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VOLUME I

NACOM II MASTER

VOL. I

TECHNICAL MANUAL

for

RADIO TRANSMITTER

MODEL GPTR-10KYA

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THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, N. Y.

OTTAWA, CANADA

VOLUME I

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Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.



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-- FOREWORD --

The GPTR-10KYA as shown in figure 1-1 is a dual Technimatic 10 kw Radio Transmitter System. The system comprises three major units mounted into three equipment racks; these modular units are used in various transmitter and receiver systems as well as the GPTR-10KYA. Individual modular manuals are written for each unit in the system and then combined as required with a system manual to cover the entire transmitting system.

The GPTR-10KYA system manual discusses the exciter and amplifier system only to the extent that it affects the system; detailed information concerning operation or maintenance of any modular unit is available in the following modular manuals:

VOLUME I

Technical Manual for SBGR-4YA
Technical Manual for CHGR-4
Technical Manual for CMRA-4
Technical Manual for RTTD-5A
Technical Manual for RTMU-41A

VOLUME II

Technical Manual for PALA-10K

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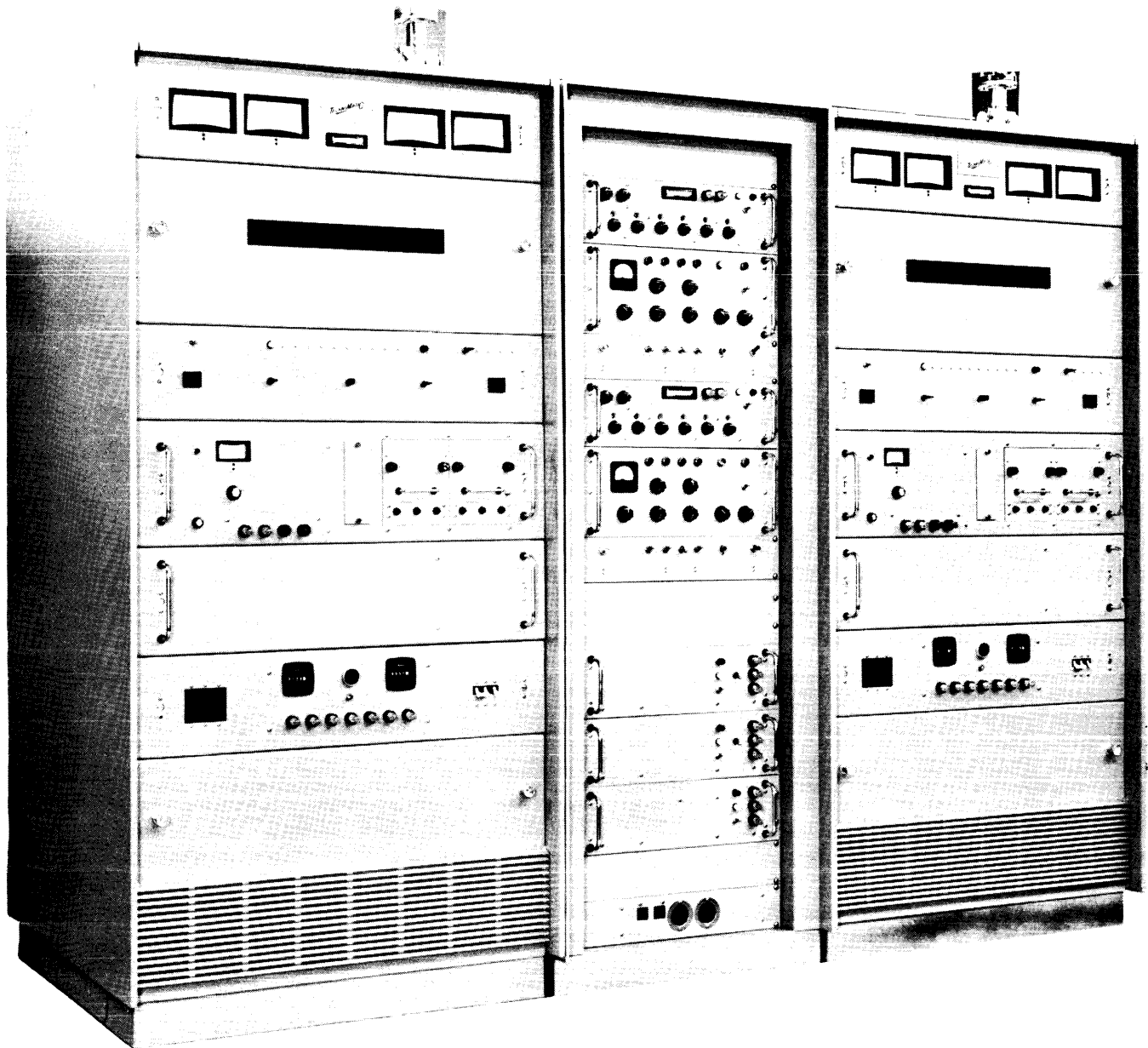


Figure 1-1. GPTR-10KYA Transmitter Overall Front View

SECTION 1

GENERAL INFORMATION

1-1. PURPOSE OF EQUIPMENT

The GPTR-10KYA system provides dual simultaneous transmissions in the frequency range from 2 MHz to 30 MHz. The system can be operated locally either manual or automatically. For sites requiring remoted operation, the GPTR-10KYA will operate via CCIT teletype or teletype code generator such as the transmitter programmer, Model RTPH.

System capabilities are outlined under technical characteristics.

1-2. SYSTEM MAKE-UP

The GPTR-10KYA system consists of three major units housed in three frames as follows:

GPTR-10KYA

<u>1st</u> PALA-10K	<u>2nd</u> SBGR-4YA	<u>3rd</u> PALA-10K
Main Frame	CHGR-4	Main Frame
Meter Panel	CMRA-4	Meter Panel
PA Section	CHGR-4	PA Section
IPA Drawer	CMRA-4	IPA Drawer
Exciter Drawer	RTTD-5A	Exciter Drawer
Main Power Panel	RTTD-5A	Main Power Panel
Main Power Supply	RTMU-41A	Main Power Supply
Harmonic Filter		Harmonic Filter

1-3. SYSTEM FUNCTIONAL DESCRIPTION

The GPTR-10KYA functions as two separate 10-kilowatt transmitters. The exciter rack, SBGR-4YA contains two single-sideband, four-channel ISB exciters that control and provide drive for each of the 10-kilowatt linear

amplifiers. Additionally, each exciter unit in the SBGR rack can be controlled via teletype or teletype code generator.

Initially, when a coded message is present at the input of the Signal Data Storage Unit, Model RTMU, the message is stored within the RTMU. When the RTMU receives a "tune signal", the RTMU releases the message code by code to the transmitter decoder, RTTD. The decoder will then supply necessary voltage, contact closure, and grounds to initiate frequency selection, mode of emission, output power level setting and Transmitter High Voltage ON/OFF.

When the exciter receives this information, control circuits within the exciter select the desired frequency and mode of emission. Simultaneously the PALA-10K receives a portion of the message for bandswitching, High-Voltage ON-OFF, power level setting and START TUNE.

Once the PALA-10K has received a START TUNE signal, the PALA starts a tuning cycle, ending with the desired frequency, power level setting and mode of emission. Bear in mind that the dual transmitter can be operated simultaneously or individually as desired. Automatic local or remote tuning is accomplished in less than 30 seconds.

TABLE 1-1

TECHNICAL CHARACTERISTICS

Frequency Range:	2.0 MHz to 30 MHz
Power Output:	10kw PEP or Average
Intermodulation Distortion:	Third and higher products at least 35 db below either of two equal tones.
RF Input Power:	.2 watts PEP or average power maximum.
Hum and Noise Level:	At least 55 db down from either tone of a two-tone test.
Harmonic Suppression:	Not less than 75 db below fundamental.

TECHNICAL CHARACTERISTICS (Cont'd)

Output Impedance:	50 ohms, unbalanced with a VSWR of up to 3:1 maximum.
Frequency Stability:	One part in 10^8 per day, with rms stability factor of not more than 1 part in 10^8 during any 10 minute period.
Operating Modes:	SSB, LSB, ISB, AM compatible (USB and carrier) 4 channel multiplex.
Channel Selection:	Automatically accomplished within 10 seconds after frequency selection.
Audio Input:	Adjustable in 1 db steps from -26 dbm to -6 dbm.
Tuning Time:	Not more than 20 seconds.