

W6OTX**W6ARA**
PAARA NEWSLETTER
 VOLUME 74, NUMBER 11, November 2023
K6OTA**K6YQT**

PAARAGraphs



The Official Newsletter of the
Palo Alto Amateur Radio Association, Inc.

The Friendliest Club Around

Celebrating 86 years as an active amateur radio club—Since 1937

<http://www.paara.org/>

Bay Area Mesh Network for Emergency Communication

Rachel Kinoshita, KK6DAC

Come learn about the Bay Area Mesh (BAM), a volunteer-led project to build a resilient high-speed wireless network throughout the San Francisco Bay Area for use during disasters and emergencies. The talk will include a demonstration of the mesh network, and information about how you can get involved.

Rachel Kinoshita, KK6DAC, moved from Oregon to the San Francisco Bay Area in 1989 to work for a start-up email software company and has spent most of her career working in the messaging industry.

She now spends her time fighting spam, malware, and phishing attacks. Rachel considers herself still a newbie to ham radio, having only gotten her license in early 2013. Although like many things, Rachel jumped in with both feet and soon got her general license, an HF rig and starting exploring the world in the low bands. At the same time, she found herself working with her local Community Emergency Response Team (CERT) to help develop and shape their communications plans and policies. She also found her way to the South County ARES (SCARES) organization where she developed an interest in emergency communications.

This meeting will be a
Hybrid Meeting
Zoom and In Person

Time: Nov 3, 2023 07:00 PM Pacific Time
 Please check <https://www.paara.org/> for
 Zoom Details

Upcoming Events

Nov 3***	PAARA General Meeting, 7:00 PM *** Zoom and In Person Meeting
Dec 1	
Jan 5	
Nov 15	Board Meeting, 7:00 PM. Everyone welcome! Zoom Meeting, eMail President for details!
Dec 20	
Jan 17	

President's Corner

November 2023

PAARA in the Park, held on September 30th, goes into the books as a very successful event. With 29 PAARA members, 16 guests, and 4 members of other clubs totaling 49 who signed the log. All told, we had a lot of people enjoying the nice weather. Amongst the attendees were several new hams along with a half dozen youth who learned about the hobby. Darryl, KI6LDM, had 14 eager 2M Yagi antenna builders of all ages making antennas that in turn were used by them to find the two foxes hidden in the park. Ahead of the event, Margaret, W6WEK, Doug, KG6LWE, and Ric, N6AJS, assisted by cutting all the tape measures and dipping the ends so we wouldn't have any accidents due to sharp edges. Doug did a masterful job of soldering the coax leads to everyone's antennas. Brian Tanner, AG6GX, from CARES, assisted Darryl in providing construction and FOX hunting over-



(Pres — Continued on page 3)

Trip Report: Courage Classic Bike Ride *Ric Hulett, N6AJS*

Each year, the Children's Hospital Denver Foundation sponsors a two-day bike ride in the Colorado mountains. The start and finish are at the Copper Mountain resort. Over a thousand bicyclists ride one of three routes including Tennessee pass, Vail Pass, and Loveland pass.

This year, over \$3 million was pledged to support Children's Hospital in Denver.

The ride covers back country, well outside of cell phone coverage. Ham radio operators provide critical communications support for the riders and the tour organizers. (Colorado Highway Patrol requires the ride to have communications coverage over the entire ride.)

This year, for the fourth time, I traveled to Colorado in July to ride with a SAG wagon (Support And Gear) along the ride.

Ham support:

We had ham stations at each of the rest stops, and on each of seven SAG wagons. Skyler Fennell, W0SKY, placed internet-linked 440 MHz repeaters on the mountain tops, providing full coverage over the ride. (see his video at Summit Signals - Conquering a Rocky Mountain Bike Race with Ham Radio):



Summit Signals - Conquering a Rocky Mountain Bike Race with Ham Radio

<https://www.youtube.com/watch?v=NdsY-OlrmKA>

The SAG radios were all equipped with

APRS so that "Big Boss" Christian Norris W0DCN knew the status of the crews.

APRS is a digital communications protocol to provide GPS location and short messages using the 2-meter frequency 144.390 MHz. Transmissions from APRS stations are repeated by other stations in the local area, allowing good coverage.

APRS.fi is a web page that shows any stations received by an internet-linked node, so I was able to plot my travel route after the ride. One of the Colorado Highway Patrol motorcycles was also equipped with an APRS beacon.

My FTM-100DR doesn't have an easy way to edit text messages, so it wasn't perfect for the task. I am planning a gear upgrade for next year, using a Terminal Node Controller (TNC) to link an APRS transceiver to my cell phone via bluetooth.

The Ride:

On Friday night, we assembled the SAG drivers and hams in the parking lot to assemble and test the mobile radios. This all went well, except for the one Ford van that wouldn't start. It turns out that the newer models don't have the battery in an obvious location under the hood, which led to confusion about jumper cable placement. By Saturday morning, we had a replacement van, and working ham gear. (I am pleased to report that this did not happen to me.)

With that job done, we retired for dinner and a final briefing meeting.

Saturday morning, the first riders were on the course by 6:00 am. Before that, we ferried a group of runners up to the Colorado Trail for their cross-country run. For the rest of Saturday until mid-afternoon, we drove the Colorado mountain roads: Leadville, Vail, Dillon, and Copper Moun-

(Classic — Continued on page 4)

(Pres — Continued from page 1)

sight along with the second FOX. The event would not be 100% fun without the masterful BBQ grilling of Rob, KC6TYD, who provided all the food and drinks along with cooking ham-burgers & hot dogs!

Doug and Darryl also provided HF antennas along with HF radios which attendees used to make contacts, understand how to operate an HF radio, or just watch, ask questions, and learn. Three long-distance contacts were made, one to Africa and two to South America. For two new operators, these were the first DX contacts ever made. They both had big smiling faces as did the group of antenna-building fox hunters. As both PAARA in the Park outings proved successful and enjoyable for all who attended, we'll continue holding the event. The board is currently looking at the next event in April 2024.



By the time you read this, Pacificon and the PAARA special event station, W1AW/6, will be a memory. Please join me in congratulating Mikko, AB6RF, and his major assistant Christopher, AI6KG, for all their exemplary work orchestrating the special event station. Special thanks go to Doug, KG6LWE, who drug the trailer up from his home QTH, assisted in the setup of the antenna, then returned Sunday to help take it

down and return the trailer to his home QTH. Thanks also go to all the PAARA members who helped with the setup, operation/oversight, spending Friday and Saturday nights, and packing up of the equipment that made this station possible. Setting up and staffing the station is an essential addition to Pacificon and is greatly appreciated by MDARC, the sponsoring club of Pacificon, as well as attendees who took the time to operate or learn how to operate HF radios.



Roughly 1,100 contacts, including many DX contacts, were made by everyone who worked one of the 5 stations. As in past years, scouts descended on the station on Saturday. Christopher worked with them to make their first contacts on HF so they could earn a radio merit badge. I don't know how many scouts Christopher helped but there was a crowd around the 20M station for several hours!



Rob, KC6TYD, was also a participant in Pacificon along with quite a few PAARA members. He and his team made 3 jumps working Parachute Mobile. All three jumps attracted quite a bit of attention from attendees trying to make contact with a jumper or learn more about skydiving. Roughly 100 contacts were made be-

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PAARAGraphs — November 2023
Celebrating 85 years as an active ham radio club—Since 1937

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tween the 3 jumpers.



September was the start of board elections. Clark, KK6ISP, is accepting nominations from anyone who wishes to run for a position on the board. Feel free to talk with Clark or anyone on the board if you have any questions about being on the board. Nominations remain open until the end of the November 3rd club meeting. Elections will be held during the December 1st club meeting. You must be a current member of PAARA and be present in person at the meeting in order to vote. No online voting is being provided.

As we stand on the precipice of fall and the holiday season, one might start thinking of what the first activity of 2024 will be. For me, it's Quartzfest from January 21 to the 27th. For those who haven't attended, it's a wonderful time of camping, socializing, meeting new and old friends, and learning, with a bit of HF thrown in for good measure. I hope you'll consider joining those of us who make the trek to the desert about 8 miles south of Quartzsite, AZ. More information can be found here: <https://quartzfest.org/>. As I did last year, I plan on attending the King of the Hammers off-road race in Johnson Valley from January 18th to February 3rd. I will be volunteering as a Course Marshal thus have an opportunity to use my business band radio again. You can find more about the event at: <https://kingofthehammers.com/>.

As you can tell, this month's PAARAGraphs is a bit light in the story department. Thanks to Ric, N6AJS, for getting me a story at the last minute. Please consider submitting a story for next month's issue or we'll not have a story at all!

I look forward to seeing a room full of smiling faces at the November 3rd meeting. It will be an IRL and Zoom meeting.

73, Jim K6SV

Get on the air to keep the airwaves alive!

(Classic — Continued from page 2)

tain, just keeping an eye on the riders.

When the weather is fine, the job is pretty stress-free. This year we had sunny skies through both days.

In the afternoon, we started to pick up a few riders who were fatigued, or just wanted a lift to the top of Vail pass.

SAG and radio support become critical when the weather gets rough – afternoon thunderstorms are common in the mountains – or if there is a mishap. We hope for a boring day!

The radio traffic isn't all health and safety: Last year, the traffic went out over the repeaters, "Summit High School is out of pickles. Can Tennessee pass provide some?" This year, several of the ride volunteers were wearing dill pickle color t-shirts.

The Sunday ride was much the same, with good weather and no road incidents. Most riders are off the course in the early afternoon, and we start breaking down the radios and bike racks.

The tour organizers take great care of everyone, and we finished the afternoon with a barbecue lunch.

The Courage Classic ride raises a lot of money for the region's premier pediatric hospital, and covers some of the most beautiful mountain roads in the world. It's one of my favorite ham radio activities of the year: Mountains, bicycles and radio: It's a perfect weekend.

October 2023 Board Meeting Minutes

The meeting was called to order at 7:05. In attendance were President Jim Thielemann K6SV, Vice President Rob Fenn KC6TYD, Secretary Ric Hulett N6AJS, Treasurer Margaret Cooper K6WEK, Directors Doug Teter KG6LWE, Joel Wilhite KD6W, Walt Gyger K6WGY, and Darryl Presley KI6LDM. Also present was Bob Ridenour, KN6YGN.

A quorum was present.

President's Report — I was really impressed by the attendance at the October PAARA meeting. Including online attendees, we had 52 people there. It was also nice to see that we had a lot of folks who stayed after the break. And, we had a very interesting guest speaker this month.

Secretary's Report — Members: Don't forget that PAARA memberships expire at the end of December! This is a great time to visit the PAARA website and renew with PayPal. Or, mail your check to PO Box 911, Menlo Park 90426. Even easier, bring your \$25.00 (what a bargain!) to the PAARA meeting.

We have gained several new members in the last month or so. A warm PAARA welcome, to Shiv W6CN, Joshua KO6ASM, Vikas KN6QLK, Vijay W6VIJ, Jeffrey AG6WX, and Sorin KN6YUH.

Treasurer's Report — Secretary is putting together an end-of-quarter report for our bookkeeper. We had deposits from the PAARA in the Park activity, and reimbursed Darryl for material costs.

The badge vendor needs to make some new custom laminate material for PAARA badges. We will find out what this may cost.

VP / Program Chair Report — We were looking for a speaker from one of the ham services on Maui regarding the recent fires, but have no leads yet. The November speaker (TBD) will give a talk about mesh networks.

Old Business

Pacificon — It is this weekend October 20th ~22nd. As in past years, PAARA is running the W1AW/6 special event station. This is an excellent ham gathering, PAARA members should make a point to attend.

As in years past, we will be welcoming Scouts to our station for the Jamboree on the Air.

We'll set up 4 stations, with the same antennas as last year.: A triband beam for 10m to 20m, wire vertical for 40, and the dipole for 80m.

Look for a new "W1AW/6" banner this year.

Members — We really, really need your input to keep PAARAGraphs as a unique and high-quality club newsletter. If you have a ham-related story, write it down, (even a few sentences), and send to the editor, Jim Thielemann.

If a club member relates a good story to you, ask them to make it into an article: It doesn't have to be a big manuscript, any ham story is a good one. Member contributions are critical to our PAARAGraphs.

Education Committee:

The tape-measure yagi project at PAARA in the Park was a big success, showing people they could build a directional antenna, and search a hidden transmitter in

(Minutes — Continued from page 5)

the field. The youngsters really enjoyed the fox hunt.

We had a discussion about ways to provide knowledge to newer hams, including an ‘education corner’ in the newsletter. This will be discussed further.

PAARA equipment sales — KC6TYD. No new sales. A member is willing to donate some inexpensive 2m handhelds to the club, which we could give to new hams.

Radio Loaner program — We have had no takers so far, will mention this at the club meeting.

PAARA repeater — Repeater is up and running, but we need to schedule a cleanup day at the repeater site.

Field Trip — Suggestions for the next Field Trip? A trip to the Computer History museum was suggested. No other proposals are to hand.

Elections — PAARA holds officers elections at the December meeting each year. Candidate nominations must be entered by the end of the November meeting. Contact Clark KK6ISP if you are interested in running for a board office.

Field Day — Do we continue using Write Log moving forward?? N1MM? Any update Mikko? We will change to N1MM for Field Day 2024. Mikko will run a check on N1MM. Note we may need to update to Win10 to interface with IC7300, 7610

New Business

Our president will not be in attendance for the February or April club meetings. Rob Fenn will conduct these meetings.

PAARA in the Park — The board tentatively decided to hold the next event on April 20, 2024. April 27 is a possible alternate.

Electronics Flea Market — PAARA is scheduled to run this event on Sunday, April 14, 2024.

Dream to Reality Raffle — We have submitted additional documentation to the State to allow the raffle. We don’t know at this time if we will be cleared in time for the December meeting.

We discussed some alternate ticket sales plans, including multiple months of raffle ticket sales. We will discuss again at the November board meeting.

Moved and seconded to purchase KX3 with filter, antenna tuner and microphone. The board approved this motion.

We have updated the club page at ARRL.org All information is current and correct.

New business — Ben will not be at the next meeting AK6AD will assist with the Zoom at the November meeting. Thanks, Alan!

Darryl — A club member wants to know if we can have an e-mail reflector on Groups.io? We can accomplish this, if we have volunteer moderators. Darryl and Rob will confer and present at the next board meeting.

The meeting was adjourned at 8:55 pm.

Respectfully submitted,
 Ric Hulett N6AJS
 PAARA Secretary

Palo Alto Amateur Radio Association, Inc.

PO Box 911 Menlo Park, CA 94026

Officers

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	k6wek@arrl.net	

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	walt@tradewindsaviation.com	
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	dteter@wcwi.com	
Director ('23)	Darryl Presley, KI6LDM	650 255-2454
	ki6ldm@arrl.net	

Appointed Positions

Membership	Ric Hulett, N6AJS	408-332-4593
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Station Trustee K6OTA	Ron Chester, W6AZ	
Property Manager	Doug Teter, KG6LWE	
Badge Coordinator.....	Doug Teter, KG6LWE	650-743-7892
	dteter@wcwi.com	
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	Shrikumar, KA6Q	
	shri.paara@enablery.org	
Field Day Coordinator.	Doug Teter, KG6LWE	650-743-7892
ASVARO Rep	Clark Martin, KK6ISP	
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Webmaster.....	Shrikumar, KA6Q	
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Technical Coordinator.	Christopher, AI6KG	408-348-0304
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Speaker Coordinator...	Rob Fenn, KC6TYD	650-888-9060

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Member Profiles	<i>Position Vacant</i>
Technical Tips.....	Ric Hulett, N6AJS
Photographer	<i>Position Vacant</i>

VE Exams

De Anza Park, Sunnyvale, 2nd Saturday 10:30 am each month except November and December. See website for details and exceptions: <http://amateur-radio.org>

Electronics Flea Market (ESM)

Sponsorship: Association of Silicon Valley Amateur Radio Organizations (ASVARO)

The Electronics Flea Market is seeking a new location. Until that is resolved, the EFM is on hold. Website: <http://www.electronicsfleamarket.com/>

PAARA — Palo Alto Amateur Radio Association

Meets 1st Friday 7:00pm each month at Room H-6, Cubberley Community Center; Net 145.230 - PL 100Hz Mondays at 8:30. See website at <http://www.paara.org>. For more information, contact: Joel Wilhite KD6W, KD6W@ARRL.NET, 650-325-8239

FARS — Foothills Amateur Radio Society

Meets 4th Friday each month at 7:00pm at Covington School, Los Altos.

Website: <http://www.fars.k6ya.org>

NCDXC — Northern California DX Club

Meets 3rd Thursday 7:00pm each month,
Repeater for member info 147.360. Contact president@ncdx.org, Website: <http://ncdx.org>. YouTube content: "The Northern California DX Club Official Channel". Cohost of the International DX Convention.

The 50MHz & Up Group of Northern California

This organization specializes in vhf + wak signal and microwave activities. Meetings are held on the first Tuesday of each month. Time is usually 5pm for in person meetings, and 7pm for Zoom only meetings. In person meetings are held Sports Basement, 1177 Kern Ave, Sunnyvale. Always check the website, <http://50MhzandUp.org>, for correct information. Zoom information is also there.

San Mateo Radio Club W6UQ.ORG

Meets, 3rd Friday, January through November.

Tuesdays & Thursdays, [Directed] Net, 7pm, N6ZX 145.370Hz, -600kHz, PL107.2Hz

Contact: SanMateoRadioClub@gmail.com, Website: <http://W6UQ.org/calendar>

SPECS

Southern Peninsula Emergency Communication System users Group

Meets each Monday 7:30pm and 8:00pm.

See: <https://specsnets.org/monday-night-net> for more info.

Contact: <https://www.specsnets.org/contact> or board@specsnets.org

SCARES

South County Amateur Radio Emergency Service

Meets 3rd Thursday 7:30pm each month, Belmont EOC, Belmont City Hall, One Twin Pines Lane, Belmont CA 94002. Net is on 146.445 [PL 114.8] & 444.50 (PL-100) 7:30 Monday evenings. Contact: President Gary D. Aden, K6GDA 650-743-1265 (D), 650- 595-5590 (N)
Web: <http://k6mpn.org> E-mail: pres@k6mpn.org

SCCARA

Santa Clara County Amateur Radio Association

Operates W6UU & W6UU/R, repeater 146.985-pl

Nets: 2m, 7:30pm Mon; 70cm, 10M (28.385) 8PM Thur.

Meets 2nd Mon each month @ 7:30 PM.

ARRL/VEC license testing contact 408-507-4698

SVECS — Silicon Valley Emergency Communications

Operates AA6BT repeater (146.115 MHz+)

Website: <http://www.svecs.net> or contact: Lou Stierer WA6QYS 408 241 7999

WVARA — West Valley Amateur Radio Association

W6PIY six-meter repeater on 52.58MHz. Normally, six-meters is linked with 147 and 223, while 441 and 1286 repeaters are linked.

VHF: 52.58 (-500) 151.4 ctcss

147.39 (+600) 151.4 ctcss

441.35 (+5.0)

88.5 ctcss

223.96 (+1.6) 156.7 ctcss

1286.20 (-12m)

100.0 ctcss

Meetings are 2nd Wednesday of every month except July, August and December.

Website: <http://wvara.org>, Contact: info@wvara.org

(Please send changes to PAARAGraphs editor)



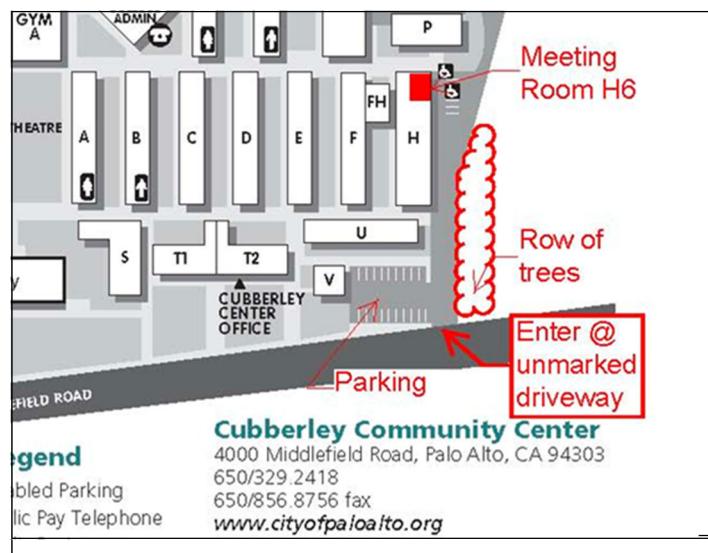
PAARA Weekly Radio Net

Info and Swap Session
 every Monday evening at 8:30pm
 on the N6NFI 145.230 MHz repeater

Week Control Operator

1 st	Doug - KG6LWE
2 nd	Doug - KG6LWE
3 rd	Ric - N6AJS
4 th	Rob - KC6TYD
5 th	Rob - KC6TYD

If you're interested in trying out at Net Control, Contact Doug, KG6LWE. It's good practice, and lots o' fun! Give it a try.



Meeting Location — Middlefield Road between San Antonio and Charleston in Palo Alto. 4000 Middlefield Road

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Palo Alto Amateur Radio Association
 P.O. Box 911, Menlo Park
 California 94026-0911

Club meetings are on the first Friday of each month, 7:00pm at the Room H-6, Cubberley Community Center.

Radio NET & Swap Session every Monday evening, at 8:30pm, on the 145.230 – 600 MHz repeater, PL 100Hz.

Membership in PAARA is \$25.00 per calendar year, which includes one subscription to PAARAGraphs \$6 for each additional family member (no newsletter).

Make payment to the
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Text: .doc, .rtf, or .txt
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UHF DMR	444.475 MHz +5 MHz CC1	Slot 1: Dynamic Slot 2: NorCal BM (31068)
33cm FM	927.225 MHz -25 MHz	PL 100 Hz

PAARA Badges

Badges can be ordered through
our web-

site <https://www.paara.org/pages/members-current.html>

Scroll to the bottom
of the page and fill out the info. All
badges will be mailed.

The cost for a badge is \$25.00.

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PAARAGraphs accepts paid advertisements from non-members. (short personal ads remain free for members in good standing). **All ad rates listed are per issue.**

1. Not-for-profit ads by association members for ham-related items and wants. No cost for business card-size ads (additional space at \$2.50 per business card size per issue).

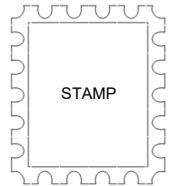
2. For Profit organizations and/or individuals: \$5-business card size, \$14.00-quarter page, \$25-half page, \$50 full page or back cover per issue.

These fees may be reduced or waived in exchange for a valuable consideration that is given to the Association or its general membership. Such consideration must be in addition to any existing arrangements with the association. The PAARAGraphs editors reserve the right to reject any ad deemed to be not in the best interest of the Association.

All fees payable in advance by the year with "scanner-ready" copy or text-only ads. **Give payment and copy to Walt Gyger, K6WGY.**

PAARGraphs — November 2023

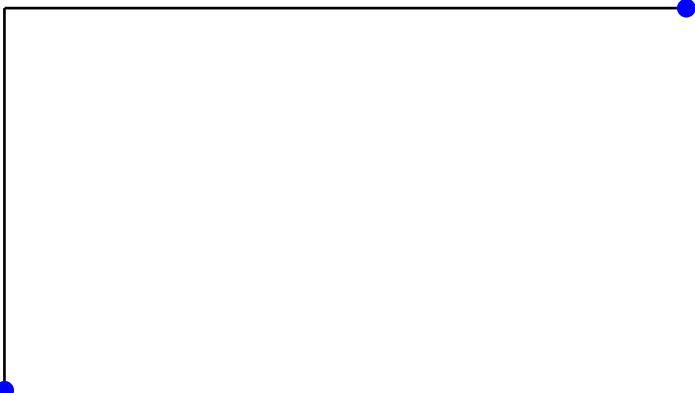
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- RETAIL LOCATIONS - Store hours 10:00AM - 5:30PM - Closed Sunday
- PHONE - Toll-free phone hours 8:30AM - 5:30PM
- FAX - All store locations
- ONLINE - WWW.HAMRADIO.COM
- MAIL - All store locations

YAESU
The radio

FTDX101MP | HF/50MHz Transceiver

Real-time Spectrum Scope with Automatic Scope Control • Narrow Band SDR & Direct Sampling SDR • Crystal Roofing Filters • Phenomenal Multi-Signal Receiving Characteristics • Internal Signal Processing System • 3kHz Roofing Filter for enhanced performance • 3.5 inch Full Color TFT USA Capable • Internal Automatic Antenna Tuner • High Accuracy TX/RX



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 USA Capable • Internal Automatic Antenna Tuner • High Accuracy TX/RX



FTDX10 | HF/50MHz 100W SDR Transceiver

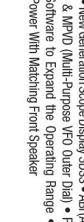
Narrow Band and Direct Sampling SDR • Down Conversion 9MHz IF Filtering Filters • Produce Excellent Shape Factor • 5" Full-Color Touch Panel w/3D Spectrum Stream • High-Speed Auto Antenna Tuner • Microphone Attenuator w/o Sagitar Parameter Equalizer • Remote Operation w/o optional LAN Unit (SCU-LAN10)



FT-991 | HF-50MHz 100W SDR Transceiver

Narrow Band and Direct Sampling SDR • Down Conversion

9MHz IF Filtering Filters • Produce Excellent Shape Factor • 5" Full-Color Touch Panel w/3D Spectrum Stream • High-Speed Auto Antenna Tuner • Microphone Attenuator w/o Sagitar Parameter Equalizer • Remote Operation w/o optional LAN Unit (SCU-LAN10)



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

• 50 watts of RF power • Large 6 digit backlit LCD display

• Band Scope • Built-in Bluetooth • WIRE-X Portable Digital Node/Fixed Node with IR-200



FT-3000R | C4FM/FM 144/430MHz Dual Band

• 50W Output Power • Real Dual Band Operation • Full Color TFT Display • Band Scope • Built-in Bluetooth • WIRE-X Portable



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

Real-time Spectrum Scope with Automatic Scope Control •



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

• Unmatched SDR Receiving Performance • Band-Pass Filtered Det.

VC-Tune • New Generation Scope Display • IBL Active Band Indicator & MWD (Multi-Purpose FWD Outer Dial) • PC Remote Control Software to Expand the Operating Range • Includes External Power With Matching Front Speaker



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



FT-500DR | C4FM/FM 144/430MHz Dual Band

• Front Firing Acoustically Enhanced Speaker System • True

Dual Band Operation, C4FM/C4FM Digital D-UP Dial Receive • Built-in



FT-500DR | C4FM/FM 144/430MHz Dual Band Xcvr

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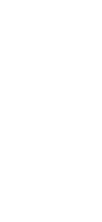
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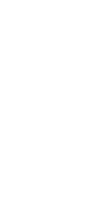
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