

NARRATIVE STATEMENT - STA

By this application TransCore respectfully requests Special Temporary Authority to test a non-multilateration vehicle identification tag reader system under development by the company for operation under Part 15 frequency hopping 902.5 to 927.5 MHz. Specifically, the system is being developed and manufactured, but now testing is required prior to our certification application of the equipment under Part 15 rules.

The proposed experimental operation is similar to those previously authorized by the Commission to TransCore under call sign WD2XEL, for the licensed LN Radio Service sub-band. Now we need to prove the prototype works over the entire hopping frequency range and at power levels of Part 15 equipment.

TransCore does not seek authority to conduct market studies or provide communications services under the requested experimental authority. Nor does it propose to market, sell, or lease prototype equipment to end users in conjunction with this test. The participants in the test will be advised that operation is being conducted under an experimental authority issued to TransCore and is temporary. In addition, no fees will be charged to entities using the equipment during this test. After the experimentation ceases, TransCore will recall and recover all devices that do not comply with FCC regulations

A. Purpose and Description of Operations:

TransCore is a leading developer and manufacturer of radio frequency identification (“RFID”) technology in the United States and around the world. By this request, TransCore seeks experimental authorization to test a special frequency hopping version of the TransCore Encompass and MPRX Multi-Protocol reader system in a configuration which is intended to simulate its deployment for vehicle monitoring and access control. Specifically, the system will separately transmit a carrier signal and a modulated signal on various hopping frequencies to mimic Part 15 operations. Several Bandwidths of emissions are possible within the band and center frequency extremes will be chosen to have the emissions fall completely within 902 to 928 MHz band. Readers will be installed in a parking lot or above or beside a roadway to interrogate transponders on vehicles that will pass near the reader. The reader will transmit a carrier to illuminate the tag as well as a modulated signal to write data to the tag using backscatter techniques. The signal that the tag reflects back to the reader will be approximately 40 dB below the power transmitted toward the tag by the reader. The tag is passive in the sense that it lacks a battery or other independent power source; it simply imposes modulation on the reflected carrier, but does not generate an intentionally radiated signal.

The technology being employed has been used for years in the United States in the non-multilateration sub-bands of the Location and Monitoring Service operating in the 902 – 904 and 909.75 to 921.75 MHz sub-bands. Now we want to verify proper operation of equipment at the lower Part 15 RF levels and when hopping thru the band. TransCore and its customers, however, need TransCore to conduct final design verification using signals emitted over the whole 902 to 928 MHz band.

B. Need for STA:

TransCore seeks an STA to promptly confirm that the equipment signal levels under Part 15 frequency hopping are sufficient for reliable operational testing for a six month authorization.

C. Proposed Testing Locations:

TransCore proposes to conduct the majority of its tests at a remote site outside of Albuquerque, NM, known as Balloon Fiesta Park, which is distant from roads and businesses. It also seeks authorization to conduct secondary tests infrequently at our manufacturing facility on Jefferson Street and at specific customer locations below. No more than two tag readers operating simultaneously will be set up within 0.2 kilometers of these locations. The coordinates for the locations are as follows:

4901 Balloon Fiesta Parkway NE Albuquerque, NM 87113 Bernalillo County North Latitude: 35-12-04 West Longitude: 106-35-36 Datum: NAD83	8600 Jefferson Street, NE Albuquerque, NM 87113 Bernalillo County North Latitude: 35-10-57 West Longitude: 106-35-21 Datum: NAD83
22960 Shaw Rd, suite 700 Sterling, VA 20166 Louden County Lat/Long 38 58 50.7 N 77 25 20.7 W Datum: NAD83	Road test facility Former Hartwood Airport, Midland, VA 22728 Fauquier County Lat/Long 38 29 07.3 N 77 36 47.5 W Datum: NAD83

D. Technical Specifications:

Frequency (frequency stability will be maintained within ± 2.5 PPM)	902.5 to 927.5 MHz
Station Power (power levels will comply with FCC limits relating to human exposure to radiation)	36 dBm EIRP
Bandwidth	0.100 kHz maximum for the carrier signal; up to 900 kHz for the modulated signal with appropriate setback from band edge for closest hop frequency
Modulation	The carrier signal has no modulation; The modulated backscatter signal will carry Manchester encoded data, with a 35 dB depth of modulation
Emission Designators	0K10N0N for the carrier signal; up to 900KL1D for the modulated backscatter signal
Station Antennas	Directional up to 14 dBi Gain with transmit power reduced to meet +36 dBm EIRP maximum. (Additional information is provided below)

TransCore requests a waiver of the station identification requirements set forth in Section 5.115 of the Commission's rules, 47 C.F.R. § 5.115 (2012).

E. Interference Protection:

For purposes of the experimental activities conducted under the authority requested in this application, TransCore proposes to place the carrier and modulated signals and the orientation of antennas (*i.e.*, a low side fire where the antenna typically mounted at most 3 meters above the ground, and is horizontally illuminating the side of a vehicle as it passes by) so as to avoid causing interference to any licensee. Alternately an antenna pointed straight down or no more than 15 degrees above straight down, with at least 15 db side lobe rejection will be used from above the vehicles. Furthermore, operations will occur at a low power (*i.e.*, +36 dBm EIRP) with frequency hopping across the band with average dwell times not to exceed 0.4 seconds.

In addition, TransCore will restrict its operations to the minimum period needed to complete its tests. Specifically, it will conduct tests only during a limited number of days during the term of the authority.

TransCore recognizes that the band is also used for licensed operations and includes a different radio service. As such TransCore would coordinate with these licensees and take steps to reduce the likelihood of any harmful interference. All operation will be under the control of TransCore personnel. In the event that interference is experienced, the TransCore contact named on page 4 below will have the testing shut down immediately.

F. Antenna Information:

TransCore will be testing a single antenna at a time on each reader. The principal plane radiation patterns provide at least 15 dB suppression of side lobes and even more to the rear. The antenna gain is 14 dBi or less. TransCore will control the RF power fed into the antenna to ensure that the maximum equivalent isotropically radiated power ("EIRP") does not exceed +36 dBm.

The antennas will be no higher than six (6) meters above the ground. As such, no FAA coordination is required.

G. Types and Number of Units To Be Tested:

TransCore requires two readers and multiple backscatter tags at each site to obtain valid data and present an accurate demonstration of real-world operations. The installations will be temporary fixed facilities that direct their signal toward a tag mounted on a passing vehicle that will move within several meters of the reader's antenna. With 4 sites the total units is 8, but it will be rare that they all will be in operation at the same time.

H. Restrictions on Operation:

The equipment to be used in this testing is being developed solely for prototype testing. The equipment under test will be labeled as follows:

FCC STATEMENT

Permission to operate this device has been granted under experimental authority issued by the Federal Communications Commission to TransCore, is strictly temporary and may be cancelled at any time. Operation is subject to the condition that it not cause harmful interference. It may not be offered for sale or use or sold for delivery in the United States unless and until the approval of the FCC has been obtained.

I. Public Interest Statement:

TransCore submits that issuance of this STA is in the public interest, convenience, and necessity. Grant of the authority will permit TransCore to develop innovative equipment that will promote safe and efficient operations in the transportation and access control industry.

J. Contact Information:

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