

CQ Chatter

DECEMBER 2019

VOLUME B19 • ISSUE 10

WOOD COUNTY AMATEUR RADIO CLUB

President	WB8NQW	Bob Willman
Vice President	KD8VWU	Doug Perez
Secretary	N1RB	Bob Boughton
Treasurer	KD8NJW	Jim Barnhouse

Kick-off to Be Held in Wayne This Year

The annual Kick-off banquet will be held in Wayne, OH, on Monday, January 13, at 6:00 pm.

The location is the Country Farmhouse restaurant, at 117 E. Main St. The cost is \$13.00 per person, and the meal will be served buffet style. As you are probably well aware, the previous venue, Holiday Inn French Quarter in Perrysburg is no longer in business, necessitating the change. In keeping with our practice prior to our use of the French Quarter, the event will be held on the date of the January business meeting (second Monday of the month).

Please let Bob, WB8NQW (blcksmth@wcnet.org) know if you plan to attend by January 8th at the latest. The banquet gives us all a chance to interact with our fellow Club members with an eyeball QSO instead of only over the air. ■

FCC seeks to clear amateurs from 3.4 GHz

From Southgate AR News

An FCC Notice of Proposed Rulemaking (NPRM) seeks to remove the existing non-federal allocations in the 3.3-3.55 GHz band.

The FCC says: By taking the initial step needed to clear the band of allocations for non-federal incumbents, the Commission furthers its continued efforts to make more mid-band spectrum potentially available to support next generation wireless networks—consistent with the mandate of the MOBILE NOW Act.

What the NPRM Would Do:

- Propose to clear the 3.3-3.55 GHz band of existing non-federal users by removing the non-federal secondary radiolocation and amateur allocations in the 3.3-3.55 GHz band;
- Propose to relocate incumbent non-federal users out of the band;
- Seek comment on relocation options and transition mechanisms for incumbent

continued—on p.4

Net Check Ins

Nov 5

Traffic: 0

K8OVO (NCS)
K8BBK
KE8CVA
N1RB
KE8NEC
KG8FH
WD8JWJ
WB8NQW
W8PSK
KE8NDF
WD8LEI (11)

Nov 12

Traffic: 0

WB8NQW (NCS)
KE8CUZ
KC8EKT
KE8CVA
KG8FH
KD8NJW
KE8NCZ
KD8RNO
W8PSK
N1RB
N8VNT
KG8FU
KE8NEC
WD8ICP
WD8JWJ
WD8LEI (16)

BRAIN TEASERS

1. What does the propagation K-index indicate?
 - a.) the relative position of sunspots on the surface of the Sun
 - b.) the short term stability of the Earth's magnetic field
 - c.) the stability of the Sun's magnetic field
 - d.) the solar radio flux at Boulder, CO
2. What does the propagation A-index indicate?
 - a.) the relative position of sunspots on the surface of the Sun
 - b.) the amount of polarization of the Sun's electric field
 - c.) the long term stability of the Earth's magnetic field
 - d.) the solar radio flux at Boulder, CO
3. How much must the power output of a transmitter be raised to increase the S-meter reading on a distant receiver from S8 to S9?
 - a.) about 1.5 times
 - b.) about 2 times
 - c.) about 4 times
 - d.) about 8 times

December Contests

The contest lineup for the month of December is given below. Please note that the WARC bands (60, 30, 17 and 12 m) are never open to contesting.

Dec 7-8	<i>1800 to 2359</i>	80 m to 10 m
FT8 Roundup		Digital
Dec 14-15	<i>20000 to 2359 Z</i>	10 m
ARRL 10 Meter 'test		CW/SSB
Dec 21	<i>0000 to 2359 Z</i>	80 m to 10 m
OK (Czech) DX RTTY 'test		Digital
Dec 21-22	<i>1400 to 1400 Z</i>	160 m to 10 m
Croatian CW DX 'test		CW
Dec 22	<i>1800 to 2359 Z</i>	80 m to 10 m
ARRL Rookie Roundup		CW
Dec 28	<i>0000 to 2359 Z</i>	160 m to 10 m
RAC (Canada) Winter 'test		CW/SSB

December Hamfests

Dec 7 **Fulton County ARC Winterfest.** American Legion Hall, Delta, OH.
web: <http://k8bxq.org/hamfest>

IT'S TIME TO RENEW YOUR MEMBERSHIP

Dues Payable to: WCARC

P. O. Box 534

Bowling Green, OH 43402

Sen/Stu: \$10—Reg: \$15—Fam: \$20

More than One Million Contacts Logged on Field Day 2019

From ARRL News

ARRL Contest Program Manager Paul Bourque, N1SFE, reports that nearly 1.1 million contacts were made during the 2019 ARRL Field Day — the most popular operating event in North America. Bourque reported the [2019 ARRL Field Day results](#), which are available starting on page 64 of the [digital edition](#) of the December 2019 issue of QST. Bourque says in his article that more than 36,000 radio amateurs took part in ARRL Field Day 2019 across all 83 ARRL/Radio Amateurs of Canada sections, up slightly from the 35,250 reported last year. The total number of contacts was down by about 7% from 2018's 1.18 million contacts.

"This year, 3,113 entries were received from local clubs and emergency operations centers (EOCs), as well as individual portable, mobile, and home stations," Bourque wrote in QST. Most entries were in Class A — club or non-club groups of three or more.

Of the nearly 1.1 million contacts, approximately 46% were made on phone, and 456,000 (42%) of contacts were made on CW. The remaining 138,000+ (12%) of the contacts were made on digital modes, such as PSK31, FT8 and RTTY. "This is a substantial increase compared to 2018, when total QSOs on the digital modes numbered just over 56,000," Bourque reported. "With the last 2018 release of [WSJT-X](#) (which now supports Field Day exchanges), many

participants made use of FT8's ability to communicate when band conditions weren't being cooperative."

Top 10 scores ranged between W3AO's Class 14A entry from Maryland-DC, with 32,356 points, to W1NVT's 14,876-point Class 2A entry from Vermont.

Bourque said that 95% of the 3,113 entries received came through the Field Day web applet.

"Not only is ARRL Field Day an opportunity to sharpen operating skills in temporary and portable locations, it's also an occasion to showcase amateur radio to the local community, with clubs often setting up in publicly accessible locations and interacting with non-hams," Bourque wrote. ■

Ed. Note—-the K8TIH entry is listed on p.71, column 3, of December QST. The Club had a total of 1,556 points in Class 4A.

FCC— from p. 1

non-federal users, either to the 3.1-3.3 GHz band or to other frequencies;

- Prepare the band for possible future shared use between commercial wireless services and federal incumbents, potentially making as much as 250 megahertz of spectrum available for flexible use, including 5G. Regarding the Amateur and Amateur-Satellite Service allocation they say: With respect to amateur operations, is there sufficient existing amateur spectrum in other bands that can support the operations currently conducted in the 3.3-3.5 GHz band? The 3.40-3.41 GHz segment is designated for communications to and from amateur satellites. ■

WCARC Weekly Net

Tuesdays at 2100 all year

147.18 MHz 67 Hz PL

Net Control Roster

Dec 3	KD8NJW
Dec 10	K8OVO
Dec 17	WB8NQW
Dec 24	N1RB
Dec 31	KD8VWU
Jan 7	KD8NJW
Jan 14	K8OVO

NEXT MEETING

Business Meeting

Monday

December 9

TIME: 7:30PM/7:00EB

PLACE:

Sheriff's Training Room

S. Dunbridge Rd. &

E. Gypsy Lane Rd.

Bowling Green, OH

10 meter Net

informal group

meets

Sunday

@ 20:30

on 28.335 MHz

Fusion Net

Thursday

@ 19:30

on 442.125 MHz

67 Hz PL on FM

discussion of all

things digital

Net Check Ins

Nov 19

Traffic: 0

N1RB (NCS)
K8JU
KE8CVA
KG8FH/M
KD8NJW
WB8NQW
W8PSK
WD8JWJ
KE8NEC
K8LL
KD8RNO
KE8NDF (13)

Nov 26

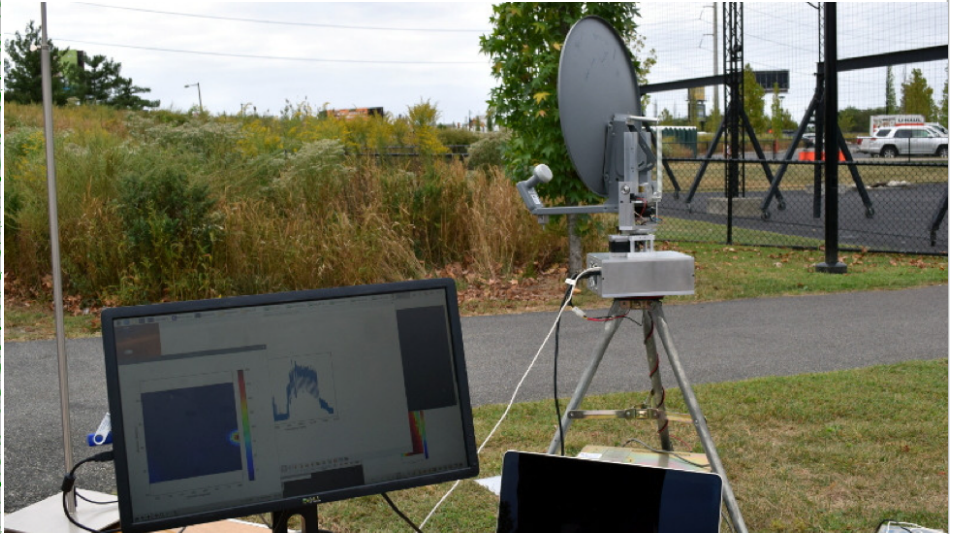
Traffic: 0

KD8VWU (NCS)
KA8VNG
KD8RNO
KC8EKT
N8VNT
KE8NEC
WB8NQW
KG8FH
K8BBK
WD8JWJ
KE8CUZ
KE8CVA (12)

A Miniature Radio Telescope in Every Backyard

[Tom Nardi](#), in [hackaday.com](#)

You probably wouldn't expect to see somebody making astronomical observations during a cloudy day in the center of a dense urban area, but that's exactly what



Amateur Radio Telescope Field Set Up

was happening at the recent 2019 Philadelphia Mini Maker Faire. Professor James Aguirre of the University of Pennsylvania was there demonstrating the particularly compact Mini Radio Telescope (MRT) project built around an old DirecTV satellite dish and a smattering of low-cost components, giving visitors a view of the sky in a way most had never seen before.

Thanks to [the project's extensive online documentation](#), anyone with a spare satellite dish and a couple hundred dollars in support hardware can build their very own personal radio telescope that's capable of observing objects in the sky no matter what the time of day or weather conditions are. Even if you're not interested in peering into deep space from the comfort of your own home, the MRT offers a framework for building an automatic pan-and-tilt directional antenna platform that can

continued—on p. 7

*telescope—*from p. 6

be used for picking up signals from orbiting satellites.

With the [slow collapse of satellite television in the United States](#) these



dishes are often free for the taking, and a fairly common sight on the sidewalk come garbage day. Perhaps there's even one (or three) sitting on your own roof as you read this, waiting for a new lease on life in the Netflix Era.

Whether it's to satisfy your own curiosity or because you want to follow in Professor Aguirre's footsteps and use it as a tool for STEM outreach, projects like MRT make it easier than ever to build a functional DIY radio telescope.

Point and Shoot

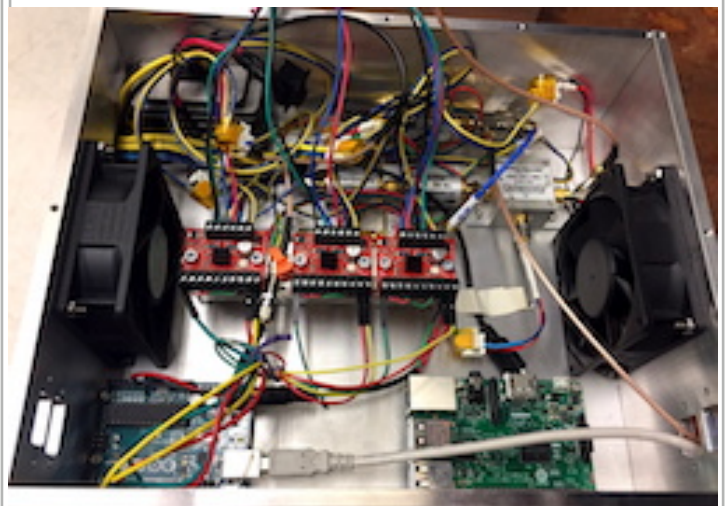
The MRT, and really any radio telescope project like this, is essentially made up of two separate systems: one that provides the motorized aiming of the dish, and the receiver that actually captures the signals. Either system could work independently of the other, but when combined with the appropriate software "glue", they allow the user to map the sky in radio frequencies.

Obviously, the electronics and mechanical components required to pan an antenna across the sky aren't terribly com-

plex. If you wanted to keep things really simple and were content with moving in a single axis, [you could even do it with a "barn door" tracker](#). What's really kicked off the recent explosion of DIY radio telescopes is the RTL-SDR project and the era of low-cost Software Defined Radios (SDRs) it's inspired.

Unsurprisingly, the MRT also uses an RTL-SDR receiver for processing signals from the Low-Noise Block (LNB) in the dish. Professor Aguirre says that since they are still using the stock DirecTV LNB, the telescope is fairly limited in what it can actually "see". But it's good enough to image the sun or [pick up satellites in orbit](#), which is sufficient for the purposes of demonstrating the basic operating principles of a radio telescope.

To move the satellite dish, the MRT is using an Arduino connected to a trio of Big Easy Drivers from Sparkfun. These



are in turn connected to the stepper motors in the antenna mount, which are sufficiently geared so they can move the dish around without the need for a counterweight. This makes it an excellent

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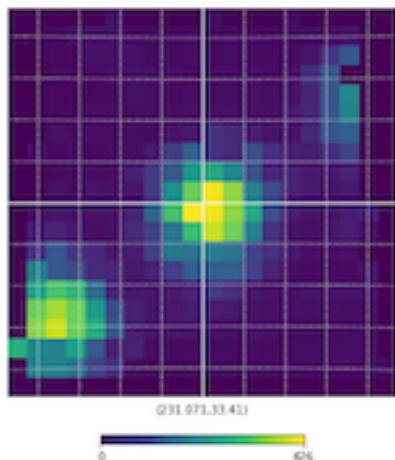
telescope— from p. 7

candidate for enclosure inside a dome, which would allow for all-weather observations.

Both the RTL-SDR receiver and the Arduino are connected to a Raspberry Pi, which runs the software for the telescope and provides the interface for the user. The MRT GitHub repository contains all of the various tools and programs created for the project, mostly written in Python, which should provide a useful reference even if you're not interested in duplicating the telescope's overall design.

Wandering Through the Sky

When we visited Professor Aguirre, he was attempting to use the MRT to find the Sun. You'd think that a simple enough task in the middle of the afternoon, but thanks to an unbroken layer of steel-gray clouds hanging low in the October sky, Sol was absolutely nowhere to be found with our meager human senses.



Geostationary satellites as seen by the MRT

As the dish made its slow robotic pans across the sky, we spoke with the Professor about the telescope and the various revisions it went through over the

years. Eventually the display lit up, showing a representation of an unusually strong signal, clearly the MRT was hearing *something* out there. After brief scrutiny, the Professor announced that we hadn't found the sun; instead, the telescope most likely crossed paths with a geostationary satellite.

It was this raconteur style of discovery that kept visitors to the Mini Radio Telescope enthralled. Nobody expected this hacked together contraption of consumer-grade hardware to [discover a new exoplanet](#) or help solve some long-pondered mystery of the cosmos while sitting in a Philadelphia parking lot. ■

Ham Issues 10 Meters Challenge

From ARNewsline

When was the last time you were on 10 meters? Is there something magic about 28.400 MHz? Gary, K8JCR, is hoping so. In recent posts on the QRZ.-com forum, he has issued an open invitation to hams everywhere: He writes: "Get Back On Ten Meters." His QST is inspired by a 10 meter QSO he had in October with a friend in Ohio that ended up being joined by a ham in northern Florida. That pleasant surprise got him thinking about the possibilities of the band, which he believes most hams rarely think about and don't really appreciate. He calls 10 meters one of radio's "greatest treasures." Since then he's been monitoring 28.400 MHz as much as

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W1AW to Commemorate 98th Anniversary of First Amateur Radio Signals to Span the Atlantic

December 11 marks the 98th anniversary of the success of ARRL's Transatlantic Tests in 1921, organized to see if low-power amateur radio stations could be heard across the Atlantic using shortwave frequencies (i.e., above 200 meters). On that day, a message transmitted by a group of Radio Club of America members at 1BCG in Greenwich, Connecticut, was copied by Paul Godley, 2ZE, in Scotland.

While the first two-way contact would not take place until 1923, the 1921 transatlantic success marked the beginning of what would become routine communication between US radio amateurs and those in other parts of the world — literally the birth of DX.

To commemorate this amateur radio milestone, Maxim Memorial Station W1AW will be on the air through the day on December 11 with volunteer operators. The goal is to encourage contacts between radio amateurs in the US and Europe while showcasing the significance of the transmissions that pioneered global communication and laid the groundwork for technology widely used today. The event will run from 1300 until 0000 UTC. Some details are still being worked out, but operation will focus on 40 and 20 meters (SSB). **Contact** Clark Burgard, N1BCG, for more information. ■

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anymore.***

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Chuck-WD8ICP

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Price reduced!

challenge—from p. 8

he can in the hopes of finding others who want to keep the band alive and busy. He has also devoted a website to this activity. It's at geton10meters.yolasite.com. The website considers all the possibilities the band can hold. Imagine getting Worked All States on 10 meters? It could happen, Gary says, but only if hams act to keep the band alive. As Gary notes on his website: "Use it or lose it." ■

ed. note: ARRL 10m contest on Dec. 14-15

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