Performance Optimization Guide

Doodle Labs Performance Optimization Guide: Drone at 5 to 12 km

We've developed our Doodle Labs Performance Optimization Guides to shed light on how specific Doodle Labs customers are achieving peak performance at particular ranges and use-cases. The following configuration data was provided by a Doodle Labs customer based on results achieved during real field testing. As with the use of any radio technology, unique environmental challenges may require alternative configurations to achieve similar results.

Drone description:

Boasting a flight time of 60 minutes with maximum payload and a range of 4 km, this drone is suited for surveillance & industrial inspections. The UAS is equipped with Dual GPS sensors for redundancy. Standard features such as geofencing, terrain follow, quick return to launch, and failsafe modes for communication loss, low battery, and high winds are built into the drone for safe operations.

Link Details

- **Type of System used in test**: Multi-Rotor
- **Range**: 12 km
- **Type of data and throughput at max range**: 10 Mbps
- **Topology**: Single Node Relay

- **Number of Nodes**: 3

Doodle Labs Product Details

- **Mesh Rider Radio Models**: RM-2450-2J-XM, RM-2450-2K-XW
- **Frequency Band**: 2400-2482 MHz
- **Channel Width**: 10 MHz
- **Level of encryption**: AES -128

Mesh Rider Settings (if different from default)

- **DiffServ**: Enabled
- **Socat raw UDP**: 2000 CS6
- **QGC/Mavlink UDP**: 14500 CS6
- **Mavlink UDP:** 14551 CS6
- **Transmit Power Control**: Disabled
- **DHCP**: Server
- **OGM Interval**: 100
- **Bridge Loop Avoidance**: 0
- **Ath9k_watchdog**: 5

Antenna Details

- **Antenna Gain - GCS**: 5 dBi
- **Antenna Type - GCS**: Omni
- **Antenna Gain - UAV**: 5 dBi
- **Antenna Type - UAV**: Omni
- **Tx Power**: Max

Environment

- **Location (urban, remote, etc)**: Open Field