

SUPPORTING STATEMENT

Pursuant to Section 5.3 (a) and (j), Section 5.51, and Section 5.53 of the Federal Communications Commission (“FCC”) rules, 47 C.F.R. §§ 5.3 (a) and (j), 5.51, and 5.53 (2018), Southwest Research Institute (“SwRI”) respectfully requests an experimental authorization so that it may enhance the research it has conducted under a complementary license issued under call sign KG2XAJ, which has now expired. That license supported SwRI’s effort to research, test, and provide advanced intelligent vehicle system safety systems using Dedicated Short Range Communications (“DSRC”) radios operating in the 5.9 GHz spectrum.

Specifically, by the instant application, SwRI seeks authority to operate equipment on frequencies from 5.855 GHz to 5.925 GHz and 5.725 GHz to 5.825 GHz at two locations described below and listed in the attached application on FCC Form 442.

In support of SwRI’s request, the following is shown:

1) Company Background:

Southwest Research Institute is headquartered in San Antonio, Texas. Its address and FCC Registration Number (“FRN”) are provided below:

Southwest Research Institute
P.O. Box Drawer 28510
6220 Culebra Road
San Antonio, TX 78238-5166

FRN: 0004074217

SwRI is an independent, not-for-profit, applied engineering and research organization devoted to technology development and transfer. It conducts business with the industry and the government (*i.e.*, the United States and other friendly nations) on a worldwide basis. Approximately 50% of the SwRI’s business is for the U.S Government.

2) Need for Experimental License and 5-Year Term:

SwRI has been involved in Intelligent Transportation Systems (“ITS”) and intelligent vehicle systems since 1995. Increasingly, these systems are integrating advanced communications equipment to improve traffic flow and traffic safety. SwRI has been conducting research and development and supporting deployments using DSRC radios in the 5.9 GHz spectrum and is expanding this research to include cellular vehicle-to-everything (“C-V2X”) equipment in this same spectrum.

SwRI respectfully requests an experimental authorization so that it may enhance its current research. Given the long-term nature and evolution of SwRI’s research and development, it respectfully seeks an experimental license with a term of five years so that it may conduct tests that are expected to continue on an on-going basis for at least 5 years and likely 10 or more years.

3) Locations of Test Site:

Intelligent vehicle systems are designed to provide safety of life applications in moving vehicles. To evaluate these systems adequately, SwRI must transmit signals in a real-world environment in which a transmitter and receiver are located on moving vehicles in a variety of configurations and orientations. Such conditions cannot be simulated by testing in an anechoic chamber of any realistic size.

Accordingly, SwRI proposes to conduct tests at its campus located at 6220 Culebra Road, San Antonio (Bexar County), Texas (centered at coordinates NL 29-26-29; WL -98-37-56 (NAD 83)) and on adjacent roads. The campus is comprised of approximately 1200 acres, an area entirely under the control of SwRI. In addition, SwRI seeks to conduct related tests on a nearby rural roadway (Highway 90) connecting the cities of Castroville and Dunlay, in Medina County, Texas.

4) Frequencies Desired:

As noted above, SwRI has conducted tests under its complementary license issued under call sign KG2XAJ. By the instant application, SwRI seeks authority to operate on additional frequencies from 5.855 GHz to 5.925 GHz and 5.725 GHz to 5.825 GHz. SwRI acknowledges that it must operate on a secondary, non-interference basis with DSRC equipment utilizing the 5.855 GHz-5.925 GHz spectrum. Thus, transmissions will be limited primarily to a 20 MHz channel from 5.905 GHz to 5.925 GHz.

5) Power Levels and Duty Cycle:

SwRI will operate with the minimum necessary power to conduct its research and evaluations, and in no event will that level exceed 4 Watts peak effective radiated power (“ERP”).

Moreover, the testing to be conducted under the requested authority will be intermittent. Transmissions are not continuous, and they occur only for a brief period of time during any given day. Specifically, SwRI expects to transmit for only a few minutes on a given test frequency. On a rare occasion, SwRI might need to transmit for several hours.

In addition, as each phase of testing is completed, there might be a period of several months before another test is commenced.

6) Type of Emission, Modulation Technique, and Bandwidth Required:

Operations will be conducted consistent with current OBE limits from Class C DSRC devices. All C-V2X devices will limit emissions to -25 dBm/100 kHz EIRP or less outside the channel edges of 5905 MHz and 5925 MHz and below the band edge of 5855 MHz. The -25 dBm/100 kHz EIRP limit comes from § 8.10.2.2 of ASTM E2213 – 03. The devices will utilize 20 MHz channels within the above spectrum ranges. The primary emission designators are 10M0D7W and 20M0D7W. If other emission modes and modulation techniques are utilized, in no event will the emissions extend beyond the frequency bands requested.

SwRI does not propose to supply station identification as set forth in Section 5.115 of the Commission's Rules, 47 C.F.R. § 5.115 (2018).

7) Equipment To Be Used:

SwRI proposes to deploy not more than 2 fixed bas station or more than 10 mobile devices at each test location. Thus, the maximum number of devices to be deployed during the testing is 4 fixed base station units and 20 mobile units. SwRI proposes initially to conduct its tests using devices obtained under the Qualcomm Cellular Vehicle-to-Everything (C-V2X) Development Platform, but it may conduct tests with other devices as well.

8) Antenna Information and Compliance with Human Exposure Limits:

SwRI will comply with all Federal Aviation Administration (“FAA”) and FCC rules and regulations regarding the installation and operation of antennas and their support structures. The antennas to be deployed under the authority requested will not extend more than six meters above ground or more than six meters above a building.

All power levels will comply with the limits set forth in the FCC’s rules, including those relating to human exposure to radiation. In addition, all personnel who will operate the equipment are knowledgeable as to the effects of RF energy and will have the ability to control their exposure.

9) Restrictions on Operation:

SwRI understands that other stations may be licensed on the channels it has requested and that, if any interference occurs, it may be required to discontinue its operations immediately. SwRI does not expect such interference to occur, however, as its tests will be conducted only on a limited basis as described above.

SwRI also recognizes that: (a) permission to operate has been granted under experimental authority issued by the Federal Communications Commission, is strictly temporary, and may be cancelled at any time and that (b) operation is subject to the condition that it not cause harmful interference.

Moreover, SwRI does not propose to market, sell, or lease unapproved equipment to end users or conduct a market study in conjunction with this test. After the completion of the tests, SwRI will recall and recover all devices that do not comply with FCC regulations. If any different treatment becomes necessary during the course of its experimentation, SwRI will seek separate and additional authority from the agency.

10) Interference Protection/Stop Buzzer Contact Information:

As noted above, SwRI recognizes that the operation of any equipment under experimental authority must not cause harmful interference to authorized facilities. Should interference occur, SwRI will take immediate steps to resolve the interference, including if necessary arranging for the discontinuance of operation. Notwithstanding these precautions, SwRI believes that its experimental operations are unlikely to cause interference. As described above, SwRI proposes to limit the power and transmitting times of its tests to the minimum necessary to conduct its evaluations.

SwRI also advises the FCC that Mr. Purser Sturgeon II is the technical contact for this request. He will be personally responsible for the operations to be conducted and will serve as the “stop buzzer” in the event that operations must be terminated because of any interference concerns. Mr. Sturgeon can be reached at (210) 522-3924; email: psturgeon@swri.org

11) Public Interest Statement:

SwRI submits that expedited processing of its application in the public interest, convenience, and necessity, as it will permit SwRI to conduct tests and evaluations that will support its research and development of innovative and reliable equipment designed to support DSRC technologies that will benefit the needs of potential users.

12) Contact Information:

Company Contact:

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