

THE PLATTSMOUTH AMATEUR RADIO CLUB

Communicator

April 2019

FCC Adopts New Rules for Spectrum above 95 GHz in Branded “Spectrum Horizons” Initiative

(ARRL 03/20/2019) The FCC has adopted new rules to encourage development of new communication technologies and expedite the deployment of new services above 95 GHz. The action was the latest move in the Commission’s “Spectrum Horizons” branded initiative.

“This spectrum has long been considered the outermost horizon of the usable spectrum range, but rapid advancements in radio technology have made these bands especially ripe for new development,” the FCC said in announcing the March 15 move.

Prior to its “historic” decision last week, the FCC had no rules for authorizing communication above 95 GHz other than by radio amateurs or through experimental operations. Under current rules, specific Amateur Radio allocations exist at 122.25 – 123.00 GHz; 134 – 141 GHz; 241 – 250 GHz, and at frequencies above 300 GHz, and limited experimentation has taken place in this region of the radio spectrum. Among radio amateurs active in that region of the spectrum is Brian Justin, WA1ZMS, in Virginia — who has made at least one contact on every available Amateur Radio band. He earned the first-ever ARRL VUCC awards for 122 GHz, 134 GHz, and 241 GHz, and even went so far as to make the first contact on a less-than-1-millimeter band, 322 GHz. “Many world DX records were made as well along the way,” he said last spring. “The most rewarding one for me was 114 kilometers [about 71 miles] on 241 GHz.”

In announcing adoption of the new rules for spectrum above 95 GHz, the FCC cited “substantial opportunities for innovation on these frequencies, especially for data-intensive high-bandwidth applications as well as imaging and sensing operations.”

The new rules create a new category of experimental licenses for using frequencies between 95 GHz and 3 THz. “These licenses will give innovators the flexibility to conduct experiments lasting up to 10 years, and to more easily market equipment during the experimental

period,” the FCC said. The FCC action also makes a total of 21.2 gigahertz of spectrum available for use by unlicensed devices. The Commission says it selected “bands with propagation characteristics that will permit large numbers of unlicensed devices to use the spectrum, while limiting the potential for interference to existing governmental and scientific operations in the above-95 GHz bands, such as space research and atmospheric sensing.”

The FCC said study of these uses could ultimately lead to further rulemaking actions and additional licensing opportunities within the Spectrum Horizons bands.

At the invitation of FCC Chairman Ajit Pai, well-known academic researcher, entrepreneur, contesteer, and DXer Theodore “Ted” Rappaport, N9NB, delivered remarks prior to the Spectrum Horizons vote. The docket for the proceeding, ET Docket No. 18-21, incorporates the terminated 2013 Petition for Rule Making RM-11795, submitted by James Whedbee, N0ECN, of Missouri. Whedbee has asked the Commission to create rules for the operation of intentional radiators in the band 95 – 1,000 GHz under Part 15.

<http://www.arrl.org/news/fcc-adopts-new-rules-for-spectrum-above-95-ghz-in-branded-spectrum-horizons-initiative>

<https://docs.fcc.gov/public/attachments/FCC-19-19A1.pdf>

VE7DXW’s “RF Seismograph” May Be Real Seismograph

(ARRL 02/28/2019) Alex Schwarz, VE7DXW, in British Columbia, Canada, is exploring the possibility that “RF signatures” detected by the RF Seismograph propagation tool could also be indicating earthquakes, and may even be able to predict them shortly before they occur. A real-time HF propagation-monitoring tool developed by Schwarz and the MDSR team, the RF Seismograph shows both band noise and activity or band activity alone on six HF bands. It’s a project of the North Shore Amateur Radio Club (NSARC).

“We had been doing the solar eclipse experiment, and we developed the RF Seismograph software to look for changes in propagation during the eclipse,” Schwarz explained. “After the eclipse, we decided to leave the RF

2019 PAID MEMBERSHIP

- Paid memberships in **Bold**
 AGØL.....Steve Loyd [E]
 AIØN..... Chuck Engberg* [E]
 KØEGG John 'Tim' Eggertsen [G]
 K3CRFDave Smith [E]
 K5LBS.....Jerry Gault [E]
 KA0IJY Keith Keene [E]
 KBØFSIPat McCollum [T]
 KBØLF..... Fred Eriksen [E]
 KBØOGO Roger Behrns* [E]
 KBØZZT..... George Bellairs [T]
 KCØDTK..... Joan Bellairs [T]
 KCØHYD.....John Titsworth [G]
 KCØHYE.....Shirley Titsworth [T]
 KDØNMD.....Dudley Allen [G]
 KEØBXB Kim Allen [T]
 KEØXQ..... Bill McCollum [E]
 KGØKR Beth Engberg* [E]
 KIØPYKevin Faris [E]
 N5SEZ..... Ray McNally [E]
 NØLZHJohn Harrington [T]
 WØDBW.....Derek Winterstien [G]
 WØZYDave McLaughlin [E]
 WØZYD... Debbie McLaughlin [G]
 W3DCQ.....Bill Pulsifer [G]

*Charter Members #New Ham

Note: Thanks to all who have paid their dues and many who have given additional donations. All donations are greatly appreciated. Please let me know of any corrections.

Meetings are 8am the last Saturday of most months at Mom's Café in Plattsmouth.

Tuesday night get-togethers at Plattsmouth Burger King at 7 PM



P.A.R.C. Officers

- President**
 KBØOGORoger Behrns
 rb55930@windstream.net
- Vice President**
 KCØHYDJohn Titsworth
- Secretary**
 WØDBW.....Derek Winterstien
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443.45⁺ is located in downtown Omaha
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 147.48 Simplex is also in Murray.

Web Site
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The February 23, 2019 meeting was held at Mom's Café. The meeting was called to order at 8:03 am by President Roger Behrns

Those in attendance were Roger (KBØOGO), Kevin (KIØPY), Ray (N5SEZ), Derek (WØDBW), Keith (KA0IJY), and Dave (WØZY).

The Minutes of the January meeting were approved on a motion by Dave and second by Keith.

The treasurer reported dues and donations of \$130 and no expenses which leaves \$305 in the repeater fund and \$990.35 in the general fund for a balance of \$1295.35. The report was approved on a motion by Derek and second by Dave

The ballots for the officers were tallied and all current officers retained their office.

It was mentioned that the Lincoln State Convention will be held on March 9.

The meeting adjourned on a motion by Kevin and second by Dave at 8:08.



PLATTSMOUTH ARC MEMBERSHIP REGISTRATION FORM					
Name		Call Sign		Class	
Address		City		State	Zip
E-Mail			Phone #		
Spouse Name			Call Sign		Class
Membership Type <input type="checkbox"/> Primary(\$15) <input type="checkbox"/> Spouse (\$5) <input type="checkbox"/> Student (\$5) <input type="checkbox"/> New Ham		● Additional donations are gratefully accepted. ● New Hams are free during the year they receive their first license. ● Please give this form and dues to the club treasurer or any club officer.		Donation for: <input type="checkbox"/> Repeater fund <input type="checkbox"/> Insurance <input type="checkbox"/> Other _____ <input type="checkbox"/> General	
Any additional e-mail or cell phone #s?		Amount: <input type="checkbox"/> I prefer my donation to be anonymous.			

Meeting Calendar
 at Mom's Café

8am, Sat March 30, 2019
 8am, Sat April 27, 2019
 8am, Sat May 25, 2019

at Mom's Café
 Field Day is June 22-23

Seismograph running, and we have now collected 4 years of data.”

The system uses an omnidirectional multiband antenna to monitor JT-65 frequencies (± 10 kHz) on 80, 40, 30, 20, 15, and 10 meters. Recorders monitor the background noise and display the result in six color-coded, long-duration graphs displaying 6 hours of scans. When signals are present on a band, its graph trace starts to resemble a series of vertical bars.

Most recently, the RF Seismograph recorded the magnitude 7.5 earthquake in Ecuador on February 22. Schwarz recounted that noise on 15 meters began to be visible about 1 hour before the quake; then, 2 hours after the quake released, 15 meters started to recover. The US Geological Survey said the quake was about 82 miles below ground. It did not affect 80 meters. Schwarz speculated that the quake was easy to see on the RF Seismograph because 15 meters typically is not open during hours of darkness — especially when the solar flux is only 70.

Following a magnitude 5.0 earthquake off the coast of Vancouver Island, his RF Seismograph picked up changes. Canada’s government-run Earthquakes Canada was able to provide Schwarz with a list of magnitude 6.0 or greater events since the RF Seismograph went into operation, and the two teams have been collaborating to find a correlation between HF propagation anomalies and earthquakes. With the measurements, Schwarz has been attempting find a correlation between the list of past geological events and what his RF Seismograph may have sensed on those occasions.

“The earthquakes show up as RF noise because of the electric field lines, now scientifically confirmed to change the way the ionosphere reflects RF,” Schwarz said. He cited an article in the October 2018 edition of *Scientific American*, which, he says, “explains it really well.” (See Erik Vance’s “Earthquakes in the sky,” *Scientific American*, October 2018, p. 44).

The *Scientific American* article explores measurements in Japan looking into how earthquakes can create electric field lines that extend into the atmosphere. “Could they be used to detect earthquakes before they cause damage on the planet?” Schwarz asks.

Schwarz said 171 earthquakes — all magnitude 6.0 events or greater — were studied, and only 15 of them had no RF noise associated with them. In 26 cases, the time of the disturbance detected by the RF Seismograph failed to match the USGS-reported time of the quake.

Schwarz said that in 72% of the earthquake studies, the RF Seismograph was able to detect an increase in noise on 80 meters, typically before and after the event.

“More analysis is needed,” Schwarz has concluded. “The study is still continuing and we need your help to set up more monitoring stations.”

RF Seismograph is now a project on Scistarter.com,

facilitated through Arizona State University. Schwarz said Scistarter hosts “interesting projects for all ages and backgrounds” and “provides a vehicle for young people that are interested in science to get real live experience in this field.”

<http://www.arl.org/news/ve7dxw-s-rf-seismograph-may-be-real-seismograph>
<http://users.skynet.be/myspace/mdsr/index.html>
http://www.ep.sci.hokudai.ac.jp/~heki/pdf/Scientific_American_Vance2018.pdf

Survey: FT8 Growing as DX Mode in an Era of Waning Propagation

(ARRL 03/12/2019) In the 2018 update of his survey of modes used on the air, Club Log’s Michael Wells, G7VJR, says the number of Club Log users uploading at least one FT8 contact to the site grew from 8,000 in 2017 to 14,200 in 2018. Wells worked with data from Club Log users who, he reports, uploaded 41.3 million contacts in 2018, up by 12% from last year.

“I think that fact is more significant given the ongoing decline of this particular solar cycle, and it’s possible evidence of extra activity from FT8 and newly active amateurs who’d run out of steam on CW and SSB, but are back to try digital modes,” Wells said.

He reports that 13,900 users uploaded at least one CW contact, and 18,000 had at least one phone contact. The total number of active users was just under 22,000 across all modes in 2018, Wells said, who added that number has been dropping each year since 2015.

“When we look at the graph of QSOs, you can deduce that FT8 users must be prolific in terms of the number of QSOs they make when they’re on the air,” Wells said. “Once you start making FT8 QSOs, I get the feeling it’s more likely you’ll be on the bands for longer in a session, as it can be quite addictive working DX in the noise. Having those absolute signal-to-noise figures is compelling.”

In his discussion, Wells reported that operators from some 270 DXCC entities were active on FT8 in 2018. “It’s quite a showing for FT8,” he allowed, pointing out that the figure is close to the computed 287 active DXCC entities. About two-thirds of DXpetitions using Club Log used FT8 while active, and a bit more than 6% of Club Log DXpedition contacts were on FT8 last year.

Wells observed that while it’s likely that more modest stations are logging rare DX, especially in DXpedition mode where FT8 favors weaker signals, its use comes at the expense of speed — or rate.

“With many expeditions to rarer locations being somewhat constrained logistically, and not having the luxury of staying a long time, operating FT8 could be seen as something of a trade-off,” Wells said. “Even so, for pure throughput, it seems expeditions are still getting the numbers from other modes. Expeditioners like to

work pileups and amass as many contacts as they can, after all.”

Wells posits that FT8 may be the only way to stay in the hobby for operators living on small lots and confronting stringent zoning regulations. “However, I think we mustn’t romanticize those particular situations too much. A lot of the FT8 on the bands today is just plain old competitive,” he concluded. “It’s generally become a QRO [high-power] mode, and it’s fierce in its ways. SSB and CW CQs are often going unanswered, while a tiny sliver of each band heaves with FT8. This pattern hasn’t ended in 2018. That’s not great news.”

<http://www.arrl.org/news/survey-ft8-growing-as-dx-mode-in-an-era-of-waning-propagation>
<https://g7vjr.org/2019/03/proportion-of-modes-used-on-the-air-2018-update/>
<https://clublog.org/>

WWV Centennial Special Event Will Use WW0WWV

(ARRL 03/01/2019) With its funding secure for another year, WWV, the world’s oldest continuously operating radio station, will have extra reason to celebrate its centennial this fall. The National Institute of Standards and Technology (NIST) and the Northern Colorado Amateur Radio Club (NCARC) have teamed up to organize 100th anniversary events. A memorandum of understanding is pending. The WWV Committee has announced that the call sign WW0WWV was granted on February 23 to the WWV Amateur Radio Club for use during the Amateur Radio special event, planned to run September 28 – October 2, with operators on the air — no pun intended — around the clock. NCARC predicts the effort will require “hundreds” of volunteer operators.

“The 100th anniversary is an occasion to celebrate radio and our understanding of the electromagnetic spectrum, and an opportunity to help people everywhere appreciate what radio does in their everyday lives,” said Dave Swartz, WODAS, who has been spearheading the on-the-air event.

The WWV Committee met on February 22, with representatives of NCARC and NIST on hand, to further firm up plans for the centennial celebratory events. Although the US government cannot fund any Amateur Radio special event expenses, club members will be allowed to use a 15-acre parcel on WWV property, Swartz has explained. The operating site lies outside the security fence.

For its part, NIST will focus on plans for an October 1 recognition ceremony and an open house at the radio station north of Fort Collins.

<http://www.arrl.org/news/wwv-centennial-special-event-will-use-ww0wwv>
<http://www.nist.gov/>
<http://wwv100.com/index.php>

A Way to Make Some Noise about QRM Issues

(ARnewsline 3/22/19) Encouraging hams to cooperate with one another to help locate and handle sources of interference, the Radio Amateur Society of Australia has released a free online resource as a tool to assist them.

The amateur group describes the tool, QRM dot guru (QRM.guru) as an internet-based educational and reference resource. RASA states there are no commercial interests in the service, which was built with content from developers, the public domain and credited published works. The website is interactive, providing guidance in locating, reducing or eliminating interference. It also offers tips on how to choose consumer products that do not emit unwanted RF noise.

One of its developers, Chris VK3QB, says in a press release [quote] “For the first time and in one place, QRM.guru provides a coordinated set of resources and self-help for amateurs to find out about QRM issues and techniques in resolving them.”

To gain access, visit QRM dot guru and click on the words “start here.”

The amateur radio society is also asking that suggestions and comments be sent via email to feedback at qrm dot guru (feedback@qrm.guru)

<https://www.arnewline.org/>
<https://qrm.guru/>

"Last Man Standing" Has One More Ham

(ARnewsline 3/15/19) Congratulations to Jet Jurgensmeyer of the American TV sitcom "Last Man Standing" who recently passed his license exam. The teenager plays the grandson of the show's lead character Mike Baxter who has the imaginary call sign KA0XTT. Actor Tim Allen, who plays Mike, has the real-life call sign KK6OTD. Jet is awaiting word of his.

MIT Ham Club Puts Radio Studies Online

(ARnewsline 3/1/19) If you've ever wished you could attend MIT, you now have your chance. The Massachusetts Institute of Technology's Radio Society is making a series of programs about radio available online through the school's Independent Activities Period. The Radio Society is W1MX, MIT's amateur radio club, and it has arranged for nine lectures to be made available on YouTube. These are intense courses - just what you'd expect from MIT - and cover such subjects as software-defined radio, propagation, radio astronomy and radio history, for starters.

If you want to attend - virtually, of course -- visit the website at <http://w1mx.mit.edu/iap-2019/>.

Best of all, you can do all of this at your leisure, so you don't have to worry about oversleeping the start of class. Or even cramming for finals. You're already part of a fraternity of radio so why not go to class too?