

NARRATIVE STATEMENT

I. Introduction and Background

Pursuant to Section 5.3(d), (g) and (i) and Section 5.51 of the Commission's rules, 47 C.F.R. §§ 5.3(d), (g), (i), 5.51 (2012), Amtech Systems LLC (a/k/a as "TransCore"), respectfully requests an experimental license to design, evaluate and demonstrate prototype equipment and applications for use in Dedicated Short Range Communications ("DSRC") systems operating in the 5.9 GHz band. A five-year license is needed to accommodate ongoing tests of equipment that are expected to change or evolve over the next five years as a result of TransCore's research and development.

In addition, TransCore respectfully requests expedited treatment of this request so that it may commence tests on or before **August 1, 2013**. Justification for such action is attached separately in the "Request for Expedited Treatment" accompanying this application.

The following information is provided in support of this request:

II. Purpose of Experimentation and Justification for Nationwide Authority

For more than twenty years, TransCore has been a leading manufacturer of radiofrequency identification ("RFID") and related equipment and systems in the United States and overseas. It currently is involved in designing, developing and demonstrating devices and applications to be deployed in Intelligent Transportation Systems ("ITS") and other operations related to vehicle safety, traffic management and other activities. TransCore seeks to test and demonstrate the functionality and acceptability of equipment and requirements applicable to operations in the 5850-5925 MHz DSRC frequency allocation. For example, TransCore proposes to test equipment and applications to be deployed for traffic detection and traffic re-routing by public safety agencies and private entities.

Industry research and development in DSRC technology has reached a stage that requires additional "real-world" field tests, operational trials, and proof of concept evaluations to determine the availability and reliability of communications capabilities needed to support DSRC systems. *See generally Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, ET Docket No. 13-49, *Notice of Proposed Rulemaking*, 28 FCC Rcd 1769 (2013). In the long term, however, these capabilities will be provided by DSRC equipment licensed under standards either already established or to be implemented under Parts 90 and 95 of the FCC's rules, 47 C.F.R. Parts 90, 95 (2012).

TransCore anticipates that the equipment that will ultimately be approved by the FCC for DSRC applications will be sold in quantities numbering in the hundreds of thousands, if not millions. Indeed, the potential market for DSRC products includes the approximately 250 million registered vehicles registered in the United States alone. To obtain statistically valid engineering results during the testing phase, TransCore must conduct tests not only at its own research and

development facilities identified in the accompanying application on FCC Form 442 in Albuquerque, NM, and San Diego, CA (*i.e.*, within 3 km of the coordinates 35-10-56N; 106-35-35W and 32-53-17N; 117-10-30W, respectively), but also at the R&D facilities of its equipment manufacturing partners or joint venturers. It must also conduct demonstrations for government agencies and private entities at other locations within the United States and its territories. Unfortunately, TransCore cannot at this time determine the specific locations of tests that are not at its facilities. The locations will depend to a great extent upon who will participate in TransCore's R&D efforts or which government agencies or industry entities will seek to evaluate the equipment.

Accordingly, TransCore respectfully requests authority in the instant application to operate nationwide (*i.e.*, within the United States and its territories). Specifically, TransCore seeks authority to demonstrate and evaluate equipment and applications: (1) at its own premises in Albuquerque; (2) at the premises of entities working under TransCore's authorization in the design and development of the devices and related products; (3) at trade shows or non-residential exhibitions; and (4) at non-residential, business, commercial, industrial, scientific, or medical locations during the design, development, and pre-production stages. Indeed, these operations are consistent with the requirements set forth in Sections 2.803 and 2.805 of the Commission's rules.¹ In addition, TransCore seeks authority to operate mobile devices near certain residential locations. The nature of the services and devices associated with DSRC technology typically involve such usage and therefore should be authorized under the requested experimental license.

TransCore could obtain either an experimental license or special temporary authority for each specific effort to conduct compliance, performance, functionality, and acceptance testing of its prototype products. It believes, however, that an approach requiring TransCore to obtain a regular experimental or special temporary authority for each product or experiment before it conducts research and development of DSRC systems does not provide it essential flexibility to adapt quickly to changes in its research plans and requirements. Consequently, TransCore is seeking a nationwide experimental license to test, demonstrate and operate prototype products at unspecified temporary locations in the United States. This request is fully consistent with the FCC's rule changes regarding blanket licenses in ET Docket Nos. 10-236 and 96-256.

¹ 47 C.F.R. §§ 2.803, 2.805; *see also Promoting Expanded Opportunities for Radio Experimentation and Market Trials under Part 5 of the Commission's Rules and Streamlining Other Related Rules Revision of Part 2 of the Commission's Rules Relating to the Marketing and Authorization of Radio Frequency Devices*, ET Docket No. 10-236, *Report and Order*, FCC 13-15, released Jan. 31, 2013 ("Marketing Rule Revisions"); *Amendment of Part 5 of the Commission's Rules to Revise the Experimental Radio Service Regulations*, ET Docket No. 96-256, *Report and Order*, 13 FCC Rcd 21391 (1998) ("ERS Streamlining Order").

III. Technical Specifications

Application Type/Classification: XD (Experimental Demonstration)

Frequency Band 5850 to 5925 MHz

Modulation: OFDM

Emissions Designators: 16M0D2D

TransCore seeks to employ various modes of modulation, bandwidth and data rates. Nevertheless, none of these modes of operation would extend beyond the limits set forth for 5850 to 5925 MHz band

Power Levels:

Temporary Fixed Units:

Temporary fixed transmitters will conform to Section 90.375 for Roadside Units (“RSUs”). Channelization and power limits will conform to Section 90.377, Subpart M of the Commission’s Rules, and ASTM E2213-03.

Effective Isotropic Radiated Power (Peak)	40.0 dBm
Effective Radiated Power (Peak)	06.1 Watts

Mobile Units:

Mobile power of On-Board Units (“OBUs”) will conform to Section 95.639, Section 95.1509, Subpart L, and ASTM E2213-03.

EIRP (Peak)	13.0 dBm
ERP (Peak)	12.2 mWatts

Antenna Data / Overall Height of Antenna(s) Above Ground:

The antennas deployed under this experimental authority will not extend more than six meters above the ground or, if mounted on an existing building, will not extend more than six meters above the building. If an antenna is mounted on an existing structure other than a building, it will be installed in accordance with FAA and FCC rules and regulations.

IV. Equipment To Be Tested and Operational Safeguards

As discussed above, TransCore seeks to obtain accurate “real-world” engineering data regarding the compliance, performance, functionality, and acceptability of DSRC equipment and applications as well as to demonstrate its equipment and applications. Thus, TransCore must deploy a sufficient number of units during its studies to simulate actual usage. TransCore anticipates that it will be able to conduct demonstrations for government agencies and private entities with a not more than 10 temporary fixed stations and not more than 100 mobile units at

each test location. Mobile communications will occur within less than 1 kilometer of the nearest temporary fixed installation. In addition, TransCore expects that no more than five individual demonstrations tests will be conducted at any given time under the requested experimental authority at locations other than at facilities in Albuquerque, NM, and San Diego, CA. In other words, 50 temporary fixed stations and 1,000 mobile units would reflect the maximum number of unapproved or unlicensed units that would be in operation at any given time under its authorization at locations other than at its facilities in Albuquerque or San Diego. Moreover, TransCore will limit the number of devices, power, area of operation, and transmitting times of these units to the minimum necessary to conduct its tests.

TransCore understands that the FCC permits: (1) companies to enter into agreements and contracts to manufacturer products before they are approved; and (2) manufacturers to sell—but not deliver—unapproved products on a conditional basis to wholesalers and retailers. See *Marketing Rule Revisions*, § 2.803; *Part 15 Revisions*, 6 FCC Rcd 1683, 1685 (1991). TransCore does not propose to market, sell, or lease prototype equipment to end users or conduct a market study in conjunction with this test inconsistent with these requirements. Moreover, upon termination of the experimentation, all unapproved equipment will be returned to TransCore for disposal as required by FCC rules. If any different treatment becomes necessary during the course of its experimentation, TransCore will seek separate and additional authority from the agency.

TransCore also recognizes that the proposed experimental operation must not cause harmful interference to authorized facilities. It does not anticipate a problem, but should interference occur, TransCore will immediately take steps to resolve the interference, including if necessary discontinuing operation. To that end, TransCore would advise entities using the equipment that permission to operate the equipment has been granted under experimental authority issued to TransCore, is strictly temporary and may be canceled at any time, and that any unauthorized equipment may not be and may not be, offered for sale or lease, or sold or leased, until authorization is obtained . Specifically, TransCore proposes to label the equipment or user information conspicuously with information as follows:

FCC STATEMENT

Permission to operate this device has been granted under experimental authority issued by the Federal Communications Commission to Amtech Systems LLC, is strictly temporary, and may be canceled at any time.

This device has not been authorized as required by the rules of the Federal Communications Commission. This device is not, and may not be, offered for sale or lease, or sold or leased, until authorization is obtained. Thus, the user does not hold a property right in the device and may be required to return the device.

In addition, pursuant to Section 90.371 of the FCC's Rules, 47 C.F.R. § 90.371 (2012), TransCore will coordinate with the NTIA regarding any fixed station operations within 75 kilometers of any government installation listed in the table contained in that section. TransCore will also comply with all international arrangements, such as those applicable to operations near the borders with Canada or Mexico.

V. Post-Grant Notification and Filing Requirements

TransCore understands that the number of units it seeks to test might be higher than the FCC usually approves under experimental authorizations. To facilitate action on its request, TransCore therefore agrees to the placement of appropriate conditions on its authorization to reflect the limitations specified in this narrative to provide other safeguards to ensure against the potential for interference. Specifically, TransCore will agree to conditions identical or similar to those listed on below:

Special Conditions:

- (1) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.
- (2) The station identification requirements of Section 5.115 of the Commission's Rules are waived.
- (3) All entities participating in the experiment shall be informed that this operation is for experimental purposes only and can be cancelled at any time.
- (4) Prior to equipment authorization or a determination of compliance, the device must be accompanied by a conspicuous notice worded as follows: "This device has not been authorized as required by the rules of the Federal Communications Commission. This device is not, and may not be, offered for sale or lease, or sold or leased, until authorization is obtained."
- (5) Licensee is authorized to conduct a maximum of five tests at any given time other than the tests conducted at its locations in Albuquerque, NM and San Diego, CA.
- (6) Licensee is authorized to operate a maximum of 10 fixed stations and 100 mobile units communicating within a 1 km radius of each fixed station.
- (7) Licensee shall comply with the power limits set forth in the FCC's rules applicable to the specific channel and type of device tested.
- (8) Licensee shall comply with the reduced power limits when operating devices for entities other than state and local governments.
- (9) Licensee is required to notify the Commission of the specific details of each individual test, including location, number of fixed and mobile units, power, emission designator, and any other pertinent technical information. No operation shall take place until the Commission has received the required notification. This notification should be uploaded electronically via the OET Experimental Licensing Branch's Electronic Filing Web Site at <https://apps.fcc.gov/oetcf/els/> using the "Add Attachments" feature.

VI. Public Interest Statement

TransCore submits that the public interest, necessity and convenience are served by the grant of a nationwide license under these circumstances. Such action would enhance the company's ability to obtain information needed to ensure that the products it designs will accommodate and promote new technologies and services. It will also allow TransCore to reduce administrative burdens imposed upon the company and upon the Commission in connection with the processing of a variety of specific separate applications for regular licenses or requests for special temporary authority or their renewals when needed. In sum, grant of the application as proposed would advance the communications technology and the application technology needed to further the national agenda of improving the operational safety and efficiency of vehicles on U.S. highways.

VII. Contacts for Inquiries

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