ECE TYPE-APPROVAL CERTIFICATE

Communication concerning approval granted of a type of special warning lamp for motor vehicles, pursuant to Regulation No. 65

E5 Approval No: E5*65R00/12*0114*00

1.	Special warning lamp	:	complete bar red
2.	Special warning lamp has	:	two levels of intensity
	Special warning lamp consists of	:	Two End Modules.
3.	For special warning lamps having two levels of intensity, indicate the system used to obtain increased intensity at daytime	:	Internal control unit
4.	Used light source	:	LED
	Light source module specific identification code	:	See test report
5.	Rated voltage of special warning lamp	:	+10 – 30 VDC
6.	Trade name or mark	:	W5 Lightbar TR2
7.	Manufacturer's name and address	:	Standby AB Nohabgatan 12C 461 53 TROLLHÄTTAN
8.	If applicable, name and address of manufacturer's representative	:	Not applicable
9.	Submitted for approval on	:	See test report
10.	Technical Service responsible for approval tests	:	RISE Research Institutes of Sweden AB
11.	Date of report issued by that Service	:	18 November 2025
12.	Number of report issued by that Service	:	105105-1324448-1

Swedish Transport Agency
Road and Rail Department
Type Approvals
Box 267, SE-781 23 Borlänge, Sweden

Office address
Jussi Björlings väg 19

transportstyrelsen.se
vag@transportstyrelsen.se

SWEDISH APPROVAL AUTHORITY
TRANSPORT STYRELSEN

13.	Approval	:	granted
14.	Reason(s) of extension (if applicable)	:	Not applicable
15.	Place	:	Göteborg
16.	Date	:	29 December 2025
17.	Signature	:	

Tommie Augustsson
Type Approval Certification Officer

18. The list of documents filed with the administration service which has granted approval and available on request is annexed to this communication:
Information document
Test report

Swedish Transport Agency
Road and Rail Department
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SWEDISH APPROVAL AUTHORITY
TRANSPORT STYRELSEN
SVENSK GODKÄNNANDEMYNDIGHET

0. GENERAL

0.1 **Make:** Standby AB

0.2 **Type**: W5, (roof mounted lightbar). Modular lightbar in lengths from 59 up to 194cm in either single, dual or triple colour variants.

0.3 **Type identification marking:** W5 Lightbar TR2, (can be used in combination whit TA2 or/and TB2)

0.3.1 **Location of marking:** Label on top of Lightbar

0.5 **Manufacturers name and address:**

Standby AB
Nohabgatan 12C
461 53 TROLLHÄTTAN

0.7 **Type and placing of label:** Label on top of Lightbar

0.8 **Address to assembly plant:**

Standby AB
Nohabgatan 12C
461 53 TROLLHÄTTAN

1 **This electric/electronic subunit shall be approved as a component.**
N/A

2 **Any restrictions of use and conditionings of fitting.**
N/A

3 **Electrical system rated voltage** +9-30 VDC, negative ground

Appendix 1

See RISE Report number: *105105-1324448-1 Type testing of special warning lamp W5 End Module according to ECE R65*

Postadress/Postal address
Standby AB
Nohabgatan 12C
SE-461 53 TROLLHÄTTAN

Telefon/Telephone
Nat. 0520-49 44 40
Int. +46 520 49 44 40

e-post/e-mail
Info-se@standbygroup.com

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REPORT

Contact person
Mikael Lindgren
Division Safety and Transport
+46 10 516 57 13
mikael.lindgren@ri.se

Date
2025-11-18

Reference
105105-1324448-1

Standby AB
Nohabgatan 12 C
461 53 TROLLHÄTTAN

Type testing of special warning lamp W5 End Module according to ECE R65

(4 appendices)

Test object

- Special warning lamp W5 End Modules

RISE Research Institutes of Sweden AB is appointed Technical Service by the Swedish Transport Authority, and has in this capacity performed type testing of your Special warning lamp W5 End Modules, in accordance with ECE Regulation No. 65, supplement 12 to the original version of the Regulation (Rev 2, Amend. 5; 22 November 2023).

Summary of results

The tested LED special warning lamp W5 End Modules fulfils the requirements for amber (A), blue (B), and red (R), category T, Class 2, in accordance with ECE R65:2023.

Identification

Your reference: Fredrik Eriksson
Manufacturer: Standby AB

Type: Special warning lamp W5 End Module
Product drawing: W5_ProdStruct_R65_A02.pdf
Component and marking drawing: G89910xxxv100A_W5EM.pdf
Bill of materials: K89910xxxA01_W5EM_R65_2025w26.pdf

See photos in Appendix 4.

Manufacturer specification of the light source

The light source W5 End Module consists of two End Modules. The W5 Light Bar is assembled from left and right end modules and 4 – 20 optional inner LED modules (not included in this test report) with clear lenses. The assembly is category T bar, two End Modules were tested.

Rated voltage: +10 – 30 VDC, nominal test voltage +13.5 V.

Measurement method

The measurement method follows RISE method no. 361. The light source is connected to +13.5 VDC in accordance with the manufacturer directive.

Confidentiality level
C2 - Internal

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Two blinking modes (F2 and F3) according to the manufacturer was used. The light source is available in amber (A), blue (B), or red (R) colour. The light source has two levels of intensity (Class 2), corresponding to Day and Night requirements used in this report. Blue and Red LEDs can be placed in upper, middle or lower positions. Amber LED is placed only in the lower position.

Measurement equipment

Photogoniometer SP 501295
Spectrometer RISE BX70823
Oscilloscope RISE BX82962

Measurement date

June - August, 2025.

Uncertainty of measurement

Luminous intensity: ±5 % of reading
Repetition frequency: ±0.1 Hz
Chromaticity coordinates: ±0.005
Pulse length: ±5 % of reading

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95 %. The standard uncertainty of measurement has been determined in accordance with EAL Publication EA-04/2.

With regards to statements of conformity, a decision rule based on simple acceptance in accordance with JCGM 106:2012 is applied.

Results

Results are presented in paragraphs corresponding to ECE R65.

5 General requirements

5.1 Resistance to vibrations.
Judged to fulfil the requirements.

5.2 Resistance to maladjustment.
Judged to fulfil the requirements.

5.3 Light source fixing.
Judged to fulfil the requirements.

5.4 Light source module design.
Judged to fulfil the requirements.

5.5 Light source power supply.
Judged to fulfil the requirements.

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5.6 Light source frequency of blinking.
The light source frequency of blinking fulfils the requirements, see Table 1 and A5.6 – 7.

Temperature test
The temperature behaviour of the parts was tested and reported in MTkPX13185-2.
Not tested.

Rain test (Annex 4)
The rain test behaviour of the parts was tested and reported in MTkPX13185-2.
Not tested.

Table 1. Flash pattern timing.

W5 End Module	Test conditions	Flash frequency (Hz)	Note
Sample 1 Amber Night F2	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 1 Amber Night F3	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 2 Amber Night F2	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 2 Amber Night F3	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 1 Amber Day F2	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 1 Amber Day F3	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 2 Amber Day F2	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 2 Amber Day F3	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	

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Table 1. Flash pattern timing.

W5 End Module	Test conditions	Flash frequency (Hz)	Note
Sample 1 Blue Night F2	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 1 Blue Night F3	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 2 Blue Night F2	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 2 Blue Night F3	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 1 Blue Day F2	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 1 Blue Day F3	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 2 Blue Day F2	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 2 Blue Day F3	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	

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Table 1. Flash pattern timing.

W5 End Module	Test conditions	Flash frequency (Hz)	Note
Sample 1 Red Night F2	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 1 Red Night F3	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 2 Red Night F2	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 2 Red Night F3	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 1 Red Day F2	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 1 Red Day F3	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 2 Red Day F2	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	
Sample 2 Red Day F3	*V* = +10,8 VDC	2.0	Fulfils ECE R65
	V = +13,5 VDC	2.0	
	V = +28,0 VDC	2.0	

5.7 Agreement between optical systems.
See A5.8.

5.8 Multiple colours.
Not applicable.

5.9 Flash patterns.
Only two programmed flash patterns (F2 and F3) are available.

6 Photometric requirements (Annex 5)

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A5.5 Intensity stability
The effective luminous intensity changed less than 5 cd during 30 minutes of operation. The light source fulfils the requirement.

A5.6 – 7 Pulse width, frequency, and luminous intensity
F2: The pulse train period is 497 ms (f = 2.0 Hz). The train "ON" time is 195 ms in length (< 0.4/f) and consists of one 135-ms pulse, followed by one 40-ms pulse, separated by 20 ms. The "OFF" time is 302 ms (> 0.1 s). The intensity difference between Day and Night is done by pulse-width modulation.

F3: The pulse train period is 497 ms (f = 2.0 Hz). The train "ON" time is 195 ms in length (< 0.4/f) and consists of one 115-ms pulse followed by two 19-ms pulses; the two pulses are separated by 20 ms. The "OFF" time is 302 ms (> 0.1 s).). The intensity difference between Day and Night is done by pulse-width modulation.

The light sources fulfil the category T, class 2 (amber/blue/red) requirements regarding minimum and maximum effective luminous intensities. See also diagrams in Appendix 2 and tables in Appendix 3.

A5.8 Multiple optical systems
The unit contains one optical system, covering the angular range 0° – ±180° (where 0° corresponds to the vehicle direction of travel). The units operate in phase and fulfil the requirements for luminous intensity.

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7. Colour (Annex 3)

W5 End Module	x	y	Note
Sample 1 lower Amber Night F2	0,5746	0,4184	Fulfils ECE R65
Sample 1 lower Amber Night F3	0,5725	0,4173	Fulfils ECE R65
Sample 2 lower Amber Night F2	0,5750	0,4181	Fulfils ECE R65
Sample 2 lower Amber Night F3	0,5761	0,4187	Fulfils ECE R65
Sample 1 lower Amber Day F2	0,5745	0,4186	Fulfils ECE R65
Sample 1 lower Amber Day F3	0,5740	0,4184	Fulfils ECE R65
Sample 2 lower Amber Day F2	0,5743	0,4181	Fulfils ECE R65
Sample 2 lower Amber Day F3	0,5750	0,4187	Fulfils ECE R65
Sample 1 upper Blue Night F2	0,1603	0,1046	Fulfils ECE R65
Sample 1 upper Blue Night F3	0,1593	0,1035	Fulfils ECE R65
Sample 2 upper Blue Night F2	0,1587	0,1066	Fulfils ECE R65
Sample 2 upper Blue Night F3	0,1598	0,1075	Fulfils ECE R65
Sample 1 upper Blue Day F2	0,1596	0,1027	Fulfils ECE R65
Sample 1 upper Blue Day F3	0,1595	0,1026	Fulfils ECE R65
Sample 2 upper Blue Day F2	0,1594	0,1055	Fulfils ECE R65
Sample 2 upper Blue Day F3	0,1598	0,1059	Fulfils ECE R65

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W5 End Module	x	y	Note
Sample 1 middle Blue Night F2	0,1610	0,1052	Fulfils ECE R65
Sample 1 middle Blue Night F3	0,1588	0,1030	Fulfils ECE R65
Sample 2 middle Blue Night F2	0,1599	0,1029	Fulfils ECE R65
Sample 2 middle Blue Night F3	0,1588	0,1022	Fulfils ECE R65
Sample 1 middle Blue Day F2	0,1593	0,1021	Fulfils ECE R65
Sample 1 middle Blue Day F3	0,1592	0,1018	Fulfils ECE R65
Sample 2 middle Blue Day F2	0,1595	0,1016	Fulfils ECE R65
Sample 2 middle Blue Day F3	0,1601	0,1035	Fulfils ECE R65
Sample 1 lower Blue Night F2	0,1584	0,1054	Fulfils ECE R65
Sample 1 lower Blue Night F3	0,1585	0,1057	Fulfils ECE R65
Sample 2 lower Blue Night F2	0,1588	0,1039	Fulfils ECE R65
Sample 2 lower Blue Night F3	0,1591	0,1042	Fulfils ECE R65
Sample 1 lower Blue Day F2	0,1586	0,1039	Fulfils ECE R65
Sample 1 lower Blue Day F3	0,1588	0,1044	Fulfils ECE R65
Sample 2 lower Blue Day F2	0,1591	0,1023	Fulfils ECE R65
Sample 2 lower Blue Day F3	0,1597	0,1035	Fulfils ECE R65

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W5 End Module	x	y	Note
Sample 1 upper Red Night F2	0,6905	0,3038	Fulfils ECE R65
Sample 1 upper Red Night F3	0,6947	0,3049	Fulfils ECE R65
Sample 2 upper Red Night F2	0,6909	0,3044	Fulfils ECE R65
Sample 2 upper Red Night F3	0,6886	0,3044	Fulfils ECE R65
Sample 1 upper Red Day F2	0,6965	0,3038	Fulfils ECE R65
Sample 1 upper Red Day F3	0,6956	0,3036	Fulfils ECE R65
Sample 2 upper Red Day F2	0,6959	0,3047	Fulfils ECE R65
Sample 2 upper Red Day F3	0,6925	0,3039	Fulfils ECE R65
Sample 1 middle Red Night F2	0,6909	0,3064	Fulfils ECE R65
Sample 1 middle Red Night F3	0,6965	0,3027	Fulfils ECE R65
Sample 2 middle Red Night F2	0,6871	0,3039	Fulfils ECE R65
Sample 2 middle Red Night F3	0,6878	0,3036	Fulfils ECE R65
Sample 1 middle Red Day F2	0,6955	0,3045	Fulfils ECE R65
Sample 1 middle Red Day F3	0,6963	0,3027	Fulfils ECE R65
Sample 2 middle Red Day F2	0,6942	0,3048	Fulfils ECE R65
Sample 2 middle Red Day F3	0,6927	0,3044	Fulfils ECE R65

W5 End Module	x	y	Note
Sample 1 lower Red Night F2	0,6871	0,3040	Fulfils ECE R65
Sample 1 lower Red Night F3	0,6908	0,3043	Fulfils ECE R65
Sample 2 lower Red Night F2	0,6919	0,3047	Fulfils ECE R65
Sample 2 lower Red Night F3	0,6934	0,3055	Fulfils ECE R65
Sample 1 lower Red Day F2	0,6945	0,3043	Fulfils ECE R65
Sample 1 lower Red Day F3	0,6956	0,3041	Fulfils ECE R65
Sample 2 lower Red Day F2	0,6941	0,3041	Fulfils ECE R65
Sample 2 lower Red Day F3	0,6932	0,3038	Fulfils ECE R65

The colour of the light sources fulfil the requirements of ECE R65, see plots in Appendix 1.

Remark

The measured values reported are valid only for the units under test.

RISE Research Institutes of Sweden AB
Measurement Science and Technology - Time and Optics

Performed and reviewed by

Mikael Lindgren

Appendices

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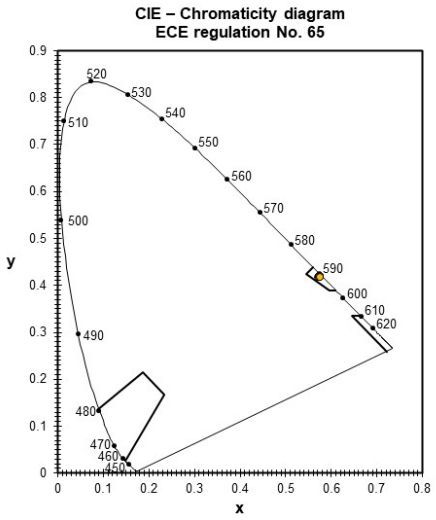
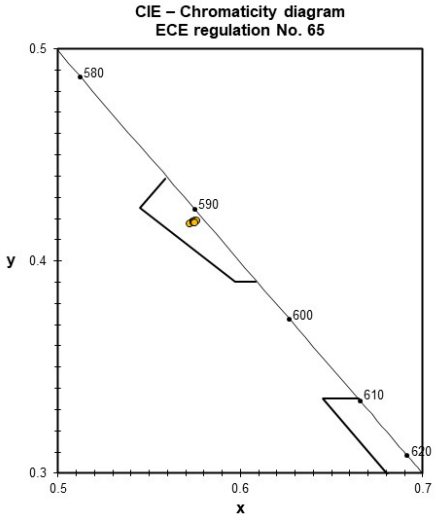
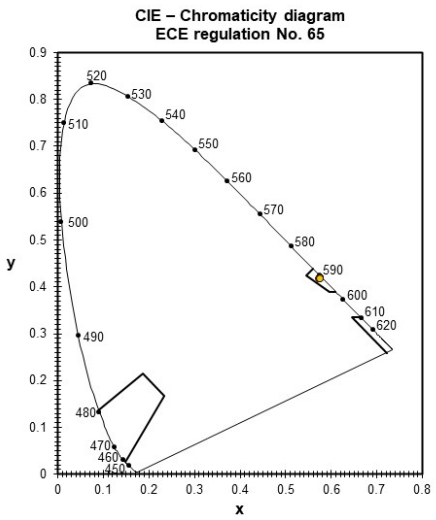
Appendix 1: Colour plots

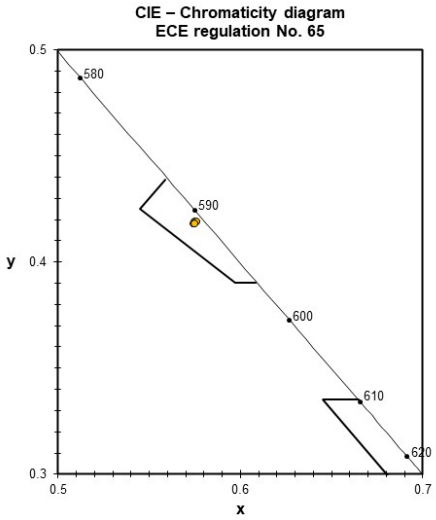
Amber Sample 1





Amber Sample 2





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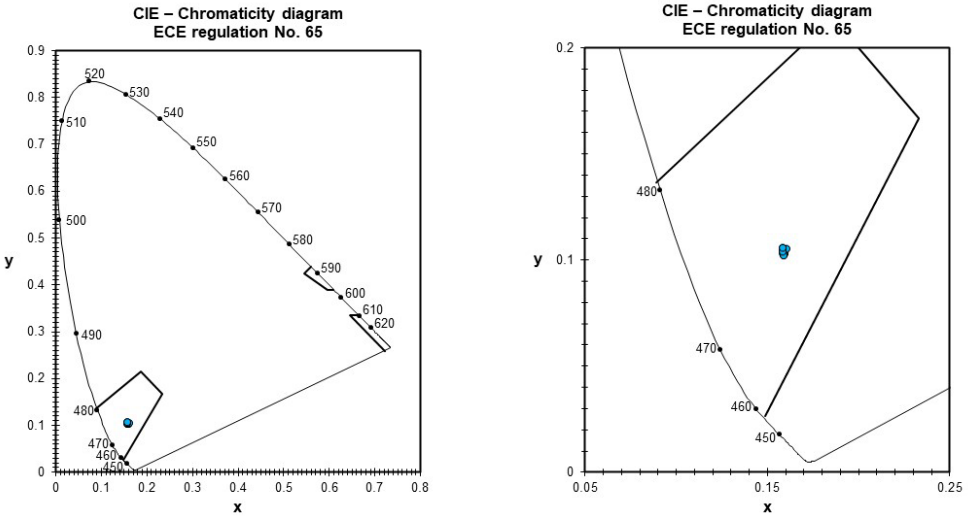
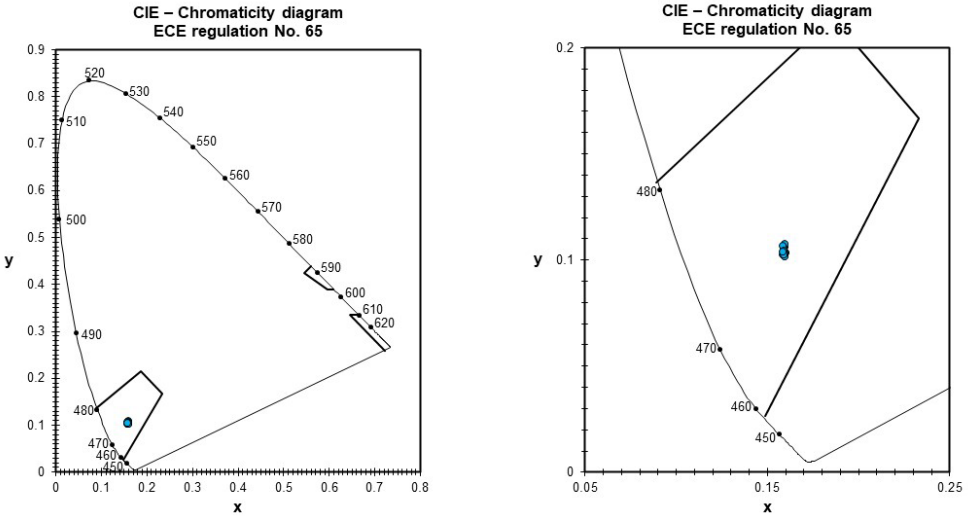
Appendix 1

Blue Sample 1

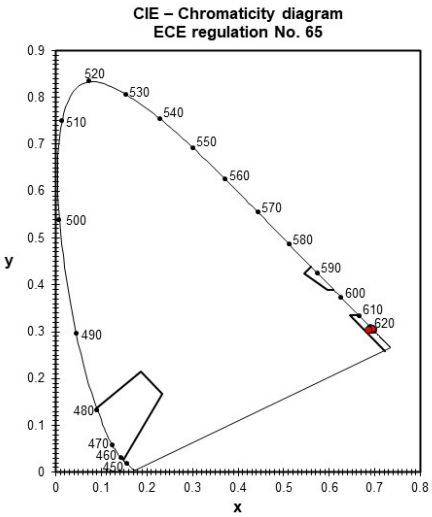


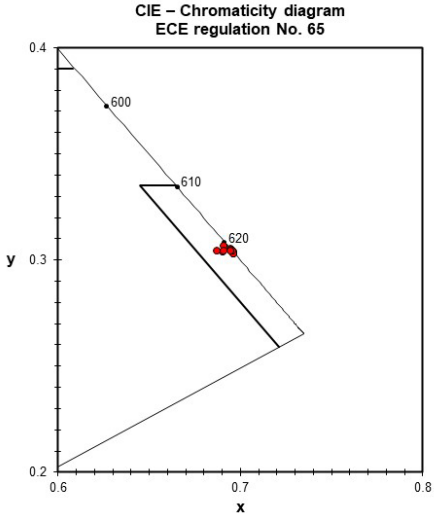
Blue Sample 2



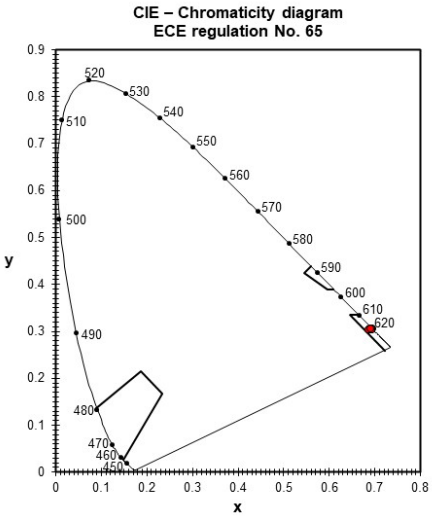
Appendix 1

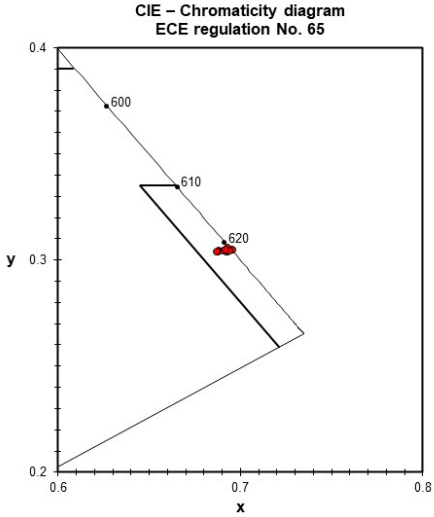
Red Sample 1





Red Sample 2





Appendix 2

Appendix 2: Pulse diagrams

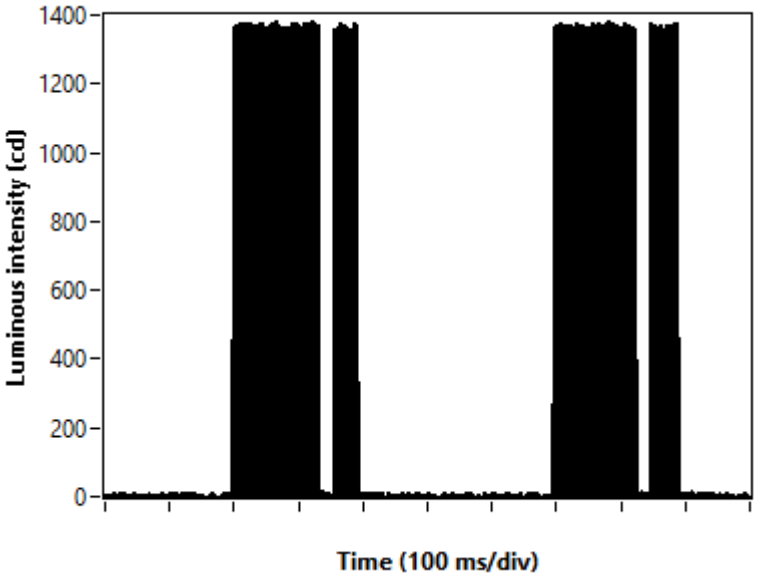


Figure A2.1. Pulse diagram for Night F2.

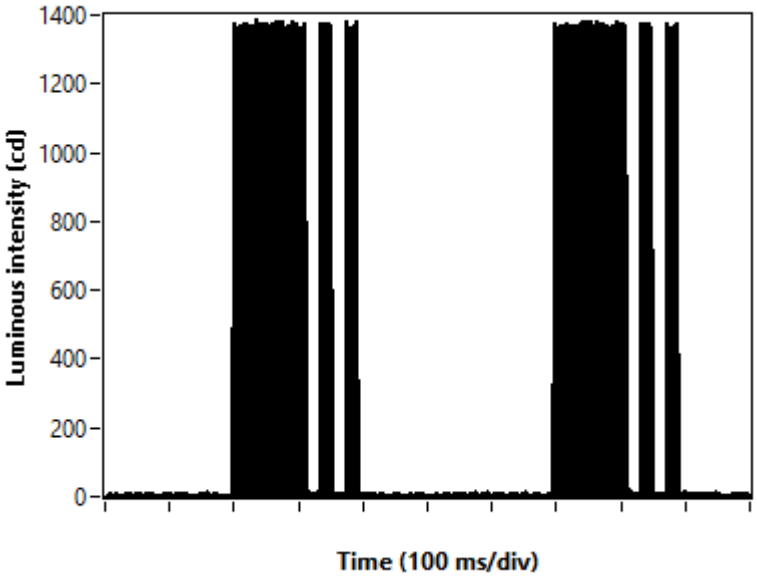


Figure A2.2. Pulse diagram for Night F3.

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Appendix 2

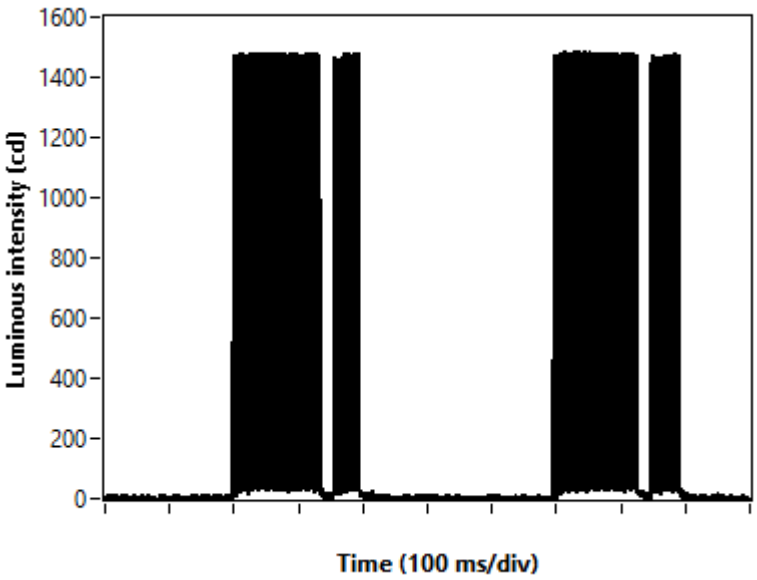

Figure A2.3. Pulse diagram for Day F2.

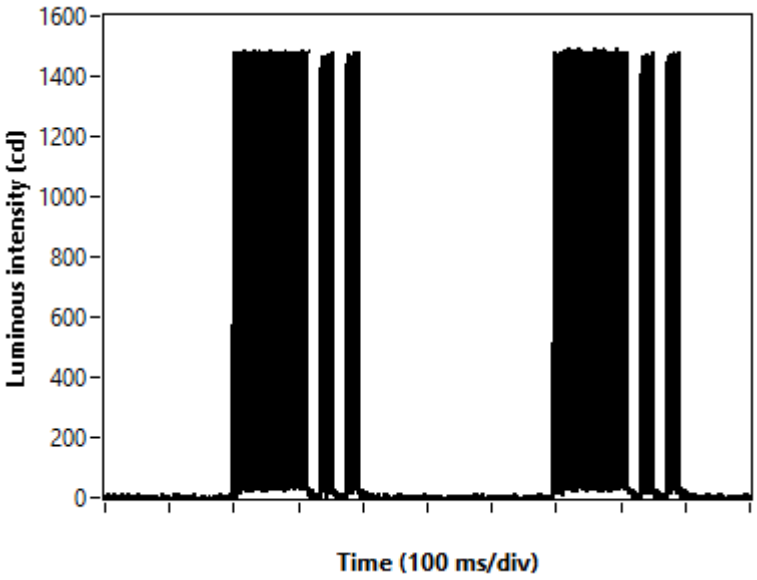

Figure A2.4. Pulse diagram for Day F3.

Appendix 3: Measurement results effective luminous intensity

1324448 EU-A TA2-1 F2 N

Vertical angle (deg) \ Horizontal angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	111	154	170	173	172	202	202	222	208	220	218	196	144
-4	190	244	286	328	330	358	374	374	369	367	352	300	232
-2	236	290	342	389	406	423	432	425	422	406	386	322	255
+0	267	315	367	414	439	441	444	428	425	400	382	322	248
+2	258	306	359	398	408	419	408	390	385	364	345	292	216
+4	227	279	317	353	344	361	339	333	316	309	292	256	176
+8	151	202	217	245	202	229	209	215	190	193	176	172	108

Table A3-1. Effective luminous intensity for W5 End Module Amber, Sample 1, Night F2.

1324448 EU-A TA2-2 F2 N

Vertical angle (deg) \ Horizontal angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	111	173	210	227	210	208	171	182	161	184	188	165	110
-4	197	281	352	401	390	359	322	330	307	346	330	278	201
-2	233	320	397	450	443	413	385	384	376	404	379	323	249
+0	240	328	403	448	451	423	409	402	407	431	397	343	270
+2	217	303	371	414	418	395	385	378	386	415	384	332	255
+4	181	267	317	355	342	341	324	333	338	361	340	301	220
+8	110	192	199	219	216	213	192	219	197	234	225	219	143

Table A3-2. Effective luminous intensity for W5 End Module Amber, Sample 2, Night F2.

1324448 EU-A TA2-1 F3 N

Vertical angle (deg) \ Horizontal angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	100	139	154	156	156	184	183	201	188	200	196	176	130
-4	171	220	260	298	299	323	339	339	334	334	318	270	209
-2	213	262	311	354	367	382	391	384	380	370	349	292	230
+0	241	283	331	375	395	399	401	386	383	362	346	289	224
+2	234	276	324	359	368	379	368	354	348	329	311	265	196
+4	204	250	285	319	309	325	305	302	285	280	264	231	159
+8	136	182	195	221	183	206	189	194	171	174	159	155	98

Table A3-3. Effective luminous intensity for W5 End Module Amber, Sample 1, Night F3.

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1324448 EU-A TA2-2 F3 N

Vertical angle (deg) \ Horizontal angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	100	156	190	204	190	188	154	165	145	166	170	148	99
-4	179	254	317	364	350	325	292	298	277	312	298	250	180
-2	211	289	361	410	401	372	349	347	341	365	343	292	225
+0	216	297	365	405	409	383	373	364	368	389	361	309	243
+2	196	274	336	374	375	355	348	341	349	374	345	300	231
+4	165	242	285	322	310	308	293	300	303	326	307	275	199
+8	100	172	180	199	196	192	173	198	177	210	203	197	127

Table A3-4. Effective luminous intensity for W5 End Module Amber, Sample 2, Night F3.

1324448 EU-A TA2-1 F2 D

Vertical angle (deg) \ Horizontal angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	221	301	334	338	338	397	394	432	408	428	424	381	283
-4	370	475	552	633	640	693	722	718	712	710	678	579	453
-2	462	561	661	752	785	816	833	819	814	785	747	623	495
+0	514	605	710	799	842	853	856	822	820	774	738	616	479
+2	502	591	693	768	788	809	786	756	744	705	667	566	421
+4	443	537	615	683	664	697	654	646	610	599	561	495	344
+8	297	393	422	471	395	447	457	418	372	376	343	336	214

Table A3-5. Effective luminous intensity for W5 End Module Amber, Sample 1, Day F2.

1324448 EU-A TA2-2 F2 D

Vertical angle (deg) \ Horizontal angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	220	337	409	443	408	405	333	356	314	358	366	322	218
-4	384	544	680	774	748	692	622	636	592	669	637	537	391
-2	456	616	767	868	854	798	747	742	727	779	731	623	483
+0	467	633	778	863	870	816	790	775	785	830	771	662	521
+2	422	587	716	799	805	758	744	729	745	800	739	643	495
+4	353	516	612	686	662	657	626	638	649	699	657	583	429
+8	219	372	388	428	423	414	373	426	383	456	441	423	279

Table A3-6. Effective luminous intensity for W5 End Module Amber, Sample 2, Day F2.

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1324448 EU-A TA2-1 F3 D

Vertical angle (deg) \ Horizontal angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	205	279	307	313	313	365	364	399	375	396	392	352	260
-4	343	439	512	586	595	640	668	665	659	656	626	535	419
-2	429	519	613	701	728	755	776	763	754	726	691	577	457
+0	477	560	658	746	779	788	797	766	760	720	686	571	442
+2	465	548	641	711	730	749	729	700	689	652	620	526	389
+4	410	496	570	631	614	644	606	598	564	555	519	457	317
+8	274	364	391	437	365	415	376	389	344	348	319	310	198

Table A3-7. Effective luminous intensity for W5 End Module Amber, Sample 1, Day F3.

1324448 EU-A TA2-2 F3 D

Vertical angle (deg) \ Horizontal angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	203	311	378	412	376	374	308	329	290	331	338	298	201
-4	355	503	629	716	692	640	575	591	547	616	590	497	362
-2	422	572	713	802	791	737	688	686	673	721	677	579	447
+0	432	586	721	799	806	760	736	717	727	768	711	614	483
+2	391	543	662	743	742	700	689	679	689	744	686	595	458
+4	327	478	565	636	612	609	579	596	600	646	612	543	398
+8	203	344	359	396	389	383	345	395	355	425	407	391	258

Table A3-8. Effective luminous intensity for W5 End Module Amber, Sample 2, Day F3.

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1324448 EU-T TB2-1 F2 N

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	63	96	115	125	123	132	115	127	119	119	112	98	67
-4	150	203	234	257	272	284	292	299	302	290	251	223	166
-2	204	277	291	349	359	380	390	393	398	378	325	289	217
+0	225	298	319	375	398	390	414	401	413	383	339	294	224
+2	200	259	284	326	363	332	368	340	362	317	294	243	191
+4	154	188	219	235	281	240	282	238	264	229	232	186	149
+8	75	99	118	119	113	119	112	116	115	118	110	100	67

Table A3-9. Effective luminous intensity for W5 End Module Blue upper, Sample 1, Night F2.

1324448 EU-T TB2-2 F2 N

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	56	78	94	98	100	109	98	108	105	111	91	76	52
-4	136	209	236	254	250	255	249	262	280	279	238	197	140
-2	186	294	322	353	333	339	340	370	388	383	320	270	198
+0	208	305	350	373	363	345	371	397	426	404	345	293	220
+2	189	263	316	323	314	292	331	353	391	354	308	255	197
+4	150	197	247	244	261	226	270	256	292	254	239	187	152
+8	71	104	130	134	135	128	125	128	117	122	123	109	76

Table A3-10. Effective luminous intensity for W5 End Module Blue upper, Sample 2, Night F2.

1324448 EU-T TB2-1 F3 N

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	55	86	102	111	110	119	103	114	107	107	102	88	61
-4	133	182	210	232	245	255	262	270	272	264	228	202	150
-2	184	249	263	313	324	343	351	356	357	342	295	262	196
+0	202	267	287	335	358	353	439	361	373	345	305	265	203
+2	179	234	255	295	326	299	333	306	326	286	268	220	173
+4	138	170	197	211	253	216	254	216	239	207	210	168	135
+8	67	88	106	106	101	107	102	105	104	106	100	91	61

Table A3-11. Effective luminous intensity for W5 End Module Blue upper, Sample 1, Night F3.

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1324448 EU-T TB2-2 F3 N

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	50	71	84	88	90	98	89	97	95	100	81	67	47
-4	122	188	215	228	227	233	223	237	254	253	215	178	126
-2	169	266	291	317	301	306	310	335	354	347	290	244	178
+0	187	278	315	337	327	312	395	359	385	369	311	267	199
+2	170	238	286	292	283	264	300	319	354	320	278	231	177
+4	135	177	225	220	235	204	244	232	263	231	216	168	137
+8	63	94	118	121	122	115	113	116	105	109	111	99	68

Table A3-12. Effective luminous intensity for W5 End Module Blue upper, Sample 2, Night F3.

1324448 EU-T TB2-1 F2 D

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	163	250	294	319	311	335	290	321	301	302	285	248	171
-4	385	521	602	651	691	721	734	753	761	732	636	565	422
-2	526	709	745	885	917	962	984	994	1000	959	822	730	549
+0	579	760	813	947	1013	988	1047	1007	1046	965	852	739	567
+2	516	664	726	829	923	841	933	856	913	798	743	616	486
+4	396	483	561	599	708	613	710	607	670	580	593	470	378
+8	195	253	301	303	288	303	286	297	294	300	282	256	171

Table A3-13. Effective luminous intensity for W5 End Module Blue upper, Sample 1, Day F2.

1324448 EU-T TB2-2 F2 D

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	142	204	242	252	258	280	254	278	271	287	235	199	135
-4	348	530	602	641	634	647	626	662	707	706	609	504	364
-2	478	747	817	889	847	857	859	934	981	967	814	686	509
+0	533	773	884	943	917	871	937	1005	1077	1020	871	746	562
+2	485	663	802	816	797	739	839	889	989	891	780	647	505
+4	387	502	629	616	664	577	688	650	739	644	615	478	393
+8	189	274	338	346	350	331	324	331	302	315	318	286	203

Table A3-14. Effective luminous intensity for W5 End Module Blue upper, Sample 2, Day F2.

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1324448 EU-T TB2-1 F3 D

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	152	232	276	298	292	314	273	301	283	283	268	233	160
-4	360	488	565	611	649	674	691	710	716	687	598	534	396
-2	491	662	698	832	857	902	925	935	940	898	772	689	516
+0	542	715	763	889	949	928	989	946	983	907	802	695	533
+2	484	620	679	777	867	788	876	807	862	750	698	580	456
+4	373	452	526	563	669	576	667	572	630	545	557	442	354
+8	183	238	283	284	272	284	269	280	277	281	265	240	160

Table A3-15. Effective luminous intensity for W5 End Module Blue upper, Sample 1, Day F3.

1324448 EU-T TB2-2 F3 D

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	133	192	229	237	243	263	241	262	255	270	221	187	128
-4	327	498	566	604	595	608	588	623	665	664	572	474	341
-2	449	698	767	837	793	804	808	881	923	908	765	643	478
+0	502	727	832	891	860	820	885	943	1012	961	817	701	528
+2	457	624	753	767	747	693	789	836	931	838	734	607	474
+4	363	472	592	580	624	541	649	612	693	606	577	449	369
+8	177	257	317	325	330	310	305	311	284	297	300	268	189

Table A3-16. Effective luminous intensity for W5 End Module Blue upper, Sample 2, Day F3.

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1324448 EU-M TB2-1 F2 N

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	32	48	55	58	66	49	60	52	54	53	60	47	35
-4	85	109	127	137	145	131	153	155	149	151	144	113	87
-2	127	168	179	208	199	191	211	230	208	220	199	166	127
+0	144	187	203	229	219	211	224	244	222	236	211	183	137
+2	125	161	174	203	192	191	194	210	192	192	177	146	110
+4	86	106	124	129	139	123	140	133	138	123	129	94	74
+8	39	53	59	56	58	51	59	58	61	56	56	47	32

Table A3-17. Effective luminous intensity for W5 End Module Blue middle, Sample 1, Night F2.

1324448 EU-M TB2-2 F2 N

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	31	40	50	43	47	52	57	39	54	49	53	40	26
-4	78	111	128	134	122	137	129	117	149	148	139	104	74
-2	121	181	195	210	182	203	183	179	211	222	192	162	119
+0	143	201	220	233	204	222	201	205	236	239	208	184	133
+2	125	177	196	206	177	192	172	191	216	211	178	156	115
+4	86	114	142	137	130	122	125	133	159	132	130	99	79
+8	38	54	59	62	62	55	56	56	63	54	58	53	36

Table A3-18. Effective luminous intensity for W5 End Module Blue middle, Sample 2, Night F2.

1324448 EU-M TB2-1 F3 N

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	30	44	51	54	60	45	55	48	50	48	55	42	32
-4	78	100	116	125	131	119	139	141	136	138	132	103	79
-2	116	153	163	189	181	174	192	207	189	200	181	151	116
+0	131	171	184	208	201	192	204	223	202	215	193	166	124
+2	115	147	158	186	174	174	176	191	174	175	161	133	100
+4	79	96	113	118	127	112	127	121	125	112	117	85	68
+8	36	48	53	52	53	47	53	53	55	51	51	43	29

Table A3-19. Effective luminous intensity for W5 End Module Blue middle, Sample 1, Night F3.

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1324448 EU-M TB2-2 F3 N

Vertical angle (deg) \ Horizontal angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	27	35	45	39	42	46	52	35	49	44	48	36	23
-4	70	100	115	122	109	123	116	105	134	133	125	94	67
-2	110	163	176	189	164	183	167	162	191	200	173	146	108
+0	128	181	199	210	184	201	181	186	213	215	188	166	120
+2	113	160	177	185	160	174	156	172	196	191	161	140	103
+4	77	102	129	124	116	110	112	120	143	119	118	90	71
+8	35	48	53	55	56	50	51	50	56	51	52	48	33

Table A3-20. Effective luminous intensity for W5 End Module Blue middle, Sample 2, Night F3.

1324448 EU-M TB2-1 F2 D

Vertical angle (deg) \ Horizontal angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	83	123	141	150	170	125	155	132	138	134	151	118	90
-4	222	283	325	352	371	336	390	396	382	388	370	292	225
-2	328	433	459	533	510	490	540	584	533	564	510	425	327
+0	370	482	520	590	562	541	574	628	568	608	541	467	351
+2	324	416	447	519	490	489	497	537	493	492	455	373	284
+4	223	274	319	332	356	316	357	342	353	314	332	243	193
+8	99	136	153	142	146	131	150	147	158	142	141	121	80

Table A3-21. Effective luminous intensity for W5 End Module Blue middle, Sample 1, Day F2.

1324448 EU-M TB2-2 F2 D

Vertical angle (deg) \ Horizontal angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	83	106	132	115	124	136	150	106	143	130	139	108	72
-4	208	292	334	350	319	355	336	307	387	385	361	277	200
-2	320	470	506	544	473	526	476	465	549	576	500	423	313
+0	372	520	568	606	529	575	520	532	611	621	540	478	350
+2	328	463	507	532	460	497	447	493	559	545	462	403	304
+4	228	299	372	358	337	320	326	346	413	346	341	264	213
+8	103	142	161	168	169	152	147	147	170	148	159	140	98

Table A3-22. Effective luminous intensity for W5 End Module Blue middle, Sample 2, Day F2.

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1324448 EU-M TB2-1 F3 D

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	76	113	131	139	157	116	144	123	130	125	141	111	84
-4	205	264	302	328	345	313	364	370	357	362	346	273	209
-2	303	403	428	499	478	457	504	548	498	528	477	397	307
+0	344	448	487	548	526	504	535	587	533	567	506	439	328
+2	300	386	415	483	456	456	464	501	460	460	425	349	266
+4	208	255	296	310	334	295	333	320	330	294	310	227	180
+8	92	126	141	132	136	122	139	137	147	132	132	113	75

Table A3-23. Effective luminous intensity for W5 End Module Blue middle, Sample 1, Day F3.

1324448 EU-M TB2-2 F3 D

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	78	100	124	107	117	128	140	99	134	122	130	101	67
-4	195	275	315	328	298	335	316	288	363	362	339	260	188
-2	300	441	475	512	442	493	447	439	515	540	469	397	295
+0	349	488	534	569	497	543	489	502	576	584	510	450	329
+2	308	435	479	500	432	467	420	463	528	512	434	379	285
+4	214	281	349	337	317	300	306	325	388	325	321	248	201
+8	96	132	151	157	159	141	138	137	160	139	149	131	93

Table A3-24. Effective luminous intensity for W5 End Module Blue middle, Sample 2, Day F3.

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1324448 EU-B TB2-1 F2 N

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	74	106	119	116	124	130	123	136	130	134	132	126	86
-4	135	178	216	241	239	250	250	268	264	265	235	202	149
-2	160	205	249	267	283	287	288	299	296	290	263	213	165
+0	166	206	252	275	294	296	303	308	300	298	270	218	169
+2	159	205	240	272	279	289	296	297	289	286	259	222	165
+4	142	190	211	242	238	254	264	264	255	253	223	207	144
+8	92	134	137	155	138	160	155	167	150	155	130	144	83

Table A3-25. Effective luminous intensity for W5 End Module Blue lower, Sample 1, Night F2.

1324448 EU-B TB2-2 F2 N

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	65	105	121	125	109	128	107	127	117	126	119	102	68
-4	130	197	224	252	232	245	225	248	247	272	231	188	134
-2	154	219	258	281	276	267	272	282	286	298	263	214	162
+0	160	227	271	289	287	284	289	296	296	308	265	216	168
+2	153	227	266	285	278	271	285	291	285	296	256	219	166
+4	136	213	239	256	238	243	252	266	265	262	225	205	151
+8	80	153	153	161	148	152	138	168	146	163	143	146	91

Table A3-26. Effective luminous intensity for W5 End Module Blue lower, Sample 2, Night F2.

1324448 EU-B TB2-1 F3 N

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	68	97	110	106	112	119	112	124	118	122	120	115	78
-4	125	165	200	220	219	230	228	244	243	240	213	184	136
-2	148	190	228	245	259	261	263	275	269	264	241	196	150
+0	153	189	231	252	271	271	277	280	274	271	245	200	154
+2	147	189	220	249	255	264	270	271	264	261	236	203	150
+4	131	174	195	224	218	234	241	242	234	229	204	190	131
+8	85	124	125	142	126	147	141	151	137	141	118	132	76

Table A3-27. Effective luminous intensity for W5 End Module Blue lower, Sample 1, Night F3.

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1324448 EU-B TB2-2 F3 N

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	58	95	109	113	99	115	96	114	105	114	107	92	61
-4	118	179	202	229	212	221	203	223	222	246	209	170	121
-2	139	197	234	255	251	241	246	254	258	270	239	194	146
+0	144	205	245	261	259	256	261	269	270	278	239	195	152
+2	138	205	241	258	251	248	257	263	257	267	234	198	150
+4	123	192	216	230	216	220	227	243	240	236	204	184	136
+8	72	138	139	145	134	137	124	152	132	147	129	132	82

Table A3-28. Effective luminous intensity for W5 End Module Blue lower, Sample 2, Night F3.

1324448 EU-B TB2-1 F2 D

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	193	275	307	300	315	333	315	349	330	342	337	321	220
-4	348	457	553	618	614	635	635	680	667	663	596	511	379
-2	414	526	634	679	720	727	733	754	748	729	665	537	418
+0	427	528	642	696	749	752	771	778	759	748	679	549	427
+2	411	527	616	690	709	733	750	750	731	722	654	561	419
+4	364	483	540	621	610	649	668	667	645	636	565	523	366
+8	239	344	352	398	351	410	396	424	382	393	330	367	216

Table A3-29. Effective luminous intensity for W5 End Module Blue lower, Sample 1, Day F2.

1324448 EU-B TB2-2 F2 D

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	173	275	315	324	284	330	279	329	303	326	310	269	183
-4	337	502	572	641	596	617	573	628	621	692	594	483	347
-2	397	557	655	712	700	676	688	714	726	756	668	547	416
+0	411	577	687	730	730	712	732	746	751	778	674	548	433
+2	394	577	674	720	703	689	720	734	721	750	653	558	427
+4	352	541	616	645	609	615	636	673	670	665	575	524	388
+8	211	395	395	411	381	390	354	431	376	417	368	376	240

Table A3-30. Effective luminous intensity for W5 End Module Blue lower, Sample 2, Day F2.

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1324448 EU-B TB2-1 F3 D

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	185	261	292	284	299	314	297	329	312	323	317	303	207
-4	332	436	526	587	581	600	600	642	629	629	562	482	359
-2	395	501	604	644	682	691	692	714	707	691	626	507	396
+0	407	503	610	661	710	711	729	735	717	708	640	519	402
+2	392	501	589	656	673	694	713	710	691	683	619	531	394
+4	348	460	515	589	578	612	633	631	610	600	533	494	345
+8	228	329	334	377	333	390	375	401	363	372	312	347	203

Table A3-31. Effective luminous intensity for W5 End Module Blue lower, Sample 1, Day F3.

1324448 EU-B TB2-2 F3 D

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	163	259	297	306	268	313	263	311	288	310	295	255	174
-4	318	474	540	606	563	585	543	595	592	660	565	460	332
-2	374	525	622	676	662	641	653	678	690	724	636	524	398
+0	389	545	650	691	689	675	694	709	715	742	642	525	415
+2	372	545	640	683	667	655	683	698	688	714	622	535	411
+4	334	513	581	611	576	585	608	638	636	633	548	500	374
+8	199	373	373	391	362	370	336	408	357	398	350	359	231

Table A3-32. Effective luminous intensity for W5 End Module Blue lower, Sample 2, Day F3.

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1324448 EU-T TR2-1 F2 N

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	59	89	108	110	106	135	142	172	176	166	149	123	82
-4	182	255	302	329	338	394	386	410	404	421	390	365	274
-2	286	378	419	486	505	519	540	523	520	518	492	451	347
+0	343	428	478	523	560	519	552	517	535	501	474	429	336
+2	318	388	432	455	498	436	487	406	440	390	396	339	277
+4	252	300	340	355	384	335	371	300	342	303	313	265	212
+8	109	163	190	200	182	174	155	161	156	153	165	150	97

Table A3-33. Effective luminous intensity for W5 End Module Red upper, Sample 1, Night F2.

1324448 EU-T TR2-2 F2 N

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	86	114	129	116	116	111	112	126	113	110	106	90	59
-4	223	330	362	421	379	379	321	365	344	331	302	256	197
-2	305	429	496	554	545	502	474	511	507	502	438	378	278
+0	317	419	505	544	551	503	527	535	575	546	487	416	311
+2	270	329	420	445	465	392	520	442	532	494	445	361	285
+4	206	257	343	348	384	321	373	356	426	393	356	275	225
+8	96	150	174	193	200	199	187	193	193	201	188	152	111

Table A3-34. Effective luminous intensity for W5 End Module Red upper, Sample 2, Night F2.

1324448 EU-T TR2-1 F3 N

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	55	82	98	100	97	123	129	156	161	151	136	112	74
-4	168	234	276	301	307	360	352	372	368	384	355	332	249
-2	266	350	384	444	461	477	493	477	476	472	451	412	313
+0	315	393	438	478	515	470	505	474	485	455	430	391	306
+2	293	357	397	420	455	397	444	370	401	356	361	309	252
+4	232	273	312	326	354	307	337	274	312	277	285	241	192
+8	99	150	173	182	168	159	141	148	142	140	151	135	88

Table A3-35. Effective luminous intensity for W5 End Module Red upper, Sample 1, Night F3.

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1324448 EU-T TR2-2 F3 N

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	78	104	118	106	105	101	102	115	102	101	96	82	54
-4	202	300	328	382	345	346	292	332	312	301	276	233	179
-2	276	390	450	503	494	455	434	465	461	456	395	343	254
+0	288	380	458	494	501	457	478	489	522	496	441	378	283
+2	245	299	384	406	422	357	404	403	484	448	403	328	259
+4	187	233	311	315	349	291	339	322	387	357	324	249	205
+8	88	137	158	175	181	181	170	176	175	183	171	137	101

Table A3-36. Effective luminous intensity for W5 End Module Red upper, Sample 2, Night F3.

1324448 EU-T TR2-1 F2 D

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	157	231	276	276	266	335	347	420	428	402	360	296	197
-4	476	650	760	823	833	974	947	998	986	1025	946	883	658
-2	739	965	1057	1220	1254	1280	1329	1278	1266	1263	1198	1091	832
+0	883	1084	1205	1305	1391	1274	1355	1259	1295	1217	1143	1041	808
+2	819	987	1091	1136	1231	1071	1195	989	1068	941	959	817	668
+4	648	755	856	884	949	825	907	726	829	734	760	639	512
+8	281	413	475	497	452	429	378	392	380	371	399	360	236

Table A3-37. Effective luminous intensity for W5 End Module Red upper, Sample 1, Day F2.

1324448 EU-T TR2-2 F2 D

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	208	277	312	283	284	272	277	313	281	278	269	234	157
-4	537	799	877	1022	923	927	787	898	852	826	763	652	512
-2	735	1040	1203	1347	1324	1226	1163	1260	1257	1253	1093	960	717
+0	765	1012	1222	1317	1338	1228	1291	1319	1424	1363	1223	1056	801
+2	650	795	1018	1079	1129	955	1085	1092	1318	1231	1116	920	731
+4	499	619	828	834	932	779	911	869	1052	977	892	693	579
+8	233	363	421	467	486	485	457	473	476	499	471	383	288

Table A3-38. Effective luminous intensity for W5 End Module Red upper, Sample 2, Day F2.

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Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	144	212	253	255	247	310	324	393	401	377	338	280	186
-4	435	598	702	764	776	908	883	935	924	961	888	831	621
-2	677	891	979	1127	1173	1195	1241	1202	1188	1185	1123	1032	785
+0	812	1000	1116	1211	1302	1186	1272	1185	1216	1143	1075	978	762
+2	756	912	1010	1055	1146	1003	1118	925	1005	886	901	768	629
+4	596	696	793	821	888	771	845	681	778	687	717	601	482
+8	258	384	441	462	424	401	356	369	356	348	377	339	223

Table A3-39. Effective luminous intensity for W5 End Module Red upper, Sample 1, Day F3.

1324448 EU-T TR2-2 F3 D

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	197	259	294	266	266	254	259	290	261	257	247	213	142
-4	505	753	824	956	861	868	734	837	791	766	701	599	468
-2	689	976	1132	1261	1239	1144	1083	1174	1167	1159	1010	882	656
+0	720	952	1147	1234	1253	1145	1202	1228	1321	1266	1128	970	732
+2	610	747	954	1009	1058	891	1008	1012	1223	1140	1031	843	670
+4	468	582	779	783	872	728	850	808	978	904	823	637	532
+8	219	341	397	440	456	454	427	441	441	463	437	352	263

Table A3-40. Effective luminous intensity for W5 End Module Red upper, Sample 2, Day F3.

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1324448 EU-M TR2-1 F2 N

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	34	45	50	47	53	55	77	73	77	71	72	56	50
-4	107	142	171	178	184	212	215	206	202	247	236	194	151
-2	179	244	266	307	293	292	304	326	295	323	324	260	204
+0	219	284	316	341	324	306	322	342	304	332	312	263	201
+2	193	269	283	315	274	251	263	286	248	244	253	195	158
+4	152	180	213	216	197	172	191	178	180	168	179	132	105
+8	55	82	93	103	100	66	81	80	82	74	84	70	42

Table A3-41. Effective luminous intensity for W5 End Module Red middle, Sample 1, Night F2.

1324448 EU-M TR2-2 F2 N

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	39	51	59	51	58	55	65	47	52	41	47	38	26
-4	128	200	215	240	202	212	172	174	195	172	157	137	97
-2	202	280	310	332	297	313	267	272	306	299	262	220	166
+0	205	281	314	342	307	324	296	297	342	332	302	260	192
+2	166	212	261	267	257	254	239	261	310	304	270	208	165
+4	116	149	190	188	191	185	182	183	237	221	201	151	121
+8	52	78	85	88	91	91	95	86	110	104	103	82	58

Table A3-42. Effective luminous intensity for W5 End Module Red middle, Sample 2, Night F2.

1324448 EU-M TR2-1 F3 N

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	31	41	46	43	49	50	70	67	71	65	66	51	45
-4	97	129	156	161	167	193	195	189	184	226	214	177	138
-2	162	221	243	279	265	266	278	295	271	294	295	236	186
+0	199	259	290	311	294	279	291	312	278	301	285	238	183
+2	176	247	258	286	249	229	240	261	228	222	228	178	143
+4	137	165	193	197	179	156	174	162	164	153	163	120	96
+8	50	75	85	93	91	60	74	72	75	68	76	64	38

Table A3-43. Effective luminous intensity for W5 End Module Red middle, Sample 1, Night F3.

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Vertical angle (deg) \ Horizontal angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	36	48	54	48	54	52	60	44	49	39	44	36	24
-4	119	184	199	224	186	197	158	161	181	160	146	129	91
-2	187	257	285	307	275	291	247	252	282	279	244	205	155
+0	189	261	290	316	285	300	273	274	319	308	281	242	180
+2	154	196	243	249	239	236	221	241	288	282	251	193	154
+4	106	138	176	174	177	171	170	169	219	205	186	141	112
+8	48	72	78	81	84	84	88	79	102	97	96	77	55

Table A3-44. Effective luminous intensity for W5 End Module Red middle, Sample 2, Night F3.

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Vertical angle (deg) \ Horizontal angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	84	113	125	116	131	135	193	182	193	178	180	136	121
-4	276	363	435	447	462	530	534	513	502	611	581	479	372
-2	459	625	673	774	728	727	756	806	730	801	800	642	506
+0	563	723	796	859	811	765	797	850	755	820	773	649	496
+2	498	684	712	787	684	623	652	709	612	606	620	481	386
+4	388	459	536	544	488	428	474	441	445	414	443	327	261
+8	138	210	237	258	250	165	202	198	203	183	206	173	101

Table A3-45. Effective luminous intensity for W5 End Module Red middle, Sample 1, Day F2.

1324448 EU-M TR2-2 F2 D

Vertical angle (deg) \ Horizontal angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	97	126	143	124	141	135	162	115	128	101	117	95	64
-4	319	497	533	594	496	523	422	429	484	428	392	347	248
-2	501	688	762	820	731	772	657	672	757	741	653	552	419
+0	507	692	776	843	754	795	725	731	846	824	754	650	484
+2	414	524	638	659	632	623	593	643	766	754	673	522	415
+4	287	370	471	464	470	456	449	451	590	548	501	378	304
+8	127	194	212	219	225	227	236	213	274	261	259	208	145

Table A3-46. Effective luminous intensity for W5 End Module Red middle, Sample 2, Day F2.

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Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	78	104	116	108	122	126	179	170	180	166	167	128	113
-4	256	337	403	414	430	495	499	479	470	573	545	449	347
-2	424	579	626	717	677	678	707	753	684	752	748	605	472
+0	520	669	743	800	755	715	742	794	702	767	723	607	465
+2	462	633	664	732	636	585	613	664	573	568	582	451	364
+4	359	425	498	506	455	399	443	412	416	387	415	305	245
+8	127	194	219	240	233	154	189	184	190	172	193	162	95

Table A3-47. Effective luminous intensity for W5 End Module Red middle, Sample 1, Day F3.

1324448 EU-M TR2-2 F3 D

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	90	117	134	117	134	128	153	108	121	96	110	89	61
-4	299	465	501	561	468	493	396	405	459	403	371	326	235
-2	472	646	717	771	689	727	620	632	713	697	615	520	395
+0	475	650	728	793	710	750	687	689	798	776	712	611	455
+2	386	491	601	622	596	587	559	606	721	710	634	490	390
+4	270	347	441	436	443	430	423	425	556	516	472	356	286
+8	119	182	198	205	212	213	223	202	258	245	244	196	136

Table A3-48. Effective luminous intensity for W5 End Module Red middle, Sample 2, Day F3.

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1324448 EU-B TR2-1 F2 N

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	91	128	138	133	133	177	173	179	176	206	209	191	137
-4	178	251	280	327	315	356	401	355	348	373	348	292	213
-2	220	286	328	377	383	408	413	395	406	398	376	305	236
+0	230	291	350	395	397	424	436	408	414	401	378	323	244
+2	226	299	350	397	380	407	428	404	392	378	361	326	242
+4	214	286	326	362	341	353	393	356	329	324	314	301	218
+8	131	204	202	231	189	218	204	224	183	188	195	211	123

Table A3-49. Effective luminous intensity for W5 End Module Red lower, Sample 1, Night F2.

1324448 EU-B TR2-2 F2 N

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	109	179	195	179	160	164	140	160	152	155	146	140	101
-4	201	295	330	365	332	339	317	332	306	338	303	280	207
-2	230	311	374	404	386	375	389	392	389	395	354	300	239
+0	234	326	391	417	406	393	400	420	423	425	369	299	249
+2	224	321	376	402	399	377	395	410	415	423	367	306	241
+4	195	289	335	350	344	332	352	371	397	389	339	288	223
+8	111	204	194	211	201	208	195	235	214	260	208	202	134

Table A3-50. Effective luminous intensity for W5 End Module Red lower, Sample 2, Night F2.

1324448 EU-B TR2-1 F3 N

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	84	118	127	121	122	162	158	164	161	188	192	174	126
-4	163	229	258	301	288	325	314	324	318	342	319	266	195
-2	203	262	300	344	350	375	378	361	371	363	343	278	216
+0	211	267	321	363	362	387	400	376	379	368	346	295	226
+2	208	274	322	362	347	371	390	368	361	344	328	298	222
+4	196	262	297	329	312	321	359	325	300	295	289	274	198
+8	120	187	184	211	173	199	187	205	168	171	177	193	112

Table A3-51. Effective luminous intensity for W5 End Module Red lower, Sample 1, Night F3.

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1324448 EU-B TR2-2 F3 N

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	98	161	174	160	144	148	125	142	134	137	129	122	87
-4	181	265	296	328	296	303	282	296	271	299	268	246	179
-2	207	278	334	362	345	335	348	349	347	349	312	262	207
+0	210	295	350	375	363	350	356	374	375	373	325	262	216
+2	202	289	338	361	360	337	351	366	368	374	325	269	210
+4	175	262	301	314	310	299	313	331	350	343	298	253	194
+8	100	183	174	190	181	186	174	209	191	230	183	177	118

Table A3-52. Effective luminous intensity for W5 End Module Red lower, Sample 2, Night F3.

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Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	236	324	348	330	328	433	422	435	427	498	505	460	331
-4	456	634	700	814	777	871	837	861	845	899	840	701	511
-2	561	721	822	937	941	997	1007	956	980	958	905	732	568
+0	588	731	876	977	976	1037	1057	986	1002	965	908	775	588
+2	575	754	871	981	934	993	1039	975	946	911	861	783	579
+4	545	718	803	892	838	859	953	859	792	777	754	720	521
+8	334	514	506	573	466	532	496	541	443	450	465	507	295

Table A3-53. Effective luminous intensity for W5 End Module Red lower, Sample 1, Day F2.

1324448 EU-B TR2-2 F2 D

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	262	427	462	428	383	396	335	383	366	374	354	339	248
-4	479	701	783	869	784	810	754	794	732	811	729	673	502
-2	547	733	883	958	916	893	933	935	930	946	850	721	581
+0	557	771	927	991	964	933	952	999	1011	1008	886	720	602
+2	533	759	892	952	947	896	936	980	989	1012	880	737	582
+4	465	686	798	835	816	787	836	888	942	929	813	692	540
+8	267	486	461	501	479	496	466	562	511	622	503	487	326

Table A3-54. Effective luminous intensity for W5 End Module Red lower, Sample 2, Day F2.

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Appendix 3

1324448 EU-B TR2-1 F3 D

Horizontal angle (deg)

Vertical angle (deg)	+0	+15	+30	+45	+60	+75	+90	+105	+120	+135	+150	+165	+180
-8	229	313	332	316	313	414	403	414	407	474	480	435	314
-4	439	607	671	776	743	832	797	821	805	855	800	664	484
-2	544	694	785	894	896	952	961	912	937	910	859	695	539
+0	567	701	837	934	932	989	1009	941	953	918	864	735	557
+2	556	721	835	938	892	949	995	930	900	868	818	743	553
+4	526	689	769	852	802	823	910	823	757	739	721	686	495
+8	321	492	484	552	445	509	474	517	421	429	443	484	280

Table A3-55. Effective luminous intensity for W5 End Module Red lower, Sample 1, Day F3.

1324448 EU-B TR2-2 F3 D

Horizontal angle (deg)

Vertical angle (deg)	-180	-165	-150	-135	-120	-105	-90	-75	-60	-45	-30	-15	+0
-8	251	410	445	411	369	381	323	373	355	364	344	332	244
-4	459	671	750	834	753	780	728	765	710	787	710	658	493
-2	524	702	847	921	885	861	901	905	901	919	828	708	572
+0	535	739	889	953	927	896	919	967	979	980	867	707	590
+2	513	728	856	914	910	863	903	951	959	981	858	720	575
+4	445	658	761	798	785	764	805	855	911	902	791	677	530
+8	255	466	442	482	463	480	449	542	495	604	489	476	322

Table A3-56. Effective luminous intensity for W5 End Module Red lower, Sample 2, Day F3.

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Appendix 4

Appendix 4: Photos of units under test.

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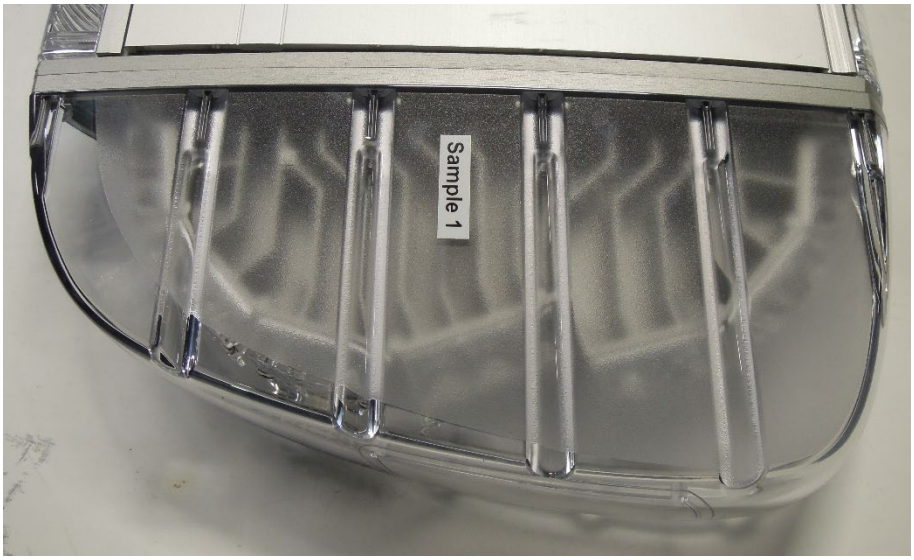
Appendix 4



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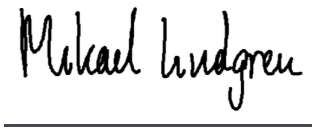
Signerare

Mikael Lindgren (ML)
RISE Research Institutes of Sweden AB
Org. nr 556464-6874
mikael.lindgren@ri.se
+46 10 516 57 13



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