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**UNITED STATES DEPARTMENT OF COMMERCE  
National Telecommunications and  
Information Administration**

Washington, D.C. 20230

May 19, 2003

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 Twelfth Street, S.W.  
Washington, DC 20554

Re: 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, RM-9096

Dear Ms. Dortch:

Enclosed please find an original and eight (8) copies of the late-filed Comments of the National Telecommunications and Information Administration, U.S. Department of Commerce. A copy of the filing in a WordPerfect file is also provided on diskette.

Please direct any questions you may have regarding this letter to the undersigned. Thank you for your cooperation.

Respectfully submitted,

Kathy D. Smith  
Chief Counsel

Enclosures

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

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

In the Matter of	)	
	)	
Amendment of the Commission's Rules	)	WT Docket No. 01-90
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	)	ET Docket No. 98-95
Rules to Allocate the 5.850-5.925 GHz Band to the	)	RM No. 9096
Mobile Service for Dedicated Short Range	)	
Communications of Intelligent Transportation	)	
Services	)	

**COMMENTS OF THE NATIONAL TELECOMMUNICATIONS  
AND INFORMATION ADMINISTRATION**

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May 19, 2003

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## EXECUTIVE SUMMARY

The National Telecommunications and Information Administration (NTIA) supports the Federal Communications Commission (Commission) in its efforts to implement a regulatory framework necessary to support Dedicated Short Range Communications (DSRC) technology, a technology directed by Congress in the Transportation Equity Act for the 21st Century. The Department of Transportation (DOT) has advocated the allocation of spectrum for DSRC. This allocation will facilitate incorporating technology and advanced electronics into the nation's surface transportation infrastructure. NTIA agrees with the DOT and believes that DSRC technology will help achieve the goals envisioned by Congress to enhance safety on the nation's highways. The service rules proposed by the Commission strike a reasonable balance between establishing new services that will benefit the public and allowing for the continued operation of national defense radar systems used by federal agencies. NTIA offers the following comments in response to specific issues raised in the DSRC Notice of Proposed Rulemaking and Order.

NTIA believes that site specific licensing is appropriate for DSRC Road Side Units (RSUs). The site specific licensing approach is consistent with the technical and functional parameters established in the American Society of Testing & Materials (ASTM) DSRC Standard. The ASTM standard offers a means of standardizing access to the 5.80-5.925 GHz (5.9 GHz) band, which NTIA believes is a basis for achieving national interoperability. Specific site licensing is appropriate because geographic area licensing appears incompatible with the industry-developed ASTM E 2213-02 DSRC Standard that currently exists. Site specific licensing will also facilitate the coordination process that is necessary to avoid interference between DSRC RSUs and high power Government radar systems.

NTIA believes that the Commission should exercise, by rule, its authority with respect to the licensing of On-Board Units (OBUs). This would apply to OBUs associated with a fixed system, as well as those not associated with a fixed station; it would apply to OBUs for both public safety and non-public safety operations. NTIA believes that authorization under the Commission's Part 15 Rules for DSRC OBUs would not offer sufficient protection for public safety and safety-related services. Allowing causal interference, as permitted under the Part 15 Rules, could prohibit the deployment of critical public safety DSRC applications, potentially reducing the overall public benefits envisioned for DSRC. Therefore, NTIA recommends that the Commission authorize DSRC OBUs under Part 90 instead of its Part 15 Rules.

The DOT has expended substantial effort in developing coordination zones to ensure that the concerns raised by the Department of Defense (DoD) regarding interference from high power Government radar systems were resolved. NTIA believes that since many of the technical parameters for the DSRC equipment to be used in the United States have now been finalized, it is appropriate for the DOT to initiate another study to determine the effectiveness of the current coordination zones. As before, the study will be performed in cooperation with the DoD, working through the NTIA Interdepartment Radio Advisory Committee process, and will take into account future Government radar operations.

Finally, NTIA believes that there would be substantial public benefit in facilitating national interoperability of DSRC technology. To encourage this, NTIA recommends that the Commission incorporate by reference the industry-developed ASTM E 2213-02 DSRC Standard into its Part 90 rules for the 5.9 GHz band. This standard would be applicable to DSRC operations that perform a public safety function as well as to those that perform functions other

than public safety. NTIA believes that compliance with the industry-developed ASTM E 2213-02 DSRC Standard should be required of equipment manufacturers. NTIA also recommends that the equipment type certification requirement for DSRC should be included in Part 90 of the Commission's Rules and that compliance should be required as a prerequisite to equipment type certification under Part 90. These recommendations will facilitate the successful deployment of DSRC, as well as achievement of the Commission's and DOT's goal of nationwide interoperability.

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

In the Matter of	)	
	)	
Amendment of the Commission's Rules	)	WT Docket No. 01-90
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Communications of Intelligent Transportation	)	
Services	)	

**COMMENTS OF THE NATIONAL TELECOMMUNICATIONS  
AND INFORMATION ADMINISTRATION**

The National Telecommunications and Information Administration (NTIA), an Executive Branch agency within the Department of Commerce, is the President's principal adviser on domestic and international telecommunications policy, including policies relating to the nation's economic and technological advancement in telecommunications. Accordingly, NTIA makes recommendations regarding telecommunications policies and presents Executive Branch views on telecommunications matters to the Congress, the Federal Communications Commission (Commission), and the public. NTIA, through the Office of Spectrum Management, is also responsible for managing the Federal Government's use of the radio frequency spectrum. NTIA respectively submits the following comments in response to the Commission's Notice of Proposed Rulemaking and Order in the above-captioned proceeding.<sup>1</sup>

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<sup>1</sup> *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), [and] Amendment of Parts 2 and 90 of the*

## I. INTRODUCTION

Intelligent Transportation Systems (ITS) apply new and emerging computing and communications technologies to surface transportation systems making highways, transit systems, buses, rail, trucks, and passenger vehicles more efficient, less costly, cleaner and safer.<sup>2</sup> Many of the applications envisioned to support ITS employ a communications link that enables information to move seamlessly between a transponder mounted on a car's windshield to a toll booth, or from a roadside transmitter to an in-vehicle navigation device. The very nature of transportation implies mobility, so a wireless radio link, termed Dedicated Short Range Communications (DSRC), is used for the many differing ITS applications. DSRC is a short to medium range communications service that supports both public safety and private operations in roadside-to-vehicle and vehicle-to-vehicle communication environments. DSRC operations involve two types of devices: a Road Side Unit (RSU) and an On-Board Unit (OBU).

In 1998, the Congress passed the Transportation Equity Act for the 21st Century (TEA-21).<sup>3</sup> The TEA-21 directed the Commission to work with the Department of Transportation (DOT) to evaluate the spectrum needs associated with ITS, "including spectrum for dedicated short-range vehicle to wayside wireless standards."<sup>4</sup> In October 1999, the Commission allocated

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*Commission's Rules to Allocate the 5.850-5.925 GHz Band to the Mobile Service for Dedicated Short Range Communications of the Intelligent Transportation Services*, Notice of Proposed Rulemaking and Order, WT Docket No.01-90, ET Docket No. 98-95, RM No. 9096, FCC 02-302, 68 Fed. Reg. 1999 (Jan. 15, 2003) (hereinafter "DSRC NPRM&O").

<sup>2</sup> ITS includes both public and private applications.

<sup>3</sup> Transportation Equity Act for the 21<sup>st</sup> Century, Pub. L. 105-178, 112 Stat. 107 (1998).

<sup>4</sup> *Id.* at §5206(f), 112 Stat. 457.

spectrum in the 5.850-5.925 GHz band (5.9 GHz Band) for DSRC-based ITS applications.<sup>5</sup> At the time of the allocation, the Commission deferred action on many policy and technical questions that must be addressed before the allocation can be utilized. During the last several years, the DOT has been working to develop standards addressing such matters. The Commission in this proceeding is considering the unresolved policy and technical issues and will promulgate service rules governing licensing and use of the 5.9 GHz band.

Military radar systems operated by the Department of Defense (DoD) represent the largest incumbent user of the 5.9 GHz band. In the DSRC Allocation R&O, the Commission adopted rules stating that DSRC stations operating in the 5.9 GHz band “shall not receive protection from Government Radiolocation service in operation prior to the establishment of the DSRC station.”<sup>6</sup> The Commission’s Rules also require that DSRC stations operating within 75 kilometers (km) of 59 radar installations be coordinated through the NTIA.<sup>7</sup> New Government radar installations that may be deployed subsequent to the 5.9 GHz allocation to DSRC must coordinate with incumbent DSRC operations.<sup>8</sup> One issue not addressed in the DSRC Allocation R&O was whether provisions need to be adopted to prevent interference to DSRC stations from new high power Government radar operations.

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<sup>5</sup> *In the Matter of 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 the Intelligent Transportation Service*, Report and Order (hereinafter “DSRC Allocation R&O”), ET Docket No. 98-95, 64 Fed. Reg. 66405 (Nov. 26, 1999).

<sup>6</sup> 47 C.F.R. §90.371(b).

<sup>7</sup> *Id.*

<sup>8</sup> DSRC Allocation R&O at ¶14.

NTIA supports the Commission in its efforts to implement the regulatory framework necessary to support DSRC technology as directed by Congress. The DOT has advocated the allocation of spectrum for DSRC, which will facilitate incorporating technology and advanced electronics into the nation's surface transportation infrastructure. NTIA agrees with the DOT that DSRC technology will help achieve the goals envisioned by Congress to enhance safety on the Nation's highways. NTIA believes that the current rules adopted by the Commission strike a reasonable balance between establishing new services that will benefit the public and allowing for the continued operation of Government radar systems used to support national defense. NTIA offers the following comments in response to specific issues raised in the DSRC NPRM&O.

## **II. SITE SPECIFIC LICENSING SHOULD BE EMPLOYED FOR DSRC ROAD SIDE UNITS.**

An RSU is a DSRC transceiver that is normally located along a road or pedestrian passageway. RSUs may also be mounted on a vehicle or hand carried,<sup>9</sup> but may only operate when stationary. The Commission seeks comments on two possible licensing arrangements for RSUs: site specific licensing or geographic area licensing.<sup>10</sup> The Commission appears to prefer geographic licensing, noting that site specific licensing may be too cumbersome for radio systems comprised of several hundred sites because it does not provide the flexibility to relocate transmitter sites without obtaining the Commission's prior approval.<sup>11</sup> Under a site specific

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<sup>9</sup> This portability will be for uses that are temporary, such as work zone warnings.

<sup>10</sup> DSRC NPRM&O at ¶¶ 44, 47.

<sup>11</sup> *Id.* at ¶46.

licensing arrangement, applicants would have to pay for the services of a frequency coordinator every time it was necessary to activate a new RSU or relocate an existing RSU.<sup>12</sup> In contrast, the Commission states that geographic area licensing will facilitate interoperability and operational standards. The Commission also states that geographic area licensing will allow a licensee to modify or add to its facilities without prior Commission approval. The Commission believes that this type of licensing will increase a licensee's flexibility to manage its spectrum and reduce administrative and operating costs.<sup>13</sup> The Commission requested comment on each of these licensing arrangements for RSUs.

On the issue of licensing arrangements for RSUs, the Intelligent Transportation Society of America (ITS America)<sup>14</sup> recommends that fixed RSUs be licensed on a site specific basis.<sup>15</sup> ITS America states that geographic area licensing will result in assigning exclusive control of frequencies to a single licensee for a defined geographic area.<sup>16</sup> ITS America believes that this can create area of exclusivity, which is at odds with the shared use concept necessary for achieving nationwide interoperability. ITS America further states that even if a standard were

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<sup>12</sup> *Id.*

<sup>13</sup> *Id.* at ¶47.

<sup>14</sup> ITS America is a Federal Advisory Committee of the Department of Transportation, which provides the Department with consensus advice on ITS matters. ITS America has over 600 members which include corporations involved in providing transportation of goods and service; federal, state, and local transportation agencies; and research institutions and universities. ITS America also has the support of standards developing organizations such as the American Society of Testing & Materials (ASTM) and the Institute of Electrical and Electronics Engineers (IEEE).

<sup>15</sup> *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, (hereinafter "ITS America Ex Parte Filing"), at 48 (July 9, 2002).

<sup>16</sup> Comments of ITS America, WT Docket No. 01-90, at 13 (March 17, 2003).

adopted for interoperability, it would be rendered irrelevant, as licensees under a geographic licensing arrangement would in all likelihood not allow access to their exclusive frequencies without compensation.<sup>17</sup> In contrast, under a site specific licensing arrangement, no entity would have exclusive rights to any frequencies in the band, which ITS America believes is necessary for interoperability.<sup>18</sup> In making this recommendation, ITS America does not indicate that there are disadvantages, as cited by the Commission, in using a site specific licensing arrangement.

NTIA concurs with the Commission that its decision on licensing should be guided by the need to ensure national interoperability and uniform technical standards. However, NTIA agrees with ITS America that site specific licensing better achieves this goal. Site specific licensing for RSUs is based on the technical and functional parameters established in the industry-developed ASTM E 2213-02 DSRC Standard and are the basis for achieving national interoperability.<sup>19</sup> The ASTM DSRC Standard is based on licensees operating within identified localized “communications zones”<sup>20</sup> transmitting at ranges of 1000 meters or less. The ASTM standard does not offer any licensee exclusive rights to any portion of the 5.9 GHz band as would occur under a geographic licensing scheme. Thus, geographic licensing appears to be incompatible with the industry-developed ASTM DSRC Standard that currently exists. Site

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<sup>17</sup> *Id.*

<sup>18</sup> *Id.*

<sup>19</sup> ASTM E2213-02, 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) (hereinafter “ASTM DSRC Standard”).

<sup>20</sup> Communications zone refers to the transmission contour corresponding to individual fixed RSUs as described in a license application. The communications zone is determined based on the RSU installation class designation of maximum transmitter power and maximum transmitter range.

specific licensing will also facilitate the coordination process that is necessary to avoid interference between DSRC RSUs and high power Government radar systems. A site specific licensing approach should therefore be applicable to both public safety and non-public safety RSUs.

The Commission raises valid concerns regarding the administrative burden that site specific licensing for RSUs may create.<sup>21</sup> However NTIA believes that these administrative burdens can be minimized. For example, a licensee could be permitted to use a single license application to identify the proposed locations of multiple RSUs for coordination. It is also envisioned that a frequency coordinator, not the Commission, would be responsible for the coordination process. The frequency coordinator's use of software and an up-to-date database of earlier coordinated stations (perhaps accessible directly by applicants through the Internet) could facilitate rapid approval of the request or identify potentially affected stations. The frequency coordinator and licensees can also use the Commission's Universal Licensing System (ULS), available to the public on the Commission's website, to effectively manage license applications and a central database of licensee information. ULS is being successfully being used today for public safety and non-public safety frequency bands.

The licensing arrangements for RSUs will also impact the required coordination with Government radar operations. For example, if a geographic area licensing scheme were employed, licensees would be permitted to locate their RSUs anywhere within a specified geographic area. The specific locations and the technical characteristics of the RSUs would be unknown. On the other hand, if a site specific licensing scheme were used, the licensees would

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<sup>21</sup> DSRC NPRM&O at 46.

be required to include in any application the latitude and longitude of the proposed RSU.<sup>22</sup> Each site-specific licensed RSU would also be associated with a specific communications zone derived from the range and transmitter power levels proposed for the RSU under that license.<sup>23</sup> All transmissions would be required to take place within its corresponding communications zone, facilitating coordination with Government radar operations.

The cornerstone of the sharing arrangement reached between the DOT and DoD in the 5.9 GHz band is the required coordination between DSRC stations and radar systems. Based on compatibility studies performed to support the DSRC allocation, it was determined that in order to avoid interference from co-channel radar systems DSRC stations would need to be coordinated to avoid co-channel operations at short separation distances.<sup>24</sup> Section 90.371(b) of the Commission's Rules requires that operation of DSRC stations within 75 km of 59 radar installations listed in 90.371(b) be coordinated through NTIA. In order to have an effective coordination process, the locations of the DSRC stations must be identified. Under a geographic area licensing arrangement, the specific DSRC station locations will not be available. Only under a site specific licensing arrangement will the specific locations of the DSRC stations be known.

### **III. LICENSE BY RULE IS APPROPRIATE FOR DSRC ON-BOARD UNITS.**

There are two types of DSRC OBUs, those associated with a specific fixed system (OBU

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<sup>22</sup> ITS America Ex Parte Filing at 48.

<sup>23</sup> *Id.* at 49.

<sup>24</sup> National Telecommunications and Information Administration, Institute for Telecommunication Sciences, NTIA Report 00-373, *Measured Occupancy of the 5850-5925 MHz Band and Adjacent Spectrum in the United States* (Dec. 1999) (hereinafter "NTIA Report 00-373") at 28.

to RSU operations) and those not associated with a fixed system (OBU to OBU operations). The Commission requested comments on licensing OBUs associated with a specific fixed system under the associated RSU license.<sup>25</sup> For OBUs not associated with a specific fixed system, the Commission seeks comments on whether they should be unlicensed under the Part 15 Rules or licensed by rule.<sup>26</sup>

It is the goal of the ITS community for vehicles manufactured in the United States to be equipped with a DSRC OBU.<sup>27</sup> Given the potentially large numbers and the mobile nature of DSRC OBUs, licensing each unit would be both impractical and a significant administrative burden for the Commission. Requiring individual OBU licensing could also slow down the deployment of equipment.

Section 307(e) of the Communications Act, as amended, permits the Commission to authorize by order the operation of radio stations without individual licenses in the following radio services: 1) the citizens band radio service; 2) the radio control service; 3) the aeronautical radio services; and 4) the maritime radio service for ship stations.<sup>28</sup> The DSRC OBUs will operate at short distances and low power. Since they are installed on vehicles, there is no need to designate a protected service area for their operation. Operation of the OBUs will not be competing with each other for access to the spectrum, and thus do not need exclusive rights to

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<sup>25</sup> DSRC NPRM&O at ¶52.

<sup>26</sup> *Id.* at ¶53.

<sup>27</sup> Recently, seven major vehicle manufacturers - BMW, Daimler Chrysler, Ford, General Motors, Nissan, Toyota, and Volkswagen - announced the formation of the Vehicle Safety Communications Consortium to pursue the use of the 5.9 GHz band for DSRC safety applications for passenger and commercial vehicles.

<sup>28</sup> 47 U.S.C. §307(e).

either a protected service area or spectrum. The Commission has previously applied an expansive definition of the citizen band radio service to the wireless medical telemetry service.<sup>29</sup> The operating characteristics of OBUs are similar to the citizens band radio service. Moreover, it is envisioned that OBUs will perform safety related and public safety functions similar to the aviation and maritime radio services. Given the similarities with other equipment that is licensed by rule, ITS America recommends that OBUs also be licensed by rule.<sup>30</sup> This would include both OBUs associated with a fixed system and those not associated with a fixed system. The recommendations made by ITS America are consistent with those of the DOT and represent the consensus view of the ITS community.

ITS America does not believe that unlicensed DSRC operations under the Commission's Part 15 Rules should be permitted in the 5.9 GHz band.<sup>31</sup> This represents the consensus view of the ITS community. ITS America states that since the predominant use of the 5.9 GHz band is expected to be for public safety and safety related functions, potential interference must be minimized. ITS America believes that permitting unlicensed DSRC operations would undermine the ability of frequency coordinators to protect public safety licensees from interference.<sup>32</sup> Furthermore, ITS America believes that unlicensed DSRC operations would threaten the integrity of the band for its designated purposes.<sup>33</sup>

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<sup>29</sup> *In the Matter of Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service*, Report and Order, ET Docket No. 99-255, 15 FCC Rcd 11206 (rel. Jan. 22, 2002).

<sup>30</sup> ITS America Ex Parte Filing at 56.

<sup>31</sup> *Id.* at 58.

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

NTIA believes that the Commission should exercise its authority to license OBUs by rule. This would apply to OBUs associated with a fixed system as well as those not associated with a fixed station for both public safety and non-public safety OBUs. NTIA also agrees with the views expressed by ITS America and believes that authorization under the Commission's Part 15 Rules for DSRC OBUs would not offer sufficient protection for public safety and safety related services. Allowing causal interference, as permitted under the Part 15 Rules could inhibit the deployment of critical public safety DSRC application, potentially reducing the overall public benefits currently envisioned for DSRC.<sup>34</sup>

**IV. THE COMMISSION SHOULD WAIT UNTIL THE CONCLUSION OF THE DOT TESTING BEFORE ADOPTING PROVISIONS TO PREVENT INTERFERENCE FROM FUTURE RADAR OPERATIONS.**

The Federal Government incumbent users in the 5.9 GHz band are fixed, transportable and mobile radars operated by the DoD that are used primarily for surveillance, test range instrumentation, airborne transponders, and experimental testing. These radars are used extensively in support of national and military test range operations in the tracking and control of manned and unmanned airborne vehicles. The potential interference between these incumbent military systems<sup>35</sup> and DSRC stations was addressed to the satisfaction of the DoD within

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<sup>34</sup> 47 C.F.R. §15.5. A primary operating conditions under Part 15 is that the operator must accept whatever interference is received.

<sup>35</sup> The radars operating in this band typically use transmitters that produce between 0.25 and 1,000,000 watts of peak power, and employ antennas that have mainbeam antenna gain that is between 30 to 40 dBi. The radar antennas often keep the mainbeam power directed in the sky with power levels somewhat lower than the mainbeam values being produced at ground level. However, some 5 GHz radars, such as maritime navigation/surface search radars, do illuminate the ground.

NTIA's Interdepartment Radio Advisory Committee (IRAC)<sup>36</sup> and resulted in the coordination zones found in the Commission's Rules.<sup>37</sup> New Government radar installations may be deployed subsequent to DSRC implementation, but they are required to coordinate with the incumbent DSRC operations.<sup>38</sup> With respect to such future radar installations, the Commission is seeking comments on whether specific provisions need to be adopted to prevent interference from new high power Government radar installations to the DSRC Control channel.<sup>39</sup>

In developing the coordination distances required for the compatible operation of DSRC in the 5.9 GHz band, the DOT sponsored several studies performed by NTIA's Institute for Telecommunication Sciences. These studies included electromagnetic compatibility (EMC) tests of DSRC equipment and analytical analysis of interference to DSRC receivers. To examine potential interference, the EMC testing used simulated radar signals that were coupled into the DSRC receiver, considering both co-channel and off-channel radar operations. The radar signals were selected to represent the range of parameters used by both existing radars and possible future radar designs.<sup>40</sup> As a result of the EMC testing, it was determined that improved DSRC system performance in the presence of interfering radar signals may be achieved through the use of shorter DSRC data packets and possibly through the use of forward error correction (FEC)

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<sup>36</sup> The IRAC, consisting of representatives of 20 Federal agencies, serves in an advisory capacity to the Assistant Secretary of Commerce for Communications and Information. The IRAC, in existence since 1922, advises the Assistant Secretary in the discharge of his/her responsibilities pertaining to the use of the electromagnetic spectrum.

<sup>37</sup> 47 C.F.R. §90.731(b).

<sup>38</sup> DSRC Allocation R&O at ¶14.

<sup>39</sup> DSRC NPRM&O at ¶58.

<sup>40</sup> NTIA Report 98-352 at v.

into the DSRC coding scheme.<sup>41</sup> Based on the EMC tests, an analysis was performed that considered other factors such as antenna coupling and separation distances, which could provide additional protection to DSRC receivers.<sup>42</sup> The EMC tests and analysis were used as the basis for developing the coordination zones found in the Commission's Rules.

Since at the time there were no U.S. standards for DSRC equipment, all of the testing and analysis used in developing the coordination zones were based on the European<sup>43</sup> and Japanese<sup>44</sup> DSRC standards. In June 1999, the ASTM began working on a United States standard for DSRC, which resulted in testing and the selection of a standard for DSRC in the fall of 2001.<sup>45</sup> With the United States standard for DSRC now in place, the DOT plans to pursue additional EMC testing and analysis using equipment that complies with the ASTM standard. The analysis will examine the effectiveness of interference mitigation techniques such as terrain shielding, the use of directional antennas, and radio frequency fencing to reduce interference to DSRC receivers.

In order for the DSRC stations to coordinate with Government radar operations in the 5.9 GHz band, DoD had to identify the specific locations of its radar installations. The locations of

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<sup>41</sup> *Id.* at 21.

<sup>42</sup> NTIA Report 99-359 at 13.

<sup>43</sup> National Telecommunications and Information Administration, Institute for Telecommunication Sciences, NTIA Report 98-352, *Electromagnetic Compatibility Testing of a Dedicated Short-Range Communication System* (hereinafter "NTIA Report 98-352") (July 1998).

<sup>44</sup> National Telecommunications and Information Administration, Institute for Telecommunication Sciences, NTIA Report 99-359, *Electromagnetic Compatibility Testing of a Dedicated Short-Range Communication (DSRC) System that Conforms to the Japanese Standard* (hereinafter "NTIA Report 99-359") (Nov. 1999).

<sup>45</sup> ASTM DSRC Standard.

the radar installations listed in the Commissions's Rules for coordination were based on the DoD's anticipated requirements prior to the terrorist attacks on September 11, 2001. One of the concerns raised by DoD regarding future radar installations is related to the expanding role of radars in support of homeland defense. This expanded role could result in a requirement to deploy radars in areas other than the 59 sites listed in the Commission's Rules. Some of these areas could include cities and highways where DSRC equipment is expected to be used. DoD is concerned that this expanded deployment of 5.9 GHz radars could increase the potential for interference with DSRC operations. Furthermore, with the limited amounts of spectrum available for future radar development, it is likely that new radar systems will be developed for use in the 5 GHz bands.<sup>46</sup> Future radar pulse waveforms are expected to become longer than at present, thereby increasing the average power produced by the transmitter. In order to minimize interference between 5 GHz radars and DSRC systems it will be necessary to take into account radars with higher duty cycles than presently exist.<sup>47</sup>

The DOT has expended substantial effort in developing the coordination zones to ensure that the DOD's concerns regarding interference from high power Government radar systems were resolved. NTIA agrees with the DOT that, since many of the technical details for the DSRC equipment to be used in the United States have now been finalized, it is appropriate for the DOT to initiate another study to determine the effectiveness of the current coordination zones. As before, the study will be performed in cooperation with the DoD, working through the NTIA

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<sup>46</sup> The frequency bands from 5250-5925 MHz are allocated on a primary basis to Government radiolocation.

<sup>47</sup> NTIA Report 00-373 at ix.

IRAC process, and will take into account future Government radar operations. Therefore, NTIA recommends that the Commission wait until the conclusion of this testing before adopting provisions to prevent interference from future radar installations.

**V. INDUSTRY DEVELOPED STANDARDS SHOULD BE ADOPTED BY THE COMMISSION FOR DSRC EQUIPMENT TO ENSURE NATIONAL INTEROPERABILITY.**

In the NPRM&O, the Commission acknowledges that Congress in the TEA-21 stressed the need to ensure national interoperable DSRC-based applications. The DOT has also identified DSRC services as a critical component of the ITS program for which interoperability is essential. The Commission requested comments regarding nationwide interoperability of DSRC applications. The areas addressed by the Commission include: whether all DSRC applications should be interoperable;<sup>48</sup> whether the marketplace can achieve the interoperability necessary for DSRC ITS applications;<sup>49</sup> and whether the ASTM developed DSRC ITS standard is the appropriate standard for national interoperability.<sup>50</sup>

Interoperability problems with public safety communications equipment is an all too familiar problem. This situation may be repeated for DSRC equipment developed in the 5.9 GHz band unless a common standard is developed. ITS America reports that the ITS community is currently experiencing problems with non-interoperable systems in the 900 MHz band.<sup>51</sup> For example, a long-haul truck could encounter at least three incompatible toll systems traveling

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<sup>48</sup> DSRC NPRM&O at ¶31.

<sup>49</sup> *Id.* at ¶33.

<sup>50</sup> *Id.* at ¶34.

<sup>51</sup> ITS America Ex Parte Filing at 30.

from California to Florida: Fastrack® (California); Tolltag® (Texas); and Sunpass® (Florida). If this same truck were then to travel to the Northeast, it would encounter EZ-Pass®. An interstate vehicle is therefore forced to carry multiple toll tags or stop to pay tolls for which it does not have a proprietary tag.<sup>52</sup> The use of multiple and incompatible equipment may also cause spectrum disruptions resulting from interference. ITS America believes that these incompatibility problems cannot be resolved at the local or state level, and that national attention and resources must be applied.<sup>53</sup> ITS America recommends that the Commission specify compliance with the industry-developed ASTM E 2213-02 DSRC Standard to ensure interoperability. ITS America further recommends that the Commission incorporate by reference the industry-developed ASTM DSRC Standard in its Part 90 rules for the 5.9 GHz band.<sup>54</sup> A large number of the parties that filed comments support the ITS America recommendations.<sup>55</sup>

The industry-developed ASTM DSRC Standard is based on the widely used wireless local area network standard, IEEE 802.11a. In addition, the standard complies with all of the Commission's stated requirements to adopt a specific standard. It was approved in an open and fair process involving leading industry, consulting, and government technology representatives. It was approved by an ANSI-accredited standards developer, ASTM. The rights to use the

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<sup>52</sup> *Id.*

<sup>53</sup> *Id.*

<sup>54</sup> *Id.* at 37.

<sup>55</sup> New York State Thurway Authority; International Municipal Signal Association; Highway Electronics; Johns Hopkins University Applied Physics Laboratory; National Association of Telecommunications Officers and Advisors; Intersil Corporation; Mark IV Industries, LTD. I.V.H.S. Division; Department of Transportation; Public Safety Wireless Network Program; E-Z Pass Interagency Group; Nissan Motor Company, LTD.; Port Authority of New York and New Jersey Tunnels, Bridges, & Terminals Department; International Bridge, Tunnel, & Turnpike Association.

standard are freely available without discrimination or cost.<sup>56</sup>

NTIA believes that there will be substantial public benefit in facilitating national interoperability of DSRC equipment. A required standard for DSRC guarantees interoperability among different manufacturers and will permit the development of equipment that is backward compatible. NTIA supports the recommendation made by ITS America for the Commission to incorporate by reference the industry-developed ASTM DSRC Standard in its Part 90 rules for the 5.9 GHz band. This standard would be applicable to both public safety and non-public safety DSRC operations. This would also include any subsequent modifications or additions to the industry-developed ASTM E 2213-02 DSRC Standard.

NTIA also believes that compliance with the industry-developed ASTM E 2213-02 DSRC Standard should be required of equipment manufacturers. This requirement should significantly enhance the likelihood that interoperability in the 5.9 GHz band is achieved – each DSRC device will transmit using the same technical protocols and band channelization structure regardless of the DSRC application(s). NTIA recommends that the equipment type certification requirement for DSRC should be included in Part 90 of the Commission’s Rules. Moreover, demonstrated compliance with the industry developed ASTM E 2213-02 DSRC Standard should be required as a prerequisite to equipment type certification under Part 90.

## **VI. CONCLUSION**

For the foregoing reasons, NTIA urges the Commission to employ site specific licensing for DSRC RSUs; to license DSRC OBUs by rule; to ensure compatibility between DSRC applications and future high power Government radar installations; and to adopt industry-

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<sup>56</sup> DSRC NPRM&O at ¶34.

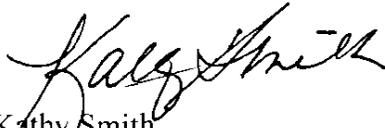
developed standards for DSRC to ensure national interoperability. These recommendations would greatly facilitate the successful deployment of DSRC, while protecting critical Government operations.

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