

Vol. 21 No. 5

www.mvus.org

June /July 2007

June Meeting on Friday 22nd --- August Picnic Sunday the 12<sup>th</sup> See below!

June at the Hometown Buffet Near SR 725 and Yankee Rd. in Centerville

August Picnic at Daun's Place (see below)

MVUS Sunday Net at 14:30 UT (currently 10:30 AM local time, EDT).

The net frequencies are primarily 144.280 Mc and 28.960 Mc.

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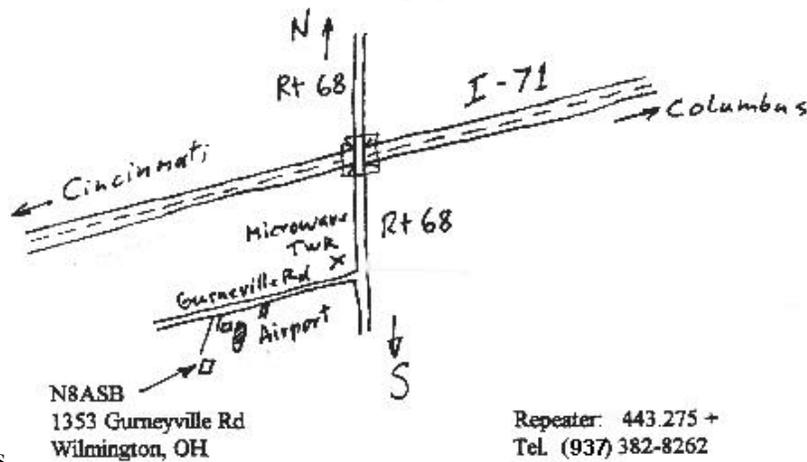
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#### Upcoming Events

Central States Conference: July 26-29, Omni Hotel, San Antonio, Tx [www.csvhfs.org](http://www.csvhfs.org)

August 4: UHF Contest---- August 11: Mid America Microwave Soc Meeting at VOA

Sun, Aug 12 MVUS Picnic at Daun's, N8ASB. Details, see next page!



Directions

Cumulative Contest 10 GHz and Up: Aug 18/19 & Sept 15/16

De N8ZM

Well, the 2007 Hamvention is history, and as best I can tell, it went quite well. Many thanks to everyone who pitched in to help with the booth and the VHF/Microwave forum. Mike, W8RKO, worked very hard right up to the deadline to get the beacons for the roof at Hara ready, but Murphy (NOT our own Mike) won the battle. There were just too many hurdles and not enough time, but I'm sure Mike will have us in good shape well before next year's show.

What with traveling a lot for work lately, I haven't been keeping up with the 1296 beacon project status, so that will give us an agenda item for the next meeting. The two Mikes, KB8APR and W8RKO have been working on getting the antenna completed for installation, which I believe has been delayed again. But I expect to hear soon that the climbers are scheduled to do the deed by summer's end.

After consulting with Daun, N8ASB, the picnic is planned for August 25. Usual rules, as in MVUS will provide the dogs and burgers and drinks, and you bring a side dish, dessert or favorite munchie. We'll start setting up at Daun's at about 11 AM, and eat at about 2 PM. As usual, there will be measurement capability available based on what you tell me you would like to do. Antennas are always fun, and any mystery gadgets you'd like to check out will let us play like CSI:Wilmington, except dead devices probably won't be as interesting as working ones. Just let me know what you have in mind so I can remember to pack for it. And as always, bring the family! Gerd will have the map and other details on the previous page.

Coming up in October, several MVUS members are putting together a Midwest version of the ARRL's classic Frequency Measurement Tests, or FMT. John, N8UR, who has an interest in time and frequency measurement that makes an obsession seem normal, is leading this project. There is more info to the right, and a link on the MVUS web site for the details. If you want to participate, either with the transmissions or to practice your measuring skills, get in touch with John. I know he will welcome your assistance.

Just a reminder that there won't be a July meeting or edition of Anom Prop to accommodate those who are attending the Central States conference. Steve will be sending out a reminder notice about the picnic, however.

Also, a reminder that now is a good time to make sure your MVUS dues are up to date. After all, that's what keeps us going. I think we have a very good record of using our financial resources wisely and keeping our operating expenses to a minimum so that we can fund cool projects, like the beacons. We hope that you appreciate what we accomplish enough to chip in and help fund even more fun stuff.

That's all for now; see you on the 22<sup>nd</sup> ! That's the 4<sup>th</sup> Friday this month. De Tom, N8ZM.

#### Frequency Measuring Test (FMT)

The Midwest VHF/UHF Society (located in Southwest Ohio) is pleased to announce that the first annual MVUS Frequency Measuring Test will be held on Saturday, October 13, 2007. There will be two transmission periods: the first at 14:30 EDT (1830 UTC), and the second at 21:30 EDT (0130 UTC Sunday). Transmissions will be on the 80M, 40M, and 30M amateur bands from Dayton, Ohio under the callsign W8KSE.

Our goal is to transmit a signal known in frequency to parts in 10e-12 (i.e., less than 0.0001 Hz error at 10 MHz) and stable to at least that level during the course of the transmission. The transmitted signals will also have very low phase noise. Frequencies will be measured at the transmitter site with a system capable of micro Hertz resolution referenced to a GPS disciplined oscillator, and will also be monitored by another station in ground wave range that can measure the frequencies with similar accuracy.

The MVUS Frequency Measuring Test is intended to supplement, not replace, the ARRL FMT. Our transmission format is still under development, but we plan to offer significantly longer key-down times to allow not only accurate frequency measurements, but also propagation studies (e.g., measuring Doppler effects as the ionosphere changes during the course of the test).

Further information, including approximate transmission frequencies, will be posted at <http://www.febo.com/time-freq/FMT>. You can also send email with questions or comments (or, after the test, your results!) to "FMT@MVUS.org".

For discussion about off-air frequency measurement, we suggest you check out the FMT-nuts mailing list, sponsored by Connie Marshall, K5CM. For details, go to <http://tech.groups.yahoo.com/group/FMT-nuts/>.

Warwolf! **This is the one you want! A professionally engineered model kit based on the most famous and most powerful medieval siege engine. Fully functional, this machine can hurl a one-pound missile more than 100 feet!** [TREBUCHET.COM]

Update Industry. **Just got a new Pc and it is getting bogged down almost every other day with “updates”. I have a slow connection; on a good day I get 40kbs but mostly it is in the low 30s. So an update of a few Mbytes is painfully slow, might take ½ hour or more; in the meantime I am waiting for a news article that should only take a second or two. Painful.** [Gerd, WB8IFM]

E-Mail. ...**Communication between human beings is becoming swifter, briefer and more and more irrelevant...**[Vickie Kapnas]

Wire Cutting Ceremony. **When the average citizen hears “microwave”, he thinks about the oven. And when you ask kids about wireless they will tell you that it permits them to use their laptops without wires to connect to the Internet. I observed a “wire cutting ceremony” on TV the other night where another downtown was served with WiFi, that’s the 2.4 GHZ wireless system that spreads the Internet!** [Gerd, WB8IFM]

What a Chauffeur Should Know. **The motorcar of today, as its name indicates, consists briefly of two parts – the motor and the car. Thus we have two factors to deal with: first, the car to be propelled – the dead factor; and, second, the propelling power, the motor or engine – the live factor. The car without the engine is powerless; the engine alone may run without effect...**

[ S.M.Butler, Secretary Automobile Club of America, 1904]

Meetings. **“Interruption is the biggest enemy of productivity. We stay away from each other as much as we can to get more stuff done.”** [Jason Fried]

Bicycles. **They are building a garage for 10,000 bicycles in Amsterdam where 40% commute to work by bike. I rode through Amsterdam on my motorbike in the 1950s and remember it was like swimming in a sea of bikes.** [Gerd, WB8IFM]

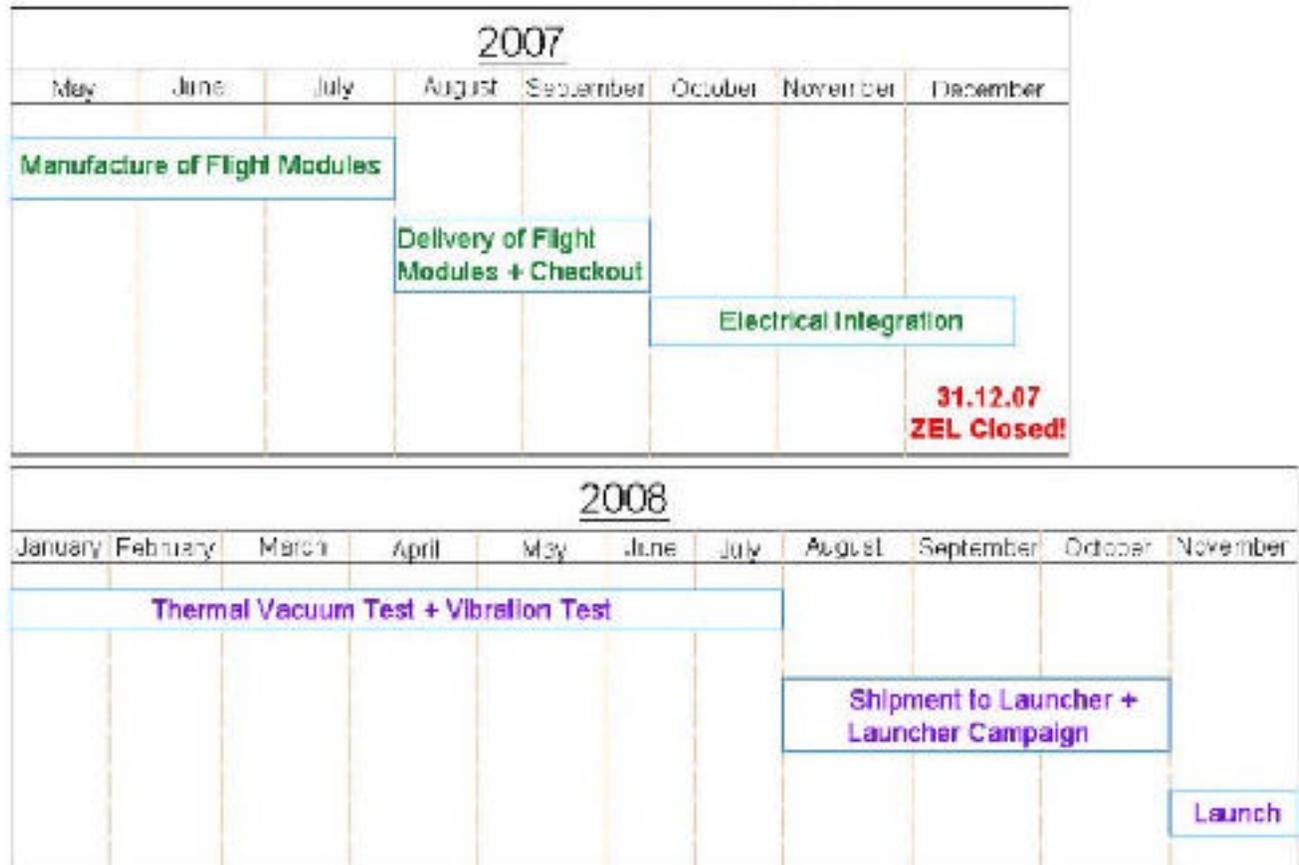
Gun Culture. **“Guns don’t kill people; people kill people”... But it’s really a cultural thing: the British have bad teeth, the French smell of garlic; Americans tend to have more bullet-holes in them than other people. The slogan should actually go:” Guns don’t kill Americans; Americans kill Americans”.** [Gwynne Dyer]

"I'm mad as hell, and I am not going to take it any more." Peter Finch spoke that line, playing the deranged anchor Howard Beal, in the 1976 Oscar-winning movie Network. (It's still a great and relevant movie in case you've never seen it.) And frankly, it sums up how I feel about the ease of use -- or actually the lack thereof -- of modern electronic devices. [Louis E. Frenzel ED Online, 5-29-07]

Colorado Time Signal. **For top accuracy synchronizing the clock to the Colorado 60kHz time signal is required. In some parts of the US, in particular on the East and West coast the signal is sometimes weak. It may take up to 72 hours before a good signal is received. The reception can be helped by placing the clock in a window facing Colorado with the back towards Colorado. ...The best conditions for reception are at night, between midnight and 6 AM.** [LaCross Technology / Travel Alarm Clock]

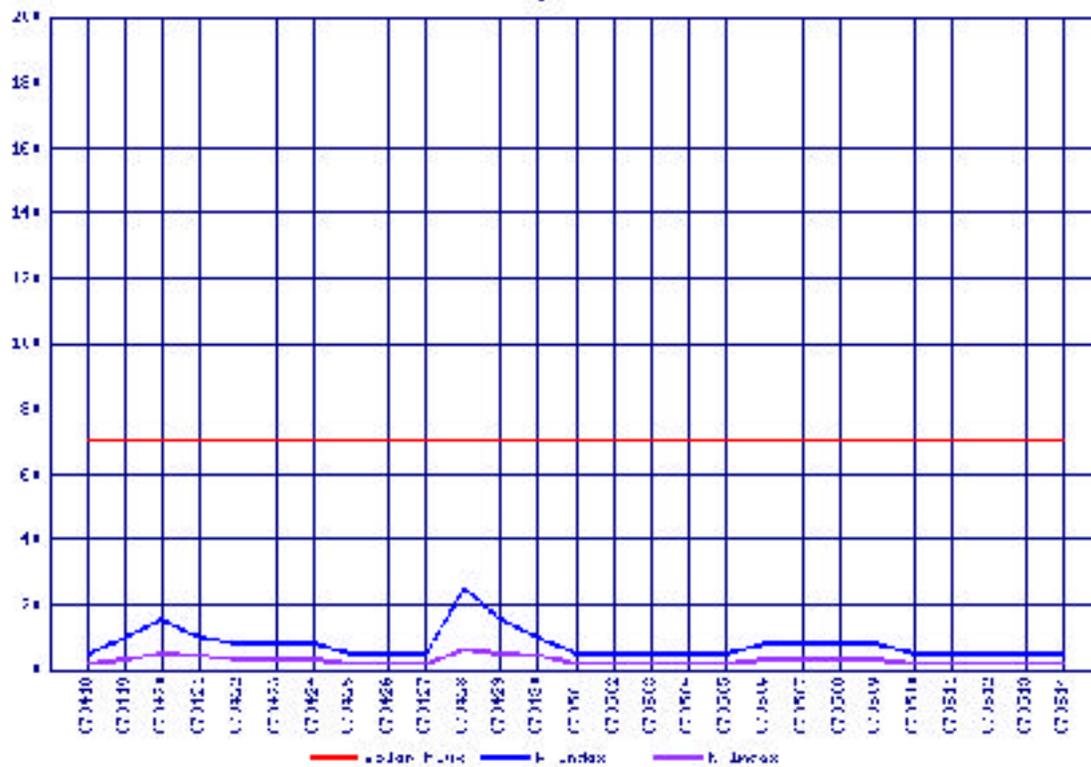
D-Star Demystified. **Efficient MAC Protocols for Wireless Sensor Networks Endowed with Directive Antennas: a Cross Layer Solution. By Gianfranco Manes, Romano Fantacci, Francesco Chiti, Michele Ciabatti, Giovanni Collodi, Davide Di Palma, Iliaria Nelli, and Antonio Manes.** [Department of Electronics and Telecommunications - University of Florence,]

# P3E Time Schedule



All Quiet on the Sun ... Solar Flux Flat ... the Pot is NOT Boiling ... April/May 2007.

## 27 Day Forecast



Another Hamvention came and went. The weather was quite nice. It only rained a few drops on Thursday at set-up time when early birds or first time visitors scout the area. Friday, Saturday and Sunday it was dry, mostly sunny, and a little bit chilly in the morning. (45 to 75F) The cool made you run faster through the flea market, a requirement if you planned to see it all!

John, N8VZW, helped set up and tear down our exhibit and spent many hours answering question, collecting memberships and selling a few proceedings from last year's Microwave Update. Joe, N8QOD, did jump in and help out during the entire event. There were no beacons on the roof this year, Mike, W8RKO (ex WB8GXB) had run into a problem that he couldn't fix in time.

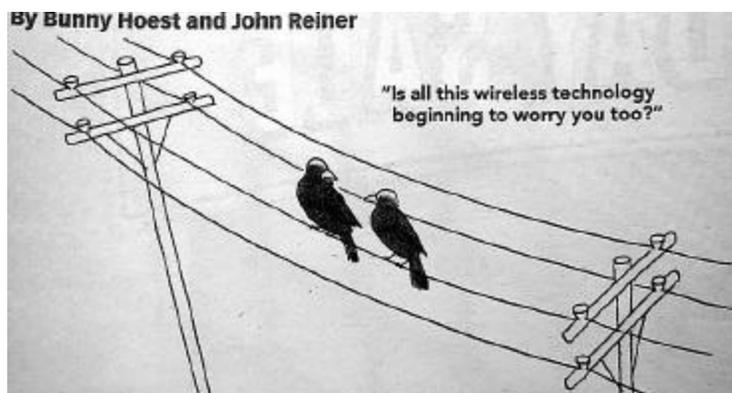
We had an early visitor from Japan, JA9SSB, who proudly showed us pictures of his station. Of course, there was a tall tower with big antennas, but the impressive photo was from his station, all Collins equipment. Lloyd, NE8i, our master rover, stopped by and reported new 10GHz contacts across the big lakes, hundred miles and more and milliwatts on one side. He also gave me one of the brand new one dollar coins with a picture of George Washington. Turns out he had a whole pocket full of coins; he passes them out when on a trip. It definitely keeps the natives happy while he enjoys unencumbered roving. Most hams I know have one or another avocation on the side. John, N8OU, now is into bowling and Ham radio is temporarily on "stand-by". He is doing quite well, collecting all kinds of trophies, he feels he's got to do it while he still has his youthful strength.

The forum went over quite well, I listened to Kent, WA5VJB, about big antennas, we had wondered what he was referring to.

It turned out he was talking about a 1800 foot tower with a big TV antenna on top using a complicated diplexer system on the ground where you could feed in left and right hand circular polarization separately and the hams were permitted to splice in a 6m signal at one point as well. The resulting signal surprised all the hams for hundreds of miles around. Kent was permitted to take a ride up a tiny elevator (it sounded quite adventurous) and peak at the antennas close and take a look around the landscape.

After my own presentation, talking about our translator project, I sat in on the tropo presentation by Palle Preben-Hansen, OZ1RH, from Denmark. His claim, you can work reliably over 700km (450miles) by using a volume of moist air halfway between stations up to a height of 10km (6 miles). To hit this volume your beam elevation angle should be one degree. This can be achieved by placing the antenna about ten wavelengths above ground. Also you need a clear foreground and about a kW of power. It works for all frequencies up to about 10 GHz. The ten-wavelength requirement limits you to the two-meter band with an antenna height of about 70 feet. The kilowatt is achievable to frequencies up to 2.4 GHz, and at the higher frequencies, however, the higher antenna gain easily makes up for the lack of power. For EME capable stations tropo should be a piece of cake.

Ed Garner, WR8A, and Merle Rummel, W9LCE, manned the booth on Friday and Bob, K8TQK, showed up early on Saturday and stayed till the Forum started at 2:15 PM. I had a chance to talk to Bob and he knew a lot about southern Ohio, interesting historical facts. Him being blind, he had an extra ordinary sense for voices of people he had met before. Of course, many people know him from the air, as he is quite active!



Rolf, DK2ZF has been combining vacations with his favorite hobby: communicating through satellites. Since he and xyl Tatiana are also interested in the historical background of the places they visit, their vacations have had a triple benefit: the warm sunshine, ham radio and history. Like most Germans, Rolf, is heading south for vacation. You see, like the Canadians, they do it because of their northerly locations. They go for the sunshine. Among all the possible locations, he prefers the many islands that beckon

Rolf has put together a complete small satellite station suitable to be brought along on airplanes and it has worked quite well over the years. However, now, since there has not been any high altitude ham satellite capable of real dx, he has been somewhat in a bind. Working the low orbit satellites, although there are a lot of those, is not very challenging and satisfying. There are two high orbit satellites in the building stage but launch is probably at least a year away.

An alternative to fall back on would be to use Oscar Zero, the moon, and that is exactly what Rolf did. Nowadays the feat is getting easier. By applying digital coding signals can be picked up that are way below the noise and the lightweight materials let you put together a relatively big antenna to take along on a trip. Rolf made an H-frame from GfK telescoping masts (fiberglass) to hold four 144 MHz 11el Flex yagis. He is using 8 watts from an FT-847 to drive a BEKO HLV-600 linear, which gives him an output power of 600 watts. This should be sufficient using the WSJT method (Weak Signal FSK software) to make solid EME contacts.

Having tested this setup and method successfully on the island of Mallorca (EA6), a large island in the Mediterranean off the coast of Spain, the next destination selected was Madeira (CT3), an island in the Atlantic off the coast of Africa.

“Five days before departure, computer trouble popped up. The HP laptop refused to recognize its USB ports, neither mouse nor printer worked and, of course, we needed a USB port to connect to the WSJT. All high-powered advice, a trip to buy a specials adapter etc did not work. Fortunately I had just acquired a Siemens laptop that was to be my backup. DK5XG, Georg, got

this laptop working, and installed WSJT and everything worked fine together with the FT-847. The audio level could easily be set to zero dB as required. So this now became our main pc. The HP laptop was brought along as it contained the WPX contest log and the SatPC32 satellite-tracking program.”

This was only the beginning though of a number of flops, eventually Rolf lost count. During a stopover in Stuttgart, the trusty cell phone that had provided years of good service gave up. The usual procedures (battery out, back in) did not work. So he lost the memory with all the stored numbers of his contacts.

“We landed on Madeira March 15. There was bright sunshine and somewhat gusty winds. Our 220-pound of luggage, three suitcases and a 6-foot surf bag made it quickly to the conveyer belt and we had no problem subsequently loading it in the rental car. After a 30-minute drive over good roads and through more than five tunnels we arrived at the Quinta (this was a mansion, it costs more, of course, but it comes with enough backyard to accommodate my bigger getting antenna farm). This was going to be our home for the next 2 weeks. We found everything as Michael, DL1YMK, had described it to us. However, he never mentioned the gusty winds.”

Soon Rolf and his xyl, Tatiana, started putting the antenna together. Tatiana assembled the yagis while Rolf put together the H frame. They hurried to get done before dark and though the strength of the wind was increasing, Rolf was unconcerned. Finally, all was assembled and they both attached the group to the tripod. There were three bedrooms and an extra room on the first floor that Rolf immediately took possession of for “the shack.”

“Tuning up the transmitter was a charm. The output reached easily 600 watts and the Rx/Tx switch from DK4VW, Ulrich, worked fine. Now, only the receive level needed adjustment. To my great disappointment it was not possible to set the level to zero dB, what had easily been possible before we left. Long telephone calls to Guido, DL8EBW, and Bernd, DF2ZC, did not help; -12 dB was the best we could do. This would pretty much make contacts impossible. In the meantime the gusty wind had morphed into a full-blown gale with an estimated strength of 8 to

9. (~50 mph) Xyl Tatiana helped to take the antenna down, but it was too late, there was a fracture and it appeared impossible to fix it. Later we heard from the manager that a storm like this hadn't hit the island in 40 years."

"Fortunately I had packed a small 11 el Yagi for 435 MHz that I now could use to make a few contacts over Oscar7. My experience with this satellite goes back a long time to Oct 1972. I made two contacts with central Europe on March 21<sup>st</sup>. There were mountains from the northwest to the northeast. So I could only use overhead orbits from east or west. But then no further signals could be heard. Another flop? A cabling error caused the demise of my MiKom-VV. (pre-amp) Too bad! On top of this we lost the HP laptop for good when the blue screen of death announced, "boot error".

While xyl Tatiana made another Levada hike with some friends (Levadas are small irrigation canals and tourists love to use the service paths that run alongside for walks) Rolf tried to fix the H-frame, the objective being to get the antenna functioning as the storm was past and the winds had subsided. He succeeded!

"I sent a message to DL8EBW, Guido, that a test transmission from CT3/DK2ZF was coming up. I activated the station in the middle of the night (1 April) and shortly thereafter at text message from DL8EBW was received; he reported a - 23dB signal. Five minutes later Guido reported that W5UN (TX) and S51LM (Slovenia) had heard me. Later another report from

VE7TIL (Pacific coast) arrived. This at least confirmed that my transmit set-up worked."

"Before departure from Funchal (Madeira airport) I got my SBS -1 Transponder Rx out and could pick up 20 aircraft on 1050 MHz from 220 miles away racing along the Europe-Canaries corridor.

So the trip was not a complete failure and a repeat was already mentioned to the xyl."

In spite all the misfortunes, there were enjoyable moments. They met a nice couple from Greifswald (a small town in north west Germany at the Baltic Sea): DL3KWR and DL3KWF, Rosel and Hardy. Nobody got lost during the Levada hikes. And nobody got stomachaches from overeating all this good food. The new surf bag only 6 feet long was a big improvement over the longer bag used only a year ago on the trip to Mallorca.

Thinking ahead Rolf traveled to the Azores over the Pentecost holidays. (5-27) He was successful and found a good QTH for 2008. He took only short-wave equipment plus a compass and a satellite finder (Lidl meter) with him this time.

"I like to thank all OMs that helped with the preparations and supported me throughout with advice and their selfless help and actions: Michael, DL1YMK; Guido, DL8EBW; Georg, DK5XG; Bernd, DL9AN; Ulrich, DK4VW; and Andreas, DF1HF."



Ready to Travel



Construction Detail

Ready to hit the Moon

# Antenna Analyser 1.8-60 MHz (AD8302+AD9851) By IW3HEV

The presented unit connected to a PC parallel port forms a vector analyser and it can be compared to a high price VNA.

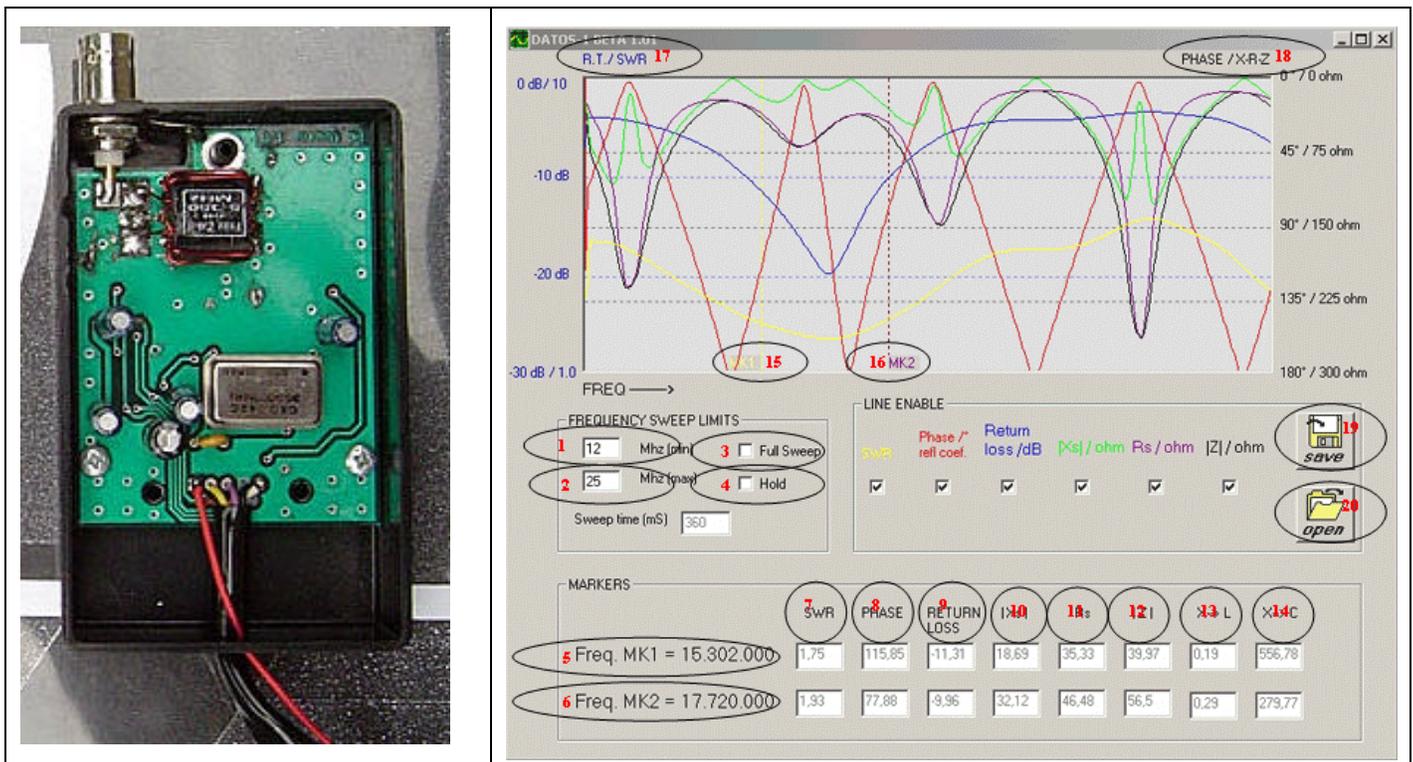
It performs a scan trough a programmable frequency limits and acquires impedance parameters in the frequency domain

## Main features:

- Antenna analyser with the following measurements: Return Loss, SWR, Z, X, R
- Real time measurement, 0.3 seconds per screen with 500-point resolution.
- DDS generator with -5 DB output
- Measurements of capacitor and inductor, balun, resistors, etc.
- Measurements of coaxial cable
- Software compatible with Win95/98/ME/2000/XP
- Power supply from the PC, from PS2 (external keyboard connector) or USB connector, no external power required.

The unit is contained in a plastic box of 55 X 90 mm and the power supply is taken from the USB or PS2 of the connected PC giving the option of portable use.

PC board available 20 Euro, complete unit 150 Euro All info (construction, software etc) on Web



Analiser

Software Picture

WSJT Operating Modes. Technical Features

(By Bob, K1SIX, complete description (6m primer) on the web )

MODE	XMSN RATE	BANDWIDTH	~SENSITIVITY*	FEATURES
FSK441A	147 characters per second	1323 Hz	-2 dB (SH msg)	Highest speed of all (retained in Ver. 6)
FSK441B	110 characters per second	1379 Hz	-5 dB (SH msg)	FEC used= Less falsing (no longer supported)
FSK441C	63 characters per second	1379 Hz	-5 dB (SH msg)	Strongest FEC of all three= Less falsing (no longer supported)
JT6M	14.4 characters per second	925.93 Hz	-13 dB	Much slower than 441 but more sensitive, uses AVERAGING
<u>JT44</u>	5.38 baud (0.7 char. per sec.)	485 Hz	-20 dB to -29 dB	Relies on averaging over time (ver. 3.8.1 only!)
JT65A**	2.69 baud	177.6 Hz	-23 dB to -29 dB	Least forgiving re: Freq. stability- Averaging + FEC
JT65B**	2.69 baud	355.3 Hz	-22 dB to -29 dB	More forgiving re: Freq. stability- Averaging + FEC
JT65C**	2.69 baud	710.6 Hz	-21 dB to -29 dB	Most forgiving re: Freq stability- Averaging + FEC

\*Approximate sensitivity is relative to noise power in a 2500 Hz bandwidth

\*\* Sensitivity for v. 4.9 arbitrary callsigns, for callsigns in CALL2.TXT - UP TO 4 dB MORE SENSITIVE

Quick PC Board Etching

By Mike Suhar, W8RKO

I make many PC boards throughout the year for my electronic projects. Some boards justify outsourcing to a PC board house while others I make myself. Some of the boards I make in-house are small boards where I need something quick and I may only need one.

As an example, the other day I needed a single MMIC amp for above 2 GHz. The board was only an inch square on Rogers 5880 material. The layout was made from tape and it was hardly worth pulling out my air bubble etch tank, air pump, heater, etc. The solution?

Put on a couple pairs of Nitrile gloves (the blue ones from Harbor Freight) to protect your hands from the etch solution. Pour a little Ferric Chloride into a glass measuring cup. Dab a small sponge into the liquid and gently rub over the board. The rubbing action provides excellent agitation as opposed to just dropping it into the Ferric Chloride. Be gentle, as you don't want to wipe off your resist pattern. A half ounce copper board will etch off in under three minutes; an ounce board in five.

Ferric Chloride stains horribly, so make sure your work area is protected. I always do this work in the garage so I don't get yelled at should I make a mess inside the house.