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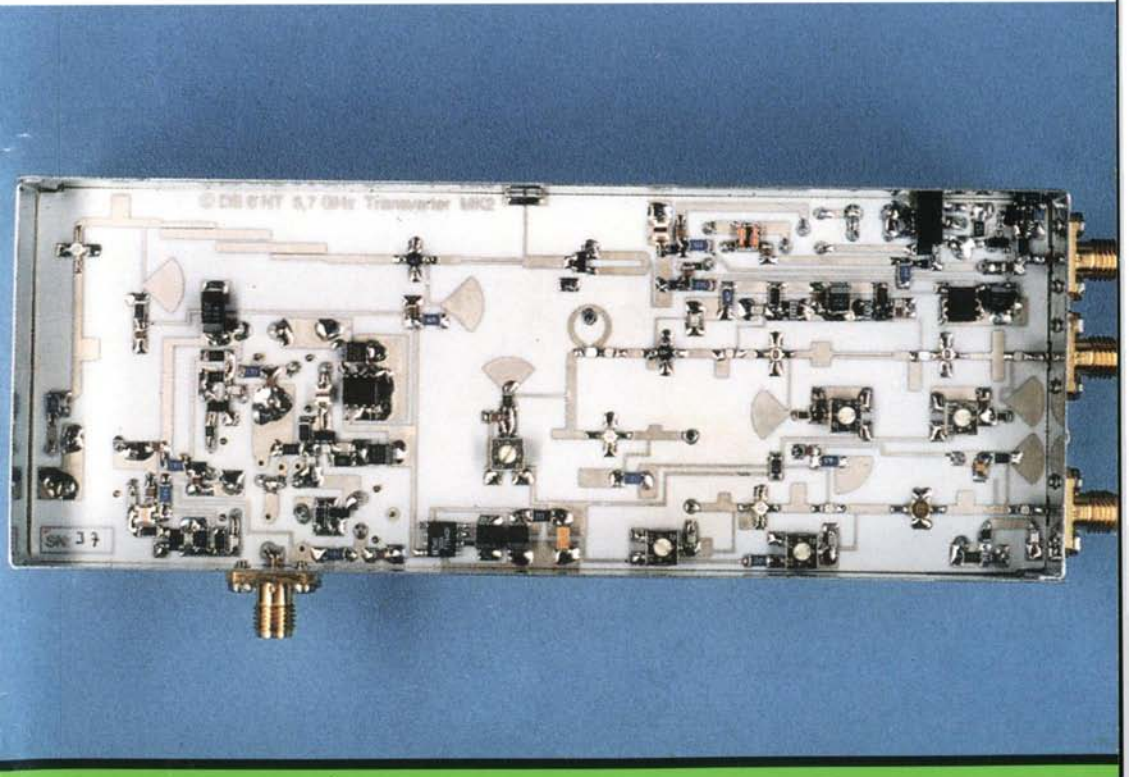
3/1999

5.7GHz Transverter



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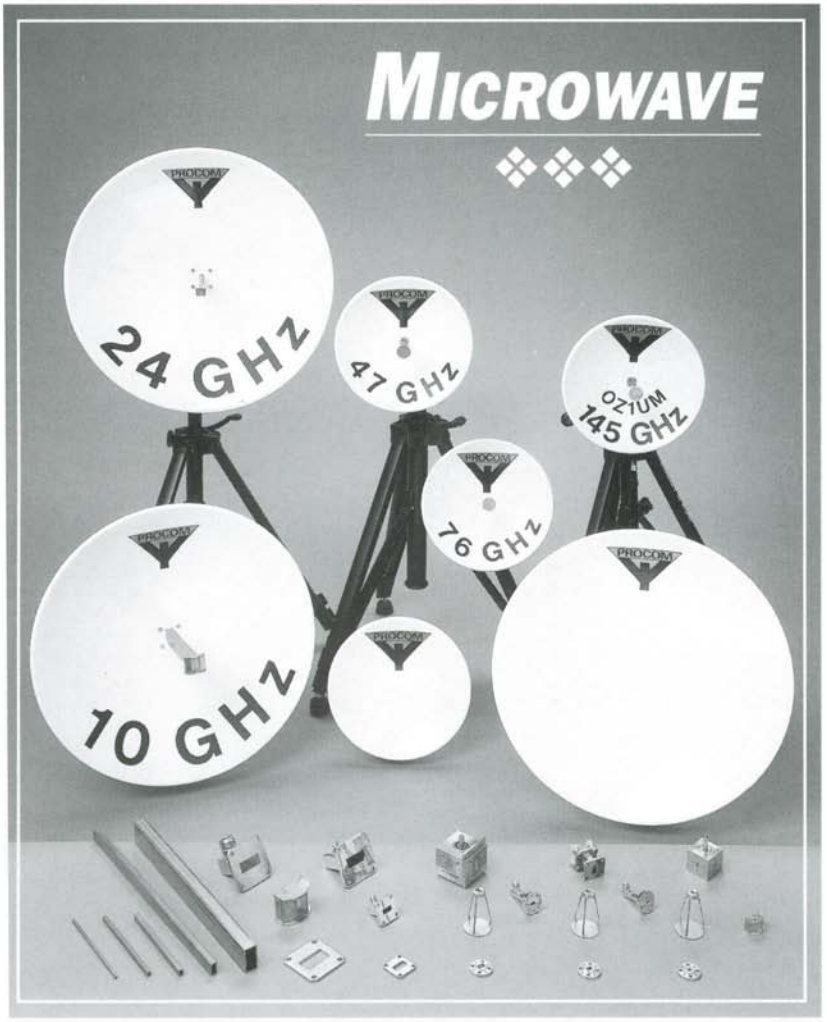

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Technical Reports

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5.7 GHz Transverter MKIII

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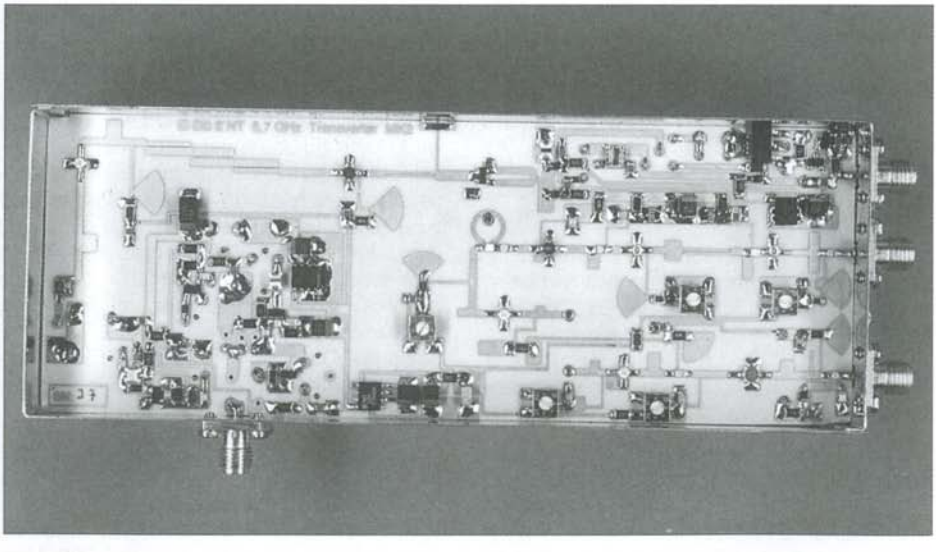
1. Einführung

1976 wurde die erste 5,7 GHz Schmalband Station von DL7QY im DUBUS Magazin beschrieben. Dies war der Beginn der Schmalbandtechnik im 5,7 GHz Band. Der Aufbau der 6 cm Baugruppen war in Kammerbauweise mit Koaxialresonatoren ausgeführt. Das



5.7GHz Transverter Top View

Sende- und Empfangsteil waren getrennte Baugruppen. Der Konverter hatte eine ZF von 28 MHz. Der Sender bestand aus einem 576 MHz Leistungssender mit verschiedenen Varaktorvervielvacher (CW und FM Modulation). Danach folgten verschiedene Veröffentlichungen in Hohlleitertechnik (1. Generation)

1987 wurde der erste auf Teflonsubstrat realisierte Transverter von DC0DA und DJ6EP beschrieben. Diese jetzt auch mit GaAs FET's bestückten Schaltungen bestanden aus verschiedensten Einzelbaugruppen (LO, Mixer, Amp., usw.) die zu einem Transverter zusammengeschaltet wurden. Der Abgleich erfolgte durch "Fähnchenschieben" mit beachtlichem Messaufwand. (2. Generation)

Der hier veröffentlichte Transverter ist auf keramikgefülltem Epoxydsubstrat aufgebaut. Das Empfangsteil erreicht eine Rauschzahl von ca. 1,0 dB NF bei mehr als 20 dB Verstärkung. Das Sendeteil erreicht eine Ausgangsleistung von mehr als 200 mW bei min. 40 dB Nebenwellenunterdrückung und 144 MHz ZF. Soll 432 MHz als ZF verwendet werden ist lediglich ein 111 MHz Quarz einzubauen. Weitere Schaltungsänderungen sind dafür nicht erforderlich. Der gesamte Transverter mit ZF-Umschaltung, Steuerausgang für Koaxialrelais oder PA's, Quarzoszillator, LO-Aufbereitung ist in einem Weißblechgehäuse mit den Abmessungen 55x148x30mm untergebracht. Ein Abgleich durch "Fähnchenschieben" mit aufwendiger HF-Messtechnik entfällt.

1. Introduction

In 1977 the DUBUS magazine published the first 10GHz SSB transverter which had been developed by Claus Neye, DL7QY. This was the begin of using narrowband techniques in the 3cm band. The construction technique at that time utilised the classical waveguide approach.

1987 the first transceiver on a PTFE-substrate has been described by DC0DA and DJ6EP. The circuits used have been realised with GaAs-FETs. Several modules were 'screwed' together. The alignment effort to make this tranceiver working has been considerable.

The current transverter is a singleboard construction on RO4003 substrate. The receiver has a noise figure of 1.0dB at more than 20dB gain. The transmitter achieves an output power of more than 200mW. The IF is 144MHz and the spurious rejection is better than 40dB. A 432MHz IF can be selected just by change of the crystal in the XO to a frequency of 111MHz.. Then the spurious rejection is even better at at least 50dB.

Everything -TX, RX, LO, IF-Switch and T/R-control is on a single board housed in a 55x148x30mm large box from tinplate. Tuning is required only for the two cavity resonators, the four helix bandfilter in the LO-chain and the bias currents of the TX/RX amplifiers.

The restricted tuning range of the helix filters make 'false' resonances not possible.

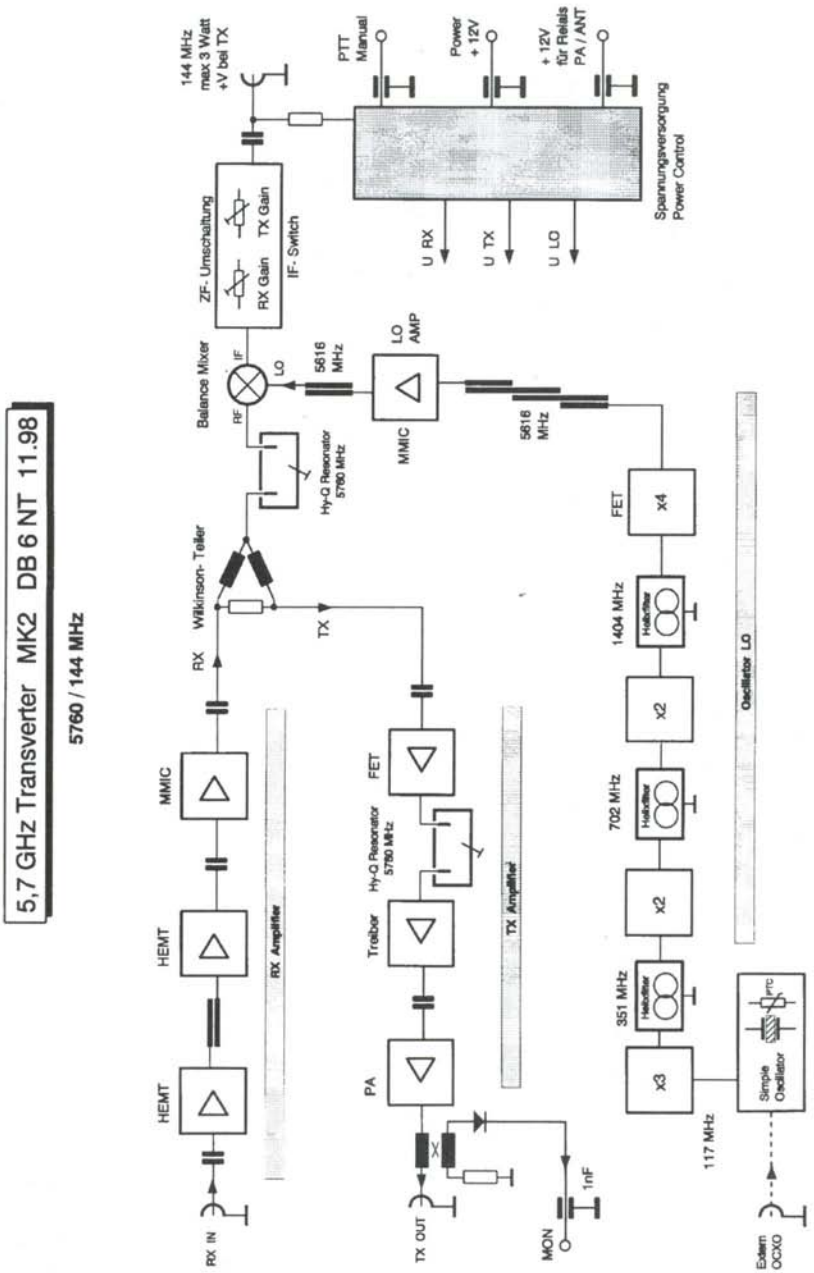
2. Schaltungsbeschreibung

LO

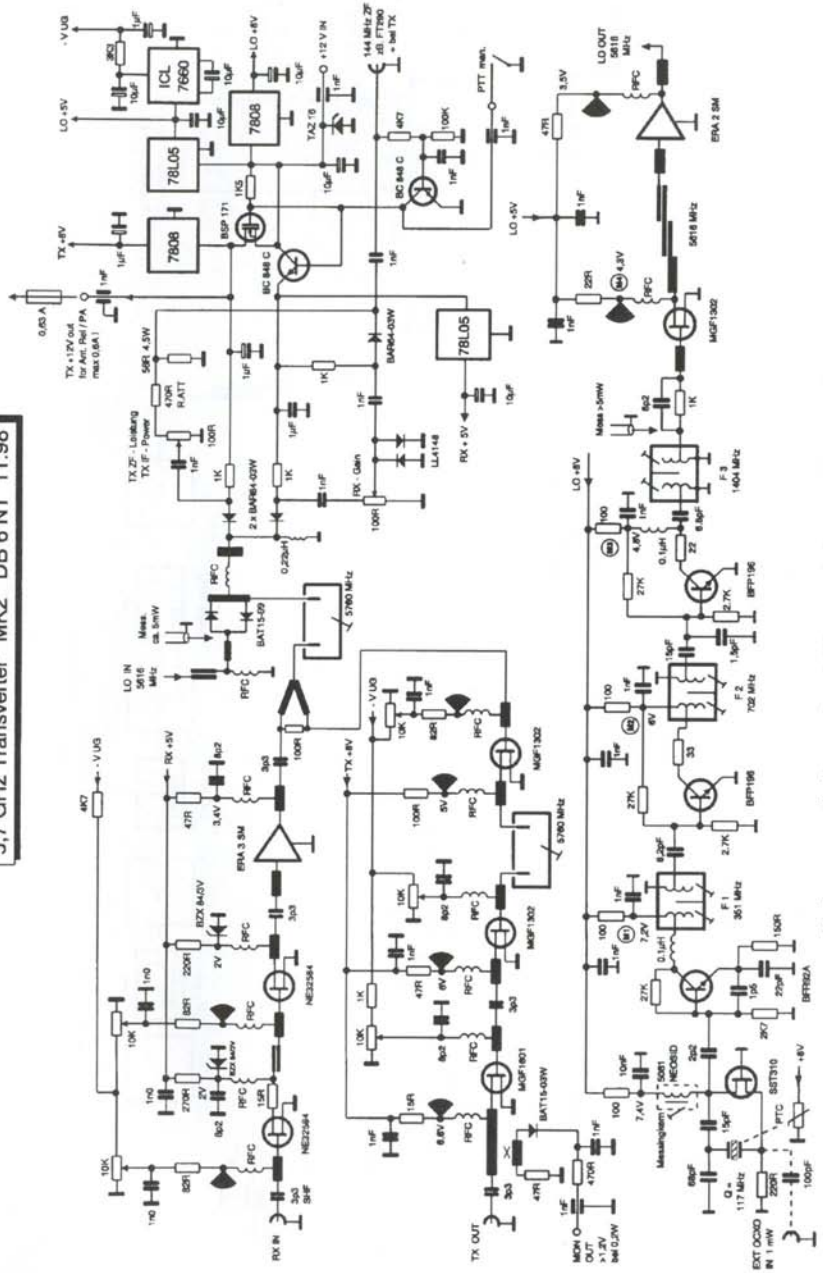
Der bewährte "Simple Quarzoszillator" mit dem FET SST310 schwingt auf 117 MHz. Die Frequenzeinstellung erfolgt durch eine M3 Messingschraube, die gegen den Ferritkern getauscht wird. Ein auf das 40 C Thermostatenquarz aufgesteckter PTCHeizer stabilisiert die Quarztemperatur und somit die Frequenzdrift in gewissen Grenzen. Weiterhin wird durch Einbau entsprechender Kondensatoren (TK) im Oszillator eine weitere Temperatur-Kompensation erreicht, dafür sind zwei Lötplätze 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" OCXO mit ca. 1 mW (DF9LN) einzukoppeln. Dazu wird der Quarz mit Heizer entfernt.

Nach dem Oszillator folgt eine Verdreifacherstufe mit dem BFR92. Über ein Helixfilter wird die Frequenz 351 MHz selektiert und auf den Verdoppler mit BFP196 gekoppelt. Nach einem weiteren Helixfilter das auf 702 MHz abgestimmt wird, gelangt das Signal auf eine

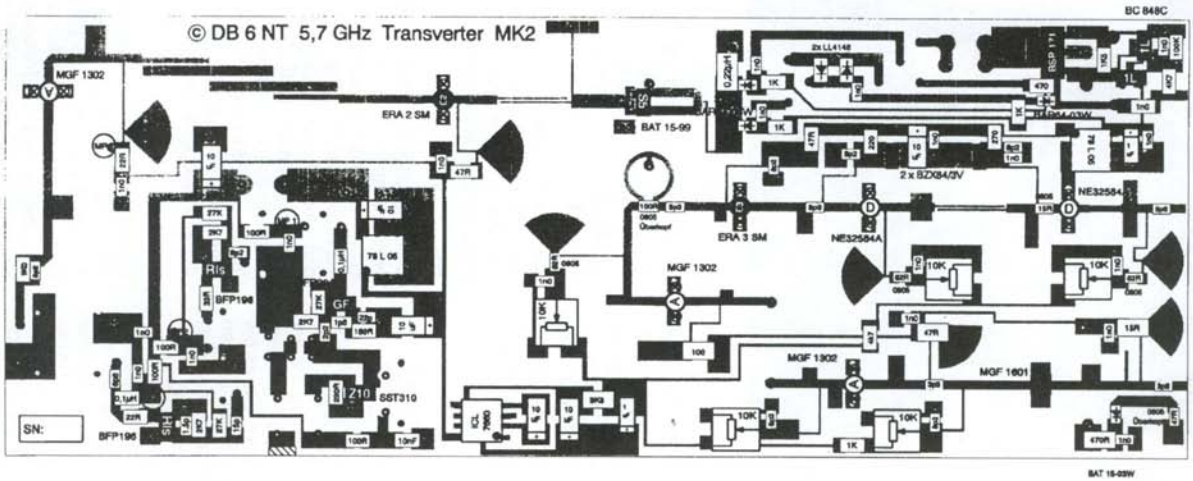
Bild/Figure 1: Block Diagram



Bild/Figure 2: Circuit Diagram



5,7 GHz Transverter MK2 DB 6 NT 11.98



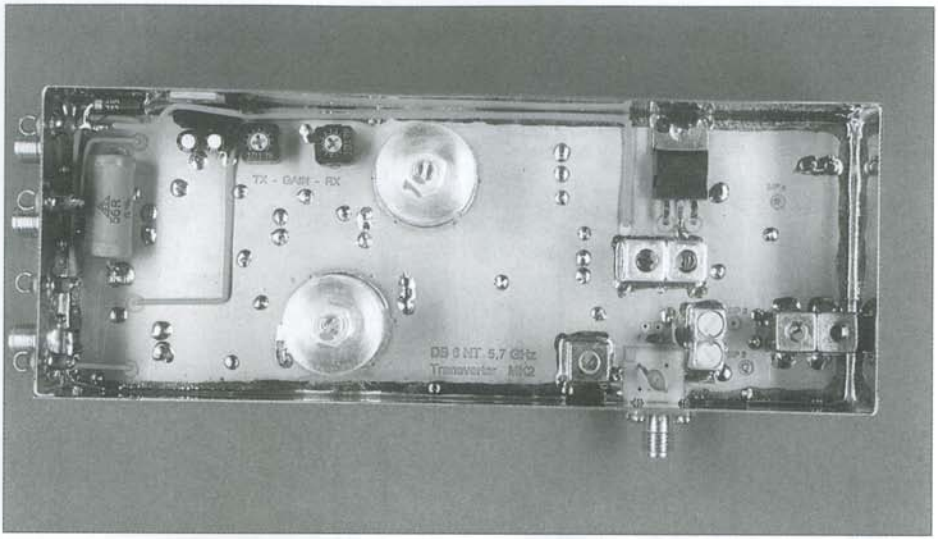
Bild/Figure 3: Parts Layout

⊗ Durchkontaktierungen
Through-connection

▨ Mit Gehäuserahmen verlöten
To solder with box

* Widerstand Bauform 0805
Resistor foodprint style 0805

5.7GHz Transverter Bottom View



weitere Verdopplerschaltung. Das folgende Helixfilter wird auf 1404 MHz eingestellt. Mit dem MGF1302 als Vervierfacher wird die Endfrequenz 5616 MHz erreicht. Das mit einen Mikrostripfilter selektierte Signal wird über eine MMIC Verstärkerstufe mit ERA 2 SM dem Mischer zugeführt. Die erzeugte LO-Leistung beträgt mehr als 5 mW.

Mischer

Die Mischstufe ist ein "einfach balancierter Diodenmischer" mit BAT15-99 (LOW-BARRIER). 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-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!). 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 Koaxialrelais sowie kleinen PA-Verstärkern verwendet werden (max. 0,6...0,8A belastbar). Dieser Ausgang sollte unbedingt mit einer Feinsicherung geschützt werden.

Zur Spiegelfrequenz-Selektion werden Hi-Q Resonatoren (versilberte Messingtöpfchen) verwendet. Mikrostripfilter erreichen bei 144 MHz ZF keine ausreichende Selektion.

RX

Das Empfangsteil besitzt zwei HEMT FET's und einen weiteren MMIC mit einer Gesamtverstärkung von 30 dB. Dadurch wird kein weiterer ZF-Verstärker benötigt. Das über einen 3,3pF Kondensator gekoppelte Eingangssignal wird einem rauschangepassten NE32584C zugeführt. Danach folgt über ein Striplinefilter die zweite Vorstufe mit NE32584C und die 3. Stufe mit dem MMIC ERA 3 SM. Danach folgt ein Wilkinson Teiler und das HQ-Spiegelfrequenzfilter.

TX

Über das auch für den Sendezweig benützte HQ-Filter hinter dem Mischer gelangt im Sendefall das TX-Signal auf eine MGF1302 Verstärkerstufe. Über ein weiteres HQ-Filter zur Nebenwellenunterdrückung wird die Treiberstufe mit MGF1302 angesteuert. Danach folgt die Endstufe mit

MGF1601 die das Sendesignal auf mehr als 200 mW verstärkt. Am Senderausgang ist ein Richtkoppler mit Schottkydiode BAT15-03W 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 117MHz. The coil is tuned by a M3 brass screw, which is fitted instead of the usual ferrite 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 351MHz which utilises a BFR92A transistor. The third harmonic is filtered by a helix bandfilter and drives the doubler with the BFP196. The output filter sieves the harmonic at 702MHz. A second doubler with a BFP196 achieves an output frequency of 1404MHz. The subsequent helix bandfilter is tuned to 1404MHz.

Now the chain of bipolars ends and the 1.404GHz signal drives a GaAs-FET quadrupler with a MGF-1302. A microstrip edge coupled filter selects the LO frequency of 5616MHz and drives a further linear amplifier equipped with the ERA-2SM MMIC. The power at this point is around 5mW (7dBm).

Mixer

The LO drives a single balanced diode mixer which uses a BAT15-99 low barrier double diode. 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!

On the RF-port of the mixer a cavity resonator cares for sufficient suppression of spurious responses.

RX

The RX-chain uses two HEMT-Amplifiers (NE32584C) and a third stage with a ERA3 SM MMIC. The gain of >30dB makes an extra IF-amplifier obsolete. The stages are coupled with simple microstripline filters. The last stage is coupled to the mixer filter via a Wilkinson divider.

TX

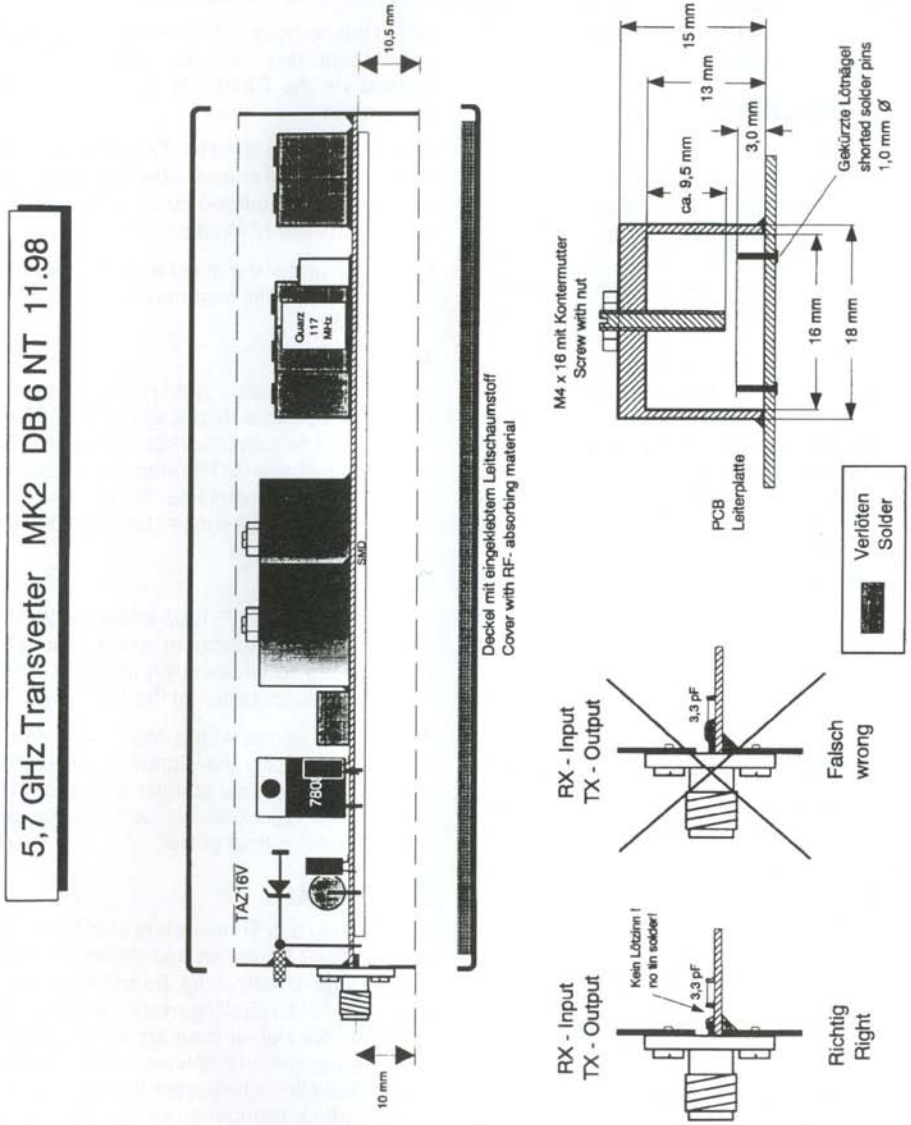
Two stages with MGF-1302 follow the Wilkinson divider. A subsequent cavity resonator cares for additional selectivity in the TX-chain needed for suppression of the LO.

Two further stages with a MGF-1302 and A MGF-1601 amplify the signal to a power of 200mW. A directional coupler with a BAT15-03W Schottky diode allows for a monitor voltage of the RF output power.

3. Aufbau

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 Kenntnisse beim Aufbau von Mikrowellenschaltungen 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-Lötstati-

Bild/Figure 4: Construction Hints

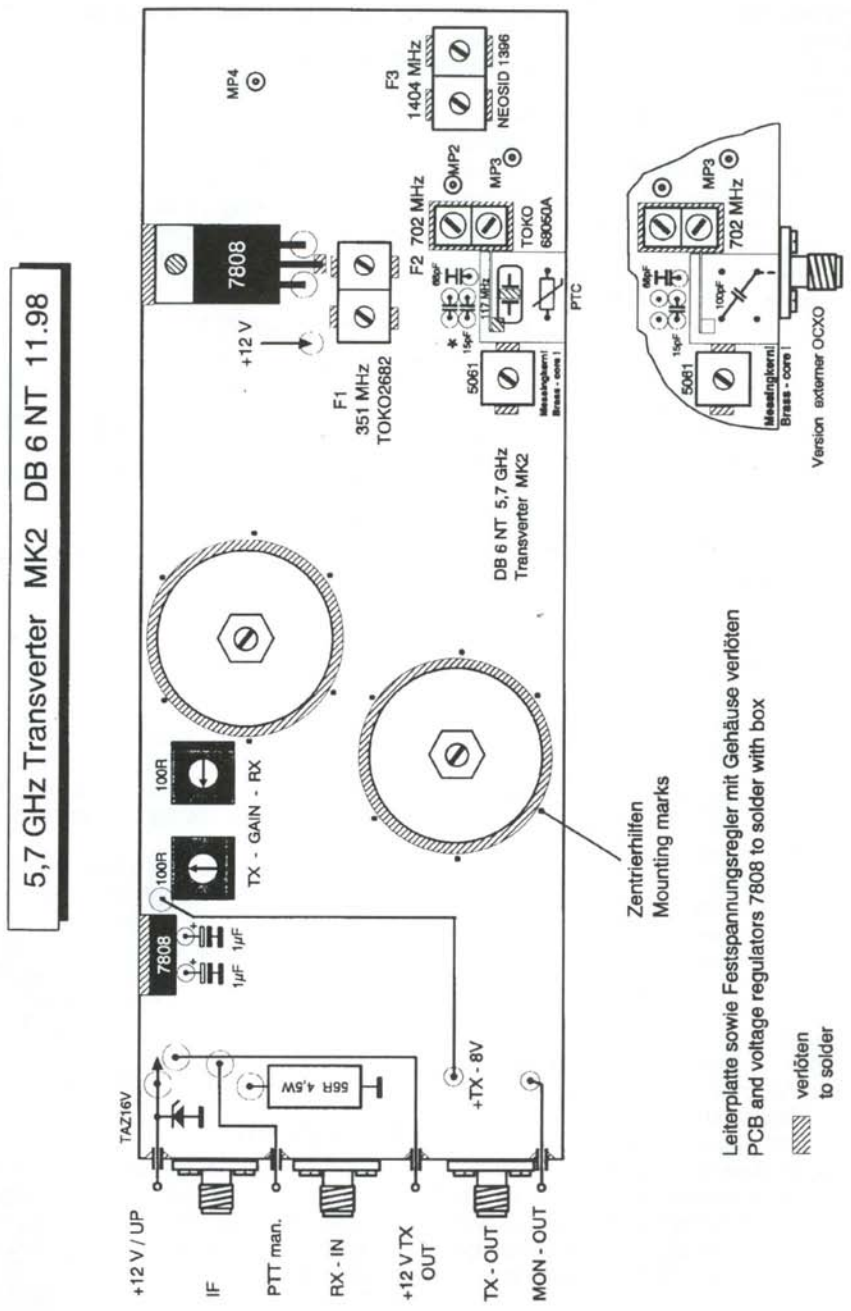


on sowie eine leitende und geerdete Arbeitsunterlage (siehe (11]).

Aufbaufolge:

1. Anpassen der Leiterplatten an das Weißblechgehäuse durch Anfeilen der Ecken.

Bild/Figure 5: Parts Layout Top View



2. Anzeichnen der Löcher für die SMA-Koaxbuchsen
3. Bohren der Löcher für Buchsen und Durchführungskondensatoren. M2 Gewinde für SMA-Buchsen 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.
5. Einlöten der Koppelstifte für die HQ-Resonatoren. Die verwendeten Lötnägel sind vorher auf das im Plan entsprechende Maß zu kürzen. Auf senkrechte Montage achten!
6. Verzinnen der Unterkante der Resonatortöpfchen. Mit dem Zirkel die Position des späteren Resonators auf der Leiterplatte anzeichnen. Kurze M4 Zylinderkopfschraube in den Resonator eindrehen. Aufsetzen des Resonators auf die Leiterplatte. Lötkolben mit dicker Spitze auf die M4 Schraube legen und warten bis der Resonator Löttemperatur erreicht hat. Unter Zugabe von etwas Lötzinn den Resonator mit der Leiterplatte verlöten. Dabei kann sich die Leiterplatte bräunlich verfärben, was jedoch keinen Einfluß auf die HF-Eigenschaften hat.
7. Bestücken der Leiterplatte und Durchführungskondensatoren. Verlöten der Helixfilter siehe Bestückungsplan. Die Festspannungsregler werden mit ihrem Kühlflansch mit dem Weißblechgehäuse verlötet. Dabei ist das mittlere Masseanschlußbeinchen abzubrechen. Für die SMD Bauteile sollte 0,5mm Lötzinn verwendet werden. Danach wir die Baugruppe in Alkohol (Spiritus) gewaschen. Die Metallabstimmschrauben der Filter sind vorher auszudrehen um später die Trocknung der Bauteile zu erleichtern. Die Keramikabstimmschrauben werden nur zum Abgleich gedreht (Metallabrieb auf der Keramik). Sollte ein Ultraschallwaschbad verwendet werden, ist der Quarz erst danach einzulöten (Quarze werden durch starken Ultraschall beschädigt). Nach dem Trocknen bei ca. 80C im Ofen (1Std.), oder über Nacht auf einem warmen Heizkörper, kann die Baugruppe abgeglichen werden.

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
4. Solder PCB into the box (Fig. 4). Use a 10.2mm high piece of wood as a ruler to find the right adjustment.
5. Solder the coupling rivets for the cavity resonators. They must stand upright.
6. Tin the bottom of the resonators. Mark the correct position with a pair of dividers. Fit a short M4 screw to the resonator. Put the resonator onto the position marked and heat the screw with a soldering iron. If the resonator is on the right temperature solder at the bottom.
7. Mount the parts onto the PCB (Fig. 3). Mount the feedthrough caps. Solder the helix filters (Fig. 4). Solder the regulators with their heatsinks to the wall of the tinplate box. 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.

4. Abgleich

1. Anlegen der +12V Betriebsspannung durch ein Netzgerät mit Strombegrenzung ca. 0,6A. Kontrolle der Betriebsspannungen an den Festspannungsreglern.

2. Messen der Kollektorspannung des BFR92 Verdopplers am Messpunkt 1. Eindrehen des Messingkerns in die Oszillatorspule. Dabei sollte ein schmaler Papierstreifen beigelegt werden um einen straffen Sitz des Kerns zu gewährleisten. Beim Anschwingen des Oszillators geht die Spannung auf ca. 7,2V zurück.
3. Messen der Spannung am Messpunkt 2. Durch wechselseitiges Abstimmen des 351 MHz Bandfilters wird auf minimale Spannung abgeglichen, ca. 6V (maximaler Strom = optimale Ansteuerung).
4. Messen der Spannung am Messpunkt 3. Durch wechselseitiges Abstimmen des 702 MHz Filters wird auf minimale Spannung abgeglichen, ca. 4,8V. (Die Keramikschrauben verursachen bei sehr häufiger Betätigung Metallabrieb auf ihrer Oberfläche. Erkennbar durch "ruppiges" Abstimmverhalten. Der Belag kann mit Glasfaserstift entfernt werden.
5. Messen der Spannung am Messpunkt 4. Durch wechselseitiges Abstimmen des 1404 MHz Bandfilters wird auf maximale Spannung abgeglichen, ca. 4,3V.
6. Abschlußwiderstand oder Antenne an den Eingang des Empfängers anschließen.
7. Einstellen der Ruheströme der 2 RX Transistoren NE32584C auf 2V Drainspannung
8. Anschließen eines 2m Empfängers am ZF-Ausgang in Stellung SSB. RX- und TX-Gain-Potentiometer sind dabei auf Linksanschlag zu drehen (max. Verstärkung). Beim langsamen Eindrehen der M4 Abstimmschraube in den HQ-Resonator ergeben sich zwei Rauschanstiege im 2m Empfänger. Das beim Eindrehen der Schraube erste Maximum ist das richtige Seitenband (oberes Seitenband 5760 MHz). Danach ist die Schraube mit der Kontermutter festzuziehen.
9. Transverter durch "PTT man." Kontakt auf Stellung "Senden" schalten (ohne 2m HF-Ansteuerung). Einstellen der Arbeitspunkte der Sendetransistoren auf den im Schaltplan angegebenen Wert. Anschließen des Senderausgangs an eine geeignete Antenne oder einen Abschlußwiderstand. Ansteuerung durch ein 2m Sendesignal mit 1...3 Watt. Messen der Monitorspannung am Richtkoppler. Eindrehen der M4 Schraube in den HQ-Resonator im Sendezweig und Abgleich auf maximale Ausgangsleistung (Monitorspannung). Da der 1. Resonator beim Empfängerabgleich bereits auf die richtige Frequenz abgestimmt wurde, ist nur ein Maximum zu erwarten. Schraube ebenfalls durch Kontermutter festziehen. Danach sollte ein Feinabgleich des 1. Resonators am Mischer sowie des letzten Helixkreises (1404 MHz) und der Ströme des Sendeverstärkers erfolgen.
10. Einpegeln der Sendeleistung durch Zurückdrehen des TX-Gain Potis bis die Ausgangsleistung beginnt abzufallen.
11. Anschließen einer Empfangsantenne. Einstellen der Oszillatorfrequenz mittels einer Bake mit bekannter Sendefrequenz.
12. Einkleben von niederohmigen 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. Ein geeignetes Koaxialrelais dient zur Sende/Empfangsumschaltung.

Fertig! QSO fahren!

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 regulators.
2. Measure the collector voltage at the BFR92A (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 (351MHz) to minimum voltage (ca... 6V) at M2.

4. Measure voltage at M3 (Fig. 2). Tune bandfilter F2 (702MHz) to minimum voltage (ca... 4.8V) at M3.
5. Measure voltage at M4 (Fig. 2). Tune bandfilter F3 (1404MHz) to minimum voltage (ca.. 4.3V) at M4.
6. Connect dummy load or antenna at input connector of RX.
7. Adjust 10k pots for a reading of 2V at the drain of the two RX-transistors NE32584C.
8. Connect 2m receiver at IF connector. Turn RX-Gain and TX-gain pots fully CCW. Adjust M4 tuning screw at resonator in front of mixer slowly clockwise (inwards) until you observe an increase in noise level. This is the upper sideband on 5760MHz. For verification turn the tuning screw further inwards until you observe a second peak in noise level. This is the lower sideband on 5372MHz. Turn back to the first maximum (Tuning screw is less inside the resonator) and lock with the security nut.
9. Switch transverter to transmit by grounding the PTT input. Connect a 50Ω dummy load to the TX output. Adjust all FETs in the TX-chain by the appropriate bias pots to the drain voltage given in the circuit diagram (Fig. 2). Drive the transverter with 1...3W on 144MHz. Measure the monitor voltage at MON OUT. Only adjust the resonator in the TX-chain to a maximum by careful tuning. There is only one maximum, because the first resonator has already been tuned in the step before. Lock the tuning screw with a security nut. A fine tuning can be carried out by optimising the first resonator (in front of the mixer) and the bias currents of the TX transistors.
10. Reduce the TX-gain by clockwise rotation of the TX-gain pot until the TX output starts to decrease.
11. Connect antenna to RX input. Adjust the XO until a known beacon reads the correct frequency.
12. Take low resistance carbonised foam and glue it into the bottom cover. This damps the resonances of the box.

5. Danksagung

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 Richard DF5SL der die 100% Reproduzierbarkeit der Schaltung bestätigte.

5. Acknowledgement

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

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No-Tune SSB/CW Transceiver for 3400MHz

Matjaz Vidmar, S53MV

1. New frequency band 3400MHz in S5

Since June 1998 amateur-radio operations on the 3.4GHz frequency band were authorised for the first time in Slovenia (S5). Of course we all wanted to activate the new band as soon as possible. The easiest way was to modify the successful and simple zero-IF (Weaver) microwave SSB/CW radios for this band as well.

The 3.4GHz (9cm) band is not very popular among microwave amateurs, at least not in Europe. In ITU region II the amateur allocation extends from 3300MHz to 3500MHz. On the other hand, since a few years ago there were only a few European nations that allowed amateur activity in the 3400-3475MHz segment on a secondary basis. Long-distance narrowband amateur operations were mainly concentrated around 3456MHz both in Europe and in North America, since 3456MHz is a convenient multiple of several common frequencies: 144MHz (x24), 432MHz (x8) and 1152MHz (x3) (local oscillator in transverters).

According to new common European frequency plans, a small part of the 9cm band, usually 3400-3410MHz, was allocated to the amateur-radio service in many European nations. The same frequency band 3400-3410MHz was allocated to the amateur-radio service in Slovenia on a secondary basis as well. Accordingly narrowband activity in Europe was shifted down to 3400MHz.

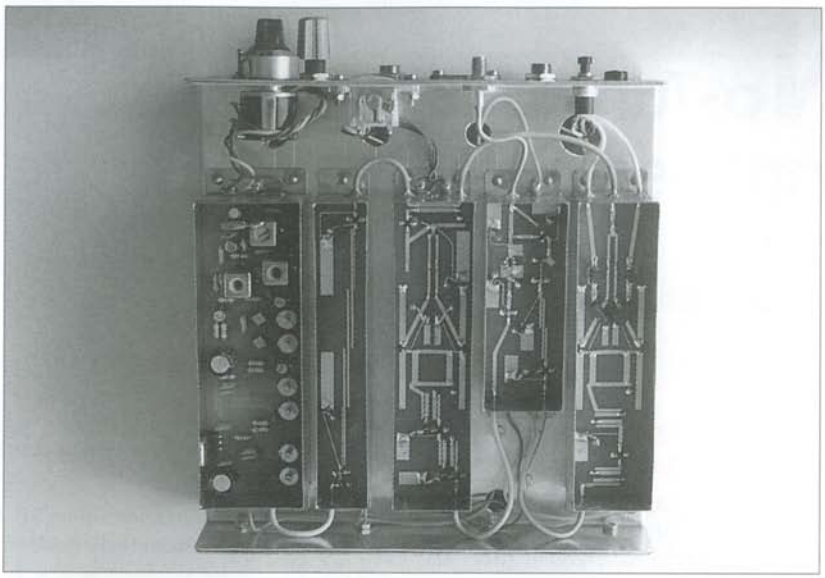
Of course the 3.4GHz zero-IF SSB transceiver presented in this article makes use of the proven designs for 2.3GHz and 5.7GHz. The low-frequency and audio stages are the same, as well as the subharmonic mixers with BAT14-099R Schottky quads. Besides GaAs HEMTs and INA MMIC amplifiers, the 3.4GHz zero-IF RTX uses new, high-performance and inexpensive silicon bipolar transistors like the BFP420.

The zero IF SSB transceiver for 3400MHz uses a single PIN-diode (BAR81) antenna switch just like the 5.7GHz and 10GHz versions. Therefore the transmitter output stage (CLY2) makes an integral part of the antenna switch. Although the CLY2 was not designed for operation at 3.4GHz, it can still provide more than 0.5W of output power, although the power gain (8-9dB) is smaller than in the 13cm band. All of the RF stages are built as microstrip circuits on 0.8mm thick glassfiber-epoxy laminate FR4.

1. Neues Band 3400MHz für S5

Seit Juni 1998 ist das 3400MHz Band auch in Slovenien frei gegeben. Um möglichst schnell auf diesem band QRV werden zu können,

3.4GHz Transceiver Top View



wurde die Schaltung des 'Zero-IF' Transceivers für 9cm modifiziert.

Das 9cm Band ist zumindest in Europa nicht sehr populär. Nach dem neuen Frequenzplan ist der Bereich 3400...3410MHz für den Amateurfunk zugewiesen.

Der hier vorgestellte Transceiver für 9cm benutzt im Prinzip die gleichen Schaltungen wie die entsprechenden Transceiver für 13 und 6cm. Während die NF-Schaltung gleich sind, werden in dem HF-Zweig neben den bewährten Mischern mit der BAT14-099R Diode, dem HEMT's und den INA-MMIC auch neue bipolare Transistoren wie der BFP420 verwendet.

Der PIN-Dioden Schalter ist ebenfalls wie bei den anderen Modellen. Die Ausgangsstufe ist ein CLY2, der auf 9cm immerhin noch 0,5W Leistung erzeugt. Alle HF-Schaltungen wurden auf 0,8mm dickem FR4-Substrat realisiert.

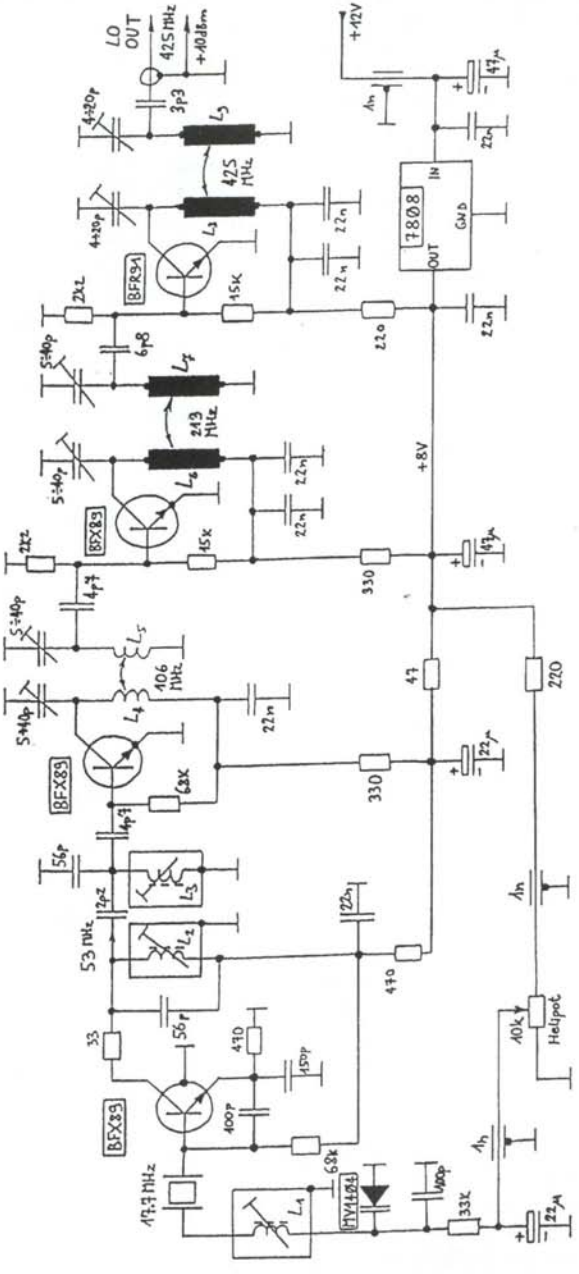
2. Modified VCXO and multiplier stages

A transceiver for 3456MHz could use the same VCXO and multiplier chain up to 576MHz as in the 2304MHz version, since the two frequencies are in an exact ratio 3:2. The 576MHz signal is doubled to 1152MHz to drive the subharmonic mixers in the 2304MHz transceiver. The same 576MHz signal could be tripled to 1728MHz to drive the subharmonic mixers in the 3456MHz transceiver.

Since the narrowband segment in the 9cm band was shifted down to 3400MHz, a slightly different crystal has to be built in the VCXO. The above mentioned frequency multiplications could be used, however they do not represent an efficient technical solution. Above 1GHz silicon bipolar transistors become quite inefficient as frequency multipliers, while GaAs FETs and HEMTs mainly produce even harmonics due to their quadratic transfer function.

The 3.4GHz transceiver therefore includes a slightly modified multiplier chain. The VCXO

Bild/Figure 1: VCXO and multipliers for 425MHz



is using a 17.7MHz (fundamental resonance) crystal. The VCXO output is first tripled to 53MHz, then doubled to 106MHz, again doubled to 213MHz and finally doubled to 425MHz in the same VCXO module. The VCXO module is followed by an additional HEMT multiplier (as in the 5.7GHz transceiver) used to multiply 425MHz by four to obtain 1700MHz to drive the subharmonic mixers.

The modified VCXO and multiplier stages are shown on Fig.1. For operation on 3400MHz, a fundamental-resonance crystal for 17.708MHz is required in the VCXO. Unfortunately this frequency is not standard and a special crystal has to be ordered. The closest standard crystal is the PAL subcarrier multiple at 17.734MHz (used in many TV-sets in Europe) that multiplies up to 3405MHz in the described circuit.

Although narrowband operation is permitted at 3405MHz in all countries where amateurs have access to the 9cm band, it is probably very difficult to find a correspondent on this frequency. On the other hand, if a standard PAL crystal for 17.734MHz is pulled down by 26kHz with a series inductor, the resulting VCXO will not be very stable. In the latter case, just the power-on warm-up frequency drift may reach 50kHz at the final frequency of 3.4GHz.

In order to pull a standard PAL subcarrier crystal down to 17.708kHz, a relatively high series inductivity L1 is required in the range of 5...8uH, depending on the cyrstal used and other parasitic capacitances in the circuit. The stability can be improved by grounding the crystal case. The suggested components (varicap MV1404 and 100pF parallel capacitor) provide a coverage of about 600kHz around 3.4GHz that should be sufficient for narrowband modes including the correction of the VCXO drift.

The multiplier chain is tuned to lower frequencies by increasing the values of the resonant and coupling capacitors, while the inductors are left unchanged. Capacitive trimmers (Philips foil type, 7.5mm diameter with three leads) in the 106MHz and 213MHz bandpass filters are increased to 5-40pF (violet body), while the trimmers in the output stage at 425MHz are increased to 4-20pF (green body).

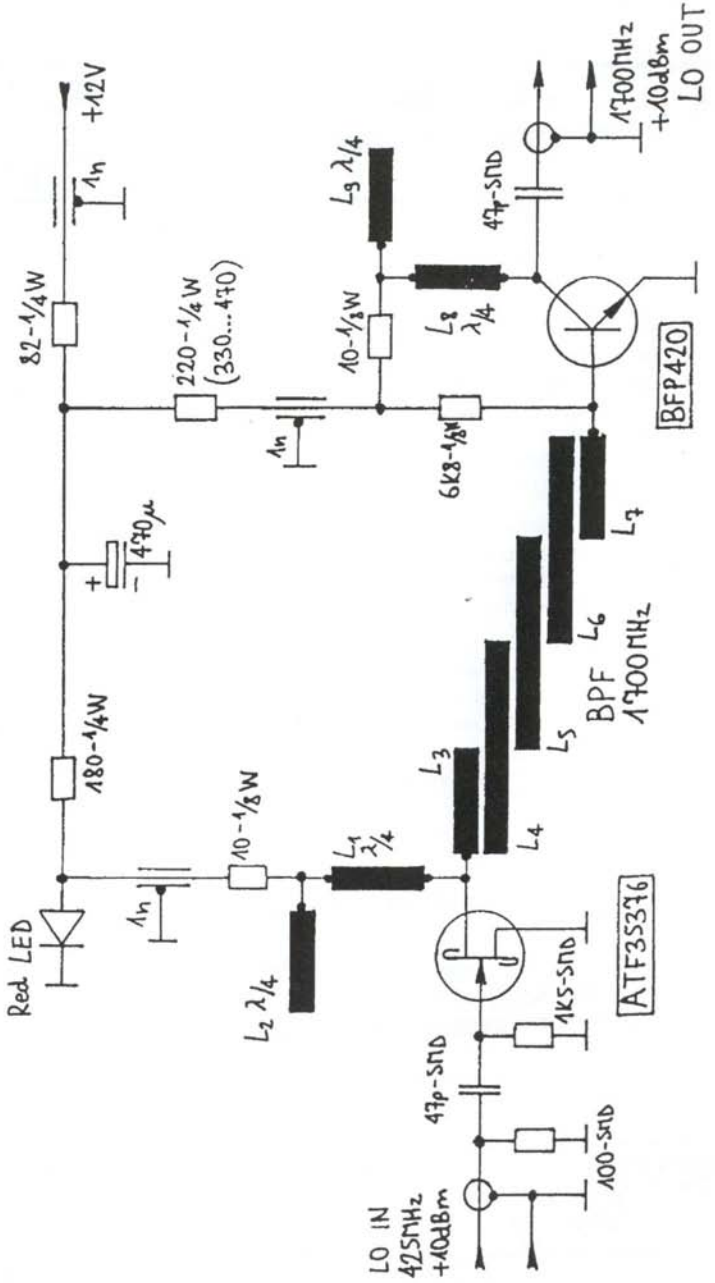
The printed-circuit board of the VCXO and multiplier stages is of course identical as published for the 23cm, 13cm, 5cm and 3cm versions of the zero-IF SSB transceiver. There are only a few changes of capacitor values in the component location, so the corresponding drawings are not published once again. If a standard 17.734MHz crystal is pulled down to 17.708MHz in the described circuit, special care has to be taken that the oscillator operates in a stable way and does not jump on another resonant mode of the crystal.

The circuit diagram of the additional multiplier for 1700MHz is shown on Fig.2. The multiplier includes an ATF35376 HEMT, overdriven with the 425MHz (+10dBm) input signal. The following microstrip bandpass filter selects the fourth harmonic at 1700MHz. The 1.7GHz bandpass is followed by an amplifier (BFP420) to boost the 1700MHz LO signal level to about 10mW (+10dBm).

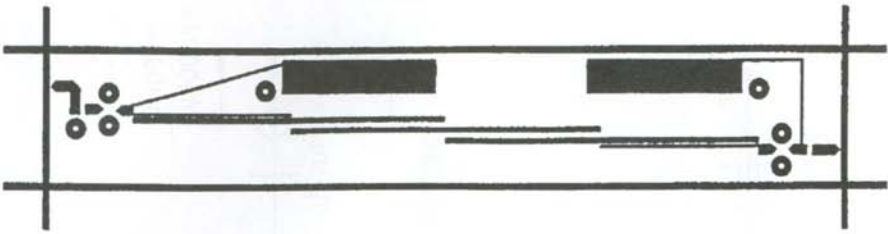
The additional multiplier for 1700MHz is built as a microstrip circuit on a double-sided, 0.8mm thick FR4 glassfiber-epoxy printed-circuit board with the dimensions of 20mmX120mm. The upper side is shown on Fig.3 while the lower side is not etched to act as a groundplane for the microstrip circuits. The component location on both sides of the printed-circuit board is shown on Fig.4.

A correctly assembled multiplier for 1700MHz should not require any tuning. One should however check the Idss of the ATF35376 HEMT. When checking the overall transceiver, the LO power level may result too high, degrading both the noise figure of the receive mixer and the carrier suppression of the transmit mixer. In this case it is recommended to increase the supply resistor of the 1700MHz amplifier BFP420 from the original 220ohm up to 330ohm or even 470ohm.

Bild/Figure 2: Multiplier for 1700MHz



Bild/Figure 3: 1700MHz Multiplier PCB



2. VCXO und Vervielfacher

Ein Transceiver für 3400MHz könnte die gleiche Frequenzaufbereitung wie in der 2304MHz Version benutzen. Das 576MHz Signal wird anstatt auf 1152MHz auf 1728MHz verdreifacht, um den Subharmonischen -Mischer auf 3546MHz zu treiben.

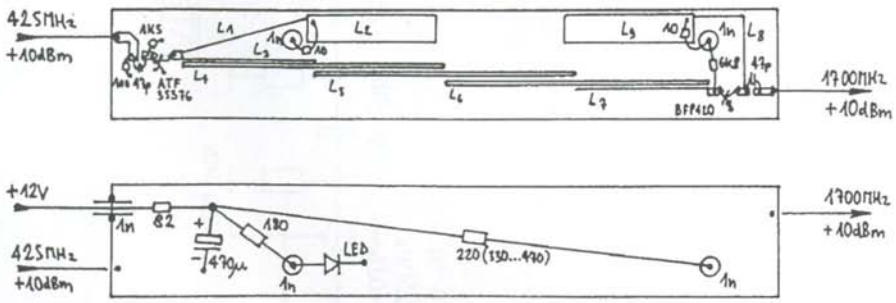
Da bipolare Transistoren oberhalb von 1GHz nicht so gut als Vervielfacher arbeiten, wurde hier ein andere Weg beschritten. Die Frequenzaufbereitung wurde modifiziert.

Der 3.4GHz Transceiver benutzt einen 17.708MHz Quarz in der Grundwelle, der dann auf 53MHZ verdreifacht, auf 106MHz verdoppelt, wieder auf 213MHz verdoppelt und schließlich auf 425MHz verdoppelt wird. dann folgt wie beim 5,7GHz Transceiver ein FET-Vervierfacher auf 1700MHz.

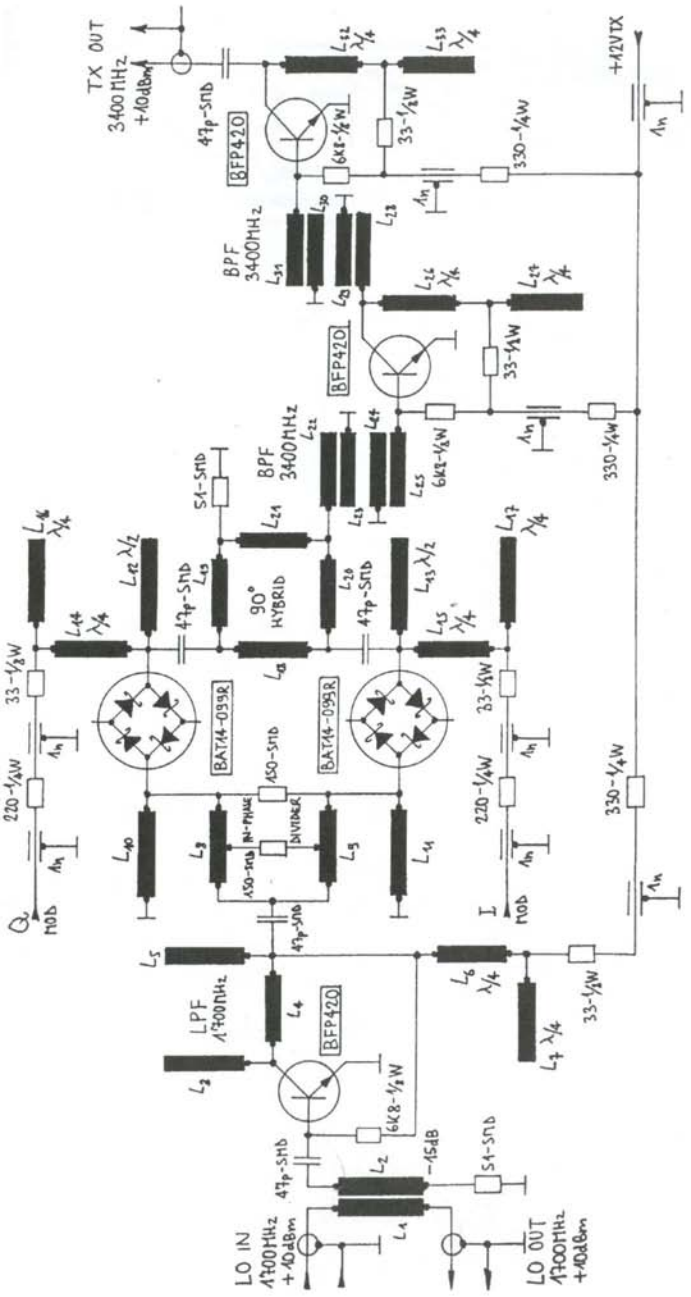
Der modifizierte VCXO wird in Abb. 1 gezeigt. Es wird für den VCXO ein 17.708MHz Quarz eingesetzt. Unglücklicherweise ist das keine Standardfrequenz. Aber ist gibt einen Standardquarz auf 17.734MHZ, der zur Erzeugung des PAL-Unterträgers in fast allen Fernsehgeräten eingesetzt wird. Dieser muß durch eine relativ hohe Induktivität von ca. 5...8uH nach unten gezogen werden. Das verringert die erreichbare Stabilität, so daß eine Einlaufdrift von ca. 50kHz auf 3,4GHz zu beobachten ist. Mit den vorgeschlagenen Komponenten ist der Bereich ca. 600kHz um 3,4GHz.

Die Vervielfacherkette wird auf tieferer Frequenz abgestimmt. Dazu werden die Trimmer auf 106 und 213MHz gegen 5...40pF (Violett) ausgetauscht. Im 425MHz Teil werden solche mit 4...20pF (grün) benutzt.

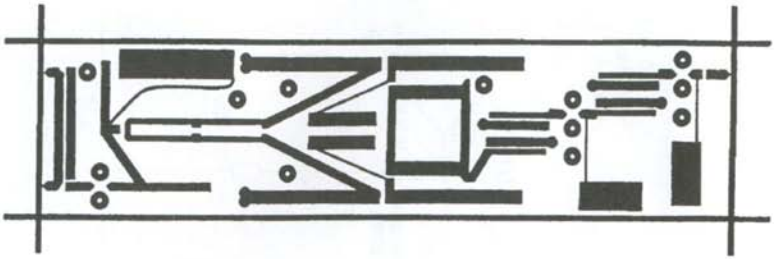
Bild/Figure 4: 1700MHz Multiplier Component Location



Bild/Figure 5: Quadrature Transmit Mixer for 3400MHz



Bild/Figure 6: 3400MHz TX Mixer PCB



Da die Leiterplatte mit den früher beschriebenen identisch ist, wird nur der geänderte Schaltplan gezeigt (Abb. 1). Wenn man den 'billigen' PAL-Quarz mit 17,734MHz benutzt, sollte man darauf achten, daß der Oszillator nicht auf andere Resonanzen springt. Das einfachste ist, wenn man einen Grundwellenquarz für 17,708 MHz bestellt.

Der Vervierfacher wird in Abb. 2 gezeigt. Der HEMT ATF35376 wird durch ein 10dBm Signal auf 425MHz angesteuert. Das Mikrostreifenleitungsfilter selektiert die 4.-te Harmonische auf 1700MHz. Ein nachfolgender Verstärker mit dem BFP420 bringt das Signal auf einen Pegel von 10dBm.

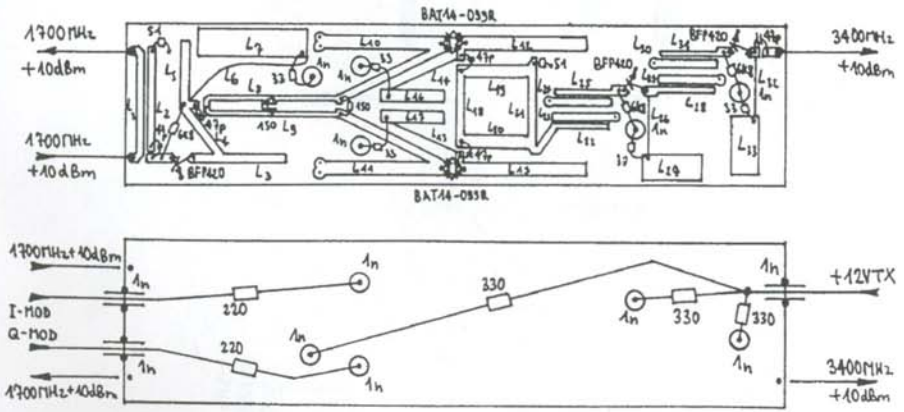
Die Schaltung ist auf doppelseitigen FR-4 mit 0,8mm Dicke realisiert (Abb.3.). Die Bauteileanordnung zeigt Abb. 4.

Die bestückte Leiterplatte muß auf Anhieb ohne Abgleich funktionieren. Sollte der LO-Pegel zu hoch sein -Anzeichen dafür sind höhere Rauschzahl des Mischers und schlechte LO-Unterdrückung - kann man den Kollektorwiderstand des BFP420 auf 330 oder 470 Ohm erhöhen.

3. Quadrature transmit mixer for 3400MHz

The circuit diagram of the transmit mixer for 3400MHz is shown on Fig.5. Besides two

Bild/Figure 7: 3400MHz TX Mixer Component Location



subharmonic mixers, an in-phase LO divider and quadrature hybrid coupler for 3.4GHz the module includes a coupler and buffer amplifier for the 1700MHz LO and two output RF amplifier stages, to boost the output 3.4GHz signal level to about 10mW (+10dBm). All bandpass filters and other passive RF components are built as microstrip circuits on double-sided, 0.8mm thick FR4 glassfiber-epoxy laminate.

The receiver and transmitter of the zero-IF SSB transceiver for 3400MHz both require the same local oscillator signal at 1700MHz. The switching of the latter is performed in the same way as in the zero-IF SSB transceivers for 1.3GHz, 5.7GHz and 10GHz. Most of the LO signal power is fed to the receive mixer all of the time. A small part of the LO signal is taken by a -15dB coupler and amplified by a BFP420 transistor to drive the transmit mixer. The 1700MHz LO signal is filtered in a low-pass (L3, L4 and L5) before being applied to the two subharmonic transmit mixers through an in-phase divider L8/L9.

The BAT14-099R Schottky quads provide a good mixer symmetry at relatively low frequencies, so no special measures are required to improve the unwanted carrier suppression at 3400MHz. Of course the mixer symmetry can be further improved by orienting both BAT14-099R Schottky quads in the same direction in the circuit. In practice this means that one of the two BAT14-099R has to be soldered upside down in the circuit.

Both mixer outputs are combined in a quadrature hybrid to obtain the desired SSB signal at 3400MHz. The hybrid is followed by a 3400MHz bandpass (L22, L23, L24 and L25) to remove the LO residuals at 1700MHz and other unwanted mixing products far away from the 3.4GHz frequency band. Two amplifier stages with BFP420 transistors boost the relatively low signal level (about -12dBm) up to about 10mW (+10dBm). Another 3400MHz bandpass (L28, L29, L30 and L31) is built between the two amplifier stages.

The module of the quadrature transmit mixer for 3400MHz is built as a microstrip circuit on a double-sided, 0.8mm thick FR4 glassfiber-epoxy printed-circuit board with the dimensions of 30mmX120mm. The upper side is shown on Fig.6 while the lower side is not etched to act as a groundplane for the microstrip circuits. The component location on both sides of the printed-circuit board is shown on Fig.7. A correctly assembled quadrature transmit mixer for 3400MHz should not require any tuning. One should however check the output power (+10dBm) and the mixer balance (at least 25dB of unwanted carrier suppression). If the carrier suppression is not sufficient, check the LO power level and the installation of the mixer diodes.

Quadratur Sendemischer für 3400MHz

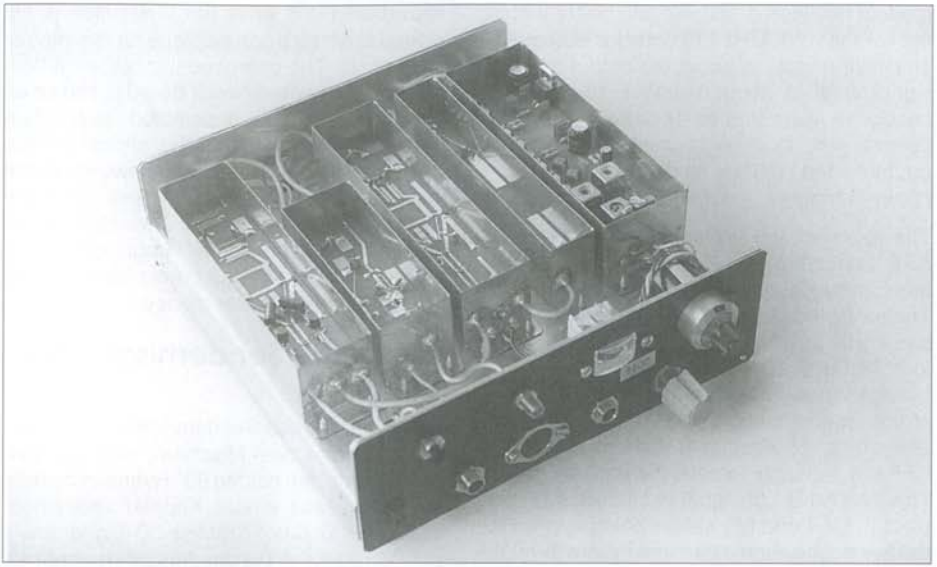
Das Schaltbild des Sendemischers zeigt Abb. 5. Neben den zwei Mischern, einem 0° Leistungsteiler, den beiden 90° Hybriden besteht das Modul aus einem Koppler und einem Verstärker für das 1700MHz LO-Signal sowie zwei Verstärkern, die das Ausgangssignal auf 10dBm anheben. Die ganze Schaltung ist auf 0,8mm dickem FR-4 realisiert (Abb. 6)

Der Sende- und der Empfangsmischer werden beide mit dem LO-Signal von 1700MHz betrieben. Mittels des 15dB Richtkopplers wird ein Signal von -15dBm ausgekoppelt und mit einem Verstärker mit dem BFP420 auf den Sendemischer geführt. Der Hauptpfad des LO wird dauernd mit dem Empfangsmischer verbunden. Das LO-Signal wird über ein Tiefpass (L3, L4 und L5) von Harmonischen befreit und den Mischern über den 0°-Teiler (L8, L9) zugeführt.

Die BAT14-099R Dioden haben auf dieser niedrigen Frequenz ausreichende Trägerunterdrückung, so daß keine speziellen Symmetrierungsmaßnahmen erforderlich waren. Allerdings wurden beide Dioden in der gleichen Richtung angeordnet. Das bedeutet, daß eine Diode 'über Kopf' eingelötet werden muß.

Die Ausgänge der beiden Mischer werden in einem 90°-Hybrid zusammengeführt. Damit entsteht das SSB-Signal auf 3400MHz. Ein Bandfilter (L22, L23, L24 und L25) siebt unerwünschte Mischprodukte und den LO auf

3.4GHz Transverter



1700MHz aus. Zwei Verstärker mit dem BFP420 heben das Signal von -12dBm auf 10dBm an. Ein weiteres Bandfilter (L28, L29, L30 und L31) sorgt für ausreichende Selektion.

Den Bestückungsplan der 30x120mm großen Leiterplatte aus FR-4 zeigt Abb. 7.

Bei der Inbetriebnahme sollten die Ausgangsleistung mit 10dBm und die Trägerunterdrückung mit mindestens 25dB geprüft werden.

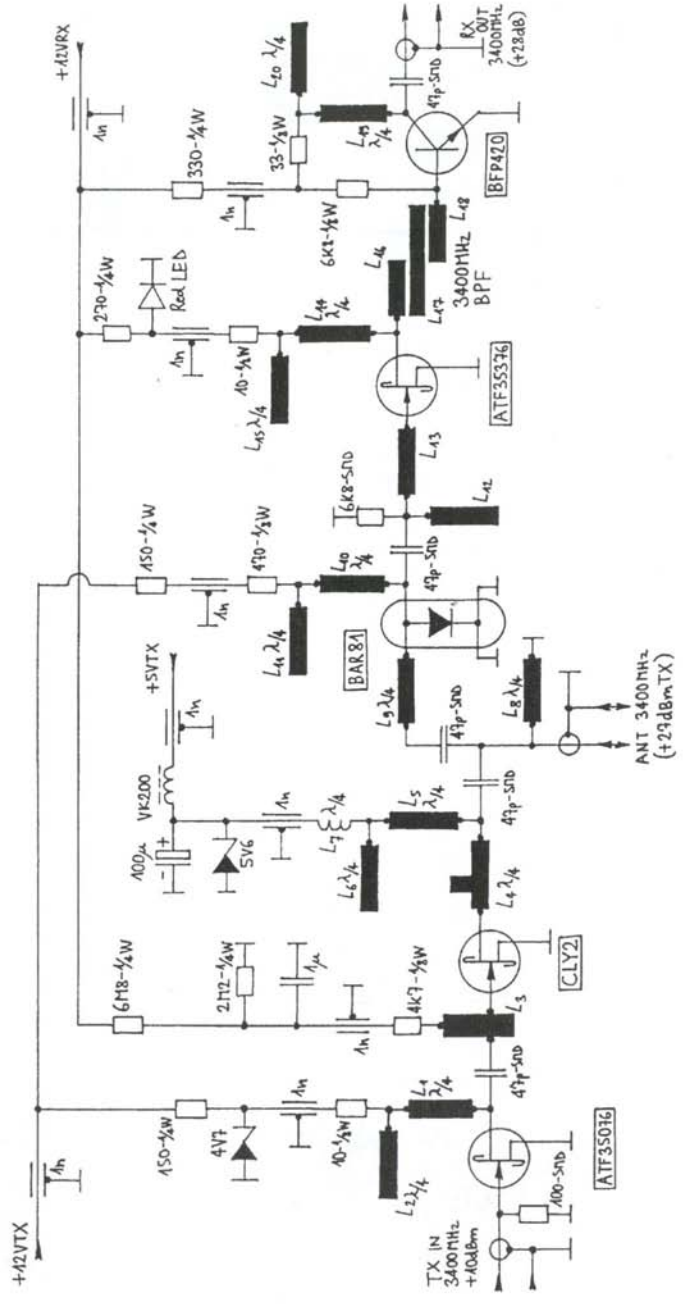
4. RF front-end for 3400MHz

The circuit diagram of the RF front-end of the zero-IF SSB transceiver for 3400MHz is shown on Fig.8. The RF front-end includes the transmitter power amplifier, the receiver RF preamplifier with bandpass filter and the antenna switch with a PIN diode. The RF front-end is built as a microstrip circuit on a double-sided, 0.8mm thick FR4 glassfiber-epoxy printed-circuit board like in the transceivers for 1.3GHz, 2.3GHz and 5.7GHz.

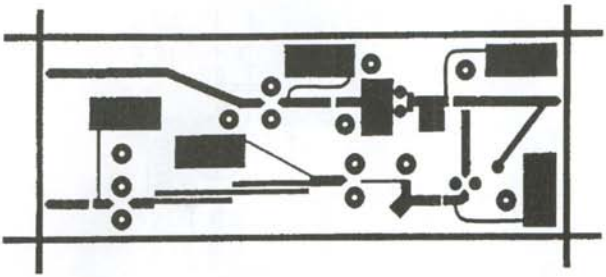
The transmitter power amplifier is designed with the inexpensive GaAs transistor CLY2 in plastic package. The CLY2 can produce more than 0.5W of RF power also on 3.4GHz, however the available gain is much smaller than on 2.3GHz. The gain of the CLY2 amounts to only 8-9dB at 3400MHz and requires a drive power of 60-80mW. An ATF35076 HEMT (high Idss) is used in the driver stage. Since the gain of the ATF35076 is far too high for this application, it is partially reduced by the 100ohm resistor from gate to ground. Anyway, the ATF35076 still provides a few dB of gain margin for the overall transmitter chain.

The antenna switch uses a single PIN diode BAR81 in shunt configuration on the receiver input. Due to the low parasitic capacitance of the BAR81, no negative bias voltage is required to bring the diode to the OFF state in the 3400MHz band. No special circuit is therefore required to drive the PIN diode. A simple resistor to +12VTX is sufficient. While transmitting the short circuit from the BAR81 diode is transformed in an open circuit at the summing node by the L9 quarter-wavelength line. The BAR81 provides more than 20dB attenu-

Bild/Figure 8: RF Frontend for 3400MHz



Bild/Figure 9: 3400MHz RF Frontend PCB

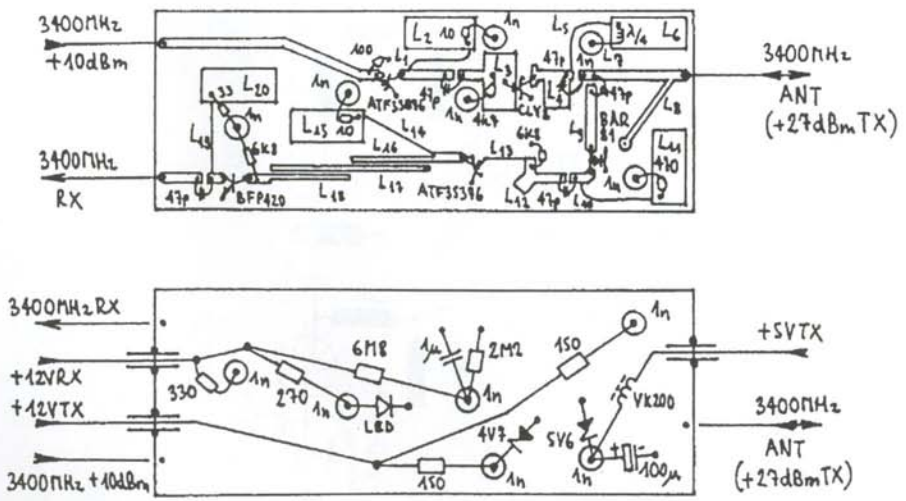


ation to protect the receiver. On the other hand, the transmitter output stage remains connected to the antenna at all times. While receiving the CLY2 drain voltage is removed and a positive bias is applied to the gate. The CLY2 then behaves as a short circuit, further transformed by L4 in an open circuit at the summing node.

The RF front-end includes a two-stage receiving preamplifier including a simple bandpass for 3400MHz. The first stage uses an ATF35376 HEMT, while a BFP420 silicon transistor is used in the second stage. The overall gain amounts to about 28dB including the losses in the interstage bandpass filter. Since there are no strong signals expected in the 3400MHz band, the preamplifier gain can be kept high to improve the noise figure.

The RF front-end of the zero-IF transceiver for 3400MHz is built as a microstrip circuit on a double-sided, 0.8mm thick FR4 glassfiber-epoxy printed-circuit board with the dimensions of 30mmX80mm. The upper side is shown on Fig.9 while the lower side is not etched to act as a groundplane for the microstrip circuits. The component location on both sides of the printed-circuit board is shown on Fig.10. L7 is the only quarter-wavelength

Bild/Figure 10: 3400MHz RF Frontend Component Location



choke that is not printed on the circuit board, but is a small self-supporting coil made of a 25mm long piece of 0.15mm thick CuL wire.

A correctly assembled RF front-end for 3400MHz should not require any tuning. Before installing the printed-circuit board in the brass frame it makes sense to check the Idss of all of the FETs. Small corrections to the output circuit may bring a few milliwatts more output power, but any improvement is usually less than 1dB.

4. HF-Teil für 3400MHz

Das Schaltbild des 3400MHz HF-Teils zeigt Abb. 8. Das HF-Teil enthält den Sendeverstärker, den Empfänger-Eingangsverstärker und die Sende-/Empfangsumschaltung mit der PIN-Diode.

Der Sendeverstärker ist mit einem preiswerten CLY2 GaAs FET bestückt. Die Ausgangsleistung ist ca. 0,5W. Die Verstärkung beträgt aber nur noch 8...9dB. Daher ist eine Treiberleistung von 60...80mW erforderlich, die von einem ATF35376 HEMT erzeugt wird. Da die Verstärkung des HEMT's zu groß ist, wird sie mit dem 100Ohm Gatewiderstand reduziert.

Der Antennenschalter benutzt eine einzelne BAT-81 PIN-Diode in Parallelschaltung. Auf 3400 MHz ist keine Sperrspannung erforderlich, da die Kapazitäten dieser Diode ausreichend klein sind. Beim Senden wird der Kurzschluß der leitenden BAT-81 durch eine Viertelwellenleitung L9 in einen Leerlauf transformiert. Es wird eine Isolation mindestens 20dB erreicht. Bei Empfang wird die Betriebsspannung vom CLY2 entfernt und das Gate über eine positive Spannung durchgeschaltet. Das erzeugt eine sehr kleine Impedanz im Drainpfad, die über L4 in einen Leerlauf am Antennenanschluß transfomiert wird.

Der zweistufige Empfangsverstärker benutzt in der ersten Stufe den HEMT ATF35376 und in der zweiten den bipolaren Transistor BFP420. Die Verstärkung beträgt 28dB.

Das HF-Teil befindet sich auf einer 30x80mm großen Leiterplatte aus FR-4 (Abb. 9). Den Bestückungsplan zeigt Abb. 10. L7 ist nicht gedruckt, sondern ein 25mm langer 0,15mm dicker Draht.

Auch bei diesem Modul sind jegliche Abstimmmaßnahmen überflüssig.

5. Quadrature receive mixer for 3400MHz

The circuit diagram of the quadrature receive mixer for 3400MHz is shown on Fig.11. The circuit of the quadrature receive mixer for 3400MHz is very similar to the equivalent mixer for 1296MHz except that all bandpass filters, hybrids and chokes are designed for a higher operating frequency.

Although the available gain from the INA03184 MMIC drops quickly above 2.5GHz, this device still provides the highest gain on 3400MHz with a modest DC current drain. Besides the INA03184 MMIC amplifier, the input signal is fed through two bandpass filters for 3400MHz before reaching the quadrature hybrid. Both subharmonic mixers use BAT14-099R Schottky quads, fed in-phase with the 1700MHz local oscillator. Finally, the quadrature receive mixer module also includes two IF preamplifiers with two BF199 transistors.

The module of the quadrature receive mixer for 3400MHz is built as a microstrip circuit on a double-sided, 0.8mm thick FR4 glassfiber-epoxy printed-circuit board with the dimensions of 30mmX120mm. The upper side is shown on Fig.12 while the lower side is not etched to act as a groundplane for the microstrip circuits. The component location on both sides of the printed-circuit board is shown on Fig.13.

A correctly assembled quadrature receive mixer for 3400MHz should not require any tuning. Some BF199 transistors may cause excessive "popcorn" noise and may have to be replaced. The mixer noise figure may also increase if the LO signal level is too high.

5 Quadratur Empfangsmischer für 3400MHz

Das Schaltbild des Empfangsmischer zeigt Abb. 11. Diese Schaltung ist ähnlich zu der

Schaltung des 1296MHz Transceivers ([1]). Obwohl die Verstärkung des MMIC INA03184 oberhalb von 2,5GHz schnell abfällt, reicht er dennoch für 3,4GHz noch aus. Nach einem Bandfilter folgen die beiden Mischer mit den BAT14-099R Schottky Dioden. Als ZF-Verstärker fungieren die BF199 Transistoren.

Die Schaltung ist auf einer FR-4 Leiterplatte mit den Abmessungen 30x120mm untergebracht (Abb. 12). Den Bestückungsplan zeigt Abb. 13.

Ein Abgleich ist nicht nötig. Falls die verwendeten BF199 zuviel 'Popcorn' Rauschen aufweisen, müssen sie gegen Typen anderer Hersteller ausgetauscht werden.

6. Modification of other modules

The zero-IF SSB/CW transceiver for 3400MHz is using the same quadrature modulator, IF amplifier and demodulator as the (already described) similar transceivers for 1296MHz, 2304MHz, 5760MHz or 10368MHz. The only differences are in the supply circuit for the transmitter power amplifier and in the driver of the PIN-diode antenna switch.

The SSB/CW switching RX/TX module includes a current-limiting resistor for the transmitter power amplifier. The value of the latter should match the RF device used in the particular transmitter output stage. In the 3400MHz transceiver the CLY2 is operated at higher currents than in the 2304MHz version, so the current-limiting resistor has to be somewhat smaller. Recommended values are around 25-27ohm. The exact value is chosen so that the operating voltage of the output stage may rise up to the full value of 5.6V limited by the zener diode in the RF front-end.

The SSB transceiver for 3400MHz does not require a special PIN diode driver like the 5.7GHz and 10GHz versions, since the capacitance of the BAR81 PIN diode is small enough for operation at 3400MHz without reverse bias. However, the above mentioned PIN driver may be required when using higher capacitance diodes like the BAR80.

6. Modifikation der anderen Module

Der Transceiver verwendet in ZF die gleichen Module (Modulator, Demodulator., AGC-Verstärker) wie die schon beschriebenen Transceiver. Die einzigen Unterschiede sind in der Spannungversorgung.

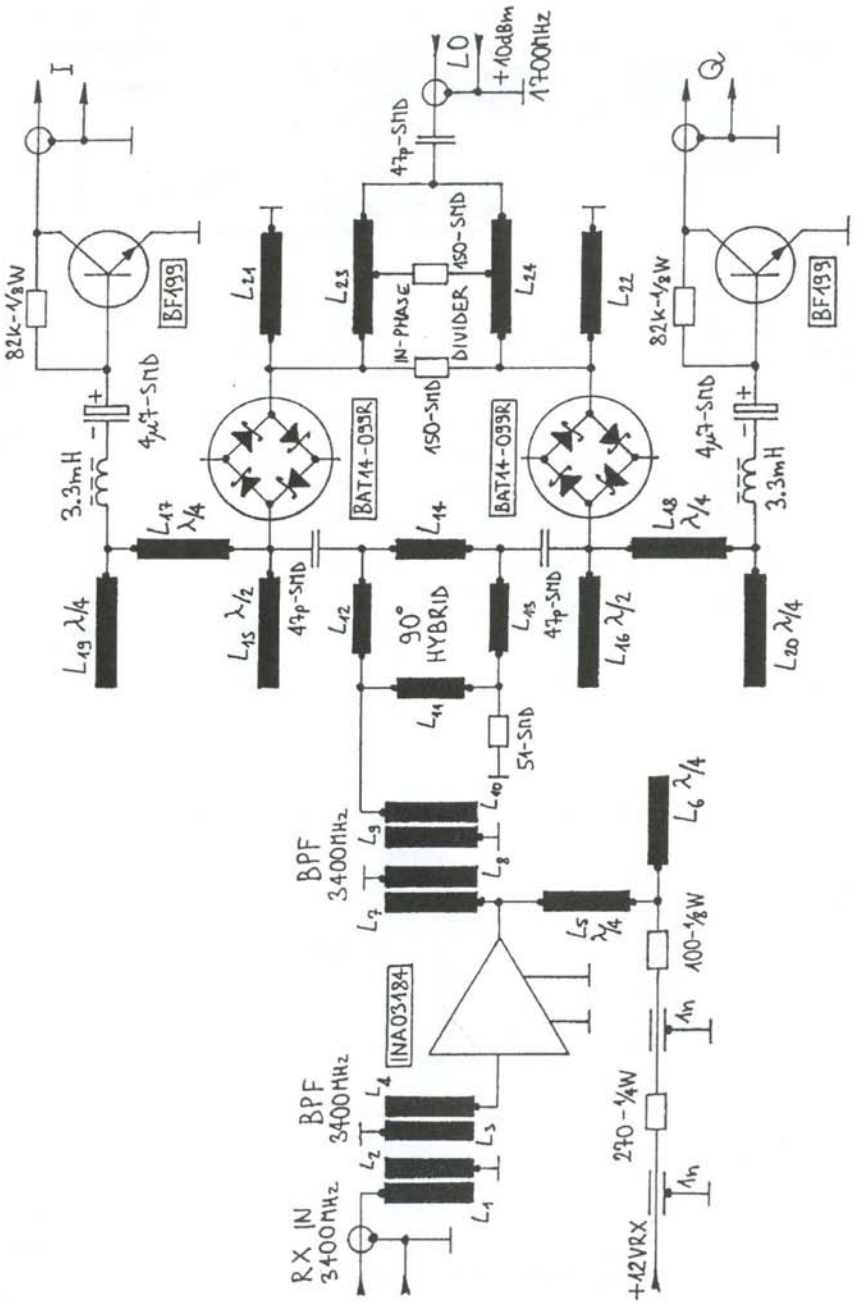
Der Strombegrenzungswiderstand in der Drain-Leitung des CLY2 sollte auf 27Ohm reduziert werden. Er ist dann richtig, wenn die Drain-Spannung auf 5,6V steigen kann.

7. Assembly and checkout of the 3400MHz SSB transceiver

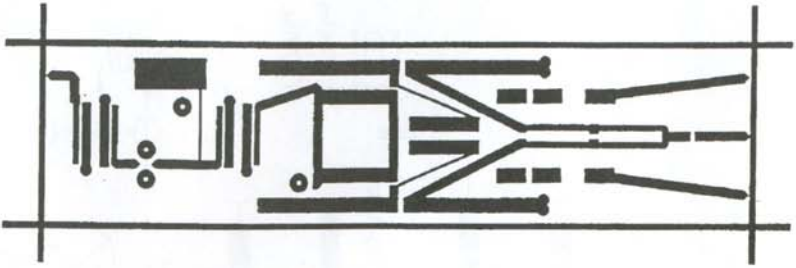
Although the assembly of the SSB transceiver for 3400MHz is not as demanding as the assembly of the 5.7GHz and 10GHz versions, it is recommended to carefully select the components to be used in the RF section. In particular it is recommended to use new SMD capacitors of the size 0805 or smaller, since the older, larger 1206 types may have strange responses in the microwave frequency range. One should absolutely avoid using capacitors made of brown ceramic, since the latter has a high temperature coefficient and high dielectric losses at microwave frequencies. The 3400MHz version uses a new component, the BFP420 silicon transistor (SMD marking "AMs"). The latter is packaged in the very small SOT-343 package. Also the pinout is changed, since the BFP420 has the emitter grounded internally to improve its RF performance. The wide pin is one of the emitters, the other emitter being located diagonally on the opposite side of the package. The base is on the same side as the wide pin while the collector is on the opposite side of the wide pin. The BFP420 transistors operate at low voltages 2-3V just like HEMTs, but they do not tend to oscillate at very high frequencies like HEMTs.

The RF modules of the SSB transceiver for 3400MHz have the same dimensions as the

Abb./Fig. 11: Quadrature Receive Mixer for 3400MHz



Bild/Figure 12: 3400MHz RF Frontend PCB

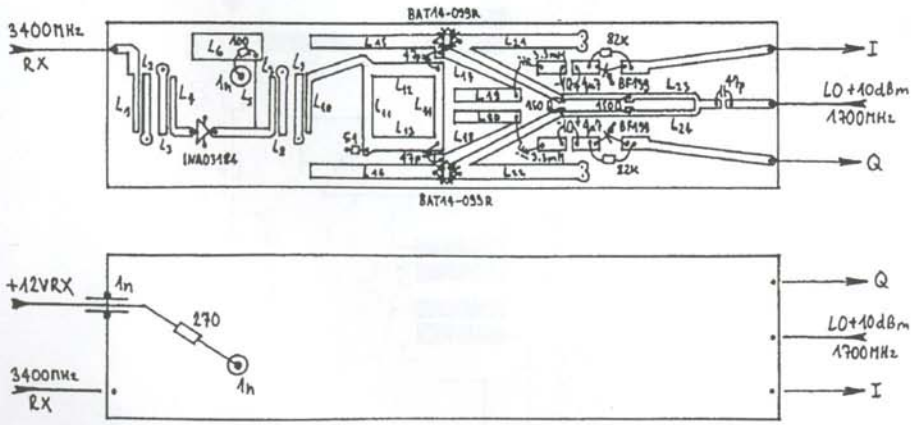


modules of the 5.7GHz and 10GHz versions. Therefore the same brass boxes, overall transceiver enclosure (60mmX180mmX180mm) and module location as in the 5.7GHz or 10GHz versions can be used. The only difference is in the position of some connections, requiring different holes on the brass boxes. All of the microstrip circuits of the 3400MHz SSB transceiver are designed so that no microwave absorber is necessary in any of the RF modules. Also the VCXO module does not require a bottom cover.

The checkout of the transceiver should start with the alignment of the VCXO and multiplier stages. The VCXO should be tuned to cover the desired frequency range. The multiplier stages are adjusted for the maximum output signal, measured as a voltage drop on the base of the following stage. The maximum on 425MHz is found by measuring the drain current (voltage) of the HEMT multiplier for 1700MHz. The additional multiplier for 1700MHz does not require any tuning except for the adjustment of the output power (around +10dBm).

Both the receiver and the transmitter should be already operational, but they still need several checks. In the receiver one should first check the overall gain. There should be a clear drop in the noise when the supply to the LNA is removed and the noise should drop

Bild/Figure 13: 3400MHz RF Frontend Component Location



almost to zero when the IF preamplifiers are disconnected. If the drop of the noise power is more pronounced at low supply voltages (10V or less), the LO signal level is probably too high.

Next the receiver is tuned to a weak signal (beacon or another VCXO with multiplier chain) and the received signal is carefully monitored. Besides the main response a mirror signal moving in the opposite direction while tuning should also be heard. The mirror response should be suppressed with the two trimmers in the IF amplifier. Any frequency instabilities are probably caused by the VCXO, especially when using a cheap PAL subcarrier crystal pulled down to 17.708MHz. The transmitter output power should be checked while adjusting the trimmer in the modulator. In CW mode, the full power should be achieved already at about 1/3 of the full resistance. The supply voltage of the output stage should then rise to 5.6V limited by the zener diode. In SSB mode the output power and supply voltage of the output stage should both drop to almost zero without modulation. The unwanted carrier suppression should be at least 25dB. An insufficient carrier suppression is probably also caused by a too high LO signal level.

The SSB modulation as well as the carrier suppression should also be checked with another station operating in the 3400MHz band. Both LSB and USB have to be checked, since it is relatively easy to swap I and Q lines in the internal wiring of the transceiver. The mode of operation (USB or LSB) of the receiver can also be checked by tuning the receiver to an unmodulated carrier (beacon).

Finally the overall shielding of the transceiver has to be checked. Waving with a hand usually produces a 1.4kHz whistle in the loudspeaker. This effect is common to all zero-IF radios and is caused by the leakage of the LO signal because of insufficient shielding. The frequency of the reflected signal from a moving hand is shifted by the Doppler effect. Finally this signal is collected by the antenna and fed to the receiver front-end.

The current drain of the described SSB/CW transceiver for 3400MHz is about 240mA during quiet reception at a nominal supply voltage of 12.6V. The current drain rises to about 590mA during CW transmission at an output power of 500mW. During SSB transmission the current drain is even higher, since it is inversely proportional to the modulation level, and may reach 750mA during speech pauses.

7. Zusammenbau und Test

Als Kondensatoren sollten nur NP0-Kondensatoren in der Größe 0805 zum Einsatz kommen.

Der BFP420 ist ein neues Bauelement im SOT-343 Gehäuse. Der Emitter ist geerdet. Sie arbeiten bei Spannungen von 2...3V, sind aber nicht so schwingfreudig wie HEMT's.

Alle HF-Module haben die gleichen Abmessungen wie bei den vorher beschriebenen Transceivern. Daher können die gleichen Gehäuse verwendet werden. Kein Modul braucht irgendwelche Absorberstoffe im Deckel.

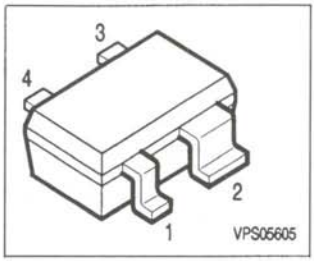
Der Funktionstest des Transceivers beginnt mit dem VCXO. Der VCXO soll über den gesamten gewünschten Bereich abstimmbar sein. Die Vervielfacher werden auf Maximum abgeglichen, indem man die Basisspannung des folgenden Transistors mißt. Das letzte Bandfilter auf 425MHz wird auf maximalen Drainstrom im Vervierfacher abgestimmt. Die Ausgangsleistung soll 10dBm betragen.

Der Sender und Empfänger müssen dann bereits funktionieren. Die Verstärkung des Empfangsverstärkers wird durch Unterbrechung seiner Stromversorgung geprüft. Das Empfängerrauschen muß dann stark abnehmen. Wenn der Abfall des Rauschens bei kleinen Betriebsspannungen (<10V) deutlicher wird, ist der LO-Pegel zu hoch.

Der Empfänger wird auf ein schwaches Signal abgestimmt. Beim Durchstimmen hört man ein kleines Signal, was sich gegenläufig abstimmt. Dieses wird durch die beiden Trimmer im Demodulator minimiert.

Bild/Figure 14: Footprint of BFP420

NPN Silicon RF Transistor



- For high gain low noise amplifiers
- For oscillators up to 10 GHz
- Noise figure F = 1.05 dB at 1.8 GHz
  outstanding G_{ms} = 20 dB at 1.8 GHz
- Transition frequency f_T = 25 GHz
- Gold metalization for high reliability
- **SIEGET ® 25 - Line**
  Siemens **G**rounded **E**mitter **T**ransistor
  25 GHz f_T **- Line**

Die Sendeleistung muß auf den Sättigungswert steigen, wenn der Trimmer im Modulator zu 1/3 aufgedreht wird. Die Betriebsspannung der Endstufe muß dann auf ca. 5,6V steigen. In SSB fällt die Spannung bei Sendepausen bis auf Null. Die Trägerunterdrückung soll mindestens 25dB betragen.

Das richtige Seitenband wird durch Tests mit einer anderen Station geprüft. Man kann leicht die Leitungen am I und Q-Kanal vertauschen.

Zum Schluß prüft man die Güte der Abschirmung. Wedelt man mit der Hand im Gerät oder vor der Antenne hört man meistens einen jaulenden Ton mit 1,4kHz. Das ist typisch für alle 'Zero-IF' Transceiver und ist bedingt durch ungenügende Abschirmung des LO-Signals. Dieser wird nämlich direkt wieder vom Empfänger heruntergemischt.

Der Stromverbrauch des Transceivers liegt bei ca. 240mA bei Empfang und einer Betriebsspannung von 12,6V. Während des Sendebetriebs und einer Ausgangsleistung von 0,5W steigt der Betriebsstrom auf 590mA. In den SSB-Sprachpausen kann der Stromverbrauch bis zu 750mA betragen.

8. References/Literatur

[1] Matjaz Vidmar, S53MV, "No-Tune SSB Transceivers for 1.3, 2.3 and 5.7GHz", DUBUS TECHNIK V, pp. 203..271

[2] Matjaz Vidmar, S53MV, "No-Tune SSB Transceiver for 10GHz", DUBUS TECHNIK V, pp. 272..291

[3] Rainer Bertelsmeier, DJ9BV, "Weaver Method of SSB-Generation", DUBUS TECHNIK V, pp. 292..301

Oven Controlled Crystal Oscillator

Silvano Ricci, I0LVA

Oven Oscillator

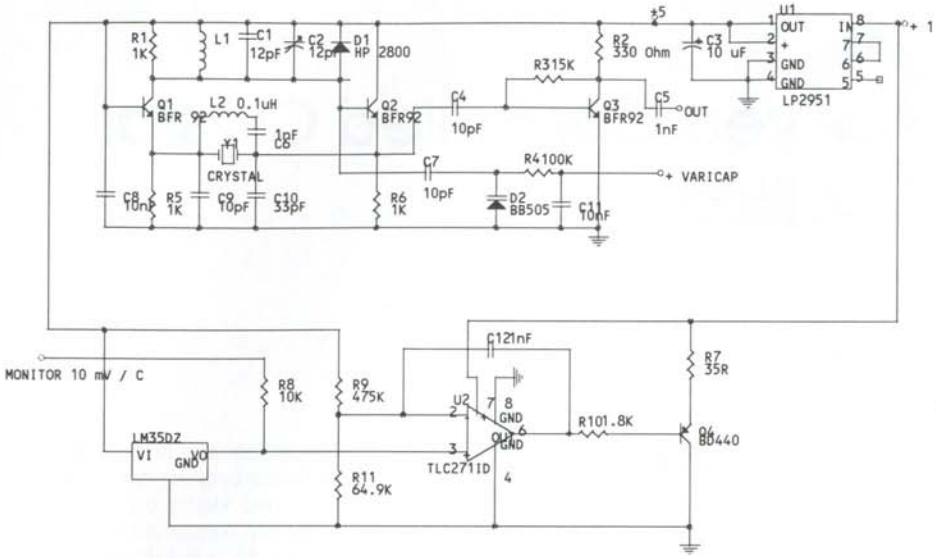
While operating on the 5,7, 10 and 24 GHz bands over the past few years, often I had skeds on a sked frequency. But mostly the other station was some 10 or 20 kHz off frequency. So, it is easy to imagine what such a large frequency error implies, because in addition to the accurate aiming and propagation issues, a third problem arises, namely the need to find the other station.

Therefore I have thought of an oscillator that might solve this inconvenience. The results is the OVEN oscillator shown in the photos, which is completely made up of SMD components.

The oscillator, which has thus been developed, is an OVEN with an stability of 1 x 10-8 per day, which means that stability is higher than or equal to 200 Hz per day in the 10 GHz band.

Fig. 1 shows the oscillator circuit. It uses a 29 x 43 mm double-sided plated PCB, drilled with holes.

The critical part is the thermal coupling between quartz, heating unit (BD440) and temperature sensor (LM35). Furthermore, the circuit has be enclosed into a 31 x 45 mm copper box to protect it from temperature variations. A 10 Ohm/m constantan



Bild/Figure 1: Circuit Diagram

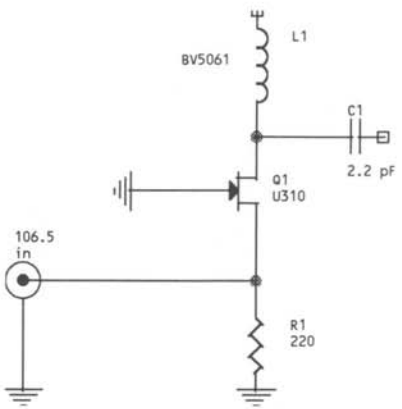
wire is wound around the box to achieve R7 resistance, whose aim is to bring the internal temperature to approx. 45 degrees. The whole unit is then inserted into a 74 x 55 x 50 polystyrene coated sheet tin box. The reference voltage and input for the LM35 integrated circuit (temperature sensor) is provided by a positive voltage regulator adjustable at low nominal values for the bias current and for the drop-out voltage with the LP2951CN integrated circuit.

Table 1 shows the list of components. The oscillator can operate a traditional 2556 MHz oscillator, using the first stage usually with fet U310. It is an easy modification as shown by the diagram in Fig. 2 and as illustrated by I8CVS in RR 5/97.

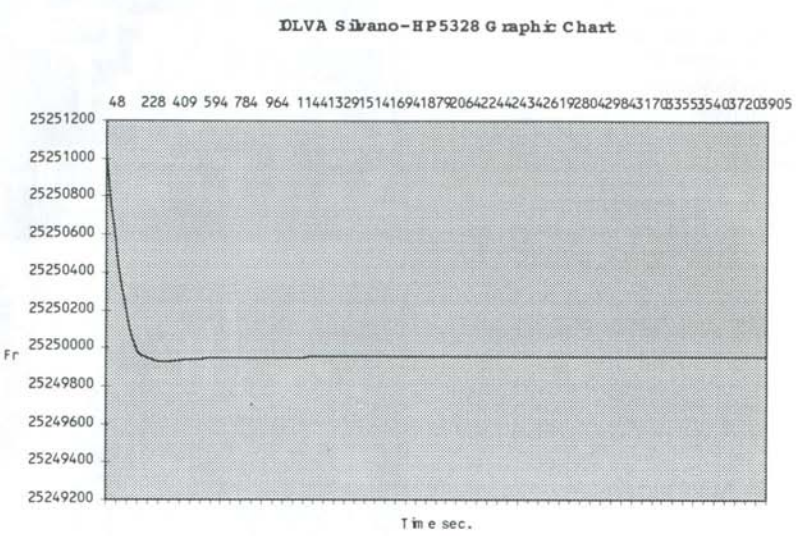
The Instruments used for the measure are following:

1. Frequency counter HP5342
2. Frequency counter HP5340
3. Frequency counter HP5328 opz. High stability with HPIB interface Network
4. Analyzer HP 8505-8501-8503 Spectrum
5. Analyzer HP8569B
6. Power Meter HP 435A

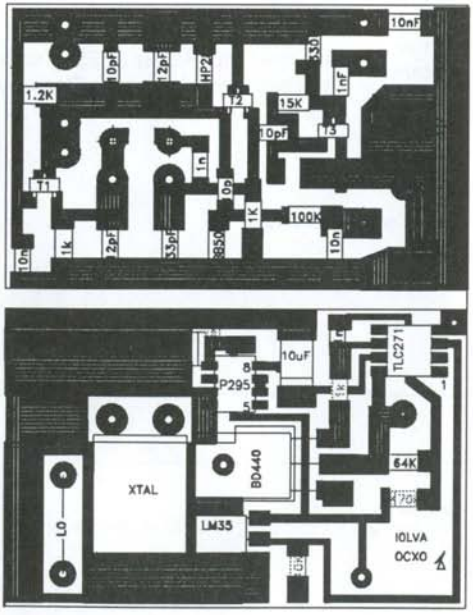
My special thanks go to Enry, ex I1AJS, for his encouragement and the many experiments.



Bild/Figure 2: Circuit for coupling to a



Bild/Figure 3: Frequency vs. Time for a 125.5MHZ LO



A= RESISTOR R 7

B= MONITOR

C= POWER +12/15 Volt

D= +5 VOLT

Bild/Figure 4: Parts Layout

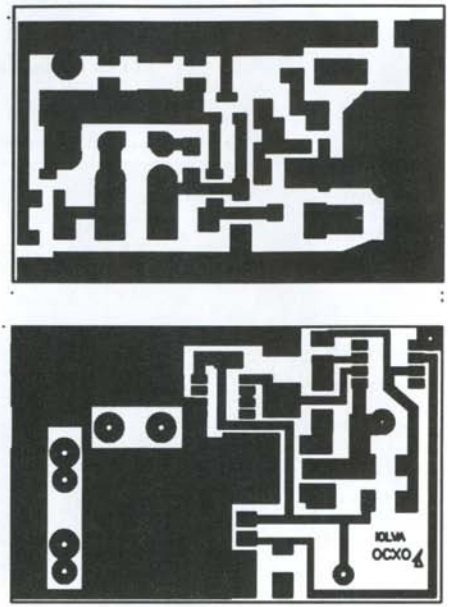
Deutsche Fassung

Wenn man auf den höheren Mikrowellenbändern (5,7...24GHz) arbeitet, ist neben den Problemen der Antennenausrichtung und den Ausbreitungsbedingungen das Problem der Frequenzgenauigkeit und der Konstanz bei Temperaturänderungen. z.B. bei Portabelbetrieb ganz erheblich.

Daher habe ich nach den Ideen von [1], [2] einen geheizten Oszillator entwickelt, der vollständig in SMD-Technik aufgebaut ist (Photos).

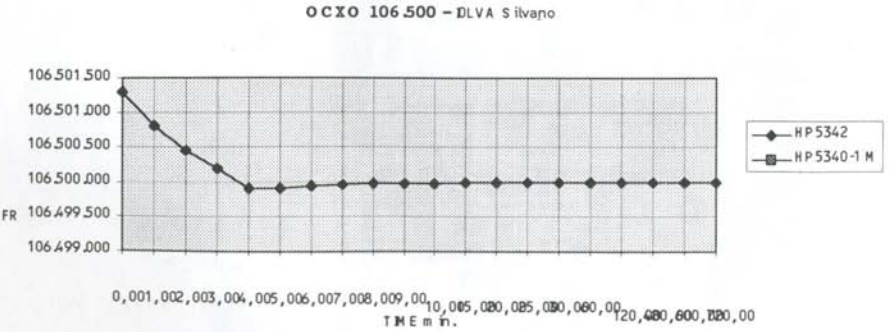
Dieser Oszillator hat einen Stabilität von 1×10^{-8}. Das bedeutet auf 10GHz einen Stabilität von 200Hz. Abb1. zeigt die Schaltung. Der Oszillator ist ein Butler-Oszillator, der mit einer Kapazitätsdiode fein abgestimmt werden kann. Die Platine hat die Abmessungen 29x43mm (Abb. 4 und 5).

Bei der Temperaturregelung ist es wichtig, für eine enge Kopplung des Heizelements (BD440) mit dem Oszillator und dem Temperaturfühler (LM35) zu sorgen. Die Schaltung ist in ein Kupfergehäuse eingebaut, das von dem BD440 und einem Heizer aus Widerstandsdraht beheizt wird. Die interne Temperatur beträgt ungefähr 45°C. Alles zusammen befindet sich in einem mit Styropor isoliertem Gehäuse mit den Abmessungen 74x55x50mm.



Bild/Figure 5: PCB

Ein 'Low-Drop' Regler LP2951 stabilisiert die Betriebsspannung für den Oszillator. Tabelle zeigt die Teileliste.



Bild/Figure 6: Frequency vs. Time for a 106.5MHz LO

Table 1: Parts

Item	Quantity	Reference	Part
1	2	C2,C1	12pF
2	1	C3	10 uF
3	2	C9,C4	10pF
4	3	C5,C6,C12	1Nf
5	1	C7	3.3Pf
6	2	C11,C8	10nF
7	1	C10	33pF
8	1	D1	HP 2800
9	1	D2	BB505
10	1	L1	9 t, 3.5mm ID, 0.5mm CuEl
11	1	L2	0.1uH
12	1	Q1	BFR 92
13	2	Q2,Q3	BFR92
14	1	Q4	BD440
15	1	REF1	LM35DZ
16	3	R1,R5,R6	1K
17	1	R2	330 pF
18	1	R3	15K
19	1	R4	100K
20	1	R7	35R Konstantan Wire
21	1	R8	10K
22	1	R9	475K
23	1	R10	1.8K
24	1	R11	64.9K
25	1	U1	LP2951
26	1	U2	TLC271ID
27	1	Y1	CRYSTAL

Wenn man eine traditionelle LO-Schaltung mit eingebautem Quarzoszillator mit U310 betreiben möchte, empfiehlt sich eine Ansteuerung der Baugruppe nach Abb. 2.

Die Meßwerte der Aufwärmdrift für zwei Oszillatoren auf 106,6 und 125,5MHz zeigen die Abb. 3 und 6. Daraus kann man erkennen, daß sich der Oszillator nach dem Einschalten innerhalb von 10 Minuten stabilisiert hat.

Mein Dank geht an Enry, I1AJS, der mir sehr geholfen hat.

References:

[1] KA2WEO, "Low-Phase-Noise Oscillators", QEX10/94

[2] Gianfranco Sabatini, I2SG, " Master Oscillator 5-8 GHz",. Radio Revista 9/94-3/95

Microwave Products

Editor: Rainer Bertelsmeier, DJ9BV

Stanford Microdevices

Product Description

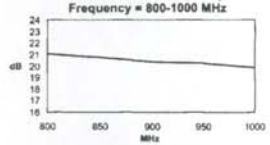
Stanford Microdevices' SXA-289 amplifier is a high efficiency GaAs Heterojunction Bipolar Transistor (HBT) amplifier housed in low-cost surface-mountable plastic package.

These HBT amplifiers are fabricated using molecular beam epitaxial growth technology which produces reliable and consistent performance from wafer to wafer and lot to lot.

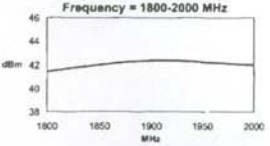
These amplifiers are specially designed for use as driver devices for infrastructure equipment in the 50-2000 MHz cellular, ISM and narrowband PCS bands.

Its high linearity make it an ideal choice for multi-carrier as well as digital applications.

Power Gain vs. Frequency
Frequency = 800-1000 MHz



Output Third Order Intercept
Frequency = 1800-2000 MHz



Preliminary

SXA-289

50-2000 MHz Power Amplifier

Product Features

- **Patented High Reliability GaAs HBT Technology**
- **High Gain :**
  +18.0dB Typ. at 900 MHz
  +15.5dB Typ. at 1900 MHz
- **High Linearity Performance :**
  +40.5dBm Typ. at 900 MHz
  +42.0dBm Typ. at 1900 MHz
- **High Efficiency: Draws only 115mA of Current at +5V**
- **Minimal Matching Components**
- **Surface-Mountable Plastic Package - SOT 89**

Applications

- **Driver Stage For High-Linearity Applications**
- **PCS, Cellular Systems**
- **Multi-Carrier Applications**

Electrical Specifications at Ta = 25C

Symbol	Parameters: Test Conditions: Z_o = 50 Ohms, f = 50-2000 MHz		Units	Min.	Typ.	Max.
P_{1dB}	Output Power at 1dB Compression	f = 800-900 MHz f = 1800-2000 MHz	dBm dBm		24.0 24.0	
S_{21}	Power Gain	f = 800-900 MHz f = 1800-2000 MHz	dB dB		20.5 15.5	
S_{12}	Reverse Isolation	f = 800-900 MHz f = 1800-2000 MHz	dB dB		30.0 30.0	
VSWR	Input VSWR	f = 800-900 MHz f = 1800-2000 MHz	-		1.5:1 1.5:1	
VSWR	Output VSWR	f = 800-900 MHz f = 1800-2000 MHz	-		2.0:1 2.0:1	
IP_3	Third Order Intercept Point	f = 800-900 MHz f = 1800-2000 MHz	dBm dBm		40.5 42.0	
NF	Noise Figure	f = 800-900 MHz f = 1800-2000 MHz	dB dB		5.0 5.0	
I_d	Device Current	Vc=+5V	mA		115.0	

Stanford Microdevices

Product Description

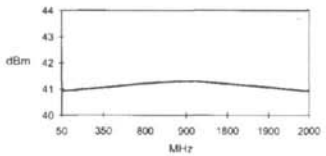
Stanford Microdevices' SXH-189 amplifier is a high efficiency GaAs Heterojunction Bipolar Transistor (HBT) amplifier housed in low-cost surface-mountable plastic package.

These HBT amplifiers are fabricated using molecular beam epitaxial growth technology which produces reliable and consistent performance from wafer to wafer and lot to lot.

These amplifiers are specially designed for use as driver devices for infrastructure equipment in the 50-2000 MHz cellular, ISM and narrowband PCS bands.

Its high linearity make it an ideal choice for multi-carrier as well as digital applications.

Output Third Order Intercept Point vs. Frequency



Preliminary

SXH-189

50-2000 MHz Power Amplifier

Product Features

- **Patented High Reliability GaAs HBT Technology offers significant advances over competitive MESFET process**
- **High Gain :**
  +18.0dB Typ. at 900 MHz
  +15.5dB Typ. at 1900 MHz
- **High Linearity Performance :**
  +41.0dBm Typ. at 900 MHz
  +41.0dBm Typ. at 1900 MHz
- **High Efficiency: Draws only 95mA of Current at +5V**
- **Minimal Matching Components**
- **Surface-Mountable Plastic Package - SOT 89**

Applications

- **Driver Stage For High-Linearity Applications**
- **PCS, Cellular Systems**
- **Multi-Carrier Applications**

Electrical Specifications at Ta = 25C

Symbol	Parameters: Test Conditions: Z_0 = 50 Ohms, f = 50-2000 MHz		Units	Min.	Typ.	Max.
P_{1dB}	Output Power at 1dB Compression	f = 800-900 MHz f = 1800-2000 MHz	dBm dBm		21.0 21.0	
S_{21}	Power Gain	f = 800-900 MHz f = 1800-2000 MHz	dB dB		18.0 13.0	
S_{12}	Reverse Isolation	f = 800-900 MHz f = 1800-2000 MHz	dB dB		30.0 30.0	
VSWR	Input VSWR	f = 800-900 MHz f = 1800-2000 MHz	-		1.5:1 2.0:1	
VSWR	Output VSWR	f = 800-900 MHz f = 1800-2000 MHz	-		2.0:1 2.0:1	
IP_3	Third Order Intercept Point	f = 800-900 MHz f = 1800-2000 MHz	dBm dBm	38.0 38.0	41.0 41.0	
NF	Noise Figure	f = 800-900 MHz f = 1800-2000 MHz	dB dB		3.5 4.2	
I_d	Device Current	Vc=+5V	mA		95.0	

Distributors

1. Richardson, Tel.: +49-89890214-0
2. Comptron GmbH, Tel.: +49-89538866-0

Microwave Europe

Editor: John Sørensen, OZ1IPU

1296 MHz

DL0UL/p JN48UO wkd: 02./03.10.99 PA6V JO33 546km, IK4DCX JN64 555km, HA5SHF JN97 703km, G3XDY JO02 716km, G8P JO01 661km, OM3LQ JN88 554km, 9A5Y/P JN85 675km, M1CRO/P JO01 699km, HA7P JN97 683km, 9A7A JN86 553km, HA1VHF JN97 532km, OM3F JN88 555km, DL1SUN JO53 563km, DK1CB JO53 544km. Rig: 67 Element Yagi, 120W. Tks fer info Ingo.

DL5LF JO54AF wkd: 30.7.99 GM6FIO/P IO86RQ 838km, G3PHO IO93GJ 760km, 1.8.99 GM4LBV IO86RQ 838km, 2.8.99 G0EHV IO94FW 750km. Rig: 23ele., 1W. Tks fer info Frank.

LA0BY/p JO59IX wkd:18.5.99 OZ1BGZ JO65AP, SM7ECM JO65NQ, SK0UX JO99BM, OH0A JP90XD, SM3BEI JP81NG, OZ6OL JO65DJ, OZ2LD JO54TU, OZ9KY JO45VX, 29.7.99 PA0JUS JO22OO (889km), PA0ZM JO32GK (879km), PA0EZ JO22OF (928km), SM7FMX JO65KN, PA5DD JO22IC (953km), PA0ME JO22OB (945km), PA0GUS JO23TA (835km), DG6JF/p JO33QN (743km), PA3AWJ JO21GW (974km), OZ7IS JO65DQ, G0KPW JO02 hrd only,1.8.99 PA0BAT JO31FX (929km), DK1KR JO53HW (673km), ON4PS/p JO20KQ (ODX 1098km), 2.8.99 PE3CEG JO33FB (813km). Rig: Xvtr at 43-ele-yagi antenna, 15W RF. Tks fer info Stefan.

ON4KHG/P JO10UN wkd: 1.5.99 DG5FEB/P JO40PL, PI4GN JO33KK, 2.5.99 DL5OAQ/P JO42QH, G3OHM/P IO92GB, DL1SUZ JO53UN. From JO10VI: 3.7.99 PI4GN JO33KK 3.7.99 G5BK/P IO81XW, 4.7.99, DG5FEB/P JO40PL, DK0FLT JN59FW, HB9AOF/P JN36DO, G3OHM/P IO82XJ .Rig: 144/1296 home-made transverter (10 W) + 35 el. F9FT. Tks fer info.

SM6ECM JO65NQ wkd: 3.7.99 PI4GN JO33, 1.8.99 G0KPW JO02, G4DDK JO02, GM4LBV IO86RQ, 2.8.99 G3XDY JO02, PA0GUS JO23, PA5DD JO22, 3.8.99 PA0-BAT JO31, 4.8.99 G0KPW JO10.9.99 LY2WR KO24, 11.9.99 ON5NY JO10, PA5DD JO22, G4DCV JO01, 12.9.99 OK2BLE JN99, SM3BEI JP81. Tks fer info Anders.

2320 MHz

DH5FS/P JO71AD 380m ASL wkd: 07.08.99 DL0RCW jo60lk, DB6NT jo50ti, DG2DWL Jo60vr, DG0VO JO60TS RIG: 1W 2m-9ele Yagi (13cm Ant forgotten hi). Tks fer info Fred.

F5HRY (JN18EQ) wkd:16/12/98 G3LQR (JO02), G3XDY (JO02), G4DDK (JO02), PA0EZ (JO22), PA5DD (JO22), PE1JBK (JO22), DL3EAG (JO31), 06/06/99 TM9R/P (JN04), 24/07/99 F1ANH/P (IN88). Rig 25 el / 25 W. Tks fer info Herve.

SM6ECM JO65NQ wkd: 15.6.99 DL2NUD JO63, LA6LCA JO59, 20.7.99 SM6EAN JO57, DL2NUD JO63, DG0RG JO62, 1.8.99 G4DDK JO02, 2.8.99 PA0GUS JO23, PA3CEG JO33, 7.9.99 SMODFP JO89, 11.9.99 PA5DD JO22, 12.9.99 OK2BLE JN99, SM3BEI JP81. Tks fer info Anders.

5760 MHz

DH5FS/P JO60UW 425m ASL wkd: 21.07.99 DH0LS/P Jo61JF 72km. DH5FS/p jo71ad 380m ASL wkd: 07.08.99 DG2DWL jo60vr 49km, DL4DTU JO61tb 31km, DB6NT jo50ti 191km, DG0VO jo60ts 51km. RIG: 300mW /1.7dB 60cm dish..I'am active from

jo71 if somebody needs this square (up to 3cm) DH5FS@QSL.NET. Tks fer info Fred.

DL0UL/p JN48UO wkd: 02./03.10.99 400km DB1BX JO32 496km, DK9OY JO52 428km, DL4OL/P JO52 428km. Rig:1.8m Dish, 40W. Tks fer info Ingo.

F5HRY (JN18EQ) wkd: 02/05/99 G4LIP/P (JO01), 20/06/99 F6DPH/P (JN14), 27/06/99 F5JWF/P (JN25), 04/07/99 F1CLQ/P (JN38), 24/07/99 F5FLN/P (IN93), 27/07/99 F1PYR/P (IN87).Rig 70 cm / 2 W. Tks fer info Herve.

SM6ECM JO65NQ wkd: 15.6.99 DL2NUD JO63, 3.7.99 PA0EZ JO22, 20.7.99 DL2NUD JO63, SM6EAN JO57, 2.8.99 PA0GUS JO23, PA3CEG JO33, 17.8.99 SM6ESG JO67, 11.9.99 PA5DD JO22. Tks fer info Anders.

10368MHz

DJ1KP JO40JJ wkd: 3/4.7.99 OK1KHK/p JO80, OE3WRA/3 JN77, OL2R JN89, OK1AIY/P JO70, OE5VRL/5 JN78, OE5MKM JN78, OE3WOG/2 JN67, DL2NUD JO63, OE2M JN67, DG0RG JO62, OK1KEI/p JN79, HB9MIO/p JN37, DG1VL/p JO61, DM2AFN JO61, HB9CZF/p JN37, DJ8VY/p JN68, DK0OG JN68, DD5OI JN57. Tks fer info Helmut.

DL0UL/p JN48UO wkd: 05./06.06.99 OE5VRL/5 JN78 339km, OK1JKT/P JO60 325km, DL2ABO/P JO51 350km, 03./04.07.99 DL4EAU/P JO51 339km, DL2ABO/P JO51 339km, OE5VRL/5 JN78 339km, OK1VAM/P JO60 351Km, OE5MKM JN78 333km, DG1KJG JO30 308km, OK1JKT/P JO60 325km,OK1KIM JO60 348km, DH4AE/P JO51 355km, DL4OAN/P JO51 359km, OK1KEI/P JN79 361km, OK1KIR/P JO60 336km, DK0WAL JO61 368km, OE8MI/8 JN66 374km, DM2AFN/P JO61 405km, DL3YEE JO42 407km, DG1VL/P JO61 422km, DL4WO JO61 409km, OL2R JN89 475km, OK1AIY/P JO70 484km, OE1MCU/3 JN77 468km, DG0RG JO62 525km, OK1KHK/P JO80 518km, SP6GWB/6 JO80 545km, OL7Q/P JN99 646km, 30cm Dish, 5W, 02./03.10.99 OK1KEI/P JN79 361km, OK1JKT/P JO60 325km, OK1UWA/P JO60 308km. Rig: 48cm Dish, 4W. Tks fer info Ingo.

DL5LF JO54AF wkd: 19.7.99 DF9QX JO42HD rs 250km, 3.8.99 SM7ECM JO65NQ 255km, 4.8.99 PA3CEG JO33FB 270km, G3LQR JO02QF 617km. Rig: 60cm dish, 1W. After a long break I am back and build up my station again. I am QRV on 70cm, 23cm and 3cm. Prepare 70cm for EME next year. Tks fer info Frank.

DG1VL/P JO61XF wkd: 4.7.99 DJ9DW JO40LE 371Km RS, DK0WAL JO61OA, DF6NA JN49XS 326Km RS, DL4WO JO61WC, OK1JKT/P JO60OK RS, DJ6BU/P JO40XLKm 396km, RS, DJ1KP JO40JJ 375Km RS, DG1KJG JO30NT 480Km RS, DM2AFN JO61WB, DC9YC JO31PI 464Km RS, DL0GTH JO50JP 231Km RS, DG2DWL/P JO60VR, DL4DTU/P JO60TS, DF0MTL JO60OM RS, OK1VAM/P JO60LJ 113Km RS, DL0UL/P JN48UO Km RS, DK0FLT JN59FW Km RS, DB6NT JO50TI, DK4VW JO40IT 370km RS, DG2NBJ JO50ND, OK1KIM JO60BJ, DB6DY/P JO50IP RS, OK1KEI/P JN79CX RS, DF0TEC/P JO73CF 223Km, OE2M JN67NT 384Km RS, DK0OG JN68GI 335Km RS, OE1MCU/3 JN77XX 389Km RS, DC8EC JN57UX 396Km RS. Rig: 1W, 60cm dish, DB6NT transverter. Tks fer info Henry.

Succesfully QSO form Italy to Spain!!! I/DJ3KM JM88CW wkd: 5.7.99 EA/DJ4AM RST 559/56 IM86WR 1624km. Rig: 5W, 0,6m dish. Tks fer info Adalbert.

F5HRY (JN18EQ) wkd:16/12/98 F6DRO (JN03), PA0EZ (JO22), 07/05/99 (RS) PA5DD (JO22), PA3DYS (JO21), PA0BAT (JO31), PA0WWM (JO22), DL3EAG (JO31), PA0EZ (JO22), 24/05/99 F1UO (JN16), 29/05/99 F6BVA/P (JN24) 572km, 30/05/99 F5FLN/P (JN04), F1BLT/P (JN04), 03/06/99 (RS) PA0WWM (JO22), PA3DYS (JO22), 20/06/99 F6DPH/P (JN14) 517 km, 27/06/99 F6BVA/P (JN34) 591 km, 03/07/99 F1CLQ/P (JN38, loc #60 !), 25/07/99 F5FLN/P (IN93), F1PYR/P (IN87). Rig 60cm / 7 W. Tks fer info Herve.

OE5VRL/5 JN78DK wkd: 13/14.7.99 DL4EAU/p JO51, DK4VW JO40, DK0ALK

JN38, DK4GD JN47, DH6FAE/p JO40, DC6RW/p JN49, HB9CZF/p JN37, DJ1KP JO40, DL3YEE JO42, PA6C JO33, DH8AG JO31, DG1KJG JO30, DC9YC JO31, DC9KK JO30, DG0RG JO62, IK4PMN JN64, I4QIG/5 JN54, IK5HGY/5 JN54, IW6DCN/6 JN63, I0ZDP/0 JN63, I6CXB JN63, IW3FZQ/4 JN54, I4CVC JN54. Tks fer info Rudi.

ON4KHG/P JO10UN wkd:1.5.99 G0EMG/p JO01, 2.5.99 PA6C JO33FB. From JO10VI: 4.7.99 PA6C JO33FB. Rig: 144/10368 DB6NT Transverder (0,23 W) + 48 cm DISH. Tks fer info.

SM6ECM JO65NQ wkd: 18.5.99 LA6LCA JO59, 28.5.99 DF1OI JO42 RS, 15.6.99 LA6LCA JO59, DL2NUD JO63, 3.7.99 SM7FWZ/7 JO77 RS, PA0EZ JO22 RS, DL3YEE JO42 RS, DL0GTH JO50 RS, DL5CC JO64 RS, DH8AG JO31 RS, DF0TEC/p JO73 RS, OK1VAM/p JO60 RS, 5.7.99 DM2AFN JO61 RS, DL4WO JO61 RS, OK1JKT/p JO60 RS, DB6NT JO50 RS, DL4DTU JO61 RS, 20.7.99 DK1KR JO53 RS, SM6FHZ JO57 RS, SM6EAN, DL2NUD JO63, DG0RG JO62, 28.7.LA6LCA JO59, 1.8.99 G4DDK JO02, 2.8.99 PA3CEG JO33, 3.8.99 PA0GUS JO23, PA0BAT JO31, SM1HOW/1 JO96, DL5LF JO54, 4.8.99 G3LQR JO02, 17.8.99 PA3CEG JO33, SM6ESG JO67, 7.9.99 SM0DFP JO89, 11.9.99 PA5DD JO22, SM0FZH JO99, SM1FMT JO97. Tks fer info Anders.

24192 MHz

F5HRY (JN18EQ) wkd:17/03/99 F6DWG/P (JN09). Rig 50cm / 85 mW. Tks fer info Herve.

NEW RECORD on 24 GHz

with a QRB of 444 Km. In reference to my activity I inform you that on August 11,1999 at 10,15 GMT I have made the new record on 24 GHz with a QRB of 444 Km. The QSO have been made from my QTH S. Polo dei Cavalieri (Rome) JN62KA to Balestrate (Palermo) Sicily Island JM68MA. I made the qso with my dear friend Mario I3EME/IT9. The work conditions are the following:

I0LVA: Tx 250 mW, N.F.: 2.5 dB, dish: 90 cm. Temperature 23 C, 651 m a.s.l. RST Tx: 419 RST Rx: 519. I3EME/IT9: Tx 80 mW, N.F.: 3.5 dB, dish 50 cm. temperature 31C, 120 m a.s.l. The record has arrived after that I have achieved the following QSO: 7.6.98 S51JN/p JN65XM, 28.6.98, F6BVA/TK JN42QE, 14.8.98 IT9IPQ/9 JM78RE 397km, 16.8.98 I3EME/IT9 Only HRD JM68MA 486km. Tks fer info Silvano.

OE5VRL/5 JN78DK wkd: 27.6.99 DL6NCO JN59, DL6NCI JO50, DB6NT JO50, DKONA JO50. Tks fer info Rudi.

Your reports can be send to me on FAX ++45 98467877, E-mail dmteknik@post4.tele.dk as "ASCII-DOS text" or by post to my NEW ADDRESS: John Sorensen, Solystvej 13, DK- 9300 Saeby, Denmark, and please if possible on a disk in ASCII-DOS text, that will help me a lot, thank you. Vy 73 John OZ1IPU

Microwave: World Firsts and World Records

Band (GHz)	World First QSO			World Record		
	Date	Calls	QRB (km)	Date	Calls	QRB (km)
10	1946-05-06	W2JRM-W2JN	3.3	1994-12-30	VK6KZ/p-VK5NY/p	1912
24	1975-10.14	G3BNL/P-G3EEZ/p	150	1999-08-11	I0LVA-I3EME/IT9	444
47	1984-10-03	HB9AMH-HB9MIN	1	1998-05-15	F6BVA/p-F5CAU/p	193
76	1985-12-30	HB9MIN-HB9AGE	0.5	1995-12-07	HB9MIO/p-DK4GD/p	114
145	1992-12-12	DB6NT/p-DL1JIN/p	1	1997-04-07	DL6NCI/p-DB6NT/p	53
241	1993-05-23	DB6NT/p-DL1JIN/p	0.1	1995-06-07	DB6NT/p-DF9LN/p	2.1
411	1998-01-06	DB6NT/p-DL1IN/p	0.05	1998-01-06	DB6NT/p-DL1IN/p	0.05

If you have an update or a correction, please write to:
John Sørensen, OZ1IPU, Rosenvej 49, DK-9300 Sæby, Denmark.Tel.: (++45)9846-3311

EME News

Editor: Bernd Wilde, DL7APV

intro: Official **ARRL DATES**: oct. 30/31 and nov. 27/28.
Let me say thank you for the great job of net control guys on 20m, that there are on ***every weekend*** twice for more then two hours for many years now, **Joe K1RQG (432&up) and Lionel VE7BQH (144MHz)**
Dates for **Brazil '2000** will be August 18th and 19th 2000.
We have some interesting reports about the **ecplise** in europe.

OZ6OL's dish

ARRL contest

Greetings to all, The dates for the 1999 ARRL International EME Competition will be October 30/31 and November 27/28. As always, the ARRL sought as much input as possible concerning this years dates. Discussions were conducted on the 20 meter EME nets as well as the Moon-Net reflector. Several concerns were expressed regarding weather during the November weekend and contest conflicts during the October weekends. All of these concerns were taken seriously into consideration, however no real consensus was achieved as to the most preferred dates. Lionel, VE7BQH, assisted by conducting a survey of EME operators on all bands inquring which dates you wanted. The results of that survey have previously been reported, and as one can clearly see, no date was a clear preference. This left us with the difficulty of selecting a set of weekends that would not be attractive to a large group, regardless of which weekends were selected. If these dates were not your choice, please understand the situation and I want everyone to know that we will again look at the dates in the same manner for the year 2000 in an effort to select the best possible weekend combination to permit maximum participation in the competition. I want to thank all of you for your support of EME activity, and especially thank Lionel and Joe, K1RQG, for their help

EME-TOPLIST

144MHz

Call	small	SQR	DX CC	US States	WAS	WAC	#
I2FAK	448	56	105	50	1993	1988	942
UA9FAD	265	43	73	40	--	--	400
PA2CHR	254	43	63	48	--	1993	364
DJ7OF	150	28	30	22	--	1996	170
RW1AW	116	24	31	23	--		129
9A9B	66	16	21	11	--	--	84
PE1OGF	46	14	16	12	--	--	55
UA3PTW	40	12	14	9	--	--	41
EA1ABZ	37	15	17	0	--	--	39
YO2AMU	36	18	24	12	--	--	57
SP7DCS	33	15	15	8	--	--	33
YO2IS	33	14	16	10	--	--	34
S53J	28	11	12	3	--	--	31
F5HRY	21	?	8	7	--	--	21
JA9BOH	?	?	39	34	--	--	210
CT1DMK	?	?	41	?	--	--	118
DL2IAN	?	?	?	?			40

432MHz

DL9KR	378	52	82	50	1987	1978	715
OK1KIR	247	43	62	44	--	1982	342
G3LTF	206	?	55	47	--	--	327
DL7APV	128	26	32	40	--	1984	151
F1ANH	125	25	31	25	--	--	159
YO2IS	115	23	33	23	--	--	141
OE9ERC	107	24	27	22	--	1993	126
DL8OBU	90	23	29	21	--	--	104
G4ERG	77	21	24	19	--	--	93
OK1CA	71	24	25	22	--	1996	121
EA6ADW	66	19	24	19	--	--	69
CT1DMK	49	?	19	?	--	--	49
PA2CHR	38	14	17	10	--	--	45
F5HRY	31	?	14	8	--	--	31
OK1DFC	21	12	11	6	--	--	21
JA9BOH	?	?	48	42	--	--	296
G3SEK	?	?	54	42	--	--	275
ZS6AXT	?	?	32	?	--	--	152
RW1AW	?	?	?	?			35

1296MHz

OE9ERC	140	29	35	28	--	1993	201
OK1KIR	131	30	37	25	--	1989	164
G3LTF	108	?	31	20	--	--	134
F1ANH	106	25	31	20	--	1994	140
EA6ADW	105	24	31	24	--	1994	145
DJ9YW	96	26	32	17	--	1998	104
HB9BBD	92	23	31	20	--	1994	119
CT1DMK	67	?	24	?	--	--	69
OK1DFC	58	18	24	11	--	--	65
OK1CA	34	16	18	7	--	--	31
JA9BOH	?	?	1	?	--	--	2
HA5SHF	?	?	20	6	--	--	46
ZS6AXT	?	?	32	?		1993	144

2300MHz

OE9ERC	41	14	19	8	--	--	44
OK1KIR	36	13	18	9	--	--	37
F1ANH	17	8	11	5	--	--	18
G3LTF	13	?	12	2	--	--	14
EA6ADW	8	4	8	1	--	--	9
ZS6AXT	?	?	16	?	--	--	29

5760MHz

OE9ERC	14	7	12	2	--	--	16
OK1KIR	11	7	9	2	--	--	12
CT1DMK	5	?	4	?	--	--	4

10368MHz

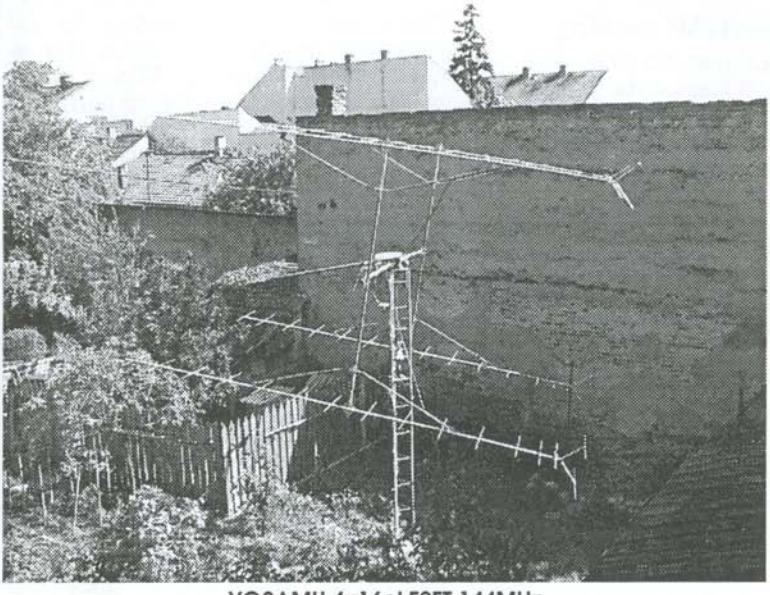
OK1KIR	11	8	10	2	--	--	12
OE9ERC	11	8	7	3	--	--	11
CT1DMK	10	?	8	?	--	--	11

DON'T forget, we need one update per year !!!

in disseminating information leading up to this decision. I also want to thank Lionel for conducting the survey and presenting the results to everyone. Regards & 73, Joel W5ZN ARRL Vice President

144 MHz

DL2IAN (JN49bc) Tom reports : wkd stations 90-96 W5UN, KB8RQ and SM7BAE, 29.05.96 HB9JAW #4, 21.7.96 VE7BQH #5, 27.9.96 SM5FRH #6, 28.9.96 F3VS #7, 29.9.96 SM5MIX #8, SM2CEW #9, 27.10.96 SM5FRH, 23.11.96 F3VS, 19.10.97 W5UN, F3VS, SM5FRH, 10.01.98 SM5FRH, I2FAK



YO2AMU 4x16el F9FT 144MHz

#10, 28.02.98 I2FAK, 08.03.98 SM5FRH, 29.03.98 SM5FRH, S57TW #11, 04.04.98 F3VS, SM5BSZ #12, 05.04.98 SM5FRH, 02.05.98 OZ1HNE #13, EA6VQ #14, WA9KRT #15, 03.05.98 W5UN, 20.06.98 W5UN, 21.06.98 SM5FRH, IK3MAC #16, 25.07.98 PA0JMV #17, 16.08.98 IK3MAC, 27.12.98 K1CA #18 since this day working with 800W before 300W, K9MRI #19, 30.12.98 JH5FOQ #20, W5UN, 01.01.99 SM5FRH, 03.01.99 W5UN, 23.01.99 VE3KH #21, WA4NJP #22, 24.01.99 IK1FJI #23, 30.01.99 K2GAL #24, W7HAH #25, JH2COZ #26, 20.02.99 IK3MAC, W5LBT #27, 27.02.99 DUBUS Contest: OE5EYM #28, W5UN, SM5FRH, IK3MAC, F3VS, W5LBT, DL5MAE #29, RU1A #30, IK1FJI, SM5BSZ, KB8RQ, 28.02.99 UA3TCF #31, HB9Q #32, I3DLI #33, I2FAK, 20.03.99 ZS6ALE #34, EA3ADW #35, 27.03.99 RU1AA #36, ON7RB #37, 28.03.99 W5UN, 16.05.99 SM2CEW, 23.05.99 K5GW #38, 10.07.99 W5UN wrkd with only 80 W !!, 17.07.99 DK3WG #39, WA1JOF #40. rig: ft-726R, MGF 1302. DSP59+, 3CX800A7 und 4x9 element F9FT tnx fer info Tom.

***HB0/PI4TUE* expedition** report: It took some time but here are the the results of our Trip to HB0 After a long night driving without sleeping we arrived in Malbun (+1600m ASL) Liechtenstein arround 06 local time in the morning. At 0830 the ski-lift opended and we could take up all our gear. Yes we had to take everything up by skl-lift to the restaurant (+2020m ASL) where we stayed the next 14 days. This took us about 2 hours continous work to get everything up including antenna towers. Than we had to carry everthing to the restaurant 100m Away from the fift. Some of us were still not tired after that and started to build up some antennas. We were lucky we did build up the EME H-frame incluning the rotors because it was raining the next day. We build up the antennas in the restaurant and late in the afternoon we could mount them. After checking the SWR we were happy because only 120W reflected from 1.8KW out. The year before we had nearly 500W reflected power. The antennas coun't be raised enough to look over a small hill in front of the hotel towards ON/PA/G for tropo and meteor-scatter so only weak signals were heard. Never the less we worked G0KPW and G4SWX in tropo !!

Stations wkd on EME: *july 30* None of the sked stations we hrd, *july 31* : 0339 KB8RQ Random 539/539 #1 Very loud, 0500 AA7A Sked #2 Weak but readable, 0520 F3VS Random #3 Very loud, 2204 IK3MAC Random #4 Loud, *Aug 01*: 0300 OZ1HNE Sked #5 FB signal Jorgen, 0500 Echo test.. FB echoes !

VIII Italian EME meeting

It took place on may 8/9.1999, at Hotel Joseph, Marina di Pietrasanta, (LUCCA qth of I5JUX). It is an annual Italian EME meeting. Guests were also DL9YEY Thomas and DL3YEL Uli, they took down the old antennas of I5JUX, only the tower left now. He hopes to have the new antennas mounted soon.

On saturday IK1ODO Marco, reports of his activity on VLF, 137 KHz, with much new one for Italy. He had all his test equipment at the meeting to calibrate many preamplifier and filter of all eme people.
I2PHD Alberto and IK2CZL Vittorio presented news about HAMVIEW 2.21 next years version.
I5TDJ Piero, presented relations for novice, theoric and pratice measurement of solar noise on 432 MHz, good explanations and pratice improvements on terrace of hotel. (see foto)
I0FTG Pippo, presented transverter 1296/28 with double convertion, for eme use, complet, 10 watt output and also kit version, a good job.
I2SG Gianfranco, present a his diplexer, that go on spatial station (ARISS project), selected from NASA.
I5JRR Raffaele, present a contest for Italian sections of radioamateur, for activity of construction for amateur project.
Mni thanks to JA4BLC Yoshiro, that had donated 10 Hemfet, for meeting. Mni OM have requested this hemfet, a lucky is :IK5TGK, I4TTZ, IK5JWQ, IW5CNS, I5EUS, that receive 2 hemfet with diagram and next year to come with the preamplifier for 144 and 432 MHz mounted and operative.

Thanks also to IK5QLO Andrea, for disponibility of one hemfet for all OM that request : IK1COA, IK1SBB, I2RV, they will prepare only one preamplifier for next year.
Thanks to IW5DAN Luigi and I5TEO Matteo, for digital photo service, expecially for I5TEO that arranged a CD with all photo of meeting.Many interventions for eme politic problem, during the meeting, i hope on next year to have the resolutions of all.
I purpose on 2000 year, contest on september 26/27 , are perigee and good declination, i to wait for comments of Italian eme people, for confirmation.
Next meeting is 20 to 21 may 2000, same place.

IK4UQT Franco, to take up station of I2COR, great problems to move tower and antenna, (10 mt. diameter dish) necessary a special transport and for PO river, not possible to pass on bridge, to be forded the river, with ligther. Now all part of the station are on new qth, Franco to build plinth for all. participants: I1ANP, I1JE, IK1COA, IK1FJI, IK1ODO, IK1SBB, IK1UWL, IW1CCH, IW1DJS, IZ1CGT, I2RV, I2SG, I2COR, I2FAK, I2FGT, I2PHD, IK2CDI, IK2CZL, IK2DDR, IK2TLA, I3DLI, IK3MAC, IV3FSG, IW3RI, I4TTZ, IK4UQT, I5EUS, I5JRR, I5JRV, I5JUX, I5MMC, I5SKJ, I5TDJ, I5TEO, I5WBE, IK5AMB, IK5GBL, IK5JWQ, IK5MEN, IK5QLO, IK5TGK, IW5ADB, IW5BSF, IW5CNS, IW5DAN, IW5ECO, IZ5AXC, IZ5BXF, IZ5EME, I0FTG, IW0BET, DL3YEL, DL9YEY, mni SWL.

Ciao on next meeting, Mario I1ANP, Italian EME manager.

+ CQ, 0509 K2GAL Random #6 Easy copy Hank !, 0518 CQ no takers or too weak, 0541 W0HP Random #7 Good copy, 0547 CQ no takers or too weak, 0700 Skeds no copy, 0740 VE3KH Random #8 Good signal Kevin !, *Aug 03*: 0900 PA0JMV Sked #9 Weak but FB for 2-Yagi, *Aug 05*: 0500 RU1AA Sked #10 Loud ! FB Alex, 0759 W5UN Sked (20m) #11 Good signal, *Aug 06*: 1022 IK1FJI Random #12 Good signal, 1046 W7HAH Random #13 Never hrd Shep this loud, 1100 VE7BQH Sked #14 Rather weak but OK.
Found a lot of noise during moon rise !! so sorry for the japanese friends.
Unfortunatly couldn't find where it came from. Switched off all computers in our shack also the lights, video mobile phones e.g. could it have been a reflection from the mountains ????? There was a solar system outside but during the night it did not produce power !

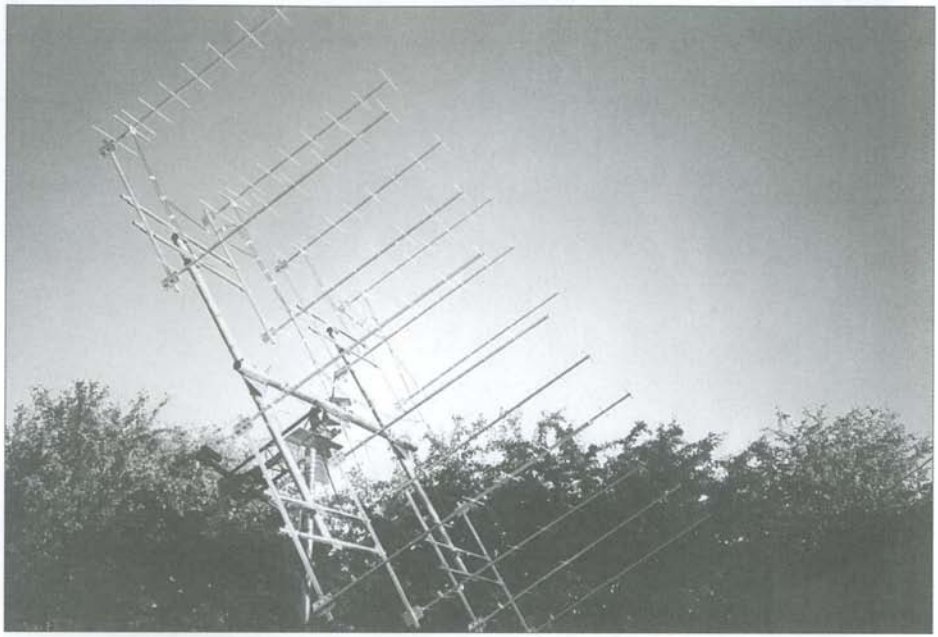
VIII Italian EME meeting

from left to right: I2RV, I5JRR, I2FGT, I3DLI, I2FAK, IK3MAC, IK2DDR, IW5BSF, I5MMC,I5EUS.

assume.. From time to time I had good own echoes which means that the TX power was sufficient and the Receiver Okay. Pre-amp was measured at 0.35dB but died later due to a switching error.

Friday Aug 06 arround 21 local time a Fohn wind started. This wind is like a mistral in france, giving warm air from the south. As we are on a mountain top we had winds from 100 to 120 Km/hour !! we had to take down several antennas else had been damaged or fallen down on the roof of the restaurant. This was very risky we almost had to secure ourselves because of the strong wind. This is a continious wind not like a storm here in west europe with lots of QSB on it. The break of the EME antenna rotor broke during the storm so it was not possible to put them up again we found out the morning after the storm. We decided to put up a single yagi for our next days MS and tropo skeds. But again in the night the fohn came up and we had to take down the antenna again. So unfortunatly for all the stations who had skeds with us we couldn't be QRV due to the fact that our antennas were down. And if we did put them up they wouldn't have stayed in direction because the brake was broken. In this strong winds it certainly was not possible to keep the antennas in the right direction. tnx fer info John

RW1AW (KP50eb) wkd : in july 09.07: K3VGX # 113. 14.07: PA3CWI # 114, NJ0M / 1Yagi!! /# 115, 17.07: EA6VQ # 116, GM4JJJ # 117, NP4C # 118, AA7A # 119, ON7UC # 120, 30.07: N2WK # 121 04.08 UA4AQL # 122. 07.08 JA5NNS #, DF6NA #, DL2IAN #,



G4ERG 16x10el. bv pol. rot.

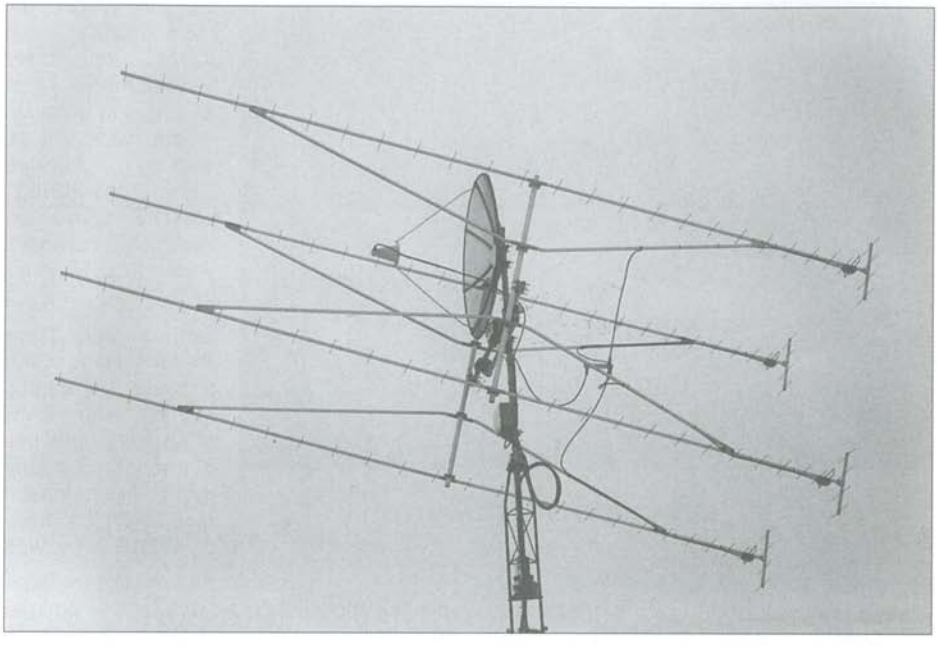
I4XCC # 126, IK3MAC 569! / 539. 08.08 UA4API 539/539, OK1MS, WA6PY # 127, SM5FRH 569/ 539, SM7SJR # 128, KB3PD #129. 08.August very strong echoes / S 5-6 / SSB EME QSO SM5FRH / IK3MAC hrd, very stable signals like on the 20m net hi-hi ! rig : 4x17B2, IC-746,MGF-1302 2xGU74B 2400w out into 42m 7/8" tx line. tnx fer info Alex

432 MHZ

DL8OBU (JO42xi) reports: Feb-june 99: 25.2.99 SV1BTR o/o #94 27.3.99 DK3BU o/o #95, DF3RU 549/559, JA5OVU 549/549, SM2CEW 549/549, EA6ADW o/o #96, K4QI 529/439, 28.3.99 JH4JLV 429/429 #97, SM2CEW 549/549, OE5EYM 449/559, G4ERG 549/439, 17.4.99 W7CNK 439/429, 23.4.99 G4ERG 439/429, W7CNK 539/449, SM3AKW 539/549 24.4.99 JH4JLV 449/439, JA4BLC 449/449, HP3XUG o/o #98, K5WXN o/o #99, WA9FWD o/o #100, 25.4.99 JA5OVU 549/559, 22.5.99 DL1YMK 429/429 #101, JA4BLC 449/449, DF3RU 549/559, KB8RQ o/o #102, 23.5.99 OE5EYM 539/459, WE2Y o/o #103, 20.6 JA6AHB #104. tnx fer info Juergen

RW1AW (KP50eb) reports : 09.07: W7HAH # 24. 10.07: OZ4MM # 25, SM3AKW # 26, KA0RYT, DL9NDD, K1FO. 14.07: DL8OBU # 27. 30.07: VK4AFL # 28 / first VK / 02.08: IK5QLO # 29 / 2 Yagi / Alex used a new preamp during this qso (NE-324 Cavity +CF-300 Nf = 0,28 dB many thanks to Jan DL9KR who send this phemt to St.- Petersburg) 07.08 OK1KIR 449/439 # 31, WE2Y 449/459 # 32, KB4CNI 539/549 # 33. 08.08 JA5NNS 559/539 # 34, JA5OVU 569/569 !!! #35. rig : 12X15el 9BV, FT-736 + DSP599ZX, NE-324 Cavity + CF-300 Nf = 0,28 dB / GS-35B /1500w out. tnx fer info Alex (Email RW1AW@mail.admiral.ru)

VK4AFLreports : After this [June] S/W I will be dismantling my present antenna array to make way for the new array which is now completed but in sub assembly from. Everything is new [apart from the preamp/relay box]

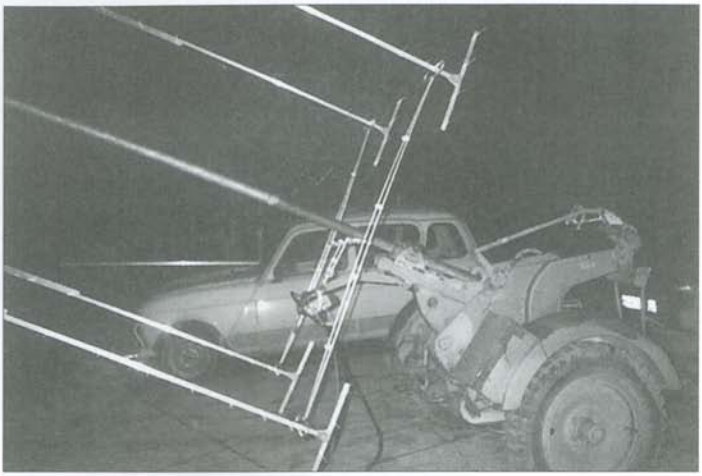


DL1YMK 4x8,5wl bv opt 432MHz

including the tower & rotators. I expect final assembly & testing to take five to six weeks which will preclude any July S/W skeds but the target is to be on by the Aug S/W. Can you therefore consider me QRT until further notice but I will advise as soon as I am QRV again. The replacement array is 16 x 4.0 w/l DL6WU's with full polarity control. It has been a very big [& expensive] project but with the end hopefully in sight it has got to the exciting stage. It will replace a 4 x 9.2 w/l DL6WU horiz only array which has given me a lot of pleasure but I have learned that fixed polarity is a big disadvantage. Power will remain the same, [approx 600w at the array]. Tnx once again. Regards & 73's, Trevor Benton, VK4AFL.

432 & up NETnews

22/23 May PA3CSG: worked VE4MA, LX1DB, DL2LAC on 10 ghz inits #19 on 10ghz. **W2UHI**: had a good time on the moon worked 10-12 good signals, good activity. still running with split operation. N2IQU, HB9SV, OE5EYM, KB2AH, W4RDI, KD4LT, ZS6AXT, EA6ADW, W6HD, HA5SHF, W7SZ all worked.. Dubus. please make sure the Frank is listed as QRV on 23cm. **W5LUA**: new init on 5.7ghz VE1ALQ was on 3cm but did not hear OH2AXH, 30w at feed on 5.7ghz.. did not make it on 23cm about 30 to 40 deg offset between W5LUA and VE1ALQ. **KB4CNI**: was over to Green Bank, nil fromEA3DXU and T from DL3YEE heard echoes good during the DXU and YEE skeds did work W7BBM right after YEE sked. **KB8RQ/M**: worked 2 out of 3.DL8OBU, W7CNK heard EA3DXU but not complete. W7CNK had big signal heard him first time he hit the key. **HP3XUG**: massive power failure yesterday also bad wx this time of year needs resked with DL3YEE and this is the last weekend for Louie til October.. will be QRT July through September. **RW1AW**: worked K2UYH, DL7APV, DF3RU on 1600w on 70cm Excellent 2216z 569/559 random QSO with K2UYH . **LX1DB**: QSO with PA3CSG on 10ghz.



S57RA 4x8,5wl 9BV 432MHz

29/30 May EA6ADW from the last skeds I worked only JA7BMB and KD5FZX. My moonwindow under http://www.ctv.es/USERS/cerveny/window.htm

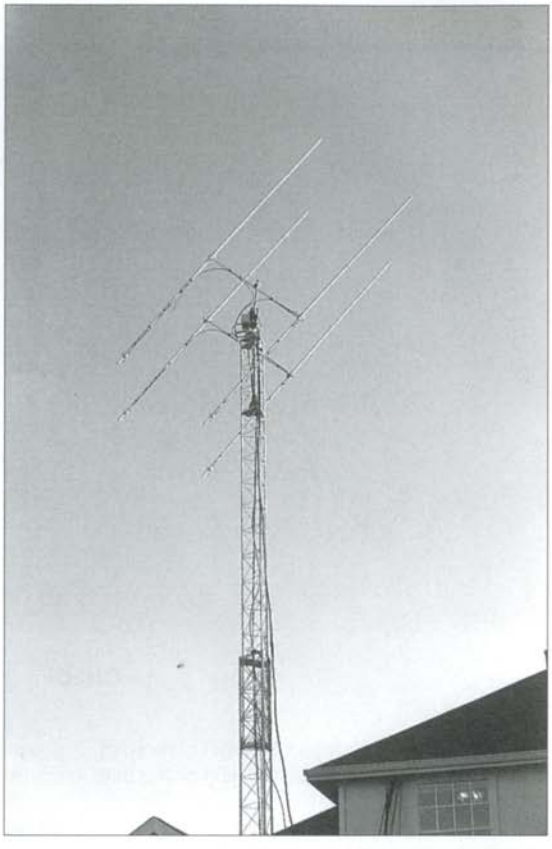
19/20 June K6IBY 432 system complete,will be ready for skeds after 12&13 contest. **9H1ES** FORTUNATO is still working on 23cm & 10GJHz system. **K6IBY** new email: k6iby@pop.mindspring.com. **WD5AGO**: no too much going on will be putting up another dish in the next month or so.. it will be smaller but better surface for higher bands. **HP3XUG**: will be off the air till October.. will be on from Alaska. **PA3CSG**: worked RW3BP on 10ghz. **W7SZ**: will be on 23cm and also will be on 70cm in a couple of weeks.**SM2CEW** was QRV on 432 on Saturday 19th, worked the following stations: DL4KG, G4RGK, OE3JPC, W7CNK, DL9NDD, RW1AW #358 and G3LTF. Listened briefly on 1296 and heard W1ZX working Pop, K5JL with good signals. Congrats to Wille for getting the station going on 1296 ! 73 de Peter **W5LUA**: doing some tower work New email address al_ward@am.exch.hp.com **DL9KR**:nothing to much 3V8AA is postponed to next year. 9H1PA is not on 70cm was on last night heard W7HAH calling DJ3FI but FI not there #716 JA6AHB from new location.

26 Jun W7QX: did have QSO with K6MYC on 70cm. **WA1JOF**:now receiving sun noise on 4 loop yagis.will be working towards 23cm ops. **K6IBY**: will be active on 70cm EME in about 2 weeks.k6iby@aol.com

Sat, 3 Jul: Dave **VK4DH**. He is in the process of getting started with EME [432] & will be active in the not too distant future. His address: holtondj@gil.com.au. **W7SZ**: why was the weekend after perigee chosen as sked weekend vs perigee weekend.. crossed pole 4 yagi array is in place for 70 cm and now waiting for 70cm amp to arrive. **4 Jul W7CNK**: excellent QSO with VE1ALQ on 5.7ghz.. 559n sent to VE1ALQ and rcvd 539 from Darrell.. pretty excited about being back on 5.7ghz.. is VE4MA going to be able get on 5.6ghz.

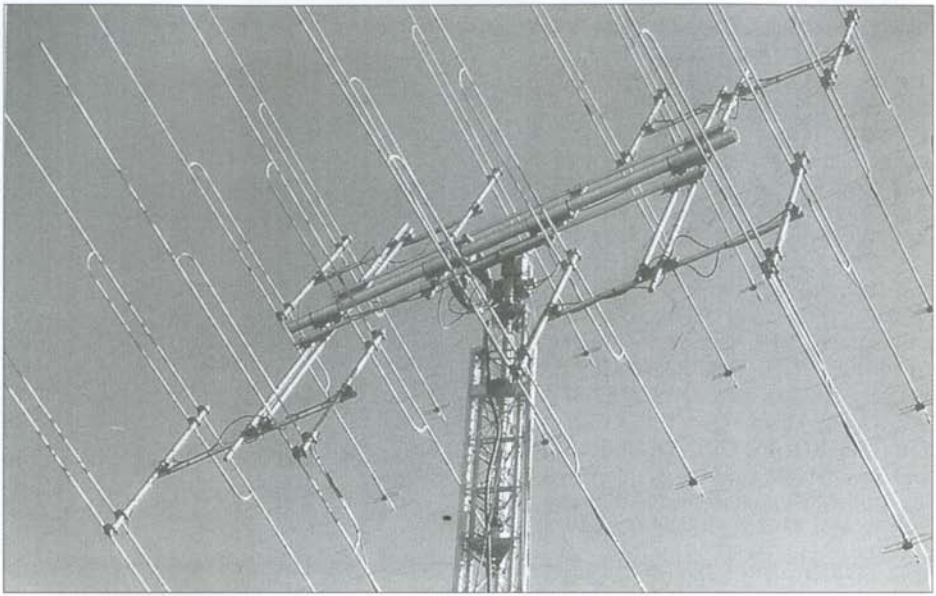
11 July Daniel, **LU8EDR**, has now his own email address (lu8edr@usa.net), so please email him for any skeds proposals on 1296 MHz. >73 de Marc LU6DW. Please note my NEW email address starting from now: **hb9sul**@ticino.com the old hb9sul@compuserve.com is NOT valid any longer. I'm still reacheable at the same GSM # which is + 41/79/310 44 21 Thank you and best 73 de Andrea Member of the HB9MS Dx Group. For info, my new mail f5sdd@hotmail.com is now f5sdd@wanadoo.fr Tnx to forward EME news! 73's! Dave **F5SDD** member **F5KDK** RCEMEP. **LU8EDR** : The station at this moment. Name: Daniel Bernardini Address: Oliver 121 Lomas de zamora 1832 Buenos Aires Argentina Grid: GF05TF Antenna: 6 m Dish Power: 70 W (In construction 600 W, with KB2AH cavity, and 300w LU6DW power amplifier) Bands: 23cm S/N ratio 20dB at 200

solar flux (KB2AH preamplifier) Azimuth camera OK , elevation camera near to finsh this Sunday 11. Operators: LU8EDR and LU6DW Thanks Joe. LU8EDR.(Dany) **VE6TA**: Seemed like very good condx today on 1296. Was only on for a short period due to working nightshift, and managed to work the following; GW3XYW 449/339 new intial and dxcc W2UHI 549/539 N6BQ 449/329 ON5RR O/O new initial from DO33 W6HD 559/549 Huge signal. Grant VE6TA, 275w and 5 meter dish. DO33gs. **W2UHI**: was on the moon Sat ON5RR, N6BQ, OZ6OL, G4DZU, K5JL, OZ4MM, GW3XYW, VE6TA, W6HD, on Sun KD4LT, G4DZU, PA3CSG, KB2AH, ZS6AXT, N6BQ & OE9ERC 10ghz saw lots of interesting proporgation effects worked up to 200 miles.. W9ZIH, K9UIF, K3SIW, WW8M, WB9SNR, WA9CGZ, all worked on 10ghz. 20w 90' wave guide 3' dish 6db sun noise, 4dB cs/gnd. **W4RDI**: all is working on EME, but ambition down a little email is dcarlson@gate.net. **K5JL**: good activity on 23cm this morning.. W6HD with big signal.. LU8EDR called and worked on both SSB & CW. **W5LUA**: W7CNK on 5.7ghz.. W1ZX on 23cm.. been on 13cm this morning and worked 3 stations.. WA8WZG, NU7Z, & W4HHK.. working on TH-327 amp for 23cm. **G4ALH**: not active on EME at this time. **VE4MA**: interesting conditions on 5.7ghz. OE9ERC (569) worked CT1DMK also worked, but with raspy signals.. working on 24ghz stuff this week.



WW2R

17 Jul AL7OB Made a couple contacts, pretty poor success ratio. JA5NNS 549/549 JA5OVU random O/O K2UYH 549/559 Heard KB4CNI - he did not hear me. Heard DL9NDD (both skeds) not good enough for QSO Heard W7QX first transmission, not again. DL8OBU heard me, could not hear him. Many attempts with RW1AW - he heard me, I cud not hear him. Heard the LU you mentioned on the net - STRONG Lots of sked cancellations Improvements in store for 432: new relay (Transco thanks to Lucky) Better preamp (possibly cascade), separate TX/RX feedlines. Mike, AL7OB BP51DC 432 EME - 16 X 12 element NBS 2.2, K2RIW 700Watts, ARR .5dB, FT-736. **VK4AFL**: Just advising that I am now QRV [432] again & will be on this weekend looking for contacts. Tnx & 73's, Trevor. **DJ9YW** reports : Giuseppe (Josef) **I0UGB** is now with the new dish (5,08m) circular QRV on 23cm EME.I worked him 17 July 99.He had 150W at feed.=240kW ERP. The new e-mail adress is from 1.Sept.99]I0UGB:< Sturbani@Pelagus.it> Best 73 Heinrich,DJ9YW e-mail: <DJ9YW@t-online.de> **W7CNK**: worked VK4AFL last eve. **W0RAP**: not too much to report.. dish is up but not operational needs to trim some trees. **N6BQ**: reports got



ON5OF

4 ele beam up on 20 mtrs **LU8EDR** blew solid state amp and not repaired yet, Big dish is still progressing and hopes to be QRV for the contest. **W7QX**: had a direct lightening hit on pole pig no damage to ham shack. lost TV set, well pump, and a telephone.. looking for K5JL & W7CNK. **18 Jul W7SZ**: 70cm array is up and working well 4x42 ele cross pole.. worked K5GW random with 100w.

24 Jul EA6ADW in DL hello friends, now EA6ADW staying in DL until 2.nd sept.99. From 3.rd sept. until Nov.99 ready for any 1296-sked. 3 weeks ago EA6ADW/P,JM19NW worked 10368MHz-TROPO: 2-times 9H1ES/P, JM76 and JM75 (1090km) with RS55/59. On 1296-eme wkd initial W1ZX random for #146. 73 es cuagn in Sept. de Peter. **25 Jul** Not much NET activity this weekend .. CSVHF conference. **K6IBY**: just checking in QRV on 70cm will take skeds. 4x33 ele yagis 250w

31/1 Jul/aug W7QX: change email address to w7qx@sedona.net. To get the **CSVHF** preamp and ant gain measurements go to csvhf.com web site:http://www.csvhfs.org/CSANT99.HTML and http://www.csvhfs.org/CSNF99.HTML 73 Jerry W7QX. **K5JL**: no traffic reports LU8EDR will be QRV next weekend.

Sat, 7 Aug Thanks for all mail from you. I am QRV on 144 EME hoping to be back to 432 and UP in few month. My e-mail has been changed VY 73 Paul Chominski **WA6PY** e-mail: pch@us.ibm.com Would you please inform all guys on the net that we cannot be QRV because the power amplifier is out of service. 73 de Marc **LU6DW** - Daniel **LU8EDR**. **W7CNK**: OH2AXH sked on 5.7ghz was complete this morning. **WA9FWD**: worked PY5ZBU this morning, needs UTAH on 70cm. **WE2Y**: worked on 70cm OK1KIR (O/O), RW1AW (O/O), DL9NDD. **VE1ALQ**: not much new.. new inits on 5.7ghz OX2AXH 559/549. **DL9KR**: was on the moon today.. little activity.. looking for info W7SZ on 70cm

(100w 4xm2) needs sked in September. **GM0ONN**: 4X21 Yagis and 800w. **W7QX**: not too much.. still has a feedline problem.. will try to get on 70cm. **K6MYC/M**: trying to get the 70cm system running..needs to fix preamp problems. **WB0GGM**: amp is still down .. had family obligations this past week.. hopes to have amp back on by next sked weekend.

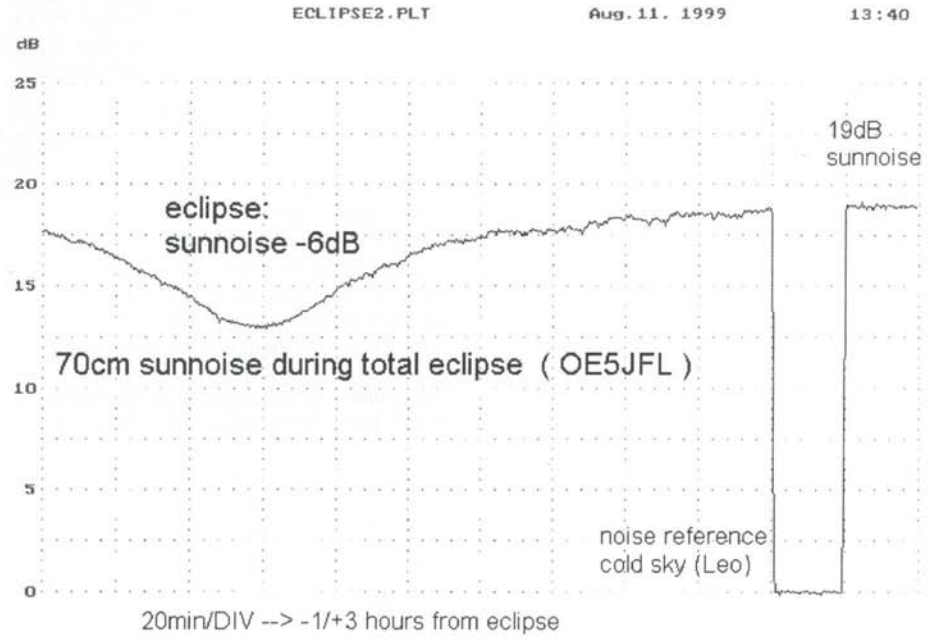
Sun, 8 Aug PA3CSG: worked GW3XYW on 3cm good sig. **RW1AW**: QRV on 70cm ..OK1KIR, WE2Y, KB4CNI, this morning JA5NNS 559/539 & JA5OVU 569/569 .. UA4API is back on 70cm and hearing signals with 4 yagis.. Also heard AL7OB but not complete.. VK4AFL 30 Jul & IK5QLO 2 Aug were 2 inits last week. **F/ON5OF**: wx not good in Belgium today.. went to Hamvention, and picked up cavity with GS35 on 70cm.. hopes to have it working by the first weekend of contest.. nothing else happening on EME .. Nothing on 23cm .. No response on activating 3A EME station.. Hopes that the local club can help.. there is a window limit in 3A .. Dirk still needs volunteer help for 3A EME expedition. 3A2MS & ON5OF are only interest so far.. looking for systems for 23cm and 70cm.. needs help with antennas on both bands..

Sat, 14 Aug Don, **WA1JOF** is now operational on 23cm, worked in Aug 9th. He has 4 loop yagies and 100 watts. He was weak, but is working on more gooo. **KB4CNI**-I have some good and bad news, the good news is that I have found a house to buy. The first thing I checked on is whether towers are allowed and they are. The bad news is I have to take down 4 towers and will be off the air for a while. I am planning to start to dismantle the 432 EME array next week. I have a 120 foot tower with my HF antennas on it to take down which I am not looking forward to at all! The

VII Italian EME meeting

left to rigth: IZ5EME, IK5EHR, I5MMC, I2PHD, I2RV, I5TDJ, I5JRV.

Measurements by OE5JFL during Eclipse 1999



house I am buying is up on a high hill. I can see over 20 miles in most directions. I think it will be a good radio site. I really enjoyed all the EME contacts and friends I made and I hope to be back on the moon by next summer. I hate that I will not be able to make the EME contest this year. I just wanted to send you a line Joe so you and others knew what happen to me. Thank you Joe for the great job you are doing with the EME NET. It has helped me make many contacts. I'LL BE BACK! Cowles -KB4CNI. **W2UHI**: Frank & WA8WZG did complete on 10ghz.. Frank now has an updated WEB page with more pics.. 10ghz stuff. http://member.tripod.com/~w2uhi/index.html. **N6BQ**: the 5 meter dish system will be operational for the September weekend the call will be WA6KBL and this is a new initial. CM97, 5 meter dish, 1200w. **WA1JOF**: first 23cm EME from Maine with K5JL. **W7SZ**: still waiting for 70cm amp.. made contact JA5OVU.. still running 350w.. # 2 on 70cm.. 4x42 cross poled.

15 Aug: Giuseppe, **I0UGB** has now e-mail adress:sturbani@pelagus.it. **AL7OB**: looking for plate xfmr for 7289 amp.. needs European stations skeds to AL7OB west. **K6MYC**: system is running on 70cm without preamp, hopes to be able to run random on occassion, will be working on the preamps and sequencing.

1296 MHz

HA5SHF We group's(HA5SHF)results on 1296MHz: JUN 19 17:05 UTC HB9BBD 579/559 JUN 20 12:45 UTC JA7BMB "M"/"O" 13:00 UTC 4X6UJ nil 13:30 UTC I5MPK nil 14:00 UTC I6PNN nil 14:30 UTC HB9BHU nil 15:42 UTC HB9SV 579/549 17:30 UTC VE3BQN nil Ted write:not QRV 17:33 UTC F1ANH "O"/"O" 18:30 UTC LU6DW nil Marc write:not QRV 19:00 UTC WA8WZG nil 19:30

UTC K9BCT nil 20:30 UTC W4OP nil 73,Csaba HA5BGL

OK1DFC reports : I am sending my report about activity trough August SW 1999. The condition was quite good. Also wetter was nice summer in OK. Activity in the first night was low. I had sked with W1ZX. The QSO was o.k. and complete without problem. I had this QSOs. GW3XYW 539/449, ZS6AXT 539/539, K2UYH 559/559, DJ9YW 539/559, W1ZX 559/559 INITIAL 81 WAS 15, W6HD 559/559, S59DCD 539/339, OE9ERC 579/559, W2UHI 539/539, OK1KIR 449/449, DJ5MN 339/O INITIAL 82, HB9BBD 579/569, OZ6OL O/549, I0UGB O/539 INITIAL 83, OH2AXH 559/559, K5JL 559/549, K4QI 559/559, W2UHI 549/539 Next SW I will be busy, because VHF IARU contest , and 2-3.Oct some UHF IARU contest. See you in the ARRL Contest 1999 in both parts.tnx fer info Zdenek OK1DFC

N6BQ : Sorry you weren't here to operate the station this month. Conditions were quite good and all signals were good copy with lots of activity. And, all the equipment worked great! July 10: Worked G4DZU (partial), ON5RR, W2UHI, OZ6OL, K5JL, OZ4MM, N2IQU, GW3XYW, VE1ALQ, W6HD (big signal), and VE6TA. July 11: Worked PA3CSG, KB2AH, KD4LT, OZ4MM, K5JL, ZS6AXT, W2UHI, OE9ERC, VE6TA, GW3XYW, G3LTF, EA6ADW, and W1ZX (Initial #136). Others heard were W6HD, VE1ALQ, and LU8EDR on SSB working K5JL. 73s, Hoppy N6BQ

5760 MHz

Hi all microwave EME'ers !!! We (**OH2AXH**) had two QSO's today (08.08.99); W7CNK and VE1ALQ on 5.7 GHz. The equipment we have is a 35 W SSPA feeding the 6.4 m dish. Own echoes good, lunar noise about 2 dB. If you want a sked, please either e-mail us to this address (michael.fletcher@oh2aue.pp.fi) or better yet, give us a call at + 358 40 5038904 (this OH6DD's mobile) and let's see what we can arrange ! Looking forward to new EME scalps on 6 cm EME !!! Best regards - Michael, OH2AUE

VE1ALQ **6cm Restrictions** Please include in Net Notes & NL the following Information on my 6cm limitations. These same restrictions will apply to up & coming 3cm as well.Min. EL on moon rise 30 degrees due to spring & summer tree foliage. Fall & Winter 24 degrees.Max EL 61 degrees, due to modified polar mount limitation.Max AZ 260 degrees, due to adjacent 40' VHF tower obstruction.Min EL on moon set limiter to Max AZ.Power output 200W +/- 10%Dish Size: 3.4 Meters, F/d 0.36 Moon noise 0.75db, W5LUA Pre-Amp, SMA input (working on W5LUA Pre-Amp with WG input). Computer tracking dead band 0.12 degrees (still need full 360 degrees accurate calibration) Dish feed line: 18 feet WR-159, 6 feet WR-159 Flex, 13 feet WR-137 flex. Dish feed: VE4MA/W5LUA, VSWR non detectable at TWT output with -32db reflected coupling. Freq. LO Stability & accuracy locked to 0.005PPM 5Mhz Standard, same for 10Ghz station. TX IF: TS-790 at 144Mhz. RX IF: TS-950SDX at 28Mhz with HB 144Mhz down converter. Location: Lat. 45 19'27", Long. 66 11'31" GS FN65vh Prefer not to operate when moon at Zenith as was the case with first two initials, Ve4MA & W5LUA, doppler with Ve4MA, - 850Hz, with W5LUA -65Hz and falling, CW notes (T), terrible. All Skeds welcomed, if E-mailed please send copy to K1RQG, especially if on SW. I have completed four Skeds on 5.76Ghz. 1-VE4MA, 2-W5LUA, 3-CT1DMK, 4-LX1DB. 3/On 6cm my station is a minimum of 2db better on both TX & RX after considerable mechanical alignments & adjustments, both with Dish surface & feed placement & Scalar adjustments. Now seeing 1db of moon noise consistently. Now working on 10Ghz. <ve1alq@fundy.net> Thanks & Best 73. Darrell, Ve1ALQ

eclipse

DL9NDD: reports working DF3RU during the eclipse has this ever been done before.

DJ9YW On 11.Aug.99 we had a nearly total eclipse of the sun. My QTH was 400km in the north of the umbra. At 10h35 UT the maximum was reached with 91% covering. During the eclipse the temperature reduced 3°C. At

ca.11h00 UT I turned my 23cm EME system on and it happened to be that I heard the CQ-call from Erich, OE9ERC. Even though the sun was still covered with 43%, we had a QSO with "O"/"O"! QSO Start 11h05 UT (sun noise 13,8dB) QSO end 11h11 UT (sun noise 14,1dB). Distance to the moon was 373382km. AZ 172° and EL 52°. At 12h00 UT the sun was full visible again and delivered 16,3 dB at SFi 127. Erich had a sun noise of 17,5dB in the QSO and without covering of 56%. The VK3UM/F1EHN program watched with 0,1° exactly.

DL6WU my qth is about 60 km from the edge of the totality zone, which meant 99% occultation. There were thick clouds so I stayed home and watched the sun noise. From the normal value of 14.5 dB (at flux 135 and no eruptions) the Y factor steadily decreased to 8 dB at max occ and then returned to normal. This shows that a large part of the 70 cm noise comes from the corona or there would have been a decrease of 20 dB, ie. to an almost unmeasurable level. Wonder if others have made similar measurements. 73, Guenter

OE5JFL reports : My EME-site was just within the total eclipse zone, so I let my autotracking system make a sunnoise plot on 70cm, starting two hours before and ending three hours after the total eclipse. Partial eclipse lasted +/-1hour20minutes, total eclipse 30seconds in my EME QTH and two minutes in my home QTH. The decrease in sunnoise was 6dB, so I guess that around 25% of the sunnoise we usually measure on 70cm comes not from the sun directly but from the corona. The 3dB angle of my 10m dish is slightly less than 5 deg. From the signal plot you can see, that it needed about double the time before sunnoise was up to it's original value again, compared to the end of the visible partial eclipse. From that I assume that the corona is extended to 0.5deg around the sun, at least considering 432MHz radiation. The signal plots you can see as well by visiting my homepage:http://www.qsl.net/oe5jfl. While my system made the measurement, I went to my home QTH, which was close to the center of the total zone. I picked up my family and had big luck as the weather improved. Back into the car, we were chasing a clear spot in the sky by driving around. Stopping just in the right area and moment we could see the 'black' sun, the corona and Venus beside for two minutes, sitting in darkness. The mountains far in the south were outside the total zone and covered with soft red/yellow light. An impression I will never forget! tnx fer info Hannes

Last

EME NET Europe: After some talks with Jan, DL9KR we think about a EME net for europe. Our proposal is Sundays 9:00 UTC around 7.070MHz on 40m. 20m is not good within europe and 80 should be a problem in summer. What about?
Let us know!!

RIO 2000 :The forthcomming conference will be the 9th and dedicated to 432 & up Earth Mooon Earth amateurr radio activities covering all technical aspects of this facet of the hobby.
We have received already offers to present 26 technical papers at this conference. Rio de Janeiro has been selected as the confercne location and the event will take place on August 18th and 19th 2000. Our Web page covering this event will be avaible on the Internet by the end of June this year, its adress being www.eme2000.com.br and email eme@inepar.com.br. tnx fer info PY5ZBU

About toplist I received only one comment: Read comments in the last Dubus abt the toplists. I for one would report if Dubus had a toplist containing both EME and the other propogations (except for repeaters and sats of course) like we have here in SM. It is too much work for me to split EME qsos from the rest. 73 de SM7SJR, Bjorn.

DL7APV antennas are down, working on a new array, hope to be back in october.

- deadline every first of Feb./May/August/Nov.
- my email bernd_wilde@eac-com.de
- gl at ARRL contest, hope to cu then

73 Bernd DL7APV

Tropo News

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

2m > 700 km

DG2LBF, JO54BH, wkd: 27.7.99 1821-1903 G0KPW JO02OD 640km, G4DHF IO92UU 706, G4LOH IO94IA 743. 28.7.99 0639-0648 GW4HBZ/P IO83GC 903, G7RAU IO90IR 868. 3.8.99 0447 G4DHF IO92UU 706km. Rig: 25W + 2 x 11 Ele. tnx for info Jürgen

DH0GHU, JN38VN , wkd: 23.01.99 EA3BB/p JN12IG 804km. 09.05.99 9A5Y JN85OO 785km 13.06.99 9A3PA JN85EG 747km 04.07.99 OZ1ALS/p JO44XX 729km 03.08.99 DH8BQA/p JO74AA 746km, SK7MW JO65MJ 840km, OZ1ALS JO41WX 729km, OZ4EDR JO75JF 883km. Rig: 300w. tnx for info Ulrich

DK0ALK, JN38TD wkd SSB: 3./4.7.99 EA6IB JM09SB 1122km, SM7WT JO65QQ 926, SM7LXV/7 JO65TM 918, OZ7SKB/P JO45VX 884, OZ2AR/P JO55KR 872, OZ8FYN/P JO55GL 840, OZ5VF/P JO45XG 809, OZ1ALS/P JO44XX 777, OZ1SDB/P JO44UV 765, F6KBR/P JN12FM 745, DL5LM JO44SR 744, DF0TEC/P JO73CF 731, DJ3LE JO44TN 727, DL9MS JO54WC 726, DL0SX/P JO44SM 722, DB7LN JO44VL 721, DL3TW JO44SK 713, DL8VU JO54EG 708, DL2BZE JO72AX 703, DL0KF/P JO54AG 702. Comments: It was a surprising contest. At the beginning it was dissapointing, because the activity was very poor. We are the opinion, that activity decreases from contest to contest. This is valid for 2m, 70cm and 23cm, not for 3cm! DL1GNM. tnx Michael

DL0UL/P JN48uo wkd: 3./4.7.99 OZ9EDR/P JO64 736km, M0BAA/P JO02 703km, SP2FAX JO83 751km, OZ5VF/P JO45 742km, OM7F JN98 730km, OZ2AR/P JO55 797km, OZ7SKB/P JO45VE 733km, SK7MW JO65 789km, OZ1ALS/P JO44 710km, OM3KTU/P JN99 722km, SP9AMH/P JO90 735km, YZ4IZ JN84 744km, OZ8FYN/P JO55 790km, G3VAS/P IO94 923km, OZ5GX/P JO57 979km, OZ1HLB/P JO55 812km, SM7WT JO65QQ 827km. 4./5./9.99 SK7MW JO65 789km, HG6Z JN97 757km, M1A JO02 720km, 9A3B JN95 737km, HG7KLF JN97 756km, SP9AMH/P JO90 735km, OM7F JN98 717km, 9A7D JN95 739km, YT4D JN94 784km, SM7LXV/7 JO65 815km, OM3KLJ/P KN08KJ 823km, HA8CE KN06EN 832km, G5B JO03 845km, M0V IO94 957km, G8L IO90 817km, OM3KBX/P KN19 910km, OZ1IEP JO55 821km. Rig: 700W 2*17 Element. tnx for info Ingo, DL5EBT

DL2FDL, JO40LN, wkd: 7.8.99 1229-1552 OK1MAC JN79IO 423km, HB0/PI4TUE JN47TC 353, F6IFR JN09TT 528, F5UPH/P JN36BP 482. 8.8.99 1400-1600 OE3XXA JN88CH 580, OE5NNN/3 JN77GX 496, IK2PFL/3 JN56WK 336, I2FAK JN45OB 611, G0KPW JO02OD 565, I2XAV/P JN44PP 657, OE7FRH/7 JN67DL 419, OE5HSH JN68PC 415, OE2M JN67NT 429, OE7/DG6PY/p JN56LW 428. tnx for info Michael

DL5UH/P, JO74AA wkd: 4.9.99 M1A JO02OD (881), HA7P JN97KW (756). 5.9.99 DK0ALK JN38TD (792), 9A5Y JN85RO (967), G8P JO01QD (912), ON1DBQ/P JO20MV (701), F6KDL/P JN37NV (835), PA6NL JO01BX (957). rig: 750w, 10 ele 9bv. tnx for info Moritz

I4XCC, JN63, wkd: 25.4. DF0WD JO42FD, PA0PVW JO22VA 1034Km. 9.5. SP2FAX JO83VA 1086Km. 6.6. OM9AU KN09CE. 26.6. 1650-1732 DL7UCW JO62SK, DL0BE JO51GR, DK0BAR JO51GR, LZ2FR KN13IU. 27.6. F1NSR/P JN32CX #481. 2.7. SP2FAX JO83VA. 31.7. HB0/PI4TUE JN47TC. 2.8. LX1DB JN39CO, IH9/IZ0BNU JM66AT, IH9/IZ6CR JM56XT 9.8. DH5FS JO61JF. tnx for info Claudio

IT9CYH/IT9, JM68OA, 1150m 50w + 20el. H.made, wkd >700km: 22.8.99 I1BPU/1 JN45DR, IK1CRN JN44CA, IK1NPP/1 JN44CF, F5JY JN33AH, IW1CKS/1 JN35UK, IK1XPE/1 JN45GX, IW1QN JN44KR, IW2MEX JN55AN, IW1BCW JN45IA, IW2EDU JN55HP, IZ4BEH JN54WL, IW2MXY JN45NO, IN3GEN/IN3 JN55IU, IW1FPC JN44CV, IK3UNA JN55NP, 9A2RD JN65VR, IW2MEI JN55LA, IW3RUA/3 JN66EA, I2OKW JN45OO, IK1PXM/1 JN33VU, IK1XPD/1 JN34OR, I4LUI JN64AK, IW3XRZ JN55RA, Beam 270 Deg: EA/F QSOs: EB5EEO IM98PG, F/G3LTF JN33GP, F4RPW JN33AH, F5RU JN33NV, F/PE1PZF/P JN23WE, F5PVX/P JN23WE, F1CH/P JN23WE, EA7RZ IM86SU, IW1CHX JN35TH, IK1LBW JN44VD, F1BIJ JN33OQ, F8IC JN33KM, IW1ESM JN45FB, I2ZFJ/1 JN44FF, IK1DBM JN33UT, IK1LGV JN44JK, IW1ABM/1 JN33UT, EA4BAS/5 IM98TL, 7X2LS JM16ML, EA5AFP IM98VX, EB6ADS JM09DV, IW1QNS JN44JK. Note: the qso's with F's around 12:15z made just after 10 minuts of very strong rain, beaming to 270. Signal report was 59+. Same strength signals turning antenna around!! I wish to know from these peoples the direction of their antennas during qso with me..... What kind of propagation was it ??! tnx Max.

IT9VDQ, JM68QE wkd: 22.8.99 0802-1604 IK1XPE/I1 JN45GX 953km, IW2HUS/I2 JN45NT 917, 9A2RD JN65VG 788, IK1CRN JN44CA 779, IK1YNZ JN33UT 785, IW1QN JN44KK 790, IK3UNA/I3 JN55NP 849, S57MTA JN75FM 819, IK1NPP/I1 JN44CF 798, F/PE1PZF/P JN23WE 842, IK2YXK JN45OP 897, I3XRZ JN55RA 776, IW1ESM JN45FB 866, I1SBU JN44WD 724, IW2EDU JN55HP 859, IK1LBW JN44VD 727, IW1QNS JN44JK 793, IK2WQK JN55LD 799. Grazie Gius!

LA0BY/p, JO59IX wkd >700km: 4.5.99 OH2W KO29FX, OH1XT KP01UK, DL9MS JO54WC. 1.6.99 DG9LAM JO44MM, PA3BGM JO33CE, PA3CWN JO33AH, DL5CC JO64AD, SP1CNV JO84CF, SP2IQW JO94GM, DB4LL JO44SM, DJ8ES JO43SX, DL5LF JO54AF, DO2LS JO44XF, DL5ME JO52SD, DL4IB JO64CC, DL9AN JO62SN, DK9OY JO52CK, DL1UU JO62SP, DG9BDV JO33KE, OH2W KO29FX, OH1MM KP11BG, OH1XT KP01UK. 6.7.99 SM2GCR JP93TK, SK3MF JP92FW, OH6QR KP22BN, OH2BNH KP20NH, OH1XT KP01XT, SP1CNV JO84CF, PA3CEE JO33JI, LA/DK2BJ /p JP41UA, LA7M JO37SX, LA3R JP61AD, DL9MS JO54WC. 4.8.99 DH8BQA/p JO74AA, PA3CEE JO33JI, OH1MM KP11BG, OH1XT KP01UK, OH1ZAA KP01RO, LA3R JP51NA, LA3VP JP40BN, LA3EDA JP40XJ. tnx Stefan

OE3GRA/6, JN77VN, 6ele Quad, 25W, wkd: 4.7.99 in SSB RK2FWA KO04 868km. Auffallend war Ausbreitung (auch zu einer Reihe SP Stationen um 600 km genau entlang einer ca 200 km entfernten Gewitterfront ber OM und SP in ganz engem Winkelbereich fr ca. 20 min. tnx for info Gerhard

ON4KHG/P, JO10VJ, wkd: 4.9.99 F6KEH/P JN02XR 864km, F6FZS/P IN93OA 892, EA2LU/P IN93IA 907,F5JGY/P JN04QH 701, OL2R JN89AO 880. 5.9.99 OK1OFA/P JN69UO 714, DF0FA/P JO70JT 777, I5PVA/3 JN56 741 OK1KNG/P JN69VN 721, OL2O JN79IO 785, OE5NNN/3 JN77GX 826, OK1KFQ/P JO70LR 789, F1JRD/P JN14SC 700, F8NSC/P JN12EK 892, F6HTJ/P JN12EK 892, OZ1BEF JO46OE 738. Wkg cond.: 2x9 el 150 W. tnx for info Gaetan

SM7SJR, JO87EB, wkd >700km: 5.1.99 DK5DQ JO31PH 870km, DF0WD JO42FD 747km, PA3CEE JO33JI 734km. 2.2.99 DL6BF JO32QI 779km, PA3CEG JO33FB 772km, DF0WD JO42FD 747km, PE9DX JO33MD 736km, PA3CEE JO33JI 734km. 2.3.99 DL6BF JO31QI 863km, DL2ARD/P JO60AR 759km. 6.4.99 DF0WD JO42FD 747km. 1.6.99 DL2ARD/P JO60AR 759km, DF0WD JO42FD 747km. 2.7.99 DL2JEE JO60PU 719km. 6.7.99 DK5DQ JO31PH 870km, DF7DJ JO31UO 826km, DL2ARD/P JO60AR 759km, PA3CEE JO33JI 734km, OK1AGE/P JO70GU 701km. RIG: 4x2MXP28 at 23m agl, FT847, 8877, MGF1302. tnx for info Bjorn

70cm 70cm 70cm 70cm 70cm 70cm 70cm 70cm

DG2LBF, JO54BH wkd: 30.7.99 0634-0640 G4CLA IO92LJ 770km, G6PAA JO02VM 586km. 2.8.99 1906-2224 GM4LBV IO86RQ 839km,.GM4WJA IO87MN 889, M1BTR JO03BI 664, GM4JJJ IQ86GB 882, G6TTL JO01NI 687, G4DEZ JO01IN 700.. 3.8.99 0505 G0KDR JO02RF 620km.. 4.8.99 1958-2039 GM4LBV IO86RQ 839, MM1CXE IO86OE 843. Rig: 25W + 2x20Ele. tnx for info

DK0ALK JN38TD wkd: 3./4.7.99 PI4GN JO33KK 591km, PA6C JO33FB 553,DB1BX JO32OS 516, DK0WAL JO61OA 514. Preamp was killed during the contest. tnx Michael.

DL0UL/p JN48uo wkd: 1./2.5.99 G3XDY JO02 716km, G4PIQ JO01 715km, G8TMB JO01 701km, M1CRO/P JO01 733km, G0EMG/P JO01 701km, SP9EWU JO90 707km, G4LOO/P IO91 814km. 2./3.10.99 OZ6HY JO45 714km, G3XDY JO02 716km, G0EMG/P JO02 720km, 9A2SB JN95 752km, 9A1O JN95 748km, G8HGN JO01 739km. Rig: 2*21 Element 700W, tnx for info Ingo.

DL5UH/P, JO74AA, wkd: 3.8.99 DF4UE JN48RR (669), ES1AJ KO29HK (882). From JO74AB 14.9.99 LA0BY/P JO59XR (643), SM3BEI JP81NG (822), LA6LCA JO59FE (610), LA3DV JO49XQ (673), SM4RPP JO79HH (585), LC1PAT JO59FS (671), SM0FZH JO99HI (651), LA6MV JO59FJ (632), SM0DFP JO89VL (644), SM5SWI JO78WR (531), SM5WHY JO78MM (500), LA8WF JO59GV (682), LC3NAT JO59HK (633), LC3SAT JO59ES (672), OH0A JP90XD (764), SM5UFB JO78MN (504), SK4BX JO79OF (579). rig: 100w, 21ele 6wu. tnx for info Moritz

LA0BY/p in JO59IX wkd >500km: 13.7.99 OH0A JP90XD, OZ2LD JO54TU, SK3MF JP92FW, SM3AKW JP92AO, OZ9KY JO45VX, SK7MW JO65MJ. 29.7.99 ON1DO JO11PC (1092km), PA0JUS JO22OO, ON7PO JO10PU (ODX 1118km), PA3CNX JO22MC, PE1RQX JO23VG, PA0ZM JO32GK, PA0ME JO22OB, PA7FM JO21DV, PA5DD JO22IC, PE1GNP JO31IX, PD1AOT JO33HF, DG9BDV JO33PE. 30.7.99 PA5DD JO22IC, PE1JBK JO22MD, PD1AIV JO21EV, PA0GHB JO11WH (1055km), PE1OBU JO22DA, ON4CGZ JO11PC (1092km), PA3DYS JO21JP, PA0WWM JO22FE. 1.8.99 PA3AOH JO31GW, DL8BDU JO43AA, PA0BAT JO31FX, PE1JBK JO22MD, PA3DXV JO21WA (1043km), DK1KR JO53HW, ON4PS/p JO20KQ (1098km), PD1AIQ JO22RM, DK9OY JO52CK, PA3CEG JO33FB, DC9KU JO30BT (1061km), DG0RG JO62JV, DK5WO JO30AS (1067km), DB0YI/B JO42XC (3W ERP) hrd. 2.8.99 PA0ZM JO32GK, PA5DD JO22IC, PA3CEG JO33FB, PE2ENG JO33NA, PE1OLM JO23TF, DC9KU JO30BT, DK5WO JO30AS, DC9YC JO31GJ, OZ3ZW JO54RS. My equipment: 120W and 17-ele-yagi. tnx for info Stefan

LA/DG1VL/p, JO59IX, wkd > 600km: 1.8.99 04-07UT PA0AOH JO31GW 932km, PA0BAT JO31FX 929km! DK1KR JO53HW 673km, ON4PS/p JO20KQ 1098km!!! ODX!, PD1AIQ JO22RM 892km DK5WO JO30AS 1067km!! Rig: 100W + 17 Ele. tnx for info Henry

PA0ZM, JO32GK, wkd: 18.7.99 F6KPL IN99IO - 632km; OE5XBL JN68PC 679, G0VHF/P JO01GN 422, G4BRK IO91DP 571, G3MEH IO91QS 495, OK1OFF JO70CG 584, OK1FXB/P JO60WD 570, OK1KNG/P JN69VN, DB6NT JO50TI 422; 29.7.99 LA0BY/P JO59IX 877km; OZ1FIT JO65CU 529, OZ2LD JO54TU 429. 30.7.99 MM1CXE IO86OE 734. GM8CGY IO87XQ 799km. 1.8.99 MM1BUO IO86LP 774km; MM1CXE IO86OE 734km. 2.8.99 LA4LN JP50JA 883km; LA0BY/P JO59IX 877km; SM7JUQ JO65PO 564km; SM6PGP JO67BK 660km. tnx for info

6m News

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

24.5.	1519	DL1EJA, JO31, wkd: CT3FT IM13TA
29.5.	1230	SP1NVA/MM JM36VV wkd Es: SP, PA, DL, G
30.5	1754	DL1EJA, JO31, wkd: EH8BPX IL18SK und 1808 LU2EG GF05 11500km
31.5.	1856	DL1EJA, JO31, wkd: EH8BI IL28GB
3.6.	1300	ON4GG hrd TR0A + 3C5I 1415 SV5BYR wkd 5A1A 2120 DL9USA 71 wkd WT3A/MM KM44
4.6.	1610	DL7QY, JN59, hrd ZS6DN/B mit 559
5.6.	1420-1500	Es: DL8HCZ JO53 wkd: SM3UZS JP92, YO4CIS KN43, OH5A KP53, UR5ZEL/p KN57
6.6.	1630-1730	TEP von Süd-DL: V5/HB9QQ JG85!, ZS6WB, ZS6BTE, ZS6AYE via Es: R3VHF LO16
7.6.	1715	Es: DL8HCZ JO53 wkd: SV2DFA/2 KN00, EH1AGZ/p IN71, YO4AUL KN44
7.6.	1730-1800	Multihop-Es: **A61AH LL75** wkd: DK2PH, DL9YEY u.v.a. DLs + ON, G, I, SV, LX
10.6.	18-19	F2 + Es von PY5CC GG54 nach Europa: DL3RBH JN68, DJ4SO JO44, SP, ON, OZ, PA, G, F, OK, SM, I, HB9 - PP5BC arbeitet ebenfalls nach EU.
11.6.	1600	Es von Mittel-DL: 9A3NC/MM JM37
11.6.	1800	TEP von DL: DL9USA, JO71, hrd 9J2BO, der wohl leider einen tauben RX hat.
12.6.	0745	Es von Süd-DL: 4L5O, LN21
14.6.	17-19	TEP von Süd/Mittel-DL: 9J2BO KH44, 7Q7RM, PY5CC via Es: 9A3NC/MM KN30
15.6.	1800	TEP von ganz DL, ON, PA; 9J2BO, 7Q7RM
16.6.	17-18	TEP von Süd-DL: 7Q7RM, 9J2BO, V51VHF-B
	21-22	F2+Es von ON + PA: KP4EIT FK 58, WP4O FK68, KP4BZ FK78
	2130	Aurora-E von SM3UZS JP92 + OH6: JW7SIX-B
	22-23	F2+Es von EH7KW+ EH7AH: VE1ZZ, VE1PZ, VE1YX, W3JO, W1RA, WT3A/MM HM96

Ab Mitte Juni gab es täglich gute Es-Öffnungen auf 6m von DL an vielen Tagen gab es auch TEP nach Südafrika, einfach zuviele Öffnungen um alles aufzulisten. Hier interessante Stationen, die von DL aus gearbeitet wurden: JY9NE KM71, EK6AD LN20, OD5SX KM74, OD5PN KM73, 7Q7RM KH74, OH1/PY3DYS KO19, 4L5O LN21, SV5BYR KM46, SV2DFA/p KM09, 5T5BN, PA3HEN/MM aus JO34, 12, IN 65, 64, 54, 42, 41, 40, IM96, JN22 u.a. ON4PS/MM JN22, SP1NY/MM IO06, 9A3NC/MM JM37 u.a., EI/G7LXK IO53, EI7IQ IO53, CU8AO HM49, EH8BPX IL18, EH8BYR IL38, OD5PN KM73, EA8/EH5CPU IL28, SV9/G4VXE KM25, 5A1A JM62, R3VHF LO16, LY1KAT/p KO35, 9J2BO KH44, 5H3US, Z23JOR KH53, Z21FO KH52, Z22JE KH52, LA5TFA/p KP09, LY2SA KO14, LY2FE/p KO06, OH3MF/9 KP36, OH/DK5JM JP90, OH2KFB KP22, L2TAA JP88, LA4XGA JP33, OH1ZAA/7 KP53, UX0CQ KN69 RV3ANU/3 KO66, YL2AJ/p KO17, TF3FK HP94, LA7M/p JP41, UR5YDW KN28, YO5CRQ KN17, SP5ULD/8 KN09, SP6TRQ/9 KO00, RA6AX KN94, SP8AWQ KN19, ES4EQ KO39, SP9HWN KO00, OH6JW/8 KP44, LY1DQ KO25, EW8CD KO52, SM/DL5DSM/p JO88, LA2OG JP42, UT2IZZ KN87, YO8BOI KN36, 5B4AGC KM64, T72EB/A JN63, EI7IQ IO53, 9A3NC/MM KM38 +28, OH6/PA3DYS KP14, EH7TV IM77

20.6.	1526	DJ5JK JN49, wkd: UN3G, MN83
23.6.	1900	Es von ganz DL: JW7SIX JQ68 2030 von Süd-DL: K9VV EM79, K8TQK EM89, VE1ZZ FN84, N4CH FM07, K8MFO EN82, W1RA, WA1OUB
24.6.	0930	Multihop-Es von West-DL, OZ: JE1BMJ 529 50.105
25.6.	1845-2005	DL8HCZ, JO53, wkd Mulit-Es: W1ALS FN55, KB1DSG FN65, KA1A 43, W1WHL FN31, KU2A, N1BUG FN 55, W1JZR FN42, W1LP FN41, K2OVS FN30, K2WE 31, W1CWU FN42, W3JO FM29, KO2OK, K3HZO, W1XP FN42, W4MYA FM07, hrd WA1OUB, K1TOL
4.7.	10-16	F2+Es von ganz DL: **VP2E/W6JKV, KP2A, KP4EIT FK68, KP4BZ FK78**
5.7.	16-18	TEP von ganz DL: 9J2BO KH44, ZS6WB, Z22JE, ZS6JON, ZS6BTE, ZS6EZ, ZS6DN/B
	2100	Es von Süd-DL: JW7SIX
6.7.	18-20	TEP/Es von Mittel/Süd-DL. 9J2BO, W3EP, 7Q7RM, 5H3US,
9.7.	1800-1900	Es von West/Nord-DL: ON4PS/MM JN22, LU8MB FF57, Süd-DL, 9A, I: OX3SIX HP15, JW7SIX
10.7.	0420-0700	Multihop-Es von Nord-DL/OZ/SM7: JN1JFC und ca. 30 weitere JA-Stationen
12.7.	1800	Es von Süd-DL: SP1NY/MM IO06!
18.7.	1450	S57A wkd A61AH 19.7. 1800 F2/Es von Süd/West-DL. PY5CC GG54
20.7.	17-18	F2/Es von Süd-DL: PY5CC

Von Ende Juli bis Mitte August wurden folgende interessante Stationen von DL aus auf 6m gearbeitet:
9A3NC/MM JM79, 7Q7RM KH74, Z23JOR KH53, 9J2BO KH44, CN8UN IL37, PA3GDN/MM JN00, Z21FO KH52, PA3HEN/MM JM66, JM07, JN22 u.a., LZ7Y KN41!, WT3A/MM KN20, IC8/N5KME JN60, IS0AGY/p JM48, YL2JN KO16, J45K KM36,IH9/IZ0BNU JM66, IH9/IZ6CRK JM56, EH1AGZ/p IN71, RN6HW LN16, RK6CZ KN95, UA6AJU KN95, UY1HY KO60, UR5WN KO50, TA7V KN90, 5B4/G0JHC KM64, J48QEI KM07, OM9M KN18, YO5BRZ KN07, EJ7NET IO63, HB0/HB9QQ Jn47, CT3HF IM12, UU8JK KN85

21.7. 17-18 TEP+Es von ganz DL: 7Q7RM, Z23JOR, 9J2BO
1920-2240 Es von SM3 + OH: hrd JW7SIX, wkd JW7QIA JP68
22.7. 20-23 Es von SM3, SM6, SM7, OZ, OH: WKD JW7QIA JQ68, UA1ZCG KP59
25.7. 1730 TEP von Süd-DL: 9J2BO
26.7. 15-17 TEP von Süd-DL: V51VHF, Z21FO, Z23JOR 1900 DL7QY JN59 wkd PY5CC GG54
20-21 Es von G/GI: OX3VHF, FP5XAB, von ON, SP, G: VE3UBL/B 50.059; EA7 wkd VE1
27.7. 10-11 Es von Mittel/Nord-DL: SM6CMU/2 JP75, SM3RPQ JP74
29.7. 1800 9J2BO KH44 wkd I, IT, DL, PA wtc + glz. K1TOL
29.7. 1950 Es von EA8: D44BS HK84FW
1.8. 17-18 TEP+Es von ganz DL. Z23JOR KH53, 9J2BO KH44 TK/HB9AOL JN42
4.8. 1920-45 F2 + Es von Süd-DL: LU2FFD FF97
16.8. 2115-2230 Es von SM7/OZ: LA5TFA/p KP09 17.8. 0000-0100 Es von Nord-G: TF3MLT HP93, OX3SIX
17.8. 1132 DL3AMA JO51 wkd: SP1MVA/MM IN64

Von Ende August bis Mitte September wurden folgende interessante Stationen von DL aus auf 6m gearbeitet:
7Q7RM KH74, Z23JOR KH53, 9J2BO KH44, Z21FO KH52, PA3HEN/MM JN22 u.a.
21.8. 1045 SP4MPB wkd FR5DN
16-18 TEP+ES von ganz EU: TZ6VV, 9J2BO, ZS6PJS, 7Q7RM, PY5CC, LU
22.8. 1730 TEP von Mittel-DL: Z22JE KH52
23.8. 14-17 Aurora von Nord-DL 1710 TEP von Mittel-DL: 7Q7RM
24.8. 2130 TEP von ON: 7Q7SIX-B 2145 von West-F: ZD8VHF-B
21-22 Es von GI, GM: OX3SIX-B, TF3MLT HP93, TF3VET HP94AD, TF3FK HP94AC
25.8. 1900 Es von Berlin: OD5SIX-B, KM74 - TEP von SP2: 7Q7SIX
29.8. 1630-1730 TEP/Es von DL, SP, PA, ON: V51VHF, ZS6PJS KG46, Z22JE KH52, ZS6EZ KG44, ZS6BTE KG33, TZ6VV. – Von EA7 aus: TU2OJ IJ76,
30.8. 1100 Es von Süd-DL: UU7JM KN74, UU2JJ KN75 2015 Es von ES1CW KO29: JW7SIX-B
30.8. 1945-2045 Es von SM3, OH6, ES: JW7SIX
31.8. 16-19 TEP/Es von I, SP, EA: 5H3US, Z22JE, V51VHF, 9J2BO, ZS6AXT, V51KC JG88
2.9. 16-19 TEP/Es von ganz DL, PA, ON: TZ6VV IK63, LU2MHP FF57, 9J2BO, JY9NX 71, LU2MHD FF55, CX1CCC GF15, LU7DZ, LW5EJU, LU3EMK GF05, hrd in PA: TU2EW
20-21 F2/Es von ON, G: PY5CC, ZD8VHF/B 2108 DL7QY 59 wkd PP1BG GG99
3.9. 1750-1845 TEP von Mittel + Süd-DL: 9J2BO
Stationen, die om Oktober von Italien und Spanien aus erreicht wurden: 5X1T, PS2V GG67, PY2XB/p GG56, PY1VOY, PY0FF, PY5CC, PY2SFY, 5N9RGP JK31, TZ6VV, 5R8GJ LH41, 9J2BO, FR5DN LG78, Z23JOR, Z22JE, V51KC JG88, TU2OJ, 3C5I, FR5DX, TR8CA, PP1CZ, LU8MB, LU2FFD FF97, LU2MHP FF57, PP5JD, TR8KPJ, JY9NX, ZS4TX KG30, ZS6WB, ZS6BTE, ZS4NS KG32, ZS6Y, ZS6XJ, LW6EUQ, ZR5MGK KG33, ZR6ZL KH33, ZS6AVP, ZR5ADQ KG50, 7Q7RM, ZS6PJS, PY2CDS, PY2XB, PT7NK, LU3EMK, PY4AIF GH80, PY2RO, ZP5AA, LU4FM FF96, PY5ZBU, LU7FA, PY1NX, ZS6JON, PY5EG, PY2VA GG66, LU8MAJ FF57, PY6WO HH05, PY7ZZ HI21, PY2CDS, LU9EHF FF95, LU9AEA GF05, TR8XX, Z2/ZS6BTE KH21, ZP9DM GG24, C91RF KH53
27.9. 1625 Aurora+Aurora-E von SM3: JW7SIX 13-17: Aurora von G, GM, SP, SM, Nord-DL
28.9. 1440 F2: EH8BYR wkd YC1MH 29.9. 22-23 Aurora von GM: GB3LER
8.10. 16-17 Es von Süd-DL, G, PA: TZ6VV IK63
9.10. 1040-1140 TEP von Süd-DL, PA, G, SP: FR5DN LG78
10.10. 14-1730 Aurora von SM7, DL aus: OY9JD, OH, GM - 18-21 AE von SM7: OH9SIX, JW7SIX
11.10. 1200 TEP von Mittel-DL: FR5DN LG78
12.10. 1430 TEP von Süd/Mittel-DL: TR8CA JJ40 1500 Aurora von OZ, G
12.10. 18-22 **F2 von DL**, PA, G, ON: PY1VOY GG86, PP5JD GG52, PY5CC, ZP5DM GG24, PY2NKY GG66, PY2DP GG56, PY5HOT GG46, PP1CZ GG99, LU2FFD FF97, LW4HBN FF87, TEP: 9J2BO, 7Q
13.10. 1400 F2/Es von Süd-DL: TU2OJ IJ76
14.10. 1400- Aurora von N-DL: GB3LER, LA8AJA 1830-1900 TEP von Süd-DL: 9J2BO
15.10. 1330-1430 TEP von Süd-DL: 3C5I-B 1720 Es von Süd-DL: TZ6VV 1900 F2 von PA/ON: LU
19.10. 1330-1430 TEP von Süd, Mittel + Ost-DL: 3C5I-B
4.11. 0900 F2-Scatter from OZ and SM7 to JA, JA1BK wkd
5.11. 0750 F2: OH2BC KP20, + ES1CW KO29 wkd: 9M6JU (East-Malaysia!)
7.11. 0830-1100 F2: UN3G MN83 wkd: SP, OE, I, ganz DL, OZ, SM, YL etc. – OZ, SM, F, OH wkd 9M2!!
1030-1130 TEP von ganz DL: ZS6WB, BTE, Y, ZR6ZL u.a. F2: TR8CA + TR8XX

Aurora News

Editor: Norbert Göttsche, DL8LAQ

LA0BY in JO59FW wkd via Aurora on 144 MHz:

1999-07-22

1541 ES0X	KO18XC	52A	55A	20
1550 LA7DFA/p	JP21	41A	55A	10
1553 ES0SM	KO08XK	51A	55A	20
1631 ES8A	KO28FD	54A	57A	0
1655 DL1EJA	JO31DS	57A	59A	325

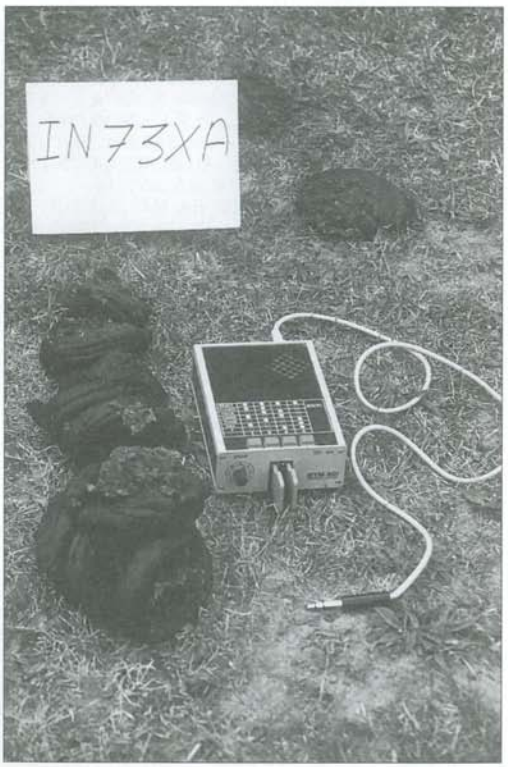
Thanks for report, Stefan.

SM7SJR (JO87EB) wkd on 144MHz:

1999-02-19	
1649 LA1TI	JP50HT
1656 OH3OZ	KP20JR
1704 OH1XT	KP01UK
1999-03-01	
1654 OH5LK	KP30ON
1656 RX1AS	KO59FX
1705 EU6MS	KO45IN
1713 ES1RF	KO29IJ
1716 OH5SA	KP41BB
1718 OH6JUM	KP02OJ
1720 SM5TC/4	JP61QB
1722 RZ1AP	KO49VW
1725 UA1AJY	KO49VW
1728 OH6JKY	KP02QL
1732 RV3IG	KO87OT
1738 UA1AJA	KP50FA
1740 UA1NA	KP50FA
1744 RA3DCI	KO96CB odx 1336km
1746 RA3LBK	KO65QA
1749 RA3DRC	KO95AR
1751 OH2OT	KP20MH
1753 RU1AZ	KO59RG
1754 UA3DHC	KO96CB
1757 RZ1AWR	KO59DX
1759 RA3LE	KO64AR
1801 RA3DQT/3	KO85UT
1809 DK1GS	JO54LH
1810 DL5ME	JO52SD
1812 DL7HG	JO62HO
1815 OH2KXV	KP20CM
1819 OH6KSR	KP22VG
1823 LA8ZY	JO59JV
1825 OH6MW	KP41CB
1832 OH7UE	KP22VO
1999-07-22	
1645 LA8ZY	JO59JV
1648 LA7DFA	JP21??
1654 ES8A	KO28FD
1658 ES1AJ	KO29HK
1722 ES1DF/2	KO29GG

Thanks for your report, Björn.

EA3BB – I5WBE – I4YNO
Big Bursts in IN73XA
(Ed.: from which OP?....)



Es News

Editor: Norbert Göttsche, DL8LAQ

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

1999-05-24

DF6NA (JN49XS) wkd: 1245 EA5CA IM99, 1246 EA7IT IM78, 1246 EB5BCF IM99, 1248 EA9IB IM85, 1324 EA4EHI IM68, 1332 EB4BAP IM69, 1335 EA2CAR IN82, 1344 CT1ESJ IN60, 1346 CT1DQM IN60, 1351 EA2AWD/MM IN84, 1356 EB4BAP IM69, 1410 CT1DNF IN50, 1416 CT1EEB IN50.

DG3FCT (JO41RB) wkd: 1333 EA5CA IM99TL hrd, 1415 EB2FLH IN82QU, 1442 CT1ESJ IN60.

DH0GHU (JN38VN) wkd: 1245 EA9IB IM85NG, 1341 CT1ESJ IN60KI, 1343 EB4BAP IM69PU, 1347 EA2CAR IN82PU, 1348 EA2AWD/mm IN84LP.

DH8GV (JO33RL) wkd: 1248 EA6XQ JM19, 1306 EA7IT IM87, 1312 EA5EZJ IM98, 1321 EA5EGV IM97, 1407 EA5CA IM99, 1411 EA5ZF IM99, 1420 EA5FKX IM98.

DK3WG (JO72GI) wkd: 1231 EA9IB IM85NG 2342 km, 1239 EB5BCF IM99TK, 1243 EA5CHT IM97EK 2078km, 1248 EA7GTF IM87CS 2154km, 1251 EA5AGR IM88WV, 1256 EA5FKX IM98, 1257 EA5EGV IM97KX 2004km, 1300 EA5EZJ IM98VX, 1307 EA5CA IM99TL, 1314 EB4FQP IM68TV 2194km, 1320 EA4EHI IM68TV 2194km, 1331 EA7AJ IM87CS 2154km, 1334 EA5TM, 1340 EB4EZU IM89VI, 1344 EA2CAR IN82PU, 1348 CT1ESJ IN60KI 2154km, 1351 EA2AWD/mm IN84LP(!), 1354 F5DUX IN93IN, 1356 EA4AYU IM76VR 2270km, 1358 EB1HZU IN71PP, 1404 EB4BAP IM69PU 2133km, 1415 EA4BPJ IN80EJ, 1416 F6FHP JN94TR, 1419 EB2FLH IN82QU, 1433 CT1DNF IN50QP 2184km.

DL9NCW (JO50XH) wkd: 1400 EB4BAP IM69PU hrd, 1408 CT1EEB IN50, 1410 CT1DQM IN60, 1411 CT1ESJ hrd, 1413 CT1DNF IN50 hrd, 1432 EA1CNO IN52, 1433 EA1CBY IN52, 1435 EA1DAV IN53, 1446 EB1EHO IN73, 1450 F1UO JN25? hrd.

ON1IM (JO11UB) wkd: 1305 EA6XQ JM19, 1311 EA5FKX IM98, 1316 EA5EZJ IM98, 1316 EA6FB JM08, 1338 EA3ADW JN11, 1340 EA3CRI JN11, 1342 EA6FB JM08, 1343 EA3DXU JN11, 1347 EB3DYS JN11, 1357 EA3GJO JN11.

PA0ZM (JO32GK) wkd: EA5CA IM99TL, EA6FB JM19PQ, EA5FKX IM98SK, EB5BCF IM99TK, EA5TM IM99SK, EA5AIV IM97KX, F5GPI JN03OJ, F6CRP IN96KE.

1999-05-30

I4XCC (JN63GV) wkd: 1833 CT1FOH IN50, 1835 EB7HAF IM76SR, 1840 CT1ESJ IN60.

1999-05-31

DH0GHU (JN38VN) wkd: 1342 SV1OH KM18VA, 1408 LZ1QI KN12PR (C?).

DL9NCW (JO50XH) wkd: 1355 SV1OH KM18VA hrd, 1401 SV3AGQ KM17LX mit 2W!

LZ1DP (KN22TK) wkd: 1334 IK2PTR/3 JN45QA, 1335 I1CPN JN34, 1336 F1FIH JN35, I1JTQ JN35UB, 1337 IK2PTR/4 JN45QA, F6EAJ JN25LH, 1338 IK2EAE JN45LL, 1339 F1DUO JN26MB, IW4DMH JN64CJ, 1341 IK3UNC JN64, IK2RXX JN56, 1342 F8DO JN26IF, 1346 I2MGD JN45MF, 1348 IZ2CEG JN45TL, IK2ZVU JN45OO, 1351 EA1ARJ JN11, 1353 IZ3BUI JN53SK.

1999-06-19

I4XCC (JN63GV) wkd: 1115 UU5JPS KN65SP, 1715 OH6MAZ KP21IG.

LA0BY (JO59FW) wkd: 1715 ER5AA/p KN45DU, 1717 ER5AL/p KN45DU, 1718 ER5CW/p KN45DU, 1718 ER1M KN46KW, 1723 SP8AOV/p KO11GG, 1723 SP8UFT KO11JC.

ON1IM (JO11UB) wkd: 1728 RK3AF KO84, 1736 RV3AH KO85.

PA4VHF (ex PA3FJY, JO32EH) wkd: 1738 RK3AF KO85QR, 1738 RV3AH hrd, 1738 RA3DQT KO95HI hrd.

1999-06-20

DG3FCT (JO41RB) wkd: 1202 SV1BTR KM17VX, 1215 SV1UG KM17VX, 1217 SV1DKR KM17UW.

DG3GAG (JN48) wkd:1028 SV3CYM KM08VG, 1042 SV7DMK KN21LH, 1047 LZ5QD KN12IG,

1053 LZ1AG KN22ID, 1059 LZ1QKP KN12QP, 1108 Z31DX KN11, 1111 SV8DTD KM39EA, 1117 LZ5UV KN12GR, 1118 LZ1UH KN11SU, 1123 LZ1WL KN13, 1131 LZ1ZC KN12, 1133 TA1AT/M KN41, 1141 LZ1QI KN12PR, 1142 LZ1QB KN12RO, 1159 Z36IBI KN02SA 59 59 (fm), 1201 YU1TH KN03 (fm), 1201 LZ5KL/M KN22, 1206 SV7\DH1GV KM17 (fm), 1209 SV7DMD/M KM17 (fm), 1214 LZ3PZ KN12PQ (fm), 1215 LZ5AZ KN21 (fm), 1327 YO4NF KN44HE, 1333 YO4IMP KN44AI (fm), 1335 YO9AZD KN35AA.

DH0GHU (JN38VN) wkd: 1050 LZ1AG KN22ID, 1101 LZ5QD KN12IG, 1107 SV8DTD KM39EA, 1110 LZ1UH KN11SV, 1123 SV7DMK KN21LH, 1124 LZ1WL KN12IF, 1130 LZ1BJ KN12 (fm), 1140 LZ1AG KN22ID, 1157 DH1GV/SV7 KN20 (fm), 1211 LZ5KL/m KN22 (fm), 1327 YO4NF KN44HE, 1331 YO3ACX KN34B (C?), 1441 UX0FF KN45KJ, 1623 RX3PX KO84SD.

DK3WG (JO72GI) wkd: 1025 SV1DH KM18VA, 1026 SV9ANK KM25NI 2065km, 1027 SV1BTR KM17VX, 1028 SV1DKR KM17UW, 1029 SV1LK KM17UW, 1031 SV1BRL KM17UW, 1031 SV1CNS KM18UA, 1034 SV1EN KM18VA, 1040 SV3AGQ KM17LX, 1045 SV3CYM KM08VG, 1048 SV1AKR KM17UW, 1050 SV3AQR KM07OL, 1102 Z32VB KN01PA, 1110 Z31DX KN11GD, 1115 SV8CS KM07KS, 1130 SV2DFA/2 KN00RF.

DK9ZY (JO40BE) wkd from 1115-1210 UTC: SV8DTD KM39EA, YO4FYQ KN44HE, YO5QAQ KN16UG,

YO4WZ/p KN44EW, YO9DAX/p KN44EW, YO9AZD KN35AA, SV0EC KN10CJ, Z32DX KN11GD.

DL9NCW (JO50XH) wkd: 1030 SV8DTD KM39EA hrd, 1100 SV0EC KN10CJ hrd, 1101 SV9ANK KM25NI, 1104 SV1DKR KM17UW, 1105 Z31DX KN11 hrd, 1112 SV4CGA hrd, 1112 SV1LK hrd, 1113 Z32VB KN01PA, 1114 SV3AGR hrd, 1115 SV1AMH hrd, 1120 SV1BTR KM17UW, 1128 SV2DFA/2 KN00RF, 1131 SV1RK KM17VU, 1135 SV3AGQ KM17LX hrd, 1137 SV1BRL KM17UW, 1138 SV1CNS KM18UA, 1141 SV4CFZ KM19FO.

F5HRY (JN18EQ) wkd: 1204 LZ1KDP KN12, 1206 LZ1QI KN12, 1208 LZ1AG KN22, 1214 LZ1KG KN31, 1233 TA1D KN41.

I4XCC (JN63GV) wkd: 1016 LZ2QA KN43EK, 1026 LZ1QB KN12RO, 1032 LZ1DP KN22TK, 1040 YO7VS KN14VH, 1050 YO3JW, 1052 LZ2CW KN23GK, 1052 LZ2SQ KN33FL, 1053 YO3APJ KN34AL, 1055 YO4NF KN44HE, 1057 YO9AZD KN35AA, 1058 LZ2ZY KN13, 1101 LZ2OU KN33GF, 1101 YO3ACX KN34BL, 1103 YU1OK KN14BB, 1107 LZ4KAC KN13TS, 1109 LZ2FR KN13IU, 1111 YO7IV KN24KV, 1113 YO4RXX KN45AK, 1115 YO4ATW KN35XG, 1117 YO3AMM KN34BL, 1118 YO7AQF KN24KU, 1124 YO4FYQ KN44HE, 1126 LZ2SK KN43EK, 1132 YO7IV KN24IK, 1133 YO7CGS KN15OA, 1135 UX0FF KN45NI, 1136 YO3FWR KN34BL, 1138 YO9IE KN34AW, 1143 LY2FE KO05OQ, 1144 UU2JZ KN74BX, 1146 SP3JBI JO91BR, 1147 SQ2FRZ JO92NP, 1149 UU2JQ KN74BW, 1153 SP2OFW JO93AC, 1154 SP2FAX JO83VA, 1411 UR0EY KN88AF, 1609 LY2WR KO24OQ, 1610 LY2SA KO14LL, 1616 SP4MPH KO14LC, 1624 ES2WX KO29, 1625 ES8JX KO28LM, 1633 ES1CW KO29HK, 1636 ES1RF KO29, 1637 OH2BNH KP20LG.

LA0BY (JO59FW) wkd: 1609 LZ2CW KN23GK 2068km, 1615 YO2BBP KN05OS, 1615 LZ1KG KN31CS 2290km, 1617 LZ5UV KN12PR 2104km, 1620 YU7EW KN05HP, 1622 YO7CGS KN15OA, 1623 HA6NQ JN98WA, 1623 HA6ZB JN97WW, 1624 HA8MV KN06DU, 1626 LZ1JK KN12OR 2102km, 1627 LZ1QI KN12PR 2104km, 1630 LZ2FO KN13KX, 1632 LZ1ZD KN12, 1633 YU1EV KN04FR, 1636 HG8JM KN06HU.

LZ1DP (KN22TK) wkd: 1032 IW5DAN JN58GU, I4XCC JN63GV, I1CPN JN34VI, 1033 IV5BEN JN53PS, IK5ONY JN53NU, IW3BLV JN53OM, 1034 IW2BAI JN43, 1035 IW1ESM JN45FB, IW2DAL JN45NN, 1036 IW4DJV JN64GD, IZ1BPN JN35VG, 1037 I4YNO JN54KP, 1038 I4PYR JN54DT,1039 IW1DMC JN45GB, IK2THU JN45SF, 1040 IW1CAA JN45, I4RHP JN54QL, 1041 I2EMD JN55AD, IW1BCV JN52, 1042 I1JTQ JN35, 9A2RD JN65TF, IK4HLQ JN54KP, 1043 I2CPO JN45TP, 1044 IK2CIK JN45MO, IN3ZTI/3 JN55OL, 1045 IK2GSV JN55FJ, IK2GSO JN45NK, 1046 I2PY JN55NB, IZ2AAL JN45OP, 1047 IW3FQT JN55VC, IK3UMQ JN55PE, 1048 IK3UNA JN55LK, IK1LGV JN44, 1050 I3UKY JN55MF, I3EHK JN55RQ, 1051 IK1ZJB JN45FD, F8OP JN26MM, 1052 I2MCD JN55AD, IK3SSG JN55WH, 1053 IW2HAJ JN45NO, 1054 I2FAK JN45OB, IW2FGK JN55, 1056 IK2YXK JN45OP, IK1PJU JN45OL, 1057 I3SBB JN55QZ, 1058 I3LGP JN55WJ, IK2IQD JN45OT, 1059 IW2FSB JN45KW, IK2QII JN45OO, 1100 HB9Q JN47CG, S56ECR JN67, 1101 S57EZB JN65WQ, IK1IZB JN45IH, 1103 IK2OEI JN45OO, 1105 IW1AVF JN44IV, 1106 IK3VZO JN55XA, IW1AZJ JN35, 1107 IW1KAD JN55AD, 1108 F6KHD/p JN35BS, 1109 S56HCE JN67, IK3TPP JN65EP, 1110 I2PY JN55NB, F6HBS JN35BW, 1111 F1ESP JN35AV, 1112 IK2YQX JN45OL, 1113 HB9SNR JN36, 1114 F6HIL/p JN35BS, 1115 IV3BBR JN65TW, HB9ONN JN37NC, 1116 HB9OCR JN46LA, 1117

IV3NDC JN65RV, 1119 HB9BSJ JN37, IW3RQL JN66OB, 1120 F6EKJ JN27ND, HB9CXZ JN46, 1122 IZ2BKF JN55, HB9JAW JN47, 1123 9A1CEI JN65XF, 1124 IZ3BJC JN65FV, 1124 I2ELJ JN45OP, 1125 DL6GCK JN47OR, 1126 IK3XTT JN55LK, 1127 IW3GBQ JN65CL, 9A5AEI JN65XF, 1128 DL1GI JN47FW, I3DLI JN65BK, 1129 IW3HHN JN55RR, 1130 HB9BNI JN37WB, S53X JN65WS, 1131 HB9BQU JN37VD, 1132 S57NTI JN65, IZ3CGD JN55SP, 1133 HB9MIO JN37SB, 1134 IW3FUS JN45NK, 9A3NI JN65TF, 1135 HB9OAB JN46ME, IK1EQP JN34RR, 1137 IZ3AWS JN55UH, 1138 I3VYK JN55MJ, S54G JN65TM, 1139 HB9DKM JN37TN, IN3BYV JN56UE, 1159 F1CML JN07WE, HB9PVI JN37SB.

LZ2CW (KN23GK) wkd: 1024 IK0BZY JN61GW, 1025 IW0BET JN61FS, 1027 IK0SMG JN61FG, 1031 IK0FTA JN61GV, 1038 IK5OEA JN53PG, 1039 IW5BML JN52JW, 1046 IW5DAN JN53GU, I4YNO JN54KP, 1047 IN3ZTI/3 JN56, 1048 I1JTQ JN35UB, 1050 I4XCC JN63GV, 1051 IK1ZJB JN45FD, 1054 9A6V/P JN73TT, 1052 I2FAK JN45OB, 1057 IW1HLQ JN45, 1058 IK4HLQ JN45KP, 1059 I4YNO JN54KP, 1104 I2MCD JN55AD, IW1AZJ JN35UB, 1105 IW1BCV JN44FS, 1106 IW2BAI JN45SF, 1109 IK3VZO JN55XA, 1110 IW1ESM JN45FB, 1111 IK3UMQ JN55PE, I1DMP JN35UB, 1112 IW2DAL JN45NN, 1113 IK2YXK JN45OP, IW2HAJ JN45NO, 1116 IK3UNA JN55LZ, 1118 IW1CAA JN45AM, IZ1BPN JN35VG, 1119 IK1ZJB JN45FD, IK3SSG JN55WH, 1120 I4BHP JN54QL, IK2GSV JN55FG, 1121 IZ2CPO JN45TP, 1122 IW1AVF JN44IV, 1124 F6KHD/P JN35BS, 1126 IK4HLQ JN54KP, 1131 I2PY JN55NB, 1134 IK2IQD JN45OT, 1135 PE1DTU JO23JB, DF7VO JO32MF, DB3YAD JO32MF, 1136 PA3EXX JO22NR, 1137 DO1YC JO32MF, 1138 9A2RD JN65TF, IW3FQT JN55VC, I3EHK JN55RQ, 1139 I3LGP JN55WG, DL9YEY JO41GV, 1141 DL5YET JO41EV, IZ3AWS JN55UH, 1142 IK3TPP JN65EP, IZ2AAL JN45DP, 1143 IK2XRL JN45NR, PE1FEI JO22VQ, 1144 HB9OCR JN46LA, 1145 PE1MCD JO23XE, 1146 IW2FSB JN45KW, 1148 IK3ZAW JN65EJ, 1149 F1NNE JN41JE, 1151 PE1PQX JO23VG, 1153 I3VYK JN55MJ, 1154 I3LDI JN65BK, I2AE JN65BK, 1156 DL6BF JO32QI, PA3EKZ JO23MH, 1157 IW1CHX JN35TH, 1202 IK2GSO JN45NP, 1204 PA2TAB JO23GF, HB9DCM JN36BE, 1205 F8OP JN26MM, 1209 IK2YYL JN45JR, 1213 PD4HDB JO32HN, SM6KJX JO67CK, 1609 LA0BY JO59FW, 1612 SM6FUD JO57WQ, 1613 SM6EAN JO57QW, 1615 SK6HD JO68SD, 1616 SM6VKC JO68GG, 1618 LA5KO JO59FS, 1620 SM6TZX JO77EE, 1622 LA8WF JO59, 1624 LA6MV JO59FJ, 1630 OZ1IEP JO55XU, 1634 OZ1LO JO55VC.

OK2KJT (JN99AJ) wkd: 1006 SV1EN KM18VA, 1007 SV1COK KM17VX, 1010 SV1DKR KM17UW, 1053 SV3AQR KM07OL, 1056 SV3CYM KM08VG.

OK2PIN (JN99AJ) wkd: 1103 SV3AQR KM07OL, 1104 SV3CYM KM08VG, 1200 IZ8BAB JM89IG.

ON1IM (JO11UB) wkd: 1132 YO9AZD KN35, 1137 YO9CAD KN35, 1138 YO9GJA KN16, 1153 YO3JW KN34, 1158 YO4FJQ KN44, 1158 YO6DBA/P KN36, 1622 UT5ER KN78, 1641 US5WU KO20.

PA4VHF (ex PA3FJY, JO32EH) wkd: 1057 9H1CG JM75FW, 1132 LZ2Y KN13OT, 1136 YO2BBT KN05, 1137 YO7VS KN14VH, 1138 YO2BBP KN05OS, 1138 HA8CL KN06GF, 1139 YO2LAM KN05PS, 1141 HA8CE KN06EN, 1143 YO7CGS KN15OA, 1145 YO2LAM KN05PS, 1146 YO2LFP KN06MD, 1150 YO2IS KN05PS, 1152 YU7AR KN05BW, 1159 YU7EW KN05HP, 1207 SV0EC KN10CJ. Heard: SV3AGQ KM17, SV1BTR KM17, SV1DKR KM17 and LZ2FR KN13.

SM7SJR (JO87EB) wkd: 1135 IT9IPQ/9 JM78SG 2090km, 1137 IW8PQ JM78WQ, 1138 IW9CER JM78XX, 1146 I8NHJ JN71HL, 1147 I8MPO JN70FP, 1150 IW8EAA JN70CV, 1150 IK7YZI JN71QQ, 1151 IK8YOQ JN70GR, 1152 I8WES JN70DV, 1153 I8KPV JN70KO, 1201 IC8FAX JN70CN, 1202 IK7TOF JN71QM, 1203 I8QLS JN70CU, 1208 IC8COJ JN60WR.

1999-06-22

DG3GAG (JN48) wkd: 1548 LZ2KZ KN33FC, 1605 YO3JW KN34CK, 1607 YO3FWR KN24BL, 1620 YO9GDJ KN25WA.

DG9MAQ (JN58LJ) wkd: 1040 TA4A KM37, 1058 LZ2DX KN11, 1109 SV2BWS KN10, 1126 SV8DTD KM39, 1137 SV7DMK KN21, 1139 LZ1UH KN11, 1141 Z31DX KN11, 1142 LZ5QD KN12, 1148 DH1GV/SV7 KN20, 1150 SV2CXI KN10, 1158 SV1ENG KM18, 1214 SV2FPM.

DH0GHU (JN38VN) wkd: 1604 YO3JW KN34CK.

DK3WG (JO72GI) wkd: 1612 LZ3DB KN12QQ.

I4XCC (JN63GV) wkd: 1530 SP4MPB KO03GS, 1531 LY2SA KO14LL, 1533 LY2IC.

LZ2CW (KN23GK) wkd: 1524 DL6BF JO32II, 1525 DH5MK JO41IV, 1526 PA3CEE JO33JI, 1526 PA3CEG JO33FE, 1527 PA8NL JO23, 1529 PA9KT JO33JF, 1548 DL6WT JN39VV, 1549

DL3DN JN48, 1604 DL2ARD JO60AR, DL9YEY JO41GV.

ON1IM (JO11UB) wkd: 1524 YO5QAQ KN16, 1530 YO6FNA KN36.

1999-06-23

DL9NCW (JO50XH) wkd: 0945 SM4VQP hrd.

1999-07-12

DH0GHU (JN38VN) wkd: 1855 YO4NF KN44HE, HA8BE KN06QR hrd.

1999-07-17

DG3FCT (JO41RB) wkd: 1718 RA3LW KO54MO.

DH0GHU (JN38VN) wkd: 1652 RA3LW KO54MQ, 1709 UA1WCF KO55JR (cw), 1726 UA3DHC KO96CB 2206km (cw).

I4XCC (JN63GV) wkd: 1700 UA1WER KO47EU, 1705 OH5LK KP30ON, 1716 YL3AG KO26AW.

OE6IWG (JN77PK) wkd: 1704 UA1WER KO47EU, 1709 OH5LK KP30ON.

PE1HWO (JO21GV) wkd: 1731 UT8AL KO61WP, UR5LX KO70WK hrd.

1999-07-18

DH0GHU (JN38VN) wkd: 1546 9H1CG JM75FW. Heard: SV3EAO KM08, SV9ANK KM25 and some 9H.

DK3WG (JO72GI) wkd: 1548 9H1GB JM75FU, 1552 9H1ET JM75FU, 1559 9H1CG JM75FW, 1626 EA6XQ JM19LH, 1635 EA6QB JM08QV.

DL1GI (JN47FW) wkd: 1455 9H1? JM75FM hrd, 1550 SV1OH KM18, 1557 SV3EAH KM08UF hrd.

I4XCC (JN63GV) wkd: 1549 SV9ANJ KM25NH, 1623 SV5BYR KM46CG, 1719 EA7AG IM86SU, 1724 EA5AJX IM98KU, 1726 EA5CLH JM08BR, 1733 EA7ALL IM87BS.

IT9VDQ (JM68QC) wkd: 1627 G0FIG JO90UU, 1642 F6FLV JN18AT, 1643 F6HMQ JN18GP, 1644 F5FTK(?).

IW2DVK/7 (JN71TR) wkd: 1710 EB4CJE IN80EC, 1711 EA4BAS IN80HL, 1712 EB4YY IN70XG, 1713 EA4AQQ IN80GL, 1714 EA4AL IN80EL, 1717 EB4DPC IN80EN, 1717 EA3CSV JN01ND, 1719 EA4AMX IM89AT, 1719 EB4DIZ IM89AT.

OE6IWG (JN77PK) wkd: 1631 F5FLN IN94KR.

OK2PIN (JN99AJ) wkd: 1539 9H1GB JM75FU, 1543 9H1ET JM75GU, 1544 9H1CG JM75FW, 1552 9H1F? JM75? (nc), 1625 EA4AQQ IN80GL, 1628 EB4CJE IN80EC, 1641 EA4AL IN80EL.

1999-07-20

DG3FCT (JO41RB) wkd: 1632 EB5EEO IM98PG.

DK3WG (JO72GI) wkd: 1648 EA7ALL IM87BS 2158km, 1649 EA7AJ IM87CS, 1652 EA4CTF IM89AT, 1653 EB4CJE IN80EC, 1654 EA4AMX IM89AD 2040km, 1656 EB4DCX.

OE6IWG (JN77PK) wkd: 1645 EV1CTQ IN73FM, 1655 F6FHP IN94TR.

1999-08-04

DK3WG (JO72GI) wkd: 1643 EA6FB JM08PW, 1645 EB5EEO IM98, 1659 EA4CTF IM89AT.

1999-08-21

DL5MAE (JN58VF) wkd: 1120 4K6D LN40VK 3116km, 1123 RZ6BU KN84PV.

1999-08-22

IT9VDQ (JM68QE) wkd: 1303 EA7RZ IM86SU, 1352 EB5EEO IM98PG, 1658 EA5EZJ IM98VX.

DG0KW (JO64MH) wkd: 1136 IW9EIN/p JM68.

Comments:

DH0GHU writes: Finally I had the chance to have an ES season like those during the time before I got QRV on 2m. In 1999, I had more ES-QSOs than all those from 1993 to 1999. Especially the event at June 20th was big fun. No new countries (no active hams on 2m in TA-EU ??), but lot of new squares. Four openings during that sunday, and huge pileups during the main opening. Let us hope for a similar (or even better?) season in 2000. 73, Ulrich.

DL1GI schreibt: SV1OH konnte ich nur arbeiten, weil ich weit von der .300 entfernt reingehört habe, während sich die DLs gegenseitig im "ES-Ruf" die Empfänger auf der Anruffrequenz blockierten. Ich kann nur immer wieder die Aufrufe vieler 2-m-DXer unterstützen, einen größeren Frequenzkorridor um die 144.300 zu aktivieren. 73, Ralf.

IT9VDQ writes: During the opening on 22th of August, just after a big rain of 15 minutes, I was beaming on 300; very strong signals from EA. But beaming on usual EA directions (270-275), nothing heard. I wish to know from my qso-corrispondents the direction of their antennas. 73, Gius.

Meteor Scatter

Editor: Norbert Göttsche, DL8LAQ

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

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

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

DK3WG (JO72GI) wkd on 144 MHz:

1999-08-10
0925 0942 LZ7Y KN41AX 28 27 7 5 cr
1999-08-11
2212 2230 TA1ZK/0 KM29XT 38 27 9 5 cr
1999-08-12
0840 0900 F9IE IN86WW 36 26 4 6 cs*1
1100 1115 RK3AF KO75WO 2738 9 1 c
1200 IK2HAJ JN45NO 26 26 1 10 cs
1999-08-13
0725 0737 EA3BB/p IN62TL 27 27 7 20 cr
0800 0845 UA1ZCG KP58ER 26 26 7 5 c
Thanks for report, Jürgen.

DL1SUZ (JO53UN) wkd on 144 MHz:

1999-08-07
0500 0600 EA1ABZ IN71 26 5 7 1 nc
0700 0800 IW2HAJ 27 27 5 7 1 ncs*1
1999-08-08
2100 2140 GD4IOM IO74 26 46 15 m 2 c
1999-08-09
2000 2045 RX3QFM KO91 38 27 13 11 11 c*2
1999-08-12
1300 1340 EA1BFZ IN81 nil
1400 1440 EA7GTF IM87 nil
1500 1515 EA1ABZ IN71 26 27 4 5 c
1600 1700 IW7DEC JN81 27 27 4 3 2 c
1700 1740 SM5TSP JP90 26 26 7 5 8 c
2000 2045 EI5FK IO51 36 27 11 5 10 c
2100 2150 IW2DVK JN45 27 27 13 16 5 c
1999-08-13
2000 2035 RV3ZR KO80 26 37 4 3 5 c
1999-08-14
0300 0325 LA5KO JO29 27 26 8 12 2 c
Equipment: IC821, PA 300W (GI7b), preamp 3SK121, 2x11 el. Yagi, DTR, OH5IY-soft, AF-keying; *1 Tnx to DL0IBM for cq and qrz on 144.183 since 0745 and killing last chance to complete this contact! *2 Tnx fer my new MS-ODX 1811 km.
Condx mostly poor; where are the rocks? Only SM/DL9MS always with outstanding reflections. He launched his own rocks? Impossible to crack the pile-up on his freq. Thanks for report, Uwe.

DL8EBW (JO31NF) wkd on 144 MHz:

1999-07-02
0400 0426 LA4XGA JP33VC 27 26 8 3 1.0c*1
1999-07-03
0200 0241 SP9PZU/7 KO00GM 26 26 16 21 1.0c
0300 0400 UT1E KN57XX 26 1 3 0.5nc
1999-07-06
0420 0441 R1MVA KP40GP 26 27 5 8 1.5cr*2
1999-07-09
0357 0408 LA4XGA JP33VC 39 28 10 8 6.0c*1
1999-07-18
0000 0100 CT1FAK/p IM57 26 1 3 0.5ncs
1999-07-25
0512 0520 EI/DH7FB IO44XF 27 27 6 10 2.0c
1999-07-29
0002 0010 9A0DX JN82IW 38 27 8 7 8.0c*3
0100 0246 SM6CMU/2 KP17QE 26 27 7 10 1.0c*3
1999-07-30
0355 0420 LA4XGA JP33VC 27 28 10 18 0.5c*1
1999-08-03
2153 2211 OH6KTL KP02OJ 28 27 6 10 1.0cr
1999-08-06
0100 0230 SM6CMU/2 KP08XB 26 27 3 7 1.0c
1999-08-11
0300 0315 OM9M KN18AM 27 28 11 14 2.0c
2200 2215 LZ7Y KN41AX 26 37 9 8 0.7c
1999-08-12
2245 2250 TA1ZK/0 KM29XT 28 38 m m 30!cr
2301 2302 OK2MWR JN99HQ 29 29 1 15!cr
2324 2325 I8TWK JN70 28 28 1 20!cr
1999-08-13
2222 2236 SM2/DL9MS JP96 26 27 7 5 3.0cr
1999-08-14
2300 2400 RA3LBK KO65RA 28 27 3 10 3.0nc*4
1999-08-15
0007 0016 IK4PLU JN64FC 27 27 6 13 2.0c
1999-08-20
0355 0412 LA4XGA JP33VC 27 27 4 8 0.7c
Remarks: *1 Regular sked to Geir (1320 km), to test MS-condx; *2 Sri to SM1/DL5ME - started QSO earlier than our tailend - informed DL1EAP so he could use 1 1/2 hours; *3 Ufb reflections from delta-Aquarids shower! *4 Sri Victor - have had static noise frm thunderstorm... NIL-skedresults: 1999-08-01 9A5D JN92 & RV3AH KO85 (sri alarmclock trouble!), 1999-08-02 OH9MTY KP46, 1999-08-06 OH9MTY KP46 & LA4XGA JP33; 1999-08-12 CT1DYX/p IM57 & RK3AF KO75 & RA3LBK KO65 1999-08-13 RV3AH KO85 & CT1DYX/p IM57.
Equipment: FT726R modified (CF300), 4CX250R, 11 ele Flexa, preamp MGF1302, DTR, ETM9C, RX/TX max 3500lpm, OH5IY 5.0. Every sked for ms, also with

stations worked before is very (!) welcome! Thanks for report, Guido.

EA3BB MS Expedition to IN62-72-73-82-83 Perseids 1999

Hello MS Fans, after our last MS Expedition to JN 01-02-12 on 1998, reading the file of Most Wanted Square by DL8EBW, we organized to active the Spanish Squares IN72-73-82-83 and 62 on Perseids shower.

So we began our preparations to realize our expedition. At last moment came with us Alex I4YNO, I and Alex started from my QTH on 7th. August to run 1100 Km to EA3BB QTH, after the "Concurso Nacional EA " (7 - 8 Aug.) we started on 9th. to run abt. 650 Km. to Embalse del Ebro Lat. 43 N Long.4 W, there we met EA1DPP that found the better place to have a good take off and informed the Authority of our activity. To Embalse del Ebro we found some places with good take-off frm N to SSE exploiting the reflection of the lake.

On 12th. Aug at 13.30 z, we started to IN62TL near Astorga - Leon abt. 300 Km., arrived on the evening EA3BB with his fine work to put on the rig, at 21.00z, we were able to operate on MS from IN62TL! We are vy satisfied of our results, also if may was better, but we had QRM from some stations not patients to await our final RRRRR or our CQ!

Many TNX to our corrispondents, to EA3DXR Toni, EA1DPP Manuel and EA1ATT for their support, to EB1DNA Ricardo, EB1DPB Jos (de La Corua) for their visit and "Aguardiente" and to EB1FCR Jess (de Ponferrada).

Vy 73' and Dx de EA3BB Group.

EA3BB (IN73XA) wkd:

1999-08-10

0430	IK0BZY	27 27 5 4 4	c
0455	IW0GPN		nils
0515	PE1HWO	27 27 22 4 3	c
0535	DL5ME	27 26 15 16 3	c
0620	DH8BQA	27 26 24 m 10	c
0635	DF1BN	37 38 14 10 25	c
0710	G4ZTR	27 27 11 15 7	c
0745	G3KWY	26 26 4 10 2	c
0810	DL2FDX	28 27 25 m 3	c
0840	I1JTQ	26 27 6 10 3	c
0915	I3LGP	38 27 7 15 45	c
0945	HB9FAP	27 27 11 10 3	c
1025	YU7KB		nil
1205	DF1IAZ	26 26 5 9 2	cr

EA3BB (IN72XX) wkd:

1999-08-10

1330	YU7KB		nil
1355	S51AT	26 27 5 7 3	c
1420	G4ZTR	26 37 13 16 2	c
1440	DH9OY	27 27 8 10 15	c
1520	PA2TAB	27 28 6 7 3	c
1535	PE1HWO	27 27 11 10 3	c
1600	DF8IK	28 27 4 7 3	cr
1630	DH0GHU	26 27 15 20 2	c
1650	DK8EL		nil
1730	DH8BQA	26 27 7 8 2	c
1757	DL2FDX	27 38 6 8 18	c
1830	HB9FAP		nil
1900	ON4AVJ	26 27 8 11 3	nc*1
1935	IK0BZY	27 27 4 8 2	c
1942	IW0GPN		nils
2005	DL9YEY	27 27 10 15 2	cr
2020	ON4AMX	27 27 4 7 3	cr
2055	DF1IAZ	26 27 7 5 3	cr

EA3BB (IN82AX) wkd:

1999-08-11

0220	G4ZTR	27 27 22 12 2	c
0240	DL1SDN	37 27 13 5 10	c
0310	G4YTL	27 28 7 9 5	c
0330	G1HWY	26 27 11 12 2	c
0355	DL4NAA	38 27 20 m 30	cr
0415	G4AEP	27 27 16 m 4	c
0445	DL2NFX	37 27 6 10 6	cr
0525	PE1HWO	27 27 18 17 20	c
0545	DF1BN	37 28 12 10 10	c
0610	PE1LCH	28 27 19 m 5	c
0625	DF2ZC	27 27 18 m 4	c
0645	DF7KF	27 27 10 15 5	cr
0654	OK1MAC	38 27 4 10 10	ncr*1
0715	PA2TAB	36 27 12 10 7	c
0740	DL6BF	37 27 6 10 7	cr
0808	G0KAS	27 27 5 11 3	ncr*1
0825	DH8BQA	26 26 7 11 7	c
0835	DK5TE	36 37 3 9 8	c
0855	PA3BZO	28 27 6 10 7	cr
0925	I1ANP	27 27 7 10 2	c
0940	IK2DDR	27 27 6 2 3	c
1005	OK1MAC	38 27 6 8 8	cr
1020	YU7KB		nil

EA3BB (IN82AX) wkd:

1999-08-11

1030	S57EA	26 28 5 7 2	cr
1056	S51AT		nil
1110	IK1LGV	26 27 10 9 2	c
1155	S51AT	26 27 6 10 3	cr
1237	IW0GPN		nils
1322	I8TWK		nil
1359	DL9AN	26 37 2 7 1	ncr*1
1417	DK8EL		nil
1435	DF8IK	38 28 8 9 7	cr
1458	DL5ROB	37 4 8 8	ncr*1
1534	HB9FAP	36 26 4 5 6	c
1545	DL2IAN	38 37 8 9 8	c
1623	ON4KHG	38 39 8 5 7	cr
1658	S55AW	26 26 8 10 10	c
1727	DH9GCD	27 36 4 9 3	ncr*1

EA3BB (IN83AA) wkd:

1999-08-11

2015	IW2BNA	38 27 18 10 10	c
2034	HB9FAP	26 27 14 10 4	c
2052	DK0OG	27 27 20 m 3	cr
2118	DF8IK	38 27 19 m 6	c
2127	DF1CF	27 27 6 8 3	cr
2138	DL1EJA	27 39 8 10 9	c
2147	DL9YEY	37 37 6 10 8	cr
2159	PA2DWH	38 38 4 9 7	ncr*1
2227	DH0GHU	27 27 13 7 4	c
2248	DH1DCN	27 27 9 11 5	c
2303	DF5BN	27 27 6 9 2	ncr*1
2333	SP4MPB		nil
2357	DK5TE	27 27 8 12 3	cr

DK5TE: Beam to KO03GR!

EA3BB (IN83AA) wkd:

1999-08-12

0024	DH2OAA	nil
0044	DH9OY	nil
0135	DK8EL	nil

From 0135 to 0210 I5WBE black out! :-(Very sorry for S55AW, he rcvd me calling DK8EL! :-(

0229	DH8BQA	nil
0249	DL5ME	27 27 20 m 15 cr
0312	DL4MEA	38 37 25 3 15 c
0345	I8MPO	26 27 10 15 5 cs
0424	PE1OGF	nil
0437	PA2TAB	27 27 6 9 4 c
0458	PE1LCH	37 27 7 11 7 c
0535	IK0BZY	26 27 10 14 3 c
0545	IW0GPN	nis
0622	IV3HWT	47 26 18 m 20 c*4
0647	I3LGP	37 27 6 10 10 c
0657	S57EA	36 27 6 9 7 cr
0747	IK1LGV	26 26 8 10 2 c
0802	IW1AZJ	26 38 8 9 3 c
0838	EA6VQ	27 26 7 10 8 c
0853	I8TWK	38 38 7 9 9 c
0902	DF7KF	38 27 8 5 10 cr
0922	S53VV	38 26 9 10 6 cr
0939	IK2DDR	37 38 8 11 15 c
0951	DL5BBW	28 37 5 9 3 cr
1014	YU7KB	nil
1028	DL6BF	28 27 4 8 2 cr
1058	S51AT	26 28 4 10 3 c
1112	PE1LCH	nil
1126	PEAHWO	nil

EA3BB (IN62TL) wkd:

1999-08-12

2135	DL9YEY	37 37 8 cr
2150	PA5DD	28 28 3 cr
2210	DF5BN	47 37 20 cr
2220	DL5BBW	28 38 3 cr
2235	DL1EJA	28 49 2 cr
2250	DF1IAZ	27 38 3 cr
2300	ON4AMX	28 27 3 cr
2315	DH9OY	37 27 6 ncr*1
2330	DF1CF	28 37 2 cr
2340	DF8IK	49 37 20 cr
2350	ON4KHG	48 37 21 cr

EA3BB (IN62TL) wkd:

1999-08-13

0012	DK5YA	27 38 3 cr
0032	PA3BZO	28 27 2 c r
0059	DF0WD	48 37 20 ncr*1
0117	DL5GAC	47 38 21 c r
0125	PA9KT	49 38 22 c r
0135	DL2ARD	28 39 3 c r
0200	DL4MDQ	38 49 6 c r
0215	DL1SDN	27 1 ncr*1
0225	DL9AN	38 37 6 c r
0242	DK5DQ	47 37 20 c r
0310	OK1MAC	27 38 2 ncr*1
0332	DJ4UF	27 37 2 c r
0350	DF0WD	27 48 1 c r

EA3BB (IN62TL) wkd:

1999-08-13

0427	DJ3MY	28 38 3 cr
0442	PA2DWH	37 28 5 cr
0537	PE1HWO	27 27 10 5 3 c
0602	DF2ZC	27 27 15 9 15 c
0634	PE1OGF	nil
0643	DJ2QV	27 27 6 10 77*c
0653	PA3BIY	37 37 5 8 10 cr
0701	PE1OGF	37 37 4 7 8 cr
0713	PE1LCH	38 38 4 9 10 c
0729	I1JTQ	48 27 6 10 20 c
0737	DK3WG	27 27 8 9 20 cr*2
0754	G0KAS	27 38 5 9 7 cr*2
0813	IZ5EME	39 37 5 10 2 c
0822	DH7FB	27 27 11 9 3 cr*2
0855	S55AW	38 48 14 11 7 nc5*
0957	OE6IWG	27 28 8 7 2 c
1014	IK2DDR	28 28 4 9 3 c
1028	OK1MAC	27 27 4 10 0 ncr*1
1117	DF1BN	28 28 6 9 3 c
1137	DH1DCN	37 48 5 13 7 c
1147	DL6BF	37 37 9 15 9 cr
1148	F6FLN	IN92SR 59 59 c tropo
1222	DL5MCG	37 38 5 12 7 c
1247	HB9FAP	28 27 6 9 4 c
1305	DJ5MS	37 27 3 10 10 cr
1330	OK1KT	47 37 3 9 25 c
1354	PA3CEE	27 37 5 15 3 cr
1450	S51AT	26 27 3 9 4 c
1515	S51MQ	37 27 4 10 7 cr
1549	DL2FDX	37 37 3 8 9 cr
1609	DL5DTA	27 37 3 9 2 c
1642	DL5ME	36 26 6 11 11 c
1722	DL1SDN	nil
1748	DH0GHU	27 28 9 10 2 c
1850	DL1SDN	27 27 3 4 c*4
2057	IK0BZY	nil**
2122	PB1TT	27 27 6 9 4 c
2149	ON4AVJ	27 37 10 15 3 c
2200 2232	GM4CXM	26 27 10 28 1 cs

EA3BB (IN62TL) wkd:

1999-08-14

0544	PA2TAB	27 27 8 16 1 c
0627	DK8EL	nil
0730	DL7CTA	27 27 5 9 2 ncr*1
0757	DL8SCQ	27 27 12 15 5 cr
0824	DH2OAA	27 37 9 11 2 c
0850	DL3YEL	28 27 7 7 2 cr
0902	DL6ZBN	28 36 4 9 7 cr
0912	I3LGP	27 28 3 8 5 c*4
0939	PA0RDY	26 26 5 10 3 cr
1029	ON4FI	46 37 3 7 21 cr
1054	PA3DYS	38 37 4 9 19 cr*6
1107	DK9OY	28 27 4 11 2 cr
1128	9A2RD	26 27 3 1 2 c
1220	EA6VQ	nil
1258	DL5ROB	26 2 5 2 ncr
1325	G3KWY	nil

Remarks: From 2135 to 0442 it was impossible to note bursts and pings were mni hi. *1 Not rcvd RRR; *2 DK3WG, DH7FB, beam to 72 degrees; *2 G0KAS, sidescatter; *4 DL1SDN + IV3HWT + I3LGP keying short dit; *5 S55AW (no RRR due to qrm from S5 and I5 stations); *6 PA3DYS rcvd RRR to slow speed.

	QSO/SKD	QSO/RN	NC	NIL
IN73XA	11	1	-	2
IN72XX	9	4	1	4

IN82AX	18	10	4	5
IN83AA	19	10	2	9
IN62TL	24	41	10	5
total	81	66	18	24

QSO valid = 147. Longest burst: DJ2QV 77 seconds.

Hasta el proximo año! Vy 73' de EA3BB, Pau, I5WBE, Enrico and I4YNO, Alex. Thanks for report.

F5HRY (JN18EQ) wkd on 144 MHz:

1999-04-27
0520 0532 T98LWT JN84 27 27 c
1999-05-2
1455 1530 G0KZG/MM IN28 26 27 c
Thanks for report, Herve.

F6HVK (JN27LH) wkd on 144 MHz:

1999-05-05
? ? LY2FE KO05OQ 27 28 4 7 6 c
1999-06-10
? ? TA/DL5MAE KM37PV 26 27 3 2 5 cr*4
? ? OHOLIZ KO09KW nil
? ? OH3AWW KP11TL 26 27 5 3 10 nc
1999-06-28
? ? SM7SJR JO87EB 27 26 3 40 1.5c
1999-07-02
? ? SM1/DL5ME JO96BW 27 26 4 3 5 c t
1999-07-04
? ? RU1AA KO48VR 27 27 6 4 4 c
During the Perseids:
? ? LZ7Y KN41AX 27 28 11 5 10 c
? ? LA5KO JO29OG 26 27 23 43 7 c
? ? OM9M KM18AM 27 27 4 3 15 c
? ? OK2SBL JN99AO 27 27 8 8 6 nc*1
? ? TA1ZK/P KM29XT 27 39 5 3 6 c r
? ? LZ1KJ KN31CX 27 28 4 3 5 c*2
? ? EU6MS KO45IN 27 28 14 6 10 c*3
? ? I7HCB JN71VT 27 27 4 7 4 c
? ? RX3QFM KO91FM 26 - - 2 - nc*6
? ? LA8KV JP52OG 26 27 10 8 15 c
? ? OH6MAZ KP21IG nil
? ? GMOWDD IO85JV 26 28? 3 10 1.5nc*5
? ? LAOBY JP61DB 27 39 10 8 17 c*3
? ? GM4YXI IO87WJ 26 27 6 30 3 c*5
Remarks: *1 TX error I received OK2MWR! *2 Nothing first 25 minutes; *3 Many beautifuls bursts during this sked; *4 New DXCC; *5 Difficult direction QTF 15' ; *6 2444 km. Equipment: 1 or 4 x 17 ele M2, 300W, DTR. Thanks for report, André.

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

1998-01-03
1600 DK1CO JO63SX 27 27
2100 RU1AA KP40XD 27 26
2320 UT8AL KO61 28 27
1998-01-04
0040 OZ8ZS 38 27
0044 SM7FMX JO65KN 27 27
0059 LA0BY JO59BT 27 38
0122 OZ1DSK 27 27
0130 G6YIN IO93ET 27 27
0133 PE1BVM JO21BI 27 27
0201 DL4ABJ JO42 27 27
0214 DK5DQ JO31PH 27 27
0220 G7RAU IO90 27 39
0237 DL4ABJ JO42 28 37
0314 SM7WT 37 47
1998-06-06
0240 TA/DL5MAE KM37PV 27 28
0400 OH0LIZ KO09KW 27 27
1998-06-12
1520 TA1ZK KM39AT 27 27
1998-07-03
1100 SM1/DL5ME JO96BW 27 27
1998-08-09
0400 TA1ZK/0 KM29XT 27 27
0900 ON1DLL JO21TL 27 38
1998-08-10
1200 EA1BFZ IN81SS 27 26
1998-08-11
0001 LA5KO JO29OG 27 37
0200 LZ7Y KN41 39 28
1998-08-13
0158 LY2SA KO14LL 38 38
0219 SM7FMX JO65KN 27 27
0228 DL4ABJ JO42 37 37
0234 GM4YXI IO87 37 37
0251 OH6MSZ KP21XU 37 37
0252 SM3UZS JP92FW 59 59
0258 SM3BEI 27 27
0304 LA0BY/P JP61DB 27 37
0354 G6YIN IO93ET 38 37
0404 ES2QH KO29LL 27 38
0432 UT8AL KO61WP 27 27
1998-08-18
1826 G0KPW JO02 27 28
1998-08-31
2040 YP0T KN36XA 27 26
Equipment: 4x17 ele F9FT, 1 kW. Thanks for report, Claudio.

I8TWK (JN70GR) wkd on 144 MHz:

1999-04-30
0815 0830 DL1EJA JO31DS 27 26 8 2 1 c
1999-05-03
2100 2140 DD3DX JO31NT 26 27 8 4 1 c
1999-05-05
0825 0855 EA/DL8EBW IN72WS 37 28 m m 70 c r
1999-05-11
0500 0600 F1JRD JN13WO 26 27 6 2 10 c
1999-06-08
0400 0500 SP9LCV JO90KF 4 ncs
1999-06-11
0250 0315 TA3/DL5MAE KM37 27 27 12 m 1 c r
1999-07-01
0620 0640 SM1/DL5ME JO96BW 27 52 m 2 nc
1999-07-02
1500 1530 SP9PZU/7 KO00 27 26 6 1 1 c
1999-07-07
0550 0605 SM1/DL5ME JO96BW 26 28 13 2 c
1999-07-18
0600 0700 SM1BSA JO97IO 26 26 8 4 4 nc
1999-08-01
0420 0440 DK7MI JN67BU 27 26 17 m 300! c
0440 0442 DK7MI JN67BU 59 59 1 300 csr
0545 0610 OK1UAK JO70MB 26 27 6 2 1 c
1999-08-07
1800 1900 CQ1MS IM69 nil
1999-08-11
1245 1300 ON6NL JO21UE 37 47 4 40 c
1300 1330 LY2SA KO14LL 27 27 3 2 1.5c
1400 1500 EA3BB/p IN82AX 26 1 2 nc*1
2100 2145 F1DUZ IN97NJ 26 26 4 7 1 c

2300	2400	F1AKK	IN78							nil
1999-08-12										
0000	0035	GM0WDD	IO85JV							nil
0035	0055	LZ7Y	KN41AX	27	27	11	m	2		c r
0830	0850	EA3BB/P	IN83AA	38	38	8	6	30		c
1200	1300	Z32UC	KN11FR							nil
1500	1550	EA5ZF	IM99WU	26	26	7	4	1		c
1600	1640	F5FVP	IN95WP	27		5	1	3		ncs
2154		LX1DB	JN39EO	27	27	1		30		csr*2
2202		DL5YET	JO41EV	27		1		10		ncsr
2204		DF8LC	JO53GX	27		1		10		ncsr
2237		SV0EC	KN10CQ	27	27	1		20		csr
2249		SP8UFT	KO11JI	27	37	1		20		csr
2252		DL4ABJ	JO42XP	39	39	1		20		csr
2304		SP2OFW	JO93AC	29	29	1		20		csr
2305		DF8LC	JO53GX	27		1		10		ncsr
2327		SM5FRH	JO88BW	39		1		20		ncsr
2329		DG3XA	JO43WJ	27		1		10		ncsr
2334		DL4ABJ	JO42XP	39	39	1		30		csr
2334		DL8EBW	JO31NF	28	28	1		30		csr
1999-08-13										
0000	0040	EU6MS	KO45IN							nil
0042		DL6NF	JO33NR	27	27	1		40		csr
0044		ON6NL	JO21UE	27		1		10		ncsr
0055		GD4IOM	IO74QD	27		1		10		ncsr
0100	0123	EA4AMX	IM89AT	27	26	6		15		cs
0420	0435	TA1ZK/0	KM29XT	26	26	5	5	3		c
1130	1140	G0KPW	JO02OD	26	26	5		3		cs
1210	1240	SM5HJZ	JO99AV	37		1		30		ncr
1999-08-23										
0400	0420	F/DD0VF	JN25BE	26	27	4	1	1.5		c

Remarks: *1 I started in wrong time, one hour later than scheduled, sorry for mistake! *2 DXCC #40. Equipment: IC271 + MuTek, 4CX250R (400W), 4218CC, DTR DF7KFand OH5IY rev.4.3. Thanks for your report, Carlo.

IT9VDQ (JM68QC) wkd on 144 MHz:

1999-07-30										
0300	0315	HB0/PI4TUE		37	38	18				c

Thanks for your report, Gius.

LA0BY in JO59FW wkd on 144 MHz:

1999-05-23										
0500	0605	PI4ZA	JO21	27	26	3	6	1		c
1999-08-03										
0400	0440	9A0DX	JN82IW	27			1			nc
0500	0545	HB0/PI4TUE	JN47TC	27		1				nc
2100	2145	F1DUZ	IN97NJ	26	27	13	5	2		c*
1888-08-08										
2100	2200	HA5OV	JN97NJ	26	27	3	5	0.5		nc

Remarks: * I was portable in JO59IX.

LA0BY/p in JP50PW wkd on 144 MHz:

1999-06-12										
0400	0448	F/G8MBI	JN04FT	27	27	18	16	1		c
0500	0525	IZ5EME	JN52NS	26	26	8		3		c
0525	0538	OE6IWG	JN77PK	27	26	m	m	3		cr
0545	0555	DL4MDQ	JN58SP	38	38	m	m	6		cr
0555	0601	OK1MAC	JN79OP	39	27	m	m	8		cr
0605	0630	I5WBE		27	26					ncr
1999-06-13										
0400	0418	DL2ARD	JO60AR	28	27	5	1	3		cr
0452	0505	PE1OGF	JO21QJ	27	27	12	5	2		cr
0505	0525	ON4AVJ	JO11UB	27	27	6	4	1		cr
0540	0553	DH9OY		26	26	8	6	1		cr
0555	0635	DH7FB	JO62SM	27	27	17	6	5		cr
0635	0703	OK1UAK	JO70MB	26	27	11	3	6		cr

LA0BY/p in JP61AF wkd via MS on 144 MHz:

1999-08-11										
1800	1830	RV3AH	KO85TO							nil
2000	2030	RX3QFM	KO91FM	26		1	1			nc
2100	2130	UT5ER	KN78ER							nil
2200	2300	YU7KB	JN94XX	26	26	6	10			nc
2300	2330	S51AT	JN75GW							nil
1999-08-12										
0700	0730	F1DUZ	IN97NJ							nil
0805	0855	OK1KT	JO70WE	27	27	10	3	5		c
0840	0855	DK8EL	JO31PK	37	38	4	3	10		c
0858	0910	DL1EJA	JO31DS	38	47			10		ncr
0910	0930	F6DRO	JN03SM							nil
0930	0950	DL1EJA	JO31DS	27	37	3	4	2		cr
0950	1000	F6HVK	JN27LH	27						ncr
1000	1030	DF2ZC	JO30RN	27	37	8	3	25		c
1030	1105	DL1EAP	JO31IK	38	27	3	2	10		c?
1105	1130	EI5FK	IO51RF							nil
1135	1138	PA3BZO	JO21RS	39	37	4		90		cr
1148	1158	DF9QT	JO30DR	39	38	3		30		cr
1103	1125	DF8IK	JO30IT	37	37					cr
1120	1200	DL5ME	JO52SD	37	26					nc

After this first night I decided to change QTH. The take-off here was reasonable (max 2 degrees horison) but not really good except for direction SSE. My apologies to I1JTQ and I1ANP for not being QRV after midnight on the first day. Due to the poor reflections I decided to rather catch some sleep and spent more time operating the other night.

My problem in the area was the forest. There are lots of locations along the roads with good horison, but my little mast does not make it over the trees. I believe in locations with excellent take-off also for MS work. So I drove back to a farm which I spotted the previous day, but were the owner had not been around. He was in this time, and I got permission to establish myself on the fenced meadows behind the farm building. From there I had just perfect horison from 140-210 degrees. About 50 km view! Also the other directions were below 1 degree. And, even more important: I had a long and steep slope towards South and no trees at all. SK7VHF came in via Tropo.

LA0BY/p in JP61DB wkd via MS on 144 MHz:

1999-08-12										
1655	1702	PE1RWS			37	37	3			crs*1
1832	1838	RV3IG	KO87OT	59	59	2				crs*2
1842		UA3MBJ	KO88SA	59	59	1				crs*2
1842		RV3IB	KO87IS	59	59	1				crs*2
1943		UT8AL	KO61WP	37	37	1				ncrs*1
2000	2020	LA5TFA	JP99LQ	28	27	4	4			nc s
2025		LA8KV	JP52QQ	38	38	1				crs*1*6
2025		OH6MSZ	KP21XU	39	39	1				crs*1
2039	2100	ES2RJ	KO29JM	37	27	6	6	10		crs
2150		DL3IAE	JN49DE	39	38	1				ncrs*1
2241	2255	DG1VL	JO61VC	38	27	1	1			ncrs
2244		SP4MPB	KO03GS	38	27	1				crs
2248		DK5TE	JN47NX	38	27	1				crs
2314		SP9EWO	JN99HW	27	37	1				crs
2323		OK2MWR	JN99	59	27	1				crs
2323	2335	OK2SBL			37		2			ncrs
2335	2340	IV3HWT	JN65ST	38	27	3				crs
2340	2350	S51AT	JN75GW	37	27	3				crs
2342		I2FHW	JN44	38	36	1				crs
2352		S57TW	JN75EX	38	37	1				crs

2352 0002	S57S	JN76JB	37 37 2		ncrs
1999-08-13					
0005 0007	S55AW	JN75DS	37 37 3		crs
0005 0018	IZ5EME	JN52NS	38 37 4	90	crs
0021	DL5ME	JN52SD	38 27 1		crs*3
0021	DL2ARD	JO60AR	39 37 1		crs*3
0022	DJ3MY	JN58QD	49 49 1		crs*3
0022	DG1VL	JO61VC	39 39 1		crs*3
0022	DL4NAA		39 59 1		crs*3
0023	DL5GAC	JN47SS	39 39 1		crs*3
0023	DL5WG	JO52VK	37 27 1		crs*3
0024	DL3HRT	JO61AB	39 28 1		crs*3
0024	DL4MDQ	JN58SP	37 27 1		ncrs*3
0054	F5HRY	JN18EQ	37 27 1		crs
0057 0105	DJ5BV	JO30MR	37 26 4		ncrs
0105	9A1CAL	JN86EL	39 37 1		crs
0105	HB9DFG	JN37SM	38 37 1		crs
0117 0122	OK1FID	JO80CH	37 27 2		crs
0122	OK2PVF		37 27 1		ncrs
0125 0129	DL4ABJ	JO42XP	38 27 4		crs
0130	SP2SKW		37 27 3		ncrs
0134 0138	OK2BVE		38 37 3		crs
0136	DH5FS	JO60UA	39 59 1		crs
0142	DH0GHU	JN38VN	38 37 1		crs
0143 0145	HB9FAP	JN46EW	39 37 2		crs
0144	DL9USA	JO71EN	39 27 -		ncrs
0153 0159	DH8BQA	JO73CF	37 27 3		ncrs*4
0159 0219	I4XCC	JN63GV	39 37 5		ncrs*1
0221	DL4MDQ	JN58SP	38 38 1		crs*1
0246	HA7UL	JN97KK	37 37 1		crs*1
0250	OK2PVF		37 27 1		crs*1
0251	9A4FW	JN95JG	37 38 1		crs*1
0252	S52EZ		37 27 1		crs*1
0304	I4XCC	JN63GV	37 27 1		crs*1
0304	I2FAK	JN45OB	38 38 1		ncrs*1
0315	DL1EAP	JO31IK	38 - 1		ncrs*1
0645 0705	F6FHP	IN94TR	37 26 13	30	c
0716	DL1EAP	JO31IK	38 27 1		crs
0716	DL4MEA	JN58JD	49 37 1		crs
0716	DL5ROB		39 38 1		crs
0720	DL3IAE	JN49DE	39 39 1		crs
0722 0738	DF1BN	JO31GD	37 27 6		crs
0746	DF1CF	JN57FP	39 37 1		crs
0749	G7RAU	IO90IR	37 38 1		crs
0749	ON1ALJ	JO10VV	37 37 1		crs
0754	ON4KHG	JO10WK	39 37 1		crs
0758 0802	DK0PX	JN49	39 37 3		ncrs
0802 0804	DJ5BV	JO30MR	38 36 3		crs
0808 0810	M0BTZ/p		39 39 2		crs
0814 0818	G0KPW	JO02OD	38 27 6		crs
0820	G3YVR	IO91WD	37 27 1		crs
0820	DJ3HW	JO42LH	38 27 1		crs
0820 0830	DF9PX	JN49HU	38 37 3		crs
0838 0848	G1WPF	IO91RP	27 37 6		crs
0852 0854	G8IZY	IO91VC	38 27 3		crs
0854	PE1GNP	JO31IX	28 27 1		ncrs
0909	PA2GER		38 38 1		crs
0909	DG6JF/p	JO33QN	38 38 1		crs
0909	DL8GP	JN39LH	37 37 1		crs
0909	PA3CEE	JN33JI	39 39 1		crs
0920 0935	PE9DX		38 27 5		crs
0939 0950	G4AEP	IO91NJ	38 39 3		crs
1015 1036	F6CRP	IN96KE	28 27 4		crs
1016	DL2FDX	JO40LG	38 28 1		ncrs
1021 1036	F/G8MBI	JN04FT	27 27 8		crs
1041	F6DRO	JN03SM	29 29 1		crs
1059	IK2EAE	JN45LL	39 39 1		crs
1059	DL2FDX	JO40LG	38 28 1		crs
1107 1122	PE1GNP	JO31IX	39 27 8		crs
1137	DJ2QV	JO31OM	39 27 1		crs
1230 1255	F6HVK	JN27LH	39 27 m	m	10 c
1255 1308	DJ4UF	JO30	47 38 m	m	30 cr
1420 1500	S50C	JN76JG	27 26 m	m	nc s
1800 1825	UT5ER	KN78ER	27 27 10		15 c
1900 1935	RK3AF	KO75WO	37 27 25		15 m
2000 2030	RX3PX	KO84SD			nil
2100 2155	UA3TCF	LO26IU	26 26 14	2	15 c
2200 2225	YO3DMU	KN34BJ			nil
2230 2305	S51MQ	JN75NT	26 26 5	7	1 c
2305 2320	9A2TE	JN85KK	26		nc
2320 2330	9A1CCB	JN85KK	27 26 5	2	3 c
2358 0015	DJ1OJ	JN58	36 37 3		10 cr
1999-08-14					
0015 0040	IK4PLU	JN64			nil
0615 0640	OK1UAK	JO70MB	27 27 6	2	5 cr
0640 0705	I5YDI/5		37 4		30 ncr
0705 0750	EI5FK	IO51RF	37 26 11	6	15 c
0808 0817	DL3YEL	JO41EV	27 27 7	2	1 cr
0843 0857	HA8CE	KN06EN	27 37 5		2 cr
0857 0923	DL8SCQ		37 27 m	m	20 cr
0925 0940	F1DUZ	IN97NJ	37 38 m	m	12 cr
0940 0953	DL1UU	JN62SP	27 27 4	3	25 cr
0958 1110	OE6IWG	JN77PK	27 26 m	m	30 cr*5
1120 1150	9A2TE	JN85KK	38 26 12	4	10 c

Remarks: (*1) Contact made around calling frequency 144,200 MHz. When there was no response on my frequency 144,155 MHz or when I needed a break I was sometimes listening there. Also heard on 144,200 MHz were RX3QFM, RK3AF, HA1VQ, HA5KNQ, RV3IG, RW3PF, GM4YXI, SP8UFT, HA5CW, S50C, YU1WP, YU1IO, YO3JW. (*2) I called RV3IG first when he was 3 kHz higher calling somebody else. He came down on my frequency a little later and alerted UA3MBJ and RV3IB as well. Booming signals! Where were the other UA3s? (*3) This was a single burst lasting for about 3 minutes! Set my new personal record with 8 complete contacts in one burst! (*4) Heard weakly via Tropo. (*5) I was close to tears, hi. Received one 30s burst after the other, and sent R27 for 1 hour before Walter replied with RRR. Walter told me later that his preamp had suffered a damage from a lightning stroke. It was causing 3-26 dB loss. No wonder! (*6) Shortest distance I ever worked on MS. I could not hear Kjetil on Tropo.

All in all this was again an enjoyable Perseids activity, which resultet in 96 complete MS contacts. Easy to work random SSB, even over 2000+ km distance. Once I got a 90s burst when I called CQ in CW and it was wasted: I did not manage to decode a single callsign, too much QRM. In SSB it would have been possible to complete a few contacts. Therefore I worked only random SSB during the peak of the shower. 71 contacts were made in that mode.

The shower was peaking almost as predicted, perhaps 1 hour later. During the peak I saw many bright fireballs in the dark sky. As usual, the reflections prior to the peak were quite poor. The day after the peak (14.8.) was again still good, but activity dropped rapidly. According to my experience from 3 consecutive years, the day after the peak is the day for skeds - not before.

Considerable effort was again made to work into Eastern Europe. Several skeds were arranged, and I also spent some time calling CQ towards UA3. Still I wonder if the information on my activity really spread out to the OPs. The reflections were certainly there... Another comment is related to the SSB operating procedure of several UA3 stations. It is very common to hear somebody calling CQ with only saying his call for 1 minute without breaking. How shall we make single burst QSOs? For some UA3 stations it is also common to not repeat the callsign of the station they are calling, not to talk about the necessity of final RRR...

As a matter of fact I was not the only station being on from JP61. To my surprise LA6QBA showed up from his summer house in JP61BJ. He said later he worked 40 stations as well. Other LA stations heard were LA6MV in JO59, LA6FJA and LA8AJA in JP50.

My equipment was only 180 W into 2 x 9 ele-yagis, vertically stacked on an 8m telescopic mast. Phasing cables were Aircell 7, and feeder only 6 m of Aircom Plus. Together with the MGF1302 masthead preamp this made a lightweight and very sensitive setup.

Thanks for your report, Stefan.

OE6IWG (JN77PK) wkd on 144 MHz:

1999-01-03								
2200	2230	F1NSR	JN33JK	37	37	7	6	3 cs
1999-04-23								
0400	0435	F6CRP	IN96KE	26	26	8	31	43!c
1999-05-05								
0300	0335	EADH3YAK	IN72WS	27	27	3	2	2 c
1999-05-06								
0357	0431	LY2FE	KO05OQ	26	28	5	7	2 c r
1999-05-08								
0600	0635	PE1OGF	JO21QJ	27	26	18	m	6 c
1999-05-23								
0500	0600	F1JRD	JN13WO	26	27	8	6	1 nc
1999-05-24								
0700	0800	DH0GHU	JN38VN	27		2		nc
1999-06-11								
0400	0500	RX3PX	KO84SB	26		3		nc
1999-06-12								
0527	0535	LA0BY/p	JP50PW	26	27	4	m	2 c
1999-06-13								
0500	0555	DF1BN	JO31GD	26	26	9	9	1 c
1999-06-15								
0600	0635	PE1HWO	JO21GV	26	26	9	11	2 c
1999-06-17								
0500	0530	RU1AA	KP40XD	27	26	8	10	3 c
1999-07-03								
0600	0617	SM1/DL5ME	JO96BW	26	28	8	12	48!c
1999-07-09								
0500	0545	OH5IY	KP31JK	26		1		2 nc
1999-07-24								
0400	0450	IK0BZY/9	JM76	26		1	1	1 nc
0500	0550	DH1DCN	JO41BD	27	27	4	9	0.5c
1999-07-25								
2200	2235	IW5DAN	JN53GU	27	26	4	6	1 c
1999-08-01								
0400	0500	9A5D	JN92BP	27	26	3	4	1 c
2225	2255	F1JRD	JN13WO	26	27	5	4	1 c*1
1999-08-10								
0220	0300	LA5KO	JO29OG	27	27	2	2	0.5nc
1999-08-11								
0140	0207	TA1ZK/0	KM29XT	27	27	5	6	5 cr*2
2342	2357	3A/F1JRD	JN33RR	27	27	9	3	1 cr
1999-08-12								
0135	0145	LZ7Y	KN41AX	38	28	m	m	14 cr*3
2200	2300	RV3ZR	KO80CL	26		2		nc
2300	0000	Z32UC	KN11FR	26	26	3	2	3 c?*4
1999-08-13								
0200	0212	SM7SJR	JO87EB	27	38	6	4	3 c
0900	1000	EA3BB	IN62TL	28	27	7	4	3 c
1630	1800	HB9FAP	JN46EW	26		4	2	0.5nc
2215	2315	RV3ZR	KO80CL	26		2	2	0.5nc
1999-08-14								
0000	0142	HB9FAP	JN46EW	27	46	9	3	3 c*5
1000	1106	LA0BY/p	JP61DB	26	27	6	7	3 cr*6
1999-08-15								
1100	1122	RK3AF	KO75WO	36	27	3	2	7 c
1999-08-23								
0500	0517	F/DD0VF	JN25BC	27	26	8	2	1 c
1999-08-25								
0500	0520	G0KZG/mm	JO13CH	26	27	6	1	8 c

Remarks: *1 Ufb! Lionel with only 25W! *2 The take_off to South_East is bad, need 10 elevation, so I was surprised, that the qso with Andrea was ok in 27 minutes! *3 Fantastic firework :-); *4 I hope, Dime hrd my rrr, I send my final-rrr 6 periods long; *5 Sidescatter: a SPECIAL TNX to fabio/HB9FAP for his help that I can work JN46! How many tests we have had in the last 3 years, Fabio, 15-20? *6 Many tnx Stefan, that you "hold the line" abt 65 minutes for me! Ufb!

Tnx to all was helping me to work new locators. Sorry, I had sometimes big problems with my old preamp (vox-version), he was destroyed by a thunderstorm, the loss was up to -26dB! 73, Walter (OE6IWG @ OE3XBS.AUT.EU). Thanks for report, Walter.

The OM9M-MS-Expedition

OM9M (KN18AM) wkd on 144 MHz:

1999-08-09					
2200	2300	DK5KK	JO63EX		nil
2300	2400	DL4MEA	JN58RI	26 26	c
1999-08-10					
0000	0100	DF1BN	JO31GD	27 27	c
0100	0200	DL1UU	JO62SP	26 26	c
0200	0300	DK9TU	JN48MF		nil
0300	0400	DJ5RE	JN59WI		nil
0400	0500	LA8KV	JP52QQ	26 29	c
0500	0600	DL6YCY	JO41CU	26 28	c
0600	0700	TK5JJ	JN41JW	26 26	nc*1
0700	0800	DG5OAF	JO51EP	27 27	cs
0800	0900	IZ5EME	JN51VS	27 26	c
0900	1000	LY2MW	KO24PQ		nil
1000	1100	F6HVK	JN27LH	27 27	c
1100	1200	EU6MS	KO45IN	27 37	c
1900	2000	ON1ALJ	JO10UU	39 37	cs
2000	2100	ON1AEN	JO10UU	27 27	ncs
2100	2200	DF8IK	JO30JT		nil
2200	2300	G4ZHI	IO91KN	26 36	c
2300	2400	DL2ARD	JO60AR	26 37	c
1999-08-11					
0000	0100	G3KWY	IO92IS	26 28	c
0100	0200	DL5ME	JO52SD	27 26	c
0200	0300	DL2FDX	JO40LG	26 27	c
0300	0400	DL8EBW	JO31NF	38 27	c
0400	0500	LA5KO	JO29OG	27 26	nc
0500	0600	F/G8MBI	JN04FT	27 26	c
0600	0700	OH3AWW	KP21QF	26 28	c

0700	0800	IW0GPN	JN62FB		nils
0800	0900	I1JTQ	JN35UB	26 26	c
0900	1000	IK0OZK	JN52VC		nil
1000	1100	IK0OKY	JN61GT		nil
1100	1200	IK0BZY	JN52VD		nil
1200	1300	IW2HAJ	JN45NO	26 26	cs
1300	1400	RX3QFM	KO91FM		nil
1400	1500	PE1GNP	JO31IX		nils
1900	2000	SK6HD	JO68SD	26 27	c
2000	2100	HB9Q	JN37BK	26 27	c
2100	2200	DF2ZC	JO30RN	26 26	c
2200	2300	PE1HWO	JO21GV	36 26	c
2300	2400	ON4AVJ	JO11UB	26 27	c
1999-08-12					
0000	0100	PE1BVM	JO21RI		nil
0100	0200	OH1XT	KP01UK	26 27	c
0200	0300	DH9GCD	JN38VF	26 27	c
0353		DL4ABJ		37 37	crs
0300	0400	DH0GHU	JN38VN	28 27	c
0400	0500	DG6JF/p	JO32	37 37	cs
0500	0600	OH6MAZ	KP21IG	26 27	nc
0600	0700	DK8EL	JO31LJ		nil
0700	0800	EI5FK	IO51RT	27 37	nc
0800	0900	OH6KSR	KP22VG	27	nc
0900	1000	RV3AH	KO85TO		nil
1000	1100	RW1AW	KP50EB	26 37	c
1100	1200	HB9FAP	JN46EW	26 36	c
1200	1300	EI4DQ	IO51WU		nil
1400	1500	RZ1AWT	KO48VR	38 37	c
1456		DG3XA		39 39	crs
1600	1700	GM0WDD	IO85JV	26 27	nc
1900	2000	DL1EEX	JO31ME	27 27	c
2000	2100	DF1IAZ	JN49LD	26 27	c
2036		PA0JMV		38 38	cr
2100	2200	DJ2QV	JO31OM	27 26	c
2137		DF9QT		28 27	cr
2200	2300	G4AEP	IO91NJ	26	nc
2302		PA3CEG		48 38	crs
2304		PA3DYS		59 38	crs
2304		PE1PVM		59 59	crs
2307		OZ3K		59 57	crs
2312		F6EAS		37 37	ncrs
2321		F6ELW		27 37	crs
2328		PA5DX		38 38	crs
2340		GM4AFF		49 49	crs
2350		PE1RWS		59 39	crs
2351		DL6BF		59 59	crs
2351		PE1LWT		48 48	crs
2359		DK9ZY		59 59	crs
2359		DF6NA		59 56	crs
1999-08-13					
0000	0100	PA3BIY	JO22EB	37 27	c
0032		G4IVH		39	ncrs
0046		SM7SMS		38	ncrs
0051		PE1BVM		59 48	crs
0100	0200	LY2BIL	KO24PQ	26 27	c
0141		G0RUZ		39 39	crs
0145		GM4YXI		38 38	ncrs
0158		RX3QMF		37 37	crs
0200	0300	ON4FI	JO20IV	26 26	c
0234		TA1ZK/0		37	ncr
0236		G1WPF		37	ncrs
0250		GM4YXI		37 37	crs
0251		SM3BEI		37 27	crs
0300	0400	DG5TR	JO43QC		nil
0325		OE3HHB		39 55	crs
0349		G0KPW		39 39	crs
0400	0500	EA3DUY	JN12LD	37	ncs
0600	0700	EA3KU	JN00JV	26 26	c
0700	0800	I5MZY	JN53OT	26 26	c
0800	0900	ON1DLL	JO21UE	26 38	c
0900	1000	UA4API	LO20QC	26 29	c
1100	1200	ON6NL	JO21UD	26 26	c
1200	1300	DF8IK	JO30	26 26	c
1500	1600	LY2SA	KO14LL		nil
1600	1700	SM5TSP	JP90CE	26 27	c

Remarks: *1 Sri, not rcvd final RRR. Heard: 3A/F1JRD, DK5YA (?), EA3BDU (?), GW4UWR, I2FAK (?), LY2-MW, OZ3CLL, PA3FJY (?), PE1OGF, SP2OFW, UA3-PTW, UT8AL. Equipment: IC275H, TR751E, FT290R, preamps MGF1302 and CF300, 350W and 100W, antennas DL7KM and 2 x 16 ele. F9FT, software MS-DSP 9A4GL and OH5IY.

On 50 MHz wkd over 300 Es/MS QSO (Equipment: IC756, IC706, 5 ele Yagi, HB9CV). Operators: OK1-CDJ, OK1CPU, OM7PY, OM7JG and OM7AQ. QSL via OM7AQ. More info via e-mail om7aq @ qsl.net (OM7AQ), ok1cdj @ qsl.net (OK1CDJ) and profpc @ isternet.sk (OM7JG). Internet web pages: http:// www.om0pbf.sk/om9m and http://www.hamradio.sk/om9m. Many thanks to OM3WBC, OM7IR, club station/contest team OM3KKF/OM7IR, OM7AZA and OM6KW for their help! Many thanks to all stations! 73, Zoli - OM7AQ. Thanks for report, Zoli.

ON4KHG (JO10WK) wkd on 144 MHz:

1999-08-11								
1545	1625	EA3BB	IN82AX	39 38	2	2	18	cr
1999-08-12								
1400		ES2RJ		27 27	1		20	crs
2342	2352	EA3BB	IN62TL	37 48	7	m	10	cr
1999-08-13								
0000		IZ4AIK		37 27	1			crs
0750	0756	LA0BY/P	JP61	37 39	2	m	10	crs
1221		LA5KO	JO29OG	39 39	1		10	crs

Equipment: TS440S, transverter, PA 120 W and 2 x 9 ele. Thanks for report, Gaetan.

PA2DWH (JO22GD) wkd on 144 MHz:

1999-06-19								
0955	1022	HV4NAC	JN61	28 27	12	2	1.5	cr
1999-07-09								
2207	2237	R1MVA	KO40	26 26	7	6	3	cr
1999-08-10								
1800	1900	HA6NY	KN08	26 -	3	1	1.5	nc
1900	2000	HA5OV	JN97	28 26	13	1	3	nc
2000	2035	HA6NY	KN08	26 27	9	3	6	c
1999-08-11								
0700	0728	EA7GTF	IM78	26 27	6	2	4	c
0945	1015	LA5KO	JO29	27 27	7	6	3	c
2137	2200	EA3BB	IN83	38	4	3	6	nc*1
2200	2250	HA7P	JN79	26 29	5	1	10	cs
2300	2357	LZ7Y	KN41AX	26	1		1.5	nc*2
1999-08-12								
1900	1942	OH7PI	KP42	26 27	4	1	6	c
13-08-1999-08-13								
0200	0300	LZ1ZX	KN32	-	-		nil	qrg?
0245	0325	3A/F1NSR	JN33	27 27	3	1	5	cr
0350	0415	HA9MDP	KN09?	27 27	3	1	20	cs
0405	0427	EA3BB	IN62TL	28 37	10	9	4	cr
2100	2120	S53CO	?	28 27	2	1	4	cr
1999-08-14								
0014	0057	IK2DDR	JN55	28 27	9	4	7	c

0136	0150	9A3JH	JN75	26	27	10	2	3	cr
0206	0218	S57EA	?	28	39	10	1	12	cr
0218	0230	LY2WR	KO25	39	39	m	m	10	cr
0307	0340	LZ7Y	KN41AX	26	37	5	-	4	cr
1300	1400	RK3AF	KO75WO	26	-	3	2	6	nc*3
1999-08-21									
2200	2212	IK4PLU	JN64	27	26	14	19	3	c*4

Remarks: *1 Sorry, I had QRM (birdie) and sked at 2200, so had to go QRT; *2 Two other stations calling LZ7Y although I had a sked. LZ7Y QRT because of this QRM. Those op's: Thanks! *3 At 1305 had to stop for 20 minuts, because of LFD in neighbours telephone. I think QSO missed due to that, because RK3AF QRT at 1330...; *4 Many pings and constant 319 signal (FAI?). MUF was also high that night.
Perseids were good for me this year, but the peak was not so intens as usual. Instead it seemed spreaded over more than 3 days, as still on 14th of august there was a lot of Perseid activity. Perhaps the width of the shower has broadened? Thanks for report, Dick.

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

1998-12-12									
1808	1821	YU7MS	KN05	27	27	20	32	2	cr
1827	1841	I8TWK	JN70	27	28	11	15	1	cr
1841	1851	IC8FAX	JN70	28	27	10	30	2	cr
1855	1921	S51AT	JN75	27	27	9	21	1	cr
1950	2020	S53VV	JN65	27	27	16	20	1	cr
2043	2101	I1JTQ	JN35	27	27	22	35	1	cr
1998-12-13									
1746	1756	RU1A	KO48	27	27	20	60	3	cr
1818	1826	LY8X	KO24	27	27	15	25	16	cr
1828	1842	LZ2HV	KN23	27	28	11	19	1	cr
1903	1916	SP2OFW	JO93	29	49	10	16	4	cr
1952	2007	LY2WR/p	KO16	27	29	10	35	3	cr
2130	2145	OH1XT	KP01	27	27	16	21	2	cr
2255	2305	OH4EA	KP32	27	27	9	10	1	cr
1998-12-14									
1948	2001	9A5Y	JN85	28	28	18	35	2	cr
2050	2122	HB5OK	JN46	29	28	33	80	2	cr
2205	2222	IV3HWT	JN65	29	27	20	55	3	cr
2330	2347	DL5MAE	JN58	27	27	16	30	1	cr bc
1999-08-12									
0920	0932	OH6MAZ	KP22	27	27	18	30	2	cr
1726	1736	RZ1AWT	KO48	27	39	16	40	17	cr
1810	1900	IW2DVK	JN45	27	26	4	9	2	cr
1930	1952	SM2/DL9MS	JP85	36	37	5	10	8	cr
2020	2037	EU6MS	KO45	38	28	20	39	15	cr
2120	2143	UT8AL	KO61	27	27	9	14	2	cr
2245	2300	IV3HWT	JN65	38	27	15	33	15	cr
2302		YO3JW	KN34	37	27	1		20	crs
2307		SP4MPB	KO03	37	27	1		25	crs
2335		UT8AL	KO61	27	27	1		20	crs
2355	0007	HA1BC	JN87	28	38	13	22	12	cr
1999-08-13									
0125	0152	YU1EXY	KN04	37	28	19	20	15	cr
0205	0220	S51AT	JN75	27	27	11	25	4	cr
0230	0250	RW1AW	KP50	38	37	28	100	20	cr
1000	1018	EA3KU	JN00	39	39	13	27	7	cr
1055	1117	I5YDI/5	JN54	27	27	10	17	3	cr

Equipment: TS-850S + LT2S-MK2, DSP59+, DTR, audio keying, 400W, 9 ele OZ5HF or 2 x 16 ele F9FT.

In the beginning of 1999 I moved to another QTH, where I have no antennas. My old address is still ok. As I have to go to the old QTH or the local hill, I cannot take any skeds, sri. However, when I'm QRV, I try to take digital VHF-net with me. Thanks for report, Dick.

PE1HWO (JO21GV) wkd via on 144 MHz:

1999-06-27									
0415	0445	I5YDI/5	JN54BB	26	27				cr
0500	0538	IK1PAG	JN35SB	27	27	19	6	17	c
1999-07-02									
2100	2135	SP9PZU/7	KO00GM	26	26	16		2	c
1999-07-05									
0330	0400	SM1/DL5ME	JO96BW	27	27				ct
0510	0524	9A3PA	JN85EL	27	26			15	c
1999-07-06									
0700	0800	LA0BY/P	JP41JU						nilt
1999-07-09									
2350	0030	R1MVA	KP40PG	26	26				cr
1999-07-13									
2200	2230	LY2SA	KO14LL	26	26	18	11	3	c
1999-07-22									
1035	1105	ES0SM	KO08XK	26	26				c
2200	2300	9A1CMA/P	JN73QV	26	26				c
1999-07-23									
0500	0600	IK0BZY/9	JM76						nil
1999-07-26									
0600	0640	ES2WX/0	KN18XC	27	27	8	2		c
1999-07-28									
0100	0115	9A0DX	JN82IW	27	27				c
1999-08-03									
1100	1200	OH9MTY	KP46						nil
2315	2330	OH6KTL	KP02OJ	27	27				c
1999-08-08									
0700	0720	CQ1MS	IM69	27	26	14		1	c
1999-08-10									
0500	0515	EA3BB	IN73XA	27	27				c
0518	0545	IW0GPN	JN62FB	26	27				cs
1525	1540	EA3BB	IN72XX	27	27				ct
1999-08-11									
0500	0530	EA3BB	IN82AX	27	27				c
2200	2230	OM9M	KN18AM	26	36				c
2300	0010	IK2DDR	JN55GN	26	27				c
1999-08-12									
1130	1200	EA3BB	IN83AA						nilt
1200	1300	IW2HAJ	JN45NO						nil
2000	2050	YZ7MON	JN95XA	26	37	2			cs
2124		OM9M	KN18AM	26	37				csr*1
2249		I3LLH	JN65BM	26	36				csr*1
1999-08-13									
0135		9A2VR	JN95FQ	37	37				csr
0224		SP6GWB	JO80	27	27				csr*1
0235		HA5CW/0	KN07	39	39				csr
0415		S52EZ	JN86DT	37	27				csr
0500	0540	EA3BB	IN62TL	27	27				c
0600	0700	IK3UNA	JN55LX						nils
1100	1200	RK3AF	KO75WO						nil
1200	1300	EU6MS	KO45IN						nil
1999-08-14									
2200	2340	S57TW	JN75EX	27	36				nc

Remarks: *1 50 MHz. All skeds after 31 of July were done with reduced power, due to PA trouble. Equipment: FT-101ZD & TRV, MGF1032, 4CX250B, 17 ele Yagi, MSDSP070b. Skeds always welcome via email pe1hwo @ amsat.org or PR PE1HWO @ PI8VNW.#ZH2.NLD.EU or WWC ch 14345. 73 es DX - André. Thanks for report, André.

News & Comments

Editor: Klaus Tiedemann, DL4EBY

UKW - Tagung Weinheim

Die "44. UKW-Tagung" fand am 18./19. September 1999 in der "Mannheimer Maimarkthalle" statt. Es haben fast 9000 Besucher den Weg nach Mannheim gefunden. Das sind fast 1000 mehr als im letzten Jahr. Die Ergebnisse des 23cm Mobil-Wettbewerbes / The results of the 23cm mobile competition:
1. DK9WX/m, 2. DB5KR/m, 3. DJ6DO/m

Die 45. UKW-Tagung findet am 9. und 10. September 2000 wieder in der Mannheimer Maimarkthalle statt.

The 44th VHF Convention was held on the premises of the "Mannheimer Maimarkthalle" on the 18th and 19th September 1999. Nearly 9000 visitors managed to find their way to Mannheim this year, almost 1000 more than last year. The 45th VHF Convention will be held on 9th und 10th September 2000 in the Mannheimer Maimarkthalle.

73 de Wolf, DF1GW

Selbstbauwettbewerb des OV Weinheim A20

Unter dem Motto "Selbstbau fördert die Kreativität" möchte der DARC OV Weinheim zur UKW-Tagung 2000 erstmalig einen Selbstbauwettbewerb ausrichten, an dem sich alle DARC-Mitglieder und Mitglieder anderer europäischer Amateurfunkverbände beteiligen können. Die Ausschreibung erfolgt in fünf Sektionen:

1. Empfängertechnik
2. Sendertechnik
3. Antennentechnik
4. Meßechnik
5. Digitaltechnik / Software

Eine dreiköpfige Jury bewertet die Exponate und entscheidet in Zweifelsfällen über Einstufung des Exponates in die Teilnahmesektion. In den Sektionen 1, 2 und 4 sind nur betriebsfertige Geräte oder Zusatzgeräte als Exponate zugelassen. In der Sektion 3 sind Antennen und Mechanikbaugruppen vorlegbar. In der Sektion 5 können auch Module eingereicht werden, die aber demonstrierbar sein müssen.

Alle eingereichten Exponate werden platziert, pärmiert und beurkundet. Darüber hinaus gibt es eine "Über-Alles-Prämierung" für das originellste Selbstbauexponat aus allen 5 Teilnahmesektionen.

Bewertet wird von der Jury nach einem Punktsystem für folgende 6 Kriterien:

1. Funktion
2. Amateurfunknutzen
3. Aufbauaufwand
4. Präzision
5. Innovationswert
6. Dokumentation

Bausätze sind zugelassen und als solche kenntlich zu machen. Sie führen automatisch zu einer Bewertungsminderung in den Kriterien 3. und 5. Alle eingereichten Exponate werden während der UKW-Tagung Weinheim in Mannheim ausgestellt und bewertet mit anschließender Preisverleihung. Eingereicht werden:

1. Das Selbstbauexponat
2. Eine Dokumentation zum Exponat mit Stromlaufplan und Blockschaltbild
3. Angaben zum Teilnehmer und zur Teilnahmesektion

Die Anmeldung zum Wettbewerb erfolgt vor dem 1. Sept. des laufenden Jahres schriftlich und formlos beim OV Weinheim. Eine wiederholte Teilnahme mit dem gleichen Exponat ist nicht möglich. Der OV Weinheim behält sich vor, diese Ausschreibungsrichtlinien jährlich

den Erfordernissen anzupassen. Wir freuen uns über eine rege Teilnahme.

Wolfgang Borschel, DK2DO

First National Microwave Meeting in Belgium

The Radio Club Leuven (RCL), Belgium, invites you to attend to our first National Microwave Roundtable on Sunday, 21 Nov. 1999.

Der Radio Club Leuven in Belgien lädt zum ersten nationalen Mikrowellentreffen am 21. Nov. 1999 ein.

The address is: Abdij Vlierbeek - Kessel-Lo (Leuven, Belgium).

Our program / Das Programm:

- Measurement equipment available up to 26 GHz / Meßmittel bis 26 GHz verfügbar
- Lectures for newbies and experienced amateurs / Vorträge für neue und alte Hasen
- Specialised commercial stands / Spezialisierte kommerzielle Ausstellung

Lectures / Vorträge:

- DB6NT: development of his newest 10 GHz transverter / Entwicklung seines neuesten 10 GHz Transverters
- (n.n.): ATV on the microwaves / ATV auf Mikrowellen
- ON4AOD: development of a new 10 GHz beacon / Design einer neuen 10 GHz Bake
- etc.

Demonstrations / Vorführungen:

- 10/24/47 GHz stations
- ATV on 23/13cm and 10 GHz
- Using PUFF to develop a 23 cm medium power amplifier / PUFF als Entwicklungstool für eine 23cm PA

For up-to-date info and how you can reach us, please visit our website and use the link to the microwave roundtable: http://www.ping.be/rcl To be kept informed you can also send an EMail to: on7vq@compuserve.com

See you in Leuven and bring some equipment with you to show around.

Für aktuelle Infos : http:/www.ping.be/rcl, oder EMail an on7vq@compuserve.com

Hans, ON4CDU (ex-PA0HWE)

ATV World Record Notification

Three new ATV world records were registred this summer by the SWISS ATV: Drei neue ATV Weltrecorde sind diesen Sommer durch die SWISS ATV zu verzeichnen:

5.7 GHz:

216 km, 15 June 1999, One-way qso / Einweg-QSO TK2SHF & F/HB9RXV/P B5, TK2SHF: JN42HF, 15 W, 90 cm offset parabolic dish, F/HB9RXV/P: JN33KQ

10 GHz:

1031 km 17 June 1999, 0730z EA/F1AAM/P (IM98XU, Monte Pego, Spain, 220m) and I5/HB9AFO/P (JN54BC, Rifugio Carrara, Italia, 1320m), Bi-directional B3-B5 QSO, F1AAM: DRO + 12 W TOP, 1m offset dish, HB9AFO: DRO + 12 W TOP, 1m offset dish, modified LNB + narrow band receiver + home made wide band receiver with automatic research of stations / 1m Offset-Spiegel, modifizierter LNB, Schmalbandempfänger, Selbstbau- Breitbandempfänger mit automatischer Stationssuche

47 GHz:

188 km 30 July 1999, 0630z HB9DLH-F1JSR, one-way B5 QSO, Einweg-QSO HB9DLH: Mont Chasseral BE (JN37MD), at 1550 m,

90 cm modified offset dish / Modifizierter Offsetspiegel TX 10 mW on 47.088 GHz, F1JSR: at Mont du Chat (dpt 73, JN25VQ) 90 cm modified offset dish / Modifizierter Offsetspiegel Phonie transverter NF 9 db + SAT converter, sat pointer, TV sat rx (narrow band)

You can find all details and pictures on the SWISS ATV web site: (in French and in English) / Details und Bilder sind zu finden unter: http://www.cmo.ch/swissatv

73 Michel Vonlanthen, HB9AFO, SWISS ATV president

VHF Stations-Datenbank, Update

Hallo liebe UKW Freunde, Die VHF-DX-Gruppe DL-West hat in den letzten Jahren eine Datenbank aufgebaut, die UKW-Enthusiasten Auskunft über Aktivitäten sowie Standorten von Gleichgesinnten geben soll.Eine erneute Ausgabe (Version 1.60) ist für kommenden Herbst geplant! Hierzu ist es notwendig von Zeit zu Zeit die aktuellen Daten der Aktivisten abzufragen. Bitte schicken Sie die entsprechenden Daten zu Call und Locator (siehe Muster) an DL8EBW (u.a. werden auch Daten zu den neuen DO/DM Stationen, oder Callsign Änderungen (DL/PA/F) ständig gesucht...): PR-BBS: DB0NDK.#NRW.DEU.EU, DX-Cluster: DB0NOR-9, EMail: dl8ebw@qsl.net. Wir werden weiterhin versuchen, die Datenbank in diverse europäische DX-Clustersysteme einzuspeisen (wie z. Bsp. geschehen bei DB0MDX, DB0NOR-9, DB0SUE-7, DB0ZWI-8, DB0ADX(*) und DB0SDX(*), DB0ERF-6/-7 (*)=ältere Versionen) und Logbuchprogramm-Autoren (z. Zt. gibt es eine erste Datenbankausgabe im VQLog von EA6VQ Version 2.0F !!!) zur Weiterverarbeitung zu überreden. Zudem stehen wir in regem Austausch mit DK3XT, Bernd und dessen VHF-Datenbank-System im Internet. (Datenupdates werden automatisch ständig zwischen uns ausgetauscht!). Sobald wir die neue Ausgabe fertiggestellt haben, werden wir erneut über diesem Weg berichten!

VHF-Database, Update

Hello dear VHF friends, the VHF-DX-Group DL-West has built up a VHF database, to spread infos abt activities and locations of active DXers. A new issue is planned for the comming autumn! Therefore it is necesarry to ask from time to time about your details and updates. Please send in your details or call / locator of new active stations on VHF / UHF & up. (Calls changed in PA!!! new issues? - Calls changed in DL!!! new issues! - new licenced DO/DM stations - input pse....) Please be so kind to send it back to DL8EBW:

PR-BBS: DB0NDK.#NRW.DEU.EU, DX-Cluster: DB0NOR-9, via EMail: dl8ebw@qsl.net. We will try again to pass this database to several european dx-clusters (in between in use at: DB0MDX, DB0NOR-9, DB0SUE-7, DB0ZWI-8, DB0FHK-6 DB0ADX(*), DB0SDX(*), DB0ERF-6/-7; (*)=older versions) and also to some logbook programm authors (planned is an implementation to EA6VQs VQLog!) to have a good possibility for everybody to use these data. Bye the way, we are also in direct exchange to the DK3XT VHF-Database. If you need our latest database (1.50 from 10/98) at your own computer send us an SASE (equal to 2,20DM) and 3 Dollar or 5 DM and you will receive a packed diskette (1,44MB) with DBase III file (or as a file to your e-mail adress). The complete database will **not** be made available via Internet or PR-BBS!!!

Sample-File / Beispiel:

Call	Rufzeichen	DL8EBW
DXCC/WAE	Land	Germany
Locator	Lokator	JO31NF
PR-Address	PR-BBS	DB0NDK-8
PR-Cluster	PR-Cluster	DB0NOR-9
E-Mail	Internet	dl8ebw@qsl.net
Name	Nachname*	Mustermann
Op-Name	Vorname	Muster
Street	Strasse	* Musterstr. 1
Zip	Postleitz.	* 12345
Town	Stadt	* AFUtown
Birthday	Geburtstag*	11.11.1111
Tel.nr.	Telefonnr	* 0123/4567890
Fax.nr.	Fax-Nr.	* 0987/6543210
Activity	Aktivität	HF-50-144-ms-eme, 432-ms, vhfnet-ukw/tv/dx
RIG	Equipment	2: 250Watt, 11el, MGF1302
NOF/CW	CW-QRG	144.119 / 2000lpm tx/rx
NOF/SSB	SSB-QRG	144.379
Update	Update	06/98

NOF CW/SSB = sked frequency for MS, EME, Contest etc.! Meist genutzte QRG für MS, EME, in Kontesten usw.!

(*) = These marked details will **not** be spread around. Die so gekennzeichneten Daten werden **nicht** verteilt!

Kind regards - I hope to hear from you soon, September 1999, DL8EBW

DUBUS Toplist

Editor: Norbert Goettsche, DL8LAQ

DUBUS 50 MHz Top List

NR	CALL	WW	WK	DC	TR	AU	MS	ES	F2
1	ON4KST	JO20	742	151	801	1415	1509	7920	16498
2	DL7QY	JN59	674	133	741	1665	2186	6900	16353
3	PA0RDY	JO22	651	0	725	1617	1597	****	16320
4	G4IGO	IO80	627	0	578	1308	2528	7301	16188
5	ON4PS	JO20	606	125	752	1740	1902	6520	16358
6	G4UPS	IO80	603	0	0	0	0	0	0
7	ON4GG	JO20	595	0	741	1757	1695	7243	16547
8	ON4ANT	JO20	576	0	710	1757	1695	7243	16547
9	G6HKM	JO01	552	0	347	1883	780	5674	16112
10	PA2TAB	JO32	512	132	762	1370	1809	5797	15339
11	GW4LXO	IO81	500	0	300	650	1200	7500	10000
12	DL8HCZ	JO53	479	0	365	1250	1356	3350	0
13	I4XCC	JN63	477	0	707	0	1427	3349	18627
14	F8OP	JN26	458	0	631	1023	1369	5508	13547
15	OK1DDO	JO60	454	93	620	1423	1340	6100	13300
16	DL3AMA	JO51	419	83	519	1431	1600	4001	10345
17	F1GTU	JN05	418	0	699	815	1421	3268	16400
18	SP6GZZ	JO81	407	0	515	0	1826	8103	0
19	DL9GU	JN49	402	0	721	450	0	8500	15625
20	DL6NCI	JO50	393	101	514	1294	505	7815	14239
21	SP4MPB	KO03	391	0	520	1836	1507	8290	0
22	OK1IBL	JO60	377	77	530	1320	1717	6941	11816
23	PA3FYM	JO22	375	0	1238	2019	0	****	16373
24	ES1CW	KO29	372	71	530	1968	2116	5253	9263
25	SP6GWB/P	JO80	360	68	696	629	1880	7540	8567
26	DL4ALI	JO50	359	73	464	628	1024	3969	10313
27	OK1FFD	JO60	354	79	580	1231	1067	6250	13300
28	OK1FAV	JO60	343	75	0	579	1093	6250	10366
29	OK1VBN	JN78	338	60	455	0	897	5793	0
30	SM3BIU	JP73	336	77	907	1704	1982	4414	0
31	OK1MAC	JN79	336	0	0	0	0	0	0
32	PE1OGF	JO21	332	76	0	0	0	0	0
33	YO2IS	KN05	325	0	270	1155	1404	6942	14292
34	SM7JUQ	JO65	324	84	372	1349	1062	3900	14070
35	DL7ARM	JO62	315	0	909	1189	1245	8324	15817
36	ES2RJ	KO29	313	59	345	1726	2052	4642	0
37	F8CS	JN27	313	68	336	0	0	7454	9753
38	HB9AOF	JN36	312	77	500	0	0	5400	10663
39	ES6QB	KO37	310	74	450	625	0	5145	13410
40	F5PAU	IN88	306	75	0	0	0	0	0
41	OZ7IS	JO65	296	81	410	1294	850	3100	0
42	F5DE	JN05	293	76	860	0	0	2304	12539
43	YL3AG	KO26	287	53	397	1817	0	6420	0
44	SP2IQW	JO94	286	57	556	1537	1470	2767	0
45	OK2ZW	JN89	286	85	0	0	0	0	15580
46	HB9STY	JN36	280	65	367	0	1431	4448	7810
47	DF7RG	JN68	277	62	496	1569	0	3230	14153
48	IW5AVM	JN52	275	55	768	0	1712	3056	7839
49	F1FIH	JN23	273	98	796	0	1637	2492	15613
50	IK5OIY	JN52	262	0	332	0	1444	2826	8305
51	DL3YEE	JO42	261	0	540	1056	1300	2700	13053
52	ES1AJ	KO29	261	51	415	1710	1850	3340	0
53	ES1II	KO29	259	52	335	1569	0	3325	0
54	DL1SUZ	JO53	258	60	546	1434	865	5921	8020
55	ES2WX	KO29	257	53	336	1063	1847	4651	0
56	ON5SE	JN29	257	78	0	0	0	0	0
57	I3ZVN	JN55	254	65	532	0	0	5742	8422
58	ES2NA	KO29	252	52	415	352	1843	3340	9276
59	DL2DR	JO31	247	20	1003	0	0	4769	2001
60	OK1VQ	JO60	245	46	245	539	0	2002	2755
61	OE3OKS	JN87	243	45	467	0	0	7985	0
62	DL7YS	JO62	240	60	342	461	1086	3547	8767
63	ES5DE	KO38	239	56	228	606	0	5299	8249
64	DL5BBL	JO42	237	0	414	1008	0	3975	5863
65	ES1MW	KO29	232	52	315	650	0	2855	0
66	DJ6XV	JO31	221	48	401	0	1130	3232	0
67	CT1BGE	IM58	215	0	0	0	0	0	0
68	DL6BF	JO32	207	71	574	1108	0	3058	8011
69	SP5HEJ	KO02	206	0	568	0	1838	4699	0
70	ES5MC	KO38	205	58	432	1786	0	5143	13142
71	YU1VG	JN94	201	50	1766	0	1450	3666	1650
72	OK2PPP	JN99	201	40	0	0	0	3200	0
73	OK1UDX	JN79	198	47	333	1054	0	3513	0
74	SP2JXN	JO94	198	0	0	0	0	0	0
75	SP6MLK/P	JO80	195	39	437	0	1322	2062	0
76	OK1DKS	JO70	192	42	934	0	0	1973	8514
77	ES4NG	KO39	191	47	412	725	0	3105	0
78	PA2CHR	JO22	187	72	1334	909	0	5215	13966
79	DL8EBW	JO31	186	51	247	1050	1150	5800	0
80	ES5RY	KO38	177	36	317	0	0	3640	0
81	CT1DIN	IN60	174	37	1581	0	0	3169	0
82	SP6AZT	JO81	169	0	612	0	1168	4327	0
83	HB9RUZ	JN47	168	54	406	0	960	3585	0
84	DJ2XS	JO53	164	0	440	419	0	4155	0
85	G7LRQ	IO91	154	41	0	0	0	3574	0

DUBUS 144 MHz Top List

NR	CALL	WW	WK	DC	TR	AU	MS	ES
1	DK1KO	JO53	669	0	2124	2057	2210	3285
2	DK3WG	JO72	660	1	2243	2034	2295	2782
3	DF8LC	JO53	600	70	2105	2045	2226	3291
4	PA3BIY	JO22	588	63	1550	2026	2205	3143
5	DL8EBW	JO31	562	63	1454	1918	2059	2214
6	DL8HCZ	JO53	561	0	1615	1976	2096	3527
7	PA0RDY	JO22	561	0	1582	1979	2272	2819
8	OH5LK	KP30	517	0	1962	2041	2235	2891
9	SP6GZZ	JO81	512	0	1670	1794	2017	2717

10	SP9EWU	JO90	509	62	1710	1927	2154	2531
11	HA1YA	JN87	509	71	1548	1876	2183	2885
12	PA3FOC	JO21	509	59	1373	2010	2209	2326
13	OE3JPC	JN88	504	0	1584	1821	2128	2769
14	I2FAK	JN45	493	0	1797	1508	2405	2995
15	DJ7OF	JO51	489	63	1512	1518	2152	2156
16	I4XCC	JN63	486	0	1177	1803	2275	3257
17	DL5DTA	JO61	481	58	1344	1578	2045	2057
18	LY2WR	KO24	480	57	2051	2075	2347	3007
19	OZ1DOQ	JO65	467	58	1885	1940	1981	2888
20	DL8LAQ	JO43	461	0	1376	1806	1934	3302
21	ON4GG	JO20	459	0	1420	1965	2150	2124
22	IZ5EME	JN52	455	65	1590	0	2040	2893
23	PA2CHR	JO22	453	0	1432	1683	2240	3201
24	OH7PI	KP32	451	0	1902	1926	2151	2489
25	DD0VF	JO61	445	61	1736	1275	2017	2328
26	OK2ZW	JN89	445	56	1417	1775	2113	2471
27	DL3AMA	JO51	438	56	1785	1803	1925	2083
28	YU7EW	KN05	437	67	1404	1755	2179	2430
29	DK0OG	JN68	432	0	1708	1722	2172	3320
30	SP4MPB	KO03	431	0	1886	1764	2038	2697
31	DL7FF	JO62	430	0	1516	1379	2057	2312
32	OK2VMD	JN89	428	58	1662	1765	2031	3605
33	RX1AS	KN59	427	0	1709	1905	2271	2547
34	F8OP	JN26	425	0	1228	1196	2028	2720
35	PA4VHF	JO32	416	0	1536	1337	2085	2086
36	ES2WX	KO29	415	40	1370	1950	2270	2071
37	YU7MS	KN05	410	62	1319	1856	2160	2438
38	YO2IS	KN05	407	0	1360	1916	2130	2556
39	OK1FM	JN69	403	56	1843	1438	2200	2150
40	ON4ANT	JO20	399	0	1420	1965	2124	2725
41	DL7AKA	JO62	396	0	1747	1916	2065	3620
42	OK1MAC	JN79	392	0	1536	1681	2005	2511
43	ES6RQ	KO37	391	37	1500	1840	2172	1725
44	OK1JKT/P	JO60	389	51	1701	1764	2121	2269
45	F8CS	JN27	387	54	1161	1468	2124	3231
46	IW1AZJ	JN35	386	60	1115	1188	1971	2780
47	DH3YAK	JO31	380	55	1424	1162	2024	2650
48	UA3MBJ	KO88	374	0	1560	2006	2573	2392
49	HB9CRQ	JN47	369	0	1404	1288	2060	2959
50	DL1SUN	JO53	367	0	1824	1724	1845	2333
51	DL1KDA	JO30	366	59	1388	1924	2101	2339
52	I4YNO	JN54	366	63	1374	1374	2122	2276
53	SM7JUQ	JO65	365	41	1902	1646	1921	2332
54	DL6BF	JO32	363	50	1542	1932	1814	2332
55	ES2RJ	KO29	358	40	1190	1861	2000	2127
56	YL3AG	KO26	356	33	1552	1912	0	2448
57	OE3OKS	JN87	356	59	1441	1273	1867	2788
58	SM3BIU	JP73	353	32	1460	1844	2260	2242
59	S50C	JN76	351	61	1463	1530	2233	3356
60	DL7YS	JO62	348	53	1512	1528	1826	2136
61	PA2DWH	JO22	345	59	1230	1950	2150	2250
62	OH2BNH	KP20	344	37	1334	1787	2003	2003
63	YU1WP	JN94	341	53	1422	1850	2236	2825
64	UT1PA	KO21	340	0	1901	1934	1806	2425
65	YU7EF	KN05	340	58	1135	987	2248	2440
66	PE1OGF	JO21	338	58	1391	1602	1959	2259
67	SP6AZT	JO81	335	0	2080	1463	1710	2566
68	OK1DKS	JO70	334	56	1230	1308	0	3530
69	G3LQR	JO02	333	0	1776	2031	0	2406
70	DJ1LP	JO64	331	46	1347	1071	2058	2301
71	DL5GAC	JN47	330	0	1264	1876	2135	3079
72	F6DKW	JN18	328	51	1519	1602	2051	2755
73	DK1KR	JO53	324	0	1481	2103	0	2026
74	DB6BX	JO32	321	55	1534	1541	1921	2126
75	OK1MG	JO70	319	49	1526	1590	0	2632
76	F1FIH	JN23	317	52	1305	999	1829	2934
77	IK1PAG	JN35	317	0	1186	0	2123	2725
78	F5HRY	JN18	309	54	1276	1695	2038	2758
79	ES2XM	KO29	308	37	1389	2198	0	2222
80	SP3MFI	JO91	307	0	1697	1632	1802	2617
81	PA2TAB	JO32	304	53	1302	1239	2103	2183
82	G4YTL	IO91	303	0	1450	1774	2143	2172
83	OE6IWG	JN77	303	53	1221	1110	2220	2126
84	ES4EQ	KO39	302	39	1541	1840	2240	2245
85	I1JTQ	JN35	301	0	1106	1269	1825	2742
86	OK1AXH	JO70	300	0	2142	1486	1366	1768
87	SP6GWB/P	JO80	299	47	1780	1581	1875	2437
88	ON4KST	JO20	299	54	1435	1612	1940	2383
89	SM5BSZ	JO89	293	0	1764	1824	1938	0
90	OK1DFC/P	JO60	291	51	1775	2099	2024	2016
91	PA0WWM	JO22	291	49	1303	1839	1997	2212
92	OK1FFD	JO60	289	53	1388	1720	1964	2154
93	SP2JXN	JO94	286	0	1650	1690	0	2634
94	IN3TWX	JN56	283	0	1100	0	1609	1750
95	ES3GZ	KO28	281	35	1495	1720	2134	2101
96	LA8AK	JO38	280	0	1496	1804	1804	2413
97	ES5WE	KO38	278	32	1406	1695	1934	2530
98	G4IGO	IO80	274	0	2761	1917	1903	2833
99	DL1BKK	JO43	273	0	1513	928	0	2712
100	ON4PS	JO20	273	47	1449	1435	1822	2259
101	DK2BJ	JO30	272	46	1476	1924	0	2205
102	RZ6BU	KN84	272	0	1172	960	2017	2953
103	UA4NM	LO48	270	0	1215	1850	2510	2290
104	G6HKM	JO01	269	0	1304	1555	1660	2269
105	OK1IBL	JO60	266	50	1438	1462	2003	3398
106	IK5OIY	JN52	265	0	1048	0	2095	2253
107	OZ1IPU	JO57	262	40	1387	1187	1566	2452
108	GW4LXO	IO81	261	0	2750	1550	2000	2200
109	DH8GV	JO33	261	42	1565	1018	1102	2450
110	RK2FWA	KO04	261	0	912	1759	2125	2010
111	OK1HAG	JN79	260	0	1441	1749	1909	3463
112	F6CKZ	JN09	258	0	1552	1330	1721	3408
113	DK8EL	JO31	256	0	1199	1051	1870	1996
114	OM7AQ	JN98	253	49	1484	1294	1907	2483
115	ES1RF	KO29	252	30	1184	1820	1978	2084
116	YU1VG	JN94	248	47	1407	826	1727	2294
117	PE1WHO	JO21	246	47	1315	1250	2184	2257
118	DG1BA	JO43	245	0	1674	1280	1588	2239
119	DL1SUZ	JO53	244	45	1238	1661	1811	2006

120	LZ1ZX	KN32	243	0	1162	0	1945	2729	175	DL3YEE	JO42	178	0	1574	1450	1480	2106
121	DK1VI	JN49	241	0	1148	1107	1604	3131	176	DK5WO	JO30	177	35	1474	1219	0	1993
122	DF1IAZ	JN49	240	51	1038	1143	2069	1873	177	DK9RL	JN69	177	0	1311	1513	1286	3316
123	DG1VL	JO61	239	43	1373	1223	1817	2325	178	SP2IQW	JO94	174	28	1611	1611	997	1877
124	OK2QI	JO80	238	47	1475	1686	1380	2050	179	DG3HS	JO53	174	0	1152	1091	0	2306
125	OK1KEI	JO70	235	0	1861	1259	983	2067	180	HB9AOF	JN36	173	45	1201	670	1675	2166
126	UT7GA	KN66	234	0	1877	1446	2131	2617	181	OK1VEI	JO70	170	0	1677	1197	1398	0
127	OK2PNN	JN89	234	0	149	1216	0	3771	182	ES1AO	KO29	169	25	1162	1176	1792	2136
128	HB9DFG	JN37	232	49	1367	1299	1784	2302	183	OK1KRY	JN69	166	40	1437	977	0	1830
129	OK1PG	JO70	229	49	1773	0	0	3488	184	YU7ON	KN04	164	36	914	0	1897	2273
130	F5PAU	IN88	229	43	1630	0	0	2425	185	ON4ZN	JO21	163	32	1390	980	0	2149
131	LY2SA	KO14	227	40	1569	1742	2163	2088	186	ES1JL	KO29	163	17	1379	1596	0	0
132	G3XDY	JO02	226	38	1355	2049	1835	2124	187	DL0UL/P	JN48	163	0	1026	0	1342	2019
133	F5DE	JN05	225	40	1891	1671	1892	2399	188	DG0CAL	JO52	161	0	1160	0	1543	2105
134	OK1VMS	JO70	225	44	1692	1232	0	2225	189	UA4AQL	LO20	161	0	1124	1841	2158	2195
135	F1GTU	JN05	225	0	1650	967	1934	2400	190	SP9FG	JN99	158	30	1647	1283	0	1698
136	PA0ZM	JO32	225	42	1028	1771	2061	2246	191	ES1AW	KO29	158	25	1230	1680	0	1924
137	OK1VBN	JN78	223	45	1578	1682	1915	2209	192	OK1CA	JO70	156	0	1540	1065	950	2096
138	ES5EJ	KO38	218	30	1422	1804	0	2070	193	YZ7MON	JN95	156	31	1004	0	1653	2279
139	ES0IW	KO19	216	32	1545	1687	0	1861	194	ES0BI	KO18	154	21	1439	1823	1528	0
1409	A4EW	JN95	216	0	1075	0	1956	2293	195	RW3PF	KO93	153	0	1015	1840	0	2162
141	DL5BBL	JO42	215	0	1416	1290	0	2028	196	DJ6XV	JO31	152	34	1337	961	0	2007
142	DC6DY	JO31	212	0	1416	1045	1914	2292	197	ES2QN	KO29	152	22	1175	1460	0	2116
143	DG3XA	JO43	211	39	1371	1061	1839	2331	198	OZ7IS	JO65	151	32	1128	1294	1901	1845
144	OK1DDO	JO60	210	46	1329	1500	1720	2418	199	ES6PZ	KO38	151	20	1101	0	0	2532
145	UR7GN	KN66	208	0	1830	0	2010	1940	200	YU7KB	JN94	150	35	853	0	1874	2256
146	DH9NBB	JN49	207	47	1363	1228	1725	2039	201	UT5JCW	KN64	150	0	0	0	0	0
147	ES0NW	KO19	207	30	1060	1720	1797	1965	202	CT1FAK	IN50	149	25	2129	0	2250	2488
148	IK1LGV	JN44	204	0	1466	0	1613	1890	203	DK0PX	JN48	147	0	1161	0	1815	1649
149	SP5HEJ	KO02	201	0	1830	1705	1312	2313	204	ES1CW	KO29	142	21	1192	1570	0	2143
150	UY5HF	KN66	201	0	1750	0	1820	2032	205	OK2PMN	JN88	141	0	871	1547	887	2101
151	ES8RO	KO28	199	27	1802	1800	0	1780	206	DL0GTH	JO50	139	23	1124	0	0	0
152	OK1SC	JO70	198	0	1490	1673	0	1729	207	OK2UFB	JN99	136	27	1526	0	0	1983
153	DL8AAV	JO52	198	44	1236	1127	0	2144	208	RW4AK	LO20	136	0	1126	1480	2158	2301
154	DL9BDM	JO33	197	0	1538	1248	1659	2321	209	ES5QA	KO38	135	35	1665	1788	1555	2236
155	G6RAF	IO92	197	0	1507	1722	2078	2400	210	OK2KDS	JN99	134	0	1568	0	0	1983
156	DF9QX	JO42	197	0	1446	1070	1455	3320	211	DG5NEX	JN49	133	0	1234	0	1333	1941
157	ES0SM	KO08	196	31	1578	1767	1991	0	212	DL3IAS	JN49	130	36	988	1123	1830	1866
158	IT9VDQ	JM68	195	45	1676	0	2135	2491	213	OK1DTG/P	JO70	127	27	1351	1352	0	0
159	DK2DB	JN48	195	0	1239	1136	0	3106	214	RU3ZD	KO81	126	0	1713	2126	1755	2363
160	F1HDF/P	JN18	194	0	1452	0	0	2425	215	DL5IO	JN49	126	0	1073	925	1450	1899
161	ES1OX	KO29	194	18	1016	1449	1158	2121	216	LA7DFA	JP33	125	0	630	1816	1803	0
162	OE5VRL/5	JN78	192	0	1665	1573	1990	2157	217	F1PYW	JN38	124	30	936	888	1522	1958
163	PA0JUS	JO22	192	38	1409	1050	0	2167	218	HB9S/P	JN36	123	24	1135	0	0	0
164	DL2DR	JO31	190	39	1158	980	0	2057	219	S53J	JN75	123	27	1123	1036	983	1984
165	ES7RDR	KO27	189	31	1200	1750	1000	2101	220	DL3NAW	JN59	120	0	1019	0	1961	1237
166	ES0HD	KO18	187	23	1550	1918	0	0	221	F6FGO	JN25	118	31	1390	0	0	2218
167	UA3MHJ	KO87	186	0	1227	1943	2405	1948	222	OK2KJU	JN89	115	32	1318	1766	0	1494
168	DH0GHU	JN38	186	41	1170	0	2117	1937	223	YU7AZX	KN04	113	29	914	0	1389	2173
169	HB9MIO/P	JN37	185	0	1316	975	0	2183	224	OK2XTE	JN79	111	33	1362	0	0	2267
170	S59AM	JN65	184	0	1377	0	1945	1788	225	DL0SP/P	JO62	111	0	1315	785	0	1608
171	ES5RY	KO38	183	32	1198	1695	2002	1409	226	DJ8ES	JO43	106	19	1306	0	0	1856
172	UA3T	LO16	183	0	1163	1941	2145	0	227	DL5NEN	JN59	106	30	748	0	1767	1640
173	HB9RUZ	JN47	183	48	1060	1050	0	3014	228	ON7WR	JO20	106	24	0	0	0	1834
174	OK1IAS	JO60	179	34	1392	1444	0	2138	229	I3ZVN	JN55	97	31	1212	0	0	2237

230	OK2PHM	JN89	97	20	829	1265	0	2262	
231	ES1II	KO29	95	13	979	1570	0	0	
232	LA/DL7YS/P	JO37	93	22	1207	0	1673	0	
233	CT1DIN	IN60	91	18	1218	0	0	2338	
234	OK1UDX	JN79	91	19	537	0	0	0	
235	CT1DDW	IN60	90	17	2100	0	0	2500	
236	DK0FLT	JN49	90	23	1363	0	0	1656	
237	OL5Z	JN89	90	21	928	1527	0	0	
238	ES2QH	KO29	86	15	1072	1108	1517	0	
239	CT1CAD	IM67	85	18	1304	0	0	2249	
240	ES1DF	KO29	77	0	961	1080	0	0	
241	DL3AZI	JO51	76	0	969	0	1543	0	
242	SM4SJY	JP70	73	11	1262	870	0	1160	
243	F6OBT/P	JN19	73	11	0	0	0	0	
244	OK1HRR	JO70	66	16	762	0	0	1890	
245	CT1BGE	IM58	65	0	0	0	0	0	
246	G7LRQ	IO91	60	16	1088	0	0	0	
247	SP6MLK/P	JO80	58	16	853	756	0	1446	
248	DG7SFL	JN49	57	11	759	0	0	1750	
249	ES3BM	KO29	54	11	1128	0	0	0	
250	ON4LCV	JN29	50	10	857	0	0	0	
251	F5OIH/P	JN08	49	8	666	0	0	0	
252	JX7DFA	IQ50	45	0	1	1120	2211	0	
253	F1JKY	JN25	40	10	798	0	0	991	
254	IW1QD	JN44	37	10	1000	0	0	1358	
255	IW3HTU	JN55	34	11	1180	0	0	0	

DUBUS 432 MHz Top List

NR	CALL	WW	WK	DC	TR	AU	MS	ES
1	DJ9BV	JO43	219	0	2154	1863	1440	0
2	DK3WG	JO72	204	74	1547	1494	0	0
3	G3LQR	JO02	203	0	2031	1613	0	0
4	PA0RDY	JO22	202	0	1979	1807	1376	0
5	PA0EZ	JO22	195	35	1787	1445	0	0
6	PA0WWM	JO22	191	36	1547	1836	0	0
7	OZ7IS	JO65	188	32	1499	1048	1294	0
8	DL8QS	JO43	182	33	1513	1513	0	0
9	OK1AXH	JO70	181	0	1861	1239	0	0
10	DL7QY	JN59	173	0	1640	1848	1292	0
11	DJ6MB	JO30	171	0	1278	1733	0	0
12	DB6BX	JO32	169	32	1550	662	0	0
13	F6DKW	JN18	163	23	1519	0	0	0
14	HA1YA	JN87	163	40	1438	1221	0	0
15	G3XDY	JO02	163	27	1350	1619	0	0
16	LY2WR	KO24	162	25	1751	1593	1935	0
17	SP6MLK/P	JO80	160	30	1780	0	0	0
18	DK1KO	JO53	160	0	1643	694	0	0
19	DB6NT/A	JO50	154	0	1823	0	0	0
20	DF8LC	JO53	154	0	1615	1361	0	0
21	SP6AZT	JO81	154	0	1538	1087	0	0
22	PA4FP	JO33	152	0	2116	1010	0	0
23	DK1KR	JO53	152	0	1400	1827	0	0
24	SP6GWB/P	JO80	151	30	1780	759	0	0
25	OZ2OE	JO45	149	0	2216	1020	0	0
26	YL3AG	KO26	149	19	1571	1041	0	0
27	SM6ESG	JO67	148	26	1436	712	0	0
28	DH3NAN	JO50	147	0	1437	1008	0	0
29	SM7ECM	JO65	147	24	1389	1073	0	0
30	OK1CA	JO70	146	0	1670	0	0	0
31	DL3YEE	JO42	140	0	1574	1728	0	0
32	ES2WX	KO29	140	17	1232	1415	0	0
33	OK1KEI	JO70	138	0	1682	1185	0	0
34	OK1VEI	JO70	136	0	1532	811	0	0
35	DL1SUN	JO53	136	0	1157	1071	0	0
36	SP9FG	JN99	134	25	1660	0	0	0
37	OK1KIR/P	JO60	133	28	1773	0	0	0
38	SP9EWU	JO90	133	30	1589	1558	1664	0
39	PA0JUS	JO22	130	26	1340	0	0	0
40	OH5LK	KP30	129	0	1386	1196	0	0
41	DL1BKK	JO43	128	0	1513	565	0	0
42	LA8AK	JO38	124	0	1373	981	0	0
43	G6HKM	JO01	124	0	1289	281	0	0
44	G6RAF	IO92	122	0	1730	0	0	0
45	PA2CHR	JO22	122	31	1357	323	0	0
46	OE5VRL/5	JN78	121	0	1524	1031	0	0
47	DL4VCG	JN39	119	0	1335	0	0	0
48	OZ1IPU	JO57	118	18	1387	0	0	0
49	F5PAU	IN88	117	24	1630	0	0	0
50	OK1VMS	JO70	116	23	1434	972	0	0
51	OK2QI	JO80	114	25	1410	0	0	0
52	PA0BAT	JO31	114	21	1301	0	0	0
53	DL0UL/P	JN48	113	0	1238	0	0	0
54	DJ6XV	JO31	113	19	1128	970	0	0
55	PE1OGF	JO21	112	18	1288	0	0	0
56	DL6BCT	JO43	112	0	1152	0	0	0
57	SP6GZZ	JO81	110	0	1549	870	0	0
58	UA3MBJ	KO88	110	0	1306	1541	0	0
59	ON7WR	JO20	110	23	1163	0	0	0
60	GW4LXO	IO81	109	0	1550	0	0	0
61	DL7FF	JO62	109	0	1507	772	0	0
62	DK0OG	JN68	109	0	1459	745	0	0
63	HB9MIN/P	JN37	109	0	1300	0	0	0
64	ON4ZN	JO21	109	21	1132	0	0	0
65	F1HDF/P	JN18	108	0	1204	0	0	0
66	DH9NBB	JN49	107	24	1363	0	0	0
67	DL3AMA	JO51	107	21	1015	1219	0	0
68	DL0GTH	JO50	106	20	1113	0	0	0
69	DL4KG	JO31	105	21	1273	0	0	0
70	UT1PA	KO21	105	0	1238	1761	0	0
71	DF9QX	JO42	105	0	1136	721	0	0
72	ON4PS	JO20	104	21	1335	0	0	0
73	DK5WO	JO30	104	20	1150	0	0	0
74	DC4XH	JO43	104	20	1133	808	0	0
75	ES6RQ	KO37	103	19	1452	1148	0	0
76	DL2DR	JO31	103	21	1158	0	0	0
77	DL1KDA	JO30	102	22	1286	999	1334	0
78	OK1DKS/P	JO60	102	23	1118	0	0	0
79	UT7GA	KN66	101	0	1877	0	0	0
80	HB9CRQ	JN47	101	0	1010	0	0	0

81	ON4GG	JO20	98	0	1407	0	0	0	136	ES5WE	KO38	62	11	1406	0	0	0
82	F5HRY	JN18	98	18	1222	583	0	0	137	DL8AAV	JO52	62	15	914	0	0	0
83	ON4ANT	JO20	96	0	1406	0	0	0	138	DG7SFL	JN49	61	10	947	0	0	0
84	DH8GV	JO33	94	19	1259	0	0	0	139	DL3IAS	JN49	61	12	886	0	0	0
85	OK1KRY	JN69	93	23	1350	0	0	0	140	DD0VF	JO60	60	17	1106	0	0	0
86	RX1AS	KN59	93	0	0	0	0	0	141	F6FGO	JN25	60	11	1016	0	0	0
87	DK2DB	JN48	92	0	1331	0	0	0	142	ES0NW	KO29	59	17	1213	675	0	0
88	ES2XM	KO29	92	11	1271	1259	0	0	143	ES0SM	KO08	59	20	1202	925	0	0
89	DJ1LP	JO64	91	9	1414	0	0	0	144	UA4NM	LO48	58	0	1230	1310	0	0
90	DG5NEX	JN49	91	0	1187	0	0	0	145	OK2UFB	JN99	56	20	1232	0	0	0
91	G4LRT	IO92	90	0	1394	410	0	0	146	LA/DB1DI/P	JO37	55	12	1013	0	0	0
92	OK1KPA	JN79	89	0	1176	0	0	0	147	OK1PG	JO70	54	0	1773	0	0	0
93	DK0PX	JN48	89	0	1168	0	0	0	148	YO2IS	KN05	54	0	1020	1741	0	0
94	OK1OKL	JO60	88	0	1199	0	0	0	149	DH0GHU	JN38	53	12	852	0	0	0
95	DJ8ES	JO43	88	12	1087	0	0	0	150	OK1VBN	JN78	53	11	753	723	0	0
96	ES2RJ	KO29	87	17	1261	1123	0	0	151	ES3GZ	KO28	52	10	1035	0	0	0
97	DK9RL	JN69	87	0	1185	0	0	0	152	DL5BBL	JO42	51	0	841	722	0	0
98	OK1DFC/P	JO60	87	20	1179	0	0	0	153	OL5Z	JN89	51	12	761	0	0	0
99	DK1VI	JN49	87	0	1125	870	0	0	154	DL9BDM	JO33	50	0	1278	0	0	0
100	IW5AVM	JN52	86	20	1458	0	1670	0	155	SP2JXN	JO94	49	0	1149	0	0	0
101	DG0CAL	JO52	86	0	1160	0	0	0	156	S53J	JN75	49	9	688	0	0	0
102	DG1VL	JO61	85	15	1245	0	0	0	157	ES1JL	KO29	48	11	1324	0	0	0
103	UY5HF	KN66	84	0	1670	0	0	0	158	ES1RF	KO29	47	10	875	682	0	0
104	OE3JPC	JN88	84	0	1132	1450	1469	0	159	I2FUM/2	JN44	47	0	875	0	0	0
105	HB9MIO/P	JN37	84	0	1096	0	0	0	160	OM7AQ	JN98	47	13	803	0	0	0
106	S50C	JN76	84	18	977	0	0	0	161	F5OIH/P	JN08	46	5	651	0	0	0
107	HB9AOF	JN36	84	15	926	0	0	0	162	DL5NEN	JN59	46	13	630	0	0	0
108	ES0HD	KO18	83	19	1565	614	0	0	163	SM3BIU	JP73	45	3	917	763	0	0
109	DC6DY	JO31	83	0	1190	0	0	0	164	F5DE	JN05	45	6	740	0	0	0
110	DG3XA	JO43	83	13	905	0	0	0	165	I3ZVN	JN55	42	12	1197	0	0	0
111	OH2BNH	KP20	82	12	1235	1046	0	0	166	OK2KJU	JN89	42	13	731	0	0	0
112	F6CKZ	JN09	80	0	1302	0	0	0	167	OE1LPW	JN88	41	12	1114	0	0	0
113	DF1EQ	JO31	80	0	1249	0	0	0	168	OK1HRR	JO70	40	13	765	0	0	0
114	ES4EQ	KO39	80	16	1160	907	0	0	169	OK2PHM	JN89	39	9	746	0	0	0
115	DK0FLT	JN49	80	17	1103	0	0	0	170	DK2BJ	JO30	37	9	720	0	0	0
116	ES0IW	KO19	79	17	1342	906	0	0	171	G7LRQ	IO91	36	12	1208	0	0	0
117	OK2KDS	JN99	79	0	1212	0	0	0	172	SM4SJY	JP70	36	6	691	554	0	0
118	I4YNO/4	JN54	77	15	886	0	0	0	173	ES1AO	KO29	35	12	1131	0	0	0
119	DL5NEN/P	JN59	76	16	964	0	0	0	174	DF0RU	JO62	35	0	682	0	0	0
120	DL1SUZ	JO53	75	17	1218	0	0	0	175	ES0ZA	KO19	33	8	1077	0	0	0
121	DH3YAK	JO31	75	13	1165	0	0	0	176	OK2XTE	JN79	32	11	658	0	0	0
122	F1GTU	JN05	75	0	1114	0	0	0	177	ES1DF	KO29	32	7	511	0	0	0
123	OK1FFD	JO60	74	23	1339	0	0	0	178	ES1CW	KO19	32	7	500	688	0	0
124	DL7YS	JO62	74	17	1100	0	0	0	179	SP5HEJ	KO02	31	0	1347	850	0	0
125	OK1MG	JO70	74	18	1045	0	0	0	180	F1FIH	JN23	30	7	796	0	0	0
126	DG6GP	JN48	74	13	1024	0	0	0	181	ES0IC	KO18	30	7	673	0	0	0
127	OK1KRQ/P	JN69	73	16	1091	0	0	0	182	ER5MG	KO38	28	9	626	0	0	0
128	UR7GN	KN66	70	0	1790	0	0	0	183	ES5MG	KO38	28	9	626	0	0	0
129	OK1SC	JO70	70	0	1310	758	0	0	184	ES0BI	KO18	28	7	378	0	0	0
130	OK2PWY	JN89	70	17	1135	0	0	0	185	ES1CR	KO29	27	12	930	0	0	0
131	OK2PNN	JN89	69	0	918	0	0	0	186	OK2VMU	JN99	27	9	880	0	0	0
132	OK1DTG/P	JO70	68	14	1436	0	0	0	187	ES5QA	KO38	26	8	803	0	0	0
133	DL0SP/P	JO62	67	0	1018	0	0	0	188	ES0QY	KO18	25	8	650	0	0	0
134	SM7JUQ	JO65	65	15	1232	0	0	0	189	ES1AW	KO29	24	7	512	0	0	0
135	DL6BF	JO32	64	15	869	882	0	0	190	CT1DDW	IN60	23	3	2100	0	0	0

DUBUS 1296 MHz Top List

NR	CALL	WW	WKD	CODX
1	PA0EZ	JO22	132	231302
2	PA0WWM	JO22	126	231298
3	PA0RDY	JO22	121	01286
4	DL4VCG	JN39	119	01335
5	F6DKW	JN18	119	211273
6	OK1AXH	JO70	118	01444
7	G3XDY	JO02	117	221341
8	HB9AMH/P	JN37	114	01351
9	G3LQR	JO02	114	01274
10	DB6NT/A	JO50	107	01243
11	SM7ECM	JO65	98	171326
12	SM6ESG	JO67	97	191445
13	DB6BX	JO32	97	241120
14	SP6GWB/P	JO80	95	241580
15	DL6NAQ/P	JO40	92	401253
16	OK1KIR/P	JO60	92	221208
17	SP6MLK/P	JO80	91	231580
18	OE5VRL/5	JN78	91	181524
19	PA0BAT	JO31	90	191014
20	F5PAU	IN88	89	191630
21	G6DER	IO93	86	01306
22	DL7QY	JN59	86	01261
23	DK1KR	JO53	85	01097
24	OZ2OE	JO45	84	01425
25	DK0OG	JN68	82	01160
26	DL3YEE	JO42	82	01136
27	OK1KEI	JO70	81	01316
28	OZ1IPU	JO57	81	161096
29	PA4FP	JO33	81	0 939
30	OK1VEI	JO70	80	01313
31	OZ7IS	JO65	79	171205
32	F1HDF/P	JN18	79	9 886
33	DL1BKK	JO43	77	0 995
34	HB9AOF	JN36	77	15 975
35	F5HRY	JN18	74	111064
36	DL0UL/P	JN48	74	0 962
37	OK1DFC/P	JO60	73	161176
38	OZ1DOQ	JO65	71	171322
39	DH3NAN	JO50	71	01143
40	OK1AIY/P	JO70	70	01490
41	OK1CA	JO70	70	01421
42	PA0JUS	JO22	70	01265
43	G6HKM	JO01	69	01193
44	DK5WO	JO30	69	161137
45	DH9NBB	JN49	69	131016
46	HB9MIO/P	JN37	69	01000
47	DL2DR	JO31	68	131158
48	ON7YK	JO20	68	01079
49	DC4XH	JO43	67	141090
50	HB9RG	JN47	67	0 920
51	DF1EQ	JO31	67	0 908
52	G4PMK	IO93	66	01302
53	DL0GTH	JO50	66	151073
54	OK1VMS	JO70	65	181302
55	OK1OKL	JO60	63	01177
56	OK1DKS/P	JO60	62	131207
57	G4LRT	IO92	62	01152
58	DG5NEX	JN49	61	01060
59	ON4PS	JO20	61	131052
60	ON7WR	JO20	60	141046
61	ON4GG	JO20	60	0 982
62	SP9FG	JN99	58	151492
63	OK1FFD	JO60	58	141058
64	DF9QX	JO42	57	01066
65	ON4ANT	JO20	57	0 914
66	DJ6XV	JO31	56	11 946
67	DC8UG	JO30	56	10 900
68	DC0DA	JO31	55	01034
69	DJ8ES	JO43	55	101025
70	DL1SUN	JO53	54	01162
71	DL3NQ	JN49	51	0 920
72	DB1BX	JO32	51	12 905
73	DL1KDA	JO30	50	12 940
74	LA8AK	JO38	49	01373
75	LY2WR	KO24	49	141026
76	PA2CHR	JO22	49	15 828
77	GW4LXO	IO81	48	0 990
78	DL3IAS	JN49	48	9 769
79	DK0PX	JN48	47	0 942
80	SP9EWU	JO90	46	12 946
81	DK0FLT	JN49	46	10 900
82	F6CGB	JN18	45	0 700
83	DG0CAL	JO52	44	01160
84	HB9BBD	JN47	43	111015
85	DJ1KP	JO40	43	0 698
86	IW5AVM	JN52	42	101036
87	DJ6MB	JO30	42	0 876
88	OE3JPC	JN88	42	0 702
89	HA1YA	JN87	40	13 862
90	ES2RJ	KO29	40	9 765
91	OK1KRQ/P	JN69	39	11 962
92	DK2DB	JN48	39	0 873
93	DC6DY	JO31	39	0 865
94	LA/DB1DI/P	JO37	38	91013
95	F1GTU	JN05	36	0 896
96	YL3AG	KO26	36	9 800
97	I0LVA	JN62	35	01152
98	ES2WX	KO29	35	9 692
99	DK2BJ	JO30	34	10 885
100	DG1VL	JO61	34	7 723
101	S50C	JN76	34	9 626
102	DG6GP	JN48	33	7 732
103	DH3YAK	JO31	33	5 715
104	ES4EQ	KO39	33	9 636
105	ES6RQ	KO37	33	9 600
106	DJ1LP	JO64	30	0 922
107	UR7GN	KN66	30	0 820
108	I2FUM/2	JN44	30	0 779
109	DL1SUZ	JO53	30	12 777
110	ES5WE	KO38	29	71249
111	I3ZVN	JN55	28	91197
112	G7LRQ	IO91	28	8 746
113	DK1VI	JN49	28	0 710
114	UT7GA	KN66	28	0 680
115	DK9RL	JN69	27	0 891
116	I4YNO/4	JN54	27	8 769
117	ES0SM	KO08	26	8 873
118	F6FGO	JN25	26	4 839
119	HB9RUZ/P	JN47	25	9 640
120	OZ8VO	JO56	24	0 951
121	OK2QI	JO80	23	71275
122	OK1VBN	JN78	22	9 950
123	F1FIH	JN23	22	6 605
124	OK1PG	JO70	21	0 985
125	PE1OGF	JO21	21	6 588
126	OH5LK	KP30	20	01349
127	UA3MBJ	KO88	20	0 301
128	OK1KRY	JN69	19	7 865
129	OK1KPA	JN79	19	0 783
130	OK2BBF	JN89	19	8 563
131	F5OIH/P	JN08	17	5 517
132	SP6AZT	JO81	16	0 820
133	OK2VMU	JN99	16	7 472
134	S53J	JN75	16	6 410
135	DL5NEN	JN59	16	16 320
136	IW3HTU	JN55	15	4 838
137	ES1RF	KO29	15	5 506
138	DG7SFL	JN49	15	3 358
139	SM4SJY	JP70	14	3 628
140	ES1AJ	KO29	14	5 531
141	ES2XM	KO29	14	5 478
142	DL7YS	JO62	14	2 410
143	DF0RU	JO62	14	0 373
144	ES2WR	KO29	13	5 694
145	ES0Z	KO18	13	5 453
146	RX1AS	KN59	13	0 0
147	ES1NJ	KO29	12	4 507
148	SM7JUQ	JO65	11	61061
149	ES1MW	KO29	11	4 507
150	ES0W	KO18	11	5 443
151	DL5UH	JN48	10	4 671
152	OK1SC	JO70	10	0 440
153	OK2PWY	JN89	10	6 357
154	OK2KJU	JN89	10	6 347
155	OK2PHM	JN89	10	0 341
156	IT9VDQ	JN68	9	1 899
157	ES1OX	KO29	9	5 772
158	DL0SP/P	JO62	9	2 347
159	ES1DW	KO29	9	5 330
160	YO2IS	KN05	8	0 472
161	OK1DTG/P	JO70	8	2 323
162	OK1HRR	JO70	8	2 292
163	OM7AQ	JN98	7	5 426
164	ES1TCA	KO29	7	2 246
165	UY5HF	KN66	6	0 520
166	ES2NA	KO29	6	4 349
167	GU6WDK/P	IN89	6	0 348
168	OK2XTE	JN89	6	2 206
169	SP5HEJ	KO02	5	0 433
170	GJ6WDK/P	IN89	5	0 282
171	F8UM	JN15	5	0 220
172	ES0NW	KO19	5	2 190
173	DL3AMA	JO51	5	2 162
174	ES1AW	KO29	3	2 269
175	OK2UFB	JN89	3	2 142
176	ES1WQ	KO29	2	2 337

DUBUS 2320 MHz Top List

NR	CALL	WW	WKD	C	ODX
1	PA0EZ	JO22	79	15	973
2	PA0RDY	JO22	64	0	1000
3	PA0WWM	JO22	63	15	1022
4	DB6NT/A	JO50	60	0	1119
5	G3LQR	JO02	57	0	1006
6	DL6NAQ/P	JO40	53	11	932
7	OK1KIR/P	JO60	51	10	1115
8	SM6ESG	JO67	47	7	1054
9	DL7QY	JN59	47	0	1018
10	PA0BAT	JO31	45	12	923
11	DL1BKK	JO43	45	0	760
12	OE5VRL/5	JN78	44	11	1291
13	G6DER	IO93	44	0	1265
14	PA4FP	JO33	44	0	727
15	OK1AIY/P	JO70	42	0	1296
16	DL0GTH	JO50	41	7	1052
17	OZ1IPU	JO57	38	7	1028
18	SM7ECM	JO65	38	9	942
19	DC8UG	JO30	35	8	900
20	OK1OKL	JO60	34	0	830
21	DF1EQ	JO31	34	0	678
22	DL0UL/P	JN48	32	0	960
23	F5HRY	JN18	32	6	785
24	ON7WR	JO20	32	8	756
25	OZ2OE	JO45	31	0	876
26	DC0DA	JO31	31	0	775
27	DJ1KP	JO40	30	0	454
28	DL3NQ	JN49	29	0	890
29	OZ7IS	JO65	29	9	860
30	ON7YK	JO20	29	0	733
31	HB9MIO/P	JN37	29	0	694
32	DL3YEE	JO42	28	0	912
33	G4LRT	IO92	27	0	1022
34	G3XDY	JO02	27	8	947
35	DH9NBB	JN49	27	7	654
36	DL4VCG	JN39	27	0	553
37	DF9QX	JO42	26	0	915
38	DK0PX	JN48	26	0	853
39	OZ1DOQ	JO65	25	7	830
40	I0LVA	JN62	25	0	612
41	DK0OG	JN68	24	0	675
42	DK0FLT	JN49	24	7	646
43	G4PMK	IO93	22	0	1249
44	DK2DB	JN48	22	0	873
45	OK1DKS/P	JO60	22	4	602
46	DB1BX	JO32	22	7	525
47	DL3IAS	JN49	21	6	604
48	F1HDF/P	JN18	19	2	621
49	I3ZVN	JN55	19	7	603
50	DJ8ES	JO43	18	7	1025
51	HB9AMH/P	JN37	18	0	933
52	G4DDK	JO02	17	0	969
53	LA/DB1DI/P	JO37	17	7	825
54	DG5NEX	JN49	16	0	465
55	S51WI	JN75	16	4	463
56	OK1KRQ/P	JN69	15	4	350
57	DK1KR	JO53	13	0	792
58	SP6GWB/P	JO80	12	4	587
59	DJ6XV	JO31	12	3	396
60	OK1DFC/P	JO60	11	3	549
61	PA0JUS	JO22	10	5	705
62	IW5AVM	JN52	10	3	552
63	I2FUM/2	JN44	10	0	354
64	OK2BFF	JN89	10	6	308
65	OK1KEI	JO70	9	0	786
66	DL1SUN	JO53	9	0	349
67	SP9FG	JN99	8	4	717

DUBUS 3400 MHz Top List

NR	CALL	WW	WKD	C	ODX
1	PA0EZ	JO22	28	5	835
2	DB6NT/A	JO50	27	0	741
3	DL6NAQ/P	JO40	25	4	860
4	G3LQR	JO02	22	0	924
5	PA0WWM	JO22	21	5	850
6	PA0BAT	JO31	18	3	568
7	PA0RDY	JO22	18	0	520
8	DC0DA	JO31	17	0	660
9	G6DER	IO93	15	0	859
10	DL1BKK	JO43	15	0	703
11	DL3NQ	JN49	15	0	637
12	DL7QY	JN59	15	0	565
13	DC8UG	JO30	13	6	724
14	DF1EQ	JO31	13	0	532
15	DB1BX	JO32	12	4	425
16	PA4FP	JO33	11	0	464
17	DK2DB	JN48	11	0	331
18	G4PMK	IO93	10	0	845
19	DK0PX	JN48	9	0	632
20	G4LRT	IO92	9	0	509
21	DL0UL/P	JN48	9	0	239
22	DL0GTH	JO50	7	2	466
23	DL4VCG	JN39	6	0	339
24	OZ2OE	JO45	5	0	772
25	DJ8ES	JO43	5	3	578
26	DJ6XV	JO31	5	3	396

DUBUS 5760 MHz Top List

NR	CALL	WW	WKD	C	ODX
1	HB9AMH/P	JN37	36	0	929
2	PA0EZ	JO22	34	8	1017
3	SM7ECM	JO65	34	6	960
4	DB6NT/A	JO50	32	0	1000
5	HB9MIO/P	JN37	26	0	694
6	SM6ESG	JO67	25	6	951
7	G3LQR	JO02	23	0	949
8	PA0BAT	JO31	21	7	723
9	DL1BKK	JO43	19	0	689
10	OE5VRL/5	JN78	18	6	901
11	OZ1IPU	JO57	18	6	807
12	I3ZVN	JN55	18	7	573
13	PA0WWM	JO22	17	7	863
14	F1GHB/P	IN88	17	0	669
15	F1HDF/P	JN18	17	4	638
16	OK1KIR/P	JO60	17	3	393
17	OK1UWA/P	JO70	16	0	998
18	F5HRY	JN18	15	4	442
19	DL0UL/P	JN48	14	0	660
20	S51WI	JN75	14	3	586
21	I0LVA	JN62	14	0	557
22	G6DER	IO93	13	0	947
23	DL3NQ	JN49	12	0	318
24	DC8UG	JO30	11	5	724
25	OK1AIY/P	JO70	11	0	693
26	OZ7IS	JO65	11	4	593
27	DC0DA	JO31	11	0	451
28	DK2DB	JN48	11	0	315
29	DL7QY	JN59	10	0	565
30	S51JN/P	JN65	10	3	557
31	OK1OKL	JO60	9	0	611
32	DL6NAQ/P	JO40	9	2	452
33	OZ1DOQ	JO65	9	4	442
34	DB1BX	JO32	9	4	425
35	DK0PX	JN48	9	0	409
36	DL0GTH	JO50	8	4	674
37	HB9MIN/P	JN37	8	0	286
38	LA/DB1DI/P	JO37	7	5	746
39	IW3HTU	JN55	7	3	300
40	G4PMK	IO93	6	0	958
41	OK1DKS/P	JO60	6	1	318
42	DC8EC/A	JN57	6	0	278
43	I2FUM/2	JN44	6	0	201
44	OZ2OE	JO45	5	0	679
45	DJ8ES	JO43	5	5	578
46	DF1EQ	JO31	5	0	461
47	F6CGB	JN18	5	0	407
48	DJ6XV	JO31	5	2	176
49	DL4VCG	JN39	4	0	339
50	PA4FP	JO33	4	0	235
51	F8UM/P	JN05	4	0	162
52	DK0OG	JN68	4	0	78
53	DG1VL	JO61	3	2	191
54	OK2VMU	JN99	3	2	180
55	OK1KRY	JN69	3	2	175
56	F6CGB/P	JN24	2	0	375
57	G8BKE/P	IO80	2	0	242
58	OK2QI	JO80	2	0	108
59	ES2WX	KO29	2	2	89

DUBUS 10 GHz Top List

NR	CALL	WW	WKD	C	ODX
1	F6DKW	JN18	68	10	1215
2	PA0EZ	JO22	68	13	1017
3	F5HRY	JN18	56	8	877
4	G3WDG	IO92	55	0	1135
5	G4KGC	IO92	53	0	1135
6	HB9AMH/P	JN37	51	0	939
7	F1HDF/P	JN18	51	7	867
8	G3LQR	JO02	50	0	1006
9	SM7ECM	JO65	49	7	1110
10	PA0WWM	JO22	46	13	850

11	OE5VRL/5	JN78	45	11	1136
12	HB9MIN/P	JN37	45	0	939
13	DK1KR	JO53	45	0	868
14	PA0BAT	JO31	45	11	785
15	DB6NT/A	JO50	40	0	1000
16	DL3YEE	JO42	40	0	700
17	G4BRK	IO91	39	0	1115
18	I6XCK/6	JN63	39	0	702
19	SM6ESG	JO67	37	6	1275
20	OK1JKT/P	JO60	37	9	845
21	LX1DU	JN29	37	0	700
22	DL4EAU/P	JO51	35	9	826
23	I6CXB/6	JN63	35	0	751
24	G3GNR	IO70	34	0	1275
25	HB9RG	JN47	34	0	761
26	DJ1KP	JO40	34	0	554
27	DK0OG	JN68	33	0	524
28	I0LVA	JN62	32	0	850
29	DL6NAQ/P	JO40	32	8	656
30	G4DDK	JO02	31	0	901
31	DL3NQ	JN49	31	0	712
32	DM2AFN	JO61	31	5	662
33	DL1BKK	JO43	30	0	842
34	OZ1IPU	JO57	28	7	941
35	HB9MIO/P	JN37	28	0	694
36	DL0GTH	JO50	28	7	674
37	DL3IAS	JN49	28	9	584
38	DL6NCI	JO50	28	6	481
39	OK1OKL	JO60	27	0	795
40	OK1AIY/P	JO70	25	0	736
41	DK0PX	JN48	25	0	567
42	OK1KIR/P	JO60	25	5	553
43	F1GHB/P	IN88	24	0	669
44	DL1VAA	JO61	24	4	661
45	DK0FLT	JN49	24	7	646
46	DH9NBB	JN49	24	7	646
47	DK4GD/P	JN48	24	0	566
48	ON7WR	JO20	23	9	756
49	OZ2OE	JO45	22	0	789
50	EA6ADW/P	JM19	21	4	850
51	S51WI	JN75	21	5	586
52	I3ZVN	JN55	21	7	573
53	DC8UG	JO30	20	6	753
54	DB1BX	JO32	20	7	705
55	S51JN/P	JN65	20	7	563
56	DL4VCG	JN39	20	0	533
57	DF9QX	JO42	19	0	504
58	DK2DB	JN48	19	0	432
59	G4LDR	IO91	18	0	1118
60	LA/DB1DI/P	JO37	18	6	825
61	DL5NEN/P	JN49	18	6	466
62	DL2DR	JO31	17	4	603
63	DG1VL	JO61	17	3	391
64	DL0UL/P	JN57	17	0	363
65	ON7YK	JO20	16	0	494
66	OK1KRQ/P	JN69	16	3	325
67	HB9AMH	JN37	15	0	567
68	DL7QY	JN59	15	0	492
69	OK1DFC/P	JO60	15	2	490
70	OK1UWA/P	JO70	15	0	434
71	IW5ADB	JN53	14	0	1053
72	G4PMK	IO93	14	0	958
73	DC0DA	JO31	14	0	639
74	I4XCC	JN63	13	0	496
75	OZ1DOQ	JO65	13	5	472
76	PA4FP	JO33	12	0	555
77	GW4LXO	IO81	12	0	309
78	G4KNZ	IO91	12	0	247
79	OK1DKS/P	JO60	11	2	616
80	S50C	JN76	10	3	346
81	DJ6XV	JO31	10	3	285
82	F6CGB	JN18	9	0	677
83	DJ8ES	JO43	9	4	593
84	DC8EC/A	JN57	9	0	297
85	G4LRT	IO92	8	0	824
86	F5HRY/P	JN08	8	2	491
87	DL1KDA	JO30	8	4	477
88	SP6GWB/P	JO80	8	4	457
89	F5PAU	IN88	8	0	264
90	F6CGB/P	JN12	7	0	823
91	DF1EQ/P	JO31	7	0	283
92	SP6MLK/P	JO80	6	4	355
93	ES0SM	KO08	5	2	384
94	DG0CAL	JO52	5	0	255
95	LA8AK	JO38	5	0	212
96	OK2QI	JO80	4	0	303
97	G8BKE/P	IO80	4	0	242
98	F5OIH/P	JN08	4	1	149
99	DH3NAN	JO50	3	0	134
100	PA0JUS	JO22	2	2	245

DUBUS 24 GHz Top List

NR	CALL	WW	WKD	COD	X
1	HB9MIN/P	JN37	12	0	396
2	DC8EC/P	JN57	10	0	301
3	HB9AMH/P	JN37	10	0	286
4	HB9MIO/P	JN37	10	0	172
5	DJ1KP	JO40	8	0	273
6	OE5VRL/5	JN78	8	3	273
7	DB6NT/A	JO50	6	0	301
8	S51JN/P	JN65	6	2	293
9	OK1AIY/P	JO70	6	0	281
10	G4DDK	JO02	6	0	268
11	EA6ADW/P	JM19	6	2	226
12	DK4GD/P	JN48	6	0	184
13	G3WDG	IO92	5	0	392
14	PA0EZ	JO22	5	3	391
15	DL3NQ	JN49	5	0	287
16	IW3EHQ/P	JN66	5	1	278
17	G3LQR	JO02	5	0	261
18	SM6ESG	JO67	5	1	242
19	OK1KIR/P	JO60	5	2	227
20	I3ZVN	JN55	5	2	210
21	DK0OG	JN68	5	0	193
22	OK1OKL	JO60	5	0	185
23	DF2CA/P	JN58	5	0	142
24	PA0BAT	JO31	5	2	131
25	OK1UWA/P	JO70	4	0	188
26	OK1DFC/P	JO60	4	2	185
27	DK0PX	JN48	4	0	168
28	F1GHB/P	IN88	4	0	158
29	G3GNR	IP70	4	0	154
30	DL3YEE/P	JO42	4	0	151
31	DL2DR	JO31	4	1	98
32	DL6NCI	JO50	3	3	280
33	OK1AIY-P	JO60	3	0	227
34	G4KNZ/P	IO83	3	0	120
35	DG1VL	JO61	3	2	113
36	F5HRY	JN18	3	1	82
37	DF1EQ	JO31	2	0	133
38	DL0GTH	JO50	2	1	108
39	DB1BX	JO32	2	1	90
40	DK2DB	JN48	2	0	48
41	ON7YK	JO20	2	0	34

DUBUS 47 GHz Top List

NR	CALL	WW	WKD	COD	X
1	HB9MIN/P	JN37	8	0	182
2	HB9MIO/P	JN37	8	0	166
3	HB9AMH/P	JN37	5	0	166
4	DK4GD/P	JN47	5	0	123
5	DF2CA/P_	JN58	4	0	15
6	OE5VRL/5	JN78	3	2	203
7	DL2DR	JO31	3	1	71
8	I3ZVN	JN55	2	1	179
9	IW3EHQ/P	JN65	2	1	106
10	OK1OKL	JO60	2	0	96
11	OK1UWA/P	JO70	2	0	96
12	OK1AIY-P	JO60	2	0	96
13	DB6NT/A	JO50	2	0	95
14	DL6NCI	JO50	2	2	83
15	DC0DA/P	JO31	2	0	69
16	DK0PX	JN48	2	0	62
17	DF2CA/P	JO60	2	0	59
18	DL3YEE/P	JO42	2	0	45
19	DL/HB9AMH/P	JN48	1	0	184
20	IW3HTU	JN55	1	1	49
21	DC8EC/A	JN57	1	0	14
22	OK1AIY/P	JO70	1	0	12
23	OK1KIR/P	JO60	1	1	5
24	CT1DMK	IN50	1	1	1
25	SP6MLK/6	JO70	1	1	1
26	CT1FP	IN50	1	1	1

DUBUS 145 GHz Top List

NR	CALL	WW	WKD	COD	X
1	DB6NT/OZ	JO57	1	0	3
2	IW3EHQ/P	JN65	1	1	2
3	DB6NT/A	JO50	1	0	2

DUBUS 241 GHz Top List

NR	CALL	WW	WKD	COD	X
1	DB6NT/A	JO50	1	0	2
2	DB6NT/OZ	JO57	1	0	0

Beacon List

Editor: Joachim Kraft, DL8HCZ

Beacons sorted to Frequency (>= 432MHz)

CALL	WW	POWER	ANTENNA	QTF	ASL	MODE	
KH6HME	**432,074**	BK29GO	300W ERP	2X22Y	TO CA	2501	
S55ZNG	**432,128**	JN65UU	0,1W			643	
UZ3UZA	**432,204**	LO06LX					A1A
U6Y	**432,255**	LN04BO	1.5W	DIPOLE	0/180		A1A
UT5EC	**432,280**	KN78MM		4 X YAGI	OMNI	180	A1A
UW3JL	**432,300**	KO76	5W	TURNSTILE	OMNI		A1A
UT5G	**432,370**	KN66LS	5W	DIPOLE	180/360	80	A1A
OE3XAA	**432,378**	JN88BA	1W ERP	4EL. YAGI	NNE	840	A1A
UB4RXI	**432,400**	KO51TU	5W	3 ELE.	180		A1A
UT3BW	**432,400**	KN29UA	2W	CROSSDIPOLE	OMNI	365	
SR0JN	**432,556**	JO81SX					F1A
UA9C	**432,579**	LO96WW	1W	TURNSTILE	OMNI		A1A
UZ6AWA	**432,579**	KN95LB	3W		OMNI		A1A
PI6SHF	**432,637**	JO22MG	1W	6 DB	180	150	F1A
PI6UHF	**432,675**	JO21VX	1W	QRT FOR EVER			
UZ9AWA	**432,750**	MO05QD					A1A
DB0GD	**432,800**	JO50AL	1W	SLOT	N/S	926	A1A
F1X..	**432,804**	JN23	10W	PROPOSAL	OMNI		
IT9B	**432,805**	JM67LX	50W ERP	10EL. YAGI	N	825	A1A
OE3XMB	**432,807**	JN77TX	5W	11 EL YAGI	337 DEG	1154	A1A
DB0OB	**432,810**	JN69EQ	1W	SLOT	OMNI	825	A1A
GB3WHA	**432,810**	JO01BA	25W ERP	2*8+8EL. YAGI	NW/E	165	F1A
DL0BQ	**432,815**	JN49HP			OMNI	104	
SK7UHI	**432,815**	JO76	30W ERP	HORIZONTAL	0	120	QRT
LA8UHF	**432,820**	JO59DD	50W ERP	8EL. YAGI	180	30	A1A
DB0ABG	**432,825**	JN59WI	2W	BIG WHEEL	OMNI	522	A1A
I0B	**432,825**	JN61ES	40W ERP	4*MINI WHEEL	OMNI	30	A1A
OH2UHF	**432,825**	KP20VJ	20W	2 X DIPOLE	N/E	15	
F5XBA	**432,830**	JN18KF	10W	4*HB9CV	OMNI	166	F1A
I1H	**432,830**	JN35SH	20W ERP	2EL. YAGI	S	625	A1A
LA7UHF	**432,830**	JP20LG	200W ERP	4 ELE	360	30	
ES0UHF	**432,835**	KO18CW	30WERP	X-DIPOLE	OMNI	105	A1A
DB0KI	**432,840**	JO50WC	10W ERP	DIPOLE	OMNI	1025	F1A
OH6UHF	**432,840**	KP13GM	7WERP	3 X BIG WHEEL	OMNI	55	A1A
DB0LBV	**432,845**	JO61EH	2W	2 X SLOT HORIZ	OMNI	234	A1A
LA9UHF	**432,845**	JP40CM	250W E	2X13ELE	33	1000	A1A
9A0BUH	**432,847**	JN85JO	1W ERP				
DL0UB	**432,850**	JO62KK	10W	MALTESER KREUZ	OMNI	120	A1A
I5B	**432,850**	JN53KN	20W ERP	2 X 10 ELE	N/W	56	A1A
LA5UHF	**432,855**	JP66WX	100W ERP	10 EL. YAGI	15	1110	QRT
SK3UHF	**432,855**	JP92FW	10W	HORIZONTAL	OMNI	200	A1A
I2B	**432,860**	JN45NT	35W ERP	2*10EL. YAGI	SE/SW	490	A1A
LA1UHF	**432,860**	JO59IX	10W ERP	MINI WHEEL	OMNI	364	QRT
F5XAG	**432,863**	IN93WC	40W	2X10 ELE	N/NE	550	F1A
LA6UHF	**432,865**	KP59AL	50W ERP	10 EL. YAGI	200		QRT
EI2WRB	**432,870**	IO62IJ	50W	5 EL.NBS	E	248	A1A
I2H	**432,870**	JN55DN	2W ERP	TURNSTILE	OMNI	990	A1A
PI7HVN	**432,873**	JO22CW					

CALL	QRG	WW	POWER	ANTENNA	QTF	ASL	MODE
LZ1KDZ/B	432,874	KN32FR	1W	DIPOLE		1000	
I2U	432,875	JN45ST	30W ERP	2*TURNSTILE	OMNI	1330	A1A
SK2UHF	432,875	JP94WG	300W ERP	2*20 EL. COLL	0/180	445	A1A
9A0BUV	432,878	JN95JG	.15 W	QRV 7.6.98			
HB9G	432,880	JN36BK	1W	2*CROSS DIPOLE	OMNI	1628	A1A
IV3B	432,880	JN65WR	4W ERP	TURNSTILE	OMNI	418	A1A
LA3UHF	432,880	JO38RA	29W ERP	15EL. YAGI	180	12	QRT
OK0EP	432,885	JO80OC	2X6W ERP	2*3EL. YAGI	W+SE	1500	F1A
OY6UHF	432,885	IP62NA	120W ERP	4 ELE.	SE	300	A1A
F5XAZ	432,886	JN06KN	50W ERP	BIG WHEEL	OMNI	144	F1A
OM0MUA	432,888	JN88NE	.08WERP		E/W	570	
GB3SUT	432,890	IO92CO	10W	2X8 EL.YAGI	0/135	270	F1A
I8B	432,890	JM70WO	12W ERP	2*MINI WHEEL	OMNI	250	A1A
LA4UHF	432,890	JO29PJ	50W	10 EL.YAGI	200	75	A1A
OZ4UHF	432,895	JO75KC	20W ERP	BIG WHEEL	OMNI	154	A1A
DB0YI	432,900	JO42XC	4W	BIG WHEEL	OMNI	480	A1A
I0H	432,900	JN61IS	4W ERP	2*MINI WHEEL	OMNI	373	A1A
YU1UHF	432,900	KN04OO	1W	2 X QUAD	N/NW	196	
DF0VF	432,905	JO50EU		PROPOSAL	OMNI	910	F1A
IT9S	432,905	JM77NO	3W	2XTURNSTILE	OMNI	250	A1A
PI7QHN	432,905	JO22FH	1W	GAIN 3DB	OMNI	20	F1A
SK4UHF	432,905	JO79LK	50W ERP	4*10EL.LOG.PER.	OMNI	270	A1A
GB3MLY	432,910	IO93EO	50W ERP	8+8EL. YAGI	150	600	F1A
DB0AD	432,913	JO30XJ	1W	2XHYBRIDQUAD	E/N	320	A1A
FX3UHB	432,918	IN78VC	15W	BIG WHEEL	QRT NOW	285	F1A
DB0UBI	432,920	JO42GE	12WERP	8/8 YAGI	30	125	F1A
SK7UHF	432,920	JO77BQ	15W ERP	BIG WHEEL	OMNI	350	QRT!
DB0JG	432,925	JO31GT	1W	CLOVER LEAF	OMNI	45	F1A
SK6UHF	432,925	JO67EH	10W ERP	CLOVER LEAV	OMNI	175	A1A
HG5FMV	432,930	JN97KR	0,1W	SLOT	360	690	
OZ7IGY	432,930	JO55VO	300ERP	9ELE	45	93	A1A
OK0EA	432,933	JO70UP	0.25W	2*15EL. YAGI	W/SW	1355	F1A
GB3BSL	432,934	IO81QJ	250WERP	4 X 3 ELE	90	235	F1A
DL0UH	432,940	JO41RD	1W ERP	V-DIPOLE	OMNI	385	A1A
SK7UHH	432,940	JO86GP	100W ER	2*CLOVER LEAF	OMNI	45	A1A
DB0LB	432,945	JN48NV	0.2W	CORNERDIPOLE	N/S	367	F1A
DB0OS	432,945	JO40CW	0.1W	SLOT	W	745	F1A
HG6BUA	432,945	KN07AU				1050	A1A
OH9UHF	432,945	KP36OI	50 ERP	9DBD	200	307	A1A
CT0RIB	432,950	IM59SK					
DB0IH	432,950	JN39ML	1W	BIG WHEEL	OMNI	630	F1A
S55ZRS	432,950	JN67MC	1W	SLOT DIPOL		1219	
SK1UHF	432,950	JO97CJ	50W	SLOT	OMNI	60	A1A
SK1VHF	432,950	JO97CJ	50W	3DB	OMNI	60	A1A
OZ1UHF	432,955	JO57FJ	10W	BIG WHEEL	OMNI	150	A1A
DF0ANN	432,965	JN59PL	1W	BIG WHEEL	OMNI	630	
GB3LER	432,965	IP90JD	2W	12 ELE	SSE		
OK0EO	432,965	JN89QQ	50MW	CROSS DIPOLE	OMNI	610	F1A
GB3MCB	432,970	IO70OJ	5W ERP	4EL. YAGI	45	320	F1A
OK0EB	432,970	JN78DU	50MW	3*DIPOLE	OMNI	1100	F1A
DB0JW	432,975	JO30DU	50W ERP	????	NE	225	F1A
DL0SG	432,975	JN69KA	5W	4 X 11 ELE		1024	
HG1BUA	432,975	JN87FI	0.3W	HYBRID QUAD	90		A1A
OH7UHF	432,975	KP32TW	1,5/15	6DBD	225	215	
SK5UHF	432,975	JP80SA	80W ERP	HORIZONTAL	0/180	90	QRT
F5XAS	432,978	JN12BL	50W	PROPOSAL	NNE	2400	F1A
GB3ANG	432,980	IO86MN	100W ERP	9EL. YAGI	170	370	F1A
OK0EC	432,980	JO60CF	80MW	10EL. YAGI	E	790	F1A
S55ZCE	432,980	JN76OH	0,07W	GP	OMNI	574	
SR5UHW	432,983	KO02OF	1,5W	DQ	OMNI	130	A1A
HB9F	432,984	JN36XN	15W ERP	CORNERREFLECTOR	N/S	3581	F1A
OZ2ALS	432,984	JO44WX	8W	2 X SLOT	OMNI	28	A1A
DB0VC	432,990	JO54IF	10W ERP	4*DOUB.HYBR.QUAD	OMNI	300	F1A
ON4UHF	432,992	JO20ET	1W	BIGWHEEL	OMNI	150	

CALL	QRG	WW	POWER	ANTENNA	QTF	ASL	MODE
KH6HME	1296,000	BK29GO	2500ERP	4XLY	TO CA	2501	
DF6VB	1296,004	JO31QP	0.15W ERP		S	85	F1A
DF0RB	1296,020	JO51GO	1,3	HORN	270	672	TEST
DF5EO/A	1296,025	JO31DV	0.8W	DBL.HELICAL	OMNI	170	F1A
HB9BBD/P	1296,050	JN47GA	10W	3 X DIPOLE	0	1662	F1A
S55ZNG	1296,063	JN65UU				643	
K3SIW/B	1296,070	EN52	20W	CORNER	90		
UT5EC	1296,170	KN78MM		4 X YAGI	OMNI	180	A1A
DB0VC	1296,220	JO54IF	12WERP	2 X BIGWHEEL	OMNI	300	
S55ZRS	1296,380	JN76MC	1W	DIPOLE		1219	
YU1UHF	1296,400	KN04OO	0,5W	4 X QUAD	N/NW	196	
PI6ASD	1296,642	JO22JH	1W	QRT NOW!	OMNI	30	F1A
FX6UHY	1296,739	JN38PJ	4W ERP	BIG WHEEL	OMNI	1070	F1A
DB0GD	1296,800	JO50AL	1,5W ERP	VERTICAL STACKED		926	A1A
DB0JS	1296,800	JN59GB	5W ERP	SLOT	OMNI	700	A1A
OE3XMB	1296,800	JN77TX		PROPOSAL			
SK6UHI	1296,800	JO66LJ	50W ERP	CLOVER LEAF	OMNI	230	A1A
DB0GP	1296,805	JN48WQ	4W ERP	4*5EL. YAGI	OMNI	760	F1A
DB0ZW	1296,810	JN69EQ	1W	SLOT	OMNI	825	
FX6UHX	1296,812	JN37NX	1W ERP	4ELE	SE	1278	F1A
DB0VI	1296,815	JN39MF	1W	13EL. YAGI	??	400	F1A
I4C	1296,815	JN54PK	4W ERP	2*MINI WHEEL	OMNI	444	A1A
SK7UHI	1296,815	JO76	20W ERP	HORIZONTAL	OMNI	120	QRT
PI7DIJ	1296,818	JO33AI	1W	9 ELE YAGI	200	20	F1A
DB0OT	1296,820	JO32QR	1W ERP	BIG WHEEL	OMNI	80	F1A
HB9G	1296,820	JN36BE	10WERP	VERTIKAL	OMNI	455	
LA8UHG	1296,820	JO59JW	10W ERP	14 ELE	160	364	A1A
DB0ABG	1296,825	JN59WI	0,5W	SLOT	OMNI	522	
DB0HF	1296,825	JO53BO	0.3W	BIG WHEEL	OMNI	65	F1A
DB0OP	1296,825	JN59WI	0.5W	4EL. YAGI	N	522	F1A
OE1XTB	1296,825	JN88	8W	4 X DIPOLE		190	
GB3MHL	1296,830	JO02PB	500W ERP	2*32ELSLOT.WAVEG	W/E	85	F1A
I1I	1296,830	JN35SH	20W ERP	SQUARECORNER	S	625	A1A
SK0UHG	1296,835	JO89WI	10W ERP	DOUBLE HELICAL	OMNI	55	A1A
DB0AJ	1296,837	JN57VX	10W	6EL. GROUP	N/W	720	A1A
DB0KI	1296,840	JO50WC	80WERP	SLOT	OMNI	1025	A1A
OH6SHF	1296,840	KP13GM	8WERP	DIPOL	OMNI	55	
DB0LBV	1296,845	JO61EH	2W	2X4ELE SLOT	OMNI	234	A1A
FX1UHY	1296,847	JN18IR	10 W	SLOT	OMNI	160	F1A
CT0MBC	1296,850	IM59SK					
DB0JH	1296,850	JO31JK	1W	MALTESER	OMNI	85	
DL0UB	1296,850	JO62KK	10W	4XKASTEN (QRT)	OMNI	120	A1A
GB3FRS	1296,850	IO91PH	3W	DISC	OMNI	120	F1A
GB3NWK	1296,850	JO01BI	100W	2*8EL. YAGI	NNW	180	F1A
I5C	1296,850	JN53DV	0.2W ERP	MINI WHEEL	OMNI	30	A1A
DB0JO	1296,854	JO31SK	350W ERP	4*15 YAGI	W	312	F1A
I5I	1296,855	JN53LL	10W ERP	4*MINI WHEEL	OMNI	550	A1A
OZ3UHF	1296,855	JO56CE	6W	5ELE	180	150	F1A
SK3UHG	1296,855	JP81KQ	20W ERP	HORIZONTAL	OMNI	30	
GB3MCB	1296,860	IO70OJ	3W HF	2*15ELE	ENE	300	
LA1UHG	1296,860	JO59DD	60W ERP	13DB HORN	180	30	A1A
F1XAK	1296,862	JN23MM	158W	PROPOSAL!	OMNI	114	F1A
DB0JK	1296,865	JO30LX	40W ERP	4 X 8 ELE	OMNI	260	F1A
HB9WW/P	1296,865	JN37LA	1,5W	15 ELE	120	1145	
SK7MHG	1296,865	JO65SO	50W ERP	SLOT	OMNI	200	
DB0IBB	1296,870	JO32VG	170WERP	DQUAD	S/W	200	A1A
GB3AND	1296,870	IO91GF	50W ERP	STACK. SLOTS	QRT NOW!	85	F1A
FX3UHX	1296,875	IN78UK	1W ERP	QUAD	E	121	F1A
GB3USK	1296,875	IO81QJ	250W ERP	2 X 15 ELE YAGI	90	235	
LA3UHG	1296,880	JO48JK	1W	2*15EL. YAGI	200		A1A
ON5UHF	1296,880	JO10UN	10W ERP	????	OMNI	180	F1A
FX4UHY	1296,886	JN06BX	25W ERP	SLOT	OMNI	140	F1A
OM0MSA	1296,888	JN88NE	.045WERP		E/W	570	
GB3DUN	1296,890	IO91SV	2W ERP	HB9CV	N	263	F1A

CALL	QRG	WW	POWER	ANTENNA	QTF	ASL	MODE
HG6BUB	1296,890	KN07AU				1050	A1A
DB0JC	1296,895	JO40RV	1.5W	4EL.SLOT WAVEG	OMNI	620	F1A
DB0AN	1296,900	JO31SX	1W	BIG WHEEL	OMNI	100	F2A
DB0JR	1296,900	JN67CR	0.2W	CORNERREFLECTOR	NNW	1560	F2A
GB3IOW	1296,900	IO90IO	100W ERP	ALFORD SLOT	OMNI	250	F1A
OK0EA	1296,900	JO70UP	0.2W	4*15EL. YAGI	W/S/N/E	1355	F1A
LX0SHF	1296,902	JN39BO	3W	2 X BIG WHEEL V	OMNI		
DF0VF	1296,905	JO50EU		PROPOSAL	OMNI	910	
IT9S	1296,905	JM77NO	1W	2XMINI WHEEL	OMNI	250	A1A
OH4SHF	1296,905	KP31OX	15WERP	7DBD	OMNI	200	
SK4UHI	1296,905	JO79LK	10W ERP	HORIZONTAL	OMNI	270	
F5XAJ	1296,907	JN12LL	100W	SLOT	OMNI	1100	F1A
DB0UX	1296,910	JN48FX	1W ERP	BIG WHEEL	OMNI	275	F1A
GB3CLE	1296,910	IO82RL	10W ERP	2*15+15EL. YAGI	N/SE	573	F1A
DB0UBI	1296,915	JO42GE	2,5WERP	8 ELE COLL	35	120	F1A
DL0UBI	1296,915	JO42GE	2,5WERP	COLLINEAR	30	125	
PI7QHN	1296,917	JO22FH	4W	GAIN 6DB	OMNI	20	F1A
DB0JF	1296,925	JO50CA	10W ERP	4*12 EL. SLOT	OMNI	300	F1A
DB0KME	1296,925	JN67HT	1W	VERTIKAL	OMNI	800	
GB3MLE	1296,930	IO93EO	50W ERP	CORNERREFLECTOR	SSE	600	F1A
OK0EL	1296,930	JO70SQ	0,25W	FEEDHORN	W	1036	A1A
OZ7IGY	1296,930	JO55VO	15WERP	BIG WHEEL	OMNI	95	F1A
DB0YI	1296,935	JO42XC	4W	BIG WHEEL	OMNI	480	A1A
OH5SHF	1296,935	KP30HV					
DL0UH	1296,940	JO41RD	1W ERP	V-DIPOLE	OMNI	385	A1A
PI7IVA	1296,940	JO22TA	1W	8 DB GAIN	OMNI	30	F1A
DB0OS	1296,945	JO40CW	1W ERP	6 EL. ARRAY	W	745	F1A
HB9F	1296,945	JN36RV	10W		N	800	
OH9SHF	1296,945	KP36OI	30W ERP	10DBD	200	236	A1A
FX4UHX	1296,948	IN94UW	50W ERP	2*BIG WHEEL	OMNI	88	F1A
DB0HG	1296,950	JO40HG	3WERP	BIRWHEEL	OMNI	300	
OZ5UHF	1296,950	JO65GQ	1W	VERTICAL	OMNI	30	A1A
OZ1UHF	1296,955	JO57FJ	10W	BIG WHEEL	OMNI	150	A1A
HG7BUB	1296,960	JN97KR	0,5W	SLOT	OMNI	690	
SK4UHG	1296,960	JP60VA	20W ERP	2*15EL. YAGI	180	440	A1A
SK6UHG	1296,960	JO57TQ	10W ERP	4*BIG WHEEL	OMNI	40	A1A
OK0EJ	1296,961	JN99FN				1324	F1A
DF0ANN	1296,965	JN59PL	0,5W	4 X DQ	OMNI	630	
DL0SG	1296,975	JN69KA	5W	4 X DQ		1024	
HG1BSA	1296,975	JN87GG	2.5W	HYBRID QUAD 2X	90	370	A1A
HG1BUB	1296,975	JN87FI	1,5		OMNI		
OH3RSE	1296,975	KP11UM	10WERP	BIG WHEEL	OMNI	247	
DB0JU	1296,980	JO31CV	2W	HELICAL	OMNI	295	A1A
OZ3ALS	1296,984	JO44WX	2W	BIG WHEEL	OMNI	50	A1A
DB0FB	1296,990	JN47AU	4W	DIPOLE	N/S	1200	F1A
DB0JN	1296,990	JO31WP	0.1W	MINI WHEEL	OMNI	80	F1A
GB3EDN	1296,990	IO85HW	25W ERP	2*CORNER REFLCT.	NW/SE	117	F1A
DB0JQ	1296,995	JN68ST	5W ERP	4*DQ	OMNI	850	F2A
GB3NO	1297,000	JO02PP	25W ERP	SLOT	OMNI	55	F1A
DB0JW	1297,010	JO30DU	50W ERP	4 X 11 ELE	NE	225	F1A
DB0LB	1297,040	JN48NV	0.3 W ERP	BIG WHEEL	OMNI	367	F1A
K3SIW/B	2304,020	EN52	10W	15Y	270		
S55ZNG	2304,040	JN65UU	0,1W			643	
W6IFE	2304,085	DM14KF	2.5W ERP	6C		1958	
I1J	2304,830	JN35SH	20W ERP	SLOT DIPOLE	S	625	A1A
HB9BBD/P	2308,178	JN47GA	8W	3 X DIPOLE	0	1662	F1A
YU1SHF	2320,000	KN04OO	0,2W	4 X 5 ELE LOOP	N/NW	196	
SK6MHI	2320,800	JO57XQ	10W ERP	H	OMNI	135	
SK6UHJ	2320,800	JO58RG	1W	2*??EL. YAGI	S/SW	80	A1A
SK0UHH	2320,805	JO99BM	25W ERP	H	OMNI	90	
DB0ZW	2320,810	JN69EQ		PROPOSAL			
DB0IH	2320,815	JN39ML		TEMPORARY	QRT		F1A
DB0OT	2320,820	JO32QR	1W ERP	BIG WHEEL	OMNI	80	F1A
4U1VIC/B	2320,825	JN88FF	2W	4*2 ELE.	OMNI	290	

CALL	QRG	WW	POWER	ANTENNA	QTF	ASL	MODE
DB0JX	2320,830	JO31FF	0.1W	DOUBLE HELICAL	OMNI	115	A1A
GB3MHS	2320,830	JO02PB				90	
DB0FGB	2320,833	JO50WB	15 W ERP		OMNI	1100	
F5XAC	2320,838	JN12LL	20W ERP	SLOT WG	OMNI	1100	F1A
DB0KI	2320,840	JO50WC	40WERP	SLOT	OMNI	1025	A1A
GB3NWK	2320,840	JO01BI	2W	ALFORD SLOT	OMNI	180	F1A
DB0LBV	2320,845	JO61EH	1,5W	DOPPELACHT	SSW-SSE	234	A1A
DB0GW	2320,850	JO31JK	8W ERP	WENDEL	OMNI	80	A1A
DL0UB	2320,850	JO62KK	10W	5 X DIPOLE	OMNI	120	A1A
DB0SHF	2320,855	JN48XS	1W	DIPOLE-ARRAY(6)	260	800	
OZ3UHF	2320,855	JO56AJ	0.1W	14ELE 12DBD	180	150	F1A
PI7GHG	2320,857	JO21CV	2X3W	2*10ELE	E/W		F1A
LA1UHH	2320,860	JO59DD	50W ERP	13DB HORN	180	30	A1A
F1XAH	2320,862	JN23MM	15W	SLOT WG	PROPOSAL	114	F1A
DB0GKB	2320,865	JN48JC	1W	DIPOLE-HELIX	OMNI	1000	
DB0IBB	2320,870	JO32VG	4WERP	10 X SLOT	OMNI	200	A1A
PI7TGA	2320,873	JO21WU	1W	10 DB GAIN	NW+W	75	F1A
DB0GO	2320,880	JO41ED	50WERP	SLOT WG	OMNI	738	F1A
DB0YI	2320,880	JO42XC	1W	BIG WHEEL	OMNI	480	A1A
LA3UHH	2320,880	JO48JK	0,7W	10DB HORN	45		
DB0INN	2320,883	JN68GI	1W				
PI7RMD	2320,885	JO22	1W	DQ	180	100	
OM0MTA	2320,888	JN88NE	.012WERP		E/W	570	
GB3ANT	2320,890	JO02PP	4W ERP	SLOT	OMNI	85	F1A
DB0JW	2320,900	JO30DU	25W ERP	6 ELE ARRAY	NE	225	F1A
DB0UX	2320,900	JN48FX	1W ERP	BIG WHEEL	OMNI	275	F1A
GB3WWH	2320,900			QRV???			
LX0THF	2320,902	JN39BO	0,5W	D-QUAD HORIZ	OMNI		
DF0VF	2320,905	JO50EU		PROPOSAL	OMNI	910	
GB3SCS	2320,905	IO90AP	.05W	SLOT	OMNI	198	F1A
DL0UH	2320,912	JO41RD	1W ERP	6XDIPOLE STACKED	N	385	A1A
DB0UBI	2320,915	JO42GE	0,5WERP	HORN	35	120	F1A
DL0UBI	2320,915	JO42GE	0,5WERP	HORN	30	125	
DB0VC	2320,920	JO54IF	3WERP	BIGWHEEL	OMNI	300	
PI7QHN	2320,921	JO22FH	0.2W	GAIN 6DB	OMNI	20	F1A
OK0EL	2320,930	JO70SQ	0,25W	FEEDHORN	E	1036	A1A
OZ7IGY	2320,930	JO55VO	20W	SLOT	OMNI	91	F1A
DB0GQ	2320,935	JO40GP	3WERP	DIPOLE HELIX	OMNI	549	
PI7PLA	2320,935	JO33IC	2,5W	SLOT		42	
DB0JO	2320,937	JO31SK	0.2W	HORN	N	312	F1A
DB0OS	2320,945	JO40CW	1W ERP	8 EL. ARRAY	W	745	F1A
DB0KP	2320,950	JN47TS	0.1W	HELICAL		440	A1A
OZ9UHF	2320,950	JO65HP	5W	SLOT	OMNI	30	F1A
GB3LES	2320,955	IO92IQ	5W ERP	ALFORDSLOT	OMNI	220	F1A
DF0ANN	2320,965	JN59PL	0,3W	4 X DQ	OMNI	630	
DB0AS	2320,967	JN67CR	0.5W	28EL. YAGI	NW	1560	A1A
DB0JL	2320,975	JO31MC	2W ERP	SLOT	OMNI	195	
HG1BUC	2320,975	JN87FI	0.25W	SLOT	OMNI	750	
DB0JU	2320,980	JO31CV	2W	HELICAL	OMNI	150	A1A
DC8EC/A	2321,050	JN58TB	4W	6 ELE ARRAY	NW	580	
DB0HF	2322,825	JO53BO	0.3W	BIG WHEEL	OMNI	65	F1A
DL0UB	3400,009	JO62KK	10W	12 X SLOT	OMNI	120	A1A
PI7SHF	3400,020	JO22JH	1W	16DBI	OMNI	75	
DB0HF	3400,025	JO53BO				65	
DB0KI	3400,040	JO50WC	50WERP	SLOT	OMNI	1025	A1A
DB0JL	3400,050	JO31MC	1W ERP	HELICAL	OMNI	195	F1A
PI7CKK	3400,160	JO33GE	5W	SLOT 10DB		55	
DF6VB	3400,170	JO31QP	0.02W			85	F1A
DB1BX/P	3400,820	JO32SV	1,2WERP	HELIX	OMNI	90	F1A
DB0GW	3400,850	JO31JK	1W	D-WENDEL	OMNI	80	A1A
GB3SCF	3400,905	IO90AP	0.05W	SLOT	OMNI	198	F1A
GB3OHM	3400,909	IO92AJ	1W	SLOT	OMNI	171	
DB0EZ	3456,005	JO31BS	0.1W ERP	SLOT	115	110	F1A
DL0WY	3456,115	JN67CR	80MW	12EL. GROUP	NW	1560	A1A

CALL	QRG	WW	POWER	ANTENNA	QTF	ASL	MODE
DB0JO	3456,155	JO31SL				312	F1A
DB0MST	3456,800	JN67IR	1W	COLLINEAR	OMNI	1800	
DB0JX	3456,830	JO31FF	0,1W	HELICAL	OMNI	115	
DB0SHF	3456,855	JN48XS	1W	HORN (12 DB)	260	800	
DB0INN	3456,883	JN68GI	1W				
OK0EL	5750,028	JO70SQ	0,025W	FEEDHORN	W	1036	A1A
PI7EHG	5760,035	JO22JH		16DBI	OMNI	75	
OK0EA	5760,044	JO70UP	0,02W	SLOT	W/E	1355	F1A
DF0WP	5760,050	JO31QP	0.1W ERP		S	85	F1A
F1XAO	5760,060	IN88HL	10W	SLOT WG	OMNI	326	F1A
DB0JL	5760,070	JO31MC	0.8W ERP	SLOT	OMNI	195	F1A
DB0EZ	5760,090	JO31BS	1W ERP	SLOT	OMNI	110	F1A
DL0WY	5760,192	JN67CR	50MW	6DB HORN	NW	1560	A1A
HB9EI	5760,500	JN45MW	0,1W	10DB HORN	180	1628	A1A
SK6MHI	5760,800	JO57XQ	5W ERP		270	135	A1A
DB1BX/P	5760,820	JO32SV	1,2WERP	HELIX	OMNI	90	F1A
F5XBE	5760,820	JN18JS	4W	SLOT	OMNI	160	
DB0JX	5760,830	JO31FF	0,08W	SLOT	OMNI	115	
I1K	5760,830	JN35SH	0.4W ERP	SLOT DIPOLE	S	625	A1A
DB0FGB	5760,833	JO50WB	15 WERP		OMNI	1100	
DB0KI	5760,840	JO50WC	20W ERP	SLOT	OMNI	1025	A1A
F1XBB	5760,845	JN07WV	100WERP	SLOT	OMNI	170	
DL0UB	5760,850	JO62KK	0,2W	12 X SLOT	OMNI	120	A1A
SK7SHF	5760,850	JO65OR	7W ERP	HORIZONTAL	OMNI	115	
DB0SHF	5760,855	JN48XS	0.1W	DIPOLE-PATCH(6DB	260	800	
LA1SHF	5760,860	JO59DD	25W ERP	13DB HORN	180	30	A1A
DB0INN	5760,883	JN68GI	1W			504	
OM0MXA	5760,888	JN88NE		PROPOSAL		570	
HB9G	5760,895	JN36BK	6.8W ERP	SLOT	OMNI	1577	
DB0CU	5760,900	JN48BI	5W ERP	SLOT	OMNI	970	F1A
DF0VF	5760,905	JO50EU		PROPOSAL	OMNI	910	
OZ7IGY	5760,930	JO55VO	15W	WG SLOT	E/W	91	F1A
OZ9UHF	5760,950	JO65HP	2W	WG SLOT	OMNI	30	F1A
OZ8SHF	5760,955	JO57FJ	8W	WG SLOT	OMNI	150	A1A
GB3IOW	10100,000	IO90IO	0.15W ERP	SLOT WAVEGUIDE	OMNI	250	F2A
GB3ALD	10120,000	IN89WR	1W ERP	SECT. HORN	NNE	90	F2A
DB0EZ	10368,015	JO31BS	1W ERP	SLOT	115	110	F1A
PE1BLE	10368,020	JO22JH		QRT NOW!			
PI7SHY	10368,038	JO21RK	1W	15DBI	340	56	F1A
HB9MPU/B	10368,045	JN47HD					
F1XBD	10368,046	JN18JS					
DF0WB	10368,050	JO31QP	1W ERP		S	85	F1A
LX1DU	10368,050	JN29XM	0,5W	1,3M DISH 40DBD	RAINSCAT		
OK0EL	10368,050	JO70SQ	0,050W	SLOT	W/E	1036	A1A
DK4GD/B	10368,059	JN47FW					
FX0SHF	10368,060	JN07WT	0,2W	WG	OMNI	160	F1A
F1XAI	10368,061	JN07WT	10W	SLOT	OMNI	160	F1A
DB1BX/P	10368,065	JO32OT	1,2WERP	HELIX	OMNI	90	F1A
GM4ISM	10368,070	IO85BU	1WERP	SLOT	OMNI	300	
PI7GOE	10368,073	JO11TL					
OK0EA	10368,080	JO70UP	0,02W	SLOW	W/E	1355	F1A
PA0TGA	10368,085	JO21WU	0,05W	16DB GAIN	W	75	A1A
DF6TK	10368,088	JN47TT		QRT			
KH6HME	10368,100	BK29GO	30KW ERP	1.22M DISH	60	2501	
F1XAP	10368,112	IN88HL	10W	SLOT WG	OMNI	326	F1A
DB0JL	10368,120	JO31MC	0.15W ERP	SLOT	OMNI	195	F1A
ON4TNR	10368,140	JO20KJ	0,1W	18DB HORN	WNW	2501	A1A
PI7EHG	10368,150	JO22HB		QRG+/- 20!		75	
DB0AS	10368,180	JN67CR					
NY2US	10368,210	FN30	.08W	WORLD TRADE CENT	OMNI		
GB3SWH	10368,240	IO91TP					
DL0WY	10368,278	JN67AQ	0.15W	SLOT	N/S	1850	F1A
DB0ZDF	10368,282	JN49CX					
PI7GHG	10368,285	JO21GW	0.25W	16 DB GAIN	NE	50	F1A

CALL	QRG	WW	POWER	ANTENNA	QTF	ASL	MODE
N6CA	**10368,300**	DM03TS	140W ERP		OMNI	427	
F1XAE	**10368,755**	JN24PE	5W	HORN	W/SW	1910	F1A
SK0SHG	**10368,800**	JO89XJ	0.5W ERP	SLOTTED WAVEGUID	OMNI	60	A1A
SK6MHI	**10368,800**	JO57XQ	5W ERP		OMNI	135	A1A
DB0XL	**10368,807**	JO53HU	.16W	2X8 SLOT HOR.	OMNI	49	A1A
ON4KUL	**10368,818**	JO20IV	0,1W	10DB SLOT	+-20KC!		
DB0KHT	**10368,820**	JO40FE					
DB0HRO	**10368,825**	JO64AD	0,2W	SLOT 10DB	OMNI	70	
DB0JX	**10368,830**	JO31FF	90MW	SLOT	OMNI	115	A1A
DB0FGB	**10368,832**	JO50WB	13 WERP		OMNI	1100	
DB0SZB	**10368,835**	JO60JM					
DB0KI	**10368,840**	JO50WC	13W ERP	SLOT	OMNI	1025	QRT NW
GB3MHX	**10368,840**	JO02PB	100W ERP	1.2M DISH	90	60	F1A
SR0CWK	**10368,840**	JO90NS	8W	SLOT	OMNI	280	
DB0JO	**10368,849**	JO31SL	1WERP	6 X SLOT	OMNI	312	F1A
DB0GG	**10368,850**	JN48NS	0,05W	SLOT	OMNI	400	
GB3SEE	**10368,850**	IO91XG	5WERP	SLOT WG	OMNI	177	F1A
SK7SHG	**10368,850**	JO65OR	3W ERP	10 DB OMNI	OMNI	115	F1A
DB0SHF	**10368,855**	JN48XS	10MW	HORN (13 DB)	260	800	
LA1SHG	**10368,855**	JO59DD	10W ERP	13DB HORN	180	30	A1A
DL0UB	**10368,857**	JO62KK	0,1W	12 X SLOT	OMNI	12	A1A
OE8XGQ	**10368,858**	JN66WQ	0,2W	SLOT	OMNI		
F1BDB	**10368,860**	JN33OQ	1W		OMNI		
F5XAD	**10368,860**	JN12LL	3W	SLOT WG	360	1100	F1A
DB0JK	**10368,867**	JO30LX	200WERP	SLOT	OMNI	260	F1A
GB3KBQ	**10368,870**	IO80LX	1W				
HB9G	**10368,872**	JN36BK	2WERP	SLOT WG	OMNI	1520	
OE5XBM	**10368,873**	JN78DJ	10WERP		OMNI	980	
DB0HW	**10368,875**	JO51GR					
DB0IS	**10368,875**	JO51GR	40MW	SLOT	N/W	1020	A1A
DL4DTU	**10368,880**	JO61	0,5	10DB	OMNI		
GB3CEM	**10368,880**	IO82WU	1W	HORN	130		
DB0INN	**10368,883**	JN68GI	1W	SLOT	OMNI	504	
OE1XVB	**10368,884**	JN88FE					
ON4RUG	**10368,885**	JO11UB	0.25W	17DB HORN	NE	96	F1A
DB0TUD	**10368,887**	JO61TA					
DB0KLX	**10368,888**	JN39VK					
DB0ECA	**10368,897**	JN57UV	1.5WERP		OMNI	720	
DB0CU	**10368,900**	JN48BI	5W ERP	SLOT	OMNI	970	F1A
DB0UX	**10368,900**	JN48FX	1WERP	SLOT +-25KC!	OMNI	275	
GB3SCX	**10368,900**	IO91AP					
LX0CD	**10368,902**	JN39BO	1/10W	SLOT			
SR6NCI	**10368,904**	JO80JG					
OZ4SHF	**10368,908**	JO65BV	10WERP	WG SLOT	OMNI	22	F1A
GB3RPE	**10368,910**			INFO WANTED!	QRV?		
DB0HEX	**10368,912**	JO51HT	0.9W	10DB (QRG:.902)	OMNI	1250	
OZ5SHF	**10368,914**	JO45VX	2,5WERP	WG SLOT	OMNI	210	F1A
OZ9PRO	**10368,915**	JO65BV	10W	WG SLOT	OMNI	22	F1A
DB0VC	**10368,922**	JO54IF	10W		OMNI	291	
F1XAU	**10368,925**	JN27IH	1,5 W	SLOT WG	OMNI	516	F1A
OE3XMB	**10368,925**	JN77TX		PROPOSAL		1154	
DB0HO	**10368,929**	JN47QT	10WERP	SLOT	OMNI	850	F1A
GB3MLE	**10368,930**	IO93EO	0.25W	HORN	N/S	518	
OE2XBO	**10368,932**	JN67MW	1.4WERP		OMNI	800	
SK0SHH	**10368,935**	JO89WF	0,05W ERP	HORIZONTAL	OMNI	90	QRT
GB3CCX	**10368,940**	IO81XW	0.25W	SLOT	OMNI	330	
DB0OS	**10368,945**	JO40CW		PROPOSAL!			
DB0AJA	**10368,947**	JN59AS					
OZ7IGY	**10368,947**	JO55VO					
OZ9UHF	**10368,950**	JO65HP	3WERP	WG SLOT	OMNI	30	F1A
DB0FHR	**10368,953**	JN67BU					
OZ9SHF	**10368,955**	JO57FJ	0,8WERP	WAVEGUIDE SLOT	OMNI	150	A1A
OE2XBN	**10368,957**	JN67LA	13WERP		OMNI	3105	
OZ1UHF	**10368,958**	JO57FJ					

CALL	QRG	WW	POWER	ANTENNA	QTF	ASL	MODE
OE2XRO	**10368,959**	JN67LA					
GB3CMS	**10368,960**	JO01GR	25WERP	4XSLOTWG	OMNI	108	F1A
SK4SHI	**10368,960**	JO79LK	8W ERP	H	OMNI	270	
DF0ANN	**10368,965**	JN59PL	0,2W	12 X SLOT	OMNI	630	A1A
HG5FMV	**10368,970**	JN97KR	0,1W	SLOT		690	
OZ3SHF	**10368,975**	JO45NL	2WERP	W SLOT	OMNI	58	F2B
F1XAN	**10369,000**	JN09TD	1,5W	SLOT WG	OMNI	300	F1A
GB3LEX	**10400,000**	IO92IQ	1W ERP	SLOT QRV????	SE	220	F2A
GB3XGH	**10400,000**	IO83QF	1W ERP	SLOT QRV????	OMNI	100	F2A
I5X	**10450,000**	JN54BC	0.4W ERP	15DB HORN	NW	1260	A1A
DB0JO	**24192,018**	JO31SL	0,6WERP	6 X SLOT	OMNI	312	
OK0EL	**24192,050**	JO70SQ	0,01 W	SLOT	W/E	1036	A1A
LX0DUF	**24192,100**	JN29XN	1,5KW ERP	DISH	SCATTER		
DB0JL	**24192,120**	JO31MC	0,01WERP	SLOT	OMNI	195	
I3G	**24192,150**	JN66EB	5WERP	SECT. HORN 16DB	80 W/S/E	1560	A1A
PI7EHG	**24192,150**	JO22HB	0,1W	DISH QRG +/-20	270	75	
DL0WY	**24192,182**	JN67AQ	0.02W	E-HORN	0	1880	F1A
F1XAQ	**24192,252**	IN88HL	0.1W	SLOT WG	OMNI	326	F1A
DB0AJ	**24192,408**	JN57VX	0,1WERP	SLOT	N	620	
SK6MHI	**24192,800**	JO57XQ	1W ERP	H	S+W	135	
DB0KI	**24192,828**	JO50WC	0.5W ERP	SLOT	0	1025	
DB0FGB	**24192,830**	JO50WB	1W ERP		OMNI	1100	
F5XAF	**24192,830**	JN18DU	0,1W	DISH	090		F1A
GB3MHK	**24192,830**	JO02PB		PROPOSAL			
DB0JK	**24192,865**	JO30LX	1WERP	2 X H-HORN	OMNI	260	
OE5XBM	**24192,882**	JN78DJ					
DB0TUD	**24192,885**	JO61UA	7DBM	20DBI			
GB3DUN	**24192,890**	IO92RV	0.2W	2 X HORN	320/140	263	
DB0CU	**24192,900**	JN48BI	5W ERP	20 DB HORN	180	970	F1A
GB3SCK	**24192,905**	IO90AP	0.2W	SLOT	OMNI	198	F1A
DB0HEX	**24192,910**	JO51HT		PROPOSAL			
GB3NUL	**24192,910**	IO83		PROPOSAL			
GB3AMU	**24192,940**	IO81JN	0.05W	HORN 11 DBI	55-215	263	
OE2XRO	**24192,958**	JN67LA					
DF0ANN	**24192,965**	JN59PL		TEMPORARY	QRT	630	
ON4LVN	**24192,975**	JO20IV	0,05W	10DB SLOT			
I3H	**47088,150**	JN66EB	2.5WERP	HORN 25DB	S/W	1560	A1A
DB0FGB	**47088,833**	JO50WB	0,1W ERP		NE	1100	
DB0JK	**47088,865**	JO30LX		PROPOSAL		260	

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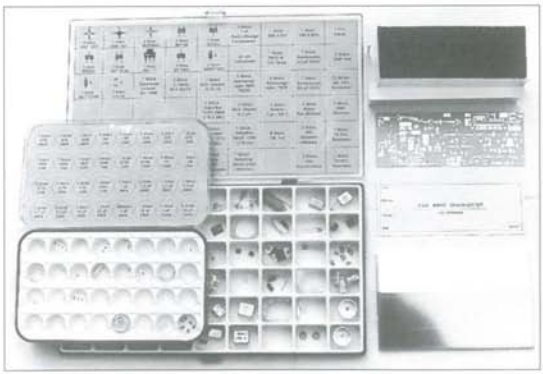

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