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RF-2500E Repeater

Microwave Repeater Systems

Applications

- Low-cost, highly reliable 2.5 GHz microwave through repeater for extending range of or clearing obstructed microwave radio paths.
- Excellent performance with analog, digital, or video microwave radios; channel capacity to 1200 FDM, 1 DS3, 45 Mb/s PCM, 34 Mb/s PCM.
- Compatible with any manufacturer's 2.5 GHz radio terminal.
- Solar power compatible -- economical in thin routes and remote locations.

Features

- RF output power up to +23 dBm analog, +16 dBm digital.
- Power consumption only 2.2 amperes at 12 Vdc for duplex operation.
- Solar powered, ac powered, or powered by primary cells.
- Compact and lightweight -- ideally suited for remote sites that do not have access roads or commercial power.
- Environmentally protected aluminum, weathertight, lockable cabinet. No extra environmental shelter required in most installation. Suitable for use at unimproved sites anywhere in the world -- Alaska to Saudi Arabia.
- Internally protected duplex, frequency diversity, and three-way or "Y junction" configurations available.
- Only one active element per channel, the internally redundant linear amplifier.
- AGC/ALC provided to correct input fades and reduce overload.
- Maximum gain can be field-adjusted for easy fine-tuning.
- In the case of single duplex configuration, amplifiers can be replaced without disrupting service.
- RMAS-100 Alarm system (optional) can remotely monitor repeater.
- Equipped with directional couplers for in-service RF output power measurements.
- No frequency conversion -- received signal is filtered, amplified, and re-radiated.
- Very reliable, greater than 85,000 hours MTBF for duplex.
- Available as a self-contained RF repeater for use with customer-furnished antenna and power equipment or as a complete package including repeater, antenna, solar electric panels, battery charger and batteries.

RF-2500E Repeater

Technical Summary

General (Duplex Configuration)

Frequency Range	2.3 to 2.7 GHz
Nominal Gain	45 dB (15 dB AGC/ALC)
Maximum Gain	60 dB (0 dB AGC/ALC)
AGC/ALC (Nominal Gain = 45 dB)	15 dB down fade, 5 dB up fade
Noise Figure	7 dB
3rd Order Intercept	+33 dBm

Antenna Connections

Impedance	50 ohms
Return Loss	20 dB min.
Antenna Ports	Type N(f) Coax.
Jumper Supplied	Type N(m) to N(m)
Cable Type (Typical)	7/8 inch Air or Foam filled Coaxial Cable with N(f) connector

Frequency Plan

Channel Bandwidth	20 MHz, 1 dB
T-R Spacing	50 MHz, min.
T-T Spacing (Frequency Diversity, 1+1) on common feeders	28 MHz, min.

Channel Response

Amplitude	± 0.5 dB, fo ± 8 MHz
Group Delay Ripple	0.30 nSec/(MHz) ² , fo ± 8 MHz

Power Requirements

Nominal Voltage	+13.5 Vdc
Voltage Range	+11 to +16 Vdc
Polarity	Negative Ground

Current:

RF-2500E-01 Duplex	2.2A
RF-2500E-02 Duplex, FD	4.4A
RF-2500E-03 One-Way	1.1A

RF-2500E Repeater

Environmental Conditions

Ambient Temperature	-40 °C to +60 °C
Relative Humidity	90% (housing internal) 100% (housing external)
Altitude	15000 ft (5000 m)

Reliability (Single channel duplex)

MTBF	85,000 hours
MTRR	30 minutes

Dimensions:

One to Four

Frequency Channels

Housing	Weather Tight Aluminum
Height	27 in (690 mm)
Width, including vent hoods	27.5 in (699 mm)
Depth	11.2 in (285 mm)
Weight	50 Pounds (23 kg)

Gain - Power - Noise Figure Table

FOR FM/FSK/MSK*

OPTION	FREQUENCY CHANNEL	LINEAR GAIN MIN. dB	AGC/ALC ON *		NOISE FIGURE dB
			POWER INPUT dBm (40 dB Gain)	POWER OUTPUT dBm	
RF-2500E-01	F1, F2	60.0	-22.0	+23.0	7
RF-2500E-02	F1, F4	58.7	-23.3	+21.7	7
	F2, F3	58.7	-22.3	+23.0	8.3
RF-2500E-03	F1	60.0	-22.0	+23.0	6.7

*For Other Modulation, Please Refer to the Following Table:

MODULATION	POWER BACKOFF dB
FM/FSK/MSK	0
4PSK	-2
16QAM	-6
QPR3/9QPRS	-5
QPR7/49QPRS	-6
QPR9	-7

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