



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1955

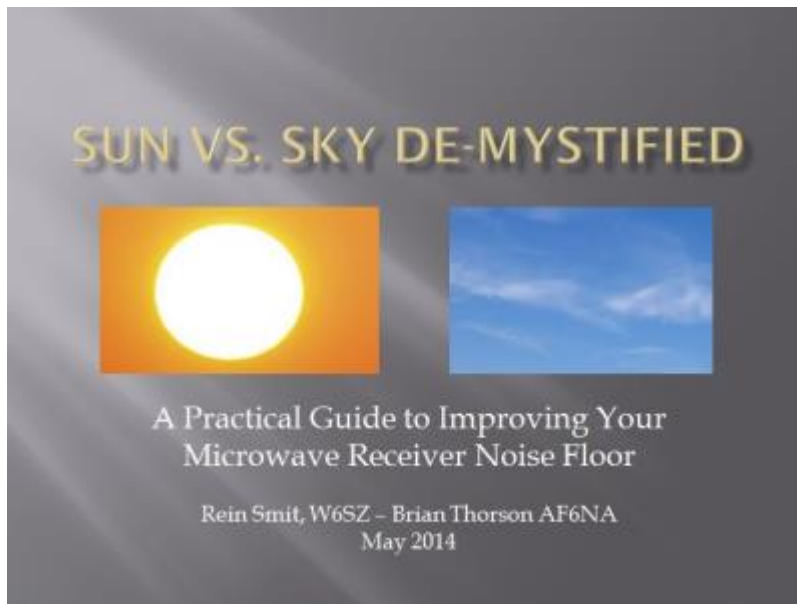
A NON-PROFIT AMATEUR TECHNICAL ORGANIZATION DEDICATED
TO THE ADVANCEMENT OF COMMUNICATIONS ABOVE 1000 MC.

July 2014 Newsletter on the Activities of the San Bernardino Microwave Society

Walter Clark, Editor

Tech Talk for the July 3rd Meeting

Brian Thorsen AF6NA will present ***"Sun vs. Sky De-mystified"***



Practical microwave receiver improvement tips, with acknowledgement to and co-authorship from Rein Smit, W6SZ.

- Next Month: Contest Planning
- Courtney, N5BF has a "Mars to Earth" X-Banding presentation he may do for us in September. This is tentative.

Activities at the May Meeting of the SBMS

(that would be of interest to the General Ham Radio Community)

Presiding: Chris Shoaff (17 in attendance... 19 last month)

Guests:

Alan Keller (Plane Wave, makers of giant telescopes)

Old Business

- MUD
 - Mel Swanberg reported signing the contract for the Hotel in San Diego.
 - Ed and Kerry (San Diego Group) will be running the Test Range. (Certain rooms have been reserved that overlook a parking lot.)
 - Official date so far, is October 16, 17, 18, 2015, Crown Plaza, San Diego.
 - The estimated average room costs is \$120 a night; includes parking.
- Heaps Peak 2,304 MHz beacon is being attended to.
 - Mel reports that he and Rein went up there but was unable to retrieve it.
 - It appears to be 60s vintage.
 - Chuck volunteered to work on it when it does come down.
 - Wayne pointed out when an important asset this beacon is. It is by the way the SBMS call sign beacon; W6IFE

New Business

- Marty was appointed chair of the Compliance Committee (that's fancy talk for figuring out the form of our existence with respect to taxes.)
- Official date for Tune Up Party is 19 July location is Fairview Park Costa Mesa CA from 7:00 AM.

Official Address

San Bernardino Microwave Society

417 Associated Road #146

Brea, CA 92821

Upcoming Events Identified by Members

(Marty Woll, N6VI)

July 17 – 19: ARRL Centennial Convention in Hartford, CT

July 19: SBMS Microwave tune-up
(Fairview Park Costa Mesa CA)
address of Fairview Park: 2501
Placentia Ave, Costa Mesa, CA 92626

Fairview Park →



July 19: after the tune-up; Dennis Kidder, once again invites us to his place after the Tune Up. That's any time after 1:00 or 2:00. Here's Google maps to Dennis's...<https://www.google.com/maps/@33.8881315,-117.9296022,15z>

July 24-26: Central States VHF Conference in Austin, TX

August 2-3: ARRL UHF Contest

August 16-17: ARRL 10 GHz & Up Contest (first of two weekends)

The editor is not interested in contesting. So if you want it posted, you, the reader have to submit them.
walterclark@roadrunner.com

What Our Members Are Working On

- **Pat Coker N6RMJ (Lake Los Angeles)**
 - Did yard work, but will rebuild his tower in June
- **Larry Johnston K6HLH (Lake Los Angeles)**
 - Did some work on aircraft scatter based on a January QST article
 - Attempted to hear the PV beacon
 - Next month he will be in Germany
- **Chris Shoaff N9RIN San Clemente**
 - For the 2 Gig and Up he was at Wayne's for a 24 hour station time
- **Wayne Overbeck N6NB (Tustin)**
 - Shared with us an interesting tip on getting through the airport; get a mobility scooter
 - Was very much involved with the 2 gig and up contest.
 - He shared an experience with a commercial amplifier for 3.4 GHZ that turned out to be very heat-sensitive. It wouldn't key up at all on warm days such as we had during the 2 gig and up contest. Chris finally got it to work long enough that he could work Marty on Frazier at 1 a.m.
 - That temperature -sensitive amp has been replaced with a much more reliable DB6NT amp.
 - He's getting ready for the VHF contest. He roved while N6MU operated the 10-band station at his house. 3.4 GHz worked fine.
 - He has lots of 10-band rigs to loan out.
- **Walter Clark (Fullerton)**
 - Showed some more magnetic field demo equipment on a talk he's putting together for various local ham clubs. (Exploratorium stuff for upper division physics.)
- **Jason Sogolow W6IEE (Burbank)**
 - Working on some Arduino based projects
- **Dan Slater AG6HF (our speaker)**
 - Is working on an 8.4 GHz receiver for detecting spacecraft leaving earth orbit.
- **Alan Keller (our guest and friend of Dan's)**
 - Is working on a dish and LNB for microwave listening
- **Rein Smit W6SZ (Alta Loma)**
 - Also working on the aircraft scatter project; also no contacts.
 - Got 10 QSOs in the 2 Gig and Up Contest
- **Jeff Fort KN6VR (Phelan)**
 - Worked on his 1200 MHz antenna

Report from Larry in Germany

We left Kressbronn this morning and have arrived at Ravensburg for a four day stay.

The ham radio convention in Friedrichschafen was fantastic. Two very large halls of swap meet electronics. It took a full day just to see it all. Another day to see the vender's hall and Makers World hall

I even met Kent, WA5VJB, and G4DDK who I had met before at the EME conference in Dallas.

- Played with his loop Yagi
- **Bill McNally N6MN (Seal Beach)**
 - Received his 2304 septum feed
- **Mel Swanberg WA6JBD (Upland)**
 - Was involved with Pat negotiating with the hotel in San Diego
 - On his bench is a service monitor.
- **Jerry Mulchin N7EME (Corto de Caza)**
 - Our first meeting without Jerry. Maybe he can send us progress reports in the future
- **Gary Heston W6KVC (Running Springs)**
 - Has repeater problems (bad receiver)
 - Went to Dayton for the big ham event there; picked up a power supply
 - While there attended the Air Force Museum and the TV museum
- **Courtney Duncan N5BF**
 - is working on a W6PQL solid state amplifier.
- **Marty Woll N6VI (Chatsworth)**
 - Operated at Frazier for the 2 GHz and Up Contest
 - Took four bands and made 54 contacts
 - Went with Dennis Kidder and Wayne Yoshida to the San Mateo Maker Faire
 - At the Faire met microwave rover Andreas N6NU
 - Making progress on the Poway antenna zoning ordinance
 - Met with 4 clubs in Arizona
 - Brought 1994 MTTS digest to give away
 - Will help present a panel on weak-signal and microwaves at ARRL Centennial Convention in Hartford, CT
 - Reported no further FCC action to date on Mimosa Networks 10 GHz petition
- **Dick Bremer WB6DNX**
 - His daughter is moving out
 - Will now put his 10 GHz project front and center

San Diego Microwave Group (as reported by Ed Munn W6OYJ)

- Kerry Banke N6IZW continues to work on design and tests of a satellite ground station for the amateur radio TV station on the International Space Station.
- Kerry gave away a quantity of “removed” 12 V 18 A-Hr sealed batteries to the members at the June meeting.
- Art McBride KC6UQH has been working on a solid state 10GHz power amp rated at 8 watts and made by Cal Amp. So far he has reached 5 watts output on 10.368 GHz
- Greg Bailey K6QPV returned from a 21 day trip to Greece and Turkey. He is in charge of our beacons on Mt. San Miguel, on 1296.300, 3,456.300 5,760.000 and 10,368.360 MHz. The beacon on 3456 is new and was built by Dan Bubke K6NKC.
- Ed himself is recovering from back surgery and missed the June meeting.
- The San Diego Group normally meet 3rd Monday at Kerry Banke’s house.

2 Gig and UP Contest Results (Marty Woll)

The results are in for the 2014 running of the 2 Gigahertz & Up Contest, and this year saw 23 entries from around the U.S. and Canada, representing five radio clubs.

In the traditional Club Competition, the San Bernardino Microwave Society came out on top, with eight entries aggregating 48,193 points. Second place went to the 50 Megahertz and Up Group of Northern California, with seven

entries and 29,833 points. Following the top two were the Northern Lights Radio Society with five entries and 6,885 points, the San Diego Microwave Group with one entry and 1,798 points, and Contest Club Ontario with two entries and 1,616 points.

An Individual Competition was added this year as part of an overhaul of the contest rules. Coming out on top was Marty N6VI, operating from Frazier Peak, with 11,893 points and a contest-best DX of 439 kilometers. Chris N9RIN, who guest-operated N6NB's Panorama Heights station, took second place overall with 10,858 points and had the top single-band score on 24 GHz. In third place was Andreas N6NU, who roved in the Central Valley using only 10 GHz. He finished with 10,538 points and the top X-band score. In fourth, fewer than fifty points behind Andreas, was Wayne N6NB, who roved with five bands and made the top scores on three of them (2, 3 and 5 GHz), turning in a grand total of 10,493 points. Fifth place went to Mike K6ML, who roved with N6NU and racked up 9,774 points.

Complete results will be posted on the SBMS Web site. You can see photos and stories from the contest in last month's SBMS Newsletter. If you have some to add, please send them to the SBMS Webmaster, W6SZ (rein0zn@ix.netcom.com). Here are those results as of 30 June 2015.

Scores for 2014 SBMS 2 GHz and Up Contest

Call	10GHz	2 GHz	3 GHz	5 GHz	24 GHz	Overall	Club	Best DX (10)
K0KFC	1256					1256	NLRS	212 km
N6JV	3880					3880	50 MHz^	273 km
VE3SMA	298					298	Ontario	57 km
KC6UQH	1798					1798	SDMG	246 km
K0AWU	1681					1681	NLRS	302 km
K6TU	1306					1306	50 MHz^	155 km
VE3OIL	318					318	Ontario	57 km
K6ML	9774					9774	50 MHz^	313 km
N6VI	8854	1073	963	1003	---	11893	SBMS	439 km
N6NB	3514	2476	1603	2136	764	10493	SBMS	170 km
WB6RWU	1720					1720	50 MHz^	369 km
W0ZQ	1197	240	127	127	---	1691	NLRS	265 km
KD0EJT	5005	973	731	915	---	7628	SBMS	313 km
N9RIN	6156	1744	393	1476	1089	10858	SBMS	313 km
N0KP	1038	251				1289	NLRS	91 km
N6TEB	1333			503	345	2181	SBMS	121 km
K6WCI	1293					1293	SBMS	121 km
N9JIM	1619					1619	50 MHz^	369 km
KK6MK	996					996	50 MHz^	141 km
N6RMJ	2152					2152	SBMS	304 km
W6SZ	1699					1699	SBMS	169 km
WA2VOI	968					968	NLRS	105 km
San Bernardino Microwave Society	48197	8 contestant entries						
50 MHz and Up Group	19295	6 contestant entries						
Northern Lights Radio Society	6885	5 contestant entries						
San Diego Microwave Group	1798	1 contestant entry						
Contest Club Ontario	616	2 contestant entries						

Best DX (10 GHz) 439 km and top score: N6VI

Interesting Story About Last Month's Microwave Mystery Device (Eddie Phillips W6IZJ)



OK. It's the local oscillator magnetron from a German 'Berlin' S-Band radar from WW2. There's a lot of radar and political history involved. While the Germans built some superb radars, starting in the late 1930's, they all used triode transmitters and were limited to an upper frequency of around 600 MHz, which meant that the angular resolution was rather poor because of the size constraint of airplanes. They did make many different VHF air intercept radars for their night fighters but their antennas, again, were way too small for good resolution. They solved the resolution somewhat by using right/left and up/down antenna switching but by the time they did that the British were jamming the hell out of them and rendering them relatively ineffective. This is yet another example of technological thrust and counter thrust but bottom line is that by 1943 the jamming was really causing them problems.

Here's where some interesting politics comes in. Hitler thought the war would be over in a few months and once it started issued an edict that no time was to be spent on developing anything which wouldn't be used within a year. What Hitler said everyone did! The Germans had done a lot of pioneering work in the microwave area, both in tubes and systems, but had given up microwave radar work because the transmitters they had only put out a few watts and range was pretty low. The British on the other hand were far more active and developed high-power magnetrons which made airborne radar very workable. Their first development was a ground-mapping radar which was installed in a lot [eventually most] of their bombers in the hopes that it could improve their very lousy bombing accuracy. It didn't help much but that's another long story. In early 1943 one of the British bombers was shot down near Rotterdam and the radar

was in good enough shape that someone recognized it as important and brought it to the attention of authorities. Within a few days it was recognized for what it was and that started an immediate German 'catch up' program which never really did but came dangerously close. Another long story. They didn't have any suitable klystron local oscillators on the shelf so used small magnetrons like the Mystery Microwave Device show above. It was called the Berlin. http://en.wikipedia.org/wiki/FuG_240_Berlin It had a single transmitter/receiver/display box and this plugged into the middle of the aircraft front panel. Like many German tubes which used 'end in first' sockets it had an unscrewable knob like the ones on the bottom in these pix. Unlike the magnetrons and klystrons this didn't use a cavity but instead tuned transmission lines which are the things at the top end. Worked OK but much noisier than klystrons....

When I was at NRL I used to pour through warehouses containing all sorts of accumulated stuff including a bunch of microwave parts from MIT Rad Labs. Most of the 10 GHz waveguide stuff came from there. One of the things I found and hauled back to the lab was a Berlin transmit/receive box which must have been part of a lot of stuff sent over for study after the war was over but which was now junk. Anyhow, I did manage to fire it up to the extent that I could get a trace on the CRT but after that I was told to 'get that thing out of the lab' so pulled the magnetron and a crystal mixer from the receiver. If I'd known what the unit really was I'd have realized that there was a transmitter cavity magnetron in it and grabbed that too but I didn't. I have that tube sitting in my desk drawer now. German microwave radar stuff from WW2 is very scarce and highly collectable these days and some of the guys on the tube list have managed to gather together examples of almost all of the radar tubes involved.

Here's about the best website for German Airborne Radar:

http://www.nsarc.ca/hf/german_radar.pdf

Tech Talk (Last Month)



Dan Slater (AG6HF) presented an overview of software defined radio (SDR) along with the closely related technology of software defined RF test instruments (SDI).

Various SDR and SDI hardware were discussed along with some of the applications and future technology trends.

Microwave Mystery Device of the Month



Resotank HB-14

Gary Heston's ATV Mobile Studio

Not only can you watch our meetings live (well delayed by 240 milliseconds) You chat to other viewers about what you are watching (or anything else.) Enter the chat room by clicking on the white space on the right of the website described below.

Just as a reminder, this is how you watch SBMS meetings from home:
http://www.batc.tv/ch_live.php?ch=2&id=139

Better yet memorize the following

Keywords: BATC TV

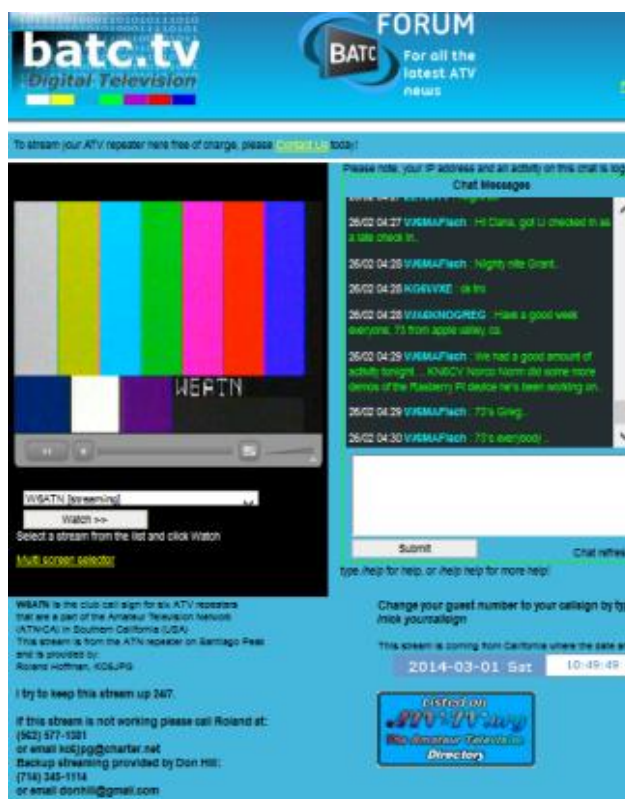
and use Google

The TV part is easy to remember. Think of the BATC as batch without the h. It's a British website (that's the B) Once you are there, on the left, you have to pick a stream. The stream to choose is:

W6ATN.

Memorize W6ATN as ATN in California. W6ATN is the club call sign for six ATV repeaters that are a part of the Amateur Television Network in Southern California. (ATN-CA)

Gary Heston's mobile studio beams its signal to the ATN repeater on Santiago Peak which is provided by: Roland Hoffman, KC6JPG



- The newsletter is to keep member informed on current activities of the “active” members; the members that come to the meetings or use ATV to report in.
- The website is for articles and all activities of the past.
- But questions or even bragging is for the SBMS Reflector. Send your email message to: sbms@ham-radio.com. More than 80 people will see your question or your bragging. (To sign up go to: <http://lists.altadena.net/mailman/listinfo/sbms>.)

Needs, Wants and For Sale

- **For Sale from Chris Shoaff:** N9RIN cshoaff@yahoo.com
 - 30w 1296 MHz PA kit \$50 + \$5 for US shipping
- **For Sale from Bill Burns:** Bill will only rarely come to the meetings, so if you want any of this, please contact him by email at . . . bburns@mediacombb.net)
His address is: 247 Rebel Road Ridgecrest CA 93555 and phone: 760-375-8566
 - 8 watt 5 GHz TWT's with power supplies \$50 each
 - copper wire enamel coated #14 many feet coils \$10 each
 - Bencher BY1 Iambic paddle key \$90
- **For Sale from Doug Millar:**
 - a Rohde and Schwarz 309 10-18GHz Signal Generator in perfect shape. It is digitally synthesized and has a pull out instruction card. It has internal modulation and will also sweep. Will accept \$900.
 - I also have an HP432 power meter, cable and head (478) in working order for \$100



Member Ads

Sixty North Electronics

Kits Made by member KL7UW

Let Ed Cole assemble your Down East Microwave kit. For kits in stock, he can deliver an assembled unit to your custom design preferences within 30-days of a paid order. **His prices are the same as you pay DEMI for an assembled transverter, but much quicker delivery time. And comes with 90-day written warrantee on labor (guaranteed to work)!**

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For examples of his work click on... <http://www.kl7uw.com/kits.htm>

Contact him at kl7uw@acsalaska.net

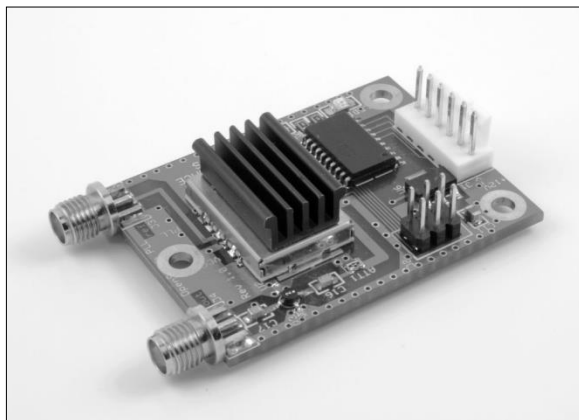
Member Ads Continued



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- ⤴ 2" x 1.5", 12V @ 140 mA typical

Available at <http://reactancelabs.com>



If you are a member you can have a picture ad here yourself.
For the time being this service is free.
eMail WalterClark@roadrunner.com

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 carpooling 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

Website: Rein Smit: 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.

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