SUMMARY OF DATA

PURPOSE

Outfit TDZ(1) provides two drive channels for linear amplifier transmitters. It has comprehensive facilities for selection of frequency and modulation. Plug-in units allow for its adaptation to current communication requirements.

BRIEF DESCRIPTION

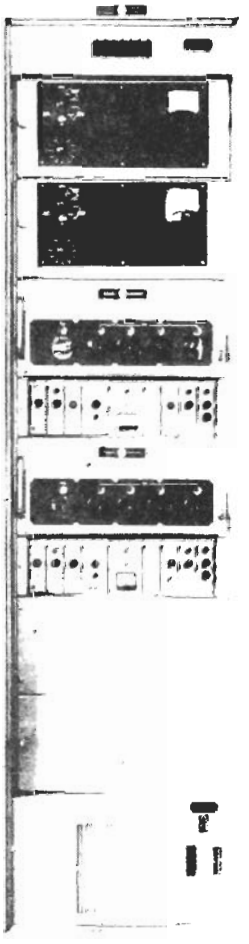
From the station Standard Frequency Outfit twin 1 MHz drives are taken to a hybrid unit. Each output from the hybrid unit is reduced in frequency by a Divider Amplifier to produce a 100 kHz pilot carrier and a 50 kHz output for various modulators. Signals from the af and dc keying lines modify the 100 kHz output which passes through an automatic attenuator (in the RF Amplifier) to the Synthesizer. Here the modulated signal is injected into the adder stages to become part of the output radio frequency. The 1 MHz drive is passed, unmodulated, by the 100 kHz Modulator to the Synthesizer. The output of the Synthesizer variable by 100 Hz increments is passed to the (distributed) RF Amplifier which raises the signal to 1.5 watts PEP for the transmitter drive. On the receipt of a tune command signal from the synthesizer, or from a self-tuned transmitter, the automatic attenuator adjusts itself to give an output between 1 and 2 watts.

The Modulator Housing carries the power supplies, hybrid units and crystal filters and will accommodate nine plug-in modules. For all arrangements of the Modulator Amplifier Group three of these are essential, viz:

5820-99-972-0120	Divider Amplifier — synthesizes 100 kHz and 50 kHz from a 1 MHz input for use in various other modules.
5820-99-972-0121	Control Amplifier — provides 250 μW PEP output irrespective of mode of operation. In floating carrier operation it also provides muting.
5820-99-972-0159	Logic Circuit — controls the operation of the other units by muting unwanted circuits.

Six other modules may be plugged in to form a specific combination for communication requirements. Power is applied to all modules but unwanted units are muted until selected for service by means of a front panel switch or by extended control. These optional modules are:—

5820-99-972-0117	Keyer — for fsk, ffd, facsimile or (line A only) on-off cw.
5820-99-972-0125	Keyer, Tone (2.55 kHz) — set up to give any of three independent shifts as selected by a front panel switch. Signals are produced at nominal 97.45 and 102.55 kHz.
5820-99-972-0124	Keyer, Tone (4 kHz) — permits modulation rates up to 3500 bauds for facsimile. Set up to give any of three shifts as selected by a front panel switch. Signals are produced at nominal 96 and 104 kHz.
5820-99-972-0119	Keyer, Tone (2 Hz) — produces two pre-set frequencies keyed by either line A or line B. Alternatively keying signals from lines A and B may be used for ffd. Signals are produced at nominal 98 and 102 kHz.
5820-99-972-0118	Modulator, ssb — Two of these may be used, one for usb and one for lsb. AF signals from line A or line B modulate 50 kHz from the Divider Amplifier and the resultant signal, above or below 100 kHz is filtered and amplified.
5820-99-527-5864	CW Space Suppressor Assembly — mutes the Modulator when the space or idle condition of the cw keying is greater than 0.5 secs.
5820-99-972-0122	Modulator, dsb — receives 50 kHz from the Divider Amplifier, doubles it and combines the 100 kHz, in correct amplitude and phase, with unfiltered signals from the usb Modulator ssb.
5820-99-972-0123	Generator, Signal — provides test tones of 1100 and 1600 Hz separately or combined, on either sideband.



OUTFIT TDZ(1)

TYPES OF TRANSMISSION

CW on-off keying (line A only)
DSB
SSB)
and) with reduced, suppressed
ISB) or floating carrier.
FFD)
Facsimile

FREQUENCY RANGE

2 to 27.5 MHz

MAIN UNITS

5820-99-580-7653 Modulator Amplifier Group comprising various panel assemblies and :—
5820-99-972-2046 Cabinet Electrical Equipment
5820-99-580-7654 Amplifier Radio Frequency
5820-99-972-4748 Synthesizer Electrical Frequency
5820-99-972-0116 Modulator Housing Power Supply

PHYSICAL DATA

Height	Width	Depth
213.4 cm (84 in.)	61 cm (24 in.)	76.2 cm (30 in.)

ELECTRICAL CHARACTERISTICS

MODULATOR AMPLIFIER GROUP

1 MHz input level	Twin 200 mW into 75 ohm.
RF Output	1 to 2W
Intermodulation	Better than —45 dB at PEP.
Harmonics	Below 2.5 MHz; better than —25 dB Above 2.5 MHz; better than —30 dB
Other spurious frequencies	Better than —58 dB at PEP.
Passband ripple	300 Hz to 6 kHz; 3 dB ±300 Hz to ±6 kHz 4 dB.
	No Single Component should be greater than —60 dB rel. to PEP for:
Noise level (am, fm or pm)	(a) Pilot carrier; normally —16 dB to —26 dB. (b) Single tone modulation; —6 dB relative PEP.
100 kHz MODULATOR	
1 MHz input level	Greater than 14 dBm into 75 ohm
100 kHz output	250 μW PEP into 75 ohm or 10 mW into 75 ohm.
(a) Telegraphy	
Keying modes and voltages	(a) Double current; +6,0, —6 V to +80,0, —80 V. (b) Single Current; —9 to —80 V and OV. (c) Short circuit Keying.
Modulation rate	Up to 300 bauds, except for Keyer, Tone (4 kHz) which has a maximum of 3500 bauds.
FST shift	±70 Hz to ±500 Hz about the nomihal centre frequency.
FFD shift	Standard; ±200 and ±600 Hz about the nominal centre frequency. Alternative; ±100 and ±300 Hz about nominal centre frequency.
(b) Telephony, ssb and isb.	
AF input	±10 dBm to —20 dBm into 600 ohm.
AF range	300 to 6000 Hz.
Clipping level	+4 dB on PEP.
Carrier	Suppressed; 60 dB below PEP. Pilot ; —16 dB or —26 dB within ±1 dB. Floating ; —7 dB at silence and less than —20 dB on traffic.

(c) Telephony, dsb.

Distortion	Better than 1% for modulation up to 85%.
Sideband clipping	Corresponds to 90—100% am after carrier re-insertion.

RADIO FREQUENCY AMPLIFIER

Gain	Set at 27.5 dB.
Input and output impedances	70 ohm.
Input and output VSWR	Less than 1.35:1
Output power	1 to 2W

SYNTHESIZER, ELECTRICAL FREQUENCY

Frequency	100 kHz to 27.9999 MHz in 100 Hz steps.
Output power	2.5 μW PEP.
Intermodulation	Better than —40 dB relative to either of equal tones, or —46 dB relative to PEP.
Spurious output	Better than —65 dB relative to PEP.
Harmonics	—25 dB to —40 dB from low to high frequencies.

POWER REQUIREMENTS

Modulation Amplifier Group (overall) 200 to 260 V, 50 to 60 Hz. Consumption 550 W

HANDBOOKS

BR 2441 Handbook for Transmitter Drive Outfit TDZ(1)
(1) Modulator Amplifier Group 5820-99-580-7653.
(2) Modulator 100 kHz (various NSN's)
(3) Synthesizer, Electrical Frequency 5820-99-972-4748.
(4) Amplifier, Radio Frequency 5820-99-580-7654.

ESTABLISHMENT LIST

E 1455

INSTALLATION SPECIFICATION

B 976

MAINTENANCE SCHEDULES

Cat. Nos.

COMMERCIAL EQUIVALENT

Marconi H1601-02	Modulator Amplifier Group	T6654A
Marconi H1503-02	Modulator 100 kHz	T5578A
Marconi H1500-02	Frequency Synthesizer	T5279A
Marconi H1001-02	Amplifier Radio Frequency	T6168A