

ENFORCEMENT BUREAU - FIELD DIVISION



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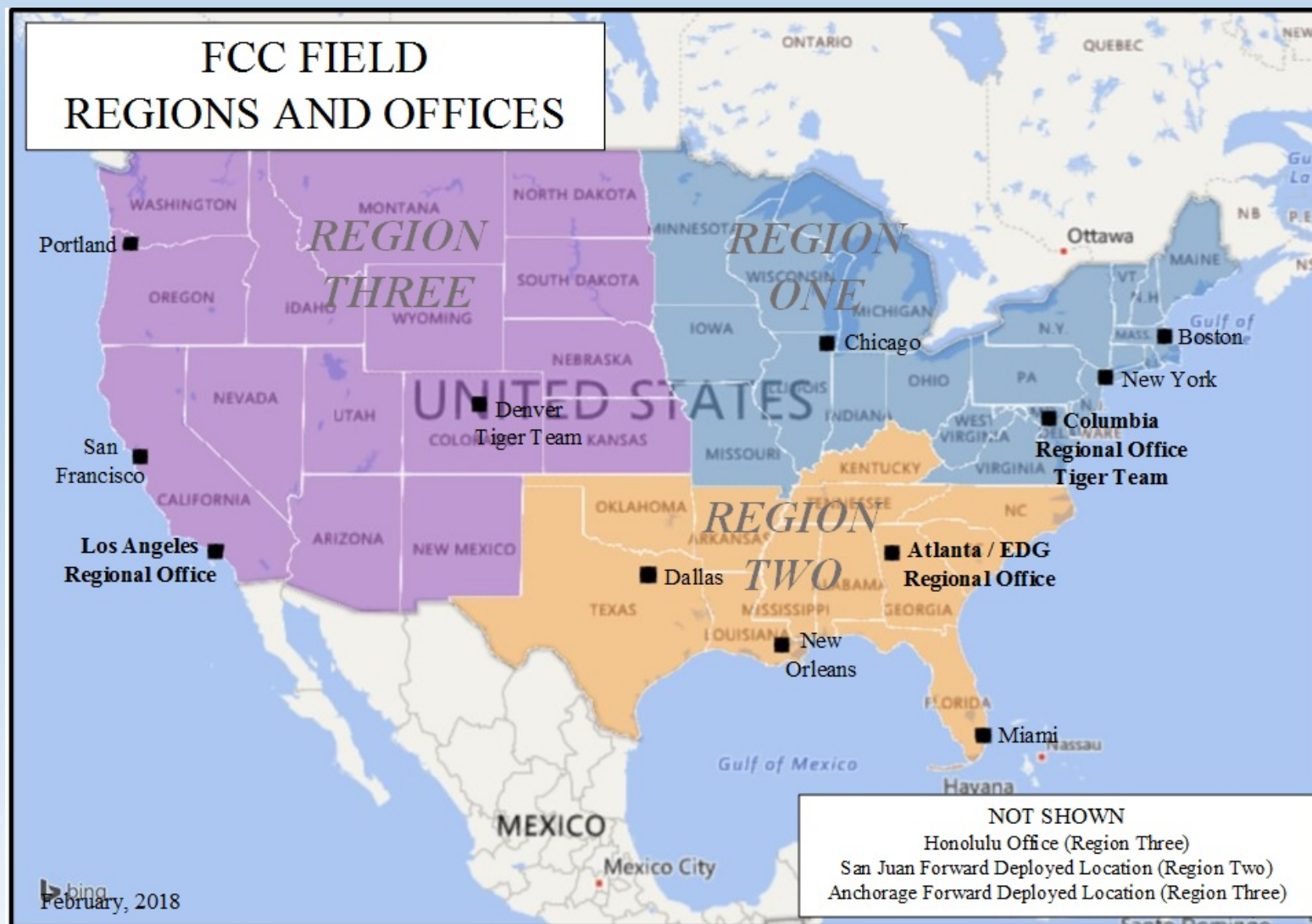
FIELD DIRECTOR

Enforcement Bureau

- Enforcement Bureau (EB) is the primary FCC organization responsible for enforcing the Commission's rules
- Office of the Field Director serves as the Bureau's means of responding to enforcement issues across the country
- The Field Office functions include:
 - Immediately responding to safety of life matters
 - Investigating and resolving individual interference complaints
 - Investigating violations in all licensee and/or operator services
 - Coordinating with local and state public safety entities
 - Executing on-scene investigations, inspections, and audits
 - Carrying out special priorities of the FCC

Enforcement Bureau

- Office of the Field Director
 - Structure
 - Investigative Teams: 3 geographic regions with 13 staffed offices and 2 forward deployed locations
 - Legal Team
 - Technology Team
 - Field Mission: Enforcement of the FCC radio frequency rules
- Spectrum Enforcement Division
 - Enforcement actions against complaints primarily involving wireless equipment matters



Types of Interference Cases

Complaint Driven

- www.fcc.gov PSIX/ESIX/Consumer Complaint Options
- Operations Center 24/7 - (202) 418-1122
- Public Safety (PSIX)
 - Federal/State/Local Municipalities
- Commercial Licensees (ESIX)
 - Cellular Telephone / Wireless Broadband
 - Broadcast / Unauthorized “Pirate”
 - Land Mobile
- Consumer Complaints
 - Broadcast Coverage
 - Wireless Broadband Coverage

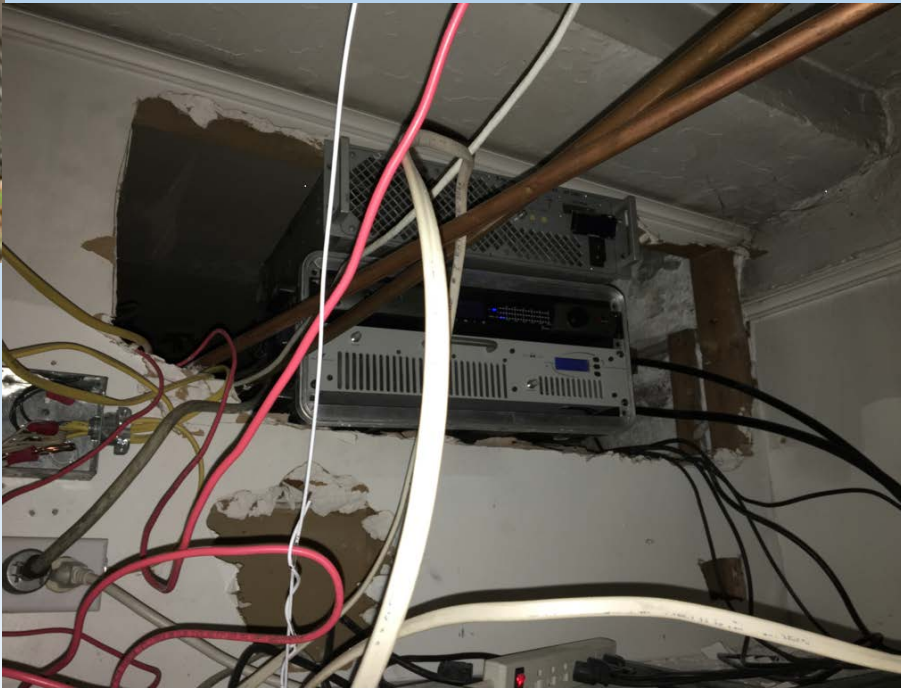
Sources of Interference

- Intentional
 - Section 15.3(o) device that intentional generates and emits RF energy by radiation or induction
 - Transmitters such as wi-fi, etc.
- Unintentional
 - Section 15.3(z) device that intentionally generates RF energy for use within the device...but which is not intended to emit RF energy by radiation or induction
 - devices which include logic circuits, such as computers, etc.
- Incidental
 - Section 15.3(n), Device that generates RF energy during the course of its operation although the device is not intentionally designed to generate or emit RF energy.
 - AC and DC motors, mechanical light switches, basic electrical power tools (that do not contain digital logic)
- Industrial, Scientific, and Medical Equipment
 - When (RF) energy is used for providing energy other than telecommunications such as production of physical, biological, chemical effects, heating, ionization of gases, mechanical vibrations, acceleration of charged particles
 - Fluorescent lighting, halogen ballasts, arc welders, microwave ovens, and R.F. heaters.

Types of Sanctions

- On-Scene
 - Verbal Warning (Social Engineering)
 - Notices: Unlicensed Operation; Harmful Interference
- Formally Issued (Regional Office)
 - Warning Letter
 - Notice of Unlicensed Operation (NOUO)
 - Notice of Harmful Interference (NOHI)
 - Notice of Violations (NOV)
- Formally Issued (HQ) – Comm Act § 503
 - Citation (for non-licensee)
 - Notice of Apparent Liability for Forfeiture (NAL)
 - Forfeiture Order
- Equipment Seizures – Comm Act § 510
 - Requires Federal Court Order

Recent Seizures

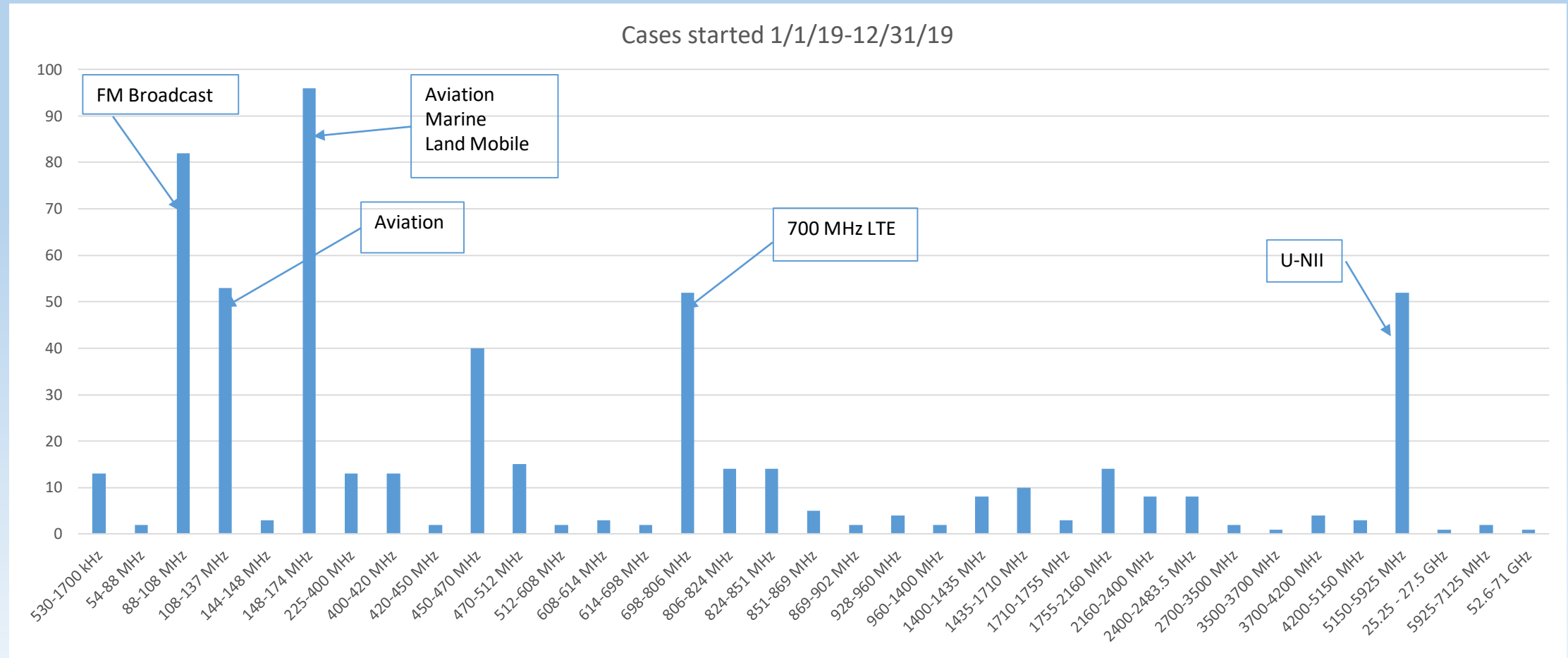


Field CY2019 Statistics

- **Total Investigations (Interference and non-Interference): 883**
- **Significant Categories**
 - Public Safety (26%)
 - Pirates (16%)
 - Caused by Part 15/18 devices (e.g., medical equipment, various devices) (11%)
 - Broadcast/Broadcast Auxiliary (9%)
 - Mobile voice/wireless broadband (8%)
- **Spectrum bands that generate most interference complaints**
 - 88-108 MHz (FM broadcast)
 - 108-137MHz/148-174 MHz/450-470 MHz (Aviation/Marine/Land Mobile)
 - 698-806 MHz (700 MHz LTE)
 - 5150-5925 MHz (U-NII)

Note: Investigation cases may involve overlapping categories

Spectrum Ranges of Recent Interference Cases



Top found devices / systems causing interference to Cellular / Wireless Broadband (700 MHz to 2.3 GHz)

- Signal Boosters
- DTV Receive Antennas (with pre-amplifier)
- Digital European Cordless Telephones (DECT)
- 5 GHz U-NII Devices (clock frequency)
- Lighting (electronic ballasts)
- LED Signs
- FM Broadcast Transmitters
- Cable TV Egress
- Garage Door Openers
- Security Cameras

CY2019 Government Interference Investigations

- Federal to Federal (13)
 - Agency to Distress 406 MHz (4)
 - Between Agencies (9)
- Federal to Non-Federal (0)
- Non-Federal to Federal (137)
 - USCG Channel 16 “Maritime 911” (28)
 - FAA (93)
 - Distress 121.5/243/406 (11)
 - CBP (2)
 - Interior (3)
- GPS Reception Interference (3)
 - From Non-Federal (3)

Types of Technology

- Direction Finding Sensors
 - Mobile (Vehicles)
 - Temporary Fixed
 - Portable (on foot)
- Software
 - Networked Sensors
 - Automation



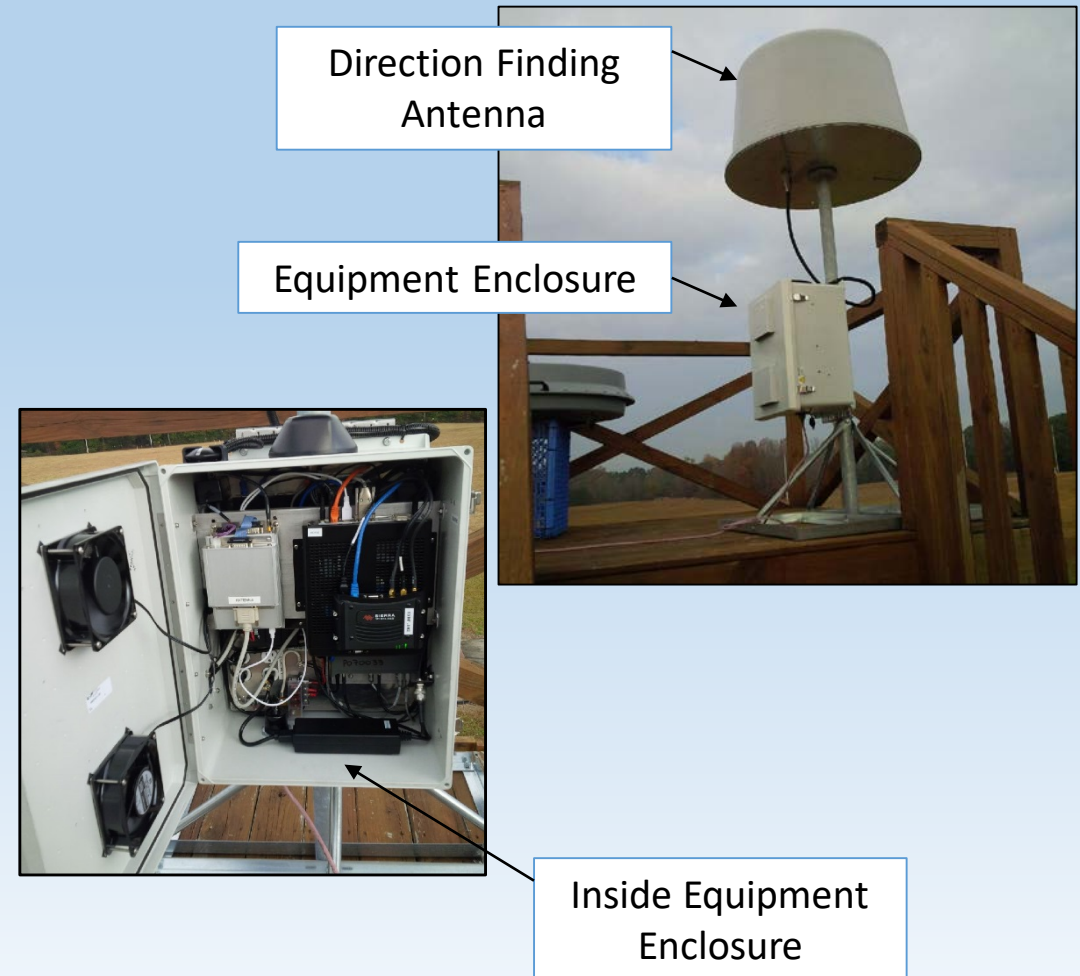
Direction Finding Vehicles

- Chevy Tahoe and Dodge Durango platform
 - Internal covert cavity backed annular slot antennas for Direction Finding
 - Software controls DF system from single dash mounted touch screen
 - Upper frequency range is 3 GHz
 - External extendable mast
 - Waveguide antennas, low noise amplifier and mission specific bandpass filters
 - Upper frequency range is 8 GHz



Temporary Fixed Direction Finding Stations

- Switched Amplitude Angle of Arrival (AOA) Direction Finding
- WJ Miniceptor Receiver (DF) and Tektronix RSA306B (Spectrum Monitoring)
- Up to 3 GHz for Direction Finding and 6.2 GHz for monitoring
- Dedicated Wireless backhaul on FCC Network Connects Mobile and Fixed Direction Finders with Remote Operators



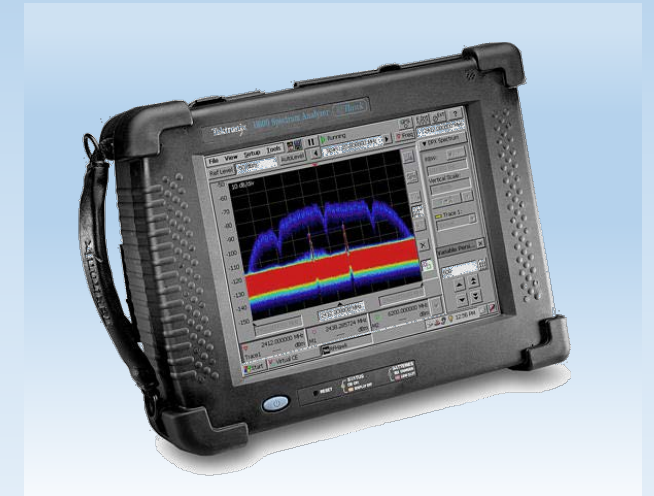
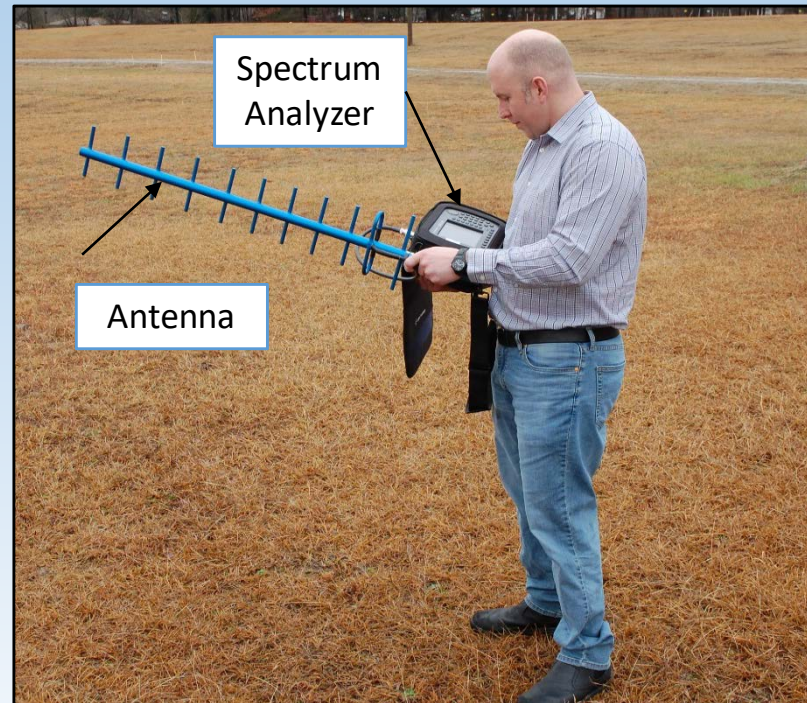
Temporary Deployable COTS Sensors

- Real time recording system provides best capability to monitor and geo-locate fast acting Intermittent emissions
- Works as individual units, or combined with other units to geo-locate using AOA and Time Difference Of Arrival (TDOA) for direction finding.
- Frequency range of 20 MHz to 8000 MHz
- Dedicated Wireless backhaul on FCC Network Connects Sensors with Remote Operators
- Collapsible. Easily carried. Can be set up by one person.

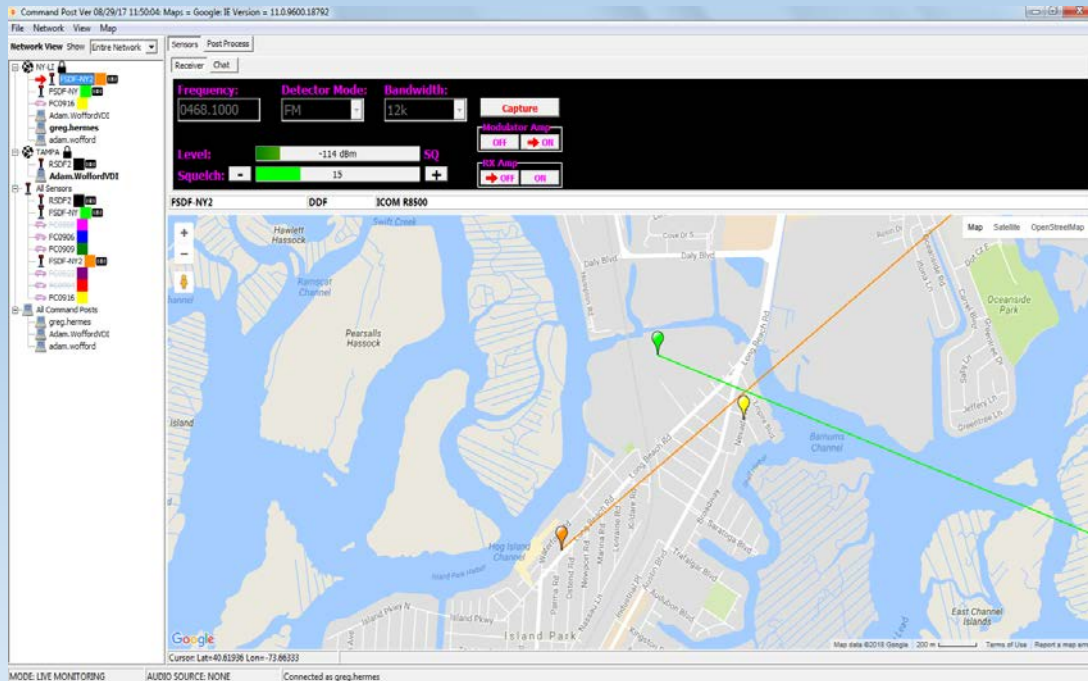


Portable Direction Finding

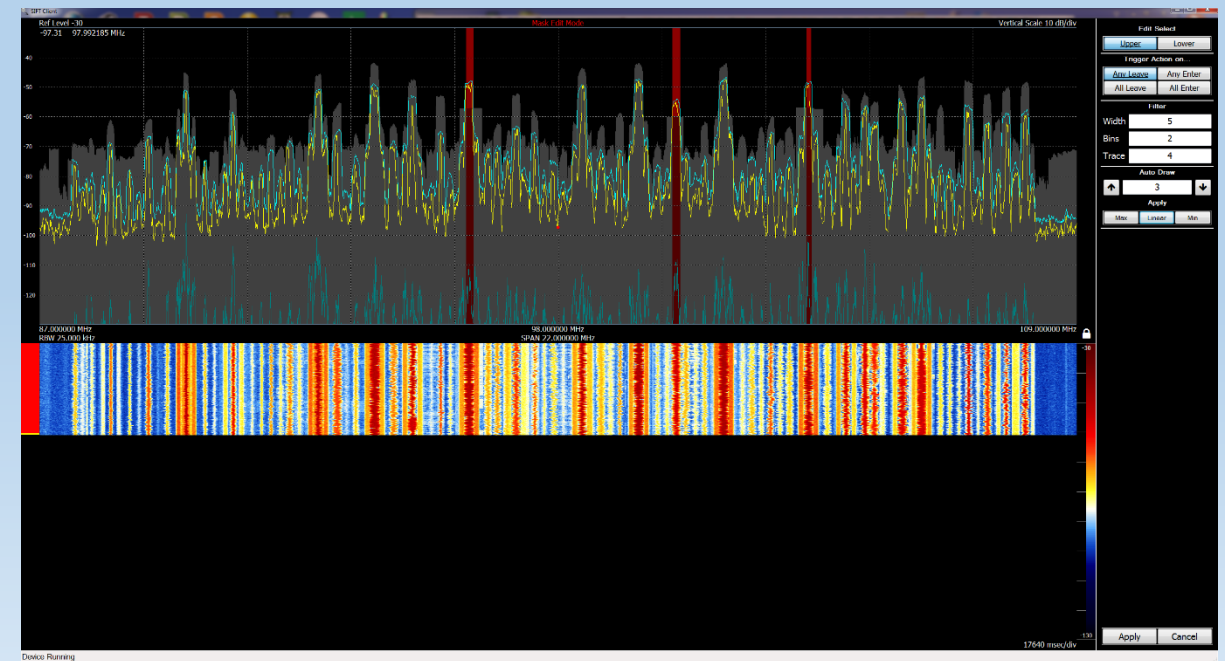
- Tektronix, Agilent and Keysight Analyzers
- Maximum frequency of 44 GHz/handheld
- Mission specific and general-purpose antennas, amplifiers, and filters



Software



(Command Post Software) Networked system of fixed and mobile sensors allow agents to collaborate, or call on remote sensors from remote locations.



(SIFT) Spectrum investigation automation software in conjunction with software defined radios (SDR) or spectrum analyzers notify agents when certain events occur

Examples of On-Scene Investigation Tools

- Unintentional Interference / Jamming
 - Direction Finding Vehicle
 - Portable Spectrum Analyzer w/ directional antenna (on-foot)
- Interference by U-NII to TDWR (5 GHz)
 - Analyzer w/ TDWR filter and high gain amplifier on Extendable Mast
 - WIFI network analysis software
 - Portable Spectrum Analyzer w/ directional antenna (on-foot)
- Hoax / Intruder
 - Temporary Fixed Direction-Finding station(s)
 - Direction Finding Vehicle
 - Portable Spectrum Analyzer w/ directional antenna (on-foot)



FCC Operations Center - (202) 418-1122
<https://www.fcc.gov/> - PSIX Interference Complaints

Authority – Pertinent Communication Act Sections

- Section 301 - License for radio communication or transmission of energy
 - It is the purpose of this chapter, among other things, to maintain the control of the United States over all the channels of radio transmission; and to provide for the use of such channels, but not the ownership thereof, by persons for limited periods of time, under licenses granted by Federal authority, and no such license shall be construed to create any right, beyond the terms, conditions, and periods of the license. No person shall use or operate any apparatus for the transmission of energy or communications or signals by radio (a) from one place in any State, Territory, or possession of the United States or in the District of Columbia to another place in the same State, Territory, possession, or District; or (b) from any State, Territory, or possession of the United States, or from the District of Columbia to any other State, Territory, or possession of the United States; or (c) from any place in any State, Territory, or possession of the United States, or in the District of Columbia, to any place in any foreign country or to any vessel; or (d) within any State when the effects of such use extend beyond the borders of said State, or when interference is caused by such use or operation with the transmission of such energy, communications, or signals from within said State to any place beyond its borders, or from any place beyond its borders to any place within said State, or with the transmission or reception of such energy, communications, or signals from and/or to places beyond the borders of said State; or (e) upon any vessel or aircraft of the United States (except as provided in section 303(t) of this title); or (f) upon any other mobile stations within the jurisdiction of the United States, except under and in accordance with this chapter and with a license in that behalf granted under the provisions of this chapter.
- Section 333- Willful or malicious interference
 - No person shall willfully or maliciously interfere with or cause interference to any radio communications of any station licensed or authorized by or under this chapter or operated by the United States Government.

Authority – Pertinent Communication Act Sections

- Section 503(b). ACTIVITIES CONSTITUTING VIOLATIONS AUTHORIZING IMPOSITION OF FORFEITURE PENALTY; AMOUNT OF PENALTY; PROCEDURES APPLICABLE; PERSONS SUBJECT TO PENALTY; LIABILITY EXEMPTION PERIOD
 - Sets forth general requirements for monetary sanctions
 - Must first issue a non-monetary citation if target is non-licensee
 - If target is licensee or if citation has been issued otherwise,
 - First issue Notice of Apparent Liability for Forfeiture – establish notice
 - Permit opportunity to respond
 - Then may issue Forfeiture Order

Authority – Pertinent Communication Act Sections

- Section 510 - Forfeiture of communications devices
 - (a) Violation with willful and knowing intent. Any electronic, electromagnetic, radio frequency, or similar device, or component thereof, used, sent, carried, manufactured, assembled, possessed, offered for sale, sold, or advertised with willful and knowing intent to violate section 301 or 302a of this title, or rules prescribed by the Commission under such sections, may be seized and forfeited to the United States.
 - (b) Seizure. Any property subject to forfeiture to the United States under this section may be seized by the Attorney General of the United States upon process issued pursuant to the supplemental rules for certain admiralty and maritime claims by any district court of the United States having jurisdiction over the property, except that seizure without such process may be made if the seizure is incident to a lawful arrest or search. (
 - c) Laws applicable to seizure and forfeiture All provisions of law relating to— (1) the seizure, summary and judicial forfeiture, and condemnation of property for violation of the customs laws; (2) the disposition of such property or the proceeds from the sale thereof; (3) the remission or mitigation of such forfeitures; and (4) the compromise of claims with respect to such forfeitures; shall apply to seizures and forfeitures incurred, or alleged to have been incurred, under the provisions of this section, insofar as applicable and not inconsistent with the provisions of this section, except that such seizures and forfeitures shall be limited to the communications device, devices, or components thereof. (d) Disposition of forfeited property Whenever property is forfeited under this section, the Attorney General of the United States may forward it to the Commission or sell any forfeited property which is not harmful to the public. The proceeds from any such sale shall be deposited in the general fund of the Treasury of the United States.