Post Office Box 3008
Hayward, CA 94540-3008
(510) 785-1500
FAX: (510) 785-6819

February 24, 2017

Subject: Chronology Attachment for Gillig Low Floor Bus Turn Signal Part 573 Report

On 12/31/1997, Gillig started production of the standard profile (non-BRT) Low Floor bus model. At this time, Gillig's Low Floor bus model used a turn signal lamp that incorporated incandescent bulbs and was manufactured by Hella. The turn original turn signal lamps went through multiple redesigns over the years, and eventually transitioned from incandescent to LED bulbs.

Beginning on 03/20/1998, Gillig sold its first aftermarket turn signal unit through its parts department.

On 08/04/2016, Gillig started to use a redesigned LED turn signal unit (Part No. 51-75367-000) manufactured by Hamsar. The redesigned unit used a new housing that included an integrated side marker lamp and side reflex reflector.

On 12/22/2016, Gillig received a customer complaint claiming that the redesigned turn signal unit (Part No. 51-75367-000) did not appear to be sufficiently visible when viewed from the front of the bus.

On 01/25/2017, Gillig received a similar customer complaint related to the visibility of the 51-75367-000 unit and initiated a technical evaluation of the design, including new compliance validation testing.

On 02/03/2017, the supplier of the redesigned signal unit (Hamsar) provided Gillig with a compliance test report that tentatively indicated that the turn signals and side reflex reflectors did not meet the base photometry requirements of FMVSS 108 for all of the test conditions when tested at the orientation that they are installed on the bus (mounted approximately 37 degrees from forward facing). Hamsar's test data also tentatively indicated that prior generations of LED or incandescent turn signal lamps may also not meet the base photometry requirements of FMVSS 108 for all test conditions if also installed at the same angle. Gillig began a comprehensive review of vehicles and parts sold/provided under warranty to analyze and confirm the supplier's test results and determine the affected population.

On 02/14/2017, Gillig submitted a Part 573 Report for the redesigned turn signal unit (Hamsar 51-75367-000) currently used in production and continued its investigation of units using the incandescent bulbs before the part was redesigned.

On 02/15/2017, Gillig located units of prior generations of turn signals (which do not have the integrated side reflex reflectors) and initiated testing of their integrated side marker lamps. The compliance data indicated that the integrated side marker lamps for all prior turn signal units are not fully compliant with all of the FMVSS 108 base photometry requirements. For turn signal units manufactured by Hella with incandescent bulbs and installed on buses manufactured between 1997-

Post Office Box 3008
Hayward, CA 94540-3008
(510) 785-1500
FAX: (510) 785-6819

2003, the units meet the allowable 60% of minimum photometric intensity requirements for 3 of 5 groups and 13 of 19 individual test points. For comparison, its total photometric intensity output is 74% of the combined base requirement minimums (1710 candela) in FMVSS 108. The integrated side marker lamp was also tested and meets all photometric requirements.

The later generation of turn signal units were also tested. For turn signal units with incandescent bulbs and installed on buses manufactured from 2003 to 2005, the units also meet the allowable 60% of minimum photometric intensity for 13 of 19 test points and the minimum photometric intensity for 2 of 5 groups. For comparison, its total photometric intensity output is 147% of the combined base requirement minimums (1710 candela) in FMVSS 108. The integrated side marker lamp meets all photometric requirements. For the turn signal units with LED bulbs installed in buses manufactured from 2005 to 2016, the units also meet the allowable 60% of minimum photometric intensity for 12 of 19 test points and the minimum photometric intensity for 3 of 5 groups. For comparison, its total photometric intensity output is 246% of the combined base requirement minimums (1710 candela) in FMVSS 108. The integrated side marker lamp meets all photometric requirements.

On 02/24/2017, following review and analysis of all data, Gillig decided to submit a Part 573 noncompliance report for the turn signal lamps (bulb or bulb w/ voltage regulator) in all prior generations of front turn signal units (Gillig Part No. 13-38076-000, 13-39011N000, 13-51273-000, 51-54495-000, 51-62153-000, and 51-73115-000).