



Publication of the Northern California Contest Club



Issue 515

April 2015

Inside this issue:

Amendments	4
Gee Grandma	5
VP/CC	7
Contest Calendar	8
HRO	9

Guests are always welcome at the NCCC!
Please join us.

NCCC Meeting

Thursday 9th April 2015

Location:-

Harry's Hofbrau, 390 Saratoga Avenue, San Jose, CA 95129 (408) 243-0434

Time:

6:00pm Schmooz, 6:30pm Dinner, 7:00pm Program

Program

- "Year In Review" by Byron, N6NUL
- "K1N Navassa DXpedition - Brief Summary" by John, K6MM
- "Annual Election of NCCC Officers"
- "A Transmission Line Power Paradox and Its resolution" by Steve Stearns, K6OIK

President's Report

I am pleased to announce the slate of candidates for the April 9 election of officers and board of directors for NCCC for 2015-2016:

President: Bob Hess, W1RH
Vice President: Steve Dyer, W1SRD
Secretary-Treasurer: Tom Carney K6EU

Board of Directors:

Rick Karlquist, N6RK (past president)
Rusty Epps, W6OAT
Rich Cutler, WC6H
Ron Castro, N6IE

A second attempt at a by-laws amendment is in process to create separate offices of secretary and treasurer. Tom, K6EU has agreed to stay on as secretary-treasurer for an additional month to allow for the amendment to take effect. The plan is for him to resign at that time, and for Bob, W1RH to appoint Joanna Dilley, K6YL as secretary. He will also appoint a treasurer, who he will identify later. I would like to thank Tom and Joanna for volunteering to serve.

The NCCC has traditionally been an SF peninsula centric club, with meetings mainly in the south bay. Members in outlying areas, such as MLDXCC and REDXA territory rarely attended meetings and mainly served to submit scores for Sweepstakes and other focus contests to NCCC instead of to their home clubs.



continued on page 3



Northern California Contest Club

Excellence In Amateur Radio Contesting

Officers:

President	Rick Karlquist,	N6RK	richard@karlquist.com
Vice President /Contest Chair	Byron Servies,	N6NUL	byron@n6nul.org
Secretary/Treasurer	Tom Carney	K6EU	k6eu@arrl.net
Past President	Alan Eshleman	K6SRZ	doctore@well.com
Director	Tom Hutton	N3ZZ	n3zz.tom@gmail.com
Director:	Ron Castro	N6IE	ronc@sonic.net
Director:	Don Taylor	K6GHA	k6gha@sbcglobal.net

Volunteers:

New Member Mentor	Al Rendon	WT6K	wt6k@arrl.net
Charter Member	Rusty Epps	W6OAT	w6oat@sbcglobal.net
Awards Chair	Joanna Dilley	K6YL	joanna.k6yl@gmail.com
CQP Chair	Chris Tate	N6WM	ctate@ewnetinc.com
CQP Certificates	John Miller	K6MM	k6mm@arrl.net
K6ZM QSL Manager	George Daughters	K6GT	k6gt@arrl.net
K6CQP,N6CQP,W6CQP QSL Mgr	Ed Muns	W0YK	w0yk@arrl.net
NCCC Email reflector Admin	Phil Verinsky	W6PK	kb-w6tqg@verinsky.com
Webmaster	John Miller	K6MM	k6mm@arrl.net
JUG Editor	Ian Parker	W6TCP	w6tcpian@gmail.com
jug@nccc.cc	Fred Jensen	K6DGW	k6dgw@arrl.net
	David Ashworth	NC6P	nc6p@yahoo.com



Northern California Contest Club

Excellence In Amateur Radio Contesting

NCCC Net

Thursday 8 PM

Freq: 3.610 +/-

NCCC

Monthly meetings take place on the second Monday of each month !

NCCC Membership Information

If you wish to join NCCC, you must fill out an [application for membership](#), which will be read and voted upon at the next monthly meeting. ([PDF application form](#))

To join, you must reside within [club territory](#) which is defined as the maximum of:

- Northern California, anything north of the Tehachapi's up to the Oregon border, and
- A part of north-western Nevada (anything within our ARRL 175-mile radius circle centered at 10 miles North of Auburn on Highway 49).

Last year, I learned from a former officer of PVRC that they have a de-centralized structure with several regional chapters and only one plenary meeting of the entire club per year. At this time last year, there was a crisis in terms of obtaining officers. Part of the problem with getting volunteers for officer was the Monday night meetings in the Bay Area. These are an extreme hardship for an prospective non Bay Area officers. Bob, W1RH and I agreed that we could get a much larger base of possible officer candidates if we restructured the club to me more decentralized, like PVRC. Although not exactly like PVRC, more on that later. Bob had some great ideas for this that we discussed last year. I tried to take some small steps in this direction by having fewer meetings, and having one of them in Dixon.

Bob intends to take this trend farther. The plan will be to have meetings on weekends in a more "central" location. Not a rotating location. That doesn't work for officers who need to attend all meetings. I suggested to Bob that we meet at the Old Spaghetti Factory in Concord. It has similar banquet facilities to the OSF in Stockton where a number of joint meetings have been held. The Concord OSF is only 1/2 mile from the Concord BART station. This will give us the entire BART system as a way of getting to the meeting, without a long drive. The Amtrak capitol corridor runs from San Jose to Oakland and Roseville to Oakland. There is a transfer to BART at the Oakland Amtrak station. REDXA members would have to drive to the Richmond BART station. Fewer meetings would be held, but speakers would be recruited that would have a bigger draw. The hope is that this defacto restructuring of the club would make it a more inclusive regional club. We would not propose to turn the independent clubs into chapters of NCCC. The formation of additional NCCC chapters is a possibility in the future if members want to do so. The board is balanced geographically with members from REDXA, MLDXCC, and the peninsula.

Bob brings to the NCCC presidency a lot of energy and vision. He can draw on his extensive experience with YCCC. He also just completed 3 years as MLDXCC president. In that time, he has championed alliances with local non-contest "feeder" clubs to recruit future contesters. He holds a high level technical position with CBS-TV and is the director of the TV antenna facility in Walnut Grove that serves 8 Sacramento TV channels. The chief engineers for each channel report to him, which sounds like a job herding cats. I think his managerial experience will help him to get all the moving parts of NCCC on the same page.

As usual with these sorts of reorganizations, the devil is in the details, and they haven't been worked out. So some fine tuning is probably appropriate. Please help Bob with constructive suggestions to implement the new plan. The new candidates including myself are on board with Bob's vision for the club.

Rick Karlquist, N6RK
President, NCCC

Status of Proposed amendment to the NCCC Bylaws.

At the February meeting of the Northern California Club, Tom, N3ZZ, presented a proposal to change the club bylaws. This change would separate the office of secretary/treasurer in to an office of secretary and an office of treasurer. This proposal received more than the five signatures required and was delivered to the current sec/treas. In accordance with the current bylaws, I called for a vote by full members of the club with voting to end on March 19th.

Unfortunately problems were later discovered in the specific wording of the amendment that lead to the conclusion the proposal should be withdrawn, revised and resubmitted. To complicate matters we discovered there was no practical way to withdraw the petition. Thus we had to let voting continue to March 19th deadline. The original petition failed to receive the required 2/3 majority and thus has been defeated.

After discussion via the NCCC reflector, a revised petition has now been prepared, signed by the required number of members and delivered to the current sec/treas. Thus in accordance with the bylaws, I now call for a vote on the revised petition by full members of the club with voting to start on April 2, 2015 and to end on May 3, 2015.

The revised petition was signed by members: K6MM, N6ZFO, W6RGG, W4UAT, K6GHA, K9YC, and N6RK.

Text for the current bylaws and the proposed revisions are attached along with the signed petition.

Full members can vote by email to nccc.treasurer@gmail.com or via USPS to:
Tom Carney, K6EU
1545 Elwood Dr.
Los Gatos, Ca 95032

“Gee Grandma, you really need a sound bar for your big TV”

A Saga in F Plans [and at least 3 martini's]

So said #2 grandson Christopher. After #2 grandson explained "sound bar", Grandma ordered one from Amazon and asked Grandpa, "You do know how it connects to the TV, right?" Grandpa replied, "Everything is bluetooth these days. Should be a walk in the park."

Plan A: Sound bar arrived. Sure enough it has bluetooth, but won't find the TV. Not to worry, apparently we just need to turn the TV bluetooth on. [insert 3-day delay reading TV book, lost in its menus, and searching Panasonic web site for instructions to turn the bluetooth on]. Grandpa sends SMS text to Christopher for help.

While waiting for a reply from #2 grandson, Grandpa calls Panasonic and asks, "How do I turn on bluetooth on our television." Jeremy, The Panasonic Teenager, searches his database and finally replies, "That model doesn't have bluetooth," neatly explaining why Grandpa can't figure out how to turn it on and crushing Grandma's assertions about his lack of electronic skills.

Grandma immediately wants to know how we could have bought the "Most Expensive Television At RC Willey That Doesn't Have Bluetooth." Knowing Grandma doesn't have a clue what bluetooth is, Grandpa decides we've lived without a sound bar for two years, one more night isn't going to kill either of us, and mixes the first martini.

Plan B: Based on Grandpa's extensive knowledge of RCA phono jacks and fairly large supply of component connection cables from past excursions into modern entertainment technology -- for Plan B, we'll just connect it that way. Sound bar end goes well, there are only two connectors ... LEFT and RIGHT ... what could go wrong?

Alas, there are three, not two, RCA phono jacks on the back of the Very Expensive Television That Doesn't Have Bluetooth, they are not labeled LEFT or RIGHT, and they are inputs, not outputs. Again, Jeremy, The Panasonic Teenager, who is beginning to sound a little more human, confirms that there are no audio output connectors with RCA phono jacks on the Very Expensive Television That Doesn't Have Bluetooth. Grandpa decides not to ask what the three that are there actually do, leading to martini #2, more-liquid-less-ice this time, and another night sans sound bar.

In the shower that night, Grandpa realizes that the component cable can plug into the back of the satellite DVR heralding **Plan C**. 14 hours later, the television sound is coming out of the sound bar. Success! Less than 60 minutes later, Grandma interrupts a CW QSO to announce that Plan C does not work for watching Netflix, and is thus "Totally Unacceptable!" Well Duh! Netflix arrives over the Wi-Fi signal, the Wi-Fi radio is in the Very Expensive Television That Doesn't Have Bluetooth, not the satellite DVR, ergo Netflix will not play through the sound bar ... very solid logic there ... which, it turns out, is still "Totally Unacceptable."

Receiving no reply from #2 grandson [common when possible work is involved], Grandpa sends an SMS text to Youngest Son in Sparks NV. "Do you know what a sound bar is? Do you have one?" which really was unnecessary, Youngest Son has everything. He replies, Yes and Yes," Grandpa asks, "How did you hook it up?" He replies, "Using the optical audio cable that came with it," which signaled the beginning of ...

Plan D: Carefully checking the sound bar box, and then the parts list, Grandpa finds small print that says, "Optical Audio Cable" (available commercially)." Jeremy, The Panasonic Teenager, now sounding positively familial, carefully explained that the cable is called an "Optical Audio Cable." I already knew that of course but he was almost calling me "Dad" by this time and I didn't want to offend him. He said it was available in any electronics store, "Do you have a Best Buy?" Strangely, it turns out that, although Auburn is not a hot bed of large stores of the box variety, we do have a Best Buy.

Fortunately it's not a long trip [nothing in Auburn is a long trip], where Cody, The Best Buy Teenager, looked at the manual and said, "Yes, we have that, 4 ft or 6 ft?" Resisting the urge to avoid yet another decision and just say "Both," Grandpa took the 4 ft cable in a box marked "Rocketfish" and headed home.

The cable was indeed four feet long with a molded connector on each end and a tiny little transparent light-bulbie thingy on each end. Well, it is "optical" so that makes sense. It doesn't seem to fit in the sound bar however. Trying it in the Very Expensive Television That Doesn't Have Bluetooth didn't go real well either. SMS text to Youngest Son asking how hard he had to shove to get it connected yielded, "It just sort of slid in, it only goes in one way." Several more tries, including a couple by Grandma, a trip through Google yielding a photo of the Toshiba Standard Optical connector which did not have the light-bulbie thingy, and it was clear it would be another sound bar-less night. Grandpa poured martini #3, all-liquid-no-ice. Fortunately, Best Buy is open on Sunday.

Plan E: Sunday morning, after re-setting all the clocks and his watch, studying the comics, and making breakfast, Grandpa was strapping the braces on his legs to go down to see Cody, The Best Buy Teenager, when he took one more close look at the connector and the photo of the Toshiba Standard Optical connector and noticed that the light-bulbie thingy on the end turned. In fact, it came off, leaving a connector that looked exactly like the one in the photo. Not only that, it now fit nicely into the sound bar. A quick check revealed that the other end, sans light-bulbie thingy, also fit the Very Expensive Television That Doesn't Have Bluetooth and just possibly, success was finally looming on the horizon.

The sound bar was installed on the TV stand, the anti-fall cable was attached, the Optical Audio Cable with Toshiba Standard Optical connectors was connected, and Grandma turned the Very Expensive Television That Doesn't Have Bluetooth on since Grandpa doesn't do remote controls. It worked just fine, however no sound came out of the sound bar, necessitating ...

Plan F: With the power cord connected and now plugged in, the sound bar finally emits sound from the satellite receiver, and from Netflix. With a great deal of relief, Grandpa assembled martini #4 and headed for 20 CW after an SMS Text message to Youngest Son ... "Mission Accomplished." About 20 minutes later, the smartphone advised Grandpa in Morse code of an SMS Text message from Youngest Son. The message read, "Great Dad! Now you need to get a sub-woofer for it." There aren't enough martinis in the entire universe for that to ever happen.

Fred K6DGW

VP/CC Corner - The Year in Review

Another year as past, and as this is my last week as VP/CC I thought a little review might be just the thing to wrap up my term.

After being elected, I tried to figure out what this job required. This was not easy, and I did not handle the transition period well. In the end, I think I got the hang of it, but others may well have a different opinion.

The first task was to decide what contests the NCCC should focus on for the 2014/2015 season. Of the advice I received, about half believed I should poll the membership, and the other half that I should just make the decision and go with it. I decided to go with a Contest Survey.

The survey was not well worded; that was my fault. I delayed too long and did not get it ready in a timely manner. Lack of editing made the questions confusing. One area of persistent confusion was the difference between a "focus" contest and whether NCCC would participate at all.

The intent was to have a small number of contests where everyone participated. These were the focus contests. The club would participate normally in other contests but not expect everyone to submit logs for the NCCC. In the end, this confusion may have led to an even steeper decline in overall participation than we would have seen in a normal year.

Participation in all contests, focus or not, has been much lower during this past year. This was due in part to continuing Sweepstakes Fatigue Syndrome™. Despite my best efforts and lots of driving, participation in Sweepstakes was well below even 2013. This has carried over to the NAQP Club Challenge.

The one bright spot was the Sweepstakes flyer. I received more feedback on that work than anything else I did over the course of the year and it was almost all positive. Having a physical letter sent to each member continues to be a good way to connect with the membership. Some members think mailing the JUG again would be a helpful way to increase engagement with the club, and I am one of them.

It is distressing that participation in the NAQP Club Challenge, a contest created by the NCCC, is down again this year. Our numbers are already so low we will come in 3rd this year again, unless something really remarkable happens in the 3 summer sessions this July and August.

I am certain the new leadership team will have excellent ideas for increasing participation. One area I would stress that should be changed are our Awards. They are very Sweepstakes-centric, and with the ongoing Sweepstakes Fatigue Syndrome we are experiencing, a change would be helpful. Of particular interest to me would be awards for improvement to encourage smaller stations to keep at it.

I thank you all for your patience, encouragement, criticism, and, most especially, all the logs.

73, Byron N6NUL



Contest Calendar— April page 1

QRP Fox Hunt	0100Z-0230Z, Apr 1
CWops Mini-CWT Test	1300Z-1400Z, Apr 1 and 1900Z-2000Z, Apr 1 and 0300Z-0400Z, Apr 2
SARL 80m QSO Party	1700Z-2000Z, Apr 2
NRAU 10m Activity Contest	1800Z-1900Z, Apr 2 (CW) and 1900Z-2000Z, Apr 2 (SSB) and 2000Z-2100Z, Apr 2 (FM) and 2100Z-2200Z, Apr 2 (Dig)
QRP Fox Hunt	0100Z-0230Z, Apr 3
NCCC RTTY Sprint	0145Z-0215Z, Apr 3
NCCC Sprint	0230Z-0300Z, Apr 3
15-Meter SSTV Dash Contest	0000Z, Apr 4 to 2359Z, Apr 5
LZ Open 40m Sprint Contest	0400Z-0800Z, Apr 4
PODXS 070 Club PSK 31 Flavors Contest	1000Z, Apr 4 to 0400Z, Apr 5
QRP ARCI Spring QSO Party	1200Z, Apr 4 to 2359Z, Apr 5
Missouri QSO Party	1400Z, Apr 4 to 0400Z, Apr 5 and 1400Z-2000Z, Apr 5
Mississippi QSO Party	1400Z, Apr 4 to 0200Z, Apr 5
SP DX Contest	1500Z, Apr 4 to 1500Z, Apr 5
Texas State Parks on the Air	1600Z, Apr 4 to 0159Z, Apr 5
EA RTTY Contest	1600Z, Apr 4 to 1600Z, Apr 5
Montana QSO Party	1800Z, Apr 4 to 1800Z, Apr 5
UBA Spring Contest, 6m	0600Z-1000Z, Apr 5
RSGB RoPoCo SSB	1900Z-2030Z, Apr 5
Low Power Spring Sprint	1400Z-2000Z, Apr 6
RSGB 80m Club Championship, CW	1900Z-2030Z, Apr 6
ARS Spartan Sprint	0100Z-0300Z, Apr 7
QRP Fox Hunt	0100Z-0230Z, Apr 8
CWops Mini-CWT Test	1300Z-1400Z, Apr 8 and 1900Z-2000Z, Apr 8 and 0300Z-0400Z, Apr 9
QRP Fox Hunt	0100Z-0230Z, Apr 10
NCCC RTTY Sprint	0145Z-0215Z, Apr 10
NCCC Sprint	0230Z-0300Z, Apr 10



Contest Calendar— April page 2

JIDX CW Contest	0700Z, Apr 11 to 1300Z, Apr 12
OK/OM DX Contest, SSB	1200Z, Apr 11 to 1200Z, Apr 12
SKCC Weekend Sprintathon	1200Z, Apr 11 to 2400Z, Apr 12
New Mexico QSO Party	1400Z, Apr 11 to 0200Z, Apr 12
Georgia QSO Party	1800Z, Apr 11 to 0359Z, Apr 12 and 1400Z-2359Z, Apr 12
Yuri Gagarin International DX Contest	2100Z, Apr 11 to 2100Z, Apr 12
International Vintage Contest HF	1200Z-1800Z, Apr 12
WAB 3.5/7/14 MHz Data Modes	1200Z-2200Z, Apr 12
Hungarian Straight Key Contest	1500Z-1700Z, Apr 12
144 MHz Spring Sprint	1900 local - 2300 local, Apr 13
NAQCC CW Sprint	0030Z-0230Z, Apr 15
CWops Mini-CWT Test	1300Z-1400Z, Apr 15 and 1900Z-2000Z, Apr 15 and 0300Z-0400Z, Apr 16
RSGB 80m Club Championship, SSB	1900Z-2030Z, Apr 15
NCCC RTTY Sprint	0145Z-0215Z, Apr 17
NCCC Sprint	0230Z-0300Z, Apr 17
Holyland DX Contest	2100Z, Apr 17 to 2100Z, Apr 18
TARA Skirmish Digital Prefix Contest	0000Z-2359Z, Apr 18
ES Open HF Championship	0500Z-0859Z, Apr 18
CQ Manchester Mineira DX Contest	1200Z, Apr 18 to 2359Z, Apr 19
Nebraska QSO Party	1200Z, Apr 18 to 0200Z, Apr 19 and 1700Z-2300Z, Apr 19
Michigan QSO Party	1600Z, Apr 18 to 0400Z, Apr 19
North Dakota QSO Party	1800Z, Apr 18 to 1800Z, Apr 19
Ontario QSO Party	1800Z, Apr 18 to 1800Z, Apr 19
Feld Hell Sprint	2000Z-2159Z, Apr 18
YU DX Contest	2100Z, Apr 18 to 1700Z, Apr 19
ARRL Rookie Roundup, SSB	1800Z-2359Z, Apr 19
Run for the Bacon QRP Contest	0100Z-0300Z, Apr 20
222 MHz Spring Sprint	1900 local - 2300 local, Apr 21
SKCC Sprint	0000Z-0200Z, Apr 22



Contest Calendar— April page 3

CWops Mini-CWT Test	1300Z-1400Z, Apr 22 and 1900Z-2000Z, Apr 22 and 0300Z-0400Z, Apr 23
UKEICC 80m Contest	2000Z-2100Z, Apr 22
RSGB 80m Club Championship, Data	1900Z-2030Z, Apr 23
NCCC RTTY Sprint	0145Z-0215Z, Apr 24
NCCC Sprint Ladder	0230Z-0300Z, Apr 24
10-10 Int. Spring Contest, Digital	0001Z, Apr 25 to 2359Z, Apr 26
SP DX RTTY Contest	1200Z, Apr 25 to 1200Z, Apr 26
QRP to the Field	1200Z-2359Z, Apr 25
Helvetia Contest	1300Z, Apr 25 to 1259Z, Apr 26
Florida QSO Party	1600Z, Apr 25 to 0159Z, Apr 26 and 1200Z-2159Z, Apr 26
CWops Mini-CWT Test	1300Z-1400Z, Apr 29 and 1900Z-2000Z, Apr 29 and 0300Z-0400Z, Apr 30
432 MHz Spring Sprint	1900 local - 2300 local, Apr 2

HAM RADIO OUTLET

14 STORE BUYING POWER!

ICOM



IC-7600 | All Mode Transceiver

- 100W HF/6m Transceiver, gen cov. receiver • Dual DSP 32 bit • Three roofing filters- 3, 6, 15kHz • 5.8 in WQVGA TFT display • Hi-res real time spectrum scope



IC-7200 | HF Transceiver

- 160-10M • 100W • Simple & tough with IF DSP • AGC Loop Management • Digital IF Filter • Digital Twin PBT • Digital Noise Reduction • Digital Noise Blanker • USB Port for PC Control



IC-7100 | All Mode Transceiver

- HF/50/144/430/440 MHz Multi-band, Multi-mode, IF DSP • D-STAR DV Mode (Digital Voice + Data) • Intuitive Touch Screen Interface • Built-in RTTY Functions



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

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

ID-51A | VHF/UHF Dual Band Transceiver

- 5/2.5/1.0/0.5/0.1W Output • RX: 0.52-1.71, 88-174, 380-479 MHz** • AM/FM/FM-N/WFM/DV • 1304 Alphanumeric Memory Chls • Integrated GPS • D-STAR Repeater Directory • IPX7 Submersible



TH-F6A | 2M/220/440

- Dual channel receive • .1 - 1300 MHz (cell blocked) RX • FM, AM, SSB • 5W 2M/220/440 TX, FM • 435 Memories • Li-Ion Battery

KENWOOD



TS-590SG | HF/50MHz Transceiver

- Equipped with 500 Hz/2.7 kHz roofing filter as standard • ALC derived from TS-990S eliminating spike issues • Antenna output function (shared with DRV connector) • CW - morse code decoder function



TM-D710G | 2M/440 Dualband

- V+V/V+U/U+U operation • Built-in GPS • Built-in TNC for APRS & DX-Cluster operation • 50W 2M & UHF • 1,000 memories • Dual receive • Green or amber backlight colors • Latest APRS firmware w/new features • Sky Command II remote functions



TM-V71A | 2M/440 Dualband

- High RF output (50W) • Multiple Scan • Dual receive on same band (VxV, UxU) • Echolink® memory (auto dialer) • Echolink® Sysop mode for node terminal ops • Invertible front panel • Choice of green/amber for LCD panel • 104 code digital code squelch



TM-281A | 2 Mtr Mobile

- 65 Watt • 200 Memories • CTCSS/DCS • Mil-Std specs • Hi-quality audio



FT-60R | 2M/440 5W HT

- Wide receiver coverage • AM air band receive • 1000 memory channels w/alpha labels • Huge LCD display • Rugged die-cast, water resistant case • NOAA severe weather alert with alert scan

YAESU
The radio



FT-991 | HF/50MHz/2M/440 Transceiver

- 160 M-440MHz - SSB/CW/FM/C4FM Digital/AM/RTTY/PSK • 100 W (2M/440: 50 Watts) • 3.5" TFT full-color touch panel operation • High speed spectrum scope • Roofing filters: 3kHz & 15kHz • 32-bit high speed floating point IF DSP



FTDX1200 | 100W HF + 6M Transceiver

- Triple Conversion Receiver With 32-bit Floating Point DSP • 40 MHz 1st IF with selectable 3 kHz, 6kHz & 15 kHz Roofing Filters • Optional FFT-1 Supports AF-FFT Scope, RTTY/PSK31 Encode/Decode, CW Decode/Auto Zero-In • Full Color 4.3" TFT Display



FT-450D | A100W HF + 6M Transceiver

- 100W HF/6M • Auto tuner built-in • DSP built-in • 500 memories • DNR, IF Notch, IF Shift



FTM-400DR | 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



5 Ways to Shop!

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

ANAHEIM, CA
(800) 854-6046

OAKLAND, CA
(877) 892-1745

SUNNYVALE, CA
(877) 892-1749

PORTLAND, OR
(800) 765-4267

PHOENIX, AZ
(800) 559-7388

WOODBRIIDGE, VA
(800) 444-4799

PLANO, TX
(877) 455-8750

BURBANK, CA
(877) 892-1748

SAN DIEGO, CA
(877) 520-9623

NEW CASTLE, DE
(800) 644-4476

DENVER, CO
(800) 444-9476

ATLANTA, GA
(800) 444-7927

SALEM, NH
(800) 444-0047

ONLINE STORE
WWW.HAMRADIO.COM

Contact HRO for promotion details. Toll-free including Hawaii, Alaska and Canada. Call will be routed to the nearest store. All HRO 800-lines can assist you. If the first line you call is busy, you may call another. AZ, CA, CO, GA, VA residents add sales tax. Prices, specifications and descriptions subject to change without notice.

New Store!