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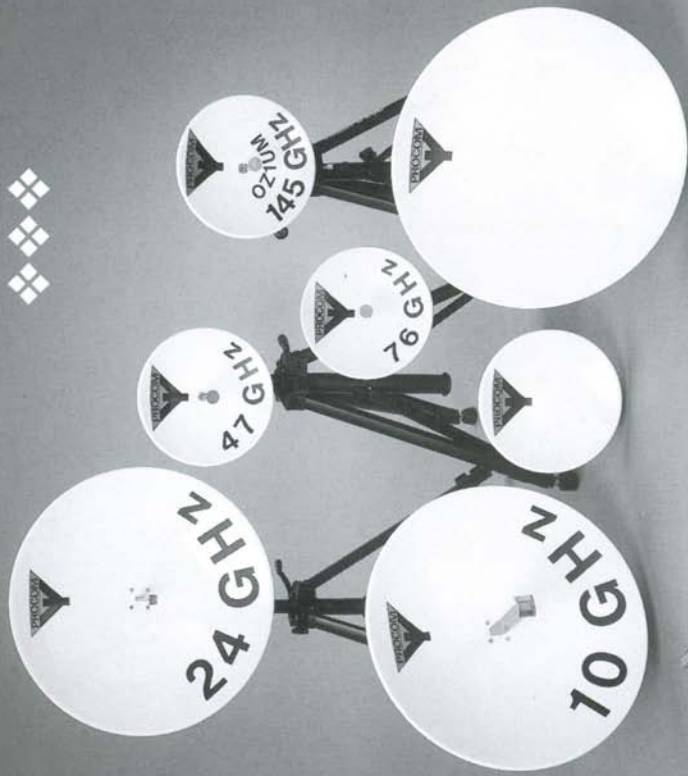
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EME98 in Paris



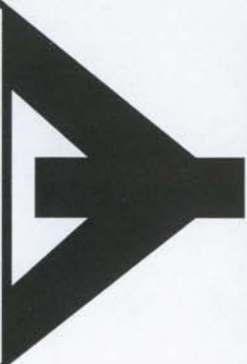
Entirely Devoted to VHF/UHF and Microwaves

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DUBUS

die zweisprachige Zeitschrift für den Schmalband-DX-Amateur auf UKW von 50MHz bis 241GHz. Geschrieben von aktiven UKW-Amateuren für aktive UKW-Amateure.

DUBUS

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Technical Reports

Editor: Rainer Bertelsmeier, DJ9BV

Transverter for 2.3...2,4 GHz

Part II

Charles Suckling, G3WDG

1. Construction

Before starting

As the parts used in this project are quite small, some form of optical aid is recommended unless your eyesight is exceptional! A bench magnifier (some have inbuilt extra lighting) can be useful, although we prefer to use a headband binocular magnifier (e.g. RS part number 606-989). A good pair of tweezers is also essential. Chip components are hard to find on the average shack floor and can fly an amazing distance if they jump out of the tweezers! A soldering iron with a fairly small tip is also highly desirable, and the use of the correct type of solder is recommended for the SMT parts. The solder supplied with the kit should work well for this.

Box and RF PCB preparation

1. Assemble the tinplate box, by placing the side sections in the lids. If necessary, bend the sidewalls to give a good fit with the lids. With the box still all together, solder the outside seams as far as can be done (without soldering to the lids!).
2. Remove the lids and solder up all box seams inside and out.
3. Trim pcb to fit box. Generally pcbs are generally supplied slightly oversize and need a small amount of filing to fit the box. The board should be made a reasonably tight fit in the box, but not so tight that there is any risk of damaging it while putting it into the box. Remove any rough edges from the board which could interfere with later soldering. Identify the TOP side of the box, by refitting the pcb in the box and noting the side of the box from which the circuit pattern can be seen. This is defined as the TOP of the box. This is shown in Fig 6.
4. Scribe a line 10mm from the top edge of the box, as centreline for SMA centre connector pins. Mark out position of connector pins, to align with relevant pcb tracks.
5. Drill holes 4mm diameter for all SMA connector centre pins.
6. Flange mount SMA connectors may be soldered directly to the box by first locating them carefully in position, clamping them with two crocodile clips (one either

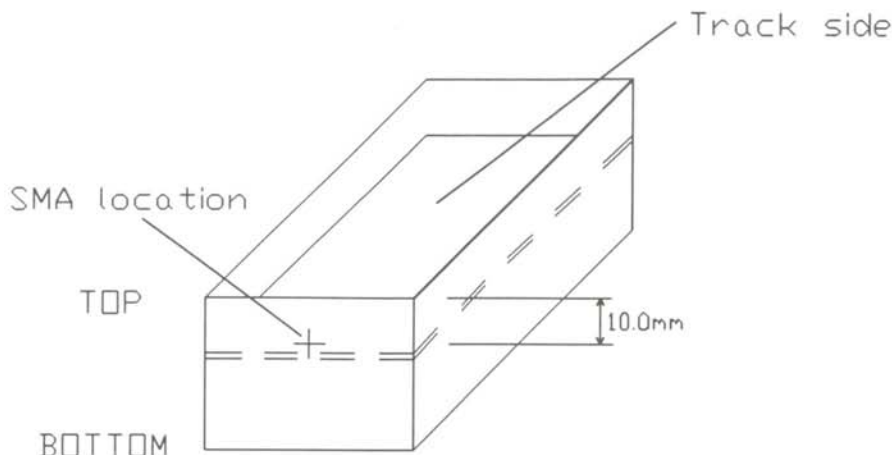


Fig. 6 Location of PCB in box

side of the flange) and then soldering. Alternatively, follow steps 7-10 below.

7. Mark out positions of connector mounting holes using connector as a marking-out jig.
8. Drill connector mounting holes 2mm dia. Deburr using a drill on both sides. It is difficult to reach the inside of the holes with small boxes but it can be done. Filing is not recommended, as areas where the tin plating is inevitably scratched off will be difficult to solder to.
9. Assemble connectors to box with M2 screws and nuts.
10. Solder connectors to box all round using sufficient heat so that the solder flows well and when cool remove fixings. The use of two soldering irons can help! Note: Stainless steel SMA connectors cannot be soldered, and are therefore not recommended.
11. Reassemble pcb into box and check alignment of connector pins to tracks.

Remove and refit any connectors where alignment is poor. Remove pcb. Cut connector pins to extend approx. 2mm into box.

12. Drill and deburr holes in the box for feedthrough capacitors for power connections. If desired, drill a 1mm hole nearby, to allow a pin to be fitted for the ground connection.

RF PCB Pre-assembly

1. Fit supplied pins into holes in PCB where grounding is required with head of pins on the circuit pattern side. Solder pins to groundplane side. This is best done by applying solder and soldering iron to the pin and flowing the solder down to the groundplane. Do NOT solder to the heads of the pins on the circuit pattern side at this stage. Trim the pins with sidecutters after soldering.
2. Drill out the 1mm location holes for the modamps and the BFR91, so that the

devices can sit down on the board or the veropins.

3. If the unit is to be used for satellite operation, cut the filter to the correct length. Two small lines printed either side of the lines serve as a guide as to where to cut the filter. Trim off the small pieces of original line.

Assembling the PCB into the box

1. Reassemble the pcb into the box from the bottom side, and push it up against the RF connector pins. Try to get the board "square" in the box, not tilted to any great extent. Tack solder the groundplane in the four corners and recheck the RF input/output tracks are still touching the connector pins.
2. Solder all round the groundplane to the box walls. Two soldering irons may be helpful here also. Make especially sure there is a good joint where the connector are located. This is necessary to ensure a proper low inductance ground path from connector to pcb. It is best not to solder the track side groundplane areas around the preamp to the box wall. The veropins provide adequate grounding on their own.
3. Fit and solder feedthrough capacitor(s) for power connections, and box ground-ing pin (if used).

Fitting components to PCB

1. Fit chip components as described in Appendix 1, except the MAR6s and HEMT.
2. Fit any wire ended components required (on RF side and/or on groundplane side as specified).
3. Make and fit the inductors. Before fitting L1, cut the supplied wire to length (15.5mm) using callipers if possible to check. Length is fairly critical. Then bend to the required "U" shape. and using pliers bend down the ends for 0.5mm length by about 45 degrees. When L1 is soldered into position, try to keep the wire flush to the board, if necessary by pushing it flat.
4. Fit the remaining semiconductor devices leaving the HEMT to last.

5. Any grounded veropins have not been soldered to during earlier assembly stages should now be soldered. Take care that none have been missed!

Konstruktion

Vorbereitungen

Da alle Teile ziemlich klein sind, empfiehlt es sich, eine tragbare Lupe, möglicherweise als Lupenbrille zu benutzen. Ebenso benötigt man eine gute SMD-Pinzette. Ein spezieller SMD-Lötkolben mit kleiner Spitze ist ebenfalls hilfreich. Als Lötzinn kann das mit dem Bausatz mitgelieferte oder FLUITIN 1532 verwenden. Letzteres enthält 2% Silber und verhindert Diffusion von versilberten Oberflächen. Weiterhin ist es völlig säurefrei.

Vorbereitung des Gehäuses

1. Wände des Weißblechgehäuses zusammenlöten. Zur Justage werden die Deckel aufgesetzt.
2. Innen verlöten.
3. Leiterplatte passend machen. Die Oberseite der Platine definiert, wie in Abb. 6 gezeigt, auch die Oberseite des Gehäuses.
4. Den Mittelpunkt der SMA-Buchsen 10mm unterhalb von der Oberseite anreißen.
5. 4mm Löcher für die SMA-Buchsen bohren
6. Buchsen mit Flansch können aufgelötet werden. Sie müssen vergoldet sein, da man Stahl-Versionen nicht löten kann. Die Buchsen müssen ringsum verlötet werden.
7. Alternativ kann man die Buchsen verschrauben. Dazu werden 4 Löcher gebohrt und die Buchse mit M2 Schrauben befestigt.
8. Die Leiterplatte einsetzen und Sitz der Buchsen prüfen.
9. Löcher für die Durchführungskondensatoren bohren.

Vorbestückung der Leiterplatte

1. Stifte zur Durchkontaktierung in die Löcher auf der Leiterplatte stecken und auf der Masseseite verlöten.

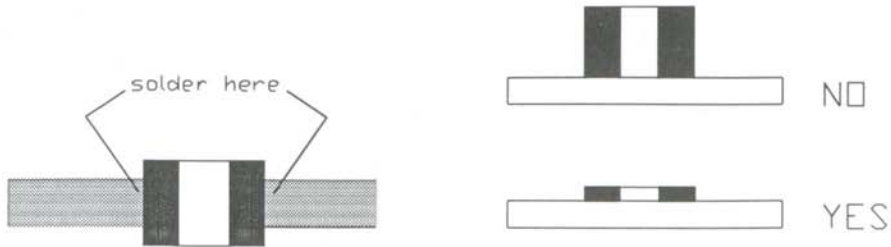


Fig. 7 Fitting chip components

2. Die 1mm Löcher für die BFR91 und die MODAMPS bohren.
3. Falls der Konverter für Satellitenbetrieb verwendet werden soll, das Filter an den markierten Stellen verkürzen.

Einbau der Leiterplatte

1. Die Leiterplatte vom Boden her einführen und auf die Mittelleiter der SMA-Buchsen pressen. Dann die Masseseite sauber verlöten.
2. Besonders wichtig ist die Kontaktierung in der Nähe der Koaxbuchsen.
3. Durchführungskondensatoren einlöten.

Bestückung der Leiterplatte

1. Alle SMD-Komponenten ausgenommen die MAR6 und die HEMT's einlöten.
2. Alle bedrahteten Bauelemente einlöten.
3. Die Spulen fertigen und einlöten. Die Länge von L1 muß genau 15,5mm betragen. L1 ist in ein U zu biegen und an den Enden auf einer Länge von ca. 0,5mm um 45° abzubiegen. Der Draht muß beim Einlöten parallel zur Platine zu liegen kommen.
4. Die verbliebenen Halbleiter und zuletzt den HEMT einlöten.
5. Alle Erdstifte(VERO-PINs) können nun auch oben verlötet werden.

Appendix 1 - Fitting chip components

To fit chip components across two circuit tracks or pads, the following procedure should be adopted. Refer to Fig. 7 .

1. Lightly tin one of the tracks or pads. Silver loaded solder is recommended, and is supplied in some of the kits.
2. Locate the chip component and reflow the solder on the tinned track to make a preliminary joint.
3. Solder the other end of the chip to the track to make a good fillet.
4. Resolder the other end of the chip using a little fresh solder.

Note that the standard chip capacitors are mounted flat on the board as shown in the figure. Mounting them at 90 degrees will cause extra series inductance and may result in reduced performance, instability etc. It is recommended to mount resistors with the code letters visible, should later debugging prove necessary!

Note, where wire ended components are mounted surface mount style, aim for minimum lead length.

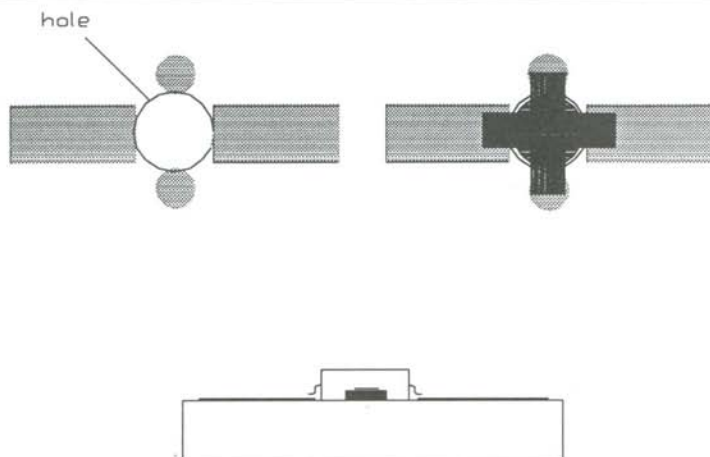


Fig. 8 Mounting MODAMPS

Anhang 1: Bestücken der SMD-Komponenten

Man halte sich an Abb.7:

1. Die 'Pads' des SMD-Bauteils verzinnen.
2. Das Teil auflegen, positionieren, mit einem Zahnstocher festhalten und an einer Seite provisorisch festlöten.
3. Die andere Seite löten.
4. Die erste Seite nachlöten

Bei den Widerständen darauf achten, die Beschriftung nach oben zu legen, damit man hinterher die Schaltung kontrollieren kann.

Appendix 2 - fitting MODAMPS

Assembly of the modamps on to the RF PCB is a two stage operation. Firstly, it is necessary to trim the ground leads so that when located in position, about half the heads of the grounding pins are visible. The reason for cutting the leads so short is to help prevent dry joints here which can have a bad effect on

the gain and noise figure of the device. When cutting the leads, please observe the static precautions described below.

To solder a MODAMP in position, lightly tin one of the grounding pins, and making sure the device is the right way round, tack the device in position by reflowing the solder on the grounding pin. Aim to have the device mounted FLAT on the grounding pins not sitting up on a bump of solder, to equalise and minimise the lengths of input and output leads which go down to the tracks.

For the reflowing operation, it is best to apply the soldering iron to the side of the pin head and not to the lead of the device, to minimise the possibility of a dry joint. Use the same technique to solder the other source lead, applying solder to the point where the cut ground lead touches the top of the grounding pin, not to the soldering iron or top of the lead. Next, remake the original joint in the same way, using a little fresh solder. Finally bend the other leads down to the board as

close as possible to the body of the device as possible, as shown in Fig. 8. The inductance of this short lead is built in to the design, and longer (diagonal style) connections will cause detuning. Another way of describing this is to ensure that the soldered joint is made at the end of the track, not some distance away from the device.

Anhang 2: Bestücken der MODAMP's

Die Bestückung der MODAMP's erfolgt in zwei Stufen. Zuerst werden die Beine so gekürzt, daß die Masse-Stifte noch halb zu sehen sind (Abb. 8).

Dann setzt man den MODAMP richtig orientiert auf die Stiftpföte und lötet ihn flach aufliegend ein. Der Lötkehl ist auf die Stifte zu halten und nicht auf den MODAMP, um kalte Lötstellen zu vermeiden.

Appendix 3 - Fitting the HEMT

Before this device is handled, some preparations need to be made to avoid potential damage to the device(s) from static discharge and/or soldering iron leakage. In the case of normal GaAs FETs, it is often possible to get away with no precautions at all and not experience any problems. With HEMTs this philosophy needs to be reexamined. HEMTs are much more susceptible to damage and this is usually not apparent in its DC characteristics, often a disappointingly high noise figure is the only observable consequence. Where devices are supplied as part of kits, the use of these devices is entirely at the constructor's risk. The Microwave Committee Components Service cannot replace damaged devices free-of-charge!!

Damage from electrostatic discharge (ESD) is avoided by never allowing the possibility of the sensitive device having a different potential to any object it touches, including yourself. A simple static-free workstation should be made, such as a sheet of metal to which a wire is attached. The free end of the wire is joined to either a proprietary anti-static wristband worn at all times, or to some form of

homemade body contact (such as a wire wrapped round a ring). For safety reasons it is recommended NOT to earth the workstation, and to use a high value resistor e.g. 100k ohms in series with the wire if using a homemade body contact. The device may then be safely unwrapped and placed on the work surface.

Source leads are cut short next using sharp sidecutters. The correct length for the source leads is such that they end up with about 1mm overlap with the copper track. If the sidecutters are of the type with insulated handles, touch the metal part of the cutters before allowing them to touch the device leads. At all times keep the device in your fingers, held in metal tweezers or on the work surface. Dropping the device at this stage anywhere off the workstation is not recommended!

The last stage in the construction of all units is the installation of the HEMT. The module should be otherwise complete and tested for correct voltages at the ends of the lines where the device is to be connected. With no power applied to the module, place it on the metal work surface and connect a wire between the work surface and the module box. Next, arrange some form of connection between the soldering iron bit and the work surface, separate from the mains earth. Check that even when hot, there is a low resistance path from the soldering iron tip and the work surface. It is also worth checking that there is no leakage in the iron by measuring resistance between the tip and the heater connections of the iron, with the iron cold and hot. The device may then be placed in position and its source leads soldered. At the same time, make sure the solder also flows to the grounding pins. It is important to avoid touching the gate and drain leads with the iron during this operation. Before soldering the gate and drain the iron should be completely unplugged (retaining the tip-work surface connection of course).

Once assembled into the circuit, devices should be safe. However if for any reason soldering operations are required in the future, be sure to repeat the precautions. The author has damaged devices in the course of developing modules when soldering in tuning

stubs and forgetting to connect the iron-work-surface link, and/or unplugging the iron. Some irons claim to have an ESD connection - we would not trust this!

Anhang 3. Bestücken des HEMT's

Kann man beim Einlöten von GaAs-FET's noch etwas schludern, was die ESD-Maßnahmen betrifft, verzeihen das HEMT's wegen der kleineren Kapazitäten nicht mehr. Buchstäblich ein paar Elektronen reichen aus, um die Elektroden auf gefährliche Potentiale aufzuladen. Leider zeigt sich das meistens nicht als Totalausfall, sondern in einer Verschlechterung der Rauschzahl oder Verstärkung. Der normale Amateur ohne diese Meßgeräte merkt das meistens nicht und wundert sich über die schlechte Performanz der Schaltung.

Man kann sich leicht eine ESD (Elektrostatic Discharge=Elektrostatische Entladung) konforme Arbeitsstation bauen. Als Belag für den Tisch nimmt man eine Metallplatte oder leitendes Gummi, das über einen 100k Widerstand mit einem Armband verbunden wird. Der Belag wird nicht geerdet!!!

Man kann den HEMT dann gefahrlos auspacken. Falls Beine zu kürzen sind, soll man Seitenschneider ohne Isolation benutzen, damit immer Körperkontakt zum HEMT besteht. Niemals den Transistor außerhalb der Platte legen.

Beim Einlöten in die Schaltung, den Konverter auf die ESD-Platte legen und mit einem Draht verbinden. Dann den LötKolben mit der ESD Platte verbinden. Mit dem Ohmmeter prüfen, ob die LötKolbenspitze wirklich niederohmig verbunden ist (Im heißen und im kalten Zustand!).

Den HEMT mit einer Metallpinzette auflegen und zuerst die Sourcen, dann das Drain und zuletzt das Gate verlöten. Die letzteren Schritte sollten mit ausgeschaltetem LötKolben durchgeführt werden. Einmal eingelötet sind die HEMT's sehr betriebssicher.

6. Parts/Teile

PCBs and kits containing some of the more difficult to obtain parts can be obtained from:

Microwave Committee Component Service
314A Newton Road
Rushden
Northants NN10 0SY
England
Tel.: +44 1933 411 446

Unter obiger Adresse gibt es Leiterplatten und Bausätze.

24 GHz Modules

Luis Cupido, CTIDMK

Abstract: Recent, low cost, GaAs devices have proven to be usable at 24GHz for the construction of LNA (low noise amplifiers), power amplifiers and frequency multipliers. This article presents a low cost solution to build 24GHz modules using a common design for the mechanics, enabling this way the experimentation with several devices and configurations without the cost and time associated with the manufacturing of a milled case for each design. Also presented here, three basic modules for 24GHz, an amplifier, a frequency doubler, and a fundamental mixer.

Kurzfassung: Nachdem GaAs-FET's für 11GHz DBS-Systeme immer billiger werden, kann man diese Transistoren auch für 24GHz einsetzen, um Mischer, LNA's und Oszillatoren zu bauen. Es werden drei verschiedene Module, ein Mischer, eine LO-Verdoppler und eine Verstärker, der sich sowohl als LNA als auch als Leistungsverstärker verwenden läßt, beschrieben. Alle Module passen in das gleiche Gehäuse. Deswegen wird die lästige Gehäusefrage unbedeutend.

1. Introduction

Packaged GaAs Fets, used in the TVRO industry, prove to be usable at 24GHz. Al-

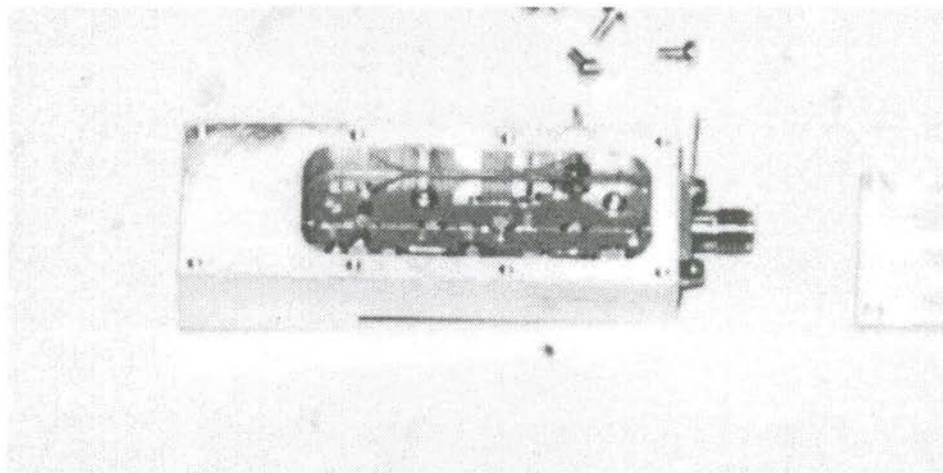
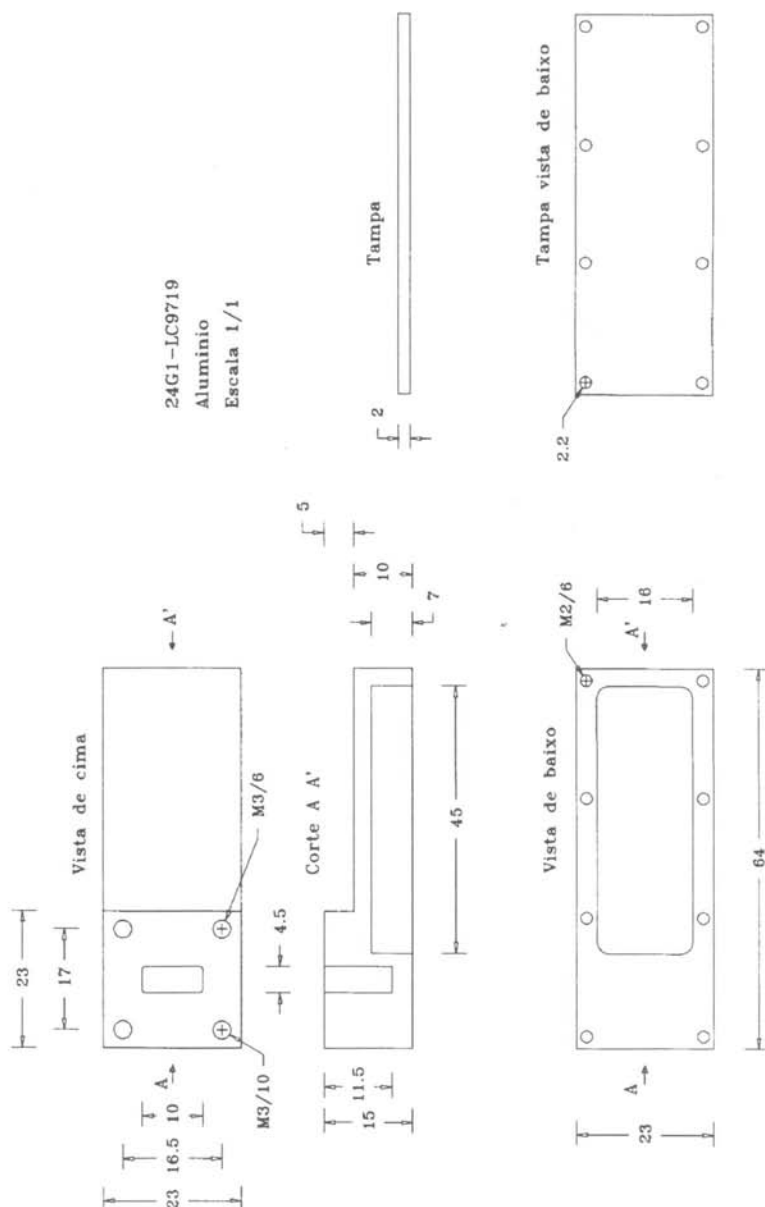
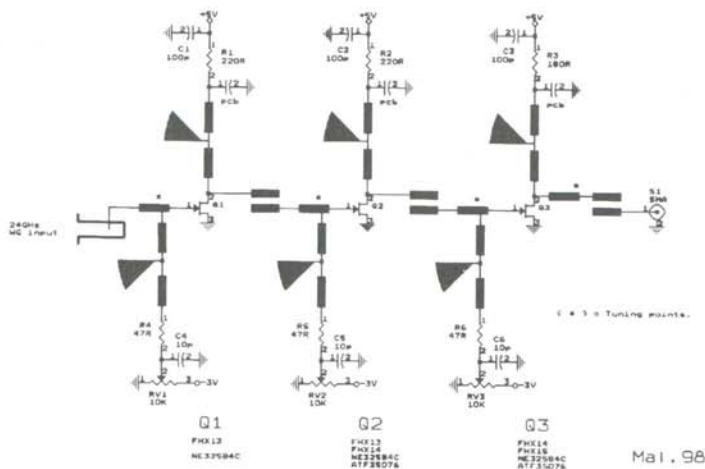


Fig. 1: LNA for 24GHz



Bild/Figure 2: Drawings for common Box

24GHz Low Noise Amplifier.
CT1DMK

Bild/Figure 3: Circuit Diagram for LNA

though they are usually specified up to 18 (and sometimes to 20GHz) they can be put to work at 24GHz with careful tuning. Low noise amplifiers were developed /1,2/ and also frequency multipliers operating at 24GHz /3,4/, and even some attempts at 47GHz have been done by the author, by DB6NT, JE1AAH /5,6/ and certainly by others. One major limitation on the experimentation at these frequencies is the fact that each circuit needs to be properly mechanically installed in a shielded box (usually a aluminum milled box) and provided with the necessary coaxial or wave-guide input and output. Every time a new circuit is to be experimented one must build a new box to accommodate the PCB. Therefore (excepting a few audacious people) only certified or quasi certified designs worth the effort and money.

1 Einführung

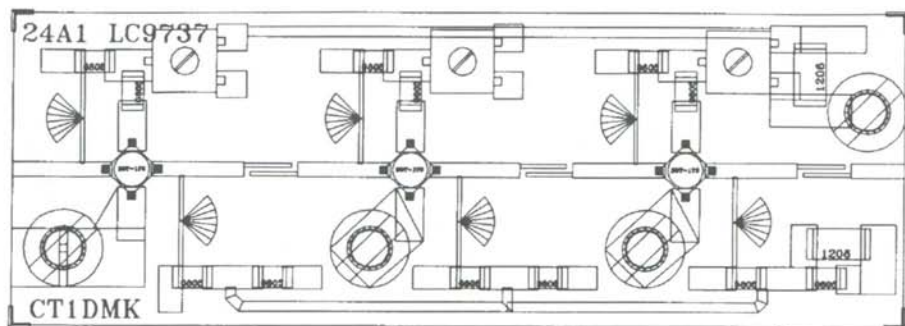
Handelsübliche GaAs-FET's können auf 24GHz eingesetzt werden, obwohl sie meistens nur bis 18GHz spezifiziert sind.

Es gibt einige Schaltungen für 24GHz LNA's (/1/, /2/) und Vervielfacher (/3/, /4/). Auch auf 47GHz wird bereits experimentiert (/5/, /6/).

Die Schaltungen funktionieren nur brauchbar, wenn auch geeignete, aus Aluminium oder Messing geformte Gehäuse und die richtigen SMA-Buchsen, die bis 26GHz spezifiziert sind, verwendet werden.

2 The designs

To make the experimentation easier I decided to attack the problem the other way around. Only one mechanical design is necessary (or two if you want, I explain later) and the several modules will fit inside. This requires that all circuits must have the connections placed at the same position, which is not a restriction for the kind of modules we envisaged. The maximum number of FET is likely to be 3, as in the DB6NT amplifier /1/, all the other circuits are expected to be smaller than a 3 FET amplifier. I used this assumption to define the maximum room that I need for a module, resulting in 45 x 16 mm internal dimensions. All power supply components will be external to save on the amount of PCB needed and



Bild/Figure 5: Parts Layout for LNA

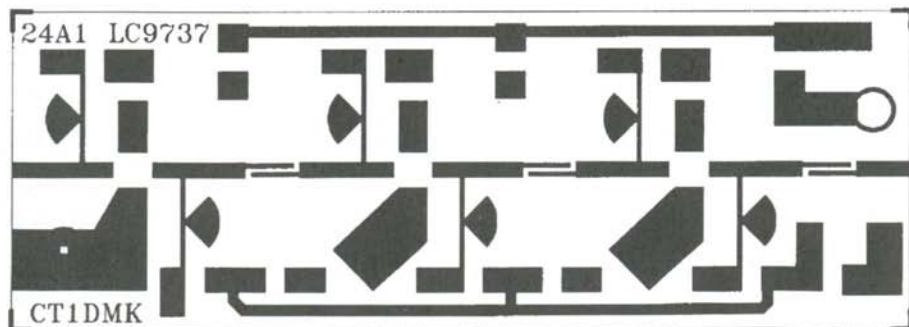
also to have the smallest overall size possible. A configuration where a wave-guide input and coaxial output (or vice versa) (fig.1) gives the maximum possibilities for interconnection. So a low noise amplifier will have WG input and coax output, while a power amplifier will have coaxial input and wave-guide output and a frequency doubler would be coaxial input (at 12GHz) and WG output (at 24GHz). As input and output are at the same relative position, any of the modules can be placed inside the box either way. If you want to have the same modules but only SMA connectors and no WG port a second milled case can be built (fig 2). The WG input (or output) transition central pin is made of semirigid UT085 cable, using only the teflon inner conductor, that fits inside a hole with the same diameter

as the cable's shield. The transition from the stripline to the wave-guide is done in the same plane as the WG flange (that is, parallel to the bottom of the box, see drawing and photos for clarification). This arrangement resulted in little return loss and proved to be better than the 90deg solution commonly used on 10GHz and 24GHz.

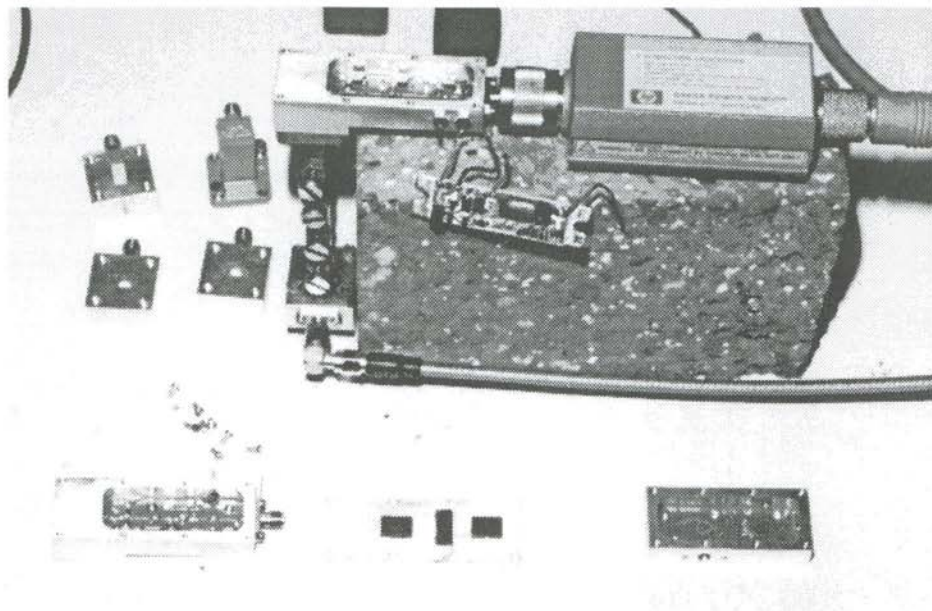
2. Die Schaltungen

Um die Entwicklung zu vereinfachen, benutzte ich nur einen Typ von Gehäuse, in das alle Schaltungen passen. Alle Buchsen müssen zwangsläufig an derselben Stelle sitzen.

Da nur maximal 3 FET's verwendet werden, habe ich das gemeinsame Gehäuse für 3 Stufen ausgelegt. Die internen Abmessungen



Bild/Figure 4: PCB of LNA



Bild/Figure 6: 24GHz Setup

sind 45x16mm. Alle Schaltungen für die Gleichspannungsversorgung sind extern angeordnet. Eine Seite ist mit einem Streifenleitungs/Hohlleiter-Übergang ausgerüstet. Die andere Seite hat eine Koaxbuchse (SMA) (Siehe Bild 1).

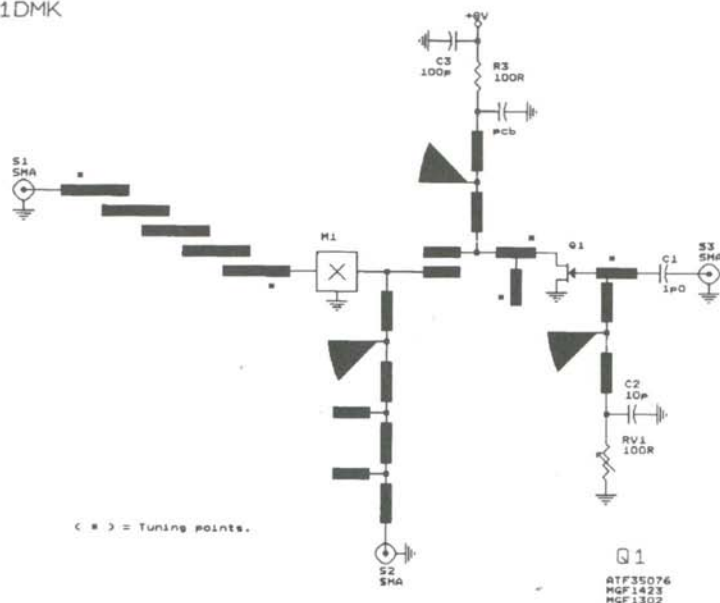
Ein LNA hat einen Hohlleiter-Eingang und einen Koaxausgang, ein Leistungsverstärker und der Verdoppler genau umgekehrt. In Abb. 2 ist auch eine Gehäuseversion mit zwei Koaxbuchsen gezeigt.

Der Streifenleitungs-Hohlleiterübergang ist mit einem Stück UT-085 Festmantelkabel realisiert. Der Erreger liegt parallel mit der Ebene des Flansches und nicht, wie sonst üblich, 90° zum Flansch. Die Rückflußdämpfung der von mir gewählten Anordnung ist besser.

3. Low Noise Amplifier

The LNA consists of three HEMT stages connected via $\frac{1}{4}$ couplers on 50Ω lines somehow similar to DB6NT's /1/ but rearranged to fit inside the box and without nega-

tive bias voltage generation. The first stage connects directly to the waveguide for the lowest possible loss, while the output is DC isolated with a $\frac{1}{4}$ coupler. The prototype PCB uses only straight 50Ω lines and requires tuning on each FET (at gate and drain) by placing small stubs along the lines while monitoring the relevant characteristics (be noise figure or gain). This way some different types of transistors could be tested and their possible use on 24GHz evaluated. The sets FHX13, FHX13, FHX14 and NE32463, NE32463, NE32563 were the ones that produced the best results. A gain better than 24dB, with noise figures below 2.0 dB, should be always possible to obtain. The best I could get was from the NEC transistor set and was 26dB gain and 1.4dB (+/- 0.2dB) noise figure. Noise figure measurements were done with Hot/Cold method using load at different temperature and also the sky of several clear days, as suggested by DK8CI in /7/, for the people without a good noise source and no liquid nitrogen at hand. To operate, the amplifier requires +5Volt and -5Volt from a external

24GHz Tx/Rx Mixer.
CT1DMK

Mai 98

Bild/Figure 7: Circuit Diagram of Mixer Module

supply. The FET's polarization should be adjusted for maximum gain or lowest noise figure on the first FET (also on the second if desired). Mitsubishi HEMT transistors were not available at my stock, therefore I could not test them, but should work as well.

3. Vorverstärker

Der Vorverstärker besteht aus 3 HEMT-Stufen, die durch $\lambda/4$ -Schlitzkoppler getrennt sind. Diese Anordnung ist ähnlich der von DB6NT beschriebenen Schaltung in [1]. Der Eingang geht direkt auf den Hohlleiter-Erreger.

Der Prototyp benutzt einfach 50Ω Leitungen, die durch kleine Stubs, die aufgelötet werden, abgestimmt werden. deswegen kann man

auch verschieden Typen von HEMT's ausprobieren.

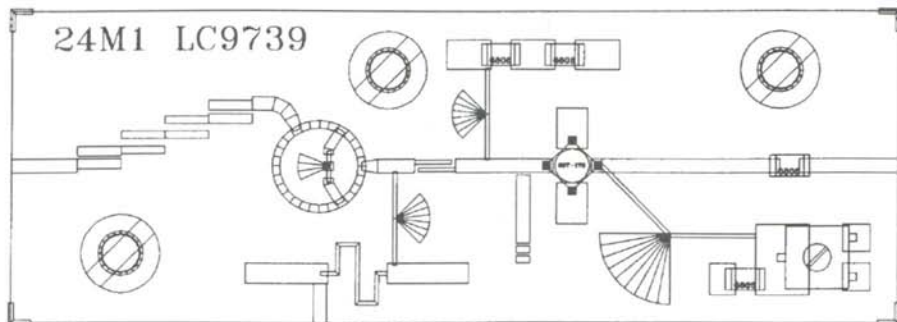
Als die am besten geeigneten HEMT's haben sich die Sätze FHX13, FHX13, FHX14 und NE32463, NE32463, NE32563 erwiesen. Damit kann eine Verstärkung von 24dB und eine Rauschzahl von weniger als 2dB erzielt werden.

Die besten Werte lagen bei 26dB Verstärkung und 1,4dB Rauschzahl mit den NEC-Transistoren.

Die Rauschzahlmessungen wurden mit der 'Hot/Cold'-Methode durchgeführt, die von DK8CI in [7] beschrieben wurde.

4. Power amplifier

A 10 milliwatt power amplifier can be built using the same strategy as the LNA de-



Bild/Figure 8: Parts Layout of Mixer Module

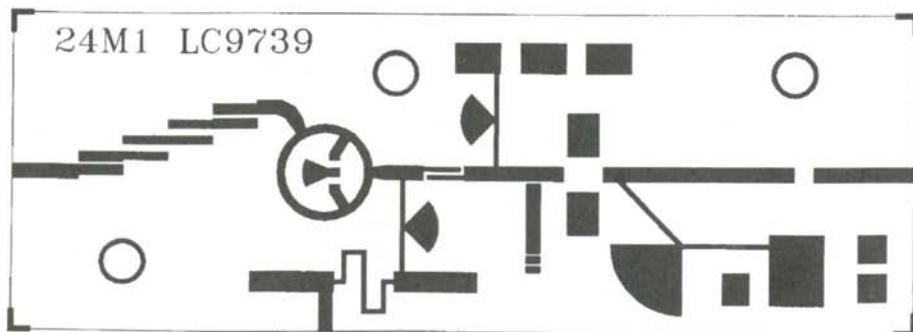
scribed previously. Basically the PCB design is the same with only the $\frac{1}{4}$ coupler now on the input and direct stripline on the output, to the waveguide port. Also the FET biasing resistors are modified in order to make them drawn more current from the 5V, specially on the last stage (reduce the R1, R2 and R3 to 47 Ω). The HEMT transistors used here may be the ones with higher NF (lower cost) like the NE32863 or the FHX15, since in principle they have the same all other characteristics besides noise figure. Attempts with a MGF1303 and MGF1425 where done with good results but lower gain was obtained (15dB) comparing with the HEMT devices (23dB). Output power, at 1dB compression, vary from device to device and are in the

range of 8 to 12 dBm. A 10dBm output is easy to obtain.

4. Leistungsverstärker

Mit demselben Design kann man einen 10mW Leistungsverstärker aufbauen. Die Widerstände in der Gleichspannungsversorgung wurden reduziert, um die höheren Ströme zu erlauben.

Als FET's nimmt man die billigsten einer Serie, z.B. den FHX15. Die Verstärkung beträgt ca. 23dB bei einer Ausgangsleistung von 10dBm.



Bild/Figure 9: PCB of Mixer Module

5. Frequency doubler

To use fundamental mixers on 24GHz (sometimes, good WG units were found at flea markets) a good source for local oscillator is mandatory. Also for those experimenting at 47GHz a good source of 24GHz is of interest. This design uses two transistors, the first as a buffer for the 12GHz, and the second as the multiplying device. Again, to allow the test of several types of transistors, all signal lines are 50Ω and tuning is required to match every transistor. Tests were made using a MGF1303 plus a MGF1425 and more than 10dBm were obtained after quick tuning (for 10dBm at input). Levels as high as 15dBm may be reached by increasing the current and exhaustive tuning but also the transistor may show its limits during the tests. If you don't have many transistors or don't like GaAs smoke, don't push much above 10 dBm.

5. Frequenzverdoppler

Um einen Mischer auf 24GHz zu betreiben, braucht man ein LO auf 24GHz. Dieser kann auch gute Dienste für 47GHz Stationen leisten. Die Schaltung benutzt die erste Stufe als Puffer und eine zweite HEMT-Stufe als Verdoppler.

Ein MGF1303 gefolgt von einem MGF1425 ergab nach einigem Abstimmen eine Ausgangsleistung von 10dBm. Die Verstärkung ist 0dB.

6. 24GHz Mixer

This is the last module I present here and is a fundamental one to make a transverter. Two different version are presented: one with integral microstrip band pass filter and another without filter. For transverter designs using 144MHz as intermediate frequency the filter required is too narrow to be feasible in a microstrip design. In this case a mixer module without filter should be used and installed with the input to the WG port, allowing direct connection to the waveguide filter. The module with integral band pass filter is suitable only for configurations having an IF greater than 1GHz since the filter has about 1.5GHz band pass at 3dB. The filter design resulted in a

compromise between insertion loss and bandwidth. The present design has already 3 to 4 dB of insertion loss making the realization of narrower filters unpractical. Although the 1.5 GHz bandwidth can be tweak in such a way that it starts to cut just below the frequency of interest, making the image suppression greater than 30dB for an IF of 1296MHz. This module requires a local oscillator in the 12GHz range and it employs a GaAs FET as the local oscillator frequency doubler to get about 7dBm to drive a rat race mixer. The diodes should be the best one can get. The BAT15 work reasonably well while the BAT30 (beam lead) should be the way to go for best performance.

6. Mischer

Der Mischer auf 24GHz ist ein einfach symmetrischer Mischer mit einem 'Rat-Race' Hybrid. Er benutzt eine Diodenpaar, das entweder eine BAT15 oder noch besser eine Beam-lead-Diode BAT30 ist.

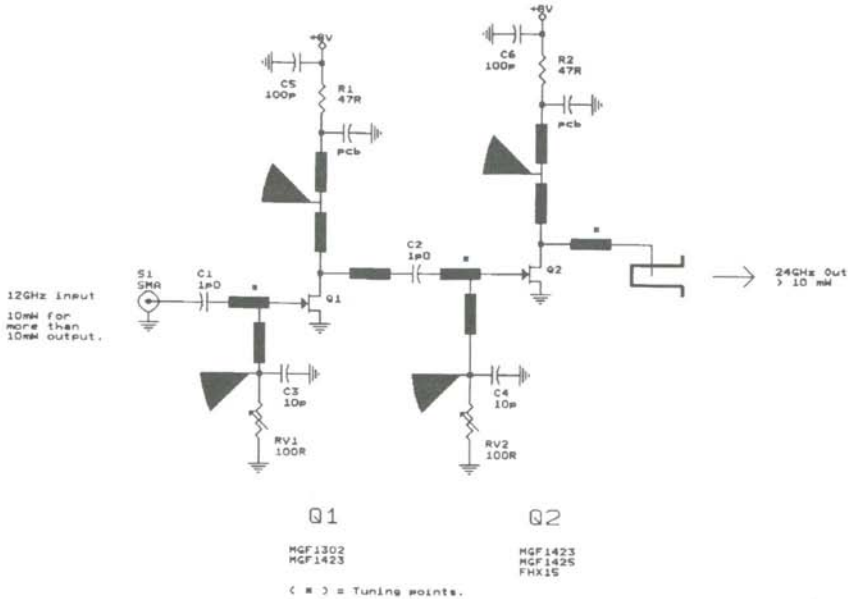
Eine Version ist ohne Filter. Diese benötigt ein externes Hohlleiterfilter, um die Spiegelfrequenz bei niedrigen ZF-Frequenzen von unter 1,3GHz zu unterdrücken.

Die zweite Version hat ein integriertes Mikrostreifenleitungsfilter, das eine Bandbreite von ungefähr 1,5GHz hat. Die Durchgangsdämpfung ist ca. 3 bis 4dB. Noch schmalere Filter sind nicht zu realisieren. Bei einer ZF von 1,3GHz beträgt die Spiegelunterdrückung ca. 30dB. Der Mischer benötigt eine LO-Leistung von 7dBm, die von dem oben beschrieben Verdoppler geliefert werden können.

7. Construction

All PCBs are made of Rogers RT5780 10mils. After etched 1.5mm holes are opened at the grounding positions. Then solder them to a 0.8mm thick cooper sheet cut to fit inside the milled box. Some filing may be necessary for them to fit correctly. After some cleaning, to remove the solder flux they are ready to be populated. The modules can be placed in and changed as many times as necessary. Assembly of all components should be made

12GHz / 24GHz Active doubler. CT1DMK



Jun. 98

Bild/Figure 10: Circuit Diagram of Active Doubler

with the modules out of the aluminum box. The ground connection of the FET's sources should be done at the exact position where the ceramic case ends (to make the connection as short as possible). Apply all general rules for GaAs FETs and SMD described in so many other articles.

7. Konstruktion

Alle Leiterplatten sind aus Rogers RT-5780 Duroid mit einer Dicke von 10mil=0,25mm gefertigt. Nach dem Ätzen werden den Befestigungen 1,5mm Löcher gebohrt. An diesen Stellen wird die Platine auf eine 0,8mm starke Kupferfolie gelötet, die in das Gehäuse paßt. Nach dem Reinigen kann man die Platinen beliebig im Gehäuse wechseln, um Experimente zu erleichtern.

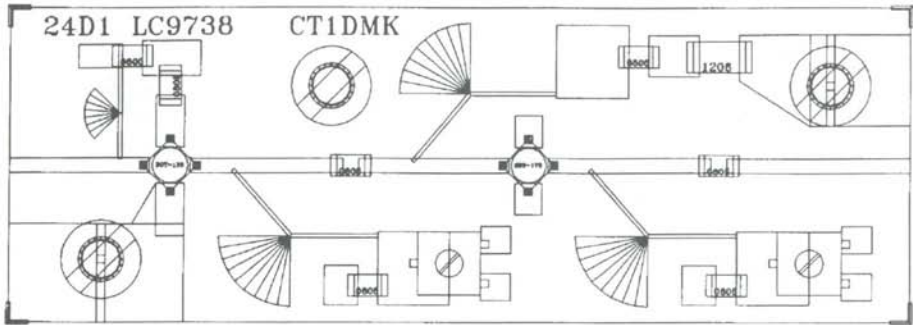
Die FET's werden direkt an der Keramik des Gehäuses durchkontaktiert.

8. Concluding remarks.

I believe that one dB or two more may be obtainable on any of the developed modules, but it is also my opinion that the tuning of such circuits becomes limited by the hand movement precision and patience (that last no longer than one hour) than by the devices themselves. There is plenty of room for your skills here. Thanks to all that helped with info and components.

8. Bemerkungen

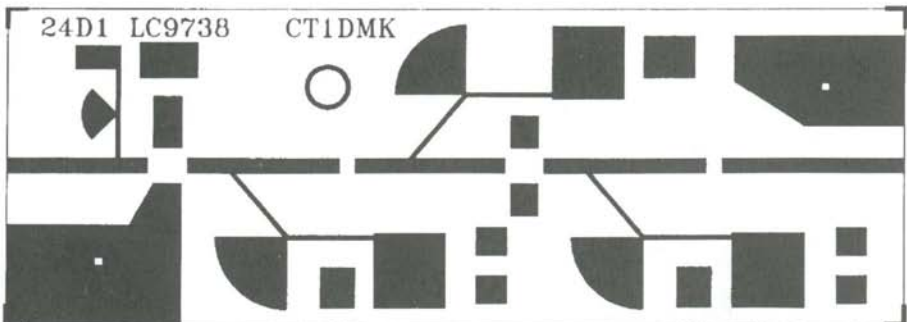
Durch geduldiges Tunen können sicher einige dB mehr herausgeholt werden. Aber selbst die erreichten Ergebnisse sind o.k. Vielen Dank an die, die mir mit Tips und Komponenten geholfen haben.



Bild/Figure 12: Parts Layout for Active Doubler

References

- /1/ Michael Kuhne, DB6NT, 'Low noise 24GHz amplifier', DUBUS 3/96
- /2/ Erich Zimmermann, HB9MIN, '24GHz RatRace mixer', DUBUS 2/93
- /3/ Erich Zimmermann, HB9MIN, 'Rauscharmer 24GHz Vorverstärker', DUBUS 1/94
- /4/ Michael Kuhne, DB6NT, '47GHz Transverter', DUBUS 1/94
- /5/ T. Takamizawa, JE1AAH, '47GHz High performance components', MW update 96
- /6/ T. Takamizawa, JE1AAH, '47GHz Active doubler', DUBUS 4/94
- /7/ Hermann Hagen, DK8CI, in CT1WW Memorial 1997, Oliv.Azmeis/Portugal.



Bild/Figure 11: PCB of Active Doubler

Practical Construction of DL6WU Long Yagis For 1296MHz

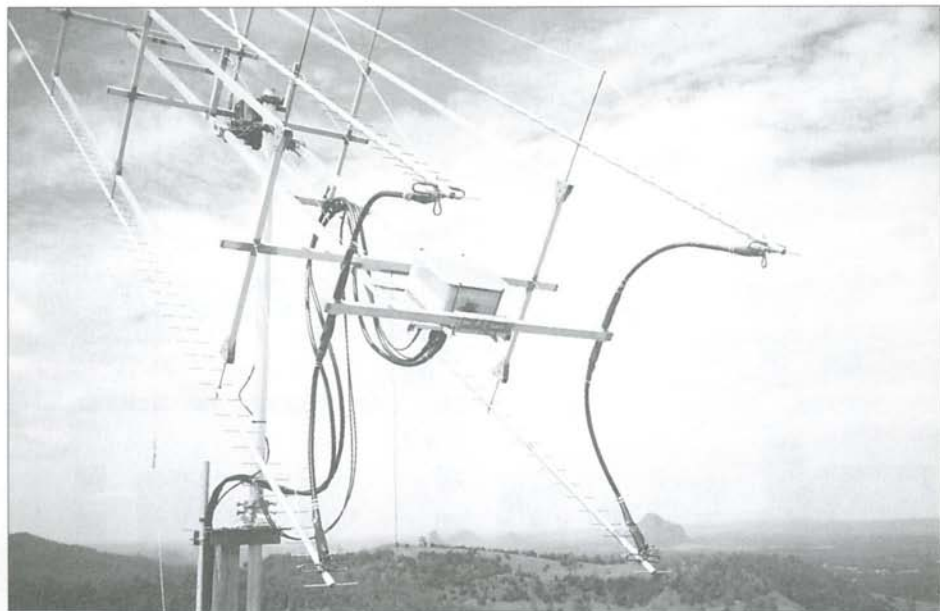
Adrian Pollock, VK2FZ/4

295 Landsborough Road, Maleny, Queensland, 4552 Australia

Lots of elements means lots of work! I decided to construct four 70-element Yagis because I could get 6000mm long booms in one piece. These require considerable support to keep them straight and the stacking distances

(900mm) are not so convenient for using 283 W balanced phasing lines. My experiments with 283Ω line (3.175mm copper tubes spaced 17mm apart) yielded $2 \times 9 \cdot \frac{1}{4} =$

4x70 El DL6WU on 23cm



1028mm, and, allowing for 2 x 17mm for the folded dipoles, gives a stacking distance of 1062mm. A better choice would be to use $2 \times 7/4 = 800\text{mm}$ plus 34mm = 834mm stacking distance. This suggests a boom length around 5000mm and 60 elements. I changed to coax and 4:1 baluns in an effort to improve the CS/G noise ratio but no improvement or deterioration was noted.

With so many elements to be hammered through the booms, I thought a simple tool to facilitate drilling the round booms accurately, and to support the elements to prevent buckling while being hammered, was worth investigating. My booms are 16mm diameter x 1.6mm wall thickness and my elements are 3.175mm diameter (1/8") aluminium wire. I tried welding rods but they were not circular enough to provide good contact. I might have got a bad batch and you might have better luck. Check with vernier callipers before you buy.

Photo 1 shows the various parts. L - R:

1. Steel Ramrod, 3.175mm diameter;
2. Brass Drilling Guide Spigot;
3. Brass Element Guide Spigot;
4. Brass Sliding Boom Collar.

The spigots are 8mm (5/16") diameter rod. The Drilling Guide Spigot is drilled through its centre with the same size drill used to drill the element holes. In my case a 3.100mm metric drill. The Element Guide Spigot is drilled down its centre for element clearance. In my case No.29 drill (3.5mm). Don't make this spigot too long (115mm), because it has to be drilled through from both ends and to do this accurately requires a lathe. So it's a good idea to machine all the parts on a lathe. Everything will then be square and the tool will be a pleasure to use.

The collar is a short cylinder about 50mm (2") diameter and about 20mm (3/4") long. It is drilled/bored through its centre such that it will slide smoothly along the boom without wobble. It is then accurately cross-drilled on a di-

ameter 10mm from one end face. This face is defined as the front face. Drill out one side of the hole and tap a thread to take the 8mm diameter Spigots. Cut a mating thread on each Spigot such that each Spigot will screw into the collar to within 6-8mm of the boom. This gap is important to allow the swarf to escape when drilling and for sighting when hammering the elements.

Then mill/cut the transverse slot from the front face to the cross-drilled hole no wider than is necessary to allow release of the element once it is hammered through the boom. It's a good idea to mill a flat on the collar opposite the Spigot where the element will protrude after hammering. Make the distance between the boom and this flat some convenient di-

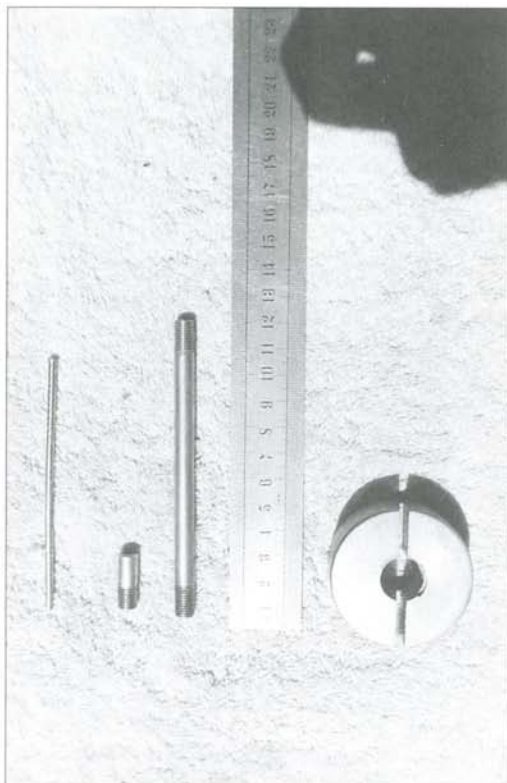


Fig. 1: Toolbox

mension and calculate how much protrusion is required for each element.

When marking out the booms it's best to mark four (or more) at a time. Lay them side-by-side, touching and clamped. Use a steel engineers right-angle square and steel scriber to scribe a single line across all four booms. Instead of marking 'element position' it's much better to mark 'front face of collar' position, which in my case is 10mm in front of each element position. Set the drill press up as in Photo 2. Feed the boom through the collar, last director first. Make sure the collar is the right way around, front face away from the reflector. Bring the scribed line for the last director flush with the front face of the collar and drill right through. This hole will be 10mm behind the scribed line; i.e.. in the correct position. This method is more accurate than trying to line up the drill point on a scribed line.

Slide the boom through to the next line, but before continuing, the first hole defines element plane and the boom must not rotate during the entire drilling operation. It's a good idea either to hammer the last director partially through or fit a temporary element of

some sort to use as a visual reference for the rest of the drilling operation.

Photo 3 shows the Element Guide Spigot in place. Use a wooden block with a hole drilled in it (to take the element as it protrudes) as an anvil. Start with the last director (or the second last if you've already put the last director through) and work towards the reflector. Make sure the boom collar is the right way around, front face away from the reflector. Bevel each end of each element slightly to remove any burrs and to facilitate its passage through the boom. Lubricate both entry and exit holes and the element with CRC/WD-40. Drop the element down the Guide and back it up with the steel Ramrod. Sight through the slot to make sure the element is centred over the entry hole and hammer through, taking care when the element hits the opposite side of the boom to centre the element over the exit hole. Hammer through and measure the element protrusion as in Photo 4. Try not to overshoot as reverse hammering will loosen the tightness of the fit slightly. Unscrew the Element Guide Spigot and the collar should slide down the boom releasing the element through the slot. Proceed down the boom until

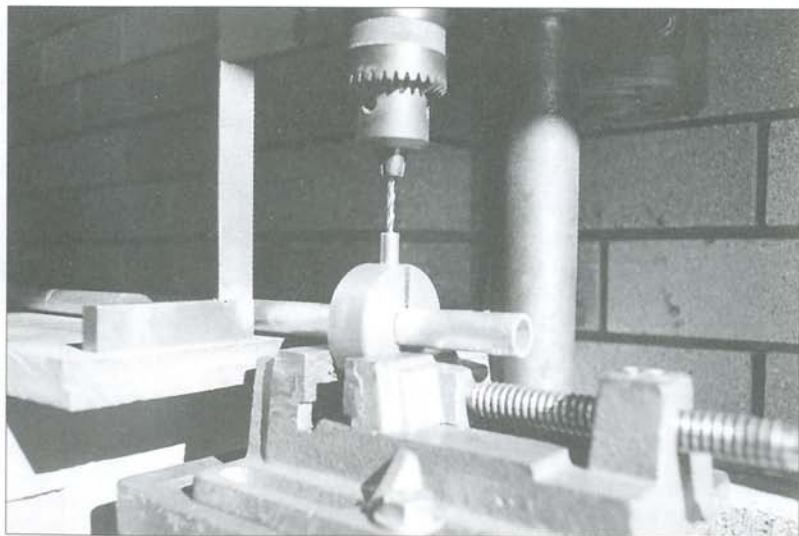


Fig. 2: Tool Setup for Drilling

all the directors are through. Don't put the reflector through until the driven element has been fitted. My elements are very tight; it requires many solid blows to force the elements through the boom.

My folded dipoles are 4.76mm (3/16") copper tube. The test antennas' folded dipoles were made in three pieces for easy adjustment but my final antennas use one-piece copper tube through the boom on Delrin insulators and bent 'in situ' with a home-made bending jig. These dipoles are very strong and will support 283Ω balanced line.

My four Yagis, Photo 5, are very marginal for EME; the linear polarisation is a real disadvantage. With 150 watts at the feed I have worked four stations: N21QU, OE9ERC, OE9XXI and WB5LUA. Only N21QU was 'random' and the others had to change their dish feed to linear polarisation to make it. At least the Yagis don't catch the wind like an equivalent 2400mm dish!

Deutsche Fassung

Wenn man eine 23cm Yagi nach DL6WU bauen will, muß man eine Menge Elemente sägen und durch den Boom schlagen. Mein Plan war, 4 Yagis mit jeweils 70 Elementen bei 6m Gesamtlänge zu bauen.

Um einen günstigen Stockungsabstand für symmetrische 'Open-Feed' Phasenleitungen zu erhalten reduzierte ich die Länge auf 5m und die Zahl der Elemente auf 60. Damit ergab sich ein Stockungsabstand von 834mm, die man gut mit 2x 7 · 1/4-Stücken mit jeweils 800mm Länge verbinden kann.

Ich versuchte, einfache Werkzeuge zu bauen, die das Bohren des Booms, die Montage der Elemente und die Qualitätskontrolle auf richtige Länge erleichtern sollten.

Meine Boom-Rohre sind rund und haben 16mm Durchmesser. Meine Elemente haben 3,175mm (1/8") Durchmesser. Ich versuchte auch, die Elemente zu schweißen. Das gelang mir aber nicht befriedigend.

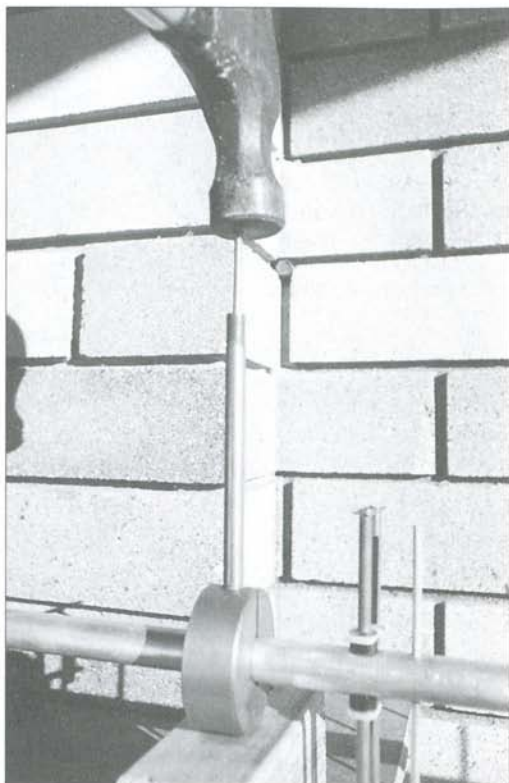


Fig. 3: Hammering the elements

Photo 1 zeigt die Verschieden Werkzeuge:

1. Ein Durchschläger aus Stahl mit 3,175mm Durchmesser
2. Eine Messing Bohrlehre
3. Eine Messing Elementführung
4. Eine verschiebbare Boom-Bohrlehre aus Messing

Die Bohrlehre ist innen 3,1mm Durchmesser. Die Elementführung ist innen 3,5mm und ca. 115mm lang. Die Teile werden vorzugsweise auf einer Drehbank gefertigt.

Die Boom-Bohrlehre hat ca. 50mm Durchmesser ist ca. 20mm lang. Der Innendurchmesser ist 16mm+0,1mm, so daß sie sauber auf dem Boom gleitet. Dann wird eine Nut gefräst, die an einem Ende ein Gewinde erhält, um die Bohrlehre und die Elementführung einzuschrauben. Diese haben 8mm

Durchmesser. Die Endposition dieser teile ist ca. 6mm vom Boom entfernt, um Platz für die Bohrspäne zu haben.

Wenn man die Positionen an den Boomrohren anreißt, sollte man es bei allen vier gleichzeitig machen. Dann kann man sie nebeneinander legen und kontrollieren.

Photo 2 zeigt, wie man mit der Bohrlehre die Elementlöcher durch den Boom bohrt. Der Letzte Direktor wird zuerst gebohrt. Um alle Elemente in der gleichen Ebene zu haben, schlägt man das erste Element gleich durch, und benutzt das als Justierhilfe.

Photo 3 zeigt, wie man die Elementführung benutzt. Vor dem Einschlagen kann man das Element und die Löcher einölen. Dann wird das Element eingeführt und selbiges mit dem Stahldurchschläger durchgetrieben. Hinterher wird die korrekte Lage wie in Photo 4 dargestellt, geprüft. Man soll möglichst das Element nicht zurückschlagen, weil das den festen Sitz gefährdet. Der Reflektor wird es eingeschlagen, wenn das Speiseelement montiert ist.

Meine Speiseelemente sind Faltdipole, die aus 4,76mm (3/16") dickem Kupferdraht bestehen. Die Dipole sind sehr kräftig und können die 283Ω 'Open-Feed'-Leitungen gut tragen. Meine 4 Yagis (Photo 5) reichen gerade aus, um EME zu machen. Mit 150W am Speisepunkt der Antenne habe ich bereits 4 Stationen gearbeitet: N21QU, OE9ERC, OE9XXI und WB5LUA. Nur N21QU war 'Random', alle anderen mußten ihre Erreger für

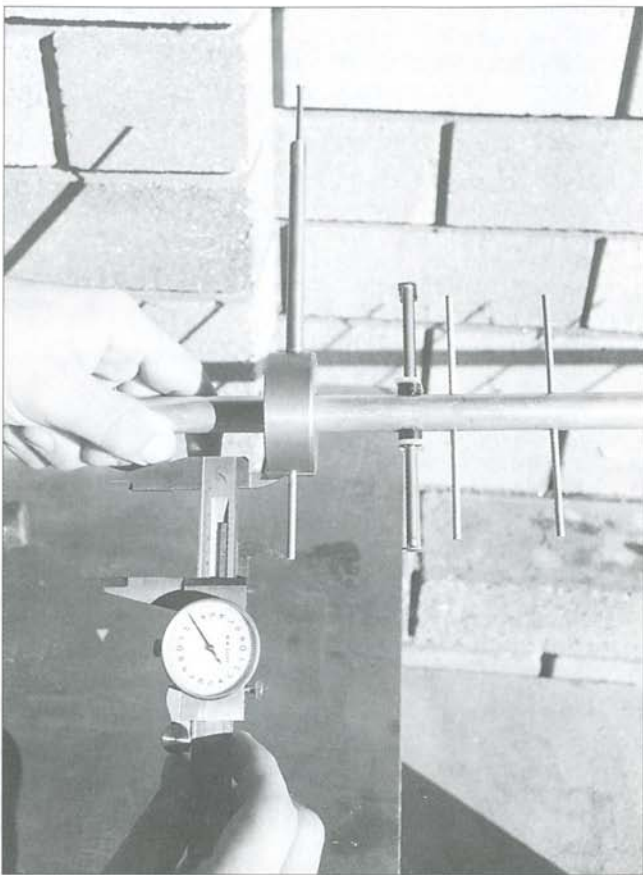


Fig. 4: Measuring Element Protrusion

ihre Spiegel auf lineare Polarisation ändern, um das QSO zu machen.

Acknowledgements

Thanks to Lyell VK2BE, Rod VK4KZR and Geoff VK4GWC who helped with various aspects of the project.

Mein Dank geht an Lyell, VK2BE, Rod, VK4KZR und Geoff, VK4GWC, die mir sehr geholfen haben.

Product Review

Editor: Rainer Bertelsmeier, DJ9BV

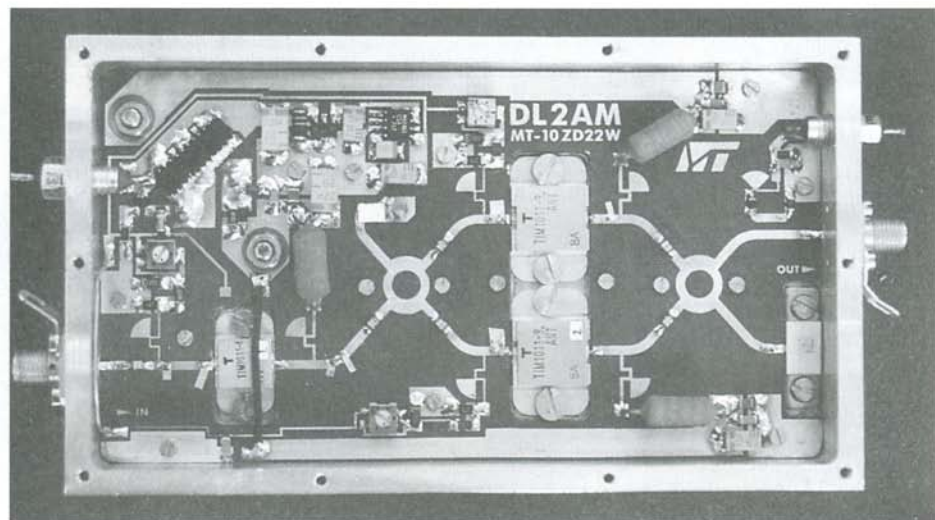
20W GaAs-FET Power Amplifier for 10GHz

R. Bertelsmeier, DJ9BV

Beschreibung

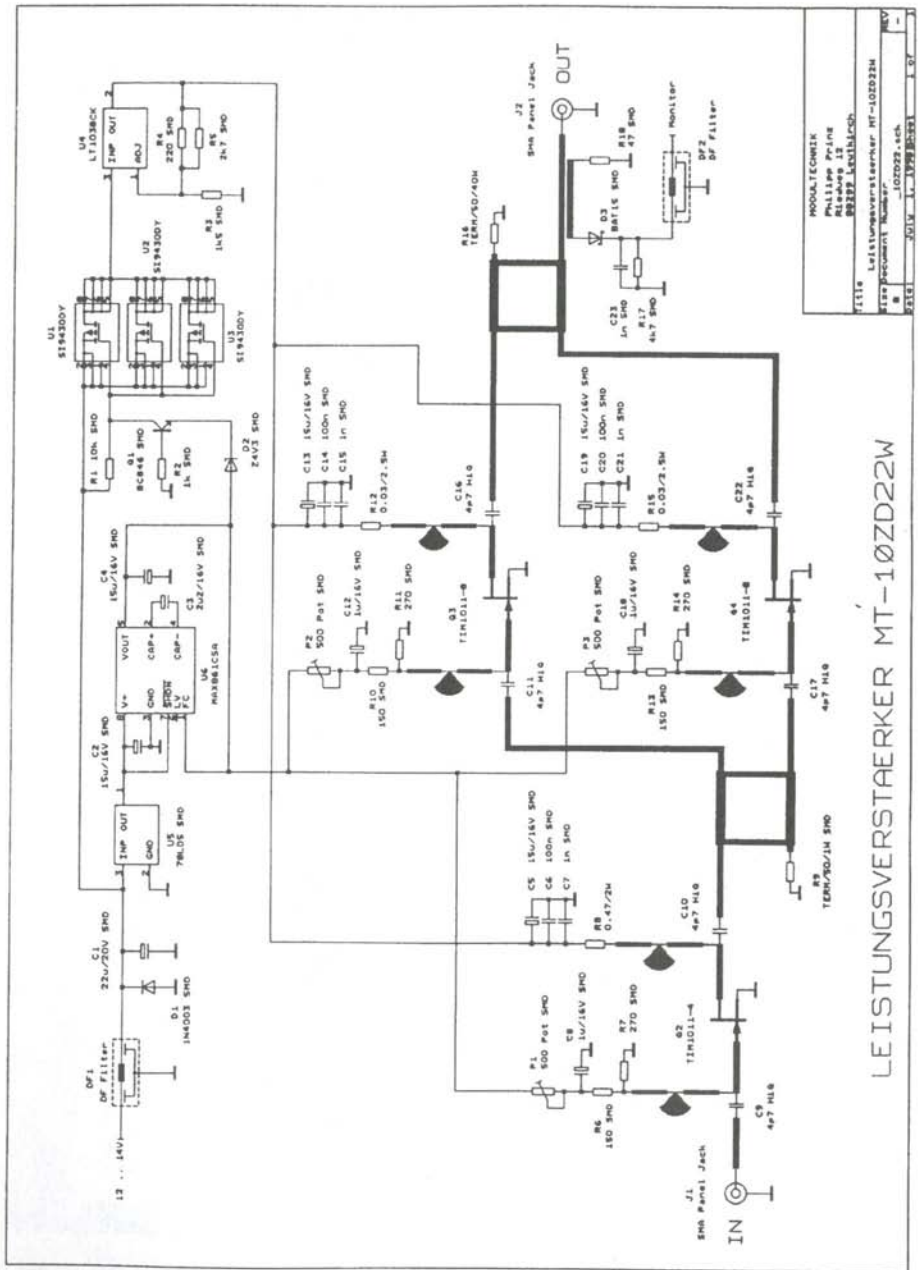
Der Leistungsverstärker MT-10DZ22W erzeugt eine typische Ausgangsleistung von 22W bei einer Steuerleistung von 310mW.

Der zweistufige Verstärker benutzt als erste Stufe einen TIM910-4 GaAs-FET und in der Endstufe zwei über 3dB/90° Hybridkoppler gekoppelte TIM910-8. Zur Anzeige der Ausgangsleistung dient ein Richtkoppler. Den



20 Power Amplifier for 10GHz

Fig. 1: Circuit Diagram



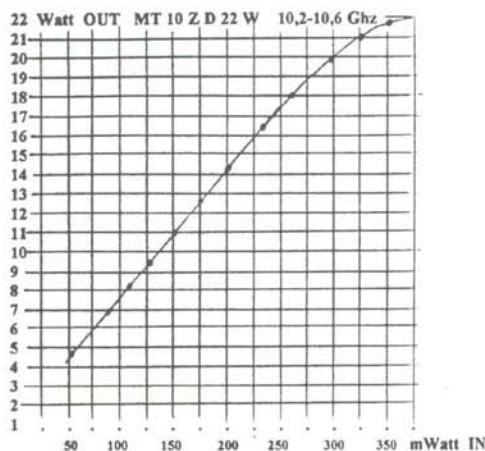


Fig. 3: Pout vs. Pin

Spannungsverlauf an der Detektordiode zeigt Abb. 3.

Ein Inverter (U6=MAX861CSA) erzeugt die negative Spannung für die Gates. Zum Schutz der FET's gegen Gatespannungsausfall dient eine Schalter mit den Leistungs-FET's U1...U3.

Die Betriebsspannung wird über einen LT1083CK Regler auf 10V stabilisiert und bei einem Kurzschlußstrom von ca. 8A gegen Überstrom geschützt. Der Ruhestrom der FET's beträgt ca. 4,2A.

Description

The power amplifier MT-10ZD22W provides a typical output power of 22W. The drive power is 310mW. The two stage amplifiers uses a TIM910-4 as a first stage and a pair of TIM910-8 as a second stage (See figure 1.). The pair of FET's is combined via 3db/90° hybrids. A directional coupler serves as a means for indicating the output power.

Negative voltage for the gates is generated by an inverter (MAX861CSA). A power FET switch (U1...U3) performs a shutdown on the drain voltage in case of a failure of the negative gate voltage. The regulator (U4, LT1083CK) provides over current protection (8A). The bias current (No RF) is set to 4.2A.

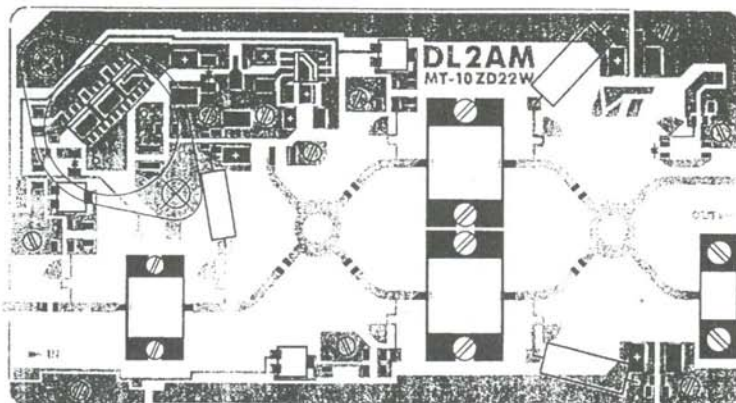
The rugged construction includes a RT-5870 Duroid PCB (Fig. 2) and a machined aluminum box. All connectors are SMA type.

Source/Bezug

Ready made units can be ordered from Philip Prinz, DL2AM, Riedweg 12, D-88299 Leutkirch 3, Tel.: (++49)-7567-294/Fax: (++49)-7567-1200.

Komplette Verstärker sind bei Philip Prinz, DL2AM, Riedweg 12, D-88299 Leutkirch 3, Tel.: (++49)-7567-294/Fax: (++49)-7567-1200 zu haben.

Fig. 2: PCB and Parts Layout



CFB0301

Product Specifications - September 1996
(2 of 3)Typical Noise Parameters ($V_{DS} = 4\text{ V}$, $I_{DS} = 30\text{ mA}$)

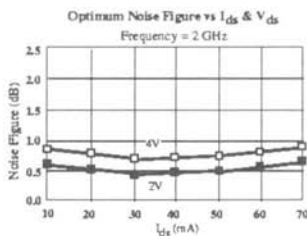
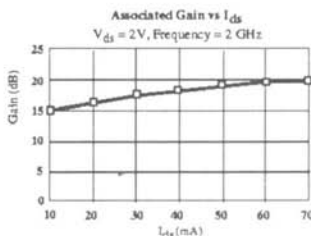
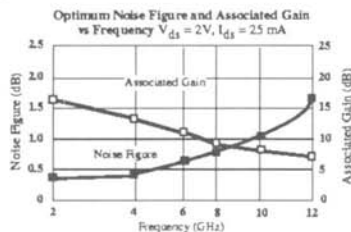
Frequency (GHz)	F_{min} (dB)	Gamma Opt		Rn/50
		Mag	Ang	
0.8	0.4	0.6	27	0.19
1.0	0.4	0.6	29	0.17
1.2	0.4	0.6	32	0.18
1.4	0.4	0.6	35	0.18
1.6	0.4	0.5	38	0.17
1.8	0.4	0.5	41	0.16
2.0	0.5	0.5	45	0.15
2.2	0.5	0.5	49	0.15
2.4	0.5	0.5	54	0.14
2.6	0.5	0.5	60	0.13

Note: 1. F_{min} values reflect the circuit losses in the test fixture when matched to optimum noise figure.

Absolute Maximum Ratings

Parameter	Symbol	Rating
Drain-Source Voltage	V_{DS}	+8V
Gate-Source Voltage	V_{GS}	-5V
Drain Current	I_{DS}	150mA
Continuous Dissipation ¹	Pt	750 mW
Channel Temperature	Tch	175°C
Storage Temperature	Tstg	-65°C to +150°C

Typical Performance

Typical Scattering Parameters ($T_A = 25^\circ\text{C}$, $V_{DS} = 2\text{ V}$, $I_{DS} = 25\text{ mA}$)

Frequency (GHz)	S_{11}		S_{21}		S_{12}		S_{22}	
	Mag	Ang	Mag (dB)	Ang	MAG (dB)	ANG	MAG	ANG
0.5	0.98	-20	7.17	161	0.02	78	0.42	-11
1.0	0.94	-40	6.90	148	0.03	70	0.41	-24
2.0	0.85	-76	6.00	119	0.05	52	0.36	-46
3.0	0.76	-108	5.00	95	0.07	38	0.32	-65
4.0	0.70	-130	4.30	75	0.08	30	0.30	-75
5.0	0.64	-150	3.83	55	0.09	20	0.27	-85

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CELERITEK
CFB0301
Product Specifications - September 1996
(3 of 3)
Test Circuit
Evaluation Board Schematic

Evaluation Board Substrate:

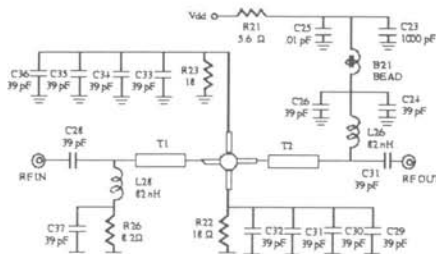
ER = 4.65

Thickness = 0.036

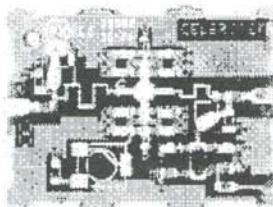
Transmission Lines (Dimensions in mm.):

T1: 0.203 (W) x 11.55 (L)

T2: 0.203 (W) x 5.05 (L)


PB-CFB0301 Evaluation Board

(SMA Connectors not shown)


Evaluation Board Parts List

Item	Reference Designator	Description	Quantity	Manufacturer	Part Number
1	B21	Chip ferrite bead 0805	1	World Products	HB-1H2012-260TT
2	C23	Capacitor, 1000pF, 0603	1	Rohm	MCH185A102JK
3	C21, C24, C26, C28-C37	Capacitor, 39pF, 0603	13	Rohm	MCH185A039JK
4	C25	Capacitor, 0.01µF, 0603	1	Rohm	MCH185A103JK
5	L26, L28	Inductor, 82nH, TINDAST-3	2	Toko	LL2012-PRNK
6	R21	Resistor, 5.6 Ohm, 0603	1	Dale	RCWP575 560
7	R22, R23	Resistor, 18 Ohm, 0603	2	Dale	RCWP575 181
8	R26	Resistor, 8.2 Ohm, 0603	1	Dale	RCWP575 820

Ordering Information

The CFB0301GaAs FET is available in tape and reel. An evaluation board is also available. Ordering part numbers are listed.

Part Number for Ordering
CFB0301
Function

Low-Noise high dynamic range FET

Package

70 mll package

CFB0301-000T

Low-Noise high dynamic range FET

70 mll package in tape and reel

PB-CFB0301

Evaluation Board

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CMM2321

Preliminary Product Information
April 1997 (1 of 4)

2.4 to 2.5 GHz 1 Watt Power Amplifier

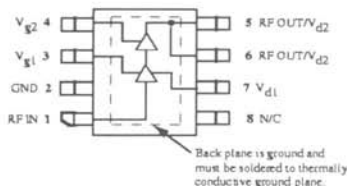
Features

- ☐ 48% Power Added Efficiency
- ☐ 31.5 dBm Output Power
- ☐ Low Distortion
- ☐ Low Cost SO-8 Surface Mount Package

Applications

- ☐ Wireless Datacom
- ☐ Wireless Bar Code Scanners
- ☐ Inter-Building Campus Networks

Functional Block Diagram



Description

The CMM2321 is a power amplifier intended for use in 2.4 GHz ISM band applications such as wireless datacom equipment, wireless bar code scanners and inter-building campus networks. This flexible amplifier can be biased to support the requirements of frequency hopping or direct sequence systems.

The CMM2321 is packaged in a low-cost, space efficient SO-8 power package that gives excellent electrical stability and thermal handling performance with a R_{θ} of less than 18°C/W. The part is designed to require minimal external circuitry for bias matching, simplifying design and keeping board space and cost to a minimum.

Absolute Maximum Ratings

Parameter	Rating	Parameter	Rating	Parameter	Rating
Drain Voltage ($+V_d$)	+9.0 V*	Power Dissipation	5 W	Operating Temperature	-40°C to +100°C
Drain Current (I_d)	1.8 A	Thermal Resistance	18°C/W	Channel Temperature	175°C
RF Input Power	+15 dBm*	Storage Temperature	-65°C to +150°C	Soldering Temperature	260°C for 5 Sec.
DC Gate Voltage ($-V_g$)	-4.0 V*				

* Max ($+V_d$) and ($-V_g$) under linear operation. Max potential difference across the device in RF compression ($V_d + |V_g|$) not to exceed the minimum breakdown voltage (V_{bd}) of +18V.

Recommended Operating Conditions

Parameter	Typ	Units	Parameter	Typ	Units
Drain Voltage ($+V_d$)	4.5 to 5.1	Volts	Operating Temperature (PC Board)	-30 to +80	°C

Electrical Characteristics

The following specifications are guaranteed at room temperature with drain voltage ($+V_d$) = 4.8 V @ 2.45 GHz in Celeritek test fixture.

Parameter	Condition	Min	Typ	Max	Units
Frequency Range		2.4	2.5		GHz
P _{1dB}		30	30.5		dBm
P _{out} Saturated	P _{in} = +14 dBm	31	31.5		dBm
Efficiency (PAE)	@ Saturation		48		%
Gain		18	20		dB
Harmonics	2nd @ P _{out} = +30 dBm	-35	-30		dBc
	3rd @ P _{out} = +30 dBm	-40	-35		dBc
Noise Figure			5.0		dB
Return Loss			10		dB
Negative Supply Current (-I _g)			0.5	1.0	mA
Positive Supply Current (I _d)	@ P _{1dB}		675		mA

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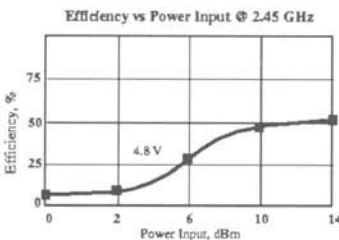
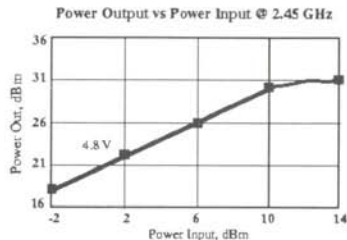
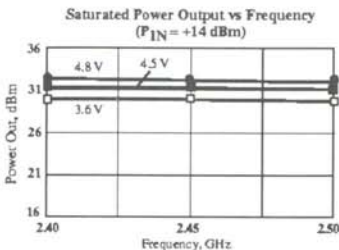
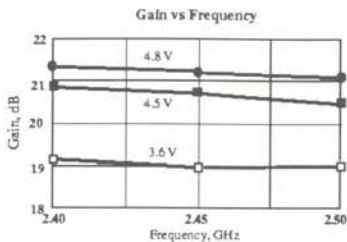
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CMM2321

Preliminary Product Information - April 1997
(2 of 4)

Typical Performance



Application Information

The CMM2321 is a two stage amplifier that requires a positive and negative supply voltage for proper operation. It is essential when turning on the device that the negative supply be applied before the positive supply. When turning the device off, the positive supply should be removed before the negative supply is removed.

The CMM2321 can be operated over a range of supply voltages and bias points. It is important that the maximum power dissipation of the package be observed at all times.

Design Considerations

Biasing A negative voltage supply is needed to bias the gates of the 2-stage GaAs FET power amplifier. Gate 1 bias is applied through pin 3 (Vg1) and gate 2 bias is applied through pin 4 (Vg2). Under most operating conditions gates 1 and 2 may be tied together. The positive supply voltage is applied to pins 5 and 6 (Vd2) and pin 7 (Vd1). The negative voltage supply should be adjusted to achieve a drain current of 600 mA with no RF input power to obtain a P1dB of approximately 30.5 dBm.

Matching Circuits Input and output matching circuits are required. The schematic and the PCB layout for the test board are shown on Page 3. The matching circuits for the CMM2321 are highlighted on the PCB layout.

A single shunt capacitor is used to match the output.

Their placement and value provide tuning. Vd2 is fed through a $\lambda/4$ trace. All other capacitors shown in the schematic are used for decoupling.

Note: Circuit board 8251 is a multiple-use test board. The portions of the board that are used with the CMM2321 are shown as solid traces on the board layout drawing on Page 3. The interface/conversion points in the evaluation board schematic are shown. These connection points may not be labeled identically on Celeritek's PB-CMM2321 evaluation board. Contact the factory for assistance in translating the external match to a specific application.

Supply Ramping To obtain the necessary power ramp, supply side switching should be used. Both drain voltages should be tied together and ramped to produce the required power vs. time response.

Thermal

1. The copper pad on the backside of the CMM2321 must be soldered to the ground plane.
2. All 8 leads of the package must be soldered to the appropriate electrical connection.
3. A large ground plane area with plated thru-holes as shown on the PCB layout should be used as a backside connection.

Contact the factory for a copy of a manufacturing application note containing more detailed information.

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CMM2321

Preliminary Product Information - April 1997

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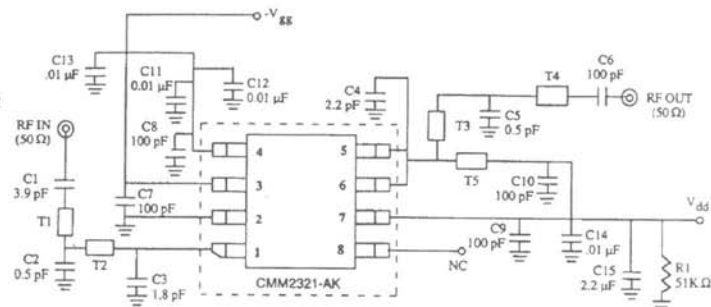
Test Circuits

Evaluation Board Schematic

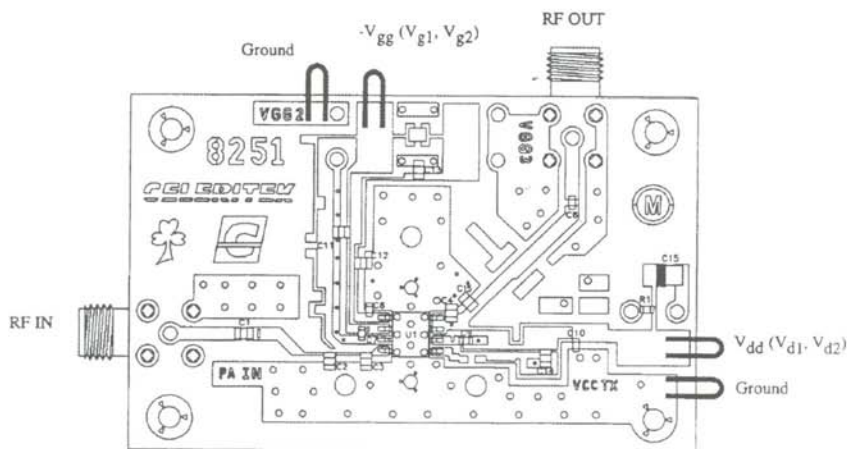
Board substrate:
ER = 4.60
Thickness = 0.031 in.

Transmission line electrical
lengths at 2.45 GHz.
(Dimensions in inches)

Line	Z (Ω)	E (°)
T1	104	14
T2	104	19
T3	50	11
T4	53	31
T5	91	82



PB-CMM2321 Evaluation Board



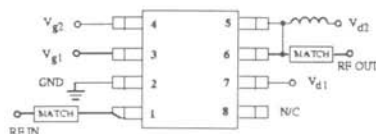
Evaluation Board Parts List

Part Type	Reference Designator	Description	Manufacturer	Part Number
Resistor	R1	51 KΩ 0603	Rohm	MCR 03J 513
Capacitor	C1	3.9 pF 0805 NPO	Rohm	MCH 185 A3R9CK
Capacitor	C2, C5	0.5 pF 0805 NPO	Rohm	MCH 185 A0R5CK
Capacitor	C3	1.8 pF 0805 NPO	Rohm	MCH 185 A1R8CK
Capacitor	C4	2.2 pF 0805 NPO	Rohm	MCH 185 A2R2CK
Capacitor	C6, C7, C8, C9, C10	100 pF 0603 NPO	Rohm	MCH 185 A101JK
Capacitor	C11, C12, C13, C14	0.01 μF 0805 X7R	Rohm	MCH 215 C103KK
Capacitor	C15	2.2 μF Tantalum	Matsuo	267 M2002225M

CMM2321

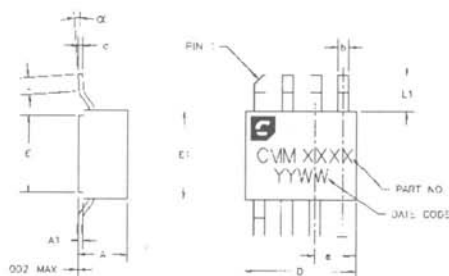
Preliminary Product Information - April 1997
(4 of 4)

Connection Diagram and Pin Descriptions



Pin #	Name	Description
1	RF IN	RF Input (Internally DC blocked)
2	GND	Ground
3	V _{g1}	Input stage gate bias
4	V _{g2}	Output stage gate bias
5	RF OUT/V _{d2}	RF output and V _{d2} . External matching circuit required
6	RF OUT/V _{d2}	RF output and V _{d2} . External matching circuit required
7	V _{d1}	Input stage drain bias
8	N/C	Ground this pin

Physical Dimensions



PARAMETER	MINIMUM	NOMINAL	MAXIMUM
A	0.005	0.008	0.010
A1	0.005	0.008	0.010
B	0.017	0.020	0.023
C	0.017	0.020	0.023
D	0.017	0.020	0.023
E	0.017	0.020	0.023
F	0.017	0.020	0.023
G	0.017	0.020	0.023
H	0.017	0.020	0.023
I	0.017	0.020	0.023
J	0.017	0.020	0.023
K	0.017	0.020	0.023
L	0.017	0.020	0.023
M	0.017	0.020	0.023
N	0.017	0.020	0.023
O	0.017	0.020	0.023
P	0.017	0.020	0.023
Q	0.017	0.020	0.023
R	0.017	0.020	0.023
S	0.017	0.020	0.023
T	0.017	0.020	0.023
U	0.017	0.020	0.023
V	0.017	0.020	0.023
W	0.017	0.020	0.023
X	0.017	0.020	0.023
Y	0.017	0.020	0.023
Z	0.017	0.020	0.023

DIMENSIONS IN INCHES (MILLIMETERS)

Ordering Information

The CMM2321 is available in a surface mount SO-8 power package and devices are available in tape and reel.

Part Number for Ordering

CMM2321-AK

CMM2321-AK-000T

PB-CMM2321-AK

Package

SO-8 surface mount power package

SO-8 surface mount power package in tape and reel

Evaluation Board with SMA connectors

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Microwave Europe

Editor: John Sørensen, OZ1IPU

NEW ADDRESS from the 1. August 1998.
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Denmark Tel. ++45 98463311 Fax ++45
98467877 E-mail dmteknik@post4.tele.dk

1296MHz

PA0WWM JO22FE wkd: 6.6.98 DK5KK/mm
JO14, DK5KK/mm JO24. Tks fer info Wim.

3400 MHz

PA0WWM JO22FE wkd: 6.6.98 DG1KIG
JO30 rs, 7.6.98 DK2MN JO32. Tks fer info
Wim.

5760 MHz

PA0WWM JO22FE wkd: 6.6.98 HB9AMH
JO37 rs. Tks fer info Wim.

10368MHz

F5HRY JN18EQ wkd: 6.6.98 PA0WWM
JO22 415 km, PA0CIS JO22 411 km, PA0EZ
JO22 441 km, PA0BAT JO31 466 km, DB1BX
JO32 566 km locator#43, DH6FAE/P JO40
536 km, DL2ABO/P JO51 654 km,
DL4EAU/P JO51 657 km RS ODX, DH4AE/P
JO51 654 km, DJ2DY/P JN39 370 km loca-
tor#44, DG1KJG JO30 381 km, DC9KK JO30
414 km, DF9QX JO42 585 km locator#45,
DL3NQ JN49 470 km, DJ5BV JO30 404 km,
DF6IY JN48 464 km, DJ1KP JO40 500 km,
DK0FLT JN59 601 km locator#46, DL0KK
JO31 413 km, DL3EAG JO31 413 km,
DL0GTH JO50 642 km, DF7JS JO31 452 km,
9 of these QSOs are SSB contacts. It is funny
to note that SSB is quite clear when the rain
could is in the DX station azimuth! Others are
showing a terrible distortion, making SSB not



I3SOY and IW3EH on 145 GHz

usable. Rig: 5W in 60cm offset dish, 2xNE325 on RX. Tks fer info Herve.

F6DKW JN18CS wkd: 6.6.98 PAOCIS JO22, PA0WWM JO22, PA0EZ JO22, PA0BAT JO31, DB1BX JO32, DH6FAE/p JO40 DL4EAN/p JO51, DL2ABO JO51, DK0FLT JN59, DJ5BV JO30, DC9KK JO30, DG1KJG JO30, DK0BN JN39, ON7WR JO20, DF9QX JO42, HB9AMH JN37, DL3NQ JN49, DJ1KP JO40, DF6IY JN48, DK8ZP JO40, DL3IAS JN49, DB6NT JO50, DL0KK JO31, DL3EAG JO31, DL0GTH JO50, 7.6.98 DH1VY JN39, DL4FBN JO30, 21.6.98 DG1KJG JO30, DL3YEE JO42, DF9QX JO42, PA3CEG JO33, DK2AN/p JO51, DJ5BV JO30, DL2ABO JO51. Rig: TX 9watt, RX 1,2db, Ant 60cm dish. Tks fer info Maillard.

OK1JKT/p JO60OK wkd: 28.5.98 DL1VAA JO61 RS, 29.5.98 DL1VAA JO61 RS, DL4WO JO61 RS, DL4EAU/p JO51 RS, DD7MH JN68 RS, 31.5.98 OK1UVY JO60 RS, DL1VAA JO61 RS, 5.6.98 DD7MH JN68 RS, DD5OI JN57 RS, DK2GR JN59 RS, DL6NCI JO50 RS, 6.6.98 OK1DFC/p JO71, OK1DST/p JO70, DJ5BV JO30 RS, DL4IB JO64 RS, DH8AG JO31 RS, DH8AG JO31

RS, OK1DFC/p JO71, OK1DST/p JO70, OK1KRQ/p JN69, DG0AU JO50 RS, DL6NCI JO50 RS, DK0FLT JN59 RS, DL2ALI/p JO50, DL0GTH JO50 RS, DF0MTL JO50 RS, OK1AIY/p JO70, OK1UFL/p JO70, OK1MDK/p JN79, OE5VRL/5 JN78 RS, DK0WAL JO61 RS, DD7MH JN68, OE2JG/2 JN67 RS, DL1VAA JO61 RS, DL1WA/p JO50, PA0EZ JO22, G3LQR JO02 RS 845km, PA0WWM JO22 RS, DJ7GK JN69 RS, DK9MN JN58, DB4CE JN57, DK2GR JN59 RS, DC8EC JN57, DB6NT JO50, 7.6.98 OE3XXA JN88, OL7Q/p JN99, DG2DWL/p JO60, DG1VL JO61 RS, DG0VE JO61 RS, DK2AN/p JO51 RS, OE3WIA/3 JN77, DL1AS/p JN47 RS, DC6NY JN59 RS, DH6FAE/p JO40 RS, DJ1KP JO40 RS, hrd. via RS DK1KR JO53, HB9AMH/p JN37, DL2NUD JO63, PA0BAT JO31, 12.6.98 DL1VAA JO61 RS, 15.6.98 DL1VAA JO61 RS, DL2ABO JO51 RS, DK1KR JO53 RS, DL4EAU/p JO51 RS, 17.6.98 DK1KR JO53 RS, DL4EAU/p JO51, DL3YEE JO42 RS, 25.6.98 LX1DU JN29 RS, DC9YC JO31 RS, DL3EAG JO31 RS, DL1VAA JO61 RS, DL4WO JO61 RS, DG1VL/p JO61 RS, DL2NUD JO63 RS, DL3YEE JO42 RS, 26.6.98 OE5VRL/5 JN78 RS, DL1VAA JO61



I3SOY/3 in JN66EB during Contest

RS, 27.6.98 DD7MH JN68 RS, DC8EC JN57 RS, 3.7.98 OK1UVY/p JN69, 4.7.98 OK1KIR/p JO60, DL1VAA JO61, OK1AIY/p JO70, OK1VAM/p JO60, OK1KRU/p JO60, OK1KRQ/p JN69, OK1KHK/p JO80, OK1KEI/p JN79, OK1KKD JO60, DL6NCI JO50, OE3XKW JN77, OE1MCU/3 JN77, DG2DWL/p JO60, DK0FLT JN59, DL4WO JO61, DD7MH JN68, OK1KRY/p JN69, DJ5BV JO30, DB6NT JO50, hrd DF9IL/p JN48. Rig: TX 1,3W, ant 1,2n dish. Tks fer info.

PA0WWM JO22FE wkd: 2.6.98 DL3NQ JN49 rs, DG1KJG JO30, DL4EAU/P JO51 rs, DJ5VW JO31 rs, 6.6.98 F6DKW JN18, ON7WR JO20 rs, F5HRY JN18RQ rs, DJ2DY/P JN39 rs, DK0BN JN39 rs, DH1VY/P JN39 rs, DL3IAS JN49 rs, DL0KK JO31 rs, G4LOJ JO02 rs, DK2UO/P JO30 rs, DJ5VW JO31 rs, DL0GTH JO50 rs, DJ5BV JO30 rs, DF6IY JN48 rs, DJ1KP JO40 rs, DK0FLT JN59 rs, DG1KJG JO30 rs, DL4IB JO64 rs, DK1KR JO53 rs, OK1JKT/P JO60 rs, HB9AMH/P JN37 rs, DL3NQ JN49 rs, 07-06-98 DH6FAE/P JO40 rs, DK2MN JO32 rs, DH8AG JO31 rs, DF7JS JO31 rs, F6HPP JN19 rs. Tks fer info Wim.

S50C JN76JG 1508m asl wkd: 21.6.98 I4JED/4 JN54 346km, I3ZVN/3 JN55 276km, S51JN/p JN65 105km, I3NGL/4 JN63 329km, I3ZJL/3 JN55 276km, S57UUD JN75 87km, I6CXB JN63 315km, I3ZH/3 JN55 256km, OE8MI/8 JN66 84km, 4./5.7.98 I6XCK/6 JN63 326km, IK4OMN JN64 302km, OE5VRL/5 JN78 244km, I4CVC JN54 315km, I3CLZ/3 JN55 276km, I3ZHN JN65 199km, I6CXB JN63 315km, I3ZJL/3 JN55 276km, S51JN/p JN65 105km, I6CXB JN63 315km, I3ZH/3 JN55 247km, S57UUD JN75 87km, I3ZVN/3 JN55 276km, I3OFW/3 JN65 215km, OE8MI/8 JN66 84km, I3CLZ/3 JN55 276km, I3DRE/3 JN65 205km. RIG: 90cm dish, 100mW. Tks fer info Matija / S53MM.

145GHz station on Tripod



TM2SHF JN42HF wkd: 20.6.98 F6GBQ/p JN13 519km, F1ANY/p JN12 566km, EA6ADW JM19 527km, F6BVA/p JN23 248km, F1EIT/p JN12 490km, 21.6.98 F5RVO/p JN24 346km, F6BVA/p JN33 213km ATV, F/HB9AFO/p JN23 248km ATV, F/HB9RXV/p JN33 214km ATV, F1ANY/p JN12 566km, F5DCB/p JN13 431km ATV, F6DRO JN03 594km, 22.6.98 F/HB9RXV/p JN33 215km ATV, F6FAT/p JN23 248km ATV, F1AHR/p JN02 549km ATV, F1GJA/p JN33 206km ATV, 23.6.98 F6BVA/p JN33 213km ATV, F1GJA/p JN33 206km ATV, F/HB9RXV/p JN24 312km ATV, 24.06.98

F6FAT/p JN23 248km ATV, F6BVA/p JN23 248km ATV, F/HB9RXV/p JN24 346km ATV, F1AHR/p JN02 549km ATV, F1EOE/p JO02 549km ATV, heard F/HB9RXV/p JN24 346km ATV, 25.6.98 F1UNA/p JN12 507km ATV, F1AHR/p JN02 549km ATV, F1EOE/p JN02 549km ATV, 26.6.98 F6FAT/p JN23 248km ATV, heard EA5/HB9AFO/p IM98XU 822km ATV, F1ANA/p JN12 514km, F1UNA/p JN12 514km ATV, 26.6.98 EA5/HB9AFO/p IM98 822km ATV new world record in ATV on 10GHz, 27.6.98 F1UNA/p JN12 link to EA5/HB9AFO/p IM98 1281km ATV, EA5/HB9AFP/p IM98 link to F1UNA/p, F6BVA JN33 209km ATV, F1UNA/p JN12 459km ATV, F1ANY/p JN13 465km ATV, F6DRO JN03 594km, F1VBW JN03 594km. Tks fer info TM2SHF (HB9DLH, F1AAM, F5BUU, F1JSR).

24192MHz

I3SOY/3 JN66EB wkd: 7.6.98 S51JN/p JN65, I4BER/4 JN54, I4QIG/4 JN54, IW3FZQ/4 JN54 218km. Rig: TX 200mW, ant 85cm offset, RX NE32584. Tks fer info Paolo.

TM2SHF JN42HF wkd: 21.6.98 F6BVA/p JN33 213km, 23.6.98 F6BVA/p JN33 213km, 24.6.98 F6BVA/p JN23 248km, 27.6.98 F6BVA JN33 209km. Tks fer info TM2SHF (HB9DLH, F1AAM, F5BUU, F1JSR).

47GHz word record

A new 47GHz word record has been established on May 15th between F6BVA/p located in JN12GM (Tour de Blatere) 1439m asl and F5CAU/p located in JN14SC (Mont Aigoual) 1567m asl, distance 193Km. After a cautious beaming job on 10 and 24 GHz, the 47GHz SSB QSO started at 20:20 GMT with nearly constant 51-52 reports until 21:00 GMT. An another contact was made the following morning at sunset with 53-54 reports affected by a deep QSB. Tks fer info Gil F5CAU.

I3SOY/3 JN66DB wkd: 3.5.97IW3EHQ/3 JN65CC 106km. Rig: TX 100 microwatt, ant 40cm offset dish, RX, 9dB NF. Tks fer info Paolo. 47 GHz in Northern-Italy.

On 17/05/98 at the end of the microwave meeting of Suzzara (MN, Italy), IK3NWV/3 operator Max, located in Mount Grappa (1600 m ASL - JN55VU) make a two way ssb contact with I3CLZ/2 operator Luciano in JN55IX (near Suzzara) with a report of 52/52 and a QRB of 129 km (establishing the new Italian record on 47 GHz band). On 31/05/98 these two stations, I3CLZ/3 and IK3NWV/3, both located in Mount Grappa (JN55VU) have made a two-way cw qso with I4QIG/5 operator Gianni, located in JN54QB (900 m ASL). IK3NWV/3 and I3CLZ/3 received a report of 519 and 419 respectively and I4QIG/5 received a report of 529/529, the QRB was 203 km! (is this the new World Record in 47 GHz Band?). The signal was affected by strong QSB due to the bad weather conditions (clouds and fog affected Mount Grappa all the time of the qso). IK3NWV and I3CLZ uses a home-made transverter DB6NT second version, about 0.2 mW out(?), noise figure about 7/8 dB(?) and a 40 cm prime-focus dish. XTAL of L.O. is electronically thermo-stabilized so the frequency drift after 90 seconds from power-on is very low. Performances of these two stations are rapidly increasing this year due to the new version of the DB6NT transverter which increase the output power and decrease the noise figure with respect to the first version. At the time of writing IK3NWV is experimenting a 60 cm dish with good results. This project takes more time and patience, but the construction is within everybody's grasp (i.e. microwave amateur devoted to home-made constructions). I4QIG use a tx DB6NT with 15 mW out (MKU12LO + MKU1224 + 23-47S), a rx DB6NT with 6.6 dB NF (MKU12LO + MKU47G) and 1 meter dish antenna. Tks fer info Max, IK3NWV (gasmass@keycomm.it).

145GHz

The first contacts on 145GHz in Italy made by IW3EHQ and I3SOY IW3EHQ JN65DT wkd: 21.4.98 I3SOY JN64DV 2.5km. IW3EHQ Rig: LO. DB6NT MK3 19dBm + Doubler diode + PA 24GHz 15dBm, Mixer DB6NT diode HSCH 9101 out -30/- 20dBm, WR7 dish 25cm. I3SOY Rig: TX 10 microwatt

47GHz Offset Dish



out 30cm cassegrain feed, RX diode from HP.
Tks fer info Paolo and Costante.

The next deadline is 1.november 1998, your reports can be send to me on FAX ++45 98467877 , E-mail dmteknik@post4.tele.dk or by post to my NEW address and please if possible on a disk in "ASCII DOS TEXT". Vy John OZ1IPU

The next deadline is 1. August 1998, your reports can be send to me on FAX ++45 98467877, E-mail dmteknik@post4.tele.dk or by post to my address and please if possible on a disk in ASCII-DOSText.

73 de John OZ1IPU

Microwave: World Firsts and World Records

Band (GHz)	World First QSO			World Record		
	Date	Calls	QRB (km)	Date	Calls	QRB (km)
10	1946-05-06	W2JRM-W2JN	3.3	1994-12-30	VK6KZ/p-VK5NY/p	1912
24	1975-10-14	G3BNL/P-G3EEZ/p	150	1997-10-26	F6BVA/p-F5CAU/p	398
47	1984-10-03	HB9AMH-HB9MIN	1	1998-05-15	F6BVA/p-F5CAU/p	193
76	1985-12-30	HB9MIN-HB9AGE	0.5	1995-12-07	HB9MIO/p-DK4GD/p	114
145	1992-12-12	DB6NT/p-DL1JIN/p	1	1997-04-07	DL6NCI/p-DB6NT/p	53
241	1993-05-23	DB6NT/p-DL1JIN/p	0.1	1995-06-07	DB6NT/p-DF9LN/p	2.1
411	1998-01-06	DB6NT/p-DL1IN/p	0.05	1998-01-06	DB6NT/p-DL1IN/p	0.05

If you have an update or a correction, please write to:

John Sørensen, OZ1IPU, Rosenvej 49, DK-9300 Sæby, Denmark. Tel.: (++45)9846-3311

Microwave USA

Editor: Kent Britain, WA5VJB

VHF/UHF Century Club Award

The VHF/UHF Century Club Award is for working 100 grids on 144 MHz. On 9 cm and up, the requirement is to work 5 different grids from a common point. In May of 1998 Doug and Justin completed their 5th QSO from Apple Orchard Mountain in Bedford, Virginia to qualify for the award.

WA5VJB had the honor of verify the award. (They had tried to use another VUCC manager, but he did not think 47 GHz was a ham band!). While qualifying for 47 GHz VUCC #1, they broke the North American 47 GHz dis-

tance record twice. The longest QSO was 114 km. All paths were surveyed in advance and two of the QSOs were non-optical line of site paths. Yes, low humidity is important for low path loss, but the 114 km was made during fog conditions and May in Virginia is well known for humid conditions and the elevation was only 1200 meters.

Equipment was 100 milliwatt Gunn systems with a 2 foot dish at WA1ZMS and a 1 foot dish at K2AD's end. Both stations used Icom R-7000's as 70 MHz WBFM IF's. The fourth harmonic of a 11.775 GHz oscillator was used



Justin WA1ZMS, Doug K2AD: 47 GHz VUCC

for frequency spotting. Weak signal tuning was tuning the 70 MHz IF until the signal is found then the IF frequency is radioed to the other station. Tuning of the 47 GHz Gunn was just to sensitive for finding weak signals. VE4MA has moved up to 3 cm and now has a 4 Meter dish and 35 watts on 3cm EME. Perhaps most importantly for those cold Canadian nights, Barry has rebuilt his EME station so it can be operated from inside the house.

3cm EME

Look for Barry to be active this fall on 3cm EME. NU7Z has now put Seattle, Washington on 10 GHz EME. Rick is using a 4 Meter dish with 25 watts out and has worked 4 American and NO European stations thus far. Rick also brings out a problem I have also seen in the last two years. If the American station is more than 5 KHz off frequency (or at least what frequency they think we should be on), the European station never finds the American station!

As an open comment to all European 10 GHz EME stations, I know that I do not have 5 KHz stability in my remote EME station! I use an Icom IC-202 as the IF and always tune +/- 50 KHz during skeds. W7CNK has returned to 10 GHz EME after 10 years. 25 years ago Lucky was one end of the first Amateur EME QSO on 220 MHz. In 1986, he was one end of the first Amateur EME QSOs on 9 and then later that years, 6 cm. In 1988 Lucky was one end of the 2nd 3cm EME QSO. With a 5 Meter dish and 150 watts he will have a good signal from Oklahoma City, Oklahoma.

A technical note from Jim Vogler, WA7CJO went over his studies on Linear vs. Circular Polarization on 3 cm EME. When a CP signal bounces of a rough sphere at an angle, the signal is no longer CP. So a CP signal off the moon from Europe bounced back to Europe is still pretty much CP, but when bouncing from Europe to North American, the reflected signal loses much of the circular component. This effect is far greater on 3 cm than it is on 23 cm. We do not support a change from the current standard. North American Horizontal

Polarization, Europe Vertical Polarization, Australia Horizontal Polarization..

Microwave Update 98

Microwave Update will be returning to Dallas Texas in the fall of 1999. Hosted again by W5LUA and WA5VJB. This is perhaps the premier Microwave conference in North America. We hope many of our European friends can again attend. I will be covering more details technical talks and surplus tours as the time comes closer. I will be attending Weinheim for me first trip ever to Europe. I am looking forward to meeting many of you. Kent Britain WA5VJB

EME News

Editor: Bernd Wilde, DL7APV

Intro: Due to my holidays I got not all Emails in time. This issue is a short version. Paris is over and we look forward to the ARRL contest with unusual dates.

ARRL contest 1998 :

October 10/11 and December 5/6 - they skipped November because of the IARU CW contest.

432 MHZ

DL7APV reports: after some time of rebuilding of our house I put up 8x21el. and worked 15.08. NC1I 539/549, 16.08. KA0RYT O/O #, W7CNK M/O#. Heard were only G3LTF. Activity was very low, reason might be holiday season and the time when the moon was on. DL7APV is the same as our club station DK0NHF. rig 8x21el. feed loss to preamp. 0.6dB MGF1302 preamp. 0.4dB, TX 750w tx feed loss 1.6db to dipols. Due to a driver problem I had only 500w at the first weekend. The dust of some years on the rig caused some problems, hopefully they will be fixed until sept.

OE3JPC reports : he has changed his "array" from 2x19el Tonna (2.9m boom) to 2x20el DJ9BVopt70 (4.2m boom) on 4 Oct 1997 made it a lot easier to work a couple of new initials: 18.10.97: JA5OVU #19, DK3BU #20, 19.10.97: OZ4MM #21, 9.11.97: K0RZ #22, 15.11.97: K5GW #23, N21QU #24, 16.11.97: ON4KNG #25, 13.12.97: 7M2PDT #26, 3.1.98: VE1ALQ #27, 5.4.98: DF3RU #28, 31.5.98: OE5EYM #29, all random except 7M2PDT and VE1ALQ. rig: tx 4CX250R, 2x20el. DJ9BVopt70 6wl, open wire feed, FXH35LG cavity, 2nd stage CF300. sun noise is abt 10.5dB/cold sky/Leo (flux about 100). Apart from that I heard douzens of statiopns

which I was not able to work yet: VK3UM, I5MPK, UT5DL, K5JL, JL1ZCG, HB9SV, W1ZX, KA0RYT, F1ANH, JA2TY, HB9SUL, KB8ZW, K0RZ, W7CI, JH0YSI, JA2ODV, EA3UM, DL4KG, JA3SIM, DL8OBU, W7QX, JA2KRW, W7CNK. Surprisingly, hearing good 4 yagi stations is no serious problems with such a mini array if the rx works well! tnx fer info Johannes



PA3DZL's BIG 23cm EME antenna

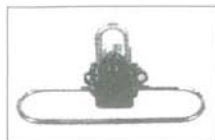


High Precision YAGI Antennas

CAM-produced Antennas made in Germany

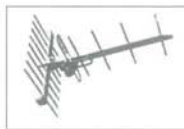


Dipoles without Compromise



folded dipoles with semi rigid balun and N-jack, fully sealed

Reflector without Compromise



high front to back ratio due to multiple reflector; highly appreciated by EME-people: they don't want to pick up terrestrial noise!

Installation without Compromise



All antennas come pre-assembled with all elements mounted for accuracy and fit. Our automatic mounting machine (picture) did it for you . . .

Booms drilled automatically on our step-and repeat drill, thus very close tolerances

Elements cut piece per piece with a maximum difference in length of 0.1mm

All hardware stainless steel, u-bolts and wing nuts as well! Dismounting after 10 years: no problem!

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All accessories required available as well: power combiners, remote switches, rotators, thrust bearings, . . . You name it!

Fast assembly: ready to use in about 10 min. No need to worry which element must be mounted at which place.

Double optimised, broadband design suitable for the whole ham band, even for ATV. Doesn't detune when getting wet.

Model	Frequency	Elements	Gain (dBD)	Length (m)		Price (DEM)
SHF 2328	23cm	27	15,4	1,6	Fore-mast	215,-
SHF 2344	23cm	44	18,1	3,0	Support strut	258,-
SHF 2367	23cm	67	19,9	5,1	Support strut	315,-
SHF 1340	13cm	40	16,6	1,6	Fore-mast	220,-
SHF 1367	13cm	67	20,0	3,0	Support strut	339,-
SHF 1633	Meteosat	32	16,3	1,6	Fore-mast	265,-
SHF 1658	Meteosat	58	18,7	3,1	Support strut	345,-

Ask for details: leaflet "SHF-Yagis": free of charge.

General catalogue (100 pages): please send bank-notes of 10,- DEM or \$ 8,- (Deutschland: 6,60 DM in Briefmarken einsenden!).

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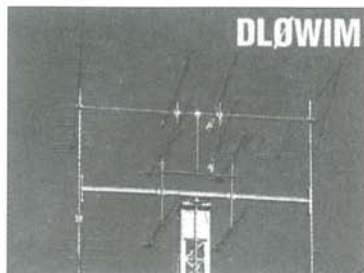
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EME-TOPLIST

Call small SQR DX US WAS WAC #
 CC states

144MHz

I2FAK	448	56	105	50	1993	1988	942
DK3WG	374	54	86	50	1992	1983	642
PA2CHR	254	43	63	48	--	1993	364
F9HS	180	33	49	27	--	1985	247
DJ7OF	150	28	30	22	--	1996	170
UA4NM	114	23	32	21	--	--	0
RA3LE	88	27	26	0	--	--	95
DL5DTA	83	21	24	15	--	--	96
9A9B	52	19	19	11	--	--	69
HB9SUL	48	16	19	0	--	--	63
PE1OGF	46	14	16	12	--	--	55
YO2IS	21	10	6	10	--	--	31
F5HRY	20	0	8	7	--	--	21
W6/SM0PYP	19	10	8	7	--	--	21
HB9DFG	18	11	8	5	--	--	14
DL3YEE	11	6	6	2	--	--	0
SP7DCS	11	5	6	2	--	--	11
JA9BOH	?	39	34	?	?	1995	210

432MHz

DL9KR	363	50	80	50	1987	1978	665
DJ6MB	258	39	59	43	--	1984	309
OK1KIR	229	43	62	43	--	1982	329
DK3WG	228	40	62	40	--	1991	326
G3LTF	206	0	55	47	--	--	327
F1ANH	117	24	30	23	--	--	141
YO2IS	113	23	33	23	--	--	139
RA3LE	111	26	24	23	--	1984	124
ON4KNG	110	25	34	17	--	1996	129
DL3YEE	90	22	32	15	--	--	?
G4ERG	77	21	24	19	--	--	93
OK1CA	71	24	25	22	--	1996	121
EA6ADW	64	19	23	19	--	--	65

PA2CHR	38	14	17	10	--	--	45
HB9SUL	34	12	17	9	--	--	37
OK1DFC	21	12	11	6	--	--	21
UA4NM	12	8	10	4	--	--	?
F5HRY	4	?	14	8	--	--	31
JA9BOH	?	?	48	42	--	--	296
GW3XYW	?	?	33	?	--	--	178
G3SEK	?	?	54	42	--	--	275

1296MHz

OK1KIR	112	29	34	24	--	1989	139
G3LTF	108	?	31	20	--	--	134
F1ANH	100	24	30	20	--	1994	128
EA6ADW	97	23	29	23	--	1994	129
HB9BBD	80	21	29	12	--	1994	?
DJ9YW	78	24	28	15	--	1998	89
F5PAU	74	24	24	15	--	--	47
OK1DFC	52	15	23	9	--	--	52
OK1CA	34	16	18	7	--	--	31
DL3YEE	12	6	9	1	--	--	?
GW3XYW	?	?	27	?	--	--	114
JA9BOH	?	1	?	?	--	--	2

2300MHz

OK1KIR	31	13	17	8	--	--	32
F1ANH	16	8	11	5	--	--	17
G3LTF	13	?	12	2	--	--	14
EA6ADW	8	4	8	1	--	--	9
GW3XYW	?	?	13	?	--	--	16

5760MHz

OK1KIR	7	4	6	1	--	--	7
--------	---	---	---	---	----	----	---

10368MHz

G3WDG	17	?	17	4	--	--	17
G4KGC	13	?	15	2	--	--	15
OK1KIR	11	7	10	2	--	--	11
W6/SM0PYP	4	3	3	2	--	--	6

The toplist is based on qso's worked by the station. We need no list or qsl-cards. We hope everyone tells the truth.

small square are like JO64, EM65, ...

SQR are like EM, JO, ...

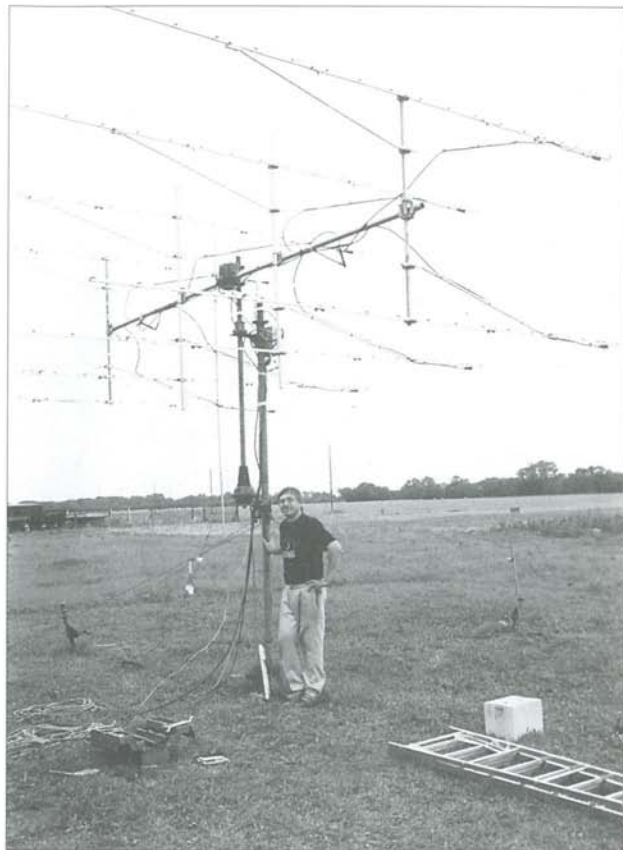
DXCC are number of countries based on the DXCC list

US-States number of worked States in the US

WAS Year when the Station got the diplom for 50wkd US-States

WAC Year when the station got the diplom worked all continents

initials, number of different worked stations

DK0NHF/DL7APV 8x21el. 432MHz**1296 MHz**

K3HZO reports : 30 May : K4QI Random - Completed, received 429, 31 May results: EA6ADW sked - Completed, received "O" prior to sked time while echo testing. Sked arranged initially via E-mail. EA3UM sked - no one there. PA3CSG called midway during sked. Completed, received 439. I6QGA, F2TU, GW3XYW sked - no one there N2IQU sked - did not show up. Copied on 30 May but was waiting for sked 31 May to work him. N6BQ sked - Completed, received "O"

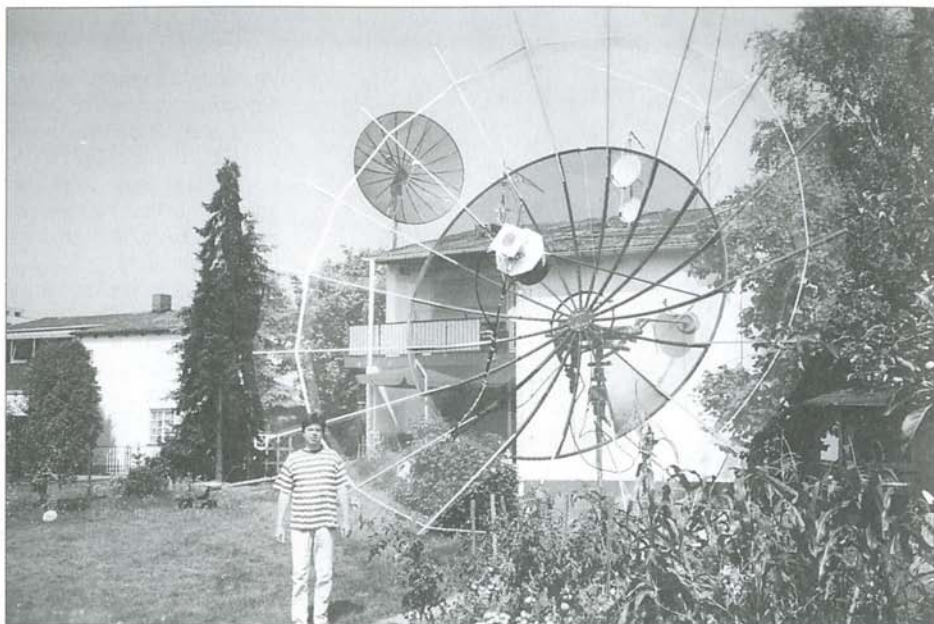
K2UYH Random - Completed, received 549!!!! Worked every station heard. Five sked no shows (no E-mails or notification). Worked three randoms. Initial count is now 25. Next sked weekend: We could try F2TU and GW3XYW again, but they were no shows the last two week-ends. EA3UM again? I6QGA again? PY5XBU? Entirely up to you as far as who to sked. I am still not familiar with the 23CM players. I will take as many skeds as you can provide. Thank you. 73, Harry K3HZO

CX9BT reports : Manuel is not qrv at the moment, but still reading all about EME. Manuel has a new address: Manuel Castelo, CX9BT, P.O.Box 13107, D-3, Montevideo, Uruguay. His 6.7m dish is disassembled and perhaps landing in his local radio club. As a donation-thinking in to continue building a 432 System, with a couple of short yagies with pol. control, or crossed yagies. He has a TH308 as new, gift of HB9SV, Enrico, and all the chassis and components for the 1KW

out PA. tnx fer info Manuel.

ON5RR worked : the following initials this year 07.02.98 CT1DMK, 02.06. TM8EME, KD4LT, 21.06. PY5ZBU, K3HZO, W7GBI, W6HD, VE6TA. This brings him at a total of 63 initials.tnx fer info Marc

PA3DZL wkd : in May TM8EME 529/529. Jac borrowed a 23el F9FT, and mounted the antenna outside on a small table with a benchvice to elevate the antenna to 53.5". On Az he moved his table!! rig: 23el. F9FT 1.75m, 0.4m coax line to relais HF400, preamp

DF4PV on 23cm: 6m Dish with $f/d=0.2$ /KB2AH feed

MGF1302 with NF 0.5dB, driver 2C39+PA 2x 2C39 water cooled 200w; 150 at feed. On May first Jac heard TM8EME in ssb working SM2CEW, LA8LF, OH2DG and others. Signals were too weak to have a good eme qso. All big guns were calling so it had no use for him to call with one yagi. On May second nothing on moon window, preamp died. On May third he was qrv with a new preamp. At 18:25 he could get their attention and worked them. EME with a minimum station. txn for info Jac

Frank **W2UHI** has a Home page with lots of information about 23cm EME. Visit him at: <http://members.tripod.com/~w2uhi/index.html>

The 8th International EME Conference

The 8th International 432 MHz and up EME conference took place in Paris during 1998 August 7/8/9 week end. About 80 OM and 40

XYL/QRP attended this conference, which was organized by Jean Jacques F1EHN, Herv F5HRY, Olivier F5MZN and William F6DLA.

While the XYL were gathering for a PARIS by night visit of the monuments on Friday evening, the OM were listening to the first talks in the conference room: The Eiffel tower and its early use for radio by F6DLA, video of the EA9 expedition by EA3DXU, 1kW TWT power supply by CT1DMK and 13 cm allocation band problems by G3LTF. Just after, people gathered around the flea market, where high power equipments could be found ...

Saturday lectures began with the amazing job done by CT1DMK about EME and radio astronomy. It was followed by an history of the 70 cm NL by K2UYH, and 10 GHz preamplifiers by S57UUU. After lunch, we had a lecture on thick boom influence by DL6WU, then OE5JFL presented his stand alone EME controller. HB9BBD showed an impressive video on his new 10m dish, S57UUU gave another

The winning team: F5HRY, F1MZN, F1EHN, F6DLA (l. to r.)

talk about his TWT power supply presented in 1996, followed by WA7CJO about the 24 GHz use of 12-18 GHz TWTs. G3SEK discussed about polarization problems, K2UYH spoke about amateur the SETI league, and PY5ZBU ended the conference with a video presentation of Rio de Janeiro, as a possible destination for the coming conference ... During this time, ladies went on a free program in the morning (Louvre museum, "Grands Magasins" ...), and visited the Eiffel Tower and Montmartre during the afternoon driven by our XYL. Saturday evening's dinner resulted in a very hot (temperature rose up above 35C which is unusual for Paris) and friendly meeting. Lots of prizes were given during the big tombola (raffle) ! Tubes, amplifier and preamplifier, transverter, DSP and much more went to various people, who seemed quite pleased with them. The organization crew went to bed at around 3 AM, after having a test (taste ?) on several "8th EME Conference" champagne bottles ...

Five hours later, the ladies were on the way to Versailles castle where they had lunch after the visit. A short boat trip on the river Seine ended XYL's program. The OM went to visit the Nancay radio astronomy station, with its huge decimetric telescope. It was a 200 km bus journey still under a very hot weather and weak air conditioning ... On the way, the visit was introduced by Francois BIRAUD, professional radio astronomer, and videos on F3VS 2m huge array and TM8EME activity were showed. The lunch took place in a restaurant near Nancay, and the following general discussion was driven by G3SEK. As usual, many different opinions were reported on difficult problems such as contests, activity week ends, schedules and so on ... Ian G3SEK tried to get through, but more than one day would have been necessary to conclude on these subjects ! Thus we decided to speak about the next one, and Don PY5ZBU gave more interesting details about Brazil possibilities. As far as it appeared that there was no other solid proposal we could discuss

about, and regarding Don's facilities in Brazil, Rio de Janeiro was decided to be the right place for 2000. Sunday's program finished by a late dinner at the IBIS hotel, in a very friendly atmosphere, listening to Nadine and Ian's music, drinking some special "chouchen" brought from Brittany by F5PAU ...

Listening to people comments during and after the conference, we were pleased to hear numerous thanks, as greetings to the work we did to make this conference as successful as possible. The balance of the conference is near zero, which is fine for a \$ 25 000 total budget.

We thank all the people who attend the conference and/or helped us during the organization, and wish to see you again soon in southern latitudes.

73's from the PARIS 1998 International EME conference organization crew : F1EHN, F5HRY, F5MZN, F6DLA.

And the winner is....



OTHER publications:

144MHz: VHF EME Report (newsletter)
subscription rates : US \$16, Canada \$18,
foreign \$25 per year. editor & Subscr.
W2CRS, Doug Allen, PO Box 5646, Wood-
land Park CO 80866, USA

Directory:WB5LBT, Robert TaYLOR; 10715
Waverland, Baton Rouge LA 70815, USA and
email WB5LBT@aol.com

432&up Newsletter

Rates about US \$20

K2UYH, Allen Katz, engr. Dept., Trenton Stae

College, Trenton, NJ 08650-4700, USA,
email: a.katz@ieee.org

Skeds & Address directory DL4EBY, Klaus
Tiedemann, Halskestr.35, D-12167 Berlin,
Germany

Last

- deadline every first of Nov./Feb./May/Au-
gust
- **DUBUS mailbox is closed** due to low
activity
- my email bwilde@eac-com.de

- **ARRL contest:** October 10/11 and December 5/6
- **EME net** every Saturday & Sunday
432&up K1RQG 14:00 UTC
144MHz: 14.345MHz
at 16:00 UTC

Kisses everywhere



73 Bernd DL7APV

EME Directory

Editor: Klaus Tiedemann, DL4EBY

Equipment

(Continued from DUBUS 2/1998)

1296 MHz

4X6UJ	3.1m dish,	200	J	G4CCH	2.4m dish,	400	J
9H1ES	2.4m dish, hor	550	J	G4DZU	3m dish,	800	J
AA6IW	5m dish,	1000	N	GW3XYW	6.7m dish,	500	J
CT1DMK	5.6m dish, circ	500	J	HA1YA	3.2m dish,	50	N
DC6UW	6m dish,	1000	J	HB9BBB	10m & 2.4m dish,	2200	J
DD1XF	3.7m dish, circ	400	J	HB9BHU	3.7m dish, circ	800	J
DF3RU	3m dish, circ	300	J	HB9JAW	12.5m dish,	500	N
DF5JJ	3.5m dish,	600	N	HB9SV	8m dish, circ	600	J
DF6WE	2m dish,	120	N	I6PNN	4m dish,	400	J
DF9QX	5m dish,	500	J	I6QGA	6m dish,	600	J
DH0OAH	3.5m dish,	300	J	IK2OFO	4m dish,	200	N
DH9FAG	3m dish,	200	J	IK2RTI	4.3m dish,	230	J
DJ5MN	2x70el, hor	1300	J	IK3COJ	4m dish, circ	150	J
DJ7FJ	4.5m dish, circ	300	N	IK3GHY	5m dish,	100	N
DJ9YW	4.5m dish, circ	360	J	IK4DCX	1.6m dish,	150	J
DL0SHF	6m dish IMU, circ	500	J	IN3HER	5m dish,	400	N
DL3YEE	4x48el,	200	N	JA2JRJ	6m dish,	500	N
DL6YDH	3.5m dish,	300	J	JA4BLC	6m dish,	500	J
DL8OBU	4x5m yagis,	100	J	JA6CZD	,	450	J
DL9EBL	12m dish,	999	J	JA7BMB	5m dish,	200	N
EA2BK	3m dish,	150	N	JA8ERE	4m dish,	500	J
EA2LY	4x35el M2,	180	J	JA9BOH	2m dish,	100	N
EA3UM	7m dish, circ	1200	J	JF3HUC	6m dish,	?	J
EA6ADW	5.5m dish, circ/lin	1000	J	JH1OFX	6m dish, lin	160	N
F1ANH	8m dish LR, circ	500	J	JH1WLK	3.8m dish,	500	N
F1CH	,	1200	J	JH3EAO	4.7m dish,	200	J
F1SDR	6.1m dish,	600	N	JH5LUZ	5m dish,	200	J
F2TU	6m dish,	500	J	JL1ZCG	32x30el,	300?	J
F5AQC	6m dish,	400	J	JR4AEP	4m dish,	400	J
F5ELL	8m dish,	800	J	JR4BRS	5.7m dish,	200	J
F5KDK	4x26el BV,	150	J	K2DH	5.5m dish,	600	J
F5MZN	3.5m dish,	150	N	K2UYH	8.7m dish,	400	J
F5PAU	6.7m dish,	900	J	K3HZO	3m dish,	200	J
F5PL	7m dish, circ	270	J	K4QI	7.5m dish,	600	N
F6CGJ	8m dish,	200	J	K5AZU	9m dish,	35	J
F6KSX	3.3m dish,	500	J	K5JL	8.5m dish,	500	J
G3LQR	4.2m dish, circ	150	J	K7WUP	6m dish,	200	N
G3LTF	6m dish, lin	500	J	K7XW	3m dish,	50	J
				K9BCT/4	4.3m dish,	300	J
				K9KFR	7.5m dish,	500	J

JA8ERE		100	J
JH3EAO	4.7m dish,	80	J
K2DH	5.5m dish,	350	J
K7WUP	6m dish,	60	N
K9KFR	7.5m dish,	300	J
LA8LF	5m dish,	15	J
LX1DB	11m dish,	150	J
NU7Z	4m dish, circ	55	N
OE9ERC	8m dish,	1000	J
OE9FKI	3.7m dish,		J
OE9XXI	9m dish, circ	150	J
OH2AXH	6.4m dish, circ	50	J
OK1KIR	5.5m dish, rot/circ	100	J
OZ4MM	10m dish 12.5mm, circ	30	J
OZ9AAR	5m dish,	100	N
SM3AKW	5m dish,	100	J
SM4DHN	6m dish, circ	100	J
VE1ZJ	3.6m dish,	90	N
VE4MA	3m dish,	180	J
W4HHK	5.5m dish, circ	300	J
W5LUA	5m dish,	350	J
W7GBI	7.5m dish, circ	600	J
WA7CJO	4.8m dish,	300	N
WA8WZG	4.9m mesh dish,	120	J
WB0TEM	10m dish,		N
ZS6AXT	5m dish,	50	J

3456 MHz

DL9EBL	12m dish,	200	J
G3LQR	4.2m dish,	20	N
K2DH	5.5m dish,	100	N
LX1DB	11m dish,	20	N
NU7Z	4m dish, lin	130	N
VE4MA	3m dish,	80	J
W4AQL	30m dish,	10	N
W5LUA	5m dish,	250	J
WA8WZG	4.9m solid dish,	50	N

5760 MHz

CT1DMK	5.6m dish, circ&lin	35	J
DF3RU	3m dish, V	(40)	N
DJ7FJ	4.5m dish, lin	20	J
DL9EBL	6m dish,		N
I6PNN	4m dish,	28	J
IK2RTI	4.3m dish, vert	25	J
JA4BLC	6m dish,	22	N
JA7BMB	6m dish,	10	J
K2DH	5.5m dish,	50	N
LX1DB	3.7m dish,	50	N
N8DJB	4.5m dish, ?	12	N
NU7Z	4m dish,	130	N
OE9ERC	8m dish,	50	J
OE9PMJ	8.84m dish, lin rot	40	J
OK1KIR	4m dish, rot/circ	20	J
OZ1IPU	3m dish, v/h	28	J
PA3CSG	3m,		J
SM4DHN	6m dish, circ	60	J
VE4MA	3m dish,	30	J
W4AQL	30m dish,	5	N

W4DEX	3m dish,	40	N
W4TJ	3.7m dish,	10	N
W5LUA	5m dish,	40	J
W5ZN	3m dish,	18	J
W7CNK	5m dish,	32	J
W7GBI	5m dish, lin	70	N
WA8WZG	4.9m solid dish,	70	J

10 GHz

AA5C	3.3m dish,	100	J
AA6IW	5m dish,	200	N
CT1DMK	5.6m dish, v	50	J
DF3RU	3m dish, V	(40)	N
DJ7FJ	2/3.3/4.5m dishes, v	50	J
DL0RT	10m & 25m dish,		N
DL0SHF	6m solid dish, rot	20	J
DL9EBL	6m dish,		N
EA2BK	3m dish,	25	N
EA6ADW	3.7m dish 40%, circ/lin	(45)	N
F6CGJ	3.2m dish,	12	J
F6KSX	3.3m dish,	50	J
G3WDG	3.3m dish,	45	J
G4KGC	3.3m dish,	28	J
G4PCS	2m dish,	15	J
I4CHY	4m dish,	20	J
I6PNN	3m dish,	1	N
JA4CMZ	2.5m dish,	0	N
K2UYH	3m dish,	100	N
K9KFR	4m dish,	150	J
LX1DB	3.7m dish,	35	J
N4MW	2.4m dish,	8	J
NU7Z	4m dish, lin	25	N
OE9ERC	4m dish,	50	J
OH2AXH	6.4m dish, linear	(13)	N
OK1KIR	4m dish, rot/circ	15	J
ON6JZ	3.3m dish,	17	N
OZ1IPU	3m dish, v	68	J
PA0PLY	2m dish,	200	N
PA3CSG	3m,	60	J
RW3BP	1.65m dish,	30	J
S56UUU	3m dish,	50	J
SM4DHN	6m dish, circ	400	J
VE4MA	3m dish,	35	J
VE7CLD	3.6m dish, hor	20	J
VK2ALU	3.7m dish,	16	J
W4DEX	3m dish,	30	N
W4TJ	3.6m dish,		J
W5LUA	5m dish,	140	J
W6/SM0PYP	3m dish,	26	J
W7CNK	5m dish,	32	J
WA3RMX	3m dish,	200	N
WA5VJB	3.4m dish,	70	J
WA7CJO	4.8m dish,	410	J
WA8WZG	4.9m solid dish,	50	N
ZS6BTE	3m dish,	0	N

24 GHz

DJ7FJ	4.5m dish,	0	N
W5LUA	5m dish,	zero	N

ES News

Editor: Ilan Schnell, DL5BCU

Thank you for your reports.

1995-06-02

DH8BQA (JO73DB) wkd: 11:36 9H1GB JM75, 11:39 9H1BN JM75, 11:42 9H1CG JM75, 11:43 9H1CD JM75, 11:56 9H5L JM75, 11:59 IW9BJU JM77, 12:08 IC8FAX JN70, 12:13 IT9GSF JM67.

1995-06-12

DH8BQA (JO73DB) wkd: 13:50 CT1DQM IN60.

1996-05-23

DH8BQA (JO73DB) wkd: 12:19 UR3EE KN88, 12:40 UA6LQZ LN08.

1996-06-07

DH8BQA/P (JO73CF) wkd: 10:20 F1DUZ IN97.

1997-05-23

IK1PAG (JN35SB) wkd: 15:20 YO4BZC JN45, 15:22 YO4ATW KN35, 15:23 YO4ACX KN34, 15:34 YO4FRJ/P KN34, 15:40 YO3DMU KN34, 15:50 YO7IV KN24, 15:55 YO3JW KN34, 18:02 UU2JD KN75.

1997-06-04

I4XCC (JN63GV) wkd: 05:47 UR5LX KO70, 05:49 UR5LLW KN89, 05:54 UT2HN KN79, 05:56 US5LNC KO70, 05:58 UT3HS KN79, 06:16 RV3ZR KO80, 06:16 UT2IL KN88, 06:36 UT3HB KO60.

IW5AVM (JN52NS) wkd: 06:05 UR5LX KO70, 06:15 US5UES KO50, 06:34 UT2HN KN79, 06:37 US5LNC KO70, 06:38 RV3ZR KO80, 06:53 UT3HB KO60.

1997-06-05

DH8BQA/P (JO73CF) wkd: 07:10 YO4FYQ KN44.

IW5AVM (JN52NS) wkd: 06:47 OH6KTL KP02OJ 2279 km.

1997-06-18

I4XCC (JN63GV) wkd: 14:01 GW3LDH, 14:15 G6YIN, 14:18 G4KUX IO94, 14:29 GM7NZI IO75, 14:30 G0WYY IO94.

IW5AVM (JN52NS) wkd: 10:50 G4KUX IO94, 10:51 G1WYC JO02, 10:51 G6YIN IO93, 10:53 G3UTS IO94, 10:54 G0EAT IO93, 10:54 G3NBQ IO83, 10:55 G1SWH IO83, 10:55 G3LQR JO02, 10:56 G4LOW IO93, 10:57 G7SMI IO92, 10:57 GM7NZI IO75, 10:58 G7HPF IO92, 10:59 G4ZFJ JO01, 11:00 F1DBN JO00, 11:03 G3WQM IO93, 11:06 G4HGI IO83, 11:07 GM4HAO IO75, 11:08 G8GRT IO92, 11:10 G4OBK IO94, 11:12 G0BPS JO01, 11:12 G6TTL JO01, 11:13 G4HTZ JO01, 11:14 G4CYA IO93, 11:16 G4IJE JO01, 11:16 G6HKM JO01, 11:18 GM0GLV IO75, 11:19 G8NWM IO92, 11:34 G8XVJ IO83, 13:57 GM7ION IO75, 14:12 G1AWP IO95.

1997-08-14

I4XCC (JN63GV) wkd: 16:40 OZ6ABA JO57.

1997-10-19

I4XCC (JN63GV) wkd: 14:02 EB1ENP IN62, 14:12 CT1DMK IN50, 14:15 CT1DYX IN51.

1998-07-15

PA3HDD (JO22FE) wkd: 16:32 SP9EWO/9 JN99, 16:33 HA0ML KN17, 16:34 OM3CSO KN18.

DL1EJA (JO31DS) wkd on 144 Mhz (ssb only):

1998-06-03
1317 SV9/DC9KZ/P KM35CF59 59
1998-06-11
1749 EA9CAW IM75IV 59 59
1800 EA9CW IM75IV 59 59
1810 EA7FRJ 59 59
1845 EA7GBG IM67QI 59 59
1854 CN8LI IM64NA 59 59
1856 EA7AJ IM87CS 59 59
1857 EA7GTF IM87 59 59
1858 EA7SM IM76SR 59 59
1914 CT1CLR IN50QP 59 59
1921 CT1CRR IM58KT 59 59
1926 EA9MH IM85NG 59 59
1942 CT1FOH IN50RA 59 59
1998-07-15
1634 YO5BWD KN27GD 59 59
1635 SP9EWO/9 JN99LP 59 59
1636 U5YM KN28XG 59 59

Rig: IC720A+LT2S+GS35B-PA; PreAmp
NF=0,4dB; 24ele Yagi 12m agl, 30m asl.
73, Oliver.

DL8EBW (JO3INF) wkd on 144MHz:

1998-06-05
1832 UR5LX KO70WK 53 5? nc
1998-06-11
1820 EA9CW IM75IV 52 hrd
1823 EA7/G4XEN IM87 51 hrd
1825 CT1CAD IM67 59 hrd
(10sec burst!)

1828 CT1EEB IN50RS 59 59
1845 CN8LI IM64 52 hrd
(15sec burst!)

1846 EA9CW IM75IV 55 hrd
1921 CT1FOH IN50RA 59 59
1921 CT1CRR IM58 55 hrd

Long opening but not good enough here in
JO3INF! Heard others working with mostly 59
into CN8 and CN

1998-06-15
2058 CT4? IM59 42 hrd
(abt 50sec.)

1998-07-15
1631 SP9EWO/9 JN99LP 59 hrd 90°
1633 U5YM KN28XG 59 hrd 90°
1635 SP9EWU JO90NH 59 hrd 90°
1998-08-15
0935 LA2AB JO59 55 hrd 45°
wkd SV0EC

0937 OH1ZAA KP01 59 56 30°
0937 SM2CKR KP03 52 hrd 30°
1710 EA9AI IM75 52 hrd 200°
1711 EA9IB IM85 51 hrd 200°

Thanks for report, Guido.

OZ5AGJ (JO56DF) wkd on 144 Mhz:

1998-08-15
0904 LZ1AG KN22, 0905 YO7VS KN14, 0905
YO7VJ KN14, 0906 LZ1ZP KN22, 0922 HA8BE
KN06, 0929 LZ1KWT KN32, 0932 LZ1ZX KN32,
0935 IK0OKYJN61, 0938YO7NH KN14, 0942
YO7LGI KN14, 0951YO2AFS KN05, 0951
HA8CE KN06, 0953OM6VV JN99 , 0954
YO2BCT/P KN05, 1012YO7BKX KN14, 1013
YO7CFD KN14, 1015YO7KAJ KN1 ,Heard
9A1CCY, YO3LX. My first ES on 2m this year! Vy
73 Benny.

SV0EC (KN10CJ) wkd on 144 Mhz:

1998-08-09
0856 YU1EV KN04CN 59 59 491km
0927 EA6PS JM19JN 59 59 1654km
0945 EA5APL IM98SQ 59 59 1948km
0947 EA5NI IM97JX 59 59 2030km odx
0948 EA5ZF IM99WU 59 59 1895km
0950 EA6NY JM19IN 59 59 1661km
0952 EA6VQ JM19MP 59 59 1631km
0958 EA5EZJ IM98VX 59 59 1920km

1000 EA5AFP IM99UN 59 59 1914km
1001 EA5BXH IM99TL 59 59 1923km
1014 EA3GDE JN00HR 59 59 1819km
1998-08-15
0937 LA2AB JO59FV 59 59 2316km odx
0939 PA3FOC JO21VW 59 59 1794km
0941 G3ZVW IO91WP 59 59 2116km

Thanks for report, Hardy.

YU1VG (JN91NX) wkd on 144 MHz:

1998-08-09
1106 EA5EZJ IM98VX 59 59 1665km
1107 EA6PS JM19 59 59
1108 EA5AFP IM99UN 59 59 1657km
Thanks for report, Vasa.

YU7EW (KN05HP) wkd via Es:

1998-07-15
1335 4X4UJ KM72MT 59 59 1886km
1342 4Z5JA KM72LT 59 59 1881km
1636 DL4ABJ JO42XP 59 59 1098km
1998-07-17
1007 UA3PTW KO93BS 599 599 1554km
1012 RA3DQT KO59HI 599 599 1664km
1998-07-19
0646 UA6MA KN97VE 59 59 1479km
0802 UA4ALU LN29LA 599 599 1868km
0902 UA4API LO20QC 599 599 1906km

1998-08-15
0845 LA2AB JO59FE 59 59 1654km
0855 LA3BO JO59CD 59 57 1657km
0856 SM6KJX JO67CK 59 59 1433km
0902 SM7WT JO65QQ 59 59 1227km
0902 SM6EHY JO67CL 59 59 1438km
0903 SM6CMU JO57XK 59 59 1440km
0903 SM6NZV JO57XK 59 59 1440km
0934 SM7RME JO77LP 59 59 1406km
0935 LA3FV JO59CC 59 59 1653km
0943 G7RAU IO90IR 59 59 1717km
0944 G0OFE IO90AT 59 59 1765km
0947 F1UVN/P JO10IA 59 59 1422km
0952 OZ6ABA JO57DJ 59 59 1487km
0953 OZ8ZS JO55RT 59 59 1300km
0955 OZ1KLU JO46PE 59 59 1414km
0956 OZ1OF JO45VB 59 59 1297km

73, Pista - YU7EW (Adr: Nemethy Istvan, Branka
Radicevica 63, YU-23217 Aleksandrovo - Serbia)

If possible, please submit your ES reports in
machine readable form (ASCII). You may do so
using 3 1/2 inch MS-DOS magnetic media.
Time, Call, [Locator] for each QSO are needed.

Note that my e-mail has changed!

@QSOKLEIN = e-mail: ischnell@physik.uni-bre-
men.de

Sorry but I do not have packet radio any more.

73's and good DX, Ilan or Arvin Schnell Uni Bre-
men, NW1, Room O3170, Tel: +49-421-218-2944
mailto: //aschnell@physik.uni-bremen.de
http://hix.physik.uni-bremen.de/~arvin

Tropo News

Editor: Joachim Kraft, DL8HCZ - Joachim@Kraft.net

2m > 700 km

DG0OPK/p, JO50AN, 815m asl, wkld/hrd > 600Km: 23.5.98 0640-1542 G0KPW JO02OD 637km, 9A3VD JN75XX 671, 9A2AE JN86HF 683. 24.5.98 0541-0933 G0KPW JO02OD 637km, IK6LZA 52 51 JN63GR 782, S53VV 53-7 52 JN65UM 629, TK/DC3VW/P 57 55 JN42LM 897, IOUGB 52 hrd JN62BE 944, IK4CBO 51 51 JN54DS 644. 30.5.98 1258-1520 I4GBZ JN54XV 646, TK/DF2VJ/P 52 hrd JN43RA 839, IK3VZO JN55XA 632, S59CST JN65UN 619, S50L JN75ES 622, HG1DLZ JN87HF 607, IW2MEI JN55LA 622, I4XCC JN63GV 764. 1.6.98 1230-1256 HG1DLZ JN87HF 607, 9A1CMS JN86FM 651, S52DK JN76SA 648, 1828 G6ODA IO91WN 718. 2.6.98 0340 DG0CAL/MM JO14VM 609, 0654 DG0CAL/MM JO04XQ 712. 20.6.98 1234-2250 S59DFT JN75PS 659km, HG1DRD JN86KU 648, HG1W JN87GF 602, 9A2QG JN95CI 838, S57O JN86DT 619, HG1Z JN86KU 648, HA2R JN87VE 679, HG7P JN97KW 703, G7RAU IO90IR 798, G4LOH IO94QA 819, G4DEZ JO01IN 661, G4DHF IO92UU 755, G8IZY IO91VC 721. 21.6.98 0334-0600 HA5KDQ JN97LN 729, HA5BDJ/7 JN97KP 719, HA3KGC JN86VI 737, HG6Z JN97WV 772, HG9OZD/6 52 HRD KN08EB 798, YO2II/P 51 HRD KN06UG 982. 2.8.98 0631-0949 52ZW JN86BS 613km, S51WC JN75PS 659, 9A2RD JN65TF 650, 9A3RU JN85LI 774, 9A1CAL JN85EL 650, IK3TPP/4 JN64GA 751, I2XAV/1 JN44MU 639, IK5ZUW/6 JN63GN 800, IK0DDP/6 JN62OW 881, IK5PWB/5 JN53SR 768, S52OP JN86AM 629, S53J JN75EV 609, 9A4VM JN85FS 713, 9A5Y JN85OO 765, I2ADN/4 JN54MK 685, IW5CYY/P JN54FF 704, IK2PTR/4 JN44PW 628, I1MXI/1 JN44SN 668, K5VHU/5 JN54IE 710, IW2HAJ/1 JN44CF

717, K0FEC/0 JN63JF 841, 4.8.98 1806 OZ7RD JO56AL 627km. Rig: TR751+PA (150W, 2x9EI) p-QTH: Schnitzersberg/Rhön
Danke fuer die Info Michael!

DG0OPK/p, JO50RV, wkld/hrd > 600Km: 1.7.98 1746 T77WI 51-3 41qsb jn63fw 777km.

DH0GHU, JN38VN, wkld: 160598 G4SIV/p JO03AD 745km + other Gs. 170598 G8LNC/p IO90JO 687km, hrd 0740-0755:G4ZE/p IO93EH 844km. 230598 TK/DC3VW/p JN42LM 678km sqr #125 *1. 300598 TK/DF2VJ/p JN43RA 629km sqr #126 *1. 020698 DH8BQA/p JO73CF 687km. 030698 DL9MS JO54VC 676km sqr #130. 060698 F1NSR/p JN33HR 545km sqr#133, TM1C IN97HV 697km. 070698 F/G8MBI JN04FT 697km sqr#135. 010798 T77WI JN63FW 627km. 04/05.0798 OZ1ALS JO44XX 729km, totally 30QSOs 500km. 110798 PA6BN JO13OF 610km sqr#141, EA3BCP/p JN12IK 788km. 260798 TK/DL7AJA/p JN43QA 628km. 020898 9A2AE JN86HF 713km real 59, 9A5Y JN85OO 784km sqr#152. *1 mni tks to the TK crew for the nice activity and good signals ! no condx during all this so-called summer... rig : 300W/11el 12m agl Danke fuer den Bericht Ulrich!

DL8EBW, JO31nf, wkld: 21.6.98 0950 OK2KFK/p JN89 hrd 657, OZ5AGJ JO56df 594. 4.7.98 (wrkd during Contest) OZ5BAL/p JO55 558, OZ9EDR JO64 552, OE2XRM JN67 576, G4ZAP/p IO94 591. (was only qrv for some hours with 60-100Watts to avoid TVI (football-WM) DL8EBW RIG: FT726R MOD CF300, 11 EL DL6WU, MGF1302, 250 W (4CX250R).

DL8EBW/p, JO31pg, wkld: 7.7.98 after checking condx in the SCA from at home

(17-18UT) I decided to make a short trip to JO31pg (QTH of DK5DQ in Contests) and built up 7el on 8m telescopic mast. Other rig was my usual/mob rig. At 1845 I was qrv - All at all managed 20 QSOs to DL, F, OZ(15x), SM (1x) and LA (1x) with ODX 746km inbetween 1 1/2 time... condx : normal! QSOs over 600km: OZ6ABA JO57 708km, OZ4EDR JO75 665km, LA7M JO37 746km and SK7CY JO66 645km. Thanks to Nico, DK5DQ for joining the short and vy spontaneous trip!! tnx for info Guy

HB0/PI4TUE, JN47 wkcd >600Km in July

98: 0705 PI4GN JO33KK 731 0704 PA3CEE JO33IJ 730 0705 PA3DOL JO22MT 715 0704 PA3EXX JO22NR 704 0710 PA3CEG JO33FB 700 0705 PA0RDY JO22KJ 680 19980704 PA3BIY JO22EB 669 0704 PE1PZS JO21DV 658 0704 PE1RSR JO22OE 649 0704 PI4ZLD JO11WM 644 0704 PA0ME JO22OB 637 0704 PA2TAB JO32MM 631 0706 PA3FTX JO21DN 629 0706 PA0GHB JO11WH 627 0704 PA3FJY JO32EH 625 0710 PA3DYS JO21JP 615 0704 PE1LWT JO22VA 613 19980705 PA3GUY JO21HM 611 0704 PA0JED JO22WA 610 0704 PA0PVW JO21VX 609 0704 PA2CHR JO22XA 608 0707 PB0AOL JO21WX 606 0705 PA3AXU JO21TV 606 0709PE1RRE JO21WW 602 0709 OK1FID JO80CH 601 0704PA3BZO JO21RS 600, Rig : TS850 + LT2S + MGF-1302 Ant: 1x17el F9FT PA GS35b about 1.2KW (we had a special licence for 1.5KW....), QTH JN47TC Sareiser joch 2010m ASL anf 2020m ASL, pe1ogf@iaehv.nl tnx for info John

LZ2AB, KN33 wkcd >700km: 4./5.7.98

HA0HO 704 km, HA0MK/9 733, 9A4EW 737, UT5DL 752, 9A1D 753, 9A2SB 764, T91EDO 774, HA7NS 774, 9A3B 775, 9A7D 783, HG9OZD/p 788, HA6ZB 790, 9A1CRS 794, HG6Z 799, HG7KLF 799, YZ4IZ 808, 9A4P 819, HA5KDQ 833, HA5BDJ/7 843, HA7NS 858, OM7A860, HG7P 861, 9A1B 875, HA2R 888, OM3KEE/p 890, OM3RBS/p 891, OM7T 915, 9A1EZA 929, 9A7S 933, 9A1CMS 956, S52ZW 974, OM3KII/p 991, S50D 997, S57Y 1000, S59FOP 1015, S57C 1022, S51S 1027, S59EKL 1061, S50C 1065, KRISTO LZ2AB

S50C, JN76JG, 1508m asl, wkcd: 2./3.5.98
LZ1KWT KN32AS 972, DF0KM JO41GN 744, YO5KAD/p KN17UR 695, LZ2KMS KN22RR 932, DK0FFO/p JO72BO 706, LZ2FO KN13IP 688, I8YZO JM78WO 857, YO5KUW/p KN17UT 697, SP7DCS/7 JO91MN 665. 6./7.6.98 LZ1KWT KN32AS 972, LZ6T KN22IS 876, LZ2WE/p KN13NT 709, LZ7N KN21JX 929, F1FIH JN23GS 852, YT1Z KN13HI 697, LZ2HV KN22PR 920, LZ2ZY KN13OT 715, SP7NJX JO91RR 696, IT9IPQ/9 JM78SG 892, LZ6C KN13OU 713, YO5KUW/p KN17UR 695. 4./5.7.98 LZ2AB KN33SC 1066km, IW9EKK/9 JM68OA 927, LZ2ZY KN13OT 715, LZ1KWT KN32AS 972, IT9IPQ/9 JM78SG 892, DF0YY JO62GD 673, IT9VDQ JM68OA 927, Z31RM KN00OX 782, IC8CQF JN70CN 637. RIG: 4 x 15 Cue Dee, 700 W

70cm

DG0OPK/p, JO50AN, wkcd >500km 3.5.98
0407-1125 S52CO jn75qx 644km, S59W jn75gv 616, IK3VZO jn55xa 632, 9A7A jn86be 661, S53O jn86dt 619, SP9EWU jo90nq 640, OE3JPC jn88eb 536. Rig: TS770+PA (100W, CF300, 2x19EI)
DG0OPK/p wkcd/hrd 500Km 20.6.98 1416-2153 HG1W jn87fi 665km, HA2R jn87ve 679, HG5FMV jn97kr 714, HG7P jn97kw 703, F5XDA/B 599 jn18kf 579 Beacon but nobody QRV, G4DEZ jo01in 661. 21.6.98 0608-1058 HA1VHF jn87gf 602km, 9A2AE jn86be 661, S57O jn86dt 619, I4LCK/4 jn54pd 719, S51S jn76qk 603, I3NPF/4 jn63cw 754, S50C jn76jg 591, I0UZF/0 jn63jf 841, S53DNA jn76bl 544, 9A3NI/p jn75ak 642, S51ZO jn86dr 626, S53T jn75gv 616. Rig: FT790+PA (80W, 2x19EI)

DH0GHU wkcd >500km: 4./5.7.98 DL0OU
JO43WJ 557km, PA6C JO33FB 509km
PI4GN JO33KK 546km, OK1VMS JO70GU 548km. rig 20w/18el. tnx for info Ulrich

S50C, JN76JG, 1508m asl wkcd: 2./3.5.1998
DF0CI JO51CH 653, DG3FK/p JO40XL 588, DG7NBE/p JO40XI 578. 6./7.6.98 LZ1KWT KN32AS 972, IK1/DK5DQ/p JN43BV 586, SP9EWU JO90NH 552, DK3WG JO72GI 677, DL4DWA JO61QH 570, HA0HO KN07SU 541. 21.6.98 YO2KBQ/p KN16VG

691, DF0CI JO51CH 653, IK1FHB/1 JN34OP 618, YO2LIS/p KN16VG 691, DL8AKI/p JO51CH 653, DG0OPK/p JO50AN 592, DK3WG JO72GI 677, I1COB/1 JN33UU 618, SP9EWU JO90NH 552. 4./5.7.98 LZ1KWT KN32AS 972, YO5KAV/p KN16JS 614, DG0OPK/p JO50AN 592, DF0YY JO62GD 673, YO2KQD/p KN16II 608, DL4AKK/p JO50AN 592, DF0CI JO51CH 653, F1CH/p JN34UB 607, YU1AU KN03JG 579. RIG: 2 x 26 9BV, 200W tnx for info Matija/S53MM

DG0OPK/p, JO50AN, wkd 1296MHz >300km: 2.5.98 1616-2332 DF0TEC/p jo73cf 412km, PA0ZM jo32gk 319, OE5MKM jn78cj 385, OE5MKN jn78ea 422, DD7MH jn68hd 327, DH0HAR jo53ap 343, 3.5.98 0337-1158 PI4GN jo33kk 386, PA6C jo33fb 371, DK1CB jo53cl 324, DL2NUD jo63le 354, ON4PS jo20kq 364. 21.6.98 0737-0905 OE2EBO jn67mw 364km, auch 13cm, OE2JG/2 jn67pw 375, OE5MKN jn78ea 422, OE2XRM jn67nt 375. Rig: TR751+HM Transverter (35W, 23EI)

DG0OPK/p, JO50AN, wkd 2320MHz >300km: 2.5.98 1616-2307 DF0TEC/p jo73cf 412, OE5MKM jn78cj 385, DD7MH jn68hd 327. 03.05.98 0946 DL2NUD jo63le

354km. Rig: TR751+Homemade Transverter(8W)+ 60cm Dish!!!



Contest QTH OM7F

6m News

Editor: Joachim Kraft, DL8HCZ - Joachim@Kraft.net

T77C/A QRV auf 6m! Ein Bericht von DJ6TK.

Ich habe waehrend meines diesjaehrigen Urlaub an der Adria erneut Tony - T77C- in San Marino besucht. Der Besuch fand am 20. Juni statt. Mein Urlaubsort lag mit dem Auto nur 1/2 Stunde entfernt. Fuer die Hinfahrt hatten wir uns auf 2m FM auf einem Direktkanal verabredet. Schon im Bereich von Rimini konnte ich den ersten Kontakt mit Tony aufnehmen. Nachdem ich die Republik San Marino erreicht hatte, hat mich Tony zu einem bestimmten Punkt gelotet, dort habe ich auf ihn gewartet. Nach kurzer Begrueßung sind wir ersteinmal in ein Restaurant gefahren und haben einen Cappuccino getrunken und erste Informationen ausgetauscht. Danach ging es mit dem Auto weiter zum Standort der Clubstation T70A in JN63FW. Der Ort der Clubstation ist auf einem Huegel gelegen mit einem herrlichen Blick in Richtung Norden. Leider musste ich feststellen, dass der Rotor, auf dem die 4 el Quad fuer 6m saß, defekt war. Auf Tonys Frage hin, in welche Richtung er nun die Quad drehen sollte, habe ich mich fuer NNW entschieden. So war DL, F, HB9 und G eventuell moeglich. Falls die Condx es zulassen, habe ich natuerlich auch auf eine Double-hop-E Verbindung in die Staaten gedacht. In einem der Räume stand ein TS680S fuer KW und 10 Watt auf 6m. Da ich meinem 6m Transverter von R/N Electronics, der maximal 25 Watt macht, habe ich mich fuer diesen entschieden. Tony bat mich, sein Call T77C/A fuer alle QSOs auf 6m zu benutzen. Bei einer ersten Bandueberpruefung merkte ich schon, dass die Condx an diesem Tag leider nicht die besten waren. Egal, um 09.35 UTC ging es mit IW4DCW in SSB los. Die ersten Verbindungen wurden mit italienischen Stationen in SSB und CW abgewickelt. Um 10.03 UTC dann der erste S5, und zwar S53J. Gegen 10.45 UTC rief mich ploetzlich eine weiblich Stimme. Wie sich herausstellte, war es wohl die XYL von OY9JD, und OY9RJ, von der ich 59 bekam. Kurz darauf meldete sich Jon- OY9JD auch noch selbst. Es ging dann weiter mit 9A4QV. Um 11.26 UTC dann der erste DL. Wer konnte es auch anders sein als Thomas aus Muenchen - DL7AV -. Auf meine Bitte hin gab Thomas dann unsere Verbindung sofort in das DX-Cluster ein. Es ging weiter mit OE8CIQ und um 11.34 UTC dann UT1PA aus KO21FC. Gegen 11.36 UTC meldete sich LA4LN aus JP50JA mit einem tollen Signal. Kurze Zeit spaeter gelang mir eine Verbindung mit der einzigen PA0 - Station, es war PA0JMH. Gegen 11.59 UTC meldete sich Benny - OZ5AGJ - aus JO56. Dann gegen 12.14 UTC die erste polnische Station - SQ8GKA - aus KO12NC. Um 12.20 UTC erschien mit

OH3NLP die erste finnische Station. Ab 12.24 UTC ging es gut nach Estland. Es begann mit ES1AJ aus KO29. Innerhalb von einer halben Stunde konnte ich 8 Verbindungen nach Estland machen mit einer Unterbrechung durch meinen alten Freund Rauno - OH3MF -. Gegen 13.05 UTC erschien LY2SA aus KO14LL. Um 13.55 UTC konnte ich die erste und einzige Verbindung nach Rumänien machen. Der Op war YO4AUL aus KN44HE. Von G, GJ, GD, GI, F, ON oder EI war die ganze Zeit nichts zu hoeren. Von einem Anruf aus den Staaten wurde leider auch nichts. Wo waren SM7AED und die anderen starken SM Stationen trotz staendiger Eingabe meiner QRG im DX-Cluster??? Um 14.39 UTC meldete sich 9H5IO, kurz danach 9H5IP auf der Rueckseite der Antenne mit starken Signalen. Leider konnte ich weitere Stationen aus Malta auf meiner QRG nicht ausmachen. Gegen 15.07 UTC dann das letzte QSO mit DL4MDQ aus JN58SP, der sich noch fuer das neue Land auf 6m bedankte. Ich konnte somit in der Zeit von 09.35 - 15.07 UTC insgesamt 57 Verbindungen unter dem Call - T77C/A - taetigen. Die Verbindungen pro DXCC sahen wie folgt aus: IW4DCW insgesamt 23 Stationen aus I und IT9 S53J insges. 4 Stationen OY9RJ insges. 2 Stationen 9A4QV insges. 1 Station DL7AV insges. 2 Stationen OE8CIQ insges. 2 Stationen UT1PA insges. 1 Station LA4LN insges. 1 Station PA0JMH insges. 1 Station OZ5AGJ insges. 1 Station SQ8GKA insges. 2 Stationen OH3NLP insges. 5 Stationen ES1AJ insges. 8 Stationen LY2SA insges. 1 Station YO4AUL insges. 1 Station 9H5IO insges. 2 Stationen Schade, dass der Rotor defekt war. Ich denke mal, dass dann noch mehr Verbindungen moeglich gewesen waeren. Fuer Tony - T77C - hat die Operation 3 neue Laender beschert. Alle QSLs fuer diese 6m Operation bitte an DJ6TK, der alle Karten bereits mit Labels versehen und zum Versand uebers QSL-Bureau in Baunatal vorbereitet hat. Inzwischen ist T77C mit einem neuen IC-746 und 100 Watt auf 6m QRV, der Rotor ist inzwischen auch wieder voll funktionsfaehig. Vy 73 and good luck on the Magic Band Wilf/DJ6TK

DL7ARM, JO62 wkd: 23.6.98 1558z KOFF, EM49, 50.094

FAI News

Editor: Georges Vialet, F8OP, "Le Cottage", F-71290 CUISERY

YU7EW KN05HP

31.05.98 20.01 EA3ADW JN11CQ, #

01.06.98, 20.06 EB3DYS JN11CK, 20.10
EA3GJO JN11BI, 20.15 EA3ADW JN11CQ,

02.06.98 20.06 EA3ADW JN11CQ,

03.06.98 20.01 EA2AGZ IN91DV, 20.35
EA3ADW JN11CQ, 20.43 EA3DXU JN11BK,
21.11 IC8FAX JN70CN, 21.25 EA3CQQ
JN11AO,

04.06.98 20.13 EA3ADW JN11CQ,

15.06.98 20.06 EA3ADW JN11CQ

17.06.98 21.02 EA3ADW JN11CQ

18.06.98 20.00 EA3ADW JN11CQ 20.39
EA3GFB JN11KX 20.48 EA3CQQ JN11AO
20.45 F/G8MBI JN04FT

23.06.98 17.04 EA3ADW JN11CQ 20.15
EA3TI JN11DQ 20.43 EA3DYS JN11CK
20.58 IC8FAX JN70CN

24.06.98 17.37 EA3ADW JN11CQ

01.07.98 20.05 EA3ADW JN11CQ 20.28
EA3GJO JN11BI 21.34 IK0BZY JN61GW

02.07.98 21.03 EA3ADW JN11CQ

05.07.98 20.49 EA3CQQ JN11AO 20.58
EA3DXU JN11CM 21.17 EA3ADW JN11CQ

07.07.98 20.03 EA3ADW JN11CQ

15.07.98 18.57 EA3ADW JN11CQ.

QTF always the same: 285 TX: 350w 10el
DJ9BV only 8m high. TKS Pista.

YU1VG, JN91NX wkd 600km: 7.8.98
9H1CD JN75FV,

8.8.98 IZ5EME JN52NS, IK3TPP JN65HN.

9.8.98 IT9IPQ/9 JM78SG, IT9FGN JM78PE,
J5EUZ/5 JN53SR, IW5BVM JN35RM.

10.8.98 IZ4AIK JN63HV, IK0RWX/5 JN52TU.

12.8.98 I1PIK JN44TG, IZ1BLH/P JN34WH,
I3UKY JN55MF.

13.8.98 I3LGP JN55WJ, I3EHL JN55WJ,
I3ZVN JN55QQ, I3LDS JN55SQ, I3LDI
JN65BK, F/ON5OF JN33MR, IW3HTU
JN55QQ.

14.8.98 IZ5BLO/5 JN55FF, IK5QLO JN53FU,
I3VYK JN55MJ, I2PY JN55NB, I4STU
JN54IW, IK3COJ JN65BN, I2FHW JN44OS,
IW2IXY JN45NX, IW2JQF JN45NK, IK5QKB
JN53BT, IK1EGC JN35UR, IZ1AAL JN45OP,
IK1TVR JN34DI, IW2FGK JN46LJ, I2SCL
JN33UT.

15.8.98 IZ1BSO JN44CE, IW3QBM JN65SV,
I4AMD JN64CK.

16.8.98 I5PVA JN53OS, IS0/IW2IU
JM49TX, EB3DYS JN11CK, IK5ZQB
JN53GA, IK5FTQ/5 JN54JD, IK5HGY/5
JN45JD, I8VWK/5 JN54HQ. tnx for info,
Vasa.

Aurora

Editor: Norbert Götsche, DL8LAQ

DL1EJA (JO31DS) wkd on 144 MHz:

1998-07-16			
1753 SK7AX	JO77DS	53A	53A
1998-07-16			
1756 GM4YXI	IO87WJ	55A	59A
1998-08-06			
2303 G4DHF	IO92UU	59A	55A
2307 G4FUF	JO01GN	53A	52A
2314 GM4CXM	IO75TW	54A	52A
2317 GM4DGT	IO85GX	57A	41A

Rig: IC720A+LT2S+GS35B-PA; PreAmp NF=0,4dB; 24ele Yagi 12m agl, 30m asl, 73, Oliver - DL1EJA

LA0BY in JO59FW wkd via Aurora on 144 MHz:

1998-04-26			
1514 OH1XT	KP01SK	52A	55A 350
1542 GW0KZG/mm	IO37RC	51A	hrd 325
1652 LA3PU	JO49UE	52A	44A 10
1707 DK5JM	JO43QS	52A	53A 315
1998-05-02			
1237 LY2FE	KO05OQ	52A	55A 60
1250 DK3BU	JO33NO	57A	55A 10
1257 ES1DF/2	KO29GG	52A	55A 50
1308 SP1MVG/p	JO73IJ	56A	55A 50
1335 SK4MPI/B	JP70NJ	59A	hrd 350
1335 DL0PR/B	JO44	58A	hrd 40
1336 OZ4UHF/B	JO75KC	52A	hrd 50
1336 SK1VHF/B	JO97CJ	52A	hrd 50
1337 SK7VHF/B	JO65	52A	hrd 50
1406 LY5BAW	KO25KA	52A	55A 60
1413 DA0ND	JO42FS	59A	59A 45 SSB
1419 PI4GN	JO33KK	59A	59A 30 SSB
1423 LY3ED	KO14UX	55A	55A 45
1429 LY2WR	KO24OQ	57A	57A
1430 RU1AA	KP40XD	52A	hrd 50
1434 PA3FJY	JO32EH	57A	59A
1440 SP7DCS/7	JO91MN	52A	55A
1452 OH0/SK5RO	KO09CX	55A	57A
1458 DL5ME	JO52SD	59A	59A
1501 DF0TEC/p	JO73CF	59A	59A
1503 DL0BRB	JO43NX	59A	59A
1505 SQ6W	JO80FQ	57A	59A
1507 DL0XM	JO61DJ	52A	59A
1510 OK1KQI/p	JO80DI	52A	59A
1514 OK1FID/p	JO80DI	52A	59A
1515 DL0YE/p	JO54AG	59A	59A
1517 DK5KK	JO63EX	59A	59A
1519 DL1SUN	JO53PN	59A	59A
1523 DK2CRN/p	JO41AF	51A	51A
1525 SP2MKO	JO93CB	52A	55A
1530 LY2SA	KO14LL	59A	59A
1538 OK1VMS	JO70GU	59A	55A
1550 DL0WMD	JO54XB	57A	59A
1555 LY2MW	KO24PQ	51A	53A 70
1558 DL8BDU	JO43AA	55A	59A

1604 OZ1SDB/p	JO44XX	59A	55A SSB
1607 DG6JF/p	JO33QN	59A	59A SSB
1615 SP4MPB	KO03GS	57A	57A 70
1622 DJ9YE	JO43HV	59A	59A
1623 DF0BT	JO62QN	52A	55A
1625 DL1JF	JO54CF	55A	59A
1629 OZ1BUR	JO46HI	51A	55A
1631 DL9MS	JO54WC	59A	59A
1640 OH0AB	JP90XI	52A	59A 45

Nice to have such a good Aurora during the contest. Heard many stations also on SSB with good signals. Gave up calling them because they were not familiar with Aurora (they commented on my "poor" modulation!!!).

1998-05-04			
1644 G4DHF	IO92UU	55A	55A 300
1645 PA3CEE	JO33JI	54A	55A 310
1998-05-05			
0450 SK4MPI/B	JP70NJ	59A	hrd 340
0455 DJ4TC	JO63PN	55A	55A 40
1998-05-29			
1652 DG5TR	JO53QP	52A	53A 45
1658 DK8LV	JO44RK	57A	57A 45
1700 DL1SUN	JO53PN	57A	55A 45
1998-06-26			
1800 SK4MPI/B	JP70NJ	52A	hrd 340
1998-07-06			
1500 SK4MPI/B	JP70NJ	52A	hrd 340
1998-07-16			
1340 SK4MPI/BJP70NJ		53A	hrd 340
1554 SK7AX	JO77DS	57A	57A 40
1633 SM5EFP	JO79WJ	52A	56A 40
1728 DK3WG	JO72GI	59A	59A 40
1735 PA3CEE	JO33JI	54A	54A 20
1736 DL4ABJ	JO42XP	52A	53A 40
1737 DK1CO	JO63SX	55A	59A 40
1740 DL9OA	JO64EB	51A	55A 40
1741 DF8LC	JO53GX	57A	57A 40
1998-07-23			
1632 ES2WR/8	KO28FD	52A	55A 20
1635 ES1AR/0	KO18BE	52A	55A 20
1637 ES2RJ/8	KO18UK	52A	55A 20
1638 PA3CEE	JO33JI	52A	52A 0
1643 OJ0AU	JP90NH	52A	55A 10
2137 LA2PHA	JO38IB	52A	55A 320
2221 OH1XT	KP01UK	53A	55A 0
2225 OJ0AU	JP90NH	57A	59A 0
2236 LA8KV	JP52QQ	52A	53A 30
1998-07-24			
1628 DL9MS	JO54WC	53A	55A 20
1630 LA8KV	JP52QQ	53A	hrd 30
1632 OJ0AU	JP90NH	53A	hrd 350

LA0BY/p in JO59IX wkd via Aurora on 144 MHz:
1998-05-05

1703 SM5HJZ	JO99AV	57A	55A	30
1705 SM3BEI	JP81NG	53A	56A	30
1708 OH2KKP	KP20MH	55A	57A	30
1713 SM4HFI	JP70TO	55A	55A	30
1714 SK5MR	JO78LM	55A	55A	30
1716 LA1K	JP53EK	59A	57A	30
1717 OH0AB	JP90XI	59A	59A	30
1719 SH1AAJ	JO96BW	54A	55A	30
1722 OH2KW	KP20IJ	55A	55A	30
1724 SK3AH	JP82XO	59A	55A	30
1729 OZ1KLU	JO46PE	52A	55A	30
1732 OH2AAQ	KO29FX	52A	55A	30
1735 DL8UD	JO44SK	57A	55A	30
1750 DK1KO	JO53CT	52A	55A	30
1753 DL9MS	JO54WC	52A	54A	30
1805 DL1SUN	JO53PN	53A	53A	30
1929 SL2ZA	KP03DT	52A	55A	30

Thanks for your report, Stefan.



DL6YCY und DL3YEL QRV als T77WI

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Meteor Scatter

Editor: Norbert Götsche, DL8LAQ, e: Norbert.Goetsche@hamburg.roses.de

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It happens sometimes that I can't recognize what column of your report includes the number of bursts or pings or the tx/rx report. Please don't forget to give me a short hint. In this column the order is bursts, pings and seconds. And here is again the meaning of the short cuts: c = complete, bs = backscatter, m = many, nc = not complete, nil = not in log (no reflections!), r = random, s = ssb, sc = sidescatter and t = tailend.

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73, Norbert

DD0VF (JO61VA) wkd on 144 MHz:

1998-01-02									
20002012 G0FIG	IO90	49	27	12		42	c		
1998-01-03									
0632065018TWK	JN70	28	27	16		0.5	c r		
10001025IC8FAX	JN70	27	37	8	5	4	nc		
11171127OH3AWW	KP21	28	27	23	3	3	c r		
12001245LY2FE	KO05						nil		
13001400EA7GTF	IM87	27	27	7	10	1	nc *1		
14001440SM2LTA	JP94	26	36	9	5	3	c		
14521506OH1XT	KP01	27	26	3		7	c r s		
15161520LA2AB	JO59	38	27	3		10	c r s		
18221845SM3MXR	JP80	38	38	15	m	5	c r		
19251959SM3PXO	JP73	28	27	22		4	c r		
22332250SM3KJO	JP92	27	27	2		3	nc r s *2		
1998-01-11									
07000800G0FIG	IO90	27	26	5	6	0.2	nc *3		
1998-03-07									
200520464U1ITU	JN36	28	26	26	12	1	c *4		
1998-04-19									
06000700IW1AZI	JN35	26	27	9	4	6	nc *3		
1998-04-21									
05050600YPOT	KN38	27	26	27	19	1.5	c		
1998-04-22									
05100545OH8HDL	KP34	27	27	24	4	7	c		
06220635YPOT	KN37	27	26	6	4	38	c r		
08000832OH6KSR	KP22	38	26	16	7	5	c		
1998-04-23									
07000731YPOT	KN26	27	26	15	9	12	c S9		
1998-04-26									
06000648G0FIG	IO90	26	26	8	7	0.5	c *3		
1998-04-21									
05300600EA2LU	IN92						nil *3		
1998-05-22									
05300630EA2LU	IN92	27	26?6			1	nc *3		
1998-05-23									
06000655IW1AZI	JN35	26	26	17	4	7	c *3		
22502310EA2LU	IN92	27	27	32	11	3	nc *5		
1998-05-26									
04400505GW0KZG/mm	IP81	28	26	27	9	3	c		

1998-05-29

05000520YO5TE	KN16	26	26	10	2	1.5	c		
1998-06-04									
20452100MM/DK5KK1O76		27	26	17	4	2	c		
1998-06-05									
04000420SV9/DK5YA	KM35	39	49!	24	5	8	c *6		
1998-06-06									
05000515IK0OKY	JN61	26	27	5	4	1.5	c *7		
06250645OH6KSR	KP22	28	28	15	5	3	c r		
1998-06-06									
22002240EU6MS	KO45	28	27	57		3	c		
1998-06-07									
05050517SM2CEW	KP15	38	27	22	10	7	c r		
11001117UTSER/A	KN69	27	28	25	12	2	c		
1998-06-08									
1045110018TWK	JN70	27	26	28		8	c r		
11171125IC8FAX	JN70	27	26	26		1	c r		
1998-06-09									
06000700GW0KZG/mm	IO69	27		6		0.2	nc		
07050715LY2WR	KO24	38	27	29		6	c r		
09250935RU1A	KO48	39	28	59!		5	c r		
1998-06-10									
06120635OH8E	KP45	27	26	6	4	3	c r		
1998-06-11									
1135120018TWK/P	JN60	27	27	5	2	1	nc r *8		
1998-06-12									
21002200EW6AZ	KO44	27		19	5	1	nc *9		
1998-06-12									
04450452EW6AZ	KO44	27	27	37	m	3	c r		
06300700Z30B	KN01	28		2		4	nc		

Remarks: *1 2026km he got not my RRR :-(((; *2 no RRR hrd; *3 With HB9VC-ant+100W; *4 DXCC #58 (without emc); *5 I sent 3 periods RRR, but Jorge got nothing; *6 Vy nice 2017km qso! max S9+10; *7 IK0OKY used 20W; *8 they spend me 4 periods only; *9 They have lost the MGF1302. Equipment (JO61VA, home): HB9CV+100W.

DD0VF (JO61VC) wkd on 144 MHz:

1998-06-20									
07000715OH7PI	KP42	28	28	44	7	3	c		
1998-06-21									
0400043011JTQ/P	JN34	39	27	5	5	5	c		
1998-07-10									
1942	FIGTU	JN05	59		1	35	hrd *1		
1998-07-10									
23022317LA/DL2ARD	JP21	27	26	4	2	4	c r		
1998-07-12									
05000600OH9NDD	KP26	27		1	2	1.5	nc		
1998-07-12									
21032111EA6/PA2CHR	JM29	27	27	5	1	1	c		
1998-07-18									
10001052EA6/PA2CHR	JN10	27	26	34	6	1	c		
1998-07-19									
02150300SV/OE6IWG	KM06	27	36	12	4	2	c		
03000330LA/DL2ARD	JP44	27	27	13	2	0.5	c		

0400 0500 IK5JWQ	JN52						nil
1998-07-20							
1800 1847 TA1ZK/0	KM39						nil *2
1998-07-22							
0730 0820 TA1ZK/0	KM39	27	27	17	2	5	c
1998-07-23							
2100 2130 LA/DL2ARD	JP42	27	26	12	3	1.5	c
1998-07-28							
0700 0747 F/DL4DTU	IN88	37	26	25	4	10	c
0800 0850 LA/DL2ARD	JP50	26	26	7	2	2	c
1998-07-29							
0515 0532 F/DL4DTU	IN86	38	37	16	1	5	c
1998-08-01							
1920 1955 LA/DL1UJJP31		27	28	15	4	0.5	cr
1998-08-08							
1100 1135 EW5M	KO32	28	26	19	6	1	c
1998-08-09							
0700 0800 CQ1MS	IM59	26		2		0.2	nc *5
1998-08-12							
0002 0010 SM6CMU/3	JP74	28	38	6		5	cr
0900 1000 RV3ZR	KO80	47		4		22	nc!
1245 1303 EW6AL	KO46	38	38	14		5	cr
1318 1346 LA0BY/P	JP51	27	37	3		10	crs
1514 1518 MS0ACG/PIO68		37	37	12		10	crs
2000	/DL5MAE	JM87					*3
1998-08-13							
0700 0800 EA1ABZ	IN71	27		4	2	4	nc
0910	G0TIC/P	IN79	37	26	1	43	crs
1100 1200 UA1OLJ	LP03	27		5	4	1	nc *4
2007 2035 OH5LZY	KP51	27	26	11	7	2	cr

Remarks: *1 Hrd 35sec S9 144.280; *2 PA-failure in TA; *3 Not qrv due to thunderstorm; *4 2057km; *5 2175km. Equipment (JO61VC, 2nd qth): 13 el. 13.6dBd 100W.

DD0VF (JO61VA, HB9CV+100W) wkd on 144 MHz:

1998-07-04							
1000 1025 EA6VQ	JM19	27	26	11	2	2	c
1998-07-12							
2100 2200 IK5JWQ	JN52	26		2	2	0.5	nc
1998-07-17							
0200 0245 SV/OE6IWG	KM16	27	26	12	3	1	nc *1
1998-07-18							
0600 0620 IZ5EME	JN52	28	26	11	1	1	nc
1998-07-31							
1959 2020 IC8FAX	JN70	27	36	10	2	2	c
Remarks: *1 Could not drive to 2nd QTH due bad health and used 3el.							

DD0VF (JO61WA) wkd on 144 MHz:

1998-07-26							
0200 0222 SV/OE6IWG	KM07	39	27	25		7	c
0300 0340 RV3ZR	KO80						nil
0345 0351 I5WBE	JN53	28	27	39!		1	c
0430 0437 IZ5EME	JN52	28	26	47!		2	c
Equipment: 8el + 100W, 73, Steffen. AX.25: dd0vf@db0tud / eMail: dd0vf@gw.n1kio.ampr.org.							

DH0GHU (JN38VN) wkd on 144 MHz:

1998 - 05 - 30							
1400 1500 I5WBE	JN53JR	27	26			1	c *1
1998 - 05 - 31							
0600 0655 SM3UZZ	JP92FW	27	26			2	c
1998 - 06 - 02							
2200 2235 LY2BIL	KO24OQ	27	27	m	m	4	c
1998 - 06 - 03							
0700 0800 SV9/DK5YA	KM35CF	27	26	m	m	5	c
1998 - 06 - 04							
0600 0650 I8TWK	JN70GR	27	27	7	m	4	c

1998 - 06 - 06							
0400 0450 LY2SA	KO14LL	38	26	m	m	6	c
0500 0550 OE6IWG	JN77PK	36	26	5	13	10	c
2100 2150 EU6MS	KN45IN	27	26	m	m		c
1998 - 06 - 11							
1417 1432 I8TWK/P	JN60XX	27	27	m	m		cr
1998 - 06 - 12							
2100 2125 SP2OFW	JO93AC	29	27	m	m	3	c
1998 - 06 - 13							
0500 0540 IK0OKY	JN61GT	26	27	m	m	10	c
1998 - 06 - 14							
0800 0845 YO5TE	KN16TS	27	26	3	m	2	cr
1998 - 06 - 21							
1000 1040 EA6VQ	JM19MP	27	27				c
1998 - 07 - 25							
0100 0125 SV/OE6IWG	KM07	37	26	m	m		c
HA8CE	KN06EN	27	27	m	m	6	c
1998 - 07 - 26							
0530 0626 9A4NF	JN73VS	26	26	5	m	3	c
2100 2140 LA/DL1UJJP40RJ		26	26	m	m	4	cr
1998 - 07 - 28							
2300 2336 LA/DL2ARD	JP50op	26	27	m	m	2	c
1998 - 08 - 01							
0400 0450 HA7UL/8	JN96SJ	26	26	9	29	2	c
0600 0620 EA2LU	IN92ET	27	27	m	m		c
0620 0635 EA2AGZ	IN91DV	27	27	m	m	30	c
2000 2050 YU7EW	KN05HP	27	26	5	m	5	c
2140 2210 TK5JJ	JN41JW	27	27	5		3	c
1998 - 08 - 02							
2100 2200 IE4DQ	IO51WU	26	26	10	m	1	c
1998 - 08 - 06							
0500 0515 SM3MXR	JP80GR	27	27	16	m	12	c

Remarks: *1-First CW-MS QSO vy low QRB, just for testing the equipment. Equipment: 50-300W, 11 el. DL6WU, DTR, ETM9COGX3, NF-keying, max. 3000lpm.

I'm very interested in more skeds, QRO and 10-60 only outside TV hours. Please skeds via digital vhf net, vhf net, PR (dh0ghu@db0cz.bw.deu.eu) or email (dh0ghu@qsl.net, only during QRL). 73, Ulrich - DH0GHU.

DL1EJA (JO31DS) wkd on 144 MHz (complete only):

1998-04-04							
0530 I8TWK	JN70GR	27	27				
1998-04-12							
0700 S53VV	JN65UM	26	26				
1998-04-19							
0400 OH6KSR	KP22VF	27	26				
0500 YU7KB	JN94XX	26	26				
1998-04-20							
1837 YR0T	KN38FC	26	27				
1998-04-22							
0530 IK3VZO	JN55XA	26	26				
0725 YR0T	KN37TD	27	27				
1998-04-23							
0427 YR0T	KN26HS	39	27				
0935 IW1BCV	JN44FS	26	27				
1998-04-26							
1330 GW0KZG/mm	IO37	27	27				
1998-05-28							
1950 GW0KZG/mm	IP91	27	26				
1998-06-01							
0400 IK1/DK5DQ/P	JN43BV	27	26				
1998-06-04							
0700 MM/DK5KK/P	IO76	26	26				
1998-06-09							
0930 TK5JJ	JN41JW	27	27				

1335OH8E KP45NH 26 26
 2047RU1A KO48VR 27 26
 1998-06-10
 0627I8TWK JN70GR 27 27
 0720LY2WR KO24OQ 27 27
 1998-06-11
 1323I8TWK/P JN60XX 27 27
 1998-06-13
 0350EW6AZ KO44EW 27 27
 0500OH1XT KP01UK 27 27
 1998-06-14
 0657EA3KU JN00JV 37 37
 1998-06-16
 0845F/DL1GI/P IN77 27 27
 1998-06-30
 0604T77WI JN63FW 27 27
 1998-07-03
 1600SP9PZU/8 KN19EU 26 26
 1998-07-04
 0600YZ7MON KN03DI 26 26 ssb
 1998-07-08
 0500IZ5EME JN52NS 27 28
 1998-07-11
 1047EA6/PA2CHR/P JM29 26 27
 1998-07-12
 0847LA/DL2ARD JP21KS 27 26
 1998-07-16
 0437LA/DL2ARD JP44WA 27 27
 1998-07-18
 1317EA6/PA2CHR JN10 28 27
 1998-07-19
 0300SV3/OE6IWG KM06 26 26
 1998-07-21
 0325LA/DL2ARD JP43TQ 28 47
 1998-07-23
 0637LA/DL2ARD JP42MC 27 26
 1998-07-25
 0455SM3UZS JP92FW 37 27
 0600HA8CE KN06EN 27 27
 0627EA1ABZ IN71QO 27 27
 1998-08-04
 0400OH8UV KP34VJ 28 27
 1652LA/DL1UU JP31XW 27 27
 1998-08-05
 0732EW5M KO32DX 26 27
 1998-08-06
 2202EU6MS KO45IN 28 27
 1998-08-07
 1732SM/DL1UU JP62GR 27 27
 1998-08-08
 0915MS0ACG/P IO68WF 26 26 ssb
 1998-08-09
 0200CQ1MS IM59NM 27 27
 0500RA3LBK KO65QA 27 26
 0605YU7ON KN04AX 27 26
 0915SS7TW JN75EX 27 27
 1045SM2CEW KP15CR 39 37
 1822EW6AL KO46KB 27 27
 2215SM3MXR JP80GR 27 27
 2240HA7UL JN97KK 26 49
 2337RX1AS KO59SX 39 38
 1998-08-10
 0315OH5LZY KP51AT 27 37
 0402Z32UC KN11CR 27 27
 0457YU7EW KN05HP 27 27
 0603EA2LU IN92ET 27 37

1998-08-11
 0800LZ1KJ KN31CS 26 26
 1053SM2CKR KP03DQ 27 39
 1135SM/DL1UU JP72 27 37
 1200OH6KTL KP02OJ 27 26 ssb
 2112SM6CMU/3 JP74 27 37
 1998-08-12
 0100T9SO JN94IM 37 27 ssb
 0600HG9OZD KN08EB 37 26 ssb
 0743LA0BY/P JP51 37 27 ssb
 12159A2RD 37 26 ssb
 1332OH2KKP KP20 39 38 ssb
 1400OH7PI KP32XG 37 37 ssb
 1405SM2CKR KP03DQ 37 39 ssb
 1426SK0CT JO89XJ 37 37 ssb
 1433OH6MSZ KP21 37 27 ssb
 1436I8MPO JN70FP 38 38 ssb
 1502SM3UZS JP92FW 38 38 ssb
 1505OH8MFH KP34 38 37 ssb
 2147RU1AA KP40XD 47 47
 2302YU1VG JN91NX 37 27 ssb
 2331LZ1ZP KN22 27 27 ssb
 2341G8XVJ IO83? 38 28 ssb
 1998-08-13
 0552HA3UU JN96 37 27 ssb
 0622S55AW JN76 38 37 ssb
 0649MS0ACG/P IO68WF 38 28 ssb
 1998-08-14
 0947LY2WR KO24OQ 27 37

Equipment: IC720A+LT2S+GS35B, preamp (0.4dB NF), 24 ele Yagi 12m agl, 30m asl. 73, Oliver - DL1EJA

DL1SUZ (JO53UN) wkd on 144 MHz:

1998-08-01
 06000625OH6KSR KP22VG 26 26 15 m 1.5 c
 1998-08-08
 08000840S53VV JN65UM 26 26 14 5 7 c
 1998-08-09
 08000830SM3UZS JP92FW 27 27 30 m 10 c
 10301050S57TW JN75EX 28 26 8 5 1 c
 21002130YU7EW KN05EP 26 27 12 7 2 c
 22002240IZ5EME nc *1
 1998-08-10
 2100 IZ5EME nc *2
 1998-08-11
 22002245YU7ON KN04AX 26 27 9 9 20 c
 1998-08-12
 07000735IW1BCV JN44FS 28 26 30 m 25 c
 08300845I4XCC JN63GV 38 27 15 8 30 c
 15101530OH5LZY KP51AT 38 26 19 m 30 c r

Remarks: *1 Nil after 40min; *2 Sked canceled because my PA-tube was down. Equipment: IC821 + PA 300W (GI7b) + preamp, CF300, 2 x 11el. Yagi @ 10m agl, 60m asl, DTR and OH51Y V5.0 (AF-keying). The most contacts are scheduled on digital VHF-Net convers-channel 14345. Skeds are welcome also on 6m with HSCW - 2500 lpm. Vy 73, Uwe - dl1suz@db0mvp.fmv.deu.eu / dl1suz@aol.com.

DL8EBW (JO31NF) wkd on 144 MHz:

1998-05-26
 03500415GW0KZG/mm IP91 26 26 18 m 3 c
 1998-05-30
 11451205IK0OKY JN61GT 26 2 2 0.3 nc *2
 199-805-31
 04280445GW0KZG/mm IP81 27 26 17 16 3 c
 05550640IK0OKY JN61GT 27 26 5 6 2 c *2
 1998-06-02

03450401 GW0KZG/mm IP70TP 27 27 14 12 2.5 c
 1998-06-03
 03500425 GW0KZG/mm IO69 27 26 15 27 1 c
 1998-06-07
 06000700 UT5ER/A KN69RA 4 nc
 1998-06-10
 03520406 LY2WR KO24QO 27 28 13 m 6 cr
 04150440 I8TWK JN70CN 27 27 9 m 3 cr
 1998-06-11
 03520410 GW0KZG/mm IO56 26 26 8 7 2 c
 04430450 RU1A/P KO48VR 27 27 8 m 8 cr
 1117 1135 I8TWK/P JN60XX 27 27 m m 3 cr
 1998-06-12
 23000006 OH1XT KP01VM 27 27 20 42 4 c
 1998-06-13
 00250050 EW6AZ KO44EW 27 28 10 m 2 c tail
 03000400 Z30B KN01QA 27 27 6 13 2 nc
 1998-06-14
 03500440 GW0KZG/mm IO58 27 26 m m 4 c
 05150540 EA3KU JN00JV 27 m m 5 nc
 1998-06-15
 03000400 LZ2HV KN23TB 3 nc
 04000415 F/DL1GI IN77XS 27 27 7 11 6 c
 04200431 LY2BIL KO24QO 27 27 8 m 5 c
 1998-06-29
 23052325 T77WI JN63FW 27 26 8 m 2 cr
 1998-07-04
 03000400 YZ7MON/p KN03DI 26 27 7 10 2 nc s
 1998-07-17
 01000200 SV/OE6IWG KM16 26 2 4 5 0.5 nc
 02550305 LA/DL2ARD JP44wa 28 37 6 6 2 c
 1998-07-18
 02000300 SV/OE6IWG KM06vt26 1 2 0.5 nc
 1998-07-22
 03000400 TA1ZK/1 KM39AT 1 2 0.3 nc
 1998-07-25
 03000400 SV/OE6IWG KM07ug 26 27 8 6 0.5 nc
 1998-07-28
 04000500 SV8CS KM07JS 1 3 0.5 nc
 1998-07-29
 00000200 LA/SM6CMU JP77NA 2626 5 6 1 nc
 1998-07-30
 00000400 SV/OE6IWG KM07ug 26 26 6 8 2 c
 04000500 9A3PA/P JN82IW 27 38 5 11 4 nc *3
 23002331 OH8HDL KP34VJ 37 26 14 14 8 c fb
 23470005 9A3PA/P JN82IW 38 27 10 m 7 cr
 1998-08-02
 00000200 LA/SM6CMU JP78 26 5 3 1.5 nc
 05000545 ES2RJ/8 KO28KL 27 27 12 28 0.7 c
 1998-08-04
 23002345 EW5M KO32DX 26 26 19 48 1.5 c
 1998-08-07
 03000500 OH9/SM6CMU KP18dl 26 - 2 4 0.5 nc
 1998-08-08
 03000500 SM6CMU/2 KP17qc 26 1 2 0.5 nc
 23100045 YO3KWJ/PKN35 27 27 17 m 3 cr
 1998-08-09
 23100050 EW6AL KO46KB 28 m m 5 nc r
 1998-08-10
 23450011 EW6AL KO46KB 28 27 10 m 3 cr
 1998-08-12
 00300100 I8/DL5MAE JM87 26 1 1 0.3 nc
 02000300 T9SO JN94IM 26 26 5 8 1 nc s
 13501416 OH5LZY/P KP51AT 27 27 6 2 5 cr
 15011504 OH6KTL KP02 27 26 4 2 20 cr s
 15451547 MS0ACG/PIO68 27 27 2 m 45 cr s

17001830 UT2HN KN79OI 26 4 4 0.3 nc
 20002031 UR5LX KO70wk 37 26 6 6 45 c
 21072108 OH1XT KP01 27 27 1 30 cr s
 23212400 YZ7MON/p JN93RV 37 37 1 20 nc *4
 1998-08-13
 00430100 9A4FW JN95 27 37 3 4 4 nc *5
 01090110 YU1VG/P JN91 39 39 1 15 cr s
 05300555 HA3UU JN96 37 3 m 7 nc r s
 08240830 LA2AB JO59 27 37 5 m 7 cr s
 09220946 LA0BY/P JP51NA 28 37 8 16 3 cr
 10001200 OH9SCL KP46BI 26 2 4 0.5 nc

Remarks: *1 Regular sked to Geir (1320 km), to test MS-condx; *2 QRP-Test (both txed only with 20 Watt); *3 he had trouble with his generator...; *4 sri Ilija, but agn wrong procedur - without txing any calls I can not send you any RRR! *5 no RRR rcvd, sri; NIL: 1998-05-23 EA1ABZ/P IN72, 1998-07-23 SV/OE6IWG KM07 (tailend), 1008-07-27 LA/SM6CMU JP65, 1998-07-29 SV8CS KM07, 1998-08-12 RA3LBK, 1998-08-13 Z32UC KN11.

Equipment: FT726R modified (CF300), 4CX250R (250W), 11el Flexa, MGF1302, DTR-MS tape recorder (made by DF7KF), ETM9C, RX/TX max 3500lpm, OH5IY Compact-MS-Soft Version 5.0. Every sked for MS, also with stations worked before is very welcome! 73, Guy. Thanks for report. Guido.

EW6AZ Expedition to KO44EW

On the first day the worst happened: the crew burned the preamplifier and don't have any more MGF1302's, so may not copy very good next days. They completed 11 QSOs, all on random. Some guys did not come on sked, some skeds were NC. Complete QSOs at 2400 UTC on 1998-06-12:

DL1DUR R, DJ1OJ R, DL2FDX R, DJ7OF R, DL9MS R, DL5MAE R, DF8LC R, DL3IL R, DJ3HW R, PA0JMV R, DJ5RE R, S57TW R.

On the second and third day they worked:

PE1OGF S, DL8EBW S, IK1PAG S, PE1LWT S, DL1EJA R, DH7FB R, DD0VF R, PA3BIY S, DL5ME R, PA3BZL S, PA2DWH R, S53VV R, DL8GP R, I5WBE S, DJ9EY R, DL1EAP R, DK1KO R, I2FAK S, DL1UU S, DK0OG R, I4XCC R, DJ5BV R, DL4MEA R. S = sked R = random

All operation was done by two man: Victor, EU6MS and Aleksei, EW6AL, who had first experiences on meteor scatter. There were lots of problems, as always in expedition, they lost power twice for 1.5 and 4 hours, the frequency stability was very poor. Equipment used is 100% home brew, including digital recorder, which is quite insensitive to weak signals. It always took long time to program memory keyer for transmit. All this led to many NC QSOs and missed skeds. EW6AZ was heard by bigger stations via Iono-scatter, but was impossible to QSO without preamp. I think the most important is what they said me in final QSO: "All at all we enjoyed the expedition and want to repeat this". 73 Rytis LY2BIL/LY2WR.

H80/PI4TUE (JN47TC) wkcd on 144 MHz:

1998-07-03

05000517 EA3DXU 27 27 21 9 3 c
 06000700 SM5TSP nil
 07000721 I8TWK 27 26 6 14 3 c
 08000900 OH1XT nil *1
 09001000 OH2BNH nil *1
 1998-07-04
 04000500 YO3JW 36 1 17 20 nc
 05000600 LY2MW 1 nc
 tailend ON4AVJ no time.
 06000700 9H1GB nil

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tailend S54AA nil
 0700 0730 EA6VQ 27 27 18 34 3 c
 0800 0820 YU7EW 26 26 2 11 2 c
 0900 0940 DL1UW 26 26 4 7 2 c
 1998-07-05
 0400 0500 F/G8MBI 27 5 11 30 nc *2
 0500 0532 LY2SA 26 26 3 8 7 c s9*3
 0600 0700 OH6KSR nil *1
 1998-07-06
 0300 0400 LA5KO nil *1
 0400 0500 LA0BY 2 nc *1
 0500 0540 HA5CRX 26 26 3 10 1 c
 0540 0635 HA7UL 26 26 3 11 2 c
 0700 0755 HA5OV 26 26 1 12 2 c
 0800 0900 OH1XT nil
 0900 1000 DH8BQA nil
 1000 1041 YO5TE 26 26 3 11 1 c
 1100 1200 SV1WE nil
 1200 1300 YO5KAI 27 2 5 2 nc
 2200 2300 EU6MS nil
 1998-07-07
 0400 0440 YO3JW 27 27 4 20 1 c
 0500 0541 G1HWY 27 27 7 30 7 c *4
 0600 0700 IT9VDQ nil
 0700 0800 LY2MW 1 nil
 0800 0852 EA7GTF 26 27 9 30 2 c *5
 0900 0930 TK5JJ 27 2 5 1 nc *6
 1000 1041 YO5KAI 27 27 4 9 1 c
 2200 2300 SM7THS nil *1
 1998-07-08
 0200 0320 LY2WR 26 26 2 11 1 nc
 0300 0400 LY2BIL nc no time, tailend LY2MW no time
 0400 0415 G4ZHI 27 26 4 16 2 c
 0500 0540 G0FIG 26 26 5 17 1 c *5
 0600 0700 SM5TSP nil *1
 0700 0800 DJ3LE nil *1
 0800 0910 OE6IWW 28 38 3 8 5 c
 1000 1040 YU7KB 26 26 2 19 2 c
 1045 1112 YU7MS 26 27 3 5 2 c
 1200 1220 IC8FAX 27 27 6 21 2 c
 1998-07-09
 0400 0500 YZ7MON nil
 0500 0600 9A4FW nil
 0600 0700 9A4EW nil
 0700 0755 G3KQWY 27 27 6 17 3 c
 0800 0900 G3NAQ nil
 1998-07-10
 0700 0745 LY2MW nc sc
 0745 0812 LY2WR c sc
 0900 LY2BIL nc
 1998-07-11
 0300 0400 Z32UC nil
 0400 0500 IK0BZY static noise S9+++ (rain/snow) nil
 0500 0600 IZ8AZB static noise S9+++ (rain/snow) nil
 0600 0632 EA2AGZ 26 26 9 18 2 c
 0700 0800 SM7TUG nil *1
 0800 0840 9A4NF 27 28 3 7 1 c
 0900 1000 EAG4XEN nil
 1998-07-12
 0500 0550 YU1EXY 27 26 7 26 16 c S9*7
 2100 2145 SP2OFW 37 27 7 27 9 c
 1998-07-13
 0500 0602 I8MP0 26 26 7 20 2 c s!
 0602 0620 G0KAS 27 27 2 16 2 c
 Remarks: *1 we had a mountain 600m away from our QTH
 about 400m higher covering 340-60 deg in all our skeds into

this direction I tried various directions for getting signals during receive periods. Also tried back scatter; *2 Graham had good reflections of you little weak but readable than from 0425 nothing anymore...did you stop? *3 We both think this is a FIRST HB0-LY QSO on 144MHz any other claims; *4 I was wondering if you had a copy on me or not...I had FB reflections from you but it took a long time before I got a report; *5 I was wondering (perhaps just like you...) why I did not copy a single ping in the first 4 periods...than I found out you were in the wrong period so I changed periods so we could complete the QSO. Had FB reflections from you; *6 No reflections anymore after 2 periods...did you stop? *7 SRI I mixed up the callsigns first periods I was TX-ing YU7 instead of YU1 than I got the 16" S9+ burst and copied your callsign a few times... after I recovered from my ear damage...hihihi WOW this was really loud just like Perseids bursts.
 QTH JN47TC 2010m asl, antenna 2020m asl. Equipment: TS-850 + LT2S-MK-II, MGF1302 (0.4dB NF), PA GS35B (1.2kW), I7ele F9FT, DTR and OH5IY MS-soft 4.3/5.0 with audio keying. 73, John - pe1ogf @ iaehv.nl - homepage: <http://www.IAEhv.nl/users/pe1ogf/>
 HB0-Expedition: <http://www.IAEhv.nl/users/pe1ogf/expedition.htm>
 listkeeper of meteor-scatter@qth.net. Thanks for report, John.

I4XCC Perseids 98 results

Signals from middle distances were really strong from EW6AL and DA0ND. Like usual from vy short QRB the reflections from I/DLSMAE were vy short. After 4-5 previous skeds I finally completed with OH6KSR, receiving from him a 20 sec burst (S7) with final roger. Till now I've only 4 QSOs over 2200km in MS. Like past years I noted that the rise time of Perseids is shorter than the fall time (i.e. up to 12. Aug around 10-11 UTC reflections were not so long and strong, but on 13 and 14 Aug condx falls slowly). About "poststamps collection" (squares!) I got 5 new squares (KO32, JM87, JP51, JP62, KP22), so #473.

I4XCC (JN63GV) wkcd on 144 MHz (complete only):

1998-08-09
 0420 0500 EW5M KO32DX 27 26
 1998-08-10
 0315 0340 I/DLSMAE JM87AX 26 26
 0800 0830 DG5OAF JO51EP 27 27 ssb
 1125 1140 DA0ND JO34XE 27 48
 1998-08-11
 1000 1035 SM7TUG JO76NJ 27 37
 1720 1735 EW6AL KO46KB 27 28
 1998-08-12
 0400 0500 SM3UZS JP92FW 27 37 2152km
 0600 0630 LA0BY/P JP51NA 27 27
 0830 0850 DL1SUZ JO53UN 27 38
 1100 1150 SM/DL1UW JP62GM 27 26 2072km
 1300 1345 OH6KSR KP22VG 26 27 2218km!
 1500 1540 RZ1AWR KO59DX 27 27 2151km
 1998-08-13
 0900 0915 LZ1KJ KN31CS 27 27
 73, Claudio. Thanks for report, Claudio.

I8TWK (JN70GR) wkcd on 144 MHz:

1998-03-15
 1115 1145 PA2DWH JO22GD 27 27 10 6 c
 1998-04-04
 0530 0550 DL1EJA JO31OV 27 27 6 1.5 c
 1998-04-27
 2100 2110 DK0OG JN68GI 26 26 7 1.5 c

1998-04-28
21002155 DD9SQ JN59BH 27 27 6 2 c
1998-05-02
0635 0700 DL9AN JO62SN 27 27 15 3 1 cr
1998-05-05
0800 0820 G4ZHI IO91KN 27 26 5 1 c
1998-05-06
0600 0615 DF8LC JO53GX 27 27 15 1.5 c s9
1998-05-09
0500 0530 DH0LS JO61II 27 38 19 1 c
1998-05-25
0650 0730 SV9/DF7KF KM35cf 27 27 11 8 6 cr s9*1
1998-05-27
0400 0430 DL4MEA JN58JD 26 26 12 m 8 c
1998-05-30
0500 0525 DK5KK JO63EX 27 26 13 3 3 c
0600 0625 DL6ZBN JO40FE 26 27 4 6 1.5 c
0800 0900 EA6VQ JM19MP 26 27 21 7 1 c
1998-06-01
0440 0450 SV9/DK5YA KM35cf 27 37 15 1 cr
0500 0555 OK1FID JO80CH 27 26 20 14 1.5 c
0600 0630 DH0GHU JN38VF 27 27 8 3 40 c
1998-06-05
0550 0610 EA2LU IN92ET 26 37 9 3 1 c
1998-06-06
0425 0445 PE1OGF JO21QJ 27 27 m m cr
0500 0545 SV1WE KM18VA 26 26 8 5 6 c*2
0730 0740 DJ9YE JO43HV 27 27 7 5 2 cr
1200 1220 DH8BQA JO73CF 37 26 10 5 7 c
1998-06-08
0525 0540 DL1KDA JO30FQ 36 38 10 7 cr
1035 1100 DD0VF JO61VA 26 27 7 4 cr
1135 1155 DJ2QV JO41EV 37 27 10 6 15 cr
1998-06-09
0450 0500 PE1OGF JO21QJ 27 27 7 3 cr
0510 0525 DL1IDUR JO70KV 27 27 14 1 cr
0545 0610 OE6IWG JN77PK 26 27 12 1 cr
0700 0715 DJ9YE JO43HV 27 27 8 2 cr
0725 0740 LY2WR KO24PQ 27 27 12 3 cr
1998-06-10
0335 0345 PA2TAB JO32GF 27 38 7 2 cr
0355 0410 G0FIG IO90VV 27 26 6 1.5 cr
0410 0440 DL8EBW JO31NF 27 27 14 6 2 cr
0625 0635 DL1EJA JO31DS 27 27 11 6 cr
1998-06-12
0540 0605 DF0WD JO42DF 27 27 20 10 5 cr
1998-06-13
0700 0725 DL5MAE JN58VF 28 28 18 2 cr s9
1998-07-03
0700 0720 HB0/PI4TUE JN47tb 26 27 6 5 1 c*3
1300 1335 SP9PZU/8 KN19EU 26 26 10 2 1.5 c
1998-07-14
1500 1535 EA6/PA2CHR JM29 26 26 7 1 2 c
1998-07-17
1315 1329 DL9MS JO54WC 26 26 5 1 2 c*5
2000 2023 DF7KF JO30VB 26 26 5 1 0.5 c
1998-07-22
1300 1355 TA1ZK/0 KM39AT 37 37 3 1 8 c*4
1998-07-23
2300 2315 DL9USA JO71EN 27 26 15 10 c
1998-07-24
0030 0045 SV3/OE6IWG KM07vg 27 27 6 2 4 c s9
0100 0120 EA1ABZ IN71QO 26 26 7 1 0.5 c
1998-07-28
2000 2030 OZ1DSK JO44WX 27 26 15 2 2 c
1998-07-31

0400 0420 OZ/DL5ME JO75IG 27 27 6 4 c
0500 0525 SP6GZZ JO81HI 38 27 23 m 7 c
0650 0725 HA8CE KN06EN 27 27 4 5 0.5 c
Remarks: *1 DXCC #36; *2 DXCC #37; *3 DXCC #38; *4 DXCC #39; *5 2500lp/1 min. periods. Hrd: PA6BN, G3WDG. Equipment: IC271 + Frontend MuTek + 4CX250R (400W) + 4218CC + DTR DF7KF + OH5IY rev/4/3 + PC.

I8TWK/p (JN60XX) worked in Arietids contest:

1998-06-11
0955 1040 G4BRK 26 26
1050 1100 DL1EAP 37 26
1110 1135 DL8EBW 27 27
1200 1220 ON7UC 27 26
1225 1245 DJ2QV 27 28
1250 1300 PA2TAB 27 27
1315 1330 DJ5BV 27 26
1335 1345 PA2DWH 27 27
1345 1355 DL1EJA 27 27
1355 1405 DJ9YE 27 26
1405 1415 PE1OGF 27 27
1420 1430 DH0GHU 27 27
1500 1515 DJ7OF 27 26
1520 1535 DH3YAK 27 27
1540 1550 PA3EFC 27 27

Totally 15 QSO in 6 hours of operations...

We think could be more if some stations calling us should have sent their reports together the calls, we gave precedence to that we had entirely calls AND reports (yes, PA2DWH, DJ7OF, PA3EFC...). They called us for a lot of time sending ONLY their calls, no our calls and report! This works correctly fine for a sked, when you have not copied the other partner, (I think that they were calling us because they HAD our call fine! So, when working in random some expedition, SEND ALSO REPORTS AND SAVE TIME, don't you think so?

Notes:

Scheduled program was to start at 0730. We was in late for more car traffic in intering at Naples as we expected, and to take Jacob, IC8FAX, at the sea boat station coming from Capri island. We reached finally JN60xx at 0740Z. Here were waiting us IK8ZZW and IW8CBN that gently helped us to set the equipments and antenna. Murphy gave his (we expected!) nice tribute giving us a slight trouble on setting up the antenna (high SWR) and we need to test again all cable and connection before finding that RF feedback comes from a slightly dirty pin of a connector and blocked the TRX VFO! All was the OK to start at 0840, with some little late... Surprisingly, no takers from our calls in about 70 minutes. We was thinking to remove all our equipments and came back home... No one station on SSB to test the signal strenght.... finally we found IZ8AZB, and he gave us vy good reports; so equipment is OK. Finally at 0955 we listened G4BRK calling us in weak burst, no DL, the OM Battle with pile-up! Shower was going down in efficiency toward DL but, in subsequent going up the DL signals was as strong to cover most of DX calling from G. We apologize for some stations could not work us, as many calls come together!

We remind, with vy good burst during different QSO: G4AEP (R26/27, but no RRRR owing QRM), DD0VF (R27/27 no fln. RRRR - Sri, Steffen, we called you for 5 periods!), DL2FDC (many vy strong reflection with 26 rept for us), DL9YEE (-/26), DF8IK (R27/27 nc - we sent report for 4 periods and copied mini burst ever 27), G0FIG (-/27), DL5MCG (-/27), PA3FJY (-/27).

For these and other that may want JN60, we will came back there again in next future, if will be expressly required from

Meteor Scatter

a good number of operators. Best 73 and tnx for all enjoyment. 18TWK/P: 18TWK Carlo, IC8FAX Jacob and 18YGZ (an "old style VHF contester...") Pino. Thank you for report.

LA0BY (JO59FW) wkd on 144 MHz:

1998-04-25									
0500 0525 G4ZHI	IO90	27	26	6	2	3	c		
1998-06-05									
0830 0915 G3KWY	IO92IS	26	26	6	3	1	c		
1998-06-06									
0400 0430 OE3MWS	JN88DC	27	26	6	11	1	c		
0500 0530 SP8RHP	KO10EF						nil		
1998-06-09									
0720 0810 RU1A	KO48	27	26	m	m	5	cr		
1998-06-13									
0615 0630 DL5MAE	JN58	27	28	m	m	3	cr		
1300 1342 EW6AZ	KO44EW	27		8	5	1	nc		
1998-06-14									
0540 0615 S53VV	JN65	26	27	14	8	4	cr		
1998-07-04									
0400 0450 T77WI	JN63FW	27	26	5	7	3	c		
1998-07-06									
0400 0430 HB0/PI4TUE	JN47						nil		
1998-07-11									
0700 0730 PA6BN	JO13OF	26	26	7	13	1	c		
1998-08-09									
2100 2130 F5JNX	JO37QT	26		1	1		nc s		
2200 2235 HA8CE	KN06EN	26	26	3	5	3	c		
1998-08-10									
2000 2020 EW5M	KO32	27	26	3	5	3	c		
2100 2120 YU7KB	JN94XX	26	27	2	1	3	c		
2200 2230 YZ7MON	JN93RV						nil s		
1998-08-11									
0700 0745 IZ1BPN	JN35	27		2	2	3	nc		

Equipment: 1 kW and 9-ele yagi.

DXpedition report from LA0BY/p in JP51NA

My second "full size" Perseids DXpedition in Southern Norway brought us to Brumundkampen, about 2 hours drive North from Oslo. The location was almost on top of a hill sloping gently from E to SW.

We were truly out in the field this time, without any mains power. So we run just 180 W output power into a 2 x 9-ele vertically stacked system. The old FT225RD still did a good job. The CW keying speed was only 1000 lpm, but we use DTR on receive. The equipment was powered from a small generator, type Honda EX500 (which worked very reliably, fuel consumption 5 liters/day), and backed up by battery.

Here is what LA0BY/p worked on 144 MHz MS:

1998-08-11									
1630 1652 DJ7OF	JO51HQ	27	26	7	6	1	cr		
1652 1705 DL5DTA	JO61SD	26	27	2	2		nc r		
2000 2102 OH8UV	KP34VJ	26	27	7	5	2	c		
2102 2122 RX1AS	KO59FX	27	28	9	6	5	c		
2122 2147 RW1AW	KP50EB	27	48	11	8	2	c		
2147 2202 RU1AA	KP40XD	28	38	11	2	3	cr		
2202 2225 YU7MS	KN05FJ	27	27	6	4	3	c		
2225 2245 YU7KB	JN94XX	27	26	3	-	2	c		
2245 2303 DL5DTA	JO61SD	27	26	6	5	7	cr		
2303 2323 YU7EW	KN05HP	27	27	2	2	3	c		
2323 2358 S57TW	JN75EX	27	28	3	2	3	c		
2358 0012 DK0OG	JN68GI	37	27	4	3	8	cr		
1998-08-12									
0007 HA5CW	JN96JO	599	599	1			cr *1		
0023 0055 9A1CCY	JN85OO	27	27	13	16	2	cr		
0500 0552 DL5ME	JO52SD	46	26	m	m	30	c		

0600 0625 I4XCC	JN63GV	27	27	12	7	20	c		
0625 0648 IV3HW	JN65ST	38	27	10	6	16	c		
0648 0658 DK8EL	JO31PK	27	27	5	3	4	cr		
0700 0712 F6BSJ	JN26HP	37	27	10		10	c		
0712 0728 F8OP	JN26MM	37	27	12	4	8	c		
0728 0735 PA3FBN	JO33	47	48	1			nc r		
0742 0801 DL1EJA	JO31DS	37	27	7			cr s		
0753 PA3FBN	JO33	48	48	1			cr s		
0825 F1SAH	IN88LS	28	38	1			cr s		
0827 0855 DJ3MY	JN58QD	37	38	5			cr s		
0855 0903 F8CS	JN27UR	37	27	4		6	cr		
0915 0930 DL2FDX	JO40LG	27	37	7		20	cr		
0930 0948 DF8IK	JO30IT	27	27	10		20	cr		
0948 1005 DL3YEL	JO41EV	36	37	4		25	nc r		
1005 1015 EA6VQ	JM19MP						nil 2442 km		
1020 1030 ON4KHG	JO10WK	38	38	1		10	nc r		
1033 1047 DL3YEL	JO41EV	36	37	5		10	cr		
1053 1105 G4YTL	IO92MB	37	27	3	3	5	cr		
1105 1123 DL3IAE	JN49DE	27	28	3	2	3	cr		
1123 1138 DL2IAN	JN49BE	27	26	4		10	cr		
1140 1206 DJ2QV	JO31OM	36	26	5	6	12	cr		
1206 1218 ON4KHG	JO10WK	38	27	5		30	cr		
1225 1227 F5JNX	JN37QT	27	26	3			cr s		
1228 DH0GHU	JN38VN	27	26	1			cr s		
1229 1244 ON7UC		28	28	3			cr s		
1232 DH3YAK	JO31RS	37	27	1			cr s		
1232 DJ3MY	JN58QD	38	38	1			nc r s		
1246 1249 G7RAU	IO90UU	39	39	2			cr s		
1300 1308 G0FIG	IO90UU	37	37	5		10	cr s		
1309 G4LOH	IO94QA	37	37	1			cr s		
1309 DL9AN	JO62SN	37	37	1			cr s		
1313 DJ3MY	JN58QD	39	38	1			cr s		
1313 1323 DD0VF	JO61VB	37	27	3			cr s		
1325 1335 DJ3HW	JO42LH	37	37	3			nc r s		
1345 1355 DF1IAZ	JN49LD	27	27	2			cr s		
1355 DK5YA	JN49NX	39	39	1			cr s		
1356 1400 SP4MPB	KO03GS	38	27	2			cr s		
1400 1404 DG1VL	JO61VB	37	27	3			cr s		
1414 DJ3HW	JO42LH	39	27	1			cr s		
1414 1416 HB9BQU	JO37VD	38	39	2			cr s		
1426 1437 DL5YET	JO41EV	38	27	6			cr s		
1428 S54AA	JN76EG	37	26	1			nc r s		
1438 1439 ON1AEN		38	39	3			cr s		
1441 ON1ALJ	JO10VV	37	39	2			cr s		
1442 HB9FAP	JN46EW	39	27	3			cr s		
1447 DL4MEA	JN58JD	37	27	1			cr s *2		
1447 HB9DFG	JN37	38	37	1			cr s *2		
1447 DL5MCG	JN58KH	38	27	1			cr s *2		
1447 DL2ARD	JO60AR	39	27	1			cr s *2		
1447 DL3HRT		37	38	1			cr s *2		
1451 PA3BZL	JO22SB	39	37	1			cr s		
1451 G0KAS	IO91UI	39	37	1			cr s		
1456 DF9PX	JN49HU	37	27	2			cr s		
1458 1508 PA3BGM		37	37	2			cr s		
1500 EL4DQ	IO51WU	37	27	1			cr s		
1510 1520 G1WPF	IO91RP	38	38	4			cr s		
1530 DL5DTA	JO61SD	39	39	1			nc r s		
1535 DG3NDN		27	27	1			nc r s		
1547 1555 S54AA	JN76EG	27	27	2			cr s		
1555 DL5DTA	JO61SD	39	39	1			cr s		
1555 S50C	JN76JG	37	37	2			cr s		
1606 DL5GAC	JN47SS	39	27	2			cr s		
1610 G3YVR		37	26	1			nc r s		
1815 S51AT	JN75GA	37	27	1			cr s		
1856 9A2AE	JN86	39	37	1			cr s		
1856 S55AW	JN75DS	27	37	1			cr s		

1856 1901 DB5KN	JO31NA	38	27	2		crs
1904 LY2MW	KO24PQ	39	27	1		crs
2035 2052 SP9EWU	JO90	37	27	7	4	30 cr
2117 2130 RW3PF	KO93CD	38	27	7	4	20 cr
2227 HA1DLZ		38	27	1		ncrs
2246 SP6GZ	JO81	38	38	1		crs
2249 HA8CE	KN06EN	49	37	1		crs
2253 2332 IZFAK	JN45OB	37	27	m	m	crs
2256 DL9USA	JN71EN	39	37	1		crs
2256 DH8BQA	JO73CF	37	37	1		crs
2339 2242 F/G8MBI	JN04FT	27	27	3		crs *3

1998-08-13

0000 0030 IK0BZY	JN61GW					nil 2123 km
0037 0057 LY2WR	KO24OQ	27	39	18	8	10 cr
0100 0200 IZ5EME	JN52NS	27	26	9	3	8 c 2028km
0200 0208 SP2OFW	JO93AC	27	37	5	3	4 cr
0600 0635 IW2BNA	JN45ON	37	26	34		20 c
0645 IW2BNA	JN45ON	39	39	1		crs
0648 0700 IZ1BPN	JN35	26		2		nc
0700 0733 IW1AZJ	JN35UB	27	27	8	10	3 c
0800 0825 F6DRO	KN03SM	26	26	6	2	3 c 2046km
0825 0837 F5HRY	JN18EQ	38	37	13		10 c
0838 0850 S54AA	JN76EG	27	37	m	m	15 cr
0850 0905 DH2OAA	JO42TU	38	37			ncr
0905 0922 F6HVK	JN27LH	38	27	10		12 c
0922 0933 ON4AVJ						nil *4
0933 0948 DL8EBW	JO31NF	37	27	6	2	6 cr *4
0955 1018 DJ1OJ	JN58	27	38	6	2	8 cr
1018 1045 ON4AVJ		37	38	5	3	7 ncr
1700 1745 ES2RJ/8	KO28	27	28	8	8	6 c
1805 1900 RZ1AWR	KO59DX	36	27	8	4	30 nc
1900 1940 UA1OLJ	LP03DC	26	26	11		40 c
2000 2038 UT5ER	KN78ER	49	27	9	5	25 c 2003km
2038 2105 UR5LX	KO70WK	27	28	2	1	2 nc
2105 2115 HA7UL	JN97KK					nil
2115 2140 PA2TAB	JO32GF					nil
2145 2158 LY2BIL	KO24OQ	38	37	8	4	10 cr
2200 2222 9A4FW	JN95JG	27	28	6	2	4 c
2222 2300 9A4EW	JN95JG	26	28	2	11	10 c
2300 2320 9A1EZA	JN86HG	28	27	9	7	5 c

1998-08-14

0000 0030 YU1EXY	KN04FT	36	27	12	10	15 c
0030 0102 DJ5RE	JN59WK	38	39	8	6	8 cr
0102 0125 F6CRP	IN96KE	27	27	12	7	5 c
0130 0152 PE1OGF	JO21QJ	38	27	m	m	6 cr
0500 0527 DJ4UF	JO30	26	36	m	3	c *5
0600 0618 HA1BC	JN87PU	48	27	7	11	40 c
0627 0657 DL1ELY	JO31	39	38	9		10 c
0700 0750 DK9TU	JN48MF	27	26	4	4	3 c
0805 0845 DK5MV	JN58	27	38	7	6	10 cr *6
0900 0915 UA1ZCG	KP59JK	37	27	m	m	10 c
1000 1020 ON6NL	JO21UE	27	27	11	12	1 c
1026 DK3BU	JO33NO	529	539	2		cr *7
1026 DL1DUR	JO70WK	529	559	1		c *7
1040 1112 G0CUZ	IO82WM	37	37	5	12	6 cr

Remarks: *1 HA5CW made me jump in my seat when he suddenly called me in slow speed CW with a booming signal. Eventually he got tired of calling me in MS procedure (he called me earlier for a long time). *2 New personal high score: 5 complete QSO in one burst!!! (I may have mixed up some reports, because I could not take notes as fast as I made QSO). *3 I was beaming due South when Graham called me. I was so tired that I began making mistakes with the procedure, but the reflection was long enough to correct them. *4 After hearing nothing from tailender ON4AVJ for 3 periods I accepted the call of DL8EBW, assuming that ON4AVJ was not

on frequency. *5 By mistake Eckart transmitted the first 4 periods into a vertical - I heard him anyway, hi! *6 DK5MV was very persistent and had called me on several days, without me being in a position to reply. I am glad we finally made it. *7 When I replied on DK3BU's call in slow speed CW, suddenly DL1DUR answered as well, and even passed his locator. Whereas I believe the QSO with DL1DUR was on MS I wonder if DK3BU was on Tropo? *8 For that hour I had scheduled a sked with YU7AU but with reverted period (me transmitting second period). There were so many stations on frequency that I felt I shouldn't change periods and confuse them. I hoped that Ljube would notice - obviously he didn't. I apologize for not keeping the sked. I will never again arrange skeds in opposite period.

I was accompanied by Rune, LC1PAT, and (partly) Ivar, LC3SAT, who were concentrating on 50 MHz. We had not much wind but at times heavy rain on August 12 and 13. Everything worked fine but we had a hard time fighting cattle that came nibbling on our cables. First came the sheep, then came the cows, and finally the horses - good grief what a zoo!

Being the only 144 MHz operator it was as tough as always to stay awake so many hours, but very rewarding though. Reflections were good almost round the clock. The maximum occurred almost as predicted by OH5IY's MS-Soft 5.0, around 1430 UTC on August 12.

This year I spent quite some time calling CQ to Eastern Europe. The response was not really overwhelming but at least we worked a few more stations from the East than in 1997. Perhaps people did not know of our expedition, despite announcements in DUBUS and on the Internet? I feel it is always difficult to spread information to Eastern Europe - any good suggestions? I am prepared to do it better next year.

Giving skeds on beforehand only to very distant stations, and to stations outside our normal beam heading, worked out well. It resulted in more contacts above 1500 km than last year, despite the much lower ERP. I hope this practice did not annoy the many DL, G, PA and ON stations who asked for skeds. Most of them I worked on random. I believe it is important for the overall activity to give also HAM's from less densely populated areas a chance to work a rare square.

A little comparison to our last year's DXpedition to JP41UA, a location in the same area and with equally good take-off:

Year	1997	1998
Locator	JP41UA	JP51NA
RF power	1 kW	180 W
Antenna	17-ele	2 x 9-ele (stacked vertically)
ERP	20 kW	4 kW
Operating hours	69	45
QSO total	130	113
QSO CW	40/25	33/29
QSO SSB	4/61	0/51
QSO 1000 km	3/10	3/4
QSO 1000-1500 km	19/72	9/55
QSO 1500-1800 km	14/7	11/17
QSO 1800-2000 km	2/2	8/3
QSO 2000 km	1/0	3/0

The number of QSOs listed is for sked/random operation.

The comparison shows: (a) RF power is not the most important factor for success; (b) vertically stacked antennas with large azimuth beam width give more DX than a single narrow beam; (c) a good Tropo take-off is good also for MS.

Our results confirm that one should always go for the QTH with the best possible take-off and not for the comfortable

cottage with the mains socket round the corner, even if this leads to lower RF power.

So it was nice having again operated in a good Perseid shower. We look forward to activate another rare square in Southern Norway next year. A good location has already been identified in JP31 - no promise but intention, hi.

73 from Stefan - eMail: la0by@qsl.net - homepage http://www.qsl.net/la0by/index.html. Thanks for your report, Stefan.

LA5TFA (JP99LQ) wkd on 144 MHz:

1998-08-09 SM5DIC JO89JT complete; 1998-08-08 DL1SUN JO53PN and DC7UT JO42GB, both nil; 1998-08-07 SM7TUG JO76NJ complete; 1998-06-28 DL1UU JO62SP complete; 1998-06-19 EU6MS KO45IN complete; 1998-06-18 LY3MW KO24QP complete; 1998-06-07 DH3YAK JO31RS complete; 1998-06-04 DH8BQA JO73BF complete; 1998-06-03 DL4MEA JN58JD and LY2WR KO24OQ, both complete.

Thanks for report, but give us next time more informations.

OE6IWG (JN77PK) wkd on 144 MHz:

1998-01-03
1600 1640 ON1ALJ JO10VV 27 27 4 2 5 c s
2300 2400 ES2RJ KO29JM 27 nc
1998-01-10
2100 2200 OH3AWW KP21QF 26 nc *1
1998-01-18
0600 0640 OH3AWW KP21QF 26 nc *1
1998-05-26
0400 0500 SV9/DF7KF KM35cf 26 nc
1998-06-02
0300 0400 I/DK5DQ JN43BV 26 nc *2
1998-06-06
0500 0540 DH0GHU JN38VN 26 36 6 m 4 c
1998-06-09
0538 0616 I8TWK JN70GR 27 26 27 m 5 c r
1998-06-11
2100 2200 SO3FSA JO84IA 26 26 4 8 1 nc *3
1998-06-13
0400 0500 Z3ZUC KN11CR 26 nc
1200 1300 EW6AB KO44EW 27 nc
1998-06-14
0410 0500 9A4NF JN73VS 26 26 3 5 1 nc *3
1998-06-20
2300 2400 I1JTQ/p JN34WR 26 nc
1998-06-21
2200 2300 I1JTQ/p JN34WR 26 nc
1998-06-23
0400 0430 ON7UC JO11ND 26 27 19 m 2 c
1998-06-28
0700 0755 9A4NF JN73VS 27 26 8 m 3 c
1998-06-30
0400 0500 OH1XT KP01UK 26 27 13 m 1 nc *3
1998-07-05
0700 0800 I1JTQ/P JN34OS 26 27 9 m 1 c
1998-07-08
0800 0900 HB0/PI4TUE JN47tc 38 28 4 5 8 c dxcc 50
1998-08-06
2100 2200 RV3ZV KO80CL 26 nc
1998-08-07
2200 2220 TK5JJ JN41JW 27 27 7 3 1 c
2300 2325 PE1OGF JO21QJ 27 26 13 3 2 c
1998-08-08
0000 0050 SM7TUG JO76NJ 27 26 13 10 3 c
0935 1000 CQ1MS IM59NM 26 nc
2000 2050 DH6JL JO31MI nc

1998-08-09
1100 1130 EA3BB JN02IB 36 26 12 m 8 c
1815 1915 DA0ND JO34XE 26 nc
1998-08-10
0515 0530 DA0ND JO34XE 27 26 4 10 1 c t *4
0600 0625 EW5M KO32DX 27 26 13 11 1.5 c
2300 0000 I/DL5MAE JN87AX 27 nc *5
1998-08-11
0800 0900 OZ/DF2ZC JO75KF 26 26 11 8 0.3 c
1700 1800 UT5ER KN78ER 27 nc
2200 2300 Z3ZUC KN11CR 26 nc *6
1998-08-12
0022 0030 EW6AL KO46KB 27 27 6 m 2 c
0500 0530 ON4KHG JO10WK 36 26 9 m 6 c
0800 0900 RV3ZR KO80CL 26 nc
1100 1125 ES2RJ/8 KO28KL 26 28 8 3 8 c
1521 SP2IQW JO94GM 37 37 1 8 c s r
2200 2245 LASKO JO59FH 27 26 14 6 25 c
2300 2400 OH6KSR KP22VG 26 nc
1998-08-13
0200 0240 LZ1KJ KN11CS 26 27 11 6 1 c
0300 0335 LZ1KG KN11CS 26 26 5 3 18 c
0339 0349 GOKPW JO02OD 37 37 8 m 7 c s
0900 1025 OH1XT KP01UK 26 37 13 4 1 nc *3
1998-08-14
0400 0445 OH1XT KP01UK 26 26 9 3 1 c
1998-08-15
0700 0800 OH3AWW KP21QF 26 nc

Remarks: *1 Matti had problems with ice on the antennas; *2 Power from Nico was 25W; *3 No rrrr; *4 I was tailender after HG7PL; *5 I was tailender after LZ1KWT; *6 I was tailender after I8TWK. Equipment: 400W and 16el F9FT, after 30.5. with 180W and 4*10/9BV. Many thanks to ON6NL, DL1KDA, DL8EBW, S57TW and S53VV, they arranged a lot of skeds for me! Thanks to all!

OE6IWG on holiday in Greece (SV3)

KM16DV abt 600-700m asl

QTH was a few kilometers over the little town exohori, on a new good road up to (I think) 2200m asl. I was too lazy to drive 90min with the car, so I stopped on 600-700m asl, there was a good takeoff between 170 to 345, with a nice look down to Kardamilli! 9el antenna up (16el was not good to handle with my arm-rotary), start from the generator, and then take place in the car. Outside was it too dark for me (no good feeling), I hrd only the generator and the bursts, hi. After the first day, antenna and mast down, give it behind the tree's, and I hoped, that nobody find my antenne plus mast :-)). 2.nd day: uff, antenna and mast on the correct place, ok let's go to the ms-work...

After that two days I visited the little taverne over Exohori, good greek coffe... Thanks to Udo, DK5YA, this was his tip to go to this qth.

1998-07-16
0000 0030 DK3WG JO72 27 27 7 m 2 c
0030 0055 S53VV JN65 27 27 7 m 1.5 c t
0100 0115 DL5MAE JN58 27 27 9 m 6 c
0120 0140 S57TW JN75 27 27 12 m 3 c t
0300 0340 DH3YAK JN31 26 1 3 nc
0340 0405 S54AA JN76 27 27 11 8 4 c t
1998-07-17
2300 2342 IW2BNA JN45 26 26 9 7 0.5 c
0000 0045 DL5ME JO52 26 26 10 7 3 c
0100 0130 DL4MEA JN58 27 26 24 m 2 c
0200 0240 DD0VF JO61 26 26 3 3 0.5 nc
0240 0305 DL5SDTA JO61 26 26 6 5 2 c t

03050335 HA5CRX JN97 26 26 4 6 0.5 c
04000425 IK1PAG JN35 27 27 8 m 2 c
04250435 IW1AZJ JN35 27 37 6 m 3 c t

KM06VU abt 300m asl

QTH was NW from Evangelismos on a good place with no QRM, QRN between two houses, but they were NOT ready to living in, so NO TVI/BCI possible hi. 220V line was abt 100m to a another house, it takes dm 2.- for the electric and a really good chat (near 4 hours) with wine and beef, wine and... aehmm...

That QTH was not as good as KM16, but I had not so much time left to find a better location. TNX to Silvio, IW1AZJ to give me the info for this qth.

1998-07-18

23002335 DH3YAK JO31 26 1 0.5 nc
23350002 IW1AZJ JN35 27 27 4 7 2 c t
00020022 DL5GAC JN47 27 26 5 3 3 c
01200200 I4XCC JN63 27 27 20 m 3 c t
02300305 I8TWK JN70 27 26 5 9 0.5 c t
03050330 DF8LC JO53 26 - 2 0.5 nc
03300400 IK1PAG JN35 27 27 16 m 2 c t

1998-07-19

23250005 S51MQ JN75 26 26 5 1 c t
00450100 S57TW JN75 27 26 7 5 1 c r
01200200 9A4NF JN73 26 26 8 4 0.5 c t
02000215 DK0OG JN68 27 26 9 m 2 c
02150305 DD0VF JO61 36 27 2 18 c t
03050400 DL1EJA JO31 26 26 5 6 3 c *1
04050415 DL9AN JO62 27 27 5 m 2 c

1998-07-20

00000040 I1JTQ JN35 27 26 10 14 0.5 c
01000135 DL1EAP JO31 26 1 0.5 nc
02000230 LY2SA KO14 26 1 1 0.3 nc
03000320 LY2MW KO24 26 1 0.3 nc
03400400 DL5DTA JO61 27 27 11 6 1 c r
04000442 IV3HWT JN65 27 26 26 m 2 c

1998-07-21

00000045 DF5BN JN49 26 26 14 m 1 c
01000200 DK5SK JO63 27 26 3 5 2 c
02250255 PE1OGF JO21 27 3 0.3 nc
03000310 I5WBE JN53 27 26 8 m 1 c
03300355 S53VV JN65 27 27 8 m 1.5 c r
04000420 IK1LGV JN44 27 37 9 m 8 c
04250445 IW1CHX JN35 27 27 12 16 2 c t
04450502 S51AT JN75 27 27 4 3 1 c r

1998-7-23

03000325 F6DRO JN03 27 27 15 m 2 c
04200500 DL8EBW JO31 27 3 0.3 nc

KM07UG abt 15m asl

This QTH was on the Campingplace in Kyparissia. 220V AC, good takeoff, 20m from the beach, all ok there, so no more words, hi.

1998-07-24

00150030 DL4MEA JN58 27 27 11 m 3 c
00300045 I8TWK JN70 27 27 4 6 0.5 c t
01400155 S57TW JN75 27 27 5 9 2 c r
02000235 DL1DUR JO70 26 26 16 21 18 c
02350307 S53VV JN65 26 27 11 9 2 c t
03070345 HA5CRX JN97 27 26 4 3 1 c
03450405 IK3VZO JN55 26 27 4 6 5 c t
04050435 I1ANP JN44 27 27 14 m 1 c
04350500 DL5MCG JN58 27 27 9 12 1 c t

22002225 EA6VQ JM19 27 26 11 m 3 c
23002330 DL5SDTA JO61 26 27 7 13 2 c
1998-07-25

00000030 IN3TWX JN56 27 27 19 m 1 c
01000125 DH0GHU JN38 26 37 7 4 2 c
01250200 DJ70F JO51 27 26 8 6 1 c t
03000330 DL8EBW JO31 27 5 0.3 nc

1998-07-26

23200002 YU7EW KN05 26 27 6 4 0.5 c
02000230 DD0VF JO61 27 39 15 16 4 c
02300250 YU7KB JN94 26 26 2 3 1 c t
02570315 DL5MAE JN58 28 38 13 m 3 c
03150330 I5WBE JN53 38 37 16 m 2 c t
03350405 DL9AN JO62 28 27 4 3 c r
04050420 IZSEME JN52 28 26 13 m 2 c
19542030 DL2FDX JO40 27 26 12 6 1 c r
20352115 DK0OG JN68 28 26 23 m 2 c r
21262150 DL1MAJ JN58 27 27 11 14 4 c r

1998-07-29

00400100 DL9AN JO62 26 26 10 12 1 c r
02000305 DH3YAK JO31 27 26 11 8 4 c
03050335 LY2WR KO24 27 26 13 7 3 c
03350400 LY2SA KO14 26 1 0.3 nc

Sri to LY2MW and YZ7MON, after 0410ut I had NO 220vac on the place... :-)

1998-7-30

00000100 DL8EBW JO31 26 26 4 4 1 c
01000130 DK1KO JO53 26 26 6 2 1 c *2
01300205 DL1EAP JO31 26 26 8 m 3 c t *2
03250355 IC8FAX JN70 27 26 14 14 1 c t
03550432 IW1AZJ JN35 27 27 17 m 11 c
04320455 IK1PAG JN35 27 37 18 m 3 c t

Pfmm, ready..

Remarks: *1 ODX with 2056km; *2 bad QRM from other callsigns/qso!

You can see, there are really many complete tailenders (!) My equipment was always: 150-180W, 3SK97 preamp and a 9el F9FT. Sri, the 16el was too long for the different places :-)

2 qso 2000km	4 qso 1900km	7 qso 1800km
6 qso 1700km	5 qso 1600km	7 qso 1500km

Worked at all: 32 locators (39 loc incl. tropo), 12 DXCC, 67 QSOs, longest bursts from DD0VF and DL1DUR with 18 seconds, strongest was I4XCC with S9. So I think this score is not so bad for a single-op-work :-)

I called abt 9 hours cq on 144.093 from west to north, but not so much echo, most comes back from north-west. I called also often on tropo to north-west on 144.300 at 20UTC, but no chance to copy any I3 or I4 station... sri, boys. Tropo to I8, IT9 or 9H was really ufb with signals much over S9!

Tropo-QSOs from KM06UT (Methoni):

1998-07-19 SV8AQY (KM08), IT9IPQ/9 (JM78), IT9XDJ (JM77), IW9FOQ (JM76) and 9H5IO (JM75); 1998-07-20 SV1CDZ/8 (KM07), 9H1CD (JM75), IW9DCN (JM77), IT9SGN (JM76) and IK8MLW (JM89); 1998-07-21 9H1CD (JM75), hrd EA3ADW (JN11); 1998-07-23 9H1CD (JM75), test with EA3BAP nil...

Tropo-QSOs from KM07UG (Kyparissia):

1998-07-24 IW9QQQ, IT9IPQ/9 (JM78), test with I8MPO nil, IK8MLW (JM89), hrd SV8CS (KM07); 1998-07-26 9H5L (JM75), 9H1AV (JM75), 9H9MHR (JM75).

Thanks to Henry, 9H1CD, for his help to fix the big problems with my microphone and pa! Sri, no Tropo-QSOs with I8TWK, IC8FAX and I8MPO. Hrd on 1998-07-21 between 1920 and 1940 UTC EA3ADW (calling CQ FAI) with 53 via FAI, but no chance with my 180W. QTF was 300-330 degrees, so where was the scatterpoint? It was NOT Sporadic-E, that was a FAI-signal. I shot a lot of fotos, so it takes time to make it ready (scanning etc...), but fotos come in the next future on my homepage (<http://users.austro.net/steinwender-SV3-Expedition> http://users.austro.net/steinwender/sv3_98.htm).

QSLs direct or via bureau will be returned with a foto-qsl. Address: Walter Steinwender, H.v.Hofmannsthalweg 3, A-8605 Kapfenberg.

Sorry, that about 10 stations were not qrv during their skeds, the chance to work south SV comes not every year, hi...YES, this was again a VY nice expedition for me, so I look in a few weeks/months for the next, hi. All the best, see you again from another place, 73, Walter - OE6IWG. AX.25 / eMail: OE6IWG @ OE3XBS.AUT.EU / oeciwig@qsl.net. GSM: +43 676 540 11 35. Many thanks for your reports, Walter.

OH8E Expedition results

We just been in KP55AS and KP45NH (yeah, KP45NH, not KP45LM because we found better place from there) working MS (and also tropo+ES). What really happened, there is a little story of expedition. Friday, 5th June, we (OH5KJQ & OH5LZY) start driving to KP55 from KP41.

Saturday, 6th June, 0230 we was in KP55AS, after a few hour sleep 0500 we started to put the antennas. Mr Murphy was with us. Have you ever tried to check antennas with broken SWR meter? We have tried but we don't recommend that. So nearly half a day we was fixing antennas before quessing what was real problem... In the evening 2x19 in 2m was ok. Second tower with 2x36 to 0.7m and 4el 6m fall down during first try. One 0.7m antenna brokened. During the evening we made 7 tropoqso to OH. It was rainy day...

1998-06-07

0200 waked up and started aggregator
0315 0330 DJ9YE JO44HV 1677km
0413 0435 DL9AN JO62SN 1797km 13 bursts
0507 0532 DF8LC JO53MM 1721km many refl.
0533 0625 DL5ME JO52MM 1818km) nc
0633 0647 DJ7OF JO51HQ 1954km
0647 0700 DL9MS JO54MM 1625km
0713 0725 DK1KO JO53MM 1721km
0733 0750 LY2WR KO24OQ 1263km
1050 1147 CQ CQ...
0847 0930 DL5ME JO52SD 1838km 13b best S7
0930 1520 CQ CQ...
1523 1625 DL1EAP JO31MM 2050km nc
1628 1910 EME
1915 2135 CQ CQ...
2138 2200 LY2BIL KO24OQ 1263km
2213 2245 DL2ARD JO60AR 1965km
2303 2350 DL9USA nc
0000 We went sleeping.

When we didn't found correct locator, we used middlepart MM, so QRB is +/- some kilometers. If NC, we qsy back CQ after one hour trying. Total QSOs: 8xDL, 2xLY, 14xOH in Tropo mostly on 144.120 during MS. We also tried EME

during 1630 to 1830 but nothing, so we thought, that we are too small gun for that and forget whole EME... On 6m we made one ES qso with DL8PM JO30BU 2146km. That was one more than on 0.7m.

1998-06-08

0800 waked up and we take antennas off and qsyed to KP45NH. Then again setup and we started in MS. That was also rainy day...

2017 2040 DL9MS	JO54WC 1571km
2127 2225 DL9AN	JO62SN 1670km nc
2243 2311 DF8LC	JO53MM 1655km nc
2311 2340 DJ7OF	JO51HQ 1847km 7b, 9+20
1998-06-09	
0003 0030 DF8LC	JO53MM 1655km
0032 0055 DJ9YE	JO43MM 1724km 13b
0103 0130 DL9AN	JO62SN 1670km mni b, 9+20
0130 0342 CQ CQ...	
0343 0355 DL2ARD	JO60AR 1898km mni refl.
0403 0414 DL5ME	JO52SD 1772km mni refl., 9+20
0427 0510 LY2WR	KO24OQ 1203km mni strong and short b
0707 0755 SP4MPB	KO03GS 1371km
0807 0910 LY2MW	KO24PQ 1202km nc
1007 1110 DH7FB	JO62SM 1674km nc
1117 1200 DL7FF	
1203 1215 DK3BU	>15b, 5sec
1327 1410 DL1EJA	10b
1420 1500 PA3BIY	JO22EB 2033km
1503 1615 DH9OY	bc mistakes with TX text, sri
1757 1900 PA3BZL	nc hrd DL1SUN
2205 2235 DH7FB	JO62SM 1674km mni refl.
2230 2350 SM6KJX	JO67CK 1253km hrd GM4YXI
1998-06-10	
0052 0010 LY2MW	KO24PQ 1202km 6b
0257 0355 PA3BZL	
0417 0440 DL1SUN	5b
0443 0455 DJ3HW	JO42HW 1794km
0603 0635 DD0VF	JO61VB 1814km
0657 0730 DL2DXA	
0730 0950 CQ CQ...	

6 meter not any qso, in 0.7m 2 qso with OH8E call and during NAC 3 qso with OH5AI/8 call.

Setup

2 m: Icom IC-706, Lunar 30-160 (120W), 2 x 19el homemade 11.34m boom 5 and 8m up. 10m aircom+. Maybe it was 50/50 in MS, because we was very qrp but we didn't use pre amp...
6 m: Yeasu FT-847, 100w, 4el homemade 6m up. 12m aircom+
70cm: Yeasu FT-847 & FT-726R, RFC 4-110 = 100w. 1 x 36el homemade 5m up. 10m aircom+.

Problems

- 1) That SWR meter...
- 2) That one brokened 0.7m antenna.
- 3) Our IBM ThinkPad 90MHz Pentium didn't work with OH5IY soft. COM problem. But we had also Copam 386sx laptop. But in Copam we are not found battery, so after 3 hour when refuelling aggregator, Copam went down. If anybody knows where I can found battery for to Copam NB386SLC-20, pse info to e-mail oh5lzy.sral.fi.

4) Was weather in tuesday. In the morning it winded very hard and for example when we tried to beam 230 degree, we

beamed from 200 to 260 degree and elevation -5 to +10 degree nearly hole day.

5) Also tuesday morning we had very big QRM even we was middle of nothing. Maybe 3 km to nearest electric line and first house. After hunting the problem was ungood connecting cable between rig and linear.

6) Tuesday evening MARK button blow up from DTR. Matti changed mark and rec button with together. It work little time and start again make problem. So after little thinking we made second working strategy. When RX period start, we pushed play in speed 1/1 and after burst made << and press slowerly speed. So that was a pause before DH7FB qso.

Comments by Janne OH5LZY

At first many tnx SRAL for giving special call for our expedition. Also big tnx for all, who looked us in MS + tnx for GSM calls :-). Next time call during my TX period, because GSM made qrm to ext pa in DTR.

I recognized many calling styles during our expedition. I lend Joachim DL9MS call in next and I recommend follow:

Good	Not so good	
1 TX CQ CQ OH8E	CQ CQ OH8E	
1 RX MSDNMSDLNMS	373737OH8EDL	RX 12 LETTER
2 TX DLNMSOH8E262626	CQ CQ OH8E	
2 RX R37OH8EDLNMSR3	OH8EDLNMS37373	RX 14 LETTER
3 TX RRRRRRRRE	DLNMSOH8ER26R26	
3 RX RR	8E	
4 TX CQ CQ OH8E	DLNMSOH8ER26R26	
4 RX	RRRRRRRRMS	
5 TX	RRRRRRRRRE	
5 RX	RRR	
6 TX	RRRRRRRRRE (for safe :-)	

Tnx Jo, you was using that first way, sending only your call, not both calls and report.

So, I don't know is there any random rules, but on my mind it is better to give only own call, because normally we can try earlier to make qso when burst are not very long. Of course if there is long burst that second way is better and quicklier, but in this expedition it was not too good propagation. I was calling to many period cq because I received only something 72727OH8. Also normally I can send first rrrr report, I don't must guess how many rrr report I must send when I believe that other station is received my final rrr. Now when I send at first rrr, after receive first time rrr I can change my TX to CQ CQ and other station recognize that I am received his/her rrr when hear cq. Of course first way don't work everytime like that, but maybe in 80% of qsos.

Why random, why not sked?

I planned our MS working in expedition. Reason for random was

- during Quadrantids I was bored because 10 times nothing heard during first 20min in sked (in KO49SW).

- everybody have same possibility to work us. If I make skeds, quicklyest call with telephone and have best times. also everybody don't have e-mail and via bbs trying normally all times are full. BBS was too slowly after giving first informa-

tion of expedition. I recognized that before KO49 trip. And I am not in 14345 KHz, so via 20 m nobody can't catch me.

- after giving info of our trip with text ONLY RANDOM, I received many e-mail and a few bbs messages for sked request. I know, that my english is not 100%, so maybe everybody didn't understand my text.

- Many ham told in sked request that distance is over 2000km so pse sked.

Unfortunately I can't found any place from locator map, where is optimum distance to everywhere and rare sq. (Also I'm wondering those bonus stations in ARI MS contest, because nearest corner of Italy was about 2340km from our QTH (JN67), Pompei and other part of 18 zone littlebit more...). I'm not hunting world QRB record. My idea is make many qsos. In expedition is limited time, so not any sked and it is more interest to sit in car when don't know who is answering. From home it is different. There I'm quite a often. In autumn again QRV from KP41KL when new antennas would be ready. So if I make next pedition, I work ONLY RANDOM. (or maybe I would polish my own ego, when I see that I'm vanity... :-)) 73s de Janne. AX.25 OH5LZY OHR5CB.FIN.EU / e-mail oh5lzy.sral.fi

Comments by Matti OH5KJQ

This was my first real expedition, and I probably had too big expectations but I'm little bit disappointed, not at expedition itself, it was kind of fun but I really liked to make more qsos, specially on 6m. 2m was ok, because of MS and 70cm was poor as expected but I qso in 4 days in 6m was not really worth of travelling hundreds of kilometers to cold and rainy north Finland... Fortunately 6m wasn't only band we activated, otherwise we might run out of beer much earlier... :-)

Anyway, even propagations wasn't so marvelous, I'm not giving up, this definitely wasn't my last expedition, must hope better propagations to next time, when and where? I don't know yet, but feel free to make a suggestions.

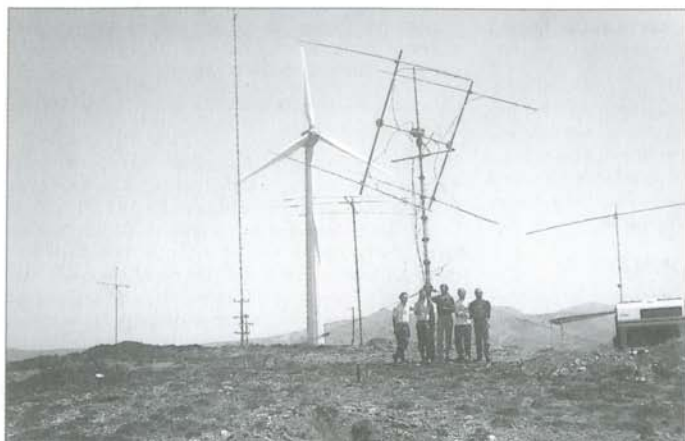
I kept my first MS qsos on this expedition and I found that MS is quite interesting, so in near future I might be on the air on MS in my home square KP41 (I have also some plans to make contest QTH in KP40).

Thanks to: SRAL (Finnish amateur radio league) that maked possible to use special callsign OH8E and everybody who worked or tried to work us. 73 de Matti OH5KJQ, Joutseno KP41JC. AX.25: OH5KJQ@OH5RCB.FIN.EU / email: tuomimat@mail.wvnet.fi or oh5kjq@sral.fi

SV9/DK5YA auf Kreta

Das erste QSO auf 144 führte ich am Abend des 22.05.98 mit einem FT50R nach 4X4, ca. 800 km mit 3 Watt SV9/59 in FM übers Wasser. Das sah schon einmal vielversprechend aus! Zu diesem Zeitpunkt war ich noch allein in SV9, Angelo, DC9KZ, und Dit, DF7KF, kamen am nächsten Tag, dem 23. Mai mit dem Wohnmobil auf Kreta an. Der Standort hat uns auf Anhieb begeistert, es war windstill, das Wetter traumhaft, der Anschlußkasten mit der 230V-Stromversorgung jedoch 200 m vom Standplatz des Wohnmobils entfernt. Die Folge:

SV9/DK5YA and SV9/DF7KF in KM35CF



Ein Händler für Kabel und anderes Elektroallerlei in Sitia machte mit uns das Geschäft des Sommers, jede Menge dicke Strippen (50 m 5x2,5 und weitere 50 m 5x5 Quadrat) wechselten gegen Drachmen den Besitzer. Bei Vollast ging die Spannung der GS53B-PA von 3,7 auf 3,1 kV runter, das Netz brachte so eben noch 210 V an die Trafos.

Wie sich zeigen sollte, war das durchaus in Ordnung und immer noch besser, als einen stinkenden und zur Schwind-sucht neigenden Generator zu betreiben.

Ab Sonntag, dem 24.05., liefen alle Stationen, erste QSOs auf 2 m gingen nach 4X4 und SV1,2,3,8 und 9. Auch auf 6 m liefen die ersten Verbindungen bei einer schwachen Sporadic-E. 144 MHz war totenstill, keine birdies, kein QRM/QRN, ein Traum für mitteleuropäische Städte.

Die EME-Anlage war noch unvollständig, von 4x12. el M2's fehlten noch zwei, die angeblich per UPS auf dem Weg nach Kreta waren. Am Montag, dem 25. Mai, kamen André und Peter, DF9OX und DF3KV, per Flieger aus Hamburg und machten sich sofort daran, allerlei wilde Drahtverhaue für Kurzwellen zu spannen.

Die ersten MS-Skeds am Morgen des 25. Mai liefen schlecht, lausige Reflexionen, leise und kurz dazu. Als Antenne diente zu diesem Zeitpunkt eine 17 el. M2. Am Nachmittag waren die fehlenden Antennen für EME immer noch nicht da, bohrendes Nachfragen in DL förderte zu Tage, daß die Dinger noch gar nicht unterwegs waren. Also TNT Overnight anrufen und ab damit. Dienstag Abend, so hieß es, wird in Ost-Kreta angeliefert.

Nichts dergleichen, wie sich herausstellte, hatte der griechische Partner von TNT in Heraklion ganz eigene Vorstellungen von "Overnight". Nach langem Hin und Her und aufopferndem Einsatz von Jimmy, SV1BTR in Athen, nebst allerlei wüsten telefonischen Drohungen gegenüber TNT Hellas er-

reichten uns die sehnlichst erwarteten Rechen am Donnerstags Abend (!), per Überlandbus gemächlich herangekarrt, abholen mußte ich sie selbst...oh heilige mediterrane Seele... Kurz danach traf auch Dimi, SV1BTR, nebst entzückender Gattin ein...

In der Nacht von Donnerstag zu Freitag bauten Angelo und Dit unter Flutlicht die EME-Anlage fertig, wir hatten ja am Freitag morgen die ersten Skeds. Zu unserem Entsetzen war aus der Ruhe auf 144 MHz plötzlich ein Chaos geworden, wildes Geknatter und bles QRN in alle Richtungen, zeitweise über S9. Was war los? Mit einsetzendem sehr starken Wind am Mittwoch (100 km/h, Tag und Nacht) wurde

die Luft immer trockener was

zahlreiche Uralt-Isolatoren an den Umspannstationen der in unmittelbarer Nähe betriebenen Windkraftanlage zu heftigem Sprühen anregte. Nachts war das optisch sehr beeindruckend und hatte etwas vom Silvesterfeuerwerk. Auch Peter, DF3KV, war mitunter der Verzweiflung nahe, auf 160, 80 und 40 Meter lag der "Knatterpegel" zeitweise bei 80dB über Rauschen, völlig verrückt. Diese nette "Begleitmusik" blieb uns, mit wenigen Ausnahmen, bis zum letzten Tag, dem 7. Juni, auf allen Frequenzen erhalten.

Leider sahen sich zahlreiche OM s in Europa und USA zu diesem Zeitpunkt bemüht, uns via Cluster und im I-Net als "taube Nüsse" zu bezeichnen, da wir zwar lautstark über den Mond zu hören waren aber partout nicht antworteten. Das Gemeckere nahm, wie uns DL1KDA per Handy mitteilte, teilweise recht üble Ausmaße an. Erst nach vier Tagen sprach sich allmählich herum, mit welchen Problemen wir mitunter zu kämpfen hatten. Merke: Erst mal nachfragen, was los ist und dann (bei Bedarf und wenn's gerechtfertigt ist) eine Expedition als "deal" und "Bake" schmähen...

Bei 20 bis 50 Grad Elevation hatten wir zeitweise relative Ruhe, in diesem Fenster gelangen uns schließlich einige QSOs, auch mit 4-Yagi-Stationen gings plötzlich problemlos. Von den Meckerern war dann seltsamerweise nichts zu hören...

André, DF9OX, war die meiste Zeit auf 6 m zugange, hatte Riesen-Pile-Up s und füllte Tag für Tag die Festplatte seines Rechners.

MS wurde zusehends besser, ab dem 28. Mai gings richtig gut. 2000 Kilometer erwiesen sich als problemlos, leider scheiterte das QSO mit DK1KO (knapp 2.500) am verfluchten QRN. Beiseitig 26, aber die R's wollten nicht durchs Geknatter.

Wir riefen uns übrigens in Random täglich die "Tasten" wund. Leider war die Resonanz miserabel, was verwundert, fehlt doch X-OM SV9 und KM35 sowieso jedem. Schade! Daß es ging beweisen die zahlreichen QSOs. Entfernungen über 2000 Kilometer mit Stationen, die weniger als 300 Watt und teilweise nur eine Antenne haben.

Die Sporadic-E vom 3. Juni war Angelos Feuertaufer, schade, das der GM aus IO86 im QRM/QSB unterging. Jede Menge Gs (per Doppel-Hop), Is und einige DLs gingen ins Log.

Auf 144.300 lauschten wir während dieser Öffnung einem bekannten Funkfreund aus LA (das Rufzeichen verschweigen wir mal lieber...), der mit S9+ gemächlich in CW CQ rief, auf meinen Anruf SV9/DK5YA mit "hi hi" zurückkam und weiter CQ gab. Ich habe das dem guten OM mittlerweile im VHF-Net geschildert, er war hörbar mit den Nerven fertig... und gelobte Besserung und mehr Vertrauen in eine gute Es-Öffnung...

Zu EK6AD ging es ab dem 27. Mai fast täglich via Es, am 2. Juni gesellten sich noch zwei UA6er hinzu, RK5 und US5 ging im QSB unter. Die Es vom 3. Juni bescherte einige Is, 9A, S5, HA, YU, YO, OE und OK. Schön auch das QSO mit F/G8MBI: Mehrere Versuche via MS waren NC, auch über den Mond ging es immer nur partial. Beim 4. MS-Sked, am Morgen des 5. Juni, kam Graham nach meiner 1. Periode plötzlich leise in Slow-Speed retour, IONO, dachte ich. Ich gab 529, rumms, war Graham S9++, Es! Welch ein Spaß. Grams Kommentar: "I'm a lucky man!" Leider war in Frankreich zu dieser Zeit (07.40 UT) kaum Aktivität, die Es dauerte gut 40 Minuten und nur 4 Stationen gingen ins Log, ODX war an diesem Tag FSADT in IN94.

Fazit: Wir hätten uns weniger Wind und moderne Isolatoren gewünscht, sonst hatten alle viel Spaß und wenig Schlaf. Merke: Ein Mitglied der Expedition sollte penibel darauf achten, daß bei Expeditionen in Mittelmeerländer, nach SV zumal, der Verzehr von Hülsenfrüchten aller Art strengstens untersagt ist! Noch so viele Fenster in einem Wohnmobil erweisen sich als nicht tauglich, um den entstehenden Problemen per Durchzug Herr zu werden...

Bis zum nächsten Mal! Udo, DK5YA und die Gang: DC9KZ, DF7KF, DF9OX, DF3KV.

144 MHz:
EME: 32 QSOs (leider nicht mehr, QRN - siehe Text)
MS: 78 QSOs (es hätten auch mehr sein können...)
Es: 102 QSOs
IONO: 1 QSO
FAI: 4 QSOs

Zahlreiche Tropo QSOs: 5B4; SV1,2,3,7,8,9; I7,8,IT9; 9H1;

4X4
50 MHz: über 2000 QSOs

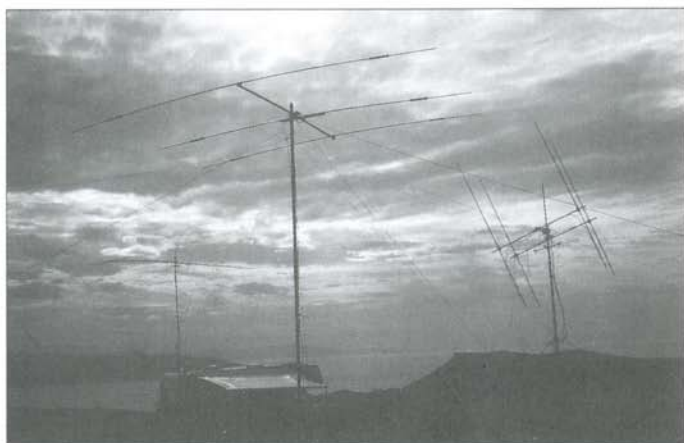
Stationen:
144MHz MS: TS850SAT, LT2S, 17el. M2, MGF1302, 3CX800, DTR, OH5IY-Soft
144MHz EME/MS: FT1000MP, LT2S, 4x12 el. M2, GS35B, MGF1302, DTR, DSP, OH5IY-Soft
50MHz: FT920, 7el. M2
KW: FT920, IC720, FB33, Dipole, Longwires (2x160m Dipol!), Mehrere Notebooks; ein großes Wohnmobil und zusätzlich ein Zelt

P.S.: Der Standort in KM35CF ist hervorragend. Take-off 360 Grad, vom allerfeinsten. Wie mir der örtliche Bürgermeister, der übrigens ein guter Freund ist, mitteilte, werden derzeit die defekten Isolatoren ausgetauscht, da die Verluste zu hoch waren. Da auch 230V zur Verfügung stehen (kostenlos!) ist der Standort für eine zweite Expedition durchaus geeignet. Außerdem fehlt immer noch zahlreichen OM, die nicht zum Zuge kamen, das seltene Feld nebst Land. Wer also mal hin fahren möchte sollte Kontakt mit mir aufnehmen, der gute Draht zum Bürgermeister sorgt für Strom, Standort und eine exzellente und sehr preisgünstige Ferienwohnung in der nahen Ortschaft Paleastro. 73, Udo
See "THE DK5YA VHF-PAGE" <http://www.qsl.net/dk5ya>
Vielen Dank für den Bericht, Udo.

VHF-Dxpedition to San Marino T77WI

From June 29th until July 5th 1998 Maik (DJ2QV), Ulli (DL3YEL) and Maik (DL6YCY) activated San Marino on 144 MHz Meteorscatter. YEL and YCY started on June 28th at 5 AM in JO41 and picked up QV at the Ham radio in Friedrichshafen. Finally we arrived in T7 at about 9 PM where we met Giancarlo (T77WI).

Without his great help the whole Expedition would have been impossible. He organised the license and the hotel for us and



SV9/DK5YA and SV9/DF7KF in KM35CF

Meteor Scatter

allowed us to use his call sign during the expedition because with T7/DL... the power is limited to 10 Watts only.

Our QTH "Hotel Bellavista" was located at the northern edge of the historic centre of San Marino at an altitude of 675m asl. The hotel manager offered us to use the roof of the hotel to install the antennas and we rented one room for the shack. Our caravan was parked a long distance away from the hotel because it was not allowed in the historical city. Only for unloading the equipment, Giancarlo made a deal with a "nice" police-woman, allowing us to park close to the hotel.

We installed the 2x9 ele F9FT and made the first QSOs on Trope in the afternoon of June 29th. Our plan to be qrv on the packet radio world wide convers channel 14345 did not work all of the time because of some link troubles in Italy. In the first night we worked 12 QSOs on Meteorscatter. Somehow we were a little disappointed because the "big pile up" was not happening on our Random frequency. Sometimes we were calling CQ for several hours without any reply.

The next day we installed the second antenna, an 11 ele F9FT fixed to 325 degrees. Now we were able to call CQ into two directions simultaneously, but unfortunately this did not improve our QSO rate. It has to be mentioned that the reflections were extremely poor most of the time. It happened that for several hours only very short pings came through.

After this night, the wind got stronger and stronger. Finally we decided to take down the 2x9 ele because we did not want the wind to blow them down the roof. We continued with the 11 ele F9FT and used a single 9 ele with approx. 15 deg. elevation into direction 325 degrees for the rest of the expedition. The strongest wind lasted for almost three days, with peaks of around 100 km/h in the afternoon and evening times.

On 20m VHF net we only arranged very few Skeds due to local noise (S9+20 dB) during daytime. Finally we managed to work 51 complete MS QSOs during 5 nights. On Trope we worked about 270 QSOs with ODX 948km (DK3WG).

Unfortunately there was no Sporadic E and only one weak FA1 opening in which we worked F/G8MBL. During the VHF-Contest on 4th/5th July we had big problems due to local QRM from some Italian stations. So we disassembled our station in the morning of July 5th and drove back to Germany.

Equipment used during expedition: TS-690S + LT2S Transverter, PA 1: 3CX800, PA 2: 4CX350 + homemade switchbox. Transmitting continuously to both antennas, receiving switchable between Ant 1, Ant 2, both. OH5IY MS-Soft, DTR.

This is the list of complete MS QSO from T77WI in JN63FW: 1998-06-29

2115 2130 DJ9YE JO43HV 27 27
2210 2240 PE1OGF JO21QJ 27 28



2300 2320 DL8EBW JO31NF 27 26
1998-006-30
0235 0255 PE1LCH JO23WF 27 27
0445 0505 G0FIG IO90UU 26 26
0515 0535 DH7FB JO62SM 27 27
0535 0550 LY2MW KO24PQ 26 26
0605 0615 DL9AN JO62SN 27 27
0620 0640 DL1EJA JO31DS 27 27
0650 0725 DL1DUR JO70KV 27 27
0750 0805 DL9YFY JO41GV 28 27
0825 0845 DH3YAK JO31RS 27 26
2005 2030 DL1KDA JO30FQ 27 27
2105 2125 SP2OFW JO93AC 27 27
2135 2155 PA2DWH JO22GD 27 27
2205 2220 SP4MPB KO03GS 26 27
2225 2240 G4YTL IO92MB 27 27
2240 2255 PA2TAB JO32GF 27 27
1998-07-01
0325 0345 EA2AGZ IN91DV 27 26
0355 0415 DL5YET JO41EV 27 27
0535 0550 ON4AMX JO20KV 26 37
0620 0640 G4AEP IO91NJ 27 26
0755 0825 DF7KF JO30GU 27 27
0935 0955 PA3FBN JO33HF 27 47
1998-07-02
0325 0340 PE1LWT JO22VA 26 27
0405 0420 ON4AVJ JO11UB 26 26
0420 0435 DJ3HW JO42LH 28 27
0500 0535 OH1XT KP01VM 27 27
0535 0555 DF9QT JO30MM 26 27
0600 0615 DH2OAA JO42TU 27 27
0620 0635 DL1UU JO62SP 27 27
0920 1000 LY2WR KO24QO 26 26
1998-07-03
0320 0340 F6DRO JN03SM 26 27
0340 0400 DL9MS JO54WC 26 27
0410 0420 DL5ME JO52SD 26 27
0425 0435 PA3FOC JO21FW 27 26
0440 0500 ON7UC JO11ND 28 27

05500615 G0KAS IO91UI 26 27
 08150830 DK5DQ JO31PH 37 26
 09200940 LY2BIL KO24PQ 27 26
 20202050 LY2SA KO14LL 26 27
 21252145 DL8LAQ JO43XU 26 27
 22152250 DL1EAP JO31IK 26 27
 1998-07-04
 01000135 DJ5BV JO30MR 26 26
 02550340 DF8IK JO30JT 26 36
 03450405 PA3BZL JO22SB 27 28
 04100450 LA0BY JO59FW 27 26
 05000600 SM3MXR JP80GR 26 26
 07000725 G4ZHI IO91KN 26 26
 07550825 EA6VQ JM19MP 27 26
 12151305 PA0PVW JO21VW 26 26

We have planned to give out QSL cards personally at the Weinheim VHF meeting. After this event, remaining QSLs will be sent out via the buro. If you want direct QSL you can send SASE to DJ2QV, Maik Reckeweg, Auf dem Dahlacker 4, D-44807 Bochum, Germany. 73 de DJ2QV, Maik. Many thanks for your report, Maik.

YU1VG (JN91NX) wkd on 144 MHz: 1998-08-11

2317 PA3LAU 37 37 cr
 2317 PA0PRW 37 37 cr
 2322 DL4ABJ 37 37 cr
 1998-08-12
 0633 EA3TI 37 37 cr
 0647 DA0ND 37 37 cr
 0716 DJ3MY 38 38 cr
 0731 DL4MEA 37 37 cr
 0735 ON1IM 37 37 cr
 1330 DL1EAP 37 38 cr
 1331 DJ5BV 37 38 cr
 1331 DL3IAE 49 49 cr
 1343 PA3DYS 59 59 cr
 1343 DK5YA 59 59 cr
 1343 DL2IAN 39 39 cr
 1343 OK1FEA 38 38 cr qrm
 1345 F2LQ 58 58 cr
 1345 F6CRP 59 27 cr
 1349 F6FHP 38 57 cr
 1355 G4SSA 38 38 cr
 1355 S50C 59 59 cr
 1636 9A4EW 39 39 cr *1
 1636 DH8BQA 38 38 cr
 1636 DL9USA 39 37 cr
 1636 HA8MV 59 37 cr *2
 2223 DL1KDA 37 37 cr
 2302 DL1EJA 37 27 cr
 2341 EA3ADW 39 39 cr
 1998-08-13
 0109 DL4ABJ 39 39 cr
 0109 DL8EBW 39 39 cr
 0127 ON4ALJ 37 39 cr
 0203 DK5DQ 27 27 cr
 0203 DL1KDA 37 37 cr

Remarks: *1 First MS-QSO 9A/YU; *2 First MS-QSO HA/YU. All qso wkd on random 144.200. Heard: G1WPF, G0PKW, LY2MA, SP9EWU, EA2LY and EA8? Equipment: FT225R + preamp BF988 + PA 500W + 17el. Yagi at 200m asl.

During my receiving periods I have had much QRM from other europeans. I noticed the best reflections on 1998-08-12

from 1330 to 1400 UTC. The signals were very strong, up to 9+20dB and 10 to 50 seconds long.

Many thanks for all QSOs, hope to see you next year. 73 and gl, Vasa. For direct QSL: Vasa Vujanovic, Mose Pijade 2/76, 15000 Sabac - Yugoslavia. Many thanks for your report, Vasa.

YU7EW (KN05HP) wkd on 144 MHz via MS:

1998-08-01
 2000 2045 DH0GHU JN38VN 26 26 8 10 2 c
 1998-08-06
 0600 0700 SM3MXR JP80GR 26 26 10 26 2 c
 1998-08-07
 1000 1055 EW5M KO32DX 26 26 8 17 5 c
 1998-08-09
 0115 0130 DA0ND JO34XE 37 27 12 14 8 c
 0500 0600 DD3DX JO31TN nil
 0600 0700 DG2BCP JO43CE 26 26 6 26 2 c
 1900 2000 DL6ZBN JO40FE 26 2 3 1 nc
 2000 2100 DH9GCD JN38VF 26 26 6 6 2 c
 2100 2125 DL1SUZ JO53UN 27 27 7 23 2 c
 2230 2300 OH8UJ KP34VJ 26 2 4 1 nc
 1998-08-10
 0500 0530 DL1EJA JO31DS 37 27 15 56 8 c
 1900 2000 DH6JL JO31MI nil
 2000 2015 DJ3HW JO42LH 38 38 4 5 12 c
 2100 2200 I8/DL5MAE JM87ax 26 7 7 1 nc *1
 2200 2230 DF8IK JO30JT 26 27 13 12 2 c
 1998-08-11
 0000 0045 OH6KSR KP22VG 26 26 7 7 8 c
 0500 0600 DL6ZBN JO40FE nil
 1900 1950 DH6JL JO31MI 26 26 6 6 2 c
 2000 2030 DL6ZBN JO40FE 26 26 3 10 2 c
 2100 2200 QH4EA KP32MG 26 27 5 3 2 c
 2300 2330 LA0BY/P JP51NA 27 27 5 9 3 c
 1998-08-12
 0500 0600 OH6KTL KP02OJ nil
 1203 SM4VQP JO78OX 27 27 1 cs
 1232 SM3BEI JP81NG 37 37 1 cs
 1242 DF8LC JO53GX 27 27 1 cs
 1998-08-13
 0200 0300 5B4/EU1AA KM64vv nil
 1007 PE1FIY 27 27 1 cs
 1008 F6DBO 27 27 1 cs
 2200 2230 SM7TUG JO76NJ 47 27 12 18 85 c
 2300 2400 DL1ELY JO31IO 26 5 13 3 nc *2
 1998-08-16
 0200 0245 DL2FDX/P JO74AA 26 26 7 6 6 c
 Remarks: *1 and *2 My max RX speed 1000 lpm! You TX abt 2000 lm! Adr: Nemethy Istvan "Pista", Branka Radicevica 63, YU-23217 Aleksandrovo, Serbia. PSE QSL direct! 73, Pista - YU7EW. Thanks for your report, Pista.

432-MHz-MS-Record

On 12-08-1998 after 5 unsuccessful attempts in May and 10-11 Aug, we completed HSCW meteor scatter QSO between LY2WR KO24OQ and UA9FAD LO88DA. Not sure about the correct distance, some soft says 1935, some 1931 km. It took 3.5 hours, in this period I received 4 reflections, 7+6+0.5+0.5 seconds long. The strength was S5-4, very clear and easy decodable.

This is new IARU reg 1 record, I would like to know if this also World Record. Also worked SM2CEW and UA4API on 432 MHz in this years Perseids. IK0BZY, ON4KNG, G4RKG, PA2CHR were nil/nc. Wonder if someone else had compete contacts on this band. 73 Rytis - LY2BIL/LY2WR

News & Comments

Editor: Klaus Tiedemann, DL4EBY

New ATV Distance Records

Two ATV distance records have been battered during the ATV Expedition Corsica - Spain 1998:

New World Record for ATV on 10GHz

Between TM2SHF (F1AAM, F1JSR, F5BUU and HB9DLH) located on the Col de Piana on the Island of Corsica in grid square JN42HF and EA5/HB9AFO/P (HB9ADJ, HB9AFO and SWL Jacky) located on Monte Pego in Spain in IM98XU. The distance is **821 km or 510 miles** (701 km or 434 miles was prior record). P5 strength signals were exchanged during more than 2 hours with power levels of 1 and 20 Watts with antennas between 2 ft (60cm) and 40 inches (1 meter).

European ATV Record on 24GHz

Between TM2SHF in JN42HF, Corsica, and F/HB9AFO/P in JN23WE, Mont Caume, France. Distance: **248 km**.

QSO: **One way** with signal report P3

TM2SHF was using 200mW, and an antenna of 2.5 ft (75cm).

HB9AFO used a DB6NT converter, special feed, and 40 inch (1 meter) parabolic dish.

All details and pictures can be found on the SWISS ATV Web site:

<http://www.cmo.ch/swissatv>

You can also see the complete list of all chronological ATV records in all ham bands (will be translated in english very soon). Other than that, you will find the ATV IARU Region I contest rules, the list of ATV'ers E-mail addresses, some software to download, news from the ATNA USA, a lot of pictures taken in the 1998 Dayton Hamvention, and so on...

Please don't hesitate to send us news from your activity, we will put them quickly on the site.

For the SWISS ATV records homologation team: Michel Vonlanthen, HB9AFO, President of SWISS ATV, European Representative of ATNA

Vittorio, IK2CZL writes:

I'd like to inform interested DUBUS readers that under the URL

<http://www.freeyellow.com/members/padan>

it is possible to download the software Hamview 2.05, dedicated to weak signal reception. It mainly consists of a real time FFT analyzer

You are invited to send in your reports and articles via EMail / disk, or upload to the DUBUS BBS.

- EMail (Internet): tklaus@berlin.snafu.de

& a real time (well, almost...) DSP band pass filter and denoiser. The software is of course freeware!

vy 73, Vittorio IK2CZL

DUBUS DXer Meeting in Weinheim

(New Location in Downtown Weinheim)

During the annual Weinheim VHF/UHF meeting DUBUS invites all VHF/UHF/SHF DXers to attend our get-together in the private brewery **Woinemer**. It will begin at Saturday, September 15th, 1900 local time and can last to 2400. There is food, funh and lots of beer (yes, they have 6 different sorts of beer and we tested it last years, superb. **Address: Woinemer Hausbrauerei, Friedrichstr. 23, 69469 Weinheim Tel. 06201-12001.**

Please notice that this is the **new location** directly in Weinheim, we have already visited last year. You will find it by following the map below. In fact it's directly in downtown Weinheim. Hope to see you all!

Während der Weinheim UKW-Tagung veranstaltet der DUBUS Verlag das jährliche DXer Treffen in der Privatbrauerei 'Woinemer', Friedrichstr. 23, 69469 Weinheim Tel. 06201-12001. Es beginnt am Samstag, den 15.9.97, abends ab 1900 Uhr. Bier, Essen und Spaß sind angesagt.

Bitte beachten Sie, daß dies ein neuer Treffpunkt ist (Seit 1997). Die 'Woinemer' Hausbrauerei liegt mitten in Weinheim und ist, wie in der Karte unten gezeigt, sehr leicht zu erreichen. Auf Wiedersehen im 'Woinemer'!



Location of Weinheim DUBUS-DX Meeting

DUBUS Toplist

Editor: Norbert Goettsche, DL8LAQ
email: Norbert.Goettsche@hamburg.roses.de

DUBUS 50 MHz Top List

NRCALL	WW	WK	DC	TR	AU	MS	ES	F2
1 ON4KST	JO20	726	148	801	1415	1509	7920	16498
2 DL7QY	JN59	674	133	741	1665	2186	6900	16353
3 PA0RDY	JO22	651	0	725	1617	1597	****	16320
4 G4IGO	IO80	627	0	578	1308	2528	7301	16188
5 G4UPS	IO80	603	0	0	0	0	0	0
6 ON4GG	JO20	595	0	741	1757	1695	7243	16547
7 ON4ANT	JO20	576	0	710	1757	1695	7243	16547
8 ON4PS	JO20	564	124	752	1740	1902	6520	16358
9 G6HKM	JO01	552	0	347	1883	780	5674	16112
10 GW4LXO	IO81	500	0	300	650	1200	7500	10000
11 DL8HCZ	JO53	479	0	365	1250	1356	3350	0
12 PA2TAB	JO32	466	128	762	1370	1809	5797	15339
13 I4XCC	JN63	464	0	707	0	1427	3349	18627
14 F8OP	JN26	419	0	631	1023	1369	5508	13547
15 F1GTU	JN05	418	0	699	815	1421	3268	16400
16 DL3AMA	JO51	412	79	519	1431	1600	4001	10345
17 SP6GZZ	JO81	407	0	515	0	1826	8103	0
18 DL9GU	JN49	402	0	721	450	0	8500	15625
19 OK1DDO	JO60	400	88	620	1423	1340	6100	13300
20 SP4MPB	KO03	391	0	520	1836	1507	8290	0
21 OK1IBL	JO60	377	77	530	1320	1717	6941	11816
22 PA3FYM	JO22	375	0	1238	2019	0	****	16373
23 OK1MAC	JN79	336	0	0	0	0	0	0
24 PE1OGF	JO21	332	76	0	0	0	0	0
25 YO2IS	KN05	325	0	270	1155	1404	6942	14292
26 OK1FAV	JO60	325	74	0	579	1093	6250	10366
27 DL7ARM	JO62	315	0	909	1189	1245	8324	15817
28 ES1CW	KO29	314	67	530	1895	1692	5253	0
29 F8CS	JN27	311	68	336	0	0	7454	9753
30 ES6QB	KO37	309	74	450	0	0	5145	0
31 DL4ALI	JO50	303	62	464	0	1042	3996	0
32 OK1VBN	JN78	295	59	455	0	897	5793	0
33 SM7JUQ	JO65	292	0	372	1349	1062	3900	14070
34 OK1FFD	JO60	291	74	580	1231	0	6250	13300
35 SP6GWB/P	JO80	288	0	696	629	1880	7540	0
36 OZ7IS	JO65	287	0	410	1294	850	3100	0
37 SP2IQW	JO94	286	57	556	1537	1470	2767	0
38 OK2ZW	JN89	286	0	0	0	0	0	15580
39 HB9STY	JN36	280	65	367	0	1431	4448	7810
40 DF7RG	JN68	276	62	496	1569	0	3230	14153
41 IW5AVM	JN52	275	55	768	0	1712	3056	7839
42 F1FIH	JN23	273	98	796	0	1637	2492	15613
43 HB9AOF	JN36	272	72	500	0	0	5400	10663
44 IK5QIY	JN52	262	0	332	0	1444	2826	8305
45 DL3YEE	JO42	261	0	540	1056	1300	2700	13053
46 ON5SE	JN29	257	78	0	0	0	0	0
47 OE3OKS	JN87	243	45	467	0	0	7985	0
48 ES5DE	KO38	239	56	228	606	0	5299	0

49 F5DE	JN05	237	64	860	0	0	2304	0
50 I3ZVN	JN55	237	62	532	0	0	5742	8422
51 ES2RJ	KO29	237	53	419	1701	0	3167	0
52 DL5BBL	JO42	237	0	414	1008	0	3975	5863
53 DL7YS	JO62	236	60	342	461	1086	3547	8767
54 YL3AG	KO26	233	49	397	1817	0	6420	0
55 CT1BGE	IM58	215	0	0	0	0	0	0
56 OK1VQ	JO60	212	44	245	539	0	2002	2755
57 DL6BF	JO32	207	71	574	1108	0	3058	8011
58 ES1II	KO29	207	45	335	673	0	3325	0
59 SP5HEJ	KO02	206	0	568	0	1838	4699	0
60 ES5MC	KO38	202	58	432	1786	0	5143	0
61 YU1VG	JN94	201	50	1766	0	1450	3666	1650
62 SP2JXN	JO94	198	0	0	0	0	0	0
63 OK1DKS	JO70	192	42	934	0	0	1973	8514
64 PA2CHR	JO22	187	72	1334	909	0	5215	13966
65 DL8EBW	JO31	186	51	247	1050	1150	5800	13300
66 OK2PPP	JN99	178	40	0	0	0	3200	0
67 ESSRY	KO38	177	36	317	0	0	3640	0
68 CT1DIN	IN60	174	37	1581	0	0	3169	0
69 SP6AZT	JO81	169	0	612	0	1168	4327	0
70 HB9RUZ	JN47	168	54	406	0	960	3585	0
71 DJ2XS	JO53	164	0	440	419	0	4155	0
72 ES1AJ	KO29	160	33	415	352	0	3340	0
73 DL2DR	JO31	160	15	0	0	0	3982	0
74 G7LRQ	IO91	154	41	0	0	0	3574	0
75 OH2BNH	KP20	147	37	391	948	0	3246	0
76 DL5GAC	JN47	147	0	129	690	0	5100	11900
77 DF1EQ	JO31	138	0	279	0	0	2769	0
78 OK2XTE	JN79	138	42	162	0	0	2419	0
79 IW2DVK	JN45	137	38	534	0	1022	7332	0
80 DL5IO	JN49	134	0	113	340	900	3100	12995
81 DL5UH	JN48	129	35	103	0	0	5943	0
82 DJ6XV	JO31	128	0	401	0	1130	3232	0
83 ES3RM	KO28	127	31	210	692	0	3111	0
84 ES4NG	KO39	124	33	408	0	0	3105	0
85 DK2BJ	JO30	112	39	275	0	0	1782	0

DUBUS 144 MHz Top List

NR CALL	WW	WK	DC	TR	AU	MS	ES
1 DK1KO	JO53	656	0	2124	2057	2210	3285
2 DK3WG	JO72	639	104	2243	2034	2295	2782
3 PA3BIY	JO22	588	63	1550	2026	2205	3143
4 DK9OY	JO52	573	57	1651	1947	2208	2434
5 DL8HCZ	JO53	559	0	1615	1976	2096	3527
6 PA0RDY	JO22	551	0	1582	1979	2272	2819
7 DL8EBW	JO31	545	61	1454	1918	2030	2214
8 DF8LC	JO53	544	0	2105	2045	2226	3291
9 OH5LK	KP30	517	0	1962	2041	2235	2891

10	SP6GZZ	JO81	512	0	1670	1794	2017	2717	65	DL5GAC	JN47	330	0	1264	1876	2135	3079
11	HA1YA	JN87	509	71	1548	1876	2183	2885	66	ES2RJ	KO29	328	37	1190	1861	1969	1953
12	OE3JPC	JN88	504	0	1584	1821	2128	2769	67	F6DKW	JN18	327	51	1519	1602	2051	2755
13	SP9EWU	JO90	498	0	1710	1927	2154	2531	68	DH3YAK	JO31	320	55	1424	1162	1860	2650
14	I2FAK	JN45	493	0	1797	1508	2405	2995	69	OK1MG	JO70	319	49	1526	1590	0	2632
15	OZ1DOQ	JO65	467	58	1885	1940	1981	2888	70	DK1KR	JO53	318	0	1481	2103	0	2026
16	I4XCC	JN63	461	0	1177	1803	2275	3257	71	ES2XM	KO29	308	37	1389	2198	0	2222
17	DL8LAQ	JO43	460	0	1376	1806	1934	3302	72	SP3MFI	JO91	307	0	1697	1632	1802	2617
18	ON4GG	JO20	459	0	1420	1965	2150	2124	73	F1FIH	JN23	304	51	1305	999	1757	2934
19	DL5DTA	JO61	454	58	1344	1578	2045	2057	74	G4YTL	IO91	303	0	1450	1774	2143	2172
20	PA2CHR	JO22	453	0	1432	1683	2240	3201	75	ES4EQ	KO39	302	39	1541	1840	2240	2245
21	LY2WR	KO24	448	0	2051	2075	2218	3007	76	DB6BX	JO32	302	52	1534	1541	1921	2115
22	PA3FOC	JO21	446	0	1373	2010	2209	2326	77	I1JTQ	JN35	301	0	1106	1269	1825	2742
23	OK2ZW	JN89	445	56	1417	1775	2113	2471	78	OK1AXH	JO70	300	0	2142	1486	1366	1768
24	DJ7OF	JO51	436	63	1512	1518	1970	2156	79	F5HRY	JN18	298	52	1276	1695	2038	2758
25	DL7FF	JO62	430	0	1516	1379	2057	2312	80	SP6GWB/P	JO80	296	0	1780	1581	1875	2437
26	YU7EW	KN05	430	65	1404	1755	2179	2430	81	SM5BSZ	JO89	293	0	1764	1824	1938	0
27	OK2VMD	JN89	428	58	1662	1765	2031	3605	82	OK1DFC/P	JO60	291	51	1775	2099	2024	2016
28	RX1AS	KN59	427	0	1709	1905	2271	2547	83	PE1OGF	JO21	291	52	1391	1139	1959	2260
29	IW5AVM	JN52	423	63	1590	0	2040	2893	84	IK1PAG	JN35	289	0	1186	0	1910	2725
30	DD0VF	JO61	420	58	1736	1275	2017	2328	85	SP2JXN	JO94	286	0	1650	1690	0	2634
31	DL3AMA	JO51	414	54	1785	1803	1925	2075	86	OK1FFD	JO60	283	47	1388	1720	1937	2154
32	ES2WX	KO29	411	40	1370	1950	2270	2071	87	PA0WWM	JO22	283	49	1303	1839	1997	2212
33	DK0OG	JN68	408	0	1708	1722	2172	3320	88	IN3TWX	JN56	283	0	1100	0	1609	1750
34	F8OP	JN26	408	0	1228	1196	2028	2720	89	ES3GZ	KO28	281	35	1495	1720	2134	2101
35	YO2IS	KN05	407	0	1360	1916	2130	2556	90	LA8AK	JO38	280	0	1496	1804	1804	2413
36	OK1FM	JN69	403	56	1843	1438	2200	2150	91	ES5WE	KO38	278	32	1406	1695	1934	2530
37	ON4ANT	JO20	399	0	1420	1965	2124	2725	92	ON4KST	JO20	277	51	1435	1612	863	2383
38	DL7AKA	JO62	396	0	1747	1916	2065	3620	93	OE6IWG	JN77	275	50	1221	1110	2220	2126
39	SP4MPB	KO03	393	0	1886	1764	2038	2697	94	G4IGO	IO80	274	0	2761	1917	1903	2833
40	OK1MAC	JN79	392	0	1536	1681	2005	2511	95	DL1BKK	JO43	273	0	1513	928	0	2712
41	ES6RQ	KO37	391	37	1500	1840	2172	1725	96	DK2BJ	JO30	272	46	1476	1924	0	2205
42	OK1JKT/P	JO60	385	51	1701	1764	2121	2269	97	RZ6BU	KN84	272	0	1172	960	2017	2953
43	F8CS	JN27	378	54	1161	1468	2124	3231	98	UA4NM	LO48	270	0	1215	1850	2510	2290
44	UA3MBJ	KO88	374	0	1560	2006	2573	2392	99	G6HKM	JO01	269	0	1304	1555	1660	2269
45	HB9CRQ	JN47	369	0	1404	1288	2060	2959	100	OK1IBL	JO60	266	50	1438	1462	2003	3398
46	IW1AZJ	JN35	369	60	1115	1188	1971	2780	101	PA2TAB	JO32	265	51	1302	1094	1949	2183
47	DL1SUN	JO53	367	0	1824	1724	1845	2333	102	IK5OIY	JN52	265	0	1048	0	2095	2253
48	PA3FJY	JO32	366	0	1536	1337	2085	2086	103	OZ1IPU	JO57	262	40	1387	1187	1566	2452
49	DL1KDA	JO30	366	59	1388	1924	2101	2339	104	GW4LXO	IO81	261	0	2750	1550	2000	2200
50	I4YNO	JN54	366	63	1374	1374	2122	2276	105	RK2FWA	KO04	261	0	912	1759	2125	2010
51	SM7JUQ	JO65	357	41	1902	1646	1921	2332	106	OK1HAG	JN79	260	0	1441	1749	1909	3463
52	OE3OKS	JN87	356	59	1441	1273	1867	2788	107	F6CKZ	JN09	258	0	1552	1330	1721	3408
53	YL3AG	KO26	353	33	1552	1912	0	2448	108	DH8GV	JO33	257	42	1565	1018	1102	2450
54	S50C	JN76	351	61	1463	1530	2233	3356	109	DK8EL	JO31	256	0	1199	1051	1870	1996
55	PA2DWH	JO22	345	59	1230	1950	2150	2250	110	ES1RF	KO29	252	30	1184	1820	1978	2084
56	DL6BF	JO32	344	50	1542	1932	1814	2332	111	DG1BA	JO43	245	0	1674	1280	1588	2239
57	OH2BNH	KP20	344	37	1334	1787	2003	2003	112	ON4PS	JO20	243	43	1449	1435	1393	1964
58	DL7YS	JO62	343	53	1512	1528	1826	2136	113	LZ1ZX	KN32	243	0	1162	0	1945	2729
59	UT1PA	KO21	340	0	1901	1934	1806	2425	114	DK1VI	JN49	241	0	1148	1107	1604	3131
60	YU1WP	JN94	340	50	1422	1850	2236	2825	115	OM7AQ	JN98	239	49	1484	1294	1793	2483
61	SP6AZT	JO81	335	0	2080	1463	1710	2566	116	OK2QI	JO80	237	0	1475	1686	1380	2050
62	OK1DKS	JO70	334	56	1230	1308	0	3530	117	OK1KEI	JO70	235	0	1861	1259	983	2067
63	G3LQR	JO02	333	0	1776	2031	0	2406	118	UT7GA	KN66	234	0	1877	1446	2131	2617
64	DJ1LP	JO64	331	46	1347	1071	2058	2301	119	OK2PNN	JN89	234	0	149	1216	0	3771

120HB9DFG	JN37	232	49	1367	1299	1784	2302	175ES1JL	KO29	163	17	1379	1596	0	0
121OK1PG	JO70	229	49	1773	0	0	3488	176SP2IQW	JO94	162	27	1611	1611	997	1877
122F1GTU	JN05	225	0	1650	967	1934	2400	177DG0CAL	JO52	161	0	1160	0	1543	2105
123DG1VL	JO61	224	43	1343	1223	1800	2325	178UA4AQL	LO20	161	0	1124	1841	2158	2195
124YU1VG	JN94	224	39	1022	826	1727	2294	179SP9FG	JN99	158	29	1647	1283	0	1698
125OK1VBN	JN78	223	45	1578	1682	1915	2209	180ES1AW	KO29	158	25	1230	1680	0	1924
126F5DE	JN05	222	38	1891	1671	1892	2399	181DL0UL/P	JN48	157	0	1026	0	0	2019
127ES5EJ	KO38	218	30	1422	1804	0	2070	182OK1CA	JO70	156	0	1540	1065	950	2096
128ES0IW	KO19	216	32	1545	1687	0	1861	183ES0BI	KO18	154	21	1439	1823	1528	0
1299A4EW	JN95	216	0	1075	0	1956	2293	184DH0GHU	JN38	153	36	1170	0	2117	1937
130DL5BBL	JO42	215	0	1416	1290	0	2028	185RW3PF	KO93	153	0	1015	1840	0	2162
131DC6DY	JO31	212	0	1416	1045	1914	2292	186ES2QN	KO29	152	22	1175	1460	0	2116
132OK1VMS	JO70	211	42	1692	1232	0	2225	187OZ7IS	JO65	151	0	1128	1294	1901	1845
133F5PAU	IN88	209	0	1630	0	0	2425	188ES6PZ	KO38	151	20	1101	0	0	2532
134UR7GN	KN66	208	0	1830	0	2010	1940	189UT5JCW	KN64	150	0	0	0	0	0
135G3XDY	JO02	208	38	1355	2049	0	2124	190CT1FAK	IN50	149	25	2129	0	2250	2488
136DH9NBB	JN49	207	47	1363	1228	1725	2039	191DJ6XV	JO31	148	0	1337	961	0	2007
137ES0NW	KO19	207	30	1060	1720	1797	1965	192DK0PX	JN48	147	0	1161	0	1815	1649
138IK1LGV	JN44	204	0	1466	0	1613	1890	193OK2PMN	JN88	141	0	871	1547	887	2101
139SP5HEJ	KO02	201	0	1830	1705	1312	2313	194ES1CW	KO29	138	20	1192	1570	0	2090
140UY5HF	KN66	201	0	1750	0	1820	2032	195OK2UFB	JN99	136	27	1526	0	0	1983
141DF1IAZ	JN49	201	48	1038	789	1978	1873	196RW4AK	LO20	136	0	1126	1480	2158	2301
142ES8RO	JO28	199	27	1802	1800	0	1780	197ES5QA	KO38	135	35	1665	1788	1555	2236
143OK1DDO	JO60	198	46	1329	1500	1720	2418	198LY2SA	KO14	135	31	1008	1118	1676	2088
144DL8AAV	JO52	198	44	1236	1127	0	2144	199OK2KDS	JN99	134	0	1568	0	0	1983
145DL9BDM	JO33	197	0	1538	1248	1659	2321	200DG5NEX	JN49	133	0	1234	0	1333	1941
146G6RAF	IO92	197	0	1507	1722	2078	2400	201DL3IAS	JN49	130	36	988	1123	1830	1866
147DF9QX	JO42	197	0	1446	1070	1455	3320	202RU3ZD	KO81	126	0	1713	2126	1755	2363
148ES0SM	KO08	196	31	1578	1767	1991	0	203DL5IO	JN49	126	0	1073	925	1450	1899
149OK1SC	JO70	195	0	1490	1673	0	1729	204LA7DFA	JP33	125	0	630	1816	1803	0
150DK2DB	JN48	195	0	1239	1136	0	3106	205DL3NAW	JN59	120	0	1019	0	1961	1237
151ES1OX	KO29	194	18	1016	1449	1158	2121	206F6FGO	JN25	118	31	1390	0	0	2218
152IT9VDQ	JM68	192	41	1625	0	1950	2491	207OK2XTE	JN79	111	33	1362	0	0	2267
153PA0JUS	JO22	192	38	1409	1050	0	2167	208DL0SP/P	JO62	111	0	1315	785	0	1608
154OE5VRL/5	JN78	190	0	1665	1573	1990	2157	209DL5NEN	JN59	106	30	748	0	1767	1640
155DL2DR	JO31	190	39	1158	980	0	2057	210ON7WR	JO20	106	24	0	0	0	1834
156ES7RDR	KO27	189	31	1200	1750	1000	2101	211DJ8ES	JO43	104	19	1306	0	0	1856
157ES0HD	KO18	187	23	1550	1918	0	0	212OK2PHM	JN89	97	20	829	1265	0	2262
158UA3MHJ	KO87	186	0	1227	1943	2405	1948	213I3ZVN	JN55	96	31	1212	0	0	2237
159HB9MIO/P	JN37	185	0	1316	975	0	2183	214ES1II	KO29	95	13	979	1570	0	0
160S59AM	JN65	184	0	1377	0	1945	1788	215LA/DL7YS/P	JO37	93	22	1207	0	16730	
161ES5RY	KO38	183	32	1198	1695	2002	1409	216CT1DIN	IN60	91	18	1218	0	0	2338
162UA3T	LO16	183	0	1163	1941	2145	0	217CT1DDW	IN60	90	17	2100	0	0	2500
163HB9RUZ	JN47	183	48	1060	1050	0	3014	218DK0FLT	JN49	90	23	1363	0	0	1656
164DG3XA	JO43	179	35	1371	1061	1839	2183	219ES2QH	KO29	86	15	1072	1108	1517	0
165DL3YEE	JO42	178	0	1574	1450	1480	2106	220CT1CAD	IM67	85	18	1304	0	0	2249
166DK5WO	JO30	177	35	1474	1219	0	1993	221ES1DF	KO29	77	0	961	1080	0	0
167OK1IAS	JO60	177	33	1392	1444	0	2138	222DL3AZI	JO51	76	0	969	0	1543	0
168DK9RL	JN69	177	0	1311	1513	1286	3316	223SM4SJY	JP70	73	11	1262	870	0	1160
169DG3HS	JO53	174	0	1152	1091	0	2306	224F6OBT/P	JN19	73	11	0	0	0	0
170HB9AOF	JN36	172	44	1201	670	1675	2166	225OL5Z	JN89	69	14	874	0	0	0
171OK1VEI	JO70	170	0	1677	1197	1398	0	226CT1BGE	IM58	65	0	0	0	0	0
172ES1AO	KO29	169	25	1162	1176	1792	2136	227OK1UDX	JN79	63	19	537	0	0	0
173OK1KRY	JN69	166	40	1437	977	0	1830	228G7LRQ	IO91	60	16	1088	0	0	0
174ON4ZN	JO21	163	32	1390	980	0	2149	229DG7SFL	JN49	57	11	759	0	0	1750

108DG3XA	JO43 83	13 905	0	0	0	163SM4SJY	JP70 36	6 691	554	0	0
109OH2BNH	KP20 82	12 1235	1046	0	0	164ES1AO	KO29 35	12 1131	0	0	0
110F6CKZ	JN09 80	0 1302	0	0	0	165DF0RU	JO62 35	0 682	0	0	0
111DF1EQ	JO31 80	0 1249	0	0	0	166ES0ZA	KO19 33	8 1077	0	0	0
112ES4EQ	KO39 80	16 1160	907	0	0	167OK2XTE	JN79 32	11 658	0	0	0
113DK0FLT	JN49 80	17 1103	0	0	0	168ES1DF	KO29 32	7 511	0	0	0
114ES0IW	KO19 79	17 1342	906	0	0	169SP5HEJ	KO02 31	0 1347	850	0	0
115OK2KDS	JN99 79	0 1212	0	0	0	170F1FIH	JN23 30	7 796	0	0	0
116I4YNO/4	JN54 77	15 886	0	0	0	171ES0IC	KO18 30	7 673	0	0	0
117DL5NEN/P	JN59 76	16 964	0	0	0	172ES1CW	KO19 29	7 500	688	0	0
118DH3YAK	JO31 75	13 1165	0	0	0	173ER5MG	KO38 28	9 626	0	0	0
119F1GTU	JN05 75	0 1114	0	0	0	174ES0BI	KO18 28	7 378	0	0	0
120OK1FFD	JO60 74	23 1339	0	0	0	175ES1CR	KO29 27	12 930	0	0	0
121DL7YS	JO62 74	17 1100	0	0	0	176ES5QA	KO38 26	8 803	0	0	0
122OK1MG	JO70 74	18 1045	0	0	0	177ES0QY	KO18 25	8 650	0	0	0
123DG6GP	JN48 74	13 1024	0	0	0	178ES1AW	KO29 24	7 512	0	0	0
124UR7GN	KN66 70	0 1790	0	0	0	179CT1DDW	IN60 23	3 2100	0	0	0
125OK2PWW	JN89 70	17 1135	0	0	0	180ES1II	KO29 22	4 508	0	0	0
126OK1SC	JO70 69	0 1310	758	0	0						
127OK2PNN	JN89 69	0 918	0	0	0						
128DL0SP/P	JO62 67	0 1018	0	0	0						
129DL6BF	JO32 64	15 869	882	0	0						
130ES5WE	KO38 62	11 1406	0	0	0						
131DL8AAV	JO52 62	15 914	0	0	0						
132DG7SFL	JN49 61	10 947	0	0	0						
133DL3IAS	JN49 61	12 886	0	0	0						
134F6FGO	JN25 60	11 1016	0	0	0						
135ES0NW	KO29 59	17 1213	675	0	0						
136ES0SM	KO08 59	20 1202	925	0	0						
137UA4NM	LO48 58	0 1230	1310	0	0						
138OK1DTG/P	JO70 56	0 1436	0	0	0						
139OK2UFB	JN99 56	20 1232	0	0	0						
140LA/DB1DI/PJO	37 55	12 1013	0	0	0						
141OK1PG	JO70 54	0 1773	0	0	0						
142YO2IS	KN05 54	0 1020	1741	0	0						
143DH0GHU	JN38 53	11 852	0	0	0						
144OK1VBN	JN78 53	10 723	753	0	0						
145ES3GZ	KO28 52	10 1035	0	0	0						
146DL5BBL	JO42 51	0 841	722	0	0						
147LO5Z	JN89 51	12 761	0	0	0						
148DL9BDM	JO33 50	0 1278	0	0	0						
149SP2JXN	JO94 49	0 1149	0	0	0						
150ES1JL	KO29 48	11 1324	0	0	0						
151I2FUM/2	JN44 47	0 875	0	0	0						
152ES1RF	KO29 47	10 875	682	0	0						
153OM7AQ	JN98 47	13 803	0	0	0						
154F50IH/P	JN08 46	5 651	0	0	0						
155DL5NEN	JN59 46	13 630	0	0	0						
156F5DE	JN05 45	6 740	0	0	0						
157I3ZVN	JN55 41	12 1197	0	0	0						
158SM7JUQ	JO65 41	11 1048	0	0	0						
159OK1HRR	JO70 40	13 754	0	0	0						
160OK2PHM	JN89 39	9 746	0	0	0						
161DK2BJ	JO30 37	9 720	0	0	0						
162G7LRQ	IO91 36	12 1208	0	0	0						

Regeln/Rules

Die DUBUS TOP-List veröffentlicht regelmäßig Eigenangaben von UKW-Amateuren über die Zahl der von Ihnen gearbeiteten Felder auf den UKW-Bändern. Für die Topliste zählt nur ein QTH und ein Rufzeichen (Kann ein Portabel Standort sein). Gültig sind alle Felder weltweit. Nur terrestrische Verbindungen zählen. EME-Verbindungen werden in einer eigenen TOP-Liste erfasst, die der Redakteur für die EME-News verwaltet. Verbindungen über Satelliten und Relais zählen nicht. Die Liste wird in regelmäßigen Abständen veröffentlicht. Verwenden Sie den Vordruck und berichten Sie Ihren Felder-Stand entweder an DL8LAQ oder für Nur-EME an DL7APV. Um die Zahl der Einträge immer aktuell zu halten, wird jeder Eintrag pro Band nur dann weiter veröffentlicht, wenn er mindestens einmal pro Jahr von dem Rufzeichen-Inhaber durch Einsenden des untenstehenden Formblatts auf den neuesten Stand gebracht wurde. Nach Ablauf der Frist wird jeder Eintrag automatisch gelöscht.

DUBUS TOP-List publishes unconfirmed claims of squares worked by VHF/UHF-operators. Only one call sign or one QTH (may be portable) can be used for these claims. Only QSO's via terrestrial propagation are valid for this TOP-List. EME-Standings (EME-QSO's only) should be reported to the EME-News editor. QSO's via satellites and relays are not valid. The TOP-List will be published regularly. Please report your standings to DL8LAQ or for EME-ONLY to DL7APV. To have a clear picture of competition and activity each claim one each single band has to be updated at least once a year. Otherwise this entry will be deleted automatically.

DUBUS 1296 MHz Top List

NR	CALL	WW	WKDCODX
1	PA0EZ	JO22	132 23 1302
2	PA0WWM	JO22	126 23 1298
3	PA0RDY	JO22	121 01 1286
4	DL4VCG	JN39	119 01 1335
5	F6DKW	JN18	119 21 1273
6	OK1AXH	JO70	118 01 1444
7	G3XDY	JO02	117 22 1341
8	HB9AMH/P	JN37	114 01 1351
9	G3LQR	JO02	111 01 1274
10	DB6NT/A	JO50	107 01 1243
11	DL6BX	JO32	97 24 1120
12	SM6ESG	JO67	96 19 1440
13	SM7ECM	JO65	96 17 1326
14	SP6GWB/P	JO80	95 01 1580
15	DL6NAQ/P	JO40	92 40 1253
16	OK1KIR/P	JO60	92 22 1208
17	SP6MLK/P	JO80	91 23 1580
18	OE5VRL/5	JN98	91 18 1524
19	G6DER	IO93	86 01 1306
20	DL7QY	JN59	86 01 1261
21	F5PAU	IN88	85 01 1630
22	DK1KR	JO53	85 01 1097
23	PA0BAT	JO31	85 18 1014
24	OZ2OE	JO54	84 01 1425
25	DK0OG	JN68	82 01 1160
26	DL3YEE	JO42	82 01 1136
27	OK1KEI	JO70	81 01 1316
28	OZ1IPU	JO57	81 16 1096
29	OK1VEI	JO70	80 01 1313
30	PA3DIJ	JO33	79 01 939
31	OK7ZIS	JO65	77 01 1205
32	DL1BKK	JO43	77 01 995
33	HB9AOF	JN36	77 15 975
34	DL0ULP	JN48	74 01 962
35	OK1DFC/P	JO60	73 16 1176
36	F5HRY	JN18	73 01 1064
37	OZ1DOQ	JO65	71 17 1322
38	DH3NAN	JO50	71 01 1143
39	OK1AIY/P	JO70	70 01 1490
40	OK1CA	JO70	70 01 1421
41	PA0JUS	JO22	70 01 1265
42	G6HKM	JO01	69 01 1193
43	DK5WO	JO30	69 16 1137
44	DH9NBB	JN49	69 13 1016
45	HB9MIO/P	JN37	69 01 1000
46	ON7YK	JO20	68 01 1079
47	DC4XH	JO43	67 14 1090
48	HB9RG	JN47	67 01 920
49	DF1EQ	JO31	67 01 908
50	G4PMK	IO93	66 01 1302
51	DL2DR	JO31	65 13 1158
52	OK1OKL	JO60	63 01 1177
53	OK1DKS/P	JO60	62 13 1207
54	G4LRT	IO92	62 01 1152
55	DG5NEX	JN49	61 01 1060
56	ON7WR	JO20	60 14 1046

57	ON4GG	JO20	60 01 982
58	SP9FG	JN99	58 15 1492
59	OK1FFD	JO60	58 14 1058
60	DF9QX	JO42	57 01 1066
61	ON4ANT	JO20	57 01 914
62	DJ6XV	JO31	56 01 946
63	DC8UG	JO30	56 10 900
64	DC0DA	JO31	55 01 1034
65	DJ8ES	JO43	55 10 1025
66	DL1SUN	JO53	54 01 1162
67	ON4PS	JO20	54 13 1052
68	DL3NQ	JN49	51 01 920
69	DB1BX	JO32	51 12 905
70	DL1KDA	JO30	50 12 940
71	LA8AK	JO38	49 01 1373
72	PA2CHR	JO22	49 15 828
73	GW4LXO	IO81	48 01 990
74	DL3IAS	JN49	48 01 769
75	LY2WR	KO24	47 01 1026
76	DK0PX	JN48	47 01 942
77	DK0FLT	JN49	46 10 900
78	F6CGB	JN18	45 01 700
79	DG0CAL	JO52	44 01 1160
80	HB9BBD	JN47	43 11 1015
81	DJ1KP	JO40	43 01 698
82	IW5AVM	JN52	42 10 1036
83	SP9EWJ	JO90	42 01 946
84	DJ6MB	JO30	42 01 876
85	OE3JPC	JN88	42 01 702
86	HA1YA	JN87	40 13 862
87	ES2JR	KO29	40 01 765
88	DC6DY	JO31	39 01 865
89	LA/DB1DI/P	JO37	38 01 1013
90	OK1VMS	JO70	38 10 747
91	DK2DB	JN48	37 01 873
92	F1GTU	JN05	36 01 896
93	IO1VA	JN62	35 01 1152
94	YL3AG	KO26	35 01 800
95	DK2BJ	JO30	34 10 885
96	S50C	JN76	34 01 626
97	DG6GP	JN48	33 01 732
98	DG1VL	JO61	33 01 723
99	DH3YAK	JO31	33 01 715
100	ES4EQ	KO39	33 01 636
101	ES6RQ	KO37	33 01 600
102	DJ1LP	JO64	30 01 922
103	UR7GN	KN66	30 01 820
104	I2FUM/2	JN44	30 01 779
105	ES2WX	KO29	30 01 692
106	ES5WE	KO38	29 01 1249
107	G7LRQ	IO91	28 01 746
108	DK1VI	JN49	28 01 710
109	UT7GA	KN66	28 01 680
110	I3ZVN	JN55	27 01 1197
111	DK9RL	JN69	27 01 891
112	I4YNO/4	JN54	27 01 769
113	ES0SM	KO08	26 01 873
114	F6FGO	JN25	26 01 839
115	HB9RUZ/P	JN47	25 01 640
116	OZ8VO	JO56	24 01 951

117	OK2QI	JO80	23 01 1275
118	OK1VBN	JN78	22 01 950
119	F1FIH	JN23	22 01 605
120	OK1PG	JO70	21 01 985
121	PE1OGF	JO21	21 01 588
122	OH5LK	KP30	20 01 1349
123	UA3MBJ	KO88	20 01 301
124	OK1KRY	JN69	19 01 865
125	OK1KPA	JN79	19 01 783
126	OK2BBF	JN89	19 01 563
127	F5OIH/P	JN08	17 01 517
128	SP6AZT	JO81	16 01 820
129	DL5NEN	JN59	16 16 320
130	ES1RF	KO29	15 01 506
131	DG7SFL	JN49	15 01 358
132	SM4SJV	JP70	14 01 628
133	DF0RU	JO62	14 01 373
134	RX1AS	KN59	13 01 0
135	DL7YS	JO62	12 01 410
136	ES2XM	KO29	11 01 694
137	DL5UH	JN48	10 01 671
138	OK1SC	JO70	10 01 440
139	OK2PWY	JN89	10 01 357
140	OK2PHM	JN89	10 01 341
141	IT9VDQ	JN68	9 01 899
142	ES1OX	KO29	9 01 772
143	DL0SP/P	JO62	9 01 347
144	YO2IS	KN05	8 01 472
145	OK1HRR	JO70	8 01 292
146	OM7AQ	JN98	7 01 426
147	UY5HF	KN66	6 01 520
148	GU6WDK/P	IN89	6 01 0348
149	OK2XTE	JN89	6 01 206
150	ES2WR	KO29	5 01 745
151	SP5HEJ	KO02	5 01 433
152	GJ6WDK/P	IN89	5 01 282

DUBUS 2320 MHz Top List

NR	CALL	WW	WKDCODX
1	PA0EZ	JO22	79 15 973
2	PA0RDY	JO22	64 01 1000
3	PA0WWM	JO22	63 15 1022
4	DB6NT/A	JO50	60 01 1119
5	G3LQR	JO02	55 01 1006
6	DL6NAQ/P	JO40	53 11 932
7	OK1KIR/P	JO60	51 10 1115
8	DL7QY	JN59	47 01 1018
9	DL1BKK	JO43	45 01 760
10	G6DER	IO93	44 01 1265
11	SM6ESG	JO67	44 01 1054
12	OE5VRL/5	JN78	43 11 1291
13	PA0BAT	JO31	43 12 923
14	PA3DIJ	JO33	43 01 727
15	OK1AIY/P	JO70	42 01 1296
16	OZ1IPU	JO57	38 01 1028
17	SM7ECM	JO65	36 01 880
18	DC8UG	JO30	35 01 900
19	OK1OKL	JO60	34 01 830

20	DF1EQ	JO31	34	0	678
21	DL0UL/P	JN48	32	0	960
22	ON7WR	JO20	32	8	756
23	OZ2OE	JO45	31	0	876
24	F5HRY	JN18	31	6	785
25	DC0DA	JO31	31	0	775
26	DJ1KP	JO40	30	0	454
27	DL3NQ	JN49	29	0	890
28	OZ7IS	JO65	29	0	860
29	ON7YK	JO20	29	0	733
30	HB9MIO/P	JN37	29	0	694
31	DL3YEE	JO42	28	0	912
32	G4LRT	IO92	27	0	1022
33	G3XDY	JO02	27	8	947
34	DH9NBB	JN49	27	7	654
35	DL4VCG	JN39	27	0	553
36	DF9QX	JO42	26	0	915
37	DK0PX	JN48	26	0	853
38	OZ1DOQ	JO65	25	7	830
39	IOLVA	JN62	25	0	612
40	DK0FLT	JN49	24	7	646
41	DK0OG	JN68	23	0	675
42	G4PMK	IO93	22	0	1249
43	DK2DB	JN48	22	0	873
44	OK1DKS/P	JO60	22	4	602
45	DB1BX	JO32	22	7	525
46	DL3IAS	JN49	21	6	604
47	I3ZVN	JN55	19	7	603
48	DJ8ES	JO43	18	7	1025
49	HB9AMH/P	JN37	18	0	933
50	G4DDK	JO02	17	0	969
51	LA/DB1DI/P	JO37	17	7	825
52	DG5NEX	JN49	16	0	465
53	S51WI	JN75	16	4	463
54	DK1KR	JO53	13	0	792
55	DJ6XV	JO31	12	0	396
56	PA0JUS	JO22	10	5	705
57	IWSAVM	JN52	10	3	552
58	I2FUM/2	JN44	10	0	354
59	OK2BFF	JN89	10	6	308
60	OK1KEI	JO70	9	0	786
61	DL1SUN	JO53	9	0	349
62	OK1DFC/P	JO60	9	3	320
63	SP9FG	JN99	8	4	717
64	LA8AK	JO38	8	0	677
65	OK1CA	JO70	8	0	291
66	OK1PG	JO70	8	0	0
67	F6CGB	JN18	7	0	407
68	DG6GP	JN48	7	2	388
69	DH3NAN	JO50	7	0	331
70	F1GTU	JN05	7	0	313
71	SP6GWB/PJO	080	7	0	274
72	SP6MLK/P	JO80	6	3	272
73	F1FIH	JN23	6	1	181
74	ON4PS	JO20	5	0	574
75	S50C	JN76	5	2	346
76	OK1KRY	JN69	5	3	189
77	OK2QI	JO80	4	0	201
78	DF2CA/P	JN57	3	0	206
79	GW4LXO	IO81	3	0	200

DUBUS 3400 MHz Top List

NR	CALL	WW	WKDCODX
1	PA0EZ	JO22	28 5 835
2	DB6NT/A	JO50	27 0 741
3	DL6NAQ/P	JO40	25 4 860
4	PA0WWM	JO22	21 5 850
5	G3LQR	JO02	19 0 924
6	PA0BAT	JO31	18 3 568
7	PA0RDY	JO22	18 0 520
8	DC0DA	JO31	17 0 660
9	G6DER	IO93	15 0 859
10	DL1BKK	JO43	15 0 703
11	DL3NQ	JN49	15 0 637
12	DL7QY	JN59	15 0 565
13	DC8UG	JO30	13 6 724
14	DF1EQ	JO31	13 0 532
15	DB1BX	JO32	12 4 425
16	DK2DB	JN48	11 0 331
17	G4PMK	IO93	10 0 845
18	DK0PX	JN48	9 0 632
19	G4LRT	IO92	9 0 509
20	DL0UL/P	JN48	9 0 239
21	DL4VCG	JN39	6 0 339
22	OZ2OE	JO45	5 0 772
23	DJ8ES	JO43	5 3 578
24	DJ6XV	JO31	5 0 396
25	GW4LXO	IO81	3 0 117
26	DK0OG	JN68	3 0 78
27	DF9QX	JO42	2 0 143
28	DF2CA/P	JN57	2 0 24
29	OZ1IPU	JO57	1 1 209
30	G8BKE/P	IO80	1 0 114
31	GU6WDK/P	IN89	1 0 6

DUBUS 5760 MHz Top List

NR	CALL	WW	WKDCODX
1	HB9AMH/P	JN37	36 0 929
2	PA0EZ	JO22	34 8 1017
3	SM7ECM	JO65	34 6 960
4	DB6NT/A	JO50	32 0 1000
5	HB9MIO/P	JN37	26 0 694
6	SM6ESG	JO67	25 6 951
7	G3LQR	JO02	21 0 949
8	PA0BAT	JO31	20 7 723
9	DL1BKK	JO43	19 0 689
10	OZ1IPU	JO57	18 6 807
11	PA0WWM	JO22	17 7 863
12	I3ZVN	JN55	17 6 573
13	OK1KIR/P	JO60	17 3 393
14	OK1UWA/PJO	070	16 0 998

15	OE5VRL/5	JN78	15	6	901
16	DL0UL/P	JN48	14	0	660
17	S51WI	JN75	14	3	586
18	IOLVA	JN62	14	0	557
19	G6DER	IO93	13	0	947
20	F5HRY	JN18	12	3	442
21	F1GHB/P	IN88	12	0	435
22	DL3NQ	JN49	12	0	318
23	DC8UG	JO30	11	5	724
24	OZ7IS	JO65	11	0	593
25	DC0DA	JO31	11	0	451
26	OK1AIY/P	JO70	10	0	693
27	DL7QY	JN59	10	0	565
28	S51JN/P	JN65	10	3	557
29	OK1OKL	JO60	9	0	611
30	DL6NAQ/P	JO40	9	2	452
31	OZ1DOQ	JO65	9	4	442
32	DB1BX	JO32	9	4	425
33	DK0PX	JN48	9	0	409
34	DK2DB	JN48	9	0	315
35	HB9MIN/P	JN37	8	0	286
36	LA/DB1DI/P	JO37	7	5	746
37	G4PMK	IO93	6	0	958
38	OK1DKS/P	JO60	6	1	318
39	DC8EC/A	JN57	6	0	278
40	I2FUM/2	JN44	6	0	201
41	OZ2OE	JO45	5	0	679
42	DJ8ES	JO43	5	5	578
43	DF1EQ	JO31	5	0	461
44	F6CGB	JN18	5	0	407
45	DL4VCG	JN39	4	0	339
46	DJ6XV	JO31	4	0	176
47	F8UM/P	JN05	4	0	162
48	DK0OG	JN68	4	0	78
49	DG1VL	JO61	3	2	191
50	OK1KRY	JN69	3	2	175
51	F6CGB/P	JN24	2	0	375
52	G8BKE/P	IO80	2	0	242
53	ES2WX	KO29	2	2	89
54	GJ6WDK/PIN	89	1	0	136
55	OK2QI	JO80	1	0	108
56	SP6MLK/6	JO70	1	1	1

DUBUS 10 GHz Top List

NR	CALL	WW	WKDCODX
1	PA0EZ	JO22	68 13 1017
2	F6DKW	JN18	64 9 1215
3	G3WDG	IO92	55 0 1135
4	F5HRY	JN18	54 8 877
5	G4KGC	IO92	53 0 1135
6	HB9AMH/P	JN37	51 0 939
7	SM7ECM	JO65	48 7 1110
8	G3LQR	JO02	46 0 1006
9	PA0WWM	JO22	46 13 850
10	HB9MIN/P	JN37	45 0 939
11	DK1KR	JO53	44 0 868
12	OE5VRL/5	JN78	42 10 1136
13	DB6NT/A	JO50	40 0 1000
14	DL3YEE	JO42	40 0 700

15	G4BRK	IO91	39	0	1115
16	I6XCK/6	JN63	39	0	702
17	PA0BAT	JO31	38	10	785
18	SM6ESG	JO67	37	6	1275
19	LX1DU	JN29	37	0	700
20	I6CXB/6	JN63	35	0	751
21	HB9RG	JN47	34	0	761
22	DJ1KP	JO40	34	0	554
23	DK0OG	JN68	33	0	524
24	I0LVA	JN62	32	0	850
25	DL6NAQ/P	JO40	32	8	656
26	G4DDK	JO02	31	0	901
27	DL4EAU/P	JO51	31	0	826
28	DL3NQ	JN49	31	0	712
29	DL1BKK	JO43	30	0	842
30	OK1JKT/P	JO60	30	5	638
31	G3GNR	IO70	29	0	1275
32	OZ1IPU	JO57	28	7	941
33	HB9MIO/P	JN37	28	0	694
34	DL3IAS	JN49	28	9	584
35	OK1OKL	JO60	27	0	795
36	DK0PX	JN48	25	0	567
37	OK1KIR/P	JO60	25	5	553
38	DL1VAA	JO61	24	4	661
39	DK0FLT	JN49	24	7	646
40	DH9NBB	JN49	24	7	646
41	DK4GDP	JN48	24	0	566
42	ON7WR	JO20	23	9	756
43	OZ2OE	JO45	22	0	789
44	EA6ADW/P	JM19	21	4	850
45	OK1AIY/P	JO70	21	0	736
46	S51WI	JN75	21	5	586
47	DC8UG	JO30	20	6	753
48	DB1BX	JO32	20	7	705
49	S51JN/P	JN65	20	6	563
50	DL4VCG	JN39	20	0	533
51	I3ZVN	JN55	19	7	573
52	F9QX	JO42	19	0	504
53	F1GHB/P	IN88	19	0	456
54	G4LDR	IO91	18	0	1118
55	LA/DB1DI/P	JO37	18	6	825
56	DL5NEN/P	JN49	18	6	466
57	DL0UL/P	JN57	17	0	363
58	DL2DR	JO31	16	4	603
59	ON7YK	JO20	16	0	494
60	DK2DB	JN48	16	0	432
61	HB9AMH	JN37	15	0	567
62	DL7QY	JN59	15	0	492
63	OK1UWA/P	JO70	15	0	434
64	IW5ADB	JN53	14	0	1053
65	G4PMK	IO93	14	0	958
66	DC0DA	JO31	14	0	639
67	DG1VL	JO61	14	2	391
68	I4XCC	JN63	13	0	496
69	OZ1DOQ	JO65	13	5	472
70	GW4LXO	IO81	12	0	309
71	G4KNZ	IO91	12	0	247
72	OK1DKS/P	JO60	11	2	616
73	S50C	JN76	10	3	346
74	F6CGB	JN18	9	0	677

75	DJ8ES	JO43	9	4	593
76	DC8EC/A	JN57	9	0	297
77	G4LRT	IO92	8	0	824
78	F5HRY/P	JN08	8	2	491
79	DL1KDA	JO30	8	4	477
80	DJ6XV	JO31	8	0	195
81	F6CGB/P	JN12	7	0	823
82	SP6GWB/P	JO80	7	0	374
83	DF1EQ/P	JO31	7	0	283
84	SP6MLK/P	JO80	6	4	355
85	PA3DIJ	JO33	6	0	344
86	ES0SM	KO08	5	2	384
87	DG0CAL	JO52	5	0	255
88	LA8AK	JO38	5	0	212
89	G8BKE/P	IO80	4	0	242
90	F50IH/P	JN08	4	1	149
91	OK1DFC/P	JO60	3	2	185

DUBUS 24 GHz Top List

NR	CALL	WW	WK	CD	CODX
1	HB9MIN/P	JN37	12	0	396
2	DC8EC/P	JN57	10	0	301
3	HB9AMH/P	JN37	10	0	286
4	HB9MIO/P	JN37	10	0	172
5	DJ1KP	JO40	8	0	273
6	OE5VRL/5	JN78	7	3	273
7	DB6NT/A	JO50	6	0	301
8	G4DDK	JO02	6	0	268
9	EA6ADW/P	JM19	6	2	226
10	DK4GDP	JN48	6	0	184
11	G3WDG	IO92	5	0	392
12	PA0EZ	JO22	5	3	391
13	DL3NQ	JN49	5	0	287
14	G3LQR	JO02	5	0	261
15	S51JN/P	JN65	5	2	236
16	OK1KIR/P	JO60	5	2	227
17	DK0OG	JN68	5	0	193
18	OK1OKL	JO60	5	0	185
19	DF2CA/P	JN58	5	0	142
20	PA0BAT	JO31	5	2	126
21	OK1UWA/P	JO70	4	0	188
22	OK1DFC/P	JO60	4	2	185
23	DK0PX	JN48	4	0	168
24	G3GNR	IP70	4	0	154
25	DL3YEE/P	JO42	4	0	151
26	DL2DR	JO31	4	1	98
27	F5HRY	JN18	4	1	82
28	OK1AIY/P	JO70	3	0	266
29	OK1AIY-P	JO60	3	0	227
30	F1GHB/P	IN88	3	0	158
31	G4KNZ/P	IO83	3	0	120
32	I3ZVN	JN55	3	1	102
33	DG1VL	JO61	3	1	50
34	DF1EQ	JO31	2	0	133
35	DB1BX	JO32	2	1	90
36	DK2DB	JN48	2	0	48
37	ON7YK	JO20	2	0	34
38	SM6ESG	JO67	2	1	20
39	G4KGC	IO92	1	0	392

40	DC0DA/P	JO32	1	0	104
41	G8BKE/P	IO80	1	0	100
42	F50IH/P	JN08	1	1	90
43	CT1DMK	IN50	1	0	82
44	DJ6XV	JO31	1	0	76
45	F6CGB/P	JN37	1	0	74
46	OK1OGS/P	JN69	1	0	60
47	GW4LXO	IO81	1	0	58
48	OZ1IPU	JO57	1	1	55
49	DL4VCG	JN39	1	0	9
50	SP6MLK/6	JO70	1	1	1

DUBUS 47 GHz Top List

NR	CALL	WW	WK	CD	CODX
1	HB9MIN/P	JN37	8	0	182
2	HB9MIO/P	JN37	8	0	166
3	HB9AMH/P	JN37	5	0	166
4	DK4GDP	JN47	5	0	123
5	DF2CA/P	JN58	4	0	15
6	DL2DR	JO31	3	1	71
7	OK1OKL	JO60	2	0	96
8	OK1UWA/P	JO70	2	0	96
9	OK1AIY-P	JO60	2	0	96
10	DB6NT/A	JO50	2	0	95
11	DC0DA/P	JO31	2	0	69
12	DK0PX	JN48	2	0	62
13	DF2CA/P	JO60	2	0	59
14	DL3YEE/P	JO42	2	0	45
15	DL/HB9AMH/P	JN48	0	184	
16	DC8EC/A	JN57	1	0	14
17	OK1AIY/P	JO70	1	0	12
18	OK1KIR/P	JO60	1	1	5
19	SP6MLK/6	JO70	1	1	1
20	CT1DMK	IN50	1	0	1

DUBUS 76 GHz Top List

NR	CALL	WW	WK	CD	CODX
1	DK4GDP	JN47	4	0	114
2	DF2CA/P	JO50	4	0	4
3	HB9MIO/P	JN37	2	0	114
4	DB6NT/A	JO50	2	0	77
5	DC0DA/P	JO50	2	0	48
6	OE9FKI	JN47	1	0	2
7	HB9AMH/P	JN37	1	0	1
8	HB9MIN/P	JN37	1	0	1

DUBUS 145 GHz Top List

NR	CALL	WW	WK	CD	CODX
1	DB6NT/OZ	JO57	1	0	3
2	DB6NT/A	JO50	1	0	2

DUBUS 241 GHz Top List

NR	CALL	WW	WK	CD	CODX
1	DB6NT/A	JO50	1	0	2
2	DB6NT/OZ	JO57	1	0	0

AMP UK

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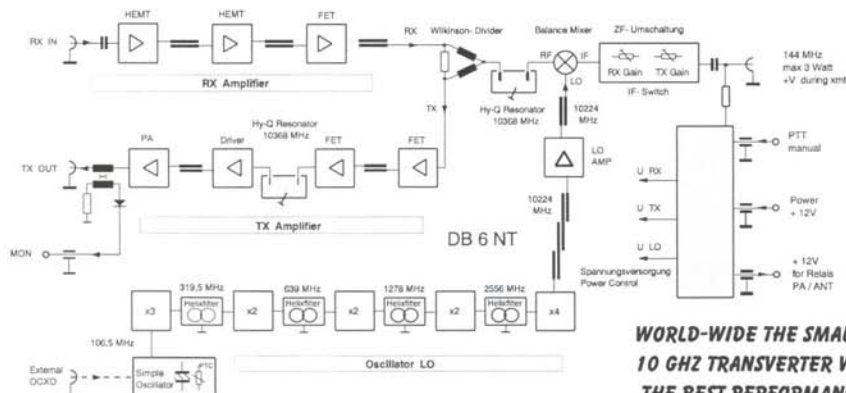
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