GMRS Radio Communication **Part 1**

Updated: 2026-03-12

bb2

A Class PDF is posted at www.peninsulaprepper.com

The PDF will have interactive links:

- Youtube links that are used in class
- Links to graphics used in class
- Links to recommended Handheld Radio Equipment

Class Overview

- What is GMRS – General Mobile Radio Service
- The difference between FRS, GMRS, and Ham
- How a repeater works
- How to get a GMRS license – No test required
- Inexpensive handheld radio recommendations, USB batteries

FRS vs GMRS

FRS

Family Radio Service

- No License Required
- Limited to **2** Watts
- No External Antennas
- No Repeater Access

Link

GMRS

General Mobile Radio Service

- License Required ($35)
- **50** Watts on Some Channels
- Can Use External Antennas
- Can Access Repeaters

Watts are the Electrical Energy your Radio puts out when you Transmit

GMRS

1-7 = 5 Watts

8-14 = .5 Watts

15-22 = 50 Watts

Repeaters = 50 Watts

Ch	Frequency	Name	Tone Mode
1	462.562500	GMRS1	
2	462.587500	GMRS2	
3	462.612500	GMRS3	
4	462.637500	GMRS4	
5	462.662500	GMRS5	
6	462.687500	GMRS6	
7	462.712500	GMRS7	
8	467.562500	GMRS8	
9	467.587500	GMRS9	
10	467.612500	GMRS10	
11	467.637500	GMRS11	
12	467.662500	GMRS12	
13	467.687500	GMRS13	
14	467.712500	GMRS14	
15	462.550000	GMRS15	
16	462.575000	GMRS16	

Ch = Radio Channel

CTCSS & PL--Tones

- **CTCSS** Tones and **PL** Tones are the same thing
- **CTCSS** = Continuous Tone Code Squelch System
- **PL** = Private Line

TSQL in Chirp means that tones are used to get into the repeater and that the repeater will transmit out with tones.

Dozens of repeaters can share the 8 repeater frequencies by choosing 1 of 50 different choices of tones for each frequency.

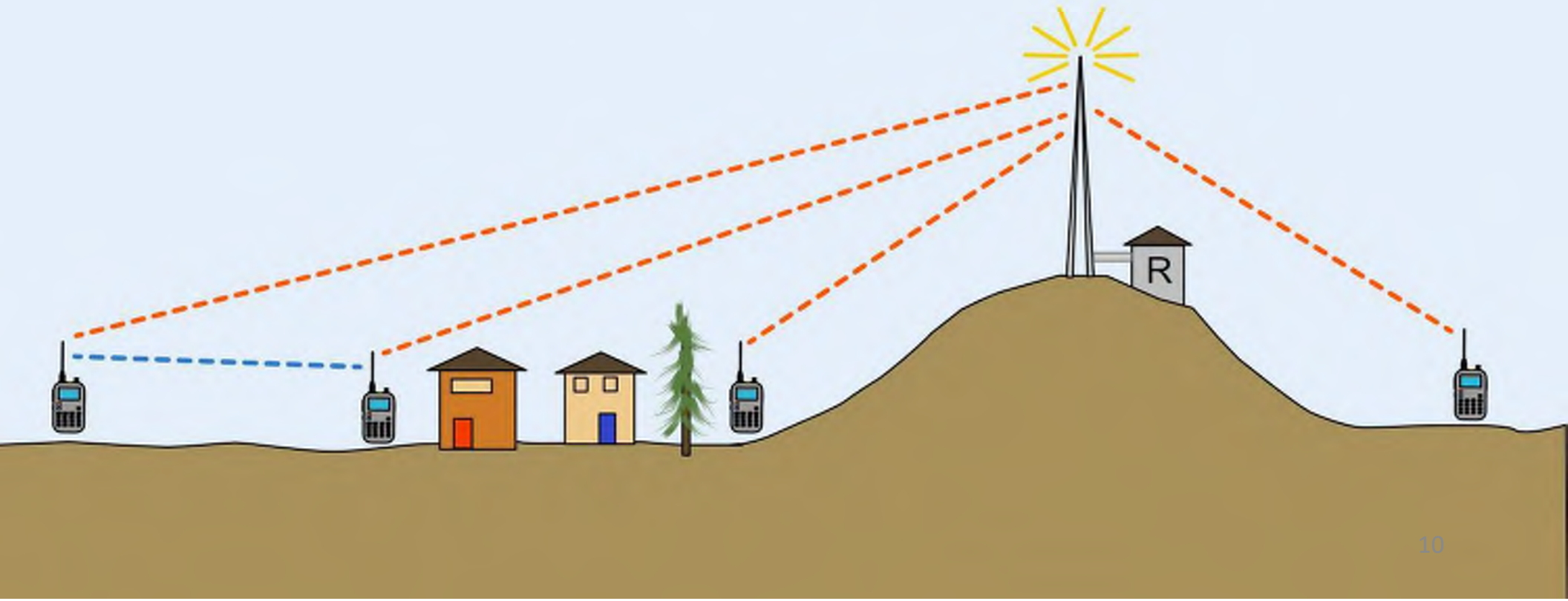
Green Channels = 50 watt max

Purple Stripe = Repeaters

CH	Frequency	Name	Tone Mode	Tone	Tone Squelch
13	467.687500	GMRS13			
14	467.712500	GMRS14			
15	462.550000	GMRS15			
16	462.575000	GMRS16			
17	462.600000	GMRS17			
18	462.625000	GMRS18			
19	462.650000	GMRS19			
20	462.675000	GMRS20			
21	462.700000	GMRS21			
22	462.725000	GMRS22			
23					
24	462.725000	TIM-LK-G	TSQL		210.7
25	462.675000	PEACK-G	TSQL		173.8
26	462.625000	TIGR-G	TSQL		141.3
27	462.600000	GOLD-G	TSQL		77.0
28	462.600000	OLYM-G	TSQL		141.3
29	462.600000	ROY-G	Tone	103.5	
30	462.575000	TAPP-G	TSQL		156.7
31	462.725000	SNOH-G	TSQL		141.3
32	462.650000	CANY-G	Tone	151.4	
33	462.575000	OPEN-G	TSQL		229.1

Repeater (Live Duplex / Rebroadcast)

Simplex (Direct Radio to Radio)



GMRS vs Ham

GMRS

General Mobile Radio Service

- License Required
- All Immediate Family members can use a single license
- Can Use External Antennas
- Can Access Repeaters
- GMRS Skills Carry Over to Ham
- Great Family Communications

Ham

Ham Radio Operator

- License Test Required
- 3 Levels of Licensing
- License Limited to Individual
- Out of State Coms.
- Expensive Equipment
- Can Use External Antennas
- Can Access Repeaters

Link

Getting a GMRS License

- Link to YouTube How-to **Video**
- Link to get a FCC FRN Number
- Link to get your GMRS License

FCC Radio Rules

- In an Emergency where Life and Property are threatened – Any Frequency – Any Power
- FCC Part 95
- Ham radios should not transmit on GMRS frequencies and GMRS radios should not be able to transmit on Ham Frequencies
- Link to NotaRubicon Video

What Radios do we Recommend?

Tidradio: TD-H3 & TD-H8

Features of Both Radios:

- 3 Operating Modes: Ham, GMRS, Ham & GMRS
- Bluetooth configuration with your cell-phone
- Battery can be charged with a USB-C
- Bright colored screens that can be seen outdoors
- Screens show: Frequency, Chanel Number, Name
- Chirp Compatible, Weather Stations, Commercial FM

TD-H3

- **Radio to Radio Configuration
- Bluetooth Configuration
- Two Transmit Buttons
- Transmits on 1.25 Meters
- Receives Air Band

TD-H8

- **Ham Radio Version (10 watts)
- Bluetooth Configuration
- Large buttons
- Three more face buttons
- Outdoor IP-65 Rating

Video Link: Comparison of H3 and H8

Tidradio has a new radio: TD-H9

Link Page to Hand-Held Radios & Antennas

Important Note:

The Tidradio TD-H3 and TD-H8 are each sold in a GMRS version and a Ham version. All of the radios are able to operate in 3 modes (Ham, GMRS, and Ham/GMRS)

With the Tidradio TD-H3 both the GMRS version and the Ham version appear to have the same performance level in all 3 modes. If you choose the TD-H3 I suggest purchasing the GMRS version because it has appears to have an FCC GMRS model number where the TD-H3 Ham version does not.

The Tidradio TD-H8 GMRS version and the TD-H8 Ham version have some differences. One is their performance levels. Both versions put out about 5 watts in the GMRS mode. The difference in performance level comes while in the Ham mode. The TD-H8 GMRS version is limited to about 5 watts when operating in Ham mode while the TD-H8 Ham version puts out about 10 watts while operating in Ham mode. Another difference is that the TD-H8 GMRS version has an FCC GMRS model number where the TD-H8 Ham version does not. Deciding between the two versions of the TD-H8 will depend on individual preference.

TD-H3 Amazon Links

Link 1

Link 2

TD-H8 Amazon Links

Link 1

Link 2

15” Tidradio GMRS Antenna Link

15” Luiton GMRS Antenna Link

Note: some 15” Tidradio GMRS Antennas will be available in class for $3

- **Extended Length Antenna options / SWR as tested by Bob on 2025-01-15 (lower is better)**
  - $3 Tidradio GMRS 15” - SWR: GMRS = 2.0, UHF = 2.7, VHF = 3.4
  - $10 Luiton GMRS 15” - SWR: GMRS = 1.1, UHF = 2.1, VHF = 2.2

Part 2

- Programming Radios
- Talking on the Radio

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- YouTube links that are used in class

Programming Profiles for TD-H3 & TD-H8

GMRS Channels

CH	Frequency	Name	Tone Mode	Tone	Tone Squelch
1	462.562500	GMRS1			
2	462.587500	GMRS2			
3	462.612500	GMRS3			
4	462.637500	GMRS4			
5	462.662500	GMRS5			
6	462.687500	GMRS6			
7	462.712500	GMRS7			
8	467.562500	GMRS8			
9	467.587500	GMRS9			
10	467.612500	GMRS10			
11	467.637500	GMRS11			
12	467.662500	GMRS12			
13	467.687500	GMRS13			
14	467.712500	GMRS14			
15	462.550000	GMRS15			
16	462.575000	GMRS16			
17	462.600000	GMRS17			
18	462.625000	GMRS18			
19	462.650000	GMRS19			
20	462.675000	GMRS20			
21	462.700000	GMRS21			
22	462.725000	GMRS22			
23					

Local GMRS Repeater Channels - Frequencies and PL Tones (G is for GMRS)

22	462.725000	GMRS22			
23					
24	462,725000	TIM-LK-G	TSQL		210.7
25	462.675000	PEACK-G	TSQL		173.8
26	462.625000	TIGR-G	TSQL		141.3
27	462.600000	GOLD-G	TSQL		77.0
28	462.600000	OLYM-G	TSQL		141.3
29	462.600000	ROY-G	Tone	103.5	
30	462.575000	TAPP-G	TSQL		156.7
31	462.725000	SNOH-G	TSQL		141.3
32	462.650000	CANY-G	Tone	151.4	
33					
34					
35					

Simplex 50-Watt GMRS Channels
(S is for Simplex)

43		
44		
45	462.675000	PEACK-S
46	462.550000	LEADR-S
47	462.575000	BELFR-S
48	462.600000	CRESVL-S
49	462.625000	GIGHBR-S
50	462.650000	KEYCTR-S
51	462.700000	OLLALA-S
52	462.725000	WOLLCT-S
53		
54		

Local Ham Channels
(V is for VHF / U is for UHF)
Note: Ham are channels 60 and above

59					
60	146.820000	TIGR-V	Tone	103.5	
61	146.620000	GOLD-V	TSQL		103.5
62	442.650000	GOLD-U	Tone	103.5	
63	145.170000	BELF-V	Tone	103.5	
64	145.470000	CAPT-V	TSQL		100.0
65	146.475000	COUG-V	TSQL		110.9
66	441.925000	SHLT-U	TSQL		100.0
67	146.720000	SHLT-V	Tone	103.5	
68	442.375000	UNIVP-V	Tone	103.5	
69	145.350000	PURDY-V	Tone	103.5	
70	440.225000	PURDY-U	Tone	103.5	
71	145.350000	ARESP-V	Tone	103.5	
72					

1.25 Meter

78					
79					
80	224.120000	East Tig	Tone	103.5	
81	224.340000	West Tig	Tone	110.9	
82	224.440000	Cougar M	TSQL		103.5
83	224.180000	W7E-GRAH	Tone	103.5	
84	224.420000	WA6-BAIN	Tone	88.5	
85	224.760000	BAL-ENUM	Tone	103.5	
86	224.200000	W7T-PORT	TSQL		123.0
87	224.260000	NM7E-MC	Tone	103.5	
88					
89					
90	146.520000	2m Call			
91	446.000000	70cmCall			
92					

Channel 91: VHF Call Channel
Channel 92: UHF Call Channel

NOAA Weather Channels

187		
188		
189	162.550000	NOAA1
190	162.400000	NOAA2
191	162.475000	NOAA3
192	162.425000	NOAA4
193	162.450000	NOAA5
194	162.500000	NOAA6
195	162.525000	NOAA7
196	161.650000	NOAA8
197	161.775000	NOAA9
198	161.750000	NOAA10
199	162.000000	NOAA11

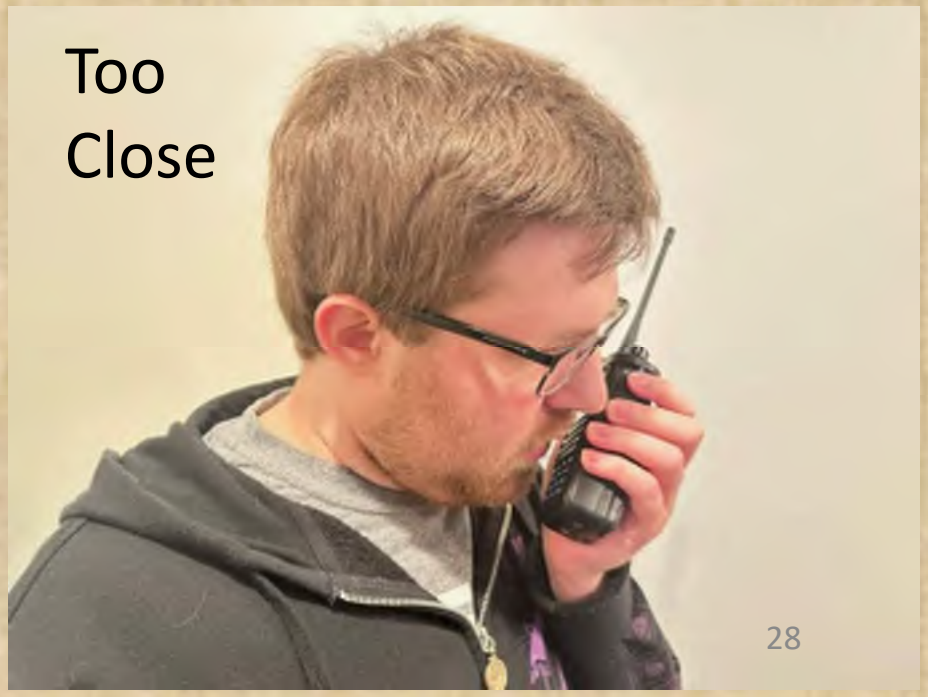
- Press the PTT button for about 2 seconds before speaking
- Speak slightly louder than normal
- Stay about 3-6 inches from the microphone
- Keep the antenna vertical
- Hold your position while you speak

Correct Distance

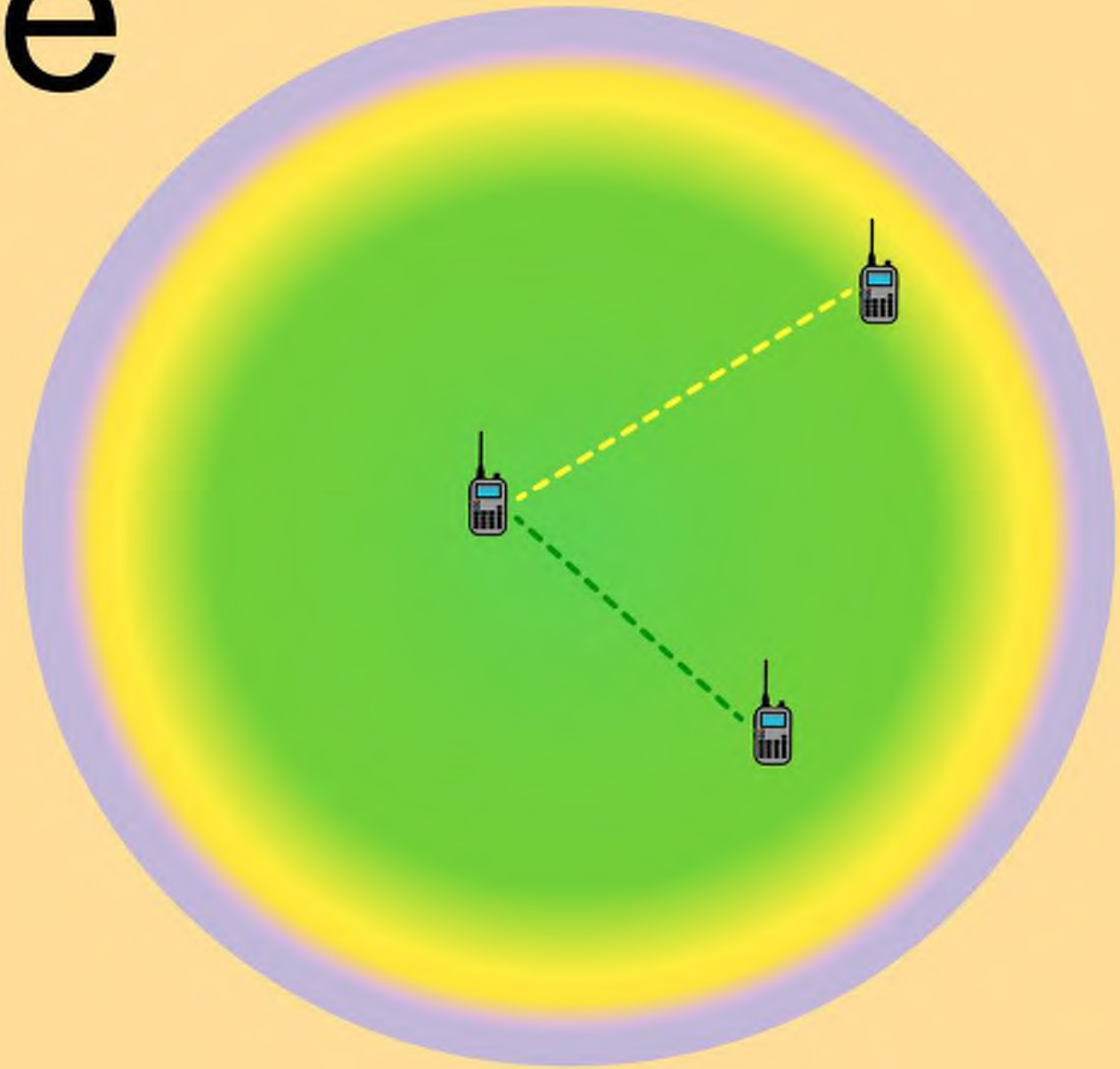
Radio needs to be vertical

Too far away

Too Close



Fringe

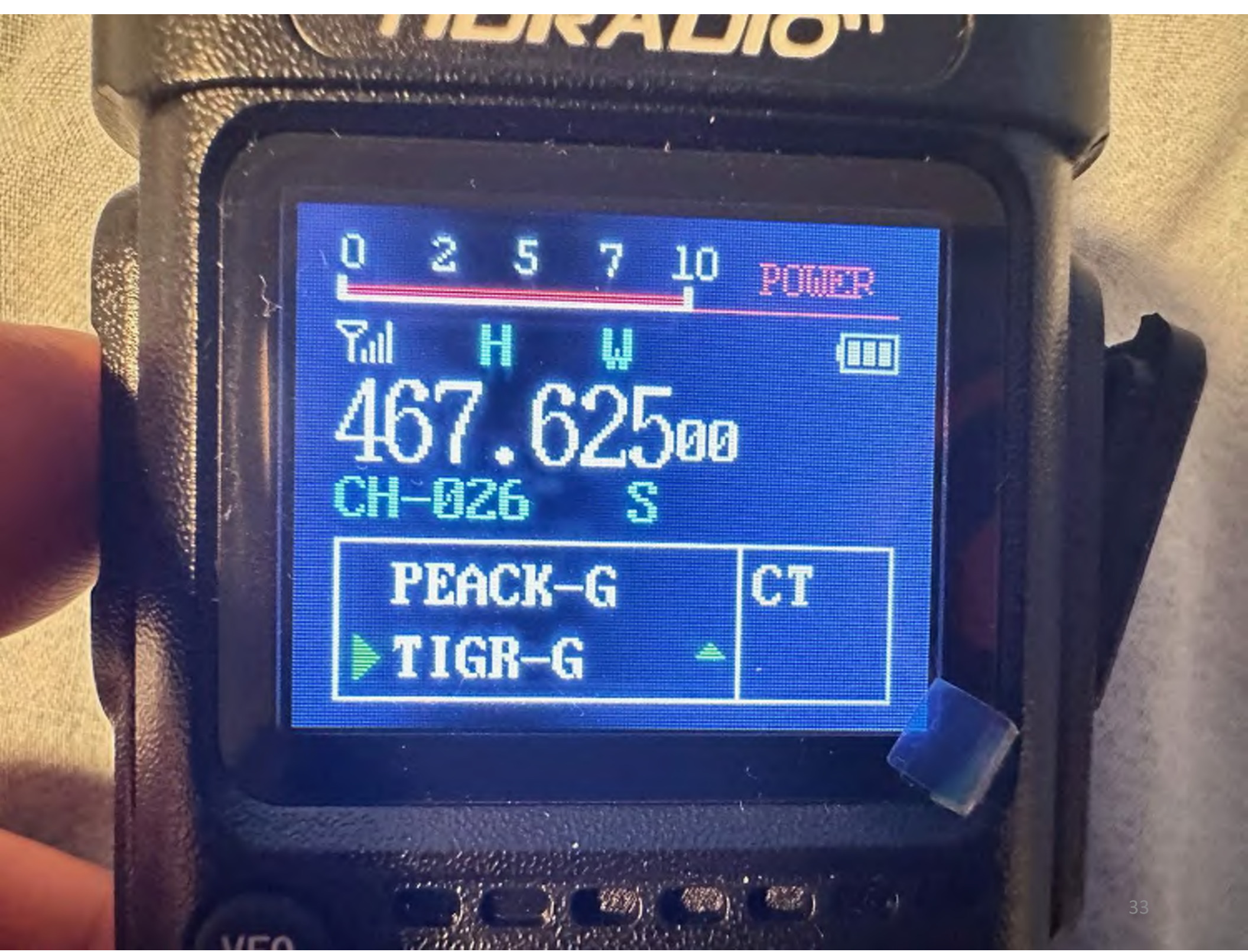


Good radio practices will help you stay in contact when you are on the fringe.


TIDRADIO
PCN_2025-01-30DU
Your Name
Your Callsign
VFO
MR


0 2 5 7 10 POWER
H W
462.67500
CH-025 S
PEACK-G
CT
PEACK-G


0 2 5 7 10 POWER
H W
462.62500
CH-026 S
PEACK-G
TIGR-G
CT


0 2 5 7 10 POWER
H W
467.62500
CH-026 S
PEACK-G
TIGR-G
CT

What is a Radio Net?

A meeting on the radio with a predetermined Time and Frequency

Demo

- Signal Checks
- Comment

Sample Signal Check "This is (your callsign) for a signal check" I would appreciate feedback from anyone who is monitoring"

Note: Do not overuse Signal Checks to create conversations!

Local GMRS Repeater

- **Pierce County Peninsula - Peacock Repeater**
  - **Practice Net Today Only 5:00 PM**
  - **Social Net: Every Monday 5:30 PM**
  - **Emergency Practice Net: Every Tuesday 6:30 PM**
- **Kitsap County – Gold Mountain Repeater**
  - **Net: Saturday 6:00 PM** (Kitsap County Armature Radio Club)
- **King County – Cougar Mountain**

(A Net is a regularly scheduled meeting on a predetermined radio frequency)

Local GMRS Nets:

- Monday 5:30 PM (Ch. 25) Peacock Repeater – Peninsula Community Social Net
- Tuesday 6:30 PM (Ch. 25) Peacock Repeater – Peninsula Community Team Emergency Net
- Saturday 6:00 PM (Ch. 27) Gold Mountain Repeater – Gold Mt Social Net

Local Ham Nets (Monitor Only):

- Monday 7:00 PM (Ch. 71) Peninsula ARES Net (Armature Radio Emergency Services)
- Monday 7:00 PM (Ch. 63) North Mason County Amature Radio Club Social Net
- Daily 7:00 PM (Ch. 60) Mike & Key Social Net (Wednesday is Radio Tech Net)

Part 3

- Programming: Chirp, RT Systems, Odmaster, and Radio-to-Radio
- Mobile and Base Stations
- Antennas and SWR
- Cable and Connections
- Next Step Ham Radio

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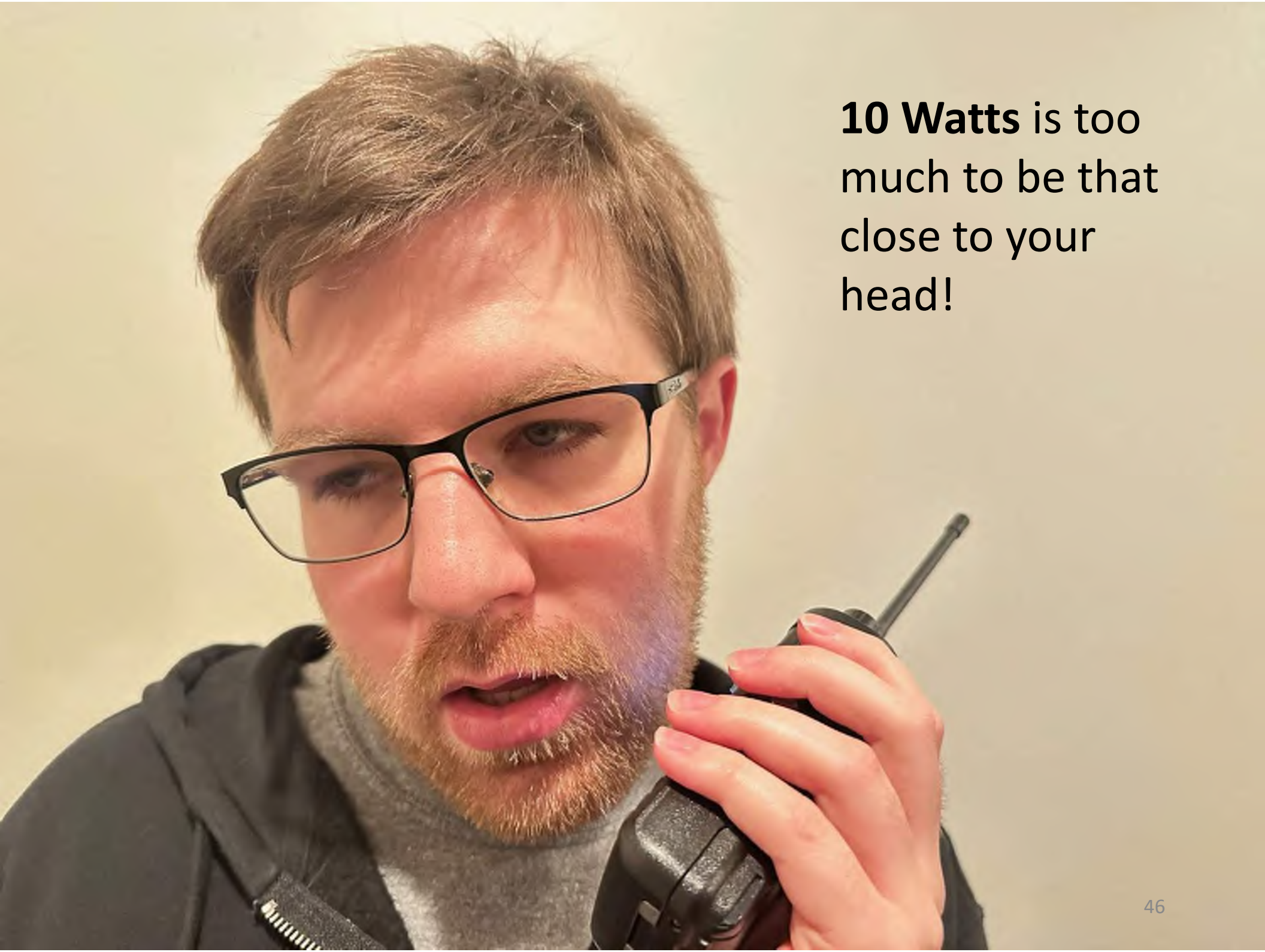
Chirp – Free Open Source Software for Radio Programming

RT Systems - Software for Specific Radio Programming (usually about $25 for the software and $25 for the programming cable

Odmaster – Tidradio's Bluetooth Mobile App (positives and negatives)

Direct Radio-to-Radio Copy – Total Radio Configuration from One Radio to Another


10 Watts is too much to be that close to your head!

Radioddity DB25-G & QB25

Retevis RT-95

Radioddity DB-50

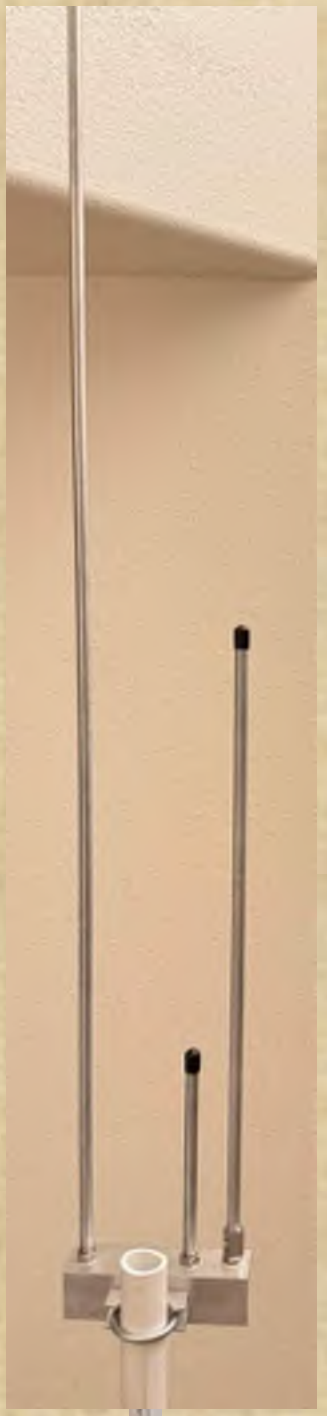
Radioddity DB-50

Wouxum KG-1000G Plus

Comet CA-2X4SR-NMO

Comet 680SB -NMO

J-Pole Antennas



SWR Meter- Dummy Load

SWR Meter - Antenna

From Left to Right

- RG316
- RG58
- RG8X

- Upper Cable is RG8X
- Lower Cable is LMR400 or Equivalent

Male / Female
Threads vs Conductors

Common Cable Connectors

From Left to Right: SMA Male, SMA Female, BNC Male, BNC Female, PL259 Male, SO239 Female, N-Type Male, N-Type Female

Note: The SO239 Female and the PL259 Male are also called UHF connectors and are very common.

Ham Study Books

hamstudy.org

- Study online
- Take tests at home
- Great Mobile Study App

Repeaters

Repeater Operation: A radio will need to have the repeater settings programmed in to use this operation. The repeater mode allows users to communicate at much farther distances then the simplex mode. **The Peninsula Community Team** uses the **Peacock Repeater** WRPR468 located on Peacock Hill near Gig Harbor. The Peacock Repeater frequency and tone settings that need to be programmed into a radio are as follows: The frequency is **462.675000**, the tone mode is TSQL, the tone squelch is **173.8**, the offset is **5.000000**

Every Tuesday evening at 18:30 hours The Peninsula Community Team meets on the Peacock GMRS Repeater for a **practice emergency net** (an on-radio meeting). The purpose of the Peninsula Community Team is for Emergency Preparedness. We do a net roll call and usually have a social aspect of the net so that people can get comfortable speaking on the radio. On Monday at 17:30 hours we meet for a **social net.** Both nets are good opportunities for people to talk on the radio and to find out if their radio equipment is working properly.