



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1955

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

December 2015 Newsletter on the Activities of the San Bernardino Microwave Society

Walter Clark, Editor

December 3rd Tech Talk

A past SBMS President, Dick Bremer, WB6DNX, has been serving as the SBMS treasurer for several years. He is one of the most consistent Microwave Tune Up operators over the years. In addition to his 4-foot 10 GHz dish, Dick also has a horn and omni for his x-band activities. A true veteran at



amateur



microwave, Dick also stays involved with emergency communications in his community. He will demonstrate a microwave EMCOMM system at the December 3rd meeting of SBMS.

Construction Project at the Meeting !!!

To end the year, all those in attendance will be able to take part in a microwave design and construction project in a teamwork environment. Bring your microwave experience and knowledge with you to the meeting, and think about who you would like to team up with. Three or four teams will be given kits and tools to do a 20-minute design and construction project from scratch.



The device that tests out with the best performance will be the winner. The winning team will be honored on international TV. Come and join in the activity and learning environment. You may be a coach or an “Elmer,” or you may be a microwave student, but all will enjoy this meeting.

Come and join SBMS at the Meeting this Thursday, December 3 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://www.batc.tv/ch_live.php?ch=2&id=139

Activities at the November SBMS Meeting

(that would be of interest to the general ham radio community)

Business Meeting

Presiding: Chris Shoaff N9RIN

(18 in attendance... 17 last month)

Guests or Members Not Seen In a Long Time

N6EQ, Chuck from Oak Hills: "Antelope Valley Microwave Society"

Old Business

Microwave Update

MUD 2015 Proceedings: 190 copies were printed. About 170 were issued so far to registrants, sold as extra copies, or sold to those not attending. Marty Woll N6VI sent out five complimentary copies to ARRL officials and sold some others at various places, such as last weekend's BozoFest, and has forwarded the proceeds to Dick Bremer. When the copies we have now are gone, we will notify ARRL and they handle all further inquiries, or we could have a secondary printing done if we wanted to deal with distributing more for ~\$15 profit each.

Also, **Marty Woll N6VI** has the entire proceedings in PDF format and could put it on CD-ROM and sell copies for \$5. A volunteer would be needed to handle that.

Mel Swanberg N6JBD suggested that we conclude our involvement with these proceedings when the current copies run out.

Brian Thorson AF6NA volunteered to handle requests for and mailing of the proceedings that remain, arranging with Dick Bremer about PayPal and other means of payment. When these are gone Marty will notify ARRL who will then take over fulfillment of future requests. Brian's e-mail contact information is on the SBMS web page <http://ham-radio.com/sbms/>.

Brian would also work with Dick to make the PDF proceedings available on the SBMS website, after a nominal (\$2-\$3) payment.

New Business

The SBMS website (<http://ham-radio.com/sbms/>) says that we make badges meaning that we owe new members badges. (This includes new members from MUD registrations and new local members over at least the last 4-5 years.) Dick Kolbly (SK) used to do this and it was thought that Phyllis Kolbly possibly still had the machine. Dave Laag W6DL volunteered to take on the task of making badges. Question: Do we want badges in the traditional style (like Ed Munn W6OYJ has) or something rectangular and plastic? Consensus was to stay with the old, prestigious style. Dave will bring a price for a new badge machine back to a future meeting.

New Business Continued

Pat Coker N6RMJ indicated the need for an alternate method of streaming the meeting to the internet inasmuch as the Santiago ATV repeater was down this evening. Gary Heston W6KVC and Tom Board WB6HYH and the crew would still collect the video and audio from the meeting. An alternative feed would run in parallel with ATN when available. Possibilities include:

1. High speed internet, either a drop in the American Legion Hall or cooperation from one of its neighbors. Brian Thorson will look into this.
2. MESH network. A laptop in the room could reach a node in the network from which a user like Don Hill could put the content out on the regular internet. Gary Heston will look into this. Gary will need an NTSC USB interface from his equipment to support this.

Chris Shoaff N9RIN (relayed from the chat room by Pat Coker) asked about a date and place for this year's Christmas party. Walter Clark volunteered his home at 824 W. Valley View Dr., Fullerton. By majority vote, Saturday December 12, 2015 was selected as the date, to be announced on the SBMS reflector as soon as possible.

Walter said that everyone should bring their own choice of meat; potluck side dish is optional. He would provide soft drinks, utensils and plates. Walter will be monitoring the reflector for questions or you can email him directly at: walterclark@roadrunner.com RSVP is not necessary, come if you can, when you can.

ATV and Internet Check-ins

No ATN television coverage at the November Meeting because the Santiago repeater was off the air. (Don Hill KE6BXT sent notice of this via the chatroom.)

Pat Coker, N6RMJ reported those signed on to the chatroom: N9RIN, KC6JPG, KE6BXT, N8KH, KF6PGT and a couple of others, hoping that it might become available.

Courtney Duncan (N5BF), Recording Secretary

What Our Members Are Working On

Ed Munn W6OYJ: San Diego

summed all our feelings about the Microwave Update held in in San Diego couple of weeks ago. He said everyone appreciated all the work that Pat N6RMJ and Mel WA6JBD did. Congratulations on a wonderful job!

Dan Slater AG6HF (La Habra Heights)

was at Microwave Update and enjoyed it. He demonstrated a microwave field probe for aligning antennas that can be used for feed focus placement, boresighting etc. This device may be an SBMS Tech Talk in 2016.

Dave Laag W6DL: Marino Valley

while digging through his Klystron box found one for 10 GHz and that inspired him to build a Klystron-plexer (rather than a pola-plexer or Gunnplexer). It is air cooled and requires thousands of volts. Dave looking for half quart beer cans on E-bay but finding them too costly.



Marty Woll N6VI (Chatsworth)

collected more Amateur Radio Parity Act support letters at BozoFest. Is sending the letters back to ARRL Headquarters 50-100 at a time. The letters are also available at ARRL.org. The bill has 108 co-sponsors in the house but only one in the senate. That's where our emphasis is. Let's hope one of Boxer / Feinstein (California Senators) will co-sponsor. All of his microwave activity this month involves MUD and post-MUD.

Jim Blum KK6MXP: Ontario

devoted his full attention to MUD.

He also went to BozoFest and won an atomic clock, thermometer, and 900 MHz antenna on raffle tickets.

Jeff Fort KN6VR (Phelan)

was on a tour of the fall colors in New England where the tour guide took them to Mt. Washington. This would be a great 10 GHz site but tour bus wouldn't stop!

Jeff NG6Y

Still researching and collecting parts for a 10 GHz rig.

Rein Smit W6SZ (Alta Loma)

was with Doug Millar K6JEY last week on the EME event with 6-7 people.

Conditions were good; everything worked on WSJT. Used a dongle (off of a splitter after the pre-amp) to monitor the band.

He said Doug Millar and Bill McNally N6MN are flying out to pick up two large dishes in Texas from Kent WA5JVB.

Courtney Duncan N5BF: La Canada

was very involved with MUD last month and will be checking into the Friday 1296 net with K6TSK.

Mel Swanberg WA6JBD (Upland)

did lots of work last month putting MUD together. There is a listing on E-bay for 25 dBi flat panel antennas for 10 GHz for \$90 or slightly used for \$50. Has ordered one to evaluate. Looks like they might be useful for a home station, on a rotator, with PA and LNA attached to it. Hasn't swept it yet.

Walter Clark: Fullerton

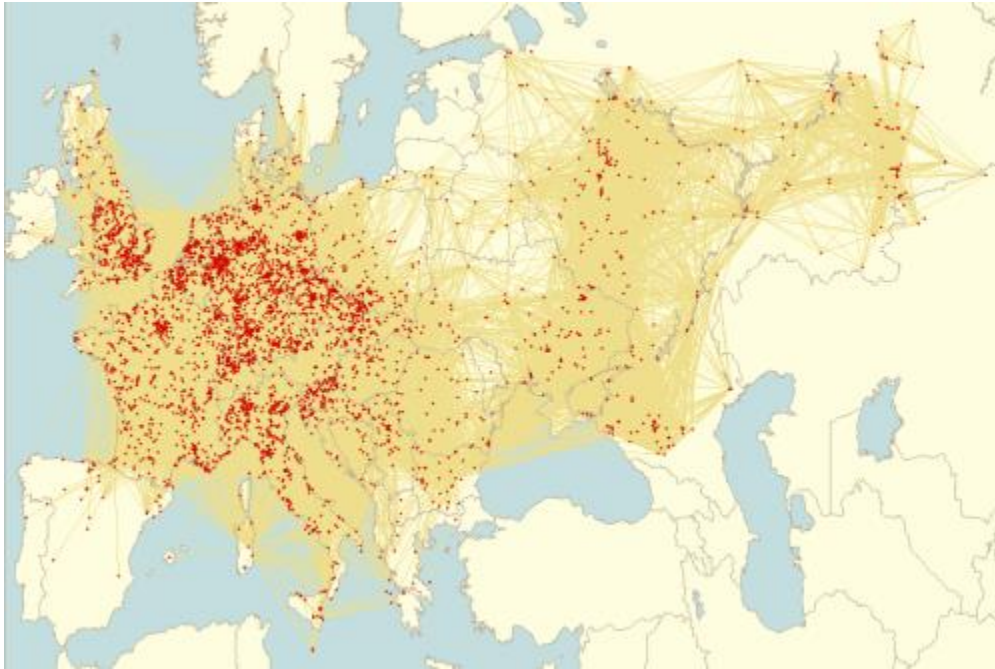
has been concentrating on GPS for R/C models. His first approach used XBee; 2.4GHz WiFi telemetry. He also played with recording GPS in the plane. He showed a balsa box containing \$15 GPS receiver and a \$25 microSD card reader. Of interest to SBMSers is that one can put such a system on your dashboard and record your roaming to document your locations. The result can be displayed on Google Maps.

He also brought a new product for R/C modelers; a remote (915 MHz) battery monitor. The receiver is held in the pocket and the warning that you should land is from a vibrator. The transmitter is 5 grams but the most amazing thing is that it is only \$9.95

Frank Kromann AG6QV (Trabuco Canyon)

has a lot going on but not much microwave. Took third place in Europe VHF contest in rainy conditions. (His group of five people was 1st place in 2012). Made 800 contacts with 1350 km best DX: from the Point of Denmark to Slovenia. This

contest is 24 hours, 2 meters terrestrial, no EME allowed, and is the biggest contest in Europe every year. Here's a participation map of the activity during the contest:



Pat Coker N6RMJ: Lake Los Angeles

Picked up another chaparral feed at MUD for his dish at home and is working on a 10 GHz setup for home for next year, but will still rove in the contest.

Larry Johnston K6HLH (Lake Los Angeles)

finally got his tower back up after having been down for about three months for refurbishment of all the attached equipment.

He has an RF link between the shack and top of tower for antenna control, preamps and other equipment.

He attended MUD including the Paul Wade talk on cheap transverters for 5760 MHz. Bought some and is building them up. They feature a 145 MHz IF and use inexpensive amplifier parts with power output of +17 dBm. The kits are soldered with a little dinky torch. The assembler uses a bead of solder, wraps it, and hits it with the torch.

Paul Basay KK6VBB Fontanna

just got general ticket (Applause!!) and is getting on 1296, looking at transverters, transceivers, and antennas

He asked the members for advice on transceivers and suppliers. He got lots of shout outs..." Down East, W6PQL and Kuhne (DB6NT)".

Gary Heston W6KVC (Running Springs)

is working on a dual band 2.4-1200-1253 antenna to be mounted in a six foot solid dish at his house for some gain to help with the ATN broadcast. (The feed is built by Steve Noll in Ventura.) More than 20-30 watts will melt this feed in a few seconds.

Courtney Duncan (N5BF), Recording Secretary

Kerry Banke; Extended Activity Report

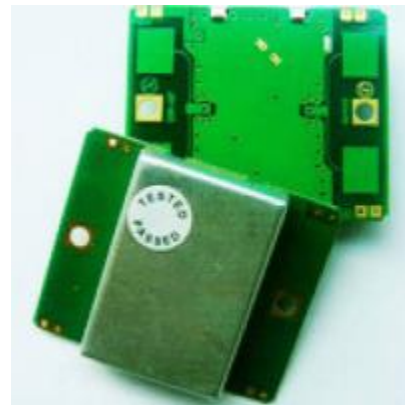
Our SDMG had a good time with a booth at our local Maker Faire. Our hands-on activity was a 10 GHz T-Hunt suitable for kids and adults. We presented and published the information 2015 Microwave Update for the simple system consisting of an LNB, AD8307 Amp/detector and audio amp.



at the
Rx
Log

[Go to eBay, search "AD8307 MODULE"](#)

The TX is a DRO microwave intrusion alarm module available for \$10.



http://www.limpkin.fr/public/HB100/HB100_Microwave_Sensor_Application_Note.pdf

The DRO module is keyed on/off at about a 1 KHz rate with an Arduino to produce a tone at the Rx.

Best DX so far for the simple system is about 7 miles with the integral LNB and DRO module.

The Rx does have an 11 MHz wide, 638 MHz IF filter to constrain the Rx bandwidth. The MUD article shows a surplus SAW used ahead of the AD8703 board but I was recently made aware of a cheaper 12 MHz BW, 630 MHz coaxial ceramic filter on eBay that is probably of a more manageable size to deal with.

A second, more recent, project not really published yet, is a simple direct conversion DSB Rx for 10 GHz narrowband. This uses a cheap Avenger PLL type LNB giving an IF of 618 MHz for a 10368 MHz input.



[Go to eBay, search “Avenger PLL LNB”](#)

The LO for the direct conversion mixer is one of the K5BCQ Si570 boards running at 206 MHz (using the third harmonic) through a low pass filter to reduce the 206 MHz and 412 MHz LO content. The Rx mixer is a SBL-1 being pushed above its rated upper frequency limit. That is followed by an audio preamp and amplifier. This is a very sensitive system of course with the frequency stability determined mainly by the LNB. It is very usable for copying weak signal beacons and SSB. The Cold sky/warm earth temperature difference is easily detected with this setup.

The TX for this unit is still a work in progress but at this point is a system which phase locks one of the DRO intrusion alarms to the Si570 VFO frequency after being down converted through the LNB to about 618 MHz. Both the 618 MHz LNB IF and the 618 MHz VFO signals are divided by 256 and applied to a frequency/phase detector which varies the DRO supply voltage to control its frequency. In TX this puts the DRO on the same frequency as the Rx.

I do have documentation on these projects but nothing on the web yet. I'll be happy to send info upon request.

73 -Kerry N6IZW with the SDMG

For more on this interesting, scientific and affordable project see the SBMS 2015 MUD proceedings, soon to be out on CD.

Bill and Doug's Most Excellent Adventure

From a lucky encounter at MUD, Bill N6MN and I were offered two 7' portable dishes and mounts. Looks like just the thing for 2.3GHz EME.

We retrieved them from Dallas, TX a week or so ago and can report on an excellent road trip and two fantastic antennas. We are currently



A little beat after driving all that way to Dallas and ready to roll.

"We are both working toward being on the air for DUBUS EME contest in Feb."
Bill.

Doug K6JEY73

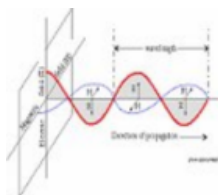


working on getting the septum feeds attached properly and hope to be on the air soon. (Thanks to Bill for some excellent planning.)



Upcoming Events (Marty Woll N6VI)

- December 3: SBMS monthly meeting
- December 12: Christmas Party at Walter's Fullerton
- January 7: SBMS monthly meeting
- January 30 – February 1: ARRL January VHF Contest (includes all microwave bands)
- February 19 – 20" ARRL Southwestern Division Convention, Yuma AZ
- Call for Papers and Presentations for **VHF Super**



VHF Super Conference

Sponsored by Southeastern VHF Society, North East Weak Signal Group and the Mt. Airy VHF Radio Club. Hosted by the Grid Pirates Contest Group and Directive Systems and Engineering

Conference

April 15-17, 2016, near Washington, DC.

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

Spectrum Defense Update – WRC 2015 Comes to a Close (Marty Woll N6VI, Vice-Director, ARRL Southwestern Division)

In last month's SBMS newsletter, I reported that ARRL's Chief Technology Officer Brennan Price N4QX and his staff were off to Geneva, Switzerland for the World Radio Conference, where global spectrum allocation decisions are made. The conference ended last Friday, and our results can rightly be called a success: no meaningful loss of Amateur spectrum and a modest global allocation in the 5 MHz (60-meter) band. Part of the work at each WRC is setting the agenda for the next such conference, in this case the one to be held in 2019. The proposed 2019 agenda almost included consideration of our entire 2-meter and 70-centimeter bands for use by commercial satellites, but a concerted effort by ARRL representatives, working with the Department of Defense and our worldwide Amateur Radio allies, managed to get these two popular Amateur bands removed from consideration – at least this time around. The next World Radio Conference will, however, include consideration of additional worldwide commercial allocations in our 5 GHz and 47 GHz bands.

This important work is just one part of ARRL's advocacy efforts on behalf of Amateur Radio.



Please support the League with your continued membership. Donations to the Spectrum Defense Fund are also appreciated.

SBMS Christmas Party (Saturday, December 12. 1:00)

It will be at Walter Clark's house this year. It's less than a mile from Dennis Kidder's where we've had the party for the past few years.

824 Valley View
Fullerton

If you don't have GPS...

- From the 91 Fwy
- go N on Euclid 1.9 mi
- Rt turn on Valley View
- 3rd house on the right.

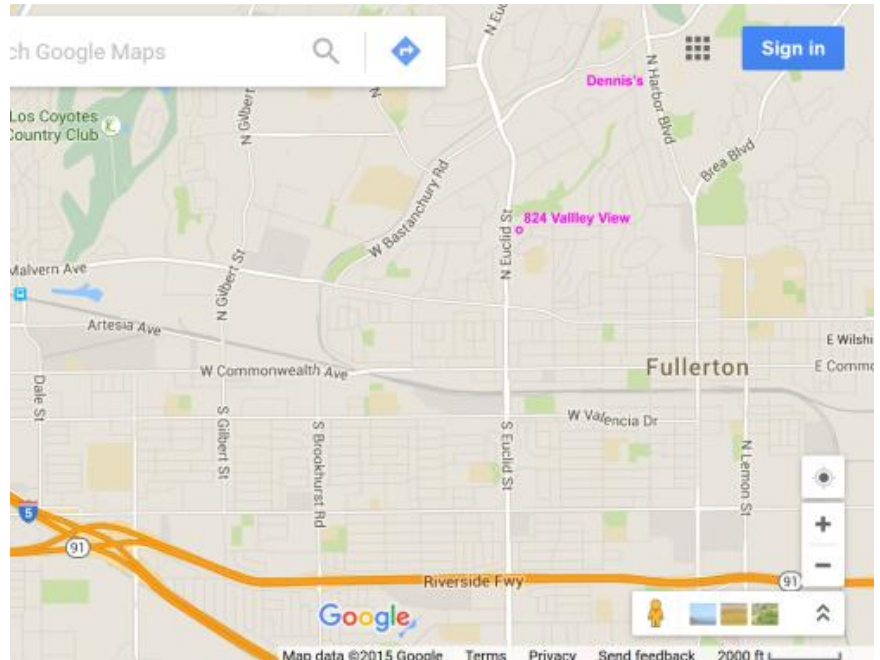
There's a 4' dish in the front yard.

Details...

- There will be a BBQ and hot plates
- Just like at Dennis's, bring your own meat or main dish. If you have a favorite side dish to share, bring that.
- Walter will provide the ice chest and canned drinks.
- Walter will provide the plastic-ware and paper plates.

RSVP is not necessary, come if you can, when you can.

Please.... bring an old project (in the form of a table decoration) to talk about.



Tech Talk Last Month

Brian Thorson, AF6NA

At the November 5th SBMS meeting, Brian, AF6NA went over the system that served SBMS for the last 15 years and presented some of the important design constraints and opportunities facing the measurement team next year.

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.) Enter the chat room by clicking on the white space on the right of the website described below.

This is how to 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 then 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, and logged in, on the right choose "Repeaters" and then on the left, you have to pick a stream.

The stream to choose is: **W6ATN**.

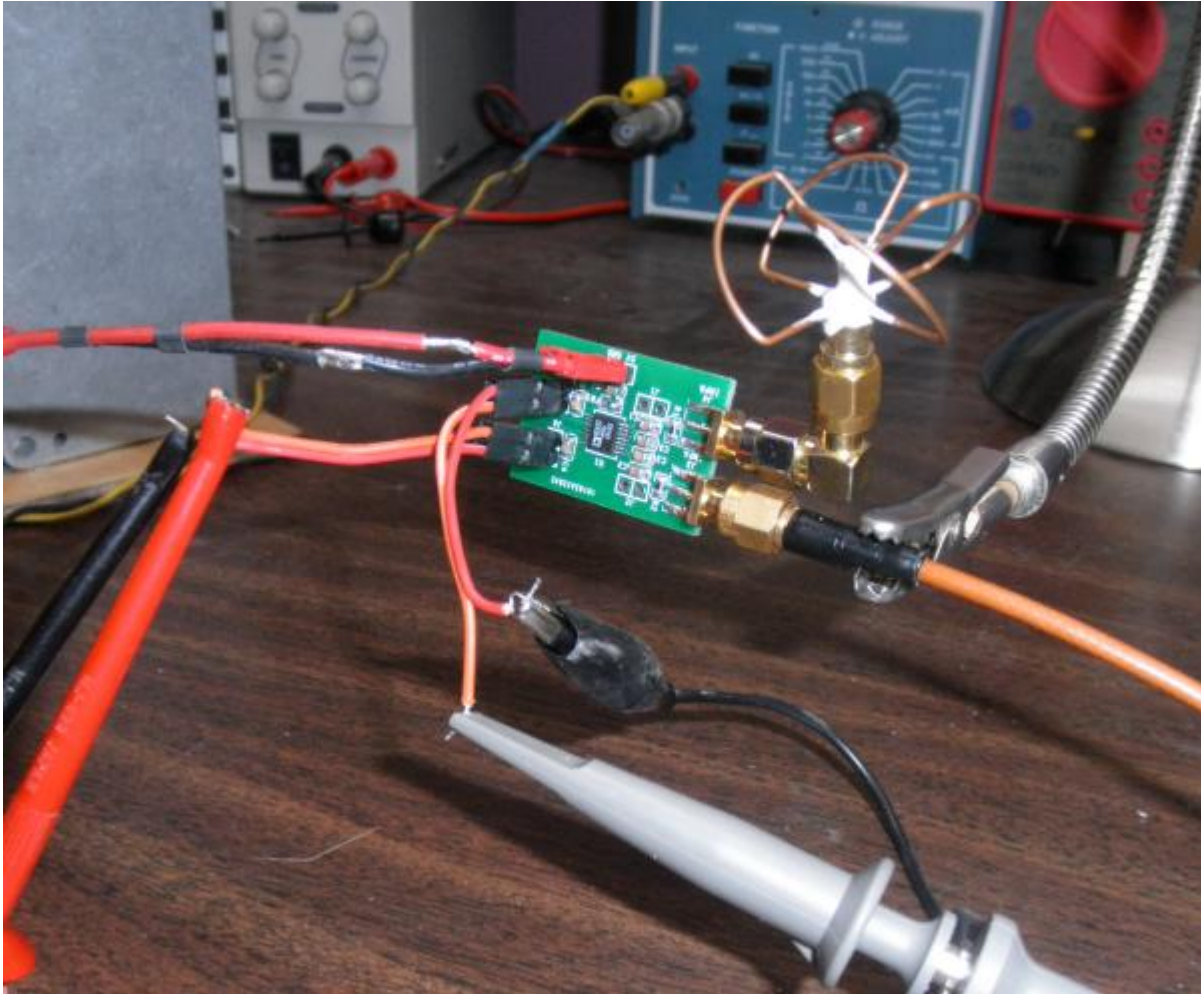
Memorize W6ATN as ATN in California.

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



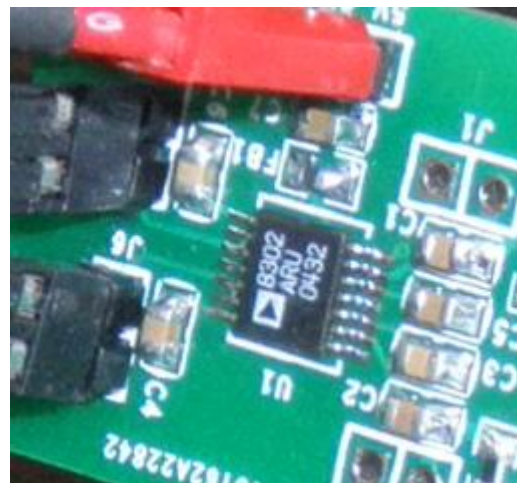
Microwave Mystery Gizmo of the Month



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

SBMS@lists.altadena.net

If you don't have an account sign up at this website: sbms@ham-radio.com



Hint: Go to eBay, search “AD8302 MODULE”

Needs, Wants and For Sale (Updated 2 November 2015)

- **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
 - TVRO dishes 10 ft, 6 ft, and 5 ft ← **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 \$10
 - Pickup bed trailer with camper shell- licensed. \$250
- **For Sale from Doug Millar (drzarkof56@yahoo.com):**
 - 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>

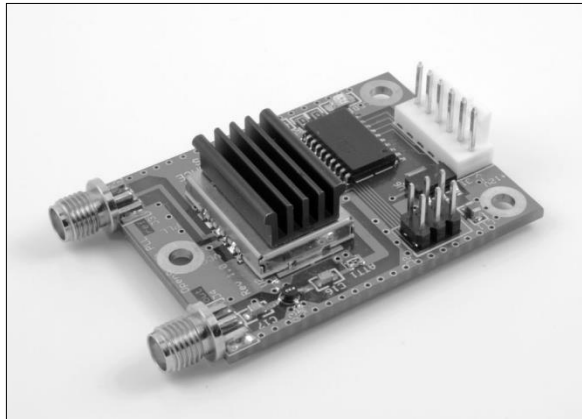
Contact him at kl7uw@acsalaska.net



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.

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- ⤴ Open Source code and design, made to be modified
- ⤴ 2" x 1.5", 12V @ 140 mA typical

Available at <http://reactancelabs.com>

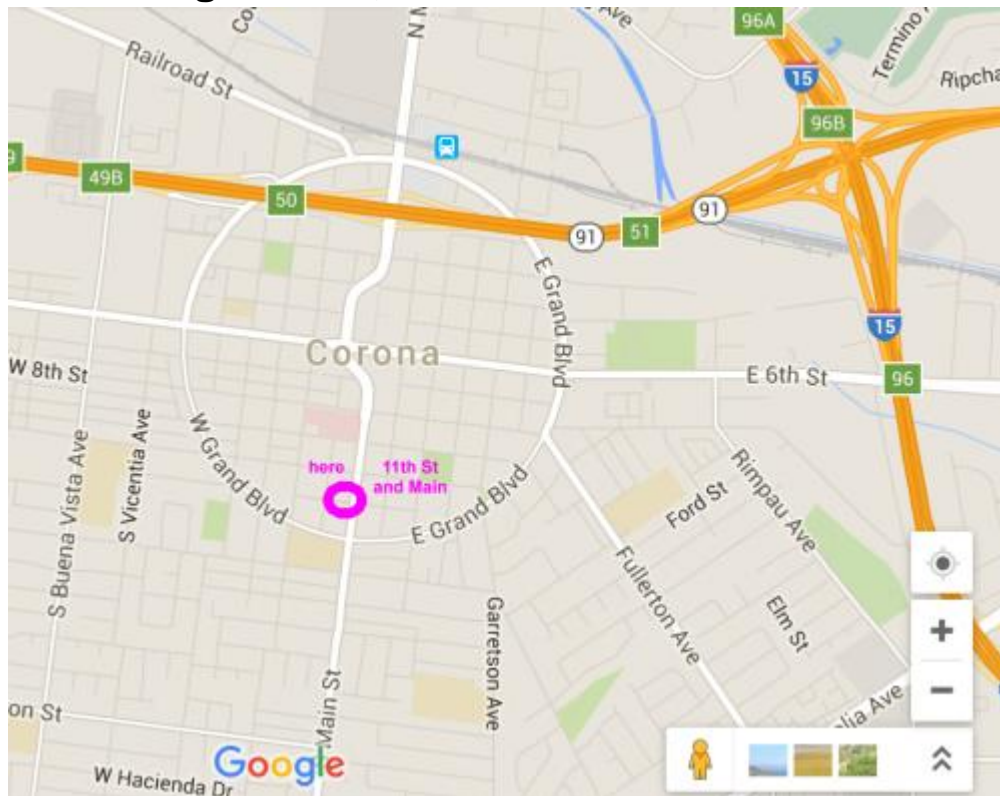


If you are a member you can have a picture ad here yourself.
For the time being this service is free.
eMail editor at: WalterClark@roadrunner.com

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 Dick Bremer, WB6DNX 714-529-2800

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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