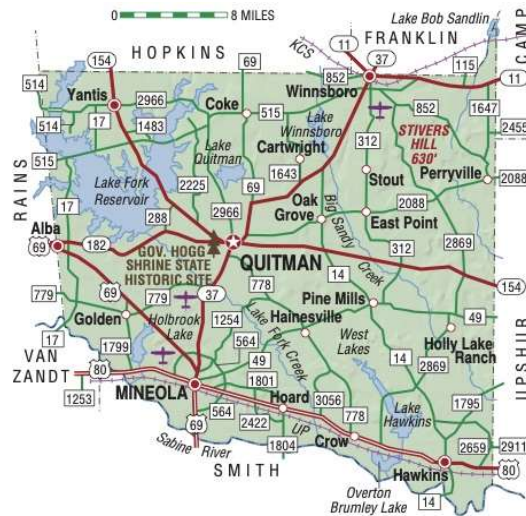# WC3EPG COMMUNICATIONS HANDBOOK

WOOD COUNTY, TX CHANNEL 3 EMERGENCY PREPAREDNESS GROUP

COMPILED BY GARY PINSON - KI5VYE

Last Revision May 25, 2023 Revision 7

VISIT KI5VYE.COM FOR MORE INFORMATION

If You Like What I Am Doing, Buy Me A Coffee

https://ki5vye.com/buy-me-a-coffee

3-3-3 Radio Plan for SHTF Survivalist Communications

https://wc3epg.locals.com/ | https://nextdoor.com/g/eabliva8b/

3-3-3 Radio Plan

12

9   3

6

For SHTF Communications. Turn on your radio.

Every 3 hours. For 3 minutes. Channel 3.

STAY INFORMED – JOIN OUR ZELLO CHANNEL

Channel 3 – WC3EPG Wood County, Texas EPG

Wood County, Texas Emergency Preparedness Group

https://ki5vye.com/wc3epg/

SCAN ABOVE QR CODE TO JOIN OUR ZELLO CHANNEL

OR VISIT: https://zello.page/eXZfhdb4cTgNMy3y8

Zello: 2-Way Radio Through Your Android Smart Phone

By Bob Friedman

Zello is a free android phone application which can be downloaded from the PlayStore on your smart phone. When Zello is in activate operation on your phone, it makes your phone act like a 2-way radio with a Push-To-Talk button staged on your screen. There is no cost for this service, other than the monthly rate you already pay for cell service. Unfortunately, it is not available for iPhone/Apple-based platforms.

Your Zello signal is transmitted through the phone's cellular service provider network. Because of this, range is essentially unlimited IF YOU HAVE A CELL SIGNAL.

You can create your own talkgroup ("channel") and include who you choose in that talkgroup. You can speak directly person-to-person with other individual Zello users, with individuals in your talkgroup or with the whole talkgroup at the same time, like a general 2-way radio channel.

In Wood County, Gary Pinson has created an emergency and prep Zello channel called WC3EPG (Wood County Emergency Preparedness Group). WC3EPG is still under development, but will eventually incorporate some level of organization which may include traffic handling nets and practice nets, general communications for Wood County preppers, emergency groups and families. That said, you can develop your own channels for your personal use or for some specialized use as well.

As a general statement, no license is required for Zello 2-way radio use. It should be understood, however, that some GMRS and amateur radio repeaters have a Zello link so that licensed amateur radio or GMRS operators can access those repeaters using their cell phones. If you wish to access such links, you MUST have the appropriate license and operate your station (including your cell phone) in accordance with the applicable rules and regulations (station identification every 15 minutes, no foul language, etc). Operators of Zello channels linked to radio repeaters in licensed services generally confirm that you have the appropriate license before they allow you on their Zello radio repeater link.

Cell phones have a higher level of communications security because receivers which can receive cell phone signals are not generally available and because Federal law prohibits the monitoring of cell phone calls. Obviously, government agencies possess the ability and resources to monitor cell phone calls, but cannot legally do so without a court order, wireline tap order or other legal authority.

Cell phone signals, including the Zello app, work by sending your call through repeater stations which are switched by computer from repeater to repeater as your location and coverage change. The cell system can tank if the repeaters and/or controllers are destroyed by lightning strike, EMP, natural disaster or intentional destruction or sabotage (POWER STATION attacks in Cali). If that happens, your phone does not possess the ability to talk directly to another phone point-to-point like a simplex radio channel and this includes Zello. If the cell system goes down, so does Zello, so you will need other RF-based systems (CB, MURS, FRS, GMRS, amateur radio) to communicate if the cell system tanks.

Zello: 2-way radio through your Android smart phone

PROS

- ☐ Free
- ☐ Relatively secure
- ☐ "Unlimited range"
- ☐ Can create and develop your own channel
- ☐ You can regulate who is allowed on your channel
- ☐ Direct comms between individuals via the system
- ☐ "Radio channel" general comms with entire group
- ☐ License-free (with exceptions)

CONS

- ☐ Cellular network-dependent (if network is down, comms won't happen)
- ☐ No point-to-point (simplex) comms
- ☐ Certain channels which link to GMRS or amateur radio assets require the appropriate licensure and compliance with the Federal rules and regulations pertaining to those radio systems.
- ☐ If your comms are being monitored by a government agency pursuant to a court order, your comms are no longer secure.

Zello For Emergencies

By Raphael Varieras May 06, 2019

https://ki5vye.com/download-zello

Nobody expects an emergency at work -- they are simply impossible to predict. But the unfortunate truth is that workplace emergencies happen all the time, all over the world. By definition, workplace emergencies are major events that might harm employees or customers, damage equipment and facilities, or seriously disrupt work.

Examples include:

Natural disasters like earthquakes, hurricanes, and floods
Fires
Equipment malfunction or user error
Injuries and other medical situations
Traffic accidents
Release of hazardous substances
Threats of violence

The threat of an emergency at work doesn't just risk the lives of your employees and customers -- it also risks the life of your business itself. According to the Federal Emergency Management Agency (FEMA), between 25-40% of businesses do not reopen and fail within one year of experiencing a major disaster. The best way to protect your team and business is to prepare for the worst case scenario.

How to Prepare for an Emergency at Work:

Employers should train their employees to effectively respond to an emergency with an emergency action
A required method for alerting people about the nature and location of an emergency
A plan for how to communicate during an emergency
An evacuation and emergency escape plan
Duties (medical or otherwise) that certain employees must perform before a shutdown
During an emergency, the first step is to let people know that an emergency is happening -- a mass
Historically, first responders use traditional land mobile radios (LMRs) to connect during a crisis. But as

10 Benefits of Push-to-Talk Apps in Emergencies:

Alerts: Many push-to-talk apps let employees notify entire teams and channels in the event of an
Location: Push-to-talk apps like Zello can broadcast the location of team members in distress with state-of-
Flashlight: The same device that connects your team also lets them see in a power outage.
Photos: With push-to-talk apps like Zello, people can take pictures and share them to keep the authorities
Battery Life: Enabling your battery saving mode means your emergency push-to-talk app works throughout
Convenience: Push-to-talk apps like Zello install on the employee's choice -- many of them you already
Flexibility: Phones let you talk to one person, and radios let you talk to many. Push-to-talk apps like Zello
Connection: Radios have limited range, but push-to-talk apps connect people anywhere in the world over
Sound Quality: Radios and calls often have poor sound quality, but the low bandwidth of push-to-talk apps
Recordings: Radios and calling require both parties to be present to talk, but push-to-talk apps like Zello

Recap of Emergency Push-to-Talk Apps

By their very nature, emergencies can't be predicted. The best you can do is fully prepare yourself and your business with a comprehensive emergency action plan. A crucial part of any emergency action plan is a method of communication for your employees.

You need answers to questions like:

How do employees notify the team about an emergency?
How do team members stay connected during an emergency?

There are many benefits to answering these questions by using push-to-talk apps like Zello for emergencies. These apps have life-saving features and compare favorably to traditional methods of communication, like radios, calling, and texting. To learn more about Zello's push-to-talk emergency app, request a demo below.

IMPORTANT WARNING!

Despite what you may be reading about on Facebook, Zello is not an app that magically turns your cell phone into a device that can communicate worldwide when cell towers and electricity go out.

Spreading this false information is doing a disservice to your friends and family. You need to understand how a cell phone works. A cell phone works on a radio frequency designed to connect to powerful cell towers. It also likely has two other very weak radio transmitters in it — Bluetooth and WiFi. These radios have a range of 15-30 feet at best.

Without a connection to data, be it cellular or wifi internet access, Zello will be useless as a communication app on your device. According to Zello's own website, the app will not work without internet access.

"ZELLO CANNOT WORK WITHOUT INTERNET ACCESS."

Does Zello work between two phones that are connected to a wireless network but not on the internet?

Zello cannot work without internet access, but if both you and your contact are within one network, the voice will be transferred using the shortest way - WiFi network in your case. Internet will be used only to log into zello network and do some service data exchange, it will be less than 1 kiB per second.

If cell towers are down, then power is likely out. If power is out, then you don't have wifi. If you have no data access, the only person you'll be talking to with Zello is yourself.

Telling people it is a good emergency communication option is not helping people. If you want good emergency communication, get real walkie talkies, a satellite phone, or VHF radio (get all three if you can).

I'm not saying that Zello isn't a cool app or that it doesn't have a use, but, your cell phone will not turn into a magical worldwide communication device that doesn't need an internet connection with Zello. If it could, then all cell carriers would be out of business by now. Think about that for a sec.

https://ki5vye.com/download-zello

WC3EPG EMERGENGY FREQUENCIES

https://wc3epg.locals.com/		https://nextdoor.com/g/eabliva8b/	
Radio Service	Channel Modulation Type	Frequency MHz	Additional Settings
WC3EPG	ZELLO APP CHANNEL	CELL PHONE	https://zello.page/eXZfhdb4cTgNMy3y8
CB-3	AM / SSB Also Available	26.98500	
CB-9	AM / SSB EMERGENCY	27.06500	
CB-19	AM / SSB TRUCKER	27.18500	
FRS-3	FM SIMPLEX	462.61250	
GMRS-3	FM SIMPLEX	462.61250	
MURS-3	FM SIMPLEX	151.94000	
FREENET-3	FM SIMPLEX	149.05000	
PMR446-3	FM SIMPLEX	446.03125	
2m HAM-3	FM SIMPLEX	146.52000	
70cm HAM CALL	FM SIMPLEX	446.00000	
70cm HAM-3	FM SIMPLEX	446.03000	
VHF SKYWARN	FM DUPLEX	147.10000	(+) 0.6 PL 136.5
UHF SKYWARN	FM DUPLEX	446.00000	(+) 5.0 PL 151.4
NOAA WEATHER	RECEIVE ONLY	162.47500	

During Times Of Emergency We Utilize The 3-3-3 Emergency Preparedness Plan

Every 3 Hours Check In And Monitor This Zello Channel And Other Over The Air Channels

Such As CB-3, FRS-3, GMRS-3, MURS-3 for 3 Minutes.

Access Times: (12 Midnight – 3 AM – 6 AM – 9 AM – 12 Noon – 3 PM – 6 PM – 9 PM)

This is the "When, Where, and How" to make radio contact with each other for SHTF. The 3-3-3 Radio Plan was designed for SHTF communications. Versions of it are used by survivalist prepper and emergency communications groups. It is based on the easy-to-remember "Survival Rule of Three". It is often called a Radio Schedule, or a SKED. It is like the communications equivalent of a Rally Point or Disaster Meet-Up Plan.

ABOUT THE 3-3-3 RADIO PLAN

Here's how the 3-3-3 Radio Plan works:

Turn on your radio. Every 3 hours. For at least 3 minutes. Channel 3.

WHEN: EVERY 3 HOURS

Always use your Local Time for local area communications with the 3-3-3 Radio Plan. At the "top of the hour", each 3 hours:

Noon – 3 PM – 6 PM – 9 PM

Midnight – 3 AM – 6 AM – 9 AM

HOW LONG: AT LEAST 3 MINUTES

At the top of every 3rd hour, turn on your radio. Even if you don't need to make a call yourself, always turn on your radio and listen for calls for at least 3 minutes. If you have sufficient battery power, or if you have not been connected for a while, then you should listen for 15 minutes. You never know if someone may need help or trying to reach you. If you need to check in, make a short transmission and say:

"This is (Name and /or Call Sign) checking in or monitoring."

ACCURATE TIME KEEPING

Synchronize your watch with other radio operators whenever possible. If you doubt your watch accuracy, compensate by keeping your radio turned on for a longer duration, before and after every 3rd hour. If you don't have a watch, try listening to an AM broadcast radio station, they always identify their call letters at the top of each hour.

WHERE: CHANNEL 3

Channel 3 is CB-3, FRS-3, GMRS -3, MURS-3 or the Channel 3 – WC3EPG Zello Group Channel.

CB, FRS, GMRS and MURS are the most common types of radios used by survivalists and preppers.

If your organized group has a different designated SHTF channel or Prepper SHTF HAM frequency, you should use it as your 3-3-3 channel.

For example: 146.520 FM Simplex, Freenet 3, or PMR466-CH3.

FEATURES OF THE 3-3-3 RADIO PLAN

1. Easy for everyone to remember the "Rule of Three".

2. Conserves precious battery life for walkie talkies.

3. Gets everyone on the air at the same time.

4. Sets a schedule of 8 times per day to call each other.

5. Avoids impractical hourly schedules that can be a burden in real-life scenarios.

6. Enables the use of short transmissions for optimum success and security.

7. Three hours between contacts is enough time to rest in a survival situation.

8. A person can walk 8 miles in 3 hours, the practical distance limit of handheld radios over average terrain.

9. 3-3-3 is fully interoperable and compatible with the alternative 3-2-1 plan.

HAM RADIO 3-3-3 RADIO PLAN

Ham radios don't have channel numbers. They have frequencies instead. A channel is just a specific frequency that has a purpose.

Most hams use 146.520 MHz FM Simplex (No PL) as their 3-3-3 channel. Some organized Prepper Ham groups use 146.420 FM Simplex. Non-aligned Survivalist Hams use 146.550 Simplex as the Bug Out Channel (BOC) and 3-3-3.

The most used local ham frequency could become a 3-3-3 channel for your area. But it probably should not be a repeater channel, because repeaters may cease to function when SHTF! Instead, hams could use Simplex FM on the output frequency of the repeater.

The 3-3-3 Survival Rule is a well-known principle in survivalist training. It commits fundamental skills or procedures to memory. The 3-3-3 Radio Plan builds upon the Survival Rule of 3, otherwise known as the Rule of Threes.

PREPPER & SHTF COMMUNICATIONS 2 WAY RADIO FREQUENCIES

BAND	CHAN	FREQ.MHZ	NOTES
FRS	3	462.6125FM	PREPPER FRS
GMRS	20 / 675	462.675+FM	PL 141.3 REPEATR
MURS	3	151.940 FM	PREPPER MURS
CB AM	3 AM	26.985 AM	PREPPER CB
CB AM	9 AM	27.065 AM	EMERGENCY CB
CB SSB	36 USB	27.365USB	SHTF SURVIVAL
CB SSB	37 USB	27.375USB	PREPPER CB SSB
CB FREEBAND	38 GAP	27.378USB	SHTF SURVIVAL
CB FREEBAND	E 2 HI	27.425USB	SHTF SURVIVAL
LOWBAND VHF	LOW	33.400 FM	SHTF SURVIVAL
LOWBAND VHF	PKDOT	42.980 FM	PREPPER LOW
HAM VHF	2 M	146.520 FM	HAM CALL SIMP
HAM VHF	2 M	146.550 FM	HAM PREPR SIMP
HAM VHF	6 M	51.000 FM	HAM PREPR SIMP
HAM HF	10 M	28.305USB	HAM PREPR TECH
HAM HF	20 M	14.242USB	HAM TAPRN
HAM HF	40 M	7.242LSB	HAM TAPRN NET
HAM HF	60 M	5.357USB	HAM SHTF NVIS
HAM HF	80 M	3.818LSB	HAM TAPRN NET
LAND SAR VHF	SARFM	155.160 FM	SEARCH&RESCUE
MARINE VHF	16	156.800 FM	SAFETY CALLING
MARINE VHF	72	156.625 FM	MARINE PREPPER
AIRCRAFT VHF	GUARD	121.500 AM	EMERG DISTRESS

Wallet size frequency list (PRINT)

SHTF FREQUENCY LIST

PRINT THIS PAGE

WALLET SIZE

PREPPER & SURVIVALIST SHTF FREQUENCIES
2-WAY RADIO COMMUNICATIONS

RADIO SERVICE	CHANNEL NAME	FREQUENCY MHZ	DESCRIPTION MODE
FRS UHF	FRS 3	462.6125	FM PREPPER
GMRS UHF	GMRS17	462.6000	FM SURVIVALIST
GMRS UHF	GMRS20	462.675+	FM PL141.3RPTR+5MHz
PMR UHF	PMR 3	446.03125	FM PREPPER
MURS VHF	MURS 3	151.940	FM PREPPER
CB AM	CB 3AM	26.985	AM PREPPER
CB AM	CB 9AM	27.065	AM HIGHWAY SAFETY
CB SSB	CB 36U	27.365	USB SURVIVALIST
CB SSB	CB 37U	27.375	USB PREPPER
CB FREEBAND	FB368U	27.368	USB SURVIVALIST
CB FREEBAND	FB378U	27.378	USB PREPPER
CB FREEBAND	FB425U	27.425	USB SURVIVALIST
LOWBAND VHF	LOW334	33.400	FM SURVIVALIST
HAM UHF	HAM U3	446.030	FM PREPPER
HAM VHF	HAM 52	146.420	FM PREPPER
HAM VHF	HAM 52	146.520	FM HAM CALLING
HAM VHF	HAM 55	146.550	FM SURVIVALIST
HAM HF	HAM10M	28.305	USB PREPPER
HAM HF	HAM20M	14.242	USB PREPPER
HAM HF	HAM40M	7.242	LSB PREPPER NETS
HAM HF	HAM60M	5.357	USB SURVIVALIST NVIS
HAM HF	HAM80M	3.818	LSB PREPPER NETS
LAND SAR VHF	SAREMT	155.160	FM SEARCH&RESCUE
MARINE VHF	MAR 16	156.800	FM SAFETY CALLING
MARINE VHF	MAR 72	156.625	FM BOAT PREPPER

3-3-3 RADIO PLAN
CHANNEL 3
EVERY 3 HOURS
FOR 3 MINUTES

2013 Public Domain Source: RADIOMASTER REPORTS

More frequencies at: RADIOFREEQ.WORDPRESS.COM

SHTF FREQUENCY LIST
THIS CHART OF ACTIVE SURVIVALIST AND PREPPER FREQUENCIES WAS RELEASED INTO THE PUBLIC DOMAIN IN 2013 BY RADIOMASTER REPORTS.

RadioMaster Reports

More information about this list, and frequency charts with programming files are available at RADIOFREEQ.WORDPRESS.COM

3-3-3 Radio Plan

For SHTF Communications. Turn on your radio. — Every 3 hours. For 3 minutes. Channel 3.

3-3-3 RADIO PLAN - The Survivalist Radio Schedule
This is the "When, Where, and How" to make radio contact with each other for SHTF. The 333 Radio Plan was designed for SHTF communications, when normal methods of communication fail. Versions of the 3-3-3 are used by survivalist, prepper, and emergency communications groups worldwide. It is based on the easy-to-remember "Survival Rule of Threes". It is often called an emergency radio schedule or *sked*.

DESK SIZE

PREPPER & SURVIVALIST SHTF FREQUENCIES
2-WAY RADIO COMMUNICATIONS

RADIO SERVICE	CHANNEL NAME	FREQUENCY MHZ MODE	DESCRIPTION
FRS UHF	FRS 3	462.6125 FM	PREPPER
GMRS UHF	GMRS17	462.600 FM	SURVIVALIST
GMRS UHF	GMRS20	462.675+ FM	PL141.3RPTR+5MHz
PMR UHF	PMR 3	446.03125FM	PREPPER
MURS VHF	MURS 3	151.940 FM	PREPPER
CB AM	CB 3AM	26.985 AM	PREPPER
CB AM	CB 9AM	27.065 AM	HIGHWAY SAFETY
CB SSB	CB 36U	27.365 USB	SURVIVALIST
CB SSB	CB 37U	27.375 USB	PREPPER
CB FREEBAND	FB368U	27.368 USB	SURVIVALIST
CB FREEBAND	FB378U	27.378 USB	PREPPER
CB FREEBAND	FB425U	27.425 USB	SURVIVALIST
LOWBAND VHF	LOW334	33.400 FM	SURVIVALIST
HAM UHF	HAM U3	446.030 FM	PREPPER
HAM VHF	HAM 52	146.420 FM	PREPPER
HAM VHF	HAM 52	146.520 FM	HAM CALLING
HAM VHF	HAM 55	146.550 FM	SURVIVALIST
HAM HF	HAM10M	28.305 USB	PREPPER
HAM HF	HAM20M	14.242 USB	PREPPER
HAM HF	HAM40M	7.242 LSB	PREPPER NETS
HAM HF	HAM60M	5.357 USB	SURVIVALIST NVIS
HAM HF	HAM80M	3.818 LSB	PREPPER NETS
LAND SAR VHF	SAREMT	155.160 FM	SEARCH&RESCUE
MARINE VHF	MAR 16	156.800 FM	SAFETY CALLING
MARINE VHF	MAR 72	156.625 FM	BOAT PREPPER

VERSION: SHTF FREQ LIST 2013E

3-3-3 RADIO PLAN
CHANNEL 3
EVERY 3 HOURS
FOR 3 MINUTES

2013 Public Domain Source: RADIOMASTER REPORTS

More frequencies at: RADIOFREEQ.WORDPRESS.COM

ABOUT THE 3-3-3 RADIO PLAN
Here's how the 3-3-3 Radio Plan works:
Turn on your radio. Every 3 hours. For 3 minutes. Channel 3.

WHEN: EVERY 3 HOURS
Always use your Local Time for local area communications with the 3-3-3 Radio Plan. At the "top of the hour", each 3 hours:
Noon, 3pm, 6pm, 9pm.
Midnight, 3am, 6am, 9am.

HOW LONG: FOR 3 MINUTES
At the top of every 3rd hour, turn on your radio. Even if you don't need to make a call yourself, always turn on your radio and listen for calls for at least 3 minutes. This is because you never know if someone may be trying to reach you, or may need help. If you need to check in, make a short transmission at this time. Say "This is me, just checking in." If you have sufficient battery power, or if you have not connected in for a while, then you should listen for 15 minutes.

ACCURATE TIME KEEPING
Synchronize your watch with others whenever possible. If you doubt your watch accuracy, compensate by keeping your radio on for a longer duration, before and after every 3rd hour. If you don't have a watch, try listening to an AM broadcast radio station, they always identify their call letters at the top of each hour.

WHERE: CHANNEL 3
Channel 3 usually applies to CB, FRS, or MURS. These are the most common types of radios used. If your group has a different designated SHTF channel or Prepper SHTF HAM frequency, you should use it instead of Channel 3. For example, the ham 2 meter simplex calling channel 146.520 MHz. The rest of the 3-3-3 Radio Plan remains the same. Keep it simple.

HOW IT WORKS: FEATURES OF THE 3-3-3 RADIO PLAN

1. Easy for everyone to remember the "Rule of Three".
2. Conserves precious battery life for walkie talkies.
3. Gets everyone on the air at the same time.
4. Sets a schedule of 8 times per day to call each other.
5. Avoids impractical hourly schedules.
6. Enables the use of short transmissions for optimum success and security.
7. Three hours is enough time to rest in a survival situation.
8. A person can walk 8 miles in 3 hours, the practical distance limit of handheld radios over average terrain.

VERSION: SHTF_FREQUENCY_LIST_2013E

THE DOS AND DON'TS OF RADIO COMMUNICATION

When using radio communication, remember these best practices to go by and which radio faux-pas to avoid!

DO: THINK AHEAD

Always know what you're going to say before you transmit, as no one else can use their radio while you're holding down the talk button. While you're um-ing and ah-ing someone else might be trying to transmit an emergency message, so be ready and know what you're going to say before you speak.

DON'T: TRANSMIT CONFIDENTIAL INFORMATION

Unless you have the necessary security in place, don't relay any sensitive information over your radio. Remember that frequencies are shared, and you do not have exclusive use of the frequency.

DO: BE CLEAR AND BRIEF

Speak clearly, at a regular volume, and a little slower than you normally would. Keep your message concise and only include necessary information.

DON'T: INTERRUPT

If other people are having a conversation, wait until they've finished before transmitting your message – unless it's an emergency.

DO: KNOW WHAT TO DO IN AN EMERGENCY

If other people are having a conversation and you have an emergency message, wait until you hear "over" then press push to talk. Say "Break, break, break, [your name/call sign], I have an emergency message for [recipient's name/call sign], do you copy, over."

DON'T: GET IMPATIENT

The other person may not be able to reply immediately. Give them time to respond before trying again.

DO: IDENTIFY YOURSELF AND WHO YOUR MESSAGE IS INTENDED FOR

Before starting your message, identify yourself and get the attention of the person you need to communicate with. For example, "[recipient's name/call sign], this is [your name/call sign], over." You can transmit the rest of your message once they have responded and you know they're listening to avoid repeating yourself.

DON'T: START TALKING STRAIGHT AWAY

There can be a short delay before your radio transmits, so wait a second or two before speaking to make sure the beginning of your message doesn't get cut off.

DO: KNOW THE LINGO

Here are some key phrases to remember:

Over – I've finished speaking

Say again – Please repeat your last message

Stand by – I acknowledge the transmission but can't respond right now

Go ahead – I can respond, go ahead with your message

Roger – Message received and understood

Affirmative/Negative – Yes/No

Out – Conversation finished, channel clear for other users

Citizens Band Radio Service (CBRS)

Rule Part 47 C.F.R, Part 95

The Citizens Band Radio Service (CBRS) is a private, two-way, short-distance voice communications service for personal or business activities of the general public. It also may be used for voice paging. It is authorized 40 channels between 26.965 MHz and 27.405 MHz.

Similar service includes the General Mobile Radio Service (GMRS).

The CB Service provides a service for short-distance communications by individuals and businesses. Over the years, changes occurred to the service such as adding additional channels; however, the purpose of the service has remained the same.

Channels

There are 40 CB channels. Each CB channel is 10 kHz. The channel number and its frequency are:

01) 26.965	02) 26.975
03) 26.985	04) 27.005
05) 27.015	06) 27.025
07) 27.035	08) 27.055
09) 27.065*	10) 27.075
11) 27.085	12) 27.105
13) 27.115	14) 27.125
15) 27.135	16) 27.155
17) 27.165	18) 27.175
19) 27.185	20) 27.205
21) 27.215	22) 27.225
23) 27.255	24) 27.235
25) 27.245	26) 27.265
27) 27.275	28) 27.285
29) 27.295	30) 27.305
31) 27.315	32) 27.325
33) 27.335	34) 27.345
35) 27.355	36) 27.365
37) 27.375	38) 27.385
39) 27.395	40) 27.405

*Channel 9 is reserved for emergency communications or for traveler assistance.

Anyone, regardless of age, can operate a CB station – except a foreign government, a representative of a foreign government, a federal government agency or someone who has received an FCC a cease-and-desist order that is still in effect. Anyone who is eligible may operate a CB station for personal or business use, in accordance with the rules.

An individual license is not required to operate a CB station and the FCC does not renew formerly issued CB Radio Service licenses;

The FCC service rules for the Citizens Band Radio Service (CBRS) are located in 47 C.F.R. Part 95.

The FCC's rules and regulations are located in Title 47 of the Code of Federal Regulations (CFR).

The official rules are published and maintained by the Government Printing Office (GPO) in the Federal Register. Additional information about the Federal Register is available at the National Archives and Records Administration web site.

An online version of the FCC Rules is available at the GPO e-CFR website. The e-CFR is authorized and maintained by the National Archives and Records Administration's (NARA) Office of the Federal Register (OFR) and GPO.

Search FCC Rules by:

      All of Title 47
      Parts 0-19
      Parts 20-39
      Parts 40-69
      Parts 70-79
      Parts 80-199

You can also search all government rules and regulations listed in the CFR at the e-CFR web site.

Operating a Citizens Band (CB) Device

You may operate a CB transmitter at any location where the FCC regulates radio communications, subject to certain restrictions. A CB transmitter must be certified by the FCC. Transmitters that have been certified for use in the CB Radio Service may be found on the FCC website using the page at https://apps.fcc.gov/oetcf/eas/reports/GenericSearch.cfm.

None of the CB channels are assigned for the exclusive use of any station. You must cooperate in the selection and use of the channels in order to make the most efficient use of them and to reduce the possibility of interference. If you use a CB station to transmit a message, you cannot talk with another station for more than 5 minutes continuously and then you must wait at least one minute before starting another communication.

There are several additional things to consider when using a CB device, including:

> You may not raise the power output of a CB transmitter.

> You may not attach a "linear," "linear amplifier" or any other type of power amplifier to your CB transmitter.

> There are no height restrictions for antennas mounted on vehicles or for hand-held devices.

> For structures, the highest point of your antenna must not be more than 20 feet above the highest point of the building or tree on which it is mounted, or 60 feet above the ground. There are lower height limits if your antenna structure is located within two miles of an airport.

> You may use an on-the-air pseudonym ("handle") of your choosing.

> You must at all times and on all channels, give priority to emergency communications.

The Citizens Band Radio Service, or CB, as it is commonly called, is a type of radio communication under the category of Personal Radio Service. As with the other types of PRS, such as FRS, GMRS, MURS, and LPRS (Low Power Radio Service), CB is intended for both consumer and business use. CB is covered under Part 95 of the FCC rules. A CB radio does not require a license to operate.

CB service operates on 40 shared channels in an AM mode or Single SideBand (SSB) mode. SSB offers less noise and greater range than AM mode and is usually found on higher end CB radios. SSB has two modes, Upper Sideband and Lower Sideband. You can only communicate with other SSB CB radios when in SSB mode.

There is no minimum age requirement to operate a CB radio. In fact. almost anyone can use CB. According to the FCC rules (95.403) "you are authorized to operate a CB station unless:

> (a) You are a foreign government, a representative of a foreign government, or a federal government agency; OR

> (b) The FCC has issued a cease and desist order to you, and the order is still in effect."

CB channels and frequencies are not assigned to any specific individual or organization. For the most part, you can operate a CB radio on all 40 channels and frequencies designated by the FCC for CB, but there are some caveats.

First, you can use CB only on those 40 channels and frequencies. Channel 9 may be used only for emergencies or for travel In addition, however, any channel can be used for emergency communications or traveler assistance. In addition, as these channels are shared, you must always give priority to emergency communications on all channels.

The maximum power levels for CB operation depends on the type of signal you are transmitting. AM signals are allowed a maximum of four watts. SSB mode is allowed up to 12 watts Peak Envelope Power, or PEP. According to the FCC, you are not allowed to raise the power output of your CB unit, attach any type of power amplifier, or modify the unit internally. Also, according to the FCC, you must use an FCC-certified CB unit in the United States. FCC-certified CB units have an FCC-certified label placed on the radio by the manufacturer.

CB is intended for short range, local communications only, but there is a way to increase range considerably by bouncing or "skipping" the signal off the ionosphere. This method is called 'shooting skip". Some CB users can skip a signal thousands of miles. The FCC prohibits attempts to communicate with CB stations over 155.3 miles (250km) away; however, signals can skip naturally depending on tropospheric conditions, so it is not unusual to send or receive CB transmissions across the country - or even around the world - unintentionally.

Family Radio Service (FRS)

Rule Part 47 C.F.R, Part 95

The Family Radio Service (FRS) is a private, two-way, short-distance voice and data communications service for facilitating family and group activities. The most common use for FRS channels is short-distance, two-way voice communications using small hand-held radios that are similar to walkie-talkies. The service is licensed-by-rule so the general public can use the devices without having to obtain a license and channel sharing is achieved through a listen-before-talk etiquette.

Other services that allow similar communications include the CB Radio Service, General Mobile Radio Service (GMRS) and the Multi-Use Radio Service (MURS).

The FRS is authorized 22 channels in the 462 MHz and 467 MHz range, all of which are shared with General Mobile Radio Service (GMRS) which requires an individual license for use.

FRS is licensed by rule. This means an individual license is not required to operate an FRS radio provided you comply with the rules. You may operate an FRS radio regardless of your age, and for personal or for business use if you are not a representative of a foreign government.

Channels

There are 22 FRS channels. Each channel has a bandwidth of 12.5 kHz, but the power of each channel may vary as indicated below. All channels are shared with GMRS, so you may hear communications from licensed GMRS stations on these channels.

Channel No.	Frequency	Power (ERP in Watts)
1	462.5625	2 W
2	462.5875	2 W
3	462.6125	2 W
4	462.6375	2 W
5	462.6625	2 W
6	462.6875	2 W
7	462.7125	2 W
8	467.5625	0.5 W
9	467.5875	0.5 W
10	467.6125	0.5 W
11	467.6375	0.5 W
12	467.6625	0.5 W
13	467.6875	0.5 W
14	467.7125	0.5 W
15	462.5500	2 W
16	462.5750	2 W
17	462.6000	2 W
18	462.6250	2 W
19	462.6500	2 W
20	462.6750	2 W
21	462.7000	2 W
22	462.7250	2 W

Operating a Family Radio Service (FRS) Unit

You can operate a FRS transmitter at any place where the FCC regulates radio communications, subject to certain limitations. A FRS transmitter may not be modified and must be certified by the FCC.

None of the FRS channels are assigned for the exclusive use of any user. You must cooperate in the selection and use of the channels in order to make the most effective use of them and to reduce the possibility of interference.

The usual range of an FRS device on channels 8-14 is less than one-half mile, but longer range communications can be achieve on channels 1-7 and 15-22 depending on conditions. You may not interconnect FRS transmitters and radios with the telephone system.

GMRS FRS Dual-service radios

Some manufacturers received approval to market radios that were certified under both FRS and GMRS, which allowed users to use one device to operate on FRS channels, which does not require a license, and GMRS, which requires an FCC license. In 2017, the FCC changed its rules to stop equipment authorization of FRS dual-service radios and it changed the rules for both FRS and GMRS such that existing radios would be reclassified as either FRS or GMRS to remove the confusion of whether a license was needed for legal operation.

Specifically, if you have a radio that was sold as a dual-service FRS/GMRS radio and it is limited to the channels and power limits provided under the "Data" tab on this page, then that device can be operated as an FRS device without a licensing requirement. However, if the device exceeds the limits under the "Data" tab or includes any of the following channels (467.5500, 467.5750, 467.6000, 467.6250, 467.6500, 467.6750, 467.7000, and 467.7250 MHz), then it is a GMRS device and an individual FCC license is needed to operate the device other than on the channels and with the bandwidth and power limits shown under the "Data" tab.

General Mobile Radio Service (GMRS)

Rule Part 47 C.F.R, Part 95 Subpart E

Radio Service Code(s) ZA - GMRS

The General Mobile Radio Service (GMRS) is a licensed radio service that uses channels around 462 MHz and 467 MHz. The most common use of GMRS channels is for short-distance, two-way voice communications using hand-held radios, mobile radios and repeater systems. In 2017, the FCC expanded GMRS to also allow short data messaging applications including text messaging and GPS location information.

Services that provide functionality similar to GMRS include the Citizens Band Radio Service (CBRS), the Family Radio Service (FRS) and the Multi-Use Radio Service (MURS).

The GMRS is available to an individual (one man or one woman) for short-distance two-way communications to facilitate the activities of licensees and their immediate family members. Each licensee manages a system consisting of one or more transmitting units (stations.) The rules for GMRS limit eligibility for new GMRS system licenses to individuals in order to make the service available to personal users. (Some previously licensed non-individual systems are allowed to continue using GMRS.)

In 2017, the FCC updated the GMRS by allotting additional interstitial channels in the 467 MHz band, increased the license term from 5 to 10 years, allowed transmission of limited data applications such as text messaging and GPS location information and made other updates to the GMRS rules to reflect modern application of the service.

An FCC license is required to operate GMRS system. Licenses are issued for a ten-year term and can be renewed between 90 days prior to the expiration date and up to the actual expiration date of the license. After a license expires, an individual must request a new GMRS license.

A GMRS system licensed to a non-individual prior to July 31, 1987 is also eligible for renewal, but the licensee may not make any major modification to the system.

You may apply for a GMRS license if you are 18 years or older and not a representative of a foreign government. If you receive a license, any family member, regardless of age, can operate GMRS stations and units within the licensed system.

The FCC service rules for the GMRS are located in 47 C.F.R. Part 95 Subpart E. You can find information about GMRS licensing in the rules.

The FCC's rules and regulations are located in Title 47 of the Code of Federal Regulations (CFR).

The official rules are published and maintained by the Government Printing Office (GPO) in the Federal Register. Additional information about the Federal Register is available at the National Archives and Records Administration web site.

An online version of the FCC Rules is available at the GPO e-CFR website. The e-CFR is authorized and maintained by the National Archives and Records Administration's (NARA) Office of the Federal Register (OFR) and GPO.

Search FCC Rules by:

All of Title 47
Parts 0-19
Parts 20-39
Parts 40-69
Parts 70-79
Parts 80-199

You can also search all government rules and regulations listed in the CFR at the e-CFR web site.

Channels

There are 30 GMRS channels with a bandwidth of 25 kHz (20 KHz authorized bandwidth) or 12.5 kHz as outlined below:

Channel	Authorized Bandwidth
462.5500	20 kHz
462.5625	20 kHz
462.5750	20 kHz
462.5875	20 kHz
462.6000	20 kHz
462.6125	20 kHz
462.6250	20 kHz
462.6375	20 kHz
462.6500	20 kHz
462.6625	20 kHz
462.6750	20 kHz
462.6875	20 kHz
462.7000	20 kHz
462.7125	20 kHz
462.7250	20 kHz
467.5500	20 kHz
467.5625	12.5 kHz
467.5750	20 kHz
467.6125	12.5 kHz
467.6000	20 kHz
467.6625	12.5 kHz
467.6250	20 kHz
467.7125	12.5 kHz
467.6500	20 kHz
467.5875	12.5 kHz
467.6750	20 kHz
467.6375	12.5 kHz
467.7000	20 kHz
467.6875	12.5 kHz
467.7250	20 kHz

A GMRS licensee may use a combination of portable, mobile, fixed and repeater stations consistent with the operational and technical rules in Subpart E of Part 95. The use of some channels is restricted to certain types of stations and certain channels are reserved for voice-only operations, while other channels allow voice and data operations.

None of the GMRS channels are assigned for the exclusive use of any system. You must cooperate in the selection and use of the channels in order to make the most effective use of them and to reduce the possibility of interference.

You can expect a communications range of one to twenty-five miles depending on station class, terrain and repeater use. You cannot directly interconnect a GMRS station with the telephone network or any other network for the purpose of carrying GMRS communications, but these networks can be used for remote control of repeater stations.

Normally, you and your family members would communicate between yourselves directly or through a repeater station. The stations must be within the territorial limits of the fifty United States, the District of Columbia, and the Caribbean and Pacific Insular areas.

In transient use, a mobile station from one GMRS system may communicate through a mobile relay station (repeater) in another GMRS system with the permission of its licensee. The communications may also be with mobile stations from other GMRS systems also with permission from the licensee to communicate through the mobile relay station.

GMRS OR FRS RADIO: HOW TO CHOOSE

What's the difference between Family Radio Service (FRS) band or the General Mobile Radio Service (GMRS)? The world of two-way radios is full of acronyms and they can start to feel kind of overwhelming if you aren't super familiar with the ins and outs of radio frequencies, citizen bands, and megahertz. So if you're trying to choose between a GMRS or FRS Midland radio and feel stumped, don't stress about it. We can break down the difference and help you decide which is the best type of radio for your needs.

WHAT IS FRS?

Family Radio Service (FRS) was developed for consumer use in no small part thanks to Radio Shack, who saw a need to define and preserve special radio frequencies for consumers that were separate from other bandwidths reserved for other types of communication. While walkie talkies had grown more popular with civilians since World War II, by the 1990s there was also increasing competition for radio frequencies.

In the 1970s, the popularity of CB radio meant there was more competition at lower frequencies with walkie talkies, which didn't have as powerful a signal. That's when the FCC moved walkie talkies up to 49 megahertz, to keep them from picking up conversations leaking from CB rigs.

That was all well and good until the late 1980s and early 1990s, when once again competition from other wireless devices like baby monitors started to squeeze those lower frequencies walkie talkies had been operating on. Radio Shack suggested that the FCC define frequencies between 462 and 467 MHz for recreational walkie talkie use, which they have operated on ever since.

That's why when you use an FRS two-way radio you don't have to worry about picking up your favorite classic rock station or cordless telephone conversations. You also don't have to worry about the pitfall of the old push-to-talk feature on early cell phones, which was that they interfered with frequencies reserved for emergency personnel. Essentially, anyone with a two-way radio can freely use FRS channels. Any competition for bandwidth that comes from multiple parties with two-way radios trying to operate their devices in close proximity can be managed with the channel and privacy code features now offered on many walkie talkies.

For clarity, FRS features a lower wattage and includes handheld radios, such as these Midland radios. GMRS radios include Midland MicroMobile® radios, which act as a powerful base camp in your vehicle and can communicate with handhelds as long as they are on the same channel.

HOW FRS DIFFERS FROM GMRS?

GMRS radios, on the other hand, use specific frequencies within that same band designated for FRS radios: 462-467 MHz. The difference is that GMRS radios have designated channels within those frequencies that aren't available to FRS radios. GMRS radios also require a license from the FCC to operate.

That's in part because they are more powerful. FRS walkie talkies can't be modified to amplify their signal to reach further distances. GMRS radios, however, can be modified to have a stronger, farther-ranging signal, at least up to 50 watts. That means that a GMRS radio can have all the same capabilities as an FRS radio in addition to special channels that FRS can't access, and the option to extend the range of the product. If you're looking for power and range with GMRS, check out Midland's best two way radios.

WHAT DO FRS AND GMRS HAVE IN COMMON?

Both FRS and GMRS radios use FM rather than AM. Without getting too technical, FM radio is often used for music and broad regional coverage because it has less static. GMRS radios are going to sound a little louder and clearer than FRS radios. That's not going to be an issue for most people, as a quality FRS radio will already have quality sound, thanks to being well-made and the FM input. If stealthy communication is important, you can pair these radios with a walkie talkie earpiece. That said, if you are a stickler for audio quality, the GMRS will provide you an additional crispness and clarity. That's because GMRS has more power to put behind its modulating frequency, which means less interference.

WHEN YOU NEED FRS

Here's how you can keep narrowing down your options. For those who plan to use two way radios only infrequently, in close range, or in outdoor scenarios that aren't particularly technical, an FRS radio is just fine. FRS two way radios are powerful enough to have a range of a mile or two (depending on the terrain) and will keep you in touch with your party in case of emergency. We also have an array of outdoor radios perfect for your adventures. And for those who work and play in louder environments, you can pair your radio with a walkie talkie headset.

If you plan to use your two-way radio more frequently, over a broader area, or in areas with more competition for a signal, you might want the greater flexibility and power a GMRS radio provides. If you want the greatest number of options for how to use your radio and at what distance and with the most clarity, a GMRS will give you extra peace of mind. A casual or new two-way radio user, however, will do just fine with a quality FRS radio.

WHY DO I NEED A GMRS LICENSE?

The FCC requires a GMRS radio license as a way to regulate frequencies that are used by two-way radio devices. Before operating a GMRS radio, a consumer must have a valid license. Any radio using the shared FRS/GMRS frequencies that is able to transmit above 2 Watts of power was reclassified as GMRS only after the recent FCC Changes in September 2017. GMRS radios can be handhelds or in-unit mobile radios.

We know the FCC website is a confusing place, so we are here to help demystify the GMRS licensing process. Fair warning, this might be dry but it is important information! Stick with us!

TOP GMRS LICENSE TAKE-A-WAYS

- Applicant must be 18+

- Not a representative of a foreign government

- Only available to individuals, aka no new business GMRS license (there are some that are grandfathered in, but that's a different story circa 1987)

- No test, just payment; $35 and good for 10 years

- License covers you and your immediate family (husband, wife, kids, siblings, grandparents, aunts, uncles, you get the point!)

- If you have been convicted of a felony in the past, you will need to disclose more information as to the context of the charges (this does not mean you will automatically denied)

- And finally, follow the rules set forth by the FCC

WAIT, WHAT ARE THE FCC RULES?

- If an authorized FCC representative request to inspect a GMRS station (This means anything GMRS; handheld, mobile unit, base units, etc), the operator must make the station and any station records available

- No messages in connection with any activity which is against Federal, State, or local law

- No false or deceptive messages

- No coded messages with hidden meanings ("10 codes" are permissible – CB users, you know what we mean but for those of you scratching your head check this link for a 10 Code List)

- No music, whistling, sound effects or material to amuse or entertain

- No ads or offers for the sale of goods or services

- No ads for political candidate or political campaign

- No international distress signals (like Mayday) unless in a vehicle in immediate danger

- No communicating with stations in the Amateur Radio Service, any unauthorized station, or to any foreign station

- No continuous or uninterrupted transmissions (unless communications have to do with the immediate safety of life or property)

- No messages for public address systems

- Must identify using FCC-assigned call sign at the end of transmissions and at periodic intervals during transmissions

THAT'S A LOT OF RULES, WHY DO I WANT GMRS AGAIN?

Increased Power – Compatibility to FRS Radios – Repeater Capable – Low Cost

Multi-Use Radio Service (MURS)

Rule Part 47 C.F.R, Part 95

The Multi-Use Radio Service (MURS) uses channels in the 151 – 154 MHz spectrum range. The most common use of MURS channels is for short-distance, two-way communications using small, portable hand-held radios that function similar to walkie-talkies.

Similar services include General Mobile Radio Service (GMRS) and Family Radio Service (FRS).

MURS is authorized five channels that were previously in the industrial/business radio service and were known as the "color dot" frequencies in Part 90 of the FCC rules.

Channels

There are five MURS channels and the channels are either 11.25 kHz or 20.00 kHz each. The channel frequencies and (bandwidth) are:

151.820 MHz (11.25 kHz)

151.880 MHz (11.25 kHz)

151.940 MHz (11.25 kHz)

154.570 MHz (20.00 kHz)

154.600 MHz (20.00 kHz)

MURS is licensed by rule. This means an individual license is not required for an entity to operate a MURS transmitter if it is not a representative of a foreign government and if it uses the transmitter in accordance with the MURS rules outlined in 47 C.F.R. Part 95 Subpart J. There is no age restriction regarding who may operate an MURS transmitter.

Rules & Regulations for Title 47

The FCC's rules and regulations are located in Title 47 of the Code of Federal Regulations (CFR).

The official rules are published and maintained by the Government Printing Office (GPO) in the Federal Register. Additional information about the Federal Register is available at the National Archives and Records Administration web site.

An online version of the FCC Rules is available at the GPO e-CFR website. The e-CFR is authorized and maintained by the National Archives and Records Administration's (NARA) Office of the Federal Register (OFR) and GPO.

Search FCC Rules by:

All of Title 47

Parts 0-19

Parts 20-39

Parts 40-69

Parts 70-79

Parts 80-199

You can also search all government rules and regulations listed in the CFR at the e-CFR web site.

You may operate a MURS transmitter at any location the FCC regulates radio communications, subject to certain restrictions. A MURS transmitter must be certified by the FCC.

None of the MURS channels are assigned for the exclusive use of any user. You must cooperate in the selection and use of the channels in order to make the most effective use of them and to reduce the possibility of interference.

No MURS transmitter shall, under any condition of modulation, transmit more than 2 watts transmitter power output.

The usual range of communications between MURS stations is less than a few miles; connecting a MURS radio to an external antenna can extend the range to ten miles or more. MURS stations are not allowed to be interconnected with the public switched telephone network. A station identification announcement is not required to be transmitted. Other restrictions on the use of MURS stations also apply.

CB FREQUENCY / CHANNEL INFORMATION FOR PREPPERS

CB transmissions take place on 40 shared channels from 26.965 MHz to 27.405 MHz in either AM mode, FM Mode or Single Side Band (SSB) mode.

> No license required
>
> Channels often busy and noisy
>
> 40 AM Channels, 40 FM Channels, 40 LSB Channels, 40 USB Channels
>
> Effective Range: 3-5 miles (handheld); 7-10 miles (mobile); 10-50 miles (base)
>
> Max of 4 watts (AM and FM) or 12 watts (PEP SSB)

Here is a complete list of the CB Channels with their corresponding Frequency:

CB Channel	Frequency	Frequency Use
Channel 1	26.965 MHz	
Channel 2	26.975 MHz	
Channel 3	26.985 MHz	WC3EPG Monitor Channel and Unofficial Prepper CB Network (AM)
Channel 4	27.005 MHz	Used by many 4X4 Jeep clubs
Channel 5	27.015 MHz	
Channel 6	27.025 MHz	You'll hear many skip talker high power operators using illegal high-power amplifiers
Channel 7	27.035 MHz	
Channel 8	27.055 MHz	
Channel 9	27.065 MHz	Channel 9 is the universal C.B. emergency channel
Channel 10	27.075 MHz	
Channel 11	27.085 MHz	Local CB Call Channel
Channel 12	27.105 MHz	
Channel 13	27.115 MHz	Often used in some areas for marine use, campers and recreational vehicles.
Channel 14	27.125 MHz	Frequency for many walkie-talkies. FCMA (Federal Motor Coach Assoc) heard here
Channel 15	27.135 MHz	
Channel 16	27.155 MHz	Used by many 4X4 Jeep clubs
Channel 17	27.165 MHz	Used by truckers on the east-west roads in California
Channel 18	27.175 MHz	
Channel 19	27.185 MHz	Unofficial Trucker channel (but probably where you will find most of them hanging out)
Channel 20	27.205 MHz	
Channel 21	27.215 MHz	Used by truckers for North-South routes in some areas of the country
Channel 22	27.225 MHz	
Channel 23	27.255 MHz	
Channel 24	27.235 MHz	
Channel 25	27.245 MHz	
Channel 26	27.265 MHz	
Channel 27	27.275 MHz	
Channel 28	27.285 MHz	
Channel 29	27.295 MHz	
Channel 30	27.305 MHz	30 and up are often used for SSB operation
Channel 31	27.315 MHz	
Channel 32	27.325 MHz	
Channel 33	27.335 MHz	
Channel 34	27.345 MHz	
Channel 35	27.355 MHz	
Channel 36	27.365 MHz	
Channel 37	27.375 MHz	Unofficial Prepper Survivalist 37 (USB)
Channel 38	27.385 MHz	Unofficial SSB calling channel, LSB mode
Channel 39	27.395 MHz	
Channel 40	27.405 MHz	

Family Radio Service (FRS) - General Mobile Radio Service (GMRS)

The Family Radio Service is a license-free, private, two-way, very short-distance voice and data communications service for facilitating family and group activities. These frequencies are shared with the General Mobile Radio Service (GMRS).

Note: A discrepancy has been noted with Federal documents as well as some FRS/GMRS radios, which list Channel 8 as 467.5675 MHz. Research with the FCC has shown that the correct frequency is 467.5625 in keeping with the 25kHz spacing of these and the GMRS frequencies (see Wiki for details).

The General Mobile Radio Service is a land mobile radio service available to persons for short-distance two-way communications to facilitate the activities of licensees and their immediate family members. Each licensee manages a system consisting of one or more stations. These channels are also used by FRS (Family Radio Service) radios, but at a lower power.

- FRS - No license required
- FRS - Low learning curve
- FRS - Very short range
- FRS - Poor build quality
- GMRS - One license covers entire family ($35.00 for 10 years)
- GMRS - No test required to get license
- GMRS - Up to 25-mile range and further with the use of repeaters
- GMRS - Good build and sound quality
- GMRS - Not a lot of noise
- GMRS - Can communicate with FRS radios on some channels

Alpha Tag	Output Frequency	Input Frequency	FRS Wattage	FRS Bandwith	GMRS Wattage	GMRS Bandwith	FRS License	GMRS License
FRS/GMRS 01	462.5625		2 W	12.5 kHz	5 W	20 kHz	NO	YES
FRS/GMRS 02	462.5875		2 W	12.5 kHz	5 W	20 kHz	NO	YES
FRS/GMRS 03	462.6125		2 W	12.5 kHz	5 W	20 kHz	NO	YES
FRS/GMRS 04	462.6375		2 W	12.5 kHz	5 W	20 kHz	NO	YES
FRS/GMRS 05	462.6625		2 W	12.5 kHz	5 W	20 kHz	NO	YES
FRS/GMRS 06	462.6875		2 W	12.5 kHz	5 W	20 kHz	NO	YES
FRS/GMRS 07	462.7125		2 W	12.5 kHz	5 W	20 kHz	NO	YES
FRS/GMRS 08	467.5625		.5 W	12.5 kHz	.5W	12.5 kHz	NO	YES
FRS/GMRS 09	467.5875		.5 W	12.5 kHz	.5W	12.5 kHz	NO	YES
FRS/GMRS 10	467.6125		.5 W	12.5 kHz	.5W	12.5 kHz	NO	YES
FRS/GMRS 11	467.6375		.5 W	12.5 kHz	.5W	12.5 kHz	NO	YES
FRS/GMRS 12	467.6625		.5 W	12.5 kHz	.5W	12.5 kHz	NO	YES
FRS/GMRS 13	467.6875		.5 W	12.5 kHz	.5W	12.5 kHz	NO	YES
FRS/GMRS 14	467.7125		.5 W	12.5 kHz	.5W	12.5 kHz	NO	YES
FRS/GMRS 15	462.5500		2 W	12.5 kHz	50 W	20 kHz	NO	YES
FRS/GMRS 16	462.5750		2 W	12.5 kHz	50 W	20 kHz	NO	YES
FRS/GMRS 17	462.6000		2 W	12.5 kHz	50 W	20 kHz	NO	YES
FRS/GMRS 18	462.6250		2 W	12.5 kHz	50 W	20 kHz	NO	YES
FRS/GMRS 19	462.6500		2 W	12.5 kHz	50 W	20 kHz	NO	YES
FRS/GMRS 20	462.6750		2 W	12.5 kHz	50 W	20 kHz	NO	YES
FRS/GMRS 21	462.7000		2 W	12.5 kHz	50 W	20 kHz	NO	YES
FRS/GMRS 22	462.7250		2 W	12.5 kHz	50 W	20 kHz	NO	YES
GMRS 15RP 462.5500	462.5500	467.5500	Prohibited	Prohibited	50 W	20 kHz	Prohibited	YES
GMRS 16RP 462.5750	462.5750	467.5750	Prohibited	Prohibited	50 W	20 kHz	Prohibited	YES
GMRS 17RP 462.6000	462.6000	467.6000	Prohibited	Prohibited	50 W	20 kHz	Prohibited	YES
GMRS 18RP 462.6250	462.6250	467.6250	Prohibited	Prohibited	50 W	20 kHz	Prohibited	YES
GMRS 19RP 462.6500	462.6500	467.6500	Prohibited	Prohibited	50 W	20 kHz	Prohibited	YES
GMRS 20RP 462.6750	462.6750	467.6750	Prohibited	Prohibited	50 W	20 kHz	Prohibited	YES
GMRS 21RP 462.7000	462.7000	467.7000	Prohibited	Prohibited	50 W	20 kHz	Prohibited	YES
GMRS 22RP 462.7250	462.7250	467.7250	Prohibited	Prohibited	50 W	20 kHz	Prohibited	YES

*FCC SAR limit GMRS handheld radios to 5W of power.

What Is The MURS Radio Service?

MURS stands for **M**ulti **U**ser **R**adio **S**ervice. It uses a license-free group of **5 channels** in the 151–154 MHz spectrum range, which were previously in the industrial/business radio service and were known as the "color dot" frequencies in Part 90 of the FCC rules. Different from similar service GMRS, MURS is a l**ow-power**, **short-range**, **license-exempt personal** radio service.

Frequencies

CHANNEL	FREQUENCY	BANDWIDTH	POWER	MODE	DESCRIPTION
MURS 1 CALL	151.820 MHz	11.25kHz	2W	FMN	Common Use
MURS 2 SAFETY	151.880 MHz	11.25kHz	2W	FMN	Common Use
MURS 3 EM	151.940 MHz	11.25kHz	2W	FMN	Common Use
MURS 4 BLUE DOT	154.570 MHz	20kHz	2W	FM	Common Use/Blue Dot
MURS 5 GREEN DOT	154.600 MHz	20kHz	2W	FM	Common Use/Blue Dot

Channels 1–3 must be used with "narrowband" FM – (2.5 kHz deviation; 11.25 kHz bandwidth). Channels 4 and 5 may use either "wideband" FM – (5 kHz deviation; 20 kHz bandwidth) or "narrowband" FM. Source: FCC

MURS channels 4-5 are shared with some business band radios who are grandfathered in on these frequencies. Commercial radio manufacturers use a "color dot system" to identify different radio channels, hence the "Blue Dot" and "Green Dot" channels. CTCSS and DCS "privacy tones or codes" (which don't actually provide privacy) are allowed on MURS.

What are the differences between MURS and GMRS radios?

1. MURS radios are totally license-free to operate, while GMRS radios require an FCC license.

2. MURS radios are less crowded.

3. MURS radios are with fixed 2 Watts output. GMRS radios are capable of up to 50 Watts power output, which means a longer range communication possibility.

4. MURS radios aren't able to hit repeaters for extending range, while some GMRS radios do.

5. MURS radios don't work with FRS radios, while GMRS radios do.

6. MURS radios are with fewer channels.

What are the differences between MURS and FRS radios?

1. MURS radios are less crowded.

2. MURS radios are allowed to use removable antennas, while FRS radios aren't.

3. MURS radios transmit on the VHF band, which provides better coverage in rural and outdoor areas. FRS works better in urban environments.

4. MURS radios don't work with GMRS radios, while FRS radios do.

5. MURS radios are with fewer channels. Handheld FRS units may have up to 22 channels.

How Far Will My Radio Transmit?

By Jackson Chen - March 27, 2020

The Facts About Distance

"How far can this radio talk?" is one of the most common questions people ask when buying a two-way radio. Unfortunately there isn't a quick answer. That's because the **type of equipment and terrain can greatly affect your range.**

But we can help you:

- Understand the key factors affecting communication range

- How these factors may apply to you

- Tips on how to extend your range

- Basic rules-of-thumb to go by

The **key considerations that affect range are: signal type, antenna, obstructions, and signal strength (wattage).** No single factor is a silver-bullet to extend your communication range. But taken in combination, they can mean the difference between getting 1/2 mile range, vs 6 miles or more. Let's discuss each of these.

Signal Type

First, not all radio signals are the same. They differ in how they travel, and how they react when they encounter materials.

Frequencies below 2MHz (Megahertz) are reflected off the atmosphere, thus they can follow the Earth's curvature. So these low frequency signals can sometimes be received by radios below the horizon hundreds of miles away. **As a general rule, the lower the frequency, the greater distance it can travel.** CB radios, and some HAM frequencies, are in the HF (High Frequency) range of 29-54MHz, giving them some of these qualities. BUT, low frequencies are susceptible to some other issues.

VHF vs UHF Which is Better?

The two frequency ranges (also called "frequency bands") used in most two-way radios are VHF (Very High Frequency), and UHF (Ultra High Frequency). We are often asked "Is VHF or UHF better?" Neither is inherently better, they each have strong points and weaknesses.

VHF frequencies can penetrate objects better than UHF. VHF can also travel farther. If a VHF wave and a UHF wave were transmitted over an area without barriers, the VHF wave would travel almost twice as far. "Sign me up for VHF!" you say. Not so fast.

Even though VHF can pass through obstacles better and travel farther, that doesn't mean it's always the better choice. "Why?" you ask. It's because of the difference between how VHF vs UHF signals react around structures. Remember, UHF signals are shorter than VHF, this is important when you're in or around buildings.

To explain this let's take an example. Assume you are trying to communicate from one side of a commercial building to the other. In between is a metal wall with a three foot opening. Radio waves cannot pass through metal. The UHF wavelength is roughly one and a half feet wide, the VHF wavelength is roughly five feet wide. The UHF signal (1 1/2 ft) passes through the door easily. However, the VHF signal is reflected since it is wider than the door. As you can see, UHF is better at navigating through the smaller spaces within a building to reach its destination. VHF signals are often blocked by metal within the building.

How Far Will My Radio Transmit? (continued)

By Jackson Chen - March 27, 2020

So to sum it up, it's a trade off. But the **general rule-of-thumb is if you are using the radio primarily outdoors** where you will have **clear line-of-sight then VHF is a better choice** because its signal will travel farther. BUT, if you will be **using your radio in or around buildings, in urban areas, or heavily wooded areas, then UHF is a better choice** because its signal will navigate around structures better, not being blocked as easily as VHF. The trade-off you are making is longer distance (VHF), vs avoiding possible "dead spots" in and around structures (UHF).

Antennas

One of the easiest ways to extend your range is by focusing on your antenna. When we said "the distance to the horizon is the maximum communication range" we didn't mention one key factor, your antenna. The calculation of distances is based on the height of your antenna. In other words, **the exact distance to the horizon varies depending on your antenna height.** There is a formula for calculating distance to the horizon based on height, but it's a little technical (see section below "Calculating the Horizon"). For now, let's just leave it at a **simple rule-of-thumb: a 6ft high antenna at both ends of the transmission (transmit & receive), will have a maximum range of approximately 6 miles.**

So according to our rule-of-thumb, 2 people around 6 feet tall using a 5 watt handheld two-way radio, used on flat ground with no obstacles, will have a maximum range of approximately 6 miles. **Are you guaranteed to get 6 miles? No.** You may only get 4 miles or even less. What can you do to make it more like 6 miles than 4 miles? Use a better antenna!

Stubby vs Whip Antenna

Handheld Antennas

Not all antennas on handheld radios are the same. Handheld radios have 2 common types of antennas: stubby and whip. Many FRS/GMRS radios on the market today have a stubby antenna because it's easier to put your radio in a backpack or pocket. However, **stubby antennas can reduce your range by up to 30%** over a whip antenna. So if range is important to you, look for a radio with a whip antenna, or at the very least, one where you can remove the stubby antenna and replace it with a whip antenna. But keep reading, there are other things to consider as well, such as power and obstructions.

Car, Boat, & Other Antennas

Antennas on cars are usually mounted on the roof or trunk and can extend several feet above the car. Therefore, mobile radios can often communicate within a range between 10 - 30 miles. Antennas on boats are a type of mobile radio, and are much the same. Except on the open water marine radios have a big advantage, there's no obstacles! Aviation radios in the air have the most advantage, no obstacles and your already very high! Base station antennas are located on the roof of a building, and commercial broadcast antennas are usually located on mountain tops or very high towers.

For example, a 25 watt marine radio will roughly have a maximum range of 60 nautical miles (111 km) between antennas mounted on tall ships, but that same radio will only have a range of 5 nautical miles (9 km) between antennas mounted on small boats at sea level. Both ships have the same 25 watt radio, the difference in this example is the height of the antenna. From the air it gets even better. Most airband radios are 5 - 8 watts and typically have a range of around 200 miles. See what a difference antenna height can make? In fact, when trying to increase your range, **increasing your antenna height is a more effective way to extend your range than increasing your power,** you get more bang-for your buck (so to speak).

How Far Will My Radio Transmit? (continued)

By Jackson Chen - March 27, 2020

To sum it up, **the higher your antenna the longer your communication range.** For mounted antennas, it's important to mount your antenna on the highest point possible. Also, mount your antenna in a straight-up position, not at an angle. For handheld radios, instead of a stubby antenna, get a whip antenna to maximize your range.

Obstructions

Remember we said you might only get 4 miles range or less? Radios signals are sometimes blocked by solid objects. Metal is not your friend when it comes to radio communications. Radio waves generally won't pass through it. Ever wonder why microwaves don't pass through the glass door? Did you notice the glass door has a metal mesh with very small holes? Microwaves are extremely high frequency with small signal waves. Although microwaves are small, they are still bigger than the tiny holes in the metal mesh. The metal mesh keeps the microwaves from passing outside the oven.

Another consideration is hills. If you live in an area with **hills, they are like metal, no radio signal will pass through them.**

BUT, radio signals can travel through many non-metallic objects such as drywall, masonry, human bodies, furniture, and many other objects. However, each time a radio signal passes through an object the signal strength is reduced. Also, the denser an object, the more it reduces the signal strength. So **with each successive object a signal passes through, its range is shorten.**

Power (wattage)

Handheld Radios

Another important factor in determining the distance a radio can communicate is its signal strength. The stronger the signal strength, the more it can withstand weakening when it passes through obstacles. **Signal strength is mainly a result of a radios' power output, measured in watts.** Commercial radio stations typically broadcast at 50,000 or 100,000 watts. Compare that to a handheld two-way radio which uses between 1/2 - 5 watts. You can see there is a big difference. Unlicensed radios such as: FRS radios are limited to 1/2 watt, MURS 2 watts, CB radios 4 watts, SSB radios can have 12 watts. Other handheld radios such as marine, aviation, and licensed land-based radios such as: LMR, Ham, & GRMS are limited to 5 watts. The maximum wattage for each radio type is set by the FCC. Moreover, handheld radios run off a small battery, so a higher wattage would mean your batteries will not last very long.

Car, Boat, & Other Radios (Mobile & Fixed-Mount)

Mobile radios usually broadcast from 25 to 100 watts maximum. Installed in vehicles, they run off the vehicle's battery. Their signal is much stronger than a handheld radio, therefore less affected by obstacles. However, their signal can still only travel to the horizon. So just having more watts without a better antenna is like having a large funnel with a small hole. So mount your antenna as high-up on your vehicle as possible. Remember the higher your antenna the father the horizon is. So more watts, along with a better antenna, equals longer range.

How Far Will My Radio Transmit? (continued)

By Jackson Chen - March 27, 2020

Average Range Guidelines *	Flat Open Terrain (miles)	Suburban Locations (miles)	Urban Areas (miles)	Inside Buildings (floors)
Wattage				
FRS ½ watt	½ - 2	½ - 1½	¼ - ½	3 - 5
1 watt (UHF)	2 - 3	1 - 2	½ - 1¼	6 - 8
2 watts (UHF)	3 - 4	1½ - 2½	1 - 1½	15 - 20
2 watts (VHF)	3 - 5	1½ - 3	¾ - 1	9 - 11
4 watts (HF)	5 - 6	2½ - 4½	1 - 3	10 - 15
4 watts (UHF)	4 - 6	2½ - 4½	1½ - 3	25 - 30
5 watts (VHF)	4½ - 6	2 - 4	1½ - 2	10 - 15
12 watt CB SSB (HF)	8 - 15	5 - 8	3 - 5	---

Tips to Increase Your Range

• If you are at the edge of your communication range and your signal is weak, **open up the 'Monitor' function on your radio to listen for weak signals.**

• One of the easiest ways to increase your range is to increase your height. If you are near the edge of your range and experiencing a weak signal **try getting to a higher location.** Walk up a hill, or simply stand on something to make yourself taller if possible. Remember, just a foot or two can make a big difference in range.

• If you are using an FRS / GMRS radio, **switch to the GMRS channels.** The FCC (Federal Communications Commission) limits FRS channels to 1/2 watt of power, GMRS can have up to 5 watts of power. FRS-only channels are 8 - 14, GMRS channels are 15 - 22 exclusively, and channels 1 - 7 are both FRS and GMRS.

• Most commercial VHF and UHF radios have two or more power modes. Be sure your **radio is set to the high power mode.**

• **Use a whip antenna** instead of a stubby one. On vehicles, **mount your antenna as high as possible** in a vertical position.

• Make sure your **battery is fully charged.** Radio signals weaken when their battery is low.

• If range is critical then **opt for a mobile radio.** Mobile radios can have 3 to 4 times the range of a handheld radio.

• **Install a repeater.** Repeaters receive signals and "re-broadcast" them, relaying them to a farther destination. However, installing a repeater is more complex. One alternative is to **find a repeater service** in your area. These services usually charge a monthly fee. Rfinder.net is an online worldwide directory of repeaters ($10 yearly fee). You can use this application to locate nearby repeaters, it also has an iPhone app. Fortunately, for most applications a repeater is not necessary and a VHF or UHF radio alone will do just fine.

How Far Will My Radio Transmit? (continued)

By Jackson Chen - March 27, 2020

Summary

At the beginning we discussed the claims some radio brands make of "up to 36 miles" or more communication range? How can they make such a claim? Well, what they are saying in reality is "if the horizon is not a factor, say you are on top of a mountain, and there are no obstructions (clear line-of-sight), then there is enough signal strength for the signal to carry for 36 miles.

How often are you on top of a mountain?

One last thing we didn't mention is weather, and other atmospheric conditions, can affect radio transmissions. But since there isn't much you can do about Mother Nature, we will only give it a passing mention here. If you really need to know about the effects of weather on radio transmission then that's a whole other conversation.

Key Points

- The key factors affecting communication range are: antenna, obstructions, signal strength (wattage), and signal type.

- The distance to the horizon is the maximum communication range for most two-way radios.

- The higher your antenna, the farther your signal can reach before hitting the horizon, therefore the longer your communication range.

- For mounted antennas, mount your antenna standing straight-up on the highest point possible.

- For handheld radios, instead of a stubby antenna, get a whip antenna.

- Radio waves generally won't pass through metal or hills at all.

- Each successive object a radio signal passes through reduces it's range.

- A stronger signal is capable of withstanding successive passes through obstacles, allowing it to travel farther.

- Either VHF or UHF radio technology can work for you if you don't really have a long range to cover.

- If you are using the radio primarily outdoors with clear line-of-sight, then VHF is a better choice because it's signal will travel farther.

- If you are using the radio in or around buildings, in urban areas, or heavily wooded areas, then UHF is a better choice because it's signal will navigate around obstacles better.

- If you must have a longer range than most radios can provide, then consider either buying a repeater, or contact a repeater service.

How Far Will My Radio Transmit? (continued)

By Jackson Chen - March 27, 2020

Calculating the Horizon

The higher your antenna, the farther the horizon. For any given antenna height use this formula: Horizon at Ground Level (in kilometers) = 3.569 multiply by the square root of the Antenna Height (in meters). So if the antenna height is at 6 feet tall (1.82880 meters), times the horizon (3.569), equals 4.83 kilometers, or 2.99 miles away.

Antenna Height	1.82880 meters (6 feet off the ground)
Horizon at Ground Level	x 3.569 kilometers
Antenna Horizon	4.83 kilometers (or 2.99 miles) away

However, the example above assumes the receiving antenna is on the ground. Raising the receiving antenna's height would extend the line-of-site even more. So **if the receiving antenna were also 6 feet off the ground you should be able to communicate almost 6 miles without obstructions** (2.99 miles + 2.99 miles). Thus, two people carrying a handheld two-way radio, the maximum communication distance on flat ground with no obstructions is approximately 6 miles.

Other Examples:

5ft 7in person standing on the ground (average eye-level height), the horizon is 4.7 kilometres away (2.9 miles)

6ft 7in person standing on the ground, the horizon is 5 kilometres away (3.1 miles)

Person standing on a 100 metre (330 ft) hill, the horizon is 36 kilometres away (22 miles)

Person standing at the top of a 828 metre mountain (2,717 ft), the horizon is 103 kilometres away (64 miles)

LOCAL GMRS REPEATERS

NAME	CHANNEL	FREQUENCY	PRIVACY CODE	TONE
		TEXAS		
ABILENE	18R	462.6250	ct13	103.5
ARLINGTON	22R	462.7250	ct22	141.3
AUSTIN	18R	462.6250	ct22	141.3
BANDERA	20R	462.6750	ct32	203.5
BROOKSTON	18R	462.6250	ct21	136.5
COLLEGE STATION	16R	462.5750	ct15	110.9
DANGERFIELD	*15R*	*462.5500*	*ct25*	*156.7*
DALLAS REACT	17R	462.6000	ct22	141.3
EMORY	20R	462.6750	ct26	162.2
GAINESVILLE	17R	462.6000	ct22	141.3
GRAPELAND	16R	462.5750	ct12	100
GREENVILLE	15R	462.5500	ct22	141.3
HOUSTON 600	17R	462.6000	ct22	141.3
HOUSTON 625	18R	462.6250	ct22	141.3
HOUSTON 725	22R	462.7250	ct30	186.2
HOUSTON NORTH	19R	462.6500	DC71	DCS631
JEFFERSON	18R	462.6250	ct07	85.4
KILLEEN	20R	462.6750	ct22	141.3
LONGVIEW	*20R*	*462.6750*	*ct25*	*156.7*
LUBBOCK 675	20R	462.6750	ct22	141.3
LUBBOCK 700	21R	462.7000	ct17	118.8
ODESSA	20R	462.6750	ct22 (up only)	141.3
OMAHA	22R	462.7250	ct18	123
PARIS 700	21R	462.7000	DC40	DCS271
PEARLAND	19R	462.6500	ct22	141.3
PURLEY	*19R*	*462.6500*	*ct25*	*156.7*
QUITMAN	15R	462.5500	ct22	141.3
ROCKWALL	16R	462.5750	ct12	100
SANTONE 550	15R	462.5500	ct22	141.3
SANTONE 650	19R	462.6500	CS	CS
SHERMAN	20R	462.6750	CS	CS
TYLER	*16R*	*462.5750*	*ct25*	*156.7*
WACO 575	16R	462.5750	ct22	141.3
WACO 675	20R	462.6750	ct22	141.3
WAXAHACHIE	16R	462.5750	ct26	162.2
WHITESBORO	16R	462.5750	ct22	141.3
WILLS POINT	22R	462.7250	ct25	156.7

LOCAL GMRS REPEATERS

NAME	CHANNEL	FREQUENCY	PRIVACY CODE	TONE
		ARKANSAS		
CAS 700 System	21R	462.7000		141.3
DEQUEEN	15R	462.5500	ct14	107.2
FAYETTEVILLE	21R	462.7000	ct22	141.3
HARRISON 600	17R	462.6000	ct18	123
HARRISON 725	22R	462.7250	ct22	141.3
HOT SPRINGS	16R	462.5750	ct16	114.8
LITTLE ROCK	15R	462.5500	ct12	100
MENA	20R	462.6750	ct14	107.2
		LOUISIANA		
BATON ROUGE	16R	462.5750	ct16	114.8
NEW ORLEANS	17R	462.6000	ct16	114.8
SHREVEPORT	15R	462.5500	ct22	141.3
		OKLAHOMA		
OKLAHOMA CITY	22R	462.7250	ct22	141.3
SHAWNEE	20R	462.6750	ct22	141.3
STILWELL	16R	462.5750	ct22	141.3
SULPHUR	16R	462.5750	ct22	141.3
TULSA 575	16R	462.5750	ct22	141.3
TULSA 675	20R	462.6750	ct22	141.3

WC3EPG Local Repeaters Wood County, Texas

Quitman, Texas Coordinates = 32.82600021, -95.43589783

Distance = 50 miles

Band(s) – 10m 6m 2m 1.25m 70cm 33m 23m

Service(s) – FM, DSTAR, ATV, IRLP, EchoLink, APCO 25, AllStar, DMR, Fusion, WIRES, TETRA, NXDN, M17, Net(s) –

70 repeaters found within 50 miles OF 75783 (32.82600021, -95.43589783)

Frequency	Offset	Tone	Call	Location	Mode	Mi	Dir
147.1000	+0.6 MHz	136.5 / 136.5	WX5FL	Quitman	FM	2.84	SSW
147.1400	+0.6 MHz	118.8	KG5E	Winnsboro	FM	12.4	NE
443.6250	+5 MHz	151.4 / 151.4	W5ENT	Emory	FM AllStar	19.4	W
146.9200	-0.6 MHz	88.5 / 88.5	W5ENT	Emory	FM EchoLink	19.4	W
147.2400	+0.6 MHz	136.5	W5ETX	Hawkins	FM	21.2	SE
145.3300	-0.6 MHz	136.5 / 136.5	W5ETX	Hideaway, Golf Course	FM	23.6	S
444.8250	+5 MHz	151.4 / CSQ	K5SST	Sulphur Springs	FM	23.6	NNW
146.6800	-0.6 MHz	151.4	K5SST	Sulphur Springs	FM Fusion	23.6	NNW
224.5800	-1.6 MHz	151.4 / 151.4	N5REL	Sulphur Springs	FM	23.6	NNW
444.2750	+5 MHz		K5SST	Sulphur Springs	DSTAR	23.6	NNW
444.9000	+5 MHz	D152 / D152	WX5FL	Sulphur Springs	FM	23.6	NNW
145.1100	-0.6 MHz	100.0 / CSQ	WX5FL	Sulphur Springs	FM	23.6	NNW
145.6000	0 MHz	146.2	W5NFL	Lindale	FM	24.6	S
146.8000	-0.6 MHz	141.3 / 141.3	WR5L	Point, Near water treatment Plant at Lake Tawakoni	FM	25.4	W
147.3200	+0.6 MHz	151.4 / 151.4	WA5YVL	Mount Vernon	FM	28	NNE
444.7500	+5 MHz	151.4 / 151.4	W5XK	Pittsburg, Hickery Hill tower	FM	29.7	E
443.2500	+5 MHz	136.5	W5ETX	Wills Point	FM	30.9	WSW
145.2700	-0.6 MHz	136.5	K5RKW	Wills Point	FM	31.1	WSW
441.5000	+5 MHz	118.8	W5NL	Cumby	FM	31.8	NW
147.3800	+0.6 MHz	136.5	W5ETX	Gilmer, Near Barnwell Mtn Rec Area	FM	32.8	ESE
146.6200	-0.6 MHz	136.5 / 136.5	W5ETX	Edom	FM	32.9	SSW
52.4900	0 MHz	136.5	KB9LFZ	Tyler	AllStar	33.7	SSE
443.1000	+5 MHz	136.5 / 136.5	W5MCT	Tyler	FM Fusion	33.7	SSE
444.7500	+5 MHz	110.9	WB5UOM	Tyler	FM	33.7	SSE
145.2100	-0.75 MHz	136.5 / 136.5	W5ETX	Tyler, UT Health Tyler Hospital	FM	33.7	SSE
145.3700	-0.6 MHz	136.5 / 136.5	W5WVH	Tyler	FM	33.7	SSE
147.2000	+0.6 MHz	136.5 / 136.5	KC5MSO	Tyler	FM	33.7	SSE
444.4000	+5 MHz	136.5 / 136.5	K5TYR	Tyler	FM	33.7	SSE
444.8500	+5 MHz		W5ETX	Tyler	DSTAR	33.7	SSE
443.5750	+5 MHz	CC1	KE5FGC	Tyler	DMR	33.7	SSE
224.2000	-1.6 MHz	136.5	W5ETX	Tyler	FM	33.7	SSE
147.2000	+0.6 MHz	136.5 / 136.5	KI5BDI	Canton	FM	34.8	SW
444.9500	+5 MHz	151.4 / 151.4	W5KNO	Mount Pleasant, Purley Tower East West	FM	35.5	NE
146.9400	-0.6 MHz	151.4	WA5YVL	Mount Pleasant	FM	35.5	NE
146.9600	-0.56 MHz	136.5 / 88.5	K5TYR	Tyler	FM	35.5	SSE
147.3400	+0.6 MHz	136.5 / 136.5	K5LET	Longview, East Mountain	FM	36.2	SE
146.6400	-0.6 MHz	136.5 / 136.5	K5LET	Longview, East Mtn	FM	36.3	SE
146.8000	-0.6 MHz	141.3 / 141.3	K5VOM	West Tawakoni, Lake Tawakoni	FM AllStar	36.4	W
147.1200	+0.75 MHz		W5ETX	Tyler	DSTAR	37.1	SSE
146.9400	-0.6 MHz	107.2 / 107.2	K5UAR	Gilmer	FM	38	ESE
444.9750	+5 MHz	151.4 / 151.4	WA5OQR	Cason	FM	38.7	E

WC3EPG Local Repeaters Wood County, Texas

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Distance = 50 miles

Band(s) – 10m 6m 2m 1.25m 70cm 33m 23m

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70 repeaters found within 50 miles OF 75783 (32.82600021, -95.43589783)

Frequency	Offset	Tone	Call	Location	Mode	Mi	Dir
147.0400	+0.6 MHz	118.8 / 118.8	K5VOM	Quinlan, Lake Tawakoni	FM	39.6	W
444.5250	+5 MHz	103.5	W5AMC	Commerce	FM	39.6	NW
147.0000	-0.64 MHz	136.5 / 88.5	K5TYR	Tyler	FM	39.7	S
444.6250	+5 MHz	CC1	W5NNI	Greenville, Majors Field Airport	DMR DSTAR	39.8	WNW
147.0200	+0.6 MHz	167.9	WB5MQP	Commerce	FM IRLP	40.2	NW
224.9600	-1.6 MHz		K5VOM	Quinlan, Lake Tawakoni	FM	41	W
442.2000	+5 MHz	151.4	N5REL	Talco	FM	41.1	NNE
145.2300	-0.6 MHz	151.4	NG5F	Daingerfield	FM	43.8	E
145.4500	-0.6 MHz	136.5 / 136.5	WX5FL	Kilgore	FM	44.6	SE
147.1600	+0.6 MHz	100.0	W5NNI	Greenville, Majors Field Airport	FM	44.7	WNW
441.6000	+5 MHz	100.0 / 100.0	N5SN	Greenville	FM EchoLink	44.7	WNW
443.9000	+5 MHz	71.9 / 71.9	N5SN	Greenville	FM EchoLink	44.7	WNW
146.7800	-0.6 MHz	114.8 / 114.8	K5GVL	Greenville, Hunt Regional Medical Center	FM	44.8	WNW
441.3000	+5 MHz		K5TKR	Longview	Fusion WIRES-X	45.2	SE
444.7250	+5 MHz	136.5	KD5UVB	Longview	FM	46.3	SE
444.9950	+5 MHz		KF5WEX	Longview	DSTAR	46.3	SE
440.6000	+5 MHz	CC	K5TKR	Longview	DMR	46.3	SE
53.1500	-1.0 MHz		N5VGQ	Overton	FM	46.5	SE
224.9000	-1.6 MHz	100.0 / 100.0	K5VOM	Greenville	FM AllStar IRLP	46.5	WNW
147.3000	+0.6 MHz	118.8 / 118.8	K5VOM	Greenville	FM AllStar	47	WNW
441.7750	+5 MHz	100.0 / 100.0	K5VOM	Greenville, Lake Tawakoni	FM AllStar	47	WNW
441.8000	+5 MHz	100.0 / 100.0	K5VOM	Greenville	FM	47	WNW
441.6250	+5 MHz	100.0 / 100.0	K5JG	Longview	FM	47.3	SE
443.4250	+5 MHz	114.8 / 114.8	K5JG	Longview	FM	47.3	SE
443.2000	+5 MHz	127.3 / 127.3	KB9LFZ	Bullard	FM	47.9	S
444.4750	+5 MHz	136.5	W5IB	Eustace	FM	48.9	SW
441.6750	+5 MHz	110.9 / 110.9	K5RCP	Terrell	FM	49.2	W
147.2200	+0.6 MHz	136.5	K5EPH	Athens	FM	49.5	SSW
147.3000	+0.6 MHz	151.4 / 151.4	N5VGQ	Kilgore	FM Fusion	49.6	SE