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
February 2006 Edition

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At the **2 February 2006** meeting, High Power Amplifiers. Members will share their projects and results. Want to build an amp? Join us for a presentation by those who have had experience building them. Both solid state and Tubes. Solid State 10GHz amplifiers, 23cm Amplifiers solid state and tube, 24GHz power amplifiers. Tech talk: amplifier operation classes and what to use. 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/.

Last meeting. Welcome to new member Fred, W6ILL of Torrance. Doug, K6JEY had a nice DVD Tech Talk on Sun Noise and how to measure it with good demonstrations. Rich KG6JKL made the video with Dr. Doug in the role of "Mr. Wizard". Dennis, WA6NIA presented videos of the students of Will Rogers School in Lynwood (LA) being shown around the OVRO station and up on the dish. Failures in the 1296 LO and the 10 GHz LO killed the three day adventure. It is hoped that May will have another chance to operate. Daryl, N6DTO carried some nice Rhodes and Swartz network analyzer, spectrum analyzer boxes to the meeting to show what he markets during the week. Ed, W6OYJ renewed the Society W6IFE license. There was a big resister give away at "the Lab" and the following weekend was to end the parts availability. 26 people present

Activity reported at the January meeting- Dick, WB6DNX went to the lab for tune up of a 3x multiplier and picked up a pile of resistors; Jeff, KN6VR went to the Christmas party and worked on a 10 MHz oscillator; Bill, WA6QYR worked on his DSP-10 and went to OVRO event; Ed, W6OYJ indicated the 24 GHz beacon up at San Diego University TV station and had an article on the 1964 DX shot; Howard, WA6YGB did some work on 220 MHz rig; Mike, W6YLZ did some radio house wiring; Pat, N6RMJ did some 5 GHz work at the lab; Gary, K6KVC did some 2 GHz ATV work; George, K6MBL described some of his past work; Ray, WA6OWM was at OVRO; Wayne, KH6WZ did some 24 GHz converter work; Daryl N6DTO, did some ATV work; Dennis, WA6NIA was at OVRO; Rich KG6JKJ was at OVRO; Dick, K6HIJ made the MUD final meeting, the Christmas Party, and worked on 24 GHz waveguide switches; Juno, KG6MQS did some filter work; Paul, KH6HME indicated the beacons are up and running; Larry, K6HLH did some work on his EME dish and 1296 MHz lna; Mel, WA6JBD made and az/el mount for a 18 inch dish and fixed an lna; Doug, K6JEY did some work on septum kits, and was at OVRO; Chris, N9RIN did some lna work and has a power amp on 1296 MHz; K6BNN did some 10 GHz work; Art, KC6UQH via ATV did some 2 GHz work; and K6GVE via ATV did some power supply work.

"**Wants and Gots for sale"**
Want- 5 GHz amp with 5 w or more out put; Hardline 7/8 or larger in 100 ft plus lengths Pat N6RMJ 661-264-1978
Want 1152 board for 1296 MHz converter Chris N9RIN cshoaff@yahoo.com
For Sale- WR90 waveguide relay 28v coil $50 each Wayne KH6WZ 714-846-1230 310-252-7726 kh6wz@arrl.net
Free Prime star off set dish- pick up at meeting or Huntington Beach, Wayne KH6WZ 714-846-1230
For sale: Clearing out radios I am no longer using:
(1) FT1000D HF transceiver with second receiver w/ 500 Hz filter. I never used it on HF, only as an IF radio for my six meter transverter. With hand mic, service manual and ops manual.....$1800
(1) TS-850S HF transceiver with hand mic, service manual & pos manual. Has two BNC female conn on rear for Rx loop.....$650
(1) TS-680S HF transceiver with hand mic, service manual & ops manual. Unit modified for transverter use, 28 MHz Rx & 0 dbm out tx IF 28 MHz on aux connector on rear, engaged with NB2 button. Worked much microwave & six meter DXwith this radio. Has great noise blanker as well.....$400
(1) IC706 MKIIG with service manual & ops manual and hand mic. Comes with remote cables (2), two mobile control head mtng brackets and main unit mtng bracket, Has 1.9 kHz SSB filter and 500 Hz CW filter installed. $700
73 Chip N6CA310.539.5395

Scheduling.
March- Tech talk on 325 GHz SIS receivers and mmwave reception techniques.
April- Network Analysis theory and clinic. We need to ask Mel and have him bring his nice analyzer
May-Basics of noise figure measurement and measurement clinic. Need a presenter. Tech talk on noise figure and noise temperature.
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

Email reports-
**** CALL for PAPERS ****for the **40th Anniversary CSVHFS Conference**
The Central States VHF Society is soliciting papers, presentations, and Poster / table-top displays for the 40th Annual CSVHFS Conference to be held in Bloomington, Minnesota (across from the Mall of America) on 27 - 29 July, 2006. Papers, presentations, and Posters on all aspects of weak-signal VHF and above amateur radio are requested. You do not need to attend the conference, nor present your paper, to have it published in the Proceedings. Posters will be displayed during the two days of the Conference.
TOPICS OF INTEREST: include (but are not limited to):
ANTENNAS, including Modeling/Design, Arrays, and Control;
CONSTRUCTION OF EQUIPMENT, such as Transmitters, Receivers, and Transverter;
RF AMPLIFIERS(power amps), including Single-band and Multi-band, Vacuum Tube and solid-state;
PRE_AMPLIFIERS(low noise);
PROPAGATION, including Ducting, Sporadic E, and Meteor Scatter, etc.;
TEST EQUIPMENT, including Homebrew, using, and making measurements;
REGULATORY TOPICS;
OPERATING, including Contesting, Roving, and Dxpeditions;
EME;
DIGITAL SIGNAL PROCESSING (DSP);
SOFTWARE DEFINED RADIO(SDR);
DIGITAL MODES, such as WSJT, JT65, etc.
Generally, topics not related to weak signal VHF, such as FM Repeates and packet-radio, are not accepted for presentation or publication. However, there are always exceptions.
Please contact either the Technical Program Chairman, Jon Platt, W0ZQ, or the Proceedings Chairman, Donn Baker, WA2VOI/0 at the the e-mail addresses below.
DEADLINE FOR SUBMISSIONS:
FOR THE PROCEEDINGS: Monday, 1 May 2006
FOR PRESENTATIONS at the conference: Monday, 3 July 2006
For NOTIFYING US you will have a Poster to be displayed at the conference: Monday, 3 July 2006. (Bring your poster with you on the 27th of July. !)

FURTHER INFORMATION: is available at the CSVHFS web site (www.csvhfs.org), "The 2006 Conference," and "Guidance for Proceedings Authors," "Guidance for Presenters," and "Guidance for Table-top/Poster Displays."
CONTACTS:(Note: (replace '(at)' with the @-sign to use the e-mail addresses)
Technical Program Chairman: Jon Platt, W0ZQ at W0ZQ (at) AOL.com
Proceedings Chairman: Donn Baker, WA2VOI/0 at Proceedings.WA2VOI (at) OurTownUSA.net

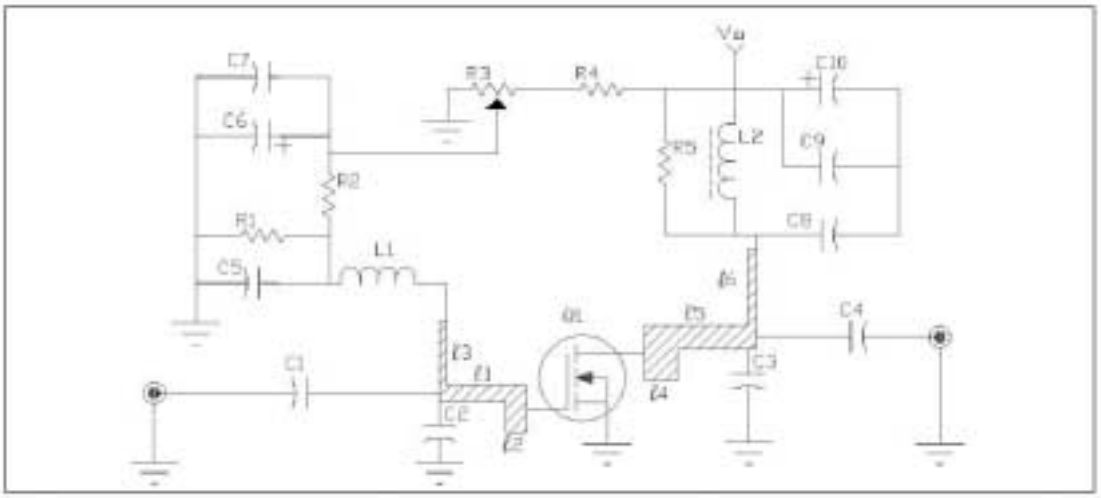
The **San Diego Microwave Club** announces that Mt. Miguel has a new beacon transmitting on 24GHz. The beacon's primary purpose is to provide an RF target for the Electrical Engineering students enrolled in the antenna design class at San Diego State University. Mt. Miguel is 8 miles line of sight to SDSU, and 17 miles to UCSD.
The beacon operates on 24.192050 GHz (+/- 500Hz) with an ERP of ~33 dBm. The carrier is identified every 2 minutes using a CW ID of K6QPV/B. The antenna is a horizontal polarized horn, 90 deg. beam width, on an azimuth heading toward the universities. Specifics on Mt. Miguel are: El 2565 ft., DM12MQ, 32 deg 41.80 min N, 116 deg 56.09 min W. Although the purpose of the beacon is for the university students, it so happens the LA basin is on the same antenna heading as the SDSU campus so the RF field sweeps NW from Miguel over the SDSU campus and on to LA. At the present time, five SDMC members have copied the beacon, all reporting high S-meter readings.
My appreciation to the following for making this project a success: The engineering staff of KPBS for use of their transmitter site atop of Miguel, Jerry Petrizze, WA6VLF, for remote control encoder/decoder, Kerry Banke, N6IZW, for parts and pieces; and Ed Munn, W6OYJ, for preliminary power and frequency measurements.
For additional information, please contact: GBailey -at- Mail.SDSU.Edu
Greg BaileyK6QPV

Those who are looking for the **MUD-2005 Antenna Test Results** can find themat:
http://www.microwaveupdate.org/2005photos/Ant_range/Antenna_Range_Results/
73s from Ed Munn, W6OYJremunn@earthlink.net

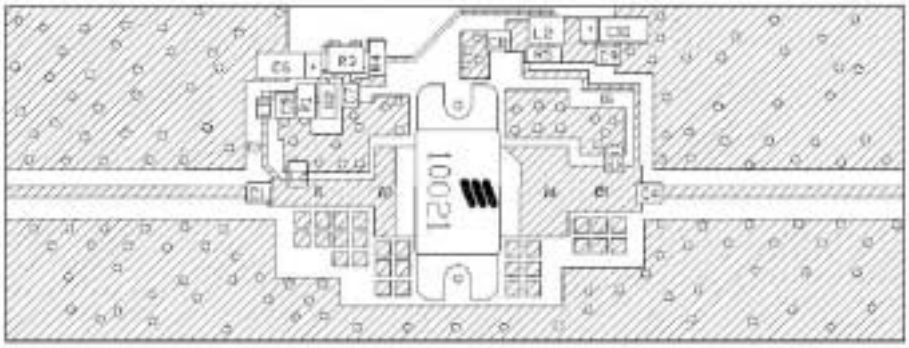
Hiya!
I just finished scanning and cleaning up all of the **Frequency West brick** info sheets that I have had for many years.
goto: http://www.ham-radio.com/n6ca/appnotes/Freq_West_bricks/fw_brick.html
They are all pdf files and between 450k to 650k.
73 Chip N6CA

Chris N9RIN has sent a photo of his 1296 MHz amplifier that he has build and hopes to have at the February meeting.

Test Circuit



Schematic for f = 1.5 GHz



Placement Diagram (not to scale)

Q1	PTF 10021	Field Effect Transistor
ℓ1	0.11 λ 1.5 GHz	Microstrip 30.21 Ω
ℓ2	0.0483 λ 1.5 GHz	Microstrip 11.69 Ω
ℓ3	0.07 λ 1.5 GHz	Microstrip 70 Ω
ℓ4	0.0853 λ 1.5 GHz	Microstrip 11.69 Ω
ℓ5	0.07 λ 1.5 GHz	Microstrip 21 Ω
ℓ6	0.25 λ 1.5 GHz	Microstrip 70 Ω
C1	33 pF	Chip Cap ATC 100 B
C2	1.3 pF	Chip Cap ATC 100 B
C3	0.7 pF	Chip Cap ATC 100 B
C4, C5	33 pF	Chip Cap ATC 100 B
C6	10 uF	SMT Tantalum

C7	0.1 uF	Chip Cap
C8	33 pF	Chip Cap ATC 100 B
C9	0.1 uF	Chip Cap
C10	10 uF	SMT Tantalum
L1	2.7 nH	SMT Coil
L2		4mm Ferrite Bead
R1	220 Ω	K 1206 SMT
R2	220 Ω	K 1206 SMT
R3	2 KΩ	SMT Pot
R4	470 Ω	K 1206 SMT
R5	2.2 Ω	K 1206 SMT
Circuit Board		.028" Dielectric Thickness, ε_r = 4.0, AlliedSignal, G200, 2 oz. copper
Circuit Board		

Hello Microwavers, I have just updated the SBMS web page section on mods to the Pcom 23 GHz ODU to 24 GHz. There are still some issues remaining but these may help if you are modifying these units.

Go to the SBMS home page at www.ham-radio.com

Drop down to "Technical Information / Papers & Software

Drop down to Technical Articles from the San Diego Microwave Group

Drop down to Technical Articles and Projects

Then to Pcom 23 GHz Mods to 24 GHz

Then to Pcom "High Side LO" Mods to 24 GHz

In paragraph 4B you will find mods to the original Pcom dc-dc power supply to provide more +5VDC current to the PA stages in the TX Module.

In paragraph 6 you will see a photo of how I cured?? Some instability in the 2-3 GHz U/D Converter performances.
Both these mods should be useful in the low-side LO version also.
I will try to get the final mods documented soon.
73s from Ed Munn, W6OYJ858-453-4563
w6oyj@amsat.org remunn@earthlink.net

PC Board Price List for W1GHZ small projects
see http://www.w1ghz.org/small_proj/small_proj.htm
Quantity
____ Antenna Ratiometer or Handheld Network Analyzer $8
____ LED Bargraph indicator - used with above $4
____ Fan controller - speed proportional to temperature $4
____ Tonemeter - audio tone proportional to voltage $5
____ Lossless Current Monitor $6
____ Single-LED Battery Voltage Monitor $2
____ Utility board for Op-amps and Comparators $2.50
____ Simple, yet "Fool-Resistant" Sequencer -- two for $10
(two boards on a panel, uncut)
____ 222 MHz Transverter for the FT-817 (or SDR-1000) $11

Discounts:
Three or more boards total, $0.25 per board
Ten or more boards total, $0.50 per board - $
Shipping:
US & Canada $1 per order for 4 or fewer boards, $
free for 5 or more
Overseas $3 per order for 4 or fewer boards, $
$2 for 5 or more

TOTAL $
Send check and mailing label to:
Paul Wade 161 Center Road Shirley, MA 01464

Subject: **Obtaining a reciprocal ham radio permit in Mexico, XE**. In the following I will describe what was necessary to obtain a reciprocal (xe permit) ham radio license in Mexico.

Getting a reciprocal ham radio permit in Mexico is not easy. As already noted on the websites of OH2MCN and WD9EWK (for links to their website see below) the process requires some substantial paperwork and patience. I hope the information below helps you to clarify this process.

Below you will find information about how to obtain a reciprocal ham radio permit in Mexico City. The Xe permit page by WD9EWK deals mainly with the situation in Tijuana. The situation is a little different here in Mexico City (as mentioned on his website). Especially if you can't file the paperwork in person due to work commitments. Please note that I am not a lawyer neither a professional dealing with this kind of "administrative stuff". This information is based on personal experience.

Things to do:
1.) Download Form 1 from http://www.agitec.gob.mx/requi/permiso.html (scroll down). If you are a US ham, download Form 2. Very basic knowledge of Spanish is needed to complete the form. Having an address in Mexico is helpful, as CoFeTel has to send you the Xe permit.
2.) Call CoFeTel in advance to let them know that your are going to file the application by mail. Their number is: 5691 7222 when dialing from Mexico City. If you dial from outside Mexico City you have to add 01 55. If dialing from aboard use: +52 55 5691 7222.
Ask for Mr. Guzman or Mr. Ramírez. These are the two responsible officers dealing with the license stuff in Mexico. They have a busy working schedule so plan in calling several times. Once you reach them they are very helpful and patient. I have communicated with them in Spanish. They speak a very clear and for foreigners very understandable Spanish.
3.) Make a copy of your passport, your visa (either FM3 or tourist visa) and ham radio license.

4.) Get an invitation letter (carta responsiva) from a Mexican ham. This is mandatory for non-US hams. Without this letter you won't be able to receive the permit.
5.) The current fee (as of September 2005) is 907 pesos (about 70 EUR). Paying this fee is a bit tricky if you can't file the paperwork by yourself (as you have to get and complete the necessary forms by yourself). You need to get "forma fiscal 5". This is a standard form here in Mexico to pay fees (derechos) to the government. This form is called "Declaración General de Pago de Derechos" issued by the SAT (Servicio de Administración Tributaria - Secretaria de Hacienda y Credito Publico). You can buy theses form in any paper store. I bought mine in a local Office Depot [located in the shopping center (Gigante, Radio Shack, Burger King and more stuff) in Polanco on Moliere between Cervantes Saaveedra and Exercito National]. Office Depot has a special section for forms - ask for forma fiscal numero 5 and they will guide you to the right place.
You will need 3 of these forms. They need to be filled out either with a computer or typewriter. If anything else than the signature is handwritten the bank will not accept it (happend to me as I thought I could give it a try :-)). If you don't have access to a typewriter you can get these forms filled out in an "escritorio". These are small shops which provide copy service and "form filling" service. I paid 25 pesos for three forms.
The form consists of several empty fields. I will later put a scanned image on my webpage but this has to wait, as I don't have access to a scanner right now.
- In the top right corner you have registro federal de contribuyentes. Put extranjero there. Leave ALR and clave única de registro población empty
- Below you will find periodo. Put there the time your are staying in Mexico. e.g. 09 2005 10 2005
- Put your name below apellido paterno, maeterno y nombre(s) o denominación o razón social. Put your last name first.
Now continue with the main area of the form. Under description del concepto put: expedicion de
operacion de aficionado extranjero. Put 15219227 into the field called clave. Put 907 (without .00 or currency symbols) into cantidad a pagar.
Put 907 next to the field called total de derechos.
Put 907 into the field called cantidad a pagar.
Leave all other fields empty. Sign the form in the squared (dashed) area.
When you have three forms in hand, you are ready to go to a bank and make a deposit. Make sure you have signed them.
6.) When you have paid you will get back three forms and a payment confirmation. The forms should have a stamp of the bank in the upper left corner. Now you are ready to send the letter to CoFeTel. The letter consists of the following documents:
application form as downloaded from the website
invitation letter (carta responsiva) by a local ham
copy of your passport
copy of your visa (either FM3 or tourist visa)
copy of your licence
one of the three "forma fiscal 5" with a stamp from the bank (proving that you have paid)
copy of paying confirmation of the bank

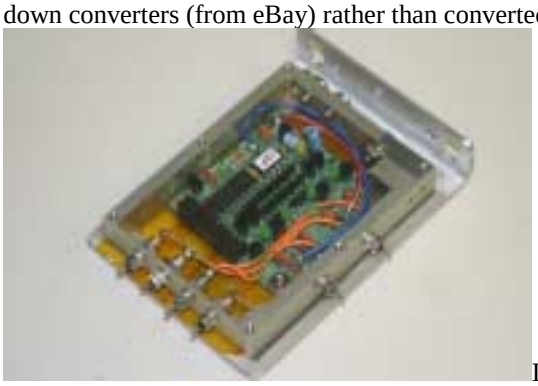
Don't send the letter by normal post. It takes about 2-3 weeks. Use a "mensajeria" instead. I used DHL as they had a subsidiary in the local Office Depot. They charged 110 pesos but delivery is overnight.
Send the letter to: Comision Federal de Telecomunicaciones
Moisés G. Ramírez Rodriguez
Director de emision de licencias
Avenida de las Telecomunicaciones s/n
Edificio ingenieria y sistemas, primer piso
Col. Leyes de Reforma
09310 Iztapalapa
México, D.F.

Important: Don't send the letter to the address mentioned (Bosque de Radiatas) in the application form as this will slow down the process.
In my case the whole process about 3 weeks.
If you have further questions please feel free to contact me.
It was quite an effort to obtain all necessary documents and information. Many thanks to Ramon, XE1KK for helping me when dealing with CoFeTel. Withhout him I would not have been able to obtain a reciprocal Xe permit. At CoFeTel I would like to thank Mr. Moisés Ramírez and Mr. Samuel Guzman for their help and patience.
Related Links:

- Information about how to obtain a reciprocal ham radio licence in Mexico (XE) by WD9EKW
- Licencing Information about Mexico by OH2MCN
- Required forms provided by CoFeTel
- Back to DL6KAC.de or the Blog

Miguel Ramirez <w6ylz@sbcglobal.net>

Here are some images of the modules I made for my 24GHz P-Com conversion radio. My unit will use Celeritek up and down converters (from eBay) rather than converted P-Com units. So, this is a "P-tek" ("Celeri-Com"?) hybrid rig.


IMG_2358.jpg JWM sequencer in a surplus milled case


IMG_2355.jpg Sequencer with cover in place


IMG_2353.jpg 3GHz Up/Down converter/mixer unit in a similar surplus milled case


IMG2386.jpg Above with cover in place


IMG2367.jpg and IMG_2370.jpg
W6OYJ DC distribution and bias protection board, with slight modifications. Different LED indicators are used to show different things: Large rectangular LEDs are for 12V signals, 5mm round ones show 5V activity. I have standardized wire and LED colors to show certain voltages. For example, orange is the PTT line (ground to enable), red is plus 12V, and yellow is plus 24V. This greatly simplifies trouble-shooting.


IMG_2359.jpg WR-42 T/R relay board. The "sub-relay" is a 12V SPDT unit, used to apply plus 24V to actuate the WR-42 relay. The red LED shows 12V TX (the sub-relay) and the yellow LED shows 24V TX (the WR-42 relay).

Almost there! I re-painted a surplus outdoor cabinet, and laid out the WR-42 plumbing last night. I still have lots to do before it is operational. Wayne KH6WZ

What Are We Doing?

Thank you for your interest in our operation. We are radio communications experimenters participating in a nationwide competition on the microwave Amateur Radio (ham) frequencies.

Who are we?
We are licensed Amateur radio operators ("hams") and members of the San Bernardino Microwave Society (SBMS). The goal of this contest is to talk to as many other ham radio stations with similar equipment as far away as possible.

Is this legal?
Yes. The Amateur Radio service was created to encourage development of radio communication technology and establish a public service communications force at no charge to citizens or the government.

Is this like CB?
No, this is not Citizens' Band radio (CB). Ham radio requires a license issued by the Federal Communications Commission (FCC) and licensees are required to successfully pass a written test involving electronics theory, radio regulations and operating procedures.

How far can you talk?
The frequencies we are using generally follow line-of-sight paths. However, through experimentation, we find that signals can be reflected against objects such as buildings, trees, islands and mountains, to extend the range. Using these techniques, we are able to contact other stations hundreds of miles away.

What kind of radios are you using?
We are builders and experimenters in microwave radio communications. No commercially-built, "off-the-shelf" equipment for these frequencies exists, so we must build our own equipment, or modify commercially-made equipment meant for other communications services, such as cell phone and long-distance telephone.

How much does this equipment cost?
Like any other hobby, people spend as much or as little as they can afford. Most people involved in ham radio spend as much as any serious stereo enthusiast, amateur photographer or woodworker.

Where can I get more information?
More information on ham radio is available from the American Radio Relay League (ARRL): http://www.arrl.org

If you are a licensed ham operator already, and want to try a new challenge, visit the San Bernardino Microwave Society (SBMS). Meetings are held the first Thursday of each month in Corona, Calif. For more SBMS information, go to http://www.ham-radio.com/sbms/

The 40 meter dish at OVRO which SBMS plans to use for EME during Cal Tech education classes.

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.

San Bernardino Microwave Society newsletter
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93555
USA