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I put a lot of time into producing these files which is why you are met with this page when you open the file.

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Hopefully after all that, I end up with a presentable file. If you find missing pages, pages in the wrong order, anything else wrong with the file or simply want to make a comment, please drop me a line (see above).

It is my hope that you find the file of use to you personally – I know that I would have liked to have found some of these files years ago – they would have saved me a lot of time !

Colin Hinson

In the village of Blunham, Bedfordshire.



AP 116A-0114-1

# CONCISE DETAILS OF GROUND RADIO AND ANCILLARY EQUIPMENT

RADIO TRANSMITTING EQUIPMENT

BY COMMAND OF THE DEFENCE COUNCIL

Ministry of Defence

Sponsored for use in the  
ROYAL AIR FORCE by D Sigs (Air)

Prepared by : Hunting Communication Technology Limited  
Worthing, W Sussex, BN14 8NW

Publications authority : ATP/MOD (PE)

Service users should send their comments  
through the channel prescribed for the purpose in  
AP 100B-01 Order No 0504

## PREFACE

This Air Publication is one of a series, given in the List of Associated Publications, providing concise details of ground radio equipment and ancillaries.

When this publication is amended, changes in technical information within individual pages will be marked by two marginal arrows thus:

▶-----◀ indicating the start and finish of the changed text. Grammatical changes or corrections will not be so marked.

LIST OF ASSOCIATED PUBLICATIONS IN THE SERIES

<u>AP</u>	<u>Title</u>
116A-0110-1	Introduction and index (to complete series)
116A-0111-1	Fixed ground radio installations
116A-0112-1	Transportable ground radio installations
116A-0113-1	Mobile ground radio installations
116A-0114-1	Radio transmitting equipment (including transmitter-receivers)
116A-0115-1	Radio receiving equipment
116A-0116-1	Frequency generation equipment
116A-0117-1	Control, monitoring and simulating equipment (including closed circuit television, sound recording and sound reproducing equipment)
116A-0118-1	Antennas, masts and antenna tuning, coupling and matching equipment
116A-0119-1	Radio and telegraph power supply equipment
116A-0120-1	Telegraph and terminal equipment

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2	Transmitters type T1509 (10D/1721) and T1509A (10D/17974)
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42	Amplifier UK/FRT 623 and UK/FRT 624
43	Terminal equipment S.H.F. radio relay HM 314 and HM 315

TRANSMITTERS RADIO	Type T1131J (10D/17746) T1131K (10D/17767) T1131M (10D/20638) T1131N (10D/22718)
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Relevant publication:-

AP116E-0201-1

**Function**

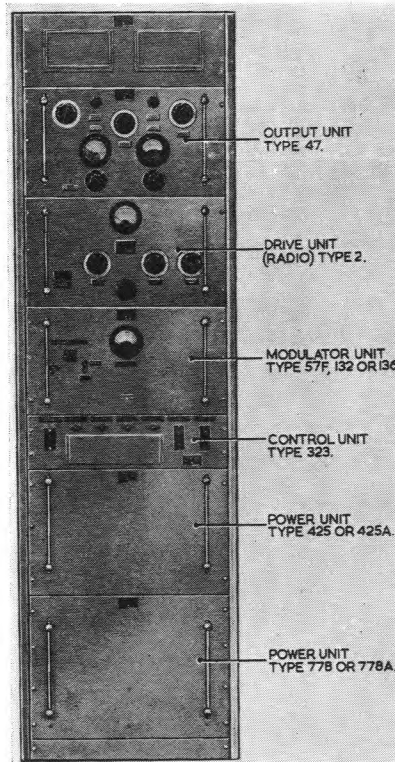
V.H.F. ground transmitter (R/T or c.w. working), fixed or mobile, R/T range approximately 100 miles (160.9km) with aircraft at 10000 ft (3048m). The difference between T.1131 J and K is in the heater circuits of the modulator units.

T.1131M is similar to T.1131K but covers a different frequency range, T.1131N is T.1131K modified for installation in air transportable radio cabins by height reduction. Transmitter Type 75C is T.1131K designed for use in a ship-borne or ground station role with the r.f. output circuit modified to match the common aerial working system requirement of R.N. The transmitters comprise output units Type 47, drive units radio Type 2, modulator units Types 57F, 132 or 136, control units Type 323, power units, Type 425 or 425A and Type 778 or 778A.

**Origin**

**Frequency range**

100 MHz to 156 MHz (3.0 to 1.9 metres).  
65 MHz to 85.375 MHz (4.6 to 3.5 metres) T.1131M only.



**Transmitter Type T.1131J**

**Frequency control**

Crystal controlled oscillator with multiplication factor of 18.

**Modulation**

100 per cent amplitude modulation.

**Output impedance**

75 ohms into coaxial transmission line.  
100 ohms into CAW system (type 75C Naval transmitter only).

**Output power**

35 watts maximum.

**Power supplies**

195-250V, 40-60 Hz single-phase a.c.

**Power consumption**

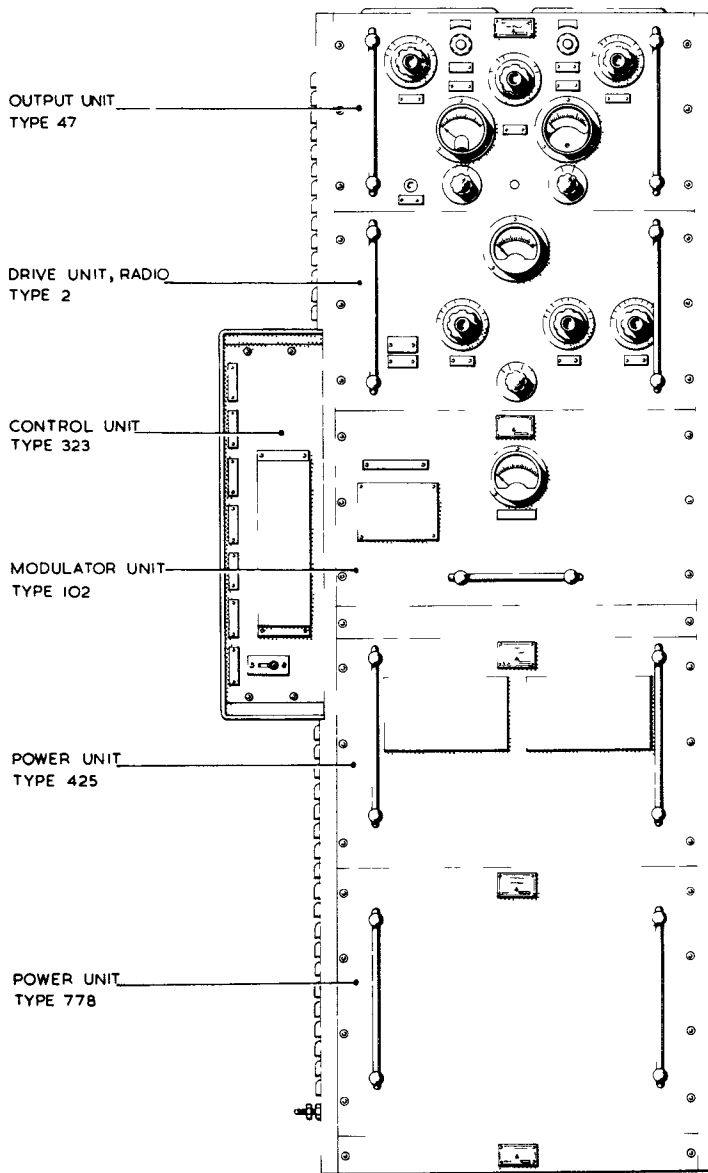
1.125 kVA.

**Overall dimensions**

	<i>Height</i>	<i>Width</i>	<i>Depth</i>
T.1131J, K & M	6ft 0in (182.9 cm)	1ft 9in (53.3 cm)	1ft 5in (43.2 cm)
T.1131N	5ft 1½in (156.2 cm)	2ft 2½in (67.3 cm)	1ft 5in (43.2 cm)
75C	5ft 1½in (156.2 cm)	1ft 9in (53.3 cm)	1ft 5in (43.2 cm)

**Weights**

672 lb (304.8 kg).



**Transmitter Type T.1131N**

TRANSMITTERS  
RADIO

Type T1509 (10D/1721)  
T1509A (10D/17974)

Relevant publication:-

AP116E-0202-1

**Function**

General purpose, low power, h.f. communications transmitter (C.W., M.C.W., and R/T) for use in fixed or mobile ground stations.

Transmitter T.1509A is a modified version of T.1509 using an induction fan motor in place of fan Type 52.

**Origin**

**Frequency range**

1.5 MHz to 20 MHz (200 to 15 metres).

**Frequency control**

Crystal or temperature compensated master oscillator.

**Frequency accuracy and stability**

To crystal accuracy.

**Modulation**

Amplitude modulation 100 per cent.

**Input impedance**

600 ohms (audio input).

**Output impedance**

50 ohms unbalanced.

**Output power**

300 watts carrier on all services.

**Keying speed**

Hand or high speed (200 w.p.m.).

**Power supplies**

180 to 250V, 50 Hz, single phase a.c.

**Overall dimensions**

<i>Height</i>	<i>Width</i>	<i>Depth</i>
4ft 11in (150 cm)	2ft 5in (74 cm)	1ft 10½in (57 cm)

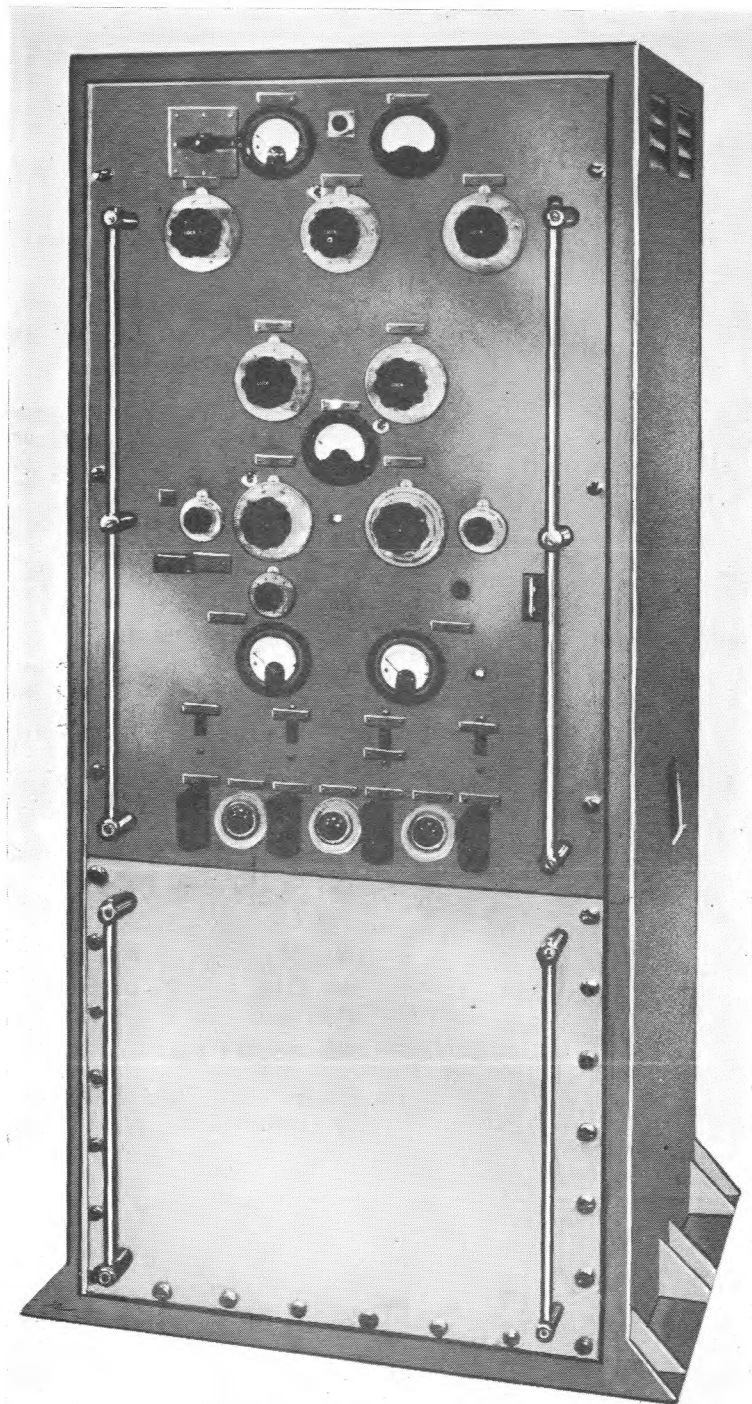
**Weight**

800 lb (363 kg).

**Associated equipment**

Control unit Type 310 (10L/171)  
or Control unit Type 88 (10L/37)





Transmitter Type T.1509

**TRANSMITTER  
RADIO**

Type T1540 (10D/2120)

Relevant publication:-

AP116E-0203-1

**Function**

A very low-power fixed or mobile ground station v.h.f. transmitter for R/T only, suitable for general use and in humid conditions at tropical temperatures. The transmitter is constructed in unit form, consisting of main chassis, transmitter unit Type 65 and power unit Type 429 with dust cover.

**Origin**

Developed from a modified version of U.S.A. transmitter, Type T.5017 (110D/146).

**Frequency range**

100 MHz to 156 MHz (3 to 1.9 metres).

**Frequency control**

Crystal oscillator with multiplication factor of 18 times.

**Frequency accuracy and stability**

To crystal accuracy.

**Modulation**

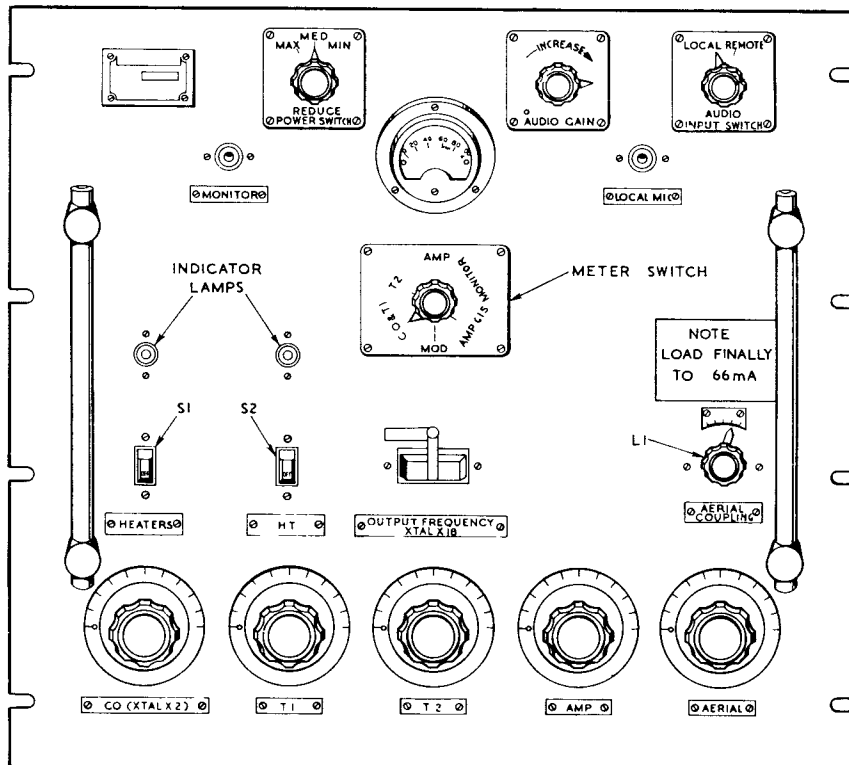
Amplitude modulation, depth variable between zero and 100 per cent.

**Input impedance**

Matched to 600 ohms line. For correct remote operation, resistance of line circuit should not exceed 1000 ohms.

**Output impedance**

Matched for unbalanced concentric feeder, 75 ohms surge impedance.



**Transmitter Type T.1540**

**Output power**

5 watts maximum, unmodulated, with provision for reducing to approximately one-third and one-thirtieth.

**Power supplies**

200 to 250V, 50 Hz, single-phase supply.

**Power consumption**

165 watts total.

**Overall dimensions (approximate)**

<i>Height</i>	<i>Width</i>	<i>Depth</i>
1ft 5½in (48.3 cm)	1ft 7in (44.5 cm)	1ft 1¼in (33.6 cm)

112 lb (50.8 kg) (including dust cover).

**Weight**

TRANSMITTERS  
RADIO

Type T1969 (10D/18459)  
T1969A (10D/21172)  
T 1969B  
(5820-99-954-2578)

Relevant publication:-

AP116E-0216-1A and 1B

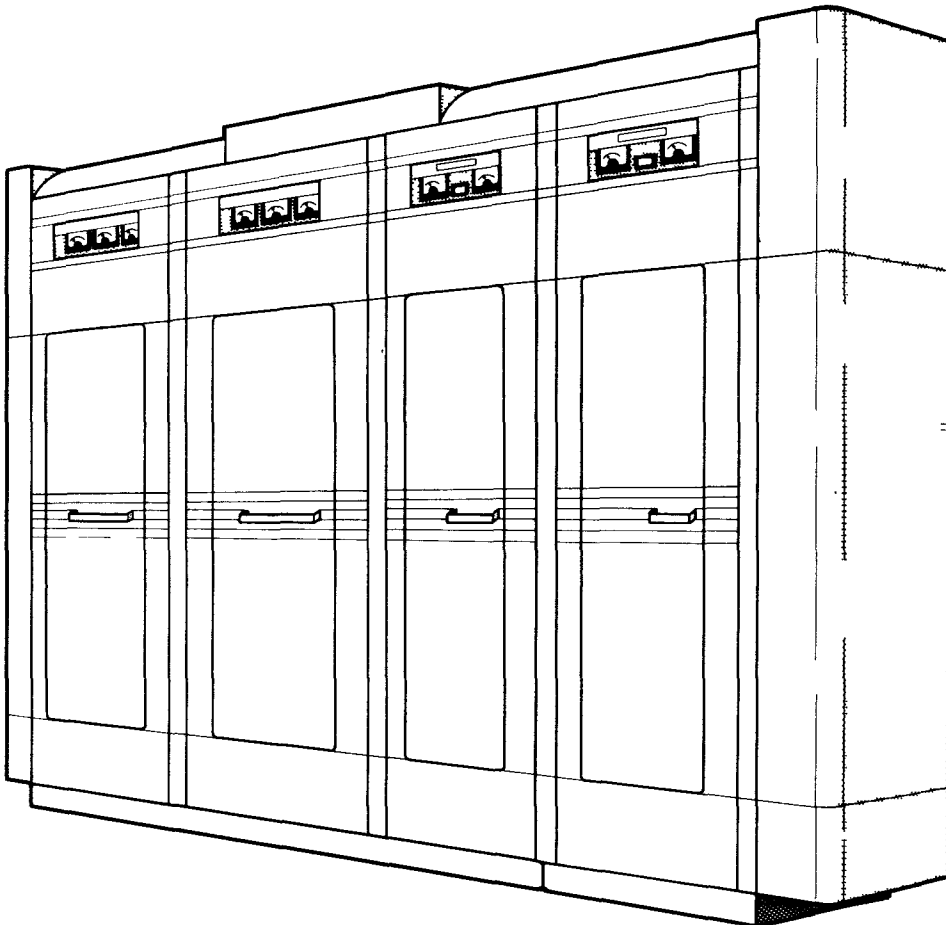
**Function**

Medium power, general purpose h.f. transmitter (c.w. or f.s.k. working) suitable for operation in tropical, temperate or arctic conditions, is of unit construction comprising r.f. and power cabinets combined to form a unified equipment.

Transmitter T.1969 consists of two r.f. cabinets and a power cabinet (twin).

Transmitter T.1969A is similar but includes Modification No. 4880 which provides a safety device for aerial exchange.

Transmitter T.1969B is T.1969 modified to Modification No. 6356 which provides extra cooling for operation under extreme conditions.



**Transmitter Type T.1969**

Transmitter 5820-99-954-2578 is the transmitter T.1969 equipped for radio telephony by the embodiment of Modification No. 8646 which adds a modulator cabinet.

<b>Origin</b>	Standard Telephones & Cables Ltd., DS.10 transmitter, Type 4-LE. 96 Grp. 14.																												
<b>Frequency range</b>	2.5 to 22 MHz (13.6 to 120 metres) in three bands:— 2.5 to 5.5 MHz, 5.0 to 11.0 MHz and 10.0 to 22.0 MHz.																												
<b>Frequency control</b>	Crystal controlled oscillator (frequency tolerance $\pm$ 0.003% using S.T.C. crystals Code No. PL.7065/144B).																												
<b>Frequency accuracy and stability</b>	To crystal accuracy.																												
<b>Modulation</b> ( <i>applicable only to Tx.5820-99-954-2578</i> )	Amplitude modulation to depth of 100 per cent: m.c.w. tone frequencies of 500 Hz, 800 Hz and 1000 Hz available.																												
<b>A.F. input level</b> ( <i>Tx.5820-99-954-2578</i> )	27dB below level of 1mW into 60 or 600 ohms line (at 50% modulation).																												
<b>Output impedance</b>	The transmitters will work into balanced (400 to 800 ohms) or unbalanced (45 to 75 ohms) loads.																												
<b>Output power</b>	<p><i>Single channel operation:—</i></p> <table border="0"> <tr> <td>C.W.</td> <td>5kW</td> </tr> <tr> <td>M.C.W. or R/T</td> <td>3kW (carrier)</td> </tr> </table> <p>(Tx.5820-99-954-2578)</p> <p><i>Twin channel operation:—</i></p> <table border="0"> <tr> <td>C.W. and R/T (carrier)</td> <td>2.0kW per channel</td> </tr> <tr> <td>C.W. (independent keying)</td> <td>5.0kW per channel</td> </tr> <tr> <td>C.W. (common keying)</td> <td>3.0kW per channel</td> </tr> </table> <p><i>Frequency shift operation:—</i></p> <table border="0"> <tr> <td>One channel</td> <td>5.0kW</td> </tr> <tr> <td>Two channels</td> <td>2.5kW per channel</td> </tr> </table>	C.W.	5kW	M.C.W. or R/T	3kW (carrier)	C.W. and R/T (carrier)	2.0kW per channel	C.W. (independent keying)	5.0kW per channel	C.W. (common keying)	3.0kW per channel	One channel	5.0kW	Two channels	2.5kW per channel														
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One channel	5.0kW																												
Two channels	2.5kW per channel																												
<b>Keying speed</b>	Up to 600 w.p.m.																												
<b>Power supplies</b>	380-415V, 50-60 Hz, three-phase supply.																												
<b>Power consumption</b>	<p><i>Single channel 5kW c.w. telegraphy:—</i></p> <table border="0"> <tr> <td>Mark</td> <td>12.5kVA</td> <td>0.8 power factor</td> </tr> <tr> <td>Space</td> <td>5.0kVA</td> <td>0.6 power factor</td> </tr> </table> <p><i>Single channel 5kW f.s.k.:—</i></p> <table border="0"> <tr> <td></td> <td>12.5kVA</td> <td>0.8 power factor</td> </tr> </table> <p><i>Telephony (3kW carrier) (as applicable):—</i></p> <table border="0"> <tr> <td>Speaking</td> <td>15.0kVA</td> <td>0.8 power factor</td> </tr> <tr> <td>Idle</td> <td>13.0kVA</td> <td>0.8 power factor</td> </tr> </table> <p><i>Twin channel 3kW c.w. telegraphy (common keying):—</i></p> <table border="0"> <tr> <td>Mark</td> <td>18.0kVA</td> <td>0.8 power factor</td> </tr> <tr> <td>Space</td> <td>6.0kVA</td> <td>0.6 power factor</td> </tr> </table>	Mark	12.5kVA	0.8 power factor	Space	5.0kVA	0.6 power factor		12.5kVA	0.8 power factor	Speaking	15.0kVA	0.8 power factor	Idle	13.0kVA	0.8 power factor	Mark	18.0kVA	0.8 power factor	Space	6.0kVA	0.6 power factor							
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<b>Overall dimensions</b>	<table border="0"> <thead> <tr> <th></th> <th style="text-align: center;"><i>Height</i></th> <th style="text-align: center;"><i>Width</i></th> <th style="text-align: center;"><i>Depth</i></th> </tr> </thead> <tbody> <tr> <td><i>Power cabinet</i></td> <td>6ft 5in</td> <td>4ft 0in</td> <td>3ft 3¼in</td> </tr> <tr> <td><i>(twin)</i></td> <td>(196 cm)</td> <td>(122 cm)</td> <td>(99.7 cm)</td> </tr> <tr> <td><i>R.F. cabinet</i></td> <td>6ft 5in</td> <td>1ft 6in</td> <td>3ft 3¼in</td> </tr> <tr> <td><i>(each)</i></td> <td>(196 cm)</td> <td>(45.7 cm)</td> <td>(99.7 cm)</td> </tr> <tr> <td><i>Modulator cabinet</i></td> <td>6ft 5in</td> <td>2ft 0in</td> <td>3ft 3¼in</td> </tr> <tr> <td><i>(Tx.5820-99-954-2578)</i></td> <td>(196 cm)</td> <td>(61 cm)</td> <td>(99.7 cm)</td> </tr> </tbody> </table>		<i>Height</i>	<i>Width</i>	<i>Depth</i>	<i>Power cabinet</i>	6ft 5in	4ft 0in	3ft 3¼in	<i>(twin)</i>	(196 cm)	(122 cm)	(99.7 cm)	<i>R.F. cabinet</i>	6ft 5in	1ft 6in	3ft 3¼in	<i>(each)</i>	(196 cm)	(45.7 cm)	(99.7 cm)	<i>Modulator cabinet</i>	6ft 5in	2ft 0in	3ft 3¼in	<i>(Tx.5820-99-954-2578)</i>	(196 cm)	(61 cm)	(99.7 cm)
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<b>Weights</b>	<table border="0"> <tr> <td><i>Power cabinet (twin)</i></td> <td>28 cwt (1422.7 kg)</td> </tr> <tr> <td><i>R.F. cabinet (each)</i></td> <td>8 cwt ( 406.5 kg)</td> </tr> <tr> <td><i>Modulator cabinet</i></td> <td>10 cwt ( 508.8 kg)</td> </tr> </table>	<i>Power cabinet (twin)</i>	28 cwt (1422.7 kg)	<i>R.F. cabinet (each)</i>	8 cwt ( 406.5 kg)	<i>Modulator cabinet</i>	10 cwt ( 508.8 kg)																						
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<i>Modulator cabinet</i>	10 cwt ( 508.8 kg)																												
<b>Associated equipment:</b>	Rack assembly Type 266 (10D/18476)																												

TRANSMITTERS  
RADIO

Type T1970 (10D/18460)  
T1970A (10D/22230)  
T1970B (10D/23669)

Relevant publication:-

AP116E-0218-1

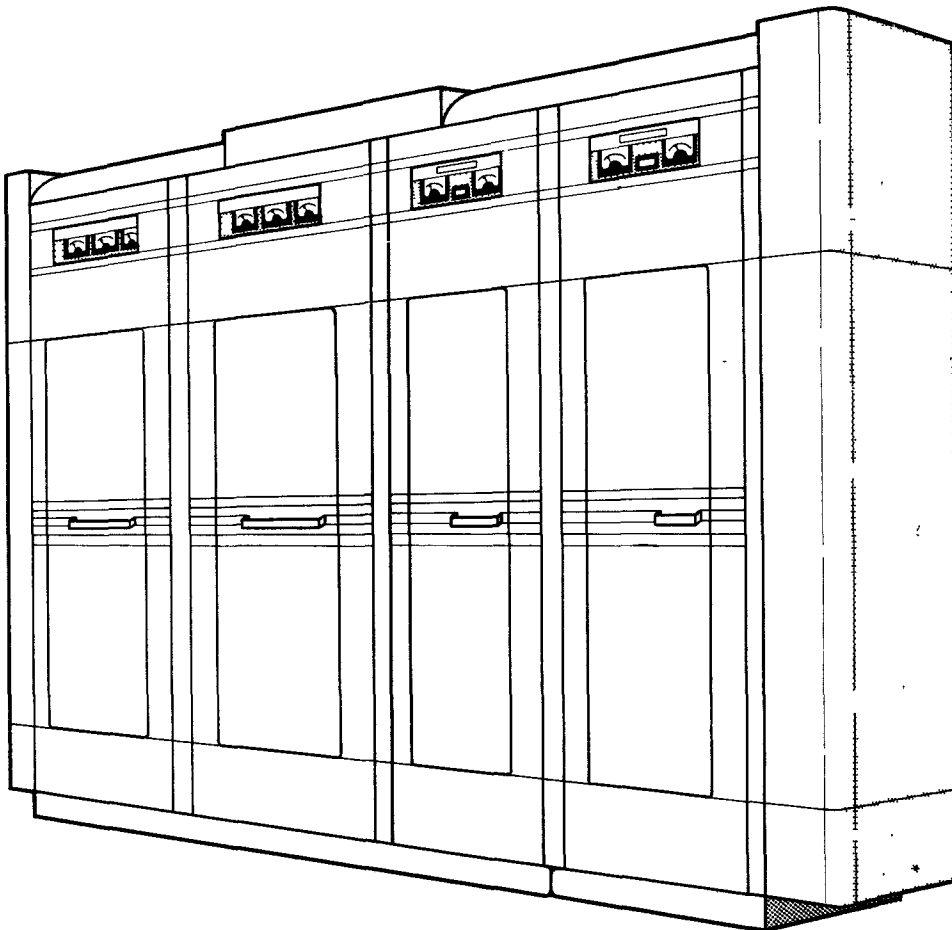
Function

Medium power, general purpose and single-sideband h.f. transmitter (c.w., on/off, f.s.k. and R/T working). Transmitter T.1970 has two r.f. cabinets for twin-channel operation, a power (twin) and modulator cabinets.

Used with rack assembly Type 266, the transmitter becomes a c.w. set suitable for on/off and f.s. keying and facsimile operation. The use of rack assembly Type 255 enables the transmitter to provide s.s.b. double channel working and low-level modulated d.s.b. service. The T.1970A is a modified version of T.1970 incorporating a safety indicator for aerial exchange. T.1970B is similar to T.1970 but is provided with a safety circuit for use with Marconi Type HA.16 aerial exchange.

Origin

Standard Telephones & Cables Ltd., DS.12 transmitter, Code No. 4-LC96/302.



Transmitter Type T.1970

<b>Frequency range</b>	4 MHz to 27.5 MHz (75 to 10.9 metres).		
<b>Frequency control</b>	Crystal controlled oscillator.		
<b>Frequency accuracy and stability</b>	To crystal accuracy.		
<b>Output impedance</b>	The transmitter will work into balanced (400-800 ohms) or unbalanced (45-75 ohms) loads.		
<b>Output power</b>	I.S.B. operation		4kW
	C.W. operation (on/off keying)		4kW
	C.W. f.s.k. operation		4kW
	D.S.B. operation (100% modulation)		4.5kW
<b>Keying speed</b>	600 w.p.m. maximum.		
<b>Power supplies</b>	380-415V, 56-60 Hz, three-phase.		
<b>Power consumption</b>	C.W. (4kW)	<i>Mark</i>	13.0kVA, 0.8 power factor
		<i>Space</i>	5.5kVA, 0.8 power factor
	F.S.K. (4kW)		13.0kVA, 0.8 power factor
	I.S.B. (4kW)		13.5kVA, 0.8 power factor
	D.S.B. (4.5kW)		15.0kVA, 0.8 power factor
<b>Overall dimensions</b>		<i>Height</i>	<i>Width</i>
		<i>Depth</i>	
	<i>R.F. cabinet</i>	6ft 3in	1ft 6in
	<i>(each)</i>	(190.5 cm)	(45.7 cm)
	<i>Power cabinet</i>	6ft 3in	4ft 0in
	<i>(twin)</i>	(190.5 cm)	(130 cm)
	<i>Modulator cabinet</i>	6ft 3in	2ft 0in
		(190.5 cm)	(66 cm)
<b>Weight</b>	2 tons 4 cwt (2235.2 kg) overall.		
<b>Associated equipment</b>	Rack assembly Type 255	(10D/18463)	
	Rack assembly Type 266	(10D/18476)	

TRANSMITTER  
RADIO

Type T1978 (10D/17884)

Relevant publications:-

AP116E-0209-1  
AP116E-0201-1

**Function**

Medium power, V.H.F. ground transmitter (R/T only) comprising three main sub-assemblies:—

- (1) Transmitter T.1131 (modified) (10D/17940)
- (2) Amplifying unit Type 474 (10U/16619)
- (3) Modulator unit Type 28 (10D/17885)

Amplifying unit Type 474 and modulator unit Type 28 together form amplifier A.1979 (10U/16618). Impedance matching unit Type 7018 forms part of the transmitter.

**Origin**

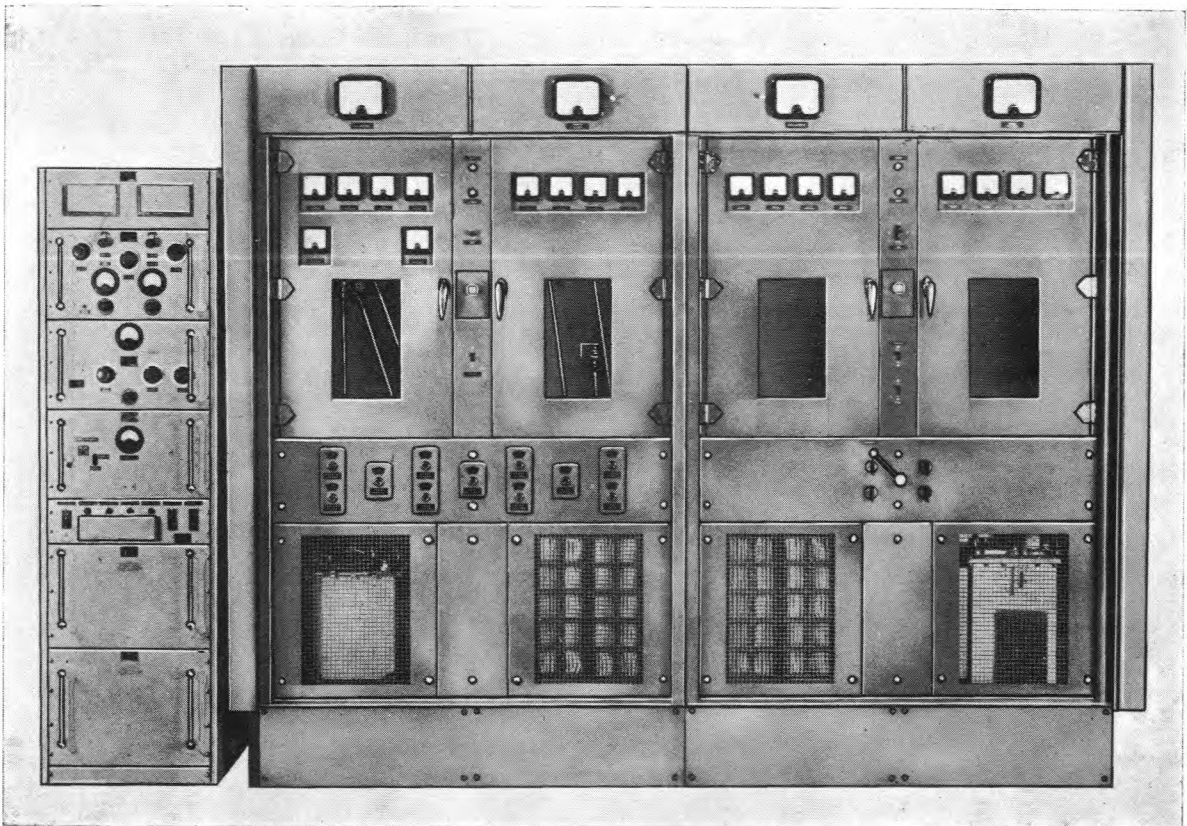
Electrical & Musical Industries Ltd., T.1131 modified, Standard Telephones & Cables Ltd., Amplifier A.1979.

**Frequency range**

100 to 156 MHz (3.00 to 1.92 metres).

**Frequency control**

Transmitter output frequency equal to 18 times crystal frequency (Transmitter Type T.1131J).



Transmitter Type T.1978



**Frequency accuracy and stability**To crystal accuracy (one part in  $10^6$ ).**Modulation**

Amplitude modulation 100 per cent.

**Input impedance**

Local microphone circuit: 100 ohms, remote microphone circuit: 600 ohms, into amplifying unit Type 472 (VOGAD).

**Output impedance**

71 ohms coaxial feeder.

**Output power**

1.6kW at 128 MHz (carrier).

**Power supplies**400  $\pm$  4V, 50 Hz, three-phase supply.**Power consumption**Carrier, above 10kVA (approx.), 0.9 power factor.  
90% modulation, 13kVA (approx.), 0.9 power factor.**Overall dimensions**

	<i>Height</i>	<i>Width</i>	<i>Depth</i>
<i>Transmitter</i>	6ft 0in	1ft 9in	1ft 5in
<i>T.1131J</i>	(183 cm)	(53.3 cm)	(43.2 cm)
<i>Amplifying unit</i>	7ft 0in	4ft 0in	2ft 6in
<i>Type 474</i>	(213.3 cm)	(122 cm)	(76.2 cm)
<i>Modulator unit</i>	7ft 0in	4ft 0in	2ft 6in
<i>Type 28</i>	(213.3 cm)	(122 cm)	(76.2 cm)

**Weights**

<i>Transmitter Type 1131J</i>	7 cwt (approx.)
<i>(10D/17746)</i>	(355.7 kg)
<i>Amplifier A.1979</i>	28 cwt (approx.)
<i>(10U/16618)</i>	(1422.7 kg)

**Associated equipment**

Voltage regulator and circuit breaker (M.P.B. &amp; W. supply and maintenance).

Test equipment:—

Dummy load Type 7020 (10S/16449)

Impedance bridge Type 7019 (10S/16448)

Transformer unit Type 7125 (10K/17692)

TRANSMITTERS  
RADIO

Type T1993 (10D/19114)  
T1993A  
(5820-99-195-6286)

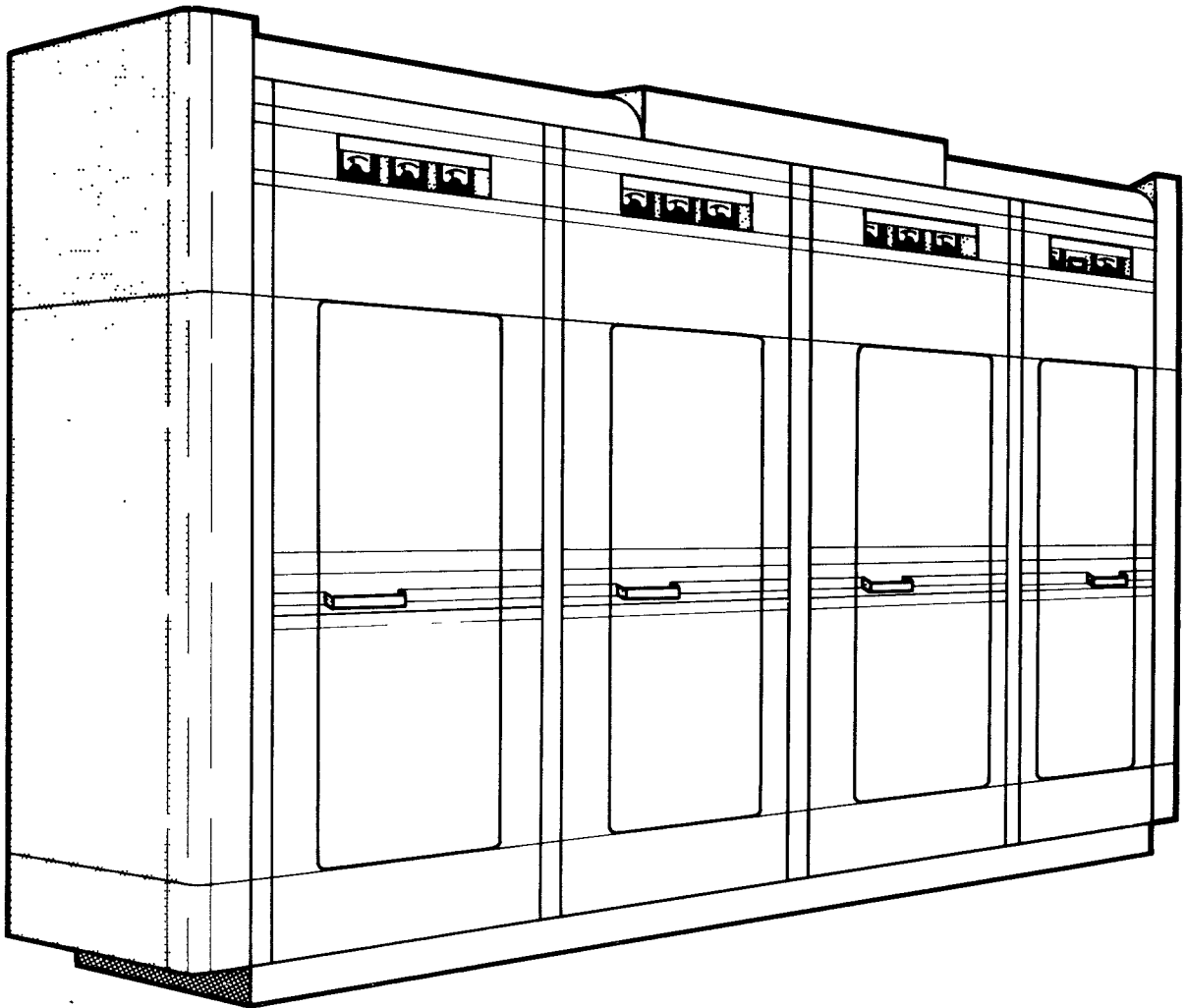
Relevant publication:-

AP116E-0216-1A and 1B

**Function**

Medium power, general purpose h.f. transmitter (c.w., m.c.w., R/T or f.s.k. working) suitable for operation in tropical, temperate or arctic conditions, is of unit construction comprising r.f., modulator and power cabinets combined to form a unified equipment.

Transmitter T.1993 consists of one r.f. cabinet, one modulator cabinet and a power cabinet (twin). Transmitter T.1993A is similar but embodies Modification No. 5663 which provides for remote selection of c.w. or R/T.



**Transmitter Type T.1993**

Transmitter 5820-99-195-6286 is the transmitter T.1993 with a safety device for aerial exchange (Mod. No. 4880) embodied.

<b>Origin</b>	Standard Telephones & Cables Ltd., D.S.10 transmitter Type 4-LE.96 Grp. 1.																
<b>Frequency range</b>	2.5 to 22 MHz (13.6 to 120 metres) in three bands:— 2.5 to 5.5 MHz, 5.0 to 11.0 MHz and 10.0 to 22.0 MHz.																
<b>Frequency control</b>	Crystal controlled oscillator (frequency tolerance $\pm$ 0.003% using S.T.C. crystals Code No. PL.7065/144B).																
<b>Frequency accuracy and stability</b>	To crystal accuracy.																
<b>Modulation</b>	Amplitude modulation 100 per cent; m.c.w. tone frequencies of 500 Hz, 800 Hz and 100 Hz available.																
<b>A.F. input level</b>	27dB below a level of 1mW, into 60 or 600 ohms line (at 50% modulation).																
<b>Output impedance</b>	The transmitters will work into 40 to 75 ohms unbalanced loads or 400 to 800 ohms balanced loads.																
<b>Output power</b>	<i>C.W. on/off or f.s.k. operation:</i> 5kW. <i>M.C.W. or R/T operation:</i> 3kW (carrier).																
<b>Keying speed</b>	up to 600 w.p.m.																
<b>Power supplies</b>	380-415V, 50-60 Hz, three-phase supply.																
<b>Power consumption</b>	<i>C.W. on/off (5kW):</i> <i>Mark</i> 12.5kVA, 0.8 power factor <i>Space</i> 5.0kVA, 0.6 power factor <i>C.W., f.s.k. (5kW):</i> 12.5kVA, 0.8 power factor <i>M.C.W. or R/T:</i> 15.0kVA, 0.8 power factor																
<b>Overall dimensions</b>	<table><thead><tr><th></th><th><i>Height</i></th><th><i>Width</i></th><th><i>Depth</i></th></tr></thead><tbody><tr><td><i>Power cabinet (twin)</i></td><td>6ft 5in (196 cm)</td><td>4ft 0in (122 cm)</td><td>3ft 3½in (99.7 cm)</td></tr><tr><td><i>R.F. cabinet</i></td><td>6ft 5in (196 cm)</td><td>1ft 6in (45.7 cm)</td><td>3ft 3½in (99.7 cm)</td></tr><tr><td><i>Modulator cabinet</i></td><td>6ft 5in (196 cm)</td><td>2ft 0in (61 cm)</td><td>3ft 3½in (99.7 cm)</td></tr></tbody></table>		<i>Height</i>	<i>Width</i>	<i>Depth</i>	<i>Power cabinet (twin)</i>	6ft 5in (196 cm)	4ft 0in (122 cm)	3ft 3½in (99.7 cm)	<i>R.F. cabinet</i>	6ft 5in (196 cm)	1ft 6in (45.7 cm)	3ft 3½in (99.7 cm)	<i>Modulator cabinet</i>	6ft 5in (196 cm)	2ft 0in (61 cm)	3ft 3½in (99.7 cm)
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<i>Modulator cabinet</i>	6ft 5in (196 cm)	2ft 0in (61 cm)	3ft 3½in (99.7 cm)														
<b>Weights</b>	<i>Power cabinet (twin)</i> 28 cwt (1422.7 kg) <i>R.F. cabinet</i> 8 cwt ( 406.5 kg) <i>Modulator cabinet</i> 10 cwt ( 508.8 kg)																
<b>Associated equipment</b>	Rack assembly Type 266 (10D/18476)																

TRANSMITTER  
RADIO

Type T1995 (10D/19125)

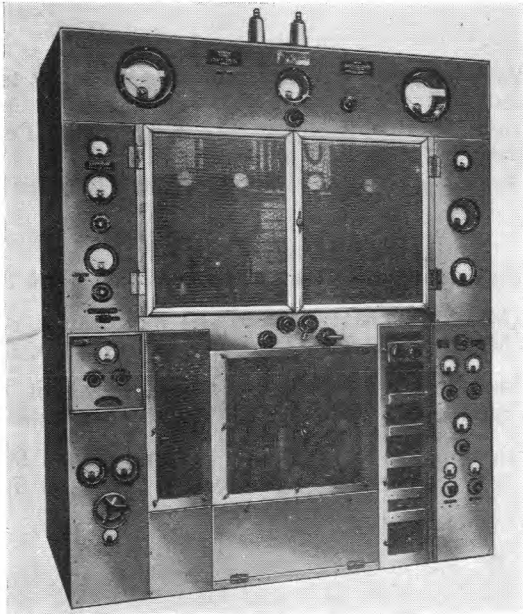
Relevant publication:-

AP116E-0222-1

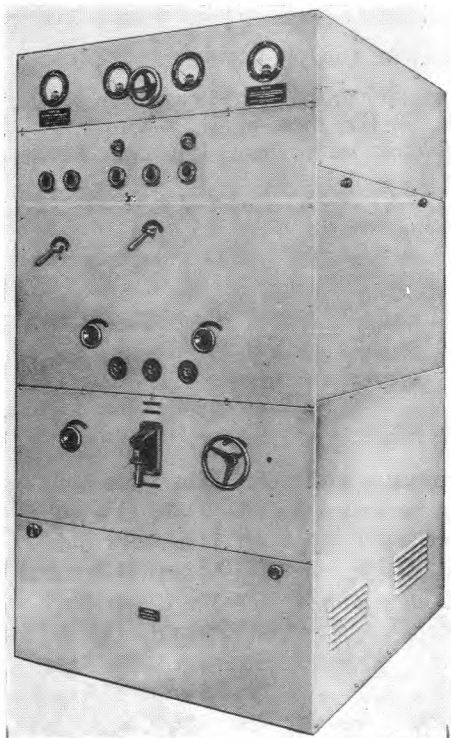
<b>Function</b>	Medium power h.f. transmitter (c.w. on/off telegraphy and R/T (s.s.b.) working). The transmitter comprises transmitter unit Type 95, power unit Type 1003, rectifier Type 62, modulator unit Type 138, drive unit, radio Type 5 and drive unit, radio Type 7.																												
<b>Origin</b>	Marconi Wireless Telegraph Co. Ltd., Type SWB11X.																												
<b>Frequency range</b>	2 MHz to 27 MHz (150 to 11.1 metres) <i>c.w. operation</i> : 4 MHz to 27 MHz (75 to 11.1 metres) <i>s.s.b. operation</i> .																												
<b>Frequency control</b>	Franklin master oscillator (transmitter unit Type 95). Crystal controlled oscillator (drive unit, radio Type 5).																												
<b>Frequency accuracy and stability</b>	Franklin master oscillator to 1 part in 20,000; Crystal controlled oscillator to 1 part in 100,000.																												
<b>Output impedance</b>	77 ohms and 600 ohms.																												
<b>Output power</b>	<i>C.W. operation</i> : At 2-22.2 MHz (150-13.5 m) 7 to 5 kW 22.2-27 MHz (13.5-11.1 m) 5 to 4 kW. <i>S.S.B. operation</i> : At 4-22.2 MHz (75-13.5 m) 8 to 5 kW (p.e.p.) 22.2-27 MHz (13.5-11.1 m) 5 to 3 kW (p.e.p.)																												
<b>Keying speed</b>	200 w.p.m. (on/off keying).																												
<b>Power supplies</b>	<i>Transmitter unit Type 95 (with power unit Type 1003)</i> 400V, 50 Hz, three-phase, 4-wire, <i>Modulator unit Type 138 and Drive unit radio, Type 5</i> : 200-250V, 50 Hz, single-phase. <i>Drive unit radio, Type 7</i> : 110V or 210-250V, 50 Hz, single-phase.																												
<b>Power consumption</b>	<i>C.W. operation</i> : Mark 19kW (0.98 power factor) Space 11kW (0.98 power factor) <i>S.S.B. operation</i> : 17kW (0.98 power factor)																												
<b>Overall dimensions</b>	<table border="0"> <thead> <tr> <th></th> <th style="text-align: center;"><i>Height</i></th> <th style="text-align: center;"><i>Width</i></th> <th style="text-align: center;"><i>Depth</i></th> </tr> </thead> <tbody> <tr> <td><i>Transmitter unit Type 95</i></td> <td style="text-align: center;">6ft 11in (210.8 cm)</td> <td style="text-align: center;">5ft 3in (160 cm)</td> <td style="text-align: center;">2ft 10in (86.4 cm)</td> </tr> <tr> <td><i>Power unit Type 1003</i></td> <td style="text-align: center;">6ft 11in (210.8 cm)</td> <td style="text-align: center;">3ft 6in (106.6 cm)</td> <td style="text-align: center;">4ft 0in (122 cm)</td> </tr> <tr> <td><i>Modulator unit Type 138</i></td> <td style="text-align: center;">6ft 5in (195.6 cm)</td> <td style="text-align: center;">4ft 0in (122 cm)</td> <td style="text-align: center;">3ft 6in (106.6 cm)</td> </tr> <tr> <td><i>Rectifier Type 62</i></td> <td style="text-align: center;">5ft 4½in (164.5 cm)</td> <td style="text-align: center;">2ft 8½in (82.3 cm)</td> <td style="text-align: center;">2ft 3½in (69.6 cm)</td> </tr> <tr> <td><i>Drive unit radio, Type 5</i></td> <td style="text-align: center;">3ft 1½in (95.2 cm)</td> <td style="text-align: center;">9½in (24 cm)</td> <td style="text-align: center;">2ft 6in (76.2 cm)</td> </tr> <tr> <td><i>Drive unit radio, Type 7</i></td> <td style="text-align: center;">6ft 0in (183 cm)</td> <td style="text-align: center;">1ft 10½in (57.2 cm)</td> <td style="text-align: center;">1ft 6½in (48 cm)</td> </tr> </tbody> </table>		<i>Height</i>	<i>Width</i>	<i>Depth</i>	<i>Transmitter unit Type 95</i>	6ft 11in (210.8 cm)	5ft 3in (160 cm)	2ft 10in (86.4 cm)	<i>Power unit Type 1003</i>	6ft 11in (210.8 cm)	3ft 6in (106.6 cm)	4ft 0in (122 cm)	<i>Modulator unit Type 138</i>	6ft 5in (195.6 cm)	4ft 0in (122 cm)	3ft 6in (106.6 cm)	<i>Rectifier Type 62</i>	5ft 4½in (164.5 cm)	2ft 8½in (82.3 cm)	2ft 3½in (69.6 cm)	<i>Drive unit radio, Type 5</i>	3ft 1½in (95.2 cm)	9½in (24 cm)	2ft 6in (76.2 cm)	<i>Drive unit radio, Type 7</i>	6ft 0in (183 cm)	1ft 10½in (57.2 cm)	1ft 6½in (48 cm)
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**Weights**

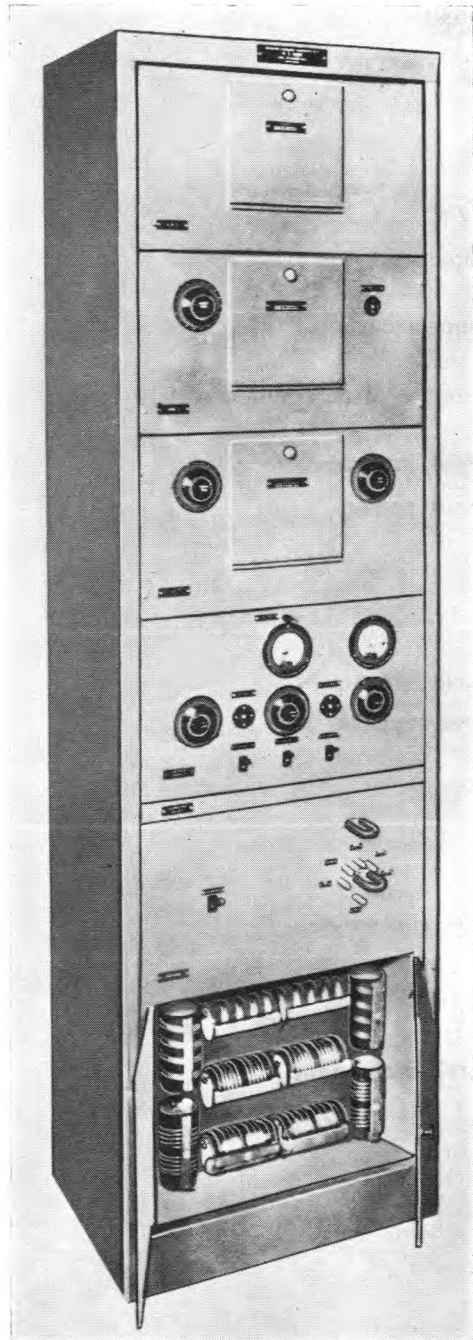
<i>Transmitter unit, Type 95</i>	25 cwt (1270 kg)
<i>Power unit, Type 1003</i>	22 cwt (1117.6 kg)
<i>Rectifier Type 62</i>	13½ cwt ( 673.2 kg)
<i>Modulator unit, Type 138</i>	25 cwt (1270 kg)
<i>Drive unit radio, Type 5</i>	—
<i>Drive unit radio, Type 7</i>	576 lb ( 261.3 kg)



**Transmitter unit Type 95**



**Power unit Type 1003 or 7724**



**Modulator unit Type 138**

TRANSMITTERS Type T2000 (10D/19142)  
RADIO T2000A (10D/22708)

Relevant publication:-

AP116E-0223-1

**Function**

Medium power h.f. transmitter (c.w. and R/T working). Transmitter T.2000 provides either c.w. on/off telegraphy or amplitude modulated R/T transmissions and comprises the following units:—

Transmitter unit Type 89, power unit Type 811, modulator unit Type 7436, drive unit radio, Type 5, amplifier Type A.7488, microphone assembly Type 72 and associated smoothing unit Type 22.

T.2000A is a version of T.2000 modified to obtain remote indication of the transmitter state.

**Origin**

Marconi Wireless Telegraph Co. Ltd., Type SWB 8X.

**Frequency range**

2 MHz to 27 MHz (150 to 11.1 metres).

**Frequency control**

Franklin master oscillator (*Transmitter unit Type 89*):  
Crystal controlled oscillator (*Drive unit radio, Type 5*).

**Frequency accuracy and stability**

Franklin master oscillator to 1 part in 20,000  
Crystal controlled oscillator to 1 part in 100,000.

**Output impedance**

77 ohms or 600 ohms.

**Output power**

*C.W. operation*

At 2 MHz (150 metres) 4kW

22.2 MHz (13.5 metres) 3kW

22.2-27 MHz (13.5-11.1m) 2kW

*R/T operation*

At 2-22.2 MHz (150-13.5m) 2.5-2.0kW

2-22-27 MHz (13.5-11.1m) 1.0-0.7kW

**Keying speed**

200 w.p.m. on/off keying.

**Power supplies**

*Transmitter unit, Type 89 (with power unit Type 811):*  
400V, 50 Hz, 3-phase 4-wire.

*Drive unit radio, Type 5:*  
200-250V, 50 Hz single-phase.

**Power consumption**

9.6kW (c.w. operation).  
11.1kW (R/T operation).

**Overall dimensions**

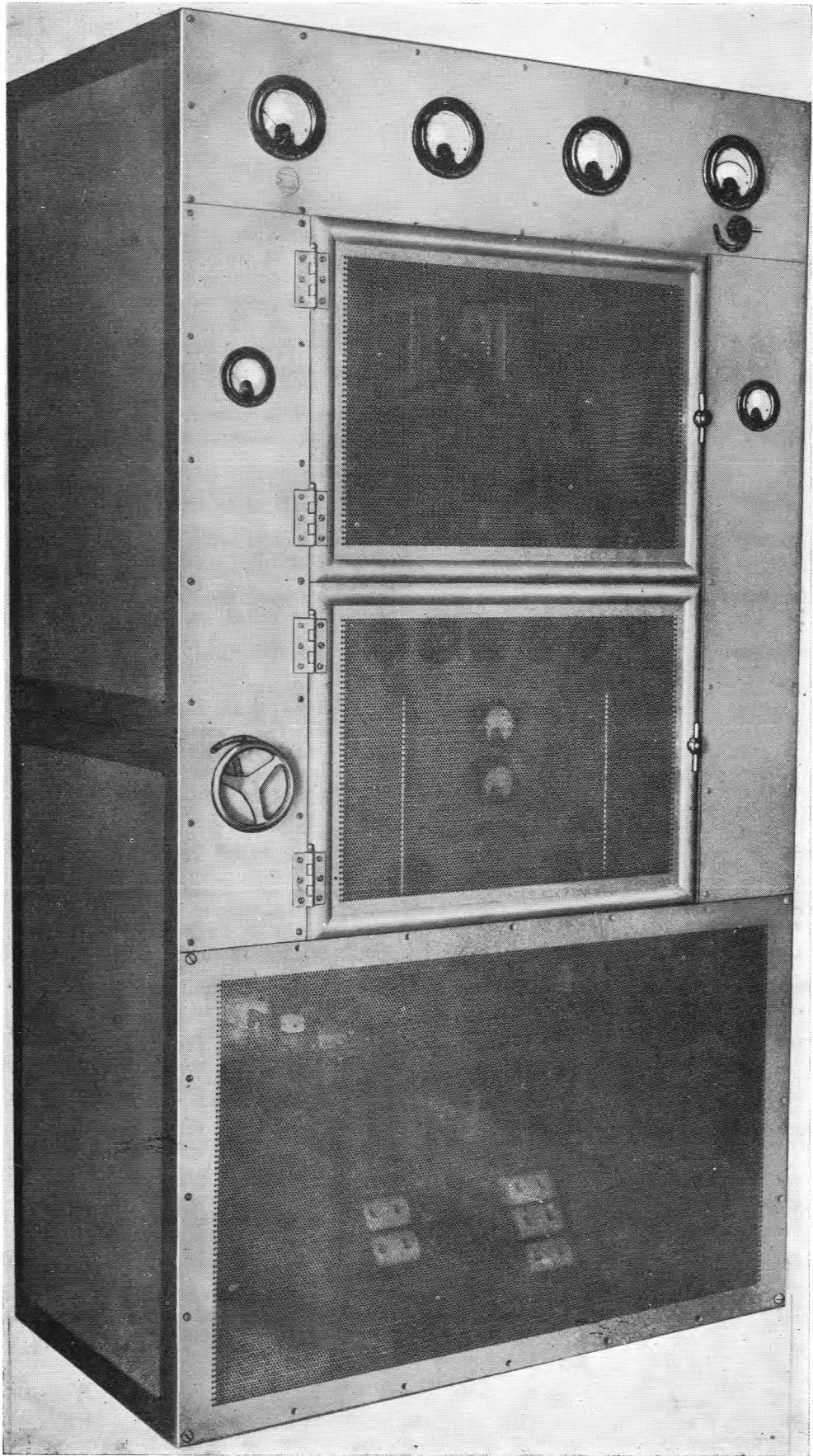
	Height	Width	Depth
<i>Transmitter unit</i>	7ft 0in	3ft 0in	2ft 0in
<i>Type 89</i>	(213.3 cm)	(91.4 cm)	(61 cm)
<i>Power unit</i>	6ft 6in	3ft 6in	4ft 0in
<i>Type 811</i>	(198 cm)	(106.6 cm)	(122 cm)
<i>Drive unit radio,</i>	3ft 1½in	9½in	2ft 6in
<i>Type 5</i>	(95.2 cm)	(24 cm)	(76.2 cm)
<i>Modulator unit</i>	6ft 5in	3ft 6in	2ft 0in
<i>Type 7436</i>	(195.6 cm)	(106.6 cm)	(61 cm)

**Weights**

*Transmitter unit Type 89* 13 cwt ( 660.4 kg)

*Power unit Type 811* 21 cwt (1066.8 kg)

*Modulator unit Type 7436* 11 cwt ( 558.8 kg)



**Modulator unit Type 7436**

TRANSMITTER  
RADIO

Type T7095 (10D/19188)

Relevant publication:-

AP116E-0223-1

<b>Function</b>	Medium power h.f. transmitter (c.w. on/off telegraphy). Transmitter T.7095 comprises transmitter unit Type 89, power unit Type 811 and oscillator unit Type 7069. It functions in a manner identical with that of the transmitter Type T.1975 (Item No. 7) when operating on c.w. telegraphy.		
<b>Origin</b>	Marconi Wireless Telegraph Co. Ltd., Type SWB 8X.		
<b>Frequency range</b>	2 MHz to 27 MHz (150 to 11.1 metres).		
<b>Frequency control</b>	Franklin master oscillator ( <i>Transmitter unit Type 89</i> ): Crystal controlled oscillator ( <i>Oscillator unit Type 7069</i> ).		
<b>Frequency accuracy and stability</b>	Franklin master oscillator to 1 part in 20,000: Crystal controlled oscillator to 1 part in 100,000.		
<b>Output impedance</b>	77 ohms or 600 ohms.		
<b>Output power</b>	<i>C.W. operation:</i> At 2 MHz (150 metres) 4kW 22.2 MHz (13.5 metres) 3kW 22.2 to 27 MHz (13.5 to 11.1 metres) 2kW		
<b>Keying speed</b>	200 w.p.m. on/off keying.		
<b>Power supplies</b>	<i>Transmitter unit Type 89 (with power unit Type 811):</i> 400V, 50 Hz, three-phase, 4-wire input. <i>Oscillator unit Type 7069:</i> 200-250V, 50 Hz, single-phase.		
<b>Power consumption</b>	9.6kW.		
<b>Overall dimensions</b>		<i>Height</i>	<i>Width</i>
		<i>Depth</i>	
	<i>Transmitter unit</i>	7ft 0in	3ft 0in
	<i>Type 89</i>	(213.3 cm)	(91.4 cm)
	<i>Power unit</i>	6ft 6in	3ft 6in
	<i>Type 811</i>	(198 cm)	(106.6 cm)
	<i>Oscillator unit</i>	8in	8in
	<i>Type 7069</i>	(20.3 cm)	(20.3 cm)
			2ft 6in
			(76.2 cm)
<b>Weights</b>	<i>Transmitter unit Type 89</i>	13 cwt ( 660.4 kg)	
	<i>Power unit Type 811</i>	21 cwt (1066.8 kg)	
	<i>Oscillator unit Type 7069</i>	50 lb. ( 22.7 kg)	



TRANSMITTER  
RADIO

Type T7096  
(5820-99-932-5691)

Relevant publication:-

AP116E-0253-1

**Function**

Very low power u.h.f. multi-channel transmitter (R/T) primarily for communication between ground and aircraft in flight. It may also be used for line of sight ground communication. The transmitter comprises transmitter unit assembly, power unit assembly and set of connectors.

**Origin**

The Plessey Co. Ltd., Type XCA 300.

**Frequency range**

225 MHz to 399.9 MHz divided into 1750 channels each separated by 100 kHz. Twelve of these channels can be preset to the required frequencies and any one of these 12 channels can be automatically selected by either remote or local switching.

**Frequency control**

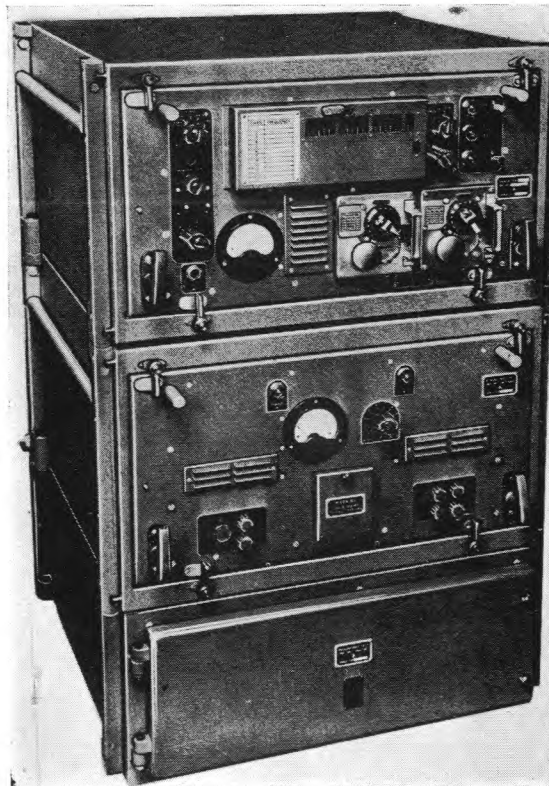
Crystal controlled master oscillator incorporating 32 built-in crystals. These crystals provide the necessary combinations to embrace all of the 1750 channels.

**Frequency accuracy and stability**

To crystal accuracy.

**Modulation**

Amplitude modulation up to 100 per cent. 12dB to 15dB clipping is available if required.



**Transmitter Type T.7096**

**Output impedance**

50 ohms (nominal).

**Output power**

10 watts (nominal).

**Power supplies**

230V or 115V, 45 to 65 Hz, single-phase.

**Power consumption**

Transmit 430 watts (approx.).  
Stand-by 250 watts (approx.)

**Overall dimensions**

	<i>Height</i>	<i>Width</i>	<i>Depth</i>
<i>Transmitter unit assembly</i>	1ft 1 $\frac{1}{4}$ in (33.7 cm)	1ft 11 $\frac{1}{4}$ in 1ft 11 $\frac{1}{4}$ in	2ft 0in (61 cm)
<i>Power unit assembly</i>	1ft 1 $\frac{1}{4}$ in (33.7 cm)	(59 cm) (59 cm)	2ft 0in (61 cm)

**Weights**

*Transmitter unit assembly* 130 lb (59 kg)  
*Power unit assembly* 151 lb (68.5 kg)

**Ancillary equipment**

Mounting plinth Type 7872  
Blower, air, Type 7344  
Panel, blanking Type 9240 and pipes, air cooling.

**Associated equipment**

Amplifier A.7439 is used with transmitter T.7096 to increase the power output to between 100 and 150 watts.



**Amplifier Type A.7349**

TRANSMITTERS  
RADIO

Type T7242 (10D/19422)  
T7242A (10D/22231)  
T7242B (10D/22795)  
T7242C (10D/13914)

Relevant publication:-

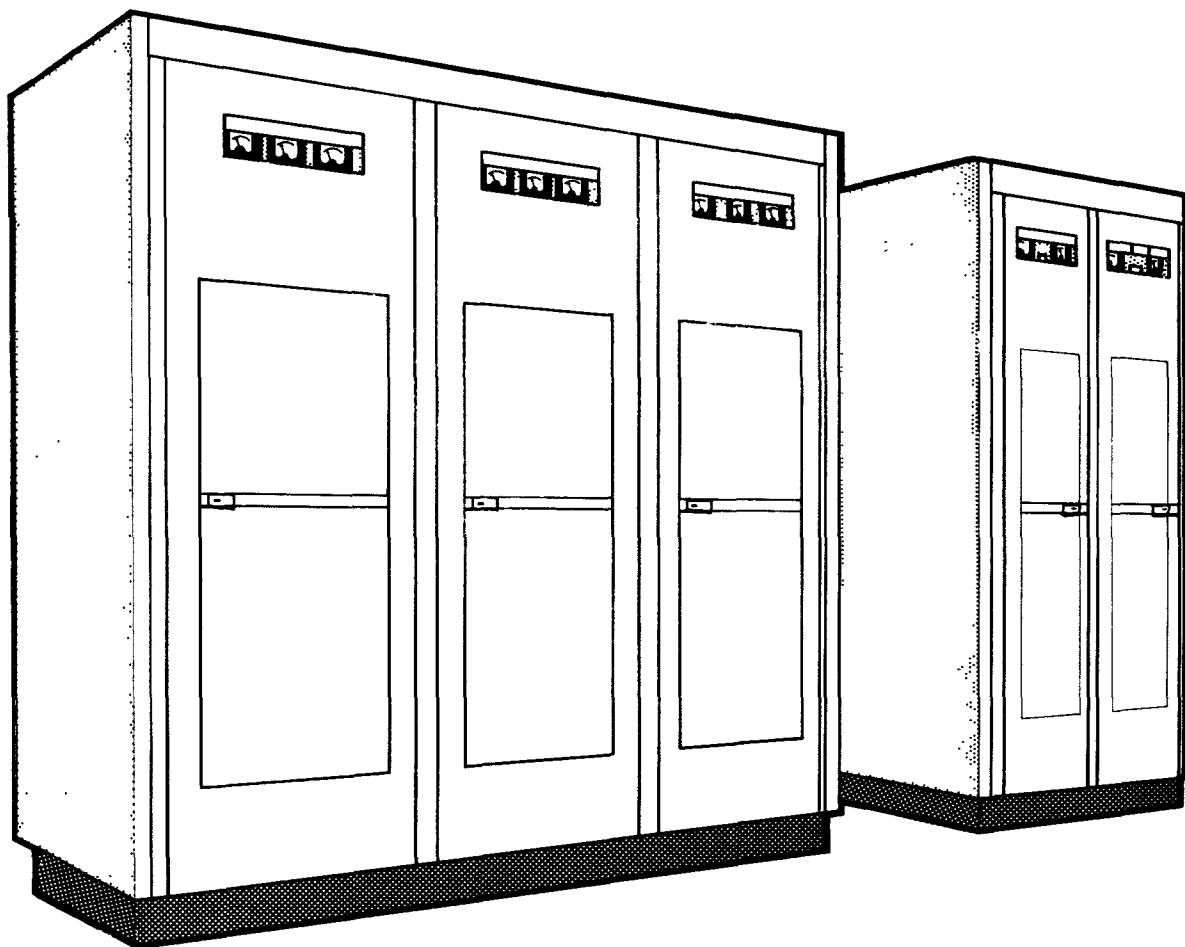
AP116E-0227

**Function**

Medium power, general purpose h.f. transmitter (c.w. on/off, f.s.k., m.c.w. or R/T working) suitable for operation in tropical, temperate or arctic conditions, is of unit construction comprising one r.f. cabinet containing two r.f. units for twin-channel operation and one cabinet housing the modulator and power supply equipment. The transmitter is designed specifically for mobile operation.

Transmitter T.7242A is a modified version of T.7242, embodying Mod. No. 5290 which provides a safety device for aerial exchange.

Transmitter T.7242B is a version of T.7242A further modified for the remote selection of c.w. or R/T working and r.f. truck selection (Mod. No. 6145). Transmitter T.7242C is a modified version of T.7242 provided with additional cooling for operation under extreme conditions.



**Transmitter Type T.7242**

<b>Origin</b>	Standard Telephones & Cables Ltd., D.S.20 transmitter, Code No. 4-LRE.134/12.																
<b>Frequency range</b>	2.5 to 22.0 MHz (13.6 to 120 metres).																
<b>Frequency control</b>	Crystal controlled oscillator (frequency tolerance $\pm 0.003\%$ using S.T.C. crystals RL.7065/144B from 2.5 to 22.0 MHz).																
<b>Frequency accuracy and stability</b>	To crystal accuracy.																
<b>Modulation</b>	Amplitude modulation 100 per cent, m.c.w. tone frequencies of 1000 Hz, 800 Hz and 500 Hz available.																
<b>A.F. input level</b>	27dB below a level of 1 mW, into 60 or 600 ohms line (at 50% modulation).																
<b>Output impedance</b>	The transmitters will work into balanced (400 to 800 ohms) or unbalanced (40 to 75 ohms) loads.																
<b>Output power</b>	<p><i>Single channel operation:</i></p> <table border="0"> <tr> <td>c.w. on/off or f.s.k.</td> <td>5kW</td> </tr> <tr> <td>m.c.w. or R/T</td> <td>3kW (carrier)</td> </tr> </table> <p><i>Twin-channel operation:</i></p> <table border="0"> <tr> <td>c.w. and R/T (carrier)</td> <td>2kW per channel</td> </tr> <tr> <td>c.w. (independent keying)</td> <td>5kW per channel</td> </tr> <tr> <td>c.w. (common keying)</td> <td>3kW per channel</td> </tr> <tr> <td>f.s.k.</td> <td>2.5kW per channel</td> </tr> </table>	c.w. on/off or f.s.k.	5kW	m.c.w. or R/T	3kW (carrier)	c.w. and R/T (carrier)	2kW per channel	c.w. (independent keying)	5kW per channel	c.w. (common keying)	3kW per channel	f.s.k.	2.5kW per channel				
c.w. on/off or f.s.k.	5kW																
m.c.w. or R/T	3kW (carrier)																
c.w. and R/T (carrier)	2kW per channel																
c.w. (independent keying)	5kW per channel																
c.w. (common keying)	3kW per channel																
f.s.k.	2.5kW per channel																
<b>Keying speed</b>	Up to 600 w.p.m. (480 bauds) tone to line, single or double current.																
<b>Power supplies</b>	380-415V, 50-60 Hz, three-phase supply.																
<b>Power consumption</b>	<p><i>Single channel (c.w. on/off, 5kW):</i></p> <table border="0"> <tr> <td>Mark</td> <td>12.5kVA (0.8 power factor)</td> </tr> <tr> <td>Space</td> <td>5.0kVA (0.6 power factor)</td> </tr> </table> <p><i>Single channel c.w., f.s.k. (5kW):</i></p> <table border="0"> <tr> <td></td> <td>12.5kVA (0.8 power factor)</td> </tr> </table> <p><i>Single channel R/T (3kW):</i></p> <table border="0"> <tr> <td></td> <td>15.0kVA (0.8 power factor)</td> </tr> </table> <p><i>Twin-channel c.w. on/off (3kW):</i></p> <table border="0"> <tr> <td>Mark</td> <td>18.0kVA (0.8 power factor)</td> </tr> <tr> <td>Space</td> <td>6.0kVA (0.6 power factor)</td> </tr> </table>	Mark	12.5kVA (0.8 power factor)	Space	5.0kVA (0.6 power factor)		12.5kVA (0.8 power factor)		15.0kVA (0.8 power factor)	Mark	18.0kVA (0.8 power factor)	Space	6.0kVA (0.6 power factor)				
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<b>Weights</b>	<table border="0"> <tr> <td><i>Power cabinet (twin)</i></td> <td>28 cwt (1423 kg)</td> </tr> <tr> <td><i>Modulator</i></td> <td>10 cwt ( 508 kg)</td> </tr> <tr> <td><i>R.F. units (each)</i></td> <td>8 cwt ( 406.4 kg)</td> </tr> </table>	<i>Power cabinet (twin)</i>	28 cwt (1423 kg)	<i>Modulator</i>	10 cwt ( 508 kg)	<i>R.F. units (each)</i>	8 cwt ( 406.4 kg)										
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<i>R.F. units (each)</i>	8 cwt ( 406.4 kg)																
<b>Associated equipment</b>	Rack assembly Type 266 (10D/18476)																

**Note . . .**

*When transmitter Type T.7242 is part of R.V.T.600 installation it operates in conjunction with the following:—*

Rack assembly Type 7198	(10D/19412)
Rack assembly Type 7199	(10D/19413)
Rack assembly Type 7204	(10D/19418)

TRANSMITTERS  
RADIO

Type T7243 (10D/19423)  
T7243A (10D/21162)

Relevant publication:

AP116E-0218-1

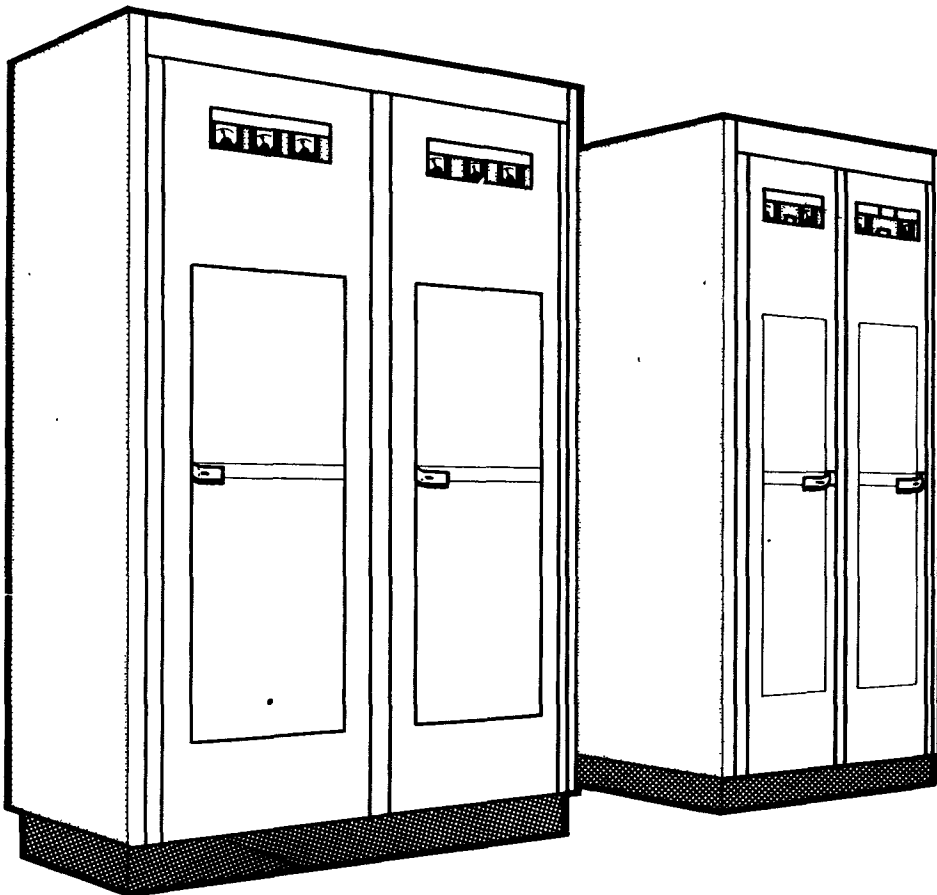
**Function**

Medium power, general purpose and single side-band h.f. transmitter (c.w. on/off, f.s.k., facsimile and R/T working), suitable for mobile operation in tropical, temperate or arctic conditions. The transmitter is of unit construction comprising one r.f. cabinet containing two r.f. units and a cabinet housing the power equipment. The form of transmission depends on the drive unit(s) used with the equipment and can be on/off and f.s.k. telegraphy, facsimile or s.s.b., i.s.b. or d.s.b. telephony.

Transmitter Type T.7243A is a variant of T.7243 modified to facilitate its installation as part of R.V.T. 610 Mk. 1 (Mod. No. 4838).

**Origin**

Standard Telephones & Cables Ltd., D.S.22 transmitter, Code No. 4-LRE.135 Grp. 2.



**Transmitter Type T.7243**

<b>Frequency range</b>	4 to 28 MHz (75 to 10·7 metres).												
<b>Frequency control</b>	Crystal controlled oscillator (frequency tolerance within 0·003%).												
<b>Frequency accuracy and stability</b>	To crystal accuracy.												
<b>Output impedance</b>	The transmitter will work into 600-800 ohms balanced line (with s.w.r. of 1·4:1) or into 40-75 ohms unbalanced line.												
<b>Output power</b>	<p><i>Single r.f. unit:</i></p> <p>S.S.B. or i.s.b. operation: 4kW (peak)</p> <p>C.W. on/off or f.s.k. operation: 4kW</p> <p><i>Two r.f. units (simultaneous operation):</i></p> <p>S.S.B. or i.s.b. 4kW (peak) each</p> <p>C.W., f.s.k. 2·5kW each</p> <p>C.W., on/off 3·4kW each</p>												
<b>Keying speed</b>	600 w.p.m. (480 bauds), including performance of drive unit.												
<b>Power supplies</b>	380-415V, 50-60 Hz, three-phase supply.												
<b>Power consumption</b>	<p><i>Single r.f. unit:</i></p> <p>C.W. on/off (mark) or f.s.k. (4kW) 13·5kVA (0·8 power factor)</p> <p>C.W. on/off (space) 5·5kVA (0·6 power factor)</p> <p>S.S.B. (single tone) (4kW) 13·5kVA (0·8 power factor)</p> <p>S.S.B. (tone off) 8·0kVA (0·7 power factor)</p> <p><i>Two r.f. units (simultaneous operation)</i></p> <p><i>Maximum consumption:</i> 18·0kVA (0·8 power factor)</p>												
<b>Overall dimensions</b>	<table border="0"> <thead> <tr> <th></th> <th><i>Height</i></th> <th><i>Width</i></th> <th><i>Depth</i></th> </tr> </thead> <tbody> <tr> <td><i>R.F. cabinet (2 units)</i></td> <td>6ft 5in (196 cm)</td> <td>3ft 4½in (103 cm)</td> <td>3ft 7in (109 cm)</td> </tr> <tr> <td><i>Power cabinet (twin)</i></td> <td>6ft 5in (196 cm)</td> <td>4ft 4½in (133 cm)</td> <td>3ft 5in (104 cm)</td> </tr> </tbody> </table>		<i>Height</i>	<i>Width</i>	<i>Depth</i>	<i>R.F. cabinet (2 units)</i>	6ft 5in (196 cm)	3ft 4½in (103 cm)	3ft 7in (109 cm)	<i>Power cabinet (twin)</i>	6ft 5in (196 cm)	4ft 4½in (133 cm)	3ft 5in (104 cm)
	<i>Height</i>	<i>Width</i>	<i>Depth</i>										
<i>R.F. cabinet (2 units)</i>	6ft 5in (196 cm)	3ft 4½in (103 cm)	3ft 7in (109 cm)										
<i>Power cabinet (twin)</i>	6ft 5in (196 cm)	4ft 4½in (133 cm)	3ft 5in (104 cm)										
<b>Weights</b>	<p><i>R.F. units (each)</i> 8 cwt ( 406·5 kg)</p> <p><i>Power cabinet (twin)</i> 28 cwt (1423 kg)</p>												
<b>Associated equipment</b>	Rack assemblies Type 255 (10D/18463) and Type 266 (10D/18476)												

**Note . . .**

*Transmitter Type T.7243A (part of R.V.T.610 installation) operates in conjunction with the following:—*

- Rack assembly Type 7200 (10D/19414)
- Rack assembly Type 7201 (10D/19415)
- Rack assembly Type 7202A (10D/21163)
- Rack assembly Type 7203 (10D/19417)

TRANSMITTERS  
RADIOType T7247 (10D/19424)  
T7247A (10D/22232)

Relevant publication:-

AP116E-0216-1A and 1B

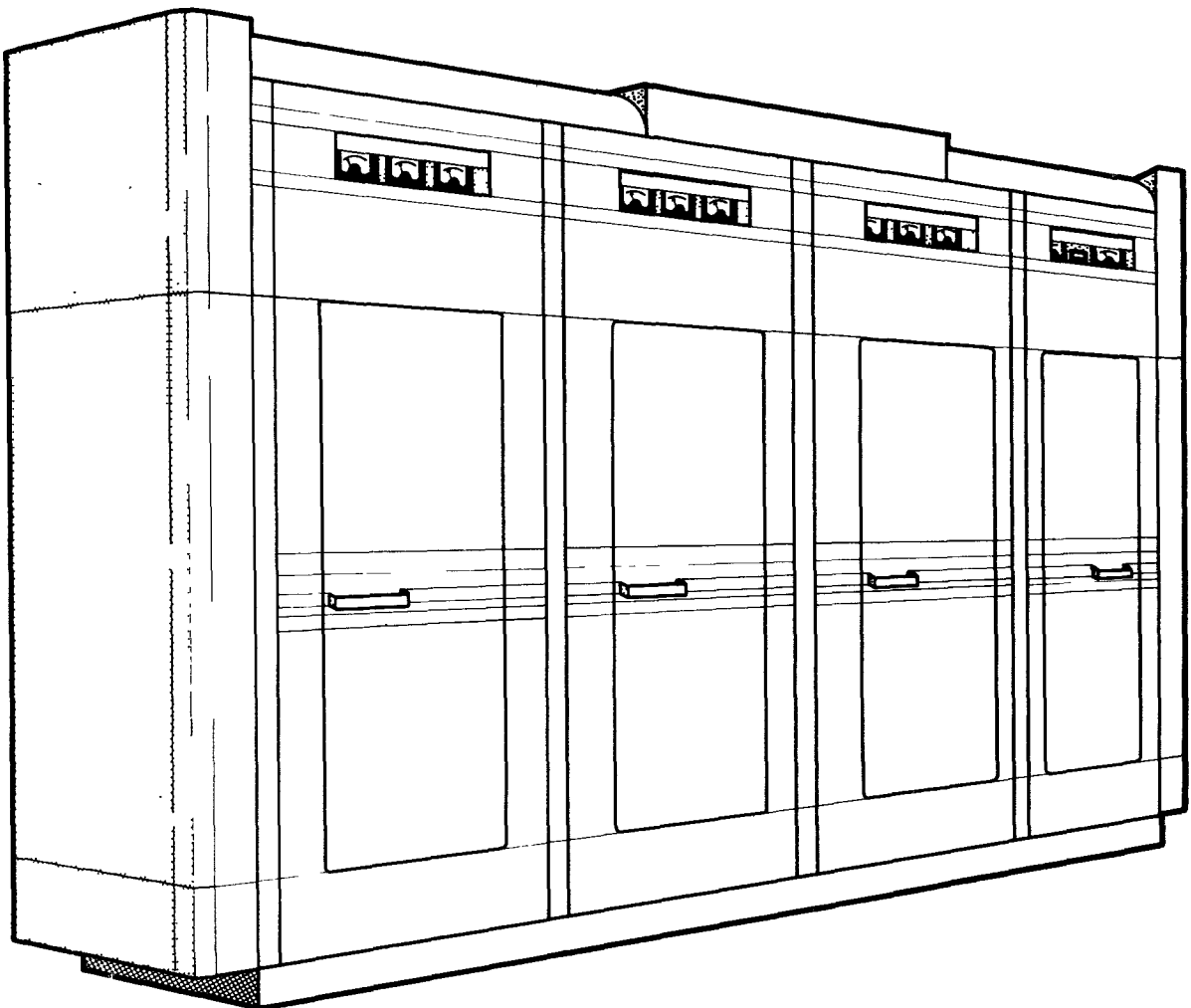
**Function**

Medium power, general purpose h.f. transmitter (c.w., m.c.w., R/T or f.s.k. working) suitable for operation in tropical, temperate or arctic conditions, is of unit construction comprising r.f., modulator and power cabinets combined to form a unified equipment.

Transmitter T.7247 consists of one r.f. cabinet, one modulator cabinet and a power cabinet (twin). Transmitter T.7247A is T.7247 modified to Modification No. 5290 which provides a safety device for aerial exchange.

**Origin**

Standard Telephones & Cables Ltd., D.S.10 transmitter, Type 4-LE.96 Grp. 61.

**Transmitter Type T.7247**

<b>Frequency range</b>	1.6 MHz to 17.5 MHz.																
<b>Frequency control</b>	Crystal controlled oscillator (frequency tolerance $\pm$ 0.005% from 1.6 to 17.5 MHz).																
<b>Frequency accuracy and stability</b>	To crystal accuracy.																
<b>Modulation</b>	Amplitude modulation 100 per cent; m.c.w. tone frequencies of 500 Hz, 800 Hz and 1000 Hz available.																
<b>A.F. input level</b>	27dB below a level of 1mW, into 60 or 600 ohms line (at 50% modulation).																
<b>Output impedance</b>	The transmitters will work into balanced (400-800 ohms) or unbalanced (40-75 ohms) loads.																
<b>Output power</b>	<i>C.W. on/off or f.s.k. operation:</i> 5kW <i>M.C.W. or R/T operation:</i> 3kW (carrier)																
<b>Keying speed</b>	Up to 600 w.p.m.																
<b>Power supplies</b>	380-415V, 50-60 Hz, three-phase supply.																
<b>Power consumption</b>	<i>C.W. on/off (5kW)</i> <i>Mark</i> 12.5kVA (0.8 power factor) <i>Space</i> 5.0kVA (0.6 power factor) <i>C.W./f.s.k. (5kW)</i> 12.5kVA (0.8 power factor) <i>M.C.W. or R/T (3kW)</i> 15.0kVA (0.8 power factor)																
<b>Overall dimensions</b>	<table border="0"> <thead> <tr> <th></th> <th><i>Height</i></th> <th><i>Width</i></th> <th><i>Depth</i></th> </tr> </thead> <tbody> <tr> <td><i>Power cabinet (twin)</i></td> <td>6ft 5in (196 cm)</td> <td>4ft 0in (122 cm)</td> <td>3ft 3¼in (99.7 cm)</td> </tr> <tr> <td><i>R.F. cabinet</i></td> <td>6ft 5in (196 cm)</td> <td>1ft 6in (45.7 cm)</td> <td>3ft 3¼in (99.7 cm)</td> </tr> <tr> <td><i>Modulator cabinet</i></td> <td>6ft 5in (196 cm)</td> <td>2ft 0in (61 cm)</td> <td>3ft 3¼in (99.7 cm)</td> </tr> </tbody> </table>		<i>Height</i>	<i>Width</i>	<i>Depth</i>	<i>Power cabinet (twin)</i>	6ft 5in (196 cm)	4ft 0in (122 cm)	3ft 3¼in (99.7 cm)	<i>R.F. cabinet</i>	6ft 5in (196 cm)	1ft 6in (45.7 cm)	3ft 3¼in (99.7 cm)	<i>Modulator cabinet</i>	6ft 5in (196 cm)	2ft 0in (61 cm)	3ft 3¼in (99.7 cm)
	<i>Height</i>	<i>Width</i>	<i>Depth</i>														
<i>Power cabinet (twin)</i>	6ft 5in (196 cm)	4ft 0in (122 cm)	3ft 3¼in (99.7 cm)														
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<i>Modulator cabinet</i>	6ft 5in (196 cm)	2ft 0in (61 cm)	3ft 3¼in (99.7 cm)														
<b>Weights</b>	<i>Power cabinet (twin)</i> 28 cwt (1422.7 kg) <i>R.F. cabinet</i> 8 cwt (406.5 kg) <i>Modulator cabinet</i> 10 cwt (508.8 kg)																
<b>Associated equipment</b>	Rack assembly Type 266 (10D/18476).																



TRANSMITTERS  
RADIO

Type T7248 (10D/19425)  
T7248A (10D/21170)  
T7248B (10D/22233)  
T7248C (10D/23913)

Relevant publication:-

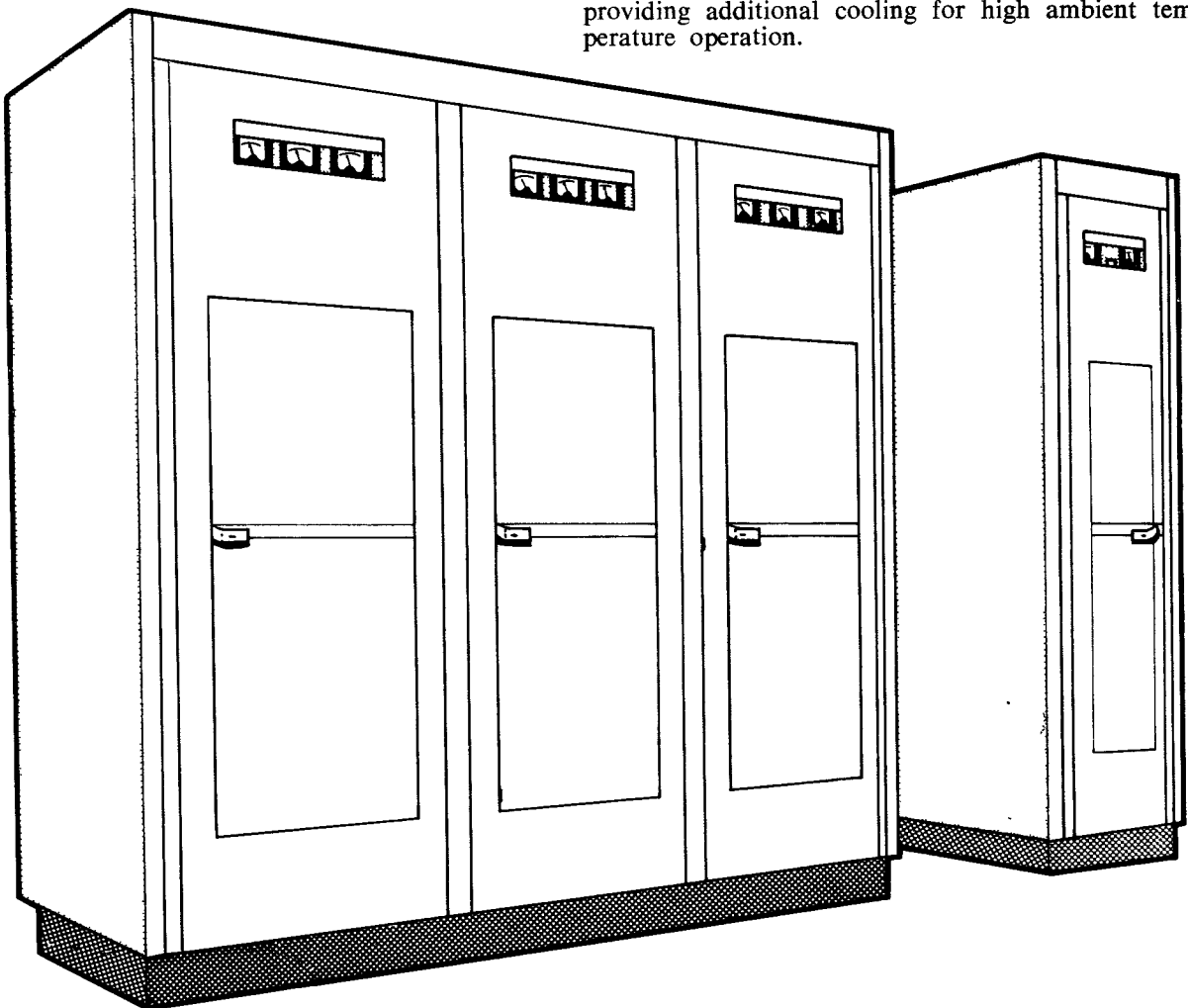
AP116E-0227

**Function**

Medium power, general purpose h.f. transmitter (c.w., m.c.w., R/T or f.s.k. working) suitable for mobile operation in tropical, temperate or arctic conditions, is of unit construction comprising one r.f. cabinet containing a single r.f. unit and a second cabinet housing both the modulator and power supply equipment.

Transmitter T.7248A is created by the embodiment of Mod. No. 4880 to T.7248, which provides a safety device for aerial exchange.

Transmitter T.7248B is T.7248 modified to provide a safety indicator for aerial exchange (Mod. No. 5290).  
Transmitter T.7248C is a modified version of T.7248 providing additional cooling for high ambient temperature operation.



**Transmitter Type T.7248**

<b>Origin</b>	Standard Telephones & Cables Ltd., D.S.20 transmitter, Code No. 4-LRE.134/31.		
<b>Frequency range</b>	1.6 to 17.5 MHz (17.2 to 187.5 metres).		
<b>Frequency control</b>	Crystal controlled oscillator (frequency tolerance $\pm$ 0.005% from 1.6 to 17.5 MHz).		
<b>Frequency accuracy and stability</b>	To crystal accuracy.		
<b>Modulation</b>	Amplitude modulation 100 per cent; m.c.w. tone frequencies of 500 Hz, 800 Hz and 1000 Hz available.		
<b>A.F. input level</b>	27dB below a level of 1mW, into 60 or 600 ohms line (at 50% modulation).		
<b>Output impedance</b>	The transmitters will work into balanced (400 to 800 ohms) or unbalanced (45 to 75 ohms) loads.		
<b>Output power</b>	<i>C.W. on/off or f.s.k. operation:</i>	4.6kW	
	<i>M.C.W. or R/T operation:</i>	3.0kW	
<b>Keying speed</b>	Up to 600 w.p.m. (480 bauds) tone to line, single or double current.		
<b>Power supplies</b>	380-415V, 50-60 Hz, three-phase supply.		
<b>Power consumption</b>	<i>C.W. on/off (4.6kW)</i>		
	<i>Mark</i>	12.5kVA	0.8 power factor
	<i>Space</i>	5.0kVA	0.6 power factor
	<i>C.W., f.s.k. (4.6kW)</i>		
		12.5kW	0.8 power factor
	<i>R/T (3.0kW)</i>		
		15.0kVA	0.8 power factor
<b>Overall dimensions</b>		<i>Height</i>	<i>Width</i>
		<i>Depth</i>	
	<i>Power cabinet (twin)</i>	6ft 5in (196 cm)	4ft 4½in (133.4 cm)
			3ft 5in (104 cm)
	<i>Modulator (combined with power cabinet)</i>	6ft 5in (196 cm)	2ft 0in (61 cm)
			3ft 5in (104 cm)
	<i>R.F. cabinet (one unit)</i>	6ft 5in (196 cm)	1ft 10½in (57 cm)
			3ft 7in (109 cm)
<b>Weights</b>	<i>Power cabinet (twin)</i>	28 cwt (1423 kg)	
	<i>Modulator</i>	10 cwt ( 508 kg)	
	<i>R.F. Unit (single)</i>	8 cwt ( 406.4 kg)	
	<i>Modulator</i>	0 scwt ( 508 kg)	
<b>Associated equipment</b>	Rack assembly Type 266 (10D/18476).		

TRANSMITTER  
RADIOType T.7355  
(5820-99-932-5698)

## Relevant publication:

AP116E-0252-1

**Function**

Very low power u.h.f. single-channel transmitter (R/T working) primarily for communication between ground and aircraft in flight. It may also be used for line of sight ground communication. The transmitter comprises transmitter unit Type 9231, cable assembly Type 9232, cover assembly and cover front Type 1068.

**Origin**

The Plessey Co., Ltd.

**Frequency range**

225 MHz to 399.9 MHz.

**Frequency control**

Crystal oscillator (temperature controlled) and a frequency multiplication system.

**Frequency accuracy and stability**

To crystal accuracy.

**Modulation**

Amplitude modulation up to 100 per cent. 12dB to 15dB clipping is available if required.

**Output impedance**

50 ohms (nominal).

**Output power**

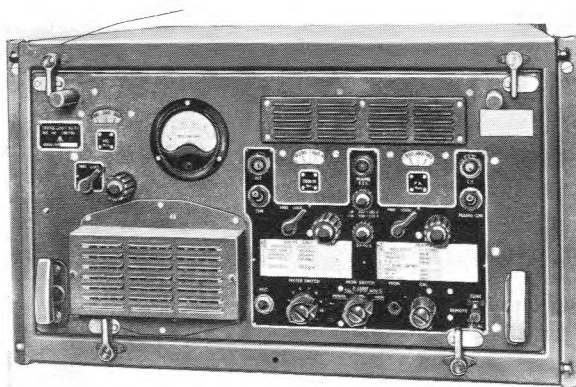
10 watts (nominal).

**Power supplies**

230V or 115V, 45 to 65 Hz, single-phase.

**Power consumption**

*Transmit* 330 watts (approx.).  
*Stand-by* 130 watts (approx.).



Transmitter Type T.7355



Amplifier Type A.9365

**Overall dimensions**

<i>Height</i>	<i>Width</i>	<i>Depth</i>
1ft 1 $\frac{1}{4}$ in (33.7 cm)	1ft 11 $\frac{1}{4}$ in (59 cm)	2ft 0in (61 cm)

**Weight**

171 lb (77.6 kg).

**Ancillary equipment**

Mounting plinth Type 7872  
Blower air, Type 7344  
Pipes, air cooling.

**Associated equipment**

Amplifier A.9365 is used with transmitter T.7355 to increase the output power to between 100 and 150 watts.

**TRANSMITTERS  
RADIO**

Type T8994  
(5820-99-933-2189)  
T15074  
(5820-99-944-2208)

Relevant publication:-

AP116E-0236-1

**Function**

Very high power, independent sideband h.f. transmitter (c.w. on/off keying, f.s.k. facsimile, multi-channel v.f. telegraphy and i.s.b. or d.s.b. R/T working). Controlled from front panels or from a remote control desk. Transmitter T.15074 is similar to T.8994 but with 50 ohms output impedance. Eight cubicles form the transmitter enclosure

**Origin**

The Marconi Co. Ltd., Type HS.51 Drawing No. W.31300 Ed. B.

**Frequency range**

4 MHz to 27.5 MHz (75 to 10.9 metres).

**Frequency control**

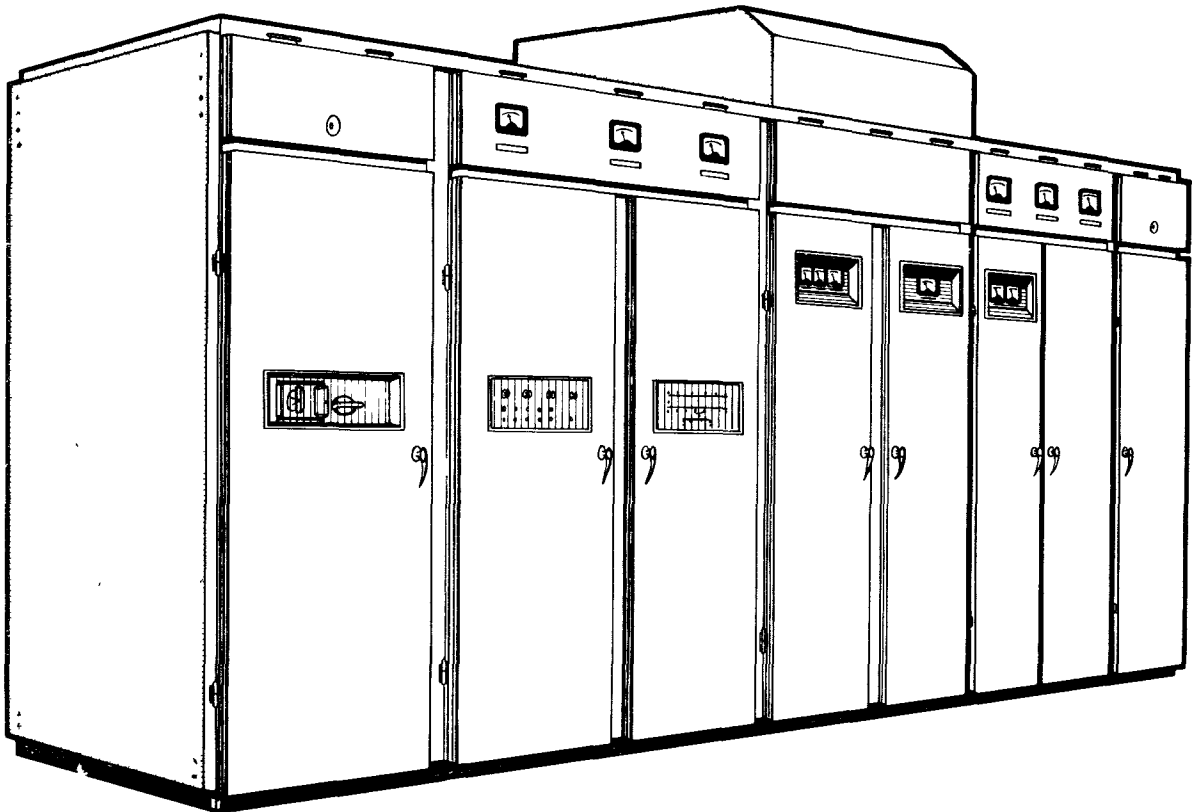
Continuous tuning over the frequency range of any one of six pre-set frequencies.

**Frequency accuracy and stability**

3 parts in 100,000.

**Modulation**

Amplitude modulation to 95 per cent depth (d.s.b. telephony operation).



**Transmitter Type T.8994 or T.15074**

<b>Output impedance</b>	600 ohms twin open wire or 200 ohms double coaxial feeder (T.8994). 50 ohms unbalanced output (T.15074).			
<b>Output power</b>	<i>I.S.B. operation</i> 30kW (p.e.p.) <i>D.S.B. operation</i> 7.5kW (carrier) <i>C.W. or f.s.k. operation</i> 20kW (continuous)			
<b>Power supplies</b>	380-440V, 50-60 Hz, 3-phase 4-wire (automatic voltage regulator maintains transmitter busbar supply within $\pm 1$ per cent for 10 per cent supply variations).			
<b>Power consumption</b>	<i>I.S.B. operation (p.e.p.):</i> 52kW (0.9 power factor) <i>C.W. on/off keying:</i> <i>Mark</i> 60kW (0.9 power factor) <i>Space</i> 15kW (0.9 power factor) <i>F.S.K. operation:</i> 60kW (0.9 power factor)			
<b>Overall dimensions</b>	<i>Height</i>	<i>Width</i>	<i>Depth</i>	
	<i>Main transmitter enclosure</i>	7ft 0in (213 cm)	19ft 11 $\frac{3}{4}$ in (609 cm)	3ft 8 $\frac{3}{4}$ in (113.5 cm)
	<i>Cubicle (each)</i>	7ft 0in (213 cm)	2ft 6in (76 cm)	3ft 9in (114 cm)

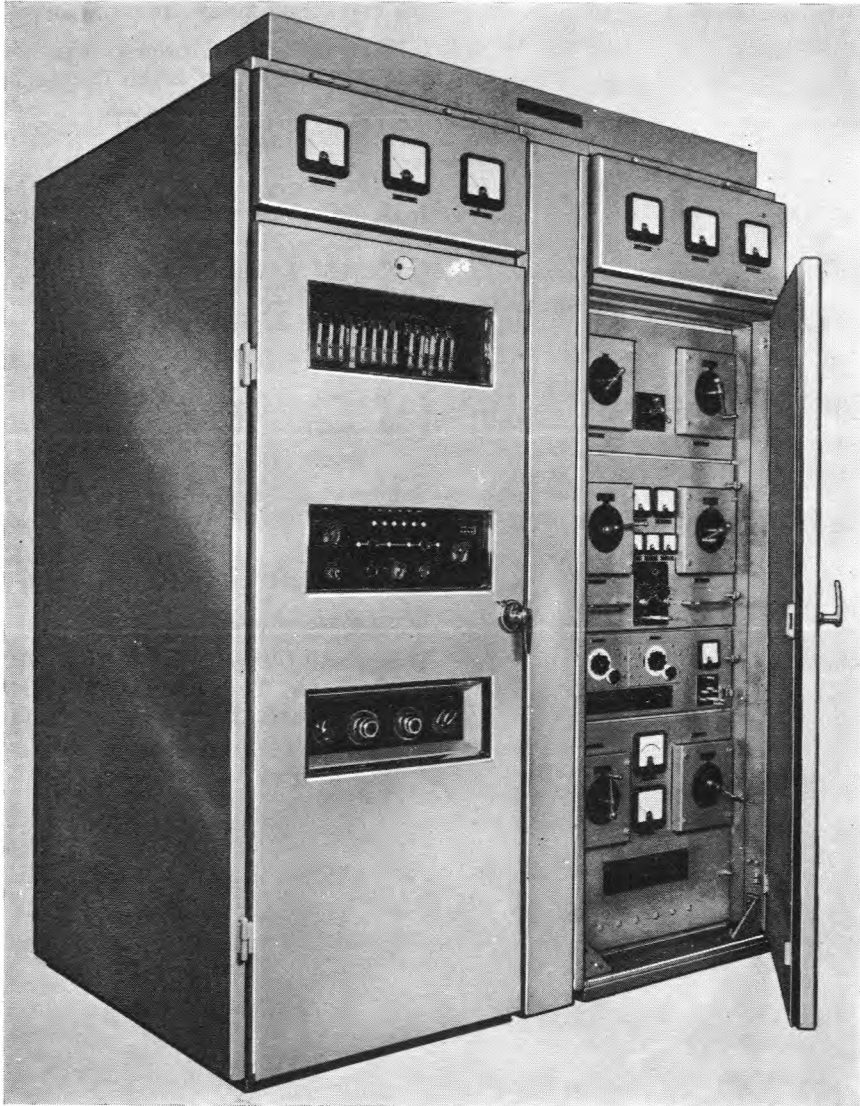
TRANSMITTERS  
RADIOType T10158  
(5820-99-933-2372)  
T10158A  
(5820-99-933-2182)  
T10158B  
(5820-99-933-2195)

Relevant publication:

AP116E-0231-1

**Function**

Medium power, general purpose, independent side-band h.f. transmitter (c.w. on/off keying, f.s.k. and i.s.b. or d.s.b. R/T working). The transmitter comprises two cubicles side by side with an air duct



Transmitter Type T.10158

between them, the rectifier and control unit cubicle being on the left and the radio frequency unit on the right.

Transmitter T.10158A is a version of T.10158 modified to provide an output for frequency measurement and fitted with reflectometers. T.10158B is a modified version of T.10158 providing 50 ohms output impedance.

<b>Origin</b>	The Marconi Co. Ltd., Type HS.31 (Drawing No. W.37918 Edn. B).								
<b>Frequency range</b>	4 MHz to 27.5 MHz (75 to 10.9 metres).								
<b>Frequency control</b>	Continuous tuning over the whole frequency range or selection of any 6 pre-set frequencies.								
<b>Frequency accuracy and stability</b>	To crystal accuracy (external drive units).								
<b>Input level</b>	0.1W nominal from primary drive. 0.25W from i.s.b. or keyed telegraph drive (3.1 MHz).								
<b>Output impedance</b>	600 ohms balanced (T.10158). 50 ohms (T.10158B).								
<b>Output power</b>	<i>I.S.B. operation</i> from 4 to 21 MHz 3.5kW (p.e.p.) 21 to 27.5 MHz 2.5kW (p.e.p.) <i>C.W. and f.s.k. operation</i> from 4 to 21 MHz 3.5kW 21 to 27.5 MHz 2.5kW								
<b>Power supplies</b>	380-420V, 50-60 Hz, three-phase 4-wire.								
<b>Power consumption (at 0.9 power factor)</b>	<i>I.S.B. (2-tone modulation)</i> 7kW <i>C.W. mark</i> 9kW <i>space</i> 3.7kW <i>F.S.K.</i> 9kW								
<b>Overall dimensions</b>	<table><thead><tr><th></th><th><i>Height</i></th><th><i>Width</i></th><th><i>Depth</i></th></tr></thead><tbody><tr><td><i>Main unit</i></td><td>7ft 6in (228 cm)</td><td>5ft 6in (167 cm)</td><td>4ft 4in (132 cm)</td></tr></tbody></table>		<i>Height</i>	<i>Width</i>	<i>Depth</i>	<i>Main unit</i>	7ft 6in (228 cm)	5ft 6in (167 cm)	4ft 4in (132 cm)
	<i>Height</i>	<i>Width</i>	<i>Depth</i>						
<i>Main unit</i>	7ft 6in (228 cm)	5ft 6in (167 cm)	4ft 4in (132 cm)						
<b>Weights</b>	(To be added later).								
<b>Associated equipment</b>	Drive unit, Type 10159 (10D/20456). Keying unit, Type 10195 (10K/20265). Oscillator unit, Type 11215 (10V/16243).								



TRANSMITTERS  
RADIO

Type T10197  
(5820-99-933-2173)

Relevant publication:-

T10197A  
(5820-99-933-2177)

AP116E-0232-1

T10197B  
(5820-99-933-2165)

**Function**

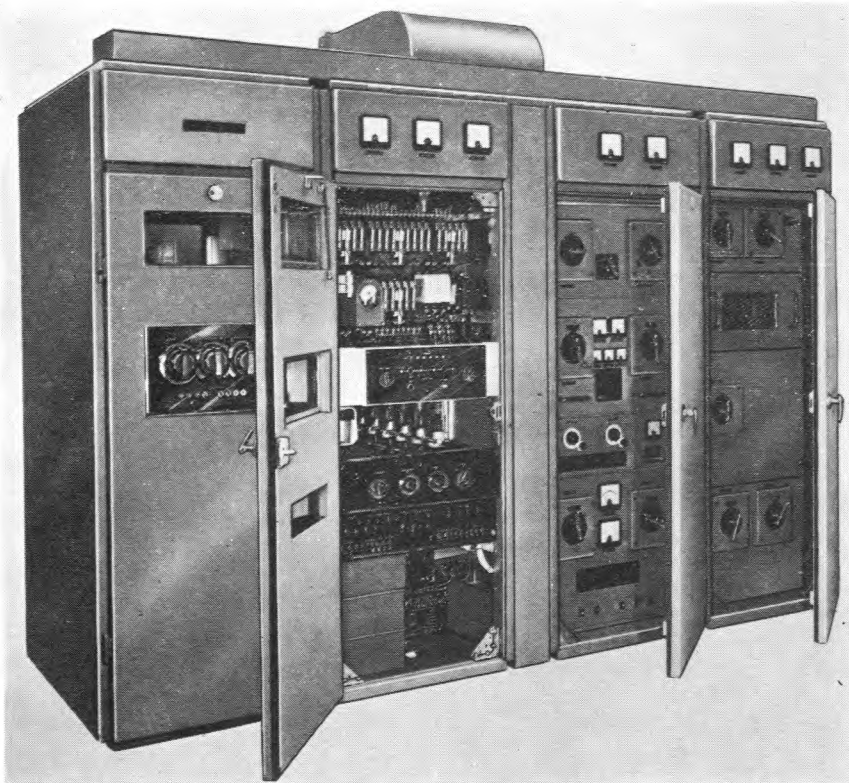
Medium power, general purpose, independent side-band h.f. transmitter (c.w. on/off keying, f.s.k. facsimile multi-channel V.F.T. and i.s.b. or d.s.b. R/T working). The transmitter comprises four cubicles mounted side by side on a plinth with two rectifier and control units on the left and two radio-frequency units on the right. Provision is made for remote control switching on and off. Transmitter T.10197A is a version of T.10197 modified to provide an output for frequency measurement and fitted with reflectometers. T.10197B is a 2.5 to 20 MHz version with a fan incorporated.

**Origin**

The Marconi Co. Ltd., Type HS.71.

**Frequency range**

4 MHz to 27.5 MHz (75 to 10.9 metres) (T.10197).  
2.5 MHz to 20 MHz (120 to 15 metres) (T.10197B).



**Transmitter Type T.10197**

<b>Frequency control</b>	Continuous tuning over the whole frequency range or selection of any of 6 pre-set frequencies.		
<b>Frequency accuracy and stability</b>	To crystal accuracy (external drive units).		
<b>Input level</b>	0.1W nominal from primary drive. 0.25W from i.s.b. or keyed telegraph drive (3.1 MHz).		
<b>Output impedance</b>	50 ohms (T.10197). 600 ohms balanced (T.10197B).		
<b>Output power</b>	<i>I.S.B. operation:</i> 7 to 10kW (p.e.p.) <i>D.S.B. operation:</i> 3.5 to 4kW <i>C.W. on/off or f.s.k.:</i> 6 to 7kW (using i.s.b. loading), 7 to 7.5kW (using optimum loading)		
<b>Power supplies</b>	380-440V, 50-60 Hz, three-phase 4-wire.		
<b>Power consumption</b> (at 0.9 power factor)	<i>I.S.B. (10kW) (2-tone modulation)</i>	18kW	
	<i>C.W. (7.5kW) (on/off keying) mark</i>	21kW	
		<i>space</i>	10kW
	<i>F.S.K. (7.5kW)</i>	21kW	
<b>Overall dimensions</b>		<i>Height</i>	<i>Width</i>
	<i>Main unit</i>	7ft 6in	10ft 6in
		(228 cm)	(322 cm)
			4ft 4in
			(132 cm)
<b>Weights</b>	<i>(To be added later).</i>		
<b>Associated equipment</b>	Drive unit, Type 10159 (10D/20456) Keying unit, Type 10195 (10K/20265) Oscillator unit, Type 11215 (10V/16243).		

AP116A-0114-1

Item No. 24

TRANSMITTER  
RADIO

Type T11768 (10D/21097)

Relevant publication:-

AP116E-0207-1AB

**Function**

High power, m.f., long range navigational beacon with the following types of emission:—

A.1. keyed carrier (beacon)

A.2. continuous carrier, keyed tone (beacon)

A.3. telephony (meterological broadcast)

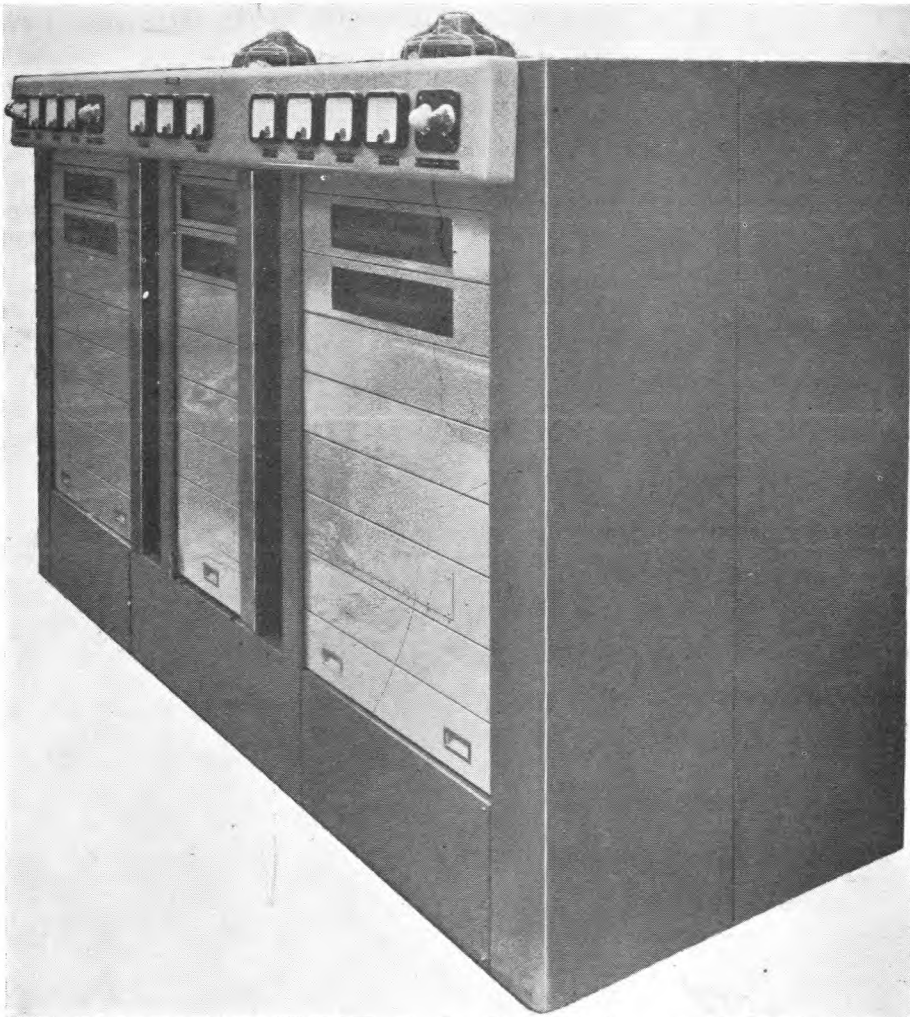
The transmitter may be set on any one crystal-controlled spot frequency between 200 and 415 KHz. The facility to change frequency to a second spot frequency within the band is not instantaneous.

**Origin**

Redifon Ltd., Type G 192 R.

**Frequency range**

200 KHz to 415 KHz (1500 to 720 metres).



**Transmitter Type T.11768**

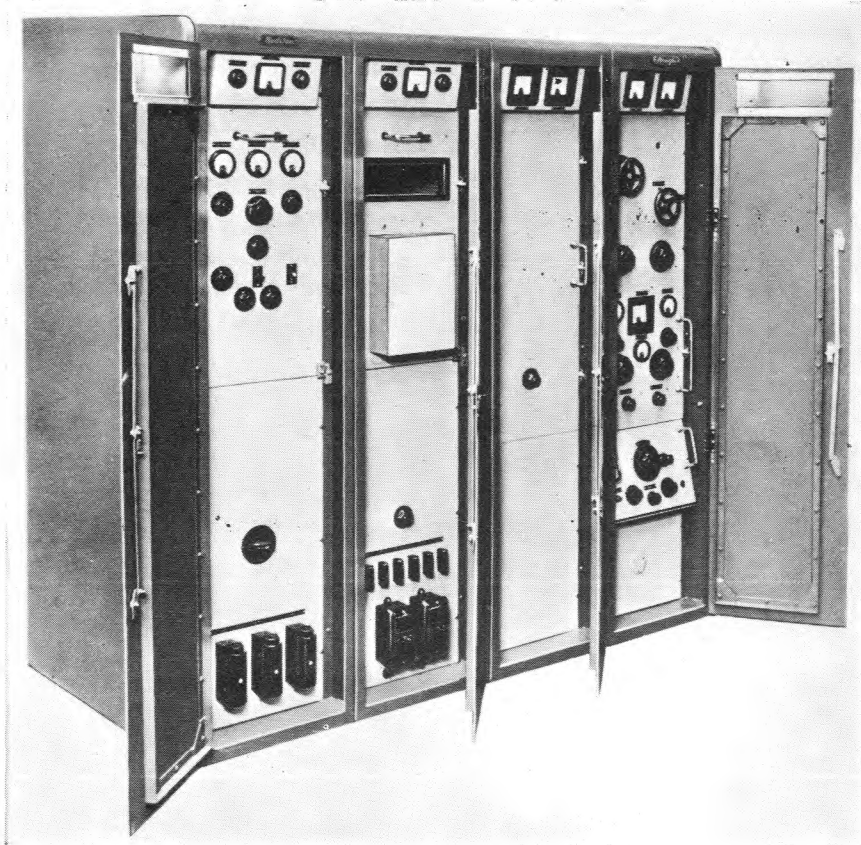
<b>Frequency control</b>	<i>Crystal</i> (2 plug-in crystals either selected by switch). <i>Internal oscillator (tunable)</i> for test and emergency use. Low impedance external drive socket provided.						
<b>Frequency accuracy and stability</b>	Within plus or minus 0.01% over the ambient temperature range +20°C to +40°C.						
<b>Modulation</b>	<i>Audio tone for A.2 transmission:</i> 1020 Hz $\pm$ 50 Hz, 400 Hz $\pm$ 25 Hz. <i>A.F. response on telephony:</i> $\pm$ 2dB from 200 to 3500 Hz relative to 1000 Hz. <i>Depth:</i> 40 to 90%. <i>Harmonic distortion:</i> less than 7.5% up to 90% modulation.						
<b>Output power</b>	10 kW unmodulated carrier (reduced power facility provided for setting up and tuning).						
<b>Output impedance</b>	50 ohms unbalanced. (Aerial matching unit suitable for matching via concentric feeder to aerial array).						
<b>Bandwidth</b>	<i>A.1 emission (keying speed 7 w.p.m.):</i> 95% of total power radiated within $\pm$ 18 Hz of carrier frequency. <i>A.2 emission:</i> Within $\pm$ 2158 Hz of carrier frequency.						
<b>Power supplies</b>	360-440V, 50 Hz, three-phase 4-wire.						
<b>Power consumption (at 0.91 power factor)</b>	38kW (approx.).						
<b>Overall dimensions</b>	<table> <thead> <tr> <th><i>Height</i></th> <th><i>Width</i></th> <th><i>Depth</i></th> </tr> </thead> <tbody> <tr> <td>6ft 3in (190.5 cm)</td> <td>10ft 0in (304.8 cm)</td> <td>4ft 0in (122 cm)</td> </tr> </tbody> </table>	<i>Height</i>	<i>Width</i>	<i>Depth</i>	6ft 3in (190.5 cm)	10ft 0in (304.8 cm)	4ft 0in (122 cm)
<i>Height</i>	<i>Width</i>	<i>Depth</i>					
6ft 3in (190.5 cm)	10ft 0in (304.8 cm)	4ft 0in (122 cm)					
<b>Weights</b>	7500 lb (3402 kg) (oil filled components excluded). 2600 lb (1189.4 kg) (oil filled components only).						

TRANSMITTER  
RADIO

Type T12842 (10D/21704)

Relevant publication:-

AP116E-0208-1AB



Transmitter type T12842

**Function**

Medium power, m.f. beacon transmitter used with FGRI.23069(AP116A-0111-1) providing keyed tone m.c.w. or keyed c.w. with either automatic or manual keying. An automatic coder is incorporated. The transmitter comprises two sub-assemblies, occupying four bays, with a double-bay power supply unit and a radio frequency and modulator section.

**Origin**

Redifon Ltd., Type G.91R.

**Frequency range**

200 KHz to 550 KHz in two bands (200-400 and 400-550 KHz) (1500 to 750 and 750 to 545 metres).

**Frequency control**

Two crystal-controlled spot frequencies between 200 and 550 KHz. Variable frequency oscillator covering same range is provided for test or emergency operation.

TRANSMITTER  
RADIO

Type T13119 (10D/21610)

Relevant publication:-

(for illustrations refer  
to Item No. 7)

AP116E-0223-1

<b>Function</b>	Medium power, h.f. transmitter (c.w. and f.s.k. working). Transmitter T.13119 is a version of T.1975 modified to enable it to be driven by a f.s.k. duplex drive unit, cabinet (fitted), Type 8756. The transmitter comprises transmitter unit Type 13125, power unit Type 811 and drive unit radio, Type 4.		
<b>Origin</b>	The Marconi Co. Ltd., Type S.W.B. 8X (modified); f.s.k. drive unit Marconi Type H.D.61B (cabinet fitted Type 8756).		
<b>Frequency range</b>	2 MHz to 27 MHz (150 to 11.1 metres).		
<b>Frequency control</b>	Franklin master oscillator (transmitter unit Type 13125). Crystal controlled oscillator (drive unit radio, Type 4).		
<b>Frequency accuracy and stability</b>	Franklin master oscillator to 1 part in 20,000. Crystal controlled oscillator to 1 part in 100,000.		
<b>Output impedance</b>	77 ohms or 600 ohms.		
<b>Output power</b>	At 2.0 MHz (150 metres)                    4kW 22.2 MHz (13.5 metres)            3kW 22.2-27 MHz (13.5 to 11.1m) 2kW		
<b>Keying speed</b>	200 w.p.m. (on/off keying). 150 bauds (f.s.k., drive unit Type 4).		
<b>Power supplies</b>	<i>Transmitter unit, Type 13125 (with power unit, Type 811):</i> 400V, 50 Hz, three-phase 4-wire. <i>Drive unit, radio, Type 4:</i> 200-250V, 50 Hz, single-phase.		
<b>Power consumption</b>	9.6kW.		
<b>Overall dimensions</b>		<i>Height</i>	<i>Width</i>
		<i>Depth</i>	
	<i>Transmitter unit, Type 13125</i>	7ft 0in (213.3 cm)	3ft 0in (91.4 cm)
	<i>Power unit, Type 811</i>	6ft 6in (198 cm)	3ft 6in (106.6 cm)
	<i>Drive unit radio, Type 4</i>	3ft 1½in (95.2 cm)	2ft 6in (76.2 cm)
<b>Weights</b>	<i>Transmitter unit, Type 13125</i>	13 cwt ( 660.4 kg)	
	<i>Power unit, Type 811</i>	21 cwt (1066.8 kg)	
	<i>Drive unit, radio, Type 4</i>	220 lbs ( 99.8 kg)	
<b>Ancillary equipment</b>	Cabinet (fitted), Type 8756 (10AQ/1674).		

TRANSMITTER  
RADIO

Type T13120 (10D/21611)

(for illustrations refer  
to Item No. 7 & 8)

Relevant publication:-

AP116E-0223-1

<b>Function</b>	Medium power, h.f., s.s.b., transmitter (c.w., f.s.k. and R/T (s.s.b.) working). Transmitter T.13120 is a version of T.1976 modified to enable it to be driven by a f.s.k. duplex drive unit, cabinet (fitted), Type 8756. The transmitter comprises transmitter unit Type 13125, power unit Type 812, rectifier Type 62, modulator unit Type 127 and drive units radio Types 5 and 7.
<b>Origin</b>	The Marconi Co. Ltd., Type S.W.B. 8X (modified); f.s.k. drive unit Marconi Type HD 61B (cabinet fitted Type 8756).
<b>Frequency range</b>	2 MHz to 27 MHz (150 to 11.1 metres) <i>c.w. operation.</i> 4 MHz to 27 MHz (75 to 11.1 metres) <i>s.s.b. operation.</i>
<b>Frequency control</b>	Franklin master oscillator (transmitter unit Type 13125). Crystal controlled oscillator (drive unit radio, Type 5).
<b>Frequency accuracy and stability</b>	Franklin master oscillator to 1 part in 20,000. Crystal controlled oscillator to 1 part in 100,000.
<b>Output impedance</b>	77 ohms or 600 ohms.
<b>Output power</b>	<i>C.W. operation:</i> At 2 MHz (150 metres) 4kW 22.2 MHz (13.5 metres) 3kW 22.2-27 MHz (13.5 to 11.1m) 2kW <i>S.S.B. operation:</i> At 4-22.2 MHz (75-13.5m) 3 to 4kW (p.e.p.). 22.2-27 MHz (13.5-11.1m) 1.7kW (p.e.p.).
<b>Keying speed</b>	200 w.p.m. on/off keying.
<b>Power supplies</b>	<i>Transmitter unit, Type 13125 (with power unit, Type 812):</i> 400V, 50 Hz, three-phase 4-wire. <i>Modulator unit, Type 5:</i> 200-250V, 50 Hz single-phase. <i>Drive unit radio, Type 7:</i> 110V or 210-250V, 50 Hz, single-phase.
<b>Power consumption</b>	9.6kW (c.w. operation).

**Overall dimensions**

	<i>Height</i>	<i>Width</i>	<i>Depth</i>
<i>Transmitter unit, Type 13125</i>	7ft 0in (213.3 cm)	3ft 0in (91.4 cm)	2ft 0in (61 cm)
<i>Power unit, Type 812</i>	6ft 6in (198 cm)	3ft 6in (106.6 cm)	4ft 6in (122 cm)
<i>Rectifier, Type 62</i>	5ft 4 $\frac{3}{4}$ in (164.5 cm)	2ft 8 $\frac{3}{4}$ in (82.3 cm)	2ft 3 $\frac{3}{8}$ in (69.6 cm)
<i>Modulator unit, Type 127</i>	6ft 5in (195.6 cm)	4ft 0in (122 cm)	3ft 6in (106.6 cm)
<i>Drive unit radio, Type 5</i>	3ft 1 $\frac{1}{2}$ in (95.2 cm)	9 $\frac{1}{2}$ in (24 cm)	2ft 6in (76.2 cm)
<i>Drive unit radio, Type 7</i>	6ft 10in (183 cm)	1ft 10 $\frac{1}{2}$ in (57.2 cm)	1ft 6 $\frac{7}{8}$ in (48 cm)

**Weights**

<i>Transmitter unit, Type 13125</i>	13 cwt ( 660.4 kg)
<i>Power unit, Type 812</i>	21 cwt (1066.8 kg)
<i>Rectifier, Type 62</i>	13 $\frac{1}{4}$ cwt ( 673.2 kg)
<i>Modulator unit, Type 127</i>	25 cwt (1270 kg)
<i>Drive unit radio, Type 5</i>	
<i>Drive unit radio, Type 7</i>	576 lb ( 261.3 kg)

**Ancillary equipment**

Cabinet (fitted) Type 8756 (10AQ/1674).



TRANSMITTER  
RADIO

Type T13121 (10D/21612)

Relevant publication:-

(for illustrations see item  
Nos. 7 and 12)

AP116E-0223-1

**Function**

Medium power, h.f. transmitter (c.w. on/off and f.s.k. telegraphy and R/T working). Transmitter T.13121 is a version of T.2000 modified to enable it to be driven by a f.s.k. duplex drive unit, cabinet (fitted), Type 8756. The transmitter comprises transmitter unit, Type 13125, power unit, Type 811, modulator unit Type 7436, drive unit radio, Type 5, amplifier Type A.7488, microphone assembly, Type 72 and associated smoothing unit, Type 22.

**Origin**

The Marconi Co. Ltd., Type S.W.B. 8X (modified); f.s.k. drive unit, Marconi Type HD.61B (cabinet fitted) Type 8756).

**Frequency range**

2 HMz to 27 MHz (150 to 11.1 metres).

**Frequency control**

Franklin master oscillator (transmitter unit Type 13125).  
Crystal controlled oscillator (drive unit radio, Type 5).

**Frequency accuracy and stability**

Franklin master oscillator to 1 part in 20,000.  
Crystal controlled oscillator to 1 part in 100,000.

**Output impedance**

77 ohms or 600 ohms.

**Output power***C.W. and f.s.k. operation:*

At 2 MHz (150 metres) 4kW  
22.2 MHz (13.5 metres) 3kW  
22.2-27 MHz (13.5-11.1m) 2kW

*R/T operation:*

At 2-22.2 MHz 2.5-2kW  
22.2-27 MHz 1.0-0.7kW

**Keying speed**

200 w.p.m. on/off keying.

**Power supplies**

*Transmitter unit, Type 13125 (with power unit, Type 811):*

400V, 50 Hz, three-phase 4-wire.

*Drive unit radio, Type 5:*

200-250V, 50 Hz, single-phase.

**Power consumption**

9.6kW (c.w. operation).

11.1kW (R/T operation).

**Overall dimensions**

	Height	Width	Depth
<i>Transmitter unit, Type 13125</i>	7ft 0in (213.3 cm)	3ft 0in (91.4 cm)	2ft 0in (62 cm)
<i>Power unit, Type 811</i>	6ft 6in (198 cm)	3ft 6in (106.6 cm)	4ft 0in (122 cm)
<i>Drive unit radio, Type 5</i>	3ft 1½in (95.2 cm)	9½in (24 cm)	2ft 6in (76.2 cm)
<i>Modulator unit, Type 7436</i>	6ft 5in (195.6 cm)	3ft 6in (106.6 cm)	2ft 0in (61 cm)

**Weights***Transmitter unit, Type 13125* 13 cwt ( 660.4 kg)*Power unit, Type 811* 21 cwt (1066.8 kg)*Modulator unit, Type 7436* 11 cwt ( 558.8 kg)**Ancillary equipment**

Cabinet (fitted) Type 8756 (10AQ/1674).

TRANSMITTER  
RADIO

Type T13123 (10D/21614)

(for illustrations refer  
to Item No. 11)

Relevant publication:-

AP116E-0222-1

<b>Function</b>	Medium power, h.f., s.s.b. transmitter (c.w. on/off f.s.k. telegraphy and R/T (s.s.b.) working). Transmitter T.13123 is a version of T.1995 modified to enable it to be driven by a f.s.k. duplex drive unit, cabinet (fitted), Type 8756. The transmitter comprises, transmitter unit, Type 13126, power unit, Type 1003, rectifier, Type 62, modulator unit, Type 138 and drive units radio, Types 5 and 7.
<b>Origin</b>	The Marconi Co. Ltd., Type SWB. 11X (modified); f.s.k. drive unit, Marconi Type HD.61B (cabinet fitted), Type 8756).
<b>Frequency range</b>	2 MHz to 27 MHz (150 to 11.1 metres) c.w. operation. 4 MHz to 27 MHz (75 to 11.1 metres) s.s.b. operation.
<b>Frequency control</b>	Franklin master oscillator (transmitter unit, Type 13126). Crystal controlled oscillator (drive unit radio, Type 5).
<b>Frequency accuracy</b>	Franklin master oscillator to 1 part in 20,000. Crystal controlled oscillator to 1 part in 100,000.
<b>Output impedance</b>	77 ohms or 600 ohms.
<b>Output power</b>	<i>C.W. operation:</i> At 2-22.2 MHz (150-13.5m) 7 to 5kW 22-2-27 MHz (13.5-11.1m) 5 to 4kW <i>S.S.B. operation:</i> At 4-22.2 MHz (75-13.5m) 8 to 5kW (p.e.p.) 22-2-27 MHz (13.5-11.1m) 5 to 3 kW (p.e.p.)
<b>Keying speed</b>	200 w.p.m. (on/off keying).
<b>Power supplies</b>	<i>Transmitter unit, Type 13126 (with power unit, Type 1003):</i> 400V, 50 Hz, three-phase 4-wire. <i>Modulator unit, Type 138 and drive unit radio, Type 5:</i> 200-250V, 50 Hz, single-phase. <i>Drive unit radio, Type 7:</i> 110V or 210-250V, 50 Hz, single-phase.
<b>Power consumption (at 0.98 power factor)</b>	<i>C.W. operation:</i> Mark 19kW Space 11kW <i>S.S.B. operation:</i> 17kW

**Overall dimensions**

	<i>Height</i>	<i>Width</i>	<i>Depth</i>
<i>Transmitter unit, Type 13126</i>	6ft 11in (210.8 cm)	5ft 3in (160 cm)	2ft 10in (86.4 cm)
<i>Power unit, Type 1003</i>	6ft 11in (210.8 cm)	3ft 6in (106.6 cm)	4ft 0in (122 cm)
<i>Modulator unit, Type 138</i>	6ft 5in (195.6 cm)	4ft 0in (122 cm)	3ft 6in (106.6 cm)
<i>Rectifier, Type 62</i>	5ft 4 $\frac{3}{4}$ in (164.5 cm)	2ft 8 $\frac{3}{8}$ in (82.3 cm)	2ft 3 $\frac{3}{8}$ in (69.6 cm)
<i>Drive unit radio, Type 5</i>	3ft 1 $\frac{1}{2}$ in (95.2 cm)	9 $\frac{1}{2}$ in (24 cm)	2ft 6in (76.2 cm)
<i>Drive unit radio, Type 7</i>	6ft 0in (183 cm)	1ft 10 $\frac{1}{2}$ in (57.2 cm)	1ft 6 $\frac{7}{8}$ in (48 cm)

**Weights**

<i>Transmitter unit, Type 13126</i>	25 cwt (1270 kg)
<i>Power unit, Type 1003</i>	22 cwt (1117.6 kg)
<i>Rectifier, Type 62</i>	13 $\frac{1}{4}$ cwt ( 673.2 kg)
<i>Modulator unit, Type 138</i>	25 cwt (1270 kg)
<i>Drive unit radio, Type 7</i>	576 lb ( 261.3 kg)

**Ancillary equipment**

Cabinet (fitted), Type 8756 (10AQ/1674).

TRANSMITTER  
RADIO

Type T13124 (10D/21615)

(for illustration refer  
to Item No. 11)

Relevant publication:-

AP116E-0222-1

**Function**

Medium power, h.f. transmitter (c.w. on/off and f.s.k. telegraphy). Transmitter T.13124 is a modified version of T.1999 (information sheet deleted) to enable it to be driven by a f.s.k. duplex drive unit, cabinet (fitted), Type 8756. The transmitter comprises, transmitter unit, Type 13126, power unit, Type 7724 and drive unit radio, Type 5.

**Origin**

The Marconi Co. Ltd., Type SWB 11X (modified); f.s.k. drive unit, Marconi Type HD.61B (cabinet (fitted)) Type 8756.

**Frequency range**

2 MHz to 27 MHz (150 to 11.1 metres).

**Frequency control**

Franklin master oscillator (transmitter unit, Type 13126).  
Crystal controlled oscillator (drive unit radio, Type 5).

**Frequency accuracy and stability**

Franklin master oscillator to 1 part in 20,000.  
Crystal controlled oscillator to 1 part in 100,000.

**Output impedance**

77 ohms and 600 ohms.

**Output power**

At 2-22.2 MHz (150-13.5m) 7 to 5 kW  
22.2-27 MHz (13.5-11.1m) 5 to 4kW

**Keying speed**

200 w.p.m. (on/off keying).

**Power supplies**

*Transmitter unit, Type 13126 (with power unit, Type 7724):*

400V, 50 Hz, three-phase 4-wire.

*Drive unit radio, Type 5:*

200-250V, 50 Hz, single-phase.

**Overall dimensions**

	<i>Height</i>	<i>Width</i>	<i>Depth</i>
<i>Transmitter unit, Type 13126</i>	6ft 11in (210.8 cm)	5ft 3in (160 cm)	2ft 10in (86.4 cm)
<i>Power unit, Type 7724</i>	6ft 11in (210.8 cm)	3ft 6in (106.6 cm)	4ft 0in (122 cm)
<i>Drive unit radio, Type 5</i>	3ft 1½in (95.2 cm)	9½in (24 cm)	2ft 6in (76.2 cm)

**Weights**

*Transmitter unit, Type 13126* 25 cwt (1270 kg)  
*Power unit, Type 7724* 22 cwt (1117.6 kg)

**Ancillary equipment**

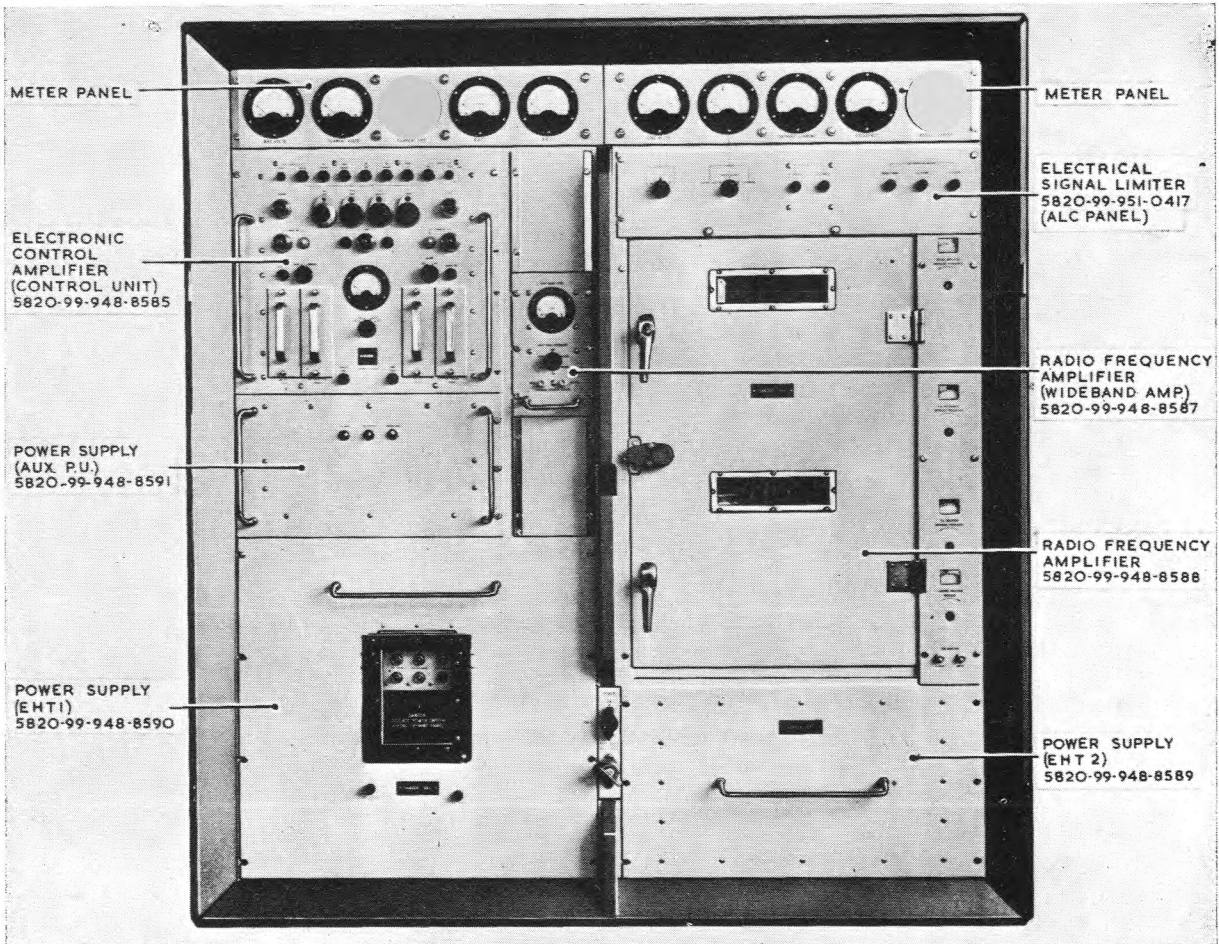
Cabinet (fitted) Type 8756 (10AQ/1674).

TRANSMITTER  
RADIO

5820-99-950-5772

Relevant publication:-

AP116E-0127-1A. 1B, 1G, 1H



Transmitter sub-assembly 5820-99-950-5890

**Function**

A long range, high power h.f. remotely controlled transmitter used with FGRI.23144 voice and telegraph transmitter and receiver station. The transmitter comprises three sub-assemblies:—

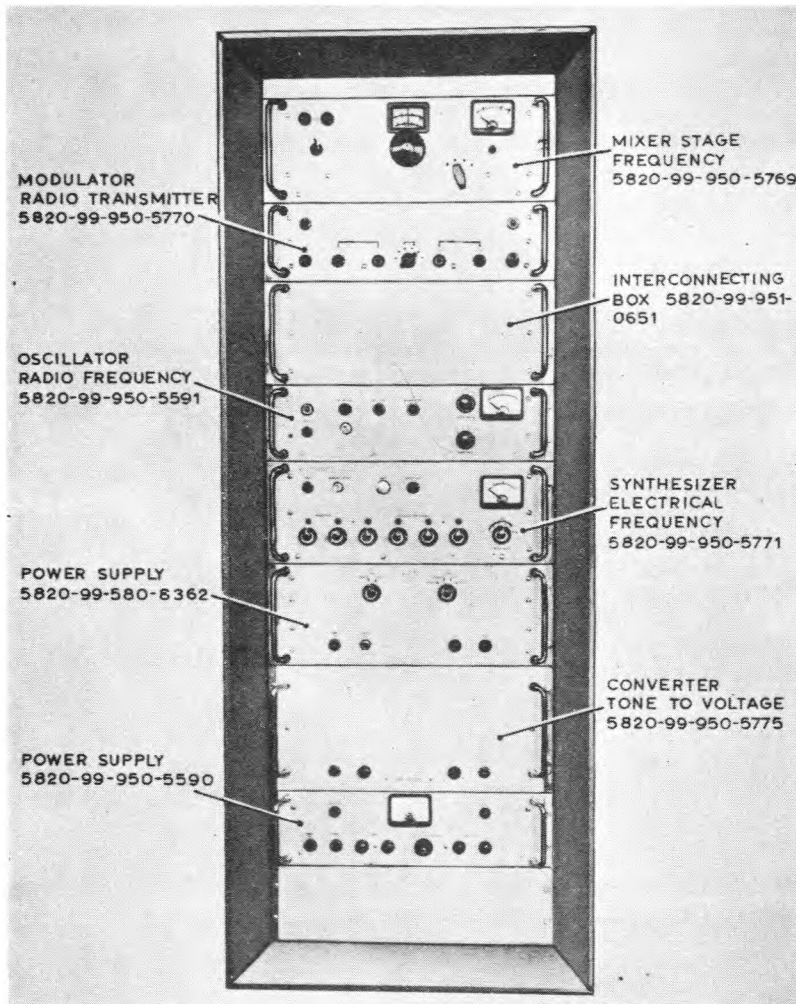
- (1) Transmitter sub-assembly, 5820-99-950-5774 (*exciter unit*)
- (2) *Transmitter sub-assembly*, 5820-99-950-5890 (*10kW h.f. linear amplifier*)
- (3) Regulator voltage, 6110-99-951-0381.

**Origin**

Racal Communications Ltd., Type TTA.187B.

**Frequency range**

2.0 to 29.9999 MHz (150 to 10 metres) in 100 Hz steps.



Transmitter sub-assembly 5820-99-950-5774



Regulator, voltage 6110-99-951-9381

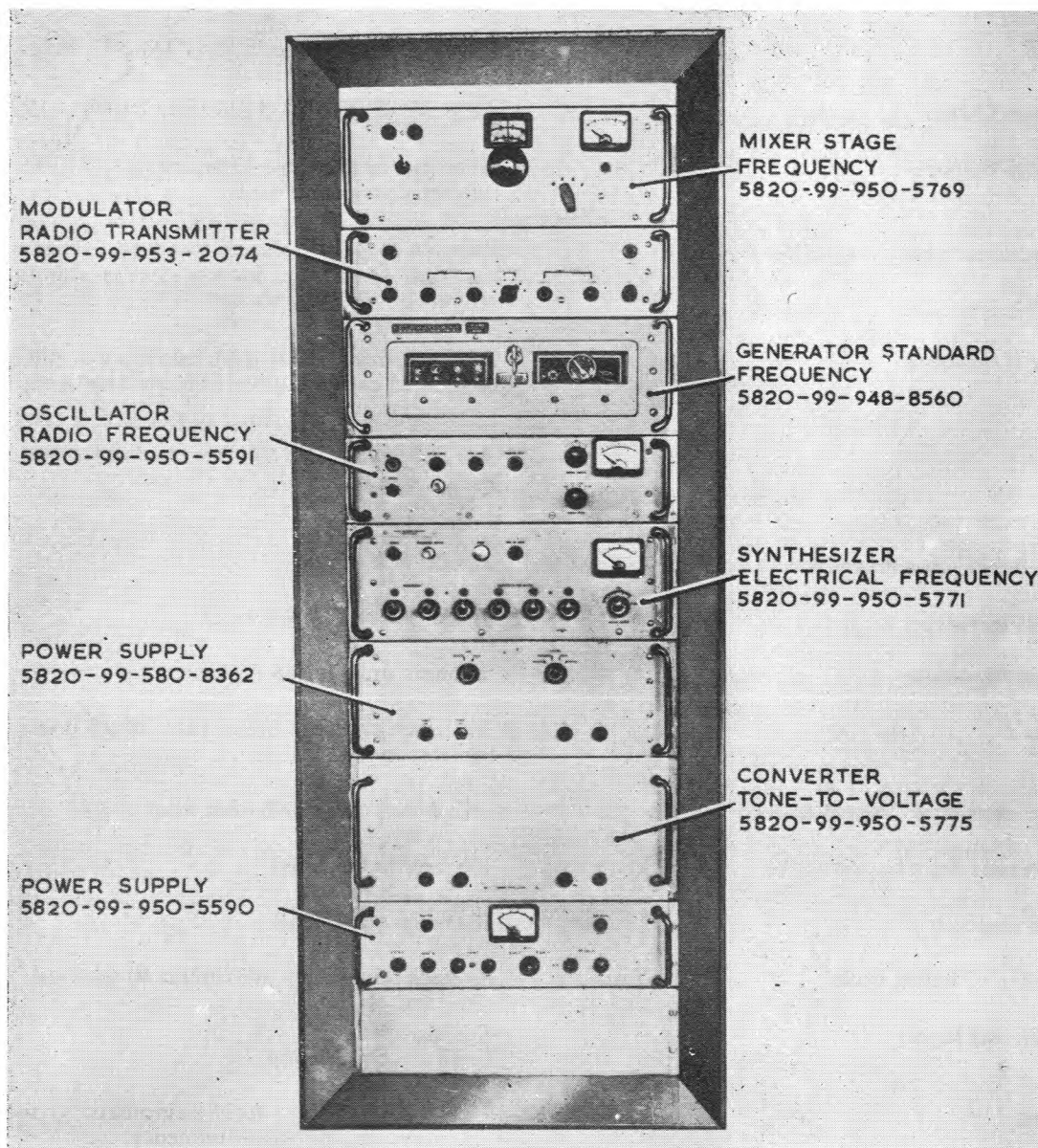
<b>Frequency control</b>	Frequency standard and distribution unit, 5820-99-951-0657 (external).																
<b>Frequency accuracy and stability</b>	Dependent on reference standard. The synthesizer, electrical frequency, 5820-99-950-5771 incorporates a standby internal reference frequency source, a statement of the frequency accuracy and stability of which is included.																
<b>Types of emission</b>	<i>SSB telephone (A3a, A3j)</i> ; suppressed, pilot or voice controlled carrier (upper or lower sideband). <i>AM compatible SSB telephony (A3h)</i> ; (re-inserted carrier with lower sideband). <i>CW telegraphy (A1)</i> .																
<b>Input level (to linear amplifier)</b>	25-800 mW.																
<b>Output power</b>	10 kW p.e.p. (7 kW r.m.s.).																
<b>Output impedance</b>	50 ohms unbalanced (2:1 v.s.w.r.).																
<b>Linearity</b>	3rd order products better than 36 dB down on one of two test tones.																
<b>Audio input level (to exciter unit)</b>	-15 to +7dBm.																
<b>RF output (from exciter unit)</b>	100 mW (adjustable).																
<b>Audio response</b>	300-3400 Hz $\pm 2$ dB																
<b>Duration of tuning cycle</b>	Average 35 seconds, maximum 60 seconds.																
<b>CW keying input</b>	<i>Remote</i> — VF tone <i>Local</i> — closed loop																
<b>Tuning</b>	(1) <i>Remote or local</i> — automatic control from synthesizer, electrical frequency. (2) <i>Manual</i> — mechanical override of automatic system.																
<b>Power supply</b>	Provided from regulator, voltage 6110-99-951-0381. <i>Input</i> : 400 V $\pm 12\%$ , 47-65 Hz, three-phase, four-wire.																
<b>Power consumption</b>	21 kVA approx.																
<b>Dimensions</b>	<table border="0"> <thead> <tr> <th></th> <th><i>Height</i></th> <th><i>Width</i></th> <th><i>Depth</i></th> </tr> </thead> <tbody> <tr> <td>Transmitter sub-assembly, 5820-99-950-5774</td> <td>5ft 5½in (165.7cm)</td> <td>2ft 0½in (62.3cm)</td> <td>2ft 3 in (68.6cm)</td> </tr> <tr> <td>Transmitter sub-assembly, 5820-99-950-5890</td> <td>5ft 5½in (165.7cm)</td> <td>5ft 0 in (152.4cm)</td> <td>2ft 3 in (68.6cm)</td> </tr> <tr> <td>Regulator, voltage, 6110-99-951-0381</td> <td>4ft 0 in (122cm)</td> <td>2ft 0½in (62.3cm)</td> <td>1ft 11 in (58.4cm)</td> </tr> </tbody> </table>		<i>Height</i>	<i>Width</i>	<i>Depth</i>	Transmitter sub-assembly, 5820-99-950-5774	5ft 5½in (165.7cm)	2ft 0½in (62.3cm)	2ft 3 in (68.6cm)	Transmitter sub-assembly, 5820-99-950-5890	5ft 5½in (165.7cm)	5ft 0 in (152.4cm)	2ft 3 in (68.6cm)	Regulator, voltage, 6110-99-951-0381	4ft 0 in (122cm)	2ft 0½in (62.3cm)	1ft 11 in (58.4cm)
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Transmitter sub-assembly (5820-99-950-5890)	2,500 lb	(1134 kg)															
Regulator, voltage	450 lb	(204 kg)															

TRANSMITTER  
RADIO

5820-99-953-2077

Relevant publication:-

AP116E-0127-1A, 1D, 1G, 1V



Transmitter sub-assembly, 5820-99-953-2076



<b>Function</b>	A long range, high power h.f. remotely controlled transmitter used with TGRI(AT)26023/1 air transportable s.s.b., radio teleprinter/voice station. The transmitter comprises three main sub-assemblies:— <ol style="list-style-type: none"> <li>(1) Transmitter sub-assembly, 5820-99-953-2076 (<i>exciter unit</i>)</li> <li>(2) Transmitter sub-assembly, 5820-99-950-5890 (<i>10 kW h.f. linear amplifier</i>)</li> <li>(3) Regulator voltage, 6110-99-951-0381.</li> </ol>
<b>Origin</b>	Racal Communications Ltd., Type TTA.227.
<b>Frequency range</b>	2.0 to 29.9999 MHz (150 to 10 metres) in 100 Hz steps.
<b>Frequency control</b>	Generator, standard frequency, 5820-99-948-8650 (mounted in exciter unit).
<b>Frequency accuracy and stability</b>	Dependent on reference standard. The synthesizer, electrical frequency, incorporates a standby internal reference frequency source.
<b>Types of emission</b>	<p><i>SSB telephony (A3a, A3j)</i>: suppressed, pilot or voice-controlled carrier (upper or lower sideband).</p> <p><i>ISB telephony (A3b, A3j)</i>: suppressed or pilot carrier.</p> <p><i>AM compatible SSB telephony (A3h)</i>: (re-inserted carrier with lower sideband).</p> <p><i>CW telegraphy (A1)</i>.</p>
<b>Input level (linear amplifier)</b>	25-800 mW
<b>Output power</b>	10 kW p.e.p. (7 kW r.m.s.)
<b>Output impedance</b>	50 ohms unbalanced (2:1 v.s.w.r.)
<b>Linearity</b>	3rd order products better than 36 dB down on one of two test tones.
<b>Audio input level (to exciter unit)</b>	-15 to +7 dBm (600 ohm line)
<b>RF output (from exciter unit)</b>	100 mW (adjustable)
<b>Audio response</b>	300-6000 Hz $\pm 2$ dB
<b>Duration of tuning cycle</b>	Average 35 seconds, maximum 60 seconds.
<b>CW keying input</b>	<p><i>Remote</i> - VF tone</p> <p><i>Local</i> - closed loop</p>
<b>Tuning</b>	<ol style="list-style-type: none"> <li>(1) <i>Remote or local</i> - automatic control from synthesizer, electrical frequency.</li> <li>(2) <i>Manual</i> - mechanical override of automatic system.</li> </ol>
<b>Power supply</b>	Provided from regulator, voltage, 6110-99-951-0381. <i>Input</i> : 400V $\pm 12\%$ , 47-65 Hz, three-phase, four-wire.
<b>Power consumption</b>	21 kVA (approx.)

**Dimensions**

	<i>Height</i>	<i>Width</i>	<i>Depth</i>
Transmitter sub-assembly, 5820-99-953-2076	5ft 5½in (165.7cm)	2ft 0½in (62.3cm)	2ft 3in (68.6cm)
Transmitter sub-assembly, 5820-99-950-5890	5ft 5½in (165.7cm)	5ft 0in (152.4cm)	2ft 3in (68.6cm)
Regulator, voltage 6110-99-951-0381	4ft 0in (122cm)	2ft 0½in (62.3cm)	1ft 11in (58.4cm)

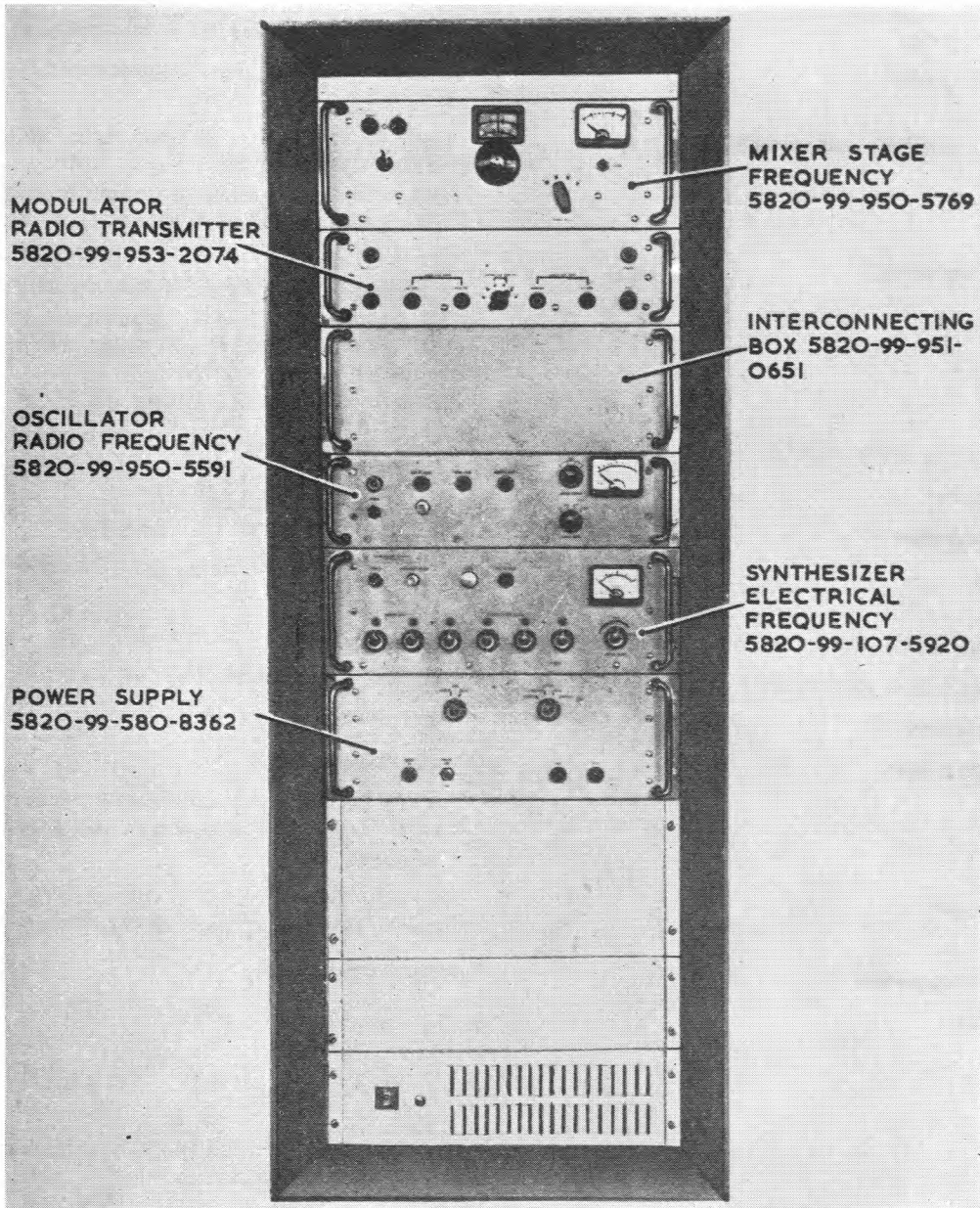
**Weights (approx.)**

Transmitter sub-assembly (5820-99-953-2076)	370 lb	(168 kg)
Transmitter sub-assembly (5820-99-950-5890)	2,500 lb	(1134 kg)
Regulator, voltage	450 lb	(204 kg)

TRANSMITTER  
RADIO

Relevant publication:-

AP116E-0127-1A, 1C, 1G, 1X



Transmitter sub-assembly, 5820-99-107-5922

<b>Function</b>	A long range, high power h.f. locally controlled transmitter used with FGRI.23186 voice and telegraph transmitter and receiver link station. The transmitter comprises three main sub-assemblies:— (1) Transmitter sub-assembly, 5820-99-107-5922 ( <i>exciter unit</i> ) (2) Transmitter sub-assembly, 5820-99-950-5980 ( <i>10 kW h.f. linear amplifier</i> ) (3) Regulator, voltage, 6110-99-951-0381.			
<b>Origin</b>	Racal Communications Ltd., Type TTA.227C.			
<b>Frequency range</b>	2.0 to 29.9999 MHz (150 to 10 metres) in 100 Hz steps.			
<b>Frequency control</b>	Synthesizer, electrical frequency, internal frequency standard source.			
<b>Frequency accuracy and stability</b>	Including ageing over 24 hours, after 30 days operation less than 2 parts in $10^{-9}$ . With change in ambient temperature $\pm 25^{\circ}\text{C}$ from $25^{\circ}\text{C}$ , less than $\pm 2$ parts in $10^{-8}$ .			
<b>Types of emission</b>	<i>SSB telephony (A3a, A3j)</i> : suppressed pilot or voice controlled carrier (upper or lower sideband). <i>ISB telephony (A3b, A3j)</i> : suppressed or pilot carrier. <i>AM compatible SSB telephony (A3h)</i> : (re-inserted carrier with lower sideband). <i>CW telegraphy (A.1)</i> .			
<b>Input level (to linear amplifier)</b>	25-800 mW.			
<b>Output power</b>	10 kW p.e.p. (7 kW r.m.s.).			
<b>Output impedance</b>	50 ohms unbalanced (2:1 v.s.w.r.).			
<b>Linearity</b>	3rd order products better than 36 dB down on one of two test tones.			
<b>Audio input level (to exciter unit)</b>	-15 to +7 dBm (600 ohms).			
<b>RF output (from exciter unit)</b>	100 mW (adjustable).			
<b>Audio response</b>	300 to 6000 Hz $\pm 2$ dB.			
<b>CW keying input</b>	Local closed loop.			
<b>Tuning</b>	(1) <i>Local</i> – automatic from synthesizer. (2) <i>Manual</i> – mechanical override of automatic system.			
<b>Power supply</b>	Provided from regulator, voltage, 6110-99-951-0381. <i>Input</i> : 400V $\pm 12\%$ , 47-65 Hz, three-phase, four-wire.			
<b>Power consumption</b>	21 kVA (approx.).			
<b>Dimensions</b>		<i>Height</i>	<i>Width</i>	<i>Depth</i>
	Transmitter sub-assembly, 5820-99-101-5922	5ft 5½in (165.7cm)	2ft 0½in (62.3cm)	2ft 3in (68.6cm)
	Transmitter sub-assembly, 5820-99-950-5890	5ft 5½in (165.7cm)	5ft 0in (152.4cm)	2ft 3in (68.6cm)
	Regulator, voltage, 6110-99-951-0381	4ft 0in (122cm)	2ft 0½in (62.3cm)	1ft 11in (58.4cm)
<b>Weights (approx.)</b>	Transmitter sub-assembly (5820-99-101-5922)		350 lb	(159 kg)
	Transmitter sub-assembly (5820-99-950-5890)		2,500 lb	(1134 kg)
	Regulator, voltage		450 lb	(204 kg)

TRANSMITTER  
RADIO

5820-99-194-6465

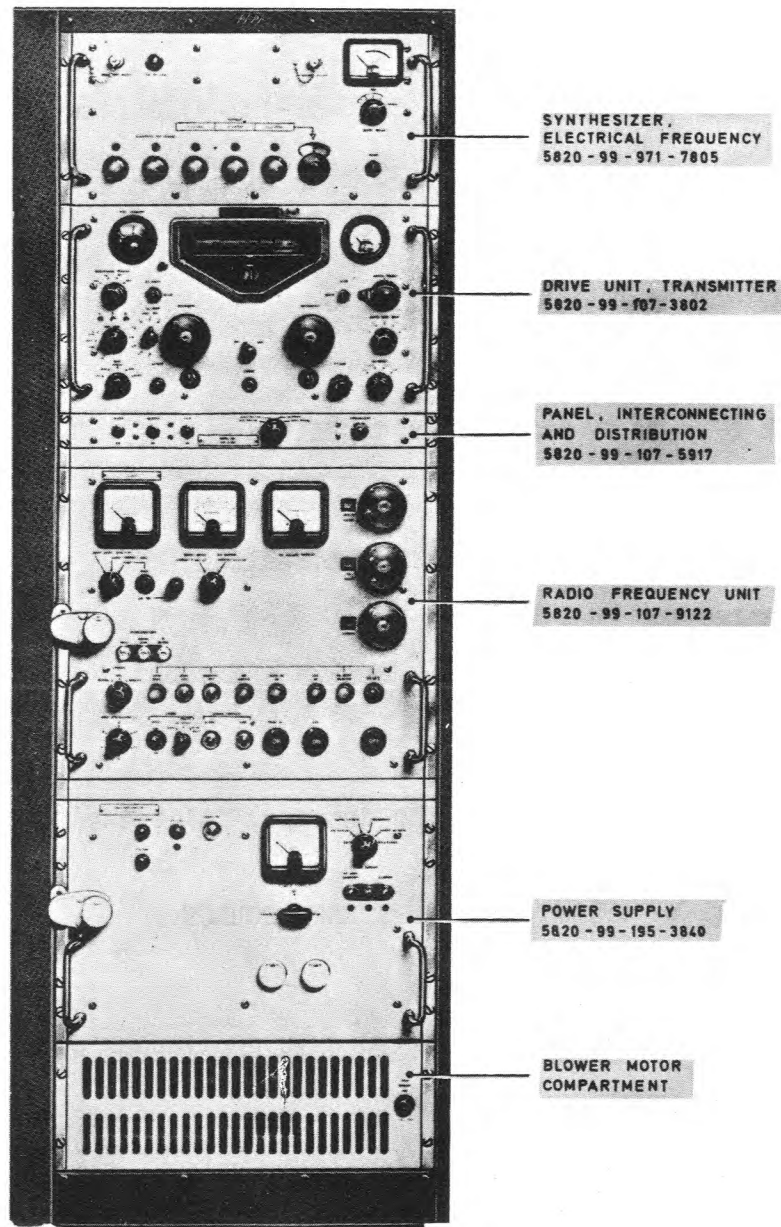
Relevant publications:-

AP116E-0127-1A, 1D, 1AF

AP116E-0257-1

AP116E-0250-1

AP116E-0249-1



Transmitting set, radio 5820-99-194-6465

## FUNCTION

A medium range, medium power h.f. locally-controlled transmitter used with TGRI(AT)26047/2, 26058/1 and 26063/1 air-transportable-voice and telegraph transmitter and receiver station. The transmitter consists of the following sub-assemblies:

- (1) Synthesizer, electrical frequency 5820-99-971-7805
- (2) Drive unit, transmitter 5820-99-107-3802
- (3) Panel, interconnecting and distribution 5820-99-107-5917 (local control panel)
- (4) Radio frequency unit 5820-99-107-9122 (1kW linear amplifier)
- (5) Power supply 5820-99-195-3840 (for 1kW linear amplifier)

## ORIGIN

Racal Communication Ltd., Type TTA.371C

## FREQUENCY RANGE

1.5 to 30MHz (200 to 10 metres) in 100Hz steps

## FREQUENCY CONTROL

Internal frequency standard (within synthesizer)

## FREQUENCY SELECTION

Setting increments of 100kHz, 10kHz, 1kHz and 100Hz

## INTERPOLATION OSCILLATOR

Variation over 10kHz, 1kHz or 100Hz decodes, calibrated 0-100 with  $\pm 1\%$  accuracy.

## FREQUENCY STABILITY OF INTERNAL REFERENCE SOURCE

- (1) Crystal Ageing  
2 parts in  $10^9$  per day after 30 days continuous operation.
- (2) Temperature Variation
  - (i) A change in ambient temperature of  $\pm 10^\circ\text{C}$  from  $25^\circ\text{C}$ , will produce a change in frequency not exceeding  $\pm 2$  parts in  $10^9$ .
  - (ii) A change in ambient temperature of  $\pm 30^\circ\text{C}$  from  $25^\circ\text{C}$ , will produce a change in frequency not exceeding  $\pm 2$  parts in  $10^8$ .

## (3) Supply Voltage Variation

A change in a.c. supply voltage  $\pm 6\%$  on the nominal setting will produce a change in frequency not exceeding  $\pm 1$  part in  $10^9$ .

## FREQUENCY STABILITY AND SETTING ACCURACY

(1) 3.6-4.6MHz without interpolation oscillator and fixed frequency outputs: In accordance with the frequency source.

(2) 3.6-4.6MHz output with interpolation between 100Hz steps:  $\pm 1$  part in  $10^6$ .

## TYPES OF EMISSION

- (1) A1, CW telegraphy
- (2) A3h, SSB telephony with full carrier emission (DSB compatibility)
- (3) A3a, SSB telephony with pilot carrier emission
- (4) A3j, SSB telephony with suppressed carrier
- (5) F1, FSK telegraphy.

## AUDIO INPUT LEVEL

+10 to -20dBm.

## OUTPUT POWER

1kW for SSB mode; 800W for CW/FSK modes.

## OUTPUT IMPEDANCE

50 ohms unbalanced (up to 2:1 v.s.w.r.)

## LINEARITY

At 1kW p.e.p., 3rd order product better than 36dB down on one of two test tones.

## AUDIO RESPONSE

300 to 3500Hz  $\pm 2$ dB.

## CARRIER SUPPRESSION (SSB)

-50dB

## POWER SUPPLY

230V, single-phase, 47-65Hz.

**POWER CONSUMPTION**

3kVA approx.

**DIMENSIONS**

Height  
5ft 5 $\frac{1}{4}$  in  
(165.7cm)

Width  
2ft 0in  
(62.3cm)

Depth  
2ft 3in  
(68.6cm)

**WEIGHT**

3701b (167.8kg) approx.



AP116A-0114-1

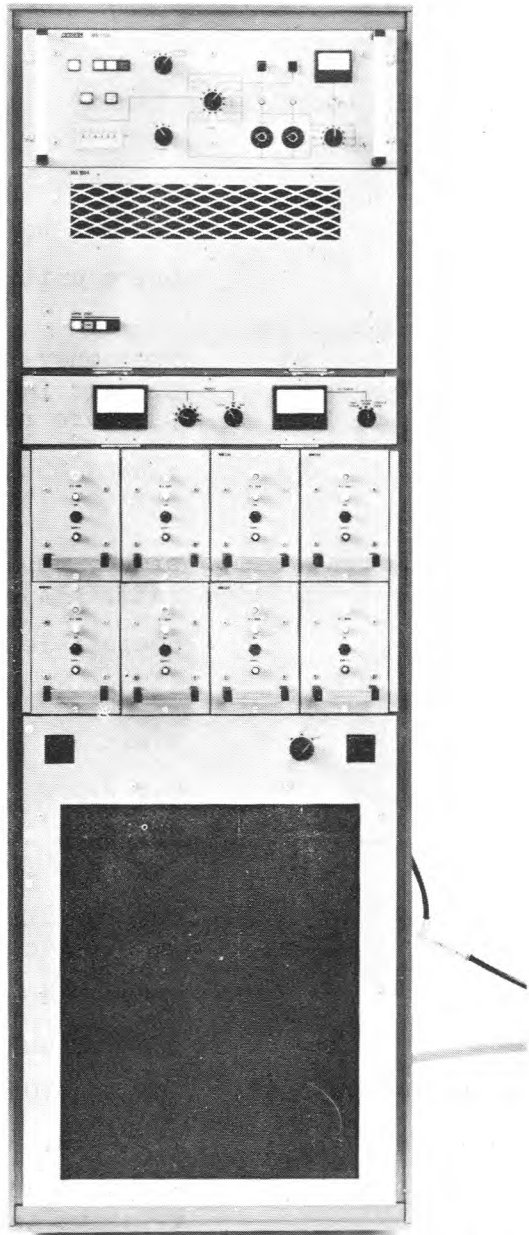
Item No. 35

TRANSMITTER  
RADIO

5820-99-626-4733  
(Racal TTA 1860A)

Relevant publication:-

AP116E-0267-1



Transmitting set, (Racal type TTA.1860A) 5820-99-626-4733

FUNCTION

H.F. Transmitter for fixed or mobile operation (u.s.b./l.s.b., compatible a.m., m.c.w or c.w.).

ORIGIN Racal Communications Ltd., Type TTA.1860A (BA 603400)

## GENERAL DESCRIPTION

This is a synthesised solid-state h.f. transmitter comprising the following sub-assemblies:-

Drive unit, transmitter (synthesised)	5820-99-624-5395
Adaptor, antenna to transmitter (coupler)	5820-99-624-5394
Assembly, line switching unit	5820-99-626-7836
Transmitter sub-assembly (includes cabinet)	5820-99-624-5393

## TECHNICAL DATA

Frequency range	1.6 MHz to 30 MHz in 100 Hz steps
Frequency control	Drive unit, transmitter (synthesised)
Frequency accuracy and stability	
a)	Frequency variation with temperature $\pm 1$ part in $10^8$ per deg. C over temperature range $-10^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ .
b)	Ageing $\pm 5$ parts in $10^9$ over a 24 hour period after 30 days.
Types of emission	s.s.b. upper or lower side band (A3J, A3A). compatible a.m. (A3H) i.s.b. (A3B) c.w. (A1) m.c.w. (A2H, A2J)
Input level (to linear amplifier)	25 mW to 200 mW nominal, $\pm 1.5$ dB, over the frequency range.
Output power	c.w.: 1 kW nominal (continuous key down) $\pm 1$ dB. s.s.b.: 1 kW p.e.p. nominal, $\pm 1$ dB.
Output impedance	50 ohms unbalanced.
Audio input level (to drive unit)	-30 to +10 dBm into 600 ohms, preset.
R.F. output:(from drive unit)	Variable, 50 mW to 200 mW p.e.p.
Audio response	Within 4 dB from 300 Hz to 3000 Hz, relative to peak response.
CW/MCW keying input	Operation by closed loop, (A2J or A2H emission achieved by internally generated 1000 Hz tone in selected side-band.

## Cooling system

Two built-in air blowers in linear amplifier. Filter fitted in air inlet. Axial fan on rear panel provides cooling for drive unit and line switching unit.

## Power consumption

Typically 4.5 kVA with 1 kW p.e.p. output.

## POWER SUPPLY REQUIRED

210-250V  $\pm 6\%$ , 47-65 Hz, single phase.

## DIMENSIONS

Height	Width	Depth
1585 mm (62 $\frac{1}{2}$ in.)	524 mm (20 $\frac{1}{2}$ in.)	610 mm (24 in.)

## WEIGHT

275 kg (600 lb) approximately.

UK/TRC 647  
AND  
MCPA500 LINEAR AMPLIFIER

Relevant publications:

AP 116E-1214-16

FUNCTION

The UK/TRC 647 and linear amplifier equipment is designed for mobile and static installations. In mobile applications, the equipment is used out of three briefcases and returned for transportation purposes. In static installations, the equipment may be housed in an MCS401A non-ruggedised cabinet (51ZZ-246026) for desk-top operation (refer Fig 4).

ORIGIN

ICOM Incorporated.

DESCRIPTION

The UK/TRC 647 and MCPA500 linear amplifier comprises three main equipments together with auxiliary items supplied in three briefcases as follows:

UK/TRC 647 comprising:

MCTR200 HF TRANSCEIVER

- (a) MCTR200 Transceiver.
- (b) Morse Key.
- (c) Briefcase.

MCPSU500 POWER SUPPLY

- (a) MCPSU200 Power Supply.
- (b) Headset.
- (c) Microphone c/w lead.
- (d) A/C Mains cable c/w plug.
- (e) DC/DC lead.
- (f) Fan.
- (g) Briefcase.

MCPA500 comprising:

- (a) MCPA500 HF Linear Amplifier.
- (b) MCPSU500 Power Supply.
- (c) Coaxial cable and c/w plugs.
- (d) Control cable.
- (e) Briefcase.

MCTR200 HF TRANSCEIVER

The MCTR200 is an advanced microprocessor controlled transceiver, capable of receiving signals in the frequency range 0.1 MHz to 30 MHz, and transmitting between 1.8 MHz to 30 MHz. The tuning frequency is controlled by a triple-loop PLL circuit, which enables a tuning resolution of 10 Hz.

The MCTR200 can operate in 6 modes; CW, CWN (narrow band filter 250 Hz), AM, USB, LSB and RTTY, allowing optimum performance with morse, voice and teletype. The output power is adjustable up to 40 Watts in AM and 100 Watts in all other modes.

The MCTR200 is designed to use a 13.8 V dc power supply or a standard lead-acid type car battery. If a 13.8 V dc supply is not available, the MCTR200 can be powered by the MCPSU200 power supply.

The MCTR200 transceiver front panel controls and indicators are illustrated in Fig 1.

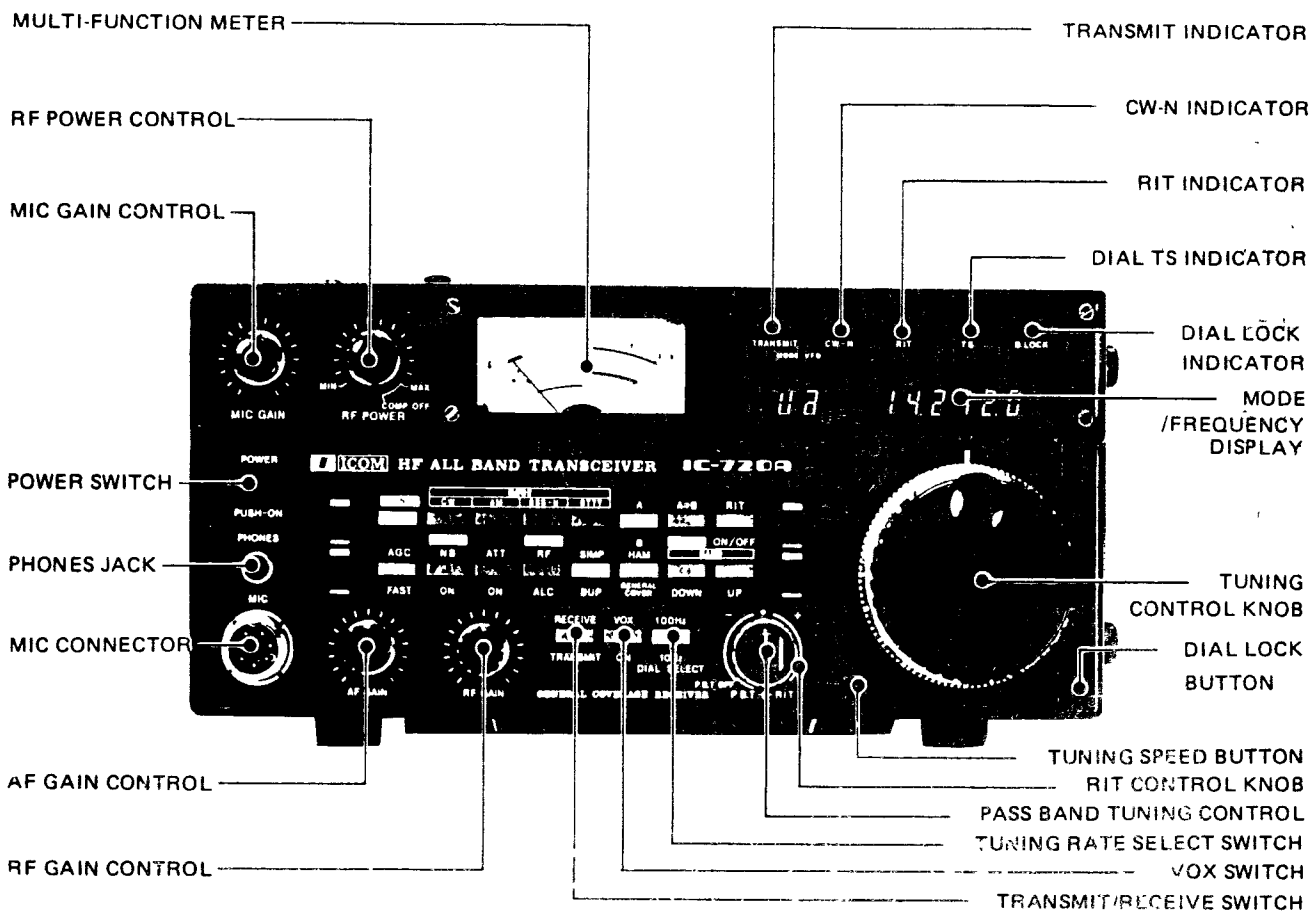


Fig 1 MCTR200 HF Transceiver Front Panel Controls and Indicators

### MCPSU200 POWER SUPPLY

The MCPSU200 power supply, illustrated in Fig 2, operates from 115 V ac or 240 V ac mains supply. Selection of input voltage is by means of an internal switch, accessible by removing the top cover of the unit. The MCPSU200 is supplied with a fan unit, which should be bolted to the rear panel during continuous transmission. If a higher output power is required, the MCTR200 and MCPSU200 can be used with an MCPA500 linear amplifier, to provide up to 500 Watts output.

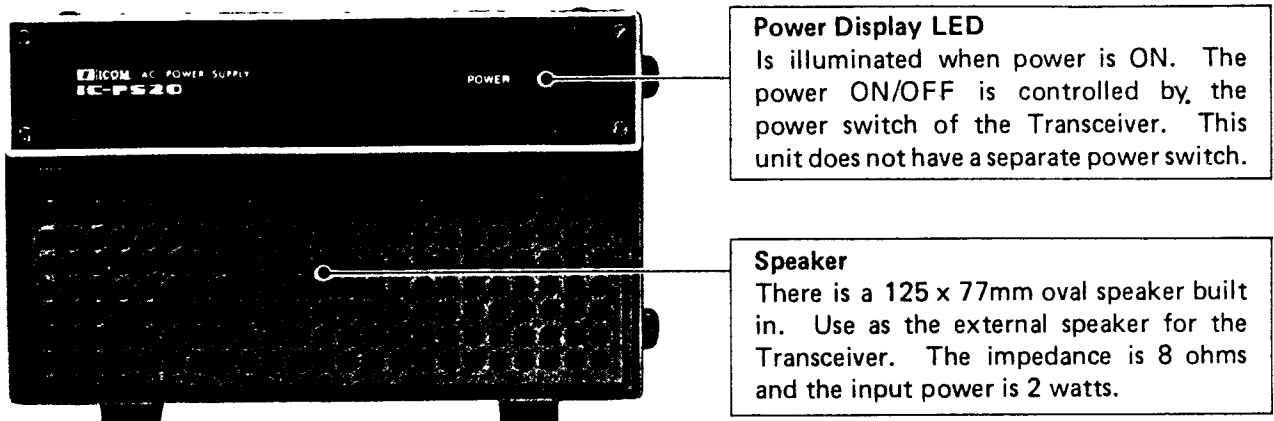


Fig 2 MCPSU200 Power Supply

### MCPA500

The MCPA500 wideband linear amplifier, illustrated in Fig 3, eliminates any need for tuning when changing frequency. The rear panels of both the MCTR200 and the MCPA500 have an ACC socket (Accessory socket), by linking these two sockets with the multi-way cable supplied, all band selection for the preselector filters in the MCPA500 is undertaken automatically. In addition, all the control signals are connected via the ACC socket for PTT and for protection purposes. The protection circuit within the MCPA500 will, under adverse conditions, either cause the MCTR200 to reduce power output or shut down altogether. The MCPA500 requires a dc input of 40 V at 23 A minimum, which is supplied by the MCPSU500 power supply. The MCPSU500 operates from 115 V ac or 240 V ac mains supply.



Fig 3 MCPA Linear Amplifier

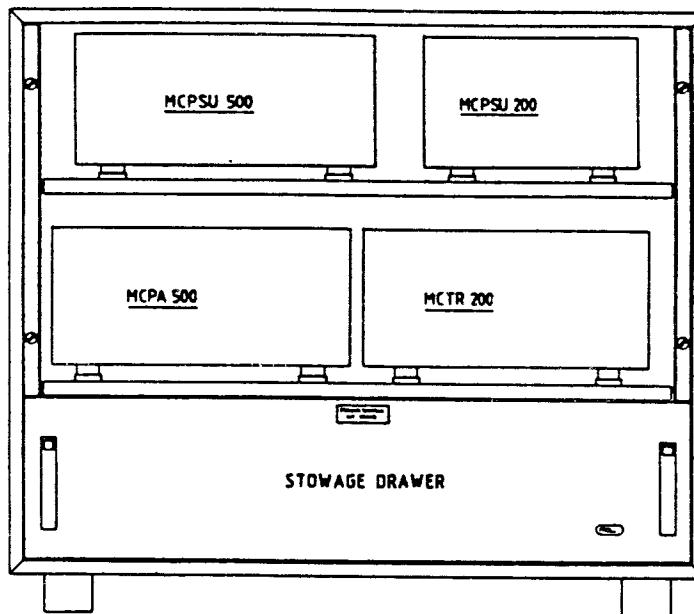


Fig 4 MCS401A Cabinet

FUNCTIONAL CHARACTERISTICS

Transmitter

Frequency range: 1.8 MHz to 30 MHz.

RF Power.

SSB(A3J) : 200 Watts PEP input.  
CW (A1) : 200 Watts input.  
RTTY (F1) : 200 Watts input.  
AM (A3) : 40 Watts output.

Emission mode.

AJ3 : SSB (USB and LSB).  
A1 : CW.  
F1 : RTTY (frequency shift keying).  
A3 : AM.

Receiver

Frequency range: 0.1 MHz to 30 MHz.

Receiving mode.

A1 : (USB and LSB).  
A3J : (USB and LSB).  
F1 : output FSK audio signal).  
A3 : AM.

IF Frequencies.

1st : 39.7351 MHz.  
2nd : 9.0115 MHz.  
3rd : 10.75 MHz.  
4th : 9.0115 MHz.

UK/FRC 649  
HF SSB TRANSCEIVER

Relevant publications:

AP 216E-0138-12345

FUNCTION

The Home Defence Radio Communications Network (HDRCN) survivable radio kit provides single sideband (USB only) communications on preset frequencies within the frequency range 2 MHz to 8 MHz, with a maximum power output of 100 W Peak Envelope Power (PEP).

ORIGIN

Racal Messenger Ltd.

DESCRIPTION

Two versions of this kit are in Service use. Figs 1 and 2 illustrate the transceiver VRM 455M with power supply MA 4557A and transceiver DTR 2002M with power supply DPS 04 respectively.

For the net control and alternate control stations, the HF survivable radio kit consists of the following items:

- 1 HF radio set, 100 W, 3-channel, Decca Messenger type DTR 2002M-3.  
OR  
HF radio set, 100W, 3-channel, Racal Messenger type VRM 4555M.
- 2 Power supply unit, Decca Messenger type DPS 04.  
OR  
Power supply unit, Racal Messenger type MA 4557A.
- 3 Single frequency helical whip antenna, precut to the HDRCN common frequency, complete with all necessary fixings, earth radials and pegs, and 30 metres of coaxial cable.
- 4 Wire dipole kit, adjustable 2 MHz to 8MHz (2 off).
- 5 24 ft glass fibre mast, complete with all necessary fittings.
- 6 Depth A spares pack of lamps and fuses.

For each of the net stations, the HF survivable radio kit consists of the following items:

- 1 HF radio set, 100 W, 2-channel, type DTR 2002M-2.  
OR  
HF radio set, 100 W, 2-channel, type VRM 4555 M.



- 2 Power supply unit, type DPS 04.  
OR  
Power supply unit, type MA 4557A.
- 3 Single frequency helical whip antenna, precut to the HDRCN common frequency, complete with all necessary fittings, earth radials and pegs, and 30 metres of coaxial cable.
- 4 Wire dipole kit (1 off).
- 5 24 ft glass fibre mast, complete with all necessary fittings.
- 6 Depth A spares pack of lamps and fuses.

## FUNCTIONAL CHARACTERISTICS

### Transceiver unit

- Frequency range: 2 MHz to 16 MHz.
- Channels: Six (maximum).
- Operating modes: Single frequency or double frequency simplex SSB, USB.
- Frequency stability:  $\pm 10$  Hz over operating range.
- Power supply input: 13.8 V negative earth.

### Transmitter

- Power output: 100 W peak envelope power,  $\pm 1$  dB over frequency range. Power reduction facility (from 100 W to 25 W).
- Power consumption: 7 Amps average (speech). 18 Amps peak.

### Receiver

- AF power output: 3 W into 4 ohms (maximum).
- Power consumption: 700 mA.

### Power supply unit

- AC supply input: 110 to 120 V or 220 to 240 V at 47 to 63 Hz.
- DC supply output: +13.8 V negative earth.
- Output current: Peak 18 A; average 7 A.



Fig 1 Transceiver VRM 4555M with power supply MA 4557A



Fig 2 Transceiver DTR 2002M with power supply DPS 04

UK/FRT 651  
30KW HF AUTO-TUNED  
LINEAR AMPLIFIER

Relevant publications:

AP 116E-1212-1A

FUNCTION

The UK/FRT 651 is a general purpose, fully automatic linear communications amplifier. It provides an output of 30 kW over the frequency range 2 to 30 MHz.

ORIGIN

Marconi Communication Systems Ltd.

DESCRIPTION

The amplifier is housed in two cabinets which are mounted side by side and bolted together. The left hand cabinet houses the power supply and control circuits and the right hand cabinet houses the rf circuits and small power supplies. A fan together with its starter is mounted externally to the amplifier and is connected via a suitable air duct, either to the rear or the base of the rf cabinet.

The rf amplifier comprises a low level wideband solid state input pre-amplifier driving a tuned penultimate stage of four beam tetrodes connected in parallel, and a single radial beam power tetrode final stage. A fully integrated digital control system is used to provide power switching and sequencing, range determination, servo control, overload protection and indication.

POWER SUPPLY

The amplifier will operate within mains voltage variations between +6% and -10% of the nominal. The valve filaments and bias supplies are regulated by an automatic voltage stabiliser.

PHYSICAL CHARACTERISTICS

Weight

Complete: 1,605 kg.

Dimensions

Height: 1,600 mm.  
Width: 3,200 mm.  
Depth: 1,000 mm.

FUNCTIONAL CHARACTERISTICS

Frequency range: 2 to 30 MHz.

Frequency change time: The time for any frequency change does not exceed 10 secs.

Frequency range: Range 1 - 2 to 2.3 MHz.  
Range 2 - 2.3 to 3 MHz.  
Range 3 - 3 to 4.5 MHz.  
Range 4 - 4.5 to 6.7 MHz.  
Range 5 - 6.7 to 10 MHz.  
Range 6 - 10 to 15 MHz.  
Range 7 - 15 to 20 MHz.  
Range 8 - 20 to 25 MHz.  
Range 9 - 25 to 30 MHz.

Power supplies: 380,400,415,440 V 3-phase, 4 wire  
at 50 Hz  $\pm 2.5\%$ .

Power consumption: At 20 kW cw: 69 kVA.  
At 30 kW pep: 63 kVA.  
Power factor: 0.9.

Operating temperature:  $-10^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$  dry heat or  
 $40^{\circ}\text{C}$  at 95% RH.

UK/FRT 639/640 TRANSMITTER  
UHF/VHF MULTI-CHANNEL  
GROUND-TO-AIR COMMUNICATIONS EQUIPMENT

Relevant publications:

AP 116E-0280-16 - Transmitter UK/FRT 639 and UK/FRT 640.

DESCRIPTION

Transmitter Assembly

This consists of one transmitting set UK/FRT 639 and one transmitting set UK/FRT 640 installed in a rack-mounted equipment case. The VHF transmitter operates in the frequency range 117.000 MHz to 136.975 MHz and the UHF transmitter operates in the frequency range 225.000 to 399.975 MHz. With LOCAL selected on the transmitter equipment, frequency and channel selections are made via the main equipment.

Amplifier assembly

The amplifier can be used in conjunction with the UHF transmitter to increase the 20 Watt RF output to 100 Watts. A metering facility is also provided. The main equipment case with transmitters UK/FRT 639 and UK/FRT 640 and the UHF amplifier is illustrated in Fig 1.

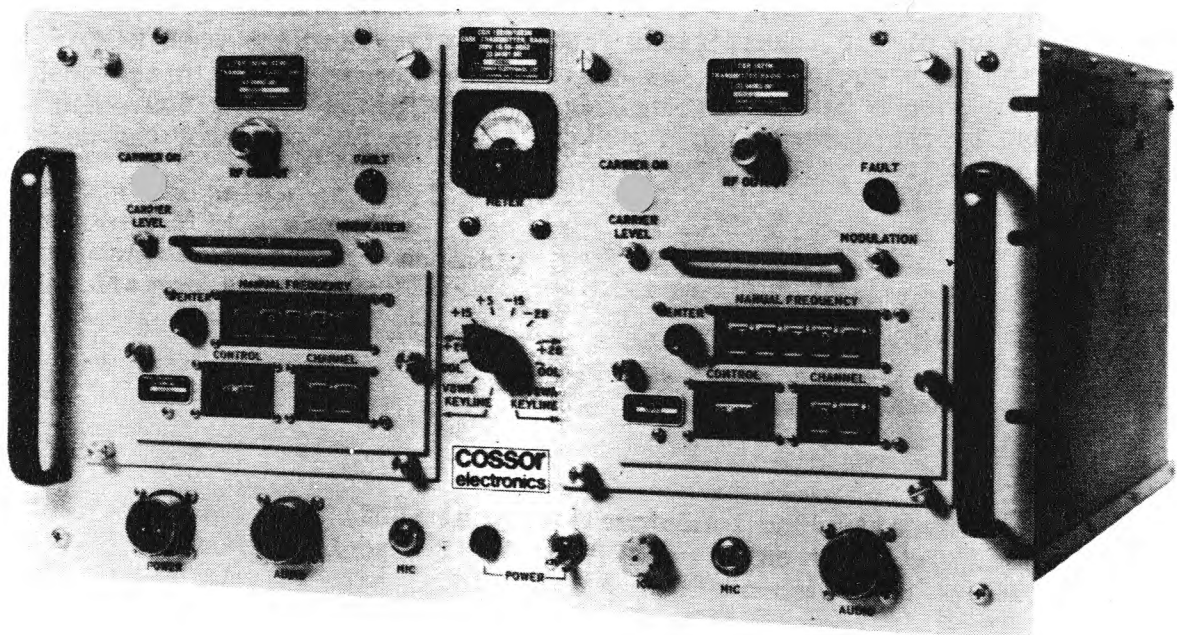


Fig 1 Main Equipment Case

LEADING PARTICULARS

Frequency range: VHF: 117.000 MHz to 136.975 MHz.  
UHF: 225.000 MHz to 399.975 MHz.

Channel spacing: 25 kHz.

Frequency accuracy: VHF:  $\pm 822$  Hz max.  
UHF:  $\pm 2.5$  kHz max.

Modulation: Amplitude modulation.

Power supplies: 207 to 225 V ac at 47 to 63 Hz.

Power output: Transmitters: 20 W.  
Amplifier: 100 W.

Temperature: Operating:  $-10^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$ .  
Storage:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ .

Dimensions:  
Main equipment case:

Width: 483 mm.  
Height: 267 mm.  
Depth: 762 mm.  
Weight: 42.4 Kg.

DESCRIPTION

Remote Control Unit

The Remote Control Unit (RCU) is a self-contained unit providing frequency or channel selection of the transmitters from a remote location, when REMOTE is selected on the main equipment. The RCU is connected to the main equipment by 40 metres of multicore cable thus enabling the operation of the equipment to be carried out by the operator in a control tower situation, with the main equipment located in a ground area.



Fig 2 Remote Control Unit

LEADING PARTICULARS

Remote control unit

Dimensions:

Width: 146 mm.  
Height : 64 mm.  
Depth: 281 mm.

Weight: 0.80 Kg.

Temperature: Operating: -10°C to +55°C.  
Storage: -40°C to +85°C.

Power requirements: +28 V at 0.75 A max to transmitter  
and 0.375 A for receiver.

**UK/FRR-636/637/641/642/643 and 644  
UHF/VHF MULTICHANNEL GROUND-TO-AIR  
COMMUNICATION EQUIPMENT - RECEIVERS**

Relevant publications:

AP 116E-0756-16

**DESCRIPTION**

**Receiver**

The receiver module is part of a ground-to-air communication system operating in the UHF (225 to 399.975MHz) and VHF (117 to 136.975MHz) bands. It comprises a power supply and an IF/AM detector module with (UHF or VHF) front end, synthesizer and preset memory module. The memory can hold up to 29 separate channels. There is provision for manual or remote control (Item No. 40) of preset channel or selection of frequency. A receiver can be in a stand alone or transceiver configuration. In a transceiver installation the present memory and synthesizer are not used.

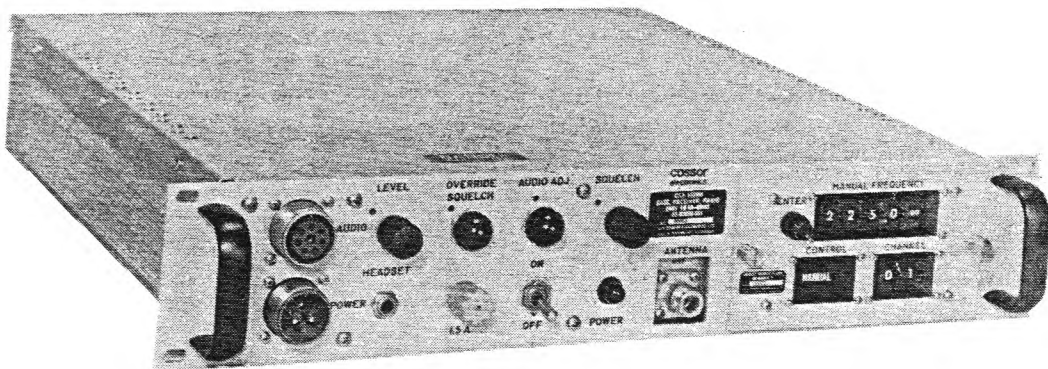


Fig 1 Receiver module

**LEADING PARTICULARS**

Receiver

Purpose

: Providing multichannel crystal controlled ground-to-air reception in the VHF and UHF bands. Selection of VHF and UHF is achieved by substitution of a plug-in module.



**DIMENSIONS AND WEIGHT**

	<b>Height</b> mm	<b>Width</b> mm	<b>Length</b> mm	<b>Weight</b> kg
Receiver	89	483	483	-
Case	-	-	-	12.3
Module	-	-	-	64

---

Modulation	:	Amplitude
VHF	:	117.000 to 136.975MHz
UHF	:	225.000 to 399.975MHz
Input Impedance	:	50 $\Omega$ (nominal)
$\frac{S + N}{N}$ ratio	:	The Ratio (S + N)/N at the output for an input of +12 dB $\mu$ V emf when the signal is modulated 30% with 1000 Hz is at least 10 dB.
Selectivity	:	Referred to a centre frequency VHF output -6 dB $\pm$ 14.1 kHz $\pm$ 25.9 kHz -60 dB UHF output -6 dB $\pm$ 11.8 kHz $\pm$ 28.2 kHz -60 dB
Image rejection	:	More than 65 dB
IF rejection	:	More than 80 dB
Spurious responses	:	More than 75 dB down for signals at frequencies more than 5 MHz from the tuned signal and up to twice the tuned frequency.
AGC	:	the audio output shall be contained within 4dB for signal levels varying between +12 dB $\mu$ V and 106 dB $\mu$ V emf. The rf input signal shall be 30% modulated at 1000 Hz.
Audio frequency response	:	+1 dB, -3 dB, 300 Hz - 3000 Hz. Reference 1000 Hz r.f. input +60 dB $\mu$ V e.m.f.
Audio distortion	:	Total distortion less than 5% with and r.f. input of +60 dB $\mu$ V e.m.f. modulated 30% at 1000 Hz.
Audio output impedance	:	UUPI (wide band) Monitor (haeaset)
		600 $\Omega$ $\pm$ 15%
		2.0k $\Omega$ 600 $\Omega$
Power sources	:	207 to 225 volts a.c. with power taps, 47 Hz to 63 Hz

↳

**Power consumption**

**Warm up time** : 5 mins to reach a frequency accuracy of  $\pm 6$ ppm

**Temperature**

**Operating** : -10°C to +55°C

**Storage** : -40°C to +85°C

**Altitude**

**Operating** : 10,000 ft max

**Storage** : 40,000 ft max

**Module configuration**

Control Unit	2	1		2	2	
Preset Memory Module						
UHF Synthesizer Module						
VHF RX Front End 03-03992-001	1			1	2	
UHF RX Front End 03-03990-002	1	1	1	2		
Receiver Case 03-03990-002	2	1	1	1	2	
Amplifier UHF Module 03-04004-001			1			
UHF Tx Module 03-04002-001	1	1	1	1	2	
VHF Tx Module 03-04003-001	1				2	
Transmitter Case 03-04001-002	1	1	1	1	1	
Code	UK FRR 636	UK FRR 637	UK FRR 641	UK FRR 642	UK FRR 643	UK FRR 644
Equipment Configuration	20 WATT VHF & UHF Tx & Rx	20 WATT UHF Tx & RX	100 WATT UHF Tx & Rx	20 WATT VHF Tx & Rx	Dual 20 WATT UHF Tx & Rx	Dual 20 WATT VHF Tx & Rx

Table 1 Multi-cha

ion

**UK/FRT-621 AND 622 TRANSMITTERS  
VHF/UHF GROUND-TO-AIR COMMUNICATIONS  
EQUIPMENT**

Relevant publications:

AP 116E-0274-16

**DESCRIPTION**

**Transmitter Assembly**

The transmitter is fitted with two crystal-controlled transmitter modules, one tuned to a single channel on the v.h.f. band, and the other to a single channel on the u.h.f. band. The operation of the transmitter modules is identical except for the addition of a tripler stage in the u.h.f. module.

The transmitter, without modulator or transmitting modules, is called the transmitter case. It houses the power supplies, control and protection circuits and the air blower. Operator controls are on the front panel.

**Modulator**

The modulator receives microphone or line audio, amplifies it, and applies it via the mode switch to one of the transmitter modules. Within the modulator an a.g.c. (VOGAD) circuit compares the peak audio level to a reference voltage and adjusts the audio amplifier to provide a constant output level which is passed via a percentage modulation control to a limiter and a low pass filter (cut-off 4Hz) before going to the final amplifier. This amplifier, comprising an integrated circuit and a push-pull amplifier, modulates and biases the transmitter power amplifier valve.

**LEADING PARTICULARS**

**Transmitter**

Purpose : The UK/FRT 621/622 is a 20 watt a.m. transmitter operating on one selected channel in either the v.h.f. or u.h.f. bands. Selection of v.h.f. or u.h.f. is by a front panel switch. For more power output the transmitter can be connected to a UK/FRT 623/624 amplifier (see below).

**DIMENSIONS AND WEIGHT**

	<b>Height</b> mm	<b>Weight</b> mm	<b>Depth</b> mm	<b>Weight</b> kg
Transmitter	267	483	483	25.4

**Temperature**

Operating : -10°C to +55°C  
Storage : -40°C to +85°C

Warm up time	:	20 minutes
Altitude		
Operating	:	3.05 km (10,000 ft)
Cooling	:	Self-contained blower
Power requirements	:	225 to 255 V a.c. (240 V a.c. tap), or 208 to 232 V a.c. (220 V a.c. tap), 47 to 63 Hz, single-phase.
HF power output	:	More than 20 W
Modulation	:	Amplitude
Modulation level	:	75 to 90% depending on line level
Audio distortion (detected output)	:	Not greater than 10%
Carrier noise level	:	Modulated (85%) to unmodulated carrier difference not less than 40 dB
VSWR	:	2:1 maximum
Output load impedance	:	50 ohms resistive
Frequency range	:	117 to 137 MHz (VHF) and 225 to 400 MHz (UHF)
Frequency accuracy	:	$\pm 11.5$ p.p.m
Modulation frequency response	:	Phantom, local microphone PTT, or remote microphone PTT
Keying	:	

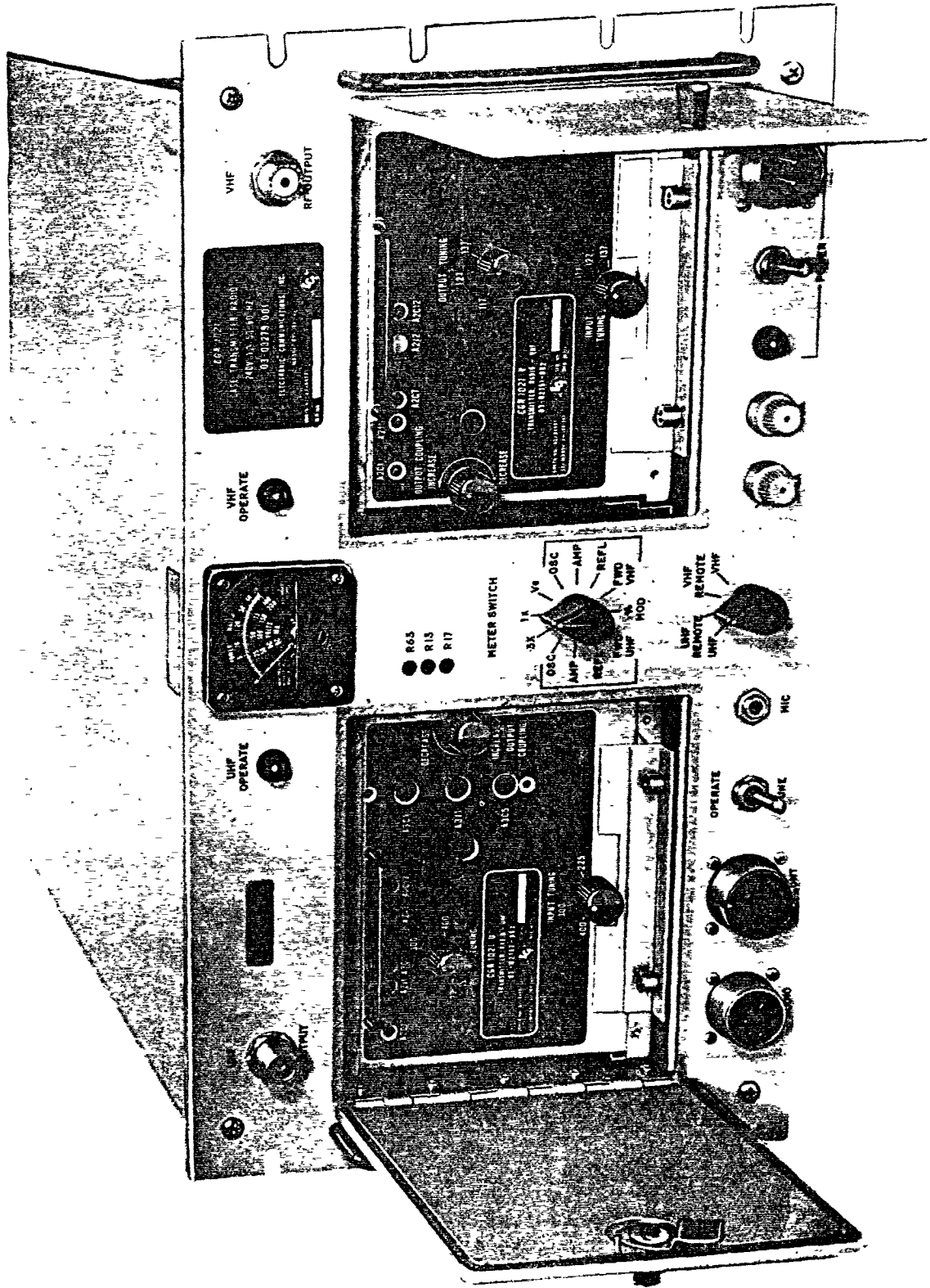


Fig 1 Tra [unclear] controls and indicators

**UK/FRT-623 AND 624 AMPLIFIERS  
VHF/UHF GROUND-TO-AIR COMMUNICATIONS  
EQUIPMENT**

Relevant publications:

AP 116E-0274-16

**INTRODUCTION**

The amplifier accepts the outputs of the UK/FRT transmitter, and amplifies either signal to a level of 100W. During operation all control of the amplifier, including switching on, comes from the transmitter. A meter switch permits monitoring of the amplifier functions.

**FUNCTION**

The UK/FRT amplifier case contains two modules, one for amplifying u.h.f. the other for v.h.f. only one amplifier can be working at one time, and is selected by a relay controlled from the UK/FRT transmitter. The transmitter also supplies the a.c. power and the r.f. input. The bias and high voltage for the modules are produced within the amplifier case. Inputs to the two amplifier modules are taken from the two output connectors on the UK/FRT transmitter.

Each module contains a two-valve push-pull amplifier, which requires +1250V for anodes, +300V for screens, and -40V to 65V for the grid bias. These voltages are taken from a high voltage and a bias voltage supply. The screen voltage is Zener-controlled and used as the means of selecting which of the modules is operating. This is determined by a relay, controlled from the UK/FRT transmitter, which switches transmitter and amplifier together to either u.h.f. or v.h.f.

Each module contains an input matching attenuator, a push-full amplifier, a 400 Hz (u.h.f.) low pass filter (160 MHz for v.h.f.) and finally, a directional coupler. The amplified signal passes through the directional coupler to the antenna. From the directional coupler d.c. voltages representing forward and reflected power are taken to the meter (via the meter switch) for monitoring.

**LEADING PARTICULARS**

**Amplifier**

Purpose	:	The UK/FRT VHF/UHF amplifier, connected to the UK/FRT transmitter, boosts the output, VHF or UHF, to 100 W.
Temperature		
Operating	:	-10° C to +55° C
Storage	:	-40° C to +85° C
Altitude:		
Operating	:	3.05 km (10,000 ft)
Cooling	:	Self-contained blower
Warm up time		

Input power requirements (supplied by transmitter)	:	225 to 255 V a.c. (240 V a.c. tap), or 208 to 232 V a.c. (220 V a.c. tap), 47 to 63 Hz, single-phase
		1000 VA maximum at 0.85 power factor
DC input power	:	+23 V, 150 mA
RF power output	:	100 W min.
Load impedance	:	50 ohms nominal
VSWR	:	2:1 max.
Carrier noise level	:	At least 40 dB below detected audio voltage of carrier modulated 90% with 1000 Hz
Envelope distortion	:	Not over 10%
Frequency Range		
VHF	:	117 to 137 MHz
UHF	:	225 to 400 MHz

**DIMENSIONS AND WEIGHT**

	Height mm	Width mm	Depth mm	Weight kg
Amplifier	267	483	483	31.3



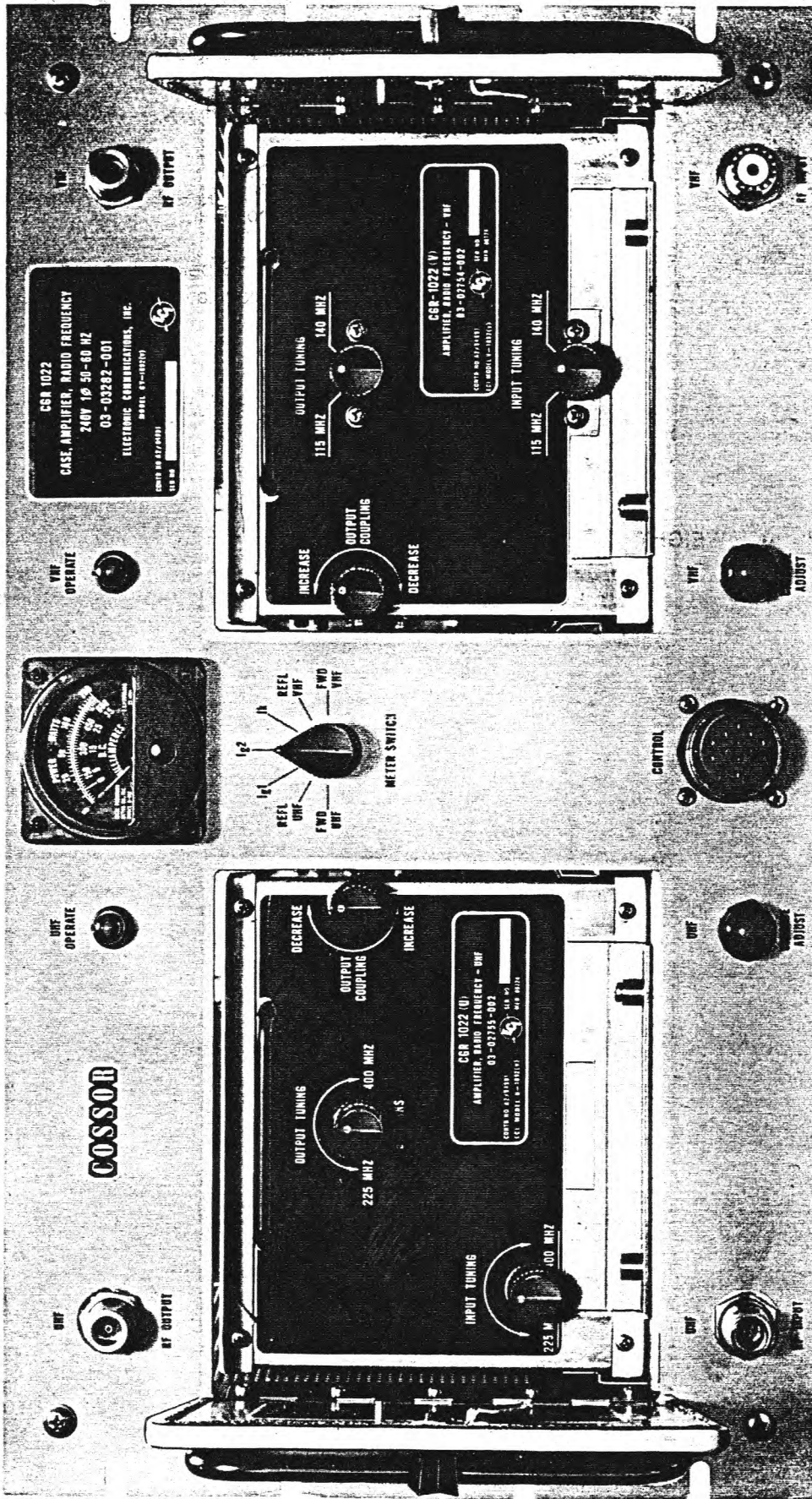


Fig 1 Arr

**HM 314 and HM 315  
S.H.F. RADIO RELAY TERMINAL EQUIPMENT**

Relevant Publications:

AP 116Q-0802-1

**DESCRIPTION**

The HM 314 and HM 315 are part of a series of radio terminal equipment designed to provide economical long distance multi-channel communications, operating in the Super High Frequency range. The HM/310 series use the band from 4400 Mc/s to 4800 Mc/s. The series of equipment comprises mainly the following classification, according to the system utilized or the facilities provided:

<b>Series</b>	<b>Type Title</b>	<b>Equipment Used</b>	<b>System Provided</b>
HM310	HM311	Twin transmitter and receiver racks.	Single Operation terminal
	HM312	HM311 with traffic relay panel type 2654.	Operational terminal
	HM313	HM311 with automatic changeover panel type 2669	Standby terminal for HM312
	HM314/315	Two HM311 with traffic relay panel type 4841 and automatic changeover panel type 4842.	Paths A and B respectively of twin path terminal using only one receiver output.

**TECHNICAL SPECIFICATIONS**

NOTE

This is not a rigid specification, the performance figures given being typical only.

**General**

Frequency Range	:	HM300 series: 3900-4200 Mc/s HM310 series: 4400-4800 Mc/s
Operating Conditions	:	Ambient Temperature 0.50°C. Humidity 95% relative humidity at low temperature for continuous operation.
Modulation Frequency Input	:	Traffic 75Ω unbalanced EOW, 600Ω balanced
Channel Loading Factor for 60 channels	:	6.1 dB.
Power Supply	:	200-250V AC ±6%. 45-65 c/s ±2½%.

Power consumption	:	900VA. (single terminal)
<b>Transmitter</b>		
Frequency stability	:	150 parts in $10^6$
Negative Feedback	:	$18 \pm 2$ dB with a stability margin of 6 dB
Frequency Deviation	:	$\pm 200$ kc/s r.m.s. per channel at terminal transmitter.
Modulation frequency range	:	Traffic 12 kc/s to 312 kc/s $\pm 0.5$ dB. EOW and Supervisory 300 c/s to 5 kc/s $\pm 1$ dB.
Modulation sensitivity	:	(For a crystal multiplication factor of 25) - 44.5 dBm input gives 200 kc/s r.m.s. deviation at the transmitted frequency.
Modulation input level	:	Traffic +3 to -42 dBm per channel into $75\Omega$ unbalanced. EOW 3 to 0 dBm 2 wire $600\Omega$ balanced.
Transmitter power output	:	Not less than 250 mW when terminated in a matched load.
Output impedance	:	To match waveguide $2\frac{1}{2} \times 1\frac{1}{4}$ in. Coaxial cable. $50\Omega$
<b>Receiver</b>		
Negative feedback	:	$18 \pm 2$ dB with a stability margin of 6 dB.
Modulation output level	:	Traffic -5 to -30 dBm per channel, test tone. EOW when arranged for 2 wire extension -11 dBm in $600\Omega$ for 1 kc/s test tone.
<b>Overall transmitter/ receiver performance</b>		
Modulation frequency response	:	Traffic band 12 kc/s to 312 kc/s $\pm 0.5$ dB. EOW and Supervisory. 300 c/s to 6 kc/s $\pm 1$ dB.
Intermodulation and noise	:	Using a carrier giving a level into a receiver of -80 dBW and modulated with white noise to simulate a fully loaded 60-channel signal, the noise and intermodulation products are not to exceed -45 dB N.P.R in the top channel (298 kc/s).
Noise	:	Using an unmodulated carrier giving a level into the receiver of -80 dBW, the noise measured in the top channel (298 kc/s) not to exceed -46.5 dB N.P.R.

**DIMENSIONS AND WEIGHT**

	<b>Height</b> mm	<b>Width</b> mm	<b>Depth</b> mm	<b>Weight</b> kg(Approx)
Single Channel	2280	1040	400	254

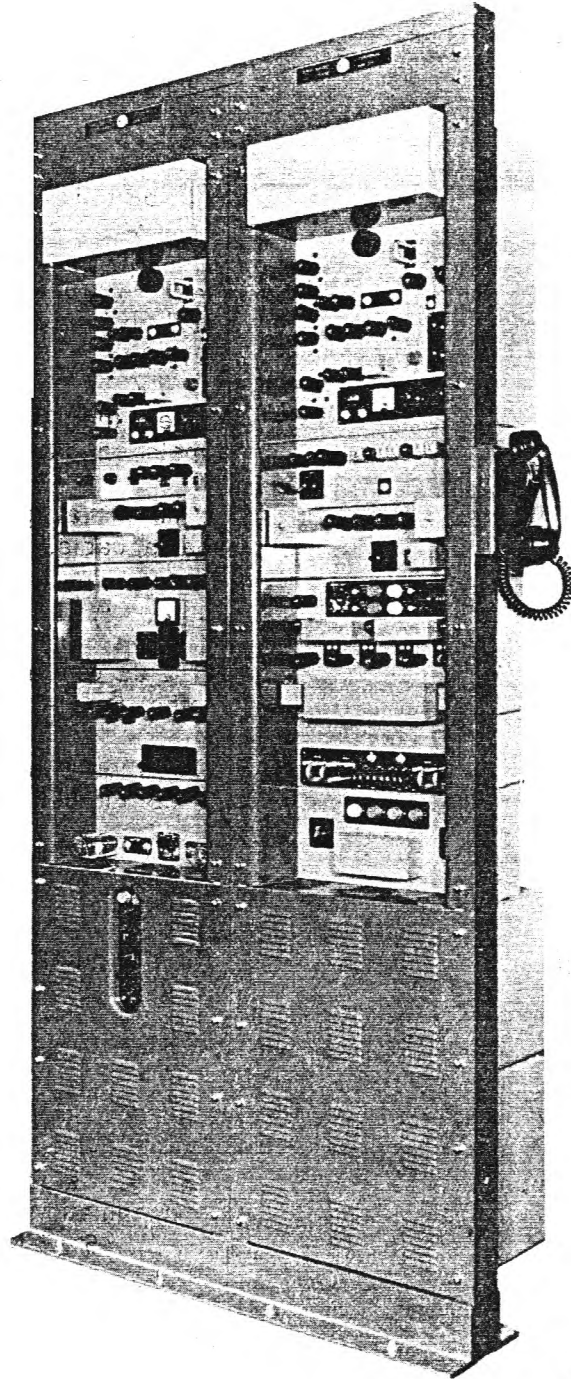


Fig 1 Terminal station