

Marconi Tropospheric-scatter Equipment

Designed and produced by Radio Engineering Laboratories, New York, U.S.A

In conjunction with Radio Engineering Laboratories of New York, the Marconi Company can supply and install complete tropospheric scatter systems engineered to meet any operational requirements in any part of the world. A wide range of equipment is available, suitable for medium and long-distance links of various channel capacities and the highest standards of performance.

2600 Series FEATURES

Solid state
Modular construction
Six r.f bands.
300 channel capacity.
Highest performance standards.
High reliability.
Built-in test facilities.

APPLICATION

The 2600 Series equipment provides comprehensive facilities for a wide variety of applications.

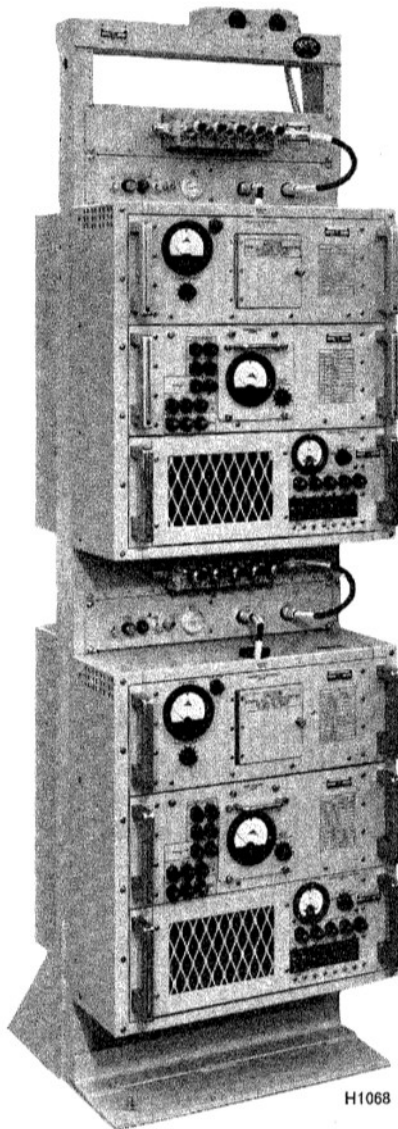
The exceptionally flexible design of this series is eminently suitable for different types of installation such as:

Fixed stations.
Transportable stations.
Military tactical applications.
Shipborne use.

GENERAL DESCRIPTION

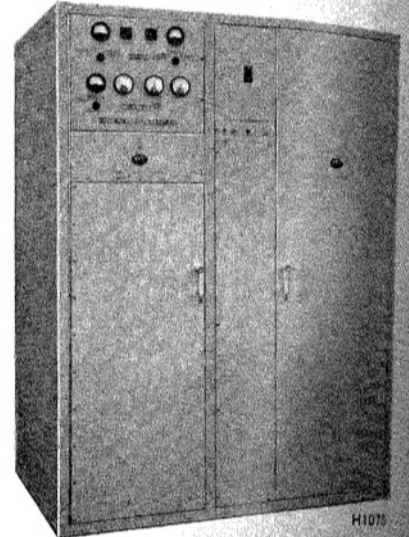
Receivers

The 2600 Series receivers are used in communication systems employing up to 300 channels (normally tropospheric scatter systems have 24 to 120 channels) and operating in the r.f frequency range between 350 MHz and 5000 MHz. Multiplexed voice, data and telegraph information, received on a frequency modulated carrier, is selected, amplified and demodulated in these units. Frequency division, pulse code or time division multiplex systems can be accommodated. The use of combiners provides diversity operation. The normal maximum baseband width is 1300 kHz but 2500 kHz also can be supplied for certain applications. Tunnel diode or parametric amplifiers may be specified to precede the receivers, dependent upon the characteristics of the transmission path and the acceptable noise factor of the system. The i.f bandwidth of the receiver is established by plug-in modules and is determined by the channel capacity being used.



Dual receiver rack

H1068



Typical power amplifier

H1075

Exciters

The exciter units receive the composite signal containing multiplexed voice, data and/or telegraph information and convert it to an f.m signal of 70 MHz. This is modulated to produce an f.m signal at the required carrier frequency, with a power output suitable for the input to the power amplifier. The input of multiplexed information may comprise frequency division, pulse code or time division multiplex. The normal maximum baseband width is 1300 kHz but 2500 kHz also may be accommodated for certain applications.

Power Amplifiers

Power amplifiers accept the signal from the exciter at carrier frequency and raise it to a level suitable for transmission. They are available with ratings ranging from 100 watts to 100 kilowatts, covering a wide frequency range to meet a variety of applications. High reliability results from the advanced techniques employed in these power amplifiers. They will accept most line voltages and frequencies used in military and commercial installations throughout the world. A comprehensive control system of modulation ensures simplicity of operation and protects the personnel and prevents interference with other operations.

They are fully metered with status and alarm indications for all important functions.

Operation and Maintenance

In order to take advantage of the flexibility and high performance in a practical communications system the equipment has been designed for simple, straightforward operation and maintenance procedures.

This has been accomplished by providing built-in meters and selector switches, normalized test points in each unit, indicating lamps and comprehensive protection circuits. The operator can perform routine checks by means of 'go/no go' type metering. Faults can be quickly identified and corrected by module replacement.

A range of specialized solid-state test equipment has been developed for transmission measurements, alignment and performance analysis.

Each module containing active components has built-in test points to facilitate repair of modules on site, at a central depot or at the factory. A special module tester is available for this purpose.

Reliability

Sound electrical and mechanical design together with careful selection of components, thorough testing, built-in safety devices and adequate circuit compensation, contribute to the high reliability of the REL 2600 Series.

TYPICAL SPECIFICATIONS, FOR THE 2600 SERIES TROPOSPHERIC-SCATTER RADIO TERMINAL

Operating frequency range (MHz)	Power amplifier options (kW)	Receiver noise figure (dB)	Traffic baseband (kHz)	I.F bandwidth options (MHz)	Intermodulation distortion (NPR) (dB)
REL 2600 Series 350-450	1, 10, 100	2-0, 4-5 or 8	12	0-1	55
755-985	1, 10, 75	2-0, 4-5 or 8	to	to	to
1700-2400	1, 10	2-0, 4-5 or 8	1300	15	60
2400-2700	1, 10	2-0, 4-5 or 9			
4400-5000	1, 10	3, 4-0 or 9			
7700-8500	1, 10	3, 4-0 or 9			

This concept enables stations to operate with fewer technicians on site and also permits unattended operation.

Extreme care in circuit design details, generous use of feedback in the modulator and AFC amplifiers, d.c emitter degeneration on all transistors and well-regulated power supplies, ensure maximum reliability and stability even after an extended period of use. The REL 2600 Series offers extraordinarily high performance and reliability; providing long, trouble-free life with a minimum failure rate.

DATA SUMMARY

Radio frequency: 350-450, 755-985, 1700-2400, 2400-2700, 4400-5000, 7700-8500 MHz.

Transmitter power output: 100 W, 1 kW, 10 kW, 100 kW depending on r.f range and application.

Receiver noise figure: 8 dB or 4 dB or 2 dB.

Modulation: F.M.

Deviation capability: ± 3.5 MHz peak.

Baseband:

Traffic: 12-1300 kHz maximum for 300 channels.

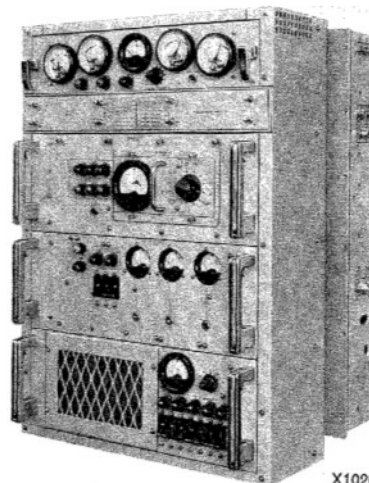
Order wire: 0.25-12 kHz.

Intermediate frequency: 70 MHz.

I.F Bandwidth: Variable by plug-in units.

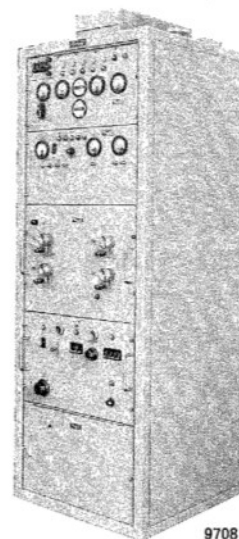
Intermodulation: 55 dB NPR with CCIR loading.

Diversity: Post detection, dual and quadruple.



X1020

REL 2600 series exciter complete in cabinet



9708

1 kW power amplifier for 2000 MHz

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