FCA
FIAT CHRYSLER AUTOMOBILES

Thomas McCarthy
Head, Vehicle Safety Compliance and Product Analysis

May 14, 2019

Ms. Heidi King, Deputy Administrator
National Highway Traffic Safety Administration
1200 New Jersey Ave. SE
Washington, DC 20590

Re: Supplement to FCA US Petition for Determination of Inconsequential Noncompliance with Federal Motor Vehicle Safety Standard ("FMVSS") 108 (Recalls 19V-199 and 19E-025 dated April 5, 2019)

Dear Ms. King:

FCA US LLC (f/k/a Chrysler Group LLC) ("FCA US") is a Delaware limited liability company with its principal place of business at 1000 Chrysler Drive, Auburn Hills, MI 48326.

FCA US is submitting the attached report documenting additional testing that FCA US recently conducted. It is similar to testing that was described in the above-referenced petition. As FCA US anticipated when submitting this petition, this additional testing further supports FCA US' position, that the human eye could not differentiate the performance of the reflex reflectors on the affected vehicles from the reflex reflectors on the compliant vehicles. FCA US submits that this data confirms the subject vehicles perform adequately to meet the safety purpose of FMVSS 108.

Sincerely,

Thomas McCarthy

Enclosure
CC: Mr. Kareem Habib
Acting Chief, Recall Management Division

FIAT CHRYSLER AUTOMOBILES

Subject: Follow-up FCA US LLC Subjective Evaluation of Dodge Journey Front Side Reflex Reflectors.

Location: FCA Canada Inc. Automotive Research and Development Center Lighting Tunnel, Windsor, Ontario, Canada.

Date: April 26, 2019.

Background:

Reflex reflectors are devices used on vehicles to give an indication to approaching drivers using reflected light from the lamps of the approaching vehicle. A subjective evaluation of the "on-vehicle" reflective performance of Dodge Journey Front Side Reflex Reflectors was conducted to determine if human eyes are capable of distinguishing between reflex reflectors known to not meet, and known to meet, the photometric requirements of FMVSS 108 and CMVSS 108.

The original subjective evaluation was conducted on March 22, 2019 in the Lighting Tunnel at the FCA Canada Automotive Research and Development Center in Windsor, Ontario, Canada, with headlamps of two different vehicles used as sources of illumination. The first vehicle used as a source of illumination was a Jeep Cherokee that had a headlamp mounting height of 34.89 inches above ground (as measured to the center of the device). The second vehicle used as a source of illumination was a Ram 1500 Pickup Truck that had a headlamp mounting height of a 39.59 inches above ground (as measured to the center of the device).

This follow-up evaluation was conducted using an Alfa Romeo Giulia that had a headlamp mounting height of 26.50 inches above ground (as measured to the center of the device). This vehicle was chosen to demonstrate a scenario of a vehicle with low headlamp mounting heights being used as the source of illumination. (Please note the lettering and numbering of the evaluations, figures, and appendices contained in this report are sequential to those used in the previous March 22, 2019 report.)

Evaluation:

A subjective evaluation was conducted of a Dodge Journey with a headlamp assembly containing a front side reflex reflector known not to meet FMVSS 108 / CMVSS 108 photometric requirements compared to a Dodge Journey with a headlamp assembly containing a front side reflex reflector known to meet FMVSS 108 / CMVSS 108 photometric requirements. This evaluation was conducted at 9:00 am, Friday, April 26, 2019 in the Lighting Tunnel at the FCA Canada Automotive Research and Development Center in Windsor, Ontario, Canada. Eight FCA employees, with various job responsibilities, participated in this subjective evaluation.

This evaluation was conducted with two Dodge Journey vehicles parked front end to front end across the road surface 100 feet (30.5 meters) away from an Alfa Romeo Giulia vehicle that used its headlamps as a source of illumination for observers to evaluate the luminous intensity of each front side reflex reflector. The 100 feet (30.5 meter) distance was chosen because that is the distance that is specified in FMVSS 108 and CMVSS 108 for testing reflex reflectors using a goniometer in a photometric laboratory.

A red Dodge Journey was parked across the left side of the pavement with a passenger side headlamp containing a front side reflex reflector known to not meet FMVSS 108 and CMVSS 108 photometric requirements (see Appendix D). Another red Dodge Journey was parked across the right side of the pavement with a driver side headlamp containing a front side reflex reflector known to meet FMVSS 108 and CMVSS 108 photometric requirements (see Appendix E). These were the same headlamp assemblies and side reflex reflectors that were used for the previous subjective evaluation that occurred on March 22, 2019. For reference, FMVSS 108 and CMVSS 108 photometric requirements are shown in Appendix F.

A 2019 Alfa Romeo Giulia with Bi-Xenon Projector Headlamps (25 watt D5S light sources) was used as the source of illumination. Evaluators stood immediately in front of, and at the centerline of, the Alfa Romeo Giulia vehicle while its headlamps were being used as the source of illumination. Evaluators were asked if they were able to distinguish a difference between the reflex reflectors.

Four different scenarios were subjectively evaluated as described below:

Subjective Evaluation F: Alfa Romeo Giulia Low Beam Headlamps used as light source at center of the pavement shining towards the two Dodge Journey vehicles. See Figures 11 and 12.

Subjective Evaluation G: Alfa Romeo Giulia High Beam Headlamps used as light source at center of the pavement shining towards the two Dodge Journey vehicles. See Figures 13 and 14.

Subjective Evaluation H: Alfa Romeo Giulia Low Beam Headlamps used as light source at the left edge of pavement (146 inches to the left of the centerline of pavement) shining towards the two Dodge Journey vehicles. See Figures 15 and 16.

Subjective Evaluation J: Alfa Romeo Giulia Low Beam Headlamps used as light source at the right edge of pavement (150 inches to the right of the centerline of pavement) shining towards the two Dodge Journey vehicles. See Figures 17 and 18.

Additional images that depict the setup of these subjective evaluations are shown in Appendix G.

Findings:

None of the eight evaluators were able to distinguish any luminous intensity differences of the light being reflected to their eyes from the Dodge Journey front side reflex reflectors that were being illuminated by the headlamps of the Alfa Romeo Giulia in the 4 subjective evaluations that were conducted.

This report was compiled by:

Dennis Novack
Senior Technical Specialist
FCA Exterior Lighting Engineering

Subjective Evaluation F: Alfa Romeo Giulia Low Beam Headlamps used as light source at center of the pavement shining towards the two Dodge Journey vehicles. See Figures 11 and 12.

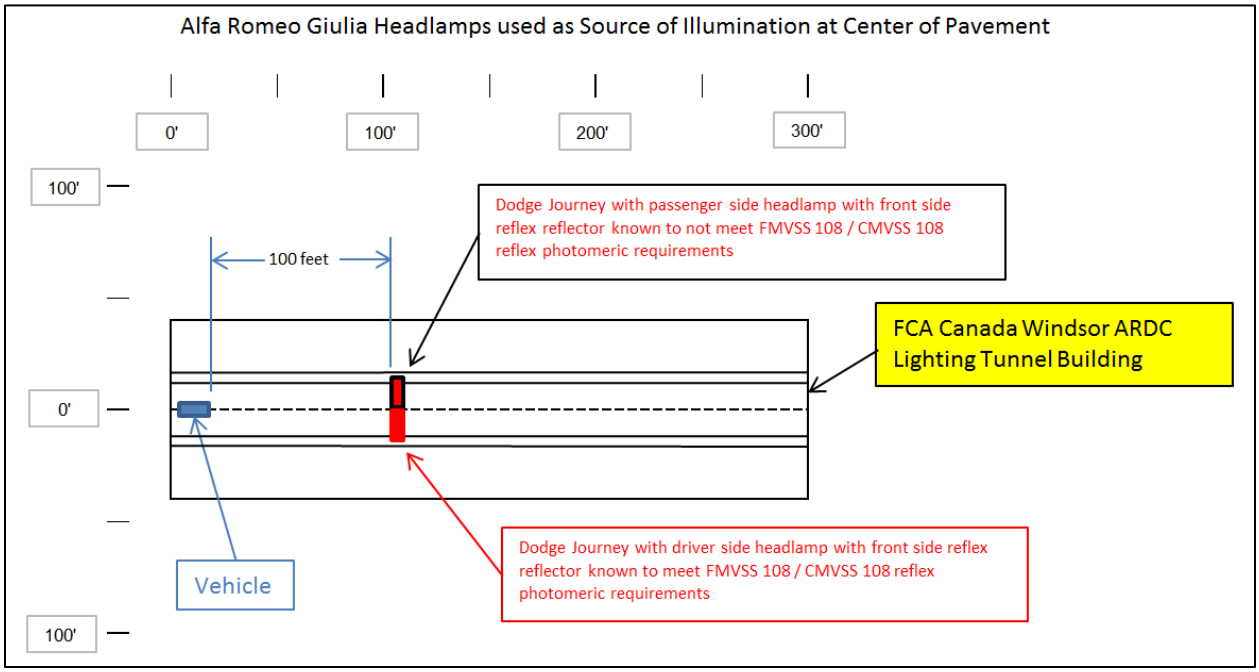

Figure 11 - Diagram of Subjective Evaluation of Dodge Journey Front Side Reflex Reflectors viewed from center of pavement with Alfa Romeo Giulia Low Beam Headlamps used as source of illumination.

Figure 12 - Photograph of Subjective Evaluation using Alf Romeo Giulia Low Beam Headlamps as source of illumination. Camera lens set at centerline of road, centerline of the Alfa Romeo Giulia, and height above ground of 46.0 inches (eye level of average height female driver sitting in the driver's seat of the Alfa Romeo Giulia).

Subjective Evaluation G: Alfa Romeo Giulia High Beam Headlamps used as light source at center of the pavement shining towards the two Dodge Journey vehicles. See Figures 13 and 14.

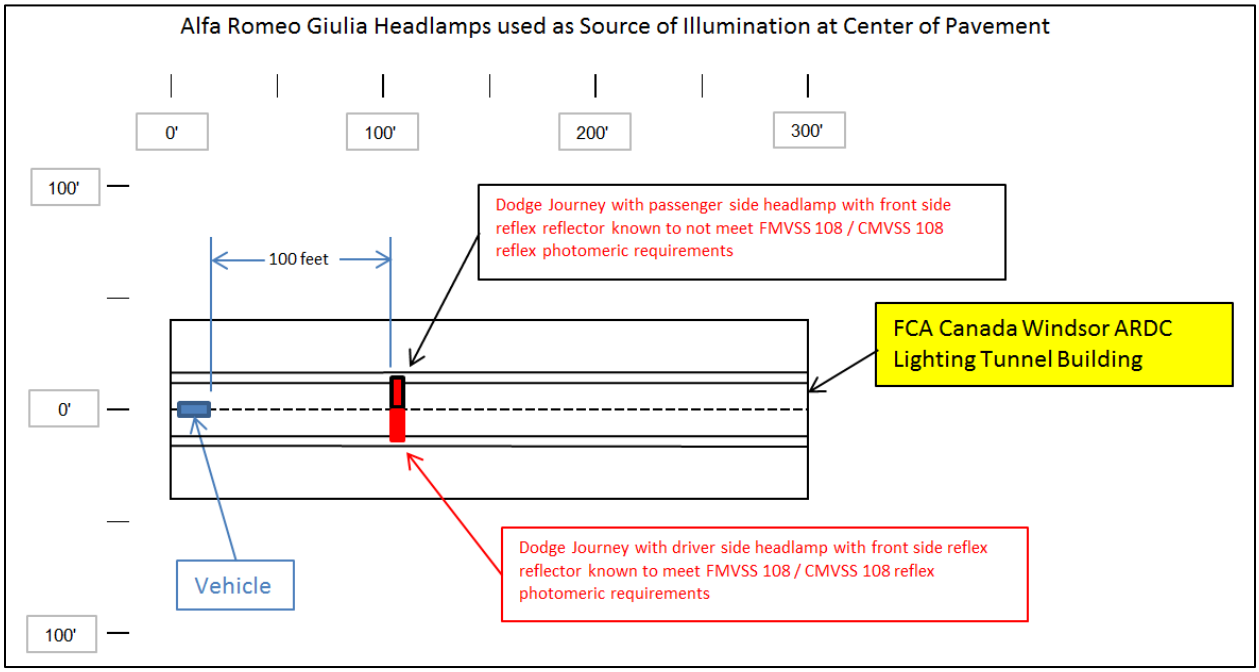

Figure 13 - Diagram of Subjective Evaluation of Dodge Journey Front Side Reflex Reflectors viewed from center of pavement with Alfa Romeo Giulia High Beam Headlamps used as source of illumination.

Figure 14 - Photograph of Subjective Evaluation using Alfa Romeo Giulia High Beam Headlamps as source of illumination. Camera lens set at centerline of road, centerline of the Alfa Romeo Giulia, and height above ground of 46.0 inches (eye level of average height female driver sitting in the driver's seat of the Alfa Romeo Giulia).

Subjective Evaluation H: Alfa Romeo Giulia Low Beam Headlamps used as light source at the left edge of pavement (146 inches to the left of the centerline of pavement) shining towards the two Dodge Journey vehicles. See Figures 15 and 16.

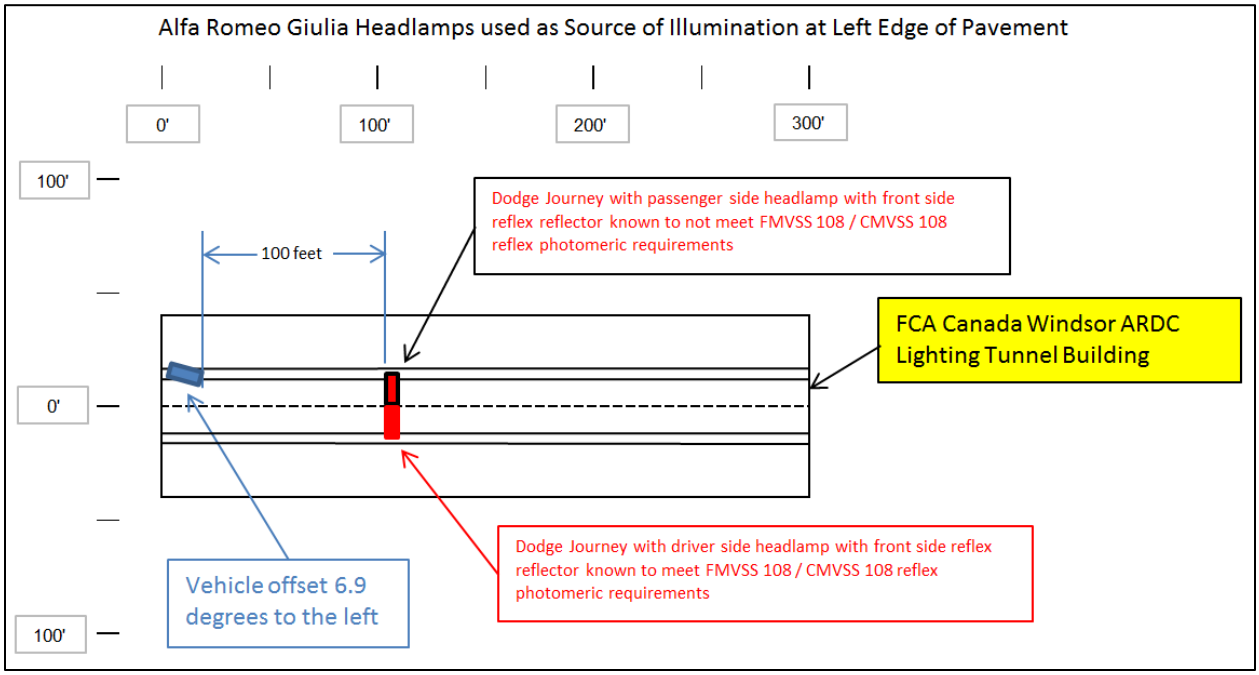

Figure 15 - Diagram of Subjective Evaluation of Dodge Journey Front Side Reflex Reflectors viewed from left edge of pavement with Alfa Romeo Giulia Low Beam Headlamps used as source of illumination.

Figure 16 - Photograph of Subjective Evaluation using Alfa Romeo Giulia Low Beam Headlamps as source of illumination. Camera lens set at left edge of pavement, centerline of the Alfa Romeo Giulia, and height above ground of 46.0 inches (eye level of average height female driver sitting in the driver's seat of the Alfa Romeo Giulia).

Subjective Evaluation J: Alfa Romeo Giulia Low Beam Headlamps used as light source at the right edge of pavement (150 inches to the right of the centerline of pavement) shining towards the two Dodge Journey vehicles. See Figures 17 and 18.

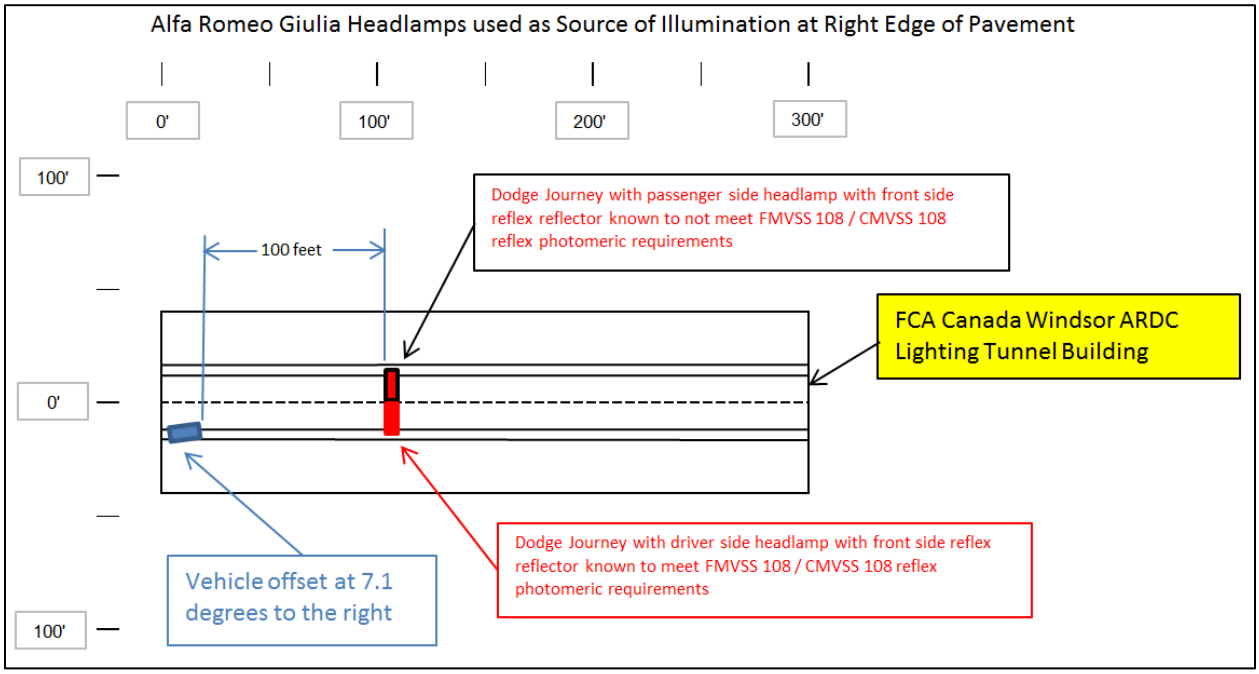

Figure 17 - Diagram of Subjective Evaluation of Dodge Journey Front Side Reflex Reflectors viewed from right edge of pavement with Alfa Romeo Giulia Low Beam Headlamps used as source of illumination.

Figure 18 - Photograph of Subjective Evaluation using Alfa Romeo Giulia Low Beam Headlamps as source of illumination. Camera lens set at right edge of pavement, centerline of the Alfa Romeo Giulia, and height above ground of 46.0 inches (eye level of average height female driver sitting in the driver's seat of the Alfa Romeo Giulia).

Appendix D: Photometric report for the right hand (passenger side) Front Side Reflex Reflector contained in the Headlamp Assembly installed in the red Dodge Journey positioned on the left side of the roadway used for the April 26, 2019 Subjective Evaluation at the FCA Automotive Research and Development Center Windsor Lighting Tunnel. Photometric report is from laboratory test conducted by Sapphire Technical Solutions. (Note: This is the same headlamp assembly and side reflex reflector that was used for the previous subjective evaluation that occurred on March 22, 2019.)

Report No.: TR1143 March 09,2018

STS Charlotte - 1553-01 RH Dodge Journey HL # SR895 - Photometric Test Report: Reflex Amber MVSS108 # TR3345

Test Function	Date/Time	Operator	Equipment
Reflex Amber MVSS108	2/27/2018 12:10:18 PM	REW	STS AP-OEM

Work Order	Serial Number	Lamp
1553-01	1553-01 (2017-0005)	RH dodge Journey Headlamp - Reflex
Sales Order	**Requisitioner**	**Color**
1603	Transport Canada	Amber

Notes:

Aiming Offset:	L/R = 0.00	U/D = 0.00			
Fixture Offset:	L/R = 89.17	U/D = -0.00	Height = 11.06	X = 8.20	Y = -0.22
Multiplier:	1.0000				

Supply	Source Name	Set Voltage	Set Current	Meas. Voltage	Meas. Current
4	PROJECTOR	18.00	8.168 (*)	15.343	8.167

Pass/Fail Results: **Testpoints:** **Req. = FAIL InHouse = PASS**

Description / Location	L/R Angle	U/D Angle	Cd/fc	Pass/Fail	Min	Max	InH Min	InH Max
H-V	0.00	0.00	2.216	F---	11.25	--	--	--
H-V 1.5Deg.	0.00	0.00	0.833	----	.175	--	--	--
10U-V	0.00	10.00	1.911	F---	7.5	--	--	--
10U-V 1.5Deg.	0.00	10.00	0.647	----	.125	--	--	--
10D-V	0.00	-10.00	1.816	F---	7.5	--	--	--
10D-V 1.5Deg.	0.00	-10.00	0.721	----	.125	--	--	--
H-20R	20.00	0.00	1.029	F---	3.75	--	--	--
H-20R 1.5Deg.	20.00	0.00	0.391	----	.075	--	--	--
H-20L	-20.00	0.00	1.177	F---	3.75	--	--	--
H-20L 1.5Deg.	-20.00	0.00	0.378	----	.075	--	--	--

2/27/2018 12:10:18 PM ------- Equipment: AP Series by Sapphire Technical Solutions L.L.C.

Appendix E: Photometric report for the left hand (driver side) Front Side Reflex Reflector contained in the Headlamp Assembly installed in the red Dodge Journey positioned on the right side of the roadway used for the April 26, 2019 Subjective Evaluation at the Lighting Tunnel at the FCA Automotive Research and Development Center in Windsor, Canada. Photometric report is from laboratory test conducted by SL China (Yantai). (Note: This is the same headlamp assembly and side reflex reflector that was used for the previous subjective evaluation that occurred on March 22, 2019.)

SL CHINA (YANTAI)

SL China

PHOTOMETRIC RESULTS

Program:	Jul 95	R/R NAS PHOTO_AMBER
R/R NAS PHOTO_AMBER		
Name:	JC49 NAS RR ASSY LH 181106	
Number:		
Report:		
Test no.:		

R/R NAS PHOTO_AMBER

Function	Min	Max	H [¡ã]	V [¡ã]	R [mcd/lx]	Unit	N.O.K.
0.2¡Æ at H - V	1050	-	0	0	1997.0	mcd/lx	OK
0.2¡Æ at H - 10U	700	-	0	10	2010.0	mcd/lx	OK
0.2¡Æ at H - 10D	700	-	0	-10	1691.0	mcd/lx	OK
0.2¡Æ at 20L - V	350	-	-20	0	1187.0	mcd/lx	OK
0.2¡Æ at 20R - V	350	-	20	0	1376.0	mcd/lx	OK
1.5¡Æ at H - V	15	-	0	0	44.1	mcd/lx	OK
1.5¡Æ at H - 10U	12.5	-	0	10	35.9	mcd/lx	OK
1.5¡Æ at H - 10D	12.5	-	0	-10	32.5	mcd/lx	OK
1.5¡Æ at 20L - V	7.5	-	-20	0	22.4	mcd/lx	OK
1.5¡Æ at 20R - V	7.5	-	20	0	26.8	mcd/lx	OK

Appendix F: Reflex Reflector Photometry Requirements in FMVSS 108 and Canada Technical Standards Document (TSD) 108:

Table XVI-a: Reflex Reflector Photometry Requirements

Observation angle (degrees)	Entrance angle (degrees)	Minimum performance					
		Red reflectors		Amber reflectors		White reflectors	
		(cd/incident ft-c)	(mcd/lux)	(cd/incident ft-c)	(mcd/lux)	(cd/incident ft-c)	(mcd/lux)
0.2	0	4.5	420	11.25	1050	18	1680
	10U	3.0	280	7.5	700	12	1120
	10D (1)	3.0	280	7.5	700	12	1120
	20L	1.5	140	3.75	350	6	560
	20R	1.5	140	3.75	350	6	560
1.5	0	0.07	6	0.175	15	0.28	24
	10U	0.05	5	0.125	12.5	0.2	20
	10D (1)	0.05	5	0.125	12.5	0.2	20
	20L	0.03	3	0.075	7.5	0.12	12
	20R	0.03	3	0.075	7.5	0.12	12

(1) Where reflex reflectors are mounted with their axis of reference less than 750 mm above the road surface, photometry requirements below 5° down may be met at 5° down rather than at the required specified downward angle.

Table XVI-a—Reflex Reflector Photometry Requirements

Observation angle (degrees)	Entrance angle (degrees)	Minimum performance					
		Red reflectors		Amber reflectors		White reflectors	
		(cd/incident ft-c)	(mcd/lux)	(cd/incident ft-c)	(mcd/lux)	(cd/incident ft-c)	(mcd/lux)
0.2	0	4.5	420	11.25	1050	18	1680
	10U	3.0	280	7.5	700	12	1120
	10D (1)	3.0	280	7.5	700	12	1120
	20L	1.5	140	3.75	350	6	560
	20R	1.5	140	3.75	350	6	560
1.5	0	0.07	6	0.175	15	0.28	24
	10U	0.05	5	0.125	12.5	0.2	20
	10D (1)	0.05	5	0.125	12.5	0.2	20
	20L	0.03	3	0.075	7.5	0.12	12
	20R	0.03	3	0.075	7.5	0.12	12

(1) Where reflex reflectors are mounted with their axis of reference less than 750 mm above the road surface, photometry requirements below 5° down may be met at 5° down rather than at the required specified downward angle.

Appendix G: Additional images that depict the setup of the subjective evaluations of the Dodge Journey Front Side Reflex Reflectors using an Alfa Romeo Giulia as source of illumination inside the FCA Canada Automotive Research and Development Center Lighting Tunnel, located in Windsor, Ontario, Canada.