

THE SAN BERNARDINO MICROWAVE SOCIETY (SBMS)

“Communicating at 1 GHz and Above – Since 1955”

February 2020 Updates, Activity and News



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Upcoming 06 February 2020 SBMS Meeting – Microwave Field Probe System



Today it is practical for the amateur radio community to build low-cost personal antenna measurement systems that are fully capable of meeting modern industry antenna measurement standards. After a brief review of antenna properties, several home built near and far-field antenna measurement tools will be described. Examples of antenna diagnostic and performance measurements using these tools will be shown.



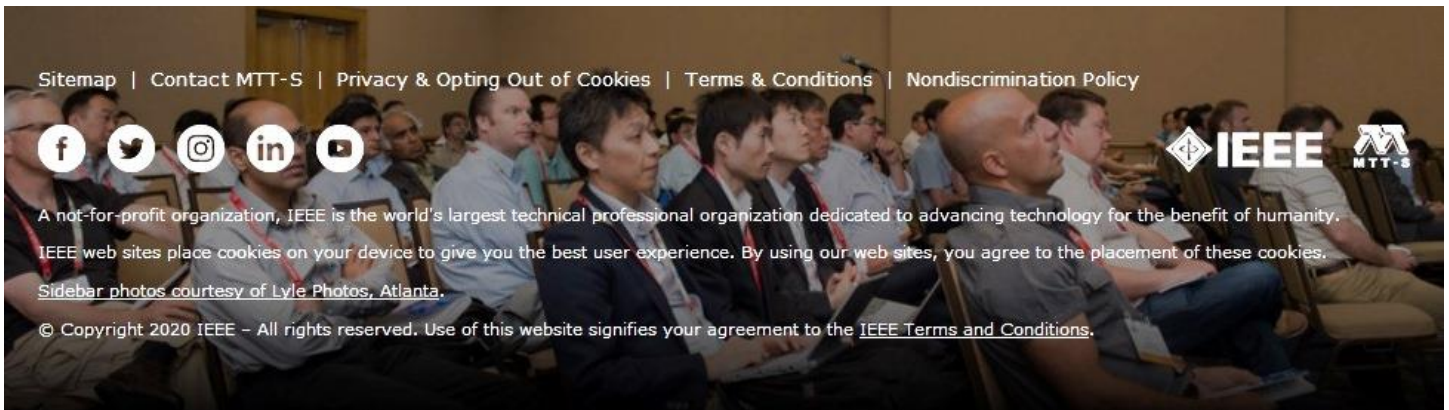
Dan, AG6HF, Demonstrating the Microwave Field Probe to Kerry, N6IZW, of the San Diego Microwave Group
Dan Slater (AG6HF) is a freelance engineer specializing in RF and optical system engineering. Previously he was cofounder, CTO and VP of Nearfield Systems Inc. (www.nsi-mi.com), a

leading supplier of antenna measurement solutions for aerospace, defense and 5G. He has 20 issued US patents and has authored numerous RF and optics technical publications.

The 2020 IEEE Microwave Theory and Techniques (MTT) Symposium – Los Angeles Convention Center

	International Microwave Symposium 21 – 26 June 2020 Los Angeles, California	
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A great opportunity is coming up in June to promote Amateur Microwave. Some of us may have been members of the IEEE MTT Society. The conference was in Anaheim two years ago and I met and spoke with engineers from 5 continents.



Start thinking now about bringing microwave hardware and systems to demo Amateur microwave systems. Let's bring some of our best hardware and tell the story of how we have fun with our radios.

122 GHz Microwave Contact

Mike, K6ML and Oliver KB6BA completed a 122 GHz contact on 16 DEC 2019 of 80 kilometers. Oliver was at Mt Umunhum (CM97BD, 1041m ASL). Mike was set up on Mt Diablo (CM97AV, 1122m ASL). Estimated path loss was 213 dB. These experienced operators used a pair of 122 GHz radios home brewed by K6ML, using Silicon Radar TRX_120_001 chips (half a milliwatt out, 12 dB NF) and 60 cm Winegard DBS dishes, all controlled by Arduinos. Mike described the contact as follows. "When we started dish alignment, carrier signals were steady at about 15 dB (in 500 Hz) above the noise. The first dropout came at the end of alignment.



Signals came back a bit weaker after Oliver finished his sandwich :). Some fog visible about halfway below the midpoint which caused some QSB. At times, the path shut down for 5-10 minutes, probably passing clumps of moisture, the fog below our midpoint. The midpath moisture layer became higher as time went by, reaching about 3/4 of the path height by the time we packed up. By QSO time, there was QSB, and by the end, peaks were about 6-7 dB above the noise (in 500). We made the trips because the WX forecast was for approx -10/+7, which would have been much better. But it worked.” Links to YouTube videos of the contact are here:

<https://www.youtube.com/watch?v=5dvPUflQYo>

<https://www.youtube.com/watch?v=oCi5xgDerF4>

January 2020 Microwave Activity Report

Jason W6IEE – Has been playing with FT8 on HF just to learn about it. What is the problem with operating portable JT? Timing. Has a GPS W3BJS with every possible piece of ham radio software on an image that loads on it. A pad (pictured) is the terminal for it. The big enabler is a cheap power supply 10,000 mAh. \$60 for computer, \$15 aluminum case, \$15 GPS, batteries are cheap. Extender cable is \$4 and a new iPad \$250.

Robert KM6RXN – Talked to Rein W6SZ on liaison last night, couldn’t make it on 10 GHz at 20 milliwatts. Still hasn’t replaced his power amp that he installed at the QTH of AF6NA.

Courtney N5BF – Had the best EME contest season yet in the fall with a record 64 QSOs in the October/November contest and ran geographic statistics on moon pass utilization. Planning an upgrade to the station to expand the dish and enable swapping of feeds if it can be fit it into existing time. When reporting the contest, had the same sort of Cabrillo discussions in the EME community as in the 10 GHz community a few months earlier.

Dave W6DL – Is presenting the Tech Talk tonight and spent his free time this month finishing it after first preparing it 3-4 years ago.

Larry K6HLH – Building a box with amplifiers for 2.4-3.4-5.8 GHz to go with the transverters he already has on the tower. Has been looking for the 2304 MHz beacon but hasn’t heard anything yet. Mel WA6JBD said that you could hear it from onsite.

Mel WA6JBD – Eric AF6EP came over during holidays and worked on his X-Band radio. Got the LNA set up. Most free time has been spent on some lower frequency remote controlling stuff with old Motorola radios.

Rein W6SZ – Has a software problem with that AirSpy involving the USB driver. Has been fooling with it unsuccessfully for a month.

Bill N6WL – All activity has been VHF/UHF. Experimenting with SDR software; has not able to get it to work for more than about 10 seconds.

Steve WA6OXN – Has plenty of microwave activity at his day job that he can't talk about – no recent time for amateur. Came across a pile of Harris Constellation surplus transmitters / receivers and is looking at them to see what's usable. Has some Marconi power sensor heads and is keeping a lookout for the matching meters. There are some in the States but more in Europe.

George AD6XF - Corona, same report as Steve WA6OXN re: work versus amateur, plus a lot of travel.

Eric AF6EP – Worked with Mel WA6JBD as reported above. The whole 10 GHz assembly at the feed of the dish is working. Worked on getting a lab set up at home and the workbench cleared off enough for a nice scope so he could get running and soldering on electronics.

Chris N9RIN – Plenty of HF, Ku and L-Band at work but no amateur microwave activity. 10 and 24 G radios still in the same condition they were in five years ago when his house flooded. They are not yet cleaned out.

Jim, KK6MXP – Tearing apart a Collins rig to recover circulators, isolators, and filters. Still thinking about his radio design, picking his transistors, power circuits, and so on depending on how much money he has. Wants to derive all the voltages on the box from 13.8, have a GPS reference, and a computer for digital and waterfall display. Those of you who live in the Inland Empire may have noticed a pulsing carrier falling on the outputs of several repeaters, 5 KHz apart. Dave W6DL allowed that some cable TV has power supplies that have capacitors that go bad and act just like this. The source may be within 1200 feet of your house. The cable company may not even have customers on it anymore.

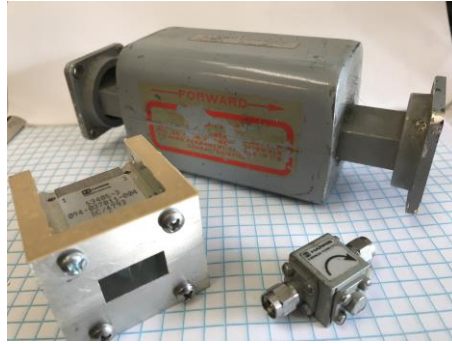
Gary W6KVC – Microwave activity is ATV. This evening the lift tower on the ATN truck wouldn't budge so we're not on Amateur Television Network (ATN) tonight. His rigs are an IC-7300 and IC-7600 and he got a Elecraft 500 kit for Christmas. It's all microprocessor automatic; don't have to touch it even to change frequency. Just finished his ninth class of C-Cadets. He really enjoys running two of these classes a year.

Brian AF6NA – Activity over holidays was when Robert came over on New Year's Day, had supper, and went out to the garage to put a radio together (the only one he has working, not counting the Kolbly Loaner). Didn't get on home-to-home last night due to the effort required to set up the large 4- foot system.

Dan AG6HF – Continues with his experiments looking at satellites and such. Tuesday a SpaceX capsule came back from station a few hundred miles off shore. On his fourth attempt with his receiving system, he was able to see a Doppler signal for just under 3 minutes and in it was able to see the traces when parachutes opened and other dynamic events.

Dick WB6DNX – Has been out looking for 3.4 GHz parts and found a KWM 3212 local oscillator and N9RIN transceiver in his garage. Also started collecting parts for a 10 GHz filter. May be able to get it all together before we lose or move the band.

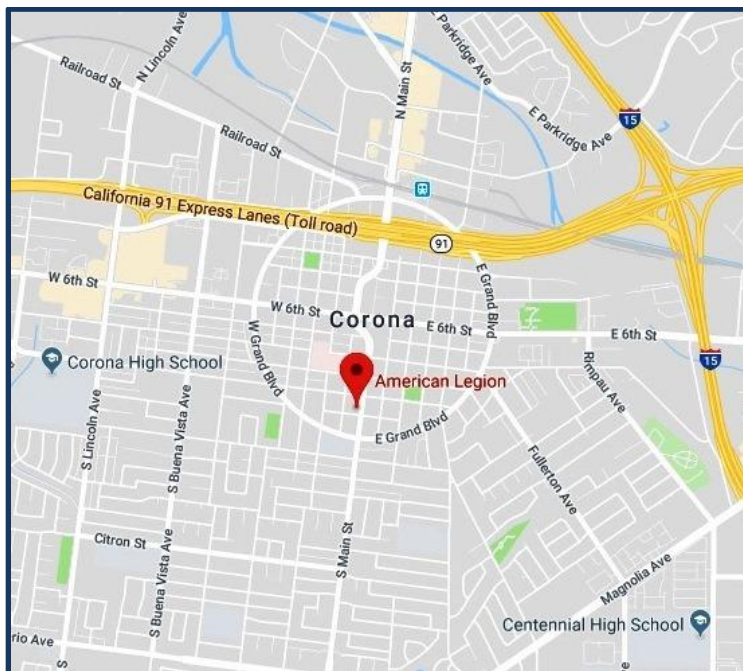
January 2020 SBMS Meeting Recap – Microwave Isolators



Dave, W6DL educated SBMS meeting attendees on the theory and application of microwave circulators and isolators. This was one of the most informative presentations in recent history. Dave has not only done his homework, he has mastered the material. Thanks again to Dave for an excellent talk!

SBMS Monthly Meetings: First Thursday of the month – 7:00 PM

**American Legion Hall
1024 South Main St.
Corona, CA 92882**



Contact SBMS:

Feel free to get in touch with SBMS with questions about Amateur microwave systems, operation, design, club activities or meetings.

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The SBMS E-Mail Reflector

For hardware requests, technical help, microwave theory questions, reach all SBMS members on the email reflector list at the following address:

sbms -at- ham-radio.com

Microwave-Related Events for 2020

February 6	SBMS Meeting
March 5	SBMS Meeting
April 2	SBMS Meeting
May 2	Central States VHF Society Microwave Sprint (902 MHz & up)
May 2 – 3	SBMS 2 GHz & Up Contest
May 7	SBMS Meeting
June 4	SBMS Meeting
June 13 – 14	ARRL June VHF Contest (includes microwaves)
July 2	SBMS Meeting
July (TBD)	SBMS Microwave Tune-up
August 1 – 2	ARRL 222 MHz & Up Distance Contest (includes microwaves)
August 6	SBMS Meeting
August 15 –	16 ARRL 10 GHz & Up Contest, Part 1
September 3	SBMS Meeting
September 12 – 13	ARRL September VHF Contest (includes microwaves)
September 12 – 13	ARRL EME Contest, 2.3 GHz and higher bands (Dates unofficial for ARRL EME)
September 19 – 20	ARRL 10 GHz & Up Contest, Part 2
October 1	SBMS Meeting
October 10 – 11*	ARRL EME Contest, 50 MHz through 1.2 GHz bands, Part 1
October 15 – 18	Microwave Update 2020, Sterling, VA
November 5	SBMS Meeting
November 28 – 29*	ARRL EME Contest, 50 MHz through 1.2 GHz bands, Part 2
December 3	SBMS Meeting