

GS-SSR Spread Spectrum Telemetry Transceiver

Features

- ❑ Frequency hopping spread spectrum
- ❑ 2.4 GHz license-free operation
- ❑ 115.2 kbps throughput
- ❑ Up to 20 mile operating range
- ❑ Point to point / Point to multipoint
- ❑ Single radio store and forward repeater
- ❑ Ruggedized enclosure



Outline

I-Series 2.4 GHz radio, from the FreeWave Technologies, offers versatility and ease of use in a variety of locations and applications.

The professional radio is available in a ruggedized milled aluminum enclosure, with Type-N connectors.

The wireless RS-232 spread spectrum data radios provide reliable long range data communications. Using the superior frequency hopping spread technology, these radios are capable of uncompressed data rates up to 115.2 KBaud over distances of 30 km or more, depending on the line of sight, meeting the data communications needs in the seismic networks which are frequently split over vast areas.

The 2.4 GHz radio operates at 500 mW output power that allows the usage of a directional antenna without exceeding FCC Part 15 emission limits. As well as providing long range reliable data links, it is set up quickly and incur no ongoing fees, unlike cellular and land line communications.

The 2.4 GHz radio operates in either point to point or point to multipoint modes, selectable through any terminal program. Repeaters may be deployed in either mode to extend the range of the link, not by plugging two units in back to back as is the case with most radios, but by programming the units to operate as a store and forward repeater. With up to two repeaters in a link and using optional external antennas, links of 90 km and beyond are possible.

All radios are assigned a unique electronic serial number, providing complete control of who does and who does not have access to the data. An optional mode allows the radio to respond to a set of AT commands.

Each radio is tested from -40 ° C to +75 ° C, and must also pass real world data and link tests.

These radios have been used in several projects for data transmission successfully by GeoSIG.

Specifications GS-SSR

Radio link:

Frequency Range	2.400 to 2.4835 GHz
Range, <u>Line-of-sight</u>	approx. 30 km (with 5 dB omnidirectional antenna)
Method	Frequency hopping spread spectrum
Occupied Bandwidth	230 KHz
Modulation	GFSK, 120 ~ 170 Kbps
Hopping patterns	15, user selectable
Frequency bands	6, user selectable
Hopping channels	50 to 80, user selectable
RF Connector	Type N female

Transmitter:

Output Power	100mw to 500mw, programmable
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Receiver:

Sensitivity	-108 dBm at 10 ⁻⁶ raw BER
Selectivity	40 dB at $f_c \pm 230$ KHz 60 dB at $f_c \pm 460$ KHz
System gain	137 dB

Data Transmission:

Error Detection	32 bit CRC, retransmit on error
Data Encryption	Substitution, dynamic key
Link Throughput	115 Kbaud, uncompressed, measured assuming 75% frequency availability

Data Interface:

Protocol	RS-232, 1200 Baud to 115.2 KBaud, DCE
Connector	DB9-female

Power Requirements:

Voltage	8.5 to 30 Vdc
Transmit Current	650 mA at 12 Vdc for 500 mW power out
Receive Current	100 mA at 12 Vdc
Idle Current	65 mA at 12 Vdc

Environment and mechanical:

Operating temperature	-40 °C - +75 °C
Humidity	0 to 95% non-condensing
Enclosure	Extruded aluminum
Dimensions [mm]	56.5 H x 74.3 W x 165.1 L -
Weight [g]	441

Specifications subject to change

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