Compact high gain 5.8GHz antenna EGLE-64C-1R

Flat circular polarized 5.0GHz – 6.2GHz 19dBi gain antenna

FEATURES:

- High gain 19dBi
- Broadband operation (5GHz-6.2GHz)
- Right-handed circular polarization RHCP (EGLE-64C-1L for LHCP)
- Small size factor 220 mm x 220 mm x 18.2 mm
- Ideal for FPV drones, repeaters, ground stations and long-distance communications

GLE-64C-1R designed for long range communications over broad frequency range

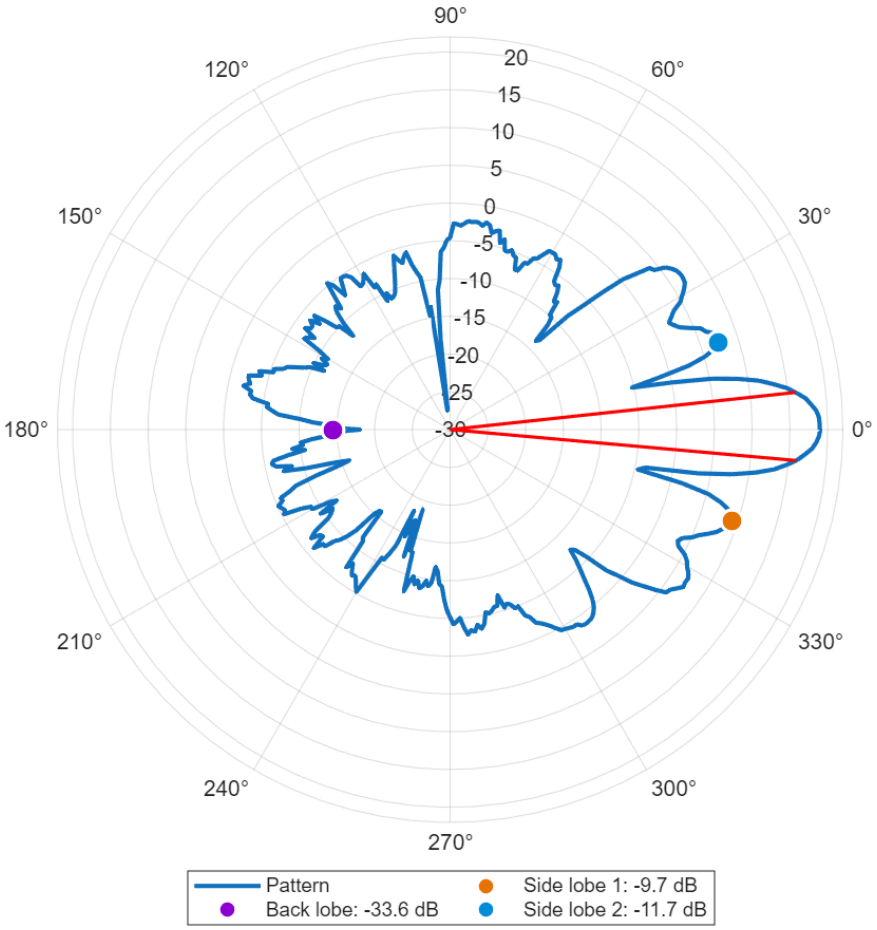
High gain right hand polarization planar antenna for UAV or general signal transmission over long distance. RHCP polarization (EGLE-64C-1L also available for LHCP polarization). Circular polarization reduces multipath and reflections from conductive objects, while high gain reduces interferences from other than main direction.

Main specifications:

Frequency of operation:	**5 GHz – 6.2 GHz**
Antenna gain:	19 dBi @ 5.8GHz (gain for various frequencies provided in the table below)
Polarization:	RHCP (Right handed circular polarization)
Impedance:	50 Ω
Half power beamwidth:	22.3 deg
VSWR:	< 2
S11:	< -10 dB
Side lobe level:	-9.7 dB
Back lobe level:	< -30 dB
Fixing:	M6 screw or Tripod mount (1/4 inch) on demand
Dimmensions:	220mm x 220mm x 18.2mm + cable
Input power:	-
Weight:	370 g
Connector:	SMA male connector, gold-plated, 150mm cable length

Antenna radiation patterns:

5800MHz



5.0 GHz

Max direction : 1.0°
Viewing angle (-3dB): 13.8°
Back lobe (181.0°) : -26.19 dB rel.
Side lobe 1 (321.0°) : -9.60 dB rel.
Side lobe 2 (39.0°) : -10.00 dB rel.

5.2 GHz

Max direction : -1.0°
Viewing angle (-3dB): 14.0°
Back lobe (179.0°) : -16.17 dB rel.
Side lobe 1 (21.0°) : -11.29 dB rel.
Side lobe 2 (39.0°) : -12.81 dB rel.

5.4 GHz

Max direction : 0.0°
Viewing angle (-3dB): 12.6°
Back lobe (180.0°) : -16.76 dB rel.
Side lobe 1 (325.0°) : -11.08 dB rel.
Side lobe 2 (341.0°) : -11.66 dB rel.

5.6 GHz

Max direction : -1.0°
Viewing angle (-3dB): 12.3°
Back lobe (179.0°) : -27.98 dB rel.
Side lobe 1 (35.0°) : -8.96 dB rel.
Side lobe 2 (18.0°) : -10.41 dB rel.

5.8 GHz

Max direction : 0.0°
Viewing angle (-3dB): 11.2°
Back lobe (180.0°) : -33.55 dB rel.
Side lobe 1 (342.0°) : -9.70 dB rel.
Side lobe 2 (18.0°) : -11.73 dB rel.

6.0 GHz

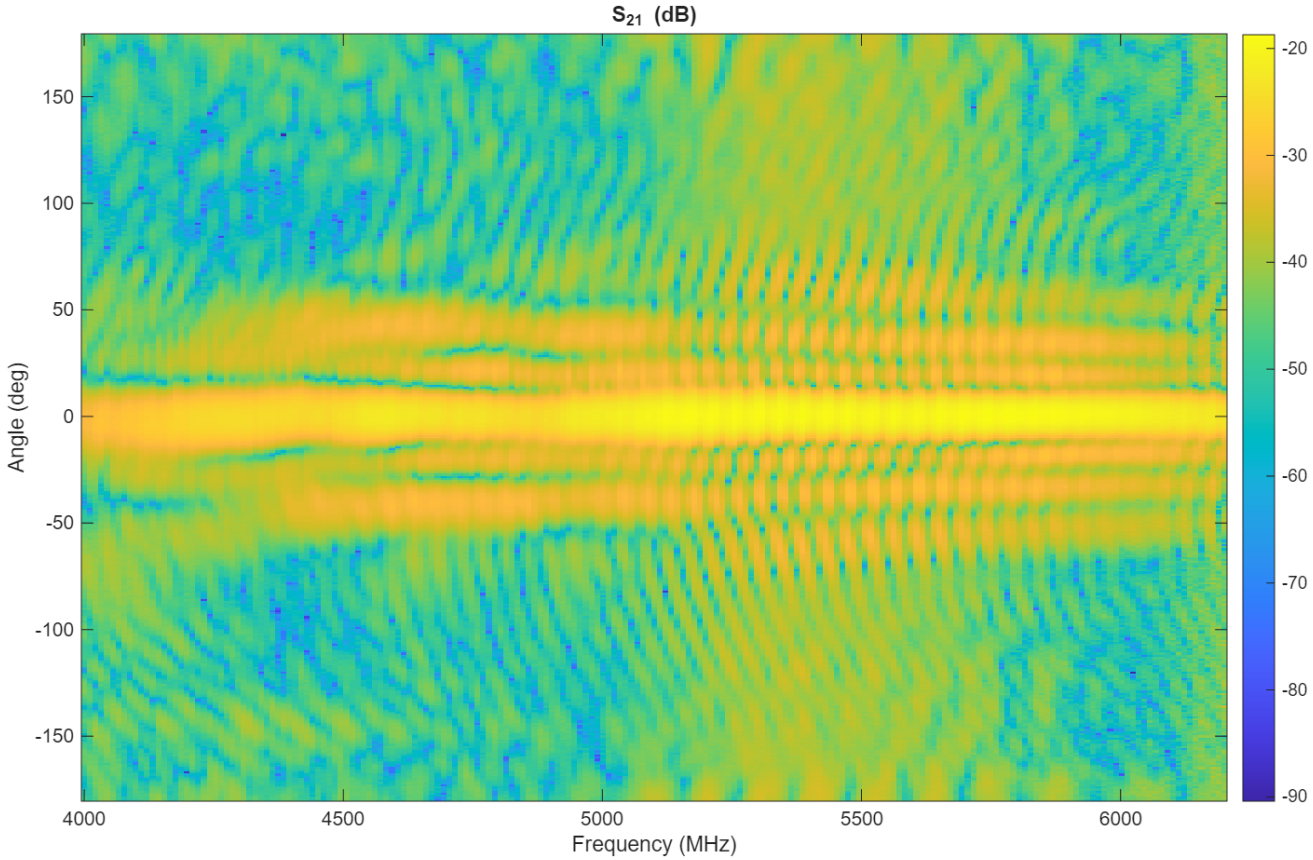
Max direction : 0.0°
Viewing angle (-3dB): 11.3°
Back lobe (180.0°) : -25.47 dB rel.
Side lobe 1 (344.0°) : -9.74 dB rel.
Side lobe 2 (19.0°) : -11.98 dB rel.

6.2 GHz

Max direction : -1.0°
Viewing angle (-3dB): 11.2°
Back lobe (179.0°) : -20.08 dB rel.
Side lobe 1 (343.0°) : -9.27 dB rel.
Side lobe 2 (19.0°) : -10.71 dB rel.

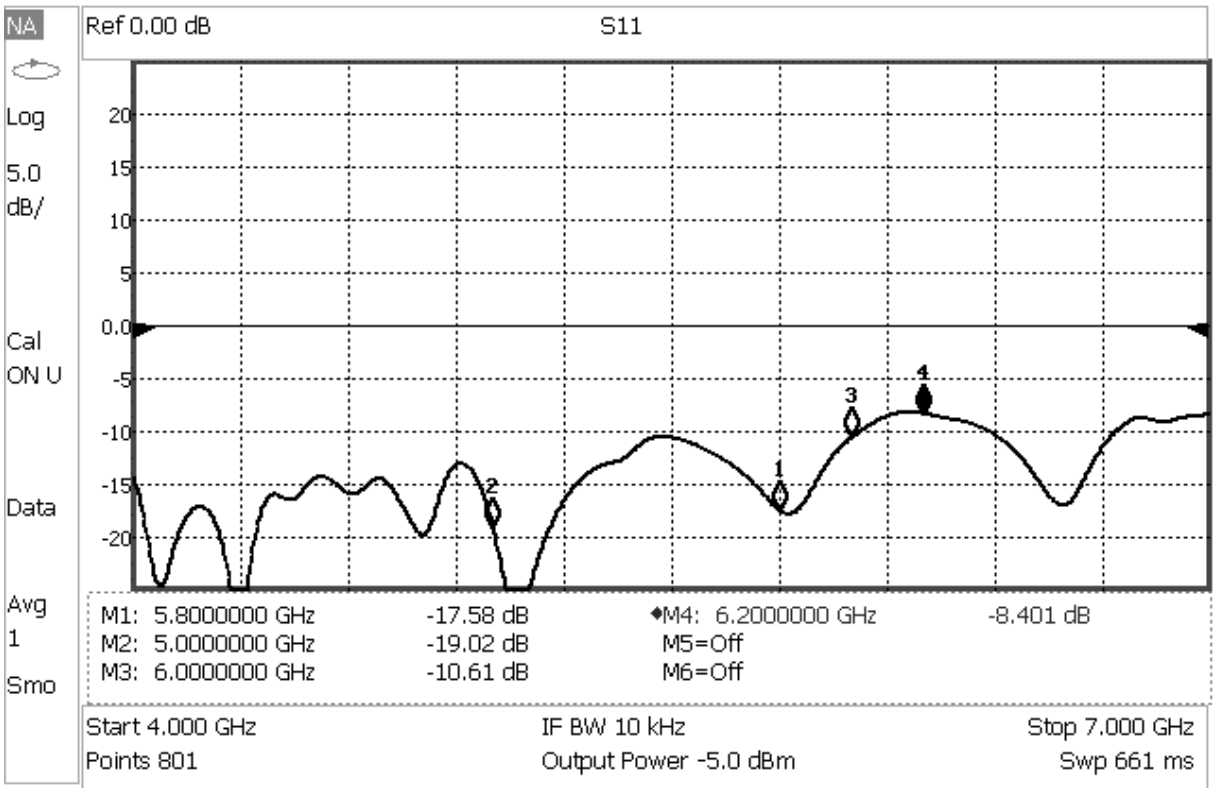
*Note: sidelobes and backlobe level are relative level to antenna maximum

Antenna radiation pattern vs frequency:

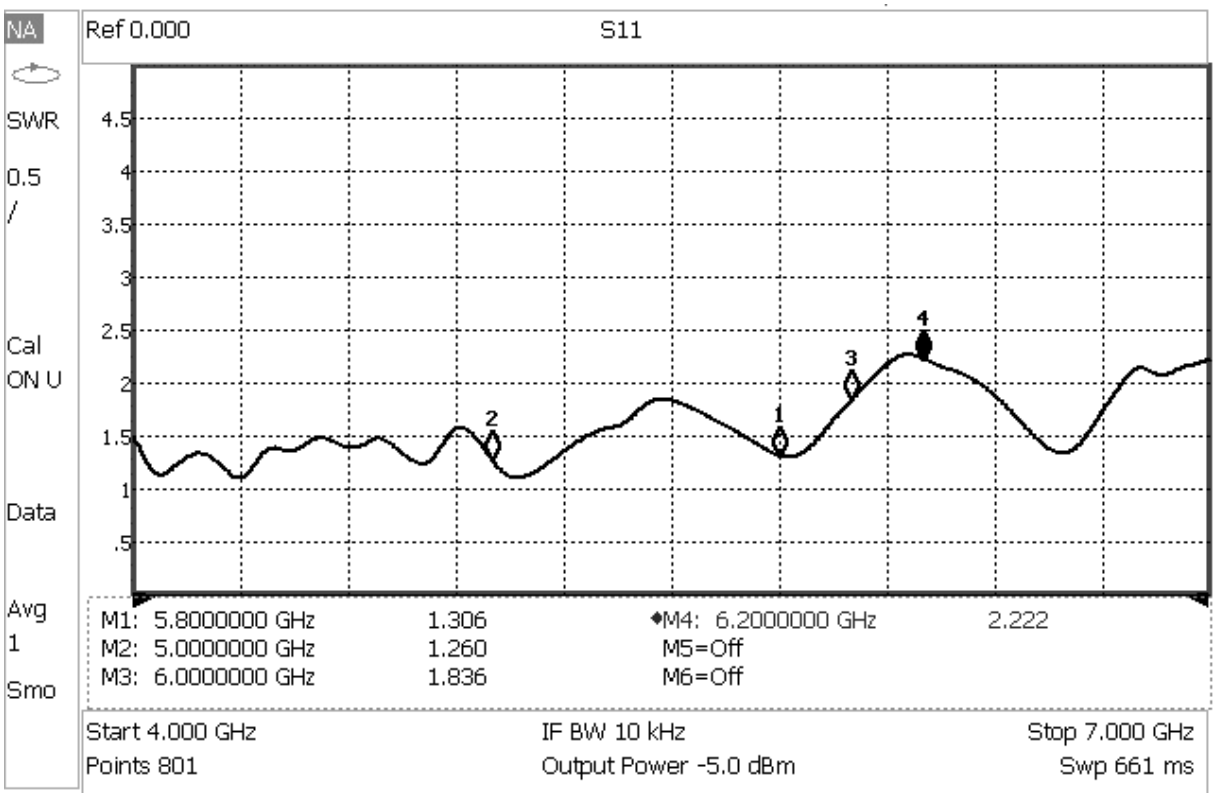


Impedance matching:

S11, dB:

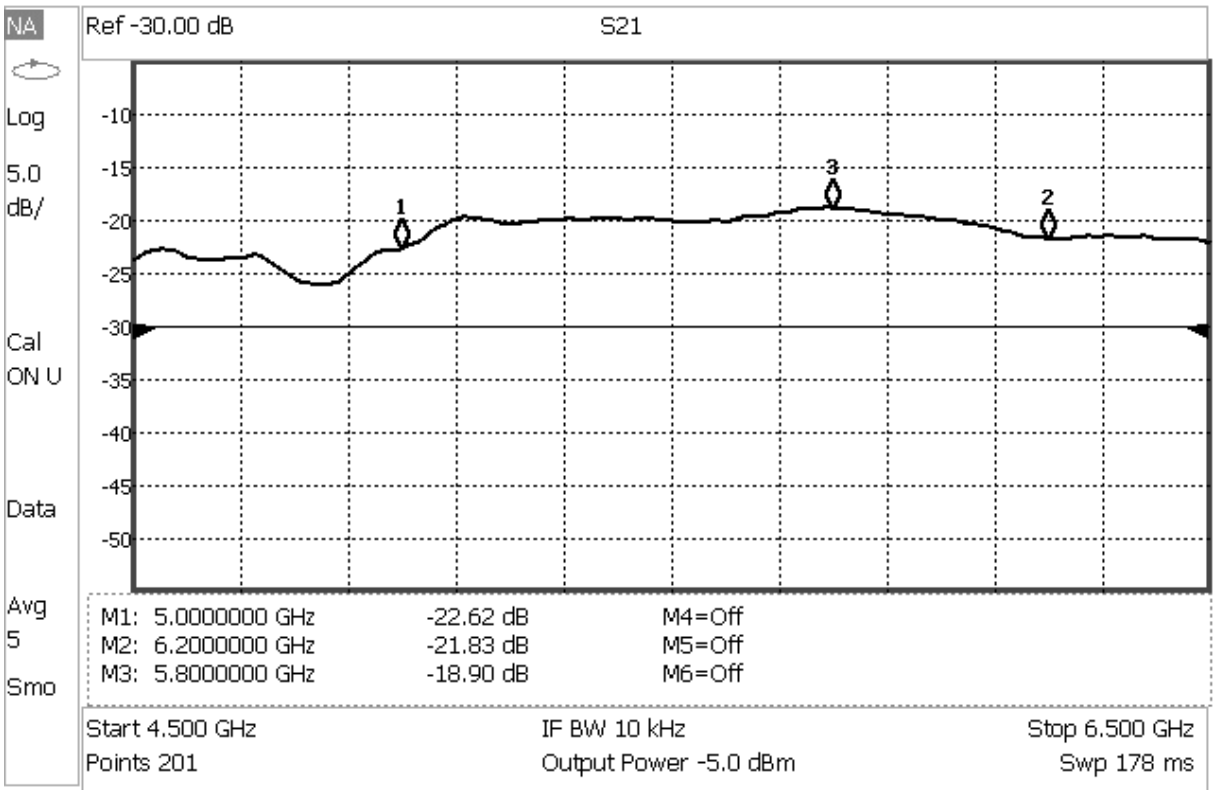


VSWR:

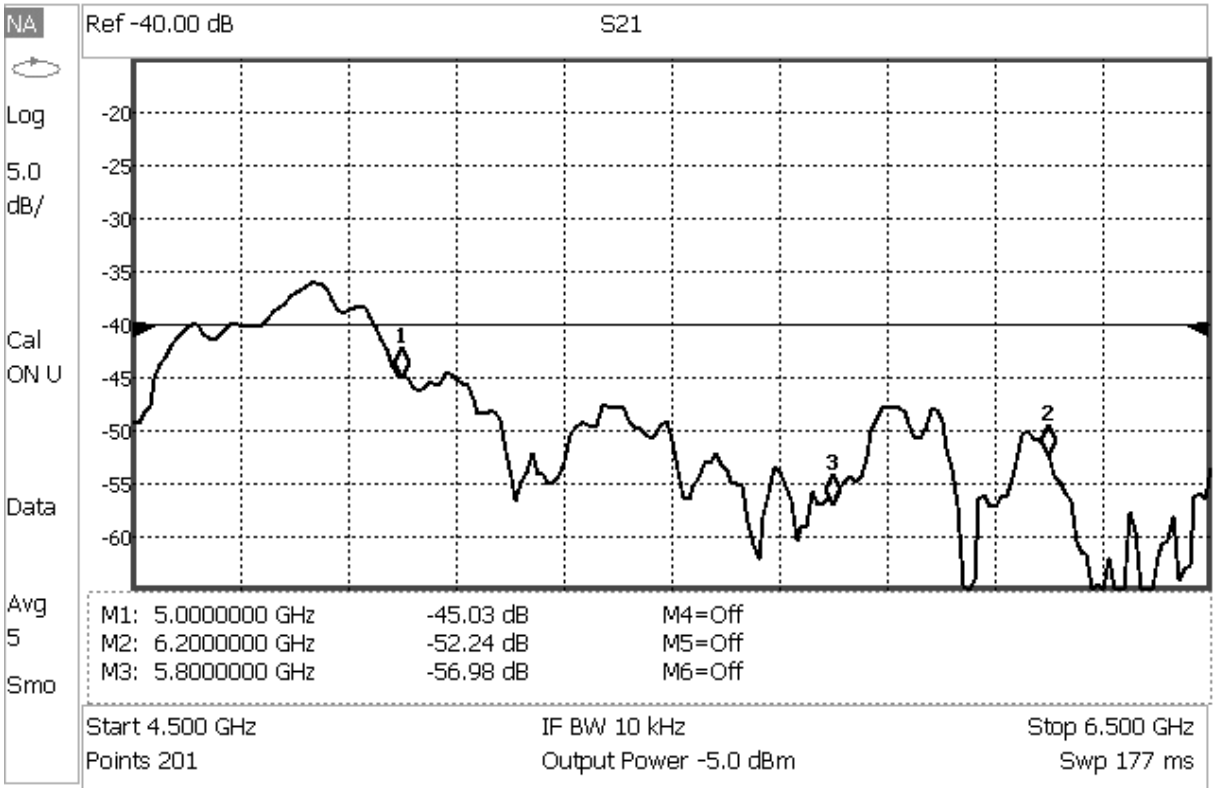


Path loss 3m distance:

TX: EGLE-64C-1R, RX: EGLE-64C-1R

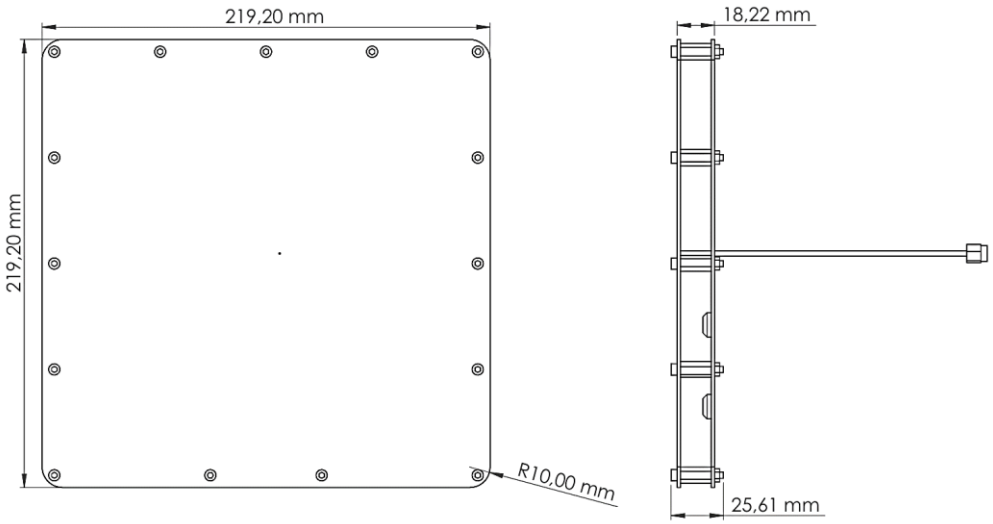


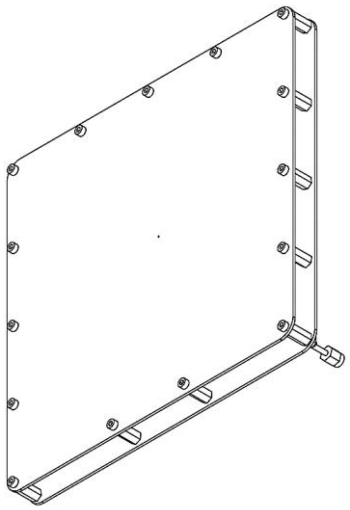
Opposite polarization rejection: (TX: EGLE-64C-1R, RX: EGLE-64C-1L)



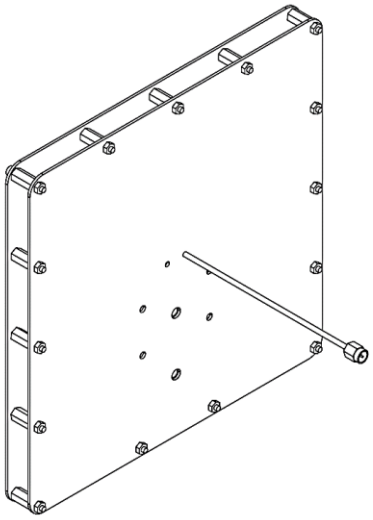
Drawings:

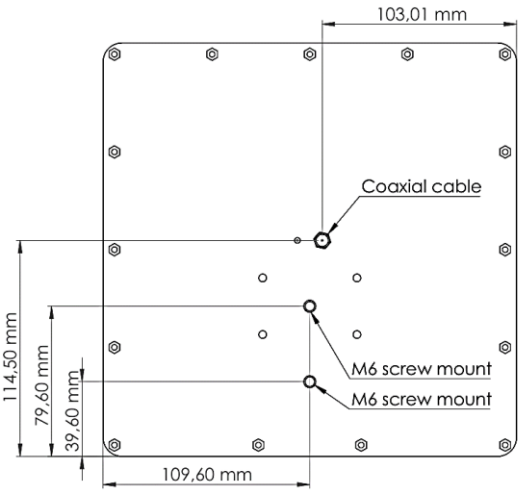
Front side:





Back side:





Photos of the product:

Front:

TBD

Side:

TBD

Back:

TBD

Mounting:

TBD

FAQ

Why circular polarization?

Linearly polarized antennas primarily operate in a single plane and are best suited for stationary applications. However, moving objects such as UAVs rotate in various directions, which can lead to signal loss due to polarization mismatch. Circularly polarized antennas can receive signals regardless of orientation, enabling reliable communication even when the transmitter or receiver is rotating.

Why does antenna gain matter?

Omnidirectional antennas radiate equally in all directions. To increase communication range, two key factors are crucial: transmitter power and antenna gain. Transmitter power is often limited by factors such as device size, heat dissipation, and efficiency. Additionally, industry regulations restrict radiation power to minimize interference with nearby electronic devices.

In contrast, a higher-gain antenna can extend communication distance by focusing the radiation pattern in a specific direction while maintaining the same transmitter power.

Why does opposite polarization rejection improves antenna performance?

An antenna with strong opposite polarization rejection can effectively suppress interference from nearby equipment operating with an opposite polarization. Additionally, it helps reduce multipath effects by minimizing the reception of reflected signals from metallic or conductive surfaces, resulting in improved signal clarity and overall communication reliability. Example: When the primary system operates using right-hand circular (RH) polarization, an additional system using left-hand circular (LH) polarization can function in the same environment without interfering with each other’s signals. This is possible because the opposite polarizations are naturally isolated, allowing both links to coexist with minimal cross-interference.

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