

Description of Experimentation

MidWave Wireless, Inc. (“MidWave”) hereby requests that the Federal Communications Commission (“FCC” or “Commission”) grant the instant experimental application to authorize the operation of certain software-defined radios (“SDRs”) in the 1.4 GHz and 1.7 GHz frequency ranges in connection with the program of experimentation described below and in the Form 442 application submitted herewith.

A. Purpose of Experiment

The primary purpose of this experiment is to test and validate the performance of existing SDRs configured for mobile ad hoc networking (“MANET”) operation in the 1.4 GHz and 1.7 GHz frequency ranges. These radios have been fielded in other spectrum bands but are not yet certified for operation in the requested frequencies. The goal of this experimental program is to characterize radio behavior, waveform performance, and interoperability in order to support future deployment considerations and equipment certification in these bands.

B. Technical Approach

The testing campaign will use SDR-based platforms equipped with adaptive MANET waveforms. These waveforms employ quadrature amplitude modulation (“QAM”) and advanced forward error correction optimized for robust performance in contested or degraded radiofrequency (“RF”) environments.

Key evaluation areas include:

- **Certification-Oriented Validation:** Verifying transmit spectral masks, occupied bandwidth, and out-of-band emissions across 2.5 MHz, 5 MHz, and 10 MHz bandwidth modes.
- **Scalability and Mesh Operation:** Assessing stability of self-forming mesh networks with multiple nodes, including route optimization, relay performance, and network recovery after node removal or failure.
- **Mobile Platform Integration:** Radios will be tested in fixed and mobile configurations to evaluate handoff behavior, end-to-end latency, and link stability under dynamic mobility.
- **Extended Range and Relay Links:** Characterizing point-to-point connections over distances to measure throughput and latency across networks.
- **Interference and Multipath Resilience:** Introducing controlled interference and operating in multipath-heavy environments to validate link margins, packet error rates, and quality of voice/PLI/video transport.

C. Expected Outcomes

The experimental results will provide data needed to evaluate the suitability of these existing radios for operation in the 1.4 GHz and 1.7 GHz bands. Specifically, the program will measure:

- Conformance with emission and bandwidth requirements
- Mesh stability, routing efficiency, and network scalability
- Range, throughput, and latency under mobile and fixed conditions
- Performance margins in the presence of interference and multipath

The collected data will directly inform the certification pathway for these radios and support broader consideration of their deployment in the 1.4 GHz and 1.7 GHz spectrum.

D. Request for Waiver of Station Identification Requirements

MidWave requests a waiver of the station identification requirements in Section 5.115 of the Commission's rules.¹ Grant of the requested waiver will promote the public interest by allowing MidWave to determine the most effective operating capabilities of the SDRs and associated equipment as part of this experiment.

E. Interference Protection

MidWave recognizes that the operation of any equipment under experimental authority must not cause harmful interference to authorized facilities. MidWave will fully coordinate and operate on a non-interference, non-protected basis with any authorized user affected or reasonably likely to be affected. MidWave's experimental operations are unlikely to cause interference. Its operations will be conducted only on a limited basis as described herein. Operation under the experimental license will not adversely impact any authorized user of radiofrequency spectrum, including but not limited to adjacent-band WMTS operations, and the experimental authorization sought herein is requested only for a single market where MidWave is the Commission licensee for the relevant 1.4 GHz and 1.7 GHz spectrum.

F. Stop Buzzer Contact

The stop buzzer contact for this experiment is:

John Dooley
631-682-2508
john.dooley@jarvinian.com

¹ 47 C.F.R. § 5.115.

G. Test Location

Authorized tests will take place at designated areas in Magalia, CA, with an operating radius of 1 mile.

Frequencies and Bandwidths

- 1390–1395 MHz, 1432–1435 MHz, 1700-1710 MHz
- Emission designators: 2M50X7F, 5M00X7F, 10M0X7F
- Modulation: 1024QAM

Power Levels

- 1 W output power (peak)
- 30 dBm ERP (peak)

Location and Emissions

- Frequencies
 - 1390-1395 MHz
 - 1432-1435 MHz
 - 1700-1710 MHz
- Location
 - Magalia, CA
 - 16101 Doon Grade Rd, Magalia, CA 95954
 - Latitude/Longitude: 39° 53' 3.0186" N, 121° 34' 18.051" W
 - Radius: 1 mile

All radios to be used in the instant experiment are manufactured by Hypha Solutions:

Model	Units	ERP (Watts)
H1 Mini (C206-1-130150)	1	1
PTT V2 (M-PTT2-500-052150)	2	1