Viziv Technologies, LLC
Request for Part 5 Experimental License
ELS File No. 0139-EX-CR-2019

NARRATIVE STATEMENT

Pursuant to Section 5.59(a)(2) of the Commission's rules, 47 C.F.R. § 5.59(a)(2), Viziv Technologies, LLC ("Viziv") hereby respectfully requests renewal of station WI2XTH from April 1, 2019 to April 1, 2022, to operate in the 100 kHz and 51 MHz bands for the purpose of testing prototype equipment. Viziv has changed its company name (from Texzon Technologies, LLC) and would request that its new experimental license be issued in the name of Viziv Technologies, LLC. Viziv is simultaneously filing a modification application to reflect changes to this existing authority as described herein.

Viziv is developing systems for the excitation of terrestrial electromagnetic surface waves (Zenneck surface waves, not Norton ground waves) with the ultimate intent of more efficient broadcast signaling without the current issues associated with ionosphere skip interference. The equipment to be used is experimental and proprietary and is entirely of a prototype nature.

A. Purpose of Operation and Need for Renewal License:

Viziv is a growing startup company concerned with the development of novel technologies in the fields of energy storage and distribution. The focus of the company is the development of methods and equipment that will enable more efficient and effective energy management and delivery in a safe, environmentally-conscious and reliable manner. This request to renew the experimental authority will allow the company to continue to test the functionality of its prototype equipment and to further validate the science of the terrestrial electromagnetic surface wave for use in signaling.

Testing efforts thus far have yielded promising results and further testing is needed to validate variations in design to improve coupling efficiency and excitation of surface waves under varying ambient conditions. New design configurations are being developed that can reduce the vertical size and radial extent of the launch probe structures and to preferentially couple only to the Zenneck surface wave mode of propagation. Additionally, testing of surface waves for navigation and positioning will be undertaken. The continued testing will also allow for recording of precise field strength measurements at the requested frequencies using spectrum analyzers and calibrated antennas and other proprietary instrumentation. Importantly, Viziv is designing such testing apparatuses to minimize the conventional spherical radiation of signals with the intent to limit the interference effects to any other party in the spectrum bands under test.

The systems under test will be used to demonstrate the science and application of Zenneck surface waves and is a precursor to a more extensive demonstration of this new signaling technology. The experimental license is needed to provide measurement data to better define the parameters necessary for future commercial uses of the technology and builds upon the granted experimental special temporary authority (call sign WK9XGS) previously granted to Viziv.

B. Location of Proposed Operation:

Viziv proposes to continue to conduct its experimental testing at our research laboratory location in Texas. The transmission units will be fixed and designed to be non-radiating in the conventional sense. Viziv researchers will be using off-the-shelf commercial grade crystal controlled and PLL signal generators along with commercial grade power amplifiers (Class A, AB, C, and D). The approximate location the testing probes are in the table below (in Datum: NAD83).

C. Technical Specifications:

The table below provides details of the transmitter and operational characteristics of the proposed experimental testing:

Transmitter Name	Latitude	Longitude	Frequency	Input Power	ERP	Emission Designator
L1-LNCR	32° 9′ 4.9″ N	96° 57′ 0.1″ W	100 kHz	100 kW	1 kW	H100N0N
L1-LNCR	32° 9′ 4.9″ N	96° 57′ 0.1″ W	100 kHz	100 kW	1 kW	20K0MXD
L1-LNCR	32° 9′ 4.9″ N	96° 57′ 0.1″ W	100 kHz	100 kW	1 kW	20K0MXX
L2-LNCR	32° 9′ 5.5″ N	96° 56′ 12.5″ W	100 kHz	100 kW	1 kW	H100N0N
L2-LNCR	32° 9′ 5.5″ N	96° 56′ 12.5″ W	100 kHz	100 kW	1 kW	20K0MXD
L2-LNCR	32° 9′ 5.5″ N	96° 56′ 12.5″ W	100 kHz	100 kW	1 kW	20K0MXX
Temp Probe 1	32° 9′ 20.5″ N	96° 56′ 28.2″ W	100 kHz	100 kW	1 kW	H100N0N
Temp Probe	32° 9′ 22.3″ N	96° 56′ 36.6″ W	51 MHz	6kW	50 W	H100N0N

1. Frequencies Desired

Viziv seeks to continue testing at this location on two different center frequencies, 100 kHz and 51 MHz. Viziv plans to conduct a series of measurements over the frequency ranges, from 80 to 120 kHz for the 100 kHz testing, with a 100 Hertz bandwidth for its continuous wave testing experiments and 20 kHz bandwidth for navigation and position testing. For its 51 MHz testing (50 to 54 MHz), Viziv will utilize 100 Hertz of bandwidth for continuous wave testing.

2. Effective Radiated Power

Viziv anticipates that the testing will be non-radiating according to the conventional definition of radiation. To conduct the testing, the RF power that is necessary to create local fields for launching a high velocity propagating surface wave will be utilized. The RF input power will not exceed 100 kW for the surface wave launching probes at 100 kHz and not more than 6 kW for the surface wave launching probe at 51 MHz. The intent of all testing will be to produce a surface wave without producing any Norton ground wave radiation. The effective radiated power at 100 kHz is not expected to exceed 1 kW and is not expected to exceed 50 W at 51 MHz.

3. Modulation and Emissions

Viziv proposes two modes of testing. One mode of testing will employ a continuous wave signal with 100 Hertz of bandwidth. The emission designator for this mode of testing is H100N0N.

A second mode of testing will be for the navigation and position application development work, which will use a modulated signal having 20 kHz of bandwidth. The emission designator for this mode is either 20K0MXD or 20K0MXX.

4. Antenna Information

While each testing apparatus will be designed to be non-radiating, the surface wave launching probes will be between 50 feet and 80 feet above ground level for the 100 kHz testing and between 1 and 12 feet above ground level for the 51 MHz testing. No probes will be mounted in a fashion that will require approval under FAA and FCC rules and regulations.

5. Equipment to Be Used

Viziv expects to conduct its demonstration with one or two test probes operating at 100 kHz and a single test probe at 51 MHz at the above referenced fixed location. When the two probes at 100 kHz are used, the launch signals will be phase locked together and will effectively operate as a single signal source. The launch probes and any receiving structures are prototype equipment developed by Viziv. Viziv will limit the power, area of operation, and transmitting times to the minimum necessary to gather the needed scientific measurements of this new technology.

D. <u>Protection Against Causing Interference:</u>

Viziv has requested continued authority to operate in the 100 kHz and 51 MHz bands. The 100 kHz band is a primary radiolocation band for the LORAN radio-navigation system, as well as being available for other radiolocation and power

line carrier use on a secondary basis. The 51 MHz band is a primary Amateur Radio Service band. Viziv understands that it must accept any interference from any users of these bands and that all operations by Viziv will be on a secondary basis. Viziv has established a point of contact identified below with "kill switch" authority should any interference occur to primary licensed services. Should interference occur, Viziv will take immediate steps to resolve the interference, including, if necessary, arranging for the discontinuance of operation.

E. Restrictions on Operation:

Viziv is not seeking authority to perform a market study under the requested experimental license. Moreover, no fees will be charged to entities using the equipment during this test. Entities will be advised in accordance with Section 2.803 of the Commission's rules, 47 C.F.R. §2.803, that any unapproved devices which have not been authorized as required by the FCC are not being offered for sale or lease, or sold or leased, until authorization is obtained.

F. Public Interest:

Viziv submits that issuance of a renewed experimental license as requested is in the public interest, convenience, and necessity. Grant of a renewed experimental license will help Viziv to develop and test innovative equipment that will allow for more effective and efficient power management and distribution.

G. Contact Information:

Technical Contact and "Stop Buzzer/Kill Switch:"

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