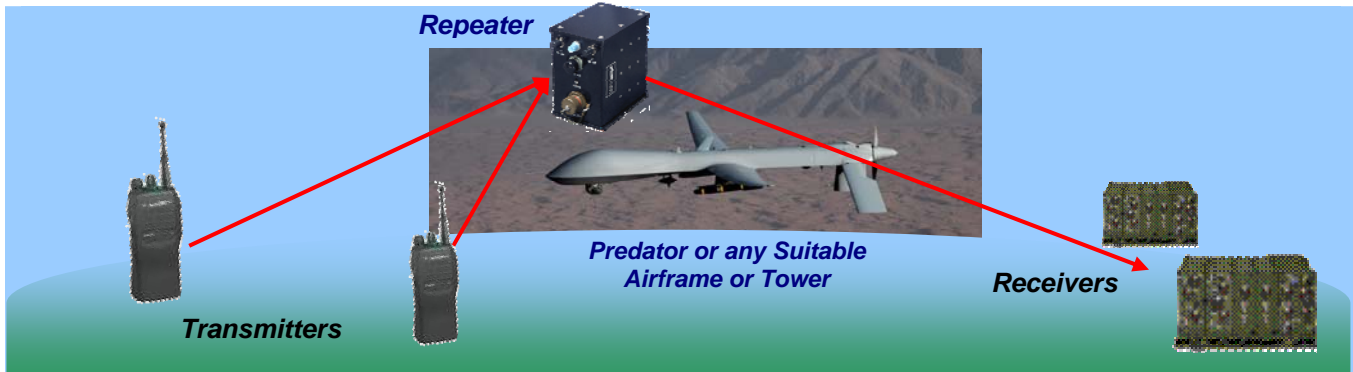


Radio Repeater for Communication Range Enhancement

Low-Cost Solution for Extending the Range of Line of Sight Communications

Applications:

- Range extension of line-of-sight communication systems
- Supports VHF, UHF, and microwave frequencies
- Fixed installations on towers or mobile installations on aircraft



The version of the SwRI repeater shown (PN 14183-1100-01) receives uplink transmissions and retransmits them on a different frequency to greatly extend the range of communications

Communication Range Enhancement

The communications range of line-of-sight (LOS) radios can be greatly extended using a small, low-cost radio repeater. SwRI developed one such repeater for use on training ranges and exercise areas. The repeater receives the signals from transmitters on the selected RF channel and then retransmits them on another frequency to a receiver, which can remain on the ground in a controlled environment. The repeater includes a capability to detect a waveform of interest and retransmit only when that waveform is present. When the repeater is placed on an aircraft and flown over a sizeable exercise area, much more realistic training scenarios can be supported.

The original repeater architecture is extensible to duplex operation in which the repeater performs two-way communication between transceivers at both ends of the communication link. The waveform detection capability is embodied in a baseband software defined radio, which enables reprogramming the unit to detect other waveforms of comparable or less complexity in software. Currently supporting several UHF frequency bands, the design can be modified to support other frequencies in VHF, UHF, and microwave frequency bands.

Radio Repeater for Communication Range Enhancement



The repeater is housed in a rugged aluminum enclosure and has no operator controls.



Each repeater is supplied as a kit with a Users Manual, configuration software install CD, USB cable, and flying-lead power cable all packaged in a rugged transport case.

Features and Benefits

- **Low Cost** – The repeater provides an affordable solution for extending line-of-sight communication range.
- **Rugged Construction** – The repeater has undergone extensive tests proving it suitable for either tower or manned/unmanned aircraft environments.
- **Low Electromagnetic Emissions** – The repeater has been extensively characterized in accordance with MIL-STD-461 guidelines.
- **Simple Configuration** – Main repeater functions are configured using a simple PC-compatible graphical user interface (GUI). Connection to the configuration computer is via a standard USB interface.
- **Suitable for Multiple Platforms** - The simplicity of the repeater allows it to be built into a form factor that can be hosted on a variety of aircraft, both manned and unmanned

Technical Specifications (PN 14183-1100-01)

- **Dimensions** – 6.2 x 4.2 x 6.75 inches (including connectors)
- **Weight** – 5.1 lbs
- **Power** – 10 to 36 VDC (28 V nominal)
- **Operating Temperature** - -40 to +55 °C
- **Altitude** – tested to 25,000 ft ASL
- **Humidity** – 5 to 95% (non-condensing)
- **Mounting** – on repeater bottom using 4 ea. 10x32 screws
- **Nominal Range** – 100 nautical miles at a repeater height of 10,000 ft. above ground level. (Typically the limitation is RF line-of-sight)
- **Transmitter Power Output** – 200 mW or 1 W, selectable during configuration by the user
- **Receiver Noise Figure** – 5 dB
- **Transmit (downlink) Frequency** – Available upon request
- **Receive (uplink) Frequency** – Available upon request

Export sales of this product are subject to U.S. export control laws under ITAR regulations and require export license approval from the US Department of State.

FOR INFORMATION ONLY – SPECIFICATIONS SUBJECT TO CHANGE.



For more information contact:

James A. Moryl, Director, Surveillance & Geolocation Department

PHONE: 210-522-3932

FAX: 210-522-2709

e-mail: james.moryl@swri.org

Southwest Research Institute®

6220 Culebra Road, San Antonio, Texas 78238-5166

www.surveillance.swri.org

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