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

September 2006 Edition

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At the **7 September 2006** meeting is the usual second half 10 GHz contest preparation 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.

Last meeting- Discussion of where everyone would be at the first half of the 10 GHz and up contest was the main topic. Steve, W6QIW from Santa Barbara was our visitor. LA County Fair September 9 to October 1 will have 10 spaces for hams to bring their stuff for show and tell on the weekends. Still not update on Church parking lot use. Mexican license have arrived for Miguel, Frank and amigos. Frank, WB6CWN had a sample of a new Hittite part HMC287LP5 giving 20 dB gain and out put of 2 Watts. The part cost was $60 a piece in lots of 10. Demo board was something like $300 with device on board. It was reported that Ken, W6DTA was on the feeling poorly list. **A BIG THANK YOU to San Diego Microwave Group** for putting on the tune up party. SBMS voted to send a thank you to the Mexico hams for helping with the license issues and getting on 10 GHz. Robin WA6CDR talked about use of the liaison frequency. 21 people present

Scheduling.
September 9 - 11 ARRL September VHF QSO Party
September 16 - 17 ARRL 10 GHz and Up Contest

Activity reported at the 3 August SBMS meeting- John KJ6HZ went to the tune up party and rebuilt the 10 GHz rig and will be editing the where to go to sites list; Larry, K6HLH traveled in Europe; Mike W6YLZ has IMU feed for his dish and Pats loaner rig for amigo in Mexico; Dick, K6HIJ worked on his Qualcomm 10 GHz rig; Chris; N9RIN tested his 10 GHz rig; Wayne KH6WZ worked on his 24 GHz rig; Steve, W6QIW has a new 1296 MHz power amp;

Doug, K6JEY has 10 GHz rig working thanks to WA6CGR; Gary, K6KVC has a 10 GHz ATV rig; Pat, N6RMJ has 24 GHz rig working; Jeff, KN6VR repackaged his 10 GHz rig; Dave, WA6CGR has been doing stuff; Dick, WB6DNX went to the tune up party; Tom WB6UZZ has 10 GHz parts coming; Frank WB6CWN getting ready for Mexico, and had a board module that would tune 200 KHz with computer on 20 meters and 28 MHz; Mel, WA6JBD has a smoking power supply; Dennis W6DQ went to the tune up party; Robin WA6CDR will be on Benito; Chris, N9RIN will be on Signal Hill.

Amateur Radio Expo 2006 – looking for individuals or groups to provide information and staffing for a Ham Radio Exhibition at the 2006 LA County Fair from 9 September to 1 October on weekends. Visit http://lafair.b2v.org. Contact Joy Matlack KD6FJV rbcom1@b2v.org or Rich Whited KG6JKJ kg6jkj@sbcglobal.net or Carl Gardenias WU6D wu6d@scdx.org.

Items from the Internet world-

In reply to those who have inquired- the 24GHz beacon on San Miguel, DM12MQ is operating-The frequency continues to drift upward as the crystal ages. Presently, I read the carrier at 5 KHz high, or 24.192015 GHz. GregK6QPV

Greetings all, I am looking at the ARRL Antenna Handbook, 18th edition, which has detailed instructions for building the K1FO series of Yagis for 144, 222, and 432 MHz. I am presently building #11 and #12 of this type of yagi, so I am not a newcomer to the process. The first ten I have built are up and running very well on 144, 222 and 432 MHz and have been for several years.
But it is never too late to learn something new. In re-reading the 144 MHz section, I notice that it says the driven element should be adjusted if the 12-element version is not being constructed. No other details are given. Does anyone have a notion as to what sort of adjustment is needed? I am building the 16-element version, if you are curious. I have previously built four of the 12 elements 144, four of the 33 elements 432, and two of the 16 elements 222 Yagis. I didn't make any adjustments to the driven elements of those. Perhaps none was needed. If you look at the free space element tables and compare them to the table that has the element lengths adjusted to compensate for boom diameter, notice that the driven element length is not changed. It seems curious to me that driven element length does not need adjustment for boom diameter, compared to free space, yet needs "adjustment" for addition of directors which are several feet away and no other changes (e.g. D1, D2 spacing relative to driven element) are shown in the two tables.
The T-matches on all the previous Yagis tuned up beautifully. I am assuming that the T-arms can be adjusted for a match on the 16 elements also, but if the correct "adjustment" to the driven element design is not done, is the yagi operating at optimum performance? 1:1 SWR isn't the only criterion. Since I am just at the point of starting to build the driven elements for the two latest Yagis, it is a good time to ask.
Thanks as always.73, Dave, K4TO

On Friday 04 August 2006 8:47 pm, Dave Sublette, K4TO wrote: Lee Scott - AA1YN wrote:
Dave, I have built 4 of the 16 elements 2m K1FOs. I had to lengthen the driven element quite a bit. I used 3/16 brass welding rod for the element and adding to it was no problem. You could get some brass tubing to fit over the driven element and make it adjustable. I used brass tubing for the T match and square 1/4" tubing for the shorting bars.
Hmmmmm.. I would tend to think that using 3/16 materials rather than the 1/4-inch specified in the instructions would have caused the extra length. Also the use of alternate geometry in the matching section would have affected the match significantly. I am using the exact materials called for in the handbook. I should be ready to tune the antennas sometime Monday. I'll report the results here.
Upon further pondering, I believe the best interpretation of the statement that the driven element will have to be adjusted for Yagis other than 12 elements is that the arms will have to be positioned differently than the distances shown in the diagram. It is the simplest explanation. The driven element impedance is different for each version of the antenna; therefore the T-match arms will have to be adjusted differently. I'll let you and everyone else know as soon I get the Yagis tuned. 73, Dave

K4TO, AA1YN es The MW Gang de K2RIW 8/06/06
Dear Dave, Lee, es the MW Gang,
It is a common misconception that adjusting the arm lengths of a T match will change only the Resistive portion of

the impedance match to the Driven Element of a Yagi. This is almost untrue. As you extent the T match adjusting clips, the main thing you are doing is adding capacitance to the ends of the driven element, which lowers its resonant frequency. This does raise the resistive component slightly, but more importantly it makes the Driven element more Inductive. Only on rare occasions will this adjustment alone, accomplish a good impedance match.

You will almost always require a second method of adjustment to remove the reactive component. And, a VSWR of 1.1:1 (or better) is worth seeking if you want to get full performance from that Low Noise Amplifier (LNA) that you so carefully tuned while it was connected to a nearly perfect 50 ohm Automatic Noise Figure Indicator (ANFI).

I have submitted an article on this subject to a number of publications who have all turned it down. They seem to believe the subject is boring, and that everyone knows how to get a great match to the Driven Element of any Yagi. The stories I hear tell me this is not so, particularly when someone makes any change in the materials used to construct the Yagi.

Below is a copy of the article that no one wants to publish that explains how to fix the problem. It also tries to de-mystify the crazy rumor that a Yagi cannot give full performance if the Driven Element is as long (or longer) than the Reflector.
73 es Good VHF/UHF/SHF/EME DX, Dick, K2RIW

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PERFECT IMPEDANCE MATCHING OF A YAGI by K2RIW 09/12/05, edited 8/06/06.

INTRODUCTION -- Most Low Noise Amplifiers (LNA) only achieve top performance if they see particular input impedance. This fact should motivate EME operators to achieve a "perfect match" at the Driven Element of their Yagi antennas. There are often-used impedance matching procedures that disturb the Pattern and Gain performance of the Yagi; the procedure described here does not do that. This article describes an impedance matching subtlety that has been overlooked, and it describes the peculiar relationship between the length of the Driven Element and the Reflector.

It is amazing how unknown this impedance matching procedure is. You can understand the concept by viewing the Graphs, or by memorizing two rules about a Dipole:
(1) Longer makes the R higher
(2) Longer makes the X more Inductive.

GRAPHICALLY -- Open ANY edition of the McGraw-Hill "Antenna Engineering Handbook" by Jasik (1st ed. 1961), Jasik & Johnson (2nd ed. 1984), or Johnson (3rd ed. 1993) and look at the two Graphs on pages 4-7 and 4-8, Figure 4-3 and Figure 4-4, respectively. All issues have this information on the same page numbers. These Graphs tell you the Impedance of essentially all Monopole Antennas, for all reasonable Lengths and Diameters.

A DIPOLE IS TWO MONOPOLES -- First, remember that a Dipole is simply twoMonopoles back-to-back. Therefore, all Impedances and Lengths (in degrees) that you read from the Graphs should be doubled when considering a Dipole. Figure 4-3 tells you the Resistive Component of the Impedance versus the Length (in degrees). Figure 4-4 tells you the Reactive Component of the Impedance versus the Length (in degrees).

THE GRAPHS SAY IT ALL -- When you study Figure 4-3, you will notice something very interesting. The Resistive Component of the Impedance always gets Larger, as the antenna is made Longer, up to 180 degrees for a Monopole, which is equal to 360 Degrees (One Wavelength) for a Dipole. Therefore, you do not need any fancy Impedance Matching Networks in order to get a perfect Resistive Match for your particular Dipole; and it doesn't matter if you are using a 35, 50, 70, 200, 300, or 600-ohm transmission line. Choose the correct Length of the Dipole, and you will achieve that exact Resistive Component, anywhere from 1 ohm to over 1,000 ohms.

THE REACTIVE COMPONENT -- Then from Figure 4-4 you will notice that for your chosen length, the Dipole Impedance usually has a Reactive Component left over. You will also notice that for almost all Diameters of the antenna, the Reactive Component goes through zero at about 85 degrees of Length (for a Monopole), which equals 170 degrees for a Dipole (about 0.472 wavelength). For shorter Lengths the Reactive Component is (-) [Capacitive],

and for longer Lengths the Reactive Component is (+) [Inductive].

LOW R IS BETTER -- I find that it is easier to live with the Inductive Dipole case. Therefore, any method that lowers the natural Resistive Component of the antenna's Impedance (relative to the transmission line) is desirable. This can come about by using a fat Dipole, a higher impedance transmission line, an impedance-lowering device (such as a Delta March or a T Match), or choosing one of the Yagi designs that creates a Low Impedance Driven Element -- most of the good designs do this automatically.

LONGER IS INDUCTIVE -- Once the feed point of the Driven Element has a lower Resistive component than your transmission line Impedance, that will force you to lengthen the Dipole so as to raise it's Resistive component. This, in turn, will cause the Dipole's feed point to become Inductive. Then, all you have to do is to create a small Shunt Capacitor at the feed point, and you have a perfect match (a 1.0:1 VSWR), or a Reflection Coefficient (S11) of -30 dB, if that's what you desire.

AN EASY PROCEDURE -- The first time this is explained to you, it may seem complicated. Once you have performed the procedure once or twice, you will say, "why hasn't someone told me this sooner?" A skilled operator, who is watching the Reflected Power on a Bird Watt Meter, a Directional Coupler, or the screen of Network Analyzer, can perform the procedure in about 3 minutes. Be sure your instrumentation has High Directivity, or else the "perfect tuning" will be a "false perfection".

TUNING TRICKS -- Here are some additional tricks. You can always electrically lengthen your Dipole by placing small pieces of Copper Tape on the tips of the Dipole (capacitive Top Hats), or by placing sliding pieces of tubing in that area. You can create a Shunt Capacitor at the antenna's Feed Point by placing a piece of Copper Tape across the terminals of the feed point, after first insulating one of them with some paper tape. Your intention here is to prove that you can achieve a perfect impedance match to your Dipole. Once achieved, it is a simple matter to convert your "gimmick capacitors" into permanent fixtures that are mounted to the antenna in a weatherproof manner.

INDUCTIVE Z IS BETTER -- I like the Shunt Capacitor approach because it is very easy to create a variable capacitor by way of Copper Tape. The capacitor can be easily tuned under working conditions by poking an overlapping piece of Copper Tape with a thin diameter wooden stick, as you stand out of the way of the antenna's field. This also is the way to tune the pieces of Copper Tape that are placed on the tips of the Dipole (by bending them). The Dipole Tip-Tuning and the Feed point Shunt Capacitor Tuning will display some interaction. But, after a couple of tuning cycles, you will have a 1:1 VSWR within a few minutes.

CAPACITIVE Z IS HARDER -- If you have to make the Dipole electrically shorter than 170 degrees (to match the antenna's Resistive Component for a transmission line that has a lower Impedance), that will force the antenna's Reactive Component to be Capacitive, and this will require a shunt or series Inductor to be placed at the Feed Point. I find that it is more difficult to make a variable Inductor gimmick-tuning device. But, maybe some of the smarter EME'ers and Microwavers will also solve that problem.

YAGI TUNING -- Here are some notes concerning Yagi antennas. Many amateurs worry that gimmicky devices placed on the Driven Element will decrease the Gain, or change the Pattern of an otherwise well-designed Yagi. As long as loss less devices are used, this is not a problem. For a Yagi to work well, all that is required is for the Driven Element to:

(1) Radiate in a Linear-Polarized, Dipole-like manner.
(2) Present a good impedance match to the transmission line.
(3) Present no Common Mode Currents that flow on the outside of the coaxial transmission line (use a good Balun, like a 1/2 wave coax Balun).
(4) And for all of the Yagi's Parasitic Elements to be the right electrical lengths, and be in the right positions.

A PROBLEM: YAGI TUNING WITH THE DIRECTOR OR REFLECTOR – You may have been told you can use the First Director (or two), or the Reflector, for adjusting the Impedance Match of the Driven Element. However, when you do this you are simultaneously changing the Yagi's Pattern, and it's Front-to-Back Ratio.

Tuning the Yagi, and adjusting the Impedance Match of the Driven Element, really are two separate operations. A good number of experienced Yagi builders believe that the Gain and Pattern are not significantly impacted when

tuning the First Director (only) as a means of improving the Impedance match. For some particular Yagi designs, where the First Director is very close, this may be true. I say, if you are smart enough, one operation doesn't have to contaminate the other; why take the chance when independently correcting the VSWR is so easy?

LENGTH OF THE DRIVEN ELEMENT VERSUS THE REFLECTOR -- When you follow this impedance matching procedure you will often find that the Driven Element ends up almost as long, or even longer, than the Reflector. This greatly disturbs many Yagi users, because they have come to believe that the Reflector most be longer for proper Yagi operation -- this is an incorrect belief.

I have seen some very respected EME operators lengthen the Driven element, the Impedance match was getting better, the measured pattern did not change, but they would stop at the instant the length approached that of the Reflector -- they seemed to believe the antenna would EXPLODE if they went any further. Their mistaken belief in this area was that strong.

The Yagi will perform correctly if each of the Parasitic Elements has the correct Electrical Length, and each is in the correct position. The Driven Element only needs to radiate in a broadside manner to supply the signal that sets that process in motion; it's physical length does not matter, as long as it is in the vicinity of one half wavelength long.

Here is an exaggerated example to demonstrate that principle: if the Driven Element was a made a full wavelength long, only then the Dipole would have a broadside null in it's Radiation Pattern, and it would not properly excite the Parasitic Elements.

USE DUAL INSTRUMENTATION WHILE TUNING A YAGI -- If you are designing your own "Super Yagi", here is a procedure I recommend. A really smart technologist will use two pieces of instrumentation, or he will set up his Network Analyzer so there are two traces on the screen (in different colors). Then he can simultaneously display the Gain and the Impedance Match, as he does the tuning of the individual Yagi elements. You will be amazed how often an adjustment of a Director will make the Gain jump up 1 dB, at the same time that the Driven Element VSWR goes from a 1.0 to a 1.5 (a loss of 0.18 dB). The smart technologist will leave the Director tuning at the High Gain position, and then he will INDEPENDENTLY work on the Driven Element to bring the VSWR back down. At the end of this tuning procedure he will have a Yagi that has Maximum Gain, and the Best VSWR, without allowing one operation to contaminate the other.

LOSS TEST -- If you have any doubt that there may be lossy components within an antenna, a simple test will reveal that fact very fast. Simply put 100 watts into the antenna for 5 minutes. Then turn off the RF and quickly go over and touch the components of the antenna. The heat radiated by the lossy components will be revealed to you very quickly with that test.

LOSS TEST SENSITIVITY -- Here is an example of how sensitive that test is:
(1) Your hand can easily detect the temperature increase of a component that is dissipating one watt for 5 minutes.
(2) One watt of loss out of 100 watts represents 99% efficiency, or a loss of0.04 dB.

CONCLUSION -- I hope you find this information to be useful. I think I have earned a small fortune over the years by using these techniques to tune the antennas for my consulting clients. They were amazed that I could achieve a 1.05 VSWR (and better), sometimes over a considerable bandwidth -- but that's another story. There are modern sophisticated receiver circuits that will only perform well when an extremely low VSWR is present.
73 es Good VHF/UHF/SHF/EHF/EME DX, Dick, K2RIW
web: http://www.consult-li.com/listings/RKnadle.htm

On Sunday 06 August 2006 4:55 pm, Al W0PUF wrote:
Regarding Dicks post:
I have McGraw-Hill "Antenna Engineering Handbook" by Jasik (1st ed. 1961), the pages and graphs Dick references are not correct. Not sure what are the right pages but perhaps: on pages 3-4 and 3-5, figures 3-3 and 3-4 respectively. Al - w0puf

W0PUF es The Micro Wave Reflector Group de K2RIW 8/06/06.
Dear Al et. al,
You are correct; thank you for pointing this out. In the First edition of Jasik (1961) the appropriate graphs are on pages 3-4 and 3-5. The Monopole Impedance Graphs are Figure 3-3 (the Resistive Component) and Figure 3-4 (the Reactive Component).
The problem came about because the second and third editions have an additional chapter, (the new chapter 3) which is labeled "Arrays of Discrete Elements".
73 es Good Yagi DX, Dick, K2RIW

MICROWAVE UPDATE 2006OCTOBER 19-22
THE Midwest VHF/UHF Society is pleased to announce that it has been chosen to host the Microwave Update 2006 Conference in Dayton, Ohio on October 19-22, 2006.The event will be held at the Holiday Inn North, located at the Wagner Ford Road exit on I-75. Room rates are $79 plus tax per room per night for king or double beds, maximum occupancy is 5 per room, registration at 937-278-4871 or www.holiday-inn.com/day-north. PLEASE NOTE: When you make your reservation, let the hotel know that you are part of the Microwave Update Conference, so that you will be counted in our block of rooms guarantee to the hotel. This will keep us from being charged for our conference, flea market and banquet rooms.
On Thursday, the surplus shop tour will include Mendelson's, Fair Radio, and Midwest Surplus. Friday night will be the traditional MUD Flea Market, and Saturday evening will close the event with a banquet including door prizes. This years banquet speaker is ARRL's president, Joel Harrison, W5ZN.
In addition to the excellent technical presentations MUD is known for, there will be an exhibit area for vendors to show off their latest offerings, and a hospitality suite on Thursday and Friday evenings. Test equipment will be available for checking noise figure, amplifier gain, output power, phase noise, and impedance. We hope to arrange for suitable nearby facilities early on Sunday morning so that an antenna gain and pattern test range can be set up. To present papers, call Gerd Schrick at 937-253-3993 or email wb8ifm@amsat.org.Of course; there will be activities for the family as well, since Dayton offers many cultural attractions and great shopping! The Museum of the United State Air force recently completed a major expansion of its indoor exhibit area, substantially increasing the number of aircraft and historical items on display. The cost of registration is $40 before September 30, $45 after September 30, and $50 at the door, with the banquet cost at $30 per person. The registration includes one copy of the proceedings; additional copies will be $20 each. For more information: www.microwaveupdate.org.
The members of MVUS are looking forward to hosting MUD 2006, and hope you will join us for a great time in Dayton! The MUD 2006 Committee:Tom Holmes, N8ZM; Mike Schulsinger, N8QHV; Gerd Schrick, WB8IFM; Steve Coy, K8UD; Tony Emanuele, WA8RJF; Bob Mathews, K8TQK; And a Host of Others
73 Bob K8TQKem89je Bainbridge, Ohio 45612qrv 50m-10gigs...

A kit to produce **30W at 1296MHz has been engineered by members of the San Bernardino Microwave Society** http://www.ham-radio.com/sbms/ and the San Diego Microwave Group http://ourworld.compuserve.com/homepages/edmunn/:
- power gain 10 - 13dB (so budget for 3W i/p) - uses a PTF 10021 FET - 28v dc supply; current drain about 2A (or use 24v & lose <1dB power o/p) - cost $45 + $5 s&h (shipping USA; kit does not include heat sink, connectors or T/R relay)

For full details, assembly & test info, and to order a kit, email1296amp@cox.net Note: this kit contains surface mount components; familiarity with handling these is helpful (BUT: it just ain't that hard - see comments below)
For pic of completed amp, see http://kahuna.sdsu.edu/~mechtron/hamshack/1296Amp/1296Photo1a.jpg (note: you do not have to erode the heat sink as much as our brave beta-tester did <g>)
Personal comments from a builder: - I have successfully completed one kit, with a second on the way; splitters/combiners also under construction - I used a Model 99 heat sink from Communications Concepts ($22 + s&h)http://www.communication-concepts.com/heat_sink.htm - to accommodate the FET height vs. PCB thickness, I chose to use a sheet of 0.032 in thick brass beneath the PCB instead of washers or bending the FET tabs; I used item #253 from K&S Engineering www.ksmetals.com. Many hobby stores have a display area with K&S products. - I decided to use a 4in x 6in slab of copper between the FET and the aluminum heat sink to better distribute heat. I bought mine from Industrial Metal Supply Co., who sell metal off cuts by the lb http://www.imsmetals.com/ locations Irvine, Riverside, San Diego & Sun Valley in CA - thermal grease: to use or not to use? There are many opinions. Advice I have had is that use of grease prevents getting a good RF ground –

leads to possible oscillation & thermal runaway. - I found the bias adjustment pot somewhat fragile, so, being ham-handed (sorry!), I am using a 10-turn encapsulated pot in my Mark II version - the clearance holes in the PCB are large enough to permit the use of #6 machine screws (NOTE: must use #4 for mounting FET); having broken a #4 tap recently, which stuck in the project... need I say more - power relays; for brick amps, I have standardized on an NTE SPDT, 12v coil, 40A contacts, encapsulated relay from Mouser http://www.mouser.com ; $7.25 ea @5-off; part # 526-R51-5D40-12F. Spade terminals and easy mounting with a #10 screw. - Rf relays; I use Transco SPDT, SMA relays from DEM http://www.downeastmicrowave.com/ $45ea guaranteed working; I have been told they will tolerate 80W COLD-switched at 1296. They are nom 28v, but DEM sells neat kits for operating from 12v (which I use) - connectors; I used right-angle SMA, PCB-style; I found I needed to file the pins slightly to achieve a sliding fit; pyrojoe claims SMA is good to 400W, so have at it... - surface mount parts; I use demagnetized tweezers & a fine Weller soldering iron bit; if, like me, you suffer from the "slippery little suckers" syndrome, a la "Pretty Woman," spread a sheet on the floor & work directly on it. Sounds daft. Wait 'til you're searching for an SMD cap on your workshop floor...

Now make some noise on the 1296 nets: - WSWSS http://www.wswss.org/ Tues & Fri evenings - PNWVHFS http://www.pnwvhfs.org/ Sun am

Any info on other reflectors you think this email should be listed on, please advise the writer off-list

Rod Adkins WI6M "Rod Adkins" <adkins92rod@earthlink.net>

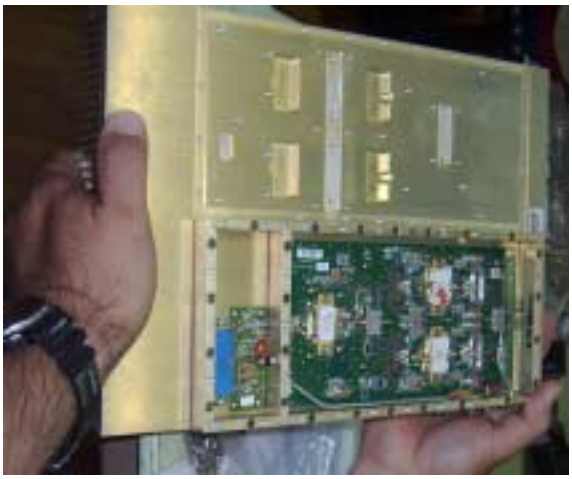
"**Wants and Gots for sale.**

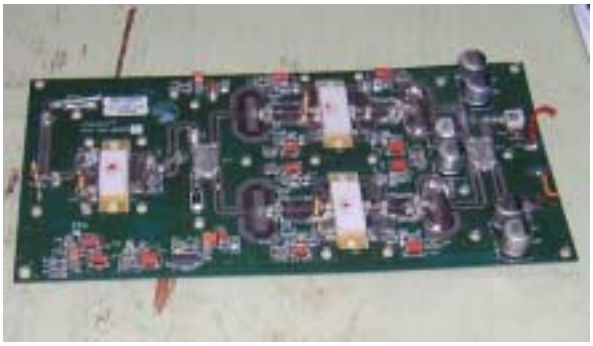
I need a few things. First Kent K6WCI is ordering a DB6NT 10ghz transverter to start building his own set up. Last few contests he has been running with a borrowed rig. So I am looking for. 3ft dish and a 1watt amp to get Kent's system started. Also need a box to start building my 24ghz unit in. Got the same horn Pat N6RMJ has and need to find a nice size enclosure to start putting things together. Any ideas where to look would be appreciated. If you know someone at TRW who sells something suitable let me know because every time I go I have not been able to find anything. Also, need a waveguide switch for 24GHz, WR42 I believe. Thanks, Dave, N6TEB

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

Want- manuals for a Motorola R-2001A/HS Communications Analyzer? I am looking for both, Operation and Service manuals. Tnx & 73 Dan Welch - W6DFWw6dfw@dslextreme.com

For Sale- 900 MHz amps. I am trying to get better documentation on these PCBs, including voltage and currents, drive levels, etc. Here is the info again: 900 MHz amplifier, pulled-out and functional PCB, with no heat sink, no bias protection, no driver RF. 8W in gives you 250W out, 6W in gives you 150W out. Voltage is 24V DC; bias voltage is negative 5V to 15V (to be verified). Current at 24V also needs verification. RF input and RF output are via traces on the PCB. This is not necessarily a "plug and play" project; there are some precautions involved. I am seeking more information so I can make this a step-by-step project - soon. PRICES: Amplifier board, $30 Pre-driver, 1mW to 9mW in, 3W to 8W out: $15 (limited supply) Bias PCB, with diodes: $5 (limited supply) Details: Preferred delivery is pick-up at the SBMS meeting following receipt of money. As an alternative, add $15 for shipping and handling to anywhere in USA. This is for fellow SBMS and SDMG members only for the moment, as quantities may be limited. Any questions? Contact me off-list via e-mail: kh6kine@earthlink.net photo below.





Want- Lu LNB John KJ6HZ 951-288-1207
Want Siemens RW2135 TWT and RWN 320 power supply Frank WB6CWN 805-558-6199
Want 10 GHz 10w SSPA Denis W6DQ 562-858-2883
For Sale- WR90 large waveguide relays, 24v tested $30 each Wayne KH6WZ 310-357-2396.
For Sale 10 MHz OCXO's tested, various types and voltage requirements priced from $35-40 each. Ask for list Wayne KH6WZ 310-357-2396.kh6kine@earthlink.net
Want- WR22 pieces and parts for 47 GHz. Wayne KH6WZ 310-357-2396.kh6kine@earthlink.net

Owens Valley Radio Observatory Project
Hi, On August 5 at 0200 UTC, W6IFE will be operating on 10368.200 MHz EME, using the 40 Meter Telescope at the Owens Valley Radio Observatory. The polarization is horizontal. During the first hour or so the transmissions will consist of 2 seconds of CW repeated at 5-second intervals, while I take mapping data using a DSP10 transceiver. At the end of this session, I will have the telescope moved to the location that gave the strongest return and begin QSO's. The mapping that was done earlier located four sites that had good returns, however, it was found that the Telescope was not aligned correctly at that time. I would like to get reports from any one that hears our signal as to: Time, SS, Estimated S/N, Quality and a description of your station. Since we are running only 8W output, it is going to take a fairly good station with a large antenna to get much of a signal from us, but give us a good try. This is most likely our last chance to use the Telescope for some time. One of the Radio Astronomers is starting to install his equipment at this time.73, Chuck WA6EXV

Left Chuck WA6EXV at the DPS-10 taking the data from the mapping of the moon on 10,368 MHz. Right is Bill, WA6QYR moving the 130 ft dish in a mapping sequence for Chuck. The mapping went fine, but QSO's were zip. Chuck had a later report of being heard from KD7TS but unfortunately it wasn't two ways.

Post script to June 10-GHz shot: KL7FZ and KL7UW set up a demo at the Kenai Peninsula 2nd Annual Ham fest on July 15th across the indoor basketball court that was the ham fest site. We did discover that the DEMILO likes about 30-minutes warm up to settle down the multi-KHz drift (uses PTC on xtal for temp compensation). During the June VHF Contest shot the freq. drift was so bad that only CW could be used. This time very good SSB was done.
Now we plan for trying a 150-mile shot during the Sept. VHF Contest (1100foot site to a 2200-foot site). KL7FZ tried out 50w 2m SSB from the1100-foot site to my home over 100-miles (He with mobile whip and I with17-foot whip). Had we planned in advance I could have set up at 400-feet (site I used to work 81 miles on 927 MHz FM with 10w in June) and tried on10-GHz. I am planning on building up a 2w PA using the FMM5061VF mmic on 10-GHz.The are available for $100/ea. from DEMI. Zack Widup <w9sz@prairienet.org>is gathering together a group-buy hoping to drop the price to $80. All one needs is a 50-ohm microstrip input and output line on duroid pcb with sma connectors and bypassing for the power lead (7 vdc). And an appropriate heat sink, of course.73's, Ed - KL7UW

10 GHz and Up Contest First Half.
It was kind of light in the LA basin for contacts. Many of the normal local folks stayed home may be because of the high gas prices. N6CA and company went north on highway 99 into the San Joaquin Valley and worked many of the northern CAL groups and Mexico. WA6CGR group and N6RMJ group went up highway 5 to mid valley and did the same. WA6JBD roamed the desert areas making lots of long distance shots. The Mexico group; Bernardo Gonzales, XE2HWB, Mike Ramirez, 4B2HWB (W6YLZ), Antonio, XE2HWH, Antonio (stayed in Vizcaino when his rig went down and was not able to participate) and Frank Kelly, 4C2HWH (WB6CWN) were in DL27 making lots of contacts. WA6QYR and W7ERN were in Anaheim Hills DM13cu making a few contacts with an old Ma-com 100 mw rig and a new but poorly performing rig. Others out and about were: W6MEM, N9RIN, KE6HPZ group, and K6JEY group.

The first weekend of the 10 GHz contest **Ernie, W7ERN** (new comer to amateur microwave) and **Bill, WA6QYR** were in the DM13cu location on Anaheim Hills, CA working very hard at making contacts.

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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