



**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**

### **Activities of the August SBMS Meeting** (... which would be of interest to the General Ham Radio Community)

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

**Guests Or Members Not Seen In a Long Time**

**ATN Check-ins**

#### **Before Meeting Discussion**

The Brazil to Namibia 2 meter JT contact

Wayne, our speaker seemed to be most informed on that. He said that it was ruled a false decode by WSJT software author Joe Taylor K1JT. What counts as a completed contact was also discussed. If such a path is completed, this is significantly further than the California to Hawaii records being discussed tonight.

Your editor pointed out that if WSJT software is what allows signal to noises in the one percent, shouldn't Joe Taylor be getting most of the damn credit?

#### **Old Business**

- Mel Swanberg WA6JBD has made mechanical progress on the 2 GHz beacon project: getting the exciter in shielded box.
- Dave Laag W6DL is working on a process of transferring the W6IFE trusteeship from Ed Munn W6OYJ. The renewal has been completed. In attempting to transfer the callsign, it was discovered that there is no FRN (Federal Register Number) in the FCC database for W6IFE. Dave is currently working on getting an FRN number so the transfer application can be processed.
- SBMS member badges. Now has the required artwork example in that Dave found his old badge while preparing for the 10 GHz contest.

## Dinner Before the Up Coming Meeting . . .

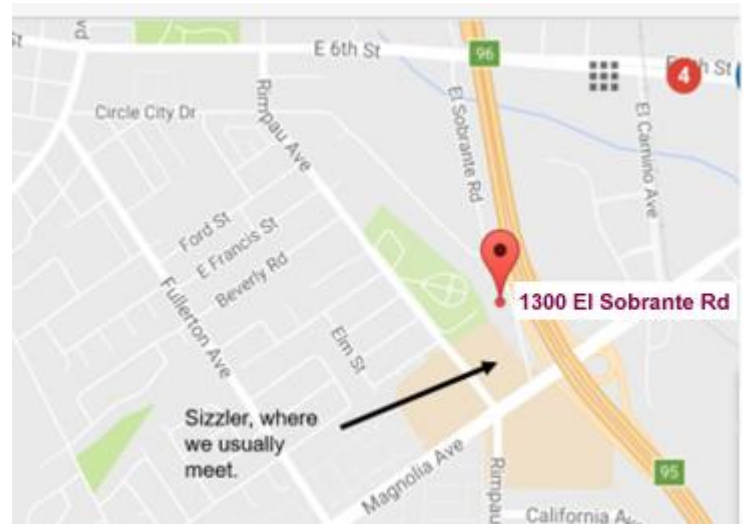
“Dinner-Before” is like a people capacitor in that it is a gathering place for those who are trying to beat the traffic and have a variety of distances to come from. Some arrive as early as 4:00.

We are back at Sizzler for November.

DINNER MENU	
TASTERS & TAPAS	
AUSTRALIAN LAMB CHOPS (2) Fresh Ground Pepper and Rosemary	\$14.99
CRAB CAKE (3 or 6 oz.)	\$11.99
1/2 w/ Mango & Peach Cilantro Salsa and Jalapeño Aioli	\$19.99
CALAMARI TEMPURA RINGS 1/2 w/ Lime Aioli & Spicy Cocktail Sauce	\$10.99
CRAB STUFFED MUSHROOMS (3)	\$12.99
Crab Stuffed Baby Portobello Mushrooms w/ Crispy Bacon and Japanese Bread Crumbs 1/2 w/ Cilantro Hollandaise Sauce	
AHI POKE	\$14.99
Sashimi Grade Tuna, Onion, Ginger, Soy, Vinegar, Sesame Seeds, Lemon Juice, Red Chili Sauce	
OYSTERS ROCKEFELLER (3 or 6)	\$8.99
Creamed Spinach, Parmesan Toasted Bread Crumbs (Optional Bacon Bits)	\$17.99
JUMBO SHRIMP COCKTAIL (4)	\$12.99
Spicy Cocktail Sauce, Lemon Wedge, Iceberg Lettuce	
CARPACCIO OF BEEF FILET (2oz)	\$11.99
Truffle White Balsamic Dressing w/ Mache, Cracked Pepper, Pine Nuts, Shaved Parmesan	
BACON WRAPPED SHRIMP (4)	\$12.99
Stacked and filled with melted Pepper Jack Cheese and wrapped w/ Smoked Cherrywood Bacon	
ROASTED BRUSSEL SPROUTS	\$10.99
Oven Roasted w/ Crispy Cherrywood Bacon, Select Herbs, Syrupy Balsamic	
CHARCUTERIE & CHEESE PLATE	\$18.99
Select Hard Salami, Prosciutto, Brie, Smoked & Hard Cheeses, Fig Jam	

The **Toasted Barrel** (just below Sizzler's) is now open but **turns out** that you can't get out of there for less than \$30 because they sell alcohol. It's dark and quiet which means it's for sophisticated people who are super friendly, have a life and lots of time to talk, not hams.

The **Toasted Barrel** is where Coco's used to be and they have been doing major renovation for months.



## Upcoming Events

- Nov 19–20: ARRL EME Contest  
50 MHz through 1296 MHz part 2

## 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 Above ATN is a Sister Hobby to Microwave Amateur Radio. Another is Amateur-DSN.

The DSN in Amateur-DSN stands for deep space network. It is a bunch of guys throughout the world who network by way of email and what they share is contact with interplanetary spacecraft. The frequency they monitor (8GHz) doesn't change much so spectral analysis is not as important as it is for amateur radio astronomy types, but their dishes are as big. Usually nothing much is going on and then NASA turns up the transmitter on a spacecraft and all of a sudden the amateur-DSN group email gets real busy; 6 or 8 a day. This is typical of the kind of messages you see in the email network when something exciting is going on. (These are from F5PL, Bertrand Pinel.)

Exomars TGO is transmitting "full output" few hours on a day for ranging purpose. Big ESA DSN using Quasar references for to compute with a high accuracy TGO trajectory, approaching the red planet. Best 73s F5PL

Here's another on the same event:

Exomars TGO transmitting at this time  
with a " terrific " signal .

8410,302 MHz

+35 dB ( Hz )

73s F 5PL

Not any problem for to catch the carrier  
the aiming of the dish to Mars planet

Sometimes the equipment used by these guys is quite affordable. Remember that they are tracking the carrier and not decoding the information. This rig belongs to Bertrand Pinel.



For more visit <http://www.nitehawk.com/f5pl/>

It may seem crazy that such a small horn can receive a signal from a spacecraft near mars, but others have reported similar stories...

Reception of the Cassini probe at Saturn has been reported on dishes as small as 5 feet.

## Fact Check . . .

***Here's a back of the envelope calculation from our own Courtney Duncan (who works on these very spacecraft)***

The difference between the 34 meter NASA DSN dish and Bertrand Pinel's horn is probably over 60 dB. The gain at 8.4 GHz for 34 m. is about 68 dBi. Also, the NASA system noise temperature (entire system) is about 30 Kelvins. Bertrand's is probably more like 100-150; another 5-6 dB.

At the 34 meter DSN dish, however they are recovering the carrier and all the subcarriers and all the data on those subcarriers, 10s or 100s of thousand bits per second.

Bertrand is just seeing the main carrier in a waterfall; enough signal to define a trace, but not even one moment of signal-above-noise every scrolling epoch. So he's definitely seeing it, but it's less than 3 dB SNR in a 2 Hz bandwidth (the bandwidth of a bin in the waterfall). Compare that to the 34 meter DSN which is probably recovering something like a MHz or most of a MHz bandwidth. At least 50 dB different.

A similar calculation can be made for 5 meter dish and Cassini around Saturn.

Here's a fascinating link for more on NASA's reception: <https://eyes.jpl.nasa.gov/dsn/dsn.html>



On the lower right you can click on "more information" and see what the signal levels and bit rates are from operating DSN apertures.

73 Courtney

It is absolutely thrilling that you can detect anything at all from so far away. Don't expect a SWL QSO card though. They are a bit busy.

Is there any SBMSers out there that want to have a look? Nothing to buy. Apparently, all you have to do is use Spectran or equivalent at the frequency noted by Bertrand above. Oh and a current map of the heavens to locate Mars.



# YET ANOTHER . . . Sister Hobby to Microwave Amateur Radio: SARA

The Society of Amateur Radio Astronomers (like the amateur deep space guys) keep in contact principally by way of group email. Where amateur-DSN types are most interested in quiet amplifiers and very narrow bandwidths, SARA are most interested in many spectral lines. Needless to say they are not interested in images of space like amateur “optical” astronomers are. Like microwave hams rubidium frequency standards are of interest. Here’s a recent email message from Michiel Klaassen to show their interest in spectrum...

Hi All,

I wondered if there were more interesting frequency lines than those in my molecule list. And there are; like the so called recombination lines.

He goes into the physics of recombination and then ends with this . . .

... I also saw that the intensity was very weak; it took 14 hours of integration time for the first line above to give a 0.2K peak.

I contacted Michiel Klaassen for some introductory words on amateur radio astronomy.

The next thing to know is that you get no result by just looking at a spectrogram (such as Alberto’s, I2PHD Spectran).

You must add all spectra together during 5 minutes (about 100,000 spectra) or more, while tracking the source. (An exception to tracking, is the capturing of hydrogen at 1420MHz which of course can be seen everywhere).

Regards, Michiel

Michiel listed for me all the astronomical frequencies within all the ham bands, but here I’ve sampled from his rather lengthy list just those most popular to SBMS types:

Ionized Helium Isotope (3HeII) 8665.65 MHz 8660.0 - 8670 MHz  
Methanol (CH<sub>3</sub>OH) 12.178 GHz 12.17 - 12.19 GHz 3), 6)  
Formaldehyde (H<sub>2</sub>CO) 14.488 GHz 14.44 - 14.5 GHz 3), 4)  
Cyclopropenylidene (C<sub>3</sub>H<sub>2</sub>) 18.343 GHz 18.28 - 18.36 GHz 3), 4), 6)  
Water Vapour (H<sub>2</sub>O) 22.235 GHz 22.16 - 22.26 GHz 3), 4)  
Ammonia (NH<sub>3</sub>) 23.694 GHz 23.61 - 23.71 GHz 4)  
Ammonia (NH<sub>3</sub>) 23.723 GHz 23.64 - 23.74 GHz 4)  
Ammonia (NH<sub>3</sub>) 23.87 GHz 23.79 - 23.89 GHz 4)

Michiel’s website is <http://parac.eu/projects.htm>

He recommends as a starting point the most simple way to capture the 21cm signal of neutral hydrogen; project MK9. (<http://parac.eu/projectmk9.htm>) 21 cm line is so bright there’s no need for a dish.

The software needed is described in project MK4.

(<http://parac.eu/projectmk4.htm>)

In project MK3 a 22” dish is used to get more signal area. (<http://parac.eu/projectmk3.htm>)



In HS01 a radio amateur uses a 3m dish; very good results. (<http://parac.eu/projecths01.htm>)

SARA types get together several times a year (typically New Mexico and Virginia) at very well attended conference. For more on the society itself: <http://radio-astronomy.org/>

# What Our Members Are Working On

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

## **Frank Kromann AG6QV (Trabuco Canyon)**

missed the last meeting being on a 2 meter contest in Europe. It didn't go as well as last year, rain poured down for 24 hours. Just as they were packing up lightning struck where their equipment had been.

He's collecting parts for new 23 cm antenna.

The new 10 GHz transverter project is nearly to the point of both transmit and receive capability

## **Bill Locke N6WL (Baker)**

was active both Saturdays of the contest. In August he didn't use Cactus and made 5 contacts for 1500 points. In September did use Cactus and made 17 contacts, 5 of them tail-ending other QSOs. Potosi is 40 miles from his operating location on Turquoise Mountain but he couldn't hear it direct path - could only hear when pointed west. The group encouraged Bill, and everyone, to send their logs in.

## **Bill McNally N6MN (Seal Beach)**

has stripped his antennas off house. He and his wife are buying a house in the Helene, Washington area in the middle of a microwave absorbing forest. Is considering going to a dish-trailer concept for microwave and EME work.

## **Larry Johnston K6HLH (Lake Los Angeles)**

is back on 1296 and is working on 10 GHz with his new tower setup by moving the rig in steps from the shack to its ultimate intended operating position, but hasn't been able to keep it fully working at each step so far.

## **Mel Swanberg WA6JBD (Upland)**

ran a carrier for half an hour last night for the home-to-home event, putting out e-mail to invite listeners. Rein W6SZ heard it, Dave W6DL did not. The Santiago Beacon is down, failed, off, or weak. He did the September contest weekend on Potosi with Steve W6QIW. It is always interesting to do side by side operations like this. Steve had a smaller dish but better performance preamp and was hearing things Mel struggled with. Then somewhere along the line Mel's preamp failed. Didn't notice a big performance difference going from < 1 dB to about 2 dB noise figure so he thinks the limiting factor is phase noise on local oscillator. Has since ordered a new LO and will change out the multiplier chain. Also bought a new 0.8 dB NF preamp for \$120 that is rugged enough to put on the dish and go to Potosi. It is a Swedish Microwave satellite Ku band preamp. (Lucky find on E-Bay.) In the August contest weekend used a slot antenna with lossy coax. Worked Potosi on this omni from his home station. Now has a waveguide (10-15 foot penetration into the house) and is hearing PV beacon as it wanders around, away from its published frequency. The shack and antenna mast are on the corner of the house where the tower is.

## **Dave Laag W6DL (Marino Valley)**

was able to work Bill Locke's half watt station at Turquoise. Got out Saturday and Sunday both weekends of the 10 GHz contest, four hours each. Dave said it was good to see a fair amount of activity.

### **Rein Smit W6SZ (Alta Loma)**

had a nice night in the home-to-home event with Mel WA6JBD, Rein, and Dave W6DL listening. Looking for more participation and is interested in weak signal contacts. Another night other than the evening before the meeting, such as a different Thursday or a weekend evening, was suggested. Rein will put an e-mail on the reflector to poll the group.

### **Tom Board WB6HYH (Rancho Cucamonga)**

is on 2.4 GHz ATV now. Spent the last few days getting antennas and preamp on his tower. He has been working on this project for about three years, six months of which was troubleshooting antennas. All of his prior ATV activity had been on 434 MHz.

### **Courtney Duncan N5BF (Eagle Rock)**

garnered 43K points total in the 10 GHz contest, a few percent higher than 2015. Son John KG6HCO participated in August only for about 13K points. N5BF September activity was all on Frazier, including N5BF's first overnight there. Attempted to work W6SZ on JT65B and saw signals in the waterfall but was unable to get the computer fully functioning for a completed contact. Frank AG6QV reported hearing this attempt but did not have enough power on his new rig to make a contact. Attempted K1JT echo mode echoes off the rising moon near midnight (at 26 KHz Doppler!) but did not detect anything. On Sunday, the W6BY (Brian Yee) roving group was visited by a crop dusting helicopter while they were working the Frazier group on 10 GHz! Back home on 23 cm EME, has 8 "initial" contacts since "first light" in mid August including 6 in Europe with 4 QSL cards received so far. Refocused dish feed on sun noise for a 1.5 dB improvement. Plans VK3UM analysis soon.

### **Rein reported some activity between himself and Courtney as a rehearsal for the Wednesday Home to Home Event**

Courtney, N5BF and Rein W6SZ made contact during the late contest hours between Frazier mountain by using double bounces off Palos Verdes and a mountain peak north of Ontario. More here over next month.

Rein wants to express his appreciation to Courtney for setting time apart during the contest. Something that been in the planning for at least 2 contest periods in previous years.



## 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. Here's others who are supporting *Home to Home*.

**Dave Glawson WA6CGR (Wilmington):**  
Remember, I am always available on 10GHz.

**Mel Swanberg WA6JBD (Upland):**  
If there's any interest in restarting *Home to Home*, I'm now up and running with a permanent omni antenna. I've replaced the lossy coax with waveguide and am now able to hear the PV beacon (currently wandering through 10368.143 as we speak) at up to S7.  
Available for QSO's, ragchews, experimentation, providing a beacon source, or any other Part 97 appropriate use of 10,368 MHz Pwr out is 5 watts, 30 watts on request. This is intended to be permanently set up. We'll see how that works. Coming soon - a steerable panel antenna, and JT65 and other digital modes.



**Dave Glenn N6TEB (Downey):**  
I will be working on a rooftop panel. Looking forward to doing 10ghz from home. It will be a 3 watt unit with an old db6nt as its foundation. I did take Mel Swanberg's advice and have built a new rig. > 1db noise figure and 20Watts (I hope). . . looking forward to microwaves from home.

# Microwave Mystery Gizmo of the Month

It was a flux capacitor you guys  
... How could you miss that?

[https://www.youtube.com/  
watch?v=EhU862ONFys](https://www.youtube.com/watch?v=EhU862ONFys)

And you can buy one here:

[https://www.bonjourlife.com/flux  
-capacitor-usb-car-charger/](https://www.bonjourlife.com/flux-capacitor-usb-car-charger/)



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

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

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

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

# Last Month's Tech Talk

## Wayne Overbeck N6NB (Tustin)

Hawaii to California: World DX records on 2.3, 3.4 ... and now 902 MHz.



He talked about the trans-Pacific tropospheric duct and the two most recent openings in June and July of 2016. The June opening led to a new world distance record on 902 MHz, breaking a 25-year-old record. He also told us about the 2.3 and 3.4 GHz DX records set last year, with video clips from both years.

## Needs, Wants and For Sale

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

phone: 760-375-8566      email: [bburns@symbolmediacombb.net](mailto:bburns@symbolmediacombb.net)

His address is: 247 Rebel Road Ridgecrest CA 93555

- Andrews Microwave dish 8 ft solid aluminum **free**
- Long lengths of heavy tower guywire with insulators **free**
- Lengths of aluminum tubing, ½ inch to 3 inch diameters **free**
- Earth screws for anchors of guy wires **free**
- 1296 antenna 8 bays of 3 element Yagis \$5
- Radio Shack PRO 651 handheld digital trunking Police scanner and manual (paid \$400) and USB cable (paid \$35) all for **\$150**. Still new. Receives local weather channel just fine. Will receive all 3 modes of trunk radio signals as well as normal analog stations. AA battery holder and rechargeable battery holder. Receives 25-174 MHz, 216-512 MHz, 764-960 MHz (cell blocked), 1240-1300 MHz.

# 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 below.

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@gmail.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>

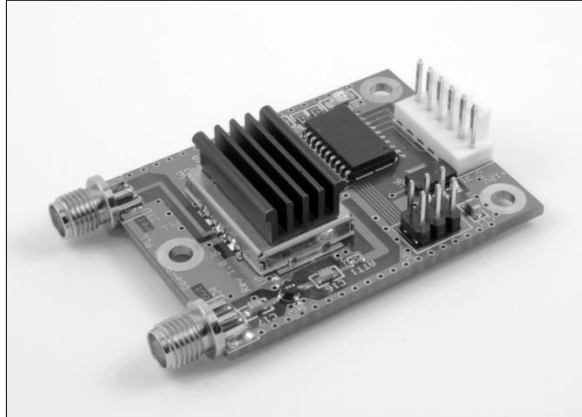
## REACTANCE LABS



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**

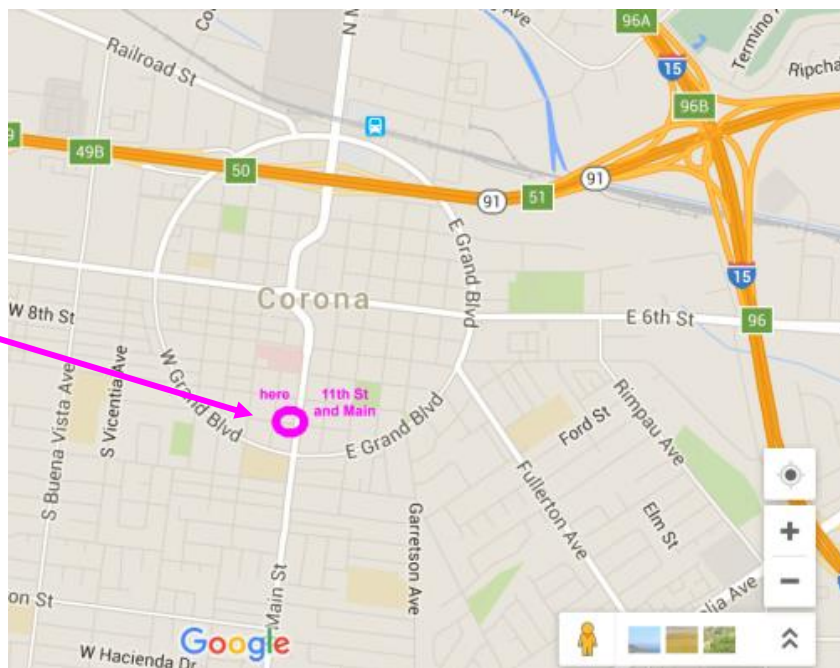
417 South Associated Road #146

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:  
American Legion  
Hall, Corona, CA**



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

# 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](mailto:walterClark at-symbol roadrunner.com)

The newsletter is distributed by way of the SBMS Website: [www.ham-radio.com/sbms](http://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: walterclark at-symbol roadrunner.com

## **Contact San Bernardino Microwave Society (SBMS)**

### **President Rein W6SZ**

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**Corresponding Sec Jeff Fort, KN6VR**

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email: [jnfort at-symbol Verizon.net](mailto:jnfort@symbol.verizon.net)

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email: [wa6cgr at-symbol ham-radio.com](mailto:wa6cgr@symbol.ham-radio.com)

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  - send by email words and pictures of progress to: [walterclark at-symbol roadrunner.com](mailto:walterclark@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](mailto:sbms@symbol.ham-radio.com). To sign up go to: <http://lists.altadena.net/mailman/listinfo/sbms>

## **Tech Talk for the November 4<sup>th</sup> Meeting . . .**

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

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>

## **The Talk Thursday**