



User's Guide For Repeater Operation

The Dallas Amateur Radio Club

Welcome to the Dallas Amateur Radio Club's W5FC repeaters. This *User's Guide for Repeater Operation* will help you make better use of our repeaters and serve as an introduction to one of the oldest amateur radio clubs in the country. As a member of the DARC, three state-of-the-art FM repeaters are available for your use in the Dallas area. Your privileges are available 24 hours a day, every day. Your responsibilities require that you operate at all times in compliance with all FCC rules and regulations (Part 97), follow the DARC repeater rules and guidelines, and observe all instructions from W5FC control operators and net control operators using the repeaters.

The W5FC Repeater			
Analog	Output	Input	PL Tones
2 Meters	146.880	146.280	110.9
220 Mhz	224.880	223.280	110.9
440 Mhz	442.425	447.425	110.9
D-Star	Output	Input	PL Tones
2 Meters	144.530	145.130	None
440 Mhz	440.575	445.575	None
23 cm	1295.0000	1275.0000	None

2 Meter Repeater

Output Frequency 146.880 Mhz.

Our main VHF repeater, known locally as the "**Eight-Eight Machine**", is located atop a tall building near SMU and downtown Dallas. It transmits an effective radiated power of 70 watts. The input frequency for this repeater is 146.280 Mhz. (negative offset) and CTCSS or PL tone of 110.9 is required for access.

Various courtesy tones are heard during the repeater's operation. During the repeater's normal state, you should hear a "bli-blip" tone or "bubble-up" after your release the PTT switch and a short (3-4 second) delay called a "squelch tail". This is called a "courtesy tone". **It is our practice to wait until the tail or bubble-up drops before keying up in response to a transmission or before making another call.**

During a net operation (see Nets below); such as RACES, DFW Traffic Net, a Public Service Event, etc., a single, sharp tone is broadcast and the squelch tail is shortened. The net control operator directs Communications during these events.

Should the main repeater be offline for maintenance, the backup repeater may be activated. During such times, there will be no tone sent between transmissions and the squelch tail will be shortened.

The repeater automatically identifies itself on a regular basis, by either a voice announcement or by Morse code (W5FC/R is sent). **Users should wait until the ID is finished to resume transmitting.** Club bulletins as well as weather alerts for the RACES members are frequently sent in addition to the ID.

The "Eight-Eight" machine's main repeater provides excellent coverage throughout the Dallas area over a 35-mile radius. Depending on tropospheric or weather conditions and users' equipment, the coverage extends into south Texas, Louisiana, Arkansas, Oklahoma, and Kansas. Be considerate of distant listeners.

1.25 METER REPEATER

220 Mhz Repeater

Output Frequency 224.880 Mhz.

Our 220 Mhz. repeater is co-located with the **“Eight-Eight Machine”** in Dallas. The input frequency is 223.280 Mhz (negative offset). A PL (CTCSS) tone of 110.9 is required to operate it. Only a few hams use this repeater, making it an often wide-open frequency for anyone with equipment capable of utilizing it.

70 cm Repeater

Output Frequency 442.425 Mhz.

Our main UHF repeater has an input frequency of 447.425 Mhz (positive offset) and a CTCSS (PL) tone of 110.9 is required to operate it.

A two-step courtesy tone is heard when the repeater is properly accessed. The tones of the **“Four-Forty Machine”** and the **“Eight-Eight Machine”** are markedly different. Again, a squelch tail is present after you release the PTT switch, so the same waiting rule applies.

The 440 machine outputs approximately 100 watts of effective radiated power. This gives our UHF repeater more range than it's 2-meter counterpart, again depending on conditions, your location and equipment.

FOR SECURITY REASONS, WE DO NOT DIVULGE THE EXACT LOCATION OF THE REPEATERS.

UNAUTHORIZED USERS AND INTERFERENCE WITH THE REPEATER

Willful and/or malicious interference with any repeater is a violation of federal law, punishable by fine, revocation of license, confiscation of equipment, and/or imprisonment in a federal penitentiary. This includes unidentified transmissions, playing music or other forms of broadcasting, talking to unlicensed scanner listeners keying down on a QSO, obscene language, and willful transmission of a falsified emergency call or using the repeater for any illegal use.

The FCC and the Dallas Amateur Radio Club have considerable resources to track down and identify such interference. Users who monitor illegal activity are urged to make a note of the time, content, duration and beam heading from the input frequency (if available) and contact any club control operator or board member via telephone or alternate frequency.

Resist the understandable temptation to “key-down” on the offender. Not only is it illegal to do so, but it may hamper attempts to get a fixed location on the interfering signal. Do not acknowledge nor talk about the malicious interference while on club repeaters. If you must do so, then do it on the phone or another frequency.

NETS

Our “**Eight-Eight Machine**”, the 2 meter repeater is the designated repeater for several important emergency and communication functions called “Nets.” **WHEN THESE NETS ARE IN OPERATION, THEY HAVE PRIORITY OVER ALL OTHER USERS EXCEPT FOR STATIONS WITH EMERGENCIES** (see Glossary for definition of emergency).

The Dallas RACES (Radio Amateur Civil Emergency Service) uses the “88” repeater for training and emergency operations. RACES training nets are on the first and third Sunday nights of the month at 8:00 p.m. Only authorized RACES members may participate, by mandate of Part 97.

When emergency conditions warrant, the Dallas RACES officials will call a net with a series of long tones. A short courtesy tone with no squelch tail will alert users to the operation. When you hear these tones, you should immediately cease use of the repeater and follow all instructions from the net control station. Failure to yield the frequency to an emergency is a serious breach of federal law.

For further information about joining Dallas RACES, you are invited to contact Randy Patterson KE5JIT, 1923 Maxwell Drive, Lewisville, TX 75077. Visit the RACES home page at <http://www.cloudcowboy.net>.

Each evening at 6:30 p.m., **ARRL Dallas / Ft. Worth Metroplex Traffic Net** meets on the “88” machine for purposes of exchanging message traffic into and out of the D/FW area and training amateurs in the operation of a formal net and handling message traffic. This net is a part of the ARRL National Traffic System (NTS) and all interested amateurs are invited to participate. Additional information is given at the end of each session as to how to get further involved with the NTS nets. The repeater’s courtesy tone will be shortened during net operation as it is during RACES operations. During this net, the net control station has priority over all other amateur traffic with the exception of emergency traffic.

Monday evening at 7:00 p.m. the DARC has weekly nets. They are as follows:

- 1st Monday – Hamfixins Net
- 2nd Monday – EmComm Net
- 3rd Monday – Hamfixins Net
- 4th Monday – Geek Net
- 5th Monday – Special Topics Net

These nets are only as good as the ones actively participating so join in and have some fun!

Wednesday evening at 7:00 p.m., the DARC sponsors **VetNet**. This net is a specialty net for veterans, reservist, and active-duty military. Anyone can check in, but the focus is those who have served.

Saturday evening at 7:00 p.m., the **DARC Tech Talk Net** meets on the “88” machine for discussion of amateur radio of technical nature and anything related to amateur radio in the D/FW Metropolitan area – does not have to be related solely to the DARC.

Twice a month, the DARC conducts a “**Meeting On The Air**” on both the “88” and 440 repeaters. This meeting occurs on the first and third Sunday of each month at 7:00 p.m., immediately preceding the RACES training net. This is a fun and friendly net, open to participation by all licensed amateurs, and you are invited to participate. Technical questions may be answered, ham and club news, a buzzword and a swap net will be offered.

Information on these meetings can be found in the monthly newsletter, “In the DARC” or on the DARC’s website at: <http://www.w5fc.org>.

Occasionally, public service nets use the club repeaters. To do your public service, you are encouraged to learn more and participate in these events or extend the proper courtesy to those who have engaged in this important facet of amateur radio. Additional information on public service events is available from those responsible at our monthly club member meetings and online at our web page, <http://www.w5fc.org>

Hints For Better Mobile Operation

To receive maximum benefit from the club repeaters, your rig must operate properly. Thoroughly read your radio's operator's manual and learn how to use your radio. If you need assistance, there are dozens of DARC members who are more than willing to help – just ask. And remember the following:

- 1) Don't try to hit the repeater from inside your car with a hand-held radio using its "rubber duck" antenna.
- 2) Invest in a good outside antenna, mounted as high as you can, even if you're using an HT
- 3) If you power your rig through the cigarette lighter socket, make sure there is no alternator whine or ignition noise present. PRF suppressors, like those sold at electronic stores such as Radio Shack or Tanner's, will usually take care of this problem.
- 4) It is better to power your transceiver directly by the car's battery. Run heavy gauge cable (14-gauge minimum) directly from your rig to the positive and negative terminals on the car battery, and install fuses at the battery in both the positive and negative cables.
- 5) Play it safe. Don't try to watch your radio and drive at the same time.

GOOD MANNERS

We are all judged by the company that we keep. No one wants to be associated with a bunch of ill-mannered, rude and discourteous people. You are responsible for your conduct on the air. The DARC will use all resources at its disposal to track down abusers of the repeaters and help proper authorities prosecute them to the fullest extent of the law.

If necessary, we will send letters to people who abuse our repeaters directing them to stop using ALL of our repeaters. If this becomes necessary, the FCC is notified and a copy of all documentation is forwarded to their office.

Consider the analogy of two people having a conversation on the street. Would you jump into their conversation without permission? Would you annoy them or try to talk over them? Would you try and take every other turn to talk, instead of waiting for your turn?

PRACTICE THE FOLLOWING COURTESIES:

- 1) Listen and listen again before making a call.
- 2) If in doubt, listen again and ask "is the frequency in use?"
- 3) Enter the repeater with your call sign alone or simply "KE5XXX, listening" or "KE5XXX mobile" or "KE5YYY this is KE5XXX."
- 4) Don't say break unless you have emergency traffic. It is not necessary to correct visitors as the opposite is true on most other repeaters. However, we have retained the pro-sign BREAK as the signal of an emergency.
- 5) Don't jump into QSOs to make another call without asking; ask courteously. Other stations will welcome your courtesy and acknowledge your call.
- 6) Don't "*kerchunk*" the repeater. The FCC defines this as an illegal transmission. If you want to see if you're "getting in", and the frequency is clear, call "KE5XXX, testing."
- 7) Stay off the other ham's squelch tail by not *tailgating*. Wait until the signal drops (your S-meter will show you when there is no signal from the repeater) before responding. The repeaters will automatically time out if they detect 3 minutes of unbroken transmission (1.5 minutes during rush hours or if tailgating is deemed excessive). A "Repeater Time Out for XX Seconds" will be transmitted over the repeater after the offenders un-keys. During the time-out, the repeater will be shut down.
- 8) There is no need to say "for ID" when you identify. Simply say your callsign.
- 9) Be patient with newcomers.
- 10) Give others a chance to use the machine and move long conversations to a simplex frequency. In other words, don't be a repeater hog.
- 11) Yield to others because they have asked courteously.
- 12) **YIELD IMMEDIATELY TO EMERGENCY TRAFFIC**
- 13) Don't give directions if you don't know them.

- 14) Listen carefully for the other ham's callsign so they do not have to repeat it.
- 15) Give your callsign phonetically the first time to new contacts so they can clearly understand your callsign.
- 16) Cooperate with our control operators and follow their instructions.
- 17) Make sure your equipment is operating properly with fully charged batteries, a good antenna and tuned to the correct frequency.
- 18) Follow all FCC rules and regulations. They are the LAW.
- 19) Use only enough power to fully connect with the repeater.
- 20) If you are not hitting the machine, wait until you are in range or can improve your operating position or power, rather than continuing to try to make it into the repeater. Your persistence will only annoy others.
- 21) Give meaningful signal reports when asked. "Full quieting" or "Your signal is unreadable" or "You're readable but noisy" are examples of meaningful repeater strength reports.
- 22) There is no need to acknowledge a negative contact, no contact, or no response.
- 23) When ducting conditions are present, you may hear and work distant stations. Remember, however, if they are "getting in" here, we may be "getting in" there, so transmit with as little power as possible and pause for the squelch.
- 24) **THERE IS NOT AN ADULT HOUR ON THE DARC REPEATERS. IF IT'S IN POOR TASTE, THEN IT'S IN POOR TASTE, NO MATTER WHAT TIME OF DAY, AND IT IS NOT PERMITTED ON A DARC REPEATER. THIS INCLUDES INNUENDOS. IF YOU ABUSE THIS COMMON-SENSE RULE, THE REPEATER WILL BE SUBJECT TO BEING SHUT DOWN BY THE CONTROL OPERATOR, AND YOU MAY BE ASKED TO CEASE TRANSMITTING ON THE DARC REPEATERS.**

Appendix "A" - Glossary

73: Best wishes....a ham's way of saying good-bye on the air.

88: Hugs and kisses.

Access Code: a series of numbers which, when punched into a DTMF keypad while depressing the PTT switch, allow the user to access the autopatch or other repeater functions.

Back Door: a communications system used only by control operators to contact the repeater for maintenance or programming functions.

Break: pro-sign given by an amateur station with emergency traffic, asking the users of the repeater to yield the frequency in order to deliver emergency traffic.

Controller: an electronic device, which interfaces the repeater radios, duplexers and other equipment. The controller is the "brains" of the repeater.

Control Operator: DARC officials who monitor the repeater for illegal use and who maintain a backdoor connection with the repeater controller for command and control functions.

CTCSS Tones: Continuous Tone Coded Squelch System which are sub-audible tones sent by a transmitter to a repeater which, upon receipt by the CTCSS-enabled repeater, will allow the transmitted signal to be retransmitted by the repeater. Also known as a "PL" tone.

Courtesy Tone: a series of "musical" tones sent by the repeater to acknowledge successful contact immediately after you let up on the PTT button.

DTMF: Dual Tone Multi Function. Also known as telephone "touch tones". Many of today's transceivers have a DTMF keypad as part of the radio or microphone.

Duplex: the ability to receive and transmit simultaneously. A repeater operates duplex.

Emergency Traffic: communications dealing with a threat to human life or serious damage to property.

FCC: the Federal Communications Commission.

Full Quieting: when your signal into the repeater is strong enough to reach the repeater without any “white noise.” A signal, which completely quiets all weak signal noise, is said to be “full quieting.” Note this term does not convey any description of audio quality.

Kerchunking: the illegal practice of briefly keying a transmitter with an unidentified, unmodulated signal on a repeater’s input frequency. Kerchunking offenders expect to determine whether the repeater is operating.

Key: another term for depressing the PTT button on a transceiver’s microphone.

Keypad or Touch-Tone: a telephone-style set of push buttons which are numbered 0-9, “#” (pound) and “*” (star or asterisk) which are used to send DTMF signals to the repeater or another transceiver.

Lid(s): a radio amateur that either doesn’t know better or doesn’t care. If they are the former then they need to receive training and are encouraged to improve their operating practices. If they are the latter and do not improve then they are to be shunned as poor operators.

Machine: slang term for the repeater system.

PL Tone: see CTCSS tone above.

PTT Switch: Push To Talk. A button, usually found on one side of a mobile microphone which, when pressed, activates the transmitter side of a transceiver radio.

RACES: Radio Amateur Civil Emergency Service

Simplex: a communications mode whereby two or more stations utilize the same frequency for transmit and receive.

Squelch Tail: a brief unmodulated carrier sent by the repeater after you release the PTT button. During this period, all stations should wait until the carrier drops.

Time-Out: a case where the repeater controller automatically shuts down the machine when it detects an unbroken transmission in excess of the allowable transmission time (typically 3 or less minutes). This is done to ensure compliance with FCC regulations.

Turkey: an unauthorized user who makes illegal transmissions. Person may or may not be licensed. See “Lid.”

W5FC: the callsign of the Dallas Amateur Radio Club as licensed by the FCC.

Your input to the club on any facet of this *User’s Guide* or any other question or suggestion is welcomed by the Dallas Amateur Radio Club. Please direct your comments to any club officer or board member at info@w5fc.org.

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