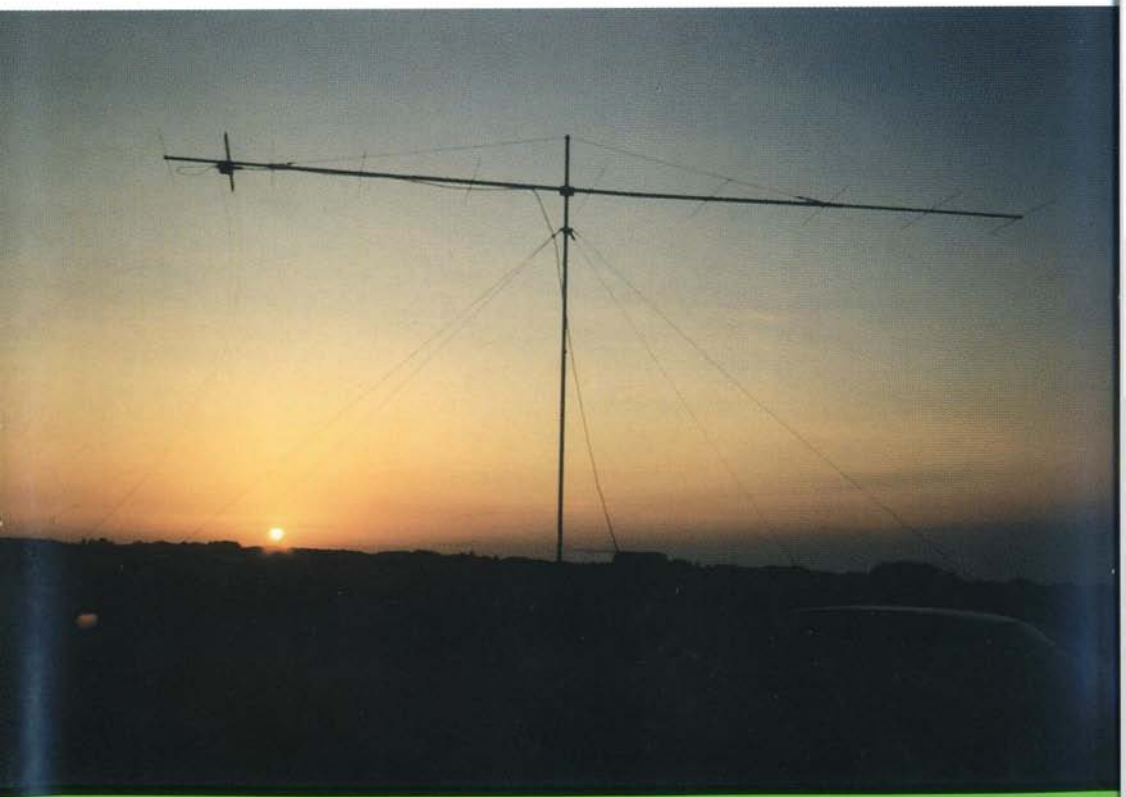
Vol. 27

DUBUS

C 11159
4. Quartal

4/98

Meteor Scatter



Entirely Devoted to VHF/UHF and Microwaves

PROCOM
DENMARK

MCW 3000

Mikrowellen-Wattmeter

- Einfache, schnelle und genaue Leistungsmessung.
- Extreme Bandbreite.
- Großer Dynamikbereich von 70 dB.
- Hochempfindlich – mißt ab ÷50 dBm (10 Nanowatt).
- Bereich: ÷50 dBm bis +20 dBm. (10 Nanowatt bis 100 Milliwatt).
- Frequenzbereich: 100 kHz bis 18 GHz mit Standardmeßkopf PRO-18G und bis 50 GHz mit Zusatzmeßkopf.
- Mit den meisten Typen von Dioden-Meßköpfen einsetzbar.
- Unzählige Einsatzbereiche bei der Leistungsmessung.
- Hohe Genauigkeit: < ± 1 dB mit PRO-18G Standardmeßkopf (÷40 dBm bis +20 dBm) [HP 33330B-, C-, D- oder E-Typ Meßköpfe können ohne Nachstellung verwendet werden].
- Ausgang für Koordinatenschreiber oder Scope. (1 V/10 dB).
- Der Dynamikbereich läßt sich mittels externer Dämpfungsglieder oder Richtkoppler erweitern.
- 9-12 VDC-Versorgung.
- MEßKOPF TYP PRO-18G WIRD MITGELIEFERT.

EISCH-ELECTRONIC
Annemarie Eisch-Kafka
Abt.-Ulrich-Str.16, D-89079 ULM, Tel: (+49) 07305 23208, Fax: (+49) 07305 23306

Inhalt/Contents

Title: EA6/PA2CHR/p in JN10WB

Redaktion/Editorial Staff

Technical Reports, Microwave Parts:	Rainer Bertelsmeier, DJ9BV, Glücksburger Str. 20, D-22769 Hamburg
Microwave News:	John Sørensen, OZ1IPU, Sølystvej 13, DK-9300 Sæby, Denmark
Microwave USA:	Kent Britain, WA5VJB, 1626 Vineyard Rd., Grand Prairie, TX 75052, USA
Microwave JAPAN:	T. Takamizawa, JE1AAH, 3-28-6 Takaishi, Asao-ku, Kawasaki 215, Japan
EME-News:	Bernd Wilde, DL7APV, Nordhoferstr. 8, D-16833 Nordhof
Tropo News, 6 m News, Beacon List:	Joachim Kraft, DL8HCZ, Grützmühlenweg 23 , D-22339 Hamburg
Meteor Scatter News, Aurora News, Top List:	Norbert Göttsche, DL8LAQ, Tulpenweg 3, D-24568 Kaltenkirchen
ES News:	Ilan Schnell, DL5BCU, Am Heidberg 8, D-28865 Lilienthal
FAI News:	Georges Vialet, F8OP, Le Cottage, Rte de Tournus, F-71290 Cuisery, France
News & Comments:	Klaus Tiedemann, DL4EBY, Halskestr. 35, D-12167 Berlin

Electronic Mail & AX25

Email-Address:	dubus01@ibm.net / tklaus@berlin.snafu.de / 0405383186@t-online.de
AX.25:	dl8laq@db0hb / dl8hcz@db0hb

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
Entirely devoted to DX-ing on VHF/UHF and Microwaves (50MHz...241GHz). Fully bilingual and written by active radio amateurs for active radio amateurs.

Das DUBUS-Magazin erscheint vierteljährlich im März, Juni, September und Dezember. Der Abonnementspreis beträgt in der BRD DM 35,-. Durch Überweisung des Abonnementspreises auf unser Postbank-Konto werden Sie für ein Jahr Bezieher der DUBUS.

The DUBUS-Magazin is published quarterly in March, June, September and December. For subscription please contact your national representative or transfer the appropriate annual rate, which can be seen below, by international postal money order to DUBUS Postbank account.

Herausgeber/Publisher:
DUBUS Verlag GbR, Grützmühlenweg 23, D-22339 Hamburg, FRG.

Chefredakteur/Editor-in-Chief:
Rainer Bertelsmeier, DJ9BV, Glücksburger Str. 20, D-22769 Hamburg. Fax: (++49)40-850-8972, e-mail: dubus01@ibm.net

Geschäftsführer/Manager:
Joachim Kraft, DL8HCZ, Grützmühlenweg 23, D-22339 Hamburg, FRG, email: 0405383186 @t-online.de

Abo-Verwaltung/Circulation:
Norbert Göttsche, DL8LAQ, Tulpenweg 3, D-24568 Kaltenkirchen, Tel.: 04191/959913

Abo-Konto/Subscr.-Account:
Postbank Hamburg, Kto.-Nr. 266292202, BLZ 20010020

International Representatives

Austria:	Reinhilde Riml, OE9YTV, Marktstr. 35, A-6971 Hard
Australia:	Doug McArthur, VK3UM, Tikaluna, 26 Old Murrindindi Rd., Glenburn, Victoria 3717
Belgium:	Luc Selis, ON4ASL, 13 Heikestratt, B-3190 Boortmeerbeek
Bulgaria:	C. Mintchev, LZ1DP, Ul Boruigrad 8 AP 10, 6004 Stara Zagora
Czech Republik:	Milan Gütter, OK1FM, Karafiatova 23, 31702 Plzen
Denmark:	Gert Rahbek-Udengaard, OZ1FKZ, Risvangen 2, DK-8362 Hörning
Eire:	A.E. Latham, EI6AS, 226 Belgard Heights, Dublin 4
France:	Patrick Magnin, F6HYE, Marcorens, F-74140 Ballaison
Finland:	Jukka Saario, OH1FF, Insinrinkatu 48 A 28, SF-33720 Tampere
Italy:	Tony Fumagalli, I2FUM, Via Masia 34, I-22100 Como
Japan:	Toshihiko Takamizawa, JE1AAH, 3-28-6 Takaishi, Asao-ku, Kawasaki 215
Luxemburg:	Carlo Diedert, LX1CD, 15 Op der Hobuch, L-5832 Fentange
Netherlands:	Veron Verkoop Bureau, P.O. Box 1166, NL-6801 BD Arnhem
Norway:	N.N.
Portugal:	Filipe A.S. Ferreira, CT1DDW, B. st. Eugena, Lote-28 1.Post, 3500 Viseu
Poland:	Andrezj Wlodarczyk, SP1JX, P.O. Box 67, 76-270 Ustka
Romania:	Folea Ion, YO5TE, P.O.Box 168, RO-3400, Cluj 1
Serbia:	Nemethy Istvan, YU7EW, Branka Radicevica 63, YU-23217 Aleksandrovo
R.S.A.:	John Sygo, ZS6JON, P.O. Box 66, 1752 Paardekral
Spain:	J.R. Daglio Accunzi, EA2LU, Manual Irribarren 2-5 D, E-31006 Pamplona
Slovenia:	Miha Habic, S51FB, Vodnikova 8, SI-1000 Lubljana
Sweden:	Anders Pettersson, SM7ECM, Hökvägen 111, S-24562 Hjärup
Switzerland:	Ferdinand Stämpfli, HB9MIO, Etzelkofenstr. 90, CH-3308 Grafenried
Ukraine:	Sergej Lysenko, UR5LX, Zolochev Reg., Iwaschki, Kharkov Obl, Ukr. 312211
United Kingdom:	Roger Blackwell, G4PMK, 5 Tollgate Road, Culham, Nr. Abingdon, Oxon OX14 4NL
USA:	Russel L. Miller, N7ART, 12041 S.W. Peninsula Drive, Crooked River Ranch, OR 97760
Other Countries:	Contact DUBUS Verlag. Subscription Rates: **Europe DM 35,- Overseas Air Mail DM 40,- (US$ 30.00)**

Technical Reports

Editor: Rainer Bertelsmeier, DJ9BV

RYTHM13: Converter for 2.4GHz

Gianfranco Sabbadini, I2SG

RYTHM for Novices

The described converter is a quasi NO-TUNE project employing an innovative harmonic mixer: the RYTHM. This acronym has been implemented to identify an high efficiency harmonic mixer, with local oscillator whose frequency is four times lower than the fundamental mode, i.e. the:

RECOVERED YELD TETRA HARMONIC MIXER

Such a circuit simplifies the L.O. chain, therefore not including multipliers but a simple filter selecting the 6th harmonic of the crystal oscillator and a buffer stage.

The circuit and the operating principle of this mixer are shown in Fig.1, Fig. 2. Four diodes are involved: one pair is driven directly by the oscillator signal and a second pair is connected via a delay line, 90 degree long. Each diode pair is in conduction state twice per cycle and therefore the impedance at the junction varies 4 times per local oscillator cycle.

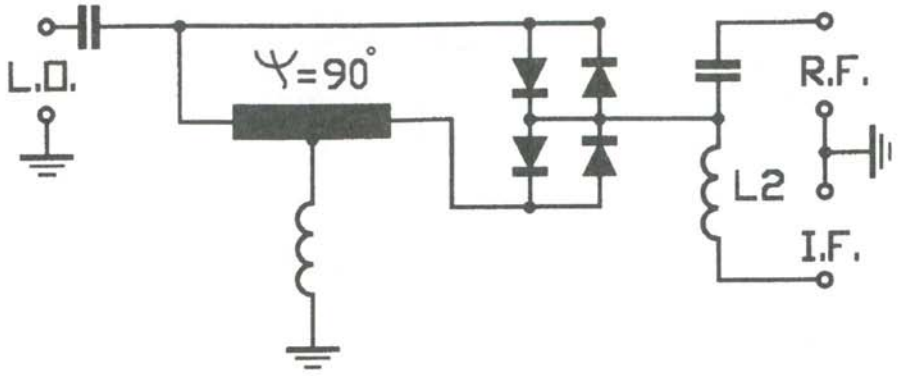
The mixer has 3 ports:

1. At the four diodes junction: the R.F. signal is applied.
2. The mixing product (I.F.) - isolated by the an high impedance line (L2) - is also available at the junction.
3. At the end of the diodes pairs: the L.O. signal - with 90 degrees relative phase shift - switches the diodes.

To maximise the conversion efficiency the oscillator ports must show low impedance to ground both at the I.F. frequency and at the even harmonics of the L.O. frequency (2nd, and 4th): this condition is satisfied placing a ground return via a low value inductance and a capacitive stub - placed for symmetry reasons - at the middle of the delay line.

Some alternative solutions of RYTHM have been tested, including hybrid shifter, but that here described is the simplest among those evaluated giving satisfactory results: the measured conversion loss is 8...8.5 dB.

The project here described is intended for beginners and novices willing to explore the microwave bands, doing something with own



Bild/Figure 1: Diagram of RYTHM

hands but with little money, no expensive intrumentation available and/or specific background at U/SHF. Only a soldering iron and a D.C. multimeter are the key instruments necessary and of course ... good ham spirit: the project has been developed keeping in mind this philosophy. Nevertheless the experienced microwave enthusiast could try the proposed RYTHM into other solutions and/or implement this new mixer at other MW bands: it's also a challenging opportunity to explore new ways to do old things !.

1. Einführung

Es wird ein 13cm Konverter vorgestellt, der praktisch ohne Abgleich auskommt und einen neuartigen Mischer verwendet, dessen LO-Frequenz nur ein Viertel der internen zur Mischung verwendeten Harmonischen ist. Der Mischer wird RYTHM genannt.

Damit kann man die LO-Schaltung wesentlich vereinfachen. Man braucht nur die 6. Harmonische des Quarzoszillators aussieben und verstärken.

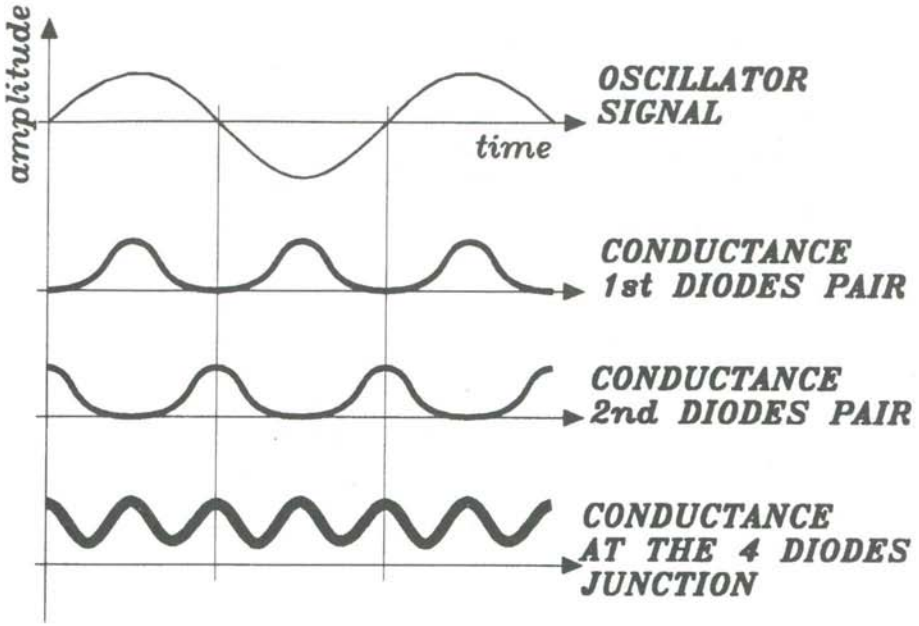
In Abb. 1 wird die Schaltung des Mischers vorgestellt. Der Mischer besteht aus 4 Dioden, wovon jeweils 2 antiparallel geschaltet sind. Eine Hälfte wird direkt vom LO, die andere über eine 90° Phasenleitung vom LO gespeist. Aus Abb. 2 erkennt man, daß jedes Paar zweimal während eines LO-Zyklus leitend ist. An der Verbindung ist somit das Quartett viermal während eine Zyklus leitend. Daraus ergibt sich die Mischwirkung auf der vierfachen LO-Frequenz. Der Mischer hat 3 Tore:

1. Die HF wird an dem Summenpunkt eingespeist
2. Die ZF wird über einen Tiefpass an diesem Punkt entnommen.
3. Der LO wird an den Enden der Diodenpaare eingespeist.

Um den Wirkungsgrad zu optimieren, müssen die LO-Tore eine niedrige Impedanz auf den geradzahligen Harmonischen der LO-Frequenz und auf der ZF zeigen. Das erreicht man durch eine Drossel und kapazitive Stubs in der Mitte der Phasenleitung. Die hier vorgestellt einfachste Alternative hat einen Konversionsverlust von 8...8,5dB.

2. Circuit Description

Until now 4 different RYTHM-13 designs have been implemented (ver. A, B, C and D), with alternative devices for the first R.F. stage and with/without I.F. post-amplifier. The first re-



Bild/Figure 2: Operation of RYTHM

lease - the most simple - has been already described and the circuit is given in Fig. 3. (Ref. 1)

This version uses the MMIC type INA10386 in the first R.F.stage and no I.F. amplifier: the measured performances show an overall conversion gain of 21 dB and a noise figure of 3.7...4 dB.

Due to the feedback received from OM's dealing with this first release and the demand for lower noise figure, the latest "D" version has been developed and it's described (Fig.4) in the following. With only little more effort the improvement is significant:

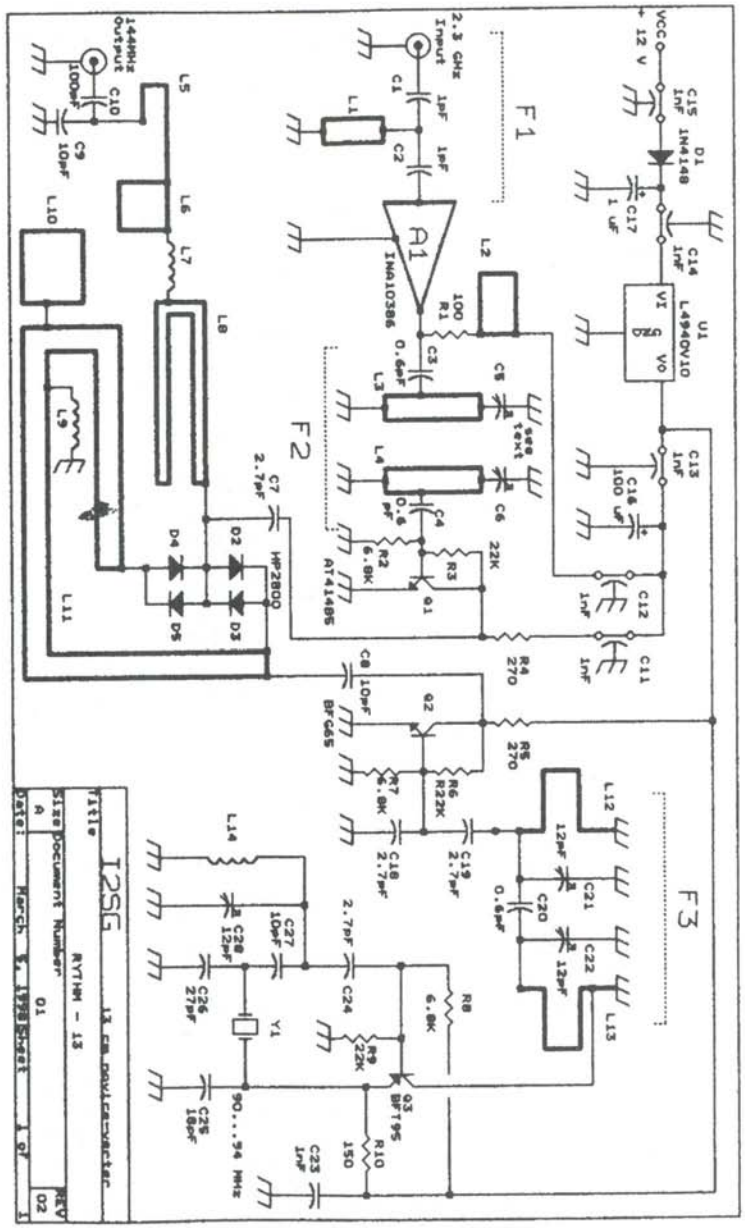
- Noise Figure: 1.2...1.4 dB
- Conversion gain: 32...35 dB

With reference to the circuit diagram of Fig.4, the key points are the following.

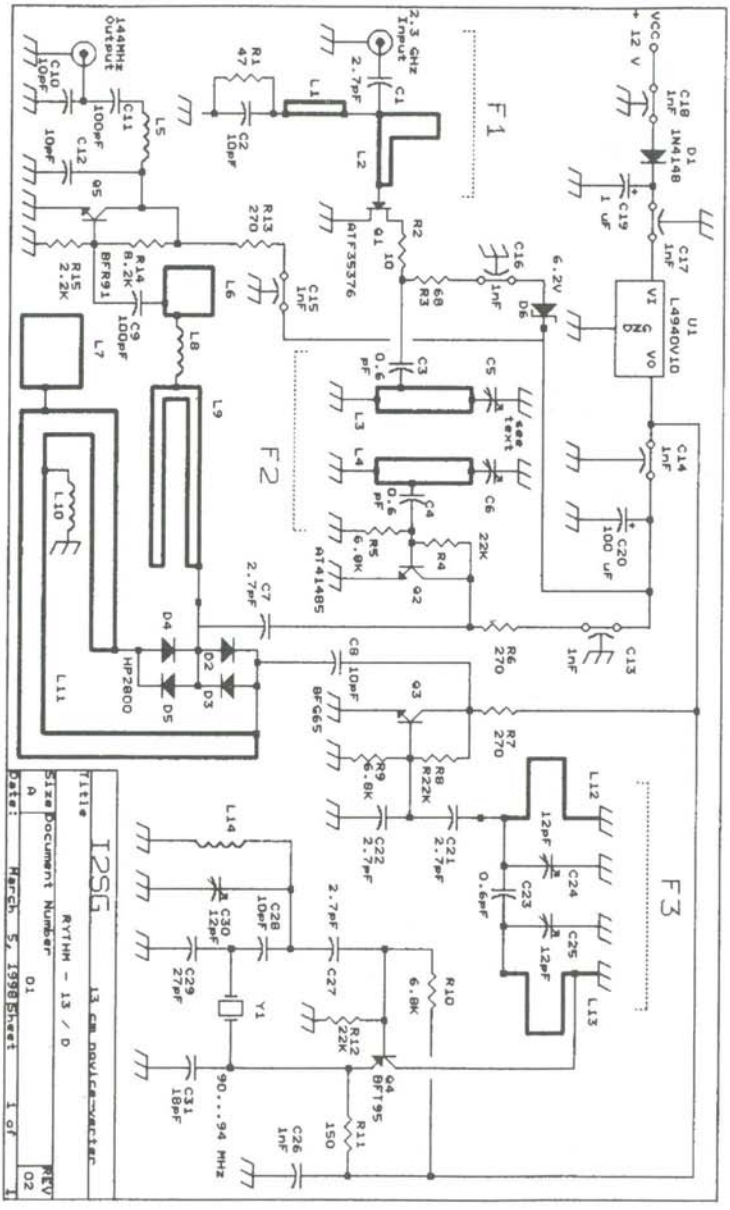
1. The first R.F. amplifier (Q1) is based on a PHEMT operated at zero-bias, as already experimented on a 23 cm preamplifier described at Ref. 2. This stage is followed by a 2-pole microstrip filter (F2) and by another amplifier with a single bipolar transistor (Q2). That drives the RYTHM-mixer. Q5 is a post-amplifier at the I.F. frequency.

2. "F1" is a matching network for minimum N.F. and no tuning elements are provided.

3. The image filter "F2" is a COMB structure. With a couple of lines capacitively loaded (l = 70 degrees) this kind of filter is the most compact among those feasible in microstrip technology (Ref.3). The tuning capacitors (C5, C6) are formed with a piece of a thin copper foil (5 mm wide, 10...12 mm long) spaced about 0.5 mm from the microstrip. To guarantee an image rejection greater than 45 dB the filter has been designed for a pass-band of 40 MHz. The input-output coupling taps are given by the ground returns of L3 and L4. These are quite repeatable since they correspond to the thickness of the PTFE laminate (1,6 mm). Fig. 5 shows the simulated

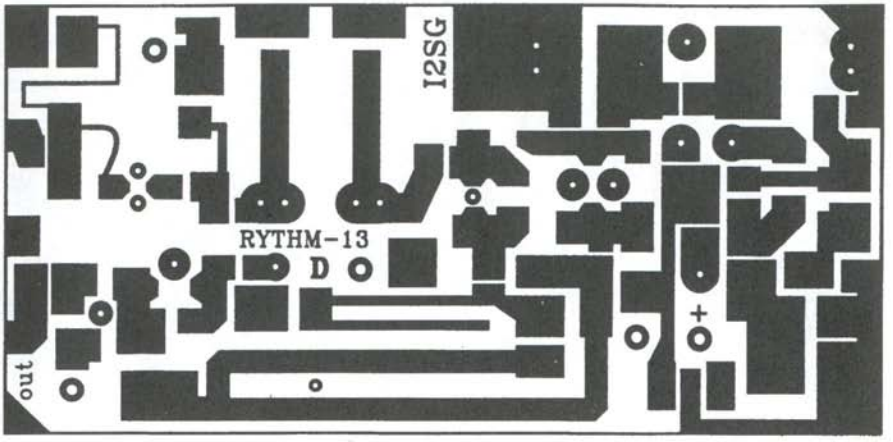


Bild/Figure 3: Diagram of RYTHM-13/Rev. A



Bild/Figure 4: Diagram of RYTHM-13/D

Bild/Figure 5: PUFF Simulation



Bild/Figure 6: PCB of RYTHM-13

response of F2, using the PUFF program. The simulation includes:

- the ground returns (lines length = 1.6mm, Z_0 = 80 ohm)
- the loading capacitors of 0.16 pF (theoretical value)

4. The gain of the second stage (Q2) is near to |S21| at 2,4 GHz or slightly higher (about 11 dB with the Avantek AT41485).

5. The amplified R.F. signal is applied to the RYTHM via C7 and is isolated from the IF port by L9 (half- wavelength at 2.4 GHz). L6-L8 and the output filter (C12-L5-C10) reject the oscillator harmonics.

6. The local oscillator is a modified CLAPP circuit with a PNP transistor (Q3) followed by a filter (F3) for the 6th harmonic selection and an amplifier stage (Q4), without tuning elements. (Ref. 4) This part of the circuit is essentially the same as in the NO-TUNE converter for the 23 cm band, which has been described in Ref. 5.

The XTAL (Y1) is a 5th 'overtone', with nominal resonance frequency given by:

$$F_X = \frac{(F_O - F_{IF})}{24}$$

were:

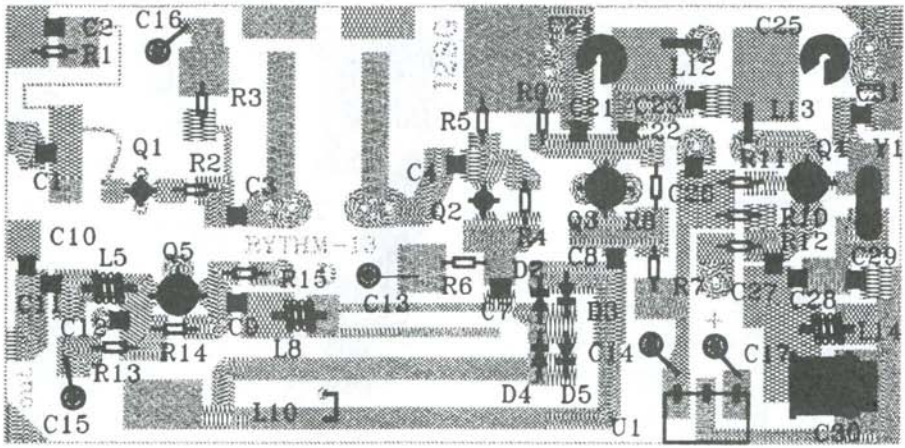
F_X = XTAL frequency (generally is a 5th overtone)
F_O = Input frequency at 2.4 GHz
F_{IF} = Output I.F. frequency

The following table gives the XTAL frequencies calculated for the most common frequency slots used in Italy (I.F.= 144MHz).

Input Frequency (MHz)	Oscillator Frequency (MHz)	XTAL Frequency (MHz)
2304...2306	540	90
2400...2402	564	94
2444...2442	574	95.667

Table 1: Operating Frequencies

Typical output level on the 6th harmonic (at the input of F3) is -10...-13 dBm. The tapping on L13 is given by the path from the microstrip side to the ground, i.e. is equal to laminate thickness



Bild/Figure 7: Parts Placement

(1,6 mm). C13 tunes L14 on the XTAL operating frequency.

7. The filter "F3" has a narrow pass-band so that the close-in harmonics (the 5th and the 7th) are at least 40...45 dB down vs. the desired L.O. signal. Trimmers C23, C24 are air dielectric with ceramic support for superior Q factor as well mechanical and electrical stability. Tuning of this filter is very easy and it's requiring only a D.C. tester.

8. All stages are biased via a +10 V low drop-out voltage regulator, and a 6.2 V zener diode provides the necessary voltage drop for Q1.

2. Schaltung

Bis heute wurden vier verschiedene Spielarten des Konverters realisiert. Die einfachste Version wurde bereits in Ref. 3 beschrieben. Diese Version benutzt als Vorverstärker einen INA10386 und keinen ZF-Verstärker. Die Verstärkung beträgt 21dB und die Rauschzahl 3,7...4dB.

Eine niedrigere Rauschzahl erschien wünschenswert. Die hier vorgestellt Version D (Schaltung in Abb. 4) hat folgende Daten:

- Rauschzahl: 1,2...1,4dB
- Verstärkung: 32...35dB

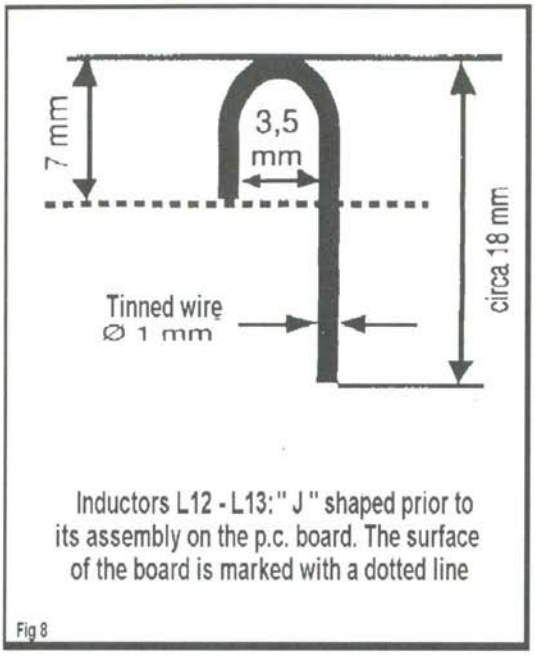
Die Schaltung baut sich wie folgt auf:

1. Der HF-Verstärker (Q1) besteht aus einem PHEMT, der ohne Vorspannung betrieben wird (Sie Ref. 2). Ein zweipoliges Bandfilter (F2) in Mikrostreifenleitungstechnik sorgt für die Spiegelselektion. Ein zweiter Verstärker mit Q2 treibt den Mischer. Das ZF-Signal wird über Q5 verstärkt.

2. F1 ist eine abstimmfreies Netzwerk, das für optimale Rauschanpassung sorgt.

3. Das Filter F2 besteht aus einer Kammstruktur von zwei gekoppelten Leitungen, welche über kleine Kapazitäten (C~0,16pF) abgestimmt wird. Diese werden als kleine Kupferfolien (5x10mm) realisiert, die ca. 0,5mm Abstand zur Streifenleitung haben. Die nominelle Bandbreite des Filters beträgt nur 40MHz. Die Ein-/Auskopplung findet über die Durchkontaktierungen der Streifenleitungen statt. Diese sind präzise reproduzierbar. Abb. 5 zeigt einen Simulation des Filters mittels der Software PUFF.

4. Die Verstärkung der zweiten Stufe ist ca. 11dB.



Bild/Figure 8: Shaping of inductors

5. C7 koppelt das 13cm Signal in den Mischer. L9 ist eine halbe Wellenlänge auf 13cm und isoliert das ZF-Tor. L8, L8 und das Ausgangsfilter (C12, L5, C10) unterdrücken Harmonische des LO.

6. Der LO ist eine Clapp-Schaltung mit einem rauscharmen PNP-Transistor. Das Filter F3 siebt die 6. Harmonische aus. Die Pufferstufe mit Q4 verstärkt das LO-Signal auf den nötigen Pegel. Der Quarz schwingt im 5. Oberton. Seine Resonanzfrequenz bestimmt sich zu

$$F_X = \frac{(F_O - F_{IF})}{24}$$

mit:

F_X = Quarzfrequenz
F_O = Eingangsfrequenz
F_{IF} = ZF Frequenz

Tabelle 1 zeigt die Quarzfrequenzen für die in Frage kommenden Bänder. Am Eingang von F3 herrscht ein Pegel von ca. -12dBm. Die Anzapfung wird wieder durch die Durchkontaktierung gebildet. Damit sind unnötige Freiheitsgrade ausgeschlossen. Mit C13 kann man die Oszillatorfrequenz abstimmen.

7. Das Filter F3 hat eine geringe Bandbreite, so daß die benachbarten Harmonischen (5./7.) bereits mit 40...45dB unterdrückt werden. C23 und C24 haben eine Luftdielektrikum. Das bedeutet gute Stabilität und hohe Güte.

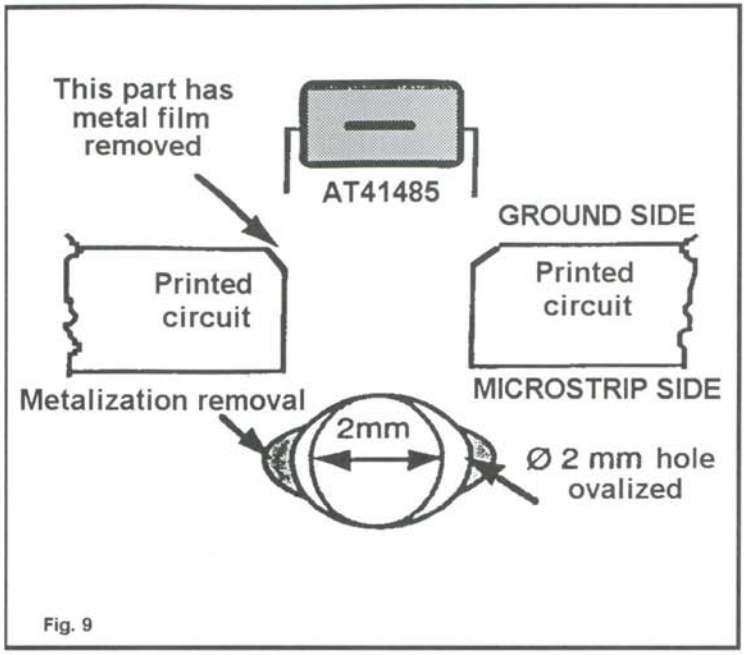
8. Alle Stufen werden von einem 10V 'Low-Drop' Regler versorgt. Für Q1 ist noch eine 6,2V Zenerdiode vorgeschaltet.

3. Construction

The circuit is build on 1.6mm PTFE laminate (Rogers 5870) having dimensions 108x53 mm. (see Fig. 6) As for my other projects, I make available only the 'strategic' components, i.e. the PTFE p.c. board and the PHEMT ATF 35176.(I leave to the experimenter the pleasure to go around 'flea markets' to search after the other devices !). The printed circuit is passivated with silver and pre-drilled with the PHEMT ground returns inserted: the latter are 2 hollow rivets (diameter = 2 mm) to establish a defined (and repetitive) inductance of the ground return, which is part of device matching and stability. (Ref. 6) The component list is given in Tab.2

Fig. 7 shows the parts layout. All components are soldered on the microstrip side except the second R.F. transistor Q2, feed through bypass capacitors C13, C14, C15, C16, C17, C18, zener diode D6, electrolytic capacitors C19, C20 and diode D1. C18 is soldered on the case (of low cost tinned iron).

The coils L5, L8, L14 are made with 0.8 mm enamel wire, close spaced with 3.5 mm internal diameter: number of turns are: L5 = 5 turns, L8 = 4 turns, L14 = 10 turns. Inductors L12, L13 are shown in Fig.8. Also L10 is "J" shaped but with different sizes: height = 7mm, inner dis.= 5mm, wire diameter = 0.5mm. All



Bild/Figure 9: Assembly of second RF-Stage

other 'L' components are printed and do not require adjustment.

Here are the recommended steps to follow STRICTLY in the listed sequence:

1. The p.c. board (drilled and with rivets inserted) is trimmed with a file to the correct dimensions of the case (case sizes: 110x55x42 mm). Being the second stage Q2 soldered from the ground side, the board is drilled and a cavity is shaped as shown in Fig. 9. The device is inserted from the ground side with the emitter leads placed on the metalized surface of the board; base and collector terminals are bent 90 deg. to reach the microstrip side.

Make sure - prior the soldering - that input and output are not shorted to ground. The recommended connectors are SMA (with 2 holes flange) at the input and SMA or BNC at the I.F. output. These are directly soldered to the box prior to soldering the printed circuit. The box is also drilled for subsequent insertion of the feed-through capacitor C18.

2. The p.c. board is soldered to the box. The rivets are soldered both sides for a solid contact to the PHEMT ground return. The metalization patterns parallel to the board outline are also soldered to ground (i.e. to the case walls). The distance between the microstrip side of p.c.b. and the cover plate should be not less than 25 mm, to avoid detuning of filters or undesired parasitic coupling. For additional, (but non necessary) precaution stick, on the cover plate, a piece of absorbing sponge.

3. The voltage regulator is soldered - at the edge - to the case wall: to make this operation easier, remove the plating (normally nickel) of the edge of regulator tab using a thin file. Tuning capacitors C5, C6 are formed with thin copper foil as shown in Fig.10: interposing a thin piece of unmetalized epoxy laminate will make the soldering operation easier. All the ground returns are connected using tinned

Table 2: Parts List

Pos.	Item	Value
1	C 1, 7, 21, 22, 27	2.7pF, SMD
2	C2,C8,C10,C12,C28	10 pF; SMD
3	C3,C4,C23	0.68 pF; SMD
4	C5,C6	see text
5	C9,C11	100 pF; SMD
6	C13,C14,C15,C16,C17,C18	1 nF; feed-through
7	C19	1 uF; Electrolytic
8	C20	100 uF; Electrolytic
9	C24,C25,C30	12 pF; Air trimmers
10	C26	1 nF; SMD
11	C29	27 pF; SMD
12	C31	18 pF; SMD
13	R1	47 ohm SMD
14	R2	10 ohm SMD
15	R3	68 ohm SMD (s. text)
16	R4,R8,R10	6.8 Kohm SMD
17	R5,R9,R12	22 Kohm SMD
18	R6,R7	270 ohm
19	R11	150 ohm
20	D1	1N4148 (or 1N4000)
21	D2,D3,D4,D5	HP2800
22	D6	Zener 6.2 Volt, 1 Watt
23	L5	5t, 0.8mm CuEl, 3.5mm diam., close sp.
24	L8	4t, 0.8mm CuEl, 3.5mm diam., close sp.
25	L14	10t, 0.8mm CuEl, 3.5mm diam., close sp.
26	Q1	ATF35376 Avantek
27	Q2	AT41485 Avantek
28	Q3	BFG65 Philips I
29	Q4	BFT95/ BFQ23 Philips
30	Q5	BFR91
31	U1	L4940V10 ST
32	Y1	5th overtone XTAL(Quarzkeramik, KVG)

wire (D= 0.8 mm). (including the returns of L3,L4) Air trimmers C24, C25 are soldered.

IMPORTANT: THE GROUND TERMINAL IS THAT OF THE ROTOR.

4. Inductors L12, L13 are placed (see Fig. 8). In sequence: insert the coil, solder the connection to the trimmer, bend the other terminal toward the laminate (ground), solder to ground, and last, solder the microstrip side (i.e. the tapping connected to collector of Q4). Insert and solder L10.

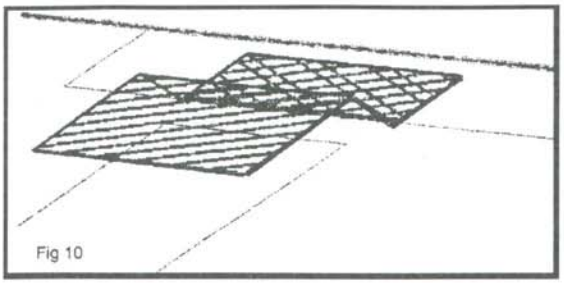
5. All feed-through capacitors are inserted and soldered to ground.

6. The second R.F. stage, Q2, is soldered, as well as all other components are inserted with exception of Q1, D2, D3, D4. (therefore - at

this stage - the RYTHM includes only one diode, through the delay line L11).

7. At this point apply +12V supply to the circuit and the L.O. is tuned:

- Check the regulated voltage (+ 10 V).
- Check the voltage drop on R6, R7, R11, R13 showing the current flow on the related devices.
- Connect the D.C. multimeter (10 V F.S. .) momentarily via a high value resistor (47 kOhm) between the emitter of Q4 and ground. Adjust C24, C25 and C30 to minimum capacitance.
- Turn C30 slowly until a sharp change of the meter indication shows the start of the oscillator. Disconnect the meter and adjust C30 to set the frequency to the nominal value (if a frequency meter is available): alternatively simply check with an FM radio the carrier at the XTAL frequency.
- Verify the correct start of the oscillator by switching the supply line: if it isn't the case adjust C30 slightly to make it happen.
- Connect the multimeter, configured 100 micro ampere F.S., between L6 and ground. The single Shottky diode connected is used as a peak detector: since its tangential sensitivity is greater than -50 dBm, few tens of millivolts are sufficient to indication of the meter.
- Turn C25 up to a peak indication of the meter: continuing (up to Cmax) other peaks are noted, corresponding to the different harmonics of the oscillator. The "Q" factor of this circuit is high, and therefore the tuning is quite 'sharp'.
- Adjust C25 to mimimum again and start again to increase slowly the capacitance: stop at the first peak encountered: at 99 % this is the 6th harmonic. Then tune the secondary circuit, tuning C24 for maximum: during this operation the meter will exceed full scale and therefore is configured as voltmeter (1 V F.S..). Fine-peak again C25 for maximum.



Bild/Figure 10: Assembly of C5, C6

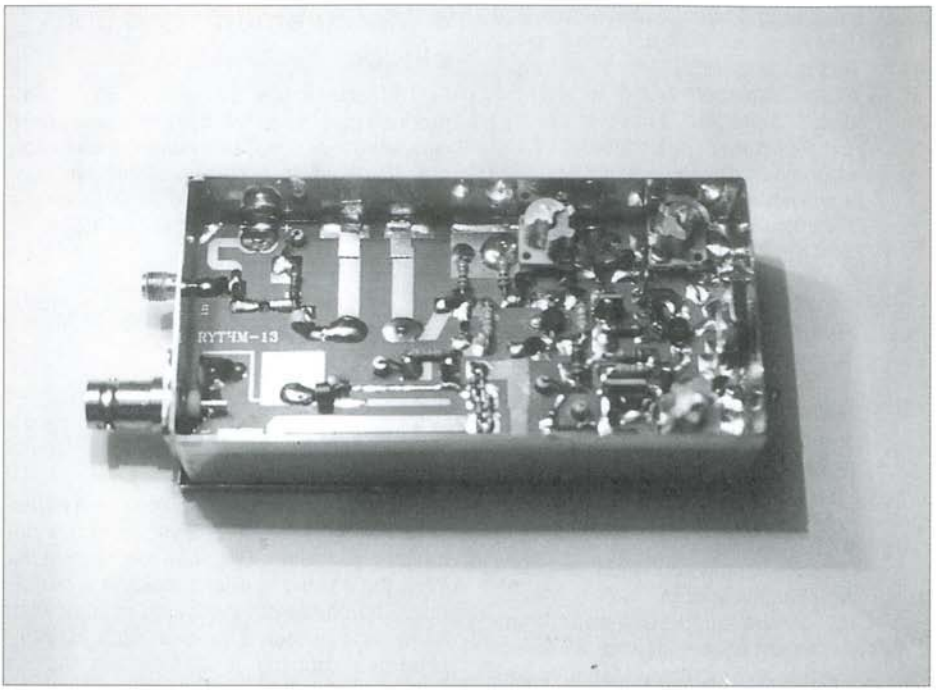
8. After removing the supply voltage and all missing component are assembled (i.e.; Q1, D2, D3, D4).

9. Apply the supply voltage and verify the drain voltage of Q1: this should be not lower than 1 volt: in case of lower voltage, change R3 to 47 ohm. (after Vcc removal)

10. At this point the RYTHM-13 assembly is completed and the only point left is the tuning of the image filter F2. Terminate the input of the converter on a 50 ohm load. If a load is not available a reasonable length of 'lossy' cable should be connected (ex 7...10 m of RG58). With receiver in SSB mode, C5 and C6 are adjusted for the maximum noise, i.e. maximum deviation of the RX S-meter. This is achieved by changing the spacing of the copper trips vs. the microstrip ends of L3,L4 by means of a tooth-pick.

3. Konstruktion

Die Schaltung ist auf einem Rogers 5870 Substrat mit 1,6mm Dicke realisiert. Die Leiterplatte hat die Abmessungen 108x53mm. Vom Verfasser kann die fertig durchkontaktierte und versilberte Platine bezogen werden. Bei den übrigen Bauteilen ist man auf



Bild/Figure 11: Ready Made RYTHM-13

sich selbst angewiesen. Die List der Bauelemente ist in Tabelle 2 zu sehen.

Abb. zeigt den Bestückungsplan. Alle Komponenten m it Ausnahme von Q2, den Durchführern C14, 14, 15, 16, 17 und 18, der Zenerdiode D6, den Elkos C19, C20 und der Diode D1 werden auf die Mikrostreifenleitungsseite aufgelötet.

Die Spulen L5, 8 und 14 werden aus 0,8mm starkem Kupferlackdraht gefertigt. L12 und L13 zeigt die Abb. 8. L10 ist ähnlich nur mit 5mm Abstand der Schenkel und 0,5mm Durchmesser des Drahtes.

Die folgenden Schritte sollten beim Bau eingehalten werden:

1. Die Leiterplatte wird auf Maß gebracht. Abb. 9 zeigt die Montage von Q2, der von unten eingelötet wird. Die koaxialen Buchsen sind SMA-Buchsen. Das Gehäuse wird entsprechend mit Löchern auch für den Durchführungskondensator C18 versehen. Die SMA-Buchsen werden auf das Gehäuse gelötet.

2. Die Leiterplatte wird in das Gehäuse gelötet. Ebenso werden die Nieten durchgelötet, welche die Sourcen des PHEMT's erden. Der Abstand zwischen Deckel und Platine sollte mehr als 25mm betragen, um Verstimmungseffekte zu verhindern.

3. Spannungsregler einlöten. Dann die Abstimmkondensatoren C5 und C6 wie in Abb. 10 fertigen und einlöten. Alle Durchkontaktierungen werden mit verzinntem Draht von 0,8mm Durchmesser ausgeführt. Die Trimmer C24 und C25 einlöten. Der Rotor liegt auf Masse.

4. Nach Abb. 8 die Induktivitäten L12 und L13 anfertigen und einlöten. Ebenso L10.

5. Alle Durchführungskondensatoren einlöten.

6. Alle anderen Komponenten mit Ausnahme von Q1, D2, D3 und D4 einlöten.

7. 12V anlegen und den LO abstimmen
   - Spannung am Ausgang des Reglers prüfen (+10V).
   - Spannungsabfall an R5, R7, R11 und R13 prüfen.
   - Ein Multimeter am Emitter von Q4 über einen 47k Widerstand anschließen. C24, C25 und C30 auf minimale Kapazität einstellen.
   - C30 eindrehen. Eine plötzliche Stromänderung zeigt den Einsatz der Schwingung an. Mit einem Frequenzzähler die Frequenz justieren
   - Beim wiederholten Ein-/Ausschalten das Anschwingen überprüfen.
   - Multimeter auf 100µA Vollauschlag schalten und zwischen L6 und Masse klemmen. Die einzelne Diode im Mischer (D1) arbeitet als empfindlicher HF-Detektor mit einer tangentialen Empfindlichkeit von -50dBm. Damit kann man die LO-Amplitude justieren.
   - C25 eindrehen, bis das erste Strommaximum angezeigt wird. Weiteres Eindrehen ergibt jede Menge Maxima, die den verschiedenen Harmonischen des XO entsprechen.
   - C25 wieder auf Minimum drehen und das erste Maximum der Anzeige wiedersuchen. Danach C24 auf Maximum drehen (Bereich am Multimeter auf 1V ändern). C25 nachjustieren.

8. Alle fehlenden Bauteile (Q1, D2, D3 und D4 bestücken.

9. Spannung wieder anlegen und Drainspannung von Q1 prüfen. Diese sollte nicht weniger als 1V betragen. Falls das so ist, muß R3 auf 47Ohm geändert werden.

10. Eingang des RYTHM-13 mit einer 50Ohm Last abschließen und mit nachgeschaltetem RX auf 144MHz C4 und C5 wechselweise auf maximales Rauschen am Nachsetzer abstimmen. Das wird durch Änderung des Abstandes der Kupferfolien mittels eines Zahnstochers erreicht.

4. Measurements and conclusions

Fig. 11 shows one of the first RYTHM-13 produced: to date few samples have been circulated to skilled OM, including those interested to satellite communications for independent evaluation 'on-field'. Tab. 2 list the typical characteristics of RYTHM-13D.

RYTHM-13D Characteristics

- Conversion Gain: 32...35 dB (2400/144 MHz)
- Noise Figure: 1,4 dB
- Image Rejection: 40 dB
- Pass-band: 55 MHz (@ - 3 dB)
- Supply voltage: 11 V min... 15 V max.
- Supply current: 70 mA

Fig. 12 shows the frequency response measured with a spectrum analyser and a wideband noise source. The peak response at the left is the 90 MHz oscillator leakage at the I.F. port. The bandwidth measured is somewhat larger than expected, probably due to undesired over-coupling of L3, L4. Nevertheless the image rejection exceeds 40 dB.

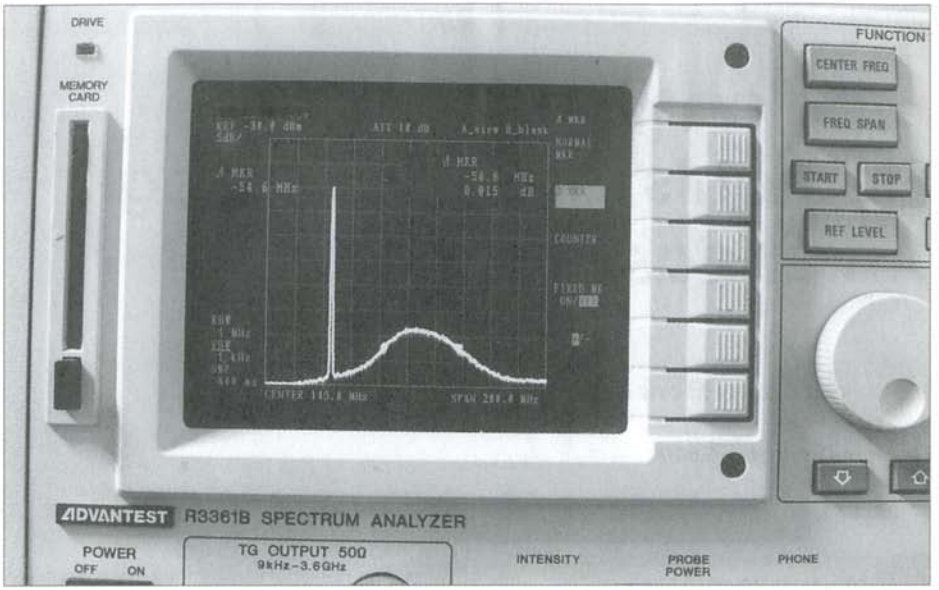
This project is the last of a series the author generated for the promotion of the narrowbandwidth activity on the microwave bands in Italy. The next efforts will be toward the 'new wave' of the wideband communications, like fast scan Amateur Television (ATV) and high speed digital communications. These are candidate to become interesting and affordable, also in view of the stream of low cost components the industry will make available for high volume ISM applications, up to the millimetres bands.

Meßwerte

Abb. 11 zeigt einen der ersten Konverter, die gebaut wurden. Die folgende Tabelle zeigt die Leistungswerte

RYTHM-13D Meßwerte

- Verstärkung: 32...35 dB (2400/144 MHz)
- Rauschzahl: 1,4 dB
- Spiegelfrequenzunterdr.: 40 dB
- Bandbreite: 55 MHz (@ - 3 dB)



Bild/Figure 12: Passband of RYTHM-13

- Betriebsspannung: 11 V min... 15 V max.
- Strom: 70 mA

Abb 12 zeigt das Verhalten des RYTHM-13 im Durchlassbereich des Filters F2. Der Peak auf der linken Seite ist der XO-Durchsschlag auf 90MHz. Obwohl die Bandbreite größer als erwartet ist, beträgt die Spiegelfrequenzunterdrückung mehr als 40dB.

5. References/Literatur

1) Gianfranco Sabbadini, I2SG, " RYTHM-13: CONVERTITORE PER I 13 CM ", Radio Kit Feb./Mar. 1998.

2) Gianfranco Sabbadini, I2SG, "SSS23:preamplifier on 1.3 GHz ", DUBUS 2/1997.

3) - " FILTRI A MICROONDE " Liberatore, Parente. Collaborazione tra Siemens AG e Tecniche Nuove. MILANO

4) Randall W. Rhea, " OSCILLATORS DESIGN AND COMPUTER SIMULATION " Second Edition. Noble publishing. Atlanta

5) Gianfranco Sabbadini, I2SG, " NOVICE-VERTERS PER I 23 CM ", Radio Rivista No12 1996.

6) Gianfranco Sabbadini, I2SG, " SEMINARIO MICROONDE ", Parte seconda. Incontri tecnici 1995-1996, Sezione ARI di Pavia.

7) ARRL, " THE ARRL UHF/MICROWAVE EXPERIMENTER'S MANUAL " ARRL - 225 Main Street Newington, CT 06111 USA.

The design of Driven Elements for VHF/UHF Yagi Antennas

Modeling, observations and some case studies.

Graham Daubney, G8MBI

1. Introduction

What I present here is intended to provoke thought and experimentation. Whilst I do present some practical solutions, to both the modeling and real world of antennas, my intent is to make input to those who have an interest in both designing and building their own antenna systems, share some views and opinions, and perhaps prompt some of those with deeper understanding and/or more sophisticated testing facilities, to contribute in future. What I do not intend is to infer that a huge problem exists, but simply to explore and try to move forward the constant improvement process.

Antenna modeling is now a large part of many peoples interest, it can also however be a 'lone' part of the hobby, it is possible that many people have seen similar results to these and are also wondering. I want to encourage some data/experiences exchange. If you have input or constructive criticism they are welcome at my email address.

I am truly a radio amateur and not a professionally trained engineer or mathematician. I am a kind of 'hands on guy' who likes to play with, and practically use, both modeling software and physical realisations of antennas in my Hobby. My discussion covers a number of areas and poses some questions as well as offering some solutions.

1. Einführung

Mit diesem Artikel möchte ich diejenigen, die Antennen selbst bauen oder konstruieren, mit einigen Erfahrungen, Ideen und Gedanken versehen, welche die Speisung von Yagis betreffen.

Die Modellierung und Simulation von Antennen ist inzwischen gut verbreitet. Auch Amateure haben Zugriff zu der entsprechenden Software. Als echter Amateur - Ich bin kein Ingenieur - möchte ich einige Erfahrungen und Erkenntnisse mitteilen.

2. Why Focus on the DE ?

The DE can be viewed alternately as both the least important part of a Yagi antenna and yet the most important part of a high performance system.

It's purpose is purely that of coupling your transmitter into the antenna, no more and no less. In purely theoretical terms it has little or no effect on the pattern, gain or other parame-

ters of the antenna. Yet, in practical terms it, can have major effect on the antennas performance. Especially in the area of realised gain and pattern. A good antenna design can be very quickly turned into a mediocre or even poor design by accumulated losses within the DE , especially those coming from any matching system and the cable attached to it, which frequently and unintentionally gets employed as a matching device. This must be viewed very seriously when trying to operate 'on the edge'. As a practical example let me take a recent realworld case.

A 144mhz EME system was being constructed , the antenna chosen was a group of four 5 lambda boom yagis. The particular antenna chosen was picked because it had a rather good gain performance and a group of 4 produced a theoretical gain of close to 21 dbd. Most people spend a lot of time, effort and finally money, to select what they consider to be the very best and will spend hours or weeks consulting papers and other people for opinions and facts, often choosing a difference of 0.2 db just to have the 'best'.

What happened here was that on checking the DE assembly it became clear that there were 0.2db losses in the balun and connections associated with the balun and cable connections. Plus a further 0.2db losses because the balun was in fact not of correct length. Some further potential for additional cable losses because of poorish return loss. The presence of the balun within the yagi was not considered, but one can safely assume that there will be additional degradation because of that also.

What this means is that the overall system performance was only equivalent to a group of 4.5 lambda antennas with DE's that are running more efficiently, in fact when reduced feeder lengths are considered, then the 4.5's are even better. The group of 5 lambda antennas had, in effect, a total of over 4 metres of boom doing nothing. More importantly the 4.5 lambdas would have reduced stacking distance requirements and would also save a total of 2 metres of stacking frame. The wind loading savings and weight savings are also significant. Why spend weeks choosing or, worse still designing and building an array to have this happen. ? The moral is that in designing or choosing high performance antennas then pay attention to details OTHER than quoted gain numbers.

To design a good yagi is not enough, you also have to get the antenna coupled properly and efficiently into the rest of the system AND you have to be able to actually build a DE in a reliable manner with respect to finding parts to fabricate it with and, for most people, with simple hand tools.

2. Bedeutung des Speiseelementes

Man kann das Speiseelement als den unbedeutendsten aber auch als den wichtigsten Teil einer YAGI betrachten.

Seine Bedeutung liegt darin, die Leistung aus dem Speisekabel in die Antenne zu koppeln. Rein theoretisch hat dieses Element wenig Einfluß auf die Parameter Diagramm und Gewinn. Praktisch ist jedoch oft der Einfluß nicht zu vernachlässigen.

Ein gutes Design kann schnell mittelmäßig werden, wenn sich Verluste im Speiseelement oder Anpassungsgliedern summieren.

Als Beispiel sei ein System von 4 Yagis genannt, die jeweils 5λ lang sind und einen Gewinn von ca. 21dBd produzieren. Viele Leute wählen eine Antenne aufgrund von Gewinnunterschieden von 0,2dB aus. Der Besitzer der Antennen entdeckte nach einiger zeit, daß die Leistung der Antenne nicht wie erwartet war. Es fehlten ca. 0,5dB, die durch Balun m it falscher Länge und einen schlecht konstruierten Faltdipol entstanden waren.

Das bedeutete, daß der Gewinn dieser Gruppe dem Gewinn von verlustfreien Antennen mit 4,5λ Länge entsprach. D.h. 4x1m=4m Boomlänge waren überflüssig. Zudem hätte man die Antennen von 4,5λ dichter stocken können, ganz zu schweigen von der Windlast. Mit anderen Worten, warum sollte man nicht alle Eigenschaften optimieren, wenn man schon eine Menge Zeit, Geld und Arbeit in eine Antenne investiert?

Eine Antenne zu designen ist nicht genug. Man muß sich Gedanken über geeignete Speisesysteme machen, die optimal sind im elektrischen Sinne, der Mechanik und der Reprozierbarkeit mit einfachen Werkzeugen.

3. Return Loss and SWR.

There is a good deal of focus in the following on return loss and SWR. That should not be misunderstood, it is worth remembering that SWR is only an indicator.

Having a poor SWR does not necessarily indicate that an antenna is bad, but it might give problems and loss opportunities in other system components.

Equally having a very good and rather flat 'in shack' SWR is not a very good sign either. When one sees this situation it is often time to start looking for losses in the system. In fact the above example is a very good case where the losses in both balun system and construction actually improve SWR whilst significantly reducing systems efficiency.

Good or bad return loss is not necessarily an indicator of goodness or badness of an antenna or systems efficiency. In most practical systems a return loss of better than 25db AT the antenna is rather hard to realise except in perhaps one very narrow band spot, equally 16 to 20 db can probably be considered as good enough, at 144 anyway.

The make up of the match is rather more critical, a good match in narrow bandwidth or with a specific feeder length maybe OK if you know that this is what you have, but if you do not know it, it may lead to a nasty surprise just when you think you have finished building the system.

3. VSWR der Antenne

Das VSWR einer Antenne ist nur ein Indikator.

Hat man ein schlechtes VSWR, heißt das nicht, das die Antenne schlecht ist. Es könnte allerdings zu höheren Verlusten Anlaß geben.

Ebenso ist ein gutes VSWR kein hinreichendes Zeichen für einen gute Antenne. Ein gutes VSWR hat z.B. eine 'Dummyload'. D.h. gute Anpassung kann auch von inneren Verlusten herrühren, die den Wirkungsgrad vermindern.

Daher ist eine Rückflußdämpfung von mehr als 20dB (VSWR=1,22) für den SSB-Bereich des Bandes gut genug.

4. DE in software models

Optimisation of antennas using computer modeling has progressed a long way in the last 10 years. Over a period of four years I have attempted to play with and understand some of the many software packages now available. I always had the same problem, I could design very nice yagis with apparently good parameters but "what to do about modeling the DE" ? and, even more importantly, "can I really model the matching system" ? and why do my models not correlate well with the real world.

The solution adopted by VE7BQH during his comparison work [1.] was to 'normalise' all the antennas by making no attempt to model the respective DE's and their matching systems but to insert a straight split dipole into each model and tweak the length appropriately to reduce any reactance so as not to influence the gain figure unduly. Whilst it can be argued that this process does not truly represent the real world antenna, it is the ONLY current sensible way to make antenna comparisons in modeling.

For the rest of the antenna we have a lot of modeled to real world correlation effort that has provided what appear to be reliable corrections for boom diameters and mounting methods and element length corrections for material size changes or tapering. One can therefore design in software and simply build the antenna with confidence. But we have little in the area of modeling to reality correlation in the area of Driven Elements.

4. Speiselemente als Software-Modelle

In den letzten 10 Jahren sind einige Softwarepakete verfügbar geworden, mit denen man Antennen simulieren kann. Ich selbst spiele seit 4 Jahren damit rum. Dabei hatte ich immer das Problem, wie man Speiseelemente und Anpassungsglieder modellieren kann.

VE7BQH [1] hat in seiner Arbeit alle Antennen mit einem geraden Dipol simuliert, unabhängig wie nun bei der jeweiligen Antenne das Speiseelement wirklich aussah.

Bei den Direktoren und Reflektoren gibt es genug experimentelles Wissen und daraus abgeleitete Formeln, um unterschiedliche Befestigungsmethoden, Boomdurchmesser oder Elementdicken zu berücksichtigen. Das erlaubt praktisch den Bau einer funktionierenden Antenne direkt abgeleitet aus den Ergebnissen der Simulation.

Für das Speiseelement existieren solche Erfahrungen meines Wissens nicht.

5. Where are the software issues in modeling DE ?

It seems that modeling software has a number of issues in this area, centred round the ability to model properly the junctions of dissimilar wire sizes and end effects that are not well understood, even in the real world, contributing to a 'fuzzy' comparison between modeling and real world results.

I made many attempts to correlate the performance of well known DE systems (for example f9ft hairpin) by modeling, using the supplied DE matching options in YO [2.] The results did not seem to be quite as expected. I have recently been told that in fact on HF the results given by YO are quite close. I suspect (but do not know) that results here are being affected by additional capacitance and inductance that even short connections and proximity have on vhf/uhf. (?) Perhaps the matching menu items have been calibrated against realworld HF results.

In any event the majority of these options utilise components in the matching process, these imply either difficult to find components or difficult fabrication for high power use and, at VHF and above, are unnecessarily lossy. YO is a super program for a quick evaluation or very quickly knocking a new antenna broadly into shape. I strongly recommend however that DE's only be modeled as straight split (and resonant) dipoles, where results appear to be at least in the ballpark.

I quickly moved from YO to AO [3.] , which being a full wires based modeler in x,y,z geometry allows a potentially more accurate model to be constructed. It also claims to handle junctions of dissimilar wire diameters. Once again attempts to model well known real world and well used designs gave some strange results. I conclude that modeling anything that uses junctions of dissimilar wire diameters as part of the matching process should not be attempted.

Probably the most popular design for a DE on 144 and 432 is the folded dipole it is a 'logical' choice and clearly the work of DL6WU and later DJ9BV have had large influence here. It also appeared that this should in fact be modeled more accurately than many others such as hairpin, 't' match or gamma match, because those generally involve, necessarily so to work, dissimilar diameter junctions, whereas a folded can be modeled in uniform diameters.

The folded, by having common material size throughout , was also able to be run in NEC for Wires 2.05 [4.] as well as AO. Although not the main theme of this article, I should also note that tables and models presented here have been run at 20 segments in Nec for Wires 2.05, it can be argued that higher segmentation density is necessary (or even perhaps less), but the choice of 20 was arrived at as a reasonable compromise between accuracy and processing time, from extensive prior study (by myself and others) it also appears well into the flattening part of the curve that can be plotted of accuracy/change versus segmentation density.[5.] Polar plots were run quickly in AO at 10 segments.

Modeling of folded dipoles in software has proven to be an extremely thorny issue. Most of the sets of antennas available from real world designs that target 50 ohms intrinsic (in order to be fed by a folded with 4:1 impedance transformation and then 4:1 balun back to 50 ohm feeder) seem to display very poor modeling results, often with rapidly swinging R component and high J values. Thus making an apparently highly reactive match and somewhat surprisingly, given that prior wisdom was that foldeds gave a better bandwidth than straight dipoles, often displaying a very narrow match.

When compared with results from a number of stations actually building/using these designs, it was clear that the modeling software was showing the correct trend, but the real world results, whilst displaying reactance and some overall mismatch were not as extreme as models predicted. They were/are however still apparently wrong. A number of people have also thought up a variety of cunning 'cheats' to correct this after the event, such as bent/re-positioned D1's, re-drilled DE position holes and carefully chosen cable lengths to feed them with. On most, simply 'fiddling' with D1 does not fix it completely.

Great effort was expended by a number of keen amateur modelers in an attempt to construct new antennas in software that utilised folded dipoles, myself included, working mostly in AO and then comparison/verification in Nec for wires 2.05. I could almost never arrive at a satisfactory solution to get from 50ohms to 200ohms, I could however make solutions that looked OK from lower starting values (such as 16 transformed to 75), these lower starting value solutions clearly also worked in the real world, and on later generation antennas, as SM2CEW had used this technique in his very successful array. My results here using this method on 432 also indicate success, but only after some linear length correction of the folded dipole.

The reason was still unclear, but appeared to be that there was a major issue in most modeling packages available. More or less I concluded not to use folded dipoles in models. (or real world if possible, but more on that later)

In 1997 some new software became available called NEC WIN PRO. Lionel VE7BQH then re-visited this subject and has perhaps shone some new light on the area. The arrival of this software prompted Lionel to do further work and resulted in the model of a folded dipole with apparent good results in a NEW design. The complex impedance behaved very nicely with good bandwidth and the antenna itself was rather competitive in gain and g/t terms.

This antenna when run in both AO and NEC for wires 2.05, with a folded dipole modeled, now also shows much more expected and acceptable results, with close correlation to those achieved with a straight split modeled, so maybe the issue was/is not all in software?

What has been done here is two things, firstly the linear length of the dipole has been adjusted carefully, the actual overall dimensions with respect to length versus depth are not that critical (this was already well known from long ago and recent modeling, at least within sensible ratios) but more critically this antenna has a much broader 50 ohm bandwidth, than those previously examined. The match is much closer to 50 ohms non reactive.

This work appears to have pointed in another direction, namely that to get a folded to work well in either modeling or real world it is necessary to have a more stable and much closer to 50 ohms impedance within the ANTENNA itself than many currently available designs show. This antenna has been built using a straight split dipole and showed good real world to model correlation like that, what has not yet been tested is a folded dipole.

It is also necessary in the real world to fabricate both the folded itself and the Balun VERY carefully, as pointed out in prior construction notes that have accompanied these type of designs. Length of tails on the balun and low inductance paths are essential.

My current conclusion is that earlier work with folded dipoles utilised them in relatively 'tame' designs with respect to bandwidth, based mostly on the work of DL6WU. Whilst these

have not necessarily presented an excellent return loss, they have shown a relatively flat return loss. It seems that the majority of people are also only checking return loss or SWR 'in shack' and not necessarily close enough to the antenna. So big attention has not been drawn to the issue.

As more and more software has become available and an increased number of people have been able to create new designs then the 'race' to find highly optimised designs is well and truly on. That has highlighted the return loss issue as it is no longer flat in large bandwidths but displays a reasonably rapid rate of change. It has become much more difficult to get an acceptable part of the curve (high return loss part) to match where you want to operate when realising a real world design from computer constructed models. THAT is the issue, not necessarily one of bad or poor designs but how to get good correlation from models to real world.

In fact the process of "optimisation" in yagi antennas is not really that at all, it is perhaps more correctly described as a process of "compromisation". No matter how good the software or the skill and knowledge of the operator (designer) then you can never get something for nothing. The pressure to constantly strive for better gain and better G/T in high performance yagis introduces the need to compromise in some other area, the easiest compromise to accept is Bandwidth. At least on your computer screen ! This may be responsible for highlighting the issue but most likely not it's fundamental cause.

Although one possibly cannot trust entirely the software outputs that Nec for Wires 2.05 and NEC WIN PRO arrive at, they do appear to at least show a general trend. They also show some trend of this issue as each generation of antennas is arriving.

The earlier DL6WU 10 element, first generation, and BV 4 Lambda, second generation, show at least partial correlation between the folded and straights models with the transformation being close to 4:1 although the modeled resulting swr is not that wonderful it is relatively flat. By the time the third generation of BVO-4wl arrives then a faster swinging J component is arriving. Coming completely upto date we arrive at the fourth generation with BVO-3wl, by now we have a very broadly swinging J component. Please remember I am not claiming these modeling numbers are exactly correct, but only that they show the (inevitable?) trend. Modeling results of some of these popular antennas are shown in table 1.

BEFORE you go and look at that I would like to clearly state that it is not my intention to imply or state that DL6WU or DJ9BV antennas are bad, have a major issue, or should all be taken down and thrown away immediately. It is indeed a compliment that the majority of antennas available to study, both in real world and modeling, emanate from the work of these people, both have been prolific in output and responsible for a continuous improvement in, and understanding of, Yagis. It is however an ongoing and emerging fact that there are some issues arising here which we should all address in order to continue the improvement process. With the recent release of the new BVO series [6.] Rainer has once again produced competitive designs that are excellent performers in Gain and G/T. However the issue of how to centre the usable match portion of the antenna/DE to the frequency you want to use it on, remains.

You must also be careful exactly what you model and how. The foldeds modeled in this table have been software constructed with 'flat ends' and the linear lengths have therefore been corrected to compensate. I have attempted to model more accurately constructed foldeds with curved ends, the effort needed to do that in x,y,z geometry is high and results show little deviation from those obtained here. Which indeed may be indicative of part of both the modeling and correlation to real world issues.

5. Grenzen der Modellierung

Es scheint nicht einfach zu sein, in den üblichen Programmen genaue Simulationen von Speiseelementen zu erhalten.

Table 1: Impedances of Yagis

Generation	1	2	3	4	3-4
Antenna	DL6WU-10	BV-4wl	BVO-4wl	BVO-3wl	BQH-12j
Physical Folded: Overall Dimensions	990 by 66	990 by 66	990 by 66	990 by 66	---
Modelled as (1), Centre to Centre	958 by 58	958 by 58	958 by 58	958 by 58	948 by 66
144.000 imp	192+64	173+37	189+41	209+82	199-2
swr	1.39	1.28	1.24	1.50	1.01
144.500 imp	227+61	200+47	209+26	304+16	198-6
swr	1.37	1.27	1.15	1.53	1.03
145.000 imp	261+23	237+31	213-6	202-161	195-6
swr	1.34	1.25	1.07	2.19	1.04
Straight Split dipole of length	990	990	980	968	990
144.000 imp	45.6+8	42.6+5.9	44.4-0.7	46.8-0.2	51.1+0.3
swr	1.22	1.23	1.13	1.07	1.02
144.500 imp	54+0.9	49.3+9.5	49.3-2.7	68.9-12.9	51.0+0.4
swr	1.21	1.21	1.06	1.47	1.02
145.000 imp	62.6+2	58.7+7	50.8-9.4	48.0-54.2	50.5+1.1
swr	1.24	1.23	1.21	2.88	1.02

notes:
1. Modelled with square ends and so linear length corrected.
2. At 20 segments in Nec for Wires 2.05

Ich habe einige Versuche unternommen, die Eigenschaften von bekannten Speiseanordnungen zu bestimmen. Z.B. habe ich versucht, die 'hairpin' Anpassung von F9FT zu modellieren. Während die Ergebnisse mit YO [2] auf HF brauchbar waren, waren sie auf VHF unbrauchbar.

Ich ging dann zu AO [3] über. Da es ein segmentiertes Verfahren ist und der Hersteller sagt, daß Teile mit verschiedenen Durchmesser verbunden werden können, war ich guter Hoffnung auf brauchbare Resultate. Die Unterschiede zwischen Simulation und Praxis waren jedoch wieder ziemlich drastisch.

Sehr beliebt als Speiseelement auf 144 und 432MHz ist der Faltdipol nicht zuletzt beeinflußt durch die Arbeiten von DL6WU und DJ9BV, die diese Konstruktion empfehlen. Er scheint auch einfacher zu modellieren zu sein, als 'hairpin', 'T-match' oder 'Gamma-Match', die verschiedene Durchmesser im Modell erfordern. Der Faltdipol kann dagegen ohne Durchmessersprünge modelliert werden.

Faltdipole wurden sowohl in NEC/Wires 2.05 [4] als auch in AO simuliert. Dabei werden in NEC 20 Segmente verwendet. Dies scheint nach den Erfahrungen von SM5BSZ [5] ausreichend zu sein. Überraschenderweise entpuppte sich die Aufgabe, Yagis mit Faltdipol zu simulieren als ausgesprochen dornige Aufgabe. Yagis mit 50Ohm Eingangsimpedanz, die über einen Faltdipol und einen 4:1 Balun wieder auf 50Ohm angepaßt werden, zeigten in der Simulation oft schlechtes VSWR und/oder Anpassungsbandbreite. Das wird auch von einer Reihe Stationen, die solche Anordnungen gebaut haben, berichtet. Allerdings waren die realen Messungen nicht so schlecht wie die Simulationsresultate.

Viele, auch ich, haben versucht, Antenne mit 50Ohm Impedanz zu entwerfen und sie über Faltdipole zu speisen. Sowohl in der Simulation als auch in der Messung brachten die meisten Entwürfe nicht die gewünschten Anpassungsresultate, obwohl alle Simulationen in NEC/Wires ausgeführt wurden.

Im Jahre 1997 wurde die Software NEC WIN PRO verfügbar. VE7BQH entwarf eine neue Antenne, die selbst schon eine große Anpassungsbandbreite zeigte. Auch eine Simulation mit Faltdipol zeigte ein sehr gutmütiges Verhalten, nachdem die Länge sorgfältig justiert worden war. Es scheint, daß eine Voraussetzung für gute Anpassung mit Faltdipolen ein 'gutmütiges' Design der Yacht, oder anders gesagt eine gute Anpassungsbandbreite der Antenne ist.

Mit 'giftigeren' Antennen, die eine kleine Anpassungsbandbreite mit sehr schnell veränderlichem Imaginärteil der Impedanz haben, ist die Anpassung über einen Faltdipol wesentlich schwieriger. Die Konstruktion muß jedenfalls sehr sorgfältig mit geringst möglichen parasitären Induktivitäten und Kapazitäten erfolgen.

Meine gegenwärtige Schlußfolgerung ist, daß speziell bei den Antennen von DL6WU relativ gute Anpassungsbandbreiten die Regel waren und deswegen die Mehrheit der Nachbauer keine Probleme mit Faltdipolen hatte. Der VSWR-Verlauf war meistens recht flach und außerdem messen die meisten Amateure im Shak, d.h. durch die Kabeldämpfung geschönte Meßwerte für das VSWR.

Heutzutage, wo Simulationssoftware jedermann zur Verfügung steht, entstehen bei der Jagd nach dem letzten Zehntel dB an Gewinn leicht relativ kritische Konstruktionen, die sich nicht einfach über eine befriedigende Bandbreite anpassen lassen. Ebenso wird die Korrelation zwischen Modell/Simulation und realer Welt immer schlechter, weil die Simulationssoftware an die Grenzen der Genauigkeit geht.

Man kann Software wie NEC for Wires 2.05 bzw. NEC WIN PRO nicht vollständig vertrauen. Sie zeigt aber zumeist wenigstens den Trend

Bei der Untersuchung von einer DL6WU 10 und einer BV 4λ zeigte eine Simulation den erwartet flachen Verlauf des VSWRs, wenn auch nicht ein sehr gutes Optimum der Anpassung. Neuere Designs wie die BVO-4wl (3. Generation) oder die BVO-3wl (4. Generation) haben, wie Tabelle 1 zeigt eine sehr stark veränderliche Eingangsimpedanz, somit eine kleine Anpassungsbandbreite. Die Zahlen aus der Simulation müssen nicht unbedingt absolut richtig sein, zeigen aber den beobachteten Trend.

Das Problem ist nach wie vor, wie man diese Antennen, die sehr gute Werte im Gewinn oder dem G/T haben, auf den gewünschten Frequenzbereich anpaßt.

Simuliert man Faltdipole, modelliert man solche mit flachen Enden, weil sie einfacher zu segmentieren sind. In der Praxis benutzt man aber meistens welche mit halbrunden Enden.

Table 2: Gain Drop

Gain drop due to DE misalignment in a yagi (gain figures in Dbd)			
Band	**144**	**144**	**432**
Antenna	**BVO-5wl**	**BVO-3wl**	**BVO70-13wl**
offset in mm			
0	15.01	13.43	18.78
-10	15.01	13.43	18.76
-20	15.00	13.42	18.71
-25	15.00	13.42	18.66
-30	14.99	13.41	18.61
-35	14.99	13.41	18.53
-40	14.98	13.40	18.44
-50	14.96	13.39	too much

notes:
1. Modelled with square ends and so linear length corrected.
2. At 20 segments in Nec for Wires 2.05

Das ergibt schon Unterschiede in den Zahlen, wenn man nicht in der Gesamtlänge korrigiert.

6. Foldeds in the real world

My first reaction to the modeling results was "ok, but it cannot really be true" . Many people have made antennas with folded dipoles and nobody seemed to raise this issue, there are perhaps thousands of people out there using them.

My real world testing ability on this issue is somewhat limited. I have extremely infrequent and short term access to a network analyser. On a regular basis I can only perform rather simple return loss tests and check for reactance by insertion of random lengths of coax.

Local tests indicated that it was in fact true that a folded was frequently pretty reactive and correlation from 'on screen' dimensions to real world dimensions is poor. Although not quantified, it appears that the result is not as extreme as models may indicate, but nevertheless it does exist.

During this time I got involved with quite a number of European EME operators looking at many aspects of their antenna system design in models. Not entirely surprisingly to me I started to receive realworld return loss data from some of these guys that indicated both reactance and a funny resonance within folded dipoles, on several different antennas.

There also seems to be a consistent factor of best return loss being low in frequency. Implying that the most popular folded designs may be on the long side.

I am also of the opinion that having the balun within the antenna is having some confusing effect on correlation attempts. Although difficult to model, my attempts at modeling pieces of cable in close proximity to the other antenna parts does indicate some serious interference potential in this area.

This is now a very confused and difficult area to explore accurately, it appears that one can summarise the issues into 5 areas.

1. Perhaps poor modeling within software, not yet proven either way

2. Existence of significant and unquantified 'end' and other effects in the realisation of a folded dipole.

3. Effects of balun construction.

4. Effect of the physical presence of the balun within close proximity to critical and sensitive parts of the antenna.

5. More highly 'optimised' (effectively bandwidth compromised) designs highlighting items 1 to 4.

6. Faltdipole unter realen Bedingungen

Als ich die ersten Ergebnisse sah, dachte ich: 'Das kann nicht wahr sein!'. Immerhin gibt es tausende von Amateuren, die funktionierende Yagis mit Faltdipolen benutzen. Meine Meßmittel sind bis auf den sehr seltenen Zugriff auf einen Netzwerkanalysator eher bescheiden: Ich kann Verluste und VSWR messen.

Ich konnte wohl bestätigen, daß Faltdipole in kritischen Antennen ziemliche Reaktanzen aufwiesen, obwohl nicht so schlimm, wie die Modellrechnung erwarten ließ.

Durch Gespräche mit europäischen EME-Amateuren fand ich heraus, daß viele andere diese Phänomene auch beobachtet hatten.

Bei Faltdipolen als Speiseelement scheinen mir folgende Probleme vorzuliegen:

1. Schwierigkeit, diese vernünftig zu simulieren
2. Vorhandensein von unbekannten parisitären Effekten
3. Vorhandensein eines Baluns, dessen Nachbarschaft zu Elementen das Feld stört
4. Designs mit kleiner Bandbreite verstärken die obigen Effekte

7. What to do ? ....Modeling

For ALL forms of matches such as 'T', Gamma, Hairpin etc. then results are unreliable due to dissimilar wires junctions issues and may also be distorted further by the anomalies seen in foldeds.

For Foldeds results to date, it seems that results point the right trend, but again are not really close enough to model something and then build it with any great confidence.

For straight split dipoles the results from the better modeling packages look ok and when compared with realworld results seem rather close.

Given that a straight split dipole also has the easiest construction method, the least loss and the simplest form of adjustment (just cut it or slide it) then I recommend to use straight split simple dipoles in all modeling.

If you adopt that as a modeling philosophy then it also seems logical to adopt it in the real world, if possible.

7. Modellierung

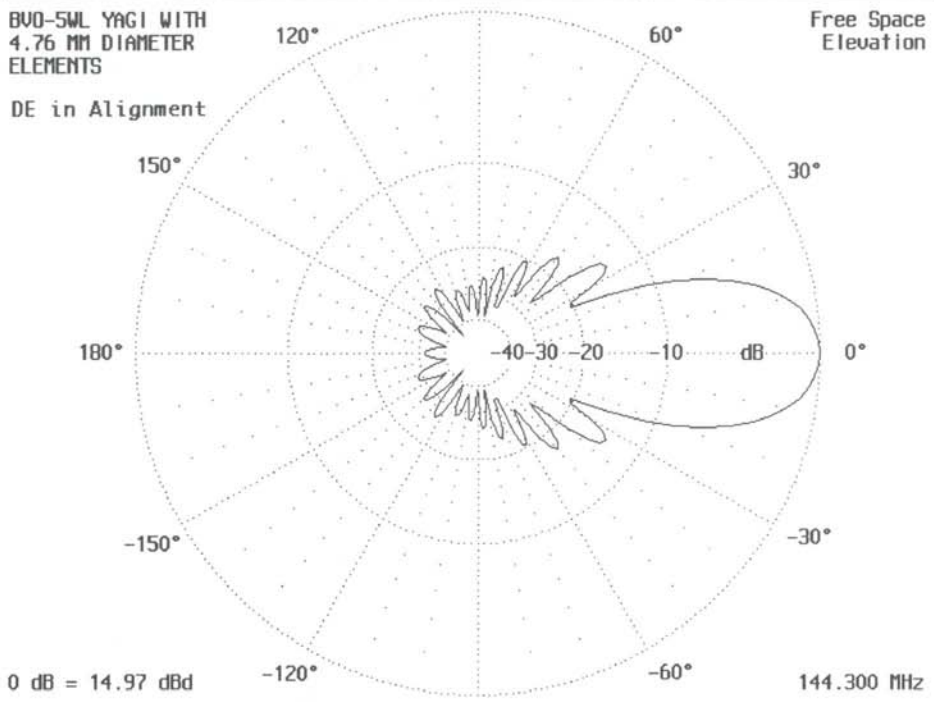
Exotische Formen wie 'T', Gamma oder Hairpin können nicht vernünftig simuliert werden und man ist auf Probieren angewiesen.

Die Resultate für Faltdipole liegen abseits der gemessenen Realität, so daß man auch auf Probieren angewiesen ist.

Bei einfachen gestreckten Dipolen liegen Simulation und Messung genügend beieinander. Ich bevorzuge sie deshalb als einfachste Speisemethode (Abb. 5).

8. Things to watch for in modeling..

Over time I have developed a list in my head of indications that may point to trouble coming with bandwidth reduction and highly gain optimised antennas. There are a number of characteristics/trends that highly gain pushed designs display, if you start to see these then it is time to look closely at your likelihood of getting a broad and reliable modeling to real world match. None of these mean the an-



Bild/Figure 1: BVO-5WL with DE in Alignment

tenna is necessarily a bad or poor design, just that you may be getting close to the edge and that you are going to have to pay closer attention to matching, element corrections and construction accuracies. You may also start to see match changes in poor weather.

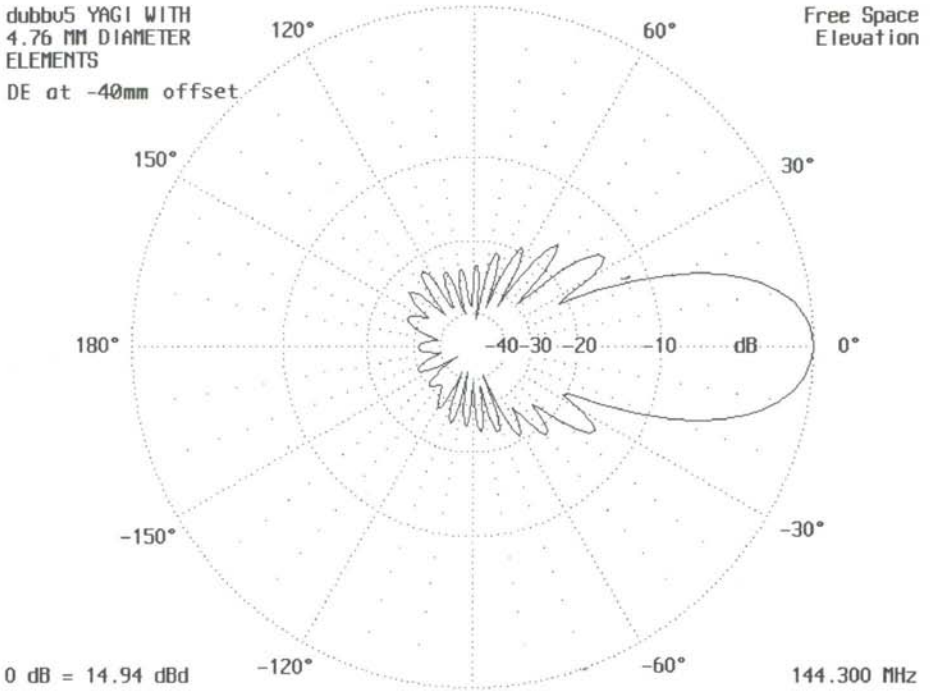
a) The gain peak of the antenna moves down, most often the gain peak will be slightly higher than the centre design/match frequency, if you start to see convergence of the gain peak and the centre design frequency then look out. I have personally deliberately exploited this in a number of my own, as yet unpublished, designs as this enables a very competitive g/t number to be generated.

b) The Front Rear of the antenna starts to degrade VERY rapidly on the high side of the design frequency and generally will consist of one large tail, rather than a number of lobes with nulls between.

c) The impedance and reactance (and most often =return loss or SWR) swings rapidly on one side of the design frequency, the high side, but maintains at least some reasonable bandwidth on the other.

d) To create a combination of reasonable match and get back some of the Front Rear ratio you have to allow the last director to "go where it wants" during optimisation, this frequently leads to the last director being longer than the prior one and often longer than several prior ones. This in particular is very indicative.

e) In order to maintain any match at all, the length of the driven element, even a straight simple split dipole, starts to deviate from what one would normally call a common length, mostly significantly shorter. As a general rule of thumb if you start to see DE's outside the range of 980mm to 990mm on 144mhz, this is why.



Bild/Figure 2: BVO-5wl with DE 40mm Offset

Some of these will show up in designs that are not being pushed, but a combination of perhaps two or more of these is a sure sign.

As good examples, the BVO-3wl shows ALL of these symptoms as do the SM5BSZ designs I have looked at. That is because they are very competitive designs, one could even say "leading published" designs.

8. Was man bei der Modellierung beachten muß

Wenn man Antennen auf Gewinn züchtet, gibt es einige Effekte, die man beachten sollte:

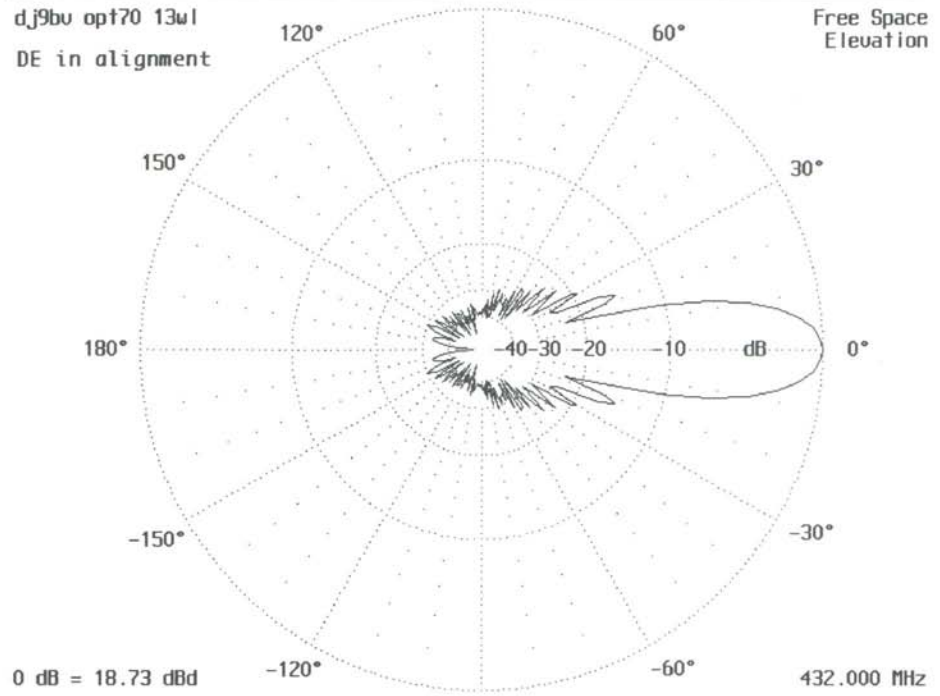
1. Die Frequenz mit dem maximalen Gewinn rutscht nach unten. Fällt sie mit der Mittenfrequenz des Arbeitsbereiches zusammen, kann man ein ordentliches G/T erwarten.
2. Das Vor-/Rückverhältnis fällt oberhalb der optimalen Frequenz rapide ab.
3. Das VSWR wird oberhalb der optimalen Frequenz drastisch schlechter.
4. Der letzte Direktor ist oft länger als die Vorgänger, um optimale Anpassung und Vor-/Rückverhältnis zu erzielen.
5. Um Anpassung zu erzielen wird das Speiseelement oft deutlich kürzer als üblich, d.h. kürzer als 980mm.

Diese Symptome sind sowohl beim BVG-3wl als auch beim SM5BSZ Design zu finden, die zur Oberklasse im Gewinn gehören.

9. What to do ? ....Real World

I make no claim for originality here, only offer an opinion and strategy that works.

Apart from the difficulties of modeling, all forms of DE matching employing additional tubes, movable parts, or components, have either difficult to fabricate parts and/or potential for loss.



Bild/Figure 3: OPT70_13wl with DE in Alignment

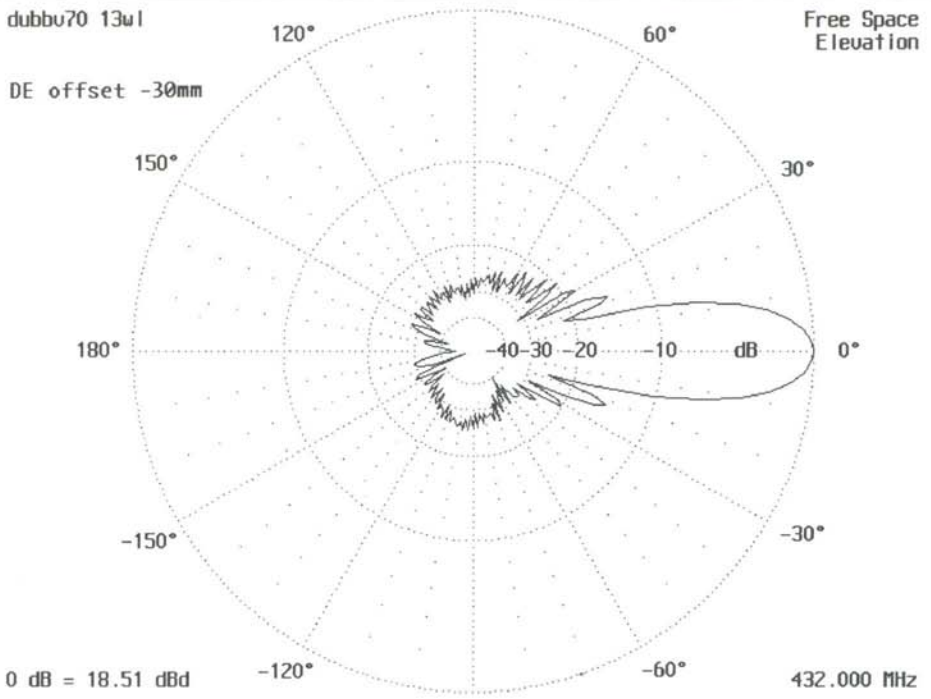
The traditional and well accepted folded driven has both advantages and disadvantages. It is undoubtedly the best theoretical choice, it offers, with the 4:1 balun, a good transition from balanced to unbalanced, it puts the centre line of the driven element in close plane match with the parasitic elements, it is not too hard to fabricate.

On the negative side it is very easy to accumulate losses in the many soldered and exposed junctions, tails and the balun itself. What to do with the coax balun ? which can and does cause interference to the antenna match and pattern by being in close proximity to other elements, this may in fact account for at least part of the real world results in the more recent highly gain pushed designs. It is difficult and maybe not possible to model accurately and then simply produce to the dimensions 'apparently' required. Finally, it is completely impossible to adjust. (hence all the bent D1's and clipped D1's you can find in the world)

The straight split dipole also has some negatives, the potential for current on the braid affecting the antenna pattern and match. The 'offset' in geometry necessary by having the DE either above or below the boom could cause both gain drop and pattern asymmetry in the H plane.

On the positive side it is exceptionally easy to build, it is 'lossless', very easy to adjust in situ by both trimming and small repositioning, correlates rather well with modeling results so can be built with confidence.

Although not the focus of this piece it is also worth mentioning that in crossed yagis the coupling and interactions between straight splits appears to be less than that of foldeds, the coax balun of the folded is extremely difficult to locate in a crossed antenna and the



Bild/Figure 4: OPT70-13wl with DE 40mm Offset

problem of passing coax around or through a folded is also not easy to address.[7.]

9. Reale Welt

Im folgenden werde ich eine funktionierende Strategie vorstellen.

Der Faltdipol als Speiseelement hat Vor-, aber auch Nachteile. Zu den Vorteilen gehört, die einfache Symmetrierung und die nicht zu schwierige Mechanik. Zu seinen Nachteilen gehört die Akkumulation der Verluste in diversen Verbindungen von Kabel, Balun und Dipolenden. Ebenfalls sind eine Menge Stoßstellen in der Konstruktion. Weiterhin ist oft der lange Balun störend. Und drittens ist es sehr schwierig, die elektrischen Eigenschaften des Faltdipols durch Simulation hinreichend genau zu bestimmen.

Der einfache gestreckte Dipol hat auf der negativen Seite seine Asymmetrie bezüglich der Ebene der Direktoren und bei fehlendem Balun mögliche Probleme mit Strömen auf dem Mantel des Kabels.

Auf der positiven Seite ist er sehr einfach zu bauen, ist nahezu verlustfrei, läßt sich sehr einfach durch Abschneiden trimmen und die Simulationsergebnisse entsprechen sehr gut der Wirklichkeit. Auch für Kreuzyagis hätten diese Eigenschaften Vorteile ([7]).

10. Modeling 50Ω intrinsic Yagis

Both the Folded and straight split DE's require that the 'natural' (or intrinsic) impedance of the yagi structure be 50ohms . Whatever final real world solution you choose, folded or straight, the basic modeling requirement is the same.

No matter how you go about optimising your model whether by using optimisers (such as YO and AO) or by trial and error, or by manu-

ally noting and following a trend, the result will always be that highly gain optimised antennas will trend to require a low feedpoint impedance. Do not allow this to fall too low, even if you plan to use another matching system, allowing this to fall too low will lead to higher losses.

You can create close to 50 ohm antennas in models by following this process outlined below. I have assumed, and therefore not described in details here, good modeling practice. For example, reasonable segmentation, a sensible spread of optimisation frequencies, etc. etc. Optimise your antenna exactly as you wish, whilst maintaining a 'reasonable' feed impedance requirement. When you think you are finished then insert a new D1 in relatively close proximity to the DE (thus the old D1 becomes D2, old D2 becomes D3 etc.) fix/freeze positions and lengths of all other directors and focus on 'forcing' the impedance upto 50 ohms. Use D1 only initially, both length and position.

It seems that if you have really pushed the antenna (got a good one !) then this will probably not be enough to get either any 50 ohm match or one with any decent bandwidth and a low J component. To achieve that it will be necessary to move the DE back towards the reflector and D1 in tandem with it. It may also be necessary to have a slight tweak of the reflector. Changing the length of the DE should be avoided if at all possible.

Some minor positional or length adjustment of d2 and d3 will also help to restore any minor pattern degradation's that may have taken place during the matching modeling.

Once you practice this process it can come rather quickly and you will also be able to visually identify a likely 50 ohm design in future , the rear of the boom holding REF, DE and D1 gets compressed and of course D1 is rather close to DE.

In a really heavily gain pushed design you may also find it necessary to allow the last director to lengthen a bit (remember the points made above now) this sometimes allows a final matching tweak and may get back any lost front to rear.

This whole process should in general have little effect on any prior pattern you had achieved, it will however lower the gain a little as the adding of the extra director increases the internal losses. It almost certainly will not lower the effective real world gain, because if left with a low impedance feedpoint then you will be forced to use a lossy matching device anyway, which will likely cost you more. By adopting this strategy of 50 ohms intrinsic and using D1 to achieve it, you will probably save much loss and a lot of real world constructional difficulty necessary with other matching systems.

OK I modeled it, what now...?

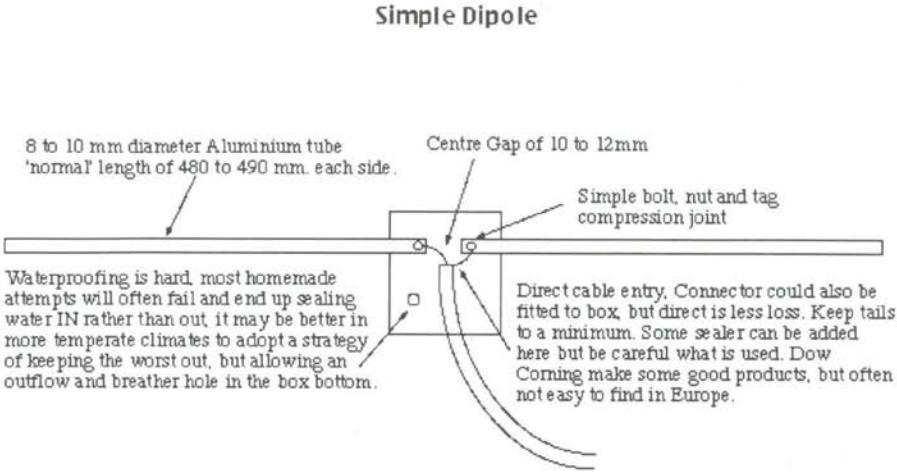
Now you have a 50 ohm antenna.

I would strongly recommend that you now do some build sensitivity testing before taking hacksaw to aluminium. In your model try changing the length of a number of directors by 1 or 2mm randomly, maybe even in a one sided manner, try moving one, or several, elements by 3 or 4mm back and forth. This will simulate any possible construction errors and deviations as you translate your model to a physical antenna. If you see sudden and severely degraded parameters then you should really stop and think if this antenna is truly realisable in the physical world.

Check especially the Reflector and early Directors around the DE, and last director. If very small deviations cause sudden changes in the complex impedance or gain then you may be heading for trouble.

If you plan to use a straight split DE then you have not yet finished. Now you have to take a look at the antenna performance with the DE offset from the plane of the parasitic elements. Adjust your model in steps to check this by moving the DE up, or down, out of perfect plane alignment with the other elements. If you decided boom size and driven box construction technique then you know the exact amount to move already.

Each antenna will perform slightly differently in this respect. The first thing to check is gain drop, an example of this can be seen in Table 2. The antennas modeled here are the BVO-



Bild/Figure 5: Straight Dipole Construction

5wl, BVO-3wl and BVO-70 13wl. On 144 gain drop amounts to little more than 'modeling noise'.

The table shows a result on 432mhz probably good enough for tropo use but can you afford to lose this much on EME ?. You will have to decide that based on your construction capabilities and other factors such as if building crossed yagis then maybe getting the boom 'clutter' of baluns and foldeds out of the way is the best way. In any case a gain drop of 0.15 to 0.2 db by using a simple DE is likely to only be equal to, or even less, than those losses in a more complex one.

The next thing to check is asymmetry caused by the offset. To do this you MUST switch symmetry off in plotting (for example in AO options menu, or by 'runtime switches' in other packages). The H plane plot of a BVO-5wl with DE in perfect alignment can be seen in Plot 1. and the comparative plot of the same antenna with a DE centre line 40 mm below other elements in Plot 2.

The level of sidelobe change can be seen in these plots. It can also be seen that this is relatively small it will not degrade much. But in fact the asymmetry could be used to good advantage if the DE is located on the underside of the boom, as the first few (major) ground lobes actually reduce leading to a possible g/t improvement. You will also have to remember that symmetry may be returned in groups of yagis during the stacking process, so consider and utilise that also.

The results on 432 with 30mm offset are shown in Plots 3 & 4. The offset could possibly be reduced to 25mm. To get less than that, even with small size booms, is surprising difficult.

I have tried physical and modeling experiments with 'saddle' style DE's where alignment is improved and also 'gull wing' shaped DE's for the same purpose. Results are mixed with advantages and disadvantages both ways. In the end I think for EME the folded remains the optimum choice on 432 where our required bandwidth in percentage terms

is lower and major side lobe disruption could cause more significant G/T issues. It would be worthwhile to construct foldeds with movable ends or at least a prototype one with some kind of trombone adjustment until you are sure that you have the dimensions required correct. By the way, it seems that modeling to real world correlation is even worse on 432.

Although not as fully explored here as the 144 results, it is now quite clear that highly optimised and later generation 432 yagis also have potential for matching issues and likely more potential for balun interference within the antenna.

I recommend making your own versions of these plots and tables for the chosen or designed antenna. When making small compromise choices it is best to understand them all thoroughly first.

After construction a straight split dipole is easy to adjust with minor length corrections or a small movement either back or forward on the boom. When doing this please check with three or even more short but random lengths of cable inserted to check that the match is consistent. As more coax is added to the feeder the return loss or SWR should only ever improve, not worsen (losses are being added). In most practical systems this will not be precisely the case, small changes are acceptable, but wild swings indicate trouble.

During final adjustment be wary of sliding the DE too close to D1, this will affect the yagi pattern and close proximity software modeling results of this situation are unreliable and may not show the whole picture. Wherever you end up with the DE in the physical world, it is a good idea to go back and model the solution you arrive at to see what you may have done to pattern and other parameters.

If you really are nervous about having current on braid and subsequent pointing squint without a balun, then you could add a simple sleeve balun to comfort yourself. However with the straight split DE not boom grounded, the coax taped off frequently and tightly to the boom, then those of us without baluns have not seen any real trouble.

Another suggestion could be the use of ferrite rings threaded onto the feeder, I have not experimented with this and it needs some thought and calculation.

10. Modellierung von 50Ω Yagis

Egal welche Art von Speiseelement - gestreckter oder gefalteter Dipol - man benutzt, für optimale Anpassung muß die Eingangsimpedanz der Yagistruktur 50Ω betragen.

Leider ist es so, daß die gebräuchlichen Antennenprogramme mit eingebauten Optimisierer die Tendenz haben, Yagis mit kleiner Impedanz zu generieren. Sie liegt dann oft im Bereich von 10 ... 25Ω.

Das ist ungünstig auch wegen zu erwartender Verluste. Hat man eine Struktur gefunden, die den erwarteten Gewinn oder das erwartete Diagramm verspricht, ist es nötig, die Eingangsimpedanz manuell auf 50Ω zu züchten. Man fügt z.B. eine neues Element D1 nahe am Strahler ein und hält alle anderen Positionen fest. Dann setzt man die Zwangsbedingung auf 50Ω Impedanz fest und läßt den Optimisierer unter dieser Zwangsbedingung rechnen.

Hat man nun die gewünschte 50Ω Antenne, sollte man einen Test auf Empfindlichkeit gegenüber Maßänderungen durchführen. Dazu ändert man die Abmessungen in zufälliger Weise um 2...4mm und schaut sich die Ergebnisse an.

Benutzt man einen gestreckten Dipol ist es sinnvoll, sich das Diagramm für Asymmetrie anzugucken. In Tabelle 2 sieht man Beispielswerte für den Gewinnabfall bei asymmetrischen Speiseelement, Wie man sieht, ist er auf 144MHz vernachlässigbar.

Das Diagramm stattdessen ändert sich schon deutlicher, wie man an den Abb. 1 und 2 bzw. 3 und 4 sieht.

Gestreckte Dipole mit weniger als 25mm Asymmetrie kann man kaum bauen. Mögli-

cherweise ist daher auf 432MHz ein gefalteter Dipol vorzuziehen.

In der Praxis kann man kleine Justagen durch die Position des ersten Dirketors und des Dipols selbst vornehmen.

Meint man, Probleme durch Mantelströme zu haben, kann man einen Mantelbalun spendieren oder einfach das Kabel in ¼-Abständen am Boom erden.

11. Case Studies.

I am indebted to those mentioned here for providing much real world data and help, I have tried to document simply and accurately the experiences and hope they will assist others. In most cases they did the field work, I did the modeling. 9H1PA has done much modeling of his own also.

1. BVO-5wl, G4SWX. With folded of 980mm and 66mm height the return loss in 144.00 to 144.3 was acceptable but the best return loss was at 143.5. Moving the balun within the antenna gave variable results. To help with my modeling and real world correlation John did a lot of testing (often in the snow!) foldeds of 930,940,960 were also tried, none correlated with software. They all showed reactance and rather rapid swing. A straight split dipole of length 980 overall, with around 10mm centre gap in 9.5mm tubing produced the best result. In the end the simple split was adopted, with no balun, and tested extensively on tropo and EME. A centre frequency (within dx portion of 2 metres) return loss of 25db was achieved. A hosing down test to simulate poor weather moved the best match frequency LF, but maintained very acceptable return loss in band.
2. BVO-5wl, G4YTL, tested some T matches with poor results. The result from G4SWX has been incorporated.
3. BVO-5wl, The team at 9A1CCY have also built this antenna with the straight split solution and return loss result from the prototype (they plan 4) is also good, by the way they have implemented a crossed version and will use simple polarity switching. 9A1CCY has also incorporated the same straight split dipole into a 10 element DL6WU array with good results.
4. BVO-5wl, OZ1HNE, a thanks to Juergen for supplying various measurements, data and input on his crossed version of this antenna also.
5. BVO-4wl, 9H1PA built with the standard 990mm by 66mm folded and 4:1 balun. Moving the balun around in the antenna makes quite some difference. Again best return loss was in the 143.5 to 143.7 area. Attempts to fold the balun up and fix it on top of the feed box out of the way led to even worse result. SWR was 1.3 to 1.4 in the 144.1 to 144.5 range, random coax insertion test also showed big changes. Phil did much modeling and real world moving around, finally he moved DE from 365 to 395 and D3 from 1355 to 1340. Now has swr of 1.15 and only small changes over the dx portion bandwidth and with random coax insertion tests.
6. BVO-3wl, 9H1PA. The conventional folded of 990mm length was rather unhappy, with best swr at 143.700, by 144.300 it was 1.4 . A folded of length 968 was tried which improved the SWR in the 144.100 to 144.300 portion. However the final solution was to revert to the conventional 990mm overall folded and move DE position to 323 (from 391) and D1 to 637 (from 669). This has had the effect of moving best return loss/swr to the range 144.050 to 144.300 at 1.1:1. Modeling of these changes shows no significant change of either gain or F/R. Neither does it show a very good match either !, but it clearly works. I would suggest adopting these on a provisional basis before drilling final holes and testing with various cable lengths. This antenna is a real winner (small boom but good gain, nice G/T and little gain drop with non insulated stacking frame) so I expect many people to be using small groups of this as an entry level to EME, further feedback from anyone trying these changes wo! uld be very much appreciated.
7. BVO-3wl , F9HS, on my recommendation Claude has gone for a straight split, no

balun solution. Has a good return loss from 144.000 to 144.500 the final tweaked length was 953mm overall with around 10mm centre gap in 10mm diameter material, this seems rather short but has shown good results on EME with 13 stations worked in ARRL first leg on a single, polarity switchable, 3 lambda yagi ! Return loss from 144.000 to 144.500 ranges from worst of 17db to best of 27db, more importantly the return loss moves very little in wet weather and cable length deviation by 3/4 lambda shows only 15% increase in returned power.

Again modelling of this solution does not show fully the real world good result. By the way, this antenna shows excellent results in crossed format even with aluminium poles running in the elements, you have to position the poles correctly. The DE for vertical set of elements was adjusted in situ and best results were yielded with a slightly longer DE, this is due to some matching interference from the aluminium support tube. Adjust on test.

11. Fallstudien

Ich all denen, die mich mit Daten und Meßwerten versorgt haben, sehr dankbar.

1. BVO-5wl, G4SWX. Mit einem Faltdipol war das beste VSWR auf 143,5MHz. Nach vielen Versuchen erwies sich ein gestreckter Dipol mit 980mm Länge als die beste Lösung. Das VSWR im DX-Bereich war dann besser als 1,15.
2. BVO-5wl, G4YTL. Nach Versuchen mit T-Match wurde die Lösung von G4SWX eingebaut.
3. BVO-5wl, 9A1CCY baute eine 4-er Gruppe mit der Lösung von G4SWX mit guten Resultaten.
4. BVO-5wl, OZ1HNE. Jörgen benutzt eine Kreuzyagi Version und versorgt mich mit Meßwerten
5. BVO-4wl, 9H1PA. Der Standard Faltdipol mit 990x66mm brachte die besten Anpassungswerte von 143,5...143,7MHz. Phil änderte die Position des DE von 365 auf 395mm und D3 von 1355 auf 1340mm. Damit erreichte er ein VSWR von 1,15:1.
6. BVO-3wl, 9H1PA. Der Faltdipol war am besten auf 143,7MHz. Auf 144.300 war das VSWR schon 1,4:1. Die Lösung bestand schließlich darin, die Länge des Faltdipols von 968 auf 990mm zu erhöhen und die Position von DE von 391 auf 323mm sowie von D1 von 669 auf 637mm zu verändern. Das ergab ein VSWR von 1,05:1 von 144,05 bis 144,3MHz. Modellierung dieser Änderung zeigt keine Änderung im Gewinn oder Diagramm.
7. BVO-3wl, F9HS. Auf meine Empfehlung benutzt Claude für seine Yagi einen gestreckten Dipol mit 953mm Länge und 10mm Durchmesser. Das VSWR ist gut von 144,0 bis 144,5MHz.

12. Conclusion, food for thought and wish list.

It remains unclear, to me anyway, whether there is a genuine problem with modeling foldeds in software or if the issue lies in the 50 ohm bandwidth of the antenna designs and then, in turn, getting a folded to go in the right spot without being able to model it, or having any reliable end effect data. ?

If the issue is simply one of needing end effects correction factors for folded dipoles then why does it not seem possible to create at least a modeled folded that is happy in these antennas in software ? even if the dimensions would need correction for actual construction.

Without some very strict controlled measurements being made I believe we cannot discount the construction of, and the very presence of, the balun.

I am not concluding that folded dipoles should be abandoned, but with unsure and unsafe modeling results and unquantified real world effects I do conclude:-

1. Folded dipoles, 'T' matches matches
   - introduce a lot of loss potential because of difficult to create mechanically reliable and corrosion proof

joints as well as possible balun losses
- even these have some risk of pattern assymetry if currents are not equal in the two legs, very difficult to achieve in real world.

2. Straight dipoles
   - very low losses
   - preserve pattern symmetry if mechanically close to plane of parasitic elements
   - Easy to construct and adjust
   - no balun requirement, if the antenna is designed for 50 ohms intrinsic

To help further:

I wish to see an adjustable folded design that can be easily built/adjusted with simple hand tools and with the balun made in rigid cable at no more than boom width dimensions to keep it out of the antenna.

I wish someone would send me a top of the range network analyser, free of charge, for the rest of my life. Then I could maybe answer many questions !

12. Schlußfolgerungen

Für mich bleibt es weiterhin unklar, ob die Schwierigkeiten mit Faltdipolen an der schlechten Simulation dieser Speiseelemente liegen oder ob es an der geringen Bandbreite der verwendeten Antenne liegt.

Bei all den Schwierigkeiten und ungelösten Fragen denke ich, daß

1. Faltdipole, T-Match
   - größere Verluste wegen der vielen notwendigen Verbindungen haben
   - sich schlecht modellieren lassen
   - zu überraschenden Ergebnissen bezüglich Güte der Anpassung und der Bandbreite führen
2. Gestreckte Dipole
   - Einfach zu bauen und zu justieren sind
   - geringe Verluste haben
   - keinen Balun benötigen, falls die Antenne 50Ω Eingangsimpedanz hat
   - zu voraussagbaren Ergebnissen in der Praxis führen

13. Notes & References:

[1] see DUBUS 1/96 for the results of this work.

[2] YO is Yagi optimiser written/supplied by Brian Beezley, K6STI . Commercially available, very useful as a fast input tool as well as an optimiser as it will create x,y,z geometry files for onward use in AO and Nec for wires.

[3] AO is a wires based x,y,z modeler from K6STI.

[4] NEC wires 2.05 is x,y,z model evaluator from K6STI.

[5] SM5BSZ web site with much very useful information on antenna designing and other eme related subjects at: HTTP://ham.te.hik.se/homepage/sm5bsz

[6] DUBUS Technik V

[7] For more on crossed yagis thoughts and other antenna subjects, such as rotatable polarity arrays for eme, stacking information and principles visit....G3SEK web site at: HTTP://www.ifwtech.demon.co.uk/g3sek

Microwave Europe

Editor: John Sørensen, OZ1IPU

1296MHz

DH0HAR JO53AP wkd: 9.8.98 G6JHR JO01, G3WDG IO92, G8GXP IO93, G6XDI IO91, G8ADM IO91, hrd. GB3USK IO81, GB3MHL JO02, 10.8.98 GM4LBV IO86, PA3FHY JO22, G7UWA JO02, G0JDL JO02, OZ2TG JO65. Rig: 30W, 26 ele yagi, preamp with HEMT. Please contact me for sked on Tel ++49 40 5276363 QRL 10-18 or in shack ++49 40 5256261 and at home after 22.00 ++49 405228287. Tks fer info Frank.

DG0OPK/p, JO50AN, wkd/hrd > 500Km: 9.8. 0529-0723 ON5NY jo10lv 500, G7UWA jo02ut 626, G4DEZ jo01in 661, G4AJC io91vc 722, G6TTL jo01ni 630. Rig: TR751+Transverter (35W, 23El Yagi 5m AGL, 818m ASL) tnx for info Michael

2320MHz

DH0HAR JO53AP wkd: 9.8.98 G3WDG IO92, 10.8.98 PA3FHY JO22, hrd. PI7PLA JO33. Rig: 5W, 1m dish, preamp with HEMT. Please contact me for sked on Tel ++49 40 5276363 QRL 10-18 or in shack ++49 40 5256261 and at home after 22.00 ++49 405228287. Tks fer info Frank.

PA0BAT JO31FX wkd: 15.2.98 F5HRY JN18. Tks fer info Gerard.

3400MHz

DG1VL/p JO61XE wkd: 4.10.98 DG2DWL/p JO60VR. Rig: FT290RII, Transverter 400mW, 4dB, 60cm Dish. Tks fer info Henry.

PA0BAT JO31FX wkd: 4.7.98 DL0GTH JO50, 5.7.98 DH9NBU JO40. Tks fer info Gerard.

5760MHz

DG1VL/p JO61XE wkd: 4.10.98 OK1KIR/ JO60PM , DG2DWL/p JO60VR, DG0VO/p JO60UT. Rig: FT290RII, Transverter 500mW, 4dB, 60cm Dish. Tks fer info Henry.

PA0BAT JO31FX wkd: 3.5.98 LX/PA3FPS/p JO30, 6.6.98 HB9AMH/p JN37 RS, 4.7.98 DG7NBE/p JO40, 5.7.98 DH9NBU JO40. Tks fer info Gerard.

I2SG JN45PR wkd: 15.08.98 IT9/IT3EME in JM68MA. ODX > 900km and new Italian Record. Rig: TX 5W, Dish 3.3m with 'dual-mode' feed. Tks fer info Gianfranco.

10368MHz

DH0HAR JO53AP wkd: hrd. DB0HW JO51, DB0HEX JO51. Rig: 200mW, 50cm dish, Transverter DB6NT. Please contact me for sked on Tel ++49 40 5276363 QRL 10-18 or in shack ++49 40 5256261 and at home after 22.00 ++49 405228287. Tks fer info Frank.

DG1VL/p JO61XE wkd: 07.06.98 OK1DFC/p JO71FA, DK0FLT JN59FW via RS, DJ7AL JO61VC, OK1DST/p JO70GU, 25.06.98 OK1JKT/p JO60OK via RS, DL2NUD JO63MF via RS, DG8EB JO60CK via RS, DL6NCI JO50VI via RS, DL3YEE JO42GE via RS, Hrd: DB0HEX/B JO51, DB0JX/B JO30LX via RS, 4.10.98 OK1KIR/p JO60PM, DG0VO/p JO60UT, OK1UWA/p JO60LJ, DG2DWL/p JO60VR, DK0WAL JO61OA, OK1KRU/p JO70LR, DB6NT JO50TI, DG0VO/p JO60UT, OK1KEI/p JN79CX, DG0VE JO71AG. Tks fer info Henry.

PA0BAT JO31FX wkd: 15.2.98 F5HRY JN18, F6DKW JN18, 2.5.98 DL3NQ JN49, DC6RW JN49, G0EMG/p JO02, 31.5.98 DL4OAN JO51, DL6NCI JO50, 2.6.98

DL4EAU/p JO51, 6.6.98 G3LQR JO02, F6DKW JN18, F5HRY JN18, DH1VY/p JN39, HB9AMH/p JN37, DL3IAS JN49, DK0BN JN39, DJ2DY/p JN39, DK1KR JO53, DK0FLT JN59, DL3NQ JN49, F1HDF/p JN18, DF6IY JN48, F6HPP JN19, DL0GTH JO50, 11.6.98 DL3NQ JN49, 15.6.98 F6DKW JN18, 21.7.98 DF6NA JN49, DK9MN JN58, DC8EC JN57, 10.8.98 DC6UW JO44, 23.9.98 OK1AIY/p JO70, DL1VAA JO61. Tks fer info Gerard.

24192MHz

DL4WO/p und DG1VL/p JO61XE wkd: 4.10.98 DG2DWL/p JO60VR, DK0WAL JO61OA, OK1UWA/p JO60LJ113km. Rig: FT290R, DB6NT Transverter, abt 50mW, 65cm Dish. Tks fer info Henry.

24GHz world record.

Date: Sept 3rd 1998 07:08AM JST Dist : 402km RS : 41 to 59 JM3KMO and JR3EDZ made QSO on 24GHz. JM3KMO was on Mt. Norikura in Honshu island and JR3EDZ was on top of Mt. Tsurugi in Shikoku island. Rig : JM3KMO Specially tuned Maki-denki UTV-24G with single FLR026FH 100mW JR3EDZ HB JE1AAH based with DB6NT 2 x FLR026 HPA 200mW, Ant : JM3KMO 90cm Cheveron made, JR3EDZ 60cm Cheveron made They made confirming QSO 2hr after to complete JA's new record rule. Their talk back was 1200MHz 1W HT! always 59! Tks fer info Toshi

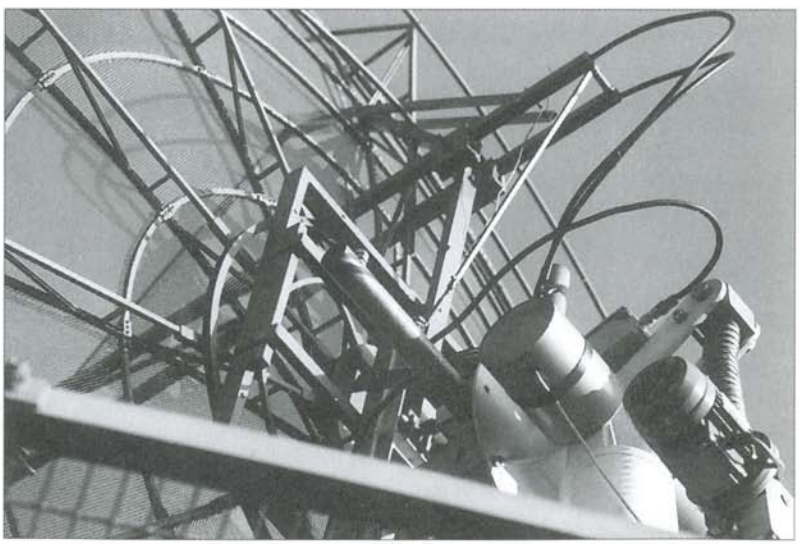
Microwave News

Presentations of HYPER

HYPER is the French newsletter for Microwave enthusiasts (Hyperfréquences is the French word for Microwave). The newsletter is published every month and comprises 20 A4 size pages. It gives useful information on all the aspects of microwave operation for the bands above 5GHz.

Of course a section is dedicated to the contacts and the activity during the French Microwave days (last Sunday of every month, from May to October), but the bulletin is crammed with those practical details the Microwave enthusiast needs for his home-built equipment.

Some examples of the articles published in 1997/98: Beacons: construction of beacons



I2SG: Elevation and Azimuth Control with 3-phase AC-motors

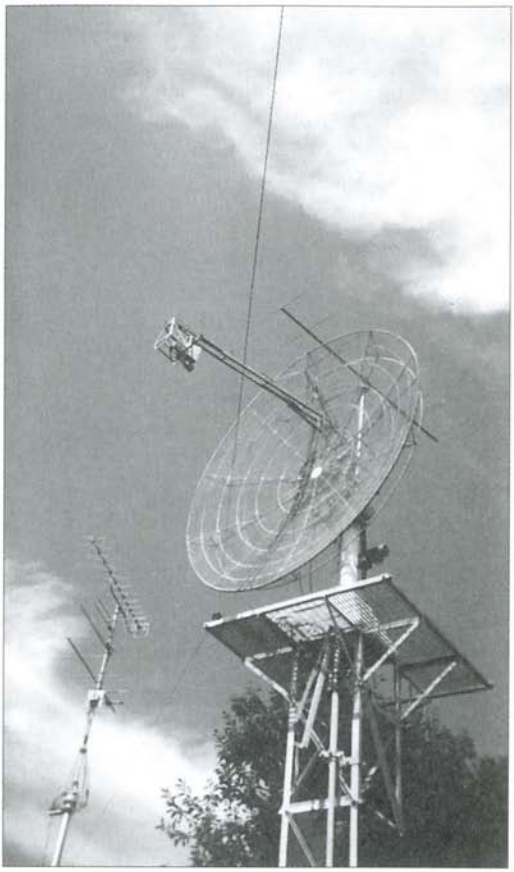
for 5,7, 10 and 24GHz. Beacons: list of French Microwave beacons (regularly updated). Microwave multipliers using the ERA-1. Modifying the G4DDK-004 LO board for 30mW @ 3GHz. Improving the stability of your LO source. A simple wattmeter for 24GHz. Various tabels giving the technical data on GaAs Fets, Hemts, MMICs, Power devices usable above 5 Ghz (with a list of the places where you can buy them, the average price etc). Two pages of data on the more commonly used TWTs (1 to 19GHz, 1 to 300W). Plus a lot more..... Hyper also publishes an average of two Special Issues a year (included in the subscription), each dedicated to one particular Microwave topic.

The 1997 issues were: One booklet on the 1W Qualcomm amplifiers (19 pages, published in June 1997). One booklet on a 5,7GHz transverter developped by F1OPA (26 pages, Mach 1997).

The news bulletin is edited and published by F1GHB, a well-known Microwave operator in France and Britain, who is currently QRV on 5,7, 10 and 24GHz. The publication is run on a non-profit basis, so the subscription fee asked is only used to offset the printing and mailing costs. Subscription fees for European amateurs: 167 French Francs a year + the 12 A4 size self-addressed envelopes. Please NO Eurocheques, as the banks ask a ripping charge. Try to send the money in cash. For UK amateurs only: Send a 16,70£ cheque + the 12 A4 size envelopes, or 17,50£ all inclusive (Cheques written out to M.J. Monteil, F5RVO) All enquiries and subscriptions to: F1GHB Eric MOUTET 28, Rue de Kerbabu SERVEL F-22300 LANNION FRANCE

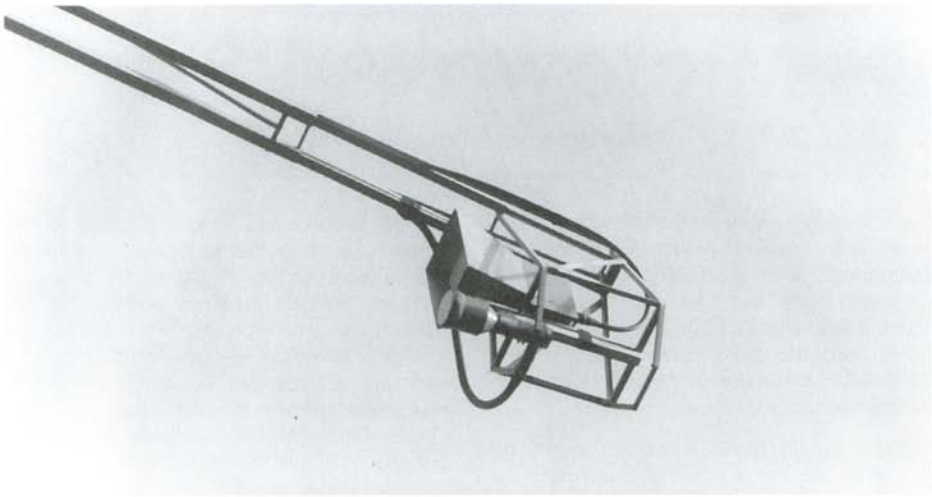
24GHz Info. Question: My second 24GHz portable station is, outside the microwave contests available for anyone interested to do experiments. Who??. Rig 40cm dish, 100mW, 2,5dB NF, only 12V needed. Contact me on Tel. ++31-315-241339 or E-mail: gerard.geesink@wxs.nl . Tks fer info Gerard.

I2SG: Dish in JN45PR



The next deadline is 1. February 1999, your reports can be send to me on FAX ++45 98467877, E-mail dmteknik@post4.tele.dk as ASCII-DOS text or by post to my NEW ADDRESS: John Sorensen, Solystvej 13, DK-9300 Saeby, Denmark, and please if possible on a disk in ASCII-DOS text, that will help me a lot, thank you. Merry Christmas and Happy Radio New Year John OZ1IPU

73 de John OZ1IPU



I2SG: 2 feeds for three bands

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	1998-09-03	JM3KMO-JR3EDZ	402
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

I want to say how much I enjoyed the Weinheim UHF conference last September. DL fleamarkets are quite different from the American ones, but I adapted and brought home a heavy bag of 'bits'. This was my first trip to Europe and it was nice to finally meet our DUBUS editor and many of the European microwavers..

I would like to make some comments on problems we have working Europeans on Microwave EME:

Problem 1

Sending to fast When running 2 1/2 minute sequences is it really better to send your call 50 times?? I know that I personally have trouble copying 20 words per minute when listening to a code practice tape. Now .... when the signals are .1 dB above the noise floor??? Please slow down, there is no reason to send CW beyond 8-10 words per minute on Microwave EME.

Problem 2

You do not tune around I have missed several QSO's because I was 10 KHz from the frequency the European station was expecting me to be on. This is 1 x 10 to the 9th frequency accuracy! Doppler shift can be 2 x 10 to the 9th! We are all using wide bandwidths on 3 cm EME and 3 cm EME signals are very easy to find, even when they are too weak to copy. So please tune around a bit.

Circular Polarization on 3 cm EME

No North American 3 cm EME station is currently capable of generating 3 cm EME Circular Polarization and we do not support a change to 3 cm EME CP.

Problems with Circular Polarization on 3 cm It is difficult to build a CP feed with less than 0.5 dB system loss. Radar Studies of the moon have show that at higher frequencies the forward scattered signal off a rough spherical surface does not maintain CP. So the total loss when running CP is about equal to liner polarization 45 degrees off axis. Let's stay with the current standard, NA Linear Horizontal, Europe Linear Vertical, Australia Linear Horizontal. The curvature of the Earth brings us all back into alignment.

New North American 120 and 140 GHz records: KF6KVG and W0EOM have been working on their millimeter gear again. The systems use Hughes harmonic mixers and 9 inch (23 cm) Cassegrain dishes. W0EOM uses two antennas and 2 mixers with one optimized for TX, the other optimized for RX. KF6KVG uses one dish and mixer, changing the diode bias between TX and RX. October the 2nd, they had a 1 way 144 GHz QSO of 4.9 km, beyond the current US record, but were unable to complete a QSO due to KF6KVG's lower power. The equipment was modified for 120 GHz and on November 16th, Will and Bob competed a 5.3 km QSO for a new US record. These QSO's were under warm weather, high humidity, near sea level conditions. They will be revisiting 144 GHz and plan major upgrades to their 47 GHz stations. Look for the records to be pushed out a long way.

Microwave Update 1999 W5LUA and I will be hosting the Microwave Update Conference in Plano, Texas October 22 and October 23. Plano is on the North edge of Dallas. Microwave Update it the premier North American microwave event. I will he organizing one of our famous Electronics Surplus tours on October 21. For additional information you can contact AL_WARD@HP.COM or me at WA5VJB@FLASH.NET 73's WA5VJB

1998 Microwave Update Noise Figure Workshop Results

Estes Park, Colorado

Noise Figure Measurement Accuracy +/- 0.2 dB

Workshop conducted by W5LUA, WA8WZG, K0KHZ,WW2R/N4FRE,N0FZG

Call	Design	Device		NF	Gain
		50			
W8TN	DEM			1,40	24,40
		432			
WA9FWD	HB			0,44	19,60
WA9FWD	HB			1,75	12,00
		902			
WA0RDX	HB	NE334		0,07	23,20
WA0RDX	HB	NE334	CAVITY	0,08	22,82
WA0RDX	HB	NE334		0,09	23,00
WA0RDX	HB	NE334		0,09	22,40
WA0RDX	HB	MGF4918D		0,21	24,20
N4PZ	DEM33LNA			0,52	18,35
		1296			
WA8WZG	AGO2-23			0,30	32,10
W8ZSX	SSB SLN			0,32	33,10
LU6DW	KB2AH		CAVITY	0,32	16,60
W7CS	WD5AGO 2 STG			0,35	31,20
WA8WZG	AG0-23			0,36	26,13
K6DV		ATF-36077		0,36	17,50
WA8WZG	DEM23LNAH			0,38	17,86
W4RDI			CAVITY	0,40	30,20
N4FRE	DJ9BV	FHX35		0,43	16,46
W7QX	AGO2-23	FHX05		0,44	30,40
G3WDG	DJ9BV	TGF4350	STRIPLINE	0,44	17,14
N7LQ	DEM 23LNAH			0,45	16,28
N7LQ	KB2AH		CAVITY	0,50	25,22
WA9FWD	MCM	MCM MGF1302		0,56	15,90
W7CS		MGF1302		0,64	17,12
N7LQ	DEM 1296	ATF-10136		0,65	16,68
W7CS	WD5AGO 1 STG			0,98	11,00
W7CS	hp 1101 (OLD)	HFET-1101		1,08	16,19
N4FRE	DEM 1296	ATF10136		1,09	14,78
2304					
G3WDG	HB	TGF4350		0,43	16,10
N2CEI	DEM	ATF-36077		0,50	18,70
WA8WZG	W5LUA	ATF-36077		0,54	17,70
N4FRE	W5LUA	ATF-36077		0,60	17,40
W7CS	MGF1302 +ISOL	MGF1302 +ISOL		0,95	28,40

2320

G3WDG	HB	TGF4350	0,42	15,90

3456MHz

N2CEI	DEM 9LNAH	ATF-36077	0,55	15,70
N4FRE	W5LUA	ATF-36077	0,70	12,60
WA8WZG	W5LUA	ATF-10136	0,75	25,00
WA8WZG	W5LUA	ATF-36077	0,75	12,80
K5GNA	C BAND LNA		1,63	36,70
W0AUS	C BAND LNA		1,65	30,00

5760

WA8WZG	W5LUA	ATF-36077	0,85	11,20
N4FRE	W5LUA	ATF-36077	0,90	12,10
N4FRE	W5LUA	ATF-10135	1,08	12,08
WA8WZG	W5LUA	ATF-10136	1,30	17,80
K5RHR	HB	2XERA-1	13,40	1,30

10368

JE1AAH	HB	NE329	0,68	12,50
N0UGY	W1VT		0,81	11,93
N4FRE	G3WDG004	FHX06	0,93	12,50
W8ZSX	DB6NT 102A		0,99	10,60
N2CEI	DEM	ATF-36077	1,05	23,50
WA8WZG		ATF10135 X2	1,76	18,40
N0UGY	HB CONVERTER		2,28	18,00
JA3LGP	COMMERCIAL	WJ 5320	9,50	13,50

24192

JE1AAH	HB	NE329	1,60	17,05
JE1AAH	HB	NE329	2,15	20,90
WA8WZG	DB6NT	NE329?	2,18	28,20
JE1AAH	HB	NE329/NE326	2,18	26,20
W5LUA	HEWLETT PACKARD	HMMC-5023	2,89	20,33
W5LUA	HB	ATF-36077	3,08	13,30
W5LUA	FUJITSU MMIC	FMM5701LG	3,47	9,50
W5LUA	HB	ATF-36077	3,50	13,50
JE1AAH	22 GHz COMMERCIAL		3,74	27,30
AA0BR	HB CONVERTER		3,88	8,40
K5GNA	MITEQ		4,12	25,50
W0EOM	HB CONVERTER	DSB	4,20	28,00

Yagis von WiMo

für 2 m und 70 cm

Kompromißlose Dipole

Faltdipol mit Teflon-Balun komplett im Anschlußkasten. N-Buchse. Anschlußkasten kalt verschweißt und zusätzlich ausgeschäumt...

Kompromißlose Elemente

"Dicke" Elemente mit 8 mm ø, hohe Bandbreite. Material Alu, hohe Leitfähigkeit, geringe Verluste! Elemente geschraubt, hohe Kontaktsicherheit auch nach Jahren!

Kompromißlose Kreuzyagis

Boom aus Rundrohr: kein Unterzug nötig, super Richtdiagramm! Spezial-Mastschelle: Montage horizontal/vertikal (+-Form) oder diagonal (X-Form) möglich! Anschlußfertige Phasenleitungen lieferbar.

Modell	Frequenz	Elemente	Gewinn (dBD)	Länge (m)		Preis
WY 204	2m	4	7	1,2	Vormast	90.00
WY 207	2m	7	10	2,6		106.00
WY 210	2m	10	12,3	4,6	Unterzug	153.00
WX 208	2m	2x4	7	1,2	Vormast	151.00
WX 214	2m	2x7	10	2,6		192.00
WX 220	2m	2x10	12,3	4,6		223.00
WY 706	70cm	6	8	0,75	Vormast	110.00
WY 7010	70cm	10	11,5	1,6	Vormast	115.00
WY 7018	70cm	18	14	3,1	Unterzug	154.00
WY 7023	70cm	23	15	4,2	Unterzug	175.00
WX 7020	70cm	2x10	11,5	2	Vormast	192.00
WX 7036	70cm	2x18	14	3,4		223.00
W 3000	Duoband	3+5	5/8	1,4	Vormast	197.00
18250	D-Netz	5	7	0,6	Vormast	152.00
18251	D-Netz	12	12	1,0	Vormast	191.00

Helical Antennas

Die Antennen sind in erster Linie für den Betrieb über Satelliten entwickelt, aber natürlich auch für terrestrische Funkverbindungen einsetzbar. Vormastmontage, Anschluß über N-Buchse, Impedanz 50 Ω, Schrauben aus Edelstahl.

Helix 70. Lg. 150 cm, Gew. 9,5 dBd ... 210.00
Helix 70-2. Lg. 290 cm, Gew. 12,5 dBd ... 318.00
Helix 23. Lg. 60 cm, Gew. 11,0 dBd ... 108.00
Helix 23-2. Lg. 140 cm, Gew. 13,0 dBd ... 140.00
Helix 23.4. 4f.-Gruppe, Gew. 16,0 dBd ... 238.00
Helix 13. Lg. 570 cm, Gew. 14,0 dBd ... 180.00
Helix 13-2. Lg. 70 cm, Gew. 15,0 dBd ... 205.00

Planar Antennas

Gruppe 23
Gruppenantennen für 23 cm, 11dBd, N-Buchse 109.00

PA-23R
Gekapselte Flachant. (Hybridquad), 9 dBd, N-Buchse
für 23 cm ... 136.00
für 13 cm ... 139.00
für D-Netz ... 145.00

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

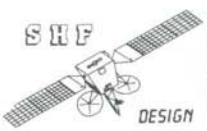
Elements cut piece per piece with a maximum difference in length of 01.mm

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

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 th whole ham band, even for ATV. Doesn´t detune when getting wet.



Präzisions-Yagis

für 23 cm, 13 cm und Meteosat

Kompromißlose Dipole

Faltdipole mit semi-rigid Balun und Teflon N-Buchse, dicht vergossen!

Kompromißloser Reflektor

Mehrfachreflektor für hohes Vor/Rückverhältnis, wichtig für SAT und EME!

Kompromißlos einfacher Aufbau

Alle Elemente bereits montiert, das hat unser Fügeautomat (Bild) für Sie gemacht!...

Typ	Frequenz	Elemente	Gewinn (dBD)	Länge (m)		Preis
SHF 2328	23cm	28	15,4	1,6	Vormast	212.00
SHF 2344	23cm	44	18,1	3,0	Unterzug	256.00
SHF 2367	23cm	67	19,9	5,1	Unterzug	312.00
SHF 1340	13cm	40	16,6	1,6	Vormast	217.00
SHF 1367	13cm	67	20,0	3,0	Unterzug	336.00
SHF 1633	Meteosat	33	16,3	1,6	Vormast	263.00
SHF 1658	Meteosat	58	18,7	3,1	Unterzug	344.00

Ask for details: leafleat "SHF-Yagis": free of charge. General catalogue (100 pages): please send banknotes of 10,- DEM or $ 8,- (Deutschland: 6,60 DM in Briefmarken einsenden!).

Orders welcome by mail, phone, FAX, e-mail. Daily worldwide shipments via UPS and mail. Foreign representatives wanted!

WiMo Antenna Ltd.
Gaxwald 14
D-76863 Herxheim, Germany
Tel.: +49 7276 919061
Fax: +49 7276 6978
e-mail: info@wimo.com
http://www.wimo.com

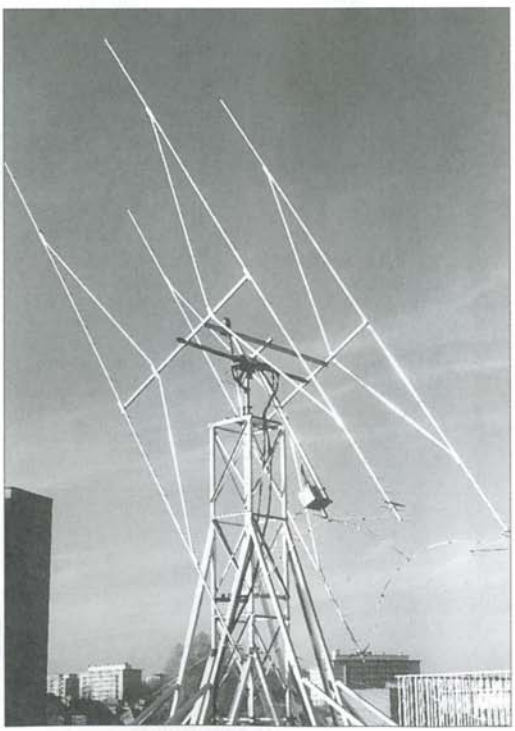
EME News

Editor: Bernd Wilde, DL7APV

intro: The proposal for the next 432&up EME conference in 2000 is Brasil. The first leg of the ARRL contest is over. Condx and activity on 432 were less normal. We have mixed statements.

144 MHz

DL1EJA (JO31) wkd : ARRL Part I KB8RQ, W5UN, SM5FRH, IK3MAC, F3VS, AA4FQ, I2FAK, SM2CEW, OZ1HNE, VE3KDH, K7CA, VE7BQH, K5GW, WB5LBT, SM5BSZ, I3DLI, for 16x Worked now 47 initials (most on random) with the following equipment since 10.97: Rig: IC720A (500Hz-IF-Filter+GD82 AF-Filter), LT2S, MGF1302 PreAmp (NF ca. 0,4dB) 3x2C39 Driver-PA, GS35B Final-PA (750W) Ant: 24ele Yagi by M2 (8 Lamda) limited elevation in some directions by the rove Condx were very much up and down, but found on sunday some very good hours. From time to time I received my own echos!! I called cq sometimes, but didn't hear anybody answering me. There is a rumour that F/G8MBI (single-Yagi) received my echos also. All in all I'm quite happy with the result, but hope to improve my sccore during the 2. part in december. Tnx for everybody who called me, and see you off the moon!!! Oliver, DL1EJA (JO31DS)



ON4KNG 4x11l 9bv opt. open feeder 6mm dia.

EA1ABZ (IN71QO) reports: Here I send you my first year 144 MHz EME activity initials. First I used 2 x 12 WU and 400W 4CX250. On 23.05.98 I started using my new 4 x 12 WU array and same power. Now I am building a PA with a GS35B. I have just finished a DEMI transverter for 432 and I hope to be on 432 in some years with 4 x 26 BV opt.
1 08/11/97 W5UN, 2 28/02/98 PE1LCH, 3 28/02/98 EA6VQ, 4 28/02/98 VE3KDH
5 28/02/98 KB8RQ, 6 28/02/98 W0RWH
7 28/02/98 VE7BQH, 8 04/04/98 SM5FRH
9 23/05/98 IK2DDR, 10 23/05/98 SM2CEW
11 23/05/98 IK3MAC 559/529, 12 23/05/98 F3VS 559/529, 13 17/07/98 S57TW, 14 17/07/98 ON7RB, 15 17/07/98 WA9KRT
16 18/07/98 OZ1HNE, 17 21/07/98 CT1DMK
18 15/08/98 F1FLA, 19 17/08/98 EA3DXU, 20 23/08/98 K5GW, 21 27/08/98 9H1CD, 22 08/09/98 W0HP, 23 08/09/98 W7HAH, 24 09/09/98 JA9BOH, 25 12/09/98 I2FAK, 26 12/09/98 SM5BSZ, 27 12/09/98 SM5MIX, 28 12/09/98 IW5DAN, 29 12/09/98 KB3PD, 30

EME-TOPLIST

144MHz

Call	small	SQR	DX CC	US states	WAS	WAC	#
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	15	19	11	--	--	69
HB9SUL	48	16	19	0	--	--	63
PE1OGF	46	14	16	12	--	--	55
UA3PTW	40	12	14	9	--	--	41
EA1ABZ	37	15	17	0	--	--	39
S53J	28	11	12	3	--	--	31
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	0	0	39	34	--	--	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
OE9ERC	107	24	27	22	--	1993	126
DL7APV	94	26	31	40	--	1984	126
DL3YEE	90	22	32	15	--	--	0
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	--	--	0
F5HRY	4	0	14	8	--	--	31
JA9BOH	0	0	48	42	--	--	296
GW3XYW	0	0	33	0	--	--	178
G3SEK	0	0	54	42	--	--	275

1296MHz

OE9ERC	136	27	32	28	--	1993	194
OK1KIR	112	29	34	24	--	1989	139
G3LTF	108	0	31	20	--	--	134
F1ANH	100	24	30	20	--	1994	128
EA6ADW	97	23	29	23	--	1994	129
HB9BBD	92	23	31	20	--	1994	119
DJ9YW	78	0	28	15	--	1998	89
F5PAU	74	24	24	15	--	--	47
OK1DFC	58	18	24	11	--	--	65
OK1CA	34	16	18	7	--	--	31
DL3YEE	12	6	9	1	--	--	0
GW3XYW	0	0	27	0	--	--	114
JA9BOH	0	0	1	0	--	--	2

2300MHz

OE9ERC	40	14	18	8	--	--	43
OK1KIR	31	13	17	8	--	--	32
F1ANH	16	8	11	5	--	--	17
G3LTF	13	0	12	2	--	--	14
EA6ADW	8	4	8	1	--	--	9
GW3XYW	0	0	13	0	--	--	16

5760MHz

OE9ERC	13	7	11	2	--	--	15
OK1KIR	7	4	6	1	--	--	7

10368MHz

G3WDG	17	0	17	4	--	--	17
G4KGC	13	0	15	2	--	--	15
OE9ERC	11	8	7	3	--	--	11
OK1KIR	11	7	10	2	--	--	11
W6/SM0PYP	4	3	3	2	--	--	6

12/09/98 I3DLI, 31 13/09/98 SM4IVE, 32 13/09/98 N6OC, 33 16/09/98 DK3WG, 34 16/09/98 UT5ER, 35 24/09/98 EA2AGZ, 36 09/10/98 JL1ZGC, 37 10/10/98 HB9Q, 38 10/10/98 OZ9AAR, 39 10/10/98 WB5LBT. e-mail:ea1abz@santandersupernet.com web:http://members.tripod.com/~EA1ABZ/index.html. Tnx fer info Ramiro.

F9HS reports: Hello, after a long time of inactivity I am QRV again on 144 MHz EME from JN23AT. I use a single BVO-3WL cross pol with full elevation and an 8877 PA. Worked all random :

16.08. IK3MAC, K5GW, 06.09. SM5FRH, 12.09. F3VS, SM5FRH, IK3MAC, I2FAK, KB8RQ, SM5BSZ, W5UN (heard VE3KDH,

microwave eme contest

from: AL_WARD **note : for '98 it's over!!**

First Annual International Microwave EME Contest Due to the increase in the number of amateur bands where EME is used, it has become increasingly difficult to operate all bands during the EME contests. Typically a multi-band station will utilize the bands where the operator expects the highest number of QSOs. EME activity on 2304 MHz and higher generally suffers due to the rather low number of active stations and the limited amount of operating time available. Based on comments from amateurs worldwide it appeared that there was support of a "microwave only" EME contest. Earlier in the year, WA8WZG, W5ZN , and myself ,W5LUA, discussed the possibility of the ARRL sponsoring either a separate microwave EME contest or creating special categories for microwave EME within the structure of the annual EME contest. With Joel's (W5ZN) involvement and influence in the ARRL we managed to get their attention. Since there is a Region 1 scheduling conflict this year, the usual ARRL EME contest is being held the weekends of October 10-11 and December 5-6, 1998.

The rules of which are listed in the September 1998 QST, page 102. We were not able to supply the ARRL with enough information soon enough regarding the structure of the microwave EME contest. As a result, the ARRL is sponsoring "a non-competitive microwave EME weekend to be held November 7-8, 1998". After further discussions with Joel W5ZN of the ARRL, it has been decided to try to organize the event into being the first competitive annual International Microwave EME Contest. W5ZN, WA8WZG and myself propose the following set of rules. WA8WZG and KD4LT have already offered to sponsor the awards and plaques.

The International Microwave EME weekend will promote EME activity on every amateur band at 2304 MHz and higher. Although the QST column suggested microwave start at 1296 MHz, it was suggested by the consensus of attendees at the 1998 Paris EME conference that the microwave contest should only include the microwave bands at 2304 MHz and higher. Individual band awards will be issued for each single band including 2300 MHz (13 cm), 3400 MHz (9 cm), 5700 MHz (6 cm), and 10300 MHz (3 cm). Multi-band awards will also be given for best overall score on all bands 2304 MHz and higher.

Initially the microwave EME contest will be held in November 1998. As other amateurs have indicated, there may be a more optimum time of year for the contest based on weather, etc. The important factor is that if we want the ARRL to support a microwave EME contest, then we should start by taking advantage of the opportunity that the ARRL has given us. We must participate and submit logs and make our suggestions for improving the contest next year.

Rules:

1. Object: Two way communications via earth-moon-earth (EME) on any authorized mode on each amateur radio band at 2304 MHz and higher.

2.Date and Contest Period: Two full 24 hour UTC periods on November 7 and 8, 1998. In order to maximize the number of QSOs per band it is suggested that 13 cm be the primary band on November 7 with 3 cm being the primary band on November 8. Both 9 and 6 cm are best handled by coordinating activity windows between active stations. A suggestion made by ZS6AXT is to have 9 cm also on November 7 and 6 cm on November 8.

3. Entry Categories: Single Operator: One person performs all operating and logging functions, equipment adjustment and antenna alignment.
Multi-Operator: Two or more persons participating at the same location.
Commercial Equipment: Stations using equipment that is not amateur owned will have their scores listed separately.

4. Exchange A valid contact consists of receiving both call signs and reports and confirmation of both call sign and report. Partial or incomplete QSOs do not count. Stations may be worked only once per band for credit.

5. Scoring QSO points: Count 100 points for each complete EME QSO on 13 cm and 3 cm. Count 200 points for each complete EME QSO on 6 cm and 300 points for each completed EME QSO on 9 cm. Multiplier: Each U.S. and Canadian call area, plus each DXCC country (not US/Canada) worked via EME on each band.

Final Score: Single band entry score is determined by multiplying QSO points on a particular band by the sum of multipliers worked on the same band. Multi-band entry score is determined by multiplying the total QSO points for all bands by the sum of multipliers worked on all bands.

6. Miscellaneous: Fixed or portable operation is permitted. Stations operating outside traditional call areas must indicate so, identifying the call area of the operating site. Contacts may be made on CW or SSB. Only one signal per band is permitted. A transmitter, receiver or antenna used to contact one or more stations under one call sign may not be used subsequently under any other call sign during the contest, except for family stations where more than one call has been issued, and then only if the second call sign is used by a different operator.

7. Reporting: Entries must be postmarked no later than 30 days after the close of the contest and must include complete log data and a summary sheet. The summary sheet should show a band by band breakdown of QSOs and multipliers. For at least the first year of the microwave EME contest, the contest entries should not be sent to the ARRL but rather sent to

W5LUA Al Ward 2306 Forest Grove Estates Rd. Allen, Texas 75002 USA
Entries can also be emailed to W5LUA. The email address is : al_ward@hp.com

Include any comments you may have regarding improving the microwave EME contest for the years to come.

8. Awards: Certificates/Awards will be issued to the top three stations worldwide on each single band and multi-band for both single operator and multi-operator. Additional awards will be issued where significant effort and/or competition is evident.

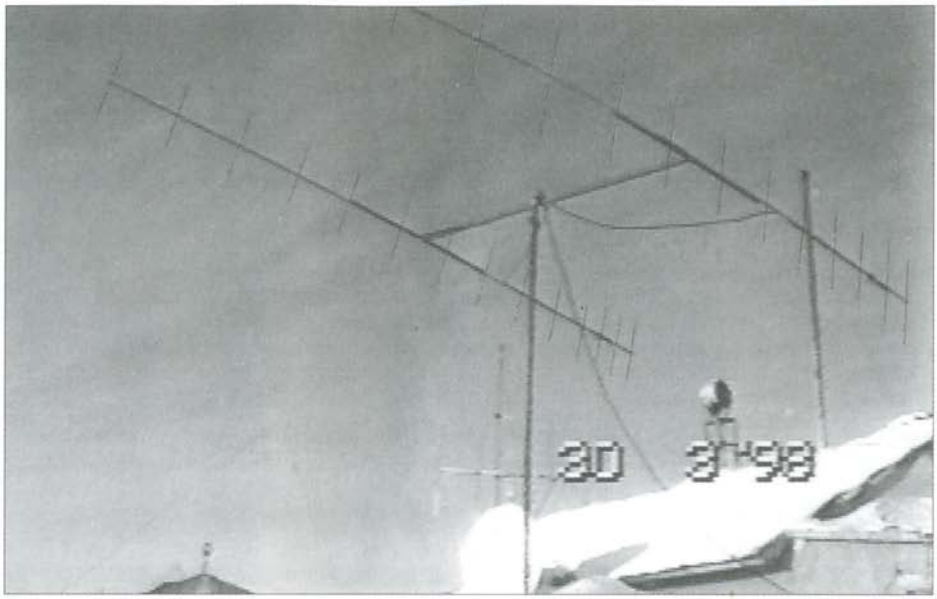
Al Ward W5LUA Joel Harrison W5ZN Tom Whitted WA8WZG September 26, 1998

VE7BQH, WB5LBT), 13.09. I3DLI, WA9KRT, 04.10. RZ1AWT #248, 10.10. IK3MAC, F3VS, I2FAK, KB8RQ, SM5FRH, SM5MIX, W5UN, VE7BQH, SM5BSZ, SM2CEW, K5GW 11 oct. HB9Q, AA4FQ (heard 10/11 oct. DJ5MN, SM3MXR, I3DLI, W9KRT, RU1A, K7CA OZ1HNE, K6MYC, LZ2US). It is fun using such a small antenna, but I am planning a bigger array for next year... Please note my new address: Claude Dagonneau, Cidex 1040, F-30250 Asperes, France Tnx fer info Claude.

I4XCC (JN63gv) wkd : 01.02.98 OZ1HNE #169, 01.03 WA9KRT. Claudio Maracci Via Celletta 144 47854 Croce di Montecolombo - Rn rig 4X17 el. F9FT - 1Kw. AX-25 : I4XCC@IK4VFK-8 e-mail: maracci@iper.net Web www.geocities.com/Area51/Dungeon/8804 tnx fer info Claudio

S53J (JN75EV) reports: about S53J Radioclub Borovnica (also S59DBR). We have our location in a small village called Pokojisce near Borovnica, 20 km SW from Ljubljana, capital city of Slovenia, 732 m a.s.l. We were established in 1979 and we are mostly devoted to VHF/UHF/SHF - 50 MHz to 1296 MHz. We built 15 m high tower with four 17 el. antennas 2M 5WL for 2m, 4*28 el 2M 9WL for 70 cm and 55 el.Tonna for 23 cm. Separated on the roof we have 5 el Tonna for 6m. Stations are ICOM IC 745 for short wave with just multiband Windom, ICOM IC 820H, ICOM IC 202S and YAESU FT 736R. 500W amplifier for 2m with 2*4CX250B was built by our eident Joe S56TZJ. For 70 cm we use 100 W TLA 432. Jo~e built also rotator for elevation - up to 54 degrees. We're

RODJG: 2xDJ9BV-3.6wl, vertical, 8 deg. elevation fixed



active on TROPO, ES, EME. We have made also few MS contacts and some via aurora and FAI, but not recently.
wkd initials '95: W5UN '96: SM5FRH '97: I3DLI, SM5DCX, I2FAK, IK2DDR, SM5BSZ, RU1AA, 9A9B, 9A2AE, F1FLA, IV3GBO, JL1ZCG, I5JUX, KB8RQ, SM2CEW, S51ZO, '98: IK3MAC, DL5MAE, F3VS, S57TW, OH2PO, VE7BQH, LZ2US, WA9KRT, IK4WLV, SM4IVE, VE3KDH, K5GW, WB5LBT, 7K3LGC # 31 Rig: IC-820H + 500W (2*4CX250B), 4*17 el.2M 5WL, cca 20,9 dBd, feed with 15m ceflex 7/8", aircom to antennas and RG-213 to stn, cca 2dB loss in cable, preamplifier MGF 1302, elevation up to 54 degrees but wkd SM4IVE when moon was 61
432 MHz S53J tried, but 100W is not enough, although 4*28 el. 2M 9WL is not bad antenna. Preamplifier MGF 1302. Hrd OZ4MM and some stns from Germany. Elevation up to 54 degrees, I believe QSO possible till 62. RIG: ICOM IC-820H + 100 W, MGF 1302, 4*28 el. 2M 9WL
Vilko Oblak - S51XO Cesta XII / 2A 1260 Ljubljana - Polje Slovenia Tel.home: +386 61 484 371 Tel.QRL : +386 61 17 34 710 Email: Vilko.Oblak@urszp.sigov.si

RODJG expedition to Sredney Island

(How EME works from 1000km south of the North Pole)

Nick, UA3DJG reports: UA3DJG and UA3DAT came to Sredney Island (Loc.: NQ59QM) in February 1998. At this time we had polar night interupted with daily auroras and a very nice moon nerly all the time. The main topic was to construct a communication base for the 'Valdimir Shukow' expedition, which wanted to travel by ski from Severnaya Semla to Canada via the North pole. In fact they succeeded to do so.

After construction of our shak we had daily QSO's with this expedition on HF. But we braught also our VHF-equipment to this place. I had my homebrew transceiver and a good power amplifier with EME-power. But we didn't take antennas with us, because we were not sure, wether it would be possible to erect an EME antenna just 1000km south of the North pole during disgusting winds, low temperature and snow.

Nick, RA3DJG at the key on R0DJG

But the moon was shining nearly all the day ('night') with low elevation angles. Very impressing. So finally I decided: Let's do something.

There was no material: no alumium tubes, nothing. But after looking around we found an old satelllite TV-antenna system, which has been operated on 700MHz. This was obsolete, because the people now use dishes for Sat-TV. We decided to construct two times DJ9BV-3.6wl out of the scrap.

Two weeks later two DJ9BV style Yagis were looking at the moon and R0DJT began operation.

QSOs: 20.03.98 UT5ER O/O; DK3WG O/O; IK3MAC O/O. 30.03.98 W5UN 559/O; VE7BQH 539/O; 03.04.98 DJ7OF O/O; 04.04.98 SM5FRH O/O; W5UN O/O; KB8RQ O/O. 05.04.98 F3VS O/O; SM5BSZ O/O. 11.04.98 I2FAK, IK2LZT. 12.04.98 UA9FAD, DL5MAE. We worked 14 different stations in two weeks.

Skeds not complete: UA3TCF, UA3IOU, UR5LX, OZ1HNE, W0RWH, K1CA, WA9KRT, G4YTL, JA9BOH, JH2COZ.

Heard: RU1AA, I5JUX, F1FLA, K7CA, OE5EWM?, F/G8MRI?

Rig: TX 750W, Ant 2xDJ9BV-3.6wl, spaced 4m without preamp and with 10m coaxial cable.

At the 12th of April we had been able to hear our own echos for nearly 3 h. The moon position was about 1 degree elavtion just over the polar sea.

Could not hear anything from JA9BOH and JH2COZ at this day. With UA9FAD and DL5MAE no problems this day.

We want to thank UT5ER, RW1AW and DK3WG for help on the 20m EME-net.

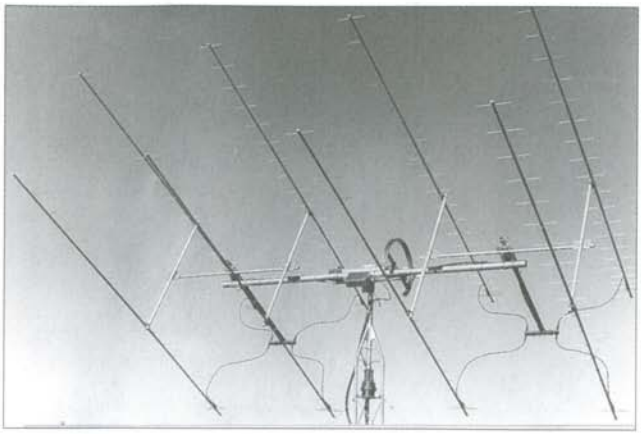
QSL address: Miasnikov Nick, P.O. Box 73, Ramenskoje, 140103 Russia

Tnx fer info Nick.

432 MHZ

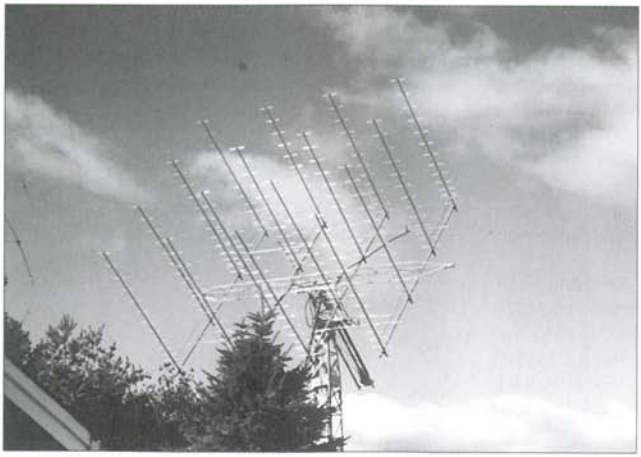
DK3FB wkd in sept. SW VE1ALQ and N4GJV. Some others were heard, but too weak to copy complete call. In ARRL Part I: DL9KR, DJ6MB, OH2PO, K1FO, OE5JFL, OZ4MM and DL3EAG.

CWNR: F5FLN, N9AB, SM3AKW, OE5EYM, HB9SV and F1ANH. Heard were also UR5LX, N4GJV, SM2CEW, DL9NDD, KD4LT, JL1ZCG and DK3WG. Bad wx with high wind and a not yet detected noise source caused lots of problems. tnx fer info Rüdiger

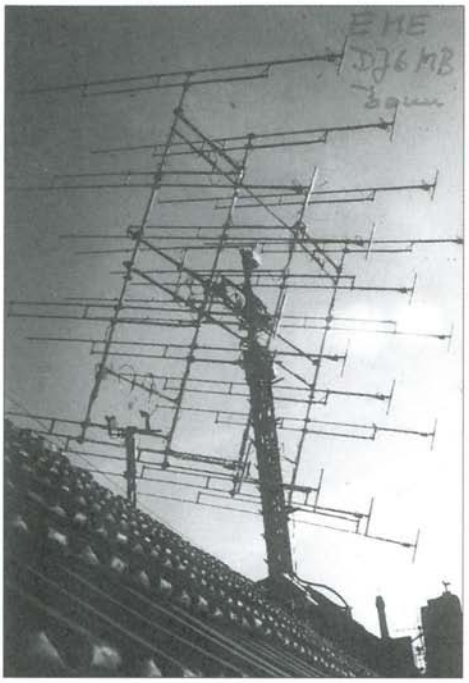


K0RZ 8xK1FO 22el. manual.polarity adjustment.

DL3EAG : wkd in sept. SW N4GJV, JA5OVU and SM2CEW. Heard were also IK5QLO partly and a W7Q? , but not complete call. Amazing for me was that N4GJV and SM2CEW came back on my CQ call (first time). in ARRL I he found the conditions quite good, but also strange from time to time. Saturday morning, I had only three contacts, OH2PO, K5GW and N4GJV. Many other were heard, but conditions were unidirectional, loud signal from N9AB (539), K2UYH (529) and W7BBM, but no response on my call. Heard were also W7FN(?), DL8OBU, DL4KG, DJ6MB and ON5OF. Saturday evening I had some more contacts, so European conditions were good. JA5OVU, DL9KR, UR5LX, OZ4MM, JL1ZCG (#36), DJ6MB (#37), SM3AKW (#38), OE5JFL, DK3WG, DL4MEA (#39) and DK3FB were worked. CWNR: F5FLN, 7M2PDT and OE5EYM. Heard was HA1YA. Sunday morning same effect than Saturday, loud signals from US, but no response. Especially KD4LT was extremely loud. When he worked K1FO, he was about 539 and Steve, K1FO was only O. One hour later, KD4LT was gone (or not heard anymore), but K1FO came up loud and I worked him 539/439. Finally Sunday evening UT5DL (#40) worked, ending up with 11*16 in first leg. I changed PA, now K2RIW with 2*4CX250, abt. 900W out, but I'm still limited in elevation (maximum 30degr. at moon set). My Email address is still wrong in the database, could you please change it to:FLICK@NTCCSC01DU .NTC.NOKIA.COM I also have my own home page now: http://www.qsl.net/dl3eag for the Americans and http://www.t-online.de/home /028367000/ for the Europeans thanks and best 73, see you off the moon tnx fer info Stefan



KB8ZW 432 array



DJ6MB 16x27el 9BV

IK5WJD reports : ARRL first leg Contest Results this year I have a lot of problems: saturday 10.10.98 work on the job, time reduced for only one QSO: K5GW O/R (please I'm still waiting one year ago his QSL card !) sunday 11.10.98 a third armonic of FM broadcast interferring in the PREAMP, only four QSOs: OH2PO O/R, K1FO 439/549, DL9KR 559/569, OZ4MM O/R. I hope the best for next leg in december. tnx fer info Alessandro.

KA0RYT reports : I have been busy this year with many activities - including winning the Central States noise figure contest on 144 and 432 - measurements were -144 =0.18db noise figure at 25.5db gain and on 432 = 0.22db noise figure at 22.47db gain . I have also been getting ready to go out portable to Nebraska(EN 01/02) on Sept 12 / 13 activity weekend for a short expedition there only for 432 EME.(Please try to forward this info to the 432 EME operators - skeds will go through K1RQG / 432 +above net) I have been putting together pieces for a 1296 EME station here and may be QRV late this year or early next year from this QTH - EN34DW . tnx fer info Ron

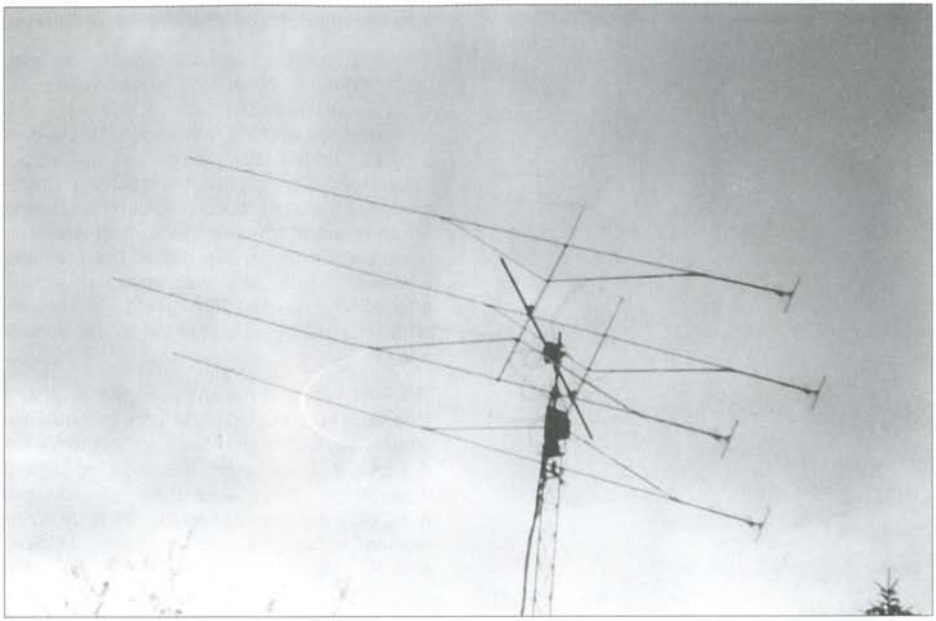
OE3JPC reports : I am still (again, new grid, JN87EW) qrv on 70cm EME, added 4 elements to my 2 yagis (each of course...). Sun noise with 2x7.7wl dj9bv opt70 is now about 11dB to cold sky/Leo. I added a few new calls to my "hrd but not yet wkd-stns-list", during the contest. Unfortunately I have not found a solution for putting up an hf-ant at my new qth so far therefore I cannot show up on the net at the moment. However, skeds are welcome via e-mail, phone/fax (++43-2254-75769). JOHANNES.PICHLER@gv.oebb.at tnx fer info Johannes

W7HAH reports : I haven't been active on 432 for over a year but did participate in the ARRL contest, worked 14 strations, most of them were Europeans. Looking for skeds during activity week in Nov. I am sure there should be a number of stations that need Montana. Stations worked during the contest were: UR5LX, K5GW, N9AB, DL9KR, OH2PO, OE5JFL, N4GJV, G4ERG, K1FO, DLMEA, HA1YA, K5WXN, JA4BLC AND JA5OYU. 3 NEW INITIALS. Conditions appeared to be good but only spent 2 1/2 hours on 432. Initials now 183. 73 Shep

432 & up NETnews

QTH-QSY de **EA6ADW** Hello guys, now my year is over. Sunday 8.th nov. our ship will bring us to Barcelona. From there nonstop to DL by car. Will come back to EA6 around march99 (like every year). IMPORTANT: please use my german e-mail cerveny@t-online.de from 07.th.nov98 - end of febr.99. In that periode my adress will be : Peter Cerveny, Barbarossastr.30a, D-42115 Wuppertal, Germany, Tel./Fax ++49-202-713260 73 es cuagn in 3/1999 from EA6, de Peter, EA6ADW/DF5JJ.

EI8PJ is new station on 432 with 4y and 200w in IO63, no qso until now but will be improve to 8y and be qrv in sept. Derek **F/ON5OF** plans an expedition to 3A2 (half hour drive from his qth) in 1999 and needs help. **9H1ES** is a new station on 23cm



DL9NDD 4x13wl 9BV (actual now 17wl !!!)

sun noise 432&1296 on OCT 31/NOV 2:

K5JL	-&20.2dB 28'dish, 39dbd @ 23cm
W4TJ	-&13.2dB 12' dish, 31.7 @ 23CM
KD4LT	19.2&18.6dB 32' dish 70cm 29.88 gain,22' dish 36.14 dbi @ 50% EFF
K3HZO	-&10.4dB 3 MTR dish, 29.33dbi @23cm
VE1ZJ	11.5&- 6FO22 on 70cm
OZ4MM	19.5&21.8 10 meter dish (13cm = 19.7 see net notes)
WA4NJP	17.7&15.9dB 5 METER DISH

N2HLT 8 FO up; power down to 400w. **WA9FWD** working on his dish still KL7HFQ: was on and did hear echoes and were loud. **DL9KR** is QRV, but the Brake on Jan's rotor is bad.. needs to repair and do some mechanical work.. After 15 years service, needs repairs. ARRL score : 91x35. **9H1ES** was busy and missed some skeds, sent 7 QSL cards, DJ9YW, HB9BBD, K2DH, K2UYH, VE1ALQ, W2UHI.needs LA8LF address, anyone else needing cards, please give info to 9H1ES or 9H1PA. Correction of Cowles **KB4CNI** locator FM08JF. **9H1BN** who was testing 70cm eme during the contest had to go QRT to a later date as he has to complete his 2 Meter EME station before re-activation on 70cm again . The yagi's were giving him a some problems due to high swr.(6wl dj9bv opt.) around 1.: 1.7 and that was the reason for short activity during contest. He only managed to work DL9KR and OH2PO.73's from 9H1PA PHILIP. **W7ALW** Barrie DN36au reports Have finally completed my small 432 EME station. Would like to try a few skeds during the next several days. Station is: 4 X 13WL with elevation to 55 degrees, .38db, 38DB preamp, FT736 with Mutek boards and LA-70B. Was not able to transmit during last contest period due to relay problems, but did hear many stations, some quite well. Skeds via barrie99@marsweb.com. **DK5MN** is not qrv on 432+1296, because antennas are down. Their group will try to be QRV again for the second part of the contest in December. For us it was a *good* decision to down the antennas now to avoid storm caused damages! Since yesterday we have winds up to 130 km/h!! Chuck **W7CS**, I was able to make 30 Q's and 19 multis in the 1st w/e of the contest on 1296. I was too beat to stay up for the Pacific/Asian window either nite. I hope to increase my 125w (in the shack) with a

TH308/328 by the 2nd w/e. I had some trouble copying some of the stns because of their poor dot/dash spacing or poor weighting. Also this was often compounded by too high sending speed. **KL7HFQ** HF amp is down, collecting parts for 23cm ops. New station **KL7FH** with the same ant system as AL7OB will be QRV on 70cm in near future. **RW1AW** will come up on 432.

1296 MHz

F5PAU wkd : ARRL I HB9BBD 579/579, OK1DFC 559/549, JA7BMB 569/449 #99, DF4PV 569/449, LA8LF 579/569, G3LTF 569/449, ZS6AXT 579/449, G4CCH 549/549, OE9XXI 569/569, OZ6OL 559/449 #100, N2IQU 579/579, OZ4MM 569/569, EA6ADW 449/449, HB9BHU 559/559, OH2AXH 559/559, KD4LT 569/559, SM6CKU 569/559, W2UHI 559/559 OE9ERC 559/559, KB2AH 559/569, VE1ZJ 559/449, WD5AGO 559/559, K5JL 569/559, PY5ZBU 559/549 #101, F6CGJ 569/569, DC6UW 579/569, W7CS 559/449 #102, JH5LUZ 559/559, SM4DHN 569/569, S59DCD 569/559, SM3AKW 559/559, OH2DG 569/559 #103, F1ANH 569/579, ON5RR 549/549, EA3UM 559/559, JA6CZD 569/569, F5AQC 569/569, G3LQR 559/549, OE5JFL 569/569, OE9EYM 579/569 #104, HB9SV 569/579, K3HZO O/O #105, K2UYH 559/559, F5PL 569/559, W6HD 559/549 #106. TOTAL 45 QSO ON 23 CMS. TOTAL OF #106 AND DXCC 38. tnx fer info Francis.

HA5SHF (JN97nm): is a new station on 1296, they wkd: 07.03.1998 OE9XXI, 04.04.1998 OZ4MM random, 04.04.1998 OE9ERC, 01.05.1998 TM8EME /random-SSB!, 20.06.1998 EA6ADW, VE1ALQ, 30.06.1998 WB5LUA, 17.07.1998 SM2CEW, 18.07.1998 HB9BBD, LX1DB, K2UYH, KB2AH /random, 19.07.1998 K5JL, 15.08.1998 LA8LF, OE5JFL/random, K5JL random, W2UHI random, 16.08.1998 HB9BBD random, ZS6AXT random, G3LTF random. rig:3,6m dish,100W at the feed(with YD 1270),FHX35 preamp. and using circular pol. email: ha5bgl@mail.matav.hu. tnx fer info Csaba HA5BGL

K3HZO reports: I worked 22 stations with 12 multipliers during the first contest weekend between Moonrise and Zenith at this location. All stations were worked on 23CM. I believe you tabulate these between the weekends contest weekends. I worked the following four stations for new initials: OE5EYM SM6CKU F5PAU F5PL Total initals 23CM: 49 tnx fer info Harry

OK1DFC wkd in ARRL part I : F5PAU 559/549, LA8LF 559/559, HB9BBD 589/579, ZS6AXT 539/539, HB9BHU 539/579 #, G3LTF 559/549, OK1KIR539/549, OE9ERC 559/549, EA6ADW 569/549, DF4PV 529/439 #, HA5SHF 449/549 # and DXCC, OE5EYM 559/559 #, OZ4MM 559/449, OZ6OL O/539 #, F6CGJ 579/559, N2IQU 579/549, OH2AXH 559/559, KD4LT 559/559, SM6CKU559/539, OE9XXI 579/559, SM3AKW 559/559, WD5AGO 559/O, EA3UM 559/549, W2UHI 559/549, KB2AH 569/559, OE9XXI 55/53 my first SSB contact, K5JL 559/559, DC6UW 559/539, JH5LUZ 539/559, SM4DHN 559/439 , F1ANH 559/449, OH2DG 449/549 #, JA6CZD 559/449 #, S59DCD 559/449, ON5RR 559/529, DH9FAG 559/559 # F5AQC 559/549, VE1ALQ 559/529, HB9SV 579/559, OE5JFL 579/559, K4QI 559/439, KB2AH 559/549, PA3CSG 559/549, F5PL 559/539, W7CS 539/549 #, HB9BBD 55/53 SSB, JA7BMB 559/559 #, DF3RU 439/439 #, all to gether 48 QSO, 4500 points in the contest and 25 multipliers. I was use first time my new power amplifier with TH338 by OE9PMJ, around 1kW out. He worked all time wery well but problem was with N-conectors. I must remowed this PA for 7/8" conectors. In the contest I was leastening PY5ZBU and 9H1ES. tnx fer info Zdenek

5760 MHz

OE9PMJ reports 6&13cm, Hello Gentlemen, Here is the list of contacts I made during the Contest on 6cm on Nov 7/8: CT1DMK (549/559) initial, big surprise, I6PNN (449/O). OE9ERC (559/559), OK1KIR (549/549), VE4MA (549/559) in sked, W5LUA (559/559), JA7BMB (449/549), SM4DHN (559/539), IK2RTI (449/449) and finally OE9ERC (44/54) on SSB, (dup) for a score of 9x8. Eric, OE9ERC achived the same result. tnx fer info Peter

10368 MHz

RW3BP reports : about his uicrowave contest. Before contest I checked my 1.65 m offset dish by template. After corrections I have on 10 GHz 2 dB of additional gain and 1.2 dB of moon noise (instead of 0.8 dB). So real size of my dish was 1.3 m hi. Then it was series of misfortunes. First TX then RX. I repaired my RX ten minutes before

EUROPEAN WORLDWIDE EME CONTEST 1999

Sponsored by REF and DUBUS

The EU WW EME contest is intended to encourage worldwide activity on moonbounce. Multipliers are DXCC countries plus **ALL W/VK/VE STATES** . This gives equal chances for stations from North America, Europe and Oceania.
The rules reward random QSOs, but do not penalize skeds on 2.3GHz or above.

1. Contest Dates & Periods
The contest happens during two full weekends: 144 and 1296MHz on the FEBRUARY weekend, and 432MHz and all other bands on the MARCH weekend.
Each weekend of the contest begins at 00:00 UTC on Saturday and ends at 24:00 UTC on Sunday.
2. Bands and dates

First weekend:	144MHz and 1296MHz	27/28 FEBRUARY 1999
Second weekend:	432MHz, 2300MHz and above	27/28 MARCH 1999

3. Sections

QRP	144MHz	<100kW EIRP
	432MHz	<400kW EIRP
	1296MHz	<600kW EIRP
	>=2300MHz	no separate QRP/QRO categories

QRO On 144, 432 and 1296MHz, stations with EIRP equal to or greater than stated above.
PRO Non-amateur equipment or antenna. PRO stations will have scores listed separately.
There are no separate multi-operator classes. Multi-operator and QRO stations will be highlighted in the general classifications.

4. Exchange
Callsigns + TMO/RST + R.

5. Scoring
100 points for each random QSO completed.
10 (ten) points for each sked QSO completed on bands below 2.3GHz.
100 points for each sked QSO completed on 2.3GHz or higher bands.

6. Multipliers
Each DXCC country (except W/VE/VK), or EACH INDIVIDUAL STATE worked in W/VE/VK.
Multipliers count only if worked by RANDOM (except on 2.3GHz or above).
States and provinces can be determined after the contest using address lists in recent Newsletters or in DUBUS.

7. Total scores
Single band entries: sum of points multiplied by sum of multipliers. There will be one QRP winner and one QRO winner on each band.
Multiband entries: (Total sum of points on all bands) * (total sum of multipliers on all bands)
There will be one QRP multiband winner and one QRO multiband winner.

Multiband stations will also be listed as an entry on each separate band worked, and can also win single-band awards.

8. Reporting
Copy of the log for each band with details of points, multipliers and total points.
The following information MUST also be included for each band:
1. Output power, transmit cable loss, antenna type and gain.
2. Working category: QRO/QRP single/multi operator
3. Name(s) and signature(s) of all operators
4. Locator/State.
Other information is welcome: Comments, conditions, grid locator, other station details, photographs, etc...

9. Awards
A certificate will be sent to each entry. All QRP/QRO band winners and QRP/QRO multiband winners will receive a trophy.
In each section, the highest-scoring station in the southern hemisphere will receive a special certificate.

10. Logs
Log entries MUST be postmarked no later than 30 days after the end of the second weekend (i.e. in the mail or e-mail by 27 APRIL 1999), to the following address:

DUBUS Verlag
EME Contest
P.O. Box 500368, D-22703 Hamburg, Germany
Fax: (++49)40-8508972

You can also e-mail your log directly to: dubus01@ibm.net All e-mail entries will be acknowledged within one week.

13. Referee
Responsible for rules and general questions is:

Ian White, G3SEK
52 Abingdon Rd., Drayton, Abingdon, Oxon OX14 4HP
England
Tel.: (++44)1235-531559, E-Mail: g3sek@ifwtech.demon.co.uk

Good Luck in the EU WW EME Contest 1999 !

moon set. Heard loud signals from SM4DHN 1.5 degrees above horizon. That is all my success in the contest. 73, Sergei RW3BP

- my email bernd_wilde@eac-com.de
- merry christmas and a happy new year!!!

Last

- **Dates EUROPEAN WORLDWIDE EME CONTEST 1999**
  - 1. Leg 144MHz 27/28 Feb, 1999
  - 2. Leg 432MHz 27/28 Mar, 1999
- deadline every first of Feb./May/August/Nov.

73 Bernd DL7APV

Tropo News

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

2m > 700 km

DD0VF, JO61VA, wkd > 700km: 26.4., 23.5., 30.5., 20.6., 30.6., 2.7., 25.7., 30.7.98 I4XCC JN63GV 800km, 9.5.98 IZ4AIK JN63HV 797km, 22.5., 1.7.98 IK4DCX JN64GA 784 km, 23.8.98 IK5ZWU/6 835km. Rig:100W+HB9CV (120m asl 37m agl)

DD0VF, JO61VC, wkd >700km: 5.5.98 OZ9AEG JO57FJ 732km. 23.5. G0KPW JO02OD 875. 7.6. F5FNY/P JN36BP 748. 11.6. PA6BN JO13OF 759. 14.7. I4XCC JN63GV 807, 8.8. I4XCC JN63GV 807. 9.8. G3XZW IO93JD 1047, GW4HBZ/P IO83GC 1196, G0KPW JO02OD 875, G3IMV IO91OX 1012, G6ZYD/P IO93EH 1077, G4SWX JO02PB 869. 21.9. G0FYD IO83LS 1176, GD4XTT IO74TF 1269, GM4AFF IO86ST 1234km (Test with 1W: GM4AFF gave me 56!), G4LOH IO94IA 1068, MM1BUO IO87WI 1242, GI6ATZ IO74AJ 1374km. 22.9. LY2WR KO24OQ 862, LY2MW KO24PQ 867, LA2PHA JO38IB 897, LA5KO JO59FH 937. Rig: 100W+13el (200m asl 10m agl). tnx for info Steffen

DD0VF/P, JO61WA, wkd >700km: 21.5.98 9A2QG JN95CI 707km, I4XCC JN63GV 800, YO2II/P KN06UG 780. 5.7. FBC5MZN/P JN19PG 778, G4BAH/P JO02OD 883, I4XCC JN63GV 800, IK5ZWU/6 JN63GN 835, M0BAA/P JO02TG 856, ON50GRC/P JO10UU 712 22.7. IZ4AIK. 6.9. G8P JO01QD 872, HB5NE JN36GU 708, M8B JO02OD 883, TM6P JN19PG 778. Rig: 100W+8el (350m asl 5m agl)

DD0VF/P, JO71AD, wkd >700km: 2.8.98 9A7D JN95CI 714km, F5MSL/P JN36BP 764, G0KPW JO02OD 891, G4SWX JO02PB 885, I4XCC JN63GV 814, IK0FEC/0 JN63JF 885, IK3TTP/4 JN64GA 800, IK5PWB/5 JN53SR 846, IK5ZWU/6 JN63GN 851, IZ4BEH.

DD0VF/P, JO60TT, wkd >700km: 1.9.98 OZ6ABA JO57DJ 763km, SK6NP JO67JV 789. 23.9. G0HBV IO95AP 1165km, G0KPW JO02OD 871, G7AWC IO95EW 1158, GM0CLN IO85MX 1236, GM0FET IO87UB 1248, GM0HUO IO86OI 1242, GM1LKD IO87WE 1245, GM3JIJ IO68VE 1512, GM3WOJ IO77WS 1381, GM4CXM IO75TW 1318, GM4EOU IO86PF 1232, GM4GUF IO85JU 1246, GM4ILS IO87IP 1331, GM4OGI IO85DX 1280, GM4RWE IO86OQ 1257, GM4ZUK/P IO86RW 1255, GM7IKA IO86ML 1257, GM7SJC IO87LN 1313, GM7WLE IO88KK 1365, GM8LFB IO88JH 1362, M1COV JO03AP 976, MM0BQI IO85KX 1246, MM1BUO IO87WI 1254, SM6VSZ JO67EB 701 also hrd SK4MPI/B JP70NJ 529 1069km, SK1VHF/B JO97CJ 559 790km. Rig: 100W+8el (695m asl 4m agl). tnx for info Steffen.

DG0OPK/p, JO50AN, wkd/hrd > 700Km: 8.8.98 2244-2358 G4LOH io94qa 819, G1WPF io91rp 747, G7RAU io90ir 798. 9.8.98 0330 EI2WRB/B 559 hrd io62ig 1213km no activity, 0415-1236 EI3GE io63xd 1138, G1JUR io90wt 743, G8IZY io91vc 721, G7TRN io91wt 721,G3NXT io93td 765, GW6VZW io81lq 920, G4DIE io81vk 861, GW7VSF io81hm 942, G3WPH io91nl 769, G4YTL io92mb 781, G4TIF io92fh 825, G3YVR io91wd 716, G8NOF io92ci 842, G6IQL io92aj 854, G7OCI io91xt 715, GW4UWR io81lp 919, G4PBP io82wo 869, G4AJC io91vj 722, G0KVA io91tq 736, GW7SMV io81ln 919, GW8JLY io81lm 931, GW8ASA io81em 959, GW1MCD io81lp 919 only 3W out, GW5NF io81kq 925, EI8IP io63rk 1176, GW4HBZ/p io83gc 967, G6ZYD/p io93eh 854 10W out, 9H1CD hrd

jm75fv 1668 ES pileup, 9H1GB jm75fu 1672 ES pileup, 9H1ET hrd jm75gu 1674 ES pileup, G8FWY 57 57 io94et 915, GI6ATZ 53 qsb hrd io64aj 1286 strong qrm (bad), G0AHC/p io94mi 854 25W + HB9CV, G1VOC/p jo03di 735, G4FLM io94sg 821, M1DGW io95fe 930, G0PWE io95fe 930 3W 6El Yagi. 1.9. 1831 OZ6ABA jo57dj 726 myqth jo50rv. 5.9. 1044 HG9MET/6 kn08eb 798, 1059 HG9MDP/6 kn08eb 798, 1442 I4JED/4 jn54pd 719, 1954 OZ1THY/P jo46ft 702, 2031 9A3B jn95fq 826. 6.9. 0546 9A7S/P jn83so 958, 1210 9A0V/P jn85ov 741. Rig: FT225+PA (130W, 9El F9FT 7m AGL, 820m ASL)

DG0OPK/p, JO50RV, wkd/hrd > 1000Km: 21.9.98 1849 GM4AFF io86st 1121, 1928 MM1BUO io87wi 1136 new square. 22.9.98 1700 LY2WR 52 ko24oq 1013 hrd only, 1724 GM4WLL/p io85ju 1114 new square, 1902 GM4ILS io87ip 1212, 2029 GM4CXM io75tw 1185 new square. 23.9.98 1630 GM8LFB io88jh 1248 new square, 1641 GM3WOJ io77ws 1261 new square, 1700 GM7SJC io87ln 1194, 1704 GM4ZUK/p io86rw 1132, 1725 GM3JIJ io68ve 1391 new square. Rig: TR751+PA (120W, 9El 3m AGL 450m ASL; Batteriebetrieb aus dem Auto) tnx for info Michael

DG1VL, JO61, wkd: 22.9.98 LA2PHA, LA6LI jo38ib, GM4AFF io86st 23.9.98 SP8UFT ko11ji, GM3WOJ io77ws, GM8LFB io88jh, GM4CXM io75tw, GM4ILS io87ip, GM4ZUK/p io86rw. tnx for info Henry

DH0LS (JO61ii) wkd: 9.8.98 G7RAU IO90ir 979km, G1WPF IO91rp 916km, GW4HBZ IO83gc 1115km, G4LOH IO94qa 944km. 22.09.98 **(JO50sv)**: GM4WLL/p IO85ju 1118km, GM4CXM IO75tw 1190km, GM4ILS IO87ip 1216km, GM8LFB IO88jh 1253km, LA5KO JO59fh 938km, LA2PHA JO38ib 855km, GM4AFF IO86st 1126km, GM4ZUK/p IO86rw 1137km. Es ging am 22.09. noch weiter: GM arbeitete LY und OK2 und aus Nord-DL klappte wohl auch GD und GI. tnx for info Jens.

DL1EJA, JO31, wkd: 6.6. 1634 F6KDC/P JN15FP. 21.6. 0914-1011 OK1FID/P JO80EI, OK2KFK JN89AO, F6ETI/P IN87KW, G4NVM/P JO01FA, OK1KOK/P JO80IB. 4.7. 2149-2315 GM0CLN/P IO85RU, F6KPQ/P IN87KW, OL2R JN89AO. 5.7. 0808 F5KMQ/P JN15JB, 1210 OL7M JO80FG. 19.7. 1040 OK1FID/P JO80EI. 20.7. 0857 FB1ACF IN87KL. 7.8. 810-40 F4ATL IN78VJ, F1ABW IN87RI, F1CJQ IN78VL, F1GHB/P IN88IN, F6CRP IN96KE. 9.8. 0751 EI8IP IO63RK. 10.8. 0939 GM4YXI IO87WJ. 13.8. 0647 G8TIC/P IN79JX. 14.8. 1224 LA2PHA JO38IB. 21.9.1853-2006 SP2OFW JO93AC, GM4AFF IO86ST, GI6ATZ IO74AJ. 22.9. 0622-1455 MD1BYG IO74RD, GI6ATZ IO74AJ, MM1BUO IO87WI, GM1LKD IO87WE, GM4CXM IO75TW, GM4JJJ IO86GB, GM8LFB IO88JH, SP2FAX JO83VA. GM3WOJ IO77WS. OE3FLA JN88CH. Rig: IC720A + LT2S + GS35B-PA; PreAmp NF 0,4dB; 24ele Yagi 12m up, 30m ASL tnx for info Oliver

DL8EBW, JO31nf , wkd: 21.6. 0950 OK2KFK/p JN89 hrd 657, OZ5AGJ JO56df 594. 4.7. (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). 7.7. after checking condx in the SCA from 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 will be 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 in 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!! 18.9.98 hrd: OZ5AGJ JO56 594 , OZ6ABA JO57 716. 20.9. OK2DL JN89 657, OK2KFK JN89 657. 21.9. hrd only: MM1BUO IO87 906, G4LOH IO94 608, SM7RYO JO76 715, wkd GM4AFF IO86st 59+20! 880km. 22.9. 04UT G0KPW JO02 (from /mob with 80W/5/8 55/55 SSB), hrd GM8LFB IO88 1027 went qsy to QTH of DL8RJ/p JO31nh 23.9. 04UT G0KPW JO02 (from /mob with 80W/5/8 57/56 SSB), GM8LFB IO88 1027 (both 10 W only!) GM4ZUK/p IO86 893, hrd GM3WOJ IO77 1026, SP1EOI JO73 566,

OK1AGE/p JO70 520, OK2DL JN89 657. 24.9. OK2PVF/p JN99 824km.

DL8EBW/p, JO31nh, wkd: 22.9.98 GM8LFB IO88 1020km, SK6HD JO68 863 and OZ6ABA JO57 707 - cracking sign 59+ without preamp! made 1/10 W qrp tests and changed still 57, hrd LY2WR KO24 1272, GB3NGI IO65 979, GM4CXM IO75 915, GM4AFF IO86 873 GM4ZUK/p IO86 886, GM4WLL/p IO85 800. tnx for info Guido.

GM4CXM, IO75TW, wkd: 2m Tropo report 22.-23.9.98 Hllo all 2m Dx'ers. Very pleased we had good condx from the west of Scotland after a long time. I missed the start of the opening on 21/9 but was active for some periods 22.-23/9. Result: LA = 2, SM = 10, ON = 3, PA = 12, DL = 42, OZ = 9, OK = 5, SP = 5. Squares: KO03, JN79, 89, JO11, 20, 21, 22, 23, 28, 30, 31, 32, 33, 38, 41, 42, 43, 44, 45, 50, 51, 52, 53, 54, 55, 56, 57, 60, 61, 65, 66, 67, 70, 73, 80, 82, 83, 84. Members of the 1000 Km Club: SP4MPB KO03GS 1609, DG0OPK/P JO50RV 1189, OK2AUF JN89AR 1532, SM7RYO JO76DB 1161, OK1FID JO80CH 1506, SM7WT JO65QQ 1110, SP3SFN JO82TM 1477, SM7JUQ JO65PO 1106, SP2FAX JO83VA 1466, SM7SKI JO65NS 1093, OK1XH/P JN79FM 1453, DJ7OF JO51HQ 1092, OK1VMS JO70GU 1374, DG5OAF JO51EP 1080, OK1AGE/P JO70GU 1374, SM7BOU JO66KG 1071, SP1MHY JO84CF 1323, DL3SWS JO53SG 1068, DD0VF/P JO60TT 1322, SM6JMZ JO66IS 1057, DG1VL JO61WC 1319, DL8AAV JO52DH 1038, DG0DG/P JO61SA 1304, SM6TZX JO67EE 1036, DL5DTA JO61SD 1297, SM6VSZ JO67EB 1036, DL3WW JO60FM 1271, DL5ME JO52SD 1034, SP1EOI JO73GN 1242, DK9OY JO52CK 1026, DL2ARD/P JO60AR 1233, OZ1XAT JO55WL 1020, SM7TUG JO76NJ 1208, OZ1IEP JO55XU 1020, DL1HTT JO61FR 1199, DF7OG JO52BN 1015, SM7LXV JO65SL 1197, DJ9YW JO42QA 1000, DH0LS/P JO50SV 1194. Rig: 3cx800A7 + 2x 16el 25m agl, 130m asl. 73 Ray

EB8BTV, IL18QI, Teneriffa Isl., > 1000km: 17.2.98 1845-2359 EA7GBG 67 1367km, EA7AIL 77 1404, EA7AOM 77 1527, EA7AAY 77 1527, CT2GBX 60 1591, CT1DIN 60 1598, CT1DRB 58 1338, EA7AVY 88 1632, CT1CAD 67 1304, EB7AHB 77 1527.

18.2.98 2005-2105 EB4HGO 68 1518, EB7HJX 67 1402, EB4BAP 69 1568, EA4CJ 80 1787.

1.3.98 1940 EA7AMI 77 1410.

2.3.98 0835 EB7DEW 87 1560, 1747 CT1CRB 58 1338.

7.3.98 1250-1615 EA7OC 77 1526, EA7AEB/p 77 1526, CT1DYX 1597, EA7TL 76 1356, EA7EAB/p 77 1526.

8.3.98 0926-1144 EA7ESB 67 1339, EB4GFC/p 60 1594, EA4EJR 68 1445, EB4EQP 68 1506, CT1ESJ/p 60 1592. 9.3.98 2220-2235 CT1DRB 58 1338, EB1FIF 62 1752. 20.3.98 2210-2315 EA7RF 67 1399, EA7GBG 67 1367.

21.3.98 1205 EB7HAF 76 1470.

22.3.98 0956-1008 EB7HJX 67 1360, EB7COL 77 1404, EB7CBV 78 1525.

9.6.98 1143 CT98EDB 51 1604.

12.6.98 1408 CT2GRV 50 1545.

14.6.98 1618 EB7COL 77 1413.

16.6.98 2150 CT1EEB 50 1493.

17.6.98 0826 CT1DRB 58 1338, 2144 EA1BNI 51 1660.

18.6.98 2149 PA3HEN/MM IM64 1144km.

20.6.98 1529-1821 EB1DNA 53 1824, ED1RRM 62 1765, EA1CI 62 1768, EA1TA 53 1820, CT1EPS IM57XC 1260.

21.6.98 1325 EA7AFE 67 1398. 23.6.98 1202 CT2GKT 59 1454. 7.7.98 2200 EA1DG/CT 60 1570.

8.7.98 2218-2348 G6YAY 80 2692km, GW7SMV 81 2817, G4DHF 92 3036 (!), G4CQM 70 2697, G6YAY 80 2692.

11.7.98 1450 CQ5B 58 1333, 2240 EB1ACT 53 1842, EA1YK 62 1745. 18.7.98 1810-2040 CT1FOH 50 1493, EA1AEG 51 1620.

19.7.98 0622 EB7ALS 77 1458, 1120 EA7ALL 87 1580, EA7CU+AG 87 1686, EA7SR 77 1413.

20.7.98 0843 EA7ALL 87 1580, EA7GTF 87 1586, 1007 EA7AKN 76 1470.

23.7.98 2205 CT1EAT 68 1347.

24.7.98 1013 CT1EFG 58 1349.

26.7.98 EA1AEG/p 52 1725.

1.8.98 1424 CT1CAD 67 1304.

5.8.98 2136-2205 EI9IO 52 2718km, EI8IP 63 2908, EB7BFV/p 86 1512.

6.8.98 0635 EI9IO 52 2718, 2145 EI4DQ 51 2706, 2206 CT1DL 58 1361.

7.8.98 0830-2346 G6YAY 80 2692, GW4HBZ/p 83 2955, EA1CNO 52 1719, GW8ELR 71 2811, G1SMI 83 3019, M0AWX 83 3030, G1SWH 83 3030, GW3IEQ 73 2929, G4TRA 81 2848, EI4DQ 51 2706, EI2FSB 51 2643, GW7SMV 81 2817, G4CQM 70 2697, EI4CI 63 2916, GW3ZTH 81 2796, GW0VRL/p 71 2785, GW3HWR 71 2785, GD4IOM 74 3096, G3VVP 70 2664, M1AIX 83 3022, GW8JLY 81 2827, GW7KYT 81 2800, G0FYD 83 3034, G0HIU 83 3041, M1DDM 83 3022, G1SWH 82 2937, G4IOQ 83 3040, GD4XTT 74 3043, GW3LNR 81 2826, G1PRE 70 2657, G3YIY 70 2633, G4HOL 70 2660, G7TBJ 70 2652, GW4HBZ/p 83 2955, G3FJS 70 2667, GW6TYO 81 2816, G4PBP 82 2949, EI4HT 51 2709.

8.8.98 0642-2027 GW3ZTH/p 81 2809, EI4CI 63 2916, G3TA 81 2871, **G4LOH 94 3135km!**, GD8EXI 74 3021, GW8ASA 81 2794, G4PD 72 2854, G8SAL/p 70 2664, EI8IP 63 2908, G0CUZ 82 2940, EI2FSB 51 2643, GW7KTP 81 2795, G6YAY 80 2692, GW1IOT 81 2832, EI6FE/p 52 2795, GW0PLP 72 2786, G3NPB 70 2652, **GM4JJJ 86 51/51 3253km!!!**, GW7KYT 81 2800, GW0VWD 81 2807, GW8DSA 81 2794, GW8ELR 71 2811, GW0VRL/p 71 2785, G1LNA 70 2613, G6STD 70 2606, EI6FE/p 52 2795, G0MSM/p 79 2590, 2154 CQ1MS 59 2443.

9.8.98 1138 G7TBJ/p 70 2652, 1614 CT1DYX/p 57 1242, 2227 EI9IO 52 2718.

10.8.98 2124 GW0VRL/p 71 2811.

11.8.98 1025 EA1FDI 52 1758, 1225 G8TIC/p 79 2590, 1348 G6YAY 80 2692, 1400 F6HKM 87 2457.

12.8.98 0931 CT1FRN 58 1349.

19.9.98 2226 CT1DNF 50 1549.

20.8.98 1836 CT1CAD 67 1304.

21.8.98 0950 EA1CNO 52 1705, 1353 CT2GPW 57 1273, 1415 EA7FRZ 86 1626, 2220 EB1IZV 51 1664, 2238 EA9AI 75 1355.

22.8.98 1153 EA1FDI 52 1758, 1805 CT4LV 50 1545.

23.8.98 1930 EB7BQI 76 1470.

26.8.98 0902-0947 EB1IZV 51 1664, EA7AJ 87 1586, EA7ALL 87 1580, EA7GBG 67 1367, 1145 EA7AHG 87 1562, 2210-2310 EB7AHB 77 1527, EA7GTF 87 1586, EB7ELS 77 1527, CN8TW IM63EN 1034.

EB8BTV QSL Address: Fernando Borges Dguez, C/Domingo Hdez. N. 21, E-38440 La Guancha, Tenerife, Spain. MANY THANKS for the nice report Fernando!

F6HTJ/p, JN12EK, 2300m asl wkd: 26.7.98 F2LQ/p IN88NQ 806 km, G7RAU IO90IR 963 km, F6CBH JN19BH 765 km. 6.9.98 G8P JO10QD 971 km, G8L io90jo 948 km. Rig 60w + 9Ele. tnx for info Michel

LY2SA, KO14LL, wkd: 22.9.98 1307-1920: G4LOH IO94IA 1569 km, PA0PVW JO22VA 1172, DL5YCI JO42IF 977, DL1BKK JO43NA 923, DJ7OF JO51HQ 879, DF7OG JO52BN 874, DK9OY JO52CK 873, DF1HF JO43VL 867, DF0CB JO43WJ 864, DL4XX JO43XK 858. tnx for info Vidas

LZ2AB, KN22NR, 2300m asl wkd Sept 5./6.98 >700km: 1421 S57C JN76PB 864, 1430 9A1C JN75LG 860, 1457 9A0V/P JN85OV 721, 1500 S57O JN86DT 831, 1502 HA5KDQ JN97LN 723, 1505 HG5FMV JN97KR 740,1507 HA5BDJ/7 JN97KP 734, 1508 HA7WJ JN97MP 725, 1509 OM3F/P JN98TW 811, 1544 OM8A JN88PA 848, 1549 OE3XKW JN77XX 923, 1604 OM3KHE

JN99JC 861, 1609 OE3XXA JN88CH 931, 1611 OL7M JO80FG 1068, 1716 OM1DK/P JN88WK 849, 1726 9A2L JN86HF 778, 1730 S53AC JN76MC 884, 1737 HG1Z JN86KU 796, 1741 OM3KII/P JN98KJ 796, 1749 HG7P JN97KW 757, 1754 HA3KGC JN86VI 707, 2013 UU5J KN74FV 786, 2017 UU2JQ KN74BX 763, 2143 HA5AXF JN97NK 704, 2148 OM5LD/P JN98BI 829, 2252 9A1CMS JN86EL 808, 0044 S51ZO JN86DR 827, 0348 OM3RRC/P KN09CE 812, 0350 HG6Z JN97WV 706, 0528 S59DEM JN75DS 926, 0607 IV3HWT JN65ST 983, 0624 S59R JN75KX 891, 0715 S52ZW JN86BT 842, 0831 OK2TT/P JO80OB 1015, 0846 S59ABC JN76TO 865, 0908 HA1KSQ JN87UO 794, 0944 HG3FMZ JN96AV 725, 0948 HA5ZA JN97OL 703, 1210 S53D JN76BD 951, 1250 OM3KEE JN88UU 891, 1256 HA5CW JN97OM 706km. RIG: IC275H, KLM17. tnx for info Kristo

OK1XH, JN79FM, wkd: 23.9.1998 1705-1935: GM3WOJ IO77WS 1523km, GM7WLE IO88KK 1511, GM8LFB IO88JH 1507, GM4ILS IO87IP 1473, GM7SJC IO87LN 1455, GM4CXM IO75TW 1449, MM1BUO IO87WI 1396, LA2PHA JO38IB 1077, OZ6ABA JO57DJ 918, OZ5TG JO45VW 780. Rig: IC-706, PA 100W, 18elY, 730 m ASL tnx for info Milan

OL7M, JO80FG, wkd: 4.7. to 5.7.1998 IK1AZV/1 JN34QM 935, YU1ANT KN03DI 822, IK5HGY/5 JN54JD 804, IK5ZWU/6 JN63GN 803, YT1W KN03FR 788, YZ1OVG KN03KV 783, I6ZLO/6 JN63PP 775, OZ9KY JO45VX 774, PA0AWN JO33DE 771, PA0PVW JO22VA 768, IK2THU JN45SF 762, PA6C JO33FB 755,I4ERN JN64GB 751, LX1JA JN29XV 750, I4CVC JN54WH 747, PA3FJY JO32EH 736, YT7P JN94XC 735, DB7JU/P JO31BC 733, YU1VD KN04ML 730, DL1EJA JO31DS 730, 4N1V JN94UC 728, YU1VAZ JN94WE 724, YU1DG KN04OO 724, YU1EMN KN04LP 711, DF0RW/P JO31GG 706km. We us: ANT 15 el. DL6WU, RIG IC820H + GaAs preamp. + PA 700W out. tnx for info Milos, OK1UOW

S53J, JN75EV, 732m asl, wkd >600km: 8.3.98 0805 SP9MRQ JO90MH 600km, 6.4. 1733 DL4FCS JO40HG 647. 26.4. 1755 F6FEC JN33NN 628. 1.5.98 0850 YO5OCZ/p KN17UR 737. 2.5. 1945 SP9MRQ JO90MH 600. 3.5. 0522 DF0CK JO50AN 610, 0555 DK0BN JN39VX 668, 0602 DL6FBL/p JO40XL 606, 0838 OM3KDX/p KN19DB 691km. 10.5.98 0748 DL4FCS JO40HG 646, 0829 DL2FDX JO40LG 630, 09.24 SP9EWU JO90NH 604. 31.5. 0940 DG6PY/p JO30JF 740km, 24.7. 1616 IS0/IK2SVI JN40TX 668 km, 2.8.98 0807 SP9MRQ JO90MH 600, 0824 DG0OPK/p JO50AN 609, 0827 DF0TAU JO40QL 629, 0829 DL6ZBN/p JO40QL 629, 0833 DD7ZN JO40FC 641, 0859 OM3KHU/p KN09XA 666. 8.8. 1923 DG0OPK/p JO50AN 609, 18.10. 0855 SP9MRQ JO90MH 600 km. RIG: IC-820H + 500 W, MGF 1302, 4*17 el. 2M 5WL tnx for info Vilko, S51XO

UA4AQL , LO20QB, wkd >600 km: 30.9.98 0401 RV6HKQ LN14RC 678 km, 0758 RA6JX LN23GA 786 km; 13.10.98 1936 4K6D LN40VK 1124 km, 2155 UN7AX LN53PN 851 km; RIG: 50w, 2*15el DJ9BV. tnx for info Al

YZ7MON, JN93rv, wkd >500km: This is the result from YZ7MON, Ilijas little expedition to JN93rv square. Ilija was QRV only SSB from mountain Tara abt 1300m ASL with 50w and 2x11el. 8.8.98. OM1AVK JN88OD, OE3JPC JN87EW. 9.8. IZ4AIK JN63, OK2DL JN89AO. 12.9. 737-851 OK2ZZ/p JN89AO, OK2SGY/p JN89SS, OK2BFH JN99FN, OK1UOW JO80FG. 13.8. OE3LFA JN88CH. 14.8. OK2KVM/p JN89AK. 15.8. LZ1KWT KN32SK, OK2PVF JN99JQ, OK2BVE JN99JQ, OM6VV JN99VN, SP9NLQ/p JN99NS. 16.8. 0806-0934 IC8FAX JN70CN, OK2KFK JN89AO, OM1AVK JN88OD, OK2RAS/p JN99GN, OK2KJU/p JN89SG, OK2VDJ/p JN79US, OM3CDR JN88NE, OK1UGA JO80DD, OM3TZO/p JN88UU, OK2KJT JN99AJ, OK2UAF JN89AR, OK2KEA/p JO80BJ. tnx for info Bane, YU7KB

70cm>500km

DD0VF, JO61VA wkd >500km: 23.5.98 PA0ZM JO32GK 523km. 8.6. DL1KDA JO30FQ 516. 3.10. DL0KM JO31BC 536. 4.10. 9A2L JN86HF 572, PA6NL JO21BX

677, S51ZO JN86DT 502. Rig: 20W+ 6el or 9el (120m asl 37m agl)

DD0VF/P JO61WA wkd >500km: 21.5.98 HA5KDQ JN97LN 532km Rig: 20W+9el (350m asl 6m agl) tnx for info Steffen

DG0OPK/p, JO50AN, wkd/hrd >700Km: 9.8. 0330-40 GB3BSL/B 539 hrd io81qj 890km no activity, GB3SUT/B 539 hrd io92co 847, 0534-1107 G4DIE io81vk 861, G3WPH io91nl 769, G3NXT io93ta 765, G4GFI io91vh 722, M1CWN io81vm 861, G0RRJ io91fe 814, G4YTL io92mb 781, G4NPH jo02bi 714, G4AJC io91vj 722, G4CLA io92lj 793, G1HWY io90uv 727, G4FLM io94sg 821 10W. Rig: FT790R+PA (80W, 2x19El Yagi 7m AGL, 820m ASL)

DG1VL, JO61, wkd: 23.9.98 MM1BUO IO87WI 1245km, GM4LBV IO86RQ 1237km! tnx for info Henry

DH0HAR, JO53AP, wkd: 9.8.98 2230 G6JHR JO01FJ (also on 23cm wkd). 10.8. 2249 GM4LBV IO86RQ (also on 23cm wkd). I am looking for Skeds on 70, 23, 13 and 3cm to QTF 90-270 Deg. Phone ++49 40 5276363 QRL or 5256261 home. tnx for info Frank

DH5HV/P, JO31CQ, wkd: Hi UHF-friends, during the uhf-contest from 3.-4.10. I was able to work the following stations with a QRB>500km: G4ERG IO93SR 503, OK1DHC JN69HQ 504, DH7FB JO62SM 509, OK1KIR/P JO60PM 511, DL4MEA JN58JD 513, M8A IO92JL 514, G8ZQB IO92JN 516, G4PMK IO91IP 517, OK1DFC/P JO60RN 521, OK1ORA/P JO60TP 530, HB9AJ JN47HD 534, HB5OK/P JN47PH 535, HB9STY JN36GU 538, DF4MAA JN58WH 552, DF9RJ JN68GS 555, G6DER IO93GN 558, DG0DM/P JO71CD 558, DL1MAJ JN68AH 561, HB9IAB/P JN36DO 565, DL9MCC JN58UA 567, DF0TEC/P JO73CF 568, OK1IPU/P JN69UN 579, G8OHM/P IO82QL 610, OE2EBO JN67MW 643, OE5D JN68PC 645, OE2XRM JN67DK 657, OE5VRL JN78DK 680, F1DUR IN97QI 689, OL2R JN89AO 731. Rig: IC471H with PreAmp (MGF1302) + GS35B (750W) Ant: 4x11ele Yagi verticaly stacked. Tnx for all who gave me points during the contest, and see you again on the band!! tnx for info Jochen

LY2SA, KO14LL, wkd: 22.9.98 1546-2030 DL3EAG JO31DK 1164 km, DL8QS JO43KH 931, DJ9RX JO43LE 929, DL8AKI/P JO51CH 924, DL8OBU JO42XI 892, DG2LAB JO54AK 834, DF8LC JO53GX 808, DJ9FG JO52UD 791, DL1SUZ JO53UN 742, OZ1IEP JO55XU 715. tnx for info Vidas

S53J, JN75EV, 732m asl, wkd >500km: 8.3.98 05.48 SP9EWO/9 JN99LP 538 km, 05.55 SP9EWU JO90NH 604, 07.33 DL6NAA JO50VF 518, 08.10 OK2BDQ/p JN99GR 527, 8.32 OL7Q JN99DQ 512. 12.4.98 10.09 SP9EWO JN99HW 549, 10.11 SP9EWU JO90NH 604. 3.5. 06.47 OK2BLE JN99FN 509, 07.54 SP9EWU JO90NH 604. 21.6. 07.37 SP9EWU JO90NH 604, 10.45 OK2KQQ JN99DQ 512. 24.7. 16.30 IS0/IK2SVI JN40TX 668. 20.9. 09.56 SP9EWU JO90NH 604, 10.00 SP9EWO JN99HW 549. 5.10.98 05.04 OM3F/p JN98TW 520, 05.09 SP9FG JN99XF 559, 06.31 DK5PD JN39VV, 07.51 DM2CKK/p JO50AN 609, 08.34 OL7Q/p JN99FN 509, 08.46 SP9EWO/9 JN99LP 538, 08.47 SP9EWU JO90NH 604, 0829 OK2BMU JN99BU 521, 10.27 OK22KQM/p JN99GM 509, 11.13 OK2BDQ/p JN99GR 528 km. RIG: ICOM IC-820H + 100 W, MGF 1302, 4*28 el. 2M 9WL tnx for info Vilko, S51XO

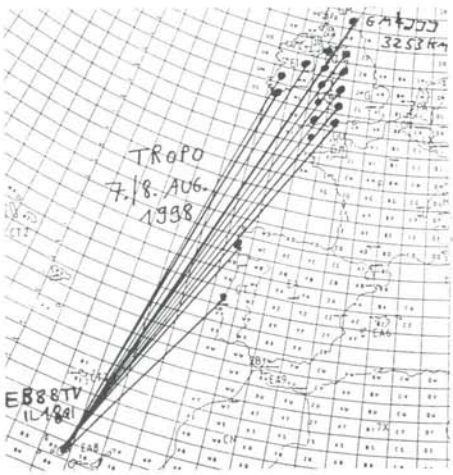
UA4AQL, LO20QB, wkd >700 km: 30.9.98 0800 RA6JX LN23GA 786 km. 13.10.98 1938 4K6D LN40VK 1124 km, 2224 UN7AX LN53PN 851 km; Rig: 30w, 2*23el DJ9BV optim. tnx for info Al

EB8BTV: Traum-Tropo von Teneriffa auf 2m

Zu traumhaften Tropo-Übereichweiten kam es Anfang August von den Kanarischen Inseln nach Irland und Großbritannien auf dem 2m-Band. Es wurden dabei Entfernungen von über 3000km überbrückt, was sonst nur via Doppelhop-Es möglich ist. Eine der Hauptbeteiligten Stationen war EB8BTV, Fernando, aus IL18QI.
Bereits am 6.8. konnte morgens um 0635 UT EI9IO aus IO52 über 2718km gearbeitet werden. Abends um 2145 ging dann noch EI4DQ aus IO51 ins Netz. Am folgenden Tag hatte sich dann der Duct stabilisiert und aufgrund des nahenden Wochenendes wurden auch immer mehr Stationen auf diese Super-Öffnung aufmerksam.
Am 7. August konnte EB8BTV von 0830-2346 UT folgende Stationen arbeiten: G6YAY 80 2692, GW4HBZ/p 83 2955, EA1CNO 52 1719, GW8ELR 71 2811, G1SMI 83 3019, M0AWX 83 3030, G1SWH 83 3030, GW3IEQ 73 2929, G4TRA 81 2848, EI4DQ 51 2706, EI2FSB 51 2643, GW7SMV 81 2817, G4CQM 70 2697, EI4CI 63 2916, GW3ZTH 81 2796, GW0VRL/p 71 2785, GW3HWR 71 2785, GD4IOM 74 3096, G3VVP 70 2664, M1AIX 83 3022, GW8JLY 81 2827, GW7KYT 81 2800, G0FYD 83 3034, G0HIU 83 3041, M1DDM 83 3022, G1SWH 82 2937, G4IOQ 83 3040, GD4XTT 74 3043, GW3LNR 81 2826, G1PRE 70 2657, G3YIY 70 2633, G4HOL 70 2660, G7TBJ 70 2652, GW4HBZ/p 83 2955, G3FJS 70 2667, GW6TYO 81 2816, G4PBP 82 2949, EI4HT 51 2709.
Am 8. August ging es dann von 0642 bis 2027 UT mit folgenden Stationen weiter: GW3ZTH/p 81 2809, EI4CI 63 2916, G3TA 81 2871, **G4LOH 94 3135km!,** GD8EXI 74 3021, GW8ASA 81 2794, G4PD 72 2854, G8SAL/p 70 2664, EI8IP 63 2908, G0CUZ 82 2940, EI2FSB 51 2643, GW7KTP 81 2795, G6YAY 80 2692, GW1IOT 81 2832, EI6FE/p 52 2795, GW0PLP 72 2786, G3NPB 70 2652, **GM4JJJ 86 51/51 3253km!!!**, GW7KYT 81 2800, GW0VWD 81 2807, GW8DSA 81 2794, GW8ELR 71 2811, GW0VRL/p 71 2785, G1LNA 70 2613, G6STD 70 2606, EI6FE/p 52 2795, G0MSM/p 79 2590, 2154 CQ1MS 59 1443.
Am 9.8. kam es nur zu 3 QSOs: 1138 G7TBJ/p 70 2652, 1614 CT1DYX/p 57 1242, 2227 EI9IO 52 2718.
Am 10.8. brach der Duct langsam zusammen, um 2124 konnte nochmal GW0VRL/p 71 2811km erreicht werden.
Am 11.8. verabschiedete sich diese Öffnung um 1225 mit G8TIC/p 79 2590, 1348 G6YAY 80 2692, 1400 F6HKM 87 2457.

Most Wanted Squares 1999: MWS / DXCC 99

Hallo liebe UKW-Freunde, in den letzten Jahren wurde von der VHF-DX-Gruppe DL-West in Zusammenarbeit mit dem "Funktelegramm" die M(ost) W(anted) S(quare) Liste und DXCC Liste für den UKW-Bereich ausgearbeitet. Auch 1998 fand diese Liste wieder viel positiven Anklang bei DX-Expeditionären und wurde gerne zur Planung herangezogen. (Erinnern wir uns gerne an T7, SV9 u.a. als gesuchte WAEs/DXCCs bzw. an Felder wie KO26,35,37,38 KM06,07,16 KO32,44,46 usw. um nur einige wenige Beispiele aus der guten 98er Aktivität hervorzuheben). Auch dieses Jahr haben wir uns entschlossen, diese Liste wieder aufleben zu lassen. Hier die Spielregeln für die 99er Liste: Die Erhebung findet ab dem 1.12.98 bis 10.2.99 statt (Einsendeschluss). Somit wird die MWS99 schon im März veröffentlicht werden können und jeder kann sich ein davon Bild machen, was besonders aktivierenswert ist!
Einzusenden sind die jeweiligen meist gesuchtesten Großfelder und DXCC-Länder (ohne jegliche Anzahl-Begrenzung) über deren Aktivierung man sich besonders freuen würde. Jede Station darf nur einmal einreichen! Die eingeschickten Großfelder / DXCCs sollten natürlich im Rahmen der Erreichbarkeit des jeweiligen Absenders liegen (Tropostn. max 1000km, MS Stationen max. 2200km)
Infos bitte an: VHF-DX-Gruppe DL-West, c/o DL8EBW G. Jünkersfeld, Gustav-Freytag-Str.1, D-42327 Wuppertal
PR: DL8EBW@DB0NDK, E-Mail: dl8ebw@qsl.net



Neue Ausgabe (Version 1.50) der VHF-DATENBANK der VHF-DX-Gruppe DL-West

Es ist nun wieder soweit! Die VHF-DX-Gruppe DL-West hat die erstellte VHF-Datenbank (nun ca. 37700 Calls samt Lokator!) zum Versand fertig! Aus Datenschutzgründen werden wir wieder keine gesammelten Adressen mit weitergeben. Die Adressdaten sind einfacher aus Cluster-Adressen-Datenbanken oder aus den bekannten Callbüchern herausfindbar! Wir haben uns entschieden, die Datenbank als gepackten D-Base (III) File (28 MB) zusammen mit Auskopplungen der MS-Datenbank und VHF-Net Datenbank gegen Einsendung eines SASE (self adressed and stamped Envelope / 2,20DM) und zusätzlich 5 DM oder oder 3 Dollar an jeden HAM weiterzugeben. Es handelt sich um eine Aufwandsentschädigung! (Kosten incl. 3 1/2" Diskette - bitte keine Disketten an uns mit einschicken!!!) Wir sind weiterhin um jede Änderung, Neueinträge und auch Informationen Call / Locator von DX-Stationen die gearbeitet wurden, sehr verlegen! Zudem können natürlich weiterhin Info-Anfragen an unsere Gruppe direkt gestellt werden! (PR und via Post bei DL8EBW)

6m News

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

DJ6TK, JO53, wkd: 3.8. 17.34 IG9/KW2HKW JM65HL. 4.8. 06.57 YO4CIS KN43GT, 09.37 5B4/EU1AA KM64VV, 16.22 UY1HY KO60MA, 17.20 ES2WX/8 KO28KL, 17.43 YL2DX KO26AW. 5.8. 08.39 5B4AFM KM64KQ. 6.8. 12.16 SM7GWU JO78LB Aurora, 12.30 GM3POI IO88 Aurora, 12.40 SM7OYP JO66JA Aurora, 17.00 OH9/SM6CMU KP18DL, 17.10 LA5TFA JP99LQ, 17.49 UY5QZ KN77MT. 7.8. 17.55 YT1AD KN03IQ. 9.8. 11.16 DA0ND JO34XE, 12.13 IM0/IK2GAO JM49. 10.8. 16.53 US5EKL KN78MK. 12.8.09.16 LC1PAT JP51 in "MS", 09.47 IM0/IK2WAN JM49FM, 16.24 OH3MF/9 KP36UN, 16.32 OH9SCL KP46BI. 13.8. 08.43 LC1PAT JP51 in "MS".

DL1EJA, JO31 wkd 6m: 11.10.98 1734z V51KC JG88LA ODX now, 1745z 7Q7RM KH74. tnx for info Oliver

DL7QY, JN59, wkd: 22.4.98 5A1A JM62; 26.4. TT8JE JK72 new DXCC; 30.4. 7Q7JL KH74; 31.5. EK6AD LN20 new DXCC; 2.6. UN3G MN83; 4.6. KP4EIT FK58, PY5CC GG54; 12.6. TR8CA JJ40; 23.6. K0FF EM49; 27.6. KM1H FN42; 27.6. VE9AA FN65, WA1OUB FN43; 7.8. 7Q7RM KH75; 9.8. ST2SA KK56 new DXCC, LU5JAU GF07, LW5DX GF05, KW5EJU GF05, LW4DIR GF05, LU2EGQ GF05, LU3EMK GF05, LW3BJX GF05, LU1DMA; 10.8. PY5CC GG54, PY2XB GG66; 17.8. TZ6VV IK63 new DXCC. tnx for info Claus.

PA3HEN/MM, 6m/2m report: It was a trip from PA-ON-CT-D44-ON-PA. 17.9. IN79 50 GW3MFY-IO81 18.9. IN42 144 CT1FOH-IN50 CT1DNF-IN50 IN52 144 CT1DRB-IM58 21.9: IM47 50 PY5CC-GG54 7Q7RM-KH74 22.9. IM23 50 CT3FT-IM13 7Q7RM-KH74 IM22 50 7Q7RM-KH74 PY5CC-GG54 PY2WBC-GG67 PY2XB-GG66 ZP6CW-GG41 23.9. IL07 50 TZ6VV-IK63 EH8BPX-IL18 PY5CC-GG54 CT3HF-IM12 PY2PA-GG66 PP1CZ-GG99 LU3EMK-GF05 LW5EJU-GF05 PP1BG-GG99 PY2XB-GG66 PY2HDY-GG67 ZP9DM-GG24 24.9. HL92 50 ZP6CW-GG41 ZP5SNA-GG14 PY5CC-GG54 PP1CZ-GG99 PY2XB-GG66 28.9. HK99 50 PY2XB-GG66 PY5CC-GG54 PY2DP-GG66 29.9. IL04 50 PY2NQ-GG66 PY5CC-GG54 ZP6CW-GG14 30.9. IM10 50 PY5CC-GG54 LW5DX-GG05.

Beacon News and Updates:

DB0JB has changed call to DB0UX (Info DK2TB)

I3H, JN66EB, QRG 47088.150, 2.5 WERP, Horn 25dB, 1560m asl, QTF S/W, A1A. First 47 GHz Beacon in Italy. Op IW3EHW

OK0EA, JO70UP, 1355m:

432.933 MHz, 250mW, F1A, 2 x 15 Ele Yagi, W/SW

1296.900, 200mW, F1A, 4 x 15 Ele Yagi, W/S/NE

5760.044, 20mW, F1A, Slot, W/E

10368.080, 20mW, F1A, Slot, W/W

tnx for info to OK1AIY

OK0EL, JO70SQ, 1036m:

144.474 MHz, 5mW, F1A, Dipole, W/E

1296.930, 250mW, F1A, Feedhorn, W

2320.930, 250mW, F1A Feedhorn, W

5760.028, 25mW, A1A, Feedhorn, W

10368.050, 50mW, A1A, Slot, W/E

24192.050, 10mW, A1A, Slot, W/E

tnx for info to OK1AIY

Aurora

Editor: Norbert Göttsche, DL8LAQ

DF1CF (JN57FP) wkd on 144 MHz:
1998-08-27 1244-1807 UTC

OZ6OL	JO65DJ	55A	55A	20°
DK3BU	JO33NO	55A	53A	30°
DL9MS	JO54WC	55A	57A	50°
G4SWX	JO02PB	53A	52A	30°
OZ1PMX	JO56FA	52A	52A	30°
DL1UU	JO62SP	57A	57A	40°
DK1CO	JO63SX	55A	55A	10°
DL1SUN	JO53PN	55A	55A	30°
OZ1KLU	JO46PE	55A	55A	30°
DJ1SHF	JO73AM	55A	55A	30°
PA3HDD	JO22FE	55A	55A	30°
GM1XOI	IO85AT	55A	55A	0°
GM0NAI	IO75RU	51A	52A	0°
GM0CLN	IO85MX	51A	52A	0°
DJ4SO	JO44WG	55A	55A	10°
SM7WT	JO65QQ	55A	57A	10°
DL1EJA	JO31DS	55A	55A	50°

73, Jürgen. Thanks for report, Jürgen.

DF1IAZ (JN49LD) wkd on 144 MHz:
1998-08-27

1309 DK3BU	JO33NO	52A	41A	40°
1312 GM1XOI	IO85AT	52A	52A	0° ODX!
1323 DL9MS	JO54WC	51A	52A	45°
1326 G4SWX	JO02PB	53A	52A	40°
1329 DL1UU	JO72SP	51A	53A	50°
1341 DL/UT8AL	JO43SV	53A	57A	40°
1344 DL1EJA	JO31DS	55A	52A	50° (60°)
1355 OZ1PMX	JO56TI	51A	55A	20°
1432 OZ1PIF	JO65AN	53A	53A	20° ssb
1447 DK1CO	JO63SX	57A	55A	40°
1449 DK9OY	JO52CK	55A	55A	40°
1450 DL1SUN	JO53PN	55A	59A	40°
1500 DJ1SHF	JO73AM	51A	52A	50°
1506 OZ1KLU	JO46PE	55A	55A	20°
1508 G4DHF	IO92UU	59A	59A	30°
1513 DK3WG	JO72GI	59A	57A	50°
1528 PE1PZS	JO21DV	53A	57A	50° ssb
1532 DL8CMM	JO52WO	57A	57A	30°
1537 DL8LAQ	JO43XU	57A	55A	30°
1539 PA3HDD	JO22FE	55A	59A	30°
1542 SP1CNV	JO84CF	51A	53A	40°
1545 DK2CF	JO53CI	52A	54A	30°
1601 DL8BDU	JO43AA	55A	55A	30°
1616 PA3DOL	JO22MT	55A	55A	30°
1630 PA2DWH	JO22GD	51A	53A	30°
1634 PA3CEE	JO33JI	55A	55A	30°
1700 DJ4SO	JO44AG	53A	57A	30°
1998-10-19				
1421 DK9OY	JO52CK	55A	53A	
1518 DK1CO	JO63SX	57A	55A	
1521 DL9MS	JO54WC	53A	53A	

Heard Oct, 19th: SM7EWW JO65NU, OZ7ZS JO55RT, LY1DQ KO25RF and SP1NQN JO84ML. 73, Ralf. Thanks for report, Ralf.

DJ1OJ (JN58SE) wkd on 144 MHz:
1998-08-27

1454 DL1SUN	JO53PN	55A	55A
1457 DK9OY	JO52CK	56A	54A
1459 DL1UU	JO62SP	55A	55A
1507 DJ1SHF	JO73AM	53A	52A
1511 DL9MS	JO54WC	59A	59A
1525 DL8CMM	JO52WO	57A	57A
1540 DL8LAQ	JO43XI	57A	55A
1542 DK3WG	JO72GI	56A	56A
1545 DK1CO	JO63SX	57A	55A
1547 PA3CEE	JO33JI	59A	59A
1559 PA3HDD	JO22FE	55A	55A
1600 G4SWX	JO02PB	59A	59A
1607 PA3BIY	JO22EB	55A	55A
1618 OZ6OL	JO65DJ	57A	55A
1621 OZ1LPR	JO44WX	54A	55A
1626 SM7WT	JO65QQ	57A	57A
1631 DL1EJA	JO31DS	53A	41A

Equipment: 100W, 2x11 ele Flexa, preamp SP-2000

DJ1OJ (JN58SE) wkd on 50 MHz:
1998-08-27

1514 OZ1EHW	JO54WR	55A	55A	
1519 SM7FJE	JO65ML	57A	57A	
1520 OZ3ZW	JO54RS	56A	56A	ssb
1526 DF9CY	JO54AL	55A	55A	
1529 SP4MPB	KO03GS	53A	53A	
1533 DK2PH	JO41GV	55A	57A	

Equipment: FT-726R, 10W, 5 ele M. Es hat Spaß gemacht, hier im Süden wieder mal eine Aurora zu erleben... 73, Heijo. Thanks for report, Heijo.

DK3WG (JO72GI) wkd on 144 MHz:
1998-08-27 from 1350-1620 UTC

LY2SA	KO14LL	57A	57A	
SP6GVF	JO81LC	55A	59A	
SP6GVU	JO81LC	55A	59A	
DK9OY	JO52CK	59A	59A	
ES0HD	KO18FF	44A	55A	
DL1UU	JO62	57A	57A	
DL1KDA	JO30FQ	57A	59A	
LY2PU	KO14XW	55A	59A	
SM5KQS/5	JO88MS	56A	57A	
HB9QQ	JN47KJ	57A	59A	
SM5PRE	JO78SK	44A	52A	
SM6CYZ	JO66MK	56A	57A	
OK1IAZ	JN49LD	57A	59A	
UA3PTW	KO93BS	44A	55A	1543 km
UT5ER	KN78ER	57A	59A	1508 km
9A2AE	JN86DF	57A	55A	
UR5LX	KO70WK	55A	55A	

OK2KQQ	JN89DQ	55A	59A	
9A1CAL	JN86EL	55A	55A qtf 72°/30°	
9A1EZA	JN86HG	57A	59A	
DJ1OJ	JN58SE	56A	56A	
OM5KM	JN98AH	55A	59A	
HA5OV	JN97NJ	57A	59A qtf 80°	
9A2SB	JN95GM	55A	58A qtf 90°/20°	
OE3JPC	JN87EW	55A	58A	
OE3OKS	JN87AR	56A	55A	

Sri, from N to NNW I have had very strong QRM from highvolt-transformer-field. I couldn't work in that direction at this time... 73, Jurg. Thanks for report, Jurg.

DL1EJA (JO31DS) wkd on 144 MHz:

1998-08-27

1202 OZ1PMX	JO56FI	55A	55A	
1206 DL9MS	JO54WC	55A	55A	
1230 SM5BSZ	JO89IJ	55A	52A	
1238 DK9OY	JO52CK	59A	59A	
1244 DK3BU	JO33NO	59A	59A	
1249 DL1UU	JO62SP	57A	55A	
1302 DL1DUR	JO70KV	57A	55A	
1309 G3JSM	IO91LC	57A	53A	
1311 DJ6LV	JO31JG	59A	59A	
1314 DL2FDX	JO40LG	55A	55A	
1321 GM1XOI	IO85AT	59A	59A	
1325 SP1NQN	JO84ML	55A	55A	
1338 LY2WR	KO24OQ	55A	57A	
1342 DF1IAZ	JN49LD	52A	55A	
1408 DL1KDA	JO30FQ	59A	59A	
1412 SP2RS	JO94GK	53A	57A	
1417 DL8CMM	JO52WO	57A	58A	
1420 DL1HN	JO43XN	59A	59A	
1422 DJ1SHF	JO73AM	52A	55A	
1427 G3BJD	IO84	57A	56A	
1430 DL2IAN	JN49BN	53A	55A	
1447 G3YVR	IO91WD	55A	55A	
1455 GM3NHQ	IO86	55A	57A	
1459 PE1OGF	JO21QJ	59A	59A	
1502 SP3DOQ	JO81HU	55A	59A	
1504 DL8URM	JO62SN	59A	59A	
1510 M1AIX	IO83QM	59A	59A	ssb
1511 G8IYG	IO82XT	59A	59A	ssb
1512 PA0KT	JO22CB	59A	59A	ssb
1514 MD1BYG	IO74RD	59A	59A	ssb
1515 PE1RWS	JO32BM	59A	59A	ssb
1516 G4DIE	IO81VK	59A	59A	ssb
1517 G6FZV	IO82VE	59A	59A	ssb
1518 GW8JLY	IO81JM	59A	59A	ssb
1520 G1SMI	IO83PM	59A	59A	ssb
1521 G4NKV	IO93MR	59A	58A	ssb
1528 DG0SY	JO50VC	59A	55A	ssb
1531 G8HDS	IO83VO	59A	55A	ssb
1539 SP1CNV	JO84CF	59A	57A	
1549 DH1TW	JN48QM	52A	55A	
1554 F8CIE	JN27MI	55A	57A	
1555 HB9BZA	JN36BE	55A	57A	
1556 HB9QQ	JN47KJ	59A	59A	
1558 YU7EW	KN05HP	52A	52A	
1601 HA5OV	JN97NJ	52A	55A	
1605 9A1CAL	JN86EL	52A	55A	
1607 DJ2JA	JO40IM	59A	55A	
1618 11JTQ	JN35UB	59A	55A	
1627 DK3AX	JN59DV	52A	55A	
1628 F8OP	JN26MM	55A	55A	
1631 DJ1OJ	JN58JE	41A	52A	
1637 PA0AKN	JO31BT	59A	55A	
1645 GM0NAI	IO75RU	59A	57A	
1649 DJ4TC	JO63PN	55A	55A	
1651 DL3SWS	JO53SG	55A	55A	
1653 DF7KF	JO30	59A	59A	
1653 DK8EL	JO31JO	53A	59A	
1656 DA0CV	JO60AR	55A	55A	
1658 DL1EAP	JO31IK	59A	57A	
1700 HB9DFG	JN37SM	55A	54A	
1702 DK5YA	JN49NX	55A	56A	
1705 DF1CF	JN57FP	55A	55A	
1708 DL4MEA	JN58JD	55A	55A	
1709 DL5DTA	JO61SD	52A	53A	

Heard some more DX like LY2SA, RZ3BA/1... but in QSO with other people. It was a very nice event, and I like to thank all who called me! I'm not the best CW-OP but did my best.

1998-09-25

0540 YL3DW	KO26DW	51A	59A	
0607 SM6EQO	JO57XP	52A	55A	
0616 SM7MXO	JO77IP	59A	59A	
0623 SM7BOU	JO66KG	59A	59A	
0634 SM7TZK	JO77ML	55A	55A	
1501 SM7WT	JO65QQ	55A	58A	
1509 OZ6ABA	JO57DJ	59A	59A	ssb
1539 SM5BSZ	JO89IJ	59A	57A	

1998-11-13

1425 GM0CLN	IO85MX	52A	53A	
1429 OZ8ZS	JO55RT	52A	55A	
1441 DK8LV	JO44RK	52A	55A	
1454 SM7WT	JO65QQ	53A	59A	
1511 OZ6ABA	JO57DJ	59A	59A	ssb
1602 RX1AS	KO59FX	52A	55A	1747km
1604 RW1AW	KP50EB	51A	55A	1746km
1612 LA3BO	JO59CD	59A	59A	
1634 SM3BEI	JP81NG	52A	55A	
1653 SM5BUZ	JO78MM	52A	56A	
1701 LA3PU	JO49UE	52A	55A	
1725 DJ4SO	JO44WG	55A	55A	
1735 DL2OM	JO30SN	55A	57A	
1740 LA0BY/P	JO59FV	55A	55A	
1747 DF8LC	JO53GX	55A	59A	
1800 GI4OWA	IO64IX	55A	55A	
1812 SM4ARQ	JO79OI	52A	59A	
1824 ES6RQ	KO28WA	52A	55A	
1834 OZ6TY	JO55XE	52A	55A	
1842 GM3WKZ	IO88DN	55A	59A	
1851 G4HGI	IO83RG	51A	57A	
1854 SK6QW	JO68WR	55A	59A	
1914 GM4JJJ	IO86GB	53A	53A	
1918 PA3EQK	JO22HG	41A	56A	
1928 GM4ILS	IO87IP	52A	53A	

It was very much fun to work during this nice event. I was very pleased to work UX1AS and RW1AW with my little 12ele Yagi! Surprise was also SM3BEI witch give me the 2nd QSO into the JPx1 KPx1-Line at all. So it looks like a very strong event witch was unusually high in the ionosphere. I was only able to work this area 2-3 times in last 10 years of activity. Missed LY1DQ from KO25 on the 2nd. event at 2300 UTC for a new square, but hope to catch him next time. Thanks to all who called and worked me, and hope to do better next time. Equipment: IC720A, LT2S, MGF1302 (NF=0,4dB), 2C39-Driver, GS35B-PA (750Watt), 12 ele at 15m agl and 30m asl.

DL1EJA (JO31DS) wkd on 50 MHz:

1998-09-25

1543 OZ1KSN	JO57EL	52A	52A	

Equipment: IC706MK2, 6 ele Hygain 12m agl. 73, Oliver. Thanks for reports, Oliver.

DL1SUZ (JO53UN) wkd on 144 MHz:

1998-08-26

1802 OH0JFB	JP90XI	53A	51A	

1998-08-27

1538 UT5ER	KN78ER	55A	57A	
1545 DL9MS	JO54WC	59A	59A	
1554 HB9DFG	JN37SM	55A	52A	
1622 HB9QQ	JN47KJ	59A	59A	
2053 OH1XT	KP01UK	53A	55A	

DL1SUZ (JO53UN) wkd on 50 MHz:

1998-08-27

1533 PA3BLS	JO22LM	55A	55A	
1534 DL3AMA	JO51ND	55A	55A	
1536 DK2PH	JO41GV	59A	59A	ssb
1630 ON4ANT	JO20AR	55A	57A	
1642 DJ9KG	JO42MX	53A	52A	
1611 PA0BWL	JO21SS	55A	55A	
1517 SP2SGZ	JO82UU	53A	51A	ssb
1524 DL2GBT	JN48CU	55A	55A	ssb

Thanks for report, Uwe.

DL8EBW (JO31NF) wkd on 144 MHz:

1998-08-27

0040 OZ1PMX	JO56FI	52A	51A	30°	
0045 GM4CXM	IO75TW	55A	53A	30°	
1525 SM5BSZ	JO89IJ	52A	51A		*2
1602 HB9DFG	JN37SM	55A	52A	70°	*1
1646 G4DHF	IO92UU	57A	57A	30°	*1
1655 DJ4SO	JO44WG	55A	55A	30°	*1
1705 GM0NAI	IO75RU	52A	31A	10°	*1
2129 G4DHF	IO92UU	55A	hrd	30°	

Remarks: *1 TX only 40-60W! *2 DL8EBW/m 60-70W into 5/8 vertical near Wuppertal (JO31NF) on BAB A46 at abt. 100-120 km/h with voice-CW! (whistling, hi) - Good ears Leif!

From 0000-0130 UTC also heard GB3NGI IO65 (beacon) 55A and LY2WR KO24 max 52A. Between 1530-1730 UTC I copied many stations in QTF 10-90(!) from: IO74, 75, 90, 91, 92, 93, JO01, 02, 20, 21, 22, 23, 30, 31, 32, 33, 41, 42, 43, 43, 52, JO54, 65, 89, JN18, 19, 26, 35, 37, 48, 49, 55, 58, 59, 68, 87 and hrd UT5ER 41A!

During the best time (what I have seen in DXC) I was in QRL (as normal for an VHf-DXer, hi - one of the golden rules from Murphy!) I believe it was one of the better sort as we have seen last in 91 or 92! So keep an eye on it what will happens next days, weeks, month... gl! But of course I regard my neighbours with their TV-sets... Equipment: FT726R mod. CF300, 11 ele DL6WU, MGF1302, 250W.

DL8EBW (JO31NF) wkd on 144 MHz in CW:

1998-11-07

1639 YL80AG	KO26AW	55A	55A	20°	*1
1643 LY1DQ	KO25RF	55A	55A	20°	*1
1908 GM4JJJ	IO86GB	55A	55A	0°	*1

1998-11-08

0538 LA2PHA	JO38IB	55A	55A	0°	*1

1998-11-09

1605 GM0PWS	IO68UG	55A	hrd	0°	*2

1998-11-13

1559 LA3BO	JO59CD	53A	hrd	0°	*2
1601 SM7TKR	JO77	51A	hrd	30°	*2
2020 GM4JJJ	IO86GB	57A	hrd	10°	*2

Remarks: *1 DL8EBW in JO30gu at the Marconi-Contest at DF7KFs QTH: 700W, 2x17ele; *2 At home: FT-726R, CF300, 11ele DL6WU, MGF1302, 250W.

DL8EBW/m (JO31NF) wkd on 144 MHz in CW:

1998-10-19

1510 LY1DQ	KO25RF	55A	hrd	30°
1515 YL80AG	KO26AW	55A	hrd	35°
1531 LA2PHA	JO38IB	55A	57A	35°

Heard from 1420 - 1600 UTC: GM, G, SM, LA, OZ, PA and north DL. Mobil-Rig: FT480, 120W, 7 ele DL6WU up on 250m. asl 2 km from home. 73, Guido. Thanks for reports, Guido.

HB9BZA (JN36BE) wkd on 144 MHz:

1998-08-27

1519 DK1KO	JO53CT	55A	57A	
1521 PA3BIY	JO22EB	55A	55A	
1526 PA3HDD	JO22FE	54A	57A	
1533 G4SWX	JO02PB	55A	55A	
1536 PA3CEE	JO33JI	55A	55A	
1539 G3IMV	IO91OX	55A	56A	
1556 DL1EJA	JO31DS	57A	55A	
1604 PA3DOL	JO22MT	55A	55A	
1611 PA2DWH	JO22GD	53A	55A	

Equipment: 700 W out, 11 el Yagi. End of the opening just after 1700Z (G4SWX 53A at this time) but no new stations heard. 73, Robert. AX.25: HB9BZA @ HB9IAP.SROM. CHE.EU. Thanks for report, Robert.

LA0BY wkd on 144 MHz:

1998-08-27 (JO59FW)

1546 ES2RJ	KO29JM	54A	57A	0°
1637 DL8BDU	JO43AA	54A	55A	30°
1644 LY2SA	KO14LL	55A	55A	30°
1653 PA0GHB	JO11WK	53A	55A	290°
2025 G4DHF	IO92UU	57A	57A	310°
2029 SM7LZQ	JO77DS	52A	55A	350°
2034 DK8LV	JO44RK	59A	59A	20°
2039 DL9OA	JO64EB	52A	58A	10°
2040 DL/UT8AL	JO43HV	59A	59A	10°
2043 PA0RDY	JO22KJ	57A	55A	0°
2043 DL8CMM	JO52WO	57A	58A	10°
2045 PA3BIY	JO22EB	55A	55A	0°
2057 SP1NQN	JO84ML	52A	55A	40°
2059 DJ4TC	JO63PN	57A	57A	40°

1998-08-29 (JO59FW)

1615 SM0NZZ	JO89WJ	52A	55A	20°
1630 DL9MS	JO54WC	57A	57A	40°

1998-09-01 (JO59IX)

1611 DK3WG	JO72GI	55A	56A	30°
1620 SP2RS	JO94GK	52A	53A	30°
1626 OH1LT	KP00XO	54A	54A	30°
1637 SK3MF	JP92FW	56A	55A	30°
1639 OH3BNP	KP20KR	53A	53A	30°
1646 YL2AJ	KO16OX	55A	55A	30°
1651 ES6CO	KO38KA	53A	55A	30°
1700 LY2MW	KO24PQ	56A	59A	30°
1701 DL9MS	JO54WC	59A	59A	30°
1702 OH6MSZ	KP21XU	57A	57A	20°
1703 SP1CNV	JO84CF	52A	53A	30°
1705 SM3KJO	JP92FX	55A	55A	20°
1708 LY2BHP/p	KO05MX	54A	55A	30°
1712 SM7CMV/7	JO65UK	56A	57A	30°
1714 ES2RJ	KO29JM	55A	55A	30°
1716 SK6HD	JO68SD	56A	55A	30°
1719 OH2AAQ	KO29FX	56A	55A	30°
1722 OH3BK	KP11TF	55A	53A	30°
1723 SM7TUG	JO76NJ	53A	55A	30°
1727 OH6QR	KP22BN	53A	55A	30°
1735 SM1MUT	JO97EJ	55A	55A	30°

1738 SK3MF	JP92FW	53A	53A	20°
1740 OZ2GM/A	JO56BT	53A	53A	30°
1743 LY2SA	KO14LL	55A	55A	30°
1756 LA4XGA	JP33VC	57A	55A	350°
1759 SK2AT	KP03BU	56A	55A	0°
1998-10-07 (JO59FW)				
1600 SK4MPI/B	JP70NJ	57A	hrd	340°
1998-11-03 (JO59IX)				
1802 OH6QR	KP22BN	54A	55A	0°
1806 OH2KKP	KP20MH	55A	59A	0°
1807 RU1AA	KP40XD	53A	54A	0°
1813 SK3MF	JP92FW	55A	57A	0°
1817 SM3BEI	JP81NG	52A	54A	0°
1998-11-05 (JO59FW)				
1629 DL1SUN	JO53PN	57A	57A	0°
1998-11-06 (JO59FW)				
1700 LA8AJA	JP50	52A	57A	20°
1703 DJ9YE	JO43HV	59A	59A	30°
1717 DK8LV	JO44RK	57A	59A	30°
1720 DL4IB	JO64CC	55A	55A	20°
1724 GM8LFB	IO88JH	42A	53A	350°
1734 G4LOH	IO94IA	56A	59A	340°
1741 MM1BMK	IO87VL	59A	57A	350°
1998-11-07 (JO59FV)				
1607 DK9OY	JO52CK	59A	59A	20°
1609 OH2KKP	KP20MH	59A	59A	0°
1612 LY2MW	KO24PQ	55A	59A	30°
1614 DH8BQA/p	JO73CF	52A	59A	20°
1616 DL0BRB	JO43NX	57A	59A	20°
1617 SP1CNV	JO84CF	52A	57A	20°
1621 DJ9YE	JO43HV	57A	59A	20°
1626 DL5ME	JO52SD	55A	55A	20°
1626 DK8LV	JO44RK	59A	59A	20°
1628 DL1UU	JO62SP	59A	55A	20°
1630 SP2BOF	JO94FM	57A	59A	30°
1632 RU1AA	KP40XD	52A	57A	0°
1633 DJ1SHF	JO73AM	59A	59A	20°
1635 LY2WR	KO24OQ	57A	57A	30°
1638 DF0WD	JO42FD	59A	59A	20°
1640 DL2ZAE	JO41QI	55A	59A	20°
1642 DL6BF	JO32QI	55A	57A	20°
1644 DL1RNW/p	JO62GC	52A	55A	20°
1648 SP2FAX	JO83VA	59A	59A	20°
1650 LA8AJA	JP50EV	55A	59A	0°
1652 SP4MPB	KO03GS	59A	53A	20°
1659 DL8BDU	JO43AA	56A	55A	20°
1701 DL1SUZ	JO53UN	53A	55A	20°
1705 DJ4SO	JO44WG	59A	59A	20°
1708 DL0KF	JO54AG	55A	59A	20°
1711 DL1SUN	JO53PN	57A	59A	20°
1714 DF1SF	JO43VL	55A	55A	20°
1716 DJ9MT	JO54EG	53A	57A	20°
1718 DL0HRO	JO64BD	53A	55A	20°
1719 LY2SA	KO14LL	55A	55A	30°
1725 OH1XT	KP01UK	55A	59A	0°
1728 OH2KW	KP20IJ	52A	55A	0°
1732 DL9MS	JO54WC	55A	59A	0°
1736 SM7WT	JO65QQ	57A	57A	0°
1741 SM3BEI	JP81NG	59A	57A	0°
1755 LA2PHA	JO38IB	51A	52A	0°
Nice to have some Aurora during the Marconi Contest.				
1998-11-09 (JO59FV)				
1449 DL1UU	JO62SP	59A	56A	40°
1534 DK9OY	JO52CK	57A	58A	30°
1540 DK3BU	JO33NO	59A	59A	20°
1544 DJ3LE	JO44TD	59A	59A	20°
1545 DL9QB	JO44UL	55A	59A	20°
1553 DL5CC	JO64AD	57A	57A	30°
1555 DL2HRE	JO51TQ	52A	55A	30°
1556 DL3KVR	JO64AC	55A	57A	30°
1603 LY2IC	KO14WW	52A	57A	40°
1607 DD0VF	JO61VC	52A	55A	40°
1608 SP2NJE	JO92AT	55A	55A	40°
1612 PA3BGM	JO33CE	57A	59A	20°
1613 DL8BAB	JO43OB	59A	59A	20°
1616 LA7SL	JO59WT	55A	55A	20°
1622 DJ9YE	JO43HV	59A	59A	30°
1630 PA3HDD	JO22FE	59A	58A	340°
1644 SP2RS	JO94GK	53A	57A	30°
1645 DK5JM	JO43QS	57A	57A	30°
1650 LY3ED	KO14UX	57A	56A	20°
1658 DL7ULM	JO62SN	55A	57A	30°
1707 ES0HD	KO18FF	53A	56A	20°
1714 PA3FJY	JO32EH	53A	55A	20°
1715 SP1CNV	JO84CF	57A	57A	30°
1722 DL8YHR	JO41GV	53A	55A	30°
1723 SP1NQN	JO84ML	59A	59A	30°
1725 SP2BNJ	JO94VH	55A	55A	30°
1732 SQ2EEQ	JO94HI	55A	55A	30°
1737 SM7NWH	JO65MN	57A	57A	20°
1738 YL80AJ	KO16OX	59A	59A	10°
1741 DL6YST	JO42MK	52A	55A	20°
1758 SM6CYZ	JO66MK	55A	55A	20°
1800 DL6CTG	JO52XJ	53A	55A	30°
1816 LY2MW	KO24PQ	59A	59A	30°
1818 DL3SWS	JO53SG	57A	59A	0°
1820 DF2JQ	JO31HL	53A	53A	0°
1822 DK5DQ	JO31PH	57A	53A	0°
1823 DL1BEY	JO33RJ	55A	56A	0°
1825 PA2TAB	JO32GF	57A	59A	0°
1830 DL5YET	JO41EV	57A	59A	0°
1838 OH2BNH	KP20LG	59A	59A	330°
1839 OH3TZ	KP11TM	53A	55A	330°
1841 DJ9MG	JO52TC	53A	53A	0°
1843 SM3AKW	JP92AO	59A	59A	340°
1846 G3UTS	IO94CU	52A	52A	320°
1858 LA2OG	JP42NB	59A	59A	330°
1900 OH2KW	KP20IJ	54A	55A	330°
1902 DJ3XK	JO53AN	55A	55A	330°
1910 G4DHF	IO92UU	52A	55A	320°
1998-11-13 (JO59FV)				
1549 LA2EG	JP20PL	52A	54A	350°
1552 OZ6TY	JO55XE	59A	58A	10°
1605 DL5BAX	JO53BN	52A	55A	10°
1606 LY2MW	KO24PQ	52A	59A	30°
1610 ES1RF	KO29IJ	57A	57A	30°
1613 SP7CNL	JO91QQ	52A	55A	40°
1616 DL7UDA	JO62TK	55A	57A	40°
1646 RV3IG	KO87OT	52A	55A	40°
1649 DJ9FG	JO52UD	59A	59A	40°
1651 DL4DWA	JO61QH	55A	55A	40°
1652 DF4HH	JO43XO	59A	59A	40°
1655 PA3HBH	JO33GD	55A	58A	10°
1659 SP5CCC	KO02NF	55A	57A	40°
1701 SP2FAX	JO83VA	59A	59A	40°
1703 DL5WG	JO52VK	55A	57A	30°
1704 DL3BQA	JO73CF	54A	55A	30°
1709 SP8UFT	KO11JI	52A	55A	40°
1713 DJ7OF	JO51HQ	59A	59A	30°
1737 DF7OG	JO52BN	54A	55A	30°
1739 PA3GTC	JO32LR	52A	52A	350°
1742 DL1EJA	JO31DS	55A	55A	350°

1743 ES2NA	KO29JL	53A	55A	10°
1757 DL3IO	JO53HB	57A	57A	40°
1759 DK2JP	JO73CB	56A	57A	40°
1801 DJ3HX	JO43VP	56A	57A	30°
1806 OH3BHL	KP10RR	52A	55A	20°
1812 G4LOH	IO94IA	59A	59A	330°
1821 GM3WKZ	IO88DN	52A	57A	330°
1825 DJ4UF	JO30BR	53A	53A	330°

Thanks for the long report, Stefan.

LY2SA (KO14LL) wkd on 144 MHz (Top 10 QSO's):

1998-08-27

1552 GM0NAI	IO75RU	55A	53A	1742 km
1735 G4DHF	IO92UU	57A	57A	1536 km
1730 G4SWX	JO02PB	55A	55A	1460 km
1408 LA4XGA	JP33VC	55A	55A	1292 km
1251 DL1EJA	JO31DS	57A	57A	1150 km
1337 PA3FBN	JO33HF	55A	55A	1078 km
1323 LA2PHA	JO38IB	55A	55A	1077 km
1516 PA3CEE	JO33JI	55A	55A	1064 km
1243 DK3BU	JO33NO	59A	56A	1037 km
1358 9A2AE	JN86HF	57A	57A	1021 km

There was a long and good Aurora opening. Heard I1JTQ in JN35 and worked 9A2AE and 9A1CAL in JN86, QTF was 280 deg. Really fantastic! Thanks all for QSO's and hope to hear again next Aurora. Regards, Vidas. Thanks for report, Vidas.

OE3JPC (JN87EW) wkd on 144 MHz:

1998-08-27

1320 DL9MS	JO54WC	55A	57A	25°
1327 DK3BU	JO33DO	55A	hrd	25°
1432 DK9OY	JO52CK	58A	59A	30°
1436 DK1KO	JO53CT	59A	59A	30°
1509 LY2WR		53A	hrd	10°
1512 LY2SA	KO14LL	55A	hrd	30°
1516 DK1CO	JO63SX	58A	55A	5°
1556 G4SWX	JO02PB	57A	hrd	325°
1612 DK3WG	JO72GI	58A	55A	35°
1622 DH3YAK	JO31RS	54A	57A	25°

Heard also PA and some more G's. 73, Johannes. Thanks for report, Johannes.

OH0JFB (JP90XI) wkd on 144 MHz:

1998-08-23

1502 RU1AA	KP40XD	55A	59A	552km
1506 UA1OLJ	LP03DC	55A	55A	1109km
1512 RZ1AWR	KO59DX	55A	59A	573km

1998-08-26

1446 RW1AW	KP50EB	59A	59A	576km
1451 RV3IG	KO87OT	55A	57A	1022km
1453 RK1NA	KP71ET	59A	57A	791km
1458 UA3DJG	KO95CN	55A	55A	1196km
1502 UA3MAG	KO97VP	55A	57A	1171km
1504 SM3RIU	JP93DK	59A	59A	354km
1507 OH6KSR	KP22VG	59A	59A	378km
1510 OH8HFY	KP34VF	59A	59A	591km
1512 SM3UFF	JP80HP	59A	59A	186km
1514 UA1AJA	KP50FA	59A	59A	582km
1516 UA1NA	KO59IX	59A	59A	596km
1518 RN1NZ	KP71ES	57A	59A	790km
1520 RZ1AP	KO40VW	55A	59A	1213km
1526 OH6JKY	KP02QL	59A	59A	249km
1530 DL9MS	JO54WC	59A	55A	848km
1534 LA3BO	JO59CD	59A	59A	562km
1537 SP2RS	JO94GK	51A	55A	664km
1541 DJ4TC	JO63PN	59A	57A	856km
1543 RA3LBK	KO65QA	55A	57A	991km
1546 DL1SUN	JO53PN	51A	55A	919km
1547 DL4IB	JO64CC	55A	57A	836km
1550 SM7TZK	JO77ML	59A	59A	427km
1552 SM6CEN	JO57XO	59A	57A	551km
1555 DL1UU	JO62SP	57A	57A	943km
1556 SM5EFP	JO79WJ	59A	59A	252km
1559 LY2MW	KO24PQ	57A	59A	706km
1600 SM7WT	JO65QQ	59A	59A	648km
1602 SP1CNV	JO84CF	55A	57A	718km
1605 UA1WER	KO47EU	59A	59A	555km
1607 UA1ABS	KO59ET	59A	59A	581km
1609 SM7TOG	JO77DS	57A	57A	433km
1613 SM7LZQ	JO77DS	59A	55A	433km
1720 DK1CO	JO63SX	57A	55A	807km
1727 SM4VLG	JP70RL	53A	55A	248km
1731 LA2PHA	JO38IB	55A	55A	795km
1733 ES2NA	KO29JL	55A	55A	287km
1739 DL/UT8AL	JO43HV	57A	57A	990km
1743 DK9OY	JO52CK	55A	54A	1064km
1747 LA6LI	JO38IB	57A	55A	795km
1752 LY3ED	KO14UX	51A	53A	638km
1757 SM4VYH	JP70OD	59A	54A	264km
1801 DL1SUZ	JO53UN	51A	53A	905km
1805 DL0DET	JO52CK	57A	55A	1064km
1816 DL9GTI	JO64AV	51A	51A	768km
1818 PE1LCH	JO23WF	55A	55A	1164km
1820 PA3HBH	JO33GD	55A	55A	1142km

Equipment: IC-275E, 3CX800 PA (600W), 2x15 ele DJ9BV, preamp. 73 de Peter, OH0JFB.

PE1OGF (JO21QJ) wkd on 144 MHz:

1998-08-27

1447 G4SWX	JO02PG	59A	59A	
1457 HB9QQ	JN47KJ	57A	59A	
1500 DL1EJA	JO31DS	59A	59A	
1502 LA2PHA	JO38IB	57A	57A	
1507 DL1SUN	JO53PN	59A	59A	
1510 PA3CTQ	JO22CX	55A	55A	
1514 DK2CF	JO52CI	55A	59A	
1517 EU6MS	KO45IN	56A	55A	1600km
1520 DL1UU	JO62SP	57A	55A	
1531 DL1AVD	JO50UP	53A	57A	
1540 PA3CEE	JO33JI	59A	59A	
1548 GM4CXM	IO75MM	59A	59A	
1552 G4RKV	JO01OI	59A	59A	
1558 DL2RNM	JO62KL	55A	53A	
1603 SP1CNV	JO84CF	53A	52A	
1606 DL3HRT	JO61AH	55A	55A	
1610 F5OBX	JN19CR	59A	59A	
1612 PA0JMV	JO21PM	59A	59A	
1628 PA3HDD	JO22FE	59A	59A	
1646 DJ4SO	JO44WG	57A	59A	
1648 PA2DWH	JO22GD	57A	57A	
1700 G3IMV	IO91OX	57A	57A	
1706 GM4WLL/P	IO85JU	55A	55A	
1717 DK8ELD	JO31KK	51A	51A	
1722 G4DHF	IO92UU	57A	57A	
1726 G1WPF	IO91RP	57A	57A	
1749 GM0NA	IO75MM	33A	53A	

This was a tremendous aurora, could even work my neigbour (15 km away in aurora!). Copied several stations from Italy Slovenia and Croatia !!! this is very unusal.

On 19th of October we had a good Aurora opening. I was lucky to be at home and worked the following stations: (I have no CW licence so sometimes I had problems with the callsigns and it took me a little longer for completing QSO's) certainly

at 25wpm in Aurora...hihi. When I switched on the Aurora was allready very strong so probably started few hours earlier but very low activity on the band. After some spots in the DX-cluster there came some more activity... At least it works but best should be listening on your radio instead of waiting till you see something in the cluster. Well anyway First signals were QTF 50° almost 55° from here and turned to straight north. At 1645 GM4ILS was still readable calling CQ with less takers. (Only copied GM4ILS CQ never the calling stations).

1998-10-19

1402 DF1RL	JO43MW	59A	57A
1409 DL1UU	JO62	55A	57A
1411 DJ9MG	JO52TC	55A	55A
1413 DL9QB	JO44FU	53A	59A
1418 SP1NQN	JO84MG	55A	57A
1420 LY2SA	KO14LL	55A	55A
1430 DK5YA	JN49MX	59A	59A
1439 LA2PHA	JO38IB	55A	55A
1444 DK9OY	JO52CK	59A	59A
1448 DJ3XK	JO53AN	57A	59A
1451 DJ6TK	JO52NO	53A	55A
1454 DL1KDA	JO30FQ	59A	59A
1456 DJ4TC	JO63PN	57A	57A
1506 G3IMV	IO91OX	57A	57A
1514 PE1PZS	JO21DV	57A	57A
1534 GM4ILS	IO87IP	57A	53A
1539 DK1CO	JO63SX	55A	55A
1554 DL9MS	JO54NC	57A	53A

Heard : LY1DQ , LY2MW , YL80AG , OH1LT , LA4CQ

Signals were first QTF 50° to 55° and turned to 0°. I was running 4x11ele and 400W. 73, John pe1ogf@iaehv.nl. Thanks for report, John.

RV3AH (KO85TO) wkd on 144 MHz:

1998-08-26

1521 RA3IG	KO87OT	57A	55A
1525 OH1AT	KP01UK	56A	55A
1550 UA1AJA	KP50FA	55A	58A
1601 OH7PI	KP42HF	59A	57A

1998-08-27

0318 UA3TCF	LO26IU	59A	57A
0320 SM4IVE	JO79SD	59A	55A
0422 OH5LW	KP30NN	55A	59A
1417 UA3PTW	KO93BS	58A	59A
1419 OH3BYZ	KP21TA	56A	56A
1423 OH1XT	KP01UK	56A	55A
1427 SM5FRH	JO88BW	59A	55A
1441 OH5LW	KP30NN	58A	59A
1444 UT5ER	KN78ER	59A	59A
1457 RV3IA	KO87JR	58A	58A
1503 UA3TFU	KO68XJ	55A	55A
2017 SM5BSZ	JO89IJ	59A	55A
2036 OH3NQW	KP21GE	56A	56A
2048 RK1NA	KP71ET	56A	56A
2103 RV3IG	KO87OT	59A	57A

Equipment: FT-847 (50W), F9FT-17 ele.73, Ed. eMail: ard@pop.transit.ru. Address: Box 17, Moscow, 109052, Russia. Thanks for report, Ed.

SP6GVU (JO81LC) wkd on 144 MHz:

1998-08-27

1124 SM7BOU	JO66KG	55A	
1145 DK1KO	JO53CT	57A	
1145 DL9MS	JO54WC	55A	
1252 SM4VQP	JO79NB	59A	ssb
1259 SM1HOW	JO97GL	55A	
1300 DK1KR	JO53HW	59A	
1316 SM5BSZ	JO89IJ	59A	
1320 YL3AG	KO26AW	57A	
1327 SM4LMV	JO79OF	59A	
1339 SM6CYZ	JO66MK	55A	
1344 DK3BU	JO33NO	59A	
1358 DK3WG	JO72GI	59A	
1423 DL1UU	JO62SP	55A	
1431 SM5EFP	JO79WJ	55A	
1444 SM5FRH	JO88BW	59A	
1558 DK1CO	JO63CX	59A	
1601 SM7WT	JO65QQ	57A	
1610 OZ6OL	JO65DJ	59A	
1628 PA3CEE	JO33JI	55A	
1732 DK0OG	JN68GI	52A	599 tropo

Equipment: IC-202, PA 200W, 17 ele F9FT, 40m agl. 73, Andy. (please give us the received report too! ed.). Thanks for report, Andy.

UR5LX (KO70WK) wkd on 144 MHz:

1998-08-27

1334 YL3AG	KO26AW	55A	55A
1444 UT5ER	KN78ER	59A	59A
1448 UA3DJG	KO95CN	55A	55A
1459 UA3PTW	KO93BS	59A	59A
1530 DK3WG	JO72GI	55A	55A

1998-09-25

1243 UA3XCM	KO85GC	59A	59A
1406 YL3AG	KO26AW	57A	55A

73, Sergej. Thanks for report, Sergej.

YU7EW (KN05HP) wkd on 144 MHz:

1998-08-27

1454 DK1KO	JO53CT	55A	55A	10°
1531 G4DHF	IO92UU	55A	55A	350°
1554 PA3BIY	JO22EB	52A	52A	340°
1559 DL1EJA	JO31DS	52A	52A	350°
1607 G4SWX	JO02PB	55A	55A	350°

Heard: DK1CO and G3IMV, but no QSO, sri. Remarks: *1 1712km. 73, Pista. Thanks for report, Pista.

Meteor Scatter

Editor: Norbert Göttsche, DL8LAQ

Dear Readers, don't forget to send in all your reports, experiences and comments about the MS avtivity!

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.

Send your reports to dl8laq@hamburg.roses.de or to my packet radio address DL8LAQ@DB0HB.#HH.DEU.EU.

73, Norbert

POMPEI ARI RADIO CLUB MS CONTEST
JUNE 1998 "ARIETIDS"
OFFICIAL FINAL CLASSIFICAL
CATEGORY: CW

Class.	Call	Locator	pfx	QSO x 1	QSO x 2	QSO x 3	QSO x 6	/p mpy	final score
1	RU1A	KO48VR	28	44				-	1.232
2	OH8E	KP45NH	17	21				1,5	536
3	DJ9YE	JO43HV	9	4	2	1	1	-	163
4	DL5MAE	JN58VF	7	5	1	1		-	70
4	PE1OGF	JO21QJ	5	3	1	1	1	-	70
6	DH3JW		7	5	2			-	63
7	DD0VF	JO61VC	6	3	2	1		-	60
8	DL8EBW	JO31NF	3	2		1	1	-	33
9	DJ2QV	JO31OM	2		1	1	1	-	22
10	PA2TAB	JO21	2	1		1	1	-	20
11	ON7UC	JO11ND	2		1		1	-	16
12	DL1KDA	JO30FQ	3	2		1		-	15

Out of competition (control logs)

	I8TWK	JN70GR	12	14				-	168
	I8TWK/p	JN60XX	14	15				1,5	315

CATEGORY: SSB

We did not receive any log, so no info aboutt SSB activity during the contest.

COMMENTS:

In all contest period the propagation was nice any morning, as predicted by any software, with frequent and moderately strong 1-10" reflections. Activity was not as high as expected; we extended the contest during all the week, but competitors were not so much in number as in December BCC.

First we think that this fact is not due to low interest in MS random working, but that June Arietids are daylight shower, so many people could not comply their working time needs with the shower time opportunities.

Second, we collected the request of a full week long contest time. At this moment we think of course that should be better limit the time at three, or max four days, corresponding with a full week-end.

Third, we had some people defection in our radio club, and was not possible the activation of other calls; maybe better in future!

In conclusion we can affirm that Arietids is a very affordable shower, and that the nice traffic of last two years can be easily mantained and can grow more if in this period some DX Expedition keeps high the square-hunter interest. In sum we encourage for the future all the square-hopper to catch their equipments and go! Results will be more encouraging than you can device.

At the moment I cannot confirm if next year will be held another contest session, but if so I will diffuse the news and any particular well in time.

Thanks to all participating guys, your prizes will be sent in few days.

Best 73' Carlo, I8TWK.

DF1IAZ (JN49LD) wkd on 144 MHz (complete only):

1998-06-04
0830 0900 MM0/DK5KK IO76SC 26 26 4 33 3 c
1998-07-23
0500 0535 OH1XT KP01UK 26 27 14 45 1 c
1998-07-25
0400 0425 OZ/DL5MEJ O75IG 27 26 11 21 3 c
1998-07-26

0500	0530	F6FHP	IN94TR	27	27	10	52	4 c
1998-07-27								
1638	1655	LA/DL1UU	JP40RW	27	27	6	7	1 c
1998-07-28								
0300	0311	I8MPO	JN70FP	27	27	4	28	3 c s
1998-08-01								
0200	0217	LY2SA	KO14LL	27	26	27	33	1 c
1998-08-02								
0300	0335	IK0BZY/9	JM76	26	27	9	24	1 c
1998-08-04								
0400	0455	F6DRO	JN03SM	28	27	18	97	3 c
1998-08-06								
0400	0416	EW5M	KO32DX	26	26	11	20	1 c
1998-08-09								
0600	0626	SM7TUG	JO76NJ	27	27	10	19	1 c
1998-08-10								
0600	0650	EA7/G4XEN	IM87XI	26	27	7	6	1 c
1998-08-12								
1344	1354	LA0BY/P	JP51NA	37	27	4	1	40 c s r *3
1700	1717	EW6AL	KO46KB	47	38	9	7	40 c r *3

Remarks: *1 His PA broken, he used 23W (QRB 1814 km); *2 2069km; *3 Blower failure during QSO before, PA-Transistor gets too hot, now only 10W! 73, Ralf. Thanks for report, Ralf.

DG3GAG (JN48NB) wkd on 144 MHz in SSB:

1998-11-16					
0400	OH1XT	KP01UK	27	27	cw
1115	EA3TI	JN11DO	37	37	
1127	EB4EUB	IN80DJ	37	37	
1221	EA2LU	IN92ET	37	37	
1316	G1WUU	IO80FK	37	37	
2343	SP2NJI	JO92MP	37	37	
2345	EW2RZ	KO33	59	59	
2359	LA5KO	JO59FH	59	59	
1998-11-17					
0008	SP2OFW	JN93AC	39	39	
0017	YT1VV	JN94US	39	39	
0021	OH1AYQ	KP12MA	37	37	
0027	EA5AGR	IM88WV	59	59	
0028	EA4BAS	IN80HL	59	59	
0031	F1JRD	JN13WO	59	59	
0046	EA4QQ	IN80	38	38	
0047	LY2WR	KO24OQ	59	59	
0049	LY2SA	KO14LL	38	38	
0050	SP7JSG	KO01BV	38	38	
0107	G4LOH	IO94IA	39	39	
0118	EA7GTF	IM78MA	37	37	
0120	IW0UIQ	JM49MD	38	38	
0121	F1CH	JN23VF	38	38	
0124	CT1CAD	IM67HD	38	38	
0132	EA5EZJ	IM99	38	38	
0138	EA1DAU	IN63AA	39	38	
0156	CT1EPS	IM59	39	39	
0156	EA9MH	IM85NG	59	59	
0216	S54AA	JN76	59	59	
0220	G1SWH	IO83QU	37	37	
0227	GM0BQM	IO85	37	37	
0234	LY2MW	KO24PQ	39	37	
0237	HA2SX	JN97	59	59	
0243	SM4VQP	JO79NB	38	38	
0259	OH2MFE	KP20	38	38	
0306	HA8UG	JN97IA	39	39	
0315	9A1CCY	JN75	38	38	
0328	UT5ER	KN78ER	59	59	
0337	SP2FAX	JO83VA	39	39	
0339	RA3DQ	KO85QU	59	59	
0353	EB4EZU	IM89VI	58	59	
0425	I8MPO	JN70FP	38	38	
0431	CT1FOH	IN50QO	39	39	
0449	LZ3BD	KN12QQ	39	39	
0459	I4RHP	JN54MA	39	39	
0500	I5UXJ	JN53MA	59	59	
0518	LY2FE	KO05OQ	38	38	
0521	UT5EC	KN78LM	39	39	
0527	9H1GB	JM75FU	38	38	
0529	YO4GJH	KN44	39	39	
0544	YO3JW	KN34CK	59	59	
0549	HA8CE	KN06EN	39	39	
0617	YU1WP	JN94OM	59	59	
0619	UR5LX	KO70WK	39	39	
0621	YO2DM	KN05PS	29	39	
0627	UA1WER	KO47EU	39	39	
0630	SP8NCJ	KO12NA	38	38	
0637	I7CSB	JN71QQ	39	39	
0642	I6VYV	JN72AA	59	59	
0643	I8DVJ	JN70FQ	59	59	
0644	9A1CG	JN75	59	59	
0647	OH7PI	KP32XG	59	59	
0702	LY1DQ	KO25RF	59	59	
0706	OH5LK	KP30OA	59	59	
0711	LA0BY/P	JO59IX	49	38	
0721	GM0GMD	IO86	38	38	
0736	YU1CW	KN03	59	59	
0740	SV5DX	KM36	59	59	
0741	SV0EC	KN10DM	59	59	
0751	S51UE	JN76	59	59	
0754	YU1EM	KN03	59	59	
0757	SM7UFW	JO76	52	52	
0803	G0NFD	IO92	56	56	
0808	LA8OW	JP65	59	59	
0817	F/G8MBI	JN04FT	59	59	
0827	F9FT	JN18	52	52	
0844	OZ6ABA	JO57DJ	55	55	
0857	YU1IO	KN04IQ	59	59	
0901	9A3PA	JN85EL	59	59	
0911	YO5BEY	KN16	59	59	
0917	GM4CXM	IO75TW	59	59	
0946	YU7EW	KN05HP	59	59	
0951	EA2AGZ	IN92ET	59	59	
1007	EA1BLA	IN53	59	59	
1016	EB1FIF	IN73	59	59	

The ODX was RA3DQ with 2100 km! Equipment: IC-746, 2x10 ele, 500W (GS31b).
I had luck, because I have had at 0000 UTC a CW-sked with LA5KO so I get up at 2330 and the RX was on 144.300 and WOOOOOW! I made nearly all CW-skeds in SSB. The only one missing was OH6KSR but we will make it in Geminids or so. I'm allways open for some MS-CW skeds. If you need my square please contact me. eMail : witt@swol.de (Homepage: http:\\www.qsl.net\dg3gag). Good DX and fine reflections. We meet us in MS or ES! 73, Erwin. Thanks for report, Erwin.

DL1EJA writes:

Hi VHF-DXer,
here is my raport of worked stations during the leonids in MS. There were also some QSO's in Tropo witch you don't find in this list. As you can see in this long list, it was the best 25h of DX on 2m in my life! There were some hours in the

morning of the 17.11. when there were so many signals all over europe like in a very big Es-opening on 6m. Signals from UT5EC (QRB2000km) fare over S9 who lasted sometimes longer than 5min. Thanks to all who called and workd me, and sorry to some om who had qrm of me. All in all it was a unforgettable event, and I hope everybody had so much fun like I still have on it. If you can help me with some locators I whould be very pleased. I know that some of them are not corect or incomplete. My QSL will leave via buro in the next weeks, if you like to send direct, my adress is:
Oliver Reinders, Jaegerweg 5, D-47546 Kalkar.
Equipment: IC720A, LT2S, MGF1302 (DJ9BV), driver 3x2C39BA, PA GS35B (700W out), antenna is 3/4 of an old 16 ele Tonna; so only 12 ele Yagi at 15m agl.

DL1EJA (JO31DS) wkd on 144 MHz:

1998-11-16

0931	YU7EW	KN05HP	27	27
2303	SV0EC	KN10CL	27	37
2305	S51TE	JN76BI	57	37
2307	HG9MDP	KN08DF	27	57
2307	I8MPO	JN70FP	57	59
2308	9A3PA	JN85EL	27	57
2312	SP7EXY	KO00QW	37	47
2324	HA8CE	KN06EN	57	58
2329	SP2FAX	JO83VA	57	59
2338	LY2SA	KO14LL	57	57
2339	9A1CCY	JN85OO	57	59
2341	SP4MPB	KO03GS	57	37
2342	S57TW	JN75EX	57	59
2350	YT1VV	JN94US	57	59
2354	IK0BZY	JN62GA	57	59

1998-11-17

0004	LY3MW	KO15	57	39
0021	HA6NQ	JN98WC	57	39
0021	YU7MS	KN05	57	37
0022	UT8EAE	KN58	27	27
0025	OH5LK	KP30ON	57	37
0029	ES2RJ	KO29JM	57	55
0031	LA3BO	JO59CD	37	27
0032	F1NSR	JN33JK	39	39
0033	EA3ADW	JN11CQ	59	57
0037	LY2MW	KO24	37	38
0037	LY2MR		37	57
0047	EA5EZJ	IM99RM	57	57
0047	F6HTJ	JN12	37	39
0051	IK1MTZ	JN35UB	57	59
0052	MM0AMW	IO75EJ	57	57
0110	9A1CAL	JN86EL	57	59
0115	IW0UIQ	JM49MD	57	59
0124	LY2WR	KO24OQ	57	59
0131	YU4AR	KN03	57	59
0132	SM3UZS	JP92FW	57	58
0132	OH1XT	KP01UK	57	59
0133	ES2RJ	KO29JM	57	59
0137	EA/DF9OX	IM88VP	57	59
0138	RU1AA	KP40XD	57	57
0139	OH1AYQ	KP12JB	59	59
0141	SM4VQP	JO79NB	59	59
0144	EA9AI	IM75IV	59	57
0152	YU1OS	KN04	57	37
0156	SM3KJH	JP92	59	59
0159	HA8UG	KN06	59	59
0205	S51AT	JN75GW	59	59
0208	9A4EW	JN75	59	55
0209	IW1AZY	JN35UB	59	59
0217	I5UXJ	JN53MA	57	59
0217	SV1OE	KM17VX	57	57
0219	HA6NQ	JN98WC	59	59
0223	IW2MYV	JN56	59	59
0225	IW3RCR	JN66	57	57
0234	YU4NC	JN94	57	59
0252	G8XVJ	IO83RJ	59	59
0253	LZ3BD	KN12QQ	37	37
0256	EA6FB	JM08PV	59	59
0257	S51AT	JN75GW	59	59
0302	EA7GTF	IM87CS	57	59
0303	F6KHM	IN98	57	55
0303	G1SMI	IO83PM	59	59
0303	EA1DDU	IN73FM	57	57
0304	EB4EZU	IM89VI	57	59
0306	EA9AI	IM75IV	59	59
0307	CT1CAD	IM67HD	59	59
0313	CT2GLU	IM59OS	57	57
0315	EA4BAS	IN80HL	59	59
0323	EA2LY	IN93JA	57	37
0334	9A3PA	JN85EL	57	39
0336	HA2SX	JN87VC	57	59
0343	YT4D	JN94	57	59
0344	LA5KO	JO48TU	57	59
0349	S51TE	JN76BI	59	59
0351	YU7VA	KN05DJ	57	57
0357	Z30B	KN01PA	599	599 cw
0359	UR5LX	KO70WK	57	57
0423	CT1FAK	IN50QO	57	57
0425	DL9MS	JO54WC	59	59
0426	EA2LY	IN93JA	27	37
0441	EA9MH	IM85NG	57	59
0445	CT1FOH	IN50RA	59	59
0446	F1EYB	JN23KK	57	57
0448	I5UXJ	JN53MA	59	59
0450	EA3TI	JN11DO	59	59
0458	UT5EC	KN78MM	57	59
0505	RW1AW	KP50EB	59	59
0512	UT5ER	KN78ER	57	59
0519	LY2FE	KO15	57	59
0533	SM5BSZ	JO89IJ	599	599 cw
0536	UT5ER	KN78ER	57	59
0540	LZ2FO	KN13KX	57	59
0544	YO3JW	KN34CK	57	59
0546	F1FIH	JN23GS	57	59
0552	IK0SMG	JN61FS	57	58
0553	I5WBE	JN53JR	59	59
0553	F1NSR	JN33JK	57	59
0554	LZ2FO	KN13KX	37	27
0555	LZ3BD	KN12RD	57	57
0556	OK1VSO	JN79	59	59
0601	YT1VV	JN94US	59	59
0603	LY2FE	KO15	59	59
0606	RU1AA	KP40XD	59	59
0609	9A2RD	JN65TF	59	59
0616	EA3DUY	JN12LD	57	57
0618	F/G8MBI	JN04FT	59	59
0655	LY1DQ	KO25RF	59	59
0716	EA5FKX	IM98	57	55

0721	EA2LU	IN92ET	57	59
0728	SM6EAN	JO57WQ	47	37
0746	SP8UFT	KO11KI	57	58
0800	I4RHP	JN54QL	57	59
0801	LZ1AG	KN22ID	57	59
0804	9H1CG	JM75	57	59
0817	F1JG	JN23HQ	59	59
0831	SM3COL	JP82	57	59
0832	OH8UV	KP34VJ	57	59
0832	OH8HDL	KP34VJ	57	57
0838	SM3JLA	JP93LH	57	59
0840	LA8OW	JP50	57	59
0847	YU1WP	JN94OM	57	59
0847	YU1IO	KN04IQ	59	59
0853	SP6SKA	yJO90	57	59
0903	SP2JXN	JO94GJ	57	59
0922	EA2AGZ	IN91DV	57	59
0946	YU7KB	JN94XX	57	59
1005	EA1CBY	IN52OH	57	55
1007	EA2AGZ	IN91DV	57	57
1015	EA1BLA	IN53UM	59	59
1034	IZ5EME	JN52NS	59	59

73 and see you in the next opening, Oliver. Thanks for report, Oliver.

DL1GI (JN38) wkd on 144 MHz:

1998-11-16				
2250	LY2WR		59	55
2339	LY2SA		59	59
2343	S51TE		59	59 tropo?
1998-11-17				
0015	SP4MPB		54	57
0024	LY2MW		55	55
0037	UT8AL		59	59
0037	OH5LK		37	59

Heard: EA7GTF, SP2OFW, UA3PTW. 73, Ralf.

Leonidensturmvon DL6BF

Ich habe mich von den TV-Vorhersagen nicht irritieren lassen und war, obwohl auch schon etwas verspätet, am 17. November ab 6.10 UTC dabei. Als ich den Transceiver einschaltete, dachte ich zuerst, ich hätte mich im KW-TRX vergriffen. Es herrschten in der Tat zeitweise Bedingungen wie auf dem 80-m-Band. Nach dem ersten Schock habe ich dann kräftig mitgemischt. Dabei habe ich nur den rufenden DX-Stationen geantwortet und nach neuen Locator-Feldern Ausschau gehalten. Dabei konnten es einige nicht lassen sich auf die heißen Anruf-QRGs (144.200 + 144.300) zu setzen und dabei hier in den Ballungsräumen mit ihren starken Signalen selbst zu rufen und damit diese Frequenzen für andere total zu blockieren.

Es war ganz Europa zu arbeiten. Ich habe ca. 80 DX-Stationen gehört und 51 aus insgesamt 19 Ländern gearbeitet. Dabei konnte ich 11 neue Locator-Felder erreichen. Mein ODX über 1954 km erreichte ich im QSO mit 9H1CG. Starke Stationen waren über längere Zeiträume zu hören. So war z. B. SM5BSZ etwas 1.5 bis 2 Stunden fast ohne Unterbrechung hörbar. Ebenfalls herausragend: LY2WR, YU7EW, I8MPO, I8TWK, EA2LU, I4XCC, SP2FAX, usw... Es war das gigantischste was ich in 20 Jahren VHF-DX erleben konnte und übertraf auch die beste ES-Öffnung. Ab etwa 8.30 UTC flaute es langsam ab. Nachmittags habe ich versucht einigen OM klarzumachen, daß der Meteoritensturm schon vorbei sei, was mir aber angesichts der TV-Ankündigungen für die Nacht zum 18. November schwerfiel. In der folgenden Nacht haben noch mehrere DXer auf das Großereignis gewartet - dabei einige die wußten, daß wir schon wieder am Fuße des Berges angekommen waren. Es ist unbegreiflich wie es zu diesen Falschmeldungen der Medien kommen konnte. Vielleicht sind sie besser beraten, in Zukunft Funkamateure zu befragen. Mir war jedenfalls klar, daß die Medien mit ihrem Vorhersagen wohl daneben liegen würden. Das Funktelegramm lag da mit seiner Ankündigung (Morgenstunden des 17. November) ganz richtig. Bravo!!!

DL6BF (JO32QI) wkf on 144 MHz:

1998-11-16					
1036	EA3TI	JN11	37	37	
1115	EA3TI	JN11	37	37	
1998-11-17					
0614	IK1MTZ	JN35	59	59	
0619	I8MPO	JN70FP	59	59	
0628	LZ1QI	KN12	59	59	
0630	SP5CCC	KO02	59	59	
0633	I7CSB	JN71	59	59	
0640	I1JTQ	JN35	57	59	
0642	IW6?		57	59	nc
0645	YO3JW	KN34	59	59	
0650	F/G8MBI	JN04	59	59	
0654	I4RHP	JN54	59	59	
0700	HA2SX	JN87	59	59	
0701	LY2LS	KO14	599	599	
0715	OH7PI	KP32	599	599	
0719	LY2WR	KO24	599	599	
0722	RX1AS	KO59	59	59	
0724	OH6KTL	KP02	59	59	
0745	I8TWK	JO70	59	59	
0749	IZ1BPN	JN35	59	59	
0752	9A1CAL	JN86	59	59	
0756	S51AT	JN75	59	59	
0759	9A3PA	JN85	59	59	
0800	YU7EW	KN05	59	59	
0801	OK2DL		59	59	
0810	LZ1LPR		59	59	
0831	IZ5EME	JN52	59	59	
0834	F1JG	JN23	59	59	
0840	SM3JLA	JP93	59	59	
0842	ES2RJ	KO29	59	59	
0855	EW1RZ	KO33	59	59	
0912	EA2AGZ	IN91	59	59	
0922	LA4XGA	JP33	59	59	
0935	YZ2SU?		59	59	
0946	YO7MS	KN05	59	59	
0946	YU7VA	KN05	57	57	

0948	9A3PA	JN85	59	59	
0951	9H1CG	JM75	57	59	
0957	OH1XT	KP01	59	57	
1001	LA6BK ?		59	59	
1024	EA3TI	JN11	59	59	
1026	YT4D	JN94	59	59	
1040	OH6KSR	KP22	57	57	
1119	SM3VAL		59	59	
1243	HG1DLZ	JN87	59	59	
1244	9A2DL	JN86	59	59	
1251	SM0MZS		59	59	
1998-11-18					
0351	RW1AW	KP50	59	59	
0829	IC8FAX	JN70	59	57	
0840	YU1IO	KN04	59	57	
0911	I6???		59	59	nc

Heard: SM3COL, SM5BSZ, 9A1AKV, LA0BY/p, SM4UOS, LA2SAA, RA1US, LZ2FO, S57TW, OH8HDL, OH6TI, F1FHI, OH6JBM, IW2BNA, HB9SNL, EW1XRK, YZ1SU, SM4VQP, IZ1XKD, YU7UB, OH1ET, SP7UFT, EA7CTF, RA3LBK, 9A2RD, EA4EUB, OH5LK, I4XCC and EA2LU. Equipment: FT-736, 2x12 ele DJ9BV, 220W. Thanks for report, Heinz.

DL8EBW (JO31NF) wkd on 144 MHz:

1998-08-28								
1915	1930	LA4XGA	JP33VC	-	-	1	3	0.5 test
1998-09-04								
0400	0441	LA4XGA	JP33VC	27	26	11	23	1.5 c *1
1998-09-11								
0400	0446	LA4XGA	JP33VC	26	26	10	11	4.0 c *1
1998-09-12								
0000	0051	OH6KSR	KP22VF	26	26	16	11	0.5 c
1998-09-18								
0400	0500	LA4XGA	JP33VC	27	26	18	36	1.0 nc*1*2
1998-09-25								
0400	0430	LA4XGA	JP33VC	27	26	14	21	1.5 c*1*2
1998-10-02								
0400	0420	LA4XGA	JP33VC	26	26	9	18	0.7 c *1
1998-10-16								
0400	0443	LA4XGA	JP33VC	26	26	13	38	0.7 c *1
1998-10-23								
0400	0435	LA4XGA	JP33VC	26	26	11	22	13 c *1
1998-11-06								
0500	0521	LA4XGA	JP33VC	26	27	5	11	0.8 c *1
1998-11-13								
0500	0521	LA4XGA	JP33VC	27	26	6	19	1.0 c *1
1998-11-16								
0100	0211	EA/DF9OX	IM88MX	26	27	12	28	1.0 c *1
2245	2252	LA4XGA	JP33VC	37	599	3	2	60 c *1
2320	2340	OH8HDL	KP34VJ	48	37	8	4	45 c
1998-11-17								
0028		I8MPO	JN70FP	59	59	1		120! c r s
0029		HA6NQ	JN98WA	39	59	1		c r s
0030		9A1CCY	JN85OO	39	59	1		45 c r s
0034		EA3ADW	JN11CQ	39	59	1		c r s
0038		SV0EC	KN10DM	39	59	1		c r s
0045		HA8UG	JN97SA	59	-	1		180 nc r s
0107		EA7GTF	IM87CS	39	49	1		60 c r s
0123		EA/DF9OX	IM88MX	39	38	1		180! c r s
0127		S51AT	JN75GW	59	57	1		c r s
0153		OH5LK	KP30	59	59	1		120! c r s
0156		SM3KJO	JP92DX	59	59	1		c r s
0234		OH8HDL	KP34VJ	59	59	1		c r s
0237		SM3UZS	JP92FW	59	59	1		c r s
0252		ES2RJ	KO29JM	59	59	1		120! c r s
0300	0330	RX3PX	KO84TD			2		1.0 nc
0336		RU1AA	KP40HK	599	59	1		c r ssb/cw
0352		IV3BBR	JN65	57	57	1		c r s
0353		UT8AL	KO61WP	39	59	1		c r s
0354		EA2LY	IN93AH	39	59	1		c r s
0357		RW1AW	KP50EB	39	59	1		c r s
0430		LY2WR	KO24OQ	399	59	1		c r ssb/cw
0435		OH6KSR	KP22VF	39	59	1		c r s
0439		SM5BSZ	JO89IJ	599	59	1		120 c r s/cw
0442		UT8AL	KO61WP	59	59	1		c r s
0446		LA5KO	JO59FH	39	39	1		c r s
0448		RX3PX	KO84SD	59	59	1		c r s
0502		RV3IG	KO87OT	59	59	1		c r s
0526		UT5ER	KN78ER	59	59	1		120! c r s
0545		LY2FE	KO05NQ	37	39	1		c r s
0548		UR5LX	KO70WK	37	37	1		c r s
0559		RA3DQT	KO85	39	59	1		c? r s
0635		LY2MW	KO24PQ	48	48	1		c r s
0636		LA3FV	JO59CC	59	59	1		c r s
0826		EA7BGR	IN80HI	59	59	1		c r s
0827		EA2LU	IN92ET	59	59	1		c r s
0840		SM3COL	JP82	48	59	1		c r s
0842		F/G8MBI	JN04FT	38	39	1		c r s
0843		F9HS	JN23AT	28	37	1		c r s
0845		EB5EEO	IM98	59	59	1		c r s
0858		EA3TI	JN11DO	49	59	1		c r s
0930		RX1AS	KO59FX	39	59	1		c r s
0948		9H1CG	JM75	37	38	1		c r s
0953		IK4WLV	JN54XK	59	59	1		c r s
1159		OH7PI	KP32XG	59	59	1		c r s
1200	1320	LA5TFA	JP99LQ	26	27	3	1	2.0 nc *3

Remarks: *1 Regular sked to Geir. *2 Aurora backscatter condx during the sked! *3 2142km.

NIL-Skedresults: 04.09. RA3DQ KO85 (2050km), 16.10. YU7KB JN94, 22.10. RA3DQ KO85 (2050km), 17.11. RA1QA KO99 (2234km), 17.11. RU3ZD KO81 (2119km), 18.11. UA1OLJ LP03 (2354km), 18.11. LA5TFA JP99 (2142km), 18.11. RK1NA KP71 (2019km), 18.11. UT2HN KN79 (1993km) and the "specials": 17.11. UA4AQL LO20 (2668km) - Double-Hopp-Test! 17.11. KO0U/1 FN42 (5792km) - Tripple-Hopp-Test! 18.11. UA3TCF LO26 (2497km) - Double-Hopp-Test!

Comments:

In Leonids I was outside on hill (abt. 300m asl.) with 750W and 12el (QTH-Loc was also JO31nf) 16/17.11.98 From my side of view it was the best ms-shower-event I have seen during my ms-work since 15 years. Of course it will be difficult to classificate such an event, but never I saw such long reflections over 10-12 hours! On my side the real event start near 23 UTC whilst in qso to my friend Geir, LA4XGA, I was able to complete in slow speed! From that time on, there was no real break up to around 10-12UT! Than the shower gone down horizont and did not show up for us at comming night. It's a pitty that shower ste down so early because I believe there was a chance to complete with LA5TFA the first time... Anyway - next year there will be a chance again - do not expact such an event like these year and do not believe any scientist anymore...hihi...

Equipment: FT-726R modified (CF300), 4CX250R (250W), 11 ele Flexa, preamp 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, Guy.

EA1ABZ (IN71QO) wkd on 144 MHz:

1998-05-23					
2200	DH3YAK	JO31RS	27	27	c
2300	IW1AZJ	JN35UB	26	26	c
1998-07-22					
0500	G1HWY	IO90UV	26	26	c
1998-07-23					
0300	PE1OGF	JO21QJ	26	27	c
1998-07-24					
0100	I8TWK	JN70GR	26	26	c
0400	IW1CHX	JN35VI	27	26	c
1998-07-25					
0600	PA0RDY	JO22KJ	26	27	c
0630	DL1EJA	JO31DS	26	27	c
1998-07-28					
2200	DF8IK	JO30JT	27	27	c
1998-08-07					
0600	DL2FDX	JO40LG	26	26	c
0745	DJ1OJ	JN58SE	26	27	c
1400	G3IMV	IO91OX	26	26	c
0500	G4ZHI	IO91KM	26	26	c
1998-08-08					
0400	DL5DTA	JO71	26	27	c
0600	G4AEP	IO91NP	26	27	c
0700	F8OP	JN26MM	26	27	c
0745	F6BSJ	JN26HP	26	27	c
1998-08-09					
0800	ON4KHG	JO10WK	27	26	c
0945	DJ3MY	JN58QD	27	27	c
1998-08-10					
0400	DL5YET	JO41EV	27	26	c
0500	G0KAS	IO91UI	27	26	c
0600	ON4AVJ	JO11UB	27	38	c
1998-08-11					
0500	ON1ALJ	JO10UU	26	26	c s
0006	PA2TAB	JO32GF	27	27	c
0900	DL5ME	JO52SD	27	26	c
1998-08-12					
0700	DL3YEL	JO41EV	27	26	c
2100	G1WPF	IO91RP	26	37	c s
1998-08-13					
0400	F5HRY	JN18EQ	27	26	c
1998-08-24					
1300	DL1ELY	JO31IO	27	26	c
1998-08-23					
0500	ON7UC	JO11ND	27	27	c

Equipment: 11 ele DL6WU, 300W, CB-trx + 144/28 transverter, preamp 0.5dB NF, 9A4GL MSDSP software.
73, Ramiro. eMail: ea1abz@santandersupernet.com - WWW: http://members.tripod.com/~EA1ABZ/index.html. Thanks for report, Ramiro.

I4XCC (JN63GV) wkd on 144 MHz:

1998-08-09					
0420	0500 EW5M	KO32DX	27	26	c
1998-08-10					
0315	0340 I/DL5MAE	JM87AX	26	26	c
0800	0830 DG5OAF	JO51EP	27	27	c
1125	1140 DA0ND	JO34XE	27	48	c
1998-08-11					
1000	1035 SM7TUG	JO76NJ	27	37	c
1720	1735 EW6AL	KO46KB	27	28	c
1998-08-12					
0400	SM3UZS	JP92FW	27	37	c *1
0600	0630 LA0BY/P	JP51NA	27	27	c
0830	0850 DL1SUZ	JO53UN	27	38	c
1100	1150 SM/DL1UU	JP62GM	27	26	c *2
1300	1345 OH6KSR	KP22VG	26	27	c *3
1500	1540 RZ1AWR	KO59DX	27	27	c *4
1998-08-13					
0900	0915 LZ1KJ	KN31CS	27	27	c
1220	1235 G0KPW	JO02OD	27	37	c

Remarks: *1 2153 km; *2 2073 km; *3 2218 km; *4 2150 km. In Perseids shower I still used the MSDSP program (9A4GL) with good results. If somebody want have info about this program pse give me a e-mail. Thanks for report, Claudio.

I8TWK (JN70GR) wkd on 144 MHz:

1998-08-04								
1505	1530 DG2BCP	JO43CE	26	37	8	3	1.5	c
1998-08-08								
1600	1700 EA3BB/p	JN02IB	26	27	13	2	4	c
1998-08-11								
1000	1100 UT5ER	KN78ER	26	27	9	4	0.7	c
2300	2325 DK5TE	JN47NX	26	27	6	1	0.5	c
1998-08-12								
0000	0008 OZ8ZS	JO55RT	27	27	1		8	c s
0031	G7RAU	IO90HQ	39	39	1		10	c s r
0035	G7RAU	IO90HQ	39	39	1		20	c s r
0400	0435 DL9OA	JO64EB	26	26	8	4	5	c
0500	0555 EB4FQP	IM68TV	26	26	3	4	3	c
0558	0605 DA0ND	JO34XP	26	28	12	2	6	c
1815	1825 LZ2KZ	KN33FS	27	27	8		12	c
2050	2120 OZ1DSK	JO44WX	27	37	15	3	14	c
1998-08-13								
0000	0013 F6FHP	IN94RT	27	27	3	2	5	c
0725	0810 OM7PY	JN98UH	28	27	4	2	3	c
1998-08-15								
1600	1630 DL2FDX/p	JO74AA	26	27	6	2	4	c

NC: EW5M, HB9FAP, Z32UC, SM5MIX, DL9YEY, G4LOH, DL1EEX, LX0EME, SV3/IW1AZJ. NIL: DF1CF, CQ1MS, OK1MAC (sri, I was not qrv for business) 5B4/EU1AA, F6KHM, OH1XT, OZ5AGJ, CT1FAK, YO7VS, ES2RJ/8, ES5PC, G8TIC/p, SM4VQP, SP3MFI, SM7TUG. Heard: PA6BN, G3WDG, DH9OY, DL5RE, HA5KDQ. Equipment: IC271 + MuTek frontend, 4CX250R (400W), 4218 CC, DTR DF7KF, OH5IY rev.4.3 + PC. 73, Carlo. Thanks for report, Carlo.

IW1AZJ (JN35UB) wkd on 144 MHz:

1998-03-01								
0600	0657 PA2DWH	JO22EB	26	26	8	12	1	c
1998-03-14								
2300	2342 SP2OFW	JO93AC	27	37	8	11	1	c
1998-03-21								
0500	0547 LY2MW	KO24PQ	26	26	7	5	1	c
1998-03-27								
0500	0552 HA7UL	JN97KK	26	26	6	14	1	c
1998-04-21								
2015	2050 YR0T	KN37TD	26	26	5	4	3	c r
1998-05-25								
0600	0700 DD0VF	JO61VB	26	26	3	8	2	c *1
1998-05-23								

2300 0000	EA1ABZ	IN71QO	26	26	4	10	3	c
1998-06-03								
0200 0300	SV9/DK5YA	KM35BD	36	36	11	20	3	c
1998-06-04								
0300 0400	MM/DG0CAL	IO76SC	27	26	4	6	4	c
1998-06-11								
2320 2340	SO3FS/1	JO84IA	27	26	6	8	3	c r
1998-06-30								
1900 2100	Z30B	KN01QA	26	26	5	12	2	c
1998-07-11								
0300 0400	PA6BN	JO13OF	26		2	13	1	nc
1998-07-12								
0300 0400	LA/DL2ARD	JP21KS	26			3		nc *2
1998-07-13								
0000 0100	LA/DL2ARD	JP21KS	26			4		nc
1998-07-14								
0500 0600	LA/DL2ARD	JP21KS	26			7		nc
1998-07-15								
2140 2225	LY2WR	KO24OL	27	26	7	22	2	c
1998-07-17								
0425 0435	SV/OE6IWG	KM16VG	37	27	2	9	6	c *3
2335 2355	SV/OE6IWG	KM06VU	27	27	9	11	2	c
1998-07-21								
1900 2000	TA1ZK/P	KM39AT	26		1	6	2	nc
1998-07-24								
2200 2325	ES0SM	KO08XK	26	27	9	35	6	c *4
1998-07-27								
0630 0650	LA/DL1UU	JP40RJ	26	27	7	6	3	c
1998-07-30								
0400 0430	SV/OE6IWG	KM07UG	27	27	5	12	3	c
1998-08-05								
2040 2132	DF8IK	JO30JT	27	26	10	6	2	c *5
1998-08-09								
0600 0635	EW6M	KO32DX	37	26	7	6	5	c
1998-08-10								
0400 0500	YZ7MON	JN93RV	26	26	2	13	4	nc s
1998-08-11								
1100 1145	ES2RJ/8	KO28KL	26	26	5	10	5	c
1998-08-12								
0200 0230	I/DL5MAE	JM87AX	26	27	8	8	3	c
1100 1140	EW6AL	KO46KB	28	27	3	5	20	c
1998-08-13								
0700 0730	LA0BY/P	JP51NA	27	27	5	6	3	c
2200 2300	Z30B/P	KN00OX	26	26	5	11	2	c

Remarks: *1 HB9CV ant! *2 Hrd many times in rnd: 12.Aug 0530-0730 8 burst and 17 ping with max S7; *3 Very fast indeed Walter: qso in two periods; *4 QSO in cw at 200 lpm! *5 643 km, very short distance.

Here are the details of my activity from Crete isl. The results was not so satisfying, due:

- KM15, Falassarna, was a very nice place for holiday (I enjoy a lot!) but with a poor take off beetween 340-0°; the major problem was a loss of AC mains during each night (24-26 august period) so I miss a lot of sked;
- KM25, Chania, was a better place for radio, but too much stations were not qrv!
- all sked with QRB >2000km were NIL, as predicted. I had qso with SV9/DF7KF over more than 2000 km: the DL group was above an hill with excellent take-off, 4xM2 ant, EME power and meteor activity like in June!

Then, for all OM who couldn't get any skeds: don t forget that mine wasn't an MS expeditions: I carry radio and short antenna (no back-up system or AC generator, ecc.) only to do some qso's. I was on holiday and my wife don't agree too much radio activity during (hi)! Anyway, I like too much the place and I hope to go there also next year.

SV9/IW1AZJ/P (KM15SL, Falassarna):

1998-08-24								
2330 0000	9A2AE	JN86	26		3			nc
0420 0500	IK3VZO	JN55	27	26	8	9	3	c ?
0500 0547	I8TWK	JN70	28	26	4	16	4	c
1998-08-26								
2200 2300	IK1PAG	JN35	36	26	19	36	5	nc

SV9/IW1AZJ/P (KM25AM, Chania):

1998-08-27								
0300 0400	LY2WR	KO24						nil *
0400 0500	OE6IWG	JN77	26	26	2	7	1	nc
0500 0542	EA6VQ	JM19	37	26	22	39	5	c
1998-08-29								
2100 2127	IW2BNA	JN45	27	26	7	20	2	c
2130 2200	IW1CHX	JN35	26	26	8	10	2	c
2200 2237	IZ5EME	JN52	27	26	14	24	4	c
2240 2300	IK5JWQ	JN52	26	26	10	10	3	c
1998-08-30								
0000 0022	IK2DDR	JN55	37	27	7	12	7	c
0100 0142	YU7MS	KN05	26	26	7	13	2	c
0200 0300	IV3HWT	JN65						nil
0400 0500	OE3MWS	JN88						nil
0500 0600	S57TW	JN75						nil
0600 0700	I5WBE	JN53						nil
0700 0737	YU7EW	KN05	26	26	10	22	5	c
2300 2352	YU1EXY	KN04	26	26	5	11	2	c
1998-08-31								
0000 0100	9A1EZA	JN86						nil
0100 0200	LY2MW	KO24						nil
0200 0300	DL5ME	JO52						nil *
0300 0332	IK3VZO	JN55	27	26	5	12	4	c
0400 0422	IZ1BPN	JN35	26		4	4	2	nc
0422 0512	DL5MCG	JN58	26	26	3	8	5	c
0500 0530	9A2AE	JN86						nil
1998-09-01								
0300 0332	DL1MAJ	JN68	26	27	14	13	3	c
0340 0402	DJ1OJ	JN58	36	26	3	2	5	c
0400 0437	DL4MEA	JN58	27	26	14	20	4	c
0500 0527	DJ1OJ	JN58	27	26	9	15	7	c

SV9/IW1AZJ/P (KM15SL, Falassarn):

1998-09-02								
0300 0327	DL5MAE	JN58	27	27	7	14	5	c
0330 0427	DJ3MY	JN58	38	27	15	17	6	c
0437 0502	HA1BC	JN97	27	27	6	18	3	c
1998-09-03								
0400 0437	IK1PAG	JN35	27	26	15	21	3	c
0500 0520	IZ1BPN	JN35	27		5	9	15	nc
0600 0612	I1JTQ	JN35	26	26	11	15	5	c
2100 2130	IZ1BPN	JN35	26		7	16	3	nc
2200 2232	DK0OG	JN68	37	26	6	20	5	c
1998-09-04								
0400 0442	IW5DAN	JN52	26	26	6	16	2	c
0500 0600	DL5DTA	JO61						nil *

Remarks: * Distance 2000km.

A special thanks to Walter IW2BNA for support during my activity and Diego, IK1MTZ for his DTR; who need QSL

pse only direct to my address: IW1AZJ Silvio Rua, Corso Benedetto Croce 33, 10135 Turin, Italy. 73 and good luck in Leonidi '98! Silvio. Thanks for report, Silvio.

LA0BY (JO59FW) wkd on 144 MHz:

1998-08-30

0500	0530	DF8IK	JO30	27	27	15	13	1	c

1998-11-17

2339	OM3LQ		59		n c r s
2339	HA9RC		59		n c r s

1998-11-18

0123	HA8MV		37	37	n c r s
0156	YU1IO	KN04IQ	59	59	c r s
0158	OM3RM	JN88PA	59	59	c r s
0253	LY2BAW	KO25KA	59	59	c r s

LA0BY/p (JO59IX) wkd on 144 MHz:

1998-11-17

0654	I4RHP	JN54	59	59	c r s
0656	IW1ESM	JN45FB	59	59	c r s
0659	I1JTQ	JN35UB	59	37	c r s
0659	9A2RD	JN65HF	59	59	c r s
0703	9A3PA	JN85EL	49	59	c r s
0704	DJ5BV	JO30	59	59	c r s
0705	DK5TE	JN47	59	59	c r s
0707	I3LGP	JN65	599	59	c r s
0708	I8MPO	JN70FP	59	59	c r s*1
0711	DG3GAG	JN48NB	49	38	c r s
0714	DL5GAC	JN47SS	49	49	c r s
0715	IV3HWT	JN65ST	59	59	c r s
0718	ON4KHG	JO10WK	59	59	c r s
0718	DL3NCR	JN48QX	59	59	c r s
0719	OK2DL	JN89	59	59	c r s
0721	PA0JMV	JO21PH	59	59	c r s
0722	OK1DDO	JO60JD	59	59	c r s
0723	SP9EWU	JO90NH	59	59	c r s
0723	DD0VF	JO61VB	59	59	c r s
0725	FA1UDY	JN16NX	59	59	c r s
0727	OK1FFD	JO60CF		59	n c r s
0728	F6DRO	JN03SM	47		n c r s
0729	DL9YEY	JO41GV	59	59	c r s
0729	DL2IAN	JN49	59	59	c r s
0732	F/G8MBI	JN04FT	59	59	c r s
0734	F1FIH	JN23GS	59	57	c r s
0735	HB9SUL	JN46LA	59	59	c r s
0736	I5WBE	JN53JR		59	n c r s
0742	IZ5EME	JN52NS	57		n c r s
0751	F1JG	JN23OP	59	59	c r s
0800	0830	UA4AQL	LO20QB		nil s*2
0805	RU1AA	KP40XD	59	57	c r s
0815	GM4CXM	IO75TW	59	59	c r s
0822	HG1DLZ	JO87HF	59	59	c r s
0830	0900	RA3DQ	KO85QU	59	59	n c s
0900	0930	UT4ER	KN78ER			nil s
0917	F6FMB	JN24EL	59	59	c r s
0918	PE1GNP	JO31IX	59	59	c r s
0929	DL2OM	JO30SN	59	59	c r s
0930	G7RAU	IO90IR	59	59	c r s
0930	G4KEQ	JO01	59	59	n c r s
0947	YO7VS	KN14VH	599	59	c r s
0958	IK4WLV	JN54XK	59	59	c r s
1001	F1FIH	JN23GS	59	59	c r s
1001	IW1AZJ	JN35UB	59	59	c r s
1003	IK2EAE	JN45LL	55	37	c r s
1005	F6FHP	IN94	59	59	c r s
1035	F6CBH	JN19BH	59	59	c r s
1044	G4ASR	IO81MX	59	58	c r s
1056	F6EAM	JN19AN	59	59	c r s
1102	DL5DTA	JN61SD	59	59	c r s
1102	OK1FFD	JO60CF	59	59	c r s
1104	DF1IAZ	JN49LD	59	-	n c r s
1106	S55AW	JN75DS	59	59	n c r s
1111	DF9PX	JN49HU	59	59	c r s
1111	DK5WO	JO30	59	59	c r s
1112	DH4PAA	JN49CW	59	59	c r s
1119	DF8IK	JO30JT	59	59	c r s
1119	IK1GPG		59	59	c r s
1120	DJ9EV		59	59	c r s
1120	DF1CF	JN57FP	59	59	c r s
1121	IW1BCV	JN44FS	59	39	c r s
1122	DL3BQA	JO73	59	59	c r s
1123	S55AW	JN75DS	59	59	c r s
1130	1200	IW0UIQ	JM49MD			nil s
1146	YU7EW	KN05HP	59	59	c r s
1158	IZ5EME	JN52NS	59	59	c r s
1158	I5WBE	JN53JR	59	59	c r s
1159	IK5AMB		59	59	c r s
1200	1230	I8TWK	JN70GR		1	n c s
1242	IZ4AIK	JN63HW	59	59	c r s
1250	RX1AS	KO59FX	59	59	c r s
1251	DG1VL	JO61VC	59	59	c r s
1300	1330	EA2AGZ	IN91DV		1	n c s

Remarks: *1 2176km; *2 2435km. Phantastic experience working in this Leonid shower. Unfortunately I got up too late and missed the best part. Being at times like Sporadic-E, I found it very inefficient running skeds. All skeds were NIL or NC. I had high sun noise and other QRN towards East, so I missed all the UA stn - too bad! Will promise to take no sked for 1999 and be on early enough, hi. Thank for report, Stefan.

OE6IWG (JN77PK) wkd on 144 MHz:

1998-11-16

2300	2330	OH2BNH	KP20LG	27	27	10	m	40	c
2335	SM3/7..			37	37				c r s *1
2338	LY3ED	KO14UX	59	59					c r s
2339	OH5LK	KP30ON	59	59					c r s
2344	SP2OFW	JO93AC	37	37					c r s

1998-11-17

0003	SP7EXY	JO90	37	36	c r s
0004	LY2SA	KO14LL	37	37	c r s
0008	SM7TZK	JO77ML	59	59	c r s
0009	EA3ADW	JN11	59	37	c r s
0011	SP4MPB	KO03	37	37	c r s
0020	UT8AL	KO61WP	27	37	c r s
0022	SP2FAX	JO83VA	37	59	c r s
0044	F6HTJ	JN12KQ	37	39	c r s
0104	EA5EZJ	IM98VX	59	59	c r s
0145	G4LOH	IO94IA	37	37	c r s

Sleep, sleep...I was too tired from the day before.

0518	UT5EC	KN78MN	37	59	c r s
0535	OH1XT	KP01UK	37	37	c r s
0549	YT4D	JN94BR	59	59	c r s

...and THEN I must go to qrl...arrghhhhh... Normally I have free time at this day, but one was ill, so I must hold his times in the school :-(Remarks: *1 Sri, I lost your complete call, was too confused, found NO pen etc... See you later on the air. 73, Walter. Thanks for report, Walter.

ON1AEN (JO10UU) wkd on 144 MHz:

1998-08-10

1800	1900	EA4AMX	IM89AT		2	5	3	n c s*1
2000	2100	SP4MPB	KO03					*1
2100	2200	EA2AGZ	JN91DV	26	2	8	5	*1
2300	2342	SM4VQP	JO79NB	37	27	11	19	4 c s

1998-08-11								
0533	0600	EA1ABZ	IN71QO	27	26	16	7	7	nc s
0600	0700	OM7JG	JN98UI	26	26	6	23	3	nc s
1300	1400	F1JRD	JN13WO						*1
1400	1500	OE3MWS	JN88DC						*1
2100	2200	IV3HWT	JN65ST						nil
2300	2400	SM5DRV	JO77MV			1	11	1	nc s
1998-08-12									
0627	0700	OH6KTL	KP02OJ	26		3	3	3	nc s t
0700	0800	S51MQ	JN75NT	37	27	4	5	5	c? s qrm
1100	1126	OH8UV	KP34VJ			1	2	0.5	nc s
1242		SM2CKR	KP03DQ?	38	38	1			c s r
1438		LA0BY/P	JP51NA	39	38	1			c s r
1500	1502	OH6KSR	KP22VG	28	27	4	4	10	c s r
1800	1815	SP4MPB	KO03GS	37	27	5	3	5	c s r
2100	2126	SM3MXR	JP80GR	37	27	16	13	10	c s r
1998-08-13									
0000	0100	OH8UV	KP34VJ	37	27	7	26	22	c? s *2
0100	0108	S51MQ	JN75NT	37	26	3	5	17	c s r
0300	0400	Z32UC	KN11CR						*3
0733		HA3UU	JN96JO	39	27	1			c s r
0733		YU1IW		39	39	1			c s r

Remarks: *1 Problems with generator; *2 22" burst no break at 00:06:50; *3 Not qrv - sleeping.

ON1ALJ (JO10UU) wkd on 144 MHz:

1998-08-10									
1900	2000	EA7GTF	IM87CS						*1
2343	2400	SM4VQP	JO79NB	37	27	2	17	3	nc s te
1998-08-11									
0500	0533	EA1ABZ	IN71QO	26	26	9	23	10	c s
0700	0800	YZ7MON	JN93RV						nil
0900	1000	9A2RD	JN65TF						nil
1000	1100	EW5M	KO32DX	26	26	8	13	2	c s
1600	1700	YU7KB	JN94XX						nc s
2000	2100	9A2AE	JN86HF						nil
2200	2300	EA3KU	JN00JV						nil
1998-08-12									
0000	0038	SM3UZS	JP92FW	27	27	4	12	15	c s
0400	0420	LY2MW	KO24PQ	26	26	6	7	12	c s
0530	0603	OH6KTL	KP02OJ	26	26	7	9	5	c s
1441	1445	LA0BY/P	JP51NA	39	37				c s r
1600	1609	EA6FB	JM08PW	37	37	5	12	5	c s
1832	1840	SP4MPB	KO03GS	27	27	3	8	15	c s t
1856		SM3JLA	JP93LH	39	39	1			c s r
2100	2200	Z32UC	KN11CR						nil *2
2126	2141	SM3MXR	JP80GR	27	27	7	11	8	c s te
2200	2212	OH1XT	KP01UK	27	26	3	12	7	c s
2300	2400	S57MSU	JN76EF						nil
1998-08-13									
0108		S51MQ	JN75NT	37	37	1			c s r
0208	0254	S57MSU	JN76EF	27	27	4	17	2	c s
0552		HA3UU	JN96JO	37	37	1			c s r
0604	0640	S53VV	JN65UM	27	27	7	21	3	c s *3
0700	0713	YU7KB	JN94XX	27	27	3	8	8	c s

Remarks: *1 Problems with generator; *2 Tailend after OZ5AGJ, received good burst from OZ5AGJ; *3 Heard 2 periods on tropo (31-41). Equipment (ON1ALJ and ON1AEN): TS-790E, 3CX800, MGF-1302, 4x10 ele DJ9BV. QTH: Elst, JO10UU (contest QTH ON6ZT - OT8M). We hope to meet you during next major showers. Thanks for reports.

The big spectacle named "Leonids"

When I turned on my transceiver on November, 17th 1998 at 0300 UTC I couldn't believe my ears. My antenna was in the direction east and I heard EA3TI with 59. Direction EA signal was 53, so best QTF 90. MUF was allmost above 144 MHz during several minutes. Sometimes it was like Sporadic-E. This was the best shower during my 20 years of VHF DXing, hi.

ON1IM (JO11UB) wkd on 144 MHz:

1998-11-17				
0323	EA3TI	59	59	90°
0327	EA6FB	27	27	90°
0330	OH5LK	59	59	90°
0335	HA8UG	55	59	90°
0340	9A1CCY	59	59	90°
0347	EA7GTF	55	59	90°
0354	YT1VV	55	59	90°
0355	9A1CAL	57	59	90°
0415	RW1AW	55	59	90°
0418	SP7TXY	55	59	90°
0420	S57TW	56	59	90°
0424	I5UXJ	55	59	90°
0438	IW5DAN	39	59	
0519	EA4AQQ	55	59	*1
0523	CT1FOH	55	55	90°
0526	IK1MTZ	55	59	
0537	LZ2FO	37	39	
0540	I8MPO	55	59	
0544	HA8CE	59	59	
0603	S57TW	59	59	
0624	HA2SX	59	59	
0626	YU1WP	59	59	
0623	SP4FAX	59	59	
0638	HA8UG	59	59	*3
0638	IK1MTZ	59	59	*3
0638	YT4D	59	59	*3
0641	I7CSB	59	59	*3
0641	9A1CAL	59	59	*3
0642	I7RHP	59	59	*3
0647	9A3PA	59	59	
0647	I8TWK	59	59	
0658	LY1DO	59	59	
0704	SP5CCC	59	59	
0718	SP4MPB	59	59	
0733	IV3HWT	59	59	
0737	9A3PA	59	59	
0741	RU1CW	56	56	
0752	ES2RJ	59	59	
0759	9A3PA	59	59	
0810	IZ5EME	59	59	
0814	IW1AZJ	59	59	
0823	SM3JLA	59	59	
0852	IV3HWT	59	59	
0854	I8TWK	59	59	
0913	EA2LU	59	59	
1021	YP5BEU	59	59	
1139	IZ5EME	59	59	
1213	IK5CQV	59	59	
1220	OK2PVF	59	59	

Remarks: *1 Difficult to find new stations; *3 Very long burst. The antenna direction east has given the best results. 73, Dirk. Thanks for report, Dirk.

PA3BIY (JO22EB) wkd on 144MHz:

1998-01-02					
2047	2200	HA5CRX	JN97	26	27	nc
1998-01-03					

1152	1200	OH0JFB	JP90	37	37		11	c r
1345	1405	LA1K	JP53	38	39		10	c r
1700	1800	UA3MHJ	KO87	26				nc *11
1998-01-04								
0000	0052	Z32UC		27	26	15	9	8 c
1998-01-06								
1800	1900	GW0KZG/mm	IN42	26	26	9	7	c
1998-01-20								
2100	2157	HA5CRX	JN97	26	38	5	18	1.5 c
1998-01-22								
2130	2230	HA5CRX	JN97	26	26			nc
1998-01-23								
2100	2152	HA5CRX	JN97	26	26	12	11	1 c
2200	2235	EU6MS	KO45	27	28	22	17	2 c *1
1998-01-26								
2100	2200	HA5CRX	JN97	26	26			nc
1998-01-30								
2200	2227	EU6MS	KO45	27	28	11	20	1 c *1
1998-02-04								
2000	2100	HA5CRX	JN97	26	26	14	8	1 c *2
1998-02-06								
0500	0545	HA5CRX	JN97	26	26			nc *2
1998-02-06								
2200	2235	EU6MS	KO45	26	27	19	21	2 c *1
1998-02-13								
2200	2240	EU6MS	KO45	28	26	16	19	3 c *1
1998-02-20								
2200	2255	EU6MS	KO45	26	27	22	27	2.5 c *1
1998-02-27								
2200	2246	EU6MS	KO45	27	27	30	22	1 c *1
1998-03-06								
2200	2225	EU6MS	KO45	28	28	10	12	1.5 c *1 fb!
1998-03-20								
2200	2220	EU6MS	KO45	27	27	8	7	2 c *1
1998-03-27								
2200	2232	EU6MS	KO45	28	28	9	25	2 c *1
1998-04-03								
2100	2200	EU6MS	KO45	28	28			nc *1
1998-04-10								
2100	2200	EU6MS	KO45	26	28			c *1
1998-04-13								
0600	0652	IK1PAG	JN35	26	26	19	31	2 c
1998-04-17								
2100	2120	EU6MS	KO45	28	28	6	7	1 c *1
1998-04-20								
2202	2228	YR0T	KN38	26	26	10	2	c r
1998-04-22								
0800	0830	YP0T	KN37	26	26	10	8	c
1998-04-24								
2100	2200	EU6MS	KO45	27	28	12	22	1.5 nc *1 *3
2210	2300	LY2WR	KO24	27	27	m	m	3 c
1998-04-29								
1752	1838	GW0KZG/mm	IO26	26	27	15	14	1 c
1998-04-30								
0530	0552	GW0KZG/mm	IO15	37	27	23	21	13 c
1998-05-01								
2100	2118	EU6MS	KO45	27	28	13	12	1 c *1
1998-05-05								
0510	0534	GW0KZG/mm	IO32	27	26	m	m	46 c
1840	1956	GW0KZG/mm	IO13	27	26	12	12	12 c
1998-05-08								
2100	2142	EU6MS	KO45	27	27	15	12	4 c *1
1998-05-09								
0515	0537	GW0KZG/mm	IO14	27	26	21	28	c
1998-05-15								
2100	2145	EU6MS	KO45	26	26	9	24	10 c *1

1998-05-21								
2000	2100	HA5CRX	JN97	26	26	6	3	c
1998-05-22								
2100	2115	EU6MS	KO45	26	28	10	16	c *1
1998-05-24								
1332	1357	GW0KZG/mm	IP92	27	27	13	24	c r
1998-05-26								
0515	0524	GW0KZG/mm	IP81	27	27	15	8	12 c
1998-05-29								
2100	2140	EU6MS	KO45	27	27	9	11	1 c *1
1998-06-02								
0537	0557	GW0KZG/mm	IP70	27	27	m	m	1 c
1998-06-03								
0545	0611	GW0KZG/mm	IO69	28	27	19	27	2 c
1998-06-04								
1830	1857	LY2WR	KO24	26	26			c
1998-06-05								
2100	2130	EU6MS	KO45	27	28	10	12	1 c *1
1998-06-07								
0400	0500	UT5ER/A	KN69	26		1	4	nc
1730	1815	LY2WR	KO24	27	27	24	17	10 c
1998-06-09								
1412	1510	OH8E	KP45	27	26	6		5 c r *4
1998-06-10								
0435	0455	LY2WR	KO24	28	39	m	m	4 c r
2050	2150	GW0KZG/mm	IO47	27	26	20	15	c r
1998-06-11								
0528	0537	RU1A	KO48	27	28	m	m	8 c r
1998-06-13								
0500	0522	EW6AZ	KO44	27	26	14	6	6 c
1998-06-17								
0300	0330	OH1XT	KP01	26	27	19	m	2 c
1998-06-18-								
0700	0720	OH1XT	KP01	27	27	10		1 c
1998-06-26								
2100	2137	EU6MS	KO45	28	27	14	6	1.5 c *1
1998-07-03								
2100	2140	EU6MS	KO45	28	27	m	m	1.5 c *1
2140	2205	LY2SA	KO14	26	37	m	m	2 c
1998-08-07								
2100	2125	EU6MS	KO45	27	28	9	15	3 c *1
1998-08-08								
2100	2200	OM7JG		26		1		nc
0005	0020	EW5M	KO32	27	26	7	5	2 c r *5
1998-08-09								
1215		9A2RD		27	27	1		60 c r s *6
1998-08-10								
0455	0510	EW6AL	KO46	28	28	6	6	13 c r *7
2100	2200	IV3NDC	JN65	26	26			c
1998-08-11								
0110	0150	TK5JJ	JN41	27	28			2 c
1447	1557	OH8HDL	KP34	27	27			8 nc
2100	2200	IZ1BPN	JN35	27				nc
1998-08-12								
0055	0200	I/DL5MAE	JM87	27		1	5	3 nc *8
0850	0902	SM6CMU/3	JP74	27	27	m	m	6 c r
1436		SM3UZS		39	49	1		c r s
1438		SM2EKM	KP05	37	37	1		c r s
1457		SM2CKR		37	38	1		c r s
2100	2200	SV8CS	KM07	26				nc *9
2200	2300	UA3PTW	KO93	26		1	3	nc *10
2347	0002	RU1AA		27	27	m	m	10 c r
1998-08-13								
1400	1435	OH8HDL	KP34	38	37			10 c
2127	2205	S51MQ	JN75	27	27	15	m	3 c
2220	2305	LY2WR	KO24	28	39	m	m	15 c

1998-08-14

2100	2130	EU6MS	KO45	37	27	17	13	8	c *1

1998-08-21

2100	2130	EU6MS	KO45	28	28	14	20	5	c *1

1998-08-28

2100	2130	EU6MS	KO45	27	28	13	11	1.5	c *1

Remarks: *1 Regular skeds every friday evening. We often exchange regards after completion of a QSO like: "GN 73's". In 1 instance I needed Vic to know that he should call LY2WR the next day, so I send "PSE CALL LY2WR". He received it and did so the next day. In other words, with 2000lpm you can exchange a lot if info, and it is really fun to exchange greetings after the final rogers have been send. *2 In spring the conditions seem to be better in the evenings compared to the mornings. This complies with what has been published in literature, but it is nice to experience too! *3 EU6MS had problems with his receiver; *4 Random! 2035KM! *5 *7 UFB Operation from the Polish and Belarus groups again! many tnx guys! *6 I was tuning the band when I heard 9A2RD calling PE1OGF in sked. I called after OGF had finished and made QSO in the same big burst! *8 1 Gd burst at 00.56z with both calls, no more later. Tnx fer try, Wolfgang! *9 I heard a burst, but it turned out to be from soemone else... *10 2248km. Got part of my call; *11 2150km.

Good dx and I hope to catch you on MS, Peter. eMail pa3biy@dds.nl - PR: PA3BIY@PI8HGL.#ZH1.NL.EU

SV0EC (KN10CJ) wkd on 144 MHz:

1998-11-16

2304	DL1EJA	59	59	c
2324	LY2ED	27	27	c
2335	IK0BZY	27	27	c
2340	SP2FAX	27	27	c
2353	DG0JF/p	27	27	c

1998-11-17

0006	DH3SMS	59	59	c
0007	DL5GAC	27	27	c
0008	DB9SQ	27	27	c
0009	IK2EAE	27	27	c
0018	S57TW	59	59	c
0026	DL1EAP	59	59	c
0033	OZ8ZS	27	27	c
0037	DL8EBW	59	59	c
0037	DH3YAK	59	59	c
0038	DL1KDA	59	59	c
0039	SP9EWU	59	59	c
0043	EA2ADW	59	59	c
0045	SP4MPB	59	59	c
0124	DF9UX	27	27	c
0137	SP2OFW	59	59	c
0150	9A1CCY	59	59	c
0158	SP2NJI	59	59	c
0208	OZ6OL	59	59	c
0213	SP9EWO	59	59	c
0215	I8MPO	59	59	c
0216	I1JTQ	59	59	c
0216	IK1MTZ	59	59	c
0217	YU7EW	59	59	c
0218	IW1AZJ	59	59	c
0303	EA3TI	27	27	c
0317	DL2ARD	59	59	c
0318	DL1IAN	59	59	c
0319	DL3IAE	59	59	c
0322	YT1VV	59	59	c
0324	IK1EGC	59	59	c
0346	IW5DAN	59	59	c
0709	DK5TE	59	59	c
0725	DJ9EV	59	59	c
0734	PA0RBV	59	59	c
0741	DJ3TF	26	26	c
0742	DG3GAG	59	59	c
0758	DF9RJ	59	59	c
0802	PE1BVM	59	59	c
0802	DL8GP	59	59	c
0803	DK3BU	59	59	c
0803	PA0JMV	59	59	c
0807	F5HRY	59	59	c
0815	DL5MCG	59	59	c
0816	DF1IAZ	59	59	c
0834	PA0ZM	59	59	c
0840	OK2DL	59	59	c
0851	S54AA	59	59	c
0859	F9FT	59	59	c
0922	F1CH	59	59	c
1009	F6DWG/p	59	59	c

This list is not complete! 73, Hardy. Address: Hardy Stein, Vas. Georgiou 58, GR-58300 Kria - Vrissi. Thanks for report, Hardy.

UR5LX (KO70WK) wkd on 144 MHz in SSB:

1998-05-02

0400	0430	LY2SA	27	26	4	6	c

1998-08-12

1430	1510	DA0ND	27	27	5	1	c
2000	2035	DL8EBW	26	37	4	1	c
2035	2055	DK5DQ	27	38	5		c
2110	2200	DH3YAK	27	28	3		c

1998-08-13

2030	2200	LA0BY/P	27	38	4	4	c

During the Leonids:

1998-11-17

0359	OH5LK	59	59	
0400	PA3DOL	59	59	
0401	DL1EJA	57	57	
0401	LY2SA	59	59	
0402	SP2OFW	59	59	
0402	SP9EWU	57	57	
0402	OK1VSO	59	59	
0403	DL1KDA	55	57	
0403	PA0ZM	55	55	
0405	LY3ED	59	59	
0406	HB9FAP	57	57	
0409	9A3PA	59	59	
0413	S57TW	59	59	
0414	DD0VF	59	59	
0415	DG5HV	59	59	
0415	SP9EWO	59	59	
0416	9A1CCY	59	59	
0419	DL9MS	59	59	
0420	OK1CDJ	59	59	
0421	I4RHP	59	59	
0421	RV3IG	59	59	
0424	SP3SFN	59	59	
0425	9A1CAL	59	59	
0425	9A3PA	59	27	
0426	DL5ME	57	57	
0427	HA8CE	59	59	
0427	DJ5MS	59	59	
0428	SP9MRT	59	59	
0434	SP2FAX	57	58	
0435	OZ5AJ	55	55	
0437	OK1UAK	59	59	
0459	UT5DL	599	59	cw/ssb
0457	DL2ARD	59	59	

0457	DL9MS	59	59	
0459	DL1EAP	59	59	
0459	OZ1CTZ	59	59	
0501	RA3DQT	59	59	
0502	DK5KK	59	59	
0503	HB9FAP	59	37	
0504	HB9SUL	59	59	
0506	9A1RKV	59	58	
0510	YT1VV	59	59	
0517	UA3PTW	599	59	cw/ssb
0513	OK1FFD	59	59	
0514	RA3YO	59	59	
0516	HB9SUL	59	59	
0520	SM5BSZ	599	59	cw/ssb
0523	9A3TU	57	58	
0523	DK1KO	59	59	
0527	LY2FE	58	58	
0530	SP5CCC	59	48	
0538	DL1KDA	59	59	
0538	DL5MAE	59	59	
0545	DL7FF	59	59	
0547	DL7UKW	59	59	
0547	PE1PJG	59	59	
0548	DJ4SO	59	59	
0548	OH1XT	59	59	
0549	DL8EBW	58	37	
0551	RA3DQ	59	59	
0606	DL6DQI	59	59	
0608	HA5CTR	59	59	
0610	LY2MW	59	59	
0620	DG3GAG	59	59	
0622	UT5ER	59	59	
0627	OZ6ABO	57	55	
0628	PA0RDY	59	59	
0629	PA3FOC	57	58	
0629	DF9PX	59	59	
0636	DH3YAK	59	37	
0636	HA3QX	57	59	
0642	DL6YCY	57	55	
0641	DJ9EV	59	59	
0653	HA8UG	57	55	
0654	YO2IS	599	59	cw/ssb
0704	HG1DLZ	59	59	
0705	DL1SUZ	55	55	
0706	DL1HTT	55	59	
0722	HA8CL	59	59	
0724	YU1WP	59	59	
0727	YT4D	59	59	
0735	OM3CQF	59	59	
0739	HA2SX	59	59	
0740	IV3HWT	59	59	
0744	UA3MBJ	59	59	
0752	RX1AS	59	59	
0752	RU1AA	59	59	
0753	RW1AW	59	59	
0753	LY2FE	59	59	
0805	DG0KW	59	59	
0813	SP3FAX	59	59	
0816	OE3OKS	59	59	
0816	SP7TEC	59	59	
0817	SP8NCJ	59	59	
0818	DL3BRT	57	59	
0852	LY2WR	59	59	
0854	HB9QQ	59	27	
0856	OK2DL	59	59	
0907	SP1FO	55	59	
0908	DK3BU	59	59	
0910	YO3JW	57	58	
2343	LZ1ZP	55	58	

Equipment: FT-736, 2xGU84B with 2kW, ant dish 10,7m. 73, Sergej. Thanks for report, Sergej.

YU7EW (KN05HP) wkd on 144 MHz (ssb only):

1998-11-16					
0930	9A2RD	JO65TF	27	27	549km *1
0930	PE1PJG	JO33NA	27	27	1275 km
0931	DK8ZJ	JO30IX	27	27	1187 km
0931	PE1KLQ	JO33JF	27	27	1307 km
0931	PA2CHR	JO22XA	27	59	1285 km
0931	DL1EJA	JO30DS	27	27	1252 km
0932	DG6JF/p	JO33QN	27	27	1297 km
1006	OZ5AGJ	JO56DF	27	27	1380 km
1010	EA3TI	JN11DO	27	27	1499 km *2
1055	SM7TZX	JO67??	37	37	
1104	OH6KTL	KP02OJ	59	59	1865 km
2225	LY2WR	KO24OQ	59	59	1057 km
2227	ES2NA	KO29??	59	59	
2243	F1FLV	JN18AT	59	59	1446 km
2245	ON4AMX	JO20KV	37	37	1303 km
2246	HB9DFG	JN37SM	37	37	1023 km
2251	SP4MPB	KO03GS	37	37	904 km
2300	I8MPO	JN70FP	27	27	748 km
2305	EA3DJL	JN11CP	59	59	1546 km
2306	EA3ADW	JN11CQ	39	39	1545 km
2306	DL1EAP	JO31IK	59	59	1209 km
2307	EA5AGR	IM88VW	59	59	2016 km
2312	SM7FMX	JO65KN	59	59	1230 km
2316	OH5LK	KP30ON	59	59	1716 km
2323	SM3KJO	JP93DX	37	37	2046 km
2329	EW1RZ	KO33SV	59	59	1046 km
2331	UA3PTW	KO93BS	59	59	1545 km
2326	OZ6OL	JO65??	59	55	
2340	G8NWM	IO92TT	59	59	1716 km
2343	G8XVJ	IO83RJ	39	39	1873 km
2354	SM3UZS	JP92EV	27	27	1925 km
2357	OZ8ZS	JO55RT	37	37	1300 km
1998-11-17					
0007	SP2OFW	JO93AC	59	59	850 km
0021	PA3DOL	JO22MT	59	59	1382 km
0021	DJ2QV	JO41EV	59	59	1135 km
0022	DL3YEL	JO41EV	59	59	1135 km
0023	DF9QT	JO30DR	59	59	1203 km
0025	PA0FHG		59	27	
0037	PE1LWT	JO22VA	59	59	1295 km
0045	PE1OGF	JO21QJ	59	59	1291 km
0047	PA2DWH	JO22GD	59	27	1378 km
0059	DL3IAE	JN49DE	59	59	1009 km
0100	IK1LGV	JN44JK	59	59	941 km
0011	RA3QTT	LO01GQ	59	59	1606 km
0017	UT8DL	KO65	59	59	
0020	UT8AL	KO61WP	59	59	1180 km
0046	RV3IG	KO87OT	59	59	1765 km
0055	RV3ZR	KO80CL	59	59	1276 km
0208	DJ5BV	JO30KI	58	58	1149 km
0216	SV0EC	KN10CJ	59	59	597 km
0037	OH2MFE	KP20JE	37	37	1642 km
0243	LA3BO	JO59CD	59	59	1657 km
0249	LA5KO	JO59FH	59	59	1665 km
0259	SM4VQP	JO78OX	59	59	1528 km
0305	PA3HDD	JO22FE	59	59	1385 km
0306	EA6FB	JM08PW	57	57	1753 km
0310	DG5OAF	JO51EP	59	59	1006 km
0311	DL9MS	JO54WC	59	59	1130 km

0311	DL1KDA	JO30FQ	59	59	1191 km
0312	DG0EK	JO60LT	59	59	808 km
0327	PA0JMV	JO21PL	59	59	1300 km
0327	PA3DYS		59	59	
0731	UT5EC	KN78MN	59	59	1139 km
0754	DL5AAJ	JO52HA	59	59	1019 km
0757	ON4PS	JO20KQ	59	59	1295 km
0758	ON1ALJ	JO10VV	59	59	1375 km
0759	G4CLA	IO92LJ	59	59	1744 km
0759	G4VPD	IO92BJ	59	59	1799 km
0759	DL6BF	JO32QI	59	59	1220 km
0800	G8IZY	IO91VC	59	59	1651 km
0801	DL3NCR	JN48QX	59	59	926 km
0802	DF1IAZ	JN49LD	59	59	961 km
0804	OZ5AGJ	JO56DF	59	59	1380 km
0815	DK5DQ	JO31PH	59	59	1167 km
0815	PA3FOC	JO21FW	59	59	1373 km
0819	LY2SA	KO14QN	59	59	1011 km
0821	YO3JW	KN34CK	59	59	460km *3
0825	SP4SKA	KO14LC	59	59	956 km
0831	F1CH	JO23VE	59	59	1210 km
0833	F2GL	JN17ST	59	59	1325 km
0838	DL1MAJ	JN68AH	59	59	716 km
0848	LA8OW	JP50NC	59	59	1725 km
0902	F1DVI	JN05JD	59	59	1549 km
0906	OH1XT	KP01WL	59	59	1764 km
0914	F5ADT	IN94WO	59	59	1631 km
0916	DG3GAG	JN48LN	59	59	942 km
1020	ON4AVJ	JO11UB	59	59	1386 km
1021	DC9YC	JO31??	59	59	
1032	DK8EL	JO31IO	59	59	1218 km
1024	G7RAU	IO90IR	59	59	1718 km
1026	ON4APG	JO20AT	59	59	1355 km
1027	G3IMV	IO91OX	59	59	1715 km
1037	F6GGF	JN18DT	59	59	1428 km
1135	G3DYE		27	27	
1146	LA0BY/p	JO59IX	59	59	1725 km
1221	G7RAU	IO90IR	59	59	1719 km
1998-11-18					
0136	SP2NJI	JO92MP	59	59	787 km
0838	DL2IAN	JN49BC	59	59	1017 km
0840	DL6BN	JO42??	59	59	
0850	G4YAM	IO93VR	59	59	1742 km
0851	DH6SN		59	59	

Remarks: *1 First 9A-YU MS QSO! *2 310 sec. burst! *3 First YO-YU MS QSO! Heard also EA9AI but not sure for QSO, big QRM from I1 station, hi. Also excuse time to time strong QRM and I am not shure for all on my tape recorder, hi. 73, Pista. Address: Nemethy Istvan "Pista", Branka Radicevica 63, YU-23217 Aleksandrovo, Serbia. Thanks for report, Pista.

YU7KB (JN94XX) wkd on 144MHz:

1998-08-01								
0400	0425	DL1ELY	JO30IO	26	26	6	13	1	c
1998-08-07								
0900	0940	EW5M	KO32DX	26	26	3	2	1	c
1998-08-08								
0700	0800	CQ1MS	IM59NM						nil
1900	1950	EA3BB	JN02IB	26	26	13	7	32	c
2200	2300	DL9USA	JO71EN						nil
2300	2335	DL4ABJ	JO42XP	26	27	17	16	0.5	c
1998-08-09									
0000	0015	DA0ND	JO34XE	26	26	10	10	1	c
1900	2000	DD3DX	JO31OK						nil
2000	2100	DL6ZBN	JO40FE						nil
2100	2125	DJ5BV	JO30KI	26	26	14	6	0.5	c
2200	2300	EW6AL	KO46KB	26		7	3	0.5	nc
2300	2325	PA3BZO	JO21RS	36	27	16	9	10	c
1998-08-10									
0900	0925	IW1BCV	JN44FS	37	27	4	3	10	c s
1000	1135	DL6ZBN	JO40FE	26	26	6	6	2	c
1058		OZ/DF2ZC	JO75KF	59	59	1		5	c s
1500	1540	EA3BB	JN12IG	26	26	10	12	11	c
2100	2125	LA0BY	JO59FW	27	26	7	3	11	c
2200	2300	I/DL5MAE	JM87AX				3		nc
2300	2400	GM4YXI	IO87WJ						nil
1998-08-11									
0000	0020	DL1KDA	JO30FQ	27	27	8	12	1	c
0100	0200	EA3KU	JN00JV	27	26	5	2	14	nc
0200	0300	RX1AS	KO59FX						nil
0300	0400	LY2MW	KO24PQ	26		2	3	1	nc
0800	0900	DH8BQA	JO73CF						nil
0900	1000	RW3PF	KO93CD						nil
1400	1450	DL2FDX	JO40LG	26	27	23	16	1	c
1600	1700	ON1ALJ	JO10UU				2		nc s
1800	1900	DL5XV	JO53AP	26		3	12	1	nc
2000	2030	PA3BZL	JO22SB	26	27	13	14	1	c
2100	2150	RV3ZR	KO80CL	26	26	4	5	33	c
2227	2247	LA0BY/p	JP51NA	26	27	5	6	12	c
2300	2355	DH0GCD	JN38VF	26	27	9	4	5	c
1998-08-12									
0000	0025	PA2DWH	JO22GD	27	26	9	11	19	c
0100	0140	SP4MPB	KO03GS	27	37	13	7	3	c
0200	0300	ON4AVJ	JO11UB	26	26	15	20	7	c
0300	0400	ON4AMX	JO20KV						nil
0400	0420	DH7FB	JO62SM	27	27	8	8	1	c
0500	0600	SM7TUG	JO76NJ						nil
0600	0700	G4ZHI	IO91KN						nil
1100	1140	IW2BNA	JN45ON	39	26	8	19	9	c
1500	1530	OH1XT	KP01UK	26	37	4	4	37	c
1600	1700	EA1ABZ	IN71QO						nil
2000	2100	OH6KSR	KP22VF						nil
2100	2150	F/I1JTQ	JN33GD	26	27	13	7	0.5	c
2200	2225	PA3FBN	JO33IF	26	28	17	29	12	c
2300	2400	DL7FF	JO62TJ						nil
1998-08-13									
0000	0040	G3KWY	IO92IS	36	27	4	4	5	c
0100	0200	SM2CKR	KP03DQ						nil
0200	0215	F6CRP	IN96KE	36	27	18	9	30	c
0300	0335	PA3FOC	JO21FW	27	27	20	51	15	c
0400	0500	I8MPO	JN70FP						nil s
0500	0600	ES2RJ	KO28KL						nil
0700	0714	ON1ALJ	JO10UU	27	27	2	1	4	c s
2100	2200	LA5KO	JO59FH	26	26	3	4	0.5	nc
1998-08-14									
1900	2000	DL2FDX/p	JO74AA	26	26	8	6	0.5	nc
1998-08-15									
1900	1950	LX0EME	JN29XV	26	27	4	5	0.5	c

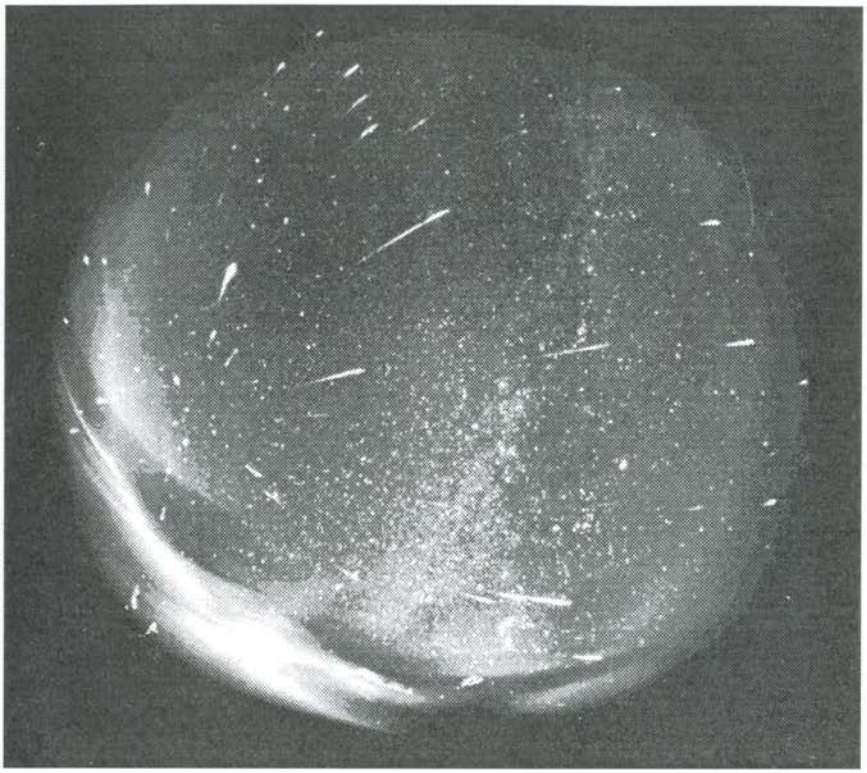
Equipment: IC202, preamp MGF1302, 100W and 11 ele DJ9BV. For high speed CW I was using MSSOFT v5.0 from OH5IY, max. TX speed is 4000lpm, and modified UHER, max. RX speed 2000lpm.

Comments: In Perseids '98 I have 31 C, 8 NC and 17 NIL QSO's. This year Perseids "give" to me 19 new square and 5 new DXCC. Maybe it was be bether, but many NIL QSO's especialy during maximum. I don't know why! QSL card for all C QSO's is sure via buro or direct to: Kostic Branislav, Simanovacka 53, 22308 Golubinci. 73, Bane. Thanks for report, Bane.

YZ7MON (JN93RV, mountain Tara, 1300m asl) wkd on 144 MHz (SSB only):

1998-08-08

Leonids



2300 2400	IK1PAG					nil
1998-08-09						
0000 0100	DG9BEM					nil
1998-08-10						
0000 0100	DL4ABJ					nil
0100 0200	DJ5BV	26		1	8	3 nc
0200 0300	DL5DTA				7	nc
0300 0400	IK1PAG				4	nc
0400 0500	IW1AZJ			1	9	0.5 nc
2000 2100	DL1SUN				4	nc
2200 2300	LA0BY/p				4	nc
2300 2400	PE1LAU	26	26	3	11	6 c
1998-08-11						
0000 0100	DL2FDX				9	nc
0100 0200	ES2RJ					nil
0200 0300	I8MPO				2	nc
0300 0400	F6CRP					nil
0400 0500	LY2MW	28		4	12	5 c
0500 0600	SM7TUG					nil
0600 0700	DL6ZBN				5	nc
0700 0800	ON1ALJ				4	nc
0800 0900	ON1AEN					nil
1800 1900	DL9YEY				3	nc
1900 2000	DL5XV	26		1	3	3 nc
2000 2030	DF8IK	27	26	2	6	8 c
2100 2200	DL9MS	26	27	6	12	9 c
2200 2300	IW2BNA	26	26	6	14	4 c
2300 2312	PA3BZL	26	27	2	2	5 c
1998-08-12						
0000 0100	SP4MPB				3	nc
0100 0200	OE6IWG					nil
0200 0300	DL3IAE				1	nc
0300 0400	PA2DWH				7	nc
0400 0500	DL1KDA					nil
0500 0600	ON4AMX				1	nc
0600 0700	DH7FB	27		1	11	5 nc
0700 0800	DF7KF					nil
0800 0900	DH8BQA				1	nc
0900 1000	EA6VQ					nil
1000 1100	G0FIG				3	nc
1800 1900	DF9PX					nil
1900 2000	OZ5AGJ	26		2	11	3 nc
2000 2100	DH2OAA				1	nc
2100 2200	DL2IAN	26		2	10	4 nc
2200 2300	SM2CKR				9	nc
2300 2320	DK5DQ	26	27	5	16	5 c
2323	DL8EBW	37	37	1		c
1998-08-13						
0000 0100	DH0GHU				9	nc
0100 0200	DL5ME					nil

0200	0300	PA3FOC						nil
0400	0500	DF1SO						nil
0500	0533	G4ZHI	26	27	4	21	4	c
0600	0700	DL1EJA				11		nc
0700	0800	DK8EL						nil
0800	0900	DH6JL						nil
0822		DL3IAE	27	37	1			c
0900	1000	EA6VQ	26		5	4	2	nc
1600	1700	EA1ABZ	26		2	1	3	nc
2100	2200	ES2RJ						nil
2200	2300	DL2ARD						nil
2300	2359	PA2TAB	27	27	3	6	5	c
1998-08-14								
0000	0040	PA3EFC	26	26	9	15	2	c
1800	1900	DL2FDX/p	26		1	3	4	nc

Equipment: 50W and 2x11 ele. Thanks for report, Ilija.

LEONIDS COMMENTS

Hello MS friends, Very nice Leonides on 17.11. from 0400 to 1100 UTC here in JN26MM. First, I looked for visual meteor during about 15 minutes. There were around 10 trails per minute, going in every directions from the radian, in E.S.E about 50 elevation. Then QSY to the radio-shack... After 25 years of MS, I never heard so long and so strong bursts on 144 MHz, really fantastic! When calling CQ MS, most of the time it was impossible to get any call in the pile-up during 1 or 2 minutes! 52 stations worked, the best ones are: UT8AL (KO61WP 2.163 km), EA9MH, OH5LK, 9H1CG, many YL, HA, YU, LY, EA a.s.o. 22 countries worked. The shower seemed to stop very quickly around 1130 UTC. Nothing heard in the afternoon and in the evening. I think the maximum was between 0600 and 0800 UTC. On 18.11, in spite of the medias predictions, between 03.and 08.00 utc, absolutly not any burst. Five quick bursts only between 0830 and 1100 UTC. Five stations worked. Nothing after: the 1998 Leonides are gone QRT... Hope next year it will be as good as this year. 73 to all MS fans! Georges F8OP.

MWS '99 / DXCC '99

Hallo dear VHF-friends,

in last years the VHF-DX-Gruppe DL-West, together with the german magazine "Funktelegramm" have created the M(ost) W(anted) S(quare) list and WAE/DXCC List for the 144MHz area. Last year it was quite nice to see, that a lot of dx-expedition{r have checked these list, before they startet their expedition and did go to quite rare locators than. (lets remember the fine activity from T7, SV9 ... as searched WAEs/DXCCs, or Squares like KO26,35,37,38 KM06,07,16 KO32,44,46 and and so on and so on....). Also this year we decide to run this collection of most wanted squares and WAEs/DXCCs again!

Please check the following rules and send your infos as soon as possible. We will collect the dates from 1.st december 98 to mid february. Latest at 10-02-99 your details have to be here! In end of march 99, we will be able to spread the results on Funktelegramm, Funkamateur, CQDL, PR and Internet that everybody have a good chance to find a recommend square to activate in summertime. Everybody can once send in as many most wanted squares and DXCC countries as he want. Of course it will be necessary that the wanted squares / countries have to be in a reachable area from the QTH of the sender (eg tropo stations send in max. 1000km area - ms stations up to 2200km...).

Here an example for the input file:
DL8EBW search DXCC: HV, SV/A, TA, ZA, 1A0
...a.s.o.
DL8EBW search SQRs: IM57,67 ; IO44,69,79 ; IP 04,13,
...a.s.o.

Infos pse to: VHF-DX-Gruppe DL-West c/o DL8EBW, Guido Jünkersfeld, Gustav-Freytag-Str. 1, D-42327 Wuppertal - AX.25: DL8EBW@DB0NDK.#NRW.DEU.EU or DL8EBW@DB0MDX or DL8EBW@DB0NOR-9 or via eMail: dl8ebw@qsl.net.

The results will be published in Funktelegramm, Funkamateur, CQDL, PR and Internet end of march 1999. Thanks very much to all for the input, because it will cause again a piece of activity for the 144MHz area! 73, Guido - DL8EBW.

DUBUS Toplist

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

DUBUS 50 MHz Top List

NR	CALL	WW	WK	DC	TR	AU	MS	ES	F2
1	ON4KST	JO20	737	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	PA2TAB	JO32	512	130	762	1370	1809	5797	15339
11	GW4LXO	IO81	500	0	300	650	1200	7500	10000
12	DL8HCZ	JO53	479	0	365	1250	1356	3350	0
13	I4XCC	JN63	477	0	707	0	1427	3349	18627
14	F8OP	JN26	458	0	631	1023	1369	5508	13547
15	OK1DDO	JO60	449	91	620	1423	1340	6100	13300
16	F1GTU	JN05	418	0	699	815	1421	3268	16400
17	DL3AMA	JO51	412	79	519	1431	1600	4001	10345
18	SP6GZZ	JO81	407	0	515	0	1826	8103	0
19	DL9GU	JN49	402	0	721	450	0	8500	15625
20	DL6NCI	JO50	393	101	514	1294	505	7815	14239
21	SP4MPB	KO03	391	0	520	1836	1507	8290	0
22	OK1IBL	JO60	377	77	530	1320	1717	6941	11816
23	PA3FYM	JO22	375	0	1238	2019	0	****	16373
24	DL4ALI	JO50	355	73	464	628	1042	3996	10313
25	OK1FFD	JO60	354	79	580	1231	1067	6250	13300
26	OK1FAV	JO60	343	75	0	579	1093	6250	10366
27	OK1MAC	JN79	336	0	0	0	0	0	0
28	PE1OGF	JO21	332	76	0	0	0	0	0
29	YO2IS	KN05	325	0	270	1155	1404	6942	14292
30	DL7ARM	JO62	315	0	909	1189	1245	8324	15817
31	ES1CW	KO29	314	67	530	1895	1692	5253	0
32	F8CS	JN27	313	68	336	0	0	7454	9753
33	HB9AOF	JN36	312	77	500	0	0	5400	10663
34	ES6QB	KO37	309	74	450	0	0	5145	0
35	F5PAU	IN88	306	75	0	0	0	0	0
36	OK1VBN	JN78	300	60	455	0	897	5793	0
37	SM7JUQ	JO65	292	0	372	1349	1062	3900	14070
38	SP6GWB/P	JO80	288	0	696	629	1880	7540	0
39	OZ7IS	JO65	287	0	410	1294	850	3100	0
40	SP2IQW	JO94	286	57	556	1537	1470	2767	0
41	OK2ZW	JN89	286	0	0	0	0	0	15580
42	HB9STY	JN36	280	65	367	0	1431	4448	7810
43	DF7RG	JN68	276	62	496	1569	0	3230	14153
44	IW5AVM	JN52	275	55	768	0	1712	3056	7839
45	F1FIH	JN23	273	98	796	0	1637	2492	15613
46	IK5OIY	JN52	262	0	332	0	1444	2826	8305
47	DL3YEE	JO42	261	0	540	1056	1300	2700	13053
48	DL1SUZ	JO53	258	60	546	1434	865	5921	8020
49	ON5SE	JN29	257	78	0	0	0	0	0
50	DL2DR	JO31	247	20	1003	0	0	4769	2001
51	OK1VQ	JO60	245	46	245	539	0	2002	2755
52	OE3OKS	JN87	243	45	467	0	0	7985	0
53	ES5DE	KO38	239	56	228	606	0	5299	0
54	F5DE	JN05	237	64	860	0	0	2304	0
55	I3ZVN	JN55	237	62	532	0	0	5742	8422
56	ES2RJ	KO29	237	53	419	1701	0	3167	0
57	DL5BBL	JO42	237	0	414	1008	0	3975	5863
58	DL7YS	JO62	236	60	342	461	1086	3547	8767
59	YL3AG	KO26	233	49	397	1817	0	6420	0
60	CT1BGE	IM58	215	0	0	0	0	0	0
61	DL6BF	JO32	207	71	574	1108	0	3058	8011
62	ES1II	KO29	207	45	335	673	0	3325	0
63	SP5HEJ	KO02	206	0	568	0	1838	4699	0
64	ES5MC	KO38	202	58	432	1786	0	5143	0
65	YU1VG	JN94	201	50	1766	0	1450	3666	1650
66	OK2PPP	JN99	201	40	0	0	0	3200	0
67	OK1UDX	JN79	198	47	333	1054	0	3513	0
68	SP2JXN	JO94	198	0	0	0	0	0	0
69	SP6MLK/P	JO80	193	0	437	0	1322	2062	0
70	OK1DKS	JO70	192	42	934	0	0	1973	8514
71	PA2CHR	JO22	187	72	1334	909	0	5215	13966
72	DL8EBW	JO31	186	51	247	1050	1150	5800	13300
73	ES5RY	KO38	177	36	317	0	0	3640	0
74	CT1DIN	IN60	174	37	1581	0	0	3169	0
75	SP6AZT	JO81	169	0	612	0	1168	4327	0
76	HB9RUZ	JN47	168	54	406	0	960	3585	0
77	DJ2XS	JO53	164	0	440	419	0	4155	0
78	ES1AJ	KO29	160	33	415	352	0	3340	0
79	G7LRQ	IO91	154	41	0	0	0	3574	0
80	OH2BNH	KP20	147	37	391	948	0	3246	0
81	DL5GAC	JN47	147	0	129	690	0	5100	11900
82	DF1EQ	JO31	138	0	279	0	0	2769	0
83	OK2XTE	JN79	138	42	162	0	0	2419	0
84	IW2DVK	JN45	137	38	534	0	1022	7332	0
85	DL5IO	JN49	134	0	113	340	900	3100	12995
86	DL5UH	JN48	129	35	103	0	0	5943	0
87	DJ6XV	JO31	128	0	401	0	1130	3232	0
88	ES3RM	KO28	127	31	210	692	0	3111	0
89	ES4NG	KO39	124	33	408	0	0	3105	0
90	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	1	2243	2034	2295	2782
3	DF8LC	JO53	600	70	2105	2045	2226	3291
4	PA3BIY	JO22	588	63	1550	2026	2205	3143

5	DL8HCZ	JO53	559	0	1615	1976	2096	3527
6	PA0RDY	JO22	551	0	1582	1979	2272	2819
7	DL8EBW	JO31	547	61	1454	1918	2059	2214
8	OH5LK	KP30	517	0	1962	2041	2235	2891
9	SP6GZZ	JO81	512	0	1670	1794	2017	2717
10	HA1YA	JN87	509	71	1548	1876	2183	2885
11	OE3JPC	JN88	504	0	1584	1821	2128	2769
12	SP9EWU	JO90	498	0	1710	1927	2154	2531
13	I2FAK	JN45	493	0	1797	1508	2405	2995
14	I4XCC	JN63	474	0	1177	1803	2275	3257
15	OZ1DOQ	JO65	467	58	1885	1940	1981	2888
16	DL8LAQ	JO43	460	0	1376	1806	1934	3302
17	ON4GG	JO20	459	0	1420	1965	2150	2124
18	DL5DTA	JO61	454	58	1344	1578	2045	2057
19	PA2CHR	JO22	453	0	1432	1683	2240	3201
20	OH7PI	KP32	451	0	1902	1926	2151	2489
21	LY2WR	KO24	448	0	2051	2075	2218	3007
22	PA3FOC	JO21	446	0	1373	2010	2209	2326
23	OK2ZW	JN89	445	56	1417	1775	2113	2471
24	YU7EW	KN05	437	67	1404	1755	2179	2430
25	DJ7OF	JO51	436	63	1512	1518	1970	2156
26	DL7FF	JO62	430	0	1516	1379	2057	2312
27	OK2VMD	JN89	428	58	1662	1765	2031	3605
28	RX1AS	KN59	427	0	1709	1905	2271	2547
29	IW5AVM	JN52	423	63	1590	0	2040	2893
30	DD0VF	JO61	420	58	1736	1275	2017	2328
31	F8OP	JN26	419	0	1228	1196	2028	2720
32	DL3AMA	JO51	414	54	1785	1803	1925	2075
33	ES2WX	KO29	411	40	1370	1950	2270	2071
34	YU7MS	KN05	410	62	1319	1856	2160	2438
35	DK0OG	JN68	408	0	1708	1722	2172	3320
36	YO2IS	KN05	407	0	1360	1916	2130	2556
37	OK1FM	JN69	403	56	1843	1438	2200	2150
38	ON4ANT	JO20	399	0	1420	1965	2124	2725
39	DL7AKA	JO62	396	0	1747	1916	2065	3620
40	SP4MPB	KO03	393	0	1886	1764	2038	2697
41	OK1MAC	JN79	392	0	1536	1681	2005	2511
42	ES6RQ	KO37	391	37	1500	1840	2172	1725
43	OK1JKT/P	JO60	389	51	1701	1764	2121	2269
44	F8CS	JN27	387	54	1161	1468	2124	3231
45	IW1AZJ	JN35	386	60	1115	1188	1971	2780
46	UA3MBJ	KO88	374	0	1560	2006	2573	2392
47	HB9CRQ	JN47	369	0	1404	1288	2060	2959
48	DL1SUN	JO53	367	0	1824	1724	1845	2333
49	PA3FJY	JO32	366	0	1536	1337	2085	2086
50	DL1KDA	JO30	366	59	1388	1924	2101	2339
51	I4YNO	JN54	366	63	1374	1374	2122	2276
52	DH3YAK	JO31	360	55	1424	1162	1960	2650
53	SM7JUQ	JO65	357	41	1902	1646	1921	2332
54	OE3OKS	JN87	356	59	1441	1273	1867	2788
55	YL3AG	KO26	353	33	1552	1912	0	2448
56	S50C	JN76	351	61	1463	1530	2233	3356
57	PA2DWH	JO22	345	59	1230	1950	2150	2250
58	DL6BF	JO32	344	50	1542	1932	1814	2332
59	OH2BNH	KP20	344	37	1334	1787	2003	2003
60	DL7YS	JO62	343	53	1512	1528	1826	2136
61	YU1WP	JN94	341	53	1422	1850	2236	2825
62	UT1PA	KO21	340	0	1901	1934	1806	2425
63	YU7EF	KN05	340	58	1135	987	2248	2440
64	SP6AZT	JO81	335	0	2080	1463	1710	2566
65	OK1DKS	JO70	334	56	1230	1308	0	3530
66	G3LQR	JO02	333	0	1776	2031	0	2406
67	DJ1LP	JO64	331	46	1347	1071	2058	2301
68	DL5GAC	JN47	330	0	1264	1876	2135	3079
69	ES2RJ	KO29	328	37	1190	1861	1969	1953
70	F6DKW	JN18	327	51	1519	1602	2051	2755
71	OK1MG	JO70	319	49	1526	1590	0	2632
72	DK1KR	JO53	318	0	1481	2103	0	2026
73	ES2XM	KO29	308	37	1389	2198	0	2222
74	SP3MFI	JO91	307	0	1697	1632	1802	2617
75	F1FIH	JN23	304	51	1305	999	1757	2934
76	G4YTL	IO91	303	0	1450	1774	2143	2172
77	ES4EQ	KO39	302	39	1541	1840	2240	2245
78	DB6BX	JO32	302	52	1534	1541	1921	2115
79	I1JTQ	JN35	301	0	1106	1269	1825	2742
80	OK1AXH	JO70	300	0	2142	1486	1366	1768
81	F5HRY	JN18	298	52	1276	1695	2038	2758
82	SP6GWB/P	JO80	296	0	1780	1581	1875	2437
83	SM5BSZ	JO89	293	0	1764	1824	1938	0
84	OK1DFC/P	JO60	291	51	1775	2099	2024	2016
85	PE1OGF	JO21	291	52	1391	1139	1959	2260
86	OK1FFD	JO60	289	53	1388	1720	1964	2154
87	IK1PAG	JN35	289	0	1186	0	1910	2725
88	SP2JXN	JO94	286	0	1650	1690	0	2634
89	PA0WWM	JO22	283	49	1303	1839	1997	2212
90	IN3TWX	JN56	283	0	1100	0	1609	1750
91	ES3GZ	KO28	281	35	1495	1720	2134	2101
92	LA8AK	JO38	280	0	1496	1804	1804	2413
93	PA2TAB	JO32	279	53	1302	1094	1971	2183
94	OE6IWG	JN77	279	50	1221	1110	2220	2126
95	ES5WE	KO38	278	32	1406	1695	1934	2530
96	ON4KST	JO20	277	51	1435	1612	863	2383
97	G4IGO	IO80	274	0	2761	1917	1903	2833
98	DL1BKK	JO43	273	0	1513	928	0	2712
99	DK2BJ	JO30	272	46	1476	1924	0	2205
100	RZ6BU	KN84	272	0	1172	960	2017	2953
101	UA4NM	LO48	270	0	1215	1850	2510	2290
102	G6HKM	JO01	269	0	1304	1555	1660	2269
103	OK1IBL	JO60	266	50	1438	1462	2003	3398
104	IK5OIY	JN52	265	0	1048	0	2095	2253
105	OZ1IPU	JO57	262	40	1387	1187	1566	2452
106	GW4LXO	IO81	261	0	2750	1550	2000	2200
107	RK2FWA	KO04	261	0	912	1759	2125	2010
108	OK1HAG	JN79	260	0	1441	1749	1909	3463
109	F6CKZ	JN09	258	0	1552	1330	1721	3408
110	DH8GV	JO33	257	42	1565	1018	1102	2450
111	DK8EL	JO31	256	0	1199	1051	1870	1996
112	ES1RF	KO29	252	30	1184	1820	1978	2084
113	YU1VG	JN94	248	47	1407	826	1727	2294
114	DG1BA	JO43	245	0	1674	1280	1588	2239

115	ON4PS	JO20	243	43	1449	1435	1393	1964	170	DL3YEE	JO42	178	0	1574	1450	1480	2106
116	LZ1ZX	KN32	243	0	1162	0	1945	2729	171	DK5WO	JO30	177	35	1474	1219	0	1993
117	DK1VI	JN49	241	0	1148	1107	1604	3131	172	DK9RL	JN69	177	0	1311	1513	1286	3316
118	DF1IAZ	JN49	240	51	1038	1143	2069	1873	173	DG3HS	JO53	174	0	1152	1091	0	2306
119	OM7AQ	JN98	239	49	1484	1294	1793	2483	174	HB9AOF	JN36	173	45	1201	670	1675	2166
120	OK2QI	JO80	237	0	1475	1686	1380	2050	175	OK1VEI	JO70	170	0	1677	1197	1398	0
121	OK1KEI	JO70	235	0	1861	1259	983	2067	176	ES1AO	KO29	169	25	1162	1176	1792	2136
122	UT7GA	KN66	234	0	1877	1446	2131	2617	177	OK1KRY	JN69	166	40	1437	977	0	1830
123	OK2PNN	JN89	234	0	149	1216	0	3771	178	YU7ON	KN04	164	36	914	0	1897	2273
124	HB9DFG	JN37	232	49	1367	1299	1784	2302	179	ON4ZN	JO21	163	32	1390	980	0	2149
125	OK1PG	JO70	229	49	1773	0	0	3488	180	ES1JL	KO29	163	17	1379	1596	0	0
126	F5PAU	IN88	229	43	1630	0	0	2425	181	SP2IQW	JO94	162	27	1611	1611	997	1877
127	DG1VL	JO61	228	43	1373	1223	1817	2325	182	DG0CAL	JO52	161	0	1160	0	1543	2105
128	LY2SA	KO14	227	40	1569	1742	2163	2088	183	UA4AQL	LO20	161	0	1124	1841	2158	2195
129	OK1VMS	JO70	225	43	1692	1232	0	2225	184	DL0UL/P	JN48	159	0	1026	0	0	2019
130	F1GTU	JN05	225	0	1650	967	1934	2400	185	SP9FG	JN99	158	30	1647	1283	0	1698
131	OK1VBN	JN78	223	45	1578	1682	1915	2209	186	ES1AW	KO29	158	25	1230	1680	0	1924
132	F5DE	JN05	222	38	1891	1671	1892	2399	187	OK1CA	JO70	156	0	1540	1065	950	2096
133	ES5EJ	KO38	218	30	1422	1804	0	2070	188	YZ7MON	JN95	156	31	1004	0	1653	2279
134	DL1SUZ	JO53	218	41	1238	1661	1707	2006	189	ES0BI	KO18	154	21	1439	1823	1528	0
135	ES0IW	KO19	216	32	1545	1687	0	1861	190	DH0GHU	JN38	153	36	1170	0	2117	1937
136	9A4EW	JN95	216	0	1075	0	1956	2293	191	RW3PF	KO93	153	0	1015	1840	0	2162
137	DL5BBL	JO42	215	0	1416	1290	0	2028	192	ES2QN	KO29	152	22	1175	1460	0	2116
138	DC6DY	JO31	212	0	1416	1045	1914	2292	193	OZ7IS	JO65	151	0	1128	1294	1901	1845
139	UR7GN	KN66	208	0	1830	0	2010	1940	194	ES6PZ	KO38	151	20	1101	0	0	2532
140	G3XDY	JO02	208	38	1355	2049	0	2124	195	YU7KB	JN94	150	35	853	0	1874	2256
141	DH9NBB	JN49	207	47	1363	1228	1725	2039	196	UT5JCW	KN64	150	0	0	0	0	0
142	ES0NW	KO19	207	30	1060	1720	1797	1965	197	CT1FAK	IN50	149	25	2129	0	2250	2488
143	IK1LGV	JN44	204	0	1466	0	1613	1890	198	DJ6XV	JO31	148	0	1337	961	0	2007
144	SP5HEJ	KO02	201	0	1830	1705	1312	2313	199	DK0PX	JN48	147	0	1161	0	1815	1649
145	UY5HF	KN66	201	0	1750	0	1820	2032	200	OK2PMN	JN88	141	0	871	1547	887	2101
146	ES8RO	KO28	199	27	1802	1800	0	1780	201	ES1CW	KO29	138	20	1192	1570	0	2090
147	OK1DDO	JO60	199	46	1329	1500	1720	2418	202	OK2UFB	JN99	136	27	1526	0	0	1983
148	OK1SC	JO70	198	0	1490	1673	0	1729	203	RW4AK	LO20	136	0	1126	1480	2158	2301
149	DL8AAV	JO52	198	44	1236	1127	0	2144	204	ES5QA	KO38	135	35	1665	1788	1555	2236
150	DL9BDM	JO33	197	0	1538	1248	1659	2321	205	OK2KDS	JN99	134	0	1568	0	0	1983
151	G6RAF	IO92	197	0	1507	1722	2078	2400	206	DG5NEX	JN49	133	0	1234	0	1333	1941
152	DF9QX	JO42	197	0	1446	1070	1455	3320	207	DL3IAS	JN49	130	36	988	1123	1830	1866
153	ES0SM	KO08	196	31	1578	1767	1991	0	208	OK1DTG/P	JO70	127	27	1351	1352	0	0
154	DK2DB	JN48	195	0	1239	1136	0	3106	209	RU3ZD	KO81	126	0	1713	2126	1755	2363
155	ES1OX	KO29	194	18	1016	1449	1158	2121	210	DL5IO	JN49	126	0	1073	925	1450	1899
156	IT9VDQ	JM68	192	41	1625	0	1950	2491	211	LA7DFA	JP33	125	0	630	1816	1803	0
157	PA0JUS	JO22	192	38	1409	1050	0	2167	212	HB9S/P	JN36	123	24	1135	0	0	0
158	OE5VRL/5	JN78	190	0	1665	1573	1990	2157	213	S53J	JN75	123	27	1123	1036	983	1984
159	DL2DR	JO31	190	39	1158	980	0	2057	214	DL3NAW	JN59	120	0	1019	0	1961	1237
160	ES7RDR	KO27	189	31	1200	1750	1000	2101	215	F6FGO	JN25	118	31	1390	0	0	2218
161	ES0HD	KO18	187	23	1550	1918	0	0	216	YU7AZX	KN04	113	29	914	0	1389	2173
162	UA3MHJ	KO87	186	0	1227	1943	2405	1948	217	OK2XTE	JN79	111	33	1362	0	0	2267
163	HB9MIO/P	JN37	185	0	1316	975	0	2183	218	DL0SP/P	JO62	111	0	1315	785	0	1608
164	S59AM	JN65	184	0	1377	0	1945	1788	219	DL5NEN	JN59	106	30	748	0	1767	1640
165	ES5RY	KO38	183	32	1198	1695	2002	1409	220	ON7WR	JO20	106	24	0	0	0	1834
166	UA3T	LO16	183	0	1163	1941	2145	0	221	DJ8ES	JO43	104	19	1306	0	0	1856
167	HB9RUZ	JN47	183	48	1060	1050	0	3014	222	OK2PHM	JN89	97	20	829	1265	0	2262
168	OK1IAS	JO60	179	34	1392	1444	0	2138	223	I3ZVN	JN55	96	31	1212	0	0	2237
169	DG3XA	JO43	179	35	1371	1061	1839	2183	224	ES1II	KO29	95	13	979	1570	0	0

225	LA/DL7YS/P	JO37		93	22	1207		0	16730
226	CT1DIN	IN60	91	18	1218	0		0	2338
227	OK1UDX	JN79	91	19	537	0		0	0
228	CT1DDW	IN60	90	17	2100	0		0	2500
229	DK0FLT	JN49	90	23	1363	0		0	1656
230	OL5Z	JN89	90	21	928	1527		0	0
231	ES2QH	KO29	86	15	1072	1108	1517		0
232	CT1CAD	IM67	85	18	1304	0		0	2249

DUBUS 432 MHz Top List

NR	CALL	WW	WK	DC	TR	AU	MS	ES
1	DJ9BV	JO43	219	0	2154	1863	1440	0
2	G3LQR	JO02	203	0	2031	1613	0	0
3	DK3WG	JO72	203	74	1547	1494	0	0
4	PA0RDY	JO22	202	0	1979	1807	1376	0
5	PA0EZ	JO22	195	35	1787	1445	0	0
6	PA0WWM	JO22	191	36	1547	1836	0	0
7	OZ7IS	JO65	186	0	1499	1048	1294	0
8	DL8QS	JO43	182	33	1513	1513	0	0
9	OK1AXH	JO70	181	0	1861	1239	0	0
10	DL7QY	JN59	173	0	1640	1848	1292	0
11	DJ6MB	JO30	171	0	1278	1733	0	0
12	DB6BX	JO32	169	32	1550	662	0	0
13	F6DKW	JN18	163	23	1519	0	0	0
14	HA1YA	JN87	163	40	1438	1221	0	0
15	G3XDY	JO02	163	27	1350	1619	0	0
16	SP6MLK/P	JO80	160	30	1780	0	0	0
17	DK1KO	JO53	160	0	1643	694	0	0
18	LY2WR	KO24	158	0	1751	1593	1935	0
19	DB6NT/A	JO50	154	0	1823	0	0	0
20	DF8LC	JO53	154	0	1615	1361	0	0
21	SP6AZT	JO81	154	0	1538	1087	0	0
22	DK1KR	JO53	152	0	1400	1827	0	0
23	SP6GWB/P	JO80	151	0	1780	759	0	0
24	PA3DIJ	JO33	150	0	2116	1010	0	0
25	OZ2OE	JO45	149	0	2216	1020	0	0
26	YL3AG	KO26	148	19	1571	1041	0	0
27	SM6ESG	JO67	148	26	1436	712	0	0
28	DH3NAN	JO50	147	0	1437	1008	0	0
29	OK1CA	JO70	146	0	1670	0	0	0
30	SM7ECM	JO65	141	22	1389	1073	0	0
31	DL3YEE	JO42	140	0	1574	1728	0	0
32	ES2WX	KO29	140	17	1232	1415	0	0
33	OK1KEI	JO70	138	0	1682	1185	0	0
34	OK1VEI	JO70	136	0	1532	811	0	0
35	DL1SUN	JO53	136	0	1157	1071	0	0
36	SP9FG	JN99	134	25	1660	0	0	0
37	OK1KIR/P	JO60	133	28	1773	0	0	0
38	PA0JUS	JO22	130	26	1340	0	0	0
39	SP9EWU	JO90	129	0	1544	1558	1664	0
40	OH5LK	KP30	129	0	1386	1196	0	0
41	DL1BKK	JO43	128	0	1513	565	0	0
42	LA8AK	JO38	124	0	1373	981	0	0
43	G6HKM	JO01	124	0	1289	281	0	0
44	G6RAF	IO92	122	0	1730	0	0	0
45	PA2CHR	JO22	122	31	1357	323	0	0
46	OE5VRL/5	JN78	121	0	1524	1031	0	0
47	DL4VCG	JN39	119	0	1335	0	0	0
48	OZ1IPU	JO57	118	18	1387	0	0	0
49	F5PAU	IN88	117	24	1630	0	0	0
50	OK1VMS	JO70	116	23	1434	972	0	0
51	OK2QI	JO80	114	0	1410	0	0	0
52	PA0BAT	JO31	114	21	1301	0	0	0
53	DL0UL/P	JN48	113	0	1238	0	0	0
54	PE1OGF	JO21	112	18	1288	0	0	0
55	DL6BCT	JO43	112	0	1152	0	0	0
56	DJ6XV	JO31	112	0	1128	976	0	0
57	SP6GZZ	JO81	110	0	1549	870	0	0
58	UA3MBJ	KO88	110	0	1306	1541	0	0
59	ON7WR	JO20	110	23	1163	0	0	0
60	GW4LXO	IO81	109	0	1550	0	0	0
61	DL7FF	JO62	109	0	1507	772	0	0
62	DK0OG	JN68	109	0	1459	745	0	0
63	HB9MIN/P	JN37	109	0	1300	0	0	0
64	ON4ZN	JO21	109	21	1132	0	0	0
65	DH9NBB	JN49	107	24	1363	0	0	0
66	DL3AMA	JO51	107	21	1015	1219	0	0
67	DL4KG	JO31	105	21	1273	0	0	0
68	UT1PA	KO21	105	0	1238	1761	0	0
69	DF9QX	JO42	105	0	1136	721	0	0
70	DK5WO	JO30	104	20	1150	0	0	0
71	DC4XH	JO43	104	20	1133	808	0	0
72	ES6RQ	KO37	103	19	1452	1148	0	0
73	DL2DR	JO31	103	21	1158	0	0	0
74	OK1DKS/P	JO60	102	23	1118	0	0	0
75	UT7GA	KN66	101	0	1877	0	0	0
76	ON4PS	JO20	101	18	1335	0	0	0
77	HB9CRQ	JN47	101	0	1010	0	0	0
78	DL1KDA	JO30	100	21	1286	999	0	0
79	ON4GG	JO20	98	0	1407	0	0	0
80	F5HRY	JN18	98	18	1222	583	0	0
81	ON4ANT	JO20	96	0	1406	0	0	0
82	DH8GV	JO33	94	19	1259	0	0	0
83	OK1KRY	JN69	93	23	1350	0	0	0
84	RX1AS	KN59	93	0	0	0	0	0
85	DK2DB	JN48	92	0	1331	0	0	0
86	ES2XM	KO29	92	11	1271	1259	0	0
87	DJ1LP	JO64	91	9	1414	0	0	0
88	DG5NEX	JN49	91	0	1187	0	0	0
89	G4LRT	IO92	90	0	1394	410	0	0
90	OK1KPA	JN79	89	0	1176	0	0	0
91	DK0PX	JN48	89	0	1168	0	0	0
92	OK1OKL	JO60	88	0	1199	0	0	0
93	DJ8ES	JO43	88	12	1087	0	0	0
94	DK9RL	JN69	87	0	1185	0	0	0
95	DK1VI	JN49	87	0	1125	870	0	0
96	IW5AVM	JN52	86	20	1458	0	1670	0
97	DG0CAL	JO52	86	0	1160	0	0	0
98	ES2RJ	KO29	85	17	1261	1123	0	0

99	DG1VL	JO61	85	15	1245	0	0	0
100	UY5HF	KN66	84	0	1670	0	0	0
101	OK1DFC/P	JO60	84	20	1179	0	0	0
102	OE3JPC	JN88	84	0	1132	1450	1469	0
103	HB9MIO/P	JN37	84	0	1096	0	0	0
104	S50C	JN76	84	18	977	0	0	0
105	HB9AOF	JN36	84	15	926	0	0	0
106	ES0HD	KO18	83	19	1565	614	0	0
107	DC6DY	JO31	83	0	1190	0	0	0
108	DG3XA	JO43	83	13	905	0	0	0
109	OH2BNH	KP20	82	12	1235	1046	0	0
110	F6CKZ	JN09	80	0	1302	0	0	0
111	DF1EQ	JO31	80	0	1249	0	0	0
112	ES4EQ	KO39	80	16	1160	907	0	0
113	DK0FLT	JN49	80	17	1103	0	0	0
114	ES0IW	KO19	79	17	1342	906	0	0
115	OK2KDS	JN99	79	0	1212	0	0	0
116	I4YNO/4	JN54	77	15	886	0	0	0
117	DL5NEN/P	JN59	76	16	964	0	0	0
118	DL1SUZ	JO53	75	17	1218	0	0	0
119	DH3YAK	JO31	75	13	1165	0	0	0
120	F1GTU	JN05	75	0	1114	0	0	0
121	OK1FFD	JO60	74	23	1339	0	0	0
122	DL7YS	JO62	74	17	1100	0	0	0
123	OK1MG	JO70	74	18	1045	0	0	0
124	DG6GP	JN48	74	13	1024	0	0	0
125	UR7GN	KN66	70	0	1790	0	0	0
126	OK1SC	JO70	70	0	1310	758	0	0
127	OK2PWY	JN89	70	17	1135	0	0	0
128	OK2PNN	JN89	69	0	918	0	0	0
129	OK1DTG/P	JO70	68	14	1436	0	0	0
130	DL0SP/P	JO62	67	0	1018	0	0	0
131	DL6BF	JO32	64	15	869	882	0	0
132	ES5WE	KO38	62	11	1406	0	0	0
133	DL8AAV	JO52	62	15	914	0	0	0
134	DG7SFL	JN49	61	10	947	0	0	0
135	DL3IAS	JN49	61	12	886	0	0	0
136	F6FGO	JN25	60	11	1016	0	0	0
137	ES0NW	KO29	59	17	1213	675	0	0
138	ES0SM	KO08	59	20	1202	925	0	0
139	UA4NM	LO48	58	0	1230	1310	0	0
140	OK2UFB	JN99	56	20	1232	0	0	0
141	LA/DB1DI/P	JO37	55	12	1013	0	0	0
142	OK1PG	JO70	54	0	1773	0	0	0
143	YO2IS	KN05	54	0	1020	1741	0	0
144	DH0GHU	JN38	53	11	852	0	0	0
145	OK1VBN	JN78	53	10	723	753	0	0
146	ES3GZ	KO28	52	10	1035	0	0	0
147	DL5BBL	JO42	51	0	841	722	0	0
148	OL5Z	JN89	51	12	761	0	0	0
149	DL9BDM	JO33	50	0	1278	0	0	0
150	SP2JXN	JO94	49	0	1149	0	0	0
151	S53J	JN75	49	9	688	0	0	0
152	ES1JL	KO29	48	11	1324	0	0	0
153	ES1RF	KO29	47	10	875	682	0	0
154	I2FUM/2	JN44	47	0	875	0	0	0
155	OM7AQ	JN98	47	13	803	0	0	0
156	F5OIH/P	JN08	46	5	651	0	0	0
157	DL5NEN	JN59	46	13	630	0	0	0
158	F5DE	JN05	45	6	740	0	0	0
159	I3ZVN	JN55	41	12	1197	0	0	0
160	SM7JUQ	JO65	41	11	1048	0	0	0
161	OK1HRR	JO70	40	13	765	0	0	0
162	OK2PHM	JN89	39	9	746	0	0	0
163	DK2BJ	JO30	37	9	720	0	0	0
164	G7LRQ	IO91	36	12	1208	0	0	0
165	SM4SJY	JP70	36	6	691	554	0	0
166	ES1AO	KO29	35	12	1131	0	0	0
167	DF0RU	JO62	35	0	682	0	0	0
168	ES0ZA	KO19	33	8	1077	0	0	0
169	OK2XTE	JN79	32	11	658	0	0	0
170	ES1DF	KO29	32	7	511	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 terrestric 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 relais 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	WKD	COD	X
1	PA0EZ	JO22	132	23	1302
2	PA0WWM	JO22	126	23	1298
3	PA0RDY	JO22	121	0	1286
4	DL4VCG	JN39	119	0	1335
5	F6DKW	JN18	119	21	1273
6	OK1AXH	JO70	118	0	1444
7	G3XDY	JO02	117	22	1341
8	HB9AMH/P	JN37	114	0	1351
9	G3LQR	JO02	114	0	1274
10	DB6NT/A	JO50	107	0	1243
11	SM6ESG	JO67	97	19	1445
12	DB6BX	JO32	97	24	1120
13	SM7ECM	JO65	96	17	1326
14	SP6GWB/P	JO80	95	0	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	JN78	91	18	1524
19	PA0BAT	JO31	90	19	1014
20	F5PAU	IN88	89	19	1630
21	G6DER	IO93	86	0	1306
22	DL7QY	JN59	86	0	1261
23	DK1KR	JO53	85	0	1097
24	OZ2OE	JO45	84	0	1425
25	DK0OG	JN68	82	0	1160
26	DL3YEE	JO42	82	0	1136
27	OK1KEI	JO70	81	0	1316
28	OZ1IPU	JO57	81	16	1096
29	OK1VEI	JO70	80	0	1313
30	PA3DIJ	JO33	79	0	939
31	OZ7IS	JO65	77	0	1205
32	DL1BKK	JO43	77	0	995
33	HB9AOF	JN36	77	15	975
34	DL0UL/P	JN48	74	0	962
35	OK1DFC/P	JO60	73	16	1176
36	F5HRY	JN18	73	9	1064
37	OZ1DOQ	JO65	71	17	1322
38	DH3NAN	JO50	71	0	1143
39	OK1AIY/P	JO70	70	0	1490
40	OK1CA	JO70	70	0	1421
41	PA0JUS	JO22	70	0	1265
42	G6HKM	JO01	69	0	1193
43	DK5WO	JO30	69	16	1137
44	DH9NBB	JN49	69	13	1016
45	HB9MIO/P	JN37	69	0	1000
46	DL2DR	JO31	68	13	1158
47	ON7YK	JO20	68	0	1079
48	DC4XH	JO43	67	14	1090
49	HB9RG	JN47	67	0	920
50	DF1EQ	JO31	67	0	908
51	G4PMK	IO93	66	0	1302
52	OK1OKL	JO60	63	0	1177
53	OK1VMS	JO70	62	17	1302
54	OK1DKS/P	JO60	62	13	1207
55	G4LRT	IO92	62	0	1152
56	DG5NEX	JN49	61	0	1060
57	ON7WR	JO20	60	14	1046
58	ON4GG	JO20	60	0	982
59	SP9FG	JN99	58	15	1492
60	OK1FFD	JO60	58	14	1058
61	DF9QX	JO42	57	0	1066
62	ON4ANT	JO20	57	0	914
63	DJ6XV	JO31	56	0	946
64	DC8UG	JO30	56	10	900
65	DC0DA	JO31	55	0	1034
66	DJ8ES	JO43	55	10	1025
67	DL1SUN	JO53	54	0	1162
68	ON4PS	JO20	54	13	1052
69	DL3NQ	JN49	51	0	920
70	DB1BX	JO32	51	12	905
71	DL1KDA	JO30	50	12	940
72	LA8AK	JO38	49	0	1373
73	PA2CHR	JO22	49	15	828
74	GW4LXO	IO81	48	0	990
75	DL3IAS	JN49	48	9	769
76	LY2WR	KO24	47	0	1026
77	DK0PX	JN48	47	0	942
78	DK0FLT	JN49	46	10	900
79	F6CGB	JN18	45	0	700
80	DG0CAL	JO52	44	0	1160
81	HB9BBD	JN47	43	11	1015
82	DJ1KP	JO40	43	0	698
83	IW5AVM	JN52	42	10	1036
84	SP9EWU	JO90	42	0	946
85	DJ6MB	JO30	42	0	876
86	OE3JPC	JN88	42	0	702
87	HA1YA	JN87	40	13	862
88	ES2RJ	KO29	40	9	765
89	DK2DB	JN48	39	0	873
90	DC6DY	JO31	39	0	865
91	LA/DB1DI/P	JO37	38	9	1013
92	F1GTU	JN05	36	0	896
93	I0LVA	JN62	35	0	1152
94	YL3AG	KO26	35	9	800
95	DK2BJ	JO30	34	10	885
96	S50C	JN76	34	9	626
97	DG6GP	JN48	33	7	732
98	DG1VL	JO61	33	6	723
99	DH3YAK	JO31	33	5	715
100	ES4EQ	KO39	33	9	636
101	ES6RQ	KO37	33	9	600
102	DJ1LP	JO64	30	0	922
103	UR7GN	KN66	30	0	820
104	I2FUM/2	JN44	30	0	779
105	ES2WX	KO29	30	9	692
106	ES5WE	KO38	29	7	1249
107	G7LRQ	IO91	28	8	746
108	DK1VI	JN49	28	0	710
109	UT7GA	KN66	28	0	680
110	I3ZVN	JN55	27	9	1197
111	DK9RL	JN69	27	0	891
112	I4YNO/4	JN54	27	8	769
113	ES0SM	KO08	26	8	873
114	F6FGO	JN25	26	4	839
115	HB9RUZ/P	JN47	25	9	640
116	OZ8VO	JO56	24	0	951
117	OK2QI	JO80	23	0	1275
118	OK1VBN	JN78	22	9	950
119	F1FIH	JN23	22	6	605
120	OK1PG	JO70	21	0	985
121	PE1OGF	JO21	21	6	588
122	OH5LK	KP30	20	0	1349
123	UA3MBJ	KO88	20	0	301
124	OK1KRY	JN69	19	7	865
125	OK1KPA	JN79	19	0	783
126	OK2BBF	JN89	19	8	563
127	F5OIH/P	JN08	17	5	517
128	SP6AZT	JO81	16	0	820
129	OK2VMU	JN99	16	7	472
130	S53J	JN75	16	6	410
131	DL5NEN	JN59	16	16	320
132	ES1RF	KO29	15	5	506
133	DG7SFL	JN49	15	3	358
134	SM4SJY	JP70	14	3	628
135	DF0RU	JO62	14	0	373
136	RX1AS	KN59	13	0	0
137	DL7YS	JO62	12	2	410
138	ES2XM	KO29	11	4	694
139	DL5UH	JN48	10	4	671
140	OK1SC	JO70	10	0	440
141	OK2PWY	JN89	10	6	357
142	OK2PHM	JN89	10	0	341
143	IT9VDQ	JN68	9	1	899
144	ES1OX	KO29	9	5	772

DUBUS 2320 MHz Top List

NR	CALL	WW	WKD	COD	X
1	PA0EZ	JO22	79	15	973
2	PA0RDY	JO22	64	0	1000
3	PA0WWM	JO22	63	15	1022
4	DB6NT/A	JO50	60	0	1119
5	G3LQR	JO02	57	0	1006
6	DL6NAQ/P	JO40	53	11	932
7	OK1KIR/P	JO60	51	10	1115
8	SM6ESG	JO67	47	7	1054
9	DL7QY	JN59	47	0	1018
10	PA0BAT	JO31	45	12	923
11	DL1BKK	JO43	45	0	760
12	G6DER	IO93	44	0	1265
13	OE5VRL/5	JN78	43	11	1291
14	PA3DIJ	JO33	43	0	727
15	OK1AIY/P	JO70	42	0	1296
16	OZ1IPU	JO57	38	7	1028
17	SM7ECM	JO65	36	9	880
18	DC8UG	JO30	35	8	900
19	OK1OKL	JO60	34	0	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	I0LVA	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	IW5AVM	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/P	JO80	7	0	274
72	SP6MLK/P	JO80	6	3	272
73	F1FIH	JN23	6	1	181

DUBUS 3400 MHz Top List

NR	CALL	WW	WKD	C	ODX
1	PA0EZ	JO22	28	5	835
2	DB6NT/A	JO50	27	0	741
3	DL6NAQ/P	JO40	25	4	860
4	G3LQR	JO02	22	0	924
5	PA0WWM	JO22	21	5	850
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	DG1VL	JO	1	1	52

DUBUS 5760 MHz Top List

NR	CALL	WW	WKD	C	ODX
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	23	0	949
8	PA0BAT	JO31	21	7	723
9	DL1BKK	JO43	19	0	689
10	OZ1IPU	JO57	18	6	807
11	PA0WWM	JO22	17	7	863
12	F1GHB/P	IN88	17	0	669
13	I3ZVN	JN55	17	6	573
14	OK1KIR/P	JO60	17	3	393
15	OK1UWA/P	JO70	16	0	998
16	OE5VRL/5	JN78	15	6	901
17	DL0UL/P	JN48	14	0	660
18	S51WI	JN75	14	3	586
19	I0LVA	JN62	14	0	557
20	G6DER	IO93	13	0	947
21	F5HRY	JN18	12	3	442
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	DK2DB	JN48	11	0	315
27	OK1AIY/P	JO70	10	0	693
28	DL7QY	JN59	10	0	565
29	S51JN/P	JN65	10	3	557
30	OK1OKL	JO60	9	0	611
31	DL6NAQ/P	JO40	9	2	452
32	OZ1DOQ	JO65	9	4	442
33	DB1BX	JO32	9	4	425
34	DK0PX	JN48	9	0	409
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	OK2VMU	JN99	3	2	180
51	OK1KRY	JN69	3	2	175
52	F6CGB/P	JN24	2	0	375
53	G8BKE/P	IO80	2	0	242
54	ES2WX	KO29	2	2	89
55	GJ6WDK/P	IN89	1	0	136
56	OK2QI	JO80	1	0	108
57	SP6MLK/6	JO70	1	1	1
58	SP6MLK/P	JO80	1	1	1
59	SP6GWB/P	JO80	1	0	1

DUBUS 10 GHz Top List

NR	CALL	WW	WKD	C	ODX
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	G3LQR	JO02	50	0	1006
8	SM7ECM	JO65	48	7	1110
9	PA0WWM	JO22	46	13	850
10	HB9MIN/P	JN37	45	0	939
11	DK1KR	JO53	45	0	868
12	PA0BAT	JO31	45	11	785
13	OE5VRL/5	JN78	42	10	1136
14	DB6NT/A	JO50	40	0	1000
15	DL3YEE	JO42	40	0	700
16	G4BRK	IO91	39	0	1115
17	I6XCK/6	JN63	39	0	702
18	SM6ESG	JO67	37	6	1275
19	OK1JKT/P	JO60	37	9	845
20	LX1DU	JN29	37	0	700
21	DL4EAU/P	JO51	35	9	826
22	I6CXB/6	JN63	35	0	751
23	G3GNR	IO70	34	0	1275
24	HB9RG	JN47	34	0	761
25	DJ1KP	JO40	34	0	554
26	DK0OG	JN68	33	0	524
27	I0LVA	JN62	32	0	850
28	DL6NAQ/P	JO40	32	8	656
29	G4DDK	JO02	31	0	901
30	DL3NQ	JN49	31	0	712

31	DL1BKK	JO43	30	0	842
32	OZ1IPU	JO57	28	7	941
33	HB9MIO/P	JN37	28	0	694
34	DL3IAS	JN49	28	9	584
35	DL6NCI	JO50	28	6	481
36	OK1OKL	JO60	27	0	795
37	DK0PX	JN48	25	0	567
38	OK1KIR/P	JO60	25	5	553
39	F1GHB/P	IN88	24	0	669
40	DL1VAA	JO61	24	4	661
41	DK0FLT	JN49	24	7	646
42	DH9NBB	JN49	24	7	646
43	DK4GD/P	JN48	24	0	566
44	ON7WR	JO20	23	9	756
45	OZ2OE	JO45	22	0	789
46	EA6ADW/P	JM19	21	4	850
47	OK1AIY/P	JO70	21	0	736
48	S51WI	JN75	21	5	586
49	DC8UG	JO30	20	6	753
50	DB1BX	JO32	20	7	705
51	S51JN/P	JN65	20	7	563
52	DL4VCG	JN39	20	0	533
53	I3ZVN	JN55	19	7	573
54	DF9QX	JO42	19	0	504
55	DK2DB	JN48	19	0	432
56	G4LDR	IO91	18	0	1118
57	LA/DB1DI/P	JO37	18	6	825
58	DL5NEN/P	JN49	18	6	466
59	DL2DR	JO31	17	4	603
60	DG1VL	JO61	17	3	391
61	DL0UL/P	JN57	17	0	363
62	ON7YK	JO20	16	0	494
63	HB9AMH	JN37	15	0	567
64	DL7QY	JN59	15	0	492
65	OK1UWA/P	JO70	15	0	434
66	IW5ADB	JN53	14	0	1053
67	G4PMK	IO93	14	0	958
68	DC0DA	JO31	14	0	639
69	I4XCC	JN63	13	0	496
70	OZ1DOQ	JO65	13	5	472
71	GW4LXO	IO81	12	0	309
72	G4KNZ	IO91	12	0	247
73	OK1DKS/P	JO60	11	2	616
74	S50C	JN76	10	3	346
75	F6CGB	JN18	9	0	677
76	DJ8ES	JO43	9	4	593
77	DC8EC/A	JN57	9	0	297
78	G4LRT	IO92	8	0	824
79	F5HRY/P	JN08	8	2	491
80	DL1KDA	JO30	8	4	477
81	F5PAU	IN88	8	0	264
82	DJ6XV	JO31	8	0	195
83	F6CGB/P	JN12	7	0	823
84	SP6GWB/P	JO80	7	0	374
85	DF1EQ/P	JO31	7	0	283
86	SP6MLK/P	JO80	6	4	355
87	PA3DIJ	JO33	6	0	344
88	ES0SM	KO08	5	2	384
89	DG0CAL	JO52	5	0	255
90	LA8AK	JO38	5	0	212
91	G8BKE/P	IO80	4	0	242
92	F5OIH/P	JN08	4	1	149
93	OK1DFC/P	JO60	3	2	185
94	DH3NAN	JO50	3	0	134
95	PA0JUS	JO22	2	2	245
96	DG5NEX	JN49	1	0	173
97	OK1KRY	JN69	1	1	78
98	SM4SJY	JP70	1	1	0

DUBUS 24 GHz Top List

NR	CALL	WW	WK	DC	ODX
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	S51JN/P	JN65	6	2	293
9	G4DDK	JO02	6	0	268
10	EA6ADW/P	JM19	6	2	226
11	DK4GD/P	JN48	6	0	184
12	G3WDG	IO92	5	0	392
13	PA0EZ	JO22	5	3	391
14	DL3NQ	JN49	5	0	287
15	IW3EHQ/P	JN66	5	1	278
16	G3LQR	JO02	5	0	261
17	SM6ESG	JO67	5	1	242
18	OK1KIR/P	JO60	5	2	227
19	DK0OG	JN68	5	0	193
20	OK1OKL	JO60	5	0	185
21	DF2CA/P	JN58	5	0	142
22	PA0BAT	JO31	5	2	131
23	OK1UWA/P	JO70	4	0	188
24	OK1DFC/P	JO60	4	2	185
25	DK0PX	JN48	4	0	168
26	F1GHB/P	IN88	4	0	158
27	G3GNR	IP70	4	0	154
28	DL3YEE/P	JO42	4	0	151
29	DL2DR	JO31	4	1	98
30	F5HRY	JN18	4	1	82
31	DL6NCI	JO50	3	3	280
32	OK1AIY/P	JO70	3	0	266
33	OK1AIY-P	JO60	3	0	227
34	G4KNZ/P	IO83	3	0	120
35	DG1VL	JO61	3	2	113
36	I3ZVN	JN55	3	1	102
37	DF1EQ	JO31	2	0	133
38	DB1BX	JO32	2	1	90
39	DK2DB	JN48	2	0	48
40	ON7YK	JO20	2	0	34
41	G4KGC	IO92	1	0	392
42	DC0DA/P	JO32	1	0	104
43	G8BKE/P	IO80	1	0	100
44	F5OIH/P	JN08	1	1	90
45	CT1DMK	IN50	1	1	82
46	CT1FP	IN50	1	1	82
47	DJ6XV	JO31	1	0	76
48	F6CGB/P	JN37	1	0	74
49	OK1OGS/P	JN69	1	0	60
50	GW4LXO	IO81	1	0	58
51	OZ1IPU	JO57	1	1	55
52	DL7QY	JN59	1	0	13
53	DL4VCG	JN39	1	0	9
54	SP6MLK/6	JO70	1	1	1
55	SP6MLK/P	JO80	1	1	1
56	SP6GWB/P	JO80	1	0	1

DUBUS 47 GHz Top List

NR	CALL	WW	WK	DC	ODX
1	HB9MIN/P	JN37	8	0	182
2	HB9MIO/P	JN37	8	0	166
3	HB9AMH/P	JN37	5	0	166
4	DK4GD/P	JN47	5	0	123
5	DF2CA/P_	JN58	4	0	15
6	DL2DR	JO31	3	1	71
7	IW3EHQ/P	JN65	2	1	106
8	OK1OKL	JO60	2	0	96
9	OK1UWA/P	JO70	2	0	96
10	OK1AIY-P	JO60	2	0	96
11	DB6NT/A	JO50	2	0	95
12	DL6NCI	JO50	2	2	83
13	DC0DA/P	JO31	2	0	69
14	DK0PX	JN48	2	0	62
15	DF2CA/P	JO60	2	0	59
16	DL3YEE/P	JO42	2	0	45
17	DL/HB9AMH/P	JN48	1	0	184
18	DC8EC/A	JN57	1	0	14
19	OK1AIY/P	JO70	1	0	12
20	OK1KIR/P	JO60	1	1	5
21	CT1DMK	IN50	1	1	1
22	SP6MLK/6	JO70	1	1	1
23	CT1FP	IN50	1	1	1

DUBUS 76 GHz Top List

NR	CALL	WW	WK	DC	ODX
1	DK4GD/P	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	DC	ODX
1	DB6NT/OZ	JO57	1	0	3
2	IW3EHQ/P	JN65	1	1	2
3	DB6NT/A	JO50	1	0	2

DUBUS 241 GHz Top List

NR	CALL	WW	WK	DC	ODX
1	DB6NT/A	JO50	1	0	2
2	DB6NT/OZ	JO57	1	0	0

DUBUS Order form - Bestellformular

Quantity / Anzahl

..... x TECHNIK 4 book – Buch DM 35,- (USD 25,-) = ... DM/USD

..... x TECHNIK 5 book – Buch DM 35,- (USD 25,-) = ... DM/USD

Add $ 6,- per book for airmal delivery outside Europe = ... USD

Map set / Locatorkarten-Set
1.) EU-map (WW+EU-Locator) 98 x 70cm with country + SQR-borders
2.) EU-map (WW+EU-Locator) 60 x 40cm for ticking off squares

..... X Map Set / Locatorkarten-Set DM 20,-(USD 13,-) = ... DM/USD

DUBUS Magazine back issues / ältere Einzelhefte:
2/81, 4/81, 4/83, 1/84, 2/84, 4/84, 1/86, 1/87, 2/87, 3/87, 4/87, 2/88, 3/88, 1/89
2/91, 3/91, 4/91, 2/92, 3/92, 4/92, 3/93, 4/93, 2/94, 3/94, 4/94, 2/95, 3/95
2/96, 3/96, 4/96, 4/97

Mark issues you want. Bitte gewünschte Nr markieren.
Price per issue: DL DM 5,- inkl. Porto, Other DM 7,-/USD 4,- incl. Postage

Anzahl der Hefte ..... x DM 5,- = ... DM
Nr of back issues ..... x DM 6,- / USD4,- = ... DM/USD

.... x DUBUS 1998 complete set (Jahrgang) DM 35,-/USD 25,- = ... DM/$

.... x DUBUS 1999 Subscription / Abo 99: DL/EU DM 35,- = ... DM

.... x DUBUS 1999 Subscription: Outside EU DM 40,- / $30,- = ... DM/$

Gesamtsumme / total amount : ..... DM / USD

(Books, Maps, Back issues, Subscriptions)

Gesamtsumme bitte als V-Scheck oder bar beilegen.
Please enclose total amount cash or Eurocheque in DM only.
(No creditcards, no other cheques)

Name: .....
Call: .....
Street/Str.: .....
ZIP/Town – PLZ/Ort: .....

Bitte einsenden an – Please send order to:

DUBUS-Verlag, Grützmühlenweg 23, D-22339 Hamburg, Germany

Note: Date for the WEINHEIM VHF Meeting is 11.-12. September 1999!

ACHTUNG – ATTENTION!
Korrektur für DUBUS BUCH TECHNIK 5!
Correction for DUBUS book TECHNIK 5!

Technik V/Page 58 **BVO-2wl (8 El.)**

Element	Position [mm]	Free SpaceLength [mm]	Length [mm] for 25mm Boom
R	0	1013	1016
DE	327	956	956
D1	534	949	952
D2	1073	934	937
D3	1828	917	920
D4	2687	908	911
D5	3540	903	906
D6	4245	914	917

"The 10 GHz Transverter"

NEW

The 3rd generation

This transverter with outstanding technical data is the result of the latest circuit design, using state of the art components.The module is useful for a high performance EME-station, but due to its small mechanical dimensions, may also be used for portable operations.

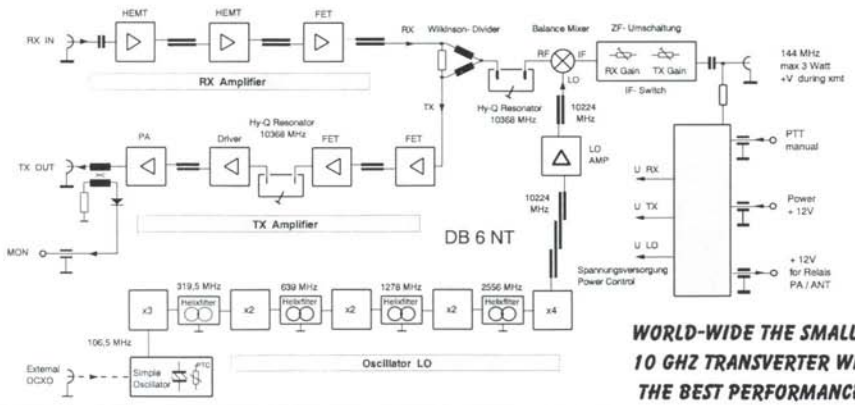
Rainscatter - Contest - EME - Tropo - BBT

- ☑ Noise figure typ. NF 1,2 dB
- ☑ Output power >200 mW
- ☑ 144 MHz IF --- 10368 MHz SHF
- ☑ Built-in IF and DC switch-over
- ☑ Selectivity achieved by helixfilter, high Q resonators and microstripfilters
- ☑ individual adjustment of RX- and TX-gain
- ☑ Provision for coupling-in an external OCXO
- ☑ Switched output voltage for external PA and antenna relays
- ☑ Directional coupler with detector for monitoring the output power
- ☑ Ceramic layered printed circuit board
- ☑ All components integrated within one module.
- ☑ Dimensions only 150 x 55 x 30 mm!

10 GHz Transverter MKU 10 G2
Price. 995 DM inc. 16% VAT

10 GHz Transverter MKU 10 G2
Option 01 No built-in oscillator. SMA connector for the input of an external OCXO required
106,5 MHz / 1mW
Price. 945 DM inc. 16% VAT

Shipping + packing 10.-DM Germany, 30.-DM Europe, Elsewhere...at cost



WORLD-WIDE THE SMALLEST 10 GHZ TRANSVERTER WITH THE BEST PERFORMANCE !

KUHNE electronic
MICROWAVE COMPONENTS

Additional sub-assemblies as well as professional units upon request.

Ask for our catalog!

Birkenweg 15
D - 95119 NAILA GERMANY
Phone: 0049 (0) 9288 8232
Fax: 0049 (0) 9288 1768
E- mail: kuhne.db6nt@hof.baynet.de
http: //web.aurecvideo.fr/infracom/db6nt.html

Postvertriebsstück, C11159, Entgelt bezahlt
DUBUS Verlag, Grützmühlenweg 23, D-22339 Hamburg

Umfrage:

DUBUS Bücher TECHNIK 1, 2 und 3

Aufgrund wiederholter Anfragen nach den Büchern TECHNIK 1, 2 und 3 starten wir an dieser Stelle eine Umfrage unter den DUBUS-Lesern. Wer Interesse an einem Nachdruck der Bücher hat, kann sich ab sofort vormerken lassen. Falls genug Vorbestellungen vorliegen, werden die Bücher nachgedruckt. Wir werden über das Ergebnis im DUBUS 1/99 an dieser Stelle berichten. Es werden nur so viele Bücher gedruckt, wie Vorbestellungen vorliegen!
Der Preis pro Buch berträgt DM 35,- (inkl. Porto)
ACHTUNG: Bitte jetzt noch kein Geld/Schecks senden!
Vormerkungen bitte bis spätestens 31.3.1999 einsenden!

DUBUS TECHNIK 1, 2 and 3 Reprints wanted?

If we get enough orders, we plan to reprint the DUBUS books TECHNIK 1, 2 and 3. You can order until March 31st 1999.
We will print only the ordered number of books!
Price per book is DM 35,- (USD 25,-) per book including postage within EU.
For overseas airmail add USD 6,- per book.
Please do not send any money right now.
We will inform about the progress in DUBUS 1/99!

Vorbestellung / Order

..... x DUBUS TECHNIK 1, DM 35,- / USD 25 = ... DM/USD
..... x DUBUS TECHNIK 2, DM 35,- / USD 25 = ... DM/USD
..... x DUBUS TECHNIK 3, DM 35,- / USD 25 = ... DM/USD
Total Amount / Gesamtsumme: =..... DM/USD

Vorbestellung einsenden an / Please send order to:
DUBUS, Grützmühlenweg 23, D-22339 Hamburg, Germany
or via e-mail: Joachim@Kraft.net

Name/Call:
Street/Str:
ZIP+Town/PLZ/Ort: