

**Before the
Federal Communications Commission
Washington, DC 20554**

In the Matter of

Amendment of the Commission's Rules
Regarding Dedicated Short-Range
Communications 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

COMMENTS OF TRANSCORE

TransCore Corporation ("TransCore")¹ respectfully submits these comments on the Notice of Proposed Rulemaking ("NPRM") in the above-referenced proceedings.² TransCore, an industry pioneer in the development of Intelligent Transportation Systems ("ITS"), welcomes the FCC's highly detailed and well-structured request for comment on proposed rules for Dedicated Short-Range Communications ("DSRC") services in the 5.9 GHz band. Indeed, TransCore and the ITS industry in general have been galvanized by the Commission's activities in this band. As

¹ TransCore is a transportation services company with over 1,700 employees worldwide, including over 1,100 technical professionals. TransCore has more than 80 locations throughout the United States and internationally, including locations in Toronto and Hong Kong.

With installations in 39 countries, world-class manufacturing facilities, and roughly 90 U.S. and foreign-issued patents, TransCore's expertise in providing system-based applications that improve transportation efficiency is unparalleled. For example, its freight-exchange network was recently hailed as one of "Forbes' Best of the Web: B2B." *See* <http://www.transcore.com> for more information on the company.

² FCC 02-302, rel. Nov. 15, 2002 ("NPRM").

explained below, TransCore strongly supports the Commission's recommendations in the NPRM and commends ITS America for its efforts in these DSRC proceedings. FCC authorization of DSRC services at 5 GHz is of the utmost importance to TransCore, its customers and their patrons, namely, the managers and users of America's ground transportation infrastructure. Therefore, timely FCC adoption of the proposed ASTM-DSRC standard will enable the successful deployment of nationwide DSRC services for ITS applications.

BACKGROUND

TransCore, an industry leader in the field of Intelligent Transportation Systems (ITS), has provided traffic management systems and services throughout the world. For instance, TransCore implemented the world's first border-crossing electronic monitoring system, and it has pioneering inventions on the use of RF identification systems for toll applications.

A transportation technology leader for more than half a century, TransCore specializes in electronic freight exchange, fleet financial services, operations management, asset tracking, and regulatory compliance reporting. Now, TransCore is building on its experience in traditional transportation applications to develop new, emerging ITS techniques with implications for enhanced homeland security, electronic vehicle registration / monitoring, and mobile commerce (or "m-Commerce").

TransCore's deep expertise extends across total traffic project management programs, including requirements analysis, design, development, engineering, installation, operations, and maintenance. It has installed advanced traffic management centers and intelligent transportation systems in America's largest metropolitan areas, including New York City and Los Angeles. Its engineers have designed more than 15 regional traffic-control centers around the globe and have integrated traffic management instrumentation for over 500 miles of urban roadways.

In accordance with its position as a transportation technology leader, TransCore is actively involved with the leading industry organizations and standards bodies.³ Specific to these Commission proceedings, TransCore has been actively involved in ASTM's development of the DSRC standard and strongly supports ITS America's recommendation that the Commission adopt the ASTM wireless transmission standard for DSRC operations.⁴

DISCUSSION

I. The Successful Growth and Evolution of DSRC Services Is Dependent Upon FCC Rules That Provide For Interoperability and Innovation.

The FCC should adopt a single wireless transmission standard, namely the ASTM-DSRC standard, to enable nationwide interoperability of Dedicated Short Range Communications (DSRC) equipment. While TransCore recognizes that the Commission does not usually adopt standards in its regulations, the circumstances here weigh heavily in favor of doing so.⁵ DSRC services can provide a substantial public benefit by enhancing roadway safety and the growth of

³ Aside from ITS America, TransCore is also actively involved with the following industry associations and organizations: IEEE, the Institute of Electrical and Electronics Engineers; ISO, the International Standards Organization; IBTTA, International Bridge, Tunnel and Turnpike Association, ATA, the American Transportation Association, the trucking industry national trade association, which serves over 9.3 million people and 423,000 companies involved in trucking; NATSO, the National Association of Truck Stop Operators; NPTC, the National Private Truck Council; TIA, the Transportation Intermediaries Association; TCA, the Truckload Carriers Association; CTA, the California Trucking Association; IANA, the Intermodal Association of North America; KMTA, the Kentucky Motor Transport Association; NMFTA, the National Motor Carrier Freight Traffic Association; OOIDA, the Owner Operator Independent Drivers Association; OTA, the Oregon Trucking Association; TRALA, the Truck Renting and Leasing Association; TRIB, Tire Retread Information Bureau; and TWNA, the Truck Writers of North America.

⁴ See NPRM ¶ 11.

⁵ Significantly, the FCC notes that DOT identified the ASTM-DSRC standard as a "critical standard" for 5.9 GHz DSRC operations. See NPRM ¶ 26.

interstate commerce, lowering pollution, and energize a nascent ITS industry.⁶ However, as the Commission notes, most presently deployed intelligent transportation systems are not compatible. Vehicles are required to carry multiple toll tags for common interstate routes, or use excessively complex and inefficient devices and systems. In addition, the lack of interoperability among ITS electronic toll collection has become a disincentive to developing additional safety-related services. As ITS America explains, lack of a single uniform standard could cause “consumers and manufacturers to adopt a ‘wait and see’ approach before purchasing or making devices, respectively slowing down deployment.”⁷ A national interoperability standard will cure these problems and spur the growth of a myriad of useful DSRC applications in the public safety and private commercial arenas.

Indeed, FCC adoption of the ASTM-DSRC standard will speed market acceptance, create additional incentives for manufacturers to design and develop mass-market – and niche market – equipment, and provide a platform upon which to support future innovative products. A national standard will help ensure that equipment built by Company A and installed on a vehicle registered in New York City will interoperate with roadside equipment from Company B installed in Miami or from Company C in Los Angeles.

The standard under consideration for FCC adoption is based on the widely used wireless LAN standard, IEEE 802.11a. In addition, the standard complies with all of the FCC’s stated requirements to adopt a specific standard: (1) It was approved in an open and fair process involving leading industry, consulting, and government technology representatives; (2) it was approved by an ANSI-Accredited Standards Developer, ASTM; and (3) the rights to use the

⁶ For example, ITS electronic toll collections using the 902-928 MHz band have reduced emissions caused by idling motors by over 80%. *See* NPRM ¶ 24 n.125 (referencing ITS America Allocation Petition at 13 that cites a U.S. Dept. of Transportation Report).

⁷ *See* NPRM ¶ 32.

standard are freely available without discrimination or cost.⁸ Significantly, the FCC recognizes that, should it decide to adopt a particular standard, it “will not unnecessarily disturb future recommendations by the ANSI-Accredited Standards Developer.”⁹ Such recognition by the federal agency provides consumers and manufacturers with the much-needed certainty behind equipment compatibility issues that impact the purchasing as well as the design and development decision-making processes.

In addition, FCC adoption of a single standard for DSRC has ample legislative support. The Transportation Equity Act for the 21st Century (TEA-21) specifically directed federal agencies to “promote interoperability among ... intelligent transportation system technologies” while noting that utilization of “standards development organizations” is appropriate.¹⁰ The FCC and DOT have worked together closely to fulfill this Congressional mandate.

Further, spectrum harmonization with America’s closest neighbors, Canada and Mexico, will provide trans-border public benefits and commercial (*i.e.*, trade) benefits.¹¹ It will allow for enhancements to homeland security systems that are used to monitor our border crossings.

⁸ See NPRM ¶ 34.

⁹ See NPRM ¶ 34. To accommodate revisions to the ASTM-DSRC standard that are designed to facilitate advances in technology, the FCC should consider delegating authority to the Office of Engineering and Technology in conjunction with the Wireless Telecommunications Bureau to conduct rulemaking proceedings and adopt rules that will update the incorporation by reference in the DSRC regulations.

¹⁰ See NPRM ¶ 7 n.33 *quoting* TEA-21 Section 5206(a). See also NPRM ¶ 26 (“TEA-21 required DOT and ITS America to develop a National ITS Program Plan, in which DOT and ITS America were to ‘identify activities that **provide for the dynamic development of standards and protocols to promote and ensure interoperability** in the development of [ITS] technologies’”) (emphasis added).

¹¹ The Commission explains that Canada is in the process of allocating much of the same frequency band for DSRC operations, and that Europe, as well as Japan and other Asian countries are allocating frequencies in the range of 5.8 GHz. See NPRM ¶ 8 n.35. In addition, these same countries are developing national DSRC standards. The Canadian plan, in particular, is expected to include the same channelization plan specified in the ASTM-DSRC standard. See NPRM ¶ 11 n.55.

Significantly, spectrum harmonization with America's neighbors and the world at-large will also help to lower development and manufacturing costs for DSRC equipment makers and service providers, such as TransCore, who plan to market intelligent transportation equipment and services internationally.

II. DSRC Operations Should Be Permitted In "A Variety of Environments."

A. Definition of DSRC and Interoperability

TransCore supports the suggested modifications to the current definition of the Dedicated Short-Range Communications Service.¹² Specifically, TransCore supports allowing DSRC services that provide for two-way audio and/or video packetized data transmitted as files (*i.e.*, store-and-forward) or digital streams as provided for in the ASTM-DSRC standard.

TransCore supports also the Commission's recommendation that the definition of DSRC services allow for operation "in a variety of environments."¹³ The proposed standard contemplates DSRC operation using "micro-cells" – small isolated areas within the limited range of RSU transceivers. While public safety – especially traffic safety – will be the primary use and purpose of the 5 GHz DSRC band, the definition of DSRC services should not be limited to traffic safety and ITS use only. There are many other public and private applications that are well suited for DSRC services at 5 GHz.

Indeed, it is foreseeable that On-Board Units (OBUs) will not only be used for safety services, but also for toll collection, to monitor ingress and egress to private parking garages, and to enable gasoline (and other retail) purchases.¹⁴ Moreover, future "open-road tolling systems,"

¹² See NPRM ¶¶ 14-16.

¹³ See NPRM ¶ 16 (including public and private environments).

¹⁴ In this regard, TransCore supports the FCC's proposal to allow "non-public safety use of the DSRC band" or "private services."

realizable only with universally deployed and interoperable OBUs, will allow for the removal of toll plazas, enhancing traffic flow and reducing freeway accidents.

Accordingly, the Commission should adopt a separate definition of “interoperability” for DSRC operations (and exclude DSRC from the current definition of “interoperability” as used for other types of services), as the agency’s current definition does not contemplate public safety and private radio spectrum users sharing an interoperable standard, which is critical for simultaneous vehicular communication and safety messaging/control. The ASTM-DSRC standard, with a spectrum access mechanism that gives priority to public safety uses, will ensure that public and private users can coexist successfully.

The success of DSRC operations at 5.9 GHz depends on the successful sharing of spectrum among many users. In fact, the ASTM-DSRC standard is based on a wireless LAN standard (IEEE 802.11) – an architecture that provides for such spectrum sharing. The ASTM-DSRC version, however, was modified to include a control channel / service channel architecture that eliminates the need for channel scanning and enables the ability to accommodate rapidly moving vehicles that may only be in the communication zone for a short period of time. The ASTM standard differs also from the IEEE standard in that it provides guaranteed spectrum access for public safety services – accomplished by prioritizing the media access mechanism in conjunction with the control channel / service channel architecture and site licensing.

B. RF Management Issues

RSU Licensing. TransCore supports the recommendations of ITS America to license RSUs on a shared, site-specific basis within defined “communications zones.” In some situations and within reasonable limitations, the site-specific “communications zone” may be a transportation corridor managed by a single transportation entity (*e.g.*, a tollway authority) to

eliminate the need for such entity to hold numerous licenses to provide continuous services along an operating corridor (or metropolitan system of corridors).

TransCore also supports the recommendation that FCC-certified frequency coordinators coordinate license applications for the 5.9 GHz DSRC band. TransCore opposes geographic licensing approaches.

OBU Licensing. RF operation of OBUs under the 5.9 GHz DSRC service should be licensed by rule under Part 95 of the Commission's Rules. At a minimum, only OBUs type-certified to comply with the ASTM standard and the FCC rules should be allowed to operate in the control channel. The ASTM standard anticipates that RSUs be licensed in the control channel and on selected service channels. Standards-compliant OBUs should only be allowed to initiate communications under a set of specific rules. In general, RSUs will initiate the communications, which provides part of the guarantee of access for public safety services. An OBU-initiated session should be limited generally to OBU-to-OBU communications.

While the Commission should not allow equipment operation in the band that will negatively impact the reliability of public safety services, it should not foreclose the design and development of low-cost simple devices that do not implement all of the capabilities contained the adopted standard, but provide useful applications without interfering with other DSRC devices.

Finally, the FCC's rules authorizing DSRC services at 5.9 GHz should not impact the Location and Monitoring Service (LMS) in the 902-928 MHz band. These bands have complementary uses that will be needed well into the future. As TransCore already explained in this proceeding, it is essential that the FCC maintain the current allocation for DSRC-based ITS in the 915 MHz band to accommodate the many ITS systems currently in place.¹⁵

¹⁵ See NPRM ¶ 83.

CONCLUSION

TransCore commends the FCC for its timely issuance of this NPRM, and encourages the Commission to swiftly promulgate regulations enabling DSRC operations at 5.9 GHz. The FCC should authorize such DSRC operations using the open communications platform offered by the ASTM-DSRC standard.

Respectfully submitted,
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