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just great reliability.

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RF-11000 Repeater

Microwave Repeater Systems

Applications

- Low-cost, highly reliable 11-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, 1344 PCM (2 DS3 or 90 Mb/s), 960 PCM (2x34 Mb/s) or multiple video.
- Compatible with any manufacturer's 8-GHz radio terminal.
- Solar power compatible -- economical in thin routes and remote locations.

Features

- RF output power up to +24 dBm analog, +22 dBm digital.
- Power consumption only 2.3 amperes at 12 Vdc for regular-power-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.
- In the case of single duplex configuration, amplifiers can be replaced without disrupting service.
- RMAS-110 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-11000 Repeater

Technical Summary

General

Frequency Range	10.7 to 11.7 GHz
Nominal Gain*	40 dB (15 dB AGC/ALC)
Maximum Gain *	55 dB (0 dB AGC/ALC)
AGC/ALC (Nominal Gain = 40 dB) *	15 dB down fade, 5 dB up fade
Noise Figure*	7 dB
3rd Order Intercept*	+39 dBm

* Refer to Gain-Power-Noise Figure Table (p6) for individual configuration options

Antenna Connections

Return Loss	26 dB min.
Antenna Ports	WR-75, Cover
Waveguide Type	WR-75

Frequency Plan

Frequency Range	10.7-11.7 GHz
Channel Bandwidth	40 MHz, 1 dB
T-R Spacing	130 MHz, min.
T-T Spacing (1+1, 2+1 or 3+1) on common feeders	80 MHz, min.

Channel Response

Amplitude	± 0.5 dB, fo ± 20 MHz
Group Delay Ripple	4 nSec p-p ,fo ± 20 MHz

Power Requirements

Nominal Voltage	+24 Vdc
Voltage Range	+21 to +30 Vdc
Polarity	Negative Ground

Current:

RF-11000-51 Duplex, Delay-Equil	2.7A max.
RF-11000-52 Duplex, FD, Delay-Equil	5.4A max.

RF-11000 Repeater

FCC Data

FCC ID:	EK2A201*
FCC Emission Designator	Booster
Power Output:	0.01~0.25W adjustable (Level 1) 0.02~0.63W adjustable (Level 2)
Frequency Range:	5925~7125 MHz
Frequency Stability:	Amplifier**
Modulating Frequency:	Dependent on Terminal Equipment

* The RF-11000 series are FCC approved for use with any 11-GHz radio equipment.

** The repeater does not have any frequency determining components; therefore, for FCC data, frequency stability is shown as amplifier. The actual frequency stability is a function of the associated end terminal radio equipment.

Environmental Conditions

Housing	Weather Tight Aluminum
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
MTTR	30 minutes

Dimensions:	One to Four Frequency Channels
Height, including feeder manifold	36.00 in (915 mm)
Width, including vent hoods	23.25 in (591 mm)
Depth, including feeder manifold	20.45 in (520 mm)

Weight:	Model	(pound/kg)
	One-Way	70/32
	Duplex	75/34
	Duplex, Freq. Diversity	80/36

RF-11000 Repeater

Gain - Power - Noise Figure Table

RF-11000-XX

FOR FM/FSK/MSK*

RF-11000 OPTION	FREQUENCY CHANNEL	LINEAR GAIN MIN. dB	AGC/ALC ON *		NOISE FIGURE dB
			POWER INPUT dBm (40 dB Gain)	POWER OUTPUT dBm	
RF-11000 -51	F1, F2	52.8	-12.4	+26.9	8.5
RF-11000 -52	F1, F4	53.0	-12.5	+26.8	8.0
	F2, F3	53.0	-12.1	+27.2	8.5

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

MODULATION	POWER BACKOFF dB
FM/FSK/MSK	0
4PSK	-2
16QAM	-6
64 QAM	-10
QPR3/9QPRS	-5
QPR7/49QPRS	-6
QPR9	-7

Peninsula Engineering Solutions, inc. may change performance specifications where necessary to meet industry requirement.