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

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ITEA 2018 - Track #5 Range Infrastructure

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

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

- 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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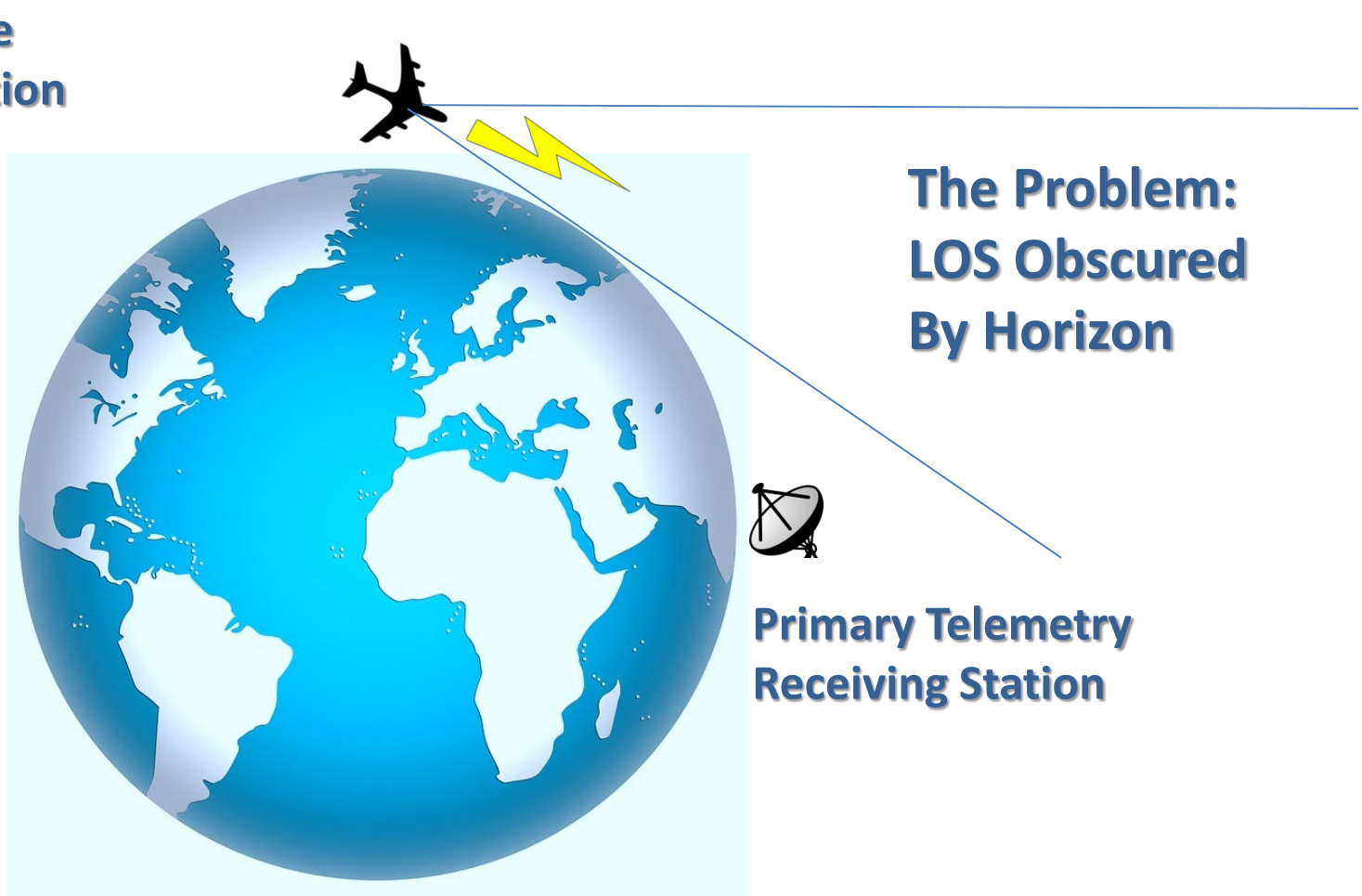

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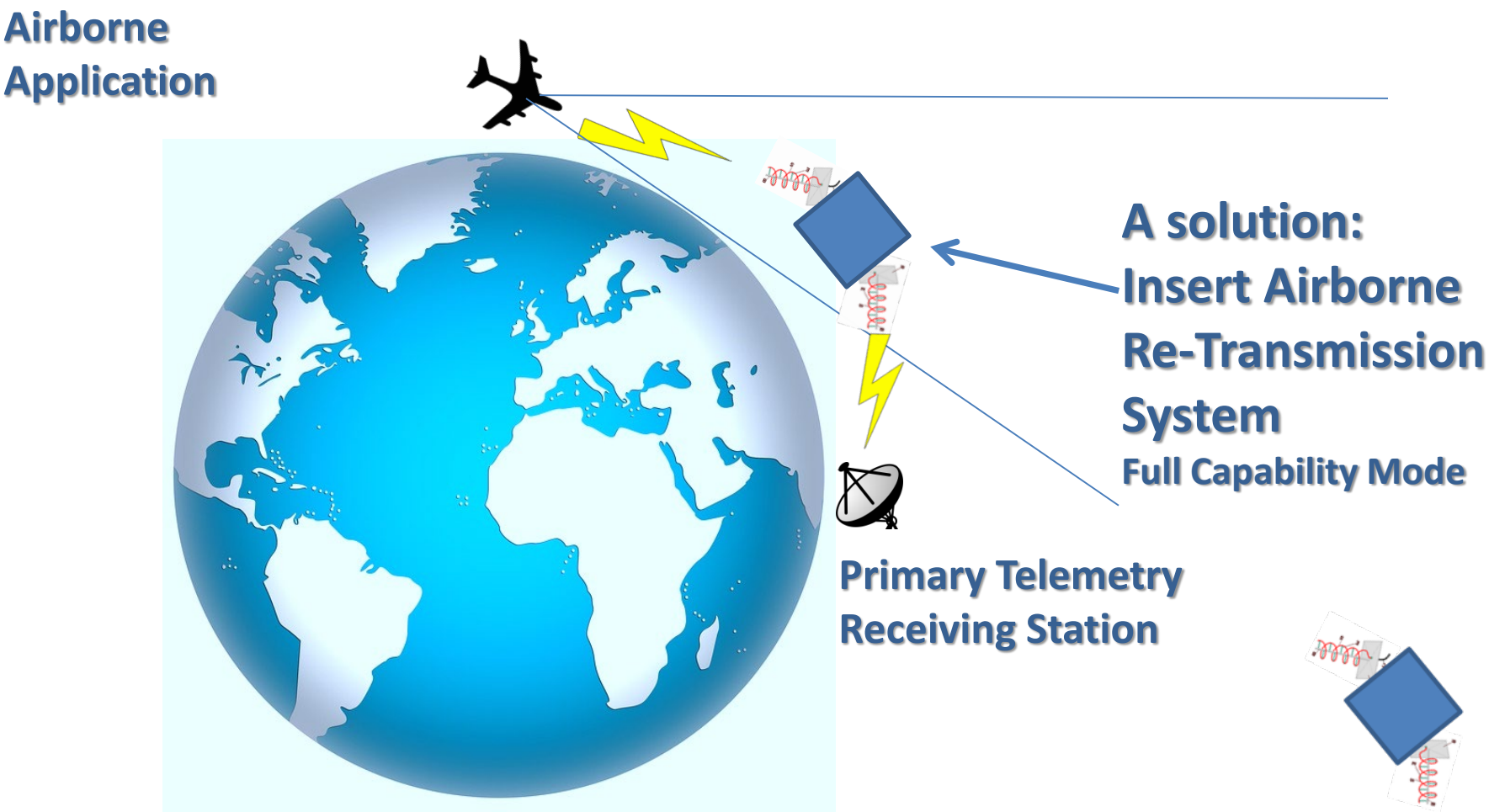

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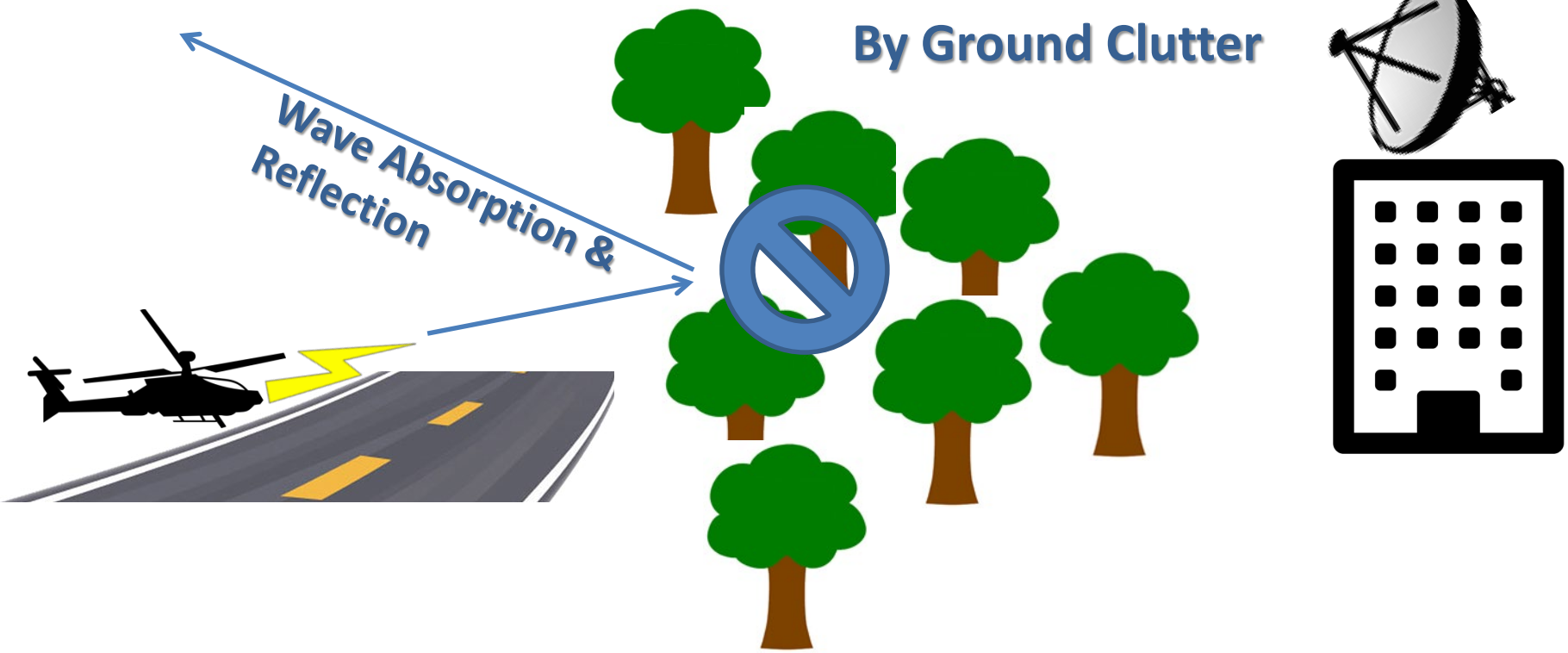
Ground Based Application

The Problem:
TM Obstructed
By Ground Clutter



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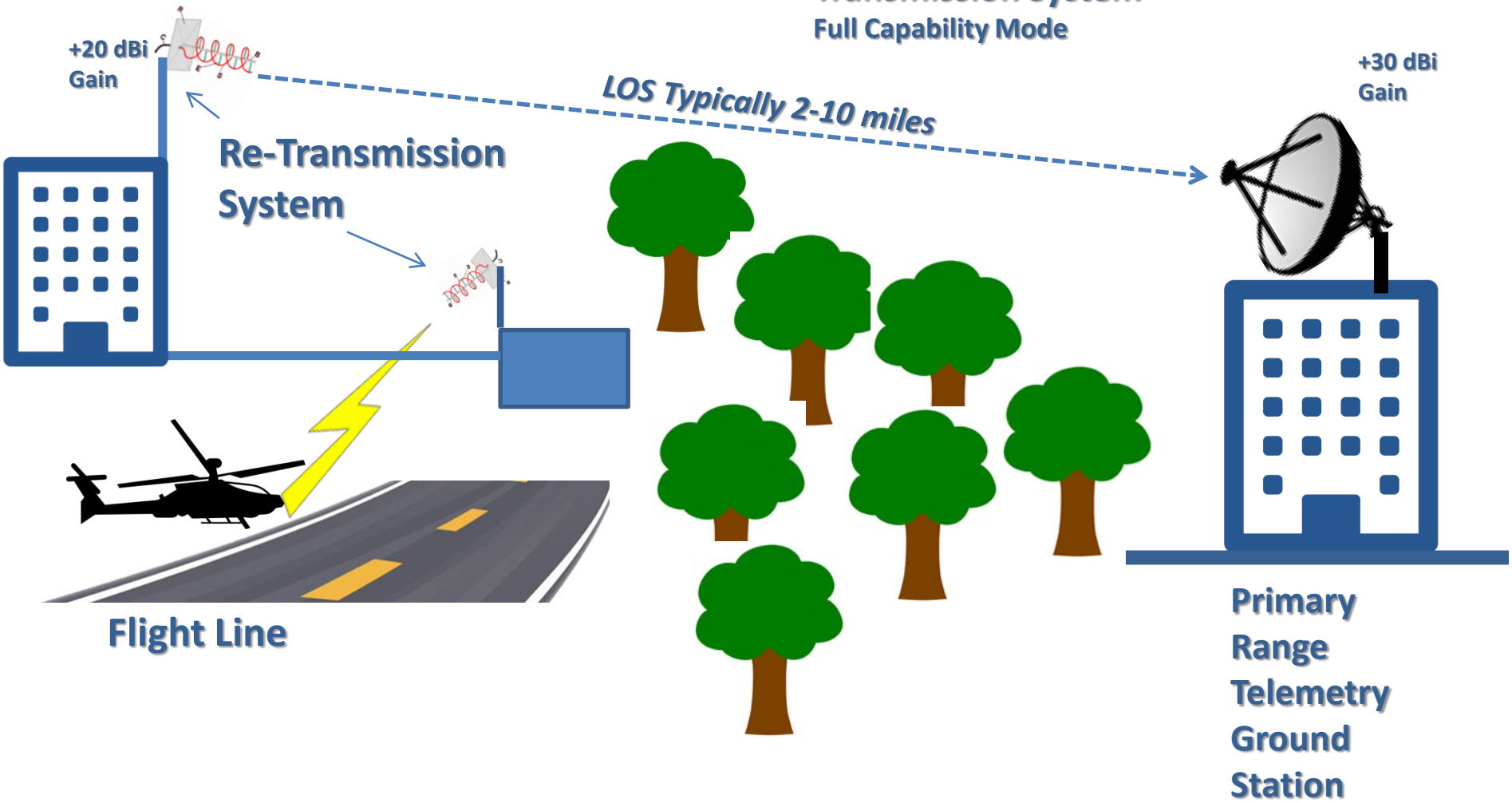
Ground Based Application

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



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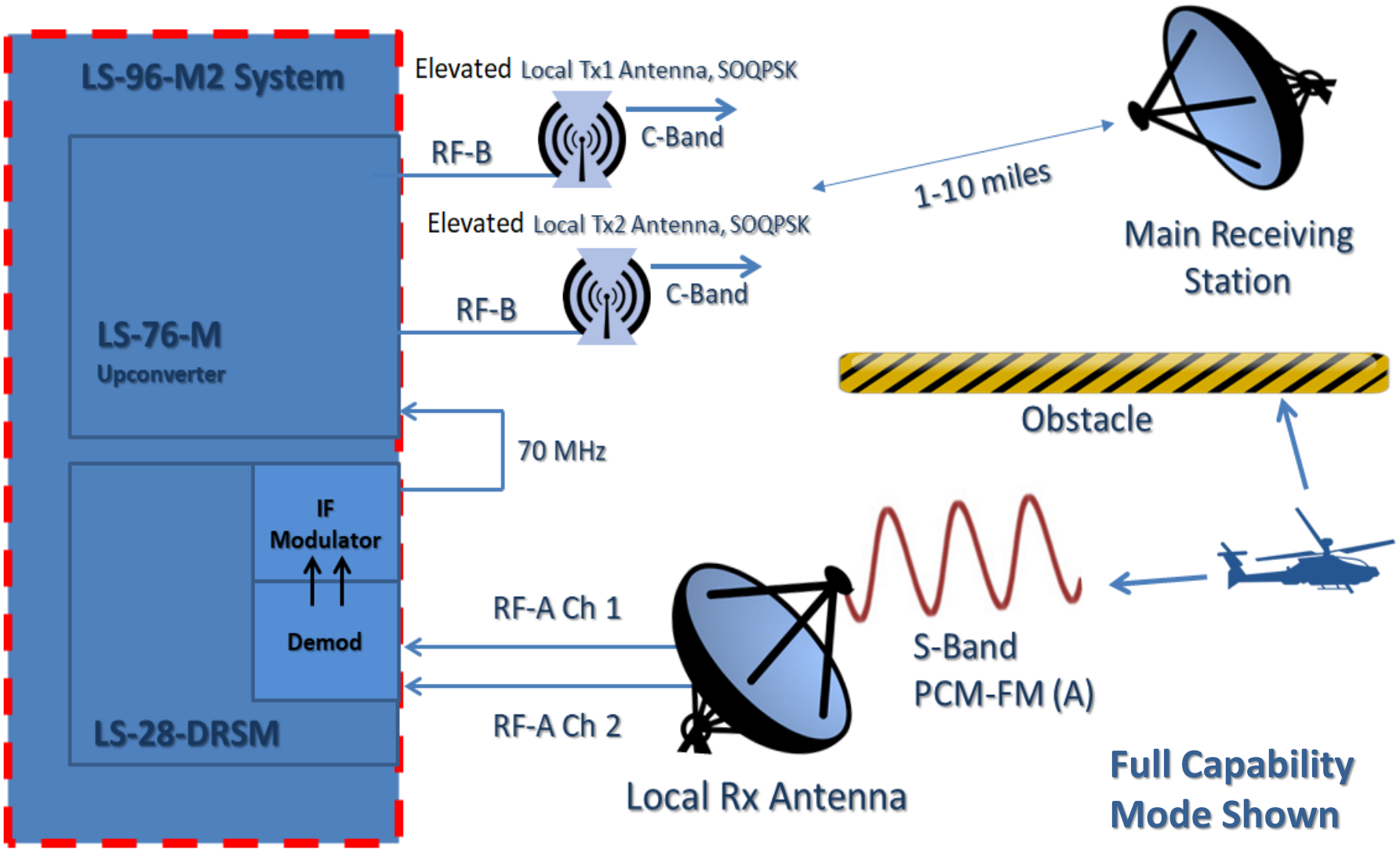

Full Capability Mode Shown

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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

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