RECEIVER OUTFIT CJM

SUMMARY OF DATA

PURPOSE

To provide an automatically tuned, independent sideband receive equipment for HF and limited MF reception in Integrated Communication System Stage 2.

BRIEF DESCRIPTION

The Synthesiser generates output frequencies, selected by five decade controls, from an accurate input frequency of 1 MHz which is usually supplied by Frequency Standard Outfit FSA. Frequency conversion is accomplished by regenerative divider circuits and triple-mix frequency multipliers.

The antenna selector switch connects one of four antenna lines to the Receiver where the input circuits include automatic protection against high rf voltages.

Two stages of rf amplication using valves, and six automatically tuned circuits precede the first frequency change which produces an if of 4 MHz, for frequencies above or below 8 MHz. The 4 MHz if is subjected to a second frequency change to produce an if of 1 MHz. The 1 MHz if from the band above or below 8 MHz, is again mixed to produce a final if of 100 kHz.

The output from the Synthesiser at its indicated frequency is inhibited. The three signals which would have been combined to form it are mixed in a Frequency Offset Unit to provide the local oscillation for each frequency change. For speech clarification the synthesised input for the final if may be replaced by one from a manually controlled oscillator.

The final if at 100 kHz is supplied to two receiver channels, one for usb, dsb and the other for lsb reception. In each channel there are four stages of if amplification all subject to AGC, the time constants for which are automatically varied with the type of reception set.

Demodulation is effected by an envelope detector for dsb reception and by balanced modulators for ssb reception. The amplified audio output from each channel can be switched to a built in loudspeaker or monitored by headphones at one of three Receiver outputs, one local and two remote.

The class of reception is selected by front panel system switches which control diode switches to select the appropriate circuits.

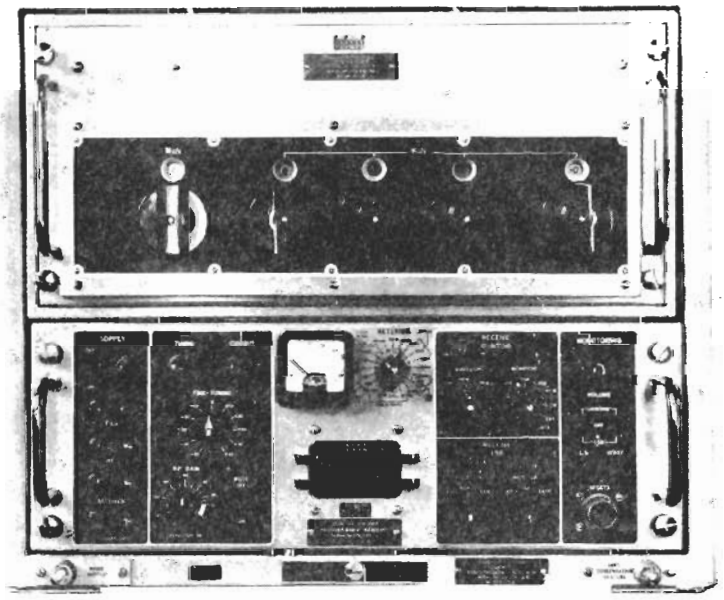
For automatic tuning purposes, the rf tuning circuits are disposed into six frequency ranges. The circuits for the appropriate range are automatically selected by a rotary solenoid system which is positioned by setting the MHz control on the Synthesiser. The circuits thus selected are then servo tuned to the required frequency, the servo reference voltage being determined by the positions of the MHz, 100 kHz and 1 kHz controls.

CLASS OF RECEPTION

Modulation: A.M.

Types of Reception: CW
MCW
Telephony
fst
Data

Supplementary Characteristics:
dsb
ssb
(usb and lsb)
lsb



FREQUENCY RANGE

HF 1.5 to 27.5 MHz with degraded performance.

MF 240 to 525 kHz.

PHYSICAL DATA

	Height	Width	Depth	Weight
Cabinet, Radio Frequency Receiver 5820-99-519-7018	48.3 cm (19 in.)	55.9 cm (22 in.)	59.1 cm (23.25 in.)	46.4 Kg (103 lb)
Synthesiser, Electrical Frequency 5820-99-519-7000	23.8 cm (9.375 in.)	50.2 cm (19.75 in.)	57.6 cm (22.62 in.)	27.2 Kg (60 lb)
Receiver, Radio Frequency 5820-99-519-7019	17.8 cm (7 in.)	50.2 cm (19.75 in.)	57.6 cm (22.625 in.)	30.2 Kg (67 lb)
Switch, Aerial Selector 5820-99-916-4652	23.5 cm (9.25 in.)	11.4 cm (4.5 in.)	12.0 cm (4.75 in.)	2.4 Kg (5.25 in.)

ELECTRICAL CHARACTERISTICS

1 MHz standard frequency input:	0.5 V to 1 V into 75 ohms or more than 1 kilohm.
Aerial input impedance:	75 ohms. Two coaxial sockets are provided for CAW.
Sensitivity:	1 μV antenna emf to give 1.4 V output into 220 ohms.
Selectivity:	Image and if rejection better than 100 dB.
Noise Factor:	10 dB ± 2 dB.
A.G.C. characteristics:	On ssb the af output level is held constant within 3 dB for an increase in input level from 2 μV to 1 V equivalent antenna emf.
	On dsb the af output level is held constant within 3 dB, for any constant percentage modulation, on carrier levels from 2 μV to 0.5 V equivalent antenna emf.
Audio output levels:	2 V ± 2 dB into 200 ohms from each sideband. 0.15 mW into 600 ohms at sideband monitor jacks. Up to 1 mV into 600 ohms at headset jack and socket, via volume control. Up to 1 W at loudspeaker, via volume control.
Frequency stability:	Same as 1 MHz standard on exact multiples of 1 kHz. ± 0.25 Hz on intermediate 100 Hz steps. ± 1 Hz short term, ± 5 Hz long term when using FINE TUNING control.

POWER REQUIREMENTS

100 to 130 V or 200 to 260 V, 50 to 60 Hz single phase ac.
70 W normal, 150 W during the tuning sequence of about 1 second.
115 V or 230 V ac or dc. 50 W for anti-condensation heaters.

HANDBOOKS

BR 4218
BR 4146 Handbook for Synthesiser, Electrical Frequency 5820-99-519-7000.
BR 4147 Handbook for Receiver, Radio Frequency 5820-99-519-7019.

ESTABLISHMENT LIST

S 1526

INSTALLATION SPECIFICATION

B 1106