

Cupertino Citizen Corps Field Communications Handbook

October 2022



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Rev: 221021

Notes

11 CERT Field General Go-Kit

1. Current Citizen Corps ID
2. Protective clothing
3. Safety Vest
4. Sturdy closed-toe shoes
5. Hard hat
6. Goggles
7. N95 mask
8. Whistle
9. Leather gloves
10. Personal first aid kit
11. Water and food
12. Sun block as needed
13. Clipboard
14. Pens (2)
15. Pad of 8.5" x 11" paper
16. ICS Forms: 211, 213, 214
17. Cupertino Forms: COES 105, 106
18. Flashlight and Batteries
19. AM Radio (portable)
20. FRS/GMRS Radio
21. Tape (i.e.: blue painters' tape)
22. ARK Activation Handbook
23. CCC Field Communications Handbook
24. Whatever else you may need

1 Contact Information

Telephone Numbers

Fire, Ambulance, other Emergency	9-1-1, or 408-299-3233
Cupertino City Office	408-777-3200
Emergency Manager	408-777-1310
Citizens Corp Coordinator / DOC	408-777-3176
CARES Emergency Coordinator	408-839-8798
MRC Emergency Coordinator	
Cupertino Public Works Support (After Hours)	408-299-2507
Union Pacific Railroad, Gate Crossing problems	800-848-8715

2 Channels and Frequencies

Function	Ch/Tone	Notes
Monta Vista ARK	1 / 21 (136.5Hz)	2w, Zone 1
Regnart ARK	2 / 22 (141.3Hz)	2w, Zone 2
Garden Gate ARK	3 / 23 (146.2Hz)	2w, Zone 3
Lawson ARK	4 / 24 (151.4Hz)	2w, Zone 4
DeAnza ARK	5 / 25 (156.7Hz)	2w, Zone 5
Creekside ARK	6 / 26 (162.2Hz)	2w, Zone 6
EOC Trailer	7 / 27 (167.9Hz)	2w, Trailer
CERT TAC 8	8 / 0	0.5w
CERT TAC 9	9 / 0	0.5w
CERT TAC 10	10 / 0	0.5w
CERT TAC 11	11 / 0	0.5w
CERT TAC 12	12 / 0	0.5w
CERT TAC 13	13 / 0	0.5w
CERT TAC 14	14 / 0	0.5w
Comm 469 TAC 15	15 / 35 (225.7Hz)	50w, ICP, EOC
CUP CERT/GMRS*	20R / 31 (192.8Hz)	50w, Repeater
SJ Local Repeater	21R / 22 (141.3Hz)	50w, Repeater
SJ CERT/GMRS	22R / 16 (114.8Hz)	50w, Repeater

***NOTE:** This repeater should not be used operational traffic.

3 Emergency Alert System, stations of interest

KCBS	740 KHz	LP1, National Primary EAS Station
KFBK	1530 KHz	CA State Primary EAS Station
KLIV	1590 KHz	Public AM Station, a CNN affiliate
WQGH344	1670 KHz	Cupertino Community Radio

4 Radio Operations Basics

4.1 In General

1. Operating a radio is about 90% listening and 10% talking.
2. If you are too busy to pay attention to what is happening on the radio, then assign this task to someone else.
3. To transmit a message:
 - i. Listen first, wait for a pause, and then...
 - ii. Press and hold the radio's PTT (Push-to-Talk) button.
 - iii. Take a deep breath and pause before speaking.
 - iv. Speak slowly and clearly.
 - v. Keep your messages as short and succinct as possible.
 - vi. Talk in plain English... no 10-codes (10-4,10-20)
4. Do not shout. If station cannot hear you, move to another location.
5. When you're done, release the PTT, and then wait.

4.2 Operating on the CERT Radio Net

1. We always want to know who is on the channel, where you are, what you are doing, and if you are OK. We do this by choosing a radio channel for this ARK on which we all will operate. See the channel assignments earlier in this guide.
2. A **Radio Net** is a moderated conference call conducted over two-way radio on a specific channel.
3. The **Net Control Operator** is the person who runs the net.
4. Every station on the channel will use a name. This name could be your neighborhood street, or it could be assigned by the ARK such as **Team 3, First Aid, Search 4**, etc. If you or your team was not assigned a name, then use your first name.
5. **Check In** to the local ARK Radio Net if you are at home and have a radio, or if you are assigned a task at the ARK. This does a few things:
 - i. let's the ARK's Net Control know who is on the Net

10 Modified Mercalli Intensity Scale (MMI)

I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved or overturned. Dishes, glassware, knickknacks, and books fall off shelves. Weak plaster, adobe buildings, and some poorly built masonry buildings cracked. Damage slight.
VII	Very Strong	Negligible damage in buildings of good design and construction. Slight to moderate damage in well-built ordinary structures. Considerable damage in poorly built or badly designed structures. Some chimneys broken. Fall of plaster, loose bricks, stones, tiles, cornices, unbraced parapets and porches. Some cracks in better masonry buildings.
VIII	Severe	Considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Wood-frame houses moved on foundations if not bolted; loose partition walls thrown out. Tree branches broken.

Ref: <https://pubs.usgs.gov/gip/earthq4/severitygip.html>

9 Phonetic Alphabet & Numbers

A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliet	W	Whiskey
K	Kilo	X	X-Ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

0	zero (ZEE-row)	5	five (Fife)
1	one (Wun)	6	six (Sicks)
2	two (Too)	7	seven (SEV-vin)
3	three (Tree)	8	eight (Ate)
4	Four (FOH-wer)	9	nine (NINE-er)

- ii. confirms you have your radio set correctly with the correct Channel and Tone for your ARK.

Example

If you are...	You would say...
Sam	This is Sam, Net Control at Creekside ARK. Any Zone 6 FRS stations, please check in now.
Bob	Creekside ARK, this is Bob at Bollinger and Miller, checking in.
Creekside ARK:	OK Bob, I have you checked in.
Angie	Creekside ARK, this is Angie at Hyde neighborhood, checking in.
Creekside ARK:	Hi Angie, acknowledged.

6. **Check Out** of the local ARK Radio Net when you need to leave the net or back at the ARK. This does a few things:
 - i. Let's the ARK's Net Control know you are leaving the Net
 - ii. We won't worry about you anymore!
 - iii. Checking out does not mean that you may be done with your participation, just that Net Control will no longer look for you on the Net.

Example

If you are...	You would say...
Bob	Creekside ARK, this is Bob, I need to leave the net, Checking out.
Creekside ARK:	OK Bob, acknowledged.
Angie	Creekside ARK, this is Angie back at the ARK. I am checking out.
Creekside ARK:	Hi Angie, acknowledged.
TEAM 3	Creekside ARK, this is TEAM 3. We are back at the ARK.
Creekside ARK:	TEAM 3, acknowledged. Are you checking out of the Net?

4.3 Passing Messages

Preparing the Message

1. Before transmitting, think of the message you want to send.
 - i. Organize your thoughts.
 - ii. If necessary, write the message down.
 - iii. Keep your message brief; there could be others on the channel with messages as well.
2. Do not pass victim or patient names over the radio unless asked for the name; these are public airwaves.

NOTE: There may be exceptions to this policy, such as matching up lost children with parents. Make sure the CERT Coordinator or Incident Commander approves any exceptions before starting.
3. If necessary, use the ICS 213 Message Short Form, phone message pad, or a piece of paper to create your message.

Passing a Message











1. Listen: Make sure the frequency is clear or Net Control is not talking to someone else who you might not hear.
2. Notify the ARK Net Control Operator that you have a message to pass. The Net Control Operator will tell when to pass the message.
3. To pass very short, simple messages, you send the entire text, and the receiving station may simply say “copied” or they may read the text back to you.
4. For longer messages, say the message in logical phrases of about 4 to 7 words, without repetitions.
5. Talk slowly. The receiving station needs to write this message down.
6. Say Break when pausing and release the PTT key while you wait for the receiving station to write down your message and acknowledge you.
7. Always release the PTT key if you stop talking.

To select a Privacy Code



This is a 2-step process:

NOTE: For CCC ARK operations, we will use ~ (for CTCSS) and the tones listed in the front of this guide.

(i) Set the tone type

1. Press and release the Menu  button  to place the radio in “Menu” mode.
2. Use the Microphone **Channel Up** ▲ or **Channel Down** ▼ button to scroll through the menu options until the LCD display shows **Pt**, then press the **Monitor/Scan**  \  button  to select it.
3. Use the Channel Up ▲ or Channel Down ▼ button to select the privacy tone type you would like to use:
 - a. **oF** for OFF – no tone is used
 - b. ~ for CTCSS – analog tone is used... **set this one**
 - c.  for DCS – digital tone is used... **NOT this one**
4. Press the **Monitor/Scan**  \  button  to confirm your selection.
 - The ~ (for CTCSS) or  (for DCS) icon will show on the LCD display, according to your selection.

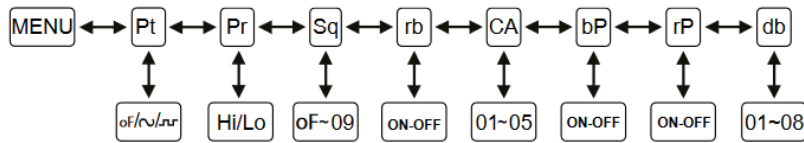
(ii) Set the Privacy Code

5. Then, use the **Channel Up** ▲ or **Channel Down** ▼ button to scroll forward or backward through the available Privacy Codes until the desired Privacy Code is shown on the LCD display.
6. When the desired Privacy Code is shown on the LCD display, press the **Monitor/Scan**  \  to confirm your selection.

NOTE: you must press Monitor/Scan to save your choice.

Menu Options

The MXT115 radio has a “Menu” mode that provides access to the features and functions shown in the chart below.



Pt	Privacy Tones - Use this option to set the privacy code.
Pr	Transmit Power Level - Use this option to change the transmit power level to Hi or Lo.
Sq	Squelch Sensitivity - Use this option to adjust squelch sensitivity.
Rb	Roger Beep - Use this option to set the option for the Roger Beep.
CA	Call Alert Tone - Use this option to select the Call Alert tone.
bP	Silent Operation - Use this option to set the option for the keypad audible “beep” tones.
rP	Repeater Channels - Use this option to turn on or off Repeater channels.
Db	Display Background - Use this option to select the color of the display background.

Basic Menu Controls

- Press **Menu** button to put the radio in “Menu” mode.
- Microphone **Channel Up** or **Channel Down** button to scroll through the menus or selected options.
- Press **Monitor/Scan** button to select a menu or confirms a submenu choice.
- **PTT**: Briefly pushing the Push to Talk button will take the radio out menu mode.

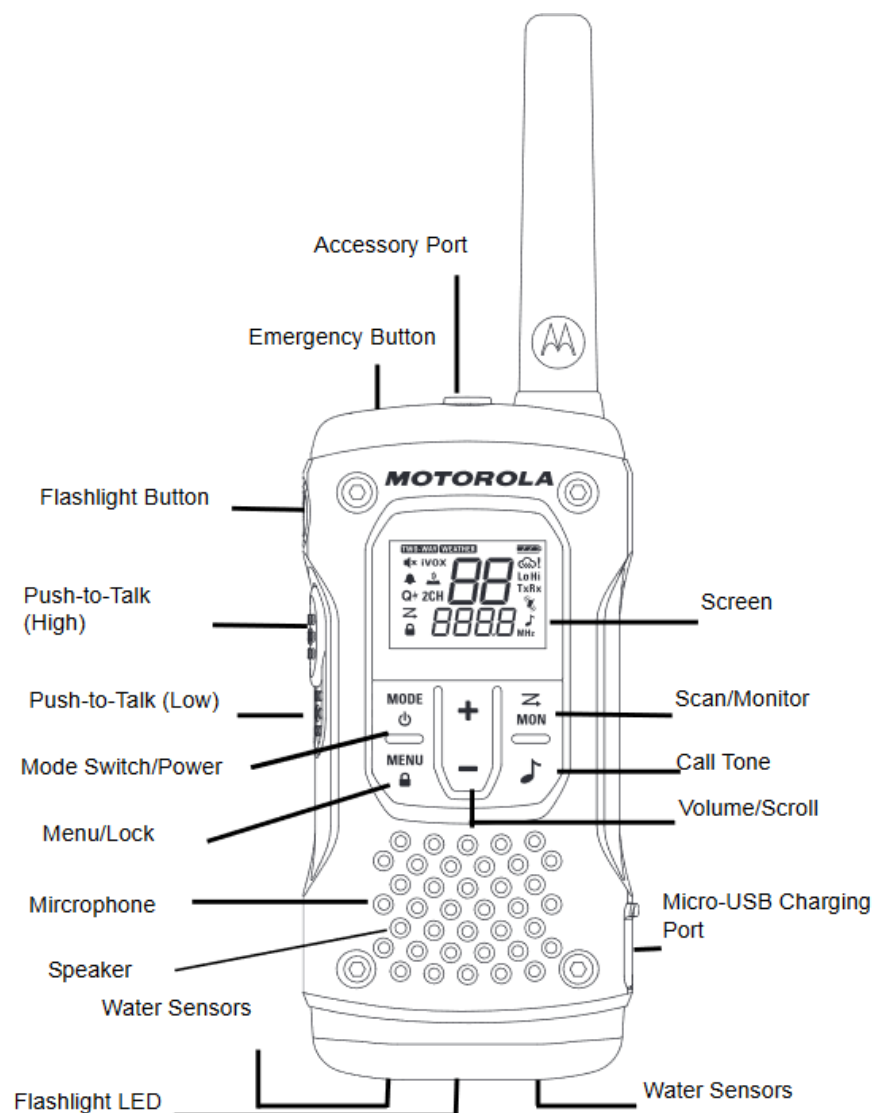
The following is an example of how the menu system works. All other menu choices work identically using the **Menu**, **Channel Up/Down**, and **Monitor/Scan** controls.

- Do not resume transmitting until the receiving station acknowledges the last transmission with something like “OK” or “continue” or something similar.
- Speak clearly and slowly. As a pacing guide, *ghost write* the message as you say it (not necessary to actually write it down again).
- Use the message passing prowords and the phonetic alphabet to spell items that cannot be understood reliably by pronouncing them.
- End the message with “End of Message”.

Example

If you are...	You would say...
Team 3	Creekside ARK, this is TEAM 3 with a message for you.
Creekside ARK	OK Team 3, wait... what is your message?
Team 3	Creekside ARK, A large tree is blocking the road... Break.
Creekside ARK	OK, continue
Team 3	... in front of 1236 Bollinger Road... Break
Creekside ARK	OK, continue
Team 3	... west of Miller Avenue. Break.
Creekside ARK	OK, continue
Team 3	Traffic is blocked both directions. End of Message.
Creekside ARK	Team 3, Acknowledge.

5.1 Introduction



Power On/Off

- To turn the radio ON: turn the **On/Off Volume** knob ② clockwise. You will hear a tone when the radio is on.
 - The LCD display will show all icons for one second and then display the most recently selected channel.
- To turn the radio OFF: turn the knob ② counter clockwise.
 - The LCD display will go blank when the radio turns off.



Selecting the Active Channel

- Be sure the radio is turned on (See *Power On/Off*).
- Press and release the microphone **Channel Up ▲** or **Channel Down ▼** button to scroll through the available channels.
- The Channel icon on the LCD display will show the active channel.

Transmitting and Receiving

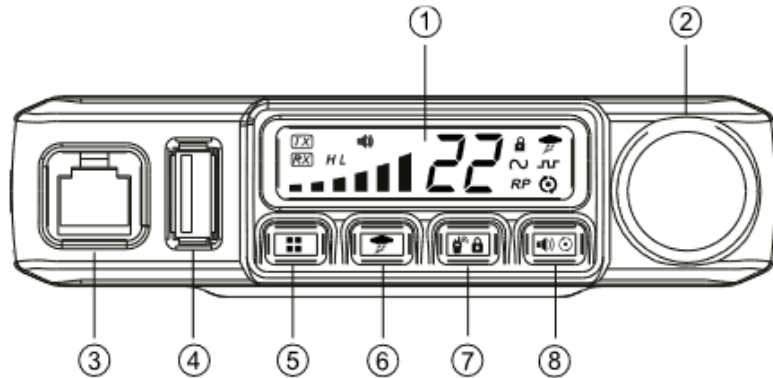
- Be sure the radio is turned on (see *Power On/Off*).
- NOTE:** For maximum clarity, hold the microphone 2 to 3 inches from your mouth when speaking.
- To transmit, press and hold the Push-to-Talk (PTT) button on the microphone and then speak into the microphone in a normal voice.
 - The **TX** icon will show continuously on the LCD display while transmitting.
 - To receive a call, release the PTT button on the microphone.
 - The **RX** icon will show on the LCD display when your radio is receiving a transmission.
 - If necessary, turn the volume knob clockwise or counter clockwise to increase or decrease the radio volume.

Locking the Keypad

- Press and hold ⑦ the **Call/Lock**  button for three seconds.
 - The Keypad Lock icon  will show on the LCD display when the keypad is "locked."
- Repeat to unlock the keypad.

The MXT115 GMRS 15 channel, 15-watt radio with 8 Repeater channels.

Controls and Indicators



1. LCD Display
2. On/Off Volume
3. Microphone Jack
4. USB Charging Jack
5. Menu - Press to access menu
6. Weather - Press to access weather mode
7. Call / Lock - Press to send a call signal, or long press (2 sec) to lock the keypad
8. Monitor / Scan - Press to enter scan mode, or long press (2 sec) to enter monitor mode

MXT115 Microphone controls

1. Channel Up ▲
2. Channel Down ▼



5.2 Common T600 FRS Radio Controls

The following describes how to operate the Motorola T600 radio:

Charging the FRS Radio

1. Two radios can be attached to one charger.
2. Open the mini-USB cover on the side of the radio
3. Connect the charger cable. Plug in the charger.
4. The radio battery indicator (upper right) will show solid when completely charged.

Turning the radio on and off

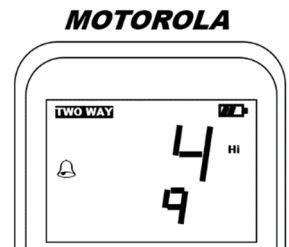
5. Press and hold the ^{MODE} button (top-left) to turn the radio **On** or **Off**.
6. The radio chirps and the display briefly show all icons available on your radio.

Set the Volume

7. In the middle of the radio, find the + and - buttons. Press the + button to raise the volume and the - button to lower the volume.
8. The volume number will show and increment every time you press either of these buttons.

Select a Channel

9. With the radio on, press the ^{MENU} button once. The current channel flashes (larger upper number on the display, 4 in this example).
10. Press the (-) or (+) buttons to select the channel.
11. Press (PTT) to save the channel setting.



Select the Tone Code

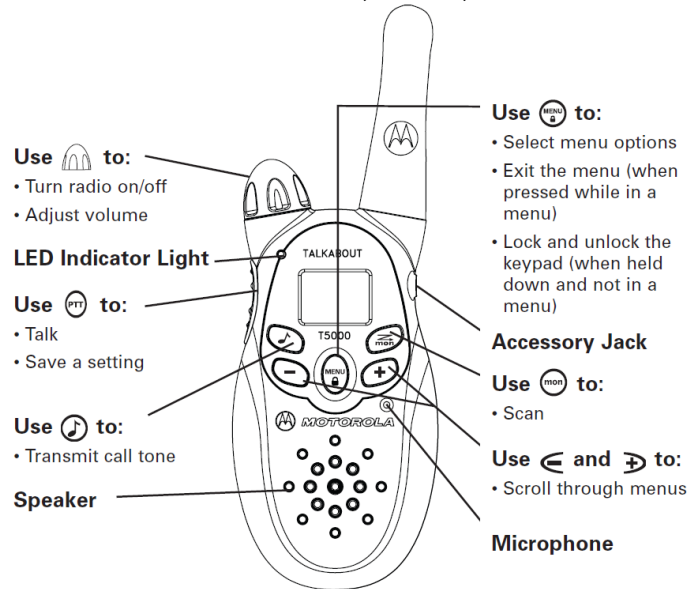
12. With the radio on, press the ^{MENU} button twice or until the tone code flashes (smaller lower number on the display, 9 in this example). The current tone code (lower number) flashes.
13. Press (-) or (+) buttons to select the tone code.
14. Press (PTT) to save the tone code with this channel.

Talking and Listening

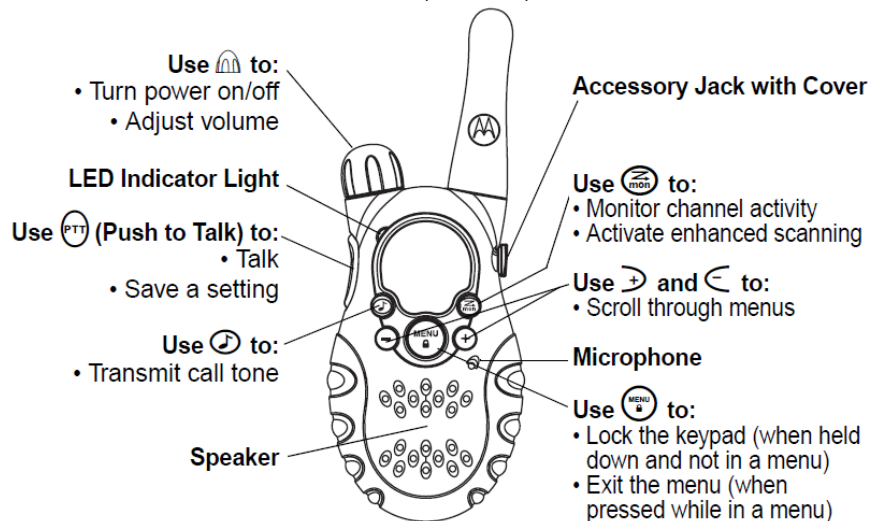
15. To talk, press and hold the Push-to-Talk button. Take a breath. Hold the radio 2 to 3 inches away from your mouth when talking.
16. When you finish talking, release the Push-to-Talk button.

6 Other FRS Radios

6.1 Motorola Talkabout T5000, T5500, T5550



6.2 Motorola Talkabout T5900, T5920, T5950



5. The battery pack will need periodic charging since the PCM does draw a small current to operate.
6. The LFP battery charger LEDs mean:
 - a. RED: battery is under Constant Current (CC).
 - b. GREEN: battery is under Constant Voltage (CV).
 - c. Once GREEN, the battery is around 80-90% capacity, but NOT full. Charge for at least 3 hours to get the battery to 100%.

LFP Battery DO's

1. Charge the battery every 8 to 10 weeks to keep the cells well equalized and balanced, and ensure that the battery is operable.
2. Charge the battery after any extended use.
3. Use only a LFP-compatible charger, such as the one provided with this radio pack.

LFP Battery DON'Ts

1. DO NOT rely on the battery voltage or charger LEDs as an indicator or remaining battery capacity.
2. NEVER use an AGM or Lead Acid battery charger as this could damage the battery.
3. DO NOT operate the radio with the charger plugged in. This will reduce the life of the battery.
4. DO NOT plug the battery into another battery or any other 12V power supply.

Battery Charging

1. Turn off the radio and radio pack meter.
2. Open the green radio pack parts bag and retrieve the LFP battery charger.
3. **FIRST:** Connect the LFP battery charger barrel connector to the Radio Pack plug marked LIFEPO4 BAT CHGR. This must be done first to wake up the charger.
4. **SECOND:** Plug in the power adapter to a power strip connected to commercial power or a generator.
5. See charger LED description above.
6. Always charge the battery for at least 3 hours.
7. When done, disconnect the battery charger and return it to the green radio pack parts bag.

- Press the “1” side of the rocker switch (between the AMPS and VOLTS display) to check the state of the Radio Pack battery. There is no need to leave this on.

Shutdown

NOTE: Leaving the radio or meter on will drain the battery.

- Turn off the radio.
- Turn off the meter display.
- Disconnect the coax cable from the radio pack.
- Depending on the ARK,
 - Monta Vista ARK: coil and secure the coax; place it inside the garage door.
 - All other ARKs: remove the mag mount from the ARK roof. Leave the antenna attached. Stow inside the ARK high on the ARK container wall.
- Leave the microphone attached. Coil the microphone cable as shown so that the cable is not pinched when you close the lid.



- Reattach the radio pack top.
- Close and lock the radio pack lid. Be careful not to pinch the mic cable. Return to the CERT Field Radio Pack.

About the LiFePO4 (LFP) Battery

- This pack uses a LFP battery that does not behave like an AGM Battery.
- The battery open circuit voltage range is 10.0 to 14.6vdc.
- The battery has a built-in Protection Circuit Module (PCM) that will prevent the battery from over charging or from being discharged too far.
- The battery will output a steady voltage around 12.8vdc until very little capacity remains. At about 10.0vdc, output voltage will be cut off to protect the battery.

6.3 Common T5000 FRS Radio Controls

Almost all FRS/GMRS hand-held radios have the same basic operating controls. The following describe how to operate these radios:

Turning the radio on and off

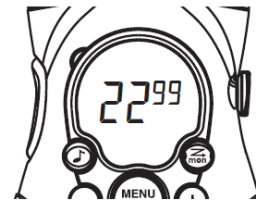
- Turn top-left knob clockwise to turn the radio on and counter-clockwise to turn the radio off.
- The radio chirps and the display will briefly show all feature icons available on your radio.
- For T600 FRS radios:** Press and hold the ^{MODE} button (top-left) to turn the radio On and Off.

Set the Volume

- Press and hold **(MON)** (monitor button) while rotating top-left volume control until you reach a comfortable listening level.

Selecting the Channel

- With the radio on, press the **(MENU)** button. The current channel flashes (larger number on the display, 22 in this example).
- Press the **(-)** or **(+)** buttons to select the channel.
- Press **(PTT)** to save the channel setting.



Selecting the Tone Code

- With the radio on, press **(MENU)** button until the tone code flashes (smaller number on the display, 99 in this example). The current tone code flashes.
- Press **(-)** or **(+)** buttons to select the tone code.
- Press **(PTT)** to save the tone code with this channel.

Talking and Listening

- To talk, press and hold **(PTT)**. Take a breath. Hold the radio 2 to 3 inches away from your mouth when talking.
- When you finish talking, release **(PTT)** (press to talk, release to listen).

7 Field Radio Pack

7.1 Introduction

This CERT Field Radio Pack is a self-contained system for deploying communications into the field with Citizen Corps resources.



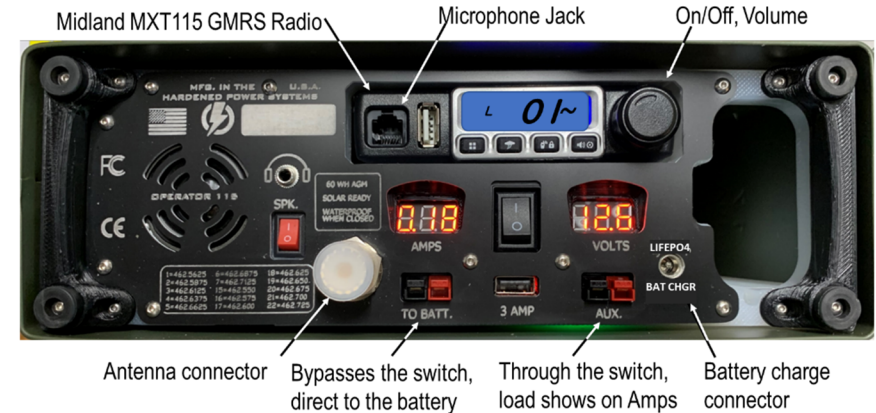
The CERT Field Radio Pack is made up of the following components:

1. GMRS Radio Pack. This case contains the following:
 - a. Hardened Power Systems (HPS) radio case; a 30 Caliber water-proof enclosure; built-in a 6Ah LiFePO4 (LFP) battery.
 - b. GMRS Base Radio; Midland MXT115 GMRS radio.
2. Motorola T600 FRS radios, qty 4 or 8.
3. Radio pack parts support bag. Contains the (i) GMRS battery charger, (ii) FRS chargers, 1 for each pair of radios, (iii) GMRS and FRS radio manuals, (iv) backup radio antenna and auto power adaptor.
4. Antenna.
 - a. For the Monta Vista ARK, an external fixed mount 6dB gain antenna mounted on the Fire Station roof.

- b. For all other ARKs, a UHF Mag Mount and 6dB gain NMO mount antenna stored in the ARK.

7.2 GMRS Radio

The Midland MXT115 radio, HPS case, and internal 6Ah LFP battery, makes this package self-contained.



Radio Enclosure Controls

1. External headphone jack with a switch to turn off the external speaker.
2. Battery charger port for the LiFePO4 battery charger.
3. Main switch that turns off the meters, but allows the radio to work.
4. Power ports:
 - a. To Batt: direct connection to the battery
 - b. Aux: controlled by the center switch
 - c. 3 AMP: USB port for powering or charging peripheral devices

Setup

1. Retrieve the CERT Field Radio Pack from the ARK.
2. Remove the GMRS Radio Pack. Open the lid and set aside.
3. Set up the GMRS Antenna at Monta Vista ARK
 - a. Locate the coax cable just inside the garage door.
4. Set up the GMRS Antenna at all other ARKs
 - a. Retrieve the GMRS mag mount antenna from the ARK. Make sure the antenna is screwed to the mag mount base.
 - b. Using a step ladder, carefully place the mag mount antenna on top of the ARK close to where you will be operating. Make sure the space where you want to attach the antenna is clear of debris.
5. Connect the antenna coax to the GMRS radio.