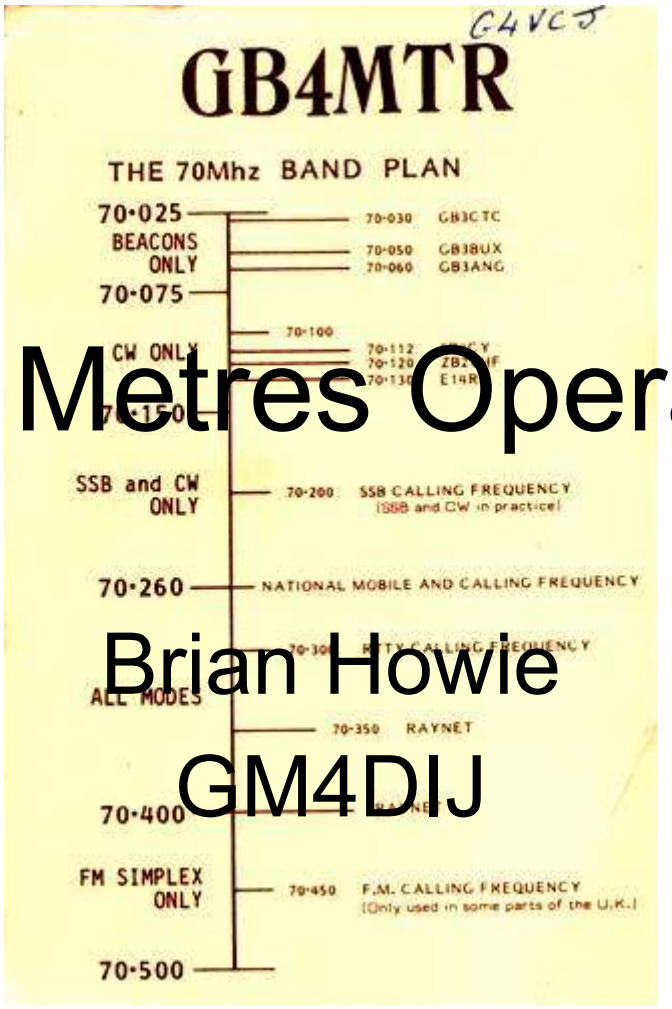


Four Metres Operation

Brian Howie
GM4DIJ

Brief History

- 1949 5-Metre (56MHz) band closes
- 1956 70.2-70.4MHz allocated in UK 50W DC input
- 1964 band increased 70.1 to 70.7MHz
- 1970s 70.025MHz to70.5MHz
- 1987 70.025MHz to70.5MHz
  - And class B allowed access and 160W out
- 1998 –Now, more countries gain access as OIRT closes
  - Croatia, Czech Republic, Denmark, Eire, Estonia, Faeroe Islands, Greece , Greenland , Luxemburg, Monaco, Portugal, Azores, Madeira, Slovenia, Somalia, South Africa, Spain ,UK, Gibraltar, Cyprus, Italy, Norway (Germany, 69.95MHz)
- Cross-Band 6m/10m-4m has been going a long time
  - G4BPY and VE1ASJ completed a 50/70 MHz QSO in 1980 (Cycle 21)
  - W3EP and CT1HZE completed a 50/70 MHz QSO in 2006

Brief History

IGY-års VHF–frekvenstildelinger til amatører i en række europæiske lande

I forbindelse med det internationale geofysiske år kan vi meddele, at følgende lande har tildelt deres amatører frekvenser i området mellem 50—72 MC/s.

Irland: 70.575—70.775 Mc/s
Frankrig: 72.0—72.8 Mc/s
Finland: 70.2—70.3 Mc/s
Tyskland: 70.3—70.4 Mc/s
England: 70.2—70.4 Mc/s. 50 watts A1., A2, A3.
Holland: 70.3—70.4 Mc/s
Norge: 50.0—54.0 Mc/s. A1, A2, A3, F3.
Norge: 70.6—72.0 Mc/s. A1, A2, A3, F3.
Sverrig: 50.0—50.5 Mc/s. 150 watts.
Jugoslavien: 72:0—72.8 Mc/s

Det vil bl. a. sige **de skandinaviske lande** undtagen Danmark, men herom forhandles der for tiden.

Børge Petersen, OZ2NU.

The IGY-year(1957/1958) radio amateur VHF frequency allocations in European countries

In relation to the international geophysical year we hereby announce that radio amateurs in the following countries have been allocated frequencies between 50-72 MHz.
Eire: 70,575-70,775 MHz
France: 72,0-72,8 MHz
Finland: 70,2-70,3 MHz
Germany: 70,3-70,4 MHz
England: 70,2-70,4 MHz, 50 W, A1, A2, A3
The Netherlands: 70,3-70,4 MHz
Norway: 50,0-54,0 MHz, A1, A2, A3, F3
Norway: 70,6-72,0 MHz, A1, A2, A3, F3
Sweden: 50,0-50,5 MHz, 150 W
Yugoslavia: 72,0-72,8 MHz

Brief History

- Early activity on AM and CW using H/B or modified PMR e.g Pye Ranger,Vanguard,Cambridge etc

- Pye ‘Ranger’ VHF radio telephone set, c 1960s. 5W AM QQV03-10

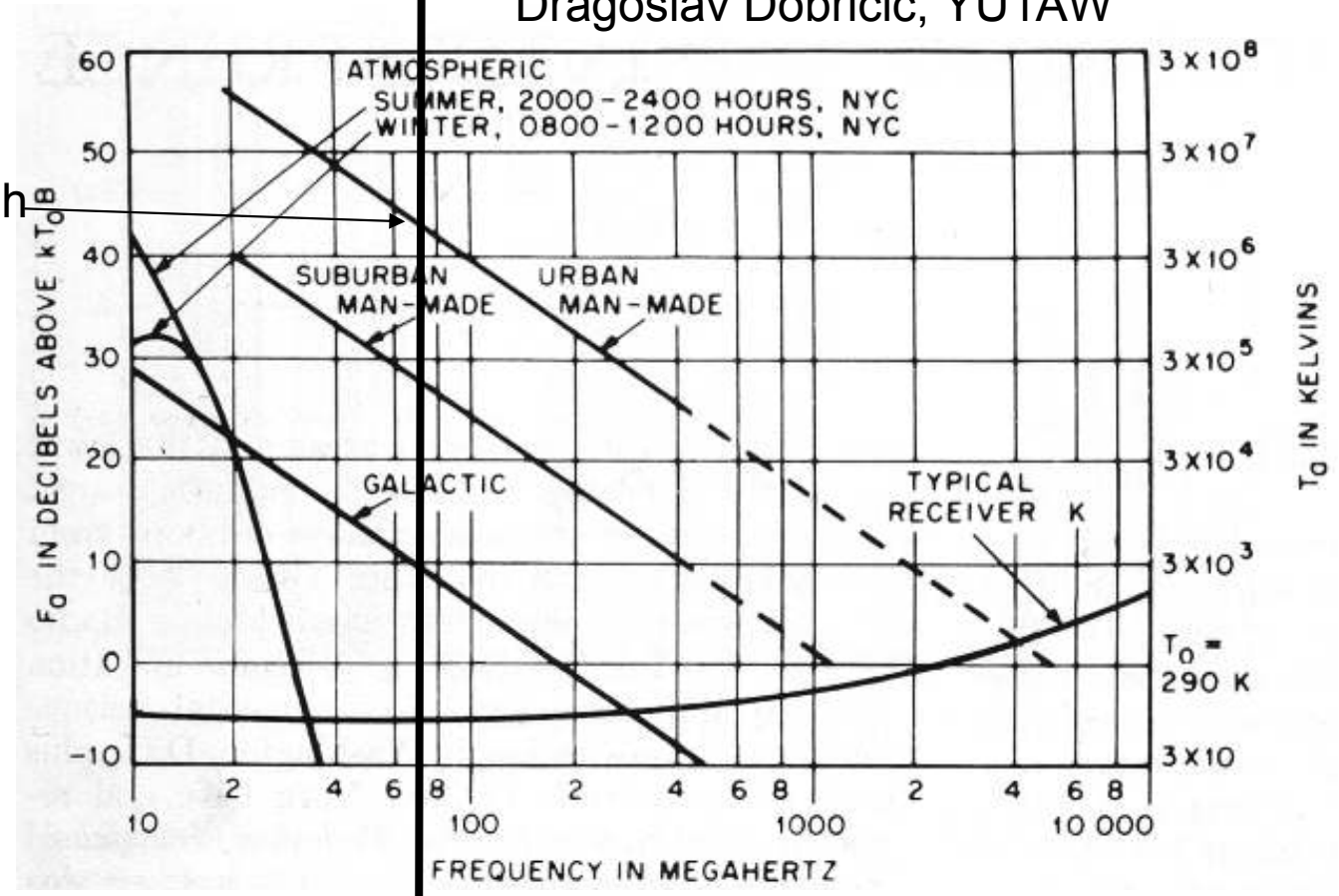
- The B44 is a British VHF AM man portable transceiver. Frequency range 60-95MHz with three crystal controlled channels. RF output 3 Watts

Band Characteristics

- Low VHF Band
  - Tropo - not as good as 2m but better than 6m
  - Ducting – rare
  - Sporadic E – rarer than 6m
  - Aurora – less Doppler distortion than 2m
  - Meteor Scatter – good, longer than 2m
  - F2- very rarely, only at sunspot peaks

Band Characteristics

VHF Antenna Noise Temperature
Dragoslav Dobričić, YU1AW



Edinburgh

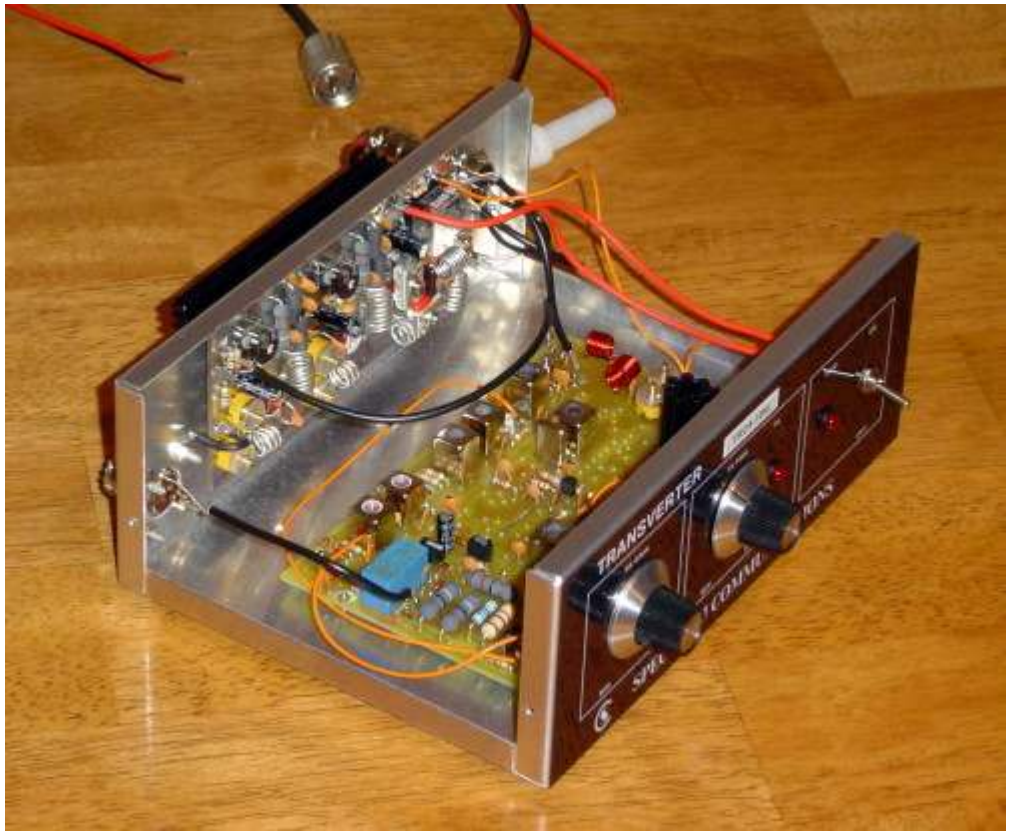
70MHz

Band Plan

70 MHz (4m)	Necessary Bandwidth	UK Usage
70.000-70.050 MHz		**Propagation Beacons only**
		70.030 MHz Personal beacons.
70.050-70.250	2.7 kHz	**Narrow Band modes**
		70.085 MHz PSK31 centre of activity
		70.150 MHz MS calling
		70.185 MHz Cross-band activity centre
		70.200 MHz SSB/CW calling
70.250-70.294	12 kHz	**All Modes**
		70.260 MHz AM/FM calling
70.294-70.500	12 kHz	**All modes channelised operations using 12.5 kHz spacing.**
		70.3000 MHz RTTY/fax calling/working
		70.3125 MHz Digital modes
		70.3250 MHz DX Cluster
		70.3375 MHz Digital modes
		70.3500 MHz Internet Gateway - can be used by RAYNET
		70.3625 MHz Internet voice gateway
		70.3750 MHz Can be used by RAYNET
		70.3875 MHz Internet voice gateway
		70.4000 MHz Can be used by RAYNET
		70.4125 MHz Internet voice gateway
		70.4250 MHz FM simplex - used by GB2RS news broadcast
		70.4375 MHz Digital modes (special projects)
		70.4500 MHz FM calling
		70.4625 MHz Digital modes
		70.4750 MHz
		70.4875 MHz Digital modes
LICENCE NOTES: Amateur Service 70.0-70.5 MHz **Secondary User:** 22dBW permitted Available on the basis of non-interference to other services (inside or outside the UK).		

Equipment

- Transverters
  - Spectrum
  - Mutek
  - Microwave Modules



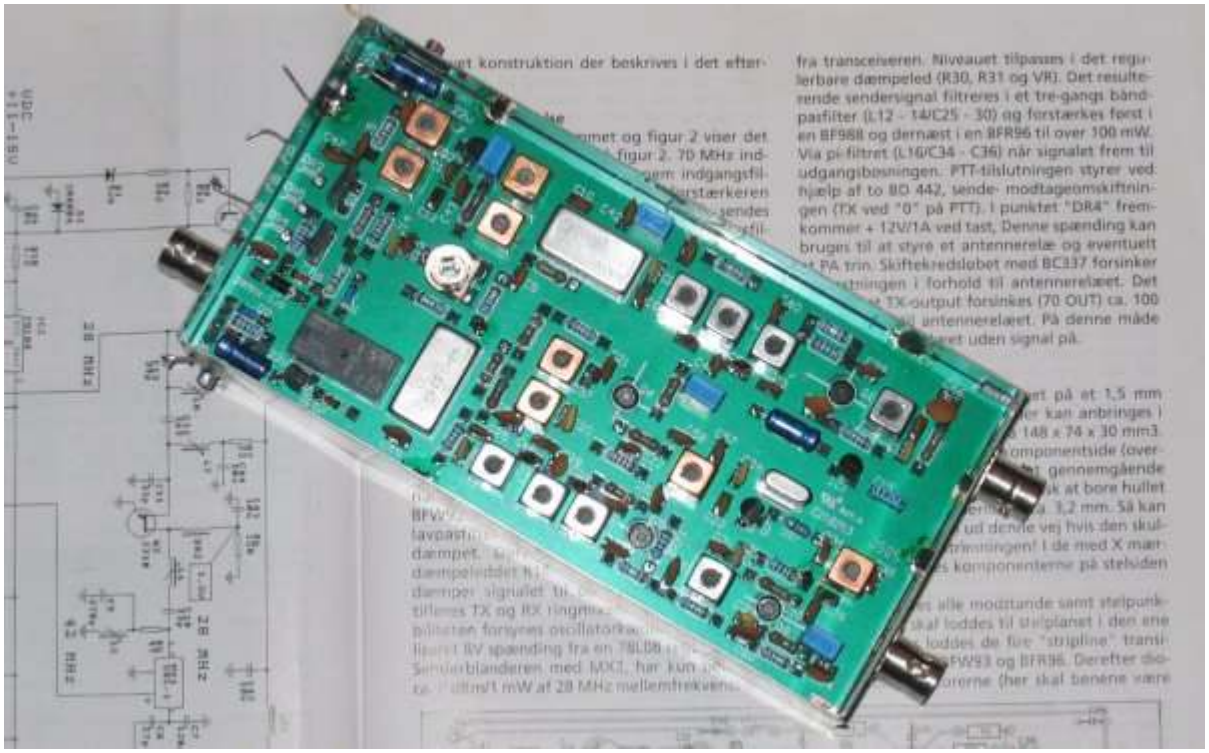
Equipment

70 MHz Transverter OZ2M

Tx o/p ~100mW

Rx NF ~2.5db

The total cost of ready to built kit is around 120 €. Profits go to supporting OZ7IGY



Equipment

Meon Transverter PW

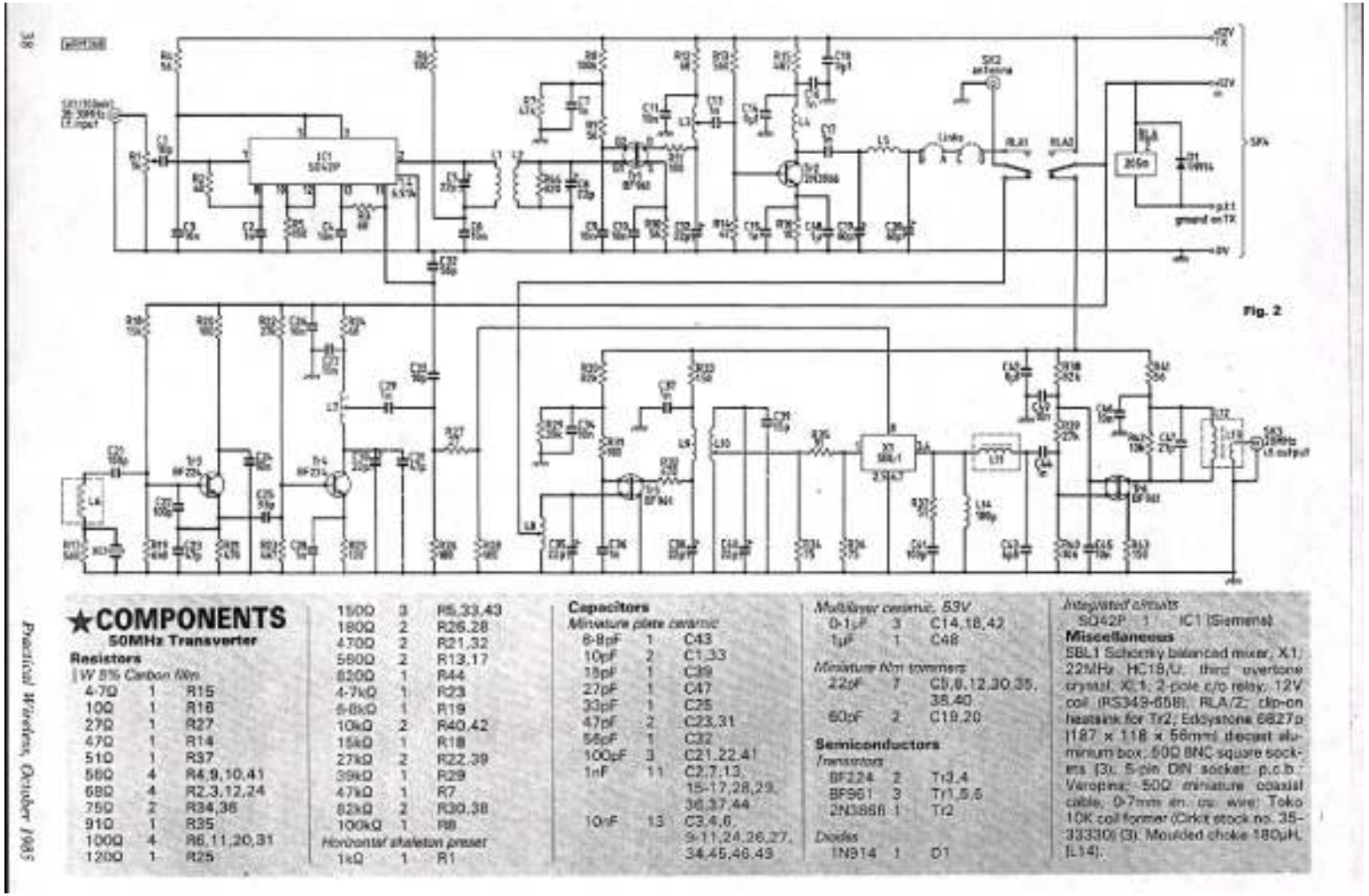


Fig. 2

★COMPONENTS

50MHz Transverter

Resistors

1W 5% Carbon film

4·7Ω	1	R15
10Ω	1	R16
27Ω	1	R27
47Ω	1	R14
51Ω	1	R37
56Ω	4	R4,9,10,41
68Ω	4	R2,3,12,24
75Ω	2	R34,36
91Ω	1	R35
100Ω	4	R6,11,20,31
120Ω	1	R25
150Ω	3	R5,33,43
180Ω	2	R26,28
470Ω	2	R21,32
560Ω	2	R13,17
820Ω	1	R44
4·7kΩ	1	R23
6·8kΩ	1	R19
10kΩ	2	R40,42
15kΩ	1	R18
27kΩ	2	R22,39
39kΩ	1	R29
47kΩ	1	R7
82kΩ	2	R30,38
100kΩ	1	R8

Horizontal skeleton preset

1kΩ	1	R1

Capacitors

Miniature plate ceramic

6·8pF	1	C43
10pF	2	C1,33
18pF	1	C39
27pF	1	C47
33pF	1	C25
47pF	2	C23,31
56pF	1	C32
100pF	3	C21,22,41
1nF	11	C2,7,13, 15-17,28,29, 36,37,44
10nF	13	C3,4,6, 9-11,24,26,27, 34,45,46,49

Multilayer ceramic, 63V

0·1µF	3	C14,18,42
1µF	1	C48

Miniature film trimmers

22pF	7	C5,8,12,30,35, 38,40
60pF	2	C19,20

Semiconductors

Transistors

BF224	2	Tr3,4
BF961	3	Tr1,5,6
2N3866	1	Tr2

Diodes

1N914	1	D1

Integrated circuits

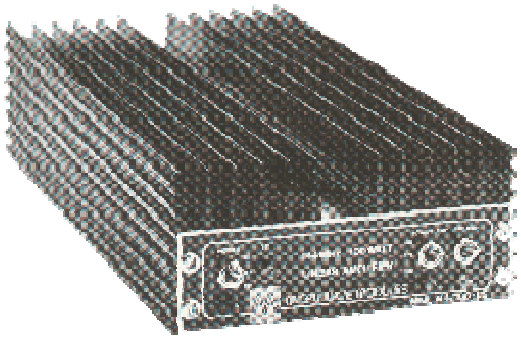
SO42P	1	IC1 (Siemens)

Miscellaneous

SBL1 Schottky balanced mixer, X1, 22MHz HC18/U third overtone crystal, XL1, 2-pole c/o relay, 12V coil (RS349-658), RLA/2; clip-on heatsink for Tr2; Eddystone 6827p (187 × 118 × 56mm) diecast aluminium box; 50Ω BNC square sockets (3); 5-pin DIN socket; p.c.b.; Veropins; 50Ω miniature coaxial cable; 0·7mm en. cu. wire; Toko 10K coil former (Cirkit stock no. 35-33330 (3); Moulded choke 180µH (L14).

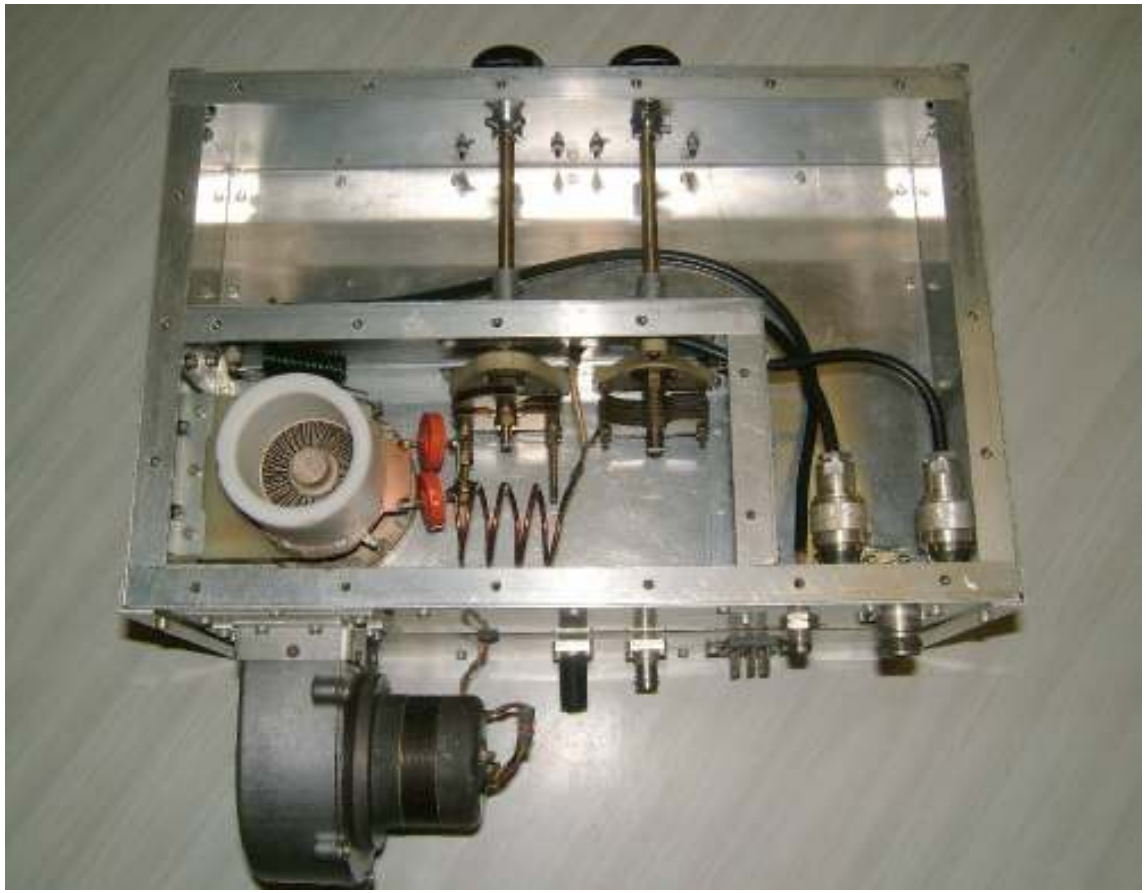
Equipment

- Linear Amps (commercial)
  - Microwave Modules 75W out
  - TE Systems 0610G 140W out
  - Pye A200 – up to 60W out - needs mods for Class AB and hard switching



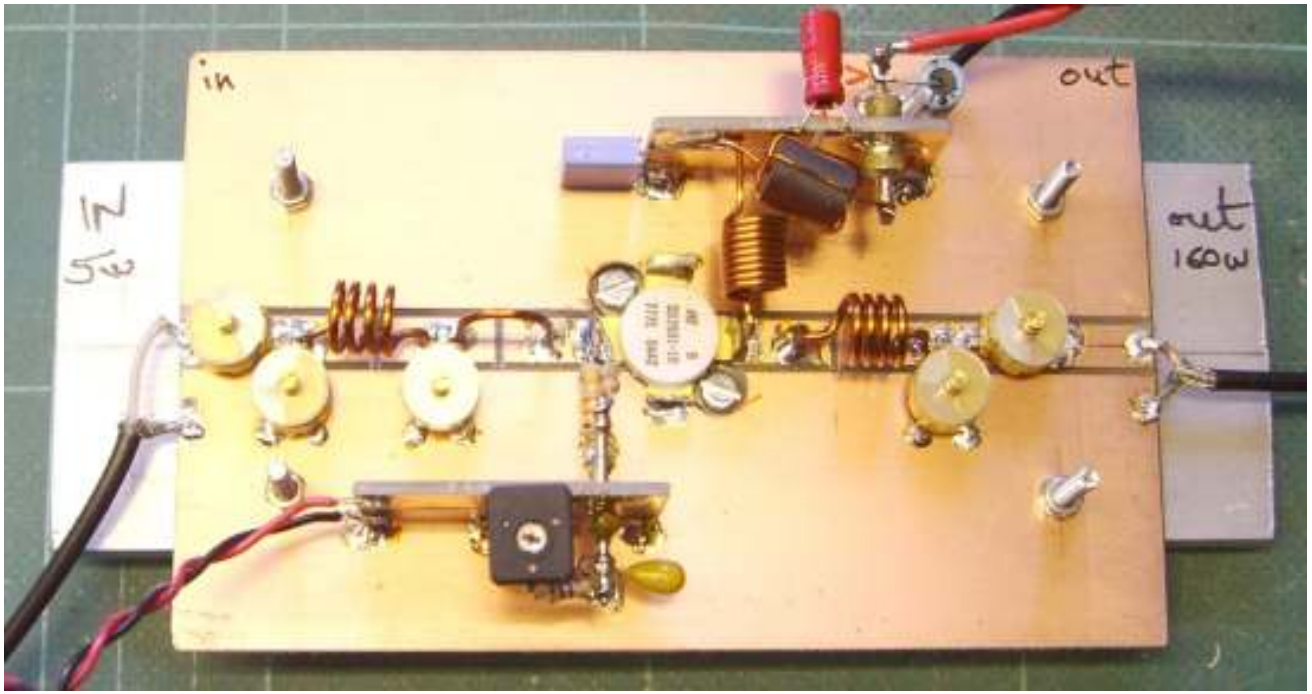
Equipment

- Linear
  - H/B valve



Equipment

- Linear
  - H/B Solid state



Equipment

- Radios -Transceivers

FT847 is the only one that covers 4m

10W output – losses in the Low Pass Filter – mods exist

Deaf receiver – Between 54-76MHz, RF amplifier noise-figure of approximately 11-12dB on 70MHz – external or internal preamp

Equipment

- Radios –Low Band PMR AM or FM
  - Ascom SE550

  - Philips MX290

  - FM1000 series
  - Yaesu VX1000

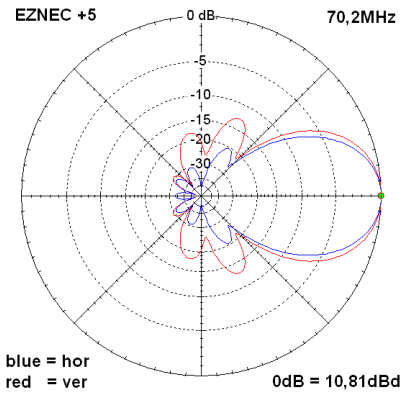
Some are synthesised older ones are xtal .
Prices vary £10 - £60
Lots of data on conversion

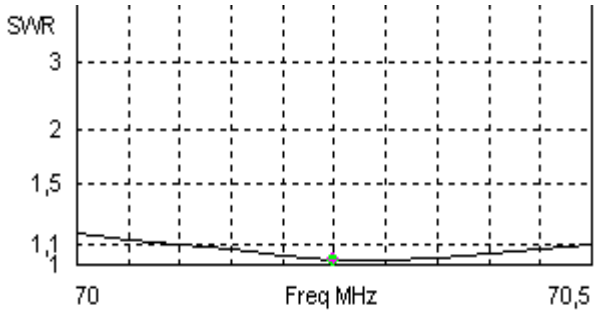
Equipment

- Antennas -Commercial
  - J Beam 4 ele 7dBd - no longer made
  - Vine
    - 4m7DX 7ele 21.5ft 10.8 dBd £179
    - 4m6DX 6ele 17ft 10.3 dBd £159
    - 4m5DX 5ele 10.7ft 8.7 dBd £135
    - 4m4DX 4ele 10 ft 7.8 dBd £99
    - 4m3DXS 3ele 4.8ft 5.8 dBd £79
  - Moonraker
    - 3 ele 45 inches 8.0 dBd £59.95
    - 5 ele 2.65m 10.0 dBd £69.95

Equipment
H/B antennas e.g. DK7ZB

Boomlength 6,55m
Excellent pattern



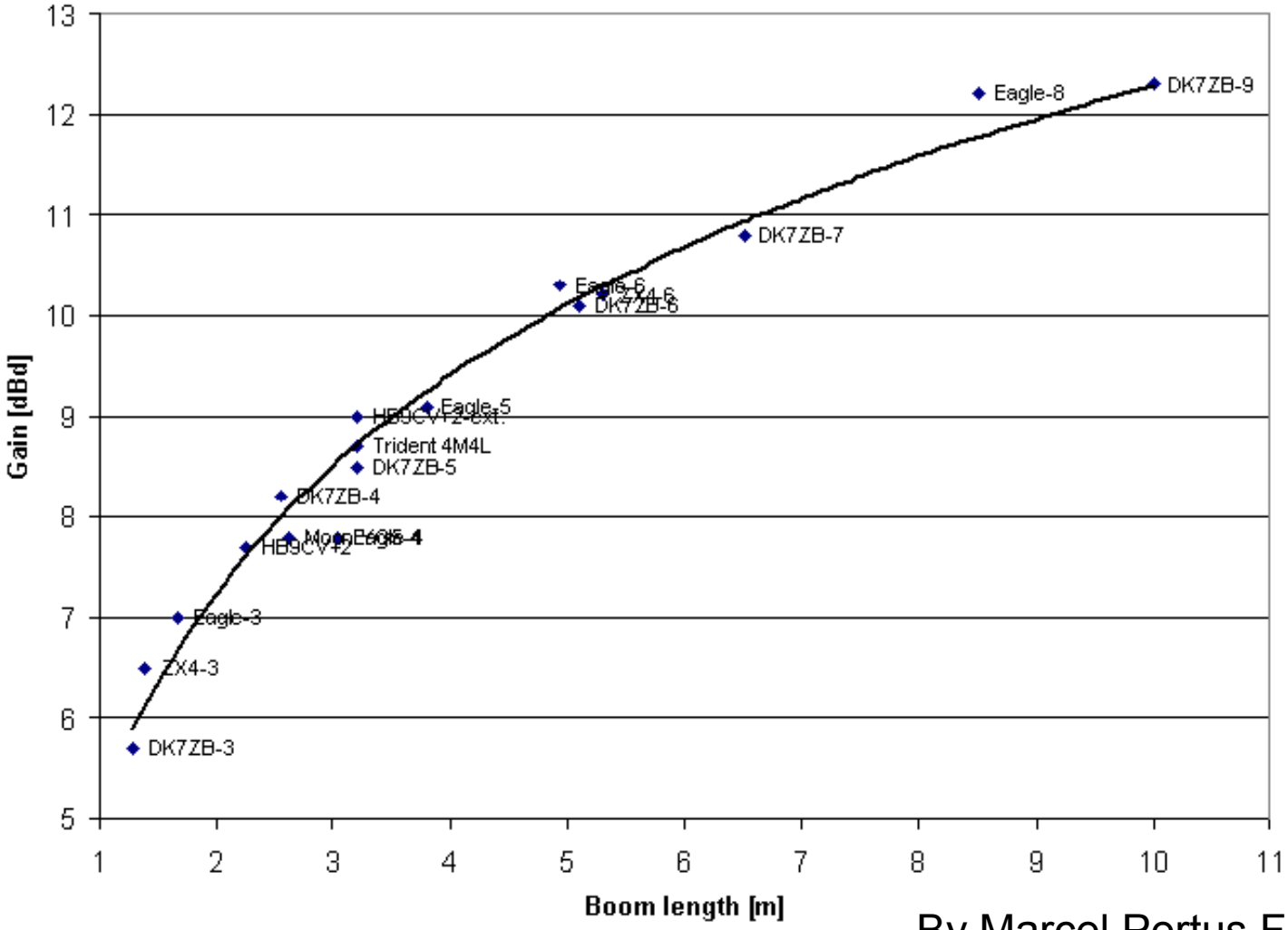


Antenna in a modified version built by
Uffe, PA5DD

7-El.-28-Ohm-Yagi, Gain 10.8dBd, F/B 30dB

Equipment

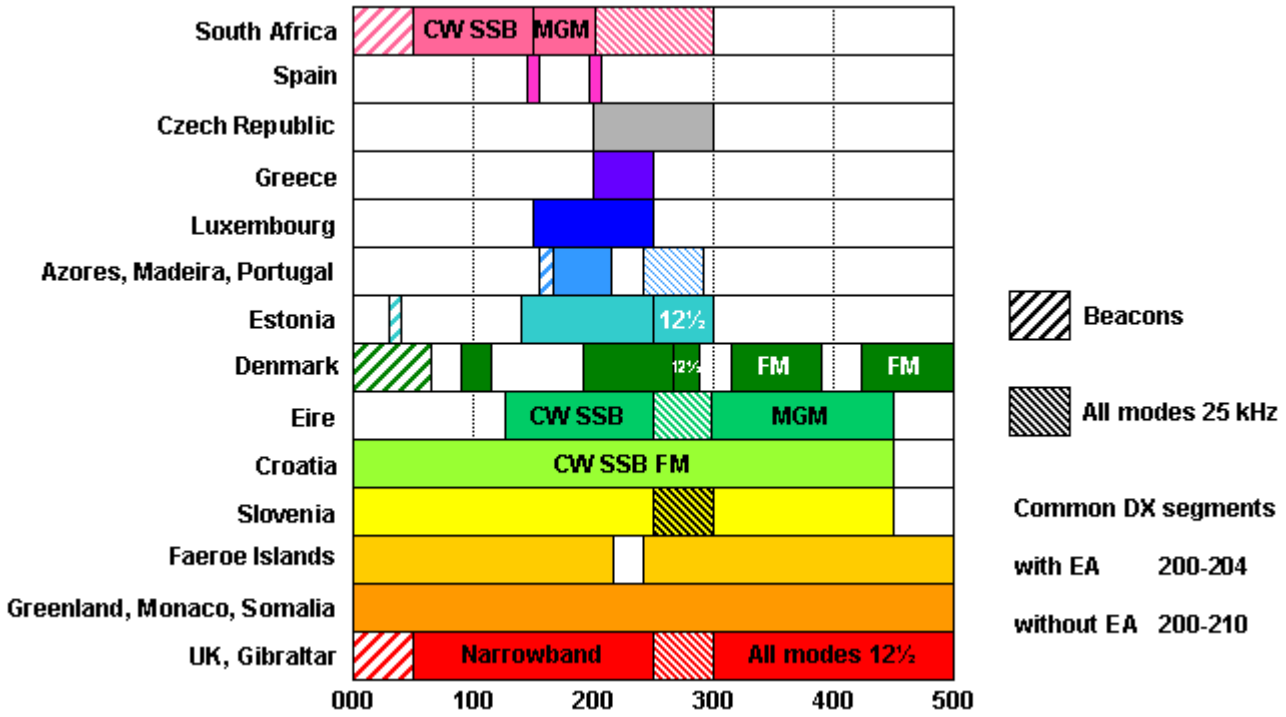
11ele 15m 13.71dBd



By Marcel Pertus F5DQK

International 70 MHz allocations

- Current -Add Norway 70 – 70.5 MHz (4m) and Italy



Current Operation

- Not much SSB/ CW in UK outside contest
  - Traditionally a lot of CW on 4m
- More during Es and Aurora
- Some FM activity –GB2RS, Glasgow, Belfast
- Mobiles on FM- No voice repeaters
- A lot of m/s and tropo using JT65 and FSK144 in mainland EU.

Contests

- 4m Contests
  - Cumulatives (5)
  - 1st 4m Contest
  - 70MHz Trophy Contest
  - 2nd 4m Contest
  - VHF NFD 4m section

Scotland is favoured on 4m owing to geography and distribution of activity

Contests

4m trophy 2008

Contests

4m Trophy 2008

Pos	Group	Callsign	Locator	QTH	QSOs	Score	Multiplier	Total	ODX Call	ODX Kms	Power	Ant	Equipment
*1	Five Bells CG	GM4SIV/P	IO75DH	PA	89	47,772	63	3,009,636	9A2SB	2,019	160	2x9 + 4 + Dipole	TS850 + Tvrtr + H/B PA
*2	Lothians Radio Society	GM3HAM/P	IO74NP	DG	75	33,332	57	1,899,924	9A2SB	1,941	160	11 + 6	FT847 + H/B PA + preamp
3	Kintyre Window Cleaners C.G.	GU3TCU/P	IN89PK	GY	90	30,882	59	1,822,038	OK2BGW	1,367	150	2x6	IC7000 + H/B Tvrtr
4	Colchester Contest Group of Colchester RA	G0VHF/P	JO01GO	SS	76	20,363	55	1,119,965	9A2SB	1,482	160	8 + 5	FT847 + 4CX250B
5	M & A Stevens	G8CUL	IO91JO	OX	52	11,723	38	445,474	9A2SB	1,597	70	4	IC706MK2G + Tvrtr + PA
6	Newquay & District Amateur Radio Society	G4ADV/P	IO70NK	TR	36	10,479	34	356,286	GM4JR	523	150	2x7	IC746 + Tvrtr + 4CX250B

Contests

The opposition at Mull of Kintyre
GM4SIV/P

2X 9ele (30ft apart), 40ft agl,
4ele + dipole

Our station was tidier (but you don't get points for that)