

# SL5200 ACHIEVES 85 KM LINK RANGE UTILIZING OMNI ANTENNAS PUSHING THE LIMITS OF UAV OPERATIONS

**SILVUS**  
TECHNOLOGIES

[CASE STUDY]

## STREAMCASTER® LITE 5200: THE POWER TO PERFORM

Delivering powerful MANET radio performance for today's leading-edge unmanned systems, StreamCaster LITE 5200 (SL5200) unifies C2, sensor & telemetry data with communications relay capabilities in one easy to integrate, ultra-low SWaP OEM module form-factor.

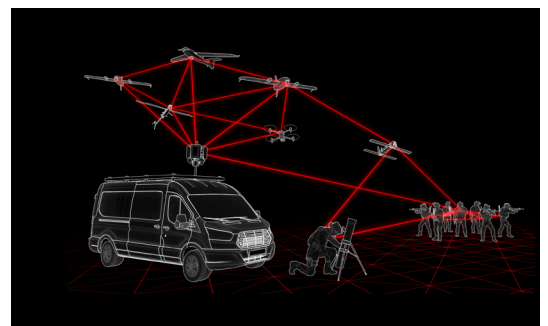
With up to 2 Watts output power (4W effective, thanks to TX Eigen Beamforming) and up to 100 Mbps data rate, the SL5200 combines class-leading power and high-bandwidth throughput with tactical mobility.



## NETWORK CONNECTIVITY FOR LEADING-EDGE UNMANNED SYSTEMS

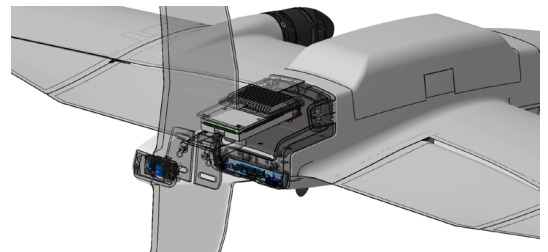
Powered by Silvus' battle-proven MN-MIMO waveform, the SL5200 supports massive scalability – seamlessly connecting UAVs, UGVs, USVs, sensors and both manned and unmanned platforms into a single, adaptive mesh network.

Fully interoperable with 4000-series StreamCaster MANET radios, the SL5200 features FIPS 140-3 and AES-256 encryption for secure data communications, with available access to Silvus' Spectrum Dominance expansive suite of LPI/LPD and Anti-Jamming resiliency capabilities – making it ideal for use in complex or contested environments, without sacrificing performance.



## GROUP 2 UAV CAPABILITIES | GROUP 1 FOOTPRINT

Featuring an ultra-low SWaP profile (52 g) and versatile I/O interface options including Ethernet, USB and RS232, the SL5200 is purpose-built for integration into tactical unmanned systems, loitering munitions and other SWaP constrained embedded applications.



# SL5200 ACHIEVES 85 KM LINK RANGE UTILIZING OMNI ANTENNAS PUSHING THE LIMITS OF UAV OPERATIONS

## THE CHALLENGE – UAV OPERATIONS LIMITED BY LINK RANGE

As today's Group 1 and Group 2 UAVs take on increasingly complex and dynamic missions, maximizing flight range is mission-critical. Their flight range is dependent on multiple variables including type of propulsion system utilized, and the transmission signal strength or link range between the aircraft's onboard radio and the ground control station (GCS) radio. Traditional solutions to extend link range such as long-range tracking antennas, bi-directional signal amplifiers or relay nodes – add cost, complexity and logistics.

## What if you could extend UAV link range without adding operational complexity?

The SL5200 was designed to do just that – deliver longer-range, high-bandwidth MANET performance without added infrastructure.

## SL5200 AIR-TO-GROUND LINK RANGE TESTING METHODOLOGY

To test the Air-to-Ground link range of the SL5200, we stepped outside the lab and put it to the test in a real-world operating environment. The goal: determine a baseline link range in S-band at multiple channel bandwidths using omnidirectional antennas on the aircraft and at the GCS to simulate a tactical UAV operational footprint.

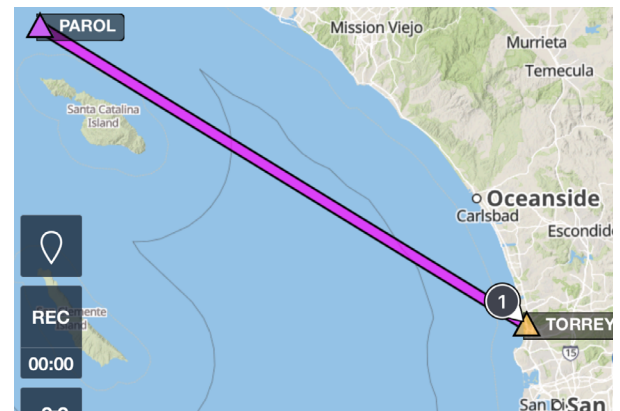
## TEST SETUP:

- **Ground Control Station (GCS):** Located at Black's Beach, La Jolla, CA, a SL5200 was connected to a pair of 5 dBi omni antennas, mounted 15 ft. above ground level to provide a clear LOS out to the horizon.
- **Aircraft:** To remove platform limitations, a Cessna fixed-wing manned aircraft was fitted with an SL5200 (standard 2W transmit power with TX Eigen Beamforming), connected to a pair of 3 dBi omni antennas mounted under each wing.



## TEST OPERATIONS & MEASUREMENT:

- Flight path: Northwest over Pacific Ocean towards Santa Catalina Island.
- Bi-directional IPERF stream triggered link statistics to obtain accurate MCS measurements.
- Python script recorded SNR, RSSI, Noise Levels and Interference data for post processing.
- Max distance was measured when link did not reconnect (less than 0dB) for more than 20 seconds.
- Performance results compared against Silvus' Link Budget Calculator (LBC) projections.



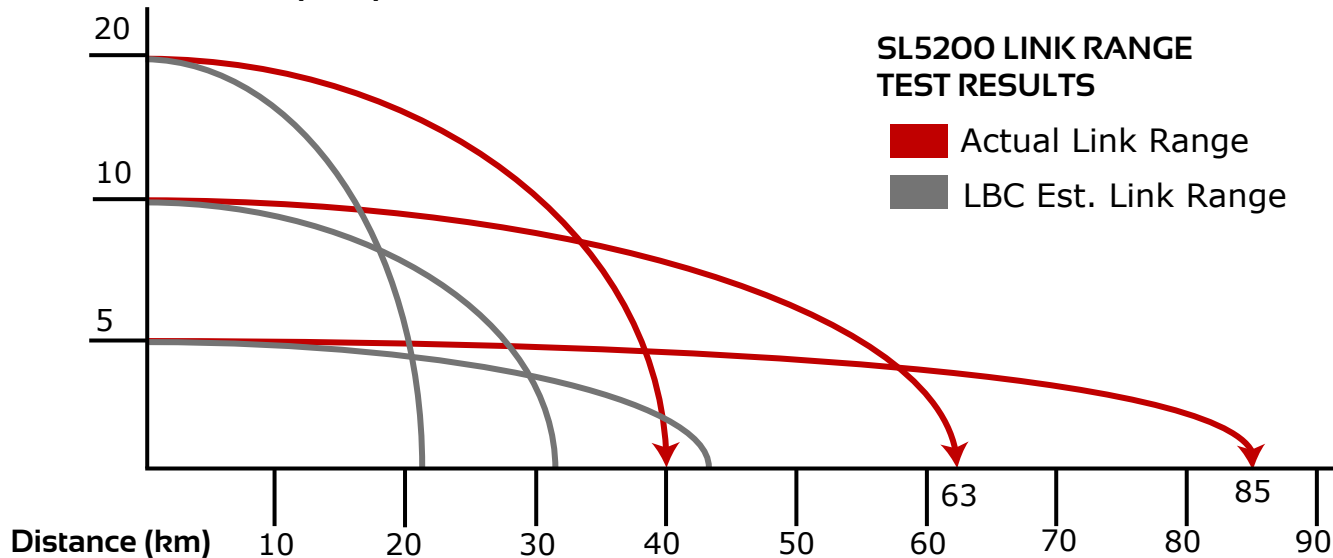
# SL5200 ACHIEVES 85 KM LINK RANGE UTILIZING OMNI ANTENNAS PUSHING THE LIMITS OF UAV OPERATIONS

## SL5200 AIR-TO-GROUND LINK RANGE TEST RESULTS

The SL5200 achieved 85 km link range utilizing omni antennas on the aircraft and at the GCS, nearly doubling the expected Air-to-Ground link range. Even when removing the standard 5db of link margin, and changing the environment to Air-to-Air, the real-world results still beat the LBC projections – proving the SL5200’s performance to extend UAV link range and multi-mission capabilities, all without the need for external amplifiers or tracking antennas.

NOTE: All tests performed in S-Band (2200-2500 MHz)

### Channel Bandwidth (MHz)



NOTE: Silvus provides its Link Budget Tool as guide to predict MN-MIMO link performance in a variety of operational use cases. In real-world environments, StreamCaster MANET radios consistently exceed its estimated performance.

## TAKE YOUR MISSION FURTHER

The SL5200 delivers long-range C2 and multi-sensor fusion – without added relays or costly tracking antennas – advancing the mission capabilities of unmanned systems:

- Increased flight range for sUAS and Loitering Munitions
- Expanded time on station for critical ISR missions
- Operate farther from the GCS for greater standoff flexibility
- Eliminate redundant comms systems

## LEARN MORE:

Compact and powerfully versatile, the SL5200 is redefining C2 and comms mesh networking for unmanned systems operating at the tactical edge.

Learn more about the StreamCaster LITE 5200 at [www.silvustechnologies.com](http://www.silvustechnologies.com) or Request a Demo to test the SL5200 for yourself, contact your Silvus Sales Representative, or email: [info@silvustechnologies.com](mailto:info@silvustechnologies.com)