



**Emily Frascaroli, Global Director**  
Automotive Safety Office  
Sustainability, Environment & Safety Engineering

**Fairlane Plaza South, Suite 400**  
330 Town Center Drive  
Dearborn, MI 48126-2738

August 12, 2022

Dr. Steven Cliff  
Administrator  
National Highway Traffic Safety Administration  
1200 New Jersey Avenue, S.E.  
Washington, DC 20590

Dear Dr. Cliff:

**Subject: Ford Motor Company Petition for a Determination of Inconsequentiality regarding 2018 through 2020 Ford F-150 Vehicles Equipped with Low Series Rear Lamps**

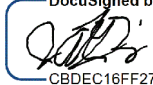
Ford Motor Company (Ford) is a domestic manufacturer of motor vehicles, incorporated under the laws of the State of Delaware, with offices at One American Road, Dearborn, Michigan.

On July 22, 2022, Ford filed a Defect Information Report (Ford ID 22C18) to address certain 2018-2020 model year Ford F-150 vehicles with low series rear combination lamps that may exceed the maximum backup lamp brightness requirement per FMVSS 108.

In its submission, Ford informed the Agency of its intent to file a Petition for Inconsequentiality. Ford is providing a list of the vehicle models, model years, approximate production volumes, and production dates in the table below.

<b>Vehicles</b>	<b>MY</b>	<b>Approximate Volume</b>	<b>Build Date Range</b>
F-150	2018-2020	1,271,854	January 10, 2017 through October 22, 2020

Pursuant to Section 30118(d) of the Motor Vehicle Safety Act and related regulation at 49 C.F.R. Part 556, Ford now petitions the Administrator for relief from the notification and remedy requirements established in Sections 30118, 30119, and 30120 of the Motor Vehicle Safety Act for the reasons set forth in the attached petition.

Sincerely,  
DocuSigned by:  
  
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for Emily Frascaroli  
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Date

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**FORD PETITION FOR A DETERMINATION OF INCONSEQUENTIALITY AND REQUEST  
FOR DEFERRAL OF DETERMINATION REGARDING CERTAIN FORD VEHICLES  
EQUIPPED WITH LOW SERIES REAR LAMPS**

Ford Motor Company (“Ford”) petitions the National Highway Traffic Safety Administration (“NHTSA”) for exemption from the notification and remedy provisions of the National Traffic and Motor Vehicle Safety Act of 1966 as amended and recodified (the “Safety Act”), 49 U.S.C. §30101, *et seq.*, pursuant to 49 U.S.C. §§ 30118(d) and 30120(h) and 49 C.F.R. part 556, with respect to certain Ford F-150 vehicles equipped with low series rear lamps.

**BACKGROUND**

On May 13, 2022, the NHTSA Office of Vehicle Safety Compliance communicated a preliminary indication of a test failure of the backup lamp function on the 2018 F-150 base series rear combination lamps. NHTSA had contracted with an outside test lab to conduct FMVSS 108 testing on service lamps. NHTSA sponsored testing found 3 of 4 LH and 4 of 4 RH lamps had test point H-V (0 Vertically and 0 Horizontally) and 1 of 4 RH lamps had test point H-10L (0 Vertically and 10 left) for back up function exceeding the regulatory maximum standard of 300 candela in FMVSS 108. This topic was brought to Ford’s Critical Concern Review Group (CCRG) for review on May 19, 2022.

Ford then reviewed the supplier’s lamp assembly certification data, as well as their historical, ongoing production audit testing records and found values consistently below the 300 candela (Cd) maximum requirement for backup lamps. Further review found the initial certification test data provided to Ford by the supplier pertained to a test that was conducted with a bulb socket that did not represent the final design. The supplier informed Ford that they had later retested with the correct focal length socket certifying the measurement for the backup lamp at H-V was 253.4 Cd, well below the limit of 300. However, Ford discovered later that the supplier’s ongoing audit testing was conducted with a “production” bulb. Because FMVSS 108 S14.2.1.6 bulb certification testing is to be conducted with a “rated” bulb, additional tests were

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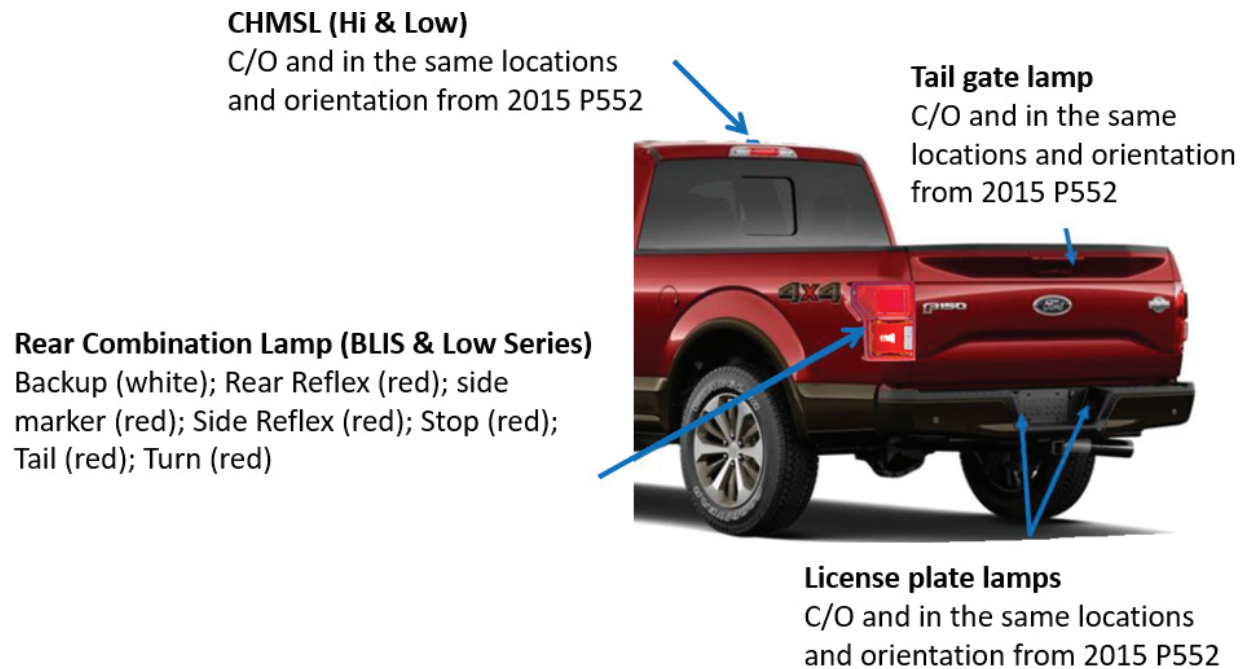
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then undertaken by the supplier for 30 sample assemblies for each (left-hand and right-hand) design. In these additional tests, values exceeded the 300 candela at test point H-V (0 Vertically and 0 Horizontally).

On July 15, 2022, Ford's Field Review Committee reviewed the concern and determined that a non-compliance existed to the backup lamp illumination requirements of FMVSS 108. Ford is not aware of any reports or complaints related to this condition.

### **DESIGN OF THE LAMP**

For the 2018 model year F-150 Ford offered two variations of tail lamps. Both tail lamps incorporated the backup lamp function. One lamp incorporates Blind Spot Information System (BLIS) sensors, and the other does not (referred to as the 'low series').



## 2018 Model Year 150 Tail Lamp Configurations



The subject of this petition is the “Low Series” variant of the tail lamps.

### **REGULATORY FRAMEWORK**

Federal Motor Vehicle Safety Standard (FMVSS) No. 108, Lamps, Reflective Devices, and Associated Equipment, is an important requirement needed for the safe operation of motor vehicles. Its stated purpose is *“to reduce traffic accidents and deaths and injuries resulting from traffic accidents, by providing adequate illumination of the roadway, and by enhancing the conspicuity of motor vehicles on the public roads so that their presence is perceived, and their signals understood, both in daylight and in darkness or other conditions of reduced visibility.”*<sup>1</sup>

Within this regulation are definitions and requirements for the many lamps required to be present on a motor vehicle. Specific to this request are the backup lamps, which *“means a lamp or lamps which illuminate the road to the rear of a vehicle and provide a warning signal to*

<sup>1</sup> 49 C.F.R. 571.108, S2.

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*pedestrians and other drivers when the vehicle is backing up or is about to back up.*<sup>2</sup> This means that in order to make a determination that the noncompliance is inconsequential to safety, one should evaluate it from the viewpoint of a pedestrian or other drivers. Ford has approached its analysis through this viewpoint.<sup>3</sup>

Backup lamps have minimum and maximum luminosity requirements specified in Table XII. The lamps need to have a luminosity requirement greater than 15 and less than 300 candela. While there are many nuances to the compliance tests, important to this discussion are the following requirements: (1) testing is conducted at a series of twenty-two points 100 feet away from the test apparatus, and (2) bulb certification testing is to be conducted with a “rated” bulb.<sup>4</sup>

### **NHTSA’s TEST RESULTS**

NHTSA provided Ford with a FMVSS No. 108 test report dated May 9, 2022. Many lighting functions of the rear combination lamps were tested by Calcoast on behalf of NHTSA. The only lighting function that failed was for the backup lamp function of the rear combination lamps. Calcoast tested eight (8) samples, seven (7) of which contained values that exceeded the maximum candela rating of 300 at the H-V test point.<sup>5</sup> One (1) sample of the eight (8) also had an exceedance at the H – 10L test point.

NHTSA’s test procedures require the measurement of the backup lamp’s photometry at twenty-two (22) individual test points. However, only fifteen (15) test points have a maximum candela rating, and seven (7) test points have no maximum candela rating. A graphical

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<sup>2</sup> 49 C.F.R. 571.108, S4.

<sup>3</sup> It is also worth noting that backup lamps only provide illumination to the rear of the vehicle and are not meant to provide notification to other vehicles or pedestrians forward of the vehicle.

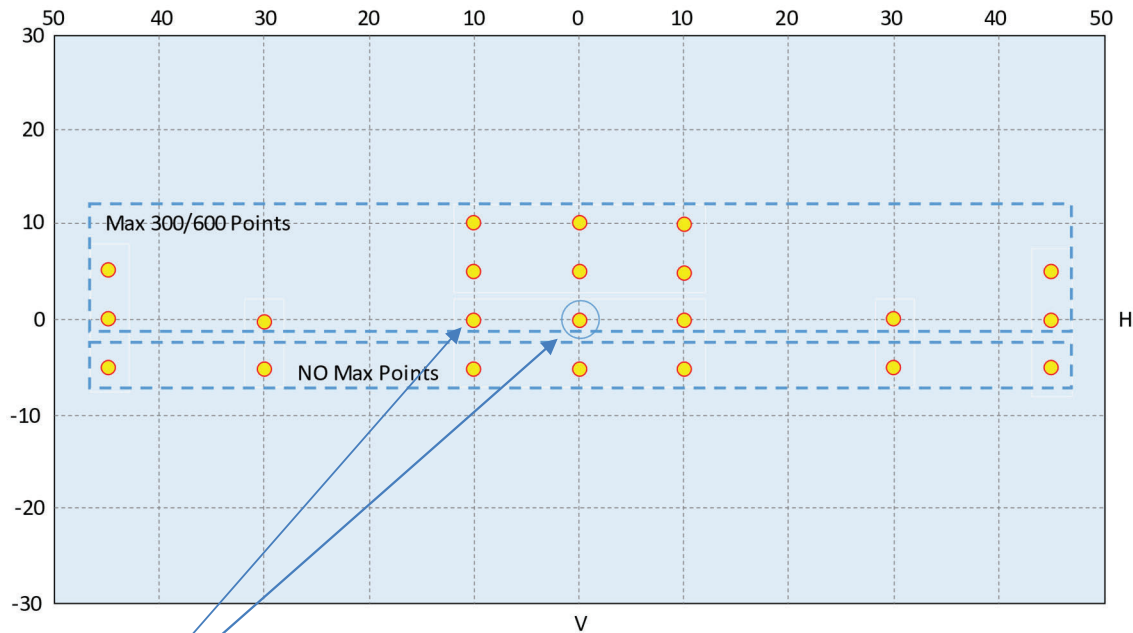
<sup>4</sup> 49 C.F.R. 571.108, S14.2.1.6

<sup>5</sup> 3 out of 4 LH samples had an exceedance at the H-V test point, 4 out of 4 RH samples had an exceedance at the H-V test point.

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representation of the test points is below, with arrows pointing to the two test points that contained exceedances in the NHTSA test report.



Of the fifteen (15) test points with a maximum candela rating evaluated by Calcoast on behalf of NHTSA (that have a maximum regulatory limit), one right-hand lamp sample had two test points that exceeded the regulatory limit – at H-V and at H – 10L. It is likely that the measurement at test point H-10L, which is to the left of point H-V (H 10L), was influenced by the H-V test point. This is based on the test results of the other lamps during the same evaluation and is not indicative of an additional root cause. In the test report provided to Ford there was also a ‘sweep’ measurement listed that appears identify the highest value across the entire lamp. Some of those values listed were marked as non-conforming, however there is no value listed in Table XXII of FMVSS No. 108 for the “MX(H-90U/180L-180R) test point.

**THE NONCOMPLIANCE IS INCONSEQUENTIAL AS IT RELATES TO MOTOR VEHICLE****SAFETY**

Ford believes that this noncompliance is inconsequential to motor vehicle safety for the following reasons:

- I. Vehicles in the field operate at a lower voltage than what was tested by NHTSA, and only a small percentage of vehicles could be over the 300 cd maximum limit.
- II. The extent of the noncompliance is such that the human eye is unable to distinguish the worst- case rear backup lamp from a compliant rear backup lamp.
- III. There are no known complaints, accidents, or injuries related to this noncompliance.
- IV. In similar situations, NHTSA has granted petitions for inconsequentiality relating to the subject requirement of FMVSS No. 108.

Information concerning each of the reasons is discussed below.

**I. Vehicles in the field operate at a lower voltage than what was tested by NHTSA, and only a small percentage of vehicles could be over the 300 cd maximum limit.**

In making decisions on the inconsequentiality of a lamp that fails to meet the luminous requirement, NHTSA has cited two reports from the University of Michigan Transportation Research Institute (UMTRI) for the principle that the human eye is unable to detect a 25% change in illumination. These reports are discussed in the following section.

Typically, NHTSA is more likely to grant a petition where the difference between the lamp's luminosity and the requirement is less than 25%. NHTSA's initial test report contained values over the 300 candela limit – sample LH3 contained the highest values measured at H-V of 382.68 and MX (H-90U/180L-180R) 397.14 candela.<sup>6</sup> To achieve a value of 460 Lm for the rated bulb, those tests were run at a voltage of 14.25 volts and amperage of 1.961 amps.

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<sup>6</sup> As described previously, while this measurement point is marked as “failed” in the May 9, 2022 test report, there is no requirement for this value in Table XXII of FMVSS No. 108.

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However, Ford does not believe this testing correlates to what another driver or pedestrian would experience if they were viewing one of the subject vehicles. First, the vehicles in the field would have production bulbs and not a “rated” bulb. Second, the voltage used on the NHTSA test report is higher than what could be on the vehicle. For the subject vehicles, the theoretical maximum voltage that could be applied to the backup lamps is 13.3 v. Ford designed and validated through CAE for the lamp to operate at 12.8 v. Using 12.8 v in the design of the lamp, Ford’s supplier predicted 236 Cd at H-V on a Lefthand Backup Lamp and 234 Cd at H-V on a Righthand Backup Lamp. These predicted values had ~22% margin to the 300 Cd limit.

The voltage for the compliance test sometimes does not match the voltage supplied by the vehicles, and a change in voltage results in a change in brightness.<sup>7</sup> To verify the design assumptions for voltage, Ford surveyed 14 vehicles and found a maximum output of 12.85 volts. This result is more in line with Ford’s design. Using 12.85 v, a statistical worst case of 327 candelas at the HV point (9% exceedance) is predicted.

After learning of NHTSA’s test report showing an exceedance at H-V, Ford tested 30 lamps, and is attaching the relevant results as Appendix B. Ford compared the lamps using production bulbs at 12.9 v and the theoretical maximum of 13.3 v. At 12.9 v, recorded values for the H-V test point ranged from 197.8 cd to 306 cd (the latter representing 2% exceedance). At 13.3 v, recorded values for the H-V test point ranged from 221.32 cd to 337.41 cd (the latter representing 12.5% exceedance).

**II. The extent of the noncompliance is such that the human eye is unable to distinguish the worst case rear backup lamp from a compliant rear backup lamp.**

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<sup>7</sup> See, e.g., *Grant of Petition for Determination of Inconsequential Noncompliance; Hella, Inc.*; 55 Fed. Reg. 37601. September 12, 1990.



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In numerous responses to petitions for inconsequentiality, NHTSA refers to two reports that state a 25% difference between a lamp's output and the standard is imperceptible to the human eye. The first report by Huey, Deker, and Lyons published in September 1994 studied the Driver Perception of Just Noticeable Differences (JND) of Automotive Signal Lamps. (DOT HS 808 209, September 1994). An additional study by the University of Michigan Transportation Research Institute (UMTRI) in February 1997 extended the 1994 study to low beam automotive headlamps. (UMTRI-97-4, February 1997). Together, the studies concluded that most drivers could not differentiate the light output between different sources when the difference in illumination was less than 25%. The 1994 study indicated that the results were appropriate for consideration of petitions for inconsequential non-compliance from manufacturers regarding vehicle lamp intensities which fall just outside the performance limits as specified in Federal Motor Vehicle Safety Standard 108.

Ford conducted a jury evaluation to verify the study results related to the F-150 backup lamp conditions associated with operators of trailing vehicles and pedestrians. The jury evaluation test setup is as follows:

- Three (3) of the subject tail lamp assemblies were installed on test stands.
- Voltage to the tail lamps was modulated to obtain a desired light output measured in candela at point H-V. The output of the lamps at point H-V was varied between 250, 300 and 350 Cd in a random fashion unknown to the observers.
- Six (6) observers viewed the three (3) assemblies from a distance of fifteen (15) feet (estimated to be the typical distance a pedestrian may observe a vehicle backing into a parking space or a trailing vehicle may follow).
- Observations were made in both a light and dark test facility.

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- The observers were first seated to approximate a sedan following a MY 2018 F-150. This is where the exceedance at H-V point should have the most effect to a trailing driver.
- The six (6) observers were permitted to stand up and move around the 15 foot line (or closer) in order to approximate a pedestrian watching the F-150 back into a parking spot.
- The six (6) observers were asked to determine if they could identify which lamps were brighter or less bright for various scenarios and if they could identify any locations of bright beams or points of light.

## Test Configuration



Three evaluation tail lamps viewed from 15 feet



Laboratory set up for lamp evaluation

The results of the jury evaluation validated the previous UMTRI reports. The observers were not able to consistently identify the differences between different light outputs at the shortened time period of seven (7) seconds (estimated to be the time a driver or pedestrian may observe a vehicle backing under typical circumstances). In fact, no observer could distinguish between the lamps at 300 cd and at 350 cd (16.7%). When provided more time to evaluate (approximately five minutes), all of the observers were able to correctly identify which lamps

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were at 250 cd and 350 cd (~33%). No observer was able to identify a difference of 50 candela when the lamps were set at 300 cd and 350 cd (16.7%) after the 5 minutes. Furthermore, no observer stated that they felt that the differences affected how they would react to the backup lamp's signal, nor were any focused beams or points of light, bright spots or glare identified.

The initial evaluations were conducted with only the backup lamps illuminated in the tail lamp. Additional evaluations were conducted with the backup lamps at 350 cd, the tail lamps illuminated, and also with the brake lamps illuminated. All 6 observers stated that the illumination of the stop lamps took the focus away from the backup lamps, partly in due to the color difference and due to the similarities in brightness between the lighting functions. One observer stated that the lamps "blended together."

Illumination of the backup lamp without brake lamps also being illuminated in normal operation is very unlikely since a driver typically depresses the brake pedal when shifting to reserve and while backing up. The human eye is able to observe many more inputs besides a backup lamp that is too bright – another vehicle or pedestrian viewing the lamp would view the entire lamp in attempting to determine the warning signals. Candela ratings were not recorded for the tail lamp and stop lamp functions during this jury evaluation; however, values for these functions were recorded in the NHTSA test reports. For stop lamps, values in Zone 3 were recorded at 881.36 cd on page 6 of the NHTSA test report. This could help explain why the observers commented that the stop lamp illumination took the focus away from the backup lamps.

As table with the evaluation results in provided in the Appendix A.

**III. There are no known complaints, accidents, or injuries related to this noncompliance.**

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Ford searched its records and found no reports of this nature. Ford recognizes that this fact is not dispositive but is illustrative of the field performance.<sup>8</sup>

**IV. In similar situations, NHTSA has granted petitions for inconsequentiality relating to the subject requirement of FMVSS No. 108.**

NHTSA's viewpoints on similarly situated petitions have been consistent throughout the decades. In 1987, NHTSA granted an inconsequentiality petition for 800 Chrysler vehicles with backup lamps that did not meet the photometric requirements.<sup>9</sup> The Chrysler vehicles failed to meet the minimum candela requirements in FMVSS No. 108 at the H-V test point by 68 candela. NHTSA concluded that the 20% reduction on 800 vehicles would be statistically unlikely to produce even one injury.

In 1990, NHTSA granted an inconsequentiality petition filed by Hella for taillamps that exceeded the maximum candela permitted by FMVSS No. 108.<sup>10</sup> In the petition, Hella argued that industry experience and supporting studies gave established that the human eye, in the vast majority of the cases, cannot detect a change in luminescence unless it is more than a 25% increase or decrease. NHTSA stated that a reduction of approximately 25 percent in luminous intensity is required before the human eye can detect differences between two lamps. The Hella lamps tested the greatest difference was 3.6 cd, or 20% higher. Hella also stated that its lamps were designed to conform to FMVSS No. 108, and production lamp voltage would be less than the voltage tested than the laboratory test voltage. Therefore, the actual candela output in the lamps would be less than demonstrated in NHTSA's tests. NHTSA agreed with Hella's

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<sup>8</sup> See *North America Subaru, Inc., Denial of Petition for Decision of Inconsequential Noncompliance*; 87 Fed. Reg. 48764, August 10, 2022.

<sup>9</sup> See *Chrysler Corp.; Grant of Petition for Determination of Inconsequential Noncompliance*; 52 Fed. Reg. 17499. May 8, 1987.

<sup>10</sup> See *Grant of Petition for Determination of Inconsequential Noncompliance; Hella, Inc.*; 55 Fed. Reg. 37601. September 12, 1990.

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statements and referenced other instances where NHTSA granted petitions for inconsequentiality regarding the light output requirements of FMVSS No. 108.

In 1991, Subaru submitted a petition for inconsequential noncompliance concerning failures of luminous intensity on the side reflex reflector.<sup>11</sup> Subaru submitted data from a study where observers could not differentiate between the reflected light of complying and noncomplying reflectors at distances of 30 m, 60 m, and 100 m. The noncompliant lamps were all less than 20 percent of the minimum values. NHTSA granted the petition and applied the reasoning from the Hella petition that the human eye cannot detect a 25 percent change in luminosity.

In 2020, NHTSA granted the inconsequentiality petition filed by Toyota for vehicles equipped with rear reflex reflectors that do not meet the minimum requirements specified in FMVSS No. 108.<sup>12</sup> Toyota argued that a change of luminous intensity of 18 percent is imperceptible to the human eye. NHTSA agreed, relying on the evaluation provided by NHTSA and the past precedent stated in the Hella and Subaru (1991) grants of inconsequentiality.

Three days prior to filing this petition, NHTSA published its denial of an inconsequentiality petition for Subaru involving the front combination lamps.<sup>13</sup> Specifically, the non-compliances involved side reflex reflectors with measured intensities below the minimum values specified in FMVSS No. 108 and one test point where the measured values slightly exceeded the 25% threshold cited by NHTSA. Ford believes that the Subaru petition is distinguishable from Ford's present petition for inconsequential treatment. First, Subaru did not conduct a jury evaluation and relied on camera measurements. Second, "the performance

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<sup>11</sup> See *Subaru of America; Grant of Petition for Determination of Inconsequential Noncompliance*; 56 Fed. Reg. 59971, November 26, 1991.

<sup>12</sup> See *Toyota Motor North America, Inc., Grant of Petition for Decision of Inconsequential Noncompliance*; 85 Fed. Reg. 39679, July 1, 2020.

<sup>13</sup> See *North America Subaru, Inc., Denial of Petition for Decision of Inconsequential Noncompliance*; 87 Fed. Reg. 48764, August 10, 2022.

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requirements for reflex reflectors are measured in (cd/incident ft-c) or (mcd/lux), whereas the performance requirements for signal lighting assessed in the [UMTRI] study are measured in candela (cd).<sup>14</sup> Third, some measured values from NHTSA's testing exceeded the 25% threshold.

Ford believes that the facts in the present petition closely mirror that in the Hella petition, and a similar outcome should be reached.

### **Summary**

The backup lamp exceedance is inconsequential to motor vehicle safety for the following reasons:

- 1) NHTSA has previously granted petitions for inconsequentiality where the requirement is exceeded by less than 25%, because differences of less than 25% are imperceptible to the human eye. For vehicles in the field, Ford predicts the maximum candela value to be 327 cd (9% exceedance) at point H-V due to the maximum voltage in the vehicle.
- 2) A jury evaluation by six observers of the lamps with voltage modulated to represent the candela values measured in the Agency's testing, under a variety of conditions (light, dark, tail lamps illuminated, brake lamps illuminated) identified no conditions that resulted in unusual brightness or glare that could potentially affect operators of a trailing vehicle or a pedestrian.
- 3) The backup lamp illuminates only while a vehicle is backing up or beginning to back up therefore normal operation on roads and highways is unaffected.

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<sup>14</sup> See *North America Subaru, Inc., Denial of Petition for Decision of Inconsequential Noncompliance*; 87 Fed. Reg. 48764, August 10, 2022.

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- 4) It does not affect the conspicuity of motor vehicles on the public roads so that their presence is perceived, and their signals understood, both in daylight and in darkness or other conditions of reduced visibility.

### **Conclusion**

For the reasons set forth above, Ford believes this noncompliance is inconsequential as it relates to motor vehicle safety and seeks exemption from the notice and remedy requirements of 49 U.S.C. Chapter 301 for the subject vehicles.

**APPENDIX A**

<b>Short Term Reverse Lamp Study (7 Seconds observation period)</b>					
	Lamp Position 1	Lamp position 2	Lamp Position 3	Results of 6 person review under simulated Day Time Lighting conditions	Results of 6 person review under simulated Night Time Lighting conditions
Sample Set A	Low (250Cd)	Medium (300Cd)	High (350Cd)	0 of 6 picked all 3 correctly 2 of 6 picked Low correctly 0 of 6 picked High correctly	0 of 6 picked all 3 correctly 2 of 6 picked Low correctly 0 of 6 picked High correctly
Sample Set B	High (350Cd)	Low (250Cd)	Medium (300Cd)	0 of 6 picked all 3 correctly 3 of 6 picked Low correctly 1 of 6 picked High correctly	0 of 6 picked all 3 correctly 3 of 6 picked Low correctly 1 of 6 picked High correctly
Sample Set C	Medium (300Cd)	High (350Cd)	Low (250Cd)	0 of 6 picked all 3 correctly 2 of 6 picked Low correctly 1 of 6 picked High correctly	0 of 6 picked all 3 correctly 2 of 6 picked Low correctly 1 of 6 picked High correctly

<b>At what point could you determine difference, Short Term Reverse Lamp Study (7 Seconds observation period)</b>					
	Lamp Position 1	Lamp position 2	Lamp Position 3	Results of 6 person review under simulated Day Time Lighting conditions	Results of 6 person review under simulated Night Time Lighting conditions
Able to tell at 50 Cd 14% difference	High (350Cd)	Medium (300Cd)	High (350Cd)	0 of 6 were able to distinguish Med to High	0 of 6 were able to distinguish Med to High
Able to tell at 100 Cd 29% difference	High (350Cd)	Low (250Cd)	High (350Cd)	2 of 6 were able to distinguish Low to High	2 of 6 were able to distinguish Low to High
Able to tell at 50 Cd 14% difference	Medium (300Cd)	Medium (300Cd)	Low (250Cd)	1 of 6 were able to pick correctly	1 of 6 were able to pick correctly

<b>Long Term Reverse Lamp Study (Over 5 minutes observation period)</b>					
	Lamp Position 1	Lamp position 2	Lamp Position 3	Results of 6 person review under simulated Day Time Lighting conditions	Results of 6 person review under simulated Night Time Lighting conditions
Sample Set A	Low (250Cd)	Medium (300Cd)	High (350Cd)	0 of 6 picked all 3 correctly 3 of 6 picked Low correctly 1 of 6 picked High correctly	0 of 6 picked all 3 correctly 3 of 6 picked Low correctly 1 of 6 picked High correctly
Sample Set B	High (350Cd)	Low (250Cd)	Medium (300Cd)	0 of 6 picked all 3 correctly 2 of 6 picked Low correctly 1 of 6 picked High correctly	0 of 6 picked all 3 correctly 2 of 6 picked Low correctly 1 of 6 picked High correctly
Sample Set C	Medium (300Cd)	High (350Cd)	Low (250Cd)	2 of 6 picked all 3 correctly 4 of 6 picked Low correctly 2 of 6 picked High correctly	2 of 6 picked all 3 correctly 4 of 6 picked Low correctly 2 of 6 picked High correctly

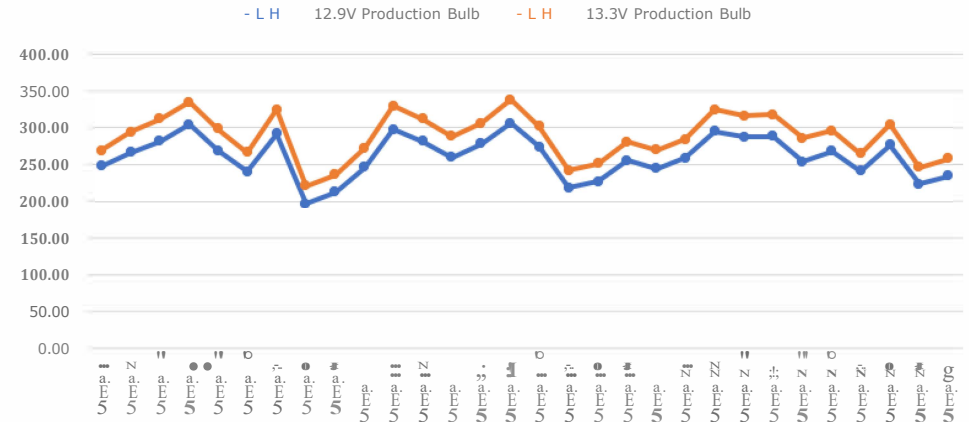
<b>At what point could you determine difference, Long Term Reverse Lamp Study (Over 5 minutes observation period)</b>					
	Lamp Position 1	Lamp position 2	Lamp Position 3	Results of 6 person review under simulated Day Time Lighting conditions	Results of 6 person review under simulated Night Time Lighting conditions
Able to tell at 50 Cd 14% difference	High (350Cd)	Medium (300Cd)	High (350Cd)	0 of 6 were able to distinguish Med to High	0 of 6 were able to distinguish Med to High
Able to tell at 100 Cd 29% difference	High (350Cd)	Low (250Cd)	High (350Cd)	6 of 6 were able to distinguish Low to High	6 of 6 were able to distinguish Low to High
Able to tell at 50 Cd 14% difference	Medium (300Cd)	Medium (300Cd)	Low (250Cd)	Not Recorded	Not Recorded



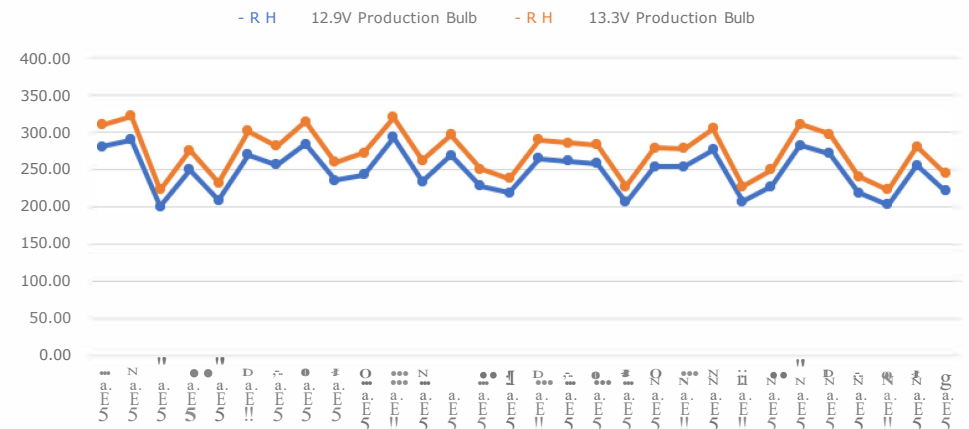
APPENDIX B

	LH 12.9V Production Bulb	LH 13.3V Production Bulb	RH 12.9V Production Bulb	RH 13.3V Production Bulb
Lamp 1	247.88	268.83	280.29	309.51
Lamp 2	266.28	293.73	289.98	321.51
Lamp 3	281.41	311.24	200.60	222.41
Lamp4	304.10	333.89	249.41	275.19
Lamp5	269.44	297.81	208.73	231.89
Lamp 6	240.57	266.28	269.85	301.24
Lamp 7	291.31	323.89	255.97	280.97
Lamp8	197.68	221.32	284.10	313.49
Lamp9	213.15	236.69	235.36	259.61
Lamp 10	246.52	272.47	242.85	272.13
Lamp 11	297.19	329.40	293.11	319.74
Lamp 12	281.41	311.72	233.90	261.62
Lamp 13	260.02	288.22	268.74	295.88
Lamp 14	278.24	305.85	227.80	250.18
Lamp 15	306.00	337.41	218.59	237.83
Lamp 16	273.68	301.68	264.86	289.78
Lamp 17	219.31	242.39	261.10	285.40
Lamp 18	227.10	251.34	257.58	282.65
Lamp 19	255.78	281.02	206.34	226.91
Lamp 20	245.26	269.98	253.76	278.62
Lamp 21	258.64	284.01	253.46	277.73
Lamp 22	294.96	324.18	276.19	304.64
Lamp 23	287.80	315.41	207.20	227.27
Lamp 24	288.51	317.66	226.62	249.11
Lamp 25	254.20	285.87	281.67	310.89
Lamp 26	268.56	295.76	271.55	296.97
Lamp 27	241.56	264.71	218.39	240.50
Lamp 28	276.67	303.72	202.31	222.47
Lamp 29	224.40	246.39	255.59	280.40
Lamp 30	234.76	257.99	220.87	244.67

FISO Rear Lamp Study  
H-V (cd) Left Hand Lamps



FISO Rear Lamp Study  
H-V (cd) Right Hand Lamps



# Part 573 Safety Recall Report

# 22V-535

**Manufacturer Name :** Ford Motor Company

**Submission Date :** JUL 22, 2022

**NHTSA Recall No. :** 22V-535

**Manufacturer Recall No. :** 22C18



## Manufacturer Information :

**Manufacturer Name :** Ford Motor Company

**Address :** 330 Town Center Drive

Suite 500 Dearborn MI 48126-2738

**Company phone :** 1-866-436-7332

## Population :

**Number of potentially involved :** 1,271,854

**Estimated percentage with defect :** 100 %

## Vehicle Information :

**Vehicle 1 :** 2018-2020 Ford F-150

**Vehicle Type :** LIGHT VEHICLES

**Body Style :** PICKUP TRUCK

**Power Train :** NR

**Descriptive Information :** Affected vehicles are equipped with low series rear combination lamps.

**Production Dates :** JAN 10, 2017 - OCT 22, 2020

**VIN Range 1 : Begin :**

NR

**End :** NR

Not sequential

## Description of Noncompliance :

**Description of the Noncompliance :** Certain 2018-2020 model year Ford F-150 vehicles with low series rear combination lamps may exceed the maximum backup lamp brightness requirement per FMVSS 108.

**FMVSS 1 :** 108 - Lamps, reflective devices, and assoc. Equipment

**FMVSS 2 :** NR

**Description of the Safety Risk :** Ford believes this noncompliance is inconsequential to motor vehicle safety and plans to submit a Petition for Inconsequential Non-Compliance for exemption from the notification and remedy requirements of the Safety Act as specified in 49 CFR Part 556.

**Description of the Cause :** The likely root cause is that the backup lamp outer lens optic features were not accurately cut in the supplier's component molding tool. The supplier's manufacturing part verification checks did not properly measure component light output and, as a result, the condition was not detected.

**Identification of Any Warning that can Occur :** None

## Involved Components :

Component Name 1 : LAMP ASY REAR

Component Description : F-150 REAR LAMP ASSEMBLY - RH

Component Part Number : JL3Z-13404-H

Component Name 2 : LAMP ASY REAR

Component Description : F-150 REAR LAMP ASSEMBLY - LH

Component Part Number : JL3Z-13405-HCP

## Supplier Identification :

### Component Manufacturer

Name : Ventra Sandusky LLC

Address : 3020 TIFFIN AVE  
SANDUSKY Ohio 44870-5352

Country : United States

## Chronology :

Refer to 22C18\_chronology.pdf attached.

## Description of Remedy :

Description of Remedy Program : Ford believes this noncompliance is inconsequential to motor vehicle safety and plans to submit a Petition for Inconsequential Non-Compliance for exemption from the notification and remedy requirements of the Safety Act.

How Remedy Component Differs from Recalled Component : Not applicable.

Identify How/When Recall Condition was Corrected in Production : Not required per 49 Part 573.

## Recall Schedule :

Description of Recall Schedule : Ford does not believe this issue presents a risk to safety and plans to

submit a Petition for Inconsequential Non-Compliance for exemption from the notification and remedy requirements of the Safety Act.

Planned Dealer Notification Date : NR - NR

Planned Owner Notification Date : NR - NR

\* NR - Not Reported