A Novel Approach To A Small Modular Data Link Re-Transmission System

Mark McWhorter - Lumistar Inc.
Paul Thoreson - Orocom

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A Novel Approach to a Small Modular Data Link Re-Transmission System

• Problem: Telemetry RF Source Obscured From Main Telemetry Receiving Station(s)

• Obscured by Distance, Buildings, Obstructions, Terrain, Horizon

• Resulting In Data Link Failure or Reduced Received Data Quality
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- **Goal:** To Develop A Small Lightweight Multi-Band Telemetry Re-Transmission System Capable of Operating Off Aircraft Power (+28VDC), under 6 pounds having less than 70 watts DC power consumption
  - excluding the RF Power Amplifier

- **Dual Mode Operation:**
  - “Full Capability” Mode and “Bent Pipe” Mode
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Airborne Application

The Problem: LOS Obscured By Horizon

Primary Telemetry Receiving Station
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Airborne Application

A solution: Insert Airborne Re-Transmission System Full Capability Mode

Primary Telemetry Receiving Station
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Ground Based Application

The Problem:
TM Obstructed By Ground Clutter

Wave Absorption & Reflection
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Ground Based Application

A solution: Insert Ground Re-Transmission System Full Capability Mode

+20 dBi Gain

Re-Transmission System

LOS Typically 2-10 miles

+30 dBi Gain

Primary Range Telemetry Ground Station

Flight Line
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LS-76-M2 Upconverter Module - 4”x6”x1.3”

LS-28-DRSM Receiver-Modulator Module - 4”x6”x1.3”
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Re-Transmission System
Operable from 200 MHz to 7 GHz

Standard Receive and Transmit Bands

- 215-320 MHz (P-Band)
- 400-1150 MHz (Extended P Band)
- 1435-1535 MHz (Lower L Band)
- 1710-1850 MHz (Upper L Band)
- 2200-2400 MHz (S Band)
- 4400-4940 MHz (C band USA)
- 5091-5250 MHz (C Band EU)
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Re-Transmission System Operating Modes

- **Bent Pipe Mode**
  - Re-Transmit at Same Modulation Format Using The 70 MHz Signal from Receiver

- **Full Capability Mode**
  - Retransmit using a Different Format Using Internal Modulation Capability
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Re-Transmission System

Transmit Specifications

• +20 dBm Output
  • Optional Power Amplifier to 10 W

• Attenuation Up to 90 dB by Software Control

• 50 KHz Tuning Resolution

• Ethernet/USB/232 Controllable
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CURRENT STATUS

• Field Tests for Ground Based Applications, Scheduled for Oct 2018 Have Been Postponed Due To Aircraft Issues Until March 2019

• Airborne Application Tests Planned for Mid-2019

• Laboratory Tests Completed
Additional Information

For Additional Information Please Contact

- **Paul Thoreson**
  - paul@tmrep.net
- **Mark McWhorter**
  - mmcwhorter@lumistar.net