

That photo of radio relay equipment

[Some will recognise the photo opposite as one that I previously published in Issue 12, where I asked what the equipment was. Two members popped up with some interesting answers. Firstly Trevor Lott emailed to say he is the guy in the photo.... - Ed]

I used to run that stuff in the 260 Signal Squadron in Germany and the UK.....I was the guy on the left in the picture. That was the late 60 and early 70's they were the MAIN form of communications for the UK defence in Ground to Air missiles groups and provided the data communications between the firing camps.

And Martin Swift, G4NCE, confirmed this as the B70 link equipment, and kindly sent me the descriptive part of the EMER for it, from which I extracted the information in the Equipment Directory below – Ed]



THE VMARS EQUIPMENT DIRECTORY – PART 4

A further selection of equipment for your delectation – some is mentioned elsewhere in this issue – Ed.

The B70 link equipment (Richard Hankins, with info supplied by Martin Swift)

Type: radio-relay link equipment, capable of carrying up to 4 duplex telephone lines.

Usage: as a single link line-of-sight paths up to 50 miles long, or with multi-carrier equipment, up to 20 miles over line-of-sight paths. It could also be operated in a “multi-hop” role, with up to 3 hops possible carrying 4 telephone circuits, plus an “engineering” link as well.

Frequency range: 4.58 – 4.86 GHz, continuously tuned.

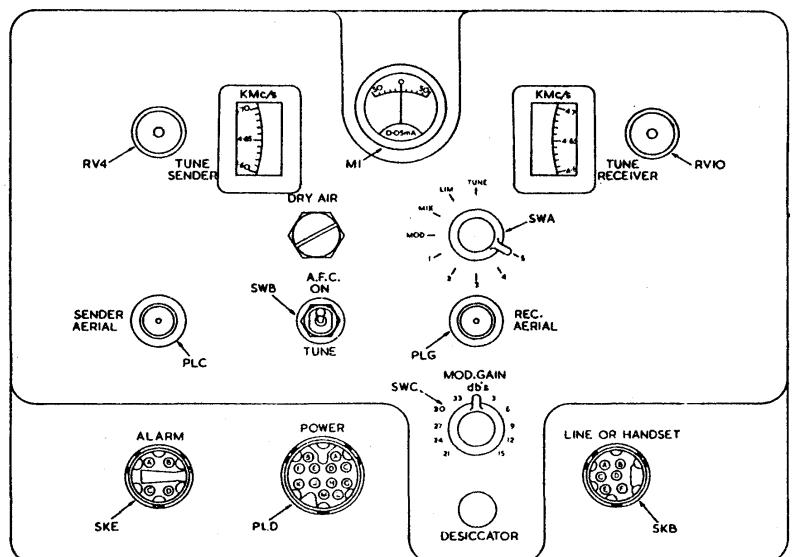
Modulation: FM with a deviation of 500KHz. The modulation bandwidth is 300Hz to 60KHz.

Rx circuitry: single conversion superhet, with an IF of 40MHz. The input stage is a crystal mixer, fed by a CV485 klystron local oscillator, whose frequency is controlled by an AFC loop. There is an alarm system built in to alert the operator to loss of an incoming carrier.

Tx circuitry: RF is produced by a CV485 klystron in a tuned cavity. This is frequency modulated by a two-valve push-pull amplifier.

Power requirements: a PSU included with the equipment supplies a stabilised 370 volt HT line at 80mA, and runs off AC mains, at 100 – 125, 200 – 250 volts, 45 – 65 Hz.

Aerials: two identical antennas are used for Tx and



Front panel view of the B70 – see also photo above

Rx. Each consists of a half-wave dipole, mounted at the focus of a 16” parabolic dish.

Notes: I have never seen this gear in “real life”. I wonder if anyone owns a system, or if this is another of those equipments of little interest to amateurs, and which we are destined to only read about in the books?

Receiver type R107 (by Jim Cookson)

The R 107 is a high grade general purpose HF communications receiver intended for use in vehicle or ground stations.

It operates with its own built-in PSU from 12 volts DC, or 100 to 250 volts AC, with an internally chassis mounted switch to change over supplies. An internal loudspeaker is fitted with sockets for headphone output.

It is a large and heavy set weighing in at 96lbs and measuring 24" x 13" x 17" deep.

Frequency coverage is from 1.2 - 17.5 Mc/s in 3 bands with operating modes of AM and CW.

Two selectivity bandwidths are provided: Narrow: 3kc/s, Wide: 6.8 kc/s, both at -6db. An AF CW filter centred on 900 c/s is also fitted.

With the exception of the 6X5 rectifier only two types of valve are used. Four EF39s in the RF and IF stages, Four AR21s as local oscillator, BFO, detector and both audio stages. The amount of audio available demonstrates that it is not necessary to use high current tetrodes in output stages, as is the practice with some manufacturers.

Balanced aerial input terminals, transformer coupled plus a high impedance single wire input are provided. Both can be tuned by the aerial trimmer. Sensitivity is listed as 2 - 6 microvolts on AM. My set would better this on most bands. From a practical user's point of view I have always been



more impressed with the R107's sensitivity than almost any other set. Although fitted only with a simple diode detector, SSB resolution is very effective providing the RF gain control is backed off.

An internal relay for muting the R107, when it is used with a transmitter has its connections brought out to the muting plug on the front panel. Shorting these pins will mute the set. A test panel accessible from the front of the receiver allows routine monitoring of the working voltages of all stages without dismantling.

It can be a physically difficult set on which to work, due partly to its weight but mainly to the quality of its construction. Every component is securely fitted, many with "p" clips and screws sealed with shellac varnish.

Reliability is second to none!

Receiver R206 MkII (by Jim Cookson)

The Reception Set R 206 MKII, big brother to the R107, is an impressive, high performance, general purpose communications receiver, capable of high resetting accuracy.

It will operate from AC mains of 100 to 240volts, or 12 volts DC, from its own separate PSU No 33.

It is one of the heaviest of the WW2 reception sets at 120 lbs, plus 50lbs extra for the PSU. Its dimensions are 25" X 13" X 15" deep. A box built into the protective framework inside the set carries a small lorry load of spare valves and parts.

Frequency coverage is 0.55 - 30 Mc/s in 6 ranges covering CW and AM modes. One of several

distinguishing features is the large chrome plated band-change handle. Mounted in the bottom right hand corner of the set, it requires two turns to rotate the turret between each band, accompanied by a very satisfying "clonk".



A two-speed dial drive gearbox, incorporating vernier calibrations, helps to give the R206 its high resetting accuracy. There is a calibrated oscillator control for small frequency excursions around the main dial setting.

It has 3 selectivity positions:- Narrow - 0.7kc/s, Medium - 2.5kc/s, Wide - 8.0kc/s, plus an AF filter centred on 900c/s. The Narrow and Medium positions have crystal filters.

The aerial input incorporating a trimmer is designed for operation from 80 ohm coax.

Valve complement, in single conversion superhet type circuit is: RF Amp ARP35; 2nd RF Amp

ARP34; Freq. Changer ARTH2; Osc. ARP35; 1st & 2nd IF ARP34; Det/1st Audio AR21; Audio Output VT52; AGC Amp ARP34; AGC Rectifier 6H6; BFO ARP34.

PSU No 33 uses two 6X5 rectifiers and a stabiliser AW2, which is visible through a small window in the front panel adjacent to the loudspeaker:

Adaptor Frequency range No 1, a separate and optional low frequency converter, which takes its power from the R206 PSU, can be used to extend the frequency coverage down from 600kc/s to 50kc/s.

The AN/GRC-106 (and GRC-106A) – from info supplied by Tony Helm

Type: mobile and fixed HF transceiver.

Frequency range: 2.000 to 29.999MHz, in 1KHz steps, with ±600Hz vernier.

Modes: USB, AM, CW, FSK.

Sub-units: (1) exciter/Rx unit (RT-662/GRC), (2) linear amplifier (AM-3349). The RT-662 is solid-state, whereas the AM-3349 uses two 4CX350A valves. The RT-662 includes the somewhat unusual features of noise squelch and VOX.

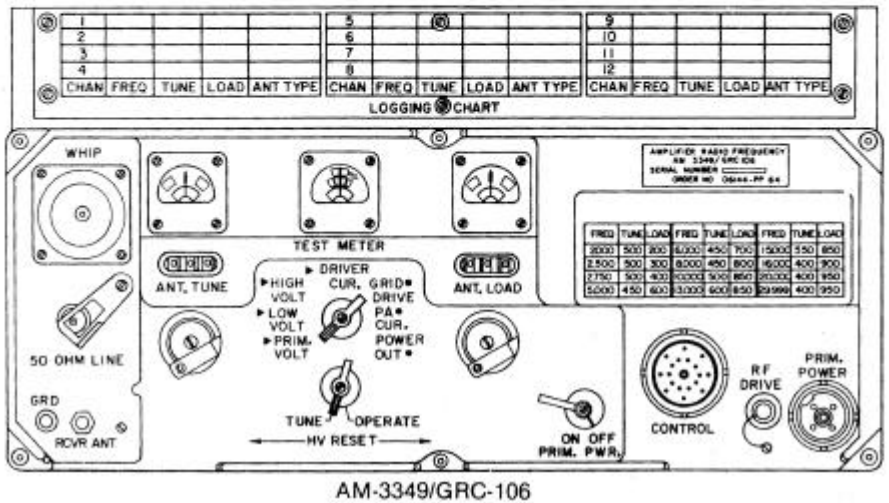
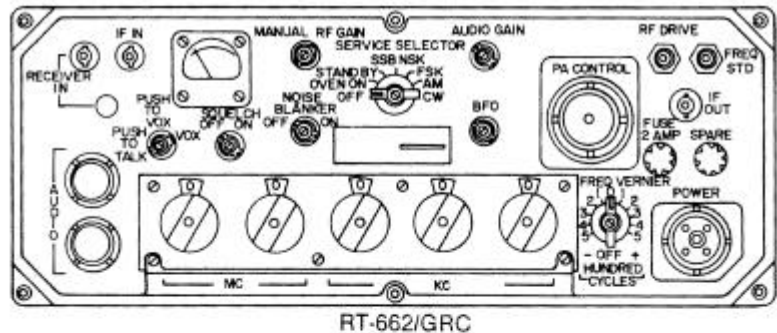
Tx output: RT-662 produces 100mW. AM-3349 increases this to 200W (AM/CW) or 400W PEP (USB).

Power requirements: 27 volts DC. RT-662 takes 10 amps. AM-3349 takes 40 amps.

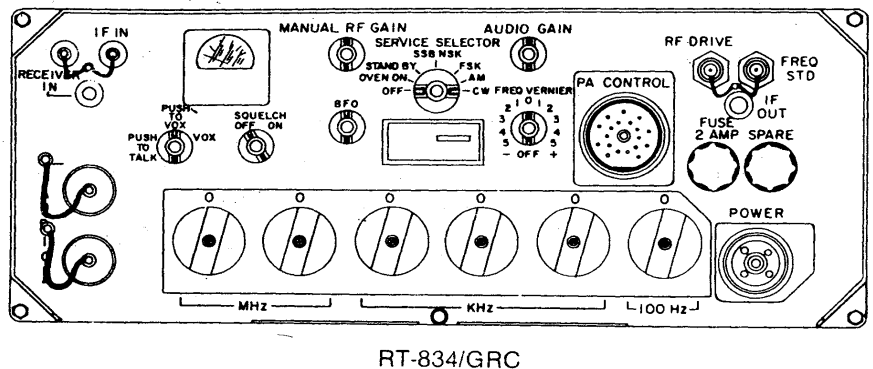
Aerials: 15' vehicle whip, or AN/GRA-50 wire dipole antenna.

Variants: an updated version, the AN/GRC-106A uses an improved exciter/Rx type RT-834, with the same amplifier. The RT-834 provides 100Hz steps over the same frequency range, and thus has a sixth tuning control.

Notes: These units are not going to be easy to find in the UK! Fair Radio in the US lists them at high prices, though cheaper with the meters missing. Given the complete system weighs some 125lbs, a better place to hunt will probably be Europe.



The front panels of the two units making up the AN/GRC-106



The front panel of the RT-834 exciter/Rx used in the GRC-106A