

# Orqa **Dual-SubGHz** JR Module

Users Manual

5-Octl-2023 : Version 1.1



O R Q A



Designed and Manufactured in the EU

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## JR Module Specifications

- **Full NDAA Compliance**, designed and manufactured 100% in the EU
- Sub-GHz ghost JR transmitter with dual independent Tx chains
- Factory configurable on **each** of the two bands from **400MHz - 960MHz**
- **4W** Output power on Band 1 (Typically 915MHz)
- **2.5W** Output power on Band 2 (Typically 490MHz)
- 2nd Generation **200Hz** LoRa mode
- Standard JR module format, powered directly from the R/C Controller
- Bidirectional **MAVLINK** telemetry\*
- Twin **RP-SMA** antenna ports
- **OLED**/Joystick menu system
- **USB** upgradable firmware

\*With software release planned for Dec 2023

## Overview

The Orqa Dual-SubGHz Radio is a control system for FPV drones, designed to provide a significant level of EW resilience.

A 'JR' standard module is inserted into a compatible R/C radio, and a hybrid dual-band receiver/video transmitter is installed on the drone.



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### READ ME FIRST

<b>Antennas</b>	<p><b>DO NOT OPERATE</b> this high-power control link without suitable antennas connected. <b>DAMAGE WILL OCCUR</b> if 3W of RF is reflected back into the power amplifiers.</p> <p>When looking at the OLED side of the JR module, the <b>490MHz</b> channel is on the left side, and the <b>915MHz</b> channel is on the right side. Be sure to use the correct antennas.</p> <p><i>The OLED on the JR module will show the required antenna locations at startup.</i></p>
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<b>R/C Battery Power</b>	<p>The JR module consumes over <b>11W</b> when emitting <b>3W</b> of RF.</p> <p>Ensure that your radio can supply this amount of power, and if possible, replace the standard 18650-style 2s packs, with <b>5000mAh 21700 2s</b> packs.</p> <p>If your radio cannot supply this power level, limit power output (even with 1W output power this module will send your drone to the moon)</p>
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<b>Tx/Rx Proximity</b>	<p>Try to keep the Tx and Rx antennas at least a few meters apart when transmitting on high power. Very close proximity can cause damage to the sensitive receiver inputs.</p>
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<b>Binding</b>	<p>Binding is (currently) always performed on the primary link, which on the first units shipped is 915MHz.</p>
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<b>Radio Compatibility</b>	<p>Most of the available 'consumer' R/C radios have a problem with high power (&gt; 1W) 400-500MHz radios. Specifically:</p> <p>RadioMaster TX16s enters emergency mode and shuts down the JR module bay.</p> <p>FrSky Horus X10 generates noise on the left stick gimbal outputs. Newer radios may have these design flaws fixed, but be sure to test carefully when passing the 1W output power.</p> <p>Note that when the JR module is used remotely from the radio, cabled on a tripod for example, none of these problems exist.</p>
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## Dual-SubGHz JR Module

### Firmware Upgrade

To upgrade the firmware in the JR module, hold the joystick button while applying power to the module.

A white LED will show, with a bootloader menu on-screen.

Use the standard Ghost updater tool, **version 1.9 or later**



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