



SEMTECH®

BETA FPV



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ELRS and LoRa for FPV Drones

See how LoRa technology is changing the game for FPV drones. BETA FPV's Aquila20 HD FPV KIT uses Semtech's LoRa transceiver to achieve longer range, more reliable control, and crystal-clear HD video—even in challenging environments. Discover how this innovation is elevating the flight experience for drone enthusiasts and professionals around the world.

QUICKFACTS

Company

BETA FPV

www.betafpv.com

Customer Profile

Founded in 2017, BETA FPV has grown into a global leading micro FPV brand by delivering cutting-edge drone technology for recreational and professional use. Driven by Focus, Integrity, Quality, and Innovation, the company has made aerial exploration accessible to enthusiasts and professionals alike.

Objectives

BETA FPV develops high-definition FPV drone systems with reliable, long-range video transmission and minimal latency for both indoor and outdoor use. LoRa technology provides robust 2.4GHz communication for the remote control link, ensuring stable control in challenging RF environments and extended range beyond traditional systems.

Results

- Control range achieved with SX1281: 1000m@104kbps, TX: 50mW
- Extended flight times of 10 minutes
- Seamless operation across indoor and outdoor environments
- Low Latency: 1-20ms
- Low power consumption: RX: 60mA@5V; TX: 350mA@5V
- Telemetry RF Power: 17mW
- Adjustable Transmitter RF Power: 25mW/50mW/100mW

Products and Services

- Semtech's [LoRa Connect™](#) – SX1281



INTRODUCTION

BETAFPV's Aquila20 HD FPV KIT represents the next generation of micro FPV drones, designed for enthusiasts and professionals seeking high-definition aerial footage with exceptional flight stability. The kit features the P1 Air Unit VTX for HD video transmission, altitude hold technology for stable hovering, and 1TB recording memory for extended recording sessions. At the heart of the remote control system is Semtech's SX1281 transceiver, providing the reliable long-range connectivity essential for professional FPV operations.

CHALLENGE

The FPV drone market demanded several critical improvements:

- **Extended Range:** Traditional 2.4GHz RC systems faced range limitations and interference in dense RF environments.
- **Reliable Control:** Pilots required consistent, low-latency control for both indoor proximity flying and outdoor long-range operations.
- **Power Efficiency:** Extended 10-minute flight times required power-efficient communication systems.
- **HD Video Support:** High-definition video streaming demanded bandwidth that traditional systems struggled to support alongside control signals.
- **Interference Resistance:** Operating in the crowded 2.4GHz band required robust communication resistant to Wi-Fi and other interference.



SOLUTION

BETAFPV integrated Semtech's SX1281 2.4GHz long-range transceiver into the Aquila20 HD FPV KIT's remote control system. The SX1281's advanced LoRa modulation combined with high-speed data capabilities enabled:

- **Long-range**, reliable control link up to several kilometers
- **Low latency** command transmission for responsive flight control
- **Excellent interference** immunity in crowded RF environments
- **Low power consumption** supporting extended flight times
- **Seamless** indoor/outdoor operation with consistent performance

The P1 Air Unit VTX handles HD video transmission while the SX1281-based controller ensures precise, reliable command and control throughout the flight envelope.

BENEFITS

For BETAFPV:

- Differentiated product with superior range and reliability
- Reduced support calls related to connection issues
- Enhanced brand reputation for quality and innovation
- Competitive advantage in the micro FPV market

For End Users:

- Extended control range enabling more ambitious flight profiles
- Stable, responsive control in both indoor and outdoor environments
- Confidence in system reliability for professional applications
- Enhanced flight experience with minimal interference issues
- Longer effective flight times due to power-efficient communication



WHERE IS IT DEPLOYED AND SCALE

The Aquila20 HD FPV KIT is deployed globally across recreational and professional FPV communities. Target markets include:

- **Recreational Pilots:** Indoor and outdoor FPV flying
- **Content Creators:** Aerial cinematography and photography
- **FPV Racing:** Training and competition environments
- **Geographic Reach:** Global distribution

About Semtech

Semtech Corporation (Nasdaq: SMTC) is a high-performance semiconductor, IoT systems and cloud connectivity service provider dedicated to delivering high-quality technology solutions that enable a smarter, more connected and sustainable planet. Our global teams are committed to empowering solution architects and application developers to develop breakthrough products for the infrastructure, industrial and consumer markets.

To learn more about Semtech technology, visit us at [Semtech.com](https://www.semtech.com) or follow us on [LinkedIn](#) or [X](#).

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