



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

April 2006 Edition

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At the **6 April 2006** meeting, **Mel, WA6JBD** will talk about **Network Analysis theory and hold forth with a clinic**. 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/>.

Hi Everyone, It looks like the **pre-meeting dinner spot for this month is again the Sizzler**. Sizzler
1461 Rimpau Ave Corona CA 92879 (951) 272-8255

The **Annual SBMS Dinner** will be on 22 April at the Ridgecrest Sizzler North Norma Street. Dinner is at 5 pm. Bring your spouse or significant other for a good dinner and friendship. Directions- Take either Highway 395 or 14 from the LA area north to Highway 178 at Inyokern. Drive east on 178 into Ridgecrest. Norma is the first light on Inyokern Road (Highway 178). Turn right on Norma and go about 3 blocks to the Sizzler on your right. We have the back room to have our own discussions and trading of stories.

Last meeting- Doug had a DVD of OVRO Dr. Mark Hodges discussion of SIS receivers in the 86-115 and 240-270 GHz bands and Chuck, WA6EXV talked about the mapping of the moon at 10 GHz. Nominations for 2006-07 SBMS officers had Dennis, WA6NIA for President; John, KJ6HZ for V President; Bill, WA6QYR for Editor; Mel, WA6JBD for recording secretary; Dick, K6HIJ for Treasurer; and Kurt, K6RRA for Corresponding Secretary. Nominations will be open at the April meeting followed by the election. SBMS auctions will start again in April running every other month. 25 people present.

Email stuff

Hi everybody, I would like to claim what should be a new world DX record of 114.4km for the 134GHz band. The QSO was between W4WWQ/4 and WA1ZMS/4 using FSK-CW copied by ear. QSO Details are: Date: Feb 26th, 2006: Time: 23:15z: Distance: 114.4km WA1ZMS/4 36-43-03N 80-19-23W EM96ur W4WWQ/4 37-31-

00N 79-30-35W FM07fm

WA1ZMS/4 WX: Temp: -3.5C; Dew Point: -22C; RH: 21%; Baro: 917mb; Atmos Loss: 0.118dB/km

W4WWQ/4 WX: Temp: -7C; Dew Point: -24C; RH: 25%; Baro: 885mb; Atmos Loss: 0.110dB/km

What was likely to be the last cold weather front of this winter season passed through the mid-Atlantic region of the US and so we thought we would take advantage of it and try for better DX than our former record of 79km. A rather frustrating fact was that the WX front was so void of water vapor and the resulting atmospheric losses so low, that we had several dB of signal margin on both ends of the QSO but didn't have any more distant sites to take easy advantage of at the time.

It has been a rather warm winter here in the eastern US, and if "global warming" doesn't limit our future plans, we hope to be back next fall with even more 134GHz DX!

73, Brian, WA1ZMS/4

Hello Microwavers. The following info is from Greg Bailey, who built the beacon. A few days ago the ID was updated to provide a longer steady carrier period and faster cw ID. 73s from Ed, W6OYJ

A 24 GHz cw beacon was established on 1/10/06 and is now operating on Mt. San Miguel, southeast of San Diego in Grid square DM12MQ. The Lat/Lon is 32 deg 41.80 min North and 116 deg 56.09 min West. Frequency is 24.192050 +/- 500 Hz and it is identified every 2 minutes as K6QPVB. The elevation of the beacon is 2565 ft and radiates a 34 dBm horizontally polarized signal toward the LA basin.

remunn@earthlink.net

The S.D. 24ghz Beacon was heard

Date: FRIDAY 02/24/2006

Time: Between 900AM AND 11AM

Signal report: in the noise almost no copy, to S4,S5 AND S8,S9

Frequency: 24.192.058 to 053

Location: DM04VF high-way 2 overlook about 128miles away,

Elevation: 2000ft

Weather SAN DIEGO LOS ANGELES

Temp 54-63F 54-58F

Humidity (aprox) 49-30% 22-20%

Equipment: DB6NT system with waveguide preamp 27db gain and 1.5nf 31dbd horn

NOTES: signals were anywhere from in the noise to s9 peeks were short 3-5 seconds long and would come at various times signal stability was good only wondered about 5khz. N6RMJ PAT



Dave, WA6CGR is now building WR42 to SMA transitions with 30 db of return loss at 24 GHz.

Owens Valley Radio Observatory Project

ON 4 February 2006...Well, guys ... news to report! First, the 10 Gig and 1296 transverter work flawlessly! Great echoes off the Moon. (Thanks Chuck and Bill!) Second, Doug's a grandpa, and is now on his way BACK to LA, leaving the rest of us here to suffer through ... Number three: high winds! We've had to stow the dish and hope that

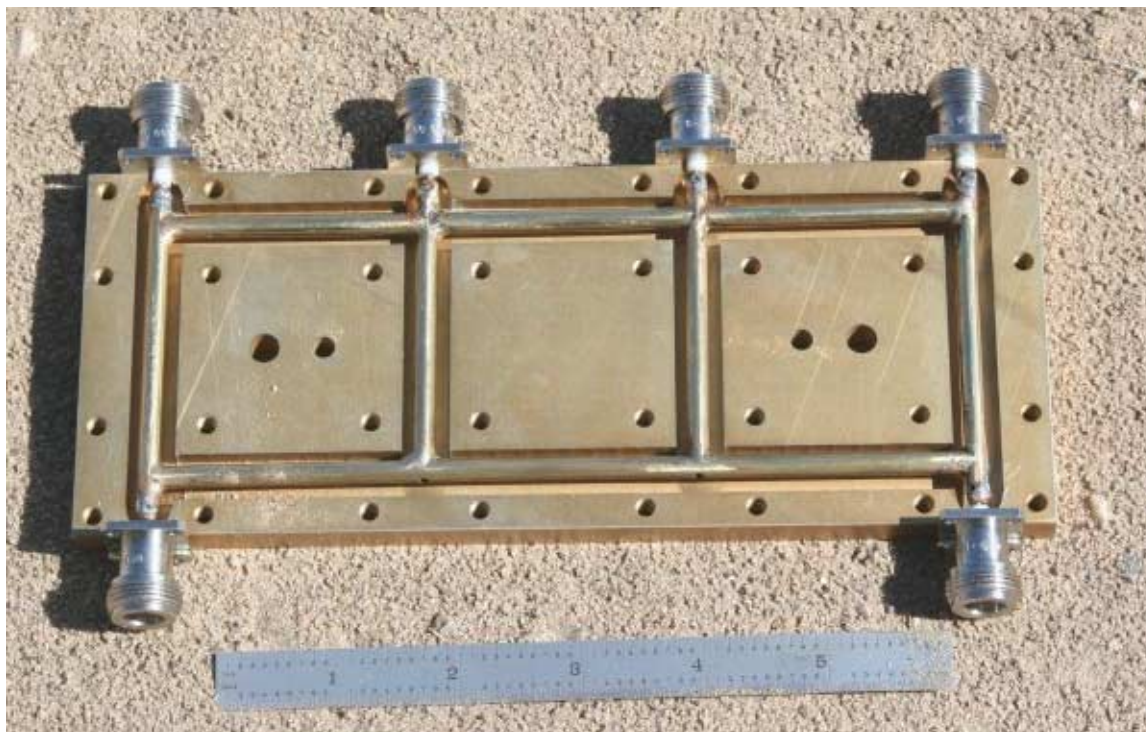
the wind dies down. If it does, we'll be back on the air.



A picture from the February Japan CQ magazine that had photographs and story about the OVRO operations by SBMS.



The 4 dipoles and hybrid built by Dick, K6HIJ to install at OVRO feed area so we can work 1296 MHz EME with right and left circular polarizations.



Inside the hybrid to make the 4 linear dipoles into the right and left circular polarizations.

“Wants and Gots for sale”

Yaesu FT736R Package. 144,220,432,1296 modules. All work. Operating & Technical manual. 432 and 1296 separate preamps..D1010 432 power amp. hand mic & MC50 desk mic. ATV mod in. All for \$1350 Pick up in La Crescenta CA 73 Bob Gardner W6SYA

Scheduling.

22 April SBMS Dinner at Ridgcrest Sizzler.

May-Basics of noise figure measurement and measurement clinic. Dick K6HIJ.

June- 24 GHz rig progress. Members share their 24 GHz rigs and I’ve a tech talk on details of construction and challenges.

July- Directional coupler design and use.

How about a field trip to Cal Tech to their receiver lab? We have been invited. Tune up party

Aug. Get ready session for 10GHz and up contest

San Bernardino Microwave Society 2GHz and Up Contest for 2006

In the spirit of stimulating more activity in the microwave bands, the San Bernardino Microwave Society (SBMS) members came up with the 2GHz and Up Contest.

The contest period is April 29 to April 30, and runs for 24 hours.

Activity reported at the 2 February meeting: Dave, WA6CGR helped Kurt, K6RRA on a 10 GHz rig, did some mill work to produce boxes, and built some WR42 to SMA transitions; Larry, K6HLH did some 1296amplifier work; Mike W6YLZ worked on Mexico license; Pat, N6RMJ was off to Vietnam for two weeks and now is engaged; Dick, K6HIJ built 4 dipoles and diplexer for OVRO 1296 MHz project; Jerry, N7EME did some 900 MHz LO work; Chip, N6CA built a 24 GHz network analyzer, did some 24 GHz beacon work and some 902 MHz repeater work; Rich, KG6JKJ was at OVRO and did some 10 GHz work and worked some HF off the station on the Hornet carrier museum ship; Larry, KG6EG built a bias supply for a 10 GHz amp; Wayne KH6WZ did some mill work on boxes, had his 24 GHz radio to show, and has some pyrojoe GPS 10 MHz equipment; chuck, Checking of 10 GHz amp for OVRO, has his DSP-10 working; John, KH6HZ has new tower and pryjoe GPS; Gary, W6KVC built an ATV amp; Dennis, WA6NIA OVRO 1296 EME contest; Jeff, KN6VR made a 1296 contact Phelan to Santa Barbara; Howard, WA6YGB did some 1296 receiver work; Ed, W6OYJ indicated that the San Diego 24 GHz

beacon now has a new chip to have a 2 minute solid signal for tuning, optical beacon to be added, had several version of GPS; Eric KG6KQT did some 2.4 GHz spread spectrum work; John, N6AX has a 10 GHz base station; Mel, WA6JBD did some 2 GHz work; Chris, N9RIN received parts for DB6NT repairs and playing with student version of Serenade; Doug, K6JEY has 432 rig off roof and has been testing 1296 tube problems.



Dave, WA6CGR was among the operators discussed in the February Japan CQ magazine.



Dave, WA6CGR carried in his 10 MHz GPS referenced frequency standard that he picked up off pyrojoes ebay list. Joseph sells the kit boards and components along with the Jupiter GPS receiver. He also sells the OCXO.



Wayne, KH6WZ had his 24 GHz rig to show.



Chuck, WA6EXV talked about his 10 GHz moon mapping measurements made at OVRO in February.



The "Passionate PINK" WR90- to N transition went to Mike, W6YLZ who has been so desperately in need of one.

Emails

For my upcoming 10 GHz transverter use, I would like to use an FT-817 (not yet purchased).

1. Even when the rig is set for 1/2 watt RF output, it puts out a momentary 5 Watts upon PTT keying.

Ordinary timing/sequencing will not solve the problem. I don't want to destroy my "new" transverter input circuits with this blast of RF.

Do any SBMS members know how to deal with this problem?

2. For external sequencer/footswitch use, which Yaesu control cable offers this feature? (The CT-62 or Ct-39)

Steve Bell KJ7OG, Tucson

As an alternative, you can disable the FT-817's 5W power amplifier altogether by simply disconnecting the DC power wire to the small amp PCB. Tom, WA1MBA shared this tip with me. You'll get a few milliwatts output at the antenna connector, which can be varied still with the front panel power level setting. In many cases, this will be enough to drive your transverter's mixer.

If you want to roll your own simple transverter, you can then connect the modified Yaesu to the IF port of an SMA microwave mixer through a 3dB pad and both transmit and receive without an IF T-R relay. Just add an LO to the mixer's LO port, with an RF filter on the RF port. The only relays needed then come after the RF filter to switch between transmit amplifiers and receive preamplifiers. Check out the block diagram for a portable radio built this way and presented at 2005 MUD at: http://www.microwaveupdate.org/2005presos/WB6CWN/Portable_Radio.pdf
Frank WB6CWN

There is a "TX Inhibit" signal on the ACC socket. If I recall it correctly, grounding this will prevent the FT-817 from generating any output while in TX mode. So, you can sequence this signal off of your PTT, or TX signal, let the radio settle down a little and then release the inhibit. That should remove the turn-on transient from the output. The operator manual is less than vague about this particular signal ...

I am faced with the same problem as I go to higher output power ... I currently drive my transverter at the lowest power setting. It does spike quite nicely on key-down.

73, -dennis WA6NIA

After talking with Dennis off-line I decided to call Yaesu tech support. They said that the pin is simply grounded to inhibit transmit. I stand corrected. Sorry if I led anyone down the wrong path on this.

John, KJ6HZ

JWM Engineering Group Expands Low Noise Microwave Phase Locked Oscillator Line with 902MHz Version

Trabuco Canyon, CALIF. — March 8, 2006 — JWM Engineering Group expands their microwave phase locked oscillator line with a 902MHz to 910MHz version. The Model 902 PLL unit joins the existing JWM Model 1152 and Model 5112 PLL units designed to replace crystal local oscillator (LO) chains in microwave receivers and transmitters.

Using an external reference oscillator, the Model 902 can provide 1 part in 10⁻⁷th frequency stability with a temperature compensated oscillator (TCXO), or 1 part in 10⁻⁹th when using an ovenized crystal oscillator (OCXO). A rubidium oscillator can provide a stability of 1 part in 10⁻¹¹th. Users must supply an appropriate 10MHz reference source for their application.

The Model 902 PLL can be used as a local oscillator in microwave receivers, transmitters, transverters and signal generators. The new PLL supports 144MHz, 50MHz, 28MHz and 14MHz intermediate frequencies.

Reverse voltage protection is a standard feature in all JWM PLL units, including the Model 902. A three-section low pass filter with a -3db cutoff frequency at 1.2GHz suppresses second- and third-order harmonic frequencies at the RF output port. A cast aluminum RF-tight enclosure provides the best possible suppression of stray RF leakage, ensuring quiet operation.

“The Model 902 is used to replace unstable 902MHz transverter crystal oscillator chains. No matter how precise a crystal oscillator may be, it will continue to drift over several kilohertz, and never really settle down to a stable and constant frequency,” said Jerry Mulchin, N7EME, President of the JWM Engineering Group.

“The JWM PLL units simplify the path to a more robust and stable frequency determining system,” Mulchin added.

Frequency Option	Application	Frequency Band	IF
758MHz	LO	902 - 906MHz	144MHz
762MHz	LO	906 - 910MHz	144MHz
852MHz	LO	902 - 906MHz	50MHz
856MHz	LO	906 - 910MHz	50MHz
874MHz	LO	902 - 906MHz	28MHz
878MHz	LO	906 - 910MHz	28MHz
888MHz	LO	902 - 906MHz	14MHz
892MHz	LO	906 - 910MHz	14MHz

Typical Unit Performance

- Power requirements: 13.8VDC@240mA typical, designed for battery/remote operations
- 10MHz reference frequency input: BNC female connector
- +17dBm RF output typical
- 2nd harmonic > -20dBc below fundamental
- Phase noise -93 dBc/Hz@10kHz typical
- Phase noise -115 dBc/Hz@100kHz typical
- 200KHz reference spurs > -100dBc
- Operating temperature range -20 Deg C to +80 Deg C
- External lock signal output provided
- Small size: 4-3/4 in. long x 1-1/2 in. wide x 1-1/4 in. high
- Custom frequencies available on special order
- Full 1 year limited warranty

Price and Availability

The Model 902 cost is US \$249.95 each plus shipping and handling. California residents pay local sales tax. More information, including a phase noise plot and a complete manual, may be found on the JWM Engineering Group website: <http://jwmeng.com/model902.html>

JWM Engineering Group
9 Westchester Court
Trabuco Canyon, CA 92679
Telephone: 949-713-6367
E-mail: info@jwmeng.com
<http://jwmeng.com>

Dear SBMS'ers

I note that the ARRL has published the results of the EME contest from last year in which we operated the 40-meter dish at OVRO on 1296. One of our photos made it to the Web report (cool!). Check out the results at:

<http://www.arrl.org/members-only/contests/results/2005/EME/>

this is on the ARRL Members-only Web. Also published is the April 2006 QST article:

<http://www.arrl.org/contests/results/2005/eme.pdf> This should be available to everyone.

Thanks to all who participated and supported our efforts. All I can say is ...wait 'til THIS year's contest ...

Also, congrats to Paul, WA6PY for placing in the top ten scores, single op unassisted. Awesome!

73, -dennis WA6NIA Ass't Project Mgr. SBMS / OVRO EME Project

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Tisza, aka 'Mrs. WA6JBD' has passed her technician class license test tonight. The airwaves will never be the same. Next item on the list? Build another 10 GHz rig.

Thanks to Dave, WA6CGR, we now have a nice home for the SBMS/OVRO EME

Website. You can check it out at: <http://www.ham-radio.com/sbms/ovro/>

We're just getting started, and there's a lot more work to do, but, you'll at least get a feel for where it's going.

Namely, the tons and tons of photographs, sound and video bites that I still need to link in.

Enjoy, and keep checking back for new material being added! -Dennis WA6NIA



Wayne, KH6WZ with his 2w 10 GHz amp at the February 06 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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