



UAS Heritage and Pedigree

UAS Payload Possibilities

Triad can extend your LOS range to 150 nm+

- Decreases your dependence on SATCOM
- High-power payloads in air and on ground
- Utilizes all major brands of radios, provides control and monitoring of RF systems
- Multiple, mobile, gimbal-stabilized ground tracking systems
- Training provided for simple pre-flight checks



Triad offers a radio-agnostic “menu” of configurable LOS link options for your UAS

UAS Payload Possibilities (Cont.)

Typical Triad package that achieves 100 nm – Silvus SC4200 example

- Accomplished with the following:
 - Triad RF High Power Radio (THPR) - 5 lb, 60W MIMO RF payload (integrated radio/amplifier)
 - 45 lb, Gimbal-Stabilized Mobile Tracker with 18" Dish
- 5 minute or less setup time
- Test data available from prior flight testing (not vapor-ware)



ISR-One Payload Possibilities

RF System Consolidation - Simplification

- We have merged multiple radio systems (e.g. - Main C Band Data Link, Redundant L band Data Link, ADS Transponder, C2 Modem) into a single, highly integrated product – Triad High Power Radio (THPR)
- Payload carefully architected to encompass filtering to eliminate co-site and other interference
- Our payloads measure and monitor transmit RF power, antenna status, radio and RF sub-system health.



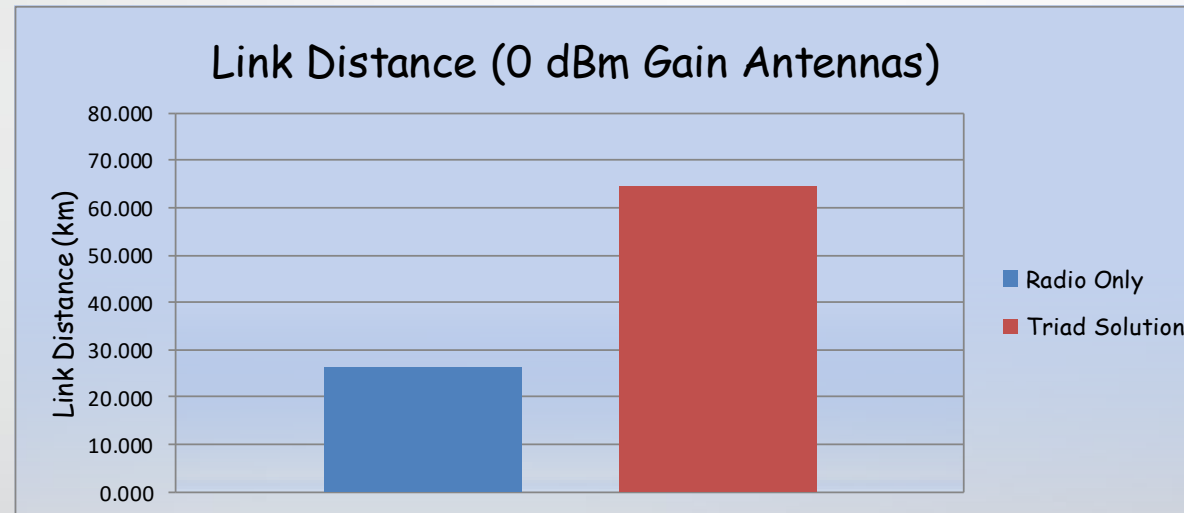
Summary

- We've developed high power radio systems utilizing Silvus, Microhard, and all other MIMO, L/S/C band radios that we can demo on your UAS or send for evaluation
- Myriad of tracking solutions available, including the lightest mobile tracking system in the industry
- We can frequency convert any of these radios to non-standard bands (e.g. 5.03 GHz, Ku band, etc.) to support any customer requirement that don't work in the standard bands offered by the radios.



Summary

- Initial Radio link integration takes **days** with Triad, **not weeks**.
- After integration, our mobile tracking system can be **setup in minutes**
- **Saves cost** due to fewer flight tests, and **decreased risk of link failure** in front of a customer.



- Our payload products are **radio agnostic** – we design with all mainstream MIMO and non-MIMO radios
- Highly configurable – easily adaptable to new frequencies when a demo is needed for customer not operating in traditional bands.

Gas Engine Group II Example

- BlueBird Aero Systems Thunder-B – **Group II Gas**
- 4 dBi Blade on Air Vehicle, 12dBi Patch on Tracker



Problem - Could not close 20 mi link using off the shelf stock radios with current tracking system

- 2.4 GHz C2 / Data / Video link using Microhard nDDL
- 1.4 GHz Video-only link using Domo Tactical Solo 8 (1080p HD)
- 400 MHz Telemetry / Flight Termination

Solution -

- **Achieved 72 mi link @ 12 Mbps, ~ 100 mi @ 5 Mbps**
- Custom payload with Triad TTRM1116 and TTRM1115 BDAs used in UAV and GCS for range extension
- Careful coordination of radio / amp settings to meet DC budget of air vehicle – also fixed misc RF issues on tracker
- Triad field-trained BlueBird staff on troubleshooting RF link (portable in-field power measurements, throughput tests, etc.)



Gas Engine Group II Example 2

- UAV Factory Penguin C – **Group II Gas**
- 4 dBi Blade on Air Vehicle, 20dBi Grid on Tracker
- 25W Triad Amp Shown on upper nose of Aircraft (updated version is smaller and internal)



- **Problem:** Needed 150 km video link using Microhard nanoDDL
- **Solution:** Triad high power radio assy on UAV and Mobile Tracking System
- Trained staff on calibration of amps /radios, dealt with self-made RF interference issues on aircraft
- **3+ years of successful 150km link deliveries**

Electric Group II Example

- BlueBird Aero Systems Spylite – Electric Motor
- 3 dBi Blade on Air Vehicle, 12dBi Patch on Tracker
- **Triad payload enabled Spylite's record 65nm range**
- <https://www.flightglobal.com/news/articles/spylite-claims-new-range-record-410646/>



UAS platforms

UAV/Data Link customers/platforms

- Eurocopter UH-72 Lakota Data Link
- RQ-7B Shadow – L band and S Band Amps
- Resolute Eagle
- Arcturus T20
- Threod Systems Stream – C
- V-BAT
- UAV Factory Penguin C
- BlueBird Aero Systems Thunder-B
- BlueBird Aero Systems Spylite – Electric Motor
 - **Triad enabled Spylite's record breaking UAS range**
 - <https://www.flightglobal.com/news/articles/spylite-claims-new-range-record-410646/>