ALE – Introduction

Gordon Gibby KX4Z NCS521

ref: JIM GROVE

What ALE does / Why Useful

- Can find a frequency on which you can hold texting or voice comms with a desired counterparty.
- Does this by real live on-the-air discoveries, both from hourly testing and immediate testing
- Unnecessary to have CHARTS, WEB PAGES, EXPERIENCE or KNOWLEDGE – extremely helpful to MILITARY for example – no expertise needed.
- Pick the desired recipient, push buttons.

Connections

- Can send short TEXT message (“AMD“) directly
- Can put you on an actual working frequency where it has already made digital contact with your counterparty – then you just talk via mic/speaker [I have minor experience with that]

How the magic happens

- Software is able to keep a list of allowed frequencies.
- It can keep multiple such lists, from which you may have to choose (particularly for SHARES)
- SOUNDINGS: on SHARES, and on some HAM, stations periodically send out “soundings“ announcing their presence
- Software maintains some knowledge of whom it has heard where, recently. It can utilize this.
- Software can also just “try every frequency“ in order, to find your counterparty.
- Stations should be “SCANNING“ – typically 2 frequencies/second or faster

Versions & History

- Evolved from “selective calling“ systems
- **Earliest versions** ~1970‘s 1980‘s?? - manufacturer specific, no interoperability
- **1986: 2nd Generation**: interoperability MIL-STD-188-141A
- Mostly government/military utilization
- Mid 1990‘s – prices began to fall, NGO utilization increasing
- **PC-ALE 2G softwre 2009**? N2CKH Steve Hadjucek
  - Download site and QRG file: https://hflink.com/pcale/

3rd Generation

- **Late 1990‘s – 3rd gen** big improvements: MIL-STD-188-141B, with backward compatibility to 2G, adoped in NATO STANG 4538.
- Very expensive, militaries adopted, far fewer NGO’s etc.
- Note: Typically ALE requires much tighter frequency accuracy than WINLINK methods, for example. WINLINK techniques typically accept +/- 100Hz and work fine – I’ve seen 10Hz specs for ALE. Tough to do at 20 Mhz.
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Enter ION2G

- Latest widely available computer-based ALE system
- 2G interoperability IL-STD-188-141B (ALE 2G)
- https://ion2g.appI (Download available there)
- Windows 10/11; Linux; MacOS.
- HF radios such as ICOM, YAESU, KENWOOD.
- Current beta release 0.9.8.5
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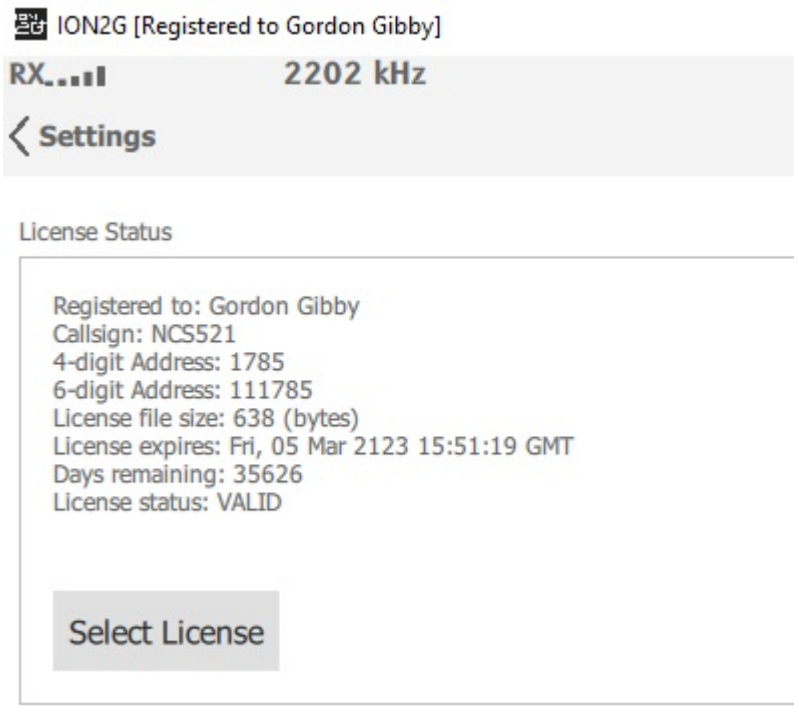
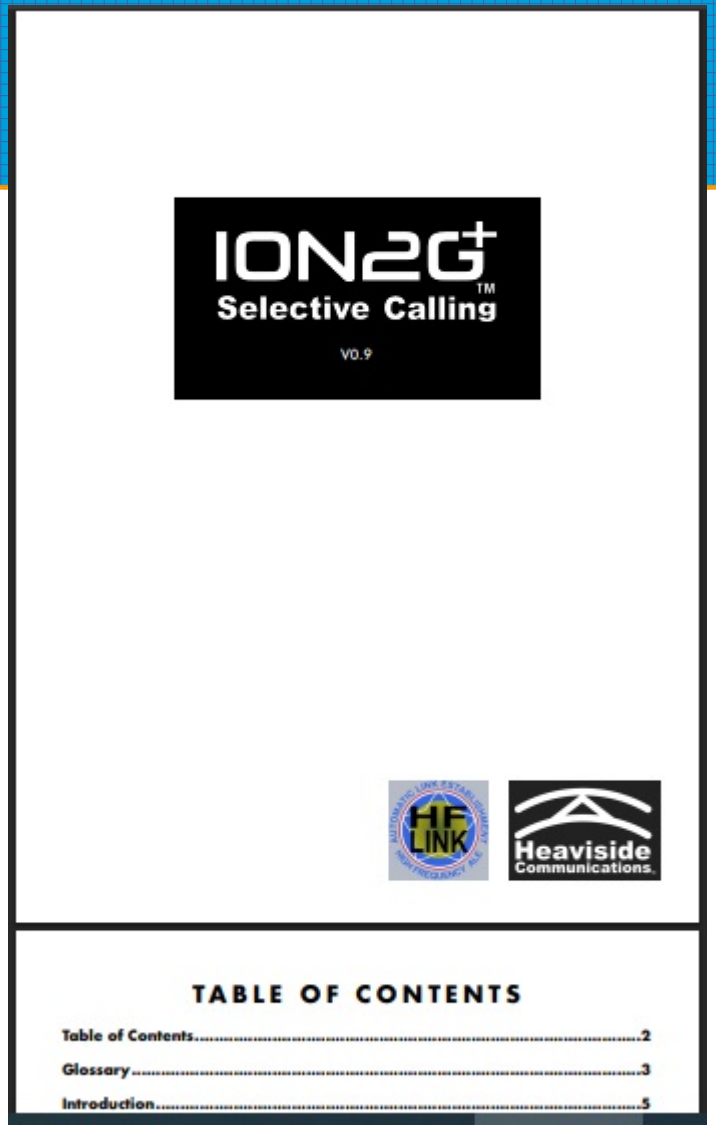
Licensing?

- Not required to play around with it
- $20 while in BETA, gives you „personalized permanent license“ and CCIR-493-4 SELCALL address assignment
- I registered for my SHARES call NCS521 and received a „license“ zipped file: ion2g-NCS521.lic
- This can be uploaded in part of SETTINGS in ION2G



Small Helpful Manual

- https://groups.io/g/fayetteares/attachment/1820/0/Ion2gMan.pdf
- Extremely helpful to ME
- Sent to me by JIM GROVE who is probably the local expert.
- Placed on our “educational articles“ page at https://www.nf4rc.club/
- https://www.nf4rc.club/how-to-docs/ion2g-basic-manual/



BASIC Settings

- Most setups are familiar to any digital operator
- Few new ones – settings for alerting operator
- Adding in ALE channels
- Self Address (for me, NCS521)
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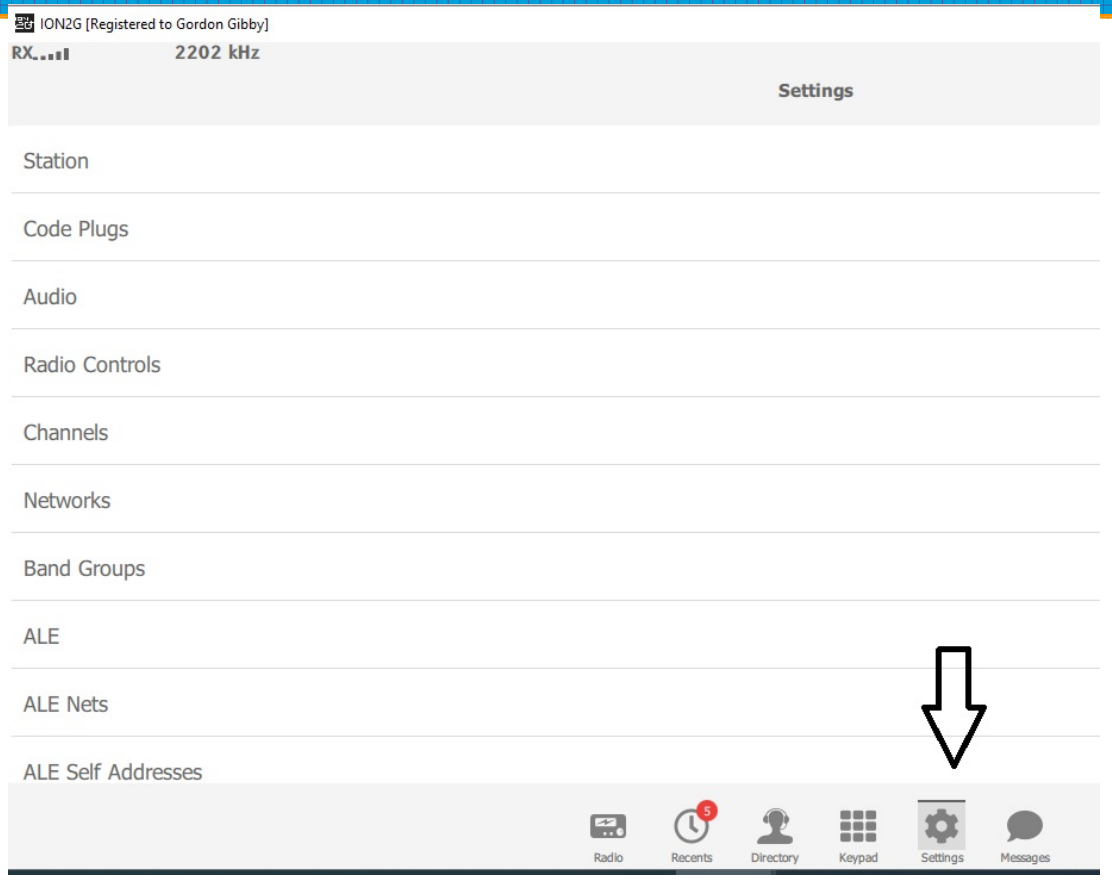
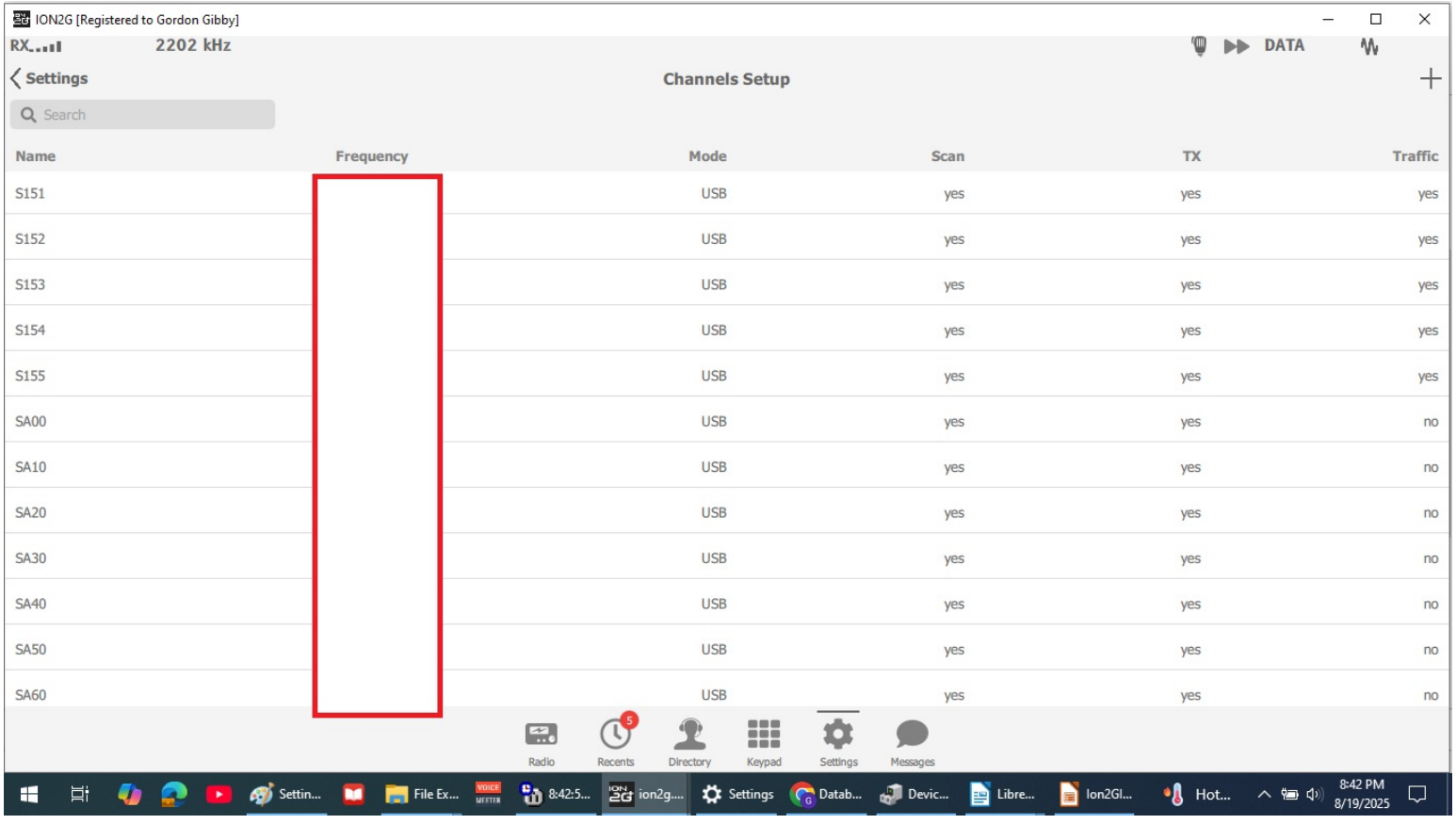


Settings | Channels

You will need a QRG file or similar to get all the SHARES frequencies.

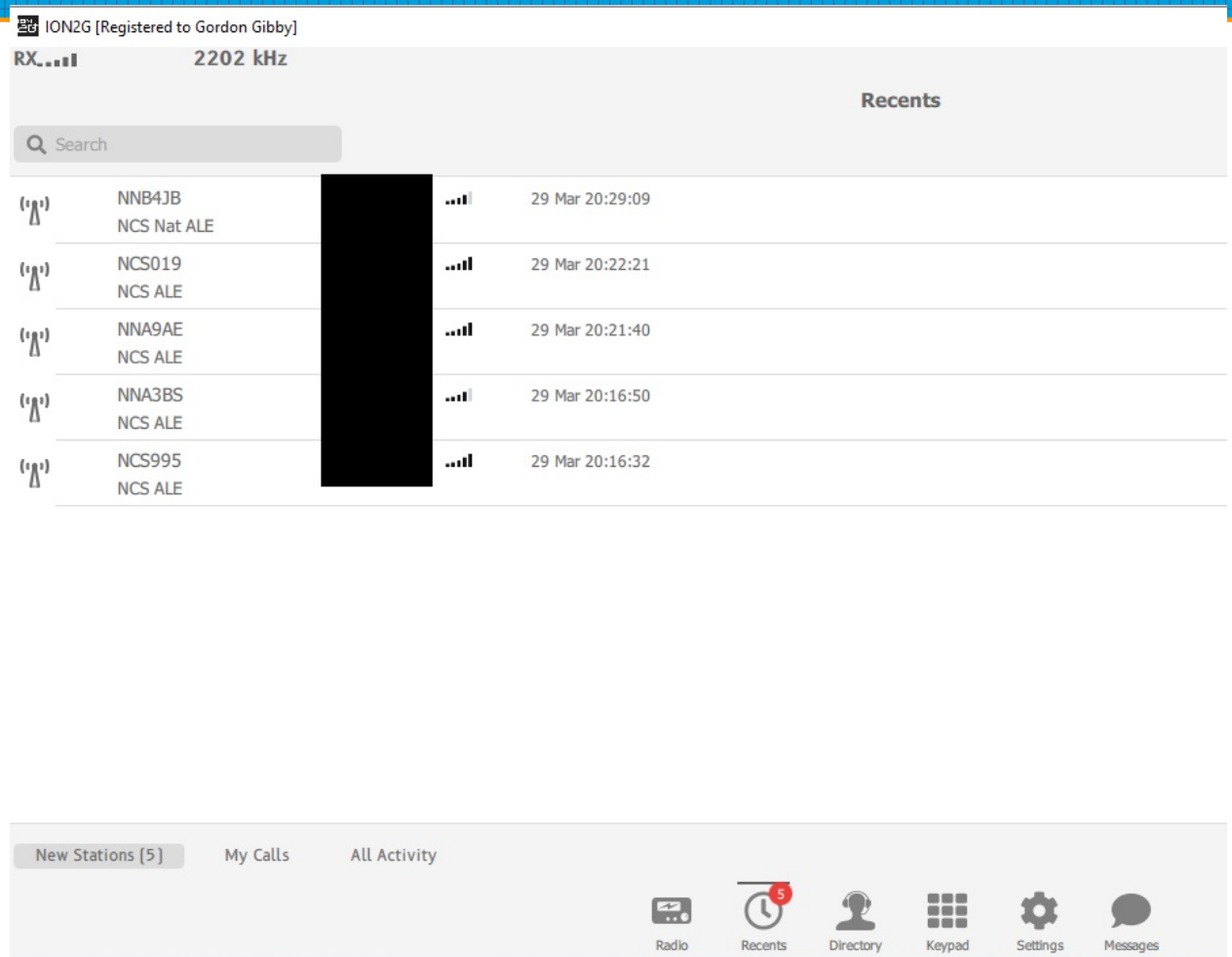
There are amateur ones as well, but I've not fiddled with them.



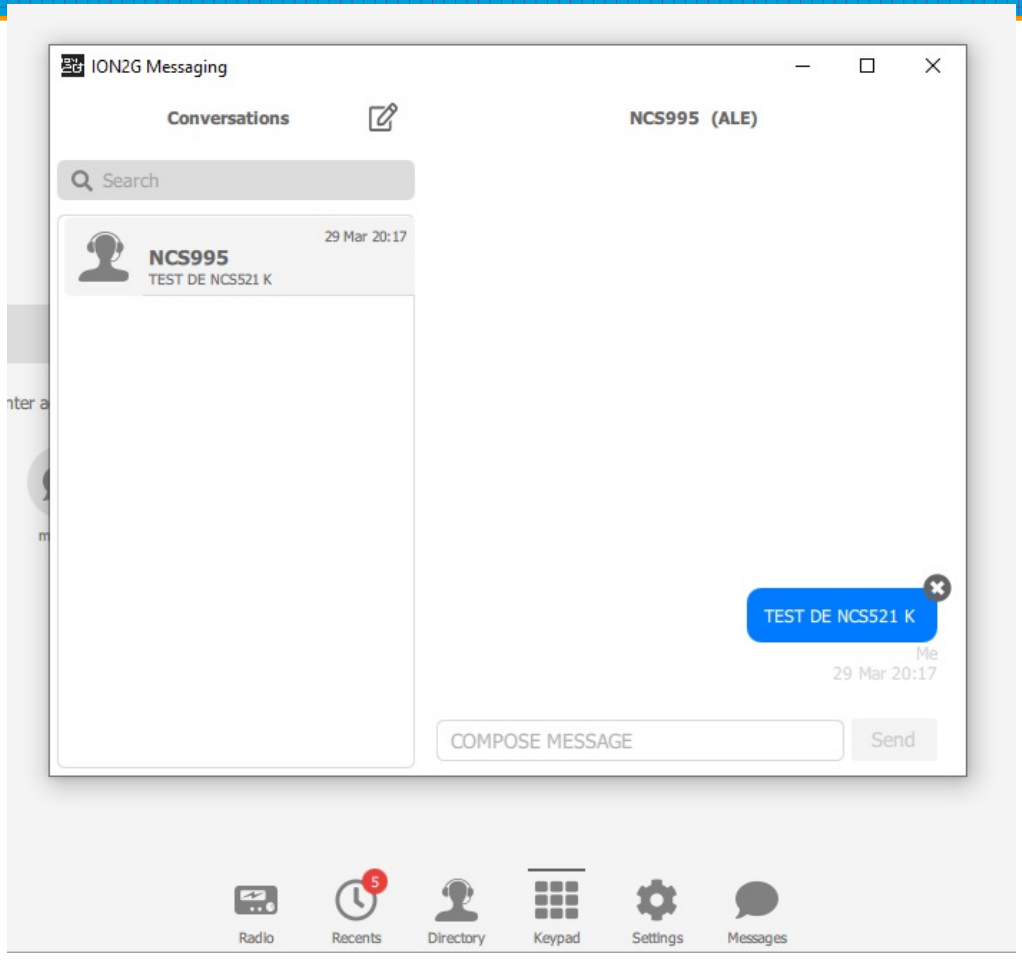
“RADIO“


ION2G [Registered to Gordon Gibby]
RX
2202 kHz
DATA
USB
AGC-F
O
RADIO
RADIO -- page I use the most. Here is where you can start "SCANNING"
SNK0
VOLUME UP
DOWN
UP
ASSETS
VOLUME DOWN
OK
SCAN
ATU
VOLUME MUTE
AUTO
BANDS
TX ENABLED
Waterfall
Radio
Recents
Directory
Keypad
Settings
Messages
8:47 PM
8/19/2025

“Recents“ – stations heard in scanning



Messages – how to have text over HF



Tips to make ALE work WELL

- Good radio – 100W, CAT control
  - I can get an sBitx to work when I have UART cable; wrote emulator for ICOM7300!
- Agree on which “NETS“ (list of frequencies) everyone will use IN ADVANCE
- GOOD ANTENNA – NVIS right? **Verticals POOR**
  - Need low loss AND wide band.
  - Autotuner that automatically remembers tuning can help
  - Tilted Folded Dipoles favored but that RESISTOR = LOSS
  - I chose a particularly long OCFD so that the impedance becomes somewhat stabiliized above some frequency

Problem: ALE needs constant operation

- Just like a WINLINK RMS
- If your radio isn't „ON“ then what is the point?
- Solving limited coax: ANTENNA MULTIPLEXERS
- Planning for nearby lightning protection

Limitations of ALE

- The calling / sounding system requires excellent frequency accuracy
- (More than non stabilized oscillators can produce)
- **NOT a “weak signal“ mode** – no where CLOSE to FT8 or FT4….
- (Likely bested by VARA!)
- Requires GOOD ANTENNA and SUFFICIENT POWER
- Requires FAST SCANNING / BAND CHANGES – diode switching is the best

Ham Adoption- limited

- Small group of followers: https://www.hflink.com/
- EXTREMELY USEFUL SITE
- Very dedicated folks
- Groups.io helpful: https://groups.io/g/hflink/topics
- Never really caught on for hams except special purpose. Most hams not interested in 24/7 connections to a specific, limited group of persons.
- Sounding on cw/data frequencies; they have Phone frequencies; not sure how they handle sounding. Likely legal „short data“ but unsure if common

Usefulness for SHARES

- Apparently many more STATIONS than HUMANS
- Best use is to allow very easy reliable connections between county EOCs, state resources etc. Known counterparties
- Need NVIS type antennas to succeed.
- Would be better if redesigned for better low-signal performance
- Once connected – you can switch to ANYTHING YOU WANT ON THAT FREQUENCY!! Consider VOICE, psk31, etc.