



July 14, 2011

Mr. Aamer Zain

Dear Mr. Zain:

Re: Commentary to FCC ET Docket Nos. 11-90 and 10-28, Operation of Radar Systems in the 76 – 77 GHz Band

Delphi Corporation (“Delphi”) respectfully submits its comments regarding the Federal Communications Commission’s (“FCC”) Notice of Proposed Rulemaking (“NPRM”) in the above-captioned proceeding. Delphi is a leader and innovator in the design and manufacture of vehicular radar systems and has actively and consistently participated in the several FCC’s rulemakings affecting such devices in recent years. Delphi has obtained a number of FCC authorizations for sale of non-licensed Part 15 automotive radar products at 10 GHz, 17 GHz, 24 GHz and 76 GHz.

I. Toyota Motor Corporation (TMC). Delphi supports the request of TMC to modify the commission’s rules with regard to radiated power levels and to allow full power radiation when the vehicle is not in motion. Delphi believes that it is beneficial to the continued improvement of automotive safety to have all applicable international regulations consistent with regard to specified parameters. Raising the power for rear and side applications to the same level as forward looking applications, as allowed in Europe and Japan, will make introduction of new systems more universal. This will allow the same system to be used world-wide resulting in earlier introduction by eliminating multiple designs. A common world-wide design will allow for lower cost due to higher volume and reduced development time and cost.

Eliminating the requirement for reduced radiation when not in motion will make systems in the US compatible with those in the rest of the world. It will allow for system performance improvements with regard to stop and go operation. It will also open the door for additional system innovations in safety related applications such as collision warning and collision avoidance.

Delphi does not support NRAO’s recommendation to create coordination zones by incorporating GPS into automotive radar. Adding a GPS requirement will increase the cost of radar systems that are already extremely cost sensitive. Delphi agrees with the FCC statement that RAS millimeter wave receivers are usually located in limited access mountain-top rural areas where line of site interference is remote. Numerous 76 GHz automotive radar systems have been implemented in both the

US and Europe starting in 1999. Delphi is not aware of any interference issues from 76 GHz automotive radar with these facilities.

III. ERA. Delphi has no opposition to ERA's request as proposed by ERA. Specifically, Delphi supports allowing fixed radar operation in off-highway applications such as airport runway surveillance. Delphi is opposed to allowing the all-inclusive operation of fixed radar in the 76-77 GHz band as proposed by the Commission.

Delphi disagrees with the FCC that fixed radar operating in the 76-77 GHz band under the same power limit as vehicular radar poses no more threat of interference to vehicular radar than multiple radar equipped vehicles. Delphi believes that the possibility of interference from multiple fixed radar installations in certain scenarios could increase the probability of interference when compared to a multiple vehicle scenario. If multiple fixed radars are mounted on elevated platforms along a highway and pointed toward a highway, their beam is not blocked by adjacent vehicles and the radar equipped vehicle may be in a potential interference environment for an extended period of time and potentially from multiple fixed radars simultaneously. In contrast, in a situation with multiple radar equipped vehicles, the radar line of sight to most vehicles is naturally obstructed thereby limiting the number of potential interferers.

Delphi also disagrees with the Commission's comments that fixed radar will use high gain narrow beam antenna that will minimize the probability of main lobe to main lobe overlap with vehicular radar. Fixed radar installations may not be as cost sensitive as is automotive radar. It is possible to generate higher device power at a moderate cost increase, enabling use of lower gain, broader beam antenna and still operate at the maximum 50 dBm power levels. Certain systems of this type are very likely to increase the probability of interference.

Delphi and the other radar manufacturers recognize the fact that automotive radars can interfere with one another. This fact is evidenced by the creation of the MOSARIM (More Safety for All by Radar Interference Mitigation)¹ project in Europe. SARA (Strategic Automotive Radar Frequency Allocation Group) has stated that the project's goals include investigating the interference mechanisms, quantifying the interference levels and developing countermeasures to mitigate automotive radar mutual interference. Delphi is very concerned that a rules change allowing the potential for many additional fixed roadside 76 GHz radiators would increase the probability of interference to automotive radar.

There are potential fixed radar applications that have been discussed such as monitoring tunnels and bridges and traffic control which would aim the antenna main beam directly at the roadway as the primary mode of operation. These types of fixed radar systems would pose the greatest threat of potential of interference to automotive radar.

¹ www.mosarim.eu

Delphi believes that more time is required to determine the potential for interference from fixed radar operating 76-77 GHz band. The commission's rules have not allowed fixed radar, and many possible applications exist that have not been analyzed with regard to interference potential to automotive radar. Delphi did not comment on the commission's request regarding changing the rules in accordance with ERA's request for airport operation because Delphi believes that airport surveillance will not impact automotive radar applications. The decision to open the fixed radar operation to all unspecified applications is a new concern and needs additional time for review.

Delphi believes that limiting the fixed radar to airport operation as originally requested by ERA will allow additional time for evaluation of interference from new and different applications. Delphi believes that new applications should petition the Commission as ERA did in order to define the system operation and allow time to determine the interference potential of the specific application. Following this recommendation will minimize the potential interference impact on automotive radar and help protect the safety aspects of automotive radar systems.

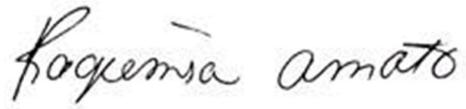
Delphi also believes that limiting the application of fixed radar to airport surveillance systems will not create a burden on the Commission with regard to enforcement any more than the current rules which prohibit fixed radar operation.

Finally, addressing the Commission's question on requiring compliance with a standard similar to the ETSI EN 301091, Delphi believes that the Commission's current process of test documentation to receive a radar model grant of equipment acceptance is adequate. Creating a Commission generated and controlled standard would create an additional burden on the Commission. Requiring compliance to a new or modified ETSI standard could create a problem for the Commission as the Commission would have no control over changes. (EN 301091 is currently written for automotive radar only and does not cover fixed radar.)

III. Summary. Delphi supports the changes to radiated power in all modes of automotive radar operation as proposed by the Commission. Delphi supports adoption of fixed radar authorization for airport surveillance operations as proposed by ERA. Delphi disagrees with the Commission's proposal to open the spectrum to all as yet undefined fixed radar applications without restrictions to avoid the potential for interference to automotive radar. Delphi believes that there are a number of applications such as monitoring tunnels and bridges and traffic control which would aim the antenna main beam directly at the roadway as the primary mode of operation thereby increasing the probability of interference. Delphi believes more time is necessary to determine the specifics of these applications, thoroughly evaluate the potential for interference to automotive radar and develop suitable restrictions or interference mitigation methods as needed. Delphi strongly recommends that the Commission not open the 76-77 GHz band to general operation of fixed radar.

Please feel free to contact me with any questions regarding this commentary.

Sincerely,

A handwritten signature in black ink that reads "Ragemra Amato". The script is cursive and fluid, with a prominent flourish at the end of the name.

Ragemra Amato
Manager Government/Technical Affairs
Innovation and Technology Office
Delphi Automotive