Broadband Mini-Loop

A Product of Alpha Antenna

Wholly owned by Productive Industries, LLC

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112 East Commercial Street, Pleasant Hill, MO 64080

Model – Mini-Loop

Specifications, Analysis, & Usage

OPERATIONAL SPECIFICATIONS

Specifications of this broadband digital mode Mini-Loop:

- Receive: Low noise characteristics for digital mode from 1.8MHz through 1GHz.
- Transmit: Support without a tuner for digital mode from 10MHz through 54MHz.

USAGE SPECIFICATIONS

- Deployable with quantum and/or spread-spectrum equipment.
    - For equipment that simultaneously uses many frequencies.
- Missions that require Ground-wave and/or Skywave HF communications.
- Useful when an isolated solution is required that requires no counterpoise.

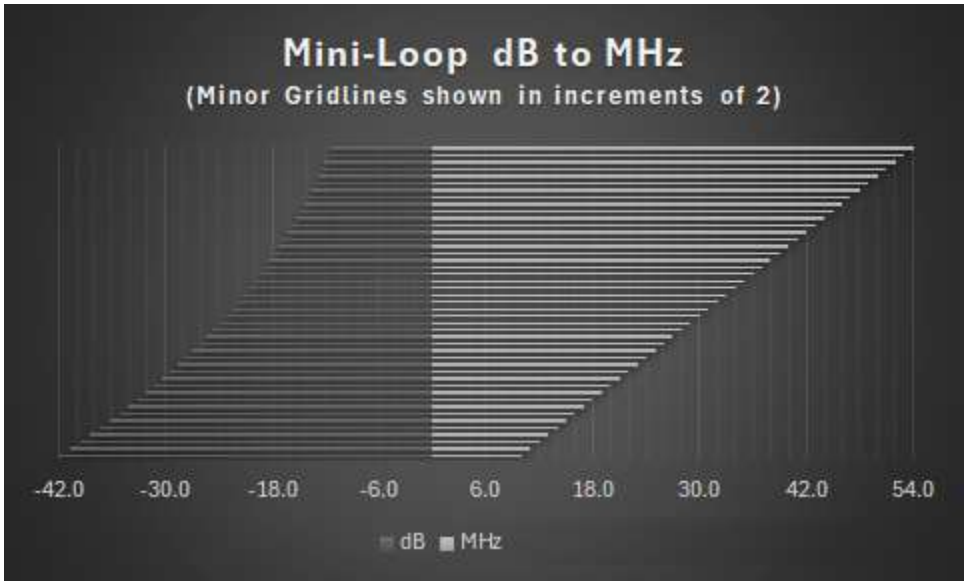
TECHNICAL SPECIFICATIONS

Option 1: 20W at 25% duty cycle, 10W at 50% duty cycle, and 5W for 100% duty cycle (digital modes).

Option 2: 100W at 25% duty cycle, 50W at 50% duty cycle, and 25W for 100% duty cycle (digital modes). Including but not limited to the MIL-STD-188 M110a digital communications mode that is rated at 25 watts continuous with bursts of 100 watts digital for up to 1 minute using the MIL-STD Data Modem Terminal (MS-DMT) and Automated Message Terminal (AMT) software applications.

ESTIMATED GAIN

(Based upon Field Strength Meter readings)



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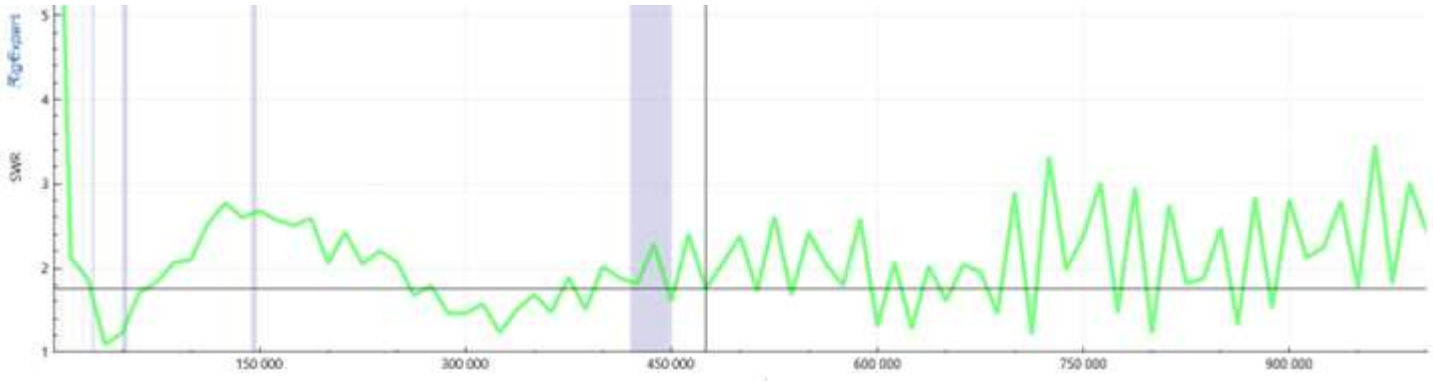
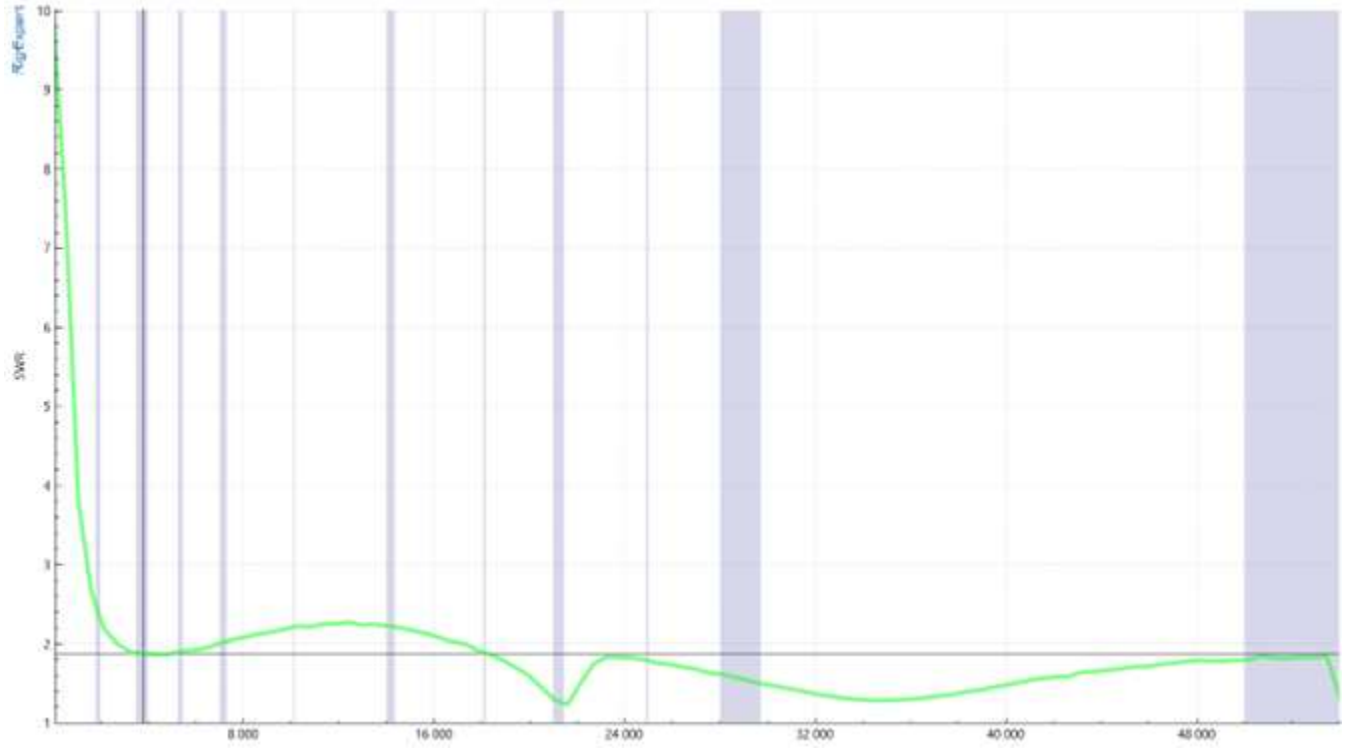
Analysis

The following results were nearly identical, whether taken indoors, outside, or in a backpack.

Analysis from 0-1GHz



Analysis from 0-54MHz



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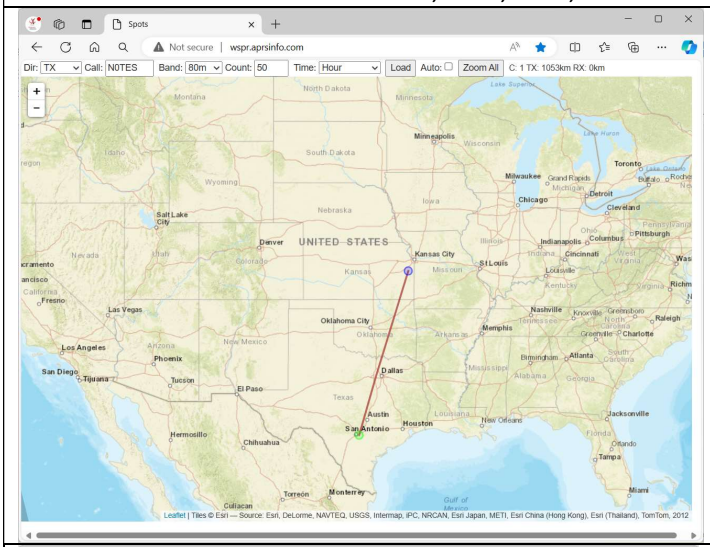
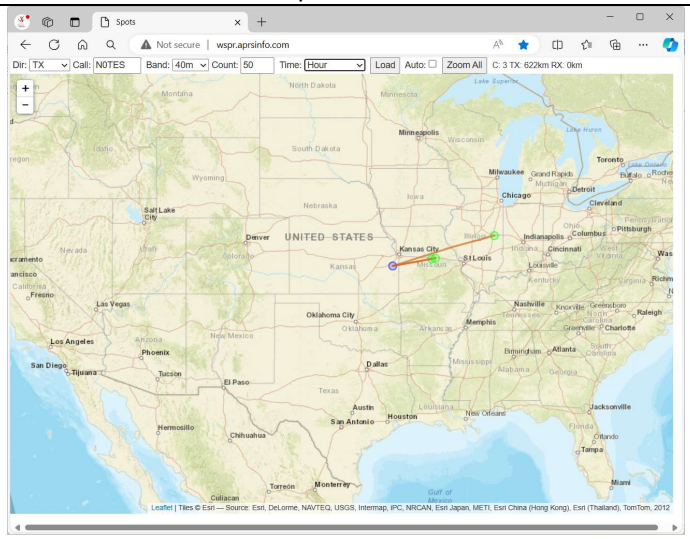
WSPR TX Test at 250mw

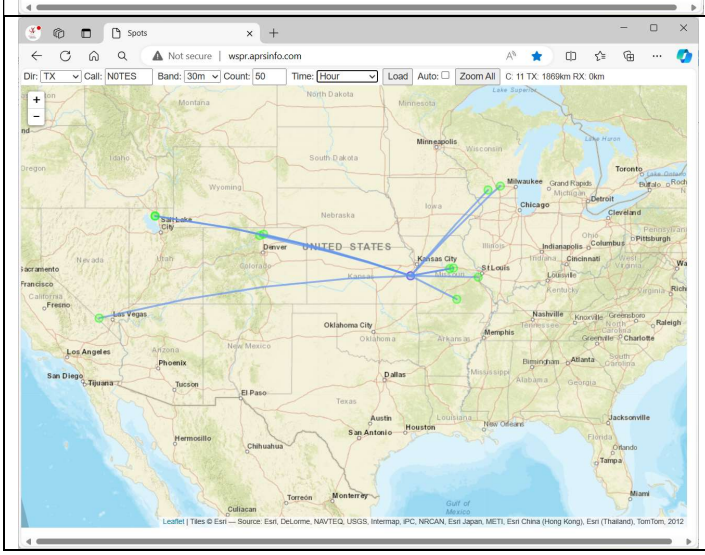
For TX we purposely tested the loop while deployed between two metal buildings & at 250mw.

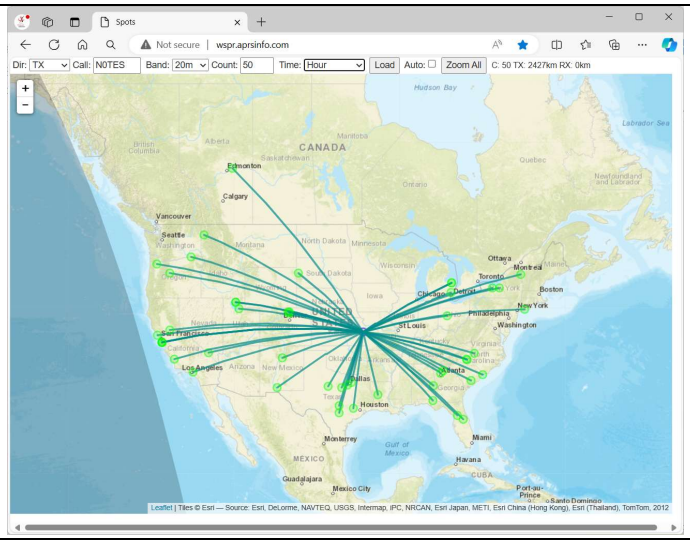
NOTE – TX efficiencies increase as power increases, which can lower the usable frequency.

80M, 40M, 30M, & 20M TEST RESULTS for the Mini Loop +









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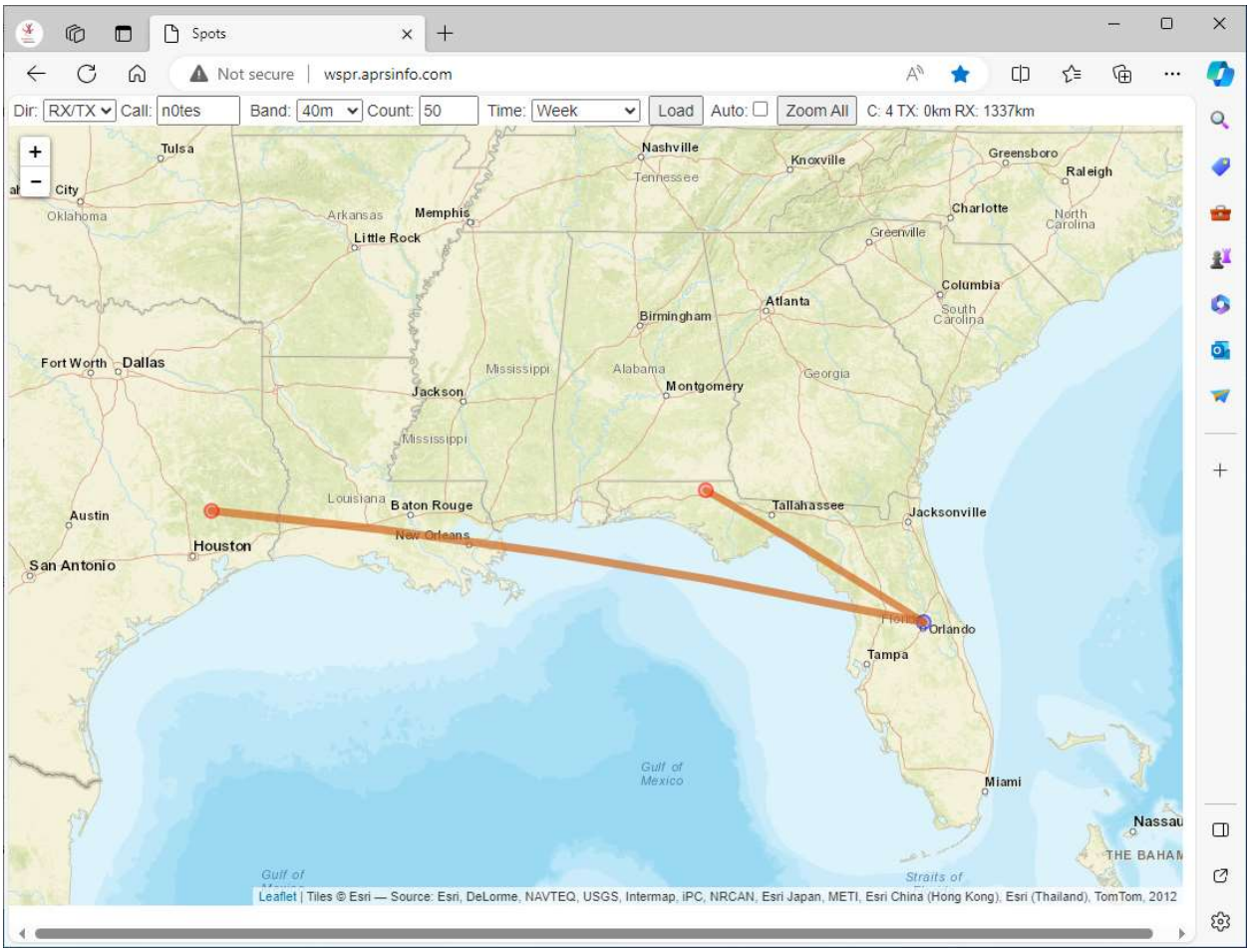
WSPR 40M RX Test

For all RX tests we purposely tested the loop while deployed indoors and between floors of a multi-story building.

Max Range = 1337km



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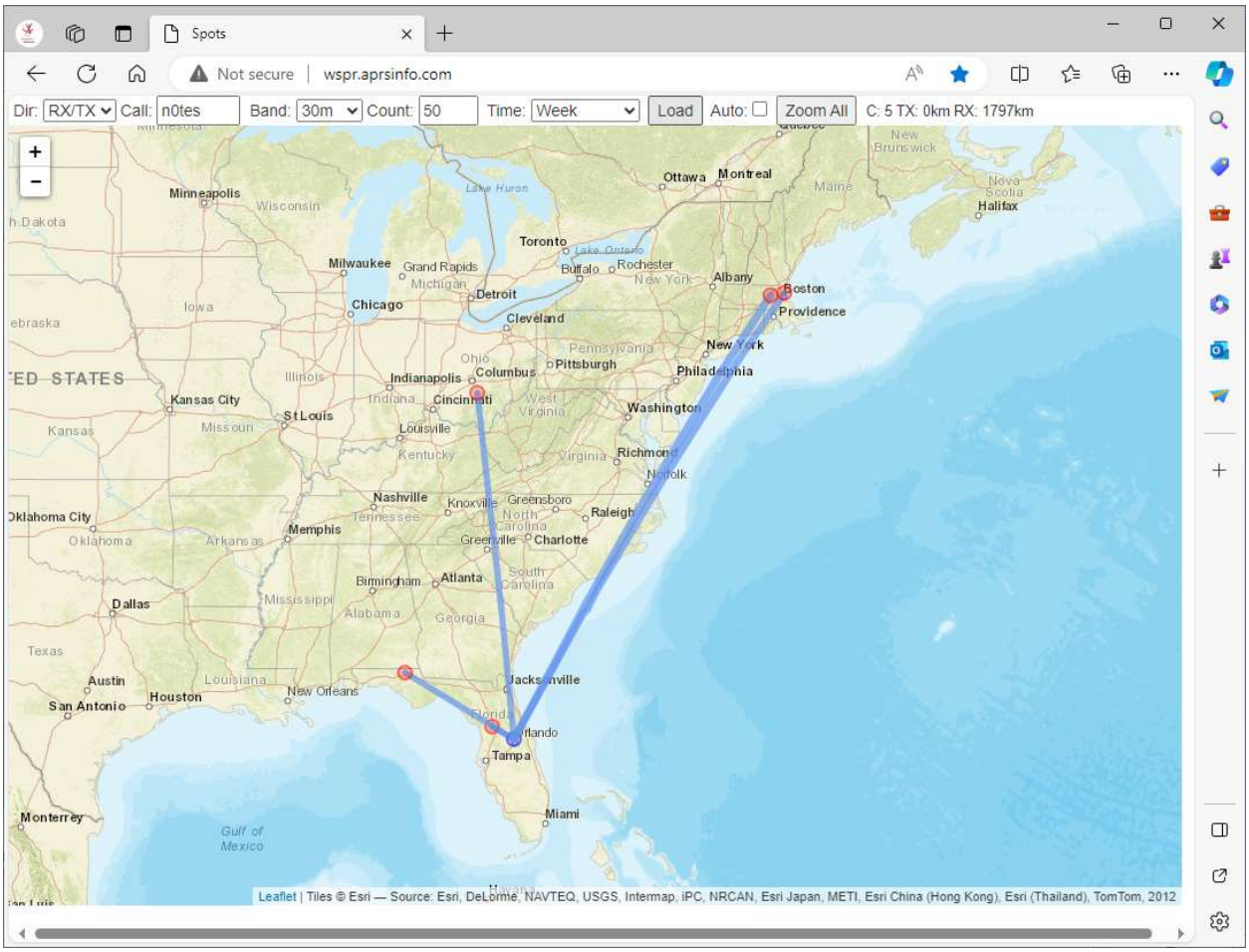
WSPR 30M RX Test

Max Range = 1797km



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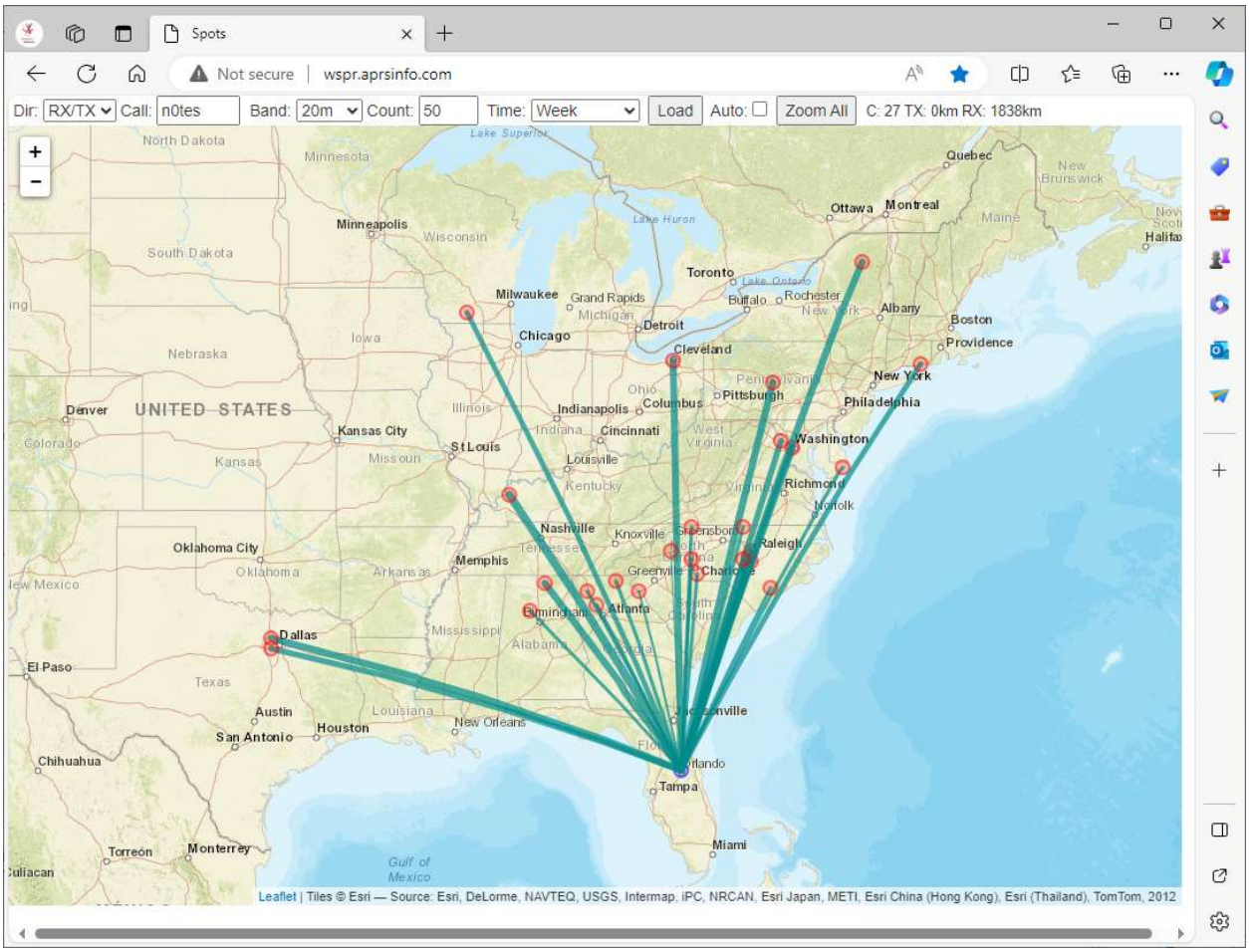
WSPR 20M RX Test

Max Range = 1838km



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USAGE

Where secrecy is paramount, communication through unseen methods plays a crucial role. Some of the usage scenarios of clandestine antennas include:

1. Clandestine Communications in Cyber-Denied Environments:

- ✓ Context: In an era where internet-based communications are vulnerable to surveillance and attacks, intelligence operatives seek alternative methods.
- ✓ Scenario: Imagine a situation where an operative needs to communicate without exposing themselves to internet-based surveillance.
- ✓ Solution:
  - Physical Separation: Platforms physically separated from the internet can be used. These platforms are not susceptible to internet-based surveillance or attacks.
  - Radio Technology: Combine modern computer-based software with radio technology.
- ✓ Importance: Counterintelligence and law enforcement must adapt to these evolving communication methods.
- ✓ Countermeasures: Detect radio-based clandestine communications and secure evidence.

2. Operational Scenarios where concealment and minimizing visibility are critical:

- ✓ Inside a Parked Car:
  - Example: Monitoring a nearby building while parked outside.
    - Setup: Transmitter, receiver, and antennas positioned out of sight from windows.
- ✓ Between Floors in an Office Building:
  - Example: Operating from the third floor to the first floor.
    - Setup: Transmitter, receiver, and antennas positioned out of sight carried out of site under clothing.
- ✓ Out in the Open:
  - Example: Providing regional communications support while deployed in the field.
    - Setup: Transmitter, receiver, and antennas positioned out of sight inside a backpack.

Remember, clandestine antennas are designed to operate covertly, avoiding detection by adversaries. Their success lies in striking a balance between effective communication and maintaining secrecy with a right sized antenna.

All these solutions are enabled by the Broadband Alpha Loop.

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