

2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp
(SAE AHRI5PP2)

Subaru P/N: 84001FL01A

CALCOAST - ITL
Lighting Technology
683 Thornton Street
San Leandro, CA 94577



09 July 2019

FINAL REPORT 108-CAN-19-002

PREPARED FOR

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
1200 New Jersey Avenue SE
Washington, D.C. 20590

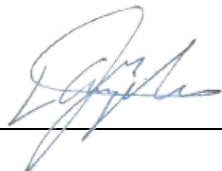
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NHTSA Report No. 108-CAN-19-002

Prepared and Approved By: 

Approval Date: 09 July 2019

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By:  _____

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TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 108-CAN-19-002	2. Government Accession No. N/A	3. Recipient's Catalog No. N/A	
4. Title and Subtitle Test Series 2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp		5. Report Date 09 July 2019	
7. Author(s) Mark Evans, Laboratory Director		6. Performing Organization Code N/A 8. Performing Organization Report No. 190614-02D	
9. Performing Organization Name and Address Calcoast - ITL 683 Thornton Street San Leandro, CA 94577		10. Work Unit No. N/A	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance 1200 New Jersey Avenue SE West Building - 4 th Floor - NEF220 Washington, D.C. 20590		11. Contract or Grant No. DTNH22-14-D-00370L 13. Type of Report and Period Covered	
15. Supplementary Notes		14. Sponsoring Agency Code	
16. Abstract The scope of this testing was limited to certain photometry, visibility, color, EPLLA and markings tests as indicated. Test failures identified were as follows: 2 of 4 Failed Lower Beam Photometry 4 of 4 Failed Side Reflex Reflector Photometry			
17. Key Words Federal Motor Vehicle Safety Standard 108 Lamps, Reflective Devices and Associated Equipment		18. Distribution Statement Unlimited	
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INDUSTRIAL TESTING LABORATORY

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TEST REPORT

Report Date: 09 July 2019

Project Name: 2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp

Submitted by: Purchased by CCITL for NHTSA from Subaru of Oakland

Test Laboratory: Calcoast - ITL San Leandro, CA 94577

Samples Submitted: Four (4) LH lamps purchased 06 June 2019

SUMMARY

TESTS (FMVSS-108)

PHOTOMETRY - Combination Front Lamp System

- Headlamp, Lower Beam - S10.15.6 / Table XIX-a (LB2V) **2 of 4 Failed**
- Headlamp, Upper Beam - S10.15.6 / Table XVIII (UB2) Passed
- Front Turn Signal Lamp - S7.1.1.13/ Table VI-a Passed
- Sidemarkers Lamp - S7.4.13 / Table X Passed
- Parking Lamp - S7.8.13 / Table XIV Passed
- Reflex Reflector, Side - S8.1.11 / Table XVI-a **4 of 4 Failed**

- Lens Area Tests (EPLLA) - Table IV-a..... Passed
- Visibility Tests - Table V-c, Luminous Intensity Option..... Passed
- Color Tests - S14.4.1..... Passed
- Plastic Optical Material Tests - S14.4.2..... Not Tested
- Physical (Mechanical) Tests - S14.5..... Not Tested
- Physical (Mechanical) Tests - S14.6..... Not Tested
- Aimability Tests - S10.18.9..... Not Tested
- Markings - S6.5 / S10.18 / Table III..... Passed

Written and Approved by:

Mark A. Evans
Laboratory Director

DESCRIPTION SHEET

Project Name: 2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp

DESCRIPTION:

The 2018 Subaru Impreza (LH) headlamps (P/N 84001FL01A) uses an H11 source for lower beam and an HB3 for upper beam functions. The lower beam remains active in upper beam mode. The lamps also have Turn Signal, Sidemarker, Parking and Reflex Reflector functions.

The on-vehicle lamp mounting height is less than 750 mm for the turn signal and parking functions per the manufacturer.

There is no horizontal aimer.

PHYSICAL INSPECTION**MARKINGS:**

Lens: "Valeo", "DOT", "VOR", "HB3", "H11", optical axis mark

Housing: "SAE AHRI5PP2 15", "SUBARU", "HEAD TYPE1 HB3 12V60W", "F70", "Valeo", "MADE IN USA", "HEAD TYPE2 H11 12V55W", "MARKER 12V5W W5W", "TURN/PARKING 12V28/8W 7444NA", additional material and other markings present

Note: Samples received with 194 bulbs and not W5W bulbs

Lot codes: unable to decipher

Marking Requirements:

S6.5.1: The lens is marked with the symbol "DOT".

S6.5.3.1: The lens is marked with the name and/or trademark of the manufacturer or importer registered with the U.S. Patent and Trademark Office.

S6.5.3.2: The lamp is marked with its voltage. The lamp is marked with its part or trade number.

S6.5.3.4.1: The lens is marked with bulb designation in front of the replaceable light sources.

S10.18.5: Headlamp lens has an optical mark indicating proper alignment.

S10.18.9.6: The lens is marked "VOR" in letters not less than 3 mm high.

Samples meet Markings requirements.

MATERIAL:

Not inspected.

BULBS:

FUNCTION	QUANTITY	TYPE	VOLTAGE	POWER	FLUX
Lower Beam (LB)	One (1)	H11	12.8V	55W	1250 Lm
Upper Beam (UB)	One (1)	HB3		60W	1700 Lm
Sidemarker (P2)	One (1)	W5W	13.5V	5W	13.8 Lm
Turn Signal (I)	One (1)	7444NA	12.8V	28W	377 Lm
Parking (P)			14.0V	8W	28.0 Lm

PHOTOMETRY SUMMARY SHEET

Project Name: 2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp

PHOTOMETRY SUMMARY

Specification(s): FMVSS 108

Reference detector control number: NIST P181-2

Test distance: 100 feet

Tests performed by: MAE/DGC

Date: 19-20 June 2019

Samples meet requirements at all points for:

Headlamp, Lower Beam - S10.15.6 / Table XIX-a (LB2V) 2 of 4 Only

Headlamp, Upper Beam - S10.15.6 / Table XVIII (UB2)

Front Turn Signal Lamp - S7.1.1.13/Table VI-a

Sidemarker Lamp - S7.4.13 / Table X

Parking Lamp - S7.8.13 / Table XIV

Samples **do not** meet requirements at all points for:

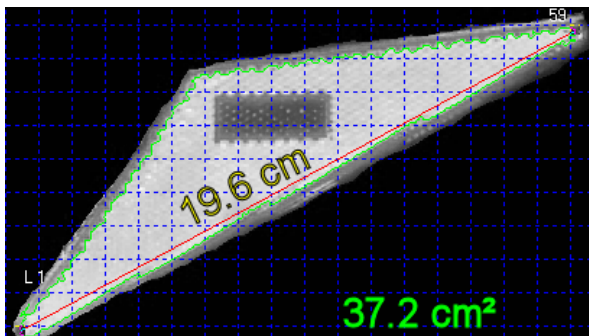
Reflex Reflector, Side - S8.1.11 / Table XVI-a

Photometry compliance verification tests for the headlamp functions (Lower Beam, Upper Beam) were performed using the seasoned light sources at design voltage. Photometry for incandescent signaling and marking functions performed using accurate-rated, calibrated bulbs at luminous flux.

All tests were performed with the lamps mounted on a test fixture supplied by the lamp manufacturer.

The manufacturer specified the Sidemarker inboard test angle is 22.5°.

The manufacturer specified the on-vehicle turn signal and parking function mounting heights are less than 750 mm.



Reflex Reflector

The reflex reflector max linear dimension at HV is ~196 mm with a projected area of ~3720 mm².

S14.2.3.6 specifies "Reflex reflectors may have any linear or area dimensions but must have no more than 7740 sq mm projected area contained within a 254 mm diameter circle exposed for photometry."

The linear dimension of the reflex elements is within the circle and its projected area is less than the maximum area for photometry.

PHOTOMETRY TEST DATA SHEET

Project Name: 2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp

Sample Number: LH1 & LH2, Left Hand (VOR Aim)

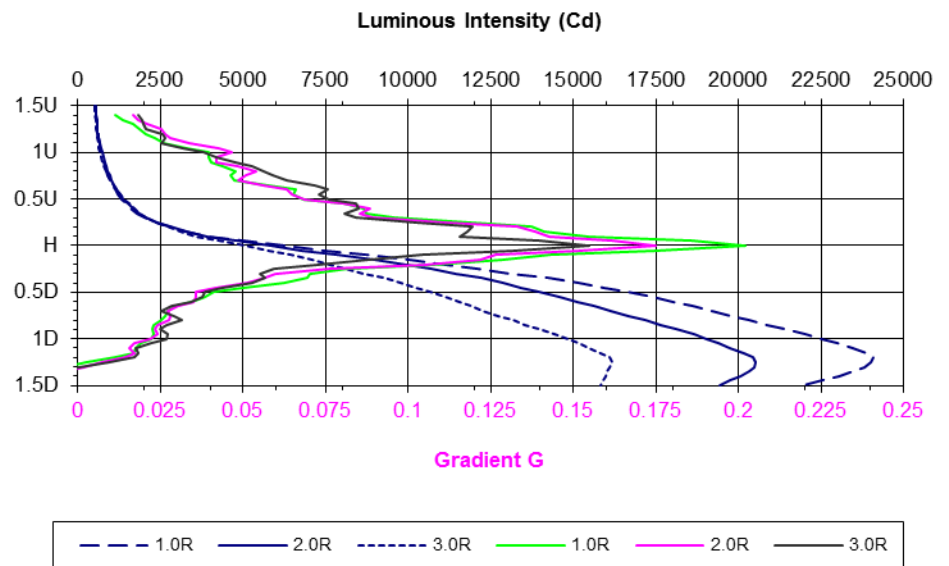
LH1

Maximum Vertical Gradient

Location	Value	Required
H/1.0R	0.202	> 0.13
H/2.0R	0.175	
H/3.0R	0.155	

Horizontal width of cutoff is greater than 2° centered at 2.0R.

Maximum inclination of cutoff is within ±0.2°.



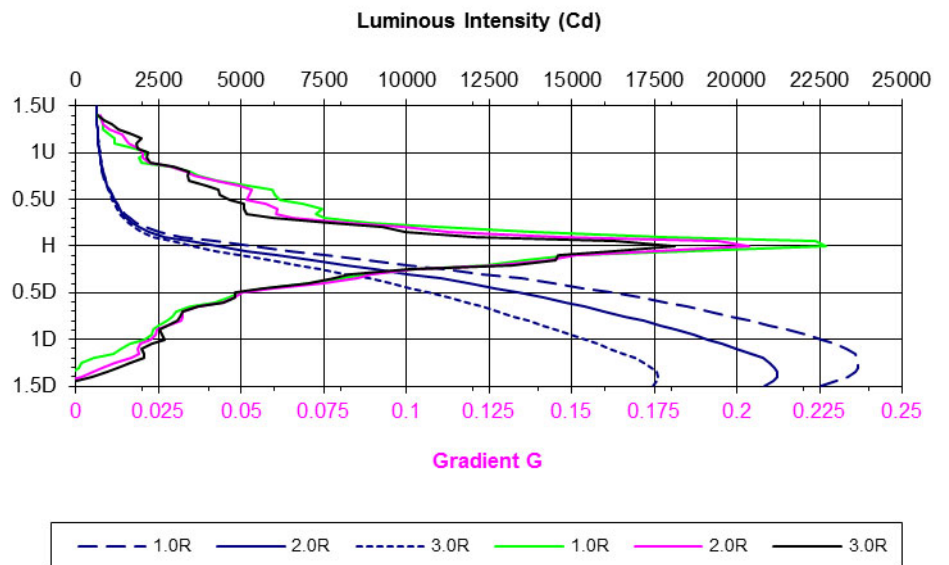
LH2

Maximum Vertical Gradient

Location	Value	Required
H/1.0R	0.227	> 0.13
H/2.0R	0.204	
H/3.0R	0.181	

Horizontal width of cutoff is greater than 2° centered at 2.0R.

Maximum inclination of cutoff is within ±0.2°.



Samples meet S10.18.9 Visual/Optical Aiming cutoff requirements

PHOTOMETRY TEST DATA SHEET

Project Name: 2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp

Sample Number: LH3 & LH4, Left Hand (VOR Aim)

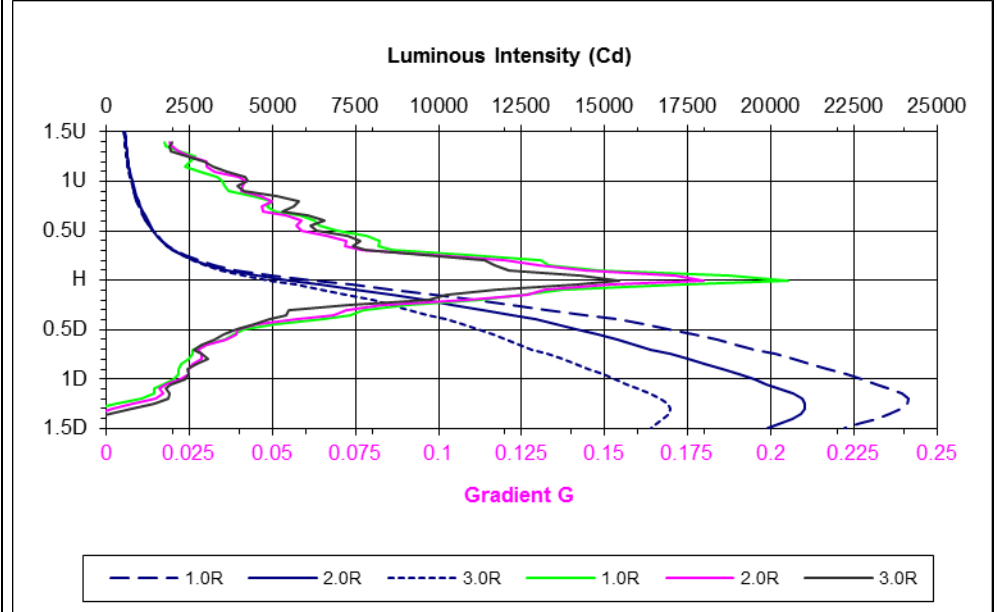
LH3

Maximum Vertical Gradient

Location	Value	Required
H/1.0R	0.205	> 0.13
H/2.0R	0.180	
H/3.0R	0.154	

Horizontal width of cutoff is greater than 2° centered at 2.0R.

Maximum inclination of cutoff is within ±0.2°.



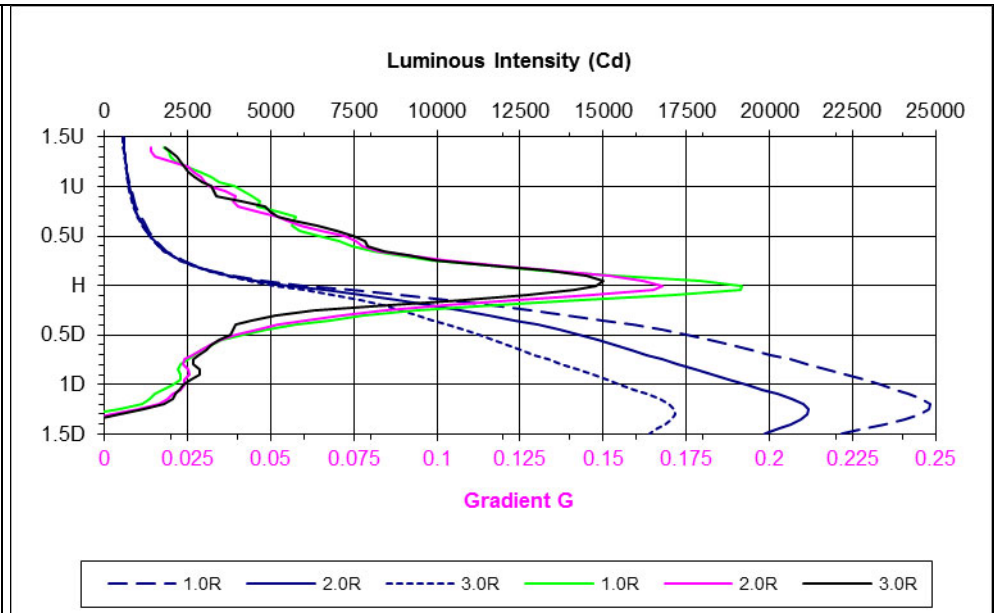
LH4

Maximum Vertical Gradient

Location	Value	Required
H/1.0R	0.192	> 0.13
H/2.0R	0.168	
0.05U/3.0R	0.150	

Horizontal width of cutoff is greater than 2° centered at 2.0R.

Maximum inclination of cutoff is within ±0.2°.



Samples meet S10.18.9 Visual/Optical Aiming cutoff requirements

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH1

Specification: FMVSS108 Table XIX-a: LB2V (VO Headlamp - 2 Lamp System)

Color: White, Lower Beam

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
4.0U 8.0L		394.62		64	-
4.0U 8.0R		230.11		64	-
2.0U 4.0L		589.33		135	-
1.5U 1.0R TO 3.0R	3.0R	504.14		200	-
1.5U 1.0R TO R	1.1R	547.49		-	1400
1.0U 1.5L TO L	9.1L	879.48	779.83*	-	700
0.5U 1.5L TO L	9.9L	1368.98	1047.09*	-	1000
0.5U 1.0R TO 3.0R	1.0R	1329.49		500	-
0.5U 1.0R TO 3.0R	2.8R	1418.52		-	2700
H 8.0L		2597.31		64	-
H 4.0L		2874.56		135	-
H V		5766.18		-	-
0.6D 1.3R		17197.73		10000	-
0.9D 3.5L		9836.25		1800	12000
0.9D V		21075.03		4500	-
1.5D 2.0R		19510.31		15000	-
2.0D 15.0L		5444.10		1000	-
2.0D 9.0L		9290.53		1250	-
2.0D 9.0R		4897.38		1250	-
2.0D 15.0R		2964.61		1000	-
4.0D 20.0L		2861.66		300	-
4.0D V		6259.75		-	-
4.0D 4.0R		5207.73		-	12500
4.0D 20.0R		235.75	261.00*	300	-
MAXIMUM	1.2D 0.5R	24751.00		-	-
MX(10U-90U/90L-90R)	10.0U 7.3R	135.83*		-	125

*** - Denotes Failure.**

Bulb: Seasoned Osram H11 furnished with sample @ 12.80V / 4.561A

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with H11 filament located at goniometer center of rotation and tilt with fixture markings aligned parallel and perpendicular to detector axis at HV. Adjusted aim hardware until LB Gmax located at H/2.0R and level from H/1.0R to H/3.0R (VOR aim).

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH1

Specification: FMVSS108 Table XVIII: UB2 (Headlamp - 2 Lamp System)

Color: White, Upper Beam

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
2.0U V		12837.14		1500	-
1.0U 3.0L		19226.87		5000	-
1.0U 3.0R		17133.89		5000	-
H 12.0L		6172.24		1500	-
H 9.0L		8105.40		3000	-
H 6.0L		13082.30		5000	-
H 3.0L		28530.04		15000	-
H V		50154.20		40000	75000
H 3.0R		30982.56		15000	-
H 6.0R		11493.16		5000	-
H 9.0R		6305.58		3000	-
H 12.0R		5529.35		1500	-
1.5D 9.0L		14647.31		2000	-
1.5D V		65754.98		5000	-
1.5D 9.0R		8974.96		2000	-
2.5D 12.0L		9457.97		1000	-
2.5D V		22780.60		2500	-
2.5D 12.0R		5831.64		1000	-
4.0D V		7535.30		-	12000
MAXIMUM	0.8D 0.4R	76303.68		-	-

Sample meets test requirements at all points.

LB Bulb: Seasoned Osram H11 furnished with sample @ 12.80V / 4.561A

UB Bulb: Seasoned Sylvania HB3 furnished with sample @ 12.80V / 5.118A

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with H11 filament located at goniometer center of rotation and tilt with fixture markings aligned parallel and perpendicular to detector axis at HV. Adjusted aim hardware until LB Gmax located at H/2.0R and level from H/1.0R to H/3.0R (VOR aim).

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH2

Specification: FMVSS108 Table XIX-a: LB2V (VO Headlamp - 2 Lamp System)

Color: White, Lower Beam

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
4.0U 8.0L		422.97		64	-
4.0U 8.0R		291.62		64	-
2.0U 4.0L		577.74		135	-
1.5U 1.0R TO 3.0R	1.3R	607.40		200	-
1.5U 1.0R TO R	1.7R	621.55		-	1400
1.0U 1.5L TO L	4.2L	707.83	648.73	-	700
0.5U 1.5L TO L	1.5L	1324.93	893.28	-	1000
0.5U 1.0R TO 3.0R	3.0R	1137.95		500	-
0.5U 1.0R TO 3.0R	1.0R	1215.91		-	2700
H 8.0L		1942.43		64	-
H 4.0L		2753.15		135	-
H V		5781.15		-	-
0.6D 1.3R		17220.99		10000	-
0.9D 3.5L		10914.07		1800	12000
0.9D V		20466.65		4500	-
1.5D 2.0R		20888.86		15000	-
2.0D 15.0L		5023.61		1000	-
2.0D 9.0L		9332.34		1250	-
2.0D 9.0R		5721.51		1250	-
2.0D 15.0R		3087.97		1000	-
4.0D 20.0L		2807.72		300	-
4.0D V		6527.79		-	-
4.0D 4.0R		5027.11		-	12500
4.0D 20.0R		441.66		300	-
MAXIMUM	1.3D 0.6R	23860.51		-	-
MX(10U-90U/90L-90R)	10.0U 7.7R	84.00		-	125

Sample meets test requirements at all points.

Bulb: Seasoned Osram H11 furnished with sample @ 12.80V / 4.563A

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with H11 filament located at goniometer center of rotation and tilt with fixture markings aligned parallel and perpendicular to detector axis at HV. Adjusted aim hardware until LB Gmax located at H/2.0R and level from H/1.0R to H/3.0R (VOR aim).

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH2

Specification: FMVSS108 Table XVIII: UB2 (Headlamp - 2 Lamp System)

Color: White, Upper Beam

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
2.0U V		16910.48		1500	-
1.0U 3.0L		25001.18		5000	-
1.0U 3.0R		21567.68		5000	-
H 12.0L		5370.50		1500	-
H 9.0L		7889.27		3000	-
H 6.0L		15208.83		5000	-
H 3.0L		33570.15		15000	-
H V		63065.92		40000	75000
H 3.0R		33054.40		15000	-
H 6.0R		11801.54		5000	-
H 9.0R		6251.64		3000	-
H 12.0R		4679.60		1500	-
1.5D 9.0L		14042.81		2000	-
1.5D V		44771.95		5000	-
1.5D 9.0R		9015.45		2000	-
2.5D 12.0L		8206.29		1000	-
2.5D V		18770.96		2500	-
2.5D 12.0R		6116.59		1000	-
4.0D V		7760.97		-	12000
MAXIMUM	0.6D 0.1R	71777.32		-	-

Sample meets test requirements at all points.

LB Bulb: Seasoned Osram H11 furnished with sample @ 12.80V / 4.563A

UB Bulb: Seasoned Sylvania HB3 furnished with sample @ 12.80V / 5.126A

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with H11 filament located at goniometer center of rotation and tilt with fixture markings aligned parallel and perpendicular to detector axis at HV. Adjusted aim hardware until LB Gmax located at H/2.0R and level from H/1.0R to H/3.0R (VOR aim).

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH3

Specification: FMVSS108 Table XIX-a: LB2V (VO Headlamp - 2 Lamp System)

Color: White, Lower Beam

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
4.0U 8.0L		435.32		64	-
4.0U 8.0R		263.00		64	-
2.0U 4.0L		551.83		135	-
1.5U 1.0R TO 3.0R	3.0R	523.83		200	-
1.5U 1.0R TO R	1.7R	566.65		-	1400
1.0U 1.5L TO L	4.8L	801.07	695.47	-	700
0.5U 1.5L TO 10.0L	5.5L	1445.75	990.41	-	1000
0.5U 1.0R TO 3.0R	1.4R	1443.65		500	-
0.5U 1.0R TO 3.0R	2.4R	1485.89		-	2700
H 8.0L		2652.98		64	-
H 4.0L		3165.82		135	-
H V		6485.70		-	-
0.6D 1.3R		17745.08		10000	-
0.9D 3.5L		11083.46		1800	12000
0.9D V		20982.65		4500	-
1.5D 2.0R		19770.06		15000	-
2.0D 15.0L		4988.65		1000	-
2.0D 9.0L		9208.33		1250	-
2.0D 9.0R		5269.57		1250	-
2.0D 15.0R		2930.20		1000	-
4.0D 20.0L		2722.43		300	-
4.0D V		6001.28		-	-
4.0D 4.0R		4856.69		-	12500
4.0D 20.0R		383.41		300	-
MAXIMUM	1.2D 0.5R	24511.61		-	-
MX(10U-90U/90L-90R)	10.0U 8.6R	135.90	124.40	-	125

Sample meets test requirements at all points.

Bulb: Seasoned Osram H11 furnished with sample @ 12.80V / 4.559A

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with H11 filament located at goniometer center of rotation and tilt with fixture markings aligned parallel and perpendicular to detector axis at HV. Adjusted aim hardware until LB Gmax located at H/2.0R and level from H/1.0R to H/3.0R (VOR aim).

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH3

Specification: FMVSS108 Table XVIII: UB2 (Headlamp - 2 Lamp System)

Color: White, Upper Beam

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
2.0U V		13927.89		1500	-
1.0U 3.0L		21223.68		5000	-
1.0U 3.0R		18250.74		5000	-
H 12.0L		6280.88		1500	-
H 9.0L		8286.07		3000	-
H 6.0L		14111.58		5000	-
H 3.0L		31291.14		15000	-
H V		56575.51		40000	75000
H 3.0R		31475.67		15000	-
H 6.0R		11521.11		5000	-
H 9.0R		6621.13		3000	-
H 12.0R		5305.09		1500	-
1.5D 9.0L		14709.78		2000	-
1.5D V		63062.00		5000	-
1.5D 9.0R		9326.18		2000	-
2.5D 12.0L		9064.93		1000	-
2.5D V		20773.44		2500	-
2.5D 12.0R		6106.03		1000	-
4.0D V		7316.62		-	12000
MAXIMUM	0.8D 0.3R	76777.36		-	-

Sample meets test requirements at all points.

LB Bulb: Seasoned Osram H11 furnished with sample @ 12.80V / 4.558A

UB Bulb: Seasoned Sylvania HB3 furnished with sample @ 12.80V / 5.120A

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with H11 filament located at goniometer center of rotation and tilt with fixture markings aligned parallel and perpendicular to detector axis at HV. Adjusted aim hardware until LB Gmax located at H/2.0R and level from H/1.0R to H/3.0R (VOR aim).

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH4

Specification: FMVSS108 Table XIX-a: LB2V (VO Headlamp - 2 Lamp System)

Color: White, Lower Beam

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
4.0U 8.0L		378.79		64	-
4.0U 8.0R		231.83		64	-
2.0U 4.0L		638.19		135	-
1.5U 1.0R TO 3.0R	2.8R	544.58		200	-
1.5U 1.0R TO R	1.9R	582.47		-	1400
1.0U 1.5L TO L	8.7L	957.57	817.48*	-	700
0.5U 1.5L TO L	8.6L	1539.52	1193.98*	-	1000
0.5U 1.0R TO 3.0R	2.4R	1424.89		500	-
0.5U 1.0R TO 3.0R	1.3R	1524.48		-	2700
H 8.0L		3067.46		64	-
H 4.0L		3252.02		135	-
H V		6114.88		-	-
0.6D 1.3R		18304.40		10000	-
0.9D 3.5L		10254.25		1800	12000
0.9D V		21753.99		4500	-
1.5D 2.0R		19698.38		15000	-
2.0D 15.0L		5368.78		1000	-
2.0D 9.0L		9565.54		1250	-
2.0D 9.0R		4970.23		1250	-
2.0D 15.0R		2744.88		1000	-
4.0D 20.0L		2820.77		300	-
4.0D V		6034.84		-	-
4.0D 4.0R		4803.60		-	12500
4.0D 20.0R		288.85	308.28	300	-
MAXIMUM	1.2D 0.6R	25307.52		-	-
MX(10U-90U/90L-90R)	10.0U 12.0L	82.02		-	125

*** - Denotes Failure.**

Bulb: Seasoned Osram H11 furnished with sample @ 12.80V / 4.556A

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with H11 filament located at goniometer center of rotation and tilt with fixture markings aligned parallel and perpendicular to detector axis at HV. Adjusted aim hardware until LB Gmax located at H/2.0R and level from H/1.0R to H/3.0R (VOR aim).

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH4

Specification: FMVSS108 Table XVIII: UB2 (Headlamp - 2 Lamp System)

Color: White, Upper Beam

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
2.0U V		15251.71		1500	-
1.0U 3.0L		22441.13		5000	-
1.0U 3.0R		19971.05		5000	-
H 12.0L		6463.27		1500	-
H 9.0L		9056.31		3000	-
H 6.0L		15184.92		5000	-
H 3.0L		30836.00		15000	-
H V		58781.86		40000	75000
H 3.0R		34671.14		15000	-
H 6.0R		12905.77		5000	-
H 9.0R		6862.70		3000	-
H 12.0R		5219.85		1500	-
1.5D 9.0L		14647.89		2000	-
1.5D V		51933.15		5000	-
1.5D 9.0R		8830.45		2000	-
2.5D 12.0L		8866.26		1000	-
2.5D V		19052.90		2500	-
2.5D 12.0R		5551.75		1000	-
4.0D V		7199.45		-	12000
MAXIMUM	0.8D 0.5R	72588.47		-	-

Sample meets test requirements at all points.

LB Bulb: Seasoned Osram H11 furnished with sample @ 12.80V / 4.555A

UB Bulb: Seasoned Sylvania HB3 furnished with sample @ 12.80V / 5.135A

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with H11 filament located at goniometer center of rotation and tilt with fixture markings aligned parallel and perpendicular to detector axis at HV. Adjusted aim hardware until LB Gmax located at H/2.0R and level from H/1.0R to H/3.0R (VOR aim).

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH1

Specification: FMVSS 108 Table VI-a: Front Turn Signal Lamp

Color: Yellow (Lamp <100mm from Headlamp Edge), 1 Lighted Section

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		138.17		100	-
10.0U 5.0R		229.83		100	-
5.0U 20.0L		101.52		63	-
5.0U 10.0L		347.43		188	-
5.0U V		532.03		438	-
5.0U 10.0R		274.99		188	-
5.0U 20.0R		158.07		63	-
H 10.0L		635.53		250	-
H 5.0L		1021.49		500	-
H V		976.06		500	-
H 5.0R		641.71		500	-
H 10.0R		396.50		250	-
5.0D 20.0L		146.82		63	-
5.0D 10.0L		628.87		188	-
5.0D V		861.81		438	-
5.0D 10.0R		513.62		188	-
5.0D 20.0R		164.32		63	-
10.0D 5.0L		281.17		100	-
10.0D 5.0R		302.08		100	-
MAXIMUM	1.6D 1.2L	1067.47		-	-
Zone 1		667.68		325	-
Zone 2		1611.82		625	-
Zone 3		4033.11		2375	-
Zone 4		1185.10		625	-
Zone 5		854.29		325	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=25.0mm) @ 14.13V / 2.432A / 377Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH2

Specification: FMVSS 108 Table VI-a: Front Turn Signal Lamp

Color: Yellow (Lamp <100mm from Headlamp Edge), 1 Lighted Section

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		148.58		100	-
10.0U 5.0R		216.21		100	-
5.0U 20.0L		157.72		63	-
5.0U 10.0L		622.68		188	-
5.0U V		811.04		438	-
5.0U 10.0R		318.76		188	-
5.0U 20.0R		185.83		63	-
H 10.0L		650.35		250	-
H 5.0L		966.91		500	-
H V		966.33		500	-
H 5.0R		780.60		500	-
H 10.0R		424.23		250	-
5.0D 20.0L		132.18		63	-
5.0D 10.0L		478.96		188	-
5.0D V		719.62		438	-
5.0D 10.0R		385.65		188	-
5.0D 20.0R		175.83		63	-
10.0D 5.0L		181.85		100	-
10.0D 5.0R		238.72		100	-
MAXIMUM	0.1D 0.7L	1023.73		-	-
Zone 1		620.33		325	-
Zone 2		1751.99		625	-
Zone 3		4244.51		2375	-
Zone 4		1128.63		625	-
Zone 5		816.59		325	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=25.0mm) @ 14.16V / 2.432A / 377Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH3

Specification: FMVSS 108 Table VI-a: Front Turn Signal Lamp

Color: Yellow (Lamp <100mm from Headlamp Edge), 1 Lighted Section

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		137.89		100	-
10.0U 5.0R		217.00		100	-
5.0U 20.0L		91.38		63	-
5.0U 10.0L		326.52		188	-
5.0U V		513.17		438	-
5.0U 10.0R		300.24		188	-
5.0U 20.0R		189.40		63	-
H 10.0L		576.77		250	-
H 5.0L		911.13		500	-
H V		928.07		500	-
H 5.0R		684.36		500	-
H 10.0R		431.54		250	-
5.0D 20.0L		142.41		63	-
5.0D 10.0L		566.96		188	-
5.0D V		849.11		438	-
5.0D 10.0R		556.76		188	-
5.0D 20.0R		241.18		63	-
10.0D 5.0L		279.47		100	-
10.0D 5.0R		294.94		100	-
MAXIMUM	2.6D 0.9L	1012.37		-	-
Zone 1		651.16		325	-
Zone 2		1470.25		625	-
Zone 3		3885.84		2375	-
Zone 4		1288.53		625	-
Zone 5		942.52		325	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=25.0mm) @ 14.17V / 2.432A / 377Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH4

Specification: FMVSS 108 Table VI-a: Front Turn Signal Lamp

Color: Yellow (Lamp <100mm from Headlamp Edge), 1 Lighted Section

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		133.73		100	-
10.0U 5.0R		215.52		100	-
5.0U 20.0L		93.70		63	-
5.0U 10.0L		331.34		188	-
5.0U V		521.04		438	-
5.0U 10.0R		292.76		188	-
5.0U 20.0R		181.18		63	-
H 10.0L		599.50		250	-
H 5.0L		951.94		500	-
H V		949.85		500	-
H 5.0R		685.45		500	-
H 10.0R		422.84		250	-
5.0D 20.0L		138.42		63	-
5.0D 10.0L		579.78		188	-
5.0D V		862.61		438	-
5.0D 10.0R		545.20		188	-
5.0D 20.0R		209.21		63	-
10.0D 5.0L		253.88		100	-
10.0D 5.0R		289.45		100	-
MAXIMUM	2.6D 0.9L	1009.89		-	-
Zone 1		619.73		325	-
Zone 2		1510.63		625	-
Zone 3		3970.89		2375	-
Zone 4		1260.80		625	-
Zone 5		895.36		325	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=25.0mm) @ 14.14V / 2.432A / 377Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH1 thru LH4

Specification: FMVSS 108 Table VI-a: Front Turn Signal Lamp
Turn Signal / Parking Ratio

	Parking				Turn				I/P Ratio				Required
	LH1	LH2	LH3	LH4	LH1	LH2	LH3	LH4	LH1	LH2	LH3	LH4	
10.0U 5.0L	19.0	15.6	18.5	18.9	138.2	148.6	137.9	133.7	7.3	9.5	7.5	7.1	3
10.0U 5.0R	10.1	8.5	12.2	13.0	229.8	216.2	217.0	215.5	22.8	25.4	17.8	16.6	3
5.0U 20.0L	14.2	12.1	15.5	16.4	101.5	157.7	91.4	93.7	7.2	13.0	5.9	5.7	3
5.0U 10.0L	30.1	31.2	30.9	32.8	347.4	622.7	326.5	331.3	11.5	19.9	10.6	10.1	3
5.0U V	22.0	22.9	25.3	27.2	532.0	811.0	513.2	521.0	24.2	35.5	20.3	19.1	5
5.0U 10.0R	19.1	13.6	15.3	15.6	275.0	318.8	300.2	292.8	14.4	23.4	19.7	18.8	3
5.0U 20.0R	14.7	15.7	20.6	20.4	158.1	185.8	189.4	181.2	10.8	11.8	9.2	8.9	3
H 10.0L	52.0	43.8	49.3	54.3	635.5	650.4	576.8	599.5	12.2	14.8	11.7	11.0	3
H 5.0L	45.7	43.2	47.2	56.9	1021.5	966.9	911.1	951.9	22.3	22.4	19.3	16.7	5
H V	30.2	28.5	25.8	30.4	976.1	966.3	928.1	949.9	32.4	33.9	36.0	31.3	5
H 5.0R	19.5	18.4	18.2	20.5	641.7	780.6	684.4	685.5	32.9	42.3	37.6	33.5	5
H 10.0R	20.1	25.1	22.7	24.7	396.5	424.2	431.5	422.8	19.7	16.9	19.0	17.1	3
5.0D 20.0L	15.1	22.9	14.0	15.3	146.8	132.2	142.4	138.4	9.7	5.8	10.2	9.1	0
5.0D 10.0L	29.4	36.0	27.9	30.7	628.9	479.0	567.0	579.8	21.4	13.3	20.3	18.9	0
5.0D V	20.9	24.6	19.7	22.7	861.8	719.6	849.1	862.6	41.2	29.2	43.2	37.9	0
5.0D 10.0R	10.9	12.4	11.4	12.0	513.6	385.7	556.8	545.2	47.3	31.2	48.8	45.3	0
5.0D 20.0R	5.7	8.7	8.0	7.5	164.3	175.8	241.2	209.2	28.6	20.1	30.3	28.1	0
10.0D 5.0L	23.7	30.1	25.8	27.9	281.2	181.9	279.5	253.9	11.9	6.0	10.8	9.1	0
10.0D 5.0R	16.0	18.1	18.7	19.8	302.1	238.7	294.9	289.5	18.9	13.2	15.8	14.6	0

Samples meet test requirements at all points.

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH1

Specification: FMVSS 108 Table X: Sidemarker Lamp (Reduced Inboard Angles)

Color: Yellow (LH), Front-to-Rear Sidemarker Separations of 149 inches
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 22.5L		1.21		0.62	-
10.0U V		1.44		0.62	-
10.0U 45.0R		0.89		0.62	-
10.0U 22.5L TO 45.0R	45.0R	0.87		0.62	-
5.0U 22.5L TO 45.0R	45.0R	0.73		0.62	-
H 22.5L		1.03		0.62	-
H V		1.42		0.62	-
H 45.0R		0.73		0.62	-
H 22.5L TO 45.0R	44.8R	0.68		0.62	-
5.0D 22.5L TO 45.0R	43.2R	0.72		0.62	-
10.0D 22.5L		0.87		0.62	-
10.0D V		1.29		0.62	-
10.0D 45.0R		0.75		0.62	-
10.0D 22.5L TO 45.0R	42.9R	0.69		0.62	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-648 (194, LCL=0.556in) @ 14.33V / 0.263A / 2.0MSCd

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 194 filament located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH2

Specification: FMVSS 108 Table X: Sidemarker Lamp (Reduced Inboard Angles)

Color: Yellow (LH), Front-to-Rear Sidemarker Separations of 149 inches
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 22.5L		1.04		0.62	-
10.0U V		1.54		0.62	-
10.0U 45.0R		0.63		0.62	-
10.0U 22.5L TO 45.0R	45.0R	0.62		0.62	-
5.0U 22.5L TO 45.0R	45.0R	0.64		0.62	-
H 22.5L		1.02		0.62	-
H V		1.27		0.62	-
H 45.0R		0.65		0.62	-
H 22.5L TO 45.0R	45.0R	0.65		0.62	-
5.0D 22.5L TO 45.0R	44.2R	0.63		0.62	-
10.0D 22.5L		1.06		0.62	-
10.0D V		1.14		0.62	-
10.0D 45.0R		0.63		0.62	-
10.0D 22.5L TO 45.0R	44.9R	0.63		0.62	-
MAXIMUM	10.0D 45.0R	0.63		-	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-648 (194, LCL=0.556in) @ 14.33V / 0.263A / 2.0MSCd

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 194 filament located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH3

Specification: FMVSS 108 Table X: Sidemarker Lamp (Reduced Inboard Angles)

Color: Yellow (LH), Front-to-Rear Sidemarker Separations of 149 inches
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 22.5L		1.12		0.62	-
10.0U V		1.52		0.62	-
10.0U 45.0R		0.81		0.62	-
10.0U 22.5L TO 45.0R	45.0R	0.82		0.62	-
5.0U 22.5L TO 45.0R	45.0R	0.64		0.62	-
H 22.5L		0.96		0.62	-
H V		1.37		0.62	-
H 45.0R		0.63		0.62	-
H 22.5L TO 45.0R	44.9R	0.62		0.62	-
5.0D 22.5L TO 45.0R	44.0R	0.64		0.62	-
10.0D 22.5L		0.97		0.62	-
10.0D V		1.33		0.62	-
10.0D 45.0R		0.64		0.62	-
10.0D 22.5L TO 45.0R	45.0R	0.64		0.62	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-649 (194, LCL=0.551in) @ 14.47V / 0.271A / 2.0MSCd

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 194 filament located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH4

Specification: FMVSS 108 Table X: Sidemarker Lamp (Reduced Inboard Angles)

Color: Yellow (LH), Front-to-Rear Sidemarker Separations of 149 inches
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 22.5L		0.98		0.62	-
10.0U V		1.47		0.62	-
10.0U 45.0R		0.67		0.62	-
10.0U 22.5L TO 45.0R	45.0R	0.66		0.62	-
5.0U 22.5L TO 45.0R	45.0R	0.66		0.62	-
H 22.5L		0.85		0.62	-
H V		1.34		0.62	-
H 45.0R		0.65		0.62	-
H 22.5L TO 45.0R	45.0R	0.65		0.62	-
5.0D 22.5L TO 45.0R	45.0R	0.63		0.62	-
10.0D 22.5L		0.81		0.62	-
10.0D V		1.34		0.62	-
10.0D 45.0R		0.67		0.62	-
10.0D 22.5L TO 45.0R	44.4R	0.64		0.62	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-649 (194, LCL=0.551in) @ 14.47V / 0.271A / 2.0MSCd

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 194 filament located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH1

Specification: FMVSS 108 Table XIV: Parking Lamp

Color: White or Yellow

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		19.03		0.8	125.0
10.0U 5.0R		10.09		0.8	125.0
5.0U 20.0L		14.18		0.4	125.0
5.0U 10.0L		30.12		0.8	125.0
5.0U V		22.02		2.8	125.0
5.0U 10.0R		19.12		0.8	125.0
5.0U 20.0R		14.65		0.4	125.0
H 10.0L		52.02		1.4	125.0
H 5.0L		45.73		3.6	125.0
H V		30.17		4.0	125.0
H 5.0R		19.52		3.6	125.0
H 10.0R		20.14		1.4	125.0
5.0D 20.0L		15.09		0.4	250.0
5.0D 10.0L		29.39		0.8	250.0
5.0D V		20.93		2.8	250.0
5.0D 10.0R		10.85		0.8	250.0
5.0D 20.0R		5.74		0.4	250.0
10.0D 5.0L		23.70		0.8	250.0
10.0D 5.0R		16.02		0.8	250.0
MX(H-90U/45L-45R)	H 8.7L	55.17		-	125.0
MAXIMUM	0.1D 8.7L	55.87		-	250.0
Zone 1		72.00		2.4	-
Zone 2		111.53		3.0	-
Zone 3		138.37		16.8	-
Zone 4		50.11		3.0	-
Zone 5		46.49		2.4	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=28.06mm) @ 15.05V / 0.594A / 28.0Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH2

Specification: FMVSS 108 Table XIV: Parking Lamp

Color: White or Yellow

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		15.62		0.8	125.0
10.0U 5.0R		8.51		0.8	125.0
5.0U 20.0L		12.09		0.4	125.0
5.0U 10.0L		31.24		0.8	125.0
5.0U V		22.87		2.8	125.0
5.0U 10.0R		13.62		0.8	125.0
5.0U 20.0R		15.71		0.4	125.0
H 10.0L		43.83		1.4	125.0
H 5.0L		43.21		3.6	125.0
H V		28.48		4.0	125.0
H 5.0R		18.44		3.6	125.0
H 10.0R		25.13		1.4	125.0
5.0D 20.0L		22.93		0.4	250.0
5.0D 10.0L		35.99		0.8	250.0
5.0D V		24.62		2.8	250.0
5.0D 10.0R		12.37		0.8	250.0
5.0D 20.0R		8.73		0.4	250.0
10.0D 5.0L		30.10		0.8	250.0
10.0D 5.0R		18.14		0.8	250.0
MX (H-90U/45L-45R)	H 9.3L	47.32		-	125.0
MAXIMUM	2.1D 9.0L	56.58		-	250.0
Zone 1		80.74		2.4	-
Zone 2		111.06		3.0	-
Zone 3		137.62		16.8	-
Zone 4		51.12		3.0	-
Zone 5		51.09		2.4	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=28.06mm) @ 15.07V / 0.594A / 28.0Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH3

Specification: FMVSS 108 Table XIV: Parking Lamp

Color: White or Yellow

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		18.46		0.8	125.0
10.0U 5.0R		12.20		0.8	125.0
5.0U 20.0L		15.53		0.4	125.0
5.0U 10.0L		30.88		0.8	125.0
5.0U V		25.27		2.8	125.0
5.0U 10.0R		15.25		0.8	125.0
5.0U 20.0R		20.58		0.4	125.0
H 10.0L		49.32		1.4	125.0
H 5.0L		47.20		3.6	125.0
H V		25.77		4.0	125.0
H 5.0R		18.21		3.6	125.0
H 10.0R		22.72		1.4	125.0
5.0D 20.0L		14.00		0.4	250.0
5.0D 10.0L		27.90		0.8	250.0
5.0D V		19.65		2.8	250.0
5.0D 10.0R		11.42		0.8	250.0
5.0D 20.0R		7.97		0.4	250.0
10.0D 5.0L		25.78		0.8	250.0
10.0D 5.0R		18.66		0.8	250.0
MX (H-90U/45L-45R)	H 8.7L	54.18		-	125.0
MAXIMUM	0.4D 8.4L	55.18		-	250.0
Zone 1		73.76		2.4	-
Zone 2		108.11		3.0	-
Zone 3		136.10		16.8	-
Zone 4		49.39		3.0	-
Zone 5		59.40		2.4	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=28.06mm) @ 15.09V / 0.594A / 28.0Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH4

Specification: FMVSS 108 Table XIV: Parking Lamp

Color: White or Yellow

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		18.90		0.8	125.0
10.0U 5.0R		13.00		0.8	125.0
5.0U 20.0L		16.36		0.4	125.0
5.0U 10.0L		32.80		0.8	125.0
5.0U V		27.24		2.8	125.0
5.0U 10.0R		15.58		0.8	125.0
5.0U 20.0R		20.42		0.4	125.0
H 10.0L		54.34		1.4	125.0
H 5.0L		56.86		3.6	125.0
H V		30.36		4.0	125.0
H 5.0R		20.49		3.6	125.0
H 10.0R		24.69		1.4	125.0
5.0D 20.0L		15.28		0.4	250.0
5.0D 10.0L		30.69		0.8	250.0
5.0D V		22.74		2.8	250.0
5.0D 10.0R		12.03		0.8	250.0
5.0D 20.0R		7.45		0.4	250.0
10.0D 5.0L		27.87		0.8	250.0
10.0D 5.0R		19.84		0.8	250.0
MX (H-90U/45L-45R)	H 5.3L	56.17		-	125.0
MAXIMUM	H 5.3L	56.22		-	250.0
Zone 1		78.41		2.4	-
Zone 2		117.83		3.0	-
Zone 3		157.70		16.8	-
Zone 4		52.30		3.0	-
Zone 5		60.70		2.4	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=28.06mm) @ 15.25V / 0.594A / 28.0Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH1

Specification: FMVSS 108 Table XVI-a: Reflex Reflector

Color: Yellow

Specific Intensity, Candela / Footcandle

Test Point	Measured 0.2°	Required Minimum	Measured 1.5°	Required Minimum
LH1				
10.0U V	6.757*	7.50	0.585	0.13
H 20.0L	4.796	3.75	0.396	0.08
H V	8.215*	11.25	0.666	0.18
H 20.0R	4.909	3.75	0.390	0.08
10.0D V	6.648*	7.50	0.610	0.13

0.2° Maximum: 8.585 @ 1.1U/3.5R

LH2				
10.0U V	6.973*	7.50	0.688	0.13
H 20.0L	5.023	3.75	0.414	0.08
H V	8.949*	11.25	0.699	0.18
H 20.0R	5.016	3.75	0.401	0.08
10.0D V	7.090*	7.50	0.637	0.13

0.2° Maximum: 9.129 @ 1.2U/0.5L

Incident Illumination upon sample: 0.956 fc (10.29 Lux)

*** - Denotes Failure.**

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with reflex center located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to projector axis at HV.

Note: Entire device excluding reflex masked off during testing.

PHOTOMETRIC TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH3 and LH4

Specification: FMVSS 108 Table XVI-a: Reflex Reflector

Color: Yellow

Specific Intensity, Candela / Footcandle

Test Point		Measured 0.2°	Required Minimum	Measured 1.5°	Required Minimum
10.0U	V	6.921*	7.50	0.588	0.13
H 20.0L		4.934	3.75	0.400	0.08
H	V	8.515*	11.25	0.697	0.18
H 20.0R		4.908	3.75	0.384	0.08
10.0D	V	6.745*	7.50	0.621	0.13

0.2° Maximum: 8.930 @ 1.5U/3.0R

LH4

10.0U	V	6.550*	7.50	0.596	0.13
H 20.0L		4.818	3.75	0.392	0.08
H	V	8.128*	11.25	0.670	0.18
H 20.0R		4.752	3.75	0.367	0.08
10.0D	V	6.647*	7.50	0.614	0.13

0.2° Maximum: 8.530 @ 1.5U/3.4R

Incident Illumination upon sample: 0.956 fc (10.29 Lux)

*** - Denotes Failure.**

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with reflex center located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to projector axis at HV.

Note: Entire device excluding reflex masked off during testing.

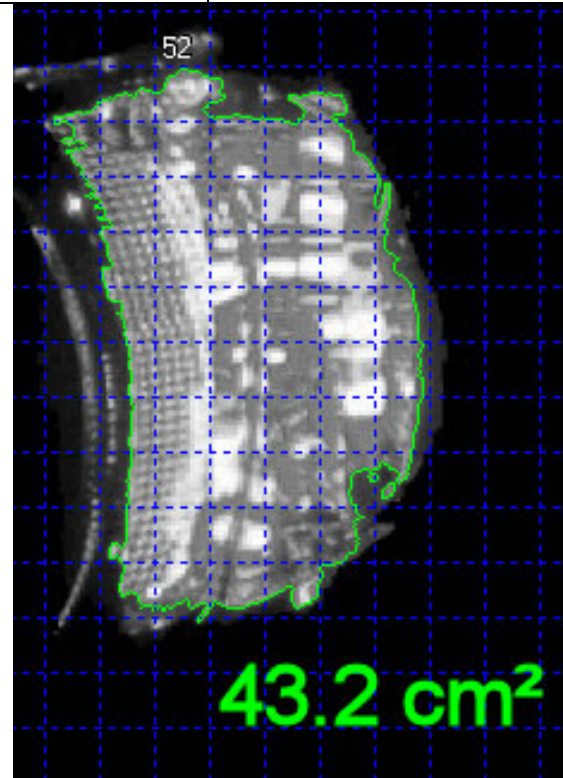
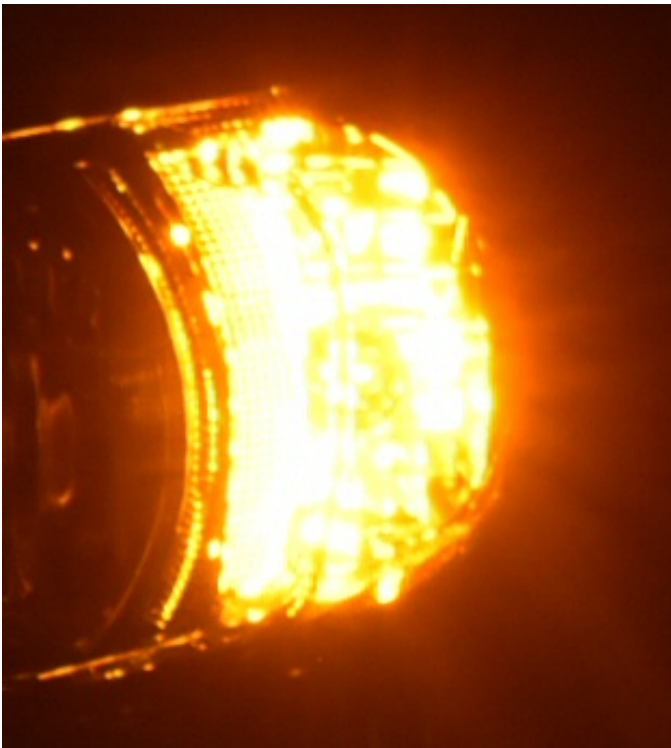
EPLLA TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH1

Requirement: FMVSS 108 Table IV-a Effective Projected Luminous Lens Area
 Test Method: CCITL camera and image analysis

Function	Effective Projected Luminous Lens Area	
	Measured	Minimum Required
Front Turn Signal (HV View)	≥43.2 cm ²	22 cm ²

**FMVSS 108 S4 Definitions**

Effective light-emitting surface means that portion of a lamp that directs light to the photometric test pattern, and does not include transparent lenses, mounting hole bosses, reflex reflector area, beads or rims that may glow or produce small areas of increased intensity as a result of uncontrolled light from an area of $\frac{1}{2}^\circ$ radius around a test point.

Effective projected luminous lens area means the area of the orthogonal projection of the effective light-emitting surface of a lamp on a plane perpendicular to a defined direction relative to the axis of reference. Unless otherwise specified, the direction is coincident with the axis of reference.

NHTSA has not defined what constitutes "glow" and has no criteria regarding test methodology or a required minimum luminance for EPLLA.

Sample meets EPLLA requirements.

VISIBILITY TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH1

Specification: FMVSS 108 Table V-c: Visibility - Luminous Intensity Option

Color: Yellow, Front Turn Signal (LH)

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
15.0U 80.0L		21.38		0.30	-
15.0U 45.0R		6.94		0.30	-
15.0U 80.0L TO 45.0R	45.0R	6.91		0.30	-
10.0U 80.0L		20.25		0.30	-
10.0U 45.0R		24.79		0.30	-
10.0U 80.0L TO 45.0R	42.3R	9.75		0.30	-
5.0U 80.0L		25.33		0.30	-
5.0U 45.0R		7.72		0.30	-
5.0U 80.0L TO 45.0R	45.0R	7.70		0.30	-
H 80.0L		28.45		0.30	-
H 45.0R		13.97		0.30	-
H 80.0L TO 45.0R	43.7R	13.71		0.30	-
5.0D 80.0L		30.04		0.30	-
5.0D 45.0R		30.37		0.30	-
5.0D 80.0L TO 45.0R	38.1R	15.19		0.30	-
10.0D 80.0L		21.90		0.30	-
10.0D 45.0R		17.44		0.30	-
10.0D 80.0L TO 45.0R	34.7R	12.63		0.30	-
15.0D 80.0L		21.35		0.30	-
15.0D 45.0R		26.85		0.30	-
15.0D 80.0L TO 45.0R	37.9R	8.04		0.30	-
15.0U TO 15.0D 80.0L	9.4U	19.55		0.30	-
15.0U TO 15.0D 45.0R	13.3U	6.82		0.30	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=25.0mm) @ 14.16V / 2.432A / 377Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

VISIBILITY TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH2

Specification: FMVSS 108 Table V-c: Visibility - Luminous Intensity Option

Color: Yellow, Front Turn Signal (LH)

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
15.0U 80.0L		20.46		0.30	-
15.0U 45.0R		6.81		0.30	-
15.0U 80.0L TO 45.0R	45.0R	6.77		0.30	-
10.0U 80.0L		22.39		0.30	-
10.0U 45.0R		21.58		0.30	-
10.0U 80.0L TO 45.0R	39.4R	10.35		0.30	-
5.0U 80.0L		26.13		0.30	-
5.0U 45.0R		10.45		0.30	-
5.0U 80.0L TO 45.0R	44.2R	10.14		0.30	-
H 80.0L		24.63		0.30	-
H 45.0R		52.89		0.30	-
H 80.0L TO 45.0R	38.8R	15.98		0.30	-
5.0D 80.0L		25.08		0.30	-
5.0D 45.0R		20.34		0.30	-
5.0D 80.0L TO 45.0R	38.8R	13.81		0.30	-
10.0D 80.0L		21.96		0.30	-
10.0D 45.0R		18.72		0.30	-
10.0D 80.0L TO 45.0R	37.1R	8.95		0.30	-
15.0D 80.0L		20.73		0.30	-
15.0D 45.0R		23.39		0.30	-
15.0D 80.0L TO 45.0R	35.5R	6.42		0.30	-
15.0U TO 15.0D 80.0L	15.0U	20.10		0.30	-
15.0U TO 15.0D 45.0R	15.0U	6.71		0.30	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=25mm) @ 14.16V / 2.432A / 377Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

VISIBILITY TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH3

Specification: FMVSS 108 Table V-c: Visibility - Luminous Intensity Option

Color: Yellow, Front Turn Signal (LH)

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
15.0U 80.0L		21.54		0.30	-
15.0U 45.0R		7.17		0.30	-
15.0U 80.0L TO 45.0R	45.0R	7.15		0.30	-
10.0U 80.0L		20.47		0.30	-
10.0U 45.0R		24.74		0.30	-
10.0U 80.0L TO 45.0R	42.0R	10.65		0.30	-
5.0U 80.0L		25.23		0.30	-
5.0U 45.0R		7.91		0.30	-
5.0U 80.0L TO 45.0R	45.0R	7.92		0.30	-
H 80.0L		28.58		0.30	-
H 45.0R		13.65		0.30	-
H 80.0L TO 45.0R	45.0R	13.67		0.30	-
5.0D 80.0L		28.49		0.30	-
5.0D 45.0R		35.89		0.30	-
5.0D 80.0L TO 45.0R	38.5R	16.18		0.30	-
10.0D 80.0L		22.62		0.30	-
10.0D 45.0R		21.47		0.30	-
10.0D 80.0L TO 45.0R	68.4L	13.28		0.30	-
15.0D 80.0L		20.71		0.30	-
15.0D 45.0R		26.36		0.30	-
15.0D 80.0L TO 45.0R	35.5R	9.28		0.30	-
15.0U TO 15.0D 80.0L	9.4U	19.81		0.30	-
15.0U TO 15.0D 45.0R	13.3U	6.95		0.30	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=25.0mm) @ 14.17V / 2.432A / 377Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

VISIBILITY TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH4

Specification: FMVSS 108 Table V-c: Visibility - Luminous Intensity Option

Color: Yellow, Front Turn Signal (LH)

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
15.0U 80.0L		21.16		0.30	-
15.0U 45.0R		7.00		0.30	-
15.0U 80.0L TO 45.0R	45.0R	6.99		0.30	-
10.0U 80.0L		20.28		0.30	-
10.0U 45.0R		25.65		0.30	-
10.0U 80.0L TO 45.0R	42.0R	9.96		0.30	-
5.0U 80.0L		25.21		0.30	-
5.0U 45.0R		7.99		0.30	-
5.0U 80.0L TO 45.0R	45.0R	7.97		0.30	-
H 80.0L		28.88		0.30	-
H 45.0R		14.13		0.30	-
H 80.0L TO 45.0R	45.0R	14.18		0.30	-
5.0D 80.0L		28.86		0.30	-
5.0D 45.0R		42.42		0.30	-
5.0D 80.0L TO 45.0R	38.8R	15.66		0.30	-
10.0D 80.0L		22.21		0.30	-
10.0D 45.0R		21.05		0.30	-
10.0D 80.0L TO 45.0R	34.7R	12.72		0.30	-
15.0D 80.0L		20.46		0.30	-
15.0D 45.0R		28.53		0.30	-
15.0D 80.0L TO 45.0R	37.9R	8.64		0.30	-
15.0U TO 15.0D 80.0L	9.5U	19.62		0.30	-
15.0U TO 15.0D 45.0R	13.2U	6.85		0.30	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=25.0mm) @ 14.17V / 2.432A / 377Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

VISIBILITY TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH1

Specification: FMVSS 108 Table V-c: Visibility - Luminous Intensity Option

Color: Yellow or White, Parking (LH)

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
15.0U 80.0L		1.76		0.05	-
15.0U 45.0R		1.31		0.05	-
15.0U 80.0L TO 45.0R	43.1R	0.49		0.05	-
10.0U 80.0L		1.79		0.05	-
10.0U 45.0R		0.52		0.05	-
10.0U 80.0L TO 45.0R	45.0R	0.50		0.05	-
5.0U 80.0L		1.71		0.05	-
5.0U 45.0R		0.99		0.05	-
5.0U 80.0L TO 45.0R	42.3R	0.79		0.05	-
H 80.0L		1.72		0.05	-
H 45.0R		2.06		0.05	-
H 80.0L TO 45.0R	41.3R	1.34		0.05	-
5.0D 80.0L		1.71		0.05	-
5.0D 45.0R		1.07		0.05	-
5.0D 80.0L TO 45.0R	45.0R	1.05		0.05	-
10.0D 80.0L		1.68		0.05	-
10.0D 45.0R		0.97		0.05	-
10.0D 80.0L TO 45.0R	42.8R	0.68		0.05	-
15.0D 80.0L		1.65		0.05	-
15.0D 45.0R		0.95		0.05	-
15.0D 80.0L TO 45.0R	40.2R	0.79		0.05	-
15.0U TO 15.0D 80.0L	2.8D	1.50		0.05	-
15.0U TO 15.0D 45.0R	9.9U	0.50		0.05	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=28.06mm) @ 15.05V / 0.594A / 28.0Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

VISIBILITY TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH2

Specification: FMVSS 108 Table V-c: Visibility - Luminous Intensity Option

Color: Yellow or White, Parking (LH)

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
15.0U 80.0L		1.46		0.05	-
15.0U 45.0R		1.31		0.05	-
15.0U 80.0L TO 45.0R	43.3R	0.54		0.05	-
10.0U 80.0L		1.48		0.05	-
10.0U 45.0R		0.54		0.05	-
10.0U 80.0L TO 45.0R	44.9R	0.55		0.05	-
5.0U 80.0L		1.29		0.05	-
5.0U 45.0R		0.82		0.05	-
5.0U 80.0L TO 45.0R	45.0R	0.79		0.05	-
H 80.0L		1.17		0.05	-
H 45.0R		0.74		0.05	-
H 80.0L TO 45.0R	45.0R	0.72		0.05	-
5.0D 80.0L		1.16		0.05	-
5.0D 45.0R		1.15		0.05	-
5.0D 80.0L TO 45.0R	45.0R	1.14		0.05	-
10.0D 80.0L		1.27		0.05	-
10.0D 45.0R		0.81		0.05	-
10.0D 80.0L TO 45.0R	45.0R	0.79		0.05	-
15.0D 80.0L		1.37		0.05	-
15.0D 45.0R		1.47		0.05	-
15.0D 80.0L TO 45.0R	35.5R	0.92		0.05	-
15.0U TO 15.0D 80.0L	3.3D	1.14		0.05	-
15.0U TO 15.0D 45.0R	6.3U	0.52		0.05	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=28.06mm) @ 15.05V / 0.594A / 28.0Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

VISIBILITY TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH3

Specification: FMVSS 108 Table V-c: Visibility - Luminous Intensity Option

Color: Yellow or White, Parking (LH)

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
15.0U 80.0L		1.32		0.05	-
15.0U 45.0R		1.37		0.05	-
15.0U 80.0L TO 45.0R	43.1R	0.61		0.05	-
10.0U 80.0L		1.29		0.05	-
10.0U 45.0R		0.60		0.05	-
10.0U 80.0L TO 45.0R	45.0R	0.59		0.05	-
5.0U 80.0L		1.24		0.05	-
5.0U 45.0R		0.99		0.05	-
5.0U 80.0L TO 45.0R	41.8R	0.88		0.05	-
H 80.0L		1.21		0.05	-
H 45.0R		2.99		0.05	-
H 80.0L TO 45.0R	77.2L	1.14		0.05	-
5.0D 80.0L		1.38		0.05	-
5.0D 45.0R		1.57		0.05	-
5.0D 80.0L TO 45.0R	42.3R	1.11		0.05	-
10.0D 80.0L		1.35		0.05	-
10.0D 45.0R		0.87		0.05	-
10.0D 80.0L TO 45.0R	42.3R	0.78		0.05	-
15.0D 80.0L		1.51		0.05	-
15.0D 45.0R		0.89		0.05	-
15.0D 80.0L TO 45.0R	45.0R	0.85		0.05	-
15.0U TO 15.0D 80.0L	2.8D	1.10		0.05	-
15.0U TO 15.0D 45.0R	8.8D	0.53		0.05	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=28.06mm) @ 15.08V / 0.594A / 28.0Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

VISIBILITY TEST DATA SHEET

Project Name: 2018 Subaru Impreza VOR Replaceable Bulb (H11/HB3) Headlamp (LH)

Sample Number: LH4

Specification: FMVSS 108 Table V-c: Visibility - Luminous Intensity Option

Color: Yellow or White, Parking (LH)

Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
15.0U 80.0L		1.28		0.05	-
15.0U 45.0R		1.25		0.05	-
15.0U 80.0L TO 45.0R	43.1R	0.57		0.05	-
10.0U 80.0L		1.28		0.05	-
10.0U 45.0R		0.58		0.05	-
10.0U 80.0L TO 45.0R	45.0R	0.56		0.05	-
5.0U 80.0L		1.19		0.05	-
5.0U 45.0R		0.92		0.05	-
5.0U 80.0L TO 45.0R	42.3R	0.85		0.05	-
H 80.0L		1.16		0.05	-
H 45.0R		3.29		0.05	-
H 80.0L TO 45.0R	80.0L	1.16		0.05	-
5.0D 80.0L		1.34		0.05	-
5.0D 45.0R		1.56		0.05	-
5.0D 80.0L TO 45.0R	76.7L	1.11		0.05	-
10.0D 80.0L		1.34		0.05	-
10.0D 45.0R		0.83		0.05	-
10.0D 80.0L TO 45.0R	42.0R	0.75		0.05	-
15.0D 80.0L		1.38		0.05	-
15.0D 45.0R		0.72		0.05	-
15.0D 80.0L TO 45.0R	45.0R	0.71		0.05	-
15.0U TO 15.0D 80.0L	2.7D	1.04		0.05	-
15.0U TO 15.0D 45.0R	9.1D	0.51		0.05	-

Sample meets test requirements at all points.

Calibrated Bulb: ITL-1825 (7440NA, LCL=28.06mm) @ 15.03V / 0.594A / 28.0Lm

Aim: Sample mounted on fixture provided by Valeo. Fixture mounted on level goniometer with 7440NA filaments located at goniometer center of rotation and tilt with fixture edges aligned parallel and perpendicular to detector axis at HV.

COLORIMETRY TEST DATA SHEET

Project Name: 2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp

Sample Number: LH1-LH4

Requirement: FMVSS 108 S14.4.1 Color Test

Test Method: FMVSS 108 S14.4.1.4 Tristimulus Method (Average of 3 reads)

Instrument: Photo Research PR-655 Spectroradiometer with SRS-3 Target

Location: 1.5D/2.0R (LB); HV (UB)

Voltage: 12.8V (LB, UB)

Function	Sample	x	y	WHITE Requirement & Chart
Lower Beam 1.5D/2R 12.8V	LH1	0.4283	0.4021	<p>0.31 ≤ x ≤ 0.50 0.38 ≤ y ≤ 0.44 y ≥ 0.75x + 0.05 y ≤ 0.64x + 0.15</p> <p>FMVSS 108 White</p>
	LH2	0.4297	0.4032	
	LH3	0.4296	0.4029	
	LH4	0.4277	0.4017	
Upper Beam HV 12.8V	LH1	0.4222	0.3999	
	LH2	0.4215	0.3998	
	LH3	0.4220	0.4001	
	LH4	0.4213	0.3992	

Samples meet Color requirements for White.

COLORIMETRY TEST DATA SHEET

Project Name: 2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp

Sample Number: LH1-LH4

Requirement: FMVSS 108 S14.4.1 Color Test

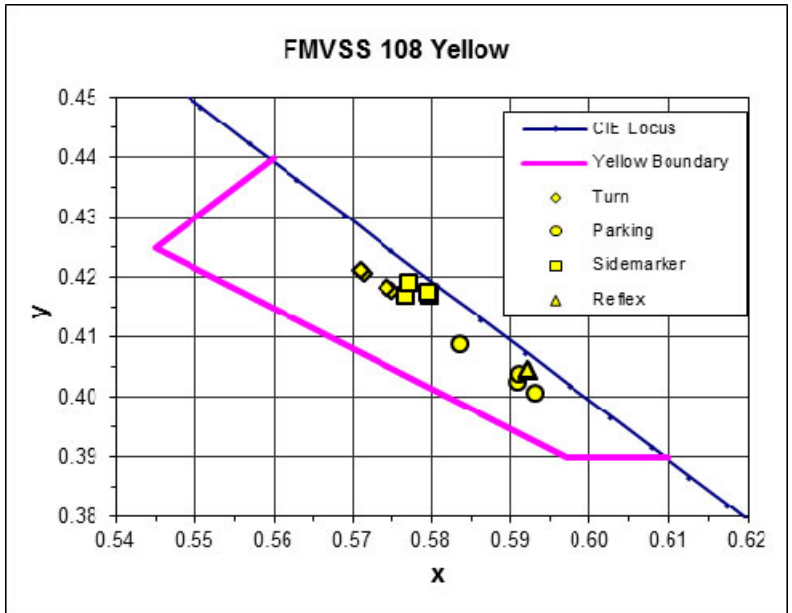
Test Method: FMVSS 108 S14.4.1.4 Tristimulus Method (Average of 3 reads)

Instrument: Photo Research PR-655 Spectroradiometer with SRS-3 Target

Location: HV (I, P, P2)

Voltage: 12.8V (I), 14.0V (P, P2)

Function	Sample	x	y	YELLOW (AMBER) Requirement & Chart
Turn HV 12.8V	LH1	0.5753	0.4176	$y \geq 0.39$ $y \geq 0.79 - 0.67x$ $y \leq x - 0.12$
	LH2	0.5717	0.4206	
	LH3	0.5713	0.4210	
	LH4	0.5747	0.4182	
Parking HV 14.0V	LH1	0.5909	0.4025	
	LH2	0.5911	0.4037	
	LH3	0.5836	0.4088	
	LH4	0.5932	0.4006	
Sidemarker HV 14.0V	LH1	0.5767	0.4169	
	LH2	0.5797	0.4168	
	LH3	0.5795	0.4174	
	LH4	0.5772	0.4191	
Reflex 5D/V	LH1	0.5923	0.4046	
	LH2	0.5926	0.4043	
	LH3	0.5923	0.4044	
	LH4	0.5924	0.4045	

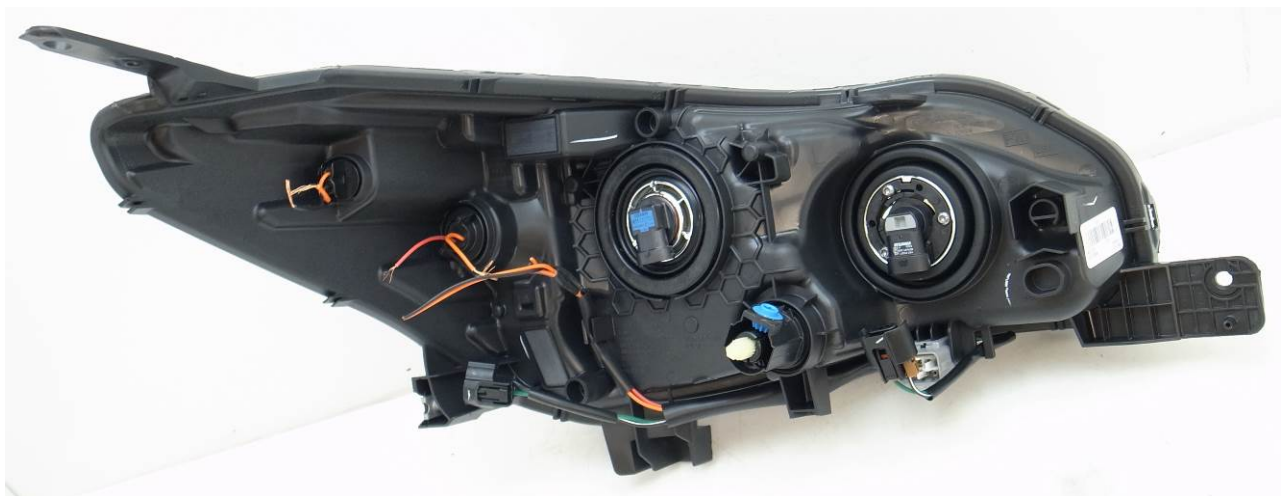


Samples meet Color requirements for Yellow (Amber).

Note: Devices tested with bulb that came with test fixture.

PHOTOGRAPH SHEET

Project Name: 2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp



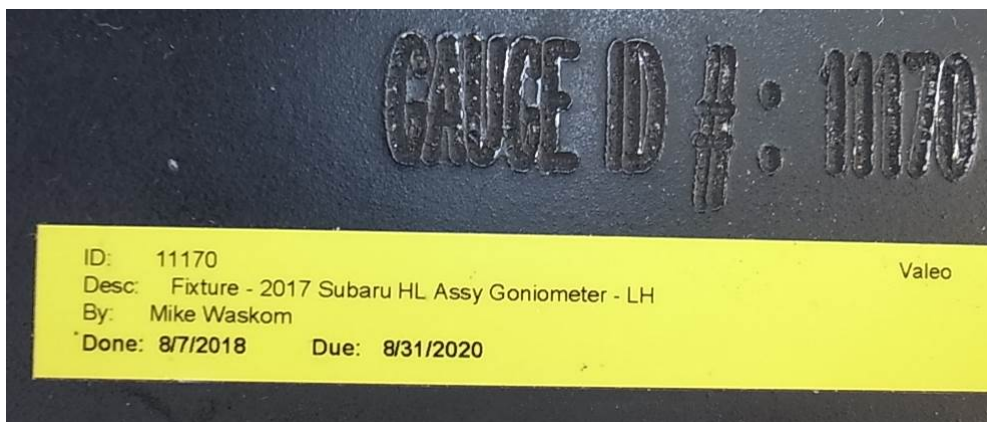
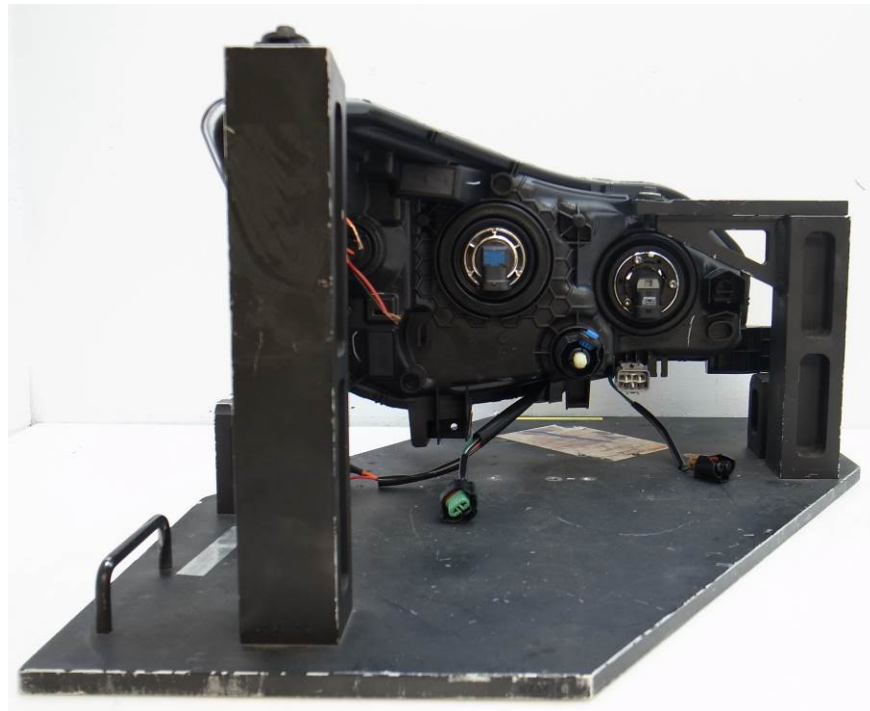
PHOTOGRAPH SHEET

Project Name: 2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp



PHOTOGRAPH SHEET

Project Name: 2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp



CALIBRATION DATA SHEET

Project Name: 2018 Subaru Impreza LH VOR Replaceable Bulb (H11/HB3) Headlamp

PHOTOMETRY / COLOR

Last Calibrated

Goniometer

ITL Custom with Aerotech ART-330, 320 Stepper Motors07 Jan 2015
 [resolution 0.001°, accuracy ±0.01° (±0.05%)] [due every 5 years]

Luminous Intensity

Hoffman TSP-7501 (HG), S/Ns 1060, 1061, 102712 Jan 2019
 [0.1 Cd to 600 kCd, ±0.01 Cd, accuracy ±2.0%] [due every 12 months]

Flash Energy (Flashing Lamps)

IL1700 with SED033/Y/L30 S/Ns 4695, 8609, 28302, 29612 Jan 2019
 [0.1 Cd·sec to 60 MCd·sec, accuracy ±2.0%] [due every 12 months]

Color - Spectroradiometric

Photoresearch PR-655 w/MS-75 lens & SRS-3 target,
 S/N 6516070620 Jun 2018
 [resolution ±2nm, (x, y) ±0.001, ±4% luminance] [due every 12 months]

Reflex Projector

Hoffman GPS-102, S/N 1006before every test
 [~1 fc (10 Lx) at 2856K (Illuminant A)] [due as needed]

ELECTRICAL

Last Calibrated

DC Power Supply

HP 6652A, S/N 3347A-01634N/A
 [500W, 0-20V, 0-25A] [use DMMS for measurement]

Voltage

Fluke 45 (#1), S/N 793401926 Jan 2019
 [resolution 0.01V, accuracy ±0.02%] [due every 12 months]

Current

Keithley 197A (#1), S/N 74143026 Jan 2019
 [resolution 0.001A, accuracy ±0.02%] [due every 12 months]