



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1955

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

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

Walter Clark, Editor

Tech Talk for the December Meeting

"Solectra" - An Integrated 10 GHz Radio Design



Our speaker for the December 4th meeting is Frank Kromann, AG6QV.

He is a Software Engineering Development Manager at Panasonic Avionics in Lake Forest, (where Chris Shoaff works) and has been a licensed Radio Amateur since 1979. His professional experience includes the roles of R&D Engineer, Software Developer, Manager and CEO at several technology companies. Frank is a world-class expert and co-author of a 2005 book on the PHP programming language and was one of the initial developers of this widely-used internet website code. He is working on a second book right now on PHP due to be published in 2015. Frank's first call sign was OZ1GPI in his home country of Denmark. While working in R&D and as CEO at Procom Antennas in

Europe, he and some other radio enthusiasts collaborated on a 10 GHz radio design that does not use an "IF" radio. Everything is integrated into a single box measuring 20 x 20x 8 cm (8x8x3 inches). The transceiver was named "Solectra" because it could be operated from a solar panel alone.

Frank is one of the only SBMS members who literally showed up to a meeting one night with a working x-band radio, and has participated with SBMS in the 10 GHz and Up Contest for the past two years. His son, Ben, is also a licensed Amateur.

This promises to be an educational tech talk even for the more senior members of SBMS.



Come and get some insight into 10 GHz radio design from a fresh perspective.

For more on the December tech talk, go to our website:

<http://www.ham-radio.com/sbms/> then click on "SBSM Meeting announcements"

Activities at the August Meeting of the SBMS (that would be of interest to the General Ham Radio Community)

Presiding: Vice President Brian Thorson (AF6NA)
(17 in attendance... 14 last month)

Old Business

Doug Millar (K6JEY), Membership Chair, offered two suggestions to improve membership and participation.

1. Better advertisement of the technical talks. Some club newsletters have pictures and bios, for example. Look further afield in the industry for non-club member talks. Recommend that the Vice President provide detailed speaker information to the newsletter editor.
2. An overview of those members who don't attend regularly shows that the monthly trip to Corona is too arduous. Suggested using TinyChat using a tablet (e.g. iPad) as a camera and using the video provided by Gary Heston (W6KVC). This would require 4G grade internet and would be interactive.

Pat Coker (N6RMJ), MUD Chair needs volunteers for the 2015 Microwave Update that SBMS is hosting in San Diego.

1. He needs volunteers to: do registration, run a website, set up a PayPal account, lead collection and coordination of speakers, and find vendors.
2. The antenna range will be run by the San Diego group. Tisza Posner (KI6DBR) and Helen Mahoney (KI6LQV) will participate in programming. This effort will ramp up January 1, 2015.

New Business

- None

Courtney Duncan (N5BF), Recording Secretary

What Our Members Are Working On

- **Brian Thorson AF6NA (Corona)**

passed around a list for volunteers for Tech Talks in 2015.

- **Doug Millar K6JEY (Long Beach)**

showed a Mastech digital LCR meter. Nice price and works well. Go to eBay, then search on MASTECH-MS5308-Digital-LCR-Meter

- The sidewalk 1296 EME station is tested and after some calibration will be used tomorrow night on CW and JT modes. Rein (W6SZ) is bringing the computer.
- We made 4 QSO's and heard many more.
- The dish worked very nicely, thanks to a group effort.
- Research using the VK3UM EME program showed that sun noise was where it should be.
- Reported on new things going on in metrology. Strontium Atomic Clocks that have 10^{-16} performance over 10 seconds. Ytterbium clocks are a further development and good to 10^{-18} so far.

- **Pat Coker N6RMJ (Lake Los Angeles)**

The amateur radio event at his house 10/11/2014 had about 80 in attendance. He gave a microwave talk and plans to do it again next year.

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

Over the last two weeks he has been monitoring a 1W transmitter from a monopole on 2 meters on a small spacecraft sent to the moon by the Chinese (who didn't publish much about it). The license is from Luxemburg. Copied on 2 m. Yagis. The main mission is a Chinese moon sample return to earth. No trouble copying WJST with fading. The Japanese are thinking of doing the same sort of mission towards Venus.

- **Larry Johnston, K6HLH (Lake Los Angeles)**

has been playing with Arduinos.

- He showed his "\$1.00 2.4GHz" transmitter and receiver. Wants to set them up on his 1296 beam on top of his 60 foot tower to keep birds off by sensing them and playing a loud noise. Wiggling the rotator doesn't bother them.
- Larry says that K6MYC near Fresno is looking for contacts on Tuesday and Friday night, 1296.105. He has a big antenna and 350 watts.

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

has been working on a new book on PHP programming to come out in May 2015. No microwave activity this month.

- **Mel Swanberg WA6JBD (Upland)**

A long term loan of HP network analyzer was called in last month leaving a gaping hole on his workbench and halting several projects. Got on Ebay and found an Agilent 8719 network analyzer that goes to 13.5 GHz. Quickly fabricated a tracking generator to go with his 8766 SA.

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

has made considerable progress and encountered considerable obstacles on his 1296 EME system.

- Passed around prints of WSJT displays showing the periodic noise problem and pictures of the 23CM35 antenna and rig setup.
- Learned WSJT on HF then got things working on the L-Band system this week. Sequencer was the last problem
- DSP-10 has it and FT-817 doesn't, but used the serial port out of WSJT with a KeySpan USB to serial Mac adapter to do sequencing using a circuit on a protoboard.

- **Jim Blum KK6MXP Corona**

is trying to change a computer from Vista to Linux to run WSJT. Looking for WSJT info for linux - Rein referred him to <http://physics.princeton.edu/pulsar/K1JT/>

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

has been working on sailboats; minimal microwave activity.

He will eventually be trying to get the X-Band radar working on the battleship Iowa.

- **Dennis Kidder, W6DQ (Inyokern)**

has been working on "Arduino Projects for Amateur Radio" book should be out in about a week, already listed on Amazon. (Not to be confused with the ARRL book on a similar topic that also just came out).

- He recently acquired a Rhode and Schwartz CMW500 receiver for high HF to microwave. He plans to set it up with an SDR to see what's going on at China Lake and Edwards.
- He went to Pacificon and gave a couple of talks. Met ARRL HQ staffers, Kay Craigie and Ed Hare (W1RFI lab manager).

- **Bill Burns WA6QYR Ridgecrest**

has been trying to get rid of stuff. Still has items in his pickup tonight: 3x 18" dishes and a 23 GHz dish with feed.

- **Chuck Swedblom WA6EXV (Ridgecrest)**

has been working on his 10GHz system; having trouble getting some parts.

- The identifier on the original system died a long time ago.

- Another holdup: Needs to find distance from the end of waveguide in the attic over to the center of the rack and do 90 degrees down.
- Need to get connectors and parts and do some welding. There is a half inch aluminum plate that everything mounts on.
- Also working on a large 10 foot antenna and needs to put cables back into it. But this would require using a ladder....

- **Ed Munn W6OYJ (San Diego)**

asked the club members "Who here directly heard the signal from Sputnik?" (Four people.)

- Fought with computers most of the month trying to get e-mail working.

- **Jason Sogolow W6IEE (Burbank)**

did some dish clearance.

- Tip on the Qualcomm "brakedrum" modules: If you do nothing else with them, a couple of chips underneath are back to back mixers. 100 mW from a 432 HT will give harmonics all the way to 10.368.
 - He has been playing with Arduinos and 8950 boards from China. They are going up in price and will likely run out and become unavailable.
 - He also just ordered three Silicon Labs SI-5351A VCXOs (\$7.50 each). Very small board to drive with an Arduino to get RF out.
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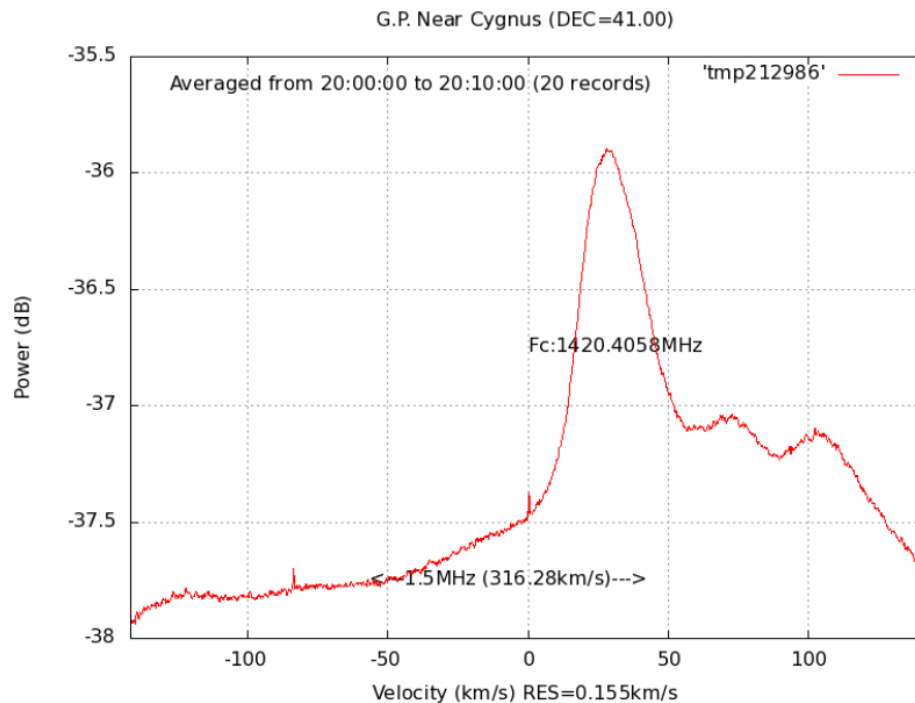
Amateur, but not ARRL-Amateur Microwave Activities

As you may have noticed, your editor on occasion brings you news from group emails besides the SBMS Reflector. Among them are:

- **DSN (Deep Space amateur Network)** who like to track spacecraft as they leave earth orbit
<https://groups.yahoo.com/neo/groups/amateur-DSN/info>
- **SARA (Society of Amateur Radio Astronomers)** who like to observe astronomical sources that flare up from time to time
<http://www.radio-astronomy.org/email-list>
- **NRP (Natural Radio Phenomena)** who monitor interesting natural phenomena such as Schuman waves
https://groups.yahoo.com/neo/groups/natural_radio_science/info

From SARA is a reminder that if you have a dish bigger than a meter and it can tilt up, the best microwave frequency for radio astronomy is 1.42 GHz; 21 cm. The hydrogen line, the 21 centimeter line, refers to the electromagnetic radiation spectral line that is created by a change in the energy state of neutral hydrogen atoms between stars in galaxies and clusters. Marcus Leech here shows how you can use DVB-T dongle and your dish to do real astronomy: http://www.sbrac.org/files/budget_radio_telescope.pdf

Notice that Amateur radio astronomy is all about frequency, not images like optical astronomy. The reason to point the dish is to reduce the signal to noise.



From Jim Sky are these websites having to do with spectral analysis of radio sources.

<http://cygnusa.blogspot.com/2014/07/rtl-meets-radio-skypipe-and-rs.html>

http://radiosky.com/spec/RTL_Bridge_Help.html

Upcoming Events Identified by Readers

- Dec. 4: SBMS monthly meeting (see cover page)
- Dec. 6-7: ARRL EME (moon bounce) Contest – 50 MHz through 1296 MHz

Anyone, (not just SBMS members) . . . if you know of any future 1 GHz and above amateur radio event, please send date and description to the editor:
walterclark@roadrunner.com

Last Month's Tech Talk:

Brian Thorson, AF6NA - How Much RF is Too Much? Human Exposure to Microwave from Amateur 10 GHz Systems.

This talk is represented in the SBMS website in the webpage:

<http://www.ham-radio.com/sbms/presentations/AF6NA/>

- 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>.)

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

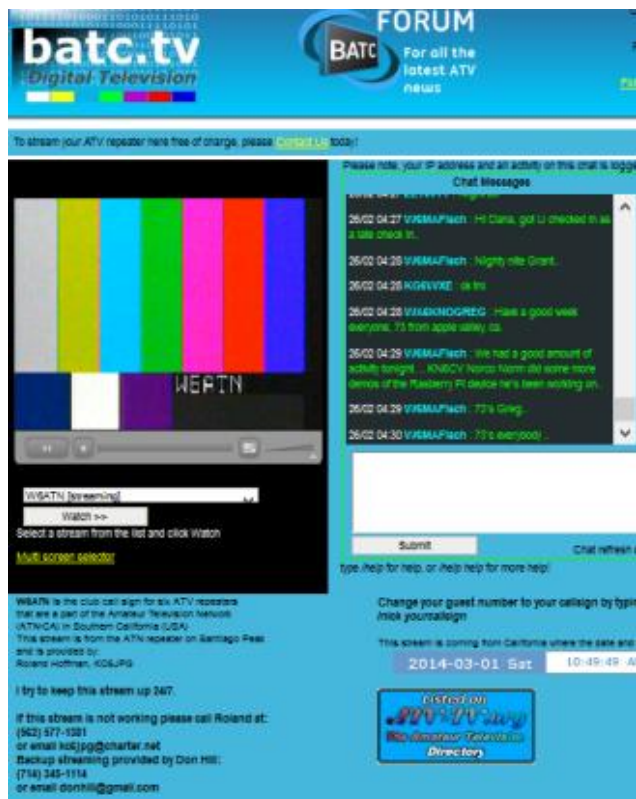
and use Google

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)

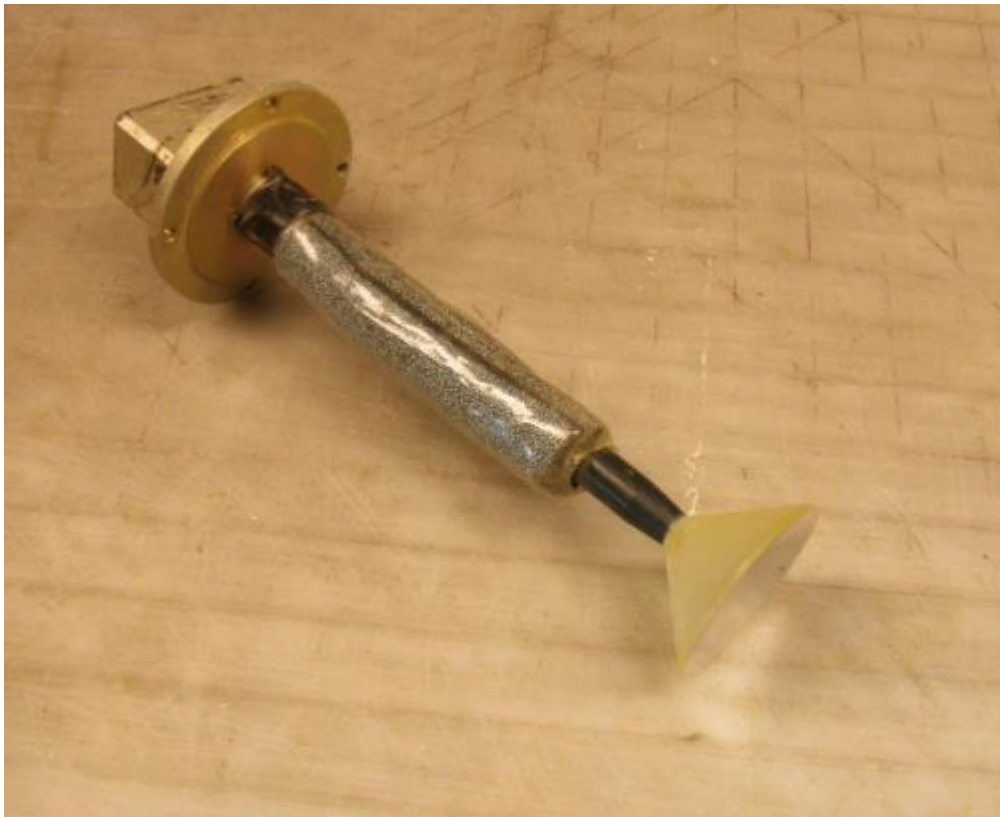
Gary Heston's mobile studio beams its signal to the ATN repeater on Santiago Peak which is provided by: Roland Hoffman, KC6JPG



Checking in Those Watching on Gary W6KVC's ATV.

- **Gordo, WB6NOA: Great meeting! Will be in Quartzite week of January 18**
- **KE6BXT, Don, Mission Viejo**
- **WA6EJO, Steve, Ventura**

Microwave Mystery Gizmo of the Month



If you would like to discuss this, use the SBMS Reflector by sending a letter to the following email address:

SBMS@lists.altadena.net

If you don't have an account go to the website:

sbms@ham-radio.com

Microwave Mystery Gizmo of the . . .

Previous Month



XBee is a WiFi (2.4 GHz) module very popular with the Maker Community and often associated with Arduino or other micro-controller. About \$40 each with a range of about a mile. They are for data, not images or sound. Thus they are very low power and can even turn themselves off when not

sending or relaying information. This is important because unlike ham radio, WiFi is always two-way even if the information is flowing only one way. (There's hand shaking involved.) Think of XBee pair as a radio link version of a USB cable. Programming them is a bit like setting up the old modems; remember those AT commands? Except there's A to Ds inside which allows them to work without a computer. Analog voltages on one XBee will show up on a computer a mile away as a sequence of numbers... that is if there's another XBee plugged into its USB port.

The green square is a popular antenna for the XBee that looks like a double Vivaldi. The claim is that it has no nulls anywhere. Thus it has less than unity gain. But no nulls? Please use SBMS reflector to comment on this claim.

Needs, Wants and For Sale (Updated 28 October)

- **For Sale from Chris Shoaff:** N9RIN cshoaff@yahoo.com
 - 30w 1296 MHz PA kit \$50 + \$5 for US shipping
- **For Sale from Mel Swanberg:** wa6jbd@verizon.net
 - HP 141T w/1200 MHz Plug-in And 3 18 GHz Plug-ins. Make offer, so cal local only.
- **Wanted by Jim Blum:** tenbakerst@aol.com
 - Source material; papers; on microwave and microwave construction.
 - Info on digital modes for microwave (WSPR, etc.) Info on beacons/beacon construction
- **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 (coils are like a foot in diameter and maybe a dozen turns or so...30 or 40 ft long wire)
- **For Sale from Doug Millar (drzarkof56@yahoo.com):**
 - 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)!**

Shipping for a transverter is typically that of medium-size flat-rate Priority Mail anywhere in the USA.

For examples of his work click on... <http://www.kl7uw.com/kits.htm>
Contact him at kl7uw@acsalaska.net

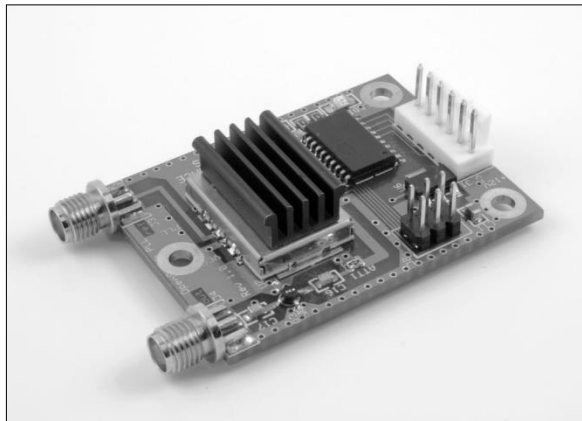
Member Ads Continued



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 editor at: 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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