

# ***THE SAN BERNARDINO MICROWAVE SOCIETY (SBMS)***

***“Communicating at 1 GHz and Above – Since 1955”***

## **March 2020 Updates, Activity and News**



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### **Upcoming 05 March 2020 SBMS Meeting – Activating the Single-Digit GHz Bands**

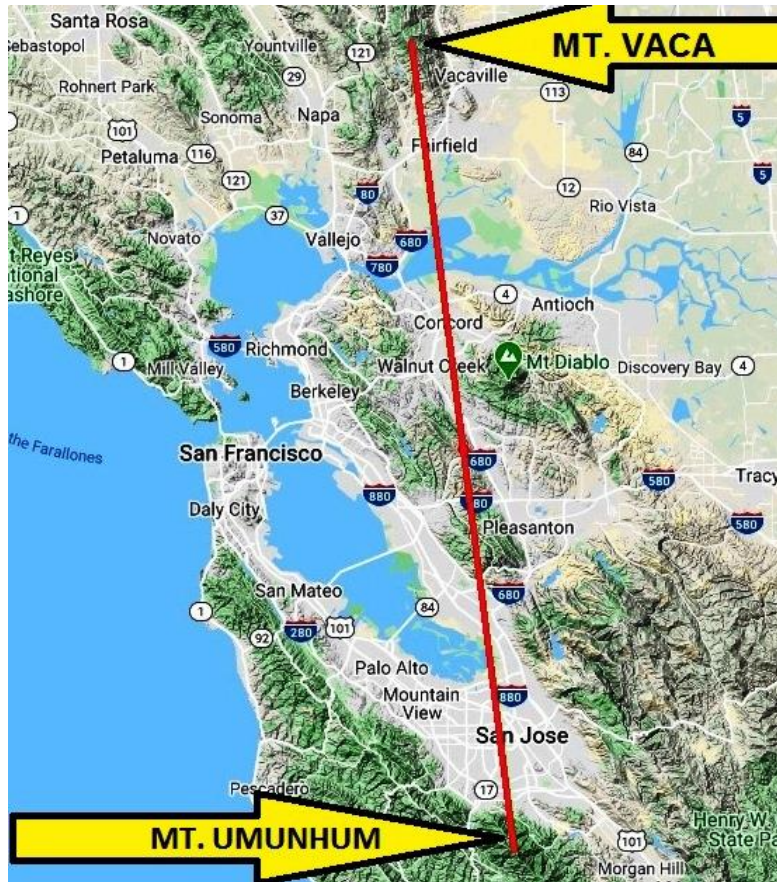
Anyone who has spent time around the San Bernardino Microwave Society knows the fascination and commitment we have to the Amateur 10 GHz band and that is where the majority of our activity takes place. But there is so much more! At the March SBMS meeting, Marty Woll, N6VI, SBMS member and past ARRL Vice-Director, will highlight three lower bands for which plug-and-play radios are not available. Each band has unique characteristics that we can discover and explore. If you have built equipment or antennas for 2, 3 or 5 GHz, we encourage you to bring your work to the meeting. Marty's talk will cover getting on and operating in these bands.

Marty has distinguished himself by scoring high on our microwave contests and is one of the most dependable QSOs. He shares from his depth of contesting experience. 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.

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## Microwaves Over Silicon Valley – New Amateur 122 GHz World Record

The **50 MHz and Up Group** has done it again! Shooting all the way across the San Francisco Bay area, they set a new 122 GHz world record on February 17, 2020. The path can be seen on the map below, spanning 139 kilometers (86.2 miles) from Mount Vaca (CM88WJ) to Mount Umunhum (CM97BD). Note the red line goes almost directly over San Jose, AKA “Silicon Valley.”



On Mt. Vaca was Mike Lavelle, K6ML, (2,740 ft. ASL) and on Mt. Umunhum (3333 ft. ASL) were Oliver Barrett, KB6BA and Jim Moss, N9JIM. Many of the So. Cal. Microwave operators will recognize these call signs and names because we have made many contacts with them in the 2 GHz and 10 GHz contests. The 122 GHz signals were very weak, just 7 dB above the noise in a 22 Hz bandwidth. Contacts were made with CW. The 60-cm Ku band offset reflectors were aligned and peaked on 24 GHz first, then the operators switched over to 122 GHz. Lavelle said, “We heard signals right away on 122 GHz.” They ran “somewhat less than half a milliwatt” on 122 GHz,” Lavelle said. Estimated path loss was about 225 dB and atmospheric loss was approximately 0.35 dB per kilometer. To borrow and adapt a famous movie quote:

You guys are really fine microwave operators!

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



International Microwave Symposium

21 – 26 June 2020

Los Angeles, California



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.



IMS2020  
Ham Radio Social  
Los Angeles  
June 23, 2020



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## February 2020 Microwave Activity Report

Jason W6IEE – No amateur microwave activity this month.

Robert KM6RXN – No QSOs on the home-to-home activity last night until he discovered that his external oscillator was off frequency. Later heard W6SZ and WA6JBD. He is now working on his 2<sup>nd</sup> radio which will be fully synthesized for frequency and direct conversion on both transmit and receive. Software will be used to generate everything in audio for up-conversion using the Weaver method of sideband generation which was written up in QEX a few years ago. (This is a phasing method that utilizes an audio carrier to produce the phase shifted baseband signal component.)

Dan AG6HF – Is giving tonight's Technical Talk.

Rein W6SZ – was on the other side of KM6RXN's QSO last night. Also had an armchair copy QSO with Mel WA6JBD. The group then discussed a possible change to the home-to-home night which was originally planned for the evening before the monthly meeting. Maximum participation has been as high as seven stations but several active operators have relocated out of the area. Possible Saturday or Sunday late afternoon or evening was discussed, pending other utilization of the Cactus network.

George KM6UKI – No microwave activity this month.

Jeff KN6VR – Has mostly been rebuilding his house.

Eric AF6EP – has a 3D printer in the lab at school and used it to make an antenna with a flange on it (pictured). Also did some more work on the roof rack on his truck and picked up two more pieces of aluminum for it on the way down here today. He has inherited a Rubidium frequency standard and is working on cable and connectors for it.

Dave W6DL – has been working on the 3.4 GHz NPRM response as noted in *new business*. He also has a dual 900 MHz 3 dB omni antenna in his truck if anyone wants it. The radome is made of a tick material and needs to be clear coated.

Jim KK6MXP – No microwave activity this month. Has been using VHF/UHF for emergency communications drills as a volunteer at Kaiser Hospital.

Mel WA6JBD – Amateur radio time this month has been spent editing the Cactus Operator's Manual for 2020. Acquired an 8760B spectrum analyzer with color display that goes up to 2.5 GHz in pristine condition. Was on last night for home-to-home activity where he was heard weakly by Robert KM6RXN but did not detect any return. Suggests that Robert put an omni on his car and drive someplace high. Don't even have to get out of the vehicle to operate. Mel has worked 150 miles to San Diego omni to omni on a configuration like that.

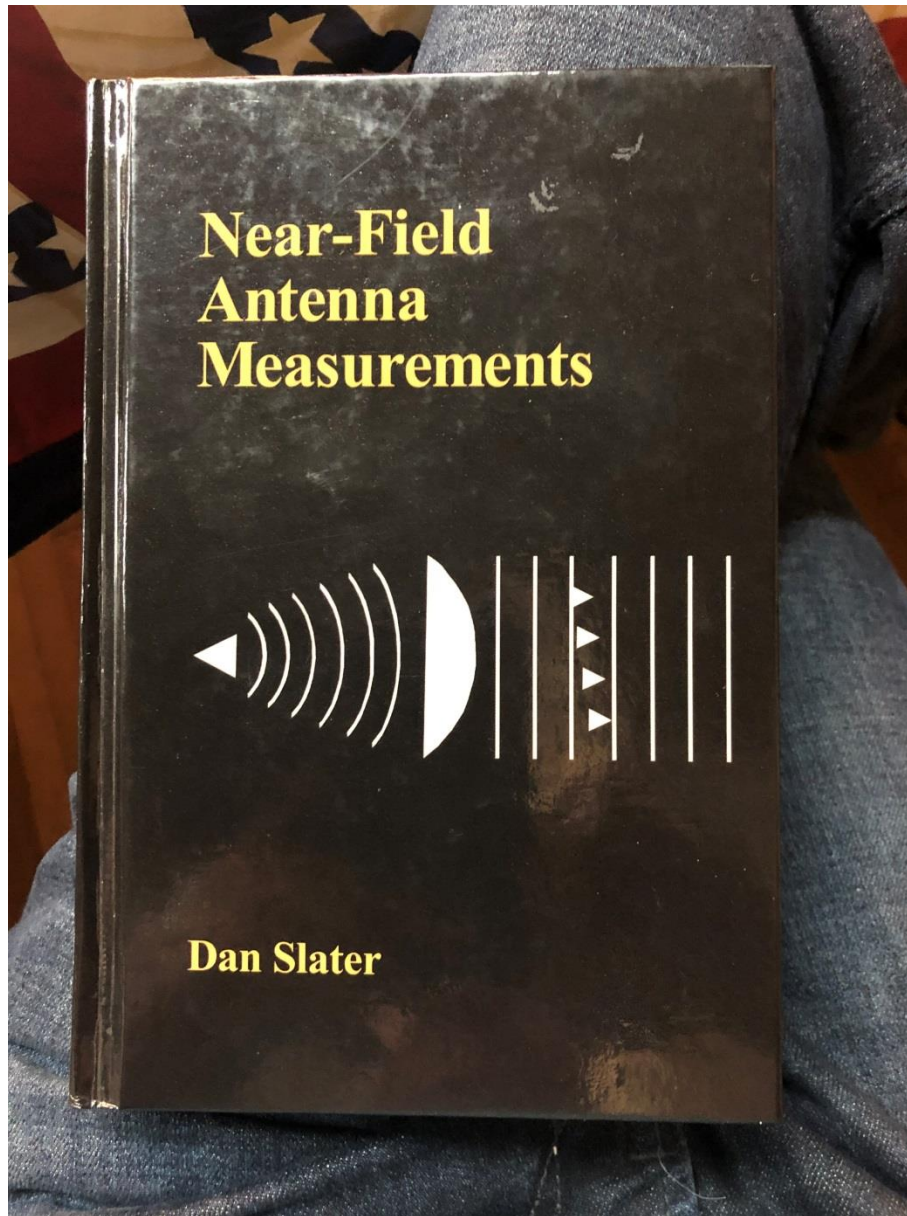
Brian AF6NA - DM13fw was recently incorporate into Eastvale which is essentially north Norco. For microwave activity he goes out about every three days and turns on a radio and waits to hear the Santiago beacon, so he knows it still works. Currently working on downsizing another radio to make it more portable. Showed his Down East Microwave 10 mW in, 3 W out amplifier (pictured).

Courtney N5BF – No appreciable microwave activity over the last month. Just got back from DC area where he tried the WA3KOK Cactus-linked system. JPL's Mars Rover is shipping to Cape Kennedy, with the Mars Helicopter, this week.

Dick WB6DNX – got out some Gunnplexers for a demo and tried to get a couple of units working enough to talk to each other. Also has a 24 GHz Gunnplexer radio. May get a wideband system going and bring it to show at a meeting. Wondered who else has one (W6DL and KM6RXN indicated that they did.) There may be enough here to have a wideband resurrection contest. W6DL indicated that W6NOB has made similar suggestions and that Dick should propose an activity to the reflector.

John KJ6HZ - Last activity was before the last contest when he worked to try to improve the performance of his radio. He thinks the feed may be out of focus. He has a shot to Santiago but there are trees on the path.



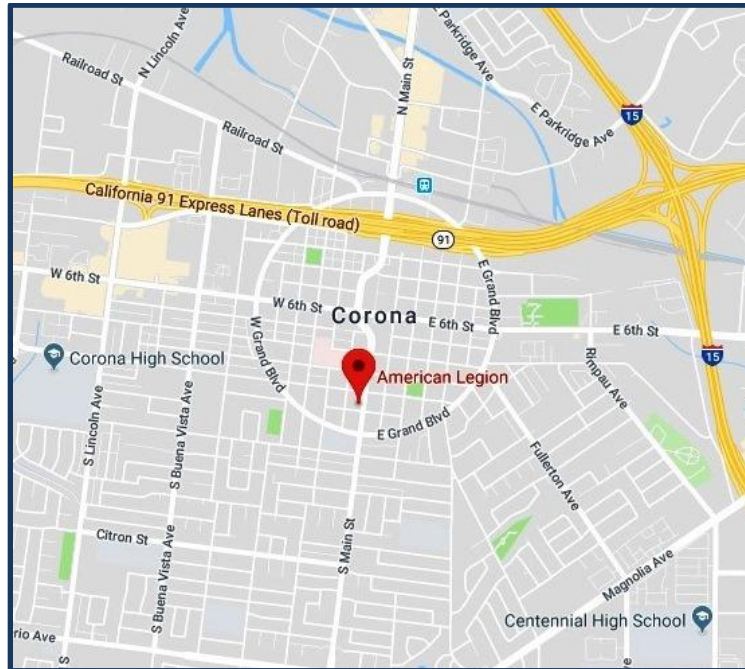


Dan Slater gave an excellent presentation on microwave antenna measurement. Dan was formerly the founder of Near Field Systems, an antenna measurement and engineering company. Thanks for challenging our minds and educating us, Dan!

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**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**

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## Microwave-Related Events for 2020

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