

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

Brian Thorson is vacationing in Hawaii but he wants to congratulate California Amateur Microwave Operators who made a really great showing in the recent 10 GHz and Up Contest in both the scoring and distance measures!

At the February 2nd meeting we will celebrate their achievements.

Those of us who have worked with Pat Coker → N6RMJ will be given the opportunity to share any congratulatory words or humorous stories at the meeting. So come out and celebrate the California contest sweep with us.



Tech Talk for the February 2nd Meeting . . .

A California Sweep!



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

Or watch the meeting on the internet <http://atn-tv.org/live>

Activities of the November SBMS Meeting

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

Presiding: Rein Smit W6SZ (17 in attendance... 14 last month)

Guests or Members Not Seen in a Long Time

Jason WB6IEE - has recently moved from Burbank to nearby Norco.

ATN Check-ins None

ATV Check-Ins None

Chatroom Check: Roland KC6JPG reported 19 people watching on the internet.

Old Business

- Dave Laag W6DL reported on the W6IFE trusteeship has completed its move to W6DL after six months dealing with the paperwork. He handed copies of the paperwork to Treasurer Dick Bremer, WB6DNX. Dave greatly appreciates former trustee Ed W6OYJ's trusteeship for many years.
- Dave W6DL, will resume work on new badges now that he is done with the trustee paperwork.

New Business

- Gary Heston K6KVC plans to attend the Quartzite Hamfest January 22-28, 2017 which consists of 900 events, some ham related. Most participants bring and stay in campers or tents. Will have microwave gear if anyone else wants to show up for demos.
- **Dues**
Dick WB6DNX announced that dues will be due in April. There is confusion about the dues date and in that they still seem to be trickling in throughout the year. There was some discussion about whether the change (to once a year) was warranted? Dues are \$15 per year, due at the April meeting. So if you want to save \$15, don't show up at the April meeting. I guess.
- Brian AF6NA announced that officer elections would be held in April so it is time to start thinking about future club service.

Events of Interest to the Microwave Ham Community

March 4 CACTUS Annual Meeting (for those who are members)
April 6 SBMS Meeting
May 4 SBMS Meeting
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)
Aug19, 20 ARRL 10 GHz & Up – Weekend #1
September 7 SBMS Meeting
Sept 16, 17 ARRL 10 GHz & Up – Weekend #2
October 5 SBMS Meeting
November 2 SBMS Meeting
December 7 SBMS Meeting

Dinner Before the Up Coming Meeting . . .

“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.

Sizzler . . . yet again. (crap, I'm getting tired of that food)

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 →

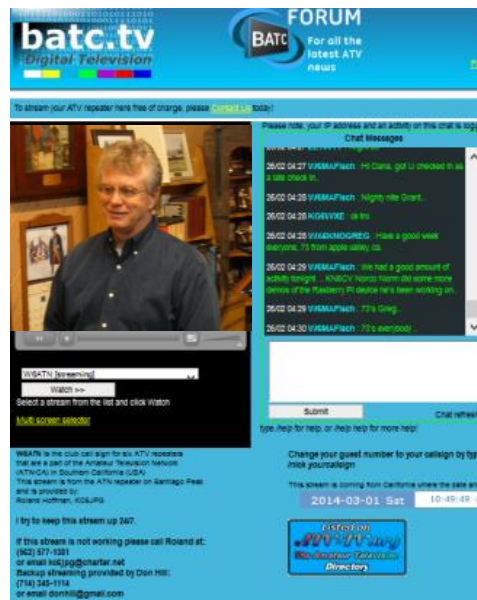
It's a British website (that's the B in batc.tv) You do not need to log in to be able to watch the video and participate in the chate. On the right choose "Repeaters" and then on the left, you have to pick a stream. The stream to choose is: **W6ATN**. This should be easy to memorize: W6 for California,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



What Our Members Are Working On

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

Brian Thorson AF6NA (Corona)

built a test fixture for feed horn tests that he will report on next month. Helped his son on a science project with help from Walter Clark.

Rein Smit W6SZ (Alta Loma)

reported on the home to home 10 GHz QSOs last evening. The 12 V. supply didn't work on his amplifier. WA6MEM was there. Now using Raspberry Pi for WSJT JT65 WSPR instead of laptop. Easier to carry around. LINRAD for weak signal work is now running too.

Dick Bremer WB6DNX (Brea)

got a new computer and printer so can resume production the treasurer's printouts.

Walter Clark (Fullerton)

demonstrated an acoustic rangefinder operating at 42 KHz; 0.8 inch wavelength... "audio microwaves." Intended for a range adjustable intruder warning system. He has plans to improve it. (see picture)
Courtney N5BF pointed out that since the speed of light is about a million times the speed of sound, this wavelength was similar to 42 GHz microwaves.



Jason Sogolow WB6IEE (Norco)

Started new job last summer working nearby on aircraft X-Band weather radar. The guy he works next to was throwing away a bunch of rotating waveguides and he brought a few for our examination. (Jason on the left in the picture below) Also brought a big coil of elliptical EW-63 waveguide (6 GHz) to give away. (That's Dave Laag, on Jason's left. Dave was our speaker this night.)

Dave Laag W6DL (Marino Valley)

discussed the Harris 1 Watt amplifiers that he has been working with. As Mel WA6JBD has pointed out, there are two different model numbers. One of them is 3 Watts up to 11 GHz and can be operated for 1.25 "linear" watts. On one instance of the other model number that has a higher frequency range, Mel gets close to 5 Watts. Dave's gets more like 1.7 or so Watts, a little more than the other, for 50% more power draw. Dave thinks it may be defective and/or have lower gain, or he may not have a big enough driver. Found some 10 GHz filters on E-Bay.



Bill Locke N6WL (Baker CA)

has some drivers Dave might be able to use.

Mel Swanberg WA6JBD (Upland)

tried the home to home activity last night but wasn't able to talk to Rein . . . only a mile away. His rig worked normally on the bench but doesn't know about how his outdoor antennas have fared in the rain. He opened the waveguide at the bottom and no water came out. He thought he heard Dave and Larry talking but not certain. Swept the antenna and it didn't look right. Right now we have no 10 GHz beacons in the region except Frazier: San Diego, Santiago, and Palos Verdes are all off the air. (Mel can't see Frazier from his house.) Progress on the 2.3 GHz beacon: Mel has set up an omni antenna at the house for testing. Three things need to happen all at once to proceed: no rain, daylight, and not at work. Have not had that in the last month so it's not done yet. Club needs to decide what to do about a permanent mountaintop antenna. Will make a recommendation next month. The site will probably be Johnstone. Played on E-Bay and acquired a couple of receivers, one of which was a mint IC-7100.

Frank Kromann AG6QV (Trabuco Canyon)

will soon be W7/AG6QV as he is moving to Seattle next week for a new job at Amazon. Has had a lot of fun with SBMS for the last four years and will continue to be a member and will visit when he's in town and will participate by internet otherwise. Still working on his new 10 GHz rig but slowed down over the holidays. He will be designing the LNA and PA next.

Larry Johnston K6HLH (Lake Los Angeles)

said his tower is down and his excuses include: rain, wind, cold, and tired. Working on an LO and a little controller that produces 38 MHz to 4.4 GHz with -4 to +5 dBm out of the PLL board on any frequency in range. He designed a board to amplify the output to +18 dBm which was his first perfect design and was produced for \$5 per square inch and was completed with parts from OSH.

Courtney Duncan N5BF (Eagle Rock)

drove his daughter Viannah KG6GXW in a moving-truck to Baltimore, Maryland over the holidays for her new job. Tried local repeaters in DC area but the ones he could hit with an HT had no linking back west. Returned yesterday by air. Made a few new EME contacts before leaving including Mexico, Virginia, a few others.

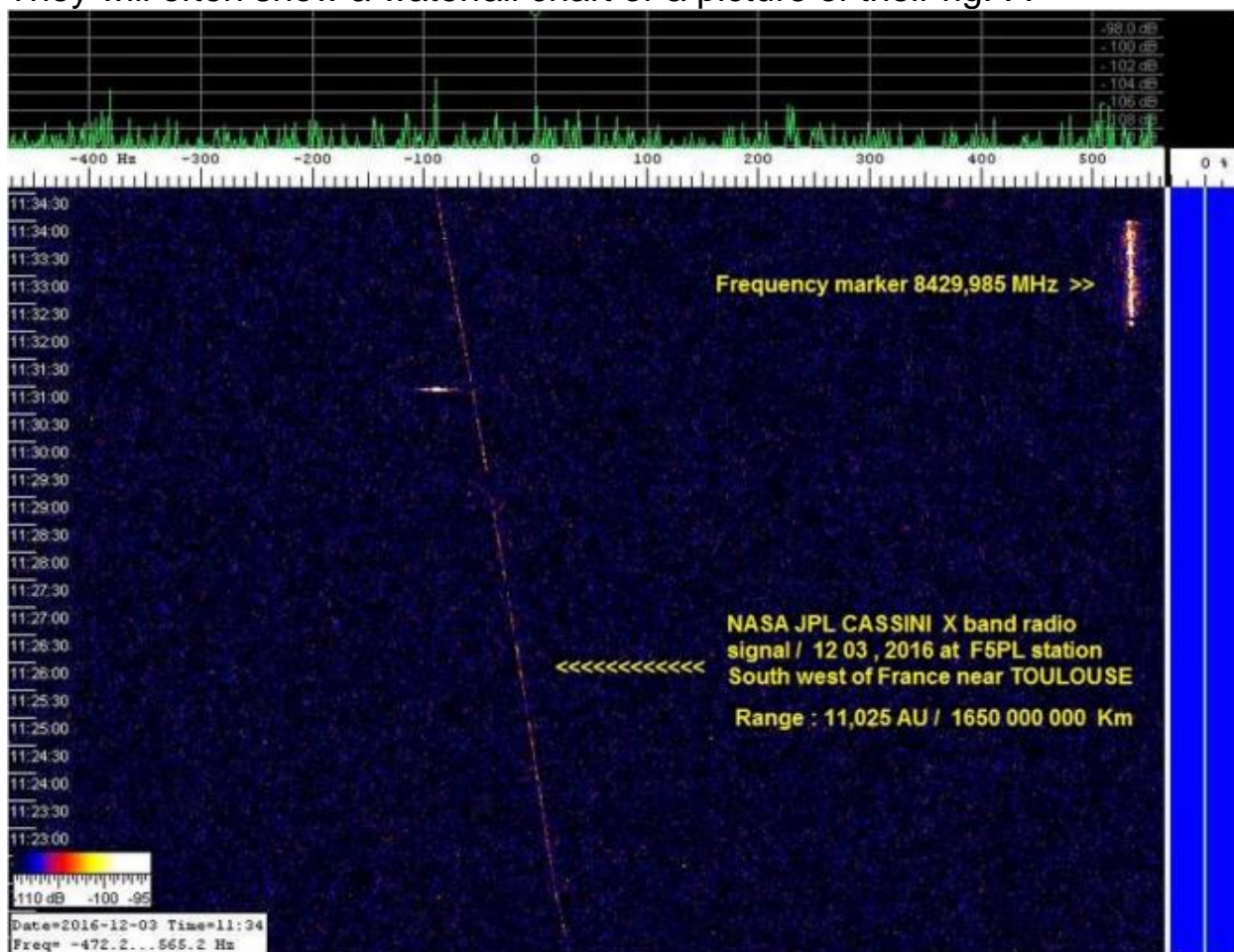
Amateur DSN (Amateur Deep Space Network)

is also microwave oriented hobby in that spacecraft they search for are about 8 GHz. Most of them are hams and some have pretty impressive dishes. When someone makes contact no QSO cards are exchanged. Instead they send out an announcement. Here's what one looks like . . .

Hello , Bonjour ,
CASSINI spacecraft detected today with a good signal on X band .
Parameters are :
- 12:35 UTC F = 8429,9847 MHz .
- Doppler shift = +49492 Hertz
- Signal strenght = + 8 dB (1 Hz) . Quoted DSS63 : - 130 dB
- Distance at Earth : + 1 650 000 000 Km / 11,025 AU

73s Bertrand F 5PL / JN03XG

They will often show a waterfall chart or a picture of their rig. . .



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 February 1st, 10,368.100 MHz, CW or SSB.
WA6JDB and W6SZ will be looking/listening for your signals.



Just for inspiration here's Rein's rig which he can either take with him in his van or drag out to the driveway during home to home.

Microwave Mystery Gizmo of the Month



If you want to declare what this is, or would like to discuss this once it has been identified, use the SBMS Reflector by sending an e-mail letter to . . .

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

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

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

The January Tech Talk was on . . .

the implementation of highly integrated microwave phase locked loops. The presentation by Dave Laag W6DL focused on two primary aspects of such technology.

First, the actual VCO portion of the system was considered. Hittite as well as other MMIC manufacturers have a wide variety of available products. The primary marketplace for these devices is commercial and military but there is sufficient crossover that Amateur bands are covered.

Careful selection of the VCO MMIC will allow the implementation of fixed frequency local oscillators for any favorite IF frequency.

Coupled with the VCO MMIC is the actual PLL integrated circuit. Again there is a wide variety of devices available and a couple from Analog Devices were highlighted. Many other manufacturers are in this market with a broad offering of options. Amateurs need to carefully pick through the "Bells and Whistles" to determine what is best for their application. We are primarily interested in fixed frequency applications and almost all options are wasted on us.

Two complete PLL LO architectures were considered, the Integer N and Fraction N. It was shown theoretically and by actual application that a significant improvement in phase noise can be achieved by using the Fraction N with careful consideration of loop filter parameters. Not covered were schemes that convert the VCO to a lower frequency for locking though these architectures may offer further improvement in phase noise.

The concept was well received by the group. This will lead to some follow-up discussions at future meetings.

The completed system consists of several "bite sized" modules. For the VCO, the MMIC needs to be placed on a piece of microwave rated PC board. A Rogers produce was proposed and we have found a couple of labs that will work the material for us. To quote the cost we need artwork. Someone who has RF/Microwave board design experience is needed to produce a board design. Any volunteers?

The VCO and PLL assemblies need to be mounted into a milled Aluminum box. Anyone have experience in this area? Brian has already done some work in this area.

The PLL IC will need to be driven by a device like an Arduino to upload frequency locking parameters. Again, anyone interested in taking on this part of the project?

We can have some follow-up discussion at the upcoming meetings.

David E. Laag <dlaag at clubnet.net>

Needs, Wants and For Sale (updated 29 January)

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@mediacombb.net

His address is: 247 Rebel Road Ridgecrest CA 93555

- 1 meter offset feed dish and 10 GH feed \$20.
- Andrews Microwave dish 8 ft solid aluminum *free*
- Steel TV push-up masts *free*
- Lengths of 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*
- Rocket boxes 11 inches by 11 inches by 28 inches *free*
- Power pole 14.5 ft tall by 1 ft diameter *free*
- Many round meters, ma, volt, frequency, misc. *free*
- Mobile HF antenna elements (poles \$20 and resonators \$20) for mounting on a spring on your bumper (if you happen to have a bumper on you late model car).

Member Ads

Sixty North Electronics (as of October 1)

Ed Cole has begun a new line of 2m 80w Linear Amplifiers which can be seen on my website:

<http://www.kl7uw.com/kits.htm>

Ed can no longer order kits from Down East Microwave which are to be resold as assembled units. However if you have purchased a kit and decide not to build it yourself, he can assemble that kit and for no shipping charge, send the working radio back to you. You will have to pay DEMI for shipping and of course pay for shipping the kit to Ed. For details and assembly rates contact Ed at the email address on the next page.

Ed can now do PayPal Sales of the popular "WA2ODO" preamps built by Pete Manfre. This covers 50-MHz thru 2.3 GHz. If not wanting to use PayPal contact "Pete Manfre" [pmanfre at-symbol gmail.com](mailto:pmanfre@symbolgmail.com), directly. [http://www.kl7uw.com/WA2ODO PayPal Sales.htm](http://www.kl7uw.com/WA2ODO_PayPal_Sales.htm)
He will also make many of the kits offered by Jim Klitzing - W6PQL: [http://www.w6pql.com/parts i can provide.htm](http://www.w6pql.com/parts_i_can_provide.htm)

Contact Ed for a quote.

All of Ed's work is covered with a 90-day warrantee on workmanship.
Ed Cole <kl7uw at-symbol acsalaska.net>

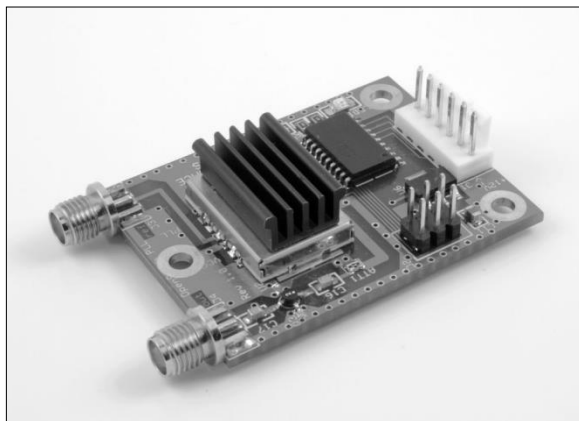
For examples of his work click on... <http://www.kl7uw.com/kits.htm>



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>



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

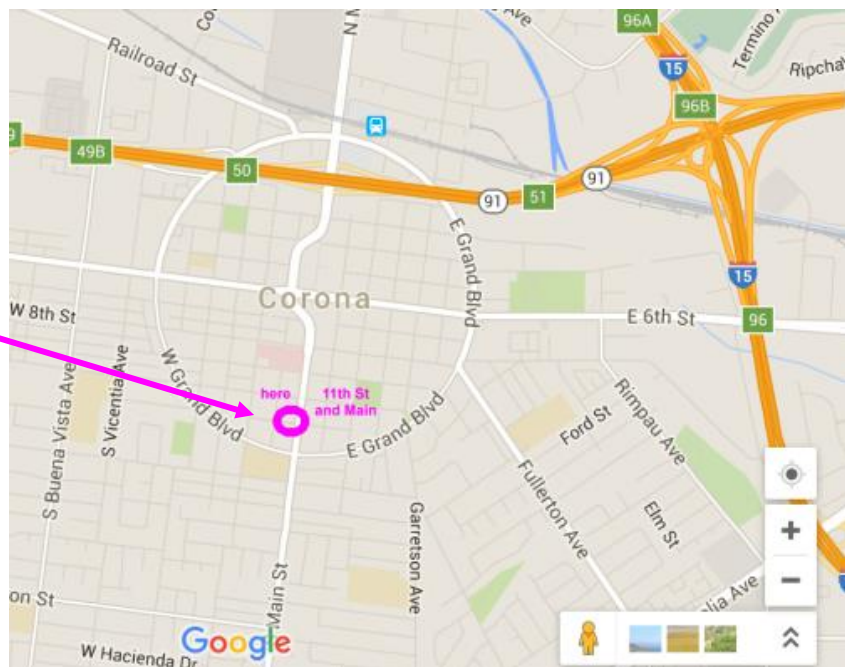
SBMS dues are \$15 per year, which includes a badge and that's about it. The dues are more in the way of a donation to pay for outreach things such as video portals, a bank account, and rent for the building. When to pay is not a matter of remembering. The Corresponding Secretary will contact you by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