



**OWNER'S MANUAL**  
**Model M704-5 Solar LED Marine Lantern**





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# 1.0 Introduction

This manual will familiarize you with the features and operation standards of Carmanah's Model M704-5 lantern enabling you to achieve optimum performance wherever your M704-5 lantern is installed.

The Model M704-5 lantern is self-contained, making it ideal for use as an aid-to-navigation on buoys, at marinas, on rivers, harbors, aquaculture installations, and many other applications requiring a compact, yet powerful, lantern.

The optional Global Positioning Satellite (GPS) synchronization feature enables you to set-up any number of M704-5 lanterns to flash in perfect unison.

Your M704-5 lantern was likely programmed with a flash pattern (the cyclical ON/OFF timing pattern of a lantern's flash) specific to your organization prior to shipping. If not, the default flash code for the M704-5 lantern is 064; see section 3.3.3 *Returning the M704-5 Lantern to Factory Default Settings*.

An optional infrared programmer for the M704-5 lantern is available from Carmanah or an authorized distributor. The infrared programmer enables you to perform the following functions:

- ◆ set the flash pattern
- ◆ automatically or manually decrease light intensity for installations with low levels of sunlight
- ◆ choose a High/Low power setting specific to either 4 or 3 nautical mile (NM) applications respectively
- ◆ turn the lantern on/off at various ambient light levels
- ◆ determine usable battery charge (in 10% increments)
- ◆ place the M704-5 in OFF mode
- ◆ place the M704-5 in SLEEP mode
- ◆ reset the factory defaults



If the M704-5 lantern will not be immediately deployed, please refer to section 5.0 *Preparing the M704-5 Lantern for Storage* and review the storage instructions to ensure the M704-5 lantern is ready to use when installation is required.



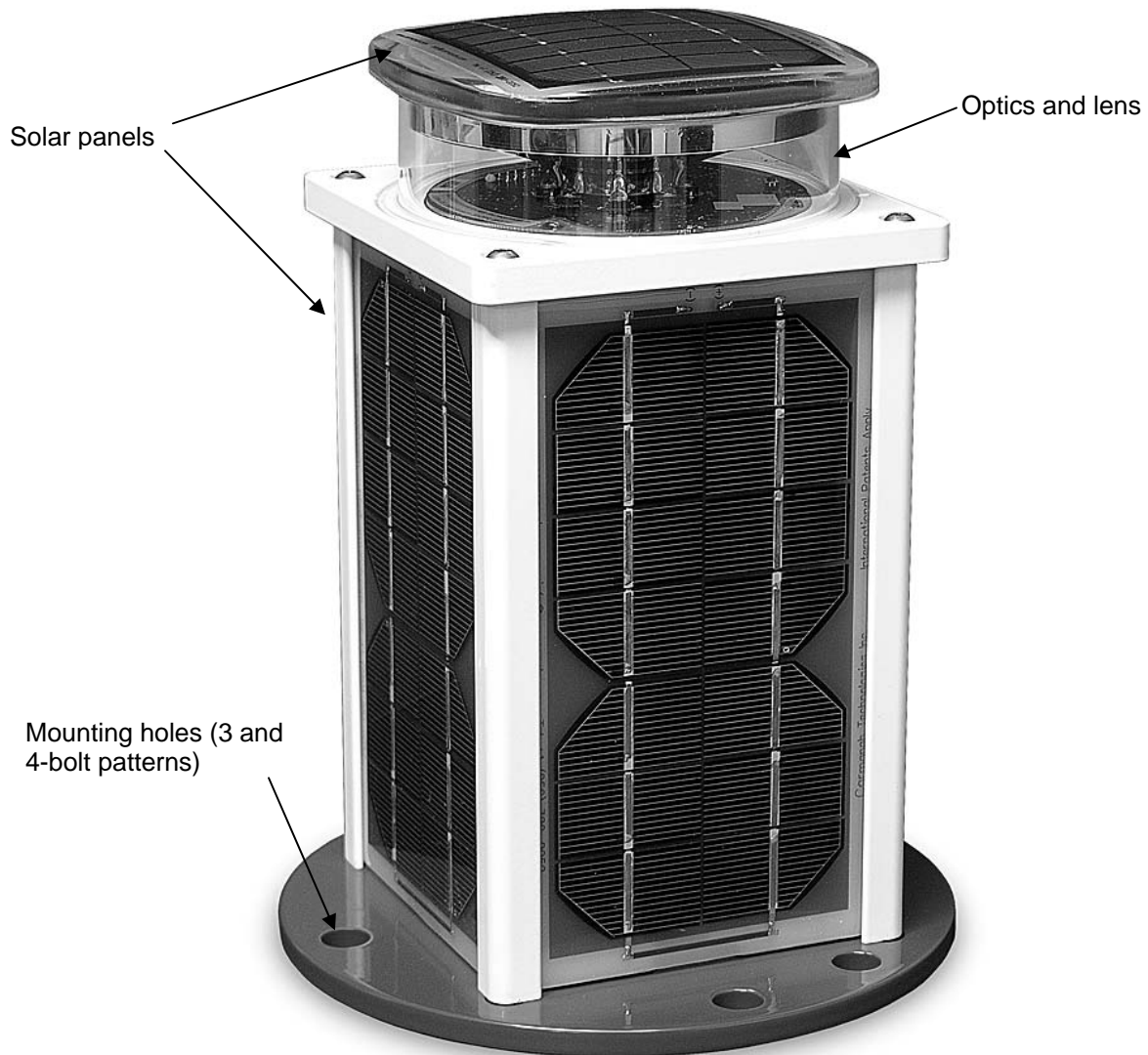
The top solar panel is not designed to support the full weight of this lantern.



**DO NOT LIFT THE LANTERN BY THE TOP SOLAR PANEL**

## 2.0 Component Identification

Figure 2-1 shows the components of the M704-5 lantern.



**Figure 2-1: Components of the M704-5 lantern**

## 3.0 Programming the M704-5 Lantern



Please thoroughly read these instructions before proceeding with the installation.

### 3.1 Preparing the M704-5 Lantern for Programming

The M704-5 lantern has two modes for conserving power during times it is not in use; SLEEP mode and OFF mode.

If your M704-5 lantern was pre-programmed by either Carmanah or an authorized distributor before shipping to you, it will be in SLEEP mode. Otherwise, your M704-5 lantern will be shipped to you in OFF mode.

**SLEEP Mode** When the M704-5 lantern is exposed to 24 hours of darkness, it will enter SLEEP mode. While in SLEEP mode, it will draw very little power from the batteries. When the M704-5 lantern is removed from the box and exposed to light, it will come out of SLEEP mode and resume normal operation.

**OFF Mode** Infrared programmer code 0 0 0 puts the M704-5 lantern into OFF mode. In OFF mode, the M704-5 lantern uses the absolute minimum amount of power. OFF mode is typically used for storage; therefore, when the lantern is in OFF mode, exposing it to light will not return it to normal operation. The infrared programmer must be used to bring the M704-5 lantern out of OFF mode.

If Carmanah or one of its authorized distributors programmed the M704-5 lantern prior to you receiving it, it is ready to install. Otherwise, you will need the optional infrared programmer to set up the M704-5 lantern as outlined in this section. To obtain a Carmanah programmer, please contact Carmanah or an authorized distributor.

### 3.2 Infrared Programmer

All functions of the Model M704-5 lantern are controlled by an infrared programmer. The infrared sensor inside the lantern accepts the commands from the programmer. The programmer enables you to customize the lantern's functions. You can set the flash pattern, adjust the intensity to suit the solar illumination, set the sensitivity level to suit the on/off requirements of a user, and test the lantern. Once the settings are programmed, the lantern can be placed in a box for storage or shipping. The lantern automatically turns off after 24 hours, and re-starts with all the previously programmed functions when taken out of the box and installed.

*Table 3-1: Programmer Buttons* describes the buttons on the programmer.

**Table 3-1: Programmer Buttons**







Button or Symbol	Description
	The start button must be pressed to initiate any programming sequence.
	The Enter button is used to end the programming sequence.
	This symbol indicates that a numerical entry is required.

Table 3-2: Lantern Programming Symbols describes the symbols used in this manual to indicate the response from the M704-5 lantern during programming.

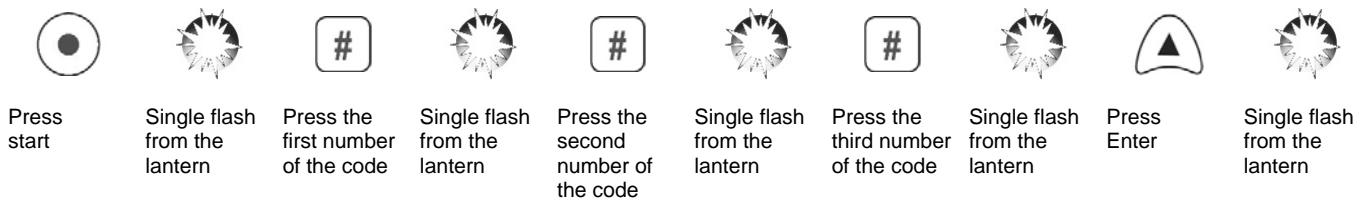
**Table 3-2: Lantern Programming Symbols**

Symbol	Description
	The single burst symbol represents the 80 millisecond flash from the lantern indicating a correct entry.
	The double burst symbol represents two longer flashes from the lantern which indicate an incorrect entry. The code has not been accepted and you must restart the programming sequence.
	The triple burst symbol represents three quick flashes from the lantern indicating that the code has been accepted.

### 3.2.1 Programming Sequence

The programming sequence is the series of five button presses used to program a particular feature or setting into the M704-5 lantern. The command sequence always follows the format show in *Figure 3-1: Programming Sequence*.



**Figure 3-1: Programming Sequence**



Do not press the buttons on the programmer too fast and do not proceed until you see a flash from the lantern.

One of the flash patterns described in *Table 3-3: Programming Completion* displays after the programming sequence is complete. The flash pattern indicates whether or not the programming was successful.

**Table 3-3: Programming Completion**

Programming Result	Flash Pattern	Description
Successful		Three quick consecutive flashes indicate that the code has been accepted. You will see this flash after every successful entry.
Unsuccessful		Two longer flashes indicate that the code has not been accepted. Restart the programming sequence.

**Figure 3-2: Successful Programming Sequence**



**Figure 3-3: Unsuccessful Programming Sequence**



An unsuccessful programming sequence for the lantern occurs for one of the following reasons:

- ♦ the lantern does not recognize the sequence, or
- ♦ the lantern has not received the correct security code

If the programming sequence is unsuccessful, re-enter the key sequence for the required code. If programming sequence is still unsuccessful, re-enter the security code.

**NOTE** Upon successful acceptance of a command sequence, the lantern will flash according to its new programming for one minute regardless of ambient light levels, allowing you to confirm that the M704-5 lantern is programmed correctly. During this time, the M704-5 lantern will accept programmer input, so a different flash code command sequence can be entered or other features of the M704-5 lantern can be programmed. After one minute, the lantern will resume normal operation.

### 3.3 Set up the Programmer

Install two new AAA batteries.

If the lantern does not respond to the programmer, remove and re-insert the batteries and repeat the Programming Instructions for the required function.

#### 3.3.1 Transitioning the M704-5 Lantern before Programming

You must transition the lantern from night to day or vice versa before you can make any changes to the default or any other settings.

The M704-5 lantern has many built-in features for the purpose of conserving battery power. One such feature is the way the lantern accepts infrared programming; rather than constantly consuming battery power while waiting for a signal from the infrared programmer, the M704-5 lantern will wait for programming instructions for only one minute after a transition. After one minute, the M704-5 lantern turns off its infrared sensor to conserve power until the next transition.

To program an M704-5 lantern, you must imitate either a day to night or a night to day transition or both in sequence depending on your ambient lighting conditions. Apply darkness or light for a period of about 15 seconds.

**NOTE** When a lantern has transitioned and is within its one-minute window to accept infrared programming, you can confirm it has transitioned by pointing the programmer at the lantern's lens and pressing the start button. The lantern will respond with a single flash after each press.

#### Day to Night Transition

If a dark room is unavailable, night can be simulated by covering ALL of the lantern's solar panels with a jacket, blanket, or the M704-5 lantern's cardboard shipping box as a cover. Keep the lantern covered for about 15 seconds. Depending on your ambient light, you may need to follow with a "Night to Day" transition.

#### Night to Day Transition

Expose the M704-5 lantern solar panels to bright sunlight or incandescent light for about 15 seconds. Depending on your ambient light, you may need to follow with a "Day to Night" transition.

### 3.3.2 Entering the Security Code to Unlock the Lantern

After the lantern is transitioned, before any changes can be made to the lantern's settings, the security code must be entered. The security code must be entered every time the lantern is transitioned. The security code is 7 5 3.

Follow the command sequence format in section 3.2.1 *Programming Sequence* for the following steps:

1. Transition the M704-5 lantern (if required).
2. Enter the security code 7 5 3.



Ensure the programmer is pointed at the lantern's lens and then enter the command sequence. The lantern will flash once after each correct entry and then three quick flashes to indicate the command sequence was accepted.



Do not proceed to the next button press until the lantern has acknowledged each button press with a single flash.

If the lantern responds to a button press with two flashes, indicating an invalid attempt, you must return to the start button and begin the sequence again. When your security code has been accepted, the lantern will give three very quick flashes.



If the lantern has not been unlocked, any attempts to program it will result in two slower flashes indicating an error.

### 3.3.3 Returning the M704-5 Lantern to Factory Default Settings

You can return the M704-5 lantern to the factory default settings. The default settings code resets the following factory default settings:

- ♦ flash code 064 at the 4NM
- ♦ 100% level of intensity

The lantern will immediately flash the 064 flash pattern. Resetting the default settings necessitates re-programming the flash code, peak power level, and intensity level settings desired for your specific application. The factory default settings code is 9 1 1.

Follow the command sequence format in section 3.2.1 *Programming Sequence* for the following steps:

1. Transition the M704-5 lantern (if required).
2. Enter the security code 7 5 3 (if required).
3. Enter the factory default settings code 9 1 1.



### 3.3.4 Setting Lantern Options with the Infrared Programmer

After the M704-5 lantern has been transitioned, it is ready to receive programming information.

Programming must commence within one minute after the M704-5 lantern has been transitioned or within one minute of the last valid programmer command.



Point the infrared programmer directly at the lantern's lens to ensure the infrared signal is received. (The M704-5 lantern's infrared detector is located on the circuit board behind the clear polycarbonate lens).

#### 3.3.4.1 Flash Code

The flash codes for the 704-5 lantern are listed in *Appendix A: Flash Codes*. The following terms are commonly used in relation to the flash codes.

- Flash Code:** The three-digit flash code (used for programming the lantern with the programmer).
- Duty Cycle:** The percentage of time over a cycle of the flash pattern that the lantern is on.
- Flash Character:** Abbreviated descriptor and flash sequence duration.
- FL# / EC#:** Flash and Eclipse (lantern On or Off periods).  
 Example:  
 Flash code 011  
 Five second repeating sequence in the following pattern:  
 On (1 sec) Off (1 sec) On (1 sec) Off (2 sec)

To change the flash code, follow the command sequence format in section 3.2.1 *Programming Sequence* for the following steps:

1. Transition the M704-5 lantern (if required).
2. Enter the security code 7 5 3 (if required).
3. Enter a three-digit flash code; see *Appendix A: Flash Codes*.



After successfully receiving the flash code command sequence, the M704-5 lantern will flash for one minute, displaying the programmed flash code. During this time, the M704-5 lantern will still accept programmer input, so a different flash code command sequence can be entered or other features of the M704-5 lantern can be configured.

After one minute, the M704-5 lantern will return to its standard operation of flashing (in the dark) or turn off (in the daytime).

#### 3.3.4.2 GPS-equipped Lanterns

The GPS functionality of the M704-5 lantern is automatically activated when the lantern is initially powered-up. Once activated, GPS-equipped M704-5 lanterns automatically synchronize with all GPS-equipped lanterns operating with the same flash pattern; however, it can take several minutes for the lantern to synchronize. The activation period is dependent on the number of satellites overhead and any obstructions from buildings or mountainous terrain.

### 3.3.4.3 High/Low Power Level

The High/Low power level is the maximum electrical current sent to the LEDs. The M704-5 lantern has two power levels. The High power level corresponds to a 4 NM range lantern and the Low power level corresponds to a 3 NM range lantern. The high/low power level setting controls the power delivered to the LEDs and, therefore, affects the range and autonomy of the M704-5 lantern; see *Table 3-5: Minimum Hours of Operation* for more information.

Follow the command sequence format in section 3.2.1 *Programming Sequence* to program the High/Low power level codes.

1. Transition the M704-5 lantern (if required).
2. Enter the security code 7 5 3 (if required).
3. Enter the High/Low Power code; see *Table 3-4: High/Low Power Level Codes*.



**Table 3-4: High/Low Power Level Codes**

Setting	Code
High (4 NM)	501 (default value)
Low (3 NM)	500

### 3.3.4.4 Flash Pattern Duty Cycle Limiter (Intensity)

The M704-5 lantern features a flash pattern duty cycle limiter which controls the intensity of the light output. Each intensity level – 100%, 75%, 50%, 25%, or 12% – sets a maximum power consumption threshold for the lantern, which results in a minimum autonomy. Autonomy is the amount of time the lantern is able to operate normally without any solar charging. The purpose of the flash pattern duty cycle limiter is to ensure that the entire range of flash codes meets or exceeds the minimum autonomy requirement.

For example, if the lantern is programmed to be on for one second out of every four seconds, the duty cycle is 25% (1:4). If this duty cycle was too large for the lantern to maintain minimum autonomy, the LEDs could be strobed during the 1 second interval that they are scheduled to be on. Strobing is a special Carmanah technique of turning the lantern LEDs on and off 100 times per second in order to limit flash pattern duty cycles. The response time of the human eye is slow enough that strobed light still appears solid, but flash patterns that are strobed will result in some reduction of the lantern's range.

The flash pattern duty cycle limiter (intensity) setting controls the power delivered to the LEDs and therefore affects the range and autonomy of the M704-5 lantern. All flash duty cycles within the M704-5 lantern are capped at 30% (0.3). Flash duty cycles that exceed 30% are strobed to bring them back to 30%. The flash pattern duty cycle limiter (intensity) control reduces the 30% cap proportionally (e.g. 75% = 0.75 X 0.3 = 0.225).

Table 3-5: *Minimum Hours of Operation* lists the minimum hours of operation on full battery charge (with no charging) at different duty cycles (intensity) and high/low power settings for flash codes 064 and 129.

**Table 3-5: Minimum Hours of Operation**

Duty Cycle			Autonomy Low		Autonomy High	
Limiter Code	Limiter Setting %	Actual Limit*	Power Code 064 12.5% (0.125) DC (hr)	Power Code 129 30% (0.30) DC (hr)	Power Code 064 12.5% (0.125) DC (hr)	Power Code 129 30% (0.30) DC (hr)
399	100	0.3	1096	457	581	242
375	75	0.225	1096	609	581	323
350	50	0.15	1096	913	581	484
325	25	0.075	1827	1827	968	968
312	12	0.035	3915	3915	2075	2075



In *Table 3-5: Minimum Hours of Operation*, column entries of the same value (e.g. 1096) are instances where the duty cycle of the flash pattern is below the duty cycle limit. When the duty cycle limit drops below the duty cycle of the flash pattern, strobing begins and autonomy figures begin to increase.

### 3.3.4.5 Automatic Light Control (ALC)

The M704-5 lantern’s proprietary Automatic Light Control (ALC) software monitors the battery voltage and amount of solar charge. ALC determines if the M704-5 lantern can continue to operate at the programmed intensity level under current solar charging conditions. If required, ALC function automatically reduces the duty cycle limit so the M704-5 lantern will continue to operate. ALC is ideal for installations where there may be plenty of sunlight in the summer, but only marginal sunlight in the winter. In this case, the M704-5 lantern will be bright during the summer, grow dimmer through the winter as the ALC adjusts the intensity, and brighten again in the spring.

To switch the ALC feature on or off, follow the command sequence format shown in section 3.2.1 *Programming Sequence* to program the ALC codes in *Table 3-6: ALC Codes*.

**Table 3-6: ALC Codes**

Setting	Code
ALC On	801 (default value)
ALC Off	800



If ALC is turned off, careful consideration of high/low power levels and intensity levels is required to ensure that the M704-5 lantern is capable of sustainable operation.

## 4.0 Installing the M704-5 Lantern



The top solar panel is not designed to support the full weight of this lantern.



**DO NOT LIFT THE LANTERN BY THE TOP SOLAR PANEL**

### 4.1 Choosing a Suitable Location

Adequate sunlight and suitable ambient temperature are the two most important factors to consider when choosing a location for Carmanah Marine Lanterns.

#### 4.1.1 Adequate Sunlight

A Carmanah Marine Lantern is powered by solar energy stored inside the rechargeable batteries of the lantern; therefore, to operate each night it requires an adequate amount of sunlight to recharge its batteries. The following factors should be considered when installing the M704-5 lantern:

- ♦ the amount of sunlight available in the region
- ♦ an unobstructed view of the sun (the M704-5 lantern should not be shaded)
- ♦ seasonal changes in sun angle

#### 4.1.2 Ambient Temperature

The temperature range of the lantern location must be between  $-40$  to  $122$  °F ( $-40$  to  $50$  °C).

## 4.2 Securing the M704-5 Lantern



Physically modifying the M704-5 lantern will void the warranty. This includes drilling additional holes in the base or re-drilling the existing mounting holes to a larger diameter.

The M704-5 lantern base plate has mounting holes for three, four, or five point mounting. The use of security fasteners is recommended to prevent theft. Use 18-8 stainless steel hex head fasteners with  $\frac{1}{2}$  -13 UNC thread. Install stainless steel washers between the mounting surface and the base plate and between the fastener head and the base plate. Tighten the fasteners to 40 to 44 lbf·ft (4.5 to 5.0 N·m).

## 5.0 Preparing the M704-5 Lantern for Storage



The top solar panel is not designed to support the full weight of this lantern.



**DO NOT LIFT THE LANTERN BY THE TOP SOLAR PANEL**



It is important to have a full battery charge when placing the M704-5 lantern into storage. A fully charged battery ensures maximum shelf life and minimizes the possibility of battery damage due to low-charge states. Even though the M704-5 lantern will be stored in the OFF mode, it will continue to consume a small amount of power.

### 5.1 Determining Battery State of Charge

You should check the battery charge levels before storing a lantern and prior to deploying the lantern to ensure it will be fully operational in the field. The battery status code is 8 1 0.

To determine the battery state of the M704-5 lantern, follow the command sequence format shown in section 3.2.1 *Programming Sequence* for the following steps:

1. Transition the M704-5 lantern (if required).
2. Enter the security code 7 5 3 (if required).
3. Enter the battery status code 8 1 0.

The M704-5 lantern will emit a series of flashes. Each flash indicates a 10% usable charge; therefore, three flashes indicate a 30% usable charge while 10 flashes indicate a full charge of 100%.

After approximately three seconds, the M704-5 lantern repeats the battery charge status flashes for a second time for verification. The M704-5 lantern then returns to the programmed flash code for one minute allowing you to confirm that the correct flash code is programmed. The M704-5 lantern accepts programmer input during this minute. After one minute, the lantern resumes normal operation.

#### 5.1.1 Battery Charge

The indicator LEDs on the M704-5 lantern flash as follows to indicate the state of the battery charge:

- ◆ **Good charge:** The green indicator LED flashes once every 5 seconds for a duration of approximately 0.5 to 1 second; the lantern continues to flash normally in this mode.
- ◆ **Low charge:** The amber indicator LED flashes once every 5 seconds for a duration of approximately 0.5 to 1 second; the lantern flashes once a minute in this mode.
- ◆ **Critical low charge:** The red indicator LED flashes once every 5 seconds for a duration of approximately 0.5 to 1 second; the lantern stops flashing in this mode.

See section 5.2 *Charging the M704-5 Lantern* for information and instructions on charging the lantern.

## 5.2 Charging the M704-5 Lantern

If the M704-5 lantern batteries have a charge of less than 80%, they will require charging. It is recommended that you place the M704-5 lantern in OFF mode for charging. When it is in OFF mode, the M704-5 lantern continues to charge using light on the solar panels, but does not turn on in darkness and thereby expend energy flashing. The code to turn the lantern off is 0 0 0.

To place the M704-5 lantern into OFF mode, follow the command sequence format shown in section 3.2.1 *Programming Sequence*.

### 5.2.1 Sunlight

If available, sunlight is the safest and easiest way to charge multiple M704-5 lanterns. As recommended in section 5.2 *Charging the M704-5 Lantern*, place the M704-5 lantern in OFF mode to ensure it can continue to charge by sunlight, but does not flash during the night. An M704-5 lantern will typically require about five days to fully charge. *Table 5-1: Charging an M704-5 Lantern* lists number of days to charge a lantern based on its state of charge.

**Table 5-1: Charging an M704-5 Lantern**

Battery State of Charge (SoC)	Sunny Days to Return Lantern to 100% SoC
90%	1
80%	2
70%	3
60%	4
50%	5
40%	6
30%	7
20%	8
10%	9

### 5.2.2 Artificial Light

Artificial light is capable of charging the M704-5 lantern if sunlight is unavailable or inconvenient; however it is less efficient than sunlight and takes proportionally longer to fully charge the lantern. Use a high-intensity incandescent (ordinary bulb or halogen). set up the charging light so that it is at least 24 inches (60 cm) away from the M704-5 lantern to prevent the M704-5 lantern from being damaged due to overheating. Position the charging light so it casts as much illumination as possible onto the solar panels of the M704-5 lantern. Use multiple charging lights to reduce the charging time.

*Table 5-2: Days to Return Lantern to 100% SoC* lists the number of days to charge a lantern based on its state of charge and the number of artificial lights used.



The heat generated by incandescent lights is capable of causing the special plastic in the M704-5 lantern's solar panels to crack or bubble. Maintain a distance of 24 inches (60 cm) between the lantern and the artificial light source.

**Table 5-2: Days to Return Lantern to 100% SoC**

Battery SoC	1 floodlight	2 floodlights	3 floodlights	4 floodlights
90%	1	0.5	0.3	0.2
80%	2	1	1	0.5
70%	3	1	1	1
60%	4	2	1	1
50%	5	2	2	1
40%	6	3	2	1
30%	6	3	2	2
20%	7	4	2	2
10%	8	4	3	2

### 5.3 M704-5 Lantern Storage or Shipment

The recommended method of storing a lantern is in OFF mode rather than SLEEP mode. When the M704-5 lantern is turned off, it remains off until it is transitioned and receives input from the programmer. The code to turn the lantern off is 0 0 0. Use the OFF code if:

- the M704-5 lantern is being shipped to a location with an available programmer; if the recipient of the M704-5 lantern does not have a programmer, you will need to put the M704-5 lantern in SLEEP mode so it can awaken automatically upon exposure to light without the need of a programmer
- the M704-5 lantern will be exposed to intermittent light (not sealed in a box)
- the M704-5 lantern is being recharged using daylight (turning the lantern off will prevent the M704-5 lantern from turning on at night and using the charge gained during the day)

### 5.4 Storage Maintenance/Duration

Elevated storage temperatures increase the rate of battery self-discharge. The optimum storage temperature for the M704-5 lantern is 68 °F (20 °C) or cooler.

Ensure that you have fully charged your M704-5 lantern and placed it in OFF mode before placing it in storage; see section 5.2 *Charging the M704-5 Lantern*.

**Table 5-3: Storage Temperature and Charge Intervals**

Storage Temperature	Check/Recharge Interval
68 °F or lower (20 °C or lower)	12 months
77 °F (25 °C)	6 months
86 °F (30 °C)	6 months
95 °F (35 °C)	3 months
104 °F (40 °C)	3 months
113 °F (45 °C)	1 month
122 °F (50 °C)	1 month
122°F or higher (50 °C or higher)	Weekly audit

## 6.0 Warranty and Customer Service

### 6.1 Warranty

This product is covered by the Carmanah warranty. Visit [www.carmanah.com/content/products/warranty/](http://www.carmanah.com/content/products/warranty/) for additional information or to register your product online.

### 6.2 Customer Service

Before contacting Carmanah's customer service department, please have the serial number of the M704-5 lantern available, a brief description of the problem, as well as all details of installation and recharging efforts.

To contact Carmanah's Customer Service Department:

**Mail:** Carmanah Technologies Corporation  
Building 4, 203 Harbour Road  
Victoria, BC Canada V9A 3s2

**Phone:** 1.250.380.0052  
877.722.8877 (Toll Free in U.S. and Canada)

**Fax:** 1.250.380.0062

**Email:** [customerservice@carmanah.com](mailto:customerservice@carmanah.com)

**Website:** [carmanah.com](http://carmanah.com)

### 6.3 Additional Products

Carmanah offers a variety of solar powered and energy-efficient LED lighting products. For marine applications, the 600 and 700 series solar-powered LED lanterns enhance visibility for navigation and safety during nighttime hours and inclement weather. For more information, visit [solarmarinelights.com](http://solarmarinelights.com).

# 7.0 Appendices

## Appendix A: Flash Codes



Candela figures derived from IALA-compliant measurement over 360° output.

Flash Code	Duty Cycle	Flash Character	FL1	EC1	FL2	EC2	FL3	EC3	FL4	EC4	FL5	EC5	FL6	EC6	FL7	EC7	FL8	EC8	FL9	EC9
001	100	Fixed																		
002	10.0	FI (2) 10s	0.5	1	0.5	8														
003	10.0	FI (2) 10s	0.5	1.5	0.5	7.5														
004	16.0	FI (2) 10s	0.8	1.2	0.8	7.2														
005	20.0	FI (2) 10s	1	1	1	7														
006	20.0	FI (2) 10s	1	1.5	1	6.5														
007	8.3	FI (2) 12s	0.5	1	0.5	10														
008	25.0	FI (2) 12s	1.5	2	1.5	7														
009	13.3	FI (2) 15s	1	2	1	11														
010	20.0	FI (2) 5s	0.5	1	0.5	3														
011	40.0	FI (2) 5s	1	1	1	2														
012	16.7	FI (2) 6s	0.5	1	0.5	4														
013	26.7	FI (2) 6s	0.8	1.2	0.8	3.2														
014	33.3	FI (2) 6s	1	1	1	3														
015	28.6	FI (2) 7s	1	1	1	4														
016	12.5	FI (2) 8s	0.5	1	0.5	6														
017	25.0	FI (2) 8s	1	1	1	5														
018	15.0	FI (2+1) 10s	0.5	0.7	0.5	2.1	0.5	5.7												
019	20.0	FI (2+1) 12s	0.8	1.2	0.8	2.4	0.8	6												
020	25.0	FI (2+1) 12s	1	1	1	4	1	4												
021	20.0	FI (2+1) 15s	1	2	1	5	1	5												
022	15.0	FI (2+1) 6s	0.3	0.4	0.3	1.2	0.3	3.5												
023	12.5	FI (3) 12s	0.5	2	0.5	2	0.5	6.5												
024	15.0	FI (3) 10s	0.5	1.5	0.5	1.5	0.5	5.5												
025	30.0	FI (3) 10s	1	1	1	1	1	5												

Flash Code	Duty Cycle	Flash Character	FL1	EC1	FL2	EC2	FL3	EC3	FL4	EC4	FL5	EC5	FL6	EC6	FL7	EC7	FL8	EC8	FL9	EC9
026	20.0	FI (3) 12s	0.8	1.2	0.8	1.2	0.8	7.2												
027	6.0	FI (3) 15s	0.3	1.7	0.3	1.7	0.3	11												
028	10.0	FI (3) 15s	0.5	1.5	0.5	1.5	0.5	11												
029	7.5	FI (3) 20s	0.5	3	0.5	3	0.5	13												
030	26.7	FI (3) 9s	0.8	1.2	0.8	1.2	0.8	4.2												
031	20.0	FI (4) 10s	0.5	1	0.5	1	0.5	1	0.5	5										
032	32.0	FI (4) 10s	0.8	1.2	0.8	1.2	0.8	1.2	0.8	3.2										
033	26.7	FI (4) 12s	0.8	1.2	0.8	1.2	0.8	1.2	0.8	5.2										
034	13.3	FI (4) 15s	0.5	1.5	0.5	1.5	0.5	1.5	0.5	8.5										
035	26.7	FI (4) 15s	1	1	1	1	1	1	1	8										
036	10.0	FI (4) 20s	0.5	1.5	0.5	1.5	0.5	1.5	0.5	14										
037	20.0	FI (5) 20s	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2	0.8	11								
038	25.0	FI (5) 20s	1	1	1	1	1	1	1	1	1	11								
039	20.0	FI (6) 15s	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	7						
040	75.0	FI-*	5	1	1	1														
041	70.0	FI-**	5	1	1	1	1	1												
042	20.0	FI 1.5s	0.3	1.2																
043	33.3	FI 1.5s	0.5	1																
044	5.0	FI 10s	0.5	9.5																
045	10.0	FI 10s	1	9																
046	15.0	FI 10s	1.5	8.5																
047	10.0	FI 12s	1.2	11																
048	6.7	FI 15s	1	14																
049	12.0	FI 2.5s	0.3	2.2																
050	20.0	FI 2.5s	0.5	2																
051	10.7	FI 2.8s	0.3	2.5																
052	10.0	FI 2s	0.2	1.8																
053	15.0	FI 2s	0.3	1.7																
054	20.0	FI 2s	0.4	1.6																
055	25.0	FI 2s	0.5	1.5																
056	35.0	FI 2s	0.7	1.3																
057	40.0	FI 2s	0.8	1.2																
058	10.0	FI 3s	0.3	2.7																

Flash Code	Duty Cycle	Flash Character	FL1	EC1	FL2	EC2	FL3	EC3	FL4	EC4	FL5	EC5	FL6	EC6	FL7	EC7	FL8	EC8	FL9	EC9
059	16.7	FI 3s	0.5	2.5																
060	23.3	FI 3s	0.7	2.3																
061	33.3	FI 3s	1	2																
062	30.2	FI 4.3s	1.3	3																
063	9.1	FI 4.4s	0.4	4																
064	12.5	FI 4s	0.5	3.5																
065	20.0	FI 4s	0.8	3.2																
066	25.0	FI 4s	1	3																
067	37.5	FI 4s	1.5	2.5																
068	6.0	FI 5s	0.3	4.7																
069	10.0	FI 5s	0.5	4.5																
070	20.0	FI 5s	1	4																
071	25.0	FI 6s	1.5	4.5																
072	8.3	FI 6s	0.5	5.5																
073	10.0	FI 6s	0.6	5.4																
074	16.7	FI 6s	1	5																
075	30.0	FI 5s	1.5	3.5																
076	10.7	FI 7.5s	0.8	6.7																
077	50.0	Iso 10s	5	5																
078	50.0	Iso 2s	1	1																
079	50.0	Iso 4s	2	2																
080	50.0	Iso 5s	2.5	2.5																
081	50.0	Iso 6s	3	3																
082	50.0	Iso 8s	4	4																
083	50.0	Iso 3s	1.5	1.5																
084	20.0	LFI 10s	2	8																
085	30.0	LFI 10s	3	7																
086	40.0	LFI 10s	4	6																
087	16.7	LFI 12s	2	10																
088	26.7	LFI 15s	4	11																
089	40.0	LFI 5s	2	3																
090	33.3	LFI 6s	2	4																
091	25.0	LFI 8s	2	6																

Flash Code	Duty Cycle	Flash Character	FL1	EC1	FL2	EC2	FL3	EC3	FL4	EC4	FL5	EC5	FL6	EC6	FL7	EC7	FL8	EC8	FL9	EC9
092	37.5	LFI 8s	3	5																
093	20.0	Mo (A) 10s	0.5	0.5	1.5	7.5														
094	16.7	Mo (A) 15s	0.5	1.5	2	11														
095	21.7	Mo (A) 6s	0.3	0.6	1	4.1														
096	40.0	Mo (A) 8s	0.8	1.2	2.4	3.6														
097	20.0	Mo (B) 15s	1.5	0.5	0.5	0.5	0.5	0.5	0.5	11										
098	15.0	Mo (U) 10s	0.3	0.7	0.3	0.7	0.9	7.1												
099	20.0	Mo (U) 10s	0.4	0.6	0.4	0.6	1.2	6.8												
100	25.0	Mo (U) 10s	0.5	0.5	0.5	0.5	1.5	6.5												
101	16.7	Mo (U) 15s	0.5	0.5	0.5	0.5	1.5	12												
102	17.3	Mo (U) 15s	0.6	0.3	0.6	0.3	1.4	12												
103	22.0	Mo (U) 15s	0.7	0.5	0.7	0.5	1.9	11												
104	23.3	Mo (U) 15s	0.7	0.7	0.7	0.7	2.1	10												
105	23.3	Mo (U) 15s	0.8	0.5	0.75	0.5	2	11												
106	35.5	Mo (U) 15s	1.2	0.7	1.15	0.7	3	8.2												
107	39.3	Mo (U) 15s	1.3	0.7	1.3	0.7	3.3	7.7												
108	21.0	Mo (U) 15s ****	0.8	0.2	0.75	0.2	1.7	12												
109	15.0	Mo (U) 15s*	0.5	0.5	0.45	0.5	1.4	12												
110	17.0	Mo (U) 15s**	0.6	0.4	0.55	0.4	1.5	12												
111	18.0	Mo (U) 15s***	0.6	0.3	0.6	0.3	1.5	12												
112	10.0	Mo (U) 10s	0.2	0.8	0.2	0.8	0.6	7.4												
113	70.0	Oc 10s	7	3																
114	75.0	Oc 10s	7.5	2.5																
115	66.7	Oc 15s	10	5																
116	66.7	Oc 3s	2	1																
117	83.3	Oc 3s	2.5	0.5																
118	75.0	Oc 4s	3	1																
119	60.0	Oc 5s	3	2																
120	80.0	Oc 5s	4	1																
121	90.0	Oc 5s	4.5	0.5																
122	66.7	Oc 6s	4	2																
123	75.0	Oc 6s	4.5	1.5																
124	83.3	Oc 6s	5	1																

Flash Code	Duty Cycle	Flash Character	FL1	EC1	FL2	EC2	FL3	EC3	FL4	EC4	FL5	EC5	FL6	EC6	FL7	EC7	FL8	EC8	FL9	EC9
125	25.0	Q 1.2s	0.3	0.9																
126	41.7	Q 1.2s	0.5	0.7																
127	50.0	Q 1.2s	0.6	0.6																
128	20.0	Q 1s	0.2	0.8																
129	30.0	Q 1s	0.3	0.7																
130	40.0	Q 1s	0.4	0.6																
131	50.0	Q 1s	0.5	0.5																
132	80.0	Q 1s	0.8	0.2																
133	10.0	Q (2) 10s	0.5	1.5	0.5	7.5														
134	12.0	Q (2) 10s	0.6	0.4	0.6	8.4														
135	12.0	Q (2) 5s	0.3	0.7	0.3	3.7														
136	10.0	Q (2) 6s	0.3	0.7	0.3	4.7														
137	11.7	Q (2) 6s	0.4	0.7	0.35	4.6														
138	9.0	Q (3) 10s	0.3	0.7	0.3	0.7	0.3	7.7												
139	10.5	Q (3) 10s	0.4	0.7	0.35	0.7	0.4	7.7												
140	18.0	Q (3) 10s	0.6	0.6	0.6	0.6	0.6	7												
141	12.0	Q (4) 10s	0.3	0.7	0.3	0.7	0.3	0.7	0.3	6.7										
142	10.0	Q (4) 12s	0.3	0.7	0.3	0.7	0.3	0.7	0.3	8.7										
143	9.3	Q (4) 15s	0.4	0.7	0.35	0.7	0.4	0.7	0.4	12										
144	10.0	Q (4) 20s	0.5	0.5	0.5	0.5	0.5	0.5	0.5	17										
145	26.7	Q (4) 6s	0.4	0.6	0.4	0.6	0.4	0.6	0.4	2.6										
146	15.0	Q (5) 10s	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	5.7								
147	7.5	Q (5) 20s	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	16								
148	12.5	Q (5) 20s	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	16								
149	21.4	Q (5) 7s	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	2.7								
150	18.0	Q (6) 10s	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	4.7						
151	25.3	Q (6)+LFI 15s	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	2	7				
152	21.0	Q (6)+LFI 15s	0.4	0.7	0.35	0.7	0.4	0.7	0.4	0.7	0.4	0.7	0.4	0.7	1.1	8				
153	37.3	Q (6)+LFI 15s	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	2	5.8				
154	18.0	Q (9) 15s	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	6.7
155	21.0	Q (9) 15s	0.4	0.7	0.35	0.7	0.4	0.7	0.4	0.7	0.4	0.7	0.4	0.7	0.4	0.7	0.4	0.7	0.4	6.7
156	36.0	Q (9) 15s	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	4.8
157	30.0	VQ 0.5s	0.2	0.4																

Flash Code	Duty Cycle	Flash Character	FL1	EC1	FL2	EC2	FL3	EC3	FL4	EC4	FL5	EC5	FL6	EC6	FL7	EC7	FL8	EC8	FL9	EC9
158	40.0	VQ 0.5s	0.2	0.3																
159	33.3	VQ 0.6s	0.2	0.4																
160	50.0	VQ 0.6s	0.3	0.3																
161	9.0	VQ (3) 5s	0.2	0.4	0.15	0.4	0.2	3.9												
162	12.0	VQ (3) 5s	0.2	0.3	0.2	0.3	0.2	3.8												
163	18.0	VQ (3) 5s	0.3	0.3	0.3	0.3	0.3	3.5												
164	32.0	VQ (6)+LFI 10s	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	2	5				
165	38.0	VQ (6)+LFI 10s	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	2	4.4				
166	13.5	VQ (9) 10s	0.2	0.4	0.15	0.4	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4	0.2	5.9
167	18.0	VQ (9) 10s	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	5.8
168	27.0	VQ (9) 10s	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	4.9
169	14.3	Q (2) 7s	0.5	1	0.5	5														
170	12.0	FI (2) 5s	0.3	0.4	0.3	4														
171	10.0	FI (2) 10s	0.5	0.7	0.5	8.3														
172	12.5	FI (5) 20s	0.5	1	0.5	1	0.5	1	0.5	1	0.5	14								
173	20.0	FI (2) 10s	1	2	1	6														
174	10.0	FI 4s	0.4	3.6																
175	16.0	FI (2) 5s	0.4	0.6	0.4	3.6														
176	30.0	Mo(A) 8s	0.4	0.6	2	5														
177	40.0	FI 2.5s	1	1.5																
178	10.0	FI (3+1) 20 s	0.5	1.5	0.5	1.5	0.5	4.5	0.5	11										
179	12.0	FI (3+1) 20 s	0.6	1.4	0.6	1.4	0.6	4.4	0.6	10										
180	13.0	FI (3+1) 20 s	0.7	1.4	0.65	1.4	0.7	4.4	0.7	10										
181	14.0	FI (3+1) 20 s	0.7	1.3	0.7	1.3	0.7	4.3	0.7	10										
182	16.0	FI (3+1) 20 s	0.8	1.2	0.8	1.2	0.8	4.2	0.8	10										
183	14.3	FI (2) 7s	0.5	1.5	0.5	4.5														
184	16.7	FI (3) 9s	0.5	1.5	0.5	1.5	0.5	4.5												
185	18.2	LFI 11s	2	9																
186	33.3	FI (6+1) 15s	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	7				
187	37.5	Mo (0) 12s	1.5	0.5	1.5	0.5	1.5	6.5												
188	30.0	Mo (0) 15s	1.5	0.5	1.5	0.5	1.5	9.5												
189	25.0	Q 1s	0.3	0.8																
190	19.6	Q (3) 4.6s	0.3	0.7	0.3	2	0.3	1												

Flash Code	Duty Cycle	Flash Character	FL1	EC1	FL2	EC2	FL3	EC3	FL4	EC4	FL5	EC5	FL6	EC6	FL7	EC7	FL8	EC8	FL9	EC9
191	6.7	FI 7.5s	0.5	7																
192	18.2	FI (4) 11s	0.5	1.5	0.5	1.5	0.5	1.5	0.5	4.5										
193	7.1	FL (3) 21s	0.5	1.5	0.5	4.5	0.5	14												
194	25.0	FL (3) 6s	0.5	0.5	0.5	0.5	0.5	3.5												
195	15.0	FI (3)10s	0.5	0.5	0.5	0.5	0.5	7.5												
196	30.0	FI (9)15s	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6.5
197	66.7	Oc (2)6s	3	1	1	1														
198	62.5	Oc (3)8s	3	1	1	1	1	1												
199	60.0	Oc (4)10s	3	1	1	1	1	1	1	1										
200	16.7	FI (2)6s	0.5	1.5	0.5	3.5														
201	6.3	FI (1)8s	0.5	7.5																
202	6.0	FI (3)15s	0.3	1.7	0.3	1.7	0.3	11												
203	8.0	FI (2)5s	0.2	0.8	0.2	3.8														
204	25.0	FI (2)4s	0.5	1	0.5	2														
205	13.3	FI (2)4.5s	0.3	1	0.3	2.9														
206	15.0	FI (3)10s	0.5	1.5	0.5	1.5	0.5	5.5												
207	10.0	FI (3)15s	0.5	1.5	0.5	1.5	0.5	11												
208	25.0	Mo(B)16s	1.5	0.5	0.5	0.5	1.5	0.5	0.5	11										
209	15.0	Q 1s	0.2	0.9																
210	18.0	FI (2+1) 10s	0.6	0.6	0.6	1.8	0.6	5.8												
211	13.3	Mo (U)	0.4	0.5	0.4	0.5	1.2	12												
212	16.7	Q 1.2s	0.2	1																
213	6.0	Q (3) 10s	0.2	1	0.2	1	0.2	7.4												
214	44.0	Q (6)+LFI 15s	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	3	4.8				
215	12.0	VQ (3) 5s	0.2	0.4	0.2	0.4	0.2	3.6												
216	48.0	VQ (6)+LFI 10s	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3	3.4				
217	18.0	VQ (9) 10s	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4	0.2	5
218	62.5	Oc (3) 12s	4.5	1.5	1.5	1.5	1.5	1.5												
219	66.7	Oc (4) 12s	5	1	1	1	1	1	1	1										
220	25.0	FI (3) 12s	1	1.5	1	1.5	1	6												
221	26.7	FI (4) 15s	1	1.5	1	1.5	1	1.5	1	6.5										
222	25.0	FI (5) 20s	1	1.5	1	1.5	1	1.5	1	1.5	1	9								
223	33.3	Mo (A)	1	1	3	7														

Flash Code	Duty Cycle	Flash Character	FL1	EC1	FL2	EC2	FL3	EC3	FL4	EC4	FL5	EC5	FL6	EC6	FL7	EC7	FL8	EC8	FL9	EC9
224	12.5	FI (5) 20s sADO	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	12								
225	13.3	FI (4) 15s	0.5	2	0.5	2	0.5	2	0.5	7										
226	12.5	FI (5) 20s	0.5	2	0.5	2	0.5	2	0.5	2	0.5	9.5								
227	28.0	Q (6)+LFI 15s	0.2	1	0.2	1	0.2	1	0.2	1	0.2	1	0.2	1	3	4.8				
228	12.0	Q (9) 15s	0.2	1	0.2	1	0.2	1	0.2	1	0.2	1	0.2	1	0.2	1	0.2	1	0.2	5.2
229	42.0	VQ (6)+LFI 10s	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4	3	3.4				
230	20.8	CST 1	3.3	1.1	1.091	1.1	3.3	1.1	1.1	30										
231	28.6	CST 2	6	15																
232	37.5	CST 3	9	15																
233	23.1	CST 4	3	10																
234	18.8	CST 5	0.5	1	0.5	1	0.5	4.5												
235	8.0	CST 6	0.4	0.7	0.4	0.7	0.4	0.7	0.4	0.7	0.4	20								
236	75.0	CST 7	1.5	0.5																
237	10.0	CST 8	0.5	2.5	0.5	2.5	0.5	2.5	0.5	11										
238	4.5	CST 9	0.6	0.3	0.6	0.3	1.5	57												
239	20.0	CST 10	0.5	1.5	0.5	2.5														
240	15.0	CST 11	0.3	0.7	0.3	2.7														
241	50.0	CST 12	6	6																
242	77.8	CST 13	2	1	5	1														
243	24.0	CST 14	0.4	0.6	0.4	0.6	0.4	2.6												
244	40.0	CST 15	0.8	1	0.8	1	0.8	1	0.8	1	0.8	2								
245	32.0	CST 16	0.8	1	0.8	1	0.8	1	0.8	3.8										
246	18.8	CST 17	0.5	0.5	0.5	0.5	0.5	5.5												
247	10.0	CST 18	0.5	2.5	0.5	2.5	0.5	2.5	0.5	11										
248	13.3	CST 19	0.8	5.2																
249	11.4	CST 20	0.8	6.2																

## Appendix B: Candela and Range Tables

**Table A: Candela and Range for Green LEDs**



Candela figures derived from IALA-compliant measurement over 360° output. Data for Low power setting not shown.

Green LEDs												
Flash Code	Duty Cycle	Flash Character	Range(NM) High 100%	Effective Candela High 100%	Range(NM) High 75%	Effective Candela High 75%	Range(NM) High 50%	Effective Candela High 50%	Range(NM) High 25%	Effective Candela High 25%	Range(NM) High 12%	Effective Candela High 12%
001	100	Fixed	3.6	24.9	3.2	18.7	2.8	12.5	2.2	6.2	1.6	2.9
002	10.0	Fl (2) 10s	4.7	59.3	4.7	59.3	4.7	59.3	4.3	44.5	3.4	20.8
003	10.0	Fl (2) 10s	4.7	59.3	4.7	59.3	4.7	59.3	4.3	44.5	3.4	20.8
004	16.0	Fl (2) 10s	4.8	66.4	4.8	66.4	4.7	62.3	3.8	31.1	3.0	14.5
005	20.0	Fl (2) 10s	4.9	69.2	4.9	69.2	4.5	51.9	3.6	25.9	2.8	12.1
006	20.0	Fl (2) 10s	4.9	69.2	4.9	69.2	4.5	51.9	3.6	25.9	2.8	12.1
007	8.3	Fl (2) 12s	4.7	59.3	4.7	59.3	4.7	59.3	4.5	53.4	3.6	24.9
008	25.0	Fl (2) 12s	5.0	73.2	4.8	65.9	4.3	43.9	3.4	22.0	2.6	10.3
009	13.3	Fl (2) 15s	4.9	69.2	4.9	69.2	4.9	69.2	4.1	38.9	3.2	18.2
010	20.0	Fl (2) 5s	4.7	59.3	4.7	59.3	4.3	44.5	3.4	22.2	2.6	10.4
011	40.0	Fl (2) 5s	4.5	51.9	4.1	38.9	3.6	25.9	2.9	13.0	2.2	6.1
012	16.7	Fl (2) 6s	4.7	59.3	4.7	59.3	4.5	53.4	3.7	26.7	2.8	12.5
013	26.7	Fl (2) 6s	4.8	66.4	4.6	56.0	4.1	37.4	3.2	18.7	2.5	8.7
014	33.3	Fl (2) 6s	4.7	62.3	4.4	46.7	3.8	31.1	3.1	15.6	2.3	7.3
015	28.6	Fl (2) 7s	4.9	69.2	4.6	54.5	4.0	36.3	3.2	18.2	2.5	8.5
016	12.5	Fl (2) 8s	4.7	59.3	4.7	59.3	4.7	59.3	4.0	35.6	3.1	16.6
017	25.0	Fl (2) 8s	4.9	69.2	4.7	62.3	4.2	41.5	3.4	20.8	2.6	9.7
018	15.0	Fl (2+1) 10s	4.7	59.3	4.7	59.3	4.7	59.3	3.8	29.6	2.9	13.8
019	20.0	Fl (2+1) 12s	4.8	66.4	4.8	66.4	4.4	49.8	3.6	24.9	2.8	11.6
020	25.0	Fl (2+1) 12s	4.9	69.2	4.7	62.3	4.2	41.5	3.4	20.8	2.6	9.7
021	20.0	Fl (2+1) 15s	4.9	69.2	4.9	69.2	4.5	51.9	3.6	25.9	2.8	12.1
022	15.0	Fl (2+1) 6s	4.4	49.8	4.4	49.8	4.4	49.8	3.6	24.9	2.8	11.6

Green LEDs												
Flash Code	Duty Cycle	Flash Character	Range(NM) High 100%	Effective Candela High 100%	Range(NM) High 75%	Effective Candela High 75%	Range(NM) High 50%	Effective Candela High 50%	Range(NM) High 25%	Effective Candela High 25%	Range(NM) High 12%	Effective Candela High 12%
023	12.5	FI (3) 12s	4.7	59.3	4.7	59.3	4.7	59.3	4.0	35.6	3.1	16.6
024	15.0	FI (3) 10s	4.7	59.3	4.7	59.3	4.7	59.3	3.8	29.6	2.9	13.8
025	30.0	FI (3) 10s	4.9	69.2	4.5	51.9	4.0	34.6	3.2	17.3	2.4	8.1
026	20.0	FI (3) 12s	4.8	66.4	4.8	66.4	4.4	49.8	3.6	24.9	2.8	11.6
027	6.0	FI (3) 15s	4.4	49.8	4.4	49.8	4.4	49.8	4.4	49.8	3.8	29.1
028	10.0	FI (3) 15s	4.7	59.3	4.7	59.3	4.7	59.3	4.3	44.5	3.4	20.8
029	7.5	FI (3) 20s	4.7	59.3	4.7	59.3	4.7	59.3	4.7	59.3	3.7	27.7
030	26.7	FI (3) 9s	4.8	66.4	4.6	56.0	4.1	37.4	3.2	18.7	2.5	8.7
031	20.0	FI (4) 10s	4.7	59.3	4.7	59.3	4.3	44.5	3.4	22.2	2.6	10.4
032	32.0	FI (4) 10s	4.7	62.3	4.4	46.7	3.8	31.1	3.1	15.6	2.3	7.3
033	26.7	FI (4) 12s	4.8	66.4	4.6	56.0	4.1	37.4	3.2	18.7	2.5	8.7
034	13.3	FI (4) 15s	4.7	59.3	4.7	59.3	4.7	59.3	3.9	33.3	3.1	15.6
035	26.7	FI (4) 15s	4.9	69.2	4.7	58.4	4.1	38.9	3.3	19.5	2.5	9.1
036	10.0	FI (4) 20s	4.7	59.3	4.7	59.3	4.7	59.3	4.3	44.5	3.4	20.8
037	20.0	FI (5) 20s	4.8	66.4	4.8	66.4	4.4	49.8	3.6	24.9	2.8	11.6
038	25.0	FI (5) 20s	4.9	69.2	4.7	62.3	4.2	41.5	3.4	20.8	2.6	9.7
039	20.0	FI (6) 15s	4.7	59.3	4.7	59.3	4.3	44.5	3.4	22.2	2.6	10.4
040	75.0	FL-*	3.7	27.7	3.4	20.8	2.9	13.8	2.3	6.9	1.7	3.2
041	70.0	FL-**	3.8	29.6	3.4	22.2	3.0	14.8	2.3	7.4	1.7	3.5
042	20.0	FI 1.5s	4.4	49.8	4.4	49.8	4.1	37.4	3.2	18.7	2.5	8.7
043	33.3	FI 1.5s	4.5	53.4	4.2	40.0	3.7	26.7	2.9	13.3	2.2	6.2
044	5.0	FI 10s	4.7	59.3	4.7	59.3	4.7	59.3	4.7	59.3	4.2	41.5
045	10.0	FI 10s	4.9	69.2	4.9	69.2	4.9	69.2	4.5	51.9	3.5	24.2
046	15.0	FI 10s	5.0	73.2	5.0	73.2	5.0	73.2	4.0	36.6	3.2	17.1
047	10.0	FI 12s	4.9	71.1	4.9	71.1	4.9	71.1	4.5	53.4	3.6	24.9
048	6.7	FI 15s	4.9	69.2	4.9	69.2	4.9	69.2	4.9	69.2	4.0	36.3
049	12.0	FI 2.5s	4.4	49.8	4.4	49.8	4.4	49.8	3.8	31.1	3.0	14.5
050	20.0	FI 2.5s	4.7	59.3	4.7	59.3	4.3	44.5	3.4	22.2	2.6	10.4
051	10.7	FI 2.8s	4.4	49.8	4.4	49.8	4.4	49.8	4.0	34.9	3.1	16.3

Green LEDs												
Flash Code	Duty Cycle	Flash Character	Range(NM) High 100%	Effective Candela High 100%	Range(NM) High 75%	Effective Candela High 75%	Range(NM) High 50%	Effective Candela High 50%	Range(NM) High 25%	Effective Candela High 25%	Range(NM) High 12%	Effective Candela High 12%
052	10.0	Fl 2s	4.2	41.5	4.2	41.5	4.2	41.5	3.8	31.1	3.0	14.5
053	15.0	Fl 2s	4.4	49.8	4.4	49.8	4.4	49.8	3.6	24.9	2.8	11.6
054	20.0	Fl 2s	4.6	55.3	4.6	55.3	4.2	41.5	3.4	20.8	2.6	9.7
055	25.0	Fl 2s	4.7	59.3	4.5	53.4	4.0	35.6	3.2	17.8	2.4	8.3
056	35.0	Fl 2s	4.6	55.3	4.2	41.5	3.7	27.7	2.9	13.8	2.2	6.5
057	40.0	Fl 2s	4.4	49.8	4.1	37.4	3.6	24.9	2.8	12.5	2.1	5.8
058	10.0	Fl 3s	4.4	49.8	4.4	49.8	4.4	49.8	4.1	37.4	3.2	17.4
059	16.7	Fl 3s	4.7	59.3	4.7	59.3	4.5	53.4	3.7	26.7	2.8	12.5
060	23.3	Fl 3s	4.8	64.6	4.7	62.3	4.2	41.5	3.4	20.8	2.6	9.7
061	33.3	Fl 3s	4.7	62.3	4.4	46.7	3.8	31.1	3.1	15.6	2.3	7.3
062	30.2	Fl 4.3s	4.9	71.4	4.5	53.5	4.0	35.7	3.2	17.8	2.4	8.3
063	9.1	Fl 4.4s	4.6	55.3	4.6	55.3	4.6	55.3	4.3	45.7	3.4	21.3
064	12.5	Fl 4s	4.7	59.3	4.7	59.3	4.7	59.3	4.0	35.6	3.1	16.6
065	20.0	Fl 4s	4.8	66.4	4.8	66.4	4.4	49.8	3.6	24.9	2.8	11.6
066	25.0	Fl 4s	4.9	69.2	4.7	62.3	4.2	41.5	3.4	20.8	2.6	9.7
067	37.5	Fl 4s	4.7	58.6	4.3	43.9	3.8	29.3	3.0	14.6	2.3	6.8
068	6.0	Fl 5s	4.4	49.8	4.4	49.8	4.4	49.8	4.4	49.8	3.8	29.1
069	10.0	Fl 5s	4.7	59.3	4.7	59.3	4.7	59.3	4.3	44.5	3.4	20.8
070	20.0	Fl 5s	4.9	69.2	4.9	69.2	4.5	51.9	3.6	25.9	2.8	12.1
071	25.0	Fl 6s	5.0	73.2	4.8	65.9	4.3	43.9	3.4	22.0	2.6	10.3
072	8.3	Fl 6s	4.7	59.3	4.7	59.3	4.7	59.3	4.5	53.4	3.6	24.9
073	10.0	Fl 6s	4.7	62.3	4.7	62.3	4.7	62.3	4.4	46.7	3.4	21.8
074	16.7	Fl 6s	4.9	69.2	4.9	69.2	4.7	62.3	3.8	31.1	3.0	14.5
075	30.0	Fl 5s	5.0	73.2	4.6	54.9	4.0	36.6	3.2	18.3	2.5	8.5
076	10.7	Fl 7.5s	4.8	66.4	4.8	66.4	4.8	66.4	4.4	46.7	3.4	21.8
077	50.0	Iso 10s	4.4	47.9	4.0	35.9	3.5	23.9	2.8	12.0	2.1	5.6
078	50.0	Iso 2s	4.2	41.5	3.8	31.1	3.4	20.8	2.6	10.4	2.0	4.8
079	50.0	Iso 4s	4.3	45.3	3.9	34.0	3.5	22.6	2.7	11.3	2.1	5.3
080	50.0	Iso 5s	4.3	46.1	4.0	34.6	3.5	23.1	2.7	11.5	2.1	5.4

Green LEDs												
Flash Code	Duty Cycle	Flash Character	Range(NM) High 100%	Effective Candela High 100%	Range(NM) High 75%	Effective Candela High 75%	Range(NM) High 50%	Effective Candela High 50%	Range(NM) High 25%	Effective Candela High 25%	Range(NM) High 12%	Effective Candela High 12%
081	50.0	Iso 6s	4.4	46.7	4.0	35.0	3.5	23.3	2.8	11.7	2.1	5.4
082	50.0	Iso 8s	4.4	47.4	4.0	35.6	3.5	23.7	2.8	11.9	2.1	5.5
083	50.0	Iso 3s	4.3	43.9	3.9	33.0	3.4	22.0	2.7	11.0	2.0	5.1
084	20.0	LFI 10s	5.0	75.5	5.0	75.5	4.6	56.6	3.7	28.3	2.9	13.2
085	30.0	LFI 10s	5.1	77.8	4.7	58.4	4.1	38.9	3.3	19.5	2.5	9.1
086	40.0	LFI 10s	4.7	59.3	4.3	44.5	3.8	29.6	3.0	14.8	2.3	6.9
087	16.7	LFI 12s	5.0	75.5	5.0	75.5	4.9	67.9	3.9	34.0	3.1	15.8
088	26.7	LFI 15s	5.1	79.0	4.8	66.7	4.3	44.5	3.4	22.2	2.6	10.4
089	40.0	LFI 5s	4.6	56.6	4.2	42.4	3.7	28.3	3.0	14.1	2.2	6.6
090	33.3	LFI 6s	4.9	67.9	4.5	50.9	3.9	34.0	3.1	17.0	2.4	7.9
091	25.0	LFI 8s	5.0	75.5	4.9	67.9	4.3	45.3	3.5	22.6	2.7	10.6
092	37.5	LFI 8s	4.7	62.3	4.4	46.7	3.8	31.1	3.1	15.6	2.3	7.3
093	20.0	Mo (A) 10s	4.7	59.3	4.7	59.3	4.3	44.5	3.4	22.2	2.6	10.4
094	16.7	Mo (A) 15s	4.7	59.3	4.7	59.3	4.5	53.4	3.7	26.7	2.8	12.5
095	21.7	Mo (A) 6s	4.4	49.8	4.4	49.8	4.0	34.5	3.2	17.2	2.4	8.0
096	40.0	Mo (A) 8s	4.4	49.8	4.1	37.4	3.6	24.9	2.8	12.5	2.1	5.8
097	20.0	Mo (B) 15s	4.7	59.3	4.7	59.3	4.3	44.5	3.4	22.2	2.6	10.4
098	15.0	Mo (U) 10s	4.4	49.8	4.4	49.8	4.4	49.8	3.6	24.9	2.8	11.6
099	20.0	Mo (U) 10s	4.6	55.3	4.6	55.3	4.2	41.5	3.4	20.8	2.6	9.7
100	25.0	Mo (U) 10s	4.7	59.3	4.5	53.4	4.0	35.6	3.2	17.8	2.4	8.3
101	16.7	Mo (U) 15s	4.7	59.3	4.7	59.3	4.5	53.4	3.7	26.7	2.8	12.5
102	17.3	Mo (U) 15s	4.7	62.3	4.7	62.3	4.5	53.9	3.7	26.9	2.8	12.6
103	22.0	Mo (U) 15s	4.8	64.6	4.8	64.6	4.3	44.0	3.4	22.0	2.6	10.3
104	23.3	Mo (U) 15s	4.8	64.6	4.7	62.3	4.2	41.5	3.4	20.8	2.6	9.7
105	23.3	Mo (U) 15s	4.8	65.5	4.8	63.2	4.2	42.1	3.4	21.1	2.6	9.8
106	35.5	Mo (U) 15s	4.7	59.7	4.3	44.8	3.8	29.8	3.0	14.9	2.3	7.0
107	39.3	Mo (U) 15s	4.6	54.9	4.2	41.1	3.7	27.4	2.9	13.7	2.2	6.4
108	21.0	Mo (U) 15s ****	4.8	65.5	4.8	65.5	4.4	46.8	3.5	23.4	2.7	10.9
109	15.0	Mo (U) 15s*	4.6	57.5	4.6	57.5	4.6	57.5	3.7	28.7	2.9	13.4

Green LEDs												
Flash Code	Duty Cycle	Flash Character	Range(NM) High 100%	Effective Candela High 100%	Range(NM) High 75%	Effective Candela High 75%	Range(NM) High 50%	Effective Candela High 50%	Range(NM) High 25%	Effective Candela High 25%	Range(NM) High 12%	Effective Candela High 12%
110	17.0	Mo (U) 15s**	4.7	60.9	4.7	60.9	4.5	53.7	3.7	26.9	2.8	12.5
111	18.0	Mo (U) 15s***	4.7	62.3	4.7	62.3	4.5	51.9	3.6	25.9	2.8	12.1
112	10.0	Mo (U) 10s	4.2	41.5	4.2	41.5	4.2	41.5	3.8	31.1	3.0	14.5
113	70.0	Oc 10s	4.0	34.6	3.6	25.9	3.2	17.3	2.5	8.6	1.9	4.0
114	75.0	Oc 10s	3.9	32.3	3.5	24.3	3.1	16.2	2.4	8.1	1.8	3.8
115	66.7	Oc 15s	4.0	36.6	3.7	27.5	3.2	18.3	2.5	9.2	1.9	4.3
116	66.7	Oc 3s	3.9	34.0	3.6	25.5	3.1	17.0	2.5	8.5	1.8	4.0
117	83.3	Oc 3s	3.7	27.7	3.4	20.8	2.9	13.8	2.3	6.9	1.7	3.2
118	75.0	Oc 4s	3.8	31.1	3.5	23.3	3.1	15.6	2.4	7.8	1.8	3.6
119	60.0	Oc 5s	4.1	38.9	3.8	29.2	3.3	19.5	2.6	9.7	1.9	4.5
120	80.0	Oc 5s	3.8	29.6	3.4	22.2	3.0	14.8	2.3	7.4	1.7	3.5
121	90.0	Oc 5s	3.6	26.5	3.3	19.9	2.9	13.2	2.2	6.6	1.7	3.1
122	66.7	Oc 6s	4.0	35.6	3.7	26.7	3.2	17.8	2.5	8.9	1.9	4.2
123	75.0	Oc 6s	3.9	31.8	3.5	23.8	3.1	15.9	2.4	7.9	1.8	3.7
124	83.3	Oc 6s	3.7	28.7	3.4	21.5	3.0	14.4	2.3	7.2	1.7	3.4
125	25.0	Q 1.2s	4.4	49.8	4.3	44.8	3.8	29.9	3.0	14.9	2.3	7.0
126	41.7	Q 1.2s	4.2	42.7	3.9	32.0	3.4	21.3	2.7	10.7	2.0	5.0
127	50.0	Q 1.2s	4.1	37.4	3.7	28.0	3.2	18.7	2.5	9.3	1.9	4.4
128	20.0	Q 1s	4.2	41.5	4.2	41.5	3.8	31.1	3.1	15.6	2.3	7.3
129	30.0	Q 1s	4.4	49.8	4.1	37.4	3.6	24.9	2.8	12.5	2.1	5.8
130	40.0	Q 1s	4.2	41.5	3.8	31.1	3.4	20.8	2.6	10.4	2.0	4.8
131	50.0	Q 1s	4.0	35.6	3.7	26.7	3.2	17.8	2.5	8.9	1.9	4.2
132	80.0	Q 1s	3.6	24.9	3.2	18.7	2.8	12.5	2.2	6.2	1.6	2.9
133	10.0	Q (2) 10s	4.7	59.3	4.7	59.3	4.7	59.3	4.3	44.5	3.4	20.8
134	12.0	Q (2) 10s	4.7	62.3	4.7	62.3	4.7	62.3	4.1	38.9	3.2	18.2
135	12.0	Q (2) 5s	4.4	49.8	4.4	49.8	4.4	49.8	3.8	31.1	3.0	14.5
136	10.0	Q (2) 6s	4.4	49.8	4.4	49.8	4.4	49.8	4.1	37.4	3.2	17.4
137	11.7	Q (2) 6s	4.5	52.8	4.5	52.8	4.5	52.8	3.9	34.0	3.1	15.8
138	9.0	Q (3) 10s	4.4	49.8	4.4	49.8	4.4	49.8	4.2	41.5	3.3	19.4

Green LEDs												
Flash Code	Duty Cycle	Flash Character	Range(NM) High 100%	Effective Candela High 100%	Range(NM) High 75%	Effective Candela High 75%	Range(NM) High 50%	Effective Candela High 50%	Range(NM) High 25%	Effective Candela High 25%	Range(NM) High 12%	Effective Candela High 12%
139	10.5	Q (3) 10s	4.5	52.8	4.5	52.8	4.5	52.8	4.1	37.7	3.2	17.6
140	18.0	Q (3) 10s	4.7	62.3	4.7	62.3	4.5	51.9	3.6	25.9	2.8	12.1
141	12.0	Q (4) 10s	4.4	49.8	4.4	49.8	4.4	49.8	3.8	31.1	3.0	14.5
142	10.0	Q (4) 12s	4.4	49.8	4.4	49.8	4.4	49.8	4.1	37.4	3.2	17.4
143	9.3	Q (4) 15s	4.5	52.8	4.5	52.8	4.5	52.8	4.2	42.4	3.3	19.8
144	10.0	Q (4) 20s	4.7	59.3	4.7	59.3	4.7	59.3	4.3	44.5	3.4	20.8
145	26.7	Q (4) 6s	4.6	55.3	4.4	46.7	3.8	31.1	3.1	15.6	2.3	7.3
146	15.0	Q (5) 10s	4.4	49.8	4.4	49.8	4.4	49.8	3.6	24.9	2.8	11.6
147	7.5	Q (5) 20s	4.4	49.8	4.4	49.8	4.4	49.8	4.4	49.8	3.5	23.2
148	12.5	Q (5) 20s	4.7	59.3	4.7	59.3	4.7	59.3	4.0	35.6	3.1	16.6
149	21.4	Q (5) 7s	4.4	49.8	4.4	49.8	4.0	34.9	3.2	17.4	2.4	8.1
150	18.0	Q (6) 10s	4.4	49.8	4.4	49.8	4.2	41.5	3.4	20.8	2.6	9.7
151	25.3	Q (6)+LFI 15s	4.4	49.8	4.3	44.2	3.8	29.5	3.0	14.7	2.3	6.9
152	21.0	Q (6)+LFI 15s	4.5	52.8	4.5	52.8	4.1	37.7	3.3	18.9	2.5	8.8
153	37.3	Q (6)+LFI 15s	4.4	50.0	4.1	37.5	3.6	25.0	2.8	12.5	2.1	5.8
154	18.0	Q (9) 15s	4.4	49.8	4.4	49.8	4.2	41.5	3.4	20.8	2.6	9.7
155	21.0	Q (9) 15s	4.5	52.8	4.5	52.8	4.1	37.7	3.3	18.9	2.5	8.8
156	36.0	Q (9) 15s	4.5	51.9	4.1	38.9	3.6	25.9	2.9	13.0	2.2	6.1
157	30.0	VQ 0.5s	4.0	35.6	3.7	26.7	3.2	17.8	2.5	8.9	1.9	4.2
158	40.0	VQ 0.5s	3.8	31.1	3.5	23.3	3.1	15.6	2.4	7.8	1.8	3.6
159	33.3	VQ 0.6s	4.1	37.4	3.7	28.0	3.2	18.7	2.5	9.3	1.9	4.4
160	50.0	VQ 0.6s	3.8	29.9	3.4	22.4	3.0	14.9	2.3	7.5	1.8	3.5
161	9.0	VQ (3) 5s	4.0	35.6	4.0	35.6	4.0	35.6	3.8	29.6	2.9	13.8
162	12.0	VQ (3) 5s	4.2	41.5	4.2	41.5	4.2	41.5	3.6	25.9	2.8	12.1
163	18.0	VQ (3) 5s	4.4	49.8	4.4	49.8	4.2	41.5	3.4	20.8	2.6	9.7
164	32.0	VQ (6)+LFI 10s	4.1	38.9	3.8	29.2	3.3	19.5	2.6	9.7	1.9	4.5
165	38.0	VQ (6)+LFI 10s	4.1	39.3	3.8	29.5	3.3	19.7	2.6	9.8	2.0	4.6
166	13.5	VQ (9) 10s	4.0	35.6	4.0	35.6	4.0	35.6	3.3	19.8	2.5	9.2
167	18.0	VQ (9) 10s	4.2	41.5	4.2	41.5	4.0	34.6	3.2	17.3	2.4	8.1

Green LEDs												
Flash Code	Duty Cycle	Flash Character	Range(NM) High 100%	Effective Candela High 100%	Range(NM) High 75%	Effective Candela High 75%	Range(NM) High 50%	Effective Candela High 50%	Range(NM) High 25%	Effective Candela High 25%	Range(NM) High 12%	Effective Candela High 12%
168	27.0	VQ (9) 10s	4.4	49.8	4.2	41.5	3.7	27.7	2.9	13.8	2.2	6.5
169	14.3	Q (2) 7s	4.7	59.3	4.7	59.3	4.7	59.3	3.8	31.1	3.0	14.5
170	12.0	FI (2) 5s	4.4	49.8	4.4	49.8	4.4	49.8	3.8	31.1	3.0	14.5
171	10.0	FI (2) 10s	4.7	59.3	4.7	59.3	4.7	59.3	4.3	44.5	3.4	20.8
172	12.5	FI (5) 20s	4.7	59.3	4.7	59.3	4.7	59.3	4.0	35.6	3.1	16.6
173	20.0	FI (2) 10s	4.9	69.2	4.9	69.2	4.5	51.9	3.6	25.9	2.8	12.1
174	10.0	FI 4s	4.6	55.3	4.6	55.3	4.6	55.3	4.2	41.5	3.3	19.4
175	16.0	FI (2) 5s	4.6	55.3	4.6	55.3	4.5	51.9	3.6	25.9	2.8	12.1
176	30.0	Mo(A) 8s	4.6	55.3	4.2	41.5	3.7	27.7	2.9	13.8	2.2	6.5
177	40.0	FI 2.5s	4.5	51.9	4.1	38.9	3.6	25.9	2.9	13.0	2.2	6.1
178	10.0	FI (3+1) 20 s	4.7	59.3	4.7	59.3	4.7	59.3	4.3	44.5	3.4	20.8
179	12.0	FI (3+1) 20 s	4.7	62.3	4.7	62.3	4.7	62.3	4.1	38.9	3.2	18.2
180	13.0	FI (3+1) 20 s	4.8	63.5	4.8	63.5	4.8	63.5	4.0	36.6	3.2	17.1
181	14.0	FI (3+1) 20 s	4.8	64.6	4.8	64.6	4.8	64.6	4.0	34.6	3.1	16.1
182	16.0	FI (3+1) 20 s	4.8	66.4	4.8	66.4	4.7	62.3	3.8	31.1	3.0	14.5
183	14.3	FI (2) 7s	4.7	59.3	4.7	59.3	4.7	59.3	3.8	31.1	3.0	14.5
184	16.7	FI (3) 9s	4.7	59.3	4.7	59.3	4.5	53.4	3.7	26.7	2.8	12.5
185	18.2	LFI 11s	5.0	75.5	5.0	75.5	4.7	62.3	3.8	31.1	3.0	14.5
186	33.3	FI (6+1) 15s	4.5	53.4	4.2	40.0	3.7	26.7	2.9	13.3	2.2	6.2
187	37.5	Mo (0) 12s	4.7	58.6	4.3	43.9	3.8	29.3	3.0	14.6	2.3	6.8
188	30.0	Mo (0) 15s	5.0	73.2	4.6	54.9	4.0	36.6	3.2	18.3	2.5	8.5
189	25.0	Q 1s	4.3	46.1	4.2	41.5	3.7	27.7	2.9	13.8	2.2	6.5
190	19.6	Q (3) 4.6s	4.4	49.8	4.4	49.8	4.1	38.2	3.3	19.1	2.5	8.9
191	6.7	FI 7.5s	4.7	59.3	4.7	59.3	4.7	59.3	4.7	59.3	3.8	31.1
192	18.2	FI (4) 11s	4.7	59.3	4.7	59.3	4.4	48.9	3.5	24.5	2.7	11.4
193	7.1	FL (3) 21s	4.7	59.3	4.7	59.3	4.7	59.3	4.7	59.3	3.8	29.1
194	25.0	FL (3) 6s	4.7	59.3	4.5	53.4	4.0	35.6	3.2	17.8	2.4	8.3
195	15.0	FI (3)10s	4.7	59.3	4.7	59.3	4.7	59.3	3.8	29.6	2.9	13.8
196	30.0	FI (9)15s	4.7	59.3	4.3	44.5	3.8	29.6	3.0	14.8	2.3	6.9

Green LEDs												
Flash Code	Duty Cycle	Flash Character	Range(NM) High 100%	Effective Candela High 100%	Range(NM) High 75%	Effective Candela High 75%	Range(NM) High 50%	Effective Candela High 50%	Range(NM) High 25%	Effective Candela High 25%	Range(NM) High 12%	Effective Candela High 12%
197	66.7	Oc (2)6s	3.8	31.1	3.5	23.3	3.1	15.6	2.4	7.8	1.8	3.6
198	62.5	Oc (3)8s	3.9	33.2	3.6	24.9	3.1	16.6	2.4	8.3	1.8	3.9
199	60.0	Oc (4)10s	4.0	34.6	3.6	25.9	3.2	17.3	2.5	8.6	1.9	4.0
200	16.7	FI (2)6s	4.7	59.3	4.7	59.3	4.5	53.4	3.7	26.7	2.8	12.5
201	6.3	FI (1)8s	4.7	59.3	4.7	59.3	4.7	59.3	4.7	59.3	3.9	33.2
202	6.0	FI (3)15s	4.4	49.8	4.4	49.8	4.4	49.8	4.4	49.8	3.8	29.1
203	8.0	FI (2)5s	4.2	41.5	4.2	41.5	4.2	41.5	4.1	38.9	3.2	18.2
204	25.0	FI (2)4s	4.7	59.3	4.5	53.4	4.0	35.6	3.2	17.8	2.4	8.3
205	13.3	FI (2)4.5s	4.4	49.8	4.4	49.8	4.4	49.8	3.7	28.0	2.9	13.1
206	15.0	FI (3)10s	4.7	59.3	4.7	59.3	4.7	59.3	3.8	29.6	2.9	13.8
207	10.0	FI (3)15s	4.7	59.3	4.7	59.3	4.7	59.3	4.3	44.5	3.4	20.8
208	25.0	Mo(B)16s	4.7	59.3	4.5	53.4	4.0	35.6	3.2	17.8	2.4	8.3
209	15.0	Q 1s	4.0	35.6	4.0	35.6	4.0	35.6	3.2	17.8	2.4	8.3
210	18.0	FI (2+1) 10s	4.7	62.3	4.7	62.3	4.5	51.9	3.6	25.9	2.8	12.1
211	13.3	Mo (U)	4.6	55.3	4.6	55.3	4.6	55.3	3.8	31.1	3.0	14.5
212	16.7	Q 1.2s	4.2	41.5	4.2	41.5	4.1	37.4	3.2	18.7	2.5	8.7
213	6.0	Q (3) 10s	4.2	41.5	4.2	41.5	4.2	41.5	4.2	41.5	3.5	24.2
214	44.0	Q (6)+LFI 15s	4.2	42.4	3.9	31.8	3.4	21.2	2.7	10.6	2.0	5.0
215	12.0	VQ (3) 5s	4.2	41.5	4.2	41.5	4.2	41.5	3.6	25.9	2.8	12.1
216	48.0	VQ (6)+LFI 10s	3.8	31.1	3.5	23.3	3.1	15.6	2.4	7.8	1.8	3.6
217	18.0	VQ (9) 10s	4.2	41.5	4.2	41.5	4.0	34.6	3.2	17.3	2.4	8.1
218	62.5	Oc (3) 12s	4.0	35.2	3.6	26.4	3.2	17.6	2.5	8.8	1.9	4.1
219	66.7	Oc (4) 12s	3.8	31.1	3.5	23.3	3.1	15.6	2.4	7.8	1.8	3.6
220	25.0	FI (3) 12s	4.9	69.2	4.7	62.3	4.2	41.5	3.4	20.8	2.6	9.7
221	26.7	FI (4) 15s	4.9	69.2	4.7	58.4	4.1	38.9	3.3	19.5	2.5	9.1
222	25.0	FI (5) 20s	4.9	69.2	4.7	62.3	4.2	41.5	3.4	20.8	2.6	9.7
223	33.3	Mo (A)	4.7	62.3	4.4	46.7	3.8	31.1	3.1	15.6	2.3	7.3
224	12.5	FI (5) 20s sADO	4.7	59.3	4.7	59.3	4.7	59.3	4.0	35.6	3.1	16.6
225	13.3	FI (4) 15s	4.7	59.3	4.7	59.3	4.7	59.3	3.9	33.3	3.1	15.6

Green LEDs												
Flash Code	Duty Cycle	Flash Character	Range(NM) High 100%	Effective Candela High 100%	Range(NM) High 75%	Effective Candela High 75%	Range(NM) High 50%	Effective Candela High 50%	Range(NM) High 25%	Effective Candela High 25%	Range(NM) High 12%	Effective Candela High 12%
226	12.5	FI (5) 20s	4.7	59.3	4.7	59.3	4.7	59.3	4.0	35.6	3.1	16.6
227	28.0	Q (6)+LFI 15s	4.2	41.5	3.9	33.3	3.4	22.2	2.7	11.1	2.0	5.2
228	12.0	Q (9) 15s	4.2	41.5	4.2	41.5	4.2	41.5	3.6	25.9	2.8	12.1
229	42.0	VQ (6)+LFI 10s	3.8	29.6	3.4	22.2	3.0	14.8	2.3	7.4	1.7	3.5
230	20.8	CST 1	4.9	70.1	4.9	70.1	4.5	50.6	3.6	25.3	2.8	11.8
231	28.6	CST 2	5.1	80.3	4.8	63.3	4.2	42.2	3.4	21.1	2.6	9.8
232	37.5	CST 3	4.8	65.0	4.4	48.7	3.9	32.5	3.1	16.2	2.4	7.6
233	23.1	CST 4	5.1	77.8	5.0	75.9	4.5	50.6	3.6	25.3	2.8	11.8
234	18.8	CST 5	4.7	59.3	4.7	59.3	4.4	47.4	3.5	23.7	2.7	11.1
235	8.0	CST 6	4.6	55.3	4.6	55.3	4.6	55.3	4.5	51.9	3.5	24.2
236	75.0	CST 7	3.8	29.3	3.4	22.0	3.0	14.6	2.3	7.3	1.7	3.4
237	10.0	CST 8	4.7	59.3	4.7	59.3	4.7	59.3	4.3	44.5	3.4	20.8
238	4.5	CST 9	4.7	62.3	4.7	62.3	4.7	62.3	4.7	62.3	4.4	48.4
239	20.0	CST 10	4.7	59.3	4.7	59.3	4.3	44.5	3.4	22.2	2.6	10.4
240	15.0	CST 11	4.4	49.8	4.4	49.8	4.4	49.8	3.6	24.9	2.8	11.6
241	50.0	CST 12	4.4	48.2	4.0	36.1	3.5	24.1	2.8	12.0	2.1	5.6
242	77.8	CST 13	3.8	29.1	3.4	21.8	3.0	14.6	2.3	7.3	1.7	3.4
243	24.0	CST 14	4.6	55.3	4.5	51.9	4.0	34.6	3.2	17.3	2.4	8.1
244	40.0	CST 15	4.4	49.8	4.1	37.4	3.6	24.9	2.8	12.5	2.1	5.8
245	32.0	CST 16	4.7	62.3	4.4	46.7	3.8	31.1	3.1	15.6	2.3	7.3
246	18.8	CST 17	4.7	59.3	4.7	59.3	4.4	47.4	3.5	23.7	2.7	11.1
247	10.0	CST 18	4.7	59.3	4.7	59.3	4.7	59.3	4.3	44.5	3.4	20.8
248	13.3	CST 19	4.8	66.4	4.8	66.4	4.8	66.4	4.1	37.4	3.2	17.4
249	11.4	CST 20	4.8	66.4	4.8	66.4	4.8	66.4	4.3	43.6	3.3	20.3
250	12.5	CST 21	4.7	59.3	4.7	59.3	4.7	59.3	4.0	35.6	3.1	16.6
251	20.0	CST 22	4.8	64.6	4.8	64.6	4.4	48.4	3.5	24.2	2.7	11.3
252	19.4	CST 23	4.8	64.6	4.8	64.6	4.4	49.8	3.6	24.9	2.8	11.6
253	12.7	CST 24	4.8	64.6	4.8	64.6	4.8	64.6	4.1	38.0	3.2	17.8

**Table B: Candela and Range for White LEDs**



Candela figures derived from IALA-compliant measurement over 360° output. Data for Low power setting not shown.

White LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
001	100	Fixed	3.5	23.4	3.2	17.6	2.8	11.7	2.1	5.9	1.6	2.7
002	10.0	FI (2) 10s	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
003	10.0	FI (2) 10s	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
004	16.0	FI (2) 10s	4.7	62.4	4.7	62.4	4.7	58.5	3.8	29.3	2.9	13.7
005	20.0	FI (2) 10s	4.8	65.0	4.8	65.0	4.4	48.8	3.5	24.4	2.7	11.4
006	20.0	FI (2) 10s	4.8	65.0	4.8	65.0	4.4	48.8	3.5	24.4	2.7	11.4
007	8.3	FI (2) 12s	4.6	55.7	4.6	55.7	4.6	55.7	4.4	50.1	3.5	23.4
008	25.0	FI (2) 12s	4.9	68.8	4.7	61.9	4.2	41.3	3.4	20.6	2.6	9.6
009	13.3	FI (2) 15s	4.8	65.0	4.8	65.0	4.8	65.0	4.0	36.6	3.1	17.1
010	20.0	FI (2) 5s	4.6	55.7	4.6	55.7	4.2	41.8	3.4	20.9	2.6	9.8
011	40.0	FI (2) 5s	4.4	48.8	4.0	36.6	3.5	24.4	2.8	12.2	2.1	5.7
012	16.7	FI (2) 6s	4.6	55.7	4.6	55.7	4.4	50.1	3.6	25.1	2.8	11.7
013	26.7	FI (2) 6s	4.7	62.4	4.5	52.7	4.0	35.1	3.2	17.6	2.4	8.2
014	33.3	FI (2) 6s	4.7	58.5	4.3	43.9	3.8	29.3	3.0	14.6	2.3	6.8
015	28.6	FI (2) 7s	4.8	65.0	4.5	51.2	3.9	34.1	3.1	17.1	2.4	8.0
016	12.5	FI (2) 8s	4.6	55.7	4.6	55.7	4.6	55.7	3.9	33.4	3.1	15.6
017	25.0	FI (2) 8s	4.8	65.0	4.7	58.5	4.1	39.0	3.3	19.5	2.5	9.1
018	15.0	FI (2+1) 10s	4.6	55.7	4.6	55.7	4.6	55.7	3.7	27.9	2.9	13.0
019	20.0	FI (2+1) 12s	4.7	62.4	4.7	62.4	4.4	46.8	3.5	23.4	2.7	10.9
020	25.0	FI (2+1) 12s	4.8	65.0	4.7	58.5	4.1	39.0	3.3	19.5	2.5	9.1
021	20.0	FI (2+1) 15s	4.8	65.0	4.8	65.0	4.4	48.8	3.5	24.4	2.7	11.4
022	15.0	FI (2+1) 6s	4.4	46.8	4.4	46.8	4.4	46.8	3.5	23.4	2.7	10.9
023	12.5	FI (3) 12s	4.6	55.7	4.6	55.7	4.6	55.7	3.9	33.4	3.1	15.6
024	15.0	FI (3) 10s	4.6	55.7	4.6	55.7	4.6	55.7	3.7	27.9	2.9	13.0

White LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
025	30.0	FI (3) 10s	4.8	65.0	4.4	48.8	3.9	32.5	3.1	16.3	2.4	7.6
026	20.0	FI (3) 12s	4.7	62.4	4.7	62.4	4.4	46.8	3.5	23.4	2.7	10.9
027	6.0	FI (3) 15s	4.4	46.8	4.4	46.8	4.4	46.8	4.4	46.8	3.7	27.3
028	10.0	FI (3) 15s	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
029	7.5	FI (3) 20s	4.6	55.7	4.6	55.7	4.6	55.7	4.6	55.7	3.6	26.0
030	26.7	FI (3) 9s	4.7	62.4	4.5	52.7	4.0	35.1	3.2	17.6	2.4	8.2
031	20.0	FI (4) 10s	4.6	55.7	4.6	55.7	4.2	41.8	3.4	20.9	2.6	9.8
032	32.0	FI (4) 10s	4.7	58.5	4.3	43.9	3.8	29.3	3.0	14.6	2.3	6.8
033	26.7	FI (4) 12s	4.7	62.4	4.5	52.7	4.0	35.1	3.2	17.6	2.4	8.2
034	13.3	FI (4) 15s	4.6	55.7	4.6	55.7	4.6	55.7	3.8	31.3	3.0	14.6
035	26.7	FI (4) 15s	4.8	65.0	4.6	54.8	4.0	36.6	3.2	18.3	2.5	8.5
036	10.0	FI (4) 20s	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
037	20.0	FI (5) 20s	4.7	62.4	4.7	62.4	4.4	46.8	3.5	23.4	2.7	10.9
038	25.0	FI (5) 20s	4.8	65.0	4.7	58.5	4.1	39.0	3.3	19.5	2.5	9.1
039	20.0	FI (6) 15s	4.6	55.7	4.6	55.7	4.2	41.8	3.4	20.9	2.6	9.8
040	75.0	FL-*	3.6	26.0	3.3	19.5	2.9	13.0	2.2	6.5	1.7	3.0
041	70.0	FL-**	3.7	27.9	3.4	20.9	2.9	13.9	2.3	7.0	1.7	3.3
042	20.0	FI 1.5s	4.4	46.8	4.4	46.8	4.0	35.1	3.2	17.6	2.4	8.2
043	33.3	FI 1.5s	4.4	50.1	4.1	37.6	3.6	25.1	2.8	12.5	2.1	5.9
044	5.0	FI 10s	4.6	55.7	4.6	55.7	4.6	55.7	4.6	55.7	4.1	39.0
045	10.0	FI 10s	4.8	65.0	4.8	65.0	4.8	65.0	4.4	48.8	3.5	22.8
046	15.0	FI 10s	4.9	68.8	4.9	68.8	4.9	68.8	4.0	34.4	3.1	16.1
047	10.0	FI 12s	4.8	66.9	4.8	66.9	4.8	66.9	4.4	50.1	3.5	23.4
048	6.7	FI 15s	4.8	65.0	4.8	65.0	4.8	65.0	4.8	65.0	3.9	34.1
049	12.0	FI 2.5s	4.4	46.8	4.4	46.8	4.4	46.8	3.8	29.3	2.9	13.7
050	20.0	FI 2.5s	4.6	55.7	4.6	55.7	4.2	41.8	3.4	20.9	2.6	9.8
051	10.7	FI 2.8s	4.4	46.8	4.4	46.8	4.4	46.8	3.9	32.8	3.0	15.3
052	10.0	FI 2s	4.1	39.0	4.1	39.0	4.1	39.0	3.8	29.3	2.9	13.7
053	15.0	FI 2s	4.4	46.8	4.4	46.8	4.4	46.8	3.5	23.4	2.7	10.9

White LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
054	20.0	Fl 2s	4.5	52.0	4.5	52.0	4.1	39.0	3.3	19.5	2.5	9.1
055	25.0	Fl 2s	4.6	55.7	4.4	50.1	3.9	33.4	3.1	16.7	2.4	7.8
056	35.0	Fl 2s	4.5	52.0	4.1	39.0	3.6	26.0	2.9	13.0	2.2	6.1
057	40.0	Fl 2s	4.4	46.8	4.0	35.1	3.5	23.4	2.8	11.7	2.1	5.5
058	10.0	Fl 3s	4.4	46.8	4.4	46.8	4.4	46.8	4.0	35.1	3.1	16.4
059	16.7	Fl 3s	4.6	55.7	4.6	55.7	4.4	50.1	3.6	25.1	2.8	11.7
060	23.3	Fl 3s	4.7	60.7	4.7	58.5	4.1	39.0	3.3	19.5	2.5	9.1
061	33.3	Fl 3s	4.7	58.5	4.3	43.9	3.8	29.3	3.0	14.6	2.3	6.8
062	30.2	Fl 4.3s	4.8	67.1	4.4	50.3	3.9	33.5	3.1	16.8	2.4	7.8
063	9.1	Fl 4.4s	4.5	52.0	4.5	52.0	4.5	52.0	4.2	42.9	3.3	20.0
064	12.5	Fl 4s	4.6	55.7	4.6	55.7	4.6	55.7	3.9	33.4	3.1	15.6
065	20.0	Fl 4s	4.7	62.4	4.7	62.4	4.4	46.8	3.5	23.4	2.7	10.9
066	25.0	Fl 4s	4.8	65.0	4.7	58.5	4.1	39.0	3.3	19.5	2.5	9.1
067	37.5	Fl 4s	4.6	55.1	4.2	41.3	3.7	27.5	2.9	13.8	2.2	6.4
068	6.0	Fl 5s	4.4	46.8	4.4	46.8	4.4	46.8	4.4	46.8	3.7	27.3
069	10.0	Fl 5s	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
070	20.0	Fl 5s	4.8	65.0	4.8	65.0	4.4	48.8	3.5	24.4	2.7	11.4
071	25.0	Fl 6s	4.9	68.8	4.7	61.9	4.2	41.3	3.4	20.6	2.6	9.6
072	8.3	Fl 6s	4.6	55.7	4.6	55.7	4.6	55.7	4.4	50.1	3.5	23.4
073	10.0	Fl 6s	4.7	58.5	4.7	58.5	4.7	58.5	4.3	43.9	3.3	20.5
074	16.7	Fl 6s	4.8	65.0	4.8	65.0	4.7	58.5	3.8	29.3	2.9	13.7
075	30.0	Fl 5s	4.9	68.8	4.5	51.6	4.0	34.4	3.2	17.2	2.4	8.0
076	10.7	Fl 7.5s	4.7	62.4	4.7	62.4	4.7	62.4	4.3	43.9	3.3	20.5
077	50.0	Iso 10s	4.3	45.0	3.9	33.8	3.5	22.5	2.7	11.3	2.1	5.3
078	50.0	Iso 2s	4.1	39.0	3.8	29.3	3.3	19.5	2.6	9.8	1.9	4.6
079	50.0	Iso 4s	4.2	42.5	3.9	31.9	3.4	21.3	2.7	10.6	2.0	5.0
080	50.0	Iso 5s	4.3	43.3	3.9	32.5	3.4	21.7	2.7	10.8	2.0	5.1
081	50.0	Iso 6s	4.3	43.9	3.9	32.9	3.4	21.9	2.7	11.0	2.0	5.1
082	50.0	Iso 8s	4.3	44.6	3.9	33.4	3.4	22.3	2.7	11.1	2.0	5.2

White LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
083	50.0	Iso 3s	4.2	41.3	3.8	31.0	3.4	20.6	2.6	10.3	2.0	4.8
084	20.0	LFI 10s	4.9	70.9	4.9	70.9	4.5	53.2	3.6	26.6	2.8	12.4
085	30.0	LFI 10s	5.0	73.1	4.6	54.8	4.0	36.6	3.2	18.3	2.5	8.5
086	40.0	LFI 10s	4.6	55.7	4.2	41.8	3.7	27.9	2.9	13.9	2.2	6.5
087	16.7	LFI 12s	4.9	70.9	4.9	70.9	4.8	63.8	3.9	31.9	3.0	14.9
088	26.7	LFI 15s	5.0	74.3	4.7	62.7	4.2	41.8	3.4	20.9	2.6	9.8
089	40.0	LFI 5s	4.5	53.2	4.1	39.9	3.6	26.6	2.9	13.3	2.2	6.2
090	33.3	LFI 6s	4.8	63.8	4.4	47.9	3.9	31.9	3.1	16.0	2.3	7.4
091	25.0	LFI 8s	4.9	70.9	4.8	63.8	4.2	42.5	3.4	21.3	2.6	9.9
092	37.5	LFI 8s	4.7	58.5	4.3	43.9	3.8	29.3	3.0	14.6	2.3	6.8
093	20.0	Mo (A) 10s	4.6	55.7	4.6	55.7	4.2	41.8	3.4	20.9	2.6	9.8
094	16.7	Mo (A) 15s	4.6	55.7	4.6	55.7	4.4	50.1	3.6	25.1	2.8	11.7
095	21.7	Mo (A) 6s	4.4	46.8	4.4	46.8	3.9	32.4	3.1	16.2	2.4	7.6
096	40.0	Mo (A) 8s	4.4	46.8	4.0	35.1	3.5	23.4	2.8	11.7	2.1	5.5
097	20.0	Mo (B) 15s	4.6	55.7	4.6	55.7	4.2	41.8	3.4	20.9	2.6	9.8
098	15.0	Mo (U) 10s	4.4	46.8	4.4	46.8	4.4	46.8	3.5	23.4	2.7	10.9
099	20.0	Mo (U) 10s	4.5	52.0	4.5	52.0	4.1	39.0	3.3	19.5	2.5	9.1
100	25.0	Mo (U) 10s	4.6	55.7	4.4	50.1	3.9	33.4	3.1	16.7	2.4	7.8
101	16.7	Mo (U) 15s	4.6	55.7	4.6	55.7	4.4	50.1	3.6	25.1	2.8	11.7
102	17.3	Mo (U) 15s	4.7	58.5	4.7	58.5	4.5	50.6	3.6	25.3	2.8	11.8
103	22.0	Mo (U) 15s	4.7	60.7	4.7	60.7	4.2	41.4	3.4	20.7	2.6	9.7
104	23.3	Mo (U) 15s	4.7	60.7	4.7	58.5	4.1	39.0	3.3	19.5	2.5	9.1
105	23.3	Mo (U) 15s	4.7	61.6	4.7	59.4	4.1	39.6	3.3	19.8	2.5	9.2
106	35.5	Mo (U) 15s	4.6	56.1	4.2	42.1	3.7	28.0	2.9	14.0	2.2	6.5
107	39.3	Mo (U) 15s	4.5	51.6	4.1	38.7	3.6	25.8	2.9	12.9	2.2	6.0
108	21.0	Mo (U) 15s ****	4.7	61.6	4.7	61.6	4.3	44.0	3.4	22.0	2.6	10.3
109	15.0	Mo (U) 15s*	4.5	54.0	4.5	54.0	4.5	54.0	3.7	27.0	2.8	12.6
110	17.0	Mo (U) 15s**	4.6	57.2	4.6	57.2	4.5	50.5	3.6	25.2	2.8	11.8
111	18.0	Mo (U) 15s***	4.7	58.5	4.7	58.5	4.4	48.8	3.5	24.4	2.7	11.4

White LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
112	10.0	Mo (U) 10s	4.1	39.0	4.1	39.0	4.1	39.0	3.8	29.3	2.9	13.7
113	70.0	Oc 10s	3.9	32.5	3.5	24.4	3.1	16.3	2.4	8.1	1.8	3.8
114	75.0	Oc 10s	3.8	30.4	3.5	22.8	3.0	15.2	2.4	7.6	1.8	3.5
115	66.7	Oc 15s	4.0	34.4	3.6	25.8	3.2	17.2	2.5	8.6	1.9	4.0
116	66.7	Oc 3s	3.9	31.9	3.5	23.9	3.1	16.0	2.4	8.0	1.8	3.7
117	83.3	Oc 3s	3.6	26.0	3.3	19.5	2.9	13.0	2.2	6.5	1.7	3.0
118	75.0	Oc 4s	3.8	29.3	3.4	21.9	3.0	14.6	2.3	7.3	1.7	3.4
119	60.0	Oc 5s	4.0	36.6	3.7	27.4	3.2	18.3	2.5	9.1	1.9	4.3
120	80.0	Oc 5s	3.7	27.9	3.4	20.9	2.9	13.9	2.3	7.0	1.7	3.3
121	90.0	Oc 5s	3.6	24.9	3.2	18.7	2.8	12.4	2.2	6.2	1.6	2.9
122	66.7	Oc 6s	3.9	33.4	3.6	25.1	3.1	16.7	2.4	8.4	1.8	3.9
123	75.0	Oc 6s	3.8	29.9	3.4	22.4	3.0	14.9	2.3	7.5	1.8	3.5
124	83.3	Oc 6s	3.7	27.0	3.3	20.3	2.9	13.5	2.3	6.8	1.7	3.2
125	25.0	Q 1.2s	4.4	46.8	4.2	42.1	3.7	28.1	2.9	14.0	2.2	6.6
126	41.7	Q 1.2s	4.2	40.1	3.8	30.1	3.3	20.1	2.6	10.0	2.0	4.7
127	50.0	Q 1.2s	4.0	35.1	3.6	26.3	3.2	17.6	2.5	8.8	1.9	4.1
128	20.0	Q 1s	4.1	39.0	4.1	39.0	3.8	29.3	3.0	14.6	2.3	6.8
129	30.0	Q 1s	4.4	46.8	4.0	35.1	3.5	23.4	2.8	11.7	2.1	5.5
130	40.0	Q 1s	4.1	39.0	3.8	29.3	3.3	19.5	2.6	9.8	1.9	4.6
131	50.0	Q 1s	3.9	33.4	3.6	25.1	3.1	16.7	2.4	8.4	1.8	3.9
132	80.0	Q 1s	3.5	23.4	3.2	17.6	2.8	11.7	2.1	5.9	1.6	2.7
133	10.0	Q (2) 10s	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
134	12.0	Q (2) 10s	4.7	58.5	4.7	58.5	4.7	58.5	4.0	36.6	3.1	17.1
135	12.0	Q (2) 5s	4.4	46.8	4.4	46.8	4.4	46.8	3.8	29.3	2.9	13.7
136	10.0	Q (2) 6s	4.4	46.8	4.4	46.8	4.4	46.8	4.0	35.1	3.1	16.4
137	11.7	Q (2) 6s	4.4	49.6	4.4	49.6	4.4	49.6	3.9	31.9	3.0	14.9
138	9.0	Q (3) 10s	4.4	46.8	4.4	46.8	4.4	46.8	4.1	39.0	3.2	18.2
139	10.5	Q (3) 10s	4.4	49.6	4.4	49.6	4.4	49.6	4.0	35.5	3.1	16.5
140	18.0	Q (3) 10s	4.7	58.5	4.7	58.5	4.4	48.8	3.5	24.4	2.7	11.4

White LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
141	12.0	Q (4) 10s	4.4	46.8	4.4	46.8	4.4	46.8	3.8	29.3	2.9	13.7
142	10.0	Q (4) 12s	4.4	46.8	4.4	46.8	4.4	46.8	4.0	35.1	3.1	16.4
143	9.3	Q (4) 15s	4.4	49.6	4.4	49.6	4.4	49.6	4.1	39.9	3.2	18.6
144	10.0	Q (4) 20s	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
145	26.7	Q (4) 6s	4.5	52.0	4.3	43.9	3.8	29.3	3.0	14.6	2.3	6.8
146	15.0	Q (5) 10s	4.4	46.8	4.4	46.8	4.4	46.8	3.5	23.4	2.7	10.9
147	7.5	Q (5) 20s	4.4	46.8	4.4	46.8	4.4	46.8	4.4	46.8	3.4	21.8
148	12.5	Q (5) 20s	4.6	55.7	4.6	55.7	4.6	55.7	3.9	33.4	3.1	15.6
149	21.4	Q (5) 7s	4.4	46.8	4.4	46.8	3.9	32.8	3.1	16.4	2.4	7.6
150	18.0	Q (6) 10s	4.4	46.8	4.4	46.8	4.1	39.0	3.3	19.5	2.5	9.1
151	25.3	Q (6)+LFI 15s	4.4	46.8	4.2	41.6	3.7	27.7	2.9	13.9	2.2	6.5
152	21.0	Q (6)+LFI 15s	4.4	49.6	4.4	49.6	4.0	35.5	3.2	17.7	2.4	8.3
153	37.3	Q (6)+LFI 15s	4.4	47.0	4.0	35.3	3.5	23.5	2.8	11.8	2.1	5.5
154	18.0	Q (9) 15s	4.4	46.8	4.4	46.8	4.1	39.0	3.3	19.5	2.5	9.1
155	21.0	Q (9) 15s	4.4	49.6	4.4	49.6	4.0	35.5	3.2	17.7	2.4	8.3
156	36.0	Q (9) 15s	4.4	48.8	4.0	36.6	3.5	24.4	2.8	12.2	2.1	5.7
157	30.0	VQ 0.5s	3.9	33.4	3.6	25.1	3.1	16.7	2.4	8.4	1.8	3.9
158	40.0	VQ 0.5s	3.8	29.3	3.4	21.9	3.0	14.6	2.3	7.3	1.7	3.4
159	33.3	VQ 0.6s	4.0	35.1	3.6	26.3	3.2	17.6	2.5	8.8	1.9	4.1
160	50.0	VQ 0.6s	3.7	28.1	3.4	21.1	2.9	14.0	2.3	7.0	1.7	3.3
161	9.0	VQ (3) 5s	3.9	33.4	3.9	33.4	3.9	33.4	3.7	27.9	2.9	13.0
162	12.0	VQ (3) 5s	4.1	39.0	4.1	39.0	4.1	39.0	3.5	24.4	2.7	11.4
163	18.0	VQ (3) 5s	4.4	46.8	4.4	46.8	4.1	39.0	3.3	19.5	2.5	9.1
164	32.0	VQ (6)+LFI 10s	4.0	36.6	3.7	27.4	3.2	18.3	2.5	9.1	1.9	4.3
165	38.0	VQ (6)+LFI 10s	4.0	36.9	3.7	27.7	3.2	18.5	2.5	9.2	1.9	4.3
166	13.5	VQ (9) 10s	3.9	33.4	3.9	33.4	3.9	33.4	3.2	18.6	2.5	8.7
167	18.0	VQ (9) 10s	4.1	39.0	4.1	39.0	3.9	32.5	3.1	16.3	2.4	7.6
168	27.0	VQ (9) 10s	4.4	46.8	4.1	39.0	3.6	26.0	2.9	13.0	2.2	6.1
169	14.3	Q (2) 7s	4.6	55.7	4.6	55.7	4.6	55.7	3.8	29.3	2.9	13.7

White LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
170	12.0	FI (2) 5s	4.4	46.8	4.4	46.8	4.4	46.8	3.8	29.3	2.9	13.7
171	10.0	FI (2) 10s	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
172	12.5	FI (5) 20s	4.6	55.7	4.6	55.7	4.6	55.7	3.9	33.4	3.1	15.6
173	20.0	FI (2) 10s	4.8	65.0	4.8	65.0	4.4	48.8	3.5	24.4	2.7	11.4
174	10.0	FI 4s	4.5	52.0	4.5	52.0	4.5	52.0	4.1	39.0	3.2	18.2
175	16.0	FI (2) 5s	4.5	52.0	4.5	52.0	4.4	48.8	3.5	24.4	2.7	11.4
176	30.0	Mo(A) 8s	4.5	52.0	4.1	39.0	3.6	26.0	2.9	13.0	2.2	6.1
177	40.0	FI 2.5s	4.4	48.8	4.0	36.6	3.5	24.4	2.8	12.2	2.1	5.7
178	10.0	FI (3+1) 20 s	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
179	12.0	FI (3+1) 20 s	4.7	58.5	4.7	58.5	4.7	58.5	4.0	36.6	3.1	17.1
180	13.0	FI (3+1) 20 s	4.7	59.6	4.7	59.6	4.7	59.6	4.0	34.4	3.1	16.1
181	14.0	FI (3+1) 20 s	4.7	60.7	4.7	60.7	4.7	60.7	3.9	32.5	3.0	15.2
182	16.0	FI (3+1) 20 s	4.7	62.4	4.7	62.4	4.7	58.5	3.8	29.3	2.9	13.7
183	14.3	FI (2) 7s	4.6	55.7	4.6	55.7	4.6	55.7	3.8	29.3	2.9	13.7
184	16.7	FI (3) 9s	4.6	55.7	4.6	55.7	4.4	50.1	3.6	25.1	2.8	11.7
185	18.2	LFI 11s	4.9	70.9	4.9	70.9	4.7	58.5	3.8	29.3	2.9	13.7
186	33.3	FI (6+1) 15s	4.4	50.1	4.1	37.6	3.6	25.1	2.8	12.5	2.1	5.9
187	37.5	Mo (0) 12s	4.6	55.1	4.2	41.3	3.7	27.5	2.9	13.8	2.2	6.4
188	30.0	Mo (0) 15s	4.9	68.8	4.5	51.6	4.0	34.4	3.2	17.2	2.4	8.0
189	25.0	Q 1s	4.3	43.3	4.1	39.0	3.6	26.0	2.9	13.0	2.2	6.1
190	19.6	Q (3) 4.6s	4.4	46.8	4.4	46.8	4.0	35.9	3.2	17.9	2.4	8.4
191	6.7	FI 7.5s	4.6	55.7	4.6	55.7	4.6	55.7	4.6	55.7	3.8	29.3
192	18.2	FI (4) 11s	4.6	55.7	4.6	55.7	4.3	46.0	3.5	23.0	2.7	10.7
193	7.1	FL (3) 21s	4.6	55.7	4.6	55.7	4.6	55.7	4.6	55.7	3.7	27.3
194	25.0	FL (3) 6s	4.6	55.7	4.4	50.1	3.9	33.4	3.1	16.7	2.4	7.8
195	15.0	FI (3)10s	4.6	55.7	4.6	55.7	4.6	55.7	3.7	27.9	2.9	13.0
196	30.0	FI (9)15s	4.6	55.7	4.2	41.8	3.7	27.9	2.9	13.9	2.2	6.5
197	66.7	Oc (2)6s	3.8	29.3	3.4	21.9	3.0	14.6	2.3	7.3	1.7	3.4
198	62.5	Oc (3)8s	3.8	31.2	3.5	23.4	3.1	15.6	2.4	7.8	1.8	3.6

White LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
199	60.0	Oc (4)10s	3.9	32.5	3.5	24.4	3.1	16.3	2.4	8.1	1.8	3.8
200	16.7	FI (2)6s	4.6	55.7	4.6	55.7	4.4	50.1	3.6	25.1	2.8	11.7
201	6.3	FI (1)8s	4.6	55.7	4.6	55.7	4.6	55.7	4.6	55.7	3.8	31.2
202	6.0	FI (3)15s	4.4	46.8	4.4	46.8	4.4	46.8	4.4	46.8	3.7	27.3
203	8.0	FI (2)5s	4.1	39.0	4.1	39.0	4.1	39.0	4.0	36.6	3.1	17.1
204	25.0	FI (2)4s	4.6	55.7	4.4	50.1	3.9	33.4	3.1	16.7	2.4	7.8
205	13.3	FI (2)4.5s	4.4	46.8	4.4	46.8	4.4	46.8	3.6	26.3	2.8	12.3
206	15.0	FI (3)10s	4.6	55.7	4.6	55.7	4.6	55.7	3.7	27.9	2.9	13.0
207	10.0	FI (3)15s	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
208	25.0	Mo(B)16s	4.6	55.7	4.4	50.1	3.9	33.4	3.1	16.7	2.4	7.8
209	15.0	Q 1s	3.9	33.4	3.9	33.4	3.9	33.4	3.1	16.7	2.4	7.8
210	18.0	FI (2+1) 10s	4.7	58.5	4.7	58.5	4.4	48.8	3.5	24.4	2.7	11.4
211	13.3	Mo (U)	4.5	52.0	4.5	52.0	4.5	52.0	3.8	29.3	2.9	13.7
212	16.7	Q 1.2s	4.1	39.0	4.1	39.0	4.0	35.1	3.2	17.6	2.4	8.2
213	6.0	Q (3) 10s	4.1	39.0	4.1	39.0	4.1	39.0	4.1	39.0	3.5	22.8
214	44.0	Q (6)+LFI 15s	4.1	39.9	3.8	29.9	3.3	19.9	2.6	10.0	2.0	4.7
215	12.0	VQ (3) 5s	4.1	39.0	4.1	39.0	4.1	39.0	3.5	24.4	2.7	11.4
216	48.0	VQ (6)+LFI 10s	3.8	29.3	3.4	21.9	3.0	14.6	2.3	7.3	1.7	3.4
217	18.0	VQ (9) 10s	4.1	39.0	4.1	39.0	3.9	32.5	3.1	16.3	2.4	7.6
218	62.5	Oc (3) 12s	3.9	33.0	3.6	24.8	3.1	16.5	2.4	8.3	1.8	3.9
219	66.7	Oc (4) 12s	3.8	29.3	3.4	21.9	3.0	14.6	2.3	7.3	1.7	3.4
220	25.0	FI (3) 12s	4.8	65.0	4.7	58.5	4.1	39.0	3.3	19.5	2.5	9.1
221	26.7	FI (4) 15s	4.8	65.0	4.6	54.8	4.0	36.6	3.2	18.3	2.5	8.5
222	25.0	FI (5) 20s	4.8	65.0	4.7	58.5	4.1	39.0	3.3	19.5	2.5	9.1
223	33.3	Mo (A)	4.7	58.5	4.3	43.9	3.8	29.3	3.0	14.6	2.3	6.8
224	12.5	FI (5) 20s sADO	4.6	55.7	4.6	55.7	4.6	55.7	3.9	33.4	3.1	15.6
225	13.3	FI (4) 15s	4.6	55.7	4.6	55.7	4.6	55.7	3.8	31.3	3.0	14.6
226	12.5	FI (5) 20s	4.6	55.7	4.6	55.7	4.6	55.7	3.9	33.4	3.1	15.6
227	28.0	Q (6)+LFI 15s	4.1	39.0	3.8	31.3	3.4	20.9	2.7	10.4	2.0	4.9

White LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
228	12.0	Q (9) 15s	4.1	39.0	4.1	39.0	4.1	39.0	3.5	24.4	2.7	11.4
229	42.0	VQ (6)+LFI 10s	3.7	27.9	3.4	20.9	2.9	13.9	2.3	7.0	1.7	3.3
230	20.8	CST1	4.8	65.9	4.8	65.9	4.4	47.6	3.5	23.8	2.7	11.1
231	28.6	CST2	5.0	75.5	4.7	59.4	4.1	39.6	3.3	19.8	2.5	9.2
232	37.5	CST3	4.7	61.0	4.3	45.8	3.8	30.5	3.0	15.3	2.3	7.1
233	23.1	CST4	5.0	73.1	4.9	71.3	4.4	47.5	3.5	23.8	2.7	11.1
234	18.8	CST5	4.6	55.7	4.6	55.7	4.3	44.6	3.4	22.3	2.6	10.4
235	8.0	CST6	4.5	52.0	4.5	52.0	4.5	52.0	4.4	48.8	3.5	22.8
236	75.0	CST7	3.7	27.5	3.4	20.6	2.9	13.8	2.3	6.9	1.7	3.2
237	10.0	CST8	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
238	4.5	CST9	4.7	58.5	4.7	58.5	4.7	58.5	4.7	58.5	4.3	45.5
239	20.0	CST10	4.6	55.7	4.6	55.7	4.2	41.8	3.4	20.9	2.6	9.8
240	15.0	CST11	4.4	46.8	4.4	46.8	4.4	46.8	3.5	23.4	2.7	10.9
241	50.0	CST12	4.3	45.3	3.9	34.0	3.5	22.6	2.7	11.3	2.1	5.3
242	77.8	CST13	3.7	27.4	3.4	20.5	2.9	13.7	2.3	6.8	1.7	3.2
243	24.0	CST14	4.5	52.0	4.4	48.8	3.9	32.5	3.1	16.3	2.4	7.6
244	40.0	CST15	4.4	46.8	4.0	35.1	3.5	23.4	2.8	11.7	2.1	5.5
245	32.0	CST16	4.7	58.5	4.3	43.9	3.8	29.3	3.0	14.6	2.3	6.8
246	18.8	CST17	4.6	55.7	4.6	55.7	4.3	44.6	3.4	22.3	2.6	10.4
247	10.0	CST18	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
248	13.3	CST19	4.7	62.4	4.7	62.4	4.7	62.4	4.0	35.1	3.1	16.4
249	11.4	CST20	4.7	62.4	4.7	62.4	4.7	62.4	4.2	41.0	3.3	19.1
250	12.5	CST21	4.6	55.7	4.6	55.7	4.6	55.7	3.9	33.4	3.1	15.6
251	20.0	CST22	4.7	60.7	4.7	60.7	4.3	45.5	3.5	22.8	2.7	10.6
252	19.4	CST23	4.7	60.7	4.7	60.7	4.4	46.8	3.5	23.4	2.7	10.9
253	12.7	CST24	4.7	60.7	4.7	60.7	4.7	60.7	4.0	35.8	3.1	16.7

**Table C: Candela and Range for Red LEDs**



Candela figures derived from IALA-compliant measurement over 360° output. Data for Low power setting not shown.

Red LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
001	100	Fixed	3.3	19.5	3.0	14.6	2.6	9.8	2.0	4.9	1.5	2.3
002	10.0	Fl (2) 10s	4.3	46.4	4.3	46.4	4.3	46.4	4.0	34.8	3.1	16.3
003	10.0	Fl (2) 10s	4.3	46.4	4.3	46.4	4.3	46.4	4.0	34.8	3.1	16.3
004	16.0	Fl (2) 10s	4.5	52.0	4.5	52.0	4.4	48.8	3.5	24.4	2.7	11.4
005	20.0	Fl (2) 10s	4.5	54.2	4.5	54.2	4.2	40.6	3.3	20.3	2.6	9.5
006	20.0	Fl (2) 10s	4.5	54.2	4.5	54.2	4.2	40.6	3.3	20.3	2.6	9.5
007	8.3	Fl (2) 12s	4.3	46.4	4.3	46.4	4.3	46.4	4.2	41.8	3.3	19.5
008	25.0	Fl (2) 12s	4.6	57.4	4.5	51.6	4.0	34.4	3.2	17.2	2.4	8.0
009	13.3	Fl (2) 15s	4.5	54.2	4.5	54.2	4.5	54.2	3.8	30.5	3.0	14.2
010	20.0	Fl (2) 5s	4.3	46.4	4.3	46.4	4.0	34.8	3.2	17.4	2.4	8.1
011	40.0	Fl (2) 5s	4.2	40.6	3.8	30.5	3.3	20.3	2.6	10.2	2.0	4.7
012	16.7	Fl (2) 6s	4.3	46.4	4.3	46.4	4.2	41.8	3.4	20.9	2.6	9.8
013	26.7	Fl (2) 6s	4.5	52.0	4.3	43.9	3.8	29.3	3.0	14.6	2.3	6.8
014	33.3	Fl (2) 6s	4.4	48.8	4.0	36.6	3.5	24.4	2.8	12.2	2.1	5.7
015	28.6	Fl (2) 7s	4.5	54.2	4.2	42.7	3.7	28.4	3.0	14.2	2.2	6.6
016	12.5	Fl (2) 8s	4.3	46.4	4.3	46.4	4.3	46.4	3.7	27.9	2.9	13.0
017	25.0	Fl (2) 8s	4.5	54.2	4.4	48.8	3.9	32.5	3.1	16.3	2.4	7.6
018	15.0	Fl (2+1) 10s	4.3	46.4	4.3	46.4	4.3	46.4	3.5	23.2	2.7	10.8
019	20.0	Fl (2+1) 12s	4.5	52.0	4.5	52.0	4.1	39.0	3.3	19.5	2.5	9.1
020	25.0	Fl (2+1) 12s	4.5	54.2	4.4	48.8	3.9	32.5	3.1	16.3	2.4	7.6
021	20.0	Fl (2+1) 15s	4.5	54.2	4.5	54.2	4.2	40.6	3.3	20.3	2.6	9.5
022	15.0	Fl (2+1) 6s	4.1	39.0	4.1	39.0	4.1	39.0	3.3	19.5	2.5	9.1
023	12.5	Fl (3) 12s	4.3	46.4	4.3	46.4	4.3	46.4	3.7	27.9	2.9	13.0
024	15.0	Fl (3) 10s	4.3	46.4	4.3	46.4	4.3	46.4	3.5	23.2	2.7	10.8

Red LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
025	30.0	Fl (3) 10s	4.5	54.2	4.2	40.6	3.7	27.1	2.9	13.5	2.2	6.3
026	20.0	Fl (3) 12s	4.5	52.0	4.5	52.0	4.1	39.0	3.3	19.5	2.5	9.1
027	6.0	Fl (3) 15s	4.1	39.0	4.1	39.0	4.1	39.0	4.1	39.0	3.5	22.8
028	10.0	Fl (3) 15s	4.3	46.4	4.3	46.4	4.3	46.4	4.0	34.8	3.1	16.3
029	7.5	Fl (3) 20s	4.3	46.4	4.3	46.4	4.3	46.4	4.3	46.4	3.4	21.7
030	26.7	Fl (3) 9s	4.5	52.0	4.3	43.9	3.8	29.3	3.0	14.6	2.3	6.8
031	20.0	Fl (4) 10s	4.3	46.4	4.3	46.4	4.0	34.8	3.2	17.4	2.4	8.1
032	32.0	Fl (4) 10s	4.4	48.8	4.0	36.6	3.5	24.4	2.8	12.2	2.1	5.7
033	26.7	Fl (4) 12s	4.5	52.0	4.3	43.9	3.8	29.3	3.0	14.6	2.3	6.8
034	13.3	Fl (4) 15s	4.3	46.4	4.3	46.4	4.3	46.4	3.6	26.1	2.8	12.2
035	26.7	Fl (4) 15s	4.5	54.2	4.3	45.7	3.8	30.5	3.0	15.2	2.3	7.1
036	10.0	Fl (4) 20s	4.3	46.4	4.3	46.4	4.3	46.4	4.0	34.8	3.1	16.3
037	20.0	Fl (5) 20s	4.5	52.0	4.5	52.0	4.1	39.0	3.3	19.5	2.5	9.1
038	25.0	Fl (5) 20s	4.5	54.2	4.4	48.8	3.9	32.5	3.1	16.3	2.4	7.6
039	20.0	Fl (6) 15s	4.3	46.4	4.3	46.4	4.0	34.8	3.2	17.4	2.4	8.1
040	75.0	FL-*	3.4	21.7	3.1	16.3	2.7	10.8	2.1	5.4	1.5	2.5
041	70.0	FL-**	3.5	23.2	3.2	17.4	2.8	11.6	2.1	5.8	1.6	2.7
042	20.0	Fl 1.5s	4.1	39.0	4.1	39.0	3.8	29.3	3.0	14.6	2.3	6.8
043	33.3	Fl 1.5s	4.2	41.8	3.8	31.3	3.4	20.9	2.7	10.4	2.0	4.9
044	5.0	Fl 10s	4.3	46.4	4.3	46.4	4.3	46.4	4.3	46.4	3.9	32.5
045	10.0	Fl 10s	4.5	54.2	4.5	54.2	4.5	54.2	4.2	40.6	3.3	19.0
046	15.0	Fl 10s	4.6	57.4	4.6	57.4	4.6	57.4	3.7	28.7	2.9	13.4
047	10.0	Fl 12s	4.6	55.7	4.6	55.7	4.6	55.7	4.2	41.8	3.3	19.5
048	6.7	Fl 15s	4.5	54.2	4.5	54.2	4.5	54.2	4.5	54.2	3.7	28.4
049	12.0	Fl 2.5s	4.1	39.0	4.1	39.0	4.1	39.0	3.5	24.4	2.7	11.4
050	20.0	Fl 2.5s	4.3	46.4	4.3	46.4	4.0	34.8	3.2	17.4	2.4	8.1
051	10.7	Fl 2.8s	4.1	39.0	4.1	39.0	4.1	39.0	3.7	27.3	2.8	12.7
052	10.0	Fl 2s	3.9	32.5	3.9	32.5	3.9	32.5	3.5	24.4	2.7	11.4
053	15.0	Fl 2s	4.1	39.0	4.1	39.0	4.1	39.0	3.3	19.5	2.5	9.1

Red LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
054	20.0	Fl 2s	4.3	43.3	4.3	43.3	3.9	32.5	3.1	16.3	2.4	7.6
055	25.0	Fl 2s	4.3	46.4	4.2	41.8	3.7	27.9	2.9	13.9	2.2	6.5
056	35.0	Fl 2s	4.3	43.3	3.9	32.5	3.4	21.7	2.7	10.8	2.0	5.1
057	40.0	Fl 2s	4.1	39.0	3.8	29.3	3.3	19.5	2.6	9.8	1.9	4.6
058	10.0	Fl 3s	4.1	39.0	4.1	39.0	4.1	39.0	3.8	29.3	2.9	13.7
059	16.7	Fl 3s	4.3	46.4	4.3	46.4	4.2	41.8	3.4	20.9	2.6	9.8
060	23.3	Fl 3s	4.5	50.6	4.4	48.8	3.9	32.5	3.1	16.3	2.4	7.6
061	33.3	Fl 3s	4.4	48.8	4.0	36.6	3.5	24.4	2.8	12.2	2.1	5.7
062	30.2	Fl 4.3s	4.6	55.9	4.2	41.9	3.7	28.0	2.9	14.0	2.2	6.5
063	9.1	Fl 4.4s	4.3	43.3	4.3	43.3	4.3	43.3	4.0	35.8	3.1	16.7
064	12.5	Fl 4s	4.3	46.4	4.3	46.4	4.3	46.4	3.7	27.9	2.9	13.0
065	20.0	Fl 4s	4.5	52.0	4.5	52.0	4.1	39.0	3.3	19.5	2.5	9.1
066	25.0	Fl 4s	4.5	54.2	4.4	48.8	3.9	32.5	3.1	16.3	2.4	7.6
067	37.5	Fl 4s	4.3	45.9	4.0	34.4	3.5	22.9	2.7	11.5	2.1	5.4
068	6.0	Fl 5s	4.1	39.0	4.1	39.0	4.1	39.0	4.1	39.0	3.5	22.8
069	10.0	Fl 5s	4.3	46.4	4.3	46.4	4.3	46.4	4.0	34.8	3.1	16.3
070	20.0	Fl 5s	4.5	54.2	4.5	54.2	4.2	40.6	3.3	20.3	2.6	9.5
071	25.0	Fl 6s	4.6	57.4	4.5	51.6	4.0	34.4	3.2	17.2	2.4	8.0
072	8.3	Fl 6s	4.3	46.4	4.3	46.4	4.3	46.4	4.2	41.8	3.3	19.5
073	10.0	Fl 6s	4.4	48.8	4.4	48.8	4.4	48.8	4.0	36.6	3.1	17.1
074	16.7	Fl 6s	4.5	54.2	4.5	54.2	4.4	48.8	3.5	24.4	2.7	11.4
075	30.0	Fl 5s	4.6	57.4	4.2	43.0	3.7	28.7	3.0	14.3	2.3	6.7
076	10.7	Fl 7.5s	4.5	52.0	4.5	52.0	4.5	52.0	4.0	36.6	3.1	17.1
077	50.0	Iso 10s	4.1	37.5	3.7	28.1	3.3	18.8	2.6	9.4	1.9	4.4
078	50.0	Iso 2s	3.9	32.5	3.5	24.4	3.1	16.3	2.4	8.1	1.8	3.8
079	50.0	Iso 4s	4.0	35.5	3.6	26.6	3.2	17.7	2.5	8.9	1.9	4.1
080	50.0	Iso 5s	4.0	36.1	3.7	27.1	3.2	18.1	2.5	9.0	1.9	4.2
081	50.0	Iso 6s	4.0	36.6	3.7	27.4	3.2	18.3	2.5	9.1	1.9	4.3
082	50.0	Iso 8s	4.1	37.1	3.7	27.9	3.2	18.6	2.5	9.3	1.9	4.3

Red LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
083	50.0	Iso 3s	4.0	34.4	3.6	25.8	3.2	17.2	2.5	8.6	1.9	4.0
084	20.0	LFI 10s	4.7	59.1	4.7	59.1	4.3	44.3	3.4	22.2	2.6	10.3
085	30.0	LFI 10s	4.7	60.9	4.3	45.7	3.8	30.5	3.0	15.2	2.3	7.1
086	40.0	LFI 10s	4.3	46.4	4.0	34.8	3.5	23.2	2.8	11.6	2.1	5.4
087	16.7	LFI 12s	4.7	59.1	4.7	59.1	4.5	53.2	3.6	26.6	2.8	12.4
088	26.7	LFI 15s	4.7	61.9	4.5	52.2	4.0	34.8	3.2	17.4	2.4	8.1
089	40.0	LFI 5s	4.3	44.3	3.9	33.2	3.4	22.2	2.7	11.1	2.0	5.2
090	33.3	LFI 6s	4.5	53.2	4.1	39.9	3.6	26.6	2.9	13.3	2.2	6.2
091	25.0	LFI 8s	4.7	59.1	4.5	53.2	4.0	35.5	3.2	17.7	2.4	8.3
092	37.5	LFI 8s	4.4	48.8	4.0	36.6	3.5	24.4	2.8	12.2	2.1	5.7
093	20.0	Mo (A) 10s	4.3	46.4	4.3	46.4	4.0	34.8	3.2	17.4	2.4	8.1
094	16.7	Mo (A) 15s	4.3	46.4	4.3	46.4	4.2	41.8	3.4	20.9	2.6	9.8
095	21.7	Mo (A) 6s	4.1	39.0	4.1	39.0	3.7	27.0	2.9	13.5	2.2	6.3
096	40.0	Mo (A) 8s	4.1	39.0	3.8	29.3	3.3	19.5	2.6	9.8	1.9	4.6
097	20.0	Mo (B) 15s	4.3	46.4	4.3	46.4	4.0	34.8	3.2	17.4	2.4	8.1
098	15.0	Mo (U) 10s	4.1	39.0	4.1	39.0	4.1	39.0	3.3	19.5	2.5	9.1
099	20.0	Mo (U) 10s	4.3	43.3	4.3	43.3	3.9	32.5	3.1	16.3	2.4	7.6
100	25.0	Mo (U) 10s	4.3	46.4	4.2	41.8	3.7	27.9	2.9	13.9	2.2	6.5
101	16.7	Mo (U) 15s	4.3	46.4	4.3	46.4	4.2	41.8	3.4	20.9	2.6	9.8
102	17.3	Mo (U) 15s	4.4	48.8	4.4	48.8	4.2	42.2	3.4	21.1	2.6	9.8
103	22.0	Mo (U) 15s	4.5	50.6	4.5	50.6	4.0	34.5	3.2	17.2	2.4	8.0
104	23.3	Mo (U) 15s	4.5	50.6	4.4	48.8	3.9	32.5	3.1	16.3	2.4	7.6
105	23.3	Mo (U) 15s	4.5	51.3	4.4	49.5	3.9	33.0	3.1	16.5	2.4	7.7
106	35.5	Mo (U) 15s	4.4	46.7	4.0	35.1	3.5	23.4	2.8	11.7	2.1	5.5
107	39.3	Mo (U) 15s	4.2	43.0	3.9	32.2	3.4	21.5	2.7	10.7	2.0	5.0
108	21.0	Mo (U) 15s****	4.5	51.3	4.5	51.3	4.0	36.7	3.2	18.3	2.5	8.6
109	15.0	Mo (U) 15s*	4.3	45.0	4.3	45.0	4.3	45.0	3.5	22.5	2.7	10.5
110	17.0	Mo (U) 15s**	4.4	47.7	4.4	47.7	4.2	42.1	3.4	21.0	2.6	9.8
111	18.0	Mo (U) 15s***	4.4	48.8	4.4	48.8	4.2	40.6	3.3	20.3	2.6	9.5

Red LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
112	10.0	Mo (U) 10s	3.9	32.5	3.9	32.5	3.9	32.5	3.5	24.4	2.7	11.4
113	70.0	Oc 10s	3.7	27.1	3.3	20.3	2.9	13.5	2.3	6.8	1.7	3.2
114	75.0	Oc 10s	3.6	25.3	3.3	19.0	2.8	12.7	2.2	6.3	1.6	3.0
115	66.7	Oc 15s	3.7	28.7	3.4	21.5	3.0	14.3	2.3	7.2	1.7	3.3
116	66.7	Oc 3s	3.6	26.6	3.3	19.9	2.9	13.3	2.2	6.6	1.7	3.1
117	83.3	Oc 3s	3.4	21.7	3.1	16.3	2.7	10.8	2.1	5.4	1.5	2.5
118	75.0	Oc 4s	3.5	24.4	3.2	18.3	2.8	12.2	2.2	6.1	1.6	2.8
119	60.0	Oc 5s	3.8	30.5	3.5	22.9	3.0	15.2	2.4	7.6	1.8	3.6
120	80.0	Oc 5s	3.5	23.2	3.2	17.4	2.8	11.6	2.1	5.8	1.6	2.7
121	90.0	Oc 5s	3.4	20.7	3.1	15.6	2.6	10.4	2.0	5.2	1.5	2.4
122	66.7	Oc 6s	3.7	27.9	3.4	20.9	2.9	13.9	2.3	7.0	1.7	3.3
123	75.0	Oc 6s	3.6	24.9	3.2	18.7	2.8	12.4	2.2	6.2	1.6	2.9
124	83.3	Oc 6s	3.5	22.5	3.1	16.9	2.7	11.3	2.1	5.6	1.6	2.6
125	25.0	Q 1.2s	4.1	39.0	4.0	35.1	3.5	23.4	2.8	11.7	2.1	5.5
126	41.7	Q 1.2s	3.9	33.4	3.6	25.1	3.1	16.7	2.4	8.4	1.8	3.9
127	50.0	Q 1.2s	3.8	29.3	3.4	21.9	3.0	14.6	2.3	7.3	1.7	3.4
128	20.0	Q 1s	3.9	32.5	3.9	32.5	3.5	24.4	2.8	12.2	2.1	5.7
129	30.0	Q 1s	4.1	39.0	3.8	29.3	3.3	19.5	2.6	9.8	1.9	4.6
130	40.0	Q 1s	3.9	32.5	3.5	24.4	3.1	16.3	2.4	8.1	1.8	3.8
131	50.0	Q 1s	3.7	27.9	3.4	20.9	2.9	13.9	2.3	7.0	1.7	3.3
132	80.0	Q 1s	3.3	19.5	3.0	14.6	2.6	9.8	2.0	4.9	1.5	2.3
133	10.0	Q (2) 10s	4.3	46.4	4.3	46.4	4.3	46.4	4.0	34.8	3.1	16.3
134	12.0	Q (2) 10s	4.4	48.8	4.4	48.8	4.4	48.8	3.8	30.5	3.0	14.2
135	12.0	Q (2) 5s	4.1	39.0	4.1	39.0	4.1	39.0	3.5	24.4	2.7	11.4
136	10.0	Q (2) 6s	4.1	39.0	4.1	39.0	4.1	39.0	3.8	29.3	2.9	13.7
137	11.7	Q (2) 6s	4.2	41.4	4.2	41.4	4.2	41.4	3.6	26.6	2.8	12.4
138	9.0	Q (3) 10s	4.1	39.0	4.1	39.0	4.1	39.0	3.9	32.5	3.0	15.2
139	10.5	Q (3) 10s	4.2	41.4	4.2	41.4	4.2	41.4	3.8	29.5	2.9	13.8
140	18.0	Q (3) 10s	4.4	48.8	4.4	48.8	4.2	40.6	3.3	20.3	2.6	9.5

Red LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
141	12.0	Q (4) 10s	4.1	39.0	4.1	39.0	4.1	39.0	3.5	24.4	2.7	11.4
142	10.0	Q (4) 12s	4.1	39.0	4.1	39.0	4.1	39.0	3.8	29.3	2.9	13.7
143	9.3	Q (4) 15s	4.2	41.4	4.2	41.4	4.2	41.4	3.9	33.2	3.0	15.5
144	10.0	Q (4) 20s	4.3	46.4	4.3	46.4	4.3	46.4	4.0	34.8	3.1	16.3
145	26.7	Q (4) 6s	4.3	43.3	4.0	36.6	3.5	24.4	2.8	12.2	2.1	5.7
146	15.0	Q (5) 10s	4.1	39.0	4.1	39.0	4.1	39.0	3.3	19.5	2.5	9.1
147	7.5	Q (5) 20s	4.1	39.0	4.1	39.0	4.1	39.0	4.1	39.0	3.2	18.2
148	12.5	Q (5) 20s	4.3	46.4	4.3	46.4	4.3	46.4	3.7	27.9	2.9	13.0
149	21.4	Q (5) 7s	4.1	39.0	4.1	39.0	3.7	27.3	2.9	13.7	2.2	6.4
150	18.0	Q (6) 10s	4.1	39.0	4.1	39.0	3.9	32.5	3.1	16.3	2.4	7.6
151	25.3	Q (6)+LFI 15s	4.1	39.0	4.0	34.6	3.5	23.1	2.7	11.5	2.1	5.4
152	21.0	Q (6)+LFI 15s	4.2	41.4	4.2	41.4	3.8	29.5	3.0	14.8	2.3	6.9
153	37.3	Q (6)+LFI 15s	4.1	39.2	3.8	29.4	3.3	19.6	2.6	9.8	2.0	4.6
154	18.0	Q (9) 15s	4.1	39.0	4.1	39.0	3.9	32.5	3.1	16.3	2.4	7.6
155	21.0	Q (9) 15s	4.2	41.4	4.2	41.4	3.8	29.5	3.0	14.8	2.3	6.9
156	36.0	Q (9) 15s	4.2	40.6	3.8	30.5	3.3	20.3	2.6	10.2	2.0	4.7
157	30.0	VQ 0.5s	3.7	27.9	3.4	20.9	2.9	13.9	2.3	7.0	1.7	3.3
158	40.0	VQ 0.5s	3.5	24.4	3.2	18.3	2.8	12.2	2.2	6.1	1.6	2.8
159	33.3	VQ 0.6s	3.8	29.3	3.4	21.9	3.0	14.6	2.3	7.3	1.7	3.4
160	50.0	VQ 0.6s	3.5	23.4	3.2	17.6	2.8	11.7	2.1	5.9	1.6	2.7
161	9.0	VQ (3) 5s	3.7	27.9	3.7	27.9	3.7	27.9	3.5	23.2	2.7	10.8
162	12.0	VQ (3) 5s	3.9	32.5	3.9	32.5	3.9	32.5	3.3	20.3	2.6	9.5
163	18.0	VQ (3) 5s	4.1	39.0	4.1	39.0	3.9	32.5	3.1	16.3	2.4	7.6
164	32.0	VQ (6)+LFI 10s	3.8	30.5	3.5	22.9	3.0	15.2	2.4	7.6	1.8	3.6
165	38.0	VQ (6)+LFI 10s	3.8	30.8	3.5	23.1	3.0	15.4	2.4	7.7	1.8	3.6
166	13.5	VQ (9) 10s	3.7	27.9	3.7	27.9	3.7	27.9	3.0	15.5	2.3	7.2
167	18.0	VQ (9) 10s	3.9	32.5	3.9	32.5	3.7	27.1	2.9	13.5	2.2	6.3
168	27.0	VQ (9) 10s	4.1	39.0	3.9	32.5	3.4	21.7	2.7	10.8	2.0	5.1
169	14.3	Q (2) 7s	4.3	46.4	4.3	46.4	4.3	46.4	3.5	24.4	2.7	11.4

Red LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
170	12.0	FI (2) 5s	4.1	39.0	4.1	39.0	4.1	39.0	3.5	24.4	2.7	11.4
171	10.0	FI (2) 10s	4.3	46.4	4.3	46.4	4.3	46.4	4.0	34.8	3.1	16.3
172	12.5	FI (5) 20s	4.3	46.4	4.3	46.4	4.3	46.4	3.7	27.9	2.9	13.0
173	20.0	FI (2) 10s	4.5	54.2	4.5	54.2	4.2	40.6	3.3	20.3	2.6	9.5
174	10.0	FI 4s	4.3	43.3	4.3	43.3	4.3	43.3	3.9	32.5	3.0	15.2
175	16.0	FI (2) 5s	4.3	43.3	4.3	43.3	4.2	40.6	3.3	20.3	2.6	9.5
176	30.0	Mo(A) 8s	4.3	43.3	3.9	32.5	3.4	21.7	2.7	10.8	2.0	5.1
177	40.0	FI 2.5s	4.2	40.6	3.8	30.5	3.3	20.3	2.6	10.2	2.0	4.7
178	10.0	FI (3+1) 20 s	4.3	46.4	4.3	46.4	4.3	46.4	4.0	34.8	3.1	16.3
179	12.0	FI (3+1) 20 s	4.4	48.8	4.4	48.8	4.4	48.8	3.8	30.5	3.0	14.2
180	13.0	FI (3+1) 20 s	4.4	49.7	4.4	49.7	4.4	49.7	3.7	28.7	2.9	13.4
181	14.0	FI (3+1) 20 s	4.5	50.6	4.5	50.6	4.5	50.6	3.7	27.1	2.8	12.6
182	16.0	FI (3+1) 20 s	4.5	52.0	4.5	52.0	4.4	48.8	3.5	24.4	2.7	11.4
183	14.3	FI (2) 7s	4.3	46.4	4.3	46.4	4.3	46.4	3.5	24.4	2.7	11.4
184	16.7	FI (3) 9s	4.3	46.4	4.3	46.4	4.2	41.8	3.4	20.9	2.6	9.8
185	18.2	LFI 11s	4.7	59.1	4.7	59.1	4.4	48.8	3.5	24.4	2.7	11.4
186	33.3	FI (6+1) 15s	4.2	41.8	3.8	31.3	3.4	20.9	2.7	10.4	2.0	4.9
187	37.5	Mo (0) 12s	4.3	45.9	4.0	34.4	3.5	22.9	2.7	11.5	2.1	5.4
188	30.0	Mo (0) 15s	4.6	57.4	4.2	43.0	3.7	28.7	3.0	14.3	2.3	6.7
189	25.0	Q 1s	4.0	36.1	3.9	32.5	3.4	21.7	2.7	10.8	2.0	5.1
190	19.6	Q (3) 4.6s	4.1	39.0	4.1	39.0	3.8	29.9	3.0	15.0	2.3	7.0
191	6.7	FI 7.5s	4.3	46.4	4.3	46.4	4.3	46.4	4.3	46.4	3.5	24.4
192	18.2	FI (4) 11s	4.3	46.4	4.3	46.4	4.1	38.3	3.3	19.2	2.5	8.9
193	7.1	FL (3) 21s	4.3	46.4	4.3	46.4	4.3	46.4	4.3	46.4	3.5	22.8
194	25.0	FL (3) 6s	4.3	46.4	4.2	41.8	3.7	27.9	2.9	13.9	2.2	6.5
195	15.0	FI (3)10s	4.3	46.4	4.3	46.4	4.3	46.4	3.5	23.2	2.7	10.8
196	30.0	FI (9)15s	4.3	46.4	4.0	34.8	3.5	23.2	2.8	11.6	2.1	5.4
197	66.7	Oc (2)6s	3.5	24.4	3.2	18.3	2.8	12.2	2.2	6.1	1.6	2.8
198	62.5	Oc (3)8s	3.6	26.0	3.3	19.5	2.9	13.0	2.2	6.5	1.7	3.0

Red LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
199	60.0	Oc (4)10s	3.7	27.1	3.3	20.3	2.9	13.5	2.3	6.8	1.7	3.2
200	16.7	FI (2)6s	4.3	46.4	4.3	46.4	4.2	41.8	3.4	20.9	2.6	9.8
201	6.3	FI (1)8s	4.3	46.4	4.3	46.4	4.3	46.4	4.3	46.4	3.6	26.0
202	6.0	FI (3)15s	4.1	39.0	4.1	39.0	4.1	39.0	4.1	39.0	3.5	22.8
203	8.0	FI (2)5s	3.9	32.5	3.9	32.5	3.9	32.5	3.8	30.5	3.0	14.2
204	25.0	FI (2)4s	4.3	46.4	4.2	41.8	3.7	27.9	2.9	13.9	2.2	6.5
205	13.3	FI (2)4.5s	4.1	39.0	4.1	39.0	4.1	39.0	3.4	21.9	2.6	10.2
206	15.0	FI (3)10s	4.3	46.4	4.3	46.4	4.3	46.4	3.5	23.2	2.7	10.8
207	10.0	FI (3)15s	4.3	46.4	4.3	46.4	4.3	46.4	4.0	34.8	3.1	16.3
208	25.0	Mo(B)16s	4.3	46.4	4.2	41.8	3.7	27.9	2.9	13.9	2.2	6.5
209	15.0	Q 1s	3.7	27.9	3.7	27.9	3.7	27.9	2.9	13.9	2.2	6.5
210	18.0	FI (2+1) 10s	4.4	48.8	4.4	48.8	4.2	40.6	3.3	20.3	2.6	9.5
211	13.3	Mo (U)	4.3	43.3	4.3	43.3	4.3	43.3	3.5	24.4	2.7	11.4
212	16.7	Q 1.2s	3.9	32.5	3.9	32.5	3.8	29.3	3.0	14.6	2.3	6.8
213	6.0	Q (3) 10s	3.9	32.5	3.9	32.5	3.9	32.5	3.9	32.5	3.3	19.0
214	44.0	Q (6)+LFI 15s	3.9	33.2	3.6	24.9	3.1	16.6	2.4	8.3	1.8	3.9
215	12.0	VQ (3) 5s	3.9	32.5	3.9	32.5	3.9	32.5	3.3	20.3	2.6	9.5
216	48.0	VQ (6)+LFI 10s	3.5	24.4	3.2	18.3	2.8	12.2	2.2	6.1	1.6	2.8
217	18.0	VQ (9) 10s	3.9	32.5	3.9	32.5	3.7	27.1	2.9	13.5	2.2	6.3
218	62.5	Oc (3) 12s	3.7	27.5	3.4	20.6	2.9	13.8	2.3	6.9	1.7	3.2
219	66.7	Oc (4) 12s	3.5	24.4	3.2	18.3	2.8	12.2	2.2	6.1	1.6	2.8
220	25.0	FI (3) 12s	4.5	54.2	4.4	48.8	3.9	32.5	3.1	16.3	2.4	7.6
221	26.7	FI (4) 15s	4.5	54.2	4.3	45.7	3.8	30.5	3.0	15.2	2.3	7.1
222	25.0	FI (5) 20s	4.5	54.2	4.4	48.8	3.9	32.5	3.1	16.3	2.4	7.6
223	33.3	Mo (A)	4.4	48.8	4.0	36.6	3.5	24.4	2.8	12.2	2.1	5.7
224	12.5	FI (5) 20s sADO	4.3	46.4	4.3	46.4	4.3	46.4	3.7	27.9	2.9	13.0
225	13.3	FI (4) 15s	4.3	46.4	4.3	46.4	4.3	46.4	3.6	26.1	2.8	12.2
226	12.5	FI (5) 20s	4.3	46.4	4.3	46.4	4.3	46.4	3.7	27.9	2.9	13.0
227	28.0	Q (6)+LFI 15s	3.9	32.5	3.6	26.1	3.2	17.4	2.5	8.7	1.9	4.1

Red LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
228	12.0	Q (9) 15s	3.9	32.5	3.9	32.5	3.9	32.5	3.3	20.3	2.6	9.5
229	42.0	VQ (6)+LFI 10s	3.5	23.2	3.2	17.4	2.8	11.6	2.1	5.8	1.6	2.7
230	20.8	CST1	4.6	54.9	4.6	54.9	4.1	39.7	3.3	19.8	2.5	9.3
231	28.6	CST2	4.8	62.9	4.4	49.5	3.9	33.0	3.1	16.5	2.4	7.7
232	37.5	CST3	4.5	50.9	4.1	38.2	3.6	25.4	2.8	12.7	2.2	5.9
233	23.1	CST4	4.7	60.9	4.7	59.4	4.1	39.6	3.3	19.8	2.5	9.2
234	18.8	CST5	4.3	46.4	4.3	46.4	4.1	37.1	3.2	18.6	2.5	8.7
235	8.0	CST6	4.3	43.3	4.3	43.3	4.3	43.3	4.2	40.6	3.3	19.0
236	75.0	CST7	3.5	22.9	3.2	17.2	2.7	11.5	2.1	5.7	1.6	2.7
237	10.0	CST8	4.3	46.4	4.3	46.4	4.3	46.4	4.0	34.8	3.1	16.3
238	4.5	CST9	4.4	48.8	4.4	48.8	4.4	48.8	4.4	48.8	4.1	37.9
239	20.0	CST10	4.3	46.4	4.3	46.4	4.0	34.8	3.2	17.4	2.4	8.1
240	15.0	CST11	4.1	39.0	4.1	39.0	4.1	39.0	3.3	19.5	2.5	9.1
241	50.0	CST12	4.1	37.7	3.7	28.3	3.3	18.9	2.6	9.4	1.9	4.4
242	77.8	CST13	3.5	22.8	3.2	17.1	2.7	11.4	2.1	5.7	1.6	2.7
243	24.0	CST14	4.3	43.3	4.2	40.6	3.7	27.1	2.9	13.5	2.2	6.3
244	40.0	CST15	4.1	39.0	3.8	29.3	3.3	19.5	2.6	9.8	1.9	4.6
245	32.0	CST16	4.4	48.8	4.0	36.6	3.5	24.4	2.8	12.2	2.1	5.7
246	18.8	CST17	4.3	46.4	4.3	46.4	4.1	37.1	3.2	18.6	2.5	8.7
247	10.0	CST18	4.3	46.4	4.3	46.4	4.3	46.4	4.0	34.8	3.1	16.3
248	13.3	CST19	4.5	52.0	4.5	52.0	4.5	52.0	3.8	29.3	2.9	13.7
249	11.4	CST20	4.5	52.0	4.5	52.0	4.5	52.0	3.9	34.1	3.1	15.9
250	12.5	CST21	4.3	46.4	4.3	46.4	4.3	46.4	3.7	27.9	2.9	13.0
251	20.0	CST22	4.5	50.6	4.5	50.6	4.1	37.9	3.3	19.0	2.5	8.8
252	19.4	CST23	4.5	50.6	4.5	50.6	4.1	39.0	3.3	19.5	2.5	9.1
253	12.7	CST24	4.5	50.6	4.5	50.6	4.5	50.6	3.8	29.8	2.9	13.9

**Table D: Candela and Range for Amber LEDs**



Candela figures derived from IALA-compliant measurement over 360° output. Data for Low power setting not shown.

Amber LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
001	100	Fixed	3.3	19.2	3.0	14.4	2.6	9.6	2.0	4.8	1.5	2.2
002	10.0	FI (2) 10s	4.3	45.7	4.3	45.7	4.3	45.7	4.0	34.3	3.1	16.0
003	10.0	FI (2) 10s	4.3	45.7	4.3	45.7	4.3	45.7	4.0	34.3	3.1	16.0
004	16.0	FI (2) 10s	4.5	51.2	4.5	51.2	4.4	48.0	3.5	24.0	2.7	11.2
005	20.0	FI (2) 10s	4.5	53.3	4.5	53.3	4.1	40.0	3.3	20.0	2.5	9.3
006	20.0	FI (2) 10s	4.5	53.3	4.5	53.3	4.1	40.0	3.3	20.0	2.5	9.3
007	8.3	FI (2) 12s	4.3	45.7	4.3	45.7	4.3	45.7	4.2	41.1	3.3	19.2
008	25.0	FI (2) 12s	4.6	56.5	4.5	50.8	3.9	33.9	3.1	16.9	2.4	7.9
009	13.3	FI (2) 15s	4.5	53.3	4.5	53.3	4.5	53.3	3.8	30.0	2.9	14.0
010	20.0	FI (2) 5s	4.3	45.7	4.3	45.7	4.0	34.3	3.2	17.1	2.4	8.0
011	40.0	FI (2) 5s	4.1	40.0	3.8	30.0	3.3	20.0	2.6	10.0	2.0	4.7
012	16.7	FI (2) 6s	4.3	45.7	4.3	45.7	4.2	41.1	3.4	20.6	2.6	9.6
013	26.7	FI (2) 6s	4.5	51.2	4.2	43.2	3.7	28.8	3.0	14.4	2.3	6.7
014	33.3	FI (2) 6s	4.4	48.0	4.0	36.0	3.5	24.0	2.8	12.0	2.1	5.6
015	28.6	FI (2) 7s	4.5	53.3	4.2	42.0	3.7	28.0	2.9	14.0	2.2	6.5
016	12.5	FI (2) 8s	4.3	45.7	4.3	45.7	4.3	45.7	3.7	27.4	2.9	12.8
017	25.0	FI (2) 8s	4.5	53.3	4.4	48.0	3.9	32.0	3.1	16.0	2.3	7.5
018	15.0	FI (2+1) 10s	4.3	45.7	4.3	45.7	4.3	45.7	3.5	22.9	2.7	10.7
019	20.0	FI (2+1) 12s	4.5	51.2	4.5	51.2	4.1	38.4	3.3	19.2	2.5	9.0
020	25.0	FI (2+1) 12s	4.5	53.3	4.4	48.0	3.9	32.0	3.1	16.0	2.3	7.5
021	20.0	FI (2+1) 15s	4.5	53.3	4.5	53.3	4.1	40.0	3.3	20.0	2.5	9.3
022	15.0	FI (2+1) 6s	4.1	38.4	4.1	38.4	4.1	38.4	3.3	19.2	2.5	9.0
023	12.5	FI (3) 12s	4.3	45.7	4.3	45.7	4.3	45.7	3.7	27.4	2.9	12.8
024	15.0	FI (3) 10s	4.3	45.7	4.3	45.7	4.3	45.7	3.5	22.9	2.7	10.7
025	30.0	FI (3) 10s	4.5	53.3	4.1	40.0	3.7	26.7	2.9	13.3	2.2	6.2
026	20.0	FI (3) 12s	4.5	51.2	4.5	51.2	4.1	38.4	3.3	19.2	2.5	9.0

Amber LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
027	6.0	Fl (3) 15s	4.1	38.4	4.1	38.4	4.1	38.4	4.1	38.4	3.4	22.4
028	10.0	Fl (3) 15s	4.3	45.7	4.3	45.7	4.3	45.7	4.0	34.3	3.1	16.0
029	7.5	Fl (3) 20s	4.3	45.7	4.3	45.7	4.3	45.7	4.3	45.7	3.4	21.3
030	26.7	Fl (3) 9s	4.5	51.2	4.2	43.2	3.7	28.8	3.0	14.4	2.3	6.7
031	20.0	Fl (4) 10s	4.3	45.7	4.3	45.7	4.0	34.3	3.2	17.1	2.4	8.0
032	32.0	Fl (4) 10s	4.4	48.0	4.0	36.0	3.5	24.0	2.8	12.0	2.1	5.6
033	26.7	Fl (4) 12s	4.5	51.2	4.2	43.2	3.7	28.8	3.0	14.4	2.3	6.7
034	13.3	Fl (4) 15s	4.3	45.7	4.3	45.7	4.3	45.7	3.6	25.7	2.8	12.0
035	26.7	Fl (4) 15s	4.5	53.3	4.3	45.0	3.8	30.0	3.0	15.0	2.3	7.0
036	10.0	Fl (4) 20s	4.3	45.7	4.3	45.7	4.3	45.7	4.0	34.3	3.1	16.0
037	20.0	Fl (5) 20s	4.5	51.2	4.5	51.2	4.1	38.4	3.3	19.2	2.5	9.0
038	25.0	Fl (5) 20s	4.5	53.3	4.4	48.0	3.9	32.0	3.1	16.0	2.3	7.5
039	20.0	Fl (6) 15s	4.3	45.7	4.3	45.7	4.0	34.3	3.2	17.1	2.4	8.0
040	75.0	FL-*	3.4	21.3	3.1	16.0	2.7	10.7	2.1	5.3	1.5	2.5
041	70.0	FL-**	3.5	22.9	3.2	17.1	2.7	11.4	2.1	5.7	1.6	2.7
042	20.0	Fl 1.5s	4.1	38.4	4.1	38.4	3.7	28.8	3.0	14.4	2.3	6.7
043	33.3	Fl 1.5s	4.2	41.1	3.8	30.9	3.4	20.6	2.6	10.3	2.0	4.8
044	5.0	Fl 10s	4.3	45.7	4.3	45.7	4.3	45.7	4.3	45.7	3.9	32.0
045	10.0	Fl 10s	4.5	53.3	4.5	53.3	4.5	53.3	4.1	40.0	3.2	18.7
046	15.0	Fl 10s	4.6	56.5	4.6	56.5	4.6	56.5	3.7	28.2	2.9	13.2
047	10.0	Fl 12s	4.6	54.9	4.6	54.9	4.6	54.9	4.2	41.1	3.3	19.2
048	6.7	Fl 15s	4.5	53.3	4.5	53.3	4.5	53.3	4.5	53.3	3.7	28.0
049	12.0	Fl 2.5s	4.1	38.4	4.1	38.4	4.1	38.4	3.5	24.0	2.7	11.2
050	20.0	Fl 2.5s	4.3	45.7	4.3	45.7	4.0	34.3	3.2	17.1	2.4	8.0
051	10.7	Fl 2.8s	4.1	38.4	4.1	38.4	4.1	38.4	3.7	26.9	2.8	12.5
052	10.0	Fl 2s	3.9	32.0	3.9	32.0	3.9	32.0	3.5	24.0	2.7	11.2
053	15.0	Fl 2s	4.1	38.4	4.1	38.4	4.1	38.4	3.3	19.2	2.5	9.0
054	20.0	Fl 2s	4.2	42.7	4.2	42.7	3.9	32.0	3.1	16.0	2.3	7.5
055	25.0	Fl 2s	4.3	45.7	4.2	41.1	3.7	27.4	2.9	13.7	2.2	6.4
056	35.0	Fl 2s	4.2	42.7	3.9	32.0	3.4	21.3	2.7	10.7	2.0	5.0
057	40.0	Fl 2s	4.1	38.4	3.7	28.8	3.3	19.2	2.6	9.6	1.9	4.5
058	10.0	Fl 3s	4.1	38.4	4.1	38.4	4.1	38.4	3.7	28.8	2.9	13.4

Amber LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
059	16.7	Fl 3s	4.3	45.7	4.3	45.7	4.2	41.1	3.4	20.6	2.6	9.6
060	23.3	Fl 3s	4.4	49.8	4.4	48.0	3.9	32.0	3.1	16.0	2.3	7.5
061	33.3	Fl 3s	4.4	48.0	4.0	36.0	3.5	24.0	2.8	12.0	2.1	5.6
062	30.2	Fl 4.3s	4.6	55.0	4.2	41.3	3.7	27.5	2.9	13.8	2.2	6.4
063	9.1	Fl 4.4s	4.2	42.7	4.2	42.7	4.2	42.7	4.0	35.2	3.1	16.4
064	12.5	Fl 4s	4.3	45.7	4.3	45.7	4.3	45.7	3.7	27.4	2.9	12.8
065	20.0	Fl 4s	4.5	51.2	4.5	51.2	4.1	38.4	3.3	19.2	2.5	9.0
066	25.0	Fl 4s	4.5	53.3	4.4	48.0	3.9	32.0	3.1	16.0	2.3	7.5
067	37.5	Fl 4s	4.3	45.2	3.9	33.9	3.5	22.6	2.7	11.3	2.1	5.3
068	6.0	Fl 5s	4.1	38.4	4.1	38.4	4.1	38.4	4.1	38.4	3.4	22.4
069	10.0	Fl 5s	4.3	45.7	4.3	45.7	4.3	45.7	4.0	34.3	3.1	16.0
070	20.0	Fl 5s	4.5	53.3	4.5	53.3	4.1	40.0	3.3	20.0	2.5	9.3
071	25.0	Fl 6s	4.6	56.5	4.5	50.8	3.9	33.9	3.1	16.9	2.4	7.9
072	8.3	Fl 6s	4.3	45.7	4.3	45.7	4.3	45.7	4.2	41.1	3.3	19.2
073	10.0	Fl 6s	4.4	48.0	4.4	48.0	4.4	48.0	4.0	36.0	3.1	16.8
074	16.7	Fl 6s	4.5	53.3	4.5	53.3	4.4	48.0	3.5	24.0	2.7	11.2
075	30.0	Fl 5s	4.6	56.5	4.2	42.4	3.7	28.2	3.0	14.1	2.2	6.6
076	10.7	Fl 7.5s	4.5	51.2	4.5	51.2	4.5	51.2	4.0	36.0	3.1	16.8
077	50.0	Iso 10s	4.0	36.9	3.7	27.7	3.2	18.5	2.5	9.2	1.9	4.3
078	50.0	Iso 2s	3.9	32.0	3.5	24.0	3.1	16.0	2.4	8.0	1.8	3.7
079	50.0	Iso 4s	4.0	34.9	3.6	26.2	3.2	17.5	2.5	8.7	1.9	4.1
080	50.0	Iso 5s	4.0	35.6	3.7	26.7	3.2	17.8	2.5	8.9	1.9	4.1
081	50.0	Iso 6s	4.0	36.0	3.7	27.0	3.2	18.0	2.5	9.0	1.9	4.2
082	50.0	Iso 8s	4.0	36.6	3.7	27.4	3.2	18.3	2.5	9.1	1.9	4.3
083	50.0	Iso 3s	3.9	33.9	3.6	25.4	3.1	16.9	2.5	8.5	1.8	4.0
084	20.0	LFI 10s	4.6	58.2	4.6	58.2	4.3	43.6	3.4	21.8	2.6	10.2
085	30.0	LFI 10s	4.7	60.0	4.3	45.0	3.8	30.0	3.0	15.0	2.3	7.0
086	40.0	LFI 10s	4.3	45.7	4.0	34.3	3.5	22.9	2.7	11.4	2.1	5.3
087	16.7	LFI 12s	4.6	58.2	4.6	58.2	4.5	52.4	3.6	26.2	2.8	12.2
088	26.7	LFI 15s	4.7	61.0	4.5	51.4	4.0	34.3	3.2	17.1	2.4	8.0
089	40.0	LFI 5s	4.3	43.6	3.9	32.7	3.4	21.8	2.7	10.9	2.0	5.1
090	33.3	LFI 6s	4.5	52.4	4.1	39.3	3.6	26.2	2.9	13.1	2.2	6.1

Amber LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
091	25.0	LFI 8s	4.6	58.2	4.5	52.4	4.0	34.9	3.2	17.5	2.4	8.1
092	37.5	LFI 8s	4.4	48.0	4.0	36.0	3.5	24.0	2.8	12.0	2.1	5.6
093	20.0	Mo (A) 10s	4.3	45.7	4.3	45.7	4.0	34.3	3.2	17.1	2.4	8.0
094	16.7	Mo (A) 15s	4.3	45.7	4.3	45.7	4.2	41.1	3.4	20.6	2.6	9.6
095	21.7	Mo (A) 6s	4.1	38.4	4.1	38.4	3.6	26.6	2.9	13.3	2.2	6.2
096	40.0	Mo (A) 8s	4.1	38.4	3.7	28.8	3.3	19.2	2.6	9.6	1.9	4.5
097	20.0	Mo (B) 15s	4.3	45.7	4.3	45.7	4.0	34.3	3.2	17.1	2.4	8.0
098	15.0	Mo (U) 10s	4.1	38.4	4.1	38.4	4.1	38.4	3.3	19.2	2.5	9.0
099	20.0	Mo (U) 10s	4.2	42.7	4.2	42.7	3.9	32.0	3.1	16.0	2.3	7.5
100	25.0	Mo (U) 10s	4.3	45.7	4.2	41.1	3.7	27.4	2.9	13.7	2.2	6.4
101	16.7	Mo (U) 15s	4.3	45.7	4.3	45.7	4.2	41.1	3.4	20.6	2.6	9.6
102	17.3	Mo (U) 15s	4.4	48.0	4.4	48.0	4.2	41.5	3.4	20.8	2.6	9.7
103	22.0	Mo (U) 15s	4.4	49.8	4.4	49.8	3.9	33.9	3.1	17.0	2.4	7.9
104	23.3	Mo (U) 15s	4.4	49.8	4.4	48.0	3.9	32.0	3.1	16.0	2.3	7.5
105	23.3	Mo (U) 15s	4.5	50.5	4.4	48.7	3.9	32.5	3.1	16.2	2.4	7.6
106	35.5	Mo (U) 15s	4.3	46.0	4.0	34.5	3.5	23.0	2.7	11.5	2.1	5.4
107	39.3	Mo (U) 15s	4.2	42.3	3.9	31.7	3.4	21.2	2.7	10.6	2.0	4.9
108	21.0	Mo (U) 15s****	4.5	50.5	4.5	50.5	4.0	36.1	3.2	18.0	2.5	8.4
109	15.0	Mo (U) 15s*	4.3	44.3	4.3	44.3	4.3	44.3	3.4	22.2	2.6	10.3
110	17.0	Mo (U) 15s**	4.4	46.9	4.4	46.9	4.2	41.4	3.4	20.7	2.6	9.7
111	18.0	Mo (U) 15s***	4.4	48.0	4.4	48.0	4.1	40.0	3.3	20.0	2.5	9.3
112	10.0	Mo (U) 10s	3.9	32.0	3.9	32.0	3.9	32.0	3.5	24.0	2.7	11.2
113	70.0	Oc 10s	3.7	26.7	3.3	20.0	2.9	13.3	2.3	6.7	1.7	3.1
114	75.0	Oc 10s	3.6	24.9	3.2	18.7	2.8	12.5	2.2	6.2	1.6	2.9
115	66.7	Oc 15s	3.7	28.2	3.4	21.2	3.0	14.1	2.3	7.1	1.7	3.3
116	66.7	Oc 3s	3.6	26.2	3.3	19.6	2.9	13.1	2.2	6.5	1.7	3.1
117	83.3	Oc 3s	3.4	21.3	3.1	16.0	2.7	10.7	2.1	5.3	1.5	2.5
118	75.0	Oc 4s	3.5	24.0	3.2	18.0	2.8	12.0	2.2	6.0	1.6	2.8
119	60.0	Oc 5s	3.8	30.0	3.5	22.5	3.0	15.0	2.4	7.5	1.8	3.5
120	80.0	Oc 5s	3.5	22.9	3.2	17.1	2.7	11.4	2.1	5.7	1.6	2.7
121	90.0	Oc 5s	3.3	20.4	3.0	15.3	2.6	10.2	2.0	5.1	1.5	2.4
122	66.7	Oc 6s	3.7	27.4	3.4	20.6	2.9	13.7	2.3	6.9	1.7	3.2

Amber LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
123	75.0	Oc 6s	3.6	24.5	3.2	18.4	2.8	12.3	2.2	6.1	1.6	2.9
124	83.3	Oc 6s	3.4	22.2	3.1	16.6	2.7	11.1	2.1	5.5	1.6	2.6
125	25.0	Q 1.2s	4.1	38.4	4.0	34.6	3.5	23.0	2.7	11.5	2.1	5.4
126	41.7	Q 1.2s	3.9	32.9	3.6	24.7	3.1	16.5	2.4	8.2	1.8	3.8
127	50.0	Q 1.2s	3.7	28.8	3.4	21.6	3.0	14.4	2.3	7.2	1.7	3.4
128	20.0	Q 1s	3.9	32.0	3.9	32.0	3.5	24.0	2.8	12.0	2.1	5.6
129	30.0	Q 1s	4.1	38.4	3.7	28.8	3.3	19.2	2.6	9.6	1.9	4.5
130	40.0	Q 1s	3.9	32.0	3.5	24.0	3.1	16.0	2.4	8.0	1.8	3.7
131	50.0	Q 1s	3.7	27.4	3.4	20.6	2.9	13.7	2.3	6.9	1.7	3.2
132	80.0	Q 1s	3.3	19.2	3.0	14.4	2.6	9.6	2.0	4.8	1.5	2.2
133	10.0	Q (2) 10s	4.3	45.7	4.3	45.7	4.3	45.7	4.0	34.3	3.1	16.0
134	12.0	Q (2) 10s	4.4	48.0	4.4	48.0	4.4	48.0	3.8	30.0	2.9	14.0
135	12.0	Q (2) 5s	4.1	38.4	4.1	38.4	4.1	38.4	3.5	24.0	2.7	11.2
136	10.0	Q (2) 6s	4.1	38.4	4.1	38.4	4.1	38.4	3.7	28.8	2.9	13.4
137	11.7	Q (2) 6s	4.2	40.7	4.2	40.7	4.2	40.7	3.6	26.2	2.8	12.2
138	9.0	Q (3) 10s	4.1	38.4	4.1	38.4	4.1	38.4	3.9	32.0	3.0	14.9
139	10.5	Q (3) 10s	4.2	40.7	4.2	40.7	4.2	40.7	3.8	29.1	2.9	13.6
140	18.0	Q (3) 10s	4.4	48.0	4.4	48.0	4.1	40.0	3.3	20.0	2.5	9.3
141	12.0	Q (4) 10s	4.1	38.4	4.1	38.4	4.1	38.4	3.5	24.0	2.7	11.2
142	10.0	Q (4) 12s	4.1	38.4	4.1	38.4	4.1	38.4	3.7	28.8	2.9	13.4
143	9.3	Q (4) 15s	4.2	40.7	4.2	40.7	4.2	40.7	3.9	32.7	3.0	15.3
144	10.0	Q (4) 20s	4.3	45.7	4.3	45.7	4.3	45.7	4.0	34.3	3.1	16.0
145	26.7	Q (4) 6s	4.2	42.7	4.0	36.0	3.5	24.0	2.8	12.0	2.1	5.6
146	15.0	Q (5) 10s	4.1	38.4	4.1	38.4	4.1	38.4	3.3	19.2	2.5	9.0
147	7.5	Q (5) 20s	4.1	38.4	4.1	38.4	4.1	38.4	4.1	38.4	3.2	17.9
148	12.5	Q (5) 20s	4.3	45.7	4.3	45.7	4.3	45.7	3.7	27.4	2.9	12.8
149	21.4	Q (5) 7s	4.1	38.4	4.1	38.4	3.7	26.9	2.9	13.4	2.2	6.3
150	18.0	Q (6) 10s	4.1	38.4	4.1	38.4	3.9	32.0	3.1	16.0	2.3	7.5
151	25.3	Q (6)+LFI 15s	4.1	38.4	3.9	34.1	3.5	22.7	2.7	11.4	2.1	5.3
152	21.0	Q (6)+LFI 15s	4.2	40.7	4.2	40.7	3.8	29.1	3.0	14.5	2.3	6.8
153	37.3	Q (6)+LFI 15s	4.1	38.6	3.7	28.9	3.3	19.3	2.6	9.6	1.9	4.5
154	18.0	Q (9) 15s	4.1	38.4	4.1	38.4	3.9	32.0	3.1	16.0	2.3	7.5

Amber LEDs												
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155	21.0	Q (9) 15s	4.2	40.7	4.2	40.7	3.8	29.1	3.0	14.5	2.3	6.8
156	36.0	Q (9) 15s	4.1	40.0	3.8	30.0	3.3	20.0	2.6	10.0	2.0	4.7
157	30.0	VQ 0.5s	3.7	27.4	3.4	20.6	2.9	13.7	2.3	6.9	1.7	3.2
158	40.0	VQ 0.5s	3.5	24.0	3.2	18.0	2.8	12.0	2.2	6.0	1.6	2.8
159	33.3	VQ 0.6s	3.7	28.8	3.4	21.6	3.0	14.4	2.3	7.2	1.7	3.4
160	50.0	VQ 0.6s	3.5	23.0	3.2	17.3	2.7	11.5	2.1	5.8	1.6	2.7
161	9.0	VQ (3) 5s	3.7	27.4	3.7	27.4	3.7	27.4	3.5	22.9	2.7	10.7
162	12.0	VQ (3) 5s	3.9	32.0	3.9	32.0	3.9	32.0	3.3	20.0	2.5	9.3
163	18.0	VQ (3) 5s	4.1	38.4	4.1	38.4	3.9	32.0	3.1	16.0	2.3	7.5
164	32.0	VQ (6)+LFI 10s	3.8	30.0	3.5	22.5	3.0	15.0	2.4	7.5	1.8	3.5
165	38.0	VQ (6)+LFI 10s	3.8	30.3	3.5	22.7	3.0	15.2	2.4	7.6	1.8	3.5
166	13.5	VQ (9) 10s	3.7	27.4	3.7	27.4	3.7	27.4	3.0	15.2	2.3	7.1
167	18.0	VQ (9) 10s	3.9	32.0	3.9	32.0	3.7	26.7	2.9	13.3	2.2	6.2
168	27.0	VQ (9) 10s	4.1	38.4	3.9	32.0	3.4	21.3	2.7	10.7	2.0	5.0
169	14.3	Q (2) 7s	4.3	45.7	4.3	45.7	4.3	45.7	3.5	24.0	2.7	11.2
170	12.0	FI (2) 5s	4.1	38.4	4.1	38.4	4.1	38.4	3.5	24.0	2.7	11.2
171	10.0	FI (2) 10s	4.3	45.7	4.3	45.7	4.3	45.7	4.0	34.3	3.1	16.0
172	12.5	FI (5) 20s	4.3	45.7	4.3	45.7	4.3	45.7	3.7	27.4	2.9	12.8
173	20.0	FI (2) 10s	4.5	53.3	4.5	53.3	4.1	40.0	3.3	20.0	2.5	9.3
174	10.0	FI 4s	4.2	42.7	4.2	42.7	4.2	42.7	3.9	32.0	3.0	14.9
175	16.0	FI (2) 5s	4.2	42.7	4.2	42.7	4.1	40.0	3.3	20.0	2.5	9.3
176	30.0	Mo(A) 8s	4.2	42.7	3.9	32.0	3.4	21.3	2.7	10.7	2.0	5.0
177	40.0	FI 2.5s	4.1	40.0	3.8	30.0	3.3	20.0	2.6	10.0	2.0	4.7
178	10.0	FI (3+1) 20 s	4.3	45.7	4.3	45.7	4.3	45.7	4.0	34.3	3.1	16.0
179	12.0	FI (3+1) 20 s	4.4	48.0	4.4	48.0	4.4	48.0	3.8	30.0	2.9	14.0
180	13.0	FI (3+1) 20 s	4.4	48.9	4.4	48.9	4.4	48.9	3.7	28.2	2.9	13.2
181	14.0	FI (3+1) 20 s	4.4	49.8	4.4	49.8	4.4	49.8	3.7	26.7	2.8	12.4
182	16.0	FI (3+1) 20 s	4.5	51.2	4.5	51.2	4.4	48.0	3.5	24.0	2.7	11.2
183	14.3	FI (2) 7s	4.3	45.7	4.3	45.7	4.3	45.7	3.5	24.0	2.7	11.2
184	16.7	FI (3) 9s	4.3	45.7	4.3	45.7	4.2	41.1	3.4	20.6	2.6	9.6
185	18.2	LFI 11s	4.6	58.2	4.6	58.2	4.4	48.0	3.5	24.0	2.7	11.2
186	33.3	FI (6+1) 15s	4.2	41.1	3.8	30.9	3.4	20.6	2.6	10.3	2.0	4.8

Amber LEDs												
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187	37.5	Mo (0) 12s	4.3	45.2	3.9	33.9	3.5	22.6	2.7	11.3	2.1	5.3
188	30.0	Mo (0) 15s	4.6	56.5	4.2	42.4	3.7	28.2	3.0	14.1	2.2	6.6
189	25.0	Q 1s	4.0	35.6	3.9	32.0	3.4	21.3	2.7	10.7	2.0	5.0
190	19.6	Q (3) 4.6s	4.1	38.4	4.1	38.4	3.8	29.4	3.0	14.7	2.3	6.9
191	6.7	FI 7.5s	4.3	45.7	4.3	45.7	4.3	45.7	4.3	45.7	3.5	24.0
192	18.2	FI (4) 11s	4.3	45.7	4.3	45.7	4.1	37.7	3.3	18.9	2.5	8.8
193	7.1	FL (3) 21s	4.3	45.7	4.3	45.7	4.3	45.7	4.3	45.7	3.4	22.4
194	25.0	FL (3) 6s	4.3	45.7	4.2	41.1	3.7	27.4	2.9	13.7	2.2	6.4
195	15.0	FI (3)10s	4.3	45.7	4.3	45.7	4.3	45.7	3.5	22.9	2.7	10.7
196	30.0	FI (9)15s	4.3	45.7	4.0	34.3	3.5	22.9	2.7	11.4	2.1	5.3
197	66.7	Oc (2)6s	3.5	24.0	3.2	18.0	2.8	12.0	2.2	6.0	1.6	2.8
198	62.5	Oc (3)8s	3.6	25.6	3.3	19.2	2.9	12.8	2.2	6.4	1.6	3.0
199	60.0	Oc (4)10s	3.7	26.7	3.3	20.0	2.9	13.3	2.3	6.7	1.7	3.1
200	16.7	FI (2)6s	4.3	45.7	4.3	45.7	4.2	41.1	3.4	20.6	2.6	9.6
201	6.3	FI (1)8s	4.3	45.7	4.3	45.7	4.3	45.7	4.3	45.7	3.6	25.6
202	6.0	FI (3)15s	4.1	38.4	4.1	38.4	4.1	38.4	4.1	38.4	3.4	22.4
203	8.0	FI (2)5s	3.9	32.0	3.9	32.0	3.9	32.0	3.8	30.0	2.9	14.0
204	25.0	FI (2)4s	4.3	45.7	4.2	41.1	3.7	27.4	2.9	13.7	2.2	6.4
205	13.3	FI (2)4.5s	4.1	38.4	4.1	38.4	4.1	38.4	3.4	21.6	2.6	10.1
206	15.0	FI (3)10s	4.3	45.7	4.3	45.7	4.3	45.7	3.5	22.9	2.7	10.7
207	10.0	FI (3)15s	4.3	45.7	4.3	45.7	4.3	45.7	4.0	34.3	3.1	16.0
208	25.0	Mo(B)16s	4.3	45.7	4.2	41.1	3.7	27.4	2.9	13.7	2.2	6.4
209	15.0	Q 1s	3.7	27.4	3.7	27.4	3.7	27.4	2.9	13.7	2.2	6.4
210	18.0	FI (2+1) 10s	4.4	48.0	4.4	48.0	4.1	40.0	3.3	20.0	2.5	9.3
211	13.3	Mo (U)	4.2	42.7	4.2	42.7	4.2	42.7	3.5	24.0	2.7	11.2
212	16.7	Q 1.2s	3.9	32.0	3.9	32.0	3.7	28.8	3.0	14.4	2.3	6.7
213	6.0	Q (3) 10s	3.9	32.0	3.9	32.0	3.9	32.0	3.9	32.0	3.2	18.7
214	44.0	Q (6)+LFI 15s	3.9	32.7	3.6	24.5	3.1	16.4	2.4	8.2	1.8	3.8
215	12.0	VQ (3) 5s	3.9	32.0	3.9	32.0	3.9	32.0	3.3	20.0	2.5	9.3
216	48.0	VQ (6)+LFI 10s	3.5	24.0	3.2	18.0	2.8	12.0	2.2	6.0	1.6	2.8
217	18.0	VQ (9) 10s	3.9	32.0	3.9	32.0	3.7	26.7	2.9	13.3	2.2	6.2
218	62.5	Oc (3) 12s	3.7	27.1	3.3	20.3	2.9	13.6	2.3	6.8	1.7	3.2

Amber LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
219	66.7	Oc (4) 12s	3.5	24.0	3.2	18.0	2.8	12.0	2.2	6.0	1.6	2.8
220	25.0	FI (3) 12s	4.5	53.3	4.4	48.0	3.9	32.0	3.1	16.0	2.3	7.5
221	26.7	FI (4) 15s	4.5	53.3	4.3	45.0	3.8	30.0	3.0	15.0	2.3	7.0
222	25.0	FI (5) 20s	4.5	53.3	4.4	48.0	3.9	32.0	3.1	16.0	2.3	7.5
223	33.3	Mo (A)	4.4	48.0	4.0	36.0	3.5	24.0	2.8	12.0	2.1	5.6
224	12.5	FI (5) 20s sADO	4.3	45.7	4.3	45.7	4.3	45.7	3.7	27.4	2.9	12.8
225	13.3	FI (4) 15s	4.3	45.7	4.3	45.7	4.3	45.7	3.6	25.7	2.8	12.0
226	12.5	FI (5) 20s	4.3	45.7	4.3	45.7	4.3	45.7	3.7	27.4	2.9	12.8
227	28.0	Q (6)+LFI 15s	3.9	32.0	3.6	25.7	3.2	17.1	2.5	8.6	1.9	4.0
228	12.0	Q (9) 15s	3.9	32.0	3.9	32.0	3.9	32.0	3.3	20.0	2.5	9.3
229	42.0	VQ (6)+LFI 10s	3.5	22.9	3.2	17.1	2.7	11.4	2.1	5.7	1.6	2.7
230	20.8	CST1	4.5	54.1	4.5	54.1	4.1	39.0	3.3	19.5	2.5	9.1
231	28.6	CST2	4.7	61.9	4.4	48.8	3.9	32.5	3.1	16.3	2.4	7.6
232	37.5	CST3	4.4	50.1	4.1	37.6	3.6	25.0	2.8	12.5	2.1	5.8
233	23.1	CST4	4.7	60.0	4.7	58.5	4.1	39.0	3.3	19.5	2.5	9.1
234	18.8	CST5	4.3	45.7	4.3	45.7	4.0	36.6	3.2	18.3	2.5	8.5
235	8.0	CST6	4.2	42.7	4.2	42.7	4.2	42.7	4.1	40.0	3.2	18.7
236	75.0	CST7	3.5	22.6	3.1	16.9	2.7	11.3	2.1	5.6	1.6	2.6
237	10.0	CST8	4.3	45.7	4.3	45.7	4.3	45.7	4.0	34.3	3.1	16.0
238	4.5	CST9	4.4	48.0	4.4	48.0	4.4	48.0	4.4	48.0	4.1	37.3
239	20.0	CST10	4.3	45.7	4.3	45.7	4.0	34.3	3.2	17.1	2.4	8.0
240	15.0	CST11	4.1	38.4	4.1	38.4	4.1	38.4	3.3	19.2	2.5	9.0
241	50.0	CST12	4.1	37.2	3.7	27.9	3.2	18.6	2.5	9.3	1.9	4.3
242	77.8	CST13	3.5	22.4	3.1	16.8	2.7	11.2	2.1	5.6	1.6	2.6
243	24.0	CST14	4.2	42.7	4.1	40.0	3.7	26.7	2.9	13.3	2.2	6.2
244	40.0	CST15	4.1	38.4	3.7	28.8	3.3	19.2	2.6	9.6	1.9	4.5
245	32.0	CST16	4.4	48.0	4.0	36.0	3.5	24.0	2.8	12.0	2.1	5.6
246	18.8	CST17	4.3	45.7	4.3	45.7	4.0	36.6	3.2	18.3	2.5	8.5
247	10.0	CST18	4.3	45.7	4.3	45.7	4.3	45.7	4.0	34.3	3.1	16.0
248	13.3	CST19	4.5	51.2	4.5	51.2	4.5	51.2	3.7	28.8	2.9	13.4
249	11.4	CST20	4.5	51.2	4.5	51.2	4.5	51.2	3.9	33.6	3.1	15.7
250	12.5	CST21	4.3	45.7	4.3	45.7	4.3	45.7	3.7	27.4	2.9	12.8

Amber LEDs												
Flash Code	Duty Cycle	Flash Character	Range (NM) High 100%	Effective Candela High 100%	Range (NM) High 75%	Effective Candela High 75%	Range (NM) High 50%	Effective Candela High 50%	Range (NM) High 25%	Effective Candela High 25%	Range (NM) High 12%	Effective Candela High 12%
251	20.0	CST22	4.4	49.8	4.4	49.8	4.1	37.3	3.2	18.7	2.5	8.7
252	19.4	CST23	4.4	49.8	4.4	49.8	4.1	38.4	3.3	19.2	2.5	9.0
253	12.7	CST24	4.4	49.8	4.4	49.8	4.4	49.8	3.8	29.3	2.9	13.7

## Appendix C: Troubleshooting

Failure	Possible Cause	Recommendation
M704-5 lantern does not turn on	Is the environment too light to activate the lantern?	The M704-5 lantern automatically turns on in the dark – test it in a dark environment.
*If the M704-5 lantern has been stored improperly, the batteries may be sulphated and will not accept a charge.	Has the M704-5 lantern been turned off?	If the M704-5 lantern has been turned off (code 000), transition the M704-5 lantern and awaken it with the programmer. See section 3.1 <i>Preparing the M704-5 Lantern for Programming</i> .
	Is the M704-5 lantern in low battery state?	If the battery indicator LED is not illuminated or is flashing, follow the charging instructions as described in section 5.2 <i>Charging the M704-5 Lantern</i> .
M704-5 lantern does not accept programmer input	The M704-5 lantern not transitioned?	Transition the M704-5 lantern by placing it under a bright light for one minute, and then place the lantern in the dark. When the M704-5 lantern illuminates, begin programming.
	The programmer is not operating.	Ensure the programmer batteries are not discharged. Reset your programmer as described in section 3.0 <i>Programming the M704-5 Lantern</i> .
	Interference	Place the programmer close to the top clear lens.
M704-5 lantern is dim	The ALC function has activated.	Deactivate the ALC as described in section 3.3.4.5 <i>Automatic Light Control (ALC)</i> . Charge as described in section 5.2 <i>Charging the M704-5 Lantern</i> .
	Peak power and intensity levels are incorrectly set.	Refer to <i>Appendix B: Candela and Range Tables</i> to verify the level settings for the desired flash code and range.



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**Technical support:** [customerservice@carmanah.com](mailto:customerservice@carmanah.com)  
Toll Free in Canada and the U.S.: 1.877.722.8877  
International: 1.250.380.0052 | Fax: 1.250.380.0062

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