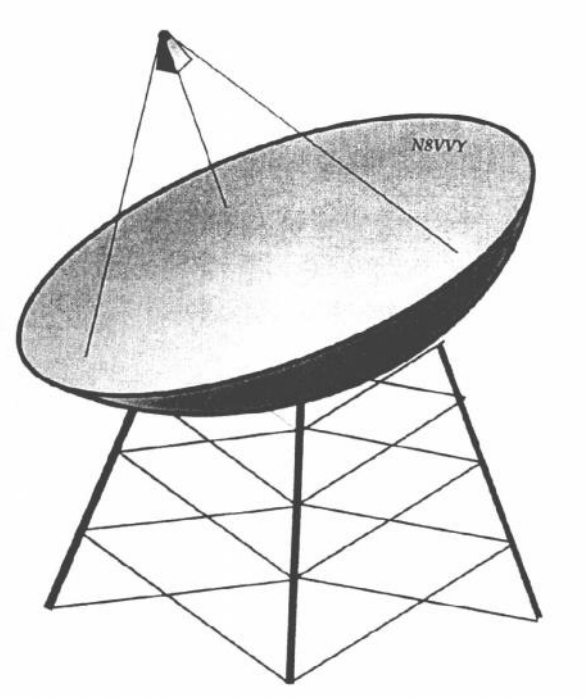
ANOMALOUS PROPAGATION

Newsletter: ***The Midwest VHF/UHF Society***



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Annual Society membership is $ 12.00. Please make checks payable to Gerd Schrick

Achtung; Several newsletters have been returned for missing labels earlier this year! Let us know (e-mail) if you are missing an issue!

MIDWEST VHF-UHF SOCIETY

Vol. 26 No. 6 www.mvus.org Aug-2012

Picnic and Measurements: Sat, 18 Aug (10:30 AM)
at Daun Yeagly's N8ASB see below

Contents

Upcoming Events

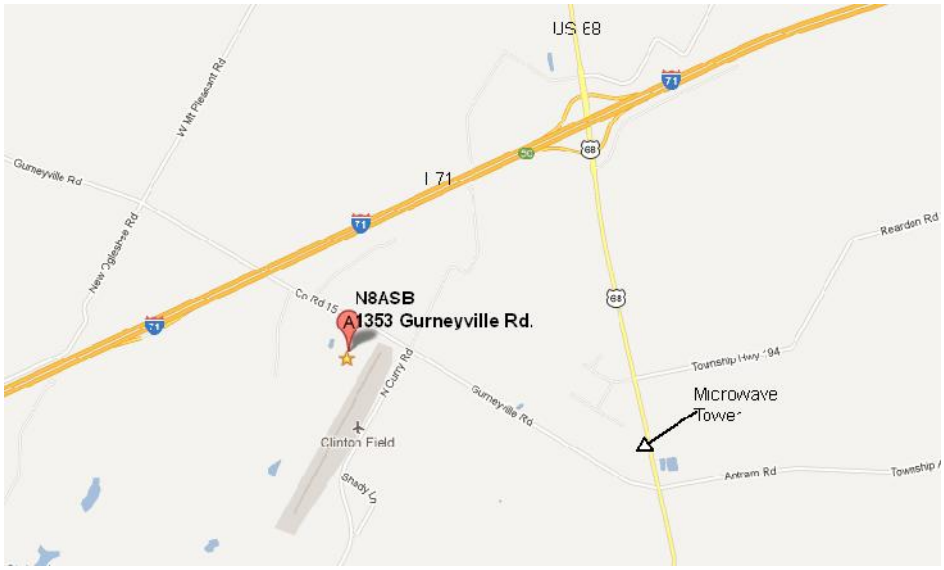
ARRL-TAPR Digital Communications Conference
--Atlanta,GA -- September 21-23, 2012,

at the Sheraton Gateway Hotel -- Atlanta Airport.

Microwave Update 2012

October 18 to 21 in Santa Clara, CA, (near San Jose and San Francisco).

AMSAT Space Symposium Oct 26-28, 2012 Orlando, FL.



De N8ZM

Several years ago, it was MVUS tradition to not have a July meeting, as many members were attending the CSVHF Conference which usually occurred the same weekend as our monthly meeting. However, in the last couple of years, the number of you attending that conference has approached zero, so we have lately been having a July meeting. That is true again this year, and on Friday evening, the 27th, we will once again meet at the MCL Cafeteria at 6:30 for dinner and conversation, and just a little bit of a formal meeting.

Most of the formal discussion will likely focus on the upcoming MVUS Picnic cum Tech Session, to be held on August 18th at the home of N8ASB. If you need directions, e-mail me at n8zm@mvus.org.

Also likely to be brought to the table, besides drink refills, will be the latest on the noise sources, the 1296 beacon project, a review of the 900 MHZ repeater project, and a concept proposal for a 2304 beacon. And anything else that comes to mind that is of interest, of course.

On the Noise Source front, by the time you read this we should have assembled and shipped all the back-ordered units, nearly a dozen of them. And by my calculations, we have passed the break-even point in sales, although only by a small amount, I am looking for ideas on other markets in which to advertise besides the microwave guys. Maybe the Radio Astronomers? The Time-Nuts? The test equipment collectors groups? The guys who try to copy signals from the deep-space probe satellites? E-bay? I am guessing here, of course.

As for the picnic, MVUS is bringing the meats, buns, and drinks, and we ask that you bring a small side dish or dessert to share. Small means enough for 4 -6 people, as otherwise we tend to have a lot left over which often goes to waste. Also this year, if you could RSVP to me, that would help me get a better idea of what to buy in the way of meats. We typically have hamburgers, hot dogs, Brats and/or Metts. I've never been very good at guessing how much of that stuff to buy, so it would really help me plan ahead if you'd let me know what you think you might.

And since this is a tech session, I also need to know what sorts of things you'd like to bring to have tested. Antennas, amps, couplers, relays, power supplies, voltmeters, etc. Just let me know a couple of weeks ahead so I can try to have the necessary gear on hand. Of course, with RF devices, I need to know the frequency and maybe the power level as well. Thanks.

OK, so I'll see you all on the 27th!

Tom, N8ZM.

Noise Sources Available

Tom and his crew are still working to crank out more noise sources.

Two models are available. The model 6V will provide a nominal 5dB ENR (calibrated) usable up through 2.5 GHz, while the model 6M will offer a nominal 5 dB ENR from 3 GHz through 10 GHz, also calibrated.

The model 6V will sell for $50, while the 6M will be $90 due to the higher cost of the noise diode. These units are compatible with most Automatic Noise Figure Meters such as the HP 8970 models. Prices are "Post paid".

Send your order to: Tom Holmes, N8ZM, 1055 Wilderness Bluff, Tipp City, OH 45371.

Make check payable to MVUS,Inc.

This and That 8-12

Mars Here We Come. NASA's most advanced Mars rover "Curiosity" has landed on the Red Planet. The one-ton rover, hanging by ropes from a rocket backpack, touched down onto Mars Sunday to end a 36-week flight and begin a two-year investigation.

[NASA Science News for Aug 6, 2012]

QKS. One that's not listed, but is my favorite: QKS? How many knobs and switches on your rig? Possible answer: QKS 63/3 --- Sixty-three but I only understand three of them. [Jeff-WA6FWI]

You might be a Ham. You plan family vacations around hamfest dates.

Car Buying. You buy a brand new car based on the radio mounting locations and antenna mounting possibilities. ["You might be a ham]

Rain Dance. The front page headline reads: "Expect DRY Heat until November." O, ja? Within the hour we had a downpour accumulating 1¾ inch (50mm) of rain. [Gerd,WB8IFM]

Tomatoes. The typical supermarket tomato is ripe red, firm to the touch and free of blemishes-as well as of flavor… [Ferris Jabre, Scientific American]

Bank Account. Isn't banking easy now? Money goes in automatically, money comes out automatically, and - oops- fees get slapped on automatically.

[Jim Guest, Consumer Reports]

MM-Waves. To support millimeter-wave links and test equipment, SAGE Millimeter, Inc. has developed its model SOM-10401317-08-S1 free-running F-band Gunn oscillator for use from 90 to 140 GHz. [Microwaves and RF Update]

Rutherford. He was a "demo or die" scientist; turning conjecture into fact. He attributed his willingness to experiment and find unorthodox solutions to his hardscrabble background in rural New Zealand: "We don't have the money, so we have to think."

Law of Gravity - Any tool, nut, bolt, screw, when dropped, will roll to the least accessible corner.

Engineering. "The man who will use his skill and constructive imagination to see how much he can give for a dollar, instead of how little he can give for a dollar, is bound to succeed."

[Henry Ford]

Last Model T. On May 31st 1927, the last Ford Model T rolled off the assembly line. It was the first affordable automobile, due in part to the assembly line process developed by Henry Ford. It had a 2.9-liter, 20-horsepower engine and could travel at speeds up to 45 miles per hour. It had a 10-gallon fuel tank and could run on kerosene, petrol, or ethanol,

From the 1948 Olympics. "Walking up the 10-m platform, I thought to myself, I've waited 16 years for this moment - am I going to blow it? So I prayed to God that I was most deserving of winning the Games. And in case he was busy, I also prayed to Buddha and Confucius".

[Sammy Lee, 91, U.S. gold and bronce in diving]

The 10 GHz EME Project at the VOA

By Mike, KA8ABR

Back in '04, I met Jim Miller, N8ECI, who was involved with the West Chester Amateur Radio Association which is a club that operates at the old VOA facility along I-75 just north of Cincinnati.

I asked Jim about the 24 foot dish that had been abandoned on the site when the government shut the facility down in '94, and he was curious why I asked! My interest was in removing the dish for use on amateur EME, but it turned out that the dish could be used where it was, thus making it an inviting prospect for a very capable EME station.

Jim was interested in UHF and microwave activities, but he had not been active on the higher bands with weak signal work. He and I decided to start an EME project to see if we could construct a station out of the remains of the dish and equipment shelter that had been abandoned in position.

The first task we had to overcome was a decision regarding the band of operation that we would use first. When installed by the VOA in '90, the dish and equipment shelter was used to receive program audio from Washington for transmission on short wave by the station. An uplink transmission system was also installed so a monitor signal could be sent back to Washington to the main studios of the VOA. Therefore, the system received around 11 GHz, and transmitted near 14 GHz. All of the equipment used for transmission, reception and actuation of the dish axes was removed by VOA personnel for use at other stations still in operation, so the equipment shelter was basically bare inside, and the motor drives used to move the dish were taken away as well.

Fortunately, the large Joyce (from Dayton!) linear actuators were still in place and operational, but the motors and gearboxes used to drive them were gone. Jim was able to fabricate some brackets to hold surplus gearboxes found at Mendelson's, and three-phase motors were procured that would drive those through Variable Frequency Drives.

We decided to concentrate on the 10 GHz amateur band because the antenna system was set up for very short microwaves (Ku Band), and the dish was set up as a Cassegrain system with a parabolic primary and hyperbolic secondary reflectors to fold up the beam path and allow the feed horn to see cold space when spill over beyond the extent of the secondary reflector was considered. Since the secondary reflector was in place and optically aligned, disturbing it to use the dish on a lower band would have forced us to remove the secondary and go through re-alignment if the decision was made to go back up to microwave frequencies.

The 23 cm band is much more popular for EME, but Jim and I are also interested in performing some radar experiments and the tighter beam width of the higher frequencies were appealing. Since we want to search for reflections from large objects in orbit, like defunct upper stages from rocket launches, it would be best to consider low noise feed arrangements that are possible with the Cassegrain configuration. The very narrow beam width of the 24 foot dish on 10 GHz is also appealing from the standpoint of detecting small objects in space.

Once the decision was made to go with a microwave system, several things had to happen to get the station construction under way. First off was a clean up of the shelter sitting behind the dish, and also the inspection, cleaning and greasing of the actuators to verify that they were still operational. This work occurred in early '05, and late that year progress was made on the activator drive and pointing system that would allow appropriate precision in pointing such a narrow beam across the sky.

Jim developed a Unix program that would read optical encoders that replaced the original Selsyn indicators that provided position feedback. These Selsyns had been driven by a 4:1 speed increasing gearboxes that increased resolution, and those were retained to drive the optical encoders.

A circuit was also developed that would read the pulses from the optical encoders and prepare them for transmission to a PC that reduced the pulses to data that a controlling program could use to steer the dish. The motors that drive the axes are standard three-phase units, and commercial VFD's are used to create a variable frequency AC drive signal from single phase power. The VFD's are controlled by the output of the driving software, as they can be fed data via an RS-232 connection from the computer running the controlling software.

A commercial tracking program called Nova is used to determine the pointing angles to the moon, and this information is fed to the driving program from a Windows based PC. The driving program also has the capability to receive manual trim adjustments that facilitates finding the moon by correcting for mechanical inaccuracies that persist in the mount at the VOA. The dish was bale to be steered in altitude and azimuth by '06, and the focus of the project then shifted to the RF side.

Since the system originally was set up for Ku band space transmission of video, the feed horn was optimized for that portion of the spectrum, and that led to the use of Free to Air TVRO signals as a calibration source for the pointing system. The Free to Air signals are very strong, and they make a good reference for antenna position whereas the sun and the moon are less precise and more difficult to detect with the radio gear. Commercial LNB's and Free to Air receivers are used for this purpose.

The heart of the RF system is a Down East Microwave transverter that works on 10 GHz and two meters. This is fed on the receive side by a ¾ inch copper pipe that forms a waveguide from the ridged horn that illuminates the secondary reflector on the antenna. A waveguide switch selects transmit or receive, and on the receive side, a DB6NT (purchased through MVUS in the White Box days) precedes a Down East preamp that provides bulk gain down stream of the very low noise Kuhne device.

At this point in time, around late '06, Dave, G4HUP was in Cincinnati helping his son who lives in the area, and he got involved with the project and provided good microwave guidance for the project. Dave is an active microwave enthusiast who had been on EME in Germany as a DL4 when he lived there.

The transmit side of the system originally consisted of the transverter feeding 10 mW to a one watt amp from Down East, and that then fed another one of Steve's amps that would provide up to of 8 watts output if driven with

2 watts. We probably got about four 4 watts out of this amp.

Our IF rig is an old Icom IC-251A that had been modified for microwave use by Red, W8ULC by separating the transmit and receive connections at the RF level. In this configuration, EME signals were received in late '06, and in April of '07, two-way contacts were made with W5LUA and IQ4DF.

Four watts is not much for an EME station, but the dish has about 50 db gain, and a 3 db beamwidth of about a quarter of a degree so most of the RF that leaves is headed for the moon! The moon subtends an angle of about a half a degree in the sky, so our system does not waste much RF by scattering it past the moon!

We were able to work most of the active stations on 10 Ghz EME with four watts, including a complete QSO with a station in California running a nine-foot dish and low power. We were able to copy him readily with the large receiving aperture of the VOA dish, but he had trouble getting us clearly due to our weak signal at his small dish. Paul Chominski, WA6PY, is a superb operator, though, and he was able to finally pull us out of the noise.

Another addition to the station that was a suggestion of G4HUP was a noise receiver designed by G4NNS that would allow us to find the moon by its thermal radiation. Similar to a receiver used in radio astronomy, this device looks at the entire two Mhz passband of the transverter and uses that to detect noise. This receiver is a godsend for finding the moon by direct observation when our pointing system is not accurate enough to find the moon directly. We are constantly recording pointing data and trim values to build a correction table that can be incorporated into the drive software to compensate for the pointing problems. The table may be necessary if we cannot find the physical problem in the mounting system.

Since the first contacts, we have upgraded the capabilities of the system by introducing the use of a G4HUP DDS signal source that drives the LO chain in the transverter. This device is driven by a 10 Mhz signal controlled by GPS, so our frequency accuracy is quite good. We have also introduced traveling wave tubes to get our power up, and currently a 60 watt tube is in place in the system. We have not worked anyone since TWTs were put in use, but we have demonstrated receiving our own echoes each time we try, both at apogee and perigee.

The signal from WC8VOA is strong enough for SSB EME, but the returning signals are very distorted due to the issues with microwave signals that return from the moon. We have worked a couple of the larger stations on SSB, and now that we have higher transmit power, we may be able to make more SSB contacts with smaller stations.

What's next? Well, we have worked just about everyone that is on the 10 GHz band, as there are very few stations on the air in that part of the spectrum. If we can get a handle on our mechanical mount issues, or add a correction table to the drive software, we may be able to try our radar experiments to try to find some empty rocket stages way out in space. Our waveguide switch has a slow transit time, so currently our minimum distance for radar work is around 7000 miles. We would have to look for large upper stages that are used to place satellites in geostationary or Molniya type orbits when they are well away from the earth.

We have to resolve our mechanical pointing issues with the dish if we have any hope of finding rocket bodies, because they are cold and do not send off enough thermal noise at 10 GHz to allow us to find them by their own emissions. If we can detect echoes from these objects, we would likely try to involve hams with like interests in trying for contacts using these objects as reflectors instead of the moon.

To shorten our minimum range and improve our chances of detecting rocket bodies, we may build a PIN diode switch that would be faster acting and thus shortening our range.

Beyond those projects? We may try to install another dish in the old transformer area east of the transmitter building for use on the 23 cm band as that is where the action is when it comes to DX-peditions and contests.

Other photos are on the WC8VOA web site at www.wc8voa.org if you need more.

From **HAMUNIVERSE.COM**

R Readability - Understanding what is said and how well. On a scale of 1 to 5, the readability of your signal with a "5" being perfect with no difficulty. In other words the ability of the other operator to understand what you are saying. A "1" is unreadable....a "5" is perfectly readable.

S Strength - On a scale of 1 to 9, indicates how strong your stations signal is. A "1" is a very faint signal. A "9" is an extremely strong signal.

T Tone - Used for Morse code signal reports. Indicates on a scale of 1 to 9 the quality of the tone of the Morse code "dits and dahs". From a "60 cycle harsh tone" a (1).... To a "very pure tone", a (9).

NOTE:
The RST System of Signal Reporting was established roughly in 1934 as a quick method of reporting Readability, Signal Strength and the Tone of CW. For voice contacts only the "R" and "S" are used. The "S" component is usually not the same as your S-Meter reading as most S-Meters aren't calibrated to track the RST System.

R = READABILITY
1 -- Unreadable
2 -- Barely readable, occasional words distinguishable
3 -- Readable with considerable difficulty
4 -- Readable with practically no difficulty
5 -- Perfectly readable

S = SIGNAL STRENGTH
1 -- Faint signals, barely perceptible
2 -- Very weak signals
3 -- Weak signals
4 -- Fair signals
5 -- Fairly good signals
6 -- Good signals
7 -- Moderately strong signals
8 -- Strong signals
9 -- Extremely strong signals

Editors Comments.

The readability scale is the most important for communication and it depends a lot on the skill and background of both operators. It relies on subjective observation.

The signal strength scale should give you an indication of how well the set-ups (receivers, transmitters, antennas) work. It is also an indication of propagation, what we call “band conditions” or just “conditions. Originally this strength was also judged subjectively. The above reference mentioned this! But when receivers started to incorporate “S-meters”, of course, efforts started to calibrate the scales. You still hear expressions like, “barely moving the needle” or “full scale, almost bending the needle”.

Drake Company introduced the TR-7 transceiver in the 1980 with a well-calibrated S-meter using 5dB per S-unit. Taking the receiver’s own noise level at the zero reference, the S1 mark would be 5 dB above this noise level, S 2 would be 10 db and so on. S9 then is 45 dB above the noise a really potent signal. There are three potentiometers to adjust to get the S meter calibrated, which is somewhat of a chore. I did this once in my younger years when I had more time and patience. Of course if you give a guy a 44 report he may not want to talk to you any longer, so I usually dispense my readings and revert to 55.

As far as the T-scale goes there isn’t anything other than T 9, you have to add it to signify: this is CW.

The dB Scale

0 dB	1 dB	2 dB	3 dB	4 dB	5 dB	6 dB	7 dB	8 dB	9 dB	10 dB
1	1 1/4	1.6	2	2 1/2	~3	4	5	6.3	8	10

(Factor) $F = 10^{DB/10}$ dB= 10 log F

Oscars with Analog Transponders.

Translated from Thomas Frey, HB9SKA's "Oscar News" (In German)

Oscar-7 (AO-7 / 7530)

10 years ago AO-7 was found to have returned to transponder service. Oscar–7 was launched on 15 November 1974, operated successfully till June of 1981 then fell silent with battery problems. For 21 years nothing was heard from AO-7 when Pat Gowen, G3IOR, heard accidentally a CW beacon with slow, 8-10WPM Morse on 145.9738. It sounded like the old Oscar telemetry with the traditional hi hi, followed by 3 sets of numbers.

Pat reported his find on the Amsat bulletin board and it became clear that AO-7 had come back to life. His mail can be read at: http://www.amsat.org/amsat/archive/amsat-bb/200206/msg00525.html

It is assumed that in 1981 the battery shortened and that over time the inner resistance increased so that now the still operating solarpanels can provide power to the transponder. Since that day AO-7 is working again during sunlight and facilitates many DX contacts. AO-7 also had additional surprises like the activation of the RTTY beacon on 70cm. Presently both linear transponders are alternatively active. Operation of Mode A or B is indicated at: oscar.dcarr.org

More information on AO-7 is available at: http://www.amsat.org/amsat-new/satellites/sat_summary/ao7.php
A collection of photos by Dick Daniels, W4PUJ of the construction, tests and start of AO-7 in the years 1973/74 can be found at: http://n4hy.smugmug.com/AMSAT/AMSAT-Oscar-7

Oscar-29 (FO-29/ 24278)

[02.12] Michael, HB9WDF, had a QSO with IK0USO via FO-29. Signals were stable with little QSB. Eugenio, IZ8JHD, reported strong signals on Jan9, 2012. He was using a 2x6el Yagi, right hand circular polarization, and an MFG1301 GasFet preamp. The beacon however is a lot weaker as before the dropout.

Oscar-52 (VO-52 / 28650)

[5-12] Gerd, DL8DR, reported on May 4 that the linear transponder of VO-2 again dropped out. At 6:25 UTC nothing was heard over Europe. Stations worldwide confirmed this.

Next day, May 5th, OZ1MY, reported that the Dutch transponder came back, however, that the uplink frequency had shifted 5.3 kHz higher. The beacon frequency likewise had shifted up to 145.8640 MHz. (DL8DR/ Oz1MY)

T. Parimarangan, Operations Director of Hamsat at ISTRAC/ISRO, apologized for the dropout, mentioning that Hamsat now has been in operation for seven years. Transponder 2 was turned on again at 2:30 UTC on 5 May 2012. No reason for the dropout was given. (ISTRAC/ISRO)

PS. From the German Website the following numbers of visitors are recorded:
DL: 7,216 HB: 1,034 OE: 449 US: 260

Noise Sources Uses 3 Applications

By Tom Holmes, N8ZM

Over the course of the MVUS Noise Source Project, several people have asked me how they might make use of a noise source. This short article will suggest several possibilities, and might stimulate you to think of a few more of your own. If you do have an application or technique that you think is worthwhile, please share it with me and I will see that it gets published in this newsletter, with you getting the credit, of course. And feel free to share it anywhere else you like; I have no right or motivation to stop you!

1) So the first and probably most well-known use is with an automatic Noise Figure Measurement Instrument, sometimes known as a Noise Figure Meter or Analyzer. Probably the best known of these are the HP 8970's, either A or B suffix. There are also similar vintage instruments made by Ailtech and others. If you feel a need to better understand how much noise your front end adds to received signals and you are fortunate enough to have one of these in your shack, or access to one at work, you are probably a very happy camper. Those of us who are interested in VHF weak signal work, whether terrestrial, satellite, or EME, live or die by the noise figure of our preamps (OK, it's not quite that dramatic but I've always wanted to use that phrase in something I wrote). Noise figure (NF), expressed in dB, is a measure of how much the signal to noise ratio of an incoming signal is deteriorated by the added noise of your receiver.

Without going into all of the mathematics and technical stuff right now, the NF meter basically compares the noise power coming out of the receive preamp with the noise source powered up vs. the power of the noise source with the preamp out of the circuit. BUT, it also measures the power from the noise source when it is NOT powered up, both directly and through the preamp being tested. This provides not only the NF but also the preamp gain. The gain measurement is actually needed by the NF meter to calculate the NF. The NF meter is in control of the power to the noise source, so the only steps needed to make the measurement are to first have the meter measure the output power of the noise source in both the on and off states with the preamp NOT in the circuit (the calibration step) and then put the preamp in the path between the noise source and the NF meter and let the instrument take care of the rest. Oh, and don't forget to provide power to the preamp while it is being measured; the NF meter neither provides nor controls that.

OK, so we have covered the most common use of a noise source, but maybe surprisingly, there are others.

2) Because these are broadband noise sources, they offer you a test signal of sorts. Let's suppose that you are fortunate enough to have access to a spectrum analyzer, and from what I have witnessed lately, more and more of us are. If you connect the noise source to the input of the SA and do just a little bit of twiddling of the controls (usually just reducing the Resolution Bandwidth to its minimum value, and setting the frequency span to cover just the band of interest, you should see the noise floor of the display increase when you power up the noise source. Now insert a bandpass filter between the noise source and the SA's input, and the noise floor shape will resemble the passband of your filter. This approach might not have as much dynamic range as using a tracking generator or a network analyzer, but it is likely more available and costs much less presuming that you are really not very lucky! This can also work to measure losses in cables and attenuators, and the gain of a preamp while showing its passband. One helpful hint: because noise is a random process, using a lot of averaging of the SA trace will make it easier to see the shape of things.

Granted, this is not a high precision measurement nor does it offer a lot of dynamic range (ratio of the loudest to weakest levels you can measure), but often times just having a quick way to see the basic frequency response of a device is informative and efficient.

And even if you don't have access to a Spectrum Analyzer, you could do this manually, though somewhat tediously, using a receiver with some sort of power indicator so that you can record the noise level as you manually tune across the frequency range. Even a voltmeter across the speaker terminals could work. Just remember that the receiver bandwidth should be narrower than the filter you are trying to measure so that you can get a good idea of its shape.

3) Here's a third use. Those folks who engage in really weak signal work, such as the EME crowd and amateur radio astronomers, will mount a noise source near the feedpoint of their antenna (usually a dish) and couple in the noise source either via radiation or a directional coupler in the feedline. They then provide the capability to control the power from the shack. If they want to check that their system is working, they simply turn on the noise source (no switching of the RF path required) and check the level. Generally, simply hearing an increase in the noise is enough confirmation that all is well, but actual signal level measurements could be made for comparison over time. So if you think your system isn't working, all you have to do is flip on the noise source and save yourself an unnecessary trip out into the cold, or heat given the current weather here in Ohio. Sure, you can do the same thing by aiming your antenna at the Sun, but not every antenna has an AZ-EL rotor and most of those are pretty slow. Or it might be 2 AM, and Moon noise does not seem to be as reliable in terms of its level. Oh, and it might be a good idea to have the power to the noise source on a momentary switch or a 30 second timer so that you can't easily forget to turn it off and lose your mind wondering why you can't hear anyone.

Well, there are a few uses for a noise source in a VHFer's ham shack, and I suspect that some of you know of a few more. I'd be happy to help you share them here in Anom Prop

June 2012 Contest Results Summary for NE8I/r.

By Lloyd Ellsworth

Basic route, started contest in EN74, South along Lake Michigan. EN74, EN64, EN73 then home for the night. Sunday, South on US127 EN73, EN72. Then East on I-96 to EN82. Ending at Lenon 4 corners plans, did not happen. Aproximately 600 miles. 23 hours operating and driving time.

Murphy was in full swing. On 902 only managed one QSO. Only major band that I did not bring back up. Both the 1296 and 6M antennas suffered much damage. At least my 6M loop is easy to repair on the road. 222 died and was repaired several times. The 6M band was open here and there. By my observation, mostly on Sunday. I could have done much more, if I had operated more 6M, and planned a “6M contest route”. Most of my time I spent on Sunday evening on US127. At 70 MPH you get one new operating grid every hour! That helps. I can operate while driving on the bottom 4 bands plus 1296. For any of the higher bands, I have to stop, and set up.

Plans for CQ VHF, will depend on band conditions. Probably mostly North-South on US127, I-75. One grid every hour, or along Lake Michigan. Similar effect. Depends on band conditions and activity during the contest.

For the UHF contest, and September VHF, I will likely take a similar route as I did for to the June test. Start in EN74, South along Lake Michigan, then home. Sunday, South and East. EN82 and South, or Lenon 4 corners. Of course, it all depends on band conditions and activity.

June 2012 summary.

Band, contacts, differend grids worked.
5 grids activated. EN64, 72, 73, 74, 82.

6M 78, 31
2M 28, 8
222 18, 5
432 18, 5
903 1, 1
1296 11, 6
2304 7, 6
3456 8, 6
5760 5, 4
10G 7, 4
24G 0, 0
47G 0,0

Works out to a claimed score of 26,082,

From The Kurzweil Newsletter

Shielding the Earth

When Mount Pinatubo erupted in 1991, the injection of sulfur particles into the atmosphere cooled the planet. Taking inspiration from nature, some scientists have begun studying whether a man-made injection of such sulfate aerosols might stave off the worst of global warming. But could the technology also be used more locally to beat the heat? [...]

MORE | http://kurzweilai.us1.list-manage.com/track/click?u=aad1a7eea269839c7d10845e8&id=22d68fce4b&e=a1b39054b3

An electric car that actually goes far?

July 20, 2012

.....

Researchers have made the first stable lithium-air batteries, Science NOW reports. They may one day give electric cars a driving range similar to today’s gas guzzlers. Lithium-air batteries have potential to store 10 times more energy than the best lithium-ion batteries on the market today, but have been unstable, falling apart after a few charges. [...]

MORE | http://kurzweilai.us1.list-manage.com/track/click?u=aad1a7eea269839c7d10845e8&id=df4f58c618&e=a1b39054b3

[Kurzweil weekly newsletter]