



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1955

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

# August 2015 Newsletter on the Activities of the San Bernardino Microwave Society

Walter Clark, Editor

## August 6<sup>th</sup> Tech Talk

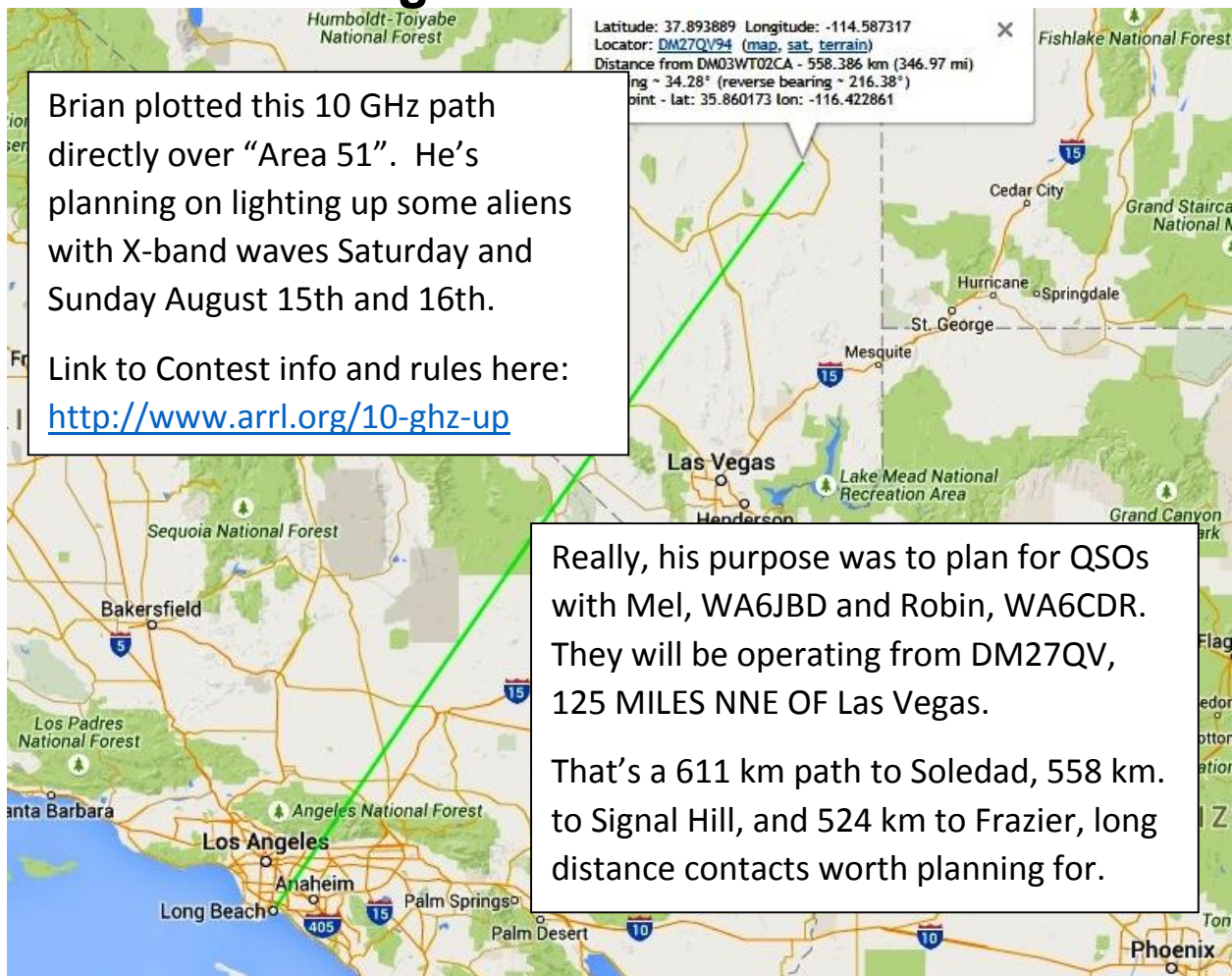
Brian plotted this 10 GHz path directly over "Area 51". He's planning on lighting up some aliens with X-band waves Saturday and Sunday August 15th and 16th.

Link to Contest info and rules here:

<http://www.arrl.org/10-ghz-up>

Really, his purpose was to plan for QSOs with Mel, WA6JBD and Robin, WA6CDR. They will be operating from DM27QV, 125 MILES NNE OF Las Vegas.

That's a 611 km path to Soledad, 558 km. to Signal Hill, and 524 km to Frazier, long distance contacts worth planning for.



# Tech Talk Description

Ever wondered why that guy on the other end keeps going further and further off frequency? This Thursday “Robin” Critchell, WA6CDR, Marty Woll, N6VI, and Pat Coker, N6RMJ will be showing us how to stay on frequency and complete QSOs in record time. All of these veteran radio contesters finished top ten in the 10 GHz Contest last year (with Chris, N9RIN) and they will bring an excellent program for the SBMS meeting.

There will be hands-on demos of how to operate efficiently and minimize radio operating error. So start your contest planning now! And plan to be with us at the official SBMS Contest Planning Meeting.



Robin



Marty



Pat

If you can't make it: watch online through Gary Heston's mobile video facility W6KVC by way of:

[http://www.batc.tv/ch\\_live.php?ch=2&id=139](http://www.batc.tv/ch_live.php?ch=2&id=139)

# **Activities at the July Meeting of the SBMS**

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

## **Business Meeting**

Presiding: President Chris Shoaff (N9RIN)

(19 in attendance... 22 last month)

## **Guests or Members Not Seen In a Long Time**

- Lisa Gibbons KF6QNG who is active in the Long Beach club. Guest of Dennis W6DQ.
- Greg Campbell W6IT, the local southern California station that Wayne N6NB worked from Hawaii in the recent world record achievements, discussed in July Tech Talk.
- Marsha Munn, XYL of Ed W6OYJ.

## **Old Business**

Brian AF6NA has been working with Mel WA6JBD to get a system put together for the 7/25/15 SBMS Tune Up in Costa Mesa. The system will measure minimum discernible signal (MDS) at 10 GHz and will be modified to make effective radiated power (ERP) measurements. No system yet for 24 GHz. Has a mixer but no source (LO).

## **MUD**

Pat Coker N6RMJ reported that he has secured the Microwave Update "seed money." Dick Bremer WB6DNX stated that the check had not yet arrived as of this afternoon's mail. Issues with the speakers and presenter's web pages have been fixed. Possible local (San Diego) tours were discussed. Jim Blum KK6MXP is providing loud-speakers and other audio equipment. Chris Shoaff N9RIN has arranged with Rohde & Schwarz for the conference to borrow a 50 GHz spectrum analyzer, noise figure meter, power meter, and signal generator which he will

operate. He requested that we ask current and future conference registrants if they are going to want to test antennas beyond 10 GHz.

## **New Business**

Dick Bremer WB6DNX reported that our liability insurance carrier had sent a notice that our annual premium was due. Hayes is no longer the insurance carrier. Our check is in the mail but hasn't yet cleared.

Chris N9RIN asked if we wanted to have a pot luck lunch after the tuneup on 7/25/15? Walter Clark offered his place in Fullerton, which has a large backyard that seats 20 people.

## **ATV and Internet Check-ins**

W6ORG Tom in Arcadia on ATN

KJ6DQR Earl in Cathedral City on ATN

Comment: Dennis Kidder W6DQ - Last month put a text out on the chat room about the quality of the signal. Terrific job, you ATV guys. Great feed on the internet!

Courtney Duncan (N5BF), Recording Secretary
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# What Our Members Are Working On

## **Dick Bremer WB6DNX: Brea**

mentored about six new hams in Brea on SSB operation at Field Day. The setup was a couple of antennas in a vacant lot with City's generator and trailer.

## **Walter Clark: Fullerton**

said that two of his three purposes of life are: 1. electronics and microwave; and 2. radio controlled airplanes (particularly flying wings). These two interest coincide with aerodynamic data sent back with telemetry (2.4 GHz WiFi).

Although not telemetry, he brought in to show the club a flying wing which includes a transducer which converts the airplane itself into a loud-speaker. Oh man was it loud. No problem hearing that from the air. He said that, that's what 100 dB spl (at one meter) sounds like.

## **Dennis Kidder W6DQ: Inyokern**

has not been at the meetings in a while. Getting closer to getting his shop back online including a working lab. Inyokern is a quiet area and, more importantly, radio quiet. This is particularly nice on HF. After a herculean effort, everything is out of the Fullerton QTH.

## **Jeff Fort KN6VR: Phelan**

tried applying what was learned in the May SBMS talk into practice by checking the focus on microwave antennas with sunlight. Had not been able to get this to work before. Larry K6HLH and he spent a while focusing a different dish.

## **Dave Laag W6DL: Marino Valley**

is working on a project to get on microwaves. He reminded the group about the 500 KHz, Night of Nights is July 12 at Point Reyes.

## **Pat Coker N6RMJ: Lake Los Angeles**

got on for the ARRL VHF QSO Party last month and made four 10 GHz contacts. Also checked into the Friday night 1296 net.

## **Jim Blum KK6MXP: Corona**

got on for the June VHF QSO Party and worked all bands up to 24 GHz until the 24 GHz radio failed. Marty N6VI was out roving and provided many contacts. Did very well from 2 meters up to 10 GHz. There were six operators on Frazier

for three days. Marty asked from the online chat room (via N9RIN) if 24 GHz had worked from Frazier. No. They think there was an amplifier failure.

### **Doug Millar K6JEY: Long Beach**

reported on the EME night in front of his garage. Lots of guys showed up. Wayne W6IRD worked on a mount for the Septum feed that absolutely positions it correctly. Heard audible echoes from over 200 watts of output. Worked 6-7 stations with easy loud signals. Next September 26-27 there will be an EME event at Dennis Kidders W6DQ in Inyokern, for low noise on 2 meters, mostly JT modes.

- Doug brought some left over equipment from OVRO. There had been 65 people at an OVRO (Owens Valley Radio Observatory) event including 8-9 hams with General Class licenses, all under 11 years old, and all girls.
- Microwave activity: working on a 47 GHz noise source.
- July 14, the day before Doug's 71st birthday - the New Horizons spacecraft will fly by Pluto at 30,000 miles per hour. The New Horizons transmitter is 60 W at X-Band.

[Secretary's Note: Happy Birthday Doug! Check out <https://eyes.nasa.gov/dsn/dsn.html> and when "NHPC" appears above one of the dishes (usually one of the 70 meter dishes) you can see the downlink and uplink activity and other information (on the right side) such as signal strength (typically -155 dBm into the 70 m. dish) and data rate. This will be going on as the data are retrieved over the next several months. If we could get contest credit for this five billion kilometer contact it would be worth five billion points!]

### **Rein Smit W6SZ: Alta Loma**

has been working on the SBMS website and got a Linrad project started . . .



Linrad is an SDR program to use on a simple platform (Raspberry Pi 2) rather than a PC. Simple to be able to use it as a portable, high performance SDR with a RTL-SDR dongle in particular for the microwave bands; 2, 8.4 and 10 GHz.

see <http://www.sm5bsz.com>

**Reing Smit, Continued:**

Linrad is a particularly good program for weak carrier and CW detection. A 7 inch display unit is on order and building the package still needs to be done. The main objective is to have something small and to be able to run it off 12 Volt DC.

**Larry Johnston K6HLH: Lake Los Angeles**

said that his last microwave activity was in the 2 GHz and up contest in May. He was one of the few to send a log in. He has been rebuilding his station after 20 years of chaotic evolution. Loose and unterminated cables everywhere.

**Courtney Duncan N5BF: La Canada**

went on vacation to EL16. Tried to work somebody there for their last Texas grid during the June VHF QSO Party but nothing but 4s heard. Working on the antenna delivered by Brian AF6NA last month, installing the necessary X-Band equipment. All items placed, holes drilled in box. Will be on the air this weekend if absolutely nothing goes wrong. Otherwise next weekend. Simultaneously preparing for a piano recital in late July.

**Brian Thorson AF6NA: Corona**

is working on ERP and MDS calibration system for Microwave tuneup 7/25/15. Will be using an Agilent 9918A Field Fox Microwave Analyzer.

**Chris Shoaf N9RIN: San Clamente**

is looking for a 3.4 GHz power amplifier in case anyone has one. Something small enough to mount on his dish. Doug K6JEY thought he might have one at the half watt level. Also is trying to cobble something together for 24 GHz for the August contest and working on a couple of microwave boards.

Courtney Duncan (N5BF), Recording Secretary
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## **San Diego Microwave Group Ed Munn W6OYJ: Reporting**

Greg Bailey K6QPV has provided an online listing of San Diego activities in during Microwave Update 2015. Visitors to San Diego will find locations, costs and descriptions for these activities ranging from the Sand Diego Zoo to the key scenic spots in the city.

Kerry N6IZW has been preparing for San Diego local tuneup which will be held in his backyard: 6026 Poppy St., La Mesa, California July 27 at 6:30 p.m.

Kerry has also been collecting equipment for the MUD Antenna Measurement event on Sunday morning October 18<sup>th</sup>. He is also preparing a couple of articles for the proceedings.

In dispositioning the equipment of Arthur McBride III KC6UQH (SK), the group decided to provide several basic microwave components to Walter Clark in support of his ongoing teaching activities.



## **What Dennis Kidder is Up To**



He picked up some Radio Shack parts bins and thinking about doing some radio astronomy. “It is so quiet here.”

His latest project is a Collins HF-80 system; his first. “This was the pinnacle of their HF radio systems ... Late 70's into the 90's ... They were used by governments and commercial users throughout the world. Different power amps up to 10 KW. This set is the 1 KW version and it came from an oil rig in the North Atlantic. Pretty cool stuff. I hope to have it running in a month or two.”



## Bill Burns WA6QYR: Microwave Activities on Rebel Road, Ridgecrest



I have one of the few Birdview trailer mounted 8 ft dishes left around. It has a concrete deck with an elevation and azimuth pole with adjustments for pointing it at a geostationary satellite. The early days of Satellite TV had these build by Birdview Company to haul out to a customer's site and set up to show them what could be done in their yard. It was made with dual axel wheels so you could haul it down a freeway at a good rate. There is a hydraulic braking system so the tow vehicle didn't need any special hookups other than lights and a trailer hitch.

There are 4 leveling jacks to make the concrete deck level and the pole El/Az adjustments easy to set up. The azimuth over elevation positing is a little different to set up but for TVRO it makes sense. Just set the elevation for your sites latitude and then adjust the azimuth for the satellite or bird you wanted to watch. I used the azimuth adjustment center point to position the trailer to look at the North Star. There was a feed and amplifier mounted at feed point with some 6 rods to hold it in place. The receiver was connected with coax to the feed and then connected to a customer's TV set.

I used some linear drives from other TVRO dishes to move the positioner in elevation and azimuth. I don't have a readout of positions so I used a small TV camera mounted on the feed to get my position to the moon. I don't have a full 180 degrees in azimuth so I will have to pick either moon rise or set to do EME work. The back of the dish positioner is flat so I can use a clinometer to set the elevation angle. I have to eyeball the moon azimuth position and then bring it in with the TV.

Chuck, WA6EXV, made a feed for 1296 MHz out of an aluminum pipe some 24 inches long and 7.5 inches in diameter. It has screws in the sides to make it circular polarization. Two N connectors a quarter wave from the closed end of the feed, one for transmit and one for receive. To hold it in place at the feed location I built a rectangular cage. All of this weight out at the feed point made the support rods bend in the wrong direction, so I had to make one more cable to hold it from the top of the dish.

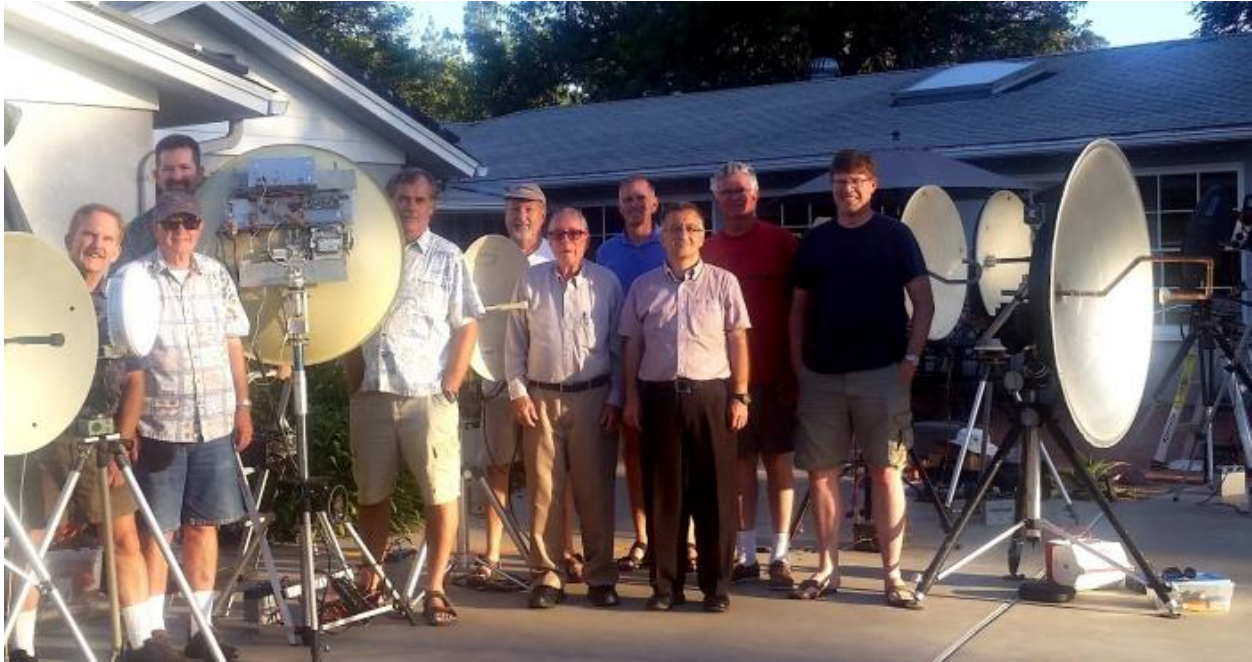


I fabricated a preamp from a Sam Jewel, G4DDK kit. I measured some few tenths of decibels of noise figure and some 20 dB gain. This mounted on the feed gave me a good start of a receiver. I had an earlier Jewel preamp kit that didn't have as good noise figure so I placed it in line with the better preamp using a coax to reach out to the feed. With a mixer/LO/amplifier combination, I converted the signal down to 28 MHz. I hoped to use my FT-817 receiver. To test the sun noise level I used a GR-1216A IF amplifier (retuned to 28 MHz from 30 MHz) with gain meter in place of the FT-817. I placed some welding glass in front of the TV camera so I could look at the sun. After some fiddling around I got a 7 dB sun noise level compared to looking into space.

A transmitter has been the hard part to come up with. I figure I'll need some 300 watts to work EME at 1296 MHz. Thus far testing with an ICOM 1296 MHz FM rig as a 10 watt source I have made some 75 watts of power using a two tube 7289 amplifier I got from WW2R. I figure if I push it, it will make more PEP in a CW mode. I have a single tube 7289 water cooled amplifier that will make some 15 watts FM. My power measurement equipment leaves some more to be desired. A 1KW Bird Termaline load with meter that is meant for 500 MHz just doesn't cut it. I need to get a calibration at 1296 MHz.

Bill WA6QYR

## The San Diego Microwave Group, 2015 Tune Up Party



San Diego Microwave Group (SDMG) established in 1982 held its first Tune Up party in July of 2000+/- at the QTH of Kerry Banke (N6IZW) in La Mesa. The 'range' consists of a signal mixer source/receiver mounted on a mast 25' above ground level. The mast is located at the far end of his property line some 220 feet from where the membership sets up their tripods. We joke about the fact that the path includes a water hop over his swimming pool (and for the record no operator has been thrown in).

SDMG membership consists of 20 active members and will have 14 rigs on the air for this year's 10G and Up Contest. Absent from those who gathered this year was Art McBride (SK, KC6UQH). In tribute to our lost member of 17 years we included his dish (left with electronics) in the photograph. Art's family donated his radio to be used as a loaner for new members. Our host, Kerry Banke, is in the blue shirt and immediately in front of Kerry (in dark glasses, tan pants) is Ed Munn (W6OYJ), presently the senior member of SBMS (joined Oct. 1955).

Only a portion of the equipment set up for the 2015 test can be seen in the photograph. The reflectors ranged from 24 to 48" while the output power was 0.5 to a LNA jarring 25 watts. Over the years Kerry has gathered data on all the rigs that have participated, thus he can immediately tell each member how their 2015 rig compares to say their 2014 entry. Even more ominous is when he looks at you and casually says; "something is wrong with your transmitter, it's down 8dB".



## Our 2015 Tune Up Party



Brian Thorson did a fabulous job of creating the test procedures as well as the test facilities. Notice the round waveguide at the top. The gain/loss of this opening as well as the pipe in the tower was all part of the calibration.

Here's Courtney Duncan N5BF looking useful.





Brian at the controls.



Bottom of the tower has a transition to coax where calibrated attenuators would be stacked.

Bill Preston of Fullerton Radio Club (and sometimes SBMS) made available to us an Agilent HP9918A Fieldfox.





Pat Coker N6RMJ, Dick Bremer WB6DNX, Jim Blum KK6MXP waiting their turns.



Robin Critchell WA6CDR



Rein Smit W6SZ





Dan Slater AG6HF, Gordo SB6NOA and Brian of course



Five of us met at Walter's house after the tuneup.



## Upcoming Events (Identified by Marty Woll N6VI)

- Aug. 1-2: ARRL UHF Contest – includes all microwave bands
- August 15-16: ARRL 10 GHz & Up Contest – 1<sup>st</sup> weekend
- Sept. 11-13: ARRL Southwestern Division Convention, Torrance CA (can you offer a microwave program?)
- Sept. 5 - 6: ARRL EME Contest – 2.3 GHz & Up
- Sept. 12-13: ARRL September VHF Contest – includes all microwave bands
- September 19-20: ARRL 10 GHz & Up Contest – 2<sup>nd</sup> weekend
- October 16-17-18: Microwave Update 2015 at the Crown Plaza Hotel in San Diego
- Oct. 31 - Nov. 1: ARRL EME Contest – 2.3 GHz & Up
- Nov. 28 - 29: ARRL EME Contest – 50 through 1296 MHz – 1st weekend



[http://hamradio.com/sbms/mud2015/mud\\_index.html](http://hamradio.com/sbms/mud2015/mud_index.html)

**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](mailto:walterclark@roadrunner.com)**

# Last Month's Tech Talk:

Tech Talk. Wayne Overbeck N6NB and Greg Campbell W6IT.  
Setting world DX records on 2304 and 3456 MHz.

## Gary Heston's ATV Mobile Studio

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.

Just as a reminder, this is how you watch SBMS meetings from home:

[http://www.batc.tv/ch\\_live.php?ch=2&id=139](http://www.batc.tv/ch_live.php?ch=2&id=139)

Better yet memorize the following  
Keywords: BATC TV  
and use Google

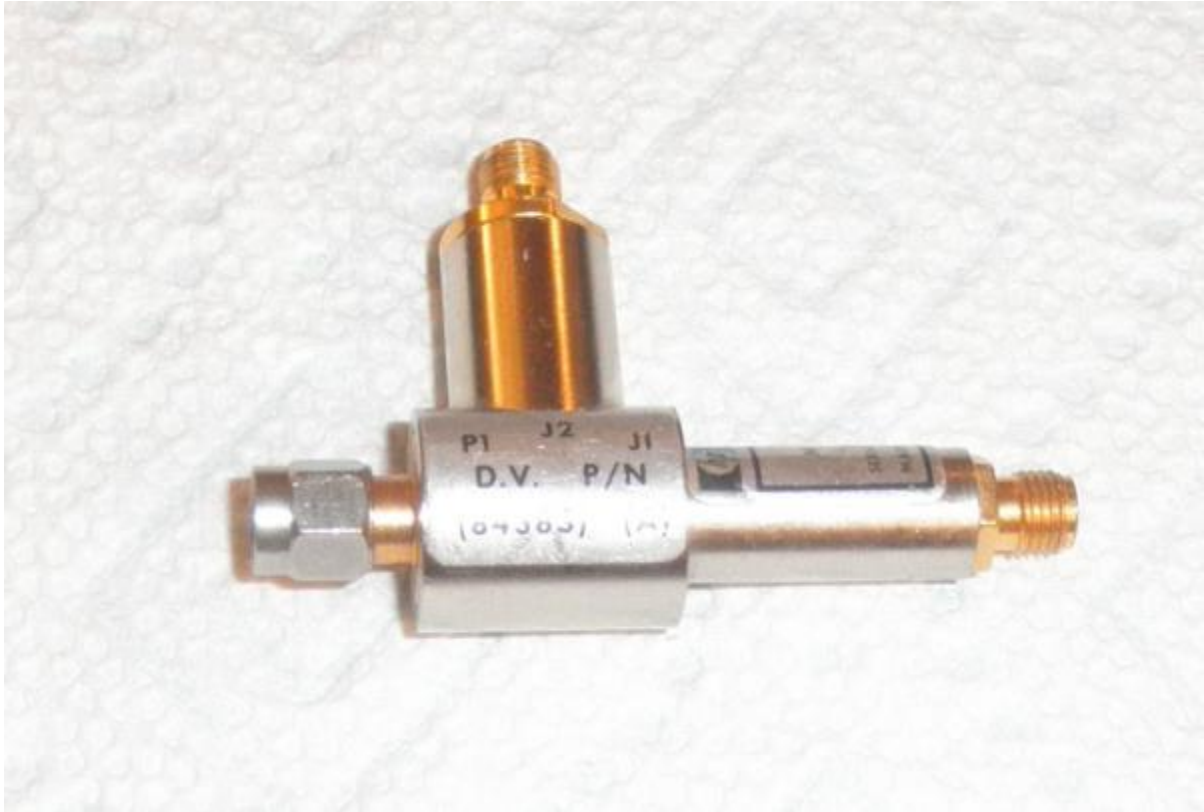
The TV part is easy to remember. Think of the BATC as batch without the h. It's a British website (that's the B) Once you are there, and logged in, on the right choose "Repeaters" and then on the left, you have to pick a stream. The stream to choose is: **W6ATN**.

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 help Dick Bremer identify this, or would like to discuss this, use the SBMS Reflector by sending a letter to the following email address:

[SBMS@lists.altadena.net](mailto:SBMS@lists.altadena.net)

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

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

## Needs, Wants and For Sale (Updated 17 June)

- **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](mailto:bburns@mediacombb.net)

His address is: 247 Rebel Road Ridgecrest CA 93555

- TVRO dishes 10 ft, 6 ft, and 5 ft free
- 6 ft and 4 ft 19 inch racks free
- Leader LBO514A 15 MHz Dual trace oscilloscope \$75
- HP 5381A 80 MHz counter \$10
- 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.

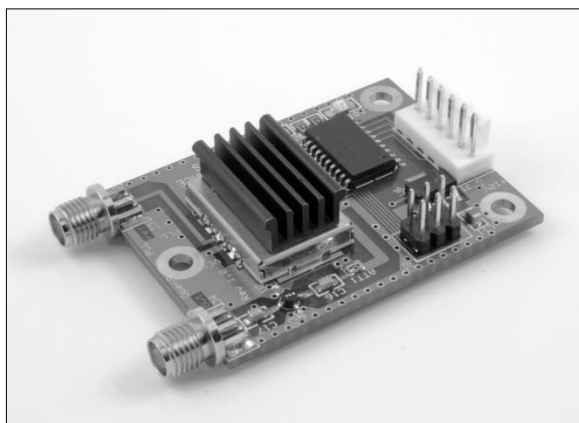
For examples of his work click on... <http://www.kl7uw.com/kits.htm>  
Contact him at [kl7uw@acsalaska.net](mailto:kl7uw@acsalaska.net)



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eMail editor at: [WalterClark@roadrunner.com](mailto: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](mailto:walterClark@roadrunner.com)

**Website: Rein Smit:** [rein0zn@ix.netcom.com](mailto: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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