

## **Application for Conventional Experimental License**

Pursuant to Part 5 of the Commission's rules,<sup>1</sup> RCA Telecom LLC ("RCA") seeks authority to perform experimental testing for the purpose of developing new channel sounding systems that will be used as an input to channel selection and auto-tuning processes on HF channels. RCA requests the standard experimental time period of 24 months.

### **Background**

RCA is performing channel sounding experiments under Call Sign WM2XTS. The experimental systems developed to support WM2XTS and the interim results analyzed have led to new channel sounder designs that RCA plans to test under this proposed new experiment.

### **Objective**

To establish an HF channel sounding system which periodically observes spectrum utilization and samples channel propagation to collect contemporary data for the purpose of informing improved automated system configuration (channel and modulation parameter selection).

### **Nature of Experiment**

The existing transmit facilities at WM2XTS have insufficient space for the proposed infrastructure for the proposed experiments. Therefore, RCA will construct a new transmit facility to support a new channel sounding experiment. This new transmit facility will contain two transmit stations.

#### **Transmit Station 1 – Sounder Station**

The Transmit Station 1 ("TS1") will be comprised of a [REDACTED] antenna. This is the antenna identified on Form 442 as "custom." It is [REDACTED] as indicated in the TS1 antenna sketch. The antenna will be [REDACTED] the ground.

This system will undertake periodic transmissions using the requested channels.

The transmitted waveform will consist of several signals, the first of which applicant expects will be up to a 1 second CW tone, [REDACTED]

---

<sup>1</sup> 47 C.F.R. Part 5.

[REDACTED]. The received waveform will be analyzed to assess the relative quality of the channel.

The timing and nature of these transmissions will be shared with receive stations via a separate and independent communications path to facilitate configuration alignment of station TS2.

### Transmit Station 2 – Test Station

The Transmit Station 2 (“TS2”) will be comprised of [REDACTED] three (3) Log Periodic Dipole Array (“LPDA”) antennas. They will be placed at the following elevations:

1. M2 10-30LP8 antenna at [REDACTED] AGL
2. M2 10-30LP8 antenna at [REDACTED] AGL
3. M2 6-10LP5-125 antenna [REDACTED] AGL

TS2 as part of the experiment will use the experimental data from TS1 for pre-emptive automated tuning and configuration of the TS2 station to evaluate and improve the system governed by TS1 experimental data. Bandwidth will vary, from 3 kHz to up to 48 kHz. The configuration will always result in a modulation compliant with those listed in the grant.

### Sounder

The proposed experimental sounder approach provides the ability to assess at least the following characteristics for each channel:

- Signal-to-Noise
- Bit error rate
- Channel latency
- Channel multipath delay and magnitude
- Doppler spread

This data can then be used to make intelligent tuning decisions, ensuring that spectrum is used effectively and minimizing the use of spectrum that does not support communications between TS2 and the receiver.

### Site

The site for this experiment has been selected as it has an existing tower already registered under ASR 1315140. FAA notification of the antenna height is not required.<sup>2</sup> And because it is an existing tower, all steps necessary have already been taken to ensure that the test antenna is in a controlled environment not accessible to the general public.

For TS1 the orientation in the horizontal plane (degrees from True North) will be [REDACTED] degrees.

---

<sup>2</sup> See 47 C.F.R. § 17.7.

For TS2 the orientation in the horizontal plane (degrees from True North) will be [REDACTED] degrees.

The antenna patterns are provided as separate exhibits.

### **Protection of Other Users**

RCA's use of the requested frequencies for testing will not cause harmful interference to other users because:

- For TS2, the signals will be confined to a limited path; and
- For TS1, the signals will have a low EIRP due to the low transmit power and low antenna gain.

In the highly unlikely event that harmful interference is created to another user, RCA will cease transmission on the frequency and will work with the FCC and affected party to resolve the interference. A point of contact for this testing will be available, with contact details physically located at the transmit site (which is monitored 24/7) to ensure that operations will cease in the event that any licensed users experience harmful interference or as otherwise directed by the FCC. RCA's **STOP BUZZER** contact is: Thomas Maxwell, 233. S. Wacker Dr., Suite 4300, Chicago, IL 60606, (312) 204-7594.

### **Station ID Requirement**

TS1 is capable of transmitting station ID, and a station ID will be transmitted.

TS2 is not capable of transmitting station identification. To the extent necessary, RCA seeks waiver of this requirement for TS2, consistent with Commission precedent.

### **Public Interest Statement**

Grant of this application will serve the public interest because it will allow RCA to determine maximum efficient use of HF spectrum as it works toward developing a system for commercial use.