

# QSight™ L/S/C-Band Boresight System



## Trust But Verify

The QSight™ system is a multi-band, high-powered, boresight RF test source. It allows an operator to verify that the receive range telemetry system is properly configured and operating as expected prior to a mission, preventing costly test failures. Quasonix is... Reinventing Telemetry™.

**Integrated Transmit Assembly (TA)** — L, S, and C bands are covered with the dual-output transmitter and the dual polarization (H and V) antenna.

**2U Rackmount Chassis** — The Controller Assembly (CA) resides on the user's network and supports a user interface via an embedded web server and the user's browser. A single cable connects the CA to the Transmit Assembly (TA).

**Data Sources from Internal Data Generators and User Supplied Data** — With data rates from 24 kbps to 46 Mbps, the QSight provides standard PN generators from the internal transmitter, including user defined patterns, as well as PCM frame assembly with programmable frame header and size; RS-422 or TTL data with clock-free operation; IRIG 218 (TMolP) stream.

**120 dB Output Power Range** — Power and polarization calibrated from -40 to +40 dBm EIRP; Operational down to -80 dBm EIRP.

**Drives Both Ports in Phase or 90° Shifted or Drives One Port, H or V** — Dual Transmitter drives Vertical and Horizontal antenna elements to produce any angle linear, or Left Hand or Right Hand circular polarization.

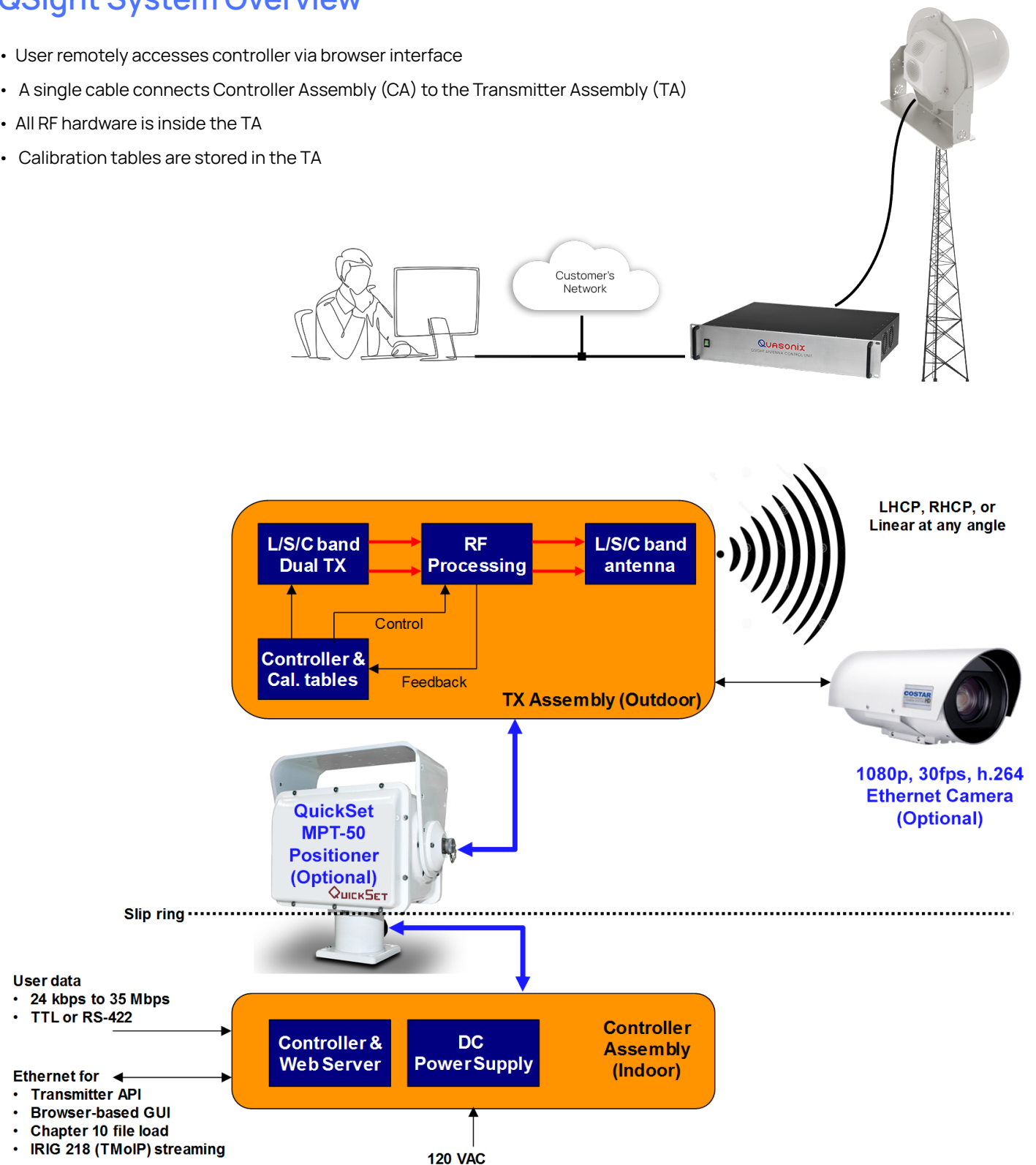
**Optional Ethernet Accessories** — Camera with Ethernet interface; positioner with Ethernet control.



2U Rackmount Controller Assembly

# QSight System Overview

- User remotely accesses controller via browser interface
- A single cable connects Controller Assembly (CA) to the Transmitter Assembly (TA)
- All RF hardware is inside the TA
- Calibration tables are stored in the TA

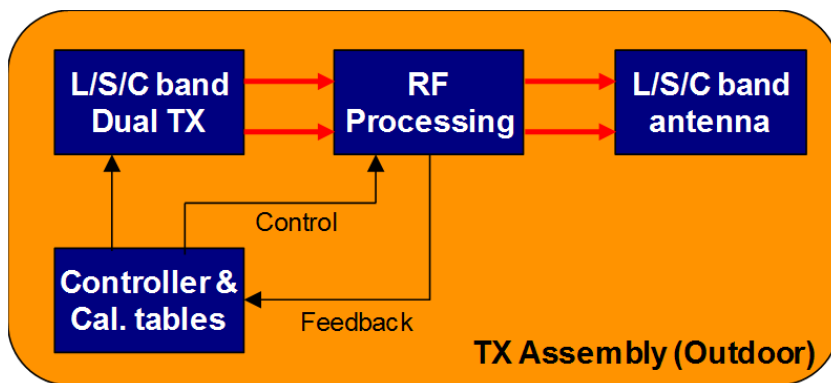


## QSight Transmit Assembly Overview

The QSight TA consists of a Quasonix dual output transmitter with up to 10 watts per output, internal or external clock and data, and all ARTM modulations. A dual- linear polarization (H & V) L/S/C band antenna with RF cables are part of the calibrated configuration.

An RF processing module enables gain and phase control.

A controller module provides calibration tables and Ethernet access to the Controller Assembly (CA).



**Contains All RF Hardware** – RF cables are part of the calibrated configuration; Dual polarization (H&V) L/S/C band antenna; RF modules for gain and polarization control; mounts outdoors, up high.

**Single Connection to the CA** – Supports user interface via an embedded web server and the user's browser; provides power to the Transmit Assembly—Ethernet, Power, and RS-422 data with just one cable! Mounts indoors in a 19-inch rack.

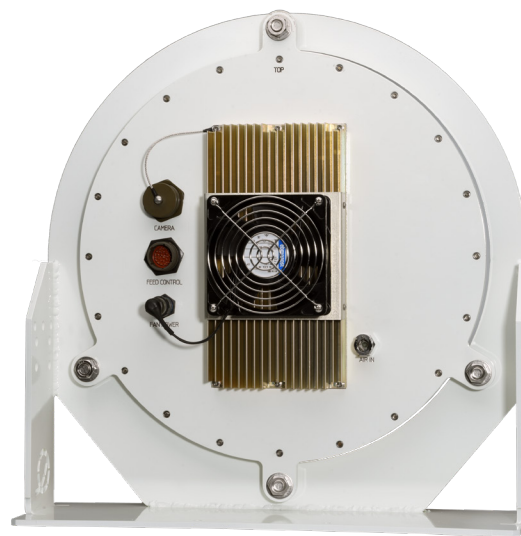
**Sealed to IP67 and NEMA-4x.**

**PoE Injector** – Supports optional HD Ethernet camera.

**Quick Disconnect for Dehydrated Air.**



Transmit Assembly—Front



Transmit Assembly—Camera, Feed Control, Fan Power (cover removed to show Fan Cooling Assembly)

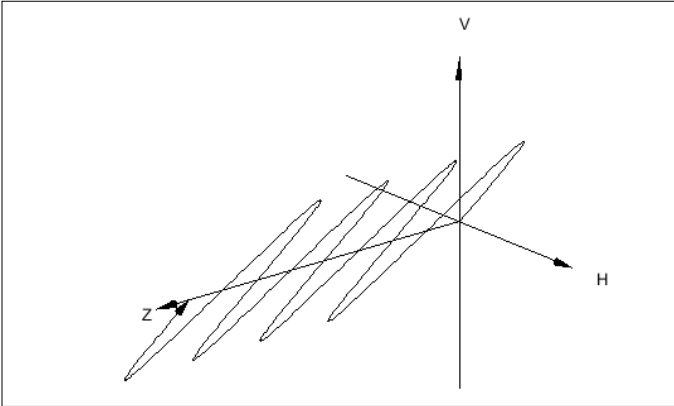
# QSight System Overview

## Drive Both Ports, In Phase

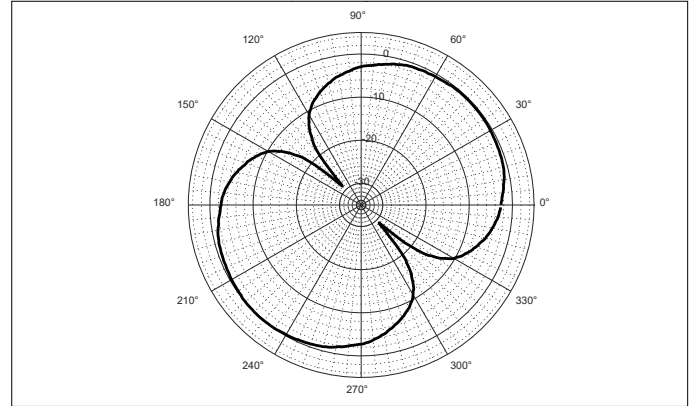
- All H = Horizontal All V = Vertical
- Other angles achieved by different H/V ratio

- Continuously varying H/V ratio yields rotating linear
- Useful for measuring axial ratio of antenna under test

Linear Output



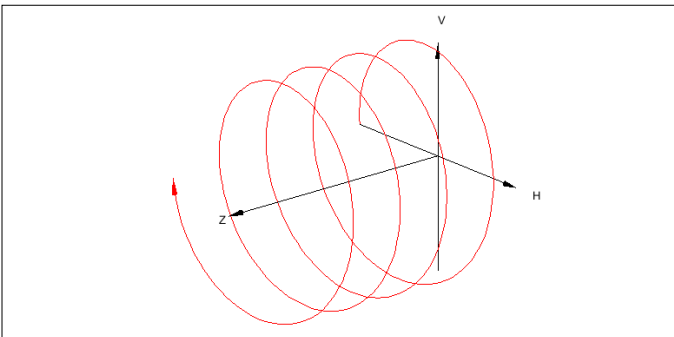
Response of Linear Receive Antenna



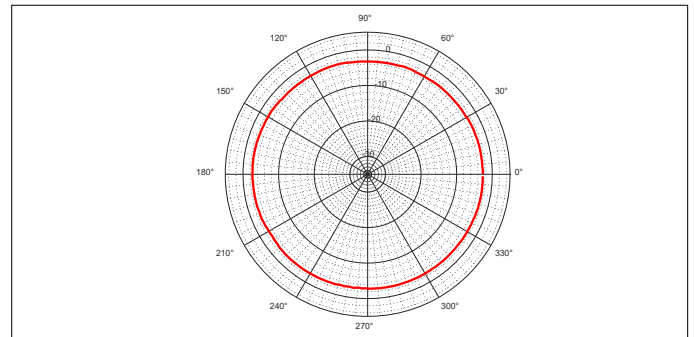
## Drive Both Ports, 90° Shifted

- Yields LHCP or RHCP, depending on which port is leading
- Enables independent testing of each channel of antenna under test

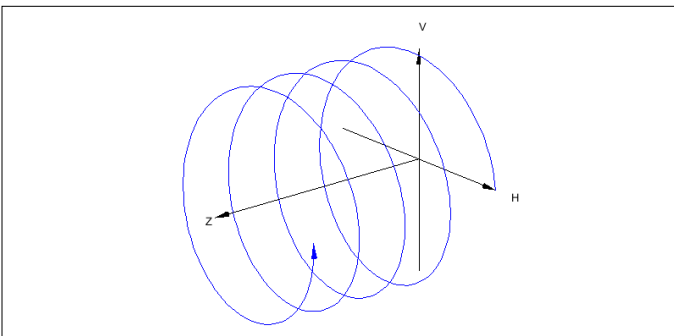
LHCP Output



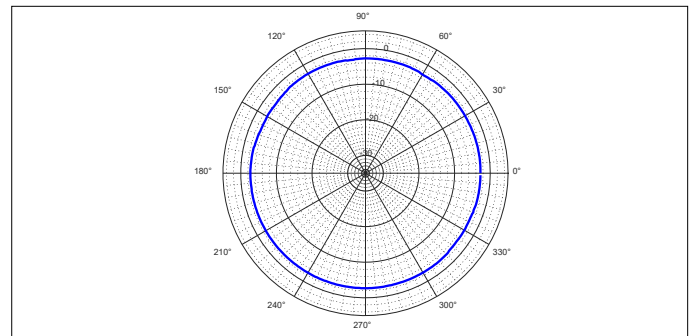
Response of Linear Receive Antenna



RHCP Output



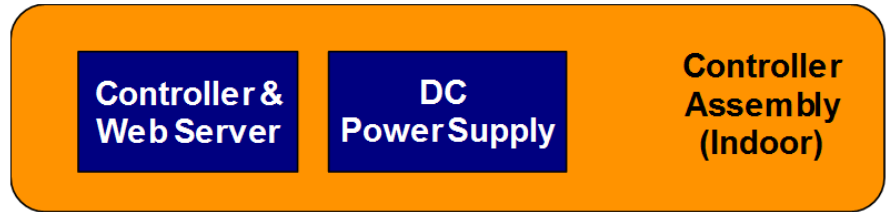
Response of Linear Receive Antenna



# QSight Controller Assembly Overview

## 2U Rackmount Chassis on User's Network

- Supports user interface via embedded web server and the user's browser
- Connects to TA via a single cable



## Controller Interfaces

- 110 VAC power Ethernet (RJ-45)
- BNC for TTL user data
- MDM-25 for RS-422 user data
- DB-9 serial port for setting IP address



2U Rackmount Chassis Controller Assembly, Rear Panel

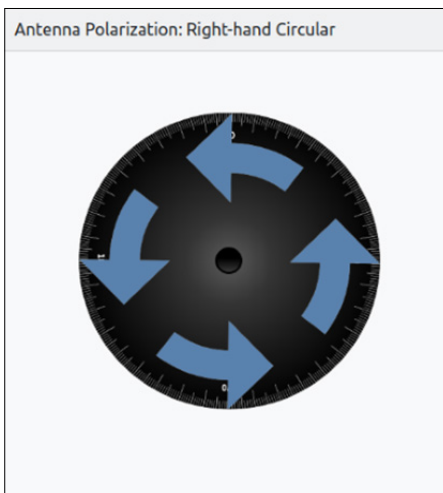
## RF Controls

**Modulation Control** – Includes Tier 0, I, and II; STC; six-code LDPC

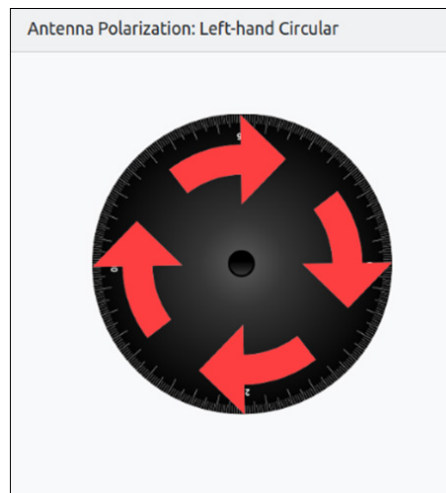
**Polarization Control** – Horizontal or vertical, RHCP or LHCP; linear at any angle or rotating linear

**80 dB of Calibrated Dynamic Range** – Calibrated at the system level, including antenna, with calibration values stored in the Transmitter Assembly

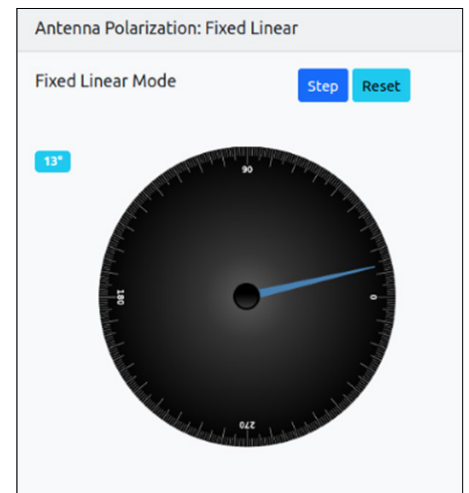
### RHCP Polarization Mode



### LHCP Polarization Mode



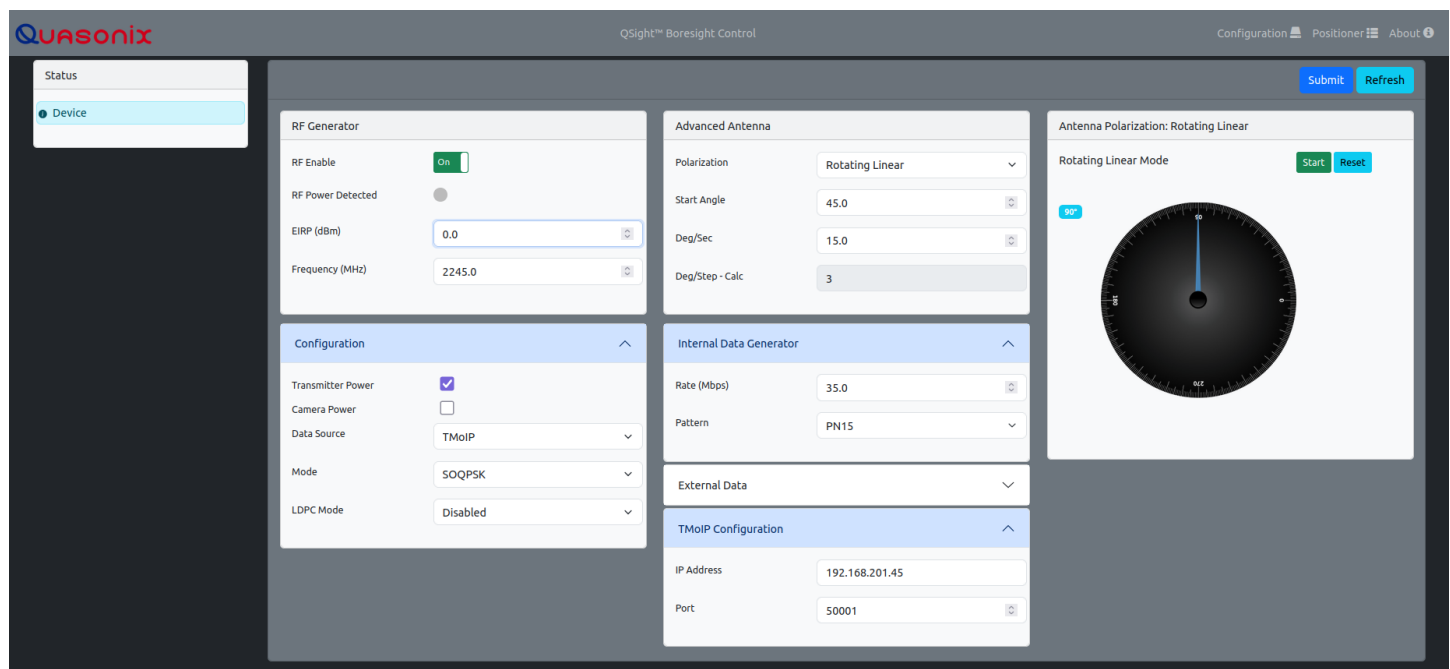
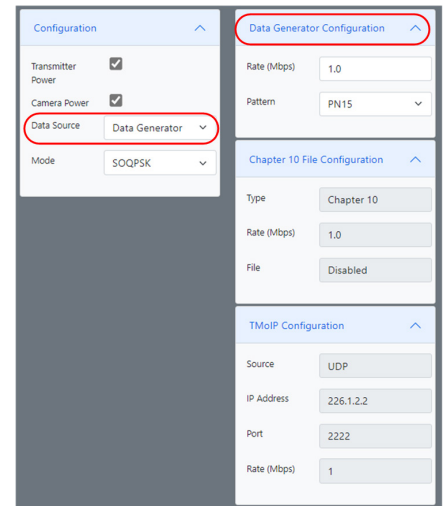
### Fixed Linear Polarization Mode



# QSight User Interface

Accessible from any browser, the QSight User Interface provides remote configuration, control, and monitoring of the system. All settings of the TA can be changed easily and quickly during testing, including frequency, modulation, power, and data rate.

Additionally, transmit waveforms and antenna patterns generated by the remote boresight unit can be set as RHCP, LHCP, or any polarization angle. The system is able to step through antenna polarization angles automatically in Rotating Linear Mode or manually in Fixed Linear Mode. Optional positioner and camera controls are also available via browser interfaces.



# QSight System Specifications

## Boresight Antenna

Performance	
Operating Frequency	1435.5-1534.5 MHz 1755.5-1849.5 MHz 2200.5-2394.5 MHz 4400.5-4939.5 MHz 5091.5-5149.5 MHz
Polarization	Any angle linear, Rotating linear, LHCP, RHCP
Axial Ratio	1 dB typical, 3 dB max (primarily in L band)
Antenna Type	Electronic amplitude and phase control
Array Size (Diameter)	13.25 inches nominal
Weight	25 lbs
Radiated EIRP Level	-40 to +40 dBm +1 dB -40 to -80 dBm uncalibrated
Antenna Beamwidth (3 dB) (nominal)	40°

Environmental	
Temperature	Operating: -30°C to +55°C Storage: -40°C to +71°C
Relative Humidity	Up to 100%, including condensation (radome protected)



## Pedestal (Optional)

### Performance

Type	Elevation/Azimuth
Backlash	$\leq 0.2$ degrees
Azimuth Velocity	$\geq 30^\circ/\text{sec}$
Azimuth Travel	360° continuous
Elevation	-20° to +90° (Software, Electrical, and Mechanical limited provided)
Elevation Velocity	12°/sec
Weight	32.5 lbs (Total weight with QSight Transmit Assembly and mounting bracket is ~73 lbs)
Power Requirements	100 to 240 VAC, 50/60 Hz

### Environmental

Operating Temperature	-30°C to +55°C
Storage Temperature	-40°C to +71°C
Relative Humidity	Up to 100%, including condensation (radome protected)
Rain	Up to 4 inches per hour

## Reinventing Telemetry™

With a razor-sharp focus on the aeronautical telemetry market and a team rich in talent, experience, and sheer determination, Quasonix is able to consistently design, develop, and manufacture what our customers regard as market-leading telemetry products.



# Quasonix

All Quasonix products are under U.S. Dept. of Commerce jurisdiction. Transmitters are categorized as EAR99.  
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