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Quantifying Appearance for Opaque Surfaces Using Spectral Bidirectional Reflectivity

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ABSTRACT

Quantifying Appearance for Opaque Surfaces Using Spectral Bidirectional Reflectivity

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Quantifying the appearance of a surface is an important aspect in quality control. Because objects at room temperature emit negligible amounts of radiation into the visible spectrum, aspects of their appearance may be quantified using reflected light. Therefore, the appearance of opaque surfaces may be quantified using measurements of the spectral, bidirectional reflectivity. However, measuring the spectral, bidirectional reflectivity of even one point at every set of incident and reflected directions is a time intensive process that is infeasible for quality control.

The objective of this work was to determine whether a limited number of spectral, bidirectional reflectance measurements may be used to characterize the appearance of an opaque surface at room temperatures. The results presented in this thesis demonstrate that measurements of the spectral bidirectional reflectivity in the visible spectrum at four sets of specular reflections – 20°, 45°, 60°, and 85° – with a resolution of 5 nm may be used to quantify the appearance of an opaque surface at room temperature. These measurements are converted into parameters called the bidirectional reflectance appearance parameters (BRAPs). These BRAPs include L^*, a^*, b^* (which define the color of the surface), *G20*, *G60*, *G85* (which define the gloss of the surface), and *H* (which describes the haze of the surface). It is shown that surfaces which appear similar have similar BRAPs and surfaces which appear different have different BRAPs.

Keywords: spectral, bidirectional reflectivity, quality control, appearance

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NOMENCLATURE

α	Absorptivity
ε	Emissivity
ρ	Reflectivity
ρ''	Bidirectional Reflectivity
τ	Transmissivity
Ω	Solid angle
f_r	Bidirectional Reflectance Distribution Function (BRDF)
$\bar{x}$	Observer function used to obtain X values for CIEXYZ color space
$\bar{y}$	Observer function used to obtain Y values for CIEXYZ color space
$\bar{z}$	Observer function used to obtain Z values for CIEXYZ color space
L^*	Part of the CIELAB color space, used to determine lightness
a^*	Part of the CIELAB color space, used to determine red-green color components
b^*	Part of the CIELAB color space, used to determine yellow-blue color components
C_{XX}	Experimentally determined constant for gloss at angle XX (20°, 60°, or 85°)
E	Energy
P	Power
S	Signal from the detector
t	Integration time
X	Part of the CIEXYZ color space, used to determine red component
Y	Part of the CIEXYZ color space, used to determine lightness component
Z	Part of the CIEXYZ color space, used to determine blue component
G20	Measured gloss at a 20° specular reflection
G60	Measured gloss at a 60° specular reflection
G85	Measured gloss at a 85° specular reflection
BRAP	Bidirectional reflectivity based appearance parameter

Subscripts, superscripts, and other indicators

$[\,]_\lambda$	indicates [ ] is a spectral quantity
$[\,]'$	indicates [ ] is a directional quantity
$[\,]^{\frown}$	indicates [ ] is a hemispherical quantity
$[\,]_e$	indicates [ ] is an emitted quantity
$[\,]_i$	indicates [ ] is an incident quantity
$[\,]_r$	indicates [ ] is a reflected quantity
$[\,]_s$	indicates [ ] is a quantity related to the illumination source
$[\,]_{sam}$	indicates [ ] is a quantity related to the sample
$[\,]_{sur}$	indicates [ ] is a quantity related to the surroundings

CHAPTER 1. INTRODUCTION

Quality control is important to businesses that provide products. Consumers expect products to be safe, useful, and visually appealing. Products are devalued when they do not meet those standards, including when they are not uniform in appearance or their appearance fails to meet the designer's intent. In such cases, the perception of potential buyers is that the product is of low quality. A recent study determined that at least 30% of online purchases are returned, and approximately 22% of those returns are due to the perception that the appearance of the received product did not match the appearance of the advertised product [1]. When the appearance of a product significantly deviates from the expectation, unhappy customers may leave scathing reviews, which damage the reputation of the company. The assumption that a company designs and manufactures low-quality products negatively affects the entire brand or company [2]. In order to avoid these problems, quality-control processes must be able to catch functional and aesthetic defects in a product.

This problem is not confined to online retailers. Ensuring that its products match customer expectations can be a problem for any company, particularly one that produces items in batches. A human observer watching products be prepared may not notice slight differences in the appearance of products prepared over the course of minutes or hours, but when individuals compare products from separate batches, any inconsistencies become readily evident. This was the case with a consumer who posted the image in Fig. 1.1 [3]. When attending a showroom, they found the tile sample pictured at the top of Fig. 1.1 and decided to purchase it and have the tile installed in their home. However, once the installation was complete, the customer compared their sample tile to what was actually installed, pictured at the bottom of Fig. 1.1. Despite having the same product name, the tiles installed had a noticeably different color from that of the sample. This was particularly problematic because the tiles were marketed as gray while the installed tiles had a slightly browner tint.

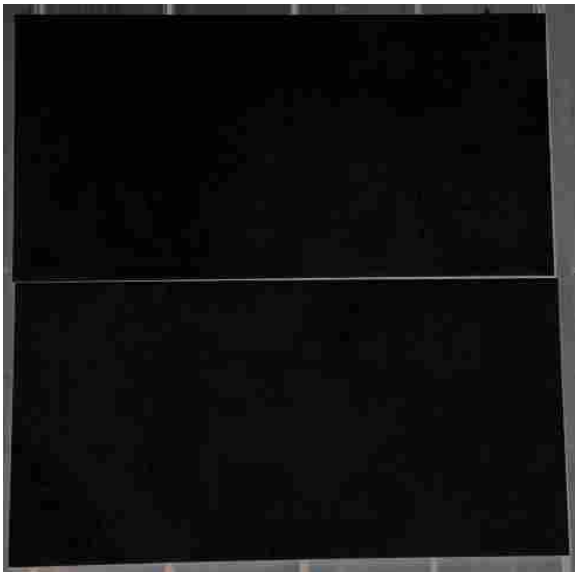


Figure 1.1: This image was taken by a customer who had tiles from different batches installed in their home [3]. Both tiles have the same product information, but the bottom tile is more brownish in appearance while the top tile is more gray.

While certain visual aspects, such as size or shape, are relatively easy to quantify, it is difficult to repeatedly measure the appearance of goods [4]. Measuring appearance is especially problematic when goods are produced in large batches. Small changes in the production process, including slight changes in pigment mix, cooling or heating rate, or moisture in the air, could gradually alter the appearance of the product. Hunter [5] explains how even small changes in viewing conditions–including the surface itself–can greatly influence the perceived color of a surface. Therefore, when the appearance of a surface is important, quality-control processes must be able to quickly and accurately detect any variation in the appearance of the surface or batch of surfaces. The aim of this thesis is to determine a limited number of measurements that can be used to uniquely quantify the appearance of opaque surfaces.

This thesis shows that spectral, bidirectional reflectivity (ρ''_λ) may be used to quantify the appearance of surfaces for quality control. The way that radiation interacts with a surface depends on the material, the finish, the wavelength of the given radiation, and the position of the radiation source relative to the surface [6, 7]. Spectral, bidirectional reflectivity is not dependent on the source of illumination. Therefore, by measuring a surface's ρ''_λ, it may be determined whether that surface meets manufacturing or design specifications.

The spectral, bidirectional reflectivity is a particularly important radiative surface property to measure because, for opaque surfaces that do not emit visible radiation, it can be directly related to color, gloss, and haze. Color, gloss, and haze are attributes commonly used to describe the appearance of an object [5]. The relationships of color and gloss to the spectral, bidirectional reflectivity will be shown in Chapter 3. Spectral, bidirectional reflectivity is the ratio of the spectral power reflected by a surface into direction θ_r, ϕ_r to the spectral power incident from direction θ_i, ϕ_i. By definition, ρ''_λ is dimensionless. The spectral, bidirectional reflectivity of a surface is related to the surfaces spectral Bidirectional Reflectance Distribution Function (BRDF), as explained in Chapter 2. In summary, the spectral BRDF is the ratio of the spectral power reflected by a surface into a particular solid angle over the spectral power incident from a collimated beam in direction θ_i, ϕ_i per unit wavelength. While measurements of spectral BRDF are used to determine appearance in the field of computer graphics [8], ρ''_λ will be presented in this thesis rather than measurements of the BRDF since ρ''_λ is used to calculate parameters which quantify the appearance of opaque surfaces.

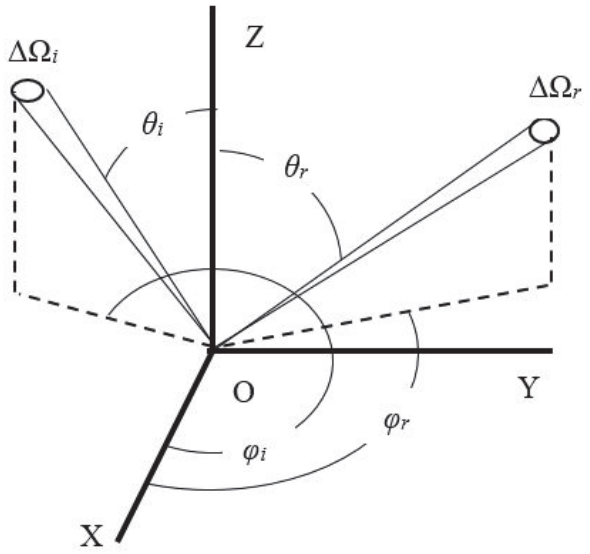


Figure 1.2: Geometry of incident and reflected beams. X and Y are along the face of the surface; Z is perpendicular to the surface.

Figure 1.2 shows how terms relating to the geometry of the reflection are used. The solid angle subtended by the illumination and by the detector are $\Delta\Omega_i$ and $\Delta\Omega_r$ respectively. The incident

direction is defined by θ_i and ϕ_i while the direction of the reflection is defined by θ_r and ϕ_r. If the reflectivity of the surface changes with position, then the position where the measurement is taken may be expressed with X and Y coordinates. In this thesis, only surfaces where the ρ''_λ is assumed to be constant or varies in only one direction are measured.

By calculating the difference between measurements of several different surfaces, it may be determined how similar in color the surfaces will appear to an observer [9]. Companies may have already established how similar two surfaces must appear in order to be considered the same color. In other words, they may already have a specific tolerance for their product's surface. The required tolerance depends on the industry and specific product. The focus of this work is not to suggest a specific tolerance, so methods of choosing or determining tolerance are not addressed in depth here. However, in order to find whether two products' appearances fall within a specific tolerance, quantitative color measurements must be taken. The goal of this thesis is to suggest a quick method to take these quantitative measurements. This versatile method can be used across many different industries and for all opaque surfaces. Once the appearance of two or more surfaces have been thus quantified, the company can calculate whether the differences fall within the predetermined tolerance.

There are many similarities between this thesis and the work presented by several scholars, including Yonehara et al. [10]. However, Yonehara et al. focused on using measurements of gloss and color to determine the surface roughness of metals. They used a separate colorimeter and gloss-meter for all of their measurements. The present work expands on this by looking at non-metallic surfaces. Bailey [11] made BRDF measurements of metallic surfaces over a range of temperatures. Their work focused on measuring differences in reflectivity as surfaces were heated and began undergoing phase changes. The purpose of these measurements was to enable a proper hazard analysis. Bailey used a high-energy laser in their work. This thesis used broadband illumination for ρ''_λ measurements. Ben-Ezra [8] created an LED based BRDF measuring device. The focus of their work was measuring the BRDF at many angles as a way to get an approximation of the entire BRDF. By using LEDs, they were able to measure the narrow bands of the spectral BRDF.

This thesis shows that measuring ρ''_λ at specified angles in the visible region of the spectrum enables quantification of the appearance an opaque, non-emitting surface. The appearance can be

quantified by measuring no more than four specular reflections over the visible range with a spectral resolution of 5 nm and converting those measurements into values that describe color, gloss, and haze. These values are referred to as bidirectional reflectivity appearance parameters, or BRAPs, since they are obtained from either spectral or total bidirectional reflectivity measurements.

This thesis has the following three objectives.

- Measure BRAPs using a single measurement apparatus.
- Determine which specular angles ρ''_λ must be measured at to characterize the appearance of an opaque, non-emitting surface.
- Determine a spectral resolution of ρ''_λ measurements needed to quantify color.

By accomplishing these objectives, this thesis will contribute to the field of quality control. This thesis can provide a basis for designing a quality-control process that is able to quantify the appearance of opaque surfaces.

Chapter 2 reviews the relationship between ρ''_λ and the BRDF, which is commonly used in some industries to specify how an opaque surface reflects incident radiation. A method for measuring ρ''_λ is also discussed in Chapter 2. Chapter 3 discusses how ρ''_λ may be used to quantify color, gloss, and haze. It also shows that gloss and haze are characteristics of a surface and are therefore independent of the illumination. Color, however, is shown to depend on characteristics of the surface, the illumination, and the observer, a drawback that ρ''_λ does not have. Chapter 4 discusses the equipment and procedures used to measure ρ''_λ. Chapter 5 presents measured BRAPs for a variety of surfaces and shows that a limited set of ρ''_λ measurements are sufficient to quantify the appearance of opaque, non-emitting surfaces. It also provides an analysis of the variation of the measurements and a discussion on the required spectral resolution for measurements of color. Chapter 6 provides a summary of this thesis.

CHAPTER 2. BIDIRECTIONAL REFLECTIVITY AND BIDIRECTIONAL REFLECTANCE DISTRIBUTION FUNCTION

In order to quantify the appearance of a surface, parts of the spectral, bidirectional reflectivity (ρ''_λ) must first be measured. This chapter outlines how the spectral, bidirectional reflectance distribution function (BRDF) is related to ρ''_λ. This chapter then explores how ρ''_λ may be measured in order to obtain the spectral BRDF.

2.1 Relating Spectral BRDF to Spectral, Bidirectional Reflectivity

The spectral BRDF is closely related to the spectral, bidirectional reflectivity, ρ''_λ. Spectral, bidirectional reflectivity is defined as the ratio of the spectral intensity reflected into $\Delta\Omega_r$ to the spectral intensity incident from $\Delta\Omega_i$ [6,7] (see Fig. 1.2). Therefore, ρ''_λ is a dimensionless quantity expressed as follows:

$$\rho''_\lambda = \frac{I_{\lambda,r} cos\theta_r \Delta\Omega_r}{I_{\lambda,i} cos\theta_i \Delta\Omega_i} \tag{2.1}$$

The spectral BRDF, denoted by $f_{r,\lambda}$, is defined as the ratio of $I_{\lambda,r}$ over $I_{\lambda,i}$ incident from $\Delta\Omega_i$. This means that unlike bidirectional reflectivity, the spectral BRDF has units of sr^{-1}. The BRDF, as presented by Nicodemus [12], may be defined on a spectral basis as follows:

$$f_{r,\lambda} = \frac{I_{\lambda,r}}{I_{\lambda,i} cos\theta_i \Delta\Omega_i} \tag{2.2}$$

Using $f_{r,\lambda}$ is common notation in equations [12,13].

In Eq. 2.2, it should be noted that in his original derivation, Nicodemus calls the reflected intensity and the solid angle subtended by incident irradiation differential quantities. Nicodemus does this because radiation may be incident from multiple directions. In such cases, the reflected intensity is a combination of the reflections from all incident radiation. Since the contribution from the incident angle of interest may be small and since the total reflected intensity may be considered

a sum, Nicodemus referred to the intensity reflected from the incident angle of interest as a differential quantity. Similarly, since incident radiation must be summed over the all of the incident angles, the solid angle subtended by the incident irradiation of interest was called a differential quantity. However, in the present measurements, the incident radiation is treated as coming from a single, collimated source. Therefore, for the purposes of this research, the reflected intensity and the solid angle subtended by incident irradiation are not treated as a differential quantities.

Eq. 2.1 may be rewritten as follows:

$$\frac{\rho''_\lambda}{cos\theta_r \Delta\Omega_r} = \frac{I_{\lambda,r}}{I_{\lambda,i} cos\theta_i \Delta\Omega_i} = f_{r,\lambda} \tag{2.3}$$

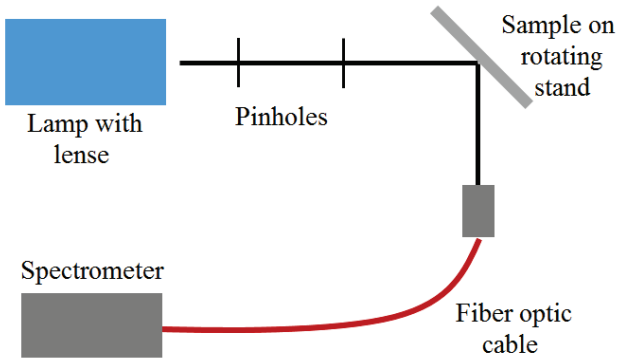
The reason Nicodemus gives for moving $cos(\theta_r)\Delta\Omega_r$ to the left hand side of Eq. 2.3 is simple; the term depends on the detector. Nicodemus' goal appears to have been to outline a practical method for making bidirectional reflectance measurements. Such a method may be used as a standard, and standards allow for easily comparing data collected by different parties. While reporting the spectral BRDF is considered the standard for computer graphics purposes [8, 11, 14–17], spectral BRDF values are not presented in this thesis. It will be shown that ρ''_λ can be used to determine the BRAPs associated with gloss, color, and haze, but the spectral BRDF cannot be used to do this directly. Because ρ''_λ is used in the calculations to determine the BRAPs, it will be reported instead of the spectral BRDF.

One method to obtain the BRDF of a surface, which is used in the field of computer graphics [8], is the use of a gonioreflectometer. Gonioreflectometers emit radiation in a narrow spectral band, typically in the visible spectrum, towards a surface [4, 14]. Radiation reflected off of the surface is collected at other angles. As no real surface is perfectly diffuse or perfectly specular, the reflections at many angles must be measured for a single incident angle. The process is repeated over numerous incident angles until reflection from any angle of interest may be accurately described. The resulting measurements are used to calculate the BRDF, which describes how incident light reflects off of an opaque surface [13]. By determining how light reflects from an opaque surface, it becomes possible to model what light would reach an observer under different viewing and illumination conditions. This allows animators to digitally replicate the appearance of a surface [8, 14] and can also be used as a means of quantifying the appearance of a surface.

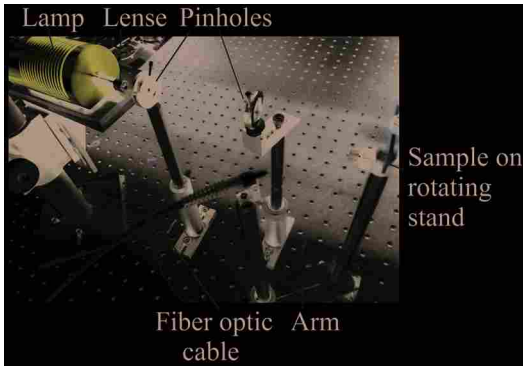
Measuring either ρ''_λ or the spectral BRDF at every angle for a point on a surface gives enough information to be able to determine the appearance of that point and differentiate that surface from another [8,14]. Unfortunately, it is difficult to obtain either of these measurements for a surface, since measurements of either ρ''_λ or the spectral BRDF must be taken at every incident and reflected angle and at every wavelength for every point on the surface. Because it is not practical to do this, when measuring ρ''_λ to differentiate between opaque surfaces, it should be measured only at the angles required to get the BRAPs, which are specified in Chapter 3.

2.2 Measurement of Spectral, Bidirectional Reflectivity

The system illustrated in Fig. 2.1 is a simple gonioreflectometer that may be used to measure ρ''_λ. The following analysis shows how ρ''_λ is obtained from these measurements.



(a) Schematic of measurement apparatus.



(b) Photograph of the optical path. The spectrometer is not shown.

Figure 2.1: Detailed representation of the test configuration.

The signal from the detector, S_λ, is proportional to the irradiation incident upon the detector, G_λ, multiplied by a calibration coefficient, $\hat{C}_\lambda$. Therefore,

$$S_\lambda = \hat{C}_\lambda G_\lambda \tag{2.4}$$

By applying the definition of the spectral irradiation [7], Eq. 2.4 may be rewritten as:

$$S_\lambda = \hat{C}_\lambda \int_{2\pi} I_{\lambda,i} cos\theta d\Omega \tag{2.5}$$

where θ is the angle between the normal of the detector and the direction of the incident radiation.

To solve Eq. 2.5, the intensity must be known as a function of the solid angle. Assuming that the intensity incident on the detector is due to emission and reflection from only a small area of the sample, then the incident radiation on the detector may be defined as follows:

$$I_{\lambda,i} = \begin{cases} 0 & \text{if } \Omega \neq \Delta\Omega_r \\ I_{\lambda,r} + I_{\lambda,e} & \text{if } \Omega = \Delta\Omega_r \end{cases} \tag{2.6}$$

Assuming that the detector keeps the same alignment and that the solid angle is small, $\cos\theta$ may be grouped into $\hat{C}_\lambda$, leading to the following constant.

$$C_\lambda = \hat{C}_\lambda cos\theta \tag{2.7}$$

By applying this definition and Eq. 2.6 to Eq. 2.5, the following is obtained.

$$S_{\lambda,sam} = C_\lambda (I_{\lambda,r} + I_{\lambda,e}) \Delta\Omega_r \tag{2.8}$$

In order to use Eq. 2.8, information about $I_{\lambda,e}$ and $I_{\lambda,r}$ must be known. The intensity incident upon the sample ($I_{\lambda,i}$) has two components: the intensity from the source ($I_{\lambda,s}$) and the intensity from the surroundings ($I_{\lambda,sur}$). This leads to the following definition of the incident intensity upon the sample:

$$I_{\lambda,i} = \begin{cases} I_{\lambda,sur} & \text{if } \Omega \neq \Delta\Omega_i \\ I_{\lambda,s} & \text{if } \Omega = \Delta\Omega_i \end{cases} \tag{2.9}$$

where $\Delta\Omega_i$ is the solid angle subtended by the source when viewed from the sample (see Fig. 1.2). This assumes that the light coming from the source is collimated; therefore the incident irradiation from any direction is only from either the surroundings or the source.

In order to relate the incident intensities to the reflected intensities, appropriate reflectance parameters must be used. Since the source subtends a small solid angle, it is appropriate to use the spectral, hemispherical-directional reflectance ($\rho_\lambda^{\frown\prime}$) for reflected intensity from the surroundings and the spectral, bidirectional reflectivity (ρ_λ'') for reflected intensity from the source. Combin-

ing these facts and assuming that only the sample is seen by the detector leads to the following expression for the signal from the detector when viewing the sample:

$$S_{\lambda,sam} = C_\lambda [\rho''_\lambda I_{\lambda,s} \Delta\Omega_r + (\rho'^{\circ}_\lambda I_{\lambda,sur} + I_{\lambda,e}) \Delta\Omega_{sam}] \tag{2.10}$$

where $\Delta\Omega_{sam}$ is the solid angle subtended by the sample when viewed from the detector.

From here, the nature of the measurement must be taken into account. Measuring visible radiation and measuring IR radiation will be considered separately. While IR radiation does not contribute to color, the same principles discussed for measuring color may be used to determine ρ''_λ in the IR region. For measuring IR radiation, see Appendix A.

For the case of visible radiation, if the room is dark ($I_{\lambda,sur} = 0$) and the sample is not at a high enough temperature to emit visible radiation ($I_{\lambda,e} = 0$), then Eq. 2.10 may immediately be simplified to the following:

$$S_{\lambda,sam} = C_\lambda \rho''_\lambda I_{\lambda,s} \Delta\Omega_r \tag{2.11}$$

By measuring the source directly, the following expression is determined:

$$S_{\lambda,s} = C_\lambda I_{\lambda,s} \Delta\Omega_r \tag{2.12}$$

By now taking measurements at various angles with the sample in place, the following ratio may be used to determine ρ''_λ.

$$\frac{S_{\lambda,sam}}{S_{\lambda,s}} = \frac{C_\lambda \rho''_\lambda I_{\lambda,s} \Delta\Omega_r}{C_\lambda I_{\lambda,s} \Delta\Omega_r} = \rho''_\lambda \tag{2.13}$$

Chapter 3 shows how ρ''_λ, obtained from Eq. 2.13, can be used to obtain values for color, gloss, and haze in order to quantify the appearance of an opaque surface. Chapter 3 will also discuss which measurements of ρ''_λ are needed in order to calculate color, gloss, and haze. A discussion on the equipment that was used to measure ρ''_λ is presented in Chapter 4.

CHAPTER 3. COLOR, GLOSS, AND HAZE

The appearance of an opaque surface may be described by its color, gloss, and haze [5]. As described in Section 3.1, color is measured using a colorimeter. Measurements taken with a colorimeter are converted into values which describe the color in a color space. As described in Sections 3.2 and 3.3, both gloss and haze are found using a separate device called a gloss-meter. The results presented in Chapter 5 demonstrate that ρ''_λ measurements obtained using a single device may be used to obtain BRAPs for color, gloss, and haze in order to quantify the appearance of an opaque surface.

This chapter presents the mathematical definitions of color, gloss, and haze to demonstrate that they are related to ρ''_λ. In the process, the specific measurements of ρ''_λ required to calculate color, gloss, and haze are determined. There are multiple ways in which color, gloss, and haze may be determined and represented. This thesis uses those methods which are most widely used in industry and which have meaning for a large number of surfaces [5]. For those interested in measurement methods to describe different surface phenomena related to appearance, see Hunter [5].

3.1 Color

Color is a sensation produced by an eye when observing visible radiation. Every color is a unique combination of hue, saturation, and lightness which is sometimes called value (see Fig. 3.1). Hue is the the attribute of color perception by which a color is judged to be red, blue, orange, etc. [18]. On a color wheel, such as Fig. 3.1, hue may be described by the hue angle, or angular position of the color on the color wheel, with pure red being 0° and yellow being 90°. Saturation is how far from neutral a color is; a color with a higher saturation is more vibrant while colors with lower saturation appear washed out. Lightness, sometimes called value, is where a color falls between white and black.

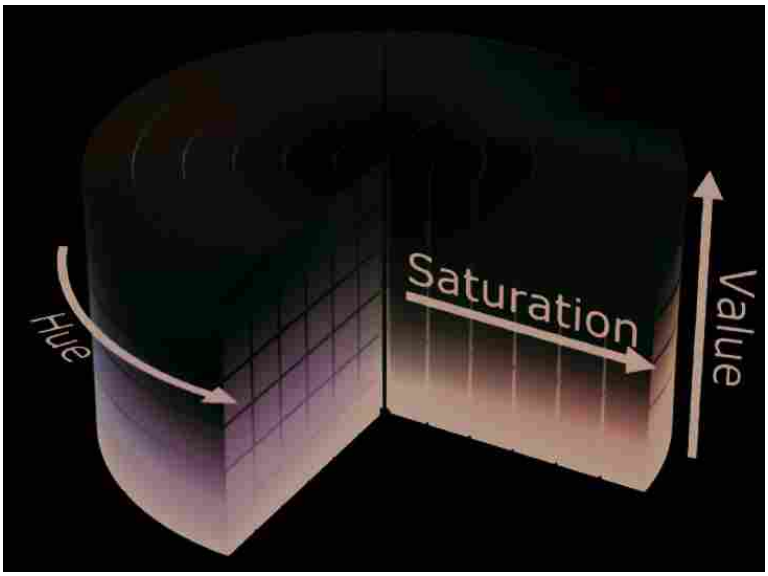


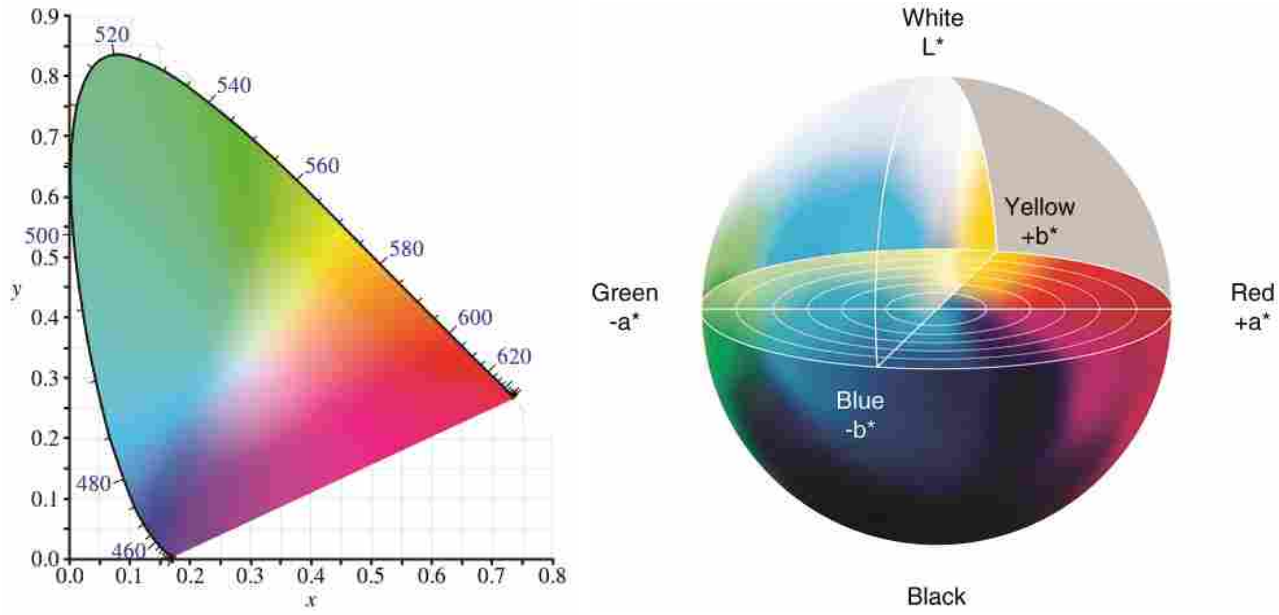
Figure 3.1: Color cylinder showing hue, saturation, and value (lightness). Image by Datumizer [19]. This work is licensed under the Creative Commons Attribution-ShareAlike 3.0 Unported License. To view a copy of this license, visit http://creativecommons.org/licenses/by-sa/3.0/ or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.

There are many different color spaces in use, and selecting the appropriate color space to use depends on the application [20]. The HSV (Hue Saturation Value) color scale, shown in Fig. 3.1, uses hue, saturation, and value directly to describe color. It is often used for applications which are artistic in nature.

The CMYK (Cyan Magenta Yellow Black) color space is used by ink printers. CMYK uses color pigment addition rather than color addition. By adding pigments, which absorb wavelengths at particular wavelengths, a surface gets darker, eventually becoming black. This is in contrast to the fact that light becomes brighter as the number of wavelengths or color components is increased.

Another color scale which is commonly used is the RGB (Red Green Blue) color scale. The saturation of red, green, and blue components of a color are specified, with values for each ranging between 0 and 255. For example, white in RGB would be 255,255,255 while a saturated blue would be 0,0,255. The RGB color space is most commonly used for representing colors in computers, where red, green, and blue pixels emit light. The RGB color space is rarely used to measure colors for non-emitting surfaces.

This thesis uses the color space recommended by the CIE (International Commission on Illumination), which is the CIEL*a*b* color space, called L*a*b* for short. This thesis uses



(a) CIE 1931 chromaticity diagram

(b) CIEL*a*b* color space

Figure 3.2: (a) CIE 1931 chromaticity diagram, which is the basis of the CIEXYZ color space [20]. This work is licensed under the Creative Commons Attribution-ShareAlike 3.0 Unported License. To view a copy of this license, visit http://creativecommons.org/licenses/by-sa/3.0/. (b) CIEL*a*b* color space. Image from Napoli [22]. This work is licensed under the Creative Commons Attribution 4.0 International Unported License. To view a copy of this license, visit http://creativecommons.org/licenses/by/4.0/.

L*a*b* because it is more commonly used when making measurements of color for technical applications [5, 8, 14]. The L*a*b* color space was derived from the original CIEXYZ color space, also called XYZ. Both L*a*b* and XYZ describe the color that would be perceived by a human observer viewing the surface under specified lighting conditions. However, L*a*b* has the benefit of having a more perceptually uniform distribution [21], which makes color comparisons easier to understand. While the XYZ color space is irregularly shaped, the L*a*b* color space is linear (see Fig. 3.2). This means that in the L*a*b* color space, moving by a given distance in a particular direction changes the color by a fixed amount regardless of the starting point.

In CIEL*a*b*, L^* indicates lightness and ranges from 0 to 100 with 0 indicating black and 100 indicating white. Unlike L^*, a^* ranges from -100 to 100 with +100 indicating saturated red and -100 indicating saturated green. b^* also ranges from -100 to 100 with +100 indicating saturated yellow and -100 indicating saturated blue. This is shown in Fig. 3.2.

The XYZ values for the source and sample are used to determine the L*a*b* values for the sample. Therefore, in this work XYZ values are first measured and then converted into L*a*b* values.

For surfaces which do not emit significant amounts of visible radiation, the color is determined by the spectral distribution of the reflected radiation. A standard method for measuring color has been established by the CIE [23]. This method has illumination incident at 45° to the surface with a detector placed normal to the surface (0°). In other words, this method measures ρ''_λ at a particular pair of angles to determine the color of a surface. Typically, the detector is placed normal to the surface, but it may be moved to another angle if there is a clear reason for doing so and the new angle is specified [24]. Due to the very low reflectivity of some materials measured in this research, the detector is placed at 45° to the surface in the direction of the reflected radiation. This allows for measuring the specular reflection, which has a higher intensity than the diffuse reflections. Measuring a stronger intensity means the detector integrates over a shorter period of time, reducing effects from noise. For some samples, this decreased the integration time to less than half of what was required for making measurements with the source at 45° and the detector at 0°. Because the reflection is measured in a different location than is standard, the colors measured in this thesis may not exactly match those measured elsewhere.

In order to convert the measured ρ''_λ into color, measurements are weighted using observer functions. A set of three observer functions (individually called $\bar{x}, \bar{y}$, and $\bar{z}$, each with a unique weight w) models the response of a human eye to visible radiation. Using the observer functions to determine color yields the CIEXYZ values (see Eq. 3.1-3 and 3.5-7). The CIEXYZ values depend on the spectral distribution of the reflected radiation, so they are dependent on the illumination, surface, and the angle of the measurement.

There are two standard sets of observer functions: the CIE 2° and CIE 10° observer functions. For an in depth discussion on the difference between the 2° and 10° observer functions, see the work by Stockman [25], which presents an analysis of how the human eye perceives color and how to mathematically model the human eye's response to visible radiation. In summary, the 2° observer functions are valid when the solid angle subtended by the viewed surface is small (approximately 1×10^{-3} sr or less) while the 10° observer functions are suited for use when the angle

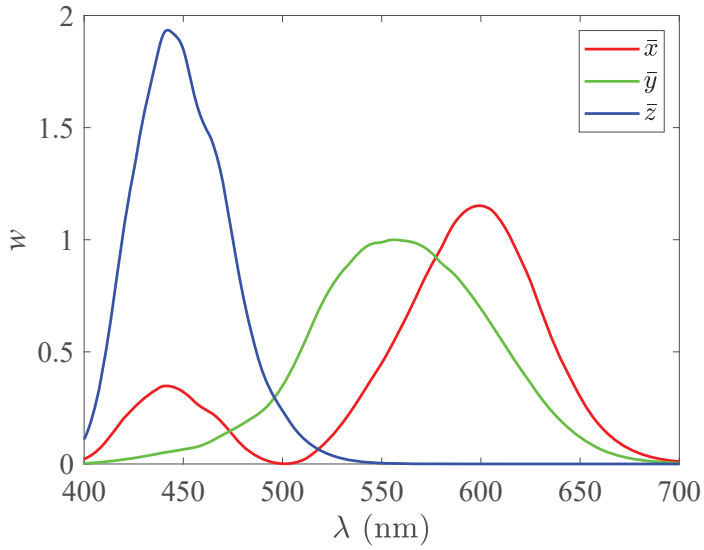


Figure 3.3: Graph showing values of CIE 2° $\bar{x}, \bar{y}$, and $\bar{z}$ with weight w.

is large. Because the angle subtended by the illuminated surface when viewed by the detector is small in these experiments, the 2° observer functions are used.

Plots of the weighting values of the 2° observer functions ($w(\lambda)$) in the range of 400-700 nm are presented in Fig. 3.3. Values for the observer functions come from data on the response of human eyes presented in [26] and the transformation into observer functions described in [25].

Weighted integrals are calculated using signals from the direct and reflected radiation. These integrals give coefficients which are used to determine XYZ values. The integrals use the appropriate observer function ($\bar{x}, \bar{y}$, or $\bar{z}$) for the coefficient. Since the signals are measured over wavelength intervals rather than as a continuous function, the integral is approximated using a Riemann sum. The coefficients for the direct radiation are found using the equations below.

$$C_{s,x} = \int_{\lambda_1}^{\lambda_2} \bar{x}_\lambda S_{\lambda,s} d\lambda \approx \sum_{i=1}^{m} \bar{x}_i S_{\lambda,s} \Delta\lambda \tag{3.1}$$

$$C_{s,y} = \int_{\lambda_1}^{\lambda_2} \bar{y}_\lambda S_{\lambda,s} d\lambda \approx \sum_{i=1}^{m} \bar{y}_i S_{\lambda,s} \Delta\lambda \tag{3.2}$$

$$C_{s,z} = \int_{\lambda_1}^{\lambda_2} \bar{z}_\lambda S_{\lambda,s} d\lambda \approx \sum_{i=1}^{m} \bar{z}_i S_{\lambda,s} \Delta\lambda \tag{3.3}$$

The equations for the coefficients associated with the reflected radiation, listed below, are similar. It should be noted that for opaque surfaces which do not emit significant amounts of radiation into the visible spectrum, $S_{\lambda,sam}$ may be written as follows:

$$S_{\lambda,sam} = \rho''_{\lambda} S_{\lambda,s} \tag{3.4}$$

This definition will be used in defining the coefficients for the reflected radiation.

$$C_{r,x} = \int_{\lambda_1}^{\lambda_2} \bar{x}_{\lambda} S_{\lambda,sam} d\lambda \approx \sum_{i=1}^{m} \bar{x}_i \rho''_i S_{\lambda,s} \Delta\lambda \tag{3.5}$$

$$C_{r,y} = \int_{\lambda_1}^{\lambda_2} \bar{y}_{\lambda} S_{\lambda,sam} d\lambda \approx \sum_{i=1}^{m} \bar{y}_i \rho''_i S_{\lambda,s} \Delta\lambda \tag{3.6}$$

$$C_{r,z} = \int_{\lambda_1}^{\lambda_2} \bar{z}_{\lambda} S_{\lambda,sam} d\lambda \approx \sum_{i=1}^{m} \bar{z}_i \rho''_i S_{\lambda,s} \Delta\lambda \tag{3.7}$$

In this paper the spacing $\Delta\lambda$ is the same for each term in the summation. To convert the coefficients from Eq. 3.1 through 3.7 above into XYZ values, they are divided by $C_{s,y}$.

$$X_s = \frac{C_{s,x}}{C_{s,y}} \quad Y_s = \frac{C_{s,y}}{C_{s,y}} = 1 \quad Z_s = \frac{C_{s,z}}{C_{s,y}} \quad X = \frac{C_{r,x}}{C_{s,y}} \quad Y = \frac{C_{r,y}}{C_{s,y}} \quad Z = \frac{C_{r,z}}{C_{s,y}} \tag{3.8}$$

X, Y, and Z are the XYZ values measured from the reflection and X_s, Y_s, and Z_s are the XYZ values measured from the source directly. XYZ values give the lightness (Y) and color components (X and Z) of a given color. Higher Y values indicate higher lightness; higher X and Z indicate a more saturated color. By dividing by $C_{s,y}$, it sets the brightness (Y) of the source to 1, which is the standard convention [23]. Based on the derivation of the XYZ values, perceived color is dependent on the observer (which is represented by observer functions), the surface's ρ''_{λ}, the illumination, and the spectral resolution ($\Delta\lambda$).

The XYZ values for the source and sample are used to determine the L*a*b* values for the sample since L*a*b* is the color space currently used in industry. The transformation from XYZ to L*a*b* is done by using the equations listed below:

$$L^* = 116 f(\frac{Y}{Y_s}) - 16 \tag{3.9}$$

$$a^* = 500(f(\frac{X}{X_s}) - f(\frac{Y}{Y_s})) \tag{3.10}$$

$$b^* = 200(f(\frac{Y}{Y_s}) - f(\frac{Z}{Z_s})) \tag{3.11}$$

The values of the left hand side of these equations are the L^*, a^*, and b^* values used to define colors in the L*a*b* color space. The function $f(t)$, where t is $\frac{X}{X_s}$, $\frac{Y}{Y_s}$ or $\frac{Z}{Z_s}$, is defined by the following:

$$f(t) = \begin{cases} \sqrt[3]{t} & \text{if } t > \delta^3 \\ \frac{t}{3\delta^2} + \frac{4}{29} & \text{if } t < \delta^3 \end{cases} \tag{3.12}$$

where $\delta = \frac{6}{29}$. For a discussion on converting to the other color spaces mentioned previously in this section, see [27].

L*a*b* colors with the same hue fall on the same hue angle. The hue angle is defined as follows:

$$h_{ab} = atan(b^*/a^*) \tag{3.13}$$

Hue angle is a way to compare colors that have different values for lightness [10].

3.2 Gloss

Gloss is a common measurement used to describe the appearance of a material or object [18, 28]. Gloss is used to describe how shiny or reflective a surface is. While there are multiple types of gloss measurements, including specular gloss, sheen, luster, absence-of-bloom gloss, distinctness-of-image gloss, and surface-uniformity gloss [5], the most commonly used measurement is specular gloss. Specular gloss is the measurement of the specular bidirectional reflection at one of three angles: 20° for high-gloss surfaces, 60° for semi-gloss surfaces, and 85° for low-gloss surfaces [29]. A specular reflection occurs when the incident and reflected angles are in the same plane ($\phi_i = \phi_r$) and are the same magnitude ($|\theta_i| = |\theta_r|$), as shown in Fig. 1.2. The 85° measurement of specular gloss may also be called sheen. Sheen is the measurement of gloss for illumination at grazing angles and is used only for low-gloss or matte surfaces. Luster is used for low-gloss

surfaces, such as fabrics, where the gloss of the surface changes with position. Absence-of-bloom gloss is only measured for surfaces where reflected highlights are present. Distinctness-of-image gloss is only measured for surfaces in which mirror images are seen. Surface-uniformity gloss is used to measure variations in a surface and is not a function of ρ''_λ. Since specular gloss has meaning for the widest variety of surfaces and is a function of ρ''_λ, it will be the gloss reported in this thesis.

To indicate at which angle the gloss measurement was taken, *G20*, *G60*, or *G85* is written behind the gloss value. When calculating specular gloss GXX, ρ''_λ is scaled by an experimentally determined constant C_{XX}, as shown below.

$$GXX_\lambda = C_{XX,\lambda}\rho''_\lambda(\theta_i = \theta_r = XX) \tag{3.14}$$

As shown in Eq. 3.14, the measurement is reported as a value at angle XX°, where XX is 20, 60, or 85. Gloss may be calculated on a spectral basis, although it is generally averaged over the visible wavelengths.

$$GXX = C_{XX}\int_{\lambda_1}^{\lambda_2}\rho''_\lambda(\theta_i = \theta_r = XX)d\lambda \tag{3.15}$$

where λ_1 and λ_2 are 400 and 700 nm respectively in this thesis.

To measure specular gloss, the spectral intensity of visible radiation after a 60° specular reflection from the surface is divided by the spectral intensity of visible radiation measured directly. This gives ρ''_λ for a 60° specular reflection from the surface. ρ''_λ is then averaged over the measured, visible wavelengths and multiplied by an experimentally determined constant, C_{60}. The constant is determined by measuring the 60° specular reflection of a black glass reference sample, such as the sample included with the gloss-meter described in Chapter 4. To get C_{60}, Eq. 3.15 is rearranged as shown below.

$$C_{60} = \frac{G60_{ref}}{\int_{\lambda_1}^{\lambda_2}\rho''_\lambda(\theta_i = \theta_r = 60°)d\lambda} \tag{3.16}$$

where $G60_{ref}$ is the 60° gloss value of the reference surface. While gloss is dimensionless, the constant is said to have dimensionless units of gloss units (GU). The constant has a value such

that when measuring a reflective black glass standard the gloss-meter will return a result of 100 GU [30]. A perfectly matte surface will return a gloss value of 0 GU.

If the value for *G60* is greater than 70 GU, the surface is considered high-gloss. For high-gloss surfaces, the gloss is measured at 20°. If the value for *G60* is less than 10 GU, the surface is considered low-gloss. For low-gloss surfaces, the gloss is measured at 85°. The process for measuring gloss at 20° or 85° is the same as the process to measure gloss at 60° except that the reflection is measured at 20° or 85°.

In this thesis, all of the surfaces were determined to have high or medium gloss through the use of the gloss-meter described in Chapter 4. Since G85 is only reported for low-gloss surfaces, specular gloss at 85° is not measured or reported in this thesis. The same procedure used to measure *G20* and *G60*, which is outlined in Chapter 4, may be used to obtain *G85*.

3.3 Haze

For opaque surfaces, haze is related closely to gloss. Haze is a measure of the cloudiness of a surface [18] and may be thought of as a measure of how quickly a surface's gloss changes with viewing angle. Like gloss, it may be reported for a particular wavelength, but is generally averaged over the visible spectrum. Haze is obtained from measurements of *G60* and *G20* [31]. The haze index, H, is determined using the following equations. If spectral haze is desired, it may be found from the following equation.

$$H_\lambda = G60_\lambda - G20_\lambda = C_{60}\rho''_\lambda(\theta_i = \theta_r = 60) - C_{20}\rho''_\lambda(\theta_i = \theta_r = 20) \tag{3.17}$$

If the haze index over the entire visible spectrum is desired, then Eq. 3.17 may be integrated over the visible spectrum. This leads to the following:

$$H = G60 - G20 \tag{3.18}$$

Haze over the entire visible region will be reported in this thesis, not spectral haze.

3.4 Summary

Color, gloss, and haze are three properties which are used to describe the appearance of a surface. Color, gloss, and haze may be quantified by L^*, a^*, b^*, *G20*, *G60*, and *H*. These six parameters are the BRAPs used in this thesis. Using ρ''_λ for specular 20°, 45°, and 60° reflections over the wavelengths of 400-700 nm, values for the BRAPs may be calculated. For surfaces which have low-gloss ($G60 < 10$ GU), an additional measurement of ρ''_λ is made at the specular 85° reflection to get *G85*. None of the surfaces measured for this thesis are low-gloss, so specular ρ''_λ at 85° is not reported.

Table 3.1: Summary of bidirectional reflectance appearance parameters (BRAPs).

Parameter	Use	Specular measurement(s)
L^*	Describes lightness of the surface	45°
a^*	Describes red-green color components of the surface	45°
b^*	Describes yellow-blue color components of the surface	45°
G20	Gloss measured at 20° (high-gloss)	20°
G60	Gloss measured at 60° (semi-gloss)	60°
G85	Gloss measured at 85° (low-gloss)	85°
H	Haze	20°, 60°

CHAPTER 4. EQUIPMENT AND PROCEDURES

This chapter describes the equipment, samples, and procedure used to measure ρ''_λ at the angles and wavelengths specified in Chap. 3. The first section describes which pieces of equipment were used and discusses samples measured. The second section discusses how the constants used to obtain gloss measurements were obtained. The final section details the procedure as well as how noise was handled and how the variation in measurements was calculated.

4.1 Equipment

4.1.1 Measurement of Specular, Spectral, Bidirectional Reflectivity

The apparatus illustrated in Fig. 2.1 is used for the experiments. The source, an Ocean Optics HL-2000-HP lamp [32], which emits radiation in the 330-2400 nm range and has a color temperature of 3000 K, was used. Hereafter the Ocean Optics HL-2000-HP lamp will be referred to simply as the lamp. Light from the lamp passes through a collimating lens and two pinhole filters to achieve a narrow, collimated beam, which was directed towards the sample. The sample was placed on a turn table with an angular resolution of 2°. A fiber optic cable collected the light reflected off of the sample and delivered the radiation to a Silver-Nova TE cooled spectrometer, which is capable of measuring radiation in the range of 190-1110 nm. The Silver-Nova TE cooled spectrometer [33] uses a CCD array and outputs intensity data as counts. The Silver-Nova TE cooled spectrometer will be referred to as the spectrometer. The fiber optic cable was a 2 meter long SMA905 0.22 n.a. (numerical aperture) single fiber. Radiation which was collected by the fiber passed through a hole with a diameter of approximately 1 mm immediately before being collected.

The lamp was secured 2 inches from the first pinhole, which was 3 in from the second pinhole. Inches were used since the optical table the equipment was fastened to had holes spaced

every 1 in. The sample was located 5 in from the second pinhole. The fiber optic cable which collected reflected radiation was secured 2.75 in from the sample on a rotating arm. This led to the detector subtending a solid angle of approximately $1.6 \times 10^{-4} \pm 3 \times 10^{-5}$ sr.

4.1.2 Gloss-meter

An ETB-0833 gloss-meter was used to measure gloss at angles of 20° and 60°. Measurements were taken with this device to compare with those obtained from measuring ρ''_λ. The manufacturer claims that the gloss-meter has a range of $0-200$ GU and is accurate to within 1.2 GU. The gloss-meter consists of two parts: the actual gloss-meter and the case. Once turned on, the gloss-meter uses a black glass reference sample with established gloss values attached to the case to calibrate itself. Once calibrated, the gloss-meter is removed from the case and placed on a surface for measurement. The gloss-meter meets ASTM standard D523 [29]. Because the gloss-meter is only able to resolve changes in gloss as small as 0.1 all BRAPs will be rounded to the tenths place except when discussing the effect of resolution on measured color.

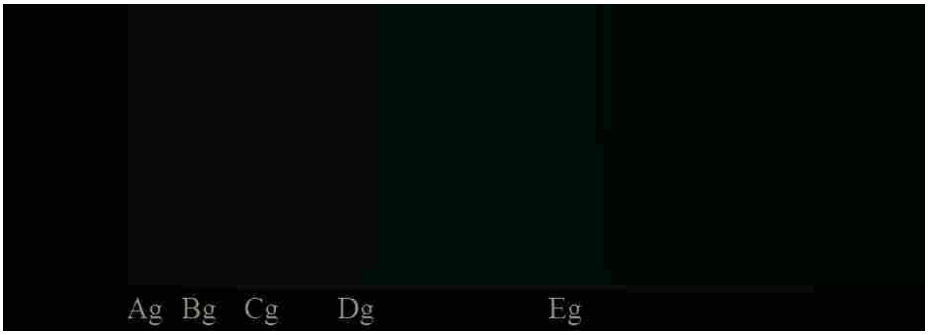
Figure 4.1: Image showing the gloss-meter. The gloss-meter was used to independently the measured gloss and haze of samples.

4.1.3 Samples

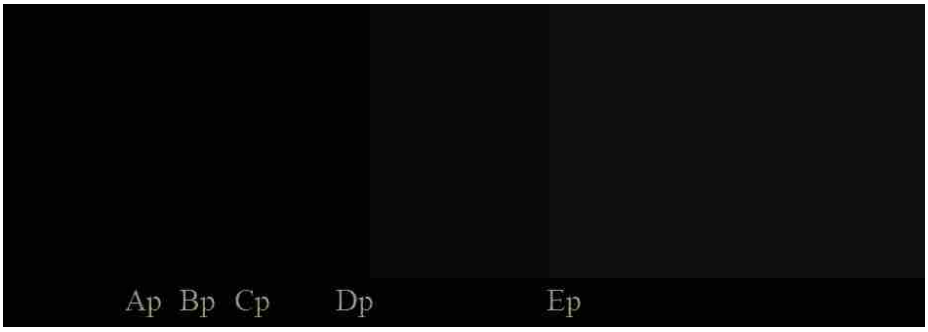
Color gradients printed on photo paper, copper strips, and plastic samples were investigated in this study as described in the following subsections.

Color Gradient Samples

(a) Yellow gradient



(b) Green gradient



(c) Purple gradient

Figure 4.2: Images of the gradients used in the experiments. Each gradient goes linearly from white to either yellow (top), green (center), or purple (bottom). Images are not full sized.

These samples were images of a color gradient created in PowerPoint using the gradient option such that the appearance of the samples varies from left to right. This tool uses the RGB color space, which is standard for computers to use. Each of the samples faded from white (RGB 255,255,255) to either yellow (RGB 255,255,0), green (RGB 0,255,0), or purple (RGB 255,0,255). Yellow and green are both on the axis of the L*a*b* color space, while purple is off axis (see Fig.

3.2). The a* measurement of yellow and the b* measurement for green were anticipated to be zero because in L*a*b* yellow and green lie on the b* axis and a* axis respectively. The a* and b* measurements for purple are anticipated to be the same.

The images were printed on Fujifilm Quality Dry Photo Paper. Color was measured at five positions (labeled A through E) on the gradients. A was located two centimeters from the left edge of the sample. The spacing between measurement A and B was set as 1 cm. The spacing between measurement A and the next measurement doubled each time (i.e. C was 2 cm from A, D was 4 cm from A, and E was 8 cm from A). The images were attached to a flat piece of copper from the same sheet as the copper sample with unknown composition. This allowed the otherwise flexible paper to be clamped down for measurement. Sheets of matte black card stock were placed between the sample and the copper backing to prevent reflections from the copper backing.

These gradients were used in order to demonstrate that the measuring apparatus shown if Fig. 2.1 could quantify both small and large changes in the appearance of opaque surfaces.

Copper Samples

Figure 4.3: Picture showing copper samples.

Three different copper samples were used for the experiments. Sample A was a sample of copper with unknown composition. Samples B, C and D were C1100 copper. Oxidation was removed from Samples A, B, and C by placing them in a salt and vinegar bath, while the oxidation on Sample D was not removed. Sample C was exposed to the ambient room conditions for one week. All samples were wiped with a soft cloth before measurements were taken.

Copper samples were measured because their appearance changes over time due to oxidization. The results of these experiments demonstrate that the apparatus used is able to detect these differences.

Plastic Samples

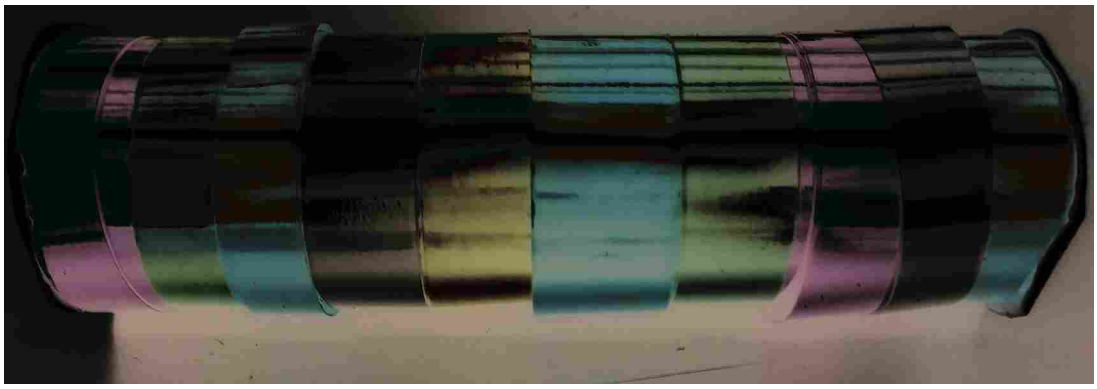


Figure 4.4: Picture showing the glossy front side of plastic ribbons used as samples, still on the spool.

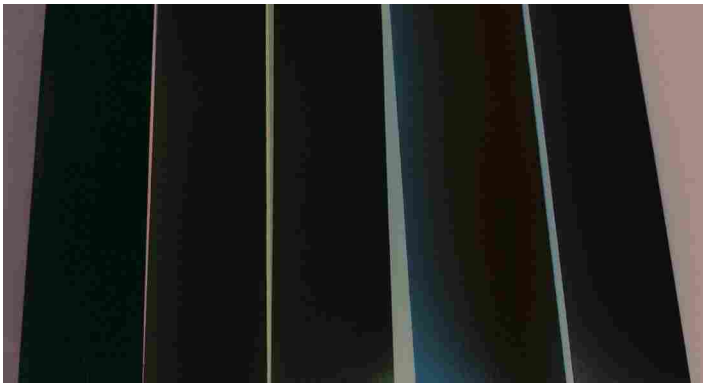


Figure 4.5: Picture showing the matte back side of plastic ribbons used as samples.

The plastic samples were thin strips of plastic ribbon manufactured by Viola (product ID 121123-1807). The strips were cut to approximately 0.5 in wide and came in colors of green, blue, purple, red, and silver. The strips were attached to a small piece of copper from the same sheet as copper sample A. By attaching the strips to copper, it ensured that the otherwise flexible material

could be clamped down without curling or bending. The front side of the strips was glossy while the back of the strips was matte. As seen in Fig. 4.4 and Fig. 4.5, in addition to being less glossy, the colors on the matte side of the plastics appear less saturated. Both sides of the plastic ribbons were tested, and the results are reported separately for the glossy and matte sides.

Plastic samples were measured because many surfaces for which appearance is important are plastic so it is important that a device used to quantify the appearance of opaque surfaces can quantify the appearance of plastic surfaces.

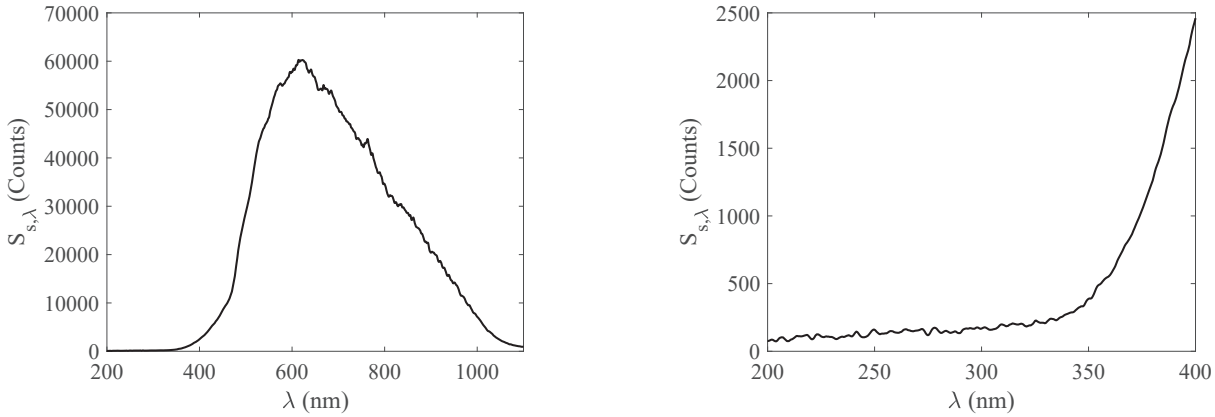
4.2 Gloss Coefficients

As discussed in section 3.2, constants for gloss measurements must be experimentally determined. For this thesis, a coefficient of 2079 GU was used for *G20* measurements and a coefficient of 2656 GU was used for *G60* measurements. These coefficients were experimentally determined and are dependent on the measurement apparatus. To determine the coefficients, the black glass reference sample included with the gloss-meter was placed where the sample is held by the measurement apparatus used in this thesis (see Fig. 2.1). Measurements were taken as described in section 4.1.1. The coefficients were determined by comparing the gloss values for the reference sample to the values to the integral of the measured ρ''_λ using the spectrometer. By dividing the measured values of gloss for the reference sample by the integral of the measured ρ''_λ, as shown in Eq. 3.16, the calibration coefficients were obtained.

4.3 Procedure

Since the only appearance of the surface was of interest, radiation in the visible region, 400-700 nm [5, 21], was analyzed. The spectral resolution used for the measurements in this thesis was 0.5 nm, because it was the maximum spectral resolution of the spectrometer.

Before the sample was put into the apparatus, the lamp was turned on and allowed to warm up for at least 10 minutes, as recommended in [32]. Once warm, the radiation from the lamp was transmitted through the fiber optic cable to the spectrometer. The fiber optic cable was aligned by maximizing the signal. Any misalignment causes the $\cos\theta$ term in Eq. 2.5 in Section 2.2 to decrease, making the solid angle from the detector to the sample smaller. As shown in the



(a) Signal across full spectrometer range

(b) Signal between 200-400 nm

Figure 4.6: Measured signal of the lamp near saturation. The signal reported by the spectrometer is non-zero for all wavelengths, despite the lamp emitting no radiation for wavelengths less than 330 nm. [32]. This is because of dark current.

derivation, this solid angle shows up in both the numerator and the denominator of Eq. 2.13. Since the fiber optic cable's alignment was held constant, the solid angle drops out of Eq. 2.13. Misalignment of the fiber optic cable would increase detector integration times.

The sample was placed on the turntable and clamped down. The turntable was then turned to the desired angle. Once the fiber optic cable was aligned by maximizing the signal, data was collected at an integration time which caused the spectrometer to approach saturation (65535 counts). Measurements were taken for specular reflections at 20°, 45°, and 60°. Measurements were all taken in a dark room. For each measurement, including those of the source, 7 sets of data were taken and averaged.

4.3.1 Integration Time

It is worth noting that different integration times were used for sampling the direct beam and reflected radiation. This was to avoid saturation of the detector.

As shown by Fig. 4.6, the measured illumination was not uniform across all wavelengths. While the signal from the spectrometer was close to saturation (65535 counts) between 600 and 700 nm, the signal was much lower near 400 nm (approximately 2500 counts, or 4% of the maximum signal). This became a problem for reflection at wavelengths near 400 nm, since measurements

in this region could be very sensitive to noise, particularly when they had lower ρ''_λ near 400 nm than elsewhere in the visible range. In order to get a usable signal, the integration time for the spectrometer was increased.

In order to show that different integration times may be used, it is helpful to recall the definition of spectral, bidirectional reflectivity. ρ''_λ, is defined as the fraction of reflected radiative power into $\Delta\Omega_r$ over the incoming radiative power from $\Delta\Omega_i$. This fraction is measured spectrally. This may be expressed mathematically as such:

$$\rho''_\lambda = \frac{P_{\lambda,r}(\theta_r)}{P_{\lambda,i}(\theta_i)} \tag{4.1}$$

where P represents power.

Since power is defined as the amount of energy transfered per unit time, Eq. 4.1 may be rewritten as follows:

$$\rho''_\lambda = \frac{\frac{E_{\lambda,r}}{t_r}}{\frac{E_{\lambda,i}}{t_i}} \tag{4.2}$$

where E represents energy and t represents the integration time. By recognizing that the incident power comes from the source, which is measured using the spectrometer, Eq. 4.8 may be manipulated to have the following form:

$$\rho''_\lambda = \frac{E_{\lambda,r} t_s}{E_{\lambda,s} t_r} \tag{4.3}$$

If both integration times are equivalent, then the time terms drop out of Eq. 4.3. However, if the integration times are different, then they must be included as indicated.

Additionally, the response of the spectrometer had to be evaluated in order to determine whether the sensitivity of the detector varied with integration time. Measurements of the specular reflection off of copper sample A with oxidization at 60° were taken at different integration times until saturation was achieved. An oxidized version of copper sample A was used for this because it had a very long integration time to achieve saturation, but the exposure times to reach saturation became prohibitively long at other angles so this sample was not used for other measurements.

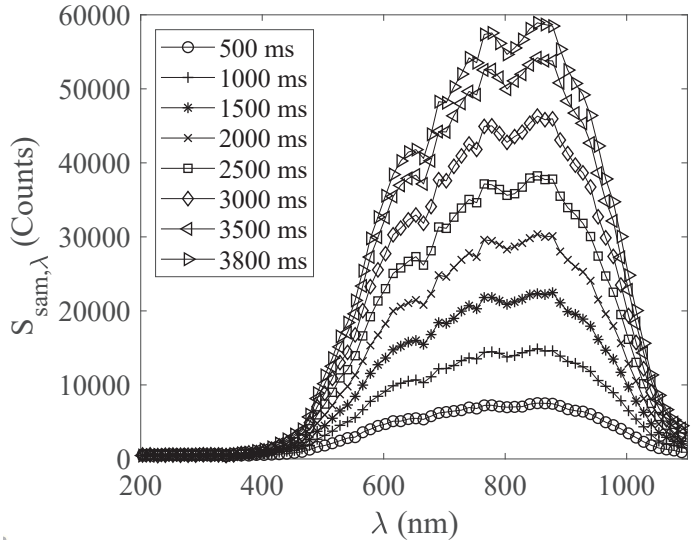


Figure 4.7: Measured reflected signal off of a sample at different integration times. The integration time was increased by increments of 500 ms until saturation was reached; then a step of 250 ms was taken to get as close to saturation as possible.

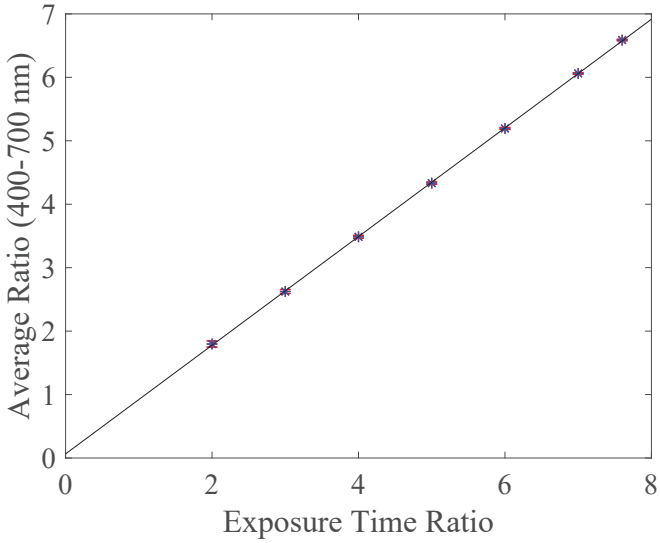


Figure 4.8: integration time ratios over 400-700 nm. The linear curve fit of the data is shown.

The data shown in Fig. 4.7 were then compared by dividing the signal strength of each integration time by the signal strength measured at an integration time of 500 ms. The average ratio over the range of 400-700 nm was then calculated for each integration time and is plotted in Fig. 4.8.

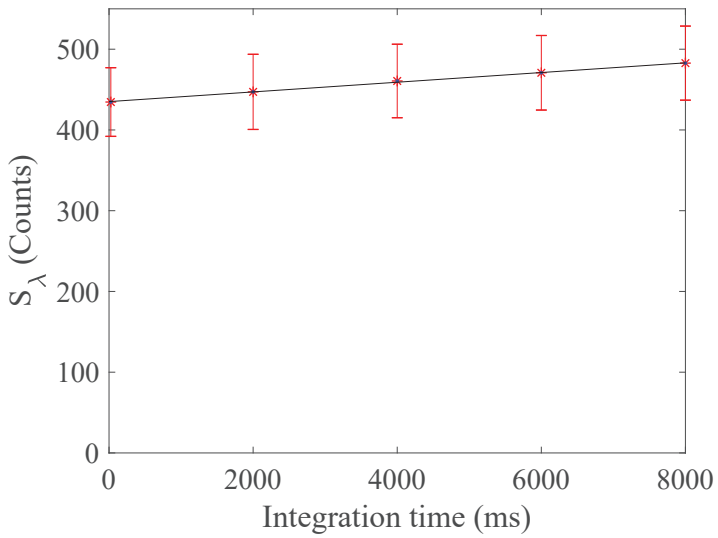


Figure 4.9: The signal from the detector at integration times of 25, 2000, 4000, 6000, and 8000 ms. The curve fit of the data is plotted and has the form $y = 0.006x + 435.1$.

As suggested by a curve fit of the data shown in Fig. 4.8, a strong, linear relationship exists between integration time and signal strength in the region of interest. By examining Figs. 4.7 and 4.8, it is clear that increasing the spectrometer's integration time does not affect the measurement except for linearly scaling the magnitude.

4.3.2 Dark Current

As with any measurement, there was noise inherent in the data. To reduce the effects of noise, the spectrometer was zeroed at each integration time before measurements were taken. The spectrometer's thermoelectric cooling (which reduces noise for long integration times) was utilized. However, this did not remove all noise. To further reduce the effect of noise on the data, seven sets of data were collected for each reflection measurement and averaged.

Despite using the built in zeroing function for each integration time, there was still a non-zero signal measured when the lamp was turned off, which may be seen in Fig. 4.6b. Figure 4.9 shows the signal measured when the lamp was turned off, with the red bars showing two standard deviations in the measured signal. While this signal was generally small compared to the reflected signal, it was significant enough to affect reflectivity values determined in the range of 400-450 nm when the reflectivity of the sample was low in that region of the spectrum. To deal with this, the

signal from the spectrometer was collected repeatedly without the lamp on for several integration times. The average signal per wavelength in the visible region was averaged for each measurement without the lamp on, giving the counts due to the average dark current. This was repeated at multiple integration times. Then the average dark currents measured at different integration times were plotted and curve fit, shown in Fig. 4.9.

As the curve fit was very linear, the dark current was estimated for the integration times of interest using the curve fit. The dark current estimate was subtracted from the data before the signal was scaled for integration time.

4.3.3 Uncertainty Estimate

Uncertainty in the measurements of this thesis has two components: accuracy and precision. While precision could be measured with variation in the measurements, accuracy was not quantified. Therefore, variation will be presented as an uncertainty estimate.

In order to estimate the variation in measurements, the standard deviation was calculated. Since there was variation in both the signal from the source and from the reflection, both of these were taken into account. This is done by taking the partials with respect to each term, multiplying the partial by the standard error, and taking the square root of the sum of each term squared. Based on Eq. 4.3, this takes the following form:

$$\sigma_\lambda = \sqrt{(\frac{t_s \sigma_{E_r}}{E_{\lambda,s} t_r})^2 + (\frac{E_{\lambda,r} \sigma_{t_s}}{E_{\lambda,s} t_r})^2 + (\frac{-E_{\lambda,r} t_s \sigma_{E_s}}{t_r E_{\lambda,s}^2})^2 + (\frac{-E_{\lambda,r} t_s \sigma_{t_r}}{E_{\lambda,s} t_r^2})^2} \tag{4.4}$$

This gives the variation to one standard deviation. Variation for all measurements in this thesis will be reported at two standard deviations, or double the value calculated in Eq. 4.4. For the noise measurements, only variation from the source is included. For the integration time ratios, since the values were averaged over 400-700 nm, the average standard deviation over this range was used. For all measurements, seven sets of data were taken.

The spectrometer was able to report the signal with 16-bit accuracy. Before each set of measurements, the system was calibrated by measuring the signal from the lamp and by using the spectrometer's built in function to zero the detector. Angles were measured to within $\pm 2°$.

CHAPTER 5. EXPERIMENT RESULTS

In this chapter, the measurements of ρ''_λ are presented and discussed. Results are presented for the color-gradient samples, the copper samples, and the plastic samples, in that order. After the results are presented, the uncertainty is estimated and the gloss measured using the gloss-meter will be compared to the gloss calculated from ρ''_λ measurements. The goal of this chapter is to show that when surfaces have similar appearances, they have similar BRAPs, and that when surfaces have different appearances, they have different BRAPs. Thus, one could use BRAPs to quantify the appearance of a surface as part of a quality-control strategy.

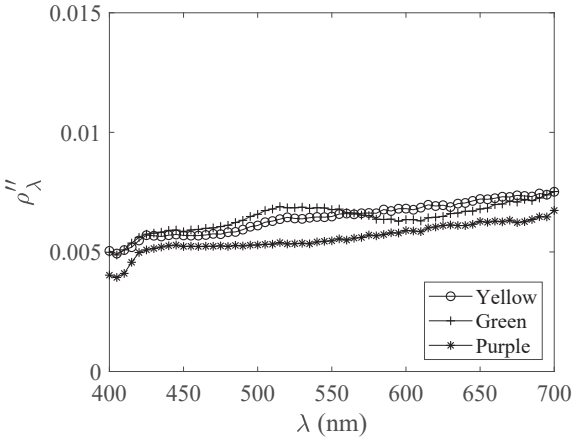
5.1 Spectral, Bidirectional Reflectivity and BRAPs

5.1.1 Color Gradient Samples

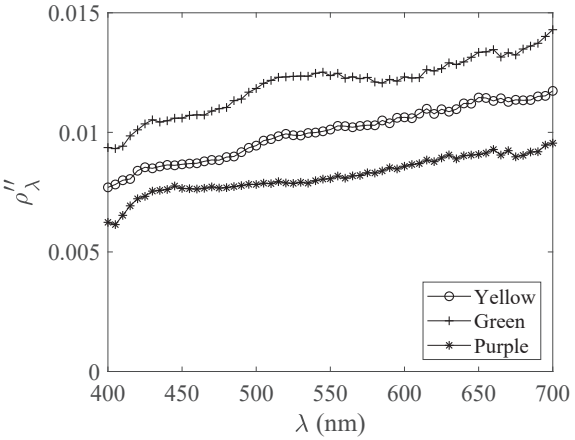
As shown in Fig. 4.2, the appearance of each color gradient varies from left to right. Therefore, it is anticipated that specular ρ''_λ measurements will be distinct at each of the specified measurement locations.

This section begins with a comparison of the measurements made at locations Ay, Ag, and Ap. A graphical comparison between the measurements of specular ρ''_λ for angles of 20°, 45°, and 60° at locations Ay, Ag, and Ap is presented in Fig. 5.1. If there were locations where the measured ρ''_λ would be indistinguishable for the three color gradients, it would be at these locations because they have the lowest saturation of the measured locations on each sample. If the measurement apparatus were unable to distinguish between locations Ay, Ag, and Ap, which appear different, then the apparatus would not be useful in making measurements to quantify the appearance of opaque surfaces.

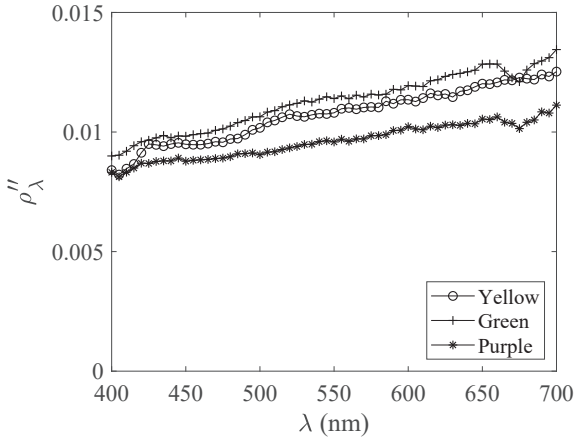
Figure 5.1 shows that the measured specular ρ''_λ at Ay, Ag, and Ap is distinct for each sample. Except for a portion of the visible section at 20°, the ρ''_λ at Ag is highest while ρ''_λ is



(a) 20° specular bidirectional reflectivity



(b) 45° specular bidirectional reflectivity



(c) 60° specular bidirectional reflectivity

Figure 5.1: Comparison of spectral bidirectional reflectivity for all color gradient samples at location A.

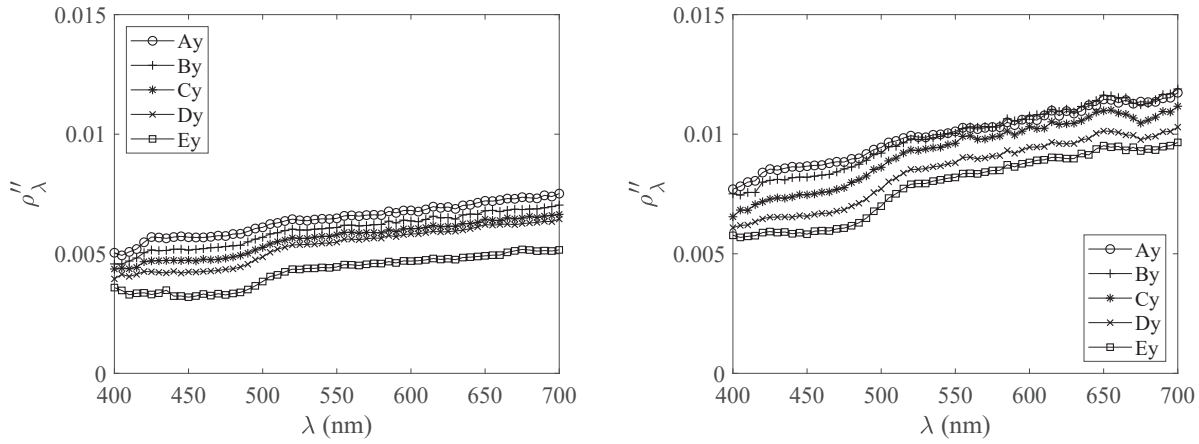
lowest for Ap. In general, the shape of the ρ''_λ is similar for all three samples. Because locations Ay, Ag, and Ap were the least saturated, and therefore were all close to white in appearance, this makes sense. The profiles of ρ''_λ for locations Ay, Ag, and Ap had the most separation between them at the specular 45° measurement. Because trends in ρ''_λ for the color gradients are most easily seen in the 45° specular measurement and there is the greatest separation between measured ρ''_λ profiles at 45°, 45° specular measurements of ρ''_λ should be used to determine color.

At 20° and 45°, there is a noticeable increase in ρ''_λ of the green gradient between 500-550 nm, which is to be expected because the wavelengths in this region of the spectrum are considered green. There is only a slight increase in this range at the 60° measurement for the green gradient.

For the yellow gradient, ρ''_λ drops slightly for all wavelengths below 500 nm. The wavelengths between 400-500 nm are considered blue. Because yellow is the opposite of blue in L*a*b* space, the drop in these wavelengths makes sense.

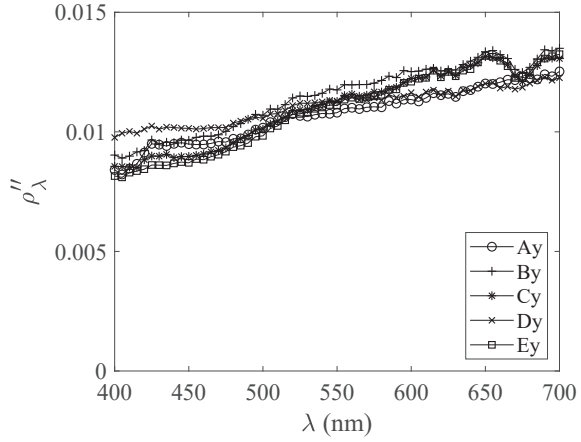
At 20° and 45°, the ρ''_λ profiles for purple level off rather than continuing their upward trend. This is to be expected because ρ''_λ is high in the red and blue regions and low in the green region. This behavior is not observed in the 60° specular measurement of ρ''_λ for the purple sample.

The discussion will now focus on how measurements of ρ''_λ vary as the appearance varies for each sample. Specular measurements of ρ''_λ at 20°, 45°, and 60° are presented for the yellow, green, and purple surfaces in Figs. 5.2, 5.3, and 5.4. Data for these measurements is included in Tables B.1 through B.9 in the Appendix B.



(a) 20° specular bidirectional reflectivity

(b) 45° specular bidirectional reflectivity



(c) 60° specular bidirectional reflectivity

Figure 5.2: Spectral bidirectional reflectivity of the white-to-yellow gradient on photo paper.

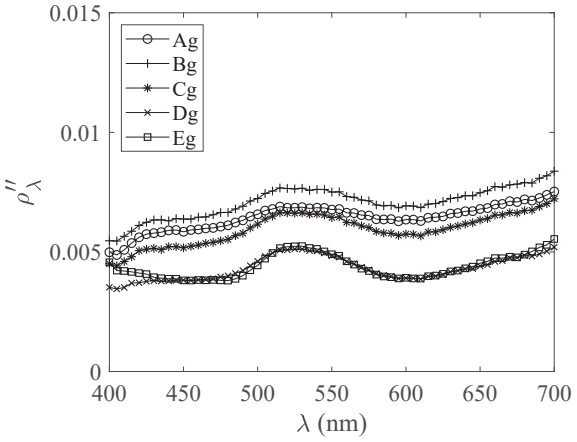
Figure 5.2 presents spectral bidirectional reflectivity of the white-to-yellow gradient on photo paper at the three measured angles. In looking at Fig. 5.2c, it becomes clear that specular ρ''_λ at 60° by itself would not describe the appearance of the yellow surface. The measurements at 60° have profiles that are nearly identical. At 20° and at 45°, there is more separation between measurements, but at 45°, locations Ay and By overlap, and at 20° the measurements at locations Cy and Dy are very similar for much of the visible spectrum. This data shows that measuring ρ''_λ at any one angle is not sufficient for distinguishing between surfaces.

Additionally, it would be difficult to distinguish between locations Ay and By graphically. Their specular ρ''_λ profiles are very similar but do not completely overlap.

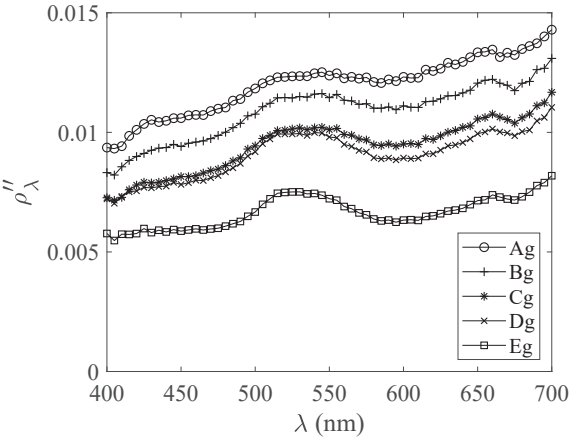
It is not possible to directly tell from Fig. 5.2 whether the appearance at Ay is similar enough to the appearance at By to meet tolerances. This is not good enough for quality-control purposes. Something more than plots of ρ''_λ profiles is required to quantify appearance. This will be shown to be the BRAPs.

Figure 5.3 presents spectral bidirectional reflectivity of the white-to-green gradient on photo paper at the three measured angles. While in general there is more difference between locations than there was for the yellow-to-white gradient, the measurements of specular ρ''_λ overlap at 20° for locations Dg and Eg, at 45° for locations Cg and Dg, and at 60° for locations Bg and Cg. Measurements of the specular ρ''_λ at 45° for locations Bg and Cg do not overlap but are very similar. This data reaffirms that measuring ρ''_λ at any one angle is not sufficient for distinguishing between surfaces.

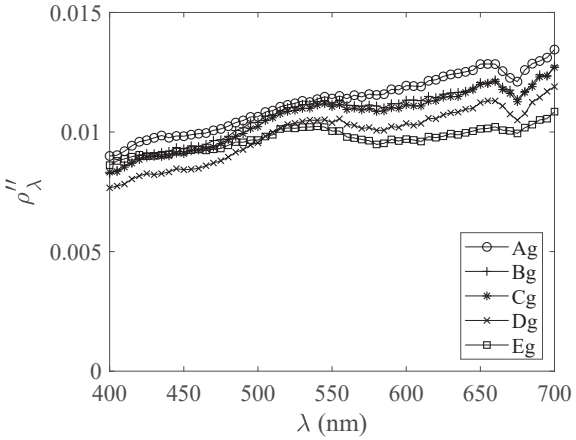
Figure 5.4 presents spectral bidirectional reflectivity of the white-to-purple gradient on photo paper at the three measured angles. It is difficult to distinguish measurements of specular ρ''_λ for one another at any angle for the purple sample. The purple gradient shown in Fig. 4.2c does not appear to become saturated as quickly as the yellow or green gradients, despite being prepared in the same manner. Therefore, it is not surprising that, for the purple sample, there is less separation in ρ''_λ as the location changes than there is for the yellow and green sample. Similar appearances should have similar measurements, but the measured ρ''_λ profiles are stacked so closely that it would be very difficult to use them as they are to determine when the appearance of the purple gradient has changed.



(a) 20° specular bidirectional reflectivity



(b) 45° specular bidirectional reflectivity

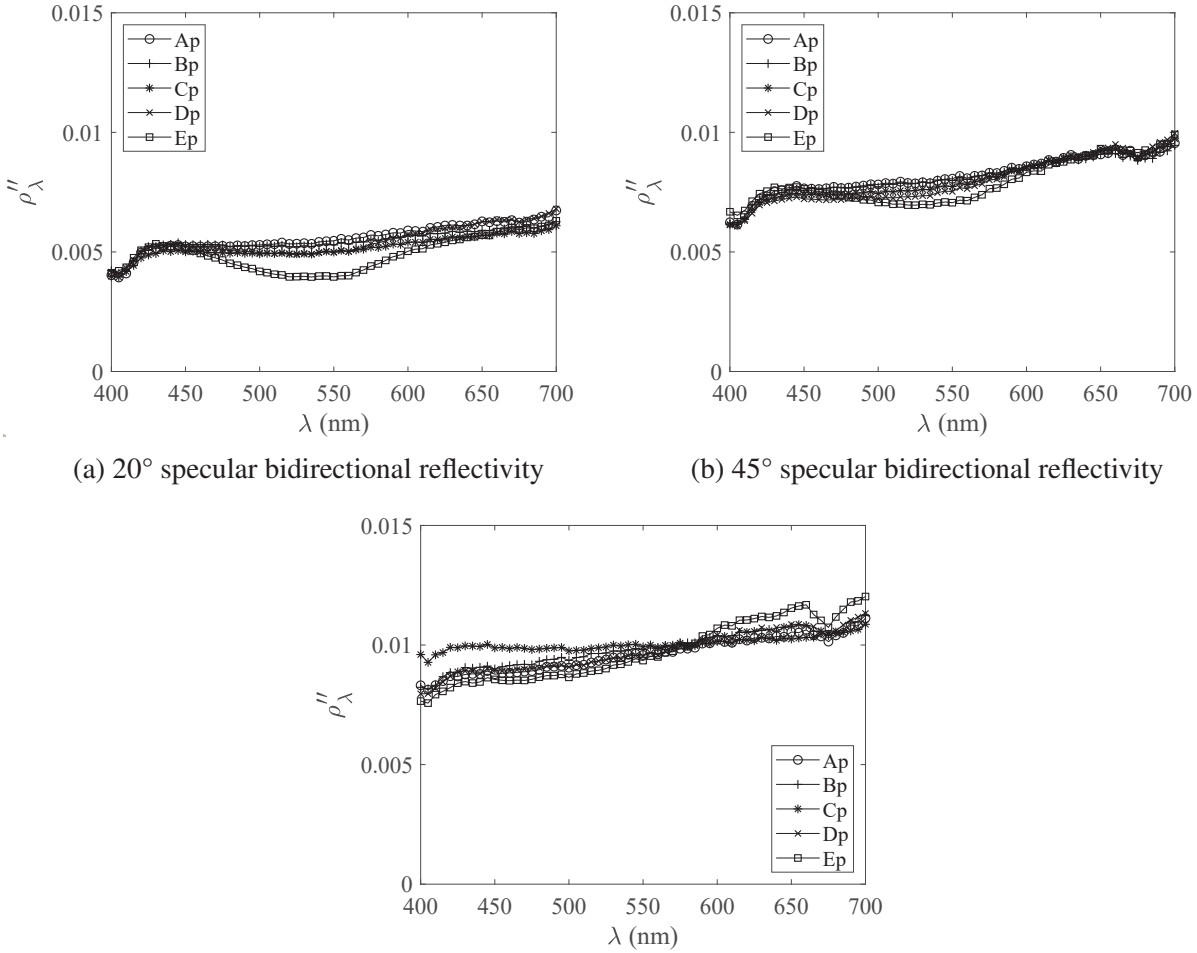


(c) 60° specular bidirectional reflectivity

Figure 5.3: Spectral bidirectional reflectivity of the white-to-green gradient on photo paper.

The quality-control problems discussed for the yellow gradient are even more severe for the purple gradient. The profiles of ρ''_λ fall almost exactly on top of one another for locations Ap, Bp, Cp and Dp. It is not possible to directly tell from Fig. 5.4 whether the appearance at Ap, Bp, or Cp is similar enough to the appearance at Dp to meet tolerances. More analysis must be done with the measured ρ''_λ profiles to determine exactly how similar or dissimilar two locations on the purple gradient appear for quality control.

The preceding discussion about the data presented in Fig.s 5.2, 5.3, and 5.4 shows that using a single measurement of specular ρ''_λ is insufficient to determine when the appearance of two surfaces (or two points on the same surface) has become different. At least two measurements are required, but which two depends on the location and the sample. Therefore, all three measurements



(a) 20° specular bidirectional reflectivity

(b) 45° specular bidirectional reflectivity

(c) 60° specular bidirectional reflectivity

Figure 5.4: Spectral bidirectional reflectivity of the white-to-purple gradient on photo paper.

of specular ρ''_λ should be used when attempting to quantify appearance. In addition, the preceding data shows that it is difficult to determine how close in appearance two surfaces or two locations on a surface appear just by looking at ρ''_λ profiles. More analysis must be done than simply providing plots of ρ''_λ in order to quantify appearance.

Because there are some changes in the relative magnitudes of ρ''_λ as one moves from left to right on the color-gradient samples, it is possible that averaging the measured ρ''_λ over the visible spectrum will be able to determine how close in appearance two surfaces (or two points on the same surface) appear. This seems reasonable because the same step is taken to calculate gloss, as was discussed in Chapter 3. The results of averaging the measured ρ''_λ are presented in Table 5.1.

Table 5.1: Averages of the measured specular spectral bidirectional reflectivity for the three color gradient samples.

Yellow	20°	45°	60°
A	0.0064	0.0100	0.0107
B	0.0060	0.0099	0.0115
C	0.0056	0.0093	0.0110
D	0.0053	0.0084	0.0111
E	0.0042	0.0078	0.0109
Green	20°	45°	60°
A	0.0064	0.0120	0.0112
B	0.0071	0.0109	0.0107
C	0.0059	0.0095	0.0106
D	0.0043	0.0091	0.0099
E	0.0044	0.0067	0.0097
Purple	20°	45°	60°
A	0.0056	0.0082	0.0096
B	0.0055	0.0081	0.0098
C	0.0052	0.0080	0.0100
D	0.0054	0.0080	0.0097
E	0.0049	0.0079	0.0097

There is some merit to averaging ρ''_λ measurements, which change based on the location on a specified color gradient. These value changes indicate that the appearance changes with position and estimates the size of the change. A problem with using just the averaged ρ''_λ measurements may be seen by comparing results from one color gradient to those of another. For example, the values for locations Ey and Ep are somewhat similar. If someone were to review Ey and Ep in just Table 5.1, they could mistakenly believe that yellow and purple appear similar. Reviewing Fig. 4.2 shows that this conclusion is incorrect.

As discussed at length in Chapter 3, color, which is a quantifiable aspect of appearance, varies as the profile of ρ''_λ changes. Using BRAPs associated with color avoids the problems highlighted in this discussion of Table 5.1. Table 5.2 presents the BRAPs for the three color gradient samples. BRAPs were calculated as described in Chapter 3.

Just like in Table 5.1, trends may be seen within individual gradients in Table 5.2. For example, L^* almost always decreases along each gradient. This makes sense because more pigmentation would reduce the reflectivity, as is seen in Figs. 5.2, 5.3, and 5.4. However, by using the

Table 5.2: BRAPs for all of the color gradients.

Yellow	*L**	*a**	*b**	*G20*	*G60*	*H*
A	9.2	0.9	2.1	13.4	28.5	15.1
B	9.3	1.1	2.7	12.5	30.5	18.0
C	8.9	1.0	3.1	11.7	29.3	17.6
D	8.1	1.1	3.3	11.0	29.5	18.5
E	7.6	1.2	3.4	8.8	28.9	20.1
Green	*L**	*a**	*b**	*G20*	*G60*	*H*
A	10.8	0.2	1.8	13.4	29.9	16.5
B	10.0	-0.1	2.0	14.7	28.5	13.8
C	8.8	-0.3	2.1	12.4	28.1	15.7
D	8.5	-0.7	1.8	9.0	26.3	17.3
E	6.2	-0.8	1.1	9.1	25.8	16.7
Purple	*L**	*a**	*b**	*G20*	*G60*	*H*
A	7.5	1.0	1.0	11.6	25.5	13.9
B	7.5	0.9	1.0	11.3	26.1	14.8
C	7.3	1.4	1.1	10.8	26.7	15.9
D	7.2	1.6	1.2	11.3	25.8	14.5
E	6.9	1.9	0.4	10.2	25.8	15.6

BRAPs, one could avoid the problems of averaging ρ''_λ and provide for an easier comparison than comparing ρ''_λ profiles. When the appearance of two surfaces is very similar, as with locations Ap and Bp, the BRAPs are very similar. When the appearance is different, as is the case for locations Ey, Eg, and Ep, the BRAPs are different. In other words, as the difference in appearance grows larger, the difference in the BRAPs for each point also grows larger. This makes BRAPs useful for quality control.

Another thing to note from Table 5.2 is that the values for gloss are fairly constant across all samples, although *G20* does decrease with increasing saturation. This is to be expected because all of the samples have the same material – photo paper – behind a thin layer of pigmentation. Therefore, the color gradients should all have similar gloss levels. As a color gets more saturated, the coverage of the photo paper by the pigmentation increases, so the ρ''_λ decreases. In other words, gloss should decrease as saturation increases. This trend is seen in Table 5.2.

As explained in Chapter 3, the measured color depends on the spectral resolution with which ρ''_λ is measured, while gloss and haze are independent of the spectral resolution. As discussed in Chapter 4, the spectrometer's spectral resolution was 0.5 nm. In order to explore the

effects of resolution on measuring color, the values used for the observer functions, the measured signal of the lamp, and the measured ρ''_λ were averaged over a specified wavelength band. Calculations were done on those averaged values to determine what L^*, a^*, and b^* would be obtained if the specular ρ''_λ measured at 45° were measured with different spectral resolutions. The coefficients for calculating color are found using a Riemann sum as discussed in the color section of Chapter 3. Riemann sums are only accurate so far as the assumption that the value used to approximate the function is a good estimate of the function over the $\Delta\lambda$. Since the $\Delta\lambda$ used to determine color cannot be smaller than the spectral resolution, the spectral resolution used to measure ρ''_λ determines the $\Delta\lambda$ used to determine color [34]. The goal of this section is to determine a suitable spectral resolution for measuring ρ''_λ to determine color. This section first explores how changes in spectral resolution affect *L*, a*, and b**. The related results are presented in Tables 5.3, 5.4, and 5.5 and Fig. 5.5. The section then studies how changes in spectral resolution affect the differences between *L*, a*, and b** when the colors are similar. The related results are presented in Tables 5.6, 5.7, and 5.8.

Table 5.3: This table shows how the measured L^*, a^*, and b^* for location Ay changes as the spectral resolution of the measurements changes.

Resolution (nm)	L^*	a^*	b^*	ΔL^* (%)	Δa^* (%)	Δb^*(%)
0.5	9.2487	0.8942	2.1369	-	-	-
5	9.2485	0.895	2.1346	-0.0022	0.0895	-0.1076
10	9.2487	0.8924	2.1279	0.0000	-0.2013	-0.4212
15	9.2505	0.8926	2.1251	0.0195	-0.1789	-0.5522
20	9.2516	0.887	2.1058	0.0314	-0.8052	-1.4554
25	9.254	0.8909	2.0919	0.0573	-0.3690	-2.1059
50	9.268	0.8619	1.989	0.2087	-3.6122	-6.9212

Tables 5.3, 5.4, and 5.5 show that as the spectral resolution becomes lower, the deviation from the L^*, a^*, and b^* measured with a spectral resolution of 0.5 nm grows. However, the change with larger spectral resolutions is not constant. The change with lower spectral resolution is largest for the green gradient, which has deviations in a^* as large as 8% by 20 nm. As will be shown in section 5.4, 8% is larger than many of the uncertainty estimates for ρ''_λ. Therefore, a resolution of 15 nm or finer should be used when measuring ρ''_λ to quantify the appearance of the color gradients.

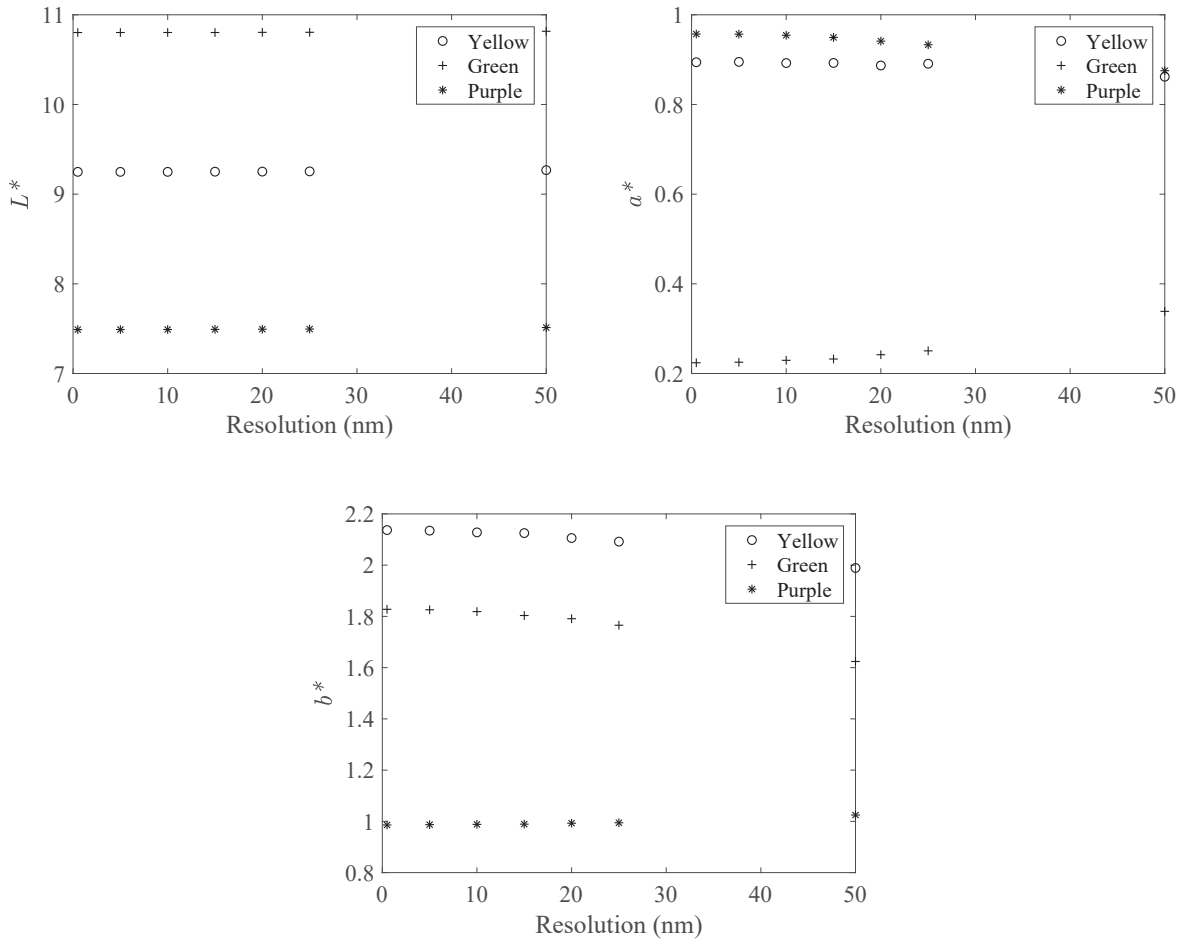


Figure 5.5: L^*, a^*, and b^* for Ay, Ag, and Ap as the spectral resolution changes.

A later section will show that a resolution of 15 nm is not fine enough to measure the L^*, a^*, and b^* of a point for every surface.

The same results presented in Tables 5.3, 5.4, and 5.5 are presented graphically in Fig. 5.5. While there is little change in L^* as the resolution changes, there is a noticeable change in a^* and b^*. The very small changes in L^* are expected because lightness is related to the average ρ''_λ and thus shouldn't change significantly with resolution. The changes in a^* and b^* values with lower resolutions are barely noticeable until the the resolution becomes lower than 15 or 20 nm. As the spectral resolution decreases, the a^* and b^* values for locations Ay, Ag, and Ap begin converging, although they never actually reach the same value. Resolutions lower than 15 nm should be avoided when measuring or comparing colors.

Table 5.4: This table shows how the measured L^*, a^*, and b^* for location Gy changes as the spectral resolution of the measurements changes.

Resolution (nm)	L^*	a^*	b^*	ΔL^* (%)	Δa^* (%)	Δb^*(%)
0.5	10.8021	0.2239	1.8276	-	-	-
5	10.8025	0.2252	1.8258	0.0037	0.5806	-0.0985
10	10.8026	0.2294	1.8187	0.0046	2.4565	-0.4870
15	10.8025	0.2323	1.8034	0.0037	3.7517	-1.3241
20	10.8042	0.2419	1.7909	0.0194	8.0393	-2.0081
25	10.8049	0.2505	1.7655	0.0259	11.8803	-3.3979
50	10.8161	0.3386	1.6240	0.1296	51.2282	-11.1403

Table 5.5: This table shows how the measured L^*, a^*, and b^* for location Py changes as the spectral resolution of the measurements changes.

Resolution (nm)	L^*	a^*	b^*	ΔL^* (%)	Δa^* (%)	Δb^*(%)
0.5	7.49	0.9571	0.9859	-	-	-
5	7.4905	0.9568	0.9872	0.0067	-0.0313	0.1319
10	7.4910	0.9544	0.9883	0.0134	-0.2821	0.2434
15	7.4921	0.9495	0.9892	0.0280	-0.7941	0.3347
20	7.4940	0.9413	0.9928	0.0534	-1.6508	0.6999
25	7.4958	0.9332	0.9945	0.0774	-2.4971	0.8723
50	7.5124	0.8753	1.0247	0.2991	-8.5467	3.9355

In Tables 5.6, 5.7, and 5.8, the actual difference is presented instead of a percent difference. This is because for color comparisons, the magnitude of the difference between L^*, a, and b^* is more important than the relative difference [9]; the magnitude of the difference is used for determining when colors are within tolerance [9].

Table 5.6: This table shows how the difference between the measured L^*, a^*, and b^* for locations Ay and By changes as the spectral resolution of the measurements changes.

Resolution (nm)	ΔL^*	Δa^*	Δb^*	$\Delta L^*_{.5}$-ΔL^*	$\Delta a^*_{.5}$-Δa^*	$\Delta b^*_{.5}$-Δb^*
0.5	-0.0058	-0.2143	-0.5973	-	-	-
5	-0.0063	-0.2133	-0.5961	0.0005	-0.0010	-0.0012
10	-0.0060	-0.2118	-0.5950	0.0002	-0.0025	-0.0023
15	-0.0051	-0.2073	-0.5874	-0.0007	-0.0070	-0.0099
20	-0.0063	-0.2044	-0.5877	0.0005	-0.0099	-0.0096
25	-0.0051	-0.2052	-0.5777	-0.0007	-0.0091	-0.0196
50	-0.0068	-0.1836	-0.5238	0.0010	-0.0307	-0.0735

Table 5.7: This table shows how the difference between the measured L^*, a^*, and b^* for locations Ag and Bg changes as the spectral resolution of the measurements changes.

Resolution (nm)	ΔL^*	Δa^*	Δb^*	$\Delta L^*_{.5}$-ΔL^*	$\Delta a^*_{.5}$-Δa^*	$\Delta b^*_{.5}$-Δb^*
0.5	0.7879	0.3498	-0.1785	-	-	-
5	0.7880	0.3485	-0.1781	-0.0001	0.0013	-0.0004
10	0.7885	0.3467	-0.1749	-0.0006	0.0031	-0.0036
15	0.7889	0.3450	-0.1735	-0.0010	0.0048	-0.0050
20	0.7893	0.3388	-0.1636	-0.0014	0.0110	-0.0149
25	0.7903	0.3332	-0.1600	-0.0024	0.0166	-0.0185
50	0.7963	0.2928	-0.1084	-0.0084	0.0570	-0.0701

Table 5.8: This table shows how the difference between the measured L^*, a^*, and b^* for locations Ap and Bp changes as the spectral resolution of the measurements changes.

Resolution (nm)	ΔL^*	Δa^*	Δb^*	$\Delta L^*_{.5}$-ΔL^*	$\Delta a^*_{.5}$-Δa^*	$\Delta b^*_{.5}$-Δb^*
0.5	0.0333	0.0385	-0.0165	-	-	-
5	0.0332	0.0388	-0.0153	0.0001	-0.0003	-0.0012
10	0.0334	0.0398	-0.0160	-0.0001	-0.0013	-0.0005
15	0.0337	0.0415	-0.0160	-0.0004	-0.0030	-0.0005
20	0.0339	0.0409	-0.0143	-0.0006	-0.0024	-0.0022
25	0.0342	0.0364	-0.0155	-0.0009	0.0021	-0.0010
50	0.0363	0.0447	-0.0111	-0.0030	-0.0062	-0.0054

Tables 5.6, 5.7, and 5.8 show that the spectral resolution of the measurements does not have a large impact on the differences between measured colors. For each color gradient, the lower spectral resolution changed the absolute difference in L^*, a^*, and b^* between locations A and B by less than 0.1. While the spectral resolution has little effect on the absolute differences in L^*, a^*, and b^*, Tables 5.3, 5.4, and 5.5 show that the L^*, a^*, and b^* values are sensitive to the spectral resolution.

Ideally, the color of the computer images used to produce the gradients could be compared to the color of the actual images. Because the color gradients were generated using a computer, their RGB colors may be determined using programs on the computer and converted into L*a*b* colors. The computer uses the RGB color scheme in order to tell individual pixels how strongly they should emit. For example, at white (RGB 255,255,255), the red, green, and blue pixels are all to emitting at their maximum brightness. However, the gradient printed on photo paper is not emitting; it is reflecting visible radiation. For matte surfaces like the photo paper, ρ''_λ values will be

much less than 1, so the L^*, a^*, and b^* values measured using the reflection will be much smaller than the L^*, a^*, and b^* produced by the computer. Additionally, the photo paper will affect the measured BRAPs. Its color will influence the measured L^*, a^*, and b^* because the measured values of ρ''_λ are a combination of the ρ''_λ of the pigments and the ρ''_λ of the photo paper. Therefore, the L^*, a^*, and b^* values obtained from the computer images are not directly comparable to the gradients' measured L^*, a^*, and b^* values.

For the color gradient samples, the most useful BRAPs were those associated with color. L^*, a^*, and b^* were almost independently able to distinguish the between the locations on the gradients. *G20* and *G60* varied between the color gradients but did not always vary significantly across a gradient. *H* was the least useful BRAP for the color gradient samples because it did not consistently vary across samples or locations.

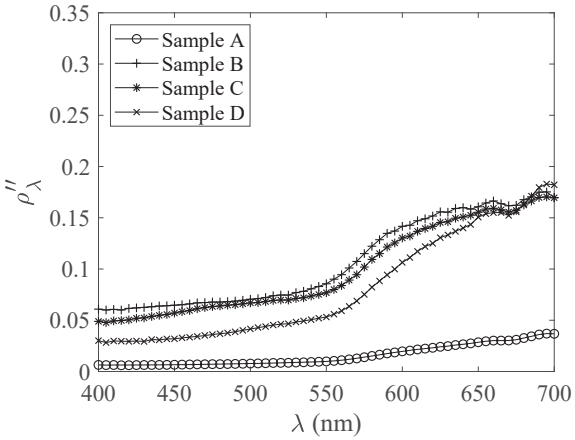
5.1.2 Copper Samples

Copper sample A had a composition different from those of the other samples. As can be seen from Fig. 4.3, copper sample A looks very different than the other copper samples. Copper sample C, which was oxidized for one week, looks similar to sample B. Sample D, which is the same base material as samples B and C, looks somewhat similar to copper samples B and C but is still clearly different.

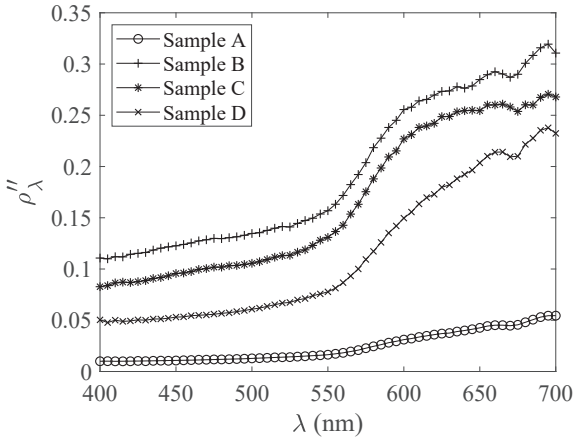
Fig. 5.6 shows the specular ρ''_λ at 20°, 45°, and 60° in the 400-700 nm range for all four of the copper samples. Data is included in Tables C.1, C.2, and C.3 in Appendix C. Using the methods described in Chapter 3, the data presented in Fig 5.6 was used to find the values of color, gloss, and haze. These results are presented in Table 5.9.

Table 5.9: Measured values of BRAP for copper samples.

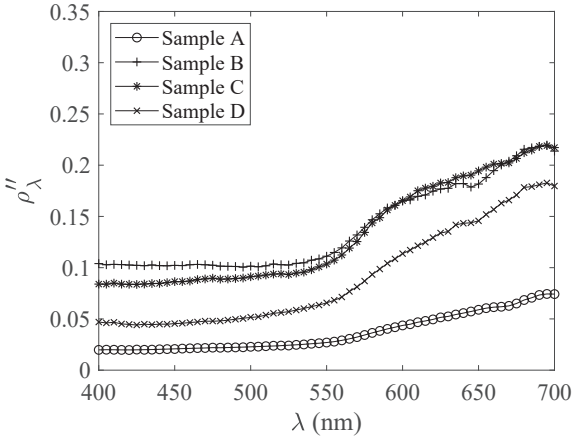
Sample	L^*	a^*	b^*	*G20*	*G60*	*H*
Cu A	16.7	11.6	12.0	31.3 GU	94.1 GU	62.8
Cu B	51.1	16.2	16.7	215.8 GU	356.7 GU	140.9
Cu C	46.2	16.7	18.1	182.0 GU	311.6 GU	129.7
Cu D	39.2	19.8	20.0	165.7 GU	245.7 GU	80.0



(a) 20° specular bidirectional reflectivity



(b) 45° specular bidirectional reflectivity



(c) 60° specular bidirectional reflectivity

Figure 5.6: Spectral bidirectional reflectivity of copper samples.

As previously mentioned, copper samples B and C look similar. Therefore, it would be expected that they would have similar values for color, gloss, and haze. The values obtained for the BRAPs are most similar for copper samples B and C of the four copper samples measured. Figure 5.6 shows that the ρ''_λ for these copper samples are very similar. As Fig. 4.3 shows, copper sample A appears the most different of the four samples, and the measured values for sample A are different from the other copper samples as seen in Fig. 5.6 and Table 5.9. The ρ''_λ of sample D is similar in shape to those of samples B and C, but it has a lower magnitude. This is reflected in the values for sample D in Table 5.9. The trends in the BRAPs match what is expected based on examining the appearances of the copper samples; copper sample A is different from the other

samples, copper samples B and C are the most similar, and copper sample D is somewhat similar to copper samples B and C.

These results for color and gloss are similar to those obtained by Yonehara et al. [10]. Their work focused on using color and gloss to measure surface roughness of metals, including C1100 (the same alloy as copper samples B, C, and D). For their copper samples, they measured a hue angle of 52°. The measurements of the three copper samples tested in this thesis all have a hue angle of $45-47°$. The difference between the hue angles may exist for two reasons. First, Yonehara et al. made measurements over a wider spectral band ($380-740$ nm). Increasing the range down to 380 nm would increase the blue component of the measured color, but this is not possible with the equipment used in this study. Second, they used a light source that they claimed was similar to the CIE standard illuminant C; the lamp used in this study is similar to illuminant A. Standard illuminant C has a spectral distribution that peaks around 450 nm, while illuminant A peaks outside of the visible range, indicating that colors measured using illuminant C will be bluer than those measured in this paper.

The gloss values obtained by Yonehara et al. [10] are also similar to the results of this study. While the surface roughness of the copper samples was not measured in this thesis, *G60* gloss values in the range of 200-400 GU were measured by Yonehara et al. for polished C1100 samples.

Yonehara et al. used two different pieces of equipment in their study: a colorimeter and a gloss-meter. Since color depends on the illumination, it is expected that using a different illumination source would lead to different colors being measured. Because gloss does not depend on the illumination, the gloss values measured by different gloss-meters should be similar.

In order to determine how the spectral resolution affects the quantification of appearance, the L^*, a^*, and b^* of each copper sample were determined at various spectral resolutions. This was done by changing the $\Delta\lambda$ term in the summations of Eq. 3.1-3 and Eq. 3.5-7. The coefficients for calculating color are found using a Riemann sum as discussed in the color section of Chapter 3. Riemann sums are only accurate so far as the assumption that the value used to approximate the function is a good estimate of the function over the $\Delta\lambda$. The goal of this section is to determine a suitable $\Delta\lambda$ for determining color. The signal and the observer function values were averaged over

Table 5.10: Measured color of copper sample A at different spectral resolutions and the percentage change relative to the measurement with 0.5 nm resolution.

Resolution (nm)	L^*	a^*	b^*	ΔL^* (%)	Δa^* (%)	Δb^* (%)
0.5	16.7405	11.6063	11.9908	-	-	-
5	16.7443	11.5942	11.9925	0.0229	-0.1046	0.0144
10	16.7541	11.5565	11.9928	0.0814	-0.4287	0.0166
15	16.7696	11.4955	11.9921	0.1736	-0.9547	0.0114
20	16.7931	11.4225	11.9900	0.3391	-1.5839	-0.0059
25	16.8164	11.3194	11.9788	0.4533	-2.4720	-0.0994
50	17.0382	10.4477	11.9792	1.7785	-9.9822	-0.0964

Table 5.11: Measured color of copper sample B at different spectral resolutions and the percentage change relative to the measurement with 0.5 nm resolution.

Resolution (nm)	L^*	a^*	b^*	ΔL^* (%)	Δa^* (%)	Δb^*(%)
0.5	51.1089	16.2432	16.6608	-	-	-
5	51.1132	16.2196	16.6610	0.0085	-0.1450	0.0010
10	51.1246	16.1482	16.6577	0.0307	-0.5849	-0.0187
15	51.1398	16.0399	16.6574	0.0605	-1.2513	-0.0210
20	51.1663	15.9121	16.6478	0.1124	-2.0385	-0.0782
25	51.1821	15.6997	16.6286	0.1433	-3.3458	-0.1936
50	51.4145	13.9731	16.5740	0.5980	-13.9755	-0.5215

the specified $\Delta\lambda$. The data collected for each of the copper samples was used. These results are summarized in Tables 5.10, 5.11, 5.12, and 5.13.

The results in Tables 5.10 through 5.13 show that the spectral resolution affects the measured values of L^*, a^*, and b^* by less than 8% until the resolution becomes 50 nm. This resolution

Table 5.12: Measured color of copper sample C at different spectral resolutions and the percentage change relative to the measurement with 0.5 nm resolution.

Resolution (nm)	L^*	a^*	b^*	ΔL^* (%)	Δa^* (%)	Δb^* (%)
0.5	46.2289	16.6570	18.1088	-	-	-
5	46.2332	16.6294	18.1082	0.0092	-0.1657	-0.0036
10	46.2429	16.5580	18.0999	0.0302	-0.5944	-0.0494
15	46.2584	16.4325	18.0930	0.0638	-1.3479	-0.0874
20	46.2763	16.2823	18.0627	0.1024	-2.2496	-0.2547
25	46.3011	16.0679	18.0417	0.1561	-3.5366	-0.3706
50	46.5089	14.2160	17.8281	0.6056	-14.6544	-1.5502

Table 5.13: Measured color of copper sample D at different spectral resolutions and the percentage change relative to the measurement with 0.5 nm resolution.

Resolution (nm)	L^*	a^*	b^*	ΔL^* (%)	Δa^* (%)	Δb^* (%)
0.5	39.2390	19.7688	20.0472	-	-	-
5	39.2442	19.7457	20.0473	0.0134	-0.1168	0.0002
10	39.2606	19.6760	20.0468	0.0550	-0.4696	-0.0020
15	39.2856	19.5686	20.0502	0.1187	-1.0127	0.0148
20	39.3246	19.4352	20.0569	0.2182	-1.6879	0.0484
25	39.3611	19.2321	20.0504	0.3113	-2.7148	0.0159
50	39.7174	17.6372	20.0817	1.2191	-10.7826	0.1719

is higher than the resolution required to determine color gradients, which is 15 nm. Therefore, the minimum spectral resolution for obtaining L^*, a^*, and b^* depends on the material. However, a resolution of 15 nm is sufficient to accurately measure L^*, a^*, and b^* for all surfaces reviewed so far.

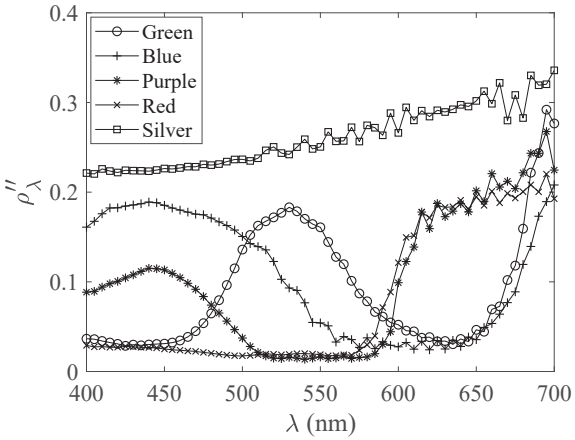
For the copper samples, all of the BRAPs were useful. Color, gloss, and haze were all different for each sample. Any one of the six measured BRAPs could be used to distinguish between the surfaces, although the differences were largest for the BRAPs associated with gloss and haze. However, it is still recommended to measure the color BRAPs because they depend on the shape of ρ''_λ, not just its average magnitude.

5.1.3 Plastic Samples

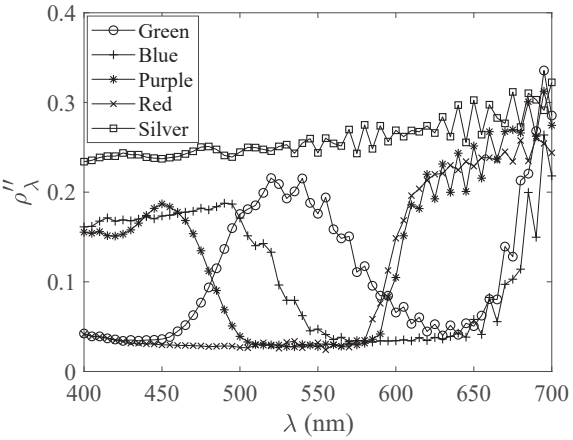
Glossy Surfaces

Figure 5.7 shows the ρ''_λ in the 400-700 nm range for the glossy side of the five plastic samples. Data is included in Tables D.1, D.2, and D.3 in Appendix D.

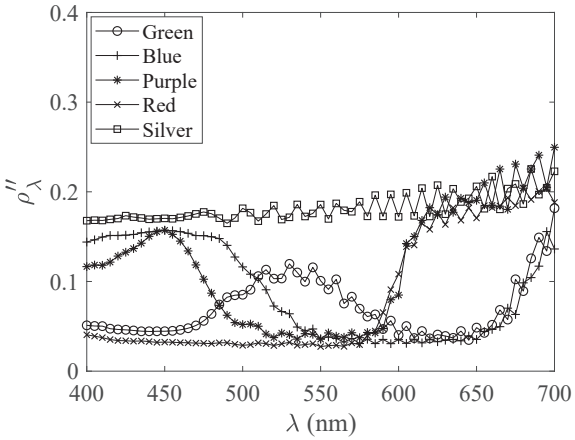
As seen in Fig. 5.7, the calculated ρ''_λ at 20°, 45°, and 60° show the trends that would be expected. For the green plastic, the ρ''_λ peaks in the region where wavelengths appear green, which occurs near the middle of the visible region. For the blue plastic, the ρ''_λ peaks in the region where wavelengths appear blue, which occurs at the shorter wavelengths in the visible region. The purple plastic has a ρ''_λ that has peaks in both the red and blue regions of the visible spectrum. The red plastic has a ρ''_λ that peaks in the longer wavelengths, which appear red. The silver plastic has a



(a) 20° specular bidirectional reflectivity



(b) 45° specular bidirectional reflectivity



(c) 60° specular bidirectional reflectivity

Figure 5.7: Spectral bidirectional reflectivity of the glossy side of plastic samples.

relatively constant ρ''_λ across the visible region, which is expected because silver is a non-saturated color. Having a non-saturated color means that the color components are present in roughly equal proportions; which is the case for uniform ρ''_λ.

As can be seen in Fig. 5.7, oscillations in the reflectivity of the samples were detected. These oscillations were most noticeable for the silver plastic sample and in the longer wavelengths. The oscillations could be the result of a thin film placed on the plastic samples to help give them a glossy appearance; information on the manufacturing process for the ribbons was not readily available. It is also interesting to note that the measurements all five samples appear to converge to the same value of the ρ''_λ as they approach 700 nm.

Table 5.14: Measured values of BRAP for the glossy side of the plastic samples using the spectrometer.

Sample	*L**	*a**	*b**	*G20*	*G60*	*H*
Green	43.5	-29.8	15.9	189.4 GU	186.3 GU	-3.1
Blue	28.8	-16.4	-36.3	219.5 GU	232.4 GU	13.0
Purple	32.7	36.5	-20.4	213.0 GU	314.3 GU	101.3
Red	33.8	36.9	22.9	166.0 GU	218.7 GU	52.7
Silver	58.4	1.2	0.8	467.4 GU	417.2 GU	-50.2

Table 5.15: Measured color of the glossy green plastic sample at different spectral resolutions and the percentage change relative to the measurement with 0.5 nm resolution.

Resolution (nm)	*L**	*a**	*b**	ΔL^*	Δa^*	Δb^*
0.5	43.5348	-29.8314	15.9237	-	-	-
5	43.5302	-29.7524	15.8293	-0.0104	-0.2648	-0.5926
10	43.5145	-29.5888	15.5325	-0.0466	-0.8132	-2.4564
15	43.4888	-29.2594	15.0516	-0.1057	-1.9173	-5.4764
20	43.4687	-28.7773	14.4902	-0.1518	-3.5337	-9.0023
25	43.4184	-28.1453	13.6292	-0.2672	-5.6521	-14.4095
50	43.1672	-23.2147	7.8489	-0.8443	-22.1802	-50.7095

The oscillations in the measured ρ''_λ provide an interesting test for specular resolution. Averaging ρ''_λ can remove features such as peaks or valleys in the ρ''_λ profile that influence color. The location and magnitude of these peaks can have a large impact on the color because the observer functions vary with wavelength (see Fig. 3.3). The specular resolution was determined for each color of plastic in a method similar to the one used for the color gradients and the copper samples. These results will be included in Tables 5.15, 5.16, 5.17, 5.18, and 5.19

While for the glossy green, blue, purple, and red samples, the change in L^*, a^*, and b^* with lower spectral resolution is small until 50 nm, the silver sample undergoes a large change in b^* at a resolution of just 10 nm (see Table 5.19). This is due to the smoothing of the oscillations seen in ρ''_λ at finer resolutions. While a spectral resolution of 15 nm is generally appropriate, for surfaces that have rapid changes in ρ''_λ, a spectral resolution of 5 nm is more appropriate. Surfaces that have more variation in ρ''_λ with respect to wavelength may require even tighter spectral resolutions to correctly quantify the appearance. However, a spectral resolution of 5 nm has been sufficient for all surfaces used in this thesis.

Table 5.16: Measured color of the glossy blue plastic sample at different spectral resolutions and the percentage change relative to the measurement with 0.5 nm resolution.

Resolution (nm)	L^*	a^*	b^*	ΔL^*	Δa^*	Δb^*
0.5	28.8187	-16.3892	-36.2564	-	-	-
5	28.8262	-16.3384	-36.2303	0.0260	-0.3100	-0.0721
10	28.8474	-16.1999	-36.1665	0.0993	-1.1550	-0.2480
15	28.8923	-16.0947	-36.0441	0.2554	-1.7970	-0.5855
20	28.9309	-15.7820	-35.8825	0.3894	-3.7052	-1.0313
25	28.9784	-15.3593	-35.6744	0.5539	-6.2840	-1.6054
50	29.5422	-12.6946	-34.1044	2.5104	-22.5430	-5.9355

Table 5.17: Measured color of the glossy purple plastic sample at different spectral resolutions and the percentage change relative to the measurement with 0.5 nm resolution.

Resolution (nm)	L^*	a^*	b^*	ΔL^*	Δa^*	Δb^*
0.5	32.6667	36.4369	-20.3584	-	-	-
5	32.6855	36.3805	-20.3070	0.0574	-0.1550	-0.2524
10	32.7382	36.2992	-20.0059	0.2189	-0.3779	-1.7314
15	32.8121	36.0303	-19.5698	0.4450	-1.1161	-3.8736
20	32.9089	35.7567	-19.0263	0.7413	-1.8669	-6.5432
25	33.0182	35.4582	-18.2754	1.0759	-2.6862	-10.2316
50	33.6560	34.1685	-11.9948	3.0283	-6.2257	-41.0817

Table 5.18: Measured color of the glossy red plastic sample at different spectral resolutions and the percentage change relative to the measurement with 0.5 nm resolution.

Resolution (nm)	L^*	a^*	b^*	ΔL^*	Δa^*	Δb^*
0.5	33.8102	36.9076	22.8624	-	-	-
5	33.8258	36.8505	22.8787	0.0462	-0.1546	0.0714
10	33.8682	36.7194	22.9637	0.1715	-0.5099	0.4431
15	33.9353	36.4338	23.0869	0.3698	-1.2836	0.9823
20	34.0228	36.1259	23.2566	0.6286	-2.1180	1.7245
25	34.1293	35.6960	23.4207	0.9438	-3.2829	2.4421
50	34.7269	33.3643	24.5104	2.7113	-9.6004	7.2087

Table 5.19: Measured color of the glossy silver plastic sample at different spectral resolutions and the percentage change relative to the measurement with 0.5 nm resolution.

Resolution (nm)	L^*	a^*	b^*	ΔL^*	Δa^*	Δb^*
0.5	58.3756	1.1580	0.8152	-	-	-
5	58.3780	1.1610	0.8318	0.0040	0.2655	2.0388
10	58.4163	1.1995	0.8919	0.0698	3.5872	9.4130
15	58.3746	1.1679	0.8130	-0.0017	0.8625	-0.2705
20	58.4084	1.1914	0.8518	0.0562	2.8892	4.4883
25	58.3777	1.1442	0.7849	0.0036	-1.1899	-3.7118
50	58.4397	1.1627	0.8642	0.1098	0.4097	6.0178

Matte Surfaces

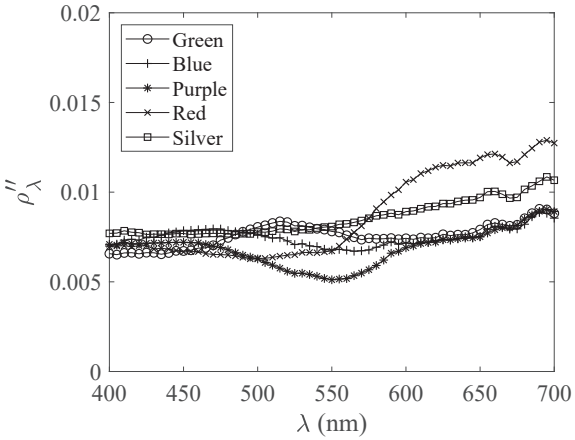
Figure 5.8 shows the ρ''_λ in the 400-700 nm range for the matte side of the five plastic samples. Data is included in Tables D.1, D.2, and D.3 in Appendix D.

Table 5.20: Measured values of BRAP for the matte side of the plastic samples.

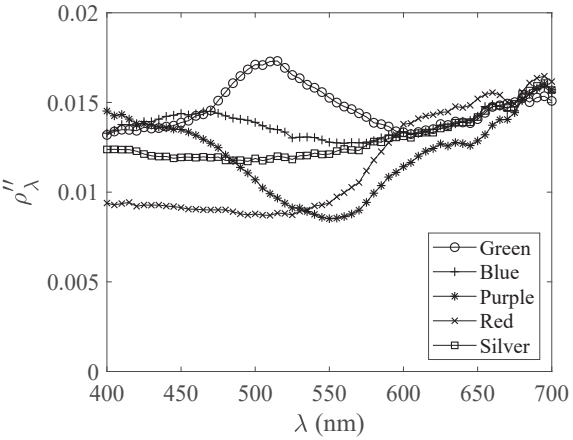
Sample	L^*	a^*	b^*	*G20*	*G60*	*Haze*
Green	12.3	-2.1	0.3	15.8 GU	30.1 GU	14.3
Blue	11.3	0.5	-0.8	15.6 GU	32.4 GU	16.8
Purple	9.0	3.4	-2.9	14.2 GU	28.7 GU	14.5
Red	9.9	4.9	3.4	18.0 GU	31.2 GU	13.1
Silver	10.9	1.4	1.2	15.9 GU	31.5 GU	15.6

The oscillations in the ρ''_λ were not observed for the matte plastic samples. This supports the notion that there could be a thin film added to one side of the plastic samples to improve glossiness. The film could also have be added to improve the color of the plastic. The ρ''_λ profiles presented in Fig. 5.8 are not the same shapes as the ρ''_λ profiles presented in Fig. 5.7. Because the colors look different in Fig. 4.4 and Fig. 4.5, one would expect the ρ''_λ profiles to have different shapes.

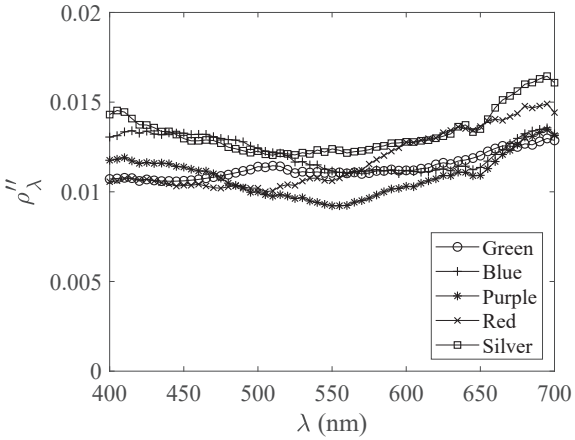
For both the matte and glossy plastic samples, the most important BRAPs were those associated with color. Gloss did not always vary very much for the different samples, so the haze measurements did not always distinguish between the different samples. The combination of L^*,



(a) 20° specular bidirectional reflectivity



(b) 45° specular bidirectional reflectivity



(c) 60° specular bidirectional reflectivity

Figure 5.8: Spectral bidirectional reflectivity of the matte side of plastic samples.

a^*, and b^* was different for each sample even if one of the three values was similar to that of another sample.

5.2 Uncertainty Estimates of Spectral, Bidirectional Reflectivity

For each measurement of ρ''_λ, the variation was calculated as outlined in section 4.2.3. As shown in Eq. 4.4, the integration times and the signals of the reflection and lamp all affect the variation. The maximum variation for each spectrometer measurement of ρ''_λ is given in Table 5.21. The variations presented are at two standard deviations.

Table 5.21: This table presents the maximum and average variations for each ρ''_λ as percentages. Percentages are calculated at two standard deviations.

	20° Max.	20° Avg.	45° Max.	45° Avg.	60° Max.	60° Avg.
Yellow A	11.8	8.2	9.9	8.1	11.8	8.2
Yellow B	10.4	8.2	9.2	8.1	9.2	8.1
Yellow C	9.4	8	9.3	8.1	9.2	8
Yellow D	9.2	8.1	9.2	8.1	9.2	8.1
Yellow E	9.2	8.2	9.2	8.1	9.4	8.4
Green A	9.8	8.8	9.4	8.7	8.9	8.1
Green B	9.7	8.4	9.1	7.9	9.2	7.9
Green C	9	8.1	9.2	8.1	9.2	8.1
Green D	9.2	7.9	8.9	8.3	9.1	7.8
Green E	9.3	8	9.1	8.3	9.1	8
Purple A	8.6	8.3	8.9	8.5	8.2	7.7
Purple B	8.7	8.2	9.1	8.6	8.2	7.6
Purple C	8.6	8.3	8.9	8.5	8.3	7.6
Purple D	8.6	8.3	9.1	8.6	8.2	7.7
Purple E	8.6	8.3	8.9	8.5	8.1	7.6
Copper A	13.1	7.4	13.4	7.4	9.7	7.1
Copper B	8.1	7	8.3	7.2	7.4	7
Copper C	9.5	7.9	11.4	8.1	9.9	8
Copper D	8.1	7	10.5	7.4	8.3	7.1
Glossy Green	14.9	7.6	11.4	8.6	8.1	7.1
Glossy Blue	7.2	7.1	8.6	8.3	7.8	7.1
Glossy Purple	7.9	7.2	8.7	8.3	7.3	7.1
Glossy Red	8.9	7.2	14.9	8.8	8.5	7.1
Glossy Silver	8.7	8.4	8.5	8.3	8.5	8.2
Matte Green	7.7	7.2	7.3	7.2	7.2	7.2
Matte Blue	7.7	7.2	7.3	7.2	7.3	7.2
Matte Purple	7.5	7.2	9	8.2	7.3	7.2
Matte Red	8	7.2	8.1	7.2	7.3	7.2
Matte Silver	8.2	8	7.3	7.2	8.1	8

The maximum variation in ρ''_λ measurements was between $7-15\%$ for each measurement. The average variation in ρ''_λ measurements was between $7-9\%$ for each measurement. Figure 5.9 shows how the variation changed at each wavelength by presenting the variation for the 45° measurement of the glossy red sample. The variation is highest in the blue region (400-500 nm) and is relatively constant across the rest of the spectrum. Similar trends were seen in measurements for other samples, though the peak seen in the blue regions was less drastic. Samples that had the lowest reflectivity in the blue region as well as a significantly higher reflectivity outside of the blue

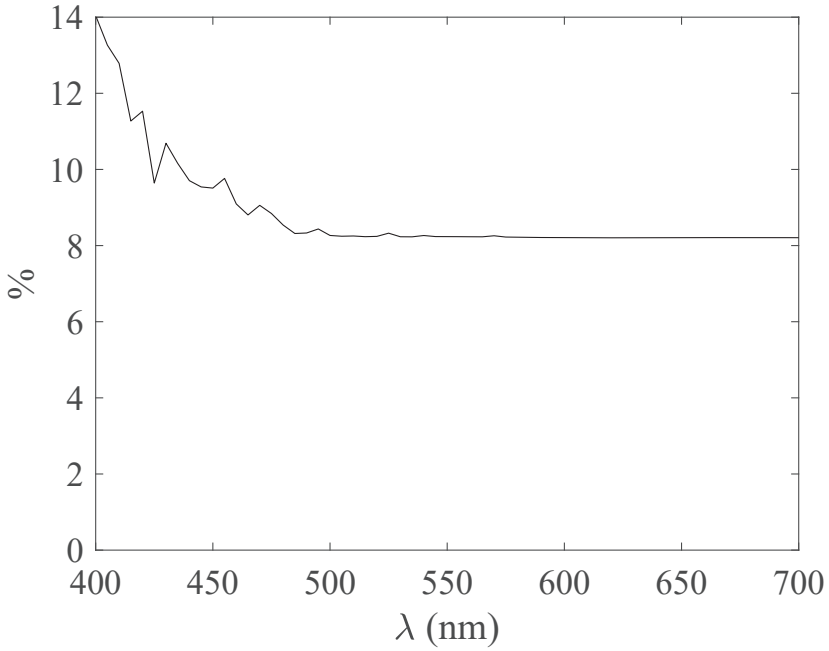


Figure 5.9: This figure shows how two standard deviations of the estimated variation changes with wavelength for the 45° measurement of the glossy red sample, which had the highest variation of the samples measured.

region (on the order of 6-7 times larger than the reflectivity in the blue region) had the highest maximum variations.

Because there is a linear relationship between the ρ''_λ and gloss or haze, an average increase or decrease of $7-9\%$ in the ρ''_λ corresponds to the same increase or decrease in the computed gloss and haze. The relationship is more complicated for color because a large increase in ρ''_λ over a few wavelengths affects the computed color more than a small change across all wavelengths.

5.3 Gloss Measurement Comparisons

As shown in 5.1, gloss measurements can be useful for quantifying the appearance of a surface. They can be used as extra data to help determine whether two surfaces are identical. Additionally, for some surfaces, gloss can be more important to characterize than color. This is particularly the case when a clear, reflective coating is applied to an opaque surface.

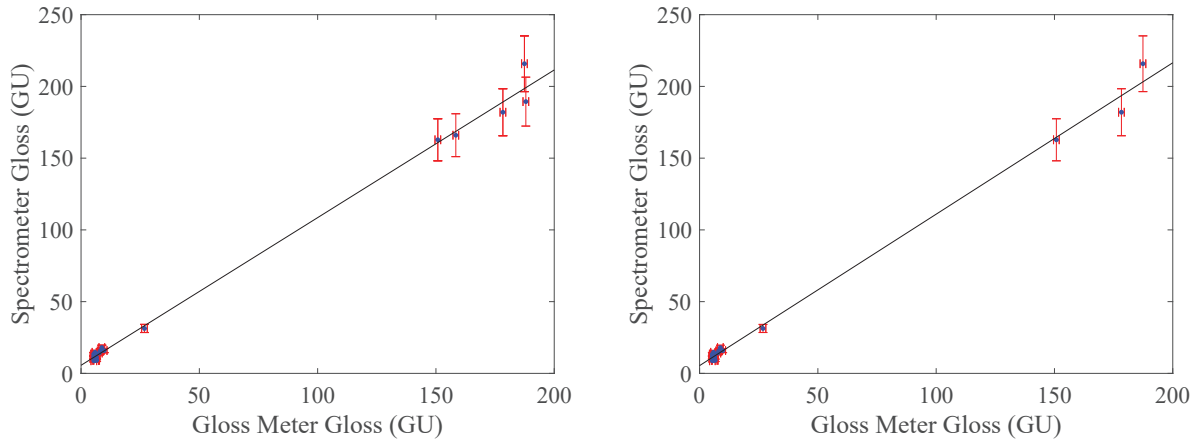
Table 5.22 presents the measured values of gloss and haze using both the measuring apparatus and the gloss-meter. Several of the measurements made by the gloss-meter were outside of its range of operation and therefore were not usable.

Table 5.22: This compares the gloss and haze values measured or calculated using the gloss-meter and the measurement apparatus.

Device	Spectrometer			Gloss-meter		
	G20	G60	Haze	G20	G60	Haze
Yellow A	13.4	28.5	15.1	5.4	26.5	21.1
Yellow B	12.5	30.5	18.0	5.5	26.7	21.2
Yellow C	11.7	29.3	17.6	5.5	26.9	21.4
Yellow D	11.0	29.5	18.5	5.4	27.0	21.6
Yellow E	8.8	28.9	20.1	5.4	27.1	21.7
Green A	13.4	29.9	16.5	6.2	27.8	21.6
Green B	14.7	28.5	13.8	5.9	27.8	21.9
Green C	12.4	28.1	15.7	5.7	27.2	21.5
Green D	9.0	26.3	17.3	6.2	28.5	22.3
Green E	9.1	25.8	16.7	6.6	29.0	22.4
Purple A	11.6	25.5	13.9	6.3	28.1	21.8
Purple B	11.3	26.1	14.8	6.3	28.2	21.9
Purple C	10.8	26.7	15.9	6.3	27.0	20.7
Purple D	11.3	25.8	14.5	6.4	28.4	22.0
Purple E	10.2	25.8	15.6	6.3	29.1	22.8
Copper A	31.3	94.1	62.8	26.8	104.8	78.0
Copper B	215.8	356.7	140.9	187.4	>200	N/A
Copper C	182.0	311.6	129.6	178.3	>200	N/A
Copper D	162.8	245.7	82.9	150.8	>200	N/A
Glossy Green	189.4	186.3	-3.1	188.0	>200	N/A
Glossy Blue	219.4	232.4	13.0	>200	>200	N/A
Glossy Purple	213.0	314.3	101.3	>200	>200	N/A
Glossy Red	166.0	218.7	52.7	158.4	>200	N/A
Glossy Silver	467.4	417.2	-50.2	>200	>200	N/A
Matte Green	15.8	30.1	14.3	8.5	32.7	24.2
Matte Blue	15.6	32.4	16.8	8.1	33.7	25.6
Matte Purple	14.2	28.7	14.5	7.7	30.3	22.6
Matte Red	18.0	31.2	13.2	8.8	33.5	24.7
Matte Silver	15.9	31.5	15.6	9.8	35.9	26.1

Some of the haze values presented in Table 5.22 are negative. Negative haze values are possible but uncommon. Since this thesis' two instances of negative haze values both occurred for glossy surfaces, it may be that the measurement apparatus has un upper limit for the gloss it can measure. Both instances also occurred on the plastic samples, so it may be that there was a defect in the ribbons used for sampling. However, because repeated testing was done, it seems that the most likely reason for negative haze values is because the haze is actually negative for those surfaces.

In order to compare the measured values of gloss from the spectrometer and the gloss meter, values were plotted against one another in Fig. 5.10. Fig. 5.10 includes all gloss measurements (*G20* and *G60*) for the measured samples except for the measurements that were outside of the range of the spectrometer. According to the manufacturer, the gloss-meter is accurate to within 1.2 GU. As shown in the previous section, the gloss measurements from the spectrometer are almost all accurate to within 9% as an average across the spectrum, so the vertical variation is 9% of the measured value.



(a) 20° gloss measurements

(b) 60° gloss measurements

Figure 5.10: Comparison of gloss values measured with the spectrometer and the gloss-meter.

As seen in Fig. 5.10, the values of gloss measured using the spectrometer and those measured by the gloss-meter are generally very similar. A linear relationship may be used to estimate the results of one measurement method using the results of the other. For the *G20* measurements, a linear equation ($y = 1.0292x + 5.6274$) fits the data with an R^2 value of 0.9956. For the *G60*

case, the best linear fit ($y = 0.8555x + 3.6273$) has an R^2 value of 0.9783. Since both sets of data are matched well by a linear equation, it seems that the differences between the spectrometer and gloss-meter measurements may be attributed to two things. First, because the slopes are slightly different, the gloss constants used by both devices must be slightly different. Second, there appears to be an offset. This offset could be caused by dark currents in either measuring device. Better calibration for one or both devices could possibly resolve the discrepancies.

CHAPTER 6. CONCLUSION

As stated in Chapter 1, this thesis has the following three objectives.

- Measure BRAPs using a single measurement apparatus.
- Determine which specular angles ρ''_λ must be measured at to characterize the appearance of an opaque, non-emitting surface.
- Determine a spectral resolution of ρ''_λ measurements needed to quantify color.

The measurement apparatus described in Chapter 4 was able to measure the specular reflections at the necessary angles to obtain the BRAPs used in this thesis. As seen in Chapter 5, the measurements of specular reflections at 20°, 45°, and 60° were used to get BRAPs, which are used to differentiate between the appearance of surfaces. For every surface measured, a unique set of BRAPs was obtained. For the copper surfaces, the measurements were able to differentiate between the different surfaces, and they showed that surfaces that appear similar will have similar BRAPs. For the plastic surfaces, the measurements were able to clearly differentiate between glossy and matte surfaces, as well as surfaces that had different colors. For the color gradient, the appearance at each location was quantified by using all six BRAPs. This was done for the color gradient even though the G20 measurements for all of the samples were very similar. The BRAPs may be used to quantify the appearance of opaque, non-emitting surfaces. However, in order to differentiate between different surfaces, the BRAPs for color should be measured with a spectral resolution of no more than 15 nm with certain surfaces requiring a spectral resolution of 5 nm for accurate color measurements.

As shown in Chapter 3, the six BRAPs are all related to ρ''_λ. Specifically, color (L^*, a^*, and b^*) is determined by summing weighting functions multiplied by ρ''_λ and the incident illumination, and then dividing the result by weighting functions multiplied by the incident illumination; gloss

(*G20* and *G60*) is an average of ρ''_λ over the visible region multiplied by an experimentally determined coefficient; and haze (*H*) is the difference between the *G60* and *G20* measurements. The relationship between ρ''_λ and the spectral BRDF is shown in Chapter 2 in Eq. 2.3. The spectral BRDF is equal to ρ''_λ divided by $\cos\theta_r \Delta\Omega_r$. Therefore, measuring ρ''_λ at 20°, 45°, and 60° over the range of 400-700 nm is sufficient to quantify the appearance of an opaque surface. For surfaces with low values of gloss, the specular reflection at 85° should be measured to obtain G85. As shown in Chapter 5, these measurements should be made with a spectral resolution of no larger than 5 nm for surfaces with ρ''_λ which varies rapidly with wavelength. Surfaces which do not have these rapid changes in ρ''_λ may have their BRAPs measured with spectral resolutions as coarse as 15 nm.

A measurement apparatus similar to the one used in this thesis is sufficient to make those measurements. If the apparatus were designed to be portable, it would be simplest if the radiation source and radiation detector were rotated so that the apparatus could be placed on a flat surface for measurement. Detectors would either be placed at 20°, 45°, and 60° or be allowed to rotate to those angles. If measurements for very low gloss surface would be done, an additional sensor could be placed at 85°, though this work has shown that the appearance could be quantified without the 85° measurement. Similar to the detector, sources would be placed at 20°, 45°, and 60° or a source could rotate to those angles. A portable version of the device could then be placed on a flat, opaque surface. Measurements would be taken at each angle.

It should be noted that acquiring *L**, *a**, *b**, *G20*, *G60*, and *H* gives six different data points for distinguishing between surfaces. The spectral, bidirectional reflectivity, even when measured with a spectral resolution of 5 nm at just one set of incident and reflected angles, gives sixty unique data points to differentiate between surfaces. Spectral, bidirectional reflectivity has the added benefit of being independent of the illumination while color is not. However, color, gloss, and haze–and by extension the BRAPs which describe the appearance of a surface–are more widely used to convey information about appearance than ρ''_λ. Also, comparing two sets of six values is an easier task than comparing two sets of data with dozens of values. As shown in Chapter 5, even when comparing plots it can be difficult to determine whether two surfaces appear within tolerances by looking at ρ''_λ profiles. It would be easier to spot differences between sets of BRAPs than charts or tables of ρ''_λ data.

One limitation of the measurement apparatus used in this study is that it is not well suited to measure ρ''_λ at multiple points on a surface. Because of how the sample is held, measurements can be taken only along the length of the sample rather than along the length and the width. For many surfaces, such as woods or tiles, the reflectivity can vary spatially. A measurement system that is flexible enough to measure ρ''_λ at multiple points on a surface would be more suited to determine what fractions of a surface have certain a appearance. Such a device could be moved on a two-axis motor similar to those used by most 3D printers. This would require using much smaller light sources than the lamp used for this thesis. The gloss-meter is an example of this; it has a small standard illuminant built into the measuring device. In order to make the proposed gloss- and color-measuring device movable, either a smaller spectrometer could be built onto the device or the signal could be carried from the measurement site to the spectrometer with a fiber-optic cable.

One of the improvements to the measurement system used would be the automation of the measurements. Because the system was not automated, the alignment needed to be done manually for every measurement. Ensuring that the sample and detector were properly aligned took a significant portion of time for each measurement. Automatic alignment would greatly reduce the time required to obtain BRAPs.

A device that quantifies color, gloss, and haze for opaque surfaces would be a benefit to companies that manufacture surfaces for which appearance is important. This thesis shows that measuring ρ''_λ of an opaque surface for specular reflections of 20°, 45°, and 60° with a spectral resolution of just 5 nm can be used to get six parameters for comparing surfaces. Therefore, measuring ρ''_λ for specular reflections at 20°, 45°, and 60° between 400 and 700 nm with a spectral resolution of no more than 5 nm may be used to quantifiably characterize the appearance of opaque, non-emitting surfaces. For surfaces which do not have ρ''_λ profiles which change rapidly with wavelength, a spectral resolution of 15 nm may be sufficient. For low-gloss surfaces, an additional measurement at 85° is required to determine gloss. That means in this method, only three or four measurements of the ρ''_λ are needed in order to quantify the appearance of an opaque surface. This non-destructive test method could be used to quickly perform quality-control processes, thereby saving companies time and capital.

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APPENDIX A. IR RADIATION

While the focus of this thesis is on visible radiation, many of the same principles can be used to determine ρ''_λ in the IR spectrum. This appendix will continue the derivation begun in Chapter 2 for infrared radiation instead of visible radiation.

As can be seen from the visible radiation case, the simplification that radiation from the surroundings is negligible is very desirable, as it greatly simplifies the analysis. However, surroundings are at a finite temperature, thus they emit radiation. While the temperature of the surroundings may be measured, the hemispherical-directional reflectivity of the sample must be known for Eq. 2.10 to be used to determine the bidirectional reflectivity. Fortunately, if the intensity of radiation from the surroundings is negligible compared to that emitted from the source or the sample, the hemispherical-directional reflectivity of the sample is not needed.

For the irradiation from the surroundings to be negligible, then the following two conditions must be true:

$$I_{\lambda,sur} << \quad I_{\lambda,s} \tag{A.1}$$

$$I_{\lambda,sur} << \quad I_{\lambda,e} \tag{A.2}$$

By assuming that the surroundings are large and isothermal, it can be said that they approximate blackbody behavior, thus:

$$I_{\lambda,sur} = I_{b,\lambda}(T_{sur}) \tag{A.3}$$

The conditions under which Eq. A.2 holds are established by using the Plank distribution:

$$I_{b,\lambda}(T) = \frac{2hc_0^2}{\lambda^5(e^{\frac{hc_0}{\lambda k_B T}} - 1)} \tag{A.4}$$

Eq. A.4 describes the intensity of a blackbody at a given wavelength and temperature. However, the spectral emissivity of the sample must be multiplied by this equation to use it for the spectral intensity emitted by the sample. Using the Plank distribution, the following is determined for any given wavelength:

$$\frac{2hc_0^2}{\lambda^5(e^{\frac{hc_0}{\lambda k_B T_{sur}}}-1)} << \varepsilon_\lambda \frac{2hc_0^2}{\lambda^5(e^{\frac{hc_0}{\lambda k_B T_{sam}}}-1)}$$

$$(e^{\frac{C_2}{\lambda T_{sam}}}-1) << \varepsilon_\lambda (e^{\frac{C_2}{\lambda T_{sur}}}-1)$$

At this point, Wien's approximation is applied to simplify the equation. It is valid so long as $hc_0 >> \lambda k_B T$, or $.01438Km >> \lambda T$. The longest IR wavelength measurable by a Nicolet 8700 FTIR with DTGS detector is 25000 nm. The detector's range leads to the constraint that $5754K >> T$. With this constraint, the derivation continues with the application of Wien's law.

$$e^{\frac{C_2}{\lambda T_{sam}}} << \varepsilon_\lambda e^{\frac{C_2}{\lambda T_{sur}}}$$

$$\frac{C_2}{\lambda T_{sam}} << ln(\varepsilon_\lambda) + \frac{C_2}{\lambda T_{sur}}$$

$$\frac{\frac{C_2}{\lambda}}{\frac{C_2}{\lambda T_{sur}}(1+ln(\varepsilon_\lambda))} << T_{sam}$$

$$\frac{T_{sur}}{1+ln(\varepsilon_\lambda)} << T_{sam} \tag{A.5}$$

Eq. A.5 establishes a criteria for determining whether the temperature of the sample is sufficiently high that the surroundings are negligible. In the case where ε_λ is equal to one, then the constraint reduces to $T_{sur} << T_{sam}$. However, when ε_λ decreases the temperature of the sample must increase. When ε_λ becomes less than or equal to .368, then the background radiation is no longer negligible and must always be accounted for.

If the source is not a blackbody, then Eq. A.5 is valid for the source. However, if the source is a blackbody, then for any given wavelength, Eq A.4 substituted into Eq. A.1 may be reduced by simple algebra to the form:

$$T_{sur} << T_s \tag{A.6}$$

Therefore, the only requirement so far imposed on the source, if it is a blackbody, is that the temperature of the source must be significantly higher than that of the surroundings

If Eq.s A.5 and A.6 are satisfied, the surroundings may be assumed negligible and Eq. 2.10 becomes:

$$S_\lambda = C_{\lambda,a}\rho''_\lambda I_{\lambda,s}\Delta\Omega_r + C_{\lambda,b}I_{\lambda,e}\Delta\Omega_{sam} \tag{A.7}$$

where, because of a difference in path length from the source to the detector and the sample to the detector, the amount of attenuation will vary and the calibration constant will be different for radiation emitted from the source and from the sample. If the medium through which light is traveling to the sample from the source is participating, the signal would be attenuated, leading to a different calibration coefficient. To deal with this, it will be assumed that the medium is non-participating since the distances are small. The assumption of air being a non-participating medium allows for Eq. A.7 to be written in the following form:

$$S_\lambda = C_\lambda \rho''_\lambda I_{\lambda,s}\Delta\Omega_r + C_\lambda I_{\lambda,e}\Delta\Omega_{sam} \tag{A.8}$$

Just as with the visible measurements, $I_{\lambda,dir}$ must be determined. By using the same process of removing the sample and directly measuring the source, Eq. 2.12 is obtained again. While the equation is of the same in form, different detectors and sources are used in the visible and IR regions. Values from the visible region should not be used in the IR region.

By using a similar process, the contribution from the sample's emission to the signal measured by the detector may be determined. Instead of removing the sample, the source may be turned off, leading to the following expression:

$$S_{\lambda,off} = I_{\lambda,e}\Delta\Omega_{sam}C_\lambda \tag{A.9}$$

Eq. A.8 may be combined with Eq. A.9. The combination leads to the following:

$$\begin{aligned} S_{\lambda,sam} &= \rho''_\lambda I_{\lambda,s}\Delta\Omega_r C_\lambda + S_{\lambda,off} \\ \rho''_\lambda &= \frac{S_\lambda - S_{\lambda,off}}{I_{\lambda,s}\Delta\Omega_r} \end{aligned} \tag{A.10}$$

By now using Eq. 2.12, the following equation is reached:

$$\rho''_{\lambda} = \frac{S_{\lambda,sam} - S_{\lambda,off}}{S_{\lambda,s}} \tag{A.11}$$

$S_{\lambda,off}$ and $S_{\lambda,sam}$ must both be measured at each angle of interest, while $S_{\lambda,dir}$ is only measured as indicated by Fig 2.1. Eq. A.11 is also valid for visible radiation when the surroundings or emission from the source are non-negligible.

APPENDIX B. DATA FOR GRADIENT SAMPLES

B.1 Yellow

B.1.1 20° measurements

Table B.1: Measurements of the yellow gradient at locations A, B, C, D, and E at 20°. The lamp signal was measured at an integration time of 25 ms and the measurements of the samples were taken at an integration time of 2000 ms, 2500 ms, 2500 ms, 2500 ms, and 2500 ms respectively.

λ	A	B	C	D	E
400	0.0050	0.0046	0.0044	0.0039	0.0036
400.5	0.0051	0.0046	0.0043	0.0039	0.0036
401	0.0050	0.0047	0.0043	0.0039	0.0035
401.5	0.0050	0.0047	0.0043	0.0039	0.0035
402	0.0050	0.0047	0.0044	0.0040	0.0035
402.5	0.0050	0.0047	0.0044	0.0041	0.0035
403	0.0049	0.0047	0.0045	0.0041	0.0035
403.5	0.0049	0.0047	0.0045	0.0042	0.0035
404	0.0049	0.0047	0.0045	0.0042	0.0035
404.5	0.0049	0.0046	0.0045	0.0042	0.0034
405	0.0049	0.0046	0.0044	0.0041	0.0035
405.5	0.0050	0.0046	0.0044	0.0041	0.0035
406	0.0050	0.0046	0.0043	0.0041	0.0035
406.5	0.0050	0.0046	0.0043	0.0041	0.0036
407	0.0050	0.0047	0.0044	0.0041	0.0036
407.5	0.0050	0.0047	0.0044	0.0041	0.0036
408	0.0050	0.0047	0.0044	0.0041	0.0035
408.5	0.0050	0.0047	0.0044	0.0040	0.0035
409	0.0050	0.0047	0.0043	0.0040	0.0034
409.5	0.0050	0.0047	0.0043	0.0040	0.0033
410	0.0051	0.0047	0.0044	0.0040	0.0033
410.5	0.0051	0.0047	0.0044	0.0041	0.0033
411	0.0051	0.0047	0.0045	0.0041	0.0033
411.5	0.0051	0.0048	0.0045	0.0041	0.0033
412	0.0051	0.0048	0.0045	0.0041	0.0033
412.5	0.0051	0.0048	0.0045	0.0041	0.0034
413	0.0051	0.0048	0.0045	0.0041	0.0034
413.5	0.0052	0.0048	0.0045	0.0041	0.0034
414	0.0052	0.0048	0.0045	0.0041	0.0034
414.5	0.0052	0.0048	0.0044	0.0041	0.0034
415	0.0052	0.0048	0.0044	0.0041	0.0033
415.5	0.0052	0.0048	0.0045	0.0042	0.0033
416	0.0053	0.0049	0.0045	0.0042	0.0033
416.5	0.0053	0.0049	0.0045	0.0042	0.0033

417	0.0053	0.0049	0.0046	0.0043	0.0033
417.5	0.0054	0.0049	0.0046	0.0043	0.0034
418	0.0054	0.0050	0.0047	0.0043	0.0034
418.5	0.0054	0.0050	0.0046	0.0043	0.0034
419	0.0054	0.0050	0.0046	0.0043	0.0033
419.5	0.0055	0.0050	0.0047	0.0043	0.0034
420	0.0055	0.0050	0.0047	0.0043	0.0034
420.5	0.0055	0.0051	0.0047	0.0043	0.0034
421	0.0055	0.0051	0.0047	0.0042	0.0034
421.5	0.0056	0.0051	0.0047	0.0042	0.0034
422	0.0056	0.0051	0.0047	0.0042	0.0034
422.5	0.0056	0.0051	0.0046	0.0042	0.0033
423	0.0056	0.0052	0.0047	0.0042	0.0033
423.5	0.0057	0.0052	0.0047	0.0042	0.0033
424	0.0057	0.0052	0.0047	0.0042	0.0033
424.5	0.0057	0.0052	0.0047	0.0043	0.0033
425	0.0057	0.0052	0.0047	0.0042	0.0033
425.5	0.0057	0.0051	0.0047	0.0042	0.0033
426	0.0057	0.0051	0.0047	0.0042	0.0034
426.5	0.0057	0.0051	0.0047	0.0042	0.0034
427	0.0057	0.0051	0.0047	0.0042	0.0034
427.5	0.0057	0.0051	0.0047	0.0042	0.0034
428	0.0056	0.0052	0.0047	0.0042	0.0034
428.5	0.0057	0.0052	0.0047	0.0042	0.0034
429	0.0057	0.0051	0.0047	0.0042	0.0034
429.5	0.0057	0.0051	0.0047	0.0042	0.0033
430	0.0057	0.0051	0.0047	0.0042	0.0034
430.5	0.0057	0.0051	0.0047	0.0042	0.0034
431	0.0057	0.0051	0.0047	0.0042	0.0034
431.5	0.0056	0.0051	0.0047	0.0042	0.0034
432	0.0056	0.0051	0.0047	0.0042	0.0033
432.5	0.0056	0.0051	0.0047	0.0042	0.0033
433	0.0056	0.0052	0.0047	0.0042	0.0034
433.5	0.0057	0.0052	0.0047	0.0042	0.0034
434	0.0057	0.0052	0.0047	0.0042	0.0034
434.5	0.0057	0.0051	0.0047	0.0042	0.0034
435	0.0056	0.0051	0.0047	0.0042	0.0035
435.5	0.0056	0.0051	0.0047	0.0042	0.0035
436	0.0056	0.0052	0.0047	0.0042	0.0035
436.5	0.0056	0.0052	0.0047	0.0043	0.0035
437	0.0057	0.0052	0.0047	0.0043	0.0034
437.5	0.0057	0.0052	0.0047	0.0043	0.0034
438	0.0057	0.0052	0.0047	0.0043	0.0033
438.5	0.0057	0.0052	0.0047	0.0043	0.0033
439	0.0057	0.0052	0.0047	0.0043	0.0033
439.5	0.0057	0.0052	0.0047	0.0043	0.0032
440	0.0057	0.0052	0.0047	0.0043	0.0032
440.5	0.0057	0.0052	0.0047	0.0042	0.0032
441	0.0057	0.0052	0.0047	0.0042	0.0032
441.5	0.0057	0.0052	0.0047	0.0042	0.0032
442	0.0057	0.0052	0.0047	0.0042	0.0033
442.5	0.0057	0.0052	0.0047	0.0042	0.0033
443	0.0057	0.0052	0.0047	0.0042	0.0032
443.5	0.0057	0.0052	0.0047	0.0042	0.0032
444	0.0057	0.0052	0.0047	0.0042	0.0032
444.5	0.0057	0.0052	0.0047	0.0042	0.0032
445	0.0057	0.0052	0.0047	0.0042	0.0032

445.5	0.0057	0.0052	0.0047	0.0042	0.0033
446	0.0057	0.0052	0.0048	0.0042	0.0033
446.5	0.0057	0.0052	0.0048	0.0042	0.0033
447	0.0057	0.0052	0.0048	0.0042	0.0033
447.5	0.0057	0.0052	0.0048	0.0042	0.0032
448	0.0057	0.0052	0.0048	0.0042	0.0032
448.5	0.0057	0.0052	0.0048	0.0042	0.0032
449	0.0057	0.0052	0.0047	0.0042	0.0032
449.5	0.0057	0.0052	0.0047	0.0042	0.0032
450	0.0057	0.0052	0.0047	0.0042	0.0032
450.5	0.0057	0.0051	0.0047	0.0042	0.0032
451	0.0056	0.0051	0.0047	0.0042	0.0032
451.5	0.0056	0.0051	0.0047	0.0042	0.0032
452	0.0056	0.0051	0.0047	0.0042	0.0032
452.5	0.0056	0.0051	0.0047	0.0042	0.0032
453	0.0057	0.0051	0.0047	0.0042	0.0032
453.5	0.0057	0.0052	0.0047	0.0042	0.0032
454	0.0057	0.0052	0.0047	0.0042	0.0032
454.5	0.0057	0.0052	0.0047	0.0042	0.0032
455	0.0057	0.0052	0.0047	0.0042	0.0032
455.5	0.0057	0.0052	0.0047	0.0042	0.0032
456	0.0057	0.0052	0.0047	0.0042	0.0032
456.5	0.0057	0.0052	0.0047	0.0042	0.0033
457	0.0057	0.0052	0.0047	0.0042	0.0033
457.5	0.0057	0.0052	0.0047	0.0042	0.0033
458	0.0057	0.0052	0.0047	0.0042	0.0033
458.5	0.0057	0.0052	0.0047	0.0042	0.0033
459	0.0057	0.0052	0.0047	0.0042	0.0033
459.5	0.0057	0.0052	0.0048	0.0043	0.0033
460	0.0057	0.0052	0.0048	0.0043	0.0033
460.5	0.0057	0.0052	0.0048	0.0043	0.0033
461	0.0057	0.0052	0.0048	0.0043	0.0033
461.5	0.0057	0.0052	0.0048	0.0043	0.0033
462	0.0057	0.0052	0.0048	0.0043	0.0033
462.5	0.0057	0.0052	0.0047	0.0043	0.0033
463	0.0057	0.0052	0.0047	0.0043	0.0033
463.5	0.0057	0.0053	0.0047	0.0043	0.0033
464	0.0057	0.0053	0.0048	0.0043	0.0033
464.5	0.0057	0.0053	0.0048	0.0043	0.0033
465	0.0057	0.0053	0.0047	0.0043	0.0033
465.5	0.0057	0.0052	0.0047	0.0043	0.0032
466	0.0057	0.0052	0.0047	0.0043	0.0032
466.5	0.0057	0.0052	0.0048	0.0043	0.0032
467	0.0057	0.0053	0.0048	0.0043	0.0032
467.5	0.0058	0.0053	0.0048	0.0043	0.0033
468	0.0058	0.0053	0.0048	0.0043	0.0033
468.5	0.0058	0.0053	0.0048	0.0043	0.0033
469	0.0058	0.0053	0.0048	0.0043	0.0033
469.5	0.0058	0.0053	0.0048	0.0043	0.0033
470	0.0058	0.0053	0.0048	0.0043	0.0033
470.5	0.0058	0.0053	0.0048	0.0043	0.0033
471	0.0058	0.0053	0.0048	0.0043	0.0033
471.5	0.0058	0.0053	0.0048	0.0043	0.0033
472	0.0057	0.0053	0.0048	0.0043	0.0033
472.5	0.0057	0.0053	0.0048	0.0043	0.0033
473	0.0057	0.0053	0.0048	0.0043	0.0033
473.5	0.0057	0.0053	0.0048	0.0043	0.0033

474	0.0057	0.0053	0.0048	0.0043	0.0033
474.5	0.0057	0.0053	0.0048	0.0043	0.0033
475	0.0057	0.0053	0.0048	0.0043	0.0033
475.5	0.0058	0.0053	0.0048	0.0044	0.0033
476	0.0058	0.0053	0.0049	0.0044	0.0033
476.5	0.0058	0.0053	0.0049	0.0044	0.0033
477	0.0058	0.0053	0.0049	0.0044	0.0033
477.5	0.0058	0.0053	0.0049	0.0044	0.0033
478	0.0058	0.0053	0.0049	0.0044	0.0033
478.5	0.0058	0.0053	0.0049	0.0044	0.0033
479	0.0058	0.0053	0.0049	0.0044	0.0034
479.5	0.0058	0.0053	0.0049	0.0044	0.0034
480	0.0058	0.0053	0.0049	0.0044	0.0033
480.5	0.0058	0.0053	0.0049	0.0044	0.0033
481	0.0058	0.0053	0.0049	0.0044	0.0033
481.5	0.0058	0.0053	0.0049	0.0044	0.0033
482	0.0058	0.0053	0.0049	0.0044	0.0033
482.5	0.0058	0.0053	0.0049	0.0044	0.0033
483	0.0058	0.0053	0.0049	0.0044	0.0033
483.5	0.0058	0.0053	0.0049	0.0044	0.0034
484	0.0058	0.0053	0.0049	0.0044	0.0034
484.5	0.0058	0.0053	0.0049	0.0044	0.0034
485	0.0058	0.0054	0.0049	0.0044	0.0034
485.5	0.0058	0.0054	0.0049	0.0044	0.0034
486	0.0058	0.0054	0.0049	0.0044	0.0034
486.5	0.0058	0.0054	0.0049	0.0045	0.0034
487	0.0059	0.0054	0.0049	0.0045	0.0034
487.5	0.0059	0.0054	0.0050	0.0045	0.0034
488	0.0059	0.0054	0.0050	0.0045	0.0034
488.5	0.0059	0.0054	0.0050	0.0045	0.0034
489	0.0059	0.0055	0.0050	0.0045	0.0035
489.5	0.0059	0.0055	0.0050	0.0045	0.0035
490	0.0059	0.0055	0.0050	0.0046	0.0035
490.5	0.0059	0.0055	0.0050	0.0046	0.0035
491	0.0060	0.0055	0.0050	0.0046	0.0035
491.5	0.0060	0.0055	0.0051	0.0046	0.0035
492	0.0060	0.0056	0.0051	0.0047	0.0036
492.5	0.0060	0.0056	0.0051	0.0047	0.0036
493	0.0060	0.0056	0.0051	0.0047	0.0036
493.5	0.0060	0.0056	0.0051	0.0047	0.0036
494	0.0060	0.0056	0.0051	0.0047	0.0036
494.5	0.0061	0.0056	0.0051	0.0047	0.0036
495	0.0061	0.0056	0.0052	0.0048	0.0037
495.5	0.0061	0.0056	0.0052	0.0048	0.0037
496	0.0061	0.0056	0.0052	0.0048	0.0037
496.5	0.0061	0.0056	0.0052	0.0048	0.0037
497	0.0061	0.0056	0.0052	0.0048	0.0037
497.5	0.0061	0.0056	0.0052	0.0048	0.0037
498	0.0061	0.0056	0.0052	0.0048	0.0037
498.5	0.0061	0.0057	0.0052	0.0048	0.0038
499	0.0061	0.0057	0.0052	0.0048	0.0038
499.5	0.0061	0.0057	0.0053	0.0049	0.0038
500	0.0061	0.0057	0.0053	0.0049	0.0038
500.5	0.0061	0.0057	0.0053	0.0049	0.0039
501	0.0061	0.0057	0.0053	0.0049	0.0039
501.5	0.0061	0.0057	0.0053	0.0049	0.0039
502	0.0061	0.0057	0.0053	0.0050	0.0039

502.5	0.0062	0.0058	0.0053	0.0050	0.0039
503	0.0062	0.0058	0.0053	0.0050	0.0039
503.5	0.0062	0.0058	0.0054	0.0050	0.0040
504	0.0062	0.0058	0.0054	0.0050	0.0040
504.5	0.0062	0.0058	0.0054	0.0050	0.0040
505	0.0062	0.0058	0.0054	0.0051	0.0040
505.5	0.0063	0.0058	0.0054	0.0051	0.0041
506	0.0063	0.0059	0.0054	0.0051	0.0041
506.5	0.0063	0.0059	0.0054	0.0051	0.0041
507	0.0063	0.0059	0.0055	0.0051	0.0041
507.5	0.0063	0.0059	0.0055	0.0051	0.0041
508	0.0063	0.0059	0.0055	0.0051	0.0041
508.5	0.0063	0.0059	0.0055	0.0051	0.0041
509	0.0063	0.0059	0.0055	0.0052	0.0041
509.5	0.0063	0.0059	0.0055	0.0052	0.0041
510	0.0063	0.0059	0.0055	0.0052	0.0041
510.5	0.0063	0.0059	0.0055	0.0052	0.0041
511	0.0063	0.0059	0.0055	0.0052	0.0041
511.5	0.0063	0.0059	0.0055	0.0052	0.0042
512	0.0063	0.0059	0.0056	0.0052	0.0042
512.5	0.0063	0.0059	0.0056	0.0053	0.0042
513	0.0064	0.0060	0.0056	0.0053	0.0042
513.5	0.0064	0.0060	0.0056	0.0053	0.0042
514	0.0064	0.0060	0.0056	0.0053	0.0042
514.5	0.0064	0.0060	0.0056	0.0053	0.0042
515	0.0064	0.0060	0.0056	0.0053	0.0042
515.5	0.0064	0.0060	0.0056	0.0053	0.0042
516	0.0064	0.0059	0.0056	0.0053	0.0042
516.5	0.0064	0.0059	0.0056	0.0053	0.0042
517	0.0064	0.0059	0.0056	0.0053	0.0042
517.5	0.0064	0.0060	0.0056	0.0053	0.0042
518	0.0064	0.0060	0.0056	0.0053	0.0043
518.5	0.0064	0.0060	0.0056	0.0053	0.0043
519	0.0064	0.0060	0.0056	0.0054	0.0043
519.5	0.0064	0.0060	0.0057	0.0054	0.0043
520	0.0064	0.0060	0.0057	0.0054	0.0044
520.5	0.0064	0.0060	0.0057	0.0054	0.0044
521	0.0064	0.0060	0.0057	0.0054	0.0044
521.5	0.0064	0.0060	0.0057	0.0054	0.0044
522	0.0064	0.0060	0.0057	0.0054	0.0044
522.5	0.0064	0.0060	0.0057	0.0054	0.0043
523	0.0064	0.0060	0.0057	0.0054	0.0043
523.5	0.0064	0.0060	0.0056	0.0054	0.0043
524	0.0064	0.0060	0.0056	0.0054	0.0043
524.5	0.0064	0.0060	0.0056	0.0054	0.0043
525	0.0064	0.0060	0.0056	0.0054	0.0043
525.5	0.0064	0.0060	0.0057	0.0054	0.0043
526	0.0064	0.0060	0.0057	0.0054	0.0044
526.5	0.0064	0.0060	0.0057	0.0054	0.0044
527	0.0064	0.0061	0.0057	0.0054	0.0044
527.5	0.0064	0.0060	0.0057	0.0054	0.0044
528	0.0064	0.0060	0.0057	0.0054	0.0044
528.5	0.0064	0.0060	0.0056	0.0054	0.0044
529	0.0064	0.0060	0.0056	0.0054	0.0044
529.5	0.0064	0.0060	0.0056	0.0054	0.0044
530	0.0064	0.0060	0.0056	0.0054	0.0044
530.5	0.0064	0.0060	0.0057	0.0054	0.0044

531	0.0064	0.0060	0.0057	0.0054	0.0044
531.5	0.0064	0.0060	0.0057	0.0054	0.0044
532	0.0064	0.0060	0.0057	0.0054	0.0044
532.5	0.0064	0.0060	0.0057	0.0054	0.0044
533	0.0064	0.0060	0.0057	0.0054	0.0044
533.5	0.0064	0.0060	0.0057	0.0054	0.0044
534	0.0064	0.0060	0.0057	0.0054	0.0044
534.5	0.0064	0.0060	0.0057	0.0054	0.0044
535	0.0064	0.0060	0.0057	0.0054	0.0044
535.5	0.0064	0.0060	0.0057	0.0054	0.0044
536	0.0065	0.0061	0.0057	0.0054	0.0044
536.5	0.0065	0.0061	0.0057	0.0054	0.0044
537	0.0065	0.0061	0.0057	0.0054	0.0044
537.5	0.0065	0.0061	0.0057	0.0054	0.0044
538	0.0064	0.0060	0.0057	0.0054	0.0044
538.5	0.0064	0.0060	0.0057	0.0054	0.0044
539	0.0064	0.0060	0.0057	0.0054	0.0044
539.5	0.0065	0.0060	0.0057	0.0054	0.0044
540	0.0065	0.0060	0.0057	0.0054	0.0044
540.5	0.0065	0.0061	0.0057	0.0054	0.0044
541	0.0065	0.0061	0.0057	0.0054	0.0044
541.5	0.0065	0.0061	0.0057	0.0054	0.0044
542	0.0065	0.0061	0.0057	0.0054	0.0044
542.5	0.0065	0.0061	0.0057	0.0054	0.0044
543	0.0065	0.0061	0.0057	0.0054	0.0044
543.5	0.0065	0.0061	0.0057	0.0054	0.0044
544	0.0065	0.0061	0.0057	0.0054	0.0044
544.5	0.0065	0.0061	0.0057	0.0054	0.0044
545	0.0065	0.0061	0.0057	0.0054	0.0044
545.5	0.0065	0.0061	0.0057	0.0054	0.0044
546	0.0065	0.0061	0.0057	0.0055	0.0044
546.5	0.0065	0.0061	0.0057	0.0055	0.0044
547	0.0065	0.0061	0.0057	0.0055	0.0044
547.5	0.0065	0.0061	0.0057	0.0055	0.0044
548	0.0065	0.0061	0.0057	0.0055	0.0044
548.5	0.0065	0.0061	0.0058	0.0055	0.0044
549	0.0065	0.0061	0.0058	0.0055	0.0044
549.5	0.0065	0.0061	0.0058	0.0055	0.0044
550	0.0065	0.0061	0.0058	0.0055	0.0044
550.5	0.0065	0.0061	0.0058	0.0055	0.0045
551	0.0065	0.0061	0.0058	0.0055	0.0045
551.5	0.0065	0.0061	0.0058	0.0055	0.0045
552	0.0065	0.0061	0.0058	0.0055	0.0045
552.5	0.0065	0.0061	0.0058	0.0055	0.0045
553	0.0065	0.0061	0.0058	0.0056	0.0045
553.5	0.0065	0.0061	0.0058	0.0056	0.0045
554	0.0065	0.0061	0.0058	0.0056	0.0045
554.5	0.0066	0.0062	0.0059	0.0056	0.0045
555	0.0066	0.0062	0.0059	0.0056	0.0045
555.5	0.0066	0.0062	0.0059	0.0056	0.0046
556	0.0066	0.0063	0.0059	0.0056	0.0046
556.5	0.0067	0.0063	0.0059	0.0057	0.0046
557	0.0067	0.0063	0.0059	0.0057	0.0046
557.5	0.0066	0.0062	0.0059	0.0057	0.0046
558	0.0066	0.0062	0.0059	0.0056	0.0046
558.5	0.0066	0.0062	0.0059	0.0056	0.0046
559	0.0066	0.0062	0.0059	0.0056	0.0046

559.5	0.0066	0.0062	0.0059	0.0056	0.0045
560	0.0066	0.0062	0.0059	0.0056	0.0045
560.5	0.0066	0.0062	0.0059	0.0056	0.0045
561	0.0066	0.0062	0.0059	0.0056	0.0045
561.5	0.0066	0.0062	0.0059	0.0056	0.0045
562	0.0066	0.0062	0.0059	0.0056	0.0045
562.5	0.0066	0.0062	0.0059	0.0056	0.0045
563	0.0066	0.0062	0.0059	0.0056	0.0045
563.5	0.0066	0.0062	0.0058	0.0056	0.0045
564	0.0066	0.0062	0.0058	0.0056	0.0045
564.5	0.0066	0.0062	0.0059	0.0056	0.0045
565	0.0066	0.0062	0.0059	0.0056	0.0045
565.5	0.0066	0.0062	0.0059	0.0056	0.0045
566	0.0066	0.0062	0.0059	0.0056	0.0045
566.5	0.0066	0.0062	0.0059	0.0056	0.0045
567	0.0066	0.0062	0.0059	0.0056	0.0045
567.5	0.0066	0.0062	0.0059	0.0056	0.0045
568	0.0066	0.0062	0.0059	0.0056	0.0046
568.5	0.0066	0.0062	0.0059	0.0057	0.0046
569	0.0066	0.0062	0.0059	0.0057	0.0046
569.5	0.0066	0.0062	0.0059	0.0056	0.0046
570	0.0066	0.0062	0.0059	0.0056	0.0046
570.5	0.0066	0.0062	0.0059	0.0056	0.0045
571	0.0066	0.0062	0.0059	0.0056	0.0045
571.5	0.0066	0.0062	0.0059	0.0056	0.0045
572	0.0066	0.0062	0.0059	0.0056	0.0045
572.5	0.0066	0.0062	0.0059	0.0056	0.0045
573	0.0066	0.0062	0.0059	0.0056	0.0046
573.5	0.0066	0.0062	0.0059	0.0057	0.0046
574	0.0066	0.0062	0.0059	0.0057	0.0046
574.5	0.0066	0.0062	0.0059	0.0057	0.0046
575	0.0066	0.0062	0.0059	0.0057	0.0046
575.5	0.0066	0.0062	0.0059	0.0056	0.0046
576	0.0066	0.0062	0.0059	0.0056	0.0046
576.5	0.0066	0.0062	0.0059	0.0056	0.0046
577	0.0066	0.0063	0.0059	0.0056	0.0046
577.5	0.0066	0.0063	0.0059	0.0056	0.0046
578	0.0066	0.0063	0.0059	0.0056	0.0046
578.5	0.0066	0.0063	0.0059	0.0056	0.0046
579	0.0066	0.0062	0.0059	0.0056	0.0046
579.5	0.0066	0.0062	0.0059	0.0056	0.0046
580	0.0066	0.0062	0.0059	0.0056	0.0046
580.5	0.0066	0.0062	0.0059	0.0057	0.0046
581	0.0066	0.0062	0.0059	0.0057	0.0046
581.5	0.0066	0.0062	0.0059	0.0057	0.0046
582	0.0067	0.0063	0.0059	0.0057	0.0046
582.5	0.0067	0.0063	0.0059	0.0057	0.0046
583	0.0067	0.0063	0.0059	0.0057	0.0046
583.5	0.0067	0.0063	0.0060	0.0057	0.0046
584	0.0067	0.0063	0.0060	0.0057	0.0046
584.5	0.0068	0.0064	0.0060	0.0058	0.0047
585	0.0068	0.0064	0.0060	0.0058	0.0047
585.5	0.0068	0.0064	0.0060	0.0058	0.0047
586	0.0068	0.0063	0.0060	0.0058	0.0047
586.5	0.0067	0.0063	0.0060	0.0057	0.0047
587	0.0067	0.0063	0.0060	0.0057	0.0047
587.5	0.0067	0.0063	0.0060	0.0057	0.0046

588	0.0067	0.0063	0.0060	0.0057	0.0046
588.5	0.0067	0.0063	0.0059	0.0057	0.0046
589	0.0067	0.0063	0.0059	0.0057	0.0046
589.5	0.0067	0.0063	0.0059	0.0057	0.0046
590	0.0067	0.0063	0.0059	0.0057	0.0046
590.5	0.0067	0.0063	0.0059	0.0057	0.0046
591	0.0067	0.0063	0.0060	0.0058	0.0047
591.5	0.0067	0.0063	0.0060	0.0058	0.0047
592	0.0067	0.0063	0.0060	0.0058	0.0047
592.5	0.0067	0.0063	0.0060	0.0058	0.0047
593	0.0067	0.0063	0.0060	0.0058	0.0047
593.5	0.0068	0.0063	0.0060	0.0058	0.0047
594	0.0068	0.0063	0.0060	0.0058	0.0047
594.5	0.0068	0.0064	0.0060	0.0058	0.0047
595	0.0068	0.0064	0.0060	0.0058	0.0047
595.5	0.0068	0.0064	0.0061	0.0058	0.0047
596	0.0068	0.0064	0.0061	0.0058	0.0047
596.5	0.0068	0.0064	0.0061	0.0059	0.0048
597	0.0068	0.0064	0.0061	0.0059	0.0047
597.5	0.0068	0.0064	0.0061	0.0058	0.0047
598	0.0068	0.0064	0.0061	0.0058	0.0047
598.5	0.0068	0.0064	0.0061	0.0058	0.0047
599	0.0068	0.0064	0.0061	0.0058	0.0047
599.5	0.0068	0.0064	0.0061	0.0058	0.0047
600	0.0068	0.0064	0.0060	0.0058	0.0047
600.5	0.0068	0.0064	0.0060	0.0058	0.0047
601	0.0068	0.0064	0.0060	0.0058	0.0047
601.5	0.0068	0.0064	0.0060	0.0058	0.0047
602	0.0068	0.0064	0.0060	0.0058	0.0047
602.5	0.0068	0.0064	0.0060	0.0058	0.0047
603	0.0068	0.0064	0.0060	0.0058	0.0047
603.5	0.0068	0.0064	0.0060	0.0058	0.0047
604	0.0067	0.0063	0.0060	0.0058	0.0047
604.5	0.0068	0.0063	0.0060	0.0058	0.0047
605	0.0068	0.0063	0.0061	0.0058	0.0047
605.5	0.0068	0.0064	0.0061	0.0058	0.0047
606	0.0068	0.0064	0.0061	0.0058	0.0047
606.5	0.0068	0.0064	0.0061	0.0058	0.0047
607	0.0068	0.0064	0.0061	0.0058	0.0047
607.5	0.0068	0.0064	0.0061	0.0059	0.0047
608	0.0068	0.0064	0.0061	0.0059	0.0047
608.5	0.0068	0.0065	0.0061	0.0059	0.0047
609	0.0068	0.0064	0.0061	0.0059	0.0047
609.5	0.0068	0.0064	0.0061	0.0059	0.0047
610	0.0069	0.0064	0.0061	0.0059	0.0047
610.5	0.0069	0.0064	0.0061	0.0059	0.0047
611	0.0069	0.0064	0.0061	0.0059	0.0047
611.5	0.0069	0.0064	0.0061	0.0059	0.0047
612	0.0069	0.0065	0.0061	0.0059	0.0047
612.5	0.0069	0.0065	0.0061	0.0059	0.0047
613	0.0069	0.0065	0.0061	0.0059	0.0047
613.5	0.0069	0.0065	0.0061	0.0059	0.0048
614	0.0070	0.0066	0.0061	0.0059	0.0048
614.5	0.0070	0.0066	0.0062	0.0059	0.0048
615	0.0070	0.0066	0.0062	0.0059	0.0048
615.5	0.0070	0.0066	0.0062	0.0059	0.0048
616	0.0070	0.0065	0.0062	0.0059	0.0048

616.5	0.0069	0.0065	0.0062	0.0059	0.0048
617	0.0069	0.0065	0.0062	0.0059	0.0048
617.5	0.0069	0.0065	0.0061	0.0059	0.0048
618	0.0069	0.0065	0.0061	0.0059	0.0048
618.5	0.0069	0.0065	0.0061	0.0059	0.0048
619	0.0069	0.0065	0.0061	0.0059	0.0048
619.5	0.0069	0.0065	0.0061	0.0059	0.0048
620	0.0069	0.0065	0.0061	0.0059	0.0048
620.5	0.0069	0.0065	0.0061	0.0059	0.0048
621	0.0069	0.0065	0.0061	0.0059	0.0048
621.5	0.0069	0.0065	0.0061	0.0059	0.0048
622	0.0069	0.0065	0.0061	0.0059	0.0048
622.5	0.0069	0.0065	0.0061	0.0059	0.0048
623	0.0069	0.0065	0.0062	0.0059	0.0048
623.5	0.0069	0.0065	0.0062	0.0059	0.0048
624	0.0069	0.0065	0.0062	0.0059	0.0048
624.5	0.0069	0.0065	0.0062	0.0059	0.0048
625	0.0070	0.0065	0.0062	0.0059	0.0048
625.5	0.0070	0.0065	0.0061	0.0059	0.0048
626	0.0070	0.0066	0.0061	0.0059	0.0048
626.5	0.0070	0.0066	0.0062	0.0060	0.0048
627	0.0070	0.0066	0.0062	0.0060	0.0048
627.5	0.0070	0.0066	0.0062	0.0060	0.0048
628	0.0070	0.0066	0.0062	0.0060	0.0048
628.5	0.0069	0.0065	0.0062	0.0060	0.0048
629	0.0069	0.0065	0.0062	0.0060	0.0048
629.5	0.0069	0.0065	0.0061	0.0059	0.0048
630	0.0069	0.0065	0.0061	0.0059	0.0048
630.5	0.0069	0.0065	0.0062	0.0059	0.0047
631	0.0069	0.0065	0.0062	0.0060	0.0048
631.5	0.0069	0.0065	0.0062	0.0060	0.0048
632	0.0070	0.0065	0.0062	0.0060	0.0048
632.5	0.0070	0.0066	0.0062	0.0060	0.0048
633	0.0070	0.0066	0.0062	0.0060	0.0048
633.5	0.0070	0.0066	0.0062	0.0060	0.0048
634	0.0070	0.0066	0.0062	0.0060	0.0048
634.5	0.0070	0.0066	0.0062	0.0060	0.0048
635	0.0070	0.0066	0.0063	0.0060	0.0048
635.5	0.0070	0.0066	0.0063	0.0060	0.0048
636	0.0070	0.0066	0.0063	0.0060	0.0048
636.5	0.0070	0.0066	0.0063	0.0060	0.0048
637	0.0070	0.0066	0.0063	0.0060	0.0049
637.5	0.0070	0.0066	0.0063	0.0060	0.0049
638	0.0070	0.0066	0.0063	0.0060	0.0048
638.5	0.0070	0.0066	0.0063	0.0060	0.0048
639	0.0070	0.0066	0.0063	0.0060	0.0048
639.5	0.0070	0.0066	0.0063	0.0060	0.0049
640	0.0070	0.0067	0.0063	0.0061	0.0049
640.5	0.0071	0.0067	0.0063	0.0061	0.0049
641	0.0071	0.0067	0.0063	0.0061	0.0049
641.5	0.0071	0.0067	0.0063	0.0061	0.0049
642	0.0071	0.0067	0.0063	0.0061	0.0049
642.5	0.0071	0.0067	0.0063	0.0061	0.0049
643	0.0071	0.0067	0.0064	0.0061	0.0049
643.5	0.0071	0.0067	0.0064	0.0061	0.0049
644	0.0071	0.0066	0.0063	0.0061	0.0049
644.5	0.0071	0.0066	0.0063	0.0061	0.0049

645	0.0071	0.0067	0.0063	0.0061	0.0049
645.5	0.0071	0.0067	0.0063	0.0061	0.0049
646	0.0072	0.0067	0.0063	0.0061	0.0049
646.5	0.0072	0.0067	0.0063	0.0062	0.0049
647	0.0072	0.0067	0.0063	0.0062	0.0049
647.5	0.0072	0.0068	0.0064	0.0062	0.0049
648	0.0072	0.0068	0.0064	0.0062	0.0049
648.5	0.0072	0.0068	0.0064	0.0062	0.0049
649	0.0072	0.0068	0.0064	0.0062	0.0049
649.5	0.0072	0.0068	0.0064	0.0062	0.0049
650	0.0072	0.0068	0.0064	0.0062	0.0049
650.5	0.0072	0.0068	0.0064	0.0062	0.0049
651	0.0072	0.0068	0.0064	0.0062	0.0049
651.5	0.0072	0.0067	0.0064	0.0062	0.0049
652	0.0072	0.0067	0.0064	0.0062	0.0049
652.5	0.0072	0.0068	0.0064	0.0062	0.0049
653	0.0072	0.0068	0.0064	0.0062	0.0049
653.5	0.0073	0.0068	0.0064	0.0062	0.0050
654	0.0072	0.0068	0.0064	0.0062	0.0050
654.5	0.0072	0.0068	0.0064	0.0062	0.0050
655	0.0072	0.0068	0.0064	0.0062	0.0049
655.5	0.0072	0.0068	0.0064	0.0062	0.0049
656	0.0071	0.0068	0.0064	0.0062	0.0049
656.5	0.0071	0.0067	0.0064	0.0061	0.0049
657	0.0071	0.0067	0.0064	0.0061	0.0048
657.5	0.0071	0.0067	0.0064	0.0062	0.0049
658	0.0072	0.0067	0.0064	0.0062	0.0049
658.5	0.0072	0.0067	0.0064	0.0062	0.0049
659	0.0072	0.0067	0.0064	0.0062	0.0049
659.5	0.0072	0.0067	0.0064	0.0062	0.0049
660	0.0072	0.0068	0.0064	0.0062	0.0049
660.5	0.0072	0.0068	0.0064	0.0062	0.0049
661	0.0072	0.0068	0.0064	0.0062	0.0049
661.5	0.0072	0.0068	0.0064	0.0062	0.0049
662	0.0072	0.0068	0.0064	0.0062	0.0050
662.5	0.0072	0.0068	0.0064	0.0062	0.0050
663	0.0072	0.0068	0.0064	0.0062	0.0050
663.5	0.0073	0.0068	0.0065	0.0062	0.0050
664	0.0073	0.0068	0.0065	0.0062	0.0050
664.5	0.0073	0.0068	0.0065	0.0062	0.0050
665	0.0073	0.0068	0.0065	0.0062	0.0051
665.5	0.0073	0.0068	0.0065	0.0062	0.0051
666	0.0073	0.0068	0.0065	0.0062	0.0051
666.5	0.0073	0.0068	0.0065	0.0062	0.0051
667	0.0073	0.0068	0.0065	0.0062	0.0051
667.5	0.0073	0.0068	0.0064	0.0062	0.0051
668	0.0073	0.0068	0.0064	0.0062	0.0051
668.5	0.0073	0.0068	0.0064	0.0062	0.0051
669	0.0073	0.0069	0.0064	0.0062	0.0051
669.5	0.0073	0.0069	0.0065	0.0062	0.0051
670	0.0073	0.0069	0.0065	0.0062	0.0051
670.5	0.0073	0.0069	0.0065	0.0062	0.0051
671	0.0073	0.0068	0.0065	0.0062	0.0051
671.5	0.0073	0.0068	0.0065	0.0062	0.0051
672	0.0073	0.0068	0.0065	0.0062	0.0051
672.5	0.0073	0.0068	0.0065	0.0062	0.0051
673	0.0073	0.0068	0.0065	0.0062	0.0051

673.5	0.0074	0.0068	0.0065	0.0062	0.0051
674	0.0074	0.0068	0.0065	0.0062	0.0051
674.5	0.0074	0.0068	0.0065	0.0062	0.0051
675	0.0074	0.0068	0.0065	0.0063	0.0052
675.5	0.0074	0.0069	0.0065	0.0063	0.0052
676	0.0074	0.0069	0.0065	0.0063	0.0053
676.5	0.0074	0.0069	0.0065	0.0063	0.0053
677	0.0074	0.0069	0.0065	0.0063	0.0053
677.5	0.0074	0.0069	0.0066	0.0063	0.0053
678	0.0074	0.0069	0.0066	0.0063	0.0052
678.5	0.0074	0.0069	0.0066	0.0063	0.0052
679	0.0073	0.0069	0.0066	0.0063	0.0052
679.5	0.0073	0.0069	0.0066	0.0063	0.0052
680	0.0073	0.0069	0.0066	0.0063	0.0052
680.5	0.0073	0.0069	0.0066	0.0063	0.0052
681	0.0073	0.0068	0.0066	0.0063	0.0052
681.5	0.0073	0.0068	0.0065	0.0063	0.0051
682	0.0073	0.0068	0.0065	0.0063	0.0051
682.5	0.0073	0.0068	0.0065	0.0063	0.0051
683	0.0073	0.0068	0.0065	0.0063	0.0051
683.5	0.0073	0.0069	0.0065	0.0063	0.0051
684	0.0073	0.0069	0.0065	0.0063	0.0051
684.5	0.0073	0.0069	0.0065	0.0063	0.0051
685	0.0073	0.0069	0.0065	0.0063	0.0051
685.5	0.0073	0.0069	0.0065	0.0063	0.0051
686	0.0073	0.0069	0.0065	0.0063	0.0051
686.5	0.0073	0.0069	0.0065	0.0063	0.0051
687	0.0073	0.0069	0.0066	0.0063	0.0051
687.5	0.0073	0.0069	0.0066	0.0063	0.0051
688	0.0074	0.0069	0.0066	0.0063	0.0051
688.5	0.0074	0.0069	0.0066	0.0063	0.0051
689	0.0074	0.0069	0.0066	0.0063	0.0051
689.5	0.0074	0.0069	0.0066	0.0064	0.0051
690	0.0074	0.0069	0.0066	0.0064	0.0051
690.5	0.0074	0.0069	0.0066	0.0063	0.0051
691	0.0074	0.0069	0.0065	0.0063	0.0051
691.5	0.0074	0.0069	0.0065	0.0063	0.0051
692	0.0074	0.0069	0.0065	0.0063	0.0051
692.5	0.0074	0.0069	0.0065	0.0063	0.0051
693	0.0074	0.0070	0.0065	0.0063	0.0051
693.5	0.0074	0.0070	0.0066	0.0063	0.0051
694	0.0074	0.0070	0.0066	0.0063	0.0051
694.5	0.0074	0.0070	0.0066	0.0063	0.0051
695	0.0074	0.0070	0.0066	0.0063	0.0051
695.5	0.0074	0.0070	0.0066	0.0063	0.0051
696	0.0074	0.0070	0.0066	0.0063	0.0051
696.5	0.0074	0.0069	0.0066	0.0064	0.0051
697	0.0074	0.0069	0.0066	0.0064	0.0051
697.5	0.0074	0.0069	0.0066	0.0064	0.0051
698	0.0075	0.0070	0.0066	0.0064	0.0051
698.5	0.0075	0.0070	0.0066	0.0064	0.0051
699	0.0075	0.0070	0.0066	0.0064	0.0052
699.5	0.0075	0.0070	0.0066	0.0064	0.0052
700	0.0075	0.0070	0.0066	0.0065	0.0052

B.1.2 45° measurements

Table B.2: Measurements of the yellow gradient at locations A, B, C, D, and E at 45°. The lamp signal was measured at an integration time of 25 ms and the measurements of the samples were taken at an integration time of 2000 ms, 2200 ms, 2400 ms, 2500 ms, and 2500 ms respectively.

λ	A	B	C	D	E
400	0.0077	0.0075	0.0065	0.0061	0.0058
400.5	0.0077	0.0075	0.0066	0.0061	0.0058
401	0.0077	0.0075	0.0066	0.0061	0.0058
401.5	0.0077	0.0075	0.0066	0.0061	0.0058
402	0.0078	0.0075	0.0067	0.0062	0.0058
402.5	0.0078	0.0075	0.0067	0.0062	0.0058
403	0.0078	0.0075	0.0068	0.0062	0.0058
403.5	0.0078	0.0075	0.0068	0.0062	0.0058
404	0.0078	0.0075	0.0069	0.0062	0.0057
404.5	0.0078	0.0075	0.0068	0.0062	0.0057
405	0.0078	0.0075	0.0068	0.0062	0.0057
405.5	0.0078	0.0075	0.0068	0.0062	0.0057
406	0.0078	0.0075	0.0069	0.0062	0.0057
406.5	0.0079	0.0076	0.0069	0.0062	0.0057
407	0.0079	0.0076	0.0070	0.0063	0.0057
407.5	0.0079	0.0077	0.0070	0.0063	0.0058
408	0.0079	0.0077	0.0069	0.0063	0.0058
408.5	0.0079	0.0077	0.0069	0.0062	0.0058
409	0.0080	0.0076	0.0068	0.0062	0.0058
409.5	0.0080	0.0076	0.0068	0.0062	0.0057
410	0.0080	0.0076	0.0068	0.0062	0.0057
410.5	0.0080	0.0075	0.0069	0.0062	0.0058
411	0.0080	0.0075	0.0069	0.0063	0.0058
411.5	0.0080	0.0075	0.0069	0.0063	0.0058
412	0.0080	0.0075	0.0069	0.0063	0.0058
412.5	0.0080	0.0076	0.0069	0.0063	0.0058
413	0.0080	0.0076	0.0069	0.0063	0.0058
413.5	0.0080	0.0076	0.0070	0.0063	0.0058
414	0.0080	0.0076	0.0070	0.0063	0.0058
414.5	0.0080	0.0076	0.0070	0.0063	0.0058
415	0.0081	0.0076	0.0071	0.0063	0.0058
415.5	0.0081	0.0076	0.0071	0.0063	0.0058
416	0.0081	0.0077	0.0071	0.0064	0.0058
416.5	0.0082	0.0077	0.0071	0.0064	0.0058
417	0.0082	0.0078	0.0071	0.0064	0.0058
417.5	0.0083	0.0079	0.0071	0.0064	0.0059
418	0.0083	0.0080	0.0072	0.0064	0.0059
418.5	0.0083	0.0080	0.0072	0.0064	0.0059
419	0.0083	0.0080	0.0072	0.0064	0.0058
419.5	0.0083	0.0080	0.0072	0.0064	0.0059
420	0.0084	0.0080	0.0072	0.0065	0.0059
420.5	0.0084	0.0080	0.0072	0.0065	0.0059
421	0.0084	0.0079	0.0072	0.0065	0.0059
421.5	0.0085	0.0079	0.0072	0.0065	0.0059
422	0.0085	0.0080	0.0072	0.0065	0.0059
422.5	0.0085	0.0080	0.0072	0.0065	0.0059
423	0.0085	0.0081	0.0073	0.0065	0.0059
423.5	0.0085	0.0081	0.0073	0.0065	0.0059

424	0.0085	0.0081	0.0073	0.0065	0.0059
424.5	0.0085	0.0081	0.0073	0.0065	0.0059
425	0.0085	0.0081	0.0073	0.0065	0.0059
425.5	0.0085	0.0081	0.0073	0.0065	0.0059
426	0.0085	0.0081	0.0073	0.0065	0.0059
426.5	0.0085	0.0081	0.0073	0.0065	0.0059
427	0.0086	0.0081	0.0073	0.0065	0.0059
427.5	0.0086	0.0081	0.0073	0.0065	0.0059
428	0.0086	0.0081	0.0073	0.0065	0.0059
428.5	0.0085	0.0081	0.0074	0.0065	0.0059
429	0.0085	0.0081	0.0074	0.0065	0.0059
429.5	0.0085	0.0081	0.0073	0.0065	0.0059
430	0.0085	0.0081	0.0073	0.0065	0.0059
430.5	0.0085	0.0081	0.0073	0.0065	0.0059
431	0.0085	0.0081	0.0073	0.0065	0.0059
431.5	0.0086	0.0081	0.0073	0.0065	0.0058
432	0.0086	0.0081	0.0073	0.0065	0.0058
432.5	0.0086	0.0081	0.0073	0.0065	0.0058
433	0.0086	0.0081	0.0073	0.0065	0.0058
433.5	0.0086	0.0080	0.0073	0.0065	0.0059
434	0.0086	0.0081	0.0073	0.0065	0.0059
434.5	0.0086	0.0081	0.0073	0.0065	0.0059
435	0.0086	0.0081	0.0073	0.0065	0.0059
435.5	0.0086	0.0081	0.0073	0.0066	0.0059
436	0.0086	0.0082	0.0073	0.0066	0.0059
436.5	0.0086	0.0082	0.0073	0.0066	0.0059
437	0.0086	0.0082	0.0073	0.0065	0.0059
437.5	0.0086	0.0081	0.0073	0.0065	0.0059
438	0.0086	0.0081	0.0073	0.0065	0.0059
438.5	0.0086	0.0081	0.0073	0.0065	0.0058
439	0.0086	0.0081	0.0073	0.0065	0.0058
439.5	0.0086	0.0081	0.0073	0.0065	0.0058
440	0.0086	0.0082	0.0074	0.0065	0.0058
440.5	0.0086	0.0082	0.0074	0.0065	0.0058
441	0.0086	0.0082	0.0074	0.0066	0.0059
441.5	0.0086	0.0082	0.0074	0.0066	0.0059
442	0.0086	0.0082	0.0074	0.0066	0.0059
442.5	0.0086	0.0082	0.0074	0.0066	0.0059
443	0.0086	0.0082	0.0075	0.0066	0.0059
443.5	0.0086	0.0082	0.0075	0.0066	0.0059
444	0.0086	0.0082	0.0075	0.0066	0.0059
444.5	0.0086	0.0082	0.0075	0.0066	0.0059
445	0.0086	0.0082	0.0075	0.0066	0.0059
445.5	0.0086	0.0082	0.0075	0.0066	0.0059
446	0.0086	0.0082	0.0075	0.0066	0.0059
446.5	0.0086	0.0082	0.0075	0.0066	0.0059
447	0.0086	0.0082	0.0075	0.0066	0.0059
447.5	0.0086	0.0082	0.0075	0.0066	0.0059
448	0.0087	0.0082	0.0075	0.0066	0.0059
448.5	0.0087	0.0082	0.0075	0.0066	0.0058
449	0.0087	0.0082	0.0075	0.0066	0.0058
449.5	0.0087	0.0082	0.0075	0.0066	0.0058
450	0.0087	0.0082	0.0075	0.0066	0.0058
450.5	0.0087	0.0082	0.0075	0.0066	0.0058
451	0.0086	0.0082	0.0075	0.0066	0.0058
451.5	0.0086	0.0082	0.0075	0.0066	0.0058
452	0.0086	0.0081	0.0075	0.0066	0.0058

452.5	0.0086	0.0081	0.0075	0.0066	0.0059
453	0.0086	0.0082	0.0075	0.0066	0.0059
453.5	0.0086	0.0082	0.0075	0.0066	0.0059
454	0.0087	0.0082	0.0075	0.0066	0.0059
454.5	0.0087	0.0083	0.0075	0.0066	0.0059
455	0.0087	0.0082	0.0075	0.0066	0.0059
455.5	0.0087	0.0082	0.0075	0.0066	0.0059
456	0.0087	0.0082	0.0075	0.0066	0.0059
456.5	0.0087	0.0082	0.0075	0.0066	0.0059
457	0.0087	0.0082	0.0075	0.0066	0.0059
457.5	0.0087	0.0082	0.0075	0.0066	0.0059
458	0.0087	0.0082	0.0075	0.0066	0.0059
458.5	0.0087	0.0082	0.0075	0.0066	0.0059
459	0.0087	0.0083	0.0076	0.0067	0.0059
459.5	0.0087	0.0083	0.0076	0.0067	0.0060
460	0.0087	0.0083	0.0076	0.0067	0.0060
460.5	0.0087	0.0083	0.0076	0.0067	0.0060
461	0.0087	0.0083	0.0076	0.0067	0.0060
461.5	0.0087	0.0083	0.0076	0.0067	0.0060
462	0.0087	0.0083	0.0076	0.0067	0.0060
462.5	0.0087	0.0083	0.0076	0.0067	0.0060
463	0.0088	0.0083	0.0076	0.0067	0.0060
463.5	0.0088	0.0083	0.0076	0.0067	0.0060
464	0.0088	0.0083	0.0076	0.0067	0.0060
464.5	0.0088	0.0083	0.0076	0.0067	0.0059
465	0.0088	0.0083	0.0076	0.0067	0.0060
465.5	0.0088	0.0083	0.0076	0.0067	0.0060
466	0.0088	0.0083	0.0076	0.0067	0.0060
466.5	0.0088	0.0084	0.0076	0.0067	0.0060
467	0.0088	0.0084	0.0077	0.0068	0.0060
467.5	0.0088	0.0084	0.0077	0.0068	0.0061
468	0.0088	0.0084	0.0077	0.0068	0.0061
468.5	0.0089	0.0085	0.0077	0.0068	0.0061
469	0.0089	0.0085	0.0077	0.0068	0.0061
469.5	0.0089	0.0084	0.0077	0.0068	0.0060
470	0.0088	0.0084	0.0077	0.0068	0.0060
470.5	0.0088	0.0084	0.0077	0.0068	0.0060
471	0.0088	0.0084	0.0077	0.0068	0.0060
471.5	0.0088	0.0084	0.0077	0.0068	0.0060
472	0.0088	0.0084	0.0077	0.0068	0.0060
472.5	0.0088	0.0084	0.0077	0.0068	0.0060
473	0.0088	0.0084	0.0077	0.0068	0.0060
473.5	0.0088	0.0085	0.0077	0.0068	0.0060
474	0.0088	0.0085	0.0077	0.0068	0.0060
474.5	0.0088	0.0085	0.0077	0.0068	0.0061
475	0.0088	0.0085	0.0078	0.0068	0.0061
475.5	0.0088	0.0086	0.0078	0.0069	0.0061
476	0.0089	0.0086	0.0078	0.0069	0.0061
476.5	0.0089	0.0086	0.0079	0.0069	0.0061
477	0.0089	0.0086	0.0079	0.0069	0.0061
477.5	0.0089	0.0086	0.0079	0.0069	0.0062
478	0.0090	0.0086	0.0079	0.0069	0.0062
478.5	0.0090	0.0086	0.0079	0.0070	0.0062
479	0.0090	0.0086	0.0079	0.0070	0.0062
479.5	0.0090	0.0086	0.0080	0.0070	0.0062
480	0.0090	0.0086	0.0080	0.0070	0.0062
480.5	0.0090	0.0086	0.0080	0.0070	0.0062

481	0.0090	0.0086	0.0080	0.0070	0.0062
481.5	0.0090	0.0087	0.0080	0.0070	0.0062
482	0.0090	0.0087	0.0080	0.0070	0.0062
482.5	0.0090	0.0087	0.0080	0.0071	0.0063
483	0.0090	0.0087	0.0080	0.0071	0.0063
483.5	0.0090	0.0087	0.0081	0.0071	0.0063
484	0.0090	0.0087	0.0081	0.0071	0.0063
484.5	0.0090	0.0087	0.0081	0.0071	0.0063
485	0.0090	0.0087	0.0081	0.0071	0.0063
485.5	0.0090	0.0088	0.0081	0.0071	0.0063
486	0.0090	0.0088	0.0081	0.0071	0.0063
486.5	0.0090	0.0088	0.0081	0.0071	0.0063
487	0.0091	0.0088	0.0081	0.0071	0.0063
487.5	0.0091	0.0088	0.0081	0.0071	0.0063
488	0.0091	0.0088	0.0081	0.0072	0.0063
488.5	0.0091	0.0088	0.0082	0.0072	0.0064
489	0.0091	0.0089	0.0082	0.0072	0.0064
489.5	0.0091	0.0089	0.0082	0.0073	0.0065
490	0.0092	0.0089	0.0083	0.0073	0.0065
490.5	0.0092	0.0089	0.0083	0.0073	0.0065
491	0.0092	0.0089	0.0083	0.0074	0.0066
491.5	0.0093	0.0090	0.0083	0.0074	0.0066
492	0.0093	0.0090	0.0084	0.0074	0.0067
492.5	0.0093	0.0090	0.0084	0.0074	0.0067
493	0.0093	0.0091	0.0084	0.0075	0.0067
493.5	0.0093	0.0091	0.0084	0.0075	0.0067
494	0.0093	0.0091	0.0085	0.0075	0.0067
494.5	0.0093	0.0091	0.0085	0.0075	0.0067
495	0.0094	0.0091	0.0085	0.0076	0.0068
495.5	0.0094	0.0092	0.0085	0.0076	0.0068
496	0.0094	0.0092	0.0086	0.0076	0.0069
496.5	0.0094	0.0092	0.0086	0.0076	0.0069
497	0.0094	0.0092	0.0086	0.0076	0.0069
497.5	0.0094	0.0092	0.0085	0.0076	0.0069
498	0.0094	0.0092	0.0085	0.0076	0.0069
498.5	0.0094	0.0092	0.0086	0.0077	0.0069
499	0.0094	0.0092	0.0086	0.0077	0.0069
499.5	0.0094	0.0092	0.0086	0.0077	0.0070
500	0.0094	0.0092	0.0086	0.0077	0.0070
500.5	0.0095	0.0092	0.0086	0.0077	0.0070
501	0.0095	0.0092	0.0087	0.0078	0.0071
501.5	0.0095	0.0093	0.0087	0.0078	0.0071
502	0.0095	0.0093	0.0087	0.0078	0.0071
502.5	0.0095	0.0093	0.0087	0.0078	0.0071
503	0.0096	0.0094	0.0087	0.0078	0.0072
503.5	0.0096	0.0094	0.0087	0.0079	0.0072
504	0.0096	0.0094	0.0088	0.0079	0.0072
504.5	0.0096	0.0094	0.0088	0.0080	0.0073
505	0.0097	0.0095	0.0089	0.0080	0.0073
505.5	0.0097	0.0095	0.0089	0.0080	0.0074
506	0.0097	0.0095	0.0089	0.0081	0.0074
506.5	0.0097	0.0095	0.0089	0.0081	0.0074
507	0.0098	0.0095	0.0089	0.0081	0.0074
507.5	0.0097	0.0095	0.0089	0.0081	0.0074
508	0.0097	0.0095	0.0089	0.0081	0.0075
508.5	0.0097	0.0095	0.0090	0.0081	0.0075
509	0.0097	0.0095	0.0090	0.0081	0.0075

509.5	0.0097	0.0095	0.0090	0.0082	0.0075
510	0.0097	0.0095	0.0090	0.0082	0.0075
510.5	0.0097	0.0095	0.0090	0.0082	0.0075
511	0.0098	0.0095	0.0090	0.0082	0.0075
511.5	0.0098	0.0095	0.0091	0.0082	0.0076
512	0.0098	0.0096	0.0091	0.0082	0.0076
512.5	0.0098	0.0096	0.0091	0.0083	0.0076
513	0.0098	0.0097	0.0092	0.0083	0.0077
513.5	0.0098	0.0097	0.0092	0.0083	0.0077
514	0.0098	0.0097	0.0092	0.0084	0.0077
514.5	0.0098	0.0097	0.0092	0.0084	0.0077
515	0.0098	0.0096	0.0092	0.0084	0.0077
515.5	0.0098	0.0096	0.0092	0.0084	0.0077
516	0.0098	0.0096	0.0092	0.0084	0.0077
516.5	0.0098	0.0096	0.0091	0.0083	0.0077
517	0.0098	0.0096	0.0091	0.0083	0.0077
517.5	0.0098	0.0096	0.0091	0.0084	0.0078
518	0.0099	0.0097	0.0092	0.0084	0.0078
518.5	0.0099	0.0097	0.0092	0.0084	0.0078
519	0.0099	0.0098	0.0093	0.0085	0.0079
519.5	0.0099	0.0098	0.0093	0.0085	0.0079
520	0.0099	0.0098	0.0093	0.0085	0.0079
520.5	0.0099	0.0098	0.0094	0.0085	0.0079
521	0.0099	0.0098	0.0093	0.0085	0.0079
521.5	0.0099	0.0098	0.0093	0.0085	0.0079
522	0.0099	0.0097	0.0093	0.0085	0.0079
522.5	0.0099	0.0097	0.0093	0.0085	0.0079
523	0.0099	0.0097	0.0092	0.0085	0.0079
523.5	0.0099	0.0097	0.0092	0.0085	0.0079
524	0.0099	0.0098	0.0092	0.0085	0.0079
524.5	0.0099	0.0098	0.0093	0.0085	0.0079
525	0.0099	0.0098	0.0093	0.0085	0.0079
525.5	0.0099	0.0098	0.0094	0.0086	0.0080
526	0.0099	0.0098	0.0094	0.0086	0.0080
526.5	0.0100	0.0098	0.0094	0.0086	0.0080
527	0.0100	0.0098	0.0094	0.0086	0.0080
527.5	0.0100	0.0098	0.0094	0.0086	0.0080
528	0.0099	0.0098	0.0094	0.0086	0.0079
528.5	0.0099	0.0098	0.0094	0.0085	0.0079
529	0.0099	0.0098	0.0093	0.0085	0.0079
529.5	0.0099	0.0098	0.0094	0.0085	0.0079
530	0.0099	0.0098	0.0094	0.0086	0.0079
530.5	0.0099	0.0098	0.0094	0.0086	0.0080
531	0.0099	0.0098	0.0095	0.0086	0.0080
531.5	0.0099	0.0098	0.0095	0.0086	0.0080
532	0.0100	0.0098	0.0095	0.0087	0.0080
532.5	0.0100	0.0098	0.0095	0.0087	0.0080
533	0.0100	0.0098	0.0095	0.0087	0.0080
533.5	0.0100	0.0098	0.0094	0.0086	0.0080
534	0.0100	0.0098	0.0094	0.0086	0.0080
534.5	0.0100	0.0098	0.0094	0.0086	0.0080
535	0.0100	0.0098	0.0094	0.0086	0.0080
535.5	0.0100	0.0099	0.0095	0.0087	0.0081
536	0.0100	0.0099	0.0095	0.0087	0.0081
536.5	0.0100	0.0099	0.0095	0.0087	0.0081
537	0.0100	0.0099	0.0095	0.0087	0.0081
537.5	0.0100	0.0099	0.0095	0.0087	0.0081

538	0.0100	0.0099	0.0095	0.0087	0.0081
538.5	0.0100	0.0099	0.0095	0.0087	0.0081
539	0.0100	0.0099	0.0095	0.0087	0.0081
539.5	0.0100	0.0099	0.0095	0.0087	0.0081
540	0.0100	0.0099	0.0095	0.0087	0.0081
540.5	0.0100	0.0100	0.0095	0.0087	0.0081
541	0.0100	0.0100	0.0095	0.0087	0.0081
541.5	0.0100	0.0100	0.0095	0.0087	0.0081
542	0.0100	0.0100	0.0096	0.0087	0.0081
542.5	0.0100	0.0100	0.0096	0.0088	0.0081
543	0.0100	0.0100	0.0096	0.0088	0.0081
543.5	0.0100	0.0100	0.0096	0.0088	0.0082
544	0.0100	0.0100	0.0096	0.0088	0.0082
544.5	0.0100	0.0100	0.0096	0.0088	0.0082
545	0.0100	0.0100	0.0096	0.0088	0.0082
545.5	0.0100	0.0100	0.0095	0.0088	0.0082
546	0.0100	0.0101	0.0095	0.0088	0.0082
546.5	0.0101	0.0101	0.0096	0.0088	0.0082
547	0.0101	0.0101	0.0096	0.0088	0.0082
547.5	0.0101	0.0101	0.0096	0.0088	0.0082
548	0.0101	0.0101	0.0096	0.0088	0.0082
548.5	0.0101	0.0101	0.0096	0.0088	0.0082
549	0.0101	0.0100	0.0096	0.0088	0.0082
549.5	0.0101	0.0100	0.0096	0.0088	0.0082
550	0.0101	0.0100	0.0096	0.0088	0.0082
550.5	0.0101	0.0100	0.0096	0.0088	0.0082
551	0.0101	0.0101	0.0096	0.0088	0.0082
551.5	0.0101	0.0101	0.0096	0.0088	0.0082
552	0.0102	0.0102	0.0097	0.0088	0.0082
552.5	0.0102	0.0102	0.0097	0.0089	0.0082
553	0.0102	0.0102	0.0097	0.0089	0.0082
553.5	0.0102	0.0102	0.0098	0.0089	0.0083
554	0.0102	0.0102	0.0098	0.0090	0.0083
554.5	0.0102	0.0102	0.0099	0.0090	0.0083
555	0.0103	0.0102	0.0099	0.0090	0.0084
555.5	0.0103	0.0103	0.0099	0.0091	0.0084
556	0.0103	0.0103	0.0099	0.0091	0.0084
556.5	0.0103	0.0103	0.0099	0.0091	0.0084
557	0.0104	0.0103	0.0099	0.0091	0.0084
557.5	0.0103	0.0103	0.0099	0.0090	0.0084
558	0.0103	0.0103	0.0099	0.0090	0.0084
558.5	0.0103	0.0103	0.0099	0.0090	0.0084
559	0.0103	0.0103	0.0099	0.0090	0.0084
559.5	0.0103	0.0103	0.0099	0.0090	0.0084
560	0.0103	0.0103	0.0099	0.0090	0.0084
560.5	0.0103	0.0103	0.0099	0.0090	0.0084
561	0.0103	0.0103	0.0099	0.0090	0.0084
561.5	0.0103	0.0102	0.0099	0.0090	0.0084
562	0.0103	0.0102	0.0099	0.0090	0.0084
562.5	0.0103	0.0102	0.0098	0.0090	0.0084
563	0.0103	0.0102	0.0098	0.0090	0.0084
563.5	0.0103	0.0102	0.0098	0.0090	0.0084
564	0.0102	0.0103	0.0098	0.0090	0.0084
564.5	0.0102	0.0103	0.0098	0.0090	0.0083
565	0.0102	0.0103	0.0098	0.0090	0.0083
565.5	0.0102	0.0103	0.0098	0.0090	0.0083
566	0.0102	0.0103	0.0098	0.0090	0.0083

566.5	0.0102	0.0102	0.0098	0.0090	0.0083
567	0.0102	0.0102	0.0098	0.0090	0.0083
567.5	0.0103	0.0102	0.0098	0.0090	0.0084
568	0.0103	0.0102	0.0098	0.0090	0.0084
568.5	0.0103	0.0102	0.0098	0.0090	0.0084
569	0.0103	0.0103	0.0098	0.0090	0.0084
569.5	0.0103	0.0103	0.0098	0.0090	0.0084
570	0.0103	0.0103	0.0098	0.0090	0.0084
570.5	0.0103	0.0104	0.0098	0.0090	0.0084
571	0.0103	0.0104	0.0098	0.0090	0.0084
571.5	0.0103	0.0104	0.0099	0.0091	0.0084
572	0.0103	0.0104	0.0099	0.0091	0.0084
572.5	0.0103	0.0104	0.0099	0.0091	0.0085
573	0.0103	0.0103	0.0099	0.0091	0.0085
573.5	0.0103	0.0103	0.0099	0.0091	0.0085
574	0.0103	0.0103	0.0099	0.0091	0.0085
574.5	0.0103	0.0103	0.0099	0.0091	0.0085
575	0.0103	0.0103	0.0099	0.0091	0.0085
575.5	0.0103	0.0103	0.0098	0.0091	0.0085
576	0.0103	0.0103	0.0098	0.0091	0.0085
576.5	0.0103	0.0104	0.0098	0.0091	0.0085
577	0.0103	0.0104	0.0099	0.0091	0.0085
577.5	0.0103	0.0104	0.0099	0.0091	0.0085
578	0.0103	0.0105	0.0099	0.0091	0.0085
578.5	0.0103	0.0104	0.0099	0.0091	0.0085
579	0.0103	0.0104	0.0099	0.0091	0.0085
579.5	0.0103	0.0104	0.0099	0.0091	0.0085
580	0.0103	0.0104	0.0099	0.0091	0.0085
580.5	0.0103	0.0104	0.0099	0.0091	0.0085
581	0.0103	0.0103	0.0099	0.0091	0.0085
581.5	0.0103	0.0103	0.0099	0.0091	0.0085
582	0.0104	0.0104	0.0099	0.0091	0.0085
582.5	0.0104	0.0104	0.0099	0.0091	0.0086
583	0.0104	0.0104	0.0099	0.0092	0.0086
583.5	0.0104	0.0105	0.0100	0.0092	0.0086
584	0.0104	0.0106	0.0100	0.0092	0.0087
584.5	0.0105	0.0106	0.0101	0.0093	0.0087
585	0.0105	0.0106	0.0101	0.0093	0.0087
585.5	0.0105	0.0106	0.0102	0.0093	0.0087
586	0.0105	0.0106	0.0102	0.0093	0.0087
586.5	0.0105	0.0106	0.0101	0.0093	0.0087
587	0.0105	0.0105	0.0101	0.0093	0.0087
587.5	0.0105	0.0105	0.0101	0.0092	0.0086
588	0.0105	0.0105	0.0100	0.0092	0.0086
588.5	0.0104	0.0105	0.0100	0.0092	0.0086
589	0.0104	0.0105	0.0100	0.0092	0.0086
589.5	0.0104	0.0105	0.0100	0.0092	0.0086
590	0.0104	0.0106	0.0100	0.0092	0.0086
590.5	0.0104	0.0106	0.0100	0.0092	0.0087
591	0.0104	0.0107	0.0101	0.0093	0.0087
591.5	0.0105	0.0107	0.0101	0.0093	0.0087
592	0.0105	0.0107	0.0102	0.0094	0.0087
592.5	0.0105	0.0107	0.0102	0.0094	0.0087
593	0.0106	0.0107	0.0102	0.0093	0.0087
593.5	0.0106	0.0106	0.0102	0.0093	0.0087
594	0.0106	0.0106	0.0101	0.0093	0.0087
594.5	0.0106	0.0106	0.0101	0.0093	0.0087

595	0.0106	0.0106	0.0101	0.0093	0.0088
595.5	0.0106	0.0106	0.0101	0.0094	0.0088
596	0.0106	0.0107	0.0102	0.0094	0.0088
596.5	0.0106	0.0107	0.0102	0.0094	0.0089
597	0.0106	0.0107	0.0102	0.0094	0.0089
597.5	0.0106	0.0108	0.0102	0.0094	0.0089
598	0.0106	0.0108	0.0102	0.0094	0.0089
598.5	0.0106	0.0108	0.0103	0.0094	0.0089
599	0.0106	0.0108	0.0103	0.0095	0.0088
599.5	0.0106	0.0108	0.0103	0.0095	0.0088
600	0.0106	0.0108	0.0103	0.0095	0.0088
600.5	0.0106	0.0107	0.0103	0.0094	0.0088
601	0.0106	0.0107	0.0103	0.0094	0.0088
601.5	0.0106	0.0107	0.0102	0.0094	0.0088
602	0.0106	0.0107	0.0102	0.0094	0.0088
602.5	0.0106	0.0107	0.0101	0.0094	0.0088
603	0.0106	0.0107	0.0101	0.0094	0.0088
603.5	0.0106	0.0107	0.0101	0.0094	0.0088
604	0.0106	0.0108	0.0102	0.0094	0.0089
604.5	0.0106	0.0108	0.0102	0.0094	0.0089
605	0.0106	0.0108	0.0102	0.0095	0.0089
605.5	0.0106	0.0108	0.0103	0.0095	0.0089
606	0.0106	0.0108	0.0103	0.0095	0.0089
606.5	0.0107	0.0108	0.0103	0.0095	0.0089
607	0.0107	0.0108	0.0103	0.0095	0.0089
607.5	0.0107	0.0108	0.0103	0.0095	0.0089
608	0.0108	0.0108	0.0103	0.0095	0.0089
608.5	0.0108	0.0108	0.0103	0.0095	0.0089
609	0.0108	0.0108	0.0102	0.0095	0.0089
609.5	0.0108	0.0108	0.0102	0.0095	0.0089
610	0.0108	0.0108	0.0103	0.0095	0.0089
610.5	0.0108	0.0109	0.0103	0.0095	0.0090
611	0.0108	0.0109	0.0103	0.0095	0.0090
611.5	0.0108	0.0109	0.0103	0.0096	0.0090
612	0.0108	0.0109	0.0103	0.0096	0.0091
612.5	0.0108	0.0110	0.0104	0.0096	0.0091
613	0.0108	0.0110	0.0104	0.0096	0.0091
613.5	0.0108	0.0110	0.0104	0.0097	0.0091
614	0.0109	0.0110	0.0105	0.0097	0.0091
614.5	0.0109	0.0110	0.0105	0.0097	0.0091
615	0.0110	0.0110	0.0105	0.0097	0.0090
615.5	0.0110	0.0110	0.0105	0.0096	0.0090
616	0.0110	0.0110	0.0105	0.0096	0.0090
616.5	0.0110	0.0110	0.0105	0.0096	0.0089
617	0.0110	0.0109	0.0104	0.0096	0.0089
617.5	0.0109	0.0109	0.0104	0.0096	0.0089
618	0.0109	0.0109	0.0104	0.0096	0.0090
618.5	0.0109	0.0110	0.0104	0.0096	0.0090
619	0.0108	0.0110	0.0104	0.0096	0.0090
619.5	0.0108	0.0110	0.0104	0.0096	0.0090
620	0.0108	0.0110	0.0104	0.0096	0.0090
620.5	0.0108	0.0109	0.0104	0.0096	0.0090
621	0.0108	0.0109	0.0104	0.0096	0.0090
621.5	0.0108	0.0109	0.0104	0.0096	0.0090
622	0.0109	0.0110	0.0104	0.0096	0.0090
622.5	0.0109	0.0110	0.0105	0.0096	0.0089
623	0.0109	0.0110	0.0105	0.0096	0.0089

623.5	0.0109	0.0110	0.0104	0.0096	0.0089
624	0.0110	0.0110	0.0104	0.0096	0.0089
624.5	0.0110	0.0110	0.0104	0.0096	0.0089
625	0.0110	0.0110	0.0104	0.0096	0.0090
625.5	0.0110	0.0111	0.0104	0.0096	0.0090
626	0.0109	0.0111	0.0105	0.0097	0.0091
626.5	0.0109	0.0111	0.0105	0.0097	0.0091
627	0.0109	0.0111	0.0105	0.0097	0.0091
627.5	0.0109	0.0111	0.0105	0.0097	0.0091
628	0.0109	0.0111	0.0105	0.0097	0.0091
628.5	0.0108	0.0110	0.0105	0.0097	0.0091
629	0.0108	0.0110	0.0105	0.0097	0.0091
629.5	0.0108	0.0109	0.0105	0.0096	0.0090
630	0.0109	0.0109	0.0105	0.0096	0.0090
630.5	0.0109	0.0109	0.0105	0.0096	0.0090
631	0.0110	0.0110	0.0105	0.0096	0.0090
631.5	0.0110	0.0110	0.0105	0.0097	0.0090
632	0.0110	0.0111	0.0106	0.0097	0.0090
632.5	0.0110	0.0111	0.0106	0.0097	0.0090
633	0.0110	0.0112	0.0106	0.0097	0.0091
633.5	0.0110	0.0112	0.0106	0.0097	0.0091
634	0.0110	0.0112	0.0106	0.0097	0.0091
634.5	0.0110	0.0112	0.0106	0.0098	0.0092
635	0.0110	0.0112	0.0106	0.0098	0.0092
635.5	0.0110	0.0111	0.0106	0.0098	0.0092
636	0.0110	0.0111	0.0106	0.0098	0.0092
636.5	0.0110	0.0111	0.0106	0.0098	0.0092
637	0.0110	0.0111	0.0106	0.0098	0.0091
637.5	0.0110	0.0111	0.0106	0.0098	0.0091
638	0.0111	0.0111	0.0106	0.0098	0.0091
638.5	0.0111	0.0112	0.0107	0.0098	0.0091
639	0.0112	0.0112	0.0107	0.0098	0.0091
639.5	0.0112	0.0112	0.0107	0.0098	0.0091
640	0.0112	0.0113	0.0107	0.0098	0.0091
640.5	0.0112	0.0113	0.0107	0.0098	0.0092
641	0.0112	0.0114	0.0107	0.0099	0.0092
641.5	0.0112	0.0114	0.0108	0.0099	0.0093
642	0.0112	0.0114	0.0108	0.0099	0.0093
642.5	0.0112	0.0114	0.0108	0.0100	0.0094
643	0.0112	0.0114	0.0109	0.0100	0.0094
643.5	0.0111	0.0114	0.0109	0.0100	0.0094
644	0.0111	0.0114	0.0109	0.0100	0.0094
644.5	0.0112	0.0114	0.0109	0.0100	0.0094
645	0.0112	0.0114	0.0109	0.0100	0.0094
645.5	0.0112	0.0114	0.0109	0.0100	0.0094
646	0.0113	0.0114	0.0109	0.0100	0.0094
646.5	0.0114	0.0115	0.0110	0.0100	0.0093
647	0.0114	0.0115	0.0110	0.0100	0.0093
647.5	0.0115	0.0115	0.0110	0.0101	0.0094
648	0.0115	0.0116	0.0110	0.0101	0.0094
648.5	0.0115	0.0116	0.0110	0.0101	0.0094
649	0.0115	0.0116	0.0110	0.0101	0.0095
649.5	0.0115	0.0116	0.0110	0.0101	0.0095
650	0.0115	0.0116	0.0110	0.0101	0.0095
650.5	0.0114	0.0116	0.0110	0.0101	0.0095
651	0.0114	0.0116	0.0110	0.0101	0.0096
651.5	0.0113	0.0116	0.0110	0.0102	0.0096

652	0.0113	0.0115	0.0110	0.0102	0.0096
652.5	0.0113	0.0116	0.0110	0.0102	0.0096
653	0.0114	0.0116	0.0111	0.0102	0.0096
653.5	0.0114	0.0116	0.0111	0.0102	0.0096
654	0.0114	0.0116	0.0111	0.0102	0.0096
654.5	0.0114	0.0116	0.0111	0.0102	0.0095
655	0.0114	0.0116	0.0110	0.0101	0.0095
655.5	0.0114	0.0116	0.0109	0.0101	0.0094
656	0.0114	0.0115	0.0109	0.0100	0.0093
656.5	0.0114	0.0115	0.0108	0.0100	0.0093
657	0.0113	0.0115	0.0108	0.0099	0.0093
657.5	0.0113	0.0115	0.0108	0.0099	0.0093
658	0.0113	0.0115	0.0108	0.0100	0.0094
658.5	0.0113	0.0115	0.0108	0.0100	0.0094
659	0.0113	0.0115	0.0108	0.0100	0.0095
659.5	0.0113	0.0115	0.0109	0.0101	0.0095
660	0.0113	0.0115	0.0109	0.0101	0.0095
660.5	0.0113	0.0115	0.0109	0.0101	0.0095
661	0.0113	0.0115	0.0109	0.0100	0.0094
661.5	0.0113	0.0114	0.0108	0.0100	0.0094
662	0.0113	0.0114	0.0108	0.0100	0.0094
662.5	0.0113	0.0115	0.0109	0.0100	0.0094
663	0.0113	0.0115	0.0109	0.0100	0.0094
663.5	0.0114	0.0115	0.0109	0.0100	0.0094
664	0.0114	0.0115	0.0109	0.0100	0.0093
664.5	0.0114	0.0115	0.0109	0.0100	0.0093
665	0.0114	0.0115	0.0108	0.0100	0.0093
665.5	0.0114	0.0115	0.0108	0.0100	0.0093
666	0.0114	0.0115	0.0108	0.0100	0.0093
666.5	0.0114	0.0115	0.0108	0.0100	0.0094
667	0.0114	0.0114	0.0107	0.0100	0.0094
667.5	0.0113	0.0114	0.0107	0.0100	0.0094
668	0.0113	0.0114	0.0107	0.0100	0.0094
668.5	0.0113	0.0114	0.0107	0.0100	0.0094
669	0.0113	0.0113	0.0107	0.0100	0.0095
669.5	0.0113	0.0113	0.0107	0.0100	0.0095
670	0.0113	0.0113	0.0107	0.0100	0.0095
670.5	0.0113	0.0113	0.0106	0.0099	0.0094
671	0.0113	0.0113	0.0106	0.0099	0.0094
671.5	0.0113	0.0113	0.0106	0.0099	0.0094
672	0.0113	0.0113	0.0106	0.0099	0.0094
672.5	0.0113	0.0113	0.0105	0.0098	0.0093
673	0.0113	0.0112	0.0105	0.0098	0.0093
673.5	0.0113	0.0112	0.0105	0.0098	0.0093
674	0.0113	0.0112	0.0105	0.0098	0.0093
674.5	0.0113	0.0112	0.0105	0.0098	0.0093
675	0.0114	0.0112	0.0105	0.0098	0.0093
675.5	0.0114	0.0113	0.0105	0.0098	0.0093
676	0.0114	0.0113	0.0105	0.0098	0.0094
676.5	0.0114	0.0113	0.0105	0.0099	0.0094
677	0.0114	0.0113	0.0105	0.0099	0.0094
677.5	0.0114	0.0113	0.0105	0.0099	0.0094
678	0.0114	0.0113	0.0105	0.0099	0.0094
678.5	0.0114	0.0112	0.0106	0.0099	0.0094
679	0.0114	0.0112	0.0106	0.0099	0.0094
679.5	0.0113	0.0113	0.0106	0.0099	0.0094
680	0.0113	0.0113	0.0106	0.0099	0.0094

680.5	0.0113	0.0113	0.0106	0.0099	0.0094
681	0.0113	0.0113	0.0106	0.0099	0.0093
681.5	0.0113	0.0113	0.0106	0.0098	0.0093
682	0.0113	0.0114	0.0106	0.0098	0.0093
682.5	0.0114	0.0114	0.0106	0.0098	0.0093
683	0.0114	0.0114	0.0107	0.0098	0.0093
683.5	0.0114	0.0114	0.0107	0.0099	0.0093
684	0.0114	0.0115	0.0107	0.0099	0.0093
684.5	0.0114	0.0115	0.0107	0.0099	0.0093
685	0.0114	0.0114	0.0107	0.0099	0.0093
685.5	0.0113	0.0114	0.0107	0.0099	0.0094
686	0.0113	0.0114	0.0107	0.0100	0.0094
686.5	0.0113	0.0114	0.0108	0.0100	0.0094
687	0.0114	0.0115	0.0108	0.0100	0.0095
687.5	0.0114	0.0115	0.0108	0.0100	0.0095
688	0.0114	0.0115	0.0109	0.0101	0.0095
688.5	0.0114	0.0115	0.0109	0.0101	0.0095
689	0.0115	0.0116	0.0109	0.0101	0.0095
689.5	0.0115	0.0116	0.0110	0.0101	0.0095
690	0.0115	0.0117	0.0110	0.0101	0.0095
690.5	0.0115	0.0117	0.0109	0.0101	0.0094
691	0.0115	0.0117	0.0109	0.0100	0.0094
691.5	0.0115	0.0117	0.0109	0.0100	0.0094
692	0.0115	0.0117	0.0108	0.0100	0.0093
692.5	0.0115	0.0117	0.0108	0.0100	0.0094
693	0.0115	0.0117	0.0108	0.0100	0.0094
693.5	0.0115	0.0117	0.0109	0.0100	0.0094
694	0.0115	0.0117	0.0109	0.0101	0.0095
694.5	0.0115	0.0117	0.0109	0.0101	0.0095
695	0.0115	0.0117	0.0109	0.0101	0.0095
695.5	0.0115	0.0117	0.0110	0.0101	0.0095
696	0.0115	0.0117	0.0110	0.0102	0.0096
696.5	0.0115	0.0117	0.0110	0.0102	0.0096
697	0.0116	0.0117	0.0110	0.0102	0.0096
697.5	0.0116	0.0118	0.0110	0.0102	0.0096
698	0.0116	0.0118	0.0111	0.0102	0.0096
698.5	0.0116	0.0118	0.0111	0.0103	0.0097
699	0.0117	0.0118	0.0111	0.0103	0.0097
699.5	0.0117	0.0119	0.0112	0.0103	0.0097
700	0.0117	0.0119	0.0112	0.0103	0.0097

B.1.3 60° measurements

Table B.3: Measurements of the yellow gradient at locations A, B, C, D, and E at 60°. The lamp signal was measured at an integration time of 25 ms and the measurements of the samples were taken at an integration time of 1200 ms, 2000 ms, 2000 ms, 2000 ms, and 2000 ms respectively.

λ	A	B	C	D	E
400	0.0084	0.0090	0.0086	0.0098	0.0082
400.5	0.0084	0.0091	0.0086	0.0098	0.0082
401	0.0084	0.0090	0.0085	0.0098	0.0082
401.5	0.0084	0.0090	0.0085	0.0098	0.0082
402	0.0083	0.0089	0.0085	0.0099	0.0081
402.5	0.0083	0.0089	0.0085	0.0100	0.0081
403	0.0082	0.0089	0.0085	0.0100	0.0081
403.5	0.0082	0.0090	0.0086	0.0101	0.0082
404	0.0082	0.0090	0.0086	0.0101	0.0082
404.5	0.0082	0.0090	0.0086	0.0100	0.0081
405	0.0082	0.0089	0.0086	0.0099	0.0081
405.5	0.0083	0.0089	0.0085	0.0099	0.0081
406	0.0083	0.0089	0.0085	0.0100	0.0082
406.5	0.0083	0.0090	0.0085	0.0101	0.0082
407	0.0084	0.0091	0.0086	0.0101	0.0083
407.5	0.0083	0.0092	0.0086	0.0101	0.0084
408	0.0083	0.0092	0.0086	0.0101	0.0084
408.5	0.0083	0.0092	0.0086	0.0100	0.0084
409	0.0084	0.0091	0.0086	0.0100	0.0083
409.5	0.0084	0.0090	0.0085	0.0100	0.0083
410	0.0085	0.0090	0.0085	0.0100	0.0083
410.5	0.0085	0.0090	0.0086	0.0101	0.0083
411	0.0086	0.0090	0.0086	0.0101	0.0084
411.5	0.0085	0.0091	0.0086	0.0100	0.0084
412	0.0086	0.0091	0.0086	0.0100	0.0084
412.5	0.0086	0.0091	0.0085	0.0100	0.0084
413	0.0086	0.0091	0.0085	0.0100	0.0084
413.5	0.0086	0.0092	0.0085	0.0100	0.0084
414	0.0086	0.0092	0.0085	0.0099	0.0084
414.5	0.0086	0.0092	0.0085	0.0099	0.0084
415	0.0087	0.0092	0.0085	0.0099	0.0084
415.5	0.0087	0.0092	0.0085	0.0100	0.0083
416	0.0088	0.0092	0.0086	0.0100	0.0083
416.5	0.0088	0.0093	0.0086	0.0100	0.0084
417	0.0089	0.0093	0.0087	0.0101	0.0085
417.5	0.0089	0.0093	0.0088	0.0101	0.0086
418	0.0090	0.0093	0.0089	0.0101	0.0086
418.5	0.0091	0.0092	0.0089	0.0101	0.0086
419	0.0091	0.0092	0.0089	0.0101	0.0085
419.5	0.0091	0.0092	0.0088	0.0101	0.0085
420	0.0091	0.0092	0.0088	0.0101	0.0084
420.5	0.0092	0.0093	0.0088	0.0101	0.0084
421	0.0092	0.0094	0.0088	0.0101	0.0084
421.5	0.0093	0.0095	0.0088	0.0101	0.0084
422	0.0093	0.0095	0.0088	0.0101	0.0085
422.5	0.0093	0.0095	0.0088	0.0101	0.0085
423	0.0094	0.0095	0.0088	0.0102	0.0085
423.5	0.0094	0.0096	0.0089	0.0102	0.0085

424	0.0095	0.0096	0.0089	0.0102	0.0085
424.5	0.0095	0.0096	0.0090	0.0102	0.0086
425	0.0095	0.0097	0.0090	0.0102	0.0086
425.5	0.0095	0.0097	0.0090	0.0103	0.0087
426	0.0095	0.0097	0.0089	0.0103	0.0087
426.5	0.0095	0.0097	0.0089	0.0102	0.0087
427	0.0094	0.0096	0.0089	0.0102	0.0086
427.5	0.0094	0.0096	0.0089	0.0102	0.0086
428	0.0094	0.0096	0.0089	0.0102	0.0086
428.5	0.0094	0.0096	0.0089	0.0101	0.0086
429	0.0094	0.0095	0.0089	0.0101	0.0086
429.5	0.0095	0.0095	0.0090	0.0101	0.0086
430	0.0095	0.0095	0.0090	0.0101	0.0086
430.5	0.0095	0.0095	0.0090	0.0101	0.0086
431	0.0094	0.0095	0.0090	0.0101	0.0086
431.5	0.0094	0.0095	0.0090	0.0101	0.0086
432	0.0094	0.0095	0.0090	0.0101	0.0086
432.5	0.0094	0.0095	0.0090	0.0101	0.0086
433	0.0094	0.0095	0.0090	0.0101	0.0086
433.5	0.0094	0.0095	0.0090	0.0101	0.0085
434	0.0094	0.0095	0.0090	0.0101	0.0085
434.5	0.0094	0.0095	0.0090	0.0101	0.0086
435	0.0094	0.0096	0.0091	0.0102	0.0086
435.5	0.0094	0.0096	0.0091	0.0102	0.0086
436	0.0094	0.0096	0.0091	0.0103	0.0087
436.5	0.0094	0.0096	0.0091	0.0103	0.0087
437	0.0094	0.0096	0.0090	0.0102	0.0087
437.5	0.0095	0.0095	0.0090	0.0102	0.0087
438	0.0095	0.0095	0.0089	0.0102	0.0087
438.5	0.0095	0.0095	0.0089	0.0102	0.0087
439	0.0095	0.0095	0.0089	0.0102	0.0087
439.5	0.0095	0.0095	0.0089	0.0102	0.0087
440	0.0095	0.0095	0.0089	0.0102	0.0087
440.5	0.0095	0.0096	0.0089	0.0102	0.0087
441	0.0095	0.0095	0.0090	0.0102	0.0087
441.5	0.0095	0.0095	0.0090	0.0102	0.0087
442	0.0095	0.0095	0.0090	0.0102	0.0086
442.5	0.0095	0.0096	0.0090	0.0102	0.0086
443	0.0095	0.0096	0.0090	0.0102	0.0087
443.5	0.0095	0.0096	0.0090	0.0102	0.0087
444	0.0096	0.0096	0.0090	0.0102	0.0087
444.5	0.0096	0.0097	0.0090	0.0102	0.0087
445	0.0095	0.0097	0.0090	0.0102	0.0087
445.5	0.0095	0.0097	0.0090	0.0101	0.0087
446	0.0095	0.0097	0.0090	0.0101	0.0087
446.5	0.0095	0.0097	0.0090	0.0101	0.0087
447	0.0095	0.0097	0.0091	0.0101	0.0088
447.5	0.0095	0.0098	0.0091	0.0102	0.0088
448	0.0095	0.0098	0.0091	0.0102	0.0088
448.5	0.0095	0.0097	0.0091	0.0102	0.0088
449	0.0095	0.0097	0.0090	0.0102	0.0087
449.5	0.0095	0.0097	0.0090	0.0101	0.0087
450	0.0095	0.0096	0.0090	0.0101	0.0087
450.5	0.0094	0.0096	0.0090	0.0101	0.0087
451	0.0094	0.0097	0.0090	0.0102	0.0087
451.5	0.0094	0.0097	0.0090	0.0102	0.0087
452	0.0094	0.0097	0.0090	0.0102	0.0088

452.5	0.0094	0.0097	0.0090	0.0102	0.0088
453	0.0094	0.0098	0.0090	0.0102	0.0088
453.5	0.0095	0.0098	0.0090	0.0102	0.0088
454	0.0095	0.0098	0.0090	0.0102	0.0088
454.5	0.0095	0.0098	0.0090	0.0101	0.0089
455	0.0095	0.0098	0.0090	0.0101	0.0089
455.5	0.0095	0.0097	0.0090	0.0101	0.0089
456	0.0094	0.0097	0.0090	0.0101	0.0088
456.5	0.0094	0.0096	0.0090	0.0101	0.0088
457	0.0094	0.0096	0.0090	0.0101	0.0088
457.5	0.0095	0.0097	0.0090	0.0101	0.0088
458	0.0095	0.0097	0.0090	0.0101	0.0088
458.5	0.0095	0.0098	0.0090	0.0101	0.0088
459	0.0095	0.0098	0.0090	0.0101	0.0088
459.5	0.0095	0.0098	0.0091	0.0101	0.0088
460	0.0095	0.0098	0.0091	0.0101	0.0088
460.5	0.0095	0.0098	0.0091	0.0102	0.0089
461	0.0095	0.0098	0.0091	0.0102	0.0089
461.5	0.0095	0.0098	0.0091	0.0102	0.0089
462	0.0095	0.0098	0.0091	0.0102	0.0089
462.5	0.0095	0.0098	0.0092	0.0102	0.0089
463	0.0095	0.0099	0.0092	0.0102	0.0089
463.5	0.0095	0.0099	0.0092	0.0102	0.0089
464	0.0095	0.0098	0.0092	0.0102	0.0089
464.5	0.0095	0.0098	0.0092	0.0102	0.0090
465	0.0095	0.0098	0.0092	0.0102	0.0090
465.5	0.0095	0.0098	0.0092	0.0102	0.0090
466	0.0095	0.0098	0.0092	0.0102	0.0090
466.5	0.0095	0.0099	0.0092	0.0102	0.0090
467	0.0096	0.0099	0.0093	0.0102	0.0090
467.5	0.0096	0.0099	0.0093	0.0102	0.0090
468	0.0096	0.0100	0.0093	0.0102	0.0090
468.5	0.0096	0.0099	0.0093	0.0102	0.0090
469	0.0096	0.0099	0.0093	0.0102	0.0090
469.5	0.0096	0.0099	0.0092	0.0102	0.0091
470	0.0096	0.0099	0.0092	0.0102	0.0090
470.5	0.0096	0.0099	0.0092	0.0102	0.0090
471	0.0096	0.0099	0.0092	0.0101	0.0090
471.5	0.0096	0.0099	0.0092	0.0101	0.0090
472	0.0096	0.0099	0.0092	0.0101	0.0090
472.5	0.0096	0.0099	0.0092	0.0101	0.0090
473	0.0096	0.0099	0.0092	0.0101	0.0090
473.5	0.0096	0.0099	0.0093	0.0101	0.0090
474	0.0096	0.0100	0.0093	0.0102	0.0091
474.5	0.0096	0.0100	0.0093	0.0102	0.0091
475	0.0096	0.0100	0.0093	0.0102	0.0092
475.5	0.0096	0.0100	0.0093	0.0102	0.0092
476	0.0096	0.0100	0.0094	0.0102	0.0092
476.5	0.0096	0.0101	0.0094	0.0103	0.0092
477	0.0096	0.0101	0.0094	0.0103	0.0092
477.5	0.0097	0.0101	0.0094	0.0103	0.0092
478	0.0097	0.0101	0.0095	0.0103	0.0092
478.5	0.0097	0.0102	0.0095	0.0103	0.0093
479	0.0097	0.0102	0.0095	0.0103	0.0093
479.5	0.0097	0.0102	0.0095	0.0104	0.0093
480	0.0097	0.0102	0.0095	0.0104	0.0094
480.5	0.0097	0.0102	0.0095	0.0104	0.0094

481	0.0097	0.0102	0.0095	0.0104	0.0094
481.5	0.0097	0.0103	0.0095	0.0104	0.0094
482	0.0097	0.0103	0.0096	0.0104	0.0094
482.5	0.0097	0.0103	0.0096	0.0104	0.0094
483	0.0097	0.0103	0.0097	0.0104	0.0094
483.5	0.0097	0.0104	0.0097	0.0105	0.0094
484	0.0097	0.0104	0.0097	0.0104	0.0094
484.5	0.0097	0.0103	0.0097	0.0104	0.0094
485	0.0097	0.0103	0.0097	0.0105	0.0094
485.5	0.0097	0.0103	0.0097	0.0105	0.0094
486	0.0097	0.0103	0.0097	0.0104	0.0094
486.5	0.0097	0.0103	0.0097	0.0104	0.0094
487	0.0098	0.0103	0.0097	0.0104	0.0094
487.5	0.0098	0.0103	0.0097	0.0104	0.0094
488	0.0098	0.0104	0.0097	0.0105	0.0094
488.5	0.0098	0.0104	0.0098	0.0105	0.0094
489	0.0098	0.0105	0.0098	0.0105	0.0095
489.5	0.0099	0.0105	0.0098	0.0105	0.0095
490	0.0099	0.0105	0.0099	0.0105	0.0095
490.5	0.0099	0.0105	0.0099	0.0105	0.0096
491	0.0099	0.0106	0.0099	0.0106	0.0096
491.5	0.0100	0.0106	0.0099	0.0106	0.0096
492	0.0100	0.0106	0.0099	0.0106	0.0097
492.5	0.0100	0.0106	0.0100	0.0106	0.0097
493	0.0101	0.0107	0.0100	0.0106	0.0097
493.5	0.0101	0.0107	0.0100	0.0106	0.0097
494	0.0101	0.0107	0.0100	0.0106	0.0097
494.5	0.0101	0.0107	0.0100	0.0106	0.0098
495	0.0101	0.0107	0.0101	0.0106	0.0098
495.5	0.0101	0.0107	0.0101	0.0106	0.0098
496	0.0101	0.0108	0.0101	0.0106	0.0099
496.5	0.0101	0.0108	0.0101	0.0106	0.0099
497	0.0101	0.0107	0.0101	0.0106	0.0099
497.5	0.0101	0.0107	0.0101	0.0106	0.0099
498	0.0101	0.0107	0.0101	0.0106	0.0099
498.5	0.0101	0.0107	0.0101	0.0106	0.0098
499	0.0102	0.0107	0.0101	0.0106	0.0098
499.5	0.0102	0.0107	0.0101	0.0106	0.0098
500	0.0102	0.0107	0.0101	0.0106	0.0098
500.5	0.0102	0.0107	0.0101	0.0106	0.0099
501	0.0102	0.0107	0.0102	0.0106	0.0099
501.5	0.0102	0.0108	0.0102	0.0106	0.0099
502	0.0102	0.0108	0.0102	0.0106	0.0100
502.5	0.0103	0.0108	0.0102	0.0106	0.0100
503	0.0103	0.0108	0.0102	0.0106	0.0100
503.5	0.0103	0.0109	0.0102	0.0106	0.0101
504	0.0104	0.0109	0.0103	0.0107	0.0101
504.5	0.0104	0.0109	0.0103	0.0107	0.0101
505	0.0104	0.0110	0.0103	0.0107	0.0101
505.5	0.0104	0.0110	0.0104	0.0108	0.0102
506	0.0105	0.0110	0.0104	0.0108	0.0102
506.5	0.0105	0.0110	0.0104	0.0108	0.0102
507	0.0105	0.0110	0.0104	0.0107	0.0102
507.5	0.0105	0.0110	0.0104	0.0107	0.0102
508	0.0105	0.0109	0.0104	0.0107	0.0102
508.5	0.0105	0.0109	0.0104	0.0107	0.0103
509	0.0105	0.0109	0.0104	0.0108	0.0103

509.5	0.0105	0.0109	0.0104	0.0108	0.0103
510	0.0105	0.0109	0.0104	0.0108	0.0102
510.5	0.0105	0.0110	0.0105	0.0108	0.0102
511	0.0105	0.0110	0.0105	0.0108	0.0103
511.5	0.0105	0.0111	0.0105	0.0108	0.0103
512	0.0105	0.0111	0.0106	0.0108	0.0103
512.5	0.0106	0.0112	0.0106	0.0108	0.0104
513	0.0106	0.0112	0.0106	0.0109	0.0104
513.5	0.0106	0.0112	0.0107	0.0109	0.0105
514	0.0106	0.0112	0.0107	0.0109	0.0105
514.5	0.0106	0.0112	0.0106	0.0109	0.0105
515	0.0106	0.0111	0.0106	0.0109	0.0105
515.5	0.0106	0.0111	0.0106	0.0109	0.0105
516	0.0106	0.0111	0.0106	0.0109	0.0104
516.5	0.0106	0.0111	0.0106	0.0109	0.0104
517	0.0106	0.0111	0.0106	0.0109	0.0104
517.5	0.0106	0.0112	0.0107	0.0109	0.0105
518	0.0106	0.0113	0.0107	0.0110	0.0105
518.5	0.0107	0.0113	0.0108	0.0110	0.0106
519	0.0107	0.0114	0.0108	0.0111	0.0107
519.5	0.0107	0.0114	0.0109	0.0111	0.0107
520	0.0107	0.0114	0.0109	0.0111	0.0107
520.5	0.0107	0.0114	0.0109	0.0111	0.0108
521	0.0107	0.0114	0.0109	0.0111	0.0108
521.5	0.0107	0.0114	0.0109	0.0111	0.0108
522	0.0107	0.0114	0.0109	0.0111	0.0108
522.5	0.0107	0.0114	0.0109	0.0111	0.0107
523	0.0107	0.0114	0.0109	0.0112	0.0107
523.5	0.0107	0.0115	0.0109	0.0112	0.0107
524	0.0107	0.0115	0.0109	0.0112	0.0107
524.5	0.0107	0.0115	0.0109	0.0112	0.0107
525	0.0107	0.0115	0.0109	0.0112	0.0108
525.5	0.0107	0.0115	0.0109	0.0112	0.0108
526	0.0107	0.0115	0.0110	0.0112	0.0108
526.5	0.0107	0.0115	0.0110	0.0112	0.0109
527	0.0107	0.0115	0.0110	0.0112	0.0109
527.5	0.0107	0.0115	0.0110	0.0112	0.0109
528	0.0107	0.0114	0.0110	0.0112	0.0109
528.5	0.0107	0.0114	0.0109	0.0112	0.0109
529	0.0106	0.0114	0.0109	0.0112	0.0108
529.5	0.0106	0.0115	0.0109	0.0112	0.0108
530	0.0106	0.0115	0.0109	0.0112	0.0108
530.5	0.0107	0.0115	0.0110	0.0112	0.0108
531	0.0107	0.0116	0.0110	0.0112	0.0109
531.5	0.0107	0.0116	0.0110	0.0113	0.0109
532	0.0107	0.0116	0.0111	0.0113	0.0110
532.5	0.0107	0.0116	0.0111	0.0113	0.0110
533	0.0107	0.0116	0.0111	0.0113	0.0110
533.5	0.0107	0.0115	0.0111	0.0112	0.0110
534	0.0107	0.0115	0.0110	0.0112	0.0110
534.5	0.0107	0.0115	0.0110	0.0112	0.0110
535	0.0107	0.0115	0.0111	0.0112	0.0110
535.5	0.0107	0.0116	0.0111	0.0112	0.0110
536	0.0108	0.0116	0.0111	0.0113	0.0110
536.5	0.0108	0.0117	0.0112	0.0113	0.0110
537	0.0108	0.0117	0.0112	0.0113	0.0110
537.5	0.0108	0.0117	0.0112	0.0113	0.0110

538	0.0107	0.0117	0.0112	0.0113	0.0110
538.5	0.0107	0.0117	0.0112	0.0113	0.0110
539	0.0107	0.0116	0.0112	0.0113	0.0110
539.5	0.0108	0.0116	0.0111	0.0113	0.0110
540	0.0108	0.0116	0.0111	0.0113	0.0110
540.5	0.0108	0.0116	0.0111	0.0113	0.0110
541	0.0108	0.0116	0.0112	0.0113	0.0110
541.5	0.0108	0.0116	0.0112	0.0113	0.0110
542	0.0108	0.0117	0.0112	0.0113	0.0111
542.5	0.0108	0.0117	0.0112	0.0113	0.0111
543	0.0108	0.0117	0.0112	0.0113	0.0111
543.5	0.0108	0.0118	0.0113	0.0113	0.0111
544	0.0108	0.0118	0.0113	0.0113	0.0111
544.5	0.0108	0.0118	0.0113	0.0113	0.0111
545	0.0108	0.0118	0.0113	0.0113	0.0111
545.5	0.0108	0.0118	0.0113	0.0113	0.0111
546	0.0108	0.0117	0.0112	0.0113	0.0111
546.5	0.0108	0.0117	0.0112	0.0113	0.0111
547	0.0108	0.0117	0.0112	0.0113	0.0111
547.5	0.0108	0.0117	0.0112	0.0112	0.0111
548	0.0108	0.0117	0.0112	0.0112	0.0111
548.5	0.0108	0.0117	0.0113	0.0112	0.0111
549	0.0108	0.0117	0.0113	0.0112	0.0111
549.5	0.0108	0.0117	0.0113	0.0113	0.0111
550	0.0108	0.0118	0.0113	0.0113	0.0111
550.5	0.0108	0.0118	0.0113	0.0113	0.0111
551	0.0109	0.0118	0.0113	0.0114	0.0111
551.5	0.0109	0.0118	0.0113	0.0114	0.0111
552	0.0109	0.0118	0.0113	0.0114	0.0112
552.5	0.0109	0.0118	0.0114	0.0114	0.0112
553	0.0109	0.0118	0.0114	0.0114	0.0112
553.5	0.0109	0.0119	0.0114	0.0114	0.0112
554	0.0109	0.0119	0.0114	0.0114	0.0113
554.5	0.0109	0.0119	0.0115	0.0114	0.0113
555	0.0110	0.0120	0.0115	0.0114	0.0113
555.5	0.0110	0.0120	0.0116	0.0114	0.0114
556	0.0111	0.0121	0.0116	0.0115	0.0114
556.5	0.0111	0.0121	0.0116	0.0115	0.0114
557	0.0111	0.0121	0.0116	0.0115	0.0114
557.5	0.0111	0.0121	0.0116	0.0115	0.0114
558	0.0111	0.0120	0.0116	0.0115	0.0114
558.5	0.0110	0.0120	0.0116	0.0115	0.0114
559	0.0110	0.0120	0.0116	0.0115	0.0114
559.5	0.0110	0.0120	0.0116	0.0115	0.0114
560	0.0110	0.0120	0.0116	0.0115	0.0114
560.5	0.0110	0.0120	0.0116	0.0115	0.0114
561	0.0110	0.0120	0.0116	0.0114	0.0114
561.5	0.0110	0.0120	0.0116	0.0114	0.0114
562	0.0110	0.0120	0.0115	0.0114	0.0114
562.5	0.0110	0.0120	0.0116	0.0113	0.0114
563	0.0110	0.0120	0.0115	0.0113	0.0114
563.5	0.0110	0.0120	0.0115	0.0113	0.0114
564	0.0110	0.0120	0.0115	0.0113	0.0114
564.5	0.0110	0.0120	0.0115	0.0113	0.0114
565	0.0110	0.0120	0.0115	0.0113	0.0114
565.5	0.0110	0.0120	0.0115	0.0113	0.0114
566	0.0110	0.0119	0.0115	0.0113	0.0114

566.5	0.0110	0.0119	0.0115	0.0114	0.0113
567	0.0110	0.0119	0.0115	0.0114	0.0113
567.5	0.0110	0.0119	0.0115	0.0114	0.0113
568	0.0111	0.0119	0.0115	0.0114	0.0114
568.5	0.0111	0.0120	0.0115	0.0114	0.0114
569	0.0111	0.0120	0.0115	0.0114	0.0114
569.5	0.0111	0.0120	0.0115	0.0114	0.0114
570	0.0110	0.0120	0.0115	0.0113	0.0114
570.5	0.0110	0.0120	0.0115	0.0113	0.0115
571	0.0110	0.0120	0.0115	0.0113	0.0115
571.5	0.0110	0.0120	0.0115	0.0113	0.0115
572	0.0110	0.0121	0.0115	0.0113	0.0115
572.5	0.0110	0.0121	0.0116	0.0113	0.0115
573	0.0111	0.0121	0.0116	0.0114	0.0115
573.5	0.0111	0.0121	0.0116	0.0114	0.0115
574	0.0111	0.0121	0.0117	0.0114	0.0115
574.5	0.0111	0.0121	0.0117	0.0114	0.0115
575	0.0110	0.0120	0.0117	0.0114	0.0115
575.5	0.0110	0.0120	0.0117	0.0114	0.0115
576	0.0110	0.0120	0.0116	0.0114	0.0115
576.5	0.0110	0.0120	0.0116	0.0114	0.0115
577	0.0110	0.0121	0.0116	0.0114	0.0115
577.5	0.0111	0.0121	0.0116	0.0114	0.0115
578	0.0111	0.0121	0.0116	0.0113	0.0115
578.5	0.0111	0.0122	0.0116	0.0113	0.0115
579	0.0110	0.0122	0.0116	0.0113	0.0115
579.5	0.0110	0.0122	0.0116	0.0113	0.0115
580	0.0110	0.0121	0.0117	0.0113	0.0115
580.5	0.0110	0.0121	0.0117	0.0114	0.0116
581	0.0110	0.0121	0.0117	0.0114	0.0116
581.5	0.0111	0.0121	0.0117	0.0114	0.0116
582	0.0111	0.0121	0.0117	0.0114	0.0116
582.5	0.0111	0.0121	0.0117	0.0115	0.0116
583	0.0112	0.0121	0.0117	0.0115	0.0116
583.5	0.0112	0.0122	0.0117	0.0115	0.0116
584	0.0112	0.0122	0.0118	0.0115	0.0117
584.5	0.0113	0.0123	0.0118	0.0116	0.0117
585	0.0113	0.0123	0.0118	0.0116	0.0118
585.5	0.0113	0.0124	0.0118	0.0115	0.0118
586	0.0113	0.0124	0.0118	0.0115	0.0118
586.5	0.0112	0.0124	0.0118	0.0115	0.0118
587	0.0112	0.0124	0.0118	0.0114	0.0118
587.5	0.0112	0.0124	0.0118	0.0114	0.0118
588	0.0112	0.0123	0.0118	0.0114	0.0118
588.5	0.0112	0.0123	0.0118	0.0114	0.0118
589	0.0112	0.0123	0.0118	0.0114	0.0118
589.5	0.0112	0.0123	0.0118	0.0114	0.0118
590	0.0112	0.0123	0.0119	0.0114	0.0118
590.5	0.0112	0.0123	0.0119	0.0115	0.0118
591	0.0112	0.0123	0.0119	0.0115	0.0118
591.5	0.0112	0.0123	0.0120	0.0116	0.0119
592	0.0112	0.0124	0.0120	0.0116	0.0119
592.5	0.0112	0.0124	0.0120	0.0116	0.0119
593	0.0112	0.0125	0.0120	0.0115	0.0119
593.5	0.0113	0.0125	0.0120	0.0115	0.0119
594	0.0113	0.0125	0.0120	0.0115	0.0120
594.5	0.0113	0.0125	0.0120	0.0115	0.0120

595	0.0113	0.0126	0.0121	0.0115	0.0120
595.5	0.0114	0.0126	0.0121	0.0115	0.0121
596	0.0114	0.0126	0.0122	0.0116	0.0121
596.5	0.0114	0.0126	0.0122	0.0116	0.0121
597	0.0114	0.0125	0.0122	0.0116	0.0121
597.5	0.0113	0.0125	0.0122	0.0116	0.0121
598	0.0113	0.0125	0.0122	0.0116	0.0121
598.5	0.0113	0.0125	0.0122	0.0117	0.0121
599	0.0113	0.0125	0.0122	0.0117	0.0121
599.5	0.0113	0.0125	0.0122	0.0117	0.0121
600	0.0114	0.0125	0.0122	0.0116	0.0121
600.5	0.0114	0.0125	0.0122	0.0116	0.0121
601	0.0114	0.0125	0.0122	0.0116	0.0121
601.5	0.0114	0.0125	0.0121	0.0115	0.0121
602	0.0113	0.0125	0.0121	0.0115	0.0121
602.5	0.0113	0.0125	0.0121	0.0114	0.0121
603	0.0113	0.0125	0.0121	0.0114	0.0121
603.5	0.0113	0.0125	0.0122	0.0114	0.0121
604	0.0112	0.0125	0.0122	0.0114	0.0122
604.5	0.0113	0.0125	0.0122	0.0114	0.0122
605	0.0113	0.0125	0.0123	0.0115	0.0122
605.5	0.0113	0.0125	0.0123	0.0115	0.0122
606	0.0113	0.0125	0.0123	0.0115	0.0122
606.5	0.0114	0.0125	0.0123	0.0115	0.0122
607	0.0114	0.0125	0.0123	0.0116	0.0122
607.5	0.0114	0.0125	0.0122	0.0116	0.0122
608	0.0114	0.0125	0.0122	0.0117	0.0122
608.5	0.0114	0.0125	0.0122	0.0117	0.0122
609	0.0114	0.0125	0.0123	0.0117	0.0122
609.5	0.0114	0.0126	0.0123	0.0117	0.0123
610	0.0114	0.0126	0.0123	0.0117	0.0123
610.5	0.0114	0.0126	0.0123	0.0116	0.0123
611	0.0114	0.0126	0.0123	0.0116	0.0123
611.5	0.0115	0.0126	0.0123	0.0116	0.0123
612	0.0115	0.0126	0.0124	0.0116	0.0123
612.5	0.0115	0.0126	0.0124	0.0116	0.0123
613	0.0115	0.0126	0.0124	0.0116	0.0124
613.5	0.0116	0.0126	0.0125	0.0116	0.0124
614	0.0116	0.0126	0.0125	0.0117	0.0125
614.5	0.0116	0.0126	0.0126	0.0117	0.0125
615	0.0116	0.0127	0.0126	0.0117	0.0126
615.5	0.0116	0.0126	0.0126	0.0118	0.0125
616	0.0116	0.0126	0.0125	0.0118	0.0125
616.5	0.0116	0.0126	0.0125	0.0117	0.0125
617	0.0115	0.0126	0.0124	0.0117	0.0124
617.5	0.0115	0.0126	0.0124	0.0117	0.0124
618	0.0115	0.0126	0.0124	0.0117	0.0123
618.5	0.0115	0.0126	0.0123	0.0117	0.0123
619	0.0115	0.0126	0.0123	0.0116	0.0123
619.5	0.0115	0.0126	0.0123	0.0116	0.0123
620	0.0115	0.0125	0.0123	0.0116	0.0123
620.5	0.0115	0.0125	0.0123	0.0115	0.0123
621	0.0115	0.0125	0.0124	0.0115	0.0123
621.5	0.0115	0.0126	0.0124	0.0115	0.0124
622	0.0116	0.0126	0.0124	0.0115	0.0124
622.5	0.0116	0.0126	0.0125	0.0116	0.0125
623	0.0116	0.0126	0.0125	0.0116	0.0125

623.5	0.0116	0.0126	0.0125	0.0116	0.0125
624	0.0116	0.0126	0.0125	0.0116	0.0125
624.5	0.0116	0.0126	0.0125	0.0117	0.0125
625	0.0116	0.0126	0.0125	0.0117	0.0125
625.5	0.0116	0.0126	0.0125	0.0117	0.0125
626	0.0116	0.0126	0.0125	0.0117	0.0125
626.5	0.0116	0.0126	0.0125	0.0117	0.0125
627	0.0116	0.0126	0.0125	0.0117	0.0125
627.5	0.0116	0.0127	0.0125	0.0117	0.0124
628	0.0116	0.0127	0.0124	0.0117	0.0124
628.5	0.0116	0.0126	0.0124	0.0116	0.0124
629	0.0115	0.0126	0.0124	0.0116	0.0123
629.5	0.0115	0.0126	0.0123	0.0115	0.0123
630	0.0115	0.0126	0.0124	0.0115	0.0123
630.5	0.0115	0.0126	0.0124	0.0115	0.0124
631	0.0115	0.0126	0.0125	0.0115	0.0124
631.5	0.0116	0.0127	0.0126	0.0115	0.0125
632	0.0116	0.0127	0.0127	0.0116	0.0125
632.5	0.0116	0.0127	0.0127	0.0116	0.0125
633	0.0117	0.0128	0.0127	0.0117	0.0126
633.5	0.0117	0.0128	0.0127	0.0117	0.0126
634	0.0117	0.0128	0.0127	0.0117	0.0126
634.5	0.0117	0.0128	0.0127	0.0117	0.0126
635	0.0117	0.0128	0.0127	0.0118	0.0126
635.5	0.0117	0.0128	0.0126	0.0118	0.0125
636	0.0117	0.0128	0.0126	0.0117	0.0125
636.5	0.0117	0.0128	0.0125	0.0117	0.0125
637	0.0117	0.0128	0.0125	0.0117	0.0125
637.5	0.0117	0.0129	0.0125	0.0117	0.0125
638	0.0117	0.0129	0.0125	0.0117	0.0125
638.5	0.0117	0.0129	0.0126	0.0117	0.0125
639	0.0117	0.0129	0.0126	0.0117	0.0125
639.5	0.0117	0.0129	0.0127	0.0117	0.0126
640	0.0117	0.0130	0.0128	0.0117	0.0126
640.5	0.0118	0.0130	0.0128	0.0117	0.0127
641	0.0118	0.0130	0.0129	0.0118	0.0127
641.5	0.0118	0.0130	0.0130	0.0118	0.0128
642	0.0118	0.0130	0.0130	0.0118	0.0128
642.5	0.0118	0.0131	0.0130	0.0119	0.0129
643	0.0119	0.0131	0.0130	0.0119	0.0129
643.5	0.0119	0.0131	0.0130	0.0119	0.0129
644	0.0119	0.0131	0.0129	0.0119	0.0129
644.5	0.0119	0.0131	0.0129	0.0119	0.0129
645	0.0119	0.0131	0.0129	0.0119	0.0129
645.5	0.0119	0.0132	0.0129	0.0119	0.0129
646	0.0119	0.0132	0.0129	0.0120	0.0130
646.5	0.0119	0.0132	0.0129	0.0120	0.0130
647	0.0120	0.0133	0.0129	0.0120	0.0130
647.5	0.0120	0.0133	0.0129	0.0120	0.0131
648	0.0120	0.0133	0.0130	0.0120	0.0131
648.5	0.0120	0.0134	0.0130	0.0121	0.0131
649	0.0120	0.0134	0.0131	0.0121	0.0132
649.5	0.0120	0.0134	0.0131	0.0120	0.0132
650	0.0120	0.0134	0.0131	0.0120	0.0132
650.5	0.0120	0.0133	0.0132	0.0120	0.0132
651	0.0120	0.0133	0.0132	0.0120	0.0132
651.5	0.0120	0.0132	0.0132	0.0120	0.0132

652	0.0120	0.0132	0.0132	0.0120	0.0132
652.5	0.0120	0.0133	0.0132	0.0120	0.0132
653	0.0121	0.0133	0.0132	0.0120	0.0132
653.5	0.0121	0.0133	0.0132	0.0121	0.0132
654	0.0121	0.0134	0.0132	0.0121	0.0132
654.5	0.0120	0.0134	0.0132	0.0121	0.0132
655	0.0120	0.0134	0.0131	0.0121	0.0131
655.5	0.0120	0.0134	0.0130	0.0120	0.0131
656	0.0119	0.0133	0.0130	0.0120	0.0130
656.5	0.0119	0.0133	0.0129	0.0119	0.0130
657	0.0119	0.0133	0.0129	0.0119	0.0129
657.5	0.0119	0.0133	0.0129	0.0118	0.0129
658	0.0119	0.0133	0.0129	0.0118	0.0129
658.5	0.0120	0.0133	0.0129	0.0118	0.0129
659	0.0120	0.0133	0.0130	0.0118	0.0130
659.5	0.0121	0.0133	0.0130	0.0118	0.0130
660	0.0121	0.0132	0.0131	0.0118	0.0130
660.5	0.0121	0.0132	0.0131	0.0118	0.0129
661	0.0120	0.0131	0.0130	0.0118	0.0129
661.5	0.0120	0.0131	0.0130	0.0117	0.0129
662	0.0120	0.0131	0.0130	0.0117	0.0129
662.5	0.0120	0.0131	0.0130	0.0118	0.0129
663	0.0121	0.0131	0.0130	0.0118	0.0129
663.5	0.0121	0.0131	0.0130	0.0118	0.0129
664	0.0121	0.0131	0.0130	0.0119	0.0129
664.5	0.0122	0.0131	0.0129	0.0119	0.0128
665	0.0122	0.0131	0.0128	0.0119	0.0127
665.5	0.0122	0.0130	0.0127	0.0119	0.0127
666	0.0122	0.0130	0.0127	0.0119	0.0126
666.5	0.0122	0.0130	0.0126	0.0119	0.0125
667	0.0122	0.0129	0.0126	0.0119	0.0125
667.5	0.0122	0.0129	0.0125	0.0119	0.0124
668	0.0122	0.0128	0.0125	0.0119	0.0124
668.5	0.0122	0.0128	0.0124	0.0118	0.0123
669	0.0122	0.0127	0.0124	0.0118	0.0123
669.5	0.0122	0.0127	0.0124	0.0118	0.0123
670	0.0122	0.0126	0.0123	0.0118	0.0123
670.5	0.0122	0.0126	0.0123	0.0118	0.0123
671	0.0122	0.0125	0.0123	0.0117	0.0123
671.5	0.0122	0.0125	0.0123	0.0117	0.0123
672	0.0122	0.0125	0.0123	0.0117	0.0123
672.5	0.0122	0.0125	0.0123	0.0117	0.0123
673	0.0122	0.0125	0.0122	0.0117	0.0123
673.5	0.0123	0.0124	0.0122	0.0117	0.0123
674	0.0123	0.0124	0.0122	0.0118	0.0123
674.5	0.0123	0.0125	0.0121	0.0118	0.0123
675	0.0123	0.0125	0.0121	0.0119	0.0123
675.5	0.0123	0.0125	0.0121	0.0119	0.0124
676	0.0123	0.0126	0.0121	0.0120	0.0124
676.5	0.0123	0.0126	0.0121	0.0120	0.0124
677	0.0123	0.0126	0.0121	0.0120	0.0124
677.5	0.0123	0.0127	0.0122	0.0121	0.0124
678	0.0123	0.0127	0.0122	0.0121	0.0124
678.5	0.0123	0.0127	0.0122	0.0120	0.0124
679	0.0122	0.0127	0.0123	0.0120	0.0124
679.5	0.0122	0.0127	0.0123	0.0120	0.0125
680	0.0122	0.0127	0.0124	0.0120	0.0125

680.5	0.0122	0.0127	0.0125	0.0120	0.0125
681	0.0122	0.0127	0.0125	0.0120	0.0125
681.5	0.0122	0.0127	0.0126	0.0120	0.0126
682	0.0122	0.0128	0.0126	0.0120	0.0126
682.5	0.0122	0.0128	0.0127	0.0121	0.0127
683	0.0122	0.0129	0.0127	0.0121	0.0127
683.5	0.0122	0.0129	0.0128	0.0121	0.0128
684	0.0122	0.0130	0.0128	0.0121	0.0128
684.5	0.0122	0.0130	0.0128	0.0121	0.0129
685	0.0122	0.0130	0.0128	0.0121	0.0129
685.5	0.0122	0.0131	0.0128	0.0121	0.0129
686	0.0122	0.0131	0.0128	0.0122	0.0130
686.5	0.0122	0.0132	0.0128	0.0122	0.0130
687	0.0122	0.0132	0.0128	0.0122	0.0130
687.5	0.0122	0.0132	0.0128	0.0122	0.0130
688	0.0123	0.0133	0.0129	0.0122	0.0131
688.5	0.0123	0.0134	0.0130	0.0123	0.0131
689	0.0124	0.0134	0.0130	0.0123	0.0131
689.5	0.0124	0.0134	0.0131	0.0123	0.0131
690	0.0124	0.0134	0.0131	0.0123	0.0131
690.5	0.0124	0.0134	0.0131	0.0123	0.0130
691	0.0124	0.0133	0.0130	0.0122	0.0130
691.5	0.0123	0.0133	0.0130	0.0122	0.0130
692	0.0123	0.0133	0.0130	0.0122	0.0130
692.5	0.0123	0.0133	0.0130	0.0122	0.0130
693	0.0123	0.0133	0.0130	0.0122	0.0131
693.5	0.0123	0.0133	0.0131	0.0122	0.0131
694	0.0123	0.0133	0.0131	0.0122	0.0132
694.5	0.0123	0.0134	0.0131	0.0122	0.0132
695	0.0123	0.0134	0.0131	0.0122	0.0132
695.5	0.0123	0.0134	0.0131	0.0121	0.0132
696	0.0123	0.0134	0.0131	0.0121	0.0132
696.5	0.0124	0.0134	0.0130	0.0121	0.0132
697	0.0124	0.0134	0.0130	0.0121	0.0132
697.5	0.0124	0.0134	0.0130	0.0121	0.0132
698	0.0124	0.0134	0.0130	0.0121	0.0132
698.5	0.0125	0.0134	0.0130	0.0122	0.0132
699	0.0125	0.0135	0.0130	0.0122	0.0132
699.5	0.0125	0.0135	0.0130	0.0122	0.0132
700	0.0125	0.0135	0.0131	0.0123	0.0132

B.2 Green

B.2.1 20° measurements

Table B.4: Measurements of the green gradient at locations A, B, C, D, and E at 20°. The lamp signal was measured at an integration time of 23 ms and the measurements of the samples were taken at an integration time of 3000 ms.

λ	A	B	C	D	E
400	0.0050	0.0055	0.0045	0.0035	0.0046
400.5	0.0050	0.0055	0.0045	0.0035	0.0046
401	0.0050	0.0055	0.0045	0.0035	0.0045
401.5	0.0049	0.0055	0.0045	0.0035	0.0045
402	0.0049	0.0055	0.0045	0.0035	0.0044
402.5	0.0049	0.0055	0.0045	0.0035	0.0044
403	0.0049	0.0055	0.0045	0.0035	0.0043
403.5	0.0049	0.0055	0.0045	0.0035	0.0043
404	0.0049	0.0054	0.0045	0.0035	0.0043
404.5	0.0049	0.0054	0.0044	0.0035	0.0042
405	0.0049	0.0055	0.0044	0.0035	0.0042
405.5	0.0049	0.0055	0.0044	0.0034	0.0042
406	0.0049	0.0055	0.0045	0.0034	0.0042
406.5	0.0049	0.0056	0.0045	0.0035	0.0042
407	0.0050	0.0056	0.0046	0.0035	0.0042
407.5	0.0050	0.0056	0.0046	0.0035	0.0042
408	0.0050	0.0056	0.0046	0.0036	0.0042
408.5	0.0050	0.0056	0.0046	0.0035	0.0042
409	0.0050	0.0056	0.0046	0.0035	0.0042
409.5	0.0051	0.0056	0.0046	0.0035	0.0042
410	0.0051	0.0057	0.0046	0.0035	0.0042
410.5	0.0051	0.0057	0.0046	0.0035	0.0042
411	0.0051	0.0057	0.0047	0.0035	0.0042
411.5	0.0051	0.0056	0.0047	0.0035	0.0042
412	0.0051	0.0056	0.0047	0.0035	0.0042
412.5	0.0051	0.0057	0.0047	0.0035	0.0041
413	0.0051	0.0057	0.0047	0.0036	0.0041
413.5	0.0052	0.0058	0.0047	0.0036	0.0042
414	0.0053	0.0058	0.0048	0.0037	0.0042
414.5	0.0053	0.0059	0.0048	0.0037	0.0042
415	0.0054	0.0059	0.0048	0.0037	0.0042
415.5	0.0054	0.0059	0.0048	0.0037	0.0042
416	0.0055	0.0059	0.0048	0.0037	0.0041
416.5	0.0055	0.0059	0.0048	0.0037	0.0041
417	0.0055	0.0059	0.0049	0.0037	0.0041
417.5	0.0056	0.0060	0.0049	0.0037	0.0041
418	0.0056	0.0060	0.0050	0.0036	0.0041
418.5	0.0056	0.0061	0.0050	0.0036	0.0041
419	0.0056	0.0061	0.0050	0.0037	0.0041
419.5	0.0056	0.0061	0.0050	0.0037	0.0041
420	0.0056	0.0061	0.0051	0.0037	0.0041
420.5	0.0056	0.0061	0.0051	0.0037	0.0041
421	0.0056	0.0061	0.0051	0.0037	0.0041
421.5	0.0056	0.0061	0.0051	0.0037	0.0041
422	0.0057	0.0062	0.0051	0.0037	0.0041
422.5	0.0057	0.0062	0.0051	0.0038	0.0041
423	0.0057	0.0062	0.0051	0.0038	0.0041

423.5	0.0057	0.0062	0.0051	0.0038	0.0041
424	0.0057	0.0062	0.0051	0.0038	0.0041
424.5	0.0057	0.0062	0.0051	0.0038	0.0041
425	0.0057	0.0062	0.0051	0.0038	0.0041
425.5	0.0058	0.0063	0.0051	0.0038	0.0041
426	0.0058	0.0063	0.0051	0.0038	0.0041
426.5	0.0058	0.0063	0.0051	0.0038	0.0040
427	0.0059	0.0063	0.0051	0.0038	0.0040
427.5	0.0059	0.0063	0.0051	0.0038	0.0040
428	0.0058	0.0063	0.0051	0.0038	0.0040
428.5	0.0058	0.0063	0.0051	0.0038	0.0040
429	0.0058	0.0063	0.0051	0.0038	0.0039
429.5	0.0058	0.0063	0.0051	0.0038	0.0039
430	0.0058	0.0063	0.0051	0.0038	0.0039
430.5	0.0058	0.0063	0.0052	0.0038	0.0039
431	0.0058	0.0063	0.0052	0.0037	0.0040
431.5	0.0058	0.0063	0.0051	0.0037	0.0040
432	0.0058	0.0063	0.0051	0.0037	0.0040
432.5	0.0058	0.0063	0.0051	0.0037	0.0039
433	0.0058	0.0063	0.0051	0.0037	0.0039
433.5	0.0058	0.0063	0.0051	0.0037	0.0039
434	0.0058	0.0063	0.0051	0.0037	0.0039
434.5	0.0058	0.0063	0.0051	0.0038	0.0039
435	0.0058	0.0063	0.0051	0.0038	0.0039
435.5	0.0058	0.0063	0.0051	0.0038	0.0039
436	0.0058	0.0063	0.0051	0.0038	0.0039
436.5	0.0058	0.0063	0.0051	0.0038	0.0039
437	0.0058	0.0063	0.0051	0.0038	0.0039
437.5	0.0058	0.0063	0.0051	0.0038	0.0039
438	0.0058	0.0063	0.0051	0.0038	0.0038
438.5	0.0059	0.0063	0.0051	0.0038	0.0038
439	0.0059	0.0063	0.0052	0.0038	0.0038
439.5	0.0059	0.0063	0.0052	0.0038	0.0039
440	0.0059	0.0063	0.0052	0.0038	0.0039
440.5	0.0059	0.0063	0.0052	0.0038	0.0039
441	0.0059	0.0063	0.0052	0.0038	0.0039
441.5	0.0059	0.0063	0.0052	0.0038	0.0039
442	0.0059	0.0064	0.0052	0.0038	0.0039
442.5	0.0059	0.0064	0.0052	0.0038	0.0039
443	0.0059	0.0064	0.0052	0.0038	0.0039
443.5	0.0059	0.0064	0.0052	0.0038	0.0039
444	0.0059	0.0064	0.0052	0.0038	0.0039
444.5	0.0059	0.0064	0.0052	0.0038	0.0039
445	0.0059	0.0064	0.0052	0.0038	0.0039
445.5	0.0059	0.0064	0.0052	0.0038	0.0039
446	0.0059	0.0063	0.0052	0.0038	0.0039
446.5	0.0059	0.0063	0.0052	0.0038	0.0039
447	0.0059	0.0064	0.0053	0.0038	0.0039
447.5	0.0059	0.0064	0.0053	0.0038	0.0039
448	0.0059	0.0064	0.0052	0.0038	0.0039
448.5	0.0059	0.0064	0.0052	0.0038	0.0038
449	0.0059	0.0064	0.0052	0.0038	0.0038
449.5	0.0059	0.0064	0.0052	0.0038	0.0038
450	0.0058	0.0064	0.0052	0.0038	0.0038
450.5	0.0058	0.0064	0.0052	0.0038	0.0038
451	0.0058	0.0064	0.0052	0.0038	0.0038
451.5	0.0058	0.0064	0.0052	0.0038	0.0039

452	0.0059	0.0064	0.0052	0.0038	0.0039
452.5	0.0059	0.0064	0.0052	0.0038	0.0039
453	0.0059	0.0064	0.0052	0.0038	0.0039
453.5	0.0059	0.0064	0.0052	0.0038	0.0039
454	0.0059	0.0064	0.0052	0.0038	0.0038
454.5	0.0059	0.0064	0.0052	0.0038	0.0038
455	0.0059	0.0064	0.0052	0.0038	0.0038
455.5	0.0059	0.0064	0.0053	0.0038	0.0038
456	0.0059	0.0064	0.0053	0.0038	0.0038
456.5	0.0059	0.0064	0.0053	0.0038	0.0038
457	0.0059	0.0064	0.0053	0.0038	0.0038
457.5	0.0059	0.0064	0.0053	0.0038	0.0038
458	0.0059	0.0064	0.0053	0.0038	0.0038
458.5	0.0059	0.0064	0.0053	0.0038	0.0038
459	0.0059	0.0065	0.0053	0.0038	0.0038
459.5	0.0059	0.0065	0.0053	0.0038	0.0038
460	0.0059	0.0065	0.0053	0.0038	0.0038
460.5	0.0060	0.0064	0.0053	0.0038	0.0038
461	0.0060	0.0064	0.0053	0.0039	0.0038
461.5	0.0060	0.0064	0.0053	0.0039	0.0038
462	0.0060	0.0064	0.0053	0.0039	0.0039
462.5	0.0060	0.0064	0.0053	0.0039	0.0039
463	0.0060	0.0065	0.0053	0.0039	0.0038
463.5	0.0060	0.0065	0.0053	0.0039	0.0038
464	0.0060	0.0065	0.0053	0.0039	0.0038
464.5	0.0060	0.0065	0.0053	0.0039	0.0038
465	0.0060	0.0065	0.0054	0.0039	0.0038
465.5	0.0060	0.0065	0.0054	0.0039	0.0038
466	0.0060	0.0065	0.0054	0.0039	0.0038
466.5	0.0060	0.0065	0.0054	0.0039	0.0038
467	0.0060	0.0065	0.0054	0.0039	0.0039
467.5	0.0060	0.0065	0.0054	0.0039	0.0039
468	0.0060	0.0065	0.0054	0.0039	0.0039
468.5	0.0060	0.0066	0.0054	0.0039	0.0039
469	0.0060	0.0066	0.0054	0.0039	0.0039
469.5	0.0060	0.0066	0.0054	0.0039	0.0038
470	0.0060	0.0066	0.0054	0.0039	0.0038
470.5	0.0060	0.0065	0.0054	0.0039	0.0038
471	0.0060	0.0065	0.0054	0.0039	0.0038
471.5	0.0060	0.0066	0.0054	0.0039	0.0038
472	0.0060	0.0066	0.0054	0.0039	0.0038
472.5	0.0060	0.0066	0.0054	0.0039	0.0038
473	0.0061	0.0066	0.0055	0.0039	0.0038
473.5	0.0061	0.0066	0.0055	0.0039	0.0038
474	0.0061	0.0066	0.0055	0.0040	0.0038
474.5	0.0061	0.0066	0.0055	0.0040	0.0038
475	0.0061	0.0066	0.0055	0.0040	0.0038
475.5	0.0061	0.0067	0.0055	0.0040	0.0038
476	0.0061	0.0067	0.0055	0.0040	0.0038
476.5	0.0061	0.0066	0.0055	0.0040	0.0038
477	0.0061	0.0066	0.0055	0.0040	0.0038
477.5	0.0061	0.0066	0.0055	0.0040	0.0038
478	0.0061	0.0066	0.0055	0.0040	0.0038
478.5	0.0061	0.0066	0.0055	0.0040	0.0038
479	0.0061	0.0066	0.0055	0.0040	0.0038
479.5	0.0061	0.0066	0.0055	0.0040	0.0038
480	0.0061	0.0067	0.0055	0.0040	0.0038

480.5	0.0061	0.0067	0.0055	0.0040	0.0038
481	0.0061	0.0067	0.0055	0.0040	0.0038
481.5	0.0061	0.0067	0.0055	0.0040	0.0038
482	0.0061	0.0067	0.0055	0.0040	0.0038
482.5	0.0061	0.0067	0.0056	0.0040	0.0038
483	0.0061	0.0067	0.0056	0.0041	0.0038
483.5	0.0062	0.0067	0.0056	0.0041	0.0038
484	0.0062	0.0068	0.0056	0.0041	0.0039
484.5	0.0062	0.0068	0.0057	0.0041	0.0039
485	0.0062	0.0068	0.0057	0.0041	0.0039
485.5	0.0062	0.0068	0.0057	0.0041	0.0039
486	0.0062	0.0068	0.0057	0.0041	0.0039
486.5	0.0063	0.0068	0.0057	0.0041	0.0039
487	0.0063	0.0068	0.0057	0.0042	0.0039
487.5	0.0063	0.0068	0.0057	0.0042	0.0039
488	0.0063	0.0069	0.0057	0.0042	0.0039
488.5	0.0063	0.0069	0.0057	0.0042	0.0040
489	0.0063	0.0069	0.0058	0.0042	0.0040
489.5	0.0063	0.0069	0.0058	0.0042	0.0040
490	0.0063	0.0069	0.0058	0.0042	0.0040
490.5	0.0063	0.0069	0.0058	0.0042	0.0040
491	0.0063	0.0070	0.0058	0.0043	0.0040
491.5	0.0063	0.0070	0.0059	0.0043	0.0040
492	0.0064	0.0070	0.0059	0.0043	0.0041
492.5	0.0064	0.0070	0.0059	0.0043	0.0041
493	0.0064	0.0070	0.0059	0.0043	0.0041
493.5	0.0064	0.0070	0.0059	0.0043	0.0041
494	0.0064	0.0071	0.0059	0.0044	0.0042
494.5	0.0064	0.0071	0.0060	0.0044	0.0042
495	0.0065	0.0071	0.0060	0.0044	0.0042
495.5	0.0065	0.0072	0.0060	0.0045	0.0043
496	0.0065	0.0072	0.0061	0.0045	0.0043
496.5	0.0065	0.0072	0.0061	0.0045	0.0043
497	0.0065	0.0072	0.0061	0.0045	0.0043
497.5	0.0065	0.0072	0.0061	0.0045	0.0043
498	0.0065	0.0072	0.0061	0.0045	0.0044
498.5	0.0065	0.0072	0.0061	0.0046	0.0044
499	0.0065	0.0072	0.0061	0.0046	0.0044
499.5	0.0066	0.0072	0.0061	0.0046	0.0044
500	0.0066	0.0072	0.0062	0.0046	0.0044
500.5	0.0066	0.0073	0.0062	0.0046	0.0045
501	0.0066	0.0073	0.0062	0.0047	0.0045
501.5	0.0067	0.0073	0.0063	0.0047	0.0045
502	0.0067	0.0074	0.0063	0.0047	0.0046
502.5	0.0067	0.0074	0.0063	0.0047	0.0046
503	0.0067	0.0074	0.0063	0.0047	0.0046
503.5	0.0067	0.0074	0.0063	0.0048	0.0047
504	0.0067	0.0074	0.0063	0.0048	0.0047
504.5	0.0067	0.0074	0.0064	0.0048	0.0047
505	0.0067	0.0074	0.0064	0.0048	0.0047
505.5	0.0067	0.0075	0.0064	0.0048	0.0047
506	0.0067	0.0075	0.0064	0.0048	0.0048
506.5	0.0067	0.0075	0.0064	0.0049	0.0048
507	0.0067	0.0075	0.0064	0.0049	0.0048
507.5	0.0068	0.0075	0.0065	0.0049	0.0049
508	0.0068	0.0075	0.0065	0.0049	0.0049
508.5	0.0068	0.0075	0.0065	0.0049	0.0049

509	0.0068	0.0075	0.0065	0.0049	0.0049
509.5	0.0068	0.0075	0.0065	0.0050	0.0049
510	0.0068	0.0075	0.0065	0.0050	0.0050
510.5	0.0068	0.0076	0.0065	0.0050	0.0050
511	0.0068	0.0076	0.0065	0.0050	0.0050
511.5	0.0068	0.0076	0.0065	0.0050	0.0050
512	0.0068	0.0076	0.0065	0.0050	0.0051
512.5	0.0068	0.0076	0.0066	0.0050	0.0051
513	0.0069	0.0076	0.0066	0.0050	0.0051
513.5	0.0069	0.0077	0.0066	0.0050	0.0051
514	0.0069	0.0077	0.0066	0.0051	0.0051
514.5	0.0069	0.0077	0.0066	0.0051	0.0052
515	0.0069	0.0077	0.0066	0.0051	0.0052
515.5	0.0069	0.0077	0.0066	0.0051	0.0052
516	0.0069	0.0077	0.0066	0.0051	0.0051
516.5	0.0068	0.0076	0.0066	0.0051	0.0051
517	0.0068	0.0076	0.0066	0.0051	0.0051
517.5	0.0068	0.0076	0.0066	0.0051	0.0051
518	0.0068	0.0076	0.0066	0.0051	0.0052
518.5	0.0068	0.0076	0.0066	0.0051	0.0052
519	0.0068	0.0076	0.0066	0.0051	0.0052
519.5	0.0068	0.0076	0.0066	0.0051	0.0052
520	0.0068	0.0077	0.0066	0.0051	0.0052
520.5	0.0068	0.0077	0.0066	0.0051	0.0052
521	0.0068	0.0077	0.0066	0.0051	0.0052
521.5	0.0068	0.0076	0.0066	0.0051	0.0052
522	0.0068	0.0076	0.0066	0.0051	0.0052
522.5	0.0068	0.0076	0.0066	0.0051	0.0052
523	0.0068	0.0076	0.0066	0.0051	0.0052
523.5	0.0068	0.0076	0.0066	0.0051	0.0052
524	0.0068	0.0076	0.0066	0.0051	0.0052
524.5	0.0068	0.0076	0.0066	0.0051	0.0052
525	0.0068	0.0076	0.0066	0.0051	0.0052
525.5	0.0068	0.0076	0.0066	0.0051	0.0052
526	0.0069	0.0076	0.0066	0.0051	0.0052
526.5	0.0069	0.0076	0.0066	0.0051	0.0052
527	0.0069	0.0076	0.0066	0.0051	0.0052
527.5	0.0069	0.0076	0.0066	0.0051	0.0052
528	0.0069	0.0077	0.0066	0.0051	0.0053
528.5	0.0069	0.0077	0.0066	0.0051	0.0053
529	0.0069	0.0077	0.0066	0.0051	0.0053
529.5	0.0069	0.0077	0.0066	0.0051	0.0053
530	0.0069	0.0077	0.0066	0.0051	0.0052
530.5	0.0069	0.0077	0.0066	0.0051	0.0052
531	0.0069	0.0076	0.0066	0.0051	0.0052
531.5	0.0069	0.0076	0.0066	0.0051	0.0052
532	0.0068	0.0076	0.0066	0.0051	0.0052
532.5	0.0068	0.0076	0.0066	0.0051	0.0052
533	0.0068	0.0076	0.0066	0.0051	0.0052
533.5	0.0068	0.0076	0.0066	0.0050	0.0052
534	0.0068	0.0076	0.0066	0.0050	0.0052
534.5	0.0068	0.0076	0.0066	0.0050	0.0052
535	0.0068	0.0076	0.0066	0.0051	0.0052
535.5	0.0068	0.0076	0.0066	0.0051	0.0052
536	0.0068	0.0076	0.0066	0.0051	0.0052
536.5	0.0069	0.0076	0.0066	0.0051	0.0052
537	0.0069	0.0076	0.0066	0.0051	0.0052

537.5	0.0069	0.0076	0.0066	0.0051	0.0052
538	0.0069	0.0076	0.0066	0.0051	0.0052
538.5	0.0069	0.0076	0.0066	0.0051	0.0052
539	0.0069	0.0076	0.0066	0.0050	0.0052
539.5	0.0069	0.0076	0.0066	0.0050	0.0051
540	0.0068	0.0076	0.0066	0.0050	0.0051
540.5	0.0068	0.0076	0.0066	0.0050	0.0051
541	0.0068	0.0076	0.0066	0.0050	0.0051
541.5	0.0068	0.0076	0.0065	0.0050	0.0051
542	0.0068	0.0076	0.0065	0.0050	0.0051
542.5	0.0068	0.0076	0.0065	0.0050	0.0050
543	0.0068	0.0076	0.0065	0.0050	0.0050
543.5	0.0068	0.0076	0.0065	0.0050	0.0050
544	0.0068	0.0076	0.0065	0.0050	0.0050
544.5	0.0068	0.0076	0.0065	0.0050	0.0050
545	0.0068	0.0076	0.0065	0.0050	0.0050
545.5	0.0068	0.0076	0.0065	0.0050	0.0050
546	0.0068	0.0076	0.0065	0.0049	0.0050
546.5	0.0068	0.0076	0.0065	0.0049	0.0050
547	0.0068	0.0076	0.0065	0.0049	0.0050
547.5	0.0068	0.0075	0.0065	0.0049	0.0050
548	0.0068	0.0075	0.0065	0.0049	0.0050
548.5	0.0068	0.0075	0.0065	0.0049	0.0050
549	0.0068	0.0075	0.0064	0.0049	0.0049
549.5	0.0068	0.0075	0.0064	0.0049	0.0049
550	0.0068	0.0075	0.0064	0.0048	0.0049
550.5	0.0068	0.0075	0.0064	0.0048	0.0049
551	0.0068	0.0075	0.0064	0.0048	0.0049
551.5	0.0068	0.0075	0.0064	0.0048	0.0049
552	0.0068	0.0075	0.0064	0.0048	0.0049
552.5	0.0068	0.0075	0.0064	0.0048	0.0049
553	0.0068	0.0075	0.0065	0.0048	0.0049
553.5	0.0068	0.0075	0.0065	0.0048	0.0049
554	0.0068	0.0075	0.0065	0.0048	0.0049
554.5	0.0068	0.0075	0.0065	0.0048	0.0048
555	0.0068	0.0075	0.0065	0.0048	0.0048
555.5	0.0068	0.0075	0.0064	0.0048	0.0048
556	0.0068	0.0075	0.0064	0.0047	0.0048
556.5	0.0068	0.0075	0.0064	0.0047	0.0048
557	0.0067	0.0075	0.0064	0.0047	0.0048
557.5	0.0067	0.0074	0.0063	0.0047	0.0047
558	0.0067	0.0074	0.0063	0.0047	0.0047
558.5	0.0067	0.0074	0.0063	0.0046	0.0047
559	0.0067	0.0073	0.0063	0.0046	0.0046
559.5	0.0066	0.0073	0.0062	0.0046	0.0046
560	0.0066	0.0073	0.0062	0.0046	0.0046
560.5	0.0066	0.0073	0.0062	0.0046	0.0046
561	0.0066	0.0073	0.0062	0.0046	0.0046
561.5	0.0066	0.0073	0.0062	0.0046	0.0046
562	0.0066	0.0073	0.0062	0.0046	0.0046
562.5	0.0066	0.0073	0.0062	0.0046	0.0045
563	0.0067	0.0073	0.0062	0.0046	0.0045
563.5	0.0067	0.0073	0.0063	0.0046	0.0045
564	0.0066	0.0073	0.0062	0.0045	0.0045
564.5	0.0066	0.0073	0.0062	0.0045	0.0045
565	0.0066	0.0073	0.0062	0.0045	0.0045
565.5	0.0066	0.0073	0.0062	0.0045	0.0045

566	0.0066	0.0073	0.0062	0.0045	0.0044
566.5	0.0066	0.0072	0.0061	0.0044	0.0044
567	0.0066	0.0072	0.0061	0.0044	0.0044
567.5	0.0066	0.0072	0.0061	0.0044	0.0044
568	0.0066	0.0072	0.0061	0.0044	0.0044
568.5	0.0066	0.0072	0.0061	0.0044	0.0043
569	0.0066	0.0072	0.0061	0.0044	0.0043
569.5	0.0065	0.0072	0.0061	0.0044	0.0043
570	0.0065	0.0072	0.0061	0.0044	0.0043
570.5	0.0065	0.0072	0.0061	0.0043	0.0043
571	0.0065	0.0072	0.0061	0.0043	0.0043
571.5	0.0065	0.0072	0.0060	0.0043	0.0043
572	0.0065	0.0072	0.0060	0.0043	0.0043
572.5	0.0065	0.0071	0.0060	0.0043	0.0042
573	0.0065	0.0071	0.0060	0.0043	0.0042
573.5	0.0065	0.0071	0.0060	0.0043	0.0042
574	0.0065	0.0071	0.0060	0.0043	0.0042
574.5	0.0065	0.0071	0.0060	0.0043	0.0042
575	0.0065	0.0071	0.0060	0.0043	0.0042
575.5	0.0065	0.0071	0.0060	0.0042	0.0042
576	0.0065	0.0071	0.0060	0.0042	0.0042
576.5	0.0065	0.0071	0.0060	0.0042	0.0042
577	0.0065	0.0071	0.0060	0.0042	0.0041
577.5	0.0065	0.0071	0.0059	0.0042	0.0041
578	0.0064	0.0070	0.0059	0.0042	0.0041
578.5	0.0064	0.0070	0.0059	0.0041	0.0041
579	0.0064	0.0070	0.0059	0.0041	0.0041
579.5	0.0064	0.0070	0.0059	0.0041	0.0041
580	0.0064	0.0070	0.0059	0.0041	0.0041
580.5	0.0064	0.0070	0.0058	0.0041	0.0040
581	0.0064	0.0070	0.0058	0.0041	0.0040
581.5	0.0064	0.0070	0.0058	0.0041	0.0040
582	0.0064	0.0069	0.0058	0.0041	0.0040
582.5	0.0064	0.0069	0.0058	0.0040	0.0040
583	0.0064	0.0069	0.0058	0.0040	0.0040
583.5	0.0064	0.0069	0.0058	0.0040	0.0040
584	0.0064	0.0069	0.0058	0.0040	0.0040
584.5	0.0064	0.0069	0.0058	0.0040	0.0040
585	0.0064	0.0069	0.0058	0.0040	0.0040
585.5	0.0064	0.0069	0.0058	0.0040	0.0040
586	0.0064	0.0069	0.0058	0.0040	0.0040
586.5	0.0064	0.0069	0.0058	0.0040	0.0040
587	0.0064	0.0070	0.0058	0.0040	0.0040
587.5	0.0064	0.0070	0.0058	0.0040	0.0040
588	0.0064	0.0070	0.0058	0.0040	0.0040
588.5	0.0064	0.0070	0.0058	0.0040	0.0040
589	0.0064	0.0070	0.0058	0.0040	0.0040
589.5	0.0064	0.0070	0.0058	0.0040	0.0040
590	0.0064	0.0069	0.0058	0.0040	0.0039
590.5	0.0063	0.0069	0.0057	0.0040	0.0039
591	0.0063	0.0069	0.0057	0.0039	0.0039
591.5	0.0063	0.0069	0.0057	0.0039	0.0039
592	0.0063	0.0069	0.0057	0.0039	0.0039
592.5	0.0063	0.0069	0.0057	0.0039	0.0039
593	0.0063	0.0069	0.0057	0.0039	0.0039
593.5	0.0063	0.0069	0.0057	0.0039	0.0039
594	0.0063	0.0069	0.0057	0.0039	0.0039

594.5	0.0063	0.0069	0.0057	0.0039	0.0039
595	0.0063	0.0068	0.0057	0.0039	0.0039
595.5	0.0063	0.0068	0.0057	0.0039	0.0039
596	0.0063	0.0068	0.0057	0.0039	0.0039
596.5	0.0063	0.0068	0.0057	0.0039	0.0039
597	0.0063	0.0069	0.0057	0.0039	0.0039
597.5	0.0063	0.0069	0.0057	0.0039	0.0039
598	0.0063	0.0069	0.0057	0.0039	0.0039
598.5	0.0063	0.0069	0.0057	0.0039	0.0039
599	0.0064	0.0069	0.0057	0.0039	0.0039
599.5	0.0064	0.0069	0.0057	0.0039	0.0039
600	0.0064	0.0069	0.0057	0.0039	0.0039
600.5	0.0063	0.0069	0.0057	0.0039	0.0039
601	0.0063	0.0069	0.0057	0.0039	0.0039
601.5	0.0063	0.0069	0.0057	0.0039	0.0039
602	0.0063	0.0069	0.0057	0.0039	0.0039
602.5	0.0063	0.0069	0.0057	0.0039	0.0039
603	0.0063	0.0069	0.0057	0.0039	0.0039
603.5	0.0063	0.0069	0.0057	0.0039	0.0039
604	0.0063	0.0069	0.0057	0.0039	0.0039
604.5	0.0063	0.0069	0.0057	0.0039	0.0039
605	0.0064	0.0069	0.0057	0.0039	0.0039
605.5	0.0064	0.0069	0.0057	0.0039	0.0039
606	0.0064	0.0069	0.0057	0.0039	0.0039
606.5	0.0063	0.0069	0.0057	0.0039	0.0039
607	0.0063	0.0069	0.0057	0.0039	0.0039
607.5	0.0063	0.0069	0.0057	0.0039	0.0039
608	0.0063	0.0069	0.0057	0.0039	0.0039
608.5	0.0063	0.0068	0.0057	0.0039	0.0039
609	0.0063	0.0068	0.0057	0.0039	0.0039
609.5	0.0063	0.0069	0.0057	0.0039	0.0039
610	0.0063	0.0069	0.0057	0.0039	0.0039
610.5	0.0063	0.0069	0.0057	0.0039	0.0039
611	0.0063	0.0069	0.0057	0.0039	0.0039
611.5	0.0063	0.0069	0.0057	0.0039	0.0039
612	0.0063	0.0069	0.0057	0.0039	0.0039
612.5	0.0063	0.0069	0.0057	0.0039	0.0039
613	0.0063	0.0069	0.0057	0.0039	0.0039
613.5	0.0064	0.0069	0.0058	0.0039	0.0039
614	0.0064	0.0070	0.0058	0.0039	0.0040
614.5	0.0064	0.0070	0.0058	0.0040	0.0040
615	0.0064	0.0070	0.0058	0.0040	0.0040
615.5	0.0064	0.0070	0.0058	0.0040	0.0040
616	0.0064	0.0070	0.0058	0.0040	0.0040
616.5	0.0064	0.0070	0.0058	0.0040	0.0040
617	0.0064	0.0070	0.0058	0.0040	0.0040
617.5	0.0064	0.0070	0.0058	0.0040	0.0040
618	0.0064	0.0070	0.0058	0.0040	0.0040
618.5	0.0064	0.0070	0.0058	0.0040	0.0040
619	0.0065	0.0070	0.0058	0.0040	0.0040
619.5	0.0065	0.0070	0.0058	0.0040	0.0040
620	0.0065	0.0070	0.0058	0.0040	0.0040
620.5	0.0064	0.0070	0.0058	0.0040	0.0040
621	0.0064	0.0070	0.0058	0.0040	0.0040
621.5	0.0065	0.0071	0.0059	0.0040	0.0040
622	0.0065	0.0071	0.0059	0.0040	0.0040
622.5	0.0065	0.0071	0.0059	0.0040	0.0040

623	0.0065	0.0071	0.0059	0.0041	0.0041
623.5	0.0065	0.0071	0.0059	0.0041	0.0041
624	0.0065	0.0071	0.0059	0.0041	0.0041
624.5	0.0065	0.0071	0.0059	0.0040	0.0041
625	0.0065	0.0071	0.0059	0.0040	0.0041
625.5	0.0065	0.0071	0.0059	0.0040	0.0041
626	0.0065	0.0071	0.0060	0.0041	0.0041
626.5	0.0065	0.0071	0.0060	0.0041	0.0041
627	0.0065	0.0072	0.0060	0.0041	0.0041
627.5	0.0066	0.0072	0.0060	0.0041	0.0041
628	0.0066	0.0072	0.0060	0.0041	0.0042
628.5	0.0066	0.0072	0.0060	0.0042	0.0042
629	0.0066	0.0072	0.0060	0.0042	0.0042
629.5	0.0066	0.0072	0.0060	0.0042	0.0042
630	0.0066	0.0072	0.0060	0.0042	0.0042
630.5	0.0066	0.0072	0.0060	0.0042	0.0042
631	0.0066	0.0072	0.0060	0.0042	0.0042
631.5	0.0066	0.0072	0.0061	0.0042	0.0042
632	0.0066	0.0072	0.0061	0.0042	0.0042
632.5	0.0066	0.0072	0.0060	0.0042	0.0042
633	0.0066	0.0072	0.0060	0.0042	0.0042
633.5	0.0066	0.0072	0.0060	0.0042	0.0042
634	0.0066	0.0072	0.0060	0.0042	0.0042
634.5	0.0066	0.0073	0.0061	0.0042	0.0042
635	0.0066	0.0073	0.0061	0.0042	0.0042
635.5	0.0066	0.0073	0.0061	0.0042	0.0042
636	0.0066	0.0073	0.0061	0.0042	0.0042
636.5	0.0066	0.0073	0.0061	0.0042	0.0042
637	0.0066	0.0073	0.0061	0.0042	0.0043
637.5	0.0067	0.0073	0.0061	0.0042	0.0043
638	0.0067	0.0073	0.0061	0.0043	0.0043
638.5	0.0067	0.0073	0.0061	0.0043	0.0043
639	0.0067	0.0073	0.0062	0.0043	0.0043
639.5	0.0067	0.0073	0.0062	0.0043	0.0043
640	0.0067	0.0074	0.0062	0.0043	0.0043
640.5	0.0067	0.0074	0.0062	0.0043	0.0043
641	0.0067	0.0074	0.0062	0.0043	0.0043
641.5	0.0067	0.0074	0.0062	0.0043	0.0043
642	0.0067	0.0074	0.0062	0.0043	0.0043
642.5	0.0067	0.0073	0.0062	0.0043	0.0043
643	0.0067	0.0073	0.0062	0.0043	0.0043
643.5	0.0067	0.0073	0.0062	0.0043	0.0044
644	0.0067	0.0073	0.0062	0.0043	0.0044
644.5	0.0067	0.0073	0.0062	0.0043	0.0044
645	0.0067	0.0074	0.0062	0.0043	0.0044
645.5	0.0067	0.0074	0.0062	0.0043	0.0044
646	0.0067	0.0074	0.0062	0.0043	0.0044
646.5	0.0068	0.0074	0.0063	0.0044	0.0044
647	0.0068	0.0075	0.0063	0.0044	0.0045
647.5	0.0068	0.0075	0.0063	0.0044	0.0045
648	0.0068	0.0075	0.0063	0.0044	0.0045
648.5	0.0068	0.0075	0.0063	0.0044	0.0045
649	0.0068	0.0075	0.0063	0.0044	0.0045
649.5	0.0068	0.0075	0.0063	0.0044	0.0045
650	0.0068	0.0075	0.0063	0.0044	0.0045
650.5	0.0068	0.0075	0.0063	0.0044	0.0045
651	0.0068	0.0075	0.0063	0.0044	0.0045

651.5	0.0068	0.0075	0.0063	0.0044	0.0045
652	0.0068	0.0075	0.0063	0.0044	0.0045
652.5	0.0068	0.0075	0.0063	0.0044	0.0045
653	0.0068	0.0075	0.0064	0.0044	0.0046
653.5	0.0068	0.0076	0.0064	0.0045	0.0046
654	0.0068	0.0076	0.0064	0.0045	0.0046
654.5	0.0068	0.0076	0.0064	0.0045	0.0046
655	0.0068	0.0076	0.0064	0.0045	0.0046
655.5	0.0068	0.0075	0.0064	0.0045	0.0046
656	0.0068	0.0075	0.0064	0.0045	0.0046
656.5	0.0069	0.0076	0.0064	0.0045	0.0046
657	0.0069	0.0076	0.0064	0.0045	0.0047
657.5	0.0069	0.0076	0.0065	0.0045	0.0047
658	0.0069	0.0076	0.0065	0.0045	0.0047
658.5	0.0070	0.0077	0.0065	0.0046	0.0047
659	0.0070	0.0077	0.0065	0.0046	0.0047
659.5	0.0070	0.0077	0.0065	0.0046	0.0047
660	0.0070	0.0077	0.0065	0.0046	0.0047
660.5	0.0070	0.0077	0.0065	0.0046	0.0048
661	0.0070	0.0077	0.0065	0.0046	0.0048
661.5	0.0070	0.0077	0.0065	0.0046	0.0048
662	0.0070	0.0077	0.0065	0.0046	0.0048
662.5	0.0070	0.0077	0.0065	0.0046	0.0048
663	0.0070	0.0077	0.0065	0.0046	0.0048
663.5	0.0070	0.0077	0.0065	0.0046	0.0048
664	0.0070	0.0077	0.0065	0.0046	0.0048
664.5	0.0070	0.0077	0.0066	0.0046	0.0047
665	0.0070	0.0077	0.0066	0.0046	0.0047
665.5	0.0070	0.0077	0.0065	0.0046	0.0047
666	0.0070	0.0077	0.0065	0.0046	0.0047
666.5	0.0070	0.0077	0.0065	0.0047	0.0047
667	0.0070	0.0077	0.0065	0.0047	0.0047
667.5	0.0070	0.0077	0.0065	0.0047	0.0047
668	0.0070	0.0078	0.0065	0.0047	0.0047
668.5	0.0070	0.0078	0.0066	0.0047	0.0047
669	0.0071	0.0078	0.0066	0.0047	0.0048
669.5	0.0071	0.0078	0.0066	0.0047	0.0048
670	0.0071	0.0078	0.0066	0.0048	0.0048
670.5	0.0071	0.0078	0.0067	0.0048	0.0048
671	0.0071	0.0078	0.0067	0.0048	0.0048
671.5	0.0071	0.0078	0.0067	0.0048	0.0048
672	0.0071	0.0078	0.0067	0.0048	0.0048
672.5	0.0071	0.0078	0.0067	0.0048	0.0048
673	0.0071	0.0078	0.0066	0.0048	0.0048
673.5	0.0071	0.0078	0.0066	0.0048	0.0048
674	0.0071	0.0078	0.0066	0.0048	0.0048
674.5	0.0071	0.0078	0.0066	0.0048	0.0048
675	0.0071	0.0078	0.0066	0.0048	0.0048
675.5	0.0071	0.0078	0.0066	0.0048	0.0048
676	0.0071	0.0078	0.0066	0.0048	0.0048
676.5	0.0071	0.0078	0.0066	0.0048	0.0048
677	0.0071	0.0078	0.0066	0.0048	0.0048
677.5	0.0071	0.0078	0.0066	0.0048	0.0048
678	0.0071	0.0078	0.0067	0.0048	0.0048
678.5	0.0071	0.0078	0.0067	0.0048	0.0048
679	0.0072	0.0078	0.0067	0.0048	0.0049
679.5	0.0072	0.0079	0.0067	0.0048	0.0049

680	0.0072	0.0079	0.0067	0.0049	0.0049
680.5	0.0072	0.0079	0.0067	0.0049	0.0049
681	0.0072	0.0079	0.0067	0.0049	0.0049
681.5	0.0072	0.0080	0.0068	0.0049	0.0049
682	0.0072	0.0080	0.0068	0.0049	0.0050
682.5	0.0072	0.0080	0.0068	0.0049	0.0050
683	0.0072	0.0080	0.0068	0.0049	0.0050
683.5	0.0072	0.0080	0.0068	0.0049	0.0050
684	0.0072	0.0079	0.0068	0.0048	0.0050
684.5	0.0072	0.0079	0.0067	0.0048	0.0050
685	0.0071	0.0079	0.0067	0.0048	0.0050
685.5	0.0072	0.0079	0.0067	0.0048	0.0050
686	0.0072	0.0079	0.0068	0.0048	0.0050
686.5	0.0072	0.0079	0.0068	0.0049	0.0050
687	0.0072	0.0080	0.0068	0.0049	0.0051
687.5	0.0072	0.0080	0.0068	0.0049	0.0051
688	0.0072	0.0080	0.0068	0.0049	0.0051
688.5	0.0072	0.0080	0.0069	0.0049	0.0051
689	0.0073	0.0081	0.0069	0.0049	0.0051
689.5	0.0073	0.0081	0.0069	0.0049	0.0052
690	0.0073	0.0081	0.0069	0.0049	0.0052
690.5	0.0073	0.0081	0.0069	0.0049	0.0052
691	0.0073	0.0081	0.0069	0.0049	0.0052
691.5	0.0073	0.0081	0.0069	0.0049	0.0052
692	0.0073	0.0080	0.0069	0.0049	0.0052
692.5	0.0073	0.0080	0.0069	0.0049	0.0052
693	0.0073	0.0081	0.0070	0.0050	0.0052
693.5	0.0073	0.0081	0.0070	0.0050	0.0052
694	0.0074	0.0081	0.0070	0.0050	0.0053
694.5	0.0074	0.0082	0.0070	0.0050	0.0053
695	0.0074	0.0082	0.0070	0.0050	0.0053
695.5	0.0074	0.0082	0.0070	0.0050	0.0053
696	0.0074	0.0083	0.0070	0.0051	0.0054
696.5	0.0074	0.0083	0.0071	0.0051	0.0054
697	0.0074	0.0083	0.0071	0.0051	0.0054
697.5	0.0075	0.0083	0.0071	0.0051	0.0055
698	0.0075	0.0084	0.0071	0.0051	0.0055
698.5	0.0075	0.0084	0.0072	0.0052	0.0055
699	0.0075	0.0084	0.0072	0.0052	0.0055
699.5	0.0075	0.0084	0.0072	0.0052	0.0055
700	0.0075	0.0084	0.0072	0.0052	0.0055

B.2.2 45° measurements

Table B.5: Measurements of the green gradient at locations A, B, C, D, and E at 45°. The lamp signal was measured at an integration time of 23 ms and the measurements of the samples were taken at integration times of 1700 ms, 1800 ms, 2000 ms, 2000 ms, and 2000 ms.

λ	A	B	C	D	E
400	0.0094	0.0083	0.0073	0.0072	0.0058
400.5	0.0094	0.0084	0.0073	0.0072	0.0058
401	0.0094	0.0084	0.0073	0.0072	0.0057
401.5	0.0094	0.0084	0.0072	0.0072	0.0057
402	0.0093	0.0084	0.0071	0.0071	0.0056
402.5	0.0093	0.0083	0.0071	0.0071	0.0056
403	0.0093	0.0083	0.0071	0.0071	0.0056
403.5	0.0093	0.0083	0.0071	0.0070	0.0056
404	0.0093	0.0083	0.0072	0.0070	0.0055
404.5	0.0093	0.0082	0.0072	0.0070	0.0055
405	0.0093	0.0082	0.0072	0.0070	0.0055
405.5	0.0093	0.0082	0.0071	0.0071	0.0055
406	0.0093	0.0083	0.0071	0.0071	0.0055
406.5	0.0094	0.0083	0.0072	0.0072	0.0056
407	0.0095	0.0084	0.0073	0.0073	0.0056
407.5	0.0095	0.0085	0.0073	0.0073	0.0057
408	0.0095	0.0086	0.0073	0.0073	0.0057
408.5	0.0095	0.0086	0.0073	0.0073	0.0057
409	0.0095	0.0086	0.0073	0.0073	0.0057
409.5	0.0094	0.0086	0.0073	0.0073	0.0057
410	0.0094	0.0086	0.0073	0.0073	0.0057
410.5	0.0095	0.0086	0.0073	0.0074	0.0058
411	0.0095	0.0085	0.0073	0.0074	0.0057
411.5	0.0096	0.0085	0.0073	0.0074	0.0057
412	0.0097	0.0085	0.0074	0.0074	0.0057
412.5	0.0097	0.0086	0.0074	0.0073	0.0057
413	0.0097	0.0086	0.0074	0.0073	0.0057
413.5	0.0098	0.0087	0.0075	0.0074	0.0057
414	0.0098	0.0088	0.0076	0.0075	0.0057
414.5	0.0098	0.0088	0.0076	0.0075	0.0057
415	0.0099	0.0088	0.0076	0.0075	0.0057
415.5	0.0099	0.0088	0.0076	0.0075	0.0057
416	0.0099	0.0088	0.0077	0.0075	0.0057
416.5	0.0099	0.0088	0.0076	0.0075	0.0058
417	0.0099	0.0088	0.0076	0.0076	0.0058
417.5	0.0099	0.0088	0.0077	0.0076	0.0058
418	0.0100	0.0089	0.0077	0.0076	0.0059
418.5	0.0100	0.0089	0.0078	0.0076	0.0059
419	0.0100	0.0090	0.0078	0.0076	0.0058
419.5	0.0101	0.0090	0.0078	0.0076	0.0058
420	0.0101	0.0090	0.0078	0.0076	0.0058
420.5	0.0101	0.0090	0.0078	0.0075	0.0058
421	0.0102	0.0090	0.0078	0.0076	0.0058
421.5	0.0102	0.0091	0.0078	0.0076	0.0058
422	0.0102	0.0091	0.0078	0.0077	0.0058
422.5	0.0103	0.0092	0.0078	0.0077	0.0059
423	0.0103	0.0092	0.0078	0.0078	0.0059
423.5	0.0103	0.0092	0.0078	0.0077	0.0059
424	0.0103	0.0092	0.0078	0.0077	0.0060
424.5	0.0103	0.0091	0.0079	0.0077	0.0060

425	0.0104	0.0091	0.0079	0.0077	0.0060
425.5	0.0104	0.0091	0.0079	0.0077	0.0060
426	0.0104	0.0092	0.0080	0.0077	0.0060
426.5	0.0104	0.0093	0.0080	0.0077	0.0060
427	0.0104	0.0093	0.0080	0.0077	0.0060
427.5	0.0104	0.0094	0.0080	0.0078	0.0060
428	0.0105	0.0094	0.0080	0.0078	0.0059
428.5	0.0105	0.0094	0.0079	0.0078	0.0059
429	0.0105	0.0093	0.0079	0.0077	0.0059
429.5	0.0106	0.0093	0.0079	0.0077	0.0058
430	0.0105	0.0092	0.0079	0.0077	0.0058
430.5	0.0105	0.0092	0.0079	0.0077	0.0058
431	0.0104	0.0092	0.0079	0.0077	0.0058
431.5	0.0104	0.0092	0.0079	0.0077	0.0058
432	0.0104	0.0093	0.0079	0.0077	0.0058
432.5	0.0104	0.0093	0.0079	0.0077	0.0058
433	0.0104	0.0093	0.0079	0.0077	0.0058
433.5	0.0104	0.0093	0.0079	0.0077	0.0059
434	0.0104	0.0093	0.0079	0.0077	0.0059
434.5	0.0104	0.0093	0.0079	0.0077	0.0059
435	0.0104	0.0093	0.0079	0.0077	0.0059
435.5	0.0104	0.0094	0.0080	0.0077	0.0059
436	0.0104	0.0094	0.0080	0.0077	0.0059
436.5	0.0104	0.0094	0.0080	0.0077	0.0059
437	0.0104	0.0094	0.0080	0.0077	0.0059
437.5	0.0104	0.0093	0.0079	0.0077	0.0059
438	0.0104	0.0093	0.0079	0.0077	0.0058
438.5	0.0104	0.0093	0.0079	0.0077	0.0058
439	0.0104	0.0093	0.0079	0.0077	0.0058
439.5	0.0104	0.0093	0.0079	0.0077	0.0058
440	0.0105	0.0094	0.0080	0.0078	0.0058
440.5	0.0105	0.0094	0.0080	0.0078	0.0059
441	0.0106	0.0094	0.0080	0.0077	0.0059
441.5	0.0106	0.0094	0.0080	0.0077	0.0058
442	0.0106	0.0094	0.0080	0.0078	0.0059
442.5	0.0106	0.0095	0.0080	0.0078	0.0059
443	0.0106	0.0095	0.0080	0.0078	0.0059
443.5	0.0106	0.0096	0.0081	0.0079	0.0059
444	0.0106	0.0096	0.0081	0.0079	0.0059
444.5	0.0106	0.0095	0.0081	0.0079	0.0060
445	0.0106	0.0095	0.0081	0.0079	0.0059
445.5	0.0106	0.0095	0.0081	0.0079	0.0059
446	0.0106	0.0094	0.0081	0.0079	0.0059
446.5	0.0106	0.0094	0.0081	0.0078	0.0059
447	0.0106	0.0094	0.0081	0.0078	0.0059
447.5	0.0106	0.0094	0.0081	0.0078	0.0059
448	0.0106	0.0094	0.0082	0.0079	0.0059
448.5	0.0106	0.0094	0.0082	0.0079	0.0059
449	0.0106	0.0094	0.0082	0.0078	0.0059
449.5	0.0106	0.0094	0.0082	0.0078	0.0059
450	0.0106	0.0094	0.0082	0.0078	0.0059
450.5	0.0106	0.0094	0.0081	0.0078	0.0059
451	0.0106	0.0095	0.0081	0.0078	0.0059
451.5	0.0107	0.0095	0.0081	0.0078	0.0059
452	0.0106	0.0095	0.0081	0.0078	0.0059
452.5	0.0106	0.0095	0.0081	0.0078	0.0059
453	0.0107	0.0095	0.0081	0.0079	0.0059

453.5	0.0107	0.0095	0.0081	0.0079	0.0059
454	0.0107	0.0095	0.0081	0.0079	0.0059
454.5	0.0107	0.0095	0.0081	0.0079	0.0059
455	0.0107	0.0095	0.0081	0.0079	0.0059
455.5	0.0107	0.0095	0.0081	0.0079	0.0059
456	0.0107	0.0095	0.0081	0.0079	0.0059
456.5	0.0107	0.0095	0.0081	0.0079	0.0059
457	0.0107	0.0095	0.0081	0.0079	0.0059
457.5	0.0107	0.0095	0.0082	0.0079	0.0059
458	0.0107	0.0096	0.0082	0.0079	0.0060
458.5	0.0107	0.0096	0.0082	0.0080	0.0060
459	0.0107	0.0096	0.0082	0.0080	0.0060
459.5	0.0107	0.0096	0.0082	0.0080	0.0060
460	0.0107	0.0096	0.0082	0.0080	0.0060
460.5	0.0107	0.0096	0.0082	0.0080	0.0060
461	0.0108	0.0096	0.0082	0.0080	0.0060
461.5	0.0108	0.0096	0.0082	0.0080	0.0060
462	0.0108	0.0096	0.0082	0.0080	0.0060
462.5	0.0108	0.0096	0.0083	0.0080	0.0060
463	0.0107	0.0096	0.0083	0.0080	0.0060
463.5	0.0107	0.0096	0.0083	0.0080	0.0060
464	0.0107	0.0096	0.0083	0.0080	0.0059
464.5	0.0107	0.0096	0.0083	0.0080	0.0059
465	0.0107	0.0096	0.0083	0.0080	0.0059
465.5	0.0108	0.0097	0.0083	0.0080	0.0059
466	0.0108	0.0097	0.0083	0.0080	0.0059
466.5	0.0109	0.0098	0.0083	0.0080	0.0060
467	0.0109	0.0098	0.0084	0.0081	0.0060
467.5	0.0109	0.0098	0.0084	0.0081	0.0060
468	0.0109	0.0098	0.0084	0.0081	0.0060
468.5	0.0109	0.0098	0.0084	0.0081	0.0060
469	0.0109	0.0097	0.0084	0.0081	0.0060
469.5	0.0109	0.0097	0.0084	0.0081	0.0060
470	0.0109	0.0097	0.0084	0.0081	0.0060
470.5	0.0109	0.0097	0.0084	0.0081	0.0060
471	0.0109	0.0098	0.0084	0.0081	0.0060
471.5	0.0109	0.0098	0.0084	0.0081	0.0060
472	0.0109	0.0098	0.0084	0.0081	0.0060
472.5	0.0109	0.0098	0.0084	0.0081	0.0060
473	0.0110	0.0098	0.0084	0.0081	0.0060
473.5	0.0110	0.0098	0.0084	0.0081	0.0060
474	0.0110	0.0098	0.0084	0.0082	0.0060
474.5	0.0110	0.0098	0.0085	0.0082	0.0060
475	0.0110	0.0099	0.0085	0.0082	0.0060
475.5	0.0110	0.0099	0.0085	0.0082	0.0060
476	0.0110	0.0099	0.0085	0.0082	0.0060
476.5	0.0110	0.0099	0.0085	0.0082	0.0060
477	0.0110	0.0099	0.0085	0.0083	0.0060
477.5	0.0110	0.0100	0.0085	0.0083	0.0060
478	0.0110	0.0100	0.0085	0.0083	0.0060
478.5	0.0110	0.0100	0.0085	0.0083	0.0060
479	0.0110	0.0100	0.0086	0.0083	0.0061
479.5	0.0110	0.0100	0.0086	0.0083	0.0061
480	0.0110	0.0100	0.0086	0.0083	0.0061
480.5	0.0111	0.0100	0.0086	0.0084	0.0061
481	0.0111	0.0100	0.0086	0.0084	0.0061
481.5	0.0111	0.0100	0.0087	0.0084	0.0061

482	0.0112	0.0100	0.0087	0.0084	0.0061
482.5	0.0112	0.0100	0.0087	0.0084	0.0061
483	0.0112	0.0101	0.0087	0.0084	0.0061
483.5	0.0112	0.0101	0.0087	0.0085	0.0062
484	0.0113	0.0101	0.0088	0.0085	0.0062
484.5	0.0113	0.0102	0.0088	0.0085	0.0062
485	0.0113	0.0102	0.0088	0.0085	0.0062
485.5	0.0113	0.0102	0.0088	0.0085	0.0062
486	0.0113	0.0102	0.0088	0.0085	0.0062
486.5	0.0113	0.0102	0.0088	0.0086	0.0062
487	0.0114	0.0103	0.0089	0.0086	0.0062
487.5	0.0114	0.0103	0.0089	0.0086	0.0062
488	0.0114	0.0103	0.0089	0.0086	0.0062
488.5	0.0114	0.0103	0.0089	0.0086	0.0062
489	0.0114	0.0104	0.0089	0.0086	0.0062
489.5	0.0114	0.0104	0.0089	0.0087	0.0063
490	0.0114	0.0104	0.0089	0.0087	0.0063
490.5	0.0114	0.0104	0.0090	0.0087	0.0063
491	0.0115	0.0104	0.0090	0.0088	0.0063
491.5	0.0115	0.0104	0.0091	0.0088	0.0063
492	0.0115	0.0105	0.0091	0.0088	0.0063
492.5	0.0115	0.0105	0.0091	0.0088	0.0063
493	0.0115	0.0105	0.0092	0.0089	0.0064
493.5	0.0116	0.0105	0.0092	0.0089	0.0064
494	0.0116	0.0106	0.0092	0.0089	0.0064
494.5	0.0116	0.0106	0.0093	0.0089	0.0064
495	0.0117	0.0107	0.0093	0.0090	0.0065
495.5	0.0117	0.0107	0.0093	0.0091	0.0065
496	0.0117	0.0107	0.0094	0.0091	0.0066
496.5	0.0117	0.0108	0.0094	0.0091	0.0066
497	0.0117	0.0107	0.0094	0.0091	0.0066
497.5	0.0117	0.0107	0.0094	0.0091	0.0066
498	0.0117	0.0107	0.0094	0.0091	0.0066
498.5	0.0117	0.0107	0.0094	0.0091	0.0066
499	0.0118	0.0107	0.0094	0.0091	0.0066
499.5	0.0118	0.0107	0.0094	0.0092	0.0066
500	0.0118	0.0108	0.0094	0.0092	0.0067
500.5	0.0119	0.0108	0.0095	0.0092	0.0067
501	0.0119	0.0109	0.0095	0.0093	0.0067
501.5	0.0120	0.0109	0.0096	0.0093	0.0068
502	0.0120	0.0109	0.0096	0.0093	0.0068
502.5	0.0120	0.0110	0.0096	0.0094	0.0068
503	0.0120	0.0110	0.0097	0.0094	0.0069
503.5	0.0120	0.0110	0.0097	0.0094	0.0069
504	0.0120	0.0110	0.0097	0.0095	0.0069
504.5	0.0120	0.0110	0.0097	0.0095	0.0070
505	0.0121	0.0111	0.0097	0.0095	0.0070
505.5	0.0121	0.0111	0.0098	0.0095	0.0070
506	0.0121	0.0111	0.0098	0.0096	0.0070
506.5	0.0121	0.0111	0.0098	0.0096	0.0071
507	0.0121	0.0112	0.0098	0.0096	0.0071
507.5	0.0121	0.0112	0.0099	0.0096	0.0071
508	0.0121	0.0112	0.0099	0.0097	0.0071
508.5	0.0122	0.0112	0.0099	0.0097	0.0072
509	0.0122	0.0112	0.0099	0.0097	0.0072
509.5	0.0122	0.0112	0.0099	0.0097	0.0072
510	0.0122	0.0112	0.0099	0.0097	0.0072

510.5	0.0122	0.0112	0.0099	0.0097	0.0072
511	0.0122	0.0113	0.0099	0.0097	0.0073
511.5	0.0121	0.0113	0.0099	0.0097	0.0073
512	0.0122	0.0113	0.0099	0.0098	0.0073
512.5	0.0122	0.0113	0.0100	0.0098	0.0073
513	0.0122	0.0114	0.0100	0.0099	0.0074
513.5	0.0122	0.0114	0.0100	0.0099	0.0074
514	0.0123	0.0114	0.0101	0.0099	0.0074
514.5	0.0123	0.0114	0.0101	0.0099	0.0075
515	0.0123	0.0114	0.0101	0.0099	0.0075
515.5	0.0123	0.0114	0.0101	0.0099	0.0074
516	0.0123	0.0114	0.0100	0.0099	0.0074
516.5	0.0122	0.0113	0.0100	0.0098	0.0074
517	0.0122	0.0113	0.0100	0.0098	0.0074
517.5	0.0122	0.0113	0.0100	0.0098	0.0074
518	0.0122	0.0113	0.0100	0.0098	0.0074
518.5	0.0122	0.0113	0.0100	0.0099	0.0074
519	0.0122	0.0114	0.0100	0.0099	0.0075
519.5	0.0123	0.0114	0.0101	0.0099	0.0075
520	0.0123	0.0115	0.0101	0.0099	0.0075
520.5	0.0123	0.0115	0.0101	0.0099	0.0075
521	0.0123	0.0115	0.0101	0.0099	0.0075
521.5	0.0123	0.0115	0.0101	0.0099	0.0075
522	0.0123	0.0115	0.0101	0.0099	0.0075
522.5	0.0123	0.0114	0.0101	0.0099	0.0075
523	0.0123	0.0114	0.0101	0.0099	0.0075
523.5	0.0123	0.0114	0.0101	0.0100	0.0075
524	0.0123	0.0114	0.0101	0.0099	0.0075
524.5	0.0123	0.0114	0.0101	0.0099	0.0075
525	0.0123	0.0114	0.0101	0.0099	0.0075
525.5	0.0123	0.0115	0.0101	0.0099	0.0075
526	0.0123	0.0115	0.0102	0.0099	0.0075
526.5	0.0123	0.0115	0.0102	0.0099	0.0075
527	0.0123	0.0115	0.0102	0.0099	0.0075
527.5	0.0123	0.0115	0.0102	0.0100	0.0075
528	0.0123	0.0115	0.0102	0.0100	0.0075
528.5	0.0124	0.0115	0.0102	0.0100	0.0075
529	0.0124	0.0115	0.0102	0.0100	0.0075
529.5	0.0124	0.0115	0.0102	0.0100	0.0075
530	0.0124	0.0115	0.0102	0.0100	0.0075
530.5	0.0123	0.0115	0.0102	0.0099	0.0075
531	0.0123	0.0115	0.0102	0.0099	0.0075
531.5	0.0123	0.0115	0.0102	0.0099	0.0075
532	0.0123	0.0115	0.0102	0.0099	0.0075
532.5	0.0123	0.0115	0.0102	0.0099	0.0075
533	0.0123	0.0115	0.0101	0.0099	0.0075
533.5	0.0123	0.0114	0.0101	0.0099	0.0075
534	0.0123	0.0114	0.0101	0.0099	0.0074
534.5	0.0123	0.0114	0.0101	0.0099	0.0074
535	0.0123	0.0115	0.0101	0.0099	0.0074
535.5	0.0124	0.0115	0.0101	0.0099	0.0074
536	0.0124	0.0115	0.0102	0.0099	0.0074
536.5	0.0124	0.0115	0.0102	0.0099	0.0075
537	0.0124	0.0115	0.0102	0.0099	0.0075
537.5	0.0124	0.0115	0.0102	0.0100	0.0075
538	0.0124	0.0116	0.0102	0.0100	0.0075
538.5	0.0125	0.0116	0.0102	0.0100	0.0075

539	0.0125	0.0116	0.0102	0.0100	0.0075
539.5	0.0125	0.0116	0.0102	0.0100	0.0075
540	0.0125	0.0116	0.0102	0.0100	0.0074
540.5	0.0125	0.0116	0.0102	0.0100	0.0074
541	0.0124	0.0116	0.0102	0.0100	0.0074
541.5	0.0124	0.0116	0.0102	0.0100	0.0074
542	0.0124	0.0116	0.0102	0.0100	0.0074
542.5	0.0124	0.0115	0.0102	0.0100	0.0074
543	0.0124	0.0116	0.0102	0.0100	0.0074
543.5	0.0124	0.0116	0.0102	0.0100	0.0074
544	0.0125	0.0116	0.0102	0.0100	0.0074
544.5	0.0125	0.0116	0.0102	0.0100	0.0074
545	0.0125	0.0116	0.0102	0.0100	0.0074
545.5	0.0125	0.0116	0.0102	0.0100	0.0074
546	0.0125	0.0116	0.0102	0.0100	0.0073
546.5	0.0125	0.0116	0.0102	0.0099	0.0073
547	0.0125	0.0116	0.0102	0.0099	0.0073
547.5	0.0125	0.0116	0.0102	0.0099	0.0073
548	0.0124	0.0115	0.0102	0.0099	0.0073
548.5	0.0124	0.0115	0.0102	0.0099	0.0073
549	0.0124	0.0115	0.0101	0.0099	0.0073
549.5	0.0124	0.0115	0.0101	0.0098	0.0072
550	0.0124	0.0115	0.0101	0.0098	0.0072
550.5	0.0124	0.0114	0.0101	0.0098	0.0072
551	0.0124	0.0114	0.0101	0.0098	0.0072
551.5	0.0124	0.0115	0.0101	0.0098	0.0072
552	0.0124	0.0115	0.0101	0.0098	0.0072
552.5	0.0124	0.0115	0.0101	0.0098	0.0072
553	0.0125	0.0116	0.0102	0.0098	0.0072
553.5	0.0125	0.0116	0.0102	0.0098	0.0072
554	0.0125	0.0116	0.0102	0.0098	0.0072
554.5	0.0125	0.0116	0.0102	0.0098	0.0072
555	0.0125	0.0116	0.0102	0.0098	0.0072
555.5	0.0125	0.0116	0.0102	0.0097	0.0071
556	0.0125	0.0116	0.0101	0.0097	0.0071
556.5	0.0124	0.0115	0.0101	0.0097	0.0071
557	0.0124	0.0115	0.0101	0.0097	0.0070
557.5	0.0124	0.0115	0.0100	0.0096	0.0070
558	0.0123	0.0114	0.0100	0.0096	0.0070
558.5	0.0123	0.0114	0.0100	0.0096	0.0070
559	0.0123	0.0114	0.0099	0.0095	0.0069
559.5	0.0123	0.0113	0.0099	0.0095	0.0069
560	0.0123	0.0113	0.0099	0.0095	0.0069
560.5	0.0123	0.0113	0.0099	0.0095	0.0069
561	0.0123	0.0114	0.0099	0.0095	0.0069
561.5	0.0123	0.0114	0.0099	0.0094	0.0068
562	0.0123	0.0114	0.0099	0.0094	0.0069
562.5	0.0124	0.0114	0.0099	0.0095	0.0069
563	0.0124	0.0114	0.0099	0.0095	0.0069
563.5	0.0124	0.0114	0.0099	0.0095	0.0069
564	0.0124	0.0114	0.0099	0.0095	0.0069
564.5	0.0124	0.0113	0.0099	0.0094	0.0068
565	0.0123	0.0113	0.0099	0.0094	0.0068
565.5	0.0123	0.0113	0.0098	0.0094	0.0068
566	0.0123	0.0113	0.0098	0.0093	0.0067
566.5	0.0122	0.0112	0.0098	0.0093	0.0067
567	0.0122	0.0112	0.0098	0.0093	0.0067

567.5	0.0122	0.0112	0.0098	0.0093	0.0067
568	0.0122	0.0112	0.0097	0.0092	0.0067
568.5	0.0122	0.0112	0.0097	0.0092	0.0067
569	0.0123	0.0112	0.0097	0.0092	0.0067
569.5	0.0122	0.0112	0.0097	0.0092	0.0066
570	0.0122	0.0112	0.0097	0.0092	0.0066
570.5	0.0122	0.0112	0.0097	0.0092	0.0066
571	0.0122	0.0112	0.0097	0.0092	0.0066
571.5	0.0122	0.0112	0.0097	0.0092	0.0066
572	0.0122	0.0112	0.0097	0.0092	0.0066
572.5	0.0122	0.0112	0.0097	0.0092	0.0066
573	0.0122	0.0112	0.0097	0.0092	0.0066
573.5	0.0122	0.0112	0.0097	0.0092	0.0066
574	0.0122	0.0112	0.0097	0.0092	0.0066
574.5	0.0123	0.0112	0.0097	0.0092	0.0066
575	0.0123	0.0112	0.0097	0.0092	0.0066
575.5	0.0123	0.0112	0.0097	0.0092	0.0065
576	0.0123	0.0112	0.0097	0.0092	0.0065
576.5	0.0123	0.0112	0.0097	0.0092	0.0065
577	0.0123	0.0111	0.0096	0.0091	0.0065
577.5	0.0122	0.0111	0.0096	0.0091	0.0065
578	0.0122	0.0111	0.0096	0.0091	0.0065
578.5	0.0122	0.0111	0.0096	0.0090	0.0064
579	0.0121	0.0110	0.0095	0.0090	0.0064
579.5	0.0121	0.0110	0.0095	0.0089	0.0064
580	0.0121	0.0110	0.0095	0.0089	0.0064
580.5	0.0121	0.0110	0.0095	0.0089	0.0064
581	0.0121	0.0110	0.0095	0.0089	0.0064
581.5	0.0121	0.0110	0.0095	0.0089	0.0063
582	0.0121	0.0110	0.0095	0.0089	0.0063
582.5	0.0121	0.0110	0.0095	0.0089	0.0063
583	0.0121	0.0109	0.0095	0.0089	0.0063
583.5	0.0121	0.0109	0.0095	0.0089	0.0063
584	0.0121	0.0110	0.0095	0.0089	0.0063
584.5	0.0121	0.0110	0.0095	0.0089	0.0063
585	0.0121	0.0110	0.0094	0.0089	0.0063
585.5	0.0121	0.0110	0.0095	0.0089	0.0063
586	0.0121	0.0111	0.0095	0.0089	0.0063
586.5	0.0122	0.0111	0.0095	0.0089	0.0063
587	0.0122	0.0111	0.0095	0.0090	0.0063
587.5	0.0123	0.0111	0.0095	0.0090	0.0064
588	0.0123	0.0111	0.0096	0.0090	0.0064
588.5	0.0123	0.0111	0.0096	0.0090	0.0064
589	0.0123	0.0111	0.0096	0.0090	0.0064
589.5	0.0123	0.0111	0.0095	0.0090	0.0064
590	0.0122	0.0111	0.0095	0.0089	0.0063
590.5	0.0122	0.0110	0.0095	0.0089	0.0063
591	0.0121	0.0110	0.0095	0.0089	0.0063
591.5	0.0121	0.0110	0.0095	0.0089	0.0063
592	0.0121	0.0110	0.0095	0.0089	0.0063
592.5	0.0121	0.0110	0.0095	0.0089	0.0063
593	0.0121	0.0110	0.0095	0.0089	0.0063
593.5	0.0122	0.0110	0.0095	0.0089	0.0063
594	0.0122	0.0110	0.0094	0.0089	0.0063
594.5	0.0121	0.0110	0.0094	0.0089	0.0063
595	0.0121	0.0109	0.0094	0.0088	0.0062
595.5	0.0121	0.0109	0.0094	0.0088	0.0062

596	0.0121	0.0109	0.0094	0.0088	0.0062
596.5	0.0121	0.0109	0.0094	0.0089	0.0062
597	0.0122	0.0109	0.0094	0.0089	0.0063
597.5	0.0122	0.0110	0.0094	0.0089	0.0063
598	0.0122	0.0110	0.0095	0.0089	0.0063
598.5	0.0122	0.0110	0.0095	0.0089	0.0063
599	0.0123	0.0111	0.0095	0.0089	0.0063
599.5	0.0123	0.0111	0.0095	0.0089	0.0063
600	0.0123	0.0111	0.0095	0.0089	0.0063
600.5	0.0123	0.0111	0.0095	0.0089	0.0063
601	0.0123	0.0111	0.0095	0.0089	0.0063
601.5	0.0123	0.0111	0.0095	0.0089	0.0063
602	0.0123	0.0110	0.0095	0.0089	0.0063
602.5	0.0123	0.0110	0.0095	0.0089	0.0063
603	0.0122	0.0110	0.0095	0.0089	0.0063
603.5	0.0122	0.0110	0.0095	0.0089	0.0063
604	0.0122	0.0110	0.0095	0.0089	0.0063
604.5	0.0122	0.0110	0.0095	0.0089	0.0063
605	0.0123	0.0110	0.0095	0.0089	0.0063
605.5	0.0123	0.0111	0.0095	0.0089	0.0064
606	0.0123	0.0111	0.0096	0.0089	0.0064
606.5	0.0123	0.0111	0.0095	0.0089	0.0063
607	0.0123	0.0111	0.0095	0.0089	0.0063
607.5	0.0123	0.0110	0.0095	0.0089	0.0063
608	0.0123	0.0110	0.0095	0.0089	0.0063
608.5	0.0123	0.0110	0.0095	0.0089	0.0063
609	0.0123	0.0110	0.0095	0.0089	0.0063
609.5	0.0123	0.0110	0.0095	0.0089	0.0063
610	0.0123	0.0110	0.0095	0.0089	0.0063
610.5	0.0123	0.0111	0.0095	0.0089	0.0063
611	0.0122	0.0111	0.0095	0.0089	0.0063
611.5	0.0122	0.0111	0.0095	0.0089	0.0063
612	0.0123	0.0111	0.0095	0.0089	0.0063
612.5	0.0123	0.0111	0.0095	0.0089	0.0064
613	0.0124	0.0112	0.0096	0.0090	0.0064
613.5	0.0125	0.0112	0.0096	0.0090	0.0064
614	0.0125	0.0112	0.0097	0.0091	0.0065
614.5	0.0126	0.0113	0.0097	0.0091	0.0065
615	0.0126	0.0113	0.0097	0.0091	0.0065
615.5	0.0126	0.0113	0.0097	0.0091	0.0065
616	0.0126	0.0113	0.0097	0.0091	0.0065
616.5	0.0126	0.0112	0.0097	0.0091	0.0065
617	0.0126	0.0112	0.0097	0.0091	0.0065
617.5	0.0125	0.0113	0.0097	0.0091	0.0065
618	0.0125	0.0113	0.0097	0.0091	0.0065
618.5	0.0126	0.0113	0.0097	0.0091	0.0065
619	0.0126	0.0113	0.0097	0.0091	0.0065
619.5	0.0126	0.0113	0.0097	0.0091	0.0065
620	0.0126	0.0113	0.0097	0.0091	0.0065
620.5	0.0126	0.0113	0.0097	0.0091	0.0065
621	0.0126	0.0113	0.0097	0.0091	0.0065
621.5	0.0126	0.0113	0.0097	0.0091	0.0065
622	0.0126	0.0113	0.0097	0.0091	0.0065
622.5	0.0127	0.0113	0.0098	0.0092	0.0065
623	0.0127	0.0113	0.0098	0.0092	0.0066
623.5	0.0127	0.0114	0.0098	0.0092	0.0066
624	0.0127	0.0114	0.0098	0.0092	0.0066

624.5	0.0127	0.0114	0.0099	0.0092	0.0066
625	0.0127	0.0114	0.0099	0.0093	0.0066
625.5	0.0127	0.0114	0.0099	0.0093	0.0066
626	0.0127	0.0114	0.0099	0.0093	0.0066
626.5	0.0127	0.0115	0.0099	0.0093	0.0066
627	0.0127	0.0115	0.0099	0.0094	0.0066
627.5	0.0128	0.0115	0.0099	0.0094	0.0066
628	0.0128	0.0115	0.0099	0.0094	0.0067
628.5	0.0128	0.0115	0.0100	0.0094	0.0067
629	0.0129	0.0115	0.0100	0.0094	0.0067
629.5	0.0129	0.0115	0.0100	0.0094	0.0067
630	0.0129	0.0115	0.0100	0.0094	0.0067
630.5	0.0129	0.0115	0.0100	0.0094	0.0067
631	0.0129	0.0116	0.0101	0.0094	0.0067
631.5	0.0129	0.0116	0.0101	0.0094	0.0067
632	0.0129	0.0116	0.0101	0.0094	0.0067
632.5	0.0128	0.0115	0.0101	0.0094	0.0067
633	0.0128	0.0115	0.0100	0.0094	0.0067
633.5	0.0128	0.0115	0.0100	0.0094	0.0067
634	0.0128	0.0115	0.0100	0.0094	0.0067
634.5	0.0128	0.0115	0.0101	0.0094	0.0067
635	0.0128	0.0115	0.0101	0.0095	0.0068
635.5	0.0129	0.0115	0.0101	0.0095	0.0068
636	0.0129	0.0115	0.0101	0.0095	0.0068
636.5	0.0129	0.0115	0.0101	0.0095	0.0068
637	0.0129	0.0115	0.0101	0.0095	0.0068
637.5	0.0129	0.0116	0.0101	0.0095	0.0068
638	0.0130	0.0116	0.0101	0.0095	0.0068
638.5	0.0130	0.0116	0.0101	0.0095	0.0068
639	0.0130	0.0116	0.0102	0.0096	0.0068
639.5	0.0129	0.0116	0.0102	0.0096	0.0068
640	0.0129	0.0116	0.0102	0.0096	0.0068
640.5	0.0130	0.0117	0.0102	0.0096	0.0068
641	0.0130	0.0117	0.0102	0.0096	0.0068
641.5	0.0130	0.0117	0.0102	0.0096	0.0069
642	0.0130	0.0117	0.0103	0.0097	0.0069
642.5	0.0130	0.0117	0.0103	0.0097	0.0069
643	0.0130	0.0117	0.0103	0.0097	0.0069
643.5	0.0131	0.0117	0.0103	0.0097	0.0069
644	0.0131	0.0117	0.0103	0.0097	0.0069
644.5	0.0131	0.0117	0.0103	0.0097	0.0070
645	0.0131	0.0118	0.0103	0.0097	0.0070
645.5	0.0132	0.0118	0.0103	0.0097	0.0070
646	0.0132	0.0118	0.0103	0.0098	0.0070
646.5	0.0132	0.0118	0.0104	0.0098	0.0070
647	0.0132	0.0119	0.0104	0.0098	0.0070
647.5	0.0132	0.0119	0.0104	0.0098	0.0070
648	0.0133	0.0120	0.0105	0.0099	0.0070
648.5	0.0133	0.0120	0.0105	0.0099	0.0071
649	0.0133	0.0120	0.0105	0.0099	0.0071
649.5	0.0133	0.0121	0.0106	0.0099	0.0071
650	0.0133	0.0121	0.0106	0.0099	0.0071
650.5	0.0134	0.0120	0.0105	0.0099	0.0072
651	0.0133	0.0120	0.0105	0.0099	0.0072
651.5	0.0133	0.0120	0.0105	0.0099	0.0072
652	0.0133	0.0120	0.0105	0.0099	0.0072
652.5	0.0133	0.0120	0.0105	0.0099	0.0071

653	0.0134	0.0121	0.0105	0.0099	0.0071
653.5	0.0134	0.0121	0.0106	0.0100	0.0072
654	0.0134	0.0122	0.0106	0.0100	0.0072
654.5	0.0134	0.0122	0.0106	0.0100	0.0072
655	0.0134	0.0122	0.0106	0.0100	0.0072
655.5	0.0134	0.0122	0.0106	0.0100	0.0072
656	0.0134	0.0122	0.0107	0.0101	0.0072
656.5	0.0134	0.0122	0.0107	0.0101	0.0072
657	0.0134	0.0122	0.0108	0.0101	0.0073
657.5	0.0135	0.0122	0.0108	0.0102	0.0073
658	0.0135	0.0122	0.0108	0.0102	0.0073
658.5	0.0135	0.0122	0.0108	0.0102	0.0074
659	0.0135	0.0122	0.0108	0.0102	0.0074
659.5	0.0135	0.0122	0.0108	0.0102	0.0074
660	0.0135	0.0122	0.0108	0.0101	0.0074
660.5	0.0134	0.0122	0.0107	0.0101	0.0074
661	0.0134	0.0122	0.0107	0.0101	0.0074
661.5	0.0134	0.0122	0.0107	0.0101	0.0074
662	0.0133	0.0122	0.0107	0.0101	0.0073
662.5	0.0133	0.0122	0.0107	0.0101	0.0073
663	0.0132	0.0122	0.0107	0.0100	0.0073
663.5	0.0132	0.0121	0.0107	0.0100	0.0073
664	0.0132	0.0121	0.0107	0.0100	0.0073
664.5	0.0132	0.0121	0.0107	0.0100	0.0073
665	0.0132	0.0121	0.0106	0.0100	0.0073
665.5	0.0131	0.0120	0.0106	0.0100	0.0073
666	0.0131	0.0119	0.0106	0.0100	0.0073
666.5	0.0131	0.0119	0.0105	0.0099	0.0072
667	0.0131	0.0119	0.0105	0.0099	0.0072
667.5	0.0132	0.0118	0.0105	0.0099	0.0072
668	0.0132	0.0119	0.0105	0.0099	0.0072
668.5	0.0133	0.0119	0.0105	0.0099	0.0072
669	0.0133	0.0119	0.0105	0.0099	0.0072
669.5	0.0133	0.0119	0.0105	0.0100	0.0072
670	0.0133	0.0120	0.0105	0.0100	0.0072
670.5	0.0133	0.0120	0.0105	0.0100	0.0072
671	0.0133	0.0120	0.0105	0.0100	0.0072
671.5	0.0133	0.0120	0.0105	0.0100	0.0072
672	0.0133	0.0119	0.0105	0.0099	0.0072
672.5	0.0132	0.0119	0.0105	0.0099	0.0072
673	0.0132	0.0118	0.0104	0.0099	0.0071
673.5	0.0132	0.0118	0.0104	0.0099	0.0071
674	0.0132	0.0118	0.0104	0.0099	0.0071
674.5	0.0132	0.0118	0.0104	0.0099	0.0072
675	0.0132	0.0117	0.0104	0.0099	0.0072
675.5	0.0133	0.0117	0.0104	0.0098	0.0072
676	0.0133	0.0118	0.0104	0.0098	0.0072
676.5	0.0133	0.0118	0.0104	0.0099	0.0072
677	0.0133	0.0118	0.0104	0.0099	0.0072
677.5	0.0134	0.0118	0.0104	0.0099	0.0072
678	0.0134	0.0118	0.0105	0.0099	0.0072
678.5	0.0134	0.0119	0.0105	0.0099	0.0073
679	0.0135	0.0119	0.0105	0.0100	0.0073
679.5	0.0135	0.0120	0.0106	0.0100	0.0073
680	0.0135	0.0121	0.0106	0.0100	0.0073
680.5	0.0135	0.0121	0.0107	0.0101	0.0073
681	0.0135	0.0121	0.0107	0.0101	0.0074

681.5	0.0135	0.0122	0.0107	0.0101	0.0074
682	0.0135	0.0122	0.0108	0.0102	0.0075
682.5	0.0136	0.0122	0.0108	0.0102	0.0075
683	0.0136	0.0122	0.0109	0.0102	0.0075
683.5	0.0136	0.0122	0.0109	0.0102	0.0075
684	0.0136	0.0122	0.0108	0.0101	0.0075
684.5	0.0136	0.0122	0.0108	0.0101	0.0075
685	0.0136	0.0121	0.0108	0.0101	0.0075
685.5	0.0136	0.0121	0.0108	0.0101	0.0075
686	0.0136	0.0122	0.0108	0.0101	0.0075
686.5	0.0137	0.0122	0.0108	0.0102	0.0075
687	0.0137	0.0123	0.0109	0.0102	0.0076
687.5	0.0137	0.0124	0.0109	0.0103	0.0076
688	0.0137	0.0124	0.0110	0.0103	0.0076
688.5	0.0137	0.0125	0.0110	0.0104	0.0077
689	0.0137	0.0126	0.0111	0.0104	0.0077
689.5	0.0137	0.0126	0.0111	0.0105	0.0077
690	0.0137	0.0126	0.0111	0.0105	0.0078
690.5	0.0137	0.0126	0.0111	0.0105	0.0078
691	0.0137	0.0126	0.0111	0.0105	0.0078
691.5	0.0138	0.0126	0.0111	0.0105	0.0078
692	0.0138	0.0125	0.0111	0.0105	0.0078
692.5	0.0138	0.0125	0.0111	0.0105	0.0078
693	0.0138	0.0125	0.0111	0.0105	0.0078
693.5	0.0139	0.0126	0.0112	0.0105	0.0079
694	0.0139	0.0126	0.0112	0.0105	0.0079
694.5	0.0140	0.0126	0.0112	0.0106	0.0079
695	0.0140	0.0127	0.0112	0.0106	0.0079
695.5	0.0141	0.0127	0.0113	0.0107	0.0079
696	0.0141	0.0128	0.0113	0.0108	0.0079
696.5	0.0142	0.0129	0.0114	0.0108	0.0080
697	0.0142	0.0130	0.0115	0.0109	0.0080
697.5	0.0142	0.0131	0.0116	0.0110	0.0081
698	0.0142	0.0131	0.0116	0.0110	0.0081
698.5	0.0142	0.0131	0.0116	0.0110	0.0081
699	0.0143	0.0131	0.0117	0.0111	0.0082
699.5	0.0143	0.0131	0.0117	0.0111	0.0082
700	0.0143	0.0131	0.0117	0.0110	0.0082

B.2.3 60° measurements

Table B.6: Measurements of the green gradient at locations A, B, C, D, and E at 60°. The lamp signal was measured at an integration time of 23 ms and the measurements of the samples were taken at integration times of 1800 ms, 1800 ms, 2000 ms, 2000 ms, and 2000 ms.

λ	A	B	C	D	E
400	0.0090	0.0083	0.0083	0.0077	0.0086
400.5	0.0090	0.0083	0.0083	0.0077	0.0086
401	0.0090	0.0083	0.0083	0.0077	0.0086
401.5	0.0090	0.0083	0.0083	0.0077	0.0086
402	0.0090	0.0083	0.0083	0.0078	0.0086
402.5	0.0090	0.0084	0.0083	0.0078	0.0087
403	0.0090	0.0084	0.0083	0.0078	0.0087
403.5	0.0090	0.0085	0.0083	0.0078	0.0088
404	0.0090	0.0085	0.0084	0.0078	0.0088
404.5	0.0090	0.0085	0.0084	0.0077	0.0088
405	0.0090	0.0084	0.0083	0.0077	0.0088
405.5	0.0091	0.0084	0.0083	0.0078	0.0088
406	0.0091	0.0085	0.0084	0.0078	0.0088
406.5	0.0092	0.0085	0.0084	0.0079	0.0089
407	0.0093	0.0086	0.0085	0.0080	0.0089
407.5	0.0093	0.0086	0.0086	0.0081	0.0090
408	0.0093	0.0086	0.0087	0.0081	0.0090
408.5	0.0092	0.0086	0.0086	0.0080	0.0089
409	0.0092	0.0086	0.0086	0.0079	0.0089
409.5	0.0092	0.0086	0.0086	0.0079	0.0089
410	0.0092	0.0086	0.0085	0.0078	0.0089
410.5	0.0092	0.0086	0.0086	0.0078	0.0089
411	0.0092	0.0086	0.0086	0.0079	0.0089
411.5	0.0093	0.0086	0.0086	0.0079	0.0089
412	0.0092	0.0087	0.0086	0.0079	0.0089
412.5	0.0092	0.0087	0.0086	0.0079	0.0089
413	0.0093	0.0087	0.0086	0.0079	0.0089
413.5	0.0093	0.0088	0.0087	0.0079	0.0089
414	0.0094	0.0088	0.0087	0.0080	0.0090
414.5	0.0094	0.0087	0.0087	0.0080	0.0090
415	0.0094	0.0087	0.0087	0.0080	0.0090
415.5	0.0094	0.0088	0.0087	0.0080	0.0090
416	0.0094	0.0088	0.0087	0.0080	0.0090
416.5	0.0094	0.0088	0.0087	0.0080	0.0090
417	0.0094	0.0089	0.0088	0.0080	0.0090
417.5	0.0095	0.0090	0.0088	0.0080	0.0090
418	0.0095	0.0090	0.0088	0.0081	0.0090
418.5	0.0095	0.0090	0.0088	0.0081	0.0090
419	0.0096	0.0090	0.0089	0.0082	0.0090
419.5	0.0096	0.0090	0.0089	0.0082	0.0090
420	0.0096	0.0090	0.0088	0.0082	0.0090
420.5	0.0096	0.0090	0.0088	0.0082	0.0090
421	0.0096	0.0090	0.0088	0.0082	0.0090
421.5	0.0096	0.0090	0.0088	0.0082	0.0090
422	0.0096	0.0090	0.0088	0.0083	0.0090
422.5	0.0096	0.0090	0.0088	0.0083	0.0091
423	0.0096	0.0090	0.0088	0.0084	0.0091
423.5	0.0096	0.0091	0.0088	0.0083	0.0091
424	0.0096	0.0091	0.0088	0.0083	0.0090
424.5	0.0096	0.0091	0.0089	0.0083	0.0090

425	0.0097	0.0091	0.0089	0.0083	0.0090
425.5	0.0097	0.0091	0.0090	0.0083	0.0090
426	0.0097	0.0092	0.0090	0.0083	0.0090
426.5	0.0097	0.0092	0.0090	0.0083	0.0091
427	0.0097	0.0092	0.0090	0.0083	0.0091
427.5	0.0098	0.0092	0.0090	0.0083	0.0091
428	0.0098	0.0092	0.0090	0.0083	0.0091
428.5	0.0098	0.0092	0.0090	0.0083	0.0091
429	0.0098	0.0092	0.0090	0.0083	0.0090
429.5	0.0098	0.0091	0.0090	0.0082	0.0090
430	0.0098	0.0091	0.0090	0.0082	0.0090
430.5	0.0098	0.0091	0.0090	0.0082	0.0090
431	0.0098	0.0090	0.0090	0.0082	0.0090
431.5	0.0098	0.0090	0.0089	0.0082	0.0090
432	0.0098	0.0090	0.0089	0.0082	0.0090
432.5	0.0098	0.0090	0.0089	0.0082	0.0090
433	0.0098	0.0090	0.0089	0.0082	0.0090
433.5	0.0098	0.0091	0.0089	0.0082	0.0090
434	0.0098	0.0091	0.0089	0.0083	0.0090
434.5	0.0098	0.0091	0.0089	0.0083	0.0090
435	0.0099	0.0091	0.0090	0.0083	0.0090
435.5	0.0099	0.0091	0.0090	0.0083	0.0091
436	0.0099	0.0091	0.0090	0.0083	0.0091
436.5	0.0099	0.0091	0.0090	0.0083	0.0091
437	0.0099	0.0091	0.0090	0.0083	0.0091
437.5	0.0098	0.0091	0.0090	0.0083	0.0090
438	0.0098	0.0090	0.0090	0.0083	0.0090
438.5	0.0098	0.0091	0.0090	0.0083	0.0090
439	0.0098	0.0091	0.0090	0.0083	0.0090
439.5	0.0098	0.0091	0.0090	0.0083	0.0091
440	0.0098	0.0092	0.0090	0.0083	0.0091
440.5	0.0098	0.0092	0.0090	0.0084	0.0091
441	0.0097	0.0092	0.0090	0.0084	0.0091
441.5	0.0097	0.0092	0.0091	0.0084	0.0091
442	0.0097	0.0092	0.0091	0.0084	0.0090
442.5	0.0098	0.0092	0.0091	0.0084	0.0091
443	0.0098	0.0093	0.0091	0.0084	0.0091
443.5	0.0098	0.0093	0.0091	0.0084	0.0091
444	0.0098	0.0093	0.0091	0.0085	0.0091
444.5	0.0098	0.0094	0.0091	0.0085	0.0092
445	0.0098	0.0093	0.0091	0.0085	0.0092
445.5	0.0098	0.0093	0.0091	0.0085	0.0092
446	0.0098	0.0093	0.0091	0.0084	0.0092
446.5	0.0098	0.0093	0.0091	0.0084	0.0092
447	0.0099	0.0093	0.0091	0.0084	0.0092
447.5	0.0099	0.0093	0.0092	0.0084	0.0092
448	0.0099	0.0093	0.0092	0.0085	0.0092
448.5	0.0099	0.0093	0.0091	0.0084	0.0092
449	0.0099	0.0093	0.0091	0.0084	0.0092
449.5	0.0098	0.0093	0.0091	0.0084	0.0092
450	0.0098	0.0093	0.0091	0.0084	0.0092
450.5	0.0098	0.0093	0.0091	0.0084	0.0092
451	0.0098	0.0093	0.0091	0.0084	0.0092
451.5	0.0099	0.0093	0.0091	0.0084	0.0092
452	0.0099	0.0093	0.0091	0.0084	0.0092
452.5	0.0099	0.0093	0.0091	0.0084	0.0092
453	0.0099	0.0094	0.0091	0.0084	0.0092

453.5	0.0099	0.0094	0.0091	0.0084	0.0092
454	0.0099	0.0094	0.0092	0.0084	0.0092
454.5	0.0099	0.0094	0.0092	0.0084	0.0092
455	0.0099	0.0094	0.0092	0.0084	0.0092
455.5	0.0099	0.0094	0.0092	0.0084	0.0092
456	0.0098	0.0094	0.0092	0.0084	0.0092
456.5	0.0098	0.0094	0.0092	0.0084	0.0092
457	0.0098	0.0094	0.0092	0.0084	0.0092
457.5	0.0098	0.0094	0.0092	0.0084	0.0092
458	0.0098	0.0094	0.0092	0.0084	0.0092
458.5	0.0099	0.0094	0.0092	0.0085	0.0093
459	0.0099	0.0094	0.0093	0.0085	0.0093
459.5	0.0099	0.0094	0.0093	0.0085	0.0093
460	0.0099	0.0094	0.0092	0.0085	0.0093
460.5	0.0099	0.0094	0.0093	0.0085	0.0093
461	0.0100	0.0094	0.0093	0.0085	0.0093
461.5	0.0100	0.0094	0.0093	0.0085	0.0093
462	0.0100	0.0095	0.0093	0.0086	0.0093
462.5	0.0100	0.0095	0.0093	0.0086	0.0093
463	0.0100	0.0095	0.0093	0.0086	0.0093
463.5	0.0100	0.0095	0.0093	0.0086	0.0093
464	0.0099	0.0095	0.0093	0.0086	0.0092
464.5	0.0099	0.0095	0.0093	0.0086	0.0092
465	0.0100	0.0095	0.0093	0.0086	0.0092
465.5	0.0100	0.0095	0.0093	0.0086	0.0092
466	0.0100	0.0095	0.0093	0.0086	0.0093
466.5	0.0101	0.0096	0.0093	0.0086	0.0093
467	0.0101	0.0096	0.0094	0.0087	0.0093
467.5	0.0101	0.0096	0.0094	0.0087	0.0093
468	0.0101	0.0096	0.0094	0.0087	0.0093
468.5	0.0101	0.0096	0.0094	0.0087	0.0093
469	0.0101	0.0097	0.0094	0.0087	0.0093
469.5	0.0101	0.0096	0.0094	0.0087	0.0093
470	0.0101	0.0096	0.0094	0.0087	0.0093
470.5	0.0101	0.0096	0.0094	0.0087	0.0093
471	0.0100	0.0096	0.0093	0.0087	0.0093
471.5	0.0101	0.0096	0.0094	0.0087	0.0093
472	0.0101	0.0096	0.0094	0.0087	0.0093
472.5	0.0101	0.0096	0.0094	0.0087	0.0093
473	0.0101	0.0096	0.0094	0.0087	0.0093
473.5	0.0101	0.0096	0.0094	0.0088	0.0093
474	0.0101	0.0096	0.0095	0.0088	0.0093
474.5	0.0101	0.0097	0.0095	0.0088	0.0093
475	0.0101	0.0097	0.0095	0.0088	0.0093
475.5	0.0101	0.0097	0.0095	0.0088	0.0093
476	0.0101	0.0097	0.0096	0.0088	0.0093
476.5	0.0101	0.0097	0.0096	0.0088	0.0093
477	0.0101	0.0097	0.0096	0.0088	0.0093
477.5	0.0101	0.0097	0.0096	0.0088	0.0093
478	0.0101	0.0097	0.0096	0.0088	0.0094
478.5	0.0101	0.0097	0.0096	0.0089	0.0094
479	0.0102	0.0098	0.0096	0.0089	0.0094
479.5	0.0102	0.0098	0.0096	0.0089	0.0094
480	0.0102	0.0098	0.0097	0.0089	0.0094
480.5	0.0103	0.0099	0.0097	0.0090	0.0095
481	0.0103	0.0099	0.0097	0.0090	0.0095
481.5	0.0103	0.0099	0.0097	0.0090	0.0095

482	0.0103	0.0099	0.0097	0.0090	0.0095
482.5	0.0103	0.0099	0.0097	0.0091	0.0095
483	0.0103	0.0100	0.0098	0.0091	0.0095
483.5	0.0103	0.0100	0.0098	0.0091	0.0095
484	0.0104	0.0100	0.0098	0.0091	0.0095
484.5	0.0104	0.0100	0.0098	0.0091	0.0096
485	0.0104	0.0101	0.0098	0.0092	0.0096
485.5	0.0104	0.0101	0.0098	0.0092	0.0096
486	0.0104	0.0101	0.0099	0.0092	0.0096
486.5	0.0104	0.0101	0.0099	0.0092	0.0096
487	0.0104	0.0101	0.0099	0.0092	0.0096
487.5	0.0104	0.0101	0.0099	0.0092	0.0095
488	0.0104	0.0101	0.0099	0.0092	0.0095
488.5	0.0104	0.0101	0.0099	0.0092	0.0095
489	0.0104	0.0101	0.0099	0.0092	0.0095
489.5	0.0105	0.0102	0.0099	0.0092	0.0096
490	0.0105	0.0102	0.0099	0.0093	0.0096
490.5	0.0105	0.0102	0.0100	0.0093	0.0096
491	0.0105	0.0102	0.0100	0.0093	0.0096
491.5	0.0105	0.0102	0.0100	0.0093	0.0096
492	0.0105	0.0102	0.0100	0.0093	0.0096
492.5	0.0105	0.0103	0.0100	0.0093	0.0096
493	0.0105	0.0103	0.0100	0.0093	0.0096
493.5	0.0105	0.0103	0.0100	0.0093	0.0096
494	0.0105	0.0103	0.0101	0.0094	0.0096
494.5	0.0106	0.0103	0.0101	0.0094	0.0096
495	0.0106	0.0104	0.0101	0.0095	0.0097
495.5	0.0107	0.0104	0.0102	0.0095	0.0097
496	0.0107	0.0104	0.0102	0.0095	0.0097
496.5	0.0107	0.0104	0.0102	0.0095	0.0097
497	0.0106	0.0104	0.0102	0.0095	0.0097
497.5	0.0106	0.0104	0.0102	0.0095	0.0097
498	0.0106	0.0104	0.0102	0.0095	0.0097
498.5	0.0106	0.0104	0.0102	0.0095	0.0096
499	0.0106	0.0104	0.0102	0.0095	0.0096
499.5	0.0106	0.0104	0.0102	0.0095	0.0096
500	0.0106	0.0104	0.0102	0.0096	0.0097
500.5	0.0107	0.0104	0.0103	0.0096	0.0097
501	0.0107	0.0105	0.0103	0.0097	0.0097
501.5	0.0107	0.0105	0.0103	0.0097	0.0098
502	0.0108	0.0105	0.0104	0.0097	0.0098
502.5	0.0108	0.0105	0.0104	0.0097	0.0098
503	0.0108	0.0106	0.0104	0.0098	0.0098
503.5	0.0108	0.0106	0.0105	0.0098	0.0098
504	0.0108	0.0106	0.0105	0.0098	0.0098
504.5	0.0108	0.0106	0.0105	0.0098	0.0098
505	0.0108	0.0107	0.0105	0.0098	0.0098
505.5	0.0108	0.0107	0.0105	0.0098	0.0098
506	0.0108	0.0107	0.0105	0.0098	0.0099
506.5	0.0108	0.0107	0.0105	0.0098	0.0099
507	0.0109	0.0107	0.0105	0.0098	0.0099
507.5	0.0109	0.0107	0.0105	0.0099	0.0099
508	0.0109	0.0107	0.0106	0.0099	0.0099
508.5	0.0109	0.0107	0.0106	0.0099	0.0099
509	0.0109	0.0107	0.0106	0.0100	0.0099
509.5	0.0109	0.0107	0.0106	0.0100	0.0099
510	0.0109	0.0107	0.0106	0.0100	0.0099

510.5	0.0109	0.0107	0.0106	0.0100	0.0099
511	0.0109	0.0107	0.0106	0.0100	0.0099
511.5	0.0109	0.0108	0.0106	0.0100	0.0099
512	0.0110	0.0108	0.0106	0.0100	0.0100
512.5	0.0110	0.0108	0.0107	0.0101	0.0100
513	0.0110	0.0108	0.0107	0.0101	0.0100
513.5	0.0110	0.0109	0.0107	0.0101	0.0101
514	0.0110	0.0109	0.0107	0.0102	0.0101
514.5	0.0111	0.0109	0.0108	0.0102	0.0101
515	0.0111	0.0109	0.0108	0.0102	0.0101
515.5	0.0110	0.0109	0.0108	0.0102	0.0101
516	0.0110	0.0109	0.0108	0.0101	0.0101
516.5	0.0110	0.0108	0.0107	0.0101	0.0101
517	0.0110	0.0108	0.0107	0.0101	0.0100
517.5	0.0110	0.0108	0.0107	0.0101	0.0100
518	0.0110	0.0109	0.0107	0.0101	0.0101
518.5	0.0111	0.0109	0.0108	0.0102	0.0101
519	0.0111	0.0110	0.0108	0.0102	0.0101
519.5	0.0111	0.0110	0.0108	0.0103	0.0101
520	0.0111	0.0110	0.0109	0.0103	0.0102
520.5	0.0111	0.0110	0.0109	0.0103	0.0102
521	0.0112	0.0111	0.0109	0.0103	0.0102
521.5	0.0112	0.0111	0.0109	0.0103	0.0102
522	0.0112	0.0111	0.0109	0.0103	0.0102
522.5	0.0112	0.0111	0.0109	0.0103	0.0102
523	0.0112	0.0111	0.0109	0.0103	0.0102
523.5	0.0112	0.0111	0.0109	0.0103	0.0102
524	0.0112	0.0111	0.0109	0.0104	0.0102
524.5	0.0112	0.0110	0.0109	0.0104	0.0102
525	0.0112	0.0110	0.0109	0.0104	0.0102
525.5	0.0112	0.0111	0.0109	0.0104	0.0102
526	0.0112	0.0111	0.0109	0.0104	0.0102
526.5	0.0112	0.0111	0.0110	0.0104	0.0102
527	0.0113	0.0111	0.0110	0.0104	0.0102
527.5	0.0113	0.0111	0.0110	0.0104	0.0102
528	0.0113	0.0111	0.0110	0.0104	0.0102
528.5	0.0113	0.0112	0.0110	0.0105	0.0102
529	0.0113	0.0112	0.0110	0.0105	0.0102
529.5	0.0113	0.0112	0.0110	0.0104	0.0102
530	0.0113	0.0111	0.0110	0.0104	0.0102
530.5	0.0113	0.0111	0.0110	0.0104	0.0102
531	0.0113	0.0111	0.0110	0.0104	0.0102
531.5	0.0113	0.0111	0.0110	0.0105	0.0102
532	0.0113	0.0112	0.0110	0.0105	0.0102
532.5	0.0113	0.0112	0.0110	0.0105	0.0102
533	0.0113	0.0112	0.0110	0.0105	0.0102
533.5	0.0113	0.0111	0.0110	0.0105	0.0102
534	0.0113	0.0111	0.0110	0.0105	0.0102
534.5	0.0112	0.0111	0.0110	0.0105	0.0102
535	0.0113	0.0112	0.0110	0.0105	0.0102
535.5	0.0113	0.0112	0.0110	0.0105	0.0102
536	0.0113	0.0112	0.0111	0.0105	0.0103
536.5	0.0113	0.0112	0.0111	0.0105	0.0103
537	0.0113	0.0112	0.0111	0.0105	0.0103
537.5	0.0114	0.0112	0.0111	0.0105	0.0103
538	0.0114	0.0113	0.0111	0.0105	0.0103
538.5	0.0114	0.0113	0.0111	0.0105	0.0103

539	0.0114	0.0113	0.0111	0.0105	0.0103
539.5	0.0114	0.0113	0.0111	0.0105	0.0102
540	0.0114	0.0113	0.0111	0.0105	0.0102
540.5	0.0114	0.0113	0.0111	0.0105	0.0102
541	0.0114	0.0113	0.0111	0.0104	0.0102
541.5	0.0114	0.0113	0.0111	0.0104	0.0102
542	0.0114	0.0112	0.0111	0.0104	0.0102
542.5	0.0114	0.0112	0.0111	0.0104	0.0102
543	0.0114	0.0113	0.0111	0.0105	0.0102
543.5	0.0114	0.0113	0.0112	0.0105	0.0102
544	0.0114	0.0113	0.0112	0.0105	0.0102
544.5	0.0115	0.0113	0.0112	0.0105	0.0102
545	0.0115	0.0113	0.0112	0.0105	0.0102
545.5	0.0115	0.0113	0.0112	0.0105	0.0102
546	0.0115	0.0113	0.0111	0.0105	0.0102
546.5	0.0115	0.0113	0.0111	0.0105	0.0102
547	0.0115	0.0113	0.0111	0.0105	0.0102
547.5	0.0114	0.0113	0.0111	0.0105	0.0101
548	0.0114	0.0112	0.0111	0.0105	0.0101
548.5	0.0114	0.0112	0.0111	0.0105	0.0101
549	0.0114	0.0112	0.0111	0.0104	0.0101
549.5	0.0114	0.0112	0.0111	0.0104	0.0100
550	0.0114	0.0112	0.0111	0.0104	0.0100
550.5	0.0114	0.0112	0.0111	0.0104	0.0100
551	0.0114	0.0112	0.0110	0.0104	0.0100
551.5	0.0114	0.0112	0.0111	0.0104	0.0100
552	0.0115	0.0112	0.0111	0.0104	0.0100
552.5	0.0115	0.0113	0.0111	0.0104	0.0101
553	0.0115	0.0113	0.0111	0.0105	0.0101
553.5	0.0115	0.0113	0.0112	0.0105	0.0101
554	0.0115	0.0113	0.0112	0.0105	0.0101
554.5	0.0115	0.0113	0.0112	0.0105	0.0101
555	0.0115	0.0113	0.0111	0.0106	0.0100
555.5	0.0115	0.0113	0.0111	0.0105	0.0100
556	0.0115	0.0113	0.0111	0.0105	0.0100
556.5	0.0115	0.0113	0.0111	0.0105	0.0100
557	0.0115	0.0112	0.0111	0.0105	0.0100
557.5	0.0115	0.0112	0.0111	0.0104	0.0100
558	0.0114	0.0112	0.0110	0.0103	0.0099
558.5	0.0114	0.0111	0.0110	0.0103	0.0099
559	0.0114	0.0111	0.0110	0.0103	0.0098
559.5	0.0114	0.0111	0.0109	0.0103	0.0098
560	0.0114	0.0111	0.0109	0.0103	0.0098
560.5	0.0114	0.0111	0.0109	0.0103	0.0098
561	0.0114	0.0111	0.0109	0.0103	0.0098
561.5	0.0114	0.0111	0.0110	0.0104	0.0098
562	0.0114	0.0111	0.0110	0.0104	0.0098
562.5	0.0115	0.0111	0.0110	0.0104	0.0098
563	0.0115	0.0112	0.0110	0.0104	0.0098
563.5	0.0115	0.0111	0.0110	0.0104	0.0098
564	0.0115	0.0111	0.0110	0.0103	0.0098
564.5	0.0115	0.0111	0.0110	0.0103	0.0098
565	0.0115	0.0111	0.0110	0.0103	0.0097
565.5	0.0115	0.0111	0.0110	0.0103	0.0097
566	0.0115	0.0111	0.0109	0.0102	0.0097
566.5	0.0115	0.0111	0.0109	0.0102	0.0097
567	0.0114	0.0111	0.0109	0.0102	0.0097

567.5	0.0114	0.0111	0.0109	0.0102	0.0097
568	0.0114	0.0111	0.0109	0.0102	0.0097
568.5	0.0114	0.0111	0.0109	0.0102	0.0097
569	0.0114	0.0111	0.0109	0.0101	0.0097
569.5	0.0114	0.0111	0.0109	0.0101	0.0097
570	0.0115	0.0111	0.0109	0.0101	0.0097
570.5	0.0115	0.0111	0.0109	0.0102	0.0097
571	0.0115	0.0111	0.0110	0.0102	0.0097
571.5	0.0115	0.0112	0.0110	0.0102	0.0097
572	0.0116	0.0112	0.0110	0.0102	0.0097
572.5	0.0116	0.0112	0.0110	0.0102	0.0096
573	0.0116	0.0112	0.0110	0.0102	0.0096
573.5	0.0116	0.0112	0.0110	0.0102	0.0096
574	0.0116	0.0112	0.0110	0.0102	0.0096
574.5	0.0116	0.0111	0.0110	0.0102	0.0096
575	0.0116	0.0111	0.0110	0.0102	0.0096
575.5	0.0116	0.0111	0.0110	0.0102	0.0096
576	0.0116	0.0111	0.0110	0.0102	0.0096
576.5	0.0116	0.0111	0.0110	0.0102	0.0096
577	0.0116	0.0111	0.0110	0.0102	0.0096
577.5	0.0116	0.0111	0.0109	0.0102	0.0096
578	0.0116	0.0111	0.0109	0.0102	0.0096
578.5	0.0116	0.0111	0.0109	0.0101	0.0095
579	0.0116	0.0111	0.0109	0.0101	0.0095
579.5	0.0116	0.0111	0.0109	0.0101	0.0095
580	0.0115	0.0111	0.0109	0.0101	0.0095
580.5	0.0115	0.0111	0.0109	0.0101	0.0095
581	0.0115	0.0110	0.0109	0.0100	0.0095
581.5	0.0115	0.0110	0.0108	0.0100	0.0095
582	0.0115	0.0110	0.0108	0.0100	0.0095
582.5	0.0115	0.0109	0.0108	0.0100	0.0095
583	0.0115	0.0109	0.0108	0.0100	0.0095
583.5	0.0115	0.0110	0.0108	0.0100	0.0095
584	0.0116	0.0110	0.0108	0.0100	0.0095
584.5	0.0116	0.0110	0.0109	0.0101	0.0095
585	0.0116	0.0110	0.0109	0.0101	0.0095
585.5	0.0116	0.0110	0.0109	0.0101	0.0095
586	0.0117	0.0111	0.0109	0.0101	0.0096
586.5	0.0117	0.0111	0.0110	0.0101	0.0096
587	0.0117	0.0111	0.0110	0.0102	0.0096
587.5	0.0118	0.0112	0.0110	0.0102	0.0096
588	0.0118	0.0112	0.0110	0.0102	0.0097
588.5	0.0118	0.0112	0.0110	0.0102	0.0097
589	0.0118	0.0112	0.0110	0.0102	0.0097
589.5	0.0118	0.0112	0.0110	0.0102	0.0097
590	0.0118	0.0112	0.0110	0.0102	0.0097
590.5	0.0118	0.0112	0.0110	0.0102	0.0097
591	0.0117	0.0111	0.0110	0.0102	0.0096
591.5	0.0117	0.0111	0.0110	0.0102	0.0096
592	0.0117	0.0111	0.0110	0.0102	0.0096
592.5	0.0117	0.0111	0.0110	0.0102	0.0096
593	0.0118	0.0112	0.0110	0.0102	0.0097
593.5	0.0118	0.0112	0.0110	0.0102	0.0097
594	0.0118	0.0112	0.0110	0.0102	0.0097
594.5	0.0118	0.0112	0.0110	0.0102	0.0096
595	0.0118	0.0112	0.0110	0.0102	0.0096
595.5	0.0118	0.0112	0.0110	0.0102	0.0096

596	0.0118	0.0112	0.0110	0.0102	0.0096
596.5	0.0118	0.0112	0.0110	0.0102	0.0096
597	0.0118	0.0112	0.0110	0.0102	0.0097
597.5	0.0118	0.0112	0.0110	0.0102	0.0097
598	0.0119	0.0112	0.0111	0.0102	0.0097
598.5	0.0119	0.0113	0.0111	0.0103	0.0097
599	0.0119	0.0113	0.0111	0.0103	0.0097
599.5	0.0119	0.0113	0.0111	0.0104	0.0097
600	0.0119	0.0113	0.0111	0.0104	0.0097
600.5	0.0119	0.0113	0.0111	0.0104	0.0097
601	0.0119	0.0113	0.0111	0.0103	0.0097
601.5	0.0119	0.0113	0.0111	0.0103	0.0096
602	0.0119	0.0113	0.0111	0.0103	0.0096
602.5	0.0119	0.0113	0.0111	0.0103	0.0096
603	0.0119	0.0113	0.0111	0.0102	0.0096
603.5	0.0119	0.0113	0.0111	0.0102	0.0096
604	0.0119	0.0113	0.0111	0.0102	0.0096
604.5	0.0119	0.0113	0.0111	0.0103	0.0096
605	0.0119	0.0113	0.0111	0.0103	0.0097
605.5	0.0119	0.0113	0.0111	0.0103	0.0097
606	0.0119	0.0113	0.0111	0.0103	0.0097
606.5	0.0119	0.0113	0.0111	0.0103	0.0097
607	0.0119	0.0113	0.0111	0.0103	0.0097
607.5	0.0119	0.0113	0.0111	0.0103	0.0097
608	0.0119	0.0113	0.0111	0.0103	0.0096
608.5	0.0119	0.0113	0.0111	0.0103	0.0096
609	0.0119	0.0113	0.0111	0.0103	0.0096
609.5	0.0119	0.0113	0.0111	0.0104	0.0096
610	0.0119	0.0113	0.0111	0.0104	0.0096
610.5	0.0119	0.0113	0.0111	0.0104	0.0096
611	0.0119	0.0113	0.0111	0.0103	0.0096
611.5	0.0119	0.0113	0.0111	0.0103	0.0096
612	0.0119	0.0113	0.0111	0.0104	0.0096
612.5	0.0119	0.0113	0.0111	0.0104	0.0096
613	0.0120	0.0113	0.0111	0.0104	0.0097
613.5	0.0120	0.0114	0.0112	0.0105	0.0097
614	0.0121	0.0114	0.0112	0.0105	0.0098
614.5	0.0121	0.0115	0.0113	0.0106	0.0098
615	0.0121	0.0115	0.0113	0.0106	0.0098
615.5	0.0122	0.0115	0.0113	0.0106	0.0098
616	0.0122	0.0115	0.0113	0.0106	0.0098
616.5	0.0122	0.0115	0.0113	0.0106	0.0098
617	0.0122	0.0115	0.0113	0.0106	0.0098
617.5	0.0122	0.0115	0.0113	0.0106	0.0098
618	0.0122	0.0115	0.0113	0.0106	0.0098
618.5	0.0122	0.0115	0.0113	0.0106	0.0098
619	0.0122	0.0115	0.0113	0.0106	0.0098
619.5	0.0122	0.0115	0.0113	0.0106	0.0098
620	0.0122	0.0114	0.0113	0.0106	0.0098
620.5	0.0122	0.0114	0.0113	0.0105	0.0098
621	0.0122	0.0114	0.0113	0.0106	0.0098
621.5	0.0122	0.0114	0.0113	0.0106	0.0098
622	0.0122	0.0114	0.0113	0.0106	0.0098
622.5	0.0123	0.0115	0.0113	0.0106	0.0098
623	0.0123	0.0115	0.0114	0.0107	0.0098
623.5	0.0123	0.0115	0.0114	0.0107	0.0098
624	0.0123	0.0115	0.0114	0.0107	0.0098

624.5	0.0123	0.0115	0.0114	0.0107	0.0098
625	0.0123	0.0116	0.0115	0.0107	0.0098
625.5	0.0123	0.0116	0.0115	0.0107	0.0098
626	0.0124	0.0116	0.0115	0.0107	0.0098
626.5	0.0124	0.0116	0.0115	0.0107	0.0098
627	0.0124	0.0116	0.0115	0.0107	0.0099
627.5	0.0124	0.0116	0.0115	0.0107	0.0099
628	0.0124	0.0116	0.0115	0.0108	0.0099
628.5	0.0124	0.0116	0.0115	0.0108	0.0099
629	0.0124	0.0116	0.0115	0.0108	0.0099
629.5	0.0124	0.0116	0.0115	0.0108	0.0099
630	0.0124	0.0116	0.0115	0.0108	0.0099
630.5	0.0124	0.0117	0.0115	0.0108	0.0099
631	0.0125	0.0117	0.0115	0.0108	0.0100
631.5	0.0125	0.0117	0.0116	0.0109	0.0100
632	0.0125	0.0117	0.0116	0.0109	0.0099
632.5	0.0125	0.0117	0.0116	0.0109	0.0099
633	0.0124	0.0117	0.0115	0.0108	0.0099
633.5	0.0124	0.0117	0.0115	0.0108	0.0099
634	0.0124	0.0117	0.0115	0.0108	0.0099
634.5	0.0124	0.0117	0.0115	0.0108	0.0099
635	0.0125	0.0117	0.0115	0.0108	0.0099
635.5	0.0125	0.0116	0.0115	0.0108	0.0099
636	0.0125	0.0116	0.0115	0.0108	0.0099
636.5	0.0124	0.0116	0.0115	0.0108	0.0099
637	0.0124	0.0116	0.0115	0.0108	0.0099
637.5	0.0125	0.0116	0.0115	0.0108	0.0099
638	0.0125	0.0116	0.0115	0.0109	0.0099
638.5	0.0125	0.0117	0.0116	0.0109	0.0100
639	0.0125	0.0117	0.0116	0.0110	0.0100
639.5	0.0125	0.0117	0.0116	0.0110	0.0100
640	0.0125	0.0117	0.0117	0.0110	0.0100
640.5	0.0125	0.0117	0.0117	0.0109	0.0100
641	0.0125	0.0117	0.0117	0.0109	0.0099
641.5	0.0125	0.0117	0.0117	0.0109	0.0100
642	0.0126	0.0118	0.0117	0.0109	0.0100
642.5	0.0126	0.0118	0.0117	0.0109	0.0100
643	0.0126	0.0118	0.0118	0.0109	0.0100
643.5	0.0126	0.0118	0.0118	0.0109	0.0100
644	0.0126	0.0118	0.0118	0.0110	0.0100
644.5	0.0126	0.0118	0.0118	0.0110	0.0100
645	0.0126	0.0118	0.0118	0.0110	0.0100
645.5	0.0126	0.0118	0.0118	0.0110	0.0100
646	0.0126	0.0119	0.0118	0.0111	0.0101
646.5	0.0126	0.0119	0.0118	0.0111	0.0101
647	0.0127	0.0119	0.0118	0.0111	0.0101
647.5	0.0127	0.0119	0.0119	0.0111	0.0101
648	0.0128	0.0120	0.0119	0.0112	0.0101
648.5	0.0128	0.0120	0.0119	0.0112	0.0101
649	0.0128	0.0120	0.0120	0.0112	0.0101
649.5	0.0128	0.0121	0.0120	0.0112	0.0101
650	0.0128	0.0121	0.0120	0.0112	0.0101
650.5	0.0128	0.0121	0.0120	0.0112	0.0101
651	0.0128	0.0120	0.0120	0.0112	0.0101
651.5	0.0127	0.0120	0.0119	0.0112	0.0101
652	0.0127	0.0120	0.0119	0.0112	0.0101
652.5	0.0127	0.0120	0.0119	0.0112	0.0101

653	0.0128	0.0120	0.0120	0.0112	0.0101
653.5	0.0128	0.0120	0.0120	0.0112	0.0101
654	0.0128	0.0121	0.0120	0.0113	0.0102
654.5	0.0128	0.0120	0.0120	0.0113	0.0102
655	0.0128	0.0120	0.0120	0.0113	0.0102
655.5	0.0128	0.0120	0.0120	0.0113	0.0102
656	0.0128	0.0120	0.0120	0.0113	0.0102
656.5	0.0129	0.0120	0.0121	0.0114	0.0102
657	0.0129	0.0121	0.0121	0.0114	0.0102
657.5	0.0129	0.0121	0.0121	0.0114	0.0102
658	0.0129	0.0121	0.0121	0.0114	0.0102
658.5	0.0129	0.0121	0.0121	0.0114	0.0102
659	0.0129	0.0122	0.0121	0.0114	0.0102
659.5	0.0129	0.0122	0.0121	0.0113	0.0102
660	0.0128	0.0122	0.0121	0.0113	0.0102
660.5	0.0128	0.0122	0.0121	0.0113	0.0102
661	0.0128	0.0122	0.0121	0.0112	0.0102
661.5	0.0128	0.0121	0.0120	0.0112	0.0102
662	0.0127	0.0121	0.0120	0.0112	0.0102
662.5	0.0127	0.0121	0.0120	0.0112	0.0102
663	0.0127	0.0120	0.0120	0.0112	0.0102
663.5	0.0127	0.0120	0.0119	0.0112	0.0102
664	0.0126	0.0120	0.0119	0.0112	0.0101
664.5	0.0126	0.0119	0.0118	0.0111	0.0101
665	0.0125	0.0119	0.0118	0.0111	0.0101
665.5	0.0125	0.0118	0.0117	0.0110	0.0100
666	0.0124	0.0118	0.0116	0.0110	0.0100
666.5	0.0123	0.0118	0.0116	0.0109	0.0099
667	0.0123	0.0117	0.0116	0.0109	0.0099
667.5	0.0122	0.0117	0.0116	0.0109	0.0099
668	0.0122	0.0117	0.0116	0.0109	0.0100
668.5	0.0122	0.0118	0.0116	0.0108	0.0100
669	0.0123	0.0118	0.0116	0.0108	0.0100
669.5	0.0123	0.0118	0.0116	0.0108	0.0100
670	0.0123	0.0118	0.0116	0.0107	0.0100
670.5	0.0123	0.0117	0.0116	0.0107	0.0101
671	0.0122	0.0117	0.0116	0.0107	0.0100
671.5	0.0122	0.0116	0.0115	0.0106	0.0100
672	0.0122	0.0115	0.0115	0.0106	0.0100
672.5	0.0121	0.0115	0.0114	0.0105	0.0100
673	0.0121	0.0114	0.0113	0.0105	0.0099
673.5	0.0121	0.0114	0.0113	0.0105	0.0099
674	0.0121	0.0114	0.0113	0.0105	0.0099
674.5	0.0121	0.0114	0.0113	0.0105	0.0099
675	0.0121	0.0114	0.0113	0.0105	0.0099
675.5	0.0121	0.0114	0.0113	0.0105	0.0100
676	0.0122	0.0114	0.0113	0.0105	0.0100
676.5	0.0122	0.0114	0.0113	0.0105	0.0100
677	0.0123	0.0114	0.0113	0.0106	0.0100
677.5	0.0123	0.0115	0.0114	0.0106	0.0101
678	0.0124	0.0115	0.0114	0.0106	0.0101
678.5	0.0124	0.0116	0.0115	0.0107	0.0101
679	0.0125	0.0116	0.0116	0.0107	0.0101
679.5	0.0125	0.0117	0.0116	0.0107	0.0102
680	0.0126	0.0117	0.0117	0.0108	0.0102
680.5	0.0127	0.0117	0.0117	0.0108	0.0102
681	0.0127	0.0118	0.0117	0.0108	0.0102

681.5	0.0128	0.0118	0.0118	0.0109	0.0103
682	0.0128	0.0118	0.0118	0.0110	0.0103
682.5	0.0129	0.0119	0.0119	0.0111	0.0103
683	0.0129	0.0119	0.0119	0.0111	0.0104
683.5	0.0129	0.0120	0.0119	0.0112	0.0104
684	0.0129	0.0120	0.0119	0.0112	0.0103
684.5	0.0129	0.0120	0.0119	0.0112	0.0103
685	0.0129	0.0120	0.0119	0.0112	0.0103
685.5	0.0129	0.0120	0.0119	0.0113	0.0103
686	0.0129	0.0121	0.0119	0.0113	0.0103
686.5	0.0129	0.0121	0.0119	0.0113	0.0103
687	0.0129	0.0122	0.0120	0.0114	0.0103
687.5	0.0130	0.0123	0.0120	0.0114	0.0104
688	0.0130	0.0123	0.0121	0.0114	0.0104
688.5	0.0130	0.0123	0.0122	0.0114	0.0104
689	0.0130	0.0124	0.0122	0.0114	0.0105
689.5	0.0130	0.0124	0.0123	0.0114	0.0105
690	0.0130	0.0124	0.0123	0.0114	0.0105
690.5	0.0130	0.0124	0.0123	0.0114	0.0105
691	0.0130	0.0124	0.0123	0.0114	0.0105
691.5	0.0130	0.0123	0.0123	0.0114	0.0105
692	0.0130	0.0123	0.0123	0.0114	0.0105
692.5	0.0130	0.0123	0.0123	0.0114	0.0105
693	0.0131	0.0123	0.0123	0.0115	0.0105
693.5	0.0131	0.0123	0.0123	0.0115	0.0105
694	0.0131	0.0123	0.0123	0.0116	0.0105
694.5	0.0131	0.0123	0.0123	0.0117	0.0105
695	0.0131	0.0123	0.0124	0.0117	0.0106
695.5	0.0131	0.0124	0.0124	0.0117	0.0106
696	0.0132	0.0124	0.0125	0.0118	0.0106
696.5	0.0132	0.0125	0.0125	0.0118	0.0107
697	0.0133	0.0126	0.0126	0.0119	0.0108
697.5	0.0133	0.0126	0.0127	0.0119	0.0108
698	0.0134	0.0127	0.0127	0.0119	0.0108
698.5	0.0134	0.0127	0.0127	0.0119	0.0109
699	0.0134	0.0127	0.0127	0.0119	0.0109
699.5	0.0134	0.0128	0.0127	0.0119	0.0109
700	0.0134	0.0128	0.0127	0.0119	0.0109

B.3 Purple

B.3.1 20° measurements

Table B.7: Measurements of the purple gradient at locations A, B, C, D, and E at 20°. The lamp signal was measured at an integration time of 23 ms and the measurements of the samples were taken at integration times of 3000 ms, 3100 ms, 4000 ms, 3300 ms, and 3000 ms respectively.

λ	A	B	C	D	E
400	0.0040	0.0042	0.0040	0.0042	0.0041
400.5	0.0040	0.0042	0.0040	0.0042	0.0041
401	0.0040	0.0041	0.0040	0.0041	0.0042
401.5	0.0040	0.0041	0.0039	0.0041	0.0042
402	0.0040	0.0041	0.0039	0.0041	0.0042
402.5	0.0039	0.0041	0.0039	0.0041	0.0042
403	0.0039	0.0041	0.0039	0.0041	0.0042
403.5	0.0039	0.0041	0.0039	0.0041	0.0042
404	0.0039	0.0041	0.0039	0.0041	0.0042
404.5	0.0039	0.0041	0.0039	0.0041	0.0042
405	0.0039	0.0041	0.0039	0.0041	0.0042
405.5	0.0039	0.0041	0.0040	0.0041	0.0042
406	0.0039	0.0042	0.0040	0.0042	0.0043
406.5	0.0039	0.0042	0.0040	0.0042	0.0043
407	0.0040	0.0043	0.0041	0.0042	0.0043
407.5	0.0040	0.0043	0.0041	0.0043	0.0043
408	0.0040	0.0043	0.0042	0.0043	0.0043
408.5	0.0041	0.0043	0.0042	0.0043	0.0043
409	0.0041	0.0043	0.0042	0.0043	0.0043
409.5	0.0041	0.0043	0.0042	0.0043	0.0044
410	0.0041	0.0043	0.0042	0.0043	0.0044
410.5	0.0041	0.0044	0.0042	0.0043	0.0044
411	0.0041	0.0044	0.0042	0.0043	0.0044
411.5	0.0042	0.0044	0.0042	0.0043	0.0044
412	0.0042	0.0044	0.0042	0.0043	0.0045
412.5	0.0043	0.0045	0.0042	0.0043	0.0045
413	0.0043	0.0045	0.0042	0.0044	0.0045
413.5	0.0044	0.0046	0.0043	0.0045	0.0046
414	0.0045	0.0046	0.0043	0.0046	0.0047
414.5	0.0045	0.0046	0.0044	0.0046	0.0047
415	0.0046	0.0046	0.0044	0.0047	0.0048
415.5	0.0046	0.0046	0.0045	0.0047	0.0048
416	0.0047	0.0046	0.0045	0.0047	0.0048
416.5	0.0047	0.0046	0.0045	0.0048	0.0048
417	0.0047	0.0047	0.0046	0.0048	0.0049
417.5	0.0048	0.0048	0.0046	0.0048	0.0049
418	0.0048	0.0049	0.0047	0.0049	0.0050
418.5	0.0049	0.0050	0.0047	0.0049	0.0050
419	0.0049	0.0050	0.0047	0.0049	0.0051
419.5	0.0050	0.0050	0.0047	0.0050	0.0051
420	0.0050	0.0050	0.0047	0.0050	0.0051
420.5	0.0050	0.0050	0.0048	0.0050	0.0051
421	0.0050	0.0050	0.0048	0.0050	0.0051
421.5	0.0050	0.0050	0.0048	0.0051	0.0051
422	0.0050	0.0050	0.0049	0.0051	0.0052

422.5	0.0050	0.0050	0.0049	0.0051	0.0052
423	0.0051	0.0051	0.0049	0.0051	0.0052
423.5	0.0051	0.0051	0.0049	0.0051	0.0052
424	0.0051	0.0052	0.0049	0.0051	0.0052
424.5	0.0051	0.0052	0.0049	0.0051	0.0052
425	0.0051	0.0052	0.0049	0.0052	0.0052
425.5	0.0051	0.0052	0.0049	0.0052	0.0052
426	0.0051	0.0053	0.0049	0.0052	0.0052
426.5	0.0051	0.0053	0.0049	0.0052	0.0053
427	0.0051	0.0053	0.0049	0.0052	0.0053
427.5	0.0051	0.0053	0.0050	0.0052	0.0053
428	0.0052	0.0053	0.0050	0.0053	0.0053
428.5	0.0052	0.0052	0.0050	0.0053	0.0053
429	0.0052	0.0052	0.0050	0.0053	0.0053
429.5	0.0052	0.0052	0.0049	0.0053	0.0053
430	0.0051	0.0052	0.0049	0.0053	0.0053
430.5	0.0051	0.0052	0.0049	0.0053	0.0053
431	0.0051	0.0052	0.0049	0.0053	0.0053
431.5	0.0051	0.0052	0.0050	0.0053	0.0053
432	0.0051	0.0052	0.0050	0.0053	0.0053
432.5	0.0051	0.0052	0.0050	0.0053	0.0052
433	0.0051	0.0052	0.0050	0.0052	0.0052
433.5	0.0051	0.0053	0.0050	0.0052	0.0052
434	0.0052	0.0053	0.0050	0.0052	0.0052
434.5	0.0052	0.0053	0.0050	0.0053	0.0052
435	0.0052	0.0053	0.0051	0.0053	0.0052
435.5	0.0052	0.0053	0.0051	0.0053	0.0053
436	0.0052	0.0053	0.0050	0.0053	0.0052
436.5	0.0052	0.0053	0.0050	0.0053	0.0052
437	0.0052	0.0053	0.0050	0.0053	0.0052
437.5	0.0052	0.0053	0.0050	0.0053	0.0052
438	0.0052	0.0053	0.0050	0.0053	0.0052
438.5	0.0052	0.0053	0.0050	0.0053	0.0052
439	0.0052	0.0053	0.0050	0.0053	0.0052
439.5	0.0052	0.0053	0.0050	0.0053	0.0052
440	0.0053	0.0053	0.0050	0.0053	0.0052
440.5	0.0053	0.0053	0.0050	0.0053	0.0052
441	0.0053	0.0053	0.0050	0.0053	0.0052
441.5	0.0052	0.0053	0.0050	0.0053	0.0052
442	0.0052	0.0053	0.0050	0.0053	0.0052
442.5	0.0052	0.0053	0.0050	0.0054	0.0052
443	0.0052	0.0053	0.0050	0.0054	0.0052
443.5	0.0053	0.0053	0.0051	0.0054	0.0052
444	0.0053	0.0054	0.0051	0.0054	0.0052
444.5	0.0053	0.0054	0.0051	0.0053	0.0052
445	0.0053	0.0054	0.0051	0.0053	0.0052
445.5	0.0053	0.0054	0.0051	0.0053	0.0052
446	0.0053	0.0054	0.0050	0.0053	0.0052
446.5	0.0053	0.0054	0.0050	0.0053	0.0052
447	0.0053	0.0054	0.0051	0.0053	0.0051
447.5	0.0053	0.0054	0.0051	0.0053	0.0051
448	0.0053	0.0054	0.0050	0.0053	0.0051
448.5	0.0053	0.0054	0.0050	0.0053	0.0051
449	0.0052	0.0053	0.0050	0.0052	0.0051
449.5	0.0052	0.0053	0.0050	0.0052	0.0051
450	0.0052	0.0053	0.0050	0.0052	0.0051
450.5	0.0052	0.0053	0.0050	0.0052	0.0051

451	0.0052	0.0053	0.0050	0.0053	0.0051
451.5	0.0052	0.0053	0.0050	0.0053	0.0051
452	0.0052	0.0053	0.0050	0.0053	0.0051
452.5	0.0052	0.0053	0.0050	0.0053	0.0051
453	0.0052	0.0053	0.0050	0.0053	0.0051
453.5	0.0052	0.0053	0.0050	0.0052	0.0051
454	0.0052	0.0053	0.0050	0.0052	0.0051
454.5	0.0052	0.0053	0.0050	0.0052	0.0050
455	0.0052	0.0053	0.0050	0.0052	0.0050
455.5	0.0052	0.0053	0.0050	0.0052	0.0050
456	0.0052	0.0053	0.0050	0.0052	0.0050
456.5	0.0052	0.0053	0.0050	0.0052	0.0050
457	0.0052	0.0052	0.0050	0.0052	0.0050
457.5	0.0052	0.0052	0.0050	0.0052	0.0050
458	0.0052	0.0052	0.0050	0.0052	0.0050
458.5	0.0052	0.0053	0.0050	0.0052	0.0050
459	0.0052	0.0053	0.0050	0.0052	0.0049
459.5	0.0052	0.0053	0.0050	0.0052	0.0049
460	0.0052	0.0053	0.0050	0.0052	0.0049
460.5	0.0052	0.0053	0.0050	0.0052	0.0049
461	0.0052	0.0053	0.0050	0.0052	0.0049
461.5	0.0052	0.0053	0.0050	0.0052	0.0049
462	0.0053	0.0053	0.0050	0.0052	0.0049
462.5	0.0053	0.0053	0.0050	0.0052	0.0049
463	0.0053	0.0053	0.0050	0.0052	0.0049
463.5	0.0053	0.0053	0.0050	0.0052	0.0049
464	0.0052	0.0053	0.0050	0.0052	0.0048
464.5	0.0052	0.0053	0.0050	0.0052	0.0048
465	0.0052	0.0053	0.0050	0.0052	0.0048
465.5	0.0052	0.0053	0.0050	0.0052	0.0049
466	0.0052	0.0053	0.0050	0.0052	0.0049
466.5	0.0053	0.0053	0.0050	0.0052	0.0049
467	0.0053	0.0053	0.0050	0.0052	0.0048
467.5	0.0053	0.0053	0.0050	0.0052	0.0048
468	0.0053	0.0053	0.0050	0.0052	0.0048
468.5	0.0053	0.0053	0.0050	0.0052	0.0048
469	0.0053	0.0053	0.0050	0.0052	0.0048
469.5	0.0052	0.0053	0.0050	0.0052	0.0048
470	0.0052	0.0053	0.0050	0.0052	0.0048
470.5	0.0052	0.0053	0.0050	0.0052	0.0047
471	0.0052	0.0053	0.0050	0.0051	0.0047
471.5	0.0052	0.0053	0.0050	0.0051	0.0047
472	0.0052	0.0053	0.0050	0.0051	0.0047
472.5	0.0053	0.0053	0.0050	0.0051	0.0047
473	0.0053	0.0053	0.0050	0.0051	0.0047
473.5	0.0053	0.0053	0.0050	0.0051	0.0047
474	0.0053	0.0053	0.0050	0.0051	0.0047
474.5	0.0053	0.0053	0.0050	0.0051	0.0047
475	0.0053	0.0053	0.0050	0.0051	0.0047
475.5	0.0052	0.0053	0.0050	0.0051	0.0047
476	0.0052	0.0053	0.0050	0.0051	0.0046
476.5	0.0052	0.0053	0.0050	0.0051	0.0046
477	0.0052	0.0053	0.0050	0.0051	0.0046
477.5	0.0052	0.0052	0.0049	0.0051	0.0046
478	0.0052	0.0052	0.0049	0.0051	0.0046
478.5	0.0052	0.0052	0.0049	0.0051	0.0046
479	0.0052	0.0052	0.0049	0.0051	0.0046

479.5	0.0052	0.0052	0.0049	0.0051	0.0045
480	0.0052	0.0052	0.0049	0.0051	0.0045
480.5	0.0052	0.0052	0.0049	0.0051	0.0045
481	0.0052	0.0052	0.0049	0.0050	0.0045
481.5	0.0052	0.0052	0.0049	0.0050	0.0045
482	0.0052	0.0052	0.0049	0.0050	0.0045
482.5	0.0052	0.0052	0.0049	0.0050	0.0045
483	0.0052	0.0052	0.0049	0.0050	0.0045
483.5	0.0053	0.0052	0.0050	0.0050	0.0045
484	0.0053	0.0052	0.0050	0.0050	0.0045
484.5	0.0053	0.0052	0.0050	0.0050	0.0045
485	0.0053	0.0052	0.0050	0.0050	0.0044
485.5	0.0053	0.0052	0.0050	0.0050	0.0044
486	0.0053	0.0052	0.0050	0.0050	0.0044
486.5	0.0053	0.0052	0.0050	0.0050	0.0044
487	0.0053	0.0052	0.0050	0.0050	0.0044
487.5	0.0052	0.0052	0.0050	0.0050	0.0044
488	0.0052	0.0052	0.0049	0.0050	0.0044
488.5	0.0052	0.0052	0.0049	0.0050	0.0044
489	0.0052	0.0052	0.0049	0.0050	0.0044
489.5	0.0052	0.0052	0.0049	0.0050	0.0044
490	0.0052	0.0052	0.0049	0.0050	0.0044
490.5	0.0053	0.0052	0.0049	0.0050	0.0044
491	0.0053	0.0053	0.0049	0.0050	0.0044
491.5	0.0053	0.0053	0.0050	0.0050	0.0043
492	0.0053	0.0053	0.0050	0.0050	0.0043
492.5	0.0053	0.0052	0.0050	0.0050	0.0043
493	0.0053	0.0052	0.0049	0.0050	0.0043
493.5	0.0053	0.0052	0.0049	0.0050	0.0043
494	0.0053	0.0052	0.0049	0.0050	0.0043
494.5	0.0053	0.0052	0.0049	0.0050	0.0043
495	0.0053	0.0053	0.0049	0.0050	0.0043
495.5	0.0053	0.0053	0.0050	0.0050	0.0043
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501	0.0053	0.0053	0.0049	0.0050	0.0042
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502	0.0053	0.0053	0.0050	0.0050	0.0042
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503.5	0.0053	0.0052	0.0049	0.0050	0.0042
504	0.0053	0.0053	0.0049	0.0050	0.0042
504.5	0.0053	0.0053	0.0049	0.0050	0.0041
505	0.0053	0.0053	0.0049	0.0050	0.0041
505.5	0.0053	0.0053	0.0049	0.0050	0.0041
506	0.0053	0.0053	0.0049	0.0050	0.0041
506.5	0.0053	0.0053	0.0049	0.0049	0.0041
507	0.0053	0.0053	0.0049	0.0050	0.0041
507.5	0.0053	0.0053	0.0050	0.0050	0.0041

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511.5	0.0054	0.0052	0.0049	0.0049	0.0040
512	0.0054	0.0052	0.0050	0.0049	0.0040
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567.5	0.0055	0.0054	0.0051	0.0051	0.0042
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573.5	0.0057	0.0055	0.0052	0.0053	0.0044
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590.5	0.0058	0.0056	0.0053	0.0056	0.0048
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595	0.0058	0.0056	0.0053	0.0056	0.0049
595.5	0.0058	0.0056	0.0053	0.0056	0.0049
596	0.0058	0.0056	0.0053	0.0056	0.0049
596.5	0.0058	0.0056	0.0053	0.0056	0.0049
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604.5	0.0059	0.0057	0.0054	0.0057	0.0051
605	0.0059	0.0057	0.0054	0.0058	0.0051
605.5	0.0059	0.0057	0.0054	0.0058	0.0051
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606.5	0.0059	0.0057	0.0054	0.0058	0.0051
607	0.0059	0.0057	0.0054	0.0058	0.0051
607.5	0.0059	0.0057	0.0054	0.0058	0.0051
608	0.0059	0.0057	0.0054	0.0058	0.0051
608.5	0.0059	0.0057	0.0054	0.0058	0.0051
609	0.0059	0.0057	0.0054	0.0058	0.0051
609.5	0.0059	0.0057	0.0054	0.0058	0.0051
610	0.0058	0.0057	0.0054	0.0058	0.0051
610.5	0.0058	0.0057	0.0054	0.0058	0.0051
611	0.0059	0.0057	0.0054	0.0058	0.0051
611.5	0.0059	0.0057	0.0054	0.0058	0.0051
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612.5	0.0059	0.0057	0.0054	0.0058	0.0052
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613.5	0.0060	0.0057	0.0055	0.0059	0.0052
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614.5	0.0060	0.0058	0.0055	0.0059	0.0053
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618.5	0.0060	0.0058	0.0055	0.0059	0.0053
619	0.0061	0.0058	0.0055	0.0060	0.0053
619.5	0.0061	0.0058	0.0055	0.0060	0.0053
620	0.0060	0.0058	0.0055	0.0060	0.0053
620.5	0.0060	0.0058	0.0055	0.0060	0.0053
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621.5	0.0060	0.0058	0.0055	0.0059	0.0054

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622.5	0.0060	0.0058	0.0055	0.0059	0.0054
623	0.0060	0.0058	0.0056	0.0059	0.0054
623.5	0.0061	0.0058	0.0056	0.0060	0.0054
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624.5	0.0061	0.0058	0.0056	0.0060	0.0054
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625.5	0.0061	0.0058	0.0056	0.0060	0.0054
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626.5	0.0061	0.0058	0.0056	0.0060	0.0054
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627.5	0.0061	0.0058	0.0056	0.0060	0.0055
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628.5	0.0061	0.0059	0.0056	0.0060	0.0055
629	0.0061	0.0059	0.0056	0.0060	0.0055
629.5	0.0061	0.0059	0.0056	0.0060	0.0055
630	0.0061	0.0059	0.0056	0.0060	0.0055
630.5	0.0062	0.0059	0.0056	0.0061	0.0055
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631.5	0.0062	0.0059	0.0056	0.0061	0.0055
632	0.0062	0.0059	0.0056	0.0061	0.0055
632.5	0.0061	0.0058	0.0056	0.0061	0.0055
633	0.0061	0.0058	0.0056	0.0060	0.0055
633.5	0.0061	0.0058	0.0056	0.0060	0.0055
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634.5	0.0061	0.0058	0.0056	0.0060	0.0055
635	0.0061	0.0058	0.0056	0.0060	0.0055
635.5	0.0061	0.0058	0.0056	0.0060	0.0055
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636.5	0.0061	0.0058	0.0056	0.0060	0.0055
637	0.0062	0.0058	0.0056	0.0061	0.0056
637.5	0.0062	0.0058	0.0056	0.0061	0.0056
638	0.0062	0.0058	0.0056	0.0061	0.0056
638.5	0.0062	0.0059	0.0056	0.0061	0.0056
639	0.0061	0.0059	0.0056	0.0061	0.0056
639.5	0.0061	0.0059	0.0056	0.0061	0.0056
640	0.0061	0.0059	0.0056	0.0061	0.0056
640.5	0.0061	0.0059	0.0056	0.0061	0.0056
641	0.0061	0.0059	0.0056	0.0061	0.0056
641.5	0.0061	0.0059	0.0056	0.0061	0.0056
642	0.0061	0.0058	0.0056	0.0061	0.0056
642.5	0.0062	0.0058	0.0056	0.0061	0.0056
643	0.0062	0.0058	0.0056	0.0061	0.0056
643.5	0.0062	0.0058	0.0056	0.0061	0.0056
644	0.0062	0.0058	0.0056	0.0061	0.0056
644.5	0.0062	0.0058	0.0056	0.0062	0.0056
645	0.0062	0.0058	0.0056	0.0062	0.0056
645.5	0.0061	0.0059	0.0056	0.0062	0.0056
646	0.0061	0.0059	0.0056	0.0062	0.0056
646.5	0.0061	0.0059	0.0056	0.0062	0.0056
647	0.0062	0.0059	0.0057	0.0062	0.0056
647.5	0.0062	0.0059	0.0057	0.0062	0.0056
648	0.0062	0.0059	0.0057	0.0062	0.0056
648.5	0.0062	0.0059	0.0057	0.0062	0.0057
649	0.0063	0.0059	0.0057	0.0062	0.0057
649.5	0.0063	0.0059	0.0057	0.0063	0.0057
650	0.0063	0.0059	0.0057	0.0063	0.0057

650.5	0.0063	0.0059	0.0057	0.0063	0.0057
651	0.0062	0.0059	0.0057	0.0063	0.0057
651.5	0.0062	0.0059	0.0057	0.0063	0.0057
652	0.0062	0.0059	0.0057	0.0063	0.0057
652.5	0.0062	0.0059	0.0057	0.0063	0.0057
653	0.0062	0.0059	0.0057	0.0063	0.0057
653.5	0.0062	0.0059	0.0057	0.0063	0.0057
654	0.0062	0.0059	0.0057	0.0063	0.0057
654.5	0.0062	0.0059	0.0057	0.0063	0.0057
655	0.0062	0.0059	0.0057	0.0063	0.0057
655.5	0.0063	0.0059	0.0057	0.0063	0.0057
656	0.0063	0.0059	0.0057	0.0063	0.0057
656.5	0.0063	0.0059	0.0057	0.0063	0.0057
657	0.0063	0.0059	0.0057	0.0064	0.0058
657.5	0.0063	0.0059	0.0058	0.0064	0.0058
658	0.0063	0.0060	0.0058	0.0064	0.0058
658.5	0.0063	0.0060	0.0058	0.0064	0.0058
659	0.0063	0.0060	0.0058	0.0064	0.0058
659.5	0.0063	0.0060	0.0058	0.0064	0.0058
660	0.0063	0.0060	0.0058	0.0063	0.0058
660.5	0.0063	0.0060	0.0058	0.0063	0.0058
661	0.0063	0.0060	0.0058	0.0063	0.0058
661.5	0.0063	0.0060	0.0058	0.0063	0.0058
662	0.0063	0.0060	0.0058	0.0063	0.0059
662.5	0.0063	0.0059	0.0058	0.0063	0.0059
663	0.0063	0.0059	0.0058	0.0063	0.0059
663.5	0.0063	0.0059	0.0058	0.0063	0.0059
664	0.0063	0.0059	0.0058	0.0063	0.0059
664.5	0.0063	0.0060	0.0058	0.0063	0.0059
665	0.0063	0.0060	0.0058	0.0063	0.0059
665.5	0.0062	0.0060	0.0057	0.0063	0.0059
666	0.0062	0.0060	0.0057	0.0063	0.0058
666.5	0.0062	0.0059	0.0057	0.0063	0.0058
667	0.0062	0.0059	0.0057	0.0062	0.0058
667.5	0.0062	0.0060	0.0057	0.0062	0.0058
668	0.0062	0.0060	0.0058	0.0063	0.0059
668.5	0.0063	0.0060	0.0058	0.0063	0.0059
669	0.0063	0.0060	0.0058	0.0063	0.0059
669.5	0.0063	0.0060	0.0058	0.0063	0.0060
670	0.0063	0.0060	0.0059	0.0064	0.0060
670.5	0.0063	0.0061	0.0059	0.0064	0.0060
671	0.0063	0.0061	0.0059	0.0064	0.0060
671.5	0.0063	0.0061	0.0058	0.0064	0.0060
672	0.0063	0.0061	0.0058	0.0064	0.0060
672.5	0.0062	0.0061	0.0058	0.0063	0.0060
673	0.0062	0.0060	0.0058	0.0063	0.0060
673.5	0.0062	0.0060	0.0058	0.0063	0.0059
674	0.0062	0.0060	0.0058	0.0063	0.0059
674.5	0.0062	0.0060	0.0058	0.0063	0.0059
675	0.0062	0.0060	0.0058	0.0063	0.0059
675.5	0.0062	0.0060	0.0058	0.0063	0.0059
676	0.0063	0.0060	0.0058	0.0063	0.0060
676.5	0.0063	0.0060	0.0058	0.0063	0.0060
677	0.0063	0.0060	0.0058	0.0063	0.0060
677.5	0.0063	0.0060	0.0058	0.0063	0.0060
678	0.0063	0.0060	0.0058	0.0063	0.0060
678.5	0.0063	0.0060	0.0058	0.0063	0.0060

679	0.0063	0.0060	0.0058	0.0064	0.0060
679.5	0.0063	0.0061	0.0058	0.0064	0.0060
680	0.0063	0.0061	0.0058	0.0064	0.0060
680.5	0.0063	0.0061	0.0058	0.0064	0.0060
681	0.0063	0.0061	0.0058	0.0064	0.0060
681.5	0.0063	0.0061	0.0058	0.0064	0.0060
682	0.0063	0.0061	0.0058	0.0064	0.0060
682.5	0.0064	0.0061	0.0058	0.0064	0.0060
683	0.0064	0.0061	0.0058	0.0064	0.0060
683.5	0.0064	0.0060	0.0058	0.0064	0.0060
684	0.0064	0.0060	0.0058	0.0064	0.0060
684.5	0.0064	0.0060	0.0058	0.0064	0.0060
685	0.0064	0.0060	0.0058	0.0064	0.0060
685.5	0.0063	0.0060	0.0058	0.0064	0.0060
686	0.0063	0.0060	0.0058	0.0064	0.0060
686.5	0.0063	0.0060	0.0058	0.0064	0.0060
687	0.0063	0.0060	0.0058	0.0064	0.0060
687.5	0.0063	0.0060	0.0058	0.0064	0.0060
688	0.0063	0.0061	0.0058	0.0065	0.0060
688.5	0.0064	0.0061	0.0058	0.0065	0.0060
689	0.0064	0.0061	0.0058	0.0065	0.0060
689.5	0.0064	0.0061	0.0059	0.0065	0.0060
690	0.0065	0.0061	0.0059	0.0065	0.0061
690.5	0.0065	0.0061	0.0059	0.0065	0.0061
691	0.0065	0.0061	0.0059	0.0065	0.0061
691.5	0.0065	0.0061	0.0059	0.0065	0.0061
692	0.0065	0.0060	0.0059	0.0065	0.0061
692.5	0.0065	0.0061	0.0059	0.0066	0.0061
693	0.0065	0.0061	0.0059	0.0066	0.0061
693.5	0.0065	0.0061	0.0059	0.0066	0.0061
694	0.0065	0.0061	0.0059	0.0066	0.0061
694.5	0.0065	0.0061	0.0059	0.0066	0.0061
695	0.0065	0.0062	0.0059	0.0066	0.0061
695.5	0.0065	0.0062	0.0059	0.0066	0.0061
696	0.0065	0.0062	0.0060	0.0066	0.0061
696.5	0.0066	0.0062	0.0060	0.0066	0.0062
697	0.0066	0.0062	0.0060	0.0067	0.0062
697.5	0.0067	0.0062	0.0060	0.0067	0.0062
698	0.0067	0.0063	0.0061	0.0067	0.0063
698.5	0.0067	0.0063	0.0061	0.0068	0.0063
699	0.0068	0.0063	0.0061	0.0068	0.0063
699.5	0.0068	0.0063	0.0061	0.0068	0.0063
700	0.0067	0.0063	0.0061	0.0068	0.0063

B.3.2 45° measurements

Table B.8: Measurements of the purple gradient at locations A, B, C, D, and E at 45°. The lamp signal was measured at an integration time of 23 ms and the measurements of the samples were taken at integration times of 2000 ms, 2000 ms, 2200 ms, 2400 ms, and 2500 ms respectively.

λ	A	B	C	D	E
400	0.0062	0.0062	0.0062	0.0061	0.0067
400.5	0.0063	0.0062	0.0061	0.0061	0.0066
401	0.0063	0.0062	0.0061	0.0061	0.0066
401.5	0.0063	0.0061	0.0061	0.0060	0.0066
402	0.0063	0.0061	0.0060	0.0060	0.0066
402.5	0.0063	0.0061	0.0060	0.0060	0.0065
403	0.0062	0.0061	0.0060	0.0060	0.0065
403.5	0.0062	0.0061	0.0061	0.0060	0.0065
404	0.0062	0.0062	0.0061	0.0060	0.0065
404.5	0.0061	0.0062	0.0061	0.0061	0.0065
405	0.0061	0.0062	0.0061	0.0061	0.0065
405.5	0.0062	0.0062	0.0062	0.0061	0.0066
406	0.0063	0.0063	0.0062	0.0061	0.0066
406.5	0.0064	0.0063	0.0062	0.0062	0.0067
407	0.0065	0.0064	0.0063	0.0063	0.0068
407.5	0.0066	0.0064	0.0064	0.0063	0.0068
408	0.0066	0.0064	0.0064	0.0064	0.0068
408.5	0.0066	0.0064	0.0064	0.0064	0.0068
409	0.0065	0.0064	0.0064	0.0064	0.0067
409.5	0.0065	0.0064	0.0064	0.0064	0.0067
410	0.0065	0.0064	0.0064	0.0063	0.0067
410.5	0.0066	0.0064	0.0064	0.0063	0.0068
411	0.0066	0.0065	0.0064	0.0063	0.0068
411.5	0.0066	0.0065	0.0064	0.0063	0.0068
412	0.0066	0.0065	0.0064	0.0064	0.0069
412.5	0.0066	0.0066	0.0065	0.0064	0.0069
413	0.0067	0.0066	0.0065	0.0064	0.0069
413.5	0.0068	0.0068	0.0066	0.0065	0.0070
414	0.0069	0.0068	0.0067	0.0066	0.0070
414.5	0.0069	0.0069	0.0067	0.0066	0.0071
415	0.0069	0.0069	0.0068	0.0066	0.0071
415.5	0.0070	0.0070	0.0068	0.0066	0.0072
416	0.0070	0.0070	0.0068	0.0067	0.0072
416.5	0.0070	0.0070	0.0068	0.0067	0.0072
417	0.0070	0.0070	0.0069	0.0068	0.0073
417.5	0.0071	0.0070	0.0069	0.0068	0.0073
418	0.0071	0.0070	0.0069	0.0068	0.0073
418.5	0.0072	0.0070	0.0069	0.0069	0.0074
419	0.0072	0.0071	0.0070	0.0069	0.0074
419.5	0.0072	0.0071	0.0070	0.0069	0.0074
420	0.0072	0.0072	0.0071	0.0070	0.0074
420.5	0.0072	0.0072	0.0071	0.0070	0.0075
421	0.0073	0.0072	0.0071	0.0070	0.0075
421.5	0.0073	0.0073	0.0071	0.0070	0.0075
422	0.0074	0.0073	0.0071	0.0070	0.0075
422.5	0.0074	0.0073	0.0071	0.0070	0.0076
423	0.0074	0.0074	0.0072	0.0070	0.0076
423.5	0.0074	0.0073	0.0072	0.0070	0.0075

424	0.0074	0.0073	0.0072	0.0070	0.0075
424.5	0.0073	0.0073	0.0072	0.0071	0.0075
425	0.0073	0.0074	0.0072	0.0071	0.0075
425.5	0.0074	0.0074	0.0072	0.0071	0.0076
426	0.0074	0.0074	0.0072	0.0071	0.0076
426.5	0.0075	0.0074	0.0073	0.0071	0.0076
427	0.0075	0.0074	0.0073	0.0071	0.0076
427.5	0.0076	0.0074	0.0073	0.0071	0.0076
428	0.0076	0.0074	0.0073	0.0072	0.0077
428.5	0.0076	0.0074	0.0073	0.0071	0.0077
429	0.0076	0.0074	0.0073	0.0071	0.0077
429.5	0.0075	0.0074	0.0073	0.0071	0.0077
430	0.0075	0.0074	0.0073	0.0071	0.0077
430.5	0.0076	0.0074	0.0073	0.0071	0.0077
431	0.0076	0.0075	0.0073	0.0071	0.0077
431.5	0.0076	0.0075	0.0073	0.0071	0.0077
432	0.0076	0.0075	0.0073	0.0071	0.0077
432.5	0.0076	0.0075	0.0073	0.0071	0.0077
433	0.0075	0.0075	0.0073	0.0071	0.0077
433.5	0.0075	0.0075	0.0073	0.0072	0.0076
434	0.0075	0.0075	0.0073	0.0072	0.0076
434.5	0.0075	0.0075	0.0073	0.0072	0.0076
435	0.0076	0.0075	0.0073	0.0072	0.0076
435.5	0.0076	0.0075	0.0073	0.0072	0.0076
436	0.0076	0.0075	0.0073	0.0072	0.0076
436.5	0.0076	0.0075	0.0073	0.0072	0.0076
437	0.0076	0.0075	0.0073	0.0072	0.0076
437.5	0.0076	0.0075	0.0073	0.0072	0.0076
438	0.0076	0.0075	0.0073	0.0072	0.0076
438.5	0.0076	0.0075	0.0073	0.0072	0.0076
439	0.0076	0.0075	0.0073	0.0072	0.0076
439.5	0.0076	0.0076	0.0074	0.0072	0.0077
440	0.0076	0.0076	0.0074	0.0072	0.0077
440.5	0.0076	0.0076	0.0074	0.0073	0.0077
441	0.0076	0.0076	0.0074	0.0073	0.0077
441.5	0.0076	0.0076	0.0074	0.0072	0.0077
442	0.0076	0.0076	0.0074	0.0072	0.0077
442.5	0.0076	0.0076	0.0074	0.0072	0.0076
443	0.0077	0.0076	0.0074	0.0072	0.0076
443.5	0.0077	0.0076	0.0074	0.0073	0.0077
444	0.0078	0.0076	0.0074	0.0073	0.0077
444.5	0.0078	0.0076	0.0075	0.0073	0.0077
445	0.0078	0.0076	0.0074	0.0073	0.0077
445.5	0.0077	0.0076	0.0074	0.0073	0.0077
446	0.0077	0.0076	0.0074	0.0073	0.0077
446.5	0.0077	0.0076	0.0074	0.0073	0.0077
447	0.0077	0.0076	0.0074	0.0073	0.0077
447.5	0.0077	0.0076	0.0074	0.0073	0.0077
448	0.0077	0.0076	0.0074	0.0072	0.0077
448.5	0.0077	0.0076	0.0074	0.0072	0.0077
449	0.0077	0.0076	0.0074	0.0072	0.0076
449.5	0.0077	0.0076	0.0074	0.0072	0.0076
450	0.0077	0.0076	0.0074	0.0072	0.0076
450.5	0.0077	0.0076	0.0074	0.0072	0.0076
451	0.0076	0.0076	0.0074	0.0072	0.0076
451.5	0.0076	0.0076	0.0074	0.0072	0.0076
452	0.0076	0.0076	0.0074	0.0072	0.0076

452.5	0.0076	0.0076	0.0074	0.0072	0.0076
453	0.0076	0.0076	0.0074	0.0072	0.0076
453.5	0.0076	0.0076	0.0074	0.0072	0.0076
454	0.0076	0.0076	0.0074	0.0072	0.0076
454.5	0.0076	0.0077	0.0074	0.0072	0.0076
455	0.0076	0.0077	0.0074	0.0072	0.0076
455.5	0.0076	0.0076	0.0074	0.0072	0.0075
456	0.0076	0.0076	0.0074	0.0072	0.0075
456.5	0.0076	0.0076	0.0074	0.0072	0.0075
457	0.0076	0.0075	0.0074	0.0072	0.0075
457.5	0.0076	0.0076	0.0074	0.0072	0.0075
458	0.0076	0.0076	0.0074	0.0072	0.0076
458.5	0.0077	0.0076	0.0074	0.0072	0.0076
459	0.0077	0.0076	0.0074	0.0072	0.0076
459.5	0.0076	0.0076	0.0074	0.0072	0.0076
460	0.0076	0.0076	0.0074	0.0072	0.0075
460.5	0.0076	0.0076	0.0074	0.0072	0.0075
461	0.0076	0.0076	0.0074	0.0072	0.0075
461.5	0.0076	0.0076	0.0074	0.0072	0.0075
462	0.0076	0.0076	0.0074	0.0072	0.0075
462.5	0.0077	0.0076	0.0074	0.0072	0.0075
463	0.0077	0.0076	0.0074	0.0072	0.0075
463.5	0.0077	0.0076	0.0074	0.0072	0.0075
464	0.0077	0.0076	0.0074	0.0072	0.0074
464.5	0.0077	0.0076	0.0074	0.0072	0.0074
465	0.0077	0.0076	0.0074	0.0072	0.0074
465.5	0.0077	0.0077	0.0074	0.0072	0.0074
466	0.0077	0.0077	0.0074	0.0072	0.0074
466.5	0.0077	0.0077	0.0074	0.0072	0.0075
467	0.0077	0.0077	0.0074	0.0072	0.0075
467.5	0.0077	0.0077	0.0074	0.0072	0.0075
468	0.0077	0.0077	0.0075	0.0072	0.0074
468.5	0.0077	0.0077	0.0075	0.0072	0.0074
469	0.0077	0.0077	0.0074	0.0072	0.0074
469.5	0.0077	0.0077	0.0074	0.0072	0.0074
470	0.0077	0.0077	0.0074	0.0072	0.0074
470.5	0.0077	0.0077	0.0074	0.0072	0.0074
471	0.0077	0.0077	0.0074	0.0072	0.0073
471.5	0.0077	0.0077	0.0074	0.0072	0.0073
472	0.0077	0.0077	0.0074	0.0072	0.0073
472.5	0.0077	0.0077	0.0074	0.0072	0.0073
473	0.0077	0.0077	0.0074	0.0072	0.0073
473.5	0.0077	0.0077	0.0074	0.0072	0.0073
474	0.0077	0.0077	0.0074	0.0072	0.0074
474.5	0.0077	0.0077	0.0074	0.0072	0.0074
475	0.0077	0.0077	0.0074	0.0072	0.0074
475.5	0.0077	0.0077	0.0074	0.0072	0.0074
476	0.0077	0.0077	0.0074	0.0072	0.0074
476.5	0.0077	0.0077	0.0074	0.0072	0.0074
477	0.0077	0.0077	0.0074	0.0072	0.0073
477.5	0.0077	0.0077	0.0074	0.0072	0.0073
478	0.0077	0.0076	0.0074	0.0072	0.0073
478.5	0.0077	0.0077	0.0074	0.0072	0.0073
479	0.0077	0.0077	0.0074	0.0072	0.0073
479.5	0.0077	0.0077	0.0074	0.0072	0.0073
480	0.0077	0.0077	0.0074	0.0072	0.0073
480.5	0.0077	0.0077	0.0074	0.0072	0.0073

481	0.0077	0.0077	0.0074	0.0072	0.0073
481.5	0.0077	0.0077	0.0074	0.0072	0.0073
482	0.0077	0.0077	0.0074	0.0072	0.0072
482.5	0.0077	0.0077	0.0074	0.0072	0.0072
483	0.0077	0.0077	0.0074	0.0072	0.0072
483.5	0.0077	0.0077	0.0074	0.0072	0.0072
484	0.0077	0.0077	0.0074	0.0072	0.0073
484.5	0.0077	0.0077	0.0075	0.0072	0.0073
485	0.0077	0.0077	0.0075	0.0073	0.0073
485.5	0.0077	0.0077	0.0075	0.0073	0.0072
486	0.0078	0.0077	0.0075	0.0073	0.0072
486.5	0.0078	0.0077	0.0075	0.0073	0.0072
487	0.0078	0.0077	0.0075	0.0072	0.0072
487.5	0.0078	0.0077	0.0075	0.0072	0.0072
488	0.0077	0.0077	0.0075	0.0072	0.0072
488.5	0.0077	0.0077	0.0075	0.0072	0.0072
489	0.0077	0.0077	0.0075	0.0072	0.0072
489.5	0.0078	0.0077	0.0075	0.0073	0.0072
490	0.0078	0.0077	0.0075	0.0073	0.0072
490.5	0.0078	0.0077	0.0075	0.0073	0.0072
491	0.0078	0.0077	0.0075	0.0073	0.0072
491.5	0.0078	0.0077	0.0075	0.0073	0.0072
492	0.0078	0.0077	0.0075	0.0073	0.0072
492.5	0.0078	0.0077	0.0075	0.0073	0.0072
493	0.0078	0.0077	0.0075	0.0073	0.0072
493.5	0.0078	0.0077	0.0075	0.0073	0.0071
494	0.0078	0.0077	0.0075	0.0073	0.0071
494.5	0.0078	0.0078	0.0075	0.0073	0.0072
495	0.0078	0.0078	0.0075	0.0073	0.0072
495.5	0.0078	0.0078	0.0075	0.0073	0.0072
496	0.0079	0.0078	0.0076	0.0073	0.0072
496.5	0.0079	0.0078	0.0075	0.0073	0.0072
497	0.0078	0.0078	0.0075	0.0073	0.0071
497.5	0.0078	0.0078	0.0075	0.0073	0.0071
498	0.0078	0.0078	0.0075	0.0073	0.0071
498.5	0.0078	0.0077	0.0075	0.0073	0.0071
499	0.0078	0.0077	0.0075	0.0072	0.0071
499.5	0.0078	0.0077	0.0074	0.0072	0.0071
500	0.0078	0.0077	0.0074	0.0072	0.0071
500.5	0.0078	0.0077	0.0075	0.0072	0.0071
501	0.0078	0.0078	0.0075	0.0072	0.0071
501.5	0.0079	0.0078	0.0075	0.0073	0.0071
502	0.0079	0.0078	0.0075	0.0073	0.0071
502.5	0.0079	0.0078	0.0075	0.0073	0.0071
503	0.0079	0.0078	0.0075	0.0073	0.0071
503.5	0.0079	0.0078	0.0075	0.0073	0.0071
504	0.0079	0.0078	0.0075	0.0073	0.0071
504.5	0.0079	0.0078	0.0075	0.0073	0.0071
505	0.0079	0.0078	0.0075	0.0073	0.0071
505.5	0.0079	0.0078	0.0075	0.0073	0.0071
506	0.0079	0.0078	0.0075	0.0073	0.0070
506.5	0.0079	0.0078	0.0075	0.0073	0.0070
507	0.0079	0.0078	0.0075	0.0073	0.0070
507.5	0.0079	0.0078	0.0075	0.0073	0.0071
508	0.0079	0.0078	0.0075	0.0073	0.0071
508.5	0.0079	0.0078	0.0075	0.0073	0.0070
509	0.0079	0.0078	0.0075	0.0073	0.0070

509.5	0.0079	0.0078	0.0075	0.0073	0.0070
510	0.0079	0.0078	0.0075	0.0072	0.0070
510.5	0.0078	0.0078	0.0075	0.0073	0.0070
511	0.0078	0.0078	0.0075	0.0073	0.0070
511.5	0.0079	0.0078	0.0075	0.0073	0.0070
512	0.0079	0.0078	0.0075	0.0073	0.0070
512.5	0.0079	0.0078	0.0076	0.0073	0.0070
513	0.0079	0.0079	0.0076	0.0073	0.0070
513.5	0.0079	0.0079	0.0076	0.0073	0.0070
514	0.0079	0.0079	0.0076	0.0073	0.0070
514.5	0.0079	0.0079	0.0076	0.0073	0.0070
515	0.0079	0.0079	0.0076	0.0073	0.0070
515.5	0.0079	0.0079	0.0076	0.0073	0.0070
516	0.0079	0.0078	0.0075	0.0073	0.0070
516.5	0.0078	0.0078	0.0075	0.0073	0.0069
517	0.0078	0.0078	0.0075	0.0072	0.0069
517.5	0.0078	0.0077	0.0075	0.0072	0.0069
518	0.0078	0.0077	0.0075	0.0073	0.0069
518.5	0.0078	0.0078	0.0075	0.0073	0.0069
519	0.0079	0.0078	0.0075	0.0073	0.0069
519.5	0.0079	0.0078	0.0075	0.0073	0.0069
520	0.0079	0.0078	0.0076	0.0073	0.0070
520.5	0.0079	0.0079	0.0076	0.0073	0.0070
521	0.0079	0.0079	0.0076	0.0073	0.0070
521.5	0.0079	0.0079	0.0076	0.0073	0.0070
522	0.0079	0.0079	0.0076	0.0073	0.0070
522.5	0.0079	0.0079	0.0076	0.0073	0.0070
523	0.0079	0.0079	0.0076	0.0073	0.0070
523.5	0.0079	0.0079	0.0076	0.0073	0.0070
524	0.0079	0.0079	0.0076	0.0073	0.0070
524.5	0.0079	0.0079	0.0076	0.0073	0.0070
525	0.0079	0.0079	0.0076	0.0073	0.0070
525.5	0.0079	0.0079	0.0076	0.0073	0.0070
526	0.0079	0.0079	0.0076	0.0073	0.0070
526.5	0.0079	0.0079	0.0076	0.0074	0.0070
527	0.0079	0.0079	0.0076	0.0074	0.0070
527.5	0.0079	0.0079	0.0076	0.0074	0.0070
528	0.0080	0.0079	0.0076	0.0074	0.0070
528.5	0.0080	0.0079	0.0076	0.0074	0.0070
529	0.0080	0.0079	0.0076	0.0074	0.0070
529.5	0.0079	0.0079	0.0076	0.0074	0.0070
530	0.0079	0.0079	0.0076	0.0074	0.0070
530.5	0.0079	0.0079	0.0076	0.0074	0.0070
531	0.0079	0.0079	0.0076	0.0074	0.0070
531.5	0.0079	0.0079	0.0076	0.0074	0.0070
532	0.0079	0.0079	0.0076	0.0074	0.0070
532.5	0.0079	0.0079	0.0076	0.0074	0.0070
533	0.0079	0.0079	0.0076	0.0074	0.0070
533.5	0.0079	0.0079	0.0076	0.0074	0.0070
534	0.0079	0.0079	0.0076	0.0073	0.0070
534.5	0.0079	0.0079	0.0076	0.0073	0.0070
535	0.0079	0.0079	0.0076	0.0074	0.0070
535.5	0.0079	0.0079	0.0076	0.0074	0.0070
536	0.0079	0.0079	0.0077	0.0074	0.0070
536.5	0.0079	0.0080	0.0077	0.0074	0.0070
537	0.0079	0.0080	0.0077	0.0075	0.0070
537.5	0.0080	0.0080	0.0077	0.0075	0.0070

538	0.0080	0.0080	0.0077	0.0075	0.0070
538.5	0.0080	0.0080	0.0077	0.0075	0.0070
539	0.0080	0.0080	0.0077	0.0075	0.0070
539.5	0.0080	0.0080	0.0077	0.0075	0.0070
540	0.0080	0.0080	0.0077	0.0075	0.0070
540.5	0.0080	0.0080	0.0077	0.0075	0.0070
541	0.0080	0.0080	0.0077	0.0075	0.0070
541.5	0.0080	0.0080	0.0077	0.0075	0.0070
542	0.0080	0.0080	0.0077	0.0075	0.0071
542.5	0.0080	0.0080	0.0077	0.0075	0.0071
543	0.0080	0.0080	0.0077	0.0075	0.0071
543.5	0.0080	0.0080	0.0078	0.0075	0.0071
544	0.0080	0.0080	0.0078	0.0076	0.0071
544.5	0.0080	0.0080	0.0078	0.0075	0.0071
545	0.0080	0.0080	0.0078	0.0075	0.0071
545.5	0.0080	0.0080	0.0078	0.0075	0.0071
546	0.0080	0.0080	0.0078	0.0075	0.0071
546.5	0.0081	0.0080	0.0078	0.0075	0.0071
547	0.0081	0.0080	0.0078	0.0075	0.0071
547.5	0.0081	0.0080	0.0078	0.0075	0.0071
548	0.0081	0.0080	0.0078	0.0075	0.0071
548.5	0.0081	0.0080	0.0077	0.0075	0.0071
549	0.0081	0.0080	0.0077	0.0075	0.0071
549.5	0.0081	0.0080	0.0077	0.0075	0.0071
550	0.0081	0.0080	0.0077	0.0075	0.0071
550.5	0.0081	0.0080	0.0077	0.0075	0.0071
551	0.0081	0.0080	0.0078	0.0075	0.0071
551.5	0.0081	0.0080	0.0078	0.0076	0.0071
552	0.0081	0.0081	0.0078	0.0076	0.0071
552.5	0.0081	0.0081	0.0078	0.0076	0.0071
553	0.0081	0.0081	0.0079	0.0076	0.0072
553.5	0.0081	0.0081	0.0079	0.0077	0.0072
554	0.0082	0.0081	0.0079	0.0077	0.0072
554.5	0.0082	0.0081	0.0079	0.0077	0.0072
555	0.0082	0.0081	0.0079	0.0077	0.0072
555.5	0.0082	0.0081	0.0079	0.0077	0.0072
556	0.0082	0.0081	0.0079	0.0077	0.0072
556.5	0.0082	0.0081	0.0079	0.0077	0.0072
557	0.0081	0.0081	0.0079	0.0076	0.0072
557.5	0.0081	0.0081	0.0078	0.0076	0.0071
558	0.0081	0.0081	0.0078	0.0076	0.0071
558.5	0.0081	0.0081	0.0078	0.0076	0.0071
559	0.0081	0.0080	0.0078	0.0076	0.0071
559.5	0.0081	0.0080	0.0078	0.0076	0.0071
560	0.0081	0.0080	0.0078	0.0076	0.0071
560.5	0.0081	0.0080	0.0078	0.0076	0.0072
561	0.0081	0.0080	0.0078	0.0076	0.0072
561.5	0.0081	0.0080	0.0078	0.0076	0.0072
562	0.0081	0.0080	0.0078	0.0077	0.0072
562.5	0.0081	0.0081	0.0079	0.0077	0.0072
563	0.0081	0.0081	0.0079	0.0077	0.0072
563.5	0.0081	0.0081	0.0079	0.0077	0.0073
564	0.0082	0.0081	0.0079	0.0077	0.0073
564.5	0.0082	0.0081	0.0079	0.0078	0.0073
565	0.0082	0.0081	0.0079	0.0078	0.0073
565.5	0.0082	0.0081	0.0079	0.0078	0.0073
566	0.0082	0.0081	0.0079	0.0078	0.0073

566.5	0.0082	0.0081	0.0079	0.0078	0.0073
567	0.0082	0.0081	0.0079	0.0078	0.0073
567.5	0.0082	0.0081	0.0079	0.0078	0.0073
568	0.0082	0.0081	0.0079	0.0078	0.0073
568.5	0.0082	0.0081	0.0079	0.0078	0.0073
569	0.0082	0.0081	0.0079	0.0078	0.0074
569.5	0.0082	0.0082	0.0080	0.0078	0.0074
570	0.0082	0.0082	0.0080	0.0079	0.0074
570.5	0.0082	0.0082	0.0080	0.0079	0.0074
571	0.0082	0.0082	0.0081	0.0079	0.0074
571.5	0.0083	0.0082	0.0081	0.0079	0.0075
572	0.0083	0.0082	0.0081	0.0080	0.0075
572.5	0.0083	0.0082	0.0081	0.0080	0.0075
573	0.0083	0.0082	0.0081	0.0080	0.0075
573.5	0.0083	0.0082	0.0081	0.0080	0.0076
574	0.0083	0.0083	0.0081	0.0080	0.0076
574.5	0.0083	0.0083	0.0081	0.0080	0.0076
575	0.0083	0.0083	0.0081	0.0080	0.0076
575.5	0.0083	0.0083	0.0082	0.0080	0.0077
576	0.0083	0.0083	0.0082	0.0081	0.0077
576.5	0.0083	0.0083	0.0082	0.0081	0.0077
577	0.0083	0.0083	0.0082	0.0081	0.0077
577.5	0.0083	0.0083	0.0082	0.0081	0.0076
578	0.0083	0.0083	0.0082	0.0081	0.0076
578.5	0.0083	0.0083	0.0082	0.0081	0.0076
579	0.0083	0.0083	0.0082	0.0081	0.0076
579.5	0.0083	0.0083	0.0081	0.0080	0.0076
580	0.0083	0.0082	0.0081	0.0080	0.0077
580.5	0.0083	0.0083	0.0081	0.0080	0.0077
581	0.0083	0.0083	0.0082	0.0081	0.0077
581.5	0.0083	0.0083	0.0082	0.0081	0.0077
582	0.0083	0.0083	0.0082	0.0081	0.0077
582.5	0.0083	0.0083	0.0082	0.0081	0.0077
583	0.0084	0.0083	0.0082	0.0081	0.0077
583.5	0.0084	0.0083	0.0082	0.0081	0.0078
584	0.0084	0.0083	0.0082	0.0081	0.0078
584.5	0.0084	0.0083	0.0082	0.0081	0.0078
585	0.0084	0.0083	0.0082	0.0081	0.0078
585.5	0.0084	0.0084	0.0082	0.0082	0.0079
586	0.0084	0.0084	0.0083	0.0082	0.0079
586.5	0.0084	0.0084	0.0083	0.0082	0.0079
587	0.0084	0.0084	0.0083	0.0082	0.0080
587.5	0.0085	0.0084	0.0083	0.0083	0.0080
588	0.0085	0.0085	0.0084	0.0083	0.0080
588.5	0.0085	0.0085	0.0084	0.0083	0.0081
589	0.0085	0.0085	0.0084	0.0084	0.0081
589.5	0.0085	0.0085	0.0084	0.0084	0.0081
590	0.0085	0.0085	0.0084	0.0084	0.0080
590.5	0.0085	0.0085	0.0084	0.0084	0.0080
591	0.0085	0.0085	0.0084	0.0084	0.0080
591.5	0.0085	0.0084	0.0084	0.0084	0.0080
592	0.0085	0.0084	0.0084	0.0083	0.0080
592.5	0.0085	0.0085	0.0084	0.0083	0.0081
593	0.0085	0.0085	0.0084	0.0083	0.0081
593.5	0.0085	0.0085	0.0084	0.0083	0.0081
594	0.0085	0.0085	0.0084	0.0083	0.0081
594.5	0.0085	0.0085	0.0084	0.0084	0.0081

595	0.0085	0.0085	0.0084	0.0084	0.0081
595.5	0.0085	0.0085	0.0084	0.0084	0.0081
596	0.0085	0.0085	0.0084	0.0084	0.0081
596.5	0.0085	0.0085	0.0085	0.0084	0.0081
597	0.0086	0.0085	0.0085	0.0084	0.0081
597.5	0.0086	0.0085	0.0085	0.0084	0.0082
598	0.0086	0.0085	0.0085	0.0085	0.0082
598.5	0.0086	0.0085	0.0085	0.0085	0.0083
599	0.0086	0.0086	0.0085	0.0085	0.0083
599.5	0.0086	0.0086	0.0085	0.0085	0.0083
600	0.0086	0.0086	0.0086	0.0085	0.0083
600.5	0.0086	0.0086	0.0086	0.0085	0.0083
601	0.0086	0.0086	0.0086	0.0086	0.0083
601.5	0.0086	0.0086	0.0086	0.0086	0.0083
602	0.0086	0.0086	0.0086	0.0086	0.0083
602.5	0.0086	0.0086	0.0086	0.0086	0.0083
603	0.0086	0.0086	0.0086	0.0086	0.0083
603.5	0.0086	0.0086	0.0086	0.0086	0.0083
604	0.0087	0.0086	0.0086	0.0086	0.0083
604.5	0.0087	0.0086	0.0086	0.0086	0.0084
605	0.0087	0.0086	0.0086	0.0086	0.0084
605.5	0.0086	0.0086	0.0086	0.0086	0.0084
606	0.0086	0.0086	0.0086	0.0086	0.0085
606.5	0.0086	0.0087	0.0086	0.0086	0.0085
607	0.0086	0.0086	0.0086	0.0086	0.0085
607.5	0.0086	0.0086	0.0086	0.0086	0.0085
608	0.0086	0.0086	0.0086	0.0086	0.0084
608.5	0.0087	0.0086	0.0086	0.0086	0.0084
609	0.0087	0.0086	0.0086	0.0087	0.0084
609.5	0.0087	0.0086	0.0087	0.0087	0.0084
610	0.0087	0.0086	0.0087	0.0087	0.0084
610.5	0.0087	0.0086	0.0087	0.0087	0.0084
611	0.0087	0.0086	0.0086	0.0087	0.0084
611.5	0.0087	0.0086	0.0086	0.0087	0.0084
612	0.0086	0.0086	0.0086	0.0087	0.0085
612.5	0.0086	0.0086	0.0086	0.0087	0.0085
613	0.0087	0.0086	0.0087	0.0087	0.0086
613.5	0.0087	0.0087	0.0087	0.0087	0.0086
614	0.0088	0.0087	0.0088	0.0088	0.0086
614.5	0.0088	0.0088	0.0088	0.0088	0.0087
615	0.0088	0.0088	0.0088	0.0088	0.0086
615.5	0.0089	0.0088	0.0088	0.0089	0.0086
616	0.0089	0.0088	0.0088	0.0088	0.0086
616.5	0.0089	0.0088	0.0088	0.0088	0.0086
617	0.0089	0.0088	0.0088	0.0088	0.0086
617.5	0.0089	0.0088	0.0088	0.0088	0.0086
618	0.0089	0.0088	0.0088	0.0088	0.0086
618.5	0.0089	0.0088	0.0088	0.0089	0.0087
619	0.0088	0.0088	0.0088	0.0089	0.0087
619.5	0.0088	0.0087	0.0088	0.0088	0.0087
620	0.0088	0.0087	0.0088	0.0088	0.0087
620.5	0.0088	0.0087	0.0088	0.0088	0.0087
621	0.0088	0.0087	0.0088	0.0088	0.0087
621.5	0.0088	0.0087	0.0088	0.0088	0.0087
622	0.0088	0.0087	0.0088	0.0089	0.0087
622.5	0.0089	0.0088	0.0088	0.0089	0.0087
623	0.0089	0.0088	0.0089	0.0089	0.0087

623.5	0.0089	0.0088	0.0089	0.0089	0.0087
624	0.0090	0.0088	0.0089	0.0090	0.0087
624.5	0.0089	0.0088	0.0089	0.0090	0.0087
625	0.0089	0.0088	0.0089	0.0090	0.0088
625.5	0.0089	0.0088	0.0089	0.0090	0.0088
626	0.0089	0.0088	0.0089	0.0090	0.0088
626.5	0.0089	0.0088	0.0089	0.0090	0.0089
627	0.0089	0.0088	0.0089	0.0090	0.0089
627.5	0.0089	0.0088	0.0089	0.0090	0.0089
628	0.0089	0.0088	0.0089	0.0090	0.0089
628.5	0.0090	0.0089	0.0090	0.0090	0.0089
629	0.0090	0.0089	0.0090	0.0090	0.0089
629.5	0.0090	0.0089	0.0090	0.0090	0.0089
630	0.0091	0.0089	0.0090	0.0091	0.0089
630.5	0.0091	0.0089	0.0090	0.0091	0.0089
631	0.0091	0.0089	0.0090	0.0091	0.0089
631.5	0.0091	0.0089	0.0090	0.0091	0.0089
632	0.0090	0.0089	0.0090	0.0091	0.0089
632.5	0.0090	0.0089	0.0090	0.0090	0.0089
633	0.0089	0.0089	0.0089	0.0090	0.0089
633.5	0.0089	0.0088	0.0089	0.0090	0.0089
634	0.0089	0.0088	0.0089	0.0090	0.0089
634.5	0.0089	0.0088	0.0089	0.0090	0.0089
635	0.0089	0.0088	0.0090	0.0090	0.0090
635.5	0.0089	0.0088	0.0089	0.0090	0.0089
636	0.0089	0.0088	0.0089	0.0090	0.0089
636.5	0.0089	0.0088	0.0089	0.0090	0.0089
637	0.0090	0.0088	0.0089	0.0090	0.0089
637.5	0.0090	0.0089	0.0090	0.0090	0.0089
638	0.0090	0.0089	0.0090	0.0091	0.0089
638.5	0.0091	0.0089	0.0090	0.0091	0.0089
639	0.0091	0.0089	0.0090	0.0091	0.0089
639.5	0.0091	0.0089	0.0090	0.0091	0.0090
640	0.0090	0.0089	0.0090	0.0091	0.0090
640.5	0.0090	0.0089	0.0090	0.0091	0.0090
641	0.0089	0.0089	0.0090	0.0091	0.0091
641.5	0.0089	0.0089	0.0090	0.0091	0.0091
642	0.0089	0.0089	0.0090	0.0091	0.0091
642.5	0.0089	0.0089	0.0090	0.0091	0.0091
643	0.0089	0.0089	0.0090	0.0091	0.0091
643.5	0.0090	0.0089	0.0090	0.0091	0.0091
644	0.0090	0.0089	0.0090	0.0091	0.0091
644.5	0.0090	0.0090	0.0091	0.0091	0.0090
645	0.0090	0.0090	0.0091	0.0092	0.0090
645.5	0.0091	0.0090	0.0091	0.0092	0.0090
646	0.0091	0.0090	0.0091	0.0092	0.0091
646.5	0.0091	0.0090	0.0091	0.0092	0.0091
647	0.0091	0.0090	0.0091	0.0092	0.0091
647.5	0.0091	0.0090	0.0092	0.0093	0.0092
648	0.0091	0.0091	0.0092	0.0093	0.0092
648.5	0.0091	0.0091	0.0092	0.0093	0.0093
649	0.0091	0.0091	0.0092	0.0093	0.0093
649.5	0.0091	0.0091	0.0092	0.0093	0.0093
650	0.0091	0.0091	0.0092	0.0093	0.0093
650.5	0.0091	0.0091	0.0092	0.0093	0.0093
651	0.0091	0.0091	0.0092	0.0093	0.0092
651.5	0.0091	0.0090	0.0092	0.0093	0.0092

652	0.0091	0.0090	0.0092	0.0093	0.0092
652.5	0.0091	0.0090	0.0092	0.0093	0.0092
653	0.0092	0.0090	0.0092	0.0093	0.0092
653.5	0.0092	0.0091	0.0092	0.0093	0.0092
654	0.0092	0.0091	0.0092	0.0094	0.0092
654.5	0.0092	0.0091	0.0092	0.0094	0.0092
655	0.0091	0.0091	0.0092	0.0094	0.0092
655.5	0.0091	0.0091	0.0092	0.0094	0.0093
656	0.0091	0.0091	0.0092	0.0094	0.0093
656.5	0.0091	0.0091	0.0093	0.0094	0.0093
657	0.0091	0.0091	0.0093	0.0094	0.0093
657.5	0.0091	0.0091	0.0093	0.0095	0.0094
658	0.0092	0.0091	0.0093	0.0095	0.0094
658.5	0.0092	0.0091	0.0093	0.0095	0.0093
659	0.0092	0.0091	0.0093	0.0095	0.0093
659.5	0.0093	0.0091	0.0093	0.0095	0.0093
660	0.0093	0.0091	0.0093	0.0095	0.0093
660.5	0.0093	0.0091	0.0093	0.0095	0.0092
661	0.0093	0.0091	0.0093	0.0095	0.0092
661.5	0.0093	0.0091	0.0093	0.0095	0.0092
662	0.0092	0.0091	0.0093	0.0094	0.0092
662.5	0.0092	0.0091	0.0093	0.0094	0.0092
663	0.0091	0.0090	0.0092	0.0094	0.0093
663.5	0.0091	0.0090	0.0092	0.0094	0.0093
664	0.0091	0.0090	0.0092	0.0094	0.0093
664.5	0.0091	0.0090	0.0092	0.0094	0.0093
665	0.0091	0.0089	0.0092	0.0093	0.0093
665.5	0.0090	0.0089	0.0091	0.0093	0.0092
666	0.0090	0.0089	0.0091	0.0092	0.0092
666.5	0.0090	0.0089	0.0090	0.0092	0.0091
667	0.0090	0.0088	0.0090	0.0092	0.0091
667.5	0.0091	0.0089	0.0090	0.0092	0.0091
668	0.0091	0.0089	0.0090	0.0091	0.0091
668.5	0.0092	0.0089	0.0090	0.0092	0.0091
669	0.0092	0.0090	0.0091	0.0092	0.0092
669.5	0.0092	0.0090	0.0091	0.0092	0.0092
670	0.0092	0.0090	0.0091	0.0092	0.0092
670.5	0.0092	0.0090	0.0091	0.0092	0.0093
671	0.0092	0.0090	0.0091	0.0092	0.0093
671.5	0.0091	0.0090	0.0091	0.0091	0.0093
672	0.0091	0.0089	0.0090	0.0091	0.0093
672.5	0.0090	0.0089	0.0090	0.0091	0.0093
673	0.0090	0.0089	0.0090	0.0090	0.0093
673.5	0.0090	0.0088	0.0089	0.0090	0.0092
674	0.0090	0.0088	0.0089	0.0090	0.0092
674.5	0.0090	0.0088	0.0089	0.0090	0.0092
675	0.0090	0.0088	0.0089	0.0090	0.0091
675.5	0.0090	0.0088	0.0089	0.0090	0.0091
676	0.0090	0.0088	0.0089	0.0090	0.0091
676.5	0.0090	0.0088	0.0089	0.0090	0.0091
677	0.0091	0.0088	0.0090	0.0091	0.0091
677.5	0.0091	0.0089	0.0090	0.0091	0.0091
678	0.0091	0.0089	0.0090	0.0091	0.0091
678.5	0.0091	0.0089	0.0090	0.0091	0.0092
679	0.0091	0.0089	0.0090	0.0091	0.0092
679.5	0.0090	0.0089	0.0090	0.0092	0.0092
680	0.0090	0.0089	0.0091	0.0092	0.0093

680.5	0.0090	0.0089	0.0091	0.0092	0.0093
681	0.0090	0.0089	0.0091	0.0092	0.0093
681.5	0.0091	0.0089	0.0091	0.0093	0.0093
682	0.0091	0.0090	0.0092	0.0093	0.0093
682.5	0.0091	0.0090	0.0092	0.0093	0.0093
683	0.0091	0.0090	0.0092	0.0094	0.0093
683.5	0.0092	0.0090	0.0092	0.0094	0.0093
684	0.0092	0.0090	0.0092	0.0094	0.0092
684.5	0.0092	0.0089	0.0092	0.0094	0.0092
685	0.0092	0.0089	0.0092	0.0094	0.0092
685.5	0.0092	0.0089	0.0092	0.0094	0.0092
686	0.0092	0.0089	0.0092	0.0094	0.0092
686.5	0.0092	0.0090	0.0092	0.0094	0.0092
687	0.0092	0.0090	0.0092	0.0094	0.0093
687.5	0.0092	0.0090	0.0093	0.0095	0.0093
688	0.0092	0.0091	0.0093	0.0095	0.0094
688.5	0.0092	0.0091	0.0093	0.0095	0.0094
689	0.0092	0.0091	0.0093	0.0095	0.0095
689.5	0.0092	0.0091	0.0094	0.0096	0.0095
690	0.0092	0.0092	0.0094	0.0096	0.0095
690.5	0.0092	0.0092	0.0094	0.0096	0.0095
691	0.0092	0.0092	0.0094	0.0096	0.0095
691.5	0.0092	0.0092	0.0094	0.0096	0.0095
692	0.0092	0.0092	0.0094	0.0096	0.0095
692.5	0.0093	0.0092	0.0094	0.0096	0.0094
693	0.0093	0.0092	0.0094	0.0096	0.0094
693.5	0.0093	0.0092	0.0094	0.0096	0.0094
694	0.0094	0.0092	0.0095	0.0097	0.0095
694.5	0.0094	0.0092	0.0095	0.0097	0.0095
695	0.0095	0.0092	0.0095	0.0097	0.0095
695.5	0.0095	0.0093	0.0095	0.0097	0.0096
696	0.0095	0.0093	0.0095	0.0097	0.0097
696.5	0.0095	0.0093	0.0096	0.0098	0.0098
697	0.0095	0.0094	0.0096	0.0098	0.0098
697.5	0.0095	0.0094	0.0097	0.0098	0.0099
698	0.0095	0.0094	0.0097	0.0099	0.0099
698.5	0.0095	0.0095	0.0097	0.0099	0.0100
699	0.0095	0.0095	0.0097	0.0099	0.0100
699.5	0.0095	0.0095	0.0097	0.0100	0.0100
700	0.0095	0.0095	0.0097	0.0100	0.0099

B.3.3 60° measurements

Table B.9: Measurements of the purple gradient at locations A, B, C, D, and E at 60°. The lamp signal was measured at an integration time of 23 ms and the measurements of the samples were taken at integration times of 2000 ms, 2000 ms, 2400 ms, 2400 ms, and 2500 ms respectively.

λ	A	B	C	D	E
400	0.0083	0.0082	0.0096	0.0080	0.0077
400.5	0.0083	0.0083	0.0096	0.0080	0.0077
401	0.0082	0.0083	0.0096	0.0079	0.0077
401.5	0.0082	0.0083	0.0096	0.0078	0.0077
402	0.0081	0.0083	0.0095	0.0078	0.0077
402.5	0.0081	0.0082	0.0095	0.0078	0.0077
403	0.0081	0.0082	0.0095	0.0079	0.0077
403.5	0.0082	0.0082	0.0094	0.0079	0.0077
404	0.0082	0.0082	0.0094	0.0079	0.0077
404.5	0.0082	0.0082	0.0093	0.0080	0.0076
405	0.0081	0.0082	0.0093	0.0080	0.0076
405.5	0.0081	0.0082	0.0093	0.0080	0.0075
406	0.0082	0.0083	0.0093	0.0080	0.0076
406.5	0.0082	0.0083	0.0094	0.0081	0.0077
407	0.0083	0.0084	0.0095	0.0081	0.0077
407.5	0.0084	0.0084	0.0096	0.0082	0.0078
408	0.0084	0.0083	0.0096	0.0082	0.0079
408.5	0.0084	0.0083	0.0096	0.0082	0.0079
409	0.0084	0.0082	0.0096	0.0082	0.0079
409.5	0.0084	0.0083	0.0096	0.0082	0.0079
410	0.0083	0.0083	0.0096	0.0082	0.0079
410.5	0.0083	0.0084	0.0096	0.0082	0.0080
411	0.0083	0.0084	0.0096	0.0083	0.0079
411.5	0.0082	0.0085	0.0096	0.0083	0.0079
412	0.0083	0.0085	0.0096	0.0083	0.0079
412.5	0.0083	0.0085	0.0096	0.0083	0.0079
413	0.0083	0.0085	0.0096	0.0082	0.0079
413.5	0.0084	0.0086	0.0097	0.0083	0.0080
414	0.0085	0.0086	0.0097	0.0084	0.0081
414.5	0.0085	0.0087	0.0097	0.0084	0.0081
415	0.0085	0.0087	0.0097	0.0085	0.0081
415.5	0.0085	0.0087	0.0097	0.0085	0.0080
416	0.0085	0.0087	0.0097	0.0085	0.0080
416.5	0.0085	0.0087	0.0097	0.0085	0.0081
417	0.0086	0.0087	0.0097	0.0085	0.0081
417.5	0.0086	0.0088	0.0097	0.0085	0.0082
418	0.0086	0.0088	0.0097	0.0086	0.0082
418.5	0.0087	0.0088	0.0097	0.0086	0.0082
419	0.0087	0.0088	0.0098	0.0087	0.0082
419.5	0.0087	0.0088	0.0098	0.0087	0.0082
420	0.0087	0.0088	0.0099	0.0087	0.0082
420.5	0.0087	0.0089	0.0099	0.0087	0.0082
421	0.0086	0.0089	0.0100	0.0087	0.0083
421.5	0.0086	0.0089	0.0100	0.0087	0.0083
422	0.0086	0.0089	0.0100	0.0087	0.0084
422.5	0.0087	0.0089	0.0100	0.0087	0.0084
423	0.0087	0.0089	0.0100	0.0088	0.0084
423.5	0.0086	0.0089	0.0100	0.0088	0.0084

424	0.0086	0.0088	0.0100	0.0088	0.0083
424.5	0.0087	0.0088	0.0099	0.0089	0.0084
425	0.0087	0.0089	0.0099	0.0089	0.0084
425.5	0.0087	0.0089	0.0099	0.0089	0.0085
426	0.0088	0.0090	0.0099	0.0088	0.0085
426.5	0.0088	0.0091	0.0100	0.0088	0.0085
427	0.0088	0.0091	0.0100	0.0088	0.0085
427.5	0.0088	0.0091	0.0101	0.0088	0.0085
428	0.0088	0.0091	0.0101	0.0089	0.0085
428.5	0.0088	0.0091	0.0101	0.0089	0.0085
429	0.0088	0.0091	0.0101	0.0089	0.0085
429.5	0.0088	0.0091	0.0100	0.0089	0.0085
430	0.0088	0.0091	0.0100	0.0089	0.0085
430.5	0.0088	0.0090	0.0099	0.0089	0.0085
431	0.0087	0.0090	0.0099	0.0089	0.0084
431.5	0.0087	0.0090	0.0099	0.0089	0.0084
432	0.0087	0.0090	0.0099	0.0089	0.0084
432.5	0.0087	0.0090	0.0099	0.0089	0.0084
433	0.0087	0.0090	0.0099	0.0089	0.0084
433.5	0.0087	0.0090	0.0099	0.0089	0.0084
434	0.0088	0.0090	0.0100	0.0089	0.0084
434.5	0.0088	0.0090	0.0100	0.0089	0.0084
435	0.0088	0.0090	0.0100	0.0089	0.0084
435.5	0.0088	0.0090	0.0100	0.0089	0.0084
436	0.0088	0.0090	0.0100	0.0089	0.0085
436.5	0.0088	0.0090	0.0100	0.0089	0.0085
437	0.0088	0.0090	0.0100	0.0089	0.0085
437.5	0.0088	0.0090	0.0099	0.0088	0.0085
438	0.0087	0.0090	0.0099	0.0088	0.0085
438.5	0.0087	0.0090	0.0099	0.0088	0.0085
439	0.0087	0.0090	0.0099	0.0088	0.0084
439.5	0.0088	0.0091	0.0099	0.0088	0.0084
440	0.0088	0.0091	0.0099	0.0088	0.0085
440.5	0.0088	0.0091	0.0099	0.0088	0.0085
441	0.0088	0.0091	0.0099	0.0088	0.0085
441.5	0.0088	0.0090	0.0100	0.0089	0.0085
442	0.0088	0.0090	0.0100	0.0089	0.0085
442.5	0.0088	0.0090	0.0100	0.0089	0.0085
443	0.0088	0.0091	0.0100	0.0089	0.0085
443.5	0.0089	0.0091	0.0100	0.0089	0.0086
444	0.0089	0.0091	0.0100	0.0090	0.0086
444.5	0.0089	0.0091	0.0100	0.0090	0.0086
445	0.0089	0.0091	0.0100	0.0090	0.0086
445.5	0.0089	0.0091	0.0100	0.0090	0.0086
446	0.0089	0.0091	0.0100	0.0090	0.0086
446.5	0.0089	0.0092	0.0099	0.0090	0.0086
447	0.0089	0.0092	0.0099	0.0090	0.0086
447.5	0.0089	0.0091	0.0099	0.0090	0.0086
448	0.0089	0.0091	0.0099	0.0089	0.0086
448.5	0.0089	0.0091	0.0099	0.0089	0.0086
449	0.0088	0.0090	0.0099	0.0089	0.0086
449.5	0.0088	0.0090	0.0099	0.0089	0.0086
450	0.0088	0.0090	0.0099	0.0089	0.0086
450.5	0.0088	0.0090	0.0099	0.0090	0.0085
451	0.0088	0.0090	0.0099	0.0090	0.0085
451.5	0.0088	0.0091	0.0099	0.0090	0.0085
452	0.0088	0.0091	0.0099	0.0090	0.0085

452.5	0.0088	0.0091	0.0099	0.0090	0.0085
453	0.0088	0.0091	0.0099	0.0089	0.0085
453.5	0.0088	0.0091	0.0099	0.0089	0.0085
454	0.0088	0.0091	0.0099	0.0089	0.0085
454.5	0.0088	0.0091	0.0099	0.0089	0.0085
455	0.0088	0.0091	0.0099	0.0089	0.0085
455.5	0.0088	0.0091	0.0099	0.0089	0.0085
456	0.0088	0.0091	0.0099	0.0089	0.0085
456.5	0.0088	0.0091	0.0098	0.0089	0.0085
457	0.0088	0.0091	0.0098	0.0089	0.0085
457.5	0.0088	0.0091	0.0098	0.0089	0.0085
458	0.0088	0.0092	0.0098	0.0089	0.0085
458.5	0.0088	0.0092	0.0098	0.0089	0.0085
459	0.0089	0.0092	0.0098	0.0089	0.0085
459.5	0.0088	0.0092	0.0098	0.0089	0.0085
460	0.0088	0.0091	0.0098	0.0089	0.0085
460.5	0.0088	0.0091	0.0099	0.0089	0.0085
461	0.0088	0.0092	0.0099	0.0090	0.0085
461.5	0.0088	0.0092	0.0099	0.0090	0.0086
462	0.0089	0.0092	0.0099	0.0090	0.0086
462.5	0.0089	0.0092	0.0099	0.0090	0.0085
463	0.0089	0.0092	0.0099	0.0090	0.0085
463.5	0.0088	0.0092	0.0099	0.0090	0.0085
464	0.0088	0.0092	0.0099	0.0090	0.0085
464.5	0.0088	0.0092	0.0099	0.0090	0.0085
465	0.0089	0.0092	0.0099	0.0090	0.0085
465.5	0.0089	0.0092	0.0099	0.0090	0.0086
466	0.0089	0.0092	0.0099	0.0090	0.0086
466.5	0.0089	0.0092	0.0099	0.0090	0.0086
467	0.0089	0.0092	0.0099	0.0090	0.0086
467.5	0.0089	0.0092	0.0099	0.0090	0.0086
468	0.0089	0.0092	0.0099	0.0090	0.0086
468.5	0.0089	0.0092	0.0099	0.0090	0.0086
469	0.0089	0.0092	0.0099	0.0090	0.0085
469.5	0.0089	0.0092	0.0099	0.0090	0.0085
470	0.0089	0.0092	0.0099	0.0090	0.0085
470.5	0.0089	0.0092	0.0098	0.0090	0.0085
471	0.0089	0.0091	0.0098	0.0089	0.0085
471.5	0.0089	0.0091	0.0098	0.0089	0.0085
472	0.0089	0.0091	0.0098	0.0089	0.0085
472.5	0.0089	0.0092	0.0098	0.0090	0.0085
473	0.0089	0.0092	0.0098	0.0090	0.0085
473.5	0.0089	0.0092	0.0098	0.0090	0.0085
474	0.0089	0.0092	0.0098	0.0090	0.0086
474.5	0.0089	0.0092	0.0098	0.0090	0.0086
475	0.0089	0.0092	0.0098	0.0090	0.0086
475.5	0.0089	0.0092	0.0098	0.0090	0.0086
476	0.0089	0.0092	0.0098	0.0090	0.0086
476.5	0.0089	0.0092	0.0098	0.0090	0.0085
477	0.0089	0.0091	0.0098	0.0090	0.0085
477.5	0.0089	0.0091	0.0098	0.0090	0.0086
478	0.0089	0.0092	0.0098	0.0090	0.0086
478.5	0.0089	0.0092	0.0098	0.0090	0.0086
479	0.0089	0.0092	0.0098	0.0090	0.0086
479.5	0.0089	0.0093	0.0098	0.0090	0.0086
480	0.0090	0.0093	0.0098	0.0091	0.0087
480.5	0.0090	0.0093	0.0098	0.0091	0.0087

481	0.0090	0.0094	0.0098	0.0091	0.0087
481.5	0.0090	0.0094	0.0098	0.0091	0.0087
482	0.0090	0.0094	0.0098	0.0091	0.0087
482.5	0.0090	0.0094	0.0098	0.0091	0.0087
483	0.0090	0.0094	0.0099	0.0091	0.0087
483.5	0.0090	0.0094	0.0099	0.0091	0.0087
484	0.0091	0.0094	0.0099	0.0091	0.0087
484.5	0.0091	0.0094	0.0099	0.0091	0.0087
485	0.0091	0.0094	0.0099	0.0091	0.0087
485.5	0.0091	0.0094	0.0099	0.0091	0.0087
486	0.0091	0.0094	0.0098	0.0091	0.0087
486.5	0.0091	0.0094	0.0099	0.0091	0.0087
487	0.0091	0.0094	0.0099	0.0091	0.0087
487.5	0.0091	0.0094	0.0099	0.0091	0.0087
488	0.0091	0.0094	0.0099	0.0091	0.0087
488.5	0.0091	0.0094	0.0099	0.0091	0.0087
489	0.0091	0.0094	0.0099	0.0091	0.0087
489.5	0.0091	0.0094	0.0099	0.0091	0.0087
490	0.0091	0.0094	0.0099	0.0091	0.0087
490.5	0.0091	0.0094	0.0099	0.0092	0.0087
491	0.0091	0.0094	0.0099	0.0092	0.0087
491.5	0.0091	0.0094	0.0099	0.0092	0.0087
492	0.0091	0.0094	0.0099	0.0091	0.0087
492.5	0.0091	0.0094	0.0099	0.0091	0.0087
493	0.0090	0.0094	0.0099	0.0091	0.0087
493.5	0.0090	0.0094	0.0099	0.0091	0.0087
494	0.0091	0.0094	0.0099	0.0091	0.0087
494.5	0.0091	0.0095	0.0099	0.0092	0.0088
495	0.0091	0.0095	0.0099	0.0092	0.0088
495.5	0.0091	0.0095	0.0099	0.0092	0.0088
496	0.0092	0.0095	0.0099	0.0092	0.0088
496.5	0.0091	0.0095	0.0099	0.0092	0.0088
497	0.0091	0.0094	0.0099	0.0092	0.0087
497.5	0.0091	0.0094	0.0098	0.0091	0.0087
498	0.0091	0.0094	0.0098	0.0091	0.0087
498.5	0.0091	0.0094	0.0098	0.0091	0.0087
499	0.0090	0.0094	0.0098	0.0091	0.0087
499.5	0.0090	0.0094	0.0098	0.0091	0.0087
500	0.0091	0.0094	0.0098	0.0091	0.0086
500.5	0.0091	0.0094	0.0098	0.0091	0.0087
501	0.0091	0.0094	0.0098	0.0091	0.0087
501.5	0.0091	0.0094	0.0098	0.0091	0.0087
502	0.0091	0.0094	0.0098	0.0092	0.0087
502.5	0.0091	0.0094	0.0098	0.0092	0.0088
503	0.0091	0.0094	0.0098	0.0092	0.0088
503.5	0.0091	0.0094	0.0098	0.0092	0.0088
504	0.0092	0.0094	0.0098	0.0092	0.0088
504.5	0.0092	0.0095	0.0098	0.0092	0.0088
505	0.0092	0.0095	0.0098	0.0092	0.0088
505.5	0.0091	0.0095	0.0098	0.0092	0.0088
506	0.0091	0.0095	0.0098	0.0092	0.0088
506.5	0.0091	0.0095	0.0098	0.0092	0.0088
507	0.0091	0.0095	0.0098	0.0092	0.0088
507.5	0.0091	0.0095	0.0098	0.0092	0.0088
508	0.0092	0.0095	0.0098	0.0092	0.0088
508.5	0.0092	0.0095	0.0098	0.0092	0.0088
509	0.0092	0.0095	0.0098	0.0092	0.0088

509.5	0.0092	0.0095	0.0098	0.0092	0.0088
510	0.0092	0.0095	0.0098	0.0092	0.0088
510.5	0.0092	0.0095	0.0098	0.0091	0.0088
511	0.0092	0.0095	0.0098	0.0092	0.0088
511.5	0.0092	0.0095	0.0098	0.0092	0.0088
512	0.0092	0.0095	0.0098	0.0092	0.0088
512.5	0.0092	0.0095	0.0098	0.0092	0.0088
513	0.0092	0.0096	0.0098	0.0092	0.0088
513.5	0.0092	0.0096	0.0098	0.0093	0.0089
514	0.0093	0.0096	0.0099	0.0093	0.0089
514.5	0.0093	0.0096	0.0099	0.0093	0.0089
515	0.0093	0.0096	0.0099	0.0093	0.0089
515.5	0.0093	0.0096	0.0098	0.0093	0.0089
516	0.0092	0.0096	0.0098	0.0093	0.0089
516.5	0.0092	0.0096	0.0098	0.0092	0.0088
517	0.0092	0.0095	0.0098	0.0092	0.0088
517.5	0.0092	0.0095	0.0098	0.0092	0.0088
518	0.0092	0.0095	0.0098	0.0092	0.0088
518.5	0.0093	0.0095	0.0098	0.0092	0.0088
519	0.0093	0.0096	0.0098	0.0093	0.0089
519.5	0.0093	0.0096	0.0099	0.0093	0.0089
520	0.0093	0.0096	0.0099	0.0093	0.0089
520.5	0.0094	0.0097	0.0099	0.0093	0.0090
521	0.0094	0.0097	0.0099	0.0093	0.0090
521.5	0.0094	0.0097	0.0099	0.0093	0.0090
522	0.0094	0.0097	0.0099	0.0093	0.0090
522.5	0.0094	0.0097	0.0099	0.0093	0.0090
523	0.0094	0.0097	0.0099	0.0093	0.0090
523.5	0.0094	0.0097	0.0099	0.0093	0.0090
524	0.0094	0.0097	0.0099	0.0094	0.0090
524.5	0.0094	0.0097	0.0099	0.0094	0.0090
525	0.0094	0.0097	0.0099	0.0094	0.0090
525.5	0.0094	0.0097	0.0099	0.0094	0.0090
526	0.0094	0.0097	0.0099	0.0094	0.0091
526.5	0.0094	0.0097	0.0100	0.0094	0.0091
527	0.0095	0.0097	0.0100	0.0094	0.0091
527.5	0.0095	0.0097	0.0100	0.0094	0.0091
528	0.0095	0.0097	0.0100	0.0094	0.0092
528.5	0.0095	0.0097	0.0100	0.0094	0.0092
529	0.0095	0.0097	0.0100	0.0094	0.0092
529.5	0.0095	0.0097	0.0100	0.0094	0.0092
530	0.0095	0.0098	0.0100	0.0095	0.0092
530.5	0.0095	0.0098	0.0100	0.0095	0.0092
531	0.0095	0.0098	0.0100	0.0095	0.0092
531.5	0.0095	0.0098	0.0100	0.0095	0.0092
532	0.0095	0.0098	0.0100	0.0095	0.0092
532.5	0.0095	0.0098	0.0100	0.0094	0.0092
533	0.0095	0.0098	0.0100	0.0094	0.0092
533.5	0.0095	0.0097	0.0099	0.0094	0.0092
534	0.0095	0.0097	0.0099	0.0094	0.0092
534.5	0.0095	0.0097	0.0099	0.0094	0.0092
535	0.0095	0.0097	0.0100	0.0094	0.0092
535.5	0.0095	0.0098	0.0100	0.0094	0.0092
536	0.0095	0.0098	0.0100	0.0095	0.0092
536.5	0.0095	0.0098	0.0100	0.0095	0.0093
537	0.0095	0.0098	0.0100	0.0095	0.0093
537.5	0.0096	0.0098	0.0100	0.0095	0.0093

538	0.0096	0.0098	0.0100	0.0095	0.0093
538.5	0.0096	0.0098	0.0100	0.0096	0.0093
539	0.0096	0.0098	0.0100	0.0096	0.0093
539.5	0.0096	0.0098	0.0100	0.0096	0.0093
540	0.0096	0.0098	0.0100	0.0096	0.0093
540.5	0.0096	0.0098	0.0100	0.0095	0.0093
541	0.0096	0.0098	0.0100	0.0095	0.0093
541.5	0.0095	0.0098	0.0100	0.0095	0.0093
542	0.0095	0.0098	0.0100	0.0095	0.0093
542.5	0.0095	0.0098	0.0100	0.0095	0.0093
543	0.0095	0.0098	0.0100	0.0095	0.0093
543.5	0.0096	0.0098	0.0100	0.0095	0.0094
544	0.0096	0.0098	0.0100	0.0095	0.0094
544.5	0.0096	0.0098	0.0100	0.0096	0.0094
545	0.0096	0.0099	0.0100	0.0096	0.0094
545.5	0.0097	0.0099	0.0100	0.0096	0.0094
546	0.0097	0.0099	0.0100	0.0096	0.0094
546.5	0.0097	0.0099	0.0100	0.0096	0.0094
547	0.0096	0.0099	0.0100	0.0096	0.0094
547.5	0.0096	0.0098	0.0100	0.0095	0.0094
548	0.0096	0.0098	0.0100	0.0095	0.0093
548.5	0.0096	0.0098	0.0100	0.0095	0.0093
549	0.0096	0.0098	0.0099	0.0095	0.0093
549.5	0.0096	0.0098	0.0099	0.0095	0.0093
550	0.0096	0.0098	0.0099	0.0095	0.0093
550.5	0.0096	0.0098	0.0099	0.0096	0.0094
551	0.0096	0.0098	0.0099	0.0096	0.0094
551.5	0.0096	0.0099	0.0099	0.0096	0.0094
552	0.0097	0.0099	0.0099	0.0096	0.0094
552.5	0.0097	0.0099	0.0100	0.0096	0.0095
553	0.0097	0.0100	0.0100	0.0096	0.0095
553.5	0.0097	0.0100	0.0100	0.0096	0.0095
554	0.0097	0.0100	0.0100	0.0097	0.0095
554.5	0.0097	0.0100	0.0100	0.0097	0.0095
555	0.0097	0.0099	0.0100	0.0097	0.0095
555.5	0.0097	0.0099	0.0100	0.0097	0.0095
556	0.0097	0.0099	0.0100	0.0097	0.0095
556.5	0.0097	0.0099	0.0100	0.0097	0.0095
557	0.0097	0.0099	0.0100	0.0097	0.0095
557.5	0.0097	0.0099	0.0099	0.0096	0.0095
558	0.0097	0.0099	0.0099	0.0096	0.0095
558.5	0.0096	0.0099	0.0099	0.0096	0.0095
559	0.0096	0.0099	0.0099	0.0096	0.0095
559.5	0.0096	0.0099	0.0099	0.0096	0.0095
560	0.0096	0.0099	0.0099	0.0096	0.0095
560.5	0.0096	0.0099	0.0099	0.0096	0.0095
561	0.0096	0.0099	0.0099	0.0096	0.0096
561.5	0.0096	0.0099	0.0099	0.0096	0.0096
562	0.0096	0.0099	0.0099	0.0097	0.0096
562.5	0.0097	0.0099	0.0100	0.0097	0.0096
563	0.0097	0.0099	0.0100	0.0097	0.0097
563.5	0.0097	0.0099	0.0100	0.0097	0.0097
564	0.0097	0.0099	0.0100	0.0098	0.0097
564.5	0.0097	0.0099	0.0100	0.0098	0.0097
565	0.0097	0.0099	0.0100	0.0097	0.0097
565.5	0.0097	0.0099	0.0100	0.0097	0.0097
566	0.0097	0.0099	0.0100	0.0097	0.0096

566.5	0.0097	0.0099	0.0100	0.0097	0.0096
567	0.0097	0.0099	0.0100	0.0097	0.0096
567.5	0.0097	0.0099	0.0100	0.0097	0.0097
568	0.0097	0.0099	0.0100	0.0097	0.0097
568.5	0.0097	0.0099	0.0100	0.0098	0.0097
569	0.0097	0.0099	0.0100	0.0098	0.0097
569.5	0.0097	0.0099	0.0100	0.0098	0.0097
570	0.0097	0.0099	0.0100	0.0098	0.0097
570.5	0.0097	0.0100	0.0100	0.0098	0.0098
571	0.0098	0.0100	0.0100	0.0099	0.0098
571.5	0.0098	0.0100	0.0100	0.0099	0.0098
572	0.0098	0.0100	0.0100	0.0099	0.0098
572.5	0.0098	0.0100	0.0100	0.0099	0.0098
573	0.0098	0.0101	0.0100	0.0099	0.0099
573.5	0.0098	0.0101	0.0100	0.0099	0.0099
574	0.0098	0.0101	0.0100	0.0099	0.0099
574.5	0.0098	0.0101	0.0101	0.0099	0.0100
575	0.0098	0.0101	0.0101	0.0099	0.0100
575.5	0.0099	0.0101	0.0101	0.0100	0.0100
576	0.0099	0.0101	0.0101	0.0100	0.0100
576.5	0.0099	0.0101	0.0101	0.0100	0.0100
577	0.0099	0.0101	0.0101	0.0100	0.0100
577.5	0.0099	0.0101	0.0101	0.0100	0.0100
578	0.0099	0.0101	0.0100	0.0100	0.0100
578.5	0.0099	0.0101	0.0100	0.0099	0.0100
579	0.0099	0.0101	0.0100	0.0099	0.0099
579.5	0.0099	0.0101	0.0099	0.0099	0.0099
580	0.0098	0.0101	0.0100	0.0099	0.0099
580.5	0.0098	0.0101	0.0100	0.0099	0.0099
581	0.0098	0.0101	0.0100	0.0099	0.0100
581.5	0.0098	0.0101	0.0100	0.0099	0.0100
582	0.0098	0.0101	0.0100	0.0099	0.0100
582.5	0.0098	0.0101	0.0100	0.0099	0.0100
583	0.0098	0.0101	0.0100	0.0099	0.0100
583.5	0.0098	0.0100	0.0100	0.0100	0.0100
584	0.0098	0.0101	0.0100	0.0100	0.0100
584.5	0.0099	0.0101	0.0100	0.0100	0.0101
585	0.0099	0.0101	0.0100	0.0100	0.0101
585.5	0.0099	0.0101	0.0100	0.0100	0.0101
586	0.0099	0.0102	0.0100	0.0101	0.0101
586.5	0.0100	0.0102	0.0100	0.0101	0.0102
587	0.0100	0.0102	0.0101	0.0101	0.0102
587.5	0.0100	0.0103	0.0101	0.0101	0.0102
588	0.0100	0.0103	0.0101	0.0101	0.0103
588.5	0.0100	0.0103	0.0101	0.0102	0.0103
589	0.0100	0.0103	0.0101	0.0102	0.0103
589.5	0.0101	0.0103	0.0101	0.0102	0.0104
590	0.0101	0.0102	0.0101	0.0102	0.0104
590.5	0.0101	0.0102	0.0101	0.0102	0.0104
591	0.0101	0.0102	0.0100	0.0102	0.0104
591.5	0.0101	0.0102	0.0100	0.0102	0.0104
592	0.0101	0.0102	0.0100	0.0102	0.0104
592.5	0.0101	0.0103	0.0101	0.0102	0.0104
593	0.0101	0.0103	0.0101	0.0102	0.0104
593.5	0.0101	0.0103	0.0101	0.0102	0.0104
594	0.0101	0.0103	0.0101	0.0102	0.0104
594.5	0.0101	0.0103	0.0100	0.0102	0.0104

595	0.0101	0.0103	0.0100	0.0102	0.0104
595.5	0.0101	0.0103	0.0101	0.0102	0.0105
596	0.0101	0.0103	0.0101	0.0102	0.0105
596.5	0.0101	0.0103	0.0101	0.0102	0.0105
597	0.0101	0.0103	0.0101	0.0103	0.0106
597.5	0.0101	0.0103	0.0101	0.0103	0.0106
598	0.0101	0.0103	0.0101	0.0103	0.0106
598.5	0.0102	0.0103	0.0101	0.0104	0.0106
599	0.0102	0.0104	0.0102	0.0104	0.0107
599.5	0.0102	0.0104	0.0102	0.0104	0.0107
600	0.0102	0.0104	0.0101	0.0104	0.0107
600.5	0.0102	0.0104	0.0101	0.0104	0.0107
601	0.0102	0.0104	0.0101	0.0104	0.0107
601.5	0.0102	0.0104	0.0101	0.0103	0.0108
602	0.0102	0.0104	0.0101	0.0103	0.0108
602.5	0.0101	0.0104	0.0101	0.0103	0.0108
603	0.0101	0.0104	0.0101	0.0103	0.0108
603.5	0.0101	0.0104	0.0101	0.0103	0.0108
604	0.0101	0.0104	0.0101	0.0103	0.0108
604.5	0.0101	0.0104	0.0101	0.0103	0.0108
605	0.0101	0.0104	0.0101	0.0104	0.0108
605.5	0.0101	0.0104	0.0101	0.0104	0.0109
606	0.0102	0.0104	0.0101	0.0104	0.0109
606.5	0.0102	0.0104	0.0101	0.0104	0.0108
607	0.0101	0.0104	0.0101	0.0104	0.0108
607.5	0.0101	0.0104	0.0101	0.0103	0.0108
608	0.0101	0.0104	0.0101	0.0103	0.0108
608.5	0.0101	0.0104	0.0101	0.0103	0.0108
609	0.0101	0.0104	0.0101	0.0103	0.0108
609.5	0.0101	0.0104	0.0101	0.0103	0.0108
610	0.0101	0.0104	0.0101	0.0103	0.0108
610.5	0.0101	0.0104	0.0101	0.0103	0.0108
611	0.0101	0.0104	0.0101	0.0103	0.0108
611.5	0.0100	0.0104	0.0101	0.0103	0.0108
612	0.0100	0.0104	0.0101	0.0104	0.0108
612.5	0.0100	0.0104	0.0101	0.0104	0.0108
613	0.0101	0.0104	0.0101	0.0105	0.0109
613.5	0.0101	0.0105	0.0102	0.0105	0.0109
614	0.0102	0.0105	0.0102	0.0106	0.0110
614.5	0.0102	0.0105	0.0102	0.0106	0.0110
615	0.0102	0.0105	0.0102	0.0106	0.0110
615.5	0.0103	0.0105	0.0102	0.0106	0.0110
616	0.0102	0.0105	0.0102	0.0106	0.0110
616.5	0.0102	0.0105	0.0102	0.0105	0.0110
617	0.0102	0.0105	0.0102	0.0105	0.0110
617.5	0.0102	0.0105	0.0102	0.0105	0.0110
618	0.0102	0.0106	0.0102	0.0105	0.0110
618.5	0.0102	0.0106	0.0102	0.0105	0.0111
619	0.0102	0.0106	0.0102	0.0105	0.0111
619.5	0.0102	0.0106	0.0102	0.0105	0.0111
620	0.0102	0.0105	0.0102	0.0106	0.0110
620.5	0.0102	0.0105	0.0102	0.0106	0.0110
621	0.0102	0.0105	0.0102	0.0106	0.0110
621.5	0.0102	0.0104	0.0102	0.0106	0.0110
622	0.0102	0.0105	0.0102	0.0106	0.0110
622.5	0.0102	0.0105	0.0102	0.0106	0.0111
623	0.0103	0.0105	0.0102	0.0106	0.0111

623.5	0.0103	0.0105	0.0102	0.0106	0.0111
624	0.0103	0.0105	0.0102	0.0106	0.0111
624.5	0.0103	0.0105	0.0102	0.0106	0.0111
625	0.0103	0.0106	0.0102	0.0106	0.0111
625.5	0.0103	0.0106	0.0102	0.0106	0.0111
626	0.0103	0.0106	0.0102	0.0106	0.0111
626.5	0.0103	0.0107	0.0102	0.0106	0.0112
627	0.0103	0.0107	0.0103	0.0106	0.0112
627.5	0.0103	0.0107	0.0103	0.0106	0.0112
628	0.0103	0.0107	0.0103	0.0107	0.0112
628.5	0.0103	0.0107	0.0103	0.0107	0.0112
629	0.0103	0.0107	0.0103	0.0107	0.0112
629.5	0.0103	0.0106	0.0103	0.0107	0.0112
630	0.0103	0.0106	0.0103	0.0107	0.0112
630.5	0.0103	0.0106	0.0103	0.0107	0.0112
631	0.0103	0.0106	0.0103	0.0107	0.0112
631.5	0.0104	0.0106	0.0103	0.0107	0.0112
632	0.0104	0.0106	0.0103	0.0107	0.0112
632.5	0.0103	0.0106	0.0103	0.0107	0.0112
633	0.0103	0.0106	0.0102	0.0106	0.0111
633.5	0.0103	0.0106	0.0102	0.0106	0.0111
634	0.0103	0.0106	0.0102	0.0106	0.0111
634.5	0.0103	0.0106	0.0103	0.0106	0.0111
635	0.0103	0.0106	0.0103	0.0106	0.0112
635.5	0.0103	0.0106	0.0103	0.0106	0.0111
636	0.0102	0.0106	0.0103	0.0106	0.0111
636.5	0.0102	0.0106	0.0103	0.0106	0.0111
637	0.0103	0.0106	0.0103	0.0107	0.0111
637.5	0.0103	0.0106	0.0103	0.0107	0.0111
638	0.0103	0.0106	0.0103	0.0107	0.0111
638.5	0.0103	0.0106	0.0103	0.0108	0.0112
639	0.0104	0.0106	0.0102	0.0108	0.0112
639.5	0.0104	0.0106	0.0102	0.0108	0.0112
640	0.0104	0.0106	0.0102	0.0107	0.0112
640.5	0.0104	0.0106	0.0102	0.0107	0.0112
641	0.0104	0.0106	0.0102	0.0107	0.0112
641.5	0.0104	0.0106	0.0102	0.0106	0.0112
642	0.0104	0.0106	0.0102	0.0106	0.0113
642.5	0.0103	0.0107	0.0102	0.0106	0.0113
643	0.0103	0.0107	0.0102	0.0106	0.0113
643.5	0.0103	0.0107	0.0102	0.0107	0.0113
644	0.0103	0.0107	0.0102	0.0107	0.0113
644.5	0.0103	0.0107	0.0103	0.0107	0.0114
645	0.0103	0.0107	0.0103	0.0107	0.0114
645.5	0.0104	0.0107	0.0103	0.0108	0.0114
646	0.0104	0.0107	0.0103	0.0108	0.0114
646.5	0.0104	0.0107	0.0103	0.0108	0.0114
647	0.0104	0.0107	0.0103	0.0108	0.0114
647.5	0.0105	0.0107	0.0103	0.0109	0.0114
648	0.0105	0.0107	0.0103	0.0109	0.0114
648.5	0.0105	0.0107	0.0103	0.0109	0.0115
649	0.0105	0.0107	0.0103	0.0109	0.0115
649.5	0.0105	0.0107	0.0103	0.0109	0.0115
650	0.0105	0.0108	0.0103	0.0109	0.0115
650.5	0.0105	0.0108	0.0102	0.0108	0.0116
651	0.0105	0.0108	0.0102	0.0108	0.0116
651.5	0.0105	0.0108	0.0102	0.0108	0.0116

652	0.0105	0.0108	0.0102	0.0108	0.0115
652.5	0.0105	0.0108	0.0102	0.0108	0.0116
653	0.0105	0.0109	0.0103	0.0108	0.0116
653.5	0.0105	0.0109	0.0103	0.0108	0.0116
654	0.0105	0.0109	0.0103	0.0109	0.0116
654.5	0.0105	0.0109	0.0103	0.0109	0.0116
655	0.0105	0.0108	0.0103	0.0109	0.0116
655.5	0.0105	0.0108	0.0103	0.0109	0.0116
656	0.0105	0.0108	0.0103	0.0109	0.0116
656.5	0.0106	0.0108	0.0103	0.0109	0.0116
657	0.0106	0.0108	0.0103	0.0109	0.0116
657.5	0.0107	0.0108	0.0103	0.0109	0.0117
658	0.0107	0.0108	0.0103	0.0109	0.0117
658.5	0.0107	0.0108	0.0103	0.0109	0.0117
659	0.0107	0.0108	0.0103	0.0109	0.0117
659.5	0.0107	0.0108	0.0103	0.0108	0.0117
660	0.0106	0.0108	0.0103	0.0108	0.0117
660.5	0.0106	0.0108	0.0103	0.0108	0.0117
661	0.0106	0.0108	0.0103	0.0108	0.0116
661.5	0.0106	0.0108	0.0103	0.0108	0.0116
662	0.0105	0.0108	0.0103	0.0108	0.0115
662.5	0.0105	0.0108	0.0103	0.0108	0.0115
663	0.0105	0.0107	0.0103	0.0108	0.0114
663.5	0.0105	0.0107	0.0103	0.0108	0.0114
664	0.0105	0.0107	0.0103	0.0108	0.0114
664.5	0.0104	0.0106	0.0103	0.0108	0.0113
665	0.0104	0.0106	0.0103	0.0108	0.0113
665.5	0.0104	0.0105	0.0103	0.0107	0.0112
666	0.0103	0.0105	0.0103	0.0107	0.0112
666.5	0.0103	0.0104	0.0102	0.0106	0.0111
667	0.0103	0.0104	0.0102	0.0106	0.0111
667.5	0.0103	0.0104	0.0103	0.0105	0.0111
668	0.0103	0.0104	0.0103	0.0105	0.0111
668.5	0.0103	0.0104	0.0103	0.0105	0.0111
669	0.0103	0.0105	0.0104	0.0106	0.0110
669.5	0.0104	0.0105	0.0104	0.0106	0.0110
670	0.0104	0.0106	0.0105	0.0106	0.0110
670.5	0.0104	0.0106	0.0105	0.0106	0.0110
671	0.0103	0.0106	0.0105	0.0106	0.0110
671.5	0.0103	0.0106	0.0105	0.0106	0.0109
672	0.0102	0.0106	0.0105	0.0106	0.0109
672.5	0.0102	0.0105	0.0105	0.0105	0.0108
673	0.0101	0.0105	0.0104	0.0105	0.0108
673.5	0.0101	0.0105	0.0104	0.0105	0.0108
674	0.0101	0.0104	0.0104	0.0105	0.0107
674.5	0.0101	0.0104	0.0104	0.0105	0.0107
675	0.0101	0.0104	0.0105	0.0105	0.0107
675.5	0.0102	0.0104	0.0105	0.0105	0.0107
676	0.0102	0.0104	0.0105	0.0105	0.0108
676.5	0.0102	0.0104	0.0105	0.0105	0.0108
677	0.0102	0.0104	0.0105	0.0105	0.0109
677.5	0.0103	0.0104	0.0105	0.0105	0.0109
678	0.0103	0.0104	0.0105	0.0105	0.0110
678.5	0.0103	0.0104	0.0105	0.0105	0.0110
679	0.0103	0.0105	0.0105	0.0105	0.0111
679.5	0.0104	0.0105	0.0105	0.0106	0.0111
680	0.0104	0.0105	0.0105	0.0106	0.0112

680.5	0.0104	0.0106	0.0105	0.0106	0.0112
681	0.0105	0.0106	0.0105	0.0107	0.0113
681.5	0.0105	0.0107	0.0105	0.0107	0.0113
682	0.0105	0.0107	0.0106	0.0108	0.0114
682.5	0.0106	0.0107	0.0106	0.0108	0.0114
683	0.0106	0.0107	0.0106	0.0109	0.0115
683.5	0.0106	0.0107	0.0106	0.0109	0.0115
684	0.0105	0.0107	0.0106	0.0109	0.0115
684.5	0.0105	0.0106	0.0106	0.0108	0.0115
685	0.0105	0.0106	0.0105	0.0108	0.0115
685.5	0.0105	0.0106	0.0105	0.0108	0.0115
686	0.0105	0.0106	0.0105	0.0109	0.0116
686.5	0.0106	0.0106	0.0105	0.0109	0.0116
687	0.0106	0.0106	0.0105	0.0109	0.0117
687.5	0.0107	0.0107	0.0105	0.0109	0.0117
688	0.0107	0.0107	0.0105	0.0109	0.0118
688.5	0.0108	0.0108	0.0105	0.0110	0.0118
689	0.0108	0.0108	0.0106	0.0110	0.0118
689.5	0.0108	0.0109	0.0106	0.0110	0.0118
690	0.0108	0.0109	0.0106	0.0110	0.0118
690.5	0.0108	0.0110	0.0106	0.0110	0.0118
691	0.0108	0.0110	0.0106	0.0110	0.0117
691.5	0.0108	0.0110	0.0106	0.0110	0.0117
692	0.0108	0.0110	0.0106	0.0110	0.0117
692.5	0.0107	0.0110	0.0106	0.0111	0.0117
693	0.0107	0.0110	0.0106	0.0111	0.0117
693.5	0.0107	0.0110	0.0106	0.0111	0.0117
694	0.0108	0.0110	0.0106	0.0111	0.0118
694.5	0.0108	0.0110	0.0106	0.0112	0.0118
695	0.0108	0.0110	0.0107	0.0112	0.0118
695.5	0.0108	0.0110	0.0107	0.0112	0.0119
696	0.0109	0.0110	0.0107	0.0112	0.0119
696.5	0.0109	0.0110	0.0108	0.0112	0.0120
697	0.0110	0.0111	0.0108	0.0113	0.0120
697.5	0.0111	0.0111	0.0108	0.0113	0.0121
698	0.0111	0.0111	0.0109	0.0113	0.0121
698.5	0.0111	0.0112	0.0109	0.0113	0.0121
699	0.0111	0.0112	0.0109	0.0113	0.0121
699.5	0.0111	0.0112	0.0109	0.0113	0.0121
700	0.0111	0.0112	0.0109	0.0113	0.0120

APPENDIX C. DATA FOR COPPER SAMPLES

C.1 20° measurements

Table C.1: Measurements of copper samples A, B, C, and D at 20°. The lamp signal was measured at an integration time of 29 ms and the measurements of the samples were taken at an integration time of 900 ms, 190 ms, 195 ms, and 190 ms respectively.

λ	A	B	C	D
400	0.0064	0.0608	0.0489	0.0327
400.5	0.0065	0.0607	0.0491	0.0323
401	0.0065	0.0607	0.0494	0.0319
401.5	0.0065	0.0608	0.0493	0.0315
402	0.0064	0.0607	0.0489	0.0313
402.5	0.0064	0.0603	0.0484	0.0312
403	0.0063	0.0599	0.0478	0.0312
403.5	0.0063	0.0595	0.0475	0.0312
404	0.0063	0.0594	0.0476	0.0310
404.5	0.0062	0.0597	0.0477	0.0308
405	0.0062	0.0600	0.0478	0.0308
405.5	0.0063	0.0603	0.0482	0.0306
406	0.0063	0.0604	0.0484	0.0306
406.5	0.0063	0.0603	0.0487	0.0307
407	0.0063	0.0603	0.0491	0.0311
407.5	0.0063	0.0604	0.0495	0.0316
408	0.0064	0.0607	0.0497	0.0321
408.5	0.0064	0.0609	0.0499	0.0326
409	0.0065	0.0610	0.0500	0.0328
409.5	0.0064	0.0609	0.0499	0.0327
410	0.0063	0.0606	0.0494	0.0324
410.5	0.0062	0.0604	0.0490	0.0319
411	0.0061	0.0604	0.0489	0.0315
411.5	0.0060	0.0605	0.0490	0.0311
412	0.0060	0.0607	0.0494	0.0309
412.5	0.0060	0.0607	0.0498	0.0310
413	0.0060	0.0607	0.0499	0.0311
413.5	0.0060	0.0605	0.0499	0.0313
414	0.0060	0.0604	0.0497	0.0316
414.5	0.0060	0.0602	0.0496	0.0318
415	0.0061	0.0600	0.0498	0.0319
415.5	0.0061	0.0597	0.0499	0.0319
416	0.0061	0.0596	0.0500	0.0320
416.5	0.0061	0.0597	0.0501	0.0320
417	0.0061	0.0601	0.0501	0.0320
417.5	0.0061	0.0605	0.0501	0.0320
418	0.0061	0.0609	0.0501	0.0318
418.5	0.0061	0.0611	0.0501	0.0316
419	0.0062	0.0613	0.0502	0.0315

419.5	0.0062	0.0614	0.0502	0.0316
420	0.0061	0.0616	0.0503	0.0317
420.5	0.0061	0.0617	0.0505	0.0319
421	0.0062	0.0619	0.0505	0.0322
421.5	0.0062	0.0619	0.0505	0.0323
422	0.0062	0.0619	0.0506	0.0324
422.5	0.0063	0.0620	0.0508	0.0325
423	0.0063	0.0620	0.0511	0.0325
423.5	0.0063	0.0620	0.0514	0.0323
424	0.0062	0.0620	0.0517	0.0322
424.5	0.0062	0.0620	0.0519	0.0321
425	0.0063	0.0621	0.0519	0.0320
425.5	0.0063	0.0621	0.0520	0.0319
426	0.0063	0.0620	0.0520	0.0319
426.5	0.0063	0.0620	0.0520	0.0318
427	0.0062	0.0619	0.0520	0.0318
427.5	0.0062	0.0618	0.0519	0.0318
428	0.0061	0.0619	0.0518	0.0318
428.5	0.0062	0.0620	0.0518	0.0319
429	0.0062	0.0621	0.0519	0.0319
429.5	0.0063	0.0623	0.0521	0.0318
430	0.0063	0.0625	0.0523	0.0316
430.5	0.0064	0.0625	0.0524	0.0316
431	0.0063	0.0625	0.0525	0.0316
431.5	0.0063	0.0626	0.0525	0.0318
432	0.0063	0.0626	0.0526	0.0320
432.5	0.0063	0.0628	0.0528	0.0322
433	0.0063	0.0630	0.0530	0.0325
433.5	0.0063	0.0631	0.0532	0.0328
434	0.0063	0.0632	0.0535	0.0330
434.5	0.0064	0.0632	0.0537	0.0332
435	0.0064	0.0631	0.0537	0.0332
435.5	0.0064	0.0629	0.0537	0.0332
436	0.0064	0.0629	0.0537	0.0331
436.5	0.0064	0.0629	0.0539	0.0331
437	0.0064	0.0630	0.0541	0.0331
437.5	0.0064	0.0632	0.0543	0.0331
438	0.0064	0.0634	0.0545	0.0330
438.5	0.0064	0.0635	0.0546	0.0330
439	0.0064	0.0637	0.0546	0.0330
439.5	0.0064	0.0639	0.0547	0.0330
440	0.0064	0.0640	0.0548	0.0330
440.5	0.0064	0.0640	0.0550	0.0330
441	0.0064	0.0640	0.0551	0.0329
441.5	0.0064	0.0640	0.0551	0.0329
442	0.0064	0.0640	0.0552	0.0330
442.5	0.0064	0.0640	0.0552	0.0332
443	0.0064	0.0639	0.0552	0.0334
443.5	0.0065	0.0638	0.0553	0.0336
444	0.0065	0.0639	0.0554	0.0337
444.5	0.0065	0.0640	0.0555	0.0337
445	0.0065	0.0642	0.0557	0.0337
445.5	0.0065	0.0643	0.0559	0.0338
446	0.0065	0.0645	0.0561	0.0339
446.5	0.0065	0.0646	0.0563	0.0340
447	0.0065	0.0646	0.0565	0.0340
447.5	0.0065	0.0647	0.0566	0.0340

448	0.0065	0.0647	0.0567	0.0339
448.5	0.0065	0.0647	0.0567	0.0339
449	0.0065	0.0647	0.0568	0.0338
449.5	0.0066	0.0647	0.0569	0.0338
450	0.0066	0.0647	0.0571	0.0339
450.5	0.0066	0.0648	0.0573	0.0340
451	0.0066	0.0648	0.0574	0.0342
451.5	0.0066	0.0648	0.0575	0.0343
452	0.0066	0.0648	0.0575	0.0345
452.5	0.0066	0.0648	0.0575	0.0346
453	0.0066	0.0649	0.0576	0.0347
453.5	0.0066	0.0649	0.0577	0.0347
454	0.0067	0.0649	0.0580	0.0347
454.5	0.0067	0.0650	0.0582	0.0348
455	0.0067	0.0651	0.0584	0.0348
455.5	0.0067	0.0652	0.0586	0.0349
456	0.0067	0.0654	0.0588	0.0349
456.5	0.0067	0.0656	0.0589	0.0350
457	0.0067	0.0657	0.0590	0.0350
457.5	0.0067	0.0657	0.0590	0.0351
458	0.0067	0.0657	0.0591	0.0351
458.5	0.0067	0.0657	0.0592	0.0352
459	0.0068	0.0658	0.0593	0.0353
459.5	0.0068	0.0659	0.0594	0.0353
460	0.0069	0.0660	0.0595	0.0354
460.5	0.0069	0.0660	0.0597	0.0355
461	0.0069	0.0660	0.0598	0.0356
461.5	0.0069	0.0661	0.0600	0.0357
462	0.0069	0.0661	0.0602	0.0357
462.5	0.0069	0.0662	0.0604	0.0358
463	0.0069	0.0663	0.0606	0.0359
463.5	0.0069	0.0665	0.0609	0.0359
464	0.0069	0.0667	0.0611	0.0360
464.5	0.0070	0.0669	0.0612	0.0360
465	0.0070	0.0670	0.0613	0.0361
465.5	0.0070	0.0670	0.0613	0.0361
466	0.0070	0.0670	0.0615	0.0362
466.5	0.0070	0.0670	0.0616	0.0362
467	0.0070	0.0670	0.0618	0.0363
467.5	0.0070	0.0671	0.0620	0.0364
468	0.0070	0.0671	0.0621	0.0366
468.5	0.0071	0.0672	0.0622	0.0368
469	0.0070	0.0672	0.0623	0.0369
469.5	0.0070	0.0673	0.0623	0.0370
470	0.0070	0.0673	0.0624	0.0371
470.5	0.0071	0.0673	0.0625	0.0372
471	0.0071	0.0673	0.0626	0.0372
471.5	0.0071	0.0673	0.0627	0.0373
472	0.0071	0.0673	0.0628	0.0373
472.5	0.0071	0.0673	0.0629	0.0374
473	0.0071	0.0672	0.0630	0.0375
473.5	0.0071	0.0673	0.0631	0.0376
474	0.0071	0.0674	0.0632	0.0376
474.5	0.0072	0.0676	0.0633	0.0377
475	0.0072	0.0677	0.0634	0.0378
475.5	0.0072	0.0679	0.0635	0.0379
476	0.0072	0.0680	0.0636	0.0380

476.5	0.0072	0.0680	0.0637	0.0382
477	0.0072	0.0680	0.0637	0.0383
477.5	0.0072	0.0679	0.0638	0.0383
478	0.0072	0.0679	0.0638	0.0384
478.5	0.0072	0.0679	0.0638	0.0384
479	0.0072	0.0679	0.0639	0.0384
479.5	0.0072	0.0678	0.0639	0.0384
480	0.0072	0.0678	0.0639	0.0385
480.5	0.0072	0.0677	0.0640	0.0385
481	0.0072	0.0677	0.0640	0.0386
481.5	0.0072	0.0678	0.0641	0.0387
482	0.0072	0.0679	0.0642	0.0388
482.5	0.0072	0.0679	0.0644	0.0389
483	0.0072	0.0680	0.0645	0.0390
483.5	0.0073	0.0680	0.0645	0.0390
484	0.0073	0.0680	0.0645	0.0391
484.5	0.0073	0.0680	0.0646	0.0392
485	0.0073	0.0681	0.0648	0.0393
485.5	0.0073	0.0682	0.0649	0.0394
486	0.0073	0.0683	0.0650	0.0396
486.5	0.0074	0.0685	0.0652	0.0397
487	0.0074	0.0686	0.0652	0.0398
487.5	0.0074	0.0687	0.0652	0.0399
488	0.0074	0.0688	0.0653	0.0401
488.5	0.0074	0.0688	0.0652	0.0402
489	0.0074	0.0688	0.0652	0.0402
489.5	0.0074	0.0688	0.0652	0.0403
490	0.0074	0.0687	0.0652	0.0403
490.5	0.0074	0.0687	0.0652	0.0403
491	0.0074	0.0687	0.0652	0.0404
491.5	0.0074	0.0687	0.0653	0.0405
492	0.0075	0.0689	0.0654	0.0407
492.5	0.0075	0.0691	0.0656	0.0409
493	0.0075	0.0692	0.0657	0.0410
493.5	0.0075	0.0693	0.0658	0.0412
494	0.0075	0.0694	0.0659	0.0413
494.5	0.0076	0.0694	0.0659	0.0414
495	0.0076	0.0695	0.0660	0.0416
495.5	0.0076	0.0696	0.0660	0.0418
496	0.0076	0.0696	0.0661	0.0419
496.5	0.0076	0.0696	0.0661	0.0420
497	0.0076	0.0696	0.0661	0.0422
497.5	0.0077	0.0697	0.0662	0.0423
498	0.0077	0.0699	0.0663	0.0425
498.5	0.0077	0.0702	0.0665	0.0426
499	0.0077	0.0704	0.0667	0.0428
499.5	0.0077	0.0705	0.0669	0.0429
500	0.0077	0.0705	0.0669	0.0430
500.5	0.0078	0.0705	0.0670	0.0431
501	0.0078	0.0706	0.0670	0.0432
501.5	0.0078	0.0706	0.0670	0.0433
502	0.0078	0.0707	0.0671	0.0435
502.5	0.0078	0.0707	0.0671	0.0436
503	0.0078	0.0707	0.0671	0.0437
503.5	0.0078	0.0708	0.0671	0.0438
504	0.0078	0.0709	0.0672	0.0439
504.5	0.0079	0.0710	0.0672	0.0441

505	0.0079	0.0711	0.0673	0.0443
505.5	0.0079	0.0712	0.0673	0.0445
506	0.0079	0.0714	0.0674	0.0446
506.5	0.0080	0.0714	0.0675	0.0448
507	0.0080	0.0715	0.0676	0.0449
507.5	0.0080	0.0716	0.0678	0.0449
508	0.0080	0.0717	0.0680	0.0450
508.5	0.0080	0.0718	0.0681	0.0451
509	0.0080	0.0719	0.0682	0.0451
509.5	0.0080	0.0721	0.0682	0.0452
510	0.0081	0.0722	0.0683	0.0453
510.5	0.0081	0.0723	0.0683	0.0454
511	0.0081	0.0724	0.0684	0.0456
511.5	0.0081	0.0726	0.0685	0.0457
512	0.0082	0.0727	0.0686	0.0459
512.5	0.0082	0.0730	0.0688	0.0461
513	0.0082	0.0732	0.0689	0.0463
513.5	0.0083	0.0735	0.0691	0.0465
514	0.0083	0.0737	0.0692	0.0467
514.5	0.0083	0.0739	0.0693	0.0468
515	0.0083	0.0739	0.0693	0.0468
515.5	0.0083	0.0739	0.0692	0.0469
516	0.0083	0.0739	0.0692	0.0469
516.5	0.0083	0.0738	0.0692	0.0469
517	0.0083	0.0738	0.0692	0.0469
517.5	0.0083	0.0738	0.0692	0.0469
518	0.0083	0.0739	0.0692	0.0469
518.5	0.0084	0.0740	0.0692	0.0471
519	0.0084	0.0742	0.0694	0.0472
519.5	0.0084	0.0744	0.0695	0.0474
520	0.0084	0.0746	0.0698	0.0476
520.5	0.0085	0.0748	0.0700	0.0478
521	0.0085	0.0749	0.0702	0.0480
521.5	0.0085	0.0749	0.0702	0.0480
522	0.0085	0.0748	0.0701	0.0480
522.5	0.0085	0.0747	0.0699	0.0480
523	0.0085	0.0745	0.0698	0.0479
523.5	0.0085	0.0743	0.0696	0.0478
524	0.0085	0.0743	0.0695	0.0478
524.5	0.0085	0.0744	0.0696	0.0479
525	0.0085	0.0746	0.0697	0.0481
525.5	0.0085	0.0749	0.0699	0.0483
526	0.0086	0.0753	0.0702	0.0486
526.5	0.0086	0.0756	0.0704	0.0488
527	0.0086	0.0757	0.0705	0.0489
527.5	0.0086	0.0758	0.0705	0.0490
528	0.0087	0.0760	0.0706	0.0491
528.5	0.0087	0.0762	0.0707	0.0492
529	0.0087	0.0764	0.0708	0.0493
529.5	0.0087	0.0767	0.0710	0.0496
530	0.0088	0.0770	0.0713	0.0498
530.5	0.0088	0.0772	0.0715	0.0500
531	0.0088	0.0774	0.0716	0.0502
531.5	0.0089	0.0775	0.0717	0.0503
532	0.0089	0.0776	0.0717	0.0504
532.5	0.0089	0.0776	0.0716	0.0504
533	0.0089	0.0776	0.0716	0.0504

533.5	0.0089	0.0776	0.0715	0.0505
534	0.0089	0.0778	0.0716	0.0506
534.5	0.0089	0.0780	0.0718	0.0508
535	0.0090	0.0782	0.0720	0.0510
535.5	0.0090	0.0785	0.0722	0.0511
536	0.0091	0.0789	0.0726	0.0513
536.5	0.0091	0.0792	0.0729	0.0515
537	0.0092	0.0796	0.0732	0.0517
537.5	0.0092	0.0800	0.0734	0.0520
538	0.0092	0.0804	0.0736	0.0521
538.5	0.0093	0.0805	0.0737	0.0523
539	0.0093	0.0806	0.0737	0.0523
539.5	0.0093	0.0806	0.0737	0.0522
540	0.0093	0.0807	0.0737	0.0522
540.5	0.0093	0.0808	0.0737	0.0522
541	0.0093	0.0809	0.0737	0.0523
541.5	0.0093	0.0811	0.0738	0.0524
542	0.0093	0.0812	0.0740	0.0526
542.5	0.0094	0.0815	0.0741	0.0527
543	0.0094	0.0818	0.0744	0.0530
543.5	0.0094	0.0820	0.0746	0.0532
544	0.0095	0.0823	0.0749	0.0534
544.5	0.0095	0.0827	0.0750	0.0535
545	0.0095	0.0830	0.0752	0.0537
545.5	0.0095	0.0833	0.0753	0.0538
546	0.0096	0.0836	0.0755	0.0539
546.5	0.0096	0.0839	0.0756	0.0541
547	0.0097	0.0841	0.0758	0.0542
547.5	0.0097	0.0843	0.0759	0.0543
548	0.0097	0.0844	0.0761	0.0544
548.5	0.0097	0.0846	0.0762	0.0545
549	0.0098	0.0848	0.0763	0.0546
549.5	0.0098	0.0852	0.0766	0.0547
550	0.0098	0.0856	0.0769	0.0550
550.5	0.0099	0.0861	0.0772	0.0552
551	0.0100	0.0867	0.0775	0.0555
551.5	0.0100	0.0872	0.0779	0.0558
552	0.0101	0.0877	0.0782	0.0561
552.5	0.0101	0.0881	0.0784	0.0564
553	0.0102	0.0885	0.0787	0.0567
553.5	0.0102	0.0889	0.0791	0.0570
554	0.0103	0.0893	0.0794	0.0573
554.5	0.0103	0.0897	0.0797	0.0575
555	0.0104	0.0901	0.0800	0.0577
555.5	0.0104	0.0903	0.0802	0.0578
556	0.0104	0.0905	0.0803	0.0580
556.5	0.0105	0.0908	0.0804	0.0582
557	0.0105	0.0912	0.0807	0.0584
557.5	0.0106	0.0915	0.0810	0.0587
558	0.0107	0.0919	0.0815	0.0590
558.5	0.0108	0.0925	0.0820	0.0595
559	0.0108	0.0931	0.0826	0.0599
559.5	0.0109	0.0937	0.0833	0.0604
560	0.0110	0.0945	0.0839	0.0609
560.5	0.0111	0.0952	0.0844	0.0614
561	0.0112	0.0958	0.0849	0.0618
561.5	0.0112	0.0963	0.0854	0.0623

562	0.0113	0.0967	0.0859	0.0627
562.5	0.0114	0.0973	0.0863	0.0632
563	0.0115	0.0979	0.0868	0.0637
563.5	0.0115	0.0986	0.0873	0.0641
564	0.0116	0.0993	0.0879	0.0646
564.5	0.0117	0.1002	0.0885	0.0650
565	0.0118	0.1010	0.0892	0.0655
565.5	0.0119	0.1018	0.0899	0.0659
566	0.0120	0.1026	0.0905	0.0663
566.5	0.0121	0.1032	0.0910	0.0668
567	0.0122	0.1038	0.0913	0.0672
567.5	0.0123	0.1043	0.0917	0.0677
568	0.0123	0.1050	0.0922	0.0683
568.5	0.0124	0.1056	0.0926	0.0689
569	0.0125	0.1062	0.0932	0.0695
569.5	0.0126	0.1068	0.0938	0.0701
570	0.0127	0.1074	0.0945	0.0706
570.5	0.0128	0.1079	0.0952	0.0712
571	0.0130	0.1086	0.0960	0.0718
571.5	0.0131	0.1094	0.0968	0.0724
572	0.0132	0.1103	0.0975	0.0731
572.5	0.0134	0.1112	0.0983	0.0737
573	0.0135	0.1121	0.0990	0.0743
573.5	0.0136	0.1130	0.0997	0.0750
574	0.0137	0.1137	0.1005	0.0756
574.5	0.0138	0.1144	0.1012	0.0762
575	0.0139	0.1151	0.1019	0.0769
575.5	0.0140	0.1158	0.1026	0.0776
576	0.0142	0.1166	0.1033	0.0783
576.5	0.0143	0.1174	0.1041	0.0791
577	0.0144	0.1184	0.1051	0.0800
577.5	0.0146	0.1194	0.1060	0.0808
578	0.0147	0.1201	0.1068	0.0815
578.5	0.0149	0.1207	0.1076	0.0822
579	0.0150	0.1213	0.1082	0.0828
579.5	0.0151	0.1217	0.1088	0.0833
580	0.0152	0.1222	0.1094	0.0839
580.5	0.0153	0.1227	0.1099	0.0844
581	0.0154	0.1232	0.1103	0.0849
581.5	0.0155	0.1236	0.1107	0.0853
582	0.0156	0.1241	0.1111	0.0857
582.5	0.0157	0.1246	0.1116	0.0863
583	0.0159	0.1254	0.1123	0.0870
583.5	0.0160	0.1263	0.1132	0.0878
584	0.0162	0.1272	0.1139	0.0886
584.5	0.0163	0.1280	0.1146	0.0893
585	0.0164	0.1286	0.1150	0.0898
585.5	0.0165	0.1291	0.1154	0.0903
586	0.0166	0.1297	0.1160	0.0908
586.5	0.0167	0.1304	0.1166	0.0914
587	0.0169	0.1312	0.1174	0.0922
587.5	0.0170	0.1320	0.1182	0.0930
588	0.0171	0.1327	0.1190	0.0937
588.5	0.0173	0.1332	0.1196	0.0942
589	0.0174	0.1337	0.1202	0.0946
589.5	0.0175	0.1342	0.1208	0.0951
590	0.0177	0.1348	0.1215	0.0957

590.5	0.0178	0.1352	0.1219	0.0964
591	0.0179	0.1355	0.1223	0.0969
591.5	0.0179	0.1357	0.1225	0.0974
592	0.0180	0.1357	0.1227	0.0978
592.5	0.0181	0.1357	0.1230	0.0982
593	0.0182	0.1359	0.1234	0.0987
593.5	0.0183	0.1362	0.1240	0.0994
594	0.0184	0.1365	0.1245	0.1000
594.5	0.0185	0.1367	0.1250	0.1006
595	0.0186	0.1370	0.1254	0.1011
595.5	0.0187	0.1373	0.1258	0.1016
596	0.0188	0.1376	0.1262	0.1020
596.5	0.0189	0.1379	0.1266	0.1026
597	0.0190	0.1384	0.1272	0.1034
597.5	0.0192	0.1392	0.1281	0.1043
598	0.0193	0.1401	0.1289	0.1053
598.5	0.0195	0.1410	0.1297	0.1062
599	0.0196	0.1416	0.1301	0.1068
599.5	0.0196	0.1418	0.1302	0.1072
600	0.0197	0.1417	0.1302	0.1075
600.5	0.0197	0.1415	0.1303	0.1079
601	0.0198	0.1414	0.1305	0.1083
601.5	0.0199	0.1415	0.1308	0.1089
602	0.0199	0.1418	0.1311	0.1095
602.5	0.0200	0.1421	0.1313	0.1099
603	0.0201	0.1423	0.1314	0.1103
603.5	0.0201	0.1424	0.1314	0.1106
604	0.0202	0.1424	0.1315	0.1109
604.5	0.0203	0.1425	0.1317	0.1114
605	0.0204	0.1427	0.1322	0.1120
605.5	0.0205	0.1431	0.1327	0.1127
606	0.0207	0.1436	0.1332	0.1134
606.5	0.0208	0.1441	0.1337	0.1140
607	0.0209	0.1446	0.1340	0.1145
607.5	0.0210	0.1450	0.1343	0.1150
608	0.0211	0.1454	0.1347	0.1155
608.5	0.0212	0.1458	0.1351	0.1161
609	0.0213	0.1462	0.1357	0.1167
609.5	0.0214	0.1466	0.1362	0.1173
610	0.0215	0.1471	0.1367	0.1178
610.5	0.0216	0.1475	0.1371	0.1183
611	0.0217	0.1479	0.1375	0.1188
611.5	0.0218	0.1482	0.1377	0.1192
612	0.0218	0.1483	0.1379	0.1196
612.5	0.0219	0.1481	0.1380	0.1200
613	0.0219	0.1480	0.1382	0.1204
613.5	0.0220	0.1479	0.1383	0.1208
614	0.0221	0.1481	0.1386	0.1212
614.5	0.0222	0.1485	0.1390	0.1218
615	0.0223	0.1490	0.1395	0.1224
615.5	0.0225	0.1495	0.1400	0.1229
616	0.0226	0.1498	0.1403	0.1233
616.5	0.0226	0.1498	0.1405	0.1235
617	0.0227	0.1495	0.1405	0.1235
617.5	0.0227	0.1493	0.1405	0.1236
618	0.0228	0.1493	0.1406	0.1238
618.5	0.0228	0.1496	0.1408	0.1241

619	0.0229	0.1502	0.1410	0.1246
619.5	0.0230	0.1509	0.1413	0.1251
620	0.0231	0.1517	0.1417	0.1257
620.5	0.0232	0.1524	0.1420	0.1262
621	0.0234	0.1531	0.1423	0.1267
621.5	0.0235	0.1536	0.1427	0.1271
622	0.0236	0.1539	0.1432	0.1275
622.5	0.0237	0.1543	0.1437	0.1281
623	0.0238	0.1546	0.1442	0.1287
623.5	0.0239	0.1549	0.1446	0.1294
624	0.0240	0.1552	0.1449	0.1301
624.5	0.0240	0.1555	0.1452	0.1307
625	0.0241	0.1558	0.1454	0.1311
625.5	0.0242	0.1560	0.1455	0.1314
626	0.0242	0.1562	0.1457	0.1318
626.5	0.0243	0.1564	0.1458	0.1322
627	0.0244	0.1567	0.1460	0.1327
627.5	0.0245	0.1568	0.1462	0.1332
628	0.0246	0.1568	0.1464	0.1336
628.5	0.0247	0.1565	0.1465	0.1338
629	0.0247	0.1562	0.1465	0.1338
629.5	0.0248	0.1557	0.1464	0.1337
630	0.0248	0.1554	0.1461	0.1335
630.5	0.0248	0.1555	0.1461	0.1335
631	0.0249	0.1558	0.1462	0.1338
631.5	0.0251	0.1563	0.1466	0.1344
632	0.0252	0.1569	0.1472	0.1352
632.5	0.0254	0.1576	0.1479	0.1360
633	0.0256	0.1583	0.1487	0.1368
633.5	0.0257	0.1588	0.1493	0.1373
634	0.0258	0.1591	0.1496	0.1375
634.5	0.0258	0.1592	0.1497	0.1375
635	0.0258	0.1591	0.1496	0.1375
635.5	0.0258	0.1588	0.1494	0.1374
636	0.0259	0.1587	0.1494	0.1374
636.5	0.0259	0.1587	0.1495	0.1375
637	0.0260	0.1588	0.1497	0.1379
637.5	0.0261	0.1591	0.1499	0.1383
638	0.0262	0.1595	0.1501	0.1388
638.5	0.0263	0.1598	0.1503	0.1394
639	0.0264	0.1601	0.1505	0.1399
639.5	0.0265	0.1601	0.1507	0.1402
640	0.0266	0.1599	0.1507	0.1405
640.5	0.0266	0.1594	0.1507	0.1405
641	0.0266	0.1588	0.1504	0.1404
641.5	0.0267	0.1582	0.1502	0.1403
642	0.0267	0.1579	0.1501	0.1403
642.5	0.0268	0.1579	0.1504	0.1405
643	0.0269	0.1579	0.1508	0.1410
643.5	0.0271	0.1581	0.1512	0.1416
644	0.0272	0.1583	0.1518	0.1423
644.5	0.0273	0.1584	0.1522	0.1429
645	0.0274	0.1585	0.1525	0.1435
645.5	0.0275	0.1585	0.1526	0.1442
646	0.0277	0.1585	0.1527	0.1448
646.5	0.0277	0.1584	0.1527	0.1453
647	0.0278	0.1585	0.1528	0.1459

647.5	0.0280	0.1589	0.1532	0.1465
648	0.0281	0.1593	0.1537	0.1472
648.5	0.0282	0.1599	0.1544	0.1480
649	0.0284	0.1603	0.1549	0.1488
649.5	0.0285	0.1606	0.1552	0.1495
650	0.0285	0.1607	0.1553	0.1499
650.5	0.0286	0.1608	0.1554	0.1503
651	0.0287	0.1610	0.1555	0.1506
651.5	0.0288	0.1613	0.1558	0.1511
652	0.0290	0.1618	0.1564	0.1517
652.5	0.0291	0.1624	0.1571	0.1522
653	0.0292	0.1630	0.1576	0.1526
653.5	0.0293	0.1635	0.1580	0.1529
654	0.0294	0.1639	0.1583	0.1533
654.5	0.0294	0.1642	0.1585	0.1535
655	0.0295	0.1644	0.1585	0.1537
655.5	0.0295	0.1645	0.1585	0.1538
656	0.0295	0.1646	0.1583	0.1538
656.5	0.0295	0.1645	0.1582	0.1537
657	0.0295	0.1644	0.1580	0.1536
657.5	0.0296	0.1645	0.1580	0.1537
658	0.0297	0.1647	0.1580	0.1538
658.5	0.0298	0.1650	0.1582	0.1541
659	0.0299	0.1655	0.1585	0.1545
659.5	0.0300	0.1660	0.1589	0.1549
660	0.0302	0.1664	0.1592	0.1553
660.5	0.0303	0.1667	0.1596	0.1556
661	0.0303	0.1667	0.1598	0.1560
661.5	0.0304	0.1667	0.1598	0.1563
662	0.0304	0.1665	0.1597	0.1565
662.5	0.0305	0.1663	0.1597	0.1568
663	0.0305	0.1661	0.1596	0.1570
663.5	0.0304	0.1658	0.1595	0.1572
664	0.0304	0.1653	0.1592	0.1572
664.5	0.0303	0.1646	0.1586	0.1569
665	0.0302	0.1637	0.1577	0.1563
665.5	0.0300	0.1628	0.1567	0.1554
666	0.0299	0.1619	0.1558	0.1546
666.5	0.0299	0.1613	0.1552	0.1541
667	0.0299	0.1610	0.1550	0.1538
667.5	0.0300	0.1609	0.1549	0.1537
668	0.0300	0.1610	0.1550	0.1538
668.5	0.0301	0.1613	0.1551	0.1539
669	0.0301	0.1614	0.1553	0.1540
669.5	0.0302	0.1616	0.1554	0.1541
670	0.0302	0.1617	0.1557	0.1542
670.5	0.0303	0.1619	0.1559	0.1545
671	0.0304	0.1619	0.1561	0.1548
671.5	0.0305	0.1620	0.1564	0.1552
672	0.0306	0.1621	0.1565	0.1557
672.5	0.0306	0.1621	0.1565	0.1562
673	0.0307	0.1620	0.1565	0.1566
673.5	0.0308	0.1619	0.1567	0.1571
674	0.0308	0.1619	0.1569	0.1575
674.5	0.0309	0.1620	0.1571	0.1577
675	0.0310	0.1622	0.1573	0.1579
675.5	0.0311	0.1626	0.1575	0.1580

676	0.0312	0.1631	0.1579	0.1584
676.5	0.0314	0.1638	0.1584	0.1589
677	0.0316	0.1645	0.1590	0.1597
677.5	0.0318	0.1653	0.1596	0.1605
678	0.0320	0.1659	0.1602	0.1615
678.5	0.0321	0.1665	0.1607	0.1625
679	0.0323	0.1670	0.1613	0.1636
679.5	0.0325	0.1674	0.1619	0.1646
680	0.0327	0.1677	0.1625	0.1655
680.5	0.0328	0.1679	0.1629	0.1663
681	0.0330	0.1681	0.1633	0.1669
681.5	0.0332	0.1683	0.1636	0.1675
682	0.0334	0.1686	0.1640	0.1682
682.5	0.0335	0.1689	0.1644	0.1690
683	0.0337	0.1693	0.1649	0.1698
683.5	0.0339	0.1696	0.1653	0.1706
684	0.0340	0.1699	0.1657	0.1712
684.5	0.0342	0.1701	0.1660	0.1718
685	0.0343	0.1705	0.1663	0.1723
685.5	0.0345	0.1709	0.1666	0.1727
686	0.0347	0.1715	0.1669	0.1733
686.5	0.0349	0.1722	0.1672	0.1740
687	0.0351	0.1728	0.1676	0.1748
687.5	0.0354	0.1733	0.1680	0.1757
688	0.0355	0.1737	0.1686	0.1767
688.5	0.0357	0.1740	0.1690	0.1776
689	0.0358	0.1743	0.1694	0.1784
689.5	0.0359	0.1746	0.1696	0.1791
690	0.0361	0.1750	0.1698	0.1797
690.5	0.0362	0.1753	0.1699	0.1803
691	0.0363	0.1754	0.1699	0.1807
691.5	0.0364	0.1753	0.1700	0.1810
692	0.0365	0.1751	0.1698	0.1812
692.5	0.0366	0.1748	0.1697	0.1813
693	0.0366	0.1745	0.1696	0.1815
693.5	0.0367	0.1745	0.1696	0.1817
694	0.0368	0.1746	0.1697	0.1821
694.5	0.0369	0.1750	0.1701	0.1826
695	0.0370	0.1752	0.1704	0.1829
695.5	0.0370	0.1752	0.1706	0.1829
696	0.0369	0.1748	0.1706	0.1828
696.5	0.0369	0.1741	0.1706	0.1825
697	0.0369	0.1731	0.1705	0.1822
697.5	0.0369	0.1721	0.1704	0.1819
698	0.0368	0.1713	0.1704	0.1819
698.5	0.0368	0.1706	0.1703	0.1819
699	0.0368	0.1701	0.1701	0.1819
699.5	0.0368	0.1698	0.1699	0.1818
700	0.0368	0.1696	0.1696	0.1819

C.2 45° measurements

Table C.2: Measurements of copper samples A, B, C, and D at 45°. The lamp signal was measured at an integration time of 29 ms and the measurements of the samples were taken at an integration time of 600 ms, 110 ms, 110 ms, and 140 ms respectively.

λ	A	B	C	D
400	0.0100	0.1107	0.0827	0.0504
400.5	0.0099	0.1110	0.0832	0.0503
401	0.0099	0.1114	0.0839	0.0500
401.5	0.0100	0.1116	0.0842	0.0500
402	0.0101	0.1115	0.0839	0.0500
402.5	0.0102	0.1108	0.0833	0.0499
403	0.0102	0.1099	0.0829	0.0496
403.5	0.0102	0.1092	0.0827	0.0493
404	0.0102	0.1090	0.0829	0.0487
404.5	0.0101	0.1093	0.0833	0.0481
405	0.0101	0.1100	0.0838	0.0477
405.5	0.0101	0.1108	0.0845	0.0477
406	0.0100	0.1112	0.0849	0.0481
406.5	0.0100	0.1112	0.0854	0.0486
407	0.0101	0.1110	0.0858	0.0490
407.5	0.0102	0.1112	0.0861	0.0492
408	0.0103	0.1115	0.0863	0.0493
408.5	0.0103	0.1119	0.0866	0.0495
409	0.0102	0.1124	0.0868	0.0498
409.5	0.0101	0.1124	0.0867	0.0500
410	0.0099	0.1120	0.0865	0.0501
410.5	0.0099	0.1116	0.0862	0.0499
411	0.0099	0.1116	0.0860	0.0493
411.5	0.0098	0.1119	0.0859	0.0490
412	0.0099	0.1123	0.0859	0.0487
412.5	0.0099	0.1124	0.0860	0.0486
413	0.0100	0.1124	0.0862	0.0487
413.5	0.0101	0.1123	0.0864	0.0489
414	0.0101	0.1122	0.0866	0.0488
414.5	0.0100	0.1121	0.0869	0.0488
415	0.0099	0.1118	0.0872	0.0489
415.5	0.0098	0.1112	0.0874	0.0490
416	0.0098	0.1108	0.0876	0.0494
416.5	0.0098	0.1109	0.0878	0.0497
417	0.0099	0.1114	0.0878	0.0499
417.5	0.0099	0.1120	0.0876	0.0499
418	0.0100	0.1127	0.0873	0.0497
418.5	0.0100	0.1130	0.0871	0.0496
419	0.0100	0.1133	0.0868	0.0495
419.5	0.0100	0.1138	0.0867	0.0493
420	0.0100	0.1144	0.0868	0.0494
420.5	0.0100	0.1149	0.0869	0.0497
421	0.0100	0.1151	0.0871	0.0502
421.5	0.0100	0.1150	0.0874	0.0507
422	0.0100	0.1150	0.0876	0.0511
422.5	0.0101	0.1150	0.0878	0.0512
423	0.0101	0.1150	0.0879	0.0512
423.5	0.0102	0.1151	0.0877	0.0511
424	0.0103	0.1151	0.0877	0.0509
424.5	0.0103	0.1152	0.0877	0.0507

425	0.0103	0.1153	0.0877	0.0504
425.5	0.0103	0.1154	0.0877	0.0502
426	0.0102	0.1153	0.0879	0.0499
426.5	0.0102	0.1153	0.0881	0.0498
427	0.0102	0.1153	0.0883	0.0498
427.5	0.0102	0.1153	0.0885	0.0498
428	0.0102	0.1155	0.0884	0.0499
428.5	0.0102	0.1157	0.0884	0.0499
429	0.0101	0.1158	0.0885	0.0499
429.5	0.0101	0.1160	0.0885	0.0499
430	0.0101	0.1161	0.0887	0.0500
430.5	0.0101	0.1163	0.0891	0.0501
431	0.0102	0.1166	0.0893	0.0502
431.5	0.0103	0.1169	0.0894	0.0503
432	0.0104	0.1172	0.0897	0.0503
432.5	0.0104	0.1176	0.0900	0.0502
433	0.0105	0.1180	0.0902	0.0503
433.5	0.0105	0.1183	0.0906	0.0505
434	0.0105	0.1186	0.0909	0.0507
434.5	0.0105	0.1186	0.0910	0.0510
435	0.0104	0.1185	0.0908	0.0513
435.5	0.0104	0.1183	0.0904	0.0515
436	0.0104	0.1183	0.0901	0.0516
436.5	0.0104	0.1185	0.0899	0.0518
437	0.0104	0.1188	0.0898	0.0520
437.5	0.0104	0.1192	0.0900	0.0521
438	0.0104	0.1195	0.0902	0.0521
438.5	0.0104	0.1197	0.0905	0.0519
439	0.0105	0.1199	0.0909	0.0517
439.5	0.0105	0.1202	0.0913	0.0514
440	0.0106	0.1203	0.0917	0.0513
440.5	0.0106	0.1204	0.0919	0.0512
441	0.0106	0.1204	0.0919	0.0513
441.5	0.0106	0.1205	0.0920	0.0514
442	0.0106	0.1206	0.0920	0.0516
442.5	0.0105	0.1206	0.0921	0.0518
443	0.0105	0.1207	0.0922	0.0519
443.5	0.0105	0.1207	0.0925	0.0520
444	0.0104	0.1209	0.0928	0.0520
444.5	0.0104	0.1212	0.0931	0.0520
445	0.0104	0.1216	0.0934	0.0520
445.5	0.0105	0.1221	0.0937	0.0520
446	0.0105	0.1224	0.0940	0.0520
446.5	0.0106	0.1226	0.0943	0.0520
447	0.0106	0.1227	0.0944	0.0521
447.5	0.0107	0.1227	0.0946	0.0521
448	0.0107	0.1226	0.0948	0.0522
448.5	0.0107	0.1225	0.0949	0.0524
449	0.0107	0.1225	0.0951	0.0526
449.5	0.0107	0.1226	0.0954	0.0529
450	0.0107	0.1226	0.0956	0.0531
450.5	0.0107	0.1228	0.0958	0.0532
451	0.0108	0.1229	0.0959	0.0531
451.5	0.0108	0.1228	0.0959	0.0529
452	0.0109	0.1229	0.0958	0.0527
452.5	0.0109	0.1230	0.0957	0.0526
453	0.0110	0.1232	0.0956	0.0527

453.5	0.0110	0.1234	0.0956	0.0529
454	0.0110	0.1236	0.0958	0.0531
454.5	0.0110	0.1237	0.0959	0.0532
455	0.0109	0.1240	0.0961	0.0533
455.5	0.0109	0.1243	0.0964	0.0534
456	0.0110	0.1245	0.0965	0.0535
456.5	0.0110	0.1248	0.0967	0.0537
457	0.0110	0.1250	0.0970	0.0539
457.5	0.0110	0.1250	0.0972	0.0539
458	0.0111	0.1250	0.0972	0.0540
458.5	0.0111	0.1251	0.0973	0.0541
459	0.0111	0.1253	0.0972	0.0542
459.5	0.0111	0.1253	0.0972	0.0543
460	0.0112	0.1254	0.0975	0.0545
460.5	0.0112	0.1255	0.0979	0.0545
461	0.0112	0.1255	0.0983	0.0545
461.5	0.0113	0.1256	0.0985	0.0544
462	0.0113	0.1257	0.0987	0.0544
462.5	0.0113	0.1259	0.0988	0.0544
463	0.0114	0.1262	0.0988	0.0545
463.5	0.0114	0.1267	0.0990	0.0546
464	0.0114	0.1270	0.0992	0.0547
464.5	0.0114	0.1272	0.0994	0.0548
465	0.0115	0.1275	0.0996	0.0548
465.5	0.0115	0.1275	0.0996	0.0548
466	0.0114	0.1276	0.0996	0.0548
466.5	0.0114	0.1277	0.0997	0.0548
467	0.0114	0.1279	0.0998	0.0549
467.5	0.0114	0.1282	0.0999	0.0550
468	0.0114	0.1283	0.1002	0.0550
468.5	0.0115	0.1284	0.1003	0.0550
469	0.0115	0.1285	0.1004	0.0551
469.5	0.0115	0.1285	0.1004	0.0551
470	0.0115	0.1285	0.1004	0.0552
470.5	0.0115	0.1286	0.1005	0.0553
471	0.0116	0.1287	0.1007	0.0554
471.5	0.0116	0.1287	0.1007	0.0555
472	0.0116	0.1286	0.1007	0.0556
472.5	0.0116	0.1285	0.1007	0.0557
473	0.0117	0.1285	0.1007	0.0558
473.5	0.0117	0.1287	0.1008	0.0559
474	0.0117	0.1290	0.1011	0.0560
474.5	0.0117	0.1294	0.1014	0.0561
475	0.0118	0.1299	0.1018	0.0561
475.5	0.0118	0.1303	0.1023	0.0561
476	0.0118	0.1304	0.1025	0.0562
476.5	0.0118	0.1305	0.1025	0.0562
477	0.0118	0.1304	0.1025	0.0563
477.5	0.0118	0.1304	0.1024	0.0564
478	0.0118	0.1303	0.1022	0.0565
478.5	0.0118	0.1301	0.1021	0.0566
479	0.0118	0.1300	0.1020	0.0566
479.5	0.0118	0.1298	0.1019	0.0567
480	0.0118	0.1297	0.1019	0.0567
480.5	0.0118	0.1296	0.1019	0.0567
481	0.0118	0.1297	0.1021	0.0567
481.5	0.0119	0.1299	0.1024	0.0568

482	0.0119	0.1301	0.1027	0.0569
482.5	0.0120	0.1302	0.1029	0.0569
483	0.0120	0.1303	0.1030	0.0570
483.5	0.0120	0.1303	0.1030	0.0570
484	0.0119	0.1303	0.1030	0.0571
484.5	0.0120	0.1304	0.1031	0.0571
485	0.0120	0.1306	0.1032	0.0573
485.5	0.0120	0.1307	0.1035	0.0575
486	0.0121	0.1309	0.1037	0.0578
486.5	0.0121	0.1310	0.1039	0.0580
487	0.0121	0.1311	0.1040	0.0582
487.5	0.0121	0.1312	0.1040	0.0583
488	0.0122	0.1313	0.1039	0.0584
488.5	0.0122	0.1314	0.1037	0.0584
489	0.0122	0.1315	0.1036	0.0584
489.5	0.0122	0.1316	0.1035	0.0585
490	0.0122	0.1314	0.1035	0.0585
490.5	0.0122	0.1313	0.1035	0.0585
491	0.0123	0.1313	0.1036	0.0585
491.5	0.0123	0.1315	0.1036	0.0586
492	0.0123	0.1317	0.1037	0.0588
492.5	0.0124	0.1321	0.1039	0.0590
493	0.0124	0.1324	0.1040	0.0591
493.5	0.0124	0.1326	0.1040	0.0592
494	0.0124	0.1328	0.1041	0.0593
494.5	0.0124	0.1329	0.1042	0.0594
495	0.0125	0.1329	0.1044	0.0595
495.5	0.0125	0.1330	0.1047	0.0597
496	0.0125	0.1330	0.1050	0.0599
496.5	0.0126	0.1329	0.1051	0.0600
497	0.0126	0.1329	0.1052	0.0600
497.5	0.0126	0.1331	0.1052	0.0601
498	0.0127	0.1334	0.1054	0.0602
498.5	0.0127	0.1338	0.1055	0.0604
499	0.0128	0.1342	0.1056	0.0606
499.5	0.0128	0.1345	0.1056	0.0607
500	0.0128	0.1347	0.1056	0.0608
500.5	0.0128	0.1348	0.1056	0.0609
501	0.0128	0.1349	0.1057	0.0609
501.5	0.0128	0.1350	0.1059	0.0610
502	0.0128	0.1351	0.1061	0.0612
502.5	0.0129	0.1351	0.1062	0.0613
503	0.0129	0.1350	0.1063	0.0614
503.5	0.0129	0.1350	0.1064	0.0615
504	0.0130	0.1351	0.1066	0.0616
504.5	0.0130	0.1352	0.1068	0.0617
505	0.0130	0.1354	0.1072	0.0619
505.5	0.0131	0.1356	0.1074	0.0621
506	0.0131	0.1357	0.1076	0.0623
506.5	0.0131	0.1358	0.1078	0.0625
507	0.0132	0.1360	0.1079	0.0626
507.5	0.0132	0.1363	0.1082	0.0628
508	0.0132	0.1366	0.1084	0.0630
508.5	0.0133	0.1369	0.1086	0.0632
509	0.0133	0.1372	0.1088	0.0633
509.5	0.0133	0.1374	0.1090	0.0634
510	0.0133	0.1376	0.1092	0.0635

510.5	0.0134	0.1379	0.1095	0.0637
511	0.0134	0.1381	0.1098	0.0638
511.5	0.0135	0.1383	0.1100	0.0640
512	0.0135	0.1385	0.1102	0.0641
512.5	0.0136	0.1388	0.1106	0.0643
513	0.0136	0.1391	0.1109	0.0645
513.5	0.0137	0.1393	0.1112	0.0647
514	0.0137	0.1396	0.1115	0.0649
514.5	0.0137	0.1397	0.1116	0.0651
515	0.0137	0.1398	0.1115	0.0652
515.5	0.0137	0.1398	0.1114	0.0652
516	0.0137	0.1397	0.1113	0.0652
516.5	0.0137	0.1397	0.1113	0.0653
517	0.0137	0.1396	0.1113	0.0654
517.5	0.0137	0.1396	0.1113	0.0655
518	0.0137	0.1397	0.1116	0.0656
518.5	0.0138	0.1400	0.1119	0.0659
519	0.0138	0.1405	0.1123	0.0661
519.5	0.0139	0.1410	0.1127	0.0664
520	0.0139	0.1414	0.1130	0.0668
520.5	0.0140	0.1417	0.1133	0.0670
521	0.0140	0.1418	0.1135	0.0672
521.5	0.0140	0.1416	0.1135	0.0672
522	0.0140	0.1413	0.1133	0.0672
522.5	0.0140	0.1410	0.1131	0.0672
523	0.0140	0.1407	0.1129	0.0671
523.5	0.0139	0.1405	0.1127	0.0670
524	0.0139	0.1405	0.1128	0.0671
524.5	0.0140	0.1407	0.1130	0.0672
525	0.0140	0.1410	0.1134	0.0674
525.5	0.0141	0.1416	0.1139	0.0677
526	0.0142	0.1423	0.1143	0.0680
526.5	0.0142	0.1428	0.1147	0.0683
527	0.0143	0.1431	0.1149	0.0685
527.5	0.0143	0.1432	0.1150	0.0686
528	0.0143	0.1432	0.1152	0.0688
528.5	0.0144	0.1433	0.1154	0.0690
529	0.0144	0.1435	0.1157	0.0693
529.5	0.0145	0.1439	0.1161	0.0696
530	0.0145	0.1445	0.1164	0.0698
530.5	0.0146	0.1450	0.1168	0.0701
531	0.0146	0.1455	0.1172	0.0703
531.5	0.0147	0.1460	0.1176	0.0705
532	0.0147	0.1462	0.1178	0.0706
532.5	0.0147	0.1462	0.1180	0.0708
533	0.0147	0.1462	0.1180	0.0708
533.5	0.0147	0.1463	0.1180	0.0709
534	0.0148	0.1465	0.1181	0.0709
534.5	0.0148	0.1469	0.1183	0.0710
535	0.0149	0.1473	0.1187	0.0712
535.5	0.0149	0.1477	0.1192	0.0715
536	0.0150	0.1481	0.1198	0.0718
536.5	0.0151	0.1485	0.1205	0.0723
537	0.0152	0.1489	0.1212	0.0728
537.5	0.0152	0.1494	0.1219	0.0733
538	0.0153	0.1497	0.1224	0.0737
538.5	0.0153	0.1498	0.1226	0.0739

539	0.0154	0.1497	0.1228	0.0739
539.5	0.0154	0.1496	0.1228	0.0739
540	0.0154	0.1496	0.1230	0.0739
540.5	0.0154	0.1496	0.1233	0.0740
541	0.0154	0.1499	0.1237	0.0741
541.5	0.0155	0.1502	0.1243	0.0742
542	0.0155	0.1506	0.1249	0.0744
542.5	0.0156	0.1511	0.1256	0.0746
543	0.0156	0.1517	0.1263	0.0748
543.5	0.0157	0.1523	0.1269	0.0751
544	0.0157	0.1528	0.1274	0.0753
544.5	0.0158	0.1532	0.1277	0.0755
545	0.0159	0.1537	0.1281	0.0757
545.5	0.0159	0.1542	0.1284	0.0760
546	0.0159	0.1546	0.1287	0.0762
546.5	0.0160	0.1551	0.1290	0.0766
547	0.0160	0.1554	0.1293	0.0769
547.5	0.0161	0.1555	0.1294	0.0770
548	0.0161	0.1555	0.1294	0.0771
548.5	0.0162	0.1555	0.1296	0.0772
549	0.0162	0.1557	0.1298	0.0772
549.5	0.0163	0.1562	0.1302	0.0774
550	0.0164	0.1569	0.1308	0.0777
550.5	0.0165	0.1577	0.1315	0.0782
551	0.0166	0.1585	0.1321	0.0786
551.5	0.0167	0.1592	0.1327	0.0790
552	0.0168	0.1598	0.1333	0.0793
552.5	0.0169	0.1603	0.1339	0.0797
553	0.0170	0.1608	0.1345	0.0800
553.5	0.0170	0.1614	0.1351	0.0804
554	0.0171	0.1621	0.1357	0.0808
554.5	0.0172	0.1627	0.1362	0.0811
555	0.0173	0.1632	0.1366	0.0813
555.5	0.0173	0.1635	0.1368	0.0815
556	0.0174	0.1637	0.1369	0.0817
556.5	0.0174	0.1640	0.1371	0.0819
557	0.0175	0.1646	0.1375	0.0823
557.5	0.0176	0.1654	0.1380	0.0829
558	0.0177	0.1665	0.1387	0.0835
558.5	0.0178	0.1677	0.1396	0.0842
559	0.0179	0.1690	0.1406	0.0850
559.5	0.0181	0.1704	0.1416	0.0859
560	0.0182	0.1718	0.1427	0.0867
560.5	0.0184	0.1731	0.1437	0.0875
561	0.0185	0.1743	0.1447	0.0882
561.5	0.0186	0.1753	0.1457	0.0888
562	0.0188	0.1763	0.1468	0.0894
562.5	0.0189	0.1773	0.1480	0.0900
563	0.0190	0.1782	0.1491	0.0906
563.5	0.0191	0.1791	0.1502	0.0911
564	0.0192	0.1801	0.1513	0.0917
564.5	0.0194	0.1813	0.1525	0.0925
565	0.0195	0.1824	0.1536	0.0932
565.5	0.0196	0.1835	0.1546	0.0940
566	0.0198	0.1845	0.1555	0.0949
566.5	0.0199	0.1854	0.1563	0.0956
567	0.0200	0.1862	0.1569	0.0962

567.5	0.0201	0.1871	0.1576	0.0968
568	0.0202	0.1881	0.1585	0.0974
568.5	0.0204	0.1891	0.1596	0.0980
569	0.0205	0.1902	0.1607	0.0986
569.5	0.0207	0.1912	0.1619	0.0993
570	0.0209	0.1922	0.1632	0.1001
570.5	0.0210	0.1932	0.1644	0.1009
571	0.0212	0.1943	0.1657	0.1018
571.5	0.0214	0.1955	0.1671	0.1028
572	0.0216	0.1968	0.1685	0.1037
572.5	0.0218	0.1979	0.1698	0.1046
573	0.0220	0.1990	0.1710	0.1055
573.5	0.0222	0.2001	0.1722	0.1065
574	0.0224	0.2013	0.1733	0.1074
574.5	0.0226	0.2025	0.1743	0.1084
575	0.0227	0.2038	0.1754	0.1093
575.5	0.0229	0.2053	0.1765	0.1102
576	0.0232	0.2070	0.1778	0.1112
576.5	0.0234	0.2089	0.1791	0.1122
577	0.0236	0.2111	0.1806	0.1132
577.5	0.0239	0.2131	0.1820	0.1142
578	0.0240	0.2147	0.1833	0.1150
578.5	0.0242	0.2159	0.1845	0.1157
579	0.0243	0.2168	0.1856	0.1162
579.5	0.0244	0.2176	0.1868	0.1167
580	0.0245	0.2184	0.1879	0.1173
580.5	0.0247	0.2192	0.1891	0.1179
581	0.0248	0.2199	0.1901	0.1186
581.5	0.0249	0.2206	0.1909	0.1195
582	0.0250	0.2213	0.1916	0.1204
582.5	0.0252	0.2223	0.1924	0.1215
583	0.0254	0.2236	0.1934	0.1227
583.5	0.0256	0.2250	0.1947	0.1238
584	0.0259	0.2262	0.1961	0.1247
584.5	0.0260	0.2271	0.1974	0.1254
585	0.0262	0.2277	0.1986	0.1260
585.5	0.0263	0.2281	0.1996	0.1267
586	0.0265	0.2288	0.2008	0.1276
586.5	0.0267	0.2299	0.2021	0.1286
587	0.0269	0.2314	0.2035	0.1296
587.5	0.0271	0.2330	0.2048	0.1305
588	0.0273	0.2344	0.2058	0.1313
588.5	0.0275	0.2355	0.2066	0.1321
589	0.0277	0.2364	0.2074	0.1330
589.5	0.0279	0.2373	0.2083	0.1341
590	0.0281	0.2381	0.2093	0.1351
590.5	0.0283	0.2387	0.2101	0.1361
591	0.0284	0.2391	0.2105	0.1367
591.5	0.0285	0.2395	0.2107	0.1372
592	0.0286	0.2399	0.2109	0.1377
592.5	0.0287	0.2405	0.2112	0.1383
593	0.0288	0.2413	0.2118	0.1390
593.5	0.0289	0.2423	0.2127	0.1399
594	0.0291	0.2433	0.2136	0.1407
594.5	0.0293	0.2442	0.2145	0.1414
595	0.0295	0.2451	0.2153	0.1420
595.5	0.0296	0.2460	0.2161	0.1426

596	0.0297	0.2470	0.2170	0.1434
596.5	0.0299	0.2481	0.2181	0.1444
597	0.0301	0.2494	0.2196	0.1457
597.5	0.0303	0.2510	0.2215	0.1470
598	0.0306	0.2527	0.2234	0.1480
598.5	0.0308	0.2543	0.2251	0.1488
599	0.0310	0.2553	0.2262	0.1492
599.5	0.0310	0.2557	0.2267	0.1494
600	0.0311	0.2556	0.2269	0.1497
600.5	0.0312	0.2554	0.2272	0.1501
601	0.0313	0.2552	0.2274	0.1508
601.5	0.0314	0.2552	0.2277	0.1515
602	0.0315	0.2553	0.2280	0.1522
602.5	0.0316	0.2556	0.2282	0.1528
603	0.0317	0.2560	0.2284	0.1532
603.5	0.0318	0.2564	0.2287	0.1535
604	0.0319	0.2569	0.2292	0.1540
604.5	0.0320	0.2574	0.2300	0.1547
605	0.0322	0.2579	0.2311	0.1556
605.5	0.0323	0.2584	0.2323	0.1566
606	0.0324	0.2587	0.2333	0.1576
606.5	0.0325	0.2590	0.2340	0.1583
607	0.0326	0.2593	0.2344	0.1588
607.5	0.0327	0.2597	0.2346	0.1592
608	0.0329	0.2603	0.2349	0.1597
608.5	0.0330	0.2613	0.2354	0.1603
609	0.0332	0.2624	0.2362	0.1612
609.5	0.0334	0.2634	0.2372	0.1623
610	0.0336	0.2641	0.2381	0.1635
610.5	0.0338	0.2645	0.2389	0.1645
611	0.0340	0.2648	0.2394	0.1653
611.5	0.0341	0.2649	0.2396	0.1657
612	0.0342	0.2646	0.2394	0.1659
612.5	0.0342	0.2642	0.2390	0.1660
613	0.0343	0.2637	0.2386	0.1664
613.5	0.0343	0.2635	0.2384	0.1670
614	0.0345	0.2637	0.2385	0.1679
614.5	0.0346	0.2644	0.2390	0.1689
615	0.0348	0.2654	0.2396	0.1697
615.5	0.0349	0.2664	0.2402	0.1703
616	0.0351	0.2670	0.2406	0.1707
616.5	0.0352	0.2672	0.2406	0.1709
617	0.0352	0.2671	0.2403	0.1709
617.5	0.0353	0.2669	0.2400	0.1710
618	0.0353	0.2671	0.2399	0.1712
618.5	0.0354	0.2677	0.2401	0.1714
619	0.0356	0.2684	0.2406	0.1718
619.5	0.0358	0.2691	0.2413	0.1723
620	0.0360	0.2697	0.2421	0.1729
620.5	0.0362	0.2703	0.2431	0.1737
621	0.0363	0.2708	0.2440	0.1745
621.5	0.0365	0.2713	0.2447	0.1753
622	0.0365	0.2715	0.2454	0.1761
622.5	0.0366	0.2717	0.2461	0.1769
623	0.0367	0.2719	0.2468	0.1776
623.5	0.0368	0.2721	0.2473	0.1782
624	0.0368	0.2725	0.2479	0.1788

624.5	0.0369	0.2729	0.2483	0.1793
625	0.0370	0.2733	0.2487	0.1798
625.5	0.0371	0.2735	0.2491	0.1803
626	0.0372	0.2736	0.2496	0.1808
626.5	0.0374	0.2737	0.2500	0.1814
627	0.0375	0.2738	0.2504	0.1820
627.5	0.0376	0.2741	0.2505	0.1824
628	0.0376	0.2743	0.2504	0.1826
628.5	0.0376	0.2744	0.2500	0.1826
629	0.0376	0.2744	0.2495	0.1824
629.5	0.0375	0.2741	0.2490	0.1821
630	0.0375	0.2738	0.2488	0.1820
630.5	0.0375	0.2738	0.2491	0.1823
631	0.0376	0.2742	0.2497	0.1829
631.5	0.0378	0.2751	0.2508	0.1839
632	0.0381	0.2763	0.2521	0.1852
632.5	0.0384	0.2776	0.2534	0.1865
633	0.0386	0.2787	0.2545	0.1877
633.5	0.0388	0.2792	0.2551	0.1884
634	0.0389	0.2791	0.2550	0.1887
634.5	0.0390	0.2786	0.2543	0.1886
635	0.0390	0.2778	0.2534	0.1881
635.5	0.0390	0.2772	0.2525	0.1876
636	0.0390	0.2769	0.2519	0.1874
636.5	0.0391	0.2771	0.2517	0.1876
637	0.0392	0.2773	0.2519	0.1882
637.5	0.0394	0.2776	0.2523	0.1890
638	0.0395	0.2777	0.2528	0.1900
638.5	0.0396	0.2776	0.2534	0.1909
639	0.0398	0.2774	0.2540	0.1916
639.5	0.0399	0.2770	0.2544	0.1920
640	0.0400	0.2765	0.2545	0.1923
640.5	0.0400	0.2758	0.2542	0.1925
641	0.0401	0.2751	0.2536	0.1925
641.5	0.0401	0.2746	0.2531	0.1924
642	0.0402	0.2744	0.2530	0.1925
642.5	0.0403	0.2746	0.2534	0.1928
643	0.0405	0.2751	0.2540	0.1932
643.5	0.0407	0.2759	0.2546	0.1938
644	0.0409	0.2769	0.2551	0.1946
644.5	0.0411	0.2779	0.2552	0.1956
645	0.0412	0.2786	0.2549	0.1965
645.5	0.0414	0.2791	0.2544	0.1974
646	0.0415	0.2792	0.2539	0.1982
646.5	0.0416	0.2790	0.2532	0.1988
647	0.0417	0.2789	0.2525	0.1995
647.5	0.0418	0.2792	0.2521	0.2004
648	0.0420	0.2800	0.2521	0.2014
648.5	0.0422	0.2813	0.2525	0.2024
649	0.0424	0.2827	0.2531	0.2032
649.5	0.0425	0.2840	0.2538	0.2035
650	0.0426	0.2848	0.2545	0.2035
650.5	0.0427	0.2854	0.2552	0.2036
651	0.0428	0.2856	0.2560	0.2038
651.5	0.0431	0.2859	0.2571	0.2045
652	0.0433	0.2864	0.2584	0.2057
652.5	0.0435	0.2868	0.2594	0.2070

653	0.0438	0.2874	0.2601	0.2081
653.5	0.0440	0.2880	0.2606	0.2089
654	0.0441	0.2887	0.2607	0.2094
654.5	0.0443	0.2892	0.2605	0.2098
655	0.0443	0.2896	0.2600	0.2101
655.5	0.0444	0.2899	0.2596	0.2104
656	0.0444	0.2901	0.2593	0.2107
656.5	0.0444	0.2901	0.2590	0.2110
657	0.0444	0.2901	0.2591	0.2113
657.5	0.0445	0.2900	0.2595	0.2115
658	0.0446	0.2900	0.2598	0.2119
658.5	0.0448	0.2903	0.2601	0.2124
659	0.0449	0.2908	0.2602	0.2129
659.5	0.0451	0.2915	0.2602	0.2135
660	0.0452	0.2925	0.2601	0.2140
660.5	0.0453	0.2935	0.2600	0.2144
661	0.0453	0.2945	0.2600	0.2147
661.5	0.0453	0.2952	0.2601	0.2150
662	0.0454	0.2957	0.2603	0.2154
662.5	0.0454	0.2958	0.2606	0.2158
663	0.0455	0.2955	0.2611	0.2163
663.5	0.0455	0.2948	0.2616	0.2165
664	0.0455	0.2937	0.2618	0.2163
664.5	0.0454	0.2922	0.2616	0.2155
665	0.0452	0.2903	0.2609	0.2142
665.5	0.0450	0.2884	0.2596	0.2127
666	0.0447	0.2868	0.2582	0.2113
666.5	0.0446	0.2859	0.2572	0.2103
667	0.0446	0.2855	0.2566	0.2100
667.5	0.0446	0.2856	0.2567	0.2099
668	0.0447	0.2860	0.2572	0.2100
668.5	0.0447	0.2864	0.2580	0.2101
669	0.0447	0.2867	0.2585	0.2100
669.5	0.0447	0.2868	0.2585	0.2097
670	0.0447	0.2871	0.2581	0.2095
670.5	0.0447	0.2873	0.2573	0.2093
671	0.0448	0.2874	0.2563	0.2091
671.5	0.0449	0.2874	0.2554	0.2090
672	0.0450	0.2874	0.2547	0.2089
672.5	0.0451	0.2873	0.2541	0.2087
673	0.0452	0.2875	0.2538	0.2086
673.5	0.0453	0.2881	0.2538	0.2088
674	0.0454	0.2888	0.2538	0.2091
674.5	0.0455	0.2895	0.2538	0.2095
675	0.0455	0.2900	0.2537	0.2100
675.5	0.0457	0.2904	0.2539	0.2107
676	0.0458	0.2908	0.2543	0.2118
676.5	0.0460	0.2914	0.2550	0.2130
677	0.0463	0.2922	0.2560	0.2143
677.5	0.0466	0.2933	0.2570	0.2158
678	0.0469	0.2945	0.2579	0.2171
678.5	0.0472	0.2960	0.2587	0.2183
679	0.0474	0.2975	0.2594	0.2194
679.5	0.0477	0.2991	0.2599	0.2205
680	0.0480	0.3007	0.2602	0.2216
680.5	0.0483	0.3023	0.2603	0.2227
681	0.0486	0.3038	0.2602	0.2237

681.5	0.0488	0.3054	0.2600	0.2247
682	0.0491	0.3071	0.2599	0.2258
682.5	0.0494	0.3085	0.2599	0.2266
683	0.0497	0.3093	0.2598	0.2270
683.5	0.0499	0.3095	0.2597	0.2272
684	0.0501	0.3092	0.2596	0.2272
684.5	0.0504	0.3088	0.2597	0.2273
685	0.0506	0.3084	0.2600	0.2276
685.5	0.0508	0.3082	0.2605	0.2283
686	0.0511	0.3084	0.2613	0.2291
686.5	0.0514	0.3089	0.2623	0.2300
687	0.0517	0.3097	0.2636	0.2310
687.5	0.0520	0.3106	0.2649	0.2320
688	0.0523	0.3116	0.2661	0.2330
688.5	0.0525	0.3125	0.2668	0.2337
689	0.0527	0.3135	0.2672	0.2344
689.5	0.0529	0.3145	0.2673	0.2350
690	0.0531	0.3159	0.2674	0.2353
690.5	0.0533	0.3173	0.2675	0.2357
691	0.0534	0.3185	0.2676	0.2359
691.5	0.0536	0.3193	0.2676	0.2361
692	0.0536	0.3194	0.2675	0.2362
692.5	0.0537	0.3192	0.2676	0.2364
693	0.0538	0.3190	0.2680	0.2367
693.5	0.0540	0.3191	0.2687	0.2371
694	0.0541	0.3193	0.2695	0.2376
694.5	0.0543	0.3195	0.2703	0.2380
695	0.0544	0.3194	0.2706	0.2378
695.5	0.0545	0.3189	0.2702	0.2372
696	0.0545	0.3181	0.2696	0.2364
696.5	0.0545	0.3171	0.2688	0.2356
697	0.0545	0.3163	0.2683	0.2348
697.5	0.0545	0.3154	0.2682	0.2343
698	0.0545	0.3146	0.2684	0.2339
698.5	0.0545	0.3137	0.2686	0.2335
699	0.0545	0.3127	0.2686	0.2331
699.5	0.0545	0.3117	0.2683	0.2327
700	0.0545	0.3107	0.2679	0.2323

C.3 60° measurements

Table C.3: Measurements of copper samples A, B, C, and D at 60°. The lamp signal was measured at an integration time of 29 ms and the measurements of the samples were taken at an integration time of 450 ms, 150 ms, 150 ms, and 180 ms respectively.

λ	A	B	C	D
400	0.0198	0.1040	0.0840	0.0470
400.5	0.0198	0.1040	0.0840	0.0470
401	0.0199	0.1039	0.0842	0.0471
401.5	0.0200	0.1036	0.0844	0.0472
402	0.0200	0.1034	0.0845	0.0472
402.5	0.0200	0.1031	0.0843	0.0471
403	0.0200	0.1028	0.0842	0.0470
403.5	0.0199	0.1026	0.0841	0.0467
404	0.0199	0.1027	0.0840	0.0464
404.5	0.0199	0.1028	0.0839	0.0461
405	0.0200	0.1029	0.0839	0.0461
405.5	0.0200	0.1029	0.0839	0.0461
406	0.0200	0.1028	0.0836	0.0460
406.5	0.0199	0.1027	0.0835	0.0459
407	0.0199	0.1025	0.0837	0.0459
407.5	0.0199	0.1025	0.0840	0.0461
408	0.0199	0.1026	0.0844	0.0465
408.5	0.0200	0.1028	0.0851	0.0469
409	0.0201	0.1031	0.0855	0.0473
409.5	0.0201	0.1034	0.0854	0.0472
410	0.0199	0.1032	0.0849	0.0467
410.5	0.0198	0.1028	0.0843	0.0462
411	0.0196	0.1024	0.0834	0.0457
411.5	0.0194	0.1020	0.0828	0.0453
412	0.0194	0.1019	0.0825	0.0453
412.5	0.0194	0.1019	0.0826	0.0455
413	0.0194	0.1019	0.0830	0.0457
413.5	0.0196	0.1021	0.0836	0.0458
414	0.0197	0.1022	0.0840	0.0457
414.5	0.0198	0.1026	0.0842	0.0454
415	0.0198	0.1030	0.0839	0.0452
415.5	0.0197	0.1032	0.0835	0.0451
416	0.0196	0.1034	0.0833	0.0451
416.5	0.0196	0.1033	0.0835	0.0451
417	0.0196	0.1031	0.0837	0.0451
417.5	0.0196	0.1030	0.0840	0.0451
418	0.0196	0.1028	0.0841	0.0451
418.5	0.0196	0.1029	0.0841	0.0450
419	0.0196	0.1028	0.0840	0.0449
419.5	0.0196	0.1027	0.0838	0.0448
420	0.0197	0.1026	0.0838	0.0446
420.5	0.0197	0.1026	0.0839	0.0446
421	0.0196	0.1026	0.0839	0.0445
421.5	0.0196	0.1027	0.0839	0.0445
422	0.0197	0.1029	0.0839	0.0444
422.5	0.0197	0.1031	0.0839	0.0443
423	0.0198	0.1032	0.0838	0.0443
423.5	0.0199	0.1030	0.0838	0.0443
424	0.0200	0.1028	0.0837	0.0442
424.5	0.0200	0.1025	0.0837	0.0441

425	0.0201	0.1022	0.0836	0.0440
425.5	0.0201	0.1020	0.0837	0.0440
426	0.0201	0.1018	0.0838	0.0440
426.5	0.0200	0.1017	0.0838	0.0441
427	0.0199	0.1016	0.0837	0.0443
427.5	0.0199	0.1015	0.0835	0.0445
428	0.0198	0.1014	0.0834	0.0447
428.5	0.0199	0.1014	0.0834	0.0448
429	0.0199	0.1016	0.0836	0.0449
429.5	0.0199	0.1017	0.0838	0.0449
430	0.0199	0.1019	0.0840	0.0449
430.5	0.0198	0.1021	0.0841	0.0449
431	0.0198	0.1022	0.0841	0.0448
431.5	0.0197	0.1022	0.0840	0.0447
432	0.0198	0.1023	0.0839	0.0445
432.5	0.0198	0.1024	0.0839	0.0444
433	0.0198	0.1026	0.0840	0.0443
433.5	0.0199	0.1029	0.0843	0.0443
434	0.0199	0.1030	0.0845	0.0443
434.5	0.0200	0.1029	0.0846	0.0443
435	0.0200	0.1026	0.0845	0.0444
435.5	0.0201	0.1022	0.0844	0.0445
436	0.0201	0.1019	0.0844	0.0446
436.5	0.0201	0.1017	0.0845	0.0447
437	0.0202	0.1016	0.0847	0.0447
437.5	0.0203	0.1016	0.0848	0.0447
438	0.0203	0.1017	0.0850	0.0448
438.5	0.0204	0.1017	0.0849	0.0448
439	0.0204	0.1018	0.0849	0.0448
439.5	0.0204	0.1019	0.0848	0.0449
440	0.0203	0.1020	0.0847	0.0449
440.5	0.0203	0.1021	0.0846	0.0449
441	0.0204	0.1021	0.0847	0.0449
441.5	0.0204	0.1021	0.0847	0.0449
442	0.0204	0.1021	0.0848	0.0450
442.5	0.0204	0.1021	0.0850	0.0452
443	0.0204	0.1022	0.0852	0.0453
443.5	0.0205	0.1022	0.0852	0.0452
444	0.0205	0.1021	0.0853	0.0450
444.5	0.0205	0.1020	0.0854	0.0449
445	0.0206	0.1018	0.0854	0.0448
445.5	0.0206	0.1016	0.0855	0.0449
446	0.0205	0.1015	0.0856	0.0450
446.5	0.0206	0.1016	0.0857	0.0451
447	0.0206	0.1016	0.0858	0.0452
447.5	0.0207	0.1018	0.0860	0.0452
448	0.0207	0.1019	0.0861	0.0453
448.5	0.0207	0.1020	0.0862	0.0453
449	0.0207	0.1021	0.0863	0.0453
449.5	0.0206	0.1021	0.0864	0.0454
450	0.0206	0.1022	0.0864	0.0455
450.5	0.0207	0.1023	0.0864	0.0455
451	0.0207	0.1024	0.0864	0.0455
451.5	0.0207	0.1024	0.0863	0.0455
452	0.0208	0.1023	0.0862	0.0455
452.5	0.0208	0.1023	0.0860	0.0455
453	0.0209	0.1023	0.0859	0.0456

453.5	0.0209	0.1022	0.0859	0.0457
454	0.0210	0.1021	0.0860	0.0457
454.5	0.0210	0.1020	0.0862	0.0457
455	0.0210	0.1020	0.0864	0.0458
455.5	0.0210	0.1022	0.0866	0.0459
456	0.0211	0.1023	0.0867	0.0460
456.5	0.0211	0.1025	0.0867	0.0461
457	0.0211	0.1025	0.0867	0.0462
457.5	0.0211	0.1025	0.0867	0.0462
458	0.0211	0.1025	0.0867	0.0463
458.5	0.0211	0.1025	0.0868	0.0463
459	0.0212	0.1026	0.0869	0.0463
459.5	0.0212	0.1027	0.0869	0.0464
460	0.0213	0.1029	0.0869	0.0465
460.5	0.0213	0.1031	0.0870	0.0466
461	0.0214	0.1031	0.0870	0.0467
461.5	0.0214	0.1032	0.0871	0.0468
462	0.0215	0.1032	0.0873	0.0469
462.5	0.0215	0.1033	0.0875	0.0469
463	0.0215	0.1033	0.0877	0.0470
463.5	0.0215	0.1034	0.0880	0.0470
464	0.0215	0.1033	0.0881	0.0470
464.5	0.0215	0.1032	0.0883	0.0470
465	0.0215	0.1032	0.0884	0.0470
465.5	0.0216	0.1031	0.0884	0.0470
466	0.0216	0.1031	0.0884	0.0471
466.5	0.0216	0.1032	0.0884	0.0472
467	0.0217	0.1033	0.0885	0.0474
467.5	0.0217	0.1033	0.0887	0.0476
468	0.0218	0.1033	0.0889	0.0477
468.5	0.0217	0.1032	0.0890	0.0479
469	0.0217	0.1031	0.0891	0.0479
469.5	0.0217	0.1029	0.0891	0.0479
470	0.0216	0.1029	0.0890	0.0479
470.5	0.0216	0.1028	0.0890	0.0479
471	0.0217	0.1027	0.0890	0.0479
471.5	0.0217	0.1025	0.0890	0.0478
472	0.0217	0.1023	0.0891	0.0478
472.5	0.0217	0.1022	0.0891	0.0478
473	0.0217	0.1021	0.0892	0.0478
473.5	0.0218	0.1021	0.0893	0.0479
474	0.0219	0.1023	0.0895	0.0479
474.5	0.0219	0.1023	0.0896	0.0479
475	0.0220	0.1024	0.0898	0.0479
475.5	0.0220	0.1024	0.0899	0.0480
476	0.0220	0.1024	0.0899	0.0480
476.5	0.0219	0.1023	0.0897	0.0481
477	0.0219	0.1023	0.0896	0.0481
477.5	0.0218	0.1022	0.0894	0.0480
478	0.0218	0.1021	0.0892	0.0480
478.5	0.0218	0.1019	0.0891	0.0479
479	0.0218	0.1018	0.0890	0.0479
479.5	0.0219	0.1016	0.0889	0.0479
480	0.0219	0.1015	0.0888	0.0479
480.5	0.0218	0.1013	0.0887	0.0479
481	0.0218	0.1012	0.0887	0.0480
481.5	0.0218	0.1012	0.0888	0.0481

482	0.0219	0.1013	0.0889	0.0482
482.5	0.0219	0.1014	0.0890	0.0484
483	0.0219	0.1014	0.0890	0.0485
483.5	0.0219	0.1013	0.0890	0.0486
484	0.0220	0.1012	0.0889	0.0486
484.5	0.0220	0.1012	0.0889	0.0487
485	0.0221	0.1013	0.0890	0.0489
485.5	0.0221	0.1014	0.0891	0.0490
486	0.0221	0.1016	0.0893	0.0491
486.5	0.0222	0.1017	0.0894	0.0492
487	0.0222	0.1017	0.0895	0.0493
487.5	0.0222	0.1018	0.0895	0.0494
488	0.0222	0.1018	0.0895	0.0495
488.5	0.0222	0.1017	0.0894	0.0496
489	0.0222	0.1016	0.0894	0.0497
489.5	0.0222	0.1014	0.0894	0.0497
490	0.0222	0.1012	0.0894	0.0496
490.5	0.0222	0.1010	0.0894	0.0496
491	0.0222	0.1008	0.0895	0.0496
491.5	0.0222	0.1007	0.0896	0.0497
492	0.0222	0.1007	0.0898	0.0498
492.5	0.0223	0.1007	0.0899	0.0500
493	0.0223	0.1006	0.0900	0.0501
493.5	0.0223	0.1005	0.0900	0.0502
494	0.0223	0.1005	0.0900	0.0502
494.5	0.0223	0.1005	0.0899	0.0503
495	0.0223	0.1005	0.0899	0.0504
495.5	0.0224	0.1006	0.0899	0.0504
496	0.0224	0.1005	0.0900	0.0505
496.5	0.0224	0.1005	0.0901	0.0506
497	0.0225	0.1005	0.0901	0.0507
497.5	0.0225	0.1007	0.0902	0.0508
498	0.0226	0.1009	0.0903	0.0510
498.5	0.0227	0.1012	0.0906	0.0513
499	0.0227	0.1014	0.0908	0.0515
499.5	0.0228	0.1015	0.0910	0.0516
500	0.0228	0.1015	0.0912	0.0517
500.5	0.0228	0.1014	0.0912	0.0518
501	0.0228	0.1013	0.0912	0.0519
501.5	0.0228	0.1013	0.0912	0.0519
502	0.0228	0.1012	0.0913	0.0519
502.5	0.0228	0.1010	0.0914	0.0519
503	0.0228	0.1009	0.0914	0.0519
503.5	0.0229	0.1007	0.0915	0.0519
504	0.0229	0.1007	0.0916	0.0519
504.5	0.0229	0.1007	0.0917	0.0520
505	0.0229	0.1009	0.0919	0.0521
505.5	0.0230	0.1011	0.0920	0.0522
506	0.0230	0.1012	0.0921	0.0523
506.5	0.0231	0.1013	0.0922	0.0525
507	0.0231	0.1014	0.0924	0.0527
507.5	0.0232	0.1015	0.0925	0.0530
508	0.0233	0.1017	0.0927	0.0532
508.5	0.0233	0.1019	0.0929	0.0534
509	0.0233	0.1019	0.0929	0.0535
509.5	0.0234	0.1019	0.0929	0.0536
510	0.0234	0.1018	0.0929	0.0538

510.5	0.0234	0.1018	0.0929	0.0539
511	0.0234	0.1018	0.0929	0.0541
511.5	0.0234	0.1019	0.0929	0.0543
512	0.0235	0.1021	0.0930	0.0544
512.5	0.0235	0.1023	0.0931	0.0546
513	0.0236	0.1026	0.0932	0.0548
513.5	0.0237	0.1028	0.0934	0.0550
514	0.0237	0.1032	0.0935	0.0552
514.5	0.0238	0.1034	0.0937	0.0554
515	0.0238	0.1035	0.0938	0.0555
515.5	0.0238	0.1035	0.0938	0.0556
516	0.0239	0.1034	0.0938	0.0556
516.5	0.0239	0.1031	0.0937	0.0557
517	0.0238	0.1028	0.0935	0.0556
517.5	0.0238	0.1025	0.0933	0.0555
518	0.0238	0.1023	0.0933	0.0555
518.5	0.0238	0.1024	0.0934	0.0555
519	0.0238	0.1025	0.0936	0.0557
519.5	0.0239	0.1027	0.0938	0.0559
520	0.0240	0.1029	0.0939	0.0562
520.5	0.0240	0.1030	0.0940	0.0564
521	0.0241	0.1029	0.0940	0.0566
521.5	0.0241	0.1028	0.0940	0.0567
522	0.0241	0.1027	0.0938	0.0567
522.5	0.0240	0.1025	0.0936	0.0567
523	0.0240	0.1024	0.0934	0.0567
523.5	0.0239	0.1023	0.0932	0.0567
524	0.0239	0.1023	0.0931	0.0567
524.5	0.0240	0.1024	0.0932	0.0568
525	0.0240	0.1026	0.0933	0.0571
525.5	0.0241	0.1029	0.0936	0.0573
526	0.0243	0.1033	0.0939	0.0576
526.5	0.0243	0.1035	0.0941	0.0578
527	0.0244	0.1035	0.0941	0.0579
527.5	0.0244	0.1035	0.0940	0.0579
528	0.0244	0.1034	0.0940	0.0579
528.5	0.0245	0.1035	0.0940	0.0581
529	0.0245	0.1037	0.0942	0.0582
529.5	0.0246	0.1039	0.0945	0.0584
530	0.0247	0.1042	0.0948	0.0586
530.5	0.0248	0.1044	0.0950	0.0588
531	0.0248	0.1046	0.0952	0.0590
531.5	0.0249	0.1048	0.0954	0.0592
532	0.0249	0.1047	0.0955	0.0594
532.5	0.0249	0.1046	0.0954	0.0595
533	0.0249	0.1045	0.0954	0.0595
533.5	0.0249	0.1044	0.0953	0.0596
534	0.0250	0.1045	0.0953	0.0597
534.5	0.0250	0.1046	0.0954	0.0599
535	0.0251	0.1047	0.0957	0.0601
535.5	0.0252	0.1049	0.0960	0.0604
536	0.0252	0.1052	0.0964	0.0607
536.5	0.0254	0.1056	0.0968	0.0611
537	0.0255	0.1061	0.0973	0.0615
537.5	0.0256	0.1066	0.0976	0.0618
538	0.0257	0.1071	0.0979	0.0621
538.5	0.0258	0.1073	0.0980	0.0622

539	0.0258	0.1074	0.0980	0.0622
539.5	0.0258	0.1074	0.0979	0.0622
540	0.0258	0.1073	0.0980	0.0621
540.5	0.0258	0.1073	0.0981	0.0620
541	0.0258	0.1073	0.0983	0.0619
541.5	0.0259	0.1074	0.0986	0.0620
542	0.0259	0.1075	0.0990	0.0621
542.5	0.0259	0.1078	0.0993	0.0623
543	0.0260	0.1081	0.0997	0.0626
543.5	0.0261	0.1083	0.1000	0.0628
544	0.0261	0.1084	0.1002	0.0631
544.5	0.0262	0.1085	0.1005	0.0633
545	0.0263	0.1086	0.1008	0.0635
545.5	0.0264	0.1088	0.1011	0.0637
546	0.0265	0.1090	0.1014	0.0639
546.5	0.0265	0.1092	0.1017	0.0641
547	0.0266	0.1094	0.1019	0.0643
547.5	0.0267	0.1095	0.1020	0.0644
548	0.0267	0.1096	0.1022	0.0646
548.5	0.0267	0.1098	0.1024	0.0648
549	0.0268	0.1102	0.1027	0.0650
549.5	0.0269	0.1106	0.1031	0.0654
550	0.0270	0.1112	0.1036	0.0657
550.5	0.0271	0.1118	0.1040	0.0661
551	0.0272	0.1123	0.1044	0.0664
551.5	0.0273	0.1127	0.1048	0.0667
552	0.0274	0.1129	0.1052	0.0670
552.5	0.0275	0.1131	0.1055	0.0672
553	0.0276	0.1133	0.1060	0.0674
553.5	0.0276	0.1136	0.1064	0.0677
554	0.0277	0.1140	0.1068	0.0679
554.5	0.0278	0.1144	0.1071	0.0681
555	0.0278	0.1148	0.1074	0.0682
555.5	0.0278	0.1150	0.1075	0.0683
556	0.0279	0.1152	0.1076	0.0684
556.5	0.0279	0.1154	0.1080	0.0686
557	0.0281	0.1158	0.1085	0.0689
557.5	0.0282	0.1162	0.1090	0.0693
558	0.0284	0.1167	0.1096	0.0697
558.5	0.0286	0.1174	0.1103	0.0701
559	0.0287	0.1181	0.1109	0.0705
559.5	0.0289	0.1187	0.1116	0.0709
560	0.0291	0.1193	0.1124	0.0714
560.5	0.0292	0.1199	0.1131	0.0718
561	0.0294	0.1205	0.1138	0.0722
561.5	0.0295	0.1210	0.1145	0.0727
562	0.0296	0.1216	0.1152	0.0732
562.5	0.0298	0.1223	0.1159	0.0738
563	0.0299	0.1230	0.1165	0.0743
563.5	0.0301	0.1237	0.1171	0.0749
564	0.0302	0.1244	0.1177	0.0755
564.5	0.0304	0.1252	0.1184	0.0761
565	0.0306	0.1260	0.1191	0.0768
565.5	0.0308	0.1268	0.1198	0.0774
566	0.0309	0.1277	0.1205	0.0780
566.5	0.0311	0.1284	0.1211	0.0784
567	0.0312	0.1289	0.1216	0.0788

567.5	0.0314	0.1293	0.1221	0.0791
568	0.0315	0.1298	0.1228	0.0795
568.5	0.0317	0.1303	0.1235	0.0799
569	0.0319	0.1308	0.1241	0.0803
569.5	0.0321	0.1313	0.1248	0.0808
570	0.0323	0.1319	0.1255	0.0812
570.5	0.0324	0.1325	0.1262	0.0817
571	0.0326	0.1330	0.1270	0.0822
571.5	0.0328	0.1337	0.1280	0.0827
572	0.0330	0.1344	0.1291	0.0833
572.5	0.0332	0.1352	0.1301	0.0839
573	0.0334	0.1361	0.1310	0.0844
573.5	0.0336	0.1371	0.1319	0.0850
574	0.0339	0.1379	0.1327	0.0856
574.5	0.0341	0.1387	0.1335	0.0863
575	0.0343	0.1394	0.1344	0.0869
575.5	0.0345	0.1402	0.1354	0.0876
576	0.0348	0.1410	0.1364	0.0883
576.5	0.0350	0.1420	0.1376	0.0891
577	0.0353	0.1430	0.1388	0.0898
577.5	0.0355	0.1439	0.1398	0.0906
578	0.0357	0.1446	0.1407	0.0913
578.5	0.0359	0.1452	0.1415	0.0918
579	0.0360	0.1457	0.1423	0.0923
579.5	0.0362	0.1462	0.1429	0.0928
580	0.0364	0.1468	0.1436	0.0933
580.5	0.0366	0.1474	0.1442	0.0939
581	0.0367	0.1481	0.1446	0.0945
581.5	0.0369	0.1486	0.1450	0.0950
582	0.0371	0.1491	0.1454	0.0956
582.5	0.0372	0.1496	0.1458	0.0961
583	0.0375	0.1503	0.1464	0.0967
583.5	0.0377	0.1510	0.1471	0.0973
584	0.0380	0.1517	0.1478	0.0979
584.5	0.0382	0.1523	0.1483	0.0983
585	0.0383	0.1526	0.1488	0.0986
585.5	0.0385	0.1529	0.1492	0.0990
586	0.0386	0.1534	0.1498	0.0995
586.5	0.0388	0.1541	0.1506	0.1001
587	0.0391	0.1550	0.1516	0.1009
587.5	0.0393	0.1559	0.1527	0.1015
588	0.0395	0.1566	0.1536	0.1021
588.5	0.0397	0.1571	0.1544	0.1026
589	0.0399	0.1575	0.1551	0.1030
589.5	0.0400	0.1578	0.1557	0.1035
590	0.0402	0.1583	0.1563	0.1042
590.5	0.0404	0.1586	0.1568	0.1049
591	0.0406	0.1587	0.1570	0.1055
591.5	0.0407	0.1588	0.1573	0.1059
592	0.0408	0.1588	0.1576	0.1062
592.5	0.0409	0.1590	0.1580	0.1064
593	0.0411	0.1594	0.1586	0.1066
593.5	0.0413	0.1599	0.1593	0.1070
594	0.0415	0.1604	0.1600	0.1075
594.5	0.0417	0.1607	0.1604	0.1080
595	0.0419	0.1610	0.1608	0.1086
595.5	0.0420	0.1612	0.1611	0.1091

596	0.0422	0.1616	0.1614	0.1096
596.5	0.0423	0.1621	0.1619	0.1102
597	0.0426	0.1630	0.1626	0.1109
597.5	0.0429	0.1640	0.1635	0.1118
598	0.0431	0.1650	0.1644	0.1125
598.5	0.0434	0.1657	0.1651	0.1132
599	0.0436	0.1659	0.1654	0.1136
599.5	0.0436	0.1656	0.1654	0.1138
600	0.0437	0.1650	0.1654	0.1137
600.5	0.0437	0.1644	0.1654	0.1137
601	0.0438	0.1641	0.1655	0.1138
601.5	0.0439	0.1642	0.1659	0.1139
602	0.0440	0.1644	0.1663	0.1142
602.5	0.0441	0.1648	0.1667	0.1145
603	0.0443	0.1651	0.1672	0.1149
603.5	0.0444	0.1653	0.1676	0.1153
604	0.0445	0.1655	0.1680	0.1158
604.5	0.0446	0.1657	0.1685	0.1164
605	0.0448	0.1661	0.1690	0.1172
605.5	0.0450	0.1665	0.1697	0.1179
606	0.0453	0.1667	0.1703	0.1186
606.5	0.0455	0.1667	0.1707	0.1192
607	0.0457	0.1667	0.1711	0.1196
607.5	0.0458	0.1668	0.1715	0.1199
608	0.0460	0.1671	0.1720	0.1202
608.5	0.0462	0.1676	0.1728	0.1204
609	0.0464	0.1683	0.1736	0.1207
609.5	0.0466	0.1690	0.1744	0.1211
610	0.0468	0.1696	0.1751	0.1214
610.5	0.0469	0.1700	0.1756	0.1218
611	0.0470	0.1703	0.1758	0.1223
611.5	0.0472	0.1704	0.1759	0.1228
612	0.0473	0.1704	0.1758	0.1232
612.5	0.0473	0.1703	0.1756	0.1235
613	0.0474	0.1702	0.1754	0.1237
613.5	0.0475	0.1702	0.1756	0.1239
614	0.0476	0.1703	0.1760	0.1242
614.5	0.0478	0.1705	0.1768	0.1244
615	0.0480	0.1709	0.1776	0.1248
615.5	0.0482	0.1714	0.1784	0.1252
616	0.0484	0.1717	0.1789	0.1257
616.5	0.0485	0.1720	0.1790	0.1261
617	0.0485	0.1722	0.1789	0.1265
617.5	0.0486	0.1724	0.1787	0.1270
618	0.0487	0.1727	0.1785	0.1274
618.5	0.0489	0.1732	0.1785	0.1279
619	0.0491	0.1737	0.1787	0.1284
619.5	0.0493	0.1742	0.1790	0.1288
620	0.0495	0.1746	0.1794	0.1293
620.5	0.0497	0.1751	0.1799	0.1298
621	0.0499	0.1755	0.1804	0.1303
621.5	0.0501	0.1760	0.1809	0.1308
622	0.0503	0.1764	0.1815	0.1312
622.5	0.0506	0.1767	0.1821	0.1317
623	0.0508	0.1769	0.1825	0.1321
623.5	0.0510	0.1769	0.1828	0.1325
624	0.0512	0.1768	0.1828	0.1330

624.5	0.0513	0.1768	0.1827	0.1334
625	0.0515	0.1768	0.1827	0.1338
625.5	0.0516	0.1769	0.1827	0.1342
626	0.0517	0.1772	0.1828	0.1347
626.5	0.0519	0.1775	0.1831	0.1351
627	0.0520	0.1777	0.1834	0.1355
627.5	0.0521	0.1779	0.1835	0.1358
628	0.0522	0.1779	0.1836	0.1359
628.5	0.0523	0.1779	0.1835	0.1358
629	0.0524	0.1778	0.1834	0.1357
629.5	0.0524	0.1776	0.1832	0.1355
630	0.0524	0.1774	0.1831	0.1353
630.5	0.0525	0.1775	0.1832	0.1353
631	0.0527	0.1778	0.1834	0.1355
631.5	0.0529	0.1785	0.1839	0.1361
632	0.0532	0.1793	0.1847	0.1370
632.5	0.0535	0.1802	0.1855	0.1380
633	0.0538	0.1811	0.1863	0.1391
633.5	0.0540	0.1816	0.1870	0.1401
634	0.0541	0.1819	0.1874	0.1409
634.5	0.0542	0.1820	0.1876	0.1414
635	0.0543	0.1820	0.1878	0.1418
635.5	0.0544	0.1822	0.1880	0.1420
636	0.0545	0.1825	0.1882	0.1422
636.5	0.0547	0.1829	0.1885	0.1423
637	0.0548	0.1834	0.1888	0.1425
637.5	0.0550	0.1837	0.1890	0.1427
638	0.0552	0.1838	0.1892	0.1430
638.5	0.0553	0.1837	0.1894	0.1432
639	0.0555	0.1834	0.1896	0.1434
639.5	0.0556	0.1828	0.1896	0.1435
640	0.0557	0.1821	0.1895	0.1433
640.5	0.0557	0.1812	0.1892	0.1429
641	0.0557	0.1803	0.1887	0.1423
641.5	0.0556	0.1795	0.1882	0.1418
642	0.0557	0.1789	0.1879	0.1415
642.5	0.0558	0.1787	0.1880	0.1415
643	0.0561	0.1786	0.1883	0.1419
643.5	0.0564	0.1786	0.1888	0.1425
644	0.0567	0.1787	0.1893	0.1430
644.5	0.0570	0.1787	0.1899	0.1435
645	0.0572	0.1786	0.1903	0.1438
645.5	0.0574	0.1787	0.1908	0.1440
646	0.0576	0.1789	0.1911	0.1440
646.5	0.0577	0.1790	0.1912	0.1440
647	0.0578	0.1792	0.1913	0.1439
647.5	0.0579	0.1794	0.1916	0.1439
648	0.0582	0.1798	0.1921	0.1441
648.5	0.0584	0.1802	0.1928	0.1445
649	0.0587	0.1807	0.1935	0.1449
649.5	0.0588	0.1812	0.1940	0.1453
650	0.0589	0.1816	0.1944	0.1457
650.5	0.0590	0.1821	0.1947	0.1461
651	0.0591	0.1826	0.1950	0.1466
651.5	0.0593	0.1833	0.1956	0.1473
652	0.0595	0.1843	0.1962	0.1483
652.5	0.0598	0.1852	0.1968	0.1492

653	0.0600	0.1859	0.1971	0.1500
653.5	0.0602	0.1866	0.1973	0.1507
654	0.0604	0.1871	0.1976	0.1513
654.5	0.0604	0.1875	0.1978	0.1517
655	0.0605	0.1879	0.1981	0.1519
655.5	0.0605	0.1884	0.1983	0.1520
656	0.0605	0.1889	0.1983	0.1521
656.5	0.0605	0.1895	0.1981	0.1522
657	0.0605	0.1901	0.1979	0.1525
657.5	0.0606	0.1907	0.1978	0.1530
658	0.0607	0.1913	0.1980	0.1536
658.5	0.0608	0.1920	0.1985	0.1544
659	0.0610	0.1927	0.1993	0.1552
659.5	0.0612	0.1936	0.2002	0.1560
660	0.0615	0.1947	0.2011	0.1568
660.5	0.0616	0.1958	0.2016	0.1574
661	0.0618	0.1968	0.2019	0.1581
661.5	0.0619	0.1977	0.2020	0.1587
662	0.0620	0.1983	0.2022	0.1595
662.5	0.0621	0.1988	0.2024	0.1603
663	0.0622	0.1993	0.2027	0.1611
663.5	0.0623	0.1998	0.2029	0.1620
664	0.0623	0.2002	0.2028	0.1626
664.5	0.0621	0.2004	0.2023	0.1630
665	0.0619	0.2002	0.2017	0.1629
665.5	0.0616	0.1997	0.2009	0.1625
666	0.0614	0.1992	0.2003	0.1619
666.5	0.0614	0.1989	0.1999	0.1615
667	0.0615	0.1989	0.1998	0.1615
667.5	0.0617	0.1993	0.1999	0.1619
668	0.0619	0.2001	0.2002	0.1626
668.5	0.0622	0.2012	0.2008	0.1636
669	0.0624	0.2023	0.2013	0.1645
669.5	0.0625	0.2032	0.2018	0.1652
670	0.0627	0.2039	0.2022	0.1659
670.5	0.0629	0.2044	0.2026	0.1665
671	0.0630	0.2047	0.2028	0.1669
671.5	0.0633	0.2051	0.2030	0.1674
672	0.0635	0.2057	0.2033	0.1680
672.5	0.0637	0.2063	0.2035	0.1685
673	0.0639	0.2069	0.2040	0.1690
673.5	0.0642	0.2074	0.2045	0.1696
674	0.0645	0.2080	0.2052	0.1702
674.5	0.0648	0.2086	0.2059	0.1706
675	0.0650	0.2092	0.2065	0.1709
675.5	0.0653	0.2100	0.2071	0.1712
676	0.0656	0.2108	0.2077	0.1717
676.5	0.0660	0.2116	0.2082	0.1725
677	0.0664	0.2125	0.2087	0.1735
677.5	0.0668	0.2133	0.2091	0.1748
678	0.0671	0.2140	0.2095	0.1759
678.5	0.0674	0.2146	0.2101	0.1769
679	0.0678	0.2150	0.2108	0.1775
679.5	0.0681	0.2153	0.2115	0.1780
680	0.0685	0.2155	0.2122	0.1783
680.5	0.0688	0.2158	0.2127	0.1786
681	0.0692	0.2161	0.2129	0.1788

681.5	0.0695	0.2165	0.2131	0.1789
682	0.0699	0.2168	0.2133	0.1791
682.5	0.0701	0.2169	0.2135	0.1792
683	0.0703	0.2170	0.2138	0.1794
683.5	0.0704	0.2170	0.2141	0.1795
684	0.0704	0.2170	0.2144	0.1795
684.5	0.0705	0.2170	0.2146	0.1794
685	0.0706	0.2169	0.2147	0.1791
685.5	0.0708	0.2167	0.2148	0.1787
686	0.0711	0.2165	0.2149	0.1783
686.5	0.0714	0.2164	0.2151	0.1782
687	0.0718	0.2165	0.2155	0.1786
687.5	0.0723	0.2169	0.2161	0.1792
688	0.0726	0.2174	0.2168	0.1799
688.5	0.0729	0.2178	0.2174	0.1804
689	0.0731	0.2180	0.2179	0.1807
689.5	0.0732	0.2182	0.2182	0.1808
690	0.0733	0.2184	0.2184	0.1810
690.5	0.0735	0.2186	0.2184	0.1811
691	0.0736	0.2189	0.2182	0.1813
691.5	0.0737	0.2191	0.2180	0.1815
692	0.0737	0.2192	0.2176	0.1815
692.5	0.0736	0.2193	0.2174	0.1815
693	0.0737	0.2194	0.2174	0.1815
693.5	0.0738	0.2195	0.2177	0.1817
694	0.0740	0.2197	0.2182	0.1821
694.5	0.0742	0.2197	0.2188	0.1825
695	0.0744	0.2196	0.2191	0.1827
695.5	0.0744	0.2192	0.2190	0.1826
696	0.0743	0.2186	0.2186	0.1824
696.5	0.0742	0.2179	0.2182	0.1819
697	0.0742	0.2172	0.2177	0.1813
697.5	0.0742	0.2164	0.2174	0.1808
698	0.0742	0.2157	0.2171	0.1804
698.5	0.0742	0.2151	0.2170	0.1803
699	0.0742	0.2145	0.2170	0.1801
699.5	0.0742	0.2140	0.2171	0.1799
700	0.0742	0.2137	0.2172	0.1797

APPENDIX D. DATA FOR PLASTIC SAMPLES

D.1 20° measurements

Table D.1: Measurements of plastic samples at 20°. For the glossy side, the lamp signal was measured at an integration time of 29 ms and the measurements of the samples were taken at an integration time of 110 ms, 130 ms, 130 ms, 160 ms, and 100 ms respectively. For the matte side, the lamp signal was measured at an integration time of 28 ms and the measurements of the samples were taken at an integration time of 3600 ms, 3600 ms, 3600 ms, 2500 ms, and 3000 ms respectively.

	Gloss					Matte				
λ	Green	Blue	Purple	Red	Silver	Green	Blue	Purple	Red	Silver
400	0.0365	0.1610	0.0885	0.0292	0.2213	0.0066	0.0070	0.0071	0.0070	0.0077
400.5	0.0367	0.1612	0.0884	0.0289	0.2203	0.0066	0.0070	0.0071	0.0070	0.0077
401	0.0367	0.1616	0.0886	0.0288	0.2201	0.0066	0.0070	0.0071	0.0070	0.0077
401.5	0.0366	0.1622	0.0889	0.0289	0.2202	0.0066	0.0070	0.0071	0.0070	0.0078
402	0.0365	0.1629	0.0890	0.0288	0.2202	0.0065	0.0070	0.0071	0.0069	0.0078
402.5	0.0365	0.1635	0.0889	0.0286	0.2199	0.0065	0.0071	0.0071	0.0069	0.0078
403	0.0368	0.1642	0.0886	0.0281	0.2195	0.0065	0.0071	0.0071	0.0070	0.0077
403.5	0.0372	0.1652	0.0883	0.0276	0.2194	0.0065	0.0071	0.0070	0.0070	0.0077
404	0.0372	0.1661	0.0884	0.0273	0.2192	0.0065	0.0071	0.0070	0.0070	0.0077
404.5	0.0368	0.1667	0.0887	0.0272	0.2195	0.0065	0.0071	0.0070	0.0070	0.0077
405	0.0360	0.1675	0.0894	0.0275	0.2203	0.0065	0.0071	0.0071	0.0070	0.0077
405.5	0.0352	0.1683	0.0905	0.0280	0.2212	0.0065	0.0071	0.0071	0.0070	0.0077
406	0.0346	0.1689	0.0911	0.0284	0.2217	0.0065	0.0071	0.0071	0.0071	0.0077
406.5	0.0344	0.1694	0.0915	0.0286	0.2220	0.0066	0.0071	0.0071	0.0071	0.0077
407	0.0346	0.1701	0.0919	0.0284	0.2222	0.0066	0.0071	0.0071	0.0070	0.0077
407.5	0.0350	0.1707	0.0922	0.0282	0.2223	0.0066	0.0071	0.0071	0.0070	0.0077
408	0.0353	0.1715	0.0929	0.0279	0.2233	0.0066	0.0072	0.0071	0.0070	0.0078
408.5	0.0353	0.1728	0.0938	0.0277	0.2247	0.0066	0.0072	0.0072	0.0070	0.0078
409	0.0351	0.1743	0.0945	0.0279	0.2259	0.0066	0.0073	0.0072	0.0070	0.0079
409.5	0.0346	0.1753	0.0945	0.0279	0.2264	0.0066	0.0073	0.0072	0.0070	0.0079
410	0.0340	0.1759	0.0941	0.0278	0.2259	0.0066	0.0073	0.0072	0.0070	0.0078
410.5	0.0335	0.1761	0.0938	0.0276	0.2244	0.0066	0.0073	0.0071	0.0070	0.0078
411	0.0330	0.1762	0.0938	0.0273	0.2228	0.0066	0.0073	0.0071	0.0070	0.0078
411.5	0.0326	0.1765	0.0945	0.0271	0.2218	0.0065	0.0073	0.0071	0.0070	0.0077
412	0.0325	0.1771	0.0955	0.0269	0.2218	0.0065	0.0073	0.0071	0.0070	0.0077
412.5	0.0325	0.1778	0.0964	0.0270	0.2228	0.0066	0.0073	0.0071	0.0071	0.0077
413	0.0325	0.1788	0.0971	0.0271	0.2242	0.0066	0.0073	0.0071	0.0071	0.0078
413.5	0.0327	0.1796	0.0974	0.0272	0.2250	0.0066	0.0074	0.0071	0.0071	0.0078
414	0.0326	0.1805	0.0972	0.0272	0.2248	0.0066	0.0074	0.0071	0.0070	0.0078
414.5	0.0324	0.1816	0.0974	0.0271	0.2242	0.0066	0.0074	0.0071	0.0070	0.0078
415	0.0323	0.1824	0.0979	0.0270	0.2235	0.0066	0.0074	0.0071	0.0070	0.0078
415.5	0.0320	0.1825	0.0986	0.0268	0.2233	0.0066	0.0074	0.0071	0.0069	0.0078
416	0.0318	0.1824	0.0993	0.0268	0.2240	0.0066	0.0074	0.0071	0.0069	0.0078
416.5	0.0318	0.1821	0.0997	0.0268	0.2249	0.0066	0.0074	0.0071	0.0069	0.0077

417	0.0318	0.1818	0.0995	0.0269	0.2254	0.0066	0.0074	0.0071	0.0069	0.0077
417.5	0.0318	0.1820	0.0993	0.0268	0.2249	0.0066	0.0074	0.0071	0.0069	0.0078
418	0.0315	0.1824	0.0991	0.0267	0.2235	0.0066	0.0074	0.0071	0.0070	0.0078
418.5	0.0313	0.1830	0.0993	0.0268	0.2220	0.0066	0.0074	0.0071	0.0070	0.0078
419	0.0312	0.1834	0.0999	0.0270	0.2211	0.0066	0.0073	0.0071	0.0070	0.0078
419.5	0.0309	0.1831	0.1004	0.0270	0.2211	0.0066	0.0073	0.0071	0.0070	0.0077
420	0.0308	0.1825	0.1005	0.0271	0.2219	0.0066	0.0073	0.0071	0.0070	0.0077
420.5	0.0308	0.1819	0.1005	0.0270	0.2232	0.0066	0.0073	0.0071	0.0070	0.0077
421	0.0306	0.1817	0.1003	0.0267	0.2239	0.0066	0.0073	0.0071	0.0070	0.0077
421.5	0.0302	0.1822	0.1004	0.0266	0.2237	0.0066	0.0074	0.0071	0.0070	0.0078
422	0.0299	0.1831	0.1007	0.0266	0.2231	0.0066	0.0074	0.0071	0.0071	0.0078
422.5	0.0294	0.1842	0.1015	0.0268	0.2224	0.0066	0.0074	0.0072	0.0071	0.0078
423	0.0291	0.1849	0.1025	0.0270	0.2218	0.0066	0.0074	0.0072	0.0071	0.0077
423.5	0.0287	0.1850	0.1035	0.0273	0.2220	0.0066	0.0074	0.0071	0.0071	0.0077
424	0.0284	0.1847	0.1042	0.0277	0.2227	0.0066	0.0075	0.0071	0.0070	0.0077
424.5	0.0285	0.1845	0.1044	0.0279	0.2237	0.0066	0.0075	0.0071	0.0070	0.0077
425	0.0286	0.1845	0.1044	0.0281	0.2244	0.0066	0.0075	0.0072	0.0070	0.0076
425.5	0.0289	0.1850	0.1043	0.0280	0.2244	0.0066	0.0075	0.0072	0.0070	0.0076
426	0.0294	0.1859	0.1045	0.0277	0.2239	0.0066	0.0075	0.0072	0.0070	0.0076
426.5	0.0297	0.1867	0.1049	0.0274	0.2230	0.0066	0.0075	0.0072	0.0070	0.0076
427	0.0298	0.1870	0.1054	0.0273	0.2221	0.0066	0.0075	0.0072	0.0069	0.0076
427.5	0.0298	0.1867	0.1058	0.0274	0.2216	0.0066	0.0075	0.0071	0.0069	0.0076
428	0.0296	0.1859	0.1060	0.0277	0.2217	0.0066	0.0074	0.0071	0.0069	0.0076
428.5	0.0296	0.1852	0.1062	0.0279	0.2224	0.0066	0.0074	0.0071	0.0068	0.0076
429	0.0297	0.1849	0.1065	0.0280	0.2233	0.0066	0.0075	0.0071	0.0068	0.0076
429.5	0.0298	0.1851	0.1070	0.0278	0.2238	0.0066	0.0075	0.0071	0.0068	0.0076
430	0.0299	0.1857	0.1078	0.0275	0.2240	0.0066	0.0075	0.0072	0.0068	0.0077
430.5	0.0301	0.1863	0.1088	0.0275	0.2237	0.0066	0.0075	0.0072	0.0068	0.0077
431	0.0303	0.1867	0.1096	0.0275	0.2233	0.0066	0.0075	0.0072	0.0068	0.0077
431.5	0.0304	0.1866	0.1100	0.0275	0.2230	0.0066	0.0075	0.0072	0.0068	0.0077
432	0.0304	0.1860	0.1099	0.0276	0.2232	0.0066	0.0075	0.0072	0.0068	0.0077
432.5	0.0304	0.1853	0.1097	0.0276	0.2237	0.0066	0.0075	0.0072	0.0068	0.0077
433	0.0302	0.1849	0.1094	0.0274	0.2243	0.0066	0.0076	0.0072	0.0068	0.0077
433.5	0.0299	0.1851	0.1096	0.0272	0.2248	0.0066	0.0076	0.0072	0.0069	0.0077
434	0.0296	0.1858	0.1102	0.0271	0.2249	0.0066	0.0076	0.0072	0.0069	0.0077
434.5	0.0293	0.1866	0.1109	0.0271	0.2246	0.0066	0.0076	0.0072	0.0069	0.0077
435	0.0291	0.1871	0.1116	0.0270	0.2238	0.0065	0.0076	0.0072	0.0069	0.0077
435.5	0.0291	0.1870	0.1120	0.0270	0.2231	0.0065	0.0076	0.0072	0.0069	0.0076
436	0.0291	0.1865	0.1122	0.0270	0.2229	0.0065	0.0076	0.0071	0.0069	0.0076
436.5	0.0292	0.1860	0.1123	0.0269	0.2233	0.0065	0.0076	0.0071	0.0068	0.0076
437	0.0293	0.1857	0.1122	0.0269	0.2238	0.0065	0.0076	0.0071	0.0068	0.0076
437.5	0.0295	0.1859	0.1125	0.0269	0.2243	0.0065	0.0077	0.0072	0.0068	0.0076
438	0.0297	0.1867	0.1130	0.0269	0.2244	0.0066	0.0077	0.0072	0.0068	0.0076
438.5	0.0300	0.1876	0.1137	0.0269	0.2240	0.0066	0.0077	0.0072	0.0068	0.0076
439	0.0302	0.1885	0.1144	0.0270	0.2236	0.0066	0.0077	0.0072	0.0068	0.0076
439.5	0.0302	0.1891	0.1150	0.0269	0.2234	0.0066	0.0077	0.0072	0.0068	0.0076
440	0.0300	0.1890	0.1151	0.0268	0.2234	0.0066	0.0077	0.0072	0.0068	0.0076
440.5	0.0298	0.1883	0.1147	0.0267	0.2236	0.0066	0.0077	0.0072	0.0068	0.0077
441	0.0297	0.1872	0.1142	0.0267	0.2238	0.0066	0.0078	0.0072	0.0068	0.0077
441.5	0.0298	0.1863	0.1139	0.0267	0.2242	0.0066	0.0078	0.0072	0.0068	0.0077
442	0.0300	0.1861	0.1141	0.0268	0.2247	0.0067	0.0078	0.0072	0.0068	0.0077
442.5	0.0304	0.1866	0.1147	0.0269	0.2250	0.0067	0.0078	0.0072	0.0068	0.0077
443	0.0309	0.1876	0.1154	0.0269	0.2251	0.0067	0.0078	0.0072	0.0068	0.0077
443.5	0.0311	0.1888	0.1158	0.0268	0.2250	0.0067	0.0078	0.0072	0.0068	0.0077
444	0.0310	0.1894	0.1157	0.0267	0.2248	0.0067	0.0078	0.0072	0.0068	0.0077
444.5	0.0309	0.1891	0.1152	0.0265	0.2246	0.0067	0.0078	0.0072	0.0068	0.0077
445	0.0306	0.1882	0.1146	0.0263	0.2247	0.0067	0.0078	0.0072	0.0067	0.0077

445.5	0.0304	0.1868	0.1141	0.0261	0.2248	0.0067	0.0078	0.0072	0.0067	0.0077
446	0.0304	0.1857	0.1141	0.0261	0.2252	0.0067	0.0078	0.0072	0.0067	0.0077
446.5	0.0305	0.1854	0.1146	0.0261	0.2255	0.0067	0.0078	0.0072	0.0067	0.0077
447	0.0307	0.1858	0.1151	0.0262	0.2254	0.0067	0.0078	0.0072	0.0067	0.0077
447.5	0.0309	0.1865	0.1155	0.0261	0.2253	0.0067	0.0078	0.0072	0.0067	0.0077
448	0.0312	0.1872	0.1156	0.0259	0.2252	0.0067	0.0078	0.0072	0.0067	0.0077
448.5	0.0313	0.1875	0.1152	0.0256	0.2252	0.0067	0.0078	0.0072	0.0067	0.0077
449	0.0313	0.1872	0.1145	0.0253	0.2254	0.0067	0.0078	0.0072	0.0067	0.0077
449.5	0.0312	0.1863	0.1138	0.0251	0.2258	0.0067	0.0078	0.0072	0.0067	0.0077
450	0.0311	0.1853	0.1133	0.0251	0.2263	0.0067	0.0079	0.0072	0.0067	0.0077
450.5	0.0310	0.1844	0.1130	0.0252	0.2267	0.0067	0.0079	0.0072	0.0067	0.0077
451	0.0311	0.1838	0.1129	0.0254	0.2266	0.0067	0.0079	0.0072	0.0067	0.0077
451.5	0.0314	0.1837	0.1130	0.0257	0.2263	0.0067	0.0079	0.0072	0.0067	0.0077
452	0.0318	0.1840	0.1128	0.0257	0.2260	0.0067	0.0079	0.0072	0.0067	0.0077
452.5	0.0323	0.1845	0.1123	0.0256	0.2256	0.0067	0.0079	0.0072	0.0067	0.0076
453	0.0327	0.1847	0.1115	0.0252	0.2252	0.0067	0.0079	0.0072	0.0066	0.0076
453.5	0.0329	0.1845	0.1104	0.0247	0.2251	0.0067	0.0079	0.0072	0.0066	0.0076
454	0.0327	0.1839	0.1095	0.0243	0.2253	0.0067	0.0079	0.0072	0.0067	0.0076
454.5	0.0325	0.1830	0.1092	0.0241	0.2254	0.0067	0.0079	0.0072	0.0067	0.0076
455	0.0323	0.1823	0.1094	0.0243	0.2258	0.0068	0.0079	0.0072	0.0067	0.0076
455.5	0.0323	0.1819	0.1098	0.0247	0.2263	0.0068	0.0079	0.0072	0.0067	0.0076
456	0.0327	0.1819	0.1102	0.0250	0.2263	0.0068	0.0079	0.0072	0.0067	0.0076
456.5	0.0334	0.1825	0.1101	0.0251	0.2263	0.0068	0.0079	0.0072	0.0067	0.0077
457	0.0342	0.1831	0.1095	0.0249	0.2264	0.0068	0.0079	0.0072	0.0067	0.0077
457.5	0.0349	0.1833	0.1084	0.0245	0.2264	0.0068	0.0079	0.0072	0.0067	0.0077
458	0.0352	0.1831	0.1073	0.0240	0.2265	0.0068	0.0079	0.0072	0.0067	0.0077
458.5	0.0351	0.1825	0.1063	0.0236	0.2267	0.0068	0.0079	0.0072	0.0067	0.0076
459	0.0348	0.1815	0.1055	0.0234	0.2269	0.0069	0.0079	0.0072	0.0067	0.0076
459.5	0.0346	0.1806	0.1050	0.0235	0.2269	0.0069	0.0079	0.0072	0.0067	0.0077
460	0.0346	0.1800	0.1047	0.0237	0.2269	0.0069	0.0079	0.0072	0.0067	0.0077
460.5	0.0349	0.1795	0.1044	0.0240	0.2271	0.0069	0.0079	0.0072	0.0067	0.0077
461	0.0358	0.1791	0.1038	0.0242	0.2272	0.0069	0.0079	0.0072	0.0067	0.0077
461.5	0.0369	0.1791	0.1031	0.0240	0.2275	0.0069	0.0079	0.0071	0.0067	0.0077
462	0.0380	0.1794	0.1024	0.0236	0.2280	0.0069	0.0079	0.0071	0.0067	0.0077
462.5	0.0389	0.1797	0.1015	0.0230	0.2285	0.0069	0.0079	0.0071	0.0066	0.0077
463	0.0392	0.1798	0.1006	0.0224	0.2289	0.0069	0.0079	0.0071	0.0066	0.0077
463.5	0.0391	0.1796	0.0999	0.0221	0.2292	0.0069	0.0079	0.0071	0.0066	0.0077
464	0.0387	0.1791	0.0993	0.0221	0.2291	0.0069	0.0079	0.0071	0.0066	0.0077
464.5	0.0384	0.1783	0.0988	0.0224	0.2288	0.0069	0.0079	0.0071	0.0066	0.0077
465	0.0386	0.1777	0.0984	0.0229	0.2285	0.0069	0.0079	0.0071	0.0066	0.0077
465.5	0.0394	0.1774	0.0980	0.0232	0.2282	0.0069	0.0079	0.0071	0.0066	0.0077
466	0.0409	0.1775	0.0974	0.0234	0.2281	0.0069	0.0079	0.0070	0.0066	0.0077
466.5	0.0425	0.1778	0.0968	0.0231	0.2284	0.0069	0.0079	0.0070	0.0066	0.0077
467	0.0439	0.1782	0.0961	0.0226	0.2288	0.0069	0.0079	0.0070	0.0066	0.0077
467.5	0.0449	0.1785	0.0955	0.0220	0.2294	0.0070	0.0079	0.0070	0.0066	0.0077
468	0.0452	0.1785	0.0948	0.0215	0.2296	0.0070	0.0080	0.0070	0.0066	0.0077
468.5	0.0451	0.1781	0.0942	0.0213	0.2296	0.0070	0.0080	0.0070	0.0066	0.0077
469	0.0448	0.1774	0.0934	0.0215	0.2293	0.0070	0.0080	0.0070	0.0065	0.0077
469.5	0.0446	0.1764	0.0926	0.0219	0.2288	0.0070	0.0080	0.0070	0.0065	0.0077
470	0.0450	0.1755	0.0917	0.0225	0.2283	0.0070	0.0079	0.0070	0.0065	0.0077
470.5	0.0462	0.1749	0.0907	0.0229	0.2281	0.0071	0.0079	0.0070	0.0065	0.0077
471	0.0480	0.1749	0.0896	0.0229	0.2283	0.0071	0.0079	0.0070	0.0065	0.0077
471.5	0.0501	0.1752	0.0885	0.0226	0.2286	0.0071	0.0079	0.0070	0.0065	0.0077
472	0.0520	0.1757	0.0875	0.0219	0.2289	0.0071	0.0079	0.0069	0.0065	0.0077
472.5	0.0533	0.1761	0.0866	0.0212	0.2294	0.0072	0.0079	0.0069	0.0065	0.0077
473	0.0539	0.1762	0.0859	0.0206	0.2299	0.0072	0.0079	0.0069	0.0065	0.0077
473.5	0.0539	0.1760	0.0853	0.0203	0.2306	0.0072	0.0079	0.0069	0.0065	0.0077

474	0.0536	0.1757	0.0848	0.0203	0.2311	0.0073	0.0079	0.0069	0.0065	0.0077
474.5	0.0534	0.1752	0.0842	0.0207	0.2312	0.0073	0.0079	0.0069	0.0065	0.0077
475	0.0539	0.1748	0.0836	0.0213	0.2310	0.0073	0.0079	0.0069	0.0065	0.0077
475.5	0.0553	0.1745	0.0828	0.0218	0.2306	0.0074	0.0079	0.0069	0.0065	0.0077
476	0.0574	0.1741	0.0819	0.0219	0.2300	0.0074	0.0079	0.0069	0.0065	0.0077
476.5	0.0599	0.1738	0.0808	0.0217	0.2298	0.0074	0.0079	0.0069	0.0065	0.0077
477	0.0623	0.1738	0.0798	0.0211	0.2300	0.0074	0.0079	0.0069	0.0065	0.0077
477.5	0.0639	0.1737	0.0787	0.0204	0.2304	0.0074	0.0079	0.0069	0.0065	0.0077
478	0.0647	0.1736	0.0777	0.0198	0.2309	0.0074	0.0079	0.0069	0.0065	0.0077
478.5	0.0648	0.1732	0.0768	0.0194	0.2313	0.0074	0.0079	0.0068	0.0065	0.0077
479	0.0645	0.1727	0.0758	0.0195	0.2314	0.0074	0.0079	0.0068	0.0065	0.0077
479.5	0.0643	0.1719	0.0749	0.0198	0.2309	0.0074	0.0079	0.0068	0.0065	0.0077
480	0.0647	0.1711	0.0740	0.0203	0.2302	0.0075	0.0079	0.0068	0.0065	0.0077
480.5	0.0664	0.1703	0.0732	0.0208	0.2292	0.0075	0.0078	0.0068	0.0065	0.0077
481	0.0691	0.1698	0.0723	0.0210	0.2283	0.0075	0.0078	0.0068	0.0065	0.0077
481.5	0.0725	0.1696	0.0716	0.0207	0.2280	0.0075	0.0078	0.0067	0.0065	0.0077
482	0.0759	0.1695	0.0709	0.0202	0.2281	0.0075	0.0078	0.0067	0.0065	0.0077
482.5	0.0785	0.1692	0.0702	0.0195	0.2287	0.0075	0.0078	0.0067	0.0065	0.0077
483	0.0800	0.1689	0.0694	0.0188	0.2294	0.0076	0.0078	0.0067	0.0065	0.0076
483.5	0.0803	0.1684	0.0684	0.0184	0.2302	0.0076	0.0078	0.0067	0.0065	0.0076
484	0.0799	0.1677	0.0672	0.0184	0.2307	0.0076	0.0078	0.0067	0.0064	0.0076
484.5	0.0794	0.1672	0.0661	0.0187	0.2311	0.0076	0.0078	0.0066	0.0064	0.0076
485	0.0795	0.1669	0.0652	0.0192	0.2313	0.0076	0.0078	0.0066	0.0064	0.0076
485.5	0.0808	0.1667	0.0645	0.0198	0.2314	0.0077	0.0078	0.0066	0.0065	0.0077
486	0.0832	0.1665	0.0639	0.0203	0.2313	0.0077	0.0078	0.0066	0.0065	0.0077
486.5	0.0865	0.1662	0.0633	0.0204	0.2311	0.0077	0.0078	0.0066	0.0065	0.0077
487	0.0900	0.1658	0.0626	0.0202	0.2310	0.0077	0.0078	0.0066	0.0065	0.0077
487.5	0.0933	0.1653	0.0620	0.0196	0.2313	0.0078	0.0078	0.0066	0.0065	0.0077
488	0.0957	0.1648	0.0611	0.0189	0.2320	0.0078	0.0078	0.0065	0.0064	0.0077
488.5	0.0971	0.1642	0.0601	0.0183	0.2330	0.0078	0.0078	0.0065	0.0064	0.0077
489	0.0974	0.1637	0.0589	0.0180	0.2339	0.0078	0.0078	0.0065	0.0064	0.0077
489.5	0.0970	0.1632	0.0576	0.0180	0.2344	0.0078	0.0078	0.0065	0.0064	0.0077
490	0.0964	0.1628	0.0562	0.0183	0.2340	0.0078	0.0078	0.0065	0.0064	0.0077
490.5	0.0965	0.1624	0.0549	0.0189	0.2332	0.0078	0.0077	0.0065	0.0063	0.0077
491	0.0977	0.1619	0.0539	0.0194	0.2321	0.0078	0.0077	0.0064	0.0063	0.0077
491.5	0.1004	0.1612	0.0532	0.0197	0.2311	0.0078	0.0077	0.0064	0.0063	0.0077
492	0.1040	0.1604	0.0527	0.0198	0.2306	0.0078	0.0077	0.0064	0.0063	0.0077
492.5	0.1081	0.1596	0.0522	0.0195	0.2307	0.0079	0.0077	0.0064	0.0063	0.0077
493	0.1117	0.1588	0.0516	0.0189	0.2312	0.0079	0.0077	0.0064	0.0063	0.0077
493.5	0.1142	0.1582	0.0508	0.0183	0.2322	0.0079	0.0078	0.0064	0.0063	0.0077
494	0.1154	0.1578	0.0496	0.0178	0.2336	0.0079	0.0077	0.0064	0.0063	0.0077
494.5	0.1155	0.1577	0.0482	0.0175	0.2351	0.0079	0.0077	0.0064	0.0063	0.0077
495	0.1150	0.1577	0.0467	0.0176	0.2364	0.0079	0.0077	0.0064	0.0063	0.0077
495.5	0.1145	0.1579	0.0454	0.0180	0.2372	0.0079	0.0077	0.0064	0.0063	0.0077
496	0.1148	0.1578	0.0443	0.0186	0.2371	0.0080	0.0077	0.0064	0.0063	0.0077
496.5	0.1161	0.1573	0.0435	0.0191	0.2361	0.0080	0.0077	0.0064	0.0063	0.0077
497	0.1187	0.1565	0.0428	0.0194	0.2348	0.0080	0.0077	0.0063	0.0063	0.0077
497.5	0.1224	0.1554	0.0423	0.0195	0.2335	0.0080	0.0077	0.0063	0.0063	0.0077
498	0.1266	0.1542	0.0418	0.0193	0.2327	0.0080	0.0077	0.0063	0.0063	0.0077
498.5	0.1305	0.1530	0.0410	0.0188	0.2326	0.0080	0.0077	0.0063	0.0063	0.0077
499	0.1337	0.1519	0.0400	0.0183	0.2333	0.0080	0.0077	0.0063	0.0063	0.0078
499.5	0.1355	0.1511	0.0388	0.0178	0.2347	0.0081	0.0077	0.0063	0.0063	0.0078
500	0.1360	0.1506	0.0373	0.0175	0.2366	0.0081	0.0077	0.0063	0.0063	0.0078
500.5	0.1355	0.1505	0.0358	0.0175	0.2386	0.0081	0.0076	0.0063	0.0063	0.0078
501	0.1347	0.1508	0.0344	0.0178	0.2402	0.0081	0.0076	0.0062	0.0063	0.0078
501.5	0.1343	0.1511	0.0332	0.0183	0.2408	0.0081	0.0076	0.0062	0.0063	0.0078
502	0.1350	0.1512	0.0323	0.0188	0.2405	0.0081	0.0076	0.0062	0.0063	0.0078

502.5	0.1370	0.1509	0.0317	0.0192	0.2392	0.0081	0.0076	0.0062	0.0063	0.0078
503	0.1400	0.1499	0.0312	0.0194	0.2373	0.0081	0.0076	0.0061	0.0063	0.0078
503.5	0.1438	0.1483	0.0306	0.0192	0.2356	0.0081	0.0075	0.0061	0.0063	0.0078
504	0.1474	0.1464	0.0299	0.0189	0.2344	0.0081	0.0075	0.0061	0.0063	0.0078
504.5	0.1504	0.1444	0.0290	0.0184	0.2341	0.0081	0.0075	0.0061	0.0063	0.0078
505	0.1523	0.1427	0.0279	0.0178	0.2348	0.0081	0.0075	0.0061	0.0063	0.0078
505.5	0.1526	0.1415	0.0267	0.0175	0.2364	0.0082	0.0075	0.0061	0.0063	0.0078
506	0.1519	0.1411	0.0254	0.0173	0.2383	0.0082	0.0075	0.0060	0.0063	0.0078
506.5	0.1506	0.1416	0.0242	0.0175	0.2402	0.0082	0.0075	0.0060	0.0063	0.0078
507	0.1498	0.1426	0.0232	0.0179	0.2419	0.0082	0.0075	0.0060	0.0063	0.0078
507.5	0.1499	0.1436	0.0225	0.0184	0.2430	0.0082	0.0075	0.0060	0.0063	0.0078
508	0.1511	0.1442	0.0221	0.0189	0.2432	0.0083	0.0075	0.0060	0.0064	0.0078
508.5	0.1534	0.1440	0.0219	0.0192	0.2424	0.0083	0.0075	0.0060	0.0064	0.0078
509	0.1564	0.1430	0.0218	0.0193	0.2409	0.0083	0.0075	0.0060	0.0064	0.0078
509.5	0.1596	0.1413	0.0217	0.0191	0.2392	0.0083	0.0074	0.0059	0.0064	0.0078
510	0.1626	0.1393	0.0214	0.0188	0.2378	0.0083	0.0074	0.0059	0.0064	0.0078
510.5	0.1651	0.1371	0.0209	0.0183	0.2374	0.0083	0.0074	0.0059	0.0064	0.0078
511	0.1667	0.1351	0.0203	0.0179	0.2382	0.0083	0.0074	0.0059	0.0064	0.0078
511.5	0.1670	0.1337	0.0195	0.0176	0.2400	0.0083	0.0074	0.0059	0.0064	0.0078
512	0.1664	0.1331	0.0186	0.0176	0.2426	0.0083	0.0074	0.0059	0.0064	0.0079
512.5	0.1654	0.1335	0.0180	0.0179	0.2455	0.0083	0.0074	0.0059	0.0064	0.0079
513	0.1643	0.1345	0.0175	0.0183	0.2480	0.0084	0.0074	0.0058	0.0064	0.0079
513.5	0.1638	0.1358	0.0173	0.0188	0.2495	0.0084	0.0075	0.0058	0.0064	0.0079
514	0.1643	0.1367	0.0172	0.0192	0.2499	0.0084	0.0075	0.0058	0.0064	0.0079
514.5	0.1656	0.1368	0.0173	0.0194	0.2488	0.0084	0.0075	0.0058	0.0064	0.0080
515	0.1675	0.1356	0.0173	0.0194	0.2466	0.0084	0.0075	0.0058	0.0064	0.0080
515.5	0.1699	0.1333	0.0174	0.0192	0.2439	0.0084	0.0074	0.0057	0.0064	0.0079
516	0.1724	0.1301	0.0174	0.0188	0.2414	0.0083	0.0074	0.0057	0.0064	0.0079
516.5	0.1745	0.1265	0.0172	0.0184	0.2396	0.0083	0.0074	0.0057	0.0064	0.0079
517	0.1757	0.1232	0.0169	0.0180	0.2389	0.0083	0.0074	0.0057	0.0064	0.0079
517.5	0.1760	0.1206	0.0165	0.0178	0.2395	0.0083	0.0073	0.0056	0.0064	0.0079
518	0.1754	0.1192	0.0160	0.0178	0.2411	0.0083	0.0073	0.0056	0.0064	0.0079
518.5	0.1742	0.1190	0.0156	0.0180	0.2436	0.0083	0.0073	0.0056	0.0064	0.0079
519	0.1728	0.1197	0.0152	0.0184	0.2463	0.0083	0.0073	0.0056	0.0064	0.0079
519.5	0.1719	0.1211	0.0150	0.0189	0.2487	0.0083	0.0073	0.0056	0.0065	0.0079
520	0.1719	0.1227	0.0149	0.0193	0.2505	0.0083	0.0073	0.0056	0.0065	0.0079
520.5	0.1728	0.1237	0.0151	0.0195	0.2511	0.0083	0.0073	0.0056	0.0065	0.0079
521	0.1746	0.1237	0.0153	0.0196	0.2503	0.0083	0.0073	0.0056	0.0065	0.0079
521.5	0.1771	0.1222	0.0157	0.0195	0.2482	0.0083	0.0072	0.0056	0.0065	0.0079
522	0.1796	0.1193	0.0160	0.0192	0.2453	0.0083	0.0072	0.0055	0.0065	0.0079
522.5	0.1816	0.1154	0.0161	0.0188	0.2423	0.0082	0.0072	0.0055	0.0065	0.0079
523	0.1826	0.1111	0.0160	0.0185	0.2398	0.0082	0.0072	0.0055	0.0065	0.0078
523.5	0.1824	0.1071	0.0158	0.0183	0.2384	0.0081	0.0071	0.0055	0.0065	0.0078
524	0.1812	0.1043	0.0154	0.0182	0.2387	0.0081	0.0071	0.0055	0.0065	0.0078
524.5	0.1792	0.1028	0.0149	0.0183	0.2405	0.0081	0.0071	0.0055	0.0065	0.0078
525	0.1770	0.1028	0.0145	0.0186	0.2436	0.0081	0.0071	0.0055	0.0065	0.0078
525.5	0.1751	0.1041	0.0141	0.0190	0.2471	0.0081	0.0071	0.0055	0.0065	0.0078
526	0.1739	0.1060	0.0140	0.0194	0.2502	0.0082	0.0071	0.0055	0.0066	0.0079
526.5	0.1735	0.1079	0.0139	0.0197	0.2522	0.0082	0.0071	0.0055	0.0066	0.0079
527	0.1741	0.1090	0.0141	0.0198	0.2524	0.0082	0.0071	0.0055	0.0066	0.0079
527.5	0.1757	0.1088	0.0145	0.0198	0.2514	0.0081	0.0071	0.0055	0.0066	0.0079
528	0.1780	0.1072	0.0149	0.0196	0.2494	0.0081	0.0071	0.0055	0.0066	0.0079
528.5	0.1803	0.1044	0.0153	0.0194	0.2470	0.0081	0.0071	0.0055	0.0066	0.0079
529	0.1822	0.1008	0.0156	0.0192	0.2446	0.0081	0.0071	0.0055	0.0066	0.0079
529.5	0.1832	0.0969	0.0158	0.0191	0.2428	0.0081	0.0071	0.0055	0.0066	0.0079
530	0.1831	0.0932	0.0157	0.0191	0.2420	0.0081	0.0071	0.0055	0.0066	0.0079
530.5	0.1820	0.0903	0.0155	0.0192	0.2424	0.0081	0.0071	0.0055	0.0066	0.0079

531	0.1801	0.0887	0.0151	0.0194	0.2442	0.0081	0.0071	0.0055	0.0066	0.0079
531.5	0.1779	0.0884	0.0147	0.0196	0.2470	0.0081	0.0071	0.0055	0.0066	0.0079
532	0.1757	0.0893	0.0143	0.0198	0.2501	0.0081	0.0071	0.0055	0.0066	0.0079
532.5	0.1739	0.0909	0.0140	0.0200	0.2527	0.0081	0.0071	0.0055	0.0066	0.0079
533	0.1730	0.0926	0.0138	0.0201	0.2545	0.0081	0.0071	0.0054	0.0066	0.0079
533.5	0.1733	0.0937	0.0139	0.0201	0.2550	0.0081	0.0070	0.0054	0.0066	0.0079
534	0.1745	0.0940	0.0141	0.0201	0.2544	0.0080	0.0070	0.0054	0.0066	0.0079
534.5	0.1764	0.0929	0.0145	0.0200	0.2526	0.0080	0.0070	0.0054	0.0066	0.0079
535	0.1787	0.0904	0.0149	0.0199	0.2502	0.0080	0.0070	0.0054	0.0066	0.0079
535.5	0.1807	0.0868	0.0153	0.0198	0.2476	0.0080	0.0070	0.0054	0.0067	0.0079
536	0.1822	0.0825	0.0155	0.0198	0.2454	0.0080	0.0070	0.0054	0.0067	0.0080
536.5	0.1829	0.0782	0.0156	0.0198	0.2444	0.0080	0.0070	0.0054	0.0067	0.0080
537	0.1824	0.0746	0.0155	0.0198	0.2449	0.0080	0.0070	0.0054	0.0067	0.0080
537.5	0.1809	0.0722	0.0153	0.0199	0.2469	0.0081	0.0070	0.0054	0.0067	0.0080
538	0.1784	0.0711	0.0149	0.0200	0.2498	0.0081	0.0070	0.0054	0.0067	0.0081
538.5	0.1755	0.0715	0.0144	0.0201	0.2530	0.0080	0.0070	0.0054	0.0067	0.0081
539	0.1729	0.0729	0.0140	0.0201	0.2558	0.0080	0.0070	0.0054	0.0067	0.0080
539.5	0.1711	0.0749	0.0137	0.0201	0.2579	0.0080	0.0070	0.0053	0.0066	0.0080
540	0.1703	0.0766	0.0136	0.0200	0.2590	0.0080	0.0070	0.0053	0.0066	0.0080
540.5	0.1705	0.0776	0.0137	0.0199	0.2590	0.0079	0.0069	0.0053	0.0066	0.0080
541	0.1715	0.0775	0.0140	0.0198	0.2580	0.0079	0.0069	0.0053	0.0066	0.0080
541.5	0.1729	0.0760	0.0145	0.0197	0.2559	0.0079	0.0069	0.0053	0.0066	0.0080
542	0.1741	0.0733	0.0149	0.0196	0.2531	0.0079	0.0069	0.0052	0.0066	0.0080
542.5	0.1749	0.0696	0.0154	0.0196	0.2500	0.0079	0.0069	0.0052	0.0066	0.0080
543	0.1748	0.0655	0.0157	0.0196	0.2473	0.0079	0.0069	0.0052	0.0066	0.0080
543.5	0.1735	0.0614	0.0158	0.0196	0.2453	0.0079	0.0069	0.0052	0.0067	0.0080
544	0.1711	0.0579	0.0157	0.0196	0.2446	0.0079	0.0068	0.0052	0.0067	0.0080
544.5	0.1678	0.0556	0.0154	0.0195	0.2456	0.0079	0.0068	0.0052	0.0067	0.0080
545	0.1644	0.0547	0.0149	0.0194	0.2482	0.0079	0.0068	0.0052	0.0067	0.0081
545.5	0.1614	0.0553	0.0144	0.0193	0.2520	0.0079	0.0068	0.0052	0.0067	0.0081
546	0.1591	0.0570	0.0140	0.0191	0.2561	0.0079	0.0068	0.0052	0.0067	0.0081
546.5	0.1577	0.0593	0.0137	0.0189	0.2597	0.0079	0.0068	0.0052	0.0067	0.0081
547	0.1573	0.0616	0.0136	0.0188	0.2621	0.0079	0.0068	0.0052	0.0067	0.0081
547.5	0.1576	0.0633	0.0137	0.0187	0.2630	0.0079	0.0068	0.0052	0.0067	0.0081
548	0.1585	0.0640	0.0141	0.0187	0.2622	0.0079	0.0068	0.0051	0.0067	0.0081
548.5	0.1596	0.0633	0.0146	0.0187	0.2600	0.0078	0.0068	0.0051	0.0067	0.0081
549	0.1606	0.0613	0.0152	0.0187	0.2570	0.0078	0.0068	0.0051	0.0067	0.0081
549.5	0.1611	0.0581	0.0157	0.0188	0.2535	0.0078	0.0068	0.0051	0.0067	0.0081
550	0.1608	0.0542	0.0162	0.0188	0.2505	0.0078	0.0068	0.0051	0.0067	0.0081
550.5	0.1594	0.0502	0.0164	0.0189	0.2485	0.0078	0.0068	0.0051	0.0068	0.0081
551	0.1572	0.0466	0.0164	0.0188	0.2480	0.0078	0.0068	0.0051	0.0068	0.0081
551.5	0.1544	0.0439	0.0162	0.0187	0.2489	0.0078	0.0068	0.0051	0.0068	0.0082
552	0.1513	0.0423	0.0157	0.0186	0.2511	0.0078	0.0068	0.0051	0.0068	0.0082
552.5	0.1484	0.0420	0.0152	0.0184	0.2542	0.0078	0.0068	0.0051	0.0068	0.0082
553	0.1461	0.0430	0.0146	0.0181	0.2578	0.0078	0.0068	0.0051	0.0069	0.0082
553.5	0.1445	0.0449	0.0142	0.0179	0.2614	0.0078	0.0068	0.0052	0.0069	0.0082
554	0.1438	0.0472	0.0139	0.0177	0.2646	0.0078	0.0068	0.0052	0.0069	0.0082
554.5	0.1439	0.0494	0.0140	0.0176	0.2667	0.0078	0.0068	0.0052	0.0070	0.0082
555	0.1444	0.0509	0.0143	0.0176	0.2672	0.0078	0.0068	0.0052	0.0070	0.0082
555.5	0.1450	0.0514	0.0149	0.0176	0.2659	0.0077	0.0068	0.0051	0.0070	0.0082
556	0.1453	0.0507	0.0156	0.0177	0.2631	0.0077	0.0068	0.0051	0.0070	0.0082
556.5	0.1448	0.0490	0.0162	0.0179	0.2596	0.0077	0.0068	0.0051	0.0071	0.0081
557	0.1435	0.0464	0.0168	0.0181	0.2560	0.0076	0.0067	0.0051	0.0071	0.0081
557.5	0.1414	0.0433	0.0170	0.0182	0.2529	0.0076	0.0067	0.0051	0.0071	0.0081
558	0.1388	0.0400	0.0171	0.0183	0.2509	0.0076	0.0067	0.0051	0.0072	0.0081
558.5	0.1358	0.0370	0.0168	0.0182	0.2502	0.0076	0.0067	0.0051	0.0072	0.0082
559	0.1329	0.0346	0.0164	0.0181	0.2509	0.0076	0.0068	0.0051	0.0073	0.0082

559.5	0.1302	0.0332	0.0158	0.0179	0.2531	0.0076	0.0068	0.0052	0.0073	0.0082
560	0.1278	0.0329	0.0151	0.0177	0.2567	0.0076	0.0068	0.0052	0.0074	0.0082
560.5	0.1259	0.0336	0.0146	0.0175	0.2611	0.0076	0.0068	0.0052	0.0074	0.0082
561	0.1245	0.0352	0.0142	0.0173	0.2657	0.0076	0.0068	0.0052	0.0075	0.0083
561.5	0.1238	0.0374	0.0141	0.0172	0.2696	0.0076	0.0067	0.0052	0.0075	0.0083
562	0.1235	0.0397	0.0142	0.0172	0.2722	0.0076	0.0067	0.0052	0.0075	0.0083
562.5	0.1235	0.0418	0.0146	0.0173	0.2730	0.0076	0.0067	0.0053	0.0076	0.0083
563	0.1234	0.0432	0.0152	0.0174	0.2717	0.0075	0.0067	0.0053	0.0076	0.0083
563.5	0.1231	0.0437	0.0158	0.0177	0.2689	0.0075	0.0067	0.0053	0.0076	0.0083
564	0.1226	0.0430	0.0164	0.0180	0.2652	0.0075	0.0067	0.0053	0.0077	0.0083
564.5	0.1214	0.0414	0.0168	0.0184	0.2611	0.0075	0.0067	0.0053	0.0077	0.0083
565	0.1197	0.0389	0.0171	0.0188	0.2571	0.0075	0.0067	0.0053	0.0078	0.0083
565.5	0.1172	0.0361	0.0171	0.0190	0.2539	0.0075	0.0067	0.0054	0.0078	0.0083
566	0.1143	0.0332	0.0169	0.0192	0.2517	0.0075	0.0067	0.0054	0.0078	0.0083
566.5	0.1112	0.0307	0.0165	0.0191	0.2509	0.0075	0.0067	0.0054	0.0079	0.0083
567	0.1080	0.0288	0.0159	0.0190	0.2517	0.0074	0.0067	0.0054	0.0079	0.0083
567.5	0.1054	0.0279	0.0152	0.0188	0.2543	0.0074	0.0067	0.0054	0.0079	0.0083
568	0.1035	0.0281	0.0147	0.0185	0.2580	0.0074	0.0067	0.0054	0.0080	0.0084
568.5	0.1021	0.0291	0.0143	0.0183	0.2623	0.0074	0.0067	0.0054	0.0080	0.0084
569	0.1013	0.0309	0.0142	0.0182	0.2665	0.0074	0.0067	0.0055	0.0080	0.0084
569.5	0.1011	0.0332	0.0143	0.0181	0.2701	0.0074	0.0067	0.0055	0.0081	0.0084
570	0.1011	0.0356	0.0146	0.0182	0.2723	0.0074	0.0067	0.0055	0.0081	0.0084
570.5	0.1011	0.0377	0.0150	0.0185	0.2730	0.0074	0.0067	0.0055	0.0082	0.0084
571	0.1009	0.0392	0.0155	0.0189	0.2722	0.0074	0.0067	0.0055	0.0082	0.0084
571.5	0.1003	0.0400	0.0161	0.0196	0.2702	0.0074	0.0067	0.0055	0.0083	0.0085
572	0.0993	0.0397	0.0165	0.0204	0.2670	0.0074	0.0068	0.0056	0.0083	0.0085
572.5	0.0977	0.0385	0.0168	0.0213	0.2633	0.0074	0.0068	0.0056	0.0083	0.0085
573	0.0958	0.0365	0.0168	0.0221	0.2596	0.0074	0.0068	0.0056	0.0084	0.0085
573.5	0.0936	0.0339	0.0167	0.0228	0.2565	0.0074	0.0068	0.0056	0.0084	0.0085
574	0.0913	0.0312	0.0164	0.0233	0.2548	0.0074	0.0068	0.0056	0.0084	0.0085
574.5	0.0891	0.0288	0.0160	0.0236	0.2548	0.0074	0.0068	0.0057	0.0085	0.0085
575	0.0870	0.0269	0.0157	0.0237	0.2564	0.0074	0.0068	0.0057	0.0085	0.0085
575.5	0.0853	0.0259	0.0154	0.0237	0.2597	0.0074	0.0068	0.0057	0.0086	0.0086
576	0.0841	0.0258	0.0152	0.0235	0.2640	0.0074	0.0068	0.0057	0.0087	0.0086
576.5	0.0833	0.0267	0.0152	0.0233	0.2688	0.0074	0.0068	0.0058	0.0087	0.0086
577	0.0829	0.0282	0.0152	0.0233	0.2735	0.0074	0.0069	0.0058	0.0088	0.0086
577.5	0.0826	0.0303	0.0153	0.0235	0.2775	0.0074	0.0069	0.0058	0.0089	0.0087
578	0.0822	0.0326	0.0155	0.0239	0.2802	0.0074	0.0069	0.0059	0.0089	0.0087
578.5	0.0815	0.0347	0.0157	0.0247	0.2813	0.0074	0.0069	0.0059	0.0090	0.0087
579	0.0807	0.0364	0.0159	0.0260	0.2807	0.0074	0.0069	0.0059	0.0090	0.0087
579.5	0.0796	0.0374	0.0161	0.0277	0.2783	0.0074	0.0069	0.0059	0.0091	0.0087
580	0.0783	0.0375	0.0162	0.0297	0.2745	0.0074	0.0069	0.0059	0.0091	0.0087
580.5	0.0768	0.0369	0.0164	0.0319	0.2697	0.0074	0.0069	0.0059	0.0091	0.0087
581	0.0750	0.0354	0.0166	0.0340	0.2646	0.0074	0.0069	0.0059	0.0091	0.0087
581.5	0.0733	0.0334	0.0169	0.0358	0.2601	0.0074	0.0069	0.0060	0.0092	0.0087
582	0.0717	0.0311	0.0173	0.0373	0.2571	0.0074	0.0070	0.0060	0.0092	0.0087
582.5	0.0703	0.0288	0.0178	0.0384	0.2561	0.0074	0.0070	0.0060	0.0092	0.0087
583	0.0692	0.0269	0.0183	0.0391	0.2573	0.0074	0.0070	0.0061	0.0093	0.0087
583.5	0.0684	0.0255	0.0189	0.0395	0.2599	0.0074	0.0070	0.0061	0.0093	0.0087
584	0.0676	0.0247	0.0195	0.0395	0.2634	0.0074	0.0070	0.0061	0.0094	0.0087
584.5	0.0670	0.0248	0.0198	0.0396	0.2676	0.0074	0.0071	0.0062	0.0094	0.0087
585	0.0664	0.0255	0.0198	0.0398	0.2718	0.0074	0.0071	0.0062	0.0095	0.0087
585.5	0.0660	0.0270	0.0197	0.0405	0.2758	0.0074	0.0070	0.0062	0.0095	0.0087
586	0.0657	0.0290	0.0193	0.0421	0.2794	0.0074	0.0071	0.0063	0.0095	0.0087
586.5	0.0654	0.0313	0.0190	0.0445	0.2819	0.0074	0.0071	0.0063	0.0096	0.0087
587	0.0651	0.0334	0.0188	0.0477	0.2828	0.0074	0.0071	0.0064	0.0096	0.0088
587.5	0.0647	0.0351	0.0191	0.0517	0.2817	0.0074	0.0071	0.0064	0.0096	0.0088

588	0.0641	0.0362	0.0198	0.0560	0.2789	0.0074	0.0072	0.0065	0.0097	0.0088
588.5	0.0633	0.0365	0.0214	0.0605	0.2750	0.0074	0.0072	0.0065	0.0097	0.0088
589	0.0626	0.0360	0.0237	0.0647	0.2705	0.0074	0.0072	0.0065	0.0097	0.0088
589.5	0.0619	0.0349	0.0267	0.0684	0.2664	0.0074	0.0072	0.0066	0.0098	0.0088
590	0.0612	0.0332	0.0303	0.0714	0.2634	0.0074	0.0072	0.0066	0.0098	0.0088
590.5	0.0605	0.0311	0.0339	0.0734	0.2616	0.0074	0.0072	0.0066	0.0099	0.0088
591	0.0598	0.0288	0.0374	0.0745	0.2611	0.0074	0.0072	0.0066	0.0099	0.0088
591.5	0.0590	0.0267	0.0401	0.0749	0.2620	0.0074	0.0072	0.0066	0.0099	0.0088
592	0.0581	0.0250	0.0421	0.0750	0.2644	0.0074	0.0072	0.0066	0.0100	0.0088
592.5	0.0573	0.0240	0.0431	0.0753	0.2681	0.0074	0.0072	0.0066	0.0100	0.0087
593	0.0567	0.0238	0.0433	0.0761	0.2727	0.0074	0.0071	0.0066	0.0100	0.0087
593.5	0.0561	0.0243	0.0431	0.0778	0.2778	0.0074	0.0071	0.0066	0.0101	0.0087
594	0.0557	0.0256	0.0429	0.0804	0.2825	0.0074	0.0071	0.0067	0.0101	0.0087
594.5	0.0552	0.0273	0.0431	0.0840	0.2861	0.0074	0.0071	0.0067	0.0101	0.0087
595	0.0546	0.0292	0.0443	0.0886	0.2881	0.0074	0.0071	0.0067	0.0101	0.0087
595.5	0.0540	0.0311	0.0470	0.0940	0.2882	0.0074	0.0071	0.0067	0.0101	0.0087
596	0.0534	0.0328	0.0512	0.1000	0.2866	0.0074	0.0071	0.0067	0.0102	0.0087
596.5	0.0528	0.0340	0.0571	0.1060	0.2837	0.0074	0.0071	0.0067	0.0102	0.0088
597	0.0525	0.0347	0.0644	0.1117	0.2800	0.0074	0.0071	0.0068	0.0102	0.0088
597.5	0.0524	0.0349	0.0725	0.1165	0.2760	0.0074	0.0071	0.0068	0.0103	0.0088
598	0.0524	0.0344	0.0807	0.1198	0.2722	0.0074	0.0071	0.0068	0.0104	0.0089
598.5	0.0525	0.0332	0.0881	0.1217	0.2690	0.0074	0.0072	0.0069	0.0105	0.0089
599	0.0526	0.0316	0.0938	0.1224	0.2667	0.0075	0.0072	0.0069	0.0105	0.0089
599.5	0.0525	0.0296	0.0974	0.1221	0.2656	0.0074	0.0072	0.0069	0.0106	0.0089
600	0.0522	0.0275	0.0990	0.1213	0.2661	0.0074	0.0072	0.0069	0.0106	0.0089
600.5	0.0517	0.0258	0.0990	0.1208	0.2681	0.0074	0.0071	0.0069	0.0106	0.0089
601	0.0511	0.0244	0.0980	0.1208	0.2716	0.0074	0.0071	0.0069	0.0106	0.0089
601.5	0.0503	0.0237	0.0967	0.1217	0.2762	0.0074	0.0071	0.0069	0.0106	0.0089
602	0.0496	0.0237	0.0959	0.1238	0.2814	0.0074	0.0071	0.0069	0.0106	0.0089
602.5	0.0488	0.0243	0.0962	0.1269	0.2864	0.0074	0.0071	0.0070	0.0106	0.0089
603	0.0480	0.0255	0.0982	0.1308	0.2910	0.0074	0.0071	0.0070	0.0107	0.0089
603.5	0.0473	0.0271	0.1020	0.1353	0.2945	0.0074	0.0071	0.0070	0.0107	0.0089
604	0.0466	0.0289	0.1078	0.1402	0.2962	0.0074	0.0071	0.0070	0.0107	0.0089
604.5	0.0460	0.0307	0.1150	0.1450	0.2962	0.0074	0.0071	0.0070	0.0107	0.0089
605	0.0456	0.0323	0.1226	0.1495	0.2945	0.0074	0.0071	0.0070	0.0107	0.0090
605.5	0.0452	0.0336	0.1300	0.1533	0.2914	0.0074	0.0071	0.0070	0.0107	0.0090
606	0.0450	0.0344	0.1365	0.1561	0.2871	0.0074	0.0071	0.0070	0.0108	0.0090
606.5	0.0449	0.0345	0.1417	0.1574	0.2826	0.0074	0.0071	0.0070	0.0108	0.0089
607	0.0448	0.0340	0.1452	0.1574	0.2782	0.0074	0.0071	0.0070	0.0108	0.0089
607.5	0.0449	0.0330	0.1472	0.1564	0.2745	0.0074	0.0071	0.0070	0.0108	0.0089
608	0.0450	0.0315	0.1476	0.1548	0.2721	0.0074	0.0071	0.0070	0.0108	0.0089
608.5	0.0451	0.0297	0.1464	0.1531	0.2715	0.0074	0.0071	0.0071	0.0109	0.0090
609	0.0452	0.0279	0.1440	0.1518	0.2728	0.0074	0.0071	0.0071	0.0109	0.0090
609.5	0.0451	0.0263	0.1412	0.1512	0.2758	0.0075	0.0072	0.0071	0.0110	0.0090
610	0.0447	0.0249	0.1388	0.1515	0.2800	0.0075	0.0072	0.0071	0.0110	0.0091
610.5	0.0441	0.0240	0.1376	0.1529	0.2849	0.0075	0.0072	0.0072	0.0111	0.0091
611	0.0434	0.0237	0.1380	0.1553	0.2895	0.0075	0.0072	0.0072	0.0111	0.0091
611.5	0.0425	0.0239	0.1401	0.1585	0.2933	0.0075	0.0072	0.0072	0.0111	0.0091
612	0.0414	0.0247	0.1437	0.1621	0.2962	0.0074	0.0072	0.0072	0.0111	0.0091
612.5	0.0403	0.0260	0.1487	0.1658	0.2979	0.0074	0.0072	0.0072	0.0111	0.0091
613	0.0393	0.0275	0.1547	0.1693	0.2986	0.0074	0.0072	0.0072	0.0111	0.0091
613.5	0.0385	0.0293	0.1614	0.1725	0.2982	0.0074	0.0072	0.0072	0.0111	0.0091
614	0.0379	0.0310	0.1680	0.1751	0.2969	0.0074	0.0072	0.0072	0.0111	0.0091
614.5	0.0377	0.0325	0.1738	0.1770	0.2945	0.0074	0.0072	0.0072	0.0111	0.0092
615	0.0376	0.0337	0.1778	0.1777	0.2908	0.0074	0.0072	0.0072	0.0112	0.0092
615.5	0.0378	0.0343	0.1796	0.1772	0.2861	0.0074	0.0072	0.0072	0.0112	0.0092
616	0.0382	0.0344	0.1790	0.1756	0.2806	0.0074	0.0073	0.0072	0.0113	0.0092

616.5	0.0386	0.0339	0.1762	0.1731	0.2751	0.0074	0.0073	0.0072	0.0113	0.0092
617	0.0390	0.0328	0.1718	0.1703	0.2705	0.0074	0.0073	0.0072	0.0113	0.0092
617.5	0.0393	0.0313	0.1669	0.1679	0.2678	0.0074	0.0073	0.0072	0.0113	0.0092
618	0.0394	0.0296	0.1621	0.1664	0.2675	0.0074	0.0073	0.0072	0.0113	0.0092
618.5	0.0394	0.0279	0.1584	0.1660	0.2695	0.0074	0.0073	0.0072	0.0113	0.0092
619	0.0392	0.0263	0.1565	0.1668	0.2734	0.0074	0.0073	0.0072	0.0113	0.0092
619.5	0.0388	0.0251	0.1568	0.1687	0.2785	0.0074	0.0073	0.0072	0.0114	0.0092
620	0.0383	0.0242	0.1593	0.1715	0.2843	0.0075	0.0073	0.0072	0.0114	0.0092
620.5	0.0377	0.0239	0.1636	0.1748	0.2899	0.0075	0.0073	0.0072	0.0114	0.0092
621	0.0369	0.0240	0.1692	0.1784	0.2947	0.0075	0.0073	0.0073	0.0114	0.0092
621.5	0.0361	0.0247	0.1754	0.1819	0.2986	0.0075	0.0073	0.0073	0.0115	0.0093
622	0.0353	0.0259	0.1813	0.1851	0.3013	0.0076	0.0073	0.0073	0.0115	0.0093
622.5	0.0346	0.0274	0.1864	0.1877	0.3028	0.0076	0.0074	0.0073	0.0115	0.0093
623	0.0340	0.0291	0.1903	0.1895	0.3032	0.0076	0.0074	0.0073	0.0115	0.0093
623.5	0.0335	0.0308	0.1924	0.1902	0.3023	0.0076	0.0074	0.0073	0.0115	0.0093
624	0.0333	0.0324	0.1925	0.1897	0.2998	0.0076	0.0073	0.0073	0.0115	0.0093
624.5	0.0333	0.0336	0.1908	0.1879	0.2961	0.0076	0.0073	0.0073	0.0115	0.0094
625	0.0336	0.0345	0.1874	0.1852	0.2913	0.0076	0.0073	0.0073	0.0115	0.0094
625.5	0.0339	0.0348	0.1826	0.1820	0.2858	0.0077	0.0073	0.0074	0.0115	0.0094
626	0.0344	0.0347	0.1772	0.1789	0.2807	0.0077	0.0073	0.0074	0.0115	0.0094
626.5	0.0348	0.0341	0.1718	0.1763	0.2766	0.0077	0.0073	0.0074	0.0115	0.0094
627	0.0352	0.0331	0.1671	0.1745	0.2741	0.0077	0.0074	0.0074	0.0115	0.0094
627.5	0.0354	0.0317	0.1638	0.1738	0.2735	0.0077	0.0074	0.0074	0.0115	0.0094
628	0.0354	0.0302	0.1622	0.1742	0.2746	0.0077	0.0074	0.0074	0.0115	0.0094
628.5	0.0353	0.0286	0.1624	0.1755	0.2773	0.0076	0.0074	0.0074	0.0115	0.0094
629	0.0350	0.0272	0.1645	0.1776	0.2810	0.0076	0.0074	0.0074	0.0115	0.0094
629.5	0.0345	0.0259	0.1680	0.1801	0.2852	0.0076	0.0073	0.0074	0.0115	0.0094
630	0.0340	0.0251	0.1726	0.1830	0.2894	0.0076	0.0073	0.0073	0.0115	0.0094
630.5	0.0334	0.0247	0.1779	0.1860	0.2934	0.0076	0.0073	0.0073	0.0115	0.0094
631	0.0328	0.0248	0.1834	0.1888	0.2974	0.0076	0.0073	0.0073	0.0115	0.0094
631.5	0.0322	0.0254	0.1882	0.1911	0.3012	0.0076	0.0073	0.0074	0.0115	0.0094
632	0.0316	0.0265	0.1920	0.1929	0.3046	0.0076	0.0074	0.0074	0.0115	0.0094
632.5	0.0311	0.0280	0.1942	0.1939	0.3075	0.0076	0.0074	0.0074	0.0116	0.0095
633	0.0307	0.0297	0.1945	0.1938	0.3088	0.0076	0.0074	0.0074	0.0116	0.0095
633.5	0.0304	0.0314	0.1929	0.1926	0.3078	0.0077	0.0074	0.0074	0.0116	0.0095
634	0.0303	0.0329	0.1894	0.1902	0.3044	0.0077	0.0074	0.0074	0.0116	0.0095
634.5	0.0303	0.0340	0.1845	0.1871	0.2990	0.0076	0.0074	0.0074	0.0116	0.0095
635	0.0305	0.0348	0.1788	0.1837	0.2924	0.0076	0.0074	0.0074	0.0116	0.0095
635.5	0.0308	0.0351	0.1733	0.1806	0.2858	0.0076	0.0074	0.0074	0.0116	0.0095
636	0.0314	0.0350	0.1686	0.1783	0.2802	0.0076	0.0074	0.0074	0.0116	0.0094
636.5	0.0321	0.0346	0.1655	0.1773	0.2764	0.0076	0.0074	0.0074	0.0116	0.0094
637	0.0329	0.0339	0.1647	0.1774	0.2748	0.0076	0.0074	0.0074	0.0116	0.0095
637.5	0.0338	0.0330	0.1660	0.1787	0.2755	0.0076	0.0074	0.0074	0.0116	0.0095
638	0.0347	0.0319	0.1688	0.1809	0.2780	0.0076	0.0075	0.0074	0.0116	0.0095
638.5	0.0355	0.0307	0.1729	0.1836	0.2820	0.0076	0.0075	0.0074	0.0116	0.0095
639	0.0360	0.0296	0.1775	0.1864	0.2870	0.0076	0.0075	0.0074	0.0116	0.0095
639.5	0.0363	0.0287	0.1824	0.1889	0.2923	0.0076	0.0075	0.0074	0.0117	0.0096
640	0.0363	0.0279	0.1872	0.1910	0.2974	0.0076	0.0075	0.0074	0.0116	0.0096
640.5	0.0359	0.0275	0.1918	0.1923	0.3019	0.0076	0.0075	0.0074	0.0116	0.0095
641	0.0354	0.0275	0.1956	0.1931	0.3057	0.0076	0.0074	0.0074	0.0116	0.0095
641.5	0.0348	0.0279	0.1982	0.1935	0.3087	0.0076	0.0074	0.0074	0.0115	0.0095
642	0.0343	0.0288	0.1992	0.1936	0.3107	0.0076	0.0074	0.0074	0.0115	0.0095
642.5	0.0338	0.0301	0.1984	0.1931	0.3115	0.0076	0.0074	0.0074	0.0115	0.0095
643	0.0335	0.0317	0.1960	0.1918	0.3108	0.0076	0.0074	0.0074	0.0115	0.0095
643.5	0.0332	0.0335	0.1923	0.1897	0.3084	0.0077	0.0074	0.0074	0.0115	0.0095
644	0.0331	0.0352	0.1878	0.1869	0.3049	0.0077	0.0074	0.0074	0.0116	0.0095
644.5	0.0331	0.0369	0.1829	0.1839	0.3004	0.0077	0.0074	0.0074	0.0116	0.0096

645	0.0334	0.0384	0.1780	0.1810	0.2955	0.0077	0.0075	0.0074	0.0116	0.0096
645.5	0.0339	0.0396	0.1738	0.1785	0.2907	0.0077	0.0075	0.0075	0.0117	0.0096
646	0.0347	0.0404	0.1710	0.1768	0.2863	0.0078	0.0075	0.0074	0.0117	0.0096
646.5	0.0358	0.0408	0.1700	0.1759	0.2825	0.0078	0.0075	0.0074	0.0117	0.0096
647	0.0371	0.0408	0.1710	0.1762	0.2800	0.0078	0.0074	0.0074	0.0117	0.0096
647.5	0.0387	0.0404	0.1739	0.1779	0.2795	0.0078	0.0074	0.0074	0.0117	0.0096
648	0.0403	0.0397	0.1784	0.1807	0.2812	0.0078	0.0074	0.0074	0.0118	0.0096
648.5	0.0420	0.0387	0.1839	0.1844	0.2850	0.0078	0.0075	0.0075	0.0118	0.0096
649	0.0437	0.0377	0.1900	0.1882	0.2902	0.0079	0.0075	0.0075	0.0119	0.0097
649.5	0.0452	0.0365	0.1960	0.1918	0.2961	0.0079	0.0075	0.0075	0.0119	0.0097
650	0.0465	0.0355	0.2015	0.1948	0.3018	0.0079	0.0075	0.0075	0.0119	0.0097
650.5	0.0473	0.0349	0.2064	0.1971	0.3067	0.0079	0.0075	0.0075	0.0119	0.0097
651	0.0476	0.0347	0.2101	0.1986	0.3110	0.0080	0.0076	0.0075	0.0120	0.0097
651.5	0.0476	0.0351	0.2124	0.1996	0.3150	0.0080	0.0076	0.0075	0.0120	0.0098
652	0.0471	0.0360	0.2130	0.1999	0.3187	0.0080	0.0077	0.0076	0.0120	0.0098
652.5	0.0464	0.0374	0.2117	0.1993	0.3217	0.0081	0.0077	0.0076	0.0120	0.0099
653	0.0457	0.0393	0.2084	0.1977	0.3235	0.0081	0.0078	0.0076	0.0121	0.0099
653.5	0.0450	0.0415	0.2039	0.1952	0.3238	0.0081	0.0078	0.0077	0.0121	0.0099
654	0.0444	0.0441	0.1989	0.1920	0.3220	0.0082	0.0079	0.0077	0.0121	0.0100
654.5	0.0442	0.0466	0.1939	0.1885	0.3180	0.0082	0.0079	0.0077	0.0121	0.0100
655	0.0444	0.0491	0.1897	0.1852	0.3126	0.0082	0.0079	0.0077	0.0121	0.0100
655.5	0.0450	0.0513	0.1867	0.1827	0.3066	0.0082	0.0080	0.0077	0.0121	0.0100
656	0.0461	0.0531	0.1851	0.1810	0.3007	0.0082	0.0080	0.0077	0.0121	0.0100
656.5	0.0476	0.0544	0.1849	0.1806	0.2957	0.0082	0.0080	0.0077	0.0120	0.0100
657	0.0497	0.0553	0.1864	0.1816	0.2920	0.0082	0.0080	0.0078	0.0120	0.0100
657.5	0.0522	0.0558	0.1893	0.1837	0.2896	0.0082	0.0080	0.0078	0.0120	0.0100
658	0.0552	0.0558	0.1937	0.1868	0.2887	0.0082	0.0080	0.0078	0.0120	0.0100
658.5	0.0586	0.0555	0.1995	0.1905	0.2894	0.0082	0.0080	0.0078	0.0121	0.0100
659	0.0623	0.0550	0.2063	0.1943	0.2914	0.0082	0.0080	0.0078	0.0121	0.0100
659.5	0.0659	0.0543	0.2135	0.1979	0.2946	0.0083	0.0081	0.0079	0.0121	0.0100
660	0.0693	0.0535	0.2206	0.2009	0.2986	0.0083	0.0081	0.0079	0.0121	0.0100
660.5	0.0724	0.0529	0.2269	0.2033	0.3032	0.0083	0.0081	0.0079	0.0121	0.0100
661	0.0749	0.0525	0.2317	0.2049	0.3082	0.0083	0.0081	0.0080	0.0121	0.0101
661.5	0.0768	0.0524	0.2348	0.2055	0.3135	0.0083	0.0081	0.0080	0.0121	0.0100
662	0.0778	0.0528	0.2359	0.2051	0.3190	0.0083	0.0081	0.0080	0.0121	0.0100
662.5	0.0780	0.0537	0.2347	0.2037	0.3242	0.0083	0.0081	0.0080	0.0121	0.0100
663	0.0775	0.0551	0.2312	0.2014	0.3284	0.0083	0.0081	0.0080	0.0121	0.0100
663.5	0.0765	0.0570	0.2258	0.1984	0.3306	0.0083	0.0081	0.0080	0.0121	0.0100
664	0.0751	0.0592	0.2192	0.1951	0.3302	0.0083	0.0081	0.0080	0.0121	0.0100
664.5	0.0737	0.0616	0.2123	0.1916	0.3271	0.0082	0.0081	0.0080	0.0120	0.0099
665	0.0726	0.0639	0.2057	0.1881	0.3219	0.0082	0.0081	0.0080	0.0120	0.0099
665.5	0.0721	0.0662	0.2001	0.1851	0.3150	0.0081	0.0080	0.0080	0.0119	0.0098
666	0.0726	0.0683	0.1962	0.1828	0.3075	0.0081	0.0080	0.0080	0.0118	0.0098
666.5	0.0740	0.0704	0.1940	0.1815	0.3001	0.0081	0.0079	0.0079	0.0117	0.0097
667	0.0765	0.0724	0.1936	0.1815	0.2934	0.0081	0.0079	0.0079	0.0117	0.0097
667.5	0.0798	0.0740	0.1948	0.1826	0.2876	0.0081	0.0079	0.0079	0.0117	0.0097
668	0.0837	0.0753	0.1972	0.1848	0.2832	0.0081	0.0079	0.0079	0.0117	0.0097
668.5	0.0881	0.0762	0.2005	0.1880	0.2803	0.0081	0.0079	0.0080	0.0117	0.0097
669	0.0926	0.0766	0.2042	0.1916	0.2788	0.0081	0.0079	0.0080	0.0117	0.0097
669.5	0.0973	0.0768	0.2081	0.1952	0.2786	0.0081	0.0079	0.0080	0.0116	0.0097
670	0.1020	0.0768	0.2121	0.1986	0.2799	0.0081	0.0079	0.0080	0.0116	0.0097
670.5	0.1065	0.0769	0.2159	0.2015	0.2824	0.0081	0.0079	0.0080	0.0116	0.0097
671	0.1104	0.0770	0.2188	0.2036	0.2859	0.0081	0.0079	0.0080	0.0116	0.0097
671.5	0.1137	0.0773	0.2206	0.2050	0.2900	0.0081	0.0079	0.0080	0.0116	0.0097
672	0.1162	0.0779	0.2213	0.2056	0.2943	0.0082	0.0079	0.0081	0.0116	0.0097
672.5	0.1178	0.0788	0.2205	0.2054	0.2983	0.0082	0.0079	0.0081	0.0117	0.0097
673	0.1186	0.0800	0.2185	0.2043	0.3018	0.0082	0.0079	0.0081	0.0117	0.0097

673.5	0.1189	0.0816	0.2156	0.2025	0.3047	0.0082	0.0079	0.0081	0.0117	0.0097
674	0.1188	0.0837	0.2120	0.1999	0.3068	0.0082	0.0079	0.0081	0.0117	0.0097
674.5	0.1184	0.0861	0.2080	0.1967	0.3080	0.0082	0.0080	0.0081	0.0117	0.0097
675	0.1181	0.0889	0.2039	0.1934	0.3083	0.0082	0.0080	0.0081	0.0117	0.0097
675.5	0.1181	0.0919	0.2003	0.1903	0.3079	0.0082	0.0080	0.0082	0.0117	0.0097
676	0.1188	0.0952	0.1976	0.1880	0.3066	0.0082	0.0080	0.0082	0.0117	0.0098
676.5	0.1203	0.0986	0.1961	0.1866	0.3045	0.0082	0.0080	0.0082	0.0118	0.0098
677	0.1228	0.1019	0.1960	0.1863	0.3016	0.0083	0.0080	0.0083	0.0118	0.0099
677.5	0.1263	0.1052	0.1972	0.1869	0.2979	0.0083	0.0081	0.0083	0.0119	0.0099
678	0.1307	0.1083	0.1998	0.1882	0.2937	0.0084	0.0081	0.0083	0.0119	0.0100
678.5	0.1365	0.1113	0.2038	0.1903	0.2896	0.0084	0.0081	0.0084	0.0119	0.0100
679	0.1432	0.1142	0.2091	0.1931	0.2861	0.0085	0.0081	0.0084	0.0120	0.0101
679.5	0.1508	0.1169	0.2151	0.1965	0.2837	0.0085	0.0082	0.0085	0.0120	0.0101
680	0.1593	0.1194	0.2216	0.2005	0.2827	0.0085	0.0082	0.0085	0.0121	0.0102
680.5	0.1684	0.1216	0.2279	0.2044	0.2832	0.0086	0.0083	0.0085	0.0121	0.0102
681	0.1776	0.1235	0.2337	0.2078	0.2852	0.0086	0.0083	0.0086	0.0122	0.0102
681.5	0.1872	0.1253	0.2392	0.2106	0.2887	0.0087	0.0083	0.0086	0.0122	0.0103
682	0.1963	0.1269	0.2441	0.2125	0.2937	0.0087	0.0084	0.0086	0.0123	0.0103
682.5	0.2046	0.1284	0.2480	0.2137	0.2997	0.0087	0.0084	0.0086	0.0123	0.0103
683	0.2115	0.1301	0.2506	0.2140	0.3062	0.0088	0.0085	0.0087	0.0124	0.0103
683.5	0.2165	0.1318	0.2513	0.2136	0.3129	0.0088	0.0085	0.0087	0.0124	0.0103
684	0.2198	0.1339	0.2501	0.2125	0.3192	0.0088	0.0086	0.0087	0.0124	0.0103
684.5	0.2214	0.1365	0.2472	0.2107	0.3250	0.0088	0.0086	0.0087	0.0124	0.0103
685	0.2217	0.1394	0.2434	0.2082	0.3302	0.0088	0.0086	0.0087	0.0124	0.0104
685.5	0.2213	0.1428	0.2390	0.2050	0.3346	0.0088	0.0087	0.0087	0.0125	0.0104
686	0.2205	0.1464	0.2345	0.2015	0.3380	0.0088	0.0087	0.0088	0.0125	0.0104
686.5	0.2200	0.1504	0.2306	0.1980	0.3401	0.0089	0.0087	0.0088	0.0126	0.0104
687	0.2202	0.1544	0.2275	0.1952	0.3407	0.0089	0.0087	0.0088	0.0126	0.0104
687.5	0.2216	0.1581	0.2260	0.1934	0.3396	0.0089	0.0088	0.0088	0.0127	0.0104
688	0.2243	0.1616	0.2264	0.1927	0.3371	0.0090	0.0088	0.0089	0.0127	0.0105
688.5	0.2280	0.1648	0.2285	0.1931	0.3334	0.0090	0.0088	0.0089	0.0127	0.0105
689	0.2326	0.1676	0.2322	0.1946	0.3290	0.0090	0.0088	0.0089	0.0128	0.0105
689.5	0.2379	0.1704	0.2375	0.1970	0.3242	0.0090	0.0088	0.0089	0.0128	0.0106
690	0.2436	0.1731	0.2433	0.2003	0.3192	0.0091	0.0089	0.0089	0.0128	0.0106
690.5	0.2498	0.1757	0.2491	0.2043	0.3144	0.0091	0.0089	0.0089	0.0128	0.0106
691	0.2565	0.1779	0.2543	0.2084	0.3101	0.0091	0.0089	0.0090	0.0128	0.0107
691.5	0.2633	0.1796	0.2585	0.2121	0.3066	0.0091	0.0089	0.0090	0.0128	0.0107
692	0.2697	0.1808	0.2617	0.2152	0.3041	0.0091	0.0089	0.0090	0.0128	0.0107
692.5	0.2755	0.1819	0.2642	0.2177	0.3032	0.0091	0.0088	0.0090	0.0128	0.0107
693	0.2803	0.1830	0.2666	0.2196	0.3041	0.0091	0.0088	0.0090	0.0128	0.0107
693.5	0.2841	0.1843	0.2685	0.2209	0.3067	0.0090	0.0088	0.0090	0.0128	0.0108
694	0.2873	0.1859	0.2695	0.2215	0.3107	0.0090	0.0088	0.0090	0.0128	0.0108
694.5	0.2900	0.1877	0.2694	0.2214	0.3155	0.0090	0.0088	0.0090	0.0129	0.0108
695	0.2920	0.1894	0.2676	0.2201	0.3203	0.0090	0.0088	0.0090	0.0129	0.0109
695.5	0.2929	0.1910	0.2641	0.2177	0.3251	0.0090	0.0088	0.0090	0.0129	0.0109
696	0.2927	0.1927	0.2593	0.2144	0.3295	0.0090	0.0088	0.0090	0.0129	0.0109
696.5	0.2913	0.1945	0.2536	0.2107	0.3336	0.0090	0.0088	0.0090	0.0129	0.0108
697	0.2886	0.1964	0.2475	0.2066	0.3372	0.0090	0.0087	0.0090	0.0129	0.0108
697.5	0.2852	0.1986	0.2414	0.2026	0.3400	0.0090	0.0087	0.0090	0.0128	0.0108
698	0.2819	0.2007	0.2357	0.1991	0.3418	0.0089	0.0087	0.0090	0.0128	0.0108
698.5	0.2791	0.2026	0.2307	0.1962	0.3424	0.0089	0.0086	0.0090	0.0128	0.0107
699	0.2771	0.2045	0.2270	0.1941	0.3417	0.0089	0.0086	0.0090	0.0128	0.0107
699.5	0.2762	0.2062	0.2248	0.1929	0.3395	0.0088	0.0086	0.0089	0.0127	0.0107
700	0.2766	0.2080	0.2246	0.1927	0.3358	0.0088	0.0086	0.0089	0.0127	0.0107

D.2 45° measurements

Table D.2: Measurements of plastic samples at 45°. For the glossy side, the lamp signal was measured at an integration time of 25 ms and the measurements of the samples were taken at an integration time of 75 ms, 90 ms, 95 ms, 110 ms, and 90 ms respectively. For the matte side, the lamp signal was measured at an integration time of 28 ms and the measurements of the samples were taken at an integration time of 2000 ms, 2100 ms, 2100 ms, 2000 ms, and 2000 ms respectively.

	Gloss					Matte				
λ	Green	Blue	Purple	Red	Silver	Green	Blue	Purple	Red	Silver
400	0.0424	0.1613	0.1554	0.0415	0.2340	0.0132	0.0133	0.0145	0.0094	0.0124
400.5	0.0422	0.1609	0.1549	0.0411	0.2340	0.0132	0.0133	0.0145	0.0094	0.0124
401	0.0428	0.1606	0.1549	0.0407	0.2343	0.0133	0.0133	0.0145	0.0094	0.0124
401.5	0.0436	0.1609	0.1554	0.0405	0.2344	0.0133	0.0133	0.0145	0.0093	0.0124
402	0.0436	0.1615	0.1563	0.0403	0.2340	0.0133	0.0133	0.0144	0.0093	0.0124
402.5	0.0431	0.1618	0.1569	0.0399	0.2335	0.0133	0.0133	0.0144	0.0092	0.0124
403	0.0418	0.1621	0.1565	0.0396	0.2331	0.0133	0.0133	0.0143	0.0092	0.0124
403.5	0.0406	0.1623	0.1555	0.0394	0.2333	0.0133	0.0134	0.0143	0.0092	0.0124
404	0.0398	0.1622	0.1547	0.0393	0.2341	0.0133	0.0134	0.0142	0.0093	0.0124
404.5	0.0396	0.1619	0.1541	0.0391	0.2349	0.0134	0.0134	0.0142	0.0093	0.0124
405	0.0392	0.1619	0.1541	0.0391	0.2355	0.0134	0.0135	0.0143	0.0093	0.0124
405.5	0.0387	0.1621	0.1547	0.0392	0.2358	0.0134	0.0135	0.0143	0.0093	0.0124
406	0.0384	0.1625	0.1550	0.0390	0.2354	0.0134	0.0135	0.0143	0.0093	0.0124
406.5	0.0382	0.1632	0.1546	0.0389	0.2351	0.0134	0.0135	0.0143	0.0092	0.0124
407	0.0382	0.1637	0.1538	0.0388	0.2352	0.0135	0.0135	0.0143	0.0092	0.0124
407.5	0.0386	0.1637	0.1534	0.0389	0.2360	0.0135	0.0135	0.0143	0.0092	0.0124
408	0.0392	0.1636	0.1537	0.0391	0.2375	0.0135	0.0136	0.0143	0.0093	0.0124
408.5	0.0398	0.1641	0.1547	0.0392	0.2390	0.0135	0.0137	0.0143	0.0093	0.0124
409	0.0402	0.1651	0.1560	0.0392	0.2400	0.0135	0.0137	0.0144	0.0094	0.0124
409.5	0.0400	0.1664	0.1567	0.0391	0.2399	0.0135	0.0138	0.0144	0.0094	0.0124
410	0.0391	0.1677	0.1560	0.0386	0.2387	0.0135	0.0138	0.0143	0.0094	0.0124
410.5	0.0382	0.1683	0.1542	0.0381	0.2371	0.0134	0.0137	0.0142	0.0093	0.0123
411	0.0371	0.1680	0.1522	0.0377	0.2362	0.0133	0.0137	0.0141	0.0093	0.0123
411.5	0.0362	0.1672	0.1511	0.0373	0.2360	0.0133	0.0137	0.0141	0.0093	0.0122
412	0.0358	0.1667	0.1511	0.0371	0.2367	0.0134	0.0136	0.0141	0.0093	0.0122
412.5	0.0353	0.1667	0.1521	0.0371	0.2378	0.0134	0.0136	0.0141	0.0093	0.0122
413	0.0351	0.1675	0.1533	0.0372	0.2389	0.0135	0.0137	0.0141	0.0094	0.0122
413.5	0.0353	0.1691	0.1539	0.0372	0.2393	0.0135	0.0137	0.0141	0.0094	0.0123
414	0.0357	0.1706	0.1535	0.0370	0.2391	0.0135	0.0137	0.0141	0.0094	0.0123
414.5	0.0363	0.1714	0.1525	0.0370	0.2394	0.0135	0.0138	0.0141	0.0094	0.0123
415	0.0369	0.1713	0.1515	0.0370	0.2402	0.0135	0.0138	0.0141	0.0094	0.0124
415.5	0.0373	0.1703	0.1508	0.0370	0.2410	0.0134	0.0137	0.0140	0.0094	0.0124
416	0.0372	0.1691	0.1511	0.0368	0.2419	0.0134	0.0137	0.0140	0.0094	0.0124
416.5	0.0367	0.1682	0.1517	0.0364	0.2421	0.0135	0.0137	0.0140	0.0094	0.0124
417	0.0362	0.1681	0.1520	0.0358	0.2413	0.0135	0.0138	0.0140	0.0094	0.0124
417.5	0.0359	0.1689	0.1520	0.0351	0.2399	0.0135	0.0138	0.0139	0.0094	0.0124
418	0.0358	0.1696	0.1514	0.0346	0.2385	0.0135	0.0138	0.0139	0.0093	0.0123
418.5	0.0361	0.1700	0.1507	0.0343	0.2377	0.0135	0.0138	0.0139	0.0093	0.0123
419	0.0364	0.1699	0.1504	0.0343	0.2381	0.0135	0.0137	0.0138	0.0093	0.0123
419.5	0.0362	0.1688	0.1504	0.0345	0.2391	0.0134	0.0137	0.0138	0.0092	0.0123
420	0.0357	0.1677	0.1510	0.0346	0.2401	0.0134	0.0137	0.0138	0.0092	0.0123
420.5	0.0351	0.1672	0.1516	0.0346	0.2408	0.0134	0.0138	0.0138	0.0092	0.0123
421	0.0345	0.1675	0.1518	0.0345	0.2408	0.0134	0.0138	0.0138	0.0092	0.0122
421.5	0.0342	0.1685	0.1513	0.0343	0.2401	0.0135	0.0138	0.0138	0.0093	0.0122
422	0.0342	0.1701	0.1505	0.0341	0.2394	0.0135	0.0138	0.0139	0.0093	0.0122

422.5	0.0341	0.1713	0.1499	0.0342	0.2392	0.0135	0.0138	0.0139	0.0093	0.0122
423	0.0342	0.1714	0.1499	0.0345	0.2397	0.0135	0.0139	0.0139	0.0093	0.0122
423.5	0.0343	0.1707	0.1508	0.0345	0.2409	0.0136	0.0139	0.0139	0.0093	0.0122
424	0.0343	0.1698	0.1520	0.0343	0.2423	0.0136	0.0139	0.0138	0.0093	0.0122
424.5	0.0342	0.1689	0.1530	0.0340	0.2434	0.0136	0.0139	0.0138	0.0093	0.0121
425	0.0341	0.1690	0.1531	0.0336	0.2437	0.0136	0.0139	0.0138	0.0093	0.0121
425.5	0.0344	0.1701	0.1527	0.0332	0.2429	0.0136	0.0140	0.0138	0.0093	0.0121
426	0.0345	0.1716	0.1522	0.0328	0.2412	0.0136	0.0140	0.0138	0.0093	0.0121
426.5	0.0347	0.1724	0.1520	0.0325	0.2390	0.0136	0.0140	0.0138	0.0093	0.0121
427	0.0353	0.1722	0.1523	0.0324	0.2376	0.0136	0.0139	0.0137	0.0093	0.0121
427.5	0.0358	0.1706	0.1533	0.0323	0.2375	0.0135	0.0139	0.0137	0.0093	0.0120
428	0.0359	0.1683	0.1547	0.0324	0.2388	0.0135	0.0139	0.0137	0.0092	0.0120
428.5	0.0362	0.1663	0.1561	0.0324	0.2410	0.0135	0.0139	0.0137	0.0092	0.0120
429	0.0362	0.1655	0.1571	0.0321	0.2425	0.0135	0.0139	0.0137	0.0093	0.0120
429.5	0.0356	0.1663	0.1577	0.0318	0.2428	0.0135	0.0139	0.0137	0.0093	0.0120
430	0.0351	0.1681	0.1579	0.0316	0.2418	0.0135	0.0139	0.0137	0.0093	0.0120
430.5	0.0348	0.1699	0.1582	0.0316	0.2401	0.0135	0.0140	0.0138	0.0093	0.0120
431	0.0347	0.1710	0.1586	0.0320	0.2388	0.0135	0.0140	0.0138	0.0093	0.0120
431.5	0.0349	0.1707	0.1594	0.0326	0.2386	0.0135	0.0140	0.0137	0.0093	0.0120
432	0.0352	0.1693	0.1606	0.0330	0.2399	0.0135	0.0140	0.0137	0.0093	0.0120
432.5	0.0354	0.1676	0.1619	0.0331	0.2424	0.0135	0.0140	0.0137	0.0093	0.0120
433	0.0353	0.1664	0.1628	0.0329	0.2449	0.0136	0.0140	0.0137	0.0093	0.0120
433.5	0.0351	0.1663	0.1636	0.0323	0.2464	0.0136	0.0140	0.0137	0.0093	0.0120
434	0.0348	0.1673	0.1642	0.0318	0.2462	0.0136	0.0140	0.0137	0.0093	0.0120
434.5	0.0345	0.1687	0.1647	0.0315	0.2444	0.0136	0.0141	0.0137	0.0093	0.0120
435	0.0343	0.1700	0.1655	0.0315	0.2418	0.0136	0.0141	0.0136	0.0093	0.0120
435.5	0.0341	0.1705	0.1665	0.0319	0.2395	0.0135	0.0141	0.0136	0.0093	0.0119
436	0.0342	0.1704	0.1680	0.0324	0.2389	0.0135	0.0141	0.0136	0.0092	0.0119
436.5	0.0346	0.1696	0.1695	0.0326	0.2399	0.0135	0.0141	0.0136	0.0092	0.0119
437	0.0351	0.1686	0.1703	0.0324	0.2421	0.0135	0.0141	0.0136	0.0092	0.0119
437.5	0.0356	0.1681	0.1706	0.0319	0.2446	0.0136	0.0142	0.0136	0.0092	0.0119
438	0.0359	0.1686	0.1708	0.0312	0.2462	0.0136	0.0142	0.0136	0.0092	0.0119
438.5	0.0360	0.1696	0.1708	0.0306	0.2460	0.0136	0.0142	0.0136	0.0092	0.0119
439	0.0358	0.1710	0.1712	0.0304	0.2443	0.0136	0.0142	0.0136	0.0092	0.0120
439.5	0.0355	0.1723	0.1723	0.0306	0.2416	0.0136	0.0142	0.0136	0.0092	0.0120
440	0.0351	0.1727	0.1740	0.0308	0.2390	0.0137	0.0142	0.0136	0.0092	0.0120
440.5	0.0348	0.1720	0.1756	0.0310	0.2376	0.0137	0.0142	0.0136	0.0092	0.0120
441	0.0349	0.1708	0.1769	0.0311	0.2382	0.0137	0.0142	0.0136	0.0092	0.0120
441.5	0.0352	0.1693	0.1775	0.0309	0.2403	0.0137	0.0142	0.0136	0.0092	0.0120
442	0.0356	0.1685	0.1772	0.0304	0.2432	0.0137	0.0142	0.0136	0.0092	0.0120
442.5	0.0360	0.1686	0.1766	0.0300	0.2456	0.0137	0.0142	0.0136	0.0092	0.0120
443	0.0360	0.1694	0.1764	0.0297	0.2465	0.0137	0.0142	0.0136	0.0092	0.0119
443.5	0.0358	0.1704	0.1772	0.0296	0.2454	0.0137	0.0142	0.0136	0.0092	0.0119
444	0.0354	0.1710	0.1786	0.0298	0.2429	0.0137	0.0143	0.0136	0.0092	0.0119
444.5	0.0352	0.1710	0.1804	0.0302	0.2401	0.0137	0.0143	0.0135	0.0092	0.0119
445	0.0353	0.1703	0.1819	0.0306	0.2379	0.0137	0.0143	0.0135	0.0092	0.0119
445.5	0.0356	0.1695	0.1825	0.0309	0.2374	0.0137	0.0143	0.0135	0.0092	0.0119
446	0.0361	0.1690	0.1823	0.0309	0.2391	0.0137	0.0143	0.0135	0.0092	0.0119
446.5	0.0367	0.1691	0.1817	0.0306	0.2423	0.0138	0.0143	0.0135	0.0092	0.0119
447	0.0371	0.1699	0.1810	0.0302	0.2455	0.0138	0.0144	0.0135	0.0092	0.0119
447.5	0.0372	0.1712	0.1809	0.0297	0.2476	0.0138	0.0144	0.0135	0.0092	0.0120
448	0.0370	0.1725	0.1817	0.0294	0.2478	0.0139	0.0144	0.0135	0.0092	0.0120
448.5	0.0366	0.1735	0.1832	0.0293	0.2458	0.0139	0.0144	0.0135	0.0092	0.0120
449	0.0362	0.1740	0.1850	0.0293	0.2426	0.0139	0.0144	0.0135	0.0092	0.0119
449.5	0.0360	0.1739	0.1864	0.0295	0.2393	0.0139	0.0144	0.0135	0.0092	0.0119
450	0.0361	0.1734	0.1869	0.0296	0.2372	0.0139	0.0144	0.0135	0.0091	0.0119
450.5	0.0367	0.1729	0.1862	0.0296	0.2372	0.0139	0.0144	0.0135	0.0091	0.0119

451	0.0373	0.1725	0.1845	0.0295	0.2391	0.0139	0.0144	0.0135	0.0091	0.0119
451.5	0.0378	0.1726	0.1825	0.0292	0.2425	0.0139	0.0143	0.0135	0.0091	0.0119
452	0.0382	0.1731	0.1811	0.0288	0.2458	0.0139	0.0143	0.0135	0.0091	0.0119
452.5	0.0384	0.1739	0.1808	0.0287	0.2480	0.0139	0.0143	0.0134	0.0091	0.0119
453	0.0383	0.1746	0.1815	0.0289	0.2485	0.0139	0.0143	0.0134	0.0091	0.0119
453.5	0.0383	0.1750	0.1828	0.0292	0.2471	0.0139	0.0142	0.0134	0.0091	0.0119
454	0.0382	0.1750	0.1840	0.0295	0.2443	0.0139	0.0143	0.0134	0.0091	0.0119
454.5	0.0382	0.1747	0.1844	0.0297	0.2410	0.0140	0.0143	0.0134	0.0091	0.0119
455	0.0385	0.1743	0.1835	0.0297	0.2385	0.0140	0.0143	0.0134	0.0091	0.0120
455.5	0.0392	0.1742	0.1816	0.0295	0.2376	0.0140	0.0143	0.0133	0.0090	0.0120
456	0.0402	0.1746	0.1792	0.0290	0.2387	0.0140	0.0144	0.0133	0.0090	0.0119
456.5	0.0415	0.1754	0.1772	0.0286	0.2415	0.0141	0.0144	0.0133	0.0090	0.0119
457	0.0427	0.1764	0.1761	0.0283	0.2449	0.0141	0.0144	0.0132	0.0090	0.0119
457.5	0.0434	0.1770	0.1763	0.0282	0.2475	0.0141	0.0144	0.0132	0.0090	0.0119
458	0.0437	0.1772	0.1774	0.0283	0.2486	0.0141	0.0144	0.0132	0.0090	0.0119
458.5	0.0438	0.1770	0.1789	0.0285	0.2479	0.0142	0.0144	0.0132	0.0090	0.0119
459	0.0440	0.1766	0.1797	0.0287	0.2454	0.0142	0.0144	0.0132	0.0090	0.0119
459.5	0.0443	0.1762	0.1793	0.0290	0.2422	0.0142	0.0144	0.0132	0.0090	0.0119
460	0.0448	0.1762	0.1776	0.0291	0.2395	0.0143	0.0144	0.0132	0.0090	0.0119
460.5	0.0457	0.1769	0.1749	0.0291	0.2381	0.0143	0.0144	0.0132	0.0091	0.0119
461	0.0468	0.1780	0.1719	0.0290	0.2387	0.0143	0.0143	0.0131	0.0091	0.0119
461.5	0.0481	0.1792	0.1697	0.0288	0.2410	0.0143	0.0143	0.0131	0.0090	0.0119
462	0.0494	0.1804	0.1687	0.0286	0.2442	0.0143	0.0143	0.0131	0.0090	0.0119
462.5	0.0505	0.1810	0.1692	0.0286	0.2475	0.0143	0.0143	0.0131	0.0090	0.0119
463	0.0511	0.1808	0.1705	0.0287	0.2500	0.0143	0.0144	0.0131	0.0090	0.0120
463.5	0.0512	0.1799	0.1717	0.0290	0.2507	0.0143	0.0144	0.0130	0.0090	0.0120
464	0.0511	0.1788	0.1722	0.0291	0.2493	0.0143	0.0144	0.0130	0.0090	0.0120
464.5	0.0511	0.1779	0.1711	0.0292	0.2463	0.0143	0.0145	0.0130	0.0090	0.0120
465	0.0517	0.1777	0.1684	0.0290	0.2426	0.0143	0.0145	0.0129	0.0090	0.0120
465.5	0.0528	0.1785	0.1643	0.0287	0.2394	0.0144	0.0145	0.0129	0.0090	0.0120
466	0.0544	0.1802	0.1603	0.0284	0.2380	0.0144	0.0145	0.0129	0.0090	0.0119
466.5	0.0561	0.1820	0.1571	0.0282	0.2389	0.0144	0.0145	0.0129	0.0090	0.0119
467	0.0577	0.1834	0.1556	0.0281	0.2416	0.0144	0.0145	0.0128	0.0090	0.0119
467.5	0.0591	0.1840	0.1557	0.0282	0.2454	0.0144	0.0145	0.0128	0.0090	0.0120
468	0.0600	0.1836	0.1570	0.0284	0.2488	0.0144	0.0145	0.0128	0.0090	0.0120
468.5	0.0606	0.1822	0.1582	0.0286	0.2507	0.0145	0.0145	0.0128	0.0090	0.0120
469	0.0612	0.1806	0.1585	0.0288	0.2508	0.0145	0.0145	0.0128	0.0090	0.0120
469.5	0.0619	0.1792	0.1570	0.0289	0.2488	0.0145	0.0145	0.0128	0.0090	0.0119
470	0.0628	0.1787	0.1536	0.0288	0.2455	0.0146	0.0145	0.0127	0.0090	0.0119
470.5	0.0642	0.1796	0.1488	0.0286	0.2420	0.0146	0.0145	0.0127	0.0090	0.0119
471	0.0661	0.1817	0.1437	0.0284	0.2393	0.0146	0.0145	0.0127	0.0090	0.0119
471.5	0.0683	0.1843	0.1394	0.0283	0.2380	0.0147	0.0144	0.0126	0.0090	0.0119
472	0.0704	0.1865	0.1368	0.0282	0.2387	0.0147	0.0144	0.0126	0.0090	0.0119
472.5	0.0724	0.1879	0.1361	0.0282	0.2412	0.0148	0.0144	0.0126	0.0090	0.0119
473	0.0739	0.1880	0.1370	0.0284	0.2448	0.0148	0.0144	0.0126	0.0090	0.0119
473.5	0.0749	0.1871	0.1383	0.0286	0.2484	0.0149	0.0144	0.0125	0.0090	0.0119
474	0.0754	0.1854	0.1389	0.0287	0.2509	0.0150	0.0144	0.0125	0.0090	0.0119
474.5	0.0760	0.1835	0.1379	0.0287	0.2516	0.0150	0.0144	0.0125	0.0090	0.0119
475	0.0768	0.1821	0.1346	0.0285	0.2502	0.0151	0.0144	0.0125	0.0090	0.0120
475.5	0.0783	0.1818	0.1294	0.0283	0.2473	0.0152	0.0144	0.0125	0.0090	0.0120
476	0.0805	0.1828	0.1235	0.0280	0.2438	0.0152	0.0144	0.0124	0.0090	0.0120
476.5	0.0832	0.1848	0.1182	0.0278	0.2409	0.0153	0.0144	0.0124	0.0090	0.0120
477	0.0861	0.1872	0.1145	0.0277	0.2395	0.0153	0.0144	0.0124	0.0090	0.0119
477.5	0.0888	0.1890	0.1129	0.0278	0.2400	0.0153	0.0144	0.0123	0.0090	0.0119
478	0.0909	0.1896	0.1130	0.0279	0.2421	0.0154	0.0143	0.0123	0.0090	0.0119
478.5	0.0923	0.1887	0.1140	0.0280	0.2451	0.0154	0.0143	0.0122	0.0090	0.0118
479	0.0930	0.1864	0.1149	0.0280	0.2482	0.0155	0.0143	0.0122	0.0090	0.0118

479.5	0.0934	0.1832	0.1144	0.0279	0.2503	0.0155	0.0143	0.0121	0.0090	0.0118
480	0.0937	0.1803	0.1120	0.0277	0.2509	0.0156	0.0143	0.0121	0.0090	0.0118
480.5	0.0947	0.1786	0.1076	0.0274	0.2499	0.0156	0.0142	0.0120	0.0090	0.0117
481	0.0966	0.1788	0.1021	0.0271	0.2473	0.0157	0.0142	0.0120	0.0090	0.0117
481.5	0.0996	0.1811	0.0965	0.0269	0.2442	0.0157	0.0142	0.0119	0.0090	0.0117
482	0.1032	0.1845	0.0920	0.0268	0.2411	0.0158	0.0142	0.0119	0.0090	0.0118
482.5	0.1071	0.1880	0.0892	0.0269	0.2389	0.0159	0.0142	0.0119	0.0090	0.0118
483	0.1105	0.1905	0.0883	0.0272	0.2380	0.0159	0.0142	0.0119	0.0090	0.0118
483.5	0.1130	0.1913	0.0889	0.0275	0.2388	0.0159	0.0142	0.0119	0.0090	0.0118
484	0.1144	0.1901	0.0900	0.0278	0.2411	0.0160	0.0141	0.0118	0.0089	0.0118
484.5	0.1149	0.1874	0.0908	0.0280	0.2442	0.0160	0.0141	0.0118	0.0089	0.0118
485	0.1151	0.1838	0.0903	0.0281	0.2476	0.0161	0.0141	0.0118	0.0089	0.0118
485.5	0.1154	0.1802	0.0881	0.0279	0.2502	0.0161	0.0141	0.0117	0.0089	0.0118
486	0.1165	0.1776	0.0843	0.0276	0.2512	0.0162	0.0141	0.0117	0.0089	0.0118
486.5	0.1188	0.1766	0.0795	0.0273	0.2505	0.0163	0.0142	0.0117	0.0089	0.0118
487	0.1220	0.1775	0.0746	0.0270	0.2482	0.0163	0.0142	0.0117	0.0089	0.0118
487.5	0.1258	0.1801	0.0705	0.0268	0.2452	0.0164	0.0141	0.0116	0.0089	0.0118
488	0.1297	0.1836	0.0679	0.0269	0.2422	0.0164	0.0141	0.0116	0.0089	0.0118
488.5	0.1331	0.1871	0.0669	0.0273	0.2398	0.0164	0.0141	0.0115	0.0089	0.0118
489	0.1355	0.1895	0.0672	0.0277	0.2388	0.0164	0.0141	0.0115	0.0088	0.0118
489.5	0.1367	0.1898	0.0681	0.0282	0.2392	0.0165	0.0141	0.0114	0.0088	0.0118
490	0.1367	0.1876	0.0688	0.0285	0.2409	0.0165	0.0141	0.0114	0.0088	0.0118
490.5	0.1360	0.1833	0.0686	0.0286	0.2437	0.0165	0.0140	0.0113	0.0088	0.0118
491	0.1354	0.1779	0.0670	0.0284	0.2468	0.0165	0.0140	0.0113	0.0088	0.0117
491.5	0.1356	0.1730	0.0640	0.0279	0.2493	0.0166	0.0140	0.0113	0.0088	0.0117
492	0.1373	0.1700	0.0602	0.0273	0.2506	0.0166	0.0141	0.0112	0.0088	0.0117
492.5	0.1405	0.1697	0.0564	0.0268	0.2504	0.0167	0.0141	0.0112	0.0088	0.0117
493	0.1449	0.1719	0.0530	0.0264	0.2486	0.0167	0.0141	0.0112	0.0088	0.0117
493.5	0.1498	0.1760	0.0508	0.0264	0.2457	0.0168	0.0141	0.0112	0.0088	0.0117
494	0.1544	0.1807	0.0499	0.0268	0.2426	0.0168	0.0141	0.0111	0.0088	0.0117
494.5	0.1579	0.1846	0.0501	0.0275	0.2402	0.0168	0.0140	0.0111	0.0087	0.0117
495	0.1599	0.1867	0.0508	0.0282	0.2392	0.0168	0.0140	0.0111	0.0087	0.0117
495.5	0.1602	0.1862	0.0515	0.0289	0.2400	0.0169	0.0140	0.0110	0.0087	0.0117
496	0.1591	0.1830	0.0515	0.0294	0.2422	0.0169	0.0140	0.0110	0.0087	0.0117
496.5	0.1574	0.1778	0.0505	0.0294	0.2449	0.0169	0.0139	0.0110	0.0087	0.0117
497	0.1560	0.1720	0.0487	0.0290	0.2477	0.0169	0.0139	0.0109	0.0087	0.0117
497.5	0.1558	0.1669	0.0463	0.0284	0.2498	0.0169	0.0139	0.0109	0.0087	0.0118
498	0.1574	0.1635	0.0438	0.0276	0.2509	0.0169	0.0139	0.0109	0.0087	0.0118
498.5	0.1608	0.1624	0.0415	0.0269	0.2507	0.0170	0.0139	0.0108	0.0088	0.0118
499	0.1656	0.1637	0.0400	0.0264	0.2495	0.0170	0.0139	0.0108	0.0088	0.0119
499.5	0.1709	0.1669	0.0392	0.0264	0.2472	0.0171	0.0139	0.0107	0.0088	0.0119
500	0.1756	0.1711	0.0392	0.0268	0.2446	0.0171	0.0139	0.0107	0.0088	0.0119
500.5	0.1790	0.1751	0.0395	0.0275	0.2425	0.0171	0.0139	0.0106	0.0088	0.0119
501	0.1804	0.1776	0.0398	0.0284	0.2414	0.0171	0.0139	0.0106	0.0088	0.0119
501.5	0.1798	0.1774	0.0398	0.0293	0.2415	0.0172	0.0138	0.0105	0.0088	0.0118
502	0.1779	0.1744	0.0392	0.0299	0.2427	0.0172	0.0138	0.0105	0.0087	0.0118
502.5	0.1753	0.1689	0.0381	0.0300	0.2445	0.0171	0.0138	0.0104	0.0087	0.0118
503	0.1731	0.1623	0.0368	0.0297	0.2464	0.0171	0.0138	0.0104	0.0087	0.0118
503.5	0.1721	0.1562	0.0353	0.0290	0.2482	0.0171	0.0137	0.0103	0.0087	0.0118
504	0.1731	0.1519	0.0341	0.0280	0.2496	0.0171	0.0137	0.0103	0.0087	0.0118
504.5	0.1762	0.1502	0.0333	0.0271	0.2502	0.0171	0.0137	0.0102	0.0087	0.0118
505	0.1810	0.1513	0.0330	0.0264	0.2499	0.0171	0.0137	0.0102	0.0087	0.0118
505.5	0.1865	0.1547	0.0330	0.0261	0.2488	0.0171	0.0137	0.0102	0.0087	0.0118
506	0.1915	0.1592	0.0334	0.0263	0.2469	0.0171	0.0137	0.0102	0.0087	0.0118
506.5	0.1952	0.1635	0.0337	0.0271	0.2451	0.0171	0.0137	0.0102	0.0087	0.0118
507	0.1969	0.1664	0.0337	0.0282	0.2438	0.0171	0.0136	0.0101	0.0087	0.0118
507.5	0.1965	0.1669	0.0335	0.0294	0.2433	0.0171	0.0136	0.0101	0.0087	0.0118

508	0.1942	0.1647	0.0329	0.0304	0.2436	0.0172	0.0136	0.0101	0.0087	0.0118
508.5	0.1909	0.1599	0.0320	0.0309	0.2446	0.0172	0.0136	0.0100	0.0087	0.0118
509	0.1876	0.1534	0.0312	0.0309	0.2461	0.0173	0.0136	0.0100	0.0087	0.0118
509.5	0.1855	0.1464	0.0306	0.0303	0.2479	0.0173	0.0136	0.0100	0.0087	0.0118
510	0.1853	0.1403	0.0302	0.0293	0.2497	0.0173	0.0135	0.0099	0.0087	0.0118
510.5	0.1873	0.1361	0.0302	0.0281	0.2511	0.0173	0.0135	0.0099	0.0087	0.0119
511	0.1912	0.1346	0.0304	0.0270	0.2516	0.0173	0.0135	0.0098	0.0087	0.0119
511.5	0.1963	0.1361	0.0307	0.0262	0.2511	0.0173	0.0135	0.0098	0.0087	0.0119
512	0.2014	0.1396	0.0311	0.0260	0.2498	0.0173	0.0135	0.0098	0.0087	0.0119
512.5	0.2057	0.1442	0.0313	0.0264	0.2483	0.0173	0.0135	0.0098	0.0088	0.0119
513	0.2083	0.1485	0.0314	0.0275	0.2467	0.0173	0.0135	0.0098	0.0088	0.0119
513.5	0.2087	0.1512	0.0311	0.0289	0.2458	0.0173	0.0135	0.0098	0.0088	0.0120
514	0.2070	0.1512	0.0307	0.0303	0.2456	0.0173	0.0135	0.0097	0.0088	0.0120
514.5	0.2035	0.1483	0.0300	0.0315	0.2464	0.0173	0.0135	0.0097	0.0088	0.0120
515	0.1992	0.1427	0.0293	0.0321	0.2477	0.0173	0.0135	0.0097	0.0088	0.0120
515.5	0.1951	0.1354	0.0288	0.0320	0.2494	0.0173	0.0135	0.0096	0.0088	0.0120
516	0.1924	0.1277	0.0286	0.0312	0.2512	0.0172	0.0134	0.0096	0.0088	0.0120
516.5	0.1920	0.1212	0.0287	0.0300	0.2526	0.0172	0.0134	0.0095	0.0088	0.0120
517	0.1941	0.1170	0.0290	0.0285	0.2532	0.0171	0.0134	0.0095	0.0087	0.0119
517.5	0.1983	0.1156	0.0295	0.0271	0.2531	0.0171	0.0134	0.0094	0.0087	0.0119
518	0.2038	0.1172	0.0300	0.0260	0.2522	0.0170	0.0133	0.0094	0.0087	0.0119
518.5	0.2093	0.1209	0.0303	0.0256	0.2508	0.0170	0.0133	0.0094	0.0088	0.0119
519	0.2137	0.1256	0.0303	0.0259	0.2489	0.0169	0.0133	0.0094	0.0088	0.0119
519.5	0.2160	0.1301	0.0301	0.0269	0.2471	0.0169	0.0133	0.0094	0.0088	0.0119
520	0.2157	0.1330	0.0296	0.0285	0.2457	0.0169	0.0133	0.0094	0.0088	0.0119
520.5	0.2128	0.1334	0.0291	0.0302	0.2451	0.0169	0.0134	0.0094	0.0088	0.0120
521	0.2080	0.1308	0.0285	0.0318	0.2450	0.0169	0.0133	0.0094	0.0088	0.0120
521.5	0.2021	0.1254	0.0279	0.0328	0.2456	0.0169	0.0133	0.0093	0.0088	0.0119
522	0.1967	0.1180	0.0276	0.0331	0.2467	0.0168	0.0133	0.0093	0.0088	0.0119
522.5	0.1930	0.1099	0.0275	0.0326	0.2481	0.0168	0.0132	0.0093	0.0088	0.0119
523	0.1918	0.1026	0.0277	0.0314	0.2495	0.0167	0.0132	0.0092	0.0088	0.0119
523.5	0.1933	0.0973	0.0281	0.0298	0.2507	0.0166	0.0131	0.0092	0.0087	0.0118
524	0.1973	0.0945	0.0287	0.0282	0.2516	0.0166	0.0131	0.0091	0.0087	0.0118
524.5	0.2029	0.0944	0.0292	0.0268	0.2517	0.0166	0.0130	0.0091	0.0087	0.0118
525	0.2090	0.0964	0.0296	0.0259	0.2510	0.0165	0.0130	0.0091	0.0087	0.0118
525.5	0.2143	0.0998	0.0297	0.0257	0.2495	0.0165	0.0130	0.0091	0.0088	0.0119
526	0.2176	0.1034	0.0296	0.0264	0.2476	0.0165	0.0130	0.0091	0.0088	0.0119
526.5	0.2178	0.1062	0.0292	0.0278	0.2453	0.0165	0.0130	0.0092	0.0088	0.0119
527	0.2150	0.1074	0.0286	0.0297	0.2432	0.0165	0.0130	0.0091	0.0088	0.0119
527.5	0.2098	0.1062	0.0280	0.0316	0.2421	0.0164	0.0130	0.0091	0.0088	0.0119
528	0.2035	0.1027	0.0275	0.0333	0.2424	0.0164	0.0130	0.0091	0.0088	0.0120
528.5	0.1977	0.0974	0.0272	0.0343	0.2441	0.0164	0.0130	0.0091	0.0089	0.0120
529	0.1936	0.0911	0.0272	0.0345	0.2468	0.0164	0.0130	0.0091	0.0089	0.0120
529.5	0.1920	0.0847	0.0274	0.0339	0.2500	0.0164	0.0131	0.0091	0.0089	0.0120
530	0.1930	0.0794	0.0277	0.0325	0.2529	0.0164	0.0131	0.0091	0.0089	0.0120
530.5	0.1965	0.0757	0.0282	0.0307	0.2552	0.0163	0.0131	0.0091	0.0089	0.0120
531	0.2018	0.0741	0.0288	0.0289	0.2564	0.0163	0.0131	0.0091	0.0090	0.0120
531.5	0.2078	0.0745	0.0293	0.0273	0.2565	0.0163	0.0131	0.0091	0.0090	0.0121
532	0.2134	0.0765	0.0296	0.0262	0.2552	0.0162	0.0131	0.0091	0.0090	0.0121
532.5	0.2171	0.0792	0.0297	0.0260	0.2528	0.0161	0.0130	0.0090	0.0090	0.0120
533	0.2183	0.0818	0.0295	0.0266	0.2499	0.0161	0.0130	0.0090	0.0090	0.0120
533.5	0.2168	0.0835	0.0291	0.0281	0.2469	0.0160	0.0130	0.0090	0.0090	0.0120
534	0.2128	0.0838	0.0286	0.0300	0.2446	0.0160	0.0130	0.0089	0.0090	0.0120
534.5	0.2071	0.0823	0.0281	0.0320	0.2432	0.0160	0.0130	0.0089	0.0090	0.0120
535	0.2008	0.0793	0.0276	0.0337	0.2432	0.0160	0.0131	0.0089	0.0090	0.0120
535.5	0.1950	0.0751	0.0273	0.0348	0.2446	0.0160	0.0131	0.0089	0.0090	0.0121
536	0.1907	0.0703	0.0272	0.0351	0.2472	0.0160	0.0131	0.0089	0.0091	0.0121

536.5	0.1889	0.0656	0.0275	0.0345	0.2505	0.0160	0.0132	0.0089	0.0091	0.0121
537	0.1900	0.0617	0.0280	0.0333	0.2541	0.0160	0.0132	0.0089	0.0092	0.0122
537.5	0.1937	0.0589	0.0287	0.0315	0.2572	0.0160	0.0132	0.0089	0.0092	0.0122
538	0.1993	0.0575	0.0294	0.0295	0.2593	0.0160	0.0132	0.0089	0.0092	0.0122
538.5	0.2054	0.0575	0.0300	0.0277	0.2600	0.0160	0.0132	0.0089	0.0093	0.0122
539	0.2108	0.0586	0.0303	0.0264	0.2593	0.0159	0.0131	0.0089	0.0093	0.0122
539.5	0.2143	0.0603	0.0304	0.0260	0.2574	0.0159	0.0131	0.0088	0.0092	0.0122
540	0.2153	0.0623	0.0302	0.0265	0.2546	0.0158	0.0130	0.0088	0.0092	0.0122
540.5	0.2135	0.0638	0.0298	0.0276	0.2514	0.0158	0.0130	0.0087	0.0092	0.0121
541	0.2092	0.0646	0.0292	0.0293	0.2483	0.0157	0.0130	0.0087	0.0092	0.0121
541.5	0.2030	0.0643	0.0285	0.0311	0.2457	0.0157	0.0129	0.0087	0.0092	0.0121
542	0.1959	0.0627	0.0279	0.0328	0.2442	0.0157	0.0129	0.0086	0.0092	0.0121
542.5	0.1891	0.0600	0.0275	0.0341	0.2442	0.0156	0.0129	0.0086	0.0093	0.0121
543	0.1839	0.0567	0.0273	0.0346	0.2458	0.0156	0.0129	0.0086	0.0093	0.0121
543.5	0.1809	0.0530	0.0275	0.0344	0.2487	0.0156	0.0129	0.0086	0.0093	0.0121
544	0.1808	0.0496	0.0279	0.0333	0.2525	0.0156	0.0129	0.0086	0.0093	0.0121
544.5	0.1834	0.0470	0.0285	0.0316	0.2564	0.0156	0.0129	0.0086	0.0093	0.0121
545	0.1880	0.0454	0.0293	0.0296	0.2597	0.0156	0.0129	0.0086	0.0093	0.0121
545.5	0.1937	0.0448	0.0300	0.0278	0.2620	0.0156	0.0129	0.0086	0.0093	0.0121
546	0.1995	0.0452	0.0306	0.0263	0.2631	0.0156	0.0129	0.0086	0.0093	0.0121
546.5	0.2041	0.0463	0.0309	0.0254	0.2626	0.0155	0.0129	0.0086	0.0093	0.0121
547	0.2066	0.0478	0.0308	0.0252	0.2605	0.0155	0.0129	0.0086	0.0093	0.0121
547.5	0.2064	0.0491	0.0304	0.0256	0.2571	0.0155	0.0129	0.0086	0.0093	0.0121
548	0.2031	0.0501	0.0298	0.0266	0.2531	0.0154	0.0128	0.0085	0.0093	0.0121
548.5	0.1974	0.0504	0.0291	0.0280	0.2491	0.0154	0.0128	0.0085	0.0093	0.0121
549	0.1901	0.0501	0.0284	0.0296	0.2459	0.0153	0.0128	0.0085	0.0093	0.0121
549.5	0.1825	0.0490	0.0279	0.0310	0.2440	0.0153	0.0128	0.0085	0.0094	0.0121
550	0.1759	0.0473	0.0277	0.0321	0.2438	0.0153	0.0128	0.0085	0.0094	0.0121
550.5	0.1713	0.0452	0.0278	0.0326	0.2453	0.0153	0.0128	0.0085	0.0094	0.0122
551	0.1692	0.0430	0.0282	0.0324	0.2481	0.0152	0.0128	0.0086	0.0095	0.0122
551.5	0.1696	0.0410	0.0288	0.0316	0.2519	0.0152	0.0128	0.0086	0.0095	0.0122
552	0.1724	0.0394	0.0295	0.0303	0.2559	0.0152	0.0128	0.0086	0.0096	0.0122
552.5	0.1770	0.0384	0.0302	0.0288	0.2595	0.0152	0.0128	0.0086	0.0096	0.0122
553	0.1826	0.0380	0.0308	0.0272	0.2622	0.0151	0.0128	0.0086	0.0096	0.0122
553.5	0.1882	0.0383	0.0311	0.0258	0.2637	0.0151	0.0128	0.0086	0.0097	0.0123
554	0.1925	0.0391	0.0312	0.0247	0.2639	0.0151	0.0128	0.0086	0.0097	0.0123
554.5	0.1947	0.0402	0.0311	0.0242	0.2627	0.0150	0.0128	0.0086	0.0097	0.0123
555	0.1941	0.0413	0.0306	0.0242	0.2602	0.0150	0.0127	0.0086	0.0097	0.0123
555.5	0.1904	0.0422	0.0299	0.0248	0.2566	0.0149	0.0127	0.0085	0.0097	0.0123
556	0.1842	0.0427	0.0291	0.0258	0.2522	0.0149	0.0127	0.0085	0.0098	0.0123
556.5	0.1768	0.0428	0.0284	0.0271	0.2478	0.0148	0.0126	0.0085	0.0098	0.0123
557	0.1691	0.0423	0.0279	0.0284	0.2443	0.0148	0.0126	0.0085	0.0098	0.0123
557.5	0.1623	0.0415	0.0276	0.0296	0.2419	0.0148	0.0126	0.0085	0.0098	0.0123
558	0.1570	0.0403	0.0276	0.0305	0.2412	0.0148	0.0126	0.0085	0.0098	0.0123
558.5	0.1540	0.0390	0.0280	0.0310	0.2424	0.0148	0.0126	0.0086	0.0099	0.0123
559	0.1534	0.0377	0.0286	0.0310	0.2452	0.0148	0.0126	0.0086	0.0099	0.0124
559.5	0.1550	0.0365	0.0293	0.0305	0.2494	0.0148	0.0127	0.0086	0.0099	0.0124
560	0.1586	0.0357	0.0300	0.0296	0.2543	0.0148	0.0127	0.0086	0.0100	0.0124
560.5	0.1634	0.0351	0.0307	0.0285	0.2593	0.0148	0.0128	0.0087	0.0100	0.0124
561	0.1685	0.0350	0.0312	0.0272	0.2636	0.0148	0.0128	0.0087	0.0100	0.0124
561.5	0.1727	0.0352	0.0314	0.0260	0.2668	0.0148	0.0128	0.0087	0.0101	0.0124
562	0.1752	0.0357	0.0313	0.0251	0.2685	0.0147	0.0128	0.0087	0.0101	0.0124
562.5	0.1755	0.0363	0.0309	0.0246	0.2687	0.0147	0.0128	0.0087	0.0101	0.0124
563	0.1732	0.0370	0.0303	0.0245	0.2671	0.0147	0.0127	0.0087	0.0102	0.0124
563.5	0.1687	0.0376	0.0297	0.0249	0.2641	0.0147	0.0127	0.0087	0.0102	0.0124
564	0.1626	0.0380	0.0290	0.0257	0.2601	0.0147	0.0127	0.0087	0.0102	0.0124
564.5	0.1556	0.0382	0.0285	0.0268	0.2557	0.0146	0.0128	0.0088	0.0102	0.0123

565	0.1485	0.0381	0.0282	0.0281	0.2515	0.0146	0.0128	0.0088	0.0103	0.0124
565.5	0.1422	0.0377	0.0282	0.0293	0.2481	0.0146	0.0128	0.0088	0.0103	0.0124
566	0.1374	0.0370	0.0284	0.0304	0.2459	0.0146	0.0128	0.0088	0.0103	0.0124
566.5	0.1346	0.0362	0.0288	0.0311	0.2453	0.0146	0.0128	0.0088	0.0104	0.0124
567	0.1338	0.0352	0.0295	0.0314	0.2463	0.0145	0.0128	0.0088	0.0104	0.0123
567.5	0.1351	0.0345	0.0302	0.0312	0.2491	0.0145	0.0128	0.0088	0.0104	0.0123
568	0.1381	0.0339	0.0308	0.0307	0.2533	0.0145	0.0128	0.0089	0.0104	0.0123
568.5	0.1418	0.0336	0.0314	0.0299	0.2583	0.0145	0.0128	0.0089	0.0105	0.0123
569	0.1457	0.0335	0.0317	0.0290	0.2630	0.0144	0.0128	0.0089	0.0105	0.0123
569.5	0.1488	0.0335	0.0318	0.0280	0.2670	0.0144	0.0128	0.0089	0.0105	0.0123
570	0.1507	0.0337	0.0317	0.0271	0.2698	0.0144	0.0128	0.0090	0.0105	0.0123
570.5	0.1507	0.0340	0.0312	0.0263	0.2710	0.0144	0.0127	0.0090	0.0106	0.0123
571	0.1486	0.0344	0.0307	0.0259	0.2708	0.0144	0.0127	0.0091	0.0106	0.0123
571.5	0.1445	0.0349	0.0300	0.0259	0.2690	0.0144	0.0127	0.0091	0.0107	0.0124
572	0.1387	0.0352	0.0294	0.0264	0.2657	0.0144	0.0127	0.0092	0.0107	0.0124
572.5	0.1320	0.0355	0.0288	0.0272	0.2611	0.0144	0.0127	0.0092	0.0108	0.0124
573	0.1252	0.0356	0.0284	0.0285	0.2558	0.0143	0.0127	0.0093	0.0109	0.0125
573.5	0.1192	0.0355	0.0284	0.0300	0.2507	0.0143	0.0127	0.0093	0.0110	0.0125
574	0.1146	0.0352	0.0286	0.0316	0.2465	0.0143	0.0127	0.0094	0.0110	0.0125
574.5	0.1118	0.0348	0.0290	0.0331	0.2439	0.0142	0.0127	0.0094	0.0111	0.0126
575	0.1108	0.0344	0.0296	0.0345	0.2431	0.0142	0.0127	0.0094	0.0112	0.0126
575.5	0.1115	0.0340	0.0304	0.0356	0.2444	0.0142	0.0127	0.0095	0.0113	0.0127
576	0.1137	0.0336	0.0312	0.0363	0.2477	0.0141	0.0128	0.0095	0.0113	0.0127
576.5	0.1169	0.0334	0.0319	0.0366	0.2526	0.0141	0.0128	0.0096	0.0114	0.0127
577	0.1204	0.0334	0.0325	0.0365	0.2584	0.0141	0.0128	0.0097	0.0115	0.0128
577.5	0.1234	0.0334	0.0330	0.0361	0.2645	0.0141	0.0129	0.0097	0.0116	0.0128
578	0.1254	0.0336	0.0332	0.0354	0.2698	0.0140	0.0129	0.0098	0.0116	0.0129
578.5	0.1258	0.0337	0.0331	0.0348	0.2737	0.0140	0.0129	0.0098	0.0117	0.0129
579	0.1246	0.0338	0.0327	0.0343	0.2758	0.0139	0.0129	0.0099	0.0117	0.0128
579.5	0.1217	0.0339	0.0322	0.0342	0.2762	0.0139	0.0129	0.0099	0.0118	0.0128
580	0.1175	0.0340	0.0317	0.0347	0.2750	0.0139	0.0129	0.0099	0.0118	0.0128
580.5	0.1123	0.0340	0.0311	0.0358	0.2721	0.0138	0.0129	0.0100	0.0118	0.0128
581	0.1066	0.0341	0.0306	0.0374	0.2676	0.0138	0.0129	0.0100	0.0118	0.0128
581.5	0.1011	0.0340	0.0303	0.0396	0.2619	0.0138	0.0129	0.0101	0.0119	0.0128
582	0.0962	0.0338	0.0302	0.0423	0.2556	0.0138	0.0129	0.0101	0.0119	0.0127
582.5	0.0927	0.0336	0.0304	0.0453	0.2498	0.0138	0.0129	0.0101	0.0120	0.0127
583	0.0907	0.0334	0.0309	0.0485	0.2455	0.0138	0.0129	0.0102	0.0120	0.0128
583.5	0.0903	0.0332	0.0317	0.0516	0.2431	0.0138	0.0130	0.0102	0.0121	0.0128
584	0.0913	0.0330	0.0329	0.0544	0.2430	0.0138	0.0130	0.0103	0.0122	0.0128
584.5	0.0932	0.0329	0.0343	0.0567	0.2449	0.0138	0.0130	0.0103	0.0122	0.0128
585	0.0956	0.0328	0.0360	0.0584	0.2483	0.0138	0.0130	0.0104	0.0123	0.0128
585.5	0.0981	0.0327	0.0377	0.0594	0.2529	0.0138	0.0130	0.0104	0.0123	0.0128
586	0.1003	0.0328	0.0394	0.0601	0.2584	0.0137	0.0130	0.0104	0.0123	0.0128
586.5	0.1019	0.0329	0.0409	0.0606	0.2644	0.0137	0.0130	0.0105	0.0124	0.0128
587	0.1026	0.0330	0.0421	0.0611	0.2705	0.0137	0.0130	0.0106	0.0125	0.0128
587.5	0.1022	0.0332	0.0429	0.0620	0.2758	0.0138	0.0131	0.0106	0.0125	0.0129
588	0.1003	0.0334	0.0432	0.0633	0.2797	0.0137	0.0131	0.0107	0.0126	0.0129
588.5	0.0972	0.0337	0.0430	0.0652	0.2816	0.0137	0.0131	0.0107	0.0126	0.0129
589	0.0932	0.0339	0.0425	0.0680	0.2812	0.0137	0.0131	0.0108	0.0127	0.0130
589.5	0.0888	0.0341	0.0420	0.0716	0.2786	0.0137	0.0131	0.0108	0.0127	0.0130
590	0.0845	0.0342	0.0419	0.0760	0.2740	0.0137	0.0132	0.0108	0.0128	0.0130
590.5	0.0806	0.0342	0.0424	0.0809	0.2679	0.0136	0.0132	0.0109	0.0128	0.0130
591	0.0775	0.0339	0.0438	0.0862	0.2608	0.0136	0.0132	0.0109	0.0128	0.0130
591.5	0.0754	0.0337	0.0464	0.0915	0.2539	0.0136	0.0132	0.0109	0.0128	0.0130
592	0.0745	0.0334	0.0503	0.0965	0.2482	0.0135	0.0131	0.0109	0.0129	0.0130
592.5	0.0748	0.0332	0.0553	0.1009	0.2442	0.0135	0.0131	0.0110	0.0129	0.0130
593	0.0761	0.0332	0.0611	0.1046	0.2426	0.0134	0.0131	0.0110	0.0129	0.0130

593.5	0.0781	0.0333	0.0673	0.1076	0.2435	0.0134	0.0131	0.0110	0.0130	0.0130
594	0.0805	0.0335	0.0734	0.1097	0.2465	0.0134	0.0131	0.0111	0.0131	0.0130
594.5	0.0827	0.0337	0.0788	0.1113	0.2509	0.0134	0.0131	0.0111	0.0131	0.0130
595	0.0845	0.0340	0.0831	0.1127	0.2563	0.0134	0.0131	0.0111	0.0132	0.0131
595.5	0.0856	0.0343	0.0860	0.1141	0.2621	0.0134	0.0131	0.0111	0.0132	0.0131
596	0.0857	0.0344	0.0877	0.1160	0.2677	0.0133	0.0131	0.0111	0.0133	0.0130
596.5	0.0849	0.0346	0.0883	0.1185	0.2729	0.0133	0.0132	0.0112	0.0133	0.0130
597	0.0833	0.0347	0.0883	0.1217	0.2774	0.0133	0.0132	0.0112	0.0134	0.0131
597.5	0.0810	0.0348	0.0882	0.1256	0.2808	0.0134	0.0133	0.0113	0.0135	0.0131
598	0.0781	0.0349	0.0888	0.1302	0.2824	0.0134	0.0133	0.0113	0.0136	0.0132
598.5	0.0748	0.0350	0.0905	0.1350	0.2822	0.0134	0.0134	0.0114	0.0137	0.0132
599	0.0714	0.0349	0.0936	0.1398	0.2796	0.0134	0.0134	0.0114	0.0138	0.0132
599.5	0.0683	0.0346	0.0984	0.1443	0.2750	0.0134	0.0134	0.0114	0.0138	0.0132
600	0.0658	0.0343	0.1048	0.1485	0.2689	0.0133	0.0134	0.0114	0.0138	0.0131
600.5	0.0641	0.0339	0.1127	0.1525	0.2623	0.0133	0.0133	0.0114	0.0138	0.0131
601	0.0635	0.0336	0.1213	0.1560	0.2559	0.0133	0.0133	0.0114	0.0138	0.0130
601.5	0.0637	0.0334	0.1301	0.1588	0.2504	0.0133	0.0133	0.0114	0.0138	0.0130
602	0.0648	0.0333	0.1381	0.1610	0.2465	0.0133	0.0133	0.0115	0.0138	0.0130
602.5	0.0664	0.0334	0.1446	0.1624	0.2444	0.0133	0.0133	0.0115	0.0138	0.0130
603	0.0681	0.0336	0.1494	0.1632	0.2443	0.0133	0.0133	0.0115	0.0138	0.0130
603.5	0.0698	0.0339	0.1521	0.1638	0.2463	0.0132	0.0133	0.0116	0.0138	0.0130
604	0.0711	0.0343	0.1531	0.1646	0.2501	0.0132	0.0133	0.0116	0.0138	0.0130
604.5	0.0719	0.0348	0.1526	0.1662	0.2555	0.0132	0.0133	0.0116	0.0138	0.0130
605	0.0721	0.0353	0.1513	0.1685	0.2619	0.0132	0.0133	0.0117	0.0138	0.0130
605.5	0.0716	0.0357	0.1498	0.1713	0.2685	0.0132	0.0133	0.0117	0.0139	0.0131
606	0.0703	0.0361	0.1485	0.1745	0.2746	0.0133	0.0133	0.0117	0.0139	0.0131
606.5	0.0683	0.0362	0.1479	0.1778	0.2796	0.0133	0.0133	0.0117	0.0140	0.0131
607	0.0658	0.0363	0.1486	0.1809	0.2830	0.0132	0.0133	0.0118	0.0140	0.0132
607.5	0.0629	0.0361	0.1511	0.1837	0.2847	0.0132	0.0132	0.0118	0.0140	0.0132
608	0.0601	0.0359	0.1557	0.1865	0.2847	0.0132	0.0132	0.0118	0.0140	0.0132
608.5	0.0575	0.0355	0.1620	0.1892	0.2830	0.0133	0.0132	0.0119	0.0140	0.0132
609	0.0554	0.0350	0.1697	0.1918	0.2797	0.0133	0.0132	0.0119	0.0140	0.0133
609.5	0.0539	0.0346	0.1779	0.1941	0.2747	0.0133	0.0133	0.0120	0.0141	0.0133
610	0.0532	0.0341	0.1859	0.1961	0.2687	0.0134	0.0133	0.0120	0.0141	0.0133
610.5	0.0532	0.0338	0.1925	0.1975	0.2624	0.0134	0.0133	0.0120	0.0141	0.0133
611	0.0538	0.0336	0.1973	0.1985	0.2566	0.0134	0.0133	0.0121	0.0142	0.0133
611.5	0.0549	0.0336	0.2000	0.1989	0.2518	0.0134	0.0133	0.0121	0.0142	0.0133
612	0.0562	0.0338	0.2004	0.1988	0.2485	0.0134	0.0133	0.0121	0.0142	0.0133
612.5	0.0576	0.0342	0.1988	0.1983	0.2471	0.0134	0.0133	0.0121	0.0142	0.0133
613	0.0589	0.0347	0.1957	0.1981	0.2476	0.0134	0.0133	0.0121	0.0142	0.0133
613.5	0.0600	0.0354	0.1918	0.1983	0.2502	0.0134	0.0133	0.0121	0.0142	0.0133
614	0.0606	0.0362	0.1877	0.1993	0.2547	0.0134	0.0133	0.0122	0.0142	0.0133
614.5	0.0608	0.0370	0.1841	0.2012	0.2606	0.0134	0.0133	0.0122	0.0142	0.0133
615	0.0604	0.0377	0.1817	0.2037	0.2673	0.0134	0.0134	0.0123	0.0143	0.0133
615.5	0.0594	0.0383	0.1807	0.2063	0.2742	0.0135	0.0134	0.0123	0.0143	0.0133
616	0.0578	0.0388	0.1813	0.2087	0.2805	0.0135	0.0134	0.0124	0.0143	0.0133
616.5	0.0559	0.0389	0.1836	0.2107	0.2856	0.0135	0.0135	0.0124	0.0143	0.0133
617	0.0535	0.0387	0.1874	0.2122	0.2890	0.0135	0.0134	0.0124	0.0143	0.0133
617.5	0.0510	0.0383	0.1925	0.2131	0.2908	0.0134	0.0134	0.0124	0.0143	0.0133
618	0.0487	0.0377	0.1984	0.2135	0.2910	0.0134	0.0134	0.0124	0.0143	0.0132
618.5	0.0468	0.0369	0.2046	0.2137	0.2893	0.0134	0.0134	0.0124	0.0142	0.0132
619	0.0454	0.0361	0.2106	0.2137	0.2857	0.0134	0.0135	0.0124	0.0143	0.0133
619.5	0.0447	0.0353	0.2159	0.2135	0.2805	0.0135	0.0135	0.0124	0.0143	0.0133
620	0.0446	0.0346	0.2200	0.2131	0.2740	0.0135	0.0135	0.0124	0.0143	0.0133
620.5	0.0451	0.0340	0.2224	0.2127	0.2670	0.0135	0.0135	0.0125	0.0143	0.0133
621	0.0459	0.0336	0.2230	0.2121	0.2603	0.0136	0.0136	0.0125	0.0144	0.0134
621.5	0.0470	0.0334	0.2216	0.2117	0.2546	0.0136	0.0136	0.0125	0.0144	0.0134

622	0.0484	0.0336	0.2184	0.2118	0.2504	0.0136	0.0136	0.0126	0.0144	0.0134
622.5	0.0498	0.0339	0.2138	0.2124	0.2483	0.0137	0.0136	0.0126	0.0144	0.0134
623	0.0511	0.0345	0.2083	0.2134	0.2482	0.0137	0.0137	0.0126	0.0145	0.0134
623.5	0.0521	0.0352	0.2025	0.2148	0.2502	0.0137	0.0137	0.0126	0.0145	0.0135
624	0.0528	0.0360	0.1976	0.2164	0.2543	0.0138	0.0137	0.0127	0.0145	0.0135
624.5	0.0530	0.0370	0.1941	0.2182	0.2596	0.0138	0.0137	0.0127	0.0145	0.0135
625	0.0527	0.0380	0.1926	0.2199	0.2659	0.0138	0.0137	0.0127	0.0144	0.0136
625.5	0.0520	0.0389	0.1933	0.2215	0.2729	0.0138	0.0137	0.0127	0.0144	0.0136
626	0.0508	0.0397	0.1963	0.2229	0.2799	0.0138	0.0137	0.0127	0.0144	0.0136
626.5	0.0493	0.0403	0.2012	0.2239	0.2864	0.0138	0.0137	0.0127	0.0145	0.0136
627	0.0476	0.0407	0.2072	0.2246	0.2916	0.0138	0.0138	0.0128	0.0145	0.0137
627.5	0.0459	0.0407	0.2137	0.2250	0.2951	0.0138	0.0138	0.0127	0.0145	0.0137
628	0.0441	0.0403	0.2197	0.2250	0.2966	0.0138	0.0138	0.0127	0.0145	0.0137
628.5	0.0426	0.0396	0.2248	0.2246	0.2959	0.0138	0.0137	0.0127	0.0145	0.0137
629	0.0413	0.0386	0.2285	0.2238	0.2934	0.0138	0.0137	0.0127	0.0145	0.0137
629.5	0.0405	0.0375	0.2306	0.2224	0.2893	0.0138	0.0137	0.0126	0.0145	0.0136
630	0.0401	0.0363	0.2314	0.2209	0.2839	0.0137	0.0137	0.0126	0.0145	0.0136
630.5	0.0404	0.0352	0.2309	0.2195	0.2777	0.0137	0.0136	0.0125	0.0145	0.0136
631	0.0411	0.0344	0.2290	0.2187	0.2712	0.0137	0.0137	0.0126	0.0145	0.0136
631.5	0.0423	0.0339	0.2260	0.2185	0.2648	0.0137	0.0137	0.0126	0.0146	0.0137
632	0.0438	0.0338	0.2218	0.2190	0.2592	0.0138	0.0137	0.0126	0.0146	0.0138
632.5	0.0455	0.0341	0.2168	0.2202	0.2549	0.0138	0.0138	0.0127	0.0147	0.0138
633	0.0473	0.0347	0.2115	0.2219	0.2526	0.0139	0.0139	0.0127	0.0147	0.0139
633.5	0.0489	0.0355	0.2065	0.2240	0.2523	0.0139	0.0139	0.0128	0.0148	0.0139
634	0.0502	0.0366	0.2026	0.2263	0.2540	0.0139	0.0139	0.0128	0.0148	0.0139
634.5	0.0510	0.0378	0.2002	0.2284	0.2573	0.0139	0.0138	0.0128	0.0148	0.0139
635	0.0515	0.0390	0.1998	0.2299	0.2619	0.0139	0.0138	0.0128	0.0148	0.0139
635.5	0.0514	0.0403	0.2015	0.2308	0.2673	0.0139	0.0138	0.0128	0.0148	0.0138
636	0.0510	0.0415	0.2052	0.2312	0.2732	0.0139	0.0138	0.0128	0.0147	0.0138
636.5	0.0503	0.0427	0.2106	0.2313	0.2792	0.0139	0.0138	0.0128	0.0147	0.0139
637	0.0491	0.0438	0.2170	0.2312	0.2850	0.0139	0.0138	0.0128	0.0147	0.0139
637.5	0.0478	0.0447	0.2238	0.2308	0.2902	0.0139	0.0138	0.0128	0.0147	0.0139
638	0.0462	0.0452	0.2305	0.2302	0.2946	0.0139	0.0139	0.0128	0.0147	0.0139
638.5	0.0447	0.0453	0.2362	0.2293	0.2978	0.0139	0.0139	0.0128	0.0147	0.0139
639	0.0432	0.0448	0.2405	0.2281	0.2995	0.0139	0.0139	0.0128	0.0147	0.0139
639.5	0.0419	0.0440	0.2430	0.2265	0.2993	0.0139	0.0140	0.0127	0.0147	0.0139
640	0.0410	0.0427	0.2434	0.2248	0.2971	0.0139	0.0140	0.0127	0.0147	0.0139
640.5	0.0404	0.0413	0.2417	0.2231	0.2929	0.0138	0.0139	0.0126	0.0147	0.0138
641	0.0403	0.0398	0.2381	0.2215	0.2870	0.0138	0.0139	0.0126	0.0147	0.0138
641.5	0.0408	0.0383	0.2329	0.2205	0.2802	0.0137	0.0138	0.0125	0.0146	0.0138
642	0.0417	0.0370	0.2269	0.2204	0.2733	0.0137	0.0138	0.0125	0.0146	0.0137
642.5	0.0432	0.0359	0.2203	0.2213	0.2669	0.0137	0.0138	0.0125	0.0146	0.0137
643	0.0450	0.0352	0.2139	0.2231	0.2614	0.0137	0.0139	0.0125	0.0147	0.0138
643.5	0.0472	0.0350	0.2081	0.2256	0.2573	0.0137	0.0139	0.0125	0.0147	0.0138
644	0.0495	0.0354	0.2037	0.2286	0.2550	0.0138	0.0139	0.0125	0.0148	0.0138
644.5	0.0517	0.0366	0.2012	0.2316	0.2543	0.0138	0.0140	0.0126	0.0148	0.0139
645	0.0538	0.0383	0.2008	0.2341	0.2555	0.0138	0.0140	0.0126	0.0148	0.0139
645.5	0.0555	0.0406	0.2027	0.2362	0.2583	0.0139	0.0140	0.0126	0.0149	0.0139
646	0.0568	0.0433	0.2065	0.2373	0.2626	0.0139	0.0140	0.0126	0.0149	0.0139
646.5	0.0576	0.0462	0.2118	0.2374	0.2677	0.0139	0.0140	0.0126	0.0149	0.0140
647	0.0577	0.0490	0.2181	0.2368	0.2734	0.0139	0.0140	0.0127	0.0149	0.0140
647.5	0.0574	0.0518	0.2252	0.2359	0.2794	0.0139	0.0141	0.0127	0.0149	0.0140
648	0.0567	0.0542	0.2325	0.2349	0.2854	0.0139	0.0141	0.0127	0.0150	0.0140
648.5	0.0556	0.0561	0.2395	0.2338	0.2911	0.0140	0.0141	0.0128	0.0151	0.0141
649	0.0541	0.0575	0.2453	0.2325	0.2963	0.0140	0.0142	0.0128	0.0151	0.0141
649.5	0.0523	0.0581	0.2493	0.2308	0.3002	0.0141	0.0142	0.0128	0.0152	0.0142
650	0.0506	0.0581	0.2514	0.2289	0.3026	0.0141	0.0142	0.0129	0.0152	0.0142

650.5	0.0491	0.0573	0.2517	0.2269	0.3033	0.0141	0.0142	0.0129	0.0152	0.0142
651	0.0480	0.0558	0.2504	0.2254	0.3022	0.0141	0.0143	0.0129	0.0152	0.0142
651.5	0.0475	0.0537	0.2477	0.2247	0.2996	0.0141	0.0143	0.0129	0.0153	0.0143
652	0.0476	0.0511	0.2440	0.2248	0.2957	0.0142	0.0144	0.0129	0.0153	0.0143
652.5	0.0484	0.0482	0.2391	0.2256	0.2908	0.0142	0.0145	0.0130	0.0154	0.0144
653	0.0499	0.0454	0.2335	0.2272	0.2851	0.0143	0.0145	0.0130	0.0154	0.0144
653.5	0.0521	0.0431	0.2277	0.2296	0.2792	0.0143	0.0146	0.0131	0.0154	0.0144
654	0.0551	0.0415	0.2224	0.2325	0.2735	0.0144	0.0147	0.0131	0.0154	0.0145
654.5	0.0585	0.0409	0.2181	0.2355	0.2683	0.0144	0.0147	0.0132	0.0154	0.0145
655	0.0623	0.0414	0.2156	0.2383	0.2641	0.0144	0.0148	0.0132	0.0154	0.0145
655.5	0.0663	0.0430	0.2151	0.2407	0.2616	0.0144	0.0148	0.0132	0.0155	0.0145
656	0.0701	0.0457	0.2168	0.2425	0.2608	0.0145	0.0148	0.0133	0.0155	0.0146
656.5	0.0736	0.0494	0.2204	0.2438	0.2618	0.0145	0.0148	0.0133	0.0155	0.0146
657	0.0766	0.0540	0.2260	0.2446	0.2645	0.0145	0.0148	0.0134	0.0155	0.0146
657.5	0.0790	0.0592	0.2328	0.2448	0.2686	0.0145	0.0148	0.0134	0.0155	0.0146
658	0.0807	0.0647	0.2403	0.2442	0.2738	0.0146	0.0148	0.0135	0.0154	0.0146
658.5	0.0817	0.0702	0.2480	0.2430	0.2796	0.0146	0.0148	0.0135	0.0154	0.0146
659	0.0821	0.0753	0.2554	0.2416	0.2858	0.0146	0.0148	0.0136	0.0155	0.0147
659.5	0.0817	0.0795	0.2621	0.2401	0.2919	0.0147	0.0149	0.0137	0.0155	0.0147
660	0.0807	0.0826	0.2674	0.2385	0.2975	0.0148	0.0149	0.0137	0.0156	0.0148
660.5	0.0791	0.0843	0.2710	0.2367	0.3022	0.0148	0.0149	0.0138	0.0156	0.0148
661	0.0770	0.0845	0.2727	0.2347	0.3058	0.0148	0.0149	0.0139	0.0156	0.0149
661.5	0.0749	0.0833	0.2724	0.2327	0.3081	0.0149	0.0149	0.0139	0.0156	0.0149
662	0.0730	0.0808	0.2702	0.2309	0.3089	0.0149	0.0150	0.0140	0.0156	0.0149
662.5	0.0716	0.0771	0.2666	0.2299	0.3083	0.0149	0.0150	0.0140	0.0156	0.0149
663	0.0711	0.0727	0.2619	0.2297	0.3061	0.0149	0.0150	0.0140	0.0156	0.0149
663.5	0.0717	0.0679	0.2562	0.2304	0.3021	0.0149	0.0149	0.0141	0.0156	0.0149
664	0.0734	0.0632	0.2498	0.2318	0.2966	0.0149	0.0149	0.0141	0.0155	0.0149
664.5	0.0763	0.0590	0.2432	0.2336	0.2900	0.0149	0.0149	0.0141	0.0155	0.0149
665	0.0804	0.0556	0.2369	0.2355	0.2827	0.0148	0.0148	0.0140	0.0154	0.0148
665.5	0.0856	0.0536	0.2318	0.2372	0.2755	0.0148	0.0147	0.0140	0.0153	0.0147
666	0.0918	0.0531	0.2285	0.2389	0.2693	0.0147	0.0146	0.0139	0.0153	0.0147
666.5	0.0989	0.0544	0.2275	0.2407	0.2645	0.0147	0.0145	0.0139	0.0152	0.0146
667	0.1066	0.0575	0.2289	0.2423	0.2614	0.0147	0.0145	0.0139	0.0151	0.0146
667.5	0.1142	0.0620	0.2326	0.2439	0.2601	0.0148	0.0145	0.0139	0.0151	0.0146
668	0.1213	0.0677	0.2382	0.2452	0.2607	0.0148	0.0145	0.0139	0.0151	0.0146
668.5	0.1276	0.0744	0.2453	0.2462	0.2629	0.0149	0.0145	0.0139	0.0151	0.0147
669	0.1328	0.0817	0.2529	0.2465	0.2664	0.0149	0.0145	0.0140	0.0150	0.0147
669.5	0.1367	0.0894	0.2604	0.2461	0.2711	0.0149	0.0145	0.0140	0.0150	0.0147
670	0.1393	0.0972	0.2675	0.2450	0.2767	0.0149	0.0145	0.0141	0.0150	0.0147
670.5	0.1407	0.1044	0.2737	0.2432	0.2828	0.0149	0.0145	0.0141	0.0150	0.0147
671	0.1407	0.1106	0.2789	0.2409	0.2889	0.0150	0.0145	0.0141	0.0150	0.0147
671.5	0.1397	0.1153	0.2829	0.2384	0.2948	0.0150	0.0145	0.0142	0.0150	0.0147
672	0.1377	0.1182	0.2855	0.2360	0.3002	0.0150	0.0145	0.0142	0.0150	0.0147
672.5	0.1351	0.1193	0.2865	0.2338	0.3047	0.0150	0.0145	0.0142	0.0150	0.0147
673	0.1324	0.1185	0.2858	0.2322	0.3084	0.0150	0.0145	0.0143	0.0149	0.0148
673.5	0.1299	0.1163	0.2835	0.2315	0.3112	0.0150	0.0145	0.0143	0.0149	0.0148
674	0.1281	0.1128	0.2799	0.2316	0.3129	0.0150	0.0145	0.0143	0.0149	0.0148
674.5	0.1273	0.1082	0.2751	0.2325	0.3131	0.0150	0.0145	0.0144	0.0149	0.0149
675	0.1281	0.1029	0.2696	0.2342	0.3117	0.0150	0.0145	0.0144	0.0149	0.0149
675.5	0.1307	0.0975	0.2639	0.2367	0.3090	0.0150	0.0145	0.0145	0.0149	0.0150
676	0.1354	0.0924	0.2585	0.2397	0.3052	0.0150	0.0146	0.0146	0.0150	0.0150
676.5	0.1421	0.0882	0.2539	0.2430	0.3005	0.0151	0.0146	0.0146	0.0150	0.0151
677	0.1504	0.0855	0.2507	0.2463	0.2952	0.0151	0.0147	0.0147	0.0151	0.0151
677.5	0.1602	0.0845	0.2491	0.2494	0.2897	0.0152	0.0148	0.0148	0.0152	0.0152
678	0.1708	0.0858	0.2492	0.2520	0.2844	0.0152	0.0149	0.0149	0.0153	0.0153
678.5	0.1819	0.0895	0.2511	0.2543	0.2797	0.0152	0.0149	0.0150	0.0154	0.0153

679	0.1929	0.0956	0.2547	0.2561	0.2761	0.0152	0.0150	0.0150	0.0154	0.0154
679.5	0.2035	0.1039	0.2598	0.2572	0.2737	0.0152	0.0150	0.0151	0.0155	0.0154
680	0.2130	0.1141	0.2660	0.2576	0.2726	0.0152	0.0151	0.0152	0.0156	0.0155
680.5	0.2209	0.1256	0.2729	0.2573	0.2728	0.0152	0.0151	0.0152	0.0157	0.0155
681	0.2273	0.1382	0.2798	0.2563	0.2742	0.0152	0.0152	0.0153	0.0157	0.0155
681.5	0.2319	0.1508	0.2864	0.2547	0.2768	0.0152	0.0152	0.0153	0.0158	0.0156
682	0.2347	0.1631	0.2922	0.2525	0.2806	0.0151	0.0153	0.0154	0.0159	0.0156
682.5	0.2360	0.1744	0.2970	0.2498	0.2852	0.0151	0.0153	0.0154	0.0159	0.0156
683	0.2355	0.1840	0.3006	0.2466	0.2903	0.0151	0.0154	0.0154	0.0160	0.0156
683.5	0.2334	0.1915	0.3028	0.2432	0.2956	0.0150	0.0154	0.0154	0.0160	0.0156
684	0.2299	0.1968	0.3036	0.2398	0.3008	0.0150	0.0155	0.0154	0.0160	0.0156
684.5	0.2255	0.1995	0.3030	0.2369	0.3058	0.0150	0.0155	0.0155	0.0161	0.0157
685	0.2207	0.1996	0.3008	0.2348	0.3103	0.0150	0.0155	0.0155	0.0161	0.0157
685.5	0.2163	0.1970	0.2972	0.2336	0.3141	0.0150	0.0155	0.0155	0.0161	0.0157
686	0.2131	0.1918	0.2925	0.2334	0.3172	0.0150	0.0155	0.0155	0.0161	0.0157
686.5	0.2118	0.1847	0.2871	0.2346	0.3194	0.0151	0.0155	0.0155	0.0162	0.0157
687	0.2129	0.1761	0.2813	0.2370	0.3206	0.0151	0.0156	0.0156	0.0162	0.0157
687.5	0.2167	0.1670	0.2756	0.2404	0.3208	0.0151	0.0156	0.0156	0.0162	0.0158
688	0.2231	0.1588	0.2704	0.2446	0.3197	0.0152	0.0156	0.0157	0.0163	0.0158
688.5	0.2319	0.1522	0.2661	0.2491	0.3171	0.0152	0.0157	0.0157	0.0163	0.0158
689	0.2427	0.1482	0.2631	0.2533	0.3132	0.0152	0.0157	0.0157	0.0163	0.0159
689.5	0.2549	0.1473	0.2618	0.2570	0.3083	0.0152	0.0157	0.0158	0.0163	0.0159
690	0.2680	0.1498	0.2624	0.2602	0.3030	0.0153	0.0157	0.0158	0.0164	0.0159
690.5	0.2815	0.1551	0.2647	0.2625	0.2978	0.0153	0.0157	0.0158	0.0164	0.0160
691	0.2944	0.1630	0.2686	0.2638	0.2930	0.0153	0.0158	0.0158	0.0164	0.0160
691.5	0.3062	0.1730	0.2737	0.2641	0.2888	0.0154	0.0158	0.0159	0.0164	0.0160
692	0.3162	0.1849	0.2795	0.2635	0.2854	0.0154	0.0158	0.0159	0.0164	0.0160
692.5	0.3244	0.1982	0.2858	0.2623	0.2829	0.0154	0.0158	0.0159	0.0164	0.0160
693	0.3307	0.2128	0.2921	0.2610	0.2819	0.0154	0.0158	0.0159	0.0164	0.0160
693.5	0.3352	0.2277	0.2982	0.2597	0.2824	0.0153	0.0158	0.0159	0.0164	0.0161
694	0.3376	0.2418	0.3039	0.2583	0.2843	0.0154	0.0158	0.0160	0.0164	0.0161
694.5	0.3379	0.2542	0.3089	0.2567	0.2875	0.0154	0.0158	0.0160	0.0165	0.0161
695	0.3357	0.2638	0.3125	0.2543	0.2913	0.0153	0.0158	0.0160	0.0165	0.0161
695.5	0.3308	0.2701	0.3146	0.2513	0.2954	0.0153	0.0158	0.0160	0.0164	0.0160
696	0.3239	0.2735	0.3149	0.2478	0.2997	0.0153	0.0158	0.0160	0.0164	0.0160
696.5	0.3157	0.2740	0.3133	0.2445	0.3041	0.0153	0.0158	0.0160	0.0164	0.0159
697	0.3069	0.2716	0.3101	0.2417	0.3083	0.0152	0.0157	0.0160	0.0164	0.0159
697.5	0.2985	0.2664	0.3055	0.2397	0.3124	0.0152	0.0157	0.0159	0.0164	0.0158
698	0.2913	0.2586	0.3000	0.2387	0.3162	0.0152	0.0157	0.0159	0.0163	0.0158
698.5	0.2859	0.2489	0.2938	0.2387	0.3192	0.0152	0.0157	0.0159	0.0163	0.0158
699	0.2828	0.2383	0.2872	0.2396	0.3212	0.0151	0.0156	0.0158	0.0162	0.0157
699.5	0.2826	0.2277	0.2806	0.2413	0.3222	0.0151	0.0156	0.0158	0.0162	0.0157
700	0.2855	0.2181	0.2745	0.2439	0.3225	0.0151	0.0156	0.0157	0.0162	0.0157

D.3 60° measurements

Table D.3: Measurements of plastic samples at 60°. For the glossy side, the lamp signal was measured at an integration time of 29 ms and the measurements of the samples were taken at an integration time of 170 ms, 170 ms, 140 ms, 160 ms, and 140 ms respectively. For the matte side, the lamp signal was measured at an integration time of 28 ms and the measurements of the samples were taken at an integration time of 2500 ms, 2400 ms, 2500 ms, 2100 ms, and 2000 ms respectively.

	Gloss					Matte				
λ	Green	Blue	Purple	Red	Silver	Green	Blue	Purple	Red	Silver
400	0.0365	0.1610	0.0885	0.0292	0.2213	0.0066	0.0070	0.0071	0.0070	0.0077
400.5	0.0367	0.1612	0.0884	0.0289	0.2203	0.0066	0.0070	0.0071	0.0070	0.0077
401	0.0367	0.1616	0.0886	0.0288	0.2201	0.0066	0.0070	0.0071	0.0070	0.0077
401.5	0.0366	0.1622	0.0889	0.0289	0.2202	0.0066	0.0070	0.0071	0.0070	0.0078
402	0.0365	0.1629	0.0890	0.0288	0.2202	0.0065	0.0070	0.0071	0.0069	0.0078
402.5	0.0365	0.1635	0.0889	0.0286	0.2199	0.0065	0.0071	0.0071	0.0069	0.0078
403	0.0368	0.1642	0.0886	0.0281	0.2195	0.0065	0.0071	0.0071	0.0070	0.0077
403.5	0.0372	0.1652	0.0883	0.0276	0.2194	0.0065	0.0071	0.0070	0.0070	0.0077
404	0.0372	0.1661	0.0884	0.0273	0.2192	0.0065	0.0071	0.0070	0.0070	0.0077
404.5	0.0368	0.1667	0.0887	0.0272	0.2195	0.0065	0.0071	0.0070	0.0070	0.0077
405	0.0360	0.1675	0.0894	0.0275	0.2203	0.0065	0.0071	0.0071	0.0070	0.0077
405.5	0.0352	0.1683	0.0905	0.0280	0.2212	0.0065	0.0071	0.0071	0.0070	0.0077
406	0.0346	0.1689	0.0911	0.0284	0.2217	0.0065	0.0071	0.0071	0.0071	0.0077
406.5	0.0344	0.1694	0.0915	0.0286	0.2220	0.0066	0.0071	0.0071	0.0071	0.0077
407	0.0346	0.1701	0.0919	0.0284	0.2222	0.0066	0.0071	0.0071	0.0070	0.0077
407.5	0.0350	0.1707	0.0922	0.0282	0.2223	0.0066	0.0071	0.0071	0.0070	0.0077
408	0.0353	0.1715	0.0929	0.0279	0.2233	0.0066	0.0072	0.0071	0.0070	0.0078
408.5	0.0353	0.1728	0.0938	0.0277	0.2247	0.0066	0.0072	0.0072	0.0070	0.0078
409	0.0351	0.1743	0.0945	0.0279	0.2259	0.0066	0.0073	0.0072	0.0070	0.0079
409.5	0.0346	0.1753	0.0945	0.0279	0.2264	0.0066	0.0073	0.0072	0.0070	0.0079
410	0.0340	0.1759	0.0941	0.0278	0.2259	0.0066	0.0073	0.0072	0.0070	0.0078
410.5	0.0335	0.1761	0.0938	0.0276	0.2244	0.0066	0.0073	0.0071	0.0070	0.0078
411	0.0330	0.1762	0.0938	0.0273	0.2228	0.0066	0.0073	0.0071	0.0070	0.0078
411.5	0.0326	0.1765	0.0945	0.0271	0.2218	0.0065	0.0073	0.0071	0.0070	0.0077
412	0.0325	0.1771	0.0955	0.0269	0.2218	0.0065	0.0073	0.0071	0.0070	0.0077
412.5	0.0325	0.1778	0.0964	0.0270	0.2228	0.0066	0.0073	0.0071	0.0071	0.0077
413	0.0325	0.1788	0.0971	0.0271	0.2242	0.0066	0.0073	0.0071	0.0071	0.0078
413.5	0.0327	0.1796	0.0974	0.0272	0.2250	0.0066	0.0074	0.0071	0.0071	0.0078
414	0.0326	0.1805	0.0972	0.0272	0.2248	0.0066	0.0074	0.0071	0.0070	0.0078
414.5	0.0324	0.1816	0.0974	0.0271	0.2242	0.0066	0.0074	0.0071	0.0070	0.0078
415	0.0323	0.1824	0.0979	0.0270	0.2235	0.0066	0.0074	0.0071	0.0070	0.0078
415.5	0.0320	0.1825	0.0986	0.0268	0.2233	0.0066	0.0074	0.0071	0.0069	0.0078
416	0.0318	0.1824	0.0993	0.0268	0.2240	0.0066	0.0074	0.0071	0.0069	0.0078
416.5	0.0318	0.1821	0.0997	0.0268	0.2249	0.0066	0.0074	0.0071	0.0069	0.0077
417	0.0318	0.1818	0.0995	0.0269	0.2254	0.0066	0.0074	0.0071	0.0069	0.0077
417.5	0.0318	0.1820	0.0993	0.0268	0.2249	0.0066	0.0074	0.0071	0.0069	0.0078
418	0.0315	0.1824	0.0991	0.0267	0.2235	0.0066	0.0074	0.0071	0.0070	0.0078
418.5	0.0313	0.1830	0.0993	0.0268	0.2220	0.0066	0.0074	0.0071	0.0070	0.0078
419	0.0312	0.1834	0.0999	0.0270	0.2211	0.0066	0.0073	0.0071	0.0070	0.0078
419.5	0.0309	0.1831	0.1004	0.0270	0.2211	0.0066	0.0073	0.0071	0.0070	0.0077
420	0.0308	0.1825	0.1005	0.0271	0.2219	0.0066	0.0073	0.0071	0.0070	0.0077
420.5	0.0308	0.1819	0.1005	0.0270	0.2232	0.0066	0.0073	0.0071	0.0070	0.0077
421	0.0306	0.1817	0.1003	0.0267	0.2239	0.0066	0.0073	0.0071	0.0070	0.0077
421.5	0.0302	0.1822	0.1004	0.0266	0.2237	0.0066	0.0074	0.0071	0.0070	0.0078
422	0.0299	0.1831	0.1007	0.0266	0.2231	0.0066	0.0074	0.0071	0.0071	0.0078

422.5	0.0294	0.1842	0.1015	0.0268	0.2224	0.0066	0.0074	0.0072	0.0071	0.0078
423	0.0291	0.1849	0.1025	0.0270	0.2218	0.0066	0.0074	0.0072	0.0071	0.0077
423.5	0.0287	0.1850	0.1035	0.0273	0.2220	0.0066	0.0074	0.0071	0.0071	0.0077
424	0.0284	0.1847	0.1042	0.0277	0.2227	0.0066	0.0075	0.0071	0.0070	0.0077
424.5	0.0285	0.1845	0.1044	0.0279	0.2237	0.0066	0.0075	0.0071	0.0070	0.0077
425	0.0286	0.1845	0.1044	0.0281	0.2244	0.0066	0.0075	0.0072	0.0070	0.0076
425.5	0.0289	0.1850	0.1043	0.0280	0.2244	0.0066	0.0075	0.0072	0.0070	0.0076
426	0.0294	0.1859	0.1045	0.0277	0.2239	0.0066	0.0075	0.0072	0.0070	0.0076
426.5	0.0297	0.1867	0.1049	0.0274	0.2230	0.0066	0.0075	0.0072	0.0070	0.0076
427	0.0298	0.1870	0.1054	0.0273	0.2221	0.0066	0.0075	0.0072	0.0069	0.0076
427.5	0.0298	0.1867	0.1058	0.0274	0.2216	0.0066	0.0075	0.0071	0.0069	0.0076
428	0.0296	0.1859	0.1060	0.0277	0.2217	0.0066	0.0074	0.0071	0.0069	0.0076
428.5	0.0296	0.1852	0.1062	0.0279	0.2224	0.0066	0.0074	0.0071	0.0068	0.0076
429	0.0297	0.1849	0.1065	0.0280	0.2233	0.0066	0.0075	0.0071	0.0068	0.0076
429.5	0.0298	0.1851	0.1070	0.0278	0.2238	0.0066	0.0075	0.0071	0.0068	0.0076
430	0.0299	0.1857	0.1078	0.0275	0.2240	0.0066	0.0075	0.0072	0.0068	0.0077
430.5	0.0301	0.1863	0.1088	0.0275	0.2237	0.0066	0.0075	0.0072	0.0068	0.0077
431	0.0303	0.1867	0.1096	0.0275	0.2233	0.0066	0.0075	0.0072	0.0068	0.0077
431.5	0.0304	0.1866	0.1100	0.0275	0.2230	0.0066	0.0075	0.0072	0.0068	0.0077
432	0.0304	0.1860	0.1099	0.0276	0.2232	0.0066	0.0075	0.0072	0.0068	0.0077
432.5	0.0304	0.1853	0.1097	0.0276	0.2237	0.0066	0.0075	0.0072	0.0068	0.0077
433	0.0302	0.1849	0.1094	0.0274	0.2243	0.0066	0.0076	0.0072	0.0068	0.0077
433.5	0.0299	0.1851	0.1096	0.0272	0.2248	0.0066	0.0076	0.0072	0.0069	0.0077
434	0.0296	0.1858	0.1102	0.0271	0.2249	0.0066	0.0076	0.0072	0.0069	0.0077
434.5	0.0293	0.1866	0.1109	0.0271	0.2246	0.0066	0.0076	0.0072	0.0069	0.0077
435	0.0291	0.1871	0.1116	0.0270	0.2238	0.0065	0.0076	0.0072	0.0069	0.0077
435.5	0.0291	0.1870	0.1120	0.0270	0.2231	0.0065	0.0076	0.0072	0.0069	0.0076
436	0.0291	0.1865	0.1122	0.0270	0.2229	0.0065	0.0076	0.0071	0.0069	0.0076
436.5	0.0292	0.1860	0.1123	0.0269	0.2233	0.0065	0.0076	0.0071	0.0068	0.0076
437	0.0293	0.1857	0.1122	0.0269	0.2238	0.0065	0.0076	0.0071	0.0068	0.0076
437.5	0.0295	0.1859	0.1125	0.0269	0.2243	0.0065	0.0077	0.0072	0.0068	0.0076
438	0.0297	0.1867	0.1130	0.0269	0.2244	0.0066	0.0077	0.0072	0.0068	0.0076
438.5	0.0300	0.1876	0.1137	0.0269	0.2240	0.0066	0.0077	0.0072	0.0068	0.0076
439	0.0302	0.1885	0.1144	0.0270	0.2236	0.0066	0.0077	0.0072	0.0068	0.0076
439.5	0.0302	0.1891	0.1150	0.0269	0.2234	0.0066	0.0077	0.0072	0.0068	0.0076
440	0.0300	0.1890	0.1151	0.0268	0.2234	0.0066	0.0077	0.0072	0.0068	0.0076
440.5	0.0298	0.1883	0.1147	0.0267	0.2236	0.0066	0.0077	0.0072	0.0068	0.0077
441	0.0297	0.1872	0.1142	0.0267	0.2238	0.0066	0.0078	0.0072	0.0068	0.0077
441.5	0.0298	0.1863	0.1139	0.0267	0.2242	0.0066	0.0078	0.0072	0.0068	0.0077
442	0.0300	0.1861	0.1141	0.0268	0.2247	0.0067	0.0078	0.0072	0.0068	0.0077
442.5	0.0304	0.1866	0.1147	0.0269	0.2250	0.0067	0.0078	0.0072	0.0068	0.0077
443	0.0309	0.1876	0.1154	0.0269	0.2251	0.0067	0.0078	0.0072	0.0068	0.0077
443.5	0.0311	0.1888	0.1158	0.0268	0.2250	0.0067	0.0078	0.0072	0.0068	0.0077
444	0.0310	0.1894	0.1157	0.0267	0.2248	0.0067	0.0078	0.0072	0.0068	0.0077
444.5	0.0309	0.1891	0.1152	0.0265	0.2246	0.0067	0.0078	0.0072	0.0068	0.0077
445	0.0306	0.1882	0.1146	0.0263	0.2247	0.0067	0.0078	0.0072	0.0067	0.0077
445.5	0.0304	0.1868	0.1141	0.0261	0.2248	0.0067	0.0078	0.0072	0.0067	0.0077
446	0.0304	0.1857	0.1141	0.0261	0.2252	0.0067	0.0078	0.0072	0.0067	0.0077
446.5	0.0305	0.1854	0.1146	0.0261	0.2255	0.0067	0.0078	0.0072	0.0067	0.0077
447	0.0307	0.1858	0.1151	0.0262	0.2254	0.0067	0.0078	0.0072	0.0067	0.0077
447.5	0.0309	0.1865	0.1155	0.0261	0.2253	0.0067	0.0078	0.0072	0.0067	0.0077
448	0.0312	0.1872	0.1156	0.0259	0.2252	0.0067	0.0078	0.0072	0.0067	0.0077
448.5	0.0313	0.1875	0.1152	0.0256	0.2252	0.0067	0.0078	0.0072	0.0067	0.0077
449	0.0313	0.1872	0.1145	0.0253	0.2254	0.0067	0.0078	0.0072	0.0067	0.0077
449.5	0.0312	0.1863	0.1138	0.0251	0.2258	0.0067	0.0078	0.0072	0.0067	0.0077
450	0.0311	0.1853	0.1133	0.0251	0.2263	0.0067	0.0079	0.0072	0.0067	0.0077
450.5	0.0310	0.1844	0.1130	0.0252	0.2267	0.0067	0.0079	0.0072	0.0067	0.0077

451	0.0311	0.1838	0.1129	0.0254	0.2266	0.0067	0.0079	0.0072	0.0067	0.0077
451.5	0.0314	0.1837	0.1130	0.0257	0.2263	0.0067	0.0079	0.0072	0.0067	0.0077
452	0.0318	0.1840	0.1128	0.0257	0.2260	0.0067	0.0079	0.0072	0.0067	0.0077
452.5	0.0323	0.1845	0.1123	0.0256	0.2256	0.0067	0.0079	0.0072	0.0067	0.0076
453	0.0327	0.1847	0.1115	0.0252	0.2252	0.0067	0.0079	0.0072	0.0066	0.0076
453.5	0.0329	0.1845	0.1104	0.0247	0.2251	0.0067	0.0079	0.0072	0.0066	0.0076
454	0.0327	0.1839	0.1095	0.0243	0.2253	0.0067	0.0079	0.0072	0.0067	0.0076
454.5	0.0325	0.1830	0.1092	0.0241	0.2254	0.0067	0.0079	0.0072	0.0067	0.0076
455	0.0323	0.1823	0.1094	0.0243	0.2258	0.0068	0.0079	0.0072	0.0067	0.0076
455.5	0.0323	0.1819	0.1098	0.0247	0.2263	0.0068	0.0079	0.0072	0.0067	0.0076
456	0.0327	0.1819	0.1102	0.0250	0.2263	0.0068	0.0079	0.0072	0.0067	0.0076
456.5	0.0334	0.1825	0.1101	0.0251	0.2263	0.0068	0.0079	0.0072	0.0067	0.0077
457	0.0342	0.1831	0.1095	0.0249	0.2264	0.0068	0.0079	0.0072	0.0067	0.0077
457.5	0.0349	0.1833	0.1084	0.0245	0.2264	0.0068	0.0079	0.0072	0.0067	0.0077
458	0.0352	0.1831	0.1073	0.0240	0.2265	0.0068	0.0079	0.0072	0.0067	0.0077
458.5	0.0351	0.1825	0.1063	0.0236	0.2267	0.0068	0.0079	0.0072	0.0067	0.0076
459	0.0348	0.1815	0.1055	0.0234	0.2269	0.0069	0.0079	0.0072	0.0067	0.0076
459.5	0.0346	0.1806	0.1050	0.0235	0.2269	0.0069	0.0079	0.0072	0.0067	0.0077
460	0.0346	0.1800	0.1047	0.0237	0.2269	0.0069	0.0079	0.0072	0.0067	0.0077
460.5	0.0349	0.1795	0.1044	0.0240	0.2271	0.0069	0.0079	0.0072	0.0067	0.0077
461	0.0358	0.1791	0.1038	0.0242	0.2272	0.0069	0.0079	0.0072	0.0067	0.0077
461.5	0.0369	0.1791	0.1031	0.0240	0.2275	0.0069	0.0079	0.0071	0.0067	0.0077
462	0.0380	0.1794	0.1024	0.0236	0.2280	0.0069	0.0079	0.0071	0.0067	0.0077
462.5	0.0389	0.1797	0.1015	0.0230	0.2285	0.0069	0.0079	0.0071	0.0066	0.0077
463	0.0392	0.1798	0.1006	0.0224	0.2289	0.0069	0.0079	0.0071	0.0066	0.0077
463.5	0.0391	0.1796	0.0999	0.0221	0.2292	0.0069	0.0079	0.0071	0.0066	0.0077
464	0.0387	0.1791	0.0993	0.0221	0.2291	0.0069	0.0079	0.0071	0.0066	0.0077
464.5	0.0384	0.1783	0.0988	0.0224	0.2288	0.0069	0.0079	0.0071	0.0066	0.0077
465	0.0386	0.1777	0.0984	0.0229	0.2285	0.0069	0.0079	0.0071	0.0066	0.0077
465.5	0.0394	0.1774	0.0980	0.0232	0.2282	0.0069	0.0079	0.0071	0.0066	0.0077
466	0.0409	0.1775	0.0974	0.0234	0.2281	0.0069	0.0079	0.0070	0.0066	0.0077
466.5	0.0425	0.1778	0.0968	0.0231	0.2284	0.0069	0.0079	0.0070	0.0066	0.0077
467	0.0439	0.1782	0.0961	0.0226	0.2288	0.0069	0.0079	0.0070	0.0066	0.0077
467.5	0.0449	0.1785	0.0955	0.0220	0.2294	0.0070	0.0079	0.0070	0.0066	0.0077
468	0.0452	0.1785	0.0948	0.0215	0.2296	0.0070	0.0080	0.0070	0.0066	0.0077
468.5	0.0451	0.1781	0.0942	0.0213	0.2296	0.0070	0.0080	0.0070	0.0066	0.0077
469	0.0448	0.1774	0.0934	0.0215	0.2293	0.0070	0.0080	0.0070	0.0065	0.0077
469.5	0.0446	0.1764	0.0926	0.0219	0.2288	0.0070	0.0080	0.0070	0.0065	0.0077
470	0.0450	0.1755	0.0917	0.0225	0.2283	0.0070	0.0079	0.0070	0.0065	0.0077
470.5	0.0462	0.1749	0.0907	0.0229	0.2281	0.0071	0.0079	0.0070	0.0065	0.0077
471	0.0480	0.1749	0.0896	0.0229	0.2283	0.0071	0.0079	0.0070	0.0065	0.0077
471.5	0.0501	0.1752	0.0885	0.0226	0.2286	0.0071	0.0079	0.0070	0.0065	0.0077
472	0.0520	0.1757	0.0875	0.0219	0.2289	0.0071	0.0079	0.0069	0.0065	0.0077
472.5	0.0533	0.1761	0.0866	0.0212	0.2294	0.0072	0.0079	0.0069	0.0065	0.0077
473	0.0539	0.1762	0.0859	0.0206	0.2299	0.0072	0.0079	0.0069	0.0065	0.0077
473.5	0.0539	0.1760	0.0853	0.0203	0.2306	0.0072	0.0079	0.0069	0.0065	0.0077
474	0.0536	0.1757	0.0848	0.0203	0.2311	0.0073	0.0079	0.0069	0.0065	0.0077
474.5	0.0534	0.1752	0.0842	0.0207	0.2312	0.0073	0.0079	0.0069	0.0065	0.0077
475	0.0539	0.1748	0.0836	0.0213	0.2310	0.0073	0.0079	0.0069	0.0065	0.0077
475.5	0.0553	0.1745	0.0828	0.0218	0.2306	0.0074	0.0079	0.0069	0.0065	0.0077
476	0.0574	0.1741	0.0819	0.0219	0.2300	0.0074	0.0079	0.0069	0.0065	0.0077
476.5	0.0599	0.1738	0.0808	0.0217	0.2298	0.0074	0.0079	0.0069	0.0065	0.0077
477	0.0623	0.1738	0.0798	0.0211	0.2300	0.0074	0.0079	0.0069	0.0065	0.0077
477.5	0.0639	0.1737	0.0787	0.0204	0.2304	0.0074	0.0079	0.0069	0.0065	0.0077
478	0.0647	0.1736	0.0777	0.0198	0.2309	0.0074	0.0079	0.0069	0.0065	0.0077
478.5	0.0648	0.1732	0.0768	0.0194	0.2313	0.0074	0.0079	0.0068	0.0065	0.0077
479	0.0645	0.1727	0.0758	0.0195	0.2314	0.0074	0.0079	0.0068	0.0065	0.0077

479.5	0.0643	0.1719	0.0749	0.0198	0.2309	0.0074	0.0079	0.0068	0.0065	0.0077
480	0.0647	0.1711	0.0740	0.0203	0.2302	0.0075	0.0079	0.0068	0.0065	0.0077
480.5	0.0664	0.1703	0.0732	0.0208	0.2292	0.0075	0.0078	0.0068	0.0065	0.0077
481	0.0691	0.1698	0.0723	0.0210	0.2283	0.0075	0.0078	0.0068	0.0065	0.0077
481.5	0.0725	0.1696	0.0716	0.0207	0.2280	0.0075	0.0078	0.0067	0.0065	0.0077
482	0.0759	0.1695	0.0709	0.0202	0.2281	0.0075	0.0078	0.0067	0.0065	0.0077
482.5	0.0785	0.1692	0.0702	0.0195	0.2287	0.0075	0.0078	0.0067	0.0065	0.0077
483	0.0800	0.1689	0.0694	0.0188	0.2294	0.0076	0.0078	0.0067	0.0065	0.0076
483.5	0.0803	0.1684	0.0684	0.0184	0.2302	0.0076	0.0078	0.0067	0.0065	0.0076
484	0.0799	0.1677	0.0672	0.0184	0.2307	0.0076	0.0078	0.0067	0.0064	0.0076
484.5	0.0794	0.1672	0.0661	0.0187	0.2311	0.0076	0.0078	0.0066	0.0064	0.0076
485	0.0795	0.1669	0.0652	0.0192	0.2313	0.0076	0.0078	0.0066	0.0064	0.0076
485.5	0.0808	0.1667	0.0645	0.0198	0.2314	0.0077	0.0078	0.0066	0.0065	0.0077
486	0.0832	0.1665	0.0639	0.0203	0.2313	0.0077	0.0078	0.0066	0.0065	0.0077
486.5	0.0865	0.1662	0.0633	0.0204	0.2311	0.0077	0.0078	0.0066	0.0065	0.0077
487	0.0900	0.1658	0.0626	0.0202	0.2310	0.0077	0.0078	0.0066	0.0065	0.0077
487.5	0.0933	0.1653	0.0620	0.0196	0.2313	0.0078	0.0078	0.0066	0.0065	0.0077
488	0.0957	0.1648	0.0611	0.0189	0.2320	0.0078	0.0078	0.0065	0.0064	0.0077
488.5	0.0971	0.1642	0.0601	0.0183	0.2330	0.0078	0.0078	0.0065	0.0064	0.0077
489	0.0974	0.1637	0.0589	0.0180	0.2339	0.0078	0.0078	0.0065	0.0064	0.0077
489.5	0.0970	0.1632	0.0576	0.0180	0.2344	0.0078	0.0078	0.0065	0.0064	0.0077
490	0.0964	0.1628	0.0562	0.0183	0.2340	0.0078	0.0078	0.0065	0.0064	0.0077
490.5	0.0965	0.1624	0.0549	0.0189	0.2332	0.0078	0.0077	0.0065	0.0063	0.0077
491	0.0977	0.1619	0.0539	0.0194	0.2321	0.0078	0.0077	0.0064	0.0063	0.0077
491.5	0.1004	0.1612	0.0532	0.0197	0.2311	0.0078	0.0077	0.0064	0.0063	0.0077
492	0.1040	0.1604	0.0527	0.0198	0.2306	0.0078	0.0077	0.0064	0.0063	0.0077
492.5	0.1081	0.1596	0.0522	0.0195	0.2307	0.0079	0.0077	0.0064	0.0063	0.0077
493	0.1117	0.1588	0.0516	0.0189	0.2312	0.0079	0.0077	0.0064	0.0063	0.0077
493.5	0.1142	0.1582	0.0508	0.0183	0.2322	0.0079	0.0078	0.0064	0.0063	0.0077
494	0.1154	0.1578	0.0496	0.0178	0.2336	0.0079	0.0077	0.0064	0.0063	0.0077
494.5	0.1155	0.1577	0.0482	0.0175	0.2351	0.0079	0.0077	0.0064	0.0063	0.0077
495	0.1150	0.1577	0.0467	0.0176	0.2364	0.0079	0.0077	0.0064	0.0063	0.0077
495.5	0.1145	0.1579	0.0454	0.0180	0.2372	0.0079	0.0077	0.0064	0.0063	0.0077
496	0.1148	0.1578	0.0443	0.0186	0.2371	0.0080	0.0077	0.0064	0.0063	0.0077
496.5	0.1161	0.1573	0.0435	0.0191	0.2361	0.0080	0.0077	0.0064	0.0063	0.0077
497	0.1187	0.1565	0.0428	0.0194	0.2348	0.0080	0.0077	0.0063	0.0063	0.0077
497.5	0.1224	0.1554	0.0423	0.0195	0.2335	0.0080	0.0077	0.0063	0.0063	0.0077
498	0.1266	0.1542	0.0418	0.0193	0.2327	0.0080	0.0077	0.0063	0.0063	0.0077
498.5	0.1305	0.1530	0.0410	0.0188	0.2326	0.0080	0.0077	0.0063	0.0063	0.0077
499	0.1337	0.1519	0.0400	0.0183	0.2333	0.0080	0.0077	0.0063	0.0063	0.0078
499.5	0.1355	0.1511	0.0388	0.0178	0.2347	0.0081	0.0077	0.0063	0.0063	0.0078
500	0.1360	0.1506	0.0373	0.0175	0.2366	0.0081	0.0077	0.0063	0.0063	0.0078
500.5	0.1355	0.1505	0.0358	0.0175	0.2386	0.0081	0.0076	0.0063	0.0063	0.0078
501	0.1347	0.1508	0.0344	0.0178	0.2402	0.0081	0.0076	0.0062	0.0063	0.0078
501.5	0.1343	0.1511	0.0332	0.0183	0.2408	0.0081	0.0076	0.0062	0.0063	0.0078
502	0.1350	0.1512	0.0323	0.0188	0.2405	0.0081	0.0076	0.0062	0.0063	0.0078
502.5	0.1370	0.1509	0.0317	0.0192	0.2392	0.0081	0.0076	0.0062	0.0063	0.0078
503	0.1400	0.1499	0.0312	0.0194	0.2373	0.0081	0.0076	0.0061	0.0063	0.0078
503.5	0.1438	0.1483	0.0306	0.0192	0.2356	0.0081	0.0075	0.0061	0.0063	0.0078
504	0.1474	0.1464	0.0299	0.0189	0.2344	0.0081	0.0075	0.0061	0.0063	0.0078
504.5	0.1504	0.1444	0.0290	0.0184	0.2341	0.0081	0.0075	0.0061	0.0063	0.0078
505	0.1523	0.1427	0.0279	0.0178	0.2348	0.0081	0.0075	0.0061	0.0063	0.0078
505.5	0.1526	0.1415	0.0267	0.0175	0.2364	0.0082	0.0075	0.0061	0.0063	0.0078
506	0.1519	0.1411	0.0254	0.0173	0.2383	0.0082	0.0075	0.0060	0.0063	0.0078
506.5	0.1506	0.1416	0.0242	0.0175	0.2402	0.0082	0.0075	0.0060	0.0063	0.0078
507	0.1498	0.1426	0.0232	0.0179	0.2419	0.0082	0.0075	0.0060	0.0063	0.0078
507.5	0.1499	0.1436	0.0225	0.0184	0.2430	0.0082	0.0075	0.0060	0.0063	0.0078

508	0.1511	0.1442	0.0221	0.0189	0.2432	0.0083	0.0075	0.0060	0.0064	0.0078
508.5	0.1534	0.1440	0.0219	0.0192	0.2424	0.0083	0.0075	0.0060	0.0064	0.0078
509	0.1564	0.1430	0.0218	0.0193	0.2409	0.0083	0.0075	0.0060	0.0064	0.0078
509.5	0.1596	0.1413	0.0217	0.0191	0.2392	0.0083	0.0074	0.0059	0.0064	0.0078
510	0.1626	0.1393	0.0214	0.0188	0.2378	0.0083	0.0074	0.0059	0.0064	0.0078
510.5	0.1651	0.1371	0.0209	0.0183	0.2374	0.0083	0.0074	0.0059	0.0064	0.0078
511	0.1667	0.1351	0.0203	0.0179	0.2382	0.0083	0.0074	0.0059	0.0064	0.0078
511.5	0.1670	0.1337	0.0195	0.0176	0.2400	0.0083	0.0074	0.0059	0.0064	0.0078
512	0.1664	0.1331	0.0186	0.0176	0.2426	0.0083	0.0074	0.0059	0.0064	0.0079
512.5	0.1654	0.1335	0.0180	0.0179	0.2455	0.0083	0.0074	0.0059	0.0064	0.0079
513	0.1643	0.1345	0.0175	0.0183	0.2480	0.0084	0.0074	0.0058	0.0064	0.0079
513.5	0.1638	0.1358	0.0173	0.0188	0.2495	0.0084	0.0075	0.0058	0.0064	0.0079
514	0.1643	0.1367	0.0172	0.0192	0.2499	0.0084	0.0075	0.0058	0.0064	0.0079
514.5	0.1656	0.1368	0.0173	0.0194	0.2488	0.0084	0.0075	0.0058	0.0064	0.0080
515	0.1675	0.1356	0.0173	0.0194	0.2466	0.0084	0.0075	0.0058	0.0064	0.0080
515.5	0.1699	0.1333	0.0174	0.0192	0.2439	0.0084	0.0074	0.0057	0.0064	0.0079
516	0.1724	0.1301	0.0174	0.0188	0.2414	0.0083	0.0074	0.0057	0.0064	0.0079
516.5	0.1745	0.1265	0.0172	0.0184	0.2396	0.0083	0.0074	0.0057	0.0064	0.0079
517	0.1757	0.1232	0.0169	0.0180	0.2389	0.0083	0.0074	0.0057	0.0064	0.0079
517.5	0.1760	0.1206	0.0165	0.0178	0.2395	0.0083	0.0073	0.0056	0.0064	0.0079
518	0.1754	0.1192	0.0160	0.0178	0.2411	0.0083	0.0073	0.0056	0.0064	0.0079
518.5	0.1742	0.1190	0.0156	0.0180	0.2436	0.0083	0.0073	0.0056	0.0064	0.0079
519	0.1728	0.1197	0.0152	0.0184	0.2463	0.0083	0.0073	0.0056	0.0064	0.0079
519.5	0.1719	0.1211	0.0150	0.0189	0.2487	0.0083	0.0073	0.0056	0.0065	0.0079
520	0.1719	0.1227	0.0149	0.0193	0.2505	0.0083	0.0073	0.0056	0.0065	0.0079
520.5	0.1728	0.1237	0.0151	0.0195	0.2511	0.0083	0.0073	0.0056	0.0065	0.0079
521	0.1746	0.1237	0.0153	0.0196	0.2503	0.0083	0.0073	0.0056	0.0065	0.0079
521.5	0.1771	0.1222	0.0157	0.0195	0.2482	0.0083	0.0072	0.0056	0.0065	0.0079
522	0.1796	0.1193	0.0160	0.0192	0.2453	0.0083	0.0072	0.0055	0.0065	0.0079
522.5	0.1816	0.1154	0.0161	0.0188	0.2423	0.0082	0.0072	0.0055	0.0065	0.0079
523	0.1826	0.1111	0.0160	0.0185	0.2398	0.0082	0.0072	0.0055	0.0065	0.0078
523.5	0.1824	0.1071	0.0158	0.0183	0.2384	0.0081	0.0071	0.0055	0.0065	0.0078
524	0.1812	0.1043	0.0154	0.0182	0.2387	0.0081	0.0071	0.0055	0.0065	0.0078
524.5	0.1792	0.1028	0.0149	0.0183	0.2405	0.0081	0.0071	0.0055	0.0065	0.0078
525	0.1770	0.1028	0.0145	0.0186	0.2436	0.0081	0.0071	0.0055	0.0065	0.0078
525.5	0.1751	0.1041	0.0141	0.0190	0.2471	0.0081	0.0071	0.0055	0.0065	0.0078
526	0.1739	0.1060	0.0140	0.0194	0.2502	0.0082	0.0071	0.0055	0.0066	0.0079
526.5	0.1735	0.1079	0.0139	0.0197	0.2522	0.0082	0.0071	0.0055	0.0066	0.0079
527	0.1741	0.1090	0.0141	0.0198	0.2524	0.0082	0.0071	0.0055	0.0066	0.0079
527.5	0.1757	0.1088	0.0145	0.0198	0.2514	0.0081	0.0071	0.0055	0.0066	0.0079
528	0.1780	0.1072	0.0149	0.0196	0.2494	0.0081	0.0071	0.0055	0.0066	0.0079
528.5	0.1803	0.1044	0.0153	0.0194	0.2470	0.0081	0.0071	0.0055	0.0066	0.0079
529	0.1822	0.1008	0.0156	0.0192	0.2446	0.0081	0.0071	0.0055	0.0066	0.0079
529.5	0.1832	0.0969	0.0158	0.0191	0.2428	0.0081	0.0071	0.0055	0.0066	0.0079
530	0.1831	0.0932	0.0157	0.0191	0.2420	0.0081	0.0071	0.0055	0.0066	0.0079
530.5	0.1820	0.0903	0.0155	0.0192	0.2424	0.0081	0.0071	0.0055	0.0066	0.0079
531	0.1801	0.0887	0.0151	0.0194	0.2442	0.0081	0.0071	0.0055	0.0066	0.0079
531.5	0.1779	0.0884	0.0147	0.0196	0.2470	0.0081	0.0071	0.0055	0.0066	0.0079
532	0.1757	0.0893	0.0143	0.0198	0.2501	0.0081	0.0071	0.0055	0.0066	0.0079
532.5	0.1739	0.0909	0.0140	0.0200	0.2527	0.0081	0.0071	0.0055	0.0066	0.0079
533	0.1730	0.0926	0.0138	0.0201	0.2545	0.0081	0.0071	0.0054	0.0066	0.0079
533.5	0.1733	0.0937	0.0139	0.0201	0.2550	0.0081	0.0070	0.0054	0.0066	0.0079
534	0.1745	0.0940	0.0141	0.0201	0.2544	0.0080	0.0070	0.0054	0.0066	0.0079
534.5	0.1764	0.0929	0.0145	0.0200	0.2526	0.0080	0.0070	0.0054	0.0066	0.0079
535	0.1787	0.0904	0.0149	0.0199	0.2502	0.0080	0.0070	0.0054	0.0066	0.0079
535.5	0.1807	0.0868	0.0153	0.0198	0.2476	0.0080	0.0070	0.0054	0.0067	0.0079
536	0.1822	0.0825	0.0155	0.0198	0.2454	0.0080	0.0070	0.0054	0.0067	0.0080

536.5	0.1829	0.0782	0.0156	0.0198	0.2444	0.0080	0.0070	0.0054	0.0067	0.0080
537	0.1824	0.0746	0.0155	0.0198	0.2449	0.0080	0.0070	0.0054	0.0067	0.0080
537.5	0.1809	0.0722	0.0153	0.0199	0.2469	0.0081	0.0070	0.0054	0.0067	0.0080
538	0.1784	0.0711	0.0149	0.0200	0.2498	0.0081	0.0070	0.0054	0.0067	0.0081
538.5	0.1755	0.0715	0.0144	0.0201	0.2530	0.0080	0.0070	0.0054	0.0067	0.0081
539	0.1729	0.0729	0.0140	0.0201	0.2558	0.0080	0.0070	0.0054	0.0067	0.0080
539.5	0.1711	0.0749	0.0137	0.0201	0.2579	0.0080	0.0070	0.0053	0.0066	0.0080
540	0.1703	0.0766	0.0136	0.0200	0.2590	0.0080	0.0070	0.0053	0.0066	0.0080
540.5	0.1705	0.0776	0.0137	0.0199	0.2590	0.0079	0.0069	0.0053	0.0066	0.0080
541	0.1715	0.0775	0.0140	0.0198	0.2580	0.0079	0.0069	0.0053	0.0066	0.0080
541.5	0.1729	0.0760	0.0145	0.0197	0.2559	0.0079	0.0069	0.0053	0.0066	0.0080
542	0.1741	0.0733	0.0149	0.0196	0.2531	0.0079	0.0069	0.0052	0.0066	0.0080
542.5	0.1749	0.0696	0.0154	0.0196	0.2500	0.0079	0.0069	0.0052	0.0066	0.0080
543	0.1748	0.0655	0.0157	0.0196	0.2473	0.0079	0.0069	0.0052	0.0066	0.0080
543.5	0.1735	0.0614	0.0158	0.0196	0.2453	0.0079	0.0069	0.0052	0.0067	0.0080
544	0.1711	0.0579	0.0157	0.0196	0.2446	0.0079	0.0068	0.0052	0.0067	0.0080
544.5	0.1678	0.0556	0.0154	0.0195	0.2456	0.0079	0.0068	0.0052	0.0067	0.0080
545	0.1644	0.0547	0.0149	0.0194	0.2482	0.0079	0.0068	0.0052	0.0067	0.0081
545.5	0.1614	0.0553	0.0144	0.0193	0.2520	0.0079	0.0068	0.0052	0.0067	0.0081
546	0.1591	0.0570	0.0140	0.0191	0.2561	0.0079	0.0068	0.0052	0.0067	0.0081
546.5	0.1577	0.0593	0.0137	0.0189	0.2597	0.0079	0.0068	0.0052	0.0067	0.0081
547	0.1573	0.0616	0.0136	0.0188	0.2621	0.0079	0.0068	0.0052	0.0067	0.0081
547.5	0.1576	0.0633	0.0137	0.0187	0.2630	0.0079	0.0068	0.0052	0.0067	0.0081
548	0.1585	0.0640	0.0141	0.0187	0.2622	0.0079	0.0068	0.0051	0.0067	0.0081
548.5	0.1596	0.0633	0.0146	0.0187	0.2600	0.0078	0.0068	0.0051	0.0067	0.0081
549	0.1606	0.0613	0.0152	0.0187	0.2570	0.0078	0.0068	0.0051	0.0067	0.0081
549.5	0.1611	0.0581	0.0157	0.0188	0.2535	0.0078	0.0068	0.0051	0.0067	0.0081
550	0.1608	0.0542	0.0162	0.0188	0.2505	0.0078	0.0068	0.0051	0.0067	0.0081
550.5	0.1594	0.0502	0.0164	0.0189	0.2485	0.0078	0.0068	0.0051	0.0068	0.0081
551	0.1572	0.0466	0.0164	0.0188	0.2480	0.0078	0.0068	0.0051	0.0068	0.0081
551.5	0.1544	0.0439	0.0162	0.0187	0.2489	0.0078	0.0068	0.0051	0.0068	0.0082
552	0.1513	0.0423	0.0157	0.0186	0.2511	0.0078	0.0068	0.0051	0.0068	0.0082
552.5	0.1484	0.0420	0.0152	0.0184	0.2542	0.0078	0.0068	0.0051	0.0068	0.0082
553	0.1461	0.0430	0.0146	0.0181	0.2578	0.0078	0.0068	0.0051	0.0069	0.0082
553.5	0.1445	0.0449	0.0142	0.0179	0.2614	0.0078	0.0068	0.0052	0.0069	0.0082
554	0.1438	0.0472	0.0139	0.0177	0.2646	0.0078	0.0068	0.0052	0.0069	0.0082
554.5	0.1439	0.0494	0.0140	0.0176	0.2667	0.0078	0.0068	0.0052	0.0070	0.0082
555	0.1444	0.0509	0.0143	0.0176	0.2672	0.0078	0.0068	0.0052	0.0070	0.0082
555.5	0.1450	0.0514	0.0149	0.0176	0.2659	0.0077	0.0068	0.0051	0.0070	0.0082
556	0.1453	0.0507	0.0156	0.0177	0.2631	0.0077	0.0068	0.0051	0.0070	0.0082
556.5	0.1448	0.0490	0.0162	0.0179	0.2596	0.0077	0.0068	0.0051	0.0071	0.0081
557	0.1435	0.0464	0.0168	0.0181	0.2560	0.0076	0.0067	0.0051	0.0071	0.0081
557.5	0.1414	0.0433	0.0170	0.0182	0.2529	0.0076	0.0067	0.0051	0.0071	0.0081
558	0.1388	0.0400	0.0171	0.0183	0.2509	0.0076	0.0067	0.0051	0.0072	0.0081
558.5	0.1358	0.0370	0.0168	0.0182	0.2502	0.0076	0.0067	0.0051	0.0072	0.0082
559	0.1329	0.0346	0.0164	0.0181	0.2509	0.0076	0.0068	0.0051	0.0073	0.0082
559.5	0.1302	0.0332	0.0158	0.0179	0.2531	0.0076	0.0068	0.0052	0.0073	0.0082
560	0.1278	0.0329	0.0151	0.0177	0.2567	0.0076	0.0068	0.0052	0.0074	0.0082
560.5	0.1259	0.0336	0.0146	0.0175	0.2611	0.0076	0.0068	0.0052	0.0074	0.0082
561	0.1245	0.0352	0.0142	0.0173	0.2657	0.0076	0.0068	0.0052	0.0075	0.0083
561.5	0.1238	0.0374	0.0141	0.0172	0.2696	0.0076	0.0067	0.0052	0.0075	0.0083
562	0.1235	0.0397	0.0142	0.0172	0.2722	0.0076	0.0067	0.0052	0.0075	0.0083
562.5	0.1235	0.0418	0.0146	0.0173	0.2730	0.0076	0.0067	0.0053	0.0076	0.0083
563	0.1234	0.0432	0.0152	0.0174	0.2717	0.0075	0.0067	0.0053	0.0076	0.0083
563.5	0.1231	0.0437	0.0158	0.0177	0.2689	0.0075	0.0067	0.0053	0.0076	0.0083
564	0.1226	0.0430	0.0164	0.0180	0.2652	0.0075	0.0067	0.0053	0.0077	0.0083
564.5	0.1214	0.0414	0.0168	0.0184	0.2611	0.0075	0.0067	0.0053	0.0077	0.0083

565	0.1197	0.0389	0.0171	0.0188	0.2571	0.0075	0.0067	0.0053	0.0078	0.0083
565.5	0.1172	0.0361	0.0171	0.0190	0.2539	0.0075	0.0067	0.0054	0.0078	0.0083
566	0.1143	0.0332	0.0169	0.0192	0.2517	0.0075	0.0067	0.0054	0.0078	0.0083
566.5	0.1112	0.0307	0.0165	0.0191	0.2509	0.0075	0.0067	0.0054	0.0079	0.0083
567	0.1080	0.0288	0.0159	0.0190	0.2517	0.0074	0.0067	0.0054	0.0079	0.0083
567.5	0.1054	0.0279	0.0152	0.0188	0.2543	0.0074	0.0067	0.0054	0.0079	0.0083
568	0.1035	0.0281	0.0147	0.0185	0.2580	0.0074	0.0067	0.0054	0.0080	0.0084
568.5	0.1021	0.0291	0.0143	0.0183	0.2623	0.0074	0.0067	0.0054	0.0080	0.0084
569	0.1013	0.0309	0.0142	0.0182	0.2665	0.0074	0.0067	0.0055	0.0080	0.0084
569.5	0.1011	0.0332	0.0143	0.0181	0.2701	0.0074	0.0067	0.0055	0.0081	0.0084
570	0.1011	0.0356	0.0146	0.0182	0.2723	0.0074	0.0067	0.0055	0.0081	0.0084
570.5	0.1011	0.0377	0.0150	0.0185	0.2730	0.0074	0.0067	0.0055	0.0082	0.0084
571	0.1009	0.0392	0.0155	0.0189	0.2722	0.0074	0.0067	0.0055	0.0082	0.0084
571.5	0.1003	0.0400	0.0161	0.0196	0.2702	0.0074	0.0067	0.0055	0.0083	0.0085
572	0.0993	0.0397	0.0165	0.0204	0.2670	0.0074	0.0068	0.0056	0.0083	0.0085
572.5	0.0977	0.0385	0.0168	0.0213	0.2633	0.0074	0.0068	0.0056	0.0083	0.0085
573	0.0958	0.0365	0.0168	0.0221	0.2596	0.0074	0.0068	0.0056	0.0084	0.0085
573.5	0.0936	0.0339	0.0167	0.0228	0.2565	0.0074	0.0068	0.0056	0.0084	0.0085
574	0.0913	0.0312	0.0164	0.0233	0.2548	0.0074	0.0068	0.0056	0.0084	0.0085
574.5	0.0891	0.0288	0.0160	0.0236	0.2548	0.0074	0.0068	0.0057	0.0085	0.0085
575	0.0870	0.0269	0.0157	0.0237	0.2564	0.0074	0.0068	0.0057	0.0085	0.0085
575.5	0.0853	0.0259	0.0154	0.0237	0.2597	0.0074	0.0068	0.0057	0.0086	0.0086
576	0.0841	0.0258	0.0152	0.0235	0.2640	0.0074	0.0068	0.0057	0.0087	0.0086
576.5	0.0833	0.0267	0.0152	0.0233	0.2688	0.0074	0.0068	0.0058	0.0087	0.0086
577	0.0829	0.0282	0.0152	0.0233	0.2735	0.0074	0.0069	0.0058	0.0088	0.0086
577.5	0.0826	0.0303	0.0153	0.0235	0.2775	0.0074	0.0069	0.0058	0.0089	0.0087
578	0.0822	0.0326	0.0155	0.0239	0.2802	0.0074	0.0069	0.0059	0.0089	0.0087
578.5	0.0815	0.0347	0.0157	0.0247	0.2813	0.0074	0.0069	0.0059	0.0090	0.0087
579	0.0807	0.0364	0.0159	0.0260	0.2807	0.0074	0.0069	0.0059	0.0090	0.0087
579.5	0.0796	0.0374	0.0161	0.0277	0.2783	0.0074	0.0069	0.0059	0.0091	0.0087
580	0.0783	0.0375	0.0162	0.0297	0.2745	0.0074	0.0069	0.0059	0.0091	0.0087
580.5	0.0768	0.0369	0.0164	0.0319	0.2697	0.0074	0.0069	0.0059	0.0091	0.0087
581	0.0750	0.0354	0.0166	0.0340	0.2646	0.0074	0.0069	0.0059	0.0091	0.0087
581.5	0.0733	0.0334	0.0169	0.0358	0.2601	0.0074	0.0069	0.0060	0.0092	0.0087
582	0.0717	0.0311	0.0173	0.0373	0.2571	0.0074	0.0070	0.0060	0.0092	0.0087
582.5	0.0703	0.0288	0.0178	0.0384	0.2561	0.0074	0.0070	0.0060	0.0092	0.0087
583	0.0692	0.0269	0.0183	0.0391	0.2573	0.0074	0.0070	0.0061	0.0093	0.0087
583.5	0.0684	0.0255	0.0189	0.0395	0.2599	0.0074	0.0070	0.0061	0.0093	0.0087
584	0.0676	0.0247	0.0195	0.0395	0.2634	0.0074	0.0070	0.0061	0.0094	0.0087
584.5	0.0670	0.0248	0.0198	0.0396	0.2676	0.0074	0.0071	0.0062	0.0094	0.0087
585	0.0664	0.0255	0.0198	0.0398	0.2718	0.0074	0.0071	0.0062	0.0095	0.0087
585.5	0.0660	0.0270	0.0197	0.0405	0.2758	0.0074	0.0070	0.0062	0.0095	0.0087
586	0.0657	0.0290	0.0193	0.0421	0.2794	0.0074	0.0071	0.0063	0.0095	0.0087
586.5	0.0654	0.0313	0.0190	0.0445	0.2819	0.0074	0.0071	0.0063	0.0096	0.0087
587	0.0651	0.0334	0.0188	0.0477	0.2828	0.0074	0.0071	0.0064	0.0096	0.0088
587.5	0.0647	0.0351	0.0191	0.0517	0.2817	0.0074	0.0071	0.0064	0.0096	0.0088
588	0.0641	0.0362	0.0198	0.0560	0.2789	0.0074	0.0072	0.0065	0.0097	0.0088
588.5	0.0633	0.0365	0.0214	0.0605	0.2750	0.0074	0.0072	0.0065	0.0097	0.0088
589	0.0626	0.0360	0.0237	0.0647	0.2705	0.0074	0.0072	0.0065	0.0097	0.0088
589.5	0.0619	0.0349	0.0267	0.0684	0.2664	0.0074	0.0072	0.0066	0.0098	0.0088
590	0.0612	0.0332	0.0303	0.0714	0.2634	0.0074	0.0072	0.0066	0.0098	0.0088
590.5	0.0605	0.0311	0.0339	0.0734	0.2616	0.0074	0.0072	0.0066	0.0099	0.0088
591	0.0598	0.0288	0.0374	0.0745	0.2611	0.0074	0.0072	0.0066	0.0099	0.0088
591.5	0.0590	0.0267	0.0401	0.0749	0.2620	0.0074	0.0072	0.0066	0.0099	0.0088
592	0.0581	0.0250	0.0421	0.0750	0.2644	0.0074	0.0072	0.0066	0.0100	0.0088
592.5	0.0573	0.0240	0.0431	0.0753	0.2681	0.0074	0.0072	0.0066	0.0100	0.0087
593	0.0567	0.0238	0.0433	0.0761	0.2727	0.0074	0.0071	0.0066	0.0100	0.0087

593.5	0.0561	0.0243	0.0431	0.0778	0.2778	0.0074	0.0071	0.0066	0.0101	0.0087
594	0.0557	0.0256	0.0429	0.0804	0.2825	0.0074	0.0071	0.0067	0.0101	0.0087
594.5	0.0552	0.0273	0.0431	0.0840	0.2861	0.0074	0.0071	0.0067	0.0101	0.0087
595	0.0546	0.0292	0.0443	0.0886	0.2881	0.0074	0.0071	0.0067	0.0101	0.0087
595.5	0.0540	0.0311	0.0470	0.0940	0.2882	0.0074	0.0071	0.0067	0.0101	0.0087
596	0.0534	0.0328	0.0512	0.1000	0.2866	0.0074	0.0071	0.0067	0.0102	0.0087
596.5	0.0528	0.0340	0.0571	0.1060	0.2837	0.0074	0.0071	0.0067	0.0102	0.0088
597	0.0525	0.0347	0.0644	0.1117	0.2800	0.0074	0.0071	0.0068	0.0102	0.0088
597.5	0.0524	0.0349	0.0725	0.1165	0.2760	0.0074	0.0071	0.0068	0.0103	0.0088
598	0.0524	0.0344	0.0807	0.1198	0.2722	0.0074	0.0071	0.0068	0.0104	0.0089
598.5	0.0525	0.0332	0.0881	0.1217	0.2690	0.0074	0.0072	0.0069	0.0105	0.0089
599	0.0526	0.0316	0.0938	0.1224	0.2667	0.0075	0.0072	0.0069	0.0105	0.0089
599.5	0.0525	0.0296	0.0974	0.1221	0.2656	0.0074	0.0072	0.0069	0.0106	0.0089
600	0.0522	0.0275	0.0990	0.1213	0.2661	0.0074	0.0072	0.0069	0.0106	0.0089
600.5	0.0517	0.0258	0.0990	0.1208	0.2681	0.0074	0.0071	0.0069	0.0106	0.0089
601	0.0511	0.0244	0.0980	0.1208	0.2716	0.0074	0.0071	0.0069	0.0106	0.0089
601.5	0.0503	0.0237	0.0967	0.1217	0.2762	0.0074	0.0071	0.0069	0.0106	0.0089
602	0.0496	0.0237	0.0959	0.1238	0.2814	0.0074	0.0071	0.0069	0.0106	0.0089
602.5	0.0488	0.0243	0.0962	0.1269	0.2864	0.0074	0.0071	0.0070	0.0106	0.0089
603	0.0480	0.0255	0.0982	0.1308	0.2910	0.0074	0.0071	0.0070	0.0107	0.0089
603.5	0.0473	0.0271	0.1020	0.1353	0.2945	0.0074	0.0071	0.0070	0.0107	0.0089
604	0.0466	0.0289	0.1078	0.1402	0.2962	0.0074	0.0071	0.0070	0.0107	0.0089
604.5	0.0460	0.0307	0.1150	0.1450	0.2962	0.0074	0.0071	0.0070	0.0107	0.0089
605	0.0456	0.0323	0.1226	0.1495	0.2945	0.0074	0.0071	0.0070	0.0107	0.0090
605.5	0.0452	0.0336	0.1300	0.1533	0.2914	0.0074	0.0071	0.0070	0.0107	0.0090
606	0.0450	0.0344	0.1365	0.1561	0.2871	0.0074	0.0071	0.0070	0.0108	0.0090
606.5	0.0449	0.0345	0.1417	0.1574	0.2826	0.0074	0.0071	0.0070	0.0108	0.0089
607	0.0448	0.0340	0.1452	0.1574	0.2782	0.0074	0.0071	0.0070	0.0108	0.0089
607.5	0.0449	0.0330	0.1472	0.1564	0.2745	0.0074	0.0071	0.0070	0.0108	0.0089
608	0.0450	0.0315	0.1476	0.1548	0.2721	0.0074	0.0071	0.0070	0.0108	0.0089
608.5	0.0451	0.0297	0.1464	0.1531	0.2715	0.0074	0.0071	0.0071	0.0109	0.0090
609	0.0452	0.0279	0.1440	0.1518	0.2728	0.0074	0.0071	0.0071	0.0109	0.0090
609.5	0.0451	0.0263	0.1412	0.1512	0.2758	0.0075	0.0072	0.0071	0.0110	0.0090
610	0.0447	0.0249	0.1388	0.1515	0.2800	0.0075	0.0072	0.0071	0.0110	0.0091
610.5	0.0441	0.0240	0.1376	0.1529	0.2849	0.0075	0.0072	0.0072	0.0111	0.0091
611	0.0434	0.0237	0.1380	0.1553	0.2895	0.0075	0.0072	0.0072	0.0111	0.0091
611.5	0.0425	0.0239	0.1401	0.1585	0.2933	0.0075	0.0072	0.0072	0.0111	0.0091
612	0.0414	0.0247	0.1437	0.1621	0.2962	0.0074	0.0072	0.0072	0.0111	0.0091
612.5	0.0403	0.0260	0.1487	0.1658	0.2979	0.0074	0.0072	0.0072	0.0111	0.0091
613	0.0393	0.0275	0.1547	0.1693	0.2986	0.0074	0.0072	0.0072	0.0111	0.0091
613.5	0.0385	0.0293	0.1614	0.1725	0.2982	0.0074	0.0072	0.0072	0.0111	0.0091
614	0.0379	0.0310	0.1680	0.1751	0.2969	0.0074	0.0072	0.0072	0.0111	0.0091
614.5	0.0377	0.0325	0.1738	0.1770	0.2945	0.0074	0.0072	0.0072	0.0111	0.0092
615	0.0376	0.0337	0.1778	0.1777	0.2908	0.0074	0.0072	0.0072	0.0112	0.0092
615.5	0.0378	0.0343	0.1796	0.1772	0.2861	0.0074	0.0072	0.0072	0.0112	0.0092
616	0.0382	0.0344	0.1790	0.1756	0.2806	0.0074	0.0073	0.0072	0.0113	0.0092
616.5	0.0386	0.0339	0.1762	0.1731	0.2751	0.0074	0.0073	0.0072	0.0113	0.0092
617	0.0390	0.0328	0.1718	0.1703	0.2705	0.0074	0.0073	0.0072	0.0113	0.0092
617.5	0.0393	0.0313	0.1669	0.1679	0.2678	0.0074	0.0073	0.0072	0.0113	0.0092
618	0.0394	0.0296	0.1621	0.1664	0.2675	0.0074	0.0073	0.0072	0.0113	0.0092
618.5	0.0394	0.0279	0.1584	0.1660	0.2695	0.0074	0.0073	0.0072	0.0113	0.0092
619	0.0392	0.0263	0.1565	0.1668	0.2734	0.0074	0.0073	0.0072	0.0113	0.0092
619.5	0.0388	0.0251	0.1568	0.1687	0.2785	0.0074	0.0073	0.0072	0.0114	0.0092
620	0.0383	0.0242	0.1593	0.1715	0.2843	0.0075	0.0073	0.0072	0.0114	0.0092
620.5	0.0377	0.0239	0.1636	0.1748	0.2899	0.0075	0.0073	0.0072	0.0114	0.0092
621	0.0369	0.0240	0.1692	0.1784	0.2947	0.0075	0.0073	0.0073	0.0114	0.0092
621.5	0.0361	0.0247	0.1754	0.1819	0.2986	0.0075	0.0073	0.0073	0.0115	0.0093

622	0.0353	0.0259	0.1813	0.1851	0.3013	0.0076	0.0073	0.0073	0.0115	0.0093
622.5	0.0346	0.0274	0.1864	0.1877	0.3028	0.0076	0.0074	0.0073	0.0115	0.0093
623	0.0340	0.0291	0.1903	0.1895	0.3032	0.0076	0.0074	0.0073	0.0115	0.0093
623.5	0.0335	0.0308	0.1924	0.1902	0.3023	0.0076	0.0074	0.0073	0.0115	0.0093
624	0.0333	0.0324	0.1925	0.1897	0.2998	0.0076	0.0073	0.0073	0.0115	0.0093
624.5	0.0333	0.0336	0.1908	0.1879	0.2961	0.0076	0.0073	0.0073	0.0115	0.0094
625	0.0336	0.0345	0.1874	0.1852	0.2913	0.0076	0.0073	0.0073	0.0115	0.0094
625.5	0.0339	0.0348	0.1826	0.1820	0.2858	0.0077	0.0073	0.0074	0.0115	0.0094
626	0.0344	0.0347	0.1772	0.1789	0.2807	0.0077	0.0073	0.0074	0.0115	0.0094
626.5	0.0348	0.0341	0.1718	0.1763	0.2766	0.0077	0.0073	0.0074	0.0115	0.0094
627	0.0352	0.0331	0.1671	0.1745	0.2741	0.0077	0.0074	0.0074	0.0115	0.0094
627.5	0.0354	0.0317	0.1638	0.1738	0.2735	0.0077	0.0074	0.0074	0.0115	0.0094
628	0.0354	0.0302	0.1622	0.1742	0.2746	0.0077	0.0074	0.0074	0.0115	0.0094
628.5	0.0353	0.0286	0.1624	0.1755	0.2773	0.0076	0.0074	0.0074	0.0115	0.0094
629	0.0350	0.0272	0.1645	0.1776	0.2810	0.0076	0.0074	0.0074	0.0115	0.0094
629.5	0.0345	0.0259	0.1680	0.1801	0.2852	0.0076	0.0073	0.0074	0.0115	0.0094
630	0.0340	0.0251	0.1726	0.1830	0.2894	0.0076	0.0073	0.0073	0.0115	0.0094
630.5	0.0334	0.0247	0.1779	0.1860	0.2934	0.0076	0.0073	0.0073	0.0115	0.0094
631	0.0328	0.0248	0.1834	0.1888	0.2974	0.0076	0.0073	0.0073	0.0115	0.0094
631.5	0.0322	0.0254	0.1882	0.1911	0.3012	0.0076	0.0073	0.0074	0.0115	0.0094
632	0.0316	0.0265	0.1920	0.1929	0.3046	0.0076	0.0074	0.0074	0.0115	0.0094
632.5	0.0311	0.0280	0.1942	0.1939	0.3075	0.0076	0.0074	0.0074	0.0116	0.0095
633	0.0307	0.0297	0.1945	0.1938	0.3088	0.0076	0.0074	0.0074	0.0116	0.0095
633.5	0.0304	0.0314	0.1929	0.1926	0.3078	0.0077	0.0074	0.0074	0.0116	0.0095
634	0.0303	0.0329	0.1894	0.1902	0.3044	0.0077	0.0074	0.0074	0.0116	0.0095
634.5	0.0303	0.0340	0.1845	0.1871	0.2990	0.0076	0.0074	0.0074	0.0116	0.0095
635	0.0305	0.0348	0.1788	0.1837	0.2924	0.0076	0.0074	0.0074	0.0116	0.0095
635.5	0.0308	0.0351	0.1733	0.1806	0.2858	0.0076	0.0074	0.0074	0.0116	0.0095
636	0.0314	0.0350	0.1686	0.1783	0.2802	0.0076	0.0074	0.0074	0.0116	0.0094
636.5	0.0321	0.0346	0.1655	0.1773	0.2764	0.0076	0.0074	0.0074	0.0116	0.0094
637	0.0329	0.0339	0.1647	0.1774	0.2748	0.0076	0.0074	0.0074	0.0116	0.0095
637.5	0.0338	0.0330	0.1660	0.1787	0.2755	0.0076	0.0074	0.0074	0.0116	0.0095
638	0.0347	0.0319	0.1688	0.1809	0.2780	0.0076	0.0075	0.0074	0.0116	0.0095
638.5	0.0355	0.0307	0.1729	0.1836	0.2820	0.0076	0.0075	0.0074	0.0116	0.0095
639	0.0360	0.0296	0.1775	0.1864	0.2870	0.0076	0.0075	0.0074	0.0116	0.0095
639.5	0.0363	0.0287	0.1824	0.1889	0.2923	0.0076	0.0075	0.0074	0.0117	0.0096
640	0.0363	0.0279	0.1872	0.1910	0.2974	0.0076	0.0075	0.0074	0.0116	0.0096
640.5	0.0359	0.0275	0.1918	0.1923	0.3019	0.0076	0.0075	0.0074	0.0116	0.0095
641	0.0354	0.0275	0.1956	0.1931	0.3057	0.0076	0.0074	0.0074	0.0116	0.0095
641.5	0.0348	0.0279	0.1982	0.1935	0.3087	0.0076	0.0074	0.0074	0.0115	0.0095
642	0.0343	0.0288	0.1992	0.1936	0.3107	0.0076	0.0074	0.0074	0.0115	0.0095
642.5	0.0338	0.0301	0.1984	0.1931	0.3115	0.0076	0.0074	0.0074	0.0115	0.0095
643	0.0335	0.0317	0.1960	0.1918	0.3108	0.0076	0.0074	0.0074	0.0115	0.0095
643.5	0.0332	0.0335	0.1923	0.1897	0.3084	0.0077	0.0074	0.0074	0.0115	0.0095
644	0.0331	0.0352	0.1878	0.1869	0.3049	0.0077	0.0074	0.0074	0.0116	0.0095
644.5	0.0331	0.0369	0.1829	0.1839	0.3004	0.0077	0.0074	0.0074	0.0116	0.0096
645	0.0334	0.0384	0.1780	0.1810	0.2955	0.0077	0.0075	0.0074	0.0116	0.0096
645.5	0.0339	0.0396	0.1738	0.1785	0.2907	0.0077	0.0075	0.0075	0.0117	0.0096
646	0.0347	0.0404	0.1710	0.1768	0.2863	0.0078	0.0075	0.0074	0.0117	0.0096
646.5	0.0358	0.0408	0.1700	0.1759	0.2825	0.0078	0.0075	0.0074	0.0117	0.0096
647	0.0371	0.0408	0.1710	0.1762	0.2800	0.0078	0.0074	0.0074	0.0117	0.0096
647.5	0.0387	0.0404	0.1739	0.1779	0.2795	0.0078	0.0074	0.0074	0.0117	0.0096
648	0.0403	0.0397	0.1784	0.1807	0.2812	0.0078	0.0074	0.0074	0.0118	0.0096
648.5	0.0420	0.0387	0.1839	0.1844	0.2850	0.0078	0.0075	0.0075	0.0118	0.0096
649	0.0437	0.0377	0.1900	0.1882	0.2902	0.0079	0.0075	0.0075	0.0119	0.0097
649.5	0.0452	0.0365	0.1960	0.1918	0.2961	0.0079	0.0075	0.0075	0.0119	0.0097
650	0.0465	0.0355	0.2015	0.1948	0.3018	0.0079	0.0075	0.0075	0.0119	0.0097

650.5	0.0473	0.0349	0.2064	0.1971	0.3067	0.0079	0.0075	0.0075	0.0119	0.0097
651	0.0476	0.0347	0.2101	0.1986	0.3110	0.0080	0.0076	0.0075	0.0120	0.0097
651.5	0.0476	0.0351	0.2124	0.1996	0.3150	0.0080	0.0076	0.0075	0.0120	0.0098
652	0.0471	0.0360	0.2130	0.1999	0.3187	0.0080	0.0077	0.0076	0.0120	0.0098
652.5	0.0464	0.0374	0.2117	0.1993	0.3217	0.0081	0.0077	0.0076	0.0120	0.0099
653	0.0457	0.0393	0.2084	0.1977	0.3235	0.0081	0.0078	0.0076	0.0121	0.0099
653.5	0.0450	0.0415	0.2039	0.1952	0.3238	0.0081	0.0078	0.0077	0.0121	0.0099
654	0.0444	0.0441	0.1989	0.1920	0.3220	0.0082	0.0079	0.0077	0.0121	0.0100
654.5	0.0442	0.0466	0.1939	0.1885	0.3180	0.0082	0.0079	0.0077	0.0121	0.0100
655	0.0444	0.0491	0.1897	0.1852	0.3126	0.0082	0.0079	0.0077	0.0121	0.0100
655.5	0.0450	0.0513	0.1867	0.1827	0.3066	0.0082	0.0080	0.0077	0.0121	0.0100
656	0.0461	0.0531	0.1851	0.1810	0.3007	0.0082	0.0080	0.0077	0.0121	0.0100
656.5	0.0476	0.0544	0.1849	0.1806	0.2957	0.0082	0.0080	0.0077	0.0120	0.0100
657	0.0497	0.0553	0.1864	0.1816	0.2920	0.0082	0.0080	0.0078	0.0120	0.0100
657.5	0.0522	0.0558	0.1893	0.1837	0.2896	0.0082	0.0080	0.0078	0.0120	0.0100
658	0.0552	0.0558	0.1937	0.1868	0.2887	0.0082	0.0080	0.0078	0.0120	0.0100
658.5	0.0586	0.0555	0.1995	0.1905	0.2894	0.0082	0.0080	0.0078	0.0121	0.0100
659	0.0623	0.0550	0.2063	0.1943	0.2914	0.0082	0.0080	0.0078	0.0121	0.0100
659.5	0.0659	0.0543	0.2135	0.1979	0.2946	0.0083	0.0081	0.0079	0.0121	0.0100
660	0.0693	0.0535	0.2206	0.2009	0.2986	0.0083	0.0081	0.0079	0.0121	0.0100
660.5	0.0724	0.0529	0.2269	0.2033	0.3032	0.0083	0.0081	0.0079	0.0121	0.0100
661	0.0749	0.0525	0.2317	0.2049	0.3082	0.0083	0.0081	0.0080	0.0121	0.0101
661.5	0.0768	0.0524	0.2348	0.2055	0.3135	0.0083	0.0081	0.0080	0.0121	0.0100
662	0.0778	0.0528	0.2359	0.2051	0.3190	0.0083	0.0081	0.0080	0.0121	0.0100
662.5	0.0780	0.0537	0.2347	0.2037	0.3242	0.0083	0.0081	0.0080	0.0121	0.0100
663	0.0775	0.0551	0.2312	0.2014	0.3284	0.0083	0.0081	0.0080	0.0121	0.0100
663.5	0.0765	0.0570	0.2258	0.1984	0.3306	0.0083	0.0081	0.0080	0.0121	0.0100
664	0.0751	0.0592	0.2192	0.1951	0.3302	0.0083	0.0081	0.0080	0.0121	0.0100
664.5	0.0737	0.0616	0.2123	0.1916	0.3271	0.0082	0.0081	0.0080	0.0120	0.0099
665	0.0726	0.0639	0.2057	0.1881	0.3219	0.0082	0.0081	0.0080	0.0120	0.0099
665.5	0.0721	0.0662	0.2001	0.1851	0.3150	0.0081	0.0080	0.0080	0.0119	0.0098
666	0.0726	0.0683	0.1962	0.1828	0.3075	0.0081	0.0080	0.0080	0.0118	0.0098
666.5	0.0740	0.0704	0.1940	0.1815	0.3001	0.0081	0.0079	0.0079	0.0117	0.0097
667	0.0765	0.0724	0.1936	0.1815	0.2934	0.0081	0.0079	0.0079	0.0117	0.0097
667.5	0.0798	0.0740	0.1948	0.1826	0.2876	0.0081	0.0079	0.0079	0.0117	0.0097
668	0.0837	0.0753	0.1972	0.1848	0.2832	0.0081	0.0079	0.0079	0.0117	0.0097
668.5	0.0881	0.0762	0.2005	0.1880	0.2803	0.0081	0.0079	0.0080	0.0117	0.0097
669	0.0926	0.0766	0.2042	0.1916	0.2788	0.0081	0.0079	0.0080	0.0117	0.0097
669.5	0.0973	0.0768	0.2081	0.1952	0.2786	0.0081	0.0079	0.0080	0.0116	0.0097
670	0.1020	0.0768	0.2121	0.1986	0.2799	0.0081	0.0079	0.0080	0.0116	0.0097
670.5	0.1065	0.0769	0.2159	0.2015	0.2824	0.0081	0.0079	0.0080	0.0116	0.0097
671	0.1104	0.0770	0.2188	0.2036	0.2859	0.0081	0.0079	0.0080	0.0116	0.0097
671.5	0.1137	0.0773	0.2206	0.2050	0.2900	0.0081	0.0079	0.0080	0.0116	0.0097
672	0.1162	0.0779	0.2213	0.2056	0.2943	0.0082	0.0079	0.0081	0.0116	0.0097
672.5	0.1178	0.0788	0.2205	0.2054	0.2983	0.0082	0.0079	0.0081	0.0117	0.0097
673	0.1186	0.0800	0.2185	0.2043	0.3018	0.0082	0.0079	0.0081	0.0117	0.0097
673.5	0.1189	0.0816	0.2156	0.2025	0.3047	0.0082	0.0079	0.0081	0.0117	0.0097
674	0.1188	0.0837	0.2120	0.1999	0.3068	0.0082	0.0079	0.0081	0.0117	0.0097
674.5	0.1184	0.0861	0.2080	0.1967	0.3080	0.0082	0.0080	0.0081	0.0117	0.0097
675	0.1181	0.0889	0.2039	0.1934	0.3083	0.0082	0.0080	0.0081	0.0117	0.0097
675.5	0.1181	0.0919	0.2003	0.1903	0.3079	0.0082	0.0080	0.0082	0.0117	0.0097
676	0.1188	0.0952	0.1976	0.1880	0.3066	0.0082	0.0080	0.0082	0.0117	0.0098
676.5	0.1203	0.0986	0.1961	0.1866	0.3045	0.0082	0.0080	0.0082	0.0118	0.0098
677	0.1228	0.1019	0.1960	0.1863	0.3016	0.0083	0.0080	0.0083	0.0118	0.0099
677.5	0.1263	0.1052	0.1972	0.1869	0.2979	0.0083	0.0081	0.0083	0.0119	0.0099
678	0.1307	0.1083	0.1998	0.1882	0.2937	0.0084	0.0081	0.0083	0.0119	0.0100
678.5	0.1365	0.1113	0.2038	0.1903	0.2896	0.0084	0.0081	0.0084	0.0119	0.0100

679	0.1432	0.1142	0.2091	0.1931	0.2861	0.0085	0.0081	0.0084	0.0120	0.0101
679.5	0.1508	0.1169	0.2151	0.1965	0.2837	0.0085	0.0082	0.0085	0.0120	0.0101
680	0.1593	0.1194	0.2216	0.2005	0.2827	0.0085	0.0082	0.0085	0.0121	0.0102
680.5	0.1684	0.1216	0.2279	0.2044	0.2832	0.0086	0.0083	0.0085	0.0121	0.0102
681	0.1776	0.1235	0.2337	0.2078	0.2852	0.0086	0.0083	0.0086	0.0122	0.0102
681.5	0.1872	0.1253	0.2392	0.2106	0.2887	0.0087	0.0083	0.0086	0.0122	0.0103
682	0.1963	0.1269	0.2441	0.2125	0.2937	0.0087	0.0084	0.0086	0.0123	0.0103
682.5	0.2046	0.1284	0.2480	0.2137	0.2997	0.0087	0.0084	0.0086	0.0123	0.0103
683	0.2115	0.1301	0.2506	0.2140	0.3062	0.0088	0.0085	0.0087	0.0124	0.0103
683.5	0.2165	0.1318	0.2513	0.2136	0.3129	0.0088	0.0085	0.0087	0.0124	0.0103
684	0.2198	0.1339	0.2501	0.2125	0.3192	0.0088	0.0086	0.0087	0.0124	0.0103
684.5	0.2214	0.1365	0.2472	0.2107	0.3250	0.0088	0.0086	0.0087	0.0124	0.0103
685	0.2217	0.1394	0.2434	0.2082	0.3302	0.0088	0.0086	0.0087	0.0124	0.0104
685.5	0.2213	0.1428	0.2390	0.2050	0.3346	0.0088	0.0087	0.0087	0.0125	0.0104
686	0.2205	0.1464	0.2345	0.2015	0.3380	0.0088	0.0087	0.0088	0.0125	0.0104
686.5	0.2200	0.1504	0.2306	0.1980	0.3401	0.0089	0.0087	0.0088	0.0126	0.0104
687	0.2202	0.1544	0.2275	0.1952	0.3407	0.0089	0.0087	0.0088	0.0126	0.0104
687.5	0.2216	0.1581	0.2260	0.1934	0.3396	0.0089	0.0088	0.0088	0.0127	0.0104
688	0.2243	0.1616	0.2264	0.1927	0.3371	0.0090	0.0088	0.0089	0.0127	0.0105
688.5	0.2280	0.1648	0.2285	0.1931	0.3334	0.0090	0.0088	0.0089	0.0127	0.0105
689	0.2326	0.1676	0.2322	0.1946	0.3290	0.0090	0.0088	0.0089	0.0128	0.0105
689.5	0.2379	0.1704	0.2375	0.1970	0.3242	0.0090	0.0088	0.0089	0.0128	0.0106
690	0.2436	0.1731	0.2433	0.2003	0.3192	0.0091	0.0089	0.0089	0.0128	0.0106
690.5	0.2498	0.1757	0.2491	0.2043	0.3144	0.0091	0.0089	0.0089	0.0128	0.0106
691	0.2565	0.1779	0.2543	0.2084	0.3101	0.0091	0.0089	0.0090	0.0128	0.0107
691.5	0.2633	0.1796	0.2585	0.2121	0.3066	0.0091	0.0089	0.0090	0.0128	0.0107
692	0.2697	0.1808	0.2617	0.2152	0.3041	0.0091	0.0089	0.0090	0.0128	0.0107
692.5	0.2755	0.1819	0.2642	0.2177	0.3032	0.0091	0.0088	0.0090	0.0128	0.0107
693	0.2803	0.1830	0.2666	0.2196	0.3041	0.0091	0.0088	0.0090	0.0128	0.0107
693.5	0.2841	0.1843	0.2685	0.2209	0.3067	0.0090	0.0088	0.0090	0.0128	0.0108
694	0.2873	0.1859	0.2695	0.2215	0.3107	0.0090	0.0088	0.0090	0.0128	0.0108
694.5	0.2900	0.1877	0.2694	0.2214	0.3155	0.0090	0.0088	0.0090	0.0129	0.0108
695	0.2920	0.1894	0.2676	0.2201	0.3203	0.0090	0.0088	0.0090	0.0129	0.0109
695.5	0.2929	0.1910	0.2641	0.2177	0.3251	0.0090	0.0088	0.0090	0.0129	0.0109
696	0.2927	0.1927	0.2593	0.2144	0.3295	0.0090	0.0088	0.0090	0.0129	0.0109
696.5	0.2913	0.1945	0.2536	0.2107	0.3336	0.0090	0.0088	0.0090	0.0129	0.0108
697	0.2886	0.1964	0.2475	0.2066	0.3372	0.0090	0.0087	0.0090	0.0129	0.0108
697.5	0.2852	0.1986	0.2414	0.2026	0.3400	0.0090	0.0087	0.0090	0.0128	0.0108
698	0.2819	0.2007	0.2357	0.1991	0.3418	0.0089	0.0087	0.0090	0.0128	0.0108
698.5	0.2791	0.2026	0.2307	0.1962	0.3424	0.0089	0.0086	0.0090	0.0128	0.0107
699	0.2771	0.2045	0.2270	0.1941	0.3417	0.0089	0.0086	0.0090	0.0128	0.0107
699.5	0.2762	0.2062	0.2248	0.1929	0.3395	0.0088	0.0086	0.0089	0.0127	0.0107
700	0.2766	0.2080	0.2246	0.1927	0.3358	0.0088	0.0086	0.0089	0.0127	0.0107