



JUG

Publication of the
Northern California
Contest Club

NCCC



#612 – July 2023

NCCC – 53 years of contesting excellence

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NCCC MEETING

<https://nccc.cc/meetings.html>

Next In person meeting 16 Jul
1 PM Wagon Wheel BBQ

Rich N6KT

***“Building a station and operating
from Bonaire, PJ4K”***

President's Report

David, KO6M



Greetings Fellow Kbers – As I write this, we all are recuperating from IARU or WRTC. Congrats to everyone involved and wonderful job to those that participated (especially our sponsored team AD6E and K6XX). This was my first time being a part of either contest and I must admit it was fun. I won't go into the details in our operation you can get that from 3830, however I will say I sure missed the M/M Category.

Moving forward before the next newsletter we have NAQP RTTY and CW as our bigger contests. I'll use this point in the newsletter to let you all know about a new challenge from our friends at PVRC. The PVRC is starting the “NAQP Online Club Challenge”. This challenge while not under the NAQP umbrella is a wonderful way to increase club participation and “butt in chair” time.

I know what you are thinking ... “all contests and challenges do that, what makes this one different?” This challenge is unique in that it requires operators to report their scores live to the Contest Online Scoreboard. You don't have to watch the scores, you don't have to do anything for them to upload once you configure it in your logger. All you do is contest as you are used to and the scoreboard and the PVRC Challenge gurus do the rest. SO, SOA, and M2 will all be tallied. All six NAQP events will be included in the challenge and the totals will be available at <http://pvrc.org/nocc.html> The final club totals will be announced in late August.



About NCCC

Officers and Directors, 2023-2024 Contest Season

President: David West, [KO6M](#)
Vice-President/Contest Chairman: [Chris Tate, N6WM](#)
Secretary: Greg Alameda, [KK6PXT](#)
Treasurer: [Nian Li, WU6P](#)
Past President: [David Jaffe, WD6T](#)
Director: [Bob Cox, K3EST](#)
Director: [John Miller, K6MM](#)
Director: [Ed Radlo, AJ6V](#)

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Awards Chair: [Gary Johnson, NA6O](#)
California QSO Party Chair: [Dean Wood, N6DE](#)
QSL Mgr [[K6ZM](#)]: vacant
QSL Mgr [[K6CQP/N6CQP/W6CQP](#)]: [Ed Muns W0YX](#)
NAQP Teams: [Fred Jensen, K6DGW](#)
NA CW Sprint Teams: [Bob Vallio, W6RGG](#)
NCCC Email Reflector Admin: [Phil Verinsky, W6PK](#)
Worked All CA Counties Award: [Fred Jensen, K6DGW](#)

NCCC Thursday Night Contesting

NCCC Sprint: [Tom Hutton, N3ZZ](#)
NS CW Ladder: [Bill Haddon, N6ZFO](#)
NS RTTY Sprint/Ladder: [Ed Radlo, AJ6V](#)

Communications

Webmaster: [John Miller, K6MM](#)
Webinars: [Bill Fehring, W9KKN](#)
Membership: [Gary Johnson, NA6O](#)/[Ian Parker, W6TCP](#)

JUG Editor

[Fred Jensen, K6DGW](#): k6dgwnv@gmail.com
Home: 775.501.5488
Cell: 530.210.0778

While this Challenge started without us knowing about it, it will continue to evolve and grow over the next year. I hope we embrace it and continue to contest exuberantly.

I know this is a controversial idea because of the online scoring. I for one embrace this idea and hope more of you will as things move forward. Please reach out to the club via the reflector if you need help with configuring your logger to send your scores to the server.

Lastly, I would like to take the time to share the list of proposed meeting dates. There are a few open meeting topics. If you have a presentation you would like to share with the club, please let me know.

August 8th - CQP

September 12th - IARU/WRTC Review

October 22 – BBQ at N6RO

November 14 - TBD

December 12 - TBD

January 9 – TBD (Probably in person)

February 13 - Looking to have an international presentation this month.

March 12 - TBD

April 9 - Awards Presentation

Thank you and I look forward to seeing you in person and hearing you on the air!

73,
David, KO6M

VP/CC Report **Chris, N6WM**



Greetings KBers! I hope the summer is treating you all well. As I write this it is the Monday after WRTC. I want to congratulate our NCCC competitors, as well as all of the competitors, most of which are friends from around the world. And of course, a big congratulations to I44W(UW7LL/VE3DZ) for their impressive score and win. I hope many of you were able to work I46V to win a fine bottle of W0YK's fantastic wine, I know both N6WM and K7GK operations were able to do so in the East Bay...



as well as making a couple of Qs with AD6E/K6XX WRTC on phone and CW! For those interested in “going for it” on the 2026 cycle, keep your ears peeled as the organization for it spins up, and they announce the contest requirements for qualification. This often requires great dedication and to operate and do your best in many contests that are not so easy from north W6, and the competition is fierce with some of the CW and SSB prodigies of our avocation as fellow Californians.

Although recent conditions are reflective of summertime, the solar peak is providing some enhancements that may add to the fun of the upcoming summer NAQP events. For newer members, NAQP events are great for station shakedown and fun as they are in 3 main modes of RTTY, CW and SSB. They allow for SO2R, have assisted as well as non-assisted categories, and M/2 for the multi-ops among us. And more importantly for our club, they allow for team competition so single ops can participate as a group as well. This all starts on the Saturday prior to the club meeting with the summer run of NAQP RTTY. By the time you read this, K6DGW should be well into coordination of team sign ups for this. Please join me in offering big thanks to Fred for his dedicated NAQP flogging. So let’s start warming up to operate as a cohesive “Team NCCC”, a great opportunity to some fun and prepare for upcoming club competition events!

I also want to encourage all of your attendance for our next meeting. Rich N6KT will be presenting on his latest qth project in PJ4. Rich is one of the best SSB operators in the world and is a long time and highly respected member of our NCCC family. He is also a great presenter, and a really nice person. So, let’s do our best to get to the Wagon Wheel BBQ, and show our support. On that note I will take my VP/CC time to start the conversation of potential club competition opportunities, maybe as a group we can collectively agree on a couple of targets for the upcoming contest season.

So I look forward to meeting with as many of you as possible this Sunday, enjoy Rich’s talk, and put on your thinking caps for upcoming club opportunities.

73 and seeya next one

Chris Tate, N6WM

News Flash!!

Electrons Are Way Rounder Than Was Thought

Though somewhat small, electrons make our hobby possible. We often think of them as tiny round-ish marbles coming in the “brown” variety [born with substantial quantities of climate warming gasses], and the “green” variety, direct from the sun, river, reservoir, or wind. Recently, physicists have measured very precisely just how round they are, and the result is staggering. Expanded to the size of the Earth, they deviate from perfection in roundness by less than the height of an atom. Could be that's why they seem to slip through the wires so easily. You can read the whole story at:

<http://phys.org/news/2023-07-roundness-electrons-clues.html?fbclid=IwAR0Hb-nwcbvZc1ff-V5v61tUwtoUDVHjZOn0cQ54Giz9FEKYZbigvt5TQgs>



West Valley ARA Field Day

Jim Peterson, K6EI



This year the West Valley Amateur Radio Association (WVARA) -- including several NCCC members -- operated QRP in the 12A Battery category from Mora Hill in Rancho San Antonio Open Space Preserve, overlooking the Silicon Valley from an elevation of 500 feet as K6EI.

This year our team included: W9KKN, N5YJZ, W6IA, K0XI, K9DK, KF6EMB, W6ESL, AD6RY, AK6BY, KK6VF, KM6VHG, KB6NTW, KC7XE, NK6FGH, KN6ZMT, K6XM, KZ2V, KC6LBJ, W6VVQ, AJ6PV, W1MVY, WA2CRQ, and K6BBY.

Our projected score of 27,395 is almost 50% higher than last year's. And for reference, last year our score placed us at #2 out of roughly 5,000 entries nationwide -- second only to the East Coast W3AO mega-station. Not shabby!

Scoring:

TOTAL QSOs 2,877 (compared to 2,058 QSOs last year)

Total QSO Points* = 4,945

Claimed QSO score = QSO pts x power mult = 4945 x 5 = 24,725

Total Score = Bonus Points + QSO Score = 2,670 + 24,725 = 27,395

* Each CW or Digital QSO is worth 2 QSO points; each Phone QSO is worth one QSO Point.

According to the ARRL's propagation bulletin, conditions were favorable over Field Day weekend with the exception of a brief period when the planetary K index rose to 5 on Saturday night. The sunspot number on Saturday peaked at 200 (wow!!!) with a solar flux around 160. There was plenty of action on 15 meters, and 20 meters stayed open the entire 24-hours. Sadly, 10 meter band conditions were a bit of a disappointment.

We had a Get-On-The-Air (GOTA) station, three HF CW stations, three HF SSB stations, three HF digital stations, and five VHF/UHF stations including one with satellite link capabilities. Our GOTA station (W6ZZZ) was particularly popular with plenty of drop-in visitors including a good number of kids, and Mark (W6IA) single-handedly netted us eleven satellite contacts.

Being outdoors also meant that we got to put up wild-n-crazy antennas that our spouses and neighbors would never allow back home. Antennas on Mora Hill this year included a pair of 4-band (10/15/20/40) yagi antennas for CW and SSB, and a traditional tribander (with 40m driven element resonator) for the digital tent. SSB, CW, and Digital each had a triplexer which enabled sharing each yagi between multiple transmitters. We also had separate 80m dipoles for each mode. GOTA had a multiband fan dipole and VHF antennas.

In order to minimize interference within our site, we took care to have HF transceivers with well-designed front-ends in order to minimize spur transmissions and receiver pumping/de-sensing. Most of our site's HF stations used Elecraft or Flex transceivers. We likewise set up most of our antennas in a line pointed at the East Coast, so the side lobe rejection helped reduce interference. Being QRP further helped control cross-mode interference on each band.



Our digital stations benefited from Bobby K0XI's van which came with a self-contained 30 foot telescoping mast. In order to minimize interference between the CW and digital stations, we located the digital yagi about 200 feet from the rest of the site. The digital team was able to avoid long runs of coax by installing the digital RF hardware for both of their stations in the van and then running 200 feet of CAT5 Ethernet cable to the main site where the digital tent and the Flex terminals were located.

It's never too early to start thinking about FD2024. If you have any thoughts, questions, or would like to get involved with next year's operation, let me know.

Jim, K6EI
WVARA Field Day Coordinator
CQFieldDay@gmail.com

New Inter-Club Contest

The Potomac Valley Radio Club has initiated a new contest-within-a-contest for the NAQP's similar to the one that ran between NCCC, PVRC, SMC, and DFWCG for several years. There are a couple of wrinkles to this new contest ... it's open to all clubs and it employs the Contest On Line real-time scoring system. Club participants simply set up their loggers to send their QSO's in real-time to the On Line system and PVRC will do the rest. It begins with the NAQP RTTY which occurs on Sat, 15 Jul, and will cover all six.

Chris, N6WM, reports that the NCCC Board has decided to participate. Since the notice is short for the upcoming NAQP RTTY, we'll see #1 as somewhat of a test. You will find detailed instructions for configuring more logging programs than any of us knew existed at <https://blog.contestonlinescore.com/documents/>

If you plan on operating in Saturday's NAQP, give the instructions a try and lets see how it works out.

JUG Authors Needed ***No Journalistic Experience Required***

You might have noticed that this month's JUG is a little thin. We have the usual regulars, Jim's Field Day report, the usual drivel from your's truly, and the ads of course. Everyone is always working on their station ... new antenna, radio, or accessories and your experiences are interesting to all of us. Remote operations have become very common, and as Rick, N6XI, has said, "Remote operation involves a lot of 'moving parts,' and at any given time, you can only see half of them." There are a number of techniques for remoting your operations now.

Got an idea for a recurring column? Something historical? Found a good book? The possibilities are nearly endless. And, you can write directly in an email, attaching photographs, diagrams, and graphics. The JUG editorial staff can even extract photos from PDF and a few other file formats. That same handsome and talented staff will also take care of all the formatting so you can concentrate on the information and content.

It's not too early! The JUG is published just prior to the monthly meetings, generally just before the middle of each month. Start now for the August JUG!



Tube of the Month

Norm Wilson, N6JV

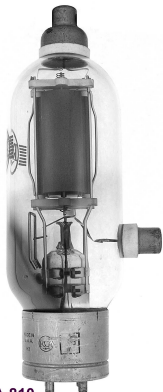
Visit the Tube Museum at n6jv.com

810



In the mid-1940s, RCA started advertising again the tubes they developed before the War. Many of the tube types were widely used by the military, but with the end of the War, RCA needed to expand their commercial customer base. Commercial AM radio had been shut down during the War and was ready for enormous growth. In the late 1940s, the people had an AM radio in the kitchen and one in the car. The major manufacturers of AM broadcast transmitters seem to like to use similar tubes. The major players in this market, were RCA, Gates and Collins. Local radio stations were licensed for power levels commonly in the

250-to-1000-watt range. There were also stations down to 50 watts especially a night. The running of lower power at night was a very common requirement.



RCA 810



RCA 1627

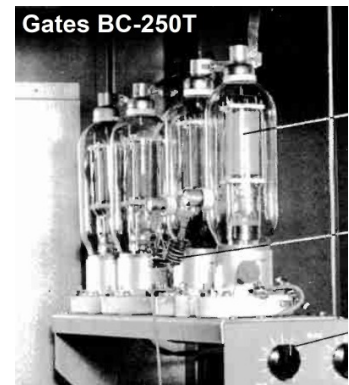
The tube that seemed to be very popular was the RCA [810](#) that was first announced in 1938. This 150-watt triode was recommended by RCA to be used as a modulator as well as an RF amplifier. The tube was good to 30 MHz plus and used up to 2250 volts at 275 ma on the plate. The filament was 10 volts at 4.5 amps. It would have been very popular among the hams, but they were buying 250TH and 304TL tubes for small change on the surplus market. RCA liked the 810 and modified it with a different grid and created the [8000](#) which had a mu of 16.5 instead of 36. They also made a version of the 810 with a 5-volt filament called the [1627](#). Taylor Tubes also made an [810](#), but it had slightly different characteristics.

RCA, Gates and Collins all used the 810 in their 250-watt transmitters.



Gates BC-1T

The Gates BC-250T transmitter was the most popular set in this class. At 750 pounds this is a lot of weight for 250 watts out. The key was that the 250-, 500- and 1000-watt amplifiers were basically the same. You could buy a 250 and later buy a kit to make it into a 1000. It may have been easier to buy the BC-1T and get a kit to change the tubes and run 250 watts as all the sets used the same parts except for the power supply and



Gates BC-250T

some tank capacitors. The BC-1T used [833A](#) tubes and the 10-volt filament transformers could be used with the



smaller 810 tubes. The 250-watt stations were so conservative and reliable that some were still in use 40 plus years after they were installed. Today several of these transmitters have been bought by hams and operated on 160-meter AM.



IARU 2023 – WD6T @ W7RN



2,131 CW QSO;s / 124 Zones / 132 HQ = 2,116,352 pts

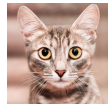


Editor Notes



The JUG is now archived! <https://www.archive.org/details/northern-california-contest-club> Click on “Collections” on the page that opens, they're all there [I checked!]. NCCC now has an archive account and we can add new issues as they are published. Major thanks to Archivist Kay Savetz for this opportunity and for filling our archive with past issues.

The 2003 ARRL Field Day is history. Like Schrodinger's Cat, it simultaneously is and is not a contest. Conditions seemed mixed, SFI > 150, Kp at 3 and 4, which seems to be the way the Cycle 25 run-up has been for some time now.



Visalia 1986 – Some of the Usual Suspects

Tom, K5RC



Know any of this trio?

The Original JUG?



It was nicknamed “Jug” by its pilots which was a shortened version of “Juggernaut” and this name was chosen because the P-47 was incredibly tough to shoot down. Or possibly because it looked like a jug if you stood it up on its nose.

It's the Republic P-47 Thunderbolt, classed as one of the most versatile fighters in WW2. The turbocharged 18-cyl radial engine powered the huge, constant speed propeller. Max take-off weight was almost 16,000 lbs making it one of the heaviest fighter aircraft in the war.

Used by several countries, production ended in 1946 but the JUG persisted in the air until the mid-60's



NCCC Membership Information

If you wish to join NCCC, please fill out an application for membership, which will be read and voted upon at our monthly meeting. To join, you must reside within club territory which is defined as everything in California north of the Tehachapi's up to the Oregon state line, and part of northwestern Nevada (anything within our ARRL 175-mile radius circle centered at 10 miles north of Auburn on Highway 49).

Life Memberships

Life memberships are \$250.00 Contact secretary.nccc@gmail.com. Members who have reached 80 years of age have and been an NCCC member for 20 or more years are eligible for Honorary Life Membership (“80/20 Rule”). Contact secretary.nccc@gmail.com

JUG Articles Wanted!

Your help allows us to produce a quality newsletter. Please consider submitting an article! The editor welcomes any and all relevant articles for inclusion in the JUG. The preferred format is plain, unformatted ASCII text, MS Word (.doc/.docx) are acceptable. Indicate the insertion point and title of diagrams and pictures in the text and attach photos/diagrams separately. Pictures should be as high a resolution as available. Please do not spend time formatting your submittal, the publication templates will re-format everything. Send your material to k6dgwnv@gmail.com indicating “JUG Submittal” in the subject.

Northern California Contest Club Reflector—Guidelines

The NCCC email reflector is devoted to the discussion of contesting. Topics include contests, station building, dxpeditions, technical questions, contesting questions, amateur radio equipment wants/sales, score posting, amateur radio meetings/ conventions, and membership achievements. Postings may not include personal attacks, politics, or off-subject posts. Such postings will be considered a violation of the Guidelines

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Twitter: “NCCCCKB”



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Welcome to the NCCC Land's End store. You can choose many different products and add a custom-embroidered NCCC logo.

If you would like to add your name and/or call sign, click the Add Personalization button when designing your garment (\$8 charge, 10 character limit).

If you have questions, contact the NCCC secretary at: secretary.nccc@gmail.com



Northern California Contest Club

[NCCC Lands' End Store](#)

We are pleased to announce that the new NCCC Land's End store is online! You can choose from an array of shirts, jackets, and hats and apply your choice of custom-embroidered NCCC logos: A plain one, or one that also says Fifty Years. And, you can personalize your item by adding your name and/or call sign. The store is open 24/7 and items are shipped directly to you. No more waiting for everyone else to make up their minds on a group purchase.

<https://business.landsend.com/store/nccc/> or from the NCCC website: <http://nccc.ccc/members/lestore.html>

Thanks to W6TCP for helping to set this up. Instructions for purchases from Lands' End NCCC Store

1. Go to <https://business.landsend.com/store/nccc/>
2. Click on Men's or Women's link, then choose item(s)
3. Pick color, inter quantity of each size you want to order.
4. Click Apply Logos and Personalizations. This will display the logo choices. Try them out. It will show you what they look like on your chosen fabric color.
5. Select a location for logo (left side, ride side, back, etc)
6. Click Apply Logo.
7. Optionally, click Add Personalization to add your name or call sign (\$8.00, 10 character limit)
8. Click Add to Bag and Continue Shopping or.
9. Start Secure Check out. Account creation and credit card required.





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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 Video output can mirror the K4 screen or display a high-res Panadapter only screen. 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

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- 65W of Power for Long Range Communications • 4.5 Watts Loud & Clear Audio • Modern White Display & Simple Operation • Weather Channel Receive & Alert Function



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- 65W RF Output Power • 4.5W Audio Output • MIL-STD 810 G Specifications • 207 alphanumeric Memory Channels • Built-in CTCSS/DTCS Encode/Decode • DMS



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IC-7100 | All Mode Transceiver

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IC-7610 | HF/50 MHz All Mode Transceiver

- Large 7-inch color display with high resolution real-time spectrum scope and waterfall • Independent direct sampling receivers capable of receiving two bands/two modes simultaneously



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IC-T10 | Rugged 144/430 MHz Dual Band

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- 10 kHz to 3 GHz Super Wideband Coverage • Real-time Spectrum Scope w/Waterfall Function • Remote Control Function through IP Network or USB Cable • Decodes Digital Incl P25, NXDN™, D-STAR • SD Card Slot for Receiver Recorder



ID-5100A Deluxe VHF/UHF Dual Band Digital Transceiver

- Analog FM/D-Star DV Modes • SD Card Slot for Voice & Data Storage • 50W Output on VHF/UHF Bands • Integrated GPS Receiver • AM Airband Dualwatch

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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



FTM-400XD | 2M/440 Mobile

- Color display-green, blue, orange, purple, gray • GPS/APRS • Packet 1200/9600 bd ready • Spectrum scope • Bluetooth • MicroSD slot • 500 memory per band



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-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



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



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-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-991A | HF/VHF/UHF All Mode Transceiver

- 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



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



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



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



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-6000R | 50W VHF/UHF Mobile Transceiver

- All New User Operating Interface-E20-III (Easy to Operate-III) • Robust Speaker Delivers 3W of Clear, Crisp Receive Audio • Detachable Front Panel Can Be Mounted in Multiple Positions • Supports Optional Bluetooth® Wireless Operation Using the SSM-BT10 or a Commercially Available Bluetooth® Headset



- RETAIL LOCATIONS – Store hours 10:00AM - 5:30PM - Closed Sunday
- PHONE – Toll-free phone hours 9:30AM - 5:30PM
- FAX – All store locations
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