



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1955

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

Activities of the San Bernardino Microwave Society

Tech Talk for the March 6th Meeting

Our March speaker is SBMS vice president Doug Millar K6JEY. His talk will be an update on some of the test equipment recently available that uses a computer for display, operation and data management (for the most part). There will also be contributions by Dennis Kidder W6DQ, and Bill McNally N6MN.



Doug K6JEY is an ARRL Technical Advisor in Metrology. He maintains standards in time, frequency, resistance, voltage and RF power in his home lab. His main interests are in UHF and up building and operating, along with CW and AM on the nearly "DC" bands.

Activities at the January Meeting of the SBMS

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

Presiding: Doug Millar (Chris is out of town testing gear for his company.)

Pre-meeting

Doug said a few words in praise of Dan Welch W6DFW who is now a silent key.

Guests Or Members Not Seen In a Long Time

- Ken Borne W6HK Orange California
- Bob McFadden KK5CUS Aliso Viejo

Bob is very interested in SDR with LNB and DTV dongle.

Ken, we met last month. Ken's first project will be 1.2 GHz and is planning on 10 GHz a few months later.

Old Business

- **Doug Millar revealed a tentative list of tech talks for the year:**
 - April: Art Goddard on The future of ham radio
 - May: WSJT- More in depth
 - June: Dan Slater on SDR for UHF and microwave
 - July: Rhode and Schwartz again
 - August: Dennis Kidder on Arduino Computer uses in Ham Radio
- **Two Meter Beacon Project**

Doug is investigating getting JA hams involved in the project. We would like a 2 meter beacon on Guam. This is the same project Bill McNally is involved with. (This is not the SBMS microwave beacon project that is being funded out of 2010 MUD profits.)
- Doug said that it isn't too soon to get ready for the August SBMS sponsored microwave contest
- There was no discussion on membership chair (Larry was present to thwart any draft-the-Larry effort.)

New Business

- No new business
-

Events

Although not all microwave-related, Marty Woll N6VI has found these upcoming gatherings:

- The Palm Springs Hamfest is on Saturday, March 15.
- The International DX Convention in Visalia, CA is April 4-5-6.
- The Two-meter Sprint is Monday evening, April 7.
- The 222 MHz Sprint is Tuesday evening, April 15.
- The 70 cm Sprint is Wednesday evening, April 23.
- The 902-and-up Sprint is Saturday morning, May 3.
- The Maker Faire in Santa Clara, CA is April 17-18.

The SBMS 2 GHz & Up contest is usually the first weekend in May but, if there hasn't been any announcement

For information on other events... see “Activities” in the SBMS website, which, you should have memorized by now

- Google SBMS
- click on our website
- then Ctrl-F Activities

- 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>.)

What Our Members Are Working On

- **Pat Coker N6RMJ (Lake Los Angeles)**
 - ...was busy cleaning his radio shack and storage area after 20 years of neglect.
- **Rein Smit W6SZ (Alta Loma)**
 - Is making the hardware to rotate and elevate his 1.2 meter dish. That dish is now capable of revealing the sun about 3dB of sun noise above cold sky.
 - No results in hearing the 10 GHz beacon signal of DL0SHF
 - He will tackle Arduino programming to control the dish with stepper motors.
 - He also has plans to check a fiber class 4 m dish's performance on 10 GHz using the sun.
 - Rein was active during last few month's **home2home** activity but could not find any other stations to work
 - He and Brian Thorson (AF6NA) tested Brian's new 10 Watt 10 GHz amplifier.
- **Marty Woll N6VI (Chatsworth)**
 - Attended the annual ARRL board meeting in Hartford, CT
 - had some ham radio antenna issues with the city of Poway
 - working on some serious jammer problems on the lower HF bands
 - will be a speaker at the Arizona State Convention in Yuma on troubleshooting techniques for newer hams Marty Woll N6VI ()
- **Larry Johnston K6HLH**
 - Replaced roof top satellite TV antenna on his mobile with a new five feed dish that sits on the ground.
- **Chuck Olive N6EQ Oak Hills (west of Hesperia and east of Phelan)**
 - Is beginning a new life in ham radio, hopefully with SBMS after surviving a pulmonary embolism. He lost 131 pounds. He thinks he contribute by helping with beacon placement.
- **Frank Kromann AG6QV (Trabuco Canyon)**
 - Spent a few weeks in Europe
 - Involved with a few others on amateur-ized commercial 2.4 GHz mesh
 - He finally took delivery of an expensive 10 GHz transistor and successfully installed it.
- **Wayne Overbeck N6NB (Tustin)**
 - In the January VHF contest Wayne was in the single operator portable (non-roving) category but worked with a group of six rovers, five of them on 24 GHz. The group made more than 200 QSOs on 24 GHz alone. Nothing broke during the contest on any of the 11-band stations.
- **Jim Steffen KC6A (Fallbrook)**
 - Working on a 1296 rig (ready to restart the project actually)
 - Also working on a permit for a tower to support the 1296 antenna
- **Jerry Mulchin N7EME (Corto de Caza)**
 - Closed on new QTH and is at 5975 Symphony Drive, Prescott AZ 86305
 - Now a proud owner of a Flex 1500

- **Bill McNally N6MN (Seal Beach)**
 - Is continuing to build up his bench with microwave test equipment.
 - Upgrading his 10 GHz station to add a power amp
 - Upgrading his 23 cm station for EME. He is taking the minimum capability route with the initial goal of working the high power big dish stations.
 - The Kwajalein project is on hold. We plan to move ahead soon on the design of a basic VHF reverse beacon.
- **Courtney Duncan N5BF**
 - Made two 1296 "opportunity" contacts in the January ARRL VHF Contest
- **Doug Millar K6JEY (Long Beach)**
 - Purchased some test equipment upgrades. Some of them will be shown in the presentation at the March meeting.
 - Worked on his 1296MHz station.
- **Dennis Kidder W6DQ (Inyokern/Fullerton)**
 - His book comes out in the fall
 - His DDS VFO works
- **Ed Munn W6OYJ (Sand Diego) Reporting on the Activities of the San Diego Group (They meet 3rd Monday at N6IZW Kerry Banke's house.)**
 - Ed come some help from Kerry to use his DTV Dongle to receive the 1296 MHz signal from the Mt. San Miguel Beacon. (DX about 25 miles)
 - Kerry received 2.4 GHz DATV signals from the International Space Station using an 18 inch dish antenna on February 8th. He is involved with efforts to develop amateur ground stations for this purpose.
 - Dan Bubke K6NKC and Greg Bailey K6QPV have been working on a beacon intended to operate from Mt. San Miguel on a frequency of 3456.300 MHz.
 - There's a huge 12' dish (foldable) on a trailer at Craig's house for moon bounce.
 - At last month's local meeting Greg Bailey brought his 12 foot dish (with foldable wings) to show and tell in Kerry's driveway. He continues his efforts to improve the feed system to work on 10 GHz EME.
 - As for Ed himself, he made one 1296 contact in the January 2014 VHF Contest, and did receive a QSL card for it.
- **Jeff Fort KN6VR**
 - Caught us up on what he has been doing as corresponding secretary
 - He also brought in some Make magazines to give away.
- **Dick Bremer**
 - Christmas was late for Dick, He got an Agilent N9330A 25 MHz to 4 GHz.

Tech Talk

- Marty Woll spoke on The Strategic Elements of Radiosport (Contesting) as Applied to Microwave Contest
- Marty is a founding Member of the Southern California Contest Club

Gary Heston's ATV Mobile Studio Was Shut Down Due To Rain

But Don Hill KE6BXT reported over 13 people in the chat room waiting for the SBMS meeting. You enter the chat room by clicking on the white space) on the right of the website here →

Here's what they had to say before they found out it was closed down...

w8arz : We will be trx the sbms on the AZ-atn net.

n9rin : Is Gary at the meeting tonight?

n9rin : No video or audio here.

KC6JPG : you should be receiving colorbars

KC6JPG : If you are running iOS, you will need a compatible browser (Puffin, etc.)

n9rin : got the color bars with something very low for the audio.

KC6JPG : Awesome :-) You are good to go! We are standing by.

n9rin : Rain is better than the snow I have here in Indiana.

kf6pgt : bummer guys. I'm in Sac, CA, too far to drive.

KC6JPG : They can live stream it . . . as long as they have a net connection - HI HI!

n9rin : That is the problem. There is no internet connection at the VFW hall.

KE6BXT : I just got off the phone with Tom Board at the SBMS meeting. It is pouring down rain there so they will NOT be setting up the ATV tonight. Sorry. Thanks for dropping by and I hope to see you next month (1st Thursday of the month) at 7:00pm. 73 de Don

KC6JPG : Ah! That's a bummer!

n9rin : Good night guys. I hope to be at the meeting next month.

KC6JPG : Take care Don! Thanks again for picking up the stream for me! I will see if I can get more gain out of my system to make up for the loss I'm experiencing.

KC6JPG : 73. G-nite.



http://www.batc.tv/ch_live.php?ch=2&id=13

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 and use Google → BATC TV.

The TV part is easy to remember. Think of the BATC and 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. It's W6ATN. Memorize ATN. W6ATN is the club call sign for six ATV repeaters that are a part of the Amateur Television Network (ATN-CA) in Southern California. This stream is from the ATN repeater on Santiago Peak and is provided by: Roland Hoffman, KC6JPG

SARA

Here's an article by Charles Osborne K4CSO on another form of microwave activity that amateurs can do. And you don't have to have a call sign. It is the most sophisticated form of SWL (short wave listener) μ SWL

There is a group that is all about amateur radio astronomy. The Society of Amateur Radio Astronomers www.radio-astronomy.org . They've been around since about 1982. Membership is



about 300 people in 17 countries. A majority are hams. But the amateur in the name is actually focused on the fact that we don't make a living at it, working instead in other professions, engineering, teaching, and similar jobs. It's an educational not for profit group 501c3 similar to many ham clubs.

And there's a significant common membership between SARA and groups like NTMS, the Microwave Reflector, Southeastern VHF Society, Central States VHF Society, EME reflector etc. Membership varies over time as interests change. But generally anyone interested in microwave, EME and meteor scatter will have a lot of common ground and equipment that can be repurposed for radio astronomy quite easily. Or another way of looking at it, anyone who does a Sun noise measurement is doing radio astronomy.

Like ham radio though there are a ton of niche groups. My SARA list server email sorts into the following subtopics:

- 1420MHz Hydrogen line observing,
- 408 MHz, 4 / 12 GHz
- repurposed satcom systems,
- Antennas,
- Cosmic Rays,
- data recorders/clocks,
- education/beginners,
- Gamma Ray Bursts and Transients,
- molecular Masers,
- interferometers,
- Jupiter / Solar observing,
- LNAs/downconverters/radios,
- magnetic field monitoring,
- meteors,
- pulsars,
- radio astronomy software,
- software defined radio,
- seismometry,
- SETI, and VLF

Pretty scary. Don't get put off by it all. Most people just pick a personal interest area and never get too caught up in the whole smorgasbord. Though over time they'll try a few items from the menu.

I'm unusual. I worked in satellite communications from '81~'99 and then because of that and my SARA background got offered a job as Director at a large educational radio astronomy observatory (www.pari.edu). So I took the vow of poverty for eight years and worked in education at a not for profit. Noticing that a loaf of bread and gasoline had doubled in price while

my salary had stayed constant I finally snapped out of it and went back into satellite communications for the past six years. I've also been an officer of one type or another in SARA since about 1990. So I've sampled or had to learn a lot of the smorgasbord just to answer questions or direct queries in a logical direction. Jack of all trades, master of none.



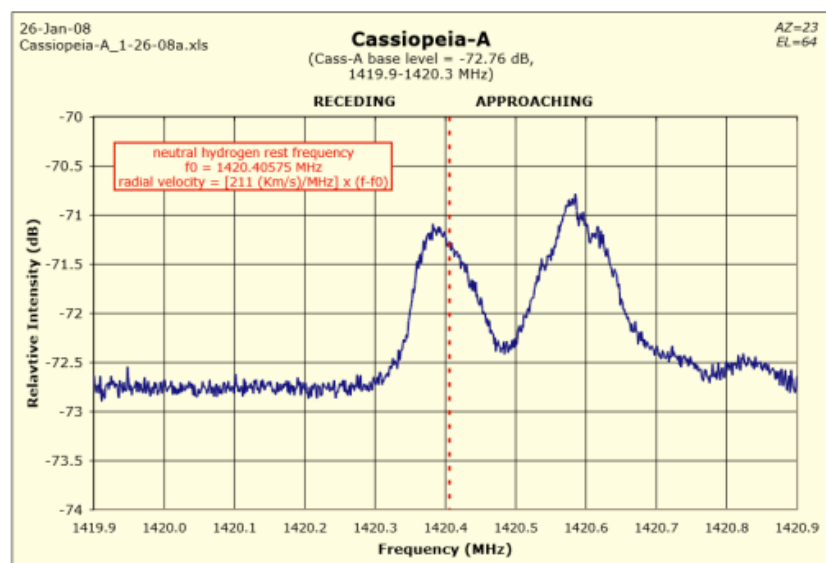
← the author's carbon fiber dish
(figure good enough for up to 31 Ghz)

The easiest place to start is 1420.405 MHz Hydrogen line. As DX goes, how's 26,000 Light Years? The center of our galaxy at that range is quite a strong signal in Hydrogen. I've seen Pieter N4IP, one of the founders of RFSpace.com pick it up on a 6ft dish using a downconverter to an SDR14. Of course the preamp is important too. One of Tommy WD5AGO's 1296 preamp designs works well at 1420 MHz too. He can optimize it for one or the other. But gain and noise figure do not change dramatically by 1420. His noise figure is usually better than 0.38 dB at either.

So anyone with a 1296 EME setup is probably well on their way to performance that would capture Hydrogen's spectral line quite definitively. A number of places in the sky are particularly interesting as you may see two humps indicating Doppler shifting both toward us and away due to rotation. Cygnus for instance is high in the sky compared to galactic center, and displays two humps.

This spectrum is a nice example from Joe Martin K5SO
<http://www.k5so.com>. His website shows a lot of 1296 EME and radio astronomy.

There are dozens of subspecialties in radio astronomy, much analogous to ham radio. See the Society of Amateur Radio Astronomers Website at <http://www.radio-astronomy.org>



Up Coming SARA Activities

Keynote Speaker for the SARA Annual Conference at Green Bank (June 2014) is Dr. Joe Taylor K1JT.

And this, a little closer to home...

2014 SARA Western Regional Conference - Bishop, California, USA on 22 and 23 March 2014

Submitted by csufitchi on Tue, 07/30/2013 - 20:41



The 2014 SARA Western Regional Conference will be held at Bishop, California and the Owens Valley Radio Observatory on Saturday and Sunday, 22 and 23 March 2014. OVRO is operated by California Institute of Technology and is located about 11 airline miles southeast of Bishop (driving distance is closer to 20 miles).

Read More → <http://radio-astronomy.org/node/147>

If you see yourself someday getting started in amateur radio astronomy, before then.... subscribe to the GoogleGroups list server for SARA. Go to:

<http://groups.google.com/group/sara-list>

and click "sign in" at the upper right hand corner of the screen to register your email address.

More on the Cassiopeia Observation Above

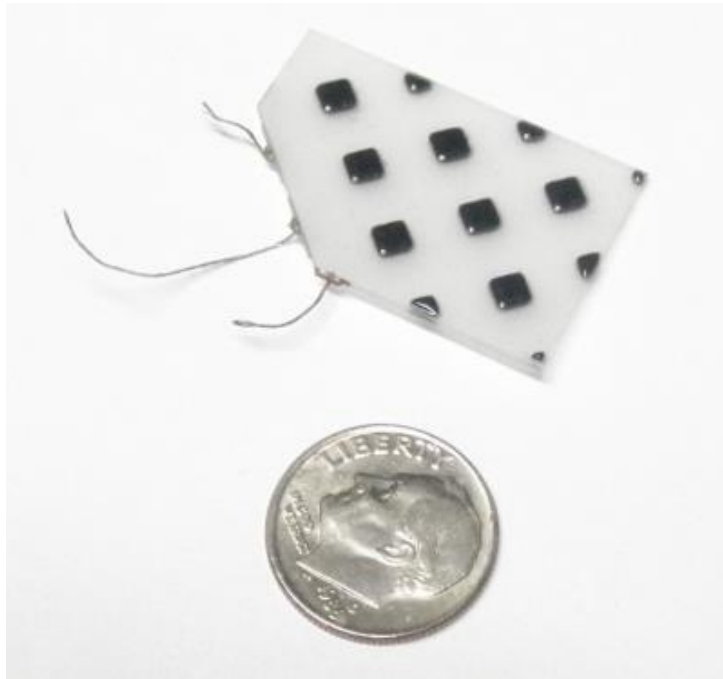
As background, to this curve; it was collected using an 8.6 meter diameter dish that has a beam width pattern at 1.4 GHz of about 1.8 degrees, thus the spectrum shown includes contributions from all sources in the field of view; not just Cassiopeia-A.

The spectrum shown is "as collected"; that is, there have been no corrections applied to the spectrum to account for any Doppler effects between the source and the radio telescope, such as corrections for Local Standard of Rest of the radio telescope for the day/time of the observation, location of the radio telescope.

If one assumes that at least the two main peaks in the spectrum originate from Cassiopeia-A itself, the position of the center region of the dual peaks at approximately 1420.49 MHz (i.e., the "average" position) indicates that the relative axial motion of Cassiopeia-A is approximately 19 km/sec toward us. If only the peak near "zero" relative velocity comes from Cassiopeia-A then, the axial component of velocity is receding. It is tempting to interpret the dual-peak structure as being due to a rotation of Cassiopeia-A, with one "lobe" rotating toward us and the other receding from us, but whether that interpretation is accurate is not at all certain. Indeed, from this measurement alone it not certain that the three main features all originate from Cassiopeia-A itself as they could, in principle at least, originate from three distinct sources that simply happen to lie in the same direction from us as does Cass-A.

73, Joe K5SO

Microwave Mystery Device of the Month



Submit your ideas to
the SBMS reflector.

sbms@ham-radio.com

(and no, there's no
credit for telling us
it's a friggin dime.)

No it's NOT cut from a larger blank. The dark things are shiny metal pillow like shapes and they terminate in a rounded edge about a ½ a mm from the edge of the white ceramic. Interesting.

Needs, Wants and For Sale

- **For Sale:** 30w 1296 MHz PA kit \$50 + \$5 for US shipping Chris Shoaff, N9RIN cshoaff@yahoo.com
- **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
 - HP 410B Multimeter with RF probe and manual free
 - copper wire enamel coated #14 many feet coils \$10 each
 - Bencher BY1 Iambic paddle key \$90
 - ARRL books- Cynthia Wall mysteries Disappearing Act; A Spark to the Past; Hostage in the woods; Easy Target; Fire Watch; Night Signals;

Member Ads

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

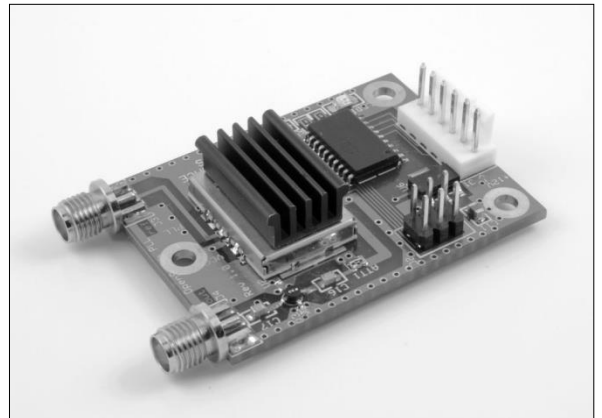
Contact him at kl7uw@acsalaska.net



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For the time being this service is free.
eMail 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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