



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1988

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

# San Bernardino Microwave Society Newsletter

*before the Meeting* Sizzler's (same-'ol same-'ol)

## Tech Talk for the Meeting of April 5<sup>th</sup> . . . The Application of Hyper-Heterodyning to Microwave and Lightwave Communications

Robert Carter is one of the most recent members of SBMS. Anyone who speaks with Robert for just a few minutes can easily see his love for high technology and Lightwave communications. His background is in the high end of the frequency spectrum. Educated at the Phoenix Institute of Technology in millimeter, microwave and laser communications, Robert's career has taken him to several high-tech companies and Start-Ups including Controlled Energy Corp., Western Digital, KLM Corporation, AT&T, RLC lasers, Cyber-Dyne, All-Optical Networks, and others. He has teamed up with other experts in photonics and laser communications in the development of several innovations in Lightwave technology. As a result, Robert has his name on over 21 patents. Along with John N. Hait and Ronald E. Preston, Robert was granted a patent on Hyper-Heterodyning in 2002. It is a method of hyper-selective filtering using photonic sources, interferometers, holograms and coherence

As always, the best seats are at our meeting in Corona, CA, but those who want to follow online, can do so at the following link.

[http://www.batc.tv/ch\\_live.php?ch=2&id=139](http://www.batc.tv/ch_live.php?ch=2&id=139) California Hams can check in on the ATN net

# Activities of the March SBMS Meeting

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

Jason Sogolow W6iEE Presiding

## Guests, or been gone a while

Oliver KB6BA from the Sunnyvale in the Bay Area who is visiting southern California this week. We routinely work Oliver in the 10 GHz and Up Contests.

## Old Business

Recording Secretary Courtney Duncan read this list of actions from the past year:

Nov '17 - KC6JPG - Microphone Upgrade (also discussed in October and July)

Nov '17 - WA6JBD - Pink Slip for WA6EXV Trailer donation (also discussed in August, July, and May)

Nov '17 - W6DL / WA6CGR / N6WL - SBMS Badges (also discussed in September, August, July, April, January, and back to November 2015 following SBMS hosted MUD in San Diego)

July '17 - WA6JBD - 2 GHz beacon progress

July '17 - KK6MXP - Capability to record and archive meetings when ATV is not set up.

Mar '17 - AF6/NA - Make SBMS meetings into U-Tubes.

May '17 - WA6JBD - Early notebook of WA6EXV containing original SBMS Constitution to be put on SBMS website.

May '17 - WB6CWN - Has a book with SBMS meeting notes from the 1980s from then recording secretary EA6ECD. Plans to pass to current recording secretary.

## New Business

Pat Coker N6RMJ announced news about the American Legion Hall where we meet. The south wall will move back two rafters which is expected to double the room size. The Legion is reclaiming the offices that are there now. Mel Swanberg WA6JBD pointed out that the hall has been the way it is now for 50 years. If there is need for a backup meeting place, the room in the back of Sizzler was suggested.

Brian Thorson AF6NA announced that next month is the date for election of new officers.

Nominations open tonight:

- Brian will be vacating the Vice President position.
- Dave Laag W6DL nominated Mel Swanberg WA6JBD for Vice President.
- Pat Coker re-nominated Dick Bremer WB6DNX for Treasurer
- Walter Clark re-nominated Jason Sogolow W6IEE for President, concurred by Mel Swanberg. Jason accepted the nomination.
- Jason then re-nominated Jeff Fort KN6VR for Corresponding Secretary.
- Courtney Duncan, Recording Secretary and Walter Clark, Newsletter Editor are not vacating their positions. Nominations for these positions are open but additional candidates are not needed.
- Pat Coker re-nominated Frank Kelley WB6CWN for ARRL Interface, Dave Glawson WA6CGR as Lab Manager and Webmaster, and Dave Laag W6DL as W6IFE License Trustee. Dave is now in serving his first ten year term as the Society's FCC licensee.

## What Our Members Are Working On (Activity Reports)

### **Pat N6RMJ Lake Los Angeles**

has been busy on 10 GHz. Took his 2' fiberglass dish off of the 75 foot tower. Mel donated a 4' dish aluminum dish that is now up and working at the 30 foot level using a new rotator that he picked up on a recent trip to Yuma. (On the way back he went up the coast whale watching and saw five!) Could never hear San Diego on the smaller dish, Now hears San Diego 10-15 dB out of noise routinely. Worked Mel WA6JBD, Dave WA6CGR at the SBMS lab, and Frank WB6CWN in Irvine with pipeline signals, S9+ on FM. Elevation control is worth doing when you have 1.9 degree beamwidth and have to bounce off the hills to make contacts. Has better than 30 dB return loss on the shepherd's hook feed. System is working very well and Pat is available to work anyone anytime he's around.

### **Rein W6SZ Alta Loma**

visited the San Diego group two weeks ago and looked at the ADF 5355 synthesized cavity, which is running again, controlled by an Arduino so you don't have to do the calculations manually. It has six push buttons and tunes 50 MHz – 1.6 GHz. Phase noise is still a problem but Rein found a paper from England where some changes to improve the phase noise are detailed.

### **Oliver KB6BA Sunnyvale**

is in the process of updating his 10 GHz rig with double oven run by a KOFF board. The output quadruples to a stable 10 GHz LO. He is also making the system switchable between 10 GHz and 24 GHz using a dual band feed horn. Needs enough power on 24 GHz to drive his DB6NT amplifier and wants the system operational for this summer.

### **Mel WA6JBD, Rancho Cucamonga**

found a 4' dish to donate to Pat N6RMJ's operation that uses WR75 feed and was originally intended for 12 GHz. Initially the return loss on 10 GHz was 6 dB with 400 MHz bandwidth so he put in a couple of tuning screws right at the feed. After tuning the bandwidth is 20 MHz at 10.368 but return loss is improved to 30 dB and it acts like an antenna when you wave your hand around it. Worked Pat, who is now using the dish, on SSB last night. In the past they were barely able to exchange tones. Mel is also starting to put together another X-Band rig. Bought a IC746 pro on E-Bay with a blown PA (connector removed inside). The 100 W mode is now disabled and it acts like a 100 milliwatt 2 meter rig with a sequencer built in. Worked on an N7EME 2756 LO, optimizing for noise performance. Maybe will all be ready for the upcoming contest season contest. The plan is for Mel's current rig to remain home as a permanent home station.

### **George K. Irvine**

has started experimenting with QWCS circuit simulator software for designing filters and passed around multiple copies of information about the tool that included a Hairpin filter layout and performance graphs.

**Robert Carter, Riverside**

is working on getting his amateur radio license reinstated and is working on a 10 / 24 GHz rig with the plan of joining in the microwave fun. Also brought a basket of retired Tesla batteries.

**Brian AF6NA, Corona**

was on vacation in China last month.

**Darrin Taylor KK6KAZ, Loma Linda**

bought an HP8510 network analyzer on E-Bay and is looking for someone to tell him how to use it. Mel WA6JBD and Dave W6DL offered to help.

**Steve WA6OXN, Riverside**

activities include downsizing his commercial shop. Listed an HP4566B to the reflector in case anyone is interested.

**Bill Lock N6WL, Baker**

working on an oscillator that is dip switch synthesized that was given to him by an equipment reseller that he used to deal with. Wants to talk to Mel about doing phase noise measurements on it. Looking on SBMS e-mail, noticed people talking about airplanes. Was surprised at what he saw there. The claim is that the information is time delayed by 20 minutes, but what he sees is exactly on real time. Would see airplanes online and run outside and they were directly overhead. Pat N6RMJ commented that he can watch the waterfall screen and see the AD7OI beacon signal come up right when one of these airplane paths occurs. Bill is interested in trying to work Pat this way using his 4 foot dish.

**Dave W6DL, Moreno Valley**

reported on his LO project from about a year ago. He is standardizing on 100 MHz.

**Dan AP6HF, La Habra Heights**

will be talking about his recent activities during the program portion of the meeting later tonight.

**Steven AG6SO, Corona**

invited by Gary W6KVC, has been a ham since 1999 and is dusting off radios working on getting back in. He is looking for new projects.

**Dick WB6DNX, Brea**

brought some aircraft radio equipment (intercom, headsets, other normally expensive equipment) tonight so that SBMS would have first refusal before he put it on E-Bay. Jason asked if there were any Bendix 24 V to 12 V power converters.

**Jason W6IEE, Norco**

has no amateur microwave activity

**Courtney N5BF, La Canada**

is in the middle of rebuilding his 10 GHz rig and hopes to have it back on the air for the next home-to-home night. Worked a few new ones on the moon on 1296 MHz (VK2BCC and VK5OQ @ VK2JDS, SP6ITF who does not coordinate, RA2FGG, VE4MA, W3HZU) and has been scheduled to give his MUD 23 cm EME talk at the JPL Amateur Radio Club later this month (3/23/18).



## Events of Interest to the Microwave Ham Community

May 5 – 6	SBMS 2 GHz & Up Contest
May 5 (8am – 2pm)	CSVHF Spring Microwave Sprint (902 MHz & up)
June 7	SBMS Meeting
June 9 – 10	ARRL VHF (& Up) Contest – get on the microwave bands
June 23 – 24	ARRL Field Day – do microwave demo for your local club
July 5	SBMS Meeting
August 2	SBMS Meeting
August 4 – 5	ARRL 222 MHz & Up Contest – Theme is: distance
August 18 – 19	ARRL 10 GHz & Up Contest – 1 <sup>st</sup> weekend
September 6	SBMS Meeting
September 8	ARRL VHF (& Up) Contest – get on the microwave bands!
September 15	ARRL 10 GHz & Up Contest – 2 <sup>nd</sup> weekend
September	ARRL EME Contest – 2 GHz & Up
October 4	SBMS Meeting
October 12 – 13	Microwave Update 2018 – Fairborn, OH Holiday Inn
October ? - ?	ARRL EME Contest – 1.3 GHz & Down – 1 <sup>st</sup> weekend
November 1	SBMS Meeting
November ? - ?	ARRL EME Contest – 1.3 GHz & Down – 2 <sup>nd</sup> 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.**

# Microwave Beacons for Southern California

## Los Angeles

San Antonio Heights 2304.320 MHz W6IFE/B 27dBm

Transmitting grid for Johnstone PK

DM14ed -117 39 06.0 34 09 14.0 6436'

Frazier Mtn. 10368.310MHz N6CA/B 1.3W

DM04ms -118.96948 34.7751 8027'

Santiago Peak 10368.330MHz AF6HP 2W

DM13fr -117.53401 33.71098 5681'

Palos Verdes 10368.300MHz N6CA/B 1.6W Out of Service

DM03ts -118.37642 33.76761 1200'

## Phoenix

White Tanks 10368.375MHz W7ATN/B 2W

1296.270MHz W7ATN/B 10W

DM33rn -112.56000 33.56861 3992'

## San Diego

Mt. San Miguel 10368.360MHz K6QPV/B 1W

5760.300MHz K6QPV/B 2W

3456.300MHz K6QPV/B 10W

1296.300MHz K6QPV/B 12W

DM12mq -116.93516 32.69793 2500'

All beacons are horizontally polarized.

To update this list:



- contact Mel Swanberg or if you don't have his email,
- use the Reflector. Mel or the Newsletter
- Editor will see it there.



# Home to Home

## This Wednesday Evening; (don't forget)

### **Rein Smit, W6SZ (Alta Loma), Past 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.**

The Wednesday before the meeting: 10,368.100 MHz, CW or SSB.  
WA6JDB, N6RMJ and W6SZ will be looking/listening for your signals.

We'll be listening on 10368.100 starting at 21:00 PDT. 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 standalone mode so it doesn't bother anyone.

Mel - WA6JB



Pat Coker's Prodeline with 9 watts;  
no-longer on his tower but now with  
added elevation control.

"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

## 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 chat. You will be automatically put into the right video channel. It is W6ATN. The "W6" for California of course and the ATN is for 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 a 2.4415 GHz FM video (analog) signal to the ATN repeater on Santiago Peak maintained by Mike Collis WA6SVT. (Gary monitors the signal from the repeater on 5 GHz.) From Santiago Peak on 5 GHz Roland Hoffman KC6JPG puts it on the internet by way of the website BATC.TV described above.



The ATN network linking is all done using FM microwave links on 2.4 GHz and 5 GHz bands. All ATN repeaters in Arizona, California and Nevada now have DVB-T (Digital Video Broadcast-Terrestrial) on 434 MHz input. Analog on 434 still works as well as the FM standard on 2,441.5 MHz. The DVB-T is the European standard for over the air TV. The T part, "terrestrial" is a format that is better with multipath. The only difference (which the US based) ATN has done to that standard is use 2 MHz B/W to fit within the 433-435 space between the weak signal and satellite sub bands.

- Gary 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.

When Roland Hoffman is substituting for Gary Heston, 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).

## **March Meeting Tech Talk:**

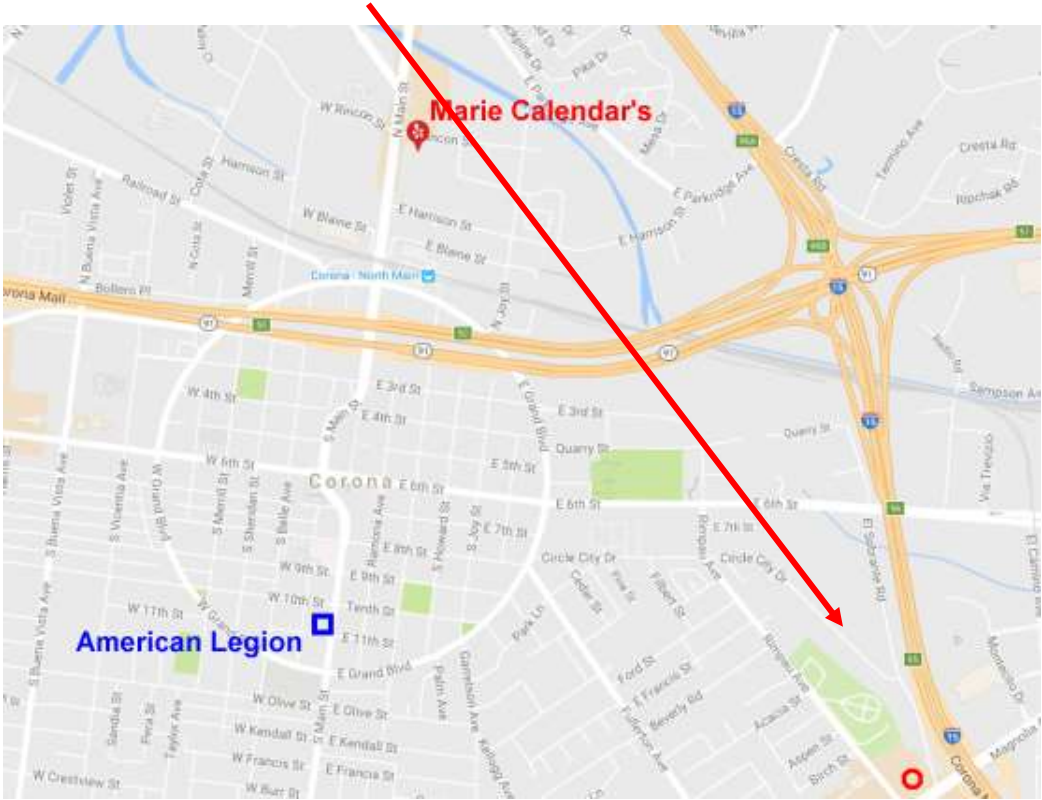
Dan Slater AG6HF showed several slides detailing his reception experiments of SpaceX launches, astronomical objects, broadcast stations and other radio objects of interest.

Brian Thorson AF6NA spoke briefly about the beginning of a new era in amateur microwaves and announced he was planning buy a DB6NT 24 GHz transverter this week.

## **Dinner before the upcoming meeting **Sizzler:****

“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. Magnolia exit then two right turns. (I’m Sooo tired of that place. ed)

For some reason, guys don't like beautiful waitresses and fine dining. Marie Calendar's is out.



# Needs, Wants and For Sale

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



## Official Address

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## 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).***

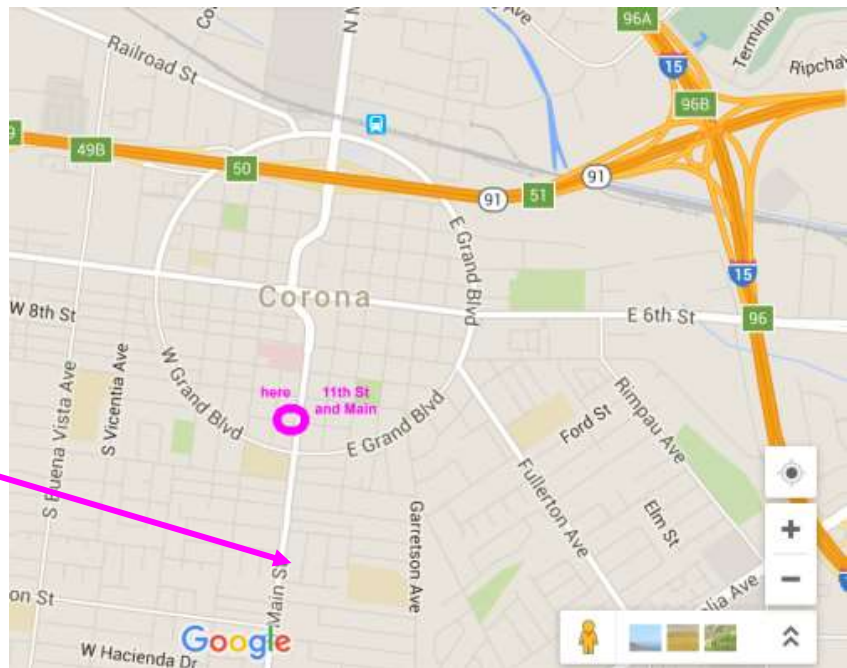
SBMS dues are \$15 per year, which includes a badge and that's about it. The dues are more in the way of a donation to pay for outreach things such as video portals, a bank account, and rent for the building. When to pay is not a matter of remembering. The Corresponding Secretary will contact you by 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](mailto:walterClark@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 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.altadega.net/mailman/listinfo/sbms>

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