



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1955

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

W6IFE Newsletter March 2007 Edition

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At the **1 March** SBMS meeting someone will talk about something. The SBMS meets at the American Legion Hall 1024 Main Street (south of the 91 freeway) in Corona, CA at 1900 hours local time on the first Thursday of each month. Check out the SBMS web site at <http://www.ham-radio.com/sbms/>.

REMINDER- NO PARKING IN THE CHURCH LOT UNTIL CLAIRIFICATION IS MADE.

From our President Dennis- 2007 is off to a great start! We've seen the results from the 2006 10 GHz and Up contest and SBMS members have posted the top four scores - Congratulations to Frank, 4C2HWH (WB6CWN), Miguel, 4B2HWH (W6YLZ), Larry, KG6EG and Glenn, KE6HPZ, pushing the 200K boundary! Miguel did an outstanding job of working the licensing issues with COFETEL and the operating permits with FMRE to be able to work the contest from Mexico. We are all grateful for the support and co-operation of Dr. Levy, XE1YK, President of FMRE and Miguel and Frank's compadres, Pepe, XE2MX, Bernardo, XE2HWH, Antonio, XE2HWH, and Ramon, XE1KK. On the 10 GHz and Up side, Dave, WA6CGR, Wayne, KH6WZ, Pat, N6RMJ, and Doug, K6JEY, made the Top Ten. Fourteen calls are in the Best DX categories, with six posting better than 1000 km. Well done! It just doesn't get more exciting than that! We all look forward to a repeat performance in this year's 10 GHz and Up contest.

In the meantime, its soon time for the 2 GHz and Up contest. Here's an opportunity to test out new radios, brush the dust off the old ones, and get out in the field and operate. Remember that this is a cumulative club contest, no individual scores are posted.

By the time you read this, history will have been made. February 23, 2007 marked the end of the FCC requiring Morse code proficiency for HF access. I would hope that ALL of you out there who have seen The Code as an impediment to an upgrade will take advantage of this and get your General and/or Amateur Extra license. And now that it is no longer a requirement, maybe some of you will take up Morse code for the fun of it, realizing that it is helpful in weak signal operations as we encounter in the microwave bands.

Hope to see you at the March meeting! 73 - Dennis W6DQ

Last meeting. Dick, K6HIJ gave a good talk with demonstration about making measurements with a signal generator, directional couple and HP415D SWR meter. Welcome to visitors Don Balsamo W6AJP of Norco and Richard Arnold K6SNO of Victorville. There was a desire to find old SBMS constitution copies and up date it for placement on the web page. The Annual SBMS dinner was voted to be at the Fullerton Sizzler on Harbor Blvd at 6 pm on 24 February. 20 people present.



Dick, K6HIJ talking about measurements.



Scheduling.

March is still in the works too.

Oct 18-20 Microwave Update 2007 King of Prussia, PA, (Philadelphia)

Activity reported at the 1 February SBMS meeting Mel, WA6JBD is still working on Cactus projects; Dick, WB6DNX purchased a Narda radiation meter at the swap meet; Chuck, WA6EXV is working on his antenna range controller, a reflock board and weak signal sources; Bill WA6QYR managed to move a WA6EXV kilowatt 144 and 432 MHz rig down the stairs to his basement operating position and is still tracing wiring before turning on the 220v; Ed, W6OYJ reported on a number of San Diego members working on various projects including Kerry N6IZW's work on optical communications between Mt Miguel and Mt Palomar some 50 miles with a laser contact using PSK-3; Ed had cards from previous 24 GHz contacts to exchange with members prior to the planned K6JEY outing to make VUCC from Heaps Peak in grids 14,15,4,5,3,13, and many others; Howard made some 1296 MHz contacts; Tom WB6UZZ picked up stuff at the swap meet; Steve, AD6HT has been collecting 24 GHz stuff; Dave, N6TEB was a rover during the Jan contest and has been collecting 24 GHz parts; Jeff, KN6VR made some 1296 contacts; Juno KG6MQS is working on a synthesizer; Jerry N7EME is working on 10 GHz rigs; Dick, K6HIJ is moving his shop into a new 7500 sq ft building, is working on computer control of his test equipment, and is working on his wire bonding machine; Pat N6RMJ talked about the 2 GHz and up rules on the second weekend of May; Larry, K6HLH went to Quartzsite for some swapping; John, KJ6HZ broke his 24 GHz rig.

OVRO report— W6IFE tied in the Italian EME contest working OVRO (www.ham-radio.com/sbms/ovro).

“Wants and Gots for sale.

For Sale: 30W 1296 amplifier kit. Cost \$45, plus \$5 if sent by mail to cover cost of shipping and packaging. In So Cal, can arrange for pickup. Email 1296Amp@cox.net for more info. Chris Shoaff n9rin

For sale Yaesu 897D Howard 626-798-0451

For Sale- Traco 9-15vDC in and +/- 12v dc and 24 v dc out at over 400 ma \$1 each Dick Bremer WB6DNX 714-529-2800

Wanted- Manual for EIP 350-351D frequency counter Juno 626-333-3256
HP8569B Jerry N7EME 949-713-6367

For Sale--Excess to my needs is a 2+ watt 24 GHz amplifier from W2PED. It has 56-db gain. I am asking \$325.00 that is what I paid. Contact me off list if you are interested.73's Bob WA6VHS rhkendall@earthlink.net



"During the celebration of the 75th anniversary of the FRME, Ramon, XE1KK, presents the SBMS award for support and cooperation to Dr. Carlos Levy, President of the FMRE. Dr. Levy was very appreciative and had good words regarding the MW activity."

SDMC Members and friends-

Friday of this week will be Kerry Banke's last day at Qualcomm. He has finally decided to turn in his key to the gold mine of microwave goodies, and start playing at home during daylight hours.

I don't think there is any question that each of us has benefited in one-way or another through his expertise in dumpster diving at Qcom?

You might want to take a few minutes and drop him a congratulatory note on his retirement-

KBanke@Qualcomm.Com

Greg Bailey K6QPV

Topics you might want to harass him about-

- Does Cindy know he has plans to bring home a G-Star 15m dish for the backyard-
- Now he doesn't have an excuse for NOT cleaning up the garage
- Maybe now he will fix his 1296 Mickey Mouse "antenna".
- Get serious about playing with laser beams.
- Become a manly-man, and tell Cindy to park her car outside of the garage
- Buy a half-track, and drive on US-5 (he did this as a kid).
- It is about time he retired and did some serious RF work
- Or some other memory you may have shared with him in the past-

Off the Internet---- Hi All,

Well, we have a growing list, so looks like we can do it. I just have to figure a date. I'd say a Saturday with Sunday as a standby. Ideally we should pick a dry day with little weather. How about after March (rainy season). There are a couple of people who want to participate but have to get their rigs back together. Here is the list so far. BTW San Diego and Up North guys are welcome to participate.

1. K6JEY
2. Maybe Wife of K6JEY
3. Pat N6RMJ
4. Dennis W6DQ
5. John KJ6HZ
6. Dave WA6CGR
7. Brian W6BY
8. Chuck WA6EXV
9. Gary WA6MEM
10. Wayne KH6WZ
11. Dave N6TEB
12. Steve KB8VAO
13. John N6AX
14. Ed W6OYJ

Looks like a great time! More later on date, arrangements, etc. Doug

For immediate release - Announcement for **2GHz and Up Contest Club Contest**

San Bernardino Microwave Society 2GHz and Up Club Contest for 2007

In the spirit of stimulating activity in the microwave bands, the San Bernardino Microwave Society (SBMS) is sponsoring a 2GHz and Up Club Contest.

For this year, 2007 the contest period runs from 6 a.m. May 12 to 8 p.m. May 13 local time.

This is a club competition in which members tally up their scores and add them with other members' scores to make up a club score.

2007 2GHz and Up World Wide Club Contest

Sponsored by the San Bernardino Microwave Society

1. Object

Worldwide groups of amateurs (Clubs) work as many amateur stations in as many different locations as possible in the world on bands from 2GHz through Light.

2. Date and Contest Period

Second weekend in May. The weekend begins at 6 a.m. local Saturday though 8 p.m. Sunday.

3. Exchange

Six-character Maidenhead Locator; example DM04ww (see April 1994 QST, p. 86 or www.arrl.org/locate/gridinfo.html). Signal report is optional.

4. Miscellaneous

Scheduling contacts is both permissible and encouraged.

Stations are encouraged to operate from more than a single location. A station may be worked again on each band for additional credit after a change of location.

For purposes of the contest, a change of location is defined as a move of at least 16 km (10 miles).

A transmitter used to contact one or more stations may not be used subsequently under any other call during the contest period with the exception for multiple licenses in the same family sharing the same equipment (family rule).

The intent of this rule is to prohibit "manufactured" contacts.

5. Scoring

Distance points: The distance in km between stations for each successfully completed QSO. One point per kilometer (eg., 10km is 10 points). QSO points: Count 100 QSO points for each unique call sign worked per band.

In making the distance calculations, a string (or ruler) and map may be used. However, calculations by computer program are preferred. Several such programs are available, including a BASIC program listing in The ARRL World Grid Locator Atlas. For purposes of making calculations, stations are defined as being located in the center of the 6-character locator sub-square (most computer programs make this assumption).

6. Multipliers

- a.. 2GHz to 10GHz times 1
- b.. 24GHz = 2 times
- c.. 47GHz = 4 times
- d.. 76GHz and up = 8 times

7. Bonus points

100 points bonus may be added for each unique call worked per band.

8. Awards

1st place plaque and all club entries will receive a certificate, suitable for framing.

Send entries no later than 60 days after the contest to be considered.

Submit logs via regular mail only.

Pat Coker, N6RMJ, 40916 179th Street, Lancaster CA 93535, USA

For more information, rules and past scores see the SBMS web page at <http://www.ham-radio.com/sbms>

or contact Pat Coker, N6RMJ: n6rmj@sbcglobal.net

Call for Papers

11th Annual Southeastern VHF Society Conference April 27th and 28th, 2007 Atlanta, Georgia

The Southeastern VHF Society is calling for the submission of papers and presentations for the upcoming 11th

Annual Southeastern VHF Society Conference to be held in Atlanta, Georgia on April 27th and 28th, 2007.

Papers and presentations are solicited on both the technical and operational aspects of VHF, UHF and Microwave weak signal amateur radio. Some suggested areas of interest are:

- . Transmitters
- . Receivers
- . Transverters
- . RF Power Amplifiers
- . RF Low Noise Pre Amplifiers
- . Antennas
- . Construction Projects
- . Test Equipment And Station Accessories
- . Station Design And Construction
- . Contesting
- . Roving
- . DXpeditions
- . EME
- . Propagation (Sporadic E, Meteor Scatter, Troposphere Ducting, etc.)
- . Digital Modes (WSJT, etc.)
- . Digital Signal Processing (DSP)
- . Software Defined Radio (SDR)
- . Amateur Satellites
- . Amateur Television

In general papers and presentations on non-weak signal related topics such as FM repeaters and packet will not be accepted but exceptions may be made if the topic is related to weak signal. For example, a paper or presentation on the use of APRS to track rovers during contests would be considered.

The deadline for the submission of papers and presentations is March 2, 2007. All submissions should be in Microsoft Word (.doc) or alternatively Adobe Acrobat (.pdf) files. Pages are 8 and 1/2 by 11 inches with a 1-inch margin on the bottom and 3/4 inch margin on the other three sides. All text, drawings, photos, etc. should be black and white only (no color). Please indicate when you submit your paper or presentation if you plan to attend the conference and present there or if you are submitting just for publication. Papers and presentations will be published in bound proceedings by the ARRL. Send all questions, comments and submissions to the technical program chair, Jim Worsham, W4KXY at w4kxy@bellsouth.net. For further information about the conference please go to www.svhfs.org.

Got this email today. Looks like interesting hardware. Frank WB6CWN

Product Announcements from Hittite, February 13, 2007

Microwave Receiver ICs Integrate LNA, Mixer & LO Driver

HMC567LC5 7 - 9 GHz, 10dB Conversion Gain, 35dB Image Rejection

HMC568LC5 9 - 12 GHz, 14dB Conversion Gain, 33dB Image Rejection

HMC569LC5 12 - 16 GHz, 14dB Conversion Gain, 32dB Image Rejection

HMC570 17 - 21 GHz, 10dB Conversion Gain, 17dB Image Rejection

HMC570LC5 17 - 21 GHz, 10dB Conversion Gain, 18dB Image Rejection

HMC571 21 - 35 GHz, 11dB Conversion Gain, 24dB Image Rejection

HMC571LC5 21 - 35 GHz, 10dB Conversion Gain, 20dB Image Rejection

HMC572 24 - 28 GHz, 8dB Conversion Gain, 20dB Image Rejection

HMC572LC5 24 - 28 GHz, 8dB Conversion Gain, 20dB Image Rejection

The Northern Lights Radio Society (NLRs) is excited to announce the creation and sponsorship of a Limited Rover award for the ARRL's UHF contest. The purpose of this award is to encourage roving by those who have fewer

bands, and by having fewer bands, have little to no chance to "win". By encouraging roving, we encourage continued growth in this fun part of our hobby.

The NLRS has defined the Limited Rover category as a rover who adheres to the rules and regulations of the ARRL's UHF contest, who submits a log to the League, who competes with no more than three bands of their choice, and who acts within the spirit of the UHF contest. Both a first place and a second place Limited Rover plaque will be awarded. Winners may be located anywhere in the USA or Canada. Full details can be found on the NLRS website at <http://www.nlrs.org/RoverMania/index.htm>, then click on "The Limited Rover Award".

The 2007 August UHF contest is August 4 & 5. Who will be the first to win a Limited Rover plaque?
73, Jon W0ZQ

Hi,

I have been playing with the CTI DRO oscillators for 78Ghz quite a bit. They are very stable, clean and lock easily. The reference input can be between about 20mhz and 200. The DRO you list will put out on the listed frequency with a specific ref. frequency. (We don't know what that is.) However, looking at the standard PDRO's they have it is probably a 12.6ghz standard oscillator. They apparently tune plus and minus 100mhz judging by the fact that the models are only listed for every 200mhz. The DRO will lock on multiples of the ref. frequency. The trick for me was to find an OCXO that would lock it up on the frequency I wanted. I ended up with a 100mhz OCXO divided down to 25mhz and an output of 13.375ghz. My IF was high-sided 450mhz. One possibility is to think differently about your IF frequency. With an 817 IF rig you can use an awful lot of frequencies. So there should be a good combination of Ref. and output frequency to put us right on with a simple OCXO arrangement. The PDRO is pretty insensitive to voltage. I run it on 12v with no problems.

Hope that helps, Doug

Don Nelson wrote:

Hi, I have purchased and set up my Jupiter GPS unit. I have the LNA based antenna attached and powered. The unit has a stick on label saying: JUPS V180. The unit was purchased on ebay and is probably like many others used by this group. I think the unit is working but I am not sure I am using it properly. I have the Jupiter pins connected in the following way:

- 1,2 + 5v
- 5 Reset on occasion
- 7,8 ground
- 11 serial output
- 13,16,17,18 ground
- 19 1 pps output
- 20 10 kHz output

There is a 1 pps signal on pin 19. There is a 10 KHz signal on pin 20. There is a periodic asynchronous character data stream at 4800 bps on pin 11 as seen on an oscilloscope. When I transform the pin 11 output of the Jupiter to a RS232 (+10v to -8v) signal, I see garbage characters via a terminal program on a PC when it is set to operate at 4800 N81. I have tried other data speed settings in the program as well as other parity settings and stop bit settings without success. Reading the specs sheet, it says that pins 7 and 8 on the Jupiter unit should be grounded to get the NMEA serial output. I have 7 and 8 grounded and I do not see useful characters on pin 11. If I let pin 7 or pin 8 float, I see +5 v on each pin suggesting that the pin is properly working inside the Jupiter board. I validate that the RS-232 port on the PC is working by connecting a Gamin 12XL data output to the PC and see the NMEA GPS messages. Given the activity I see on pins 11, 19 and 20, I assume the Jupiter board is working. My question is what may I be doing incorrectly? And what might I do to get the NMEA serial data stream output? When checked, the 10 kHz output relative to a reference HP 105 oscillator is 7 parts in 10E-6 in error. So it is assumed that the Jupiter has not locked to satellites. Thank you for your help. Don N0YE

Hi again, Thank you all for your suggestions on how I should proceed to get my Jupiter GPS unit functional. Mike, W5VSI, and James, G3RUH, gave me the solution to my problem. I needed to invert the serial output from the Jupiter GPS unit to correctly feed the RS232 port on my PC. With the inverter in place, The Jupiter board is successfully sending NMEA messages to the PC and getting displayed on the PC. I can now proceed to check out the rest of the Jupiter board capabilities.

The Jupiter pin connections that are working for me are as follows:

- 1,2 + 5v
- 5 Reset on occasion otherwise let float (1)
- 7,8 ground (2)
- 11 serial output (3)
- 13,16,17,18 ground (4)

19 1 pps output
20 10 kHz output

Notes

- (1) It appears that I can let this pin float. But it would possibly be more reliable to tie this lead to +5v through a 4700-ohm resistor. Temporarily grounding this lead does reset the board.
- (2) I have tied pin 8 to ground and have the board outputting the NMEA messages correctly. I have tied it to +5 volts without any observed difference in behavior.
- (3) This is the serial output I inverted to get the PC terminal program to successfully monitor the Jupiter messages.
- (4) On my unit, pins 10, 13, 16, 17 and 18 are tied together on the Jupiter board. I tied these pins together anyway. I have two PCs with serial RS232 ports that accept input serial streams that are essentially TTL signal levels: 0 to +5 volts. The inverter that is connected to the output pin 11 and connected to my RS232 port is simply a grounded emitter NPN transistor with a series resistor to the base and a resistor from the collector to +5 volts. It does not get much simpler than this. Don NOYE

Hi Don,

The serial data out of the Jupiter is inverted TTL, not true RS-232. You may be able to invert the RXD serial data out using a simple NPN or N-FET - or you could go whole hog with a MAX232 RS232/TTL chip; the latter uses an on-chip charge pump that makes mucho QRN, however.

BTW, pins 7 & 8 should be pulled high to get 4800-N-8-1 NMEA serial data out on pin 11.

73 de Mike W5VSI

Moline WA7SKT

Sent: Monday, February 19, 2007 11:59 AM

To: microwave@echo.valinet.com

Subject: [Mw] Circular waveguide calculator

Hello, At one time I had a program that would calculate waveguide diameters, electrical lengths etc for circular waveguide. It gave the mode cutoff freqs etc. I thought it was Txline but I can only get it to do coaxial lines.

Does anyone know what program it is? You could put values in boxes and it would recalculate. Thanks!

Loren

Loren,

The equations for TE11 and TM01 are simple:

TE11 cutoff wavelength = 3.412 / radius

TM01 cutoff wavelength = 2.613 / radius

The other modes are also simple, but I don't have handy.

Guide wavelength is:

λ_g in inches = $11.81 / (\text{Freq} * \text{SQRT}((\epsilon_r) - (\text{Freq}(\text{cutoff})/\text{Freq})^2))$

where:

Freq is frequency of interest,

ϵ_r is dielectric constant (air = 1)

Freq (cutoff) is 11.81 / cutoff wavelength (in inches)

I've got an Excel spreadsheet that does this stuff for TE11 and TM01, if you'd like a copy.

73 Donn

WA2VOI/0



Dick, WB6DNX with his swap meet Narda radiation monitor at the February SBMS meeting.

The **San Bernardino Microwave Society** is a technical amateur radio club affiliated with the ARRL having a membership of over 90 amateurs from Hawaii and Alaska to the east coast and beyond. Dues are \$15 per year, which includes a badge and monthly newsletter. Your mail label indicates your call followed by when your dues are due. Dues can be sent to the treasurer as listed under the banner on the front page. If you have material you would like in the newsletter please send it

to Bill WA6QYR at 247 Rebel Road Ridgecrest, CA 93555, bburns@ridgecrest.ca.us, or phone 760-375-8566. The newsletter is generated about the 15th of the month and put into the mail at least the week prior to the meeting. This is your newsletter. SBMS Newsletter material can be copied as long as SBMS is identified as source.

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