

Vol. 29

# DUBUS



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## CN 2 DX



Entirely Devoted to VHF/UHF and Microwaves

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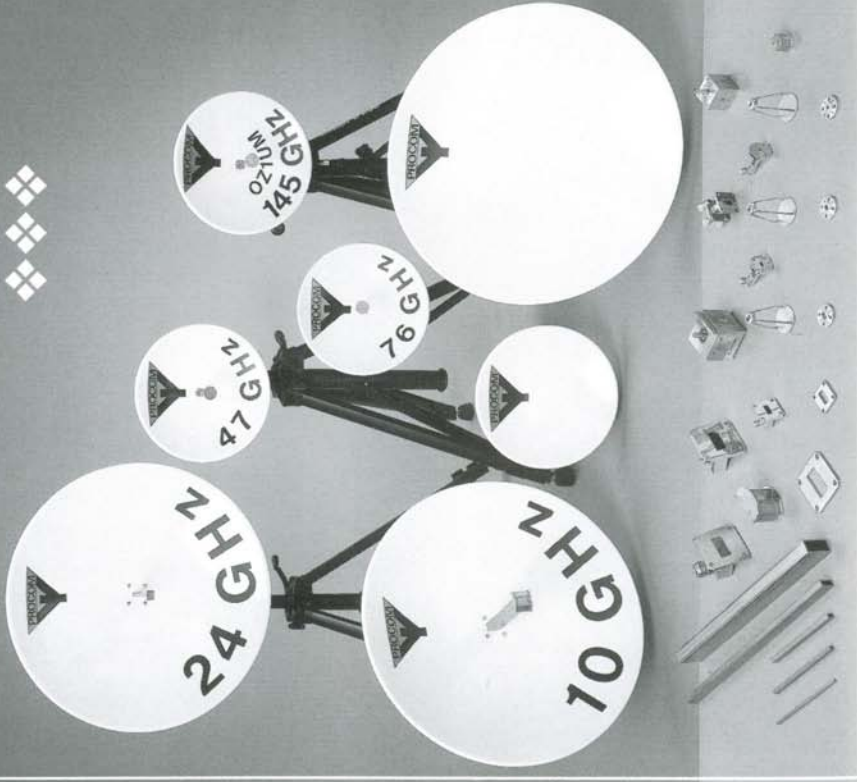
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**MICROWAVE**



# Inhalt/Contents

Title: CN2DX DX-expediton

|                                 |                              |
|---------------------------------|------------------------------|
| <b>Technical Reports</b> .....  | 6                            |
| 2.3 GHz Transverter MKII .....  | Michael Kuhne, DB6NT . . . 6 |
| <b>Microwave Products</b> ..... | 20                           |
| <b>Microwave Europe</b> .....   | 23                           |
| <b>Microwave USA</b> .....      | 28                           |
| <b>EME News</b> .....           | 30                           |
| <b>6m News</b> .....            | 52                           |
| <b>Tropo News</b> .....         | 54                           |
| <b>Es News</b> .....            | 58                           |
| <b>Aurora News</b> .....        | 73                           |
| <b>Meteor Scatter</b> .....     | 83                           |
| <b>DUBUS Toplist</b> .....      | 88                           |

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#### **DUBUS**

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

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# Technical Reports

Editor: Rainer Bertelsmeier, DJ9BV

## 2.3 GHz Transverter MKII

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Birkenweg 15, D-95119 Naila, Germany

### 1. Einführung

Der hier beschriebene Transverter ist eine Weiterentwicklung der 1993 veröffentlichten Schaltung. Die Baugruppe konnte durch die Verwendung moderner Halbleiterbauteile in ihren technischen Daten weiter verbessert werden. Durch Bearbeiten des Leiterplatten-designs hinsichtlich Kühlung der Leistungsbauteile konnte eine weitere Verbesserung des Transverters erreicht, sowie die Nachbaubarkeit vereinfacht werden. Die Schaltung ist auf keramikgefülltem Epoxydsubstrat aufgebaut. Das Empfangsteil erreicht eine Rauschzahl von kleiner 0,8 dB NF, bei mehr als 20 dB Verstärkung. Somit ist auch ein externer Empfangsvorverstärker nicht mehr erforderlich. Das Sendeteil erzeugt eine Ausgangsleistung von 1W, bei typisch -60 dB Neben- und -30 dB Oberwellen Unterdrückung. Der Transverter ist für die lineare Umsetzung des 2 Meter- Bandes in das 13 cm Amateurband Schmalbandbereich 2320...2322 MHz konstruiert, durch kleine Änderungen ist der Transverter auch auf die OSCAR P3D Frequenz 2400...2402 MHz abstimmbar. Der 2 Meter Steuerleistungsbe-reich ist von 0,5...3 Watt einstellbar, durch Änderung eines Widerstandes sind auch 10 mW ausreichend. Die Steuerleistung sollte

nicht zu groß gewählt werden um eine unnötige Erwärmung der Baugruppe durch die ZF-Verlust- Leistung zu vermeiden. Der gesamte Transverter mit ZF- Umschaltung, Steuerausgang für Koaxrelais oder PA's, Quarzoszillator, LO- Aufbereitung ist in einem Weißblechgehäuse mit den Abmessungen 60x150x30mm untergebracht. Ein Abgleich durch aufwendige HF-Messtechnik entfällt, es ist lediglich ein Spannungsmesser erforderlich.

### 1. Introduction

The new version of the 13cm transverter is an improved circuit of the transverter described in 1993 [8]. By use of modern semiconductors and refinement concerning cooling and the easy replication of the circuit a further optimisation of the transverter had been possible.

The current transverter is a singleboard construction on RO4003 substrate. The receiver has a noise figure of typical 0.8dB at more than 20dB gain.

The transmitter achieves an output power of more than 1W in a frequency band of 2320...2320MHz at an IF of 144MHz. The spurious rejection is better than 60dB. Harmonic rejection is better than 30dB.

Everything -TX, RX, LO, IF-Switch and T/R-control is on a single board housed in a 60x150x30mm large box from tinplate.

For tuning only a simple detector is necessary. All filters are helical filters with restricted tuning range. The restricted tuning range of the helical filters doesn't allow tuning on 'false' resonances.

By a small modification the transverter can also be tuned to the OSCAR P3D range of 2400...2402MHz.

## 2. Schaltungsbeschreibung

### LO

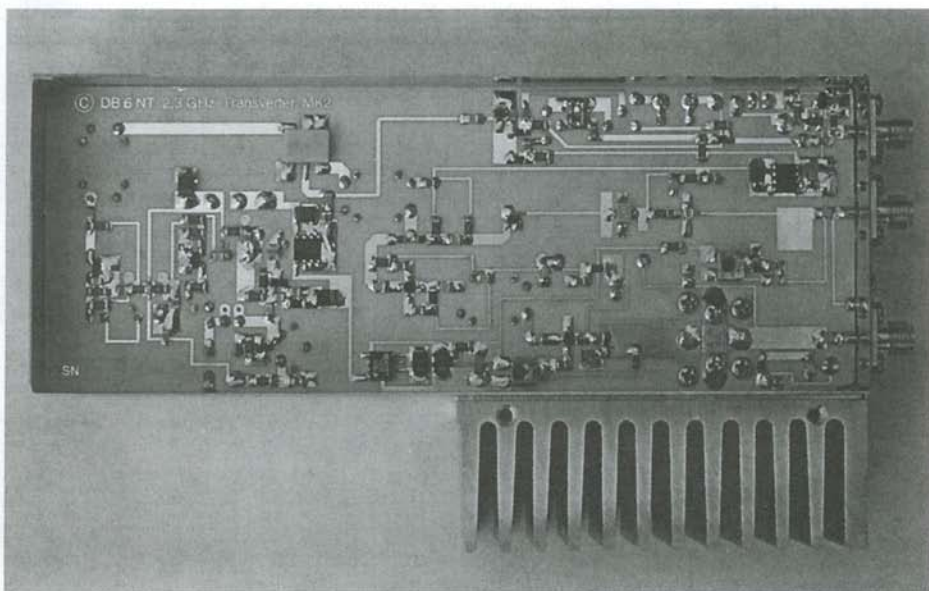
Der bewährte "Simple Quarzoszillator" mit dem FET SST310 schwingt auf 120,889 MHz. Die Frequenzeinstellung erfolgt durch den Messingkern in der Oszillatorschleife. Ein auf das 40°C Thermostatenquarz aufgesteckter PTC-Heizer stabilisiert die Quarztemperatur und somit die Frequenzdrift in gewissen Grenzen. Weiterhin wird durch Einbau entsprechender Kondensatoren (TK. Im Schaltplan mit \* gekennzeichnet) im Oszillator eine weitere Temperatur-Kompensation

erreicht. Dafür sind 2 Kondensatorlötlstellen vorgesehen. Die Stabilität reicht für normale Verhältnisse aus. Sollte eine sehr genaue und hochstabile Frequenz benötigt werden, ist an der im Schaltplan eingezeichneten Stelle ein externer "Ofenstabilisierter" Oszillator "OCXO" mit ca. 1 mW (DF9LN) einzukoppeln. Dazu wird der Quarz mit Heizer entfernt.

Nach dem Oszillator folgt eine Verdreifachstufe mit dem BFR92. Über ein Helixfilter wird die Frequenz 362 MHz selektiert und auf den Verdreifacher mit BFG 93A gekoppelt. Nach einem weiteren Helixfilter, das auf 1088 MHz abgestimmt wird, gelangt das Signal auf einen Frequenzverdoppler. Nach dem Helixfilter auf der LO-Endfrequenz 2176 MHz steht eine LO-Leistung von ca. 5 mW zu Verfügung.

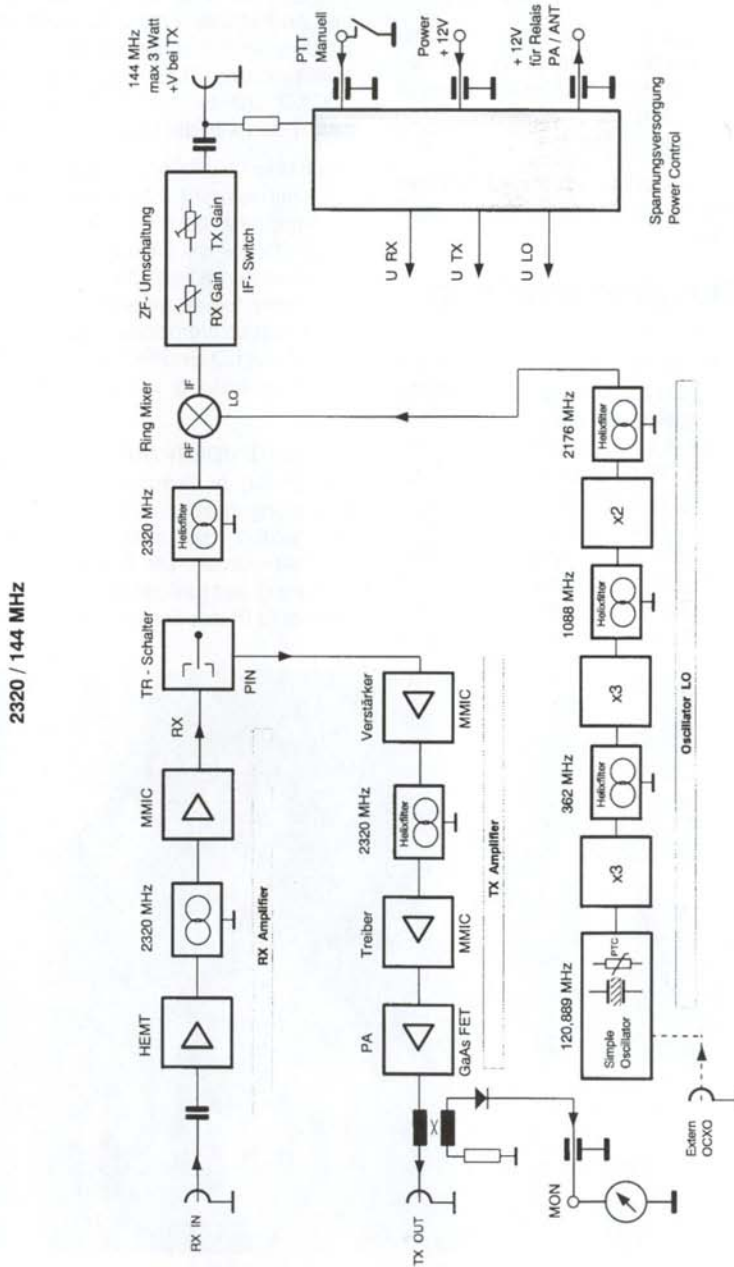
### Sende-/Empfangsumschaltung

Das ZF-Signal wird über getrennt einstellbare Dämpfungsglieder für Sender und Empfänger geführt, die durch PIN-Dioden umgeschaltet werden. Die Sende-Empfangs-Umschaltung des gesamten Transverters erfolgt über eine Plusspannung bei TX auf dem ZF-

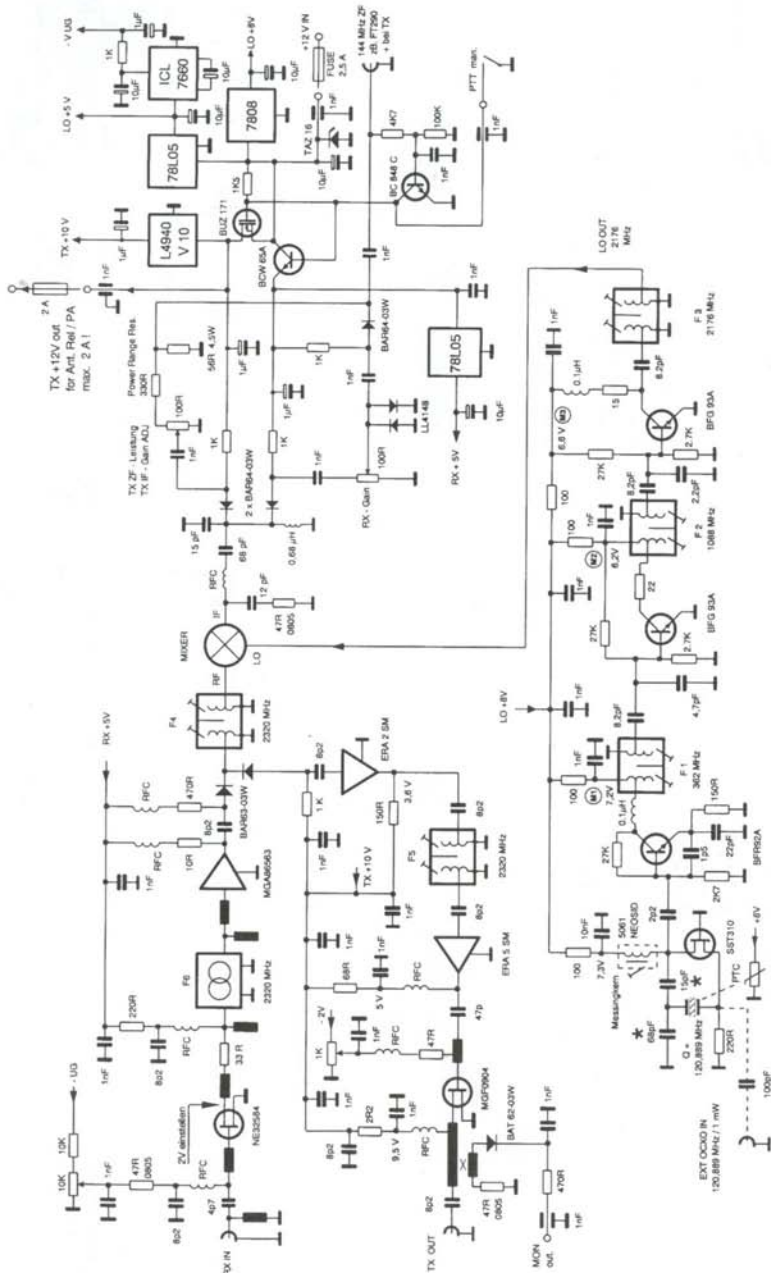


2.3GHz Transverter Top View

Bild/Figure 1: Block Diagram

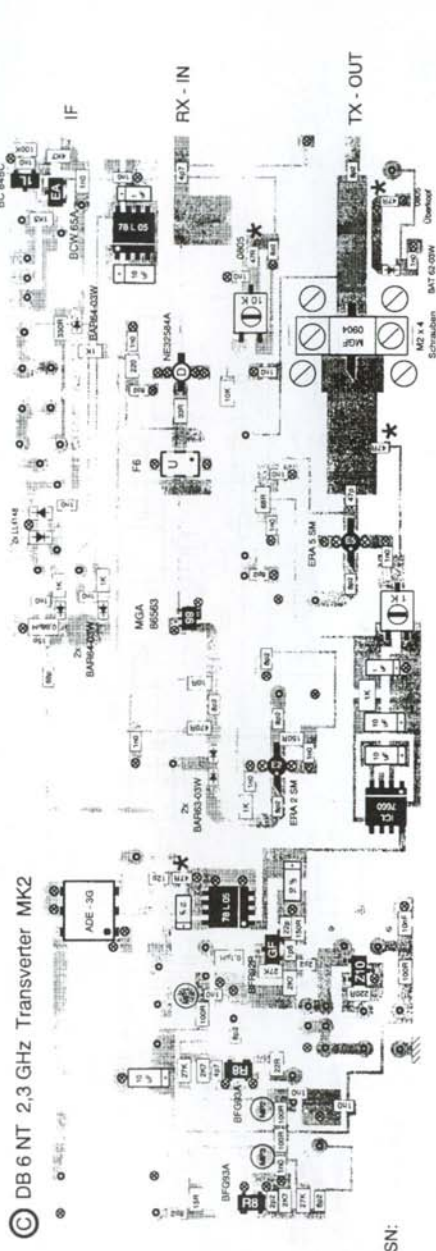


### Bild/Figure 2: Circuit Diagram



Die Spannungs- und Leistungsangaben sind Messwerte der Prototypen. Die Angaben können durch Bauteiltoleranzen stark abweichen!

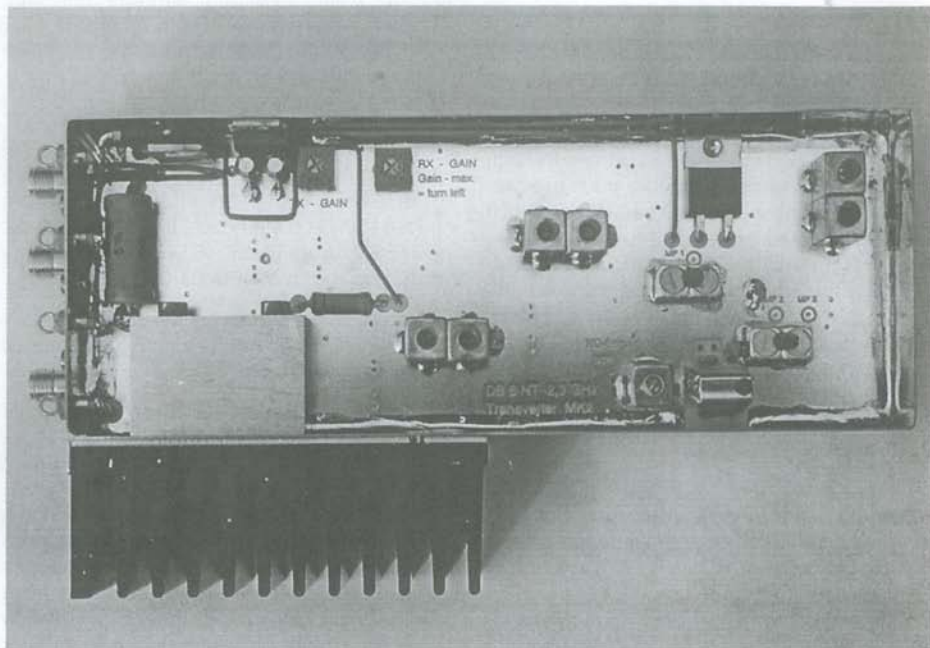
### Bild/Figure 3: Parts Layout



NS



## 2.3GHz Transverter Bottom View



Steuerkabel, wie es bei dem FT290R bereits eingebaut ist. Bei anderen Transceivern ist ein kleiner Umbau erforderlich (Eine bei Senden verwendete +Spannung im 2m Transceiver, über einen 2K2 Widerstand auf die Ausgangsbuchse legen, fertig!). Diese Steuerung benötigt keine weiteren Steuerkabel und hat sich seit Jahren bestens bewährt. Des Weiteren ist aber auch die klassische Umschaltung mit PTT- Kontakt nach Masse möglich. Die Betriebsspannungsumschaltung im Transverter erfolgt durch Transistoren. Die Schaltspannung des Senders ist herausgeführt und kann zur Steuerung von Koaxrelais sowie Leistungsverstärkern verwendet werden (max. 2A belastbar). Dieser Ausgang sollte unbedingt mit einer Feinsicherung geschützt werden.

## RX

Das Empfangsteil besitzt eine HEMT- FET Vorstufe und einen weiteren MMIC mit einer Gesamtverstärkung von 30 dB. Dadurch wird kein weiterer ZF-Verstärker benötigt. Das über einen 4,7pF Kondensator gekop-

pelte Eingangssignal wird dem rauschangepassten NE32584C zugeführt. Danach folgt über ein Multilayer- Keramikfilter F6 die zweite Stufe mit dem MMIC - MGA86563. Über die RX-TX PIN- Diodenumschaltung und ein weiteres Helixfilter F4 folgt der Ringmischer.

## TX

Über das auch für den Sendezweig benutzte Helixfilter F4 hinter dem Mischer, gelangt im Sendefall das TX-Signal auf eine MMIC Verstärkerstufe. Über ein weiteres Helixfilter F5 zur Nebenwellenunterdrückung wird das zweite MMIC ERA 5-SM angesteuert. Die darauf folgende Endstufe ist mit dem GaAs Power FET MGF 0904 bestückt. Zur Nebenwellenunterdrückung werden Helixfilter verwendet. Am Senderausgang ist ein Richtkoppler mit Schottkydiode BAT62-03W eingebaut. Er ermöglicht die Kontrolle der Ausgangsleistung (Monitoring MON.) und erleichtert den Abgleich der Schaltung.

## 2. Description

### LO

The proven 'simple' XO uses the FET SST310 in a grounded gate circuit. The crystal frequency for a 144MHz IF is 120.899MHz. The coil is tuned by the brass tuning screw. An extra 40°C PTC-heater improves the drift characteristic of the XO. Extra pads are provided for fitting additional capacitors which can be selected for temperature compensation. For normal use in a restricted temperature change environment the stability is sufficient. But for more serious work a special outboard solution like the OCXO from DF9LN is required. This can be fed in at the source of the SST310, as indicated in the circuit diagram. The crystal and the heater have to be removed in this case.

The XO is followed by a tripler to 362MHz which utilises a BFR92A transistor. The third harmonic is filtered by a helix bandfilter and drives the tripler with the BFG93A. The output filter selects the harmonic at 1088MHz. The final stage of the multiplier chain is a doubler with a BFG93A. At its output the final LO signal of 2176MHz can be obtained. The power at this point is around 5mW (7dBm).

### T/R-Switch

The IF-port of the mixer is terminated by selectable attenuators for transmit and receive. These are switched by PIN-Diodes BAR64-03W to a common IF-connector. A voltage of at least +9V, which can be supplied by a FT-290 for example, activates the T/R-switching. Other brands of 2m transceivers have to be modified accordingly.

Whilst this method of T/R-switching via the IF coaxial cable is quite elegant, also a separate method via the PTT-MAN input can be accomplished.

An extra output is fitted for TX+, which can be used for external coaxial relays or PAs. This output must be guarded by a 0.63A fuse. It is not safe in case of short circuit!

### RX

The RX-chain uses a HEMT-Amplifier (NE32584C) and a second stage with a

MGA86563 MMIC from HP. The gain of >30dB makes an extra IF-amplifier obsolete. The stages are coupled with a ceramic filter F6. The second stage is coupled to the mixer via then PIN-Switch and a helical Filter F4.

### TX

After the PIN-Switch and the helical Filter F4, which is used both for receive and transmit, a ERA2SM MMIC from MCL follows and drives via a second helical filter F5 the MMIC ERA5SM from MCL. The final stage is equipped with a MGF0904 GaAs-FET.

A directional coupler with a BAT15-03W Schottky diode allows for a monitor voltage of the RF output power.

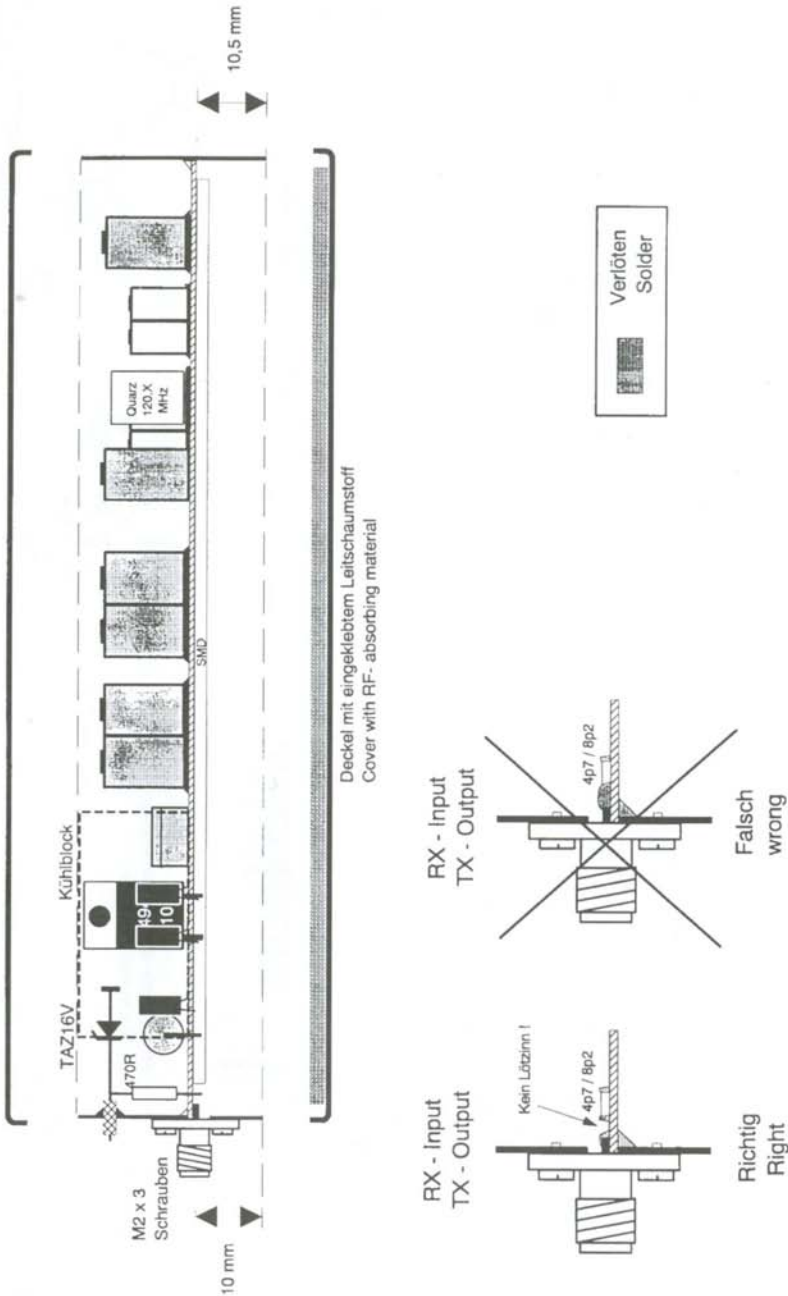
## 3. Konstruktion

Zum Aufbau des Transverters sind Erfahrungen mit SMD- Bauteilen und deren Verarbeitung zwingend notwendig. Es sollte in keinem Fall das "SMD- Erstlingswerk" werden, da Bauteile sehr kleiner Bauform zu verarbeiten sind. Ferner sollten Grundkenntnisse beim Aufbau von UKW Schaltungen vorhanden sein. Verschiedene Komponenten wie FET's sind statisch sehr empfindlich. Es wird dringend empfohlen "ESD" Schutzmaßnahmen beim Aufbau einzuhalten. Dazu gehört eine geerdete und temperaturgeregelte SMD-Lötstation sowie eine leitende und geerdete Arbeitsunterlage.

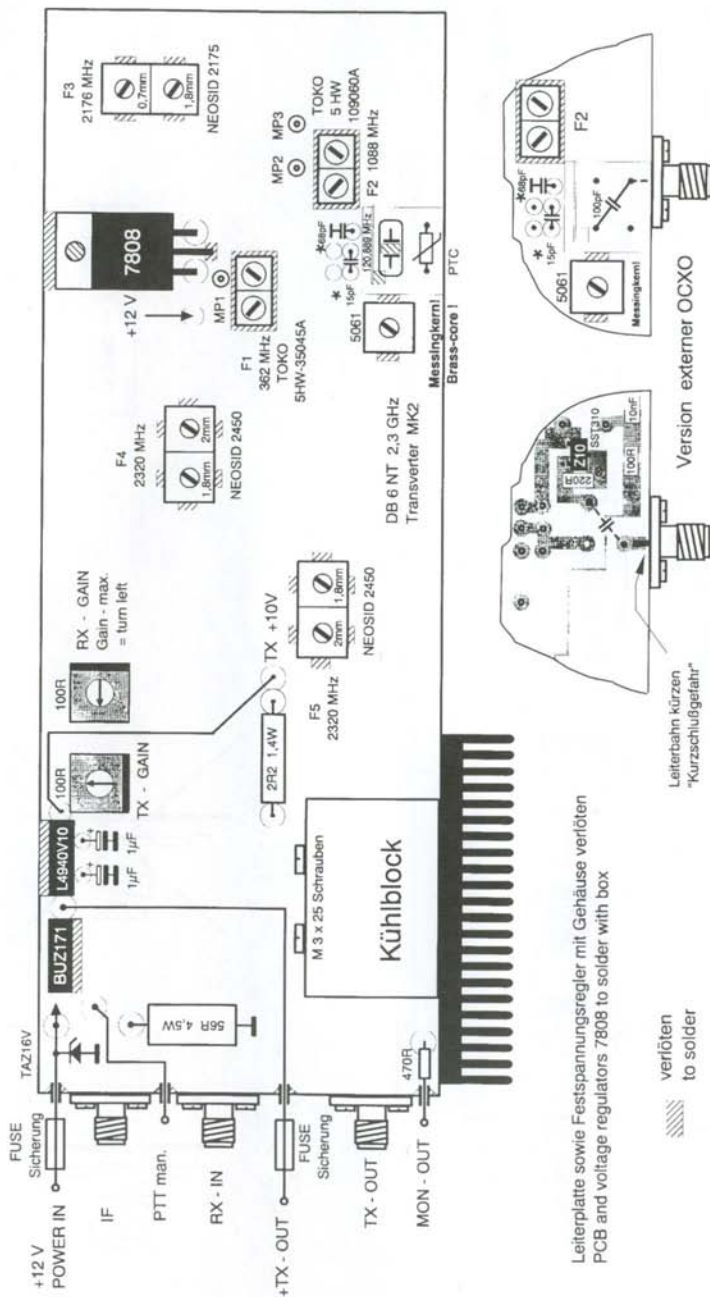
### Aufbauaufolge:

1. Anpassen der Leiterplatten an das Weißblechgehäuse durch Anfeilen der Ecken.
2. Anzeichnen der Löcher am Blechgehäuse für die SMA- Koaxbuchsen
3. Bohren der Löcher für Buchsen und Durchführungskondensatoren. M2 Gewinde für SMA-Buchsen. Kürzen der SMA-Buchsen-Anschlüsse auf ca. 2,3mm Länge. Montage der SMA- Buchsen
4. Einlöten der Leiterplatte in das Gehäuse (siehe Zeichnung). Rundherum verlöten! Um einen gleichmäßigen Abstand der Leiterplatte beim Einlöten zu erreichen, hat sich ein 10,2 mm starkes Holzstück als Unterlage bewährt.

Bild/Figure 4: Construction Hints



Bild/Figure 5: Parts Layout Top View 2320MHz



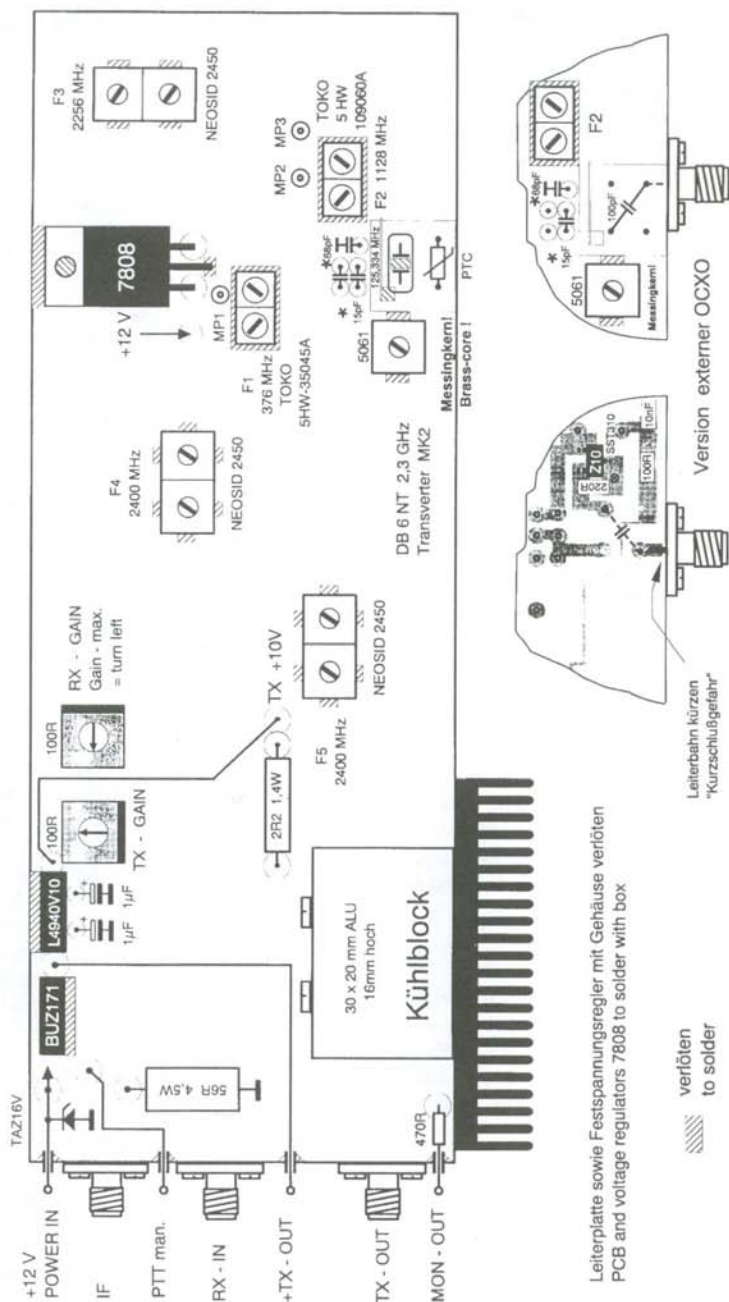
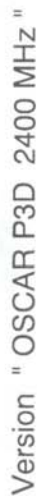
Leiterplatte sowie Festspannungsregler mit Gehäuse verlötet  
PCB and voltage regulators 7808 to solder with box

verlöten  
to solder

Leiterbahn kürzen  
"Kurzschlußgefahr"

Version externe OCXO

Bild/Figure 6: Parts Layout Top View 2400MHz



5. Bestücken der Leiterplatte und Durchführungskondensatoren. Verlöten der Helixfilter, siehe Bestückplan. Der Festspannungsregler L4940V10 wird mit dem Kühlflansch am Weißblechgehäuse verlötet. Dabei ist das mittlere Masseanschlußbeinchen abzubereiten. Der FET BUZ 171 wird voll auf die Leiterplatte gedrückt und dann an den Beinchen verlötet, da sonst der Kühlflansch den Deckel berühren würde (Kurzschlußgefahr). Für die SMD Bauteile sollte 0,5mm Lötzinn verwendet werden. Danach wird die Baugruppe in Alkohol (Spiritus) gewaschen. Sollte ein Ultraschall-Waschbad verwendet werden, ist der Quarz erst danach einzulöten (Quarze werden durch starken Ultraschall beschädigt). Trocknen bei ca. 80°C im Ofen ( 1Std. ), oder über Nacht auf einem warmen Heizkörper.
6. Einlegen des Kühlblock's in das Gehäuse und Anzeichnen der zu Bohrenden 2 Löcher, die zur Befestigung mit dem Rippenkühlkörper dienen ( Bohrer ca. 3,5...4mm, entgraten! ). Vor dem Zusammenschrauben sollte etwas Wärmeleitpaste zwischen Kühlblock, Seitenwand und Kühlkörper gegeben werden. Die Montage mit den M3 x 25 mm Innensechskantschrauben sowie den 4 Stck M2 x 4 mm um den Endstufentransistor sollte wechselseitig erfolgen, dabei ist ein Luftspalt zwischen Leiterplatte und Kühlblock zu vermeiden. Die Montage des Endtransistors erfolgt ebenfalls mit etwas Wärmeleitpaste.

### 3. Construction

To achieve a successful construction of this transverter the builder has to have experiences in the use and handling of SMD-parts. Furthermore experiences with smaller projects in microwave circuits are valuable. In any case the construction of this transverter is not a beginners project.

The usual ESD protection measures should be obeyed. (see [5] for an excellent survey).

### Construction Steps

1. Solder the walls of the tinplate box and trim the PCB for fitting into the tinplate box.
2. Mark the holes for the SMA-connectors
3. Drill holes for SMA-connectors and feedthrough caps. Mount the SMA-Connectors.
4. Solder PCB into the box (Fig. 4). Use a 10.2mm high piece of wood as a ruler to find the right height adjustment.
5. Mount the parts onto the PCB (Fig. 3). Mount the feedthrough caps. Solder the helix filters (Fig. 4). Solder the regulator L4940V10 with its heatsinks to the wall of the tinplate box. The FET BUZ171 should be fitted to the PCB by holding it tightly down and soldered. Clean the the finished PCB with alcohol. The tuning screws of the resonators should be removed. Dry the module in a stove (1h at 80°C) or over night lying on a central heating.
6. Put the heatsink into the box, mark the two holes and drill it. Put thermal compound between the PCB, side wall and the heatsink before mounting. two M3x25 and four M2x4 screws are used.

### 4. Abgleich

1. Anlegen der +12V Betriebsspannung von einem Netzgerät mit Strombegrenzung ca. 1A. Kontrolle der Betriebsspannungen an den Festspannungsreglern.
2. Messen der Kollektorspannung des BFR92 Verdopplers am Messpunkt 1. Eindrehen des Messingkerns in die Oszillatorschule - Papierstreifen als "Kernbremse" beilegen ! Beim Anschwingen des Oszillators geht die Spannung auf ca. 7,2V zurück.
3. Messen der Spannung am Messpunkt 2. Durch wechselseitiges Abstimmen des 362 MHz Bandfilters -F1- wird auf minimale Spannung abgeglichen, ca. 6,2V (maximaler Strom = optimale Ansteuerung). Die Keramikschrauben verursachen bei sehr häufiger Betätigung Metallabrieb auf ihrer Oberfläche. Erkennbar durch "ruppiges" Abstimmverhalten. Der

Belag kann mit einem Glasfaserstift entfernt werden.

4. Messen der Spannung am Messpunkt 3. Durch wechselseitiges Abstimmen des 1088 MHz Bandfilters -F2- wird auf minimale Spannung abgeglichen, ca. 6,6V (maximaler Strom = optimale Ansteuerung).
5. Eindrehen der Messing-Abstimmsschrauben nach dem im Bestückplan eingezeichneten Maßen (Filter F3, F4 und F5).
6. Anschließen einer geeigneten Antenne oder eines Abschlußwiderstandes an die Antennenbuchse der Empfangsteile. Messen der Spannung am Drainanschluß des NE32584C Vorstufentransistors und Einstellen von ca. 2V durch das 1 K Potentiometer am Gate der FET's.
7. Anschließen eines 2m Empfängers am ZF- Ausgang in Stellung SSB. RX- und TX- Gain-Potentiometer sind dabei auf Linksanschlag zu drehen (max. Verstärkung). Jetzt sollte ein Rauschanstieg im 2m Empfänger zu hören sein. Durch wechselseitiges Abstimmen des Helixfilters F4 sollte auf maximales Rauschen und somit Empfangsverstärkung abgeglichen werden. Danach erfolgt der Abgleich des LO- Filters F3. Ist am 2 Meter Transceiver ein S- Meterausschlag von mehr als S1 zu erkennen, kann die Verstärkung des Transverters mit dem RX-Gain Reglers entsprechend angepasst werden. Somit ist der Abgleich des Empfangsteils abgeschlossen.
8. Anschließen des Senderausgangs an eine geeignete Antenne oder einen Abschlußwiderstand. Transverter auf Stellung "Senden" schalten. Einstellen des Ruhestroms der Endstufe auf ca. 220 mA oder 9,5 V am Drain des Transistors. Ansteuerung durch ein 2m Sendesignal mit 0,5...3 Watt. Messen der Monitorspannung am Richtkoppler. Es ist eine Gleichspannung zu messen. Diese Spannung ist der Ausgangsleistung proportional. Jetzt folgt der Abgleich des Helixfilters F5 auf max. Monitorspannung = Ausgangsleistung. Zurückregeln der Monitorspannung auf ca. 1 Volt durch das Rechtsdrehen des TX- Gain Potentiometers.

ters. Jetzt erfolgt der Feinabgleich des Helixkreises -F5- (2320 MHz) und des LO- Filters -F2- (2176 MHz) auf maximale Ausgangsleistung.

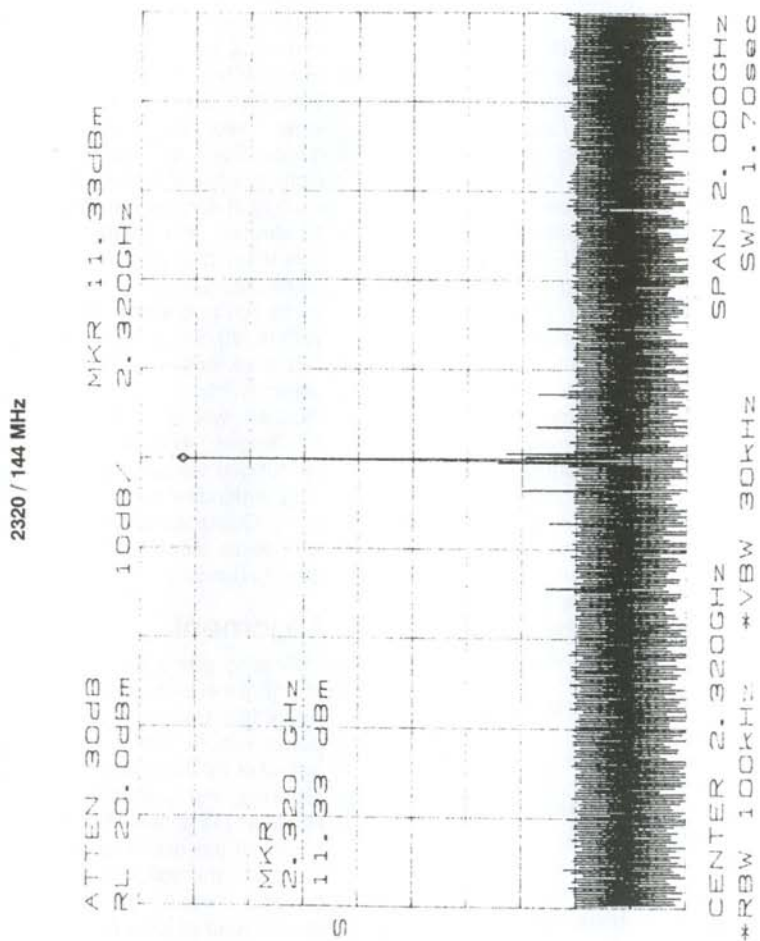
9. Einpegeln der Sendeleistung durch Drehen des TX-Gain Potis. Dabei ist die Monitorspannung zu messen. Es empfiehlt sich, die Ausgangsleistung auf ca. 80% des Maximalwertes einzustellen, um somit im linearen Arbeitsbereich des Transverters zu bleiben.
10. Anschließen einer Empfangsantenne. Einstellen der Oszillatorfrequenz mittels einer Bake mit bekannter Sendefrequenz. Sollte sich die genaue Frequenz nicht einstellen lassen, ist eine Drossel mit 0,22 H parallel zum Quarz einzulöten.
11. Einkleben von niederohmigem Leitschaumstoff in den unteren Deckel des Gehäuses (Dadurch werden Gehäuseresonanzen und somit Schwingneigungen verhindert). Einbau der Baugruppe in ein Gehäuse, wobei der Transverter zur besseren Kühlung auf das Chassisblech montiert werden sollte. Dafür sind im Kühlkörper entsprechende Gewindebohrungen vorgesehen. Eine gute Kühlung verhindert auch eine Frequenzdrift des Quarzoszillators. Ein geeignetes Koaxrelais dient zur Sende-/Empfangsumschaltung.

## 4. Alignment

The following steps are necessary for the alignment of the transverter:

1. Apply 12V. Use a current limited (< 0.6A) power supply. Check the voltage at the output of the fixed voltage regulator.
2. Measure the collector voltage at the BFR92P (Testpoint M1). Turn the tuning screw of the oscillator coil until the decrease of the collector voltage indicates the proper oscillation. The measurement should read around 7.2V.
3. Measure voltage at M2 (Fig. 2). Tune bandfilter F1 (362MHz) to minimum voltage (about 6.2V) at M2.
4. Measure voltage at M3 (Fig. 2). Tune bandfilter F2 (1088MHz) to minimum voltage (about 6.6V) at M3.

Bild/Figure 7: Output Spectrum



5. Tune the brass tuning screws of the helical filters F3, F4 and F5 as indicated in Fig. 5.
6. Connect dummy load or antenna at input connector of RX. Adjust 10k pot for a reading of 2V at the drain of the RX-FET NE32584C.
7. Connect 2m receiver at IF connector. Turn RX-Gain and TX-gain pots fully CCW. You will observe an increase in noise level. By tuning the helical filter and F4 you can maximise the noise output. Afterwards the LO filter F2 can be tuned. If there is an indication of more than S1 at the 144MHz transceiver you should adjust the RX-Gain Pot accordingly.
8. Connect a 50Ω dummy load to the TX output. Switch transverter to transmit by grounding the PTT input. The idle current of the MGF0904 should be set to 220mA. Drive the transverter with 1...3W on 144MHz. Measure the monitor voltage at MON OUT. It should read 2...3V. Tune F5 to maximum output. Adjust TX-Gain pot to a reading of about 1V. Now tune the helical filter F5 and the LO-filter F2 can be readjusted to maximum output.
9. Reduce the TX-gain by clockwise rotation of the TX-gain pot until the TX output starts to decrease. A value of 80% of the maximum assures linear operation.
10. Connect antenna to RX input. Adjust the XO until a known beacon reads the correct frequency. If the correct frequency cannot be adjusted solder a 220nH choke in parallel to the crystal.
11. Take low resistance carbonised foam and glue it into the bottom cover. This damps the resonances of the box. The heatsink should be mounted onto a chassis plate to further reduce the thermal resistance.

"Nachbauten" die 100% Reproduzierbarkeit der Schaltung bestätigten.

My special thanks to Lorenz, DL6NCI. His support and the discussions were mandatory for the success of this development. Also my thanks to Gert, DG8EB, Richard, DF5SL, and to DG8NEI and DL4DTU, who verified the reproducibility of the design by building this transverter.

## Literatur/References:

- [1] ROGERS Leiterplattenmaterial Firma Mauritz Hamburg Datenblatt RO4003
- [2] NEC Datenblatt NE32584C
- [3] SIEMENS Datenbuch RF- Halbleiter
- [4] NEOSID Filter Datenbuch
- [5] Philips Halbleiter Datenbuch
- [6] TOKO Datenbuch Helixfilter
- [7] Mini- Circuits Datenblatt Ringmischer
- [8] "Transverter for 2.3 GHz by DB6NT" DUBUS 3.93 (DUBUS Buch IV)

## Bezug

Fertige Baugruppen oder Bausätze/Ready made modules and kits:

KUHNE electronic Birkenweg 15 D-95119 NAILA Tel: 0049 (0) 9288 8232 Fax: 0049 (0) 9288 1768 Email: kuhne.db6nt@t-online.de <http://www.db6nt.com>

## 5. Danksagung/Acknowledgement

Mein besonderer Dank gilt Lorenz DL6NCI der durch seine "Aufbau"-Erfahrung und zahlreichen Anregungen entscheidend zur Serienreife des Transverters beitrug. Ferner bedanke ich mich bei Gert DG8EB und Richard DF5SL sowie Norbert DL4DTU die durch

# Microwave Products

Editor: Rainer Bertelsmeier, DJ9BV

## Product Review: L145P

### Description

With the advent of power PHEMT's, which have been designed for low noise and low intermodulation amplifiers for GSM base stations a large step in better performance of 144MHz LNA's can be achieved. Because of their low 1/f corner and their large dynamic range the new devices are especially suited for 144MHz LNA's.

The L145P is a Low Noise Amplifier (LNA) for the 144MHz band equipped with the latest power PHEMT from HP. By virtue of this special device and its unique circuit design it provides the performance needed for serious 144MHz weak signal operation like EME, Meteor Scatter, Aurora, ES, Tropo DX and satellite.

The electrical features of the L145P are:

- Frequency Range: 140...150MHz
- Gain: > 24dB
- Noise figure: < 0.3dB
- Input return loss: > 4dB
- Output return loss: > 20dB
- Output IP3: > 22dBm

Constructional features:

- Temperature compensated bias circuit (Voltage and Current regulation) for wide operating temperature range of -20...+60°C
- Milled aluminium enclosure for optimum RF performance and rugged mechanical operation
- Professional production quality

### Construction

The circuit uses a series-L match in the input for an exceptional low noise figure. Noiseless feedback in the source is used for improved input match and RF-stability on the operating frequency. The output match and broad band stability is achieved by a diplexer circuit which terminates the output of the PHEMT into 50Ω for all frequencies outside the passband.

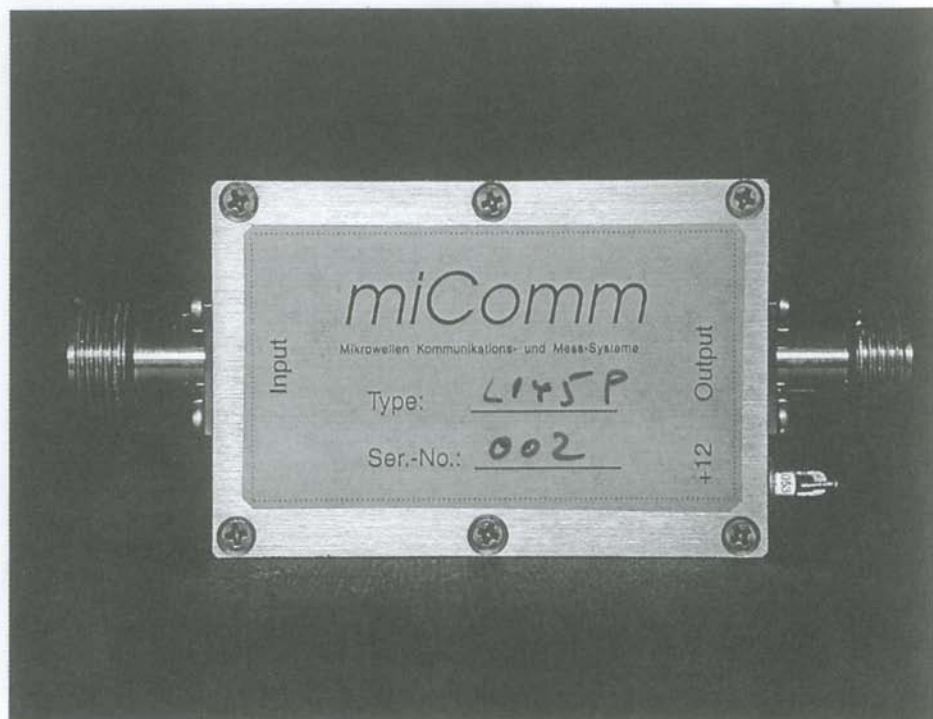
A temperature compensated bias circuit provides an active current regulation of the PHEMT and uses a negative voltage on the gate to allow for a DC-grounded source. Resonance free operation from DC to microwaves is the result. This is the key for maximum electrical stability and operation over a wide temperature range.

In the usual commercial or amateur design the source of the active device is grounded via a RC-combination. This introduces shifts in bias current under varying temperature and poor electrical stability because of the resonances caused by the capacitor parasitics.

This amplifier is constructed in SMD technique on a high grade RO4003 microwave substrate with a dimension of 34x52mm. The enclosure is a heavy duty milled aluminium box with the dimensions 43x64x30mm. The RF-connectors are N-female with N-male as an input option. The mass of the very small unit is a sheer 160g.

The DC-feed is made from a professional AMP PI-type EMI-filter, which provides suppression of external electrical noise from 10MHz to 10GHz. As an option remote feed-

## The L145P preamp for 2m



ing of the LNA through the coax cable can be fitted. The amplifier is protected against wrong polarity by a series diode and voltage spikes by a Siemens SIOV transient suppressor.

## Measurement Results

The measurement results are quite impressive. Figure 1 shows noise figure and gain versus frequency. From this figure the preamp is usable over the full band from 140...150MHz.

Another point is the high output IP3, which is advantageous under crowded band conditions. The power PHEMT used runs with 40mA drain current at 3V drain to source voltage. This gives 6dB more output power and hence a comparable increase in IP3 in comparison to the ubiquitous MGF1302 which typically runs at 10mA drain current.

## Conclusion

This small unit has a lot of value packed inside. This seems to be a new stage of performance and quality in the field of 144MHz preamps.

The manufacturer of this gadget is *miComm*, Germany. A similar model for 432MHz with the same size and properties is designated L432P.

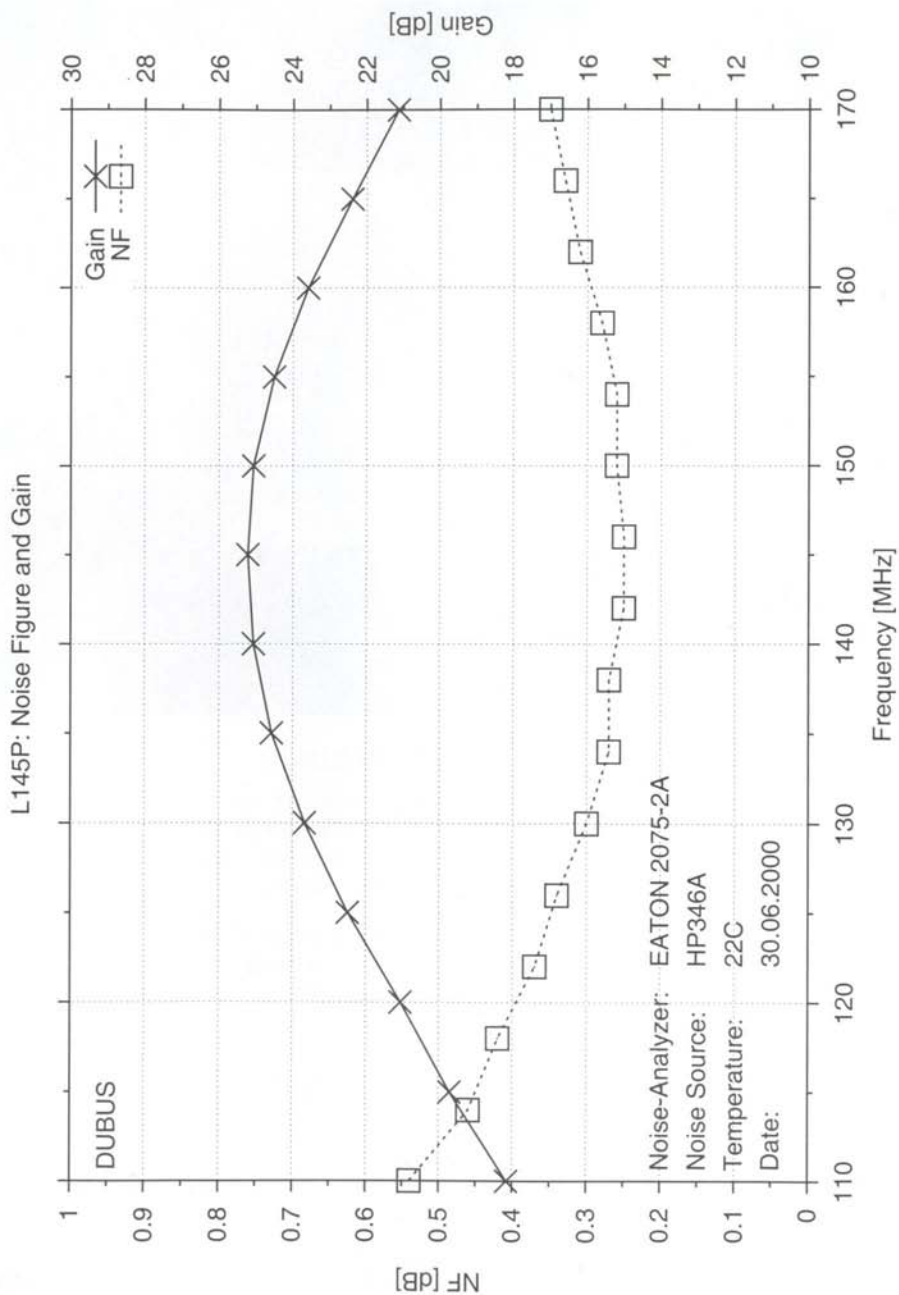
## Distribution

Ready made units are available from:

- Kuhne Electronic in Germany.  
Webpage: [www.db6nt.com](http://www.db6nt.com)
- RFham in France.  
Webpage: [www.RFham.com](http://www.RFham.com)

Both distributors also sell world-wide via the web.

Bild/Figure 1: Noise figure and gain



# Microwave Europe

Editor: Simon Lewis, GM4PLM

Hello and welcome to another ME column. It has been a busy period at home since the last column, we are still settling into our new home in Ayrshire, but things have been set back a little as a period of serious illness knocked me off my feet for a while. This also meant that I have been very late in replying to some people's mail and actioning some requests. If you have not yet received a reply then please email me and remind me. A specific apology goes to Hannes OE5JFL. Sorry you had to wait so long for a response.

Feedback on the new column format has been coming in from all over the globe and generally positive to the new format. Only one negative comment was received, that person wanting to keep the old column format. When Rainer asked me to edit this column, we were conscious that the column was losing interest and that Dubus needed to become more readable. This is of particular importance in this age of the Internet where operating information is available online almost instantaneously. Rainer therefore gave me a free hand as to what happened to the column. Discussing the changes with him, we agreed on the initial format and that is the format you are seeing here. So far the vast majority of the feedback has been very positive and that hopefully means, that in general, you are all happy. The column format is fluid and other changes may take place - especially given peoples feedback, but for now I am quite happy with it and with your comments.

As nothing much else has happened radio-wise at the home QTH, its onto the real news!

## News and items of Interest

Microwave Update 2000. John Sortor, KB3XG of the Mt. Airy VHF Radio Club, Inc.

("The Pack Rats") sends you a personal invite to the worlds most prestigious microwave event. Johns says; "We would like to invite the Microwave Update group to Philadelphia for Microwave Update 2000. For those of you that are unfamiliar, the Pack Rats are a group of VHF and above enthusiast's with a 43-year history. The club was started by a small group from Philadelphia with the sole purpose of promoting VHF activity. We have sponsored one of the area's best Hamfests (Hamarama) for the past 28 years and have hosted the Mid Atlantic States VHF Conference since 1975. I feel it is important to mention a little bit about Pack Rat history to assure the Update group that we have a well-oiled machine in place to put on a great show. The dates for Microwave Update 2000 will be:

- Surplus Tour: Thurs Sept 28
- Conference: Fri Sept 29
- Conference: Sat Sept 30
- Hamarama: Sun Oct 01

The Holiday Inn Select, Bucks County will be providing accommodations for the event. This is a 215-room full service hotel with a restaurant, lounge, indoor pool, fitness room, etc. It is centrally located between the Bucks County countryside and historic Philadelphia. We will have full use of the conference center Friday and Saturday. Two smaller meeting rooms will be available for the evening flea market(s). I even got permission to use the executive suite for the obligatory Update Happy Hour(s). This will require a special key to be issued to gain access to the executive elevator. The hotel staff has told me that late night rag chewing is expected.

## SPECIAL BLOCK ROOM RATE CLOSES 8/31/00

Room rates will be in the low to mid \$80's. There is no additional charge for double occupancy. We have blocked out 100 rooms under the key code

"Microwave Update" which will be held for us until August 31. This might sound like a lot of rooms but don't wait until the last minute to make your reservation. This is a busy area.

Holiday Inn Select, Bucks County 4700 Street Road Trevoese, PA 19053 (215) 364-2000

In addition to ham activities we are tentatively planning some extracurricular activities for stranded ham family members. Most attractions can be reached in less than 1 hour. We will include the list of activities with the registration package to see who might be interested in what.

Atlantic City Casino bus trips Franklin Mills Outlet Mall Liberty Bell & Old Philadelphia NJ State Aquarium Philadelphia Park Race Track Sesame Place Valley Forge National Park

Of course it wouldn't be Microwave Update without the surplus tour. There are more new and surplus houses within a 50-mile radius around the Holiday Inn than you will be able to visit in one day. I said new equipment because Down East Microwave Factory Tours will be on the list. Be

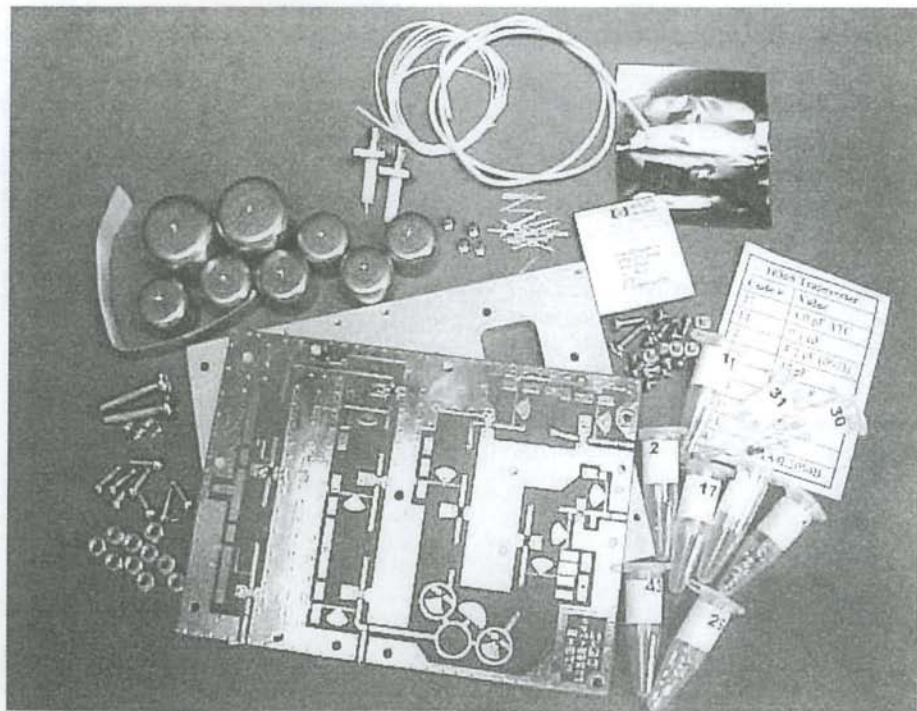
careful not to spend all your money on Thursday. There will be evening flea markets at the hotel and don't forget Hamarama on Sunday. Hamarama is one of the biggest and best Hamfests in the northeast and still attracts sellers with 'basement' gear. Tickets to the Hamfest will be available for additional cost at the conference.

I have been the chairman of the Pack Rat Conference for over 10 years now and I know from experience that it's never too early to start begging for papers. If you would like to present a paper at Update 2000, please e-mail me so I can put you on my reminder list. We hope you are as excited about visiting Philadelphia in 2000 as the Pack Rats are about hosting Microwave Update. We hope to see you next year.

Best 73's John Sortor, KB3XG

## Equipment Review

Down East Microwave 10 GHz Transverter and Transverter Interface Boards. Steve from DEM sent me news of their latest products.



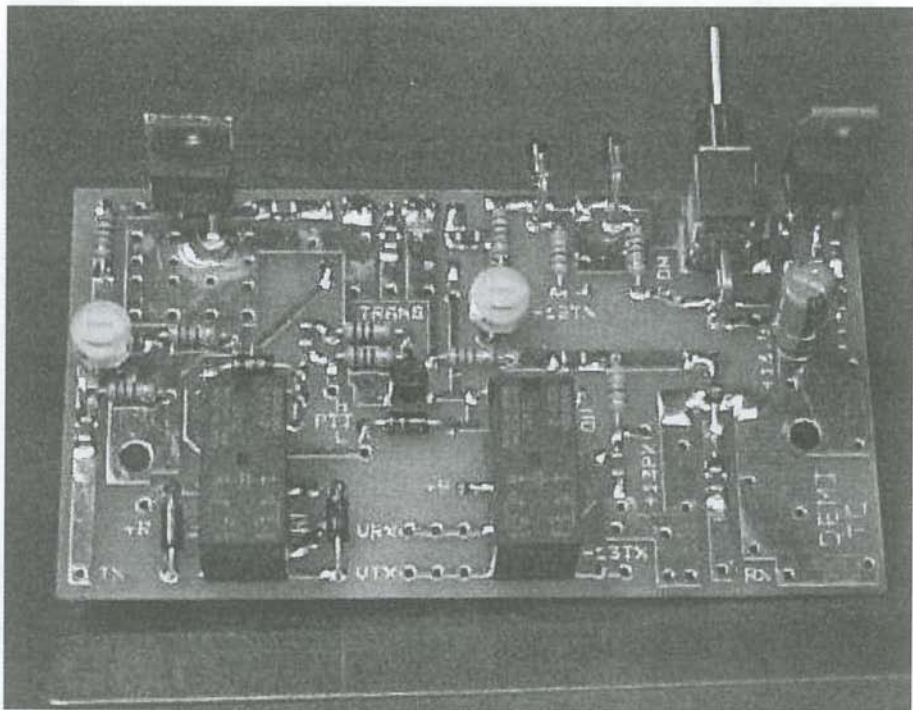
DEM 10GHz

### The transverter for 10 GHz.

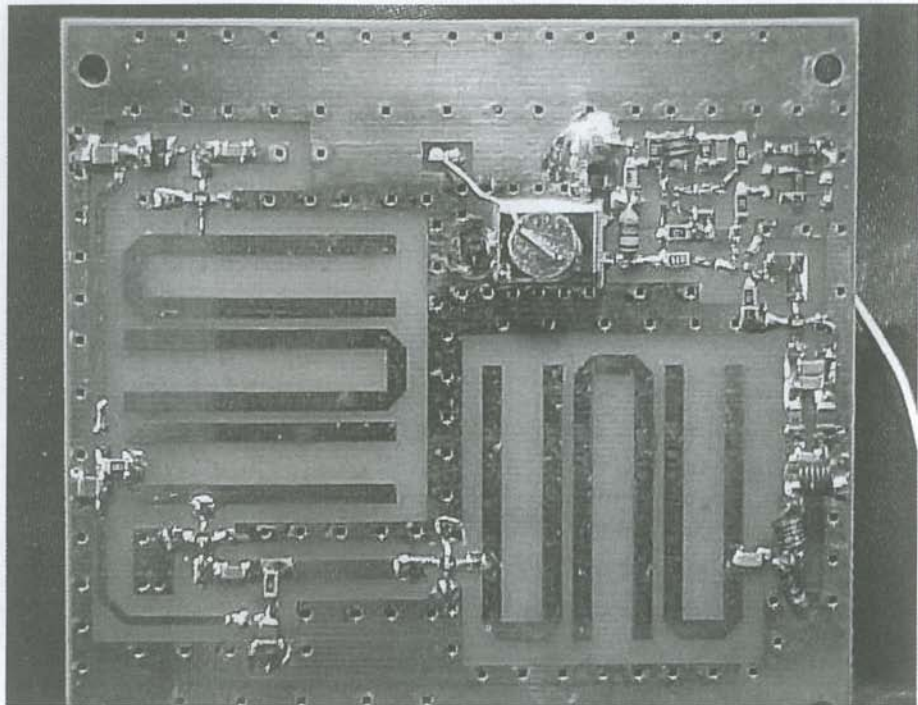
The new Down East Microwave 10 GHz. transverter is available as a kit (DEM 10368-144) or as an assembled and tested unit. The assembled unit is a complete transverter ready to be interfaced with a low power 2 meter transceiver. The unit was a joint effort design by that well known US microwaver, Paul Wade W1GHZ (N1BWT) and Steve at Down East Microwave. The design work was published in the 1999 NEWS VHF conference proceedings and 1999 Microwave Proceedings. Many new approaches have been taken in the design. Starting with the local oscillator (MICROLO) a redesigned version of the 1152 Weak Signal Source board. The Local Oscillator, is derived from a 189.333 MHz. base oscillator, and provides +5 dBm output at 1136 MHz. This enters a 3X multiplier on the transverter PCB, is amplified and then is multiplied 3 X again. There are provisions to measure the power levels at every multiplication injection point for testing and tuning. The transverter PC board utilizes MMIC's in every gain stage including a new GaAs MMIC (Fujitsu FMM5701LG) that is used in the receiver section front end that establishes the

system noise figure. The transverter has the TX and RX ports spaced correctly for a direct connection of common SMA relay so it can be used as a stand alone portable rig. The 2M IF is controlled by a PIN switch (DEM PINK) which enables the use of up to a 3 watt 144 MHz input level and provides the switching voltage functions for the transverter. A keying circuit is built in to the PINK and is either PTT to ground or Positive voltage for transmit. The PINK also controls the T/R functions of the transverter board. Future developments already under way include a 200 mW power amplifier and a redesigned single stage PHEMT LNA that will make this an excellent system for beginners, especially in the completed forms.

The DEM Transverter Control (DEM TC) is a new interface that is installed in every DEM transverter 2.3 GHz and higher. It was designed to replace the DEM PIN (or PIN KIT) pin switch attenuator. This new design now incorporates many new features with the standard functions of the DEM PIN and is highly suitable for inclusion in any homebrew transverter, and probably many other applications as well. The interface PCB measures 80 x 50mm, which is designed to fit all of the



DEM IF



DEM IF

newer DEM microwave enclosures and can be easily used to replace the older DEM PIN's that were installed in transverters with a simple modification to the enclosure. The board offers all of the features of the original interface, such as common or split IF operation with either a PTT High or Low for keying. It also still incorporates adjustable attenuators for both transmit and receive and can be connected to a 2 mixer system. It also still has options for additional receive gain if required and will perform all DC switching functions for the transverter. The new interface features include a 10 watt attenuator and a RF relay that replaces the PIN diode switch network. The relay offers better IF isolation and is not frequency sensitive allowing any frequency IF to be used without changing components. Another feature included on the new interface is a 1.5 A, 9 Volt regulator and a 24 Volt relay driver for SMA relays. All of these new circuit improvements have been in DEMI's standard microwave transverters in the past, but have all been independent circuits. This new design combines these circuits as a kit and will improve reliability of the transverter. The RX/TX IF isolation is 60dB. The adjustable RXIF

and TXIF controls have 15 -20 dB of range. The interface is not designed to be a RF sensed switch but contains the interfacing for hard PTT switching and/or a + voltage on the antenna connector of the IF transceiver. For the latest pricing and ordering information see: <http://www.doweast-microwave.com> Please mention the Microwave Europe column when ordering. There are also club and bulk discounts available. See website for further details.

Software Review Paul Wade W1GHZ's Palm Pilot microwave logger has been updated again and you can find his website listed below.

### Internet Spotlight

[http://www.qsl.net/g4klx/G4KLX\\_6cms\\_Resource\\_Page](http://www.qsl.net/g4klx/G4KLX_6cms_Resource_Page)

<http://www.jenisys.co.uk>Excellent UK lightning detector page - Looking for RS??

<http://www.w1ghz.cx>Paul Wade W1GHZ's online microwave antenna book

## Beacon and Operating News

An interesting letter received from Adalbert DJ3KM and Dieter DJ4AM brings news of 3cms QSO over 2079 km. The QSO took place at 1651 UTC on 25th June 2000 between Lampedusa Island (JM65HM) and Netanya in Israel (KM72KH). Operating as IG9/DJ3KM and 4X/DJ4AM, the pair made a CW QSO for more than an hour over the path. Signals in CW peaked at S2. Equipment at both ends comprised DL1RQ transverters, 5 Watt PA's and 60cm dishes. 70cms IF's using FT790's were used for the QSO. I have asked Dieter for some more information on this DXpedition and hopefully he will have pictures of this fine QSO. Well done both.

News from Rudi OE5VRL now. He reports activity over the past few years on 47 GHz, culminating in a QSO between himself (JN78DK) located at 865M ASL and DK9MN (JN58TC) at 580M ASL on 17.12.98 over a 201 KM path using SSB. DK9MN used a 70cm dish and Rudi a 3m dish. Equipment used comprised DB6NT transverters with less than 0.2 mW output. The path worked was non-optical.

Werner Bentele DF6TK is now QRV on 3cm from JN47TT using 5 Watts/0.9m Dish. He is happy to accept skeds and can be contacted on +49 751 48083 or +49 171 7856562.

## New Record on 24GHz

Information from Silvano IOLVA reports a 24 GHz QSO over a 461 KM path between himself (JN72CD) located at Chieti and IW3EHQ/3 located at M.Pizzoc (JN66EB) on June 18 at 1228 GMT. The QSO was conducted using both CW

and SSB with signals peaking at 51-52. Weather conditions at IOLVA were 8 deg C at 2000M ASL and 18 deg C at 1700M ASL with IW3EHQ/3. Equipment at IOLVA: 250 mW 90cm dish, 1.5 dB NF RX. Equipment at IW3EHQ/3: 750 mW 85 cm dish, 1.5 dB NF.

## News on Rain Scatter from I

During the contest at 3/4 of June, 2000 several stations from centre Italy worked to the north over distances up to 762km with a rough rainscatter like tone. IK0ZPD/0 in JN63KC worked OL2R (JN89AO/762km), OE3LI/3 (JN77XX/593km), OE3WOC/2 (jn67MR/514km). I6XCK/6 in JN63QM worked DC8EC (JN57UX/512km), OE3WOG/2 (JN67MR/468km), DL3MBG (JN67JX/498km), DK9MN (JN58TJ/559km), DJ7GK (JN69JA/613km). I6CXB in JN63RO worked OE3LI/3 (524km), DC8EC (504km), DJ7GK (604km), DL3MBG (489km), DK9MN (520km), OE5VRL/5 (JN78DK/541km), OE3WOG/2 (460km). Fabio, I6CXB does not believe in the rainscatter mode, but Goliardo, I4BER (tks for info, Goliardo) found on EUMETSAT pictures of thick clouds north of the alps on IR and visible wavelengths on the very same day. Anyway it seems that DL can be contacted on 10GHz from centre of Italy.

## New Address:

Please note all correspondence should now be sent to: Simon Lewis GM4PLM, Creoch Farm, Ochiltree, Ayrshire, KA18 2QH. Telephone: +44 (0) 1290 700008. Email remains the same at: gm4plm@emn.org.uk Web: www.emn.org.uk

## 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      | 2000-06-18   | IOLVA-IW3EHQ/3   | 461      |
| 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   | DL6NCL/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:

Simon Lewis, GM4PLM, Creoch Farm, Ochiltree, Ayrshire, KA18 2QH, UK

# Microwave USA

Editor: Kent Britain, WA5VJB

The hot and dry summer has been poor for propagation. But a very valuable propagation tool has been the tropo forecast Web site [www.iprimus.ca/~hepburnw/tropo\\_car.html](http://www.iprimus.ca/~hepburnw/tropo_car.html). This site takes weather data from all over the world, calculates atmospheric density and refractive index, then maps this data for the next three days.

The Roadrunner Microwave Group has members in Texas and Florida, a distance across the Gulf Mexico of about 1500 km. The Hepburn tropo forecast maps are being used to

arrange morning microwave schedules days in advance and were helpful in setting the new US 13cm tropo records. Maps for most of the surface of the world are available.

## Microwave Update 2000

The September 29th date for the Microwave Update 2000 conference is approaching quickly. This year the conference is hosted by the PackRats in Philadelphia, Pennsylvania. For additional information you can contact JohnKB3XG@aol.com. The 2001 Microwave Update Conference will be held in the San



Kent, WA5VJB(r) presents the Chambers Award to Barry, VE4MA

Francisco area. Conference details for the 2001 Microwave Update Conference are still being worked out.

### **Central States VHF Society's conference**

For the first time, the Central States VHF Society's conference was held outside the US, hosted by VE4MA in Winnipeg, Canada. Certainly quite a change for me going from the 43C weather in Texas to the 22C weather in Winnipeg, but the Manitoba VHF'ers did an excellent job hosting the conference. While the Noise Figure results from the CSVHFS meeting are posted here (Will appear in DUBUS 4/2000), I am afraid we will not have the antenna range results. About 15 antennas were measured, but we do not know at this time who took the results.

The 2001 CSVHFS meeting will be held in the Dallas, Texas area, somewhere near the main airport. The hosts for this conference will

be Lillburn Smith and myself. We would like to invite everyone to our conference next July. Surplus Electronics tours and good technical presentations will be offered.



**Scene at CSVHF 2000**

# EME News

Editor: Bernd Wilde, DL7APV

What we have this issue :

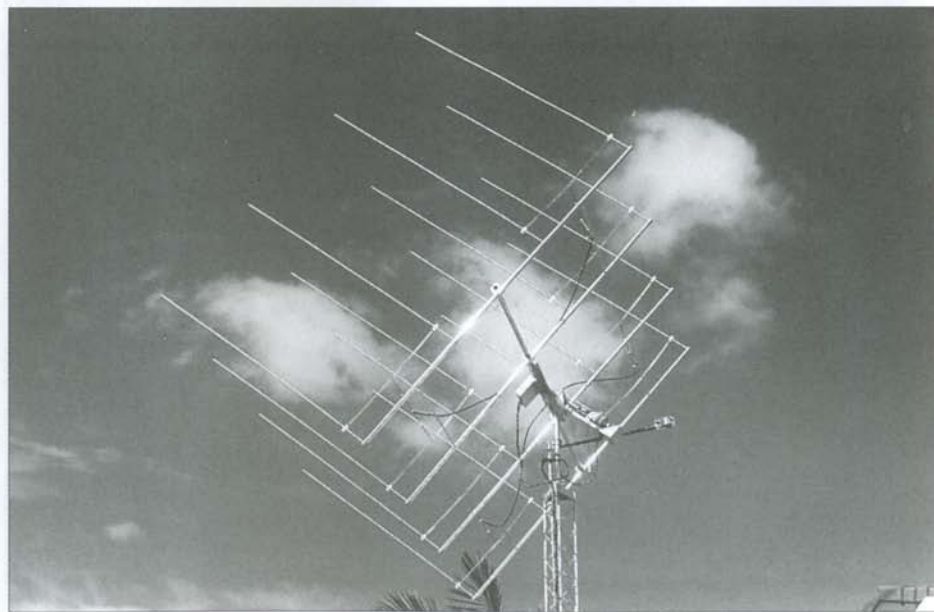
Dates for the **ARRL** contest Oct 21/22 & Nov 18/19.2000. The story about **OX2K** and some minds about **digital** modes on EME. And also a silent key.

## HG 100 BAY

Between 22and 30july 2000 HG 100 BAY a dedicated EME memorial radio station will operate in Hungary on 144, 432, and 1296MHz. The station has the following setup  
On 144 MHz : 4x11 el Yagi, 1KW output. On 432 MHz : 16x32 el Yagi, 1KW output. on 1296 MHz : 3,1m dish, 100W output.

The transmission is directed to the Moon and the aim is to receive the reflected signal and make with the memorial station. We send and expect to receive QSL from every succesfull connection and detection. More details can be read on the following web site: [WWW.PUSKAS.HU/HG100BAY](http://WWW.PUSKAS.HU/HG100BAY).

Moon echo experiments of Zoltan BAY and his team. On 06.feb/1946 dr. Zoltan Bay and his associates achived a thrilling scientific result: they were able to detect and receive a radar echo signal from the Moon. Precedents of this succesfull experiment were those re-searches of military purpose which envisaged the production of domestic active microwave



VK4AFL 16x6WU pol. rot.

## EME-TOPLIST

| Call | small | SQR | DX     | US | WAS | # |
|------|-------|-----|--------|----|-----|---|
|      | CC    |     | States |    | WAC |   |

## 144MHz

|        |     |    |     |    |      |           |
|--------|-----|----|-----|----|------|-----------|
| I2FAK  | 477 | 59 | 111 | 50 | 1993 | 1988 1045 |
| HB9CRQ | 395 | 57 | 96  | 50 | 1994 | 1987 725  |
| UA9FAD | 265 | 43 | 73  | 40 | --   | -- 400    |
| HB9Q   | 181 | 36 | 49  | 38 | --   | 1999 230  |
| GM4JJJ | 172 | 38 | 58  | 34 | --   | 1986 254  |
| RW1AW  | 157 | 33 | 37  | 28 | --   | 1999 186  |
| DM2BHG | 103 | 88 | 28  | 20 | --   | -- 135    |
| UA3PTW | 102 | 24 | 26  | 17 | --   | -- 136    |
| 9A9B   | 74  | 16 | 23  | 13 | --   | -- 91     |
| EA1ABZ | 63  | 55 | 23  | 9  | --   | -- 62     |
| SP7DCS | 49  | 18 | 19  | 11 | --   | -- 51     |
| DL2IAN | 47  | 16 | 17  | 14 | --   | -- 49     |
| PE1OGF | 46  | 14 | 61  | 16 | --   | -- 88     |
| YO2AMU | 36  | 18 | 24  | 12 | --   | -- 57     |
| YO2IS  | 33  | 14 | 16  | 10 | --   | -- 34     |
| RW3PF  | 29  | 12 | 11  | 7  | --   | -- 31     |
| F5HRY  | 21  | ?  | 8   | 7  | --   | -- 21     |
| SP2JXN | 15  | 8  | 9   | ?  | --   | -- 15     |
| DL1SUZ | 3   | ?  | 3   | ?  | --   | -- 3      |
| OK1MS  | ?   | 51 | 100 | 50 | 1992 | 1982 678  |

## 432MHz

|        |     |    |    |    |      |          |
|--------|-----|----|----|----|------|----------|
| DL9KR  | 378 | 52 | 82 | 50 | 1987 | 1978 715 |
| DJ6MB  | 280 | 41 | 61 | 44 | --   | 1984 337 |
| OK1KIR | 249 | 44 | 62 | 44 | --   | 1982 349 |
| DL7APV | 141 | 29 | 35 | 40 | --   | 1984 169 |
| F1ANH  | 125 | 25 | 31 | 25 | --   | -- 159   |
| ON4KNG | 119 | 25 | 43 | 18 | --   | 1996 146 |
| YO2IS  | 115 | 23 | 33 | 23 | --   | -- 141   |
| OE9ERC | 107 | 24 | 27 | 22 | --   | 1993 126 |
| G4ERG  | 107 | 23 | 31 | 28 | --   | -- 141   |
| DL8OBU | 90  | 23 | 29 | 21 | --   | -- 104   |
| RW1AW  | 74  | 23 | 25 | 19 | --   | -- 78    |
| OK1CA  | 71  | 24 | 26 | 22 | --   | 1996 121 |
| EA6ADW | 66  | 19 | 24 | 19 | --   | -- 69    |

|        |    |    |    |    |    |        |
|--------|----|----|----|----|----|--------|
| S52CW  | 44 | 15 | 17 | 12 | -- | -- 50  |
| UT3LL  | 41 | 23 | 17 | 13 | -- | -- 45  |
| UA3PTW | 34 | 12 | 16 | 10 | -- | -- 40  |
| F5HRY  | 31 | ?  | 14 | 8  | -- | -- 31  |
| OK1DFC | 13 | 7  | 13 | 7  | -- | -- 28  |
| ZS6AXT | ?  | ?  | 32 | ?  | -- | -- 152 |

## 1296MHz

|        |     |    |    |    |    |          |
|--------|-----|----|----|----|----|----------|
| OE9ERC | 140 | 29 | 35 | 28 | -- | 1993 201 |
| OK1KIR | 139 | 31 | 38 | 27 | -- | 1989 173 |
| HB9BBD | 121 | 26 | 34 | 24 | -- | 1994 142 |
| F1ANH  | 111 | 25 | 31 | 23 | -- | 1994 152 |
| DJ9YW  | 109 | 29 | 35 | 19 | -- | 1998 118 |
| EA6ADW | 108 | 24 | 31 | 24 | -- | 1994 148 |
| F5PAU  | 104 | 24 | 30 | 20 | -- | -- 121   |
| OK1DFC | 81  | 26 | 31 | 15 | -- | 1999 93  |
| OK1CA  | 44  | 18 | 22 | 9  | -- | -- 59    |
| ZS6AXT | ?   | ?  | 32 | ?  | -- | 1993 144 |

## 2300MHz

|        |    |    |    |   |    |       |
|--------|----|----|----|---|----|-------|
| OE9ERC | 41 | 14 | 19 | 8 | -- | -- 44 |
| OK1KIR | 38 | 13 | 19 | 9 | -- | -- 39 |
| F1ANH  | 17 | 8  | 11 | 5 | -- | -- 18 |
| OK1CA  | 9  | 9  | 9  | 1 | -- | -- 10 |
| EA6ADW | 8  | 4  | 8  | 1 | -- | -- 9  |
| ZS6AXT | ?  | ?  | 16 | ? | -- | -- 29 |

## 5760MHz

|        |    |    |    |   |    |       |
|--------|----|----|----|---|----|-------|
| OK1KIR | 14 | 10 | 11 | 3 | -- | -- 15 |
| OE9ERC | 14 | 7  | 12 | 2 | -- | -- 16 |

## 10368MHz

|        |    |   |    |   |    |       |
|--------|----|---|----|---|----|-------|
| OK1KIR | 13 | 9 | 11 | 2 | -- | -- 14 |
| OE9ERC | 11 | 8 | 7  | 3 | -- | -- 11 |

We need an update EVERY YEAR!!!

devices and using them to accomplish microwave terrestrial connection and the development of the radiolocator/radar. The work began at the United Electric Bulb Comp. hung. name: Egyesült Izzó, the engineer in charge of which was then Zoltan Bay, the brilliant physicist. Based on the experiment of the factory together with his associates, they soon developed microwave electronic tubes which were good for practical purposes as well. Using the electronic tubes, successful transmission and reception experiments were carried out and the first impulse-operated ra-

diolocator radar had borne. During the successful distance measurements made by the radiolocator, Zoltan Bay had a smart idea: the radiolocator could be used also for scientific purposes. Using the Moon as a reflecting surface, the active investigation of space could be started.

After important research work had been done and solving many practical problems had previously seemed impossible from which we emphasize here only the usage of hydrogen coulomb-meter for signal measurement and detection below noise level, their effort

succeeded on 06.feb. 1946. and the signal reflected from the Moon had been detected and measured. Just four weeks after the Americans did the same, they independently achieved this wonderful result. More details can be read on the afore-mentioned web site. Best regards and mny 73,s Ernie.

## 144 MHz

### DM2BHG reports

Since last report I worked the following new callsign's: RU1AA, UT1PA, G0RUZ, DJ5RE, IK7EZN, NJ0M, SM3MXR, SM3PWM for now 135 initials. The QSO with NJ0M was a curiosity. I was very confused concerning Paul's sequencing, but finally we did it. After that he told me, that he was in a situation to handle two stations at the same time, because the last sked was not finished yet. Congrates Paul. At the moment I have my antennas down. A new array is under construction. That will be 4 x WX 228, X-configured with full adaptivity on Rx and H, V, -45° and +45° on Tx. Most is due to Leif's proposals on his WEB-site. Need's a lot of work (new H-frame, second Rx-line, receiving system to compare both antennas and so on). At the same time I had to reduce the weight of my whole antenna-system. I use a Hummel-tower and have had 270 kg on the sledge. That caused much trouble with the ballbearings. Work is going on. I hope to be qrv soon. I'm afraid it will take longer until QRV again. 73 Heinz, DM2BHG (heinz.borde@t-online.de)

**EA1ABZ** reports : I was CQing on 144.025 random on 5th and 6th with very strong QRN coming from a power line, so I am sorry if you called me and did not get any reply from me. Many times I stopped CQing and went to



### DJ5RE 2x12el M2

investigate near the power line looking for arcovers or sounds, nothing found. My location is very clean of birdies, but this noise is worse than 100 birdies, you cannot avoid it hi. 05/07/2000 F3VS 539/529, W0HP O/O QRN, SM5FRH 559/529, 06/07/2000 DK9ZY #61 O/O QRN, my last 10 new initials; last one is #62JH2COZ, WA1JOF, WB4JEM, IK1MTZ, VE3KH, DL5MAE, G3ZIG, RW1AW, OH7PI, DK9ZY, DL2RSX #62.

73, Ramiro. RIG: 4x12 DL6WU HM and 1.5kW. EA1ABZ e-mail: ea1abz@wanadoo.es, web page: <http://ea1abz.tripod.com>

**EA6VQ** reports : 25.6.00 PA3FOC #357 (1 yagi), RA3QTT #358 / Sqr #451, RX3QFM NIL, EA3DXU random, K6PF O/- Nct complete 11:00 DL1EJA 529/529 Complete (1 yagi)

**F6HVK** reports last european 144 eme contest 18 marz 2000 : sm5frh, ik3mac, sm2cew, i2fak, dl5mae, oz1hne, sm2ckr, lz2us, pa2chr, i3dli, 19.03 kb8rq, w5un, all O/O. f6hvk loc jn27lh, 4 times 17els m2 800watt (2\* 4cx350) par 90kw, mono operateur cable 7/8 73 andré f6hvk

**K6PF** reports : After 2 years of working on putting together a new antenna system using

4 x M<sup>2</sup> 2MXP20's, I am very pleased to announce that I completed my first contact yesterday on 2m eme during a sked with Olaf, DL2RSX. This was while running only 175 watts at the power dividers & measured about 6.5dB of sun noise prior to our sked. Olaf was my 16th initial contact on 2m eme. The prior 15 contacts were all made with a 175 watts into a single yagi with 12.5dBd gain. Hope to hv abt 300 - 350 watts on within 2 to 3 months. My station consists of 4 x-pol yagis (abt 19 dBd gain), mast mounted WD5AGO preamp, 100ft of 7/8" heliax with lots of coax jumper cables & relays (abt 1.5dB loss on xmit side), Yaesu FT-726R & Timewave DSP-59+. Since I can't hear my own echos yet, I'm really enjoying the camera I mounted on the H-frame for visually tracking the moon. I'd like to thank my gud friend & mentor Joe, K6IBY, for all of his help with my installation of this antenna system during the past 2 years, especially with the mechanical parts such as the elevation system, etc.

**RU1AA #20.** July 2nd PE1LCH nc, RW1AW #21, DK3WG nc, OZ1HNE #22, W7GJ #23. JA0BLU Nc, July 3rd: DL8GP Nc, DK3WG #24, DJ7OF #25, JA0BLU Nc. July 4th: W3EME #26, N5BLZ #27, AC3A Nc, I1ANP Nc, SM5FRH 579/539 Random, S52LM Nc, DL5MAE #28, JA0BLU #29. July 5: AC3A Nc, July 5: I1ANP Nc, S52LM #30, I3DLI #31, DL8GP Nc, PA3CWI Nc, July 6: AC3A nc, 73, Bob, K6PF, DM13ar K6PF on July 23, 28 & 29. July 23 EA6VQ - Nc, July 28: S53J - M (sent) / O (rcv'd). Nc, July 29: WA4MVI - Nc, I1ANP Nc, DL8GP Nc, GM4JJJ O/- Nc, OK1MS M/O Nc, WA1JOF O/- Nc, N2WK O/- Nc, WA4MVI - Nc, WB9UWA O/O Completed for initial #33, W0VD O/- Nc. Bob, K6PF, DM13ar. 4 x M<sup>2</sup> 2MXP20's (19dBd, x-pol) & QRP with 150 watts at the pwr dividers.

**OE6IWG** makes his first QSO's on 144 EME: 29.7.2000 OZ1HNE JO57 O / O #1, GM4JJJ IO86 O / O #2, 31.7.2000 IK2DDR JN55 O / O #3. rig : GS35b - 4\*10el HomeMade - MGF1302. best regards (73), de Walter - OE6IWG. mailto: waltstone@leox.net

**SM7SJR** Ok Folks, that was it. Today we took my EME array and my tower down. Special

tnx to SM7THS, SM7UCU and SM7SJV for helping me out. Most likely there will be no more EME or MS qsos from the JO87 square for a long time. Sadly there will be not be any 6m tropo activity either I guess. I am moving to JO86DU. This year there will probably not be any 2m activity from me, I will try to get qrv on 6m though. Next year I am going to rebuild my EME stn totally. I will probably still use my 2MXP28s. But I will put them on a hazer and rotate the tower in az as the big guns do. The EME tower will only be 8 or 10m high. Tropo tower will be 20-24m high, big forrest to the south (were it is interesting to work VHF). Wishing you all GL and hpe to be back soon to work you all. 73 de SM7SJR, Bjorn

**RW1AW** reports: new stations in May/June Alex worked : W7GJ #180, OX2K #181 new DXCC, PA3DZL #182, K6AAW #183, 02.Jul was a very good day for me : two new #: K6PF O/O (very good signal for 175 W Bob) and VERY STRONG signal from Ed N5BLZ 539/539 random.

Alex is working on a second EME QTH near to his work in KO49WN. First he will try location in MS-contest but later on for 2m to 23cm EME. There he has no city qrm, no war with the neighbours. At his second qth he has only wild forest, no wild neighbours. vy 73 GL and CU EME. 4x19el ( 5.3wl) 2,4kW. Alex RW1AW KP50EB St.-Petersburg RW1AW@MAIL.ADMIRAL.RU

**WB9UWA** reports: I have my new MC2K 74x2 up and running now. It was made for me by LZ2US. My experience on the moon today was decent. I have made my first single yagi contact. 7/2/00 N5BLZ 8db s/n. Quick and easy QSO. He said the new amp helped. W3EME 12 dB s/n. Just like a super station. Quick and easy QSO. #47 AC3A 7 dB s/n. Improvements on both ends paid off! #48 7/3/00 JA0BLU 12 dB s/n. Quick QSO. First time I work him required several skeds. VE1ZJ 6db s/n. My first single yagi QSO! #49, July 3 PA3CWI 12db sn #50, AC3A 6db sn totally random, PA3DZL 12 dB sn. #51, G4YTL 12 dB sn Random, K9MRI 10 dB sn #52, July 26 CT1DMK Contact 8db sn. #53, July 29: S53J Contact. 8db sn #54, DL8GP Random. 10 dB sn. Easy one., N7EIJ #55, EA3ADW

No. 7db sn., 9HIPA nil, OK1MS Random. 15 dB sn #56, WA8CLT nil, AB3D nil. (faraday), K6PF I had calls! 2 dB sn peak. Not bad for 150 watts., WA8CLT 10 dB sn, #57. K6PF Contact in 45 min.! 2 dB sn peak. Not bad for 150 watts.#57 and by far the weakest signal copied. WA8CLT Contact. 10 dB sn, when it works #58. 73 All. Jim Shaffer WB9UWA 144 MHZ. 4, 8 element W1JR yagis,

**PA3DZL** reports : 4th july activity: SM5FRH WKD random in NAC-contest super signals as usual 529/559, WA2FGK NC solid "O" copy we have to try again. 5th july activity: K6AAW NIL in sked (both sides), W3EME WKD random ufb signals, N5BLZ WKD random ufb signals and # 239. I'm very pleased to report that I completed with: 6th july K6AAW for # 240 (also new Grid # 549) See you off the moon de Jac, PA3DZL

**YO2AMU** reports :At last I did some of the most wanted EME contacts with OH7PI and K6AAW ! Both stations made great signals here in Romania ,peaking sometimes to 529! Sorry I did not complete the QSO with KV6J.

Bill came very fine here , receiving him for 20 minutes withot QSB. I hope to work him next month for my "most wanted call". I am waiting for new EME sked proposals! I will be active all June. In July I will change my actual array for a new one + more power! Best regards! 73 de Doru / YO2AMU

## 144 MHz news

To all 2 Meter stations: Here is my NEW E-mail address - **S52LM**@amis.net 73 de Milos, S52LM

**DL8YHR** FRANK HI..im back nw on 2M EME with a vy litel Station...Using nw 2\*12ele M2 for driving im using 2\*3cx800a7.....thats al for nw Still planing an Expedition to a most Wantes dxcc in eu on 2m 6m and maybe 70cm more later will be happy to get an Eme Sked with an Station from PY..maybe you can try on 2m..vy 73 es gd dx de FRANK DL8YHR

2m-EME report from from **R/U stn** - begin June:

**RU1AA** added OX2K and K6PF.



**OX2K THE DISH**

**RW1AW** had new stn W7GJ, OX2K, PA3DZL, K6AAW (529) and WA3BZT.  
On 70cm OX2K and PA2CHR.

**UA4AQL** glad to work UT5ER

**UT5ER** had wkd AA7A and UA4AQL.

**DK3WG** wkd IK7EZN, OX2K #724 (DXCC #110) and K6PF-nc. and on 70cm OX2K #368 (DXCC #77) 73, gl via moon Jürgen, DK3WG

**WA3BZT:** Well just had a storm (tornado)(Front) come through here sounded like a train coming full speed could not see 20 feet in front of house. The winds got one EME antenna and broke it in half, by sending a 6+ inch limb of a tree, also bent two other antennas and some bending of the tower. I will be QRT till new tower and antennas are put up. If you need Delaware please contact Bill AB3D. Ed White WA3BZT

**WA8WZG** is temporarily QRT do to Storm damage, I will rebuild and be BACK!!! To see what Mother Nature can do ...take a look at [www.wa8wzg.com](http://www.wa8wzg.com) Storm Damage. EME is still operational , cu on the air soon!!!73's Tom Whitted WA8WZG 6mtrs - 47 GHZ from EN81om <http://www.wa8wzg.com>

## 222 Mhz

222 Mhz EME is alive once again at **VE3AX**. For the 1st time in 16 years I am back in business on 222 Mhz with 4 x M<sup>2</sup> 222-7wl's and the trusty old 8877 amp.

Worked Mike, K6MYC, last night - took all of 4 minutes - would have been less if we had not stuck to the 1 minute sequences. 4/529 sigs each way. He is using a very similar setup.

Still a few things to work out with the array but generally ready to accept skeds with anyone with two good yagis and 500 watts or more. Any 432 EME'ers want to change the feed some weekend (Grant???)

Bob, VE3BFM, has 8 shorter yagis and a not yet fired up 8877 (at least at his place) and should be ready later this year too. He is in FN04.

Particularly interested in ANY Caribbean or South American stations that might have a station left over from the old TE experimental days.

Why 222 Mhz you say? Crazy I guess. Yeah, I know it's limited globally - so I'll never work DXCC on 222 Mhz. I can live with that. Besides, should have the 144 EME array back up later this summer. 73 Peter VE3AX FN02cw

## 432 MHZ

**AL7OB:** Last weekend skeds were about 25% successful (much better than my usual 7-8%!). I worked G3SEK, OH2DG, KAØRYT, KB8RQ, and W7BBM for 5 new initials. Should have had OZ6OL, we were so close. Generally, I heard a lot more than I could work, which is testimony to my new 432 module in the FT-767 and its terrific Audio Peak Filter (APF)! I heard K4QI and VK4AFL but did not have time to work them due to skeds. K4QI was his usual terrific signal, but Trevor was pushing an S-5 beautiful signal! Quite amazing. I am tied down until next month, not sure if I will have much time to devote in June. Tnx & 73 Mike, AL7OB

**HB9Q** Dan writes: We spent all our free time working on the dish to optimize 432 and 1296. We hope to add 144 to the dish this fall. We will be QRV during the ARRL contest on all three bands. 144: 8x19xxx, 8877, 0.2dB NF, DSP, 432: 15.28m dish, 2x8874, 0.19dB NF, DSP, 1296: 15.28m dish, TH307, 0.24dB NF, DSP, Please listen for us, it would be great to work you! We will announce our activity times and frequencies on Al K2UYH's newsletter, on the Moon-Net, on our home-page ([www.hb9q.ch](http://www.hb9q.ch)) and on the EME Activity Logger ([www.dxworld.com/emelog.html](http://www.dxworld.com/emelog.html)). If you have a satellite station we can work on 432 EME, give it a try! vy 73 es happy moonbouncing Dan, HB 9Q E-Mail : [hb9crq@hb9q.ch](mailto:hb9crq@hb9q.ch) WWW: <http://www.hb9q.ch>

**RW1AW** reports: new # in mail/june PA2CHR # 76 , OX2K # 77 new DXCC, 02. Jul is very good day for me "tropo - rst" from Pero I5TDJ # 559 ! vy 73 GL and CU EME 12x15 1,5kW



OX2K 432 MHz antenna

Alex RW1AW KP50EB St.-Petersburg  
RW1AW@MAIL.ADMIRAL.RU  
(see also Alex 2m report)

**RW3BP** Sergej reports : Last Sunday May 7th I had very nice O/O QSO with Jan DL9KR on 70cm. It is funny to use my 1.65m dish on 70cm but very interesting for me to do it on 5th band via EME. On all allowed in Russia bands from 3 to 70cm hi. Gain is 12...13 dBd. Feed - two short (250mm) 4el Yagis spaced on 260mm. Power - abt 700W at the feed from GS23B amplifier. No problem to add 3...4 dB to TX but main problem is high noise temperature of antenna.

### 432 & up (INTER)-NETnews

Well the **N7LQ** contest team will again setup on Fox Mtn, grid DN01fa. We will have the following bands operational: 6M Legal Limit

into 1 5 element Raibeam. 2M 700W into 4x2M18CP yagis. 222 250W into 1x 222-7WL M-Squared Yagi 432 Legal Limit into 4xFO-25 yagi's with AZ/EL. 1296 30W into 1x55el LY. Email sched requests for terrestrial or EME can be sent to n7lq@powernet.net Good DX to everyone and listen for us!!!! Its the only chance to get that rare grid, DN01!!

**K6IBY**: just put the 70cm ant back up yesterday 4x32FO and will be getting back QRV soon.

**ON4KNG** reports : I am looking for another QRA/QTH and will be QRT EME for a few months. The 70cm antennas are now down and will be used by ON5OF. The last contact I've made was with OX2K, who gives me initial: 146. 73's and hope to meet you again via moon Peter-on4kng

**AL7OB** reports : Worked initial #56 OE9ERC last Sunday. Erich will be visiting here next

## IX Italian EME meeting

This year, for the ninth time on end, the Italian EME Meeting has taken place in Marina di Pietrasanta a sea side resort on the western coast of central Italy.

Hotel Joseph hospitality has been excellent and the large number of the moonbouncers relatives enjoyed full weekend of sun shining and summer temperatures: the hotel swimming pool was really crowded.

I5TDJ last year invitation to the young people, asking them to talk about the results of their experiments, has been received. On Saturday afternoon, Matteo IZ2DAY (formerly IW2MNU), an EME newcomer, spoke about his experience **building DJ9BV Yagi** antennas, adding a lot of electrical and mechanical details.

During the evening, the EME future happening has discussed, in particular the **next 2002 EME Meeting**, which should be held in Europe. Other items have been analyzed.

A letter, addressed to the Italian Amateur Radio Association (ARI) Headquarters, has been written and signed by the Meeting attendants, asking to promptly appoint a VHF/UHF Manager after the I5JRR resignation.

Then the preamplifiers, built around the HEMT's, presented last year by Yoshiro JA4BLC, has been tested and tuned. Unfortunately not all those who got a HEMT last year, had brought a preamplifier: IK5TGK, IK1COA, were not here. IW5CNS, had work problem, brought back next year. Measurements, performed by the test equipment, owned by Marco IZ5EME, gave the following best **results**:

|        |         |             |            |
|--------|---------|-------------|------------|
| IK5JWQ | 144 MHz | 22 dB gain, | 0,3 dB NF  |
| i4TTZ  | 144 MHz | 23 dB gain, | 0,33 dB NF |
| I2RV   | 144 MHz | 22 dB gain, | 0,35 dB NF |

For the 432 MHz band, Yoshiro schematic calls for a 2 to 3 turns gate coil: this way, we experienced some instability. The preamplifier performs well if the input coil has less than 2 turns. (A note by I5TDJ. Beware of conditionally stable preamplifiers! Very

often, a preamplifier which is stable on the bench, with 50 ohm test equipment at its input and output, can oscillate once connected to the antenna and the post-amplifier or converter, resulting in very poor receiving conditions. An easy way to verify its behavior on the bench, is to connect a signal or noise generator to the preamplifier input through a low loss band-pass filter and the station set up to the output. A spectrum analyzer, loosely connected to the preamp. output by a directional coupler, can show up any "real life" instability). These are best the 432 MHz **measurements results**:

|        |            |            |
|--------|------------|------------|
| IK5WJD | 22 dB gain | 0,22 dB NF |
| IK5JWQ | 22 dB gain | 0,30 dB NF |
| I2RV   | 22 dB gain | 0,50 dB NF |

IK1SBB preamplifier, for the above reason, was unstable; it will be modified. IZ5EME Marco, have measured the preamplifiers of KA0RYT, that to build for him and for I5WBE, results : 432 MHz. 1- 18 dB gain 0,21 dB NF, 2- 20 dB gain 0,25 dB NF

On Sunday morning, Paolo I3DLI, spoke about his findings on him **log-loop-Yagi** (LLY) antennas, showing the measurements performed on them by himself and other hams, among them Lionel VE7BQH.

From the results obtained by him and Graziano IK3MAC, it is clear that this antenna, only 3,7 lambda long, favourably matches with 5 lambda boom standard type Yagi.

Alberto I2PHD, talked about his new **DSP program**, Spectran Beta 3, which, unlike the former Hamview, runs on any audio card, getting bandwidths less than 1 Hz and requiring an operating system higher than Windows 3.2.

At last, Luciano I1LLU, brought two interesting papers. A **5,7 GHz solid state** linear amplifier, delivering up to 60 W (depending on the GasFet type used), with a full scale printed circuit drawing and all the details to successfully build it. The amplifier prototype has been shown. The second paper describes a **10 GHz, 45 W** output, amplifier. Two GasFet were used in the final stage, driven by a third one. The printed board



I2ZDAY at Italian EME Meeting



Some people of the Italian EME Meeting

drawing and the tricks to build it, have been fully described by the author and the nearly completed prototype has been shown.

I1LLU is planning to build a 10 GHz, 100 W amplifier, using two coupled modules. This one will be shown next year. The GasFet of the 5,7 and 10 GHz amplifiers, operate at no more than 10 V, requiring a standard 12 V supply.

Prizes for the 1999 Italian EME Contest and Italian EME Marathon have been awarded to the winners.

Then the official dinner followed up. In the afternoon, the last talks took place, wishing good by to next year meeting.

Attendants list: I1ANP, I1JE, I1LLU, IK1SBB, IK1UWL, IZ1CGT, IW1CCH, IW1DJS, I2COR, I2FAK, I2PHD, I2RV, I2SG, IZ2DAY, I3DLI, I4TTZ, IW4DHA,

I5JRV, I5JUX, I5PPE, I5TDJ, I5WBE, IK5AMB, IK5DGF, IK5JWQ, IK5WJD, IK5YBJ, IZ5EME, IW5ADB, IW5BFZ, IW5BSF, IW5CTM, IW5DAN, IK0OKY, IW0BET together with several relatives and other people interested on EME.

I1ANP Mario, Italian EME manager



I3DLI at Italian EME Meeting



I1LLU at Italian EME meeting

month. The BIG news is that I have found a big 28.5" azimuth bearing for the 9.2 meter dish project. The even bigger news is that it cost me only 2 cases of beer. And I have more than one available if anyone needs one. It is pictured on my website. Tnx & 73 Mike, AL7OB BP51dc <<http://www.custom-cpu.com/al7ob>>

**K8UC:** looking for moon activity this weekend. 25' dish, 500w 70cm

**VE6TA:** Did not work HG100BAY this morning.. Grant is ready for 222 EME ..but will leave feed on 23cm till 222 stations are ready..

**DL9KR:** repaired antenna after a storm, but now had a fire at the feedpoint..has to repair that now..

**K4AR:** Bert.. have a 20 meter antenna now.. just checking in and will be available on 432 EME and activity should increase as fall approaches.. autotracking now working .. not taking skeds at this time.. Grid: EM76vc 8xM2 9 wavelength 28ele 70cm 1.5kw

**KA0Y:** working on feedhorn.. and hopes to be back on 70cm and then 23cm soon.

**F/ON5FF:** ON4KNG has taken down array.. he has to move.. has 8x12lambda ant to the South of France.. has to do some mechanical work on the array.. still hopes to go to 3A.. will stay living in South of France and have the kids go to French school.. and will travel to Belgium to work.. Derk has brought a lot of equipment to South of France to try to set up EME array and get on EME.. Oct 21/22 Nov 18/19 are dates for ARRL contest.. wx been wet in Europe..

**EA6ADW** in JM19LU he will be more often in DL, he moved within DL. New adr: Peter Cerveny, Eppendorfer Landstr. 112, 20249 Hamburg, Tel/Fax 040-31794531. DF5JJ QRV 144-24192MHz aus JO43XO. Info: [www.qsl.net/df5jj](http://www.qsl.net/df5jj) JO31 ids not longer valid ! 73 de Peter, EA6ADW (DF5JJ)

**K1RQG : NOTE!!!:** today there was a great discussion on the 20 meter net regarding receive systems, converters, etc.. This is a great reason to join or just listen, but contributing comments from those on the net are



Bo, OX3OX at 432 Station of OX2K

extremely valuable. I really encourage all of you that receive these notes and that read the NL, to drop in on the 20 meter net and contribute to the discussions.. This is another reminder that net is not just for scheduling as some may think.

## 1296 MHz

**DJ5MN** reports : I have not been too active the last months on 23cm EME, but worked some good old friends via the moon last weekend (ZS6AXT, W2UHI, K3AX, G4CCH, IK2MMB HB9BBD and K5JL) with generally good signals. On 23cm I am still running 3m-dish with an TH327-PA at full output causing a bright smiling on my face. Best regards and 73 de Bernhard, DJ5MN in ww-loc JN58WH

**F5HRY** reports : F5IQA is part of the F6HYE group. No more info, especially on any possible 23cm activity. Maybe something set up for the OX2K activity. See F6HYE for infos. On my side, I put up a 16x23 F9FT array with 400 W to try with OX2K. I completed the QSO quite easily on June 03. I previously had a partial with F5PAU and a O/O QSO with F1ANH on random. Heard HB9Q rather strongly on Sunday 04 evening. Heard some other unidentified signals. I plan to be active from time to time in the near future. No skeds, my opinion is that EME sounds like random ! vy 73's de Hervé F5HRY

**OZ9AAR** reports : just to let you know, I have just started construction of my new 8M dish. I lost my 8 cross yagis for 2M last December,



**The OX2K Team** in front of the new club station.

On the stairs: Holger, OX3HI; Steen, OZ2TG; Michael, OX3LG.

Back: Benny, OZ5RZ; Jan, OZ5ZF; Ole, OX3OX; Peter, OZ1CBW; Jørgen, OZ1JSH; Ivan, OZ5IR; Rune; Frank, OZ1FQ.

Middle: Knud, OZ1FIT; Frits, OZ2Q; Uffe, PA5DD; Søren, OZ1FTU; Bo, OZ2M; Peter, OZ1PIF.

Front: Steen, OZ3SW; Bo, OX3LX; Jørgen, OZ1BNN; Kurt, OZ7YK; Ole, OZ7FI.

and now I'm jumping back up on the higher bands, 2M was VERY noisy here anyway. So, sometime in the future, I will be QRV again on 23CM to start with, and hopefully also some of the other bands, have already a 20W TWT for 3CM and 6CM. Regards, Carsten Groen, OZ9AAR [www.logicio.com/cgroen](http://www.logicio.com/cgroen)

**HB9SUL** reports :Just a short note to let you know that I am back on 432 for a while., Running 4\*13WL M2+ GS35b H.M.+LNA 432 h.m.+TS950+LT70S from JN46LA. I have been tuning and looking for echoes SUN 11th around 2355 on 432.015 and herd somebody

but did not recognize it. Still have to finalize my EI. reading. Will be on random when free time will permit. The idea to go to Turkey for a ARRL is still alive. The manpower is still missing. 73 de Andrea es CUL HB9SUL, Andrea BIANCHI email: [hb9sul@ticino.com](mailto:hb9sul@ticino.com) Via Arbostra 23E homepage : <http://www.ticino.com/usr/hb9sul/> CH-6963 PREGASSONA- SWITZERLAND GSM + 41-79-310 44 21

**KA0RYT**: QRT on 70cm EME and will be put up 6 yagis.. Has a situation with UPS that had

a damage claim refused. ka0ryt@aol.com wants advice.

**DL9KR:** leaving by Aug 26 and fly back to Europe on Sep 16.. all depends on the bookings.. worked 2 new inits RZ3BA/1 (138ele 800W) & G4YTL/TF 6 yagis 600w, RZ3BA/1 KO56 may be sked through RW3BP RZ3BA/1 only QRV Jun through Nov. not in winter HB9Q is really new station. up to #736 new initials.. still not clear, but HB9DBM is second operator of HB9Q and is a different location from HB9CRQ. report from DK3WG..Jan has a lot of info on travel in the Midwest.

## Expeditions

**OX2K** - 2m, 70cm and 23cm EME DX-pedition

During the period from 29th May to 4th June the OX2K DX-pedition activated Greenland on HF, 50MHz, 144MHz, 432MHz & 1296MHz. On the last 3 bands we had to revert to EME to make contacts from this remote location. Sondre Stromfjord, or Kangerlussuaq in Greenlandic, is located at the end of a 140 km long fjord just north of the polar circle. The favourable weather conditions have made it the main hub for both internal and external air traffic to Greenland with regular direct connections to Denmark, Iceland, and Canada. The airstrip was built by the US during World War II and served as a refuelling stop for planes going between North America and Europe.

During the cold war Sondre Stromfjord hosted a military base, submarine communications site and a relay station for the US missile radar

surveillance. The surrounding mountains were thus filled with radio installations, most of which were abandoned in 1991/92, meaning that masts, cables, power generators and huts were available with only minor modifications.



OX2K 32m Dish

With the help of Holger, OX3HI, we gained access to a site a few kilometres south of the community on Black Ridge. It took Holger, together with Per, OX3DU, and Michael, OX3LG, nearly all winter to remove the old equipment, clean the radio hut and make new 208VAC installations. From this location we worked HF, 50MHz, 144MHz and 432MHz, and the hut now serves as the club station for Sondre Stromfjord.

Today Sondre Stromfjord has a population of 400 most of who work at the airport and the associated facilities. The entire community is literally built along both sides of the airstrip and the town centre is within 100m of the terminal building. There is only ONE shop in Sondre Stromfjord which while we were there was running low on stock and awaited the first supply ship which was due in a few weeks. The ice in the fjord makes it possible to access the harbour for only approximately 3 months between June to September.

To the east there is a 25 km gravel road leading to the inland ice. There is a currently a lot of activity here as Volkswagen are building a car test track for over 100km in on the ice. This road is also the entry/exit point for expeditions crossing the inland ice to the east coast. On the way to the ice you can see remains of an old US fighter jet plane which crashed in the 1950's and is well preserved due to the very dry continental climate.

To the west, a 13 km road from Sondre Stromfjord to the harbour is the longest paved road in Greenland! A further 3 km by gravel road takes you to Kellyville, a tiny community with a population of 9 people.

2 km further on is the abandoned site of the submarine communications installation and all that is left is the generator/transmitter hut. From this location you have a clear view to the inland ice more than 40 km away. It is almost impossible to determine how far away things are because there are no known references such as houses, cars, buildings etc. You can also see the mountains surrounding Sisimiut on the coast an amazing 140 km away, demonstrating the dryness of the air and lack of modern pollution.

### 1296MHz - Kellyville

Kellyville is maintained and run by Stanford Research Institute. The 32m dish which is normally used for incoherent scatter radar studies of the ionosphere, has an estimated gain of 49dB, equal to a beamwidth of approximately 0.5 degrees. All transmitter equipment is made for low duty cycle pulse transmission and not suited for amateur radio service.

On the evening of our arrival we went to Kellyville to look at the installation and talked to the site manager, John, to get an overview of how we should hook up to the system.

We wanted to use the system with as few changes as possible to quickly get on the air. Due to limited pre-information on the system and a note from Gudmund, SM2BYA, regarding the polarisation, we were very concerned about how it would work out.

The transmitter for the ionosphere scientific studies is a 3MW 1291MHz pulse klystron amplifier connected to a waveguide which runs some 100m to the feedpoint/polariser. We gained access to the waveguide at the



OX2K at Black Ridge

klystron output and inserted a coax-waveguide transition for our TX-signal.

From a distance the 32m dish looks nothing special but standing on the 18m high pedestal where the dish is mounted suddenly gives a whole new perspective of the actual physical size, 32m is BIG.

The RX-port of the polariser ends in an insulated cylindrical 'chamber' between the 2 elevation gears (the chamber is big enough for 4 people!). The RX-port is a waveguide-coax transition, so all we had to do was mount our pre-amp and optionally use a relay to provide additional isolation to protect our pre-amp when transmitting. We measured the isolation between TX and RX-port on the polariser to approximately 30dB so we needed the isolation relay.

For RX we used the existing 1290MHz-28MHz down converter at the feed point. The LO frequency is controlled from a signal generator inside the building and is set to the LO frequency divided by 3. In normal operation the system is using overlying LO so the signal is inverted. We programmed the LO for listening down from 28MHz @ 1296MHz.

Using a FT-1000MP we could benefit from the dual receiver allowing us to monitor for others while simultaneously working calling stations.



Søren, OZ1FTU, working 2m EME at OX2K

The 28MHz IF signal were carried to the building by the existing RG-214 cable.

The following morning we returned with all our equipment, including 2 complete setups in case something failed or had become damaged or lost.

The connection to the TX-port was only a few meters from our operation position in the transmitter/workshop building and a short length of 1/2" LDF was used. The pre-amp and isolation relay was mounted and the relay was controlled from our sequencer via the existing control cables.

After a final check to ensure that the relay and pre-amp was working it was finally time to test the TX-line and listen for our own echoes. The tracking of the moon was done by computer controlled motors and we were thankfully not required to turn the dish manually. We performed a TX and SWR check then aimed the dish at the moon. All of us were anxious to see if our system was working. We transmitted some dashes, switched to receive and instantly heard our own echoes with S5-7, YES it worked.

It was just in time for the EU moonset and we immediately called CQ and soon the first stations were in the log. We were very relieved and happy to confirm that the dish polarisation was in accordance with the amateur convention!

There were some minor oscillations in the auto-tracking system, which made the dish scan the moon with  $\pm$  a few tenths of a degree, enough to cause some QSB. Normally the dish is used to track fixed objects/positions in the sky. Tracking the moon meant that the computer had to do some extra calculations, which took more time, causing the system to become a little unstable.

This problem was fixed by John the next day. We'd always had good strong echoes but in a QSO with Stig, OZ4MM, he told us that our signal had changed dramatically from the time at our moonrise and some 5 hours later. We now realised

that there was an offset problem, which John confirmed and he told us that they had an earlier suspicion to an offset error.

We could easily enter offset corrections into the tracking computer, but it was an educated guess as to where to start and the dish would frustratingly return to the park position ( $Az=0^\circ$ ,  $El=90^\circ$ ) to begin a new event every time we changed something. After some time (days!) we had the offset routine optimised. The best way was to turn the dish to a point where the echoes would just disappear on either side of the moon for both azimuth and elevation and then simply aim for the centre point in both axes. We could hear our own echoes with 1W, but could not easily reduce the power further to find the limit. The moon-noise was quite evident which is uncommon on 23cm.

In our preparation we had calculated to be able to work stations having 20dBi antenna gain and 100W so we were especially alert during EU moon set and US moon rise. I don't think we actually worked any non-EME stations but the best effort in real weak signal stuff was our "QRZ PA3..." to PA3DZL calling and 'testing' us with only 10W and a 2.5m dish.

To keep track of common moon windows we used VK3UM EME planner. Our common windows with JA and VK were limited because the dish could not operate/track below  $10^\circ$

elevation. The limitation was implemented to avoid any inadvertent hazardous radiation when operating at 3MW level.

### 144MHz and 432MHz, Sondre Stromfjord

Our plan was to use 4 yagi systems on 2m and 70cm which would give us reasonable antenna gain allowing us to work a fair number of stations while keeping the mechanical effort to a minimum.

The antennas were placed approximately 30m apart on opposite sides of the radio shack. The 70cm antennas were mounted on the "scaffold" and the 2m antennas on a wooden post. Both systems were connected by 1 5/8" LDF for the major part of the TX-line, which limited the loss considerably.

Both systems were mounted in a H-frame with an azimuth/elevation rotator, G-5600. It had been our original plan to pre-assemble the H-frames and antennas and to test them thoroughly before everything was shipped to Greenland, however due to lack of time this was not accomplished. Unfortunately, as feared, we encountered problems when mounting the antennas. The G-5600 azimuth/elevation rotator was simply too small for an EME antenna and could not elevate the system without the antennas being fully balanced.

On 70cm we managed to mount all 4 yagis, and with the help of small counter weights consisting of small bags filled with gravel, the system was able to elevate.

After several tries on 2m we had to settle for only 2 yagis, but it was still better to be QRV with 2 yagis than to go QRT with a broken rotator.

Our amplifiers were a 4CX1500 on 2m and 2 x 3CX800 on 70cm both build by Michael, OZ2ELA/OX3LG.

By Tuesday evening everything was ready, with all the equipment installed and the antennas beam heading calibrated. Sun noise was quite strong and we could even hear thermal noise from the ground so we were keen to get started, but of course had to wait for moonrise on Wednesday morning.

Finally we had moon rise, but for the first 20 mins the surrounding mountains and inland ice were obstructing the path. Only once 5 degrees elevation was reached were the first signals heard. On 70cm we soon heard our own echoes but on 2m it was harder with the smaller system. The first QSO on 70cm with DL9KR was run by Michael, OX3LG, with Bo, OX3LX, eagerly watching. Bo then took over while Michael recovered from being the first ever to work a 70cm QSO outside of Greenland. On 2m PE1LCH was the first in the log and soon followed the next stations. To avoid any interference between 2m and 70cm, we had to synchronise the transmit and receive periods. We chose to use 2 min periods normally used on 2m. All skeds were 30 min where OX2K would transmit in the first period. It was quickly evident that this was not a good solution however, as instead of 2 min periods, suddenly a 4 min period was present at every full and half-hour! This produced great confusion.

We used split frequency operation transmitting on 144.085/432.085, in sked listing on 090 and random 080-085. The majority of people calling us on random used 085, which caused a lot of QRM, especially when the timing sequence went wrong.

It took some time before the systems were running correctly and on Wednesday we finely adjusted the beam heading to make sure we hit the moon. The poor readout on the control units for the azimuth/elevations rotators did not make things any easier.

Unfortunately one of the control cables for the 2m system was damaged and we lost a couple of skeds on Wednesday before the fault was corrected. On Thursday the input circuit in the 2m PA suddenly failed. This unit was finished literally hours before it was due to be shipped and had been tested for only a limited time with a dummy load. However Michael "the wizard" fixed the input circuit and we were quickly back on the air, without having to setup the spare PA. Unfortunately some innocent HAM's suffered from this incident and they could not understand what had happened.



Tracking computer, GPS receiver and time standard at OX2K

Despite the limited system on 2m we succeeded with many of the skeds and also some random QSO's.

The best signals were obtained every morning, when the moon rose over the inland ice with 5-15 degrees elevation. Ground gain must have been a factor with the gently sloping ground for the first few kilometres to the east. One of the strongest was W5UN who was 559-579 with or without ground gain as long as the moon was visible! A good tool to find stations and aim antennas was a DSP FFT program (FFTDSP 4.2) where we could "see" even very weak signals in the LF band-pass. It was the first time any of us had seriously used such a program and it will definitely not be the last!

When all the OX2K stations were up and running we activated 2 HF setups, a 50MHz setup, a 2m setup, a 70cm setup and 23cm at Kellyville. Consequently due to lack of operators it was difficult to keep all the stations running which meant that some EME-operators had to do 20 hours shifts. This was far from ideal, especially for the operators, but the result was reasonably good. Sometimes

the 2m EME operator was assisted by a non-CW/EME operator to press a button on the memory-keyer or to "look" for signals using the FFTDSP program.

In retrospect it is fair to say that the expedition was a huge success. Given the remote location, the limited amount of equipment and the fact that we managed to work EME on 3 bands simultaneously, the result is VERY good.

In the near future the 2m antennas

from Force 12 will be mounted permanently. We also intend to install a 2m PA to make future DX-peditions more simple.

Besides working EME we were also active on 1.8-50 MHz and for all of us it was probably the greatest experience we've ever had as radio amateurs, and most of us are already thinking where we should go next.

73 de OX2K

#### The results for 2m, 70cm and 23cm:

144 MHz: 36 QSO (primarily skeds), 36 initials, 15 DXCC, 12 first time and 3 continents  
 432 MHz: 39 QSO (primarily skeds), 35 initials, 15 DXCC, 15 first time and 4 continents  
 1296MHz: 113 QSOs (22 in SSB), 76 initials, 20 DXCC, 20 first time, 5 continents.

We succeeded in working HB9Q, SM2CEW and WA4NJP on both 2m, 70cm and 23cm!

#### Technical data:

**23cm** OX2K-Kellyville, GP46MX. TX: Icom IC-1275, PA: SSB-electronic, TLA 1270-100 B 100W. RX: Yaesu FT-100MP, SSB-electronic LNA, SLN-series nf < 0.3dB. Antenna: 32m dish, 49dBi. Software: VK3UM EME planner, Nova for Windows, Spectran DSP display.

OX2K-Sondre Stromfjord, GP47TA. **2m TX:** Yaesu FT-847, PA: 4CX1500A RX: LNA: SSB-electronic LNA-145 nf < 0.4dB Antenna: 2 x 20 el. Force 12

**70cm TX:** Yaesu FT-847, PA: 2x3CX800A7 LNA: SSB-electronic LNA-435 nf < 0.4dB Antenna: 4 x 28 el. model 432-9WL Software: Nova for Windows, FFTDSP 4.2 by AF9Y.

Our sincere **thanks to** - the site maintenance crew at Kellyville and especially John Jorgensen for all his help - Dansk Mikrobølge Teknik for the SSB-electronic Low Noise Amplifiers - Northern Lights Software Associates, NLSA, for Nova for Windows - AF9Y, FFTDSP 4.2 - Force 12 for 4 x 20 el. 144MHz yagis OX2K homepage <http://www.qsl.net/ox2k>

I have heard from members of the DXpedition to **3B6 Agalega** (see also <http://www.agalega2000.ch/>) that they would have one place free for an EME operator bringing along the necessary equipment. The DXpedition takes place in 7 weeks, so they need to now the very latest by coming Sunday, August 13th, whether there is somebody of the EME-gang joining them or not. Agalega will NOT become through this activity a new DXCC!

## Silent key

Hans Peters, **VE3CRU**, passed away Saturday after a long but courageous battle with cancer. Hans was an avid EME'er, and stood at 48 states worked on 432 Mhz. He was also a key figure in the VE3ONT Algonquin EME expeditions in 1992-95 and graciously provided the 432 Mhz equipment for that adventure. He was the first person to make a QSO from the big dish.

More notably, Hans is remembered for his contribution to the 220 Mhz ops in North America. After establishing a Microwave Modules distributorship in Toronto in the late '70's, Hans recognized the need for a 220 Mhz transverter similar to the MMt 144-28 and MMt 432-28 which were so popular at the time. Microwave Modules was reluctant to provide transverters for a band that was not available in England so Hans started modifying the

144-28's to 220 Mhz and selling them. After some time he was finally able to convince MM to provide bare boards for the 220 Mhz program - it was easier than converting them!

I understand there are several hundred of Hans 220 Mhz "MMt 220-28's" out there - I only sold mine last year after upgrading. It served me well and I hope there will be many others in service for years to come. I ask you to remember the fellow who made it so easy for us to get on that band. Good VHF DX'ing Hans! Peter Shilton VE3AX

## Internet-bookmarks

The 432 and above **EME Newsletter** can be viewed at: <http://www.nitehawk.com/rasmit/em70cm.html> @BLOCK ENG = at the bottom of the page is also a MS WORD version

**Tubes:** 1. <http://www.qsl.net/nd2x/tube-1.html> - where relatively complete specifications for 10 tubes are listed (two more planned), as well as links to the following four sites:

2. <http://www.tubes.ru/techinfo/TransmittingTubes/summary.html> (like it says: summaries - hihi)

3. <http://df6na.mayn.de/~df6na/tubes.htm> (synopses only)

4. <http://www.qsl.net/ut7ct/tubes.html> (some errors on the GU-84 page, otherwise excellent)

5. <http://home.iae.nl/users/pe1ogf/qro.htm> (GI-7, GS-31 and GS-35 only)

it's <http://www.tubes.ru/>

About antennas : [antennspecialisten.se](http://antennspecialisten.se)

**real time emelog** <http://raven.cybercomm.net/~slapshot/dxing/emelog.html>

Have a look at : - **KC6UUT Coaxial Cable Data** <<http://www.qsl.net/kc6uut/coax.html>> or - **N3SME Coax Data** <<http://www.qsl.net/n3sme/coax.html>>

**Solar Flux Data**, taken at different frequencies (from 245 through 15400 MHz), for the day, last 7 and 30 days, at the following site: <http://www.sec.noaa.gov/getftp.cgi?get=/list/s/radio> Or by ftp: log into ftp2.sec.noaa.gov

using the following: username: ftp password: your email address then go to /pub/lists/radio <http://members.tripod.com/~ve9aa/index.html> Take a look at my <g> **mobile EME** setup. The webpage is quite disorganized (blush) but the mobile EME setup picture should come through OK. hi hi....and they say Canadians don't have a sense of humour =:-o 73, de VE9AA/mobile ! Michael

**Sun and aurora Data** you can get from : <http://www.spacew.com>.

<http://www.spacew.com/www/auroras.html>. Reports of auroral activity. Current auroral activity information can also be obtained at: <http://www.spacew.com/www/aurora.html>.

Other sites of interest include the Canadian Space Agency's near-realtime aurora plot at: [http://www.dan.sp-agency.ca/www/globe/rt\\_oval.htm](http://www.dan.sp-agency.ca/www/globe/rt_oval.htm), their photometric plots at: [http://www.sp-agency.ca/www\\_forms/rt\\_mp\\_a.htm](http://www.sp-agency.ca/www_forms/rt_mp_a.htm), and their all-sky imager at: [http://www.sp-agency.ca/www\\_forms/rt\\_asi.htm](http://www.sp-agency.ca/www_forms/rt_asi.htm). Other useful sites include the Geophysical Institute at the University of Fairbanks Alaska ([www.gi.alaska.edu](http://www.gi.alaska.edu)) and Mark Hauns automatic aurora monitors (<http://angwin.csl.uiuc.edu/~haunma/aurora>). There is also handy software available that will provide you with near-realtime notification of auroral activity, based on current solar wind conditions (see: <http://www.spacew.com/www/geolert.html> or for SERIOUS observers: <http://www.spacew.com/swarm>). PLEASE report any sightings of activity you make (whether immediately or several days after the event) to: <http://www.spacew.com/www/subaurora.html>. > solar wind conditions using the software at: <http://solar.spacew.com/swarm>. estimated auroral visibility from the ground, as well as spacecraft auroral imagery and statistical plots of anticipated activity can be found at: <http://www.spacew.com/www/aurora.html>

## Technical

In the past there were some questions about dish and **dish mount construction** on moon net. Recently I ran into some old photographs of the construction period of my 8m dish with

mount. I have added them to my web page: <http://members.xoom.com/PA3CSG/> I hope this might help constructing your dish / mount. Best regards, Geert PA3CSG <mailto:geert-st@dds.nl>

Further to my previous emails, I wanted to let you know that more information on **QRO VHF/UHF** amplifiers by Marko, LZ2US, is now available on the following web sites: <http://www.qsl.net/nd2x/LZ2US.html> <http://www.qsl.net/lz2us/>. He builds each amp to order and ships worldwide. For those who want to further explore having an amplifier built, you can email Marko directly: "LZ2US, Marko Cekov" <lz2us@isv.net>

Have **soldered alum** by coating with oil, scrape with knife so alum is only bright under oil (alum oxidize instantly when air is on surface of alum) then use a large soldering iron with solder is between iron and alum to be tinned. After tinning then OK to clean the oil off.

## EME tomorrow ?

I agree with Mark that somewhat has to be made. We are doing since more then 20 years EME the same way. We have more power, better preamps and better antennas now, but doing still CW. It works of course. But Ham radio should be on top of the technical evolution. Just read it. APV

following Statement on Moon Net:

### EA8FF LOW power EME

Some time ago there was a discussion on the MOON-NET about low-power EME, I don't want to reinstate a discussion around the ethics about automated operation, let me give some ideas on the subject and lets see if anybody shares my interest, can help with positive suggestions, software writing, hardware testing etc. to work on a still existing challenge: a mode for automated low-level communication on VHF and up.

Low-level communication is affected by a number of factors which decrease the quality of the signal in the channel, like polarity misalignment, Doppler shift, severe fading, fre-

quency inaccuracy, inability of the human brain to perform a perfect forward error correction etc. The sum of these factors results in a degradation of probably more than 6 dB. We have been able to partially eliminate these problems, but I think the time has come to do better. If you agree, please read on !

POLARITY misalignment has always been a problem, and has been solved on 1296 and up using circular polarisation, and on the lower frequencies by rotating the array, using crossed yagis and recently by electronically rotating the receiving antenna. A solution for automated transmission could be the use of Circular Sense Keying. An unmodulated carrier is sent and the information is transmitted by switching the sense of polarisation. On the receive end, information can be extracted comparing the energy in both RHCP and LHCP channels which can be monitored simultaneously. The bandwidth of the receivers can be optimised with respect to the band in use (Doppler spreading) and the keying speed. CSK has the advantage of occupying less bandwidth than any other 2-channel system and generating less TVI and RFI because in all linear polarised systems it only generates a steady carrier instead of on-off keying.

#### **On the transmit side:**

I don't know yet how to generate CSK at the kW-level, but at the 200 to 400 W level it could be done on 432 and down, using 2 equal in phase solid state power amps, each output connected to one plane of a crossed yagi system. The amps are coupled by a hybrid ring with a 90 degree shift in one leg to originate the circular polarisation. The sense of polarisation can be inverted by switching in and out a 180 degree delay in one of the inputs of the amplifiers by PIN-diodes. One could eliminate TX feed-line loss by placing the PA at the antenna relays and feeding cooling to a small aluminium block on which the final transistors are mounted.

#### **On the receive side.**

You would need 2 antenna relays and two preamps, equal in phase and gain, each connected to an in-phase splitter and recombining these signals to both RHCP and LHCP

applying the appropriate phase delays. Two equal receiving blocks would convert the signal to the 15 kHz level, where they are processed by a computer.

#### **Frequency and time accuracy.**

In an automated system there is no room for any frequency or timing error, but fortunately fellow amateurs have developed GPS-derived timing systems which are accurate enough for this application. In case of EME the Doppler-shift can be calculated and one could refer as the frequency: the frequency at a virtual observer on the moon, so the computer should always correct both transmit and receive frequencies in the system to allow for the Doppler-shift. The same could be done regarding timing, as also the distance from every place on earth to the moon can be calculated.

#### **FEC**

Perhaps the biggest advantage of such a digital system is the power of forward error correction. During contacts near the noise level, frequently bits of signal are received, and our brain is just not able to fit them in the right place, computers are.

#### **MESSAGE LENGTH**

Using 6-bit letters and 9 letters per message at 10 baud per second a message would take 5.4 seconds and could be repeated 10 times in a minute, leaving enough time to switch over. When well organised, 9 letters is enough to have a QSO where you can pass report, station EIRP, QSY to another frequency, confirm the contact...

#### **OTHER MODES**

Apart from 2-way EME-communication, the system could be programmed to perform echo-testing, work as an EME-beacon, terrestrial beacon for automated observation, terrestrial DX, you name it... With some small extras it would be compatible with current CW-EME, when a cross-yagi is mounted in X-configuration, both horizontal and vertical polarisation can be generated by simply modifying the phase difference in the input circuit of the amplifiers. When both circular signals are

converted to audio and connected to stereo headphones, our brain will automatically extract any angle of linear polarisation. 432 MHz crossed yagi

I have recently been investigating 432 MHz crossed-yagis with open wire feeders. The results are very encouraging: the array of 16 crossed yagis, all coupled with open wire feeders, shows better than 20 dB isolation between H and V, better than 20 dB return loss and the patterns of both vertical and horizontal systems seems to be equal. Before I continue I have to compensate for the weight unbalance because of the rather heavy lines, made from quarter inch copper tube. Let me mention some losses dj9bv measured or calculated for 432 in his article in DUBUS 3/93 coax cable 1/2" 0.06 dB/meter open wire 3mm Copper 0.03 dB/meter open wire 6 mm Copper less than 0.01 dB/meter open wire 6mm Alu 0.01 dB/meter coax relay 0.05 dB air balun 0.05 dB antenna balun 0.1 dB power combiner 0.05 dB

of course it adds all up, certainly when the array has more than 4 yagis! on 432 MHz where the sky noise is very low, it is very important to keep the loss of the coupling lines extremely low. DJ9BV calculated that in a 16 array group, going from .5 inch cellflex to 6mm open wire reduces the line loss by 0.52 dB, but enhances the s/n by 2.0 dB. **greetings, Mark ea8ff**

### SM5BSZ writes :

Low level EME is quite easy nowadays. You just have to get enough frequency stability to use a bandwidth of 0.1Hz. Use a FFT program to produce a "waterfall graph" with 0.1Hz resolution. It will be no problem to decode morse code by eye at a speed of one bit per minute if you use 200W at 144MHz and a single medium size yagi at both ends.

I had no difficulty to locate a 50W transmission from KK7KA on a 2.1wl yagi (1/2 of an M<sup>2</sup> 2MXP20) with my 4x14 yagi system despite inadequate frequency stability (7Hz per minute). After partly compensating for the frequency drift by adding a constant frequency drift I had no problem to locate Sewart's 25W transmission directly on the waterfall graph. (I

did not know the exact frequency in advance). With better frequency stability I am sure I would have seen also the 12.5W transmission using some more averaging in the waterfall graph.

The experiment was done Aug. 8 last year with a degradation of 3.6dB.

I am quite sure I would have had no problem whatsoever to decode slow (one bit=1 minute) morse code from Stewart at the 200W level using just a single 14 element X-yagi (5wl). If you want to try this it may be a good idea to use circular polarisation to avoid faraday rotation problems. This is of course not necessary but a simple way to avoid the need for a complete stereo system.

The multi GHz guys have the tools for frequency stability and there are plenty of FFT programs.

Once the primitive "read CW off the screen" works and some experience is gathered it may be time to devise more clever and faster modulation methods for computerised low level EME communication. 73 Leif / SM5BSZ

## LAST

- deadline every first of Feb./May/August/Nov.
- **my email** DL7APV@t-online.de
- hope to be in Weinheim
- my deadline, was aug. 15 this time
- All EMERs describing their Station, please use ONLY power at feedpoint. It is much easier to compare.
- Have a lot of fun in the ARRL contest hope to see on 432.
- Next year (in 2001) F6HYE evaluates the **DUBUS/REF contest**, send logs to him.

**73 Bernd DL7APV**



# Yagis designed by DK7

no compromise in electrical and mechanical design !

## Dipoles without compromise



Folded dipole with teflon balun inside the box, N-jack. Connector-box fully sealed by "cold-welding" and then foam-filled.

## Elements w/o compromise



'Thick' elements with 8mm dia. and high bandwidth. Made out of Aluminium: high conductivity, low loss. Screwed fixing ensures good contact even after years!

| Model         | Freq | Ele  | Gain (dBD) | Length (m) | Price (DEM) |
|---------------|------|------|------------|------------|-------------|
| WY204         | 2m   | 4    | 7          | 1.5        | 90.-        |
| WY207         | 2m   | 7    | 10.6       | 3          | 106.-       |
| WY208         | 2m   | 8    | 11.4       | 3.8        | 140.-       |
| WY209         | 2m   | 9    | 12.4       | 5          | 162.-       |
| WY214         | 2m   | 14   | 15         | 10         | 342.-       |
| WX208         | 2m   | 2x4  | 7          | 1.5        | 151.-       |
| WX214         | 2m   | 2x7  | 10         | 2.6        | 192.-       |
| WX220         | 2m   | 2x10 | 12.3       | 4.6        | 223.-       |
| WX228         | 2m   | 2x14 | 15         | 10         | 500.-       |
| WY706         | 70cm | 6    | 8          | 0.75       | 110.-       |
| WY7010        | 70cm | 10   | 11.5       | 1.5        | 115.-       |
| WY7018        | 70cm | 18   | 14         | 3.1        | 154.-       |
| WY7023        | 70cm | 23   | 15         | 4.2        | 175.-       |
| WX7020        | 70cm | 2x10 | 11.5       | 2          | 192.-       |
| WX7036        | 70cm | 2x18 | 14         | 3.4        | 223.-       |
| W-3000Duoband |      | 3+5  | 5/8        | 1.4        | 197.-       |

## Our 2m Yagis now made with a

- maximum gain, broadband with best NEC calibrated software and verified
- current-optimized design, no peaks in thus optimized gain, better sidelobes
- minimal number of elements: other designs use more elements and thus more loss. Focus on the antenna-length, not on the number of elements
- Broadbanded elements: Thick, very good diameter. Best compromise between mechanical strength and skin effects! Made of steel there is more than 0.5% skin effects!
- Pre-defined element mounting: stable, resistant nylon blocks. **No clamp** needed. The active element lengths and boom change slowly due to oxidation/corrosion

See our web page for more details

## NEW! Crossed Yagi for EME

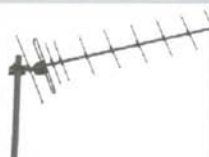
Fighting for 0.1 dB more gain, but using linear polarisation...

Crossed Yagis are **MUCH BETTER**

Designed by DK7ZB (see the VE7 Boom: round tubing **without** support elements, gain 15 dBD, length 10m)

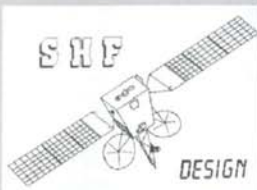
We provide information about low-

**WiMo Antenna Ltd., Gaxwald 14,  
D-76863 Herxheim, Germany**  
Tel. +49 7276 919061  
FAX: +49 7276 6978  
e-mail: [info@wimo.com](mailto:info@wimo.com)  
<http://www.wimo.com>



See our web page for details! Ask for a General catalogue (100 pages): please send (DL: bitte 6.60 DM in Briefmarken einsenden). Orders welcome by mail, phone, FAX, e-mail, UPS and mail. Payment by bank transfer. UK rep: Simon Lewis GM4PLM F. DK rep: RF connection, Hjortshøj SM. Foreign representatives wanted!

7ZB



# Hi-precision Yagis

**CAM-produced Antennas made in Germany: for 23cm, 13cm and Meteosat!**

## new design:

sidelobes and F/B-ratio. Designed with lots of test-antennas.

element-current like in older designs, and F/B ratio.

designs with the same length have 2-3 times the gain. Remember: antenna gain depends on number of elements!

conductive aluminum tubing with 8mm wall thickness. Low loss and wind load. With thin elements low SWR loss due to bad conduction and

mounting with a screw and UV-protective coating of elements directly on the antenna so the entire antenna data would be unaffected as time passes...

## parts and assembly instructions!



BQH G/T lists!).  
port strut, Folded dipoles, 2x14  
0m ..... 500.- DEM

loss polarisation switches.

Yagis: free of charge.

send banknote of 10.- DEM or \$ 6.- (Sweden).

e-mail. Daily worldwide shipments via air, C.O.D. or by credit card.

rep: INFRACOM, St. Nazaire

M rep: Swedish radio Supply, Karlstad

## Dipole without Compromise



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

## Reflector without Compromise



high F/B ratio due to multiple reflector, highly appreciated by EMEers: low terrestrial noise!

| Model   | Freq  | Ele | Gain (dBD) | Length | Price (DEM) |
|---------|-------|-----|------------|--------|-------------|
| SHF2328 | 23cm  | 28  | 15.4       | 1.6    | 215.-       |
| SHF2344 | 23cm  | 44  | 18.1       | 3.0    | 258.-       |
| SHF2367 | 23cm  | 67  | 19.9       | 5.1    | 315.-       |
| SHF1340 | 13cm  | 40  | 16.6       | 1.6    | 220.-       |
| SHF1367 | 13cm  | 67  | 20.0       | 3.0    | 336.-       |
| SHF1633 | Meteo | 33  | 16.3       | 1.6    | 265.-       |
| SHF1658 | Meteo | 58  | 18.7       | 3.1    | 345.-       |

## ...and the details:

- all elements pre-assembled, fast and easy mounting. No need to worry which element must be mounted at which place.
- all screws, u-bolts, wing-nuts etc. stainless steel! Dismounting after 10 years? Corrosion? No, Sir...
- lost a part? No problem! Everything in stock!
- does not detune when getting wet!

## Full line of accessories:

- power splitter for stacked arrays
- Phasing harnesses for circular polarization
- remote polarisation switches, coax switches
- Rotors, Thrust bearings, Masts, connectors, coax.....

# 6m News

Editor: Oliver Reinders, DL1EJA - reinders@andris.de

## Hallo Freunde vom "Magic Band",

Mein Name ist Oliver, DL1EJA und ich werde in Zukunft den 6m-Teil der Dubus vom Joachim übernehmen. Für die unter euch, die mich noch nicht kennen, eine kleine Vorstellung.

Ich bin 32 Jahre alt und seit 1986 lizenziert. Zuerst unter DG2JA und ab 1990 bin ich mit DL1EJA vorwiegend auf 2m zu hören. Meine Leidenschaft war und ist noch immer VHF-DX. Als 6m in Deutschland das erste mal frei gegeben worden ist, war ich gleich mit am Start. Da zu dem Zeitpunkt jedoch 144MHz die absolute Priorität hatte, lief 6m eigentlich nur sporadisch mit.

Bedingt durch mein Studium und einen Ortswechsel bin ich erst Ende 1995 wieder aktiv auf UKW geworden. Anfangs wieder mit dem Schwerpunkt 2m. Erst die letzten 2 Jahre hat mich das "Magic-Fieber" so richtig gepackt. Erst wurde die 4ele Eigenbau durch eine 6ele Longyagi ersetzt, und seit Anfang dieses Jahres steht nun eine 10ele DJ9BV-Yagi (2.1l) ca. 20m über Grund hier in Kalkar am Niederrhein (JO31DS). Als Gerät betreibe ich einen IC736 mit Empfangsvorverstärker im Mast um die Kabelverluste auszugleichen.

Nach diesen Experimenten auf dem Band bin ich selbst überrascht heute sagen zu können, daß die Reichweite auf 6m bei Tropo und MS vergleichbar ist mit der auf 2m. Dies ist weniger auf die recht große Antenne als vielmehr auf die Antennenhöhe zurückzuführen. Ein Großteil an Rauschen und Störungen konnte durch den erhöhten Mastaufbau beseitigt werden.

Ich möchte diesen Raum für 6m-news in Zukunft stärker für Berichte und technische Innovationen benutzen, wobei die klassischen Berichte über die Bedingungen der

letzten 3 Monate nicht zu kurz kommen sollen. Da ich bei diesen Artikeln auch und besonders auf Euch angewiesen bin, möchte ich Euch bitten Mir die Infos über Packet, Email oder Post zuzuspielen, damit ich sie schnell und aktuell hier in der DUBUS verarbeiten kann. Ich möchte auch einen Art Liste für interessante 6m-Homepages und Internetseiten einführen. Hier kann man Infos, die den Umfang dieses Heftes sprengen, weiter ausführen und vertiefen. Oder sie dienen als aktuelle Informationsquelle welche vielleicht bei manchem noch nicht bekannt sind. Es gibt kaum ein UKW-Band, das so launisch reagiert wie 6m und doch in gewisser Weise berechenbar ist. Viele Ereignisse wie Bandöffnungen nach Afrika und Südamerika sind recht gut vorherzusehen, genauso auch Aurora. Es kommt aber auch immer wieder zu Überraschungen, von denen keiner so recht geglaubt hätte, dass es möglich wäre, wie die Longpath-Öffnung nach Hawaii.

Rückblickend liegen einige Wochen mit ausgezeichneten Sporadic E-Öffnungen hinter uns. Etliche Tage an denen es regelmäßig nach JY, OD und 4X ging. In die entgegengesetzte Richtung ging es ebenfalls fast täglich nach EH8, CT3 und die Bake in ZD8 und CU war ebenfalls sehr oft zu hören. Dank der beständigen Es-Öffnungen bis tief in die Nacht gelangen auch viele QSO's Richtung Südamerika und in die Karibik im Juni und Juli. Die Freigabe des 6m-Bandes in Monaco brachte auch alte Hasen wieder richtig in Wallung. Die verschiedenen Stationen waren tagelang heiß umlagert.

Ebenfalls ein Highlight für jeden DX'er war die Aktivierung von St. Helena. ZD7VC, Bruce, wurde regelmäßig auf 6m gehört und handelte die Pileup's schon nach kurzer Zeit wirk-

lich bemerkenswert. Er wird wohl bald wieder regelmäßig über TEP zu hören sein.

Weiter verbrachten verschiedene OM ihren Urlaub in der Karibik und bescherten wohl einigen von uns schöne Bandöffnungen mit etlichen QSO's. Hier stehen allen voran die Calls J87AB, 8P9HW, 8P9JM und VP2V/W6JKV. Ebenfalls bemerkenswert war die Aktivität von FY/F5KEE, PZ3RA und vielen Stationen aus LU, PY und CX. Leider blieben die Nordamerika-Öffnungen weit hinter den Erwartungen zurück. Es waren nur 2 Öffnungen, die wirklich den Namen verdienen. Eine war während der Hamradio in Friedrichshafen, und eine weitere im Juli. Das Band war einige Stunden offen von der Ostküste bis runter in den Südosten mit starkem und schnellen QSB, wie man es von Multi-Hop-Es-Verbindungen gewöhnt ist. Sonst war in diese Richtung nur die Aktivität von OX3K, JX7DFA und weiter im Norden von JW5RIA sowie JW/DL3NRV hervorzuheben. Gerade OX3K hat wohl viele sehr angenehm überrascht mit seiner gelungenen Aktivität auf 6m. VP8CMT war hier wohl der Konterpart und hat einigen ein seltenes Land beschert. Verblüffend waren die ausgezeichneten Ausbreitungsbedingungen Ende Mai aus diesem doch recht südlichen Land. Auf der Nordhalbkugel waren in ähnlichen Breiten jedenfalls solche DX-Verbindungen nicht möglich!

Vorausschauend in die nächsten Wochen kündigt sich der Herbst mit seinen F2-Bedingungen an. In den letzten Tagen waren wieder regelmäßig TEP-Öffnungen nach Südafrika zu verzeichnen. Auch 3C5I und FR waren zum Teil recht laut in Mittel- und Nordeuropa zu hören. Leider war FR/T nicht so aktiv auf 6m, wie viele gehofft haben. Er ist nur vereinzelt geloggt worden.

Für die CW-Freunde, aber auch in SSB, ein besonderer Genuß, sind die immer häufiger auftretenden Aurora-Öffnungen, welche zum Teil bis zum Balkan und Italien nach Süden reichten. Auch in den nächsten Wochen wird sich dieser Trend noch weiter verstärken.

Anstehende Expeditionen, die man sich vormerken sollte, sind:

|           |               |
|-----------|---------------|
| VQ9QM     | 01.08.-       |
| VP9/M0RRA | 21.09.-26.09. |
| HO1A      | 16.09.-03.10. |
| 8Q7QQ     | 18.10.-31.10. |
| S92DX     | 18.11.-03.12. |
| ZD8SIX    | 1.11.-14.11.  |
| ZF2MU     | 16.11.-23.11. |
| TS7N      | 15.11.-30.11. |

Für die Mithilfe an diesem Artikel danke ich G4UPS für seine Logbuchauszüge und DL8HCZ. Weitere Infos zu Expeditionen sind unter anderem zu finden unter den Internet-Adressen:

<http://www.algonet.se/~sm7aed/>

<http://www.uksmg.org/>

Wer weitere interessante Seiten im Internet kennt, auch Bauvorschläge und Berichte und Artikel, kann mir gerne die Adressen mailen oder schreiben an:

Oliver Reinders; Jägerweg 5; D-47546 Kalkar  
reinders@andris.de

DL1EJA@DB0GOS-8

vy 73 Oliver, DL1EJA

(Sorry this time only in German language, from next issue onwards also in English!)

# Tropo News

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

## 2m

### DK1VI, JN49HH, wkd:

29.5.2000 15.59 DL8CMM/mm JO24XX 56 57 655 km new square; 11.6. 11.16 IK6HCX JN63SO 55 59 737 km; 16.16 EB3DYS/p JN12OI 52 52 879 km; 18.6. 08.53 F6CTT IN97HV 57 59 751 km; 10.12 G3HTX IO80FK 52 57 879 km; 10.37 M0BKL IO80FK 54 52 879 km.

Rig: IC251E + PA 650 W out + 16 El. Yagi

Danke für den Bericht Ernst!

### F1FIH, JN23GS, wkd 2m > 700km

03/03/00 7X2LS JM16MT; 19/03/00 9A2RD JN65VG; 29/04/00 IK3UNA JN66LS; 06/05/00 IV3HWT JN65ST, S59DEM JN75DS; 07/05/00 DD4OOO JN49IJ, DD7PA/P JN49LM, 9A2RD JN65VG, S53T JN75GV, S50C JN76JG; 21/05/00 9A2RD JN65VG; 03/06/00 S55AW JN75DS; 04/06/00 S53D JN76BD, S50C JN76JG; 10/06/00 S53N JN65WW; 01/07/00 S58W JN65XM, 9A2RD JN65VG, HA8MV/P KN06HT; 02/07/00 SP6OPZ JO70XS, IROMM JN61IT, 9A7P JN75BA, S53WW JN75DS, 7X2LS, JM16MT.

Many thanks for info Michell

### DL8EBW (JO31NF) wkd 2m 600km:

29.05.00 DL8CMM&DG0CAL/mm from JO23, 24, 35, 36; 02.06.00 1850 DL8CMM/mm JO26VN (600km), 1934 DG0CAL/mm JO26pk (592km); 11.06.00 1712 EA1/G4BAH/p IN82UB (1244km); 12.06.00 1618 F6CTT IN97HV (715km); 18.06.00 FX3THF IN88 hrd 559! (803km), 0834 F6FAI IN78 hrd (850km) F4ROV IN99 hrd (643km), 0910 F6CTT IN97HV 59++ (715km); 11.08.00 GI6ATZ IO74AJ (945km), EI3GE IO63XD (920km), GW7SMV IO81LN (705km), G3YJR IO93FR (636km), GM0BQM IO85HV (848km); 12.08.00 OK2PMU JN99AJ (800km), OK2VDV/p JO80NE (713km), F/DD0VF JN16 (624km).

RIG: FT726R (mod. CF300), 11 el. DL6WU, PA GU74b.

Tnx for info Guy.

## 70cm

### DL5UH/p JO74AA wkd:

6./7.5.2000, ON4CP JO20IV (721km), DL1ELY JO30EM (651), G4LIP/P JO01QD (913), PA6NL JO21BX (701), DK0ALK JN38TD (792).

Rig: 100W, MGF1302, 21 ele

Danke für den Bericht Moritz!

## 23cm

### DL5UH/p JO74AB wkd:

SM1WXE/1 JO97EX (512km), SM1VDA JO97FS (496), OH0A JP90XD (765).

Rig: 10W, 23 ele. Danke für den Bericht, Moritz!

## Editor wanted!

DL8HCZ ist QRT now on 144 MHz.

We think that it would be good to have someone as our editor for the 2m and 70cm - Tropo column who is active at least on 2m.

You should have access to Packet-Radio, DX-Cluster and Internet/email.

For further details please contact DL8HCZ via email: Joachim@Kraft.net

## Die CN2DX-Expedition 2000

### von HB9HLM

Ein bis zweimal im Jahr nehme ich die Gelegenheit wahr, nach Marokko zu fahren, da meine Ehefrau aus Casablanca stammt. In diesem Jahr war es das erste Mal, daß ich meine Funkstation mitgenommen habe. Und das bereue ich nicht!

Hier die Story der diesjährigen Aktivität.

Am 5. Juni Abfahrt aus der Schweiz Richtung Sète, Südsanien, um das Schiff "Marakech" nach Tanger zu erreichen. Die Reise dauerte insgesamt 36 Stunden. Die Überfahrt war nicht sehr angenehm, die See war unruhig, was meinem Magen nicht gut bekam.

Am 7. Juni sind wir in Tanger angekommen. Von dort aus waren es noch einmal knapp 4 Stunden bis Casablanca (Locator IM63DM), wo das vollgestopfte Auto entladen wurde. Im Auto gab es keinen Millimeter Platz mehr. Am Abend habe ich die ganze Station aufgebaut und den Mast für die 6m-Antenne aufs Dach gebracht. Am nächsten Morgen wurde die Verkabelung vorbereitet und schon mal die Kurzwellendipole aufgebaut. Das Dach unseres Gebäudes war nicht groß genug, so daß das Dach des Nachbarhauses mit benutzt werden musste. Im Laufe des Nachmittags war der Antennenaufbau fertig.

Als ich einen Test auf 21 und 28 MHz machte, ging gleich nach dem ersten CQ-Ruf ein Pile-up los. Das machte mir gleich Spaß. So konnten knapp 700 QSOs geloggt werden.

Mein Hauptinteresse liegt jedoch auf 50 MHz und 144 MHz. Nachmittags kam dann der Schwager meiner XYL mit einer großen Bohrmaschine und mit großen Gewindebolzen konnte der Mast für die 2m und 6m-Antennen befestigt werden. Das ging recht flott und ich checkte das Equipment, alles war in Ordnung. 6m war aber leider zu. Ich machte einige Lokal-QSOs mit CN8-Stationen auf 2m in FM und erreichte einige OM in Portugal und Spanien in SSB.

Der 9. Juni war dann außergewöhnlich: 6m war in alle Richtungen offen und es gab ein super

Pile-up, bis zu dem Moment als F5SJP mir sagte, daß 2m auf ist. Ich machte sofort QSY auf 144.300 MHz und rief umgehend CQ. Direkt nach dem ersten Ruf brach ein wahnsinniger Pile-up los. Innerhalb von 2 Stunden, von 1421 bis 1621 UTC machte ich 220 QSOs auf 2m mit DL, HB9, F, I, OE, OK, PA und SP. ODX war SP7FBP in KO00DP über 2958km, immerhin ein Doppelhop!

Danach ging's auf 6m zurück und dort ging das Pile-up weiter. 6m war die ganzen Tage auf und ich erreichte ganz Europa bis rauf nach SM, LA ES und OH. Auch QSOs mit den USA, Mayotte, Argentinien, Jordanien, Libanon, der Ukraine und Rußland kamen ins Log. Insgesamt wurden es 1600 QSOs mit 242 Großfeldern auf 6m.

Auf 2m gabe es weitere Öffnungen: Am 12.6. ging's nach EA8 und EA mit Signalen von 59+, am 13.6. konnte ich CT3 mit wahnsinnig starken Signalen arbeiten.

Am 20.6. gab es dann noch eine kleine 2m-Es-Öffnung, die 2 QSOs mit Irland und eines mit Frankreich einbrachte.

## Shak of CN2DX



Am 24.6. dann wieder eine größere Es-Öffnung von 1227-1452 UTC auf 2m nach I1, I2, I3, I4, I5, I7, I8 S5 und 9A. Immerhin werden es 50 QSOs!

Am 25.6. dann nochmal 15 Minuten Es auf 2m nach Irland. Leider war nur eine Station auf dem Band, die mir mein Signal auf 6m zurückspielte. Mein Signal dort war laut und hörte sich wie eine lokale Station in FM an!

Auf 2m wurden insgesamt 280 QSOs mit 63 verschiedenen Feldern gemacht.

Am 17. Und 18.6. war ich mobil an der Küste in Safi in IM52JH mit 80 Watt und Viertelwellenstrahler auf 6m qrv. Innerhalb von 2 Stunden gelangen von dort 53 QSOs mit 39 Feldern in folgenden Ländern: 9H, F, I, G, GU, EA, ON, EA8 IT9, EA9, HB9, ZB2, 9A, CU und S5.

Am 29.6. mußte ich einen Teil der Station abbauen, ließ aber den 6m-Dipol und die 9 Element für 2m fürs nächste Jahr aufgebaut.

Um 1030 Uhr war dann Abfahrt in Richtung Tanger, um von dort aus wieder mit dem Schiff nach Sète zu fahren. Am 1.7. abends waren wir dann

in HB9 zurück, wo mich bereits ein riesiger Stapel eingegangener QSL-Karten erwartete.

### Besuche bei marokkanischen OMs

Bei meinem Aufenthalt in Marokko habe ich die Gelegenheit genutzt, mehrere CN-Amateure zu kontaktieren. Man trifft sie auf 145.500 oder auf dem 70cm-Relais auf 439.800 MHz in FM. Ich konnte so einige interessante QSOs fahren und es gab technische Fachsimpelei genauso wie freundschaftliche Unterhaltungen. Besucht habe ich CN8TW, Ali, aus Casablanca, der von KW bis 70cm qrv ist und eine sehr gute Station und Antennenanlage besitzt. Er betreut auch das 70cm-Relais. Auch Michel, CN8CC, ebenfalls aus Casablanca, habe ich getroffen. Er ist auch auf allen Bändern qrv, war aber in der letzten Zeit kaum noch aktiv. Anlässlich meines Besuchs hat er seine Station entstaubt und wieder aktiviert.

### Mobilbetrieb auf 6m aus IM52JH (Safi)

Dann traf ich Abdou, CN8SH, der in einem 18-stöckigen Hochhaus in Casablanca wohnt. Auch

### Antenna of CN2DX



er ist gut ausgerüstet. Es gelangen von ihm aus viele QSOs in verschiedene Teile Marokkos.

Anschließend bin ich nach Rabat zum marokkanischen Afuclub ARRAME gekommen und wurde von CN8LR, Kacem, empfangen. Der Club befindet sich in einer Villa, auf der es sehr schöne Beams für KW gibt.

Dort steht auch die Bake CN8LI, die auf 50.026 MHz arbeitet. Ich hatte eine interessante Unterhaltung mit Kacem. Er ist für die Organisation und Verwaltung der marokkanischen Amateure zuständig. Auch für die Beantragung einer Gastlizenz ist er Ansprechpartner und gibt alle nötigen Informationen. Er ist zu erreichen unter:

ARRAME, OM Kacem, CN8LR, B.P.299, Rabat, Marokko. Tel.: + 212 7 673703, FAX + 212 7 674757

Karam ist sehr zuverlässig und antwortet umgehend. Ich habe bereits einige Projekte für das nächste Jahr, vielleicht einige Aktivitäten aus der Sahara und aus seltenen Feldern. Sobald alles feststeht, werde ich es mitteilen.

Insgesamt fand ich die OMs in Marokko sehr offen und warmherzig! Der Aufbau einer Antenne ist in Marokko kein Problem. Wenn man eine Lizenz hat, kann man sie überall aufbauen.

Meine Station in CN, Locator IM63DM

IC706 für 2m + 6m, PA für 2m 150W; TS680 für KW. 9 Element Yagi für 2m, Dipole für 6m und KW, fest ausgerichtet nach Mittel Europa.

73 de HB9HLM / CN2DX

Auf der folgenden Seite die von CN2DX aus IM63DM erreichten Felder auf 2m.

(The following page shows the squares worked by CN2DX, IM63, on 2m via Es and Tropo)

### TUNESIEN (TS7N) auf 6m und 2m QRV!

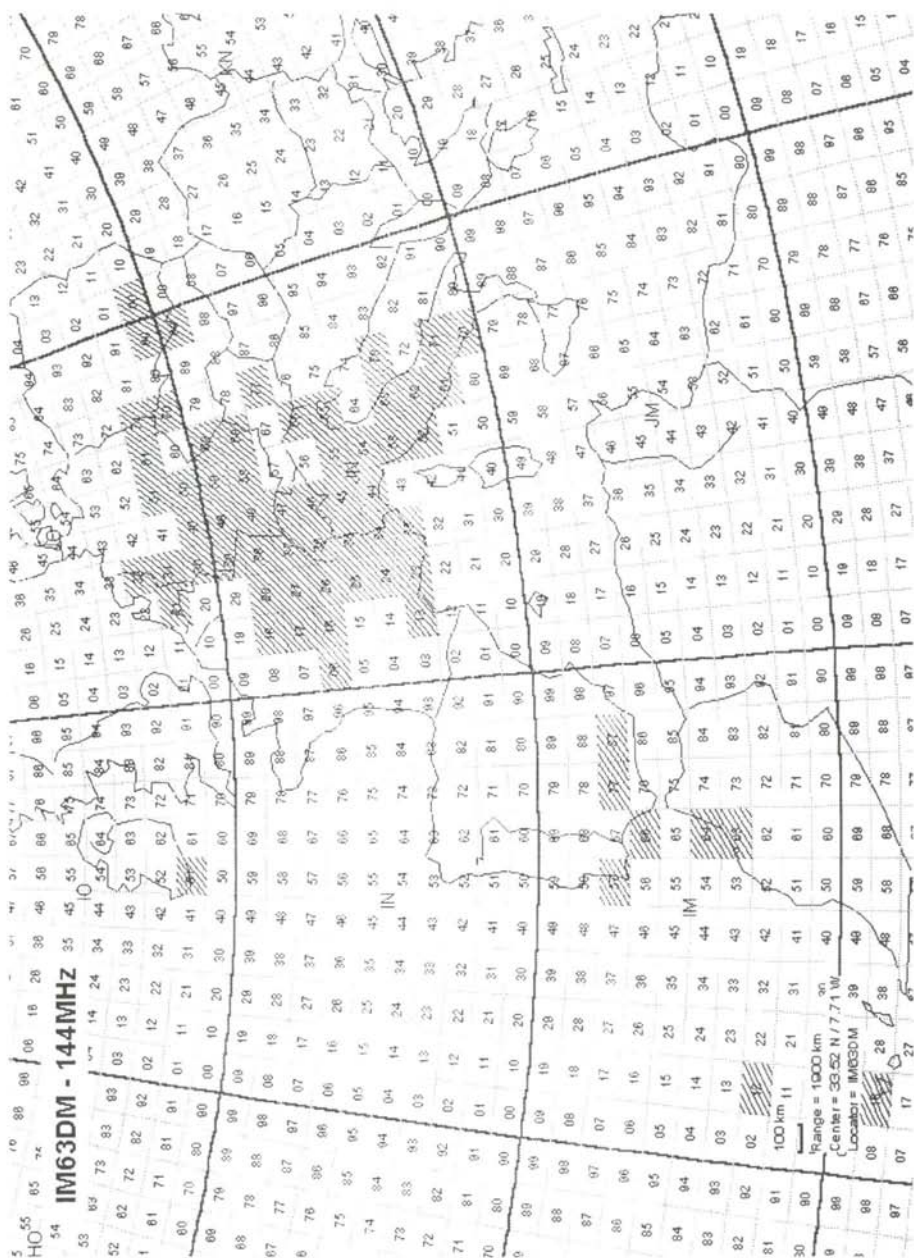
Eine Gruppe aus DL um DL6SAQ, DJ7IK u.a. ist vom 14.-30.11. aus Tunesien (Locator JM54) unter dem Rufzeichen TS7N auf 6m und 2m qrv.

Auf 2m wird auch Meteor-Scatter gemacht, wo man besonders in den Leoniden am 17.11. aktiv sein wird.

Skeds per email unter DL6SAQ@yahoo.de

Aktuelle Infos gibt es im internet unter <http://www.qsl.net/ts7n/>

## CN2DX in IM63DM: Squares on 2m



# Es News

Editor: Norbert Götsche, DL8LAQ

Dear Readers, please send your reports via email to dl8laq@gmx.de or packet radio to DL8LAQ @ DB0HB.#HH.DEU.EU. 73, Norbert.

## ES News

### 2000-05-18

**I4XCC (JN63GV) wkd:** 1938 EA7RZ IM86SU, 1948 EA9IB IM85NG, 2002 EA5DWS IM98SR.

**IK5FTQ (JN53LW) wkd:** 1748 EA7BYM IM66UM, 1750 EB7HAF IM76, 1751 EA5AJX IM98KU, 1753 EA7BI IM66UM, 1754 EA7TU IM66UM, 1758 EA7ZM IM76JR, 1759 EA7ERP IM87EE, 1800 EA5CHT IM97EK, 1802 EA7AJ IM87CS, 1809 EA5AAJ IM99SL, 1814 EA5APJ JM08BU, 1820 CT1CAD IM67HD, 1822 EB7NK IM86RQ, 1835 EB5ILD IM98SQ, 1840 EA5CLH JM08BR, 1929 EA9IB IM85NG, 1828 EB5AQR/7 IM87 (QRG 145.200 FM lorry-driver on highway near Granada).

**IT9VDQ (JM68QC) wkd:** 1806 EB1EHO IN73DM.

**IZ5EME (JN52NS) wkd:** 1746 EA4BWN IM89VI, 1752 CT1CAD IM67HD, 1753 EA5ZF IM99WU, 1755 EB5AYG IM99TN, 1756 EA4EHI IM68TV, 1758 EA5AAJ IM99SL, 1804 CT2GPW IM58LV, 1806 EA5AJX IM98KU, 1814 EA7FOY (FM), 1817 EA4ACS IM78FG (FM), 1818 EA4BL IM68SK (FM), 1819 EA4EGC IM88JV (FM), 1819 EA4BWN IM89VI (FM), 1820 EA4DBM IM88FM (FM), 1826 EA5AVD IN90XB, 1828 EB4DIZ IM89AT, 1828 EA4AMX IM89AT, 1829 EA5DIT IM99CD, 1836 EA5IT JN00AC, 1845 EA7GHZ IM78IM.

**9A4NF (JN73VS) wkd:** 1838 EA5AJX IM98, 1840 EA5ZF IM99, 1841 EB5AYG IM99, 1842 EA5AAJ IM99, 1843 CT1CAD IM67, 1844 EA5DIT IM99, 1844 EA5AMR IM99, 1846 EB5ILD IM99, 1848 EA5AGR IM88, 1856 EA7GTF IM88, 1902 EB7FPF IM67, 1919 EA7AJ IM87, 1923 EA7BYM IM88, 1935 EA9IB IM85, 1936 EA4AYU IM88, 1959 EB7COL IM77.

### 2000-05-19

**9A4NF (JN73VS) wkd:** 1432 4X1RF KM72, 1443 4X1IF KM72, 1448 4Z5AO KM72, 1449 4X1MO KM72.

**I4XCC (JN63GV) wkd:** 1535 4X1RF KM72LT, 1548 4X1IF KM72 (cw), 1550 4Z5AO KM72, 1604 4X1MO KM72KD.

### 2000-05-27

**DK1VI (JN49HH) hrd:** 1700 IW9ELR JM60OB, 1712 9H1BN/m JM75, 1715 IT9IQQ JM77NN, 1736 9H1GB

JM75FU, 1807 IW9BJU JM77GG, 1810 IT9GSV JM77LH.

**DL8LAQ (JO43XU) wkd:** 1742 IK8YOQ JN70GR, 1742 IBMPO JO70FP hrd, 1744 IBQLS JN70, 1748 IT9NAN JM77 hrd, 1755 IT9GSV JM77LH hrd, 1759 I?CEV JM78TF hrd.

**F8OP (JN26MM) wkd:** 1701 YU1CF KN03, 1709 T97M, 1718 IW9LER JM68PD, 1720 IT9VDO JM68, 1721 IT9NAN JM77, 1723 IT9WVF JM66, 1726 IT9TVF JM68OD, 1728 IT9QAU JM77MN, 1735 IT9GSV JM77LH, 1745 IBCEV JM78TF, 1752 IT9HLR (FM), 1755 IZ8BIB (FM), 1757 IW8RFA (FM), 1759 IW9CEC (FM), 1800 YZ1KU, 1807 IW8RCM JM88.

**HA8MV (KN06GU) wkd:** 1129 F6HTJ JN12KQ, 1144 F6DRO JN03SM, 1147 F/G8MBI JN04FT, 1152 F6FHP IN94TR, 1152 F1FAW IN94QS, 1646 EA3ADW JN11, 1652 EA2AGZ IN91DV, 1656 F5DUX IN93IN, 1658 F9HS JN23AT, 1700 F6ITD JN03SN, 1706 F6HRE IN93GK, 1706 F6EPE JN23JW, 1708 F4BWJ IN93MP, 1710 F4DBJ JN03NS, 1710 F1JG JN23HQ, 1712 G4TIF IO92FH, 1713 G4RUW IO91, 1713 G0KPW JO02OD, 1716 EI5FK IO51RT, 1717 EA2ADJ IN93AH, 1719 G0NNF IO92AL, 1724 G0RRJ IO91FE, 1724 G3WZT IO90UX, 1725 G7MJX IO92VA, 1725 G4FBZ IO92SQ, 1726 G0GIF IO90UW, 1727 G4MKF/P IO90, 1728 M1EAF IO92WO, 1732 G7RAU IO90IR, 1738 G4DOL IO80SO, 1738 GW7SMV IO81LN, 1739 G4HSK JO01FS, 1739 G4NOO JO01CO, 1740 G4AEP/P IO91MB, 1741 G3WZT IO90UX, 1741 G4APL IO91WH, 1742 G4BRK IO91DP, 1743 G0CUZ IO92, 1744 GX0SCR/P IO91ES, 1744 G6XRK IO91RN, 1746 G0VVE IO91SG, 1743 G3KEQ JO01BH, 1754 G0WUU IO91TB (QRP 5W), 1756 G0NNF IO92AL, 1758 G3BNE JO01BJ, 1800 G4ASR IO91MX, 1804 G3FYX IO91RM, 1806 G8WXU.

**I4XCC (JN63GV) wkd:** 1657 G3WZT IO90, 1746 LA2AB JO59, 1747 LA6MV JO59FJ.

**IT9VDQ (JM68QC) wkd:** 1231 DL4ABJ, 1232 DB6LJ, 1232 DH9OY, 1233 DJ3VI, 1233 DH2OAA, 1237 DG9OAF, 1238 DL2ALF, 1657 DJ6XV, 1658 PA3EHH, 1701 PE3ECU, 1703 PE9GG, 1703 PE9DX, 1704 PA1GYS, 1705 PA3GFY, 1706 PE1GNP, 1706 PA4VHF, 1708 PA1AT, 1709 PE1PKR, 1710 PA3AOH, 1711 DF9QT, 1712 DL8EBW, 1712 DL2OM, 1713 OK1PGS, 1718 F6DKW, 1719 DG2KBC, 1720 F5ZO, 1720 F6CBH, 1721 F8OP, 1722 HB9AOF, 1723 DM3GH, 1723 IZ1BPN, 1725 F6HGC, 1725 F4BUL, 1726 F6BSJ, 1727 I1JQT, 1729 F1PYR, 1729 DL1MAJ, 1729 LX2DX, 1730 F6ACU, 1730 F1DUE, 1732 ON4KST, 1732 F5HRY, 1733 HB9DFG, 1734 DL1KDA, 1734 PE1KLO, 1735 PA9RX, 1736 DL6YCY, 1736 F1TUE, 1737 ON1KRI, 1738 DK8VS, 1738

DG3GAG, 1739 DL8GCL, 1739 DB8KJ, 1739 DF7KF, 1740 DH0GHU, 1740 F5JNX, 1741 IW1DIM, 1742 F4AZF, 1742 HB9RS, 1743 DL1GNM, 1743 ON5PJ, 1744 HB9ZCV, 1744 ON4KHG, 1744 HB9EAH, 1745 HB9DKM, 1745 DD1WKS, 1745 DK1CM, 1745 DH1HC, 1746 DF9KX, 1746 DL2IAJ, 1747 DL9GRE, 1747 DL4NAA, 1751 SM7WT, 1751 SM7DIT, 1752 DF1BN, 1752 F6IRS, 1752 DL1EJA, 1753 DF2GN, 1753 PA2CHR, 1754 IZ2CPO, 1754 HB4FE, 1754 DF8IK, 1755 DG3GAQ, 1755 DM1HD, 1756 DJ2JS/P, 1756 DL6FAW/p, 1756 DC9KK, 1757 DL1EAP, 1758 DL3NCR, 1759 DF7KF, 1759 DL6IY, 1759 DL4NAA, 1800 DJ2KUA, 1801 DK5TE, 1801 DL8AKI/p, 1801 DL5GAC, 1802 DO1MJF, 1803 DF9NP, 1803 DL4FCS, 1805 DLSMAE, 1805 DJ5RE, 1805 DL5NEB, 1806 PA0PEV, 1807 DK7LZ, 1807 DL1EKM, 1807 DK5YA, 1807 DL4EBV, 1808 DL9EY, 1809 PD0HCV, 1809 DL6YBJ, 1810 DL6KR/P, 1810 PD1ANQ, 1811 PD0ROS, 1811 DF2JQ.

**IW9ELR (JM68PD) wkd:** 1633 PE1OGF JO21QJ, 1633 DL1KDA JO30FQ, 1633 DB8KJ JO30CM, 1633 PA0JMV JO21PM, 1633 PA3EXX JO22, 1633 PE1BVM JO21RI, 1635 DK5WO JO30AS, 1635 DG6PY/PJO30JF, 1635 DC9KU JO30BT, 1635 PA3BZO JO21RS, 1650 DF2JQ JO31HL, 1650 PE9DX JO33, 1650 PE9GG JO33, 1650 DL8EBW JO31, 1650 DL1EAP JO31, 1650 DF2WG JO31, 1650 DL6YCY JO41CV, 1650 DK5YA JN49NX, 1650 DL2OM JO30SN, 1655 DJ9CZ JO31, 1655 DL6RK/P JO30NQ, 1655 DK7LZ JO30, 1655 PA3GFY JO23SA, 1655 PA3CEE JO33JL, 1700 PA3DNA JO32, 1700 PA3ECU JO32CF, 1700 PA1GYS JO22WW, 1700 DF9QT JO30OR, 1700 DL6YBJ JO30, 1700 PA4VHF JO32EH, 1700 PA3BGM JO33CE, 1700 PA2TAB JO32GF, 1700 PE1GNP JO31X, 1700 PE1OPK JO23XH, 1705 PA3EHH JO23, 1705 DH3YAK JO31, 1705 PE1PKR JO23, 1705 DG9ZH JO32BV, 1705 DL4BV JO31, 1705 PA5WX JO33, 1705 DK5DQ JO31, 1705 DB8DY JO31NK, 1705 DJ6XV JO31LQ, 1710 PA3GWN JO32KF, 1710 PA9RX JO32, 1710 PD0RFU JO22, 1710 DL6BF JO32, 1710 DD3DX JO31TN, 1715 F5ZO JN08, 1715 F8OP JN26, 1715 DG8JF/P JO33, 1715 F6DKW JN83, 1715 F6CBH JN19BH, 1715 F4BRL JN19EN, 1715 F1PYR JN19DL, 1720 I1JTO JN35UB, 1720 DG6JF/P JO33QH, 1720 F5HRY JN18, 1720 DL5DBM JO32WO, 1720 F6BSJ JN26, 1720 F5LJA JO12IA, 1720 DH8GEV JO33RL, 1720 F6ACU JN38FC, 1720 F4AZF JN38IW, 1730 F5JNX JN37, 1730 IK1MTZ JN35UB, 1730 F6EKJ JN27ND, 1730 HB9DFG JN37.

**LZ1KQ (KN31CS) wkd:** 1716 I2FAK JN45OB, 1717 F6DQX JN25KS, 1718 IK1EGC JN35UF, 1722 IZ1BPN JN35VG, 1728 IW1CHX JN35TH, 1733 IS0DKU JM49NF, 1743 EB5AYG IM99TN, 1746 EA6VQ JM19MP, 1750 EA3DXU JN11CM, 1755 IS0KEB, 1802 EA3ADW JN11CQ, 1804 EA5ZF IM99WU, 1815 EB3DYS/N7BHC, 1822 EA3DXU JN11CM, 1833 EB3DYS JN11.

**OE1SOW (JN88FF) wkd:** 1728 G7RAU IO90IR, 1732 M0BKL IO80FK, 1736 M1DGB IO70NF, 1815 9H1CG JM75FW.

**OE6IWG (JN77PK) wkd:** 1718 G4LOH IO94IA, 1720 G4HGI IO83PL.

**ON1IM (JO11UB) wkd:** 1541 SP7RJF KO10, 1548 SP8UFT KO11, 1654 I8MPO JN70, 1657 IW0EFI JN61, 1659 IC8FAX JN70, 1704 I7JIT JN71, 1704 I8QLS JN70, 1722 HA4XN JN97, 1725 YU7BCL KN05, 1726 IK7YZI JN71, 1728 I7CSB JM71, 1729 YO2II KN06, 1734 HA2RD JN87, 1736 YU7EW KN05, 1748 IK7EZN JN90, 1749 IW7DPP JN90, 1758 HA8CE KN06, 1810 IT9QAU JM77, 1819 IT9NAN JM77.

**9A4NF (JN73VS) wkd:** 1740 F1CPX IN97, 1755 F6APE IN97, 1755 F6ETZ IN97, 1756 F6CTT IN97, 1756 F6HRP IN88, 1757 F1FYE JN08, 1758 F1OOG JN08, 1759 G1WUU IO80, 1800 F1YJ JN17, 1802 M0BKL IO80, 1807 GM4OGI IO85, 1815 GJ0JSY IN89, 1831 EA3ADW JN11, 1832 G7RAU IO90.

## 2000-05-28

**DF6NA (JN49XS) wkd:** 1612 SV8CS KM07RU.

**DK1VI (JN49HH) wkd:** 1459 IT9NAN JM77 hrd, 1405 9H1CG JM75FW hrd, 1510 IT9NAN JM77, 1512 IT9BJU JM77GG hrd, 1550 IK7UXY JN90DC hrd, 1557 IW7DPP JN90DG hrd, 1602 SV8CS KM07KS hrd, 1620 SV3CYM KM08VG, 1628 SV3EAO KM08VF, 1632 SV9VCY KM25KA hrd.

**DK3WG (JO72GI) wkd:** 1507 9H1CG JM75FW, 1513 IT9RYJ JM77MN, 1513 IT9NAN JM77, 1526 9H1GB JM75, 1527 9H5IC JM75GV, 1528 9H1ET JM75GU.

**DL2DN (JN48MX) wkd:** 1508 9H1CG JM75FW, 1512 IT9NAN JM77 hrd, 1513 IW9BJU JM77GD hrd, 1555 IK7UXY JN90DC hrd, 1602 SV8CS KM07 hrd, 1612 SV3CYM KM08VG, 1627 SV3EAO KM08VF.

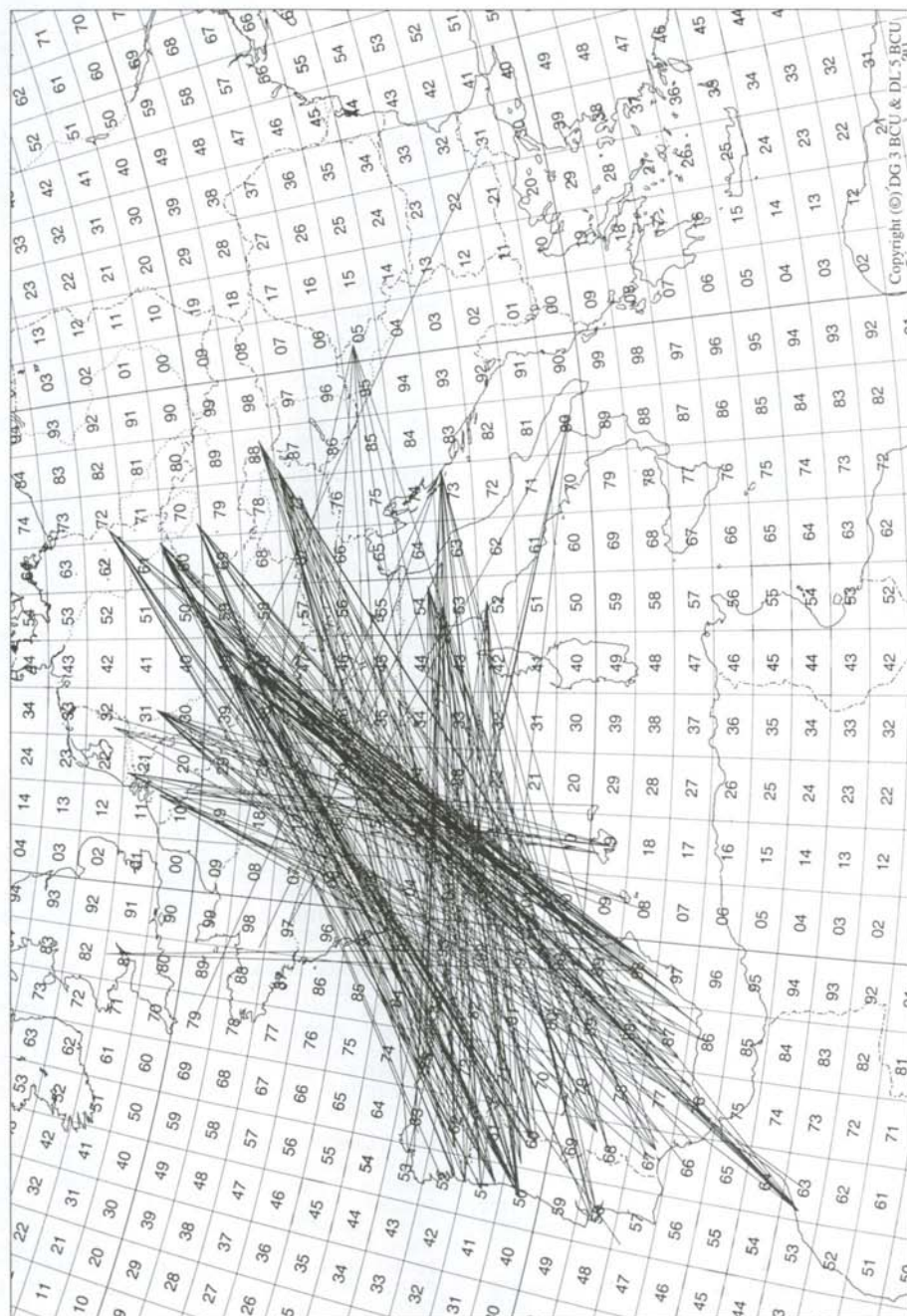
**DL8LAQ (JO43XU) wkd:** 2025 YO3JW KN34CK hrd, 2037 YO7DEW hrd, 2041 YO3APJ KN34AL, 2041 YO3FFF KN34CJ, 2042 YO3DMU KN34BJ, 2045 YO3JW KN34CK, 2045 YO4FRJ/p KN34AW hrd, 2047 HG8JG KN06MT, 2051 YO2LEA KN06WK.

**F8OP (JN26MM) wkd:** 1504 IK7UKY JN90DI, 1507 SV3CYM KM08VG, 1513 I7IWN JN90DC, 1524 SV1RK KM17VU, 1526 SV1OH KM18VA, 1527 SV1UG KM17VX, 1530 SV2DCD KN00DZ, 1535 SV1CDJ KM18GM, 1541 SV1DNU KM18VB, 1544 SV1COK KM17VX, 1546 SV1AHB KM18UX, 1554 ZA/N7BHC KN91, 1556 SV8QG KM39GC, 1557 SV2BZQ KN10KQ, 1558 SV5BYR KM46CG, 1600 Z32VB KN01PA, 1603 SV0EC KN10CJ, 1609 SV8DTD KM39EA.

**HA8MV (KN06GU) wkd:** 1504 EA6FB JM09PW, 1518 EA6XG JM19LH, 1559 9H1ET JM75GU, 1600 9H1CG JM75FW, 1932 OZ1DDX JO45VT, 2004 LA8WF JO59GV, 2006 G0PES IO83LS, 2008 LC3NAT JO59HJ, 2010 GM4JJJ IO86GB, 2012 OZ8ZS JO55RT, 2013 G0FYD IO83, 2016 SM6CMU JO57XK, 2020 OZ1IEP JO55XU, 2022 OZ5KM JO45, 2026 DL9MS JO54.

**I4XCC (JN63GV) wkd:** 1948 SM7WT JO65QQ, 1950 SM6VKC JO68CG, 1951 SM6CMU JO57XK, 1955 SM6VYK JO68EG, 1957 SM6WLA JO58WB, 2000 OH5LK KP30ON, 2005 OH1XT KP01UK, 2007 OH1CO KP10EK, 2008 OH5IY KP30, 2010 OZ4VW JO46, 2012 ES1CW KO29HK, 2013 ES2WX KO29, 2014 OH2MFE KP20JE, 2015 OH2LIY KP20MH, 2017 ES2QH KO29LL, 2017 ES1MW KO29NC, 2018 OH3OZ KP20JR.

## Opening of 09-June-2000



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**IK5FTQ (JN53LW) wkd:** 1535 SV1RK KM17VU, 1536 SV1CDZ KM18MM, 1544 SV1BRL KM17UW, 1546 SV1COK KM17VX, 1548 SV1CDM KM18UA, 1559 SV5BYR KM46CG.

**LY2SA (KO14LL) wkd:** 1956 F6FHP IN94TR, 2010 IK1EGC JN35UF, 2010 IW1AZJ JN35UB, 2011 IW1ESM JN45FB, 2011 I2FAK JN45OB, 2012 I1JTQ JN35UB, 2013 IK2YXK JN45OP, 2013 IW1CHX JN35TH, 2014 IK2EAE JN45LL, 2014 I2TUG JN45JN, 2014 DF1CF JN57FP, 2015 IZ2AAL JN45OP, 2015 IW2JMC JN45MQ, 2015 IK2LHP JN45SP, 2016 IW2BNA JN45ON, 2016 IK1GPG JN34VJ, 2016 IK2GSO JN45NP, 2017 IK2DUV JN45KO, 2017 IZ1BTS JN35TB.

**OE1SOW (JN88FF) wkd:** 1520 IT9NAN JM77, 1521 IT9RYJ JM77MN, 1523 9H5IC JM75GV, 1526 9H1MF JM75FV, 1527 9H1ET JM75GU, 1541 9H1FN JM75FV, 1547 9H1BN JM75GU, 1547 IW9CER JM78QF, 1600 IW8QOT JM88BR.

**OE6IWG (JN77PK) wkd:** 1523 IT9NAN JM77, 2013 GA4JJJ IO86GB, 2018 OH1XT KP01UV.

**ON1IM (JO11UB) wkd:** 1513 9H5IC JM75, 1555 SV3CYM KM08, 1907 SM5EFP JO79.

**9A4NF (JN73VS) wkd:** 1520 EB5BCF IM99, 1915 SM5EFP JO79, 2003 OH1XT KP01, 2003 OH6KTL KP02, 2005 SMOKXK JO89, 2005 SM5FRH JO88, 2010 SM1FMT JO97, 2015 SM3BEI JP81, 2017 SMOKAK JO89, 2023 SM3AKW JO89.

## 2000-05-30

**IT9VDQ (JM68QC) wkd:** 1521 F6FHP.

## 2000-05-31

**DF6NA (JN49XS) wkd:** 1526 EA7BA IM97CG.

**DK1VI (JN49HH) wkd:** 1920 EA7GTF IM87CS, 1929 EA9IB IM85NG hrd.

**DL8LAQ (JO43XU) wkd:** 1927 EA5ZF IM99WU.

**I4XCC (JN63GV) wkd:** 1448 EA1DIH IN51NW, 1451 EA1SH IN63IB, 1452 EA5AJX IM98KU, 1453 EB4FQP IM68TV, 1455 EA7GBG IM67QI, 1500 EA1BLA IN53UM, 1504 EA5DIT IM99CD, 1516 EA7BA IM97CG, 1534 CT1EKF IN50.

**IK5FTQ (JN53LW) wkd:** 1440 EA7GBG IM67QI, 1445 EA1DIH IN51NW, 1451 EA7IT IM87XI, 1455 EA7AJ IM87CS, 1459 EA5CD IM98BX, 1501 EB4FQP IM68TV, 1502 EA1BLA IN53UM, 1503 EB4CJE IN80EC, 1537 CT1EKF IN50SU, 1928 G7TBJ IO70FC.

**IZ5EME (JN52NS) wkd:** 1455 EB4FQP IM68TV, 1456 EA1BLA IN53UM, 1501 EB4CJE IN80EC, 1517 EA5AJX IM98KU, 1521 EA7GTF IM87CF.

**OM7AQ (JN98UI) wkd:** 1527 4X1MO KM72KD, 1529 4X1RF KM72LT.

**9A4NF (JN73VS) wkd:** 1445 EA1DIH, 1447 EA7GBG IM67, 1449 EB4FQP IM68, 1455 EB4CJE IN80, 1506 EA3SHV JN01, 1507 EB3FBA JN01, 1514 EA5AJX IM98, 1516 EA5DIT IM99, 1517 EA7AJ IM87, 1518 EA5EI IM98, 1521 EA5DWS IM98, 1529 CT1EKF IN50, 1535 EA1SH IN63.

## 2000-06-06

**DL8EBW (JO31NF) wkd:** 1912 EA9MH IM85NG, 1930 EA9IB IM85NG.

**YU7EW (KN05HP) wkd:** 1601 EA1BLA IN53UM, 1639 EA2ADJ IN93AH, 1716 F6ANW JN06FQ, 1814 EA3CSV JN01ND, 1852 CT1DIN IN60UM.

## 2000-06-09

**DF6NA (JN49XS) wkd:** 1606 EA5FKX IM98, 1607 EA5AFP IM98VX, 1607 EA5OM IM99XV, 1608 EA7IT IM87XI, 1609 EA5BCF IM99TK, 1611 EA5CHT IM97EK, 1617 EA7ERP IM87, 1624 EA5DIT IM99CD, 1635 EA7GTF IM87CG, 1704 CT1DIN IN60IM, 1710 CT1ESJ IN60KI, 1711 EA1CLR IN52, 1714 CT1AMK IN51, 1716 EB1DM IN63FI.

**DG0DG (JO61SA) wkd:** 1613 EA7GTF IM87CS, 1614 CN2DX IM63DM, 1711 CT1ESJ IN60KI, 1722 CT1DIN IN60IM, 1737 CT1FTH IN50, 1739 CT2HSN IN61CC, 1740 CT2HSO IN61CC, 1758 CT1DYX IN51.

**DK1VI (JN49HH) wkd:** 1433 EA7GTF IM57CS, 1436 EB7FLW IM76SR, 1440 CN2DX IM63DN, 1446 EA7AJ IM87CS, 1512 EA4EH IM68TV hrd, 1525 EB5EEO IM98PG hrd, 1528 EA7IT IM87XI, 1534 EB5BCF IM99TK, 1536 EA7RZ IM86SU hrd, 1548 EA5AFP IM98VX, 1607 EA5FKX IM98SQ, 1610 EA5CHT IM97EK, 1615 EA3CSV JN01ND hrd, 1628 EA5OM IM99XV, 1705 CT1DIN IN60IM, 1707 CT1ESJ IN60KI, 1720 EA1SH IN62CJ hrd, 1725 CT2HSN IN61CC hrd.

**DK3WG (JO72GI) wkd:** 1531 EB5EEO IM98PG, 1612 EA5DIT IM99CD, 1615 EA7GTF IM87CS, 1626 EA5CHT IM97EK, 1655 CT1AMK IN51QE, 1715 EA1CLR IN72VB, 1716 CT1ESJ IN60KI, 1723 CT1CLR IN50QP, 1725 CT1DIN IN60IM, 1737 EA1EPN IN71RW, 1755 EA1SH IN62.

**DL0UKW (JN38VN, op DH0GHU) wkd:** 1452 CN2DX IM63DM, 1454 EA7GTF IM87CS.

**DL1NEO (JN59KV) wkd:** 1511 EA7GBG IM67QI, 1512 EA5HB, 1515 EB5EE IM98RV, 1517 EA7RZ IM86SU, 1519 EA5GLN IM98HF, 1522 EB5EEO IM98PG, 1525 EA7IT IM87XI, 1531 EA5CHT IM97EK, 1533 EA5DIT IM99CD, 1542 EA5EGV IM97KW, 1612 EA7GTF IM87CS, 1615 EA7ERP IM87EE, 1617 EA3CSV JN01ND, 1628 EA5FKX IM98SQ.

**DL2DN (JN48MX) wkd:** 1432 CN2DX IM63DM, 1435 EA7GTF IM87CS, 1440 EB7FLW IM76SR, 1523 EB5EE IM98PG, 1526 EA7IT IM87XI, 1529 EA5AFP IM98VX, 1540 EA5HB IM99WR, 1543 EA5CHT IM97EK, 1551 EA5DIT IM99CD, 1705 CT1DIN IN60IM, 1717 EA1BSK IN52PF, 1728 CT1DMK IN50QP.

**DL8EBW (JO31NF) wkd:** 1435 EA7RZ IM86 hrd, 1456 CN2DX IM63DM (ODX 2305km!) 1510 CN8MC IM63 hrd (fm), 1516 EB7FTF IM67 hrd, 1542 EA7CYG IM77 hrd, 1551 EA6FB JM08PW, 1554 EA5AFP IM98VX, 1556 EB5EE IM98 hrd, 1609 EA6SA JM19 hrd, 1618 EA5HB IM98 hrd, 1619 EA3GU JN01 hrd, 1626 EB6AOK JM09 hrd, 1721 EA7GBG IM67QI (was last missing square on Iberian Island!), 1725 EB4FQP IM68TV, 1727 EB4GIA IN80 hrd, 1727 EA4CJ IN80 hrd.

**F8OP (JN26MM) wkd:** 1439 CN2DX IM63DM, 1441 EA7AJ IM87QI, 1443 EA7GTF IM87CS, 1448 EA7GBG IM87QS.

**G4ASR (IO81MX) wkd:** 1505 EB5ANO hrd, 1510 EA5HB IM98, 1514 EB5BCF IM99TK.

**I4XCC (JN63GV) wkd:** 1617 EB1DM IN73, 1619 F6GLQ IN98BD, 1620 EA1DDU IN73, 1638 CT1DYX IN51.

**IK5FTQ (JN53LW) wkd:** 1445 EA4CTF IM89AT, 1448 EA4EHI IM68TV, 1450 CT4KQ IN60BP, 1459 CT1DRB IM58LO, 1502 CT1ELP IM58LP, 1512 CT1ESJ IN60, 1515 EA1DIH IN51NW, 1523 CT1EKF IN50, 1530 CT1DMK IN50QP, 1533 EA1SH IN62CJ, 1545 EA1DDU IN73FM, 1554 EB1OL IN53TI, 1618 EB1DM IN73FI.

**IW1AZJ (JN35UB) wkd:** 1530 CN2DX IM63DM, 1537 EA7GBG IM67QI, 1559 CT4KQ IN60BP, 1605 CT1EKF IN50, 1615 EA1SH IN62CJ.

**IZ5EME (JN52NS) wkd:** 1445 CT4KQ IN60BP, 1447 CT1ESJ IN60KI, 1452 EA1MO IN71PP, 1457 EA1DIH IN51NW, 1517 EA7GBG IM67QI, 1535 EA1SH IN62CJ, 1537 EA1DDU IN73FM, 1543 CT1DMK IN50QP.

**LZ1KG (KN31CS) wkd:** 1508 DL8GP JN.39

**OE6IWG (JN77PK) wkd:** 1548 EA4EHI IM68TV, 1624 CT1DMK IN50QP, 1934 EB1DM IN73FI, 1956 EA6AGZ IN91DV.

**ON1IM (JO11UB) wkd:** 1452 EA7ERP IM87, 1456 EA5GLN IM98, 1504 EA7DUD IM76, 1510 EA7AJ IM87, 1532 EA7RZ IM86, 1554 EA6XQ JM19, 1711 EB5EEO IM98.

**YU7EW (KN05HP) wkd:** 1601 EA1BLA IN53UM, 1639 EA2ADJ IN93AH, 1716 F6ANW JN06FQ, 1722 F6GYJ JN18CU, 1814 EA3CSV JN01ND, 1852 CT1DIN IN60UM, 1854 F5DKK JN18CU.

**9A4NF (JN73VS) wkd:** 1450 CT1ESJ IN60, 1453 EA4EHI IM68, 1456 EA4CTF IM89, 1458 CT1ELP IM58, 1459 EA1MO IN71, 1516 EA1CLF IN72, 1517 EB4FQP IM68, 1520 CT4KQ IN60, 1523 CT1EKF IN50, 1524 EA1DIH IN51, 1534 EA1SH IN62, 1545 EA1DDU IN73, 1557 EB1OL IN63, 1600 EB1DM IN73, 1617 F6APE IN97, 1625 F9OE IN79, 1923 F6FEO JN02.

## 2000-06-10

**IW1AZJ (JN35UB) wkd:** 1856 MM0BJG IO67HC, 1908 MM0BHC IO67HC.

## 2000-06-11

**G0FIG (IO90UU) wkd:** 1059 9A3MR JN73TS.

**IT9VDQ (JM68QC) wkd:** 1035 DL6BF.

**LY2SA (KO14LL) wkd:** 1224 EB3DYS/p JN12OI, 1225 F5ICN JN23QN.

**YU7EW (KN05HP) wkd:** 1117 F1RHI, 1134 F1FHP JN04TR, 1134 F/G8MBI JN04FP, 1136 F1FAW IN94QS, 1213 F6GEX IN97NA, 1214 F6IFX/p IN87XC.

## 2000-06-12

**DD0VF (JO61VA, 100W, HB9CV) wkd:** 1907 SV9CVY KM25KA.

**I4XCC (JN63GV) wkd:** 1925 EI5FK IO51RT.

**IW1AZJ (JN35UB) wkd:** 1935 EI5FK IO51RT.

**LY2SA (KO14LL) wkd:** 1555 GJ0JSY IN89XE, 1556 F6FDI IN78RN.

**OE6IWG (JN77PK) wkd:** 1558 GM0PWS IO68UG.

## 2000-06-13

**DD0VF (JO61WB) wkd:** 2010 EB1DM IN73FI, 2013 EB1EHO IN73DM, 2015 EA1CRK IN73DM, 2023 EA1TH IN72WW, 2028 EA1FAY IN73EM.

**DG2LBF (JO54BH) wkd:** 2010 EB5AJA IM99TN, 2020 EA4BWN IM89VI, 2030 EA2AGP IN91DI, 2039 EA2AGZ IN91DV, 2043 EA4CTF IM89AT.

**DL2DN (JN48MX) wkd:** 1152 EA9IB IN85NG.

**G0FIG (IO90UU) wkd:** 2011 IZ5EME JN52NS.

**I4XCC (JN63GV) wkd:** 1956 EI5FK IO51RT, 1957 EI4DQ IO51WU, 2005 EI3EBB IO51RV, 2006 EI7GL IO51TU, 2009 EI9CDB IO51SV, 2017 F6EAS IN98LV, 2019 EI2FSB IO51DN, 2020 M0BKL IO80FK, 2029 G6YAY IO80EL, 2033 F5PAU IN88CB, 2052 G6ATZ IO74AJ.

**IW1AZJ (JN35UB) wkd:** 2021 EI8IP IO63RK, 2022 EI4DQ IO51.

**IZ5EME (JN52NS) wkd:** 1946 G4OWA IO64IX, 1953 G3WZT IO90UX, 1954 G1HWY IO90UV, 1955 M0BTZ IO91LC, 1956 G7RAU IO90IR, 1956 G6ATZ IO74AJ, 1957 M1CWB IO90HV, 1957 G0RBD IO81WL, 1959 G4FBZ IO82SQ, 1959 G0CUZ IO82WM, 2000 G4RVK IO82WN, 2001 G1OWYJ IO64XM, 2001 G0NNF IO92AL, 2003 G6JJP IO82SG, 2004 MW0AEV IO72SU, 2006 G1KH X IO81MI, 2007 GW4VEQ IO73SG, 2008 GW4EAI IO81JP, 2009 G4IGO IO80NW, 2009 EI6AS IO63TH, 2010 G8TTI IO81WK, 2010 G4TRA IO81TP, 2010 G4AEP IO91NJ, 2011 G4BRK IO91DP, 2011 G0FIG IO90UU, 2012 G4FHN/P IO81SL, 2013 G1HIA IO81QL, 2013 G4MKF IO91HJ, 2014 GW7SMV IO81LN, 2014 F6EAS IN98LV, 2016 G4APA IO83VI, 2016 G4DOL IO80SO, 2017 G0JLL IO83PR, 2018 EI8IP IO63NR, 2018 GW1MNC IO81DL, 2019 EI4DQ IO51WU, 2020 EI3EBB IO51RV, 2022 GW4AYJ IO81DL, 2023 G3JFS IO70WJ, 2025 G6YAY IO80EL, 2028 GW8ASA IO81EM, 2029 GU6AJE IN89RL, 2031 G0JFJ IO70HE, 2032 EI7GL IO51TU, 2034 G2FSB IO91.

**PE1HWO (JO21GV) wkd:** 2020 EA3GJO JN11BI.

**YU7EW (KN05HP) wkd:** 2028 EI4DQ IO51WU, 2029 EI5FK IO51RT, 2036 G6YAY IO80EL.

## 2000-06-14

**DL8EBW (JO31NF) wkd:** 1631 I8MPO JN70FP.

**I4XCC (JN63GV) wkd:** 1737 EA7GBG IM67QI, 1820 EA4AMX IM89AT, 1822 EB4DIZ IM89AT, 1917 EA7GTF IM87CS.

**IK0WGF (JN52VC) wkd:** 1905 EB4ENN IN70XK, 1906 EA1ASC IN70, 1906 CT1DIN IN60IM, 1907 EB4BFL IN90BT, 1908 CT1FJW IM58KT, 1910 EA4CTF IM89AT, 1917 EB1HLE IN70EN.

**IW5DAN (JN53GU) wkd:** 1810 EA7GBG IM67, 1900 EA5AYG IM99, 1902 EA5AGR IM88, 1903 EA7GTF IM87, 1904 EA7BYM IM66, 1907 EA5EJZ IM98, 1910 EA9IB IM85.

**IZ5EME (JN52NS) wkd:** 1740 EA7GBG IM67QI, 1824 EA4AKH IN70UA, 1904 CT2HBZ IM58LV, 1906 EA4AMX IM89AT, 1907 EB4DIZ IM89AT, 1913 EA4CTF IM89AT, 1914 EB4TT IN70XJ, 1917 EB4BFL IN80DF.

**9A4NF (JN73VS) wkd:** 1740 EA7GBG IM67, 1812 EA4AMX IM89, 1818 EA4DIZ IM89, 1823 EA4AKH IN70.

## 2000-06-24

**DD0VF (JO61VA, 100W, HB9CV) wkd:** 1709 IK8FXR JM89DH.

**DF6NA (JN49XS) wkd:** 1759 SV9CVY KM25KA, 1814 EB4EUB IN80DJ, 1825 EA7GBG IM67QI, 1830 EB4BFL IN80.

**DH0GHU (JN38VN) wkd:** 1701 SV9ANK KM25NI, 1710 SV8/DL1GI JM99TR, 1714 SV1GCB KM17?? (FM), 1719 SV3AGQ KM17LX, 1726 SV1OH KM18VA, 1729 SV1BTR KM17VX, 1736 SV/DL8MCA KM19RD (FM), 1746 SV1WA KM17, 1751 SVOLR KM18UH (FM), 1752 SV1DKR KM17UW, 1804 SV5BYR KM46CG, 1811 SV9CVY KM25KA.

**DK1VI (JN49HH) wkd:** 1708 IK7IWI JN80OO, 1716 SV3AGQ KM17LX, 1712 SV1OH KM18VA hrd, 1720 SV9ANK KM25NI hrd, 1729 SV1BJL KM18VB, 1732 SV1OH KM18VA, 1735 SV8DTD KM39EA hrd, 1739 SV1BTR KM17 hrd, 1753 SV1DKR KM17UW, 1756 SV1AQY KM17UW, 1802 SV4BGY KM19FO hrd, 1817 EB4EUB IN80DJ, 1821 EB4BFL IN80DF hrd, 1825 EA7GBG IM67QI.

**DL0UKW (JN38VN, op DH0GHU) wkd:** 1701 SV9ANK KM25NI.

**DL2DN (JN48MX) hrd:** 1820 EB4UEB IN80DJ, 1835 EB7COL IM77AG, 1840 EA7BKA IM77.

**DL8EBW (JO31NF) wkd:** 1711 IK7IWI JN80OO hrd, 1713 I7UGO JN80WG hrd, 1718-1740 SV8/DL1GI JM99 hrd, 1727 SV8CS KM08 hrd, 1738 SV3AGQ KM17LX hrd, 1743 SV9CVY KM25KA hrd, 1809 EA7GTF IM87CS, 1824 EA9IB IM85 hrd, 1825 EA7ERP IM87EE hrd, 1830 EA5T? IM99CD hrd, 1834 EA7AJ IM87CS hrd, 1838 EA7BYM IM66HM, 1842 EA7RZ IM86SU, 1847 EB7NK IM86 hrd, 1856 EB7COL IM77AG, 1858 EA7RF IM67WI. Again nice EA opening... long time we hrd also VOR from 7X, 3V and EA...

**DL9EY (JO41GV) wkd:** 1738 SV8/DL1GI JM99, 1747 EA7BYM IM66UM, 1853 EA7BYM IM66UM, 1857 EA7RF IM67WI, 1900 EA7GBG IM67QI.

**F4CIB/p (JN13SH, 10W, 9 ele) wkd:** 1718 LZ1KGJ KN31CS, 1720 LZ1AG KN22ID, 1725 LZ1QI KN12PR, 1729 LZ1UH KN11SU, 1751 LZ1KGJ KN31CS, 1801 LZ5UV KN12PR, 1809 SV0EC KN10CJ.

**F8OP (JN26MM) wkd:** 1803 SV1BTR KM17, 1804 SV1BJL KM18VB, 1805 SV3AGQ KM17LX, 1815 SV1OH KM18VA, 1817 SVOLR KM18UM.

**G0FIG (IO90UU) wkd:** 1853 9H1CG JM75, 1903 IT9VDQ JM68.

**HA5CW (JN97PM) wkd:** 1617 IT9VDQ JM68, 1617 9H1CG JM75FW, 1618 IC8FAX JN70, 1621 IW9BUJ JM77GG, 1624 IT9RYJ JM77MN, 1628 9H1GB JN75FU, 1632 IK8QKU JN78TC, 1634 IT9IPQ/9

JM78SG, 1643 IT9QAU JM77MN, 1716 IW9EJP JM77NN, 1722 9H1AL JM75FW, 1723 CT1FAK IN500Q (odx), 1718 EB5BCF IM99TK, 1731 9H1CG JM75FU, 1736 CT1DNF IN50QP, 1738 CT1EEB IN50QR, 1748 CT1FOH IN50, 1805 EA5ZF IM99WU (c?), 1807 EA5AFP IM98VX.

**I4XCC (JN63GV) wkd:** 1356 EA1NK/7 IM87ED, 1357 EA5GLN IM98HF, 1358 EB7BQI IM76SR, 1406 EA9IB IM85NG, 1410 EA7DBP IM66UM, 1413 EA7GTF IM87CS, 1416 EA7BYM IM66UM, 1417 EB7COL IM77AG, 1421 CN2DX IM63DM, 1428 EA7GBG IM67QI, 1438 EA7BKA IM77OV, 1707 SV1OH KM18, 1708 SV1BTR KM17VX, 1709 SV1AQY KM17UW, 1717 SV1BJL KM18VB, 1727 SV8DTD KM39EA, 1731 SV5BYR KM46CG, 1734 SV4BGY KM19FO, 1739 SV1WA KM17, 1748 SV2CXW KN10LP, 1804 SV1DKR KM17UW, 1809 SV3AGQ KM17LX.

**IK0WGF (JN52VC) wkd:** 1248 EA9MH IM85MG, 1348 EA9IB IM85NG, 1352 EA7GBG IM67QI, 1400 CN2DX IM63DM.

**IS0AGY (JM49OF) wkd:** 1726 YO6AWR KN35, 1726 LZ2KZ KN33CF, 1728 LZ2SJ, 1729 YO2BBT KN05, 1730 LZ4JD KN33, 1731 LZ2DA, 1732 LZ2HQ, 1733 LZ2HV KN23TB, 1734 LZ2FA KN33WN, 1735 LZ2PI, 1736 LZ2LA, 1736 LZ2VS, 1737 LZ2FO KN13, 1738 YO4FRJ/P KN34AW, 1739 LZ2KZ, 1740 LZ1AG KN21, 1741 YO4ATW KN35, 1742 YO4RFV KN35, 1743 LZ4RN, 1743 YO9ADZ KN35AD, 1744 YO4RDN KN45OV, 1744 YO4GJH JN35, 1745 UY5HF KM46HP, 1745 UT7GQ, 1746 YO7DEW KN32, 1746 YO4BZC KN45, 1747 YO9TE KN45, 1747 YO4FRJ KN35, 1748 YO4XF, 1749 YO6FWA, 1759 YO2BBT KN05.

**IT9VDQ (JM68QC) wkd:** 1325 EA7GTF IM87CS, 1327 CT1CAD IM67HD, 1332 EA5GLN IM98HF, 1338 EA7AJ, 1342 EA7IT IM87XI, 1345 EA4LU IM68TV, 1353 CT2HBZ IM58LV, 1356 CT1GOU IM58LV, 1359 EA5EJZ IM98VX, 1401 EA5IT, 1402 EA4HE IM68TV, 1415 EA1OS IN53TI, 1417 EB4ENN, 1418 EB4ERS IN80BH, 1426 CT1DHM IN61CC, 1428 CT2HSO IN61CC, 1430 CT2HSN IN61CC, 1433 CT1DNF IN50QR, 1436 EA9IB IM85NG, 1439 CT1FAK IN50QO, 1446 EA4AKH, 1448 EA4DMK IN50QP, 1453 EA1CLR IN72QB, 1651 SP7CNL JO91QQ, 1652 SP9EWU JO90NH, 1653 HA7MB KN07MB, 1653 OK2KPD, 1654 OK2STK JN99ES, 1654 SP7DCS/7 JO91MN, 1655 OK2BZQ JN99CO, 1656 OK2EZ JN99CT, 1656 SP9AI, 1656 OM2IK, 1656 OM5KM JN98AH, 1657 OK2BFH JN99GQ, 1657 OM3TZQ JN98DO, 1658 OM5RW, 1659 OM5CM JN98DF, 1659 SP7DYN JO91PW, 1700 9A3BT JN95DG, 1700 OM3THX JN98CR, 1701 9A3UV JN85ER, 1701 SP7IDG, 1701 HA8UJ, 1701 9A3QB, 1702 SP4MPB KO03GS, 1702 9A3JN, 1702 SP7SZW, 1703 9A1CRJ, 1703 9A2DA, 1703 OM7SM JN98KO, 1703 OM7ADC, 1705 HA5KDO, 1705 SP3VSC, 1705 9A2KK JN85OV, 1706 9A2YF JN81OO, 1706 HA8CE, 1706 9A4U(?), 1706 SP9BCV JO90WB, 1707 HG6JKR(?), 1708 SP9APC JN99QU, 1710 SP9KUP/PJN99QU, 1711 OK2VFS JN99GH, 1712 HA6NQ, 1712 HG4WA JN97IF, 1713 SP9CSE KO00AB, 1714 OM7AKA JN98NO, 1715 HA5CW JN97PM, 1716 HA5MO/7, 1717 YU1SU, 1718 SP9APC JN99QU, 1719 HA9MDP KN08DF, 1720 T94DU, 1720 HG9VHF, 1721 HA6BZ, 1722 SP7FBP KO0ODP, 1723 HA6NVP, 1726 YU7DP

KN05AO, 1727 YO2LFP KN06MD, 1728 YU7ZZ  
KN05BT, 1729 YU7EW KN05HP, 1733 YU7MS, 1855  
F5CT JN08KI, 1857 M0BKL IO80FK, 1858 G4DOL,  
1902 G1HWY, 1903 G0FIG, 1905 G3JHM IO91LC,  
1906 F1EBN, 1908 F1BRV.

**IW1AZJ (JN35UB) wkd:** 1650 SV0EC KN10CJ, 1652  
SV1RK KM17VU, 1653 SV1BTR KM17VX, 1655  
SV10H KM18VA, 1656 SV1BJL KM18VB, 1700  
SV3AGQ KM17LX, 1712 Z31DZ KN01SI, 1706  
SV1AQY KM17UW, 1707 SV8DTD KM39EA, 1721  
9H5ZA JM75GU, 1725 LZ1UH KN11SU, 1728  
SV2CXW KN10LP, 1732 SV5BYR KM46CG, 1735  
SV4BGY KM19FO, 1750 SV7GX KN20EW, 1755  
SV4FGT KM19FP, 1800 SV1ELG KM18WH, 1810  
SV1DKR KM17UW, 1815 SV0LR KM18OH, 1820  
EA1YV IN52OF, 1905 EB1ENP IN62EU.

**IW5DAN (JN53GU) wkd:** 1357 CN2DX IM63, 1405  
EA1NK7 IM87, 1410 EB7BQI IM76, 1412 EA9IB  
IM85, 1417 EA7DZI IM66, 1419 EA7GTF IM87, 1429  
EB7COL IM77, 1431 EA7GBG IM67, 1435 EA7IT  
IM87, 1440 EA5GLN IM98, 1450 EA7BKA IM77, 1505  
CT1EPS IM57, 1650 Z31DZ KN01, 1702 SV0EC  
KN10, 1705 SV1AQY KM17, 1708 SV1BTR KM17,  
1707 SV8DTD KM39, 1719 SV1OH KM18, 1722  
SV2DGD KM00, 1737 SV4BGY KM19, 1739 SV5BYR  
KM46, 1742 LZ1KG KN31, 1749 4X1RF KM72, 1754  
SV1BJL KM18, 1755 SV1ELG KM18, 1759 LZ5QD  
KN12, 1806 SV1DKR KN17, 1809 SV4FGT KM19.

**IZ5EME (JN52NS) wkd:** 1351 EA9IB IM85NG, 1359  
EA7GTF IM87CS, 1401 EA7AJ IM87CS, 1404  
EA5AGR IM88WV, 1406 EB7COL IM77AG, 1413  
CT1CAD IM67HD, 1416 CN2DX IM63DM, 1417  
CT1EPS IM57XC, 1418 EA7BA IM97CG, 1419  
EA7AG IM86SU, 1423 EA7CU IM87SU, 1424  
EB7FXV IM86ST, 1425 EA1NK7 IM87ED, 1429  
EA7IT IM87XI, 1432 EA7BYM IM66UM, 1435 EA7BKA  
IM77OV, 1454 EA4LU IM68TV, 1502 EA4EHI IM68TV.

**LZ1KG (KN31CS) wkd:** 1635 F6HTJ JN12KQ, 1637  
F6GPT JN13UK, 1644 EB3DYS JN11, 1650 EA3EAU  
JN11UF, 1651 EB3FSS JN01SF, 1653 EA3TA  
JN11AM, 1654 EA3DUY JN12, 1656 EA3TI JN11DO,  
1702 F6CSX JN23RH, 1703 F1EYB JN23KK, 1705  
F5BUU JN03PS, 1705 F9HS JN23AT, 1706F1FIH  
JN23GS, 1707 F1HQM JN23LV, 1711 F5LKW  
JN23SJ, 1714I1SBU JN44WD, 1715 F1AFZ JN33OQ,  
1720 TK5JJ JN41JW, 1727 EA3ADW JN11, 1730  
I5XDL JN52GW, 1731 I1ANP JN44VC, 1732 F1AFZ  
JN33OQ, 1733 F6FLC JN33NO, 1734 I20BVU JN63,  
1735 IK5OEA JN53PG, 1735 IW0RLC JN63FD, 1736  
I1BSN JN34, 1737 IW5DSA JN52US, 1739 EA3DJL  
JN11BV, 1740 IW0QBD, 1741 IK1WJN JN33VT, 1742  
I1CPN JN34VI, 1743 IW5DAN JN53GU, 1744 F1JRD  
JN13WO, 1745 IK1WVR JN44XC, 1746 IK5VHU  
JN53ON, 1747 F1EYB JN23KK, 1748 F6HZL  
JN23QU, 1750 IW1DIM JN35TC, 1752 F4CIB  
JN13SH, 1802 IK1WJN JN33VT, 1805 IK0SMO  
JN61FS, 1810 EA6VQ JN19MP, 1818 F5SJP  
JN13VQ.

**OE3EMC (JN78JO) wkd:** 1837 9H1CG JM75FW,  
1840 IW9BJ JM77GG, 1853 IT9IPQ JM78SG, 1857  
IW9DCN JM77MN, 1900 IK8XFR JM89DH, 1907  
I88QQJ JM88GW, 1909 IZ8DCQ JM88BR, 1917  
I8SXG JM89NB, 1927 SV8CS KM07JS, 2006

CT1FAK IN50QO, 2010 CT1DT, 2011 CT1DHM, 2015  
CT4KQ IN60BP, 2032 CT2HBZ, 2043 CT1GQU.

**OE3JPC (JN87EW) wkd:** 1428 EA9IB IM85NG, 1659  
IW9BJU JM77GG, 1701 9H1CG JM75FW, 1705  
IT9RYJ JM77MN, 1706 IT9DEC JM77, 1708 IFUD  
JM78UC, 1710 IT9IPQ JM78SG, 1713 9H1CG  
JM75FU, 1721 IK8XFR JM89DH, 1724 IK7TOF  
JN71QM (Tropo 718km!), 1808 CT1EEB IN50, 1809  
CT1FAX IN50QO, 1812 CT1DYX IN51PE, 1816  
CT4KQ IN60BP, 1819 CT1DNF IN50QF, 1856  
CT2HSO IN61CC, 1857 CT1DHM IN61.

**OE6IWG (JN77PK) wkd:** 1654 9H1CG JM75FW,  
1657 IT9RYJ JM77NM, 1659 IT9DEC JM77MI, 1701  
IW9DCN JM77MN, 1703 IT9IPQ JM78SG, 1707  
I8SUD JM78UC, 1710 IZ8DCQ JM88BR, 1854  
CT2HBZ IM58, 1854 CT1DHM IN61CC, 1854  
CT2HSO IN61CC, 1904 EA6SA JM19KC.

**ON1IM (JO11UB) wkd:** 1743 EA9IB IM85, 1832  
EA9MH IM85, 1834 EB7NK IM86, 1859 EA7AJ IM87,  
1901 EA7GTF IM87, 1912 9H1GG JM75, 1550 LZ1EV  
KN23.

**PE1HWO (JO21GV) wkd:** 1836 EB7NK IM86RQ,  
1837 EA9IB IM85NG, 1858 EA7AJ IM87CS, 1900  
EA7GTF IM87CS, 1902 EA7EYX IM87CK.

**YU7EW (KN05HP) wkd:** 17.05 9H1CG JM75FW,  
1728 IT9VDC JM68PD, 1738 IT9BJU JM77GG, 1749  
IW9DCN JM77MN, 1752 IT9QAU JM77MN, 1759  
IW9AUL JM68BM, 1810 EB4BFL IN80DF, 1819  
EB4EUB IN80DJ, 1828 CT1DYX IN51PE, 1836  
CT1FAK IN50QO, 1849 CT1DNF IN50QP, 1855  
EB4CTF IM89AT, 1905 EA3ADW JN11CQ.

**9A4NF (JN73VS) wkd:** 1238 EA9MH IM85, 1243  
EA9IB IM85, 1300 CN2DX IM63, 1353 EB7BYM IN53,  
1359 EB7COL IM77, 1414 CT1CAD IM67, 1415 EA7IT  
IM87, 1417 EA7BA IM97, 1420 CT1EPS IM57, 1422  
EA7AG IM86, 1424 EB7BQI IM76, 1432 EA7DBP  
IM66, 1432 CT1DHP IM67, 1437 EA7BKA IM77, 1453  
CT1ABT IM68, 1500 EA4LU IM68, 1501 CT2HBZ  
IM58, 1502 CT1GQU IM58, 1506 EA4EHI IM68, 1837  
CT1DHM IN61, 1850 EA2AZW IN82, 1850 CT2HSN,  
1851 EA1BFZ IN81, 1852 CT1DIN IN60, 1853  
EA1EBJ IN73, 1854 EA2ADJ IN93, 1903 EB4BFL  
IN80.

## 2000-06-27

**F8OP (JN26MM) wkd:** 1220 CT1ESJ IN60 hrd, 1223  
EA7BKA IM77OV, 1224 EATCYG IM77.

**GM4CXM (IO75TW) wkd:** 2010 EA7GTF IM87CS,  
2011 EA5DIT IM99CD, 2027 EA4CTF IM89AT, 2033  
EA1CLR IN72.

**IW1CHX (JN35TH) wkd:** 1204 EA4AKH IN70NA.

**IW5DAN (JN53GU) wkd:** 1550 SM0KAK JO89XK,  
1714 SV9AKN KN25IN, 1722 IT9QAU JM77MN, 1745  
SM4VOP JN69NI, 1808 SV9ANJ KM25NI.

**IZ5EME (JN52NS) wkd:** 1210 EA1SH IN62CJ, 1212  
EA1DIH IN51NW, 1215 CT1DNF IN50QO, 1230  
EA1FDI/P IN52.

## 2000-06-30

**DL2DN (JN48MX) wkd:** 1657 RZ6BU KN84PV.

**HA5CW (JN97PM) wkd:** 1405 UA6MAKN97VE, 1407  
RV6YY/6 LN04GP, 1415 RU6HL LN04VA, 1427

RA6LU LN04TW, 1429 UA6HFY LN14DR, 1439 RN6HS LN13TW, 1441 RK6HWW LN14LA, 1444 RA6XNR LN14LA. Most of the stations worked in FM between 145.400 and 145.575 but found one working at 144.053 working in SSB. Hi!

**I4XCC (JN63GV) wkd:** 1330 UA6MA KN97VE, 1344 RV6AJ LN05BU (cw), 1458 UX7LQ KO80CM, 1503 RX3QFM KO91FM (cw).

**IW1AZJ (JN35UB) wkd:** 1221 EI2FSB IO51DN, 1222 EI5FK IO51IT.

**IW1CHX (JN35TH) wkd:** 1226 EI2FSB IO51DN, 1226 EI5FK IO51.

**IW4DCW (JN54) wkd:** 1334 RZ6BU KN84PV, 1349 UA8MA KN97VE.

**I25EME (JN52NS) wkd:** 1249 EI2FSB IO51DN, 1338 UA6MA KN97VE.

**OE1SOW (JN88FF) wkd on 145.525 in FM:** 1419 RN6CG KN85LB, 1423 UA6ADC KN95BB, 1435 RZ6HWO LN13PV, 1448 UA6JBN LN23HA, 1450 RU6JO LN23HA.

**OE6IWG (JN77PK) wkd:** 1408 RN6LU LN06UR, 1418 UA6UA.

**OM2IK (JN88SI) wkd:** 1352 RZ6BU KN84PV, 1355 RA6AX KN93XX, 1411 RV6AJ LN05BU, 1419 RV6YY/6 LN04GP.

**PA0ZM (JO32GK) wkd:** 1238 CT1DHM IN61, 1245 CT1EEB IN50RR.

**RK3AF (KO85QR) wkd:** 0937 DG3GAG JN48, 0937 DK5TE JN58, 0938 DM3GH JN48, 0938 OK1TBT JN79, 0939 DJ3TF JN59.

**YU7EW (KN05HP) wkd:** 0726 4X1IF KM72KD, 0938 OH5LK KP30ON, 1419 RN6LU LN06UR.

## 2000-07-01

**DK3WG (JO72GI) wkd:** 0729 UA6MA KN97VE, 0749 UR5GT, 0825 UU5J KN74FV.

**DL8EBW (JO31NF) wkd:** 1642 Z31DZ KN00VX. A nice short opening, but again not very effective after 2 hours waiting... 2253 CT1DXY IN51. After these QSO I left for MS-Sked! Opening left more than 20min longer to IN51/61 in JO31 area - was latest ever worked ES QSO!

**F4CIB/p (JN13SH, 10W, 9 ele) wkd:** 1718 LZ1KGJ KN31CS, 1720 LZ1AG KN22ID, 1725 LZ1QI KN12PR, 1729 LZ1UH KN11SU, 1751 LZ1KG KN31CS, 1801 LZ5UV KN12PR, 1809 SV0EC KN10CJ.

**G0FIG (IO90UU) wkd:** 1639 LZ2AB KN22NR, 1644 LZ2FO KN13KX, 1700 LZ1KWT KN32AS.

**I4XCC (JN63GV) wkd:** 0914 RV6BF LN04NX.

**PE1HWO (JO21GV) wkd:** 1643 Z31DZ KN00VX, 1645 SV2CXW KN10LP, 2315 CT1DHM IN61CC.

**YU7EW (KN05HP) wkd:** 0735 UA4AOL LO20QP, 0816 UA6MA KN97VE.

## 2000-07-02

**DG2LBF (JO54BH) wkd:** 1604 IT9CYH JM68OA, 1610 IT9VDO/p JM68QE.

**DH0GHU (JN38VN) wkd:** 1430 IT9VPT JM76GW, 1609 9A4KF JN83GD.

**DK5XM (JO43XL) wkd:** 1606 IT9VDO/p JM68.

**DL8EBW (JO31NF) wkd:** 1510 IT9VDO/p JM68 hrd, 1526 IT9FLW JM68, 1527 IK7IWI JN80 hrd, 1603 IBJIT JN71HN, 1610 IK7UXU JN81HE hrd. QSOs better than nothing, but tribu to XYL was necessary and got really nice relaxing time and sun-beam, hihi...

**F5KDK/P (JN23JJ) wkd:** 0909 EA9IB IM85NG, 1147 YL3AG KO26AW.

**F6KBR/p (JN12BL) wkd:** 1142 LY2BIL KO24PQ, 1145 LY2SA KO14LL.

**F8OP (JN26MM) wkd:** 1608 9A1?? JN95, 1615 HA8UG JN97ST.

**G0FIG (IO90UU) wkd:** 1123 YO4REC KN45, 1124 YO4RDK KN35WK, 1125 YO4RFV KN45AK, 1127 YO5BEU KN27GD, 1131 YO8KOAP KN36VF, 1133 YO5ODU/P KN17US, 1136 YO5KOP/P KN17PV, 1139 UT5OH KN27MS, 1145 OMOR KN08BV, 1155 UR5YM KN28XG, 1436 IT9VDO/p JM68QB, 1515 IBMPO JN70, 1519 IJ1IT JN71HN, 1531 IZ7AUD JN90CD.

**HA5CW (JN97PM) wkd:** 1152 GD0EMG/p IO74PD, 1155 G0OLE/p IO93PW, 1200 G0ROC/p IO95CH (?), 1204 MM0CPS IO85RH, 1537 F4BWJ IN93MP, 1500 F5DUX IN93IN, 1506 F/G8MBI JN04, 1707 F4ARU IN94VT.

**IT9CYH/IT9 (JM68OA) wkd:** 1407 DF2JQ JO31HL, 1408 DL0KDA JO44FQ, 1408 DB8KJ JO30CM, 1408 PA3DZL JO21HM, 1409 PA0WWM JO22, 1409 PA0RDY JO22KJ, 1410 DL1EAP JO31, 1410 PA0PWA JO22VA, 1410 PM1HD JO31GD, 1411 PA3DOL JO22, 1411 PE2CHR JO22XA, 1412 DK2DQ JO31RV, 1415 DL4NAA JN49, 1417 DK3ID JO44AG, 1419 PF9QT JO30OR, 1421 DL2OM JO30, 1424 DF2ZC JO30RN, 1426 DF2JQ JO31HL, 1428 DF8IK JO30, 1430 PE9GG JO33NA, 1432 DL1EAP JO31, 1435 DL6GCK JN47OR, 1436 DL1GFH JN47TR, 1438 PA3CNX JO22MC, 1439 PA9LB JO21, 1440 PE1AHX JO21GS, 1442 DL6AWP JO40, 1444 DF1IAZ JN49LV, 1444 PA5WX JO33GA, 1445 DG3GAG JN48NB, 1446 DK5YA JN49NX, 1447 PA0RDY JO22KJ, 1448 PE1RBG JO22RM, 1450 PA3EXX JO22, 1451 PE1LWT JO22VA, 1451 PE0SDK JO22RM, 1452 PA3BIY JO22EI, 1500 DL1EAP JO31, 1503 DM1CG JO31IC, 1509 PA2CHR JO22, 1513 PA5WT JO22HG, 1518 PA7FM JO21DV, 1519 DF9KX JO30FQ, 1520 DC9KJ JO30BT, 1521 DH6SN JO30, 1522 DC9SD JO30CS, 1522 PA9LB JO21, 1523 PE1AHX JO22OS, 1524 PA3BIY JO22EI, 1524 PA3DZL JO21HM, 1525 DL1EAP JO31OL, 1525 PE0JMV JO21PM, 1526 PE1IVL JO21, 1526 DL90BD JO42QN, 1527 DL8LAQ JO43XU, 1528 DL3OAT JO42XH, 1529 DH2OAA JO42TU, 1548 DL4ABJ JO42XP, 1548 DL5OAS JO42XE, 1549 DK1KO JO53CT, 1549 OZ1FF JO45BH, 1550 DB8AT JO51CP, 1551 DG2LBF JO54BH, 1552 OZ1OF JO46SC, 1554 DJ6AG JO51DF, 1555 DF8LC JO43GX, 1603 DB4LL JO44SM, 1609 DL5LF JO54AF.

**IT9VDO/IT9 (JM68QE) wkd:** 1411 PA3FOC JO21, 1425 PA3DZL JO21HM, 1426 DL1EAP JO31, 1426 DF2JQ JO31HL, 1427 PA3BIY JO22EI, 1427 DL6FAW/P JO40AQ, 1427 DL1KDA JO30, 1428 PE9GG JO33NA, 1428 PA3DOL JO22MT, 1429 PA0PVW JO22VA, 1429 PA3CNX JO22, 1429 DL8KBJ JO30JW, 1430 PA0KT JO22, 1430 DF3VJ

JN39, 1430 DB8KJ JO30CM, 1431 PE1LWT JO22VA, 1431 DL3NCR JN48, 1432 DC8GT JN38, 1432 PA2CHR JO22XA, 1432 DF4IAR JN48ES, 1433 PA1BU JO31EV, 1433 DG8UAW JN48, 1434 DK7MP JO31, 1434 DF8IK JO30, 1434 DJ7GS/P JN47, 1435 GOFIG IO90UU, 1435 DL1GFH JN47TB, 1435 DJ2JA JO40, 1436 G4SWX JO02, 1436 PE1AHX JO21, 1436 DF6QT JO30, 1437 PA9LB JO21, 1437 DO2GY JN38WN, 1438 DG8GWY, 1438 PAOWWM JO22FE, 1438 PD0EBF JO22, 1439 PA2DWE JO22, 1440 PA0JMV JO21, 1440 PA2DWH JO21, 1440 F4AOA JO10, 1441 ON5NY JO10, 1446 DM1HD JO31, 1455 PA3FOC JO21, 1502 PA4ZP, 1507 DF2WG JO30, 1508 DF2ZC JO30, 1510 DF9QT JO30, 1510 PA4ZP JO21, 1511 PE1RBG JO22RM, 1511 PA5WT JO22, 1512 PA5RWE JO21PQ, 1512 PD0SDK JO22, 1512 PA0RDY, 1515 PE1AHX JO21OS, 1515 PE2KP JO22, 1515 PA7FM JO21, 1518 PA7DA JO22, 1518 DH6SN JO30, 1518 DK0HH JO30, 1519 PE1IVL JO21, 1523 PA3EXX JO22NR, 1525 DM1HD, 1525 DC9KU JO30, 1527 DF9KX, 1531 PA7JS JO22UB, 1548 DL4ABJ JO42, 1557 DL20AA JO43, 1557 DL8LAQ JO43, 1558 OZ1FF JO45BH, 1558 DL90BD JO42, 1558 DL4AO JO42NX, 1559 DB8AT JO51, 1600 OZ/DG7BBP, 1601 DG20BL JO42RL, 1601 DJ6AG JO51DP, 1602 DG5OK JO42UJ, 1602 DL3OAT, 1603 DK1KO JO53, 1604 DL8AAG JO51, 1605 DK3XM JO43, 1605 DB4LL JO44, 1605 DL5OAS JO42, 1606 DF8LC JO53, 1607 DL9LBG JO44, 1607 DH4AE JO51, 1607 DL4EAU JO51, 1607 DG2LBF JO54BH, 1608 DG1LV, 1609 DL5LF JO54AF.

**LA7M/p (JO37SX, op LA0BY):** 1208 9A1CIG JN83MI, 1234 9A7S JN85EE, 1236 YZ4IZ JN84DS, 1239 T90A JN94GG, 1240 YT4D JN94CP, 1240 9A1AA JN95FQ, 1241 YU1AR JN94CP, 1242 4N4B JN93UV.

**LY2SA (KO14LL) wkd:** 1124 EA3FLN JN11NV, 1127 F5KPO/p JN24PE, 1131 F6EGD JN24KE, 1144 F6KBR/p JN12BL, 1144 F6HTF/p JN12BL, 1145 F8NSC JN12BL, 1146 F1TKI/p JN12BL, 1147 F5PL JN02VU, 1148 F1JRD/p JN13WO, 1154 F5TAG JN03QM, 1157 F6BEG JN25JS, 1158 F8KLY JN25HP, 1204 F6KMF/p JN15JB, 1208 F4BTD/p JN04RF.

**OE1SOW (JN88FF) wkd:** 1523 EA3DXU JN11, 1529 EB3FKK JN01SF, 1602 EA3DUY JN12LD.

**PE1HWO (JO21GV) wkd:** 1129 YO2II/p KN06GU, 1143 YO5BLA/p KN16PL.

**YU7EW (KN05HP) wkd:** 1136 MM0CPS/p IO85KU, 1147 GM4ZUK/p IO85RW, 1148 GM3HAM/p IO85SS, 1151 GMOBRS/p IO85XT, 1518 F/G8MBI JN04FT, 1520 F4ARU IN94VT, 1525 F5FLN IN94SR, 1529 F5MLY JN05BP, 1531 F1TV JN94QS, 1532 F8PRQ JN05QC, 1535 F5GHP IN95LE, 1558 F1BRV JN16MX, 1559 F1AFJ JN06MT, 1613 F1CKB IN97SI, 1614 F6APE IN97QI, 1616 F1NNY.

## 2000-07-09

**OM2IK (JN88SI) wkd:** 1107 EA5ZF IM99WU.

**YU7EW (KN05HP) wkd:** 1016 EA2BVD IN91PO, 1018 EA2TJ IN91QQ, 1023 F6EGD JN24KE, 1025 F5FML JN03QP, 1027 F4BWJ IN93MP, 1028 EA1BFZ IN81SI, 1030 EA/F6CBH/p IN82UB.

## 2000-07-10

**DG2LBF (JO54BH) wkd:** 1521 S52W JN75ON.

**DF6NA (JN49XS) wkd:** 1606 SV3/DK7ZB KM06, 1616 SV9CVY KM25KA, 1626 SV1BTR KN17VX, 1720 ER1AN KN46KX, 1728 YO6ADW KN36DA.

**DH0GHU (JN38VN) wkd:** 1630 LZ1ZP KN22ID, 1730 ER1AN KN46 hrd.

**DL8EBW (JO31NF) wkd:** 1518 YO5PLA KN16SR hrd, 1519 HA8CE KN06EN, 1522 HA6NQ JN98WA, 1522 OM5CM JN98DF, 1525 HA0HO KN07SU, 1528 YO5PLA KN16SR hrd, 1540 YO5BD KN27GD, 1610 SV9CVY KM25KA hrd, 1615 SV0EN KN10CJ hrd, 1620 SV2BNL KN10LO hrd, 1621 SV1BTR KN17 hrd, 1622 SV1OH KM18VA, 1637 YO4GJH KN35XG hrd, 1638 YO5PLA KN16SR hrd, 1642 YO4FYQ KN44HE hrd, 1709 YO4RDK KN35WK hrd, 1723 YO4RFV KN45AK, 1727 YO8RRO KN36 hrd (fm), 1731 YO6ADW KN36BA hrd (cw). Vy fine opening, but lousy QRM from stations in neighborhood - caught 2 new sqrs and missed the SV9 again.

**DL8LAQ (JO43XU) wkd:** 1634 SV9CVY KM25KA, 1635 SV1AHB KN18NB, 1637 SV1RK KM17VU, 1638 SV1OH KM18VA, 1640 SV1EPP KM17UW hrd, 1643 SV0EP KN10CS, 1645 SV1BTR KN17VX hrd, 1705 L22HQ KN23UB, 1712 YO3DMU KN34BJ, 1712 YO4FRJ/p KN34AW hrd, 1713 YO3CCB KN34CL, 1716 YO3ACX KN34BL, 1717 YO7AQF KN24KU hrd, 1723 LZ2SK KN34EK hrd, 1729 YO4FRJ/p KN34AW, 1730 YO9AZD KN35AA, 1735 YO9GWW hrd, 1743 YO4FYQ KN44HE hrd.

**F80P (JN26MM) wkd:** 1524 SP7DCS/7 JO91MN, 1525 SP7CNL JO91QQ, 1531 EU3AI KO22CE, 1534 SP7JSG KO01BW, 1538 SP9MRT JO90KH hrd, 1619 LZ5UV KN12, 1626 LZ1WL KN22, 1629 LZ1ZP KN22ID, 1635 LZ2QH KN23, 1640 UY5UG KO50 hrd (DL Walli).

**G0FIG (IO90UU) wkd:** 1509 HA8CE KN06EN, 1511 YO5BXD KN27, 1512 HG9MET KN08DF, 1514 YO5PLA KN06SP, 1515 HA9MDP KN08DF, 1516 HA6NQ JN98WA, 1522 HA0HO KN07, 1535 UY5M KN28XG, 1718 YO3ACX KN34BL, 1719 YO3DMU KN34BJ.

**I4XCC (JN63GV) wkd:** 1512 DG0KW JO64MH, 1512 OZ1CL JO65, 1514 DH8YC JO62GP, 1515 SM7RYO JO76DB, 1516 SM5EFP JO79WJ, 1519 DL7ULM JO62SN, 1519 8S4MM JO7900, 1520 SM4WHF JP70OC, 1522 DL3BUE JO72FH, 1524 DL2NUD JO63MF, 1525 SM7DEZ JO65LN.

**IK0WGF (JN52VC) wkd:** 1515 SM5EFP JO79WJ, 1518 SK7HW JO76, 1523 8S4MM JO69.

**IZ5EME (JN52NS) wkd:** 1610 LZ2FO KN13KX, 1611 YU1OK KN14BB, 1612 YO3DMU KN34BJ, 1612 LZ2ZY KN13, 1614 LZ2HQ KN23UB, 1618 LZ5UV KN12PR, 1651 YO6DBA KN36BA, 1710 LZ2CC KN23JG.

**LA0BY (JO59FW) wkd:** 1640 ZA/N7BHC JN91VH, first ZA-LA?, 2168km, 1645 SV3/DK7ZB KM06, ODX 2690km, 1703 SV1OH KM18VA, 2613km, 1729 LZ1ZP KN22ID, 2201km, 1734 LZ1AG KN22ID, 1736 YMOKA KM39AT, first TA-LA?, 2487km, 1738 LZ2CC KN23JL, 1743 LZ1KG KN31CS, 2286km, 1757 YO7VS KN14VH. Nice to experience that super-DX

contacts are possible with a rather small station: I run 180W into a 9-ele-yagi, only 9m above ground. The horizon is a little blocked towards SV/TA by some trees. HB9SUL who was OP of YMOKA reported later that he worked no other stations that day. He had been convinced by a DL-stn on 6m to set up also a 2 m antenna. Andrea did this in a hurry and simply hang the rear part of a longyagi into an olive tree! I replied on his first CQ call. We both were VERY lucky!

**LY2SA (KO14LL) wkd:** 1517 F1FIH JN23GS, 1518 F6HZL JN23QU, 1519 F9HS JN23AT, 1520 IK1TVR JN34RO, 1521 F1EYB JN23KK, 1522 IK2ZVU JN45OO, 1523 F8CH/P JN12MO, 1524 HB9SNR JN36MQ, 1529 F1DRN JN23MT, 1530 F5LBL JN23FQ.

**LZ1KG (KN31CS) wkd:** 1705 OZ2BG/P JO45, 1706 DL9MS JO54, 1710 OZ1BUR JO46HL, 1711 DL5CC JO64AD, 1711 OZ1OF JO46SC, 1712 OZ2TF JO46PE 1713 OZ1BUR JO46, 1713 DK5RB JO64AD, 1714 DG0KW JO64MH, 1715 DF1AN JO63SX, 1716 OZ1LO JO55VC, 1717 OZ5AG JO56DF, 1718 DD3SP JO73GN, 1719 SP6GVU JO81LC, 1722 SQ6GSZ JO81CJ, 1726 OZ1CLL JO65, 1728 SM7WT JO65QJ, 1739 OZ5DI JO55XX, 1730 SM7FMX JO65KN, 1730 SM7XEN JO65RL, 1731 SK7MW JO65MJ, 1732 SM6CMU JO57XX, 1733 SM7WT JO65QQ, 1734 SM7LXV JO65SL, 1735 SM6KJX JO67CK, 1736 SM6HQT JO57VP, 1737 SM6GXV JO58, 1738 LA3BO JO59CD, 1740 LA2AB JO59FV, 1742 LA0BY JO59FW.

**PA0ZM (JO32GK) wkd:** 1513 HA2VR/p JN86XX, 1515 YO2II KN06PE, 1516 YO2IS KN05PS, 1517 HA8CE KN06EN, 1520 LZ2FO KN13KX, 1520 HA1SO JN87, 1521 YO7XW KN05HD, 1522 HA5OV JN97NJ, 1523 HA5CAR JN97OL, 1524 HA7SW JN97, 1643 YO3DMU KN34BJ, 1709 YO4FYQ KN44HE, 1711 YO4GJH KN35XG, 1717 YO4ATW KN35XG, 1719 YO6DBA KN36BA, 1727 YO4RDK KN35WK, 1728 YO4RFV KN45AK.

**PA4VHF (JO32EH) wkd:** 1620 SV0EC KN10CJ, 1642 YO4FRJ/P KN34AW, 1725 YO6ADW KN36BA. Hrd: SV2BNL KN10, SV2CCW KN10, SV3/DK7ZB KM06, LZ2SK, YO4FYQ KN44, YO4RDK KN35, YO6FNA KN36, YO4NF KN44, YO4GJH.

**PE1HWO (JO21GV) wkd:** 1515 HG8QG KN06MT, 1516 HA8MV KN06GU, 1518 YO2II KN06, 1520 OM5KM JN89AH, 1524 OM7AQ JN98UI, 1525 YO5PLA KN16SR, 1718 YO4ATW KN35XG.

**SQ9HYM (JN99MT) wkd:** 1511 F1UO JN16VB, 1513 F6DKW JN18CS, 1518 HB9SNR JN36MQ, 1521 DK8VS JN39NF, 1523 F6EAS IN98LV.

**YU7EW (KN05HP) wkd:** 1511 PA0PVW JO22VA, 1513 PA7FMF JO21DV, 1314 PA5WX JO33GA, 1315 PA3CWN JO33AH, 1317 PA3CEG JO33FB, 1318 DL6BF JO32QI, 1319 PA1GYS JO22WW, 1320 PA0ZM JO32GK, 1322 DL4YDR JO32RG, 1324 PA3EXB JO32LX, 1337 DK8VS JN39NF FAI 300.

## 2000-07-11

**8S4MM (JO79OO, op SM4EPR) wkd:** 1714 OE6MWG JN77, 1717 OK4ZZ JN89DF, 1718 OE1SOW JN88FF, 1718 QA2VM JN85FS, 1718 T94DU JN95DA, 1719 T91EDO JN95DA, 1719A2DA

JN86JE, 1719 OK2PTC/P JN89JM, 1720 OK2ITN JN88KS, 1721 OM5KM JN98AH, 1721 YU7KB JN94XX, 1722 YT1VE JN94US, 1722 OM5LD JN98AH, 1723 HA5CBA JN97?, 1724 YU7ON KN04AX, 1725 YU7MS KN05FJ, 1725 9A4FW JN95JG, 1726 OM7DX JN98CR, 1726 OM5CM JN98DF, 1726 HG4YJ JN96LJ, 1728 HA5CE KN06EN, 1728 9A2SB JN95GM, 1729 HA5CW JN97PM, 1729 YU7VA KN05EJ, 1730 YU1EV KN04FR, 1730 HA7WJ JN97MP, 1730 YU7DP KN05AO, 1731 OK2THG/p JN99GM, 1731 OK2VWB JN99FS, 1731 OK2PVF JN99GU, 1732 SP9EWO JN99HW, 1732 SP9COO JO90GA, 1733 OK2VSF JN99?, 1734 YZ1KU KN04ET, 1734 YU1IO KN04, 1734 YU7EW KN05HP, 1734 HA8MV KN06GU, 1737 YZ7MON JN95XA, 1738 HA6WD, 1738 HA6PX JN98WD, 1742 HA0HO KN07SN.

**DF6NA (JN49XS) wkd:** 1715 OH2KNF KP20KF, 1716 OH7MA KP52BN, 1717 OH2KKU KP20GB, 1722 OH2LNM KP20, 1723 OH5LW KP30NN, 1725 OH1AYQ KP12JB, 1732 ES1RF/3 KO29IF, 1743 OH6KTL KP02OJ, 1754 UA1TII KO78MT, 1116 LZ5UV KN12PR.

**DH0GHU (JN38VN) wkd:** 1505 hrd YMOKA KM39AT, 1712 OH2LNM KP20KF, 1715 OH2KKU KP20GB, 1716 OH5LK KP30ON, 1718 ES2NA KO29JL, 1730 YL3GAC KO27ES, 1742 OH1ZAA KP01RO, 1745 OH1AYQ KP12MA.

**DL8LAQ (JO43XU) wkd:** 1722 LY2IC KO14LL, 1723 ES6GB KO45CN hrd, 1724 LY2BIL KO14, 1735 RA3LW KO54MQ hrd, 1757 RA3PG KO84TD cw, 1758 RW3PF KO93CD cw.

**F6HTJ (JN12CQ) wkd:** 1205 HA8CE KN06EN, 1207 YU7BCL KN05.

**F8OP (JN26MM) wkd:** 0809 SV3/DK7ZB KM06. I was listening SV3/DK7ZB on 6 meters. He said: I QSY on 144.300. Big surprise. He was S9! I called him, with only 10 watts (the amplifier was heating) and we quickly complete the ES QSO! (429th square). Then I heard YU1EU and nothing more!

**G0FIG (IO90UU) wkd:** 1200 IC8FAX JN70CN, 1202 IW8QFA JN78TH, 1206 IW0GPN JN62FB, 1212 IK7UXU JN81HE, 1220 I8KPV JN70KO.

**IK0WGF (JN52VC) wkd:** 1210 F6EAS IN98LV.

**IW1AZJ (JN35UB) wkd:** 1502 YMOKA KM39AT, 1712 OH5LK KP30ON, 1725 OH6MAZ KP21IG, 1729 OH7MA KP52BN.

**LA0BY/p (JO59IX) wkd:** 1711 HA5CW JN97PM, 1712 YU7EW KN05HP, 1712 YT1VV JN94US, 1713 YU1WP JN94RP, 1713 YU7DP KN05AO, 1714 YU7BCL KN05FW, 1715 HA7WJ JN97MP, 1716 OM5KM JN98AH, 1716 SP9AI JN99MT, 1716 SP9EWO JO90NH, 1716 OM7DX JN98CR, 1717 HG9MET KN08DF, 1718 YU7KB JN94XX, 1718 HA5CBA JN97OM, 1719 HA5CRQ JN97OM, 1719 HA9MDP KN08DF, 1720 HA0HO KN07SU, 1720 OM8MF KN09DB, 1720 HA8CE KN06EN, 1721 OM3WCJ JN99TC, 1722 YO2II KN06PE, 1724 SP9CP JO90MT, 1726 YO5OBR KN07XA, 1727 HA6PX JN98WD, 1728 SP9ZCJ JO90XB, 1730 OM0AB KN08WW, 1731 OE3EFS JN78TE, 1731 9A3UV JN85ER, 1734 T91EDO JN95DA, 1734 T94NK JN95DA, 1735 OM3RM JN88QA, 1736 HG2SF

JN87XC, 1736 9A2SB JN95GM, 1737 OE1BM JN88NC, 1738 HA0HO KN07SU, 1740 YO6AWR KN25TP, 1742 SP7QJF KO10ER, 1743 YO6QT KN25TP, 1744 OK2TT JN89KU, 1750 YO6FNA KN36BA, 1753 YO4GJH KN35XG, 1759 T94DU JN95DA, 1802 HG7JAL JN97KK. Never worked so many stations in one opening. Was on mountain for 70cm NAC but discovered Es on 2m quickly. Glad I also brought 2m equipment.

**LA0FX (JP40LM) wkd:** 1706 YU7DP KN05AO, 1706 YU7MS KN05FJ, 1707 YU7EW KN05HP, 1707 YU7VU JN94US, 1708 HA5CW JN97MP, 1709 YZ7UN KN05MM, 1709 OM7DX JN98CR, 1710 HA5CBA JN97OM, 1710 HA5CRQ JN97OM, 1711 HA7WJ JN97MP, 1711 OK2POI JN99BL, 1712 HG9MET KN08DF, 1712 SP9AI JN99MT, 1712 SP9EWU JO90NH, 1713 YU7BCL KN05FW, 1715 HA9MDB KN08DF, 1715 HA4YJ JN96LX, 1716 YO2II KN06PE, 1716 SP9LCV JO90MG, 1717 SP9QZS JO90NA, 1717 SQ9HYR, 1717 OK1VSO JN89XX, 1718 HA8CE KN06EN, 1718 HA8LNA KN06FN, 1718 SQ9CWO JO90FV, 1719 HA6ND JN98WA, 1722 OM0AB KN08WW, 1722 YZ7MON JN95XA, 1729 OK1KT JO70WE, 1730 OK2ZZ JN89DF, 1731 T91EDO JN95DA, 1731 T94DU JN95DA, 1732 T94NK JN95DA, 1732 OM5KM JN98AH, 1733 OM5LD JN98AH, 1734 OM5CM JN98DF, 1734 HG4WQ JN97IF, 1735 OM7DX JN98CR, 1735 YU1EV KN04FR, 1735 HA4YJ JN96LX, 1735 HA5LV JN97MM, 1736 OM3WBC JN98VG, 1737 OM3WCJ JN99TC, 1737 OM3KIJ JN99UB, 1739 OM2IK JN88SI, 1740 YU1WP JN94JH, 1742 SP7QJF KO10ER, 1743 OM8KF KN09DF, 1744 YU1IO KN04IQ, 1744 OM7SM JN98KO, 1744 SP6ASD JO81LC, 1744 HA5OV JN97NJ, 1745 YU7AR KN05BW, 1745 OM3CLS JN99FC, 1746 YU7VA KN05KJ, 1746 YO5OBR KN07XA, 1759 OM5CM JN98DF, 1800 OK2PVF JN99GU, 1802 YU7ZZ KN05BT, 1803 YU7KB JN94XX, 1804 YU1ES KN04GI.

**LY2SA (KO14LL) wkd:** 1507 YM0KA KM29AT, 1712 G4SFY JO02QT, 1713 G4LOH IO94IA, 1714 GOEVT IO93GR, 1714 G6YIN IO93ET, 1715 G4GHI IO83PL, 1716 M1BTR JO03BI, 1717 G4BRK IO91DP, 1717 DG6JF/p JO33QN, 1718 PE9DX JO33MD, 1718 PA3DOL JO22KK, 1719 PA3EHH JO23XG, 1719 PA5WT JO22HG, 1720 G4YTL IO92MB, 1720 G3LQR JO02QF, 1720 G4SWX JO02PB, 1721 G0KPW JO02OD, 1722 G0TFA JO02, 1722 DG2BCP JO43CE, 1723 DG7TG JO43TX, 1723 PA1YS JO23WW, 1724 PE2PMI JO23MH, 1724 G3IMV IO91OX, 1726 PA3CWN JO33AH, 1727 DL6YDP JO32MF, 1728 PA1GYS JO22, 1728 ON4CDF JO21, 1729 G0FYD IO83LS, 1730 DF2JQ JO31HL, 1731 DL3YEL JO41EV, 1732 DH2OAA JO42TU, 1735 G4FVP IO94FM, 1739 G16ATZ IO74AJ, 1742 G1BBY IO95CF, 1744 G3UTS IO94CU, 1744 MM1ATY IO85OW, 1745 G6NUZ IO92XW, 1745 GW4VBM IO83LF, 1746 G4VPD IO92BJ, 1748 G1AWP IO95EJ, 1748 GW8JLY IO81JM, 1749 GW4UWR IO81LP, 1751 G8MYK IO85AT, 1752 G0TIF IO94, 1753 G0EOY IO94DX, 1755 GM1XOI IO85AT, 1756 G0PWE IO95FE, 1757 PE1DTU JO23JB, 1757 M0CFB IO94, 1757 GW7SME IO81, 1758 GM4CXM IO75TW, 1758 G0WYY IO94DX, 1758 G4SHF IO92IN, 1759 G8VHI IO92FM,

1759 G8TIC IO82VF, 1800 G7WAY IO92BB, 1800 GW7SMV IO81LN, 1801 G3AKU IO92GR, 1806 G1VGO IO93HC.

**LZ1KG (KN31CS) wkd:** 1502 IW1AZJ JN35UB, 1616 4K6D LN40VK.

**OE6IWG (JN77PK) wkd:** 1716 SM3UZS JP92FW, 1717 SM3AFT JP82XP, 1718 SM3AKW JP92AO, 1719 SM4BDQ JP80GG, 1750 OH6MAZ KP21IG, 1753 OH7HLG KP32TU.

**OH6PA (KP02PL) wkd:** 1715 9A2RD JN65TF, 1716 IK4FMT JN54WQ, 1720 IK4MEB JN64FA, 1720 DH9FS JO61UA, 1721 DK3DXX JO61VC, 1721 DH9YX JN68OL, 1722 IV3HWT JN65ST, 1722 OK1DKZ JN69XP, 1723 OK1XN JO70DB, 1724 OK1MG JO70BD, 1724 OK5ACR JO60XN, 1725 F5JNX JN37QT, 1725 S54G JN65TM, 1726 OK1DRZ JN79PQ, 1726 IV3NDC JN75EV, 1727 OE3EFS JN78TE, 1730 DK0YA JN49NX, 1731 OE3EMC JN78JO, 1732 OK1KT JO70WE, 1733 DF7TI JN47ET, 1735 IK3JIK JN76KT, 1736 OE3MWS JN88DC, 1737 OE3TVF JN78UE, 1738 OK2BDS JN79WF, 1739 OE1SOW JN88FF, 1740 9A1CAL JN86EL, 1741 HB9BQU JN37VD, 1742 OK2PTC/P JN89JN, 1743 OE3JPC JN87EW, 1744 9A3SM JN85AT, 1744 9A3LY JN85BT, 1744 9A4SL JN85BV, 1745 HA1YA JN87GF, 1745 OK2TT JN89KU, 1746 OK2PMX JN88IW, 1748 OM7DX JN98CK, 1748 OM2IK JN88SI, 1749 OK1VSO JN69WG, 1750 OM5KM JN98AH, 1751 OK2POI JN99BL, 1753 OM2IK JN88SI, 1754 9A3GL JN95AD.

**OM2IK (JN88SI) wkd:** 1731 SM4BDQ JP80GG, 1737 SM3UZS JP92FW, 1739 SM3AKW JP92AO, 1745 LA0FX JP40LM, 1745 LA3AB JO59FV, 1746 OH6KTL KP02, 1750 OH1PU KP01VL, 1752 OH1ZAA KP01RO, 1753 OH6PA KP02PL.

**ON1IM (JO11UB) wkd:** 1105 9H1CG JM75, 1147 9H1CG JM75, 1206 IT9NPR hrd, 1208 I8PKW hrd, 1743 ES5AAM KO38, 1746 RK3AF KO85, 1747 UA3DHC KO96 hrd, 1751 RA3AQ KO85, 1808 ES6CO KO38 hrd.

**PA4VHF (JO32EH) wkd:** 1730 EW6GB KO45CN, 1743 RA3AQ KO85RA, 1755 RA3PG KO84TD, 1805 ES5AAM KO38GR. Heard: UA1WCF KO55, UA1XP KO55, RK3AF KO85, EW6FS KO35, RW3PX, UA3AMY KO75, RW3PF KO93, ES5LCG KO38, RA3IS KO76, LY2BIL KO24, LY2IC KO14, ES6CO?

**PE1HWO (JO21GV) wkd:** 1719 LY2IC KO14WW, 1729 UA1XP KO55, 1732 RK3AF KO85QR, 1734 EW6GB KO54CN, 1756 RA3PG KO84TD.

**YU7EW (KN05HP) wkd:** 1057 EB5IJA JM08BU, 1120 EA4BVW IM89VI, 1130 EA5AGR IM88WV, 1138 EA4CTF IM89AT, 1148 EA3DUY JN12LD, 1158 EA5AAJ IM99SL, 1207 EA1THIN72WW, 1209 F4BWJ IN93MP, 1212 EA1CTQ IN73FM, 1558 UA6HGY LN14MA, 1601 EK6AD LN20FE, 1707 LA0FX JP40LM, 1709 LA3BO JO59CD, 1712 LA0BY/p JO59IX, 1714 LA8AJA JP50HQ, 1717 SM6VQX JO68HI, 1718 LA2AB JO59FX, 1719 LA8WF JO59GV, 1734 8S4MM JO78OO, 1743 SM3KXP JP73GH.

## 2000-07-12

**DG2LBF (JO54BH) wkd:** 1233 LZ5UV KN23PR, 1235 LZ1JY KN12PR, 1239 LZ2FO KN12FR.

**DG3GAG (JN48NB) wkd:** 1011 YM0KA KM39AT, 1052 LZ1DP KN22NK, 1131 YO3JW KN34CK, 1136 YO4FYQ KN44HE, 1146 YO4FRJ/P KN34AW, 1203 YO4GJH KN35XG.

**DH0GHU (JN38VN) wkd:** 1013 YM0KA KM39AT, 1048 LZ1DP KN22TK, 1054 LZ1JY KN12PR, 1143 YO4FYQ KN44HE, 1147 YO4FRJ/p KN34AW, 1224 YO5OHY KN17SP.

**DL0UKW (JN38VN, op DH0GHU) wkd:** 1156 YO4FRJ/p KN34AW, 1157 YO4FYQ KN44HE.

**F80P (JN26MM) wkd:** 1131 UX0FF KN45KJ, 1132 YO6ADW KN36, 1134 YO4GJH KN35GP, 1137 YO4RDN KN45AK, 1140 YO6FNA KN36BA.

**G8AHK (IO91QF) wkd:** 1730 LY2IC KO14WW.

**IW1AZJ (JN35UB) wkd:** 1032 YO4RDN KN45AK, 1033 YO4GJH KN35XG, 1035 UX0FF KN45KJ, 1045 YO6AWR KN25TP, 1100 YO6OEK KN26JF, 1110 YO6FNA KN36BA, 1129 URS6IM KN76CL.

**ON1IM (JO11UB) wkd:** 1231 YO6FNA KN36, 1235 UX0FF KN45.

**PD0RFU (JO32LS) wkd:** YM0KA KM39AT, LZ1WL KN12VG. Rig: FT-225RD, 25W, 19 ele at 12m agl. 73, Rene.

**YU7EW (KN05HP) wkd:** 0637 RW3PF KO93CD, 0654 UA3PR KO94DA.

## 2000-07-14

**UX7IR (ex UB5ICR, KN87TO) wkd:** 0635 DD3SP, 0636 SP7DCS/7, 0637 DL7CNL, 0640 DL8CMM, 0642 DL9UDS, 0643 DL3BUE, 0644 SP7JSG, 0645 SP7EBM, 0650 SP7(3?)FFJ, 0651 SP7CNL, 0653 DL7YS, 0655 DJ9FG, 0700 DL8UCC, 0702 DL9FG, 0703 DL5ME, 0710 DJ7OF, 0711 DF4JGP, 0712 SP7OGP, 0712 DL5WG, 0838 S54M, 0838 9A1CAL.

## 2000-07-17

**IK2YXK (JN45OP) wkd:** 1636 SV5BYR KM46CG, 1637 SV5AZP KM46, 1725 RZ6BU KN84PX. Hrd 4X4DX and 4X1IF in cw.

**IK5FTQ (JN53LW) wkd:** 1553 SV9CVY KM25KA, 1623 SV5AZP KM46CG, 1628 SV5BYR KM46CG, 1710 4X1IF KM72KK hrd.

**IK6MLI (JN62UT) wkd:** 1623 SV5BYR KM46, 1634 SV5AZP KM46, 1708 4X1IF KM72 cw.

**IW1AZJ (JN35UB) wkd:** 1545 SV9CVY KM25KA, 1547 SV9ZP KM25, 1607 SV9DJX KM25NI, 1624 SV1OH KM18VA, 1625 SV5AZP KM46CG, 1628 SV5BYR KM46CG.

**LZ1KG (KN31CS) wkd:** 1703 9H1CG JM75FW.

**OE1SOW (JN88FF) hrd:** 1702 SV5AZP KM46CG. Heard for 1 Minute only!

**OM2IK (JN88SI) wkd:** 1644 9H1CG JM75 cw, 1659 SV5AZP KM46, Hrd 4X1IF KM72 vy weak.

## 2000-07-22

**F1AKK (JN39CC) wkd:** 1126 EB7HAP IM76SR.

**F4AZF (JN38) wkd:** 1126 EA7GTF IM87.

**IK6MLI (JN62UT) wkd:** 1835 EA4LU IM68, 1848 EA4EGR IM78, 1853 EA7GBG IM67.

**IW1AZJ (JN35UB) wkd:** 1120 CT2HBZ IM58LV, 1125 CT1EPS IM57XC, 1822 EA9IB IM85NG.

**YU7EW (KN05HP) wkd:** 1648 OZ2TF JO46PE, 1735 G4IVH IO92WN, 1736 G4ZTR JO01KW, 1737 G4TIF IO92FH, 1738 G4RUZ IO93FR, 1741 G4NRG JO02MM, 1742 G4AEQ IO93PE.

## 2000-07-23

**LZ1KG (KN31CS) wkd:** 1607 UA6HGY LN14MA.

**LZ4NM (KN130J, 5W out) wkd:** 1645 RV6YY LN04GJ (FM).

**YU7EW (KN05HP) wkd:** 1538 UA6HGY LN14MA, 1554 RA6HSM LN1? (FM), 1556 UA6HJQ LN14MG (FM), 1558 RA6XLM LN13SL (FM, wrong send LO13SL), 1606 4K6D LN40VK, 1627 UA6JBN LN23HA (FM).

## 2000-07-24

**DG2LBF (JO54BH) wkd:** 0745 CT1FOH JN50RA, 0812 EB4BWN IM89VI, 0821 CT1DYX IN51PE, 0840 EA7AJ IM87CS, 1337 LZ1LG KN31CS, 1340 LZ1KG KN31CO, 1342 LZ1KJ KN31SG, 1527 EA3ADW JN11, 1544 F5GHP IN96LE, 1547 F6FHP IN94TR, 1556 F6DBB IN96NS, 1604 EA5ZF IM99WU, 1615 EB5BCF IM99TK, 1624 F5GPI JN03OJ.

**DG0OPK (JN57TX) wkd:** 1544 G6YAY IO80EL hrd, 1548 GM0DQM IO85CE hrd, 1549 EI4IX IO53HV, 1552 G0RUZ IO93FR hrd, 1554 G0PES IO83LS hrd, 1555 G4IDF IO82VE hrd, 1601 G0NNF IO92AL hrd, 1602 EI6AS IO63TH hrd, 1610 EI5FK IO51RT, 1611 EI3FSB IO51DN hrd, 1613 EI4DQ IO51WU, 1627 GJ0JSY IN89XE, 1630 G4APA IO82VI, 1631 G0YFD IO83LS hrd, 1641 GI0WJY IO64XM, 1648 GD0TEP IO74SD, 1738 EI5FK IO51RT (FM).

**DH0GHU (JN38VN) wkd:** CT1FOH IN50RA, 0849 CT1DYX IN51PE, 1223 CT2GRW IN60CO, 1603 G8GXP IO93FQ, 1610 EI4IX IO53HV, 1642 GM0BQM IO85CE, 1648 GM0GMD IO86AE, 1649 GM4CXM IO75TW.

**DH3IAJ (JN48HD) wkd:** 0740 EA2CCG IN82 (in FM from my car), 1521 G8HDS IO83VO, 1558 GM0BQM IO85CE, 1604 EI4IX IO53HV, 1658 GM0GMD IO86AE, 1659 GM4CXM IO75TW, 1700 GM4MIM IO85EX (FM).

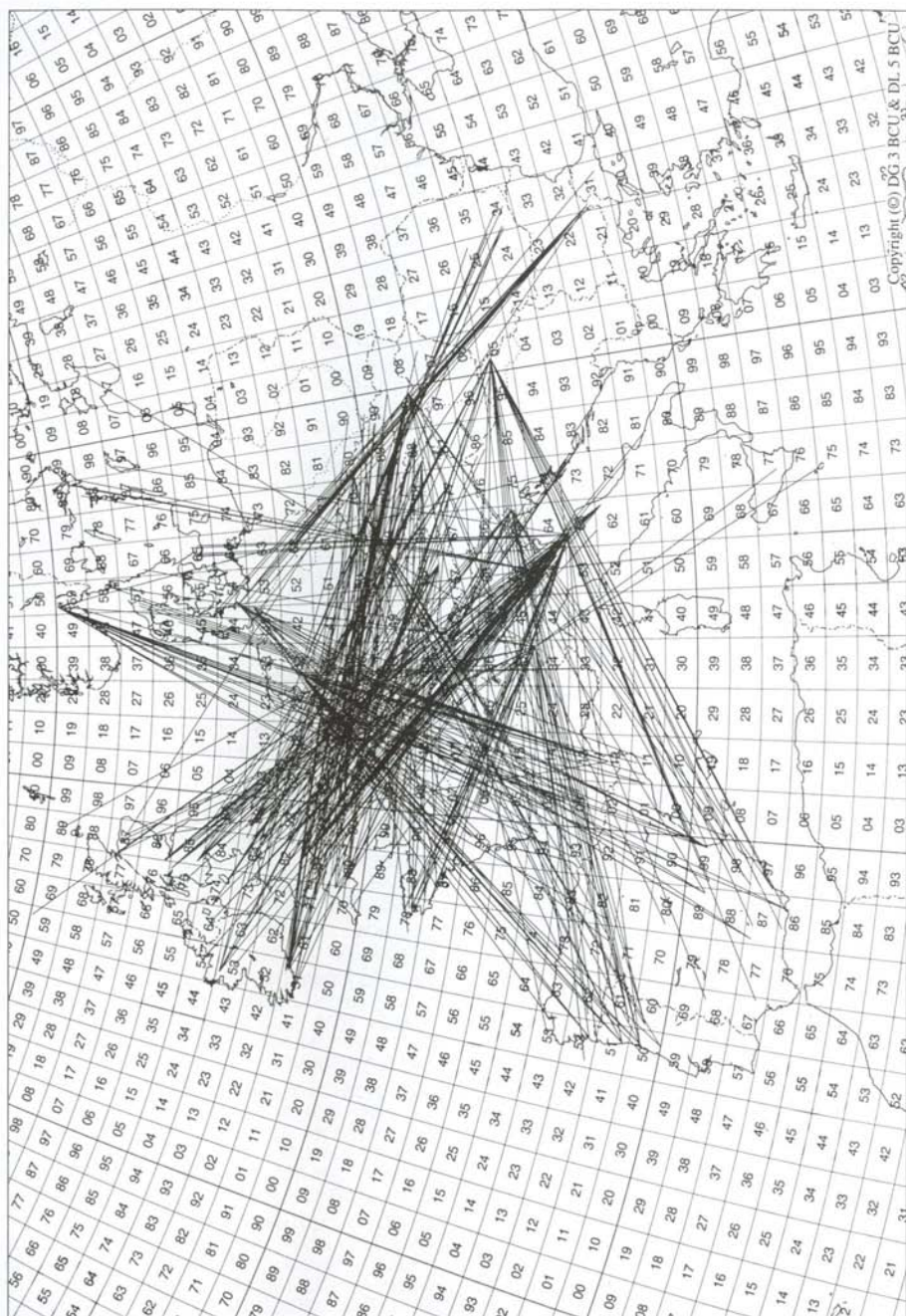
**DL0UKW (JN38VN, op DH0GHU) wkd:** 0850 CT1DYX IN51PE.

**DL8LAQ (JO43XU) wkd:** 1517 F3A2LU JN03, 1520 EA5ZF IM99WU, 1539 F5GHP IN96, 1545 F1CKB IN97SL, 1600 F2LQ IN98EB, 1602 F6ETI IN87IQ, 1603 EA5ZF IM99WU, 1606 F1VBW JN03WL, 1609 EA1BLA IN53UM.

**F6HTJ (JN12KQ) wkd:** 1600 OZ6ABA JO57DJ, 1608 PA4VHF JO32EH, 1609 PA9KT JO33JF, 1612 OZ1HNE JO57GG, 1615 OZ1BUR JO46HI, 1616 LA3BO JO59CD, 1623 OZ2TF JO46PE, 1625 OZ9AEG JO57FJ, 1628 SM6SMI JO58RF, 1738 GM4ILS IO87IP.

**G0FIG (IO90UU) wkd:** 1447 SQ9HYM JN99MT, 1450 OM3WAN JN99IF, 1451 OK1AMI JO70VA, 1454 OK2VS JN99GM, 1455 OK2PTS JN89WH, 1457 OK2PJW JN89JK, 1459 OM3WKB JN99VA, 1502 OK2UIN JN89FO, 1512 OK2ZZ/P JN99FN, 1514

## Opening of 24-July-2000



OK2MWR JN99HQ, 1515 SP9AI JN99MT, 1515 OK1VT JO70WE, 1518 HG3KR, 1519 YU7MS KN05, 1522 DL1MAJ JN68AH, 1523 YU7DP KN05AQ.

**G4ASR (IO81MX) wkd:** 1600 DL4MEA JN58, 1601 OK1SB JN69TS, 1601 OE3MWS JN88, 1601 OM7DX JN98CR, 1601 DK5RQ JN68BV, 1602 DJ3TF JN59WK, 1603 HA0HO KN07SU, 1604 IZ4IZK JN63HA, 1605 I4XCC JN63GV, 1605 IK4FMT JN54WG, 1606 IW4DTP JN54UG, 1606 IW4DCW JN54LP, 1607 I4CIL JN64AH, 1607 I4LCK JN54, 1608 I4RHP JN54QL, 1608 IK7FPU JN71SU, 1609 IK7UXU JN81HE, 1610 I4PAI JN64GB, 1611 IZ4AIB JN54XJ, 1612 9A3MR JN73TS, 1613 DL1GNM JN38WB, 1614 9A5ST/9 JN83BK, 1614 9A3RD JN65TF, 1614 S54G JN65TM, 1614 9A4KF JN83GD, 1615 9A1CAL JN86EL, 1617 9A3JH JN75AD, 1618 9A4NF JN73VS, 1620 9A2AE JN86HF, 1620 I4RHP JN54QL, 1626 I3VYK JN55MJ, 1627 IZ4AIK JN63HV, 1627 I2PY JN55NB, 1627 I4MKN JN64GC.

**I4XCC (JN63GV) wkd:** 0653 F6FAI IN78RN, 0656 F6ETI/M IN87IQ, 0712 F9OE IN78QG, 0714 F6FKB IN88OB, 0716 F1LEA IN78TI, 0718 F3VX IN97SK, 0719 F8ULC JN06FS, 0728 F/PE1PZF/M IN97, 0740 F1DSZ JN06IJ, 0741 F5NXU IN97MR, 0742 F5PIG JN06FQ, 0754 F1CDS IN77VU, 0756 F5AGO JN06DP, 0914 EA5AVD IN90XB, 0920 CT1DNF IN50QP, 1132 EA1SH IN62IB, 1323 SM7WT JO65QQ, 1325 OZ1CLL JO65, 1327 SM1FMT JO97FS, 1329 SM7OVF JO65RL, 1331 SM7FMX JO65KN, 1517 G3GNR IO70WT, 1518 G3WJOJ IO77WS, 1520 G8GXP IO93FQ, 1523 G8HDS IO83VO, 1524 G4APA IO83VI, 1529 EI5FK IO51RT, 1542 GM0BQM IO85CE, 1546 GM4CXM IO75TW, 1548 GM0GMD IO86AE, 1555 GW4VWR IO81LP, 1556 GW8JLY IO81JM, 1601 EI4IX IO53HV, 1604 G4ASR IO81MX, 1607 GW8ASA IO81EM, 1608 G0DKM/M IO81, 1611 GW4HBK IO81, 1613 G0PES IO83LS, 1616 G4SNA IO64XM, 1620 G4THI IO92FH, 1625 GW3RME IO82KX, 1658 G0KZG/MM IO59RW, 1734 EI7BJB IO63NJ.

**IK6MLI (JN62UT) wkd:** 1508 G3UTS IO94, 1511 EI5FK IO53, 1522 G0EOY IO94, 1523 G0WYY IO94, 1524 G4APA IO83, 1525 M5LXU IO93, 1529 G1AWP IO95, 1529 GM0BQM IO85, 1531 GW4RN? IO81, 1549 GM4CXM IO75, 1556 EI4IX IO53, 1601 GW4UWR IO81, 1608 G4ASR IO81, 1609 G0RUZ IO93, 1620 G4MPD IO92, 1622 G0OZ? IO94, 1624 G8YIG IO83, 1629 G4SNA IO64.

**IW1AZJ (JN35UB) wkd:** 0720 G6YAY IN80EL, 0730 F6FAI IN78RN, 0740 F1LEA IN78TI, 0744 F9OE IN78QG, 0747 G6LEU IO70MF, 0755 F5NXU IN97NR, 0800 F1BOC IN97DG, 0822 IW9BJN JN77GG, 0826 9H5SN JN75FW, 1125 CT2GRW IN60CO, 1126 CT1DNF IN50QP, 1127 CT1DNM IN61CC, 1128 CT2H5O IN61CC, 1135 CT1DYX IN51PE, 1145 EA1GAR IN51NW, 1147 EA1KV IN52DF, 1314 ES2QH/8 KO18XC, 1315 ES2RJ/8 KO18XC, 1500 SM6HBI JO58RF, 1503 SM6TZJ JO67EE, 1523 PA3DOL JO22MT, 1525 PE1RBB JO22RM, 1614 G4XVJ IO83VI, 1617 GM3WOJ IO77WS, 1650 GD0TEP IO74SD, 1655 GM4IES IO87IF, 1656 GM4WJA IO87MN.

**IW4DCW (JN54LP) wkd:** 1334 SM6FFS JO99AA, 1337 SM5KNV JO88MV, 1417 SM0EPO JO89XL, 1418 SM5PII JO88QQ, 1558 GM4CXM IO75TW, 1600

GM0GMD IO86AD, 1610 G8GXP IO93FQ, 1612 G4ASR IO81MX.

**IW4DTP (JN54UG) wkd:** 1523 G4IVH IO62, 1542 MOBQN IO85, 1552 EI4IX IO54, 1555 GW4UWR IO89, 1604 G4ASR IO81, 1606 GW8JLY IO81, 1612 G4SNA IO64, 1614 G4APA IO83, 1622 G10WYJ IO64, 1622 G4RGK IO91, 1623 G4VPD IO92, 1624 G4FBZ IO82, 1625 G6FVZ IO82.

**LA0BY (JO59FW) wkd:** 1330 9A2AE/p JN73PX, 1510 IK2GSO JN45BP, 1539 F6DRO JN03SM, 1542 F6CTD JN03, 1544 F5GPR JN03OJ, 1545 F5JGY JN04OK, 1553 F1GTX JN03MW, 1553 F9QN JN04MC, 1558 F/G8MBI JN04FT, 1600 F5LNU JN04JV, 1602 F5DUX IN93IN, 1602 F1HSU JN15AK, 1603 F1CIL JN16KL, 1607 F6FHP IN94TR, 1614 F1AJE JN05AN, 1645 EA1LZ IN82DI, 2190km, 1654 F1CKB IN97SL, 1655 F3VX IN97SK. IO80QE was also heard but NC. Weak opening with many ups and downs.

**LZ1KG (KN31CS) wkd:** 1335 DK1KO JO53CT, 1338 DB6LJ JO43TS, 1339 DL2ARD JO60AR, 1340 DL1SUN JO53PN, 1340 DG2LBF JO54BC, 1341 DG0RG JO62JV, 1342 DG1RRM JO62, 1342 OZ1LPR JO44UW, 1343 DL7ARM JO62RJ, 1344 OZ1ALF JO44WX, 1344 DL8UCC JO71EQ, 1345 DG2LBF JO54BC, 1347 DL1UU JO62SP.

**OE1SOW (JN88FF) wkd:** 1513 G0HES IO83PH, 1515 G4APA IO83VI, 1546 EI2FSB IO51DN, 1551 G0CUZ IO82WM, 1552 G4VPD IO92BJ, 1602 GW8ASA IO81EM, 1605 F6ETI IN87IQ, 1609 F1G8P IN77WX, 1618 GJ0JSY IN89XE, 1622 F1LEA IN78TI.

**OE6IWG (JN77PK) wkd:** 1446 GM0BQM IO85CE, 1447 G3UTS IO94CU, 1448 G0EOY IO94DX, 1454 G8GXP IO93FQ, 1455 G6YIN IO93, 1519 EI5FK IO51RT, 1538 GW5NF IO81KQ, 1607 F1LEA IN78TI.

**OK1DCF (JO80BJ) wkd:** 1520 F4LME/PIN97AV, 1522 F2LQ IN98IB, 1525 F1LEA IN78EI, 1542 G3GNR IO70WT, 1547 F5JKK IN87PR, 1553 GW3HWR IO71XN, 1558 G3MQY IO80FS, 1622 F1CKB IN97SL, 1638 EI3EBB IO51RV, 1639 EI7GL IO51TU, 1653 EI5FK IO51RT, 1659 EI4DQ IO51WU, 1714 EI4IX IO53HV (odx).

**OK1MG (JO70BD) wkd:** 0731 F4BWJ IN93MP, 0732 F1CJW JN04FH, 0744 F5ADT IN94WO, 0744 EB1CTQ IN73FM, 0745 F/G8MBI JN04, 0756 EA1CLR IN72QB, 0819 CT1DYX IN51PE, 0825 CT1DNF IN50QP, 0831 EA1YO IN73XI, 1338 YO3DMU KN34BJ, 1341 YO4FRJ/p KN34AW, 1343 YO3JW KN34CK, 1544 EI5FK IO51RT, 1550 EI7GL IO51TU, 1554 EI4DQ IO51WU, 1658 GW4VEQ IO73SG, 1700 EI3GE IO63XD, 1707 EI4IX IO53HV.

**OM2IK (JN88SI) wkd:** 1539 G6YAY IO80EL, 1545 EI5FK IO51RT, 1546 EI4DQ IO51WU, 1547 GW4UWR IO81, 1556 EI3FSB IO51DN, 1558 EI7GL IO51TU, 1615 F6CGJ IN78RK, 1618 G0JSSY IN89XE.

**OM7AQ (JN98UL) wkd:** 0650 F1FLX IN93TH, 0652 F1GTJ JN03, 0706 EB1CTQ IN73, 0727 F6ADT hrd, 0729 EA1CLR hrd, 0755 EA5BW IM89VI, 0812 EB1FDY hrd, 0813 EB1DPB IN53, 0820 EB1FBV, 0913 EA7BA IM97DX, 0917 EB5JA JM08BU, 1455 G3JHM IO91LC, 1456 GW8ASA IO81, 1457 G3LTF IO91GG, 1500 G3XVR IO91, 1509 GW4UWR IO81LP,

1510 G0FIG IO90UO hrd, 1512 G6FZW, 1513 G4FUF JO01GN, 1514 G8WXU JO01EP, 1516 G4ZTR JO01KW, 1527 G4CQM IO70 hrd, 1533 G8HCZ hrd, 1534 F1LEA hrd, 1556 G6YAY IO80EL, 1603 G4ASR IO81MX, 1655 EI5FK IO51RT hrd, 1657 GW4VEQ IO73SG hrd, 1700 GM4ILS IO87 hrd.

**PA0ZM (JO32GK) wkd:** 0813 CT1DNF IN50QP, 0822 CT1DYX IN51PE, 0839 EA4BWN IM89VI, 0847 EA7AJ IM87CS, 1125 EA7NK IM86RQ, 0900 EA1KV IN52PF, 1338 YO3DMU KN34MG, 1339 YO3JV KN34CK, 1344 YO4FRJ/P KN34AW, 1525 F1NSR JN33JK.

**PA4VHF (JO32EH) wkd:** 0743 EA3GJC JN11EM, 0745 EA3TA JN11AM, 0746 CT1FOH IN50RA, 0820 CT1DNF IN50QP, 0757 EB5JA JM08BU, 0804 EB5BCF IM99TK, 0816 CT1DYX IN51PE, 0829 EA5AMR IM99DG, 0836 EA4BWN IM89VI, 0842 EA7AJ IM87CS, 0901 EA1KV IN52PF, 1337 YO3DMU KN34, 1338 YO3JW KN34, 1343 YO4FRJ/P KN34AW hrd, 1522 F1NSR JN33JK, 1525 IK1PAG JN35 hrd, 1603 EA3FLN JN11KT, 1605 F6HTJ JN12KQ, 1610 EA1TA. Remarkable fact: around 1340 utc, heard those yo3 stations working with OK's in JN79/JO70, which means that MUF must have been high.

**PE1HWO (JO21GV) wkd:** 0724 EA1CLR IN72QD, 0802 EA3TA JN11AM, 0806 CT1FOH IN50RA, 0820 CT1DNF IN50QP, 0828 EA5AVD IN90XB, 0839 EA5BCF IM99TK, 0900 CT1DYX IN51PE, 0902 EA1KV IN52PF, 1135 EB7NK IM86RQ, 1336 SP9EWU JO90NH, 1339 YO3JW KN34CK, 1344 YO6AWR KN25TP.

**S56ECR (JN65VO) wkd:** 0902 EA7BA IM97CG, 0918 EB5JA JM09BU, 0924 EA5GLN IM98HF, 0955 EA4EHI IM68TV, 1057 EA4LU IM68TV, 1117 CT1DNF IN50QP, 1123 CT2GRW IN60CO, 1128 CT1DHM IN61CC, 1129 CT2HSO IN61CC, 1134 CT1DYK IN51PE, 1142 EA1KV IN52PF, 1143 EA1CIBY IN52PF, 1153 EA1SH IN62CJ, 1519 G9HDS IO83, 1522 G4APA IO83UF, 1542 GM0BQM IO85CE, 1549 G0RUZ IO93FR, 1600 M5HAM IO83RO, 1603 M0BKL IO80FK, 1609 G6YAY IO80EL, 1611 GW4HBK IO81RK, 1620 GW4UWR IO81RK, 1625 EI2FSB IO51DN, 1629 EI5FK IO51QV.

**YU7EW (KN05HP) wkd:** 0613 F2EI JN16OW, 0617 F1DSZ JN06IJ, 0621 F6CBC IN94OV, 0634 F/G8MBI JN04FT, 0646 F1CJW JN04FH, 0651 EB1CTQ IN73FM, 0657 F4BWJ IN93MP, 0810 EB5JA JM08BU, 0829 EB5BCF IM99TK, 0835 EA7AJ IM87IS, 0852 EB5GLN IM98HF, 0910 EA5AVD IN90XB, 0913 EA7RF IM67WI, 0930 EA7BA IM97CG, 0941 EA7RZ IM86IU, 0947 EA7CU IM86SU, 0956 EA5CEH IM97DQ, 1031 EA5AMR IM99DG, 1135 CT1DHM IN61CC, 1136 CT2HSO IN61CC, 1456 G8GXP IO93FQ, 1458 G8IYG IO82XT, 1501 G6YIN IO93ET, 1513 G8HDS IO83VS, 1514 PA1PVH JO22FE, 1515 PA0WWM JO22FE, 1515 EI5FK IO51RT, 1516 PA5WT JO22HG, 1518 G6GNR IO70WT, 1531 M5LXU IO93XN.

## 2000-07-29

**YU7EW (KN05HP) wkd:** 0923 EA4CTF IM89AT, 0929 EB4ENN IN70XK.

## 2000-07-30

**DH0GHU (JN38VN) wkd:** 1650-1700 SV9CVY hrd.

**DL0UKW (JN38VN, op DH0GHU) wkd:** 1659 SV9CVY KM25NA.

**DL8EBW (JO31NF) wkd:** 1634 I8MPO JN70FP. Only a short opening, but nice strong and signals on VOR.

**IW1AZJ (JN35UB) wkd:** 1502 LZ1UZ KN12PR

**LZ1KG (KN31CS) wkd:** 1650 F1FKR JN25.

**OE6IWG (JN77PK) wkd:** 1638 F5GHP IN96LE.

**OM7AQ (JN98UI) wkd:** 1638 F6FHP IN94TR, 1639 F1FAW IN94QS, 1640 F1FAM IN94, 1641 F9IE IN86WW hrd.

**ON1IM (JO11UB) wkd:** 1655 SV9CVY KM25.

**YU7EW (KN05HP) wkd on 144 MHz:** 1631 F5NXU IN97MR, 1632 F0CYF IN98DC, 1633 F5LLX IN98EA, 1634 F6CCH IN96BU, 1635 F9IF IN86WW, 1637 F1CKB IN97SU.

## 2000-08-04

**DH0GHU (JN38VN) wkd:** 0914 EB8BTU IL18QI 3067km (ES+Tropo?) 15min-opening.

**DK1VI (JN49HH) wkd:** 0934 EB8BTU IL18QI.

**DL0UKW (JN38VN op DH0GHU) wkd:** 0924 EB8BTU IL18QI.

**S56ECR (JN65VO) wkd:** 0808 EA7RZ IM86SU, 0815 EA7CU IM86, 0815 EB7FXV IM86ST, 0838 EB8BTU IL18QI, 0838 CT1FOH IN50, 0925 CT1EEB IN50, 0929 CT1DHM IN61CC.

## FAI/IONO

**I4XCC (JN63GV) wkd on 144 MHz:**

|              |        |     |         |
|--------------|--------|-----|---------|
| 2000-06-11   |        |     |         |
| 2102 F6CGJ   | IN78RK | 539 | 519     |
| 2000-06-13   |        |     |         |
| 2038 EA2AGZ  | IN91DV | 55  | 59      |
| 2050 EB1DA   |        | 51  | 52      |
| 2103 F/G8MBI | JN04FT | 529 | 529     |
| 2139 OE6IWG  | JN77   | 57  | 57 330° |
| 2000-07-25   |        |     |         |
| 2030 F4ARU   | IN94VT | 55  | 55      |
| 2131 F6DRO   | JN03SM | 57F | 57F     |
| 2000-08-09   |        |     |         |
| 2235 F6CTT   | IN97HV | 52  | 42      |

Thanks for report, Claudio.

**OE6IWG (JN77PK) wkd on 144 MHz:** 2051 I20AEG JN61HX, 2056 IK0BZY JN61GW, 2104 IK7TOF JN71QM, 2106 EA3ADW JN11CQ, 2108 I8JIT JN71HM, 2109 IW0QNX JN62IQ, 2111 I7FML JN80PW, 2116 EA3DUY JN12LD, 2123 F1NSR JN33JK, 2125 EAGJO JN11BI, 2126 F1EYB JN23KK, 2128 EA3FLN JN11KT, 2130 F6HZL JN23QU, 2135 IW5DAN JN53GU, 2137 ISWBE JN53JR, 2138 I4XCC JN63GV, 2140 IK4DRY JN64BL. All QTF 280-285 deg. and 8-12 deg. Elevation. Thanks for report, Walter.

## IONOSCATTER

Some impressions of the great Ionoscatter on 15th of Juli 2000 (taken from the MOON-NET):

# Aurora News

Editor: Norbert Götsche, DL8LAQ

## IK2DDR writes:

At least I had a great meeting with IONOSCATTER today. I worked the following: OZ1HNE 569/569, DL9MS 539/549, DK1KO 539/559. Amazing me to hear so stable signals. Specially when I worked Jorgen, OZ1HNE. I believed to hear some local stations. In these 3 qso's signal was without QSB. I found some change on freq. on every period and I don't know if it depend by some reflections or by RTX drift. So 73' and for who which never had the possibility to try on IONO, I say: IT's really a great fun! Francesco, IK2DDR.

## GM4JJJ writes:

Also great Iono condx here (along with big aurora). SM2CEW, SM3AKW and SM3UZS all strongest I have ever heard them Peter 55 on SSB! 73, David.

## SM5BSZ writes:

Really good and long lasting IONO today. I discovered it late G7RAU sent an E-mail and luckily I looked in the mailbox before the evening... Starting 1230UTC I worked 29 different stations G, PA, ON, F, DL, HB and 9A in the biggest pile-up I ever experienced via IONO. (If callers added a random offset within +/- 500Hz or so I would work many more stations.)

Unfortunately I have not yet any rotors so I have to go outside to move the antenna, a 2SA13X sitting 2m above ground. After my turning the antenna south for a while the pileup disappeared after nearly two hours. The IONO conditions were still there but the activity was much lower. I heard DG9NCX (and the pileup calling him) until about 1510 when I went QRT.

Presumably this event was not only long in time - I suppose it was also widespread geographically. Is there any information from the States? 73, Leif.

## SM2CEW writes:

The IONO has been enhanced for a few days but yesterday was a the best it has been for quite a few years. I worked distances of about 2000 km on SSB with S9 signals (G4SWX, G0KPW) ! The SSB pileup from G/PA was enormous. Good fun indeed. 73, Peter.

## Aurora News

### 9A1CCY (JN85OO) wkd:

2000-07-15

|      |        |        |     |     |     |
|------|--------|--------|-----|-----|-----|
| 1818 | G4LOH  | IO94IA | 53A | 55A | 0   |
| 1831 | DJ4TC  | JO63PN | 55A | 55A | 0   |
| 2034 | DL1RWN | JO62GH | 55A | 59A | 330 |

|                                                                       |          |        |     |        |          |
|-----------------------------------------------------------------------|----------|--------|-----|--------|----------|
| 2036                                                                  | PA2DWH   | JO22   | 57A | 54A    | 330      |
| 2102                                                                  | DK9OY    | JO52CK | 57A | 55A    | 45!      |
| 2105                                                                  | DK1KO    | JO53CT | 55A | 55A    | 30       |
| 2110                                                                  | G4SWX    | JO02PB | 55A | 55A    | 335      |
| 2113                                                                  | G3IMV    | IO91OX | 55A | 56A    | 330      |
| 2115-2128 very weak signals from big guns any QTF 345-30deg, STRANGE! |          |        |     |        |          |
| 2130                                                                  | SM7WT    | JO65QQ | 59A | 59A    | 15       |
| 2133                                                                  | OZ1CLL   | JO65GQ | 57A | 57A    | 15       |
| 2135                                                                  | OZ1FDH   | JO65CS | 59A | 59A    | 15       |
| 2137                                                                  | DJ7RI    | JO54CI | 57A | 56A    | 30       |
| 2146                                                                  | DL9MS    | JO54WC | 59A | 59A    | 30       |
| 2147                                                                  | DK1CO    | JO63SX | 59A | 59A    | 30       |
| 2148                                                                  | SP4MPB   | KO03GS | 59A | 59A    | 30       |
| 2150                                                                  | PA3CEE   | JO33JI | 59A | 55A    | 30       |
| 2152                                                                  | DL3BUE   | JO72FH | 57A | 57A    | 40       |
| 2153                                                                  | DL8LAQ   | JO43XU | 57A | 55A    | 40       |
| 2157                                                                  | DK3XM    | JO43XL | 56A | 55A    | 40       |
| 2201                                                                  | DF1HF    | JO43VL | 55A | 55A    | 35       |
| 2214                                                                  | DL1UU    | JO62SP | 59A | 59+20A | 40       |
| 2215                                                                  | DL4HG    | JO53CM | 59A | 57A    | 35       |
| 2217                                                                  | DK6XY    | JO53KV | 59A | 57A    | 35       |
| 2218                                                                  | DL8CMM   | JO52VM | 57A | 59A    | 35       |
| 2220                                                                  | RX3QFM   | KO91FM | 57A | 59A    | 35       |
| 2223                                                                  | DK3RA    | JO53LU | 57A | 55A    | 35       |
| 2226                                                                  | DL8GAM   | JO53AJ | 55A | 55A    | 30       |
| 2229                                                                  | DK1GS    | JO54LH | 59A | 59A    | 35       |
| 2232                                                                  | SP5AGT/4 | KO03RV | 59A | 59A    | 35       |
| 2234                                                                  | DL1GSJ   | JO43WN | 59A | 59A    | 35       |
| 2238                                                                  | G0FYD    | IO83LS | 55A | 55A    | 15       |
| 2246                                                                  | G3UTS    | IO94CU | 57A | 57A    | 25       |
| 2250                                                                  | PA3CDD   | JO32KF | 57A | 55A    | 25       |
| 2252                                                                  | DG4DO    | -      | 57A | 55A    | 30       |
| 2255                                                                  | OZ1LO    | JO55VC | 59A | 59A    | 30       |
| 2257                                                                  | G3PJW    | IO83PM | 55A | 55A    | 350      |
| 2259                                                                  | PA5DD    | JO22IC | 57A | 56A    | 25       |
| 2303                                                                  | LY3ED    | KO14UX | 55A | 59A    | 10       |
| 2306                                                                  | DK8ZJ    | JO54AG | 55A | 55A    | 0        |
| 2309                                                                  | DL3SWS   | JO53SG | 55A | 55A    | 0        |
| 2311                                                                  | DL7YS    | JO63NM | 55A | 55A    | 0        |
| 2315                                                                  | GOOWD    | IO93HK | 55A | 55A    | 350      |
| 2317                                                                  | DK2CF    | JO72AH | 57A | 57A    | 355      |
| 2318                                                                  | DL7UAO   | JO62   | 55A | 57A    | 355      |
| 2320                                                                  | G3LTF    | IO91GG | 55A | 58A    | 330      |
| 2321                                                                  | G4AEP    | IO91NJ | 57A | 57A    | 330      |
| 2323                                                                  | G4BRK    | IO91DW | 55A | 55A    | 330      |
| 2328                                                                  | EI6GF    | IO62RG | 55A | 55A    | 340 odx! |
| 2331                                                                  | DL5CK    | -      | 53A | 55A    | 340      |
| 2333                                                                  | SP7DCS   | JO91MN | 55A | 55A    | 330      |
| 2340                                                                  | DK5LA    | JO44TR | 55A | 55A    | 25       |
| 2344                                                                  | DL3NUA   | JO64XB | 52A | 53A    | 25       |

2345 Just few weak signals on the band, almost go to sleep. but...

## 2000-07-16

|      |        |        |     |     |    |
|------|--------|--------|-----|-----|----|
| 0031 | SP2BOF | JO94FM | 59A | 55A | 15 |
| 0035 | OZ1LPR | JO44UW | 57A | 55A | 15 |
| 0040 | DL5MAE | JN58VF | 57A | 55A | 15 |
| 0041 | OZ1CTZ | JO46OE | 57A | 56A | 15 |
| 0043 | PA9KT  | JO33JF | 59A | 59A | 15 |
| 0045 | DL1EJA | JO31DS | 59A | 55A | 15 |
| 0046 | PA3CEG | JO33FB | 57A | 55A | 15 |
| 0048 | DK3FW  | JO42VG | 55A | 55A | 15 |
| 0050 | SP1CNV | JO84CF | 59A | 57A | 15 |
| 0104 | OZ8ZS  | JO55RT | 59A | 57A | 15 |

After 0105 UTC on band was left only OZ stations with big signal, no others till 0115 UTC when all signal really gone! Really nice Aurora opening this time! Never worked before so many stations on Aurora .. Also did found some new experience with QTF playing and turning antenna each qso, there where some times a big different in scatter point stations were worked between 330 - 40 degrees! Most time of opening did call CQ... because hard to listening and searching in QRM from stations near by! Equipment: MGF1302, 4 x 10 el. DL6WU and 8877! Thanks for all beautiful QSO and CU in another opening! 73, Sasha.

## DD0VF (JO61WB) wkd on 144 MHz:

## 2000-02-12

|      |       |        |     |     |    |
|------|-------|--------|-----|-----|----|
| 1756 | OZ2TO | JO46PE | 55A | 55A | 25 |
|------|-------|--------|-----|-----|----|

## 2000-04-06

|      |        |        |     |     |         |
|------|--------|--------|-----|-----|---------|
| 2104 | OZ1FDH | JO65CS | 59A | 57A | 30/el20 |
| 2112 | ON4YT  | JO20GG | 55A | 59A | 30/el20 |
| 2115 | DF9QT  | JO30OR | 59A | 55A | 30/el20 |
| 2116 | DF8IK  | JO30JT | 57A | 55A | 30/el20 |
| 2152 | SM5CKG | JO78MM | 52A | 55A | 20      |
| 2200 | SK4BX  | JO79OF | 59A | 56A | 15      |
| 2206 | SM6FBQ | JO67BQ | 59A | 59A | 0       |
| 2219 | SM4IVE | JO79SD | 55A | 55A | 0       |
| 2225 | PA3CEE | JO33JI | 57A | 57A | 25      |
| 2239 | SM7WT  | JO65QQ | 59A | 59A | 0       |
| 2250 | GM4YXI | IO87WJ | 55A | 55A | 15      |
| 2252 | YL3AG  | KO26AW | 59A | 59A | 345     |
| 2300 | LY2MW  | KO24PQ | 57A | 59A | 345     |
| 2319 | PE1LCH | JO23WF | 59A | 59A | 0       |
| 2325 | G4ASR  | IO81MX | 59A | 59A | 315     |
| 2335 | DM1CG  | JO31IC | 59A | 59A | 40/el20 |

## 2000-04-07

|      |        |        |     |     |         |
|------|--------|--------|-----|-----|---------|
| 0013 | G7RAU  | IO90IR | 59A | 59A | 0       |
| 0035 | DL1EAP | JO31HL | 59A | 59A | 30/el20 |
| 0044 | IK1MTZ | JN35UB | 59A | 59A | 275     |
| 0058 | GO6UZ  | IO82WM | 55A | 57A | 320     |
| 0104 | ON4AMX | JO20KV | 59A | 59A | 30/el20 |
| 0109 | GM4CXM | IO75TW | 59A | 59A | 335     |
| 0127 | G3UTS  | IO94CU | 55A | 55A | 325     |

## 2000-06-08

|      |        |        |     |     |     |
|------|--------|--------|-----|-----|-----|
| 1549 | SM5BSZ | JO89IJ | 57A | 57A |     |
| 1640 | OZ2TF  | JO46PE | 55A | 55A |     |
| 1646 | SM6CLU | JO68SF | 55A | 55A | 0   |
| 1714 | LA6OJ  | JO28VQ | 41A | 52A | 345 |
| 1722 | LA8WF  | JO59GV | 55A | 55A | 345 |
| 1727 | YL3AG  | KO26AW | 59A | 55A |     |
| 1733 | LA3BO  | JO59CD | 59A | 53A | 330 |
| 1758 | OZ1FDH | JO65RH | 55A | 53A | 0   |
| 1958 | DL9MS  | JO54WC | 55A | 55A | 325 |

|      |        |        |     |     |     |
|------|--------|--------|-----|-----|-----|
| 2015 | GD4IOM | IO74QD | 57A | 57A | 325 |
| 2021 | DJ3LE  | JO44TN | 53A | 55A | 310 |

Equipment: 500W, 4 x 7ele. Thanks for report, Steffen.

## DH0GHU (JN38VN) wkd on 144 MHz:

## 2000-07-15

|      |       |        |     |     |     |
|------|-------|--------|-----|-----|-----|
| 1706 | G1SWH | IO83QQ | 57A | 59A | ssb |
| 1708 | G0KPV | JO02OD | 59A | 59A | ssb |
| 1719 | DH4AE | JO51DQ | 51A | 55A |     |

Long periode with no or only weak signals.

|      |        |        |     |     |     |
|------|--------|--------|-----|-----|-----|
| 2100 | PA3FOC | JO21FW | 55A | 55A |     |
| 2105 | G4SWX  | JO02PD | 53A | 55A |     |
| 2110 | DL1EJA | JO31DS | 55A | 55A |     |
| 2117 | DK5DQ  | JO31PH | 55A | 57A |     |
| 2143 | DJ7RI  | JO54CI | 51A | 55A |     |
| 2149 | PE1AHX | JO21OS | 55A | 55A | ssb |

Short after 22 UTC: Short blackout, then much stronger than before.

|      |          |        |     |     |     |
|------|----------|--------|-----|-----|-----|
| 2225 | PB1TT    | JO22HA | 59A | 59A | ssb |
| 2226 | G8VHI    | IO92FM | 59A | 59A | ssb |
| 2237 | PA0PVW   | JO22FP | 59A | 59A | ssb |
| 2240 | DK2AM    | JO43AK | 59A | 59A | ssb |
| 2243 | GW7ORR/p | IO81KW | 59A | 59A | ssb |
| 2248 | PA4VHF   | JO32EH | 59A | 59A | ssb |
| 2257 | G4IVH    | IO92WN | 59A | 57A | ssb |
| 2305 | G4LOH    | IO94IA | 59A | 59A |     |
| 2313 | DL3BUE   | JO72FH | 55A | 59A |     |
| 2324 | G7RAU    | IO90IR | 57A | 59A |     |
| 2327 | DL5ME    | JO52SD | 55A | 55A |     |

Most signals fading out again...not for long time.

## 2000-07-16

|      |        |        |     |     |       |
|------|--------|--------|-----|-----|-------|
| 0024 | DL9MS  | JO54WK | 55A | 57A |       |
| 0031 | G4PBP  | IO82WO | 55A | 59A | ssb   |
| 0033 | GI6ATZ | IO74AJ | 55A | 59A | ssb   |
| 0102 | EI8IP  | IO63NR | 55A | 52A | ssb * |
| 0112 | GM4CXM | IO75TW | 55A | 55A |       |

Remarks: \* 1170km ODX! QTF: Mostly around NNE/NE, no rotor - no indicator sorry... Equipment: 300W, 11el. It was the first time I had usable Aurora here (missed the event at April 06th). Three new squares and MUCH fun. 73, Ulrich. Thanks for report, Ulrich.

## DL1RTL (JO62PH) wkd on 144 MHz in CW:

## 2000-07-15

|      |         |        |     |     |  |
|------|---------|--------|-----|-----|--|
| 1838 | LA8WF   | JO59GV | 52A | 52A |  |
| 2118 | OZ2TF   | JO46PE | 55A | 55A |  |
| 2130 | LY2CI/p | KO15ID | 52A | 55A |  |
| 2136 | PA3FOC  | JO21FW | 55A | 55A |  |
| 2146 | PA3DYS  | JO21JP | 55A | 59A |  |
| 2221 | OE2UKL  | JN67LX | 55A | 59A |  |
| 2221 | I4XCC   | JN63GV | 59A | 57A |  |
| 2231 | OE5KE   | JN78DF | 55A | 57A |  |
| 2238 | G4SWX   | JO02PB | 59A | 59A |  |
| 2244 | LX2DX   | JN49WO | 59A | 59A |  |
| 2250 | LA3BO   | JO59CD | 55A | 55A |  |
| 2255 | F6DWG/p | JN19AJ | 59A | 59A |  |
| 2306 | PA5WT   | JO22HG | 55A | 59A |  |
| 2309 | 9A1CAL  | JN86EL | 55A | 55A |  |
| 2318 | IV3HWT  | JN65ST | 55A | 55A |  |

Hrd: Many DL and PA. Rig: 100 W, 8 ele (DK7ZB), QTF Northeast. Thanks for report, Heiko.

## DL8EBW (JO31NF) wkd on 144 MHz:

## 2000-06-08

|      |       |      |     |     |    |
|------|-------|------|-----|-----|----|
| 1640 | OZ2TF | JO46 | 51A | hrd | 10 |
|------|-------|------|-----|-----|----|

|      |         |      |     |     |     |
|------|---------|------|-----|-----|-----|
| 1644 | SM5BSZ  | JO89 | 55A | hrd | 10  |
| 1928 | OK1YA/p | JN79 | 51A | hrd | 320 |
| 1933 | GD4IOM  | IO74 | 52A | hrd | 320 |
| 1944 | DL9MS   | JO54 | 51A | 31A | 300 |
| 1950 | DK1CO   | JO63 | 55A | hrd | 300 |

It was not the big, expected AU in my area but as I saw from DXC reports it reached down to JN79...

#### 2000-07-14

|            |         |      |      |     |           |
|------------|---------|------|------|-----|-----------|
| 1819       | DK1KO   | JO53 | 52A  | hrd | 315       |
| 1819       | DD0VF   | JO61 | 51A  | hrd | 320       |
| 2000-07-15 |         |      |      |     |           |
| 1946       | 9A2AE   | JN86 | 55A  | 53A | 320       |
| 1955       | PA4VHF  | JO32 | 57A  | 58A | 315       |
| 2053       | DH1NHI  | JO50 | 59A  | 59A | 75        |
| 2056       | DL2FDL  | JO40 | 45A  | 55A | 75        |
| 2059       | HB9QQ   | JN47 | 55A  | 56A | 75        |
| 2100       | DF1CF   | JN57 | 59A  | 55A | 75        |
| 2144       | PE1OPK  | JO23 | 59A  | 59A | 45 ssb    |
| 2146       | G0KFW   | JO02 | 59A  | 59A | 45 ssb    |
| 2149       | DG3GAG  | JN48 | 59A  | 57A | 80 ssb    |
| 2219       | S50C    | JN76 | 59A  | 59A | 75        |
| 2225       | I4XCC   | JN63 | 59A  | 59A | 75        |
| 2235       | I2FAK   | JN45 | 55A  | 55A | 75        |
| 2247       | F9IE    |      | IN86 | 57A | 57A75 ssb |
| 2300       | G3JHM   | IO91 | 59A  | 59A | 45        |
| 2303       | DL5MAE  | JN58 | 59A  | 59A | 70        |
| 2304       | G3BNE   | JO01 | 55A  | 53A | 50        |
| 2306       | HB9FAP  | JN46 | 59A  | 57A | 70 ssb    |
| 2310       | DL1EAP  | JO31 | 59A  | 59A | 80 ssb    |
| 2317       | DL3BUE  | JO72 | 59A  | 58A | 80        |
| 2323       | G4ZFFJ  | JO01 | 59A  | 57A | 50        |
| 2325       | G3KWJ   | IO92 | 55A  | 55A | 25        |
| 2326       | G3XVR   | IO91 | 55A  | 57A | 25        |
| 2325       | G3KWJ   | IO92 | 55A  | 55A | 25        |
| 2328       | DM2AQI  | JO51 | 57A  | 59A | 40        |
| 2329       | DL9MS   | JO54 | 57A  | 55A | 60        |
| 2330       | DL8LAQ  | JO43 | 55A  | 52A | 60        |
| 2331       | DJ0JZ   | JO31 | 59A  | 59A | 60        |
| 2339       | DK9OY   | JO52 | 59A  | 55A | 50        |
| 0006       | GM0CLN  | IO85 | 57A  | 52A | 20        |
| 0011       | G4LOH   | IO94 | 59A  | 59A | 20 ssb    |
| 0016       | GI6ATZ  | IO74 | 55A  | 55A | 20 ssb    |
| 0022       | YL3AG   | KO26 | 55A  | 55A | 10        |
| 0033       | EI8IP   |      | IO63 | 59A | 59A20 ssb |
| 0039       | EI3GE   | IO63 | 59A  | 59A | 30 ssb    |
| 0047       | LY3MR   | KO24 | 55A  | 57A | 30        |
| 0052       | DG6JF/p | JO33 | 59A  | 59A | 45 ssb    |
| 0106       | SP2BOF  | JO94 | 55A  | 55A | 45        |

Also heard stations from: IO62, JO03, 20, 21, 22, 30, 41, 42, 44, 45, 46, 53, JO60, 61, 62, 64, 65, 81, JN04, 26, 27, 28, 29, 35, 38, 49, 59, 89, KO13, 15. Was QRV from up 1945 UTC and missed the afternoon opening due to family-business... Was one of the biggest openings since the great storms in 89 and 91, but the possibilities QTF east was much worse than these times - max west was EI (IO63) and max east was KO24/26! At last I heard RU1AA (KP40) in a mix of AU/AE! Let's see what will be the next surprise...

#### 2000-08-12

|      |         |      |     |     |        |
|------|---------|------|-----|-----|--------|
| 0310 | SM5FRH  | JO88 | 59A | 55A | 30 ssb |
| 0535 | GM4YXI  | IO87 | 59A | 57A | 30 ssb |
| 0750 | LA0BY/p | JP30 | 52A | 53A | 0      |
| 0751 | LA3BO   | JO59 | 57A | 55A | 0      |

|      |          |      |     |     |    |
|------|----------|------|-----|-----|----|
| 1529 | SP1NQN   | JO84 | 55A | 55A | 40 |
| 1548 | G3KWY    | IO92 | 55A | 55A | 40 |
| 1549 | G4YTL    | IO92 | 59A | 59A | 40 |
| 1550 | UA1WCF   | KO55 | 55A | 58A | 40 |
| 1604 | DH8BQA   | JO73 | 55A | 53A | 40 |
| 1632 | SP1MVG   | JO73 | 55A | 55A | 40 |
| 1637 | SM7TJC   | JO67 | 55A | 53A | 30 |
| 1640 | DL9MS    | JO54 | 59A | 59A | 30 |
| 1701 | RA3DRC/1 | KO55 | 55A | 55A | 30 |
| 1726 | G4AJC    | IO91 | 52A | 53A | 30 |
| 1730 | GM0CLN   | IO85 | 55A | 53A | 30 |
| 1738 | SM6HBI   | JO58 | 55A | 57A | 30 |
| 1748 | YL2BAW   | KO25 | 55A | 55A | 30 |
| 1852 | SM0NKZ   | JO99 | 55A | 55A | 30 |

A nice aurora but it happens on a bad time - the Perseids maximum! SM5FRH blocked the SSB calling qrg for more than 3 hours with his cracking aurora signal... lets hope the next good shower will show up outside the ms-shower again, hi! Equipment: FT726R (CF300), 11 el. DL6WU, GU74b. Thanks for report, Guido.

#### DL8LAQ (JO43XU) wkd on 144 MHz:

2000-06-26

|      |        |        |     |     |
|------|--------|--------|-----|-----|
| 1702 | SM3JGG | JP71TJ | 41A | 55A |
| 1707 | OH2KW  | KP20IJ | 51A | 53A |
| 1724 | SM6HBI | JO58RF | 52A | 57A |
| 1752 | SM4IVE | JO79SD | 57A | 59A |

#### 2000-07-15

|      |          |        |     |     |
|------|----------|--------|-----|-----|
| 1804 | G4SIV/P  | JO03CE | 57A | 55A |
| 2143 | OK1DUG/P | JO60VR | 58A | 55A |
| 2147 | I4XCC    | JN63GV | 57A | 57A |
| 2149 | 9A2KK    | JN85OV | 59A | 55A |
| 2150 | HA6NQ    | JN98WA | 57A | 57A |
| 2152 | HA8CG    | KN06EN | 55A | 55A |
| 2155 | 9A1CCY   | JN85PO | 57A | 55A |
| 2157 | YU7EW    | KN05HP | 54A | 41A |
| 2200 | 9A1CAL   | JN86EL | 55A | 51A |
| 2202 | 9A1CMS   | JN86FM | 55A | 52A |
| 2205 | OK1AMI   | JO70WA | 57A | 42A |
| 2206 | OE3BCA   | JN87CX | 53A | 52A |
| 2207 | OK2BEJ   | JN79SJ | 55A | 53A |
| 2209 | DJ2GM    | JN58SC | 58A | 53A |
| 2210 | OE2UBL   |        | 51A | nc  |
| 2213 | HB9DFG   | JN37SM | 55A | 52A |
| 2213 | YU1EV    | KN04CN | 57A | 52A |
| 2215 | OK1AID   | JO80EO | 59A | 41A |
| 2227 | 9A2SB    | JN95GM | 59A | 56A |
| 2232 | UR5BAE   | KN29SN | 56A | 52A |
| 2234 | YU7EW    | KN05HP | 59A | 57A |
| 2236 | YU7ON    | KN04AX | 57A | 52A |
| 2239 | HA5CW    | JN97PM | 59A | 52A |
| 2240 | S54G     | JN65TM | 57A | 57A |
| 2242 | OM5KM    | JN98AH | 59A | 51A |
| 2245 | SP3TYF   | JO82FH | 59A | 55A |
| 2245 | OK1AKF   | JO70EB | 59A | 59A |
| 2247 | OK2POI   | JN99BL | 59A | 58A |
| 2249 | DL6RAI   | JN58UD | 55A | 51A |
| 2251 | OM7AQ    | JN98UI | 54A | 51A |
| 2252 | OM3KME   | JN88UU | 57A | 53A |
| 2257 | T94DU    | JN95DA | 55A | 51A |
| 2258 | SQ9HYM   | JN99MT | 55A | 54A |
| 2301 | 9A2RD    | JN65TF | 55A | 55A |
| 2303 | HA1VQ    | JN87GJ | 59A | 53A |
| 2304 | IV3HWT   | JN65ST | 56A | 57A |

|      |        |        |     |     |
|------|--------|--------|-----|-----|
| 2305 | YT1VV  | JN94UU | 57A | 51A |
| 2308 | OK2YT  | JN88IW | 57A | 54A |
| 2323 | S50C   | JN76JG | 59A | 59A |
| 2330 | DL8EBW | JO31NF | 55A | 52A |
| 2332 | OE2UKL | JN67LX | 57A | 53A |
| 2336 | HB9FAP | JN46EW | 59A | 57A |
| 2354 | RW3PF  | KO93CD | 59A | 55A |

**2000-07-16**

|      |         |        |     |     |     |
|------|---------|--------|-----|-----|-----|
| 0001 | LY3OD   | KO24OR | 55A | 51A |     |
| 0009 | DL2NFX  | JN59IV | 59A | 51A |     |
| 0010 | DL2FDL  | JO40LN | 55A | 51A |     |
| 0010 | SP2RS   | JO94GK | 55A | 52A |     |
| 0014 | DL3IAS  | JN49EO | 53A | 51A |     |
| 0015 | HA1YA   | JN87GF | 57A | 53A |     |
| 0015 | OE3BCA  | JN87CX | 56A | 54A |     |
| 0017 | OM4CW/P | JN88UN | 59A | 41A |     |
| 0020 | OE3JPC  | JN87EW | 55A | 55A |     |
| 0022 | OM5LD/P | KN09CE | 55A | 41A |     |
| 0023 | S52OOO  | JN76TO | 55A | 55A |     |
| 0025 | OK2RX   | JN89IE | 56A | 51A |     |
| 0026 | G3XVR   | IO91LC | 57A | 51A |     |
| 0027 | OK2FWY  | JN89KW | 55A | 53A |     |
| 0030 | DH3YAV  | JO42FG | 59A | 52A |     |
| 0033 | G0FYD   | IO83LS | 57A | 53A |     |
| 0035 | DL1MAJ  | JN68AH | 55A | 52A |     |
| 0036 | DL6ZBN  | JO40FE | 53A | 51A |     |
| 0038 | HA6PX   | JN98WD | 53A | 51A |     |
| 0040 | PB2JJ   | JO22HD | 57A | 57A |     |
| 0041 | PA3DXV  | JO21WA | 59A | 59A |     |
| 0042 | I2FAK   | JN45OB | 53A | 53A |     |
| 0043 | OK2PM   | JN99AO | 59A | 57A |     |
| 0045 | DL5??   | JN68BN | 53A | 41A | nc  |
| 0047 | OM2TW   | JN88UG | 55A | 52A |     |
| 0049 | I4RHP   | JN54QL | 55A | 55A | ssb |
| 0057 | DM1CG   | JO31IC | 57A | 57A | ssb |
| 0104 | LY2CI/P | KO15ID | 59A | 55A |     |
| 0109 | G8VHI   | IO92FN | 59A | 57A | ssb |
| 0117 | PA4VHF  | JO32EH | 58A | 55A |     |
| 0118 | SP2RS   | JO94GK | 55A | 52A |     |
| 0126 | GI6ATZ  | IO74AJ | 59A | 55A | ssb |
| 0128 | EI8IP   | IO63NR | 55A | 55A | ssb |

Remarks: \* Many disturbing '??' from other OM. If I hear a QSO and don't know the callsigns, then I wait a minute and listen carefully. Am I the only one? Equipment: 350W and 17 ele F9FT. And yes, I should write down QTF/QTFR, sorry... 73, Norbert.

**F6KUP/p (JN29PD) wkd on 144 MHz:****2000-07-15**

|      |         |      |     |     |      |
|------|---------|------|-----|-----|------|
| 1640 | GM4OGI  | IO85 | 56A | 52A |      |
| 1706 | F9IE    | IN86 | 55A | 55A | 55A  |
| 1708 | G0KPW   | JO02 | 59A | 55A |      |
| 1715 | G4LOH   | IO94 | 59A | 55A |      |
| 1808 | MM0BQM  | IO85 | 59A | 59A |      |
| 1813 | GM0CLN  | IO85 | 55A | 51A |      |
| 1818 | GM4CXM  | IO75 | 55A | 55A | odx! |
| 1836 | G4SIV/P | JO03 | 55A | 55A |      |
| 2015 | DL1EJA  | JO31 | 55A | 55A |      |
| 2057 | DF7KF   | JO30 | 56A | 55A |      |
| 2141 | DK1KO   | JO53 | 59A | 55A |      |
| 2221 | PA0PVW  | JO22 | 59A | 59A |      |
| 2224 | G8VHI   | IO92 | 57A | 55A |      |
| 2225 | DB8KJ   | JO30 | 59A | 59A |      |
| 2236 | GI6ATZ  | IO74 | 59A | 59A |      |

|      |          |      |     |      |
|------|----------|------|-----|------|
| 2239 | PE1OPK   | JO23 | 59A | 59A  |
| 2240 | PE1KLO   | JO33 | 59A | 55A  |
| 2242 | GW7ORR/p | IO81 | 59A | 59A  |
| 2248 | DH1AE    | JO51 | 59A | 59A  |
| 2250 | DH5HV    | JO31 | 59A | 59A  |
| 2310 | G3LTF    | IO91 | 59A | 58A  |
| 2318 | GW7SMV   | IO81 | 59A | 59A  |
| 2330 | G4PBP    | IO82 | 59A | 57A  |
| 2340 | DJ0ZI    | JO31 | 59A | 559A |

**2000-07-16**

|      |         |      |      |         |
|------|---------|------|------|---------|
| 0034 | DG6JF/p | JO33 | 59A  | 59A     |
| 0042 | DK9OY   | JO52 | 57A  | 55A     |
| 0044 | G0NNF   | IO92 | 59A  | 53A     |
| 0046 | EI8IP   |      | IO63 | 59A 59A |
| 0052 | OZ1FF   | JO45 | 59A  | 59A     |
| 0054 | DK1CO   | JO63 | 59A  | 59A     |
| 0125 | OK1CTZ  | JO46 | 55A  | 51A     |

So it was what I was able to work time to time. My ant was 25-35 QTF without any elevation. Thanks to all people who answered. So I miss a lot of other interesting DX like IO76-86 IP90 SM7WT JO65 SM4XXX JO89 JO87 LY2BIL OZ1HLD OZ1CLL JO75... So hope for next aurora I'll be around here at my home QTH. It was the 2nd aurora I have luck to work and the strongest hope another earlier. I planned to be QRV on 70cm also in contest, but my friend missed the 70cm antenna. So I thought I could work some 1st french-xx on 70cm. I hope for next time. My rig was 15W with a 9 elements because it was french qrp contest hi, so enjoying Aurora with low power! Thanks for report, Oli.

**G4ASR (IO81MX) wkd on 144 MHz:****2000-06-08**

|      |        |        |     |            |
|------|--------|--------|-----|------------|
| 1609 | GM0CLN | IO85HV | 53A | 53A        |
| 1626 | MM0BQI | IO85KX | 53A | 55A        |
| 1628 | GI4OWA | IO64IX | 53A | 57A        |
| 1650 | GM3WOJ | IO77WS | 59A | 59A        |
| 1704 | GM0PWS | IO68UG | 59A | 59A ssb    |
| 1740 | YL3AG  | KO26WA | 53A | 53A 1820km |
| 1835 | GM4ILS | IO87IP | 53A | 55A        |
| 1840 | GM1XOI | IO85AT | 55A | 57A        |
| 1852 | GM4BYF | IO85JV | 54A | 55A        |

FT221Gti + Henry 2002 + 18-el DL6WU Yagi. Thanks for report, David.

**G4RGK (IO91ON) wkd on 432 MHz:****2000-07-15**

|      |        |        |     |            |
|------|--------|--------|-----|------------|
| 2242 | DK8VS  | JN39NF | 57A | 57A        |
| 2248 | 9A2SB  | JN95GM | 55A | 57A 1571km |
| 2251 | OE3JPC | JN87EW | 55A | 57A 1298km |

QTF for all contacts was 70 degrees, 15 degrees elevation. I only had propagation for about 20 minutes on 432. There was a visual Aurora overhead at the time. Rig: 8 x 27el BV yagis, openwire feed, 0.4db NF, K2RIW. Thanks for report, Dave.

**I4XCC (JN63GV) wkd on 144 MHz:****2000-07-15**

|      |         |        |     |         |
|------|---------|--------|-----|---------|
| 2047 | DK1KO   | JO53CT | 55A | 55A     |
| 2103 | DL3BUE  | JO72FH | 55A | 55A     |
| 2116 | G4SWX   | JO02PB | 55A | 55A     |
| 2145 | DK9OY   | JO52CK | 57A | 57A     |
| 2150 | DL8LAQ  | JO43XU | 57A | 57A     |
| 2151 | DJ4TC   | JO63   | 55A | 54A     |
| 2156 | PA3CEE  | JO33JI | 57A | 59A     |
| 2202 | PA9KT   | JO33JO | 55A | 55A     |
| 2206 | G4LOH   | IO94IA | 55A | 57A     |
| 2220 | PA3FOC  | JO21FW | 57A | 57A     |
| 2221 | DL1UU   | JO62SP | 59A | 59A     |
| 2222 | DL1GSJ  | JO43WN | 55A | 55A     |
| 2223 | DD0VF   | JO61WB | 57A | 59A     |
| 2224 | DL1RTL  | JO62PH | 57A | 59A     |
| 2225 | DL8EBW  | JO31NF | 56A | 59A     |
| 2227 | PE1LCH  | JO23WF | 59A | 59A     |
| 2228 | PA3BZL  | JO22HA | 59A | 59A     |
| 2228 | DH7FB   | JO62SM | 59A | 59A     |
| 2229 | DF7KF   | JO30GU | 57A | 59A     |
| 2231 | DL3ZBA  | JO41RF | 55A | 55A     |
| 2232 | DF1HF   | JO43VL | 57A | 57A     |
| 2233 | DK2AM   | JO43AK | 57A | 57A     |
| 2234 | DD3SP   | JO72EN | 57A | 59A     |
| 2241 | DL2ROM  | JO62RI | 57A | 57A     |
| 2243 | DL1EJA  | JO31DS | 59A | 59A     |
| 2245 | PA3DZL  | JO21HM | 57A | 57A     |
| 2248 | DL9MS   | JO54WC | 57A | 57A     |
| 2257 | DL6UAL  | JO61XU | 57A | 57A     |
| 2301 | PA5WT   | JO22HG | 59A | 59A     |
| 2302 | ON4AMX  | JO20KV | 55A | 55A     |
| 2304 | PA3ECU  | JO32DK | 59A | 59A     |
| 2308 | DB8WJ   | JO33TH | 55A | 55A ssb |
| 2314 | G0KPW   | JO02OD | 59A | 59A     |
| 2328 | DL3SWS  | JO53SG | 55A | 55A     |
| 2329 | DK3XM   | JO43XL | 59A | 59A     |
| 2330 | DK6XY   | JO53KV | 57A | 56A     |
| 2334 | G4SIV/P | JO03CE | 55A | 57A     |
| 2341 | DL4HG   | JO53CM | 55A | 55A     |
| 0033 | DL1SUN  | JO53PN | 57A | 57A     |

**2000-08-12**

|      |          |        |     |     |
|------|----------|--------|-----|-----|
| 1507 | DK1CO    | JO63SX | 55A | 55A |
| 1514 | DJ4TC    | JO63PN | 57A | 57A |
| 1517 | DH8BQA/P | JO73CF | 56A | 56A |
| 1529 | DK3BU    | JO33NO | 56A | 57A |
| 1538 | PA3CEE   | JO33JI | 53A | 53A |
| 1554 | DL9MS    | JO54WC | 57A | 57A |

Thanks for report, Claudio.

**LA0BY/p in JO59FV wkd on 144 MHz:****2000-06-08**

|      |        |        |     |     |    |
|------|--------|--------|-----|-----|----|
| 1515 | DK3WG  | JO72GL | 56A | 57A | 20 |
| 1517 | LY2IC  | KO14WW | 55A | 57A | 20 |
| 1520 | SM3UFL | JP80HP | 52A | 55A | 20 |
| 1521 | DL1SUN | JO53PN | 57A | 57A | 20 |
| 1522 | DL7ULM | JO62SN | 53A | 55A | 20 |
| 1525 | DK9OY  | JO52CK | 57A | 53A | 20 |
| 1526 | LY2SA  | KO14LL | 56A | 57A | 20 |
| 1527 | DJ4TC  | JO63PN | 57A | 58A | 20 |
| 1530 | ES4EQ  | KO39CE | 55A | 55A | 20 |
| 1534 | OH1NC  | KP10KW | 55A | 55A | 20 |
| 1536 | DL3BUE | JO72FH | 53A | 55A | 20 |
| 1539 | OH3BYZ | KP21TT | 53A | 55A | 20 |

|      |        |        |     |     |       |
|------|--------|--------|-----|-----|-------|
| 1542 | DL1RNW | JO62HB | 53A | 55A | 20    |
| 1544 | ES5AAM | KO38GR | 58A | 55A | 20ssb |
| 1546 | ES1MM  | KO29KK | 55A | 55A | 20ssb |
| 1549 | SP2FNC | JO94HI | 54A | 52A | 20ssb |
| 1551 | OH2KWR | KO19MU | 57A | 59A | 20ssb |
| 1554 | DL3NUA | JO64XB | 56A | 57A | 20ssb |
| 1555 | DG0KW  | JO64MH | 59A | 59A | 20ssb |
| 1557 | SM3VEE | JP81VI | 55A | 55A | 20ssb |

Break due to family demands, hi...

|      |        |        |     |     |     |
|------|--------|--------|-----|-----|-----|
| 1754 | YL2KA  | KO26AX | 55A | 57A | 20  |
| 1756 | DK0TU  | JO62PM | 59A | 59A | 10  |
| 1807 | DK3XM  | JO43XL | 59A | 55A | 10  |
| 1808 | DK2YCT | JO32RG | 52A | 55A | 350 |
| 1812 | DL1EJA | JO31DS | 56A | 55A | 350 |
| 1814 | DK5JM  | JO43QS | 57A | 57A | 10  |
| 1816 | DL2BRW | JO72GI | 42A | 53A | 10  |
| 1819 | DL9OE  | JO52GL | 53A | 54A | 10  |
| 1828 | PA3CEE | JO33JI | 55A | 55A | 340 |
| 1835 | LA4YGA | JO48AE | 59A | 59A | 340 |
| 1849 | SP1NON | JO84ML | 55A | 55A | 0   |
| 1850 | DL5LBQ | JO44MM | 52A | 55A | 0   |

**2000-07-15**

|      |            |        |         |     |          |
|------|------------|--------|---------|-----|----------|
| 1422 | SM0NKZ     | JO99IQ | 53A     | 53A | 0        |
| 1424 | LA/DK5WO/p | JO37NX | 53A55A0 |     |          |
| 1430 | OH5LK      | KP30ON | 52A     | 52A | 350      |
| 1434 | ES1RF/3    | KO29IF | 52A     | 55A | 0        |
| 1436 | DK1CO      | JO63SX | 55A     | 59A | 0        |
| 1444 | DL7VTX     | JO62TM | 52A     | 55A | 10       |
| 1445 | DH2UAI     | JO72HD | 55A     | 55A | 10       |
| 1446 | DD3SP      | JO72EN | 53A     | 55A | 20       |
| 1508 | DL9GS      | JO31OM | 53A     | 53A | 330      |
| 1516 | GM4OGI     | IO85DX | 55A     | 55A | 350 ssb  |
| 1519 | G4LOH      | IO94IA | 57A     | 57A | 330 ssb  |
| 1526 | DL6YEH/p   | JO31QX | 54A     | 57A | 350      |
| 1602 | DJ1JD      | JO52CK | 56A     | 56A | 350      |
| 1610 | SP2FAX     | JO83VA | 59A     | 59A | 350      |
| 1618 | ES0HD      | KO18FF | 55A     | 57A | 350      |
| 1620 | PA3CNX     | JO22MC | 55A     | 55A | 350      |
| 1621 | DF5JJ      | JO43XO | 56A     | 59A | 350      |
| 1624 | G4SIV/p    | JO03CE | 55A     | 57A | 350      |
| 1626 | DJ3XK      | JO53AN | 55A     | 56A | 0        |
| 1627 | DH2OAA     | JO42TU | 55A     | 55A | 0        |
| 1629 | DK2YCT     | JO32RG | 54A     | 55A | 340      |
| 2119 | SM6CMU/3   | JP62PD | 54A     | 57A | 350      |
| 2135 | ES1DW      | KO29JK | 52A     | 55A | 0        |
| 2204 | LY2FR      | KO15VR | 54A     | 57A | 30       |
| 2206 | LY3OD      | KO24OR | 54A     | 55A | 30       |
| 2210 | LY2CI/A    | KO25ID | 52A     | 57A | 30       |
| 2240 | OK5ACR     | JO60XN | 52A     | 53A | 30ssb    |
| 2313 | SP2BOF     | JO94FM | 55A     | 55A | 30       |
| 2320 | SM5EJN     | JO89JB | 53A     | 55A | 0        |
| 2322 | GM4ILS     | IO87IP | 53A     | 55A | 350      |
| 2324 | OH1XT      | KP01UK | 59A     | 59A | 350      |
| 2335 | YL3AG      | KO26AW | 59A     | 59A | 0        |
| 2342 | ES1DW      | KO29JK | 54A     | 55A | 0        |
| 2345 | OK1DUG/p   | JO60VR | 57A     | 57A | 20       |
| 2346 | OK1FPQ/p   | JO60VR | 57A     | 59A | 20       |
| 2347 | SP2CNW     | JO93BG | 54A     | 55A | 20       |
| 2353 | SP8UFT     | KO11JI | 53A     | 55A | 301219km |
| 2354 | DL9GRE     | JO64PA | 53A     | 55A | 30       |
| 2356 | DL4KUG     | JO64PB | 56A     | 55A | 30       |
| 2357 | DL3SWS     | JO53SG | 55A     | 55A | 30       |
| 2359 | SP6GVU     | JO81LC | 53A     | 53A | 30       |

## 2000-07-16

|      |          |        |     |     |       |
|------|----------|--------|-----|-----|-------|
| 0003 | DL2ARD   | JO60AR | 55A | 55A | 30    |
| 0013 | OM5LD/p  | KN09CE | 52A | 55A | 30    |
| 0014 | OM5CM/p  | KN09CE | 52A | 57A | 30    |
| 0045 | SP7DCS/7 | JO91MN | 56A | 57A | 30    |
| 0050 | DL0UB    | JO62KK | 54A | hrd | 30bcn |

AMEGA-Aurora is not always much fun up in the North! Signals are often weak, the reflection areas come and go and sometimes there are different reflection areas for the same station. It is generally not easy to work stations further away than 1100 km. The situation became more stable after 2330 UTC.

## 2000-07-28

|      |          |        |     |     |         |
|------|----------|--------|-----|-----|---------|
| 1543 | G4LOH    | IO94IA | 57A | 56A | 0       |
| 1615 | LY2SA    | KO14LL | 56A | 59A | 20      |
| 1616 | SP2RS    | JO94GK | 53A | 53A | 30      |
| 1618 | ES6DO    | KO28WA | 55A | 59A | 30      |
| 1619 | ES1RF/3  | KO29IF | 57A | 59A | 30      |
| 1620 | DL5WG    | JO52VK | 54A | 57A | 30      |
| 1621 | DL7FD    | JO62SO | 53A | 55A | 30      |
| 1623 | LY2IC    | KO14WW | 56A | 59A | 30      |
| 1625 | DK2YCT   | JO32RG | 54A | 55A | 20      |
| 1629 | ES2D     | KO19UG | 57A | 53A | 20      |
| 1631 | ES0Q     | KO07XX | 57A | 57A | 20      |
| 1634 | ES8A     | KO28FD | 57A | 55A | 20      |
| 1637 | DG0RG    | JO62JV | 59A | 59A | 20ssb   |
| 1641 | ES8X     | KO18XC | 59A | 59A | 20      |
| 1643 | DL7VTX   | JO62TM | 52A | 57A | 20      |
| 1645 | DH2UAI   | JO72HD | 56A | 57A | 20      |
| 1646 | DK1GS    | JO54LH | 54A | 56A | 20      |
| 1648 | DL3DXX   | JO61VC | 54A | 55A | 20      |
| 1650 | DK0TU    | JO62PM | 59A | 59A | 20      |
| 1659 | G0KZG/mm | IO69RL | 55A | 55A | 340 ssb |
| 1707 | DL6BF    | JO32QI | 58A | 57A | 340     |
| 1709 | DL8UD    | JO44SK | 59A | 59A | 0       |
| 1710 | G4SWX    | JO02PB | 56A | 55A | 330     |
| 1712 | PA5DD    | JO22IC | 57A | 55A | 330     |
| 1713 | DK1YY/p  | JO44WS | 56A | 55A | 330     |
| 1724 | SM7FMX   | JO65KN | 56A | 55A | 340 ssb |
| 1729 | DL1EJA   | JO31DS | 59A | 59A | 320     |
| 1732 | DK1YBT   | JO32BD | 52A | 55A | 320     |
| 1733 | DH8BQA/p | JO74AA | 59A | 59A | 340     |
| 1742 | YL2MD/A  | KO07AC | 56A | 59A | 10      |
| 1745 | DK1KO    | JO53CT | 59A | 57A | 320     |
| 1746 | DL6YCY   | JO41CU | 57A | 55A | 320     |
| 1755 | DK1CO    | JO63SX | 59A | 59A | 330     |
| 1801 | OK1DUG/p | JO60VR | 55A | 55A | 0       |
| 1809 | PA7KY    | JO32LR | 55A | 55A | 320     |

## 2000-08-01 (from JO59IX)

|      |          |        |     |     |       |
|------|----------|--------|-----|-----|-------|
| 1701 | SM0NKZ   | JO99IQ | 55A | 57A | 30    |
| 1704 | OH2BNH   | KP20LG | 54A | 55A | 30    |
| 1706 | SM1FMT   | JO97FS | 55A | 53A | 30    |
| 1712 | OH5LK    | KP30ON | 55A | 55A | 20    |
| 1713 | SK4KO    | JP70JX | 57A | 56A | 20    |
| 1715 | 8S4A     | JP71CC | 57A | 57A | 20    |
| 1719 | OH3TR    | KP11VK | 55A | 55A | 20    |
| 1722 | SM4JHF   | JP70OC | 55A | 55A | 20    |
| 1725 | DL9MS    | JO54WC | 59A | 55A | 20ssb |
| 1733 | SM1HOW   | JO97GL | 54A | 55A | 20    |
| 1735 | SM6CLU/6 | JO68TD | 54A | 57A | 20    |
| 1737 | SM5KNV   | JO88MW | 55A | 55A | 20    |
| 1741 | SM6FBQ   | JO67BQ | 55A | 55A | 20    |
| 1742 | SK7C     | JO86FJ | 55A | 59A | 20    |

|      |       |        |     |     |    |
|------|-------|--------|-----|-----|----|
| 1745 | DL4EM | JO63SQ | 54A | 55A | 20 |
| 1747 | SK4BX | JO79OF | 57A | 57A | 20 |
| 1749 | SK6HD | JO68SD | 55A | 55A | 20 |
| 1751 | SK7IJ | JO77MH | 55A | 52A | 20 |

## 2000-08-11 (from JP30SI)

|      |           |        |     |          |   |
|------|-----------|--------|-----|----------|---|
| 1605 | DH8BQA/p  | JO73CF | 57A | 55A      | 0 |
| 1606 | LA8AJA    | JP50HQ | 57A | 57A      |   |
| 1607 | SM3UFF    | JP80HP | 56A | 55A      |   |
| 1608 | DL3BQA    | JO73CF | 59A | 53A      |   |
| 1609 | SK7MW     | JO65MJ | 59A | 57A      |   |
| 1611 | LA5FHA    | JP50EV | 56A | 57A      |   |
| 1613 | DL9MS     | JO54WC | 59A | 57A      |   |
| 1615 | LA8WF     | JO59GV | 57A | 55A      |   |
| 1619 | SM3AKW    | JP92AO | 54A | 33A      |   |
| 1623 | SM0FZH    | JO99HI | 59A | 55A      |   |
| 1627 | G4LOH     | IO94IA | 57A | 55A 0°   |   |
| 1631 | DL1SUN    | JO53PN | 53A | 54A      |   |
| 1635 | SK6HD     | JO68SD | 53A | 53A      |   |
| 1738 | GM4ILS    | IO87IP | 52A | 52A 350° |   |
| 1753 | SM0KAK    | JO89XK | 53A | 52A      |   |
| 2158 | OH5LK     | KP30ON | 57A | 56A 0°   |   |
| 2201 | DK3BU     | JO33NO | 59A | 59A      |   |
| 2202 | PA3BIY    | JO22EB | 52A | 52A      |   |
| 2203 | SM7WT     | JO65QQ | 57A | 59A      |   |
| 2204 | DL5BBW    | JO32NH | 55A | 55A      |   |
| 2206 | DL8UD     | JO44SK | 59A | 59A      |   |
| 2207 | SM6EAN    | JO57WQ | 57A | 57A      |   |
| 2209 | DK5DQ     | JO31PG | 57A | 57A      |   |
| 2210 | PA3CEE    | JO33JI | 59A | 59A      |   |
| 2211 | PA3BGM    | JO33CE | 57A | 55A      |   |
| 2213 | PE9DX     | JO33MD | 59A | 59A      |   |
| 2214 | OH1XT     | KP01UK | 59A | 59A      |   |
| 2214 | DF0WD     | JO42FD | 57A | 57A      |   |
| 2216 | G0KPW     | JO02OD | 59A | 59A      |   |
| 2217 | SM3UZS    | JP92EW | 57A | 57A      |   |
| 2218 | SM4HFI    | JP70TO | 57A | 57A      |   |
| 2220 | GM0GMD    | IO86AE | 57A | 59A      |   |
| 2222 | DL1BEY    | JO33RJ | 57A | 59A      |   |
| 2223 | G0FYD     | IO83IO | 54A | 53A      |   |
| 2225 | LA8KV     | JP52QQ | 53A | 53A      |   |
| 2227 | G0PES     | IO83LS | 56A | 55A      |   |
| 2229 | PA3CEG    | JO33FB | 55A | 55A      |   |
| 2230 | G0RUZ     | IO93FR | 55A | 53A      |   |
| 2235 | OH0/DL1UU | KP00AC | 57A | 59A 10°  |   |
| 2240 | SM4WHF    | JP70OC | 55A | 55A      |   |
| 2242 | GM4YXI    | IO87WJ | 59A | 59A      |   |
| 2243 | SM5EFP    | JO79WJ | 56A | 57A      |   |
| 2247 | OH1LTU    | KP01TB | 54A | 55A 20°  |   |
| 2253 | ES2NA     | KO29JL | 55A | 57A 30°  |   |
| 2255 | SK4AO     | JP70TO | 59A | 59A      |   |

## 2000-08-12 (still JP30SI)

|      |        |        |     |         |  |
|------|--------|--------|-----|---------|--|
| 0305 | OH1LT  | KP00XO | 55A | 55A 10° |  |
| 0307 | DL5ME  | JO52SD | 59A | 55A     |  |
| 0309 | PA3DOL | JO22MT | 59A | 59A     |  |
| 0310 | DK3XM  | JO43XL | 57A | 59A     |  |
| 0311 | DL1SUZ | JO53UN | 59A | 59A     |  |
| 0313 | F6IFR  | JN09TT | 56A | 55A     |  |
| 0314 | PA5DD  | JO22IC | 55A | 55A     |  |
| 0318 | DL1EJA | JO31DS | 59A | 57A     |  |
| 0319 | PA2DWH | JO22GD | 55A | 53A     |  |
| 0321 | DK3WG  | JO72GI | 59A | 59A     |  |
| 0322 | DL6YCY | JO41CU | 55A | 51A     |  |
| 0323 | LY1DQ  | KO25RF | 59A | 59A 30° |  |
| 0326 | LY2SA  | KO14LL | 59A | 59A     |  |

|      |        |        |     |                  |      |          |        |     |             |
|------|--------|--------|-----|------------------|------|----------|--------|-----|-------------|
| 0327 | DL5WG  | JO52VK | 57A | 59A              | 0722 | DK3FW    | JO42VG | 57A | 57A         |
| 0328 | DL1EAP | JO31CC | 59A | 59A              | 0723 | PA1LA    | JO32BM | 55A | 55A 20°     |
| 0329 | PA2DWH | JO22GD | 59A | 57A              | 0724 | DL8GP    | JN39LH | 55A | 57A         |
| 0331 | PE1HWO | JO21GV | 59A | 59A              | 0725 | RU1AA    | KP40XD | 59A | 59A         |
| 0332 | DL4ABJ | JO42XP | 57A | 59A              | 0727 | ES1MW    | KO29HI | 55A | 55A         |
| 0334 | DJ9CZ  | JO31BC | 57A | 55A              | 0728 | DH7FB    | JO62SM | 59A | 59A         |
| 0335 | LY2MW  | KO24PQ | 59A | 59A              | 0730 | DK5LA    | JO44TR | 59A | 59A         |
| 0337 | OH6MAZ | KP21IG | 59A | 59A              | 0733 | RA3DRG/1 | KO55JR | 55A | 55A 1453km  |
| 0338 | DL8CMM | JO52VM | 59A | 59A              | 0735 | SP4MPB   | KO03GS | 59A | 57A         |
| 0339 | OH6PA  | KP02PL | 56A | 59A              | 0735 | PA9KT    | JO33JF | 59A | 59A         |
| 0343 | DF7KF  | JO30GU | 59A | 54A              | 0737 | DK3RA    | JO53LU | 59A | 59A         |
| 0345 | ON6NL  | JO21UE | 56A | 55A              | 0740 | DL0SE    | JO31PG | 59A | 59A         |
| 0346 | UA3MBJ | KO88SA | 57A | 57A 30°          | 0741 | DL2AN    | JO44PS | 59A | 55A         |
| 0347 | DL6UAL | JO61XU | 57A | 56A              | 0744 | SM0BSB   | JO99   | 52A | 52A         |
| 0348 | DL2ARD | JO60AR | 56A | 57A              | 0745 | PA2CHR   | JO22XA | 59A | 55A         |
| 0349 | OK1YA  | JN79IO | 55A | 55A              | 0746 | DL7BU    | JO51UT | 55A | 55A         |
| 0350 | ES2WX  | KO29JN | 59A | 59A              | 0747 | DF5LQ    | JO44XK | 57A | 59A         |
| 0351 | OK1MAC | JN79IO | 55A | 55A              | 0748 | DL7UDA   | JO72TK | 59A | 59A         |
| 0352 | DL6BF  | JO32QI | 59A | 59A              | 0749 | DL8EBW   | JO31NF | 53A | 53A         |
| 0353 | RA3IG  | KO87OT | 55A | 53A 40°          | 1510 | SQ1FTB   | JO73VT | 59A | 55A ssb     |
| 0355 | OH3OZ  | KP20JR | 59A | 59A              | 1514 | DG0RG    | JO62JV | 59A | 59A ssb     |
| 0357 | ON4AMX | JO20KV | 55A | 55A              | 1516 | DG5BD    | JO43HM | 57A | 54A         |
| 0359 | DK1GS  | JO54LH | 56A | 58A              | 1519 | DO7LTW   | JO43TX | 56A | 59A ssb     |
| 0405 | ES1QD  | KO18PO | 56A | 59A 20°          | 1522 | SP1NQN   | JO84ML | 59A | 55A         |
| 0406 | ES1RF  | KO29IF | 56A | 59A              | 1523 | LY3ED    | KO14UX | 59A | 55A 30      |
| 0414 | ES6DO  | KO28WA | 55A | 57A              | 1527 | SM3MXR   | JP80GR | 59A | 59A         |
| 0418 | GM0BQM | IO85CE | 59A | 59A 350°         | 1530 | DJ6HF    | JO42OP | 57A | 57A         |
| 0555 | DG6JF  | JO33QN | 59A | 59A ssb, QTF 180 | 1531 | DL9USA   | JO71EN | 54A | 55A         |
| 0606 | SP1MVG | JO73FJ | 59A | 51A 20°          | 1533 | DK8EL    | JO31LJ | 55A | 55A         |
| 0610 | DJ3HW  | JO42LH | 59A | 59A              | 1535 | DK4AN    | JO41CM | 57A | 58A         |
| 0612 | DF1RL  | JO43MW | 59A | 59A              | 1536 | DL0ER    | JO31LJ | 55A | 55A         |
| 0613 | LY2IC  | K014WW | 57A | 57A 30°          | 1537 | PA3ECU   | JO32CF | 59A | 59A         |
| 0614 | OZ1HNE | JO57GG | 59A | 59A              | 1538 | SM6HBI   | JO58FR | 59A | 59A         |
| 0617 | DL3BUE | JO72FH | 55A | 55A              | 1540 | LA4XGA   | JP33VC | 59A | 59A         |
| 0618 | SP2BNJ | JO94HK | 59A | 59A              | 1540 | SM5IOT   | JO99BX | 59A | 59A         |
| 0619 | SM3JGG | JP71WJ | 55A | 55A              | 1542 | PA3AKM   | JO32BS | 59A | 55A         |
| 0620 | PA0WWM | JO22FE | 55A | 55A              | 1546 | ES7MS    | KO28SL | 53A | 55A         |
| 0622 | DF1BN  | JO31GD | 55A | 55A              | 1548 | DL3JIN/p | JO61KA | 59A | 57A         |
| 0624 | DJ6LV  | JO31JG | 56A | 56A              | 1549 | DL1BXZ   | JO72DK | 55A | 55A         |
| 0626 | PA4VHF | JO32EH | 56A | 56A              | 1550 | DK2RA    | JO64RK | 57A | 55A         |
| 0626 | DL8AKI | JO51CH | 59A | 59A              | 1552 | DL1RTL   | JO62PH | 59A | 55A         |
| 0628 | OH3TZ  | KP11TM | 57A | 57A              | 1554 | DF9VF    | JO42GA | 56A | 55A         |
| 0630 | G3BJD  | IO84GM | 55A | 55A 0°           | 1555 | DL7ANR   | JO62PM | 59A | 59A         |
| 0632 | PE1LWT | JO22VA | 59A | 59A              | 1556 | LA6OJ    | JO28VR | 55A | 56A         |
| 0633 | DL5ZL  | JO51CH | 59A | 59A              | 1558 | ES1OX    | KO29HI | 55A | 55A         |
| 0634 | DH2OAA | JO42TU | 59A | 59A              | 1559 | ES2DF    | KO29GG | 57A | 59A         |
| 0635 | LA4YGA | JO48AE | 56A | 59A              | 1600 | SM5KNV   | JO88MW | 59A | 59A         |
| 0636 | DD3SP  | JO72EN | 59A | 59A              | 1601 | DH0LS    | JO61II | 55A | 55A         |
| 0637 | OH3AWW | KP21QF | 59A | 57A              | 1604 | OZ1LPR   | JO44UW | 59A | 59A         |
| 0640 | SP2MKO | JO93CB | 59A | 59A 10°          | 1605 | DJ6TK    | JO53FG | 59A | 59A         |
| 0642 | DL1GSJ | JO43WN | 56A | 59A              | 1606 | DJ3XK    | JO53AN | 59A | 59A         |
| 0647 | DG7TG  | JO43TX | 59A | 59A ssb          | 1607 | GM0CLN   | JO85HV | 57A | 55A         |
| 0651 | OH1HSC | KP10CM | 59A | 55A ssb          | 1608 | PA0ZM    | JO32GK | 59A | 55A         |
| 0700 | SM0DZB |        | 59A | 59A              | 1617 | PA0RDY   | JO22KJ | 59A | 57A         |
| 0702 | SM3VED | JP80PM | 59A | 59A              | 1618 | GM3WOJ   | IO77WS | 54A | 55A         |
| 0703 | DF0CI  | JO51CH | 57A | 55A              | 1619 | OZ1LO    | JO55VC | 59A | 59A         |
| 0704 | DL9QB  | JO44UL | 54A | 59A              | 1621 | DL6CTG   | JO52XJ | 59A | 59A         |
| 0711 | DL1RNV | JO62GH | 56A | 55A              | 1624 | SM4XIH   | JO79KA | 59A | 57A         |
| 0714 | LA3PK  | JO59KF | 59A | 59A              | 1625 | DL9BDM   | JO33RL | 57A | 57A         |
| 0716 | DL7ULM | JO52SN | 56A | 59A              | 1627 | LA6HL    | JO28TW | 59A | 59A         |
| 0717 | OZ1FDH | JO65CS | 59A | 59A              | 1631 | GM0HTT   | IO89JC | 59A | 57A 350 ssb |
| 0718 | DL2HRE | JO51TQ | 56A | 57A              | 1639 | SP3VSC   | JO92DF | 57A | 57A ssb     |
| 0719 | DL1XP  | JO53HV | 55A | 55A              | 1642 | PE1LHM   | JO22BC | 55A | 55A ssb     |
| 0720 | DL4OL  | JO52BC | 59A | 59A              | 1643 | PA3FXB   | JO33KC | 57A | 57A ssb     |
| 0721 | DL7YS  | JO62NM | 59A | 59A              | 1646 | SP2IQW   | JO94GM | 46A | 56A ssb     |

|      |        |        |     |     |     |
|------|--------|--------|-----|-----|-----|
| 1647 | PD0PQS | JO33IC | 59A | 59A | ssb |
| 1648 | DL9OBD | JO42QN | 59A | 59A | ssb |
| 1650 | SK6HD  | JO68SD | 59A | 59A | ssb |
| 1651 | DL2NS  | JO43LD | 59A | 59A | ssb |
| 1652 | DG3XA  | JO44WJ | 59A | 53A | ssb |
| 1654 | PD0NHM | JO33BC | 59A | 59A | ssb |
| 1656 | DH8GV  | JO33RL | 59A | 57A | ssb |
| 1657 | PE2ENG | JO32NX | 59A | 57A | ssb |
| 1659 | OH1HSC | KP10CM | 56A | 57A | ssb |
| 2247 | SP1CNV | JO84CF | 57A | 55A | 20  |
| 2248 | DL5LBQ | JO44MM | 55A | 55A |     |
| 2252 | SP2BOF | JO94FM | 57A | 55A |     |
| 2254 | YL2KA  | KO26AX | 57A | 59A |     |
| 2255 | SM1HOW | JO97GL | 57A | 59A |     |
| 2318 | SM7WT  | JO65QQ | 59A | 59A |     |

This was the best Aurora I ever have experienced. In my QTH it was Aurora for 2 days continuously (SK4MPI auroral). Tried to work as many stations as possible, but pay attention for the DX as well. The Aurora was visible around midnight on both days. On August 11 it was overcast but I could still see the Aurora through the clouds. Thanks for report, Stefan.

#### LY2SA (KO14LL) wkd on 144 MHz:

##### 2000-06-08

|      |         |        |     |     |  |
|------|---------|--------|-----|-----|--|
| 1922 | G7RAU   | IO90IR | 55A | 55A |  |
| 1919 | G4XBF   | IO91QD | 55A | 53A |  |
| 1938 | G4SWX   | JO02PB | 55A | 55A |  |
| 1543 | LA4XGA  | JP33VC | 57A | 55A |  |
| 1541 | LA2PHA  | JO38IB | 57A | 55A |  |
| 1646 | UA3MBJ  | KO88SA | 57A | 59A |  |
| 1526 | LA0BY/P | JO59FV | 57A | 56A |  |
| 1707 | LA8WF   | JO59GV | 57A | 56A |  |
| 1628 | RV3IG   | KO87OT | 57A | 59A |  |
| 1458 | LA3BO   | JO59CD | 57A | 57A |  |

Aurora was 14.00 UTC - 20.30 UTC in my area. QTF from 60 to 300 deg. Most south QSOs with OK2ZZ/P in JN89 and OK1YA/P in JN79. Good activity from UA1/UA3, wkd new locators UA3MBJ/KO88, OH7PI/KP42, UA1TII/KO78 (#267). Thanks for report, Vidas.

#### OE1SOW (JN88FF) wkd on 144 MHz:

##### 2000-07-15

|      |        |      |     |    |     |
|------|--------|------|-----|----|-----|
| 1702 | DK1KO  | JO53 | 55A | 10 |     |
| 1715 | DL9MS  | JO54 | 55A | 10 |     |
| 2147 | GOKPW  | JO02 | 53A | 10 | ssb |
| 2158 | DH7FB  | JO62 | 55A | 10 | ssb |
| 2203 | PE9GG  | JO33 | 53A | 10 | ssb |
| 2220 | SM7WT  | JO65 | 55A | 10 |     |
| 2224 | DB8WJ  | JO33 | 57A | 10 | ssb |
| 2226 | PE9DX  | JO33 | 59A | 10 | ssb |
| 2228 | OZ1PIF | JO65 | 55A | 10 | ssb |
| 2230 | SP2IQW | JO94 | 57A | 10 | ssb |
| 2232 | DK0TU  | JO62 | 57A | 10 | ssb |
| 2239 | PA0PVW | JO22 | 59A | 10 | ssb |
| 2243 | OZ1IEP | JO55 | 57A | 10 | ssb |
| 2253 | DG0SY  | JO54 | 57A | 20 | ssb |
| 2254 | SM7FMX | JO65 | 57A | 20 | ssb |
| 2305 | OZ1FF  | JO45 | 55A | 20 | ssb |

|            |        |      |     |    |     |
|------------|--------|------|-----|----|-----|
| 2315       | DJ1EJA | JO31 | 57A | 20 | ssb |
| 2338       | DK2AM  | JO43 | 55A | 20 | ssb |
| 2000-07-16 |        |      |     |    |     |
| 0041       | DK1CO  | JO63 | 57A | 20 | ssb |

##### 2000-08-12

|      |        |        |     |     |  |
|------|--------|--------|-----|-----|--|
| 1617 | DL9MS  | JO54WC | 55A | 55A |  |
| 1637 | OZ1CLL | JO65QQ | 55A | 55A |  |

Equipment: IC-821H, 200W, 2x13-el. Yagi, 20m AGL.  
Thanks for report, Othmar.

#### PA0ZM (JO32GK) on 144 and 432 MHz:

##### 2000-06-08

|      |        |        |     |     |  |
|------|--------|--------|-----|-----|--|
| 1726 | LA8WF  | JO59GV | 55A | 55A |  |
| 1732 | LA3BO  | JO59CD | 55A | 55A |  |
| 1740 | OZ2TF  | JO46PE | 55A | 55A |  |
| 1751 | SM6OPX | JO58RG | 53A | 53A |  |

##### 2000-07-15

|      |       |        |     |     |       |
|------|-------|--------|-----|-----|-------|
| 1714 | OZ6EI | JO45TT | 55A | 55A | 10    |
| 1735 | DK1CO | JO63SX | 55A | 59A | 10    |
| 1742 | G3LQR | JO02QF | 55A | 55A | 25 *1 |
| 1810 | SM7WT | JO65QQ | 55A | 59A | 10    |

Remark: \*1 432 MHz! Elevation 10 degrees.

##### 2000-08-12

|      |          |        |     |     |     |
|------|----------|--------|-----|-----|-----|
| 1445 | DK1CO    | JO63SX | 55A | 55A | 50° |
| 1448 | OZ1CLL   | JO65GP | 55A | 59A | 50° |
| 1451 | DH8BQA/p | JO73CU | 58A | 58A | 45° |
| 1453 | DJ4TC    | JO63PN | 57A | 57A | 45° |
| 1456 | DJ5RE    | JN59WK | 55A | 55A | 45° |
| 1502 | SP1CNV   | JO84CF | 52A | 52A | 45° |
| 1505 | DK0TU    | JO62PM | 55A | 57A | 45° |
| 1510 | G4ASR    | IO81MX | 55A | 57A | 45° |
| 1515 | DL0GER/p | JN49BE | 55A | 53A | 45° |
| 1549 | DL9MS    | JO54WC | 59A | 59A | 45° |
| 1557 | OK1VHF   | JO70EB | 53A | 53A | 70° |
| 1600 | OK1AA    | JO60BF | 52A | 55A | 70° |
| 1610 | LA0BY/p  | JP30SP | 55A | 59A | 10° |
| 1629 | SP1NQN   | JO84ML | 55A | 55A | 45° |
| 1653 | GM4ILS   | IO87IP | 55A | 57A | 5°  |
| 1702 | G4HGI    | IO83PL | 55A | 57A | 5°  |
| 1709 | SM5BSZ   | JO89JL | 57A | 59A | 20° |
| 1717 | OZ2TF    | JO46PE | 55A | 55A | 20° |
| 1744 | GD4IOM   | IO74QD | 57A | 55A | 0°  |

Thanks for report, Geert.

#### PA3BUT (JO21TX) wkd on 144 MHz in CW:

##### 2000-7-15

|      |            |        |     |     |            |
|------|------------|--------|-----|-----|------------|
| 1501 | SM6FBQ     | JO67BQ | 57A | 55A |            |
| 1512 | LA/DK5WO/P | JO37SX | 55A | 55A | Auroral-E? |
| 1554 | SM2CEW     | KP15CR | 529 | 549 |            |
| 1746 | SM7WT      | JO65QQ | 57A | 55A |            |
| 1756 | G4LOH      | IO94IA | 57A | 55A |            |
| 1812 | SM1FMT     | JO97FS | 57A | 55A |            |
| 1815 | SK6HD      | JO68AD | 55A | 57A |            |
| 1817 | LA2AB      | JO59FV | 55A | 54A |            |
| 1837 | GM0CLN     | IO85HV | 55A | 52A |            |
| 2127 | DK1CO      | JO63SX | 55A | 53A |            |
| 2142 | G7RAU      | IO90IR | 57A | 55A |            |
| 2147 | DK5DQ      | JO31PH | 59A | 56A |            |
| 2148 | DF2JQ      | JO31HL | 55A | 55A |            |
| 2152 | ON4YZ      | JO20GG | 55A | 57A |            |
| 2205 | DO0VF      | JO61WD | 55A | 51A |            |
| 2212 | DK5YA      | JN49NX | 55A | 53A |            |
| 2227 | I2FAK      | JN45OB | 59A | 55A |            |
| 2233 | S50C       | JN76JG | 57A | 55A |            |

2235 DL1GNM JN38WB 55A 55A  
 2240 OK2BXE JN89SJ 55A 55A  
 2257 OK1YA JN79IO 57A 55A  
 Heard: LA3BO, OZ2TF, GM0BQM, GM4CXM,  
 PA9KT, GM4ILS, GM4AFF, GM5WLL/P, MM0CTU,  
 F6BSJ, F6HVK, PA5DD, I4XCC

## 2000-8-12

1426 GM3WOJ IO77WS 57A 55A  
 1430 SM6BHI JO58RF 55A 55A  
 1435 YL3AG KO26AW 57A 57A  
 1438 MM0CCC IO85MW 55A 52A  
 1443 SM5BSZ JO89IJ 57A 54A  
 1501 SM6ENG JO67CQ 57A 53A  
 1621 SM6EAN JO57WQ 57A 54A

Equipment: TS530S+TRV, MGF1302, 75W, 12 el. M2  
 Yagi. Thanks for report, Eldert.

## PA4VHF (ex PA3FJY, JO32EH) wkd on 144 MHz:

## 2000-07-15

## qtf/qtr

1643 G7RAU IO90IR 57A 54A 40°/45°  
 1705 YU1EV KN04CN 55A 55A 85°/335°  
 1709 DL5MAE JN58VF 59A 59A 75°/10°  
 1715 HB9DFG JN37SM 57A 57A 75°/30°  
 1730 SP2FAX JO83VA 59A 59A 325°/320°  
 1739 G4SWX JO02PB 59A 59A 45°  
 1741 G4LOH IO94IA 59A 59A 20°  
 1805 SM7WT JO65QQ 57A 57A 330°/300°  
 1809 DK4MM JO40WK 57A 55A 45°/0°  
 1815 LA2AB JO59FV 58A 57A 350°/320°  
 1823 DL9MS JO54WC 56A 55A 330°/310°  
 1835 EI4IX IO53HV 53A 51A 320°/80°  
 1847 DK8ZJ JO54AG 52A 55A 320°  
 1933 DL6YCY JO41CU 55A 55A 40°/25°  
 1945 DF1CF JN57FP 57A 57A 300°/310°  
 1948 DD0VF JO61WB 59A 59A 300°/300°  
 1951 HB9QQ JN47KJ 55A 55A 300°/330°  
 1952 DF9NP JN58LE 54A 55A 305°  
 1955 DL8EBW JO31NF 58A 57A 305°/315°  
 1959 OK1FPQ/p JO60VR 57A 55A 310°  
 2000 DF1IAZ JN49LD 55A 43A 310°/330°  
 2034 HA8CE KN06EN 57A 57A 65°/330°  
 2036 IV3HWT JN65ST 57A 55A 70°  
 2118 HB9FAP JN46EW 55A 52A 65°/30°  
 2144 DK5DQ JO31PH 58A 55A 55°/45°  
 2155 DK1CM JO40LG 59A 55A 60°/55°  
 2210 PA3BIY JO22EB 59A 59A 20°/45°  
 2224 IK1MTZ JN35UB 59A 59A 70° vy strgl  
 2226 9A2KK JN85OV 55A 59A 75°  
 2228 OK1IAS JO60EB 57A 57A 65°  
 2235 I4RHP JN54QL 59A 59A 60° ssb  
 2242 ON1ALJ JO10SS 59A 59A 45°/80° ssb  
 2243 G6YAY IO80EL 59A 58A 60° ssb  
 2244 DL1GNM JN38WB 59A 57A 60° ssb  
 2245 I1JQT JN35UB 59A 59A 65°/25° ssb  
 2247 F5KCR JN26IX 59A 59A 65° ssb  
 2248 DH0GHU JN38VN 59A 59A 60° ssb  
 2249 DG7FEQ JO40QU 59A 53A 60° ssb  
 2252 OK1AR JO70?? 57A 57A 60° ssb  
 2255 GW0ACH IO81FK 59A 57A 60° ssb  
 2257 F4SGU/p IN97HV 59A 59A 45° ssb  
 2258 G4ZVA IO83TF 57A 55A 50° ssb  
 2259 M0BKL IO80FK 57A 53A 40° ssb  
 2300 DO9HK JO31TO 55A 59A 50° ssb  
 2301 ON4KRI JO20VQ 59A 59A 50° ssb  
 2303 F6HVK JN27LH 59A 59A 60° ssb

2306 PB1SAM JO20US 59A 59A 50° ssb  
 2307 DG5BAG JO43CB 57A 59A 30° ssb  
 2308 G4RUW IO91IJ 57A 59A 30° ssb  
 2309 F6EAS IN98LV 59A 59A 40° ssb  
 2315 F9IE IN86WW 59A 57A 30° ssb  
 2317 F1PGL JO20IE 59A 59A 40° ssb  
 2320 I1FCT JN34OS 57A 55A 45° ssb  
 2324 I1CPN JN34VL 55A 55A 55° ssb  
 2328 DD5FX JN49HS 57A 57A 65° ssb  
 2339 DK9OY JO52CK 57A 52A 50°  
 2341 F6CBH JN19BH 55A 55A 50°  
 2357 DK5LA JO44TR 57A 55A 40°

## 2000-07-16

0002 G4SIV/p JO03CE 57A 55A 40°  
 0007 PA3FOC JO21FW 59A 55A 30°  
 0012 PA3DZL JO21HM 57A 57A 40°  
 0014 DF2JQ JO31HL 56A 55A 50°/45°  
 0018 PA3DYS JO21JP 59A 59A 45°  
 0024 EI8IP IO63NR 59A 59A 10° ssb  
 0027 DL4HG JO53CM 57A 59A 40°  
 0029 PE1HWO JO21GV 59A 59A 40°/50°  
 0035 DG4BH JO44TW 59A 59A 30° ssb  
 0041 DL3BUE JO72FH 59A 59A 50°/0°  
 0047 US5WU KO20DI 55A 55A 50°  
 0052 G3PJW IO83PM 59A 59A 40°  
 0100 G1WPF IO91KP 59A 59A 30° ssb  
 0103 GB1KAA IO92NJ 59A 57A 35° ssb  
 0104 G6DOR IO91PF 55A 55A 35° ssb  
 0106 G8IYG IO82XT 59A 59A 35° ssb  
 0117 DL8LAQ JO43XU 58A 55A 45°/40°

Rig: TS850S, LT2S, 400W, 2 x 16 ele F9FT.  
 After these 75 qso's I decided to stop and go  
 home for some sleep... Around 0130 the  
 opening ended for most stations. I wish that  
 people use the QTF in each qso. Especially  
 cluster spots containing both locators and  
 QTF's can be very usefull for people that are  
 far south from the aurora, to find out where to  
 beam... Thanks for report, Dick.

## S50C (JN76JG Menina 1508m) wkd on 144 MHz:

## 2000-07-15

1920 DJ4TC JO63PN 55A 55A  
 2050 DL3BUE JO72FH 55A 55A  
 2053 DK1KO JO53CT 55A 57A  
 2130 SM7WT JO65QQ 55A 57A  
 2135 OZ1FDH JO65CS 57A 57A  
 2137 SP4MPB KO03GS 57A 57A  
 2145 DK1CO JO63SX 59A 57A  
 2150 PA3FOC JO21FW 57A 55A  
 2151 DL9MS JO54WC 59A 59A  
 2154 DJ7RI JO54CA 55A 56A  
 2155 PE9DX JO33MD 57A 57A ssb  
 2157 PA9KT JO33TW 59A 55A  
 2204 DF0WD JO42FD 57A 57A  
 2207 DK3XM JO43XA 55A 55A  
 2208 SP5AGT/4 KO03RV 55A 57A  
 2210 DL1RNW JO62GH 57A 59A  
 2211 DL7ANR JO62PM 57A 59A  
 2214 SP5CCC KO02NF 59A 59A  
 2215 PE1LCH JO23WF 59A 59A  
 2217 PA3BGM JO33CE 57A 57A

|      |          |        |     |     |
|------|----------|--------|-----|-----|
| 2218 | DL6YEH/p | JO31QX | 59A | 59A |
| 2220 | DL5WG    | JO52VK | 59A | 59A |
| 2223 | PA5DD    | JO22IC | 59A | 59A |
| 2224 | DD3SP    | JO72NJ | 59A | 59A |
| 2224 | DL8EBW   | JO31NF | 59A | 59A |
| 2224 | PA0JMV   | JO21PM | 59A | 59A |
| 2225 | PA0RDY   | JO22KM | 59A | 59A |
| 2225 | DL3BQA   | JO73CF | 59A | 59A |
| 2225 | PA3DYS   | JO21JP | 59A | 59A |
| 2226 | ON4AMX   | JO20KV | 59A | 59A |
| 2226 | PA2DWH   | JO22GD | 59A | 58A |
| 2227 | PD0RFU   | JO32LS | 59A | 49A |
| 2227 | DF9QT    | JO30OR | 59A | 59A |
| 2227 | DF6PW    | JO30RR | 59A | 59A |
| 2230 | DK6XY    | JO53KV | 59A | 59A |
| 2230 | PA3BUT   | JO21TX | 55A | 57A |
| 2234 | OZ8ZS    | JO55RT | 59A | 59A |
| 2234 | SP7EX    | JO91LN | 59A | 59A |
| 2235 | PE1LCH   | JO23WF | 59A | 59A |
| 2235 | DL1EAP   | JO31HL | 59A | 59A |
| 2235 | RX3QFM   | KO91FM | 59A | 59A |
| 2241 | OZ1CLL   | JO65GQ | 57A | 57A |
| 2242 | DD0VF    | JO61WB | 59A | 59A |
| 2244 | DL8YET   | JO31MH | 57A | 55A |
| 2246 | DK3RA    | JO53LU | 59A | 59A |
| 2248 | DH2OAA   | JO42TU | 59A | 59A |
| 2250 | PD0RFU   | JO32LS | 57A | 59A |
| 2252 | DL1UU    | JO62SP | 59A | 59A |
| 2255 | DL8GAM   | JO53AJ | 55A | 59A |
| 2301 | DL5MAE   | JN58VF | 59A | 57A |
| 2303 | OZ1LO    | JO55VC | 59A | 59A |
| 2305 | DK9OY    | JO52CK | 59A | 59A |
| 2307 | DK4QT    | JO41HX | 55A | 55A |
| 2309 | DL4DTU   | JO61TB | 55A | 55A |
| 2310 | SP1NCV   | JO84CF | 55A | 57A |
| 2314 | DL9GRE   | JO64PA | 59A | 59A |
| 2316 | DL9OA    | JO64EB | 59A | 57A |
| 2317 | DL4HG    | JO53CM | 59A | 59A |
| 2318 | PA3DOL   | JO22MT | 59A | 59A |
| 2320 | OZ1LPR   | JO44UW | 55A | 55A |
| 2321 | PA3BIY   | JO2??? | 55A | 55A |
| 2321 | SP4MPB   | KO03GS | 59A | 59A |
| 2325 | DL8LAQ   | JO43XU | 59A | 59A |
| 2326 | DL3SWS   | JO53SG | 59A | 59A |
| 2327 | DK5DQ    | JO31PH | 55A | 52A |
| 2330 | DL3NUA   | JO64?? | 55A | 55A |
| 2332 | DF1HF    | JO43VL | 55A | 55A |
| 2334 | PA3ECU   | JO32CF | 53A | 55A |
| 2335 | DL4LE    | JO54AB | 53A | 53A |

SSB

## 2000-07-16

|      |        |        |     |     |
|------|--------|--------|-----|-----|
| 0012 | DK0TU  | JO62PM | 53A | 51A |
| 0028 | OZ8ZI  | JO65CS | 55A | 55A |
| 0029 | SP2CNW | JO93BG | 55A | 55A |
| 0035 | SP2RS  | JO94GK | 52A | 55A |
| 0040 | GM0BQM | IO85CE | 55A | 52A |
| 0045 | G0FYN  | IO83LS | 52A | 52A |
| 0047 | G3UTS  | IO94CU | 55A | 55A |
| 0055 | DL1EJA | JO31DS | 55A | 55A |
| 0115 | OZ1CTZ | JO46OE | 55A | 53A |

Equipment: IC-275H, 700W, 4x20 el. DJ9BV. OP's: Boris, S53CC and S53RM, Sine.

After listening IONO (G3SWX, PA3DYS) during afternoon and first signals on Aurora (G4JHM, G4YTL, G3SWX and other G sta-

tions) at 1700 GMT from city qth on single yagi, we finally decide to move on our contest location. That took us two hours. At 1900 GMT we were finally qrv with 4 x 20 el and 700w, but without Aurora signals on the band. We start call CQ just for fun, but get reply from DJ4TC quickly via Aurora with nice signal. After that qso we needed one hour and 30 minutes for another qso. Later we S/P because nothing came back on CQ. At 2130 band start to open and from 2200 till 2335 we worked 60 stations in nice Aurora pileup. At that time the qtf was 30-40 deg. Station worked later was on qtf around 350-10 deg. The trip to our location really paid off. Another nice thing was working SM5FRH on IONO next afternoon with nice signal. Unfortunately we can not elevate antennas, for precise elevation info. Best regards from S50C klub. Thanks for report, Sine and Boris.

## YO2IS (KN05PS) wkd on 144 MHz:

## 2000-07-15

|      |        |        |     |     |     |
|------|--------|--------|-----|-----|-----|
| 1710 | G3LTF  | IO91GG | 55A | 52A | 350 |
| 2156 | DK1CO  | JO63SX | 57A | 55A |     |
| 2215 | DL9MS  | JO54WC | 57A | 55A |     |
| 2241 | DK1KO  | JO53CT | 59A | 55A |     |
| 2247 | OZ1FDH | JO65CS | 55A | 31A |     |
| 2300 | G4SWX  | JO02PB | 58A | 55A |     |

CWNR: SP4MPB, DL8CMM, PA3FOC, DJ7RI, DK6XY, DL8LAQ, OZ8ZS. Equipment: Homemade transverter, PA 4CX250B, 10 ele Yagi. 73, Szigy.

## YU7EW (KN05HP) wkd on 144 MHz:

## 2000-07-15

|      |        |        |     |     |      |
|------|--------|--------|-----|-----|------|
| 1709 | G4SWX  | JO02PB | 57A | 55A | 325  |
| 2055 | DK1KO  | JO53CT | 59A | 59A | 5    |
| 2139 | OZ1FDH | JO65CS | 55A | 55A | 0    |
| 2142 | SP4MPB | KO03GS | 55A | 55A | 15   |
| 2145 | SM7WT  | JO65QQ | 55A | 57A | 10   |
| 2148 | DJ4TC  | JO63PN | 55A | 54A | 10   |
| 2153 | DK1CO  | JO63SX | 59A | 59A | 10   |
| 2154 | DL9MS  | JO54WC | 59A | 57A | 10   |
| 2156 | DL8LAQ | JO43XU | 55A | 41A | 10c? |
| 2215 | DK3XM  | JO43XL | 59A | 55A | 10   |
| 2218 | DL1NUL | JO53PN | 57A | 57A | 10   |
| 2224 | PA3DZL | JO21HM | 59A | 59A | 10   |
| 2226 | DK9OY  | JO52CK | 59A | 55A | 10   |
| 2227 | PA3CEE | JO33JI | 59A | 59A | 10   |
| 2229 | DL5ME  | JO52SD | 55A | 52A | 10   |
| 2234 | DL8LAQ | JO43XU | 59A | 57A | 10   |
| 2236 | DL6UAL | JO62XU | 59A | 59A | 10   |
| 2239 | RA4AOR | LN29LA | 59A | 59A | 20*  |
| 2245 | OZ8ZS  | JO55RT | 55A | 55A | 10   |
| 2330 | G4LOH  | IO94IA | 57A | 55A | 345  |

Remarks: \* ODX 1868 km! Thanks for report, Pista.

# Meteor Scatter

Editor: Norbert Götsche, DL8LAQ

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

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 my email address dl8laq@gmx.de or via PR to DL8LAQ@DB0HB.#HH.DEU.EU. 73, Norbert.

## DL8EBW (JO31NF) wkd on 144 MHz:

2000-06-10  
0400 0500 ZAN7BHC JN91VH 26 10 6 1 nc s  
2000-07-01  
2300 2322 UT/DL2SDQK030ER 26 26 7 9 3 c  
2000-07-18  
2300 2357 UT0AZA KO71AT 26 26 7 5 0.7c  
2000-07-21  
2300 2357 UT0AZA KO62WB 26 26 8 9 2 c  
2000-07-22  
0345 0402 G0KZG/mm IO59 27 26 15 13 3 c  
2000-07-23  
0557 0612 G0KZG/mm IP60 27 27 12 7 45 c  
2000-08-04  
0100 0110 HA0P KN07UX 28 27 m m 1 c  
0111 0130 9A0DX JN83JA 27 27 11 m 2 cr  
2000-08-06  
0115 0122 HA0P KN17 28 28 10 m 1 c  
2000-08-11  
2250 YU7KB JN94XX 27 27 1 10 crs  
2251 YU11O JN04IQ 39 39 1 10 crs  
2300 2400 SV1BTR KM17VX 27 2 1 2 nc  
2000-08-12  
0000 0045 OH8AAS KP54AA 26 27 7 10 30 cs  
0322 0325 IV3GBO JN66 39 m m 10 nc rs  
0518 LA0BY/p JP30SI 36 27 1 10 crs  
0535 LA2PHA JO38IB 26 27 1 15 crs  
0613 OH1XT KP01UH 37 29 1 15 crs  
0615 RW1AW KP50EB 39 59 1 20 crs  
0624 SM2CKR KP03DQ 39 38 1 30 crs  
0644 OH8K KP43 49 27 1 45 crs

0831 LA8KV JP52QQ 29 29 1 20 crs  
0839 IZ4BEH JN54WL 36 m m 10 nc rs  
0900 0921 OH9MTY KP46BI 37 27 9 6 12 c \*2  
1100 1145 OH8N KP35TO 28 36 21 7 45 c \*2  
1200 1236 RK3AF KO75WO 26 26 6 3 3c  
2000-08-15  
1830 1915 G0KZG/MM JP01 27 26 11 7 11 c

Remarks: \*1 Regular sked to Geir (1320 km), to test MS-condx; \*2 Influenced by very strong AURORA effects! OH8N did not copy me during 35min! Only one way condx...

Perseid's 2000: A very nice shower with a highlight inbetween 12.8. 04-12 UTC where we saw very nice reflections on MS but also all over the time good AURORA backscatter. Longest burst occurred at around 06-07 UTC when SM2CKR and SM2CEW was fighting around the 144.200 MHz Calling QRG...hihi. Thanks specially in direction Finland, where we saw a really big activity with minimum 3-4 seldom squares! See you hopefully in LEOs!

NIL-Skedresult: 19.07. LA/SM6CMU JP77, 22.07. LA/SM6CMU JP79, 12.08. JX7DFA IQ50 (2320km), 12.08. RA3IS KO76. Equipment: FT726R (CF300), 11 el. DL6WU, GU74b, DTR (made by DF7KF), ETM9C. All infos are welcome via VHFNet or PR (BBS DB0NDK), or TEL. +202/781170. Every sked for MS, also with stations worked before is very (!) welcome! Thanks for report, Guido.

## F6HVK (JN27LH) wkd on 144 MHz:

2000-06-16  
0500 0545 SV8/DLAGI JM99 27 26 6 14 2 c  
2000-07-03  
0445 0510 LA0BY JO37SA 27 27 5 15 3 c  
2000-07-05  
0230 0315 IKOZN JM76 27 27 4 20 1.5c  
2000-07-17  
0300 0400 UT/DL2SDQ KO30 26 26 3 10 1 c?  
2000-07-22  
2200 2230 I/DL7FB JM88 26 26 3 5 0.5nc\*1  
2000-07-24  
2130 2200 I/DL9AN JM89 26 ? 1 4 0.5nc\*1  
2000-07-27  
0335 0400 ES2QH/8 KO18XC 27 26 8 15 1.5c  
2000-08-11  
2100 2200 OK2MWR JN99HQ 27 27 5 m 1.5c  
2300 2400 EI4DQ IO51WN 26 26 3 7 1 nc\*2  
2000-08-12  
0500 0550 EA4LU IM68TV 26 27 3 5 3 c\*2  
0900 0920 ES1RF KO29IF 26 28 m m 10 c\*4  
1100 1115 SM2CEW KP15CR 26 37 5 3 5 c\*3  
2000-08-13  
0900 0920 SM3MXR JP80GR 26 27 m m 7 c  
2100 2120 LZ1ZX KN32IO 26 47 3 6 4 c

Remarks: \*1 Poor reflections; \*2 Very difficult direction qtf 22; \*3 New odx ms 2290km! Trx Peter; \*4 1851km S7! Heard random: OH8N KP35OT 2434km! NIL: Z32UC, I/DL7FB JM79, OK1UAK, RK3AF 2315km, SM2CKR, 9A2TE. Rig: Single or 4x17 ele M, 300W, DTR. Email: f6hvk@club-internet.fr. Thanks for report, André.

**14XCC (JN63GV) wkd on 144 MHz:**

2000-01-04  
0307 G7RAU IO90 39 39 c s  
0316 PE1OGF JO21QJ 37 37 c s  
0350 SM7WT JO65QQ 37 48 c s  
0403 SM6CEN 37 48 c s  
0407 DK3XM JO43 37 38 c s  
0537 DK5DQ JO31PH 38 27 c s  
0549 ON1AEN JO10UV 27 27 c s  
2000-04-01  
0500 0545 PE1HWO JO21GV 27 27 c  
2000-05-28  
0001 0023 SO9FB JO84NG 27 38 c  
2000-06-25  
0500 0535 IT9/K0BZY JM76OR 27 27 c  
2000-07-05  
0400 0422 UT/DL2SDQK030ER 27 26 c  
2000-07-08  
1900 1935 EA6/PA2CHR JN20BC 27 26 c  
2000-07-20  
2200 2225 UT0AZA KO62WB 27 27 c  
2000-08-11  
2325 2339 DL4ABJ JO42 39 37 c s  
2000-08-12  
0001 0036 LA8AJA JP50HQ 26 38 c s  
0700 0730 RK3AF KO75WO 26 26 c  
0822 DL9MS JO54WC 39 59 c s  
0842 G0EVT 39 39 c s  
0900 0940 UA3GA KO92CN 26 37 c  
1000 1045 CQ1MS IM59RX 27 37 c  
0900 0930 EA1ABZ IN71QO 27 27 c  
1300 G7RAU IO90 39 39 1 c s  
2215 2245 OH0/DL1UU KP00 26 37 c

Thanks for report, Claudio.

**LA0BY/p in JO37SX wkd on 144 MHz:**

2000-07-03  
0200 0238 OH6MAZ KP22VG 26 27 15 5 1 c  
0245 0305 F6HVK JN27LH 27 27 4 1 c  
0305 0335 IZ5EME JN52NS 39 26 m m 10 c  
0400 0440 DL4MEA JN58 27 27 10 1 c  
0440 0450 F5LRL JN26MV 27 27 5 3 c  
0500 0535 OE6IWG JN77PK 27 28 12 1 c  
0535 0600 IW1AZJ JN35UB 27 27 10 2 c  
0600 0620 S51MQ JN75NT 26 27 8 1 c  
0620 0705 IK1PAG JN35UB 27 26 m m 2 c  
0705 0800 OK1UAK JO70MB 26 26 20 1 c\*1  
1200 1230 UT/DL2SDQK030ER 26 26 m 3 c  
2000-07-04  
0200 0230 UT5ER KN78ER 27 26 6 5 1 c\*3  
0300 0325 OH5IY KP30 27 27 12 10 2 c  
0400 0415 IV3HWT JN65ST 38 26 20 8 c  
2000-07-05  
0300 0400 RW1AW KP50EB 26 m nc\*2  
0400 0435 IZ4AIK JN63HV 38 26 m m 5 c  
0500 0543 EA6VQ JM19MP 26 26 22 2 c\*4  
0545 0615 F/G8MBI JN04FT 27 27 12 10 2 c

Remarks: \*1 He was running only 50W; \*2 He transmitted slow speed CW, but reflections were to short to

copy; \*3 2037km; \*4 2064km. Operators were LA0BY, DK2BJ and DK5WO. We were in a nice location on the island of Skjernoj at the southern tip of Norway, with excellent horizon in all directions. Running 180 W into 2 x 9-ele as usual.

**LA0BY in JO59FW wkd on 144 MHz:**

2000-08-03  
0400 0505 9A0DX JN83JA 26 26 8 7 1 c  
2000-08-06  
0000 0100 HB0/PI4TUE JN47 27 2 2 nc  
2000-08-10  
0400 0430 IN3KLQ JN56RG nil

**LA0BY/p in JP30SI wkd on 144 MHz:**

The location for my Perseid expedition 2000 was the Dyranut cottage, almost on top of the Hardangervidda at 1250m asl (thanks to LA5KO for the valuable advise on the QTH!). The horizon was flat from 120-160 degrees, rising slowly to perhaps 2 degrees towards both Southwest and East. There were some mountains also in Northern directions but the elevation was less than 5-7 degrees. The owner of the cottage was very friendly and supplied even 230 V (see his website [dyranut.no](http://dyranut.no)http://dyranut.no/). Here are the results:

2000-08-11  
1900 1915 ES1RF KO29IF 27 27 10 4 2 c  
1930 2000 RA3DQ KO85QU 26 2 2 nc  
2000 2045 UT5ER KN78ER 26 26 5 3 10 c 2135km  
2058 2112 RU1AA KP40XD 38 38 m 8 c r  
2300 2330 IBMPO JN70GR nil s 2240km  
2334 2339 S51AT JN75GW 27 37 2 10 c r s  
2000-08-12  
0000 0030 IK0BZY JN61GW 26 2 nc 2075km  
0230 0300 EA6VQ JM19MP nil 2320km  
0428 DL3HRT JO31AB 37 27 1 c r s  
0432 DF2ZC JO30RN 37 27 1 c r s  
0434 0444 DO1MJF 37 59 3 nc r s\*1  
0451 DH0GHU JN38VN 37 27 1 c r s  
0451 DL5MCG JN58KH 27 27 1 c r s  
0452 DL1DUR JO70KV 37 37 1 c r s  
0459 0502 G7RAU IO90IR 38 38 4 c r s  
0506 0518 DH3YAK JO31RS 37 26 6 c r s  
0518 DL8EBW JO31NF 37 36 1 c r s  
0518 0524 HB9DFG JN37SM 37 1 nc r s  
0530 G1WPF IO91RP 38 36 1 c r s  
0543 DF1IAZ JN49LD 38 38 1 c r s  
0545 0547 DL9YEE JO41GV 38 39 3 c r s  
0545 DF8IK JO30JT 38 37 1 c r s  
0551 DL9USA JO71EN 38 38 1 c r s  
0551 HB9DFG JO37SM 38 38 1 nc r s  
0551 F6FHP IN94TR 39 27 1 c r s  
0551 0553 F6DKW JN18CS 39 39 2 c r s  
0553 DC7AH 39 37 1 c r s  
0553 DK5TE JN58BG 38 38 1 c r s  
0805 DJ3MY JN58QD 38 39 1 c r s  
0805 0808 DH5FS JO61UA 38 39 3 c r s  
0813 0814 DL5MAE JN58VF 39 38 3 c r s  
0814 HB9DFG JN37SM 38 39 1 c r s  
0814 DF1CF JN57FP 39 39 1 c r s  
0816 0826 F/G8MBI JN04FT 37 27 2 nc r s  
0821 0822 ON1AEN JO10UV 39 39 3 c r s  
0826 S57EA JN76HE 37 37 1 nc r s  
0828 ON1ALJ JO10UU 39 37 1 c r s  
0829 DH3IAJ JN48HD 38 28 1 c r s  
0831 DL4NAA JN49NX 39 39 1 c r s  
0831 PE1GNP JO31IX 37 37 1 c r s

0839 0842 SM2CEW KP15CR 38 27 3 c r s  
 0843 F/G8MBI JN04FT 37 27 1 c r s  
 0846 0847 DG3GAG JN48NB 39 37 2 c r s  
 0852 0858 G0CUZ IO82WM 38 38 2 c r s  
 0900 0913 S57EA JN76HE 37 27 5 c r s  
 0914 0920 DK1CM JO40LG 29 29 5 c r s  
 0920 G4SFY JO02QT 39 26 1 c r s  
 0920 0939 OK1FGM JN79PV 27 27 4 c r s \*2  
 0945 0952 DJ5RE JN59WK 39 38 4 c r s  
 1016 1035 F5HRY JN18EQ 37 37 2 n c r s  
 1035 G4EAP IO91NJ 37 37 1 c r s  
 1037 1052 F6EAS IN98LV 39 39 4 c r s \*3  
 1041 EI3GE IO63XD 37 27 1 c r s \*3  
 1041 G4ASR IO81MX 37 37 1 c r s \*3  
 1130 F4AZF JN38IW 37 27 2 c r s \*3  
 1705 1740 RK3AF KO75WO 27 27 16 30nc \*4  
 1900 1930 RW3TU LO25BR nil 2183km  
 1954 2025 OK1UAK JO70MB 27 27 11 10 c r  
 2053 2107 OK2MWR JN99HQ 38 27 m m 15 c r  
 2135 2153 DL0GER JN49CC 37 38 m m 7 c r  
 2200 2222 YU7MS KN05FJ 27 27 8 20 c  
 2222 2238 YU7KB JN94XX 38 27 10 2 12 c  
 2300 2315 IC8FAX JN70FP nil s  
 2000-08-13  
 0500 0528 I5YDI/5 JN54BB 27 27 m m 30 c r \*5  
 0540 0600 F5LRL JN26MV 27 27 m m 15 c r \*5  
 0610 0627 DL1EEX JO31MA 27 26 m m 6 c r \*5  
 0700 0728 9A1CAL JN86EL 37 37 m m 10 c r \*5  
 0728 0743 YU7ACO KN05QC 37 27 8 30 c r \*5  
 0748 0758 DH9GCD JN38VF 38 27 10 20 c r \*5  
 0840 0910 I4XCC JN63GV 28 27 m m 3 n c r \*5  
 0930 1005 G3IMV IO91OX 28 37 m m 20 c r \*5

Remarks: \*1 He did not transmit my call; \*2 He was running only 50W; \*3 These QSOs were made on 144,200 MHz due to poor response on 144,155 MHz; \*4 Did not receive signals for 3 periods and assumed he stopped because of Aurora; \*5 These QSOs were made on 144,100 MHz due to poor response on 144,155 MHz (called CQ there for one hour).

The BIG event this year was the major Aurora opening, which lasted almost from 16 UTC on Friday to 08 UTC on Sunday (see separate report). My MS activity was quite a bit affected by this, of course. Which way should I turn the antenna? Moreover, the Aurora spoiled my rest periods, hi.

Fortunately I had arranged only few MS skeds for which I was on. Sometimes I was called by stations via Aurora while my antenna was beaming South, trying to work MS. All in all I worked 60 stations via MS, and 203 via Aurora. A few stations were worked on both MS and Aurora.

Since I was not continuously on 144,155 MHz for MS the response there was not always good during my announced random times. Next time I may only run skeds on this frequency, and use the usual calling frequencies for random activity. Using the letter calling system on 144,100 MHz proved to be a very efficient method of performing QRM-free random CW operation. 73, Stefan. Thanks for report, Stefan.

#### OE1SOW (JN88FF) wkd on 144 MHz:

2000-08-11  
 2208 2244 GW7SMV IO81LN 27 27 c s  
 2350 0006 G4LOH IO94IA 37 38 c s  
 Thanks for report, Othmar.

#### OE6IWG (JN77PK) wkd on 144 MHz:

2000-05-28  
 0400 0432 SO9AN JO84NG 27 27 10 7 1 c \*1  
 2000-06-15  
 0400 0515 I/DK5DQ JN43BV 27 28 5 1 2 nc  
 2000-06-17  
 0400 0505 I/DK5DQ JN43BV 27 27 5 3 1 c \*2  
 2000-06-20  
 0400 0445 SV8/DL3GNJM99TR 26 27 6 4 1 c  
 2000-07-02  
 1700 1750 UT/DL2SDQ KO30EG 27 26 10 4 0.5c  
 2000-07-03  
 0500 0540 LA0BY/p JO37SX 28 27 8 m 1 c  
 2000-07-05  
 0315 0400 IK0BZY/9 JM76IQ 26 27 3 5 8 c  
 2000-07-16  
 1900 1923 EA6/PA2CHR JN10 27 27 6 2 1 c  
 2000-07-21  
 2225 2247 UT0AZA KO62WB 27 27 7 m 1 c r  
 2000-07-26  
 0300 0330 ES2QH/8 KO18XC 26 27 8 m 3 c  
 2000-07-29  
 0400 0435 EA1BFZ IN81SS 26 27 6 2 1 c  
 2000-08-12  
 0018 0023 G7RAU IO90IR 29 29 2 2 11 c  
 0500 0528 F5OIH JN08RR 36 37 4 6 10 c  
 0822 DL9MS JO54WC 59 59 1 9 c r s  
 0920 SM5FRH JO88BW 27 59 1 27 c r s  
 0943 ES2RJ KO29JM 27 27 1 8 c r s  
 1033 SM5FRH JO88BW 59 59 1 129 c r s  
 2000-08-16  
 0400 0450 ES2NA KO29JL 26 27 3 44 c  
 Thanks for report, Walter.

#### This is the story of my holiday-expedition...

My holiday-expedition had some up's and down's this time. First my 10 el. antenna and mast did not arrive with our luggage. After 2 day's of waiting and phoning to the airport I called Gabriel, EA6VQ for help. I was very glad to receive his phonecall telling me there was a 13 el. antenna from the radioclub on Mallorca, (80 km. away on an other Island) available for me. I decided to wait one more evening, Friday July 7th, for my own antenna coming by a flight from Barcelona, if not, I would go to Gabriel on Saturday. This was a good choice, antenna and mast arrived with the last flight on Friday so just in time to be QRV for the first sked's on Saturday!

The first day, July 8th, I was QRV from JN20BC, a site called Cap de Cavalleria. It was very difficult to reach a good position for VHF work because the "Cap" is only a lighthouse at the end of a very bad road with lots of big rocks. This lighthouse was exactly in front of my antenna direction to North and North-East... I had to drive with the (rented) car over the rocks "upstairs" to the cost, quite dangerous during daylight, but what about leaving in the middle of the night? Finally reached a place to build up the antenna and after half an hour I was ready to start the portable generator and switch on the rig. After 2 minutes! the generator stopped and I found the piston was not moving. Repairing this took over 1 hour (with only a screwdriver and some old tools). Missed the skeds with PA3DZL because of this. I was QRV at 1315 UTC and start to run skeds:

2000-07-08

|                  |    |    |       |
|------------------|----|----|-------|
| 1315 1345 PE1OGF | 27 |    | nc *1 |
| 1400 1500 DH3YAK | 26 | 26 | nc    |
| 1500 1525 DD0VF  | 26 | 27 | c     |
| 1525 1552 DL9MS  | 26 | 26 | c     |
| 1552 1604 DF2ZC  | 27 | 26 | c r   |
| 1605 1645 S57TW  |    |    | nil   |
| 1730 1802 PA0PWW | 27 | 36 | c     |
| 1802 1845 PA3BZO | 27 |    | nc *2 |
| 1845 1855 DK0OG  | 37 | 26 | c r   |
| 1900 1933 I4XCC  | 26 | 27 | c     |
| 1933 2000 G0AEP  | 26 | 27 | c     |
| 2000 2050 DL5ME  | 27 | 26 | c     |
| 2030 2055 DL1EAP | 38 | 27 | c     |
| 2100 2110 HA5OV  | 26 |    | nc *1 |

Remarks: \*1 Generator trouble again; \*2 Nothing after 1812 UTC.

Had to go QRT at 2110 because the generator stopped and I could not get it running again... sorry!

Took antenna down in the dark and survived the trip down the rocks but when I nearly reached the main road, a big barrier, put there to keep people out of the "private ground" I had entered in the morning was closed now. With my "old tools" I was able to open it and I was free!

The next day, July 9th I found an other location: Punta Grossa in JN20CA. After some problems the generator was running with about 30% of its capacity, think it was overheated last night and I connected the 150 Watt PA direct to the car-battery. Because of this the car-engine must run all day long...

This was the best day of all, made 21 complete MS QSO's with very nice reflections. During the evening it was like the Perseids shower on my side: its very exiting to be on the other side of the pile-up!

2000-07-09

|                  |    |    |       |
|------------------|----|----|-------|
| 1200 1230 G4FUF  | 26 |    | nc *1 |
| 1300 1320 DH5HV  | 37 | 26 | c     |
| 1320 1400 DK1CM  |    |    | nil   |
| 1400 1430 PB1TT  | 26 | 26 | c     |
| 1430 1452 PE1HWO |    |    | nil   |
| 1452 1505 PE1OGF | 27 | 27 | c     |
| 1527 1545 G4YTL  | 27 | 26 | c     |
| 1600 1615 G0FIG  | 26 | 27 | c     |
| 1615 1655 SM7JUQ | 26 | 26 | c     |
| 1705 1722 DF1BN  | 37 | 26 | c     |
| 1722 1755 DF8IK  | 26 | 26 | c     |
| 1800 1830 DK5YA  | 27 | 37 | c     |
| 1830 1845 DJ2QV  | 27 | 27 | c     |
| 1845 1907 PA0JMV | 28 | 27 | c r   |
| 1907 1950 DH0GHU | 28 | 27 | nc    |
| 1950 2005 DH7FB  | 27 | 27 | c r   |
| 2005 2020 PA3DZL | 28 | 27 | c     |
| 2020 2100 PA3BZO | 27 | 26 | c     |
| 2100 2127 DL5GAC | 26 | 26 | c     |
| 2127 2137 PE1LCH | 37 | 27 | c     |
| 2137 2210 PA2DWH | 38 | 27 | c r   |
| 2210 2240 DK5DQ  | 27 | 26 | c r   |
| 2240 2250 ON4AMX | 28 | 27 | c r   |
| 2250 2302 DL4NAA | 28 | 27 | c r   |
| 2302 2317 DL3YEL | 27 | 27 | c r   |
| 2317 2330 DL2ARD | 28 |    | nc r  |

Remarks: \*1 Generator down...

After all this, I took down the station and arrived at 0245 local time in our apartment where my XYL Monique was still waiting with dinner!

On the 10th, my computer crashed, problem with the keyboard, I could not use a lot of functions including some I need in the OH5IY MS-program. I could not send the letter "O" and a report with Roger in it, the result was some QSO's took more time as usual.

In the evening of July 15 I was again QRV from JN20CA and worked:

2000-07-15

|                  |    |    |     |
|------------------|----|----|-----|
| 1537 1555 G4FUF  | 26 | 26 | c r |
| 1600 1655 DL2ARD | 26 | 26 | c r |
| 1712 1727 PA9KT  | 37 | 26 | c r |
| 1742 1825 DL6YCY | 27 | 26 | c r |

On Sunday July 16th I drove to the other side of the Island to be QRV from JN10WB, a QTH I used also in 1998.

2000-07-16

|                  |    |    |         |
|------------------|----|----|---------|
| 1157 1215 PE1OGF | 27 | 26 | c       |
| 1215 1245 PA0RDY |    |    | nil *1  |
| 1247 1320 DH3YAK | 26 | 26 | c       |
| 1320 1337 DG3GAG |    |    | nil     |
| 1337 1400 DF0WD  | 27 | 27 | c r     |
| 1400 1445 DL9MS  | 26 | 26 | c       |
| 1445 1500 DL5WG  | 37 | 27 | nc r *2 |
| 1527 1600 DL6YCY | 26 | 27 | c r     |
| 1600 1625 DK5YA  | 27 | 37 | c       |
| 1700 1725 9A4FW  |    |    | nil     |
| 1725 1800 S51MQ  |    |    | nil     |
| 1800 1900 G4AEP  | 27 | 27 | c       |
| 1900 1925 OE6IWG | 27 | 27 | c       |
| 1942 2005 ON4AMX | 28 | 27 | c r     |
| 2002 2032 DL5GAC | 27 |    | nc *3   |
| 2032 2055 DF1BN  | 28 | 27 | c       |
| 2100 2217 SM7JUQ | 26 | 26 | nc *4   |
| 2217 2232 PE1LCH | 27 | 27 | c       |
| 2252 2315 S51MQ  | 28 | 27 | c r     |
| 2327 2345 DK5DQ  | 28 |    | nc r    |

Remarks: \*1 Sked, wrong freq. I guess; \*2 Two nice reflections; \*3 Only 1 burst; \*4 Heavy QRM by HA8CE.

On 19th I could not be QRV because the generator would not work during the test and I needed time for repair. Same for the PC.

On the 23rd. I went again to JN20CA to be QRV in an Italian contest and for the last MS sked's.

2000-07-23

|                  |    |    |      |
|------------------|----|----|------|
| 1230 1255 DF0WD  | 26 | 26 | c r  |
| 1257 1320 DH3YAK | 26 | 27 | c    |
| 1322 1400 PA5DD  | 28 | 27 | c r  |
| 1400 1450 PE1HWO | 37 | 26 | c    |
| 1500 1527 DK1CM  | 28 | 26 | c    |
| 1527 1545 DF7KF  | 37 | 27 | c    |
| 1600 1625 S51MQ  | 26 | 27 | c    |
| 1625 1650 9A4FW  |    |    | nil  |
| 1700 1800 S55AW  |    |    | nil  |
| 1710 1730 S57TW  | 28 | 37 | c *1 |
| 1732 1807 9A4FW  | 27 | 27 | nc r |
| 1807 1910 DH0GHU | 26 | 26 | nc   |

Remarks: \*1 Tailend S55AW.

After all it was a nice mini-expedition, it's hard to handle a lot of MS QSO's, refill the generator every hour and get the pc running, it was in the sleep-mode every 4 minutes. Instead of the letter "O" (---) I had to send "MT"

## Meteor Scatter

-- ) a couple of times... PE1OGF = PEAMTGF hi. What about recording 3 or 4 good burst's in the DTR, start tx and on

that moment the power is dropping so the DTR lost all his memory... But, I made 54 complete QSO's and that's the most important thing.

The rig was: IC706 + 150 Watt PA, 10 el. BVO ant, gain 13.4 dB. MS QRG: 144.167

My photocamera died also after a few day's, so on the QSL is a picture of the JN10WB location only.

I have to thank a lot of people for making the operation possible this time. First of all my XYL Monique and QRP's Nancy and Nicole for not complaining too much if Dad was again on a mountain-top and not carrying things from the supermarket or going to the swimming-pool.

Jurgen, PE1LWT, for all the time he spent with arranging skeds for me and to Gabriel, EA6VQ, for his work with finding a "spare" antenna.

Thanks to all stations who called, I hope I have worked most of you and see you from an other square, (you or me). I do need JN10! Best 73's de Chris, PA2CHR. Thanks for report, Chris.

### PA3BUT (JO21TX) wkd on 144 MHz:

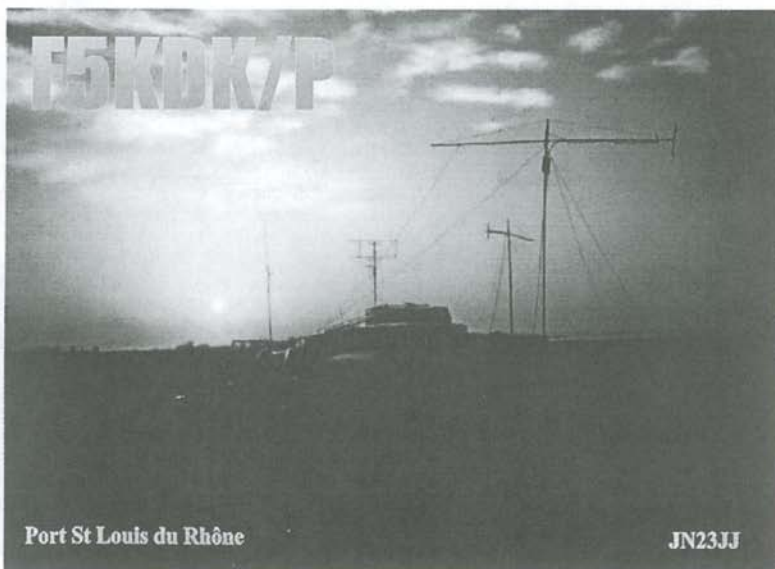
2000-08-04  
2245 2300 HA0P KN17DX 27 27 c  
2000-08-08  
1135 1210 HA8CE KN06EN 27 27 c  
2000-08-12  
0105 0135 HA6NY JN98WC 27 27 c  
Heard: G0KZG/MM, OH0/DL1UU, HA5KDK, EU6MS, TK5EP, 9A1CAL, OK1YA, OM5CM/P, IV3HWT, EA6VQ, ES2NA, SM5FRH, LZ2FO, 9A2RD, I8TWK,

I8MPO. Equipment: TS530S + TRV, MGF1302, 75W, 12 el. M2 Yagi. Thanks for report, Eldert.

### PE1HWO (JO21GV) wkd on 144 MHz:

2000-06-21  
0700 SV8/DL1GI JM99 26 26 c  
2000-06-29  
1015 IK0BZY/9 JM76 nil  
2000-07-03  
2028 UT/DL2SDQ KO30ER 27 26 c \*1  
2000-06-21  
0700 SV8/DL1GI JM99TR 26 26 7 1 c  
2000-06-29  
1015 IK0BZY/9 JM76 nil  
2000-07-03  
2000 UT/DL2SDQ KO30ER 27 26 c  
2000-07-08  
1300 EA6/PA2CHR JN20 nc t  
2000-07-16  
1800 EA6/PA2CHR JN10 nil \*2  
2000-07-23  
0400 I/DL9AN JM88 nil t  
2000-07-23  
1400 EA6/PA2CHR JN20 26 26 5 7 0.5 c  
2000-07-23  
2047 G0KZG/MM IO59 26 26 18 1 c r  
2000-07-24  
2000 I/DL9AN JM89 26 nc t  
2000-07-25  
2200 I/DL9AN JM79VR 26 27 8 m c  
2000-07-26  
0703 G0KZG/MM IO79 27 27 18 1 c  
2000-07-27  
2100 IC8FAX JN70CN 26 27 10 m c  
2000-07-27  
2155 HA6NY JN98WC 26 27 m m c  
Remarks: \*1 Wkd with 80W! \*2 Sri, could not be qrv.

Equipment:  
400W, 17ele,  
MGF1302,  
WinMSDSP.  
Skeds wel-  
come at  
pethwo@am  
sat.org. 73, An-  
drè (home  
www.qsl.net/p  
e1hwo).



Port St Louis du Rhône

JN23JJ

# DUBUS Toplist

Editor: Norbert Goettsche, DL8LAQ

## DUBUS 50 MHz Top List

| NR | CALL     | WW   | WK  | DC  | TR   | AU   | MS   | ES   | F2    |
|----|----------|------|-----|-----|------|------|------|------|-------|
| 1  | ON4KST   | JO20 | 856 | 163 | 801  | 1415 | 1509 | 8374 | 16498 |
| 2  | PA0HIP   | JO21 | 851 | 168 | 0    | 0    | 0    | 0    | 0     |
| 3  | PA0RDY   | JO22 | 807 | 139 | 725  | 1617 | 1597 | **** | 16320 |
| 4  | DL7QY    | JN59 | 797 | 155 | 741  | 1665 | 2186 | 9027 | 16353 |
| 5  | SM7FJE   | JO65 | 779 | 149 | 0    | 0    | 0    | 0    | 0     |
| 6  | SM7AED   | JO65 | 768 | 148 | 0    | 0    | 0    | 0    | 0     |
| 7  | PA2VST   | JO22 | 764 | 155 | 0    | 0    | 0    | 0    | 0     |
| 8  | GJ4ICD   | IN89 | 758 | 167 | 0    | 0    | 0    | 0    | 0     |
| 9  | G4UPS    | IO80 | 734 | 148 | 0    | 0    | 0    | 0    | 0     |
| 10 | G4IGO    | IO80 | 732 | 150 | 578  | 1308 | 2528 | 7301 | 16188 |
| 11 | ON4PS    | JO20 | 640 | 125 | 752  | 1740 | 1902 | 6520 | 16358 |
| 12 | ON4GG    | JO20 | 595 | 0   | 741  | 1757 | 1695 | 7243 | 16547 |
| 13 | F8OP     | JN26 | 591 | 0   | 631  | 1023 | 1369 | 5508 | 13547 |
| 14 | DL8HCZ   | JO53 | 586 | 115 | 365  | 1250 | 1356 | 3350 | 0     |
| 15 | PA2TAB   | JO32 | 583 | 132 | 762  | 1370 | 1809 | 5797 | 15339 |
| 16 | ON4ANT   | JO20 | 576 | 0   | 710  | 1757 | 1695 | 7243 | 16547 |
| 17 | SV1DH    | KM17 | 568 | 173 | 0    | 0    | 0    | 0    | 0     |
| 18 | IZ5EME   | JN52 | 567 | 122 | 583  | 0    | 1712 | 5216 | 15152 |
| 19 | G6HKM    | JO01 | 552 | 0   | 347  | 1883 | 780  | 5674 | 16112 |
| 20 | I4XCC    | JO03 | 548 | 0   | 707  | 0    | 1427 | 4456 | 18627 |
| 21 | SP6GZZ   | JO81 | 529 | 0   | 515  | 1394 | 1826 | 8103 | 14443 |
| 22 | DL3AMA   | JO51 | 524 | 100 | 519  | 1431 | 1600 | 4001 | 12180 |
| 23 | OK1DDO   | JO60 | 512 | 96  | 620  | 1423 | 1340 | 6100 | 13300 |
| 24 | SP6GWB/P | JO80 | 511 | 102 | 696  | 1774 | 1880 | 8419 | 14462 |
| 25 | GW4LXO   | IO81 | 500 | 0   | 300  | 650  | 1200 | 7500 | 10000 |
| 26 | ON1IM    | JO11 | 456 | 106 | 223  | 1278 | 1302 | 5607 | 16205 |
| 27 | SP4MPB   | KO03 | 451 | 0   | 520  | 1836 | 1507 | 8290 | 0     |
| 28 | SP6MLK/P | JO80 | 444 | 75  | 1051 | 1607 | 1322 | 8557 | 27874 |
| 29 | DL4ALI   | JO50 | 431 | 87  | 464  | 628  | 1850 | 3969 | 12195 |
| 30 | DL6NCI   | JO50 | 427 | 106 | 514  | 1294 | 505  | 7815 | 14239 |
| 31 | F1GTU    | JN05 | 418 | 0   | 699  | 815  | 1421 | 3268 | 16400 |
| 32 | DL9GU    | JN49 | 402 | 0   | 721  | 450  | 0    | 8500 | 15625 |
| 33 | OK1IBL   | JO60 | 377 | 77  | 530  | 1320 | 1717 | 6941 | 11816 |
| 34 | PA3FYM   | JO22 | 375 | 0   | 1238 | 2019 | 0    | **** | 16373 |
| 35 | HB9SJV   | JN26 | 374 | 90  | 526  | 768  | 1474 | 5784 | 14658 |
| 36 | OK1FAV   | JO60 | 374 | 83  | 0    | 579  | 1093 | 6250 | 10366 |
| 37 | ES1CW    | KO29 | 372 | 71  | 530  | 1968 | 2116 | 5253 | 9263  |
| 38 | OK1VBN   | JN78 | 370 | 60  | 455  | 0    | 897  | 5793 | 0     |
| 39 | SP2IQW   | JO94 | 367 | 68  | 631  | 1537 | 1470 | 4034 | 10964 |
| 40 | DL6BF    | JO32 | 365 | 71  | 1193 | 1326 | 0    | 4955 | 11582 |
| 41 | OK1FFD   | JO60 | 364 | 81  | 580  | 1231 | 1067 | 6250 | 13300 |
| 42 | HB9AOF   | JN36 | 350 | 82  | 500  | 0    | 0    | 5400 | 10663 |
| 43 | PE1HWO   | JO21 | 346 | 74  | 835  | 1092 | 1610 | 5935 | 11443 |
| 44 | DF7RG    | JN68 | 345 | 80  | 652  | 1576 | 824  | 4864 | 14802 |
| 45 | F5DE     | JN05 | 341 | 82  | 860  | 0    | 1368 | 3638 | 12539 |
| 46 | SM3BIU   | JP73 | 336 | 77  | 907  | 1704 | 1982 | 4414 | 0     |
| 47 | YL3AG    | KO26 | 336 | 63  | 691  | 1817 | 0    | 8115 | 12106 |
| 48 | OK1MAC   | JN79 | 336 | 0   | 0    | 0    | 0    | 0    | 0     |

|    |        |      |     |    |      |      |      |      |       |
|----|--------|------|-----|----|------|------|------|------|-------|
| 49 | DL7HG  | JO62 | 335 | 70 | 0    | 0    | 0    | 0    | 12900 |
| 50 | F5PAU  | IN88 | 333 | 78 | 0    | 0    | 0    | 0    | 0     |
| 51 | PE1OGF | JO21 | 332 | 76 | 0    | 0    | 0    | 0    | 0     |
| 52 | SM7JUQ | JO65 | 331 | 84 | 372  | 1349 | 1062 | 3900 | 14070 |
| 53 | DL1SUZ | JO53 | 330 | 69 | 546  | 1434 | 865  | 5921 | 11859 |
| 54 | YO2IS  | KN05 | 325 | 0  | 270  | 1155 | 1404 | 6942 | 14292 |
| 55 | DL7ARM | JO62 | 315 | 0  | 909  | 1189 | 1245 | 8324 | 15817 |
| 56 | ES2RJ  | KO29 | 313 | 59 | 345  | 1726 | 2052 | 4642 | 0     |
| 57 | F8CS   | JN27 | 313 | 68 | 336  | 0    | 0    | 7454 | 9753  |
| 58 | ES6QB  | KO37 | 310 | 74 | 450  | 625  | 0    | 5145 | 13410 |
| 59 | OE1SOW | JN88 | 302 | 68 | 0    | 0    | 0    | 0    | 11921 |
| 60 | DL2DR  | JO31 | 299 | 34 | 1003 | 0    | 0    | 4769 | 12047 |
| 61 | OZ7IS  | JO65 | 296 | 81 | 410  | 1294 | 850  | 3100 | 0     |
| 62 | DJ6XV  | JO31 | 286 | 55 | 401  | 0    | 1130 | 4805 | 10165 |
| 63 | OK2ZW  | JN89 | 286 | 85 | 0    | 0    | 0    | 0    | 15580 |
| 64 | LZ1AG  | KN22 | 281 | 74 | 375  | 0    | 0    | 3782 | 10628 |
| 65 | HB9STY | JN36 | 280 | 65 | 367  | 0    | 1431 | 4448 | 7810  |
| 66 | LY2SA  | KO14 | 275 | 56 | 374  | 960  | 904  | 4031 | 7748  |
| 67 | F1FIH  | JN23 | 273 | 98 | 796  | 0    | 1637 | 2492 | 15613 |
| 68 | IK5OIY | JN52 | 262 | 0  | 332  | 0    | 1444 | 2826 | 8305  |
| 69 | DL3YEE | JO42 | 261 | 0  | 540  | 1056 | 1300 | 2700 | 13053 |
| 70 | ES1AJ  | KO29 | 261 | 51 | 415  | 1710 | 1850 | 3340 | 0     |
| 71 | OK1UDX | JN79 | 260 | 50 | 440  | 1054 | 0    | 3513 | 7505  |
| 72 | ES1II  | KO29 | 259 | 52 | 335  | 1569 | 0    | 3325 | 0     |
| 73 | OK1VQ  | JO60 | 259 | 46 | 245  | 539  | 0    | 2002 | 2755  |
| 74 | PA4VHF | JO32 | 257 | 58 | 559  | 902  | 755  | 4832 | 11534 |
| 75 | ES2WX  | KO29 | 257 | 53 | 336  | 1063 | 1847 | 4651 | 0     |
| 76 | ON5SE  | JN29 | 257 | 78 | 0    | 0    | 0    | 0    | 0     |
| 77 | I3ZVN  | JN55 | 254 | 65 | 532  | 0    | 0    | 5742 | 8422  |
| 78 | ES2NA  | KO29 | 252 | 52 | 415  | 352  | 1843 | 3340 | 9276  |
| 79 | SP2JXN | JO94 | 249 | 55 | 0    | 0    | 0    | 0    | 0     |
| 80 | OE3OKS | JN87 | 243 | 45 | 467  | 0    | 0    | 7985 | 0     |
| 81 | DL7YS  | JO62 | 240 | 60 | 342  | 461  | 1086 | 3547 | 8767  |
| 82 | ES5DE  | KO38 | 239 | 56 | 228  | 606  | 0    | 5299 | 8249  |
| 83 | DL5BBL | JO42 | 237 | 0  | 414  | 1008 | 0    | 3975 | 5863  |
| 84 | ES1MW  | KO29 | 232 | 52 | 315  | 650  | 0    | 2855 | 0     |
| 85 | IW2DVK | JN45 | 230 | 51 | 534  | 0    | 1649 | 7332 | 9837  |
| 86 | CT1BGE | IM58 | 215 | 1  | 0    | 0    | 0    | 0    | 0     |
| 87 | SP5HEJ | KO02 | 206 | 0  | 568  | 0    | 1838 | 4699 | 0     |
| 88 | ES5MC  | KO38 | 205 | 58 | 432  | 1786 | 0    | 5143 | 13142 |
| 89 | DF1EQ  | JO31 | 203 | 0  | 279  | 0    | 0    | 2769 | 0     |
| 90 | YU1VQ  | JN94 | 201 | 50 | 1766 | 0    | 1450 | 3666 | 1650  |
| 91 | OK2PPP | JN99 | 201 | 40 | 0    | 0    | 0    | 3200 | 0     |
| 92 | OK1DKS | JO70 | 198 | 42 | 934  | 0    | 0    | 1973 | 8514  |
| 93 | HB9Q   | JN47 | 197 | 60 | 0    | 0    | 0    | 0    | 0     |
| 94 | ES4NG  | KO39 | 191 | 47 | 412  | 725  | 0    | 3105 | 0     |
| 95 | PA2CHR | JO22 | 187 | 72 | 1334 | 909  | 0    | 5215 | 13966 |
| 96 | DL8EBW | JO31 | 185 | 50 | 247  | 1050 | 1150 | 5800 | 0     |
| 97 | ES5RY  | KO38 | 177 | 36 | 317  | 0    | 0    | 3640 | 0     |
| 98 | CT1DIN | IN60 | 174 | 37 | 1581 | 0    | 0    | 3169 | 0     |
| 99 | SP6AZT | JO81 | 169 | 0  | 612  | 0    | 1168 | 4327 | 0     |

|            |      |     |    |      |      |     |      |       |    |          |      |     |    |      |      |      |      |
|------------|------|-----|----|------|------|-----|------|-------|----|----------|------|-----|----|------|------|------|------|
| 100HB9RUZ  | JN47 | 168 | 54 | 406  | 0    | 960 | 3585 | 0     | 31 | DL3AMA   | JO51 | 440 | 56 | 1785 | 1803 | 1925 | 2083 |
| 101DJ2XS   | JO53 | 164 | 0  | 440  | 419  | 0   | 4155 | 0     | 32 | DH3YAK   | JO31 | 433 | 58 | 1424 | 1162 | 2038 | 2650 |
| 102DL8GAP  | JN48 | 159 | 50 | 365  | 0    | 0   | 3070 | 11343 | 33 | DL7FF    | JO62 | 430 | 0  | 1516 | 1379 | 2057 | 2312 |
| 103G7LRQ   | IO91 | 154 | 41 | 0    | 0    | 0   | 3574 | 0     | 34 | OK2VMD   | JN89 | 428 | 58 | 1662 | 1765 | 2031 | 3605 |
| 104DG1VL   | JO61 | 149 | 38 | 0    | 0    | 0   | 2733 | 0     | 35 | F8OP     | JN26 | 428 | 0  | 1228 | 1196 | 2028 | 2720 |
| 105OH2BNH  | KP20 | 147 | 37 | 391  | 948  | 0   | 3246 | 0     | 36 | RX1AS    | KN59 | 427 | 0  | 1709 | 1905 | 2271 | 2547 |
| 106DL5GAC  | JN47 | 147 | 0  | 129  | 690  | 0   | 5100 | 11900 | 37 | YU7MS    | KN05 | 419 | 62 | 1319 | 1856 | 2160 | 2438 |
| 107OK2XTE  | JN79 | 138 | 42 | 162  | 0    | 0   | 2419 | 0     | 38 | PA4VHF   | JO32 | 416 | 0  | 1536 | 1337 | 2085 | 2086 |
| 108DL5IO   | JN49 | 134 | 0  | 113  | 340  | 900 | 3100 | 12995 | 39 | ES2WX    | KO29 | 415 | 40 | 1370 | 1950 | 2270 | 2071 |
| 109ES1RF   | KO29 | 129 | 32 | 340  | 650  | 0   | 2800 | 0     | 40 | YO2IS    | KN05 | 407 | 0  | 1360 | 1916 | 2130 | 2556 |
| 110DL5UH   | JN48 | 129 | 35 | 103  | 0    | 0   | 5943 | 0     | 41 | IW1AZJ   | JN35 | 407 | 62 | 1115 | 1188 | 2151 | 2780 |
| 111 F1JKY  | JN25 | 128 | 35 | 688  | 0    | 815 | 2043 | 7197  | 42 | OK1FM    | JN69 | 403 | 56 | 1843 | 1438 | 2200 | 2150 |
| 112DK2BJ   | JO30 | 127 | 43 | 275  | 0    | 0   | 1799 | 0     | 43 | ON4ANT   | JO20 | 399 | 0  | 1420 | 1965 | 2124 | 2725 |
| 113ES3RM   | KO28 | 127 | 31 | 210  | 692  | 0   | 3111 | 0     | 44 | DL7AKA   | JO62 | 396 | 0  | 1747 | 1916 | 2065 | 3620 |
| 114DG3HS   | JO53 | 117 | 39 | 422  | 0    | 0   | 3070 | 0     | 45 | OK1MAC   | JN79 | 392 | 0  | 1536 | 1681 | 2005 | 2511 |
| 115ES5QA   | KO38 | 115 | 28 | 0    | 0    | 0   | 2852 | 0     | 46 | ES6RQ    | KO37 | 391 | 37 | 1500 | 1840 | 2172 | 1725 |
| 116CT1DDW  | IN60 | 110 | 50 | 2100 | 0    | 0   | 4699 | 0     | 47 | OK1JKT/P | JO60 | 389 | 52 | 1701 | 1764 | 2121 | 2269 |
| 117CT1FAK  | IN50 | 108 | 1  | 0    | 0    | 0   | 5395 | 0     | 48 | F8CS     | JN27 | 387 | 54 | 1161 | 1468 | 2124 | 3231 |
| 118I2FUM/2 | JN45 | 107 | 0  | 137  | 0    | 0   | 2023 | 0     | 49 | UA3MBJ   | KO88 | 374 | 0  | 1560 | 2006 | 2573 | 2392 |
| 119S53J    | JN75 | 105 | 33 | 0    | 0    | 0   | 0    | 0     | 50 | HB9CRQ   | JN47 | 374 | 64 | 1404 | 1288 | 2060 | 2959 |
| 120IN3TWX  | JN56 | 95  | 0  | 396  | 0    | 0   | 1890 | 8100  | 51 | DL1SUN   | JO53 | 367 | 0  | 1824 | 1724 | 1845 | 2333 |
| 121PAQJUS  | JO22 | 87  | 0  | 325  | 1706 | 0   | 9650 | 0     | 52 | DL1KDA   | JO30 | 366 | 59 | 1388 | 1924 | 2101 | 2339 |
| 122DJ6MB   | JO30 | 64  | 0  | 0    | 661  | 0   | 5968 | 0     | 53 | I4YNO    | JN54 | 366 | 63 | 1374 | 1374 | 2122 | 2276 |
| 123DJ8ES   | JO43 | 58  | 20 | 1306 | 0    | 0   | 2100 | 0     | 54 | SM7JUQ   | JO65 | 365 | 41 | 1902 | 1646 | 1921 | 2332 |

## DUBUS 144 MHz Top List

| NR | CALL     | WW   | WKDC | TR | AU   | MS   | ES        |
|----|----------|------|------|----|------|------|-----------|
| 1  | DK1KO    | JO53 | 677  | 0  | 2124 | 2057 | 2210 3285 |
| 2  | DK3WG    | JO72 | 660  | 1  | 2243 | 2034 | 2295 2782 |
| 3  | PA3BIY   | JO22 | 618  | 64 | 1550 | 2026 | 2205 3143 |
| 4  | DF8LC    | JO53 | 600  | 70 | 2105 | 2045 | 2226 3291 |
| 5  | DL8EBW   | JO31 | 590  | 63 | 1454 | 1918 | 2112 2305 |
| 6  | PA0RDY   | JO22 | 564  | 67 | 1582 | 1979 | 2272 2819 |
| 7  | DL8HCZ   | JO53 | 561  | 0  | 1615 | 1976 | 2096 3527 |
| 8  | PA3FOC   | JO21 | 522  | 59 | 1373 | 2010 | 2209 2326 |
| 9  | OH5LK    | KP30 | 521  | 0  | 1962 | 2041 | 2235 2891 |
| 10 | SP6GZZ   | JO81 | 520  | 0  | 1670 | 1794 | 2017 2717 |
| 11 | SP9EWU   | JO90 | 517  | 63 | 1710 | 1927 | 2154 2871 |
| 12 | DK6AS    | JO52 | 516  | 0  | 1460 | 1885 | 2510 2260 |
| 13 | I2FAK    | JN45 | 512  | 0  | 1797 | 1508 | 2405 2995 |
| 14 | HA1YA    | JN87 | 511  | 72 | 1548 | 1876 | 2183 2885 |
| 15 | OE3JPC   | JN88 | 504  | 0  | 1584 | 1821 | 2128 2769 |
| 16 | I4XCC    | JN63 | 502  | 0  | 1177 | 1803 | 2275 3257 |
| 17 | DJ7OF    | JO51 | 489  | 63 | 1512 | 1518 | 2152 2156 |
| 18 | DL5DTA   | JO61 | 481  | 58 | 1344 | 1578 | 2045 2057 |
| 19 | LY2WR    | KO24 | 480  | 57 | 2051 | 2075 | 2347 3007 |
| 20 | DD0VF    | JO61 | 468  | 62 | 1736 | 1701 | 2017 2617 |
| 21 | OZ1DOQ   | JO65 | 467  | 58 | 1885 | 1940 | 1981 2888 |
| 22 | DL8LAQ   | JO43 | 465  | 0  | 1376 | 1806 | 1934 3302 |
| 23 | ON4GG    | JO20 | 459  | 0  | 1420 | 1965 | 2150 2124 |
| 24 | IZ5EME   | JN52 | 458  | 65 | 1590 | 0    | 2090 2893 |
| 25 | YU7EW    | KN05 | 454  | 67 | 1404 | 1868 | 2179 2430 |
| 26 | DK0OG    | JN68 | 453  | 0  | 1708 | 1722 | 2172 3320 |
| 27 | PA2CHR   | JO22 | 453  | 0  | 1432 | 1683 | 2240 3201 |
| 28 | OH7PI    | KP32 | 451  | 0  | 1902 | 1926 | 2151 2489 |
| 29 | OK2ZW    | JN89 | 445  | 56 | 1417 | 1775 | 2113 2471 |
| 30 | SP4MPB   | KO03 | 440  | 0  | 1886 | 1764 | 2038 2697 |
| 31 | DL3AMA   | JO51 | 440  | 56 | 1785 | 1803 | 1925 2083 |
| 32 | DH3YAK   | JO31 | 433  | 58 | 1424 | 1162 | 2038 2650 |
| 33 | DL7FF    | JO62 | 430  | 0  | 1516 | 1379 | 2057 2312 |
| 34 | OK2VMD   | JN89 | 428  | 58 | 1662 | 1765 | 2031 3605 |
| 35 | F8OP     | JN26 | 428  | 0  | 1228 | 1196 | 2028 2720 |
| 36 | RX1AS    | KN59 | 427  | 0  | 1709 | 1905 | 2271 2547 |
| 37 | YU7MS    | KN05 | 419  | 62 | 1319 | 1856 | 2160 2438 |
| 38 | PA4VHF   | JO32 | 416  | 0  | 1536 | 1337 | 2085 2086 |
| 39 | ES2WX    | KO29 | 415  | 40 | 1370 | 1950 | 2270 2071 |
| 40 | YO2IS    | KN05 | 407  | 0  | 1360 | 1916 | 2130 2556 |
| 41 | IW1AZJ   | JN35 | 407  | 62 | 1115 | 1188 | 2151 2780 |
| 42 | OK1FM    | JN69 | 403  | 56 | 1843 | 1438 | 2200 2150 |
| 43 | ON4ANT   | JO20 | 399  | 0  | 1420 | 1965 | 2124 2725 |
| 44 | DL7AKA   | JO62 | 396  | 0  | 1747 | 1916 | 2065 3620 |
| 45 | OK1MAC   | JN79 | 392  | 0  | 1536 | 1681 | 2005 2511 |
| 46 | ES6RQ    | KO37 | 391  | 37 | 1500 | 1840 | 2172 1725 |
| 47 | OK1JKT/P | JO60 | 389  | 52 | 1701 | 1764 | 2121 2269 |
| 48 | F8CS     | JN27 | 387  | 54 | 1161 | 1468 | 2124 3231 |
| 49 | UA3MBJ   | KO88 | 374  | 0  | 1560 | 2006 | 2573 2392 |
| 50 | HB9CRQ   | JN47 | 374  | 64 | 1404 | 1288 | 2060 2959 |
| 51 | DL1SUN   | JO53 | 367  | 0  | 1824 | 1724 | 1845 2333 |
| 52 | DL1KDA   | JO30 | 366  | 59 | 1388 | 1924 | 2101 2339 |
| 53 | I4YNO    | JN54 | 366  | 63 | 1374 | 1374 | 2122 2276 |
| 54 | SM7JUQ   | JO65 | 365  | 41 | 1902 | 1646 | 1921 2332 |
| 55 | DL6BF    | JO32 | 363  | 50 | 1542 | 1932 | 1814 2332 |
| 56 | ES2RJ    | KO29 | 358  | 40 | 1190 | 1861 | 2000 2127 |
| 57 | YL3AG    | KO26 | 356  | 33 | 1552 | 1912 | 0 2448    |
| 58 | OE3OKS   | JN87 | 356  | 59 | 1441 | 1273 | 1867 2788 |
| 59 | S5OC     | JN76 | 355  | 61 | 1463 | 1530 | 2233 3356 |
| 60 | DL7YS    | JO62 | 353  | 53 | 1512 | 1528 | 1826 2136 |
| 61 | SM3BIU   | JP73 | 353  | 32 | 1460 | 1844 | 2260 2242 |
| 62 | YU1WP    | JN94 | 346  | 53 | 1422 | 1850 | 2236 2825 |
| 63 | IK1PAG   | JN35 | 346  | 0  | 1186 | 0    | 2254 2725 |
| 64 | PA2DWH   | JO22 | 345  | 59 | 1230 | 1950 | 2150 2250 |
| 65 | OH2BNH   | KP20 | 344  | 37 | 1334 | 1787 | 2003 2003 |
| 66 | UR5BAE   | KN29 | 341  | 52 | 1994 | 1924 | 1866 2492 |
| 67 | UT1PA    | KO21 | 340  | 0  | 1901 | 1934 | 1806 2425 |
| 68 | YU7VA    | KN05 | 340  | 60 | 1316 | 1399 | 1954 2446 |
| 69 | YU7EF    | KN05 | 340  | 58 | 1135 | 987  | 2248 2440 |
| 70 | PE1OGF   | JO21 | 338  | 58 | 1391 | 1602 | 1959 2259 |
| 71 | G3LQR    | JO02 | 337  | 0  | 1776 | 2031 | 0 2406    |
| 72 | SP6AZT   | JO81 | 335  | 0  | 2080 | 1463 | 1710 2566 |
| 73 | OK1DKS   | JO70 | 334  | 56 | 1230 | 1308 | 0 3530    |
| 74 | F6DKW    | JN18 | 331  | 52 | 1519 | 1602 | 2051 2755 |
| 75 | DL1LP    | JO64 | 331  | 46 | 1347 | 1071 | 2058 2301 |
| 76 | OE6IWG   | JN77 | 331  | 54 | 1221 | 1120 | 2220 2126 |
| 77 | DK1KR    | JO53 | 330  | 0  | 1481 | 2103 | 0 2375    |
| 78 | DL5GAC   | JN47 | 330  | 0  | 1264 | 1876 | 2135 3079 |
| 79 | DB6BX    | JO32 | 321  | 55 | 1534 | 1541 | 1921 2126 |
| 80 | ON4KHG   | JO10 | 321  | 50 | 1185 | 1592 | 2094 2312 |
| 81 | ON1IM    | JO11 | 320  | 42 | 1420 | 1310 | 1865 2306 |
| 82 | F1FIH    | JN23 | 320  | 55 | 1305 | 999  | 1829 2934 |
| 83 | OK1MG    | JO70 | 319  | 49 | 1526 | 1590 | 0 2632    |
| 84 | ON4KST   | JO20 | 314  | 54 | 1435 | 1612 | 1940 2383 |
| 85 | PA0WWM   | JO22 | 312  | 50 | 1303 | 1839 | 1997 2255 |

|     |          |      |     |    |      |      |      |      |     |          |      |     |    |      |      |      |      |
|-----|----------|------|-----|----|------|------|------|------|-----|----------|------|-----|----|------|------|------|------|
| 86  | PA2TAB   | JO32 | 309 | 53 | 1302 | 1239 | 2103 | 2183 | 141 | OK2PNN   | JN89 | 234 | 0  | 149  | 1216 | 0    | 3771 |
| 87  | F5HRY    | JN18 | 309 | 54 | 1276 | 1695 | 2038 | 2758 | 142 | G3XDY    | JO02 | 230 | 38 | 1355 | 2049 | 1835 | 2124 |
| 88  | ES2XM    | KO29 | 308 | 37 | 1389 | 2198 | 0    | 2222 | 143 | F5DE     | JN05 | 225 | 40 | 1891 | 1671 | 1892 | 2399 |
| 89  | SP3MFI   | JO1  | 307 | 0  | 1697 | 1632 | 1802 | 2617 | 144 | OK1VMS   | JO70 | 225 | 44 | 1692 | 1232 | 0    | 2225 |
| 90  | G4YTL    | IO91 | 303 | 0  | 1450 | 1774 | 2143 | 2172 | 145 | F1GTU    | JN05 | 225 | 0  | 1650 | 967  | 1934 | 2400 |
| 91  | SP6GWB/P | JO80 | 302 | 47 | 1780 | 1581 | 1875 | 2437 | 146 | DG3XA    | JO43 | 224 | 42 | 1371 | 1061 | 1839 | 2331 |
| 92  | ES4EQ    | KO39 | 302 | 39 | 1541 | 1840 | 2240 | 2245 | 147 | OK1VBN   | JN78 | 223 | 45 | 1578 | 1682 | 1915 | 2209 |
| 93  | OK1FFD   | JO60 | 301 | 54 | 1388 | 1720 | 1991 | 2154 | 148 | ES5EJ    | KO38 | 218 | 30 | 1422 | 1804 | 0    | 2070 |
| 94  | I1JQT    | JN35 | 301 | 0  | 1106 | 1269 | 1825 | 2742 | 149 | ES0IW    | KO19 | 216 | 32 | 1545 | 1687 | 0    | 1861 |
| 95  | OK1AXH   | JO70 | 300 | 0  | 2142 | 1486 | 1366 | 1768 | 150 | PA5DD    | JO22 | 216 | 41 | 1302 | 1491 | 1982 | 2244 |
| 96  | SM5BSZ   | JO89 | 293 | 0  | 1764 | 1824 | 1938 | 0    | 151 | 9A4EW    | JN95 | 216 | 0  | 1075 | 0    | 1956 | 2293 |
| 97  | OK1DFC/P | JO60 | 292 | 51 | 1775 | 2099 | 2024 | 2016 | 152 | DL5BBL   | JO42 | 215 | 0  | 1416 | 1290 | 0    | 2028 |
| 98  | SP2JXN   | JO94 | 289 | 41 | 1650 | 1690 | 0    | 2634 | 153 | DC6DY    | JO31 | 212 | 0  | 1416 | 1045 | 1914 | 2292 |
| 99  | LY2SA    | KO14 | 287 | 44 | 1569 | 1742 | 2163 | 2088 | 154 | OK1DDO   | JO60 | 211 | 46 | 1329 | 1500 | 1720 | 2418 |
| 100 | DH0GHU   | JN38 | 284 | 49 | 1170 | 1170 | 2117 | 3067 | 155 | UR7GN    | KN66 | 208 | 0  | 1830 | 0    | 2010 | 1940 |
| 101 | IN3TWX   | JN56 | 283 | 0  | 1100 | 0    | 1609 | 1750 | 156 | ES0NW    | KO19 | 207 | 30 | 1060 | 1720 | 1797 | 1965 |
| 102 | ES3GZ    | KO28 | 281 | 35 | 1495 | 1720 | 2134 | 2101 | 157 | OK1SC    | JO70 | 204 | 0  | 1490 | 1673 | 0    | 1729 |
| 103 | LA8AK    | JO38 | 280 | 0  | 1496 | 1804 | 1804 | 2413 | 158 | IK1LGV   | JN44 | 204 | 0  | 1466 | 0    | 1613 | 1890 |
| 104 | ES5WE    | KO38 | 278 | 32 | 1406 | 1695 | 1934 | 2530 | 159 | RW3PF    | KO93 | 203 | 30 | 1031 | 1840 | 2134 | 2191 |
| 105 | DF1IAZ   | JN49 | 278 | 56 | 1038 | 1143 | 2069 | 1873 | 160 | YU7ON    | KN04 | 203 | 37 | 914  | 0    | 1897 | 2273 |
| 106 | ON4PS    | JO20 | 276 | 47 | 1449 | 1435 | 1822 | 2259 | 161 | SP5HEJ   | KO02 | 201 | 0  | 1830 | 1705 | 1312 | 2313 |
| 107 | G4IGO    | IO80 | 274 | 0  | 2761 | 1917 | 1903 | 2833 | 162 | UY5HF    | KN66 | 201 | 0  | 1750 | 0    | 1820 | 2032 |
| 108 | DL1BKK   | JO43 | 273 | 0  | 1513 | 928  | 0    | 2712 | 163 | OE5VRL/5 | JN78 | 200 | 0  | 1665 | 1573 | 1990 | 2157 |
| 109 | DL1SUZ   | JO53 | 273 | 46 | 1238 | 1661 | 1811 | 2309 | 164 | ES8RO    | KO28 | 199 | 27 | 1802 | 1800 | 0    | 1780 |
| 110 | DK2BJ    | JO30 | 272 | 46 | 1476 | 1924 | 0    | 2205 | 165 | DL2DR    | JO31 | 199 | 39 | 1158 | 980  | 0    | 2057 |
| 111 | HB9DFG   | JN37 | 272 | 50 | 1367 | 1299 | 1921 | 2302 | 166 | DL8AAV   | JO52 | 198 | 44 | 1236 | 1127 | 0    | 2144 |
| 112 | PE1HWO   | JO21 | 272 | 54 | 1315 | 1374 | 2184 | 2257 | 167 | IT9VDQ   | JM68 | 197 | 45 | 1676 | 0    | 2169 | 2491 |
| 113 | RZ6BU    | KN84 | 272 | 0  | 1172 | 960  | 2017 | 2953 | 168 | DL9BDM   | JO33 | 197 | 0  | 1538 | 1248 | 1659 | 2321 |
| 114 | UA4NM    | LO48 | 270 | 0  | 1215 | 1850 | 2510 | 2290 | 169 | G6RAF    | IO92 | 197 | 0  | 1507 | 1722 | 2078 | 2400 |
| 115 | G6HKM    | JO01 | 269 | 0  | 1304 | 1555 | 1660 | 2269 | 170 | DF9QX    | JO42 | 197 | 0  | 1446 | 1070 | 1455 | 3320 |
| 116 | OK1IBL   | JO60 | 266 | 50 | 1438 | 1462 | 2003 | 3398 | 171 | ES0SM    | KO08 | 196 | 31 | 1578 | 1767 | 1991 | 0    |
| 117 | IK5OIY   | JN52 | 265 | 0  | 1048 | 0    | 2095 | 2253 | 172 | DK2DB    | JN48 | 195 | 0  | 1239 | 1136 | 0    | 3106 |
| 118 | OZ1IPU   | JO57 | 262 | 40 | 1387 | 1187 | 1566 | 2452 | 173 | F1HDF/P  | JN18 | 194 | 0  | 1452 | 0    | 0    | 2425 |
| 119 | GW4LXO   | IO81 | 261 | 0  | 2750 | 1550 | 2000 | 2200 | 174 | ES1OX    | KO29 | 194 | 18 | 1016 | 1449 | 1158 | 2121 |
| 120 | DH8GV    | JO33 | 261 | 42 | 1565 | 1018 | 1102 | 2450 | 175 | PA0JUS   | JO22 | 192 | 38 | 1409 | 1050 | 0    | 2167 |
| 121 | RK2FWA   | KO04 | 261 | 0  | 912  | 1759 | 2125 | 2010 | 176 | ES7RDR   | KO27 | 189 | 31 | 1200 | 1750 | 1000 | 2101 |
| 122 | OK1HAG   | JN79 | 260 | 0  | 1441 | 1749 | 1909 | 3463 | 177 | ES0HD    | KO18 | 187 | 23 | 1550 | 1918 | 0    | 0    |
| 123 | F6CKZ    | JN09 | 258 | 0  | 1552 | 1330 | 1721 | 3408 | 178 | UA3MHJ   | KO87 | 186 | 0  | 1227 | 1943 | 2405 | 1948 |
| 124 | DK8EL    | JO31 | 256 | 0  | 1199 | 1051 | 1870 | 1996 | 179 | HB9MIO/P | JN37 | 185 | 0  | 1316 | 975  | 0    | 2183 |
| 125 | LZ1AG    | KN22 | 256 | 42 | 915  | 0    | 1779 | 2503 | 180 | S59AM    | JN65 | 184 | 0  | 1377 | 0    | 1945 | 1788 |
| 126 | OM7AQ    | JN98 | 253 | 49 | 1484 | 1294 | 1907 | 2483 | 181 | DG3HS    | JO53 | 184 | 35 | 1152 | 1091 | 0    | 2306 |
| 127 | ES1RF    | KO29 | 252 | 30 | 1184 | 1820 | 1978 | 2084 | 182 | ES5RY    | KO38 | 183 | 32 | 1198 | 1695 | 2002 | 1409 |
| 128 | GM4JJJ   | IO86 | 251 | 41 | 3253 | 1804 | 1868 | 2554 | 183 | UA3T     | LO16 | 183 | 0  | 1163 | 1941 | 2145 | 0    |
| 129 | DK1VL    | JO61 | 251 | 44 | 1373 | 1223 | 1817 | 2325 | 184 | HB9RUZ   | JN47 | 183 | 48 | 1060 | 1050 | 0    | 3014 |
| 130 | DH9NBB   | JN49 | 249 | 54 | 1363 | 1228 | 1846 | 2039 | 185 | YU7KB    | JN94 | 183 | 42 | 853  | 0    | 1874 | 2256 |
| 131 | YU1VG    | JN94 | 248 | 47 | 1407 | 826  | 1727 | 2294 | 186 | OK1IAS   | JO60 | 182 | 34 | 1392 | 1444 | 0    | 2138 |
| 132 | DK1VI    | JN49 | 246 | 50 | 1270 | 1215 | 1604 | 3131 | 187 | YZ7MON   | JN95 | 180 | 37 | 1004 | 0    | 1837 | 2279 |
| 133 | DG1BA    | JO43 | 245 | 0  | 1674 | 1280 | 1588 | 2239 | 188 | DL3YEE   | JO42 | 178 | 0  | 1574 | 1450 | 1480 | 2106 |
| 134 | OK1PG    | JO70 | 243 | 50 | 1773 | 1243 | 0    | 3488 | 189 | DK5WO    | JO30 | 177 | 35 | 1474 | 1219 | 0    | 1993 |
| 135 | LZ1ZX    | KN32 | 243 | 0  | 1162 | 0    | 1945 | 2729 | 190 | DK9RL    | JN69 | 177 | 0  | 1311 | 1513 | 1286 | 3316 |
| 136 | F5PAU    | IN88 | 241 | 46 | 1630 | 0    | 0    | 2425 | 191 | SP2IQW   | JO94 | 174 | 28 | 1611 | 1611 | 997  | 1877 |
| 137 | OK2QI    | JO80 | 238 | 50 | 1475 | 1686 | 1380 | 2050 | 192 | HB9AOF   | JN36 | 173 | 45 | 1201 | 670  | 1675 | 2166 |
| 138 | PA0ZM    | JO32 | 236 | 45 | 1028 | 1771 | 2061 | 2246 | 193 | OK1VEI   | JO70 | 170 | 0  | 1677 | 1197 | 1398 | 0    |
| 139 | OK1KEI   | JO70 | 235 | 0  | 1861 | 1259 | 983  | 2067 | 194 | ES1AO    | KO29 | 169 | 25 | 1162 | 1176 | 1792 | 2136 |
| 140 | UT7GA    | KN66 | 234 | 0  | 1877 | 1446 | 2131 | 2617 | 195 | OK1KRY   | JN69 | 166 | 40 | 1437 | 977  | 0    | 1830 |

|     |          |      |     |    |      |      |      |      |    |          |      |     |    |      |      |      |   |
|-----|----------|------|-----|----|------|------|------|------|----|----------|------|-----|----|------|------|------|---|
| 196 | ON4ZN    | JO21 | 163 | 32 | 1390 | 980  | 0    | 2149 | 5  | PA0EZ    | JO22 | 200 | 35 | 1787 | 1445 | 0    | 0 |
| 197 | ES1JL    | KO29 | 163 | 17 | 1379 | 1596 | 0    | 0    | 6  | PA0WWM   | JO22 | 195 | 36 | 1547 | 1836 | 0    | 0 |
| 198 | DL0UL/P  | JN48 | 163 | 0  | 1026 | 0    | 1342 | 2019 | 7  | OZ7IS    | JO65 | 188 | 32 | 1499 | 1048 | 1294 | 0 |
| 199 | DG0CAL   | JO52 | 161 | 0  | 1160 | 0    | 1543 | 2105 | 8  | HA1YA    | JN87 | 186 | 43 | 1438 | 1221 | 0    | 0 |
| 200 | UA4AQL   | LO20 | 161 | 0  | 1124 | 1841 | 2158 | 2195 | 9  | DL8QS    | JO43 | 182 | 33 | 1513 | 1513 | 0    | 0 |
| 201 | ES1AW    | KO29 | 158 | 25 | 1230 | 1680 | 0    | 1924 | 10 | OK1AXH   | JO70 | 181 | 0  | 1861 | 1239 | 0    | 0 |
| 202 | SP9FG    | JN99 | 156 | 30 | 1647 | 1283 | 0    | 1698 | 11 | DB6BX    | JO32 | 174 | 34 | 1550 | 662  | 0    | 0 |
| 203 | OK1CA    | JO70 | 156 | 0  | 1540 | 1065 | 950  | 2096 | 12 | DL7QY    | JN59 | 173 | 0  | 1640 | 1848 | 1292 | 0 |
| 204 | HA8MV    | KN06 | 156 | 34 | 895  | 1384 | 1736 | 2080 | 13 | DJ6MB    | JO30 | 171 | 0  | 1278 | 1733 | 0    | 0 |
| 205 | ES0BI    | KO18 | 154 | 21 | 1439 | 1823 | 1528 | 0    | 14 | G3XDY    | JO22 | 169 | 27 | 1350 | 1619 | 0    | 0 |
| 206 | DJ6XV    | JO31 | 152 | 34 | 1337 | 992  | 0    | 2007 | 15 | LY2WR    | KO24 | 167 | 26 | 1995 | 1593 | 1935 | 0 |
| 207 | ES2QN    | KO29 | 152 | 22 | 1175 | 1460 | 0    | 2116 | 16 | F6DKW    | JN18 | 163 | 23 | 1519 | 0    | 0    | 0 |
| 208 | OZ7IS    | JO65 | 151 | 32 | 1128 | 1294 | 1901 | 1845 | 17 | DK1KO    | JO53 | 161 | 0  | 1643 | 694  | 0    | 0 |
| 209 | ES6PZ    | KO38 | 151 | 20 | 1101 | 0    | 0    | 2532 | 18 | DF8LC    | JO53 | 161 | 0  | 1615 | 1361 | 0    | 0 |
| 210 | UT5JCW   | KN64 | 150 | 0  | 0    | 0    | 0    | 0    | 19 | DK6AS    | JO52 | 161 | 0  | 1569 | 775  | 0    | 0 |
| 211 | CT1FAK   | IN50 | 149 | 25 | 2129 | 0    | 2250 | 2488 | 20 | SP6MLK/P | JO80 | 160 | 31 | 1780 | 0    | 0    | 0 |
| 212 | DK0PX    | JN48 | 147 | 0  | 1161 | 0    | 1815 | 1649 | 21 | DB6NT    | JO50 | 158 | 31 | 1823 | 0    | 0    | 0 |
| 213 | ES1CW    | KO29 | 142 | 21 | 1192 | 1570 | 0    | 2143 | 22 | SP6GWB/P | JO80 | 154 | 30 | 1780 | 759  | 0    | 0 |
| 214 | OK2PMN   | JN88 | 141 | 0  | 871  | 1547 | 887  | 2101 | 23 | SP6AZT   | JO81 | 154 | 0  | 1538 | 1087 | 0    | 0 |
| 215 | DL0GTH   | JO50 | 139 | 23 | 1124 | 0    | 0    | 0    | 24 | DK1KR    | JO53 | 154 | 0  | 1400 | 1827 | 0    | 0 |
| 216 | OK2UFB   | JN99 | 136 | 27 | 1526 | 0    | 0    | 1983 | 25 | PA4FP    | JO33 | 152 | 0  | 2116 | 1010 | 0    | 0 |
| 217 | RW4AK    | LO20 | 136 | 0  | 1126 | 1480 | 2158 | 2301 | 26 | SM7ECM   | JO65 | 151 | 24 | 1389 | 1073 | 0    | 0 |
| 218 | ES5QA    | KO38 | 135 | 35 | 1665 | 1788 | 1555 | 2236 | 27 | OZ2OE    | JO45 | 150 | 0  | 2216 | 1020 | 0    | 0 |
| 219 | OK2KDS   | JN99 | 134 | 0  | 1568 | 0    | 0    | 1983 | 28 | SM6ESG   | JO67 | 150 | 26 | 1436 | 712  | 0    | 0 |
| 220 | DG5NEX   | JN49 | 133 | 0  | 1234 | 0    | 1333 | 1941 | 29 | YL3AG    | KO26 | 149 | 19 | 1571 | 1041 | 0    | 0 |
| 221 | DL3IAS   | JN49 | 130 | 36 | 988  | 1123 | 1830 | 1866 | 30 | DH3NAN   | JO50 | 147 | 0  | 1437 | 1008 | 0    | 0 |
| 222 | OK1DTG/P | JO70 | 127 | 27 | 1351 | 1352 | 0    | 0    | 31 | OK1CA    | JO70 | 146 | 0  | 1670 | 0    | 0    | 0 |
| 223 | RU3ZD    | KO81 | 126 | 0  | 1713 | 2126 | 1755 | 2363 | 32 | DL3YEE   | JO42 | 140 | 0  | 1574 | 1728 | 0    | 0 |
| 224 | DL5IO    | JN49 | 126 | 0  | 1073 | 925  | 1450 | 1899 | 33 | ES2WX    | KO29 | 140 | 17 | 1232 | 1415 | 0    | 0 |
| 225 | YU7AZX   | KN04 | 126 | 30 | 914  | 0    | 1389 | 2173 | 34 | OK1KEI   | JO70 | 138 | 0  | 1682 | 1185 | 0    | 0 |
| 226 | LA7DFA   | JP33 | 125 | 0  | 630  | 1816 | 1803 | 0    | 35 | OK1VEI   | JO70 | 136 | 0  | 1532 | 811  | 0    | 0 |
| 227 | F1PYW    | JN38 | 124 | 30 | 936  | 888  | 1522 | 1958 | 36 | DL1SUN   | JO53 | 136 | 0  | 1157 | 1071 | 0    | 0 |
| 228 | HB9S/P   | JN36 | 123 | 24 | 1135 | 0    | 0    | 0    | 37 | SP9FG    | JN99 | 135 | 25 | 1660 | 0    | 0    | 0 |
| 229 | S53J     | JN75 | 123 | 27 | 1123 | 1036 | 983  | 1984 | 38 | SP9EWU   | JO90 | 135 | 30 | 1589 | 1558 | 1664 | 0 |
| 230 | DL3NAW   | JN59 | 120 | 0  | 1019 | 0    | 1961 | 1237 | 39 | OK1KIR/P | JO60 | 133 | 28 | 1773 | 0    | 0    | 0 |
| 231 | OK1VDA   | JO70 | 119 | 27 | 938  | 641  | 0    | 2220 | 40 | OH5LK    | KP30 | 131 | 0  | 1386 | 1196 | 0    | 0 |
| 232 | F6FGO    | JN25 | 118 | 31 | 1390 | 0    | 0    | 2218 | 41 | PA0JUS   | JO22 | 130 | 26 | 1340 | 0    | 0    | 0 |
| 233 | OK2KJU   | JN89 | 115 | 32 | 1318 | 1766 | 0    | 1494 | 42 | DL1BKK   | JO43 | 128 | 0  | 1513 | 565  | 0    | 0 |
| 234 | DL0SP/P  | JO62 | 112 | 20 | 1315 | 785  | 0    | 1608 | 43 | LA8AK    | JO38 | 124 | 0  | 1373 | 981  | 0    | 0 |
| 235 | OE1SOW   | JN88 | 112 | 32 | 0    | 1286 | 0    | 2250 | 44 | G6HKM    | JO01 | 124 | 0  | 1289 | 281  | 0    | 0 |
| 236 | OK2XTE   | JN79 | 111 | 33 | 1362 | 0    | 0    | 2267 | 45 | PA0ZM    | JO32 | 123 | 24 | 1184 | 1693 | 0    | 0 |
| 237 | DJ8ES    | JO43 | 106 | 19 | 1306 | 0    | 0    | 1856 | 46 | G6RAF    | IO92 | 122 | 0  | 1730 | 0    | 0    | 0 |
| 238 | DL5NEN   | JN59 | 106 | 30 | 748  | 0    | 1767 | 1640 | 47 | PA2CHR   | JO22 | 122 | 31 | 1357 | 323  | 0    | 0 |
| 239 | ON7WR    | JO20 | 106 | 24 | 0    | 0    | 0    | 1834 | 48 | OE5VRL/5 | JN78 | 121 | 0  | 1524 | 1031 | 0    | 0 |
| 240 | I3ZVN    | JN55 | 98  | 32 | 1212 | 0    | 0    | 2237 | 49 | F5PAU    | IN88 | 119 | 24 | 1630 | 0    | 0    | 0 |
| 241 | OK2PHM   | JN89 | 97  | 20 | 829  | 1265 | 0    | 2262 | 50 | DL4VCG   | JN39 | 119 | 0  | 1335 | 0    | 0    | 0 |
| 242 | ES1II    | KO29 | 95  | 13 | 979  | 1570 | 0    | 0    | 51 | OZ1IPU   | JO57 | 118 | 18 | 1387 | 0    | 0    | 0 |
|     |          |      |     |    |      |      |      |      | 52 | OK1VMS   | JO70 | 116 | 23 | 1434 | 972  | 0    | 0 |
|     |          |      |     |    |      |      |      |      | 53 | PA0BAT   | JO31 | 115 | 21 | 1301 | 0    | 0    | 0 |
|     |          |      |     |    |      |      |      |      | 54 | OK2QI    | JO80 | 114 | 25 | 1410 | 0    | 0    | 0 |
|     |          |      |     |    |      |      |      |      | 55 | DL0UL/P  | JN48 | 113 | 0  | 1238 | 0    | 0    | 0 |
|     |          |      |     |    |      |      |      |      | 56 | DL6BCT   | JO43 | 113 | 0  | 1152 | 0    | 0    | 0 |
|     |          |      |     |    |      |      |      |      | 57 | DJ6XV    | JO31 | 113 | 19 | 1128 | 976  | 0    | 0 |
|     |          |      |     |    |      |      |      |      | 58 | SP6GZZ   | JO81 | 112 | 0  | 1549 | 870  | 0    | 0 |
|     |          |      |     |    |      |      |      |      | 59 | PE1OGF   | JO21 | 112 | 18 | 1288 | 0    | 0    | 0 |

## DUBUS 432 MHz Top List

| NR | CALL   | WW   | WKDC | TR | AU   | MS   | ES   | 53 | DL6BCT | JO43   | 113  | 19  | 1128 | 976  | 0   | 0 | 0 |
|----|--------|------|------|----|------|------|------|----|--------|--------|------|-----|------|------|-----|---|---|
| 1  | DJ9BV  | JO43 | 219  | 0  | 2154 | 1863 | 1440 | 0  | 57     | DL6BCT | JO43 | 113 | 0    | 1152 | 0   | 0 | 0 |
| 2  | PA0RDY | JO22 | 207  | 0  | 1979 | 1807 | 1376 | 0  | 58     | SP6GZZ | JO81 | 112 | 0    | 1549 | 870 | 0 | 0 |
| 3  | DK3WG  | JO72 | 207  | 74 | 1547 | 1494 | 0    | 0  | 59     | PE1OGF | JO21 | 112 | 18   | 1288 | 0   | 0 | 0 |
| 4  | G3LQR  | JO02 | 206  | 0  | 2031 | 1613 | 0    | 0  |        |        |      |     |      |      |     |   |   |

|     |          |      |     |    |      |           |   |   |     |            |      |    |    |      |      |   |   |
|-----|----------|------|-----|----|------|-----------|---|---|-----|------------|------|----|----|------|------|---|---|
| 60  | ON4PS    | JO20 | 111 | 21 | 1335 | 0         | 0 | 0 | 115 | DG3XA      | JO43 | 84 | 13 | 905  | 0    | 0 | 0 |
| 61  | ON4ZN    | JO21 | 111 | 21 | 1132 | 0         | 0 | 0 | 116 | ES0HD      | KO18 | 83 | 19 | 1565 | 614  | 0 | 0 |
| 62  | DK0OG    | JN68 | 110 | 0  | 1459 | 745       | 0 | 0 | 117 | DC6DY      | JO31 | 83 | 0  | 1190 | 0    | 0 | 0 |
| 63  | UA3MBJ   | KO88 | 110 | 0  | 1306 | 1541      | 0 | 0 | 118 | OH2BNH     | KP20 | 82 | 12 | 1235 | 1046 | 0 | 0 |
| 64  | ON7WR    | JO20 | 110 | 23 | 1163 | 0         | 0 | 0 | 119 | F6CKZ      | JN09 | 80 | 0  | 1302 | 0    | 0 | 0 |
| 65  | DL3AMA   | JO51 | 110 | 21 | 1015 | 1219      | 0 | 0 | 120 | DF1EQ      | JO31 | 80 | 0  | 1249 | 0    | 0 | 0 |
| 66  | GW4LXO   | IO81 | 109 | 0  | 1550 | 0         | 0 | 0 | 121 | ES4EQ      | KO39 | 80 | 16 | 1160 | 907  | 0 | 0 |
| 67  | DL7FF    | JO62 | 109 | 0  | 1507 | 772       | 0 | 0 | 122 | ES0IW      | KO19 | 79 | 17 | 1342 | 906  | 0 | 0 |
| 68  | DH9NBB   | JN49 | 109 | 24 | 1363 | 0         | 0 | 0 | 123 | OK2KDS     | JN99 | 79 | 0  | 1212 | 0    | 0 | 0 |
| 69  | HB9MIN/P | JN37 | 109 | 0  | 1300 | 0         | 0 | 0 | 124 | I4YNO/4    | JN54 | 77 | 15 | 886  | 0    | 0 | 0 |
| 70  | F1HDF/P  | JN18 | 108 | 0  | 1204 | 0         | 0 | 0 | 125 | DL5NEN/P   | JN59 | 76 | 16 | 964  | 0    | 0 | 0 |
| 71  | DL0GTH   | JO50 | 106 | 20 | 1113 | 0         | 0 | 0 | 126 | DH3YAK     | JO31 | 75 | 13 | 1165 | 0    | 0 | 0 |
| 72  | DL4KG    | JO31 | 105 | 21 | 1273 | 0         | 0 | 0 | 127 | F1GTU      | JN05 | 75 | 0  | 1114 | 0    | 0 | 0 |
| 73  | UT1PA    | KO21 | 105 | 0  | 1238 | 1761      | 0 | 0 | 128 | OK1FFD     | JO60 | 74 | 23 | 1339 | 0    | 0 | 0 |
| 74  | DF9QX    | JO42 | 105 | 0  | 1136 | 721       | 0 | 0 | 129 | OK1MG      | JO70 | 74 | 18 | 1045 | 0    | 0 | 0 |
| 75  | DL2DR    | JO31 | 104 | 21 | 1158 | 0         | 0 | 0 | 130 | DG6GP      | JN48 | 74 | 13 | 1024 | 0    | 0 | 0 |
| 76  | DK5WO    | JO30 | 104 | 20 | 1150 | 0         | 0 | 0 | 131 | DL7YS      | JO62 | 73 | 17 | 1100 | 0    | 0 | 0 |
| 77  | DC4XH    | JO43 | 104 | 20 | 1133 | 808       | 0 | 0 | 132 | OK1KRQ/P   | JN69 | 73 | 16 | 1091 | 0    | 0 | 0 |
| 78  | ES6RQ    | KO37 | 103 | 19 | 1452 | 1148      | 0 | 0 | 133 | OK1SC      | JO70 | 71 | 0  | 1310 | 758  | 0 | 0 |
| 79  | OK1AIY/P | JO70 | 102 | 0  | 1490 | 0         | 0 | 0 | 134 | UR7GN      | KN66 | 70 | 0  | 1790 | 0    | 0 | 0 |
| 80  | ON1IM    | JO11 | 102 | 20 | 1410 | 0         | 0 | 0 | 135 | LY2SA      | KO14 | 70 | 15 | 1164 | 946  | 0 | 0 |
| 81  | DL1KDA   | JO30 | 102 | 22 | 1286 | 999 1334  | 0 | 0 | 136 | OK2PWY     | JN89 | 70 | 17 | 1135 | 0    | 0 | 0 |
| 82  | OK1DKS/P | JO60 | 102 | 23 | 1118 | 0         | 0 | 0 | 137 | PA5DD      | JO22 | 69 | 16 | 959  | 0    | 0 | 0 |
| 83  | UT7GA    | KN66 | 101 | 0  | 1877 | 0         | 0 | 0 | 138 | OK2PNN     | JN89 | 69 | 0  | 918  | 0    | 0 | 0 |
| 84  | HB9CRQ   | JN47 | 101 | 0  | 1010 | 0         | 0 | 0 | 139 | OK1DTG/P   | JO70 | 68 | 14 | 1436 | 0    | 0 | 0 |
| 85  | ON4GG    | JO20 | 98  | 0  | 1407 | 0         | 0 | 0 | 140 | DL0SP/P    | JO62 | 67 | 0  | 1018 | 0    | 0 | 0 |
| 86  | F5HRY    | JN18 | 98  | 18 | 1222 | 583       | 0 | 0 | 141 | DD0VF      | JO60 | 66 | 18 | 1106 | 0    | 0 | 0 |
| 87  | ON4ANT   | JO20 | 96  | 0  | 1406 | 0         | 0 | 0 | 142 | SM7JUQ     | JO65 | 65 | 15 | 1232 | 0    | 0 | 0 |
| 88  | DH8GV    | JO33 | 94  | 19 | 1259 | 0         | 0 | 0 | 143 | DK2MN      | JO32 | 65 | 13 | 715  | 0    | 0 | 0 |
| 89  | DL6BF    | JO32 | 94  | 15 | 882  | 894       | 0 | 0 | 144 | UR5BAE     | KN29 | 64 | 18 | 1517 | 0    | 0 | 0 |
| 90  | OK1KRY   | JN69 | 93  | 23 | 1350 | 0         | 0 | 0 | 145 | DL9MCC     | JN58 | 64 | 18 | 875  | 0    | 0 | 0 |
| 91  | OK1DFC/P | JO60 | 93  | 22 | 1179 | 0         | 0 | 0 | 146 | ES5WE      | KO38 | 62 | 11 | 1406 | 0    | 0 | 0 |
| 92  | RX1AS    | KN59 | 93  | 0  | 0    | 0         | 0 | 0 | 147 | DL8AAV     | JO52 | 62 | 15 | 914  | 0    | 0 | 0 |
| 93  | DK2DB    | JN48 | 92  | 0  | 1331 | 0         | 0 | 0 | 148 | DG7SFL     | JN49 | 61 | 10 | 947  | 0    | 0 | 0 |
| 94  | ES2XM    | KO29 | 92  | 11 | 1271 | 1259      | 0 | 0 | 149 | DL3IAS     | JN49 | 61 | 12 | 886  | 0    | 0 | 0 |
| 95  | DJ1LP    | JO64 | 91  | 9  | 1414 | 0         | 0 | 0 | 150 | F6FGO      | JN25 | 60 | 11 | 1016 | 0    | 0 | 0 |
| 96  | DG5NEX   | JN49 | 91  | 0  | 1187 | 0         | 0 | 0 | 151 | ES0NW      | KO29 | 59 | 17 | 1213 | 675  | 0 | 0 |
| 97  | G4LRT    | IO92 | 90  | 0  | 1394 | 410       | 0 | 0 | 152 | ES0SM      | KO08 | 59 | 20 | 1202 | 925  | 0 | 0 |
| 98  | PE1HWO   | JO21 | 90  | 18 | 1290 | 0         | 0 | 0 | 153 | UA4NM      | LO48 | 58 | 0  | 1230 | 1310 | 0 | 0 |
| 99  | OK1KPA   | JN79 | 89  | 0  | 1176 | 0         | 0 | 0 | 154 | OM7AQ      | JN98 | 57 | 13 | 922  | 0    | 0 | 0 |
| 100 | DK0PX    | JN48 | 89  | 0  | 1168 | 0         | 0 | 0 | 155 | OK2UFB     | JN99 | 56 | 20 | 1232 | 0    | 0 | 0 |
| 101 | OK1OKL   | JO60 | 88  | 0  | 1199 | 0         | 0 | 0 | 156 | DH0GHU     | JN38 | 56 | 12 | 852  | 0    | 0 | 0 |
| 102 | DJ8ES    | JO43 | 88  | 12 | 1087 | 0         | 0 | 0 | 157 | LA/DB1DI/P | JO37 | 55 | 12 | 1013 | 0    | 0 | 0 |
| 103 | ES2RJ    | KO29 | 87  | 17 | 1261 | 1123      | 0 | 0 | 158 | OK1PG      | JO70 | 54 | 18 | 1773 | 0    | 0 | 0 |
| 104 | DK9RL    | JN69 | 87  | 0  | 1185 | 0         | 0 | 0 | 159 | YO2IS      | KN05 | 54 | 0  | 1020 | 1741 | 0 | 0 |
| 105 | DK1VI    | JN49 | 87  | 21 | 1125 | 936       | 0 | 0 | 160 | OK1VBN     | JN78 | 53 | 11 | 753  | 723  | 0 | 0 |
| 106 | IZ5EME   | JN52 | 86  | 20 | 1458 | 0 1670    | 0 | 0 | 161 | ES3GZ      | KO28 | 52 | 10 | 1035 | 0    | 0 | 0 |
| 107 | DG1VL    | JO61 | 86  | 15 | 1245 | 0         | 0 | 0 | 162 | DL5BBL     | JO42 | 51 | 0  | 841  | 722  | 0 | 0 |
| 108 | DL1SUZ   | JO53 | 86  | 18 | 1218 | 707       | 0 | 0 | 163 | OL5Z       | JN89 | 51 | 12 | 761  | 0    | 0 | 0 |
| 109 | DG0CAL   | JO52 | 86  | 0  | 1160 | 0         | 0 | 0 | 164 | DL9BDM     | JO33 | 50 | 0  | 1278 | 0    | 0 | 0 |
| 110 | S50C     | JN76 | 86  | 18 | 977  | 0         | 0 | 0 | 165 | SP2JXN     | JO94 | 49 | 15 | 1149 | 0    | 0 | 0 |
| 111 | UY5HF    | KN66 | 84  | 0  | 1670 | 0         | 0 | 0 | 166 | S53J       | JN75 | 49 | 9  | 688  | 0    | 0 | 0 |
| 112 | OE3JPC   | JN88 | 84  | 0  | 1132 | 1450 1469 | 0 | 0 | 167 | ES1JL      | KO29 | 48 | 11 | 1324 | 0    | 0 | 0 |
| 113 | HB9MIO/P | JN37 | 84  | 0  | 1096 | 0         | 0 | 0 | 168 | DK0FLT     | JN49 | 48 | 14 | 695  | 0    | 0 | 0 |
| 114 | HB9AOF   | JN36 | 84  | 15 | 926  | 0         | 0 | 0 | 169 | ES1RF      | KO29 | 47 | 10 | 875  | 682  | 0 | 0 |

# DUBUS 1296 MHz Top List

NR CALL WW WKDCODX

|    |          |                  |
|----|----------|------------------|
| 1  | PAOEZ    | JO22 133 23 1298 |
| 2  | PAOWVWM  | JO22 128 23 1298 |
| 3  | PAORDY   | JO22 124 01 286  |
| 4  | G3XDY    | JO02 120 23 1341 |
| 5  | DL4VCG   | JN39 119 01 335  |
| 6  | F6DKW    | JN18 119 21 1273 |
| 7  | OK1AXH   | JO70 118 01 444  |
| 8  | G3LQR    | JO02 118 01 274  |
| 9  | HB9AMH/P | JN37 114 01 351  |
| 10 | DB6NT    | JO50 108 22 1243 |
| 11 | SM7ECM   | JO65 100 17 1326 |
| 12 | SM6ESG   | JO67 99 19 1445  |
| 13 | DB6BX    | JO32 99 25 1125  |
| 14 | SP6GWB/P | JO80 95 24 1580  |
| 15 | PA0BAT   | JO31 93 20 1368  |
| 16 | DL6NAQ/P | JO40 92 40 1253  |
| 17 | OK1KIR/P | JO60 92 22 1208  |
| 18 | SP6MLK/P | JO80 91 23 1580  |
| 19 | OE5VRL/5 | JN78 91 18 1524  |
| 20 | F5PAU    | IN88 89 19 1630  |
| 21 | OZ2OE    | JO45 88 01 425   |
| 22 | G6DER    | IO93 86 01 306   |
| 23 | DL7QY    | JN59 86 01 261   |
| 24 | DK1KR    | JO53 85 01 097   |
| 25 | DK0OG    | JN68 82 01 160   |
| 26 | DL3YEE   | JO42 82 01 136   |
| 27 | OK1KEI   | JO70 81 01 316   |
| 28 | OZ1IPU   | JO57 81 16 1096  |
| 29 | PA4FP    | JO33 81 01 939   |
| 30 | OK1VEI   | JO70 80 01 313   |
| 31 | F1HDF/P  | JN18 80 9 886    |
| 32 | OZ7IS    | JO65 79 17 1205  |
| 33 | DK6AS    | JO52 78 01 421   |
| 34 | DL1BKK   | JO43 77 01 995   |
| 35 | HB9AOF   | JN36 77 15 975   |
| 36 | OK1DFC/P | JO60 76 16 1176  |
| 37 | F5HRY    | JN18 74 11 1064  |
| 38 | DL0UL/P  | JN48 74 01 962   |
| 39 | OK1AIY/P | JO70 72 01 490   |
| 40 | HB9MIO/P | JN37 72 01 000   |
| 41 | OZ1DOQ   | JO65 71 17 1322  |
| 42 | DH3NAN   | JO50 71 01 1143  |
| 43 | DH9NBB   | JN49 71 13 1016  |
| 44 | OK1CA    | JO70 70 01 421   |
| 45 | PA0JUS   | JO22 70 01 265   |
| 46 | G6HKM    | JO01 69 01 193   |
| 47 | DK5WO    | JO30 69 16 1137  |
| 48 | DL2DR    | JO31 68 13 1158  |
| 49 | ON7YK    | JO20 68 01 1079  |
| 50 | DC4XH    | JO43 67 14 1090  |
| 51 | DL0GTH   | JO50 67 16 1073  |
| 52 | HB9RG    | JN47 67 01 920   |
| 53 | DF1EQ    | JO31 67 01 908   |
| 54 | G4PMK    | IO93 66 01 302   |
| 55 | OK1VMS   | JO70 65 18 1302  |
| 56 | PA0ZM    | JO32 63 15 1329  |

|     |            |                 |
|-----|------------|-----------------|
| 57  | OK1OKL     | JO60 63 01 177  |
| 58  | ON4PS      | JO20 63 14 1098 |
| 59  | OK1DKS/P   | JO60 62 13 1207 |
| 60  | G4LRT      | IO92 62 01 152  |
| 61  | SP9FG      | JN99 61 16 1492 |
| 62  | DG5NEX     | JN49 61 01 060  |
| 63  | OK1FFD     | JO60 60 14 1058 |
| 64  | ON7WR      | JO20 60 14 1046 |
| 65  | ON4GG      | JO20 60 0 982   |
| 66  | DF9QX      | JO42 57 01 066  |
| 67  | ON4ANT     | JO20 57 0 914   |
| 68  | DJ6XV      | JO31 56 11 946  |
| 69  | DC8UG      | JO30 56 10 900  |
| 70  | DC0DA      | JO31 55 01 034  |
| 71  | DJ8ES      | JO43 55 10 1025 |
| 72  | DL1SUN     | JO53 54 01 162  |
| 73  | LY2WR      | KO24 53 14 1026 |
| 74  | PE1HWO     | JO21 52 14 1315 |
| 75  | PA5DD      | JO22 52 12 1302 |
| 76  | DL3NQ      | JN49 51 9 920   |
| 77  | DB1BX      | JO32 51 12 905  |
| 78  | K0FLT      | JN59 51 12 684  |
| 79  | DL1KDA     | JO30 50 12 940  |
| 80  | LA8AK      | JO38 49 01 373  |
| 81  | PA2CHR     | JO22 49 15 828  |
| 82  | GW4LXO     | IO81 48 0 990   |
| 83  | DL1SUZ     | JO53 48 14 968  |
| 84  | SP9EWU     | JO90 48 12 946  |
| 85  | DL3IAS     | JN49 48 9 769   |
| 86  | DK0PX      | JN48 47 0 942   |
| 87  | F6CGB      | JN18 45 0 700   |
| 88  | DJ1KP      | JO40 45 0 698   |
| 89  | DK2MN      | JO32 45 10 692  |
| 90  | DG0CAL     | JO52 44 01 160  |
| 91  | HB9BBD     | JN47 43 11 1015 |
| 92  | I25EME     | JN52 42 10 1036 |
| 93  | DJ6MB      | JO30 42 0 876   |
| 94  | OE3JPC     | JN88 42 0 702   |
| 95  | HA1YA      | JN87 41 13 862  |
| 96  | ES2RJ      | KO29 40 9 765   |
| 97  | OK1KRQ/P   | JN69 39 11 962  |
| 98  | DK2DB      | JN48 39 0 873   |
| 99  | DC6DY      | JO31 39 0 865   |
| 100 | LA/DB1DI/P | JO37 38 91 013  |
| 101 | YL3AG      | KO26 38 10 867  |
| 102 | S00C       | JN76 37 9 626   |
| 103 | F1GTU      | JN05 36 0 896   |
| 104 | DK2BJ      | JO30 36 10 885  |
| 105 | DG1VL/P    | JO61 36 6 723   |
| 106 | I0LVA/0    | JN62 35 01 152  |
| 107 | ES2WX      | KO29 35 9 692   |
| 108 | DG6GP      | JN48 33 7 732   |
| 109 | DH3YAK     | JO31 33 5 715   |
| 110 | ES4EQ      | KO39 33 9 636   |
| 111 | ES6RQ      | KO37 33 9 600   |
| 112 | DJ1LP      | JO64 30 0 922   |
| 113 | UR7GN      | KN66 30 0 820   |
| 114 | I2FUM/2    | JN44 30 0 779   |
| 115 | DK1VI      | JN49 30 10 717  |
| 116 | ON4KHG     | JO10 30 6 642   |

|     |          |                |
|-----|----------|----------------|
| 117 | ES5WE    | KO38 29 71 249 |
| 118 | I3ZVN    | JN55 28 9 1197 |
| 119 | G7LRQ    | IO91 28 8 746  |
| 120 | UT7GA    | KN66 28 0 680  |
| 121 | DK9RL    | JN69 27 0 891  |
| 122 | I4YNO/4  | JN54 27 8 769  |
| 123 | IW3FZQ/4 | JN54 27 7 732  |
| 124 | ES0SM    | KO08 26 8 873  |
| 125 | F6FGO    | JN25 26 4 839  |
| 126 | HB9RUZ/P | JN47 25 9 640  |
| 127 | OZ8VO    | JO56 24 0 951  |
| 128 | OK1DTG/P | JO70 24 8 742  |
| 129 | OK2QI    | JO80 23 71 275 |
| 130 | F1FIH    | JN23 23 6 605  |
| 131 | OK1VBN   | JN78 22 9 950  |
| 132 | OH5LK    | KP30 21 01 349 |
| 133 | OK1PG    | JO70 21 9 985  |
| 134 | PE1OGF   | JO21 21 6 588  |
| 135 | HA8MV    | KN06 21 9 576  |
| 136 | OK2BFF/P | JO80 21 8 536  |
| 137 | ON1IM    | JO11 20 5 650  |
| 138 | OK2VMU/P | JN99 20 7 570  |
| 139 | UA3MBJ   | KO88 20 0 301  |
| 140 | OK1KRY   | JN69 19 7 865  |
| 141 | OK1KPA   | JN79 19 0 783  |
| 142 | OK2BBF   | JN89 19 8 563  |
| 143 | F5OIH/P  | JN08 17 5 517  |
| 144 | IP3HTU   | JN55 16 4 838  |
| 145 | SP6AZT   | JO81 16 0 820  |
| 146 | S53J     | JN75 16 6 410  |
| 147 | DL5NEN   | JN59 16 16 320 |
| 148 | ES1RF    | KO29 15 5 506  |
| 149 | DL7YS    | JO62 15 2 410  |
| 150 | DG7SFL   | JN49 15 3 358  |
| 151 | SM4SJJ   | JP70 14 3 628  |
| 152 | ES1AJ    | KO29 14 5 531  |
| 153 | ES2XM    | KO29 14 5 478  |
| 154 | DF0RU    | JO62 14 0 373  |
| 155 | DL0SP/P  | JO62 14 2 347  |
| 156 | ES2WR    | KO29 13 5 694  |
| 157 | ES0Z     | KO18 13 5 453  |
| 158 | RX1AS    | KN59 13 0 0    |
| 159 | SM7JUQ   | JO65 12 71 061 |
| 160 | ES1NJ    | KO29 12 4 507  |
| 161 | ES1MW    | KO29 11 4 507  |
| 162 | ES0W     | KO18 11 5 443  |
| 163 | DL5UH    | JN48 10 4 671  |
| 164 | OK1SC    | JO70 10 0 440  |
| 165 | OM7AQ    | JN98 10 5 426  |
| 166 | OK2PWY   | JN89 10 6 357  |
| 167 | OK2KJU   | JN89 10 6 347  |
| 168 | OK2PHM   | JN89 10 0 341  |
| 169 | IT9VDD   | JN68 9 1 899   |
| 170 | ES1OX    | KO29 9 5 772   |
| 171 | ES1DW    | KO29 9 5 330   |
| 172 | YO2IS    | KN05 8 0 472   |
| 173 | OK1HRR   | JO70 8 2 292   |
| 174 | ES1TCA   | JO29 7 2 246   |
| 175 | DL3AMA   | JO51 7 3 162   |
| 176 | UY5HF    | KN66 6 0 520   |

|     |          |      |   |   |     |
|-----|----------|------|---|---|-----|
| 177 | ES2NA    | KO29 | 6 | 4 | 349 |
| 178 | GU6WDK/P | IN89 | 6 | 0 | 348 |
| 179 | DF5JJ    | JO43 | 6 | 3 | 281 |
| 180 | OK2XTE   | JN89 | 6 | 2 | 206 |
| 181 | SP5HEJ   | KO02 | 5 | 0 | 433 |
| 182 | GJ6WDK/P | IN89 | 5 | 0 | 282 |
| 183 | F8UM     | JN15 | 5 | 0 | 220 |
| 184 | ES0NW    | KO19 | 5 | 2 | 190 |
| 185 | ES1AW    | KO29 | 3 | 2 | 269 |
| 186 | OK2UFB   | JN89 | 3 | 2 | 142 |
| 187 | ES1WQ    | KO29 | 2 | 2 | 337 |
| 188 | ES2NT    | KO29 | 2 | 1 | 149 |
| 189 | ES6RAT   | KO28 | 2 | 1 | 125 |
| 190 | ES1JL    | KO29 | 2 | 2 | 108 |
| 191 | DG3XA/P  | JO43 | 1 | 1 | 289 |
| 192 | ES2QN    | KO29 | 1 | 1 | 198 |
| 193 | OK2PMN   | JN88 | 1 | 0 | 74  |
| 194 | OH2BNH   | KP20 | 1 | 1 | 23  |

### DUBUS 2320 MHz Top List

| NR | CALL     | WW   | WKDCODX    |
|----|----------|------|------------|
| 1  | PA0EZ    | JO22 | 79 15 973  |
| 2  | DB6NT    | JO50 | 68 15 1119 |
| 3  | PA0RDY   | JO22 | 65 01000   |
| 4  | PA0WWM   | JO22 | 63 151022  |
| 5  | G3LQR    | JO02 | 58 01006   |
| 6  | DL6NAQ/P | JO40 | 53 11 932  |
| 7  | OK1KIR/P | JO60 | 51 10 1115 |
| 8  | SM6ESG   | JO67 | 50 81054   |
| 9  | DL7QY    | JN59 | 47 01018   |
| 10 | OE5VRL/5 | JN78 | 45 111291  |
| 11 | PA0BAT   | JO31 | 45 12 923  |
| 12 | DL1BKK   | JO43 | 45 0 760   |
| 13 | G6DER    | IO93 | 44 01265   |
| 14 | PA4FP    | JO33 | 44 0 727   |
| 15 | OK1AIY/P | JO70 | 43 01296   |
| 16 | DL0GTH   | JO50 | 42 71052   |
| 17 | SM7ECM   | JO65 | 42 9 942   |
| 18 | G3MYR    | JO02 | 39 9 980   |
| 19 | OZ1IPU   | JO57 | 38 71028   |
| 20 | DC8UG    | JO30 | 35 8 900   |
| 21 | OK1OKL   | JO60 | 34 0 830   |
| 22 | DF1EQ    | JO31 | 34 0 678   |
| 23 | DL0UL/P  | JN48 | 33 0 960   |
| 24 | F5HRY    | JN18 | 32 6 785   |
| 25 | ON7WR    | JO20 | 32 8 756   |
| 26 | HB9MIO/P | JN37 | 32 0 744   |
| 27 | DJ1KP    | JO40 | 32 0 454   |
| 28 | OZ2OE    | JO45 | 31 0 876   |
| 29 | DC0DA    | JO31 | 31 0 775   |
| 30 | DL3NQ    | JN49 | 29 8 890   |
| 31 | OZ7IS    | JO65 | 29 9 860   |
| 32 | ON7YK    | JO20 | 29 0 733   |
| 33 | DL3YEE   | JO42 | 28 0 912   |
| 34 | G4LRT    | IO92 | 27 01022   |
| 35 | DH9NBB   | JN49 | 27 7 654   |
| 36 | DL4VCG   | JN39 | 27 0 553   |
| 37 | DF9QX    | JO42 | 26 0 915   |

|    |            |      |    |       |     |
|----|------------|------|----|-------|-----|
| 38 | PA5DD      | JO22 | 26 | 8     | 867 |
| 39 | DK0PX      | JN48 | 26 | 0     | 853 |
| 40 | OZ1DOQ     | JO65 | 25 | 7     | 830 |
| 41 | DL2DR      | JO31 | 25 | 0     | 823 |
| 42 | I0LVA/0    | JN62 | 25 | 0     | 612 |
| 43 | DK0OG      | JN68 | 24 | 0     | 675 |
| 44 | DK2MN      | JO32 | 24 | 6     | 635 |
| 45 | G4PMK      | IO93 | 22 | 01249 |     |
| 46 | DK2DB      | JN48 | 22 | 0     | 873 |
| 47 | OK1DKS/P   | JO60 | 22 | 4     | 602 |
| 48 | DB1BX      | JO32 | 22 | 7     | 525 |
| 49 | DL3IAS     | JN49 | 21 | 6     | 604 |
| 50 | F1HDF/P    | JN18 | 20 | 3     | 621 |
| 51 | I3ZVN      | JN55 | 19 | 7     | 603 |
| 52 | DJ8ES      | JO43 | 18 | 71025 |     |
| 53 | HB9AMH/P   | JN37 | 18 | 0     | 933 |
| 54 | OK1DFC/P   | JO60 | 18 | 4     | 549 |
| 55 | G4DDK      | JO02 | 17 | 0     | 969 |
| 56 | LA/DB1DI/P | JO37 | 17 | 7     | 825 |
| 57 | S51WI      | JN75 | 17 | 5     | 533 |
| 58 | DG5NEX     | JN49 | 16 | 0     | 465 |
| 59 | SP6GWB/P   | JO80 | 15 | 4     | 587 |
| 60 | OK1KRQ/P   | JN69 | 15 | 4     | 350 |
| 61 | HA1YA      | JN87 | 14 | 5     | 476 |
| 62 | DK1KR      | JO53 | 13 | 0     | 792 |
| 63 | ON4PS      | JO20 | 13 | 6     | 574 |
| 64 | OK2BFF/P   | JO80 | 13 | 6     | 418 |
| 65 | DJ6XV      | JO31 | 12 | 3     | 396 |
| 66 | DL1SUZ     | JO53 | 11 | 4     | 630 |
| 67 | DK6AS      | JO52 | 11 | 0     | 620 |
| 68 | IW3FZQ/4   | JN54 | 11 | 3     | 403 |
| 69 | PA0JUS     | JO22 | 10 | 5     | 705 |
| 70 | I25EME     | JN52 | 10 | 3     | 552 |
| 71 | I2FUM/2    | JN44 | 10 | 0     | 354 |
| 72 | OK2BFF     | JN89 | 10 | 6     | 308 |
| 73 | OK1KEI     | JO70 | 9  | 0     | 786 |
| 74 | SP9FG      | JN99 | 9  | 5     | 717 |
| 75 | IW3HTU     | JN55 | 9  | 2     | 542 |
| 76 | OK2VMU/P   | JN99 | 9  | 4     | 376 |
| 77 | DL1SUN     | JO53 | 9  | 0     | 349 |
| 78 | LA8AK      | JO38 | 8  | 0     | 677 |
| 79 | OK1CA      | JO70 | 8  | 0     | 291 |
| 80 | F1FIH      | JN23 | 8  | 1     | 239 |
| 81 | F6CGB      | JN18 | 7  | 0     | 407 |
| 82 | DG6GP      | JN48 | 7  | 2     | 388 |
| 83 | DH3NAN     | JO50 | 7  | 0     | 331 |
| 84 | F1GTU      | JN05 | 7  | 0     | 313 |
| 85 | SP6MLK/P   | JO80 | 7  | 3     | 272 |
| 86 | OK1PG      | JO70 | 6  | 4     | 855 |
| 87 | S50C       | JN76 | 5  | 2     | 346 |
| 88 | OK1KRY     | JN69 | 5  | 3     | 189 |
| 89 | OK2QI      | JO80 | 4  | 2     | 305 |
| 90 | F5PAU      | IN88 | 4  | 0     | 260 |
| 91 | OM7AQ      | JN98 | 3  | 3     | 281 |
| 92 | DF2CA/P    | JN57 | 3  | 0     | 206 |
| 93 | GW4LXO     | IO81 | 3  | 0     | 200 |
| 94 | OK1VBN     | JN78 | 3  | 2     | 158 |
| 95 | DL1KDA     | JO30 | 3  | 2     | 98  |
| 96 | DG1VL/P    | JO61 | 2  | 2     | 91  |
| 97 | SP9EWU     | JO90 | 1  | 0     | 134 |

### DUBUS 3400 MHz Top List

| NR | CALL     | WW   | WKDCODX  |
|----|----------|------|----------|
| 1  | DB6NT    | JO50 | 44 6 741 |
| 2  | PA0EZ    | JO22 | 29 5 835 |
| 3  | DL6NAQ/P | JO40 | 25 4 860 |
| 4  | PA0WWM   | JO22 | 24 5 850 |
| 5  | G3LQR    | JO02 | 23 0 924 |
| 6  | PA0RDY   | JO22 | 19 0 643 |
| 7  | PA0BAT   | JO31 | 18 3 568 |
| 8  | DC0DA    | JO31 | 17 0 660 |
| 9  | G6DER    | IO93 | 15 0 859 |
| 10 | DL1BKK   | JO43 | 15 0 703 |
| 11 | DL3NQ    | JN49 | 15 5 637 |
| 12 | DL7QY    | JN59 | 15 0 565 |
| 13 | DK2MN    | JO32 | 14 3 422 |
| 14 | DC8UG    | JO30 | 13 6 724 |
| 15 | DF1EQ    | JO31 | 13 0 532 |
| 16 | DL2DR    | JO31 | 13 0 470 |
| 17 | PA5DD    | JO22 | 12 4 867 |
| 18 | HB9MIO/P | JN37 | 12 0 463 |
| 19 | DB1BX    | JO32 | 12 4 425 |
| 20 | PA4FP    | JO33 | 11 0 464 |
| 21 | DK2DB    | JN48 | 11 0 331 |
| 22 | G4PMK    | IO93 | 10 0 845 |
| 23 | DK0PX    | JN48 | 9 0 632  |
| 24 | G4LRT    | IO92 | 9 0 509  |
| 25 | DL0UL/P  | JN48 | 9 0 239  |
| 26 | DL0GTH   | JO50 | 7 2 466  |
| 27 | DL4VCG   | JN39 | 6 0 339  |
| 28 | OZ2OE    | JO45 | 5 0 772  |
| 29 | DJ8ES    | JO43 | 5 3 578  |
| 30 | DJ6XV    | JO31 | 5 3 396  |
| 31 | GW4LXO   | IO81 | 3 0 117  |
| 32 | S51WI    | JN75 | 3 1 98   |
| 33 | DG1VL/P  | JO   | 3 1 91   |
| 34 | DK0OG    | JN68 | 3 1 78   |
| 35 | DF9QX    | JO42 | 2 0 143  |
| 36 | DF2CA/P  | JN57 | 2 0 24   |
| 37 | OZ1IPU   | JO57 | 1 1 209  |
| 38 | G8BKE/P  | IO80 | 1 1 114  |
| 39 | GU6WDK/P | IN89 | 1 0 6    |

### DUBUS 5760 MHz Top List

| NR | CALL     | WW   | WKDCODX   |
|----|----------|------|-----------|
| 1  | PA0EZ    | JO22 | 39 61017  |
| 2  | DB6NT    | JO50 | 39 101000 |
| 3  | SM7ECM   | JO65 | 38 47 960 |
| 4  | HB9AMH/P | JN37 | 36 0 929  |
| 5  | HB9MIO/P | JN37 | 34 0 694  |
| 6  | F1HDF/P  | JN18 | 30 4 638  |
| 7  | SM6ESG   | JO67 | 27 6 951  |
| 8  | OE5VRL/5 | JN78 | 25 9 901  |
| 9  | PA0WWM   | JO22 | 24 8 863  |
| 10 | G3LQR    | JO02 | 23 0 949  |

|    |            |      |    |   |     |
|----|------------|------|----|---|-----|
| 11 | PA0BAT     | JO31 | 23 | 9 | 723 |
| 12 | F5HRY      | JN18 | 20 | 4 | 517 |
| 13 | DL1BKK     | JO43 | 19 | 0 | 689 |
| 14 | I3ZVN      | JN55 | 19 | 7 | 573 |
| 15 | OZ1IPU     | JO57 | 18 | 6 | 807 |
| 16 | F1GHB/P    | IN88 | 17 | 0 | 669 |
| 17 | OK1KIR/P   | JO60 | 17 | 3 | 393 |
| 18 | OK1UWA/P   | JO70 | 16 | 0 | 998 |
| 19 | S51JN/P    | JN65 | 16 | 5 | 557 |
| 20 | PA5DD      | JO22 | 15 | 6 | 867 |
| 21 | S51WI      | JN75 | 15 | 4 | 586 |
| 22 | DL0UL/P    | JN48 | 14 | 0 | 660 |
| 23 | I0LVA/0    | JN62 | 14 | 0 | 557 |
| 24 | G6DER      | IO93 | 13 | 0 | 947 |
| 25 | OK1AIY/P   | JO70 | 12 | 0 | 693 |
| 26 | DK2MN      | JO32 | 12 | 3 | 422 |
| 27 | DL3NQ      | JN49 | 12 | 4 | 318 |
| 28 | DC8UG      | JO30 | 11 | 5 | 724 |
| 29 | OZ7IS      | JO65 | 11 | 4 | 593 |
| 30 | DC0DA      | JO31 | 11 | 0 | 451 |
| 31 | DK2DB      | JN48 | 11 | 0 | 315 |
| 32 | DL7QY      | JN59 | 10 | 0 | 565 |
| 33 | OK1OKL     | JO60 | 9  | 0 | 611 |
| 34 | DL6NAQ/P   | JO40 | 9  | 2 | 452 |
| 35 | OZ1DOQ     | JO65 | 9  | 4 | 442 |
| 36 | DB1BX      | JO32 | 9  | 4 | 425 |
| 37 | DK0PX      | JN48 | 9  | 0 | 409 |
| 38 | IW3FZQ/4   | JN54 | 9  | 4 | 291 |
| 39 | DL2DR      | JO31 | 9  | 0 | 201 |
| 40 | IW3HTU     | JN55 | 8  | 3 | 542 |
| 41 | HB9MIN/P   | JN37 | 8  | 0 | 286 |
| 42 | LA/DB1DI/P | JO37 | 7  | 5 | 746 |
| 43 | DL0GTH     | JO50 | 7  | 2 | 674 |
| 44 | G4PMK      | IO93 | 6  | 0 | 958 |
| 45 | OK1DKS/P   | JO60 | 6  | 1 | 318 |
| 46 | DC8EC/P    | JN57 | 6  | 1 | 278 |
| 47 | I2FUM/2    | JN44 | 6  | 0 | 201 |
| 48 | OZ2OE      | JO45 | 5  | 0 | 679 |
| 49 | DJ8ES      | JO43 | 5  | 5 | 578 |
| 50 | DF1EQ      | JO31 | 5  | 0 | 461 |
| 51 | F6CGB      | JN18 | 5  | 0 | 407 |
| 52 | DG1VL/P    | JO61 | 5  | 3 | 307 |
| 53 | DJ6XV      | JO31 | 5  | 2 | 176 |
| 54 | DK0OG      | JN68 | 5  | 2 | 78  |
| 55 | OK2VMU/P   | JN99 | 4  | 2 | 376 |
| 56 | DL4VCG     | JN39 | 4  | 0 | 339 |
| 57 | PA4FP      | JO33 | 4  | 0 | 235 |
| 58 | F8UM/P     | JN05 | 4  | 0 | 162 |
| 59 | OK1KRY     | JN69 | 3  | 2 | 175 |
| 60 | F6CGB/P    | JN24 | 2  | 0 | 375 |
| 61 | G8BKE/P    | IO80 | 2  | 1 | 242 |
| 62 | HA1YA      | JN87 | 2  | 2 | 120 |
| 63 | OK2QI      | JO80 | 2  | 1 | 108 |
| 64 | ES2WX      | KO29 | 2  | 2 | 89  |
| 65 | GJ6WDK/P   | IN89 | 1  | 0 | 136 |
| 66 | OK1KRQ/P   | JN69 | 1  | 1 | 96  |
| 67 | SP6MLK/P   | JO80 | 1  | 1 | 1   |
| 68 | SP6GWB/P   | JO80 | 1  | 1 | 1   |

## DUBUS 10 GHz Top List

| NR | CALL     | WW   | WKDCODX    |
|----|----------|------|------------|
| 1  | F6DKW    | JN18 | 74 11 1215 |
| 2  | PA0EZ    | JO22 | 74 14 1017 |
| 3  | F5HRY    | JN18 | 59 8 877   |
| 4  | PA0WWW   | JO22 | 58 13 850  |
| 5  | G3WDG    | IO92 | 55 0 1135  |
| 6  | F1HDF/P  | JN18 | 55 8 867   |
| 7  | G4KGC    | IO92 | 53 0 1135  |
| 8  | SM7ECM   | JO65 | 53 8 1110  |
| 9  | PA0BAT   | JO31 | 53 13 785  |
| 10 | G3LQR    | JO02 | 52 0 1006  |
| 11 | OE5VRL/5 | JN78 | 51 12 1136 |
| 12 | HB9AMH/P | JN37 | 51 0 939   |
| 13 | DB6NT    | JO50 | 50 14 1000 |
| 14 | DL4EAU/P | JO51 | 48 9 826   |
| 15 | DK1KR    | JO53 | 47 0 868   |
| 16 | OK1JKT/P | JO60 | 47 12 845  |
| 17 | HB9MIN/P | JN37 | 45 0 939   |
| 18 | DJ1KP    | JO40 | 45 0 656   |
| 19 | I6CXB/6  | JN63 | 44 0 751   |
| 20 | DL3NQ    | JN49 | 42 9 712   |
| 21 | DM2AFN   | JO61 | 41 9 662   |
| 22 | HB9MIO/P | JN37 | 40 0 744   |
| 23 | DL3YEE   | JO42 | 40 0 700   |
| 24 | G4BRK    | IO91 | 39 0 1115  |
| 25 | I6XCK/6  | JN63 | 39 0 702   |
| 26 | DK0FLT   | JN59 | 39 10 683  |
| 27 | DC8EC    | JN57 | 39 12 661  |
| 28 | OK1VAM/P | JO60 | 39 11 640  |
| 29 | SM6ESG   | JO67 | 38 6 1275  |
| 30 | DK0OG    | JN68 | 38 7 78    |
| 31 | PA5DD    | JO22 | 37 10 867  |
| 32 | I0LVA/0  | JN62 | 37 8 850   |
| 33 | LA1DU    | JN29 | 37 0 700   |
| 34 | DH9NBB   | JN49 | 36 9 654   |
| 35 | G3GNR    | IO70 | 34 0 1275  |
| 36 | HB9RG    | JN47 | 34 0 761   |
| 37 | OK1AIY/P | JO70 | 34 0 736   |
| 38 | DG1VL/P  | JO61 | 34 5 654   |
| 39 | DL6NAQ/P | JO40 | 32 8 656   |
| 40 | DK2MN    | JO32 | 32 8 633   |
| 41 | G4DDK    | JO02 | 31 0 901   |
| 42 | DL6NCI   | JO50 | 31 6 481   |
| 43 | DL1BKK   | JO43 | 30 0 842   |
| 44 | DL0UL/P  | JN57 | 30 0 646   |
| 45 | DL0GTH   | JO50 | 30 7 240   |
| 46 | EA6ADW/P | JM19 | 29 7 1090  |
| 47 | IW6AEG/6 | JN63 | 29 0 751   |
| 48 | OK1DFC/P | JO60 | 29 6 668   |
| 49 | OZ1IPU   | JO57 | 28 7 941   |
| 50 | DL3IAS   | JN49 | 28 9 584   |
| 51 | OK1OKL   | JO60 | 27 0 795   |
| 52 | S51JN/P  | JN65 | 25 9 637   |
| 53 | DK0PX    | JN48 | 25 0 567   |
| 54 | OK1KIR/P | JO60 | 25 5 553   |
| 55 | S50C     | JN76 | 25 9 457   |
| 56 | OK1KEI/P | JN79 | 25 7 375   |
| 57 | F1GHB/P  | IN88 | 24 0 669   |

|     |            |      |    |   |      |
|-----|------------|------|----|---|------|
| 58  | S51WI      | JN75 | 24 | 6 | 586  |
| 59  | DK4GD/P    | JN48 | 24 | 0 | 566  |
| 60  | ON7WR      | JO20 | 23 | 9 | 756  |
| 61  | SP6GWB/P   | JO80 | 23 | 7 | 679  |
| 62  | I3ZVN      | JN55 | 23 | 7 | 573  |
| 63  | OZ2OE      | JO45 | 22 | 0 | 789  |
| 64  | DL2DR      | JO31 | 22 | 4 | 603  |
| 65  | DC8UG      | JO30 | 20 | 6 | 753  |
| 66  | DB1BX      | JO32 | 20 | 7 | 705  |
| 67  | DK8ZP      | JO40 | 20 | 0 | 537  |
| 68  | DL4VCG     | JN39 | 20 | 0 | 533  |
| 69  | DF9QX      | JO42 | 19 | 0 | 504  |
| 70  | DK2DB      | JN48 | 19 | 0 | 432  |
| 71  | G4LDR      | IO91 | 18 | 0 | 1118 |
| 72  | LA/DB1DI/P | JO37 | 18 | 6 | 825  |
| 73  | DL5NEN/P   | JN49 | 18 | 6 | 466  |
| 74  | ON4KHG     | JO10 | 17 | 5 | 452  |
| 75  | G3XDY      | JO02 | 16 | 5 | 595  |
| 76  | ON7YK      | JO20 | 16 | 0 | 494  |
| 77  | F5PAU      | IN88 | 16 | 2 | 430  |
| 78  | OK1KRQ/P   | JN69 | 16 | 3 | 325  |
| 79  | HB9AMH     | JN37 | 15 | 0 | 567  |
| 80  | IW3FZQ/4   | JN54 | 15 | 5 | 519  |
| 81  | DL7QY      | JN59 | 15 | 0 | 492  |
| 82  | OK1UWA/P   | JO70 | 15 | 0 | 434  |
| 83  | IW5ADB     | JN53 | 14 | 0 | 1053 |
| 84  | G4PMK      | IO93 | 14 | 0 | 958  |
| 85  | DC0DA      | JO31 | 14 | 0 | 639  |
| 86  | I4XCC      | JN63 | 13 | 0 | 496  |
| 87  | OZ1DOQ     | JO65 | 13 | 5 | 472  |
| 88  | PA4FP      | JO33 | 12 | 0 | 555  |
| 89  | GW4LXO     | IO81 | 12 | 0 | 309  |
| 90  | G4KNZ      | IO91 | 12 | 0 | 247  |
| 91  | OK1DKS/P   | JO60 | 11 | 2 | 616  |
| 92  | OK1VAM     | JN79 | 10 | 5 | 304  |
| 93  | DJ6XV      | JO31 | 10 | 3 | 285  |
| 94  | F6CGB      | JN18 | 9  | 0 | 677  |
| 95  | DJ8ES      | JO43 | 9  | 4 | 593  |
| 96  | G4LRT      | IO92 | 8  | 0 | 824  |
| 97  | IW3QCV     | JN65 | 8  | 2 | 532  |
| 98  | F5HRY/P    | JN08 | 8  | 2 | 491  |
| 99  | DL1KDA     | JO30 | 8  | 4 | 477  |
| 100 | F6CGB/P    | JN12 | 7  | 0 | 823  |
| 101 | SP6MLK/P   | JO80 | 7  | 4 | 355  |
| 102 | DF1EQ/P    | JO31 | 7  | 0 | 283  |
| 103 | ES0SM      | KO08 | 5  | 2 | 384  |
| 104 | DG0CAL     | JO52 | 5  | 0 | 255  |
| 105 | LA8AK      | JO38 | 5  | 0 | 212  |
| 106 | OK2QI      | JO80 | 4  | 1 | 303  |
| 107 | G8BKE/P    | IO80 | 4  | 1 | 242  |
| 108 | F5OIH/P    | JN08 | 4  | 1 | 149  |
| 109 | OK2VMU/P   | JN99 | 3  | 2 | 376  |
| 110 | DH3NAN     | JO50 | 3  | 0 | 134  |
| 111 | PA0JUS     | JO22 | 2  | 2 | 245  |
| 112 | SP9FG      | JN99 | 2  | 2 | 115  |
| 113 | DG5NEX     | JN49 | 1  | 0 | 173  |
| 114 | HA1YA      | JN87 | 1  | 1 | 120  |
| 115 | OK1KRY     | JN69 | 1  | 1 | 78   |
| 116 | DL0SP/P    | JO62 | 1  | 1 | 28   |
| 117 | SM4SJY     | JP70 | 1  | 1 | 0    |

## DUBUS 24 GHz Top List

| NR | CALL         | WW   | WKDCODX  |
|----|--------------|------|----------|
| 1  | HB9MIN/P     | JN37 | 12 0 396 |
| 2  | DB6NT        | JO50 | 11 4 301 |
| 3  | DC8EC/P      | JN57 | 10 2 301 |
| 4  | OE5VRL/5     | JN78 | 10 3 289 |
| 5  | HB9AMH/P     | JN37 | 10 0 286 |
| 6  | HB9MIO/P     | JN37 | 10 0 172 |
| 7  | IW3EHQ/P     | JN66 | 8 1 461  |
| 8  | IOLVA/0      | JN62 | 8 3 444  |
| 9  | PA0EZ        | JO22 | 8 3 391  |
| 10 | DJ1KP        | JO40 | 8 0 273  |
| 11 | SM6ESG       | JO67 | 7 3 242  |
| 12 | EA6ADW/P     | JM19 | 7 2 226  |
| 13 | DK0OG        | JN68 | 7 2 193  |
| 14 | S51JN/P      | JN65 | 6 3 293  |
| 15 | OK1AIY/P     | JO70 | 6 0 281  |
| 16 | G4DDK        | JO02 | 6 0 268  |
| 17 | IW3FZQ/4     | JN54 | 6 3 250  |
| 18 | PA0BAT       | JO31 | 6 2 195  |
| 19 | DK4GD/P      | JN48 | 6 0 184  |
| 20 | G3WWD        | IO92 | 5 0 392  |
| 21 | DL3NQ        | JN49 | 5 2 287  |
| 22 | G3LQR        | JO02 | 5 0 261  |
| 23 | OK1KIR/P     | JO60 | 5 2 227  |
| 24 | I3ZVN        | JN55 | 5 2 210  |
| 25 | OK1OKL       | JO60 | 5 0 185  |
| 26 | DF2CA/P      | JN58 | 5 0 142  |
| 27 | DK2MN        | JO32 | 5 2 132  |
| 28 | DL6NCI       | JO50 | 4 3 280  |
| 29 | OK1UWA/P     | JO70 | 4 0 188  |
| 30 | OK1DFC/P     | JO60 | 4 2 185  |
| 31 | DK8ZP        | JO40 | 4 0 178  |
| 32 | DK0PX        | JN48 | 4 0 168  |
| 33 | F1GHB/P      | IN88 | 4 0 158  |
| 34 | G3GNR        | IP70 | 4 0 154  |
| 35 | DL3YEE/P     | JO42 | 4 0 151  |
| 36 | DL2DR        | JO31 | 4 1 98   |
| 37 | F5HRY        | JN18 | 4 1 96   |
| 38 | F1HDF/P      | JN18 | 3 1 230  |
| 39 | OK1AIY-P     | JO60 | 3 0 227  |
| 40 | G4KNZ/P      | JO02 | 3 0 173  |
| 41 | IW3HTU       | JN55 | 3 1 160  |
| 42 | DG1VL/P      | JO61 | 3 2 113  |
| 43 | DL0GTH       | JO50 | 3 1 108  |
| 44 | GW8BKE/PIO71 |      | 2 1 170  |
| 45 | SM7ECM       | JO65 | 2 1 168  |
| 46 | DF1EQ        | JO31 | 2 0 133  |
| 47 | DB1BX        | JO32 | 2 1 90   |
| 48 | DK2DB        | JN48 | 2 0 48   |
| 49 | PA5DD        | JO22 | 2 1 43   |
| 50 | ON7YK        | JO20 | 2 0 34   |
| 51 | G4KGC        | IO92 | 1 0 392  |
| 52 | DC0DA/P      | JO32 | 1 0 104  |
| 53 | G8BKE/P      | IO80 | 1 1 100  |
| 54 | F5OIH/P      | JN08 | 1 1 90   |
| 55 | CT1FP        | IN50 | 1 1 82   |
| 56 | CT1DMK       | IN50 | 1 1 82   |
| 57 | DJ6XV        | JO31 | 1 1 75   |

|    |          |      |        |
|----|----------|------|--------|
| 58 | F6CGB/P  | JN37 | 1 0 74 |
| 59 | OK1OGS/P | JN69 | 1 0 60 |
| 60 | GW4LXO   | IO81 | 1 0 58 |
| 61 | OZ1IPU   | JO57 | 1 1 55 |
| 62 | DL7QY    | JN59 | 1 0 13 |
| 63 | DL4VCG   | JN39 | 1 0 9  |
| 64 | SP6MLK/P | JO80 | 1 1 1  |
| 65 | SP6GWB/P | JO80 | 1 1 1  |

## DUBUS 47 GHz Top List

| NR | CALL         | WW   | WKDCODX |
|----|--------------|------|---------|
| 1  | HB9MIN/P     | JN37 | 8 0 182 |
| 2  | HB9MIO/P     | JN37 | 8 0 166 |
| 3  | HB9AMH/P     | JN37 | 5 0 166 |
| 4  | IW3FZQ/4     | JN54 | 5 1 163 |
| 5  | DK4GD/P      | JN47 | 5 0 123 |
| 6  | DF2CA/P      | JN58 | 4 0 15  |
| 7  | OE5VRL/5     | JN78 | 3 2 201 |
| 8  | I3ZVN        | JN55 | 3 1 179 |
| 9  | IW3EHQ/P     | JN65 | 3 1 111 |
| 10 | DL2DR        | JO31 | 3 1 95  |
| 11 | OK1OKL       | JO60 | 2 0 96  |
| 12 | OK1UWA/P     | JO70 | 2 0 96  |
| 13 | OK1AIY-P     | JO60 | 2 0 96  |
| 14 | DB6NT        | JO50 | 2 2 95  |
| 15 | DL6NCI       | JO50 | 2 2 83  |
| 16 | DC0DA/P      | JO31 | 2 0 69  |
| 17 | DK0PX        | JN48 | 2 0 62  |
| 18 | DF2CA/P      | JO60 | 2 0 59  |
| 19 | DL3YEE/P     | JO42 | 2 0 45  |
| 20 | DK2MN        | JO32 | 2 2 30  |
| 21 | DC8EC/P      | JN57 | 2 1 29  |
| 22 | DL/HB9AMH/P  | JN48 | 0 184   |
| 23 | GW8BKE/PIO71 |      | 1 1 93  |
| 24 | G8BKE/P      | IO90 | 1 1 54  |
| 25 | IW3HTU       | JN55 | 1 1 49  |
| 26 | OK1AIY/P     | JO70 | 1 0 12  |
| 27 | OK1KIR/P     | JO60 | 1 1 5   |
| 28 | PA0BAT       | JO31 | 1 1 1   |
| 29 | CT1FP        | IN50 | 1 1 1   |
| 30 | CT1DMK       | IN50 | 1 1 1   |
| 31 | SP6MLK/6     | JO70 | 1 1 1   |

## DUBUS 76 GHz Top List

| NR | CALL     | WW   | WKDCODX |
|----|----------|------|---------|
| 1  | HB9MIO/P | JN37 | 4 0 114 |
| 2  | DK4GD/P  | JN47 | 4 0 114 |
| 3  | DF2CA/P  | JO50 | 4 0 4   |
| 4  | DB6NT    | JO50 | 2 1 77  |
| 5  | DC0DA/P  | JO50 | 2 0 48  |
| 6  | G8BKE/P  | IO91 | 1 1 17  |
| 7  | OK1AIY/P | JO70 | 1 0 12  |
| 8  | DC8EC/P  | JN57 | 1 1 5   |
| 9  | OE9FKI   | JN47 | 1 0 2   |
| 10 | HB9AMH/P | JN37 | 1 0 1   |
| 11 | HB9MIN/P | JN37 | 1 0 1   |

## DUBUS 145 GHz Top List

| NR | CALL     | WW   | WKDCODX |
|----|----------|------|---------|
| 1  | DB6NT    | JO50 | 1 1 3   |
| 2  | IW3EHQ/P | JN65 | 1 1 2   |
| 3  | G7FRE    | JO01 | 1 1 1   |
| 4  | G4FRE/P  | JO01 | 1 1 1   |

## DUBUS 241 GHz Top List

| NR | CALL     | WW   | WKDCODX |
|----|----------|------|---------|
| 1  | DB6NT    | JO50 | 1 1 2   |
| 2  | HB9MIO/P | JN37 | 1 0 1   |



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- ☒ Low Noise Figure **max. 0,8 dB NF**
- ☒ RX - Gain **min. 20 dB**
- ☒ Output power **>1 W**
- ☒ 144...146 MHz IF
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- ☒ Ceramic layered printed circuit board
- ☒ All components integrated within one module.
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- ☒ **German Silver case -Neusilber-**

Output frequency 2320...2322 MHz amateur band  
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Price for ready made unit 795.- DM  
Price for 23G2 kit 528.- DM

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VARIAN VTR 6201 A 2 is a high Power Traveling Wave Tube (TWT) for linear use from 2 to 7 GHz with an output of 200 Watts with only 20 mWatts drive. Because of it's wide frequency range this tube can be used in 13, 9 and 6 cm band (S-, C- and X-band). Only three different power supplies are needed: heating = 6.3 V / 2.1 A; collector = 2750 V / 400 mA and helix = 4400 V / 10 mA. Connectors: RF-input = SMA-female, RF-output = LC-female. One connector LC-male will be delivered free of charge. Because of 200 Watts output power this tube can be used for moonbounce communication (EME). The large bandwidth and the high amplification makes it suitable for FM-TV in the frequency range from 2 to 7 GHz. All tubes are second hand but hardly used, well checked in our lab and in excellent condition. The quantity of this TWT's is limited!

## 200 Watts RF 2 - 7 GHz



## VARIAN VTR - 6201 A 2

**Price (without german VAT): DM 1.600,-**

Additionally the following TWT's can be offered:

AEG-TWT 8 - 18 GHz / 20 Watts (at 10,4 GHz = 50 Watts RF), gain 43 dB

Price: 1.600,- DM

For specialists only: 5 GHz - TWT-amplifier, output: 1 kWatts at 30 dB gain

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