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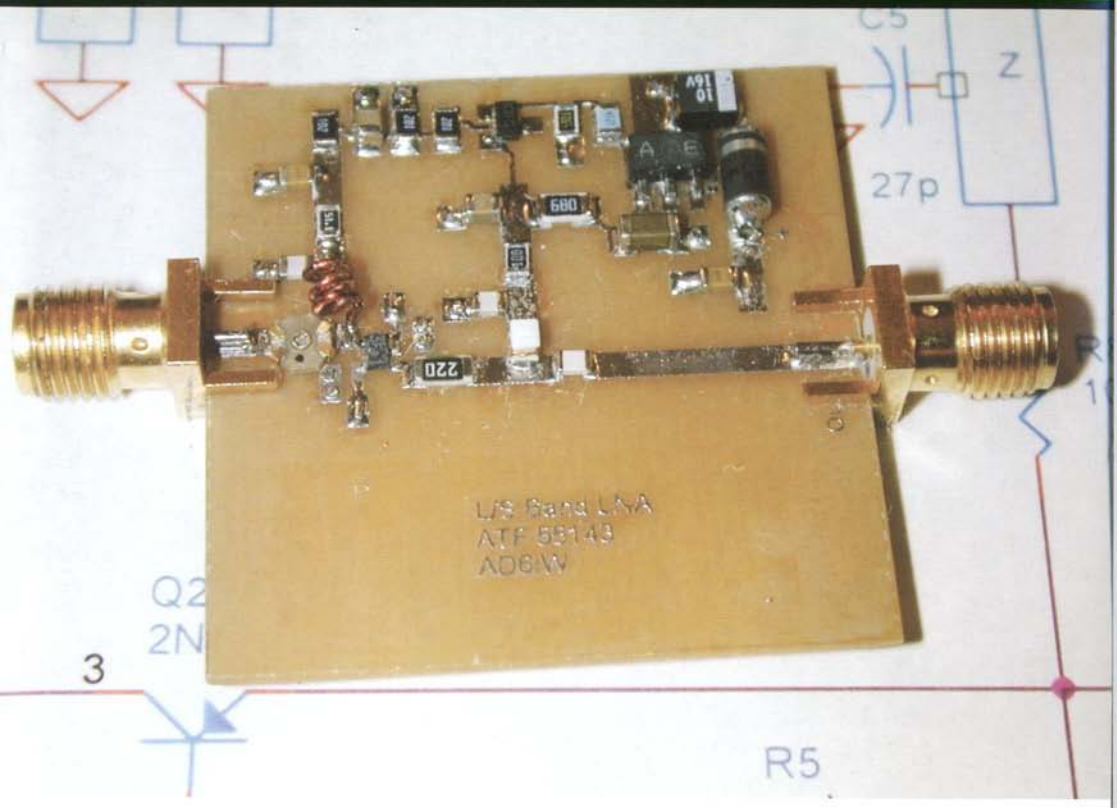
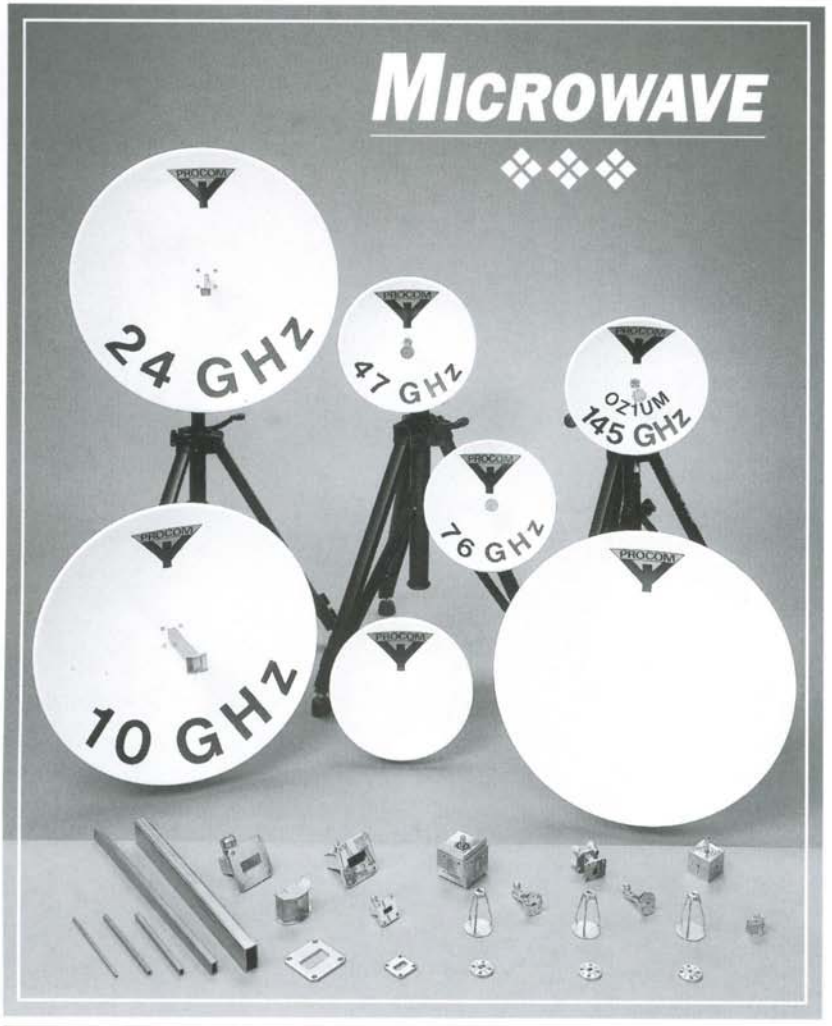


S and L band LNA`s by AD6IW



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Editorial

Dear DUBUS Reader!

Here is the third issue for 2003. Due to the extraordinary Sporadic-E-season on 2m we have got some major problems with the space in this issue and we had to scale down the layout of the Es-column. Unfortunately it was still impossible to print all reports we have received! In June and the first half of July, about every second day there was Sporadic-E on 2m over Europe. People already started talking about "Common-E" instead. But in the middle of July everything went back to "normal" with periods of 10 days without any opening and only very few short openings in August.

The reasons for this outstanding Sporadic-E-season are not clear, of course. The high Ap-index during the declining part of the present solar cycle may have been involved. An interesting theory comes from Nick, 5B4AZ (see News + Comments column), who speculated that high cloud systems in the middle of the path could trigger Es propagation. Even if many of you may not agree with this theory it was amazing that during the long period with high pressure and very hot weather all over central Europe, without many clouds, at the end of July and in August there was almost no Sporadic E on 2m anymore compared to the period before July 23rd . I am sure there will be many comments!

Also we would like to know if you want to read a Sporadic-E-column like this in the future. We know that "almost everything" is on the web now, so we are not sure what to do. But we also get reports from remote stations that you can't find on the web, and there may be the demand for a printed archive for future research purposes.

Finally the VP9DUB beacon is QRV since the beginning of August on 50.025 MHz from Bermuda Island (FM72oh). Unfortunately the 2m part on 144.300 has caused some interference to a local FM repeater We hope that this problem will be fixed soon.

Congratulations to G8VHI and G0FYD for new IARU-region-1 70cm-Tropo-records! Reg made a 2966-km-QSO with EB8AYA on July 31st but was beaten by G0FYD who worked EA8BPX on August 8th at a distance of 3021km!

Vy 73 from Joe, DL8HCZ / CT1HZE
and the DUBUS team!

Liebe DUBUS Leser!

Hier ist nun die dritte Ausgabe für das Jahr 2003, die im Zeichen der außergwöhnlichen Sporadic-E-Saison auf 2m steht. Wir haben angesichts der Vielzahl der QSO-Berichte echte Platzprobleme bekommen und mussten deshalb leider das Layout verkleinern. Trotzdem war es nicht möglich alles abzudrucken, was uns geschickt wurde und wir bitten dafür um Verständnis.
Im Juni und Anfang Juli gab es im Schnitt jeden 2. Tag eine Es-Öffnung auf 2m in Europa. Viele sprachen statt Sporadic-E schon von "Common-E". Ab Mitte Juli normalisierte sich dann langsam alles wieder und es gab auch mal Perioden von 10 Tagen ohne Es-Öffnung auf 2m. Auch im August gab es dann nur noch wenige und kurze Öffnungen.
Die Gründe für diese überdurschnittliche Es-Saison auf 2m sind natürlich nicht klar. Der überdurchschnittlich hohe Ap-Index im jetzt abfallenden Teil des Sonnenfleckenzyklus könnte eine Ursache sein.
Eine weitere interessante Theorie hat Nick, 5B4AZ, (Siehe Rubrik News & Comments), an uns übermittelt. Nick hat beobachtet, dass hohe Wolkenformationen in der Mitte des Pfads an der Auslösung von Es-Öffnungen beteiligt sein könnten. Sicher werden viele dieser Theorie nicht folgen können, aber es war schon recht auffällig, dass, als ab Ende Juli das extem heisse Wetter über Europa begann und dank des starken Hochdruckgebiets kaum Wolken über Europa waren, die Es-Aktivität auf 2m drastisch weniger wurde.

Fast alle Es-Berichte findet man natürlich heutzutage auch im Internet und wir wissen nicht, ob es noch sinnvoll ist, in Zukunft die Es-Rubrik in der DUBUS so aufrecht zu erhalten. Andererseits erhalten wir auch Berichte von entfernten Stationen, die anderswo nicht zu lesen sind. Auch sehen wir es als nötig an, die Daten für zukünftige wissenschaftliche Auswertungen irgendwo in gedruckter Form sicher archiviert zu haben.

Die VP9DUB-Bake auf Bermuda (FM72oh) konnte auf 50.025 MHz Anfang August in Betrieb gehen. Leider stört die 2m-Bake ein lokales FM-Relais. Wir hoffen aber, dass das Problem bald gelöst werden kann.

Ein Glückwunsch geht an G8VHI und G0FYD für neue IARU-Region-1-Tropo-Rekorde auf 70cm. G8VHI arbeitete am 31.7. über 2966km auf 70cm mit EB8AYA. G0FYD überbot diesen Rekord am 8.8. durch ein QSO über 3021km mit EA8BPX!

Vy 73 von Joachim, DL8HCZ / CT1HZE
und vom ganzen DUBUS-Team!

L and S band LNA with enhacement mode pseudomorphic HEMT

Goran Popovic, AD6IW

After I saw the specs for new Agilent enhancement-mode PHEMTs, I was curious to try them on 23 and 13cm. Unlike normal depletion-mode FETs, these transistors are biased with positive gate voltage, so the negative voltage converter is not needed. This simplifies circuits and reduces the cost.

These transistors are developed for PCS communication, mobile and base stations. They are very low noise, high gain, and operate at higher power levels than conventional GaAsFETs and thus have a high 3rd-order intercept point. They are in small surface mount SOT-343 plastic packages, or in very small SC70 miniPak packages, at low cost. The ATF55143 is 400 micron gate width device, and ATF54143 is 800 microns. The ATF55143 has higher gain, but is probably not so good below 800MHz because of problems with gate impedance, high gain and stability. For lower frequency applications is better to use ATF54143, which has lower noise, higher intercept point and higher output power (20 dBm at 1db compression). This device could equally well be used as an LNA or as a driver in a transmitter chain.

There are two amplifiers, both optimized on 1296 MHz, one single-stage and the other double-stage. The single-stage amplifier is in the range of 18dB gain, 0.55dB NF and +24 dBm 3rd order output intercept point; P(1dB) is 13 dBm on 1296MHz. The double-stage amplifier has very high gain >38dB, and <0.6dB NF. I developed universal PC boards on inexpensive 0.8mm (0.032 inch) FR4 material. The size of the board is 35 x 35 mm, and it could be installed in small metal box with SMA or N connectors. A lower-cost version of the amplifier could work without the metal box, just with SMA connectors directly soldered on the board, but for indoor use only. These circuits are designed for the ATF55143 and ATF551M4 but the same PC board could be used for the ATF5413 with different matching and bias values. The ATF55143 is operating at 3V and 20mA, but could be easily changed to any other operating points. Input and output matching (C1 L1 and C6 L2) are high pass configurations, which has some advantage in compensating for the very high low frequency gain of the devices, and because the required shunt inductors can be used for biasing and the drain voltage supply. The input circuit is matched to Gamma-opt for minimum noise, and the output circuit on best return loss. The input return loss is between 6dB and 9dB. The LNA supply voltage comes over the coax cable. If this option is not required, just remove L3 from the circuit (or L5 for the two-stage amplifier).

The goal was to get the best available performance from an amplifier with very low cost and commercial available parts. The minimum noise factor is about 0.35dB on 1296MHz, because two to three tenths of a dB is lost in the matching elements, microstrip, transistor package and input connectors. There is the space for improvements, like thinner PC board with a lower loss tangent, better connectors and a higher Q shunt inductor, but the cost is too big if you do not need such small improvements.

The amplifier could be optimized for lowest noise and appropriate gain anywhere between 800MHz and 2.4GHz. The noise optimized amplifier for 1296MHz works just fine anywhere from 900MHz up to 2.4GHz with lot of gain and low noise – see the gain and noise vs. frequency charts. I made and tested more than 10 amplifiers, so those charts represent average of performance. The amplifier is stabilized by a combination of drain resistor and source inductance, and is unconditionally stable (K > 1) across the whole band. I got a little bit better performance with the ATF551M4 transistor, but this one is difficult to solder. I also discovered that ATF55143 is tweaked on PCS band , and it has higher gain and lower noise on that portion of the band, which is visible as small bumps in the performance chart at 1860 MHz.

Construction

The amplifiers are easy to build. The drain resistor must be very close to the drain, and input shunt inductors should be elevated 1mm above the PC board surface. Input and output coupling capacitors should be chosen for self-resonance above 3GHz; most NPO multilayer 0805 capacitors work fine, but try to use capacitors with better tolerance than usually available. C2, C5 (also C8, C11) form a filter and those 27pF values are critical. Higher values decrease noise figure, and lower values cause instability at lower frequencies. These capacitors should be NPO 0805 type.

I optimized the drain inductors on the board, but small adjustments are possible with the additional two ground pads. Shorter drain inductors cause instability on lower frequencies, and longer could produce excessive gain on very high frequencies, 6-9GHz. Anyway, a little bit longer stubs are more acceptable, because the transistor gain

drops on higher frequencies, and everything is just fine until the return loss stays negative. Higher values of drain resistance reduce the gain and P(1dB) performance, and lower value cause instability.

The critical parts on two-stage amplifier are inductors. Because of the size of the board and very high gain, orientation of inductors is critical. To prevent coupling, the inductor of the first stage is perpendicular to the input inductor, and the same is true for the second stage. Check before you mount inductors how they are wound. I use a home-made inductor of three turns at the input to the first stage, a Coil Craft inductor at the input of the second stage, and Murata inductors on the drains of both stages. There are no oscillations present, even with the unshielded PC board version.

Tuning

To put the amplifier at work, terminate both the input and the output, and check voltage and currents for the transistor(s). Gate voltage should be around +0.5V and voltage across the 10□ resistors should be around 0.2V for 20mA drain current. Voltage on the drain should be around 3V. For optimum gain/noise, L1 should be between 2.5 and 3mm long. Apply a spectrum analyser or broadband power meter and check if they are any oscillations. If you find oscillations, try to reduce the length of source inductors with small shortcuts and additional ground pads, and/or slightly increase the value of the drain resistors.

Conclusion

The new generation of E-PHEMTs has excellent characteristics: very high gain, low noise, and what is very important, much higher immunity to interference than earlier generations of GaAs-FETs. They are low cost, and easy to use. The next step will be to optimize this LNA for another frequencies, like 800MHz, 900MHz, 1575MHz, 1800MHz, 1900MHz, 2304MHz and 2400MHz. These modifications will be updated soon on my web page.

This project was developed and presented for the 50MHz and Up Northern California group. Special thanks to John Hamilton, director of Avnet RF group for samples.

Boards and parts will be available from author, and the components list shows some other suppliers.

You can contact the author on ad6iw@arrl.net

Web pages:
http://www.agilent.com
Data sheets, s-parameters
http://goran.us My web page
http://www.farnell.com

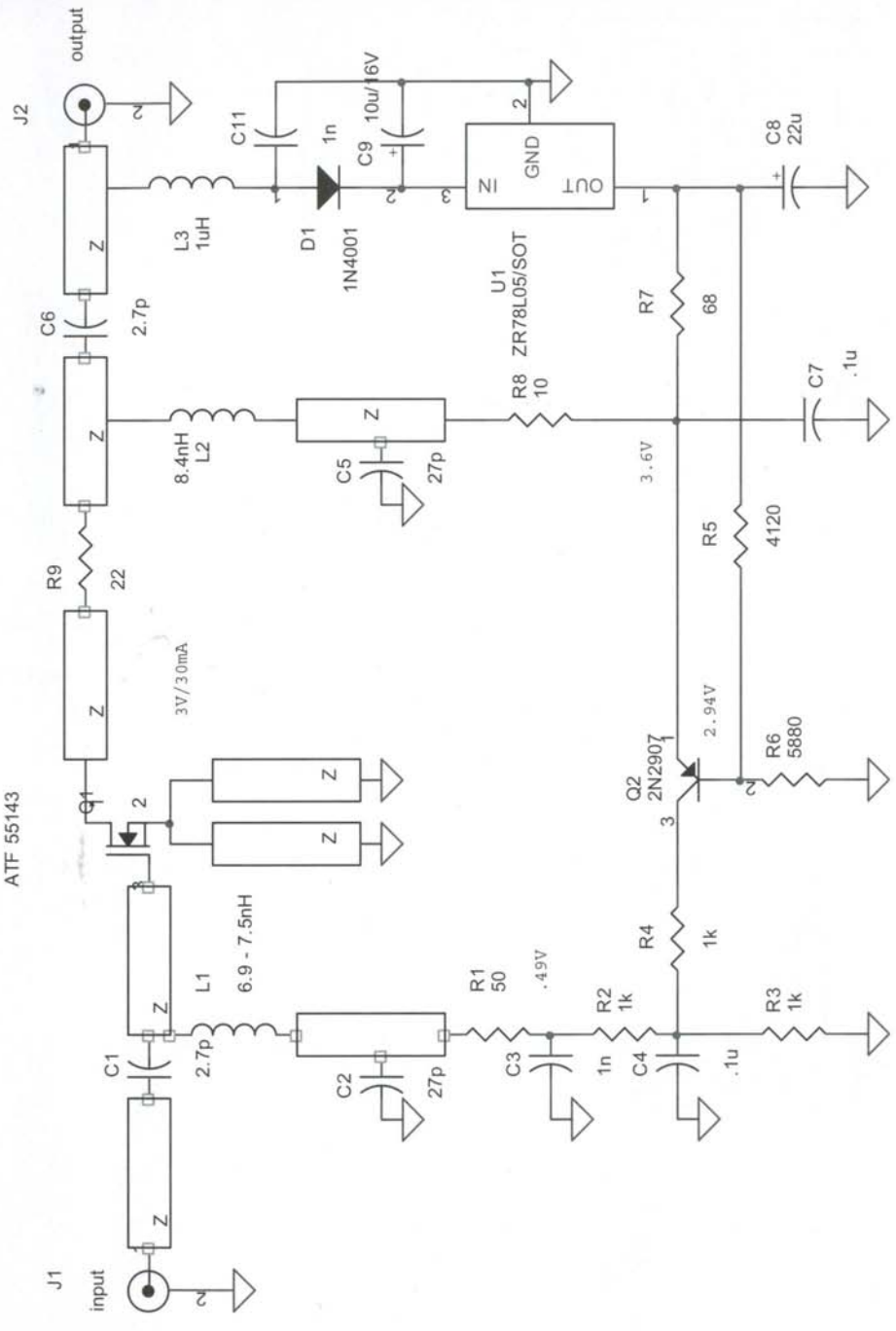
One European supplier of Agilent E-PHEMTS

Components for single-stage amplifier

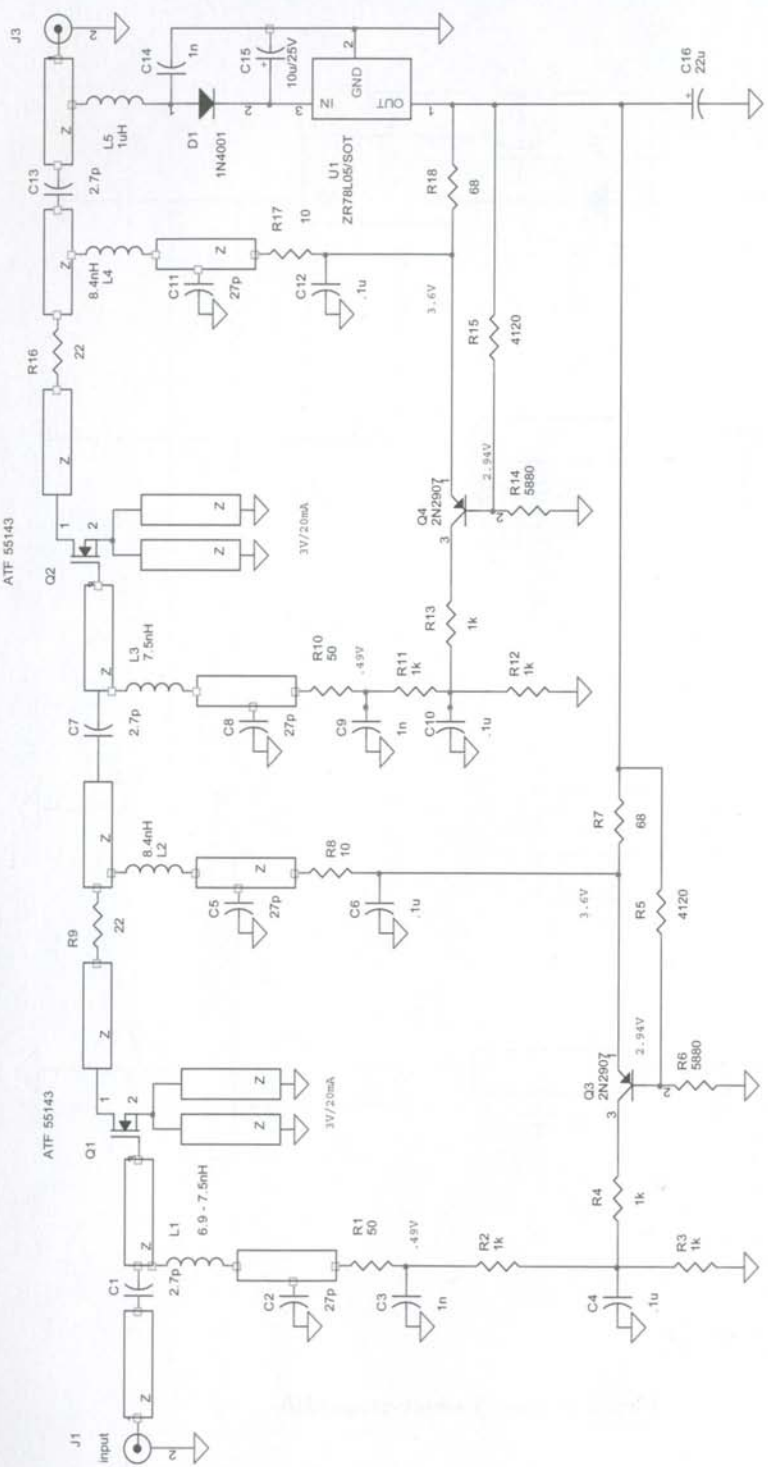
For two-stage amplifier, repeat same components in second stage.

Qty	Name	Value	Supplier	Part Number
1	C1	2.7p	Digi key	PCC030CNCT-ND
2	C2 C5	27p		PCC270CGCT-ND
2	C3 C11	1n		PCC102CGCT-ND
2	C4 C7	.1u		PCC1828CT-ND
1	C6	2.7p		PCC030CNCT-ND
1	C8	22u		PCC2242CT-ND
1	C9	10u/16V		399-1593-1-ND
1	D1	1N4001		DL4001DICT-ND
1	J1	input		J629-ND (J657_ND)
1	J2	output		J629_ND (J657_ND)
1	L1	7.5nH	HB	3 turns CuAg wire 0.5mm dia on 1.8mm dia forme 2mm long 1mm above surface or use 8.4nH DN4003CT-ND
1	L2	8.4nH		DN4003CT-ND (LQN21A8N6D44_ Murata)
1	L3	1uH		DN08102JCT-ND
1	Q1	ATF 55143		Agilent
1	Q2	2N2907		FMMT2907ACT-ND
1	R1	50		P50.0CCT-ND
1	R2	10k		P10.0KCCT-ND
2	R3 R4	1k		P1.00KCCT-ND
1	R5	4120		P4.12KCCT-ND
1	R6	5880		P5.90KCCT-ND
1	R7	68		P68.1FCT-ND
1	R8	10		P10.0CCT_ND
1	R9	22		P22.1CCT-ND
1	U1	ZR78L05/SOT		ZR78L05GCT-ND

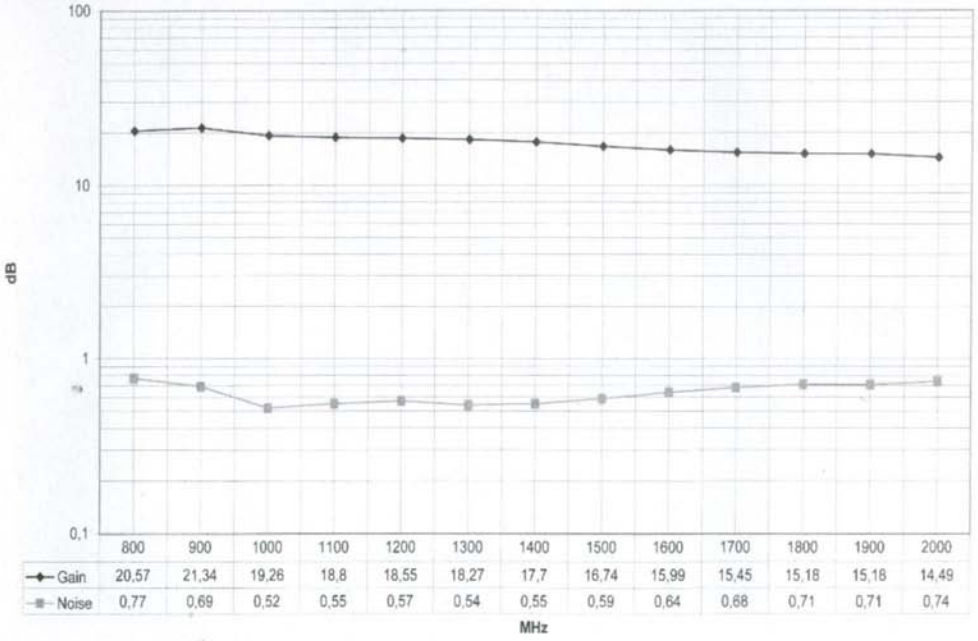
Table 1



Circuit diagram 1 single-stage LNA



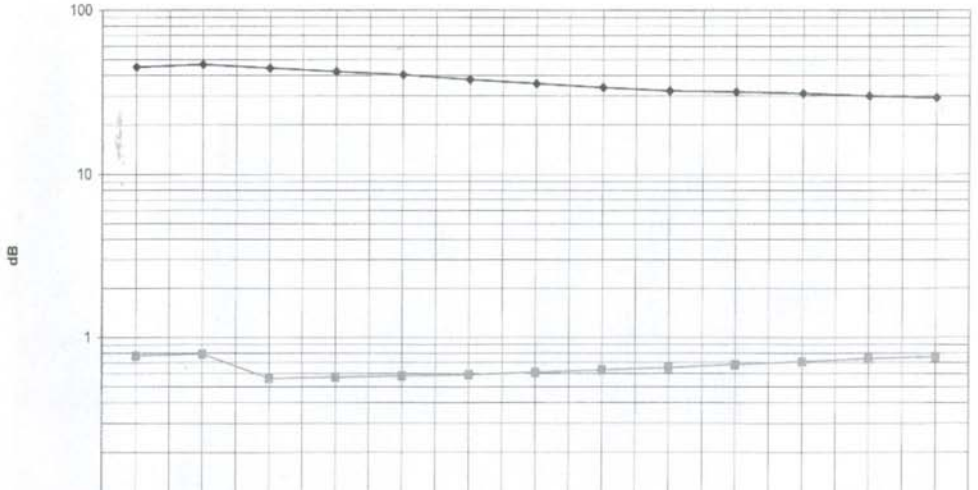
Circuit diagram
2
two-stage LNA



	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
Gain	20,57	21,34	19,26	18,8	18,55	18,27	17,7	16,74	15,99	15,45	15,18	15,18	14,49
Noise	0,77	0,69	0,52	0,55	0,57	0,54	0,55	0,59	0,64	0,68	0,71	0,71	0,74

MHz

Fig. ATF 55143 LNA



	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
Gain	44,69	46,38	44,21	41,98	40,24	37,56	35,57	33,65	32,19	31,67	30,98	29,89	29,19
Noise	0,77	0,79	0,56	0,57	0,58	0,59	0,61	0,63	0,65	0,68	0,71	0,74	0,76

MHz

Fig. 2 stage LNA with ATF 55143

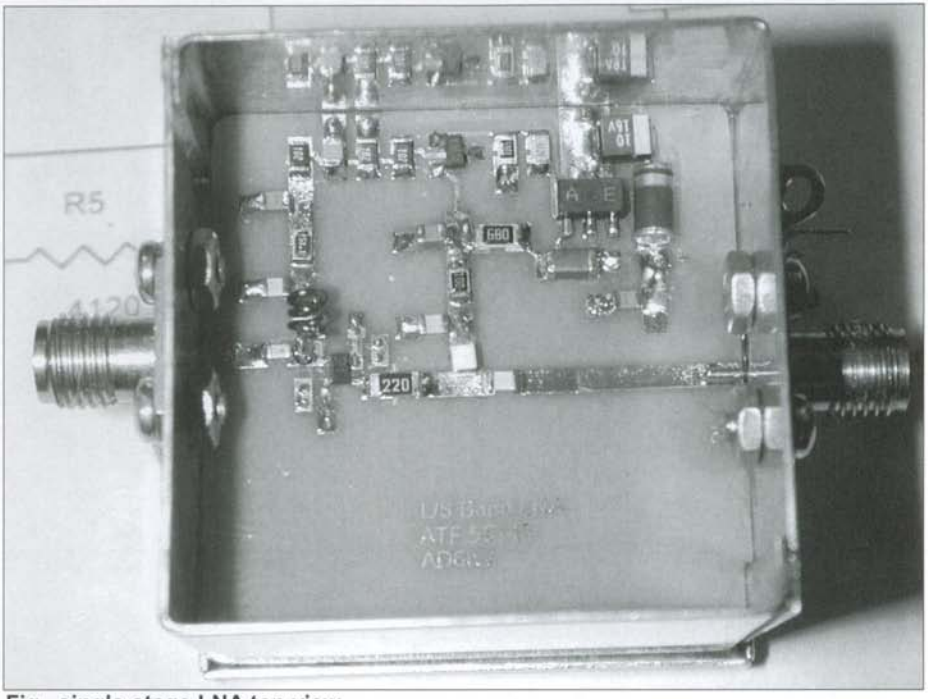


Fig. single-stage LNA top view

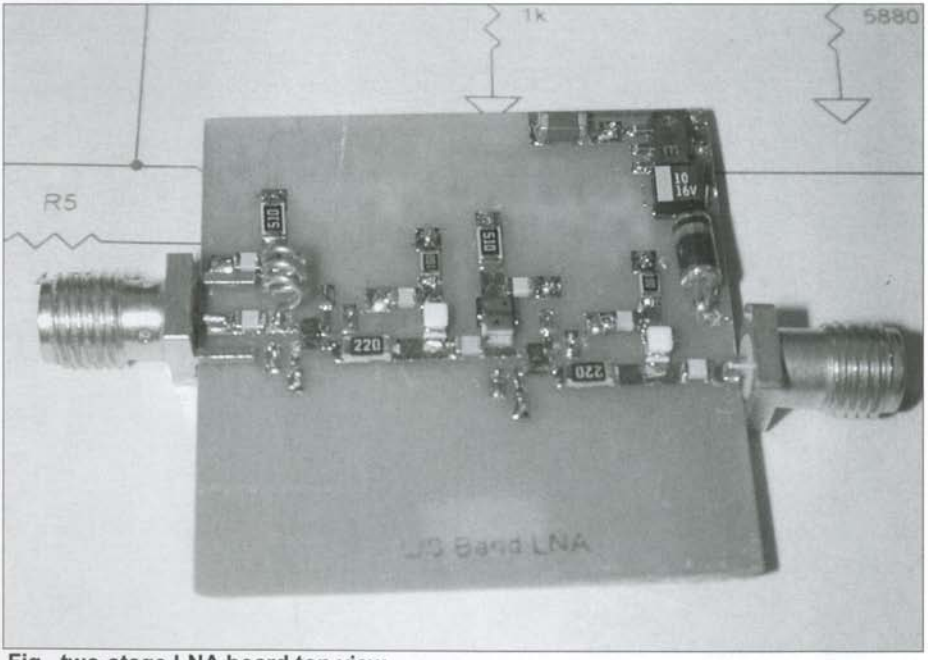


Fig. two-stage LNA board top view

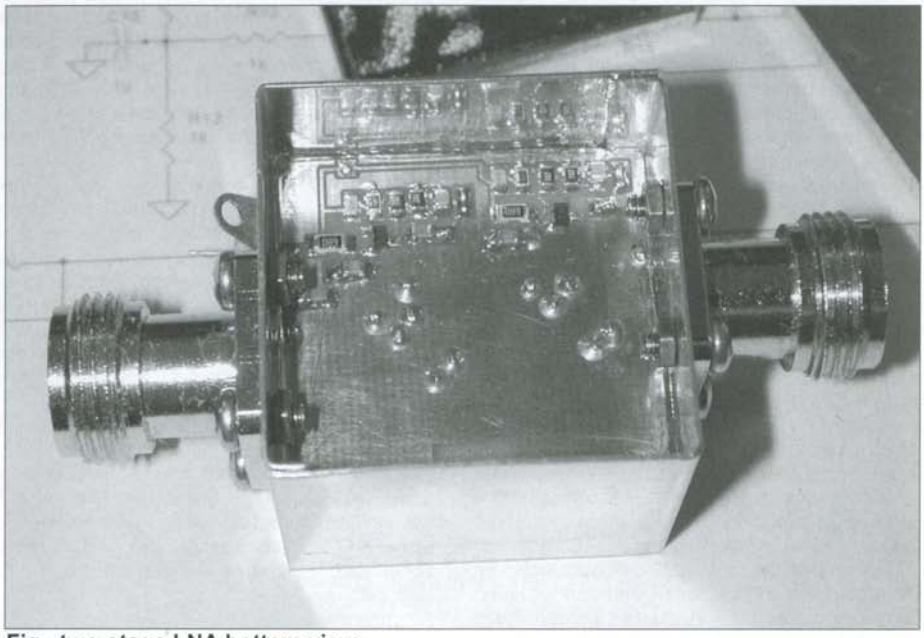


Fig. two-stage LNA bottom view

L- und S-Band LNA's mit Enhancement Mode Pseudomorphic HEMT's

Goran Popovic, AD6IW

Nachdem ich die Spezifikationen der neuen Agilent Enhancement Mode PHEMT's gelesen habe, stand für mich fest, diese für Schaltungen auf 23 und 13cm einzusetzen. Im Vergleich zu den normalen Depletion Mode FET's, werden diese Transistoren mit einer *positiven* Gatespannung betrieben. Durch den Wegfall des Konverters für die negative Spannung, vereinfacht sich die Schaltung und reduzieren sich die Kosten.

Die Transistoren werden in Mobil- und Basisstationen für die PCS-Kommunikation eingesetzt.
Sie produzieren sehr gerings Rauschen, haben einen hohen Gewinn, verarbeiten höhere Signalpegel als konventionelle GaAsFET's und erreichen einen hohen 3rd-Order Intercept-Punkt.
Angeboten werden sie im kostengünstigen SOT-343 Plastikgehäuse und im sehr kleinen SC70 miniPack-Gehäuse. Die Gatelänge des ATF55143 ist 400 Mikron, die des ATF54143 800 Mikron. Der ATF55143 hat einen höheren Gewinn, ist aber wegen der Gate-Impedanz, des höheren Gewinns und der möglichen Stabilitätsprobleme für Anwendungen unter 800 MHz nicht so gut geeignet. Für Applikationen im unteren Frequenzbereich eignet sich der Typ ATF54143 besser. Er hat eine kleinere Rauschzahl, einen höheren Intercept-Punkt und eine höhere Ausgangsleistung (20dBm @ 1db Kompression). Dieser Typ sollte sowohl in LNA's, als auch als Treiber in Senderstufen eingesetzt werden können.
Die beiden Verstärker, ein einstufiger und ein zweistufiger, sind jeweils für 1296 MHz optimiert. Der einstufige Verstärker hat 0,55 dB Rauschen, 18 dB Verstärkung, 13 dBm (@1db) und einen 3rd-Order Intercept-Punkt von 24 dBm. Der zweistufige Verstärker hat einen sehr hohen Gewinn von >38 dB und produziert weniger als 0,6 dB Rauschen. Ich habe eine gemeinsame Platine mit 0,8 mm FR4 Platinenmaterial entwickelt. Die Grösse der Platine ist 35x35 mm,
passend für ein Metallgehäuse mit SMA- oder N-Buchsen. Für den Indoor-Gebrauch kann man das Gehäuse auch weglassen. Die Schaltung wurde für den ATF55143 und den ATF551M4 entwickelt. Sie kann aber auch für den ATF5413 eingesetzt werden. Der Arbeitspunkt des ATF55143 ist 3V bei 20mA. Es kann aber auch ein anderer Arbeitspunkt gewählt werden. Die Ein- und Ausgangsanpassungen (C1, L1 und C6, L2), sind als Hochpass ausgelegt. Das ergibt den Vorteil, dass die in der Regel sehr hohe Verstärkung im unteren Frequenzbereich abgeschwächt wird und die notwendigen Shunt-Impedanzen vereinfachen die Gleichspannungsversorgung. Der Eingangskreis ist auf minimales Rauschen und der Ausgang auf beste Rücklaufdämpfung abgestimmt. Am Ein-

gang beträgt die Rücklaufdämpfung zwischen 6 und 9 dB. Der LNA wird über das Koaxialkabel mit Spannung versorgt. Sollte das nicht nötig sein, entfernt man bei der einstufigen Variante L3 und bei der zweistufigen Variante L5.
Das Ziel war es, von einem Verstärker die bestmögliche Gesamtleistung mit geringsten Kosten und leicht erhältliche Teilen zu bekommen. Wegen der Verluste (0,2 – 0,3 dB) in den Anpasselementen, der Mikrostripleitung und des Transistorgehäuses ist der minimale Rauschfaktor 0,35 dB bei 1296 MHz. Da gibt es sicher Raum für Verbesserungen, wie dünneres Board mit kleinerer Verlusttangente, bessere Anschlussstecker oder Induktivitäten mit höherem Q, aber der Aufwand und die Kosten steigen dann unverhältnismässig stark im Vergleich zum Systemgewinn.
Die Verstärker können zwischen 800 MHz und 2,4 GHz auf minimales Rauschen optimiert werden. Der rauschoptimierte 1296-MHz-Verstärker zeigt über den Frequenzbereich von 900 MHz und 2,4 GHz ausgezeichnet niedriges Rauschverhalten mit gleichzeitig hohem Gewinn (siehe Gain/Noise-Diagramm). Das Diagamm gibt den Mittelwert von mehr als 10 von mir gebauten und vermessenen Verstärkern wieder. Die Verstärker werden durch eine Kombination von Drainwiderstand und Sourceimpedanz stabilisiert, und sind über den gesamten Frequenzbereich absolut stabil (K>1). Mit dem Typ ATF551M4 konnten etwas bessere Werte erzielt werden. Dieser Transistor ist allerdings schwierig zu verarbeiten.
Es zeigte sich auch, dass der ATF55143 für das PCS-Band optimiert worden ist. Er hat geringeres Rauschen und höheren Gewinn bei 1860MHz.

Konstruktion

Die Verstärker sind betont einfach gehalten. Der Drainwiderstand muss möglichst nahe am Transistoranschluss angelötet werden und der Eingangsshunt sollte einen Abstand von 1 mm zum Board haben. Für die Eingangs- und Ausgangskoppelkondensatoren sollten Typen mit einer Eigenresonanz von > 3GHz gewählt werden. Die meisten 0805-Multilayerkondensatoren mit NP0 und enger Toleranz sollten funktionieren. C2 und C5 sowie C8 und C11 bilden ein Filter; deren Werte sind also kritisch. Höhere Werte verringern die Rauschzahl und niedrigere Werte verursachen Instabilität bei niedrigeren Frequenzen. Diese Kondensatoren sollten vom Typ NP0 0805 sein.

Ich habe die Draininduktivitäten optimiert, es sind aber durch die zusätzlichen Massepads noch geringfügige Anpassungen möglich. Kürzere Draininduktivitäten verursachen Instabilitäten bei niedrigeren Frequenzen, längere dagegen können exzessiven Gewinn bei sehr hohen Frequenzen (6 – 9 GHz) verursachen. Grundsätzlich sind etwas längere Stubs zu bevorzugen. So wird der Gewinn bei hohen Frequenzen etwas reduziert und die Schaltung arbeitet stabil solange die Rücklaufdämpfung negativ ist. Höhere Drainwiderstände reduzieren Verstärkung und Ausgangspegel, während zu niedrige Widerstandswerte Instabilitäten verursachen.
Die kritischen Komponenten bei der 2-stufigen Ausführung sind die Induktivitäten. Wegen der geringen Grösse des Boards und des hohen Gewinns ist die Orientierung der Komponenten ziemlich kritisch. Um gegenseitige Beeiflussung zu verhindern, sind sowohl die Induktivität der ersten Stufe zur Eingangsinduktivität als auch diejenigen der zweiten Stufe senkrecht zueinander angeordnet. Überprüfen Sie vor dem Einlöten die Anordnung der Windungen.
Am Eingang der ersten Stufe benutze ich eine selbstgewickelte Spule mit 3 Windungen,
eine Spule von Coil Craft am Eingang der zweiten Stufe und Spulen von Murata am Drainanschluss der beiden Stufen. Es waren unter keinen Umständen Oszillationen festzustellen, auch nicht mit der offenen Variante ohne Gehäuse.

Abgleich

Terminieren Sie Ein- und Ausgang des Verstäkers bevor Sie die Spannungsversorgung anschliessen. Die Gatespannung sollte etwa +0,5 Volt betragen. Die Spannung am 10Ω Widerstand sollte etwa 0,2 Volt (entspricht 20 mA) betragen. Am Drainanschluss sollte eine Spannung von etwa 3 Volt anliegen. Für ein optimales Gewinn/Rauschverhältnis sollte L1 zwischen 2,5 und 3 mm lang sein. Überprüfen Sie mit Hilfe eines Spektrumanalysators oder Breitband-Leistungsmesser ob Oszillationen auftreten. Wenn ja, dann hilft eventuell Verkürzen der Source-Induktivitäten durch Anbringen von Masse-Pads oder Erhöhen der Drainwiderstände in kleinen Schritten.

Zusammenfassung

Die neue Generation von E-PHEMT's zeigt hervorragende Charakteritiken: sehr hoher Gewinn, niedriges Rauschen und was sehr wichtig ist, wesentlich besseres Interferenzverhalten im Vergleich zu früheren GaAsFET-Generationen. Ausserdem kosten sie wenig und sind unkompliziert im Einsatz. Im nächstes Schritt sollen die Verstärker für andere Frequenzen optimiert werden, z. B. 800, 900, 1575, 1800, 1900, 2304 und 2400MHz. Die Ergebnisse werden dann auf meiner Homepage veröffentlicht. Das Projekt wurde für die 50MHz und die Up Northern California Group. Besonderer Dank gilt John Hamilton, Direktor der AVNET RF Group für die Überlassung von Testexemplaren.
Platinen und die dazugehörigen Teile können vom Autor bezogen werden. Kontakt: ad6iw@arrl.net
(TNX für die Übersetzung an Josef, DC9RK)

A Short Backfire Antenna

Sergio Cicerone

Introduction

Although Short Backfire Antennas are quite simple to build and do not look particularly "professional", they are widely used in telecommunication, when high gain and compact structure are needed but a large bandwidth is not required. That's why we can often find SBF Antennas on ships, satellites and sometimes on roofs, especially when links are made at low microwave frequencies. In the last few years SBF Antennas have begun to be employed also as wireless LAN radiators, although not so widely. SBFA are very suitable in the latter employment, because their natural band limitation gives no restrictions when dealing with relatively low bit rates and because of their smaller dimension when compared to a parabolic reflector.

The project had been started by Prof. P. Tognolatti – University of L'Aquila, Italy. Then had been carried on as a theme of a degree thesis by student S. Cicerone of the same University. The main requirements of the antenna are low cost and simple construction. The most simple and widespread way to build a Short Backfire Antenna is to use an aluminum pie-tin as a main reflector. The other parts are also very affordable. The simplest exciting device for the structure is a half wave dipole. Three feeds for the antenna have been built: one for linear polarization and two to achieve a circular one. Of the latter kind of feed one had been constructed in left hand circular polarization, and the other in RHCP. In both cases were used crossed dipoles, as can be seen in the following images.

Because many applications have working frequency near f_c=2425 MHz it was decided to set here the central operating frequency. The chosen operative band has many benefits. It includes an amateur radio band (2440÷2450 MHz) and some up/downlink frequencies of the Amsat AO-40 P3-D satellite for amateur communications (http://www.amsat-dl.org). Moreover these frequencies are well suitable for testing electromagnetic propagation in complex environments, a focus of study at the University of L'Aquila.

A SBF Antenna can increase its gain to considerable values thanks to the resonance that is produced inside. The radiation is well directed in the free space, even if the near field, just out of the aperture, is pretty inhomogeneous, as it can be seen in Fig. 1.

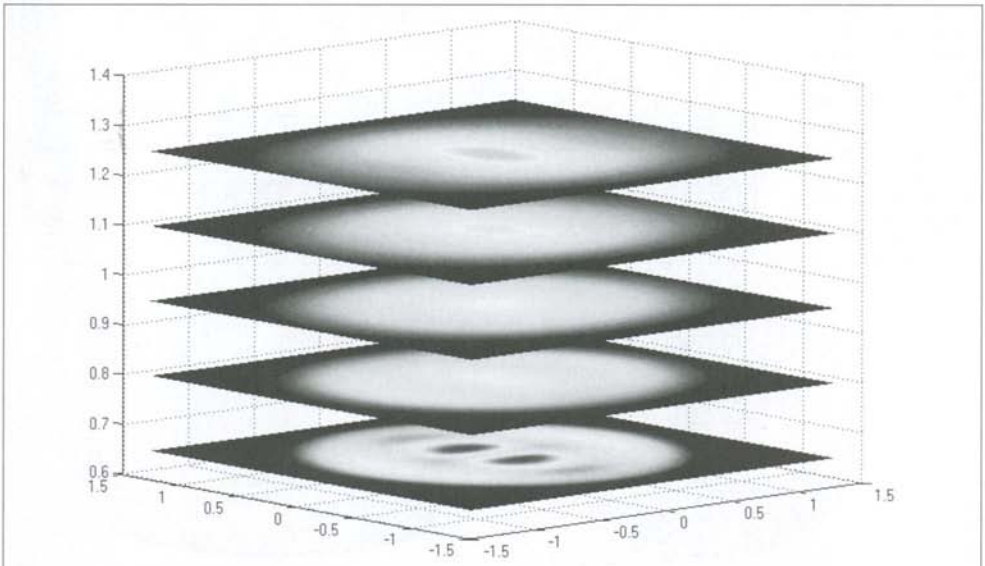


Fig. 1 Amplitude of the total near field. The aperture lies on 0.5λ plane. At the antenna aperture the field is very inhomogeneous, but becomes more regular by increasing the distance.
Abb. 1 Amplitude des Nahfelds. Die Apertur liegt auf der 0.5λ-Ebene. Auf der Aperturebene ist das Feld sehr inhomogen, wird aber bei grösserem Abstand besser.

In 1970 Ehrenspeck patented the first SBFA (U.S. pat. № 3508278), and as he stated, this kind of antenna can be compared to a laser because of its working mechanism. So with flat reflectors a narrow resonance may be obtained. Usually the bandwidth does not exceed the 3%.
One or both conical reflectors are used to increase the bandwidth. A large taper angle results in a large band but with poor gain. A good compromise, when a larger bandwidth is required, is to not exceed about 10° for a single reflector. These considerations have been verified with the aid of NEC and have also been confirmed by simulations.

The PC Simulator

The broad outline of project was built up having a look to available documentation about this kind of antenna and to the original project of Mr. Ehrenspeck. Then it was found necessary to simulate with the aid of a computer the antenna's behavior. This also because of we dealt with different materials, waveguides and shapes.
It had been used Matlab© to generate a grid structure (fig. 3), then NEC 1) to simulate it and to get the gain of the complete antenna, the directivity pattern, near field information and so on. Mathematical basis of the NEC is the Method of Moments 2).

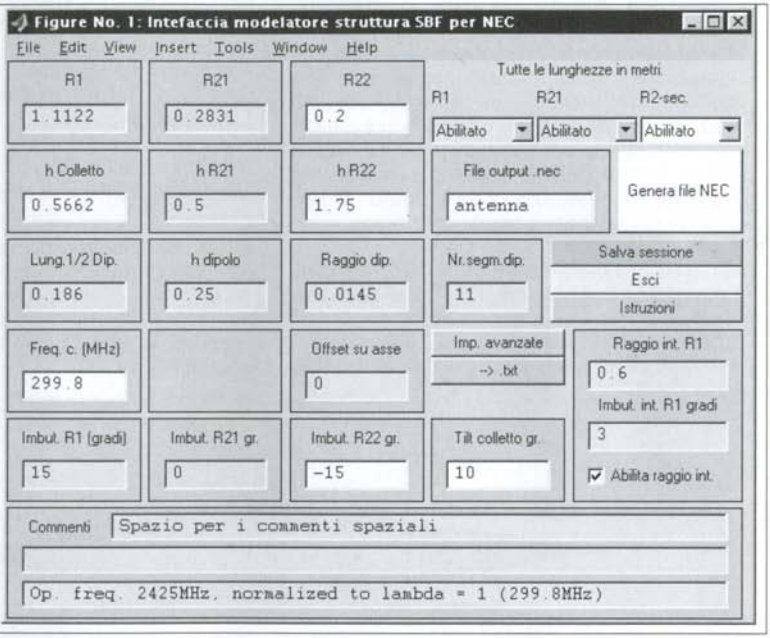


Fig. 2
Matlab© interface window. It is possible to set some parameters of the SBF antenna, such as radius of the reflectors, rim height and tilt degree, frequency, and so on. It's also possible to add an other secondary reflector.
Abb 2: Matlab©-Eingabefenster. Man kann diverse Parameter der Antenne, wie Radius des Reflektors, Seitenhöhe und Neigungswinkel oder Frequenz ändern, oder auch einen zweiten Reflektor hinzufügen.

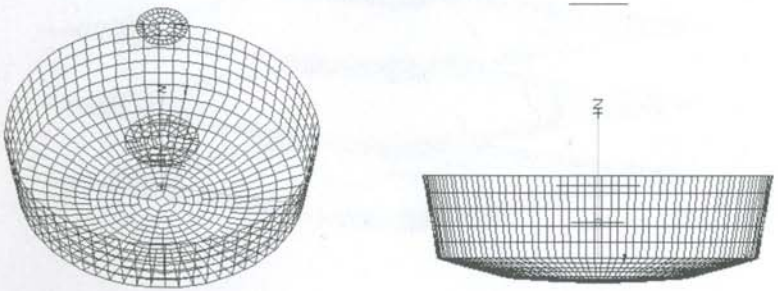


Fig. 3 – Grid structure generated by the Matlab© script with settings listed in the previous image.
Abb. 3: Von Matlab© erzeugte Gitterstruktur mit den Angaben in Bild 2.

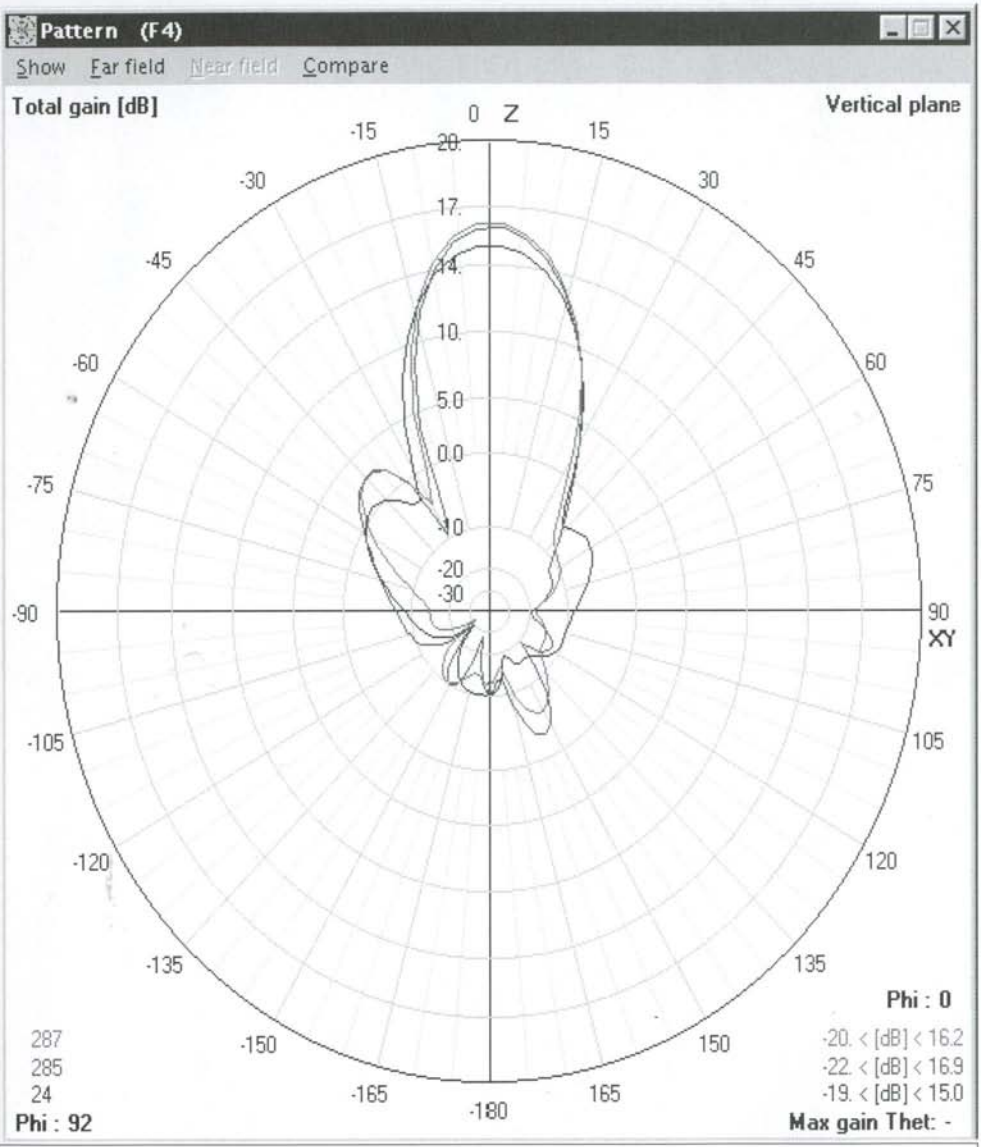
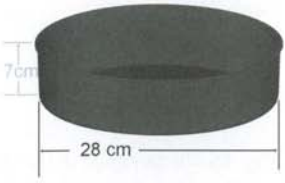


Fig. 4 - Simulation of the behavior of linear polarized antennas with three different pie-tins:

- **"287" = diameter: 28cm, height of the rim: 7 cm**
- **"285" = diameter: 28cm, height of the rim: 5 cm**
- **"24" = diameter: 24cm, height of the rim: 5 cm**

The left side shows 92° plane, the right one 0°.
For real antenna it was chosen the first tin:



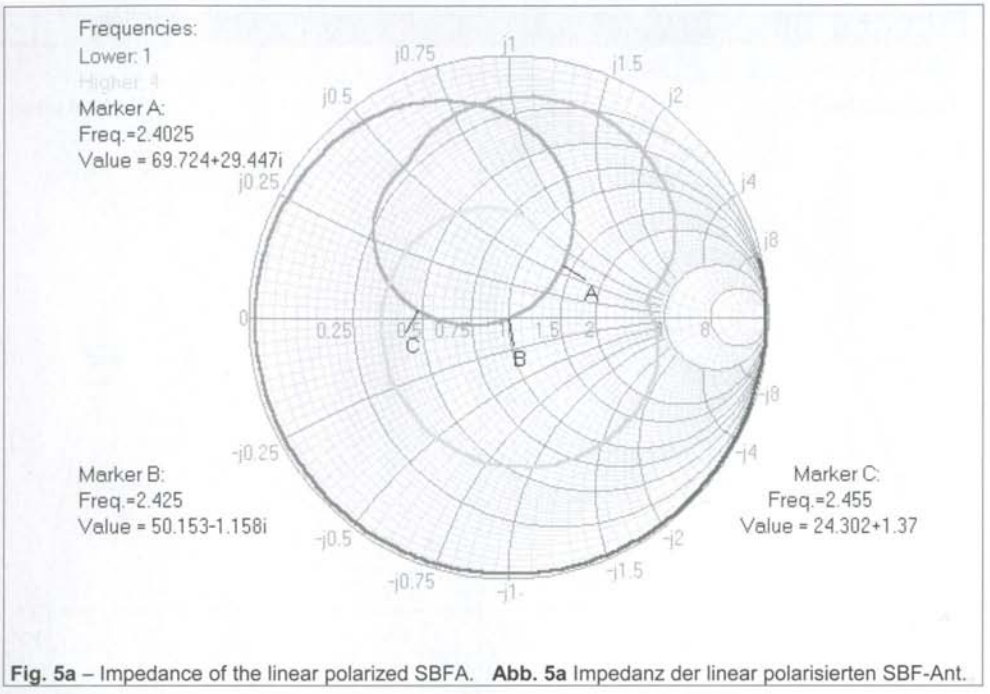


Fig. 5a – Impedance of the linear polarized SBFA. **Abb. 5a** Impedanz der linear polarisierten SBF-Ant.

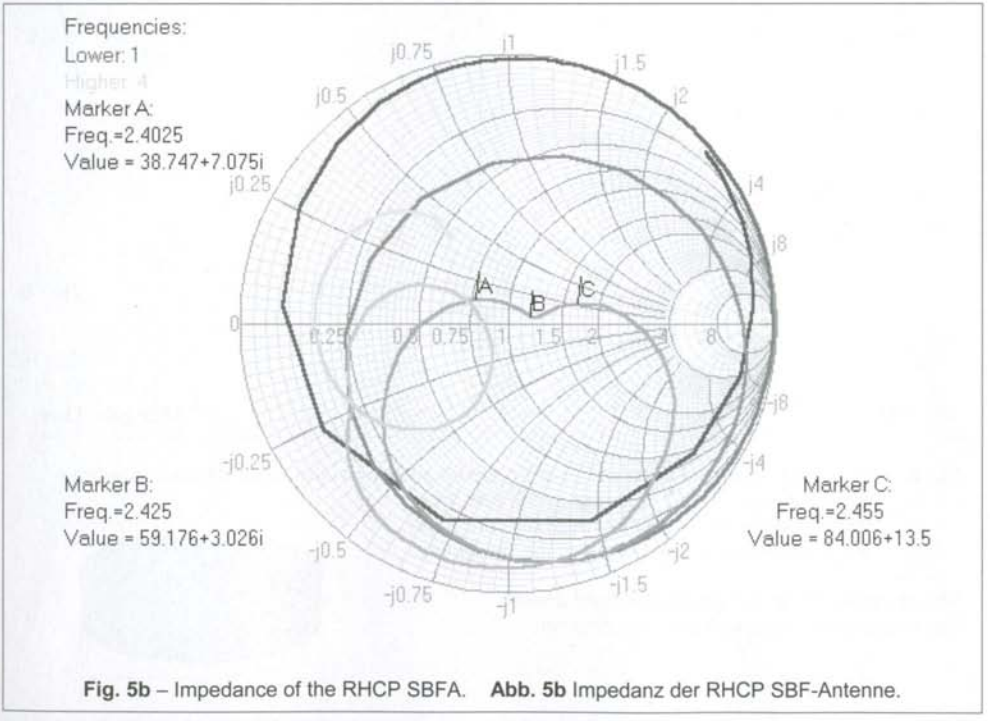


Fig. 5b – Impedance of the RHCP SBFA. **Abb. 5b** Impedanz der RHCP SBF-Antenne.

Changing parameters in the Matlab© script, it is possible to understand what is happening to the radiation characteristics of the antenna. For example we can set the rim height of the main reflector to about λ/2 and simulate the device. If then we shorten it, we'll see that will increase the bandwidth, but the gain will become more poor. Playing with such changes it is possible to find proper dimensions for all the parts of the antenna according to own requirements.

Construction and Measures

There were not available on the market many kinds of pie-tin, so we were a bit constrained by the shape of each of them. It was necessary to choose the most appropriate within a discrete set of tins by simulations, which results are shown in fig. 4.

Then we had looked for a proper choice also for the radius of the secondary reflector and found a proper value for its diameter at about 7 cm (see fig. 7).

The shortening factor of a dipole inside the cavity is quite marked compared to the situation, where we have a dipole in free space, and this had been also confirmed by NEC tests. Unfortunately it's very difficult to trust NEC outputs of impedance values, but it wasn't a problem because of good attitude of Short Backfire antennas to show input impedance nearly 50 Ohms. A good matching was obtained tuning the short circuit as shown in fig. 7 and explained in caption of fig. 8.

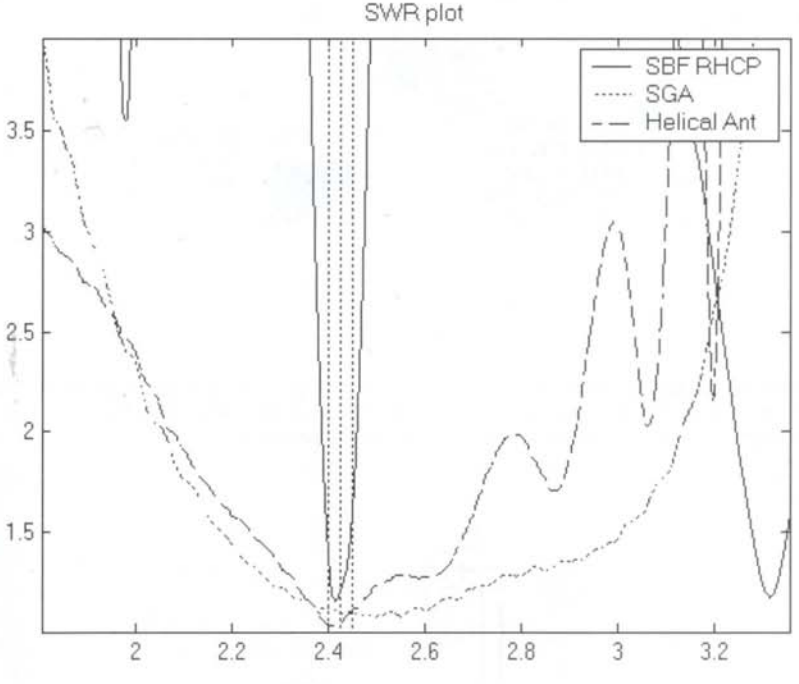


Fig. 6 – Measured Standing Wave Ratio for the Short Backfire Right Hand Circular Polarized Antenna, for the Standard Gain Antenna used to measure the gain and for a helical antenna built for other tests. Physical dimensions of the feed are shown in the next picture.

Abb. 6: Gemessenes SWR der RHCP SBF-Antenne, der Referenzantenne und einer Helixantenne, die für andere Tests gebaut wurde.

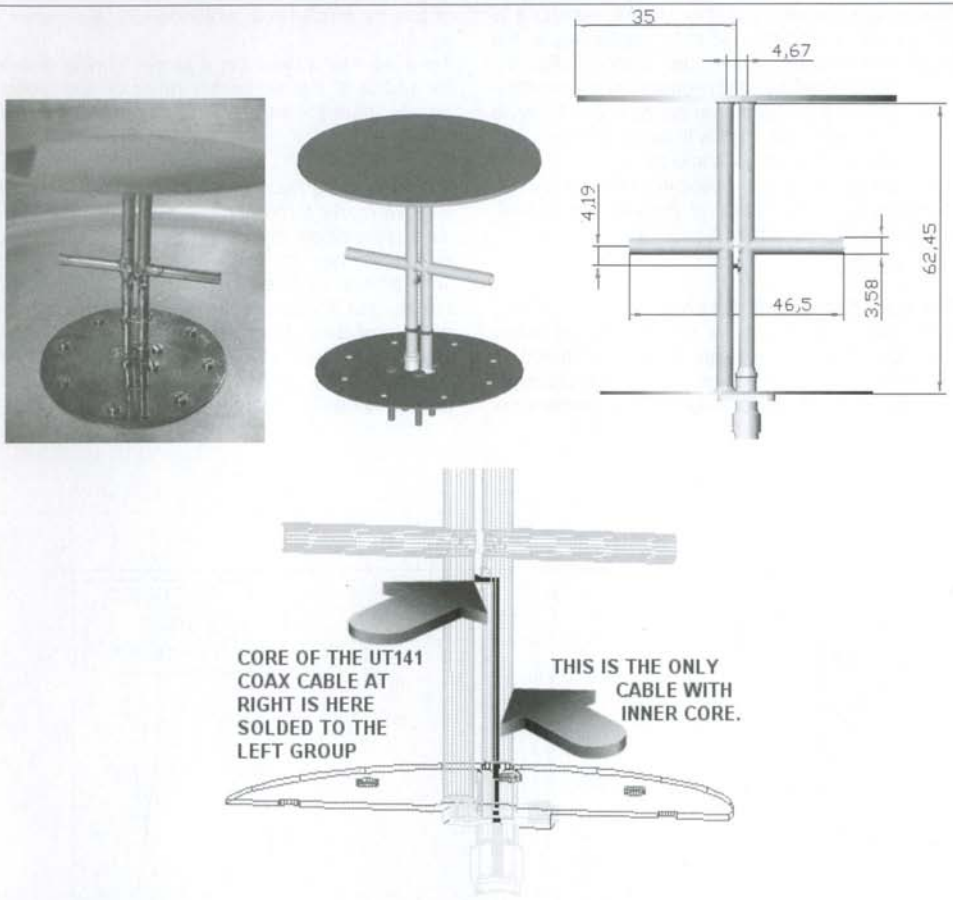
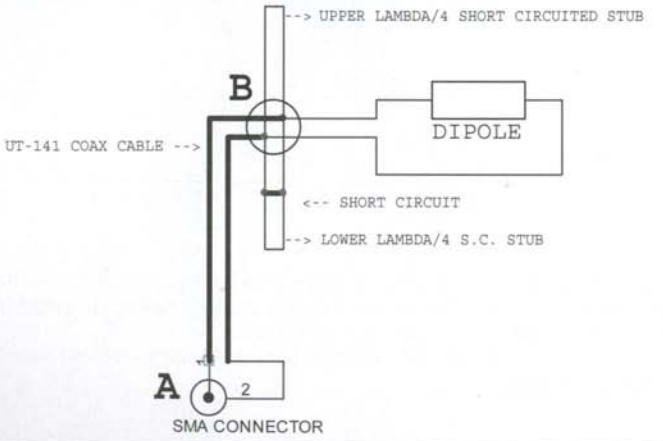


Fig. 7 (up), **Fig. 8** (down) – Feed for linear polarization and physical dimensions (in mm) of the antenna feed for linear polarization. It was used a rigid UT141 coaxial cable to create the dipole and the stubs. The lower one is short circuited to obtain the following equivalent circuit:



The characteristic impedance of the lower parallel-pair transmission line is

$$Z_{C_{TW}} = \frac{1}{\pi}\sqrt{\frac{\mu}{\varepsilon}} \cdot \operatorname{arccosh}\left(\frac{D}{d}\right) \quad (1)$$

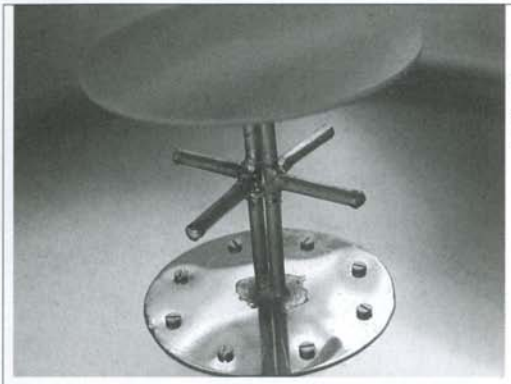
where *D* is the distance between the centres of the cables and *d* is the external diameter of each wire. Because the dielectric is the air we have

$$\frac{1}{\pi}\sqrt{\frac{\mu}{\varepsilon}} \cong 120 \quad (2)$$

Knowing Z_{CTW} for the stub we can dimension its behaviour as a pure imaginary impedance by varying the distance between its input and the short circuit. Actually the impedance seen at point B in the previous scheme is

$$Z_B = Z_{C_{TW}} \cdot \frac{Z_L + j\, Z_{C_{TW}} \cdot tg\left(\frac{2\pi}{\lambda} \cdot l\right)}{Z_{C_{TW}} + j\, Z_L \cdot tg\left(\frac{2\pi}{\lambda} \cdot l\right)} \quad (3)$$

where Z_L=0 and *l* is the distance we talked about.



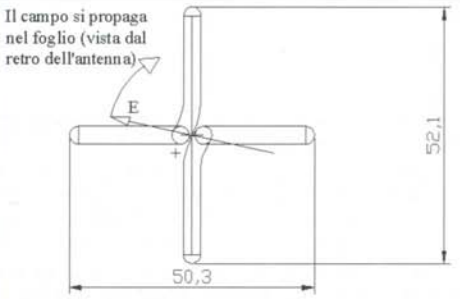
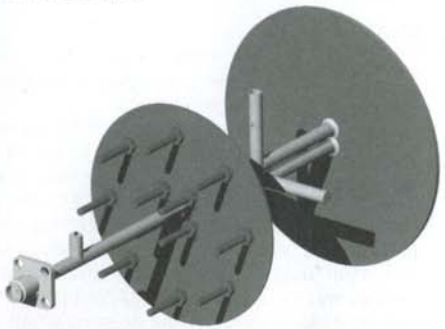
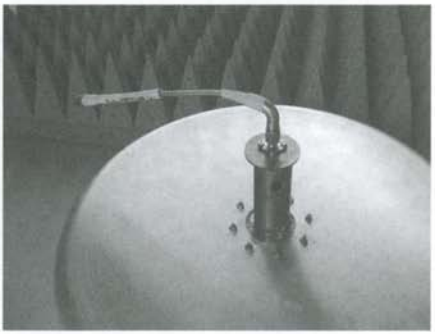


Fig. 9 Feed for circular polarization and its dimensions (rear view: the field is propagating inside the sketch; measures in mm). The length of each dipole is a critical parameter for reaching almost circular polarization. The tuning had been made soldering little patches to the ends of the diploes and testing the circularity using the standard gain antenna shown in fig. 15.
Moreover, to ensure of the correct way of rotation, it was constructed a simple RHCP helical antenna (fig. 14). Usually orthogonal polarizations are separated by about 30 dB of isolation.

Fig. 10 A short circuited stub is placed rear to the main reflector, along the transmission line and just before the connector (see next rendering). In the photo is shown how the stub had been protected placing it inside a pipe.





The stub, shown in previous pictures, is necessary for a correct matching of the antenna at the input SMA connector. An equivalent diagram will explain it better.

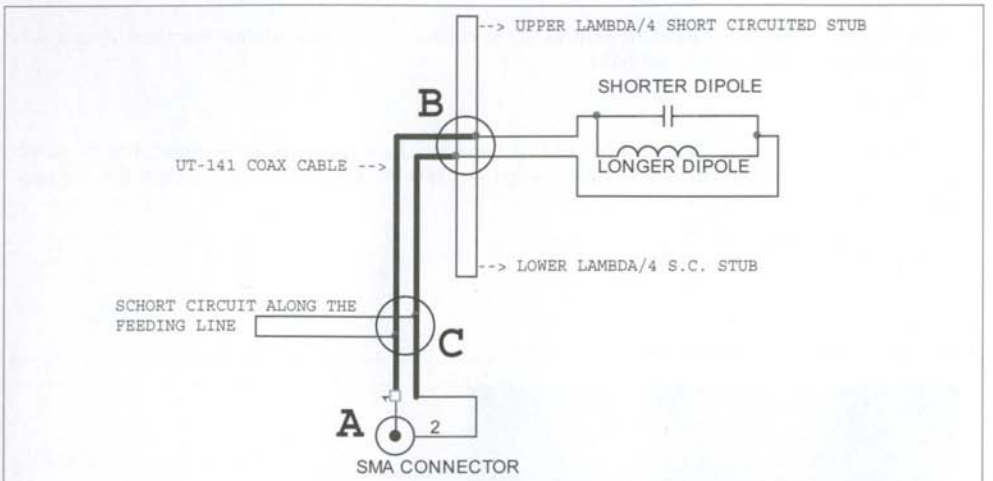


Fig. 11 – Equivalent scheme for the RHCP SBFA. **Abb. 11:** Schaltungsäquivalent der SBF-Antenne.

Matching procedure for circular polarization SBF antenna

It has been measured the admittance ad point A (SMA connector) without the short circuit along the transmission line: Z_A=13.355 + j 46.640 Ω. Using the Smith Chart and remembering that the UT 141 cable has a Teflon dielectric (ε_r = 2.1), we can quickly get the distance at which the admittance has its real part (1/50) S. In our case the distance is nearly 2.48 cm from the connector. Actually there it is seen an admittance of (20.0 +j 33.6)·10^{-3} S. Placing at point C a pure imaginary –j 33.6 S admittance, for instance a short circuited transmission line, we'll obtain in the same place a pure real impedance of 50 Ohm. The same impedance will be seen at the connector (have a look to Smith Chart). The length of the short circuited patching coax line is obtained using the formula

$$Z_{IN} = Z_C \cdot \frac{Z_L + j\,Z_C \cdot tg\left(\frac{2\pi}{\lambda}\cdot l\right)}{Z_C + j\,Z_L \cdot tg\left(\frac{2\pi}{\lambda}\cdot l\right)} \quad (4)$$

Remembering that Z_L=0 because of the short circuit, the (4) becomes

$$Z_{IN} = j\,Z_C \cdot tg\left(\frac{2\pi}{\lambda}\cdot l\right) \quad (5)$$

or

$$Y_{IN} = -j\,Y_C \cdot cotg\left(\frac{2\pi}{\lambda}\cdot l\right) \quad (6)$$

where it had been measured Y_{IN} = - j 33.6·10^{-3} and Y_C=1/50 Siemens. We also have

$$\lambda = \frac{\lambda_{FREE\,SPACE}}{\sqrt{\varepsilon_r}} = \frac{c}{2425\cdot 10^6 \cdot \sqrt{2.1}} \cong 8.531\,\text{cm}.$$

So

$$l = arctg\left(\frac{1}{-33.6\cdot 10^{-3}\cdot 50}\right)\cdot\frac{\lambda}{2\pi} \cong 7.3\,\text{mm}$$

is the length of the short circuited coaxial cable, which had been put at point C and visible in the rendering of fig. 10. The real length of the cut cable is very close to that value.

Measurements

The measurements were done using a Wiltron 37247A two port Network Analyzer in the laboratories of the L'Aquila University.

To work with a crossed dipole is a bit harder because we must pay great attention to the circularity of polarization. Nevertheless it was reached good matching. Today the fastest and the most accurate way to obtain circular polarization with good gain in homely within is to use helical antennas. With using the network analyzer, the Friis formula and the Standard Gain Antenna (fig. 15), it was possible to measure the antenna's gain: 17.1 dBi.

Other measures were done in anechoic chamber to validate the directivity diagram calculated by NEC. Best fitting is reached extending the length of the dipole in the simulation, where is not present the gap and the currents are calculated at the middle point of each of the 9 segments in which is divided the conductor. The superimposing of the calculated by NEC simulation plot and the measured one is displayed in fig. 12.

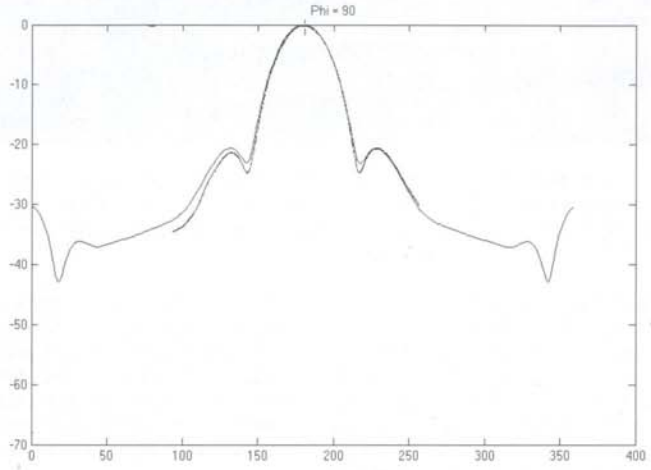


Fig. 12 – Superimposing of the NEC simulation over measured plot of the linear polarized SBF antenna. H-Plane.
Bild 12: Kurven der NEC-Simulation und der Messung der linear polarisierten Antenne in der H-Ebene.

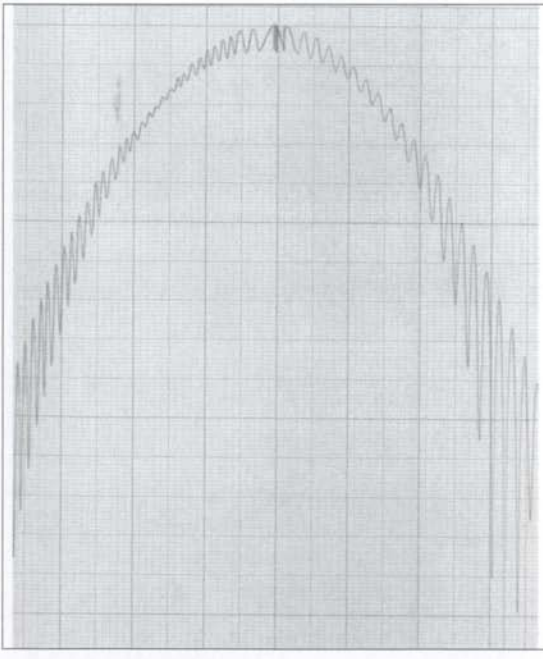
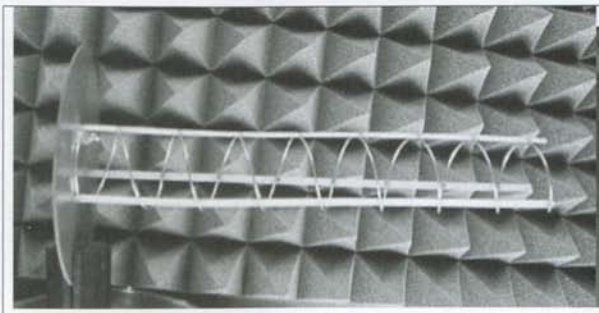


Fig. 13 – "Spinning probe" measurement of the RHCP SBF antenna. It was obtained by quick rotation of the antenna along its axis meanwhile had been scanned a directivity diagram. The gain difference for H and E planes at maximum directivity is about 1.2 dB.

Bild 13: „Spinning probe" – Messung der RHCP SBF-Antenne. Die Antenne wurde schnell um ihre Achse rotiert, während ein Richtwirkungsdiagramm aufgenommen wurde. Der Gewinnunterschied der H- und E-Ebene bei maximaler Richtwirkung beträgt etwa 1.2 dB.



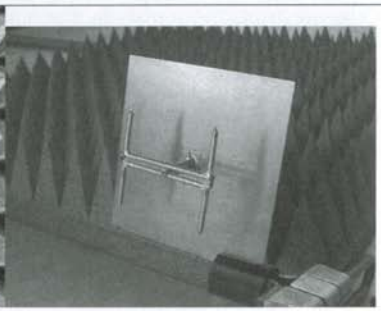


Fig. 14 (left) – The Helical Right Hand Circular Polarized Antenna.
Abb. 14 (links) die Antnne mit rechtsdrehend zirkularer Polarisation.
Fig. 15 (right) – The Standard Gain Antenna **Abb. 15** (rechts): Die Referenzantenne

Actually the polarization of the RHCP SBFA is a bit elliptical. The 1.2 dB of difference in gain for two planes isn't really a problem, and it could be achieved a better result feeding two identical dipoles with two different delaying networks, but we preferred to use a common network and to induce a delay shorting a dipole (introducing this way a capacitive behaviour) and longing the other one (which became an inductance) (see fig. 9).

Conclusions

The Short Backfire Antenna in linear polarization we dealt about was built in a simple and cheap manner, although has quite high gain and is quite simple to match. A bit more complex is the circular polarization SBF antenna, but the feed can be replaced with a patch exciting device or a short helix antenna. The SBFA is very suitable for LAN applications if somebody wants to extend the distance of a traditional wireless link with an omnidirectional antenna (100-200 meters) to about 2 km in free space and optical visibility. Moreover this antenna had always in the past been used for low frequency microwave applications because of its reduced dimensions (such as satellite and earth links), even if we have to pay band restrictions.

Special thanks to Dr. Mike Davis for precious help editing this article.

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[1] Numerical Electromagnetics Code, a computer code for antenna simulation of the Lawrence Livermore Laboratory. Are available an user friendly program ("4nec2"), manuals and other useful stuff at http://www.qsl.net/wb6tpu/swindex.html .

[2] The Method of Moments (or MoM) is a mathematical technique used to solve the electromagnetic problem

Short Backfire Antenne

Sergio Cicerone

Einführung

Obwohl Short Backfire Antennen (SBF) ziemlich einfach herzustellen sind und auch nicht gerade professionell aussehen, werden sie in Telekommunikationssystemen oft eingesetzt, wenn kompakte Struktur, hoher Gewinn und geringe Bandbreite gefragt sind.

Deshalb finden wir SBF-Antennen oft auf Schiffen, an Satelliten oder auch auf Hausdächern besonders für Linkstrecken im unteren Mikrowellenbereich. In den letzten Jahren haben SBF- Antennen begonnen, auch den Wireless-LAN-Bereich zu erobern. SBF's sind für diesen Zweck ganz besonders geeignet. Ihre Schmalbandigkeit bedeutet bei relativ niedrigen Bitraten keinen Nachteil und die kleineren Abmessungen -verglichen mit einer Parabolantenne- sprechen ebenfalls für diese Antennen.

Das Projekt wurde von Prof. P. Tognolatti, Universität L'Aquila, Italien begonnen. Fortgeführt wurde es dann als Diplomarbeit von S. Cicerone, Student an derselben Universität. Die Hauptanforderungen an die Antenne waren niedrige Kosten und einfache Konstruktion. Die einfachste und am meisten verbreitetste Art eine solche Antenne zu bauen, ist die Verwendung einer Kuchenform als Hauptreflektor. Alle anderen Teile sind ebenfalls sehr billig zu bekommen. Als Strahlerelement bietet sich ein einzelner Halbwellendipol an. Drei verschiedene Arten von Einspeisungen wurden konstruiert: eine für lineare Polarisation,
und zwei für zirkulare Polarisation. Davon war eine Einspeisung für linksdrehend Zirkulation (LHCP) und die andere für rechtsdrehende Zirkulation (RHCP) ausgelegt. Wie man anhand der folgenden Bilder sehen kann, wurden in beiden Fällen Kreuzdipole verwendet.

Da viele Applikationen ihre Arbeitsfrequenz bei 2425 MHz haben wurde diese als Mittenfrequenz gewählt. Das gewählte Band hat viele Vorteile. Unter anderem das Amateurfunkband (2440-2450 MHz) und Uplink/Downlink-Frequenzen der AO-40-Transponder (http://www.amsat-dl.org). Darüber hinaus ist dieser Frequenzbereich für das Untersuchen von elektromagnetischer Ausbreitung in komplexer Umgebung sehr gut geeignet. Dies ist auch ein Studienschwerpunkt an der Universität von L'Aquila.

Eine SBF-Antenne kann dank ihrer Resonanz sehr hohe Gewinnwerte erreichen. Wie in **Abb. 1** zu sehen ist, ist die Freiraum-Richtwirkung ist trotz des ziemlich inhomogenen Nahfeldes recht gut.

Im Jahr 1970 liess Ehrenspeck die erste SBF-Antenne patentieren (U.S. pat. No. 3508278). Aufgrund der Funktion einer solchen Antenne kann sie mit einem Laser verglichen werden. Mit flachen Reflektoren, kann eine schmale Resonanz erzielt werden. Normalerweise ist die Bandbreite nicht grösser als 3% der Arbeitsfrequenz.

Einer oder zwei konische Reflektoren werden benutzt, um die Bandbreite zu erhöhen.Ein grosser Kegelwinkel resultiert in grösserer Bandbreite mit niedrigem Gewinn. Diese Betrachtungen konnten mit Hilfe von NEC verifiziert und durch Simulationen bestätigt werden.

Der PC-Simulator

Die Grundkonstruktion wurde anhand von verfügbaren Dokumentationen und der Originalarbeit vom Ehrenspeck erstellt. Es stellte sich heraus, dass es nötig war, das Verhalten der Antenne mit Hilfe eines Computers zu simulieren. Vor allem, da wir verschiedene Materialien, Hohlleiter und Formen verwendeten.

Um das Gittermodell zu generieren verwendeten wir Matlab© **(Abb. 3).** Mit Hilfe des Programms NEC([1]) simulierten wir die Antenne, den zu erwartenden Gewinn, das Richtungsverhalten, Nahfeldinformation usw. Die mathematische Basis von NEC ist die „Method of Moments" ([2]).

Indem man die Parameter im Matlab©-Skript ändert, kann man verstehen, was mit der Strahlungscharakteristik passiert. Zum Beispiel können wir den Rand des Hauptreflektors auf Lambda ½ erhöhen und die Antenne simulieren. Wenn wir ihn dann verkleinern, sehen wir, dass sich die Bandbreite der Antenne erhöht, der zu erwartende Gewinn sich dagegen verschlechtert. Spielt man etwas mit diesen Massen, findet man die optimalen Abmessungen für die gewünschte Antenne.

Konstruktion und Abmessungen

Da es nicht sehr viele verschiedene Kuchenformen auf dem Markt gibt, waren wir in der Form etwas gebunden. Es war nötig, die am besten geeignete Form durch Simulation zu bestimmen. Das Ergebnis zeigt **Abb. 4.**

Die Suche nach den optimalen Werten für den zweiten Reflektor ergab einen Durchmesser von 7 cm (siehe **Abb. 7**).

Der Verkürzungsfaktor eines Dipols innerhalb einer Cavity ist sehr ausgeprägt im Vergleich zu einem Dipol im Freiraum. Dies konnte auch durch Berechnungen mit NEC bestätigt werden. Die Angaben von NEC bezüglich der Impedanzen sind leider nicht sehr verlässlich.

Wegen der generellen Eigenschaft der SBF, Impedanzen um die 50 Ohm zu haben, war das allerdings kein Problem. Eine gute Abstimmung konnte mit der in **Abb. 7** gezeigten Anordnung gefunden werden. Die Erklärung dazu findet man in **Abb. 8**.

Die Abmessungen des Speiseelements finden sich im folgenden Bild. (Abb. 7/8)

Der in den Bildern gezeigte Stub ist zur genauen Anpassung der Antenne an 50 Ohm nötig. Ein erläuterndes Diagramm folgt.

Anpassungsmethode für eine zirkular polarisierte SBF Antenne

Die gemessene Admittanz an Punkt A (SMA-Buchse) ohne dem Kurzschlussstub an der Feederleitung war: Z_A=13.355 + j 46.640 Ohm. Mit Hilfe des Smithdiagramms und unter Berücksichtigung des Dielektrikumswerts von UT 141 von ε_r=2.1 erhalten wir schnell den Abstand, an dem die Admittanz real ist (1/50) S. In unserem Fall waren das 2.48 cm vom Stecker. Eigentlich sieht man an diesem Punkt eine Admittanz von

(20.0 + j 33.6)*10-3 S. Plaziert man nun an Punkt C eine reine imaginäre Admittanz (-j 33.6 S), zum Beispiel einen Kurzschlussstub, erhält man an diesem Punkt eine reale Impedanz von 50 Ohm. Die gleiche Impedanz wird am Stecker „gesehen" (siehe Smithdiagramm). Die Länge des Stubs erhält man mit der Formel (4) (Siehe oben).
Da wegen des Kurzschlusses $Z_L = 0$ ist, wird Formel 4 zu Formel (5) oder Formel (6) (siehe oben).
Bei gemessenen Werten von $Y_{IN} = - j\ 33.6*10^{-3}$ und $Y_C = 1/50$ Siemens. Weiter ergibt sich

$$\lambda = \frac{\lambda_{FREIRAUM}}{\sqrt{\varepsilon_r}} = \frac{c}{2425*10^6 * \sqrt{2.1}} \cong 8.531 \text{ cm.}$$

Mit l = arctg (1/-33.6*10-3*50) * $\lambda/2\pi \cong 7.3$ cm haben wir die Länge des Stubs, an Punkt C (siehe **Abb. 10**). Die eigentliche Länge des Stubs entspricht ziemlich genau diesem Wert.

Messungen

Die Messungen wurden mit dem 2-Tor Netzwerkanalysator Wiltron 37247A in den Labors der Universität L'Aquila vorgenommen. Das schwierige an einem Kreuzdipol ist, dass man Sorge tragen muss, eine gute Zirkularpolarisation zu erzielen. Es wurden jedoch gute Ergebnisse erreicht. Der schnellste und beste Weg zirkulare Polarisation mit gutem Gewinn zu erzielen, ist die Verwendung von Helixantennen.
Mit Hilfe des Netzwerkanalysators, der Friis-Formel und der Referenzantenne (**Abb. 15**) konnte ein Antennengewinn von 17.1 dBi gemessen werden.
Es wurden weitere Messungen in einem reflexionsfreiem Raum vorgenommen, um die von NEC errechnete Richtwirkung zu verifizieren. Die beste Übereinstimmung zwischen Messergebnis und Berechnung ergab sich, wenn man die Dipole ohne Spalt einander annäherte und wenn die Ströme im Mittelpunkt der jeweiligen 9 Segmente berechnet wurden.
Die Kurven der NEC-Simulation und der Messung sind in **Abb. 12** dargestellt.
Die Polarisation der RHCP SBF-Antenne ist etwas elliptisch. Die 1.2 dB Gewinn-Unterschied der beiden Ebenen sind eigentlich kein Problem. Es könnte ein besseres Ergebnis erzielt werden, wenn man zwei identische Dipole mit unterschiedlichen Verzögerungsnetzwerken speist. Wir zogen es vor, ein gemeinsames Netzwerk zu benutzen und einen der Dipole zu kürzen (kapazitives Verhalten) und den anderen zu verlängern (induktives Verhalten) (siehe **Abb. 9**).

Zusammenfassung

Die SBF-Antenne mit linearer Polarisation hatte, obwohl einfach und billig in der Herstellung, einen ziemlich hohen Gewinn und war auch sehr einfach anzupassen. Etwas komplexer ist die Speisung bei Verwendung zirkularer Polarisation. Als Feed kann aber eine kurze Helixantenne verwendet werden. Die SBF-Antenne eignet sich sehr gut für LAN-Applikationen wenn man anstelle der mit Rundstrahlantennen zu erzielenden Distanz von 100 – 200 Meter bis zu 2km überbrücken will, freie Sicht vorausgesetzt. Ausserdem wurde diese Antenne in der Vergangenheit wegen ihrer kompakten Abmessungen für Applikationen im unteren Mikrowellenbereich (Satelliten oder Richtfunkstrecken) vielfach verwendet, auch wenn dies anderweitig Beschränkungen bedeutete.

Besonderen Dank an Dr. Mike Davis für seine wertvolle Hilfe beim Verfassen des Artikels.

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Weitere Bildunterschriften:

Bild 4: Simulation der linear polarisierten Antennen mit drei verschiedenen Formen:
„287" = 28cm Durchmesser, 7cm Randhöhe
„285" = 28cm Durchmesser, 5cm Randhöhe
„245" = 28cm Durchmesser, 5cm Randhöhe

Die linke Seite zeigt die 92°-Ebene, die rechte Seite die 0°-Ebene. Für die Antenne wurde das erste Modell gewählt.

Bilder 7 und 8: Speiseelement für lineare Polarisation mit Abmessungen. Für Dipol und Stub wurde UT141 Coaxialkabel verwendet. Die charakteristische Impedanz der unteren parallelen Leitung ist

$Z_{CTW} = 1/\pi * \sqrt{\mu/\varepsilon} * \text{arccosh}(D/d)$ (1)

wobei D der Abstand zwischen den beiden Kabelmittelpunkten und d der Aussendurchmesser der jeweiligen Kabel ist. Da wir als Dielektrikum Luft haben, gilt $1/\pi * \sqrt{\mu/\varepsilon} \approx 120$ (2)
Bei bekanntem Z_{CTW} für den Stub, können wir eine reine imaginäre Impedanz einstellen, indem wir den Abstand zwischen dem Anschluss und Kurzschluss variieren. Die an Punkt B „gesehene" Impedanz ist

(Formel 3)

mit $Z_L = 0$ und l wie beschrieben.

Bild 9: Feed für zirkulare Polarisation mit Abmessungen (in mm). Die Länge jedes Dipols ist kritisch für die Erzielung einer symetrischen Zirkularpolarisation. Zum Feinabgleich wurden kleine Metallstücke an die Dipolenden angelötet und das Resultat der erzielten Zirkularität mit einer Referenzantenne (Bild 15) verglichen. Um die Rotationsrichtung zu überprüfen, wurde eine einfache rechtsdrehende Helixantenne gebaut (Bild 14). Orthogonale Polarisationen weisen gewöhnlich 30 dB Isolation auf.

Bild 10: Ein Kurzschlussstub ist zwischen dem Hauptreflektor und der Aschlussbuchse angebracht. Im Photo ist der Stub durch ein Rohr geschützt.

Vielen Dank an Josef Koeferl, DC9RK/W0EBJ, für die deutsche Übersetzung!

Simulation with ANSOFT Serenade SV8.5 and 8.7

Transmission Line Diplexer for 435/145 MHz (Part II)

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THE PHYSICAL CIRCUIT

In Part 1 I determined the physical parameters of the transmission lines of a BP-BS microstrip diplexer. These are just approximate values, because the student version doesn't contain all the discontinuities. The layout can be drawn from the simulated data by any PCB programs.

I used Serenade 8.7 full version for the more accurate simulation [7], [8], as you can see on Figure 15. After having placed the step in impedance (STEP) and tee junctions (TEE) elements I optimized the circuit. Figure 16 shows the rectangular plot for the diplexer named "physical 3". Serenade 8.7 full version contains the S2A Layout program [9], [10]. The PCB can be generated fully automatically from netlist file (.ckt) by this program.
In favor of easier determination of the approximate measures a 5 x 5 mm grid is switched on, as Figure 17 shows. The characteristics of the circuit are superb, but it is too large. The measures can be decreased by enfolding the TRLs. There are two methods for this step. One is the simple mender structure, and the other is the multi-coupled lines. The second one needs much more time to be optimized, but it results in lower measures. Henceforth I used this method, so I present the lumped equivalent circuit of the coupled TRL on Figure 18. The ratio of inductive and capacitive components changes dependently of the coupling coefficient value. So the sum of the enfolded TRLs is not equivalent to the length of the original TRLs. It particularly concerns the usage of multi-coupled lines.

HIGH STANDARD LAYOUT DESIGN

At planning the Layout my purpose was to mount the diplexer in a 148 x 74 x 30 mm usual tinned iron box (SSB Electronic Art.-Nr.: 7276). The BENDs and multi coupled elements have many configuration variances. I had to find one which met the requirements of good electrical features and the suitable layout, too. I had to examine lots of possible devices, but I won't present all of them because of the length of the publication. Figure 19 shows the layout of an intermediate version (physical 5), which is excellent from electrical point of view. Its dimension is also suitable for the chosen box, but its layout is not usable, because W2 and WC1 transmission lines cover each other. The dimensions of the box are given, so I had to vary the BENDs and TRLs until they resulted in a suitable layout.
You can see the characteristics of the "physical 6" diplexer on Figure 20 and Figure 21. This version is adequate from the point of view of the Layout and electrical parameters, too. I made the prototype on FR-4 substrat. The simulated and the measured data are equivalent on 2m channel frequency (Figure 22), but they differ by 3.9% on 70 cm (Figure 23).
Such difference is acceptable at the usage of the cheap FR-4. I made the necessary corrections by optimizing the circuit on a frequency lower by 3.9% on 70 cm. After the repeated optimalization and measurement the final device is the "physical 8" diplexer (seen on Figure 24). In spite of the complicated circuit I did not take all the possible factors into consideration even at this device. The common coupling of the end of the hairpin-shaped lines of low impedance and the separation distance between microstrip edge and the side of the box can modify the result a little. These errors are negligible compared to the inaccuracies in manufacture of the FR-4 substrate, so I didn't consider it.
On Figure 25 I magnified the 435 MHz input inverter from the physical schematic of Figure 24. The values of the microstrip elements are distinctly visible on this figure. The suitable configuration of the BENDs and the multi-coupled TRLs resulted in the adequate Layout. Formerly this part of the circuit was marked with W1 on Figure 19. I made the optimalization of the diplexer with the following settings: Yield Optimization, Optimization Type: Random, Outcomes: 5, Response Modeling: Quadratic, Interations: 400. In case of modern computers this optimalization demands 3-4 hours CPU time while allowing 10 variables. Using the multi-coupled TRLs slows down the optimalization to a great extent.
After the optimalization I rounded off the data of the TRLs (W: Conductor width S: Line spacing) to

whole numbers in MIL (1000 MIL = 25,4 mm = 1 Inch). The tenth MIL values can be reproduced with difficulty during the manufacturing. I made the optimalization again, with the rounded W and S values and then I rounded the lengths of the TRLs to whole numbers (P: Physical length of the lines), as well. From these data the S2A LAYOUT software generated the modified PCB (seen on Figure 26) full automatically.
The substrate used was FR-4 PCB having a thickness of 1.5 mm and relative permittivity, εr = 4.5.
The measurement data of the diplexer after the modifications can be seen on Figure 27-30. In spite of the low cost substrate the measured and the simulated data are practically equivalent (Table 2.). There is good agreement between simulation and measurements.

CONCLUSION

A new type of BP–BS diplexer has been presented. The filters of the diplexer were created with the optimizing function of the Serenade, without filter designer software. In favor of the easier reproducibility all the resonators are created from transmission lines. On lower frequencies the dimension of the layout was decreased with the help of an interesting solution. The advantages of this diplexer architecture are compact size and good return loss on both channel frequencies.

Transmission Line Diplexer für 435/145 MHz (Teil II)

Gyula Nagy, HA8ET

Das Layout

In Teil 1 ermittelte ich die Parameter der Leitungselemente eines BP-BS Microstripdiplexers. Die Ergebnisse waren ungenau, weil die Studentenversion Unstetigkeiten nicht berücksichtigt.Das Platinenlayout läßt sich mit Hilfe eines beliebigen Layoutprogramms aus den simulierten Daten erstellen..

Zur genauen Simulation verwendete ich die Serenade 8.7 Vollversion [7], [8], ersichtlich aus Bild 15. Nach Einfügen der Impedanzsprünge (STEP) und Verzweigungen (TEE) optimierte ich die Schaltung. Bild 16 zeigt die Ergebnisse des Diplexers "physical 3". Die Vollversion von Serenade 8.7 enthält das S2A Layoutprogramm [9], [10]. Aus der Netzliste (.ckt) kann das Platinenlayout automatisch erzeugt werden.
Zur leichteren Abschätzung der Abmessungen wurde ein 5x5 mm Gitter aufgelegt, siehe Bild 17. Die Eigenschaften des Entwurfs sind ausgezeichnet, jedoch ist er zu groß. Die Abmessungen können durch Faltung der Leitungsstücke reduziert werden. Es gibt zwei Methoden, die einfache mäanderförmige Struktur und mehrfach gekoppelte Leitungen. Die zweite Methode erfordert mehr Entwicklungsaufwand, ergibt aber kleinere Layouts. Folglich wählte ich diese Methode, das äquivalente Schaltbild der gekoppelten Leitungen zeigt Bild 18. Das L/C-Verhältnis ändert sich in Abhängigkeit vom Kopplungsfaktor. Daher ist die Gesamtlänge der gefalteter Leitungen nicht gleich der Länge der originalen, gestreckten Leitungsstücke. Dies betrifft insbesondere mehrfach gekoppelte Leitungen.

Hochwertiges Layouten

Es war vorgesehen, den Diplexer in ein Standardweißblechgehäuse 148 x 74 x 30 mm (SSB Electronic Art.-Nr.: 7276) einzubauen. Die Biegungen und mehrfach gekoppelten Leitungen ergeben viele Freiheitsgrade. Es galt, eine elektrisch einwandfreie Lösung mit brauchbarem Layout zu finden. Ich kann hier aus Platzgründen nicht alle untersuchten Möglichkeiten vorstellen. Bild 19 zeigt eine Zwischenlösung (physical 5), elektrisch exzellent, auch ins Gehäuse passend, jedoch nicht zu realisieren, weil W2 und WC1 sich überlappen. Die Biegungen und Leitungselemente mußten bis zu einem brauchbaren Layout verändert werden.

Die Eigenschaften des Diplexers "physical 6" sind in Bild 20 und Bild 21 zu sehen. Diese Version erfüllt die elektrischen und Layout-technischen Anforderungen. Der Prototyp entstand auf FR-4 Material. Die gemessenen Parameter entsprachen auf 2m der Simulation, (Bild 22), auf 70cm ergab sich eine Abweichung von 3.9% (Bild 23).

Dies ist bei Verwendung von preiswertem FR-4 akzeptabel. Die erforderlichen Korrekturen des 70cm-Teils wurden bei 3,9% verringerter Frequenz durchgeführt. Nach wiederholter Optimierung und Messung entstand der entgültige Diplexer "physical 8" (siehe Bild 24). Wegen der komplizierten Schaltung berücksichtigte ich auch bei dieser Version nicht alle Variationsmöglichkeiten. Die Kopplung an den Enden der haarnadelförmigen Leitungen niedriger Impedanz sowie der Abstand der Streifenleitungen zu den Gehäusewänden verändern die Charakteristika ein wenig. Diese Fehler sind jedoch gegenüber der Fertigungstolleranzen von FR-4 vernachlässigbar.

In Bild 25 habe ich den Impedanzinverter der Schaltung aus Bild 24 vergrößert. Die Werte der Microstripelemente sind hier deutlich zu erkennen. Die erforderlichen Biegungen und die mehrfach gekoppelten Leitungen ergaben das entsprechende Layout. Zuvor war dieser Teil der Schaltung in Bild 19 mit W1 bezeichnet. Die Optimierung des Diplexers erfolgte mit folgenden Einstellungen: Yield Optimization, Optimization Type: Random, Outcomes: 5, Response Modeling: Quadratic, Interations: 400. Unter Verwendung moderner Rechner erfordert dieser Vorgang bei 10 Variablen etwa 3-4 Stunden. Die Verwendung mehrfach gekoppelter Leitungen verlangsamt die Optimierung sehr.

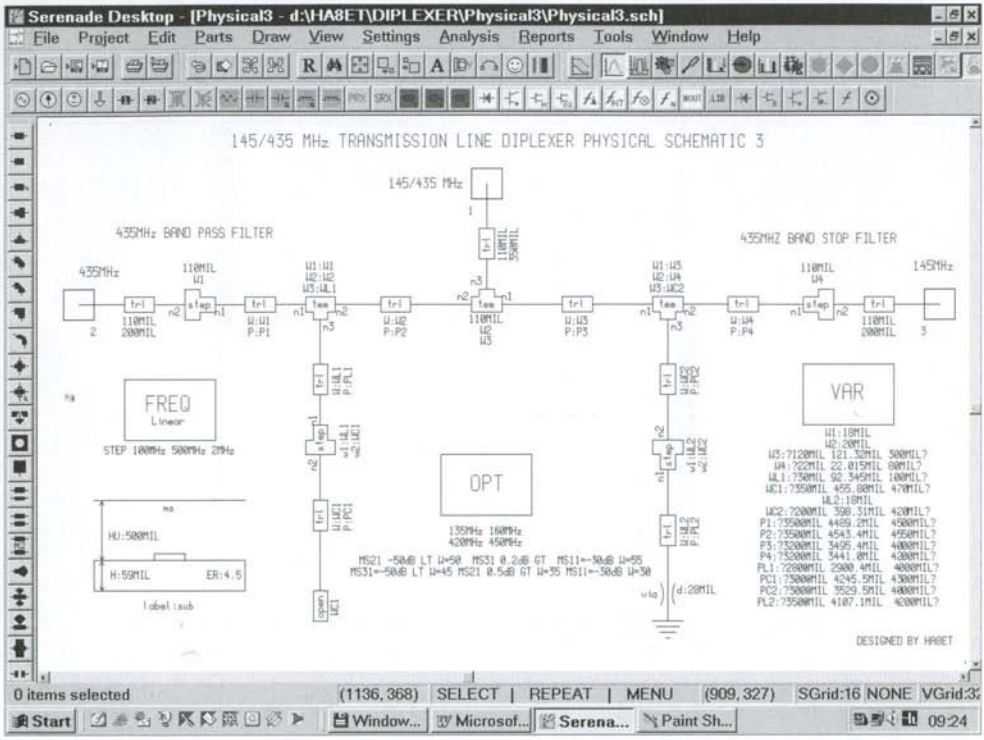


Figure 15. Physical schematic with discontinuties in the Serenade

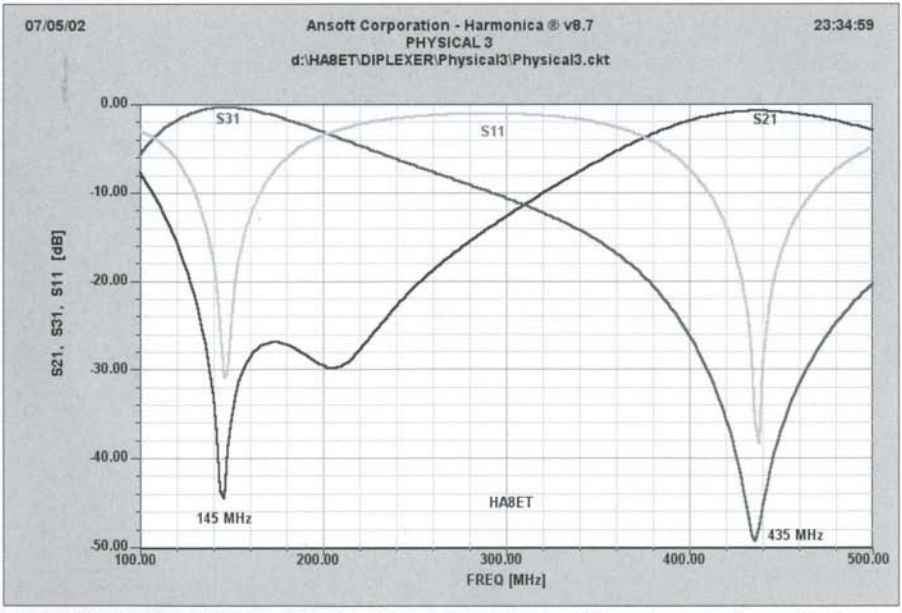


Figure 16. Transmission and return loss responses of the diplexer after optimization

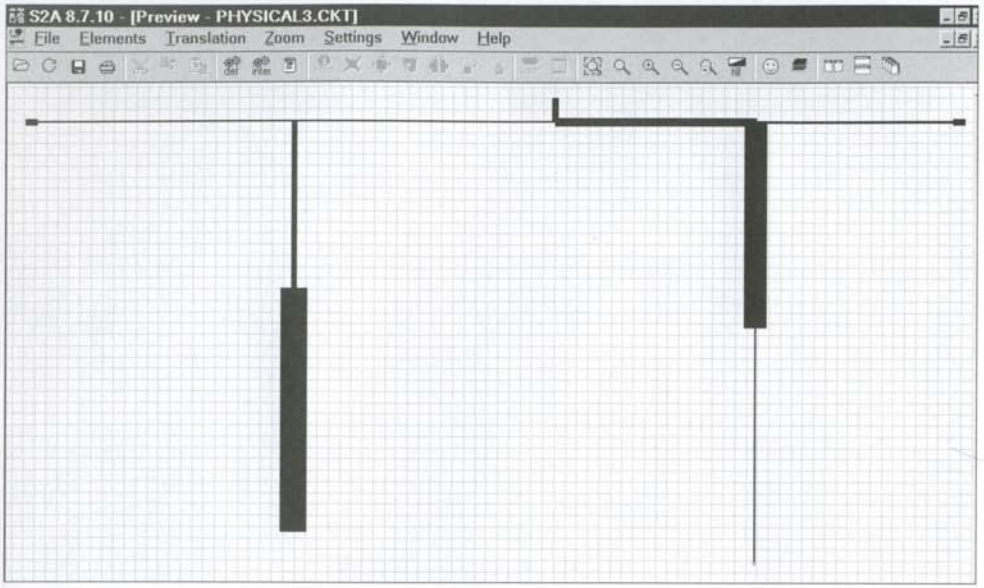


Figure 17. Layout of the "physical 3" diplexer. Grids are 5 x 5 mm

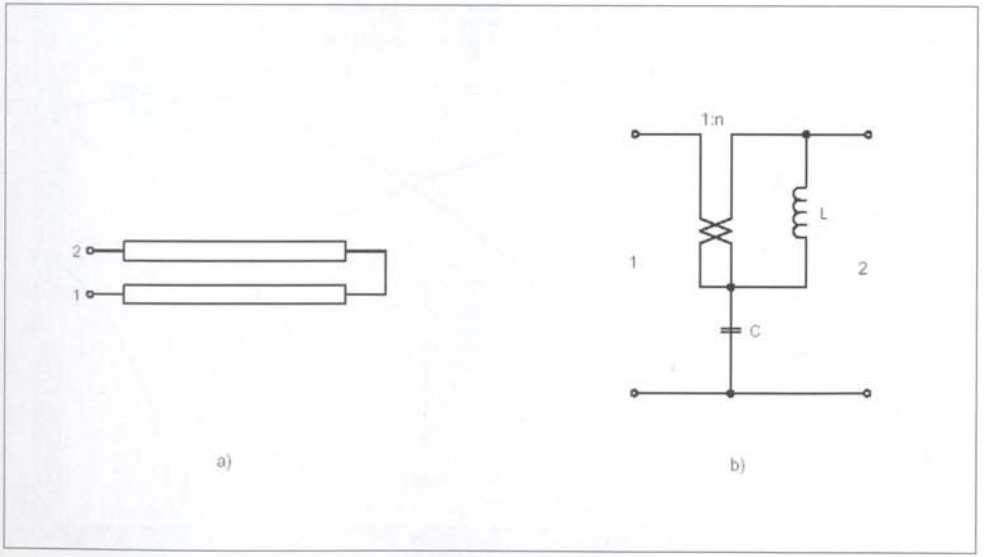


Figure 18. Lumped equivalent circuit of the coupled TRL

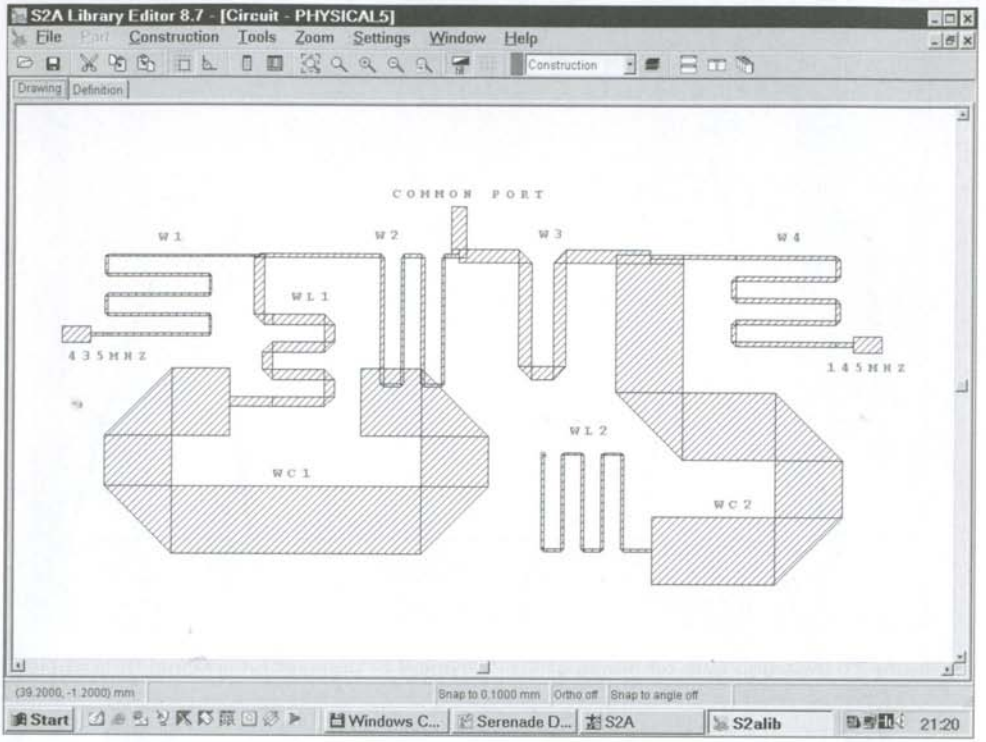


Figure 19. Layout of the "physical 5" diplexer with multi-coupled lines

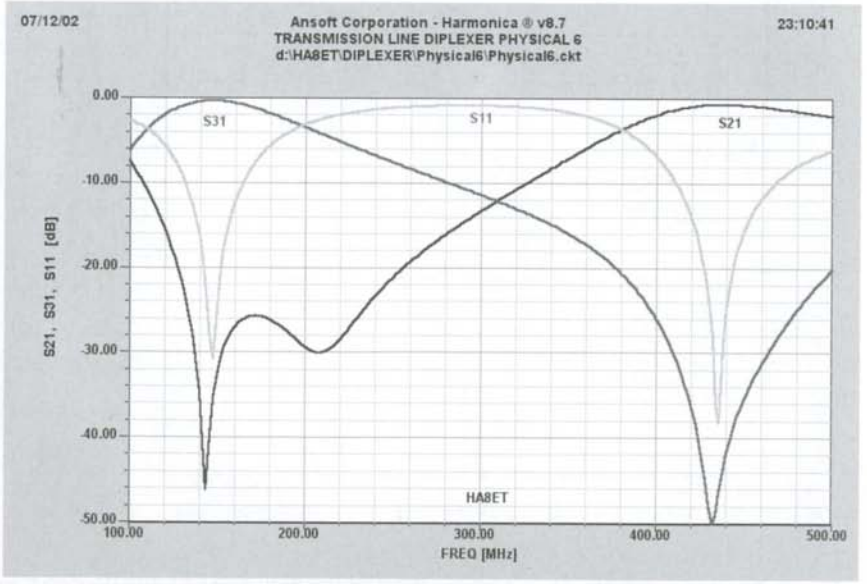


Figure 20. Rectangular plot for the "physical 6" diplexer

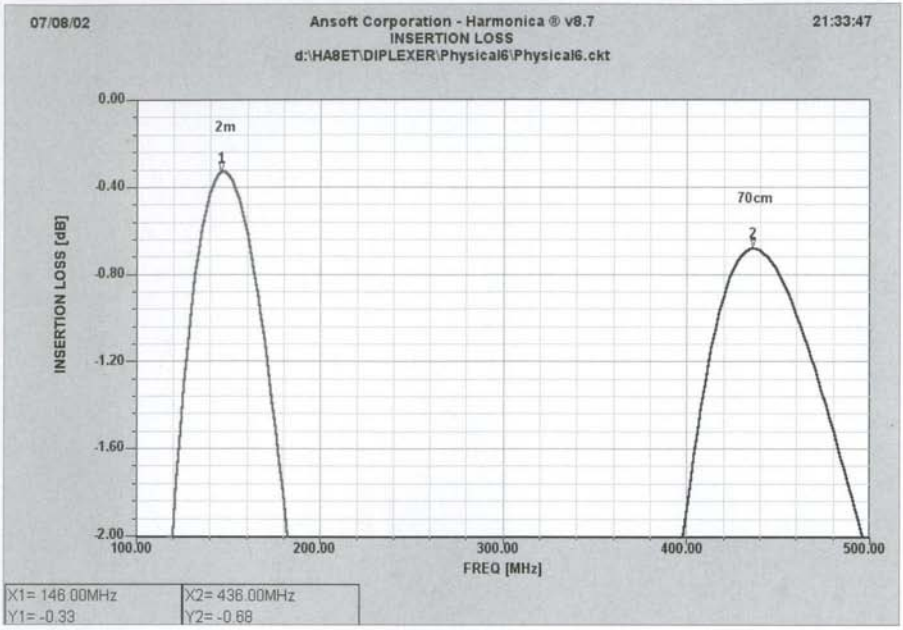


Figure 21. Insertion loss response of the "physical 6" diplexer on channel frequencies

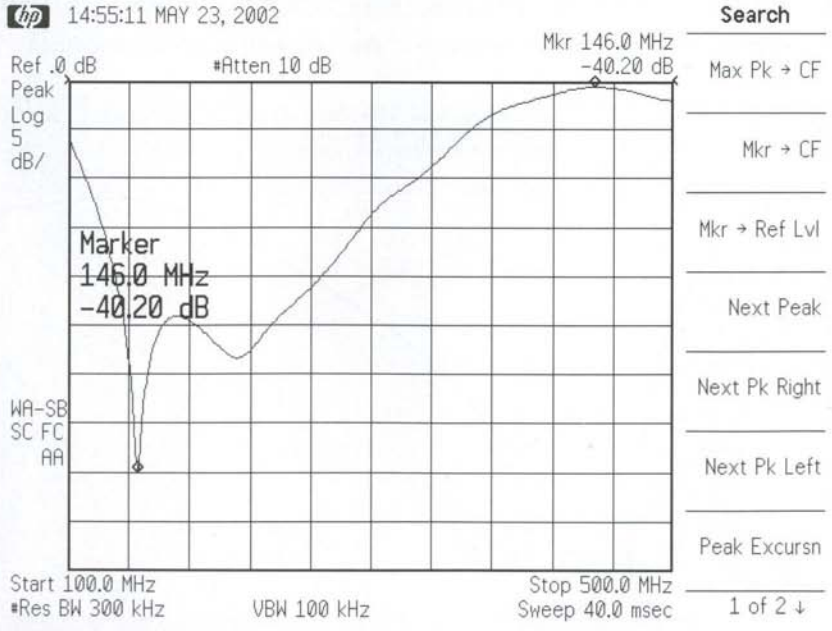


Figure 22. Measured stop band attenuation of the "physical 6" diplexer on 2 m

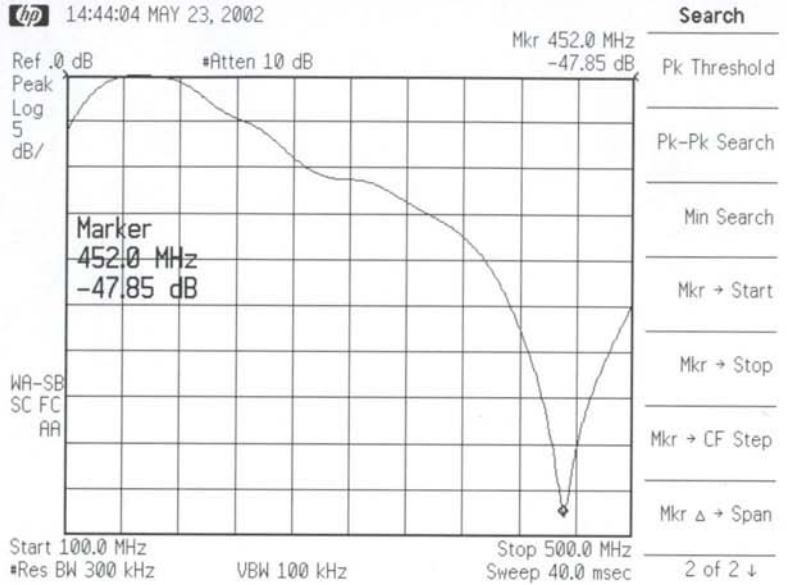


Figure 23. Measured stop band attenuation of the "physical 6" diplexer on 70 cm

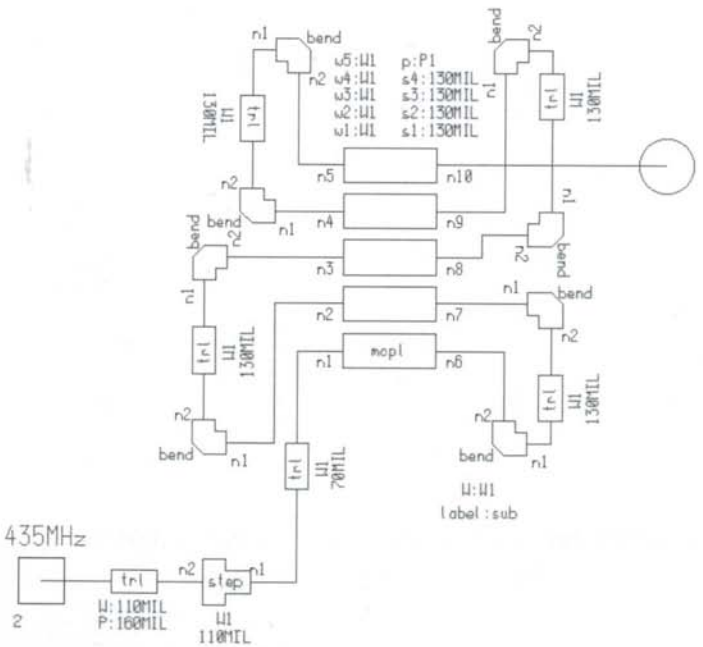
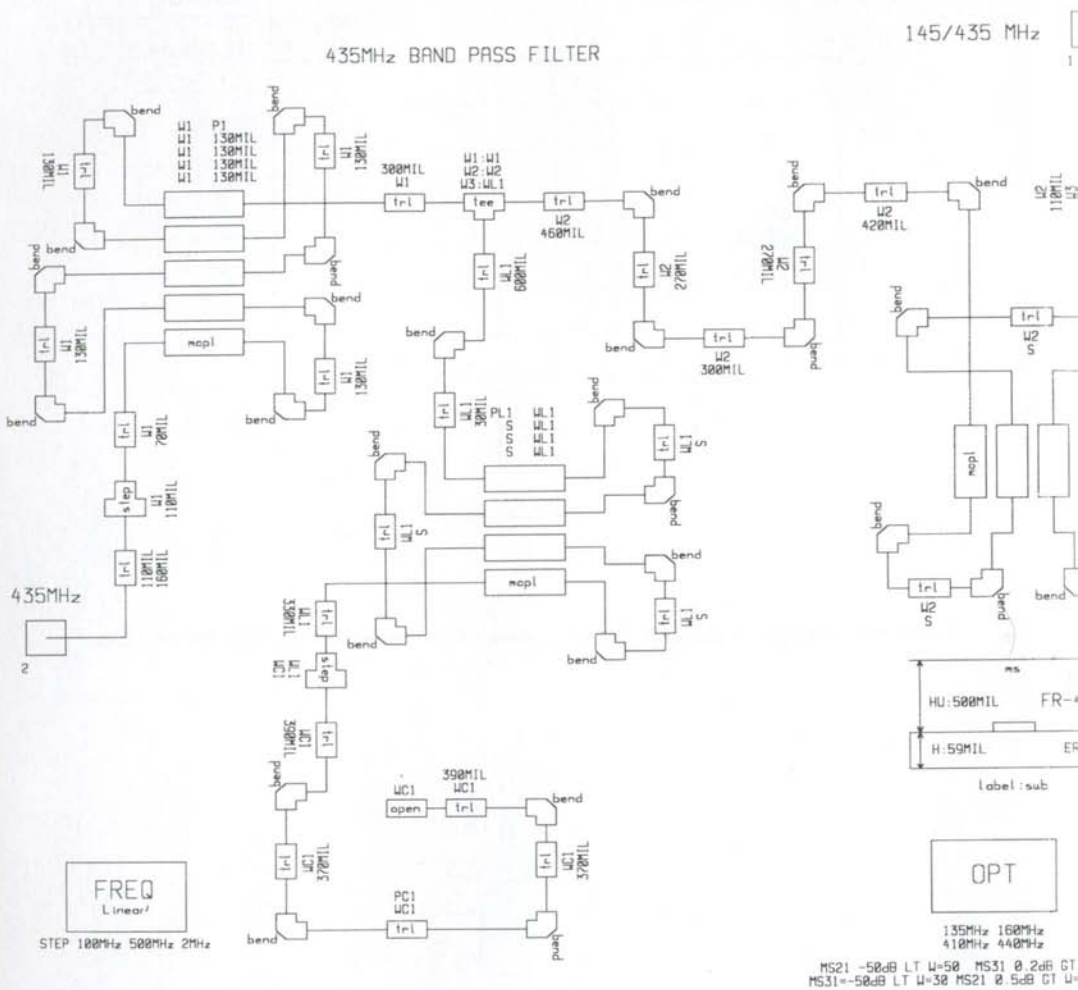


Figure 25. Enlarged circuit diagram of the 435 MHz input inverter



145/435 MHz Transmission Line Diplexer
Physical Schematic

designed by HA8ET

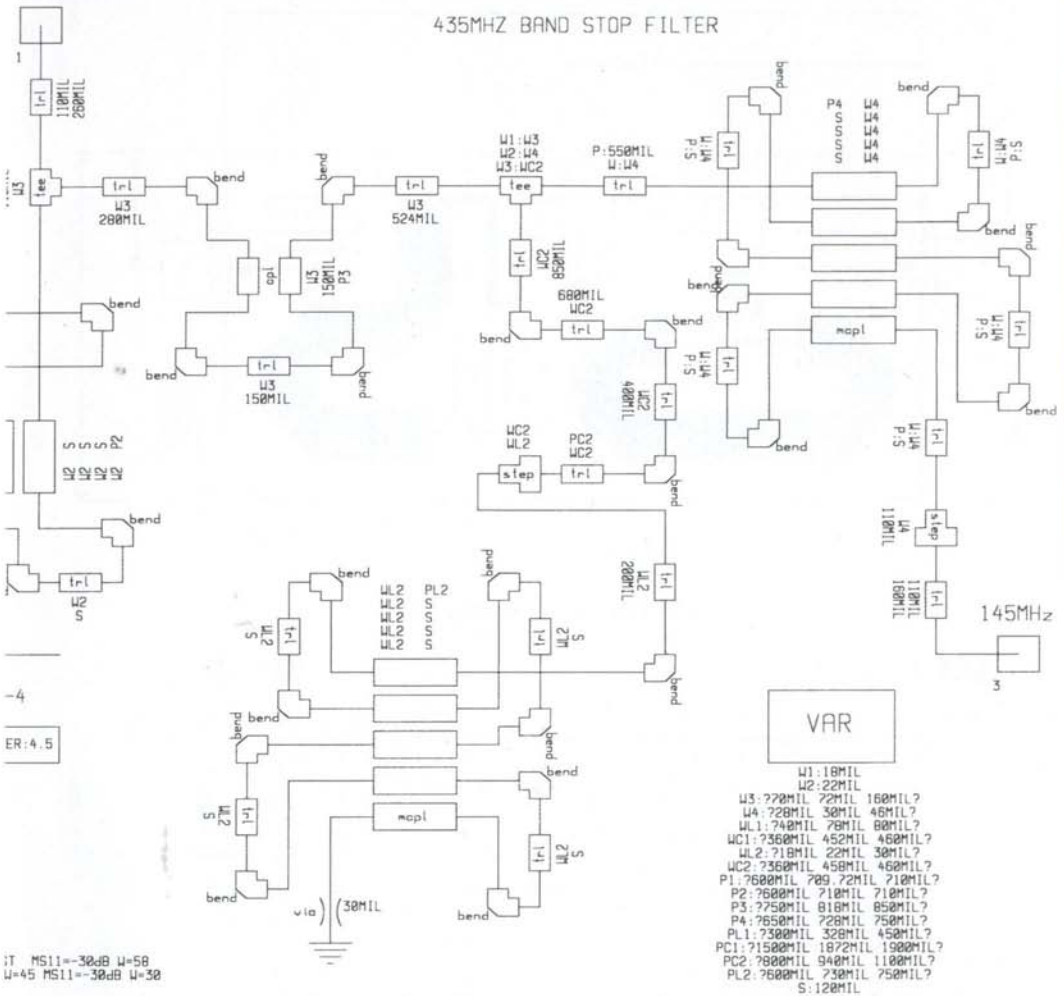


Figure 24.
Complete schematic diagram of the modified diplexer ("physical 8")

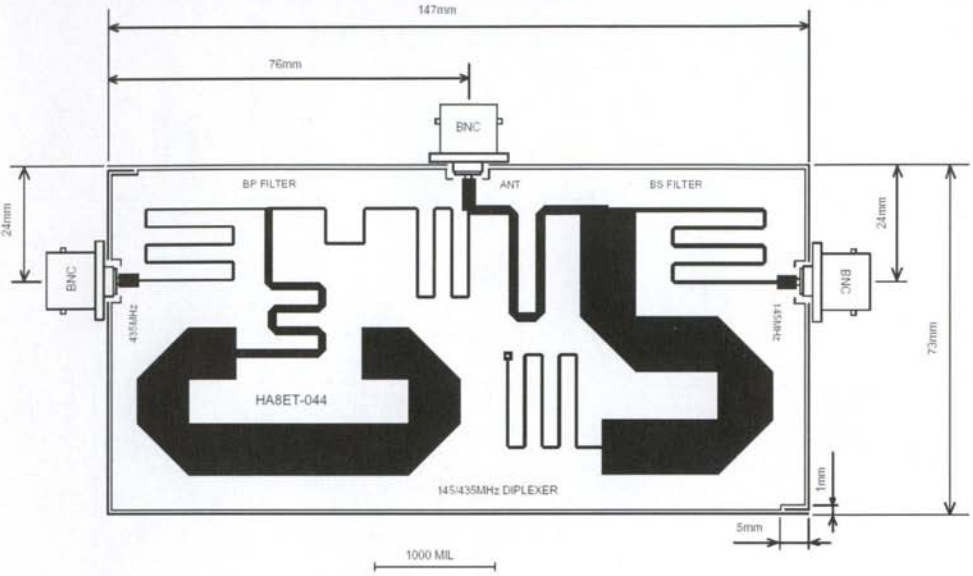


Figure 26. PCB of the modified diplexer

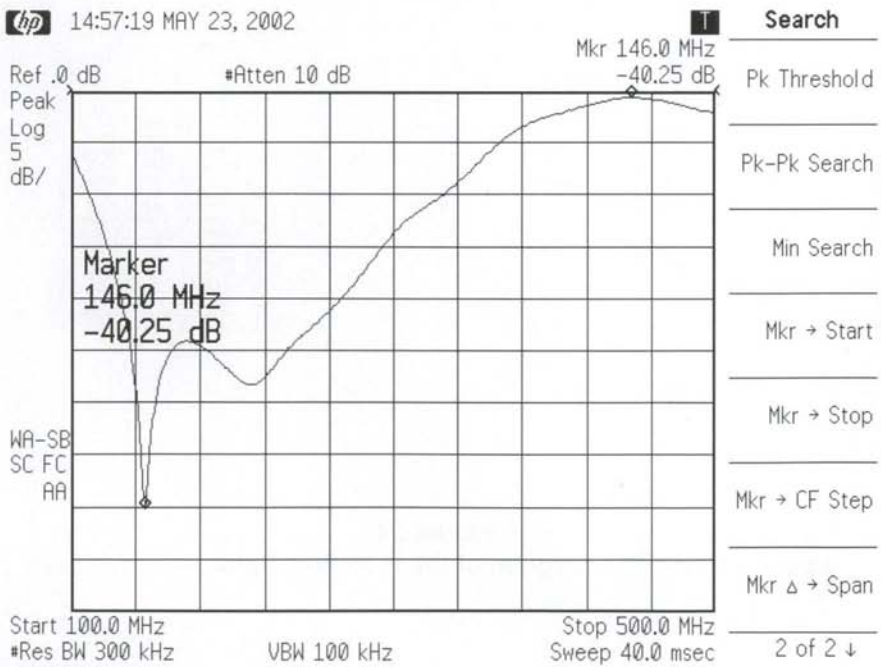


Figure 27. Measured stop band attenuation on 2 m (after modification)

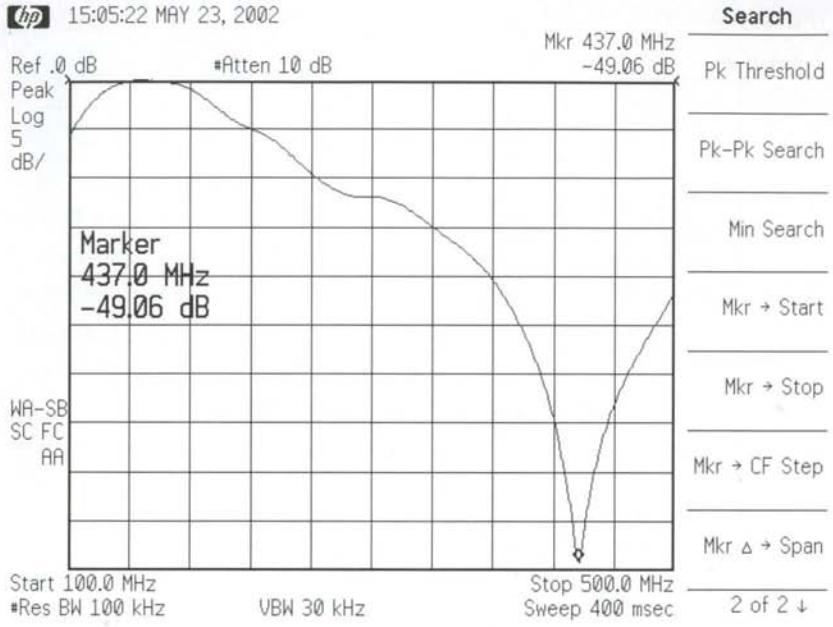


Figure 28. Measured stop band attenuation on 70 cm (after modification)

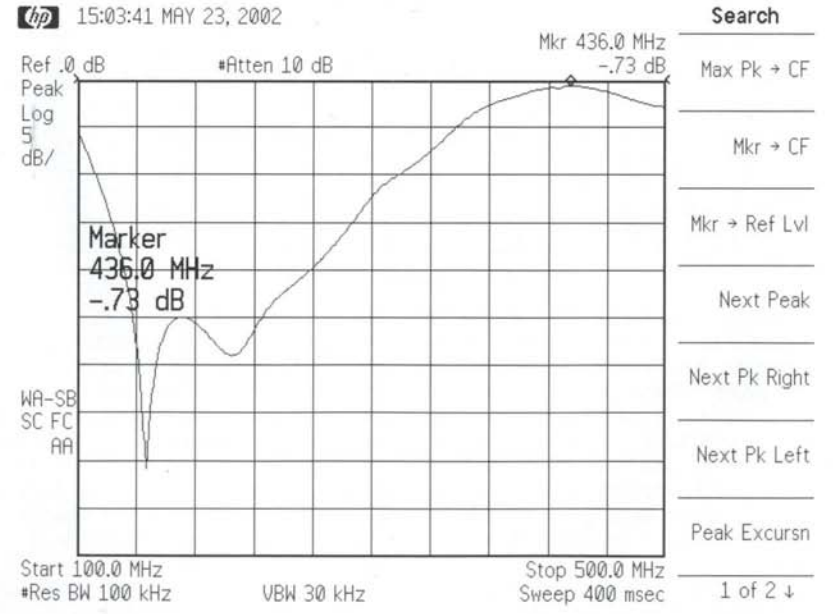


Figure 29. Measured insertion loss on 70 cm (after modification)

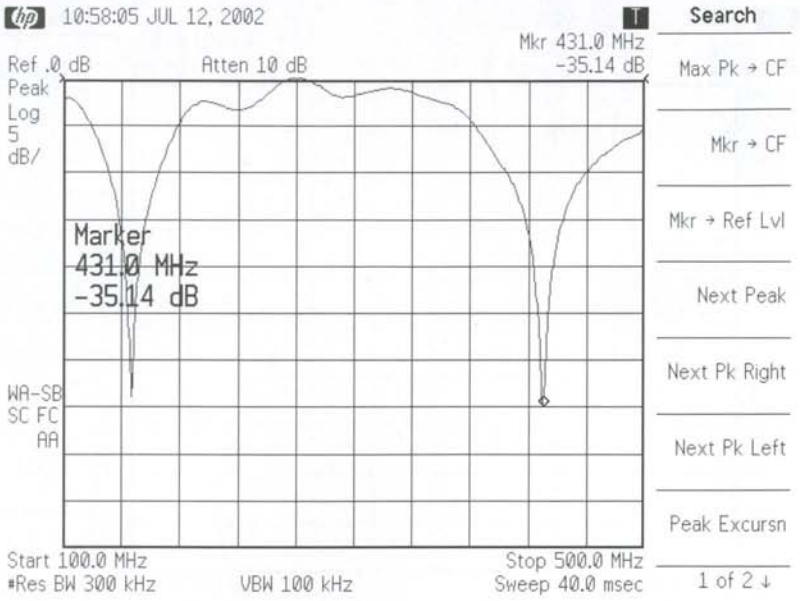


Figure 30. Measured return loss result of the modified diplexer

Table 2. Technical data / Technische Daten

	Simulated	Measured
Maximal power	-	> 50 W
Stop band attenuation on 145 MHz	-46 dB	-40,3 dB
Stop band attenuation on 435 MHz	-50 dB	-49 dB
Insertion loss on 145 MHz (S31)	-0,33 dB	-0,35 dB
Insertion loss on 435 MHz-en (S21)	-0,68 dB	-0,73 dB
Return loss on 145 MHz (S11)	-31 dB	-33 dB
Return loss on 435 MHz (S11)	-38 dB	-34 dB

Nach der Optimierung wurden die Daten der Leitungen auf ganzzahlige Werte in MIL (1000 MIL = 25,4 mm = 1 Inch) gerundet. Zehntel MIL-Werte sind bei der Fertigung nicht realisierbar. Mit gerundeten Werten für W und S erfolgte eine erneute Optimierung, danach rundete ich ebenfalls die Längen der Leitungsstücke auf ganzzahlige Werte (P: Physikalische Länge der Leitungen). Mit diesen Daten generierte die S2A Layoutsoftware vollautomatisch die geänderte Platine (zu sehen in Bild 26).

Das verwendete Substrat war 1,5 mm starkes FR-4 mit einer Dielektrizitätskonstante von 4,5.

Die gemessenen Daten des modifizierten Diplexers werden in Bild 27-30 dargestellt. Trotz des preiswerten Substrats entsprechen die Meßwerte den Simulationsergebnissen sehr gut (Tabelle 2).

Schlußbetrachtung

Ein neuer Typ BP–BS Diplexer wurde vorgestellt. Die Filter des Diplexers wurden mit der Optimierungsfunktion von Serenade ohne Verwendung einer Filterdesignsoftware entwickelt. Wegen leichterer Reproduzierbarkeit wurden alle Resonatoren als Leitungsstücke ausgebildet. Bei niedrigen Frequenzen wurden die Abmessungen des Layouts mit Hilfe eines interessanten Ansatzes verringert. Die Vorteile dieser Diplexerarchitektur sind kompakte Ausmaße sowie gute Anpassung in beiden Ubertragungsbändern.

(Vielen Dank an Harm, DK3BU, für die Übersetzung!)

REFERENCES: see Part 1 in DUBUS 2/2003

INITIAL RELEASE
Final Electrical Specifications

LT5512

DC-3GHz High Signal Level Down-Converting Mixer

July 2002

FEATURES

- **Broadband RF, LO and IF Operation**
- **High Input IP3: +20dBm at 950MHz**
  +17dBm at 1900MHz
- **Typical Conversion Gain: 1dB at 1900MHz**
- **SSB Noise Figure: 14dB at 1900MHz**
- **Integrated LO Buffer: Insensitive to LO Drive Level**
- **Single-Ended or Differential LO Signal**
- **High LO-RF Isolation**
- Enable Function
- 4.5V to 5.25V Supply Voltage Range
- 4mm × 4mm QFN Package

APPLICATIONS

- Cellular/PCS/UMTS Infrastructure
- CATV Downlink Infrastructure
- High Linearity Mixer Applications

DESCRIPTION

The LT®5512 is a broadband mixer IC optimized for high linearity downconverter applications including cable and wireless infrastructure. The IC includes a differential LO buffer amplifier driving a double-balanced mixer. An integrated RF buffer amplifier improves LO-RF isolation and eliminates the need for precision external bias resistors.

The LT5512 is a high-linearity alternative to passive diode mixers. Unlike passive mixers, which have conversion loss and require high LO drive levels, the LT5512 delivers conversion gain and requires significantly lower LO drive levels.

TYPICAL APPLICATION

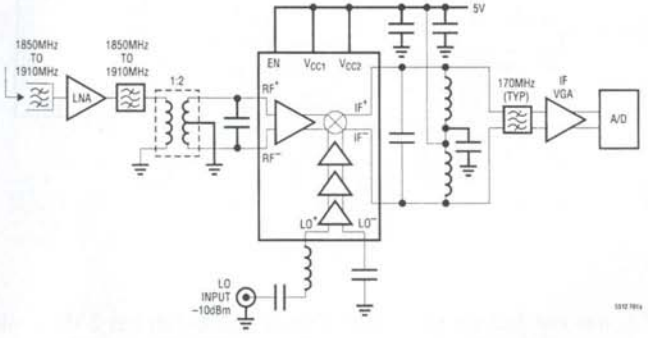
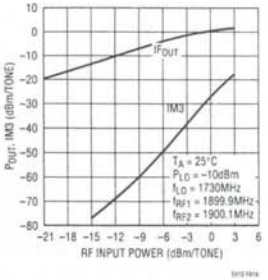


Figure 1. High Signal-Level Downmixer for Wireless Infastructure

Output IF Power and Output IM3 vs RF Input Power (Two Input Tones)



PIN FUNCTIONS

NC (Pins 1, 4, 8, 13, 16): Not connected internally. These pins should be grounded on the circuit board for improved LO to RF and LO to IF isolation.

RF⁺, RF⁻ (Pins 2, 3): Differential Inputs for the RF Signal. These pins must be driven with a differential signal. Each pin must be connected to a DC ground capable of sinking 15mA (30mA total). This DC bias return can be accomplished through the center-tap of a balun, or with shunt inductors. An impedance transformation is required to match the RF input to 50Ω (or 75Ω).

EN (Pin 5): Enable Pin. When the input voltage is higher than 3V, the mixer circuits supplied through Pins 6, 7, 10, and 11 are enabled. When the input voltage is less than 0.3V, all circuits are disabled. Typical enable pin input current is 50μA for EN = 5V and 0μA when EN = 0V.

V_{CC1} (Pin 6): Power Supply Pin for the LO Buffer Circuits. Typical current consumption is 22mA. This pin should be externally connected to the other V_{CC} pins, and decoupled with 100pF and 0.01μF capacitors.

V_{CC2} (Pin 7): Power Supply Pin for the Bias Circuits. Typical current consumption is 4mA. This pin should be externally connected to the other V_{CC} pins, and decoupled with 100pF and 0.01μF capacitors.

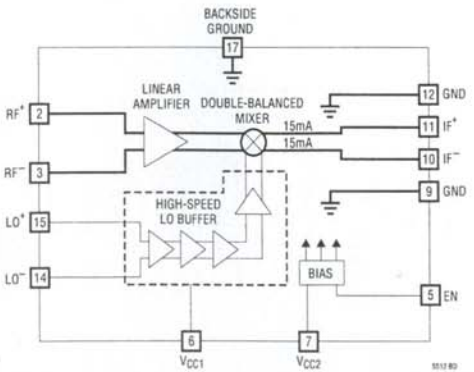
GND (Pins 9 and 12): Ground. These pins are internally connected to the backside ground for better isolation. They should be connected to RF ground on the circuit board, although they are not intended to replace the primary grounding through the backside contact of the package.

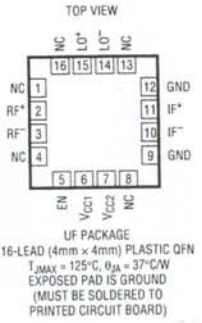
IF⁻, IF⁺ (Pins 10, 11): Differential Outputs for the IF Signal. An impedance transformation may be required to match the outputs. These pins must be connected to V_{CC} through impedance matching inductors, RF chokes or a transformer center-tap.

LO⁻, LO⁺ (Pins 14, 15): Differential Inputs for the Local Oscillator Signal. They can also be driven single-ended by connecting one to an RF ground through a DC blocking capacitor. These pins are internally biased to 2V; thus, DC blocking capacitors are required. An impedance transformation is required to match the LO input to 50Ω (or 75Ω).

GROUND (Backside Contact): Circuit Ground Return for the Entire IC. This must be soldered to the printed circuit board ground plane.

BLOCK DIAGRAM





UF PACKAGE
16-LEAD (4mm × 4mm) PLASTIC QFN
T_{JMAX} = 125°C, θ_{JA} = 37°C/W
EXPOSED PAD IS GROUND
(MUST BE SOLDERED TO PRINTED CIRCUIT BOARD)

Der LT5512 ist ein aktiver Mischer mit hohem IPIP3 und Frequenzbereich bis 3 GHz; also auch noch für 13 cm zu verwenden. Nachteil: das kleine Gehäuse (QFN Package!)
Bezugsquellen / Sources: Die Bauteile der Fa. Linear Technology können bezogen werden bei: Parts from Linear Technology are available from: www.linear.com
Fax: ++49 89 963147 or from Setron, www.setron.de

Microwave Europe

Editor: Simon Lewis, GM4PLM

Hello and welcome. I have some sad news to start this month. The past few weeks has seen the passing of two well known UK microwavers who were both instrumental in the promotion of UK microwave during the late 70's and 80's. Sam GI8GJX was not so active in the later years but he still supported the hobby and his callsign well known on the VHF/UHF and microwave bands. I know that he had a high regard for his fellow enthusiasts, some of whom he never had the pleasure to meet, but one of his greatest pleasures was to attend the VHF Convention a few years ago, where he met many familiar names. He will be sadly missed. Another familiar callsign that has recently passed away is that of Glen Ross G8MWR. Glen was a big figure in the 70/80s promoting the previously specialised area of microwave to the more general amateur population. He ran a microwave group that brought large numbers onto the 10 GHz band. I know he spent many hours of his own time working to help others become active. I was one of them. Glen worked tirelessly to retune wideband heads that were on the surplus market and provided many people with a lot of pleasure. Although not so active in the later years, he still assisted, passing on his expert knowledge. Both fine amateurs and good friends who will be sadly missed. I have passed on condolences to their families on behalf of this column.

New Microwave Data Mode?

Andy Talbot G4JNT writes 'During the recent UK 432 and up contest, someone suggested that the PSK31 datamode could be used instead of CW for weak signalling on the microwave bands. However, PSK31 is unsuitable for frequencies much above HF for the following reasons. PSK31 was designed specifically for HF type paths where frequency is accurately known and Doppler shift + drift is minimal. No more than around 4 - 6Hz tuning error is acceptable; the same applies to frequency spreading. The decoding relies on phase staying stable over the 32ms period from one symbol to the next - hence the tight frequency spec. Also, the waveform is shaped to minimise bandwidth to the absolute lowest possible for the given data rate, even at the expense of Bit Error Rate; that results in about 1dB degradation in Signal to Noise Ratio performance. In spite of this, PSK31 still falls down on certain types of HF link, particularly on trans-polar paths with a lot of auroral flutter and Doppler spreading. My idea for microwaves is for a transparent keyboard to keyboard mode that operates in the same way as PSK31, i.e. not connecting to a station as in packet radio, but just a one to one RTTY type link making use of a waveform better designed to overcome tuning errors and frequency dispersion/scattering. For compatibility it needs to be based on the SSB equipment that microwavers use, but otherwise bandwidth is not an issue, and it doesn't matter if the signal spreads out beyond the 3kHz bandwidth a bit. One idea is to make use of moderately fast (for the wanted data rate anyway) Frequency Shift Keying at something like 1200 Baud with 1800Hz shift, to fit most of the energy into 2.8kHz bandwidth. Then by adding a layer of error control coding with interleaving, or repeating, the net data rate is reduced but the link reliability in poor conditions rises. An overall error corrected rate of 30 - 50 bp/s should give plenty of scope for heavy coding to optimise bit errors on the raw FSK. Interleave factor cannot be too high as otherwise the real time keyboard to keyboard feeling would be lost, but about 0.5 to 1 second delay would probably be acceptable. The varicode alphabet of PSK31 can be included to speed up most standard traffic slightly. Fast Differential Binary Phase Shift keying (D-BPSK) may be another option for the underlying modulation type, and trials are needed to see which the better option is. Initially it might be possible to get something going with a mixture of hardware and simple software but ultimately, and to get any wide acceptance, the mode must be operable purely via a PC and Soundcard. To get this going I need to find someone who can programme in Windows for the Soundcard - I can offer help with the Digital Signal Processing and coding algorithms, but not the actual Windows interfacing'. Please email Andy if you can assist in this interesting project. Andy G4JNT G4JNT@THERSGB.NET

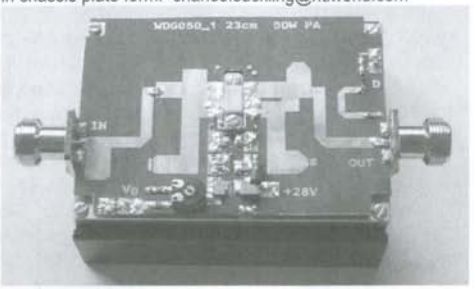
Mitsubishi 'Brick' amplifier Important Information

Some interesting information came to my email box from Mike Quee at European Microwave Components. This is especially interesting is many of us use the black brick amps in our equipment. He writes 'I thought I would inform your readership, through you, of a decision to discontinue the Mxxxxx series of VHF/UHF RF power modules. As many of your members have designed these devices into home constructed equipment or maybe considering projects that will incorporate them, it's as well they are advised that they will not be available in the future. They are being phased out over the period 1 April 03 to March 04. That's the bad news, the very good news is that they will be replaced by a new family of linear wideband LDmos modules designated RAxxxxxxx. Anyone contemplating a new project should consider these devices and not the Mxxxxxx series. The new RA modules are being offered in three voltage selections, 12.5, 9.6 and 7.2 volts, and cover the traditional frequency ranges from 68 to 1300 MHz at output powers (depending on frequency) from 3.6 to 60 watts. All the amateur bands are covered with the exception of 6 metres which was covered by the M series. The main reasons for their introduction, was to take advantage of new MOS technology to replace the ageing Bipolar Mxxxxx, rationalise the number of case styles being offered and to cut down the number of different devices being offered to cover a specific bandwidth in the VHF/UHF handy and mobile bands. (200 + Mxxxxx modules down to 38 RA modules in three case styles). We shall be holding some stock of the old Mxxxxx modules but when that runs out that's it. If your readers would like some more information, like technical data or the suggested replacement RA modules they can contact me at mike@emc.uk.com and I will be pleased to help them. In addition to the modules, the 2SC

range of Bipolar transistors are also being discontinued. Although not such a major concern as the RF power modules, they are, to my knowledge, used in some amateur projects. These too are being replaced with a new MOS family designated RDxxxxxx. Like the RA modules, the device list has been considerably rationalised with about 90% of the old 2SC devices being offered a suggested replacement RD device. Regards Mike Quee - Mike@emc.uk.com

New 50W 1296 MHz PA from G3WDG

A new PA is under development for the 23cm band using a modern discrete device. Now that the M57762 Mitsubishi modules are no longer being manufactured, this development is intended to "fill the gap". The new PA has been successfully prototyped and is currently in beta testing by a number of constructors. To date, approximately 20 PAs have been built and tested. Results are very promising. It is considerably more efficient than the M57762 and produces considerably more output power (50W or more has been achieved for all the development prototypes so far built). This is more power than can (safely) be achieved from 2 x M57762. Available modern semiconductors are designed to run off a nominal 28V supply, and this, coupled with the higher efficiency, means that much less supply current is required, making the new amplifier more suited to mast-head mounting than the old modules. In situations were +12V only is available, we are evaluating a new design for a home constructible switched mode power supply. The bandwidth of the new PA is fairly narrow. The PCB has been designed for optimum operation at 1296MHz, and can be used with slightly reduced performance "as-is" at 1269MHz (for AO-40 uplink use). However, small additional tuning elements are provided on the pcb as extensions to the input and output matching stubs, which allows the amplifier to be optimum at 1269 MHz. Optimisation at other frequencies is possible - versions have been produced so far up to 1315MHz. The PA is realised using a discrete (unmatched) transistor, with matching elements provided on a low-loss ptfe based PCB. Most of the other components are SMT devices. The PCB is mounted on a 6mm thick aluminium chassis plate, with mounting holes to allow this to be bolted to an external heatsink. Indications so far are that the design should not need tuning, and further prototypes are being built to verify this. A coupler/detector has been incorporated, to give an indication of power output. To date, several of the prototypes have been tested on the air, with excellent results. Applications include SSB/CW operation at 1296MHz, AO-40 uplinking at 1269MHz, and ATV in various parts of the band. The preliminary beta test notes have been completed and the first beta test kits are being sent out. The beta kits (and production kits) are supplied with the metal chassis plate pre-drilled and tapped, so no extra metal work is needed, and with the PCB prepared ready to take the active device. This means that kit construction is considerably simplified. We are currently able to supply ready-made tested prototypes at a price of 145 UKP, plus shipping. These can be supplied built either on an aluminium chassis plate, ready to be fitted to a heatsink, or built directly on a heatsink. For continuous operation, the heatsink needs to be cooled by a small fan (eg 80 x 80mm axial type). Connector options are either SMA or N female. Connector types can be mixed - for example SMA on input and N on output. Please specify connector types and heatsink/chassis plate options. Beta test kits are also available, at a price of 110 UKP plus shipping. These are partially built units, requiring only the components to be fitted. Beta kits are available only in chassis plate form. charles.suckling@ntlworld.com



Typical performance:

Small signal gain [200mW input]	16-17dB
Power output at 1dB gain compression	>30W
Power output with 1W drive	~40W
Power output with 2W drive	~50W
Detector output at 40W RF output	~3mA
Drain current at 1dB gain compression	~3A
Drain current at 50W RF output	<4A

Surplus Parts

One of the most interesting facets of microwave radio is the large number of surplus items that come on to the market which are then used by amateurs. A few years ago I reported on the surplus 10W SSPA's available at low cost. These were quickly purchased by many amateurs across Europe. I received a recent email from Jochen Zilg, the person responsible for their availability with news that once again he has units available for amateurs. He has both 10 and 5.7 GHz units available. If interested you can email him at mmwave.zilg@t-online.de But be quick – these are excellent units and you can be certain they will disappear quickly!

- Another email came in recently from Steve Mitchell who has some interesting 24 GHz units available. These are ex-telecoms head units and contain a rather nice 24 GHz transceiver unit. The specs that Steve has measured so far indicate they would make very nice transverters for 24 GHz and with a good NF on receive and around 400mW minimum on transmit these could provide an easy route to 24 GHz. The really nice thing about the units if that they are self contained, water proof and include a very nice 0.5m dish on the front of the units. They would be perfect for mounting at the top of the mast. Steve has a number of these units available at low cost and is keen to provide the amateur market with them. If interested you can email him at steve@g8jmj.tv where he will provide further details. Surplus items like these appear on a regular basis and usually appear in the RSGB's Microwave Newsletter. Subscription details can be obtained from RSGB Publications or online at http://www.rsgb.org/shop.

VHF North America

Westcoast – Hawaii: Another one

On June 28th/29th The KH6HME beacon was heard via Tropo on 2m from westcoast stations like N6XQ (San Diego) and N6RA (CM87).

WA6MEM from DM03 reported KH6HME/B on 70cms on June 28th at 2240z.

144 and 220 MHz Sporadic-E, June 17th

Ned, AA7A, reports from DM43, Arizona:

17 June was one of the most amazing evenings on radio for me. Six meters opened up around 0200Z in a normal summer evening fashion. The MUF was building steadily until around 0230Z when I started to hear weak signals on 144.200. I fired up the two meter amp and made a quick CQ and worked W7IEY in CN87 at 0240. The band quickly settled into a very good opening where there were many 40 over S-9 signals on the band. I managed to log 20 stations in the WA/BC area for the next half hour as I have done in openings such as this over the past 25 years from Phoenix. But this year, I had done something different.

I had recently completed my 222 station in preparation for this year's June VHF QSO party. I now use a Yaesu FT-736R with the 220 module, a Mirage 120 watt brick and an M2 8 WL yagi at 25 feet. On a lark, I swung the antenna up towards the PNW as the opening kicked into that really high gear. I was alternating working stations on 2m and calling CQ on CW on 222.1. I would announce when I went to 222 on the two meter frequency and there would be a bunch who would acknowledged on the two meter frequency that they would listen on 222.

I must say that hearing K7XQ's call pop out of the noise gave me a shock. He faded out before he was done calling me. I called him for a while longer but he didn't come back. I went back to two meters to inform him that I heard him. So, we went back to 222 and after a few minutes he reappeared and we quickly completed at 0311Z. I was simply amazed. I've been around enough to know that was a real accomplishment.

I heard nothing else on 222 after continued calling, so I went back to two meters and worked nine more stations in the PNW. I would go aback to 222 every couple of minutes and call CQ on CW. About 20 minutes after my first 222 Es contact, signals picked up a lot on 2 meters and I went back to calling diligently on 222. I then worked two more stations on 222: K7ND and W7YOZ around 0340Z. When that peak of that opening was over, I caught them back on two meters and they were as ecstatic as I was about these contacts.

Word apparently got out and I had quite a gang hanging around my two meter run frequency as I continued to work stations that I could hear on 222 on the return to two meters to run and coordinate for 222. At 0354Z, 222 caught fire and I managed to work 5 stations on SSB: W7BNH, KE7SX, W7FHI, K7NQ (repeat) and KB7DQH. Some of these stations were pushing 40 db over S9. That was the last station I heard on 222...for a while.

I continued to work station on two meters and check 222 for another hour in this fabulous opening. At 0500Z, NN7J in CN85 informed me that I was louder than ever on two and that we should try 222. After a few calls, he came back on 222.1 and was pinning the meter. We completed quickly. At this point, I was thoroughly spent.

The sporadic E continued until around 0530Z. For the next 30 minutes, stations in Northern CA were worked until the last signal faded out at 0600Z.

My totals for the evening were as follow:

2 meters: 78 unique stations in 20 grids over a time span of 3 hours and 20 minutes.

Twelve grids were contacted with straight Es, 7 grids in northern CA on straight FAI and a contact in one grid (CN90) where the propagation mode waffled between Es and FAI.

Grids worked on two meters were:

CM87, 89, 97, 98, 99

CN80, 84, 85, 86, 87, 88, 89, 90, 95, 96

DM07, DN06, 07, 13, 17

222 MHz: 9 contacts (8 unique) in 3 grids (CN85, 87 and 96) on Es over a time span of almost two hours. (Ed: QRB arround 1100km, so quite high MUF!)

As some have said about previous openings, the QSB on the signals on 222 were very fast. When I heard the first signals on the 222 band, my brain was anticipating the normal slow roll in signal strength that you see on Es signals on two meters. The QSB fade was at a significantly higher rate on 222. I wish I had turned on the digital recorder but I had a few other things making demands on my attention at that time.

The 222 MHz band was probably "open" nearly as long as the two meter band. My two meter station is very good, consisting of 1500 watts, six 3.2 wavelength yagis and a mast mounted low-noise preamp. My EIRP is probably nearly 20 db higher on two meters than 222 MHz. Some of the station I worked in the PNW were running only 10 watts into a single modest length yagi. I can only imagine what I would have done with a similarly equipped 222 station as my two meter EME setup. Or, better yet, stations of that magnitude at both ends of the circuit. I think it is time to re-think my winter antenna project.

73 and keep the filaments burning,

AA7A, Ned Stearns, aa7a@cox.net

On June 21st, 25th and 26th more Sporadic E openings were reported on 222 MHz from the U.S.

Reminder

The Microwave Update 2003 Conference will take place in Seattle, Washington, on September 25-28th, 2003. Ceck http://www.microwaveupdate.org for more information.

Sporadic E

144 MHz – Reports

Editor Norbert Göttsche
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All QSOs with "59 59" reports unless otherwise noted, hrd = also with 59, times UT

tnx to DK5YA for the maps!

May 25th, 2003

DD3DJ, JO31ol, wkd:
1838 YU1EV 57/59 KN04cn

DF2ZC, JO30rn, wkd:
1805 YO3DMU 51 hrd
1821 YU1EV KN04CN 1163 km
1823 LZ2FO KN13KX 1370 km
1829 YU1GT KN04 hrd
1835 LZ2ZY KN13OT 1402 km
1838 LZ1ZP 55 hrd
1838 HA2SU JN97AB 55 hrd
MUF 217 MHz!

DF7KF, JO30gu, wkd:
1831 YU1EV KN04
1835 YU1GT KN04
1835 LZ2FO KN13
1849 YO7AQF KN24
hrd some more YO, YU7, Z3, LZ

DF8IK, JO30jt, wkd:
1821 LZ1ZP KN22ID
1823 YU1LA KN04FR
1830 YU1EV KN04CN
1833 YZ7NOU JN94TX
1834 LZ2FO KN13KX
1835 YU1GT KN04LP
1838 LZ2ZY KN13
1846 YO2II KN06PE
1847 YO3IZI KN34BK
hrd YU7EW; rig 350w, 11el. yagi

DG8UAW, JN48br, wkd:
1820 SQ8EFK KN09VQ 998km 59+40db! **MUF=197MHz!**
1840 YO? KN34 hrd short with LX1DB

DK2CF, JO41gg, wkd:
1814 YO3DMU KN34RJ
1822 YO? hrd KN36BA few sec
1838 Z32UC 59+ hrd few sec.

DL0UL, JN48xk, wkd:
1824 US5WU KO20DI 1057km, MUF 192MHz

DL1KDA, JO30fq, wkd:
1813 YU1EV KN04CN 1232
1820 LZ1ZP KN22ID 1683
1822 LZ2FO KN13KX 1439
1830 YU1LA KN04FR 1236
1831 YU1GT KN04LP 1273
1834 YU7BCL KN05FW 1159
1846 HA8MV KN06GU 1114
1847 YO7HMH KN25 1489+-

DL6BF, JO32qi, wkd:
1759 YO3DMU KN34bj
1815 LZ2PI KN23xu
1816 YO3IZI KN34bk
1818 YO3ACX KN34bl
1824 YO7MHM KN25
1840 Z32UC KN11cr
1842 YU1GT KN04lp
hrd YU1TT, LZ2CC

DL8EBW, JO31nf, wkd:
1822 Z32UC KN11 55 hrd
1829 LZ1ZP KN22 55 hrd
1838 YU1EV KN04

DM1CG, JO31, wkd:
1815 Z32UC KN11
1823 YU1EV KN04
1839 LZ2FO KN13
hrd YU1GT, YO2II.
Rig 12ele M² / 300W

DO1ERS, JO31jc, wkd:
1848 YO2II 59/57 KN06PE
My first Es! Rig: 10w, 4 ele.

F0DSJ, JN17bt, wkd:
1823 YO8RNF KN37EW 1801
1826 HA6NY JN98WC 1319
1828 HA6NM JN98PB 1276
1830 HA6NQ JN98WA 1320
1833 U5YM KN28XG 1765
1836 OM5UM JN98EO 1205
Rig 100 w + 17 ele.

F5JKK, IN87pr, wkd:
1814 HA5PT JN97mk 1626k
1816 HA7MB KN07bm 1705
1819 HA6NQ JN98wa 1679
1823 HA6NY JN98wc 1677
1824 HA6NA JN98vc 1671
1825 YO8RNF KN37ew 2158
1839 OM5UM JN98eo 1562
1848 OM5AM JN97hv 1588

F5SDD, JN23nl, wkd:
1835 SP5CCC KO02NF 1534km
1847 HA8UG JN97SA 1180 km.
Rig 400w+11 ele

F6FHP, IN94tr, wkd:
1814 SQ8EFK KN09VQ
1816 US5WU KO20DI
1830 SP8RHL hrd 539 CW
1832 SP9FG JN99XG
1836 SP9BCV JO90WB
1837 OK2BMU JN99BU
1837 OK2CLW JN99ET
1840 SP9JDP JN99HW
US5WU in till 1850

F6HTJ, JN12kq, wkd:
1820 SQ9W JO90NN
1825 SP5WCK KO12CJ
1836 SP5CCC KO02NF

G0NFA, IO91ne, wkd 1811-1841z:
LZ1FO KN13, YU7VA KN05EJ, YU7MS KN05FJ, YU7EW KN05HP, YO2IS KN05PS, YO3IZI KN34BK, YO3ACX KN34BL, LZ2ZD KN34 (??), YO7AQF KN24KU, LZ2PI KN23XU, YO3DMU KN34BJ, YO7IV KN24MT (CW), HA8BR KN06IP (CW), HA8BR KN06IP.

G0NNF, IO92al, wkd:
1809 YU1LA KN04FR
1816 LZ5UV KN12PR
1816 LZ1QI KN12PR
1818 YU1GT KN04LP
1819 YZ7MON KN04AX
1827 LZ2FO KN13
1831 YU1IO KN04IQ
1839 YU7EW KN05HP
1843 YU7BCL KN05FW

G1AAR, JO00at, wkd:
1808 YU7EW KN05HP
1812 LZ2PI KN23XU 55 55
1815 YO2IS KN05PS
1823 YO2DMU KN34
1827 YO2II KN06PE
1830 YU7BCL KN05FW
1831 YO2LPI KN05
1835 HA5TS JN97LL 55 55

G4PCS, IO91wv, wkd:
1808 YU1IO KN04iq
1815 LZ1ZP KN22id
1816 LZ2ZY KN13ot
1816 LZ2FO KN13kx
1819 YU1GT KN04lp
1827 YU7EW KN05hp
1850 YO3DMU hrd
Rig: 100w, 2el HB9CV inside roof space of house.

G4RGK, IO91on, wkd:
1802 YU1EV hrd
1808 LZ2FO KN13KX
1812 YU1IO KN04IQ
1813 YU1EW KN05HP
1814 LZ2ZY KN13OT
1821 YU7VA KN05DJ
1827 YO2IS KN05PS
1828 HG3KR JN86WU
1831 YU7BCL KN05FN
1836 YO2LPI KN05PS
1840 YO3IZI KN34BK
1841 YO2II KN06PE
1849 YO3DMU KN34BJ

G4SWX, JO02pb, wkd:
1807 LZ5UV KN12PR
1812 YZ7MON KN04AX
1812 LZ3NY KN12QQ
1813 LZ1AG KN22ID
1813 LZ1QI KN12PR
1814 LZ1UK KN22ID
1815 LZ1QB KN12RO
1816 YU1GT KN04LP
1817 YZ7NO JN97
1819 LZ1ZP KN22ID
1822 HA6NQ JN98
1824 YU1IO KN04IQ
1824 LZ2CC KN22GS
1827 LZ2ZY KN13OT
1828 LZ2FO KN13KX
1829 YU7MS KN05FJ
1829 YZ7NOU KN94
1830 YU7VA KN05EJ
1831 YZ1KU KN04ET
1832 HA3HV JN86UK
1840 YO2NES KN05PI
1847 YO7AQF KN24KV
1848 HA8BR KN06IP
1849 LZ2PI KN23XU
1850 YO2IS KN05PS
1851 YU7CCL KN05FQ
1855 YO2LPI KN05PS
Rig: 4 x 5WL DJ9BV @ 25m agl + 8877 PA

G7RAU, IO90ir, wkd:
1845 YO4GJH KN35XG 2243
1845 YO5CRI KN16TS 1869
1841 YO4ATW KN35XG 2243
1840 HA8MV KN06GU 1650
1837 HA5CW JN97OM 1528
1836 HG7JAL JN97KK 1508
1835 HA2SU JN87VE 1443
1835 HA5CRQ JN97MM 1517
1835 HA5CBA JN97OM 1528
1834 HA5PT JN97MK 1520
1834 HA5TS JN97LL 1513
1832 HA8MV KN06GU 1650
1831 YO2LFP KN06MD 1717
1829 HA8BR KN06IP 1671
1829 YO2LEA KN06UG 1758
1828 YO7HMH KN25 2026 #
1827 HA4WQ JN97 1517
1826 HG4YJ JN96LX 1534
1820 YO3IZI KN34 2217
1816 YO7LKZ KN15PD 1923 #
1815 YO2NES KN05PS 1753
1815 YO7AQF KN24KU 2048
1814 YO3ACX KN34BL 2155
1813 YO2LPI KN05 1748
1813 YO2IS KN05LJ 1749
1812 YO7AQF KN24KU 2048
1812 YU7MS KN05FW 1687
1811 YU7VA KN05EJ 1708
1808 YU7EW KN05HP 1713
1805 LZ2PI KN23XU 2178 #
1759 YO3DMU KN34BJ 2160

G8HGN, JO01fo, wkd:
1812 YU1EV KN04CN 1656
1819 LZ2FO KN13KX 1867
1825 YU7EW KN05HP 1617
1829 YO2IS KN05PS 1654 #
1831 YU7VA KN05EJ 1615
1831 YU1GT KN04LT 1689
1834 YO2NES KN05PS 1654
1834 YO3DMU KN34BJ 2058
1840 YO2LFP KN06MD 1617
1850 YO2II KN06PE 1631 #
Hrd: HA2SU JN97AB, YU7BCL KN05FW, YZ7MON KN05BD, YU1LU KN04FR, YO7YQU ?, LZ2ZY KN13OT, LZ1ZP KN22ID

G8IZY, IO91vc, wkd:
1814 YU7EW KN05HP
1817 YU7VA KN05EJ
1819 LZ2ZY KN13OT
1821 YO3DMU KN34BJ
1827 YO2II KN06PE
1828 YU7BCL KN05FW
1830 YO2IS KN05PS
1831 LZ2FO KN13KX
1833 YO3IZI KN34BK
1837 HA4WQ JN97.
Rig: 250W + 9ele

HB9DFG, JN37sm, wkd:
1816 US5WU KO20di 1260km SQR # 308
US5WU was the only station here, no others hrd. 7ele, 200w

HA5TS, JN97ll, wkd:
1815 F1CXX JN18AT 1261 km
1823 F6CBH JN19BH 1257 km
1833 G7RAU IO90IR 1512 km
1835 G1AAR JO00AT 1420 km
1838 G3WZT IO90UX 1446 km.
Rig: 25W, 8 ele.

HA6NA, JN98vc, wkd:
1824 F5JKK IN87PR
1829 GJ0JSY IN89XE
1836 F1ORL JN08VP
1841 F1MPQ JN09??
Rig: 30w, 8 ele.

HA6NN, JN98vc, wkd:
1827 F0DSJ JN17bt
1839 F6CBH JN19bh.
Rig: 20w, 7 ele.

HA6NQ, JN98wa, wkd:
1817 GJ0JSY hrd vy weak
1819 F5JKK IN87PR
1819 G4SWX JO02PB QSB
1823 F9IE IN86WW
1828 F1ORL JN08VP
1830 F0DSJ JN17BT
1832 F1CXX JN18AT
1833 F6JXR IN98HW
1836 F6CBH JN19BH
1838 F5HRY JN18EQ
1839 F1CVU JN09NJ QSB
Rig 600w, 3.2wl single DJ9BV.

HA6NY, JN98wc, wkd:
1823 F5JKK IN87PR 1677
1825 F0DSJ JN17BT 1319
1829 F9IE IN86WW 1651
1831 F1CXX JN18AT 1314
1833 F6CBH JN19BH 1306
1833 F1ORL JN08VP 1333
1834 F6JXR IN98HW 1562
1835 GJ0JSY IN89XE 1609

HB9AA, JN36bk, wkd:
1818 SQ8EFK KN09vk
1820 US5WU KO20di

IW0GPN, JN62fb, wkd:
1556 LZ1ZX KN32IO
1600 LZ3GM KN32RL
1823 SM7WT JO65QQ
1830 SK7MW JO65MJ
1832 DG0KW JO64MH
1833 SK6HD JO68SD
1837 OZ1IEP JO55XU
1844 SM4/DH7VK JO66VL NC

5WBE, JN53jr, wkd:
603 LZ1ZX KN32IO
603 LZ3GM KN32RL
800 SP2IQW 51 hrd short

X8ETN, JM89ch, wkd:
520 UT5JCW KN64sn
550 UR5GP KN76cn
832 OZ1BUR JO46
835 OZ1HNE JO57
836 OZ1BEF JO46
825 OZ5HM hrd

Z1AG, KN22id, wkd:
811 G4SWX JO02
812 G0CUZ IO82
813 G4NOO JO01
814 M5BXB IO91
815 ON4AMX JO20
816 ON4ZN JO21

Z1ZP, KN22id, wkd:
817 G8TIC NC
817 G4PCS IO91
818 PA5KM JO11
818 ON7EH JO20
819 G4FUF JO01
819 G4SWX JO02
820 M5BXB O91
821 DL1KDA JO30
821 DF8IK JO30
822 PA0JMV JO21
823 PA4ZP JO21
827 PA3DIY JO22
828 PA1BR JO21
829 G7SQW JO02
830 PE1HWO JO21
831 PA3FOC JO21
832 PD2WDR JO21
832 PD0EBF JO21
832 DM1HD JO31
834 PA5DD JO22
835 G4EHD IO93
837 ON4AMX JO20
839 PA0WLB 55/ NC

Z3GM, KN32rl, wkd:
550 I0JXX JN61GV 1229
555 IC8FAX JN70CN 1122
556 IK0BZY JN61GW 1228
557 IK8YTA JN70CV hrd
600 IW0GPN JN62FB 1233
603 I5WBE JN53JR 1357

Z3NY, KN12qq, wkd:
810 G4SWX JO02PB
812 ON4IQ JO20
815 G4ZTR JO01KW
816 G4PBP IO82WO
1819 GW4VBM IO83LF
1821 ON4ZN JO21FB
1822 G3LQR JO02QF
1822 PA5KM JO11WL
1823 PA3DYS JO21
1824 PA0JMV JO21PO
1831 PA5MW JO21PQ
1832 PA3ENH JO21OI
1833 PA1BR JO21HM
1834 PA3FOC JO21FW
1838 DL1EAP JO31IK
Rig: 25w, 15ele

OK1MZM, JN69pr, wkd:
1606 UT5JCW KN64
He was 59+ but only for few minutes. I didn't hear other stations. Rig 25w, 9ele

OM3RM, JN88qa, wkd:
1845 F6CBH JN19BH, hrd G7RAU

OM5UM, JN98eo, wkd:
1838 F0DSJ 55/55 JN17bt
1841 F5JKK 55/55 IN87pr

ON1IM, JO11ub, wkd:
1811 YU1IO KN04
1812 YU1EV KN04
1813 YU1LA KN04
1814 LZ2ZY KN13
1817 LZ2FO KN13
1827 YU7EW KN05
1836 YU7BCL KN05
1844 YO2LPI hrd KN05
1845 YO2NES hrd KN05

PA3BIY, JO22eb, wkd:
18.14 Z32UC KN11
18.21 YZ1KU KN04EU
18.23 YU1LA KN04FR
18.25 LZ1ZP KN22ID
18.26 YU1EV KN04
18.28 YU1GT KN04LP
18.34 LZ1QD 569 559 KN12RO
18.35 LZ1QI 599 55 KN13PN
18.38 HA3HV JN86UK
18.40 LZ2ZY KN13
18.44 YU1IO KN04IQ
18.47 YO2IS KN05NS
18.55 YU7EW KN05
Hrd YO7HMH KN25, YO3IZI, YO3DMU, YZ7MON

PA5KM, JO11wl, wkd:
1818 LZ1ZP KN22ID
1822 LZ3NY KN12QQ
hrd YU7EW, LZ2FO, YO7AQF, YO2II, YU7BCL, YU1EV. Rig: 50w + 6 ele.

PD2DB, JO22md, wkd:
1814 Z32UC KN11CR 1735
1817 YO3DMU KN34BJ 1773
1825 YU1EV KN04EV 1383
1828 YZ7NOU JN94CX 1251
1829 LZ1QI KN12PR 1718
1830 LZ5UV KN12PR 1718
1838 HA3HV JN86UK 1114
1839 9A2SB JN95GM 1229
1846 YU1GT KN04LP 1436
1848 LZ2CC KN23JG 1767

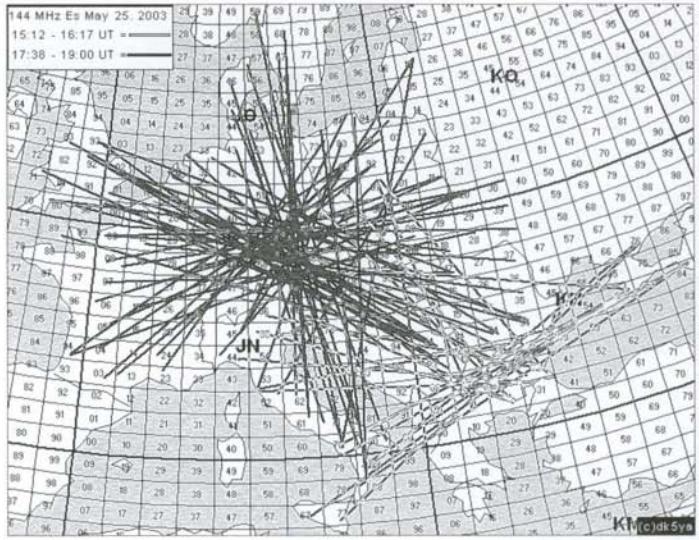
PE1RLF, JO32cg, wkd:
1813 YO3DMU KN34bj
1815 YO7HMH KN25mg
1820 LZ2QA KN43ek
1824 Z32UC KN11cr
1829 YU1EV KN04cn
1840 YU1TT JN94us

SK6HD, JO68sd, wkd:
1833 IW0GPN JN62FB
1834 IK0BZY JN61GW
1835 I0JXX JN61GV
1836 IK6EIW JN63RJ
1836 I0JX JN61

SP2IQW, JO94gm, wkd:
1826 IK0BZY JN61wg 18.26z
1830 IK5QLO JN53fn
Hrd: IW0GPN, IC8FAX, LZ2CC

RZ6BU, KN84pv, wkd:
1521 IZ8DWL 57 51 JM88
1551 IK8EER JN70
1556 IC8FAX JN70
1603 IK7UXU JN81
Rig: 20w, 10 ele

UT5JCW, KN64sn, wkd:
1510 I7UGO/7 JN80WG 1369
1512 IZ8DWL JM88BR 1581
1515 IK7XWJ JN90CK 1335
1516 IK7UXY JN90DC 1345
1520 IT9NAN JM77 1732+-
1522 IK8ETN JM89 1470+-
1525 IZ7BWZ JN92 1189+-
1526 IT9NGN JM78PE 1674
1542 IK7IWI JN80OO 1405
1544 IC8FAX JN70CN 1640
1549 IK8EER JN70VT 1506
1554 IK8YTA JN70CV 1626
1555 IS0CAK JM49 2090+-
1559 I7FML JN80PW 1384
1559 IC8CQF JN70CN CW 1640
1600 IK7UXU JN81HE 142



1602 I8MPO JN70FP 1617
1602 IZ8CPZ JN70CW 1624
1606 OK1PGS JN69RS 1618
1606 OK1MZM JO70SL 1498
1606 OK1IAS JO60DG 1712
1607 DB6NT JO50VJ 1750
1609 DJ5RE JN59WK 1723
1609 DK5RQ JN68BV 1695
1610 DK1FG JN59OP 1774
1610 DO1NF JN69 1642+-
1610 DG3RAP JN68EW 1678

YU1LA, KN04fr, wkd:
1808 ON5IQ JO21
1809 G0NNF IO92
1809 G4JZF IO82
1810 G4FUF JO01
1810 M5BXB IO91
1811 G3NVO IO91
1812 G4ZTR JO01
1813 ON1IM JO11
1814 DJ5BV JO30
1815 G8LBS JO02
1816 M0NMD IO92
1817 G3LQR JO02
1818 ON4ZN JO01
1819 G0CUZ IO82
1819 G8HCZ JO03
1820 ON4AMX JO20
1821 ON5RA
1822 PA3FOC JO21
1822 DF8IK JO30
1823 PA3BIY
1824 PE1KXH JO21
1824 PA4ZP JO21
1825 G7SQW
1826 G4KWQ IO92
1826 PA5MW JO21
1826 PD2DB JO22
1827 PA3DYS
1827 PA0WWM JO22
1828 PA0WLB JO22
1828 PA3CNX JO22
1829 PB1TT JO22
1829 G0GGS
1829 G4EHD
1830 ON4GG JO20
1831 DL1KDA JO30
1831 PA0JMV JO21
1831 ON7EH JO20
1833 PA5DD JO22

YU7EW, KN05hp, wkd
1805 G7RAU IO90IR 1721 km
1807 G3WZT IO90UX 1649 km
1807 G4IGO IO80NW 1825 km
1808 G1HAR JO00AT 1622 km
1808 G4DOL IO80SO 1790 km
1809 G1GWY IO90FU 1731 km
1809 F1DBN JO00VT 1502 km
1810 G4AEP IO91MB 1691 km
1810 G3YVR IO91WD 1641 km
1811 G3LTF? IO91 strong QRM
1811 G4DOL IO80SO 1790 km
1812 G4WUU IO80OX 1820 km
1812 G4IGK IO91AN 1776 km
1813 TM1RCB JO10PH 1386k
1814 G8IZY IO91VC 1646 km
1815 GW4HDF IO81JO 1862 k
1815 ON5SV JO10WK 1350 km
1816 F0DMU JO10LP 1418 km
1816 G3NVO IO91JK 1722 km
1817 ON1BG JO20FJ 1309 km
1817 G0IUE IO81WJ 1783 km
1818 G4BRK IO91DP 1761 km
1818 G4FUF JO01GN 1609 km
1819 MW0MFY IO81FL 1881 k
1820 G0NFA IO91NE 1693 km
1823 G0DCP IO91WN 1653 km
1824 G1POK IO91VI 1653 km
1824 G8HGN JO01FO 1616 km

1825 G4HAT JO01 strong QRM
1825 ON4ZN JO21FB 1333 km
1826 G8RWG JO01BN 1636 k
1827 G4DED IO92HB 1751 km
1827 G4PCS IO91SV 1685 km
1828 ON1IM JO11UB 1382 km
1828 G3BNE JO01BJ 1632 km
1829 2E1IDX JO01
1830 M5BXB IO91XR 1652 km
1830 G4TIF IO92FH 1769 km
1831 ON4AMX JO20KV 1299 k
1831 G4YTL IO92MB 1723 km
1831 ON1BG JO20FJ 1309 km
1831 G8LBS JO02NB 1587 k
1834 G0HCZ IO90IR 1711 km
1834 ON4CJU JO20PS 1267 k
1835 G3KEQ JO01BH 1627 km
1837 M0RDX IO83WB 1831 km
1838 G8JVM IO82SP 1839 km
1838 G4PCP IO82WO 1816 km
1839 G4JZF IO82XO 1810 km
1839 G4TIF IO92FH 1769 km
1840 G0NNF IO92AL 1801 km
1842 G4KWQ JO02AQ 1808 k
1845 G4SWX JP02PB 1577 km
1846 PE1HWO JO21GV 1363 k
1853 PA3BIY JO22EB 1381 km
1854 PA3FOC 59 ?

May 27th, 2003

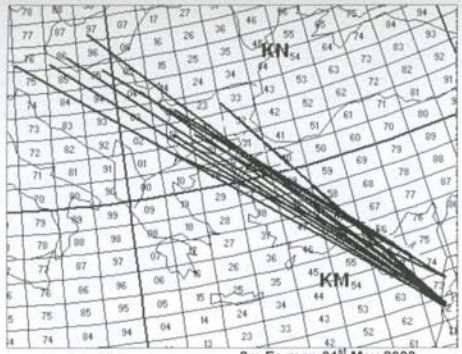
UA4AQL, LO20qb, wkd:
0715 SM4BDQ JP80FG
0718 SM5DIC JO89JT

May 29th, 2003

EB1EHO, IN73dm, wkd:
1701 IZ8DXB JN70EO 1689km
1702 I7UGO JN80WG 1983km

May 31st, 2003

4X1IF, KM72KD, wkd/hrd:
0750 YU7EV
0753 LZ2TU 519, 559
0756 LZ1QI 319 to 419 hrd
0757 YU1IT 51 5? KN04CN
0800 YU1EV KN04CN
0802 YU7EW KN05AP
0805 YZ7NOU 59 hrd JN95
0959 LZ1QI 52-54 59 KN12
1000 YU7MS 52,59 KN59
1005 LZ1ZP 31 hrd
1007 LZ1KJ 559 559 KN31CS
1009 LZ1KJ 31 51? KN31CS
1017 YU7EV 41 hrd



2m Es map 31st May 2003

4X1IF, KM72lt, wkd:
YU1EV, YU1IO, YU7BCL, YO7AX, 9A6R, LZ1QI.
Rig: 10w, 8 ele horiz. Yagi with a fixed azimuth of 300 deg. The location is in Haifa on Mt. Carmel 250m a.s.l. 73 de Alex, 4X1MH

HA5TS, JN97ll, wkd:
0806 4Z5FT KM72, hrd 4X1IF

LZ1ZP, KN22id, wkd:
0949 4Z5FT KM72

LZ3NY, KN12qq, wkd:
0954 4Z5FT KM72MT

YU7EW, KN05hp, wkd:
0749 4X1IF 59 hrd
0809 4Z5FT KM72MT 1884 km
0954 4X1IF KM72KD 1935 km
1008 4X1MH KM72LT 1880 km

OD5/OK1MU, KM73st, wkd:
1015 YU1EV KN04CN 1775km
1016 T94DU JN95DA 1928km, first OD-T9 on 2m! Pavel is QRT now in OD and back in OK.

June 2nd, 2003

DB3BW, JO42ac, wkd:
1815 SV8/DL5MAE KM28

DF8IK, JO30jt, wkd:
1815 SV8/DL5MAE KM28XI no other SV heard; rig: 350w, 11ele

DK5YA, JN49nx, wkd:
1813 SV8/DL5MAE KM28
1831 SV8DTD KM39

DL5FDP, JN49lp, wkd:
1815 SV8/DL5MAE KM28

DL5GAC, JN47ut, wkd:
1809 LZ1KJ KN31
1815 LZ1KG KN31
1816 LZ1ZP KN22
1816 LZ1DX KN22

DL8EBW, JO31nf, hrd:
1815 SV/DL5MAE KM28 55 hrd

DM1CG, JO31ic, wkd:
1814 SV8/DL5MAE 55 / 59 KM28 Rig: 200W / 12ele M²

F4BWJ, IN93mp, wkd:
1743 YO3IZI KN34bk, 2156km, nothing else hrd

F6FHP, IN94tr, wkd:
1729 UT5JCW KN64sn 2664k(!)
1749 YO3DMU KN34BK
1753 LZ2FO 55/55 KN13 (C)?

G7RAU, IO91ir, hrd:
YO5??, LZ!PP, LZ1ZP, LZ2FO and SV8/DL5MAE, all weak.

HB9AA, JN36bk, wkd:
1740 LZ2FO KN13kx
1741 YO3DMU KN34bk

HB9DFG, JN37sm, wkd:
1740 LZ1ZP KN22id 1476km
1743 LZ1KJ KN31cs 1604km
1808 LZ2FO KN13kx 1251km
1816 LZ3GM KN32rl 1476km
Rig: 400w, 7 ele.

I5WBE, JN53jr, wkd:
322 SV8/DL5MAE KM28IX ES
Es' vy short as MS

IK5QLO, JN53fu, wkd:
1322 SV8/DL5MAE KM28XI
1828 YO4BZC KN45AK

IZ1BPN, JN35vg, wkd:
18:30 UT5JCW hrd
18:31 YO3DMU KN34

LZ1ZP, KN22id, wkd:
1740 HB9DFG JN37
1741 F6DKW JN18
1816 DL5GAC JN47
1817 DK8VK

LZ3GM, KN32rl, wkd:
1212 IS0CAK JM49MB 1593
1742 F5LRL JN26MV 1838
1743 F6HVK JN27LH 1844
1813 HB9BHW JN47IJ 1569
1816 HB9DFG JN37SM 1657
1817 F6HGC JN27LI 1845
1817 F5IEP JN37JM 1712
1818 HB9RNL JN37SN 1658
1818 F5IEQ JN37JM 1712
1819 HB9DPO JN47HK 1576
1830 TM5SC JN18JX 2035

OK1TEH, JO70fd, hrd:
1830 SV3CYM KM08vf hrd vy weak for 2min.

SV1BTR, KM17vu, wkd
1235-1338: IS0SWW JN40gr, IS0KEB JN40gr, I2PY JN55, DH3VE, JN39kk

UT5JCW, KN64sn, wkd:
1729 F5VHX JN04 2558+-
1729 F6FHP IN94 2664
1730 F1JRD JN13WO 2358
1739 IK1EGC JN35UF 2027
1822 I4CVC JN54WH 1715
1822 IK1JXY JN44WC 1876

June 4th, 2003

CT1EAT, IM68da, wkd:
2105 DL9OBD JO42
2107 DF8IK NC

DF1GL, JN47co, wkd:
2052 CT1FAK IN50QO 1556 km.
Rig: 100w, 4 ele

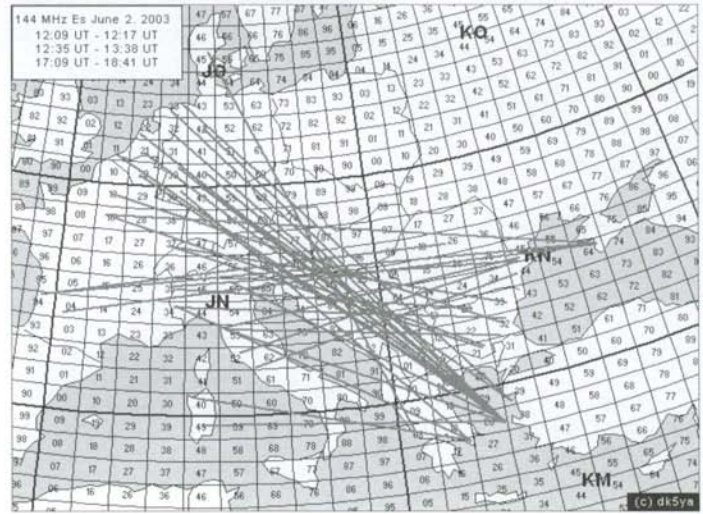
DG8UAW, JN48br, wkd:
2043 CT1FAK IN50qo 1598km
2052 CT2GRW IN60co 1545km

DK5RQ, JN68bv, wkd:
20:45 EA1 ??? hrd
20:50 CT1FAK IN50
20.52 CT1CLR IN50

DL6BF, JO32qi, wkd:
2055 EA1AK/7 IM66
2058 EA7BYM IM66um, hrd: CT1FAK

DL8EBW, JO31nf, wkd:
2027 CT1DIZ IM58 55 / 59

EA1AK/7, IM66vp, wkd:
2057 PE1GNP JO31
2057 ON4PS JO20
2057 ON1?? NC
2058 DL6BF JO32



2058 DL5NAV JO33
2104 PA3CEG JO33
2104 PA5WX JO33
2105 PA3BZL JO22
2105 PA3FXB JO33
2105 PA1YL JO33
2106 PE1RLF JO33
2106 PD0ROS JO22
2106 PA3ECU JO32
2106 PD4HDB JO??
2107 PD2JVE JO22
2107 DL6NF JO33
2107 PA3FFX JO33
2110 PA3DYS
Rig: 100w + 9 ele.

EI5FK, IO51rt, wkd:
EA6SA 20.04 GMT JM19
EA6VQ 2107 GMT JM19

G0CUZ, IO82wm, wkd:
1936 EA5EZJ IM98VX
1937 EA5AFP IM98
1940 EB5ARP IN90
2107 EA5CLH JM08
2108 EA5AFP IM98

G1AAR, JO00at, wkd:
2049 EA5EZJ IM98
2050 EA5AFP IM98

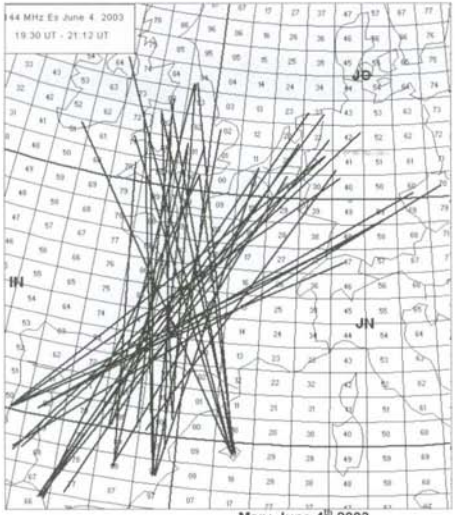
G8HGN, JO01fo, wkd:
1938 EA5EZJ IM98VX hrd
2058 EB5HRX IM99TL

G8RWG, JO01bn, wkd:
1940 EB5EYG hrd
2156 EA5EZJ IM98VX 1400km
2157 EA5AAJ IM99SL 1345km
2157 EA5AFP IM98VX 1400km
2158 EB5ARP IN90VF 1261km
2158 EB5BCF NC
Rig: 200w, 2x9ele

GW3LEW, IO71ps, wkd:
2006 EA5EZJ IM98vx
2050 EA6SA JM19

GW8ASA, IO81em, wkd:
2006 EA5EZJ IM98
2052 EA6SA JM19
Hrd: EA6VQ, EA6DD very weak

HB9JAW, JN47ce, wkd:
Heard were CT1FAK and a CT2? station for quite some time at 21.02 ut. At 21.25ut with typical FAI sound I heard again CT1FAK QTF 252deg. for ove 5



Map: June 4th 2003

min RS 51 to 53. Never before I heard at QTF 250 any FAI.

OK1MZM, JN69pr, wkd:
2056 CT1FAK IN50QO 1983 km.
Rig 25w, 9 ele

OK1TEH JO70FD, wkd:
2102 CT1FAK IN50QO 2084km

PA3BIY, JO22eb, wkd/hrd:
1940 CN8LI hrd 59 IM63
1948 EA6SA hrd
2052 EA7ERP

PE1GNP, JO31ix, wkd:
2055 EA1AK/7 IM66
2057 EA7BYM IM66

June 5th, 2003

CT1FAK, IN50qo, wkd:
1640 GM4VVX IO78TA
1644 MM1FEO IO76IC
1645 MM5DWW IO89ID
Rig: 800w + 4 x 15 ele.

June 6th, 2003

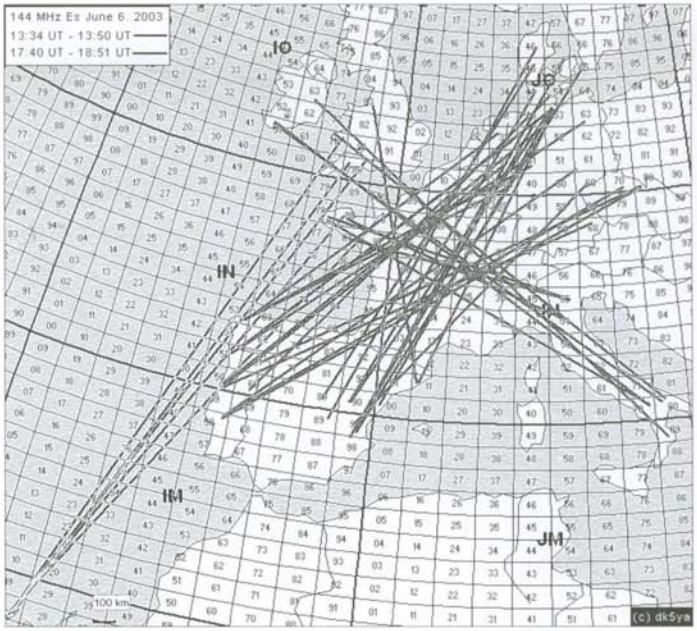
DG9MAQ, JN58lj, wkd:
1747 EA1SH IN63

DK6AS, JO52jj, wkd:
1843 EA1BLA IN53

DL8EBW, JO31nf, wkd:
1749 EA5AJX IM98
1837 CT1FAK IN50
1838 EA1SH IN63 52 hrd
1841 EA1BLA IN53

EI5FK, IO51, wkd:
1754 I8MPO JN70
1755 IK0SME JN61
1756 IW0BET JN61
Muf over 104mhz Arabic at 2324 local time EA8 Broadcast band earlier and EI8JK reported EA repeaters via es but no activity on , could have been EA8.

F8DBF, IN78ri, wkd:
1331 EB8BTV IL18QI 2453 km
1335 EA8BPX IL18SK 2438 km



1748 I8MPO JN70FP 1726 km
1755 I4CVC JN54WH 1334 km.

G4HGI, IO83pl, wkd:
1845 EA3DXU JN11 20 sec opening, nothing else

OK1AID, JO80eo, wkd:
1747 CT2HSO IN61CC
1750 CT1TM IM58KR
OK1MZM, JN69pr, hrd:
1800 CT2HSO IN61CC hrd
1801 CT1DHM IN61CC hrd

OZ1CLL, JO65gq, wkd:
1750 EA5DIT IM99

June 9th, 2003

DB9UH, JN49ws, wkd:
0901 UA6MA KN97VE 2208 km
0905 UY5HF KN66HP 1714 km
0908 UR5GIM NC. hrd UT3 and YO4.

DF1CF, JN57fp, wkd:
0849 UA6MA 55 hrd KN97VE
0903 UT2IO KN88XA
0911 UR5LLW KN89EQ

DG3XA, JO43wj, wkd:
0918 RZ6BU KN84PV very weak

DF2ZC, JO30rn, wkd/hrd:
0840 RZ6BU 51 hrd KN84PV
0843 RZ6BU 55 59 KN84PV 2307 km
0900 UR5GI(M?) 57 hrd KN76
0903 UY5HF hrd KN66HP 1896
0907 RZ6BU KN84PV 2307 km
0951 ES2CM 57 hrd 15 sec. KO29DJ 1451 km

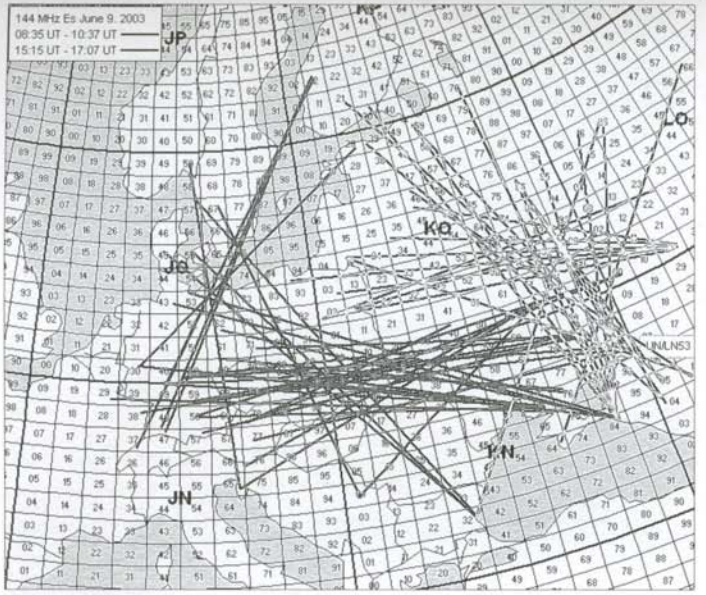
DJ8OG, JO40mf, wkd:
0902 UY5HF KN66HP 1776km
0910 RZ6BU KN84PV 2185km

DK5YA, JN49nx, wkd:
0854 UY5HF KN66hp
0945 OH1AYQ KP12ma
hrd: UA6MA, RZ6BU, UT2IO, UR5GIM.

DL4DWA, JO61qh, wkd:
0917 UA6MA KN97VE 1960km

DL5GAC, JN47ut, wkd:
0904 UT2IO KN88XA 2095km
0907 UA6MA KN97VE 2248km

DL8EBW, JO31nf, wkd:
0947 OH1AYQ KP12 hrd
0955 ES2CM KO29 hrd



DL9MCC, JN58ua, wkd:
0901 UA6MA KN97VE 2095km
0903 UT2IO KN88XA 1942km
0911 UR5LLW KN89EQ 1805
0919 UA3OW LOØØBK 2067km

HB9DFG, JN37sm, wkd:
0943 OH1AYQ KP12ma 1883km
SQR #310. Rig: 400w, 7 ele

LZ5GM, KN32ql, wkd:
1530 RW3TY LO26BG 1943km

OE5MPL, JN78cj, wkd:
0908 UA6MA KN97ve 1906km
0910 UR5LLW hrd KN89eq 1616
0913 UR5LX hrd KO70wk 1577
0953 LA2AB hrd JO59fv 1309km
might be also big Ms Burst

OK1MCS, JN69qp, wkd:
0902 UY5HF KN66HP
0912 UT2IO KN88XA
0915 UR5MGK
hrd UA6MA, Rig: 80w, 4 ele

OK1MZM, JN69pr, wkd:
0901 UA6MA KN97VE 1963 Km
0902 UY5HF KN66HP 1468 Km
0912 UT2IO KN88XA 1804 Km
0916 UR5MGK KN46JB 1222

RZ6BU, KN84pv, wkd:
0845 OK1FFD JO60CF
0846 DF2ZC JO30RN
0852 DC8RE JN59
0858 DL7ULM JO62
0902 DK1KO JO53CT
0906 OK1IAS JO60EB
0907 DG0WA JO50
0907 DH1NFL JO50
0908 DF2ZC JO30RN
0908 OK1IAS JO60EB
0909 DJ9OG JO40MF
0910 DK1CM JO40LG
0911 DL1SUN JO53
0913 DL5XV, 55, 59, JO53
0914 DL7ULM JO62
0916 DL2FF JO62TJ
0916 DG3XA JO43WJ
0916 DC7TS JO62PO
0917 DL7ANR JO62PM
0929 DG1KW
1518 RA1QDY KP70 145.5 FM #299
1526 RK3AF KO85
1530 RV3DBX KO96, 145.5 FM #300
1552 RW3TI LO16WG
1552 RW3TY LO26BG
1635 OH5LK KP30ON
Rig:15 w, 10 ele

S53VV, JN65um, wkd:
0951 LA2AB JO59

SP2IQW, JO94gm, wkd:
1603 UA4AQL LO20qb

SP5XMU, KO02lg, wkd:
1604 RV3RA LO02QP 1379
1609 RW4CLR LO32oe 1777 fm
1610 RX4CI LO32MA FM 1770
1656 UA4AQL LO20QB 1711
Rig: 50w, 13 ele

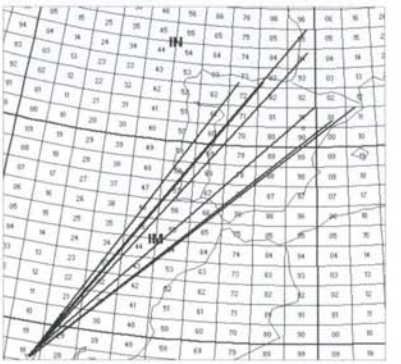
UT5JCW, KN64sn, wkd:
1541 RW4WE LO66PU 1936km

June 10th, 2003

EB8BTV, IL18sk, wkd:
1350-1425z: EB7BQI IM76, EA7ERP IM87, EB7NK IM86, EA7AG IM86, EA7GXWIM86, EA7KS IM86, CT1EPC IM68, EA7RZ IM86, EA1CKL/EA7
1759-1840z: EA3CSV JN01, EA3TI/P JN01, EA3DXU JN11, EA3CQQ JN11, EA3GCJ JN11, EA3CSV JN01, EB3BRN JN01, F6FHP IN94

F6FHP, IN94tr, wkd:
1842 EB8BTV 59/53 IL18qi
1904 EA8BPX IL18sk
1910 EB8CDX (not sure) hrd 53

Map 10.6.2003



June 12th, 2003

RZ6BU, KN84pv, wkd:
0715 - 0810 There were many Arabian commercial FM radiostations (taxi, police etc.) on 145000 and 145500.
1447 SV1FJN KM17VU FM #301
1450 SV1AFW KM17tx FM
1500 SV1ELF KM18UA #302
1501 SV1BJY KM18UA
1435 SP9JCS JO90CA
1439 OK2RX JN89IE
1440 OK2POI JN99
1443 DL5MAE JN58VF
1443 SP9JDP JN99HW
1444 DK5RQ JN68BV
1445 OK2BKV JN89NL
1446 OK1AMI JO70VA
1446 SP6LUV JO90BL
1447 OK1DKZ JN69XP
1448 OK1DOZ JO70VA

June 13th, 2003

EA4EOZ, IN80ci, wkd:
1641 IK8YVG JM88BR
1646 SV3KH KM07PQ
1653 IT9NGN JM78PE
1658 I8MPO JN70FP
Rig: 5w and turnstile antenna.

EA5EZJ, IM98vx, wkd:
1657 IK8YVG 55 JM88BR
1704 SV3KH 59 KM07

F6FHP, IN94tr, wkd:
1538 IW9HDD JM65

IK7IWI, JN80oo, wkd:
1614 EA9HA IM85mh

June 16th, 2003

CT1DYX, IN51qd, wkd:
1428 SP9AWO JN99
1428 SQ9ACK JO90IA
1448 OK1VDJ JO70VA
1448 OK1ZHS JO70VA
1449 OK2BRD
1449 SP9EWO JN99
1450 SP9APC JN99
1452 DL5ROB JN68HG
1454 OE3MWS JN88
1454 OK1KT JO70WE
1454 OK1VAM JN79
1454 OM3TZZ JN88TI
1455 SP9APC JN99QU
1456 DL5MCG JN58
1456 OK1CMW JN99
1456 OK2CLW JN99FT
1456 SP9SDR JN99QU
1457 OK2PMS JN89WW
1458 DO1MKA JN57HV
1458 OK2BKV JN89NL
1459 OK2AB JN89TI
1500 HB9PJT JN47FG
1500 OK2PMX JN88
1501 DF1GL JN47CO
1501 OK2PHI JN99
1501 SP9KUP/P JN99QU
1502 OK2BSH JN89WW
1502 OK2KUM JN89
1502 OK2WO JN89
1503 DG5GAC JN47
1504 OM1AVK JN88OD
1507 DF1CF JN57FP
1509 S51ZO JN86
1509 S57EA JN76HE
1512 DL5MAM JN58
1515 DL6SBM JN48
1516 DJ8LU JN48
1516 DL2RL JN58
1517 OK1MCS JN69
1517 OK1MZM JN69PR
1517 SP6IWQ JO80
1518 OE5KE JN78DH
1518 OK1IBB JN69MJ
1520 OK1XN JO70DB
1521 DC6RN JN59WK
1521 OK1APY JN79BX
1521 OK1TEH JO70FD
1522 DF1NP JN58OV
1522 DG7RCK JN59RG
1522 HB9DFG JN37SM
1522 OK1AMD JO70ND
1523 OE2LCM JN67NU
1524 DL1SP JN48QQ
1524 DL5RDQ JN59UF
1524 OK1PGS JN69
1525 OK1CDJ JO70VA
1525 OK1TDO JO70
1525 OK1VHW JN69WG
1526 OE3JPC JN87EW
1526 OK1CS JO70
1526 OK1KPA JO70VA

1526 OK1XOD JO7Ø
1527 DF5NK JN59QM
1527 OK1CU JO8ØCE
1527 OK1UOW JO8ØCA
1528 OK1AID JO8ØEO
1528 OK1UYR JN79
1529 DG7GM JN47
1529 OK1OSA JN79
1529 SP9XLC JO9Ø
1530 DO3GI JN37VP
1530 OK1UOZ JO7Ø
1531 DG3RAP JN68EW
1531 DL4NAZ JN58JR
1532 DL1GRT JN48UG
1533 DL1GNM JN38
1534 DG3GAQ JN48GE
1534 DK8GA JN37VN
1534 OK1UBR JN69LK
1535 OK2PTC JN89JM
1536 DL3NCR JN48QX
1536 OK1DJR JN79NU
1536 OK2VZE JN89JM
1537 DKØALK JN38WB
1538 DD7SB JN58BR
1539 DL3LFA JN67LU
1540 DJ3OS JN49FL
1540 DL9NBD JO5ØLE
1541 DB5WC JN49EJ
1542 DC5TD JN37VP
1542 OK1IAL JN69HT
1542 OK1XN JO7ØDB
1543 OK1INO JO7Ø
1544 DH8SBT JN48RV
1545 DG2GEP JN48
1545 DL5MKF
1546 DG2SKB JN49VA
1546 OK1VYK JO7ØGB
1547 OK1FOD JO8Ø
1548 DK6SO JN58BQ
1549 OK1GK JO7ØEB
1550 DL1SGH JN58BU
1550 F5JNX JN37PV
1551 DJ3ND JN58MW
1551 OK2KKW JO7ØFD
1552 OK1BAF
1553 DL8UCC JO71
1555 DK1MAX JN58
1555 DL1GRT JN48UG
1556 DFØSB JN48GE
1557 OK1ACF JO7ØWF
1558 OK1FBI
1558 OK1MNI JO7ØWA
1559 DB8AT JO51
1559 DJ9MG JO52
1559 DL1SDN JN48PP
1600 DL8GAP JN48EI
1601 DK6NJ JN59
1601 OK1TM JO7ØEC
1602 OE3JHC

1602 OK1VUM JN79EX
1612 DL4NAA JN49NX
1612 SP2MKO JO93CB
1613 DL2HWA JO51WE
1613 DL8WX JO3ØWE
1613 DL9AN JO62SN
1614 DJ2JA JO4Ø
1614 DL4MO
1614 DL8ATV JO5ØRO
1615 DC7TS JO62PO
1615 DL1RNW JO62
1616 OK1VUM JN79EX
1616 SP6CIZ JO81LB
1617 OK1DPU JO6ØVP
1618 DL1ANA JO5ØTW
1618 DL1HRE/P JO51
1618 DL6AMI JO5ØQX
1619 DJ8OG JO4ØMF
1620 DG9FC JO4ØEA
1620 DL1JNN/P JO6ØQU
1621 DL4DWA JO61QH
1621 DL8GP JN39
1629 DK3WG JO72GI
1630 DJ9FG JO52UD
1630 OK1VHF JO7ØEB
1631 DL4RDR JN59VL
1631 SQ6ELV JO8ØCQ
1632 DG7RZ 57 59
1633 OK1AR JO6ØRF
1634 DL9NCC JN59MK
1634 SP6CIZ JO81LB
1636 DD3SP JO72
1636 DL2BRW JO72GI
1639 DL1UU JO62SP
1639 DL4MT JO52
1639 DL7ANR JO62PM
1640 DL1RNW JO62
1640 DL7ULM JO62SN
1640 DO1JVA JO62ON
1641 DK3WG JO72GI
1642 DL1HWK JO61CU
1642 DL3AMF JO51KJ
1643 OK1DPU JO6ØVP
1644 SP6LB JO7Ø
1650 OK1FFD JO6ØCF
1655 DDØVF JO61WB
1655 DL3JPN JO6Ø
1656 DK5CCA JO6Ø
1656 DL3WW JO6Ø
1657 DJ2NR JO5ØVF
1658 DL3DXX JO61
1659 DG9NAV JN59
1659 DL4YY JO6ØHO
1659 DL5FDP JN49LP
1659 DM3FG
1700 DL1DUR JO61
1700 DL9DRA JO61VC

DB9UH, JN49ws, wkd:
1529 EA1LZ IN82DI 1330 km
1546 EA2AWD IN93CI 1140 km
1553 EA2RY hrd IN82pu 1232
F1BKP 57 hrd JN03AX 985 km
MUF 199 MHz
F4DPN 57 hrd IN93FL 1116 km
MUF 184 MHz
EA4LU 57 hrd IM68TV 1763 km
Rig: 50 w Log-Periodic under the roof

DD3DJ, JO31ol, wkd:
1537 EA6VQ JM19
1558 EA5TX IM99tl

DF1CF, JN57fp, wkd:
1504 CT2HSO IN61
1508 CT1DYX IN51
1519 CT1EEB IN50
1526 EA1DKV IN53
1531 EB1EHO IN73
1534 EA1DKV IN53
1536 EA1NQ IN73
1555 EA1BRK IN52
1603 EB1CTQ IN73
1610 EB1GJP IN53

DF1GL, JN47co, wkd:
1459 CT1DDW IN60do
1501 CT1FAK IN50qo
1502 CT1DYX IN51qd
1526 CT1EEB IN50qr
1529 EB1EHO IN73dm
1534 EA1NQ IN73em
1605 EB1CTQ IN73fm
Rig:100w, 4 ele

DF5DE, JO40cx, wkd:
1510 EA4CTF IM89at
1526 EA4AMX IM89at
1555 EA5AJX IM98ku
1613 EA4EOB IN80ek
1616 CT1FAK IN50qo
1644 EA4CYQ IM78bw
Rig: 150w, 11 ele.

DG2BCP, JO43dc, wkd:
1528 EA6VQ JM19HN 1566Km
1540 EA5AJX IM98KU 1740Km
1545 EA6FB JM08PV 1668Km
1547 EA7AJ IM87CS 1943Km
1553 EA5APL IM98SQ 1737Km
1555 EA5TX IM99WW 1597Km
Rig: 700w 4 x 3,6l DJ9BV

DG2LBF, JO54bh, wkd:
1541 EA5AJX IM98KU 1913 km
1554 EA6FB JM08PM 1831 km
1613 EA5FKX IM98IU 1891 km

DG9NAV, JN59ax, wkd:
1547 EA2AWD IN93CI
1700 CT1DYX IN51QD
Rig: 30w, antenna under the roof

DF2ZC, JO30rn, wkd:
1527 EA4AMX IM89AT 1491 km
1541 EA5AJX IM98KU 1466 km
1543 EA3DUY hrd JN12LD 997
1548 F6EAP hrd JN03 ca. 925
1551 EA4CTF hrd IM89AT 1491
1554 EB3DX? 51 hrd JN11
1558 CT1DYX hrd IN51PE 1625
1601 EA4CTF IM89AT 1491 km
1605 CT1HSN IN61CC 1579 km
1612 EA4EOB hrd IN80EK 1417
1615 CT1??? 51/-- hrd
1630 EA4AMX hrd IM89AT 1491
1633 EA5YTA(?) 51/- - hrd

DF8IK, JO30jt, wkd:
1458 EA7AJ IM87CS
1547 EA5AJX IM98KU
hrd EA4AMX. Rig 350w, 11ele

DJ8OG, JO40mf, wkd:
1503 EA4EOB IN80EK 1467km#
1509 EA4LU IM68TV 1747km #
1521 EA4AMX IM89AT 1539km#
1523 EA4CTF IM89AT 1539km
1530 EA2RY IN82PU 1213km #
1620 CT1DYX IN51QD 1669 #
1622 CT1FAK IN50QO 1737km#
Hrd some EA1, EA2 and CT1EEB

DK1VI, JN49hh, wkd:
16.04 EA1LZ IN82DI

DK1FUN, JN49mr, wkd:
1543 EA2AWD IN93CI
1545 EA4LU IM68TV
1603 EA1LZ IN82DI
Rig: 100w + 11 ele

DK3WG, JO72gi, wkd:
1424 EA4CTF IM89AT
1433 F4DPN IN93FC
1444 EA4AMX IM89AT
1447 EB4EUB IN80DJ
1505 EA4LU IM68TV
1507 EA4EOB IN80EK
1527 EA1LZ IN82DI
1531 EA2AWD IN93CI
1548 F4BWJ IN93MI
1550 EA2RY IN82PU
1555 F1SJX IN93GL
1600 F1BPK JN03AX
1614 CT1FAK IN50QO
1618 CT2HSO IN61CC
1622 CT1EEB IN50RR
1630 CT1DDW IN60BP
1631 EB1EBT IN73FM
1641 CT1DYX IN51QD

DK3XM, JO43xl, wld:
1432 EB3DYS JN11CK 1457km
1432 EA3EXE JN11DW 1403km
1434 EA5AJX IM98KU 1831km
1438 EA6FB JM08 C???
1503 EA7RM IM87CS 2039km
1507 EA7AJ IM87 C???
1513 EA3KU JN00JV 1557km
1617 EA5FKX IM98SQ 1826km
1619 EA4AMX IM89AT 1847km
EA5AJX was S9 from 14.30-16.25 with NO QSB!
Rig: 80w, 1x2,5wl

DK5RQ, JN68bv, wkd:
1444 CT1DYX IN51QD
1451 CT1DDW IN60BP
1456 CT2HSO IN61CC
1458 CT1FAK IN50QO
1511 CT1EEB IN50QR
1512 EB1EHO IN73DM
1525 EB1FDY IN53TI
1535 EA1TH IN72WW
1549 CT2HSN IN61CC
1601 EA1YY 59 55 IN73AO
1616 EA1DKV IN53TH

DK5TX, JO41jw, wkd:
1442 EA7HG IM87
1450 EA5AJX IM98
1453 EA7RM IM87
1529 EA7AJ IM87
1612 EA4CTF IM89
1630 CT1DDW IN60
1638 EA4EOB IN80

DL1RNW, JO62gh, wkd:
1422 EA7HG IM87CF 2105
1423 EA7RM IM87CS 2054
1427 EA4CTF IM89AT 1876
1433 EB4EUB IN80DJ 1811
1437 EA4EOB IN80EK 1804
1501 EA4AMX IM89AT 1876
1513 EA4LU IM68TV 2083
1606 CT1FAK IN50QO 2066
1614 CT1EEB IN50QR 2056
1617 CT1DDW N60BP 2019
1640 CT1DYX IN51QD 2023

DL3JIN, JO60xl, wkd:
1431 EA4EOB IN80
1432 EA4CTF IM89
1437 EB4EUB IN80
1514 EA1LZ IN82
1526 F4DPN IN93
1535 EA1EPM IN71
1542 EA2AWD IN93
1550 EA2RY IN82
1554 F1SJX IN93
1613 CT1EKD IM58
1618 CT2HSN IN61
1655 CT1EEB IN50

DL3NCR, JN48qx, wkd:
1519 EA1LZ IN82DI 1255
1528 CT1DDW IN60BP 1643
1532 CT1HSO IN61CC 1605
1534 CT2HSN IN61CC 1605
1537 CT1DYX IN51QD 1657
1543 EB1DOI IN??MQ
1550 F4DPN IN93FL 1039
1553 EA2AWD IN93CI 1063
1603 CT1EEB IN50RR 1681
1606 EA1TH IN72WW 1241
1609 EA1DKV IN53TH 1504
1613 CT1FAK IN50QO 1695
Signals very strong but with QSB. Rig: 300w + 11 ele

DL4DWA, JO61qh, wkd:
1550 EB2CTZ IN93
1550 EA1LZ IN82DI
1553 EA2AWD IN93CI
1557 EA2RY IN82PU
1607 EA1AUS IN70DX (FM)
1615 EA4CTF IM89AT
1644 EA1BLA IN53UM
1654 CT2HSN IN61CC
1656 CT1EEB IN50GR
1658 CT2HSO IN61CC

DL5FDP, JN49lp, wkd:
1634 F4DPN IN93
1700 CT1DYX IN51

DL5GAC, JN47ut, wkd:
1504 CT1DYX IN51
1504 CT2HSO IN61
1505 CT1EEB IN50
1513 CT1FAK IN50
1525 EB1EHO IN73
1530 EA1NQ IN73
1545 EA1DKV IN53
1548 EB1FDY IN53
1552 EA1NU IN73
1558 EB1CTQ IN73

DL5NAV, JO33tf, wkd:
1502 EA5AJX IM98KU 1731 km
1525 EA6DD JM19JK 1562 km
1528 EA6FB JM08PW 1660 km
1540 EA6SA JM19IR 1546 km

1540 EA6VQ JM19MP 1565 km
1545 EA5TX IM99TL 1644 km
1600 EA5GPC IM98WN 1734
1612 EA5FKX IM98IU 1736 km
1652 EA7RM IM87CS 1929 km
wkd more EA-Stn EA3EXE (jm11gw) - EA3DUY (jn12ld) - EA4LU (im68tv) but I am not shure if QSO's complete.

DL6BF, JO32qi, wkd:
1435 EA6VQ JM19hn
1511 EA5AJX IM98ku
1512 EA6FB JM08pw
1520 EA6DD JM19jk
1530 EA5GPC IM98vk
1532 EB3DYS JN11ck
1535 EA7AJ IM87cs
1538 EA6SA JM19ir
1542 EA3TI/p JN11
1547 EA5TE IM99tl
1551 EB3DXB IM99tk
1555 EA3EPH JN11ai
1602 EA7BHO IM87ee
1605 EA5APL IM98sq
1615 F6HTJ JN12kq
1635 EA7RM IM87cs
hrd EA5FKK, EA4CTF, EA4CYG, EA6/DF9UX, EA3KU.

DL8EBW, JO31nf, wkd:
1517 EA4LU IM68 55 / hrd from my car with FT480R and 1/4wave vertical antenna!
1536 EA6VQ JM19
1538 EA5DXB IM99 55 / NC
1545 EA5AJX IM98
1553 EA7BHO IM87
1557 EA5APL IM98
1621 EA3DUY JN12 52 hrd only, MUF193 MHz!

DL9MCC, JN58ua, wkd:
1652 EA1BLA IN53UM 1630km
1729 F6KHM IN78RJ 1207km ; strong QSB!

EA3XU, JN11ck, wkd:
1540 PA3FOX JO21RK
1541 PA3BJY
1544 PA3BIY JO22CA
1544 ON3AEN ? JO10
1545 PA0WWM JO22
1545 PA5DD JO22
1546 DJ9YE JO43
1547 PA2DWH JO22
1548 PA0PVW JO22VA
1549 ON4KHG JO10XO
1550 ON1IM JO11UB
1551 PA0GHB JO11WH
1552 PE1MN
1554 DK3BU JO33
1555 OZ2LPW ?
1557 PA3SVN JO22WR
1757 PA3CWN JO33
1814 DK8GV JO
1815 OZ1LPR JO44UW
1816 OZ1BUR JO46HI
1817 DK1KO JO53
1818 OZ9AEG JO57
1819 DG1YBO JO32RG
1824 9H1PA JM75
1836 9H5L JM75
1841 IK8YTA JN70CV

EA6DD, JM19jk, wkd:
1429 PA0PVW JO22 1457 Km
1430 PA3GBM JO33 1588 Km
1431 DK3BU JO33 1588 Km
1431 PA3CWN JO33 1588 Km
1431 PA2CHR JO22 1457 Km
1432 OZ7U JO45 1835 Km
1436 DF2JQ JO31 1371 Km
1436 PE9GG JO33 1588 Km
1437 DH8GV JO33 1588 Km
1437 PA5WX JO33ga 1533 Km
1437 OZ1BUR JO46 1942 Km
1440 DJ9YE JO43 1623 Km
1443 DG9YIH JO32 1480 Km
1443 OZ2TF JO46 1942 Km
1449 PA3DII JO23ve 1542 Km
1451 DL6YDP JO32mf 1454 Km
1451 PD1AN JO31 1371 Km
1509 PE9DX JO33 1588 Km
1510 PA3FXB JO33 1588 Km
1511 PE1GNP JO31ix 1422 Km
1513 G4FUF JO01 1350 Km
1513 G4LOH IO94ea 1661 Km
1517 PA3ECU JO32 1480 Km
1519 DL6BF JO32qi 1473 Km
1520 DL6YBF JO31ox 1430 Km
1520 DG8YHH JO32 1480 Km
1524 LA2PHA JO38ib 2087 Km
1524 DL5NAV JO33 1588 Km
1525 ON5AB JO20fs 1265 Km
1525 ON7EH JO20fv 1278 Km
1526 DL1EAP JO31ik 1363 Km
1526 PD0EBF JO21 1347 Km
1528 PB1TT JO22 1457 Km
1529 PE1RMI JO23mh 1550 Km
1532 PA3GJW JO32bu 1509 Km
1536 DF8XR JO32mf 1454 Km
1537 DL8WN ??
1537 DG5YIL JO32kb 1433 Km
1539 PA3EHH JO23 1568 Km
1539 ON1IM JO11ub 1294 Km
1540 PE1HWO JO21 1347 Km
1540 PA3BIY JO22 1457 Km
1542 PA3FOC JO32 1480 Km
1542 PA2DWH JO22 1457 Km
1543 PA5DD JO22 1457 Km
1543 ON5AZ JO21fe 1311 Km
1547 PA0GHB JO11 1339 Km
1554 PD2DB JO22md 1421 Km
1554 PA3DOL JO22mt 1494 Km
1555 PE1LWT JO22va 1414 Km
1557 G4ASR IO81mx 1471 Km
1558 PE1RZJ JO22fb 1408 Km
1559 G4IGO IO80 1319 Km
1604 F1DBN JO00vt 1269 Km

EA6VQ, JM19hn, wkd:
1418 PA3CWN JO33AH
1419 PA3BGM JO33CE
1420 PAØPVW JO22VA
1425 PE1MCD JO23XE
1429 OZ2TF JO46PE
1430 PA2CHR JO22XA
1430 PA3FXT JO33
1431 PDØROS JO22XE
1432 PE9DX JO33
1433 DG5BD JO43HM
1434 OZ7U JO45RL
1434 DL6BF JO32QI
1435 DG9YIH JO32QI
1436 DJ8ZJ JO32
1436 OZ3K JO45TL
1437 PA3HJG JO32BG
1438 DJ9YE JO43
1440 PA5WX JO33
1442 DG8YHH JO32QI
1443 OZ7DW JO46SB
1445 DH8GV JO33RL
1446 DF7VO JO32MF
1448 OZ1BUR JO46HI
1455 G4EAT JOØ1
1457 G4KDH JOØ1HO
1500 DK3BU JO33NO
1515 G3LQR JOØ2QF
1517 PA3DII JO23VE
1518 PA7MH JO22PG
1518 PAØJMV JO21PM
1519 OZ9V JO46QE
1520 OZ8JYL JO47XA #497
1522 PA3GJW JO32BU
1524 LA2PHA JO38
1525 ON4LN JO20IV
1525 PA3CNX JO22
1525 PD2DB JO22MD
1525 DL6YBF JO31OX
1526 DL2YFT
1526 PA9RX JO32
1527 ON7EH JO20FV
1528 PAØWWM JO22FE
1528 PA1GYS JO22WW
1528 PA3FOC JO21
1529 DG2BCP JO43DC
1530 PDØPVL JO22
1530 PAØGHB JO11WH
1531 PE1HWO JO21GV
1532 OZ9ZZ JO65CS
1533 PE1LTY JO22VJ
1533 PA2DWH JO22
1534 PA3EHH JO23XH
1534 PA3CEE JO33JI
1535 PE9GG JO33
1536 DK3QZ JO31
1536 DL8EBW JO31NF
1536 ON1IM JO11UB
1536 DD3DJ JO31
1537 OZ1LPR JO44UW
1537 DK7LH JO43BB
1537 OZ1DLD JO45
1538 DL1EAP JO31IK
1538 DG5BE JO33XD
1538 DF8XR JO32MF
1539 ON4ADP JO11
1539 PA3DOL JO22
1540 ON4CLQ JO11SE
1540 DL5NAV JO33
1541 PE1HWO JO3ØJT
1541 PA5DD JO22IC
1542 PDØEBF JO21LQ
1543 DK1MZ
1543 PA9JP JO32
1545 ON1AEN JO1Ø
1546 PA5TA JO33
1546 PA5WX JO33
1546 ON1IM JO11UB
1552 PD2DB JO22MD
1554 PE1RLF JO32CG
1554 PE2KP JO22XE
1555 DJ9CZ JO31BC
1556 PDØNHM JO33
1557 F6HHR JO1Ø
1557 ON4CHP JO21JD
1557 PE1MFP JO21
1558 PA2DWH JO22GD
1558 PA7DA JO22FF
1559 PA3BIY JO22
1559 PB1TT JO22FF
1600 F1DBN JOØØVT
1601 PE1RZJ JO32
1617 PAØEMO JO3ØJT

EB1EHO, IN73dm, wkd:
1514 SP9YDP JN99
1514 SP9EWO JN99HW
1515 DK5RQ JN68BV;
1516 OE5KE JN78DF
1516 OK2WO JN89IH
1516 SP9JCS JO90CA
1518 SQ9ACK JO90IA
1519 OK1VAM JN79IX
1520 OK1KT JO70WE
1521 OE5KE JN78DF
1521 OM3TZZ JN88
1521 OE3JPC JN87EW
1523 OK1AID
1524 OK2RX JN89IE
1525 DL5GAC JN47UT
1525 DL5ROB JN68HG
1526 OK2IWQ JO80HK
1527 DL5MAM JN58UB
1528 DF1GL JN47CO
1528 SP6IWQ JO80HK
1529 DL2RL JN58PE
1529 DL3LFA JN67LU
1530 DO1MKA JN57
1531 DF1CF JN57
1532 OK1CDJ JO70
1533 OK1IBB JN69MJ
1533 OK1MZM JN69
1534 OK1TDO JO70
1535 OK1POI JN99BL
1535 HB9PJT JN37
1536 OM3CQF JN88QQ
1536 OE3LCM JN87
1537 OK1PMX JN88IW
1538 OK1AMI JO70UA
1540 OK2PTC JN89JM
1540 OK2VZE JN89JM
1541 SP9APC JN99
1543 DL5MCG JN58KH
1545 HB9JAW JN47
1547 S51ZO JN85DR
1547 HB9DFG JN37SM
1548 DF1NP JN58OV
1549 DK8GA JN37VN
1550 OK2UIN JN89QI
1551 DG1MAJ JN57KU
1552 DO1MKA JN57HV
1554 OK2BRD JN99ET
1555 OK2CMW JN99FT
1555 OK2CLW JN99FT
1556 SP9SDR JN99QU
1556 OK2PMS JN89WW
1557 DL1GRT JN48UG
1558 OK2BSH JN89WW
1558 SP9MCY
1559 OK2WO JN89IH
1600 SP9KUP JN99
1601 DL6SBM JN48XK
1602 HB9PJT JN47FG
1603 OK2PHI JN99FS
1604 OK1MG JO70BD
1605 OK1AMD JO70ND
1605 OK1TEH JO70FD
1606 OK1VUM JN79FX
1606 SP9TTG JO90NU
1609 OK1TM JO70EC
1610 DL4RDR JN59VL
1611 OK1XN JO70DB
1613 OK1FPR JO80CE
1614 OK1KT JO70WE
1615 OK2KKW/P JO70FD
1615 OK1CS JO70FD
1616 OK1IAG JN69HT
1617 OK1INO JO70QO
1619 OK1UBR JN69LK
1619 DK1FG JN59OP
1620 SP9XLC JO90LJ
1621 DH9NFM JO50RF
1621 OK1XOD JO70IM
1626 OK1XN JO70DB
1626 OK1PGS JN69
72min Es, 80 QSOs, 2 new loc jn85 jn89 #217 squares.

EI5FK, IO51rt, wkd:
1549 IK0BZY JN61 1993+-
1552 IK0WGF JN52VC 1872
1555 I0TDK JN62CG 1886
1556 I1ANP JN44 1529+-
1557 IK8YTA JN70CV 2112
1558 IW5CNS JN53 1723+-
1558 IZ5EME JN52NS 1782
1559 9H1CG JM75 2600+-
1602 IW0UEI JN40GR 1792
1605 IC8FAX JN70CN 2137
1612 I5XDL JN52 1796+-
1615 I6NO JN63 1850+-
1616 I4RHP JN54QL 1679
1616 I4PAI JN64GB 1782
1617 I4LCK JN54 1655+-
1622 IZ4DZC JN54SV 1663
1625 I4XCC JN63GV 1793
1626 IZ7EQV
1628 IW6BFE JN63MU 1828
1630 IK4WMA JN54WG 1725
1632 I4ERN JN64GB 1782

F4BWJ, IN93mp, wkd:
1530 DL9USA JO71EN 1443km
1531 SP2OFW JO93AC 1744
1534 DG2HSF JO61LS 1374
1547 DL3JIN JO6ØLX 1325
1548 DK3WG JO72GI 1500
1549 DL2ARD JO6ØAR 1256
1550 DL4MO JO5ØEN 1149
1551 DL3HRM JO51XM 1302
1552 DL5IO JN49NI 997
1553 DL6AMI JO5ØQX 1233
1553 DL8ATV JO5ØRU 1230
1554 DH2UAK JO71FU 1465

F5LEN, JN38bo, wkd:
EA4CTF IM89AI
EA4LU IM89AS

F5IVP, JN23qi, wkd:
1540 G4ASR IO81MX
1550 EI4EY IO52QP
1603 GW3LEW IO71PS

F5SE, JN29af, wkd:
1602 EA5AJX IM98KU 1225km

G0CUZ, IO82wm, wkd:
1558 EA6/DF9UX JM09RM
1606 IW0UEI JN40 (Sardinia)
1626 TK/F1PNR JN40

G0NFA, IO91ne, wkd:
1628 I5XDL JN52

G4HGI, IO83pl, wkd:
1555 EA6/DF9UX JM09RA
1606 IS0GQX JM49OH
1622 TK/F1PNR/P JN42NP
1626 IT9PMZ JM68PE

G4RRA, IO80bs, wkd:
1615 IS0GQX JM49
1619 I4LCK JN54
1620 I4PAI JN64
1621 IZ4AIK JN63
1622 I4RHP JN54
1623 IK2DDR JN55
1623 IK5YJY JN53
1625 I4XCC JN63
1627 I4PAI JN64
1628 I4ERN JN64
1628 IZ7EQV JN71
1634 I4EWH JN64

GW3LEW, IO71ps, wkd
1429 to 1634z:
)DTK, IC8FAX, IQ5QLO,
Z5EME, IK0BZY, I0EIO, I1ANP,
K5YJY, IK1JXY, I5TAT, I0DTK,
N0GEY, I5WBE, IW5ACZ,
T1EGC, DL6GCK/P, IZ8DWL,
)WDW, IK5FTQ, I5LN,
30/IJ6DZH, IS0MVE,
K/F1YJ/P, F5IYP, ISOGQX,
N5CNS, IK5OEA, I8MPO.

GW4DGU, IO71sv, wkd:
1418 IK1JXY JN44
1419 IK5QLO JN53fu
1419 IK5/DK3EE JN53cw
1420 IK0BZY JN61gw
1429 IC8FAX JN70cn
1430 I0DTK JN62cg
1433 IK5/DK3EE JN53cw
1436 IK5EME JN52ns 59 55
1438 I5XDL JN52gw
1441 I0EIO JN61jt
1454 IK0EIE JN61
1502 IC8FAX JN70cn ragchew!!
1513 I5TAT JN53fl
1517 I5RSR JN52ns
1518 IZ5EME JN52ns
1521 EA6VQ JM?? nc
1522 I1ANP JN44vc
1524 I0WDW JN61
1525 IW8EQA JN70ue
1527 IK5YJY JN53pg
1528 IW0GEY JN61fx
1528 IK5/DK3EE JN53cw
1529 I5LN JN53dv
1530 I5XDL JN52dw
1532 IW5CNS JN53CX
1533 IK5QLO JN53fu
1537 IK1EGC JN????
1538 IW5ACZ JN53DP
1538 IK8YTA JN70uv
1539 F1DRN?? lost nc
1543 IS0/IK6DZH JN40ph
1554 F1YJ/TK JN42no
1615 IT9PMZ 55 lost nc
1615 IS0GQX JM49oh
1616 I5WBE JN53jr
1617 TK/F1PNR JN42no
1618 I0RHJ JN61fv 55 57
1624 IK5OEA JN53 59 57
1634 I8MPO JN70

GW8ASA, JO81em, wkd:
1419 IK0BZY JN61
1420 IC8FAX JN70
1421 I0DTK JN66
1430 IK1JXN JN44
1434 IK5/DK3EE JN53
1514 IC8FAX JN70
1520 I0WDW JN61
1521 IK0TAT
1522 IW5ACZ JN53
1523 IZ5EME JN52
1524 IW0GEY
1525 IK/DL6GCK/p
1526 I1ANP JN44
1527 IK5QLO JN53
1529 I5YJY JN53
1530 IW5CNF
1530 IK1EGC JN53
1539 I5LN JN53
1540 IK8YTA JN70
1545 I5WBE JN53
1556 F1YJ/TK
1607 IK0BZY
1608 I0RHJ JN61
1617 IK5FTD JN53
1617 IK5OEA JN53
1620 IW5CNS JN53
1621 I5WBE dupe
1624 IZ0AYB JN52
1625 IK0WGF JN52

HA1FV, JN87jj, wkd:
1525 EA1DKV IN53th 2010km,
Hrd EA1FDY IN53

HA5OV, JN97nj, wkd:
1552 EA1DKV IN53TH
1618 F6AQI IN96DW
1640 F6KHM IN78RJ
1647 F8DBF IN78RI
1653 F6CGJ IN78RK
1658 F5JKK IN87PR

HB9DFG, JN37sm, wkd:
1519 CT1DDW IN60bp 1446km
1522 CT2HSO IN61cc 1410km
1523 CT1DYX IN51qd 1464km
1548 EB1EHO IN73dm 1122km

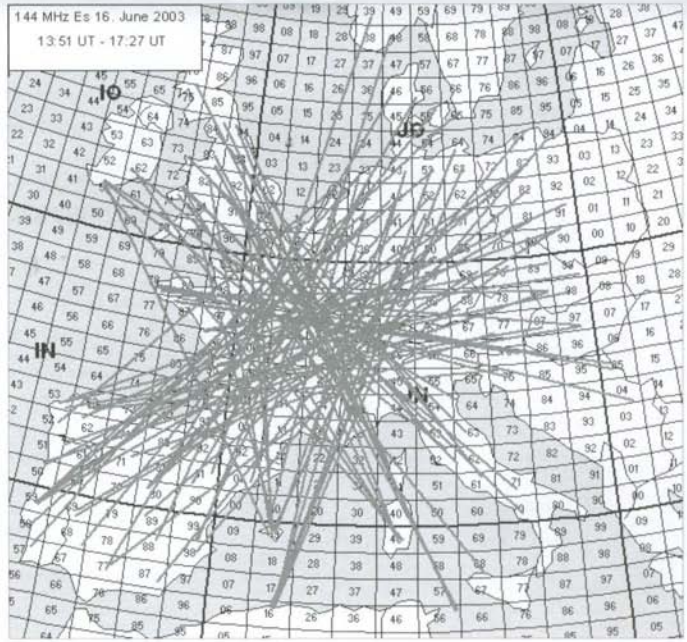
HB9JAW, JN47ce, wkd:
1430 hrd CT1FAK, CT1DYX, CT1DDW.
1546 wkd EB1EHO IN73, EA1DKV IN73, EB1FDY IN53, EA1BRK IN52, EA1NQ IN52.

IV3DXW, JN65qq, wkd:
1607 F8DBF IN78RI 1391 Km
1608 F6KHM IN78RJ 1391 Km
1617 F6CGJ IN78RK 1392 Km

IV3GTH, JN65st, wkd:
1608 F8DBF IN78RI
1617 F6KHM IN78RJ
ahrd 16.30-16.40 F6CGJ 51-52 (weak FAI ?)
16.10-16.20 FX3THF 55 qsb IN88GS (beacon)
Rig: 10w, 4 ele yagi 2 m above ground + 70 cm boom, 20 m RG58.

IK5FTQ, JN53lw, wkd:
1432 EI4EY IO52QP #209
1527 G4DOL IO80SO #210
1533 GW3LEW IO71 #211
1534 EI4DQ IO51WU
1551 F6KHM IN78RJ
1616 GW8ASA IO81EM
1632 MW1MFY IO81
Rig: 200w, 20 ele

IK5QLO, JN53fu, wkd:
1415 EI4EY IO52QP 1709
1419 GW4DGU IO71IS 1463
1432 GW3LEW IO71PS 1429
1519 G4HGO IO80 1252+-
1522 G4NYE IO81IA 1302
1527 GW8ASA IO81EM 1351
1535 F6KHM IN78RJ 1258
1536 GW4DGU IO71IS 1463
1538 GW3HWR IO71XN 1378
1555 EI9GQ hrd
1558 EI8JK IO51 hrd



1432 GW3LEW IO71PS 1429
1519 G4HGO IO80 1252+-
1522 G4NYE IO81IA 1302
1527 GW8ASA IO81EM 1351
1535 F6KHM IN78RJ 1258
1536 GW4DGU IO71IS 1463
1538 GW3HWR IO71XN 1378
1555 EI9GQ hrd
1558 EI8JK IO51 hrd
1600 F6CGJ IN78 hrd
1618 MW1MFY IO81FL 1344
1627 G7RAU IO90IR 1168
1630 EI4DQ IO51WU 1640
1632 G4ASR IO81MX 1343

I4YNO, JN54KP, wkd:
1819 EI4DQ IO51WU

I5WBE, JN53jr, wkd:
1525 G4DOL IO80SO 1257
1528 EI9GQ IO51RT 1693
1528 GW3LEW IO71
1535 F6KHM IN78RJ 1288
1545 GW8ASA IO81EM 1380
1555 EI8JK IO51
1616 GW4DGU IO71SV 1451
1617 GW3HWR IO71XN 1407
1622 GW8ASA IO81EM 1380
1628 GW4HBK IO81KP 1359
1629 EI4DQ IO51WU 1669
1632 MW1MFY IO81
1637 G4ASR IO81MX 1372

IKØWGF, JN52vc, wkd:
1555 EI5FK IO51RT
1558 EI4DQ IO51WU
1600 F8DBF IN78RI
1604 F6CGJ IN78RK
1606 F6KHM IN78RJ
1620 G3JHM
1624 GW8ASA IO81EM
1626 G4ASR IO81MX
1627 G3LFT IO91GG

OE3JHC, JN78we, wkd:
1551 EB1FDY IN53TI
1555 EA1NU IN73EM
1602 CT1DYX IN51QD
1612 EA1DKV IN53TH
1627 F6AQI IN96DW
1630 EA1BLA IN53UM

OE3MWS, JN88dc, wkd:
1454 CT1DYX IN51QD
1527 EA1DKV IN53TH
1539 EA1FDY IN53TI
hrd EA1NQ, EB1EHO

OK1CDJ, JO70va, wkd:
1515 CT2HSO IN61CC
1520 CT1FAK IN50QO
1521 CT1EBB IN50
1526 CT1DYX IN51QD

1532 EB1EHO IN73DM
1546 EA1TH IN72WW
1611 EB1CTQ 59 56 IN73FM
1616 EA1NU 59 55 IN73EM

)K1KT, JO70we, wkd:
1454 CT1DYX IN51
1458 CT1DDW IN60BP #419
1503 CT1FAK IN50QD
1506 CT2HSO IN61CC
1509 CT1EEB IN50GR
1520 EB1EHO IN73DM
1530 CT2HSN IN61CC
1532 EA1TH IN72WW #420
1539 EA4CTF 59 IM89EM ?
1549 EA2PWD 59 IN93 CR ?
1601 EA1DKV 59 IN53TH #421
1606 EA1YY 59 IN73AO
1609 EB1CTQ 55 IN73FM
1612 EA1NU 59 IN73EM
1615 EB1EHO 59 IN73DM
1617 EA1NQ 59 IN73EM

)K1MCS, JN69qr, wkd:
1515 CT1DDW IN60 #
1518 CT1DYX IN51
1537 CT2HSO IN61CC #
1559 CT2HSN IN61CC
also hrd CT1FAK, EA1YY, EA1NQ, EA1DKV

)K1MZM, JN69pr, wkd:
1423 EA1LZ IN82DI
1501 CT1DDW IN60BP
1518 CT1DYX IN51QD
1526 CT2HSO IN61CC
1528 CT1EEB IN50RR
1532 EA1TH IN72WW
1533 EB1EHO IN73DM
1543 CT2HSN IN61CC
1627 EA1YY IN73AO

)K1TEH, JO70fd, wkd:
1519 CT1DDW IN60BP 2031 #
1520 CT2HSO IN61CC 1994 #
1521 CT1DYX IN51QD 2047km
1526 CT1FAK IN50QO 2084km
1527 CT1EEB IN50QR 2075km
1531 F5HIJ IN95OA 1278 # FM!
1537 EA1TH IN72WW 1629 #
1539 CT2HSN IN61CC 1994km
1605 EB1EHO IN73DM 1699km
1611 EB1CTQ IN73FM 1687km
1621 EA1YY IN73AO 1711km.
Rig: 50w, 6 ele

)K2WO, JN89ih, wkd:
1503 CT1DYX IN51
1517 EB1EHO IN73DM
1523 CT1FAK IN50QO
1524 EA1NQ IN73EM
1606 EA1NU IN73EM
1610 EA1YY IN73AO
1614 EA1DKV IN53TH
1615 F6CRP IN96KE
1619 F5GHP IN56LE

OM1AVK, JN88od, wkd:
1505 CT1DYX IN51PE 2179 km
1531 EA1NQ IN73EM 1835 km
1535 EA1DKV IN53TH 2047km
1538 EB1FDY IN53TI 2045 km
1603 EA1BRK IN52TL 2087 km
1617 F6AQI IN96DW 1423 km
1650 F6CGJ IN78RK 1605 km
1657 F5JKK IN87PR 1481 km
hrd EB1EHO, EA1YY. 50w11 ele

OM3TZZ, JN88ti, wkd:
1453 CT1DYX IN51QD
1520 EB1EHO IN73DM
1533 EA1DKV IN53TH
1534 EA1NQ IN73EM
1535 EB1FDY IN53TI
1630 EA1BLA IN53UM
1650 F8DBF IN78RI
1650 F6KHM IN78RJ
1657 F5JKK IN87PR

OM5UM JN98eo, wkd:
1556 EA1DKV IN53th
1619 F5GHP IN96le
1620 F6CRD IN96ke
1634 EA1BLA IN53um
1.55 F8DBF IN78ri 55 hrd

ON4KHG, JO10xo, wkd:
1545 EA6FB JM08PW 1315
1546 EA6/DF9UX JM09RA 1304
1547 EB3DYS JN11CK 1029
1547 EA3DUY JN12LD 945
1549 EA3EXE JN11DW 973
1549 EA3XU JN11
1551 EA6SA JM19IR 1214
1559 EA5GPC IM98WN 1378

ON4LN, JO20iv, wkd:
1657 EA5AJX IM98LU 1415 #
1724 EA6FB JM08PU 1356
1725 EA6SA JM19IR 1251
1726 EA6VQ JM19MP 1258
1728 EA3KU JN00JV 1152 #
1731 EA6/DF9UX JM09ra 1345#
1732 EA5PC IM98VX 1380 #
Rig: 150w + 17 ele.

OZ1LPR, JO44uw, wkd:
1530 EA6FB JM08PU
1532 EA5AJX IM98KU
1535 EA3DUY JN12LD
1535 EA3TI/P JN11JT
1539 EA6VQ JM19HM
1540 EB3DYS JN11CK
1545 EA5AAC IM89WN
1550 EA5GPC IM98VK
1605 EA4LU IM68TV
1610 EA7AJ 59 55 IM98CS
1615 EA5FKX IM98IU
1615 EA3XU JN11CK
1621 EA4AK/QRP IM78CX #
1645 EA7RM IM87CS
hrd EA4CYQ

OZ1IEP, JO55xu, wkd:
1536 EA3KU JN00JV 1851 #
1538 EA5DWS IM98SS 2110
1616 EA5CMC IM99SE 2067
1621 EA5AJX IM98KU 2123
1627 EA5FKX IM98XQ 2105
1632 EA7RM IM87CS

PA3BIY, J022eb, wkd:
1500 EA5GPC IM98WN 1545
1512 EA6FB JM08
1519 EA6/DF9UX JM09RA 1470
1534 EA3EXE JN11DW 1139
1539 EA6DD JM19
1541 EA3XU JN11
1549 EB3DYS JN11CK 1192
1551 EA6SA JM19
1559 EA6VQ JM19MP 1384
1616 EA3TI/P JN11JT 1146
1635 EA5FKX IM98

PD2DB, JO22md, wkd:
1656 EA5AJX IM98KU 1552
1658 EA5TM IM99SU 1430
1707 EA5GPC IM98WN 1562
1725 EA6VQ JM19HN 1411
1728 EA6FB JM08PW 1496
1741 EA6/DF9UX JN11CK 1209
1743 EA3TI/P JN11JT 1161
1747 EA3EXE JN11DW 1153
1752 EB3DYS JN11CK 1209
1754 EA6DD JM09JK 1450
1756 EA3DUY JN12LD 1123
1806 EA5APL IM98SQ 1555

PE1GNP, JO31ix, wkd:
1512 EA6DD JM19JK
1522 EA6FB JM08
1525 EA5OB IM99SM
1537 EA5AJX IM98KU
1555 EA6/DF9UX JM09RA #319
1557 EA5CD IM98BK FM
1604 EA5GPC IM98WN
1648 EA7RM IM87CS

PE1RLF, JO32cg, wkd:
1522 EA5GPC IM98wn 1600 #
1525 EA6FB JM08pf 1607 Km new Dxcc and #
15.32 EA3KU JN00jv 1329 Km #
1534 EA3DUY JN12ld 1152 Km#
1554 EB3DYS JN11ck #
1555 EA6VQ JM19mp 1424 #

S51MQ, JN75nt, wkd:
1608 F8DBF IN78RI
1613 F6KHM IN78RJ
1616 F5GHP IN98
1619 F5JKK IN87
1656 F6CGJ IN78
Rig: 17ele + 800W

S51ZO, JN86dr, wkd:
1509 CT1DYX IN51QD 2079km
1529 EA1NQ IN73EM 1749
1532 EA1DKV IN53TH 1966
1541 EB1FDY IN53TI 1965
1547 EB1EHO IN73DM 1756
1615 F5JKK IN87PR 1435
1622 F6AQI IN96DW 1366
1633 F6KHM IN78RJ 1569
1637 F8DBF IN78RI 1569
1640 F6HRO IN88JQ 1471
1644 F6CGJ IN78RK 1569
1647 F6FAI IN88HM 1483

SP9TTG, JO90nu, wkd:
1606 EB1EHO IN73DM, hrd EA1YY, CT2HSN

YU1LA, KN04fr, wkd:
1621 F8DBF IN78
1622 F6CGJ IN78
1626 F6KHM IN7

YU7EW, KN05hp, wkd:
1619 F5JKK IN87PR 1787 km
1636 F6KHM IN78RJ 1922 km

7X0AD and 7X2RO, JM16:
Confirmed to DUBUS that they made NO 2m Es QSOs on June 16th.

June 17th, 2003

DB5WC, JN49ej, wkd:
1738 SV1OE KM17VX 1768 km new #. hrd SV9ANK, SV1OE, SV3CYM, SV1DH and SV1ELI

DF1GL, JN47co, wkd:
1710 SV1DH KM18, hrd SV2, SV5, 9H

DF8AE, JO41gx, wkd:
1642 IK8ETN JM89ch

DG9NAV, JN59ax, wkd:
hrd with antenna under the roof:
1645 IK8ETN JM89ch

DJ8OG, JO40mf, wkd:
1640 IK8ETN JN80 hrd
1703 SV3CYM KM08VG
1667km new #

DK3WG, JO72gi, wkd:
1641 9H1AW JM75
1645 9H5ZA JM75GU
1649 9H1GB JM75

DK5YA, JN49nx, wkd/hrd:
07.41 I7 and I8 local chat on .300, 144 open to SV, nil QRV
16.39 SV1DH KM18
17.00 SV3CYM KM08
hrd: 9H1BT, SV1OE, SV9ANH, SV1ELI, IK8DYD(?), IK8ETN, IK7?,

DL2IAN, JN49bc, wkd:
1615 SV3CYM KM08VF
1737 SV1ELI KM18UA
1737 SV1OE KM17
1739 SV1DH KM17
heard: SV9ANK 52
Rig: 100w, 9 ele under the roof

DL5GAC, JN47ut, wkd:
1701 SV1DH KM18
1702 SV1OE KM17
1706 SV1FJN/m ??145.500 FM
1734 SV1ELI KM18

DL5ROB, JN68hg, wkd:
1720 LA2AB JO59FV 1300
1727 LA3BO JO59 1255+-
1728 LA5KO JO29OG 1314

DL8EBW, JO31nf, hrd:
1739 SV3CYM KM08 55 hrd

DL9MCC, JN58ua, wkd:
1724 LA2AB 59/59 JO50FV 1322km

EA3XU, JN11ck, wkd:
1714 LZ1ZX KN32
1721 YO3AMU
1731 YO3DMU KN34BJ
1732 YO3IZI KN34BK
1746 LZ2FO ? KN23
1746 LZ1ZA ? KN23
2005 LZ1KG KN21
2010 LZ2SK KN43EK

EA6DD, JM19jk, wkd:
1736 YO7HMH KN25 1905 Km
1805 YO4BZC KN45ak 2140 Km

EA6VQ, JM19hn, wkd:
1609 YO5BWD KN27GD
1725 YO7HMH KN25
1804 LZ2SK KN43EK
1807 YO4ATW KN35

F1NPX, JN29ag, hrd:
1723 YL3AG KO26 hrd
1726 ES?? KO29 hrd

F5SDD, JN23rf, wkd:
1740 LZ1ZX KN32IO 1726 km

F5SE, JN29af, wkd:
1605 SV1DH KM18VA 2011 km
1643 SV3CYM KM08VF 1873 km
1714 HA, SV, LZ, YO, etc. all together hrd, impossible to identify. MS-like reflection.
1723 UTC: YL3AG, 51, hrd. Very faint signal.

F6HTJ, JN12kq, wkd:
1528 UT5JCW KN64 2461km
1632 YO3DMU KN34
1641 LZ1ZX KN32
1643 SV3CYM KM08
1653 LZ1KJ KN31
1712 LZ2FO KN13
1722 LZ2ZY KN13
1736 LZ3GM KN34
1747 LZ1KG KN31

G0CUZ, IO82wm, wkd:
1615 SP8NCJ KO12NC
1716 SP5WCK KO12CJ
1721 SP8UFT KO11
1723 SP5XMU KO02LG

G0NFA, IO91ne, wkd:
1723 LY2SA KO14LL
1729 RA3LBK KO65QA

G1AAR, JO00at, wkd:
1714 EW6FS KO35LB
1714 LY3ED KO14UX
1716 LY2SA KO14
1726 RA3LBK KO65QA

G4HGI, IO83pl, wkd:
1710 SP8NCJ KO12NC

1715 SP5WCK KO12LJ
1718 SP5XMU KO02LG
1719 SP8UFT KO11JI

G1HWY, IO90uv, wkd:
1715 EW6FS KO35
1717 SP2IQW JO94 #
1719 LY2SA KO14
1722 SP2OFW JO93
1728 LY3ED KO14
1732 RA3LBK KO65 #

3Z8ZY, IO91vc, wkd:
1711 EW6FS KO35LB
1713 LY2SA KO14LL
1722 SP5WCK KO12CJ
1733 RA3LBK KO65QA

3W4DGU, IO71sv, wkd:
1715 SP5WCK KO12cj hrd
1717 SP8NCJ KO12nc
1724 SP5XMN KO12nc
1728 SP7EXY KO00qz hrd

3W7SMV, IO81ln, wkd:
1713 LY2SA KO14 1763+-
1715 SP5WCK KO12CJ # 1723
1723 SP5XMU KOØ2LG # 1640

4S9DFG, JN37sm, wkd:
1642 SV3CYM KM08vf 1550km
1740 SV1DH KM16 1600km

V3DXW, JN65qq, wkd:
1714 LA2AB JO59FV 1593 Km
1715 LA8WF JO59GV 1592 Km
1717 LA3BO JO59CD 1513 Km
1718 LA0BY JO59FW 1598 Km
1720 LA5KO JO59FH 1529 Km
1730 LA6MV JO59EJ 1539 Km
Rig: 4cx250 + 17el. F9FT

K8ETN, JM89ch, wkd:
1736 DL8GP JN39LH
1737 DJ9IQ NC
1606:07 LA2AB JO59FV 2323 Km
1606:41 PA9RX JO32MT
1606:42 DK9NCX J059BT
1606:43 DF8AE JO41GX

Z8DWL, JM88br, wkd:
5.58 LA3BO JO59
6.10 SM6CMU JO57
6.12 G4LOH IO94

LA3BO, J059cd, wkd:
716 S53VV JN65um
716 S54G JN65tm
717 IV3DXW JN65

1717 9A3XZ JN64wu
1718 I6BQI JN72bk
1720 IW3QTG JN65
1722 S50J JN65vo
1722 I4XCC JN63gv
1727 I4ERN JN64
1728 DL5ROB JN68
1730 IW3RJZ JN65iv
1731 9A3JH

LA5KO, JO59fh, wkd:
1648 9H1GB JM75fu 55 55 2623
1714 S54G JN65tm 1547
1714 I6BQI JN72bk 1892
1714 IK6TIJ JN72aj 1896
1716 S53VV JN65um 1548
1717 I4XCC JN63gv 1719
1717 IW3QTG JN65
1718 IV3DXW JN65qq 1526
1720 IW0QNX JN62iq 1854
1721 IZ4AIK JN63hv 1719
1723 I4ERN JN64gb 1701
1728 DL5ROB JN68hb 1258
1728 DF9RJ JN68gs 1179

LZ1ZP, KN22id, wkd:
1703 F5GOP hrd
1714 F/DJ7GS JN33 ?
1724 F5ANT JN24
1727 F5VHX JN04
1728 F6FMB JN24
1733 F1GPL JN05
1734 F1RHS JN03
1735 IK1GPG JN34
1735 IK1JGS JN34
1736 F4DSD JN23
1737 I1DMP JN35
1739 F6EGD JN24
1740 F1EYB JN23
1740 F6EPE JN23
1741 F5JMI JN24
1743 F1FIH JN23
1743 F9HS JN23
1747 EA3DUY JN12
1748 EA3EXE JN11

LZ3GM, KN32rl, wkd:
1721 F1VBW JN03WL 2075
1722 F1RHS JN03PV 2118
1725 F4DSD JN23JO 1840
1726 F6EGD JN24MA 1817
1726 F6EPE JN23JW 1838
1727 F9HS JN23AT 1899
1734 F1FIH JN23GS 1859
1736 F6HTJ JN12KQ 2005
1739 F1FIH JN23GS 1859
1741 F5ANT JN24IJ 1843
1744 F1EYB JN23KK 1835
1744 EA3DUY JN12LD 2007

1746 EB3DYS JN11CK 2083
1749 F/DJ7GS JN33GH 1701
Hrd: F5VHX, EA3TI/p, EA3AXV, F5GHP, F5JMI, EA3DXU. Rig: 10w + 3wl yagi.

LZ5UV, KN12pr, wkd:
1720 F1RHS JN03PV
1725 EA3DUY JN12LD
1736 F5ANT JN24

ON4KHG, JO10, wkd:
1600 SV3CYM hrd KM08vf1967
1728 SV1OE 5 KM17VX 2102
1733 SV1DH KM18VA 2099

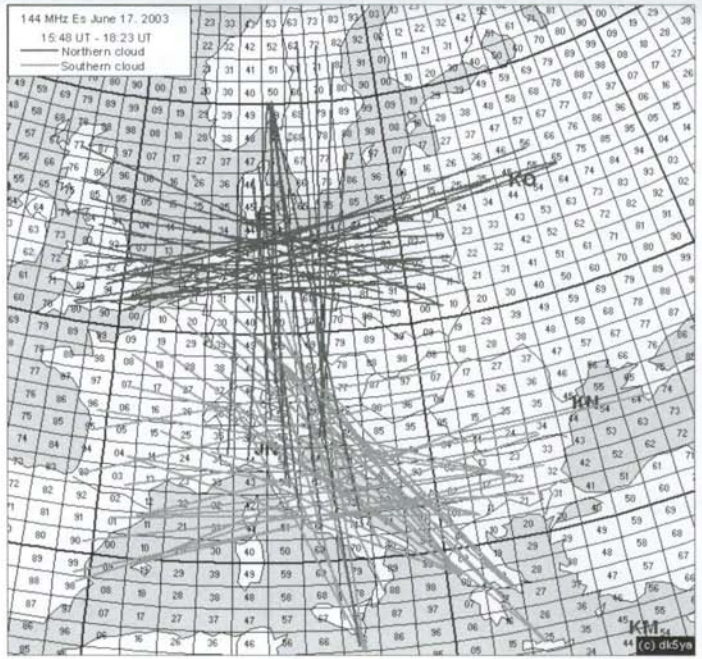
PA3BIY, JO22eb, wkd:
1714 LY2SA KO14
1720 LY3ED KO14
1722 EW6FS KO35 C?
1730 RA3DRC/1 KO55 NC
hrd RA3LBK for 2 min wkg G

S51ZO, JN86dr, wkd:
1720 OZ1BEF JO46oe 1158km

S53VV, JN65um, wkd:
1715 LA6MV JO59EJ
1716 LA3BO JO59CD
1716 LA5KO JO59FH
hrd LA2AB JO59FV

SP5XMU, KO02lg, wkd:
1622 G4KWQ IO92AQ 1546
1622 G4VPD IO92DJ 1533
1716 G0JUR IO92WT 1422
1717 G4LOH IO94EA 1512
1718 G8GXP IO93FQ 1508
1719 G4HGI IO83PL 1586
1720 GW4VBM IO83LF 1611
1720 G0UWK IO83VC 1632
1721 G4ASR IO81MX 1625
1722 G4AJC IO91VJ 1452
1722 G4MKF IO91MJ 1503
1723 G8TIC IO82VF 1570
1723 GW7SMV IO81LQ 1637
1723 G0CUZ IO82WM 1559
1724 G8WXU JO01EP 1407
1724 G4YTL IO92MB 1489
1725 GW4DGU IO71SV 1728
1725 G4RRA IO80BS 1717
1726 G4TIF IO92FH 1524
1726 G3LTF IO91GG 1540
1727 G3LQR JO02QF 1431
1727 G4IGO IO80NV 1646
1736 GI6ATZ IO74AJ 1791

UT5JCW, KN64, wkd:
1528 F6HTJ JN12KQ 2462



1646 F1VBW JN03WL 2518
1718 EB3DYS JN11CJ 2556
1743 F6DKW JN18CS 2418
1744 F6HMQ JN18GP 2393

Z32UC, KN11cr, wkd:
0735 F5VHX JN04FT
0735 F0DWH
1800 HB3YGA JN36GQ
1813 EB3BRN JN01UF
1815 IK1EGC JN35SD

June 18th, 2003

DL5FDP, JN49lp, hrd:
1729 SV1OE 57, was called by UY5HF! KN66HP but no QSO.

DL5NAV, JO33tf, wkd:
1754 LZ3NY KN12QQ 1650 km

DF8IK, JO30jt, wkd:
1742 SV1OE KM17VX
1751 YO4BZC KN45AK
hrd YO4SLL. Short opening, all sigs only 10-15sec. Rig: 350w, 11el. yagi

F0DSJ, JN17bt, wkd:
1741 LZ1QI KN12PR 1743 km

F6HTJ, JN12kq, wkd:
1750 YO4BZC KN45
1750 LZ3NY KN12qq
1751 HA0HO KN07SU
1753 DL5NAV JO33TF
1753 DK3BU JO33NO
Rig: 25w 15ele

LZ5GM, KN32ql, wkd:
1741 F4SDS JN23JO 1833km

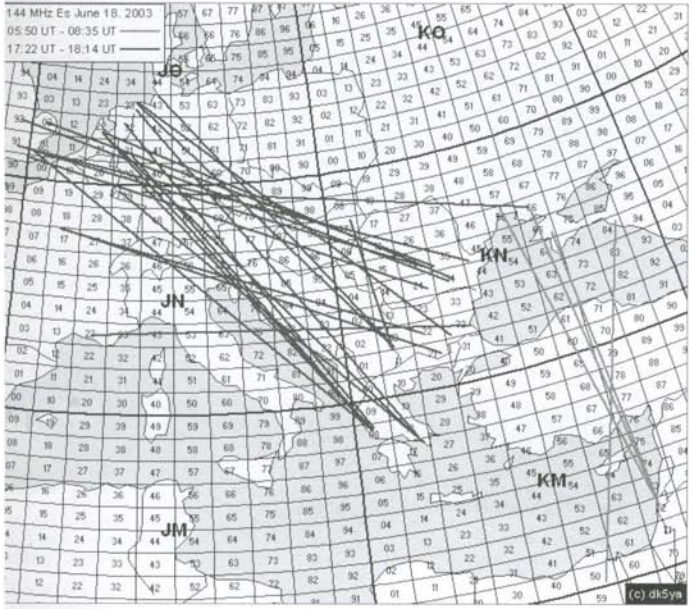
PD2DB, JO22md, wkd:
1953 SV1OE KM17VX 2143

RZ6BU, KN84pv, wkd:
0712 SU1SA 145.500 KM50 FM! first UA-SU on 144! #303
0737 SU1ER 145.500 KM50 FM
0829 SU1GS 145.500 KM50 FM
0831 SU1ER 145.500 KM50 FM

June 20th, 2003

DD1JN, JO50dj, wkd:
1051 EI8JK IO51DN

DD3SP, JO72en, wkd:
0959 F6CCH IN96BU
1003 F1CPX IN97DD



)F1CF, JN57fp, wkd:
)951 GI4SNA IO64
)954 G0FYD IO83
)956 G4JZF IO82
002 G4TIF IO92
008 EI9GQ IO51
020 MW1MFY IO81
028 M0RDX IO83
033 G7IZX FM 145.475
035 EI8GQ IO51
054 EI8IP IO63

)G2KBC, JN58mi, wkd:
954 G3JHM IO91LC 919 km
955 GØNFA IO91NE 910 km
959 G4ASR IO81MX 1073
000 G4AJC IO91VJ 873
001 EI8JK IO51 1468+-
003 GØBBB IO91PK 907
004 G3NVO IO91OU 928
006 GW4DGU IO71SV 1170
006 EI5FK IO51RT 1444
020 GW3LEW IO71PS 1184
1021 G3NNG IO91EP 975
1022 G4RRA IO8ØBR 1106
1032 EI6CPB IO63WE 1317
1052 GW4DGU IO71SV 1170
1059 EI8IP IO63NR 1382

DG3XA, JO43wj, wkd:
1000 F5HGO JN05AI
1001 F5DE JN05DP
1003 F0DWH IN94UJ
1007 F8DNX IN93FJ
1016 EB1EHO IN73DM

DH3IAJ, JN48hd, wkd:
1004 M0HDE IO83QN 991 FM
1005 G4LOH IO94EA 967km

DK1CM, JO40lg, wkd:
1049 EI5FK IO51RT
1050 EI8GQ IO51RU
1050 EI8JK IO51DN
1053 GW4DGU IO71SV

DK3WG, JO72gi, wkd:
0956 F6CCH IN96BU
0957 F1CPX IN97DD
1000 F1MZC/p IN97 2W, vertical
1004 F1EVM IN97MX
1026 F9IE IN86WW

DL1GGT, JN58ao, wkd:
0951 EI8JK IO51
0957 G8IZY IO91VC 781km!
0959 G0NFO IO91NE
1000 G4ASR IO81MX
1001 G0BBB IO91PK
1002 G3NVO IO91VK
1003 G0ASR IO81MX
1004 EI9GQ IO51TV
1006 GW4DGU IO71SV
1008 GW8TBG IO81CR
1023 G4RRA IO80BS
1036 EI5FK IO51RT
1050 EI8IP IO63

DL5GAC, JN47ut, wkd:
1030 M0RDX IO83
1032 G3JIR IO83
1053 EI8IP IO63
1101 MI0RTX IO65

DL5IO, JN49nx, wkd:
1003 GW4DGU IO71SV 997Km
1005 EI5FK IO51RT 1274Km

DL5ROB, JN68hg, wkd:
0951 G3JHM IO91LC 1030
0951 GW3LEW IO71PS 1294
0952 EI8JK IO51
0955 EI9GQ IO51TV 1545
0957 MW1MFY IO81 1170+-
0958 G3JHM IO91LC 1030
1000 GØNFA IO91NE 1021
1001 G4ASR IO81MX 1182
1002 G4AJC IO91VJ 982
1003 GØBBB IO91PK 1017
1004 G3NVO IO91VK 983
1005 G8IZY IO91VC 974
1008 GW4DGU IO71SV 1280
1009 G3NNG IO91EP 1084
1012 GW8TBG IO81CR 1231
1012 EI5FK IO51RT 1555
1100 EI8IP IO63NR 1487

DL9MCC, JN58ua, wkd:
1038 EI8JK IO51DN 1580Km
1050 EI8IP IO63NR 1444Km
1054 GW4DGU IO71SV

EA3XU, JN11CK, wkd:
0957 OZ2TF JO46PE
1002 DK3BU JO33NO
1003 DG3CKN/P
1004 PA3CWN JO33AH
1004 PA9KT JO33JF
1005 PA5TA JO33
1006 DG6JF/P JO33
1007 PE9GG JO33

EB1EHO, IN73DM, wkd:
0947 SP1FPG JO73GN
0947 SP1FJZ JO84EE
0948 SP2HNF JO94FK
0949 DL8CMM JO52VM
0952 DC7TS JO62PO
0955 DG5AAG JO51CT
0959 SP2JXN JO94GJ
1002 DL1AAH JO52EF
1003 DJ4TC JO63PN
1005 DG0KW JO64MH
1016 DG3XA JO43WJ
1020 DL9OBD JO42QN
1028 OZ2LD JO54
1028 DK1JM JO43PS
1034 SM7NWH JO65MH
1035 OZ6OL JO65DJ
1050 SM1LPU JO97CK
1050 SM7WT JO65QQ
1051 OZ2TF JO46PE
1057 SM7MXO JO77
1105 SM3RWZ JP82
8 new squares, #225 LOC

EI5FK, IO51rt, wkd:
0946 DL5MAE JN58 1437+-
0947 9A2TE JN85KK 1985
0948 T94DU JN95DA 2104
0948 OE5OLL JN68SI 1615
0948 S54M JN86CM 1882
0949 YU7EW KN05HP 2228
0949 OE8TPK JN76AM 1735
0950 S51KV JN86BJ 1883
0951 YU7MS KN05FJ 2230
0952 YU7EW KN05HP 2228
0952 HA1FV JN87JJ 1879
0953 HG1RJD JN87GJ 1862
0954 DK5RQ JN68BW 1494
0954 DK1MAX JN58SP 1466
0955 YU1IO KN04IQ 2287
0956 9A4VM JN85FS 1938
0956 OE3FVU JN78IB 1707
0957 HA5OV JN97NJ 2039
0957 HA1AD JN87RT 1906
0958 OE2IGP JN67MT 1604
0959 HA1SR JN87GQ 1849
1001 OE5KE JN78DF 1671
1004 DL5IO JN49NI 1273
1004 DG2KBC JN58MI 1444
1005 DK0EE JN58TG 1487
1005 YU7AR KN05BW 2179
1005 HA5KG JN97MM 2028
1007 T94NK JN95DA 2104
1007 HA2VH JN87SD 1942
1008 DL2RL JN58PE 1468
1009 9A7W JN85LN 1984
1009 HA5BSW JN95JD 2131
1010 9A1CCB JN85KK 1985
1010 DO2RA JN68RN 1600
1011 S57EA JN76HE 1792
1012 DL5ROB JN68HG 1555
1012 OE/DK3ID JN76FV 1744
1013 OM3EA JN88PA 1886
1014 OE5VWM JN78FF 1683
1018 OE3JHC JN78WE 1781
1018 HG4YJ JN96LX 2047
1019 S57MTA JN76EF 1773
1020 DJ8RZ JN58WV 1479
1021 HG4GHJ JN96LX 2047
1023 HA2SU JN97AA 1982
1024 DC6AL JN68JJ 1562
1026 OE3JPC JN87EW 1826
1029 HA1SR JN87GQ 1849
1029 OK1VBN JN78FX 1653
1030 OE3REC JN88HE 1833
1038 OE1SOW JN88FF 1820
1044 OE3SGA JN88GH 1822
1046 DF6NA JN49XS 1316
1046 DJ3TF JN59WK 1459
1047 OM3TZZ JN88TI 1895
1048 DK1CM JO40 1231+-
1056 DF3RU JN59UL 1446
1058 OK1MZM JN69 1536+-
Rig: 150w and 13ele

F1AFJ, JN06ht, wkd:
0951 SP1FJZ JO84
0953 SM7DLZ JO86
0955 DL4OL JO52
0957 DL1AAH JO52
1003 DG0KW JO64
1006 OZ2LD JO54
1010 OZ6OL JO65
Rig: 100w,, 4x11 ele

F1FIH, JN23gs, wkd:
0955 PA9KT JO33JF
0955 PA3AAM JO33
0956 PE9GG JO33NA
0956 LA9WX
0957 LA6HL JO28
0959 OZ2TF JO46PE
0959 PA3CWN JO33AH
1000 LA2PHA JO38IB
1004 PE1MCD JO23XE

F5JKK, IN87pr, wkd:
1050 SM1LPU JO97ck 1766km
1050 SM7WT JO65qq
1051 OZ1LPR JO44uw
1051 SM7NWH JO65mn
1051 SM7FMX JO65kn
1052 SM7NUN JO86cq
1052 SM7UYS JO65mn
1053 SM7MXO JO77ip
1053 OZ1JTE JO65er
1054 OZ6OL JO65ej

F6HTJ, JN12kq, wkd:
1028 LA2PHA JO38IB #
Rig: 40w 11 ele

F8DBF, IN78ri, wkd:
1051 DL8HCZ JO53CN 1174km
1052 SP2HNF JO94FK 1722 #
1052 DG3XA JO43WJ 1153 #
1053 DG0KW JO64MH 1384 #
1053 DJ4TC JO63PN 1371km #
1053 DL0FTG JO53CN 1146km
1054 SP1FJZ JO84EE 1585 #
1054 DK5HX JO43WN 1160km
1055 DL1NZA JO64VC 1421km
Rig: 100w, 11 ele

F8DNX, IN93fj, wkd:
SM7WT JO56QQ
SM7EOI JO86FP
DL9OBD JO42QN
DM4KA JO64II
DG0KW JO64MH
SM7UYJ JO56OP
SM7XO JO77IP
SM7DLZ JO86DE
OZ2M JO65FR
SM7MUN JO86CQ
SM1NJC JO97DO
SM7XJF JO66RH
DG3XAV JO43WJ
OZ1LPR JO44UW
DK5JM JO43QS
OZ6OL JO65DJ
OZ1CLL JO65GQ
OZ3K JO45TL
SM7URQ JO77MJ
OZ2LD JO54TU
SM6CMU JO57XK
LA2PHA JO38IC

M1MGD, IO91vc, wkd:
0955 DL5MAE JN58VF
1000 S54M JN86 #DXCC
1004 OE5KE JN78DF #DXCC
1007 HA1FV JN87JJ #DXCC
Rig: 2.5w 4ele

G4OBK, IO94of, wkd:
1007 IQ2LS JN45
1009 IW4BET JN54QL
1009 I2PY JN55NB
1012 IK4WMA JN54WG
1013 IW2BSQ JN45UJ
1016 IK5FTV JN53
1017 I4ERN JN64GB
1019 HB9QQ 599 599 JN47
1025 IK4ADE 59 55 JN54OE
1026 IZ4AIK JN63HV
1027 IK2GSO JN45
1033 IK5FTQ JN53LW

G4RRA, IO80bs, wkd:
1950 HA5BSW JN97JD
1951 OE3FVU JN78VE
1951 OM3TZZ 55 59 JN88TI
1951 OM3EA JN88PA
1952 HA5OV JN97NJ
1952 OE5OLL JN68SI
1953 HA6IGM JN97UO
1954 HA1AD JN87RT
1954 HA1SR JN87GQ
1955 OM3CQF JN88QQ
1955 HA1FV JN87JJ
1956 HG1RJD JN87GJ
1956 DF8MV JN58OV

0957 HA5KG JN97OK
0958 DK2RY JN59KN
0958 DK5RQ JN68BV
0959 HA5OAF JN97PL
1000 OE3GWC JN87CU
1001 DO2RA JN68RN
1001 OK1MZM JN69QS
1002 OK2WO JN89IH
1003 OE3BCA 579 57 JN88
1007 HA6NA JN98VC
1008 OK2PMX JN88IW
1009 OM3WMA JN88QQ
1010 OM3TZZ JN88TI
1011 HA0HO KN07SU
1012 HA6NN JN98VC
1013 OK1VBN JN78FX
1014 OE1RGU JN88DD
1015 HA6NQ JN98WA
1015 OE1RGW JN88DD
1016 OE3JHC JN78WE
1017 OK2YT JN88IW
1019 DL2RL JN58PE
1020 OK2RX JN89IE
1021 DL5MAE JN58VF
1022 DG2KBC JN58
1023 DL1GGT JN58
1024 OE2IGP JN67MT
1034 OK2POI JN99BL
1035 DL9MCC JN58UA
1050 OK2BRD JN99
1052 DD0VF

G8IZY, IO91vc, wkd:
0953 S54M JN86
0956 DL5MAE JN58
0958 S51KV JN86BJ
0958 DL1GGT JN58AO 786km
vy short, MUF 260 MHz!
1000 OE5KE JN78DF new#
1003 OE2IGP JN67MTnew#
1005 DL5ROB JN68HG
1006 YU7EW KN05HP
1006 YU7MS KN05FJ
1007 9A2TE JN85KK
1007 YU7AR KN05BW
1008 OM3EA JN88PA
1009 OE5OLL JN68SI
1010 HA2VH JN87SD
1010 HA1FV JN87JJ
1011 OE3FVU JN78VE

G0NFA, IO91ne, wkd:
0951 S54M JN86
0954 YU7MS KN05FJ
0955 DG2KBC JN58MI
0959 DL1GGT JN58AF
1000 DL5MAE JN58VF
1001 OE2IGP JN67MT
1001 DL5ROB JN68HG

1002 9A2TE JN85KK
1003 YU7EW KN05HP
1004 DK5RQ JN68BV
1004 OM3A ?
1004 HA5OV JN97NJ
1004 DK1MAX JN58
1005 DC6AL JN68JJ
1005 OE5OLL JN68SI
1008 HA1SR JN87GQ
1009 HA5KG ? QSB
1011 OE5VWM
1013 OE3BCA JN87CX

GM4CXM, IO75tw, wkd:
1004 IK4WMA JN54WG
1005 IW4BET JN54QL
1006 HB9QQ JN47
1008 HB3YEV JN47UK
1009 IK1JXY JN44WC
1010 I2PY JN55NB
1016 IW4EGP JN64GB
1017 I4ERN JN64JB
1020 IW4BSQ JN45UJ
1021 IZ1AZJ JN35
1022 IK1ZOF JN35UB
1024 IZ4AIK JN63HV
1025 IK4ADE JN54OE
1030 IK2JTS JN45
1031 I4ERN JN64GB
1032 HB9WAH JN47FD
1033 I1ANP JN44VC
1036 IZ2AAL JN45OP
1046 IK2YXK JN45OP
1049 IK2GSO JN45NP
1050 IK2DUV JN45
1051 HB9DFG JN37SM
1051 IZ2AAL JN45OP
1052 HB9BNI JN37WB
1054 IK5CQV JN53DN
1055 HB9MCY JN36RX
1056 HB9CEX JN47DM
1056 IZ1BPN JN35
1057 IW4AID JN54BU
1058 I4RHP JN54QL
Rig: 400w 9ele

GM4PLM, IO75tl, wkd:
0955 I2PY JN55
0955 IK4WMA JN54WG
0957 IW2QL JN54
0958 IW5CNS JN53CX
0959 I1ANP JN44UC
1000 I1JXY JN44
1003 IZ0AYB JN52VC
1005 HB9QQ JN47
1010 IW4BET JN54QL
1014 IW4EGP JN64GB
1019 IN3TBY JN56
1022 IZ4AIK JN63HV

1028 IK4ADE JN54OE
1037 I4STU JN54IW
1040 IW2BSQ JN45UJ
1152 IK6HCX JN63SO
1053 IK2YXK JN45OP
1058 I2MCD JN55AD
1059 I4RHP JN54QL
Rig: 50w and Vertical Colinear

MW1MFY, IO81fl, wkd:
0951 HA1FV JN87
0952 YU7EW KN05
0953 S54M JN86
0954 S51KV JN86
0955 DL5MAE JN58
0956 DK5RQ JN68
0957 OE5OLL JN68
0957 DL5ROB JN68
0958 DK1MAX JN58
0959 HA5KG JN96
0959 OM3EA JN88
1000 DL6AL JN68
1001 OE2IGP JN67
1002 OE3FVU JN78
1002 HA5BSW JN97
1003 9A2VM 59.59 JN85
1004 HA5OV JN87
1004 HG1DCL JN87
1005 OM3TZZ JN86
1006 9A2TE JN85
1007 S52G JN65
1008 HA2VH JN87
1009 HA6IGM JN97
1010 DJ8RZ JN58
1012 HA1SR JN87
1013 DO2RA JN68
1014 OE3GWK JN87
1015 S56HCE JN75
1018 OE3BCA JN87
1019 DJ9KV JN68
1019 DF1CF JN57
1019 YU7AR KN05
1020 HA5OAF JN97
1023 S57MTA JN76
Rig: 300w, 17ele

GW3LEW, IO71ps, wkd:
0945 DL5MAE JN58
0947 YU7MS KN05
0948 OE8TPK JN76
0948 S57EA JN76
0950 DL5ROB JN68
0954 S54M JN86
0955 S59F JN65
O956 DL1MAE
0957 OE2ICP JN67
0958 HG1RGD JN87
0958 HA1FV JN87
1003 YU7EW KN05

1004 OE5OCL JN68
1005 HA5SR JN87
1006 HA5BSN JN97
1006 OE5KE JN78
1008 DK5RQ JN68
1009 9A4VM JN85
10145 HA2VH JN87
1014 HG4GHJ JN96
1017 OE3GWC JN87
1018 IW3RI JN65
1019 DG2KBC JN58
1020 HA1SR JN87
1028 OE3FVU JN78
1029 DJ9KV JN68
1029 DO2RA JN68
1030 HA5BSW JN97
1030 OE3JPC JN76
1035 S57MTA JN76
1052 OE3SJA JN88
400W 13ELE

HA1FV, JN87jj, wkd:
0946 EI8JK IO51DN 1982
0950 MW1MFY IO81JJ 1534
0953 EI5FK IO51RT 1905
0955 G4RRA IO80BS 1568
0959 GW3LEW IO71PS 1644
1000 GW4DGU IO71SV 1629
1000 G3JHM IO91LC 1380
1003 EI9GQ IO51TV 1894
1005 GW8TBG IO81CR 1581
1007 G0BBB IO91
1007 M1MGD IO91VC 1323
1010 G8IZY IO91VC 1323
1019 G4ASR IO81MX 1531

HA5OV, JN97nj, wkd:
0949 EI8JK IO51DN
0950 G3YPQ IO70SS #320
0951 G4RRA IO80BS
0951 EI9GQ IO51TV
0958 EI5FK IO51RT
0958 G4ASR IO81MX
1002 GW4DGU IO71SV
1003 G0NFA IO91NE
1004 MW1MFY IO81
1005 G3JHM IO91LC
1008 G0BBB IO91PK
1011 G4NNS IO91FF
1012 G7RRQ IO91EC
1017 EI8GQ IO51RU
1018 G3LTF IO91GG
1018 EI2IV IO51TU

HA6NA, JN98vc, wkd:
1007 G4RRA IO80BS

HB9DFG, JN37sm, wkd:
1045 GM0EWX IO67ul 1445km

1049 GM4CXM IO75tw 1241km
1053 MM1FEO IO76te 1261km

HB9SJV/M, JN36bk, wkd:
0959 LA6HL JO28tw
1037 GM0EWX IO67ul
80W 5/8 lambda

IZ1BPN, JN35vg, wkd:
1047 GM0EWX IO67
1048 GM4VVX IO78
1055 GM4CXM IO75

IW2BSQ, JN45uj, wkd:
0943 G0FYD IO83LS 1304 #
0948 GM0MOX IO86KC 1488
0953 GI4SNA IO64XM 1509
0957 G3UTS IO94CU 1329
1004 G4LOH IO94EA 1255
1008 GM0EWX IO67UL 1732
1010 MI0RTX IO65PJ 1601 #
1010 G4OBK IO94OF 1234
1014 GM4VVX IO78TA 1698 #
1018 G0VOK IO83RG 1243
1019 GM4CXM IO75TW 1529 #
1020 M3DFW IO95FD 1343 #
1030 M0RDX IO83
1045 GM4PLM IO75TL 1494
1046 MM1FEO IO76IC 1583
1049 GM4ZMK IO75TW 1529

IV3DXW/M, JN65ur, wkd:
1028 144 M0RDX IO83WB
Rig 10W + 5/8 antenna

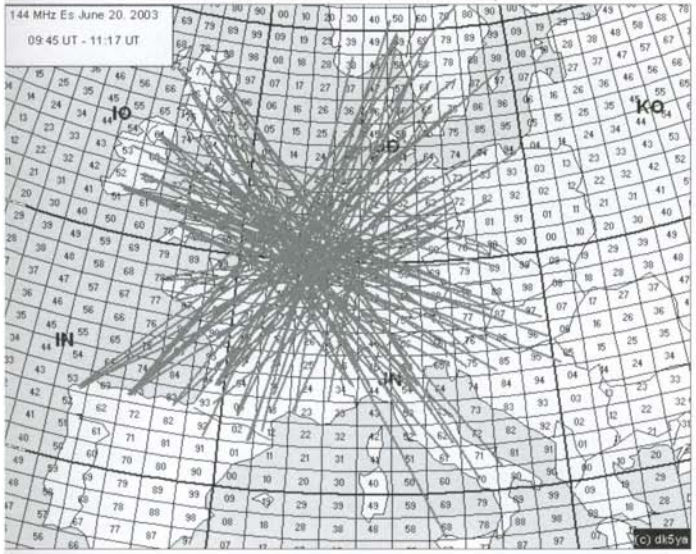
IK5FTQ, JN53lw, wkd:
1009 GM0EWX IO67ul #212
1016 MI0RTX IO65pj #213
1020 G0FYD IO83ls
1029 G4OBK IO94of
hrd GM4CXM M3DFW.

IKØWGF, JN52vc, wkd:
1034 M0RDX IO83WB 1601 Km
1045 GM0EWX IO67UL 2135 #
1049 G4LOH IO94EA 1654 Km

IZØAYB, JN52vc, wkd:
1201 G4LOH IO94EA 1652
1202 GM4PLM IO75TL 1891

OE1AVC, JN88ed, wkd:
1032 EI8JK IO51 1896km
1040 EI9GQ IO51 1806km
1050 G4ASR IO81 heard

OE1SOW, JN88ff, wkd:
1037 EI8GQ IO51RU 1820 km
1038 EI5FK IO51RT 1820 km



1037 EI8GQ IO51RU 1820 km
1038 EI5FK IO51RT 1820 km
1039 EI8JK IO51DN 1899 km
1047 GW4DGU IO71SV 1541 #
1053 G4ASR IO81MX 1440 km
1056 EI2IV IO51TU 1809 km
Rig: 300w + 2x13ele

DE3FVU, JN78ve, wkd:
0943 EI8JK IO51DN 1855
0949 G4RRA IO8ØBS 1445
0957 EI5FK IO51RT 1776
0959 EI9GQ IO51TV 1765
1002 MW1MFY IO81 1390+-
1007 G3JHM IO91LC 1251
1011 G8IZY IO91VC 1194
1017 G4NNS IO91 1253+-
1019 GW8TBG IO81 1390+-
1025 EI8GQ IO51RU 1776
1029 GW3LEW IO71PS 1513
1032 EI2IV IO51TU 1765
1032 EI9GQ IO51TV 1765
1047 GW4DGU IO71SV 1498

OK1MCS, JN69rq, wkd:
1048 EI8JK IO51DN 1635km
1050 EI8GO IO51RU 1554km
also hrd GW4DGU IO71
Rig: 80w out, 4 ele

OK1MZM, JN69pr, wkd:
1002 G4RRA IO80BS
1048 EI8JK IO51DN
1049 EI8GQ IO51RU
1059 EI5FK IO51RT
Rig: 25 w, 9ele

PA3CWN, JO33ah, wkd:
0959 F1FIH JN23
1003 EA3XU JN11
1005 F1EYB JN23 ,
1010 F1OMQ JN25io
(MUF at 218 Mhz @ JN29pk)
1020 F6HGB IN93ok ,
1021 F5WN IN94
Rig: 50w 10 ele

S57MTA, JN76ef, wkd:
1004 G4PCS IO91WV 1226
1005 G4JZF IO82XO 1378
1005 G0PQF JO01BU 1209
1006 G8WXU JO01EP 1184
1007 G4EAT JO01HR 1172
1007 GW4VBM IO83LF 1468
1008 G4FUF JO01GN 1169
1008 G4TIF IO92FH 1334
1009 G0TPH IO92IO 1332
1010 EI6CPB IO63WE 1656
1012 EI9GQ IO51TV 1764
1014 G4LRT IO92LJ 1307
1015 G3NAP IO92FJ 1338
1018 GW8VUG IO83DF 1508
1020 EI5FK IO51RT 1773
1022 G4ASR IO81MX 1409
1024 MW1MFY IO81LF 1430
1028 M0RDX IO83WB 1405
1036 GW3LEW IO71PS 1516
1048 EI8IP IO63NR 1723

SM7EOI, JO86fp, wkd:
0949 F6ELI IN94TS
0954 F5HGO JN05AI
0955 F5DE JN05DP
0959 F5FJ IN94UC
1000 F1BQM JN06UT
1008 F1MJC JN06SR

YU7EW, KN05hp, wkd:
0941 EI8JK IO51DN 2305 km
0948 EI5FK IO51RT 2228
0951 EI9GQ IO51TV 2217
0952 MW1MFY IO81FL 1881
0959 G0BBB IO91
1001 G0NFA IO91NE 1693
1003 GW3LEW IO71PS 1966
1004 GW4DGU IO71SV 1952
1006 G8IZY IO91VC 1646
1008 G3NVO IO91JK 1722
1009 GW8TBG IO81CR 1903
1012 G4ASR IO81MX 1853

June 22nd, 2003

CT1DYX, IN51qd, wkd:
Countries worked: DL, OM, OE, PA, S5, HA, LX, HB9, OE, I
ODX: 2322 kms HA5CW in JN97pm)
1443 DF7VX JO41JQ 1768
1447 DK5DQ JO31 1660+-
1448 DLØSE JO31 1660+-
1452 DJ1JD JO52CK 1895
1452 DL8EBW JO31NF 1645
1453 DFØWD JO42 1836+-
1453 DJ2QV JO41 1772+-
1453 DK9OY JO52CK 1895
1454 DF6VL
1455 DK1QH JO42HA 1780
1503 DH3YAK JO31RS 1699
1518 IV3GBO JN66OA 1833
1519 IV3DXW JN65 1812+-
1519 I3PVB JN65 1812+-
1536 OE3FVU JN78 2027+-
1538 OE3JPC JN88 2170+-
1538 OE3MWS JN88 2170+-
1539 S53OQ JN76 1981+-
1540 S5ØC JN76JG 1958
1541 IW2NBL JN45WO 1571
1541 HA1FV JN87JJ 2128
1541 OE2SCM JN67OV 1878
1541 IK2EAE JN45LL 1498
1541 HG1RJD JN87 2149+-
1541 IK3HAR JN55QM 1684
1543 HG1DLL JN87GF 2106
1543 OE2IGP JN67MT 1863
1543 S51MQ JN75 1966+-
1544 OE5MPL JN78CJ 1964
1544 DL3LFA JN67LU 1859
1544 OE2LCM JN67NU 1871
1546 OE3DXA JN88FD 2119
1547 OE6IWG JN77PK 2018
1548 OE3OKS JN87AR 2079
1549 OE6BMG JN77JE 1975
1550 OE7WX JN57QG 1727
1550 OM1DK JN88ND 2167
1551 OM4BM JN88NC 2167
1552 S53O JN86AT 2061
1552 S57TW JN75EX 1921
1552 OE1SOW JN88FF 2121
1552 OE7FMH JN57OH 1716
1553 IK3TPP JN65EP 1763
1553 OM3TZZ JN88TI 2208
1554 I1DMP JN35 1354+-
1554 IZ1BPN JN35VG 1404
1554 IZ2EEQ JN45NH 1507
1554 OE3SJA JN88GH 2129
1555 IV3NDC JN65RV 1850
1556 OM3CQF JN88RT 2207
1556 OM4CW JN88UN 2219
1557 DF1CF JN57FP 1673
1557 OE1RGU JN88DD 2107
1558 OE1AVC JN88ED 2113
1559 OE5FDM JN68 1886+-
1600 HB9DTX/P JN36 1388+-
1600 HB9RZO/P JN36 1388+-
1601 HA5CW JN97PM 2316
1603 IZ4DZC JN54SV 1686
1603 DH2OAA JO42 1836+-
1604 DD5JK JO31RO 1688
1604 DK3EE JO41 1772+-
1604 PA1AS 0
1605 DC7BK JO43XH 1938
1605 DJ1LN JO31LN 1658
1606 DC9YC JO31FJ 1619
1606 DJ6LV JO31JG 1629
1606 DB3BW JO42 1836+-
1606 DL6YCY JO41CU 1746
1607 DD5JK JO31RO 1688
1607 DK5QN JO42 1836+-
1608 DK3DS
1610 DL3OAT JO42XH 1873
1610 DL4OL JO52 1947+-
1611 DK1QO JO42 1836+-
1611 OM4CW JN88UN 2219
1612 DF7KF JO3Ø 1594+-
1612 DH2DAM JO31PH 1659
1612 DL1SUZ JO53UN 2048
1612 DL8MKG JO52 1947+-
1612 DC2OD JO42VG 1861
1613 DH6KG
1613 DL1SUN JO53PN 2025
1614 OM2TW JN88UG 2213
1615 DF7AQ JO51 1889+-
1615 DL5WG JO52 1947+-
1615 DL8AKI/P JO51CH 1828
1616 DL7FF JO62 2063+-
1616 DL8CMM JO52 1947+-
1616 OE1RGW
1617 DG5AAG JO51CT 1857
1617 DJ4EN JO3ØTK 1623
1617 DL8WX JO3ØWE 1623
1618 LX2LA JN39CP 1490
1618 DO2FR JO41TH 1793
1618 DM2BPG JO51MP 1896
1619 DJ6AG JO51 1889+-
1619 DH6FAE JO4ØSN 1745
1620 LX2DX JN29WO 1467
1621 DK3MU JO72GK 2149
1621 DL7UDA JO62 2063+-
1622 DL3HXS JO61CU 1978
1623 DL2KK JO3Ø 1594+-
1623 DJ4TC JO63PN 2136
1624 DF8DX JO31WE 1684
1624 DKØOE JO3ØDU 1573
1625 DH4JF JO3Ø 1594+-
1625 DL5OAS JO42XE 1865
1625 DL9OBD JO42QN 1857
1626 DL8YET JO31 1660+-
1627 DG2DCI JO31 1660+-
1627 DM1HD JO31 1660+-
1628 DG3YGV JO31NP 1673
1628 DN4TI JO31OM 1669
1628 DD4JC JO31MH 1645
1629 DL9LBH JO3ØMP 1602
1629 DK2CF JO41 1772+-
1630 DL2AAZ JO52 1947+-
1631 DK5TX JO41JW 1784
1631 DL1AAH JO52EF 1892
1631 DL6DAF JO52 1947+-
1632 DL8AAV JO52 1947+-
1632 DL9KBE JO31 1660+-
1632 DH6SN JO3ØBU 1564
1632 DM1CG JO31 1660+-
1633 DF7VX JO41JQ 1768
1633 DK9TF JO31 1660+-
1633 DL5OAS JO42XE 1865
1634 DL1YAW JO41 1772+-
1634 DL9OBD JO42QN 1857
1634 DO1YCS JO42KI 1816
1634 PDØMNF JO3ØAV 1562
1635 DL3NUA JO64XB 2202
1636 DGØKW JO64MH 2167
1637 DL2YFT JO31 1660+-
1637 DL6CHP JO52 1947+-
1638 DL6CGC JO52 1947+-
1639 DB8KJ JO3Ø 1594+-
1639 DG2DAA JO62GU 2053
1640 DD2KS
1640 DO1EH JO31JD 1620
1641 DFØBG JO3Ø 1594+-
1641 DKØMD JO31 1660+-
1643 DF6NA JN49XS 1730
1643 DL1KDA JO3Ø 1594+-
1643 DL4VS JN39 1533+-
1643 DC6OAF JO52BD 1872
1644 DL1JJ JO31IA 1607
1646 DD3SI JO62PM 2078
1648 DC6IA
1654 DF8AE JO41 1772+-
1655 DD5JK JO31RO 1688

EA1AK/7, IM66vp, wkd
244 QSOs, 65 Locators.
0951 LX2LA JN39
0952 DL6LW JO41

)953 DF2JQ JO31
)954 DL2KK JO30
)954 DO1KGS JO31
)954 DJ9CZ JO31
)955 ON4KRI JO20
)955 F1AFZ JN17
)955 F6ARQ JN05
)956 DK7LZ JO30
)956 DO3VG JN39
)957 DB4VO JN39
)957 DH5HV JO31
)958 F1BQM JN06
)958 DL5EBS JO31
)958 F6DMV JN18
)958 DL1EAP JO31
)959 F1MJC JN06
000 DF7KX JO30
000 DH3YAK JO31
000 DJ4UF JO30
001 DB0BIT JN39
001 PA0PVW JO22
002 ON1AEN JO10
002 ON7CL JO20
002 F9OE JN18
003 PA2CHR JO22
003 ON4KBE JO20
003 F1BZG JN07
004 F2GL JN17
004 DL2YFT JO31
005 DF7KX JO30
005 ON4PS JO20
005 PA0JMV JO21
006 DJ5DM JO31
006 DF1BN JO31
007 DL7ATR JO30
008 ON4KHG JO10
008 ON7EH JO20
008 ON4LN JO20
008 PE1LWT JO22
009 DG5YIL JO32
009 DJ8ZJ JO32
009 PA1DYK JO22
010 DJ0SP JO32
010 DM1HD JO31
010 ON4IQ JO20
011 F5TVG JN18
011 F6BBO JN18
011 F6DKW JN18
012 PD0EBF JO21
012 F5FTK JN18
013 PD0HCV JO31
013 F6GYJ JN18
014 PD2EZ JO32
014 DG5BD JO43
015 ON4LDP JO10
015 PA4EL JO21
015 PE1AMN JO21
016 PE1LCH JO23
016 PE4AD JO21

1017 PE1IWT JO32
1017 OZ1IEP JO55 (Best DX)
1017 PA3AOH JO31
1018 PA0WWM JO22
1018 PA3BIY JO22
1018 PD2DB JO22
1019 ON6ZK JO20
1019 PA3DYS JO21
1019 DL8BDU JO43
1020 F4BUC JN08
1020 F1TPL JN18
1020 ON1MH JO20
1021 F4DLL JN18
1021 ON7ZI JO10
1021 PB1TT JO22
1022 PD0JNG JO22
1022 F0DBD JN08
1022 F4DLO JN18
1023 F8BK NC
1023 F4DPW JN09
1025 PA2DWH JO22
1025 PD4HDB JO32
1025 F6CWN JN09
1026 F6GGF JN18
1026 PE2ENG JO32
1027 F2MM JN18
1027 F5MCD JN07
1027 PD5KWZ JO22
1027 PD2BNH/A JO11
1028 PE2RMI JO23
1028 ON7ZI JO10
1028 PE1MPI JO21
1029 PA7TWO JO22
1029 PE1RCW JO22
1029 F5HRY JN18
1030 PA5DD JO22
1030 F6FYZ JN19
1031 F1LPV JO10
1031 ON4ZN JO21
1032 F5RWM JN18
1032 F0DGH JO00
1033 F1DBN JO00
1033 PA0TLX JO22
1034 F4DZM JN09
1035 IS0/IK6DZH JN40
1035 G4SWX JO02
1036 PD5FDV JO21
1036 F6CBH JN19
1036 IZ0DGE JN61
1036 I0RHJ JN61
1037 PA3DZL JO21
1037 PE1EWR JO11
1038 PE1RBG JO22
1039 PD1AIQ JO22
1042 IW0GEY JN61
1042 I0AKP JN61
1042 IK0NOJ JN61
1043 IK0IXO JN52
1044 IK0WGF JN52

1045 IZ0AYB JN52
1046 IZ0AEZ JN62
1048 IW0QNX JN62
1048 I8MPO JN70
1048 IZ5EME JN52
1050 IW0RVT JN62
1053 IK8ETN/P JM89
1054 IK5YJY JN53
1056 IW6CVN/6 JN63
1056 IW4CJM/6 JN63
1057 IW6ATU/6 JN63
1059 G1HWY IO90
1100 G4ZFJ JO01
1100 G4FUF JO01
1101 IK8YOQ JN70
1102 G4EZP JO01
1103 I5OYY JN53
1104 I5WBE JN53
1104 IK5FTQ JN53
1104 IK4DRY JN64
1105 IK5YZW JN53
1106 IW5CNS JN53
1108 G8HGN JO01
1111 G8RWG JO01
1111 G4IBH JO01
1112 G8HGN JO01
1112 G3BNE JO01
1114 G4DHF IO92
1114 G4AEP IO91
1115 G3YVR IO91
1117 G4KIY IO92
1118 G7RRD JO02
1119 G0COL IO94
1123 I2PY JN55
1123 G3ZLQ IO81
1124 IV3DXW JN65
1124 IK4PMB JN54
1124 I4YNO JN54
1125 G4TIF IO92
1125 G3JYS IO92
1128 G0CUZ IO82
1128 G8GXP IO93
1136 G6IML IO83
1137 G4CBW IO83
1138 G0UWK IO83
1139 IK2GSO JN45
1139 IZ2AAL JN45
1140 IK2RXX JN45
1141 IW1AZJ NC
1141 IK2YXK JN45
1142 IK4ADE JN54
1147 IQ2LS JN45
1148 F6EPE JN23
1148 IN3GEN JN55
1149 M0RDX IO83
1149 G4ASR IO81
1150 GW4HBK IO81
1156 IW2NOR JN45
1156 IZ1BPN JN35

1157 F1ODA JN13
1158 IW1AZJ NC
1159 IK0ZMK JN61
1200 IK0BAL JN62
1202 II0W JN51
1204 I0WDW JN61
1204 DL5GAC JN47
1206 DF0DOX JN47
1207 F5LRL JN26
1207 F5RVV JN15
1208 F1FLA JN26
1209 HB9MCY JN36
1210 F1JNZ JN36
1210 F6EKJ JN27
1212 9A2WA JN83
1212 DF1VW JN39
1212 F4JVG JN16
1213 DG3HDA JN39
1213 DD2VA JN39
1215 DL1GNM JN38

1517 DM2CKK JO50
1518 DL8DAU JO40
1519 DL8AKI/P JO51
1520 DG0OBU NC
1537 DG5CST JO60
1538 DL2HWA JO51
1539 DG2SRL JO61
1540 DK5YA JN49
1540 DL2FDL JO40
1540 DL4VS JN39
1544 DD1WKS JN39
1545 DF6NA JN49
1545 DK1CM JO40
1547 DD2VA JN39
1547 DD1VD JN39
1547 DG4FDQ JO40
1548 DL6DAF JO52
1548 DJ7OF JO51
1549 DL1NBM JN49
1550 DK1FUN NC
1550 DL0GH JO40
1551 DF0CI JO51
1551 DF7PN JN49
1552 DL7ARD JO60
1552 DL6ACU JN38
1552 DG9FC JO40
1553 DC9ZB JO40
1553 F4CVQ JN38
1553 DK6FX JO40
1554 DL2IAJ JN49
1554 DB5W? NC
1557 DK4VW JO40
1558 DH3VE JN39
1559 DL8CMM JO52
1559 DF2VJ JN39
1600 DK3EE JO41
1600 DJ6AG JO51
1600 DK9OY JO52

1600 DL0OL JO52
1600 DL8AAV JO52
1601 DF7AQ JO51
1601 DK8VS JN39
1601 DB8AT JO51
1602 DL7FF JO62
1602 DL3AMA JO51

DD1WKS, JN39kk, wkd:
1548 EA1AK/7 IM66
1551 EA5GLN IM98
1558 EA7NK IM87
1600 EA7RM IM87
1604 EA7HG IM87
1619 EA1YV IN52
1625 EA1BLA IN53
1639 EA1DKV IN53

DD3SP, JO72en, wkd:
0959 F6CCH IN96BU 1325
1003 F1CPX IN97DD 1296

DF1CF, JN57fp, wkd:
1008 CT1DRB IM58
1018 CT1CSN IM58
1020 CT1FOH IN50
1021 CT1AUW IN60
1024 CT1EKD IM59 #
1030 CT1EEB IN60
1055 EA9IB IM85 # 1760 km
1543 CT1CLR IN50
1548 CT2GRW IN60
1557 CT1DYX IN51
1600 CT1FAK IN50
1601 CT1DHM IN61
1604 CT1BXT IM59

DF7KF, JO30gu, wkd:
1028 EA5AAJ IM99
1030 CT1EPS IM57
1046 CT1DRB IM58
1100 CT1CSN IM58
1101 CT1EKD IM59
1105 CT1FOH IN50
1541 EA9IB IM85
1553 EA7NK IM87
1600 EA7RM IM87
1606 EA1YV IN52
1612 CT1DYX IN51

DG3XA, JO43wj, wkd:
1635 CT1FOH IN50 2018km
1638 CT1ERW IM58JS 2178km
1639 CT1EKD IM59IB 2156km
Rig IC 910, 600 Watt, 6 ele

DG5CST, JO60ds, wkd:
1523 CT1EAT IM68 2031+-
1525 EA4LU IM68TV 1967

1538 EA1AK/7 IM66 2202+-
1547 EA7RM IM87 1902+-
1558 EA4AQQ IN80GL 1669
1604 EA7WM IM67ME 2144
1607 EA4CTF IM89AT 1753
1620 EA1CRK IN73DM 1575
1622 EA1BRK IN52TL 1818
1632 EA1BLA IN53UM 1744

DH2UAK, JO71fu, wkd:
EA4CTF 1619 IM89AT 1946km
EA1EBJ 1620 IN73FL 1755km

DK1FUN, JN49mr, wkd:
1039 CT1EEB
1552 EA1AK/7 IM66
1604 EA4CTF IM89AT
1614 EA1BLA IN53UM

DK2CF, JO41gg, wkd:
1622 CT1DMK 59/55 IN50
1629 CT1DYX 59/59 IN51
nothing else heard here

DK3WG, JO72gi, wkd:
1030 EA4AFK JM08EK
1546 EA4AMX IM98AT
1549 EA4AQQ IN80GL
1551 EA7WM IM67MS 2320
1602 EA4CTF IM89AT
1606 EB7COL IM77AG 2310
1617 EA1YV IN52PF 2066
1619 CT1ANO IN51RE 2133
1622 CT1DYX IN51QD 2144
1624 EA1DKV IN53TH
1628 EA1ATR IN52

DK3XM, JO43xl, wkd:
1611 CT1FOH IN50RA 2043km
1612 CT1DHM IN61CC 1908km
1614 CT1EAT IM68DA 2185km
1624 CT2GRW IN60CO 1953km
1626 CT1GQU IM58LV 2169km
1627 CT1FAK IN50QO 1995km
1633 CT1ERW IM58JS 2189km
1637 CT1CLR IN50QP 1992km
1641 CT1EKD IM59IB 2167km

DK5YA, JN49nx, wkd:
0954 CT1EPS IM57xl
1012 EA7HG IM87cs
1041 CT1EKD IM59
1045 CT1FOH IN50
1110 CT1ANO IN51re
1119 EA1RX IN52
1519 EB7COL IM77ag
1526 EA4LU IM68tv
1542 EA1AK/7 IM66
1547 EA7WM IM67me

1550 EA4AMX IM89at
1555 EA4CTF IM89at
1556 EA7WM IM67me (dupe)
1558 EA4DTX IN80
1601 EA7BYM IN66hm
1606 EA7BEL IM77
1617 EA1DKV IN53th 59+60dB
1618 EA1BLA IN53um
1620 EA1YV IN52pf
1646 CT1DHM IN61

DL1GGT, JN58ao, wkd:
0951 EA4LU IM68TV
1018 CT1DRB IM58LP
1023 CT1CSN IM58GQ
1030 CT1DIN IN60
1033 CT1FOH IN50
1103 EA9IB IM85
1115 EA1RX IN52PF

DL6YEH, JO32va, wkd:
1029 EB5EEO IM98PG 1665
1502 CT1FAK IN50QO 1781
1545 EA9IB IM85NG 2045
1601 EA7RM IM87CS 1823
1603 CT1ANO IN51RE 1726
1604 CT1FOH IN50RA 1827
1612 CT1DHM IN61CC 1693
1626 EA1AXH IN62QN 1507
1629 CT1GQU IM58LV 1953
1633 CT1EEB IN50QR 1770
1638 CT1ERW IM58JS 1973
1641 CT1AL IN60AQ 1738

DL8HCZ, JO53cn, wkd:
1643 CT1DIZ IM58 #562
1645 CT1FOH IN50 #563
Rig: 25w + 12 ele

EA1ASC, IN70dx, wkd:
0950 IK2YKH JN45OP
0951 IZ2AAL JN45OP
0951 IZ1BPN JN35OP
0952 IK2JTS JN35VG
0952 I1DPM
0955 EA7AVY/4
0959 9H1ET JM75GU
1004 9H1GB JM75FU
1005 F4CPS JN25MD
1016 9H5L JM75FV
1019 IT9GDF JM77LH
1030 9H1CG JM75FW
1041 ON6ZK JO20KW
1042 ON4AMX JO20KV
1043 ON4KHG

EA1CRK, IN73dm, wkd:
1030 HA2R JN87UE 1866
1031 IV3DXW JN65QQ 1526
1543 IV3NDC JN65RV 1533
1545 IV3GBO JN66OA 1515
1545 S57TW JN75EX 1604
1546 IW3RBY JN65HW 1469
1546 IK3TPP JN65XP 1571
1547 S5ØC JN76JG 1638
1547 IV3UT JN66OB 1515
1548 S53OQ JN76GH 1619
1548 IV3NTL JN65HV 1469
1549 IV3GAP JN66OA 1515
1556 9A2RD JN65TF 1544
1602 S51ZO JN86DR 1756
1610 S59DTB JN86AO 1736
1616 DB8AT JO51CP 1491
1616 DL1AAH JO52EF 1535
1617 DL3AMA JO51 1534+-
1617 DL2OM JO3Ø 1238+-
1618 DL8UCC JO71EQ 1749
1618 DG2SRL JO61HN 1634
1619 DL2ARD JO6ØAR 1558
1620 DG5CST JO6ØDS 1575
1621 DC2OD JO42VG 1505
1621 DL5OAS JO42XE 1509
1623 DK5DQ JO51PG 1536
1623 DL6DAF JO52BD 1516
1624 DD5JK JO31RO 1332
1624 DL9OBD JO42QN 1500
1625 DJ6LV JO31JG 1272
1625 DL6YCY JO41CU 1390
1819 DL8WX JO3ØWE 1268

EA4EOZ, IN80, wkd:
1008 9H1GB JM75FU
1009 9H5L JM75FV
1125 9H1GB JM75FU
1127 9H5L JM75FV
1601 DC6RN JN59WK
1617 PA7DF JO22MD

EA6DD, JM19jk, wkd:
1027 ON4KHG JO10xo 1243 Km
1030 G4SWX Hrd (he was called by 7X2LS several times)
1202 EA1RCT IN52 1076 Km
1604 GE3LEW IO71ps 1499 Km
1605 GW8IZR IO73ti 1649 Km
1609 ON4ARF JO10 1228 Km
1610 GW4VBM IO83lf 1604 Km
1612 G4IGO IO80 1319 Km
1615 GW4HBK IO81kp 1441 Km
1615 GM4CXM IO75tw 1916 Km
1615 GW8JLY IO81jm 1430 Km
1616 GW7SMV IO81 1422 Km
1618 M5AFD IO82oo 1533 Km
1619 G0IUE IO81 1422 Km
1620 GM0EWX IO67 2136 Km
1621 G1AJI IO83rn 1628 Km
1622 SV9CVY KM25ka 1982 Km
1631 G0FYD IO83li 1617 Km
1632 G0HYP IO84fn 1757 Km
1651 M1EQN IO83nn 1635 Km
1653 G4HGI IO82pl 1623 Km
1653 G7RAU IO90 1270 Km
1653 G0CUZ IO82wm 1510 Km
1654 G4CBW + M0RDX + G0UWK all IO83 1630 Km

EB8BTV, II18sk, wkd:
1145-1214 IW5CNS JN53, IK4ADE JN54, IZ2AAL JN45, IZ1BPN JN35, IK1EGC JN35, IW1AZJ JN35, F5SDD JN23 hrd

EI5FK, IO51rt, wkd:
0949 CT1EPS IM57XC 1635
0955 EB5EEO IM98PG 1624
0956 EA5GIN IM98VM 1613
0956 EA5AAJ IM99SL 1506
0957 EA5AFP IM98VX 1565
1009 EB5ILD/P IM98TJ 1621
1039 EB5HOY IM98RM 1603
1105 EA5EZJ IM98VX 1565
1109 EA5ADT IM99RF 1529
1553 IS0GQX JM49OH 1949
1611 F5SDD JN23RF 1415
1612 F1JRD JN13WO 1299
1618 F1USF JN23CN 1320
1631 F6CSX JN23HR 1329
1640 F6EPE JN23JW 1321
1642 F6EYD JN23XB 1456
1643 F1CH JN23VF 1433
1644 F1DRN JN23MT 1345
1645 F4AAG JN23VE 1437
1648 F4DQM JN23MV 1338
1650 F1NSR JN33JK 1474
1651 IZ0DZX/TK JN41JQ 1727
1753 IK4PMB JN54 1655+-
1754 I2FAK JN45OB 1503
1754 IW2DAL JN45NN 1466
1755 IK2YXK JN45OP 1466
1755 IZ2AAL JN45OP 1466
1756 IK4FWF JN54QM 1677
1756 I5OYY JN53NT 1708
1757 IZ2CPO JN45TP 1492
1757 IW2NOR JN45ON 1471
1757 IW1CCH JN54HQ 1618
1758 IK6HCX JN63SO 1876
1759 IW2MXY JN45NO 1463
1759 IW2KVT JN45 1463+-
1803 I0JXX JN61FV 1929
1803 IZ1BPN 1400

F1CXX, JN18at, wkd:
1002 EA7DUD IM76SR
1004 EA7HG IM87CS
1008 CN8IG IM75HN
1017 EA7BYM IM66UM
1154 EA9IB IM85NG

F1FIH, JN23gs, wkd:
1144 EA9IB IM75NG
1145 EB7NK IM86RQ
1159 EB7COL IM77AG
1202 7X0AD JM16JR (Tropo!)
1209 CT1EPS IM57XC
1620 EI5FK IO51RT
1622 EI8JK IO51DN

F4AZF, JN38iw, wkd:
1000 CT1EPS IM57XC 1773
1004 EA4LU IM68TV 1527
1112 EA9IB IM85NG 1709
1208 CN8IC IM75HN 1784
1606 EA7BYM IM66UM 1736
1608 EA7RM IM87CS 1501

F5JKK, IN87pr, wkd:
0954 EB5EEO hrd IM98
1017 DL3RBH JN68 1167km
1029 EB7NK IM86rk 1256km
1032 EA9IB IM85ng 1385km
1602 EA6SA JM19ir 990km

F8DBF, IN78ri, wkd:
0956 EB5EEO IM98pg 1162 #
0959 EA5GIN/P IM98VP 1134
1002 EA5EJJ IM98VI 1165km
1003 EA5AFP IM98 1130km +-
1004 EA5AAJ IM99SL 1039km #
1005 EA5TS IM99QI 1048km
1006 EB5ILD IM98TJ 1156km
1551 IT9JLG JM68GA 1791km #
1553 IS0GQX JM49OH 1487 #
1654 I5WBE JN53JR 1287km #

G0FYD, IO83ls, wkd:
1028 EA7AG IM86
1037 EA9IB IM85NG
1104 EA7ERP IM87
1113 EA7AJ IM87CS
1204 EA4CYQ IM78 hrd
1606 EA6AOK JM09
1608 EA3CSV JN01RD
1611 EA6/DF9UX JM09
1612 EB6/DG3GAG JM09
1613 EA6/DL1MBW JM09
1615 EA6VQ JM19 (END STOP)
1617 EA3ECK JN01MD
1624 7X0AD JM16JR
SQ #294 NEW DXCC #49
1631 EA6DD JM19
1632 EB3DYS JN11
1633 EA6SA JM19
1649 EA3CBH/P6 JM19IN

G4SWX, JO02pb, wkd:
0957 EA7ERP IM87EE
0958 EA7AJ IN87CS
1000 EA7HG IM87CS
1001 EA9HA IM85MH
1005 EB7NK IM86RQ
1006 EA9IB IM85NG
1010 EB7BQI IM76SR
1012 EA7HZ IM76SR
1016 EA7DUD IM76SR
1028 CN8IG IM75HN
1037 EA1AK/7 IM66VP
1041 CN8LI IM63
1044 EB4DF IM79QQ
1047 EA7DBP IM66UM
1106 EA7BYM IM66UM
1111 EA7WM IM67ME
1123 CT1EAT IM68DA
1127 CT1EPS IM57
1137 CT1FOH IN50RA
1140 CT1GQU IM58LV
1151 CT1EAD IM59IB
1221 EB7BQI IM76SR

GM4CXM, IO75tw, wkd:
1607 EA6/DG3GAG JM09RA
1609 EA6VQ JM19
1610 EA6/DF9UX JM09RA
1614 EA3CSV JN01NA
1617 EA6DD JM19JK
1622 7X0AD JM16JR # DXCC
1625 EA3AXV JN01TJ
1650 EA6SA JM19IR
1653 EA3CBH/6 JM19IN

GW8ASA, IO81em, wkd:
0955 EB5EEO IM98
0957 EA5GIN IM96
1032 EB7NK IM86
1041 EA9IB IM85
1624 EA3EXE JN11
1625 EA3DJL JN11
1645 EA3DUY JN12
1645 EA3TI/PJN11

HA1FV, JN87jj, wkd:
1540 CT1DYX IN51QD 2130 k
1547 EA1AK/7 IM66
1549 EA1AXH IN62QN 1912 km
1558 CT1ANO IN51RE 2121 km

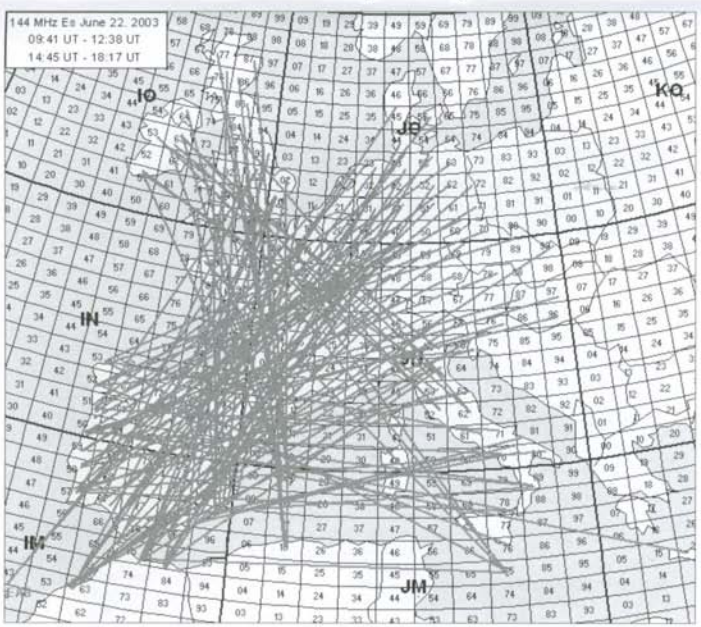
HB9JAW, JN47ce, wkd:
1035 CT1FOH IN50
1109 EA9IB IM85 #425

IZ1BPN, JN35vg, wkd:
0954 EA1ASC IN70DX 1193
0955 CT1DIN IN60IM 1334
0958 CT1AUW IN60 1310+-
1007 CT1FOH IN50RA 1454
1008 CT1EEB IN50 1459+-
1009 CT1ESQ IN50RE 1445
1040 EA1YV IN52OC 1376
1055 EA9IB IM85NG 1431
1056 CN8LI IM63 1814+-
1121 EA9AK IM75IV 1515
1124 EA7ERP IM87EE 1308
1130 EA7DUD IM76SR 1396
1133 EA9HA IM85MH 1431
1143 EB7NK IM86RQ 1287
1144 EA7AJ IM87CS 1272
1150 EB8BTV IL18QI 2853
1155 CT1EPS IM57XH 1587
1158 EB7COL IM77AG 1449
1158 EA1AK/7 IM66 1571+-
1206 EA7WM IM67ME 1522
1543 EA1BLA IN53UM 1290
1545 EA1DKV IN53TH 1302
1553 CT1DHM IN61CC 1343
1555 CT1DYX IN51 1413+-
1803 EI8JK IO51DN 1463
1804 EI5FK IO51RT 1400

IW4BET/4, JN54oe, wld:
1134 CN8LI IM63
1149 EB8BTV 55 IL18ql 3047k
1202 EA9IB IM85ng

I4YNO, JN54kp, wkd:
1005 CT1EEB IN50
1020 CT1FOH IN50
1024 EA1GAR IN51nw
1031 EA1YV IN52
1038 EA9IB IM85ng
1050 CN8LI IM63nx sqr #385; DXCC #67
1056 EA7BYM IM66um
1103 EA7DUD IM76sr
1120 EA7DBP IM66um
1123 EB7BKY IM77hi
1126 EA1AK/7 IM66vp
1142 EB7COL IM77ag
1155 CT1EPS IM57xc
1545 EA1BLA IN53um
During the Es opening Tropo conditions to EA5(IM98 and IM99) and EA3 (JN11) got tremendously enhanced, something I already experienced in the past.
Rig FT-736R with MuTek boards + MGF1302+ 3CX800A7
Ant. 20 el Shark (9,15 m.)

I5WBE, JN53jr, wkd:
1033 EA1YV IN52PF 1591
1043 CN8LI IM63NX 1868
1050 CN8IG IM75HN 1650
1059 EA7BQI IM76SR 1507
1059 EA7DUD IM76SR 1507
1105 EA1AK/7 IM66 1703+-
1107 EA7DBP IM66UM 1654



1110 EB7COL IM77AG 1583
1112 EA7BYM IM66UM 1654
1121 EA9AK IM75IV 1622
1123 EA7WM IM67ME 1663
1127 EB7NK IM86RQ 1373
1144 CT1EPS IM57XC 1750
1152 EA9IB IM85NG 1499
1654 F8DBF IN78 1322+-
1802 EI8JK IO51DN
1805 EI5FK IO51RT HRD

IK8ETN/8, JM89af, wkd:
1005 EB7COL IM77AG
1011 EA7UH IM67TH
1012 EB7NK IM86RQ
1033 CT1DRB IM58KP
1048 CT2HBZ IM58LV
1050 CT2GQU IM58LV
1056 EA1AK/P IM66VP
1113 EA4EHI IM68TV
1116 EA4LU IM68TV
1118 CT1EPS IM57XC

1123 EA7WM IM67ME
1127 EA7HG IM87CS
1132 CT1EAT IM68DA

OE3FVU, JN78ve, wkd:
1537 CT1DYX IN51QD #228
1544 CT2GRW IN6ØCO #229
1544 CT1CLR IN5ØQP 2100
1544 CT1ANO IN5ØQP 2100
1546 CT1EEB IN5ØQR 2096
1548 CT1DHM IN61CC 2014
1559 EA1AXH IN62JN #230
1604 CT1FAK IN5ØQO 2103

OK1KPU, JO60vr, wkd:
1540 CT1EAT IM68
1545 EA4LU IM68TV
1600 EA4AMX IM89AT
1610 EA1BLA IN53UM
1640 EA1BLF IN53UM
1645 EA1DAX IN53TH

OM3TZZ, JN88ti, wkd:
1547 CT1EEB IN50
1549 CT1DHM IN61CC #
1550 CT1ANO IN51RE
1552 CT1DYX IN51
1600 CT2GRW IN60CO

ON4KHG, JO10xo, wkd:
0948 EA7AJ IM87CS
0949 EA7DUD IM76TR
0952 EB7BQI IM76SR
0958 EB7DZT IM77 FM
0959 EB7GX IM77 FM
1004 CN8LI IM63
1008 CN8IG IM75HN
1009 EA1AK/7 IM66
1011 EA7BYM IM66UM
1015 EB7COL IM77AG
1018 EA7DBP IM66UM
1028 EA6DD JM19JK
1032 EB4DF IM79QQ
1039 EA4LU IM68TV

1043 CT1EAT IM68DA
1158 EA9IB IM85NG
1200 EB7NK IM86RQ
1218 EA7ERP IM87EE
1452 CT1FOH IN50RA
1459 CT2HBZ IM58LV
1608 CT1BXT IM59PF
1622 EA4AKH IN70
1627 CT1ERW IM58JS

PA0JMV, JO21pm, wkd:
0950 EB7BQI IM76SR
0959 CN8LI IM63NX
1006 EA7BYM IM66UM
1008 EA1AK/7 IM66VP
1034 EB3DYS JN11CK
1040 EA4LU IM68TV
1454 CT1DIZ IM58KP
1455 CT1FOH IN50RA
1500 CT2HBZ IM58LV
1552 EA9IB IM85NG
1605 CT1DRB IM58LP
1607 CT1BXT IM59PF
1609 CT1ERW IM58JS
1621 CT1EMT IM68
1622 HRD in QRM EA8BPX IL18sk 3140km, QRM by CT/ON

PA2CHR, JO22xa, wkd:
1002 CN8LI IM63NX
1004 EA1AK/7 IM66
1008 EA7BKY IM77HI
1010 EA7BYM IM77UM
1012 EB7COL IM77AG
1016 EA7DBP IM66UM
1029 EA7UH IM67TH
1553 CT1FOH IN50RA
1555 CT1DIZ IM58KP
1559 EA9IB IM85NG
1600 EA7NK IM86RQ

1602 EA5HRX IM99TL
1604 EA5TM IM99SK
1606 CT1DRB IM85LO
1610 EA7BEL IM77AB
1620 CT1BXT IM59
1621 CT1DIZ IM58KP
1622 EA8BPX 55 55 IL18SK
1644 CT1EAT IM68DA

S51ZO, JN86dr, wkd:
1039 EA9IB IM85NG 2042 km
1541 EA1YV IN52OF 2042
1542 CT1FOH IN50RA 2130
1548 EA1GAR IN51NW 2061
1549 EA3EBJ IN73FL 1745
1551 EA1AXH IN62QN 1863
1552 CT1DHM IN61CC 2018
1556 CT1EEB IN50QR 2099
1600 EA1DKV IN53TH 1966
1603 EA1CRK IN73DM 1756
1604 EA1NQ IN73EM 1749
1605 EA1EBJ IN73FL 1745
1610 CT1ANO IN51RE 2070

7X0AD, JM16, wkd:
1622 GM4CXM
1622 G0UWK
1623 G0CUZ
1624 GM0RDX
1626 G3NSY
1626 G0FYD
1627 GM0BQM
1628 GW4VBM
1631 G4HGI
1631 G0JJL
1632 G0HYP
1647 G7RAU
1653 G3NVO
1653 G3HAQ
1654 G3LTF

1709 F4NDD
1735 F6EYD

7X2RO, JM16
was qrv but no Es QSOs made

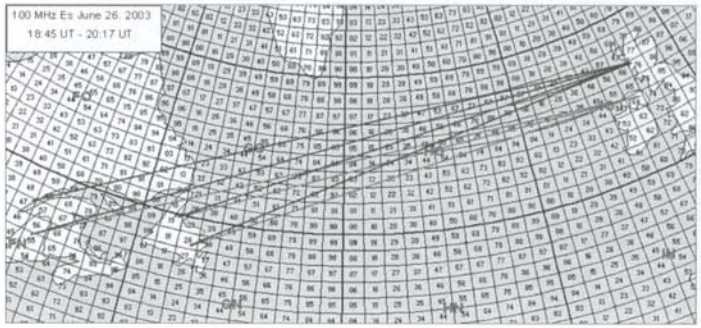
June 24th, 2003

DG0KW, JO64, wkd:
1718 UT5JCW KN64
1746 RK3AF KO85 hrd

June 26th, 2003

LZ1ZP, KN22id, wkd:
1655 F2GL JN17
Very short opening abt 2-3 min

100 MHz accros the pond!
On June 16th there was strong multihop sporadic E on 6m from all Europe (EI to OH and CT to UR) to W1, 2, 3, VE1, 2, 3, 9 and VO1. From EI and GM the MUF was arround 100 MHz to VO1 and W1 (Maine). FM broadcast Dxers from Northern Ireland (IO64) and Scotland (IO67) were able to copy the following stations from 1845 to 2020 UTC:
WHCF Bangor, Maine 88.5 MHz
CBTB Baie Verte Newfoundland on 97.1 MHz.
The distance from GM/GI to VO 1 ist 3300 to 3400 km.
The distance from GM/GI to W1 is arround 4400km. Both cases should be double hop mode.



Unfortunately there is almost zero interest in 2m DX from VO1 amateurs at the moment. Probably they have missed a big chance on this day.

June 28th, 2003

5B4AZ, KM64mr, wkd:
1505 S50C 55 56
1510 9A2TE 53 59
1511 9A1CCB 53 59
1512 I4LCK 57 57
1513 S54G 56 57
1514 S57TW 56 67
1519 S59GS 53 57
1528 9A2SB 56 59
1541 I3LGP 55 53
1547 IW3OXR 54 57
1550 IV3GBO 53 53
1602 S57O 57 57
Also heard a few others from same region.
Rig: FT847, 50w, Ant X-Quad by Wimo, Regards Neoklis

HA5OV, JN97nj, wkd:
15.38 4X1IF 57/57 km72KA
hrd JY9NX qso with YU7EW, S50C, S57O

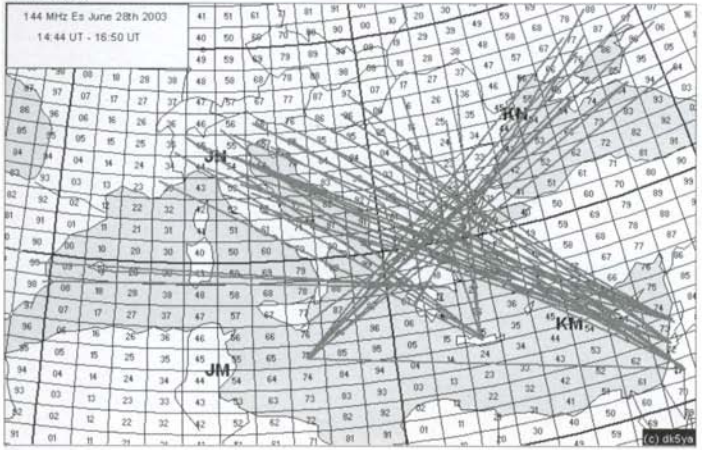
JY9NX, KM71ww, wkd:
1500 S50C
1530 IK7XWJ
1530 IZ7BWZ
1600 9H1AW (Tropo?)
Hrd YU7EW, YU1IO, S57O but QSO were not successful.
Rig: 100w + 7 ele vertical.
73 de Koji

OD5/OK1MU, KM73st, wkd:
1523 9A2TE JN85KK 2046 km
1524 YU1EV KN04CN 1775 km
1526 9A2SB JN95GM 1944 km
1529 T94NK JN94IR 1882 km
1535 T94KU JN94GG 1865 km
1537 S50C JN76JG 2231 km
1537 I3LGP JN55WJ 2384 km
1538 YU1IO KN04OQ 1722 km
1539 SV8YM KM07KS 1391 km
1546 I4XCC JN63GV 2273 km
1551 9A1CCB JN85LN 2048 km
1552 I4LCK JN54PD 2376 km
1552 S57TW JN75EX 2243 km
1553 S59GS JN75OO 2166 km
1554 9A6R JN83FM 1969 km
1556 IV3GBO JN66OA 2324 km
1557 I4PAI JN64GB 2280 km
1557 I4RHP JN54QL 2383 km
1604 IK4DRY JN64BL 2328 km
1608 YZ7NOU JN94TX 1840 km
1613 S51AT JN75GW 2229 km
1614 IK6EIW JN63RJ 2184 km
1618 S51AT JN75GW 2229 km
1618 9A2MN JN85LN 2048 km
1619 9A3RU JN85LI 2035 km
1624 9A7W JN85 2048 km
1630 9A3JB JN75 2176 km
1631 9A2EU JN85LN 2048 km
1636 9A6R JN83FM 1969 km
1637 IK4DRY JN64BL 2328 km
1637 9A6SUH JN83FM 1969 km
1639 IZ4BRH JN54WL 2346 km
1645 I4XCC JN63GV 2273 km
Rig.: 100W and 10 ele.
QSL via OK1TN.

RZ6BU, KN84pv, wkd:
1529-1550 9H1GB, PA, CG, TX + PA all JM75
1558 IT9/IK0BZY JM76or 53 53 #304 Rig: 20 wtts, 10el. DJ9BV

S57TW, JN75es, wkd:
1515 5B4AZ KM64MR
1553 OD5/OK1MU KM73ST

UT5JCW, KN64sn, wkd:
1519 9H1AW JM75EX 1878
1520 9H1GB JM75FU 1880
1520 9H1TX JM75FU 1880
1527 9H1PA JM75FI 1914
1534 SV8YM KM07JQ 1310
1534 SV8RV KM07KS 1299



June 29th, 2003

DL5GAC, JN47ut, wkd:
1743 LZ1DP KN22TK 1381 km
1743 LZ1KJ KN31CS 1461 km
1745 LZ2CC KN23JG 1276 km

EI5FK, IO51rt, wkd:
1713 HA0HO KN07SU 2185
1714 OM1AVK JN88OD 1875
1717 OM5CM JN88DF 1808
1718 HA5CW JN97PM 2045
1722 OM5MX JN98BG 1932
1726 HA5OV JN97KW 1998
1749 SP3MGM JO73QE 1618
1750 OK2WO JN89IH 1795
1750 OK2RX JN89 1811+-
1750 OK1XH JN79MT 1664
1752 OK2BDS JN79WF 1741
1802 DL3RBH JN68 1573+-
1803 OE5KE JN78DF 1671
1803 HA1FV JN87JJ 1879
1805 HG1RJD JN87 1891+-
1806 HA1SR JN87HQ 1855

F1FIH, JN23gs, wkd:
1643 HA5OV 5 JN97NJ
1704 LY3ED KO14UX

F4BWJ, IN93mp, wkd:
1632 SP9QZS JO9ØNA 1677
1715 SM1LPU JO97CK 2031
1716 SP4MPB KOØ3GS 1925
1717 LY2BAW KO25KA 2238

F4DSD, JN23jo, wkd:
1749 UT5JCW KN64SN 2286km
FT847 100W 15ele

G0CUZ, IO82wm, wkd:
1650 YZ7NOU KN94
1650 YU1EV KN04CN
1655 HA6NQ JN98WA
1655 HA9KRL KN07
1710 HA0HO KN07SU
1718 HA0MK 1718 KN08

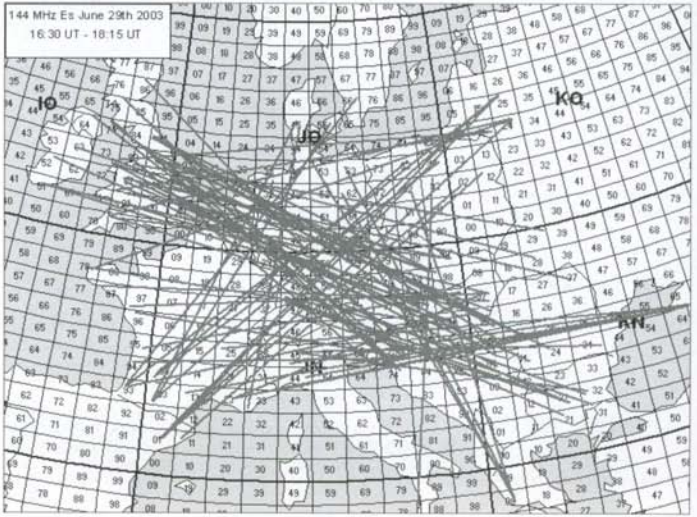
G1AAR, JO00at, wkd:
1635 YU1IO KN04IO 59 59
1653 YO8RNF KN37EW New#

G4RRA, IO80bs, wkd:
1656 YO8RNF KN37EW new#
1656 OK2BUC JN99CN
1657 OM3RI 59 - Inc
1700 SP9DHQ JN99JR
1720 OK2RX JN89IE
1721 SP9AI JN99AI
1722 SP9EWO JN99AW
1723 OM3WAN JN99IF
1725 OK2BZQ JN99
1755 LY2IC KO14IC
1755 LY2BAW KO25KA
1757 LY3ED 55 56 KO14UX

GM4CXM, IO75tw, wkd:
1712 YU7ACO KN05QC
1714 S57TW JN75EX
1716 IV3GBO JN66
Opening was very short in IO75.
Hrd HA5 call me but n/c.

GW8ASA, IO81em, wkd:
1717 HA0MK KN08
1718 HA5OX JN97
1719 HA5CW JN97
1720 OM5LD JN98
1722 OM5MX JN98
1725 OM5CM JN98
1759 SP9JCS JN99
1801 SP9EWO JN99
1806 OE5KE.. - hrd LY2IC KO14

GW8IZR, IO73ti, wkd:
1650 9A2SB JN95GM 1860
1650 HG8KG KNØ6 1957+-
1655 YU1IO KNØ4LP 2070



655 HA8KG KNØ6 1957+-
659 YØ2LEA KNØ6 1957+-
705 YO2KQD KNØ6MT 1940
705 HA5KG JN97 1770+-
710 OM2IK JN88SI 1627
720 OM5LD JN98BI 1666
720 OM5CM JN98DT 1653
720 HA6NQ JN98 1717+-
720 HA6IGM JN97 1770+-
721 OM4CW JN88 1586+-
721 HA6ZB KNØ7BV 1820
723 T94DU JN95DA 1878
723 YU7ACO KNØ5QC 2067
723 HG2SF JN86KU 1670
750 S57O JN86DT 1636
757 DL3RBH JN68 1329+-
758 HA3HV JN86UK 1749

IA5CW, JN97pm, wkd:
705 GI6ATZ IO74AJ
707 G4LOH IO94EA
710 G3YJR IO93FJ
711 G0TKJ IO93HM
718 EI4EY IO52QP #385
718 GW8ASA IO81EM
719 GW3LEW IO71PS #386
720 GW4DGU IO71SV
720 GW4EAI IO81JP
721 G3NVD IO91JK
721 EI5FK IO51RT
724 GW1MCD IO81

W2NOR, JN45on, wkd:
1747 YO3DMU KN34 1334 Km

I4YNO, JN54kpm wkd:
1745 UT5JCW KN64SN

LZ1ZP, KN22id, wkd:
1738 HB9QQ HRD
1743 LX2DX JN29
1743 DL1SDN JN48
1744 DJ2IE JN48
1745 DL8GP JN39

OM1AVK, JN88od, wkd:
1655 GW0GEI IO73KK 1669km
1656 G3YJR IO93FJ 1437km
1719 EI5FK IO51RT 1876km
1721 GW8JLY IO81JM 1507km
1:24 GW3LEW IO71PS 1613km
1725 G3NAQ IO91HL 1380km
1754 EI4EY IO52QP 1888km

SP2IQW, JO94gm, wkd:
1743 SV3CYM KM08vf #
1800 MW1MFY hrd IO81

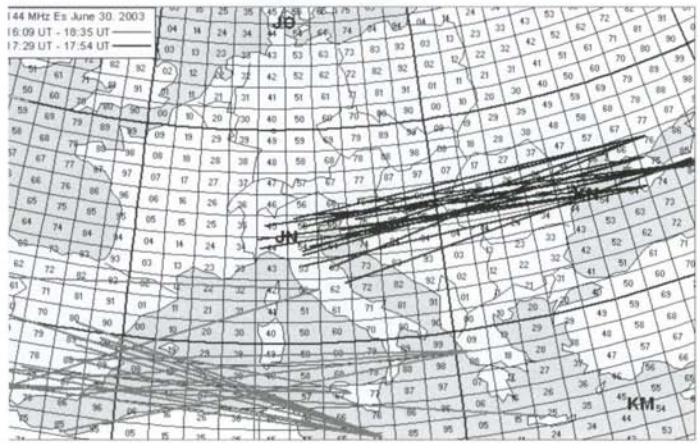
SP5XMU, KO02lg, wkd:
1632 EB3EXL JN01SU 1861
1635 F5ANT JN24IJ 1481

UT5JCW, KN64sn, wkd:
1737 IZ1ANK JN33UT 2052
1741 F1JRD JN13WO 2358
1743 F6HZL JN23QU 2235
1744 I4YNO JN54KP 1788
1744 IW1CCH JN54HQ 1807
1745 F4DSD JN23JO 2286
1746 I1CPN JN34VI 2035
1748 I1JXY JN44WC 1876
1748 I1ANP JN44VC 1882
1749 IZ5FKK JN53GU 1828
1750 I4LCK JN54PD 1764

June 30th, 2003

CT1EPS, JM57xc, wkd:
1755 9H1PA JM75
1805 9H1ET JM75
1809 9H5ZA JM75GU
1811 IT9/IKOBZY JM76OR
1819 9H1XT JM75GV
1822 9H1TX JM75FU
1829 9H1BT JM75

EA1AK/7, IM66vp, wkd:
1639 9H1GB JM75
1647 SV3CYM hrd
1648 IZ8DWL JM88
1658 SV9CVY KM25ka 2794km
1659 9H1ET JM75
1706 9H5ZA JM75
1714 IW9GSC JM67
1716 IT9NGN JM78
1720 9H1XT JM75
1732 9H1XT JM75
1736 IW9GSC JM67
1749 IT9/IK0BZY JM76



1752 9H1PA JM75

IKØWGF, JN52vc, wkd:
1705 CT1DYX IN51

IK8ETN, JM89ch, wkd:
1703 EA7RM 53 IM87
1712 EA9IB 59+20 IM85ng

RZ6BU, KN84PV, wkd:
1727 IW1CCH JN35TB 2320km
1734 9A3PA JN85EG 1638km
1734 I4RHP JN54QL 2040km
1735 IZ4AIK JN63HV 1955km
1749 I6BQI 51 hrd

S53VV, JN65um, wkd:
1729 UT5JCW KN64SN
1742 RZ6BU KN84PV Hrd

SV3CYM, KM08vf, wkd:
1607 EA9IB IM85NG
1635 EB5ARP
1644 EA7BYM IM87UM
1649 EA7RM IM87CQ
1657 EA5APL 51 IM87
1707 EB7NK IM86RQ
1713 EB7RZ 53 IM86SU

UT5JCW, KN64sn, wkd:
1728 IV3GBO/3 JN65BK 1681
1729 S51WX JN75OS 1440
1729 S53VV JN65UM 1557
1737 I1LSP
1738 I4RHP JN54QL 1751
1739 IV3DXW JN65QQ 1582
1740 9A3BA JN85KC 1313

July 2nd, 2003

DL5GAC, JN47ut, wkd:
2011 CN8AT IM63EL 2152 km

EA1DDO, IN53ui, wkd:
1806 CN8KD IM63nx
1810 CN8LI IM63nx
1827 EA8EE IL28gd
1829 EA8/IK1JPV IL28eg

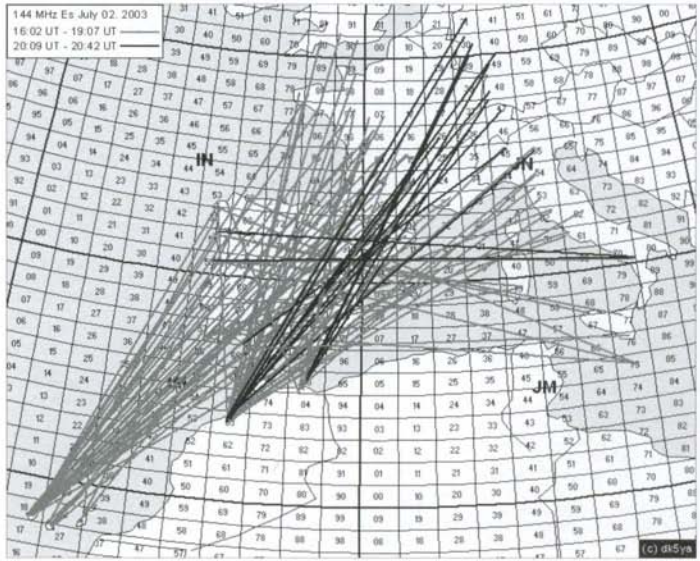
EB1EHO, IN73dm, wkd:
1814 CN8KD IM63NX #226
1818 EA8EE IL28GD
1823 EB8CDX IL18OI
1829 EB8BTV IL18
1834 EA8BPX IL18SK

EA3KU, JN00jv, wkd:
1626 EB8BTV IL18QI
1636 EA8EE IL28GD
1640 EA8TJ IL18RI
1645 EA8AHH IL18UK

EA4EOZ, IN80CI, wkd:
1626 EA8AHH IL18UK
1628 EB8BTV IL18QI
1637 EA8EE IL28GC
Rig: 5 w and turnstile antenna:

EA6VQ, JM19hn, wkd:
1632 EB8BTV IL18QI 2161 Km
1641 EA8TJ IL18RI 2155 Km
1707 EA8AHH IL18UL 2127 Km
17:21 CN8KD IM63KX 1066 Km
17:46 CT1EPS IM57XC 969 Km

EA1AK/7, IM66vp, wkd:
1620 EB8BTV IL18
1622 EA8AHH IL18



1640 CN8KD IM63 (Tropo)
1756 I0RHJ JN61
1757 IW0BET JN61
1758 IS0GQX JM49
1758 F1NSR JN33
1800 F5IVP JN23
1802 IZ5EME JN52
1803 IK0PEA JN61
1806 I8MPO JN70
1807 IK0WGF JN52
1808 IW0GUG JN61
1811 I0JXX JN61
1812 IW0BYL JN61
1813 IW0GPN JN62
1815 9H1CG JM75
1816 9H1ET JM75
1818 EB6ADS JM29
1825 IT9/IK0BZY JM76
2015 IW2BSQ JN45
2016 I2FAK JN45
2018 IK1GPG JN34

EB8BTV, IL18sk, wkd:
1556 EA5DIT IM99
1600 EA7AJ IM87
1600 EA4CTF IM89
1603 EA7CVC IM86
1604 EA9AI IM75
1607 EA5DGL IM97
1607 EA1EW IN70
1608 EB5ARP IN90
1611 EB3DYS JN11
1611 EA5AFP IM98
1612 EB5BCF IM99
1612 EA7DGR IM76
1615 EA4DTX IN80
1617 EA1AK/7 IM66
1617 EB4FSD IM78
1617 EA4LU IM68
1620 EA3CSV JN01
1622 EA4DTX IN80
1622 EA3KU JN00
1625 EA4CYQ IM78
1625 EA4EOZ IN80
1626 EB5BBP JM08
1628 EA5EZJ IM98
1629 EA6VQ JM19
1629 EA3BAV JN01
1631 EA3DUY JN12
1631 EB5BBP JM08
1631 EA6WX JM19
1631 EA4BAS IN80
1637 EA4AMX IM89
1641 EA5ADL IM98
1644 EA3AXV JN01
1650 EA4OA IN80
1652 F5HTJ JN12
1652 IS0GQX JM49 NEW ONE
1655 F5BUU JN03
1655 F1IA JN23
1658 F5SDD JN23
1700 F6DRO JN03
1702 EB5EIB IM98
1705 F5FML JN03
1706 F5IVP JN23
1706 F4DSD JN23
1708 EA4XA IM89
1710 F1FIX JN23
1710 EA3BB JN01
1714 EA3EZG JN01
1714 EA3FTT JN01
1715 F1JOK JN13
1720 F6EPE JN23
1725 F1USF JN23
1725 F6FHP IN94
1728 F5VXH JN04
1728 EA4BPJ IN80
1730 EB4DOL IN80
1734 F6CBC IN94
1735 F4BWJ IN93
1740 F6HLG IN94
1740 EA3DXU JN11
1743 EA4EBU IN80
1745 F1GTU JN05
1751 F6GQU JN05
1753 EA1BAB IN83
1755 F1GFV JN04
1800 CT1DIN IN60
1801 CT1FRZ IM58
1804 EA2KP IN83
1805 F4DXV JN04
1810 EA2CAR IN82
1810 F6FRR IN94
1815 EA2JG IN83
1819 F1TEQ IN96
1820 EB2GAI IN83
1821 F4DXX IN97
1822 F1TDX JN25
1830 EB1EHO IN73
1833 F1OMQ JN25
1835 F5DCG JN25
2125 EA1VHF IN53 HEARD
2125 EB1EWE IN53 HEARD
Rig: 25 W + 9 Ele.

F1AFJ, JN06ht, wkd:
1703 CN8KD IM63NX
Hrd EA8TJ and EA8IF 52/53

F1FIH, JN23gs, wkd:
1710 EB8BTV IL18QI
1718 EA8TJ IL18RI
1754 CN8KD IM63NX
1756 CN8LI IM63NX
1803 EA9IB IM85NG

F6FHP, IN94tr, wkd:
1709 CN8KD IM63NX
1714 EA8EE IL28GD
1726 EA8BPX IL18SK
1727 EB8BTV IL18QI
1734 EA8AHH IL18UK
1741 EA8TJ IL18RI
1746 CN8LI 54/55
1751 EB8CSD IL28 145550 FM
1752 EA8PJ IL28 145550 FM
1807 EA8/IK1JPV IL28EG
1809 EB8AMT IL18
1813 EA8BPK IL18
1819 EB8CHC IL18 145300 FM
1823 EA8IF IL18TK
1833 EB8CDK IL18OF
1841 EB8AYA IL18CQ

F6DRO, JN03TJ, wkd:
1659 EA8EE IL28gd
1700 EB8BTV IL18qi
1701 EA8AHH IL18uk
1703 EA8TJ IL18ri
1727 CN8KD IM63nx
1728 EA8BPX IL18sk
1808 EA9IB lost in qsb

F6HTJ, JN12kq, wkd:
1648 EA8EE IL28GD
1653 EB8BTV IL18QI
1704 EA8TJ IL18RI
18.04 CN8LI IM63 55/55
40w 11 ele

G4RRA, IO80bs, wkd:
1900 CN8KD 55 55 IM63NX

HB9AA, JN36bk, wkd:
1800 EA9IB IM85mg
2014 CN8PT?? Hrd 51
2015 EA7ERP IM87ee 1306 Km

IW2BSQ, JN45uj, wkd:
1753 CN8KD IM63NX 1896
1801 CN8LI IM63NX 1896
2015 EA1AK/7 IM66

IKØWGF, JN52vc, wkd:
1755 CT1EPS IM57xc
1758 CT1CAD IM67ge
1805 EA1AK/7 IM66vp

IK8ETN, JM89ch, wkd:
1800 CT1EPS IM57XC

July 5th, 2003

DC6XS, JO64nh, wkd:
1630 UU7A KN74DU 51-53
1650 UT5JWC KN74GU 51-55
Rig: FT290R + 1/4 Lambda whip

DF1CF, JN57fp
0805 SV1BTR KM17
1607 UA6MA KN97VE
1611 RV6AJ/p LN16AX 2376 km
1617 UR5QU KN77MM
1624 RN6MT KN97LN
1630 UT1IC 59 hrd KN97AX
1650 UT7EJ KN68WR
1656 UR4EWV KN88AO

DF2ZC, JO30rn, wkd:
1610 RN6BN KN95LC 2415 km
1832 UR5ITU KN65GJ 1948 km

DF8IK, JO30jt, wkd:
0802 SV3CYM 55 55 KM08VF

DF9CY, JO54al, wkd:
1620 UU7A KN74DU
1650 UT5JCW KN74
UU7A was in for 50 minutes

DG2SRL, JO61HN, wkd:
1628 UU7J KN75WL 1831 km
1632 RN6BN KN95KC 2055 km
1637 UU7A KN74DU 1761 km
1645 UR3GT KN76CL 1665 km
1654 RZ6BU KN84PV 1960 km
Rig: IC706 + 350W 18 elem. M²

DG9MAQ, JN58lj
1637 UT2IO KN88XA 1990 km
1640 UA6IK hrd LN16ad 2335k
1650 UT5ER hrd KN78ER
1657 UX0IB hrd KN68RQ
1700 RN6MT hrd KN97
1848 UU7A KN74DU
1900 UR5ITU KN65GJ hrd

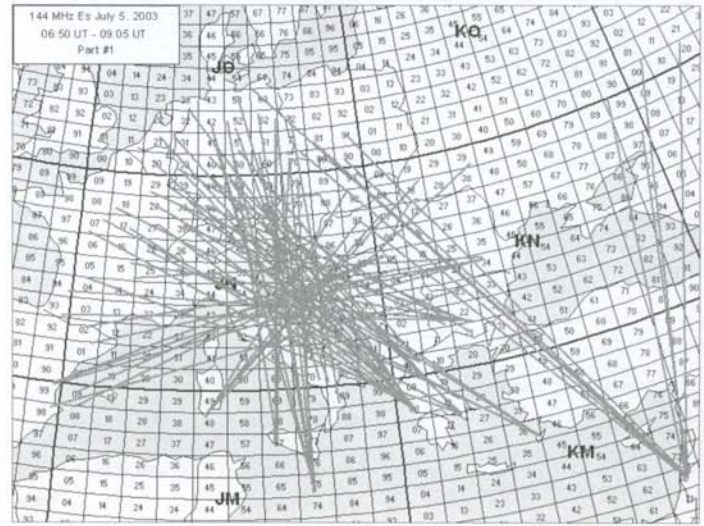
DJ3LE, JO44tn, wkd:
1633 UU7A KN74DU
1727 UT5JCW KN74GU
only 2 stations here

DL3HRT, JO61ab
1608 RK6AYN KN84UU 2025
1610 UU7J KN75WL 1865
1612 RK6HWR/6 LN03SU 2345
1616 RK6YWB LN04AC 2227km
1617 RZ6AZZ KN85RG 1986km
1621 RK6XWB/p LN13io 2.440
1626 RN6BN KN95LC 2098
1628 UU0JX KN75FF 1781km
1631 RZ6BU KN84PV 1994km
1708 UR4EWF KN67OW 1566
#256. Rig: 100w + 2x9-ele. Yagi

DL4DWA, JO61qh, wkd:
1648 RK6AYN KN84UU 1934km
1649 UT5JCW KN74GU 1721km
1651 RN6BN KN95LC (2005km)
1658 RU6HL/6 LN14AS 2235km
1659 UU5YL KN65XK 1648km
1701 UU7J KN75WL 1775km
1709 RZ6BU KN84PV 1903km
1741 RK6YWB LN04AC 2135km

DL5GAC, JN47ut, wkd:
0727 SV3CYM KM08VF
0737 SV1EN KM18VA
0803 SV1BTR KM17VU
1858 UU7A KN74DU

EA5EHS, IM99tv, wkd:
0750 YO3DMU KN34BJ
0806 YU1EV KN04CN
0814 YO4HFV KN45BF
0815 YT1VV - Rig: 15 w + GP



F1AFJ, JN06ht, wkd:
0807 SV2DCD KN00NF
Hrd SV1BTR KM17VU
Rig: 100W 4 x 11ele

F1FIH, JN23gs, wkd:
0722 SV2DCD KN00NF new#
0735 SV3CYM KM08VF hrd
0750 LZ1ZP KN22ID
0755 LZ9X KN23NR
0802 LZ5GM KN32QL
0808 LZ1BB KN12PQ
0813 LZ2ZY KN13OT
0814 LZ3KP KN12
0815 SV2CLX 55 hrd
0826 LZ2ZY KN13OT
0832 YO3DMU KN34BJ

F4BWJ, IN93mp, wkd:
0804 LZ1ZP KN22ID
0808 LZ9X KN22NR
0823 LZ3GM KN32RL
0833 LZ2ZY KN13OT

F5SDD JN23rf, wkd:
0750 LZ1ZP KN22ID 1575 km
0755 LZ9X KN22NR 1597 km
0804 LZ5GM KN32
0809 LZ2ZY KN13OT 1430 km
0811 YO3DMU KN34bj 1659 km
0812 LZ2CM KN13OJ 1434 km
0813 LZ4NM KN13OJ 1434 km
0824 YO3CCB KN34CL 1665
0825 YU1EV KN04CN 1190 km
0837 YO4CAI KN35XG 1801 km
0838 YO4GJH KN35
Only heard ER5AA KN45CW

G4SWX, JO02pb, wkd:
1630 UT1IT KN97AX 53 hrd
2643km
1640 RN6BN KN95LC 52 hrd
2849km

GM1AFV, JN87jj, wkd all in FM on 145.500 MHz:
1657 UR7WZ KN88SV 1543
1658 RW6MHM LN17CN 1901
1659 UA6LZA LN04FI 1855
1700 RV6ZN LN34DH 2295
1701 RA6LLF LN06JN 1815
1702 RK6LZS LN24NE 2212
1706 RW6MGO
1709 RA6MV
1710 RU6LB LN10CU 2142
1711 EK6AD/P LN10HJ 2198 (!)
1750 RW3HBX
1802 TA3GK
Rig: 25w + GP

(Ed: EK6AD is SK, LN10HJ is located in TA, same problem with RU6LB, so probably some "jokers")

HA6NQ, JN98wa, wkd:
1622 UA6MA KN97VE
1625 RV6AJ/P LN16AX #
1635 UR4EWV KN88AO
1637 UT1E KN57XX #
1639 UR4EWF KN67OW
1641 UT5ECZ lost in qrm
1704 RV3QX KO90TM #
1707 UY2QQ KN78RA
1723 RK6YWB LN04AC
1731 RK6XWB/P LN13IO
1738 US5QGL KN87HH
1739 UT2QA KN86KS
1744 UR5QU KN77MM
1748 US5II KN86MU
1749 RK6HWR/6 LN03SU #
1810 RU6HL/P LN14AS
1815 RV6BA KN96SA
1826 UA6IK LN16AD
1828 RN6HW LN16AB
1830 RN6BN KN95LC

HB9AA, JN36bk, wkd:
0735 SV3CYM KM08vf 1574
0756 SV1CQR KM08qo 1519
0800 IK7IMQ JN80xp 1149
0803 SV1BTR KM17vu 1735
0806 SV3EXQ KM08vf 1574
0810 I7DZG JN81kc 1046
0818 SV0LR KM18vh 1704
Rig: 100w 11ele 1000 masl

IKØWGF, JN52vc, wkd:
1842 US5EKL KN78mj

IK2DSO, JN45np, wkd:
0710 SV3CYM KM08vf
0729 SV2DCD KN00nf
0759 IK7IMQ JN80xp
1840 YO4WZ/p KN44
1850 UA6MA KN97ve

IN3KLQ, JN56rg, wkd:
1855 UT2QA KN86KS
my first UT on 144

LZ1KG, KN31cs, wkd:
1710 - 1822 UT
RA3LE KO64AR
RA4AOR LN29LA
RW3XR KO73FU
UA3WF KO82AC
RK3AF KO75TX
RA3QTT LO01GQ
RA3ACE KO95KG
RU3DD KO84RT
RA3DHK KO95KH
RN3QR LO00BK
RK3MXT KO97HC
RA3AQ KO85SP
RK3FG KO86HP
UA3AKJ KO95AO
UA3BB KO85
UA3DRP/3 LO04NH
RX3QFN KO91OP
RW3RWW LO02LM
RW3PF KO93CD
UR5LLW KN89EQ
RW3QN KO91OQ
RA3GL KO92FO
RK3RWL LO02KN
UT7LK KO80AC
UA4AQL LO20QB
RX3QFM KO91OO
RA3SD LO04AH

LZ3GM, KN32rl wkd:
0814 F1VBW JN03WL 2075
0816 IK1YNZ JN33UT 1605
0818 F1JRV JN03QO 2114
0821 F1DRN/P JN23LS 1825
0822 F6EGD JN24MA 1817
0822 F1NSR/P JN24VC 1757
0823 F4BWJ IN93MP 2300
0824 F5GB JN23LX 1824
0830 F1RJ/P JN12MQ 1992
0835 F5VHX JN04FT 2177
0836 F6FHP IN94TR 2243
0841 F6BZA/P JN05WM 2064

OE3FVU, JN78ve, wkd:
1821 UA6MA KN97VE 1739km
1825 US5QGL KN87HH 1556k #
1837 UT2IO KN88XA 1640km
1839 UT1IT KN97AX 1647km
1845 US5II KN86MU 1598km #
1848 RX4LJM KN97UF 1786km
1849 UR7IWZ KN88SR 1600km
1850 RW6MHM LN17CM 1963 #
1852 UT4EX KN78KM 1407km
1854 UR4IP KN88XB 1640km
1859 UR0QC KN86JR 1582km
1941 UR5IKN KN87UD 1640km
1943 RA6LGE LN06CP 1837k #
Most stations worked in FM on 145,500/525/550/575 changing polarisation enabled to work separate stations at the same time. Heard / worked but not completed with UT2ID KN88??, UR3MXM, RK6LZS LN06JR?, RN6MT, RW6HBX/P LN04, UA6HHE, RK6CV, and many more that I could not understand because I don't speak russian very well. UA6IK was here for at least 90 minutes.

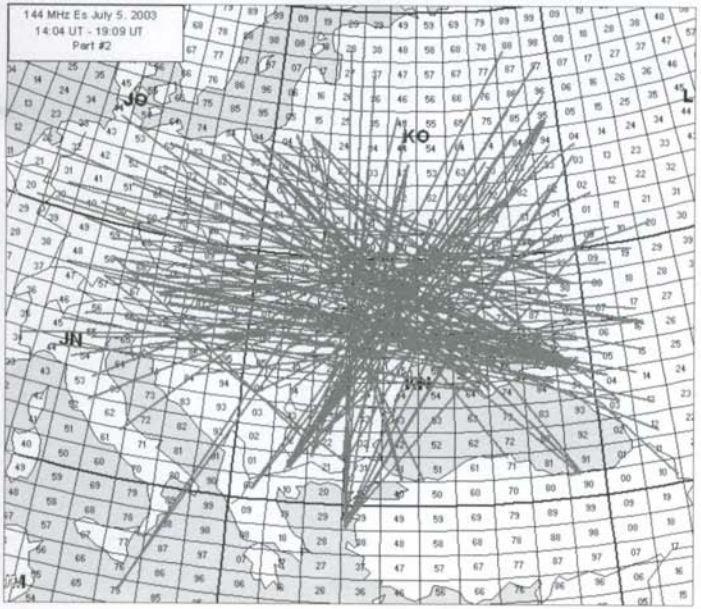
OK2BZQ/p, JN99bm, wkd:
0837 4Z5AO KM72MW 2311km

ON1IM, JO11ub, wkd:
0823 SV1BTR KM17
0847 SV3CYM KM08

PA3BIY, JO22eb, hrd:
1640 UU7J KN75WL 55 hrd
and RN6BN KN95LC 2638km!
Max 52 hrd for about 5 min

RN6BN, KN95lc, wkd 260 QSO:
1541 S57GTW JN76FA
1546 OK1KCU JO60XR
1551 YZ4IZ JN84UN
1555 9A5Y/P JN85EG
1558 DK0WM JO50KM
1559 OL7C JO60JJ
1601 DL0ETA JN59IV
1602 OK1KKJ JO70OD
1603 OK1KMG JO70EG
1604 DL0ON JO50SI
1606 DD1JN JO50DJ
1606 DL1NEO JN59IV
1607 DL6NCI JO50VI
1607 DL4NAC JN59SV
1608 OK1KZE JN79FX
1609 OK1SKK JO70EG
1609 OK1ULE JO70EG
1610 DL3PN JO50NG
1611 OK1UDJ 1JO70EG
1611 OK1MDK JN79NU
1612 DF2ZC JO30RN
1612 OK1KGR JO70AM
1612 OL1F JO70CG
1613 DL5KM JO50NP
1613 DK0TR JO40QL
1614 OK1FUW JO70EG
1614 SP9AHB/P JO80OJ
1615 OK1CD JO70GC
1615 OK2CMW JN99GR
1616 OK1IA JN79NU
1616 OK2KDS JN89PU
1616 OK1KHL JN80AC
1617 OK1KRE JO60VE
1618 DA0TAN JO50RU
1618 OK2CLW JN99FT
1619 DG0VOG JO60JS
1619 DD5DX JO61CA
1620 DL1DUR JO70KV
1621 SN6W JO80FQ
1622 SP6FAF JO80FQ
1622 DL1HWM JO61BB
1623 DL3JIN JO60LX
1623 DL2VLA/P JO61TA
1623 OK1KIMJO60RN
1624 SP9OJQ JN99IW
1624 OK1KT JO70WE
1625 SP9EWO JN99HW
1625 DL3WJ JO60CV
1625 DL2AND JO60DW
1626 DL3HRT JO61AB
1626 DL3ANK JO50NL
1627 DF0CI O51CH
1627 OK6DX JO80BJ
1628 OK1WCF JO80BY
1628 OK2KYC JN99BM
1629 OK1KBC JN79KX
1630 OK1DCF JO80BJ
1631 DA0HQ JO61VC
1631 OK1KIX JO80AO
1632 SQ9ACK JO90IA
1632 DG2SRL JO61HN
1633 SP9MRQ JO90MH
1635 DF0GC JO60FU
1635 OK2KWS JN89NV
1636 OK1KPA JN79US
1636 SQ9PM/9 JN99IU
1637 SP6HED JO80IK
1637 SQ9W JO90NH
1638 DL2HTI JO61BB
1638 SQ9CWW JO90NC
1639 SP9YEB JO90LJ
1640 DL5ME JO52SD
1640 OK1DKZ JN69XP
1641 OK1DSN JN79CU
1642 OL9S JN79ER
1643 OM3YFT JN99IF
1643 OL9W JN99FN
1643 DF3RU JN59UL
1644 SP9MCY JO90OG
1644 SP9LCV JO90KF
1645 DF0YY JO62GD
1646 SQ9QU JO90KH
1646 DG1VL JO61WE
1647 SQ9PV JO90KF
1647 SP6GZZ JO80FX
1648 DJ9FG JO52UD
1648 SP6LUV/P JO90BL
1649 SP9QZT JO90FB
1650 SP9OHL JO90KO
1651 DL2HYM JO51XM
1651 DL5WG JO52VK
1652 DL4DWA JO61QH
1652 DM4TNFJO61SL
1653 SP9AI JO99MT
1653 DL9USA JO71EN
1654 DL2HWA JO51WE
1655 DL9PM JO61GJ
1656 SP9IWQ JO80HK
1656 SP6CIZ JO81LB
1657 OK2UFB JN89PU
1657 DL7LM/P JO61GJ
1658 OM0C JN99PG
1658 OK2KUM JN89KK
1659 DL1VPL JO61UA
1700 SP6OUL JO90BF
1701 OK1KKD JO60WD
1701 OK1KRQ JO60LJ
1702 SP9QZS JO90NA
1702 OK1OPT JN69ER
1703 OK1KIY JN79SV
1703 DK3XI JO61HM
1704 DK0CWC JO60RR
1705 OL2R JN89BO
1705 DF0FA JO70IT
1706 OK1BG JO60PM
1707 DL4YY JO60HO
1707 OL5B JO60XJ
1707 OL7B JN99CL
1708 OM6TX JN99JK
1708 OM3WAN JN99IF
1709 OK1ZTZ JO60CF
1710 DL9AN JO62RE
1710 DL0DAB JO62PF
1710 DG0CC JO60KU
1711 OK2PHI JN99FS
1711 SP6RGB JO71SF
1712 OK2KCE JN89XW
1713 OM0AAO KN09AD
1713 SP9KJT JO90GC
1714 OM3KFF JN88RS
1714 OK1KKI JN79NF
1715 DL8UCC JO60XT
1716 OK2KKW JO60JJ
1716 OK1KFH JN69IQ
1717 OM3W JN99BB
1717 OL3X JN69QB
1718 OK1KYT JO60UQ
1719 OK2UKG JN99FU
1719 DK9OY JO52CK
1720 OK1KOB JO70UK
1720 OK1INO JO70QO
1721 OK2KJI JN79TI
1721 OM3RMY JN88SS
1722 SP9AMH JO90MC
1723 HA8DZ/7 JN97KW
1724 DL4DTU JO61TB
1725 T90O JN94IR
1725 S51ZO JN86DR
1726 HA3KGC JN86VI
1726 OM3KZA JN99JE
1727 HA3HV JN86UK
1729 OK2KUM JN89KK
1730 HA8CE/3 JN96CC
1731 YO6KNY/P KN36AD
1731 YU7KC KN05AW
1732 YU7ZZ JN95XV
1732 YU7AR KN05BW
1733 YZ7W KN05BT
1733 YO2BBT/P KN05WG

1734 9A1O JN95IT
1734 OK1AID JO80EO
1735 OK1KGO JN79TV
1736 OK1KCZ JO70QO
1736 OK1APU JO70QO
1737 OK1MCS JN69JW
1738 OK1OAB JN79CU
1738 OL1Z JN88AU
1739 OM3U JN88LE
1739 OK1DOT JN79KX
1740 OK1KEP JO70OR
1741 OK2UIN JN81QI
1741 UU4J KN75SD
1741 OM5KM JN98BG
1742 SP9ERV JO90EB
1743 OK2BTS JN79XE
1743 OK1OFA JN69XQ
1744 OM4A JN98HX
1744 OM3TCC JN88QQ
1745 HA6PX JN98XD
1747 OM1DK JN88WK
1749 OK1KIV JO80AN
1749 SP6TTQ JO90BK
1750 HA6W KN08FB
1750 OK1KUO JO80FF
1751 SP8WJW KN09SR
1751 HA6ZB KN07BV
1752 OM3KIJ JN99XA
1753 OK1KPU JO60VR
1753 OK1KAT JN89GU
1754 OK1OSA JN79KT
1755 OK2KHF JN99HO
1755 OK1MG JO70BD
1756 OE8GVK/3 JN88GR
1756 OK2BIW/P JN99HO
1757 OK2UYZ/P JN99HO
1757 OK1UYR JN79KT
1758 OK1ITK JN79KT
1758 OK2UWV/P JN99HO
17OK1MHZ JO70VA
1800 OK1OHK JO80EH
1801 SN7L JO91QF
1802 OK1ADT JO70VA
1803 OK1PLF JO80EH
1803 OK2KCN JN89OI
1804 OK1MJS JO80EH
1804 OK1KMP JO70SM
1805 OM3KHU KN09XC
1806 OM3KDX/P KN19DB
1806 UT3BW KN29UA
1807 UR5SKB KN29OF
1807 UR5SEL KN29OF
1808 UT0YA KN28TX
1809 OK1KCE JN89XW
1809 OK2BRX JN89QU
1810 OK1VHF JO70EB
1811 OM3WAO KN09DD
1812 OK1NS JO60PM
1812 SP9XUD KO00AC
1813 HA0MK/P KN07SU
1813 OK1KQH JN79FM
1815 OK1KKL JO70PO
1815 OK2KYD JN89PC
1816 OK1GK JO60PM
1816 HG6V KN07AV
1817 HG9VHF KN08FC
1817 HA6NY JN98WC
1819 OK2PM JN99AO
1820 OK1BNS JO60PM
1820 OK1KVR JO70SP
1821 SP9HVV KO00LA
1822 OK1KIK JO70TQ



1822 OM3KTN JN88WV
1823 OK2BRD JN99ET
1823 OK1AKF JO60PM
1824 OM3ROM 1JN99CG
1824 OK1MTZ JO70TQ
1826 SP9KUP/9 JN99QS
1826 SP9LJD JO90EB
1827 OM3KLJ JO98RP
1828 SP9ZCJ/9 JO90WB
1828 OM8HG KN08GW
1829 OK2MWR/P JN99FN
1829 OK2BVE/P JN99FN
1829 OK2PVF/P JN99FN
1830 HA6NQ JN98WA
1831 OE3W JN88BA
1831 HA5PT JN97MK
1832 HA0J KN07TM
1832 HG0NDG KN07TM
1833 HA5FMV/P JN97MM
1833 OK2KRT JN99EJ
1834 OM4K JN99DH
1835 OM3KWO KN08HP
1839 I4RHP JN54QL
1845 OM3KII JN98KJ
1847 OM3RXB/P KN09OF
1849 OM5CM JN98DF
EME ant 16x 16ele + 1 kw

SP2IQW, JO94gm, wkd:
1640 TA6IA/p 56 hrd KN90ev 2105km
1657 UR5ITU KN65GJ 1419k #
1738 UU2JZ KN74CN 1574km #
1747 UU5YL KN64XK 1572km #
1810 TA7EB KN91AW 1996km FM! new DXCC #
1830 TA7T KN91UA 2163km FM! new ODX
1855 SV8DTD KM39ea hrd
Rig: 100w + 17ele

SP9OJQ, JN99iw, wkd:
0830 4Z5AO KM72MW
1625 RN6BN KN95LC
1635 UU7J KN75WI
1640 UR3GT KN76CL
1642 RU6HL/p LN14AS
16RV6BA KN96SA
1702 RN6HW LN16AB
1708 UU0JX KN75FF
1750 RK6YVB LN04AC
1758 RZ6AZZ KN85RG
1805 UA6HGY LN14MA
1830 RK6HWR/6 LN03SU
Rig: 100w + 10 ele.

YU7EW, KN05hp, wkd:
0801 EA6/DF9UX JM09RA 1735 km #464
0811 EA6QB JM08QB 1798 km
HRD: 144.453 IW0UMP/B JN40QW, EB6AOK, 144.425 EA6VHF/B

Z32UC, KN11cr, wkd:
1609 RK3AF KO75TX
1618 RU3DD KO84RT
1620 RA3AQ KO85SP
1624 RK3MXT KO97HC
1626 UA3BX KO95DT
1627 RK3DXH KO94LN
1628 RN3FA KO84QU
1630 RW3XR KO73FQ
1631 UA3DHC KO95AW
1631 UA3BB KO85UK
1634 RA3XR KO85GB
1635 UA3XCM KO85GC
1638 UA3ARN KO84QP
1640 RK3MWA KO97UR
1641 UA3DJG KO95CN
1642 UA3MBJ KO88SA
1643 UA3PA KO85PT
1645 RA3AH KO85UC
1646 RU3ACE KO95KG
1647 RA3AES KO95LE
1648 RW3FW KO96CJ
1649 RV3AO KO85RR
1652 RA3IS
1653 RA3DEE KO95KN
1657 RA3EA KO84
1702 RK3WWF KO72QI
1703 RA3APQ KO85SP
1705 RZ3AXA KO86MA
1706 RA3DHK KO95SH
1707 RW3DLX KO84OV
1709 RW3PF Ko93CD
Rig: 350w + 4x4 loop

July 6th, 2003

DF7KF, JO30gu, wkd:
0840 YO3FFF/p KN24NT
0843 LZ5GM KN32QL
0845 YO2BUG KN06ME
0847 YO9HFB KN23KR
0848 YO4FRJ/P KN34AW

DK9OY, JO52ck, wkd:
0844 T91GJK JN94cc

DL8EBW, JO31nf, wkd:
0845 LZ2ZY KN13
0848 LZ9X KN22

DL9MCC, JN58ua, wkd:
0718 UU7A hrd KN74DU
0750 GI4GTY 51 hrd IO74AI

G8IZY, IO91vc, wkd:
0854 YO4FRJ/P KN34AW
0856 YO4RFV/P KN35
0856 YO4RXX/P KN35

G8HGN, JO01fo, wkd:
0847 YO2KBK/P KN06UG

GW8ASA, IO81em, wkd:
1040 UR7D 55 41 KN19

ON1AEN, JO10vw, wkd:
0843 YO3DMU/p KN34bj
0849 YO3FFF/p KN24nd
0907 YO8RNF KN37ew
0909 US2YW KN29px

ON4KHG, JO10xo, wkd:
0842 YO7HMH KN25MG
0845 YO3JW KN34CK
Hrd YO4FRJ/P, YO4RXX + RFV

PD0PVL, JO22xe, wkd:
0840 YT1Z KN13IJ

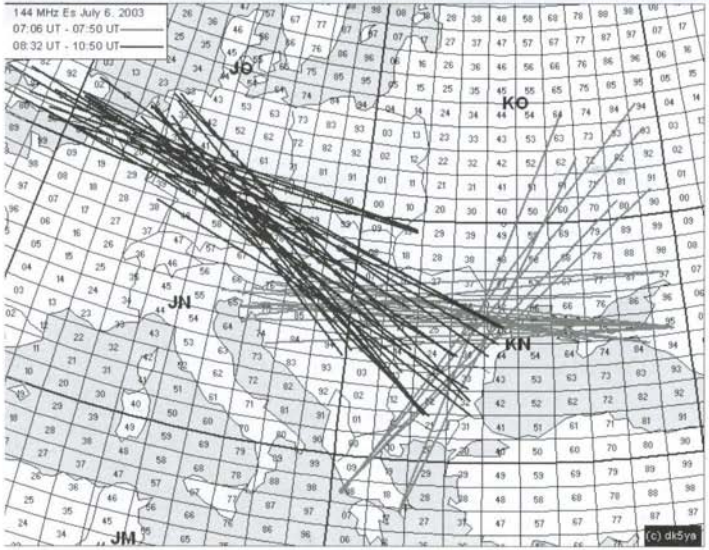
PA3BIY, JO22eb, wkd:
0843 LZ9X KN22
0905 ER5AA KN45
Hrd YO3FFF KN24, YU7FU, YT0A YO3DMU, YO8MF

RN6BN, KN95lc, wkd:
0706 S52N JN65WW
0707 S53D JN76BD
0710 S53T JN75GV
0715 IV3DNC JN65RV
0715 S50L JN75ES
0715 IV3DXW JN65QQ
0716 9A3JH SSB JN75AD
0718 IW3GGU JN65BM
0719 9A5EX JN75US
0721 S55AW JN75DS
0722 I4YDO JN74KP
0742 YU7BCD KN04HU
0748 YU1ARL KN03KM

YU7EW, KN05hp, wkd:
0839 PA0GSM JO21OU 1321 k
0841 DL0GL/p JO31KP 1208 k
0843 PA6R JO22JC 1359 km
0845 DK0PU JO31JN 1209 km

July 7th, 2003

DF1CF, JN57fp, wkd:
1033 EA7GBG IM67QI
1035 EA7BEL IM77AB



)H3IAJ/m, JN48ff, hrd:
0:42 EA7BEL IM77AB 55 hrd

)K1FUN, JN49mr, wkd:
107 EA7RM IM87cs

4B9DFG, JN37sm, wkd:
039 EA7BEL IM77ab

N3KLQ, JN56rg, wkd:
043 EA7BEL hrd IM77AB good
116 CT1DYX IN51

Z8DWL, JM88br, wkd:
)943 EA1BFZ IN81SS 1609
)945 EA1LZ IN82DI 1719
)947 EA1DKV IN53TH 2109
)948 F5HGO
)956 EA1DDO IN53UI 2102

Jaily 8th, 2003

CT1ANO, IN51re, wkd
559-1620z:
)K1AMI JO70, OK1KT JO70,
SP6IWQ JO80, DL5ROB JN68, DB6RO JN58, DF1CF JN57, OK1AYK JN78, OE5MPL JN78, DL1GNM JN38, DK5RQ JN68, DC5SG JN59, DH8SBT JN48, DF3RU JN59, SP6GZZ JO80, OK1APY JN79, DL1NAI JN59, DK2RY JN59, OK1MG JO70, DG2NBN JN59, DJ9EV JN49, DL2RDT JN59, SQ?AR JO71MC, DL3DXX JO61, DL3NCR, DF9IC JN48, OK1MHZ JO70, DF9NP JN58.

CT1DIN, IN60im, wkd:
1754 S51ZO JN86
1756 HA3HV JN86
1758 IK3TPP JN65
1759 S51KK JN76
1801 S51MQ JN75
1814 OE3FVU JN78
1818 HA5OV JN97

CT1EAT, IM68da, wkd:
1605 DF6NA JN49xs
1606 DL4ANT JN49lf
1809 DL9MCC JN58ua
1810 DG9MAQ JN58lj
1811 DJ8RZ JN58wv

DF2ZC, JO30rn, wkd:
1546 EA7BYM IM66UM 1907 km
1607 EA1AK/7 IM66 1938+- km
1615 EA7AJ IM87cs 52 hrd 1677
1621 EA4BPJ IN8ØET 1381 km

DF6NA, JN49xs, wkd:
1558-1633 EA4DTX IN80bj, EA4EOZ IN80ci, EA4BPJ IN80ej, EA4LU IM68tv, F4BWJ IN92, CT1EAT IM68da, RA2RY IN82pu, F8DNX IN93, EA8/DL6FAW IL18bp (3321 km), CT1DLF IM58lu, CT4RK IM57.

DK2RY, JN59, wkd:
1605 CT4RK IM69 hrd
1609 EA4LU IM68TU hrd
1620 CT1ANO IN51RE
1624 CT1DHM IN61CC
1805 EA1AK/7 IM66
1605 EA5AJX IM98 hrd
1609 EA5DIT IM99
1612 EA5DJX IM98 55 hrd

DL9MCC, JN58ua, wkd:
1637 CT1DHM 55 hrd
1818 CT4RK IM57NW 2004km

DK5YA, JN49nx, wkd:
1607 EA4LU IM68
1613 F4DPN, IN93
1615 CT4RX IM69
1619 EA2CAR IN82
1619 EA4DTX IN80

DL3HRT, JO61ab, wkd:
1610 F4BWJ IN93MP 1279km
1611 EA2CAR IN82PU 1442km
1612 F4DPN IN93FL 1326km
1618 EA4LU IM68TV 1974km

DL4DWA, JO61qh, wkd:
1600 EA4DTX IN80BJ 1797km
1609 EA2CAR IN82PU 1533km
1612 F4BWJ IN93MP 1370km
1616 EB1TH IN72WW 1612km
1620 CT4RK IM57NW 2289km

DL5XV, JO53ap, wkd:
1613 EA5DIT IM99CD
1615 EA5AJX 55 hrd IM98

DL8EBW, JO31nf, wkd:
1601 EA7AJ IM87
1602 EA6VQ JM19 57 hrd

EA6VQ, JM19hn, wkd:
1553 F1DBN JOØØVT
1557 PE9DX JO33
1601 ON4ADP JO11
1601 PA3BIY JO22
1601 PD2DB JO22MD
1602 DK5DQ JO31
1603 PA3CEG JO33FB
1603 PDØPVL JO22
1605 PA3DOL JO22
1605 PA2DWH JO22GD
1606 PA3DZL JO21HM
1606 PAØJMV JO21PM
1607 PAØWWM JO22FE
1611 PA3FOC JO21
1613 ON1AEN JO1Ø
1628 G4KWQ IO92AQ
1631 GØUWK IO83VC

F5IVP, JN23qi, wkd:
1620 G7RAU IO90IR
1627 G0CUZ IO82WM

G4RRA, IO80, wkd:
1600 IC8CQF JN70CN
1614 IZ5EME JN52NS
1617 IK0WGF JN52VC

G8HGN, JO01fo, wkd:
1632 EA6/DF9UX JM09RA

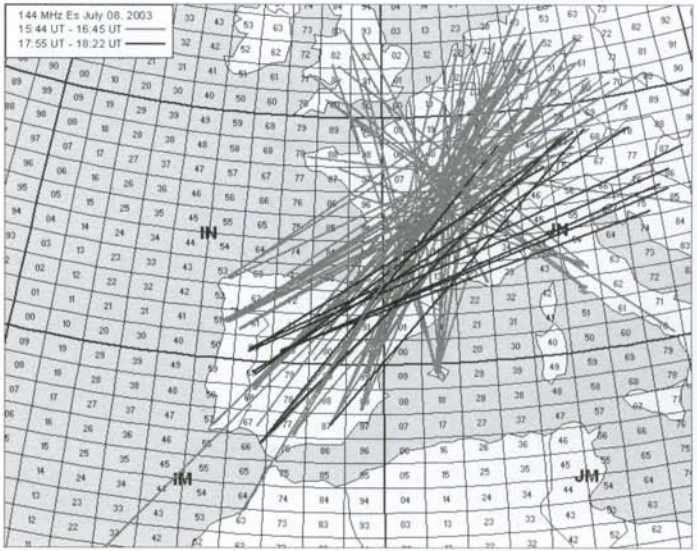
GW3LEW, IO71ps, wkd:
1610 IC8CQF JN70

HB9DFG, JN37sm, wkd:
1811 EA4CTF IM89at 1259km

IKØWGF, JN52vc, wkd:
1555 F6FAI IN88HM
1618 G4RRA IO80 hrd

OE3FVU, JN78ve, wkd:
1812 CT1DIN IN60

PA2DWH, JO22gd, wkd:
1607 EA6VQ JM19



1627 EA5AFP IM98
1627 EA6FB JMØ8PW

PA3BIY, JO22eb, wkd:
1552 EA5HB hrd
1547 EA5APL
1601 EA6VQ JM19
1612 EA6/DF9UX JM09
1618 EA6FB JM08PW
1614 EA3CSV hrd JN01ND
Hrd: EA5EJT IM99

S51ZO, JN86dr, wkd:
1753 CT1DIN IN60IM 2010 km
1754 EA1ASC IN70DX 1868
1813 CT1ANO IN51RE 2070
1815 CT1CLR IN50QP 2103
1816 EA1ASC IN70DX 1868

July 9th, 2003

CT4RK, IM57nw, wkd:
1535 DF9IC JN48IW
1538 F6IRS JN38VN
1544 DK2RY JN59QN
1550 DL9USA JO61EN
1550 DJ1OI heard
1550 DJ5RE JN59WK
1550 OK1XOD JO70IM
1551 DC6RN JN59WK
1552 DL5GAC JN47UT
1553 DK5RO JN68BV
1554 DF9NP JN58LU
1555 OK1MZM JN69PR
1555 DF5NK JN59PM
1556 OK1AGE JO70ED
1556 DF2RG JN69BI
1608 DD7SB JN58BR
1608 DG3GAQ JN48GE
1608 OK1DKZ JN69XP
1610 OK1MG JO70BD
1610 OK1IAS JO60EB
1611 DC6SG JN59NI
1615 DK5SO JN58AV
1615 OK1DPU JO60VP
1618 DH8SBT JN48SX
1618 DK2RY JN59KY
1619 DK1ANS JO70FD
1620 DL7PR JN47EV
1620 HB9DFG JN37SM
1620 DL1SDN JN48PP
1620 DL1SGN JN38WB
1622 DK0ALK JN38
1625 EB8BNS IL08OS S5
Rig: 200w 9 ele vertical.

DF1CF, JN57fp, wkd:
1544 CT1ANO IN51
1555 EA4LU IM68
1602 EA4AMX IM89
1604 CT1DMK IN50
1613 CT2HSO IN61
1616 EA1TH IN72
1621 CT1DNF IN50
1623 EA1LZ IN82
1635 CT2HSN IN61

DF7KF, JO30gu, wkd:
1601 EA6FB JM08
1606 EA5AFP IM98
1607 EA5ZF IM99
1609 EB5AYG IM99
1616 EA5AJX IM98

DK5RQ, JN68bv, wkd:
1538 EA1AK/7 IM66VP
1540 EA7BYM IM66UM
1555 EA4AMX IM89AT
1559 EA4DTX IN80BJ
1604 CT4RK IM57NW
1608 CT1DRB IM58LP
1612 CT1DIZ IM58KP
1620 CT1DL IM58RU
1621 EA1LZ IN82DI
1641 CT1DMK IN50
1643 CT2HSO IN61CC

DL3JIN, JO60lx, wkd:
1601 EA7BYM IM66UM
1612 EA4EFJ IN80DL
1614 EA4BPJ IN80EJ
1618 EA4DTX IN80BJ
1628 EA4LU IM68TV
1633 EA4AMX IM89AT
1647 EA4AQQ IN80GL

DL5GAC, JN47ut, wkd:
1548 EA7BYM IM66SM
1604 CT4RK IM57NW
1608 CT1DRB IM58LP
1614 CT1DMK IN50QP
1618 EA1LZ IN82DI
1623 EA2AWD IN93CI
1630 CT2HSO IN61CC
1632 EA1TH IN72WW #

DL5IO, JN49ni, wkd:
1538 EA8/DL6FAW IL18BP 51 59 neues ODX 3244Km, neues DXCC Nr.46
1547 EA5AJX IM98KU 1423Km
1552 EA4AMX IM89AT 1479Km
1615 EA4DTX IN80BS 1425Km

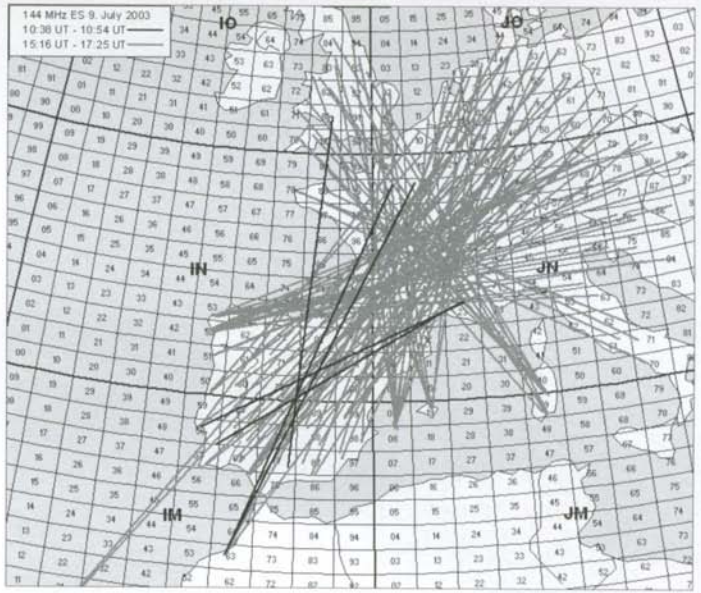
DL8CMM, JO52vm, wkd:
1550 EB5AYG IM99TV 1681km
1552 EA5ZF IM99VT 1682km
1600 EA5EHS/P IM99TK 1726k
1604 EA5AFP IM98VX 1754km
1612 EB7BKY IM77HI 2148km
1629 EA7BYM IM66UM 2270km

DL8EBW, JO31nf, wkd:
1555 EA6FB JM08
1559 EA/DF9OX JM09 57 hrd
1606 EA7IT IM87 hrd
1606 EA5AJX IM98 hrd
1607 EA5ZF IM99 hrd
1610 EB5AYG IM99 hrd
1612 EB5BCF IM99
1612 EA5AJX IM98 hrd
1613 EA5EJT IM99 hrd
1620 EA7AJ IM87 hrd
1624 EA5AJX IM98
1627 EB5EHS/P IM99
1630 EA5ZF IM99
1636 EA5AFP IM98 hrd
1640 EA5EJT IM98 hrd
1641 EA5AJX IM98 hrd
1722 EB5BCF IM99 hrd

DL8LAQ, JO43xu, wkd:
1606 EA5AJX IM98KU
1609 EA5ZF IM99VT
1613 EB5AYG IM99TN
1629 EB5BCF IM99TK hrd 57
1633 EA7IT IM87XI
1636 EA5EJT IM99RG
1638 EA5AAJ IM99SL hrd 55

EA1DDO, IN53ui, wkd:

1615	IW3QTG	JN65PT
1616	S54G	JN65TM
1618	S51ZO	JN86DN
1620	S57EA	JN76HE
1621	S57LM	JN76HD
1622	HA3HV	JN86UK
1623	S52IM	JN65TX
1624	IW3RED	JN65SW
1625	S51DI	JN76VL
1626	S51WX	JN75OS
1626	IK2DDR	JN55GN
1627	S53VV	JN65UM
1628	S59F	JN65TX
1628	IV3HWT	JN65ST
1629	9A4VM	JN85FS
1630	IW3GGU	JN65BM
1631	S56HCE	JN75AP
1632	IV3BBR	JN65TW
1632	S51KK	JN76HB
1633	S52CW	JN76CI
1633	9A8A	JN86EH
1634	S51UE	JN76CI
1634	S52ZW	JN86BT
1634	S54M	JN86CL
1634	S59DTB	JN86AO
1635	HA1YA	JN87GF



1635	S57RAM	JN76TN
1636	I3LGP	JN55WJ
1637	HA3FU	JN86UM
1639	S51ZO	JN86DR
1640	S52OR	JN76HE

Rig: 100w + 17 ele.

EA4EOZ, IN80ci, wkd:
1615 DL4ANT JN49lf
1616 DL2HQ JN48fx
1623 DF6NA JN49xs

EA5EHS/P, IM99TV, wkd:
1548 DL2ANT JN49lf
1554 DK5YA jJN49nx
1554 DL1AZZ JO50ct
1558 DJ7OF JO51hq
1559 DL8CMM JO52vm
1601 DH2FAH JO40KC
1602 DC2OD JO42VG
1604 DG1KR JO53OW
1610 DJ1LN JO31LN
1611 DL1KDA JO30FQ
1612 OZ1LPR JO44UW
1613 DK3EE JO41GU
1614 DF8IK JO30JT
1616 DA3GCJ JN11IM
1616 DG9BEM JO33cd
1618 DB8KJ JO30cm
1618 DA3CEG JO33fb
1620 DL6YCY JO41cu
1622 DJ3LE JO44tn
1623 DK0HH JO30gl
1623 DD3DJ JO31ol
1624 DG7TG JO43SV
1626 DL8EBW JO31NF
1627 DK5DQ JO31PG
1629 DH8GV JO33RL
1629 DL6YBF JO31OX
1630 DL2DR JO31TO
1631 DG5YIL JO32KB
1631 DF8XR JO32MF
1640 DH2OAA JO42TU
1648 DL3TW JO44SK
Rig: 50w + 13 ele.

EA6VQ, JM19hn, wkd:
1548 PE1HWO JO3ØJT
1548 PA3DZL JO21HM
1549 PA3GFY JO23SB
1550 PAØAL
1550 DK3BU JO33NO
1554 ON1GZ JO2ØFX
1554 PDØEAP JO22JK
1555 PA3GFY JO23SB
1558 PA3DII JO23VE
1558 PA7AL JO23VG
1559 ON7CL JO2ØJU
1559 PAØJMV JO21PM
1559 PAØEAP JO22JK
1559 ON1VS JO21LH
1600 PA3FOC JO21
1602 PA3DOL JO22
1602 PA3DYS JO21
1603 ON4AVJ JO11UB
1603 G4FUF JOØ1
1603 ON2RE JO2Ø
1604 PBØAYA JO22
1604 PD3UX JO22LE
1604 PA3BIY JO22
1605 ON7EH JO2ØFV
1606 ON4ZHG JO1ØXO

1606 PA2CHR JO22XA
1607 PE1AXM JO11VM
1607 ON1IM JO11UB
1608 ON1DO JO11PC
1609 ON4CGZ JO11
1610 G4ZFJ JOØ1HO
1611 G4DEZ JOØ3AE
1612 G8WXU JOØ1
1613 G3LQR JOØ2QF
1615 F6HHR JO1Ø
1618 G3KEQ JOØ1BH
1621 F1DBN JOØØVT
1624 G4KIY IO92WN
1625 G3BNE JOØ1BJ
1626 F1EBE JNØ9NN #500 !
1626 G3YDY JOØ1
1627 G3XPO JOØ1OC
1627 G4IBH JOØ1
1627 G8SRL JOØ1
1628 ON1AEN JO1Ø
1628 ON4LDP JO1ØUM
1631 PA5WT JO22IW
1632 F6IHC JO1ØOR
1633 F6HHR JO1Ø
1638 PB1TT JO22FF
1640 PA3GXJ JO22DA

A8/DL6FAW, IL18bp, wkd:
529 DL1GNM JN38wb
530 DK0ALK JN38wb
538 DL5IO JN49ni
618 OK1FFD JO60cf
rd DJ8NK?, DK5RQ, DL3WW,
IK1IAS. Rig: 40w + 9 Ele.

4BWJ, IN93mp, wkd:
602 HA3HV JN86UK 1495
611 S54G JN65TM 1172

5SDD, JN23rf, wkd:
040 CT2HBZ IM58LV 1305 km
040 CT1END IM58IS 1330 km

4RRA, IO80, wkd:
540 IS0GF JM49
607 IS0GQX JM49OH
635 IS0/IW2MXY JN40DI
652 IS0/IK6DZH JN40PH

A5OV, JN97nj, wkd:
603 CT1DMK IN50QP
627 EA1DDU IN73FM
633 EA1EBJ IN73FL

8DWL, JM88br, wkd:
625 F8DBF IN94RI 1517

E3FVU, JN78ve, wkd:
45 CT1DRB IM58LP 2254

1608 CT1DMK IN5Ø 2132+-
1605 CT1ANO IN51RE 2063
1606 CT2HSZ IN61CC 2014
1547 EA4AMX IM89AT 1825
1547 EA4DTX IN8ØBJ 1781
1614 EA1DDU IN73FM 1725
1612 EA1TH IN72WW 1650 #
1612 EA1TH IN72WW 1650
1633 EA2AWD IN93CI 1461

OM5UM, JN98eo, wkd:
1630 CT1ANO IN51RE 2259 km
1632 EA1TH IN72ww 1846k hrd

PA3BIY, JO22eb, wkd:
1602 EA3CBH/6 JM19IM
1604 EB6AOS JM19
1605 EA6FB JM08PW
1605 EA6VQ JM19
1612 EB6PZC JM08 FM
1614 EA5WV IM98WH FM
1615 EA5GPC/M IM98WN FM
16.32 EA3GCJ JN11

S51DI, JN76vl, wkd:
1536 EA1ADX IN53TH
1540 EA1TA IN53SI
1542 EA1DKV IN53TH
1545 EB1EWE IN53PC
1546 CT1DMK IN50
1546 CT1ANO IN51RE
1552 CT2HSO IN61CC
1553 EA1LZ IN83DI
1603 EA1TH IN72WW
1611 EA3DDU IN73FM
1624 EA1DDO IN53UI
1627 EA1EBJ IN73FL

July 14th, 2003

EB8BTV, IL18qi, wkd:
0710-0720 F1FLX IN93, F1DVI JN05, F1MOZ IN93, F1TPV JN05, F1RHS JN03, F0DJK JN15 2496km, F5VHX JN04

July 17th, 2003

EA1AK/7, JM66vp, wkd:
1630 IZ8DWL JM88br 1973 Km
1641 IW0BYL JN61gv 1711 Km
1642 I0SPS/0 JN61ku 1737 Km
1645 I6BQI JN72bk 1852 Km
1646 I0JX JN61gw 1712 Km

IZ8DWL, JM88br, wkd:
1629 EA1AK/7 IM66VP 1973
1630 EA7BYM IM66UM 1984
1633 EA7AJ IM87CS 51 51 1738

July 19th, 2003

I6BQI, JN72bk, wkd:
1148 LA2AB, JO59fv
1154 LA0BY, JO59fw
1159 G7RAU, IO90

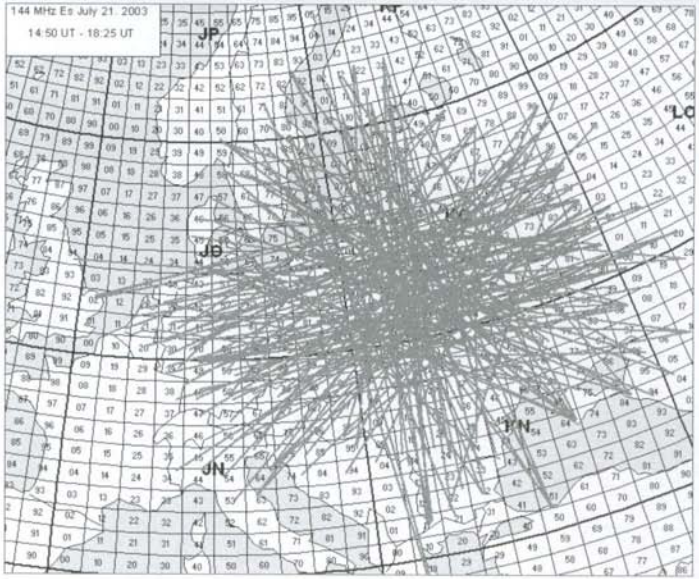
IZ5EME, JN52, wkd:
1026 4Z5AO KM72
1026 SV5AZP KM46

July 20th, 2003

HA5TS, JN97ll, wkd:
0633 UA4AQL LO20qb

July 21th, 2003

DK3WG, JO72gi, wkd:
1536 UR5LLW KN89EQ
1537 UA6MA KN97VE
1541 UT2IO KN88XA
1545 RN6HW LN16AB 2104km
1549 UT5JCW KN64SN
1552 UT2QA KN86KS
1554 RZ6BU KN84PV
1557 UR3GIM KN76CL
1559 RZ6BY KN84
1603 US5QGL KN86JS
1608 UT2QA KN86KS
1611 US5MPO KN89HN
1612 RA4AOR LN29LA 2161km
1613 UR5LLW KN89EQ dup
1619 UT5ER KN78ER
1622 UT5QNN FM
1623 RW6WHM FM KN86CM
1626 UR5MGW FM KN96QO
1634 RW6MHM FM LN17CM
1638 US5MPO FM KN89HN
1647 US4DO FM KN99KD
1655 RV6LEK FM LN08ML
1700 US5MKO FM KN99NM
1702 RA6LHP FM LN08WI
1705 UT6LI FM KN89CX
1706 UR5HVR FM KN98QP
1716 UR5MG KN98KH
1719 UA3OW LO00BK
1720 UR4LL KO70XG
1721 UT1LR KO80FA
1725 UR5GP KN76CN
1732 UU2JJ KN75AA
1733 RW3WR KO71IM
1734 RN6QR LO00BK
1736 UT8AL KO61WP
1744 UR5LX KO70WK
1749 UA6LG ? KN76CL



G4LOH, IO94ea, wkd:
1720 UT8AL KO61wp 2360km

G4SWX, JO02pb, wkd:
1718 RK3AF KO85QR 2379km
1719 RA3APQ KO85SP 2390km
1721 UA3DHC KO96CB 2427k
1726 RA3AQ KO85SP 2391km
1743 UA3ARC KO85SO 2390k
1747 EW6GB KO45 1850km

LA0BY, JO59fw, wkd:
1559 YO2IS KN05PS
1600 HG8QU KN06NQ
1649 UT5JCW KN64SN 2298km
1651 UU2JJ KN75AA 2278km
1704 UU2JJ KN75AA
1711 UT5JCW KN64SN
1718 UT5ZN KN66AX FM 2012
1718 UU1AA KN75AA FM 2278
1722 UU4JKN KN75IK FM 2271
1725 UR5GIM KN76CL 2155km
1730 UR5GP KN76CN 2148km
1734 U5NMP KN49 ? FM
1735 UR3CFC KN58CR FM
1746 ER1DAB KN46KW FM
1757 ER5AA KN45CW
1804 YO8RGJ KN36KN FM

SM0LQB, JO89xk, wkd:
1631 UU2JJ KN75AA
1632 UT5JCW KN64SN 1
1649 LZ2QA 55 59 KN43EK
1650 UR5GP KN76??
1700 TA2DC 59 31 2233 km!
KN51VC FM
1703 UR5GIM KN76CL
1704 UX0FF 59 59 KN45KN
1712 UU4JKN KN75IK
1741 ER1DAB 55 ? KN46 FM
1730 YO4BBH KN45JE
1738 YO4ATW KN35XG
1746 YO4GJH KN35XG

There was another 7 hour opening on **July 22nd** very similar to the one on July 21st. 3 small openings followed on **July 26th, August 11th and 15th**. We will print reports and maps in the next issue.

OE8FNK has stopped his Es predictions due to lack of success. Too many openings....

Ed. This year was an exceptional one regarding 2m Es openings. There were many days with openings and MUF higher than 200 MHz. This is the reason for the VERY big Es report in this issue. We got many more reports but were not able to print them all here. Anyway we are not sure if you wish to see all these reports about 2m Es QSOs in DUBUS in the future as you may find QSO lists and maps also on the web.
Please let us know what you think! info@DUBUS.de

2-m-EME News

Editor:Heinz Borde, DM2BHG
e-mail: heinz.borde@t-online.de

- **Around 2-m-EME**
- **News and information's**
- **Once there was a chat about...**
(Chats of common interest in INTERNET)
- **Treasury INTERNET**

Around 2-m-EME

SP2OFW: Hello guys, in Poland today is BIG DAYli worked with Joe KG6DX from Guam QK23 at 1120z

F8DO: Conditions here in JN26if were not very good this last perigee. I could hear my echoes most of the time except 4 th and 6th of July in the afternoon. A test with GM4JJJ on 4th gave strange results and sunday afternoon i could not hear any station. Situation became better during the night. It seems Es propagation disturbed ionosphere and sigs vanished.

4th GM4JJJ poor conditions here
IK2DDR very loud
5th IK1FJI nice sigs
6th WA4MVI nice sigs at end of QSO, new station
schedules with SK6EI and ZS6ALE nil
Heard: SK6EI 5T6M KG6DX SP2OFW

RU3ACE: Worked JT44:

01.08.03 EA3DXU o/- best -16db
W3EME o/- best -12db
02.08.03 RN6BN ro/o best -18db
I2FAK o/ro best -12db
EA3DXUo/- best -16db
KB8RQ o/-
03.08.03 OH7PI o/ro best -18db
KB8RQ o/- best -15db
S52LM o/- best -19db

2m results from R/U-stn starting July:

RA3QQT -F8DO
RK3FG - added in cw DK3EE, RN6BN, F6FHP, OK2DL, ZS6ALE and AA7A (JT44)
UA4AQL - wkd in cw ZS6ALE and JT44 with K5GMX, K6MYC, GW4DGU, LY2BAW, UA9FAD, F1EBK, OH7PI, IK7EZN and PA0JMV.
UA9FAD - wkd JT44: UA4AQL and S52LM.
UR5LX - had initials with ZS6ALE (C?) and SM3XZF.

DK3WG: wkd 5T6M (DXCC #112),
QSL-Mgr. for: RU1A/RZ1AWT, RU1AA, RW1AW, RX1AS, RA3IS, RK3FG, RV3IG, RW3PF, RW3WR, UA3MBJ, UA3TCF, RA4AOR, UA4AAV, UA4API, UA4AQL, UA4NM, RN6MT, RK9CC, UA9FAD, UA9SL, UA9YLU, UR5LX, UT5ER and UX3LV. Please send your QSL only for EME-QSOs with SASE to: J. Fiedler, P.O.Box 1531, 15205 Frankfurt (O), GERMANY. A letters from DL to Europe 0,55 Euro // 1 US$ abt 1 Euro, DL to others 1.50 Euro // 1 IRC = 1.5 Euro

KJ9I (July): An exciting weekend so far here: I received a 2m call from W4ZRZ (we worked easily), then 9H1PA (easy QSO), and then I was lucky enough to work Frank DL8YHR as 5T6M after significant KJ9I equipment problems (now fixed). Then last night on sked with KG6DX I heard nothing (nor did he from me).. and yet only a half hour later, I worked HS2CRU and HS2JFW! Conditions were just right as my moonset corresponded with a narrow slice of the HS moonrise. The HS team (same as worked by W5UN and KB8RQ some months ago) added an extra yagi this time to their portable 2m EME set-up. They deployed 2 x 2M8WLs and 200w which produced a nice clear trace and audible signal on my LinRad DSP receive computer (using vertical polarity on my 8 x 2MXP28 system). I am most appreciative for all the efforts of all those worked and this really made my weekend! TNX!

EA3DXU: I was fortunate to work KG6DX last morning (July,19) on sked for new DXCC # 90 on 144 Mhz , the signal was weak , but we could complete. This July is excellent with 2 new DXCC (5T6M)

SM5BSZ: The EME conditions were very strange yesterday (July,2), I tried some tests with F8DO and a most unusuall observation here: My own echoes were strong when I listened on the same polarisation as I transmitted on. (TX V = RX V or TX H = RX H) This normally means that stations in the same continent if they transmit Horizontal, I will receive them Horizontal. However at the start of our test F8DO was only heard here on Vertical pol and could not hear me when I transmitted on Vertical. This is surely irregular!! (Spatial offset indicated that I needed to transmit on vertical).
OK, but there is a chance that spatial offset is perhaps 15 degrees. It is also not unlikely at all that the ionosphere is different above France so that F8DO would have 90 degrees polarisation shift. (TX V = RX H or TX H = RX V). In this situation TX H in france could become RX 60 degrees in Scotland while TX H in Scotland would become RX 30 degrees in France. With some QSB on the signals your observation is compatible to such a situation. Should the spatial offset have been very near zero at the time of your observation you may have observed a new phenomenon. Personally I find it hard to believe. I believe that the sporadic E cloud over France was the reason for the change in polarisation between Scotland and France. Just my theory...sure. The ionosphere is typically the same over the entire continent but at this particular time it was different. I think you are right in assuming it had something to do with the sporadic E cloud.

9H1PA: After being a bit inactive due to work and other matters, I found some time to be active. Managed to work two new countries via JT44 , LY2BAW (1 yagi -8wl) and HL/ON4MU (2 x F9FT). These are my first QSO's on JT44. I could hear the tones clearly with LY2BAW, very weak HL/ON4MU. Surely not my last.

K6PF: I was active only for a vy few skeds between June 4-8. Doing some remodeling/refurbishing to my home & hv bn extremely busy with that work. My main objectives were to try to work LU7DZ for WAC #6 & W5ZN for state #44. Not successful, however, with either. Here's a summary of my results:
June 4th: 1900z LU7DZ - not completed. I only copied part of my call.
June 5th: 0414z W5ZN - nil both sides2100z IK2DDR - O(sent) / RO(rcv'd). Easily completed QSO to help Francesco test his new antennas which seem to be working vy well. 15dB snr on peaks. Rx-H & Tx-V polarity.
2122z F8DO - O/RO. Easily completed QSO with Marius off logger. His 8877 HPA & improved preamp are really working well. And to think we ran something like 47 skeds before we initially completed a QSO & now it was so easy. 11dB snr on peaks. Rx-H & Tx-V polarity.
2330z LU7DZ - O/-. Not completed. Vy gud signal fm Eduardo but guess he didn't copy me.
June 6th: 0452z W5ZN - nil both sides. Hi noise here with pulsating S5 noise level.
June 7th: 0000z LU7DZ – nil; 0530z W5ZN - nil both sides
June 8th: 0600z W5ZN - nil both sides

PA0JMV: Stimulated by the 2m IK0BZY QSO (1x6 ele yagi/800W) that I made 2 days ago, OH1JCS, Jojje, proposed to try with me using half of his small aray. Jojje has 2x8 ele yagi on 2WL booms (ski-stick-booms :-) plus no more than 150W and we made 2 successfull EME QSO's before. (see my homepage for details of his antenna)
We tried yesterday with only ONE of his 8 ele yagi's (he claims 12dBd gain) connected, he copied partial calls of me but i decoded nil. Today we tried again, and after 36 sequences (12 decodes) I saw both callsigns plus O-report correctly on my screen! Another row of decodes (6 out of 12) showed lots of RRR's. So after about 50 minutes we had a complete QSO! Jojje copied much more of my sigs, since I have 2x16el =17.1dBd and some more power.
There was absolutely NO GROUNDGAIN involved at either side, Jojje had 25degr elev and I had 40 degr. of elev. Some calculations: OH1JCS ERP was 1750W (150W-1.3dB cable+12dBd)=62.4dBm. Today's theoretical path loss 251.4 dB My ant gain 17.1dBd, that makes about -172dBm received signal level in my preamp. My receive treshold (0.18dB NF+ 0.1dB loss, Tsky=235 K) should be -174dBm in 1 Hz. (JT44) This shows that it was marginal, but truely possible to detect Jojje's signals given the integration-gain by the JT44 decoder. This was real FUN for both of us, and we are looking forward to many more QRP EME contacts! If you have 12dB and 150W, you are welcome to try with me in JT44. For CW I need about 9 dB more ERP.

DF2ZC: This week-end came with quite good moon conditions. I had no skeds but one with Joel, KG6DX (Guam) in QK23 in cw at 11Z on the 3rd. After three one hour skeds with either NIL or one-way this time it was just like a tropo QSO with weak signals. I copied Joel right from the start with 419 and within 5 minutes the QSO was complete. Sometimes it's that easy. Joel works with 1.2 kW to four 2.2 wl yagis (half of the array he was using in the 2nd half of the 80s). So that was a new DXCC now. Many more needed, particularly KH6! Is there really nobody with just a brick, a 10 dBd yagi and a little ground gain? Second highlight was another quick QSO, now 10 minutes. It was with Jojje, OH1JCS (KP10), in JT44. Jojje works with just two 2wl yagis mounted on skiing sticks and 150 w out. Once again it was very straight forward and it didn't quite look like working a QRP station with a mere 3.5 kW ERP. Or even less as he thinks one of the yagis doesn't work properly. You may have a look at his array on Joop PA0JMV'S home page http://home.planet.nl/~1pa0jmv/
EME is possible with even modest set-ups.

IK2DDR: Even if this weather (June 3) suggest me to stay on Lake Garda beach, I found time for some eme activity on last weekend. I worked some new stations: OK2DL #448, RN6BN #449, SK6EI #450. Worked also some other old friend like Tom, DK3EE, (very nice signal from you and i'm very happy to see you active). Unfortunately i wasn't able to work GUAM, KG6DX. I had an one hour sked with him and i heard his signal since the first period, but i did spend something like 15 2 min. periods, sending callsigns and "OOO", with no success. Joel has a good armchair signal on eme, but my suspect is that we found a total one way condition.
I made some simple sun measurements on last few days and i found a very high activity, specially on friday. Friday the Sun noise level on my IC275H S-METER was 9+20 and saturday and sunday was "only" on a S 7 level. (on quite situations i see normally S 5 - S 6). I don't know if this Sun condition made some effect on eme, but for sure it helped some Sporadic E opens. I worked also SV5BYR from Rhodes is. on saturday, via Sporadic E. So, congatulations to those stations that fighting against the hot weather, managed some eme activity. I'll spend particular congratulations to SK6EI (4x17 700 W) that i worked yesterday for the first time.

News and information

TS 2000: Hello all. As promised I have put together some web pages of TS-2000 information at: http://mywebpages.comcast.net/russk2t/. It is not finished but there is quite a bit of info already there. Comcast seems to be faltering a bit today so if you have trouble accessing the site, try again tomorrow. 73, Russ K2TXB

Bad news for future EMEers

I'm watching a show on Discovery about the formation of the moon. On the bad news side, the moon is moving farther away from the Earth, and has been moving away since its formation. The Earth - Moon distance is increasing by about 1-1/2" (4 cm) per year, which means just in the time since. I made my first EME QSO, the moon is almost 4' (1.2m) farther away. Anyone care to calculate how much the EME path loss is increasing per year? On the good side, as the moon moves away, the Earth's rotation is slowing. It seems I never have enough time, so the additional milli-seconds that I've gained over the past few years have really helped me out. Steve, K1FO

Commercial use for the Moon
However strange the idea may sound, TransOrbital of La Jolla, California is taking it and other proposals for marrying high-tech and the Earth's only natural satellite seriously. The company is getting ready to send a commercial mission to the moon and intends to send servers, data, handheld computers, and digital cameras along for the ride.(GM4JJJ)

Hello, **Doppler shift (F2TU):** I improved the software which should not contain bugs for the US configurations. The packs are a EXE which installs all automatically. The complete pack is compressed in 1.53 Mb instead of 2.7 Mb. Download at: http://www.qsl.net/f2tu/Eme_Doppler.htm

My new e-mail address is i2fak@email.it, please sign it and write ONLY here, tnx. 73, I2FAK Franco

New addres PA1GYS: For all, my new address is: G. Hartsuiker, Peperstraat 2 , NL-8451BB, Oudeschoot (fr), The Netherlands

PA0CIS QRV again: Last weekend I was able to install a new elevation system in my tower, replacing the broken "hinge" I was using. I had to take all antennas down, so it was quite a job to do (especially with the high temperature and blazing sunshine we had last weekend...). I still have some calibration to do and not all antennas are re-installed yet, but will be QRV on 144Mc EME again the coming weekend.

WEB-Page(KJ2TXB): just a short note to any interested parties. The W2DRZ AZ/EL controller web page has moved to it's permanent location. The new URL is: http://www.w2drz.ramcoinc.com

Echo tests (VK3AUU): Another problem which seems to be much less understood amongst even experienced amateurs is ground reflection. This not only produces up to almost 6 db of enhancement for those in fortuitous circumstances, but it also produces even larger nulls which are often mistaken for Faraday rotation effects. For instance, if the centre of your antenna is around 10 metres above ground, the not only to you get enhancement peaks at 3, 9 and 15 degrees, you also get nulls (and I do mean deep nulls) at 6, 12 and also to a certain extent at 15 degrees, even if the antenna can be rotated in elevation. Above this the nulls become less significant, but if you live at a northern latitude of 50 degrees, at southerly declinations between 15 and 28 degrees as we currently have, you will be operating in this area and there will be little you can do about it even with Xpol antennas.
So bear a thought for those of us who live in the southern hemisphere when you are framing contest dates when a similar situation applies to northern declinations.
If you want to observe these nulls, I suggest you plot the JT44 signal strength of a station with a longitude about 90 degrees from your own as either his or your own moon rises or sets.

Call change: PA9KT is now PA1T, JO33jf also qrv jt44 now.

HomePage: Hi vhf-dxers, will inform u, that i have now my own domain and changed my homepage-address from http://www.qsl.net/oe6iwg to http://www.oe6iwg.at or direct http://www.oe6iwg.at/funk/index.html

Lost antennas: RK3FG lost his antennas in a big storm.

Once there was a chat about... (Chats of common interest in INTERNET)

-VE1KG: I must be the only guy who did not work 5T6M/Nicolas/Frank. I left it to the weekend not paying attention to the moon declination. When you live as some of us do in the far north east corner of Nort America you have to pay attention to that. Ask Paul, N1BUG, who is 250 miles east of me. I never heard Frank well enough to call it a completion. Or i may have a receiving problem that is not obvious to me. The 2m chat room was very helpful for some of us who could not hear Frank. At least we knew when he was calling or when he went on 6M. First time i was able to talk to dx expedition directly & often. It reminded me a bit of the very funny Verizon commercial when a guy is on his cell phone & move from room to room & says CAN YOU HEAR ME NOW?? HOW ABOUT NOW?? But seriously it was very helpful. Frank did a superb job i must say. At some point i was tempted to make a sked with Frank but what was the point of making a sked with a station you have not heard in 48 hours!! Unless of course you had birdies on his TX freq. In desperation i asked (2X16) Joop to listen for me Joop ,PA0JMV is a guy that can hear a fly breaking wind on the moon. If Joop does not hear you you have a problem. He did not hear me. I am running 4x17M2 & 1500 watts. Not a big station by today's standard but not bad. By then i was panic stricken. The moon was up I just wanted to make sure i was pointed to the moon & not Venus. I was pointed the moon. Then Joop comes on the 2 M chat room & says he just worked is second 2X16 station & the guy was only running 200 watts off the moon. That did not make me fill good folks. Now the bad sides of the 2 m Chat room. Folks that have worked Frank at least once have a sudden urge to talk to him which is distracting to Frank who is trying to listen for me hi! The other bad side of the chat room is those self appointed spotters that insist on telling Frank who is calling & on what Freq. My point is leave Frank alone if Frank does not hear them he is not going to work them anyway. Anyway we should all appreciate to have folks going to far away places which give us the opportunity to work new countries.Thank you Frank for a job well done.
This is my story & i am sticking to it.

-EME vs Es (W8WN): Has anyone gone searching with their antenna to see from which direction signals are actually arriving from the moon when there is sporadic E around. My guess would be that directly pointing at the moon is unproductive, but higher elevations might be needed.
That's something for you VKs (or JAs, or this year, Europeans, with 32 days of Es) to check for. We don't get enough

Es in North America to test something like that!
(However, our new ES alerting service has enabled us to catch a number of small openings that otherwise would have gone unnoticed, and it worked nicely last night).
I would guess that the refraction could really mess up the elevation, if the enhancement of the Es cloud (which can be very small) were in the right place. In that case, tho, you might as well try EME, for, unless the moon was on the horizon, the Es cloud would be too close to expect the ionization to send the 144-MHz signal back to earth. The extra ionization would likely weaken the already tiny EME signal too much, even if you were aimed at the right direction.

-Fiering up new tubes:
K1FO: We had a long discussion on filament verses oxide cathode tubes a while back on moon-net.
Hams continue to confuse indirectly heated cathode tubes, 4CX250 family, 8877, 8938, 3CX800A7, etc. tubes with tubes that have filaments 4-1000, 3-500Z, big commercial transmitting tubes like a 3CX10000 etc.
4CX250's DO NOT have filaments, they have heaters. The primary gettering action comes from the oxide cathode. While Peters's (SM2CEW) advise just fire it up, normaly would not create any problems with a small tube like a 4CX250, I recommend that any oxide cathode tubes be burned in over a short period of time, 15 min at 25% power,15 min @ 50% power, 15 min at 75% power and then full power is OK. The reason for the ramped start up for oxide cathode tube is 2 fold.
1. Oxide cathodes are very similar to florescent lamps. Many of you may have noticed that when you put in a new florescent lamp, when it is first turned on it is dimmer than normal and may flicker. Then over the first 15 min to 30 min of use it comes up to full brightness and the flicker goes away. This is due to aging of the oxide surface that increases its emission. For oxide cathode tubes a slow burn in can increase the total emission and life of the cathode, keeping in mind that it has a much smaller emitting area than a florescent lamp.
2. There can be minute imperfections (high spots) on the cathode surface, left over from manufacturing. These high spots can cause arcing. They are usually burned off when the tube starts to draw cathode current.bringing up power slowly can minimize the effects of any arcs. Along this line I recommend a current limiting resistor (50 ohm / 100 watt) in series with the B+ to absorb any arcs and avoid the effects of damaging arc. I normally have a 50 ohm 100 w resistor in series with my HV and put in a secondn 50 ohm 100 watt resistor (in series) during the first hour of operation with a new tube. In the event of a problem it is better to burn up a $5 to $10 resistor than a $50 to $500 tube.

-FFTDSP tests (PE1LWT): Because of the upcoming upgrading to the Linrad receiver, I was testing my current rx system to compare with the future setup. I connected my signal generator to the input of my preamp, and attennuate the signal down until it disappeared from my fft screen. With this setup I can go to -169dBm until it disappeared from the FFTDSP screen.. At -160dBm I loose the sound in my headphone. Question: Are these figures state of the art? Setup: MGF1801 (0.2db nf) 40db gain in front of mixer of LT2S (modified). FFTDSP is getting audio through a separate receiver(FT100 at 8,8MHz) (SSB 2,2Khz BW) connected to the IF (8,8MHz) output of my TS850. Audio at my headphone is coming from TS850 (CW 500Hz) and DSP59+ (25Hz BW). Just wondering if someone else did sort of test before and if the result are close to my figures.
SM5BSZ: Your noise floor is -173.8 dBm/Hz. You loose the signal at 13.8 dBHz which means when it is equal to the noise in 24 Hz bandwidth. This is not really a relevant test, put an automatic keyer to the signal and find out when you copy 75% correctly. I would guess it is around -155 dBm. You loose it on the FFTDSP screen at 4.8 dBHz. For a steady carrier you can easily set Linrad so you will see it well at -180 dBm. You could select 0.2Hz bandwidth for S/N=0dB or (S+N)/N=3dB. Without averaging the signal will be hard to find, but one can see it. With each waterfall line the average of 5 spectra for a total time of 12.5 seconds for each line, a -180 dBm signal is pretty strong and easily detected. This is fine for qrss60 or qrss120:) I am contemplating a qrss mode for Linrad. In weak signal CW mode there is a limit for how narrow one can make the bins in the waterfall because the waterfall is calculated for the entire bandwidth. On my own system with 96kHz and a PentiumIII at 600 Hz the limit is at about 0.2 Hz. qrss mode would produce a waterfall from the narrow bandwidth of the baseband with practically no limitation of the bin bandwidth. Not very useful for 144 MHz EME;)

-Grounded grid amps (PA0OOM):
Can all tetrode tubes be operated with grounded grid(s)? I got my old QBL 5/3500 amp back and like to fire it up again. Grid driven it already has low gain so 100 Watts more does'nt matter AC grounding both grids, and DC via a resistor,to be able to monitor currents. Set bias with an adjustable neg. voltage on G1 Cathode DC grounded.
F6DRO answers: My own 2mtr QBL amp is a classical one: grid driven, needs to be uniteralized otherwize you get 3/4Kw oscillator! I have a neutralizing cap on the screen and a big 50 ohm resistor on input to ground. So gain is around 13db.
F2CT (formerly F6CJG of DX fame), build one like you suggest and drived the cathode, the amplifier was stable. Under 4750V/1.2 A 150w in he got 3500 out.
F1ANH build one called "zero bias", that is to say that screen and grid were grounded both RF and DC. He told me he got around 10db gain. So choose your way.

Treasury INTERNET

http://mywebpages.comcast.net/russk2t
TS2000 – information
www.pcmag.com/article2/0,4149,1200791,00.asp
Commercial use for the moon
http://www.w2drz.ramcoinc.com
W2DRZ AZ/EL controller
http://www.qsl.net/f2tu/Eme_Doppler.htm
Software F2TU
http://www.oe6iwg.at Homepage OE6IWG

EME News

Editor: Bernd Wilde, DL7APV

Summer time means vacation, so everyone was away. Activity was low, sitting in the garden is the prefered mode to waste the time. We had a unusual warm summer in central europe. Hope to cu all in the upcoming Contest season.

ARRL EME contest dates 2003

October 18/19, November 15/16. JW/SM2BYA will be qrv during first leg with **32m dish**. So **everyone** with **two yagis + 50w** should be able to work him!! See next page.

ARRL Rules

The **suggestion** is to **change** the **multi**pliers to count the other 48 states as multipliers in the contest. This could help to get **more activity** in the contest and give others new States.

We have talked about this for years but have done nothing about it. I also talked to Joel Harris Vice presented of ARRL and he thought it was a good idea. If you are interested in the change? Send your request to Gene Zimmerman at W3ZZ@arrl.org.

I myself would like to see this put in place. Don't send your request to me. That is only my opinion. **KB8RQ,** Gary.

432 MHz

New Stations:

OK1AYK (432), Jaromir in JN78gx with Antenna=parabola 5 m, OutPower=800 watt out, RX 1801 - 0.5 db

I was QRV on 7.6.2003 from our clubstation **DL0AO**. I worked DK3WG on sked o/o, DL7APV on random 439/449, JA6AHB on random o/o. Heard UA3PTW (worked already), VK4AFL and HB9AHD (not sure). Found out that it is hard on 70cm random with lower power, as sequenzing is very different from station to station. So TX'ed very often at the same time with the station I called. This practice is funny for 559/559 QSO's, no doubt. If you are keen on new initials a clear changeover would be very helpful.....I am working 2m EME with 2x12 El. from at home, so I know what weak signals are, hi. Hope to get more practice, soon. So watch out for our small station....Rig: 4x 11 lamda DJ9BV, GS31b with 600W, NE327 S01 with 0,4 dB NF, 3/8" stacking, 10m 7/8" TX line. Tom, DJ5RE for the clubstation DL0AO

DL9KR: Friday, June-27, worked *KM5A* for his first 432 EME QSO on sked with an easy 559/539 exchange, my #782. With that kind of signal Steve KM5A will be easily workable. He was **aiming** with **leveling bubble, protractor and compass**, the 4yagi array being movable on a "roller coaster" sort of pedestal.--- Yesterday I called CQ on a deserted band and was answered by DK8VS. So Werner seems to be still active. Have a good one & 73! Jan.

KM5A: made **first 70cm** contact.with DL9KR. Steve thanks to the following for helping him get on 70cm: K5JL [hardline advice], K1RQG [net control and equip], KL6M [never get discouraged], WA1JOF [power requirements], W7CNK [took time to put signal on], K2DH [test signal and more equipment], K1FO [care and feeding of amp]. This was Steve's **first EME** ever contact. Still manual control of antenna steering. [armstrong] (DN83hu)

DL4KG: I am QRT on 70 cm for a while as I am rearranging my antenna setup. I will come back with the old antennas (4x8.5 WL 9BV) but with open feeder made of 6 mm Al tubes. I bought a Micomm preamp from DJ5NV who is moving from 70 cm to 23 cm. The new preamp has 0.31 dB NF and 21 dB gain. That all should improve the system by app. 1 dB. I added also automatic antenna tracking to the system and it seems to work fine. 73 Gerald.

HB9Q wkd 2003 Jan – June

V=vertikal pol. H=horizontal Pol.

DF3RU	V	DJ3FI	H	DJ6MB	H
DJ7GK	V	DK3WG	H	DL0AO	V
DL4KG	H	DL5LF	V	DL7UDA	H
DL9KR					
EA3DXU	V				
F2TU	H	F6HZL	V	F6KHM	H
FY5DG	H				
G3HUL	H	G3LQR	H	G3LTF	H
G4ALH	V	G4RGK	H	G4YTL	H
HB9SV	V				
I2RV	H	I5CTE	H	IN3AGI	V
JA2TY	H	JA6AHB	H	JJ1NNJ	H
JR9NWC	H				
K1FO	H	K4EME	H	K4QI	H
K9SLQ	H	KE2N	H	KJ7F	H
KL6M	H	KL7HFQ	H	KU4F	V
N9AB	H				
OE3JPC	V	OE5EYM	V	OE5JFL	V
OE9ERC	V				
OK2BDQ	H	OM1TL	V		
ON5OF	V				
OZ4MM	H	OZ6OL	H		
PA0BAT	V	PA2CHR	V	PA3DZL	V
RA3LE	H	RZ3BA/1	H		
S51ZO	V	S52CW	V	S53J V	
SK0CC	H	SM2CEW	H	SM3AKW	H
SM5IOT	V				
SP6JLW	V				
UA3PTW	V	UA9FAD	H		
VE6TA	H				
VK3UM	H	VK4AFL	H		
WA4NJP	V	WB0GGM	V		
YO2IS	V				
YU1EV	V				

70 diff. Stations, 29 Vertical, 41 horizontal pol.

Tnx fer info Dan

Expeditons

Good news - the **JW/SM2BYA** 432 MHz EME operation is going to go ahead: About a month ago we filed a scheduling request for the **EISCAT Svalbard Radar 32-meter antenna**

for the weekend October 18-19, 2003, ie the first ARRL EME contest weekend. It now appears there is about a 95 % likelihood for us to get the full contiguous **48-hour** time slot from **Oct. 18th 00 UT to Oct. 19th 24 UT**! This is much better than we ever dared hope for.
This operation will be predominantly CW and some SSB. Sorry, no JT44 and **no skeds**. Since Oct. 18/19 is one of the busiest contest weekends of the year, we have decided to pick a transmitting frequency and a listening band high up in the CW segment, to minimise the risk of mutual interference between our operation and the regular contest traffic. The plan is for JW/SM2BYA to use 432.073 MHz for transmitting and .075 - .080 for receiving.
No SSB frequencies have been selected yet. To comply with the Region I band-plan, any SSB operation should be above 432.150. We are aware of the problems that may result because of the non-alignment of the band-plans in Regions II and III and are still thinking about how to handle the issue.
Due to the high latitude (78 N) the moon will be continuously above the horizon for the whole 48-hour contest period, so everybody should have a fair chance at a contact.
The ESR antenna has about 41 dBi gain at 432, so two long yagis and 50 watts should be enough for a CW QSO with JW/SM2BYA. Questions to sm2bya@telia.com
73 Gudmund SM2BYA

LY2AAM: it is doing me pain to let you know that all EME activities on 70cm were cancelled for the Expedition YL1A / LY2AAM. During the last commissioning of the station I had a fatal failure in the power amplifier. Because of leak of time there was no possibility to fix it and all investigations for a replacement failed. vy 73 Oliver, DL1EJA soon on 70cm.

HI3TEJ: I will be over in HI land to talk about setting up a permanent eme capable station, 4x10 dj9bv (old design) with HI8ROX and HI3TEJ. So looking for some cosponsors to help them out. They have a FT847 from yaesu, and I'll bring over a 2x11 and 2x19el so that they can start on the sats. We are not fixed yet on the 70cm design, but i'll have enough aluminium for them to construct some yagi's big enough for eme setup. Knowing that HI3 never bee active on eme would those interested in helping contact hi8rox@hotmail.com or teddyjiminez@hotmail.com to see how things can be arranged.
Perhaps someone is interested in joining my next trip somewhere spring next year if not before. Those wanting some new blood on 2/70 now ur chance ! Johan, ON4ANT

432 & up (net) news

DK3WG wkd DL0AO and S53J #396 in extra skeds, FY5DG had on .080 a carrier and move, sri I received E-mail to late. ES8X, heard and not complete OK1AYK and KM5A. 73,gl via moon Jurgen, DK3WG

FY5DG needs 2 GI7B tubes to try fixing my amp.
I was obliged to cancel all the sked after my PA blew up sunday morning. The last contact were F6KHM and VK 4 AFL on 432 EME. Thank you. Chris sylvie.albrieux@wanadoo.fr

I am in the process of putting my 4 yagi array up for 70cm EME (Ex GM3JFG). Mark, **GM4ISM**

K7ICW: Al is looking for EME contacts on 70cm JT44. Any interest, contact Al

S53J 2m + 70cm Antennas

RA4AOR: Uri finished the 70cm equipment in July, but not yet QRV 70cm. Father's call UA4ALU.

UA3PTW wkd on Random FY5DG....congrats

VK3FMD is looking for large 70cm and 23cm stations wishing to try cw or JT44 with him. Please e-mail for possible skeds to Charlie (qf22mc)."Charlie Kahwagi" ibnkarim@bigpond.com

I got 70cm JT44's license at EME from japanease goverment. So I can be qrv at JT44 and cw on 70cm. HPA output at JT44 is 700W and I don't have been any sked yet at JT44. I want some sked at JT44 on 70cm. So if you have a sked with me please send me email. Thanks and 73 Shu, **7M2PDT** pdt_umesan@ybb.ne.jp 16xFO14el 1.2KW out at CW and 700W out at JT44

23cm

HB9Q reports: Due to too much QRL we could only be QRV limited time. We did also some improvement work (many thanks Dominique, HB9BBD, for helping us with the profes-

sional lab-equipment and the great experience). The result on 432 is quite okay, we measure 23 dB sun noise, so we are only a few dBs from theoretical maximum. On 1296 we still are off some 6 dBs (our sun noise is only 23 dB). We will continue to improve our RX this summer to be ready for the ARRL EME Contest. We may also work on our TX side to get some more power. Our RIG is a 15 m dish and 500W circular on 432 and 300W on 1296. For more info check www.hb9q.ch

We are always interested to try with new stations even if they are marginal. Please contact us! If you like to get last minute info of our activities by e-mail drop us a message at dan@hb9q.ch

HB9Q wkd 2003 Jan – June:

DF3RU, DF4PV, DJ9YW, DK0ZAB, DL1YMK, DL8OBU
F2TU, F5VHX, F6CGJ, F6KHM
G3LQR, G3LTF, G4CCH, GW3XYW
HA5SHF,
HB9BBD, HB9BHU, HB9JAW, HB9SV
I0UGB ,IK2MMB, IK3COJ
JA6AHB, JA6CZD, JH1EFA
LX1DB
OE5EYM, OE9ERC, OE9XXI
OH2AXH, OH2DG
OK1CA
OZ4MM, OZ6OL, OZ9AAR
SM3AKW
ZL1KA
ZS6AXT
VE6TA, VE7BBG
K0YW, K2UYH, K4QI, K5GW, K5JL ,K7XQ, K9BCT/4, KU4F, N2UO, W2UHI, W2UHI, W5LUA, W7BBM, W7SZ, WA4NJP, WA6PY
56 different Stations

Hope to work you soon! vy 73 es happy moonbouncing Dan, HB9CRQ / KT6Q head of HB9Q
www.hb9q.ch dan@hb9q.ch

QRM 70 & 23cm

Zdenek OK1DFC informs, that the new Galileo (european GPS) sat-system will enter our bands. It seems that 70 + 23cm will be occupied by this system. For more info see:
http://www.citel.oas.org/wrc.asp
http://www.cqdl.de/wrc/
http://www.iaru-r1.org.za/
http://home.hccnet.nl/a.dogterom/Marino/C5_Report_final.pdf
http://www.arrl.org/news/stories/2002/10/09/100/?nc=1
http://www.leclairtelecom.com/7C_164_02_02.doc
www.esa.int
http://europa.eu.int/comm/dgs/energy_transport/galileo/documents/index_de.htm
http://europa.eu.int/comm/dgs/energy_transport/galileo/documents/technical_de.htm
http://europa.eu.int/comm/dgs/energy_transport/galileo/doc/galileo_stf_ion2002.pdf

EME-TOPLIST

Call	Sqr Small	DX CC	US-States	WAC	WAS	Initials #
144 MHz						
I2FAK	540	64	122	50	1988	1993	1241
HB9Q	476	66	112	50	1986	1994	954
CT1DMK	143	0	41	0	--	--	148
DM2BHG	140	26	40	28	--	--	221
YO2AMU	132	18	44	20	2001	--	167
UA3PTW	129	25	33	20	--	--	165
OK1DIG	125	28	37	25	--	--	155
RW3PF	99	23	26	13	--	--	103
DD0VF	92	23	33	19	--	--	101
OK1IA	12	5	11	0	--	--	12
OK1MS	0	58	103	50	1982	1992	812
432 MHz						
DL9KR	391	53	83	50	1978	1987	768
DJ6MB	298	42	62	44	1984	--	355
OK1KIR	254	45	63	44	1982	--	359
DL7APV	168	31	38	42	1984	--	220
OE9ERC	148	30	36	28	1993	--	226
HB9Q	143	31	37	25	2002	--	194
UA3PTW	103	26	30	22	2002	--	117
S52CW	90	26	27	22	--	--	106
UT3LL	82	25	21	20	--	--	82
OK1CA	71	24	26	22	1996	--	121
CT1DMK	61	0	19	0	--	--	64
OK1DFC	39	17	19	11	--	--	42
OK2BDQ	29	14	16	7	--	--	32
RW3PF	9	5	8	2	--	--	9
1296 MHz						
OE9ERC	168	32	40	30	1993	--	268
OK1KIR	148	32	39	28	1989	--	190
DJ9YW	124	29	38	23	1998	--	143
HB9Q	102	25	29	20	2001	--	129
CT1DMK	96	0	24	0	--	--	102
OK1DFC	78	23	32	15	1999	--	98
OK1CA	76	26	26	19	--	--	108
OK1UWA	12	10	11	5	--	--	22
2300 MHz						
OE9ERC	54	16	25	9	--	--	58
OK1KIR	39	13	19	10	--	--	41
OK1CA	19	11	15	2	--	--	20
OK1UWA	11	7	10	1	--	--	12
3400 MHz						
OK1CA	1	1	1	1	--	--	1
5760 MHz						
OE9ERC	23	12	16	4	--	--	25
OK1KIR	16	10	12	3	--	--	17
CT1DMK	15	0	10	0	--	--	16
10368 MHz						
OK1UWA	24	10	14	3	--	--	25
OK1KIR	19	9	13	2	--	--	21
CT1DMK	19	0	9	0	--	--	20
OE9ERC	11	8	7	3	--	--	11
OK1CA	7	4	5	1	--	--	8

Software/Internet

My software "Eme Doppler Control" is on my Web page. This software was written for EME operation, and particularly in order to compute the value of the Doppler shift, and to automatically correct the RX and TX VFO's by this amount. Moreover, it also gives information about the position of various celestial bodies: Moon, Sun, Radio sources. Download at:
http://www.qsl.net/f2tu/Eme_Doppler.htm
Philippe Pierrat - F2TU http://www.qsl.net/f2tu/

I would like to inform you, that from 1.st Jun 2003 is web www.emeconference2002.cz close. All what is include on this web, we have move to www.emecz.cz or on www.vhf.cz Have a nice day. Regards Zdenek OK1DFC

MARS

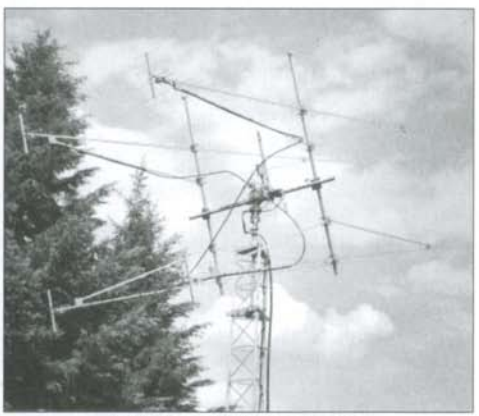
Dear Mars Radio Amateurs,a test of the Mars Global Surveyor and Mars Odyssey is currently underway, and there is a possibility that amateur EME class stations could detect one or both of the spacecraft. The object of the test is to measure the signals using the 46 meter dish at Stanford University. Both spacecraft will be transmitting a pure carrier at 437.1 MHz. MGS will have its CW beacon on continuously. Therefore, MGS is the best bet for detection by amateurs. The power is approximately 30 dBm EIRP at its peak from Mars and will vary as MGS orbits the planet with occultations every orbit. A document listing occultation times for MGS (and Odyssey) is available at:
http://members.verizon.net/~km1p/MGS_UHF_Test_2003.pdf
The largest signal will be seen just before ingress and just after egress when the UHF antenna on MGS illuminates in the Earth direction. Antenna pointing information can be generated using JPL's HORIZONS system at:
http://ssd.jpl.nasa.gov/horizons.html
Although MGS transmits at 437.1 MHz with right hand circular polarization (RHCP) there will be a varying Doppler shift to the signal of tens of kilohertz. It is unlikely that amateurs will have enough sensitivity to see the signal unless Doppler compensation is applied to the received signal.
JPL/Stanford will be testing again in **late August** during Opposition when signals are expected to be 3 dB better. For up to the minute information subscribe to the mars-net list by sending an e-mail to :
majordomo@alum.wpi.edu with the words
"subscribe mars-net" in the body of the e-mail.
Sincerely, John Callas, Mars Exploration Rover Project Science Manager & Joe, KM1P

SETI

Patent Granted for New SETI Antenna Array
SETI received a US patent for a new microwave antenna design being used in the next generation of radio telescopes. The patent will enable SETI scientists to pursue commercial application of their technologies, hopefully generating funding to support their scientific efforts.
Patent Number 6,593,876, "Adaptive Microwave Antenna Array," covers circuitry for combining the signals from multiple small antennas (such as backyard satellite TV dishes) to economically duplicate the performance of much larger, costly single-dish antennas. The technique allows the array to reconfigure itself automatically under computer control, without physically moving individual antennas. It has been tested over the past three years by SETI League volunteers in their Very Small Array (VSA), a research prototype funded in part by grants from the American Astronomical Society and the American Radio Relay League. **More** at:
n6tx@setileague.org or at www.setileague.org

LAST

Hope you had a nice summer and you prepared to make some noise next contest. **73 Bernd DL7APV**



FY5DG 432 MHz antenna

RZ3 BA/1 41 el. 432 + 2m

Tropo Reports

2m, 70cm and up

Editor: Wolfgang Schneider, DJ8ES
DJ8ES@t-online.de

Dear DUBUS-Readers,
tropo season has been started. A lot of interesting reports came from all over Europe for the summer months May, June and July. Specially in the end of July great tropo contacts were possible from F, G, GW and EI to EA, CT and also to EA8!
The great tropo opening from 4. – 10. August in the north sea area and also on Aug. 13th to F and EA will be reported in the next issue of DUBUS. Thanks for all your logs I received yet.

2m

ON4ZN, JO21FB, wkd:

07/06/2003	EA2JG	IN82LK	1118 km
07/06/2003	TM8MB	JN35KV	602 km
07/06/2003	F5KOI/P	JN06JG	599 km
07/06/2003	F5KDC/P	JN15VQ	601 km

and 10 more F above 500km, tnx fr info Walter

HE2MM/p, JN36GU, wkd on 5./6. July (>700km):
OK2KYC (JN99BM) 907km, OM3KEE (JN88UU) 862km, F8DBF (IN78RI) 847km, OK1KIV (JO80AN) 809km, OK1KHQ (JO70RL) 768km, F0DTU/P (IN93DH) 757km, OK1KCR (JN79VS) 756km, OK1KPA (JN79US) 751km, EA2URE (IN93IA) 749km, OK1OTS (JO70NJ) 743km, ON1DT (JO61WK) 737km, DB0FAW (JN20KI) 735km, OK1KKJ (JO70OD) 735km, OK1KUT (JN79OW) 725km, DL0SAW (JO52KR) 723km, PI4GN (JO33II) 723km, DA0HQ (JO61VC) 709km, DL8YET (JO61MO) 708km, EA3EZG (JN02IB) 705km, tnx fr info Yves (HB9DTX)

EA1DDO, IN53UI, wkd (>800km):

08/07/03 16:30	EB8AYA	IL18RI	1823km
08/07/03 16:40	EA8/DL6FAW	IL18BP	1845km
08/07/03 17:20	EB8BTV	IL18QI	1826km
08/07/03 18:02	RW1ZC/MM	IL10NU	2620km
08/07/03 19:20	EA8BPX	IL18SK	1811km
08/07/03 19:45	CT/DJ1SP	IM15FX	1138km
08/07/03 19:57	EB8CDX	IL18OI	1832km
08/07/03 20:03	RW1ZM/MM	IL10NU	2620km
09/07/03 19:33	G4RRA	IO80BS	889km
11/07/03 18:51	EI5FK	IO51RT	922km
12/07/03 08:30	GD0EMG	IO74QD	1228km
12/07/03 14:31	EI8IP	IO63NR	1158km
12/07/03 14:39	EI4CI	IO63RM	1137km
12/07/03 15:03	EI7IR	IO53WE	1093km

and also wkd on 30.7. – 1.8. (>700km):
EI8JK IO51, EI5FK IO51, GW3LEW IO71, G4KWQ IO92, GW8ASA IO81, F6HRO IN88, M0RDX IO83, F5IHP IN88, G3KEQ JO01, G8VHI IO92, G4RRA IO80, G3LTF IO91, G3JHM IO91, F9IE IN86, F6FAI IN88, G0TPH IO92, G8CQA IO81, F6KSV IN78, G3MQY IO80, F8DBF IN78, G7RAU IO90, F6GYJ/P IN96, F8BON IN96, F6CCH IN96, F6AQI IN96, F1CPX IN97, G4YTL IO92, G4AEP IO91, G0RRJ IO91, G4RGK IO91, M5BFL IO91, M5FUN JO00, M5BXB IO91, G8HGN JO01, G4DBL IO91, G0BBB IO91, G4NNS IO91, G4DEZ JO03, G4EAT JO01, F6CBH JN19, ON1CA/F IN86, G8RWG JO01, G4ZFJ JO01, GX6GEC JO01, G4NOO JO01, G4EZP JO01, G3YDY JO01, F1CBC JN09, G7HCO JO01, G3LQR JO02, G3YVR IO91, F4DRH IN88, F6IFR JN09, F5NXU IN97, F1FSU IN99, F5VHX JN04, F5LJA JO10, M5FUN JO00, F1RJ JN18, F4BYF IN97, F/G4XKV JN07, ON4CLQ JO11, F6GEX IN97, F8LDX IN99, F1DGF JN04, F6CWN JN09, PA3AYD JO21, PE1HWO JO21, PDOPVL JO22, PE1RLF JO32, F1GPL JN05, DJ9CZ JO31, PA1TK JO22, F1RCX JO10, DL6BF JO32, ON1GZ JO20, PA3DYS JO21JP, PD2 JO22MD, ON1DO JO11, F1EBE JN09, F4BJQ IN98, DB8KJ JO30, DL6YBF JO31, DB2KA JO30, ON4AMX JO20, F0EBT/P IN87, DF1BN JO31, DK0HH JO30, ON7EH JO20, F5RMK IN98, F6CBH JN19, PA3AOH JO31, PA2CHR JO22, ON4LN JO20, F6BQX IN96, DL1KDA JO30, F1AFJ JN06, F0DBD JN08 F5ADT IN94, F5IVP/P IN95, F5IDG/P IN87, F1FEM JN19, F1UVN JN19, F8AIL JN19, F4SGU IN97, F8LDX IN99, F6BZA JN05, F1CIA IN97, F0EAZ IN98, ON4LDP JO10, F0EBT/P IN87, F1CQK IN77, F1SJX IN93, F0CYF IN98, F1AXS/m IN93, F1UGK IN96, F1MWV IN95, F6FHP IN94, F6APE IN97, F1JOG IN94, F5GBS IN97, F0DIH JN17, F4CKV JN16, F5PEJ JN09, F5SVO IN97, F5CBU IN88, F1PUX JN16, F1BQX JN18, F6BGR JN18, F5XE JN18, F6ELI IN94, F5IGK JN09, F0EFG/P IN95, F5HGO JN05, F4DXX IN97, F8CFE IN98, F4CSG IN96, F0DPT IN93, F1BKM IN98, F1BBK JN08, F4BWJ IN93, F6GCT JN18, F4CEY JN07
rig: 100W, ant: CushCraft 17B2, tnx fr info Max

DH9NFM, JO50RF, wkd (>700km):

28/05/03 17:47	G7RAU	IO90IR	902km
01/06/03 09:08	IW2DFM/6	JN63OI	776km
18/07/03 12:47	IA5/IK2OFO	JN52BT	831km
19/07/03 15:08	IK6LZA	JN63GR	727km
19/07/03 20:02	F6IFR	JN09TT	703km

tnx fr info Chris

EA8/DL6FAW, IL18BP, wkd (>800km)

06/07/03 09:34	EA4EJR	IM68KQ	1490 km
06/07/03 09:36	CT1DHM	IN61CC	1657 km
06/07/03 09:39	CT1EPS/P	IM57XI	1329 km
06/07/03 10:00	CT1FBF/P	IM58ML	1366 km

06/07/03 10:02	CT1DYX	IN51QD	1621 km
06/07/03 10:33	CN8UN	IM63NX	1198 km
06/07/03 10:37	CT1ANO	IN51RE	1628 km
06/07/03 10:41	EA1FDI/P	IN52LV	1768 km
06/07/03 11:38	CT1FOH/P	IM59RX	1519 km
06/07/03 13:19	CT1EKD	IM59IB	1399 km
06/07/03 15:40	CT1EPS	IM57XC	1310 km
07/07/03 19:42	5T5SN	IK28AC	1710 km
07/07/03 20:08	CN8KD	IM63NX	1198 km
08/07/03 12:02	RW1ZC/MM	IL10NU	870 km
08/07/03 12:29	EA1DDO	IN53UI	1843 km
08/07/03 12:52	EA1DKV	IN53TH	1835 km
08/07/03 12:58	CN8UN	IM63NX	1198 km
08/07/03 14:53	CT1ANO	IN51RE	1628 km
08/07/03 15:00	EA1BLA	IN53UM	1859 km
08/07/03 15:16	CT4RK	IM57NW	1325 km
08/07/03 16:14	CN8KD	IM63NX	1198 km
08/07/03 16:18	CT1DIZ	IM58KP	1371 km
08/07/03 16:41	EA1DDO/P	IN53SD	1816 km
08/07/03 18:23	CT1ILT	IN50RU	1598 km
08/07/03 18:24	CT1CJJ	IN50RU	1598 km
08/07/03 18:38	CT1EKD	IM59IB	1399 km
08/07/03 18:41	CT/DJ1SP/M	IM57PM	1303 km
08/07/03 19:12	EA1TA	IN53SI	1836 km
09/07/03 11:41	EA1AK/7	IM66VP	1404 km
09/07/03 11:42	CN8NK	IM63NX	1198 km
09/07/03 12:00	RW1ZC/MM	IL10NU	870 km
09/07/03 14:02	EA7BYM	IM66UM	1390 km
09/07/03 15:14	EA7GBG	IM67QI	1423 km
09/07/03 15:40	CT1DIZ	IM58KP	1371 km
09/07/03 15:48	CT1DRB	IM58LP	1376 km

Rig: 40 watts, 9 ele Yagi, tnx fr info Norbert

ON4ZN, JO21FB, wkd:

08/06/03 F5KAY/P JN04AR 780 km
and some more stns up to 550k, tnx fr info Walter

F5SDD JN23RF wkd (>700km):

04/06/03 21.35	HA8UG	JN97SA	1180km
11/06/03 17.48	EA9HA	IM85MH	1138km
12/06/03 17.52	7X2DS	JM16PR	745km
15/06/03 13.35	F4DLS	JN19SE	678km
21/06/03 05.57	F6CBH	JN19BH	723km
30/06/03 20.53	I8MPO	JN70FP	797km
10/07/03 19.34	EA9MH	IM85MG	1142km
15/07/03 17.23	7X2LS	JM16MT	742km

rig: IC211E Mutek Frontend, PA 2*4X150, 11el
tnx fr info David

LA0BY, JO59, wkd May – July (>700km):

PE1PNV/P (JO22WJ), DH8GV (JO33), DF8AE (JO41GX), DC6BB (JO33UK), DK3QZ (JO31LP), DF0WD (JO42FD), DL6YEH (JO32VA), PD0RKC (JO33AD), PD5DP (JO22XU), PE1OYI (JO33DA), PD2DB (JO22MD), DJ5JS (JO31SL), DL6NF (JO33NR), DG9BDV (JO33), PD2JVE (JO22VJ), PD0CIF (JO32KT), PD4HDB (JO32HN), PD1ANQ (JO31EW), PD1AIQ (JO22), PD0PVL (JO22XE), DF5HD (JO43WN), PA3AYD (JO21UU), DM1HD (JO31GD), DG3OBE (JO33), PE1RCU (JO21UU), PA2CHR (JO22XA), DB4BU (JO33OO), DG9BHM (JO33VF), DL2NUD (JO63), DL8CMM (JO52VM), PA3GFY (JO23SB), DG5BD (JO43HM), DC2OD (JO42), DK5DQ (JO31PH), PE1OLM (JO23TF), PD3UX (JO32LE), PE5TDM (JO32FA), DD7DAC (JO31UH), DD2JA (JO31LH), DH5BAT (JO33VN), PD0RFU (JO32LS), PE9JVC (JO33AN), PI4ZUT (JO32CD), PE7PMT (JO32LF), DC7BQ (JO42JF), DL5EBS (JO31LH), PE2DVH (JO33IK), PA1AT (JO32), DL1YAW (JO41DX), PE1KXH (JO21XD), PE1RLF (JO32CG), DO7EG (JO31CQ), PD0LKM (JO32JX), PD5LO (JO32HR), DL1BKX (JO42PU), DO2BO (JO33), PA5WT (JO22HG), LY/DH8BQA (KO16AB), PA3CEE (JO33), LY2AAM (KO06VB), SP1CNV (JO84CF), DK5DQ (JO31), DL3SWS/P (JO53WH), DF0CI (JO51CH), PA6C (JO33FB), DF0YY (JO62GD), DL0GTH (JO50JP), OK2KKW (JO60JJ). tnx fr info Stefan

DK3WG, JO72GI, wkd (>700km),:

01/06/03 14:43	9A2RD	JN65TF	795km
02/06/03 09:10	IK2DDR	JN55GN	809km
02/06/03 10:06	F1JRD	JN13WO	1249km
02/06/03 10:46	GW4DGU	IO71SV	1292km
02/06/03 12:24	I4XCC	JN63GV	951km
03/06/03 19:51	LA2Z	JO59EJ	824km
04/06/03 12:40	IK0BZY	JN61GW	1165km
07/06/03 15:33	TM9R	JN27UR	812km
08/06/03 08:29	9A7D	JN95CI	822km
09/06/03 14:44	GD0EMG	IO74QD	1286km
14/06/03 10:10	F1JRD	JN13WO	1249km
14/06/03 12:04	IK4DRY	JN64BL	893km
16/06/03 12:30	SM2CKR	KP03DQ	1303km
23/06/03 09:58	SK3MF	JP92FW	1202km
25/06/03 19:20	G7RAU	IO90IR	1107km
25/06/03 19:49	G1WUU	IO80FK	1266km
25/06/03 20:11	G4RRA	IO80BS	1279km
25/06/03 20:30	ON7UC	JO11ND	796km
30/06/03 10:16	F6FHP	JN94TR	925km
01/07/03 09:23	IK4ADE	JN54OE	940km
02/07/03 10:06	RK3FG	KO86HP	1499km
03/07/03 12:45	ES5RY	KO38IJ	1022km
14/07/03 17:04	G4LOH	IO94EA	1100km
28/07/03 16:29	9A/DL4FCS/p	JN65TF	795km

tnx fr info Jürgen

OZ1IEP, JO55XU, wkd (>700km):

03/06/03 17:18	ON4KHG	JO10XO	53/52	789km
03/06/03 17:25	ON1AEN	JO10VW	51/52	768km
03/06/03 18:18	G4SWX	JO02PB	54/54	814km
03/06/03 18:31	DL0EE	JN49GK	53/53	707km
03/06/03 19:02	DB8KJ	JO30CM	56/57	705km
03/06/03 20:56	SK3MF	JP92FW	52/55	868km

tnx fr info Carl

JY9NX, KM71WW, wkd:

29/06/2003 14:30 9H1XT JM75GV 2011km
Rig: 100w + 7 ele yagi. tnx fr info Koji

70cm

CT1HZE, IM57nh, wkd:

03/08/03 0952	EA8BPX	IL18sk	59/59	1250km
03/08/03 0953	EA8TJ	IL18ri	59/59	1250km
03/08/03 1020	EB8AYA	IL18ri	59/59	1250km
03/08/03 1112	EA1FDI/p	IN52lv	59/59	500km

Rig: FT817, 5w, 8 ele flexa in the garden 3 m agl

DH9NFM, JO50RF, wkd (>500km),:

03/05/03 21:55	ON7WR	JO20EP	57/57	503km
04/05/03 04:55	S51ZO	JN86DR	59/59	527km
27/05/03 16:55	IW2BNA	JN45ON	54/54	545km
28/05/03 16:48	I4GBZ	JN54VV	57/57	593km
16/06/03 18:06	SP9JDP	JN99HW	53/51	512km
10/07/03 11:30	I4LUI	JN64AK	55/55	645km
10/07/03 11:32	I4STU	JN54IW	59/59	591km
10/07/03 11:39	IW3HRT	JN55TG	55/51	551km
10/07/03 16:03	IK4ADE	JN54OE	59/59	672km
19/07/03 12:51	SP9JDP	JN99HW	57/57	512km

tnx fr info Chris

DK3WG, JO72GI, wkd May - July:

25/05/03	09:20	DL5UL/MM	JO85VW	451km
25/05/03	09:32	DL5UL/MM	JO95AX	463km
25/05/03	09:39	DL5UL/MM	JO96AA	467km
28/05/03	17:28	YL1A	KO07UN	737km
10/06/03	17:11	LY2IC	KO14WW	678km
10/06/03	17:32	SK4BX	JO79OF	765km
10/06/03	18:18	LA2Z	JO59EJ	824km
18/06/03	11:16	SM1SBI	JN97FK	614km
21/06/03	14:41	HA5KDQ	JN97LN	619km
21/06/03	15:42	HA0O/9	KN08QC	677km
21/06/03	19:03	HA7P	JN97KW	579km
22/06/03	08:44	S51ZO	JN86DR	638km
22/06/03	09:54	S59R	JN76OM	650km

tnx fr info Jürgen

IW2DVK, JN45MQ, wkd (>500km),:

27/05/03	1943	9A3PA	JN85EG	575km
08/06/03	1240	ON4GG	JO20AR	672km
08/06/03	0812	EA3BB/P	JN12IG	634km
08/06/03	0811	EA3FTT/P	JN12IK	622km
08/06/03	0741	I0JXX	JN61GV	507km
30/06/03	1725	IT9TVF	JM68OD	906km
05/07/03	1626	9A6V	JN74OM	501km
08/08/03	1729	I4CVC/7	JN71SU	674km

rig: IC821h, mgf1302, GI7b, 4x21 F9FT
tnx fr info Roberto

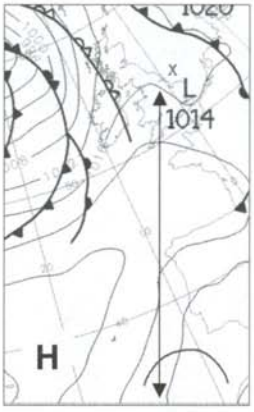
HE2MM/p, JN36GU, wkd on 5./6. July (>700km):
G4BRA/P (IO80ST), 791km, PA6C (JO33FB), 690km, G0VHF/P (JO01PU), 673km, G0HSS/P (JO01LD), 627km, PA6NL (JO21BX), 596km, PI4ZLD (JO11WM), 554km, F5BUU (JN03PO), 547km, DK0NA (JO50TI), 539km, DL0GTH (JO50MP), 535km, F1EPX/P (JO11VH), 535km, DJ8EN (JO31BP), 534km, ON1DO (JO11PC), 529km, F5HGO (JN05AI), 528km, F1BJD/P (IN98WE), 522km. tnx fr info Yves (HB9DTX)

OZ1IEP, JO55XU, wkd (>500km),:

01/06/2003 21:36	LY2AAM	KO06VB	612km
03/06/2003 20:20	LY/DL5UH/P	KO16AB	627km
10/06/2003 18:01	SK4AO	JP70TO	570km
10/06/2003 18:03	OH0JFP	KP00AB	667km
10/06/2003 18:21	ON1DO	JO11PC	778km
10/06/2003 18:23	PA5KM	JO11WL	720km
10/06/2003 19:56	SM5AFS/P	JO99BH	531km
10/06/2003 20:00	SM0UMU	JO99CE	525km
10/06/2003 20:01	SM0LYC	JO99CE	525km
10/06/2003 20:03	SK0CT	JO89XJ	531km
10/06/2003 20:05	SL0ZS	JO89XJ	531km
10/06/2003 20:45	SM3BEI	JP81NG	672km

tnx fr info Carl

G3XDY, JO02OB, wkd:
18/05/2003 F6BHI/P JN15
10/06/2003 SK7MW JO65, OZ9KY JO45
22/06/2003 F5HGO JN05
06/07/2003 OK1KIR JO60, DL6NAA JO50
13/07/2003 DL6NAA JO50
31/07/2003 EA1DKV IN53. tnx fr info John



G8VHI, IO92FM, wkd:
31/07/2003 1148z EB8AYA IL18RI 52 52 2966km
Rig TS2000 pa ssb 100watts ant 2x23ele cue dee at 13m agl mgf1302 in shack. Tnx for info Reg and congrats for the New IARU Reg. 1 Tropo record on 70cms!
(Left: WX map from July 31st)

23cm + up

DL7YS, JO62NM, wkd on 23cm:

04/05/03	OE3JPC	JN87EW	560km
04/05/03	DK0OG	JN68GI	465km
08/06/03	DL0VR	JO31MI	436km

rig: 50W (feedpoint), 1,2m dish, 13m agl
tnx fr info Peter

DH9NFM, JO50RF, wkd May – July (>400km),:
PA3AWJ (JO21GW), PA5DD (JO22IC), PA0WMX (JO21XI), I4CVC (JN54WH), PA0EZ (JO22OF), ON7WR (JO20EP), S53D (JN76BD), IK3COJ (JN65BN), PI4TUE (JO21), PA0WMX (JO21XI), PE1MMP (JO21ET), I4LCK/4 (JN54PD), ON4CDU/P (JN29RT), HB9FX/P (JN37XA),

I4CVC (JN54WH), IK3COJ (JN65BN), IW1FQD/1 (JN34NO), HB9RNL (JN37), HE2MM/P (JN36GU), PA6NL (JO21BX), PA0WWM (JO22), IK4ADE (JN54OE), HB9RDE (JN37LI). tnx fr info Chris

HE2MM/p, JN36GU, wkd on 5./6. July (23cm):
DK0NA (JO50TI) 539km, DL0GTH (JO50MP) 535km, F5HGO (JN05AI) 528km, F1BJD/P (IN98WE) 522km, DH9NFM (JO50RF) 521km, F5IGK (JN09NJ) 491km, F6CBH (JN19BH) 427km, DK0SE/P (JO30GC) 361km, ON4CDU/P (JN29RT) 339km, F5PDM (JN18KJ) 324km
and on 10GHz:
F1CLQ (JN38MA), HB9AMH/P(JN26IF), F8DO (JN26IF), F6BSJ (JN26ES). tnx Yves (HB9DTX)

PA5DD, JO22FE, wkd May - July (23cm):
GD0EMG IO74QD, DH9NFM JO50RF, DL6NAA JO50VF, SK7MW JO65MJ, OK2KKW JO60JJ, DF0YY JO62GD, G8XVJ IO83RJ, OK1KIM JO60RN, DK2GR JN59IE, DF0MTL JO60OM, OZ2LD JO54TU, OZ1BGZ JO65AP, SM7ECM JO65NQ, DM2AFN JO61WB, OZ8VO JO46WM, LA6MV JO59EJ, SM6CEN JO57XO, SM6PGP JO67BK, OZ2LD JO54TU, OZ2OE JO45VV, SM7ECM JO65NQ, OZ9KY JO45VX, OZ1BGZ JO65AP, DK2GR JN59IE, OK1KIR/P JO60PM, G3ZME/P IO82NN, GW0CFM/P IO81KW, DK0NA JO50TI, DF0TEC/P JO73CF, DF0MTL JO60LK, OK1KRQ JO60LJ, OZ6OL JO65DJ.
tnx fr info Uffe

G3XDY, JO02OB, wkd May – July ´03:
1296 MHz:
F6APE IN97, F1AZJ/P JN28, F1EZQ JN27, OZ1CTZ JO46, SM6PGP JO67, SM6HYG JO58, SM6CEN JO57, OZ6OL JO65, OZ6AQ JO44, OZ6HY JO45, OZ8AFC JO45, LA6MV JO59, LA3FV JO59, DL3IAS JN49, DLØGTH JO5Ø, TM9R JN27, F6HJO/P JN27, EI9E/P IO62, F4CKV JN16, DL3IAS JN49, LA8AV JO59, OZ2OE JO45, OZ2TG JO55, DC6UW JO44, SM6ESG, SM6DJH JO58, LA8AV JO59, DF9QX JO42, EA1CRK IN73, EA1DAX IN53
2320 MHz:
OZ1FF JO45, OZ1CTZ JO46, SM6HYG JO58, DL3YEE JO42, OZ2OE JO45
3400 MHz:
SM6HYG JO58, OZ1CTZ JO46, DL3YEE JO42
5760 MHz:
SM6HYG JO58, GW3PHO/P IO72
10368 MHz:
OZ1FF JO45, SM6HYG JO58, OZ1CTZ JO46, GW3PHO/P IO72. tnx fr info John

Personality – G3XDY

DUBUS wants to introduce active DXers from europe and overseas. Today: G3XDY

OM John Quarmby (G3XDY), has been licenced since 1968 when he was 15 years old. He is active on VHF/UHF from about 1970 onwards and lives near Ipswich in Eastern England, with XYL Liz and 3 Junior Ops.

The picture above shows him in the shack with laptop PC, IC756 and FT736 radios, plus some of the power supplies and linears. There are some other pictures on his web pages www.qsl.net/g3xdy/ of the antennas and other equipment.

Working equipment on VHF, UHF and SHF:
2m: FT736R, PreAmp BF988 NF 1dB, PA 2x 4cx350A 400W, Ant M² 12el
70cm: FT736R, PreAmp NE32184 NF 0,5dB, PA 4cx250B 250W, Ant M² 28el 9wl
23cm: IC756 + homemade Transverter, PreAmp MGF1400 1dB, PA 4x 2C39 250W, Ant 4x 23el
13cm: FT736R + homemade Transverter, Pre-Amp MGF1402 1,5dB, PA 2C39 50W, 60cm dish
9cm: FT736R + homemade Transverter DB6NT, NF 0,9dB, PA 15W, 60cm dish
6cm: FT736R + homemade Transverter DB6NT, NF 1,2dB, PA 15W, 60cm dish
3cm: FT736R + homemade Transverter DB6NT, NF 1,5dB, PA 10W, 60cm dish

2m-DX from Western Africa: RW1ZC/MM

by Alex, RW1ZC

Here a short report about my 2-meter QSOs during my last working shift from several maritime mobil locations off the west african coast close to Mauritania.
I worked from the fishing vessel "Green Star" in the fishing zone off Mauritania from January to July 12th 2003.

I worked with a ICOM-746 TRX and first used only a 5/8 vertical for FM. Later I made a 9-ele Quad of 4m length.

RW1ZC/MM shack and radio room

About propagation:
Unfortunately I was mistaken, thinking that there is no live on SSB in west africa and watched only the FM channel 145.500 and repeater frequencies.

During the winter time my vessel worked from the grid locators IK16 and IK17 near shore close to the Senegal Border. Propagation was bad. Only repeater frequencies could be opened from time to time.
Only 1 QSO this time on January 25th with EA8AZF (my locator IL10mu). During the next 2 months no propagation and no QSOs.
More FM QSOs on 2m in spring 2003:

16/3	6W7RV	FM	IK16
28/3	EA8BWW	FM	IK17
31/3	EA8CT, EA8SA	FM	IK17
4/4	6W1RD	FM, SSTV	IK16
	(QSO any time with 59, he is very active)		
20/5	EA8TL	FM	IL10
21/5	CT3MX	FM	IL10
22/5	EA8/DL6FAW, CU2AA, CU3CY, CU2JN, CU3DX	FM	IL10
27/5	EA8/DJ6WB	FM	IK16

Now my attention went to SSB mode on 2 mtrs: Suddenly while quick tuning my TRX, I got QRM and found D44TT (CQ on LSB and 2 khz up – 144302) with 59+. I tried to call him in LSB and USB, also some stations from EA8 called D44TT – but no response). So now I made QSOs on SSB:

27/5	EB8BNS, EB8BTV, EA8AHH, D44TD, EB8AMT, EA8AYA, EA8BUE		IK16ND

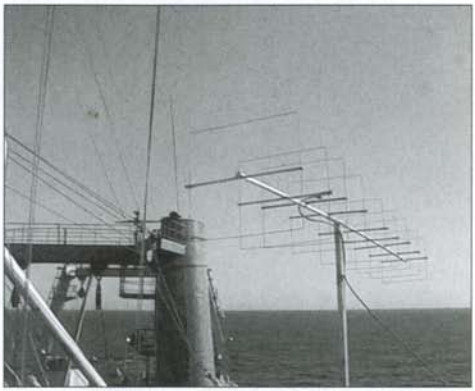
In summer time the tropo propagation was open every day 24 hours (exept some short periods).

7/6	EA8BWY, 5T5SN	SSB	IK16
8/6	CT3HF, EB8AMT	SSB	IK16
9/6	6W1HM	FM	IK16
12/6	EA8BWY	SSB	IK16
13/6	EA8IF	SSB	IK16
21/6	5T5SN	SSB	IK16
24/6	EA8FF	SSB	IK16
25/6	5T5SN, D44TD, EA8AHH	SSB	IK16
28/6	5T6M	SSTV	IK16
29/6	5T5SN	SSB, SSTV	IK16
1/7	EA8BPX	SSB	IK17
4/7	EB8AMT, EB8BNS,	SSB	IK18

Now we finished catching fishes and stayed in Nouadhibou–Harbor in Northern Mauritania, IL16nu. I got 3 days nice tropo to CT-EA:

6/7	EA4EJR, CT1EPS, EA1FDI/P, EB8BNS, CT1DHM, CT1FOP, CT1DYX,CT1FBF/P, EB8AMT, EA8BUE, 5T6M, CT2HBZ.
7/7	CT1FOM, CT1DYX (SSTV), CT4RK, EA8BWY, CT1HLF+ANO+FAK 5T5SN
8/7	EB8BTV, EA8/DL6FAW, 5T5SN, CT2HNS, CT4LR, EA1KDV, EA8IF, EA1DDO/P, CT1EEB, CT1CJJ, CT1EKD, CT1ILT, EB8BMV, CT1DIZ, EA1TA, EA1AK/7, EA7BYM, EA1DAX, EA8BPX, CT/DJ1SA/M (vertical 25 cm antenna in mobile 59/59), CT1EKD, CT1DNF, EA1BLA, EA1GAR, CT4RK, CT2DJK, CT1CRS, CT4AN.

The next 3 days we sailed from Nouadhibou to Canta Cruz de Tenerife. I have made many QSOs with the above mentioned stations from the following new squares: IL00, IL01, IL02, IL05, IL15, IL16, IL17 with the countries EA8, CT, EA, and CN8KD.
On July 9th I watched with envy for the great sporadic-E from CT, EA to Europe, but nothing at all from EU-stations, exept CT-EA-EA8.
My ODX QSO was with northern Spain from IL10nu with 2620 km QRB.



RW1ZC/MM 2m antenna

So far I plan to return to the Mauritanian coast in next January 2004 for 6 months. I will continue my activity on 2m (HF is sure also). I will try from time to time to watch 2m will do some CQ-ing.
On 144.370 I will be active in WSJT mode. But I have no access to the internet, so it´s difficult with sekds for metorscatter QSOs. So far I have not heard any WSJT signals from IK16, 17 and IL10.

RW1ZC, Alex in his /MM shack

In my opinion the QTH in IL10 in Nouadhibou (Mauritania) is a very interesting place for 2m propagation. I tried to connect 5T5SN and 5T6M with CT stations during nice tropo openings, with both 59+, but no success. I worked with Azores 59 in FM, whilst stations from EA8 (also 59) could not. Maybe this place has a special geomagnetic feature? (Hi !).

Now I watch 2m from my home QTH in Murmansk (KP69NA), but it is not a good place. So far I had only 2 QSO via meteorscatter with Estonian stations. I am qrv FSK/WSJT.
I often receive pings and bursts 0,1 – 5 sec long from the SK4MPI beacon. I use an 8 element Quad, and the ICOM 746 with 100w and WSJT software.
Best 73 to all readers and good DX!
73! Alex, RW1ZC/MM

(TNX Alex for this nice report! DL8HCZ)

6m News

Reports, Expeditions, Infos

Editor: Joachim Kraft, DL8HCZ

6m-Logbook from DL (Day, Month, UTC): June to August 2003

28.5. 1820-1900 Es from S+E-DL: A45WD LK77
29.5. 1700-1715 TEP + Es from S-DL: PY5CC, PY1RO
31.5. 1545 TEP + Es from S-DL: 7Q7SIX
5.6. 1630-1800 Es from W+M-DL: ZF1DC, HI8ROX, KP4EIT, from PA also to FJ5DX
6.6. 1300 Es from S+W-DL: VE1YX
9.6. 1500-1700 Es from N, S, M + E-DL: A61AJ LL75, from E-DL: A45WR, UN6P
10.6. 1730-1830 Es from S-DL: TA5/M0HEN KM86, D44TD HK86
12.6. 2000-2130 Es from S+M-DL: KP2A FK78, KP4EIT FK68, V25XX FK97
15.6. 2000-2100 Es from W + S-DL: KP2/KF2HC
16.6. 1700 Es from N+W-DL: S01HA IL56
1805-1930 Es from N+S+O-DL: YA4F MM44
19.6. 1830 Es + TEP from S-DL.PY5CC
21.6. 1945-2000 Es+TEP from S-DL: PY1RP, PY5CC
23.6. 1115-1400 Es from S+W+N-DL: N4IS + W4SO EL96, NG4C, K4MM EL97, K4PI EM73, W4GF EM83
24.6. 1800 Es + TEP from S-DL: PY5CC
1845 Es from N-DL: TF8/NT1N HP84
25.6. 1845-2100 Es from all DL: D44TD HK 86, PY1RO, PY1VOY, PY2XB GG66, S01HA,
26.6. 1700-2130 Multihop-Es from ganz DL: W1, 2, 3, 8, VE1, 2, 3, 9, VO1, 2. u.a. VO1MP GN37, VE2CSG FN56, WA1JAS FN55, VY1SS FN76 from S-DL: 1600 A61AJ 1700 JW9SIX/B JQ94
29.6. 1115-1200 Es from S, M + W-DL. 5T6M IK28 1800 Es from all DL: TF8GX HP84
2000-2030 Es from N-+W-DL: PY5CC, FG5FR
30.6. 1530-1900 Es from all DL: 5T6M IK28 (OP DL8YHR, QSL via ON4ANT)
1700-1930 Multihop-Es from S-DL: YA4F, PY1RO, PY1VOY 2000-2100 S01HA IL56
1.7. 1830-2030 Multihop-Es from all DL: 9Y4AT/B 50.030, 9Y4AT + 9Y4TL FK90, CU2AF HM77
2.7. 2030 Es from S-DL: FM5WD
4.7. 1950-2115 Es from S-DL: 9Y4AT, FG5FR FK96, C6A/W6JKV FL16, KP4EIT, WP4LNY, YV4DDK, KP2A
5.7. 1400-1430 Es from S-DL: C6A/W6JKV FL16
6.7. 1600-1800 Es from S + M + W-DL: 5T6M IK28, C6A/W6JKV FL16
7.7. 1340-1350 Es from S-DL: NW5E EL98 1620 from O-DL: VE1YX
2100-2130 Es from S+W-DL: W3EP, AF1T FN43, VE1YX, K9HUY
8.7. 1250-1400 Es from N+W-DL: N3DB, VP9GE FM72, NG4C FM16
1725-1830 Multihop-Es from S,N,W-DL: VE7SL + KE7V CN88, NN7J CN85, W7YOZ + K7OFT CN87 ua.
From PA was wkd: CN80, 84, 85, 87, 88, 89, DN06 + 26 gearbeitet; - VE7SL wkd 44 EUs.
9.7. 1350 Es from N+M-DL: K6EID + K4PI EM73
1900-2200 Es from S+W-DL: KY5R EM64, K4WS EM86, K4EA + N4DA EM74, K6EID EM73, N4JJ FM04, NG4C FM16, N3DB/3 FM28, WP4KJJ FK68, WP4N FK78, W4SO EL96
2000-2100 from N/W-DL: VO1ZA/B, PY2VA GG66, WP4KJJ
13.7. 1950-2045 Es from all DL: GM4COK/MM GN81 (Rig: 5w + Dipol!)
17.7. 1700-1900 Es from all DL: EX8MLT, EX8MLE, EX2A MN72, UK8OM MN51
18.7. 1320-1350 Es from S+W+M-DL: KP4EIT FK68, KP2A FK68, JY9NX KM71 1800 YA4F
19.7. 0800-1000 Es from all DL: A71EM LL55
10-14 Es from all DL: A61AH LL75
2100 Es from S-DL: JW9SIX/B JQ94
20.7. 0830-0930 Es from UR/LZ/SP/Z3: JN1JFC, JE1BMJ, JA7WSZ, JA0JTU
21.7. 1300-1530 Es from M, E, W-DL: K2MUB, W3UR, W3MYA, K5MA, K2WE, W3EP, K1HTV.
21.7. 2030 Es from S-DL: JW5SIX KQ26
22.7. 1100-1300 Es from all DL: K2MUB, W1JJ, W1CWU, K1VV and others.
6.8. 1900-1930 Es from S-DL: JW5SIX KQ26, LA5MIA JP88
15.8. 0825-1200 Es from all DL: YI/S53R, YI/ON5NT, YI/PA5M all in LM23fh
16.8. 1730 Es from W-DL: 5T5SN, IK28ac
18.8. 14-22 Stron Aurora/AE: PA0 heard VE4-beacons from EN09+EN19.

Other stations from rare squares wkd via Es from DL in June, July and August 2003:
SV3/DJ6AM/p KM07, SV8/DJ4PI/p KN20, TF/G4ODA/p IP24 und IP34, TF/OZ5IQ HP94, OY4TN IP62, F9IE IN86, M0HEN/MM JM47 + 57, TA2IJ KN40, RW1AY/1 KO68, OY/G4OGA IP61, YM0KA KM39, SP8PAI/8 KO20AM, II1W JN51XX, UT1IC KN97AI, EH3ATH KN02VC, EH4SV IM69, YR5A KN16, YO5BLA KN16, OH8GLL KP45, EO6F KN45, UT5ZA/p KN67, UT4ZG/p KN66, OD5SX KM74, YO2IS/p KN27, ZA1B JN91, MM5DWW IO89, YL3AG/p KO46, ZA/DL6LAU JN91, OJ0VR JP90, SM6CMU/3 JP74, SM6CMU/2 JP86, JP96 + KP06, SX9G KM24, OH9MRW KP46, LY2AAM KO06, TA1AZ KN41, IH9/I2ADN JM56 + JM66, YL3AG/p KO17, TA2RC/p KN50, M0HEN/MM JM17/27/KM04,

IG9/IW9HDD JM65, IH9/IW9FMW JM56, YL1A KO07, OD5/OK1MU KM73, LB1AF JP64, RU3ACE KO95, OH8K KP53, SV5AZP KM46, YM0KA KM39, YO8WW/p + YO8SS/p + YO8BIM/p KN38, SV9/SV1AIN KM15, TA2RC/p KN50, UX2KA KO30, LA7SP/m JP76, SM6CMU/3 JP63 und JP74, MU0FBO/MM IN63, YL3AG/p KO27, UR5DDX KN18, UX2KA KN30, J49PC KM24, SV2AYT/SV8 KM29., SM3SHJ JP83, LA5EKA JP32, LA1JFA/p JP55, LA7DFA JP53, S01HA IL56, LB1AF JP64, LA4SU JP77, LA8LA JP43, TF8GX + TF8VET HP84, HV0A JN61, EH4AQM/m IN81, EH8EE IL27, CN8IC IM75, LA8G JP44, OH9O KP37 + KP48, LA/DL3YEL JO39, 3V8CB JM56.

Expeditions and News:

/MM: G0KZG/MM, Andy has changed plans: His trip from CT to PY in October was cancelled. Now he plans to be qrv again on 6 + 2m in 2004 from a ship in the Mediterranean sea.

IN69: G3HTA/p is qrv on 6m until Sept. 12th.

JN14 F1ULK is qrv on 6m with 25w + 5 Ele. Yagi. Loc. JN14FX

JP83 SM3XRJ is a new station on 6m

KM73 OD5/OK1MU is qrt on 6m + 2m and back in OK where he will live from now on.

3C0 Annobon Isl.: DJ9ZB (3C0F), EA5BYP (3C0A), EA5FO (3C0R) + EA5YN (3C0V) are qrv also on 6m from 27.9. to 10.10.

3V Tunisia: TS7N will be active again on 6m from JM54, Kerkennah Isl., from November 19th to December 1st. 6m OP will be DL9USA.

A9 Bahrein: A92FF was expected to be qrv on 6m starting in August.

4L0 Georgien: 4L0G is qrv now on 6m from LN21CA.

4S Sri Lanka: From Sept. 13th-18th a large group from JA will be active also on 6m.

5U Niger: G4BWP (Op XT2WP) plans to be qrv on 6m in October/November arround the coming CQWW contests.

5U7JB (US-Op) ist qrv on 6m for a longer period. Loc. JK13, QSL via ON5NT.

5T Mauretania: 5T5SN is qrv on 6m.

7X Algeria: 7X0AD (JM16jr) says that there is good chance now to get a licence for 6m. He states that he will be qrv soon.

9L Sierra Leone: 9L1BTB is qrv on 6m.

A6 U.A.E.: ON5NT will be qrv again from October to December on 6m.

CE0Y Easter Island: CE0Y/SP9PT + SP9EVP will be qrv also on 6m from Oct 17th to Nov 1st.

FS/PJ7 St. Martin: FS/ or PJ7/N7DD, PJ7/W3ARS and PJ7/K3LP will be qrv also on 6m from Nov 20th to Dec. 2nd. QSLs via K5KV.

HI Dom. Rep.: HI3TEJ is qrv with 100w + 5 ele on 6m. Loc. FK59. QSL via ON4ANT, now ON4IQ.

JW Svalbard: JW/OZ4LP is qrv on 6m from 10.-28.9.

OJ0 Market Reef: OJ0LA + RJ will be qrv also on 6m from Sept. 19th to 26th. QRGs.: 50095/145.

PZ Surinam: From October 20th to 28th KD5CQT (PZ5CQ), K2FF (PZ5FF) + W5UE (PZ5UE) will be qrv from PZ5RA also on 6m.

S9 Sao Tome: S9TX (ex S92TX) ist qrv on 6m now for about 1 year with 100w + 5 ele Yagi. Loc. JJ30. QSL via W7KNT

SV/A Mount Athos: SV2ASP/A has got a new IC706 now. So let`s hope for some 6m activity.

TN Congo: CT3HK is qrv on 6m as TN3S for 1 year. QSL via Madeira Team, P.O. Box 19, P-9001-901 Funchal, Madeira Isl., Portugal

UK Uzbekistan: Mikhail Mejlumov, UK8OM has got a licence for 6m (Loc. MN51UA). He is qrv daily around 50115 CW. Info/skeds: uk8om@uzpak.uz

V4 St. Kitts: VE3BW will be qrv as V47CA on 6m from Oct. 21st to 31st with 100w + 3 ele. yagi.

VK9C Cocos Keeling Isl.: DM5TI, DL2RMC, DJ5IW + DL8LAS are qrv also on 6m from 11.-23.10. as VK9CT. QSLs via DL2RMC. From Oct. 28th to Nov 11th another group will be qrv under VK9CYL

VK9X Christmas: DM5TI, DL2RMC, DJ5IW + DL8LAS will be qrv from 4.-11.10. as VK9XW, XM, XT +XA also on 6m. From Oct. 13th to 27th VK9XYL will be qrv also on 6m.

VP5, Turks + Caicos: Dennis, K7BV/1, will be operating September 9-16th. Six meters will be the primary focus (including meteor scatter) with active participation in the ARRL VHF Contest, September 13-14th. QSL via KU9C. Website info for VP5/K7BV is: http://www.qth.com/k7bv/TURKS

VP9 Bermuda, FM72: From September 12th - 15th N0JK/VP9 is qrv again on 6m with 100w + 5 ele.

VQ9 Chagos: VK9LA is qrv on 6m for one year.

YA Afghanistan: G4KUX is qrv until spring 2004 on 6m as YA4F from Kabul, MM44ON.

YI Irak: YI/OM2DX will be qrv also on 6m for the next 3 years from Baghdad (LM23).

XV Vietnam: XV9DT is qrv for some years from Hanoi also on 6m. OL20.

XZ Myanmar: DL7BO, DL7UFR, DL7DF, DL7KL, DJ6TF, DK1BT + DL4WK will be qrv from 30.9.-17.10. as XZ7A also on 6m. www.qsl.net/dl7df/

ZA Albania: ZA/DL6LAU plans to be qrv again in Oct./Nov. on 6m/2m.

Beacons qrv

VP9DUB, 50.026 MHz, FM72oh, 15w, Halo, qrv since August 13th. QSL via DL8HCZ

Maritime Mobile on 6m from the North Atlantic: GM4COK/MM

GM4COK, Paul, was qrv on 6m from the cable ship Sir Eric Sharp from 9th June to 15th August 2003.

The Sir Eric Sharp is currently based in Bermuda although there are plans to move the ship to Greece later this year. The ship can be called out to repair cables in the Caribbean and the Atlantic Ocean. She carries a tracked submersible.
Bermuda is a wonderful holiday island and there are many things to see and do here and is also a popular destination for DXPeditions.

GM4COK/MM Antennas

I was qrv also as VP9/GM4COK on 6m and wkd many openings to the U.S. and Europe during summer 2003.
The picture on the left side shows the antennas I used during the trip. The HF antenna is a Diamond HM6 which can be set for any HF band. The dipole was made out of two telescopic elements bought from the local Radio Shack store. A bit of connector block, some wood and cable ties and there it was, a 6m DX magnet!

My cabin onboard, showing the FT817 (barfoot) beside the computer

9th June to 15th August 2003
I got my operating permit on 18th June and was quickly on the air on 6m. I also had a multiband mobile whip for hf. I was qrv until about the middle of August. Conditions on 6m have been patchy but there have been a few good openings.
We sailed on 10th July to do a cable repair in HN03 square. I activated as many of the squares along the way as I could. Fortunately we had to dodge a small hurricane after we finished so that meant that our track back to Bermuda was slightly different and took us through some new squares!
We arrived back in hot sunny Bermuda on 24th July to resume our standby status.
I will be going back to DU in September with a stopover in GM for a few days to reacquaint my taste buds with the local ale and, of course, the curries.
Squares activated and stations worked.....
FM82: K1TOL, K4IG, K4MM, K4MU, K5GMX, N3II, W1CWU, W1NG, W1ON, WB2AMU, W3EKT, W3UR, WP4N, WR4K
FM83: K1TOL, K2PLF, K2PS, KB3IIA, K4DLJ, VE3FGU, W3EP
FM93: K3JT, KE3Q, K4QI, K8ISK, N3DB, N4XD, NW5E
GM04: W3EP
GM05: K1IM, K2PS, K2ZRJ, KE3Q, K3TKJ, KB4FQ, K4DY, K4MM, K4WS, N3DB, N3DLQ/M, N3II, N3YDT, W2/JJ2RCJ, WB2AMU, WB2YIP,

W3BO, W3BZN, W3EP, W3PT, W3TC, W3ZZ, WA3YKI, W3ZZ, W4DR, W0MHK

GM15: K1EM, K1IM, K1NY, K1TOL, K1UTI, K2JF, K2MUB, K2PLF, K2PS, K2SIX, KB2WAL, K2ZD, K3FN, K3HX, K3KYR, K4ZOO, K8NZ, NJ1H, N2AU, N3DB, N3DLQ/M, N3II/M, VE1RG, VE3KKL, W1CAT, W1CWU, WA1ECF, W1JR, W1LP, W2WG, W3BZN, W3EP, W3JO, W3MRG, W3QIR, W3TC, W3ZZ, W4MYA, W4UDH

GM48: AA1VL, K1GUN, K1MS, K1SIX, K1TOL, K2ZD, K7BV, N3DB, KO1I, K1MS, K2MUB, K2SIX, K4RX, K5GMX, NJ1H, VE1YX, W1AY, WA1ECF, W1JJ, W1LP, W1NG, W2MPK, W3EP, W3TWX

GM59: AA1VL, AK3E, KA1A, K1ACL, K1DG, K1IM, K1MS, KA1OPD, K1SG, K1SIX, K1TEO, K1TOL, K2KOQ, K2MUB, KE2N, KF2O, K2PS, K2QE, K2SIX, K2ZD, K3TKJ, K4CNW, K4DLJ, K4MQL, K4QI, K4ZOO, K5GMX, K5XX, KA6AKH/4, K7BV, NT1N, N3DB, N3II, N4JJ, NW5E, VA1LW, VE1CSM, VE1JH, VE1RG, VE1YX, VE2PEP, VE9AA, VP9GE, WA1ECF, WA1T, W1CWU, WJ1H, W1JJ, W1LP, W1NG, WA1NYV, W1RA, W1TDC, W1UF, W1WJO/P, WA2FGK, WA2MUA, W3EP, W3JUO, W3UR, W4DR, W4GF, W4MYA, W4NP, W4TJ, W5HUQ, W5OZI, W5UN, WV8V

GN60: K1TOL, VE1JH, VE1RG, VE1YX, VE9AA, VE9DX, VE9WH, WR4K, XM9AIM

GN70: 9A1CAL, 9A1Z, 9A4K, 9A8A, F5JKK, F6FHP, KA1A, K1DAT, KB1EFS, K1GUN, K1MS, K1TEO, K1TOL, KU2A, K8SIX, NT1N, ND7K, N8UUP, OE5XBL, S50F, S51IV, S51TJ, S53AK, S53DRA, S57MTA, S59A, VA1LW, VE1AMA, VE1BN, VE1CSM, VE1CZ, VE1IW, VE1JH, VE1RG, VE1YX, VE1ZZ, VE2PEP, VE9AA, VE9DX, VE9WH, W1ALS, W1CWU, WA1ECF, W1JJ, W1LP, W1RA, WA1T, W3EP, W3TWX, W4SO, W4VQ, XM9AIM

GN71: CT4NH, EH7KW, EH7ON, EH7RM, F5JKK, F6FHP, G0JHC, G3SED, G3ZYY, G4PCI, K1MS, K1SIX, K1TOL, K7BV, ON4IQ, VE1RG, VE1YX, VE9AA, W1CWU, YU1EU, Z32ZM

GN81: 9A1Z, 9A2SB, 9A4K, 9A9AU, DC8TS, DD0VF, DJ2DA, DJ3TF, DJ9ON, DK2EA, DK8YY, DL3AMA, DL5WG, DL7ARV, DL7FF, DL7QY, DL8YHR, DL9GS, DL9USA, EI5FK, F5JKK, G8BCG/P, GW3LEW, I0WTD, IK0FTA, K1TOL, K2QE, N8UUP, OK1AOV, OK1FFD, ON4AXV, ON4IQ, ON4KST, ON4LN, ON4PS, ON5TN, ON7GB, ON9CC, OZ0JX, PA0FRE, PA0HIP, PA0RDY, PA2CHR, PA2TAB, PA2VST, PA3DOL, PA3GDY, PA4PA, PA5DD, PA5TA, PA7MM, PA7RA, PE1HWO, PE1MZS, SP2MKO, SP6GZZ, VE1BN, VE1YX, W3TWX, Z32ZM

HN03: CU5AM, EH5HB, EH7RM, F5JKK, F6FHP, HI3TEJ, KU2A, K2MUB, K2ZD, K4EQ, K6EID, K8SIX, KP4EIT, N4IS, N4JJ, N4NX, NW5E, N8CJK, N8UUP, VE1CZX, VE1LS, VE1YX, WA2GEZ, W4SO

GN93: G0JHC, G4OBK, K2ZD, K8MFO, ON4GG, ON4IQ, VE3DSS, VE3NH, W3TC

GN73: EH7RM, KP2A, OE5XBL

GN62: CU7BC

GN40: AA6TT, K1HTV, K1SIX, K1TOL, K2PS, K3KYR, K8OOK, K9HMB, N3DB, N3II, VE1CZ, VE1JH, VE1YX, VE3NE, VE3RM, W1CWU, WA1ECF, W1LP, WB2AMU, W2OO, W2YE

GM49: CU7BC, K1SIX, K1TOL, K7BV, W1JR

FM94: K1IM, K2PS, K2ZD, K3FN, VE1CSM, VE1YX, VE2PEP, VE9DX, W1CWU, WA1ECF, W1JR, WB2AMU, W3BO, W3JO

Thanks to everyone who took care to listen for my small signal. It might be a long time before these squares are ever activated again. Paul, GM4COK

Our track to and from the cable repair area in HN03 (map produced with DX Atlas).

Aurora Reports

Editor: Stefan Heck, LA0BY
LA0BY@darc.de

A major event of the period was May 29, when the geomagnetic field was unsettled to very severe storm. This is the description of the event by Jan Alvestad:
Solar wind speed ranged between 565 and 814 km/sec. A solar wind shock was observed at 11:52 UTC at SOHO with a sudden increase in solar wind speed from 567 to 689 km/sec. The source of this disturbance was likely a full halo CME (transit time: 53 hours) observed after a long duration M1.6 event in region S169 on May 27. Another and very strong solar wind shock was observed at 18:34 UTC when solar wind speed increased abruptly from 691 to 763 km/sec. This shock was caused by the arrival of the 2 halo CMEs (transit time: 43-44 hours) observed after the X1 flare late on May 27 and X3 flare early on May 28. The interplanetary magnetic field was soon after the arrival of this disturbance extremely strongly southwards and caused very severe geomagnetic storm conditions with the planetary A index for the 21-24h UTC interval reaching 231.
Another major event occured on 18 August, quite surprisingly. It reached as far south as KN64, 95 and JN63.
73, Stefan (LA0BY)

DJ8ES in JO43SX wkd on 144 MHz:

2003-08-18

1555	G7RAU	IO9ØIR	59A	59A	40°818 km
1610	SP3MGM	JO73QL	57A	59A	40°388 km
1618	SP2OFW	JO93AC	59A	59A	40°569 km
1620	OK1DFC	JO6ØTM	59A	59A	40°474 km
1636	G4DEZ	JOØ3AE	57A	57A	50°633 km
1732	S5ØC	JN76JG	57A	53A	70°934 km

tnx fer info, Wolfgang

DK3WG in JO72GI wkd on 144 MHz:

2003-08-18

1319	ES5RY	KO38JI	57A	56A	
1339	OZ2M	JO65FR	55A	55A	
1351	RA3AQ	KO85SP	55A	55A	
1400	YL3AG	KO26AW	57A	57A	
1404	SM1DVV	JO97CE	55A	569	
1409	SM0LQB	JO89XK	59A	55A	
1410	RW1AW	KP50EB	55A	57A	
1413	RA1TT	KO68XJ	56A	55A	
1415	LY1BUU	KO15XH	55A	57A	
1417	YL2HA	KO26CU	55A	57A	
1420	SM0LCB	JO89XI	59A	59A	
1435	RN6BN	KN95LC	54A	53A	1954 km
1438	HA6NQ	JN98WA	55A	57A	
1442	LY2BJ	KO25ER	57A	59A	
1447	OK1VAM	JN79IX	55A	57A	
1450	DK3QZ	JO31LP	55A	52A	
1453	SM5DIC	JO89JT	57A	57A	
1456	DK7BY	JO33RJ	53A	53A	
1502	LA5LBA	JO59RC	55A	59A	
1518	LY2SA	KO14LL	55A	59A	
1708	S50C	JN76JG	55A	55A	
1709	HA5CW	JN97PM	55A	55A	
1714	UT5JCW	KN64SN	55A	44A	
1716	HA5DG	JN97OK	55A	55A	
1723	OM5KM	JN98BG	54A	59A	
1732	OK2BVE	JN99NU	55A	57A	
1734	OM3RM	JN87WV	56A	57A	
1737	DL5MAE	JN58VF	57A	57A	
1738	HB9QQ	JN47KJ	55A	54A	

tnx fer report, Jürgen

DL6YEH in JO32VA wkd on 144 MHz:

2003-05-29

1421	SM6OPX	JO59RO	52a	53a	873 km
1745	GM0TGE	IO87TF	52a	57a	872 km
1751	LA9CM	JO59CC	52a	54a	802 km
1906	HB9FAP	JN46EW	52a	53a	567 km
1910	HB9DFG	JN37SM	52a	54a	501 km
1913	G4YTL	IO92MB	55a	55a	598 km
1915	G4AEP	IO91NJ	52a	55a	601 km
1917	F5SE	JN29BG	55a	53a	400 km
1923	I2FAK	JN45OB	55a	52a	780 km
1927	G4RGK	IO91ON	51a	55a	592 km
1937	OE2XRM	JN67NT	52a	53a	603 km
1940	HB9DKM	JN37TN	51a	52a	496 km
1945	G4IGO	IO80NO	52a	53a	757 km
1947	G3WZT	IO90UX	52a	52a	571 km
1950	OE5XBL	JN68PC	53a	55a	586 km

Rig: 750 W, 2 x 2WL-yagi tnx fer info, Andreas

I4XCC, JN63gv, wkd:

2003-08-18

1707	DK1KO	JO53ct	57A	57A	

LA0BY in JO59FW/IX wkd on 144 MHz:

2003-05-29

1452	SP2JYR	JO92GP	53A	55A	40	950 km
1455	PA3ECU	JO32CF	55A	57A	20	896 km
1458	DJ5HG	JO53IU	55A	56A	30	677 km
1502	LA8KV	JP52QQ	57A	57A	10	310 km
1704	DL5ME	JO52SD	59A	59A	30	869 km
1705	DL6DAF	JO52BD	53A	55A	30	867 km
1709	DH3YAV	JO43CD	53A	59A	30	768 km
1711	DL1YMK	JO33RP	59A	59A	30	723 km
1714	DF8AE	JO41GX	53A	52A	30	893 km
1716	DF0WD	JO42FD	57A	59A	30	875 km
1718	GM4AWA	IO86HL	55A	55A	0	895 km
1726	SP2OFW	JO93AC	55A	57A	40	890 km
1747	DF9CY	JO53AL	57A	57A	20	719 km
1755	LY2IC	KO14WW	55A	55A	40	974 km
1758	DL8WF	JO61CA	53A	55A	40	998 km
1801	DK3XC	JO61JF	55A	55A	40	979 km
1803	DK3WG	JO72GI	59A	59A	40	880 km
1804	DF0CI	JO51CH	56A	55A	40	959 km
1806	DL2LRT/p	JO61JF	55A	55A	40	979 km
1808	DL1ASR/p	JO51CH	56A	55A	40	959 km

1813	DJ3XK	JO53AN	55A	57A	40	709 km
1815	DJ6TKJ	O53FG	54A	55A	40	741 km
2234	LY2AAM	KO06VB	55A	55A	40	793 km
2306	GM4YXI	IO87WJ	59A	59A	340	779 km
2308	YL2LW	KO26CW	53A	57A	0	865 km
2334	DL6NDK	JO53AV	53A	55A	20	672 km
2336	DL1APW	JO64LN	57A	59A	20	616 km
2346	DL1SUN	JO53PN	57A	57A	20	711 km
2355	GM4VVX	IO78TA	59A	47A	340	874 km
2003-05-30						
0015	DK5DQ	JO31PG	57A	56A	340	984 km
0017	DL5EBS	JO31LH	55A	52A	340	984 km
0023	GM0TGE	IO87TF	54A	55A	340	801 km
2003-06-03						
2045	SM3VAC	JP83VA	57A	57A	20	505 km
2047	SM3KYH	JP73GI	57A	59A	20	426 km
2049	ES2WX	KO29JN	57A	59A	30	788 km
2052	ES5QA	KO38JJ	53A	53A	30	930 km
2053	ES1OX	KO29HI	55A	55A	30	783 km
2054	OH1NOR	KP00XL	55A	55A	30	623 km
2055	SM3LDP	JP82QK	53A	53A	30	449 km
2059	OH6FV	KO19RX	55A	57A	30	708 km
2102	OH2LE	KP20DI	55A	55A	30	751 km
2104	OH1LT	KP00XO	53A	55A	30	623 km
2111	YL2LW	KO26CW	53A	57A	30	853 km
2112	ES5QA	KO38JJ	55A	55A	30	930 km
2114	YL2KA	KO26AX	54A	57A	30	842 km
2116	ES2DF	KO29GG	55A	57A	30	780 km
2117	OH6YF	KP20CI	55A	59A	30	747 km
2124	ES5PC	KO38HJ	55A	55A	30	921 km
2125	YL2CQ	KO17EM	53A	55A	30	725 km
2131	SM3RWZ	JP82MI	53A	54A	20	430 km
2142	SM2GCR	JP93TK	53A	53A	20	606 km
2003-07-11						
1653	G4KWQ	IO92AQ	55A	55A	290	1108 km
1710	GM1BAN	IO88GO	55A	55A	330	803 km
1721	GM3UCN	IO85RV	53A	53A	300	887 km
1725	G4HGI	IO83PL	54A	54A	290	1074 km
2003-07-16						
1349	PD0RFU	JO32LA	53A	42A	340	907 km
2003-07-19						
2224	SP4MPB	KO03HT	55A	57A	20	918 km
2229	DK5DQ	JO31PG	56A	55A	0	984 km
2232	DD3SP	JO72EN	55A	55A	20	855 km
2237	DF1RL	JO43MW	57A	55A	20	673 km
2003-08-18						
1240	DK1YY	JO43EA	54A	55A	30	780 km
1242	DK3BU	JO33NO	59A	59A	20	733 km
1327	YL2HA	KO26CV	55A	56A	20	867 km
1329	ES5RY	KO38JI	56A	56A	20	945 km
1331	DJ9MG	JO52TC	55A	55A	20	874 km
1334	DK1KR	JO53HW	59A	59A	20	667 km
1345	LY2BUU	KO15XH	57A	59A	20	952 km
1346	ES6RQ	KO28WA	59A	59A	20	907 km
1357	OH1XT	KP01UK	55A	57A	20	634 km
1400	YL2CQ	KO17EM	54A	57A	30	737 km
1414	DK2YCT	JO32RG	55A	55A	10	872 km
1415	DL4KUG	JO64PB	57A	57A	30	675 km
1420	RA1TT	KO68XJ	52A	51A	30	1343 km
1452	LY2BJ	KO25ER	57A	59A	30	945 km
1454	SP3MGM	JO73QE	52A	51A	30	808 km
1512	RA3AQ	KO85SP	55A	55A	30	ODX 1661 km
1513	DL4DTU	JO61TB	55A	56A	30	1007 km
1516	UA1WCF	KO55JR	53A	57A	30	1285 km
1519	DL7ULM	JO62SN	57A	59A	30	842 km

Rig: 200 W, 9-ele-yagi

LA0BY/p in JO39PB wkd on 144 MHz:

2003-08-12					
1731	SM0KAK	JO89XK	53A	53A	
2003-08-13					
2214	SM5CUI	JO89WW	52A	52A	

PA5DD in JO22IC wkd on 144 MHz:

2003-05-29					
1440	GW4DGU	IO71SV	54A	54A	626 km
1442	DK3WG	JO72GI	54A	54A	671 km
1444	DL3HRT	JO61AB	56A	57A	521 km
1445	OZ1CLL	JO65GQ	57A	59A	651 km
1446	DF9CY	JO54AL	53A	56A	444 km
1452	OH5LK	KP30ON	54A	54A	1664 km
1453	LA9CM	JO59CC	58A	57A	853 km
1459	GM4AWA	IO86HL	57A	55A	715 km
1504	G4RGK	IO91ON	54A	55A	381 km
1506	G3LTF	IO91GG	55A	56A	433 km
1508	LY2IC	KO14WW	53A	55A	1303 km
1512	G3KWY	IO92IS	41A	56A	412 km
1515	SM6CVT	JO57??	54A	54A	727 km
1516	SM6CEN	JO57XO	59A	59A	769 km
1526	G0TPH	IO92IO	54A	57A	410 km
1528	G4RRA	IO80BS	55A	57A	611 km
1531	OH1FA	KP10PL	55A	55A	1470 km
1535	OZ2LD	JO54TU	55A	55A	552 km
1541	G4HGI	IO83PL	57A	57A	521 km
1542	SM6VFZ	JO57XR	55A	52A	779 km
1609	DL9MS	JO54WC	57A	57A	529 km
1612	DL4DWA	JO61QH	55A	55A	604 km
1613	SP1CNV	JO84CF	54A	55A	803 km
2239	LY2AAM	KO06VB	55A	57A	1196 km
2244	GW3LEW	IO71PS	57A	59A	645 km
2253	DL2DTJ	JO61UA	53A	55A	634 km
2302	OK1PGS	JN69RS	55A	55A	666 km
2304	DL5GAC	JN47UT	54A	55A	596 km
2305	GW3MFY	IO81FL	55A	57A	570 km
2307	HB9DFG	JN37SM	55A	55A	548 km
2308	OK1MZM	JN69PR	55A	57A	657 km
2330	GW0GEI	IO73TG	55A	55A	625 km
2342	GM0LVI	IO86JJ	53A	52A	701 km
2003-07-11					
1658	GM4ILS	IO87IP	55A	55A	800 km
1700	SM5KNV	JO88MW	56A	52A	1085 km

PA5DD in JO22IC wkd on 432 MHz:

2003-05-29					
1522	SM6CEN	JO57XO	41A	51A	769 km

Tnx fer report, Uffe!

UR5LX in KO70WK wkd on 144 MHz:

2003-05-30

2211	RU3ACE	KO95KG	53A	59A	
2213	SP1CNV	JO84CF	55A	55A	
2220	DF2ZC	JO30RN	55A	55A	1997 km
2221	SP2OFW	JO93AC	57A	59A	
2226	DL8AKI	JO51CH	55A	55A	
2238	DD0VF	JO61WB	55A	55A	
2242	DF7KF	JO30GU	55A	55A	2054 km
2248	DL4DTU	JO60TR	57A	57A	
2253	DL1UU	JO62SP	57A	59A	
2303	HB9FAP	JN46EW	55A	53A	2043 km

Rig: 800 W, 4 x 12-ele-yagi. tnx fer info, Sergej

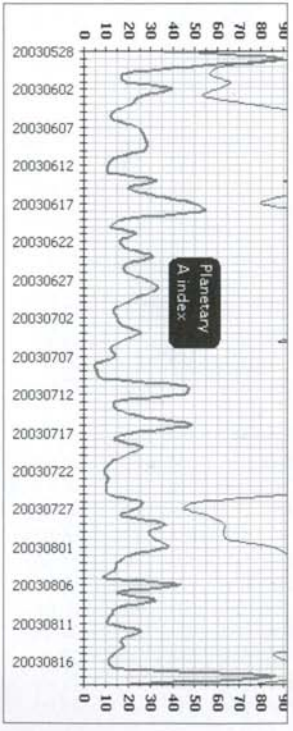
UT5JCW, KN64SN, wkd his first Aurora QSO on 2m after 16 years activity on VHF on August 18th 2003:

1624 DK1KO JO53CT 52A 52A 340/75°

Reports of SK4MPI/B, JP70nj, via Aurora on 2m:

Date	Time	from area
23.5.	1725	OH3 (KP30)
27.5.+	2005	LA (JP33)
28.5.	1055	OH3 (KP30)
29.5.+	1235	LA (JP33)
31.5.+	0505	OH6 (KP02)
	2000-2200	N-DL (JO33, 53)
5.6.	1515	OH3 (KP30)
7.6.	1645	OH6 (KP02)
8.6.	0350	LA (JP61)
8.6.	1715	OH6 (KP02)
9.6.	2110-2230	UA1, SP2, LY, OZ (JO46)
16.6.	1150-1410	OH3 (KP20), SM2 (KP15)
16.6.	1720-2150	SM2 (KP15), SM3 (JP83), LY
17.6.	0230-0630	UA1, OH6 (KP02)
18.6.	0530-0900	LA (JO59), N-DL (JO53)
	1440-1700	N-DL (JO42, 53, 33), PA
21.6.	1645-1730	N-DL (JO42, 53)
	2125	N-DL (JO53)
27.6.	1320-1530	DL (JO53, 33), OH6 (KP02) UA3 (KO75), LA (JP33)
28.6.	1400-1500	SM2 (KP15), LA (JP33), SP2 (JO94)
	2310	LA (JP33)
29.6.	1920	LA (JO59)
30.6.	1335	LA (JP33)
4.7.	1230	OH6 (KP02)
5.7.	1620	LA (JP33)
11.7.	1250-1630	OH6 (KP02), DL (JO53, 33) SP4 (KO13), SP2, LY
	2050-2400	SP4 (KO13)
12.7.	0000-0600	DL (JO53, 72)., SP4 (KO13)
13.7.	2125	LA (JP53)
16.7.	0015	OZ
+	0505	OH6 (KP02)
	1140-1430	G (IO94), DL (JO53, 33), SP2 (JO93)
	2140-2150	G (IO94, PA (JO32)
17.7.	1540	UA1 (KO49)
19.7.	2210-2400	G (IO94), DL (JO62, 72), LY, OZ
26.7.	1745-1800	N-DL (JO32, 52, 54)
	2145-2200	LA (JO59), SM0
28.7.	1430-1810	OH6 (KP02), LA (JO59) N-DL (JO53), OH1 (KP00)
29.7.	0415	OH6 (KP02)
	1350-1900	LY (KO14), N-DL (JO53)
	2230-2300	SM2 (KP15), N-DL (JO53)
30.7.	1700-1745	LA (JO59), N-DL (JO53)
	2330	OZ
31.7.	1300-1630	SM2 (KP15), LA (JP33), N-DL (JO53), SM0
1.8.	0630	SM2 (KP15)
	1345-1745	SM2 (KP15), SM0 (JO99)
2.8.	1420	SM2 (KP15)
6.8.	0650	SM2 (KP15), OH6 (KP02)
7.8.	1435	SM2 (KP15)
	2130	PA (JO23), N-DL (JO44)
8.8.	0520	OH6 (KP02)
9.8.	2100	SM2 (KP15)
12.8.	1245-1515	OH6 (KP02), SM0 (JO99)
17.8.	1755-2135	UA1, N-DL (JO53), SP2
18.8.	0635	UA1
	1100	N-DL (JO32)
18.8.	1200-1800 + 2100-2400	DL (JO53), SP, LA, OH...

+ means report of LA4VHF/B JP20lg



Planetary A Index May 28th to August 20th with the big peaks from the openings on May 29th on the top and August 18th on the bottom.

Source: http://dxlc.com/solar

Meteor Shower Calendar

by Guido Jünkersfeld, DL8EBW

October to December 2003

Name	Date	Max.	ZHR	RA	DEC	v (km/s)	Source
Capricornids	20.09.-14.10.	03.10.	3	303	-10		5IY97
s-Orionids	10.09.-26.10.	05.10.	3	086	-03		5IY97
Draconids	06.10.-10.10.	09.10.	var.	262	+54	20	IMO03
30-Lyncids	01.10.-31.10.	08.10.	10	124	+54		BMS50
eta-Cepheids	04.10.-20.10.	11.10.	22	022	+58		BMS50
epsilon-Arietids	21.09.-13.10.		12	040	+20		BMS50
beta-Doradids	14.10.-21.10.	15.10.	8	091	-64		BMS50
epsilon-Geminids	14.10-27.10	18.10.	2	102	+27	70	IMO03
Pegasids	18.10.-21.10.	19.10.	18	349	+27		BMS50
beta-Arietids	08.10.-30.10.	19.10.	9	022	+22		BMS50
Orionids	**02.10.-07.11.**	**21.10.**	**20**	**095**	**+16**	**66**	**IMO03 *1**
Cygnids-Lyrids	15.10.-30.10.	26.10.	8	280	+40		BMS50
Southern-Taurids	01.10.-25.11.	05.11.	5	052	+13	27	IMO03
Cassiopeids	08.11.-13.11.	09.11.	var.	357	+61		BMS50
Northern-Taurids	01.10.-25.11.	12.11.	5	058	+22	29	IMO03
Leonids	**14.11.-21.11.**	**18.11.**	**>100+**	**153**	**+22**	**71**	**IMO03 *2**
a-Monocerotids	15.11.-25.11.	22.11.	var.	117	+01	65	IMO03
mu-ursa-Majorids	14.11.-28.11.	26.11.	10	157	+42		BMS50
chi-Orionids	26.11.-15.12.	02.12.	3	082	+23	28	IMO03
Phoenicids	28.11.-09.12.	06.12.	var.	018	-53	18	IMO03
Puppid-Velids	01.12.-15.12.	07.12.	10	123	-45	40	IMO03
Monocerotids	27.11.-17.12.	09.12.	3	100	+08	42	IMO03
zeta-Taurids	07.12.-19.12.	10.12.	10	083	+22		BMS50
sigma-Hydrids	03.12.-15.12.	12.12.	2	127	+02	58	IMO03
Geminids	**07.12.-17.12.**	**14.12.**	**120**	**112**	**+33**	**35**	**IMO03 *3**
coma-Berenicids	12.12.-23.01.	20.12.	5	175	+25	65	IMO03
beta-Taurids	15.12.-28.12.		9	080	+24		BMS50
Ursids	**17.12.-26.12**	**23.12.**	**10**	**217**	**+76**	**33**	**IMO03 *4**
delta-Leonids	21.12.-31.12.		12	168	+18		BMS50
delta-Cancrids	21.12.-24.12.	23.12.	10	130	+17		BMS50
Carinids	15.12.-15.01.	30.12.	10	151	-60		BMS50

Kommentare: Noch haben wir 3-4 kräftige Meteoritenschauer vor uns in diesem Jahr:
*1 Orionids: Sicher ein Schauer, der in den letzten Jahren keine besonderen Ereignisse für die MS-Funkamateure hervorbrachte - aber man sollte die Häufung der eintreffenden Meteoriten nicht unterschätzen und ruhig mal in CW oder FSK einen Sked versuchen. (Max. 21.10. 21UT)
*2 Leonids: Leider ist dieses Jahr nicht mehr mit solchen Maxima wie noch in den letzten jahren zu rechnen, aber für die Stunde des Maximums können noch ca. 100-200 Meteoriten erwartet werden - also aufpassen in der Nacht auf den 19.11.! (Max. 19.11. ca. 02UT) – Look for the maximun on Nov. 19th around 02 UT.
*3 Geminids: Sicher der grösste bevorstehende Schauer – allerdings nicht besonders DX geeignet! Hier lassen sich hervorragend die Contest QSOs des BCC abwickeln und Distanzen von 1300-1800km fahren - Side- und Backscatter-Versuche bis auf 50-80km Distanz hinunter können gelingen. Maximum wird am 14.12. in den Nachmittagsstunden sein (14.12. ca 13UT). – Shower good for mediocre QRB from 1300-1800km, Max. 14.12. 13 UT)
*4 Ursinds: Ein kleiner Schauer speziell für Ost-West-Verbindungen schliesst das Jahr ab. Das Maximum ist spitz und es ist auch nur mit Glück etwas reales zu erreichen. (Max. 23.12. 01UT). –Small shower good for E-W paths, maximum on Dec. 23rd around 01UT, but difficult to hit.

Legend / Erklärungen: ZHR: Numer of meteors per hour during the maximum (Times for Europe!)
More explanations see DUBUS 4/2002, page 89.

New Products

Editor: Joachim Kraft, DL8HCZ

Neu von SSB-Electronic
Super-rauscharme Vorverstärker für 2m + 70cm (New LNA´s for 2m + 70cm)

SSB-Electronic aus Iserlohn kommt mit neuen Vorverstärkern auf den Markt, die die Messlatte noch einmal höher hängen: LNA 145 MK II (2-m) Rauschmaß **typ. 0.2 dB.** LNA 435 MK II (70-cm) Rauschmaß **typ. 0.25 dB** Anstelle eines GaAs-Fets wird ein spezieller HETERO- JUNCTION Fet verwendet, der im VHF- und UHF-Bereich eine Eigenrauschzahl von nur 0.1 dB! aufweist. Durch eine trickreiche Implementierung des Bauteils wird eine superniedrige Rauschzahl bei sehr guter Stabilität erreicht. Jeder Vorverstärker wird an einem hochgenauen AGILENT N 8973 A Noise Analyzer getestet und optimiert. Dabei wird die Rauschzahl über die Frequenz „gesweept", was einen präzisen Abgleich auf Rauschminimum sicherstellt. Das Messprotokoll wird ausgedruckt und mitgeliefert.

Am Ausgang des Vorverstärkers befindet sich ein Bandpass-Filter, bestehend aus versilberten Luftspulen und konzentrischen Hi-Q-Lufttrimmern. Dieses Filter entlastet spürbar den nachfolgenden Empfänger von Signalen, die außerhalb des Nutzbandes liegen.

Auf Wunsch werden die Verstärker mit einem N-Stecker am Eingang geliefert, um verlustarme Verbindungen zur Antenne zu ermöglichen. Die 2m-Version hat einen Gain von typ. 23dB, die 70cm-Version von 22dB. Die Geräte wiegen 150g und haben die Maße 74 x 56 x 30mm.

Ausführliche Infos unter www.ssb-amateur.de

SSB Electronic GmbH, Handwerkerstr. 19, 58638 Iserlohn, Tel.: 02371/9590-0, FAX -20

(Engl.: SSB Electronic has presented new preamps with HETERO-JUNCTION FETs in June 2003. NF on 2 is 0.2dB, on 70cm 0.25 dB. More information on the web: www.ssb-amateur.de)

Neu von WiMo
Spiegel mit Feed für 6cm

Bei WiMo gibt es einen Spiegel mit Erreger für das 6cm-Band in professioneller Ausführung. Daten: 26dBi Gain, Durchmesser 47cm, Anschluß N-Buchse, neigbare Mastschelle, Aluspiegel, kunststoffbeschichtet. Preis: 299.- EUR.

(Engl.: WiMo offers a commercial dish with feed for he 6cm band. Gain is 26 dBi, diameter 47cm, price 299 €.)

Info / Bezug: WiMo, Am Gaexwald 14, 76863 Herxheim, Germany, Tel. (+49) 7276 96680 FAX 6978 www.wimo.com junge@wimo.com

WiMo-Katalog auch auf CD

Der zur Ham-Radio neu erschienene WiMo-Katalog ist nun auch auf CD erhältlich. Die WiMo-CD ist zweisprachig deutsch/englisch und enhält den WiMo-Katalog zum Ausdrucken oder offline surfen. Ferner sind noch weitere 200MB Anten-nenanleitungen, Datenblätter, Demo-Software, Demo-Soundfiles für DSP-Lautsprecher usw. enthalten. Der Katalog kann durch Einsenden von 3.50 €, die CD mit 2.- € in Briefmarken angefordert werden. Engl: The new WiMo catalogue is now available also on CD (English and German language). The CD can be ordered for 4.00 EUR (for EU countries), the printed catalogue for 8.00 EUR. (Address see above)

70 MHz-Yagis

Wimo bringt im Herbst 2 neue Yagis für das 70 MHz-Band auf den Markt. Es handelt sich um eine 3-Element und eine 6-Element-Version. – WiMo offers new 4m Yagis this autumn. There will be a 3 ele and a 6 ele version with N-connector.

Neu bei UKW-Berichte
7/16-Blitzschutz

Neu bei UKW-Berichte ist eine Serie koaxialer Überspannungsableiter (Blitzschutz-Zwischenstecker) mit 7/16-Connectoren. Diese Serie vervollständigt die bisherige Familie der Blitzschutz-Zwischenstecker in N-, UHF- und BNC-Norm. Dazugekommen sind nun die Kombinationen 7/16-Buchse auf -Buchse (f/f; Art.Nr.: 00323), 7/16-Stecker auf -Buchse (m/f; Art.Nr.:00324), 7/16-Stecker auf -Stecker (m/m, Art.Nr.: 00325) und die Einbau-Variante mit 7/16-Buchse auf lange Buchse (f/f-l; Art.Nr.: 00326). Die Überspannungsableiter sind für Leistungen von 40 Watt bis über 2 kW lieferbar und können bis etwa 2 GHz eingesetzt werden. Die Preise für einen Blitzschutz in 7/16-Norm liegen bei EUR 135.- bzw. EUR 146.- inkl. MwSt. plus Versand. (Bei Bestellung bitte max. Sendeleistung und Arbeitsfrequenz angeben.) Bezug: UKW-Berichte, E. Smolka, Jahnstr 7, 91083 Baiersdorf, Tel. 09133-77980, Fax 779833 ukwberichte@aol.com www.ukw-berichte.de (Engl: UKW-Berichte offers a lightening protection for coaxial feedlines now also with 7/16 connectors).

News & Comments

Editor: Joachim Kraft, DL8HCZ
info@DUBUS.de

Beacons

Transatlantic Beacon Project (I) VP9DUB beacon

The VP9DUB beacon was switched on on August 13th. 6m is on 50.026 MHz with 15 w out and a loop antenna horizontally polarized.
2m: ist on 144.301 MHz (so you will have the keying on 144.300 when switched to USB). Power out arround 40 watts. Antenna is a 4 element Flexa-Yagi, QTF to Europe. Locator FM72OH. Anyway there occurred some interference from the 2m TX to a local FM repeater and the 2m-beacon is QRT until this problem is fixed. Many thanks to all who were involved, especially DF7KF; VP9GE, W3CMP and the UKSMG for sponsorship! (DL8HCZ)

Transatlantic Beacon Project (II) VO1... in GN37

DUBUS has got up to date information from the Newfoundland Amateur Radio Club regarding a possible 2m transatlantic beacon. They plan to install the beacon TX (formerly VE1SMU) this autumn with a VO1 callsign on QRG 144.400 MHz and antenna towards Europe. Locator square will be GN37. The exact callsign of the beacon will be kept secret in order to avoid untrue reports as happened with VE1SMU.

Transatlantic Beacon Project (III) The Beacon Net

A couple of years ago a project called "The Beacon Net" was founded by Ev Tupis, W2EV. This happened when PSK31 became popular. Ev proposed to built a net of beacons on 10m, 6m and also 2m on both sides of the atlantic ocean in order to investigate propagation and openings. These beacons should run in AX.25 (Packet-Radio) and / or PSK31 mode. Over the recent years most of this project was realized on the 10m band. This is not too interesting for us VHF amateurs as short-skip and F2 propagation across the pond on 10m is not really exciting as it happens very often.
Latest information from W2EV regarding 6m is that on the U.S. side there is now activity using PSK31 on 50.291 USB + 1500 Hz PSK31 audio. Also, there is activity using AX.25 on 50.620 FM @ 1200 baud (a new frequency that currently is tried out with good success).
Regarding 2m W2EV writes the following:
"The transatlantic study is on hold pending analysis of more weather data. As it turns out, we now believe that the best time of the year for a good tropo path is spring, rather than summer and fall. Unfortunately, the spring paths appear to favor Caribbean Island paths, and there is little activity there.
Therefore, we are in the process of interfacing an MP3 player to a 2m SSB transmitter with the hope of building a PSK31-based beacon and placing it on a mountaintop in the Caribbean. If all goes well, we'll have 120-watts or so, with a 12-element antenna aimed at Portugal next spring. "
So there is a chance for another interesting beacon project. I would suggest that W2EV should get some encouragement from Europe. May be some of our readers should express interest from the EU side. His email is W2EV@arrl.net
You may also wish to subscribe to the email list beaconet-subscribe@yahoogroups.com. Allthough most of the traffic there discusses 10 meter activity. (DL8HCZ)

GB3MCB Info

The GB3MCB, IO70, beacon has to change QTH in a few months and is supposed to go QRT soon. At the moment the keeper is still looking for a new QTH.

Expeditions

G0KZG/MM Info

Andy has changed ships, he's now on board of fisheries research ship "CEFAS ENDEAVOUR", which works mainly in European seas. The proposed trip from CT to PY on board "DISCOVERY" will not take place. Plenty of work on board at present, so he won't be able to set up equipment until after the Winter of 2003/2004. Andy hopes to be qrv again in 2004 on 144 MHz, running the usual high power station, subject of course to being able to operate from the ship without any interference problems. 73 de Andy Adams, GØKZG/mm

ZA Albania qrv

Until July 12th ZA/DL6LAU (JN91) was qrv on 6m and also on 2m via FSK MS with 75w and 9 ele. Yagi. On July 8th some 6m QSOs to W and VE were made. Carsten plans to be qrv again on 6m and 2m in October / November.

IS0 / IM0 qrv

From Sept. 17th to 24th IS0/IZ2DPX/p and IM0/IZ2DPX/p will be qrv from Sardinia (JM49) and Maddalena Isl. on 6 + 2m.

SX9G – KM24: Result

The expedition to Gavdos Island in the rare Locator KM24 took place successfully in the beginning of June. On 6m more than 1100 QSOs with 42 DXCCs were made. Despite the superb 2m Es season on 2m only 10 Tropo QSOs with SV, SV9 and 4X were achieved. (SV2DGH, Christos).

2m: EA7/DJ4UF/p – IM96

Eckart, EA7/DJ4UF/p plans to be qrv again on 2m via FSK MS in November with more power.

Andorra QRV

On September 6/7th an Expedition will be qrv on 2m with the call C37URA in the contest with 2 x 17 ele yagi and 1 KW. Loc. JN02PV, 2614 m a.s.l. On 23cm the call will be C31PM, QRG 1296.109 MHz, rig is 40w to a 55 ele yagi.

Stations and OPs

UC2AA in Cyprus

Many of the European VHF-OPs know the callsign UC2AA (later EU1AA) very well from the 70´s, 80`s and 90`s on 6m, 2m and up. UC2AA, "Ben", was for years the only real active station from White Russia (QTH Minsk, KO33) and for many he was a new DXCC. Since 1997 Ben is living in Larnaka, Cyprus (KM64VV). He has the call 5B4AGM now and is mostly active on HF and 6m.

Like Ben quite a number of amateurs have left the former CIS countries during the last 10 years. Especially hams from UL7, UA9 and UR moved to DL and 4X. But also OPs from UA3, UA6, UM, UD and ER left their countries. Most of them live now in also in DL, 4X and W. Of course most of them were HF OPs (we have a list of more than 500 calls here) but also the one or other well known VHF callsign is among them – like UC2AA. So now you can imagine why the one or other well known VHF callsign from eastern Europe has disappeared from the bands.

Another example is ex UA1AKZ, Leonid, who has moved to Israel and is very active as 4Z5AO on 2m from KM72mw. Leonid made a lot of 2m Es QSOs this summer towards Europe. (DL8HCZ)

5B4AZ, KM64mr

5B4AZ, Nick, reports to DUBUS that he is the only station from Cyprus at the moment who shows some interest for 2m DX. Nick, who was the former VHF manager of the 5B club says that the 5B club is quite down now. Nick is running 50w and a X-Quad on 2m and enjoyed to work some EU´s on June 28th via 2m Es.

Morocco qrv on 2m

CN8LI, Said, continues to be qrv on 2m from IM63NX. With CN8IG there is a new station qrv on 2m from IM75HN. He is more than 200km closer towards EU. So this a chance for the EU-stations to work CN via Es who are in a difficult distance to CN8LI.

PA3HEN/MM now PC7CW

Theo finished his last trip in the end of June. On June 22nd he made his last 6m-QSOs from IM58 and went QRT is Lisboa. On his trip to Turkey and on his return from Israel he made many 6m QSOs from rare squares in the Mediterranean Sea. On 2m he made only Tropo-QSOs with the "locals". In the end of May e worked a couple of CT`s from IN40, IN41, IM49, IM48 and IM47 on 2m. Remarkable were some 70cm FM QSOs with his handheld on 432.325 MHz from IM47 and IM48 to CT1DYX in IN51. QRB was more than 500km and Theo just running a few milliwatts. Sea ducting made it possible. Theo changed his dutch call in August to PC7CW.

JY9NX, KM71ww / JY4NE

JY9NX, who has been working for more than 4 years for the JA government in Amman, suddenly showed interest in 2m DX in June 2003. He caught his first 2m sporadic-E opening towards Europe on June 28th working with his 7 ele vertical Yagi that he has been using for satellite QSOs in the past. DUBUS advised him to change to horizontal polarisation and Koji changed his polarisation on June 29th. He was fascinated by the almost daily sea ducting to Malta (9H). Unfortunately Koji`s had to leave JY in August for a new job in JA. Quite a pity that nobody encouraged Koji for 2m DX 4 years ago! But there is JY4NE who starts to show interest for 2m DX now.

4U1UN on 6m

4U1UN, the "U.S. problem DXCC" regarding activity on 6m (and up, of course) was activated successfully by DL4TT on June 10th 2003. 111 QSOs were made with W1,2,3,4,6,7,8,9 and a few VE`s. W6 was even double hop Es. On June 22nd W2IX and W2RE were active and made some Es QSOs on 6m mostly into the eastcoast region. Wonder what would have happened if one of the operations would have cought an opening to EU like it has occured on June 26th.... (DL8HCZ)

SV/A Mount Athos

SV/A the "EU problem DXCC" with only Monk Apollo SV2ASP/A active on HF recently remains to be a dream (nightmare?) for 6m/2m OPs. SV1DH recently tried to convince Monk Apollo for a 6m Tropo test without success. Obviously Apollo`s rig was broken some months ago.. The good news is that now an IC-706 was donated to Apollo. So there is at last a rig with 2m and 6m now available for him.

Additionally ON4ANT reports that there will be an operation later this year by U.S. hams including 6m.

4L – Georgia QRV

The Clubstation from the Georgian ARC is qrv now under 4L0G from LN21ca also on 2m and 70cm.

9H1EL QRT now

9H1EL, Jeff, (also OP from 9H0A) is qrt after living 28 years in Malta. On July 21st he moved to the Philippines. He will be qrv as DU3/G3YDR in the future on 6m.

News, Comments & Reports

No Brendan Trophy for N2PIG

In August 2003 the responsible Irish comitee decided not to accept the application from N2PIG for the Brendan Trophy. N2PIG claimed a 2m transatlantic QSO via MS-WSJT on March 19th 2002 beween VO1/N2PIG and EI/VA3PIG (his wife). Allthough the main reasons for not accepting the application were called "formal" it was also stated that in addition the documentation of the QSO would not have been sufficient. N2PIG had got several chances to provide the missing material, but nothing happened.

5B4AZ, Nick, writes:

I have been studying Es on 6m and also 2m and it seems that from Cyprus the most common direction is abt 315 deg. to the area I have worked on June 28th. It is clear at least on

2m that the center of the path is usally over the Balkans north of Greece and the openings are strongly related to big cloud formations in the region, especially Cumulo Nimbus types.

On the picture you can see the formation over north Greece and Balkans. The formation is exactly the middle of my path to the stations I worked. Another path is North-East over similar cloud formations that occur over Turkey but so far nothing on 2m. (Nick, 5B4AZ, KM64)

4X1IF, Ralph, writes:

I would like to make a few comments. For the last 5 years, Es on two meters here has been really poor. For this reason, and perhaps because of the web and e mail use of computers and because of the popular use of 6 meters to make qso's, almost all activity here in the middle East on 2 meters has stopped. In the "good old days" prior to the past 5 years, we had daily tropo duct activity from Cyprus, Rhodes, southern shore of Crete, Turkey and some of the Greek Islands. All of these hams have become inactive on 2 meters now. Yet the band has been open to tropo duct almost each day as I hear our "cousins" in Lebanon using illegal FM amateur hand-holds on 144.300 all the time!

This year has been no exception. The band has really been "lonely" with the exception of Koji, JY9NX, who suddenly "popped" up two weeks ago. We worked via ionospheric backscattering (I believe) over the Mediterranean.

June 28th appeared to be a special day. At sun rise we had video coming in on 6 meters, probably from Iraq, Syria, and Iran. We never have video coming in before mid morning, so I guessed this might be a big day on 2 meters. I again started the beacon on 144.300 and ran it all day. 6 meters was wide open and simply filled with tremendously strong video throughout the morning and afternoon; but still nothing on 2 meters. About 5 pm local time, suddenly Koji appeared on 300 talking with another Jordanian amateur who here was extremely weak. Again I swung the beam to Amman and lost the signals, but upon rotating the antenna directly west, I again picked up Koji. I so wanted to work the second Jordanian since contacts are now so rare here! So while talking with Koji, who should break-in? Alan, 9H1AW - at last our long awaited tropo duct path to Malta finally opened up!! Boy were we both excited! Weather conditions were ripe for good tropo - hot and very humid air, just right to form the high dielectric water layer above the ocean surface. Boy, were Alan and I thrilled as both of us apparently have been monitoring 144.300 for tropo openings during the past two months.

When I told Alan that Koji was on frequency, Alan carefully listened for Koji and even heard his signal weakly; but Koji did not hear Alan. I told both operators to wait about one hour, since tropo ducts often improve toward sunset. The problem is that the duct abruptly stops just east of Jerusalem, where the extremely dry desert area abruptly starts upon the decent to the Dead Sea and Jericho from Jerusalem. And the arid mountainous area from the Jordan River to Amman also kills the tropo. So I knew it would be not easy from the Malta boys to make contact with Koji!!! But to our thrill, Alan made the first contact at sun set here, followed by a few more contacts made today. But to keep the story short, several other Maltanese stations came on frequency to try to work Koji and asked me to obtained his telephone number! In the process of trying to make contact with Koji, all hell broke loose with a great Es opening into the southern Mediterranean area that lasted about 2 hours. Worked were Cyprus (at last!), Greece (I believe), Hungary, Bulgaria, the former Yugoslavia providences, Italy, Yugoslavia and maybe some other countries. But perhaps the second exciting event was toward the end of the opening when Malta was still pounding in; Arco, 4X1GA/MOBILE, work several Malta stations from his car running 50 watts and a vertical whip antenna!

On June 29th 2 meters again opened up to Malta via tropo. Koji, JY9NX, changed polarization of this antenna from vertical to horizontal. Before sunset, he was weak into Malta, probably about 419 but he made several new contacts, and the boys in Malta went crazy with the new country!

Long after sunset about 9 PM local time, Koji was pounding into Malta with a 579 signal. Why? My explanation is that the air temperature rapidly cools down from 35 C to 20 C after sunset and allows the moist air from the sea to penetrate much deeper into central Jordan; thus the tropo duct extends much deeper into Jordan.

New 70cm-Tropo record

On July 31st G8VHI, Reg, worked EB8AYA (from Teneriffe, IL18ri) for an new IARU-region-1 Tropo-record with 2966km. The old record was established by himself as GW8VHI in 1984 with EA8XS and 2787km. Reg works with 100w and 2 x 13 ele yagi. EB8AYA, Javier, works with 30w and 2 x 21 ele yagi. Javier is only qrv in July and August on 70cm (and 2m) from his holiday QTH. The rest of the year he is living on La Palma without any rig for DX. (G8VHI/EB8AYA/CT1HZE)

New Dutch Prefixes and Callsigns

Since August 2003 Dutch amateurs may change their callsigns to a new prefix and suffixes with one letter only.

The follwing prefixes are in use now: PA, PB, PC, PD, PE, PF, PG and PH. "PD" is reserved for Novice licences only, "PE" and "PH" is reserved for VHF licences only. Many well known VHF-DXers have already changed their call, e.g. PA2VST is PA2V now. A list with the changed calls is published on the web: http://www.pg7v.net/english

Nordic VHF Meeting 2003 - Report

From June 6th to 8th the annual Scandinavian VHF meeting took place in Gavelstad, Norway (Locator JO49XL). As usual the meeting was really "Scandinavian": There were 46 LA`s, 34 SM`s, 21 OH`s, 7 OZ`s, 3 DL`s, 2 PA`s, 1 W and 1 TF.
A special station was qrv with the callsign LC0VHF and made a couple of QSOs on 6m. The following lectures were held:
- OZ1FF: Rain Scatter Propagation on the Microwave Bands in teory and practice.
- SM5BSZ: Linrad and wideband receivers.
- DB5KN: VHF and up contest activities in Germany.
- PE1PFW: Modern components and technicques for Microwave enthusiasts.
- LA8YB: EME techniques. Building of huge 2m EME array.

The next Scandinavian VHF meeting will take place on June 5th/6th 2004. Location will be probably on Aland Island (OH0).

Scandinavian VHF Meeting 2003
The location in Gavelstad / Norway (JO49)

25th Anniversary: First observation in Cyprus of a 144 MHz TEP signal from Zimbabwe, by 5B4AZ

On April 8th 1978 at 1715 UTC, a signal from ZE2JV's beacon in Rhodesia (Loc. KH52ME, now Zimbabwe), transmitting on 144.118 MHz, was heard in Cyprus for the first time by 5B4AZ in Limassol (KM64). This marked the first 144 MHz TEP signal observation between Europe and southern Africa, following reports of 144 MHz TEP contacts between southern and central American countries either side of the (magnetic) equator.
TEP on high frequencies was observed and monitored by 5B4WR and ZE2JV as far back as 1957 but as far as I know these observations were mostly on 28 MHz and 50 MHz. After reports of 2m TEP contacts across the American continent, 5B4WR and ZE2JV agreed to setup a 2m beacon in Zimbabwe, operated by ZE2JV and monitored in Cyprus by 5B4WR and 5B4AZ. For a period of several weeks no signals were heard, and some dissapointment set in until the evening of April 8th 1978, where the author, while monitoring 144118 KHz (ZE2JV's beacon frequency) heard a weak and flattery signal rising from the background noise. Very soon the callsign of ZE2JV was clearly readable, despite the weak signal and the fast flatter fade which is characteristic of TEP propagation.
Right away the author called 5B4WR on the phone, since at that time there was no 2m transmitter available for a 2-way contact and ZE2JV, unaware of the opening, continued to transmit as a beacon. 5B4WR then called ZE2JV but since at the time direct calls were not possible, the band closed before a 2-way contact could be made.Rather dissapointed, all parties involved pondered on this really exciting event, wondering whether it would repeat itself the following evening for a 2-way QSO. Well, this did happen and 5B4WR managed to complete a 2-way QSO with ZE2JV on the 9th of April 1978 at about 1730 UTC, marking the first Europe-Southern Africa QSO on 2m TEP (or any other mode!).
Equipment used by 5B4AZ for the reception of 2m signals was a home brew converter of unknown performance and a Collins 51J4 receiver. The antenna was a home-made 12 element yagi, following detailed design parameters published by DUBUS-Info. 5B4WR had a FT200 transceiver and if I remember well, a Microwave Modules 28/144 transverter. ZE2JV I believe had some home-brew equipment and a Microwave Modules 2m converter sent to him by 5B4WR.
Following the success of this team, stations in Greece and South Africa also made contacts on 2m, establishing record distances for Europe-Africa VHF QSO's. Later, experiments were carried out on UHF as well, and the author on one occasion heard a very weak buzzy signal on a South African beacon's frequency but no positive callsign identification was possible. Interestingly, during some tests carried out by the author, signals from one the OSCAR satellite's 144 MHz beacon were received weakly while the satellite was low over Zimbabwe's southern horizon, e.g. in a situation similar to a ground-based beacon.
Also on a regular basis, weather satellite transmissions in the 137 MHz band used by the author to receive APT weather images, become unusable while they are in a zone affected by TEP, because the signals are badly affected by flatter fading. Reception is possible only when the satellites move out of the TEP zone as they rise from the south. The transition from flattery to normal signals is aprupt, as if the satellite 'pops' out of the TEP zone.
Written by 5B4AZ, Neoklis Kyriazis, Limassol, July 3rd 2003.

New Prediction Methods

Recently a new method was published by scientists that allows to make better predictions for the future solar cycles. Regarding the next cycle the prediction is looking promising as this one should be much better than the actual one.

3m-DX via Es from U.K. to USA

From the RSGB GB2RS bulletin: "In GB2RS last week, we reported the extraordinary VHF propagation on the 26th of June, when two VHF-FM DXers received broadcast stations from Newfoundland and Bangor, Maine, in North America. One of them, Paul Logan, from County Fermanagh, has contacted GB2RS to say that he also logged radio station WFRY in Watertown, New York, on 97.5MHz at 2015UTC on the 26th of June. The station has since confirmed his reception report. Paul says the distance is 3049 miles, which breaks

the previous Band 2 Sporadic E distance record, held by Todd Emslie in Australia, who had received a station in American Samoa at 2739 miles."

Dates

Belgian Microwave Roundtable 2003

1. The Belgian Microwave Roundtable is organized by the Radio Club Leuven (RCL). The 5th edition will take place on the 16th of November 2003 at the 'Koninklijk Atheneum', Redingenhof, 3000 Leuven from 10.00 am until 17.00 pm. Commercial participant and demos are welcome from 8.00 am.
2. Last years edition attracted more than 300 visitors mainly from the Benelux and France. A survey held during the event showed that visitors were very satisfied and were planning to come back. We do expect at least the same number of visitors for this upcoming edition. There was/will be a 2 euro income fee.
3. Last year there were 16 demo stands showing mainly home built hardware for the bands from 144 MHz up to 76 GHz, including ATV stations, NBATV, contest stations, APRS, slow scan, measuring instruments, antenna's, etc. We expect a similar number of demo stands this year.
4. Last year's edition featured a number of lectures on microwave topics, ATV, patch antennas, APRS, etc. At this moment we are contacting speakers for this edition.
5. There was a very well equipped measuring stand manned by 'professional' amateurs. Visitors brought in more than 30 objects ranging from LNA's and antennas to complete transceivers for frequency measurements, noise figure measurements, spectrum measurements, power measurements, etc. up to the mm wavelength region. We are planning a similar measuring stand this year. This is a unique opportunity as very few amateurs have access to this range of equipment.
6. 140 copies of the RCL 2002 Microwave Proceedings (including articles on topics such as microwave filters, weather satellites, interdigital filters...) were sold during the 2002 edition.
7. As at last year's event there will be several meeting points on VHF, ATV, etc. with demos of hardware, software, etc. These stands were/will be an occasion for lively discussions.
8. For last year's editions 13 commercial and semi commercial participants were invited, most of them offered components for home building microwave and related equipment. We are planning to invite a similar number of commercial and semi commercial participants this year. There was/will be no fee for commercial participants.
9. The event will be announced via a e-mail database, a specialized web page, magazines, posters, etc.
10. Catering (food, drink) was/will be provided by RCL at nominal cost. There will be talk in on local simplex and repeater channels (2 m & 70 cm).

Info: ON7JP, email: Jacques.Depijpere@pandora.be

4m Band – News

OY and OZ on 4m now

Special licences for the 4m-Band were issued in June 2003 to OY9JD and in July to several OZ stations. They are allowed to work on 3 frequencies: 70.025, 70.050 and 70.100 MHz with 25 Watts in all modes. There is no antenna restriction. OY9JD (IP62) has already worked via Tropo the first ever QSO from OY to GM with GM4XRV/p (IP90). On July 19th OY9JD worked S53X via Es. S51DI, JN76, worked OZ3ZW, JO54, also on July 19th at 1127z for a first S5-OZ.

4m beacon in OZ: OZ7IGY QRV

The OZ7IGY is qrv since July 18th also on 4m on 70.021 MHz. The beacon is working from JO55 with a dipole in N/S direction.

4m beacon in SM

SM0TSC has got a permission to erect a beacon on the QRG 70312.5 MHz with the callsign SJV900. Loc. Will be JO99. Licences for amateurs are expected to come in about 5 years. SM0TSC himself has applied for a TX licence on 70.137.5 kHz.

4m in 9A / YU

Croatian Amateurs will get a broad 4m allocation in September 2003, max. power 10w. YU7EF was worked by several U.K. stations in July and August on 4m. But status unsure.

4m in EU

Also in other European countries (OH, ON, ES) efforts are made to obtain licences for the 4m band. I guess Germany will be the last country again like it has happened on 6m. (Of course, here the HA's are the real losers). The situation on 4m in DL is very complicated. The band mostly "belongs" to the military. Additionally the band is used in some regions by railway companies. Back in 1957/1958 due to the international geophysical year (IGY) there have been special permits for 4m in DL, F, HB9, G etc. Only the G's and EI's have managed to keep this band from these days until now. It's time now to start worldwide efforts for 4m licences in order to be ready for the next cycle.

Redaktionsschluss für Aktivitätsberichte und redaktionelle Beiträge für DUBUS 4/2003 ist der 20. November 2003.
Deadline for reports etc. for DUBUS 4/2003 is November 20th 2003

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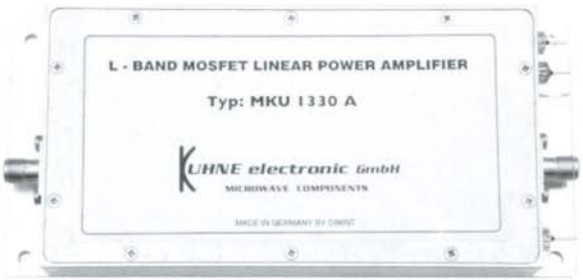

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RN6BN – 16 x 16 element Yagis for 2m

RN6BN, Sam, has finished his new Yagi system for 2m EME. His Locator is KN95
Sam plans to upgrade to 32 x 16 this autumn.