



PVRC Newsletter

December 2017

President's Letter – Bud W3LL

Hello, PVRC - Early Sweepstakes results based on submitted logs indicate PVRC may have succeeded in achieving a ten-year consecutive winning streak. If so, this could only be possible with your timely contest log submissions crediting PVRC. Thanks!!!

At year end many think of gift giving. A perfect time to contribute to PVRC for the benefits that membership brings. Just go to <http://www.pvrc.org/> and click on the Donate button at the bottom of the page.

Speaking of year end please remember to sign up with Jay W3MMM for PVRC special event station slots. For those on the receiving end you're going to want to "work the sweep" of all six stations to get the QSL cards which can be assembled into a special certificate. PVRC.ORG and QRZ.COM will have instructions on how to get the award for N4P, N4V, N4R, N4C, W3AU and W3GRF. Jay will shortly be publishing an operator's guide for those who sign up. Look for those six stations from December 24th through December 31st, 2017.

Year-end also means the conclusion of another PVRC election cycle. This year our trustee uncontested count will go from nine to thirteen trustees. I anticipate this will continue to grow until all members become trustees. Long before that, the effectiveness of the trustees will have become mute. Trustees or Board of Directors, numbering typically from five to seven members, consist of industry leaders in their respective fields to provide a layer of oversight. It's easy to do nothing and let the next group of officers deal with the problem. I don't particularly like that approach. We had a proposal to fix the issue. It was encumbered in the plethora of other bylaw changes. I'd like to separate out the trustees section of the bylaws update and see if we can get it to a vote.

Year-end also means chapter Christmas/Holiday parties. Rappahannock, SWVA, Williamsburg and a consortium of NOVA, DC and MD chapters have already announced their parties.

The new year means Frostfest and the PVRC Circle Wide Galactic Event is approaching in early February. Tom K3AJ reserved a PVRC table and Ted W3TB has been working nonstop creating handouts with such topics as: Who Is PVRC, How Is PVRC Organized, Does PVRC Have Meetings Near Me, What Contests Does PVRC Operate In, What Is A Contest, What Kind Of Hams Are Contesters, Are There Other Contesting Clubs, What Is A Contest, What Do We Get For Being A Contestster, Are There Prizes, Can I Contest With My Existing Station, But My Operation Time Is Limited, What Do I send And Receive, How Do I begin, Do I Need A Computer, What About Computer Logging, Where And How Do I Submit My Scores, So How Do I Join PVRC, When Are Some Of The Contests This Year, Here Are A Few Of The More Important Contests Of 2018. Each of these topics is described and answered in a separate color-coded handout page.

Contest Online Scoreboards are lots of fun. Randy K5ZD had an article in QST last month on the growing interest in the scoreboards. There is now a server which aggregates all independent scoreboards into one. WinTest in addition to N1MM can be configured to send scores to the server. Documentation on how to set it up with WinTest logger is [here](#), with more information [here](#) and [here](#).

It's easy:

1. Configure your logger with the following real score server URL:
2. <http://www.b41h.net/scoredistributor.php>

Dave K3ZJ posted to the PVRC reflector the do's and don'ts when operating unassisted and using the scoreboards.

Before long WRTC 2018 will be taking place. PVRC is fortunate to have five members participating in the World Series of contesting: KE3X, KD4D; N4YDU, N3KS and KU1CW

Onward to a Happy New Year and the Sports Page.

CQ WW SSB enjoyed good conditions, considering the stage of the sunspot cycle, with strong EU openings on 15 meters making that the money band for many, and even some 10M action for those with the patience to spot the openings. And the low bands weren't too shabby either, with W3LPL reporting a great run on 80M Saturday night. Let's start with a big shout out to two new PVRC members entering in the "Rookie" sub classifications. W3XOX in SOAB (A) Rookie HP made 304 QSO's using wires. W4BBT made 181 QSO in SOAB Rookie LP. A lot of PVRC members participated in multiops for this one. Despite losing some operators at the last moment due to illness and family emergencies, 12 PVRC members at W3LPL made 7,600 QSO's for 15.2M. Another big operation was at V26B, which included PVRC members K1DQV, K3RA and N3OC who turned in what looks like a #6 world effort with 9305/16.4M. The crew at WA3EKL continues to develop new operators, including some YL's and very young ops like 10-year-old KC3IZX. All told, there were 12 operators involved in this M/2 for 1808/2.5M. K3CCR with N3UM and W3GB making good use of their new 40/20 yagi to put in

1051/1.2M in a M/2. There were two ops at K3TD (@K4QPL) and four at K3OO (@W3RFC) in M/S operations. WRTC competitor N4YDU (as NR3X) piloted the KA2HTV superstation in Maine remotely to a #7 world/#3 US finish with 4137/6.3M in SOAB HP. Nate reports that even with a 4-el yagi at 137 ft., 40M SSB is still very tough. Taking #10 US in that category was none other than K3ZO with 1839/2.3M despite some annoying high line noise. N4RA and K4OV scored over 1M in that category as well, and W4JAM, K5VIP and W3GPS all were north of 700 QSO. KN4KL made the most QSO of any PVRC'er in SOAB LP. There was plenty of competition in SOAB (A) HP. TI5W (N3KS) scored 2261/1.3M. Kudos to WB2ZAB for breaking 1,000 QSO. K3WI with 908 QSO, K4XL with 899 QSO and KE4S with 805 QSO all put in good efforts in this category. This was K3WI's first serious effort from his new DE QTH, now just using wires. The Classic category (limited to 24 hours) presents a challenge deciding when to operate to maximize the score. W3LL has been studying this, and was rewarded with #10 world/#1 US in SOAB Classic HP with 1547/2M. N4MM made the top 10 US in SOAB (A) Classic HP category with 652/610K. N8II achieved #2 world/#1 US in SOAB Classic LP with 1050/1.1M. W3MMM did well in that category, too, with 411/274K for #8 world/#6 US. From way south, CX1EK took #3 world in SOSB 10M LP.

And now for those with special antenna situations: N4UEZ and AC6WI operated with attic antennas only. Wire antenna maven W3NRJ took his new triangular arrangement of three 40M extended double zepps out for a trial and doubled his last year's score. Finally, a big welcome back to N4OC over on the Eastern Shore of MD for his first contest from his home QTH since 1965 (if you know what Ed was doing all those years, you won't wonder about why he had other things to do – and if you don't know – look it up!).

CW SS? Yes, there was a big turnout – 135 PVRC logs reported this year vs. 129 last year. Conditions were so-so, with 40M and 20M as the money bands. 15M didn't produce much and 80M was disappointing with high noise levels and what seemed like less activity on that band. Let's start the report by recognizing some of those with rusty or developing CW skills who still got on and gave it a try. Bob, W3IDT made the discovery that folks were more likely to slow down for him when he ran ("First time running on CW in decades") rather than doing S&P. WN3R made several hundred QSO's. WA3AER has been working hard on his CW for a couple of years now and is becoming pretty good, making 356 QSO.

SS is a good contest for those with smaller stations, and even those with attic antennas, including K4FTO and W4GDG did well. Answering the bell after various periods away were NS3T (first time on the air in 9 months), K3EW (first ever CW SS – using 100% manual sending for 444 QSO), N1WR (first contest in 3 years – and a good effort for 558 QSO) and the return of NY3A (Steve hasn't lost much – he made 535 QSO in just 9 hours). W4FS entered in the "S" category, representing UNC Greensboro from N4YDU (no station at UNCG) putting up a nice score. Making his first full time SS CW effort in a while was "Mr. Top Gun" K3MM, with what appears to be the only PVRC score over 200K. Other big scores in various categories were by N4AF, KD4D (@N3HBX), K3ZO, WJ9B, N1LN, WR3Z (@W3LPL for a personal best) and K2AV all of whom crossed the 1,000 QSO level. WJ9B, although out of circle, was #1 in SO LP. Kudos to K2AV for 1,000+ QSO and a sweep using only wires. There is a lot of competition in QRP in CW SS. Congratulations to K4QPL for a top ten QRP finish. WR3R and N4CF put up impressive QRP scores as well. N3QE once again proved himself an HMO (highly motivated operator) as K3PRC from KE3X and from his home station for over 1,200

combined QSO. Finally, KT3Y claims first place in “SO1A” – single operator, one arm (he had a fractured right shoulder) with 628 QSO for 99K.

Continuing the trend toward more PVRC entries in RTTY contests, there were at least 30 entries (including a 10 operator multi) this year vs. 24 last year. It was tough going, though. N4CF, who just put in a short time effort said, “I must have missed the EU band openings.” Well, Mike, a lot of the big-time players missed them, too. Many reported getting stuck with unsent QTC as the openings to EU were somewhat limited and the signals not always too good. N3QE was not to be denied, though, and he is showing at #4 world/#1 US on 3830 with 851K. He really cleaned up on QTC, and reports manually typing in all the RQTC’s when N1MM wasn’t working right. No kidding. Not too shabby for a guy with just a single wire antenna. Other nice PVRC scores in SO HP were by AB3CV (430K), W4PK (415K), K4XL (338K). W4PK reports this is his first time in this contest since 2013.

Big time RTTY contesters W3LL and K4GMH had something else in common this time, too. They both have amps on the fritz and went LP. K4GMH still put in a top 10 score in SO LP in 18 hours (and yes, even he got stuck with some unsent QTC). W3LL also made the top 10 with a really part time effort of 10 hours. It was good to see N3VOP in the fray as well, as Mike has just started becoming active in RTTY from his antenna challenged location. WA3EKL continues to host a very active crew. This time, there were several first time RTTY ops in play. WA3EKL made 449 QSO and put up a score of 213K. WA3EKL and his XYL N3DPB spent their 39th wedding anniversary chasing mults together. How romantic!

SSB SS? Wow! A showing of overwhelming force by PVRC with a whopping 154 logs submitted this year vs. 124 last year. Guy, K2AV offered a nice summary of how this one went down as follows: “I note that 10% of SS logs came from PVRC. Another interesting item easily seen if you use 3830 listings and breakdown PVRC entries by bands, that 80/75m was the money band (instead of 40?) on SSB. I don’t recall seeing that before. At the top of the PVRC sorted by score list, 8 of the top ten and 36 of the top 50 had their high Q count on 80m, starting with K3MM 841 (!!!), KD4D 594, N3OC 472, W0CN 701, W4MYA 682, etc. I presume that was a complete vacuum job on 80 by Ty and he worked anything that moved.” Yep, “Mr. Top Gun K3MM went all out in both modes this year, posting the top PVRC scores each time. But KD4D was only 21 QSO behind in SSB – without spotting assistance. SOLP players N8II and W3GRF (WR3R using the historic call) had top 10 finishes with 1072/176K and 835/139K respectively. In SO U LP W3LL and K4GMH, both with their amps still in the shop, made the top 10 with 739/123K and 568/92K respectively. W4IM was the top scoring PVRC QRP guy with a nice fourth place finish per 3830.

In the interesting factoids department, it looks like W4MYA had the most PVRC QSO’s (thanks to N4CF for crunching the numbers on that) at 103. N3QE was up to his usual HMO madness with a total of 1074 QSO as N3QE/K3PRC/NW3DC. Husband and XYL WA3EKL and N3DPB had dueling multiops going. We won’t say who won. Great job continuing to mentor new ops, including some YL’s and young hams. K4DNE gets props for hanging in there despite fighting the pain from a recent knee replacement for 850/139K in 16 hours. Many PVRC’ers set goals to go beyond their normal SS SSB efforts this year and put up some pretty big numbers, including W2CDO, N3HEE, K1GG, W3MMM. NF8I worked his first contest in several years to contribute. NR4M opened his station to three new ops to try some contesting. And yes, NR4M himself is reported to

have used the microphone at times. He reports that none of his new ops ever said "Please copy..."

That's a wrap for another month.
73, Bud W3LL

<u>PVRC Officers:</u>		<u>Trustees:</u>	
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Treasurer:	K3AJ Tom Valenti		
PVRC Website: http://www.pvrc.org			

Will Solar Cycles 25 and 26 Be Weaker than Cycle 24 - via Frank W3LPL

The journal [Solar Physics](#) published an research article that infers Cycle 25 will be weaker than Cycle 26 – and Cycle 27 will be about the same as Cycle 26. The full article is available [here](#).

J. Javaraiah

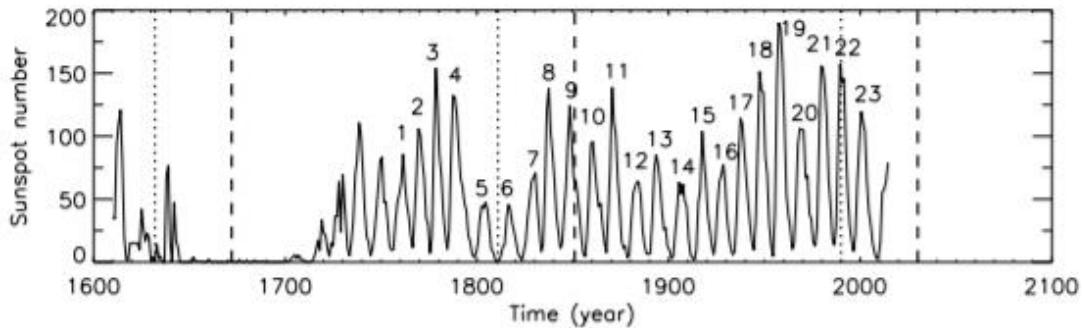


Figure 1. Variations in the yearly mean R_z (before 1950, the data represent the observations that were compiled by Hoyt and Schatten (1998) from numerous sources). Near the peak of each solar cycle the corresponding Waldmeier cycle number is given. The *dotted vertical lines* (in 1632, 1811, and 1990) and *dashed vertical lines* (in 1672, 1851, and 2030) are drawn at the epochs of steep decrease in the Sun's orbital angular momentum about the solar system barycenter. Close to all these epochs, the orbital motion of the Sun is retrograde (the rate of change in orbital angular momentum of the Sun is slightly negative). At the epochs that are indicated with *dotted vertical lines*, the values of the Sun's distance from the solar system barycenter, orbital velocity, and orbital angular momentum are slightly higher than those at the epochs that are indicated with *dashed vertical lines* (see Table 1 in Javaraiah, 2005).

Hams Get Blamed for Everything – via Hank K3YDX



K9LA/W3LPL Propagation Prediction Webcast – via Jim W4TMO

Carl K9LA and Frank W3LPL did an excellent WWROF webcast with their thoughts on what we are likely to see coming in Cycle 25 – you can view it [here](#).



YCCC Contest Tips by K1VR – via the ARRL Contest Letter

Contest Tips 2017-A YCCC Compilation v1 by K1VR

Contest Tips 2017

A YCCC Compilation by Fred Hopengarten, K1VR

Aimed mostly at DX contesting with some good links – read it [here](#).

Membership News – Tim N3QE

In November, PVRC has added 3 new members. Please welcome:

- Chas KJ6LDA in the Annapolis Chapter.
- John KC3JUA in the Laurel Area Chapter.
- Ron, KK4RWB in the Southwest Virginia Chapter.

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

Upcoming Contests and Log Due Dates

Contests This Month

- Dec 1 – ARRL 160M
- Dec 3 – 10M RTTY
- Dec 9 – ARRL 10M
- Dec 16 – Croatian CW
- Dec 17 – Rookie Roundup CW
- Dec 29 – RAC Winter
- Dec 30 – Stew Perry Top Band

Logs Due This Month

- Dec 1 – CQ WW CW
- Dec 11 – 10M RTTY

See WA7BNM's [Contest Calendar](#) for more detail and the latest information.

From the PVRC Treasurer – Tom K3AJ

PVRC has chosen not to implement an annual Dues requirement. We depend on the generosity of all of 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:



Donations to PVRC are not tax deductible

Eyeball QSO Directions

The latest info on local club meetings and get together will always be sent out on the [PVRC reflector](#) and posted on the PVRC [web site](#).

NW Region: Meetings are generally held on the third Tuesday of each month at: [Chef Lin](#), 417 S Jefferson St. Frederick, MD 21701 Phone #: 301-620-0664(2675)
The meeting begins at 7:00 PM.

Contact: Jim [WX3B](#)

DC Metro: Meets monthly the second Monday of each month, except June, July & August). The location alternates between the below MD and VA locations. Pre-meeting dinners start at 6:00 pm and meetings start at 7:30 pm.

VA LOCATION: Anita's, 521 E. Maple Ave, Vienna, VA. Tel: 703-255-1001. Meets at this location during the months of February, April and October.
Contact: Rich [NN3W](#)

MD LOCATION: Max's Café. 2319 University Blvd W, Wheaton MD 20902. Tel: 301-949-6297 People usually begin arriving at the restaurant around 6:00. Meets at this location during the months of January, March, May, September and November. Contact: Art [K3KU](#)

The Laurel, MD Region: Bill N3XL The PVRC get-together is held at the first [LARC](#) meeting each quarter at the clubhouse.

The Annapolis Crew: Dan K2YWE Meetings are held on the 4th Wednesday of each month at Broadneck Grill in Annapolis. We gather at about 5:30 PM and order dinner about 6. We break up usually before 8 PM. E-Mail [K2YWE](#) to be put on the e-mail reminder list.

PVRC-NC: The **PVRC-NC East** chapter meetings are held at [Manchester's Bar and Grill](#) on the 9100 block of Leesville Rd. in North Raleigh, with "QRM" beginning at 6:00pm and the dinner meeting following shortly thereafter. The meeting is held monthly on the 1st Thursday of most months, cancellations or changes usually announced on the [PVRC-NC website](#).

The **PVRC-NC West** chapter meets the 3rd Monday of each month (except December) at about 7:00 PM at Hams Restaurant, 414 S. Stratford Rd., Winston-Salem on the south end of the Thruway Shopping Center. We meet in the front meeting room of the restaurant. A wide variety of cold 801s and Sports bar menu available. Contact Henry Heidtmann [W2DZO](#), full info at <http://www.w4nc.com>

Over the Hill Bunch: The group meets for lunch at noon alternately in Maryland at the Sir Walter Raleigh Inn 6323 Greenbelt Rd, Berwyn Heights, MD or in Virginia at Anthony's restaurant in Falls Church. Meetings generally are held on the last Wednesday of the month and are subject to change. Meetings are announced by email.

All PVRC members, non-members interested in membership and guests are welcome. For information contact Roger Stephens, [K5VRX](#), 703-658-3991 for Virginia meetings; or Cliff Bedore [W3CB](#) or get on 147.00 for Maryland meetings.

Downtown Lunch Group: Meets: At 12 o'clock noon on the first Wednesday of every month in Downtown DC.

Location: R.F.D. Washington, 810 7th St., N.W. Washington - Metro (Green Line) at Gallery Place Station

Meeting since April 2005, PVRC'ers, contesters, DX'ers, and others coming through this area have been meeting for lunch in the Metro Center area of downtown Washington, DC. If you give him enough notice, regular attendee Fred, K3ZO, may bring you your 3-land QSL bureau cards! We invite and encourage you to join us every month for good food, good company, and good conversation. If you have any questions feel free to email or call W3DQ or our co-convenor, Rich NN3W. Hope you can join us!

Southwest VA Chapter: The Southwest VA group meets each Wednesday at about 8:30 AM at Hardees at 20265 Timberlake Road in Lynchburg, VA. This is an informal gathering, but normally has about 10-12 attendees. Contact Mark Sihlanick N2QT, Tel: 434-525-2921

Eastern Shore Chapter: Meets every three months, on the second Saturday of April, July, October and January at noon. In keeping with the tradition established by SK Dallas W3PP we will also meet at the contest station of Eric WG3J one hour before the start of most major contests. Contact Eric Hudson [WG3J](#)

Location: Delmar Pizza, north west corner of the intersection of highways 13 and 54 in Delmar, DE

Southern Maryland Chapter: Currently on hiatus, if interested in meeting contact the Chapter Chair, Tom Shelton, [ND3N](#) via email or (240) 434-3811

Colonial Capital Chapter: Meets the 2nd Thursday of each month at 8:30 am
Location: Hot Stacks Restaurant, 6495 Richmond Rd, Williamsburg, VA 23188
757-565-1105 Contact: Bill Conkling [NR4C](#)

The Tidewater Chapter meets the 3rd Tuesday of every month at Frankie's Place for Ribs located in the Fairfield Shopping Center on the corner of Kempsville Road and Providence Road in Virginia Beach. The meeting starts at 7:00 PM. All amateurs are invited.

Contact either Chapter Chair: Don Lynch, [W4YZT](#), or Ron Young, [W8RJL](#)

Blue Ridge Chapter of PVRC will welcome members and visitors. Always 1st Thursday at noon.

Place: Smokin Willy BBQ, 201 N. Maple Avenue, Purcellville, VA

Contact: Mike [W4AAW](#) - [571-510-2535](#)

If you'd like to add or correct a listing, contact [K3TN](#) for inclusion in the Newsletter!

Now a Word From Our Sponsors

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IC-2300H | VHF FM Transceiver

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

ID-51A Plus | VHF/UHF Dual Band Xcvr

• 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 **D-STAR ready**



IC-7300 | HF/50MHz Transceiver

• RF Direct Sampling System • New "IP+" Function • Class Leading RMDR and Phase Noise Characteristics • 15 Discrete Band-Pass Filters • Built-In Automatic Antenna Tuner • Large Touch Screen Color TFT LCD



ID-5100A Deluxe | VHF/UHF Dual Band Digital Xcvr

• 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 PLUS2 | VHF/UHF D-STAR Portable

• RS-MS1A, free download Android™ application • New modes for extended D-STAR coverage • Terminal Mode & Access Point Mode allow D-STAR operation through Internet • DV & FM repeater search function • Dplus reflector link commands



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FTDX5000MP Limited | 200W HF + 6M Txcvr

• Internal Power Supply • Two Totally Independent Receivers • Super Sharp "Roofing" Filters • High Performance Yaesu Custom-designed 32-bit Floating Point DSP • True Analog Meter Precision



FT-817ND | HF/VHF/UHF All Mode Portable Transceiver

Ultra Compact HF/VHF/UHF Multimode Rig • Wide Receiver Frequency Coverage • Two Antenna Connectors for Ease of Installation Front/Back • Outstanding CW Features • Versatile, Easy-To-See LCD Display • High Performance CollinsR Mechanical Filter Options • Internal Battery Power



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



FTDX3000 | 100W HF + 6M Transceiver

• 100 Watt HF/6 Meters • Large and wide color LCD display • High Speed Spectrum Scope built-in • 32 bit high speed DSP /Down Conversion 1st IF **Call For Low Pricing!**



FREE
YSK-857

FT-857D | Ultra Compact HF/VHF/UHF

• 100w HF/6M, 50W 2M, 20W UHF • DSP included • 32 color display • 200 mems • Detachable front panel (YSK-857 required)

Call For Our Low Price!



FT1XD | 144/430 5W Digital Transceiver

• C4FM/FDMA • 1200/9600bps AX.25 APRS & GPS Recvr Built-in • Dual Band Operation w/Dual Receivers (V+V/U+V/V+U) • Wideband Receive/AM Bar Antenna/Aircraft Receive • 1266 Memory Channels w/16 Char Alpha Tagging



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-2900R | Heavy-Duty 75W 2M FM Transceiver

• Massive heatsink guarantees 75 watts of solid RF power • Loud 3 watts of audio output for noisy environments • Large 6 digit backlit LCD display for excellent visibility • 200 memory channels for serious users

FT-2DR | C4FM/FM 144/430 MHz Txcvr

• Analog/C4FM Dual Monitor (V+V/U+U/V+U) • System Fusion compatible • 1200/9600 APRS Data Communications • Integrated 66ch High Sensitivity GPS • Wide Band Receiver • Snapshot Picture Taking Capability With Optional MH-85A11U



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



FTM-100DR | C4FM FDMA/FM 144/430 MHz Txcvr

• Power Packed System Fusion Transceiver • High Audio Output Power • Rugged Powerful Transmitter • Integrated 66ch High Sensitivity GPS • 1200/9600 APRS Data Communications • Voice Guide and Recording Function *Optional FVS-2 Required • Digital Group Monitor (GM) Function • Digital Clock & Timer Functions



VX-8DR | 50/144/220/440

50/144/220/440 • 5W (1W 222 MHz) • Bluetooth optional • Waterproof/ submersible (3' for 30 min) • GPS APRS operation optional • Li-ion Hi-capacity battery • Wide band Rx

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



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TS-990S | 200W HF + 6M Transceiver

- World's first dual TFT display • 200W output on all bands • ±0.1ppm TCXO ensures both high stability and reduced power consumption • Triple 32-bit DSP's dedicated to main/sub receivers and band scope • Main receiver employs full down conversion, new mixer & narrow band roofing filters • Third order intercept point (IP3) +40dBm for highest level of RX performance (main receiver)

Call For Special Price!



\$40
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COUPON

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

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KENWOOD
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TS-480SAT/HX | HF + 6M Transceiver

- 480HX 200W HF & 100W 6M (no tuner) • 480SAT 100W HF & 6M w/AT • Remotable w/front panel/speaker • DSP built-in

Call Now For Low Price!



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KENWOOD
COUPON

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 • Improved 1st mixer • New PFB key with multi-function knob • New split function enabling quick setting • LED backlight with selectable color tone



\$25
KENWOOD
COUPON

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 • "Five in One" programmable memory • 1000 multifunction memory

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TH-D72A | 2M/440 HT w/extended RX

- 5W TX, RX 118-524 MHz, VxU, VxV, UxU • APRS w/built-in 1200/9600 TNC • Built-in GPS, Built-in USB, digipeater • Echolink® compatible, • Mil-Spec STD810

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TS-2000

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TS-2000X

TS-2000/2000X | HF/VHF/UHF Transceiver

- 100W HF, 6M, 2M • 50W 70CM • TS-2000X 10W 1.2GHz
- Built-in TNC, DX packet cluster • IF Stage DSP • Backlit front key panel

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TM-281A | 2 Mtr Mobile

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

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TH-D74A | 2M/220/440 HT w/D-STAR!

- D-STAR compatible • APRS ready w/built in GPS • Color weather station information • Built-in KISS mode TNC • High-performance DSP voice processing • Standard compatibility for Bluetooth

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TH-K20A | 2M Handheld

- 2M 5.5W • VOX • CTCSS/DCS/1750 Burst built-in • Weather alert

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ALL MODE SDR RECEIVER

- Continuous Coverage from 100kHz to 2GHz
- 12-bit ADC Technology (not another 8-bit dongle!)
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- Works with popular SDR Software (HSDR, SDR-Console & Cubic SDR)
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MA-40

- 40' Tubular Tower

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MA-550

- 55' Tubular Tower • Handles 10 sq. ft. at 50 mph • Pleases neighbors with tubular streamlined look

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All US Towers shipped by truck; freight charges additional.



TX-455

- 55' freestanding crank-up • Handles 18 sq. ft. @ 50 mph • No guying required • Extra-strength construction • Can add raising and motor drive accessory • Towers rated to EIA specifications • Other models available at great prices!



218XATC-PL-(length) RG8x (240UF) w/PL259 Connectors Each End. Weather-Proof Heat Shrink Tubing.

- Stranded Center Conductor.
- 95% TC Braid + bonded 100% Foil Shield.
- Very Flexible, Light Weight, and Smaller than RG8 sizes.
- Non-Contaminating-UV Resistant-Direct Burial-Black Jacket.



233/2-G4-(length).

- Unique design (Nickel Grommets 4" Spacing) allows for easy attachment to a vehicle's body or truck bed to create a "ground-plane".
- Good option as a "buss-bar" in the shack.
- 1/2" wide tinned copper 38x48x8/384 10ga 53 Amps.
- Stocked in 1.5', 3', 5', and 10' foot lengths.



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- Complete - Six FTDI COM ports
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- Works well with HRD, M110A, Fldigi, WSJT & many more software programs
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