



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1955

A NON-PROFIT AMATEUR TECHNICAL ORGANIZATION DEDICATED  
TO THE ADVANCEMENT OF COMMUNICATIONS ABOVE 1000 MC.

## SBMS (W6IFE) Newsletter For July 2013

### Tech Talk for the July 11 Meeting

*Dennis Kidder will talk about how we educate other ham clubs about getting into microwaves. So, in reality, this is a talk about a talk! The package that will be presented to other clubs is "Microwaves are not just for popcorn!" And it will chart how someone can get involved in getting into microwaves; the simple paths to the more complex.*

## Activities of the San Bernardino Microwave Society

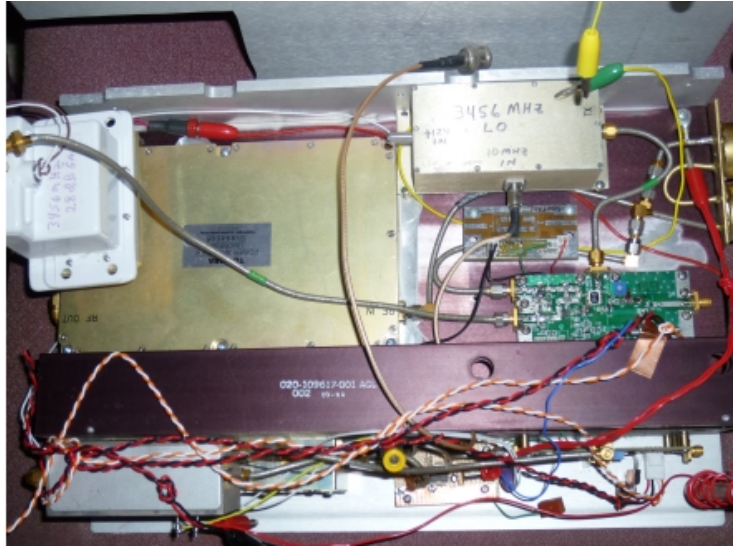
Based on Notes Taken at the Meeting of 6 June 2013 in Corona



**Now Two Months Old...** the idea of making microwave contacts from the house rather than roving... our "activity night". Perhaps just turning on your rig as a beacon for the rest is involvement enough. June 5<sup>th</sup> there were 7 involved. For July it will be the 10<sup>th</sup>.

This is Dennis's Flex 1500 display for his 10 GHz rig. Later in this newsletter he's written an account of the 5 June "Activity Night."

## Tech Talk at the June Meeting



Chris invited anyone interested to give a short talk on something between 1 GHz and 5 GHz. Here's some pictures on his projects.



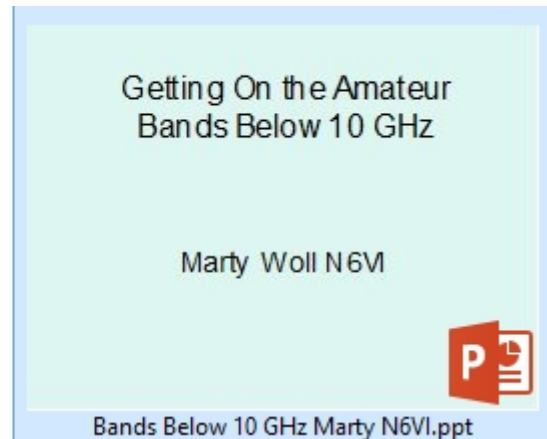
Walt gave a talk on using a C-band LNB to monitor airliner radar-altimeters.





Eric Fort gave a talk on using software to move the operating frequency of WiFi gear to the ham bands.

Wayne Overbeck and Marty Woll weren't there that evening but sent pictures of their rigs. Wayne's pictures and Marty's slide show is available on the SBMS Website.



[http://ham-radio.com/sbms/presentations/N6VI/below\\_10GHz\\_equipment.ppt](http://ham-radio.com/sbms/presentations/N6VI/below_10GHz_equipment.ppt)

## Guests Or Members Not Seen In a Long Time

- Marsha, Ed Munn's wife was visiting with us. They were staying the night in Corona for a high school reunion.

## Members and Guests by Way of ATV at the June Meeting

- Don Hill was not active this night but did send in a record of internet observers:
- Robbie checked audio only
- Steve Noll of Ventura WA6EJO
- Gordo (reported on a Santa Ana ham event)
- 14 internet viewers, and an additional five without call sign
- WB6HYH from Vale Co and KQ6EF from Toledo OH
- KE6BXT was watching in Reno on his smart phone
- KJ6DQR (Cathedral City) and W3FEY (Lancaster, Pa)
- WA6ZKY, KQ6EF, KE6ZC, W6QIW, KD6ILO, KE6BXT, N6RMJ, KF6PGT

# Important Points of the May Business Meeting

- **Maker Faire San Mateo**  
Dennis Kidder led the discussion on SBMS presence at the faire and what was seen there.
- No discussion on the Beacon Projects

## What Our Members Are Working On

### **Dick Bremer**

- reported that he, Walter and Dennis went mere blocks from their houses to a parking lot in Fullerton where south Orange County was unobstructed. Seven people were involved altogether. This was for “activity night” the night before the meeting where as many as possible try-not-to-leave-the-house beacon or talk.
- Dick passed around the latest radio from Power Worx.

### **Ed Munn W6OYJ**

reported on work going on in San Diego

- Kerry, N6IZW has completed conversion of an Endwave transverter to 24 KHz, soon to be followed by Greg, K6QPV and Lee KD0IF.
- Ed's 1296 MHz balcony mounted transverter has a short feedline to the antenna, and gets its i.f. signal via 130 feet of RG-8 to and from his garage ham-shack.
- His 10 GHz rig has a direct shot of 28 miles from the San Diego Beacon on Mt. San Miguel, but due to foliage and structures cannot hear any other beacons.

### **Dennis Kidder**

gave more details on the Wednesday “activity night”. (see article below)

### **Eric Fort**

gave a long report on adapting existing WiFi equipment to work on the ham bands. These changes are software hacking type. No soldering.

### **Larry Johnston**

was involved in the from-the-house, day-before the meeting net. His present project is making his station remote controlled. He's using a Samsun table and worked his Flex 500 from Stockton.

### **Chris Shoaff**

said he up to his ears in Ku band stuff at work.

## Bill McNally



- is setting up his home station in Seal Beach on 50, 144, 220, 432 & 1296MHz for a possible June thru Aug Calif to Hawaii tropo opening..
- He and Doug, K6JEY, are investigating propagation from Hawaii to Guam and Calif to Guam. They are looking into using WSPR reverse beacon stations to monitor possible trans-pacific paths.
- Anecdotal information suggests that in the past a path has opened up from Calif to the Phillipines on a military microwave band. This seems to indicate that similar openings could occur and that an effective monitoring system would be a good way to detect a band opening.



intermod mix.

## Pat Coker N6RMJ

has his 10 GHz omni on his 55' but only talked to his neighbor Larry.

## John Oppen

is playing with EME mount and reported on a visit to member Jerry Martis who gave John a mount. John reports that he has since cleaned up the mount and it moves smoothly.

## Mel Swanberg

- Restoring several Motorola 900 Spectras and distributing them to people wanting to get on 900 MHz.
- Was involved with some 11 GHz PtoP public safety links suffering from a 3rd order

## Jeff Fort

is working on an elevation mount for a 1 meter dish. He thinks it will have a precision on the order of .1 degrees. Portable and steerable.

## dBm to Watt Conversion Table

dBm	Watts	dBm	Watts	dBm	Watts
0	1.0 mW	16	40 mW	32	1.6 W
1	1.3 mW	17	50 mW	33	2.0 W
2	1.6 mW	18	63 mW	34	2.5 W
3	2.0 mW	19	79 mW	35	3.2 W
4	2.5 mW	20	100 mW	36	4.0 W
5	3.2 mW	21	126 mW	37	5.0 W
6	4 mW	22	158 mW	38	6.3 W
7	5 mW	23	200 mW	39	8.0 W
8	6 mW	24	250 mW	40	10 W
9	8 mW	25	316 mW	41	13 W
10	10 mW	26	398 mW	42	16 W
11	13 mW	27	500 mW	43	20 W
12	16 mW	28	630 mW	44	25 W
13	20 mW	29	800 mW	45	32 W
14	25 mW	30	1.0 W	46	40 W
15	32 mW	31	1.3 W	47	50 W

## Technical Tips

Today's tip comes to you indirectly from Eric Forte. He did a good job at the last meeting explaining to me about dBm and watts. I was a bit embarrassed because this was about the fifth time I've had to have this explained to me. I noticed that (perhaps inadvertently) he revealed a short cut. I suspect this shortcut is common but rarely admitted to because to do so reveals the little lie that you can think in dBm. Let's start with a table:

Instead of teaching the math, merely memorize the values circled above. (I'm sure you recognize the powers of ten.) Got it? OK, 30 dBm is what? That's right; 10 to the third in milliwatts.

Perhaps you have a 1 watt rig. A flashlight is about 1 watt. That 30 dBm can be a mental "handle." That handle will "ground" you so you won't be relying on a math ritual, where you could easily divide the wrong side by ten. Start with what you have, then memorize up by ten down by ten and so on. Now you know at least five conversions by heart.

What about all those between these memorized values? Here's the trick; don't think of half way between 10mW and 100mW; think instead of half way down from 100 mW. That's 50 mW. OK, look for that in the table. It's three dB down from whatever 100 mW is. Just 3; not 30. Half way down from 10 watts? 40 minus 3 . . . 37. Half way down from 10 million watts (100 dBm) is 97. Mastered that? You now know in your head at least 10 conversions; ten, hundred, five, fifty, point five and so on. Here's another trick. Note that 2 mW is twice 1, and 20 watts twice ten. In the table above, that's plus 3. 2 watts is 30 dBm plus 3. Now you know 10, 20, 50 and 13 other conversions you can do in your head.

Memorizing that 1 mW, 10 mW, 100mW is 0, 10, 20, 30, etc. is the easy part. And remembering that 2mW, 20mW, 200mW is 3 dBm up is pretty easy too. What's hard is remembering that 5mW, 50mW, 500mW is **3 dBm down** from the "*next power of ten up*."





On the left is Dennis Kidder and Walt Clark at Maker Faire, San Mateo. Dennis and Walt, a month later took their demos to the Science Discovery Center in Santa Ana. There, they were joined by Wayne Yoshida who does most of the organizing of these exhibits. More is planned. The best thing about being a presenter is the rest of the exhibit is free.

## **June 6<sup>th</sup> Activity Night (as experienced by Dennis Kidder)**

Walt Clark and I met Dick, WB6DNX, on a hilltop in Fullerton by Summit House Restaurant. State College and Bastanchury. It's one of the higher spots around but blocked by foliage in some directions.

I could hear Chip, N6CA's carrier and he could hear mine -- but we would not have had a phone QSO ... CW maybe.

Santiago beacon was quite loud ... PV was well up out of the noise and we could recover the audio easily. Frasier was close to the noise level but showed on the waterfall display.

I am definitely motivated to continue to try this ... and to work on optimizing the system. But I am convinced that unless I can get the omni at least 30 feet in the air here in Fullerton, it's hopeless from the house. And since I am moving I can't see any point in even trying that. I will continue the efforts from Inyokern and try different portable locations. Hmm ... just like roving but staying in one spot!

Dick and I did a little 10 GHz mobiling on the way back to our home QTHs. Terrain made it difficult but it was interesting while it lasted. Having the Flex 1500 spectrum display showed the Doppler dramatically!

I have also come to the conclusion that while 3/4" copper water pipe is inexpensive waveguide, I guess you get what you pay for. We noted that adding a ten foot length to raise the omni antenna added about 10 dB of loss(!). That's significant. Anyone have 20 feet of WR-90 they'd be willing to part with???

Thanks, Rein, for putting this together tonight. It was fun to get out and play with the gear. And thanks to Chip for helping out as well!

## **Upcoming Meeting Tech Talks**

**July 4 SBMS meeting-**Beginner microwave talk for other clubs. Dennis, W6DQ will show us how to do such a talk.

**August 1 SBMS meeting-** contest preparation



## **SBMS 2 GHz and Up Contest**

Northern Lights Radio Society first place with 18,644 points 9 logs.  
San Bernardino Microwave Society second place with 635 points one log.

Northern Lights Radio Society had some contacts on 2 and 3 GHz in addition to the ones on 10 GHz. The NLRS continues to out pace the rest of the clubs in getting people out for the contest. Congratulations to NLRS for another year of winning the contest.  
--Bill Burns WA6QYR

## **Other Activities Coming UP**

You should be working on your rig for the Tune-Up Party.

July 27<sup>th</sup> Fairview Park (9:00 until 2:00)

2501 Placentia Ave, Costa Mesa, CA 92626.

(South of Adams, west of Harbor.)

**Pot luck Bar B Q at Dennis's starting at 3:00. Consider it an early dinner.**

For more on this event... see "Activities" in the SBMS website. You should have it memorized by now. . .

- Google then SBMS
- click on our website
- then Ctrl-F and "Activities"

## Wants and Gots for sale.

**For Sale:** 30w 1296 MHz PA kit \$50 + \$5 for US shipping Chris Shoaff, N9RIN  
cshoaff@yahoo.com

**For Sale:** 10 GHz slotted waveguide antennas \$55 kit, \$80 assembled plus shipping Dan  
W6DFW [W6DFW@apex-scientific.com](mailto:W6DFW@apex-scientific.com)

**NEED-** HP 8694 8-12 GHz sweeper plug-in for 8690 main frame Chuck WA6EXV  
760-382-0709

**Want-** an X-band plug-in for HP8620 sweeper. Bill WA6QYR [bburns@mediacombb.net](mailto:bburns@mediacombb.net)

For Sale- Pre-estate sale- Ask Bill what you are looking for and he may have it for a good price.

Bill WA6QYR [bburns@mediacombb.net](mailto:bburns@mediacombb.net)

Bill is also offering for sale and in some cases given away:

Solar panels 12v 12 inches by 24 inches free.

40 meter vertical \$5

Butter-nut 4 band vertical \$20

Homemade 6 meter j-pole ½ inch copper pipe \$15

4 homemade 220 MHz 9 el beams- free

**More Items Available from Bill Burns**

Cushcraft 220 MHz 7 el beam \$20

2 Cushcraft two meter 11 el beams \$30

2 meter 13 el beam \$15

Many 920 MHz 9 el M Squared beams less feed \$5 each

Homemade 2 meter 5 el cross polarized satellite beam \$10

Cushcraft 440 MHz 9 el cross polarized satellite beam \$10

Az/el rotors for satellite beams with fiberglass boom \$20

TVRO dishes 10 ft, 6 ft and 5 ft free

2 motor home motorized Az/el 5 ft TVRO dishes \$10 each

Teco 108-156 MHz helical antenna 4ft long \$10

6ft 19 inch open rack \$5

6 ft 19 inch rack \$5

Andrew LDF-4-50 (1/2 inch 50 ohm) heliax coax cable in 50 to 70 foot lengths \$5 each

Guy wire 3 strand #12 copper plated steel by reel or by coil free

Commercial CB vertical 10 ft long Free

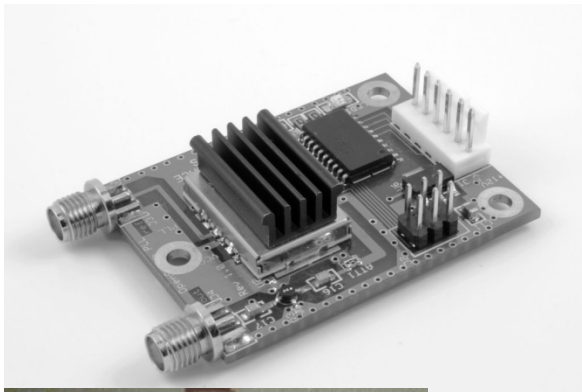
Misc steel plate, pipe and rod free

Bill WA6QYR 247 Rebel Road Ridgecrest 760-375-8566 [bburns@mediacombb.net](mailto:bburns@mediacombb.net)

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## Member Ads

**60 degrees North Electronics Company.** I am starting up a kit making service for assembling certain kits made by Down east Microwave. For those that do not want to make their own kits or maybe it's gotten too difficult, or just don't have the time or want assembled kit faster than DEMI can supply it. This one-man business so I will only be able to build a limited number per month. My price is the same as offered by DEMI assembled, plus shipping which should be medium-size flat-rate priority mail in the US. I am expecting to be able to deliver within 30 days of receipt of paid order. Contact Ed Cole: <http://www.k17uw.com/60NE.htm>



Introducing the **OpenSynth** line of frequency synthesizer kits. Available in standard frequencies of 2556, 2952, 2160, 1152, 3312, 3006 MHz, also available from 400 MHz to 3500 MHz.

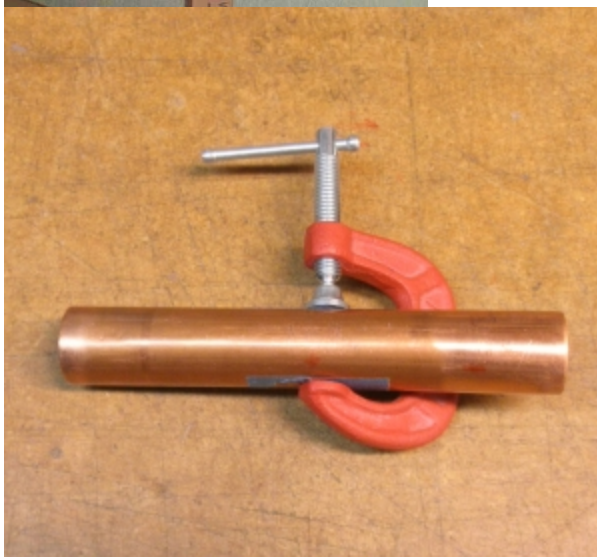
- Low phase noise, Buffered output
- Ultra low noise voltage regulators
- Open Source code and design, made to be modified
- 2" x 1.5", 12V @ 140 mA typical

Available at <http://reactancelabs.com>



← 10 GHz slotted waveguide antennas \$55 kit, \$80 assembled plus shipping Dan W6DFW  
[W6DFW@apex-scientific.com](mailto:W6DFW@apex-scientific.com)

Member Dan Welch is taking orders for the next batch which will be sometime around August; in time for MUD.



## Mystery Microwave Gismo of the Month

## **The prize?**

You get a momentary bit of respect from the other readers of the SBMS Reflector who know your name. That may not seem like much, but what is a club for, but to allow us show off to each other how much we know.

## **About SBMS**

The San Bernardino Microwave Society is a technical amateur radio club affiliated with the ARRL having a membership of over 90 amateurs. The focus of the club is microwave activities in the Southern California. ***Our sister club is San Diego Microwave Group (SDMG). At least one meeting a year are joint meetings.*** SBMS dues are \$15 per year, which includes a badge and that's about it. The dues are more in the way of a donation to pay for outreach things such as video portals, a bank account, and rent for the building. When to pay is not a matter of remembering. The Corresponding Secretary will contact you by email and will then hound you like your own personal PBS telethon. Dues can be handed to the treasurer at the meeting, or mailed to the address of the treasurer listed in the banner below.

Meetings are first Thursday of the month, 7:00 PM at the American Legion Hall, Corona. For car pooling from North Orange County call Walter Clark @ 714 882-9647

### ***The Reflector (SBMS Group Email)***

The most active method of information exchange is our group email called the SBMS Reflector. You don't need to be an SBMS member to participate. To subscribe fill out the form at the website: <http://lists.altadena.net/mailman/listinfo/sbms> (If you are getting email on the SBMS Reflector now, and you want to write your own message, pull up a recently received message, click on "Reply to List." Don't forget to change the subject line and delete all previous text as appropriate.)

### **The SBMS Website and Newsletter**

The SBMS Reflector is ephemeral. There's no record kept. The Newsletter has a slightly longer life. It is sent to members and past issues are recorded in the website. It's URL is: <http://www.ham-radio.com/sbms/> You don't have to memorize that or write it down, just enter SBMS into any internet search engine.

**Newsletter: Walter Clark:** [walterClark@roadrunner.com](mailto:walterClark@roadrunner.com)

**Website: Rein Smit:** [rein0zn@ix.netcom.com](mailto:rein0zn@ix.netcom.com)

The newsletter is created about the middle of the month and broadcast as a link inside an eMail letter to the members. This is mailed to you on the weekend prior to each meeting. SBMS Newsletter and website material can be copied as long as SBMS is identified as source.

## **About the San Bernardino Microwave Society (SBMS)**



**President Chris Shoaff, N9RIN**

2911 Calle Heraldo San Clemente CA 92673 phone: 949-388-3121  
mailto:cshoaff@yahoo.com

**Vice President: Chuck Swedblom, WA6EXV**

PO BOX 605 Ridgecrest, CA 93555 phone: mailto: chuckswed@juno.com

**Recording Sec Walter Clark**

824 Valley View Fullerton CA 92835 phone: 714-882-9647  
mailto:walterclark@roadrunner.com

**Corresponding Sec Jeff Fort, KN6VR**

10245 White Road Phelan CA 92371 phone: 909-994-2232 mailto: [jnfort@Verizon.net](mailto:jnfort@Verizon.net)

**Treasurer Dick Bremer, WB6DNX**

1664 Holly St. Brea CA 92821-5948 phone: 714-529-2800  
mailto: [rabraemer@sbcglobal.net](mailto:rabraemer@sbcglobal.net)

**Newsletter Editor Walter Clark**

824 Valley View Fullerton CA 92835 phone: 714-882-9647  
mailto: [walterclark@roadrunner.com](mailto:walterclark@roadrunner.com)

**ARRL Interface Frank Kelly, WB6CWN**

PO Box 1246, Thousand Oaks, CA 91358 phone: 805 558-6199 mailto:wb6cwn@gmail

**W6IFE License Trustee Ed Munn, W6OYJ** (call sign for club beacons)

6255 Radcliffe Dr. San Diego, CA 92122 phone: 858-453-4563  
mailto:remunn@earthlink.net.

**Lab manager Dave Glawson, WA6CGR**

1644 N. Wilmington Blvd Wilmington, CA 90744 310-977-0916 mailto:wa6cgr@ham-radio.com

**SBMS Website Editor Rein Smit W6SZ**

8333 Pumalo Alta Loma, CA 91701 mailto: [rein0zn@ix.netcom.com](mailto:rein0zn@ix.netcom.com)

**Webmaster Dave Glawson, WA6CGR**

1644 N. Wilmington Blvd Wilmington, CA 90744 310-977-0916 mailto:wa6cgr@ham-radio.com