



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1955

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

San Bernardino Microwave Society Newsletter

Dinner Before the May Meeting Marie Calendar's (see below)

Tech Talk for the May 4th Meeting . . .

"Offset Reflector Feed Horns" – Measured Results from Several Ku Band Satellite TV LNBS



I've collected several feed horns from Ku band systems and used them for my X Band rigs. These horns were designed for 12 GHz TV systems, but I'm using them at 10 GHz. I assumed they had wider beam widths at 10.368 GHz, but how much wider? Does it matter? I decided to test my offset feed horn collection to find out what their actual patterns were at 10.368 GHz. Some of these horns have been

mathematically analyzed by Paul Wade, W1GHZ. But I had 3 horns not previously evaluated by Wade. The most interesting is a 113 mm horn from Hughes Net systems, sometimes seen on gas station rooftops.

At the SBMS meeting on Thursday, May 4th I will present the feed horn patterns and share which ones I found to be best suited to my offset reflectors. So come out to the meeting and find out how to stop spilling expensive microwave power over the sides of your dish.

**Come and join SBMS at the American Legion Hall, Corona:
11th and Main (See map below.)**

Or watch the meeting "live" on the internet: <http://atn-tv.org/live> (see below for more)

Activities of the November SBMS Meeting

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

Presiding: Rein Smit W6SZ (18 in attendance... 16 last month)

Visitor: John Duncan KG6HCO son of N5BF

Not seen in a long time: Chris Shoaff N9RIN (San Clemente)

New Business

- Doug Millar K6JEY, Brian Thorson AF6NA, and Dave Glawson WA6CGR announced the “South Bay Microwave Society”, a hands-on build-something meeting at the SBMS lab at Dave’s QTH. Bring a box of parts from your garage to the lab and get something on the air. This is the same SBMS group of people but meeting at a different time for a different purpose. It was suggested that there should be a meeting before the summer contest season.
- President Rein Smit W6SZ opened the floor for annual SBMS officer nominations.
 - Mel Swanberg WA6JBD nominated Jason Sogolow W6IEE for President.
 - Dave Glawson WA6CGR re-nominated Rein Smit W6SZ for President.
 - Rein Smit W6SZ nominated Brian Thorson AF6NA for Vice President seconded by Pat Coker N6RMJ.
 - Brian stated that he was willing to continue for another year.
 - Dick Bremer WB6DNX agreed to stand for Treasurer again and train a replacement for the future.
 - Pat Coker N6RMJ re-nominated Courtney Duncan N5BF for Recording Secretary, seconded by Rein Smit W6SZ.
 - Larry Johnston K6HLH reported that Jeff Fort KN6VR (absent) was willing to continue as Corresponding Secretary.
 - Walter Clark agreed to continue as Newsletter Editor.
 - Dave Glawson WA6CGR agreed to continue hosting the Newsletter on his server.
- All officers for the 2017-2018 SBMS year were installed with Jason Sogolow W6IEE (on the right) as the new president.
- Rein Smit W6SZ is now on the board as Past President



Old Business

Dave Laag W6DL reported on SBMS badges: Jim Blum KK6MXP has the badges, the badge machine, and the material to put red on the badges. They now need a list of names and callsigns of all who will receive badges.

Treasurer Dick Bremer WB6DNX asked if we want to send badges to those who those who paid for them at Microwave Update 2015. Dave Laag replied yes, that that was what had started the badges project. Dave Clawson WA6CGR (at the left below) asked if the treasurer had a list of members who had not paid dues. Dick will try to compile a current dues list and MUD 2015 list for this purpose.



What Our Members Are Working On

(Remember you can watch these reports live on <http://atn-tv.org/live>)

Brian Thorson AF6NA (Norco)

showed one slide of his one meter horn test that he will report on next month. This is in support of his upgrade to a 1.2 meter dish for his 10 GHz station. Worked WA6CGR, WA6JBD, and W6SZ in last night's home-to-home 10 GHz event.

Pat Coker N6RMJ (Lake Los Angeles)

got 10 GHz up on the tower and worked W6SZ last night after he moved his station a little. Worked KK6MXP on Pleasant Peak. Heard WA6JBD but not enough to work. Conditions last night were 30 dB below normal. Santiago was copied but completely lost for 5 minutes at a time. Went to Las Vegas for the hamfest last month. Thursday the winds got up to 83 MPH but by Saturday for the swap meet it was 79 degrees F with 10 mph breeze, perfect.

Dave Laag W6DL (Marino Valley)

has been messing with an SDR receiver in his laptop computer that uses an off the shelf LNB. Once the door to the meeting room was open at just the right angle, we could hear Santiago beacon on open WR-75 waveguide without even using the horn antenna.

Rein Smit W6SZ (Alta Loma)

did EME with K6JEY last Friday. Last night did home-to-home with five or six participants. Conditions were poor. Was watching Frazier beacon but seldom saw it during the day.

Mel Swanberg WA6JBD (Upland)

got on the air with his repaired and cleaned 10 GHz omni for home-to-home last night. Worked WA6CGR, W6SZ, AF6NA, and exchanged tones with N6RMJ. Could have done CW at 11 p.m. but Pat didn't have his CW program going and Mel didn't have his keyer. Last night the home-to-home event had contacts going on three different frequencies. The 2304 GHz beacon still on the air and still being heard. AF6NA brought a waveguide slot antenna to play around with which may end up being the antenna in the final installation. Plotted phase noise measurements for K6HLH that were passed around.

Walter Clark (Fullerton)

spent about a hundred dollars of impulse buys on eBay of WiFi (2.4 GHz) stuff; splitters, attenuators, amplifiers, antennas etc. He showed off a 2.4 GHz power meter with a range of 1 nanoWatt to 1 Watt. A terminator shows -64 dBm. Thirty three bucks.



Larry Johnston K6HLH (Lake Los Angeles)

built a evanescent mode filter for 2304 from WR-62 waveguide (pictured). Tunes from 2 to 6 GHz. (2304 to 5760). 60 dB out of band attenuation with 2 dB insertion loss at 2304 and 3 dB bandwidth of 18 MHz. This Paul Wade W1GHZ design is easy to make, just a couple of screws and quarter inch tubing to make the capacitor. Also had WA6JBD to do phase noise measurements on his oscillator showing -70 dBc or so phase noise. These oscillators are \$50: 30 MHz to 4.4 GHz.

Jason Sogolow WB6IEE (Norco)

suggested an idea for a talk about software that will point a dish at the moon. Doug K6JEY related that Bill McNally N6NM is working with a Mead telescope mount with controller and auto calibration for 10 GHz EME. The system will track within about ten arc seconds. These can be found on E-Bay.

Chris Shoaff N9RIN (San Clemente)

is working on a board he found on E-Bay, a 54 MHz to 13.6 GHz PLL. \$73-\$75. Search for ADF 5355. Had a little trouble with the programming but now has it locking and plans optimizations. Also working on a 5760 MHz transverter board like the 3456 that SBMS did a while back. Also 2304 MHz. Next plans 1296 MHz. The board (mixer) itself will go 0.9-6.0 GHz and requires external LO filter on the transmit side.

Doug Millar K6JEY (Long Beach)

changed his sidewalk EME station around. Is now using his second K-3 which reads 1296 on the dial when used with the DB6NT converter and Demi 144/28 converter and a 150 W amplifier. Station also features the P3 Panadapter and a 24" monitor visible to all in the garage. Everybody working can see where the signals are. Saw N5BF and airplane bounces and maybe some EME. Worked no one in the DUBUS 23 cm EME event because Europe wasn't on at 0000 UT when the event started. Doug bought a Chinese vector network analyzer which works pretty well. It is by UKits. AD6IW makes an LNA with 0.2 dB NF on 1296 for \$100. Showed his clamp on ammeter for AC *and* DC which works down to 1 mA and goes for \$36. For sale: 40-60 GHz Tektronix mixer that goes on a Tektronix spectrum analyzer. It can also work on other bands as different intermediate frequencies still fall in low pass output. Also for sale: HP 437 power meter with calibration source that doesn't work and an HP 436 that goes with it. 3.5 W to 4.6 GHz. \$350. Other activity: Working on getting N6NM on 10 GHz EME.

Courtney Duncan N5BF (Eagle Rock)

participated in the DUBUS 23 cm EME last weekend, made 18 QSOs from Friday through Sunday afternoon and a direct across town contact with K6JEY / K5PV on 23 cm witnessed by Bob WA9JIB. Other participating stations reported up to 50 contacts indicating the level of activity. Blew out his G4DDK preamp before the event and dropped back to a poorer DB6NT backup. Also passed around broken 7/8 Helix N connector sawed off during a repair. Doug K6JEY said that Tony Long had fixed his G4DDK LNA for him. Doug also has noise figure equipment to peak up a repaired unit.

Dave Glawson WA6CGR (Wilmington)

worked W6SZ, N6RMJ, WA6JBD, KK6MXP, and AF6NA on Wednesday's home-to-home on the 10 GHz centrally located antenna at the lab which is a 16 dB omni. Listens to San Diego beacon all the time and can hear it about half the year. Last night it was about as strong as N6RMJ, consistently 10 dB out of the noise. Can also hear Frazier and Santiago. Received equipment from Frank WB6CWM and brought it tonight to give away. Also has a 5 Watt 24 Volt X-Band amplifier for sale: -9 dBm in for 1 dB compression \$350. Dave is getting the lab ready for people to come use it.



Dick Bremer WB6DNX (Brea)

had a conversation with Bill Preston who has many contacts at HP, Agilent, Keysight, whatever... at Walter's Tech Club that happens at Walt's house the week before the Fullerton Radio Club meeting. Bill indicated that he could find a Keysight speaker to do a Tech Talk for the club with some notice on a subject like the Field Fox, waveguides, switching relays, etc., any of HP's products. It was suggested that such a presentation might be followed by use of such equipment to measure preamps or other devices we might have.

Events of Interest to the Microwave Ham Community

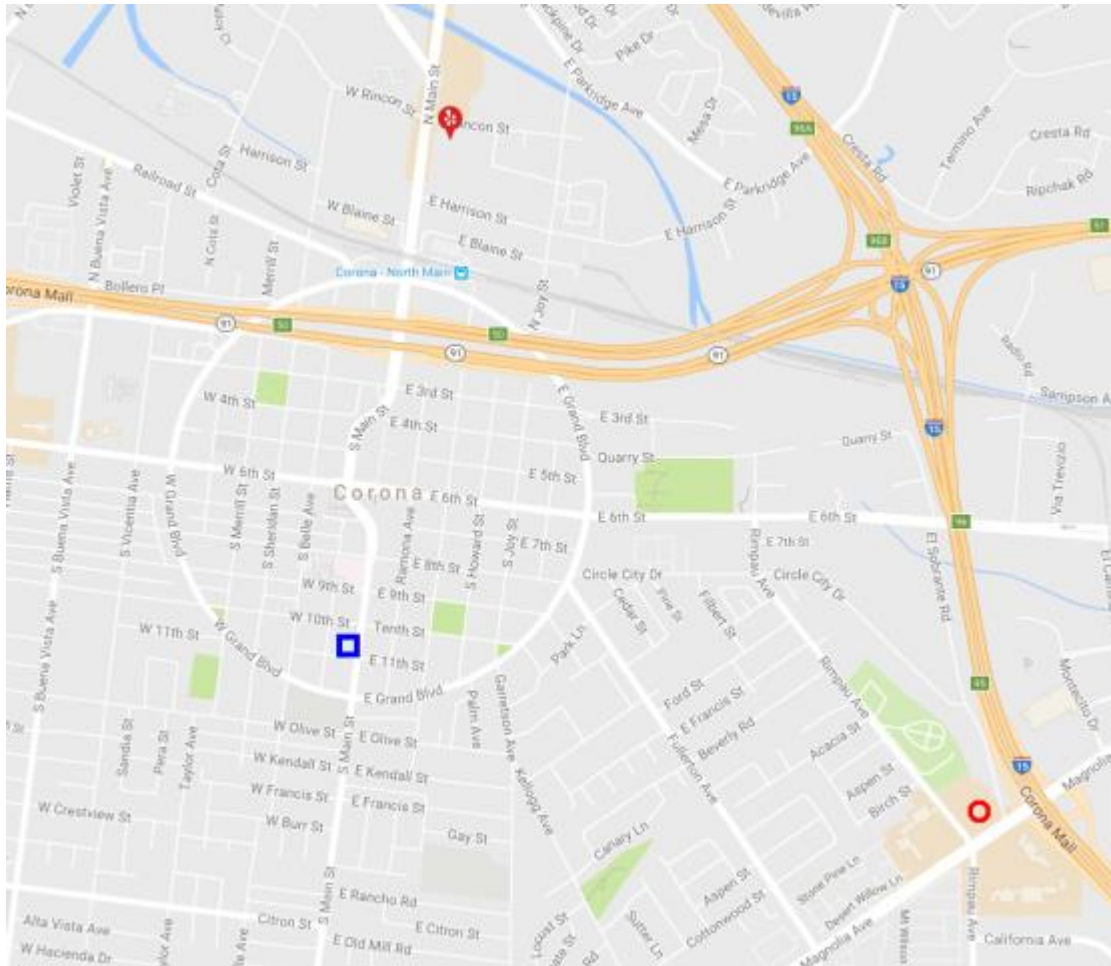
May 6, 7	SBMS 2 GHz & Up Contest & CSVHF Microwave Sprint
May 19, 20	Bay Area Maker Faire (world's largest)
June 1	SBMS Meeting
June 10, 11	ARRL June VHF Contest (Six meters through light)
June 24, 25	ARRL Field Day
July 6	SBMS meeting
August 3	SBMS meeting
August 5, 6	ARRL 222 MHz & Up Contest (Inaugural; distance-based)
Aug 19, 20	ARRL 10 GHz & Up – Weekend #1
September 7	SBMS Meeting
September 9 – 10	ARRL EME Contest, 2.3 GHz & Up
Sept 16, 17	ARRL 10 GHz & Up – Weekend #2
October 5	SBMS Meeting
October 7 – 8	ARRL EME Contest, 50 – 1296 MHz, 1st weekend
October 27 – 29	Microwave Update 2017, Santa Clara, CA
November 4 – 5	ARRL EME Contest, 50 – 1296 MHz, 2 nd weekend

If you have other events or more information on the ones listed; information that would help people decide whether to go or not, please send it to the editor at the email address below.

Dinner Before the Up Coming Meeting **Marie Calendar's**:

“Dinner-Before” is like a people capacitor in that it is a gathering place for those who are trying to beat the traffic and have a variety of distances to come from. Some arrive as early as 4:00.

This month: Marie Calendar's is on the north side of the 91 and as you can see here, both easier to get to and easier to get to our meeting place from there. North on Main, over the train tracks and right on Rincon.



There's the main dining hall of course, but three private rooms. We will be in The Library Room which seats 10 to 15. Just ask at the desk.

Gary Heston's ATV Mobile Studio W6KVC

Not only can you watch our meetings live (well delayed by 240 milliseconds). You can chat with other viewers about what you are watching (or anything else).

This is how to watch SBMS meetings from home:

<http://atn-tv.org/live>

What you will see is this →

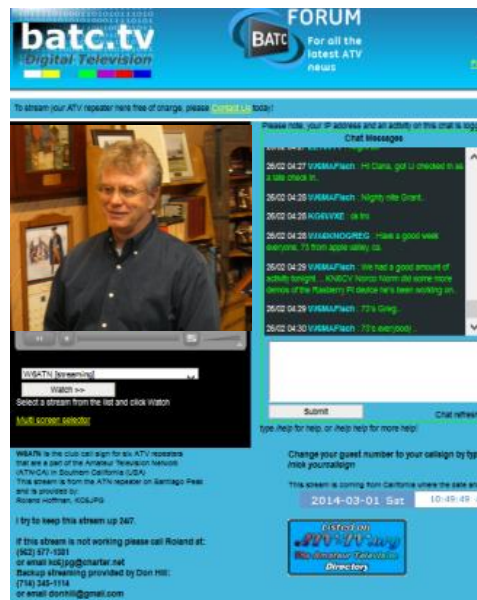
It's a British website (that's the B in batc.tv) You do not need to log in to be able to watch the video and participate in the chate. On the right choose "Repeaters" and then on the left, you have to pick a stream. The stream to choose is: **W6ATN**. This should be easy to memorize: W6 for California, then ATN as in Amateur Television Network.

W6ATN is the club call sign for eight 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 maintained by Mike Collis WA6SVT. From there Roland Hoffman, KC6JPG puts it on the internet by way of BATC.TV described above.

When Roland Hoffman is substituting for Gary Heston at the SBMS meeting, he streams to the internet directly by way of a mobile hotspot to a cell phone tower, thereby eliminating two lower bandwidth RF paths (SBMS to Santiago and Santiago to Roland's QTH). The RF signal that goes to the Amateur Television Network (ATN) uses DVGT (Digital Video Broadcast-Terrestrial) standard. It is the European standard for over the air TV. The "terrestrial" part is a format that is better with multipath. The only difference ATN has done is use 2 MHz B/W to fit within the 433-435 space between the weak signal and satellite sub bands.

- He transmits analog first.
- Snow Peak is the first digital station.
- There is a 2-3 second delay to digital users.
- There are also nodes on Mt. Potosi and Mt. Lemmon.
- Note: some meetings are recorded for archive.



There will be a large number of items brought to the meeting from Chuck, WA6EXV's station and lab. Chuck is no longer able to remain active, so at his and his family's request, these items are being given to SBMS members. There will be amplifiers, attenuators, oscillators, waveguide, coax and waveguide switches, RF adapters, filters, antennas, N, SMA, etc. etc. etc.



You really don't want to miss this. These items are free, not to be sold, through the generosity of Chuck and his family. They very much want these items to be passed on to get reused and repurposed. This is good stuff, not junk. As this is more than one car load, this will be ongoing at the meetings until everything is gone.

Mel - WA6JBD

Home to Home

This Wednesday Evening; (don't forget)

Rein Smit, W6SZ (Alta Loma), President SBMS is encouraging all Southern California microwave hams to try contacting each other from their QTH the night before the SBMS meeting.

**The intent is to learn home
to home capabilities and to
discover tricks to use them.**

Wednesday April 5th, 10,368.100 MHz, CW or SSB.
WA6JDB, N6RMJ and W6SZ will be looking/listening for your signals.



Don't forget, this Wednesday, April 5th is 10 GHz activity night. We'll be listening on 10368.100 starting at 21:00 PDT. I'll actually start listening at around 20:30, time permitting.

We have been using the LARA Santiago repeater for liaison. Since that doesn't cover the high desert, we will use the LARA/Cactus repeater located on Heaps Peak, so the desert dwellers can check in,

The frequency is 448.86- PL 100.0 It will be configured in a stand alone mode so it doesn't bother anyone.

Mel - WA6JB

Pat Coker's Prodelin on
his tower. 9 watts at 75'

"Provided a time sufficiently before or after the QSO party's time, W6SZ can position his radio before his home and can then utilize Keller Pk as a bouncing point for working points to the north."

Rein W6SZ

Microwave Mystery Gizmo of the Month



How could you guys miss this....
It's a smores making device for your Microwave Oven.
Sheeesh.

If you would like to discuss this, use the SBMS Reflector by sending an e-mail letter to . . .

[SBMS at-symbol lists.altadena.net](mailto:SBMS@symbol.lists.altadena.net)

If you don't have an account sign up at this website:

[sbms at-symbol ham-radio.com](http://sbms@symbol.ham-radio.com)

This mystery gizmo was submitted by Doug Millar



The March Tech Talk was Given by . . .

Dr. Doug Millar, K6JEY

"Microwave Power Meter Accuracy and Measurement Clinic"



Doug held a **power measurement clinic** at the April SBMS meeting.

Two power meter sensor calibrators were available to measure sensors from +20dbm to -70dbm. Guys brought their power meters for comparison with Doug's.

Needs, Wants and For Sale (updated 29 April 2017)

For Sale from Bill Burns: Bill will only rarely comes to the meetings, so if you want any of this, please contact him by phone or email.

phone: 760-375-8566 email: bburns-at-symbol-mediacombb.net

His address is: 247 Rebel Road Ridgecrest CA 93555

- Three IC-22S two meter FM rigs **free**
- 1 meter offset feed dish and 10 GHz feed \$20.
- Steel TV push-up masts **free**
- aluminum tubing, ½ inch to 3 inch diameters, 1/16th wall **free**
- Stainless steel powder cans 15 inches in diameter by 23 inches high with lids **free**
- Power pole 14.5 ft tall by 1 ft diameter **free**
- Many round meters, ma, volt, frequency, misc. **free**

Sixty North Electronics (as of April 29, 2017)

"Thank you for allowing me to advertise my small kit making business in the SBMS Newsletter.

I am discontinuing my kit making service at this time. I want to thank all my customers for allowing me to build their kits. We are going to do some retirement travel and enjoy having more time for my own ham radio endeavors. This applies to both the DEMI kits and W6PQL amplifiers that I constructed.

I will continue to service PayPal orders of WA2ODO preamps:

http://www.kl7uw.com/WA2ODO_PayPal_Sales.htm

73, Ed - KL7UW <http://www.kl7uw.com>

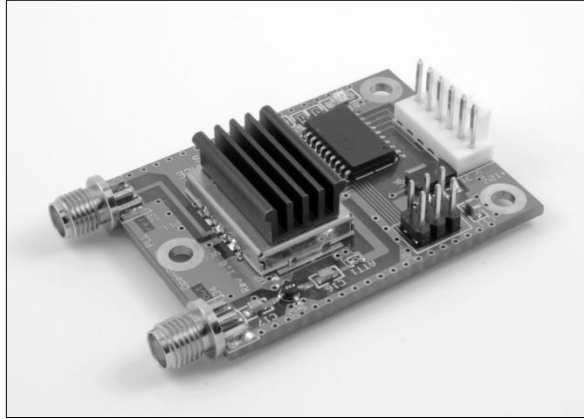
Dubus-NA Business mail: dubususa@gmail.com



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>



If you are a member you can have a picture ad here yourself.
For the time being this service is free.
eMail the editor at: WalterClark at 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).***

Official Address

San Bernardino Microwave Society
417 South Associated Road #146
Brea, CA 92821

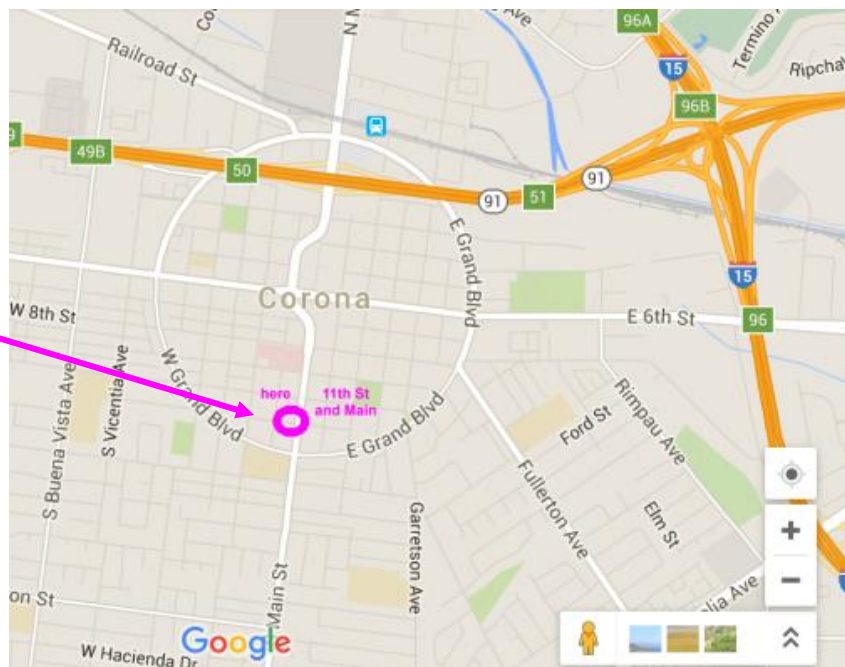
SBMS dues are \$15 per year, which includes a badge and that's about it. The dues are more in the way of a donation to pay for outreach things such as video portals, a bank account, and rent for the building. When to pay is not a matter of remembering. The Corresponding Secretary will contact you by 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**

**Google Map:
Keywords: American
Legion Hall, Corona**

For carpooling from North
Orange County call Dick
Bremer at: 714-529-2800

If you can't make it:
watch online through Gary Heston's mobile video facility W6KVC by way of
the internet out of England: <http://atn-tv.org/live>



Services Sponsored by SBMS

The Reflector (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> After that, Send your email message to: sbms at-symbol ham-radio.com. (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.)

Responsible person for this: Dave Glawson WA6CGR wa6cgr at-symbol ham-radio.com

Website: Rein Smit W6SZ: rein0zn at-symbol ix.netcom.com

The URL is: <http://www.ham-radio.com/sbms/> But you don't have to memorize that or write it down, just enter SBMS into any internet search engine.

Newsletter: Walter Clark: walterClark at-symbol roadrunner.com

The newsletter is distributed by way of the SBMS Website: www.ham-radio.com/sbms. The purpose of the SBMS Newsletter is to keep hams everywhere in the world informed on current activities of the "active" members of the San Bernardino Microwave Society. Active Members include those who:

- come to the meetings and share their progress
- use ATV to report in and describe their projects
- send by email words and pictures of progress to the above

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 - come to the meetings and share their progress
 - use ATV to report in and describe their projects
 - send by email words and pictures of progress to: walterclark at-symbol roadrunner.com
- Time sensitive questions, reports or just plain bragging is for the SBMS Reflector. Send your email message to: sbms at-symbol ham-radio.com. To sign up go to:
<http://lists.altadena.net/mailman/listinfo/sbms>

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