PVRC Newsletter
June

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Website: http://www.pvrc.org
Meeting Info: http://www.pvrc.org/chapters.htm
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President's Letter – Doug AA3S

At the Dayton Hamvention in May, a very deserving PVRC member and past President of PVRC, Ken Claerbout K4ZW, was inducted into the CQ Contest Hall of Fame. The process leading up to that induction includes a written nomination that must be submitted officially by an amateur radio contest club.

Ken K4ZW (r) accepts Hall of Fame plaque from John K1AR at Dayton (N6TV foto)

I was honored to be a part of that nomination process and want to share with you the written nomination prepared by Frank W3LPL and Lar K7SV (and approved by the PVRC Officers Trustees):

"Ken Claerbout's efforts, based on his passion for contesting, DXing and supporting other's, strongly position him for membership in the CQ Contest Hall of Fame. His contesting skills have resulted in numerous national wins and typically find him in the top ten finishers. His extensive world-wide travels have provided a number of rare multipliers and new countries for his contesting and DXing peers. Ken has mentored a number of new hams, provided education and entertainment to world-wide amateurs and helped any number of hams locally and internationally to build and/or maintain their stations. Of note, he provided exceptional service in helping the late Fred Laun K3ZO keep his amplifiers, antenna tuners and other equipment operational.

Ken has activated a number of African and Asian countries, with emphasis on the low bands for which he has great passion. On several trips to JT1CO, Ken helped Chak install and repair equipment and antennas including 160 meter beverages and activated the station in several contests. His personal calls include K4ZW, KE9A, EL2CD, Z81Z, JY8ZW, JT1ZW, EY8/K4ZW, KE9A/DU3, XW4ZW, HS0ZLD, WD9DEE/C6A, G/KE9A, KE9A/VS6, 8P9GY, ZF2ZW and TU/K4ZW. He has participated in multiop contesting from HS0ZAR, HS0ZGD, JT1CO, JT5DX, EY8MM, W3LPL, NR4M and under his own call.

Ken has made numerous trips over the past ten years to the Ethiopian Amateur Radio Club ET3AA at the Addis Ababa University, School of Electrical and Computer Engineering. He does this to continue mentoring young hams in amateur radio and contest operation as well as helping maintain and activate the station. He assisted students with installation of one of the few HF skimmers in Africa to feed the Reverse Beacon Network. Most recently in Jan 2023 Ken, Robert W9XY and Nodir EY8MM spent a week at the station helping students refine operating skills and jointly work on station projects including repair of antennas and equipment as well as installation of low band receive antennas.

Ken has encouraged and facilitated club member participation in Youth On the Air (YOTA) activities. Ken is the vice president, secretary, and a director for the YASME Foundation which was originally formed to help fund DXpeditions but has expanded to support various aspects of DXing and contesting with recent emphasis on education and youth activity. In addition to the normal duties of Ken's positions with YASME, his knowledge of travel and shipping based on occupational and personal experience helped the organization to better control costs for travel of personnel and equipment transportation.

While president of the Potomac Valley Radio Club (PVRC), Ken proposed the idea of contesting webinars. From 2009 to 2019, first under the auspices of PVRC and then the World-wide Radio Operators Foundation (WWROF), Ken hosted many webinars that enjoyed large world-wide viewership. The presentations covered a number of topics from HF propagation to the popular Contest University presented at Hamvention. In 2013 K4ZW was recognized with a YASME Foundation Excellence award for his work in support of the series of videos featuring the operational and technical aspects of contesting. Ken has also provided presentations on many of his trips to various clubs and as a keynote speaker."

Please join me in congratulating Ken and wishing him continued "good DX"! Read the remainder of this Newsletter for photos and notes from the Hamvention.

Club Competition News – Doug AA3S

Only two more 5M contests in the 2022-2023 5M season: ARRL Digital June 4 and ARRL VHF June 10.

For June, I find no State QSO Parties that have club competition awards. (plaques).

PVRC Officers:

President:	AA3S	Doug Hart
Vice President:	K3WA	Bill Axelrod
Vice President:	K8LF	Jerome Svinicki
Secretary:	N3QE	Tim Shoppa
Treasurer:	WA3AER	Ted Bauer

Trustees:

K3MM, N3OC, K2AV, N1RM, W3LPL, N3KN, W2RU, W3LL, N4RA

PVRC Charter Members (all SK):

W3GRF, W4AAV, W4KFC, N0FFZ, W4LUE, W7YS, VP2VI/W0DX, W3IKN, W4KFT. W4RQR, W4MKM, W4BFO, W4CC, W4IA

Newsletter Editor: John K3TN jpescatore@aol.com

PVRC Website: http://www.pvrc.org

PVRC Meeting Info: http://www.pvrc.org/chapters.htm

PVRC on Facebook: https://www.facebook.com/groups/PotomacValleyRadioClub/

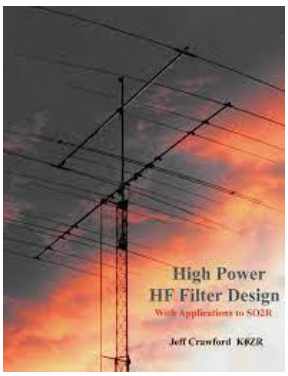
Annual W3LPL Open House, Saturday June 17 – Frank W3LPL

The Annual W3LPL Open House will take place as usual on Saturday June 17th at noon, rain or shine. NCDXA and PVRC members and their guests are welcome.

Please email me at donovanf@erols.com if you plan to attend. **IMPORTANT**: In your email please indicate if you plan to purchase food from CJ's BBQ who will be on site from noon to 2 p.m. as usual.

High Power RF Filters – Jeff K0ZR

I just completed a ~14-month writing project wherein I authored a book on High Power HF Filters, like the QEX article of 2018. It is almost 300 pages in length: 300+ equations, 275 figures, and around 80 tables. There are beginning-to-end designs for a 40m and 15m elliptic bandpass filter in two of the chapters. It is available **now** on Amazon. A softbound book is $42.95 while the hardbound version is $49.95.



If folks want to get an idea of its contents first, which is understandable and I would prefer they do, the table of contents is at the tab, "K0ZR Scribbles" on my web site, www.k0zr.com.

Maryland Metro Chapter Meeting – Ed N1EK

May meeting of the MD Metro Chapter, with (L to R): Tim N3QE; Eric W3DQ; John N3AM, Art K3KU; Bob W3IDT; Howard AE3T; and Ed N1EK.

North American (DC) CW Weekend 9-11 June – Don W4ZYT

This year's North American CW Weekend is scheduled for June 9-11, 2023. The Weekend is primarily aimed at those amateur radio operators with a particular interest in Morse code (CW) operation -

We are asking participants to be vaccinated and to use good sense with respect to any recommendations about COVID in force at the time of the weekend. At this point, masks are not required. Here's the program:

Event Summary:
North American CW Room Block
Falls Church Marriott Fairview Park for 129 USD per night

There will be a hospitality suite between 1800-2400 on Friday and Saturday. There will be refreshments and snacks available, plus plenty of collegiality and good conversation.

Pizza Friday Evening (6/10): Italian Oven,
6852 Old Dominion Dr,
McLean, VA 22101.

Brunch (Sat 6/11; 0900 to 1200): Home of Nina Lane and Jim Talens (K4NML and N3JT)
6017 Woodley Road
McLean, VA 22101
Phone 703-241-1144
Time: 9 to 12

Saturday Dinner:
Metro 29 Diner
4711 Lee Highway
Arlington, VA 22207
703-528-2454

Don't be put off by the "Diner" moniker - take a look at the menu on the web site.
This is an informal place with a class kitchen and a full selection of meal options which should suit every taste. Cocktails, beer, and wine available. Dress casual. Individual checks. Meet at 1800 until...

There is a nominal registration of $ 25 per couple or $ 15 per single person. This will help defray costs and fees. Any excess will be donated to the CWOPS Scholarship fund. Please send your check, made out to "Don Lynch W4ZYT" to:1517 West Little Neck Road
Virginia Beach, VA 23452-4717 email: w4zyt.don@gmail.com

We are looking forward to a nice weekend and good participation. Please stay safe and well, drive carefully, and come prepared for a good time

PVRCers at ~~Dayton~~ Xenia Hamvention 2023

Front (L-R): KD4D, K3MM, W1IE, N3QE, N1RM Middle: WA3AER,W3TB, K3AJ, KA4RRU, N0YY, WA4PGM, N3AM Rear: N4ZR, ? , JR2SCJ , W3TOM, K3ZB/JH1NBN, AJ3M, W3LL

Rich's kid (sometimes known as Andy) K1RA and K3TN in the tailgate area

N3AM pondering the complexities of laterally diffused Metal-Oxide Semi-conductor amplifiers

N3JT (2nd from right) at the ARRL booth with W1VE, ARRL CEO NA2AA and ARRL President K5UR. (N3JT/N3AM foto)

VHF Contesters' Rover Dream Machine (N3AM foto)

Setting Up An FT8 System: Some Finer Points – Mike W3IP

A couple of years ago, I received an email from a member of the ARRL's Volunteer Monitor program with a concern about my FT8 signal. After emails and phone calls with the volunteer monitor, and checks of my system that showed no issues, I was left not knowing the source of the complaint or the specific technical concern being raised. I expressed to the volunteer monitor my willingness to work with the person making the complaint, but never heard back.

The episode did get me to thinking about the cleanliness of FT8 signals in general, and whether an FT8 operator (me) could inadvertently transmit a FT8 (or other) digital signal that didn't meet the signal purity expectations of the WSJT software designers. The short answer is yes. This paper describes the signal generation choices that can affect the level of spurious signals that your nearby ham neighbors might hear - and how to make sure your signal stays as clean as possible! This discussion in most applicable to the ham bands greater than 20 MHz where the real-life dynamic range can be higher due to lower noise floors.

Generating the FT8 signal

An FT8 signal is generated by the WSJT-X or JTDX software. By default, the generated signal (digital at this point) is created with extremely low distortion and near the maximum possible volume. To simplify the software, the WSJT-X software designers require the sound card or codec to operate at exactly 48 kilo-samples per second and to have 16 bits of amplitude precision. The FT8 protocol generates one frequency at a time. The frequency changes slightly a few times per second as you are transmitting. Starting in WSJT-X version 2.1, the designers made sure that the frequency changes are as smooth as possible from one frequency to the other. This modulation method is called coherent frequency shift keying. It produces the minimum possible in-band spurious signals - all below about 80 dB below the peak carrier level. By comparison, the FCC says (in CFR 97.307 (e)) that all non-harmonic spurious at 50 MHz must be a minimum of 60 dB down from the peak carrier signal you are transmitting.

The WSJT-X program sends the digitally generated FT8 signal to a computer sound card or a codec embedded in a transceiver to generate the baseband (audio) FT8 signal that will be transmitted. Changing the Line In or Power Out controls on your HF or VHF radio will independently change the operating characteristics of your transmitter.

For my system (a Windows computer and a Elecraft K4D), there are 4 controls that must be set correctly for proper FT8 operation - **and, very importantly, the computer must have enough horsepower to process all the data in a timely manner**. More on that later.

The following adjustments generated the highest quality FT8 signal for me (YMMV!):

1. WSJT-X or JTDX power slider - leave at max (all the way up)
2. Windows 11 Control Panel > Sound > Playback > USB Audio Codec > Properties > Levels > set at to 100% (all the way up)
3. K4D USB Audio Codec Line In - 030 (Telnet command is LI0300000;)
4. K4D Power out - set to 23 watts

This resulted in which resulted in ALC level: 2 (Elecraft says the ALC level should be 4, but that amount of audio input creates distortion for me)

Actual Power out: 15 watts (the level I needed to drive my power amplifier)

Measuring an FT8 signal

A great way to measure and adjust your FT8 transmitted signal is with a signal sampler and a narrowband spectrum analyzer. If you don't have a narrowband spectrum analyzer, you can ask one of your neighbors with a calibrated panadapter to look at your signal. Figures 1 thru 4 show example of clean and not so clean FT8 signals.

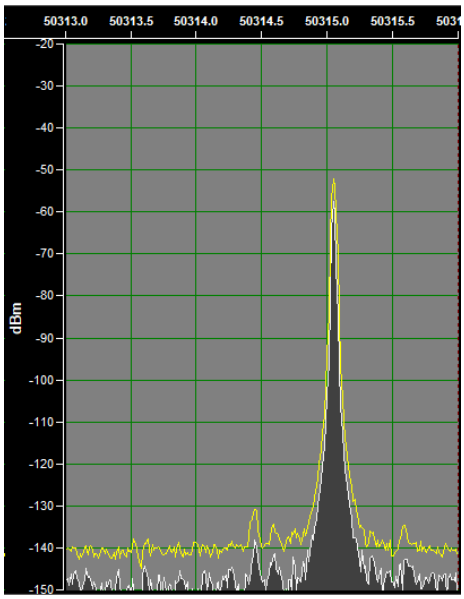


Figure 1 - Very Clean FT8 signal
(K4 panadapter data/Win4K4 display)

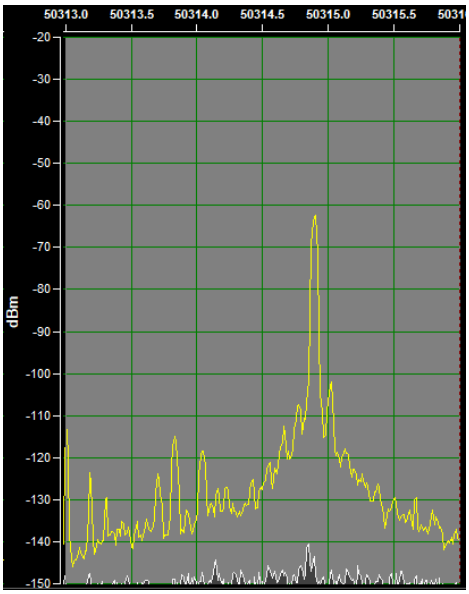


Figure 2 - Misadjusted FT8 signal
(K4 panadapter data/Win4K4 display)

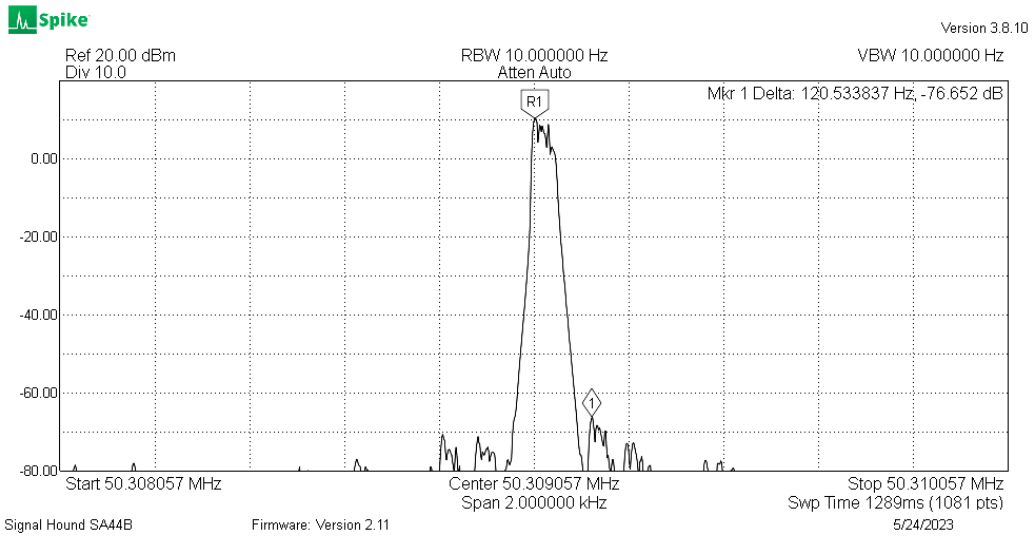


Figure 3 - Very clean FT8 signal
(Signalhound SA-44B spectrum analyzer)

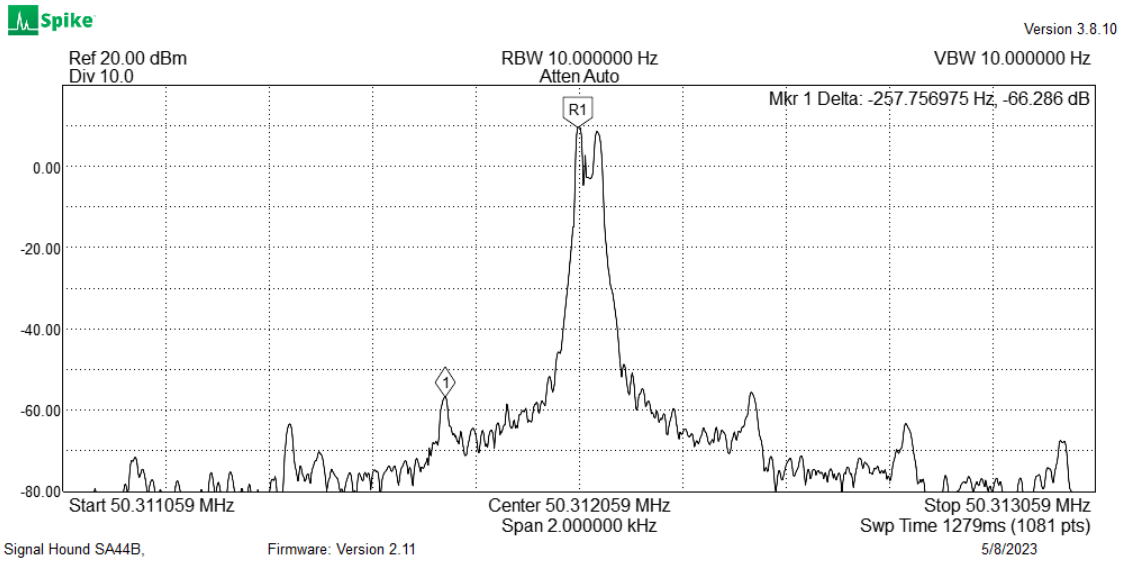


Figure 4 - Misadjusted FT8 signal
(Signalhound SA-44B spectrum analyzer)

Adjustment technique

I use the peak hold (sometimes called max hold) function on both the panadapter and the spectrum analyzer to capture as many spurs as possible during a FT8 transmitting cycle. I started with the WSJT-X/JTDX and Windows Control panel Sound settings at max and adjusted the radio's Line In control to generate the clean signal as seen in Figure 1 and Figure 3. I then touched up the radio's drive (i.e. power) level to bring the transmitter power output to the level needed to drive my amplifier. Don't forget to clear the peak hold memory before making a new measurement! Elecraft suggests the K4D ALC level should be set to "4". I found that turning the Line In level up to the point that the ALC level was "4" resulted in a significant increase in spurious signal levels. My ALC level for lowest spur levels is "2". Other radios may have similar characteristics.

Audio Harmonic Distortion

Early in the existence of WJST-X, the developers introduced a feature to keep sound card audio harmonic distortion products from being transmitted. On the Settings > Radio window, there is a block labeled "Split Operation". Enabling split operation by selecting "Rig" or "Fake it" lets the program "do the math", resulting in changes to the transmitter frequency and the WSJT-X created audio frequency. The actual transmitted frequency ends up exactly what you requested, with the benefit that all harmonic signals created in the sound card or CODEC are always out of band and are never transmitted. CAT Control must be enabled and working. Please use this feature - it really should be required, not an option! Not doing so can create QRM in one or more places in the FT8 band.

Figure 5 shows two sequences of a strong signal in the waterfall centered at 540 Hz. Between 1550 and 1700 Hz of the same sequence, you can see 8 columns of intermittent signals. This is the 3rd harmonic of the 540 Hz signal, which could potentially interfere with multiple other weak signals.

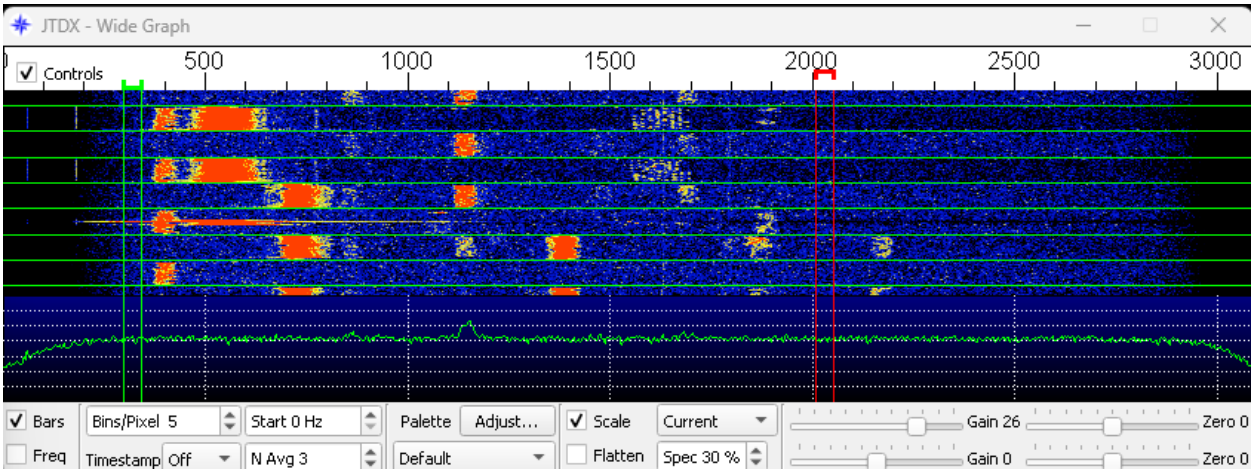


Figure 5 - intended signal at 540 Hz, 3rd harmonic between 1550 and 1700 Hz

Is your computer up to the FT8 task?

There are several programs other than WSJT-X that can be used for FT8. Called derivative works, they all use the WSJT-X code base (which is open source) for the encoding and decoding of a signal. Those developers make changes to the user interface or the edges of the computational engine that they think would be useful. One of these programs, JTDX, added features to alert the user when the computer "loses" a block of audio data coming from the sound card or codec, as well as when the computer does not have enough time to process all of the data at the end of a transmission cycle. While the late processing of data can be an inconvenience, lost blocks of audio data can reduce FT8 receiver sensitivity and can create spurious signals while transmitting.

Figure 6 shows the main screen of JTDX when operating properly. The "Lag" is a negative number, meaning that, in this case, the computer finished processing the incoming audio information .61 seconds before the end of the 15 second transmission cycle. That is a good thing! "Band activity" signifies that all audio data blocks were properly received and processed.

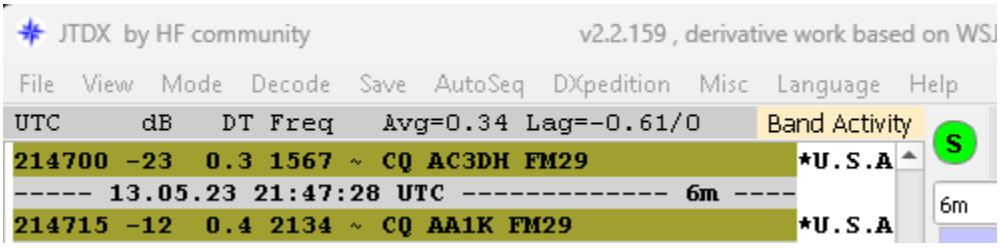


Figure 6 - properly operating JDTX software

Figure 7 shows an example of the JTDX main screen reporting that one block of audio was lost by the computer, even though the computer finished processing all data .77 seconds before the end of the transmission cycle.

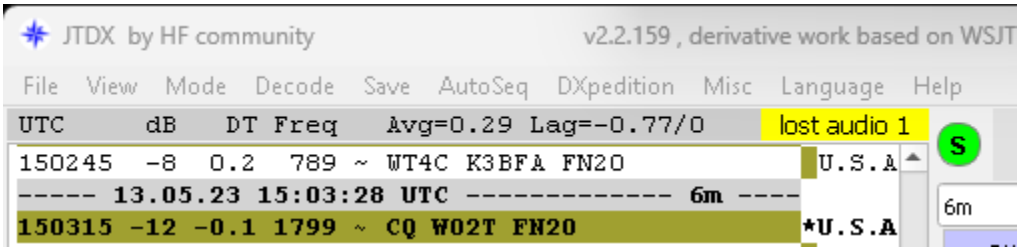


Figure 7 - JTDX reporting a lost audio block

The last case is shown in figure 8 with JTDX reporting both lost audio blocks and a slow computer. Figure 7 shows the computer finishes processing the data .5 seconds after the next transmission cycle starts. In this case, if you were in the middle of a QSO, you would start the next 15 second cycle sending the wrong message.

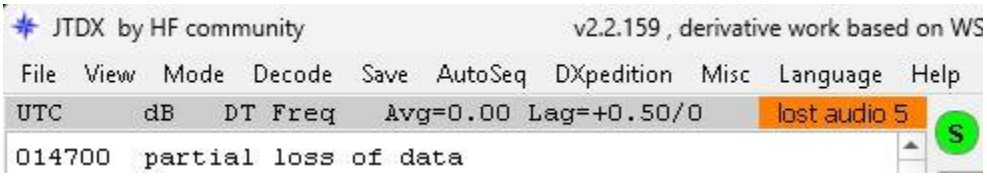


Figure 8 - JTDX reporting lost audio blocks and a slow computer

The FT8 waterfall screen can be instructive in showing when WSJT-X (or JTDX etc) and the host computer fail to deliver all of the audio data to someone else's transmitter. In figure 9, look at the strong signal at about 1630 Hz. In the 21:54:15 time slot, there are several broader horizontal lines that are indicative signal spread caused by lost audio blocks. Those broader signals actually QRMs the weaker signal at about 1440 Hz.

While the above examples were acquired using JTDX, most of the JTDX software is common with WSJT-X and the other derivative works, all of these programs are susceptible to the same issues with a slow or overloaded computer - and they don't necessarily tell you!

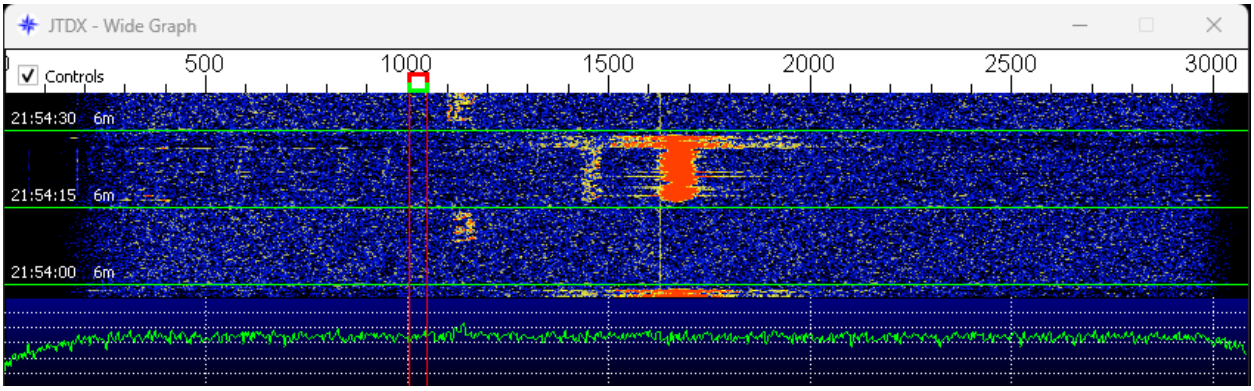


Figure 9 - Lost FT8 audio blocks

On a related topic

The June 2023 issue of QST included an article about the ARRL's Clean Signal Initiative (CSI). In the article, the author outlines what the Programs and Services subcommittee believes are the root causes of poor-quality transmitted signals in the ham bands, and what the ARRL wants to do about it over the next 5 years.

While creating standards and test procedures are a good first start to improve the quality of signals in future equipment, the article ignores the elephant in the room - the return on investment that any commercial manufacturer of ham gear must have on their new products. This is a problem (mostly) for the designers of less expensive equipment aimed at the entry level market. Stricter standards mean more development and production costs, which translates to a higher cost to that entry level ham. Just what many entry level hams do not need!

If serious about the CSI initiative, I believe the ARRL should consider obtaining the rights to some key technologies (either by designing and documenting reproducible circuits in the ARRL labs or purchasing intellectual property) and place them in the public domain (not a GPL license that would require a company to make public some of its own proprietary software). Some examples of this could be the pre distortion technology to reduce SSB splatter, or a low phase/amplitude noise synthesizer to improve all transmitted signals (the ARRL already owns some very expensive (donated) test gear to facilitate this).

Summary

Check your FT8 transmitted signal with a spectrum analyzer or in conjunction with a neighbor that has a good panadapter. Adjust your audio gain controls for the minimum level of spurious signals. Download and run JTDX (version 2.2.159) to see if your computer is actually processing all your data in a timely manner. You may need to reduce the number of other programs running at the same time on the computer, or to invest in a newer, faster computer. Your neighbors will thank you!

Field Day Is! But: Is It a Contest?? John K3TN

It is June and soon Field Day will be upon us. Last month, the PVRC reflector had some debate on the eternal “Is Field Day a Contest?” question. My argument has always been that if logs are not checked, it is not a contest, it is an operating event.

Frank W3LPL pointed out that in 1934 QST there is an article for "The Second Annual A.R.R.L. Field Day **Contest** to Test Portables" but no mention of log checking is made even back then.

Second Annual A.R.R.L. Field Day Contest
to Test Portables
June 9th–10th

Tim N3QE found a 1981 QST column by W1XX:

Operating News

Conducted By John F. Lindholm,* W1XX

What is Field Day?

W1XX said both of these things in that piece:

- “Field Day is an emergency preparedness exercise that encourages maintenance of portable communications equipment and operating skills under difficult conditions.” **and:**
- “Field Day is also an ARRL contest, with contest rules, points, bonus incentives – and some of the most competitive operation you will ever experience.”

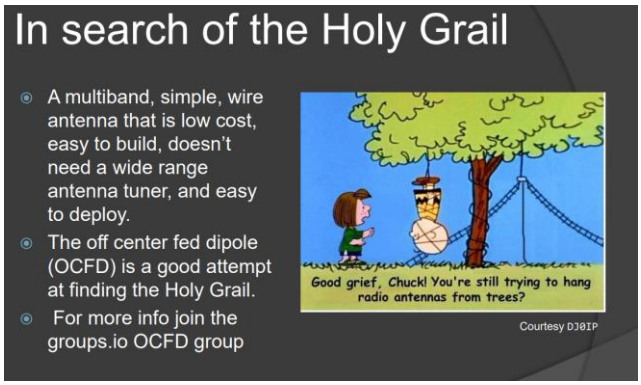
In that same QST column 5 years earlier, George W1NJM pointed out Field Day was originally a “test of portables” because in the 1930’s equipment was so bulky, that supporting emergency communications was difficult. W1NJM also listed 5 things that answered “What is Field Day?”:

1. An emergency preparedness exercise.
2. A contest.
3. A summer picnic.
4. A group effort.
5. **A challenge to amateur ingenuity, inventiveness, and determination in just about any amateur radio field of interest.**

I think that last one captures it -Field Day is whatever you want it to be. But I can’t help launching my killer piece of evidence that Field Day is not really a contest:

The ARRL prints (nearly) full line scores for FD in QST and they don't do that for contests!

Presentation on Off Center Fed Dipoles -Steve K1RF via CWOps



Steve K1RF gave a talk on Off Center Fed dipoles to the Greater Norwalk Amateur Radio Club, his presentation is available here. A bit of history on how OCF dipoles became known as "Windom" antennas and great practical technical info.

I've played a lot with wire antennas over the years and settled on an OCF dipole 20 years ago when we moved into our current house. Having the coax come down closer to the house fit the trees I had for support better, and it seemed easier to match than end-fed antennas I'd tried.

Steve includes a chart by DJ0IP that mirrors my experience: great antenna for the contest bands (80/40/20) but not so good on the WARC bands. It actually presents a 1:1 match on 6m, too, but on 10 and 6 it is so electrically long that it has a very spiky pattern.

80m OCFD: "Typical" SWR by Band, by Feedpoint Split

Feed Point	80	40	30	20	17	15	12	10
20.0%	*		4:1		26:1			
29.3%	*		9:1				10:1	
29.7%	*		12:1				6:1	
33.3%	*		26:1			17:1		

SWR:	<2:1	<3:1	<4:1	<7:1	>7:1

Values shown are approximate, and vary from QTH to QTH.

DJ0IP *ATU required to cover the whole band. ¦ Modelled for 200 Ω 3-JAN-2023

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PVRC DXCC Challenge Standings – Frank W3LPL

Below are the DXCC Challenge totals for PVRC members, transcribed from the ARRL DXCC data as of the 20th of each month or so. Thanks to Frank for the data each month to make this a regular feature. Please report any omissions or errors to Frank.

CALL	DXCC	CALL	DXCC	CALL	DXCC	CALL	DXCC
W4DR	3202	K3JT	2560	K3SX	2031	WB2ZAB	1522
W3UR	3178	N4TL	2553	N3KN	2028	AA4FU	1519
W3LPL	3168	W3BW	2550	W3FOX	2002	K4HQK	1518
K4CIA	3134	N4QQ	2541	W0YVA	2001	K1RH	1508
N2QT	3106	K5VIP	2506	K5RJ	1961	W3US	1506
W4PK	3038	WS6X	2493	W3IP	1941	KU1T	1501
N4BAA	3009	W4VIC	2477	N3KS	1906	N4ZR	1496
N4MM	2987	W2GG	2436	K4EU	1871	N3AIU	1487
W3DF	2986	W3OA	2426	N3ND	1867	W8AKS	1466
WX4G	2966	N4GG	2407	KM3V	1849	N3HBX	1428
K1HTV	2962	WA2BCK	2377	W3XY	1836	WA3EKL	1420
K4SO	2950	N3RC	2359	K3AJ	1818	N8II	1390
K5EK	2937	W2YE	2334	W3KB	1815	W4PRO	1377
N3NT	2929	K1ZZI	2314	W3DM	1791	W9GE	1364
W0VTT	2922	W3YY	2297	W2CDO	1764	AK3E	1348
W3LL	2907	K0GD	2289	KE4S	1758	KG4USN	1337
K2PLF	2903	K4WNW	2278	N4GU	1738	NR4M	1332
W3KX	2897	KA4RRU	2256	K4QE	1726	W3NRJ	1325
KG7H	2896	K3TN	2255	N4XYZ	1720	ND3F	1319
K1AR	2872	NW4V	2219	W4GP	1710	N1SZ	1317
N4DB	2854	K4FJ	2214	N3OC	1706	K4ZA	1313
AB3CV	2838	K1EFI	2190	KF7NN	1698	N1EK	1278
K3WA	2824	N4ZH	2188	NE3H	1668	N3RR	1199
KG4W	2820	W3MR	2180	K3WI	1652	W4NF	1105
K3WC	2739	N4JQQ	2164	K3STX	1647	K3IXD	1090
K3RA	2685	K2BA	2153	N3MK	1644	NE3K	1073
WB3AVN	2663	N3QE	2147	W3UL	1637	N3COB	1049
N3MN	2657	W3TN	2130	K3KY	1606	W4ZV	1047
K5RT	2650	K3PU	2107	KE3X	1588	W3OU	1046
K1GG	2626	W3GG	2071	WB4DNL	1586	K4ZW	1044
W4FQT	2622	N4NW	2068	NA1DX	1579	K4VX	1021
N3KK	2575	AA4NC	2061	N3AO	1527		

Membership News – Tim N3QE

Chapter leaders please remember to complete the Meeting Attendance Report. Members can check and update their roster details via the Roster Lookup.

Upcoming Contests – from WA7BNM

June 2023	
+ **PVRC Reunion**	**0000Z-0159Z, Jun 3 and 0000Z-0159Z, Jun 4**
+ ARRL Inter. Digital Contest	1800Z, Jun 3 to 2400Z, Jun 4
+ ARRL June VHF Contest	1800Z, Jun 10 to 0259Z, Jun 12
+ All Asian DX Contest, CW	0000Z, Jun 17 to 2400Z, Jun 18
+ Stew Perry Topband Challenge	1500Z, Jun 17 to 1500Z, Jun 18
+ His Maj. King of Spain Contest, SSB	1200Z, Jun 24 to 1200Z, Jun 25
+ ARRL Field Day	1800Z, Jun 24 to 2100Z, Jun 25

RED – scores count towards PVRC 5M Awards or Challenge Program

Editor's Last Word – John K3TN

Thanks to W3IP, N1EK, K1RA, K0ZR, N3AM and W3LPL for contributions to this issue of the PVRC newsletter.

I made a game time decision to fly up to Columbus OH, stay with a non-contester friend of mine (Rick WA3UOO), do some bicycling on Friday and drive down to Xenia for Saturday's festivities. Driving down Saturday am from Columbus, the rain stopped right at the Xenia town line and the WX was amazing all day. Good to have eyeball QSOs with many folks.

Looks like laterally diffused MOS amps are the new thing, showing up in many presentations and booths. At the contesting forum, PVRCer Tom W2SC gave a great talk on the new 8P5A.

Krassy K1LZ gave a mind-blowing talk on the computing and switching behind the 60 antenna station he built that won the ARRL CW "multi-multi" category with a mix of local and remote ops. What Krassy has built will do to the MM category what SO2R has done to the single op category times about 9 dB or so.

As always, the quality and usefulness of the PVRC newsletter depends on contributions from members. If you have photos from club meetings, screenshots of new contest software, or writeups on station improvements or contest war stories, send them in any format to jpescatore at aol dot com.

From the PVRC Treasurer – Ted WA3AER

PVRC has chosen not to implement an annual dues requirement. We depend on the generosity of all our club members to finance our annual budget. In addition, active PVRC members are expected to participate and submit logs for at least two PVRC Club Competition contests per year.

When contemplating your donation to PVRC, each member should consider the benefit you are receiving from PVRC and its many opportunities for your personal growth in our wonderful hobby, then donate accordingly.

Direct donations to PVRC via Credit Card or PayPal may be made by clicking this "Donate" button and clicking the next Donate button that appears on your screen:

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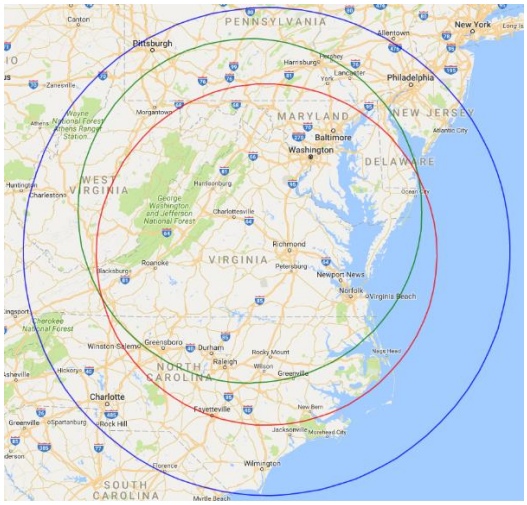
Donations to PVRC are not tax deductible

Eyeball QSO Directions

The latest info on local club meetings and get togethers will always be sent out on the PVRC reflector and posted on the PVRC web site.



Green: ARRL VHF Circle
175 mile radius
Around 38.075N,
78.171W

Red: ARRL HF Circle
175 mile radius
Around 37.43168N,
77.858482W

Blue: CQ HF Circle
250 mile radius
Around 37.43168N,
77.858482W

Now a Word From Our Sponsors

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DX Engineering carries a great selection of hands-free headsets and state-of-the-art headphones from bhi, Heil, INRAD and other top brands. Don't accept anything less than clear, intelligible speech fidelity whether you're doing the speaking or listening. **Enter "Audio" at DXEngineering.com.**

Bioenno Power

Batteries, Chargers, and Solar Products

DX Engineering now carries state-of-the-art LiFePO4 (Lithium Iron Phosphate) batteries from Bioenno Power—a company with a proven track record of producing reliable, longer-lasting power solutions for portable ops. Choose from Bioenno's 12V LFP series (capacities from 3-20Ah; maximum discharges from 7-40A) and AC to DC LiFePO4 Battery Chargers. Bioenno offers customers its True Lithium Capacity Assurance policy, meaning they individually inspect and quality-check every battery before shipment. Also available are lightweight, foldable solar panels (28W to 120W) and Solar Charge Controllers. **Enter "Bioenno" at DXEngineering.com. Batteries from $49.99; Solar panels from $104.99**

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ICO-AH-705

ICOM ICO-IC-705

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With the features and functionality of the IC-7300, IC-7610, and IC-9700, this popular Icom QRP rig is like owning a base transceiver you can hold in one hand. It boasts SDR Direct Sampling technology for stellar transmit and receive performance; 4.3" color touchscreen; real-time spectrum scope and waterfall display; built-in Bluetooth®; wireless LAN; and full D-STAR capabilities. IC-705 accessories include backpack (ICO-LC-192) and compact automatic tuner (ICO-AH-705). **Enter "IC-705" at DXEngineering.com.**

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DXE-TCFP-33	33' Mast, 6 Clamps, 7 Sections, Collapses to 69";	**$469.99**
DXE-TCFP-33HD	Heavy-Duty 33' Mast, 6 Clamps, 7 Sections, Collapses to 69"	**$599.99**
DXE-TCFP-49	49' Mast, 9 Clamps, 10 Sections, Collapses to 81";	**$849.99**

AlexLoop

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Tripod not included

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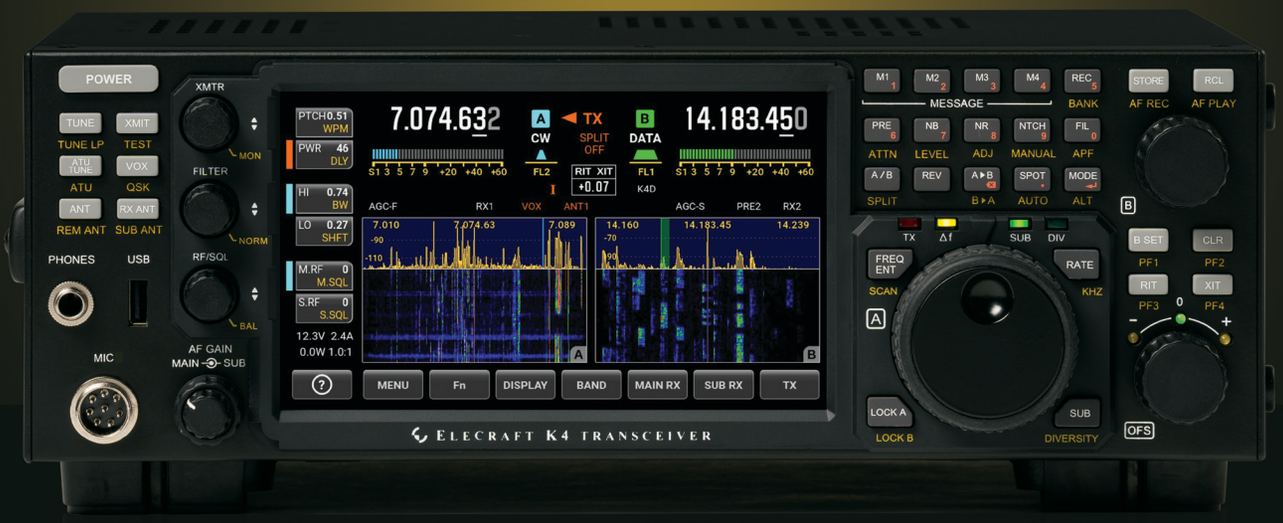
ELECRAFT K4

High-Performance Direct-Sampling SDR



A direct-sampling SDR you'll love to use

Our new K4 transceiver harnesses advanced signal processing while retaining the best aspects of the K3S and P3. It features a 7" touch display, plus a rich set of dedicated controls. Per-VFO transmit metering makes split mode foolproof. Band-stacking registers and per-receiver settings are versatile and intuitive. Control usage information is just one tap away thanks to a built-in help system.

Modular, hybrid architecture adapts to your needs

The basic K4 covers 160-6 m, with dual receive on the same or different bands. The K4D adds diversity receive, with a full set of band-pass filters for the second receiver. (Thanks to direct RF sampling, there's no need for crystal filters in either the K4 or K4D.) The K4HD adds a dual superhet module for extreme-signal environments. Any K4 model can be upgraded to the next level, and future enhancements–such as a planned internal VHF/UHF module–can be added as needed.

Single or dual panadapter, plus a high-resolution tuning aid

The main panadapter can be set up as single or dual. Separate from the main panadapter is our per-receiver *mini-pan* tuning aid, with a resampled bandwidth as narrow as +/- 1 kHz. You can turn it on by tapping either receiver's S-meter or by tapping on a signal of interest, then easily auto-spot or fine tune to the signal.

Comprehensive I/O, plus full remote control

The K4's rear panel includes all the analog and digital I/O you'll ever need. All K-line accessories are supported, including amps, ATUs, and our K-Pod controller. The USB display output supports its own user-specified format. Via Ethernet, the K4 can be 100% remote controlled from a PC, notebook, tablet, or even another K4, with panadapter data included in all remote displays. Work the world from anywhere–in style!

K4 KEY FEATURES

- Optimized for ease of use
- Modular, upgradeable design
- 7" color screen with touch and mouse control
- ATU with 10:1+ range, 3 antenna jacks
- Up to 5 receive antenna sources
- Full remote control via Ethernet

The K4 interfaces seamlessly with the KPA500 and KPA1500 amplifiers

'The performance of their products is only eclipsed by their service and support. Truly amazing!' **Joe - W1GO**

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FTDX10 | *HF/50MHz 100 W SDR Transceiver*

• Narrow Band and Direct Sampling SDR • Down Conversion, 9MHz IF Roofing Filters Produce Excellent Shape Factor • 5" Full-Color Touch Panel w/3D Spectrum Stream • High Speed Auto Antenna Tuner • Microphone Amplifier w/3-Stage Parametric Equalizer • Remote Operation w/optional LAN Unit (SCU-LAN10)

FT-991A | *HF/VHF/UHF All ModeTransceiver*

Real-time Spectrum Scope with Automatic Scope Control • Multi-color waterfall display • State of the art 32-bit Digital Signal Processing System • 3kHz Roofing Filter for enhanced performance • 3.5 Inch Full Color TFT USB Capable • Internal Automatic Antenna Tuner • High Accuracy TCXO

FTDX101D | *HF + 6M Transceiver*

• Narrow Band SDR & Direct Sampling SDR • Crystal Roofing Filters Phenomenal Multi-Signal Receiving Characteristics • Unparalleled - 70dB Maximum Attenuation VC-Tune • 15 Separate (HAM 10 + GEN 5) Powerful Band Pass Filters • New Generation Scope Displays 3-Dimensional Spectrum Stream

FT-710 Aess | *HF/50MHz 100W SDR Transceiver*

• Unmatched SDR Receiving Performance • Band Pass Filters Dedicated for the Amateur Bands • High Res 4.3-inch TFT Color Touch Display • AESS: Acoustic Enhanced Speaker System with SP-40 For High-Fidelity Audio • Built-in High Speed Auto Antenna Tuner

FT-891 | *HF+50 MHz All Mode Mobile Transceiver*

Stable 100 Watt Output • 32-Bit IF DSP • Large Dot Matrix LCD Display with Quick Spectrum Scope • USB Port Allows Connection to a PC with a Single Cable • CAT Control, PTT/RTTY Control

FTM-300DR | *C4FM/FM 144/430MHz Dual Band*

• 50W Output Power • Real Dual Band Operation • Full Color TFT Display • Band Scope • Built-in Bluetooth • WiRES-X Portable Digital Node/Fixed Node with HRI-200

FT-2980R | *Heavy-Duty 80W 2M FM Transceiver*

• 80 watts of RF power • Large 6 digit backlit LCD display for excellent visibility • 200 memory channels for serious users

FTM-200DR | *C4FM/FM 144/430MHz Dual Band*

• 1200/9600bps APRS® Data Communications • 2" High-Res Full-Color TFT Display • High-Speed Band Scope • Advanced C4FM Digital Mode • Voice Recording Function for TX/RX

FTM-400XD | *2M/440 Mobile*

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FT-70DR *C4FM/FM 144/430MHz Xcvr*

• System Fusion Compatible • Large Front Speaker delivers 700 mW of Loud Audio Output • Automatic Mode Select detects C4FM or Fm Analog and Switches Accordingly • Huge 1,105 Channel Memory Capacity • External DC Jack for DC Supply and Battery Charging

FT-5DR *C4FM/FM 144/430 MHz Dual Band*

• High-Res Full-Color Touch Screen TFT LCD Display • Easy Hands-Free Operation w/Built-In Bluetooth© Unit • Built-In High Precision GPS Antenna • 1200/9600bps APRS Data Communications • Supports Simultaneous C4FM Digital • Micro SD Card Slot

FT-65R | *144/430 MHz Transceiver*

Compact Commercial Grade Rugged Design • Large Front Speaker Delivers 1W of Powerful Clear Audio • 5 Watts of Reliable RF Power Within a compact Body • 3.5-Hour Rapid Charger Included • Large White LED Flashlight, Alarm and Quick Home Channel Access

FTM-6000R | *50W VHF/UHF Mobile Transceiver*

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