

LEOTEK Electronics USA LLC

TEST REPORT

SCOPE OF WORK

Intertek Traffic Signal ITE Program Certification Testing
of 15yr 12" Clear and Tinted Green Arrows.

REPORT NUMBER

106155687CRT-001G

ISSUE DATE

30-May-2025

PAGES

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Test Report			
Company Name	LEOTEK Electronics USA LLC	Test Location	Intertek Testing Services NA
Address	1955 Lundy Avenue	Address	3933 US Rt 11
	San Jose, CA 95131		Cortland, NY 13045
	USA		USA
Client Contact	Frank Saltani	Quote Number	Qu-01529103-0
Phone	408-380-1788 Ext. 202	Test Start Date	April 22, 2025
Email	frank@leotek.com	Completion Date	May 30, 2025

Standard(s)
ITE, Vehicle Arrow Traffic Signal Supplement, dated July 1, 2007

Spec	Test name	Clause	Tinted	Clear
			Result	
ITE	Conditioning	6.4.2	Pass	Pass
ITE	Mechanical Vibration	6.4.3.1	Pass**	
ITE	Temperature Cycling	6.4.3.2	Pass	Pass
ITE	Moisture Resistance	6.4.3.3	Pass**	
ITE	Luminous Intensity	6.4.4.1, 2,3,4	Pass	Pass
ITE	Luminance Uniformity	6.4.4.5	Pass	Pass
ITE	Chromaticity	6.4.4.6	Pass	Pass
ITE	Color Uniformity	6.4.4.7	Pass	Pass
ITE	Lens Abrasion	6.4.5.2	Pass	Pass
ITE	Current Consumption	6.4.6.1	Pass	Pass*
ITE	Low Voltage Turn Off	6.4.6.2	Pass***	
ITE	Turn-on/Turn-off Times	6.4.6.3	Pass***	
ITE	Transient Voltage Immunity	6.4.6.4	Pass***	
ITE	Electronic Noise	6.4.6.5	Pass***	
ITE	Power Factor	6.4.6.6	Pass	Pass*
ITE	Total Harmonic Distortion	6.4.6.7	Pass	Pass*
ITE	Load Switch Compatibility	6.4.7.1	Pass***	
ITE	Off State Voltage Decay	6.4.7.2	Pass***	
ITE	Failed State Impedance	6.4.8	Pass***	

*The client states the clear lens model is exactly the same as the tinted model with the exception of the lens.

As a result, the electrical testing for the clear is covered by the tinted results.

**Covered under test report 106155687CRT-001Y.

***Covered under Dialight test report 105771947CRT-002G

Results Key	
Pass	Compliant
Fail	Non-compliant
TBD	Compliance not determined
NT	Not tested in this project
NA	Test not applicable

John C. Robins

John C. Robins
Engineer
Lighting

Christopher W. Metcalf

Christopher W. Metcalf
Engineering Supervisor
Lighting

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Sample Information				
Date Rec.	Intertek ID	Description	Condition	Model No.
4/22/2025	CRT2504221030-002	12" Green Arrow Tinted 15yr	Engineering	See Below
4/22/2025	CRT2504221030-001	12" Green Arrow Clear 15yr	Engineering	See Below

Further Sample Description

Intertek Sample Number	Description	Model Number	Serial Number
CRT2504221030-002-1	12" Green Arrow Tinted 15yr	432-2324-001X0D15	A2503028061
CRT2504221030-002-2	12" Green Arrow Tinted 15yr	432-2324-001X0D15	A2503028062
CRT2504221030-002-3	12" Green Arrow Tinted 15yr	432-2324-001X0D15	A2503028063
CRT2504221030-001-1	12" Green Arrow Clear 15yr	432-2374-001X0D15	A2503028064
CRT2504221030-001-2	12" Green Arrow Clear 15yr	432-2374-001X0D15	A2503028065
CRT2504221030-001-3	12" Green Arrow Clear 15yr	432-2374-001X0D15	A2503028066

General Requirements

Intertek Sample Number	ETL Cert. Number	Label Identification	Lens Orientation	Color Coded Wires
CRT2504221030-002-1	NA	Pass	Pass	Green/White
CRT2504221030-002-2	NA	Pass	Pass	Green/White
CRT2504221030-002-3	NA	Pass	Pass	Green/White
CRT2504221030-001-1	NA	Pass	Pass	Green/White
CRT2504221030-001-2	NA	Pass	Pass	Green/White
CRT2504221030-001-3	NA	Pass	Pass	Green/White

General Requirements

Intertek Sample Number	600V / 20 AWG Min.	Wire Length $\geq$ 39"	Service Rating +105°C
CRT2504221030-002-1	600V / 18 AWG	Pass	Pass
CRT2504221030-002-2	600V / 18 AWG	Pass	Pass
CRT2504221030-002-3	600V / 18 AWG	Pass	Pass
CRT2504221030-001-1	600V / 18 AWG	Pass	Pass
CRT2504221030-001-2	600V / 18 AWG	Pass	Pass
CRT2504221030-001-3	600V / 18 AWG	Pass	Pass

*Client supplied clear lenses for testing.

Sample Modification Log	
Date	Modification description
4/22/25	AC Cable: Brown/White_C-G000000018
	Wire Cover : C-A000000097
	Waterproof Plug: C-A000000094
	Back Cover: C-A000000096
	Heat Sink: C-A000000095
	Metal PCB: C-E000000013
	Connector: CNRP4-A2001WRBS04P
	LED: LEDLXG-NCSE219BT
	Thermistor: C-F000000025
	2nd Lens: PPCTSL-LENS009B1
	SPS: _15y SPS_C-D000000001
	Power Clip_C-A000000092
	Fresnel Lens: PPCTSL-FL12C2
	Arrow Mask: PPCTSL-FM12C
	O-ring:12"_PRBTSL-LG1206
	Gasket:_12" Gasket_PRBTSL-FG12T1
	Front Cover Tinted: C-B000000036
	Front Cover Clear: C-B000000035

Sample Information

Picture(s)



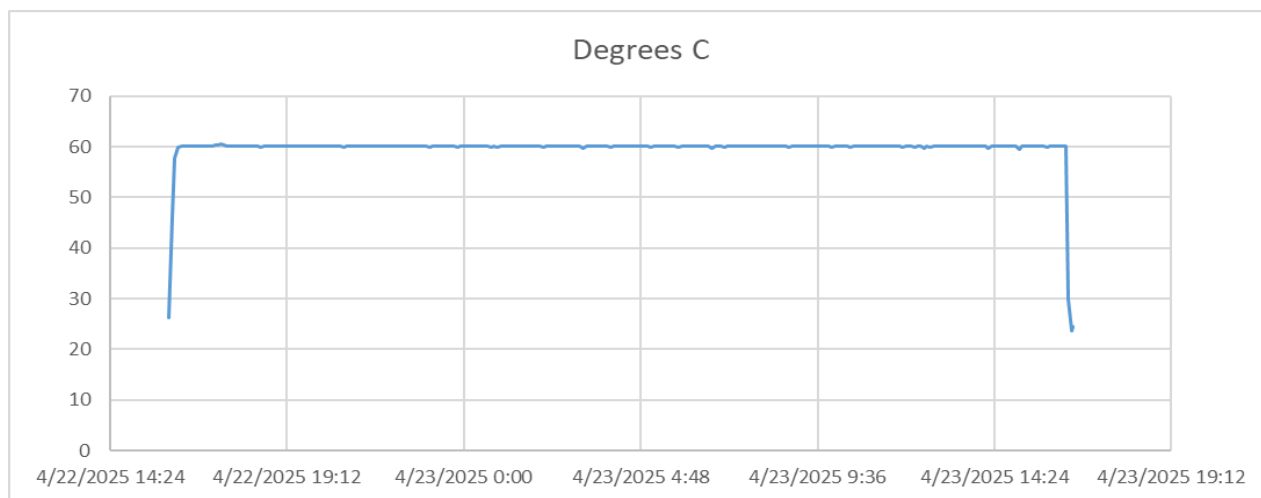
Note: The client supplied clear lenses for the modules, The clear lens model number is 432-2374-001XOD15.

Conditioning 6.4.2

The submitted LED signal modules were subjected to conditioning prior to the environmental tests. The samples were energized for a minimum of 24 hours, at 100% duty cycle in an ambient temperature of +60°C (+140°F). At the conclusion of the test, the modules shall be visually inspected for damage and checked for proper operation.

Results

Intertek Sample Number	Description	Visual Inspection		Operational Check	
		Pre	Post	Pre	Post
CRT2504221030-002-1	12" Green Arrow Tinted 15yr	Pass	Pass	Pass	Pass
CRT2504221030-002-2	12" Green Arrow Tinted 15yr	Pass	Pass	Pass	Pass
CRT2504221030-002-3	12" Green Arrow Tinted 15yr	Pass	Pass	Pass	Pass
CRT2504221030-001-1	12" Green Arrow Clear 15yr	Pass	Pass	Pass	Pass
CRT2504221030-001-2	12" Green Arrow Clear 15yr	Pass	Pass	Pass	Pass
CRT2504221030-001-3	12" Green Arrow Clear 15yr	Pass	Pass	Pass	Pass



Measured Voltage: 120.0 - 123.0 Vac

Complies: ☒ YES ☐ NO

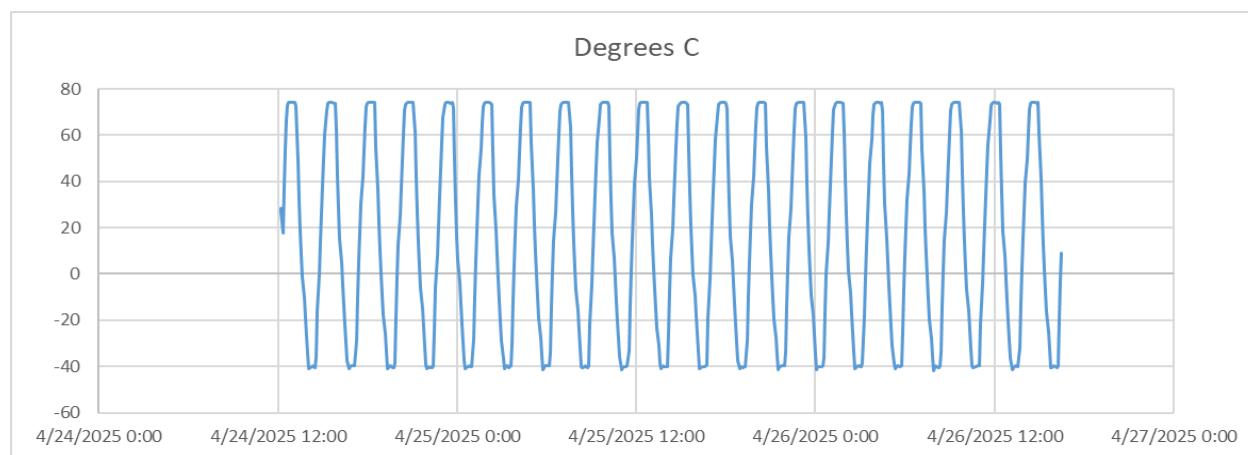
Tested By:	John Robins	Signature or initials:	<i>JR</i>
Engineer:	John Robins	Signature or initials:	<i>JR</i>
Reviewed By:	cwm	Signature or initials:	<i>cwm</i>
Test Equipment Used:	1,2	Completion Date:	23-Apr-2025
Amb (°C):	N/A	RH%	N/A

Temperature Cycling 6.4.3.2

The submitted tinted and clear LED signal modules were subjected to temperature cycling according to MIL-STD-883, Method 1010. Twenty cycles were performed with a 30 minute transfer time between temperature extremes and a 30 minute dwell time at the extremes. The temperature cycled between -40°C and +74°C. The samples were non-operating. At the conclusion of the test, the module shall be free of damage and moisture and be fully operational.

Results

Intertek Sample Number	Description	Visual Inspection	Operational Check
CRT2504221030-002-1	12" Green Arrow Tinted 15yr	Pass	Pass
CRT2504221030-002-2	12" Green Arrow Tinted 15yr	Pass	Pass
CRT2504221030-002-3	12" Green Arrow Tinted 15yr	Pass	Pass
CRT2504221030-001-1	12" Green Arrow Clear 15yr	Pass	Pass
CRT2504221030-001-2	12" Green Arrow Clear 15yr	Pass	Pass
CRT2504221030-001-3	12" Green Arrow Clear 15yr	Pass	Pass



Complies: ☒ YES ☐ NO

Tested By:	John Robins	Signature or initials:	<i>JR</i>
Engineer:	John Robins	Signature or initials:	<i>JR</i>
Reviewed By:	cwm	Signature or initials:	<i>cwm</i>
Test Equipment Used:	1	Completion Date:	26-Apr-2025
Amb (°C):	N/A	RH%	N/A

Luminous Intensity 6.4.4.1 through 6.4.4.4

The intensity distribution tests on the submitted LED traffic signal modules were performed with the Intertek 25 meter Goniophotometer. The goniophotometer was in accordance with the goniometer described in Section 11.02 (Test Apparatus) of the Institute of Transportation Engineers' Vehicle Traffic Control Signal Heads Standard Test Method. The calibration of the goniophotometer is traceable to the National Institute of Standards and Technology. The LED modules were operated at 120 volts AC. The alignment of the LED module was performed in accordance with Section 11.03 (Alignment of Optical Unit for Test) of the Institute of Transportation Engineers' Vehicle Traffic Control Signal Heads Standard Test Method. The submitted LED signal modules were tested for maintained minimum luminous intensity at each of 112 points indicated in Table 3, of the referenced specification. These measurements were recorded at an ambient temperature of 25°C. The green LED signal modules were energized at nominal operating voltage, at a 100% duty cycle for 60 minutes.

A relative luminous intensity measurement is taken in a region from 0 to 7.5° down, and from 7.5° left to 7.5° right. The measurement is taken at 80 Vac, 120 Vac and 135 Vac. When the 80 Vac and 135 Vac factors are applied to the photometric data the units shall still meet the photometric requirements of each model.

A diminution factor was measured by using the submitted samples. The modules were mounted in a dual compartment temperature chamber with the lensed portion in one compartment and all portions behind the lens within the other compartment. At room ambient temperature (both inside and outside the chamber) and in calm air outside the chamber, the modules were energized per the conditions described above and a single on-axis reading (IA) taken and recorded. With the modules off, the chamber was heated to 74°C behind the lens and 49°C in front of the lens, and allowed to stabilize. Following stabilization, the modules were energized per the above cycle and the single on-axis reading (IH) taken and recorded. A diminution factor was calculated (IH/IA). The readings recorded initially were factored by the diminution factor.

Luminous Intensity 6.4.4.1 through 6.4.4.4

Sample	CRT2504221030-002-1				Target Input voltage		Measured Input Voltage				0, 0 Lum. Intensity		Vac Variation Factor		MMLI Factor
Module	12" Omni Arrow				80Vac		80.0		Vac		208.7		Candela	0.974	0.873
Color:	Green				120Vac		120.1		Vac		214.3		Candela	1.000	
Lens	Tinted				135Vac		135.1		Vac		218.9		Candela	1.021	
Photometric Test Distance: 25 Meter															
Max	228	25°C		25°C		25°C		74°C/49°C		74°C/49°C		74°C/49°C			
Vertical	Horizontal	Rated 80Vac		Measured 120Vac		Rated 135Vac		Rated 80Vac		Measured 120Vac		Rated 135Vac		Table 1	
Angle	Angle	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Minimum	
Up/Down	Left/Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Candela	
27.5U	7.5	14.6	14.8	15.0	15.2	15.4	15.5	12.8	12.9	13.1	13.3	13.4	13.5	3.6	
27.5U	2.5	16.0	16.1	16.4	16.5	16.8	16.9	14.0	14.0	14.4	14.4	14.7	14.7	4.3	
22.5U	17.5	13.6	14.0	14.0	14.4	14.3	14.7	11.9	12.2	12.2	12.6	12.5	12.8	3.8	
22.5U	12.5	17.4	18.2	17.9	18.6	18.3	19.0	15.2	15.9	15.6	16.3	16.0	16.6	6.4	
22.5U	7.5	21.4	22.2	22.0	22.8	22.5	23.2	18.7	19.4	19.2	19.9	19.6	20.3	9.2	
22.5U	2.5	24.1	24.6	24.8	25.2	25.3	25.8	21.1	21.4	21.6	22.0	22.1	22.5	11.1	
17.5U	22.5	13.3	13.7	13.6	14.1	13.9	14.4	11.6	12.0	11.9	12.3	12.2	12.6	3.8	
17.5U	17.5	18.4	19.3	18.9	19.8	19.3	20.2	16.1	16.8	16.5	17.3	16.9	17.6	7.8	
17.5U	12.5	25.2	26.4	25.9	27.1	26.4	27.7	22.0	23.1	22.6	23.7	23.1	24.2	13.6	
17.5U	7.5	32.6	33.7	33.5	34.6	34.2	35.4	28.5	29.4	29.3	30.2	29.9	30.9	19.7	
17.5U	2.5	37.6	38.1	38.6	39.2	39.4	40.0	32.8	33.3	33.7	34.2	34.4	34.9	23.7	
12.5U	22.5	16.7	17.4	17.2	17.9	17.6	18.2	14.6	15.2	15.0	15.6	15.3	15.9	6.4	
12.5U	17.5	24.8	26.1	25.5	26.8	26.0	27.3	21.7	22.8	22.2	23.4	22.7	23.9	13.6	
12.5U	12.5	36.5	38.4	37.5	39.4	38.3	40.3	31.9	33.5	32.7	34.4	33.4	35.2	23.9	
12.5U	7.5	50.8	52.4	52.1	53.8	53.2	54.9	44.3	45.7	45.5	47.0	46.5	48.0	34.7	
12.5U	2.5	61.1	62.1	62.8	63.8	64.1	65.1	53.4	54.2	54.8	55.7	56.0	56.9	41.8	
7.5U	27.5	13.4	14.0	13.8	14.4	14.1	14.7	11.7	12.3	12.0	12.6	12.3	12.9	3.6	
7.5U	22.5	20.3	21.4	20.9	22.0	21.3	22.5	17.7	18.7	18.2	19.2	18.6	19.6	9.2	
7.5U	17.5	32.1	34.1	32.9	35.0	33.6	35.7	28.0	29.8	28.8	30.6	29.4	31.2	19.7	
7.5U	12.5	51.6	54.8	53.0	56.2	54.1	57.4	45.0	47.8	46.3	49.1	47.2	50.2	34.7	
7.5U	7.5	79.4	83.3	81.5	85.5	83.3	87.3	69.3	72.7	71.2	74.7	72.7	76.3	50.6	
7.5U	2.5	102.5	104.2	105.2	107.0	107.5	109.3	89.5	91.0	91.9	93.5	93.9	95.5	61.1	
2.5U	27.5	14.6	15.3	15.0	15.7	15.3	16.1	12.7	13.4	13.1	13.7	13.3	14.0	4.3	
2.5U	22.5	22.8	24.1	23.4	24.7	23.9	25.2	19.9	21.0	20.4	21.6	20.9	22.0	11.1	
2.5U	17.5	37.4	40.0	38.5	41.1	39.3	41.9	32.7	34.9	33.6	35.9	34.3	36.6	23.7	
2.5U	12.5	65.6	70.3	67.3	72.2	68.8	73.7	57.3	61.4	58.8	63.0	60.1	64.4	41.8	
2.5U	7.5	116.1	125.7	119.2	129.1	121.8	131.9	101.4	109.8	104.1	112.8	106.3	115.2	61.1	
2.5U	2.5	160.7	165.7	165.0	170.1	168.5	173.8	140.3	144.7	144.1	148.6	147.2	151.8	73.9	
2.5D	2.5	192.2	180.5	197.4	185.3	201.6	189.3	167.9	157.6	172.4	161.8	176.1	165.3	73.9	
2.5D	7.5	115.9	121.6	119.0	124.9	121.6	127.6	101.2	106.2	103.9	109.1	106.2	111.4	61.1	
2.5D	12.5	64.3	68.0	66.0	69.8	67.4	71.3	56.2	59.4	57.7	61.0	58.9	62.3	41.8	
2.5D	17.5	36.6	38.8	37.6	39.9	38.4	40.7	32.0	33.9	32.8	34.8	33.5	35.6	23.7	
2.5D	22.5	22.2	23.3	22.8	23.9	23.3	24.5	19.4	20.4	19.9	20.9	20.4	21.4	11.1	
2.5D	27.5	14.4	15.0	14.8	15.4	15.1	15.7	12.6	13.1	12.9	13.4	13.2	13.7	4.3	
7.5D	2.5	111.4	114.0	114.4	117.1	116.9	119.6	97.3	99.6	99.9	102.3	102.1	104.5	61.1	
7.5D	7.5	79.4	83.7	81.5	85.9	83.3	87.8	69.3	73.1	71.2	75.1	72.7	76.7	50.6	
7.5D	12.5	49.3	52.2	50.6	53.6	51.7	54.8	43.0	45.6	44.2	46.8	45.1	47.8	34.7	
7.5D	17.5	30.2	31.7	31.0	32.5	31.7	33.2	26.4	27.7	27.1	28.4	27.7	29.0	19.7	
7.5D	22.5	18.9	19.7	19.4	20.2	19.8	20.6	16.5	17.2	16.9	17.6	17.3	18.0	9.2	
7.5D	27.5	12.5	12.9	12.8	13.3	13.1	13.5	10.9	11.3	11.2	11.6	11.5	11.8	3.6	
12.5D	2.5	64.9	65.9	66.7	67.7	68.1	69.1	56.7	57.6	58.2	59.1	59.5	60.4	41.8	
12.5D	7.5	50.6	52.9	52.0	54.4	53.1	55.5	44.2	46.2	45.4	47.5	46.4	48.5	34.7	
12.5D	12.5	34.7	36.6	35.7	37.5	36.4	38.3	30.3	31.9	31.2	32.8	31.8	33.5	23.9	
12.5D	17.5	22.9	24.1	23.5	24.7	24.0	25.2	20.0	21.0	20.5	21.6	21.0	22.0	13.6	
12.5D	22.5	15.2	15.9	15.6	16.3	15.9	16.7	13.3	13.9	13.6	14.2	13.9	14.6	6.4	
17.5D	2.5	39.2	39.8	40.3	40.9	41.1	41.8	34.2	34.8	35.2	35.7	35.9	36.5	23.7	
17.5D	7.5	32.1	33.5	33.0	34.4	33.7	35.1	28.0	29.2	28.8	30.0	29.4	30.7	19.7	
17.5D	12.5	23.8	24.9	24.4	25.6	24.9	26.1	20.8	21.7	21.3	22.3	21.8	22.8	13.6	
17.5D	17.5	16.8	17.6	17.2	18.1	17.6	18.5	14.6	15.4	15.0	15.8	15.4	16.2	7.8	
17.5D	22.5	11.8	12.4	12.1	12.7	12.3	13.0	10.3	10.8	10.6	11.1	10.8	11.3	3.8	
22.5D	2.5	25.0	25.4	25.6	26.1	26.2	26.7	21.8	22.2	22.4	22.8	22.9	23.3	11.1	
22.5D	7.5	21.0	22.0	21.6	22.6	22.0	23.1	18.3	19.2	18.8	19.7	19.2	20.2	9.2	
22.5D	12.5	16.4	17.2	16.9	17.7	17.2	18.1	14.3	15.0	14.7	15.5	15.0	15.8	6.4	
22.5D	17.5	12.3	12.9	12.6	13.3	12.9	13.5	10.7	11.3	11.0	11.6	11.2	11.8	3.8	
27.5D	2.5	16.7	17.0	17.1	17.5	17.5	17.9	14.6	14.9	15.0	15.3	15.3	15.6	4.3	
27.5D	7.5	14.4	15.1	14.8	15.5	15.1	15.9	12.5	13.2	12.9	13.6	13.2	13.9	3.6	

Luminous Intensity 6.4.4.1 through 6.4.4.4

Sample	CRT2504221030-002-2					Target Input voltage		Measured Input Voltage		0, 0 Lum. Intensity		Vac Variation Factor		MMLI Factor
Module	12" Omni Arrow					80Vac		79.9 Vac		216 Candela		0.976		0.871
Color:	Green					120Vac		120.1 Vac		221.2 Candela		1.000		
Lens	Tinted					135Vac		135.1 Vac		224.7 Candela		1.016		
Photometric Test Distance: 25 Meter														
Max. cd	228	25°C		25°C		25°C		74°C/49°C		74°C/49°C		74°C/49°C		
Vertical	Horizontal	Rated 80Vac		Measured 120Vac		Rated 135Vac		Rated 80Vac		Measured 120Vac		Rated 135Vac		Table 1
Angle	Angle	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Minimum
Up/Down	Left/Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Candela
27.5U	7.5	13.9	14.0	14.3	14.3	14.5	14.6	12.1	12.2	12.4	12.5	12.6	12.7	3.6
27.5U	2.5	15.3	15.3	15.6	15.6	16.0	16.0	13.3	13.3	13.6	13.6	13.8	13.8	4.3
22.5U	17.5	13.1	13.3	13.5	13.6	13.7	13.9	11.5	11.6	11.7	11.9	11.9	12.0	3.8
22.5U	12.5	16.9	17.1	17.3	17.6	17.7	17.9	14.7	14.9	15.1	15.3	15.3	15.5	6.4
22.5U	7.5	20.7	21.0	21.2	21.6	21.6	22.0	18.0	18.3	18.4	18.8	18.7	19.1	9.2
22.5U	2.5	23.3	23.4	23.8	24.0	24.3	24.5	20.3	20.4	20.8	20.9	21.1	21.2	11.1
17.5U	22.5	12.9	13.0	13.3	13.3	13.5	13.6	11.3	11.3	11.6	11.6	11.7	11.8	3.8
17.5U	17.5	18.0	18.2	18.5	18.7	18.9	19.1	15.7	15.9	16.1	16.3	16.4	16.5	7.8
17.5U	12.5	24.6	25.0	25.2	25.7	25.7	26.2	21.4	21.8	22.0	22.4	22.3	22.7	13.6
17.5U	7.5	31.6	32.1	32.3	32.9	33.0	33.6	27.5	28.0	28.2	28.6	28.6	29.1	19.7
17.5U	2.5	36.4	36.6	37.3	37.5	38.1	38.3	31.7	31.9	32.5	32.7	33.0	33.2	23.7
12.5U	22.5	16.6	16.6	17.0	17.0	17.3	17.3	14.4	14.4	14.8	14.8	15.0	15.0	6.4
12.5U	17.5	24.6	24.8	25.2	25.4	25.7	25.9	21.4	21.6	21.9	22.1	22.3	22.5	13.6
12.5U	12.5	36.1	36.4	36.9	37.3	37.7	38.1	31.4	31.7	32.2	32.5	32.7	33.0	23.9
12.5U	7.5	49.4	50.0	50.6	51.3	51.7	52.4	43.1	43.6	44.1	44.7	44.8	45.4	34.7
12.5U	2.5	59.4	59.8	60.9	61.3	62.2	62.6	51.8	52.1	53.0	53.4	53.9	54.2	41.8
7.5U	27.5	13.2	13.2	13.5	13.5	13.8	13.8	11.5	11.5	11.8	11.8	12.0	12.0	3.6
7.5U	22.5	20.2	20.3	20.7	20.8	21.1	21.2	17.6	17.7	18.0	18.1	18.3	18.4	9.2
7.5U	17.5	32.1	32.2	32.9	33.0	33.6	33.7	28.0	28.1	28.6	28.8	29.1	29.2	19.7
7.5U	12.5	51.5	51.9	52.8	53.1	53.9	54.3	44.9	45.2	46.0	46.3	46.7	47.0	34.7
7.5U	7.5	78.6	79.3	80.5	81.2	82.3	82.9	68.5	69.1	70.2	70.8	71.3	71.9	50.6
7.5U	2.5	100.1	100.8	102.5	103.2	104.7	105.4	87.2	87.8	89.3	89.9	90.7	91.4	61.1
2.5U	27.5	14.4	14.5	14.7	14.9	15.0	15.2	12.5	12.7	12.8	13.0	13.0	13.2	4.3
2.5U	22.5	22.6	22.8	23.2	23.4	23.6	23.9	19.7	19.9	20.2	20.4	20.5	20.7	11.1
2.5U	17.5	37.7	37.9	38.6	38.8	39.4	39.7	32.8	33.0	33.6	33.8	34.1	34.4	23.7
2.5U	12.5	66.3	66.9	67.9	68.5	69.4	69.9	57.8	58.3	59.2	59.7	60.1	60.6	41.8
2.5U	7.5	117.3	119.4	120.1	122.3	122.7	124.9	102.2	104.1	104.7	106.6	106.3	108.3	61.1
2.5U	2.5	160.0	160.9	163.9	164.8	167.4	168.3	139.5	140.2	142.8	143.6	145.1	145.9	73.9
2.5D	2.5	193.9	185.9	198.6	190.4	202.9	194.5	169.0	162.0	173.1	165.9	175.8	168.5	73.9
2.5D	7.5	118.4	119.0	121.3	121.9	123.9	124.5	103.2	103.7	105.7	106.2	107.4	107.9	61.1
2.5D	12.5	65.0	65.7	66.6	67.3	68.0	68.8	56.7	57.3	58.0	58.7	59.0	59.6	41.8
2.5D	17.5	36.8	37.2	37.7	38.1	38.5	38.9	32.1	32.4	32.9	33.2	33.4	33.7	23.7
2.5D	22.5	22.1	22.3	22.6	22.9	23.1	23.4	19.3	19.5	19.7	19.9	20.0	20.2	11.1
2.5D	27.5	14.1	14.3	14.5	14.6	14.8	14.9	12.3	12.4	12.6	12.7	12.8	12.9	4.3
7.5D	2.5	114.6	116.0	117.4	118.8	119.9	121.4	99.9	101.1	102.3	103.5	103.9	105.2	61.1
7.5D	7.5	80.9	82.4	82.9	84.4	84.6	86.2	70.5	71.8	72.2	73.6	73.3	74.7	50.6
7.5D	12.5	49.8	50.7	51.1	52.0	52.1	53.1	43.4	44.2	44.5	45.3	45.2	46.0	34.7
7.5D	17.5	30.2	30.7	30.9	31.4	31.6	32.1	26.3	26.7	26.9	27.4	27.4	27.8	19.7
7.5D	22.5	18.7	18.9	19.2	19.4	19.6	19.8	16.3	16.5	16.7	16.9	17.0	17.2	9.2
7.5D	27.5	12.2	12.4	12.5	12.7	12.8	13.0	10.7	10.8	10.9	11.1	11.1	11.3	3.6
12.5D	2.5	65.6	66.1	67.2	67.7	68.6	69.1	57.1	57.6	58.5	59.0	59.4	59.9	41.8
12.5D	7.5	51.3	52.2	52.5	53.5	53.6	54.6	44.7	45.5	45.8	46.6	46.5	47.4	34.7
12.5D	12.5	34.9	35.6	35.7	36.5	36.5	37.3	30.4	31.1	31.1	31.8	31.6	32.3	23.9
12.5D	17.5	22.8	23.3	23.4	23.8	23.9	24.3	19.9	20.3	20.3	20.7	20.7	21.1	13.6
12.5D	22.5	15.0	15.3	15.4	15.7	15.7	16.0	13.1	13.3	13.4	13.7	13.6	13.9	6.4
17.5D	2.5	39.4	39.7	40.4	40.6	41.2	41.5	34.4	34.6	35.2	35.4	35.7	36.0	23.7
17.5D	7.5	32.4	33.1	33.2	33.9	33.9	34.6	28.2	28.8	28.9	29.5	29.4	30.0	19.7
17.5D	12.5	23.8	24.3	24.4	24.9	24.9	25.5	20.7	21.2	21.2	21.7	21.6	22.1	13.6
17.5D	17.5	16.6	17.1	17.1	17.5	17.4	17.8	14.5	14.9	14.9	15.2	15.1	15.5	7.8
17.5D	22.5	11.6	11.9	11.9	12.2	12.2	12.5	10.1	10.4	10.4	10.6	10.5	10.8	3.8
22.5D	2.5	24.9	25.1	25.5	25.7	26.0	26.2	21.7	21.8	22.2	22.4	22.5	22.7	11.1
22.5D	7.5	21.0	21.6	21.5	22.1	22.0	22.6	18.3	18.8	18.8	19.3	19.1	19.6	9.2
22.5D	12.5	16.3	16.7	16.7	17.1	17.0	17.4	14.2	14.5	14.5	14.9	14.8	15.1	6.4
22.5D	17.5	12.2	12.5	12.5	12.8	12.7	13.1	10.6	10.9	10.9	11.1	11.0	11.3	3.8
27.5D	2.5	16.6	16.8	17.0	17.2	17.3	17.5	14.4	14.6	14.8	15.0	15.0	15.2	4.3
27.5D	7.5	14.3	14.8	14.7	15.1	15.0	15.4	12.5	12.9	12.8	13.2	13.0	13.4	3.6

Luminous Intensity 6.4.4.1 through 6.4.4.4

Sample	CRT2504221030-002-3	Target Input voltage	Measured Input Voltage	0, 0 Lum. Intensity	Vac Variation Factor	MMLI Factor
Module	12" Omni Arrow	80Vac	80.0 Vac	210.1 Candela	0.973	0.865
Color:	Green	120Vac	120.1 Vac	216.0 Candela	1.000	
Lens	Tinted	135Vac	135.2 Vac	222.3 Candela	1.029	

Photometric Test Distance: 25 Meter

Max. cd	228	25°C		25°C		25°C		74°C/49°C		74°C/49°C		74°C/49°C		
Vertical	Horizontal	Rated 80Vac		Measured 120Vac		Rated 135Vac		Rated 80Vac		Measured 120Vac		Rated 135Vac		Table 1
Angle	Angle	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Minimum
Up/Down	Left/Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Candela
27.5U	7.5	14.2	14.4	14.6	14.8	15.0	15.2	12.3	12.4	12.6	12.8	13.0	13.1	3.6
27.5U	2.5	15.6	15.6	16.0	16.1	16.5	16.5	13.5	13.5	13.9	13.9	14.3	14.3	4.3
22.5U	17.5	13.3	13.5	13.6	13.9	14.0	14.3	11.5	11.7	11.8	12.0	12.1	12.4	3.8
22.5U	12.5	17.1	17.6	17.6	18.1	18.1	18.6	14.8	15.2	15.2	15.6	15.7	16.1	6.4
22.5U	7.5	21.0	21.5	21.6	22.1	22.2	22.7	18.1	18.6	18.6	19.1	19.2	19.7	9.2
22.5U	2.5	23.7	23.9	24.3	24.6	25.0	25.3	20.5	20.7	21.0	21.3	21.7	21.9	11.1
17.5U	22.5	13.0	13.2	13.3	13.6	13.7	14.0	11.2	11.4	11.5	11.8	11.9	12.1	3.8
17.5U	17.5	18.1	18.6	18.6	19.1	19.2	19.7	15.7	16.1	16.1	16.5	16.6	17.0	7.8
17.5U	12.5	24.7	25.5	25.4	26.3	26.2	27.0	21.4	22.1	22.0	22.7	22.6	23.4	13.6
17.5U	7.5	31.8	32.7	32.7	33.6	33.7	34.6	27.5	28.3	28.3	29.1	29.1	29.9	19.7
17.5U	2.5	36.9	37.3	37.9	38.3	39.0	39.4	31.9	32.3	32.8	33.2	33.7	34.1	23.7
12.5U	22.5	16.5	16.7	17.0	17.2	17.5	17.7	14.3	14.5	14.7	14.9	15.1	15.3	6.4
12.5U	17.5	24.6	25.1	25.3	25.9	26.0	26.6	21.3	21.8	21.9	22.4	22.5	23.0	13.6
12.5U	12.5	36.1	37.1	37.1	38.1	38.2	39.2	31.2	32.1	32.1	33.0	33.1	33.9	23.9
12.5U	7.5	49.8	50.9	51.2	52.4	52.7	53.9	43.1	44.1	44.3	45.3	45.6	46.6	34.7
12.5U	2.5	60.1	60.7	61.7	62.4	63.5	64.2	52.0	52.5	53.4	54.0	55.0	55.5	41.8
7.5U	27.5	13.2	13.5	13.5	13.8	13.9	14.2	11.4	11.6	11.7	12.0	12.0	12.3	3.6
7.5U	22.5	20.1	20.6	20.7	21.2	21.3	21.8	17.4	17.8	17.9	18.3	18.4	18.8	9.2
7.5U	17.5	31.8	32.7	32.7	33.6	33.7	34.6	27.5	28.3	28.3	29.1	29.1	29.9	19.7
7.5U	12.5	51.5	52.8	53.0	54.3	54.5	55.9	44.6	45.7	45.8	47.0	47.2	48.4	34.7
7.5U	7.5	78.8	80.6	81.1	82.9	83.4	85.3	68.2	69.7	70.1	71.7	72.2	73.8	50.6
7.5U	2.5	101.1	102.0	103.9	104.9	106.9	108.0	87.4	88.3	89.9	90.7	92.5	93.4	61.1
2.5U	27.5	14.4	14.7	14.8	15.2	15.2	15.6	12.4	12.7	12.8	13.1	13.1	13.5	4.3
2.5U	22.5	22.5	23.1	23.2	23.7	23.8	24.4	19.5	20.0	20.0	20.5	20.6	21.1	11.1
2.5U	17.5	37.5	38.3	38.6	39.4	39.7	40.5	32.5	33.2	33.4	34.1	34.3	35.1	23.7
2.5U	12.5	66.2	67.5	68.0	69.4	70.0	71.4	57.2	58.4	58.8	60.0	60.5	61.8	41.8
2.5U	7.5	117.8	121.4	121.1	124.8	124.6	128.4	101.9	105.0	104.8	108.0	107.8	111.1	61.1
2.5U	2.5	160.7	162.8	165.2	167.4	170.0	172.3	139.0	140.9	142.9	144.8	147.1	149.0	73.9
2.5D	2.5	191.6	183.1	197.0	188.2	202.7	193.7	165.8	158.4	170.4	162.8	175.4	167.5	73.9
2.5D	7.5	118.3	118.4	121.6	121.7	125.1	125.2	102.3	102.4	105.2	105.3	108.3	108.3	61.1
2.5D	12.5	65.0	65.5	66.8	67.3	68.7	69.3	56.2	56.6	57.8	58.2	59.5	59.9	41.8
2.5D	17.5	36.7	37.2	37.8	38.2	38.9	39.3	31.8	32.1	32.7	33.0	33.6	34.0	23.7
2.5D	22.5	22.0	22.4	22.7	23.0	23.3	23.7	19.1	19.4	19.6	19.9	20.2	20.5	11.1
2.5D	27.5	14.1	14.4	14.5	14.8	14.9	15.3	12.2	12.5	12.5	12.8	12.9	13.2	4.3
7.5D	2.5	112.7	112.9	115.9	116.1	119.3	119.5	97.5	97.7	100.3	100.4	103.2	103.4	61.1
7.5D	7.5	80.3	81.0	82.5	83.2	84.9	85.6	69.4	70.0	71.4	72.0	73.5	74.1	50.6
7.5D	12.5	49.8	50.2	51.2	51.6	52.7	53.1	43.1	43.4	44.3	44.6	45.6	45.9	34.7
7.5D	17.5	30.1	30.5	31.0	31.3	31.9	32.2	26.1	26.4	26.8	27.1	27.6	27.9	19.7
7.5D	22.5	18.7	18.9	19.3	19.5	19.8	20.0	16.2	16.4	16.7	16.8	17.1	17.3	9.2
7.5D	27.5	12.3	12.4	12.6	12.8	13.0	13.2	10.6	10.8	10.9	11.1	11.2	11.4	3.6
12.5D	2.5	64.4	64.7	66.2	66.5	68.1	68.4	55.7	56.0	57.3	57.5	58.9	59.2	41.8
12.5D	7.5	50.6	51.3	52.0	52.8	53.5	54.3	43.7	44.4	45.0	45.6	46.3	47.0	34.7
12.5D	12.5	34.7	35.2	35.7	36.2	36.7	37.2	30.0	30.4	30.8	31.3	31.7	32.2	23.9
12.5D	17.5	22.7	23.0	23.4	23.7	24.0	24.3	19.6	19.9	20.2	20.5	20.8	21.1	13.6
12.5D	22.5	15.0	15.2	15.4	15.7	15.9	16.1	13.0	13.2	13.4	13.5	13.7	13.9	6.4
17.5D	2.5	38.7	38.9	39.8	40.0	40.9	41.2	33.5	33.7	34.4	34.6	35.4	35.6	23.7
17.5D	7.5	31.9	32.5	32.8	33.4	33.8	34.4	27.6	28.1	28.4	28.9	29.2	29.7	19.7
17.5D	12.5	23.5	24.0	24.2	24.7	24.9	25.4	20.3	20.8	20.9	21.4	21.5	22.0	13.6
17.5D	17.5	16.6	16.9	17.1	17.3	17.6	17.8	14.4	14.6	14.8	15.0	15.2	15.4	7.8
17.5D	22.5	11.6	11.8	12.0	12.2	12.3	12.5	10.1	10.2	10.3	10.5	10.6	10.8	3.8
22.5D	2.5	24.6	24.8	25.3	25.5	26.0	26.2	21.3	21.4	21.9	22.0	22.5	22.7	11.1
22.5D	7.5	20.8	21.3	21.4	21.9	22.0	22.5	18.0	18.4	18.5	18.9	19.1	19.5	9.2
22.5D	12.5	16.2	16.5	16.6	17.0	17.1	17.5	14.0	14.3	14.4	14.7	14.8	15.1	6.4
22.5D	17.5	12.1	12.4	12.4	12.7	12.8	13.1	10.5	10.7	10.8	11.0	11.1	11.3	3.8
27.5D	2.5	16.4	16.6	16.8	17.1	17.3	17.6	14.2	14.4	14.6	14.8	15.0	15.2	4.3
27.5D	7.5	14.1	14.6	14.5	15.0	14.9	15.5	12.2	12.6	12.6	13.0	12.9	13.4	3.6

Luminous Intensity 6.4.4.1 through 6.4.4.4

Sample	CRT2504221030-001-1				Target Input voltage		Measured Input Voltage				0, 0 Lum. Intensity		Vac Variation Factor		MMLI Factor
Module	12" Omni Arrow				80Vac		79.0		Vac		184.2	Candela	0.988		0.875
Color:	Green				120Vac		120.1		Vac		186.4	Candela	1.000		
Lens	Clear				135Vac		135.1		Vac		188.1	Candela	1.009		
Photometric Test Distance: 25 Meter															
Max. cd	228	25°C		25°C		25°C		74°C/49°C		74°C/49°C		74°C/49°C			
Vertical	Horizontal	Rated 80Vac		Measured 120Vac		Rated 135Vac		Rated 80Vac		Measured 120Vac		Rated 135Vac		Table 1	
Angle	Angle	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Minimum	
Up/Down	Left/Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Candela	
27.5U	7.5	16.5	16.6	16.7	16.8	16.9	16.9	14.5	14.5	14.6	14.7	14.8	14.8	3.6	
27.5U	2.5	18.0	18.2	18.2	18.4	18.4	18.6	15.7	15.9	15.9	16.1	16.1	16.3	4.3	
22.5U	17.5	15.9	16.1	16.1	16.3	16.2	16.4	13.9	14.1	14.1	14.2	14.2	14.4	3.8	
22.5U	12.5	20.3	20.7	20.5	20.9	20.7	21.1	17.7	18.1	17.9	18.3	18.1	18.4	6.4	
22.5U	7.5	24.6	25.0	24.9	25.3	25.1	25.6	21.5	21.9	21.7	22.2	21.9	22.4	9.2	
22.5U	2.5	27.6	27.7	27.9	28.0	28.2	28.3	24.1	24.2	24.4	24.5	24.6	24.7	11.1	
17.5U	22.5	15.6	16.0	15.8	16.2	16.0	16.3	13.7	14.0	13.8	14.1	14.0	14.3	3.8	
17.5U	17.5	21.6	22.1	21.9	22.3	22.1	22.5	18.9	19.3	19.1	19.5	19.3	19.7	7.8	
17.5U	12.5	29.1	29.9	29.4	30.2	29.7	30.5	25.4	26.1	25.7	26.4	26.0	26.7	13.6	
17.5U	7.5	36.9	37.8	37.3	38.3	37.7	38.6	32.3	33.1	32.7	33.5	33.0	33.8	19.7	
17.5U	2.5	42.3	42.8	42.8	43.4	43.2	43.7	37.0	37.5	37.5	37.9	37.8	38.3	23.7	
12.5U	22.5	19.6	19.8	19.8	20.1	20.0	20.2	17.2	17.3	17.4	17.5	17.5	17.7	6.4	
12.5U	17.5	28.8	29.5	29.1	29.9	29.4	30.1	25.2	25.8	25.5	26.1	25.7	26.4	13.6	
12.5U	12.5	41.8	42.6	42.3	43.1	42.7	43.5	36.6	37.3	37.0	37.7	37.3	38.1	23.9	
12.5U	7.5	56.5	57.3	57.2	58.0	57.7	58.5	49.4	50.1	50.0	50.7	50.5	51.2	34.7	
12.5U	2.5	67.5	68.0	68.3	68.8	68.9	69.4	59.0	59.5	59.7	60.2	60.3	60.7	41.8	
7.5U	27.5	15.8	15.9	16.0	16.1	16.1	16.3	13.8	13.9	14.0	14.1	14.1	14.2	3.6	
7.5U	22.5	23.7	24.1	23.9	24.4	24.2	24.6	20.7	21.1	20.9	21.3	21.1	21.5	9.2	
7.5U	17.5	36.7	37.4	37.2	37.9	37.5	38.2	32.1	32.8	32.5	33.1	32.8	33.4	19.7	
7.5U	12.5	57.8	58.5	58.5	59.2	59.0	59.7	50.6	51.2	51.2	51.8	51.6	52.2	34.7	
7.5U	7.5	86.1	86.7	87.2	87.7	87.9	88.5	75.3	75.8	76.2	76.7	76.9	77.4	50.6	
7.5U	2.5	108.5	108.2	109.8	109.5	110.8	110.5	94.9	94.7	96.0	95.8	96.9	96.7	61.1	
2.5U	27.5	16.9	17.1	17.1	17.4	17.2	17.5	14.8	15.0	14.9	15.2	15.1	15.3	4.3	
2.5U	22.5	26.0	26.3	26.3	26.6	26.5	26.9	22.7	23.0	23.0	23.3	23.2	23.5	11.1	
2.5U	17.5	41.7	42.4	42.2	42.9	42.6	43.3	36.5	37.1	36.9	37.5	37.3	37.9	23.7	
2.5U	12.5	70.5	71.1	71.4	72.0	72.0	72.6	61.7	62.2	62.4	62.9	63.0	63.5	41.8	
2.5U	7.5	119.2	120.8	120.6	122.2	121.7	123.3	104.2	105.6	105.5	106.9	106.5	107.9	61.1	
2.5U	2.5	158.3	159.2	160.2	161.1	161.7	162.6	138.5	139.3	140.1	140.9	141.4	142.2	73.9	
2.5D	2.5	163.8	164.2	165.8	166.2	167.3	167.7	143.3	143.7	145.0	145.4	146.4	146.7	73.9	
2.5D	7.5	113.2	113.7	114.6	115.1	115.6	116.1	99.1	99.5	100.2	100.7	101.2	101.6	61.1	
2.5D	12.5	67.6	67.6	68.4	68.4	69.0	69.1	59.1	59.2	59.8	59.9	60.4	60.4	41.8	
2.5D	17.5	40.4	40.8	40.9	41.3	41.2	41.7	35.3	35.7	35.7	36.1	36.1	36.4	23.7	
2.5D	22.5	25.2	25.3	25.5	25.6	25.7	25.8	22.0	22.1	22.3	22.4	22.5	22.6	11.1	
2.5D	27.5	16.6	16.6	16.8	16.8	16.9	17.0	14.5	14.5	14.7	14.7	14.8	14.9	4.3	
7.5D	2.5	106.2	106.2	107.5	107.5	108.5	108.5	92.9	92.9	94.0	94.0	94.9	94.9	61.1	
7.5D	7.5	80.6	81.1	81.5	82.1	82.3	82.8	70.5	70.9	71.3	71.8	72.0	72.4	50.6	
7.5D	12.5	53.2	53.1	53.9	53.7	54.3	54.2	46.5	46.4	47.1	47.0	47.5	47.4	34.7	
7.5D	17.5	33.8	33.7	34.2	34.1	34.5	34.4	29.5	29.5	29.9	29.8	30.2	30.1	19.7	
7.5D	22.5	21.5	21.7	21.8	22.0	22.0	22.2	18.8	19.0	19.1	19.2	19.2	19.4	9.2	
7.5D	27.5	14.6	14.5	14.8	14.7	14.9	14.8	12.8	12.7	12.9	12.9	13.0	13.0	3.6	
12.5D	2.5	65.5	65.8	66.3	66.6	66.9	67.2	57.3	57.6	58.0	58.3	58.5	58.8	41.8	
12.5D	7.5	53.4	53.6	54.1	54.2	54.6	54.7	46.7	46.8	47.3	47.4	47.7	47.8	34.7	
12.5D	12.5	37.9	37.9	38.4	38.3	38.7	38.7	33.2	33.1	33.6	33.5	33.9	33.8	23.9	
12.5D	17.5	25.9	25.8	26.2	26.2	26.4	26.4	22.6	22.6	22.9	22.9	23.1	23.1	13.6	
12.5D	22.5	17.4	17.4	17.6	17.6	17.8	17.8	15.2	15.2	15.4	15.4	15.5	15.6	6.4	
17.5D	2.5	41.1	41.0	41.6	41.5	42.0	41.8	35.9	35.8	36.4	36.3	36.7	36.6	23.7	
17.5D	7.5	34.6	35.1	35.0	35.5	35.3	35.8	30.3	30.7	30.6	31.0	30.9	31.3	19.7	
17.5D	12.5	26.5	26.5	26.8	26.9	27.1	27.1	23.2	23.2	23.5	23.5	23.7	23.7	13.6	
17.5D	17.5	19.2	19.1	19.5	19.4	19.6	19.5	16.8	16.7	17.0	16.9	17.2	17.1	7.8	
17.5D	22.5	13.7	13.7	13.8	13.9	14.0	14.0	12.0	12.0	12.1	12.1	12.2	12.3	3.8	
22.5D	2.5	26.8	26.9	27.1	27.3	27.3	27.5	23.4	23.6	23.7	23.9	23.9	24.1	11.1	
22.5D	7.5	23.4	23.5	23.7	23.8	23.9	24.0	20.5	20.6	20.7	20.8	20.9	21.0	9.2	
22.5D	12.5	18.4	18.6	18.7	18.9	18.8	19.0	16.1	16.3	16.3	16.5	16.5	16.7	6.4	
22.5D	17.5	14.2	14.3	14.4	14.5	14.6	14.6	12.5	12.5	12.6	12.6	12.7	12.8	3.8	
27.5D	2.5	18.4	18.4	18.7	18.6	18.8	18.8	16.1	16.1	16.3	16.3	16.5	16.4	4.3	
27.5D	7.5	16.3	16.3	16.5	16.5	16.6	16.7	14.2	14.3	14.4	14.5	14.5	14.6	3.6	

Luminous Intensity 6.4.4.1 through 6.4.4.4

Sample	CRT2504221030-001-2					Target Input voltage		Measured Input Voltage		0, 0 Lum. Intensity		Vac Variation Factor		MMLI Factor	
Module	12" Omni Arrow					80Vac		80.0 Vac		180.9 Candela		0.980		0.862	
Color:	Green					120Vac		120.1 Vac		184.6 Candela		1.000			
Lens	Clear					135Vac		135.1 Vac		186.4 Candela		1.010			
Photometric Test Distance: 25 Meter															
Max. cd	228	25°C		25°C		25°C		74°C/49°C		74°C/49°C		74°C/49°C			
Vertical	Horizontal	Rated 80Vac		Measured 120Vac		Rated 135Vac		Rated 80Vac		Measured 120Vac		Rated 135Vac		Table 1	
Angle	Angle	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Minimum	
Up/Down	Left/Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Candela	
27.5U	7.5	15.2	15.5	15.5	15.8	15.7	16.0	13.1	13.4	13.4	13.6	13.5	13.8	3.6	
27.5U	2.5	16.6	16.8	17.0	17.1	17.1	17.3	14.3	14.4	14.6	14.7	14.8	14.9	4.3	
22.5U	17.5	14.4	15.0	14.7	15.3	14.9	15.5	12.4	12.9	12.7	13.2	12.8	13.3	3.8	
22.5U	12.5	18.4	19.1	18.7	19.5	18.9	19.7	15.8	16.5	16.1	16.8	16.3	17.0	6.4	
22.5U	7.5	22.3	23.1	22.7	23.5	23.0	23.8	19.2	19.9	19.6	20.3	19.8	20.5	9.2	
22.5U	2.5	25.1	25.4	25.6	25.9	25.9	26.2	21.6	21.9	22.1	22.3	22.3	22.6	11.1	
17.5U	22.5	14.3	14.8	14.6	15.2	14.7	15.3	12.3	12.8	12.6	13.1	12.7	13.2	3.8	
17.5U	17.5	19.6	20.5	20.0	20.9	20.2	21.1	16.9	17.7	17.2	18.0	17.4	18.2	7.8	
17.5U	12.5	26.3	27.5	26.8	28.1	27.1	28.4	22.7	23.7	23.1	24.2	23.4	24.5	13.6	
17.5U	7.5	33.4	34.6	34.1	35.3	34.5	35.7	28.8	29.9	29.4	30.5	29.7	30.8	19.7	
17.5U	2.5	38.5	39.0	39.3	39.8	39.6	40.2	33.2	33.7	33.8	34.3	34.2	34.7	23.7	
12.5U	22.5	17.9	18.7	18.3	19.1	18.5	19.3	15.4	16.1	15.8	16.5	15.9	16.6	6.4	
12.5U	17.5	26.1	27.5	26.6	28.1	26.9	28.3	22.5	23.7	23.0	24.2	23.2	24.4	13.6	
12.5U	12.5	37.7	39.6	38.5	40.4	38.8	40.8	32.5	34.2	33.2	34.9	33.5	35.2	23.9	
12.5U	7.5	51.1	53.1	52.1	54.2	52.6	54.7	44.0	45.8	44.9	46.7	45.4	47.2	34.7	
12.5U	2.5	61.2	62.1	62.4	63.4	63.0	64.0	52.7	53.5	53.8	54.6	54.3	55.1	41.8	
7.5U	27.5	14.6	15.2	14.9	15.5	15.0	15.7	12.6	13.1	12.8	13.4	13.0	13.5	3.6	
7.5U	22.5	21.7	22.8	22.2	23.3	22.4	23.5	18.7	19.7	19.1	20.1	19.3	20.3	9.2	
7.5U	17.5	33.5	35.5	34.2	36.2	34.5	36.6	28.9	30.6	29.5	31.2	29.7	31.5	19.7	
7.5U	12.5	52.3	55.6	53.4	56.7	53.9	57.2	45.1	47.9	46.0	48.9	46.5	49.3	34.7	
7.5U	7.5	77.9	81.7	79.5	83.4	80.3	84.2	67.1	70.4	68.5	71.9	69.2	72.6	50.6	
7.5U	2.5	98.6	100.2	100.6	102.2	101.6	103.2	85.0	86.3	86.7	88.1	87.6	89.0	61.1	
2.5U	27.5	15.8	16.4	16.2	16.7	16.3	16.9	13.6	14.1	13.9	14.4	14.1	14.5	4.3	
2.5U	22.5	24.1	25.4	24.6	25.9	24.8	26.2	20.8	21.9	21.2	22.4	21.4	22.6	11.1	
2.5U	17.5	38.7	41.1	39.5	41.9	39.9	42.3	33.4	35.4	34.0	36.1	34.4	36.5	23.7	
2.5U	12.5	64.9	69.4	66.2	70.9	66.8	71.6	55.9	59.9	57.0	61.1	57.6	61.7	41.8	
2.5U	7.5	108.9	116.5	111.1	118.9	112.2	120.1	93.8	100.4	95.8	102.5	96.7	103.5	61.1	
2.5U	2.5	146.8	150.4	149.8	153.5	151.3	155.0	126.5	129.7	129.1	132.3	130.4	133.6	73.9	
2.5D	2.5	164.4	162.8	167.8	166.1	169.4	167.7	141.7	140.3	144.6	143.2	146.1	144.6	73.9	
2.5D	7.5	108.6	114.9	110.8	117.3	111.9	118.4	93.6	99.1	95.5	101.1	96.4	102.1	61.1	
2.5D	12.5	63.7	67.8	65.0	69.2	65.7	69.9	54.9	58.5	56.1	59.7	56.6	60.2	41.8	
2.5D	17.5	37.8	40.0	38.6	40.8	38.9	41.2	32.6	34.5	33.2	35.2	33.6	35.5	23.7	
2.5D	22.5	23.6	24.7	24.1	25.2	24.3	25.4	20.3	21.3	20.8	21.7	21.0	21.9	11.1	
2.5D	27.5	15.6	16.2	15.9	16.6	16.0	16.7	13.4	14.0	13.7	14.3	13.8	14.4	4.3	
7.5D	2.5	106.4	108.2	108.6	110.4	109.7	111.5	91.7	93.3	93.6	95.2	94.5	96.1	61.1	
7.5D	7.5	78.7	82.4	80.3	84.1	81.1	84.9	67.8	71.0	69.2	72.5	69.9	73.2	50.6	
7.5D	12.5	50.6	53.3	51.7	54.4	52.2	54.9	43.6	45.9	44.5	46.8	45.0	47.3	34.7	
7.5D	17.5	31.7	33.4	32.3	34.1	32.6	34.4	27.3	28.8	27.9	29.4	28.1	29.6	19.7	
7.5D	22.5	20.3	21.3	20.7	21.7	20.9	21.9	17.5	18.3	17.9	18.7	18.0	18.9	9.2	
7.5D	27.5	13.7	14.3	13.9	14.6	14.1	14.7	11.8	12.3	12.0	12.6	12.1	12.7	3.6	
12.5D	2.5	65.1	66.0	66.5	67.3	67.1	68.0	56.1	56.9	57.3	58.0	57.8	58.6	41.8	
12.5D	7.5	52.1	53.8	53.2	54.9	53.7	55.5	44.9	46.4	45.8	47.4	46.3	47.8	34.7	
12.5D	12.5	36.6	38.2	37.3	39.0	37.7	39.3	31.5	32.9	32.2	33.6	32.5	33.9	23.9	
12.5D	17.5	24.5	25.7	25.0	26.2	25.3	26.5	21.1	22.1	21.6	22.6	21.8	22.8	13.6	
12.5D	22.5	16.4	17.2	16.8	17.6	16.9	17.8	14.2	14.9	14.5	15.2	14.6	15.3	6.4	
17.5D	2.5	40.6	41.0	41.5	41.8	41.9	42.2	35.0	35.3	35.8	36.1	36.1	36.4	23.7	
17.5D	7.5	34.0	35.0	34.7	35.7	35.0	36.1	29.3	30.2	29.9	30.8	30.2	31.1	19.7	
17.5D	12.5	25.6	26.5	26.1	27.1	26.4	27.3	22.1	22.9	22.5	23.3	22.8	23.6	13.6	
17.5D	17.5	18.3	19.1	18.7	19.5	18.8	19.7	15.8	16.5	16.1	16.8	16.2	17.0	7.8	
17.5D	22.5	13.1	13.6	13.3	13.9	13.5	14.0	11.3	11.7	11.5	12.0	11.6	12.1	3.8	
22.5D	2.5	26.4	26.7	26.9	27.3	27.2	27.5	22.7	23.0	23.2	23.5	23.4	23.7	11.1	
22.5D	7.5	22.7	23.3	23.1	23.8	23.4	24.0	19.5	20.1	19.9	20.5	20.1	20.7	9.2	
22.5D	12.5	17.9	18.6	18.2	19.0	18.4	19.2	15.4	16.0	15.7	16.4	15.9	16.5	6.4	
22.5D	17.5	13.7	14.2	13.9	14.5	14.1	14.6	11.8	12.2	12.0	12.5	12.1	12.6	3.8	
27.5D	2.5	17.9	18.1	18.3	18.5	18.5	18.7	15.5	15.6	15.8	15.9	15.9	16.1	4.3	
27.5D	7.5	15.7	16.2	16.1	16.5	16.2	16.7	13.6	14.0	13.9	14.2	14.0	14.4	3.6	

Luminous Intensity 6.4.4.1 through 6.4.4.4

Sample	CRT2504221030-001-3	Target Input voltage	Measured Input Voltage	0, 0 Lum. Intensity	Vac Variation Factor	MMLI Factor
Module	12" Omni Arrow	80Vac	80.0 Vac	186.9 Candela	0.987	0.895
Color:	Green	120Vac	120.1 Vac	189.3 Candela	1.000	
Lens	Clear	135Vac	135.1 Vac	192.2 Candela	1.015	

Photometric Test Distance: 25 Meter

Max. cd	228	25°C		25°C		25°C		74°C/49°C		74°C/49°C		74°C/49°C		
Vertical	Horizontal	Rated 80Vac		Measured 120Vac		Rated 135Vac		Rated 80Vac		Measured 120Vac		Rated 135Vac		Table 1
Angle	Angle	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Candela	Minimum
Up/Down	Left/Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Candela
27.5U	7.5	16.0	16.5	16.2	16.7	16.5	17.0	14.3	14.8	14.5	15.0	14.7	15.2	3.6
27.5U	2.5	17.6	17.7	17.8	17.9	18.1	18.2	15.8	15.8	16.0	16.1	16.2	16.3	4.3
22.5U	17.5	15.0	15.9	15.2	16.1	15.4	16.3	13.4	14.2	13.6	14.4	13.8	14.6	3.8
22.5U	12.5	19.1	20.3	19.4	20.5	19.7	20.8	17.1	18.1	17.4	18.4	17.6	18.7	6.4
22.5U	7.5	23.4	24.4	23.7	24.7	24.0	25.1	20.9	21.8	21.2	22.1	21.5	22.4	9.2
22.5U	2.5	26.4	26.8	26.7	27.2	27.1	27.6	23.6	24.0	23.9	24.3	24.3	24.7	11.1
17.5U	22.5	14.6	15.7	14.8	15.9	15.0	16.1	13.1	14.0	13.2	14.2	13.5	14.4	3.8
17.5U	17.5	20.2	21.7	20.4	22.0	20.7	22.3	18.0	19.4	18.3	19.7	18.6	20.0	7.8
17.5U	12.5	27.3	29.5	27.7	29.8	28.1	30.3	24.4	26.4	24.8	26.7	25.1	27.1	13.6
17.5U	7.5	35.0	37.0	35.4	37.5	35.9	38.1	31.3	33.1	31.7	33.6	32.2	34.1	19.7
17.5U	2.5	40.6	41.2	41.1	41.8	41.7	42.4	36.3	36.9	36.8	37.4	37.4	38.0	23.7
12.5U	22.5	18.1	19.9	18.4	20.2	18.6	20.5	16.2	17.8	16.4	18.0	16.7	18.3	6.4
12.5U	17.5	26.7	29.4	27.1	29.8	27.5	30.2	23.9	26.3	24.3	26.6	24.6	27.0	13.6
12.5U	12.5	39.0	42.5	39.5	43.0	40.1	43.7	34.9	38.0	35.3	38.5	35.9	39.1	23.9
12.5U	7.5	53.4	57.1	54.0	57.9	54.9	58.7	47.8	51.1	48.4	51.8	49.1	52.6	34.7
12.5U	2.5	64.7	66.1	65.5	67.0	66.5	68.0	57.9	59.2	58.6	59.9	59.5	60.9	41.8
7.5U	27.5	14.6	15.9	14.8	16.1	15.0	16.3	13.1	14.2	13.2	14.4	13.4	14.6	3.6
7.5U	22.5	21.9	24.3	22.2	24.6	22.5	25.0	19.6	21.7	19.9	22.0	20.2	22.3	9.2
7.5U	17.5	34.2	38.0	34.6	38.5	35.1	39.1	30.6	34.0	31.0	34.4	31.5	35.0	19.7
7.5U	12.5	54.0	60.1	54.7	60.9	55.5	61.8	48.3	53.8	48.9	54.5	49.7	55.3	34.7
7.5U	7.5	81.3	87.9	82.4	89.1	83.6	90.4	72.8	78.7	73.7	79.7	74.9	80.9	50.6
7.5U	2.5	104.4	106.9	105.7	108.3	107.3	110.0	93.4	95.7	94.6	97.0	96.1	98.4	61.1
2.5U	27.5	15.7	17.2	15.9	17.4	16.2	17.7	14.1	15.4	14.2	15.6	14.5	15.9	4.3
2.5U	22.5	24.3	26.9	24.6	27.2	24.9	27.6	21.7	24.1	22.0	24.4	22.3	24.7	11.1
2.5U	17.5	39.4	44.2	39.9	44.8	40.5	45.5	35.2	39.6	35.7	40.1	36.2	40.7	23.7
2.5U	12.5	66.6	75.2	67.5	76.2	68.5	77.3	59.7	67.3	60.4	68.2	61.3	69.2	41.8
2.5U	7.5	113.5	129.5	115.0	131.2	116.8	133.2	101.6	116.0	103.0	117.5	104.5	119.3	61.1
2.5U	2.5	156.2	163.7	158.2	165.8	160.6	168.3	139.8	146.5	141.6	148.4	143.8	150.7	73.9
2.5D	2.5	172.2	170.4	174.4	172.6	177.1	175.2	154.1	152.6	156.1	154.5	158.5	156.9	73.9
2.5D	7.5	111.6	123.3	113.0	124.9	114.7	126.8	99.9	110.4	101.2	111.8	102.7	113.5	61.1
2.5D	12.5	65.0	73.2	65.8	74.2	66.8	75.3	58.2	65.6	58.9	66.4	59.8	67.4	41.8
2.5D	17.5	38.3	42.9	38.8	43.4	39.4	44.1	34.3	38.4	34.8	38.9	35.3	39.5	23.7
2.5D	22.5	23.6	26.0	23.9	26.4	24.3	26.8	21.1	23.3	21.4	23.6	21.7	24.0	11.1
2.5D	27.5	15.4	16.9	15.6	17.1	15.8	17.3	13.8	15.1	14.0	15.3	14.2	15.5	4.3
7.5D	2.5	110.3	113.2	111.7	114.7	113.4	116.5	98.7	101.4	100.0	102.7	101.5	104.3	61.1
7.5D	7.5	80.2	87.2	81.3	88.3	82.5	89.7	71.8	78.1	72.7	79.1	73.9	80.3	50.6
7.5D	12.5	51.4	56.3	52.1	57.0	52.8	57.9	46.0	50.4	46.6	51.1	47.3	51.8	34.7
7.5D	17.5	32.0	35.4	32.4	35.9	32.9	36.4	28.7	31.7	29.0	32.1	29.5	32.6	19.7
7.5D	22.5	20.4	22.4	20.6	22.7	21.0	23.0	18.2	20.1	18.5	20.3	18.8	20.6	9.2
7.5D	27.5	13.6	14.9	13.8	15.1	14.0	15.3	12.2	13.3	12.3	13.5	12.5	13.7	3.6
12.5D	2.5	67.2	69.1	68.1	70.0	69.1	71.1	60.1	61.9	60.9	62.7	61.9	63.6	41.8
12.5D	7.5	53.1	56.4	53.8	57.1	54.6	58.0	47.5	50.5	48.1	51.1	48.9	51.9	34.7
12.5D	12.5	36.9	40.3	37.4	40.8	38.0	41.5	33.1	36.1	33.5	36.6	34.0	37.1	23.9
12.5D	17.5	24.7	27.0	25.0	27.3	25.4	27.7	22.1	24.1	22.4	24.4	22.7	24.8	13.6
12.5D	22.5	16.6	18.0	16.9	18.3	17.1	18.5	14.9	16.1	15.1	16.3	15.3	16.6	6.4
17.5D	2.5	41.7	42.6	42.3	43.2	42.9	43.9	37.4	38.2	37.8	38.7	38.4	39.3	23.7
17.5D	7.5	34.6	36.4	35.0	36.8	35.6	37.4	31.0	32.5	31.4	33.0	31.8	33.5	19.7
17.5D	12.5	25.8	27.8	26.2	28.2	26.6	28.6	23.1	24.9	23.4	25.2	23.8	25.6	13.6
17.5D	17.5	18.4	19.8	18.7	20.0	19.0	20.3	16.5	17.7	16.7	17.9	17.0	18.2	7.8
17.5D	22.5	13.1	14.2	13.3	14.4	13.5	14.6	11.7	12.7	11.9	12.9	12.1	13.1	3.8
22.5D	2.5	27.1	27.7	27.4	28.0	27.9	28.4	24.2	24.8	24.6	25.1	24.9	25.5	11.1
22.5D	7.5	23.1	24.3	23.4	24.7	23.7	25.0	20.6	21.8	20.9	22.1	21.2	22.4	9.2
22.5D	12.5	18.1	19.3	18.4	19.6	18.6	19.9	16.2	17.3	16.4	17.5	16.7	17.8	6.4
22.5D	17.5	13.8	14.7	14.0	14.8	14.2	15.1	12.3	13.1	12.5	13.3	12.7	13.5	3.8
27.5D	2.5	18.3	18.7	18.6	18.9	18.9	19.2	16.4	16.7	16.6	16.9	16.9	17.2	4.3
27.5D	7.5	16.0	16.7	16.2	17.0	16.5	17.2	14.3	15.0	14.5	15.2	14.7	15.4	3.6

Complies: ☒ YES ☐ NO

Tested By:	Matthew Benninger	Signature or initials:	
Engineer:	John Robins	Signature or initials:	
Reviewed By:	cwm	Signature or initials:	
Test Equipment Used:	9,10,11,12	Completion Date:	19-May-2025
Amb (°C):	22	RH%:	42

Luminance Uniformity

Luminance measurements were taken at nine locations across the signal face. A spot size of 0.5 inch was used. The luminance meter was translated from side to side and up and down remaining normal to the sample surface. The measurements were used to determine luminance uniformity. The measurements were taken after operating on the same duty cycle used during the photometric test.

Results

The ratio between the maximum and the minimum luminance was less than 10 to 1. Data follows.

12" Green Arrow Tinted			
Sample	CRT2504221030-002-1	CRT2504221030-002-2	CRT2504221030-002-3
Location	Luminance	Luminance	Luminance
1	17637	17222	17739
2	17862	16246	17390
3	13265	13495	13904
4	16921	16498	17231
5	15507	17712	15436
6	21945	21563	22446
7	17599	18085	18430
8	15237	15671	15689
9	12824	12318	12636
Average	16533	16534	16767
Intensity Ratio	1.7	1.8	1.8

12" Green Arrow Clear			
Sample	CRT2504221030-001-1	CRT2504221030-001-2	CRT2504221030-001-3
Location	Luminance	Luminance	Luminance
1	14883	14625	15552
2	15643	14646	15786
3	13180	12880	12655
4	15978	15346	15868
5	13076	12676	13095
6	21737	21076	23369
7	17551	16742	20320
8	15358	15595	16339
9	11893	11938	13188
Average	15478	15058	16241
Intensity Ratio	1.8	1.8	1.8

Luminance measurements are in cd/m2

Same 60 minute warm-up used for luminous intensity

Test distance is 9.5 feet with ¼ degree aperture using the PR 740

Measured Voltage:	120.0 - 120.3	Vac
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Complies: ☒ YES ☐ NO

Tested By:	John Robins	Signature or initials:	<i>JR</i>
Engineer:	John Robins	Signature or initials:	<i>JR</i>
Reviewed By:	cwm	Signature or initials:	<i>cwm</i>
Test Equipment Used:	12,13,14,15	Completion Date:	29-May-2025
Amb (°C):	22.9	RH%	52.5

Chromaticity 6.4.4.6

The chromaticity measurements were performed on the submitted LED Traffic Signal Modules with the spectroradiometer. The samples were operated at nominal input voltage and ambient temperature during the measurements. The measurements were taken from 380-780nm in 2nm increments.

The chromaticity measurements were taken at nine locations across the signal face. A spot size of one 0.5 inch was used with the samples operating on the same duty cycle used during the photometric test. The spectro-radiometer was translated from side to side and up and down remaining normal to the sample surface. The average of the measurements are recorded.

Results

		Chromaticity Coordinates	
Color	Sample	x	y
Green (Tinted)	CRT2504221030-002-1	0.070	0.560
	CRT2504221030-002-2	0.070	0.563
	CRT2504221030-002-3	0.069	0.560

		Chromaticity Coordinates	
Color	Sample	x	y
Green (Clear)	CRT2504221030-001-1	0.075	0.552
	CRT2504221030-001-2	0.075	0.548
	CRT2504221030-001-3	0.075	0.545

The chromaticity measurements pass the requirements of the referenced specification.

Measured Voltage:	120.0 - 120.3	Vac
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Complies: ☒ YES ☐ NO

Tested By:	John Robins	Signature or initials:	JR
Engineer:	John Robins	Signature or initials:	JR
Reviewed By:	cwm	Signature or initials:	cwm
Test Equipment Used:	12,13,14,15	Completion Date:	29-May-2025
Amb (°C):	22.9	RH%	52.5

Color Uniformity 6.4.4.7

Three samples of each model were tested. Nine color measurements were taken at different locations on the traffic signal face. The measurements were taken after operating on the same duty cycle used during the photometric test. The dominant wave length was found using the measured (x, y) coordinates and table 3.29 of "Color Science" by Wyszecki & Stiles.

Results

12" Green Arrow Tinted									
Sample	CRT2504221030-002-1			CRT2504221030-002-2			CRT2504221030-002-3		
Location	x	y	Dominant	x	y	Dominant	x	y	Dominant
1	0.070	0.561	502	0.070	0.559	502	0.069	0.559	502
2	0.070	0.560	502	0.070	0.563	502	0.069	0.560	502
3	0.070	0.561	502	0.070	0.563	502	0.069	0.557	502
4	0.070	0.560	502	0.070	0.564	502	0.069	0.558	502
5	0.071	0.563	502	0.071	0.566	502	0.071	0.567	502
6	0.071	0.564	502	0.071	0.569	502	0.070	0.564	502
7	0.070	0.562	502	0.070	0.567	502	0.070	0.562	502
8	0.069	0.557	502	0.069	0.561	502	0.069	0.557	502
9	0.069	0.556	502	0.069	0.558	502	0.068	0.554	502
Average	0.070	0.560	502	0.070	0.563	502	0.069	0.560	502

12" Green Arrow Clear									
Sample	CRT2504221030-001-1			CRT2504221030-001-2			CRT2504221030-001-3		
Location	x	y	Dominant	x	y	Dominant	x	y	Dominant
1	0.075	0.553	502	0.075	0.548	501	0.076	0.545	501
2	0.075	0.552	502	0.076	0.549	502	0.076	0.547	501
3	0.075	0.552	502	0.075	0.546	501	0.075	0.544	501
4	0.075	0.549	502	0.075	0.545	501	0.075	0.544	501
5	0.076	0.552	502	0.077	0.551	502	0.075	0.545	501
6	0.076	0.555	502	0.076	0.551	502	0.076	0.548	502
7	0.075	0.553	502	0.076	0.549	502	0.076	0.548	501
8	0.075	0.550	502	0.075	0.546	501	0.075	0.545	501
9	0.074	0.548	501	0.074	0.545	501	0.075	0.543	501
Average	0.075	0.552	502	0.075	0.548	501	0.075	0.545	501

Measured Voltage:	120.0 - 120.3	Vac
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Complies: ☒ YES ☐ NO

Tested By:	John Robins	Signature or initials:	
Engineer:	John Robins	Signature or initials:	
Reviewed By:	cwm	Signature or initials:	
Test Equipment Used:	12,13,14,15	Completion Date:	29-May-2025
Amb (°C):	22.9	RH%	52.5

Lens Abrasion Resistance 6.4.5.2

A lens was mounted in the abrasion test fixture with the lens facing upwards. An abrading pad was cycled back and forth (1 cycle) for twelve cycles at $10\text{cm} \pm 2\text{cm}$ per second over the test surface of the lens. The abrading pad shall not be less than $2.5\text{cm} \pm 0.1\text{cm}$ square, constructed of 0000 steel wool rubber cemented to a rigid base shaped to the contour of the lens. The "grain" of the pad was perpendicular to the direction of motion. The abrading pad support was equal in size to the pad and the center of the support surface was within $\pm 2\text{mm}$ of parallel to the lens surface. The density of the abrading pad was such that when the pad was mounted to its support and is resting unweight on the lens, the base of the pad was no closer than 3.2mm to the lens at its closest point. When mounted on its support and resting on the lens, the abrading pad was weighted such that a pad pressure of $14\text{kPa} \pm 1\text{kPa}$ exists at the center and perpendicular to the face of the lens. A pivot was used to follow the contour of the lens.

Results

A single intensity point was measured before and after the abrasion. In all samples tested the abraded lens intensity measurement was at least 90% of the un-abraded lens intensity measurement.

12" Green Arrow Tinted			
Sample	Pre Abrasion	Post Abrasion	Percentage
CRT2504221030-002-1	214.3	199.9	93.3
CRT2504221030-002-2	221.2	210.8	95.3
CRT2504221030-002-3	216.0	215.5	99.8

measurements in cd

12" Green Arrow Clear			
Sample	Pre Abrasion	Post Abrasion	Percentage
CRT2504221030-001-1	186.4	171.4	92.0
CRT2504221030-001-2	184.6	179.3	97.1
CRT2504221030-001-3	189.3	177.8	93.9

measurements in cd

Measured Voltage:	120.03	Vac		
Measured Weight:	8	lbs		
Abrasion Pad	4	Sq. In		
Pad Pressure	2.1	psi	14.5	Kpa

Complies: ☒ YES ☐ NO

Tested By:	Matthew Benninger	Signature or initials:	<i>MB</i>
Engineer:	John Robins	Signature or initials:	<i>JR</i>
Reviewed By:	cwm	Signature or initials:	<i>cwm</i>
Test Equipment Used:	9,10,11,12,16	Completion Date:	30-May-2025
Amb (°C):	21	RH%	52

Current Consumption 6.4.6.1

Three samples were measured for current flow in amperes. The measured current values are supplied for comparison of Product Quality Assurance current measurements on production modules. Current measurements were taken at start up.

Results

Measurements are in (mA)

12" Green Arrow			
Sample	-40°C	25°C	74°C
CRT2504221030-002-1	63.6	65.1	73.6
CRT2504221030-002-2	62.6	63.6	69.2
CRT2504221030-002-3	63.7	64.2	69.7

Label lists 8.0VA

The current consumption was not in excess of 120% of the design qualification current values for an ambient temperature of 25°C.

Measured Voltage:	120.0 - 120.3	Vac
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Complies: ☒ YES ☐ NO

Tested By:	John Robins	Signature or initials:	
Engineer:	John Robins	Signature or initials:	
Reviewed By:	cwm	Signature or initials:	
Test Equipment Used:	1,3,5	Completion Date:	9-May-2025
Amb (°C):	N/A	RH%	N/A

Power Factor & Total Harmonic Distortion 6.4.6.6 & 6.4.6.7

Three tinted samples of each model were measured for power factor and total harmonic distortion. A commercially available power analyzer was used to perform these measurements.

Results

12" Green Arrow						
Sample	Voltage	Current (mA)	Power (W)	Power Factor	THD V%	THD I%
CRT2504221030-002-1	120.1	68.8	8.1	0.99	1.07	6.2
CRT2504221030-002-2	120.1	66.3	7.8	0.98	1.08	6.3
CRT2504221030-002-3	120.0	66.7	7.9	0.99	1.06	6.1
Requirement	NA	NA	NA	≥ 0.90	≤ 20%	≤ 20%

Measurements taken after a minimum 60 minute warmup.

Complies: ☒ YES ☐ NO

Tested By:	John Robins	Signature or initials:	<i>JR</i>
Engineer:	John Robins	Signature or initials:	<i>JR</i>
Reviewed By:	cwm	Signature or initials:	<i>cwm</i>
Test Equipment Used:	3,4,5	Completion Date:	5-May-2025
Amb (°C):	27.9	RH%	46

Equipment list				
#	Intertek ID No.	Description	Manufacturer	Calibration Due
1	H204	Thermal Chamber	Thermotron	12-Jun-2025
2	M207	Multimeter	Fluke	14-Oct-2025
3	A206	Current Transformer	Pearson	1-Jun-2025
4	L176	Thermometer	Testo	19-Jul-2025
5	M297	Power Analyzer	Yokogawa	29-May-2025
6	O045	Optometer	UDT	11-Apr-2026
7	H138	Thermal Chamber	Despatch	Used with cal'd Equip.
8	T1546	Digital Thermometer	Dickson	9-May-2025
9	O109	Goniometer	Optroniks	4-Mar-2026
10	L235	25M Detector	Gooch and Housego	19-Apr-2026
11	O091	Power Analyzer	Yokogawa	11-Jun-2025
12	L252	Hygrometer	Testo	3-Jun-2025
13	M226	Multimeter	Fluke	7-Oct-2025
14	O757	Spectra Scan PR740	Photo Research	28-Jun-2025
15	L188	Distance Meter	Fluke	6-Dec-2025
16	F545	Scale	Amatek	15-Oct-2025

Note: For measurement uncertainty, refer to the calibration certificates for all the test equipment located in the equipment files