**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, DC 20554**

| | | |
|---|---|---|
| In the Matter of | ) | |
| | ) | |
| Amendment of the Commission's Rules Regarding Dedicated Short-Range Communication Services in the 5.850-5.925 GHz Band (5.9 GHz Band) | ) | WT Docket No. 01-90 |
| | ) | |
| Amendment of Parts 2 and 90 of the Commission's Rules to Allocate the 5.850-5.925 GHz Band to the Mobile Service for Dedicated Short Range Communications of Intelligent Transportation Services | ) | ET Docket No. 98-95<br>RM-9096 |

To: The Commission

## COMMENTS ON PETITION FOR RECONSIDERATION

Pursuant to Section 1.429 of the Commission's rules, 47 C.F.R. § 1.429, ARINC, Incorporated ("ARINC"), by its counsel, respectfully submits its comments on the Petition for Reconsideration filed by the 3M Company ("3M") on September 2, 2004,[1] regarding the licensing and service rules for the Dedicated Short Range Communications Service ("DSRCS") in the Intelligent Transportation Systems ("ITS") Radio Service in the 5.850-5.925 GHz band ("5.9 GHz Band"), which were adopted in the *DSRC Report and Order* released February 10, 2004 in the above–captioned proceedings.[2]

---

[1] 3M Company, Petition for Reconsideration, WT Docket No. 01-90 (filed Sept. 2, 2004) ("3M Petition").

[2] *In the Matter of Amendment of the Commission's Rules Regarding Dedicated Short-Range Communication Services in the 5.850-5.925 GHz Band (5.9 GHz Band); Amendment of Parts 2 and 90 of the Commission's Rules to Allocate the 5.950-5.925 GHz Band for Dedicated Short Range Communications of Intelligent Transportation Services*, WT Docket No. 01-90, ET Docket No. 98-95, RM-9096, Report and Order, 19 FCC Rcd 2458 (2004) ("*Report and Order*").

Although 3M generally supports the adopted DSRC rules, it seeks reconsideration of two issues. 3M asks that the emission mask for DSRC Class D devices in amended Rule 90.210 be eliminated. It also asks that the Commission reconsider the adopted antenna height correction factor in adopted Rule 90.377(b) for DSRC roadside units with antennas between six and 15 meters above ground level. ARINC opposes any change to or elimination of the adopted Class D emission mask, but does not object to 3M's proposal to revise the antenna height correction factor to apply only to those antennas mounted at heights greater than eight meters and up to 15 meters.

## I. DSRC CLASS D DEVICE EMISSION MASK

3M contends that the emission mask adopted in Rule 90.210 for DSRC Class D devices appears to be too restrictive and may make the cost of such devices unaffordable to public safety entities.[3] 3M further argues that the adopted emission mask characteristics, moreover, have not been commercially proven, and the Commission should therefore not require implementation of the Class D emission mask until such time as valid technical limits can be defined.[4]

Pursuant to adopted Rule 90.210, the applicable emission masks and formulas for DSRC devices are to be found in the ASTM-DSRC Standard,[5] for which compliance is required. The emission mask specified in the ASTM-DSRC Standard for Class D devices is: 0 dBr (dB relative to the maximum spectral density of the signal) at a frequency offset of ± 4.5 MHz from the

[3] 3M Petition at 12-13.

[4] *Id.* at 14.

[5] American Society for Testing and Materials (ASTM), Standard Specification for Telecommunications and Information Exchange Between Roadside and Vehicle Systems – 5 GHz Band Dedicated Short Range Communications (DSRC) Medium Access Control (MAC) and Physical Layer (PHY) Specifications, Designation: E 2213-03 (published Sept. 2003) ("ASTM DSRC Standard").

center frequency, -35 dBr at an offset of ± 5.0 MHz, -45 dBr at an offset of ± 5.5 MHz, -55 dBr at an offset of ± 10 MHz and -65 dBr at an offset of 15 MHz.

ARINC opposes any change to the adopted emission mask for Class D devices. Technically, an emissions mask is needed for all DSRC device classes to ensure that DSRC licensees can successfully share the 5.9 GHz Band. A more rigorous emission mask is needed for Class D devices because they are authorized to operate at the longest range of up to 1000 meters and the highest maximum output power of 28.8 dBm of the four classes of DSRC devices and are authorized to transmit on channels at the highest maximum EIRP of 40 and 44.8 dBm.[6] It is expected that Class D devices will be used typically for special, limited public safety applications, such as for long-range public safety communications for signal light preemption, which require higher power to transmit at distances of up to 1000 meters. Accordingly, the emission mask for Class D devices imposes some power limits as well as tighter "roll off" and spectrum band requirements. If, for example, a licensee is permitted to operate without these tighter "roll off" requirements, there is a substantial risk of interference to other DSRC licensees in adjacent channels located within 1000 meters.

More important, however, 3M's request is inconsistent with the adopted ASTM-DSRC Standard. In other words, 3M is asking the Commission to unravel the standard, thus calling into question the careful industry consensus behind the drafting and acceptance of the standard as the mechanism to establish interoperability in the 5.9 GHz Band. Without an alternative that promises clear benefits, the Commission should proceed cautiously before altering or foregoing the implementation of the adopted emission mask for Class D devices. In deciding to include the

Class D emission mask in the ASTM-DSTC Standard, ARINC and the ASTM standards-writing committee studied the feasibility and costs associated with developing and manufacturing this mask. ARINC is confident that it can be designed and produced at a price that is not cost-prohibitive to DSRC licensees, including for public safety entities. ARINC further suggests that 3M's and any other proposed revisions to the Class D device emission mask are best addressed in the ASTM standards-writing committee rather than with the Commission.

It is also the case that 3M has not offered empirical evidence showing that (1) the adopted emission mask is too restrictive, or (2) a less restrictive alternative will sufficiently guard against harmful interference. ARINC agrees with the Commission's conclusion in the *Report and Order* "… that it is safer and in the public interest, given the current development of the band, to use the emission mask and formulas in the ASTM-DSRC Standard as the technical regulatory framework for the band."[7] For these reasons, ARINC opposes 3M's request that the Commission should forego implementation of the Class D emission mask at this time.

## II. ANTENNA HEIGHT CORRECTION FACTOR

3M also requests reconsideration of the antenna height correction factor adopted in Rule 90.377(b), which provides that DSRC Roadside Unit ("RSU") antennas at heights exceeding six meters but not exceeding 15 meters must reduce the maximum allowable EIRP (measured in

[6] 47 C.F.R. § 90.375(c). The adopted rules provide that Service Channels 178 and 184 can be used for such longer range public safety communications at a higher maximum EIRP of up to 44.8 dBm and 40 dBm, respectively. *Id*. at 90.377(b), table.

[7] *Report and Order*, 19 FCC Rcd at 2477-78, ¶ 37. The Commission further noted that because of similar concerns raised about similar emission mask limits raised in another proceeding, it reserved its discretion to revisit this issue after sufficient empirical data is available to construct a "reasonable and appropriate" alternative propagation model. *Id.*

dBm) for a particular channel by a factor of 20 log(Ht/6).[8] 3M claims that the antenna height correct factor is too restrictive.[9] 3M is developing DSRC applications to permit signal light preemption at intersections for emergency vehicles. Public safety entities, according to 3M, will often need to mount antennas above six meters to up to 8 meters. Application of the antenna height correction factor, however, will impose such significant power and range reductions for these higher antennas that multiple antennas will have to be deployed at an intersection rather than a single antenna. This impact, according to 3M, is unnecessary and can double or triple the costs to public safety entities of deploying such DSRC systems at intersections.[10] 3M proposes two alternatives: adopt a "blanket" exception for public safety priority systems or, apply a correction factor only to those antennas mounted at heights above eight meters and not exceeding 15 meters.[11]

ARINC does not object to revising the adopted antenna height correction factor to apply only to antennas mounted at heights above eight meters and up to 15 meters but opposes any

[8] More specifically, the antenna height correction factor is found in footnote 1 to adopted Rule 90.377(b):

> An RSU may employ an antenna with a height exceeding 6 meters but not exceeding 15 meters provided the EIRP specified in the table [appearing above in Rule 90.377(b)] is reduced by a factor of 20 log(Ht/6) in dB where Ht is the height of the radiation center of the antenna in meters above the roadway bed surface. The EIRP is measured as the maximum EIRP toward the horizon or horizontal, whichever is greater, of the gain associated with the main or center of the transmission beam. The RSU antenna height shall not exceed 15 meters above the roadway bed surface.

[9] 3M Petition at 5.

[10] *Id.* 3M further suggests that requiring such public safety DSRC deployments to operate at lower power and shorter range "negates" the intent of the adopted rules to permit high power for public safety operations across the 5.9 GHz Band. *Id.*

[11] *Id.* at 11.

blanket exception for public safety entities. The initially proposed antenna height correction factor included a bright line limit on the maximum EIRP for antennas at heights above six meters to be 33 dBm.[12] At the urging of 3M, a subsequent request was made to the Commission not to include this 33 dBm maximum EIRP "cap" in the adopted Rules.[13] Given 3M's continuing concerns regarding the potential effect of the adopted antenna height correction factor to longer range public safety applications, such as signal light preemption, ARINC does not object to 3M's proposal to modify the formula to apply only to those RSU antennas mounted at heights above eight and not exceeding 15 meters, or 20 log (Ht/8) relative to the radiation center of the antenna.[14] In addition, this proposed change does not implicate an unraveling of the ASTM-DSRC Standard.

ARINC, however, opposes a blanket exception for public safety entities. Contrary to 3M's interpretation of Rule 90.377(b),[15] applying the antenna height correction factor, whether

---

[12] *See Ex Parte* Comments of the Intelligent Transportation Society of America: Status Report and Recommendations for Licensing and Service Rules for the DSRC Spectrum in the 5850-5925 MHz Band, WT Docket No.01-90, Appendix C at 9 (proposed Rule 90.385(c)(2)) (filed July 9, 2002). The excluded language reads: "[T]he maximum authorized effective EIRP is 33 dBm for any Roadside Unit installation where the antenna height is six (6) meters or greater above the roadway bed surface."

[13] *See Ex Parte* Submission of the Intelligent Transportation Society of America, WT Docket No. 01-90, 4 (filed Nov. 13, 2003).

[14] Revised footnote 1 to Rule 90.377(b) would therefore read:

> An RSU may employ an antenna with a height exceeding 8 meters but not exceeding 15 meters provided the EIRP specified in the table [appearing above in Rule 90.377(b)] is reduced by a factor of 20 log(Ht/8) in dB where Ht is the height of the radiation center of the antenna in meters above the roadway bed surface. The EIRP is measured as the maximum EIRP toward the horizon or horizontal, whichever is greater, of the gain associated with the main or center of the transmission beam. The RSU antenna height shall not exceed 15 meters above the roadway bed surface.

[15] 3M Petition. at 5.

invoked at six meters or eight meters, does not eliminate the ability of public safety entities to operate at higher power levels in specified channels (the Control Channel and Service Channel 184)[16]. The antenna height correction factor is based on the maximum permissible EIRP for a given channel. Where a public safety entity is permitted to operate at a higher EIRP, the formula maintains this distinction. An antenna height correction factor is therefore needed for any RSU station using a higher antenna, and ARINC opposes a blanket exception for public safety "priority systems." ARINC, however, will not object to changing the formula to apply only to those antennas mounted between eight and 15 meters to reflect, according to 3M, that current "priority control systems" are typically deployed with antennas between five and eight meters.

[16] *See* Rule 90.377(b), table.

## III. CONCLUSION

For the reasons stated herein, ARINC opposes 3M's Petition for Reconsideration the Commission to forego implementation of the Class D emission mask. ARINC, however, does not object to changing the adopted antenna height correction factor to apply only to antennas mounted at heights between eight and 15 meters.

Respectfully submitted,

By: **/s/ Robert B. Kelly ____**


Broady B. Cash
C. Gary Stephens
ARINC Incorporated
2551 Riva Road
Annapolis, MD 21401
(410) 266-4000

Robert B. Kelly
Mark D. Johnson
SQUIRE, SANDERS & DEMPSEY L.L.P.
1201 Pennsylvania Avenue, N.W.
P.O. Box 407
Washington, DC 20044-0407
(202) 626-6600

*Its Counsel*


October 27, 2004

## CERTIFICATE OF SERVICE

I, Mark D. Johnson, hereby certify that on this 27th day of October, 2004, I caused a copy of the foregoing "Comments on Petition for Reconsideration" to be sent to the persons listed below via overnight delivery.

**/ s/**
Mark D. Johnson

3M Company
Edmund J. Ring
3M Center
MS235-3F-08
St. Paul, MN 55144

John A. Prendergast
D. Cary Mitchell
Blooston, Mordkofsky, Dickens & Prendergast
2120 L Street, NW
Suite 300
Washington, DC 20037
*Counsel to 3M Company*