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

October 2012 Edition

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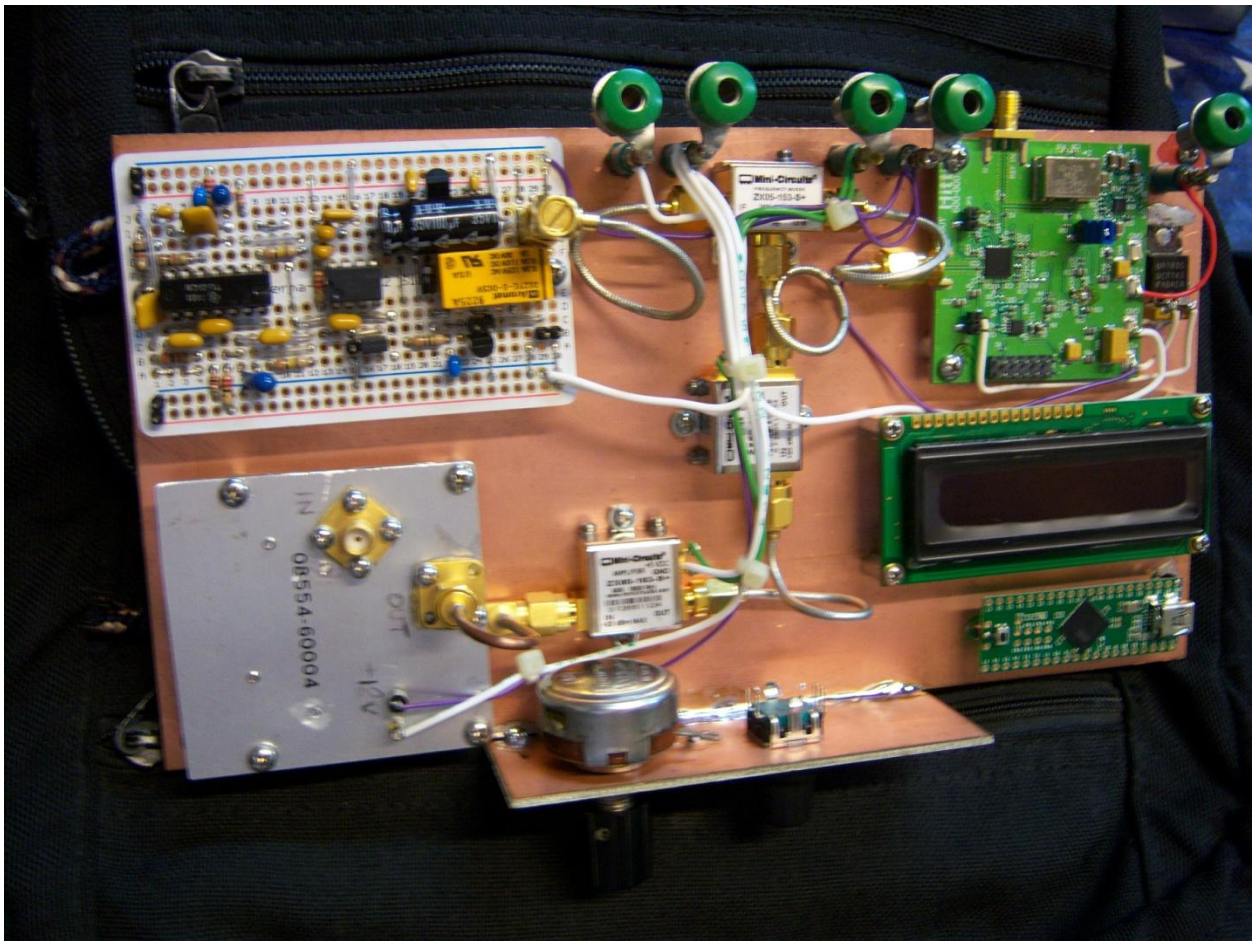
At the **October 4, 2012 SBMS meeting** will have Doug, K6JEY will speak on amateur microwave in Europe... The SBMS meets at the American Legion Hall 1024 Main Street (south of the 91 freeway) in Corona, CA at 1900 hours local time on the first Thursday of each month.

Last meeting- Dennis, W6DQ talked about his prototype 10 GHz handie talky. It will operate in the zero IF or synchrodyne narrow band mode with an audio IF of 3 KHz bandwidth. He is using a converted LNB for the LNA followed by some Mini Circuits MMICs for the RF receive stages. The LO is currently a Hittite HMC778LP6CE syntheses chip demo board. In the final unit Dennis will have just the 40 pin $40 chip for LO. The Mini Circuits mixer and MMIC receive channel will be only 3 KHz wide. There is to be a display of frequency with control buttons to set the operations. Thanks for a good hardware talk Dennis. Doug, K6JEY talked about his Isotemp 131 series double oven 10 MHz frequency source. Rein W6SZ talked about the WSJT Whisper (WSPR) mode of home to home communication (beaconing). For all frequency bands of operation it wants to have only 200 Hz bandwidth with a stability of 20 Hz/day. It has a 2 minute cycle time and needs a common logging site on the web with some sort of computer. You use an Omni-antenna. It is best to try operating on HF first to get the feel of how it operates before moving to microwaves. An FT-817 with 5 watt output works fine on 20 meters. For rover considerations one would want to use a cell phone connection to the internet. Our visitors were Bill, K6SOB of Running Springs; Kenan, KR6J of Irvine; and Ken, W6HK of Orange. It was voted to purchase a 4 pack of 6 foot tables for the American Legion and one 8 ft table for a not to exceed cost of $600. Pat, N6RMJ and Jeff, KN6VR will arrange to get them to the hall.



Scheduling:
October 6-7 2.3GHz and Up ARRL International EME Competition
October 18-21 Microwave Update 2012 in Santa Clara Biltmore Hotel
November 3-4 50 and 1296 MHz ARRL International EME Competition.
December 1-2 50 and 1296 MHz ARRL International EME Competition

Wants and Gots for sale.
For Sale: 30w 1296 MHz PA kit $50 + $5 for US shipping Chris Shoaff, N9RIN cshoaff@yahoo.com
For Sale: 10 GHz slotted waveguide antennas $55 kit, $80 assembled plus shipping Dan W6DFW W6DFW@apex-scientific.com
For Sale: Microwave Solutions 3.4 GHz PA 1mw in6w out 12vdc Matry N6VI 818-773-9655.
Want: 60 to 100 feet of EW90 waveguide Pat N6RMJ@sbcglobal.net 661-755-1773

Activity reportsfrom the 6 September SBMS meeting. Dick, WB6DNX was in the contest from Chino Hills; Chuck, WA6EXV worked on the Heaps beason; Bill WA6QYR had four contacts from the contest; Ed W6OYJ traveled around San Diego and had one Az contact; Walt did some weather radiometer studies; Ed, WX6DX gave a talk at the Satelite Society Conference; Courtney, N5BF did some computer stuff; Rein, W6SZ had 6 QSOs from home; Mel, WA6JBD roved and had 85 QSOs;Marty, N6VI roved the SJV and had 109 QSOs; Larry, K6HLH worked from home and had a up converter for his fun dongle streaching it from 500 KHz to 2 GHz; Jeff KN6VR went to Santa Yenz for the contest;Pat, N6RMJ had 110 QSOs from the SJV; Dennis, W6DQ retired from Raytheon; Doug, K6JEY went to the EME Conference in England and is working on WSPR from home;Chris, N9RIN had his rig die on Frazer. ATV checkins included Rob KC6CJV and Don KC6BXT, with lots in the chat room.

60 degrees North Electronics Company. I am starting up a kit making service for assembling certain kits made by Down east Microwave. For those that do not want to make their own kits or maybe it's gotten too difficult, or just don't have the time or want assembled kit faster than DEMI can supply it. This one-man business so I will only be able to build a limited number per month. My price is the same as offered by DEMI assembled, plus shipping which should be medium-size flat-rate priority mail in the US. I am expecting to be able to deliver within 30 days of receipt of paid order. I am not carrying any inventory so this allows shipping time to obtain kits and any other materials, and time to test the finished product plus ship to the customer. At this time I am limiting this to the VHF/UHF 25w Transceiver kits. In a couple months I hope to add three amplifier kits from Communications Concepts, Inc. If there is a something special you want assembled contact me. My professional credentials are at: http://www.kl7uw.com/60NE.htm Ed Cole

There are 2 modes in use with WSPR operation
-1 A station transmits, is (hopefully) received and reported by others via internet. The station gets feedback about its transmissions from different sites. (Reversed beacon)
-2 Passive stations receiving and only reporting. They get information about propagation with the locations of the transmitting stations.
Bottom line: One does not need to transmit to participate.
73 Rein W6SZ

I am ready!! What frequency should we use? How about 10386.305 MHz? It is between the two N6CA beacons and close to Santiago. We can use the beacons as frequency markers.
Larry K6HLH

Hello Larry,
Thanks much for your response!
The problem in a way is that I think we have to get WSP.net to add
2 channels, one for 10 GHz and another one for 24 GHz.
WSPRnet is sort of an international operation. I am trying to have them do that.
All the other bands have agreed upon frequencies, frequencies being used worldwide. So if it comes down to details with WSPR net and we ask for 2 channels, we should have done the homework.
10368.303.6 I think should be the one to propose.
WSPR bands are 200 Hz wide and normally the "dial frequency" is specified.
10368.303.600 Hz + (1400 - 1600) Hz is the actual frequency range where the transmissions take place.
The actual frequency is selected by the transmitting station's software.
So if we get this going perhaps not 7 * 24 yet and not as reversed beacons we could use that frequency range.
The rest I do not know how to handle it might be a matter for N6NB to discuss in the ARRL and the rest.
73 Rein W6SZ

Hello all,
For a WSPR net locally here in So Cal, it would be better, in my opinion at least to use Omni directional antennas.
I could well be wrong, but I think chances to "discover" bounces and the like could well be possible as detection limits are quite a bit lower.
For dx contacts high gain directional antennas would be best of course.
73 Rein W6SZ

I suggest that you NOT use a frequency close to the "analog" beacons. 3.6 KHz is close enough to easily confuse someone listening on a less than stellar filtered radio and who is using the bacons to be sure of his own frequency. The band has bazillions of spaces available, why cram it right next to existing services? There are analog beacons in the .300 to .400 range here and in many other parts of the country, why not do this at .410 and .420 or some numbers like that?
Robin, WA6CDR
and if I can ever get some TIME, Id put up something here

Hi,

I think Robin would be right if the signals were strong, but the WSPR signals are intermittent and very low power, esp. in relationship to the beacon signals. I don't think anyone would confuse a WSPR signal with a beacon signal. On the other hand, having a strong set of beacons nearby will help in accessing the WSPR stations. My 2 cents.
Doug

The WSPR signals shouldn't be very low power if they are going to be effective at extending the performance envelope. what should be being worked is how much more performance can be generated by the WSPR format using the currently available multi watt class transmitters

I don't see why proximity to the beacon is an advantage for WSPR, between phase noise in the beacon, phase noise in the receiver, and potential strong signal overload from a loud signal inside the "roofing filter" of the IF radio, seems to me that the disadvantages well outweigh the advantages of proximity for freq alignment purposes. Can't see where the accuracy of tuning is worse with 100 KHz of freq change on the IF device than with 3.6 KHz of change
If it Just Has To Be Close, make it 10 KHz and below 300
Robin

Hi Robin,
I agree with you. Let's talk about the right frequency some more. Given the phase noise response of most synthesizer front ends and FT 817's as back ends, how should we position the WSPR stations? Essentially the WSPR effort has little to do with contest efforts, so the frequency is more a matter of convenience. The frequency question is one we don't have to decide right away but do need to discuss.
It looks like we will have a variety of sources for signals. We certainly will have home radios interacting and hopefully a set of beacons. However, extended stations like K6HLH's, some in Arizona and others in San Diego and up the coast will constitute a network of "beacons" that will give us a large amount of data. A beacon in an extended location perhaps in Nevada or Arizona or up the Owens valley might be the best deal. We need to experiment and investigate.
On the other hand, a beacon on 24GHz in a nearer location might help us figure out what the parameters of propagation are on that band.
There is a lot to do....
The first level is to get a few stations on the air to act as a basis for further growth. All the pieces are there. One of the key ones is Dan's construction of excellent Omni antennas. Thanks for the foresight, Dan.
For me, the next step was to decide to put the rig at the antenna and not the garage. It will be constructed so that I can easily get on the roof, take it down, and take it mobile. I have been using the USB Tigertronics interface box to the computer and am happy with it. Rein makes his own and they work fine.
If readers of the list are interested in participating, let us know as we have access to the resources you will need.
In short, it looks like we are out for a great adventure.
Doug

Is not the WSPR mode an attempt to improve detection of our already
very weak signals? At my QTH especially. But with my improved
fixed station installation, with any luck, and serious stations on the other end, It looks possible for me to maybe work 7 states.
Please utilize WSPR beacon frequencies at least a 100 KHz above 10368.300, even with good roofing/IF (?) filters, strong home or rover stations can cause overload and intermods. Also my CW beacon, when it gets on the air, will be at approximately 10368.280.
Chuck w7cs

Not to be a parade-rainer, but:
Is WSPR "really" Ham Radio? This is a rhetorical question, not a literal one. ;)
When using WSPR, does the computer tell you when you're having fun? ;)
I think on the dry, scientific side of things, confirming reception (or not, depending on conditions) at first will be neat, but then it will probably get really boring really fast.
I think the "X-band from home" idea is an excellent one, and I too hope to build the same someday. But I think the real fun will come from using voice or CW, vs. robots talking to robots.

I'm not discouraging the collection of data in order to understand X-band propagation, but I predict: "There will be propagation events for reasons that we can correlate, and there will be those for which we can't."
Just my two cents, from the guy who still collects vacuum tubes. ;)
73,Jason W6IEE

During the past contest weekend I operated from home on Sunday evening and talked to Robin and Chip (both at their homes). I think there is plenty of opportunity for home-home activity, and having an understanding of the possible paths would be very interesting. It might also be a way to determine good locations for 10 GHz repeaters like the one that was in operation in San Diego a number of years ago.

It sounds like WSPR would be an ideal way to get this information, not to mention a way to get more people to interface their radios to computers, which would be beneficial during contests for very long haul contacts. I used a $20 SDR dongle for receive on some of the contacts I made from home and it worked well. In fact, at the recent tune-up party I got 2 dB better MDS with the SDR compared to my FT-817, mostly because I can do an arbitrarily narrow filter on SDR, and I don't have crystal filter for the 817.-Tony kc6qhp

Hi Jason,
It might not be "ham radio" but it is certainly "amateur radio" in my humble opinion.
You know as well as I do, amateur radio reaches over a very wide field of activities, from receiving signals to transmitting signals, from just talking to the world to designing radio equipment.
From contesting to amateur radio astronomy and much, much more.
A small girl playing with a crystal radio, discovering radio signals and trying to identify them, is that amateur radio, I think so.
Part of my spending time is reading about amateur radio and I am almost daily surprised what all is happening in the world of radio.
I also think a computer in amateur radio is just another what? A capacitor, a piece of wire, a detector or mixing block, a spectrum analyzer, you name it.
Doing ham radio purely with computers via the internet such as some amateurs are forced to do due to limitations in antenna restrictions and the like, is another issue. Or what about running remote receivers, transmitters via the internet. But then, if one has fun, so what.
Of course just my very personal and biased opinion.
73 Rein W6SZ

Hello Tony,
Thanks very much for your support in this.
Like you, I monitored Robin, Chip's as well as Mel's activities during the contest.
I got the same idea about unexpected contacts with non directional antenna's Not quite sure that there were unexpected QSO's but I did hear Robin as well as Chip express surprise about QSO's made during the day.
The use of Omni directional antenna's is certainly not my idea. But I think the ability to use our microwave radios more than 4 days per year is a good thing.
If there is interest in this it, probably will end up in some form of an activity evening. In any case a time limited event.
The use of WSPR could allow the detection of special, so far unknown pathways without having to spend time with the radio.
WSPR is a well established activity slowly but surely moving up in frequency.
10 And 24 GHz might be considered extreme but it is not new.
Special attention should be given to the Australia groups using DSP for contacts as well as airplane reflections; similar activities seem to be also becoming popular in Europe.
73 Rein W6SZ

Yes, this is amateur radio and yes this is the sort of things amateurs should be doing. Personally, I like things that can be highly automated and still do something arguably useful. This is why I have a few dozen months of data on the frequency and amplitude variations of the 1296.300 DM12mq beacon as observed from my station. I can get tied up at work for a month, but every time I walk by the rig I just hit "save" and have some more data.
I plan to write my own SW to make all this even better and more scientific.

And WSPR on 0.03 meters is the sort of thing I'll participate in. I think it will likely discover the sorts of things that it is discovering on 40 meters. "Hey look, there was nearly a CW supporting opening at 3 p.m. today. Who would have guessed?"
I think you will see lots and lots of airplane scatter. The DSP-10 guys in the Pacific Northwest see cirrus cloud crystals falling slowly through the stratosphere. What could be more fun than that? Detections off thunderstorms have been mentioned. That kind of flutter probably messes up the spectrum too much for WSPR, but we could always "improve" the format and pass around a new mode just for this.

I'm not nearly as ready to support this on the air as I'd like, but this sort of thing starting up is just the sort of thing that could shift my priorities just enough to join in just in time. ... About the time we get the right frequency figured out. :-) Courtney, n5bf/6

Hello All,

When the subject of discussion is WSJT or WSPR, several questions come up regularly.
WSJT and WSPR are digital modes created by Joe Taylor, K1JT.
All info, software and user manuals are available here:
http://physics.princeton.edu/pulsar/K1JT/
and
http://en.wikipedia.org/wiki/WSJT_%28Amateur_radio_software%29
There are a large number of fine papers on WSJT as well WSPR available on the internet.
This is however about how to get ready and what is needed to apply these techniques on microwave amateur radio frequencies and the roll of the internet if any.
This will get you operational:
1 - An microwave ready radio, transverter with upper/lower side band SSB capabilities,
depending on the design of the radio.
2 - A way to connect the audio output port of a computer to the mic connection on the radio.
3 - Sufficient frequency stability, actual numbers depend on mode and operational time. Long term WSPR mode requires long time stability. For details see WSJT/WSPR user and instruction manual. Most radio's in use meet these requirements, in particular when the user monitors the exchange
during the QSO .
4 - A moderate computer or laptop with accurate GMT time synchronization, this is a long time requirement.
Computer time should be within a few seconds of GMT under all circumstances. (see internet section)
5 - The computer should have a regular sound card with audio input capability.
These modes are data modes and no audio is used other than for modulating the transmitter and decoding the incoming signals.
6 - The computer needs to be able either via a serial port or USB driven serial port to perform the
RX/TX software driven RX/TX switching of the radio hardware.
What is the roll of an internet connection and what happens if no internet is available?
There is no question that the internet plays a big roll in WSJT and WSPR. The internet's roll here however is like so many its rolls in present day life.
No internet is required to use these mode, but
- Internet is often used to manage the computer clock.
see for instance here:
http://dimension-4.downloadaces.com/
There are other programs and ways to do this.
One is to use a GPS USB dongle, (particular in the field) with this software:
http://www.iz2bkt.com/BktTimeSync/BktTimeSyncEn.htm
This is excellent software and does the job without large cost.
This program requires a simple GPS dongle and no internet connection.
Loggers, schedulers, reversed beacons, etc, etc.

Many of WSJT and WSPR users use internet functions for scheduling , EME , parallel exchanges, during a WSJT QSO, reporting of signal strength related matters, etc.

One mayor function is the so called "Reversed beacon version"
An example of this is here for HF-WSJT communication:

http://jt65.w6cqz.org/receptions.php

This is a site where reception reports are collected from participating stations and those results are published for the benefit of all interested.
This is about a strict HF version of WSJT. It shows activity levels of users around the clock and world.
Other examples of schedulers, Loggers, discussion groups, WSJT related or not are:

http://www.chris.org/cgi-bin/jt65talk

http://www.chris.org/cgi-bin/jt65emeA

http://www.livecq.eu/

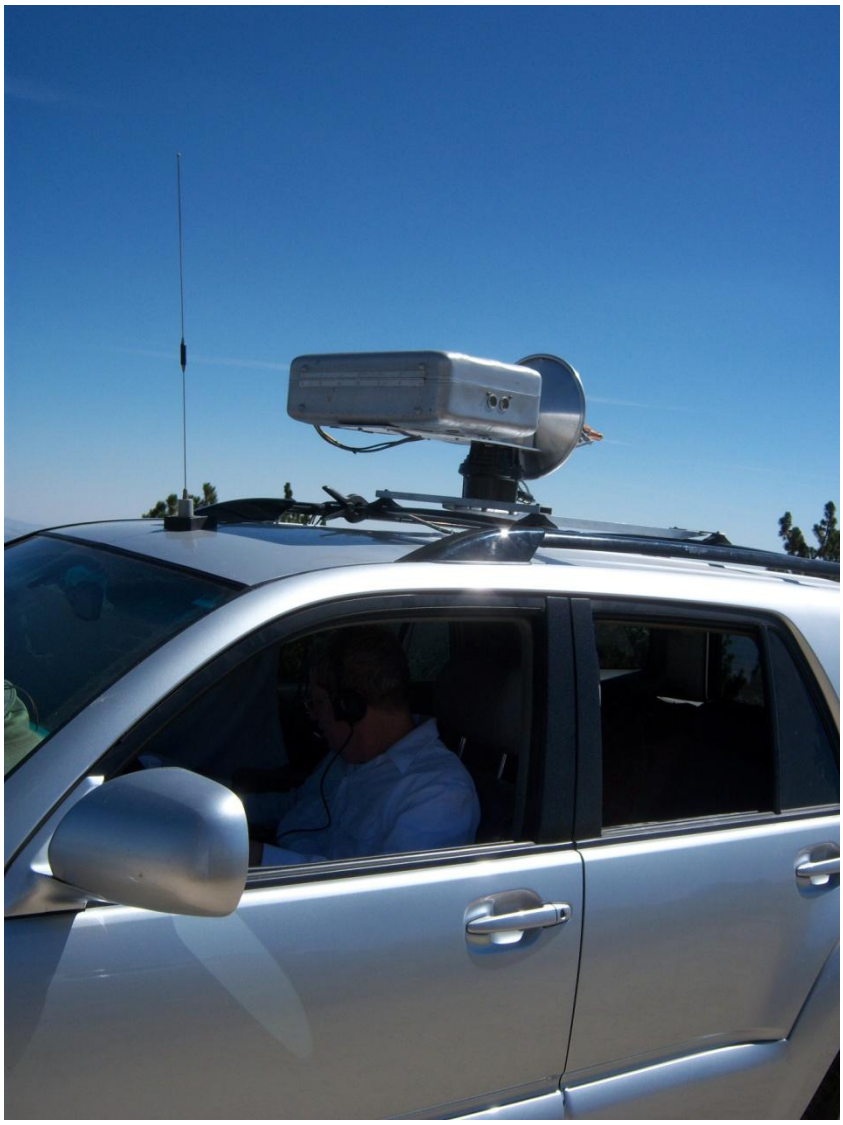
http://hb9q.ch/version2/index.php

http://www.on4kst.info/chat/login.php?band=5

Without a doubt, there are a good many others. It just to show the WSJT world wide levels and related exchanges.
For WSPR specific related matters, there is this one:

http://wsprnet.org/drupal/

It processes all WSPR signals reporting back and forth and provide much useful information and processing on Weak signal issues and technical matter.
To use the reporting feature, one needs to be able to connect to the site.
It is NOT required to do WSPR work though,
rein0zn at ix dot netcom dot com

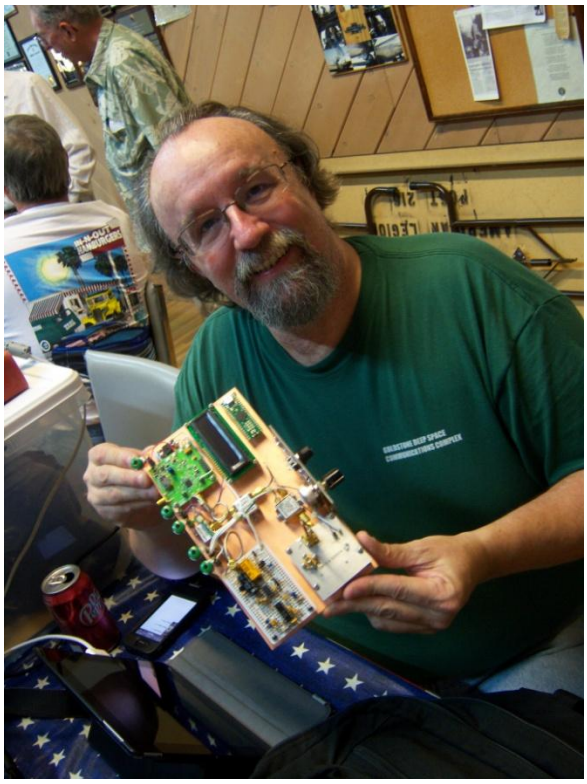


Marty N6VI with his mobile 10 GHz rig mounted on his car having a rotor to position in azimuth angle.
I want to thank everyone for the contacts and the encouragement as I entered my first ARRL 10 GHZ & Up Contest. I was using a portion of my regular 10-band VHF / UHF contest roving set-up, with a 1-foot dish and 2 watts on 10 GHz mounted with a rotator on the roof of my car. I am especially grateful for those distant ops who had the patience, the ears or both to copy me and complete contacts with me from my various operating locations.

I ended up with just over a hundred contacts on each weekend with a total of 52 unique stations and a total score of just under 40,000 points. Best DX on each weekend was W6SR and crew, both from my roving position on the floor of the San Joaquin Valley on the first weekend (486 km) and from Frazier on the second (526 km). The guys on Mt. Vaca also did a stellar job of staying with me until we made our contacts. Most of the tough ones were workable because of capable and patient CW ops on the other end. When I was roving, the guys on the hill got to me as quickly as they could and stayed up as long as we were making stops. When I was on the hill, the rovers ran us quickly and efficiently. My results from both fixed and roving operation certainly exceeded my expectations.

Larz, AA6IW rig on top of his camper could rotate while working from inside. Lots contacts were made by this station.

Brian, AF6NA on Frazier Mountain with his super performance rig during the second weekend of the 10 GHz contest. In background is Jeff, KN6VR with a similar set up busy working other stations.



Dennis, W6DQ shows off his prototype 10 GHz handie talkie at the September 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 in 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 **or, bburns@mediacombb.net, 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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