

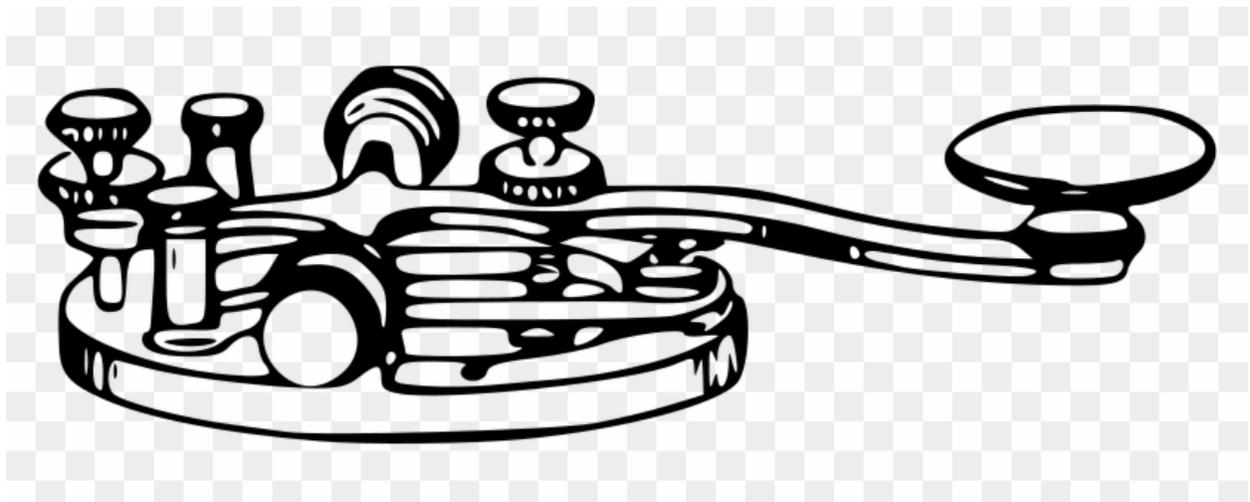


QSA-5

Marin Amateur Radio Society Monthly Newsletter

Established 1933

November 2025



When all else fails, you can count on Amateur Radio

From Our President:

To quote Steve Miller “Time keeps on slipping into the future”. The fact that *Fly Like an Eagle* was released in 1976 pretty much tells you how old I am. That may or may not be the point. However, for MARS the point is that we are approaching the end of 2025. At our November 7th meeting the election committee will announce the names of our members who have stepped up to run for the three seats that come up for next year. You have until the evening of the 6th to place any other names in nomination. No you can't just throw someone's name in the hat, they actually have to be willing to serve. Just as a reminder the election is for a two-year term on the board. Officers will be chosen by the board at the January board meeting. You must be a club member in good standing, meaning paid up, and you must have a renewable amateur radio license. The commitment is 12 board meetings per year all conducted on zoom. If you or someone you know is willing to serve on the board, please let the nominating committee know by emailing nominations@w6sg.net

The end of the year is also when we give out club awards. The club has created the following awards and will decide if they will grant the award and to whom. Ham-Of-The-Year: this is for significant contributions to the club in the specific year. Hi Roberts Award: This is in recognition of exceptional service over many years, and you don't have to be old to get the award. Ted McMillian Youth Advancement award is given to a ham under 18 years of age who has worked to advance their skills in the last year. In this case you don't need the candidate's permission to nominate them. Please email any candidates to wa6uds@w6sg.net. If you want to see prior winners please check out <https://w6sg.net/site/members/club-awards/> The deadline for nominations is December 1, 2025.

We will be holding our Christmas Celebration this year at the Cantina in Mill Valley as we did last year. A date and amount has not yet been set but as soon as the schedule is fixed, I will send out an email blast with all the information.

Going into 2026 we will be doing more to clean up and improve the club house. I will be sending out more requests for work parties for specific tasks. Please give some thought to contributing time and or money to beautifying the interior of our club house. We are amazingly fortunate to have this place, and we need to take seriously our obligation to keep it up.

That's all for now.

73 de wa6uds

Elections for the board of directors are coming up in November. Three seats on the board will be voted on this year. I think it is always better when you actually have a choice in an election. If you would like to serve on the board, or know someone who you think would be a good board member please let the election committee know by emailing at elections@w6sg.net If you nominate someone else please ask their permission before nominating them. You don't need to campaign, or debate or any of that unpleasant stuff. The board meets 12 times a year by zoom and everyone is elected as a director. At the January board meeting the club officers are elected by vote of the board members. Directors are elected for a two-year term.

I also need to thank a few of you. The first person who comes to mind is Steve Toquinto KB6HOH. Not only did he organize a excellent Field Day but also a great club picnic. I also want to thank Jeff Young KM6Y who was part of the driving force behind our NBAM committee. Jeff was instrumental at getting grant funding for the project as well as establishing many of the radio sites. Jeff has since moved to Oregon and even from that distance has participated in the ongoing management of the NBAM team. Jeff has decided to focus more on where he is now and has left the NBAM team. We owe him quite a debt for that work. Thank you Jeff.

While we are thanking people it is also time to think about club awards. Please take a moment to visit <https://w6sg.net/site/members/club-awards/> to see what awards the club has and if you have suggestions on candidates for this year please email me at wa6uds@w6sg.net

73 de wa6uds

From the Editor:

Greetings everyone! Let the Holidays begin! Halloween has passed and Thanksgiving is coming up at the end of the month. The morning temperatures have dropped, reminding us that fall is here. The 10-meter band is either jumping with potential contacts or lackluster due to solar activity. I apologize for the Qsa-5 being published a few days past the 1st, but we had some last-minute additions that needed to be included within its pages!

Advances in technology have really increased amateur radio operators' abilities to acquire radios that do a lot more for a lower cost. Case in point, the Radtel 950 Pro, which covers all the amateur radio bands, and allows transmitting on the 2, 6, 10, 11-meters bands, as well as the 70 cm band. This is covered in this month's issue. ATU Antenna tuners have also been improved and can be purchased for under \$100.00! It's great time to be involved in amateur radio!

A big thanks to Curtiss Kim and the usual suspects for their contributions. I couldn't do this without you! Have a great November everyone!

QSA-5Editor@w6sg.net



New Members:

David Efros KO6KKA - Santa Rosa





“Your parents hath given you a name. And the FCC hath given you another...”



Marin Amateur Radio Society Board of Directors Meeting 10/09/2025

Call to Order 19:30 Hours (7:30 PM) Called to Order 19:30

Attendance:

President: Curtis Ardourel WA6UDS

Vice President: Ken Brownfield AB6JR

Secretary: James Saltzgaber KM6WWY

Treasurer: Bruce Bartel N6VLB

Director: Richard Cochran AG6QR

Director: Steve Toquinto KB6HOH

Director: Ed Essick K6ELE

Trustee W6SG: Marc Bruvry KF6VNT

Trustee K6GWE: Brian Cooley K6EZX

Adopt agenda: MSC without objection to Adopt as presented.

Approve minutes of: 11 September board meeting Approved without

Secretary's Report/Communications: Nothing to report.

Treasurer's Report: Bringing budget and cash reporting up to speed on the new system. Financials were sent to Curtis. Final bill for picnic catering has been paid.

Members Present: Milt Hyams KM6ASI, Scott Pasternak KN6ZDN, Charlie Benett AI6TT, Skip Fedanzo KJ6ARL, Dan Sobel N6HLZ, Mark Klein KM6AOW, Larry Loomer KI6LNB, Kathy Spicher KM6URP, Gerald McCarthy W6NOV, Rob Rolands NZ6J,

Committee and other Reports:

- 1. Membership:** Curtis WA6UDS- 163 99% of last year's total. (93% was at October '24)
- 2. Facilities:** Skip KJ6ARL- Nothing major to report. A Keurig pod holder has fallen off the wall, Scott KN6ZDN repaired it. Leaves are starting to accumulate and need to be kept up. Interior painting party is needed to repaint the interior of the meeting room.
- 3. VOAD/RCV:** Skip KJ6ARL- RCV held field exercise Sat. October 4 testing CBO satellite locations communications using Repeaters. 3 were found to provide CM 4 to CM5 communications. No VOAD general meeting this month.
- 4. Technical:** Milt KM6ASI- No new repeater news. Gerald W6NOV Date set for October 26th to complete grounding and bounding of antennas on roof and from Poly Phaser buss bar to station ground bar inside ham station. This will complete the bulk of the approved station upgrade project.
- 5. Public Service:** Scott KN6ZDN– 2 remaining public service events for this season. Kelly Brush Ride Oct. 25th and the Mt. Tam Trail Ride Nov. 8th. Will have Public Service committee meeting to ensure a high quality of net control communications.
- 6. VE Testing:** Jim KM6WWY – Next VE Session is October 11th. 3 current applicants for this session. We have a full crew of VE examiners.
- 7. Comm Truck:** Charlie AI6TT – Comm Truck has logged about 300 miles this year.
- 8. NBAM:** Kathy KM6URP – Reflash of nodes in Portable AREDN Kits with current firmware did not go well. Will revisit updates after the first of the year to update everything. Bodega Bay has sent first digital Winlink message via AREDN to

Sonoma/Marin digital net. Still installing equipment for the Great Shakeout drill. On Saturday the 18th, held a joint AREDN exercise with Marin and Sonoma users, including Bodega Bay Fire. Board of Directors of Pole Mt. Fire toured Mt. Barnabe, expressed interest in adding AREDN on Pole Mt. Further discussion will be held on the AREDN installation on Pole Mt. Additional training of AREDN Net Control for Petaluma Health Center. Proposal will be made for Sonoma State Electrical engineering students AREDN project. Kathy spoke with SSC physics department, and they may also be interested in student AREDN project. Mark KM6AOW – BAM has donated 4 Cambium 6ghz radios that have a 6-to-10-

mile range. They will require GPS linking receivers to be used. Kathy KM6URP – These may be used in the Pole Mt. installation. Curtis will write a thank you letter. Skip KJ6ARL- Questioned about the backwards compatibility of these radios with previous hardware. Mark – No, they are different frequencies. Also, would these be suitable for multiplexing Big Rock and San Rafael Hill UHF Repeaters. Mark – Yes.

- 9. Nominations** – Ken AB6JR – Nancy KO6GII has joined Ken AB6JR & Scott KN6ZDN on the nominating committee. Presently we have 3 candidates for 3 open positions but will be soliciting additional candidates. If you are interested in running for the MARS Board, contact a member of the nominating committee or email: NOMINATIONS@W6SG.net. Must be a member in good standing of the club and have a renewable Ham license.

Old Business:

1. Donations Committee Charter – Curtis WA6UDS – we have two donations' inquiries pending, from Pat Stromeyer (Fran WA6TFP SK) and one other. We will get meetings set up and meet with the prospective donors. Meeting is scheduled with Pat Stromeyer on Wednesday 15th.
2. New Google environment – Online storage of club records – Nothing new to report.
3. Club Cleanup Committee – Curtis WA6UDS- Current committee is Ken AB6JR, Milt KM6ASI, Jim KM6WWY, Curtis WA6UDS, Skip KJ6ARL. Cleanup committee will bring necessary items and projects to the board for approval. Cleanup Committee will meet at the clubhouse on Sat. 10/11 to plan project start.

New Business:

1. Christmas Celebration – Curtis WA6UDS – A survey of members regarding the Christmas celebration was sent out 10/9. Last year's celebration held at the Cantina restaurant in Mill Valley was a success. Member feedback will be used to determine this year's. Rob NZ6J volunteered to be the lead organizing and Scott KN6ZDN will assist.
2. Awards – Curtis WA6UDS – Is soliciting recommendations for the various club awards. Need prior to the December General meeting. Awards that MARS confers (not all are awarded each year):

Ham-of-the-Year, A long MARC and MARS tradition. This award recognizes significant contributions to the club in the past year. Nominations are made by board members and committee chairs to the club president. **Hi Roberts Award** – This award is made to individuals who have been of exceptional service to the Marin Amateur Radio Society.

John Butler ‘Elmer’ Award – This award is made to members who have been exceptional mentors to other club members, especially as it relates to the art and science of radio and technical matters.

Ted McMillan Youth Advancement -This award was created to recognize a club member under 18 years old who has worked to advance their skills in our hobby and to encourage them to farther exploration in the hobby.

3. Stafford Lake Park reservations for Field Day and Picnic were discussed. Steve KB6HOH- will get reservations in place with the park.

Good of the Order - Nothing Noted

Executive Session – Not required.

Adjourn 20:34 MSC without objection

Next Regular Meeting 7 November 2025

Next Board Meeting 13 November 2025

Marin Amateur Radio Club

Balance Sheet Comparison As of October 31, 2025

DISTRIBUTION ACCOUNT	TOTAL	
	AS OF OCTOBER 31, 2025	AS OF OCTOBER 31, 2024 (PY)
Assets		
Current Assets		
Bank Accounts		
CD	0.00	0.00
MARS BUILDING FUND (8795) - 3 - 2	1,515.40	3,489.90
MARS GENERAL FUND (4328) - 9 - 1	83,543.42	76,711.45
Money Market	0.00	0.00
VE Session Cash	0.00	0.00
VE Session Cash Received	0.00	0.00
Total for Bank Accounts	\$85,058.82	\$80,201.35
Accounts Receivable		
Other Current Assets		
Uncategorized Asset	0.00	385.00
Total for Other Current Assets	\$0.00	\$385.00
Total for Current Assets	\$85,058.82	\$80,586.35
Fixed Assets		
club house- 27 Shell Rd. MV	58,983.00	58,983.00
Total for Fixed Assets	\$58,983.00	\$58,983.00
Other Assets		
Total for Assets	\$144,041.82	\$139,569.35
Liabilities and Equity		
Liabilities		
Current Liabilities		
Accounts Payable		
Credit Cards		
Other Current Liabilities		
Total for Current Liabilities		
Long-term Liabilities		
Total for Liabilities		
Equity		
Retained Earnings	15,577.46	13,748.91
Net Income	4,064.36	1,420.44

Opening Balance Net Assets	124,400.00	124,400.00
Total for Equity	\$144,041.82	\$139,569.35
Total for Liabilities and Equity	\$144,041.82	\$139,569.35

Marin Amateur Radio Club

Profit and Loss

January 1-October 31, 2025

DISTRIBUTION ACCOUNT	TOTAL	
	JAN 1 - OCT 31 2025	JAN 1 - OCT 31 2024 (PY)
Income		
Donations	7,289.65	32,646.51
Dues	2,880.00	270.00
Rent	27,570.00	29,100.00
Christmas Party Income		640.00
Public Service Refund		168.15
Unapplied Cash Payment Income		385.00
Total for Income	\$37,739.65	\$63,209.66
Cost of Goods Sold		
Gross Profit	\$37,739.65	\$63,209.66
Expenses		
Accounting	1,859.11	1,600.00
Awards	400.00	
Car & Truck	\$354.94	\$2,224.89
Car & Truck Gas	34.89	152.42
Total for Car & Truck	\$389.83	\$2,377.31
Equipment < \$2,500	431.48	
Field day	341.91	854.66
Food	1,592.07	467.02
Garbage	533.32	507.96
Insurance	\$5,731.91	\$5,073.00
Comm Van Insurance	2,458.00	2,385.18
Total for Insurance	\$8,189.91	\$7,458.18
Meals	70.77	235.24
Office Supplies & Software	130.00	18.00
Other Business Expenses	575.32	

Picnic	2,001.60	1,705.10
Public Service Expense	3,295.57	4,188.44
Repair & Maintenance	1,521.63	2,362.06
Station Upgrades & Maintenance	1,894.69	
Taxes & Licenses	4,164.36	4,099.67
Utilities	4,304.91	3,972.58
Water	593.45	1,330.79
Web Services Expenses	0.00	
Christmas Party		2,970.23
Contractors		22,549.00
Housekeeping		1,123.80
Reimbursable Expenses		542.00
Repeater		2,138.67
Total for Expenses	\$32,289.93	\$60,500.71
Net Operating Income	\$5,449.72	\$2,708.95
Other Income		
Other Expenses		
MESH Grant Disbursement	1,385.36	1,288.51
Total for Other Expenses	\$1,385.36	\$1,288.51
Net Other Income	-\$1,385.36	-\$1,288.51
Net Income	\$4,064.36	\$1,420.44

LIFE IS SIMPLE



MARS Club News

LOOSE PARTS: By Dave Blazek



Presentation at November 7 2025 Meeting

Greetings

Rob Rowlands NZ6J will do a presentation at the Friday meeting on the T-Mobile T-Satellite system.

T-Mobile T-Satellite

No signal? No problem

A satellite orbiting more than 200 miles above your head can now keep you connected—letting you text, chat, and even jump on a video call from places where your phone previously showed zero bars.

Apple cracked open the door for satellite connectivity in 2022 with its Emergency SOS feature. But this year, T-Mobile and SpaceX blew it wide open with [T-Satellite](#), an ambitious service designed to erase cellular dead zones across the US. Powered by a constellation of 650 Starlink satellites acting as orbiting cell towers, the system turns the sky itself into a network.

We were seriously impressed by the results [in our tests](#) on a remote beach in Northern California. Using T-Satellite, we sent texts, scrolled through X, and even joined WhatsApp video calls—all from a stretch of land that was once a dead zone. Signal quality isn't perfect yet, but performance is only expected to improve. Especially after [SpaceX recently acquired](#) valuable radio spectrum from Boost Mobile's parent company, EchoStar.

T-Satellite is also kicking off a new space race. AT&T and Verizon are lining up their own competing service through [AST SpaceMobile](#), while Apple plans to beef up its offering through its partner Globalstar.—*Michael Kan*

We typically have more in person attendees at the club house so I would ask that you RSVP at rsvp@w6sg.net if you plan to attend so I can make sure we have enough pizza.

73 DE WA6UDS
Curtis Ardourel

President and Membership Chair
Marin Amateur Radio Society
WA6UDS@W6SG.NET

Shape the Club's Future

Greetings

That time of year is upon us again, soon we will be dozing through Pumpkin Spice everything and Turkey. It also means that it is almost time to elect members to the MARS board of directors. At the 7 November meeting the nomination committee will present a group of candidates. In November you will be voting on three seats on the board. We currently have three candidates, but it seems a little more competitive if there we had more candidates than seats to fill.

To serve on the board, you have to be a member in good standing of the club and have a current renewable amateur radio license. There are 12 board meetings per year which are held on zoom. The term of office is two years. The best boards have members who have variety of experiences to draw on when they need to make a decision.

If you are interested, please email the nominations committee at nominations@w6sg.net

73 DE WA6UDS
Curtis Ardourel
President and Membership Chair
Marin Amateur Radio Society
WA6UDS@W6SG.NET

Our mailing address is:
Marin Amateur Radio Society
PO Box 6423
San Rafael, CA 94903-0423

Upcoming Elections

Elections for the board of directors are coming up in November. Three seats on the board will be voted on this year. I think it is always better when you actually have a choice in an election. If you would like to serve on the board, or know someone who you think would be a good board member please let the election committee know by emailing at elections@w6sg.net If you nominate someone else please ask their permission before nominating them. You don't need to campaign, or debate or any of that unpleasant stuff. The board meets 12 times a year by zoom and everyone is elected as a director. At the January board meeting the club officers are elected by vote of the board members. Directors are elected for a two-year term.

I also need to thank a few of you. The first person who comes to mind is Steve Toquinto KB6HOH. Not only did he organize a excellent Field Day but also a great club picnic. I also want to thank Jeff Young KM6Y who was part of the driving force behind our NBAM committee. Jeff was instrumental at getting grant funding for the project as well as establishing many of the radio sites. Jeff has since moved or Oregon and even from that distance has participated in the ongoing management of the NBAM team. Jeff has decided to focus more on where he is now and has left the NBAM team. We owe him quite a debt for that work. Thank you Jeff.

While we are thanking people it is also time to think about club awards. Please take a moment to visit <https://w6sg.net/site/members/club-awards/> to see what awards the club has and if you have suggestions on candidates for this year please email me at wa6uds@w6sg.net

73 de wa6uds

Volunteer Examiner News

The Marin Amateur Radio Society Volunteer Examiners finished the year's testing sessions on October 13th. Our VE is currently working on scheduling sessions for 2026. Stay tuned!

When It Comes To Getting A Ham License It Really Is Multiple Choice.

By Curtiss Kim KM6GUY

When many of us earned our operator's license, we sat in a sterile room, filled in the answer sheet with the number 2 pencil and waited while three volunteer examiners carefully graded the results. That's the way Greg Pecsar and Dennis Atwood, both of Fairfax took the tests at the latest MARS VE session in mid-October. Pecsar earned his Technician's ticket and Atwood upgraded from Technician to General. (Because of the federal government shutdown all license applications submitted will be suspended for the duration.) When it comes to future VE exams it seems "the times they are a changin". New testing procedures are being contemplated by Lead Volunteer Examiner, James Saltzgaber, KM6WWY. Some amateur clubs are already offering candidates the ability to take the exams on their personal computer, tablet or cellphone using a website that will instantly return the results the moment the test is completed. These tests are offered in a group session gathering overseen by volunteer examiners who have prescreened the applicants.

Since the pandemic, the FCC has offered license tests at home, but candidates have to register online and be supervised virtually using video conferencing software. That can often be time-consuming and dependent on the computer's capabilities and internet connection.

After the most recent VE session, Saltzgaber held a discussion with the assembled examiners looking for input on whether MARS should be moving toward giving internet exams. The latest online testing is a program being instituted by a company called ExamTools through a program like hamstudy.org. During these tests, you will join a video conference, and the exam will be administered through the ExamTools software, which provides instant results. Future VE sessions could be a combination of applicants who will want to take the tests under the "old school method" with others using

laptops in the same room. For now Saltzgaber hasn't made a decision and says he is still researching the alternatives.

(First picture, Dennis Atwood and Greg Pecsar testing. Second picture, VE's Ken Brownfield, AB6JR, Mel Nunes, AB6QM and Mark Klein, KM6AOW, Third picture, James Saltzgaber, KM6WWY, Lead VE)



The ARRL Volunteer Examiner's (VE) program has played a pivotal role in the licensing of amateur radio operators in the United States since its inception in 1984. Prior to the establishment of the VE program, amateur radio licensing exams were administered exclusively by the Federal Communications Commission (FCC). This process was often cumbersome, requiring candidates to travel to FCC offices, which were not always conveniently located. The introduction of the VE program decentralized the examination process, making it more accessible to aspiring operators. Under this program, qualified volunteers, themselves licensed amateur radio operators, were authorized to administer exams, significantly streamlining the licensing process and encouraging greater participation in the hobby.

The VE program is a cornerstone of the amateur radio community, reflecting its ethos of self-regulation and mutual support. By empowering experienced operators to oversee the licensing process, the program fosters a sense of responsibility and

mentorship within the community. Volunteer Examiners are required to meet stringent qualifications, ensuring that they possess the knowledge and integrity necessary to uphold the standards of the amateur radio service. This peer-driven approach not only maintains the credibility of the licensing process but also strengthens the bonds within the amateur radio community, as new operators are welcomed and guided by those who share their passion for the hobby.

The importance of the VE program extends beyond its practical function of administering exams. It has been instrumental in promoting the growth and diversity of amateur radio. By making the licensing process more accessible, the program has lowered barriers to entry, enabling individuals from all walks of life to become licensed operators. This inclusivity has helped amateur radio remain relevant in an era of rapid technological change, attracting new generations of operators who bring fresh perspectives and innovations to the field. The VE program has thus played a crucial role in ensuring the continued vitality of amateur radio as a dynamic and evolving pursuit.

Moreover, the VE program has had a profound impact on emergency communications and public service. Amateur radio operators are often called upon to provide critical communication support during disasters and emergencies, when traditional communication infrastructure may be compromised. By facilitating the licensing of new operators, the VE program helps to expand the pool of skilled individuals who can contribute to these efforts. The program's emphasis on rigorous testing ensures that licensed operators are well-prepared to handle the technical and operational challenges of emergency communication, thereby enhancing the overall resilience of the amateur radio service.

In summary, the ARRL Volunteer Examiner's program has been a transformative force in the world of amateur radio. By decentralizing the licensing process, fostering community engagement, and promoting inclusivity, the program has made amateur radio more accessible and vibrant. Its role in supporting emergency communications further underscores its significance, as it equips new operators with the skills needed to serve their communities in times of crisis. The VE program stands as a testament to the enduring spirit of amateur radio, embodying its values of innovation, collaboration, and public service.



2025 North Bay 2-Meter Critical Mass Calendar

2025

November 16th (third Sunday) Rob

December 14th (second Sunday; third is too close to Christmas) Michael

North Bay Critical Mass Report

The North Bay Critical Mass Radio Group, affiliated with the Marin Amateur Radio Society (MARS), focuses on practicing and maintaining amateur radio communication skills for potential use during emergencies and public service events.

Here's a breakdown of what they do:

- **Monthly Practice Sessions:** They meet each month to practice various communication skills using 2-meter band radios, including getting on the air, setting up equipment, and contacting other stations. These practice sessions help participants familiarize themselves with radio procedures and troubleshoot potential issues.
- **Emergency Preparedness:** The group contributes to local emergency preparedness by ensuring their members are ready to provide communication support in the event of a disaster. This includes collaborating with organizations like RACES (Radio Amateur Civil Emergency Service) and CERT (Community Emergency Response Team).
- **Public Service Events:** They also participate in public service events, using their radio communication skills to assist with logistics and communication needs.
- **Skill Development:** The group provides an environment for members to learn and refine their amateur radio skills, including using the phonetic alphabet, operating on different frequencies, and maintaining their radios.
- **Community Engagement:** While the core focus is on radio skills, the group fosters a sense of community among amateur radio enthusiasts in the North Bay.

Critical Mass Meeting Notes

From: Milt KM6ASI

The Critical Mass session for October was held on Sunday, October 19th at the far end of the Marin County Juror's Parking lot, under the trees near the National Guard Armory. That is their antenna training area and, by no coincidence, the topic was antennas.

They were fortunate to have Steve Wilson (W6SDY) who presented a lecture on antenna basics--design and construction. He is far and away their best antenna expert. They also reviewed the types of antennas used for VHF and UHF and demonstrated testing each for performance. Participants brought their HTs to try out the demonstration antennas and test the performance of participant's rig with them. As usual the session started at 10 AM with net check-in and phonetic phun before the start of the class and ended promptly at noon.

Participants brought their questions for Steve as well as their radios.

Here's a list of Marin County and other Important Repeaters held over from last month for any new club members:

Marin County and other repeaters				
Install Repeaterbook on your phone: https://www.repeaterbook.com/index.php/en/ . Not the ARRL book!				
Repeater	Your receive Frequency (MHz)	PL tone (Hz)	Location	Offset
Simulcast Bahia	146.700	203.5	Novato	-600kHz
Simulcast Mt Tam	146.700	179.9	Middle peak	-600kHz
Simulcast Barnabe	146.700	167.9	Mt Barnabe	-600kHz
Simulcast West Peak	146.700	192.8	West peak	-600kHz
Tam West	147.330	192.8	West peak	+600kHz
Mt Tam UHF (damaged feed lin	443.250	179.9	Middle peak	+5MHz
Big Rock UHF	447.175	156.7	Big Rock Ridge	-5MHz non standard
Dollar Hill UHF	440.925	162.2	San Rafael	+5MHz
Barnabe UHF	444.125	151.4	Mt Barnabe	+5MHz
Muir beach	442.225	141.3	Muir Beach	+5MHz
Tiburon fire station 9	442.125	146.2	Overlook	+5MHz
North Marin Simplex	147.585	n/a	Strawberry	+5MHz
Central Marin Simplex	147.510	n/a		
South Marin Simplex "Nickels"	147.555	n/a		
West Marin Simplex	147.465	n/a		
Wolfback Ridge DMR	442.525	CC2, TS1 Norca	Wolfback Ridge, Sausalito	+5MHz
Bolinas DMR	440.138	CC3, TS1	Commonweal	+5MHz
Novato KG6MZV	440.500	CC1, TZ1	Novato	+5MHz
San Francisco repeaters				
Sutro tower W6PW	145.150	DCS664	Sutro Tower, SF	
SFACS WA6GG	442.050	127.3		+5MHz
Sutro DMR	444.225	CC1, TS1	Sutro Tower	+5MHz
East Bay Repeaters				
Mt Diablo	147.060	100	Mt Diablo	+600kHz
San Leandro	147.240	107.2	San Leandro	+600kHz
W6CX DMR	145.000	CC1, TS1	Mt Diablo	+2.5MHz
Carla Orinda DMR	443.500	CC1, TS1	Orinda	+5MHz
Grizzly	145.290	131.8		

Sonoma County Repeaters				
Sonoma Mountain	146.910	88.5	Petaluma	-600kHz
English Hill	147.315	88.5	Sebastapol	+600kHz
English Hill DMR	443.100	CC1, TS1	Sebastapol	+5MHz

RCV Remote Locations Curtiss Kim, KM6GUY

By Curtiss Kim, KM6GUY

On the off chance that a community organization has to switch its operations during a major event, RCV (Radio Communication Volunteers) held an emergency response drill at various remote locations at the beginning of the month. The chosen sites were fifteen buildings connected to the Community Based Organizations but are not considered their primary headquarters. The exercise required each operator to check in on five different repeaters in the county to gauge connectivity. In addition, each RCV member practiced delivering an ACS-201, Situational Awareness Report from their assigned site. Each volunteer was also asked to fill out an ACS-214 Activity Log. The drill was designed to make sure RCV members had radio contact regardless of where they were assigned in the county. The primary repeater was the MARS simulcast system which utilizes four different repeaters in various parts of the county all broadcasting the same transmission. The additional repeaters used in the drill included the UHF equipment on Big Rock (the ridge between Lucas Valley and Novato), San Rafael Hill (overlooking the 101 freeway) and Mt. Barnabe (above Samuel P. Taylor Park) in West Marin. The club's VHF repeater on Mt. Tam's west peak was also included. Each operator was required to respond with a Circuit Merit Report from 1 to 5 on the call out and in return received a CM report on their broadcast signal. Most locations in the North, Southern and Central parts of the county had solid reports. The Mt. Barnabe repeater seemed to provide a less reliable signal source. All signal reports were logged at Net Control located at the Marin Sheriff's Department parking lot under the direction of Lead RCV Operator, Skip Fedanzo, KJ6ARL. Some of the alternative sites tested included the Children's Center of De Clores in San Rafael, Manzanita Children's Center in Marin City and King Street Senior Housing in Larkspur. RCV holds regular exercises in an effort to be prepared should a major disaster or incident occur in Marin. (More info on RCV@MarinRCV.org)

(Pictured: Children's Center De Colores, San Rafael, King St Housing, Larkspur, Manzanita Children's Center, Marin City.



ACS/RCV Mission Statement

Mission: During national, regional, or local emergencies provide effective backup radiocommunications in support of the EOC/VOAD and Community Based Organizations (CBOs) or other non-public safety agencies within the Marin County OA when requested by competent authority.

Capabilities: Proven ability to establish and maintain radio communications between OA EOC/VOAD and CBOs during exercises including the three annual Golden Eagle and two Great Shakeout exercises. Ability to deploy and operate portable stations as needed to establish reliable communications in areas that are otherwise out of touch with the EOC/VOAD.

Resources: Develop and maintain the resources that may be needed to support the overall mission:

1. Operators – A corps of trusted radio operators with: (1) basic skills and a commitment to establishing radio communications when needed; (2) ongoing participation, training, and practice in accurately passing message traffic using a variety of basic analog and specialized digital means.
2. Mobile stations – Individual operators routinely test and maintain their own radio transceivers and related equipment including power supplies, which

can be deployed to locations otherwise lacking reliable communications with the EOC/VOAD or between two or more CBOs.

3. Relationships – Establish on-going relationships of familiarity and trust between RCV operators and with key staff of served agencies, including EOC and VOAD.

HF Radio 101

Radtel 950 Pro

I had to interrupt our antenna discussions again because I came across the best Chinese made handheld transceiver on the market. It transmits of the 70 cm band, the 1.25, 2, 6, 10, and 11-meter bands as well. You get full shortwave and all the HF bands (RX) only. I purchased one recently and for \$100.00, I'm beyond impressed. NOTE: The regular Radtel 950 doesn't do all these features). To use it on HF, you need an HF antenna of the Radtel 27MHz CB antenna, which costs \$16.95). Here are some thoughts about it:

A new handheld radio has been taking the global amateur radio community by storm, the Radtel 950 Pro (there's a standard 950, but it lacks the key features that make the Pro so popular). I modified the firmware of a Quansheng K6 which allowed me to listen to HF bands. However, as good as the firmware was, it fell short of delivering a good HF experience (receive only). The 950 Pro is a dream come true. It transmits on the 1.25, 2-, 6-, and 10-meters bands (FM), the 70 cm band, and CB! It receives LW, MW, and SW. It has a color spectrum analyzer and a screen that is huge. It has Bluetooth, GPS and APRS. The best part is the price, around \$100.00 (US dollars). I've been testing mine out for the last week and will provide the test results next month. Here's a more detailed breakdown of its features:



950 Pro Details

The Radtel 950 Pro is a distinctive entry into the competitive market of Chinese-made handheld amateur radio transceivers, aiming to offer a vast array of features typically found only in much more expensive devices. Its most striking capability is its **multi-band and multi-mode reception**, which goes far beyond the traditional VHF/UHF FM capabilities of a standard handheld. The radio is designed to receive a significant portion of the radio spectrum, including Shortwave (SW), Medium Wave (MW), and Long Wave (LW) broadcasts, as well as the essential VHF/UHF amateur bands. Crucially, the Pro model also boasts **SSB (Single Sideband) reception**, a feature that is highly valued by hams for listening to global communications and is rarely integrated into a handheld of this class.

One of the standout design elements of the 950 Pro is its focus on modern connectivity and user interaction. It includes a vibrant, **full-color display** which provides a more intuitive and rich visual experience compared to the monochromatic screens of many competitors. Beyond the display, the radio features **integrated GPS and APRS (Automatic Packet Reporting System) position sending**, making it a compelling option for operators who engage in field activities or emergency preparedness where location tracking is vital. This built-in GPS

functionality enhances the radio's utility for outdoor enthusiasts, providing both current position and altitude information directly to the user.

A particularly modern convenience is the radio's support for **Bluetooth programming**. This feature allows an operator to connect the transceiver to a smartphone application for quick and easy management of settings, channel memories, and firmware updates. This wireless programming capability streamlines the often tedious process of setting up a new radio or making on-the-fly configuration changes in the field, a significant advantage for a portable device. Furthermore, the radio is equipped with a **USB Type-C charging port**, aligning it with contemporary standards for power and eliminating the need to carry a bulky, proprietary charger, thus improving its practicality for travel.

In terms of raw performance, the Radtel 950 Pro aims for a high output, often advertised with a **maximum power output of up to ten watts** on its primary VHF/UHF bands. While actual measured output may vary, this higher power rating is intended to give the handheld a communication range advantage over the more common five-watt models, a key selling point for operators seeking maximum reach from a portable unit. It also features a **full-band spectrum analyzer**, a complex tool that provides a real-time visual representation of radio activity on a chosen frequency range, enabling the operator to quickly identify and monitor signals.

The Pro version specifically extends its transmit capabilities, notably including **27 MHz CB (Citizens Band) transmission, albeit only in FM mode**. While this is not an amateur band, this inclusion broadens the radio's appeal to users with different communication needs. However, the radio has been subject to scrutiny from the amateur community, particularly regarding the actual measured power output and the overall sensitivity of the receiver, which are often cited as areas where its performance may not consistently meet the high expectations set by its extensive feature list.

Despite some debate over its true RF performance compared to premium-brand handhelds, the Radtel 950 Pro's value proposition lies in its **unparalleled feature density for its price point**. It is presented as an all-in-one solution for an amateur

operator who desires not only dual-band VHF/UHF capability but also HF/SW reception, advanced GPS/APRS functions, and modern connectivity. For the operator prioritizing a rich feature set, a color screen, and modern charging in a single, budget-friendly package, the 950 Pro stands out as a compelling, multi-functional device suitable for everything from casual listening to emergency communications.

In summary, the Radtel 950 Pro represents a convergence of multiple radio technologies into a single, compact handheld form factor. It is defined by its ambitious coverage of multiple frequency bands and modes, its integrated GPS and APRS capability, and its user-friendly interface powered by a full-color display and Bluetooth programming. While its ultimate performance remains a point of discussion among radio enthusiasts, its combination of advanced features and portability makes it a highly attractive option, particularly for the modern amateur radio operator who needs maximum utility and convenience in a single device for field deployment.



Features of the 950 Pro

The Radtel 950 Pro is a feature-rich handheld amateur radio transceiver, particularly notable for combining advanced functionality with broad frequency coverage.

Here is a list of its key features:

Frequency and Modulation

- **Dual-Band Transmit/Receive:** Operates on the standard amateur **VHF (136-174 MHz)** and **UHF (400-520 MHz)** bands.
- **Wide-Range Reception:** Capable of receiving a vast portion of the spectrum, including:
 - **Shortwave (SW):** 2.3–30 MHz (RX)
 - **Medium Wave (MW) & Long Wave (LW):** Broadcast bands (RX)
 - **Aviation Band:** 108–136 MHz (AM RX)
 - **CB Band (27 MHz):** Receive capability, with transmit limited to FM modulation on the Pro model.
- **Multi-Mode Reception:** Supports **AM, FM, LSB/USB (Single Sideband)**, and **CW (Morse Code)** reception, a feature uncommon in standard handhelds.
- **High Power Output:** Advertised to deliver up to **10 Watts** of RF power (with lower power on certain bands).

Connectivity and Positioning

- **Integrated GPS/BDS:** Displays real-time positioning, speed, and altitude.
- **APRS Position Sending:** Supports the Automatic Packet Reporting System for sharing location data.
- **Bluetooth App Programming:** Allows wireless programming, settings management, and firmware updates via a dedicated smartphone application (for both iOS and Android).
- **Wireless Frequency Copy:** Enables quick and effortless copying of frequency and sub-tone settings between compatible radios.

Display and User Interface

- **Full-Color Display:** A high-resolution color screen enhances visibility and usability.
- **Integrated Spectrum Analyzer:** Provides a real-time visual representation of signals on a frequency range, aiding in monitoring and analysis.
- **Customizable Buttons:** Side and keypad buttons can be programmed for quick access to various functions (e.g., SOS, Spectrum, Scan, FM Radio).
- **Tri Frequency Standby:** Allows monitoring of three different frequencies simultaneously.

Power and Convenience

- **USB Type-C Charging:** Supports convenient and modern charging directly through a Type-C port, in addition to a desktop charger.
- **NOAA Weather Channel Support:** Provides access to weather alerts and updates for outdoor and emergency use (where available).
- **Three Power Levels:** High, Middle, and Low power output options for maximizing range or conserving battery life.

Operational Functions

- **VOX (Voice-Activated Transmission):** Hands-free operation using microphone sensitivity.
- **Channel Zone Function:** Allows for the organization and management of channels into zones (up to 15 zones with 64 channels per zone).
- **CTCSS/DCS Support:** Includes standard tone and code squelch features.
- **Voice Scrambler:** Supports basic voice encryption.
- **Cross-Band Repeater:** Allows the radio to relay signals between VHF and UHF frequencies (may vary by firmware/model version).

950 Pro Hardware

The Radtel 950 Pro utilizes a sophisticated, modern hardware architecture that allows it to achieve its multi-band and multi-mode capabilities, moving beyond the simple single-chip architecture of many budget handheld radios.

While the manufacturer doesn't publicly list every single component, teardowns and analyses by radio enthusiasts indicate the use of specific chipsets to handle its broad functionality.

Here are the primary hardware components and architectural elements:

1. 📡 Core Receiver Architecture (Wideband/SSB)

- **Silicon Labs Si4732-A10 Chipset:** This is a crucial component for the "Pro" model. It's a high-performance, single-chip digital CMOS radio receiver used to handle the wide-band reception and demodulation, including the complex modes like **Single Sideband (SSB)**.
 - This chipset is specifically responsible for receiving the **Shortwave (SW), Medium Wave (MW), and Long Wave (LW)** bands, as well as providing the necessary support for SSB (USB/LSB) and CW reception.
- **VHF/UHF Transceiver Chipset:** The VHF/UHF TX/RX functionality is managed by a separate, dedicated chipset (the specific model is generally not confirmed but is common in Chinese-made dual-band radios).

2. 📶 Positioning and Data Modules

- **Integrated GPS/BDS Module:** The radio includes a dedicated module for global positioning, supporting both **GPS** and the Chinese **BDS (Beidou Navigation Satellite System)**. This allows for real-time location display and the feeding of position data to the APRS system.
- **APRS Functionality:** The Automatic Packet Reporting System is handled by the main processor and is integrated with the GPS module for position reporting.

- **Bluetooth Module:** A built-in Bluetooth chip allows the radio to connect wirelessly to a smartphone. This is used for advanced programming, configuration, and firmware updates via a dedicated mobile app.

3. Display and Power

- **Color LCD Screen:** A vibrant, **full-color display** is used for the main interface, showing frequency, channel data, and—most notably—the visual output of the **integrated Spectrum Analyzer**.
- **Battery System:** The radio is powered by a **7.4V Lithium-Ion battery** (typically around **2200 mAh to 2600 mAh**).
- **USB Type-C Charging Circuitry:** Includes internal circuitry to allow for direct charging of the battery via a modern **USB Type-C** cable.

4. RF and Power Section

- **Power Amplifier (PA):** The radio features a power amplification stage designed to deliver a high maximum RF output power of up to **10 Watts** on certain bands. This is higher than many compact handheld radios and requires a robust final transistor stage.
- **Antenna Connector:** Uses the standard **SMA-Female** connector type.

Next Month, we'll take a look at the Radtel 950 Pro after using it with a variety of antennas. These antennas are also suitable for QRP and low power (20 Watts or lower). There are a few pros and cons I don't want to reveal now because there are workarounds that are easy to implement. Thus, we'll tear the Radtel 950 Pro apart over the next four weeks and see whether it could be the most important cost effective and feature packed handhelds ever made!

Radtel 950 Pro Handheld (from Amazon)

https://www.amazon.com/RT-950-PRO-Handheld-Bluetooth-Programming/dp/B0FP4WHY4Q/ref=sr_1_1?crd=3QEIYA6BRBF7N&dib=eyJ2IjojMzJ9.YtWdV66zih2Vtu1NMEK_7um_4QYHt33QQIVb9BuYr1n3qieg5QHNa_z8LI_dbq

[D_uNCkgu4Wdjsp9_FCbnBFloIAQfKCDZ6PHa0mmSpCNU9RTAhHpixJkIoTAAQZfxj2WkbnA5jgubD2RmXWoKW951zk61DCZ1uRgDTvXF4WSdlyFDe7FaxacpDjKy3TgG74f2SHZr4vAvH-HIJXSC7HxqnCGgFawVKeE-cdVUCoy1U.PKx2SaLQv_3oM_YVtKCq_OymYC2HBx30jt4E0_gwu3o&dib_tag=se&keywords=Radtel+950+Pro&qid=1762290054&srefix=radtel+950+pro+%2Caps%2C389&sr=8-1](https://www.amazon.com/RTA-27B-Telescopic-SMA-Female-Connector-Handheld/dp/B0F8QFLNV9/ref=sr_1_1?crid=1AJZZUCLT15MW&dib=eyJ2IjoiMSJ9.VK-JC4WD3yR04OxBaSFYXU-dWbddawUOA65msgXu7sd0REeHo5iVQNCrzkz4t2GvEeBh-Z3en5_GA6bswxviVrIfgvl2Fx2FCdeH2J19L4MQxIF6J2YXQDa9BokcdXHHL5c5L-e2lu9dsiT4aYwSo8sjqqROMCATcXIkjAz-9OWQQawq7jpbYc1c-aC1Bk_AtMnfdRGMd_drbqqoAbyAngm0lq8KoT7xrVwN-4AVFPmk.2zlQJoso1qNUXb3fP59iUVevh3ITMw1f6mwpW-Xihdc&dib_tag=se&keywords=Radtel+950+Pro&qid=1762290054&srefix=radtel+950+pro+%2Caps%2C389&sr=8-1)

Radtel Antenna (from Amazon)

https://www.amazon.com/RTA-27B-Telescopic-SMA-Female-Connector-Handheld/dp/B0F8QFLNV9/ref=sr_1_1?crid=1AJZZUCLT15MW&dib=eyJ2IjoiMSJ9.VK-JC4WD3yR04OxBaSFYXU-dWbddawUOA65msgXu7sd0REeHo5iVQNCrzkz4t2GvEeBh-Z3en5_GA6bswxviVrIfgvl2Fx2FCdeH2J19L4MQxIF6J2YXQDa9BokcdXHHL5c5L-e2lu9dsiT4aYwSo8sjqqROMCATcXIkjAz-9OWQQawq7jpbYc1c-aC1Bk_AtMnfdRGMd_drbqqoAbyAngm0lq8KoT7xrVwN-4AVFPmk.2zlQJoso1qNUXb3fP59iUVevh3ITMw1f6mwpW-Xihdc&dib_tag=se&keywords=Radtel+950+Pro+antenna&qid=1762287065&srefix=radtel+950+pro+an%2Caps%2C251&sr=8-1

Ham Radio News

Each month, QSA-5 searches the internet for stories about amateur radio in the news. As editor of our publication, I merely present these articles and do not take a position regarding their message or content. Our first article is about amateur radio and the hurricane that devastated Jamaica

Operation HELO, Triad HAM radio operator step up to help Jamaica after Hurricane Melissa tears through island: An article on using radio to help with this disaster.

<https://www.wfmynews2.com/article/news/local/operation-helo-triad-ham-radio-operator-step-up-help-jamaica-hurricane-melissa/83-47be9582-0f3f-4420-8065-193098cc3e7c>

ARRL Wants Every Ham to Help Us Pass The Bill: A good piece regarding a game changing bill regarding ham radio and HOA restrictions.

<https://www.arrl.org/news/arrl-wants-every-ham-to-help-us-pass-the-bill>

Resilience Through Amateur Radio for National Preparedness Month 2025: A nice piece on the role amateur radio plays on being ready for anything.

<https://www.arrl.org/news/resilience-through-amateur-radio-for-national-preparedness-month-2025>

Ham radio and the world of amateur radio operators: A nice piece regarding amateur radio.

<https://canadiangeographic.ca/articles/ham-radio-and-the-world-of-amateur-radio-operators/>

Local, County, and State Governments Proclaim Value of Amateur Radio: A great article on the importance of amateur radio.

<https://www.arrl.org/news/local-county-and-state-governments-proclaim-value-of-amateur-radio>

Ham radio operators provided critical communications help: A nice article reminding us of the important role amateur radio plays when all else fails.

<https://www.tribtoday.com/news/local-news/2025/05/ham-radio-operators-provided-critical-communications-help/>

Ham Radio Operators Assemble Ahead of Hurricane Milton: A nice piece regarding disaster preparedness.

<https://www.radioworld.com/news-and-business/headlines/ham-radio-operators-assemble-ahead-of-hurricane-milton>

Ham Radio Call Signs Discovered During Clayton UC Renovation Revive Memories of Lehigh's Amateur Radio Society: This is an interesting read regarding amateur radio's rich history.

<https://news.lehigh.edu/ham-radio-call-signs-discovered-during-clayton-uc-renovation-revive-memories-of-lehighs-amateur>

WKHS Makes International Contact with Amateur Radio: A nice look at introducing amateur radio to youth.

<https://www.radioworld.com/tech-and-gear/wkhs-makes-international-contact-with-amateur-radio>

The Rich History of Ham Radio Culture: A really nice piece looking at the history of our beloved hobby (really a passion).

<https://thereader.mitpress.mit.edu/the-rich-history-of-ham-radio-culture/>

FCC Regulatory News

Here are the current regulatory changes and FCC news as it applies to Amateur Radio. This section of the QSA-5 newsletter was introduced last year. We will add new regulations and rules monthly, removing the older regulations and rules as new regulations/rules are introduced. As of the August 2021 issue of the QSA-5 newsletter, this list of FCC regulations and changes will be reduced, only covering this year's new regulations and rules. The newest regulations and changes will appear at the top of the list. Note that we are not able to cover every change the FCC has made this year within our publication. Something new from the FCC this month:

FCC Announces Intent to Delete Minor Part 97 Provisions: Is the FCC opening the door to make changes to major provisions?

<http://www.arrl.org/news/fcc-announces-intent-to-delete-minor-part-97-provisions>

FCC Issues Notice of Violation for Unauthorized One-Way Transmissions and Denial of Inspection: Apparently, they do go after offenders!

<https://www.arrl.org/news/fcc-issues-notice-of-violation-for-unauthorized-one-way-transmissions-and-denial-of-inspection>

FCC Batch Filing System Unavailable: Any VEC or VE should read this.

<https://www.arrl.org/news/fcc-batch-filing-system-unavailable>

FCC Initiates Broad Inquiry on Rules to Delete or Amend: This is of importance to everyone who has an FCC license.

<https://www.arrl.org/news/fcc-initiates-broad-inquiry-on-rules-to-delete-or-amend>

FCC Upholds Record \$34,000 Forfeiture Against Amateur Licensee: The story started a few years back but finally came to a sticky financial end for the offender.

<https://www.arrl.org/news/fcc-upholds-record-34-000-forfeiture-against-amateur-licensee>

FCC Seeks Comments on Tribal FM Allotment in Wyoming: This is an interesting read about an area of radio outside the norm.

<https://www.radioworld.com/news-and-business/business-and-law/fcc-seeks-comments-on-tribal-fm-allotment-in-wyoming>

Solar Activity Significantly Affecting Ionosphere, FCC Opens Docket for Comments on Impact: The impact of solar activity has been driven the FCC to solicit comments regarding it's impact:

<https://www.arrl.org/news/solar-activity-significantly-affecting-ionosphere-fcc-opens-docket-for-comments-on-impact>

Propagation News

Here are some links dedicated to propagation conditions, space weather, sunspot cycle information and all things related to solar conditions:

The ARRL Solar Report: This is the ARRL solar update, which is updated regularly:

<http://www.arrl.org/news/the-arrl-solar-update-5>

DX.QSI Propagation: A simple, straightforward website for propagation conditions that is regularly updated:

<https://dx.qsl.net/propagation/>

Radio Society of Great Britain: What's New and Propagation Now:

A great resource from the UK version of the ARRL regarding solar activity and propagation:

<https://rsgb.org/main/technical/propagation/whats-new-propagation-now/>

SunSpotWatch.com:

A good general interest site for amateur radio operators who follow solar activity:

<http://sunspotwatch.com/>



DIY Radio References

We have added a few additional links to our list and will continue to do so as we discover more websites related to the Do-It-Yourself movement! QSA-5 is going to keep adding to the original list of online resources, bringing you more resources as we find them. If there is anything you think would be useful to other club members, contact me and I will be happy to include it in this reference section.

Microcontrollers and Single Board Computers: With the advent of the Arduino micro-controller board, the Raspberry Pi (a single board minicomputer) and Texas Instrument's Launchpad (also a single board microcontroller), Amateur Radio enthusiasts can build both accessories, such as antenna tuners, and fully functioning transceivers. I have spent the last year at the University of California studying these devices, learning how to use them and incorporate them into electronic projects. I was able to build two HF receivers based on the Arduino and Raspberry Pi devices. The best news of all is that these devices are inexpensive! I encourage you to check these websites out!

Arduino: The Arduino microcontroller board was the first to popularize these devices. They are inexpensive and can be used for a variety of radio related projects.

I will include some links to radio related Arduino projects in the next issue of the QSA-5. Here's a link to the Arduino homepage:

<https://www.arduino.cc/>

Raspberry Pi: Did you every wish you could have a PC small enough to fit into your shirt pocket? Your dream has come true. The Raspberry Pi 4 is a fully functional Quadcore 1.6 GHz computer, about the size of a package of playing cards. It has an Ethernet jack, two USB 2 ports, two USB 3 ports and two HDMI ports. Next month, I'll post some links to radio related Raspberry Pi projects. Here's a link to their homepage.

<https://www.raspberrypi.org/>

Texas Instruments TI Launchpad: The Launchpad is Texas Instruments answer to the Arduino. The Launchpad is geared more towards advanced projects and is slightly more expensive. However, the Arduino still holds it own against this device. The Arduino also has more in the way of opensource software. Here is a link to the TI Launchpad homepage.

<https://www.ti.com/design-resources/embedded-development/hardware-kits-boards.html>

Tools for electronics: It is a lot easier to build or repair your electronics if you have the right tool. Paperclips and duct tape are not the solution to everything (unless you are McGyver – hopefully, you got the reference). Therefore, we added some links to suppliers of electronics tools.

Jameco Electronics: A supplier of decent tools at a reasonable price:

<https://www.jameco.com/Jameco/content/tools.html>

Electronic Printed Circuit Boards (PCB): If you design and build projects that require specific circuit boards, you know how difficult it is to find a board that will work for your purposes. Designing a board and then having it made can be expensive. Here is a company that has a large number of radio PCBs you can purchase and then add components to. They also can take your design and fabricate a PCB at a very reasonable cost. The company's name is **PCBway**:

<https://www.pcbway.com/project/>

Electronic Components and Parts: Many of us involved in amateur radio are constantly tinkering with electronics. It seems to be part of our genetic makeup! Here are some links to companies that sell electronic components and parts, starting with San Rafael's own Electronics Plus (Support local business).

Electronics Plus: It's great to have an electronics store close by for those times when you need a part immediately:

<https://www.electronicplus.com/>

Digikey: A good source for DIY and Maker projects as well as parts. They claim to have the world's largest selection of electronic components.

<https://www.digikey.com/>

Jameco: This company is a good source for almost everything, especially mainstay items such as resistors, capacitors, etc.

<https://www.jameco.com/>

Homemade Antennas: Many new amateur radio enthusiasts put a great deal of time and effort into researching their first radio. However, they often neglect the most important component to a successful radio experience, the antenna. Even if you have some ham radio experience, antennas can be a daunting subject. Commercially manufactured antennas can be expensive and beyond your budget during these hard financial times. Even if you have the funds available to purchase

an antenna, reading through the antenna's specs can be akin to reading some long lost ancient language. A good solution for increasing your knowledge of antennas and radio wave propagation, not to mention cutting the costs down, is to build them yourself. Here are some links to DIY (do it yourself) sites to give you a start:

Antenna building basics:

<https://www.wikihow.com/Build-Several-Easy-Antennas-for-Amateur-Radio>

Good Reference for several antenna types:

<https://www.hamradiosecrets.com/homemade-ham-radio-antennas.html>

A step-by-step guide for building a simple antenna:

<https://geardiary.com/2012/07/21/building-a-simple-ham-radio-antenna-without-soldering/>

Instructions for a VHF/UHF dual band antenna:

<https://www.instructables.com/Quarter-Wave-Dual-Band-VHFUHF-Ham-Radio-Antenna/>

Build an HF dipole antenna:

<https://www.electronics-notes.com/articles/antennas-propagation/dipole-antenna/hf-ham-band-dipole-construction-80-40-20-15-10-meters.php>

Introduction to antennas:

<https://www.onallbands.com/ham-radio-antenna-options-for-home-and-portable-operations/>

Ham Radio QRP Transceiver Kits: With the advent of SDR (Software Defined Radio), building fully functioning ham radios has become a lot easier and extremely inexpensive. While, having fewer bells and whistles, as well as being low power

units, many have fully functional touchscreens and cover many of the HF bands:

An easy to build QRP transceiver. No soldering needed to build:

<https://www.hfsignals.com/>

An easy to build, single band CW kit:

<https://qrp-labs.com/>

Offering several kits and finished transceivers:

<https://youkits.com/>

Propagation Websites: Propagation is a key factor in successful radio communications. Here are some links to websites that will help you with all your basic propagation needs:

Real time band conditions:

<https://qrznow.com/real-time-band-conditions/>

VOACAP band conditions:

<https://www.voacap.com/hf/>

ARRL Propagation Page:

<http://www.arrl.org/propagation>

Real Time HF Propagation Prediction:

<https://hamwaves.com/propagation/en/index.html>

Ham Radio Websites of general interest:

Ham Radio News: Here are some sites and articles you may find of interest regarding ham radio.

ARRL News Page, which is a good place to find national news regarding ham radio:

<http://www.arrl.org/news>

QRZ Now. Another good site for ham radio news from around the globe:

<https://qrznow.com/>

The Amateur Radio Newsline. An AP styled news feel page for amateur radio:

<https://www.arnewsline.org/>