

Compact Right Hand Circularly Polarized Antenna

Part No. RT-CP3-QL-XXX-YYY-ZZZ

Version 0.92

FEATURES

- Tri-filar configuration
- 65% radiation efficiency
- Right Hand Circular Polarization
- 110° wide beamwidth radiation pattern
- Frequency: 868, 915 or 923 MHz
- UFL coaxial cable
- 73 x 73 x 12 (mm) compact size

APPLICATIONS

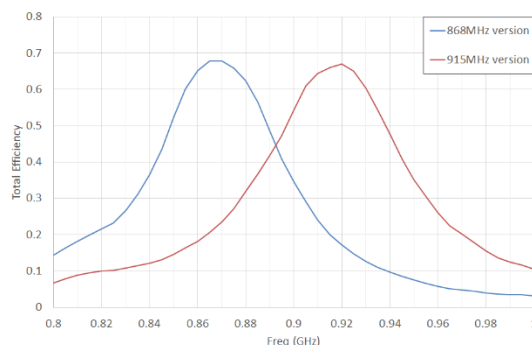
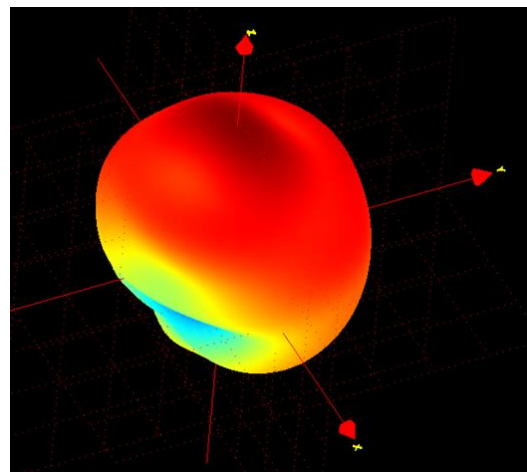
- Satellite communication
- RFID Reader
- LP-WAN device
- UHF Gateway

TECHNICAL SUPPORT

RFThings Solutions

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3. Description:

This antenna has been designed for radiating Right Hand Circular Polarization (RHCP) in the UHF band with an ultra-small form factor. The antenna provides a 110° wide beam angle RHCP radiation. A of 3 dBic peak gain is obtained in the broadside direction. The antenna is connected through a flexible cable. The structure can be ordered for 3 different frequency bands : 868, 915 or 923 MHz. The antenna is connected through a 100mm flexible cable using a UFL connector. Any custom cable length or connector type is possible upon request.

4. Applications:

The primary application of this antenna is LP-WAN communication with low-orbital satellite. This antenna has been successfully tested with the Lacuna™ network which operates at in the 865 and 915MHz bands.

This antenna can also be used for RFID reader application.

Circular polarization is also an advantageous feature for communication with linear antenna. Indeed, classical alignment mismatch is naturally compensated. In a multi-path channel as it is classically found in urban or indoor application, CP will statistically provide a better robustness for communication.

3. Part Number

RT-CP3-QL-XXX-Y-ZZZ

Note.

-XXX refers to frequency option:

-Y refers to connection option: U for UFL and S for SMA

-ZZZ refers to cable length (MM) option:

Part Number	Freq (MHz)	Cable length
RT-CP3-QL-868-U-100	868	100mm
RT-CP3-QL-915-U-100	915	100mm
RT-CP3-QL-923-U-100	923	100mm

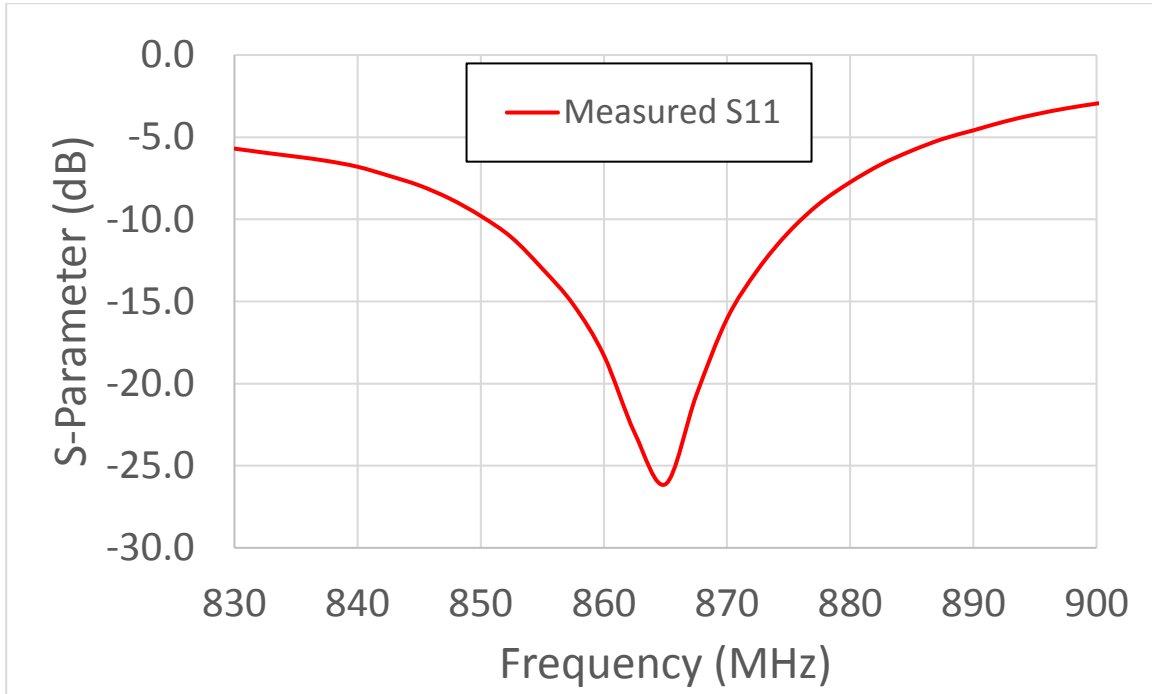
4. General Data

Parameter	Value	Comments
Polarization	RHCP	
Operating temperature	-40°C to +85°C	
Characteristic Impedance	50 ohm	
Weight	< 20g	
Dimensions (Antenna)	73*73*12 (mm)	
Connection	UFL	
Mounting holes	M2	

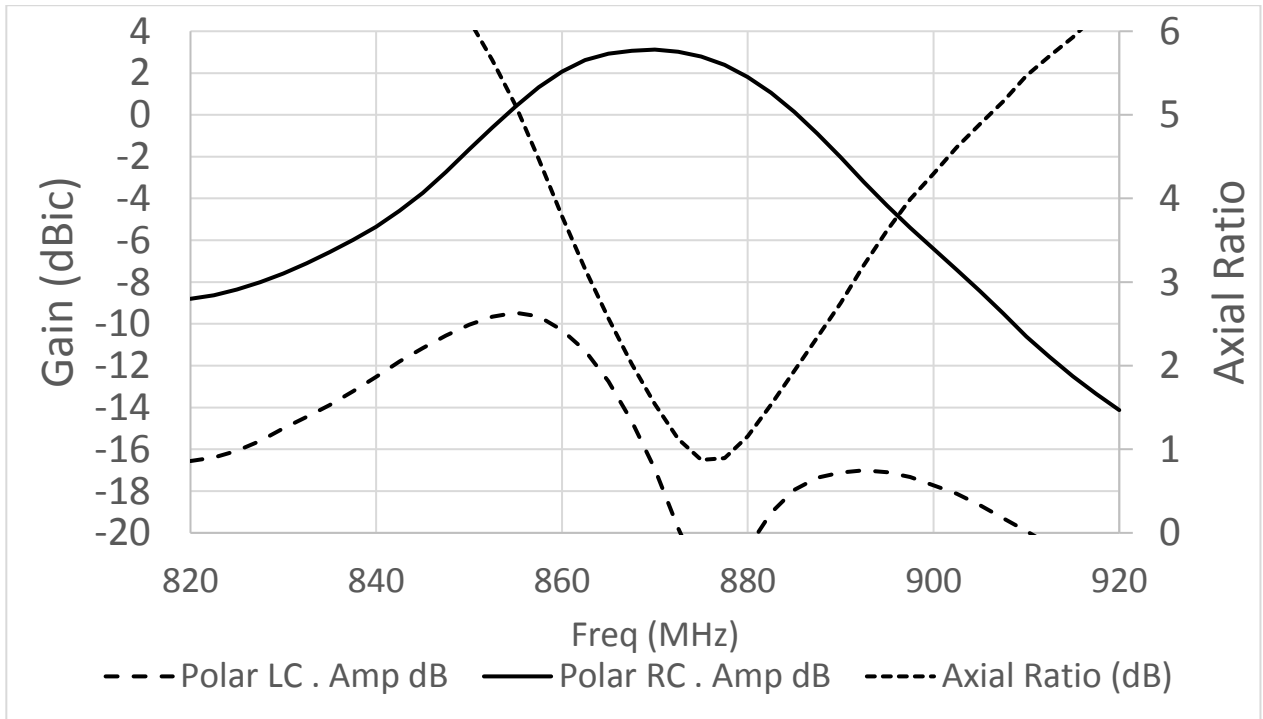
5. RF Characteristics

Parameter	862-868MHz	915MHz
Peak Gain (dBic)	> 2.7 dBic	> 2.7 dBic
Average Gain (dBi)	-1.8dB	-1.8dB
Total Efficiency	>65%	>65%
Axial Ratio	< 2 dB	< 2 dB
Reflection coefficient	< -10dB	< -10dB
Max VSWR	< 2.0	< 2.0

6. RF Performance

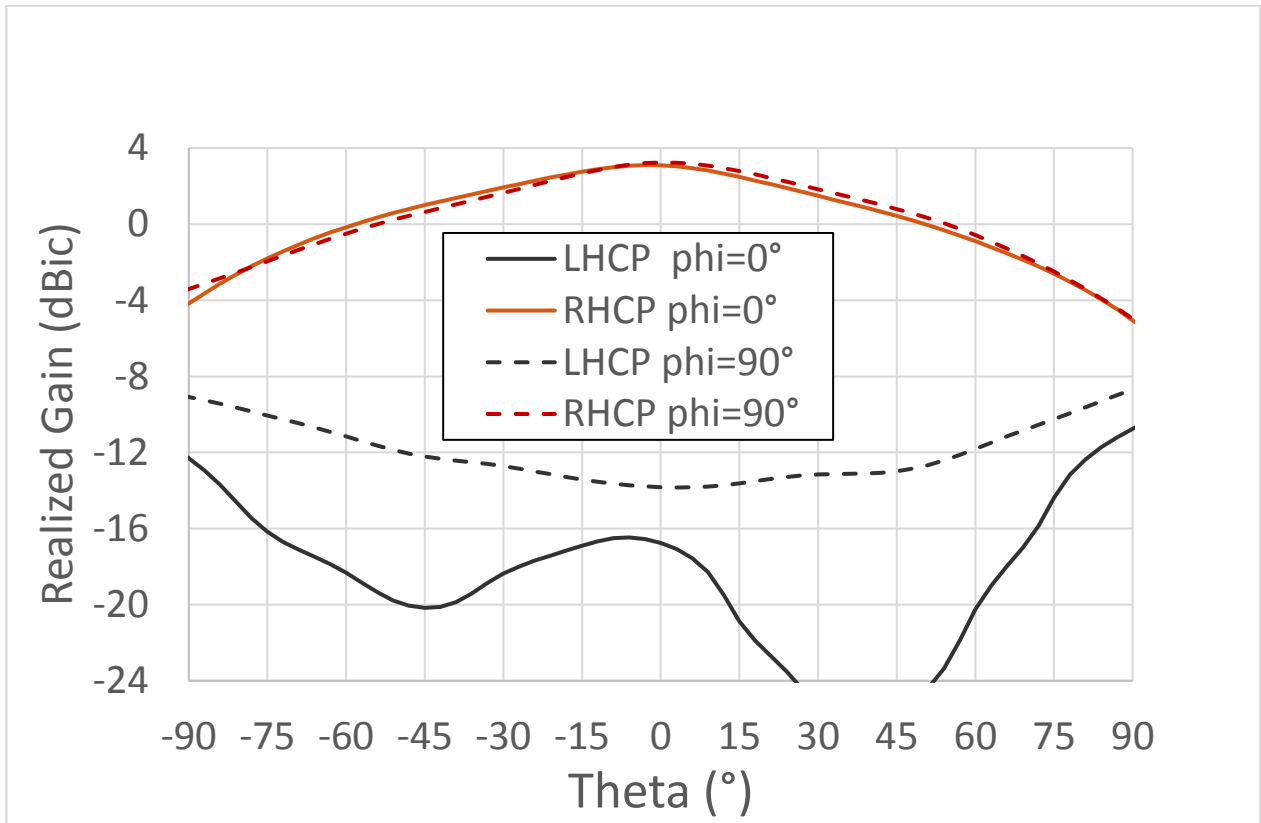


Simulated and Measured Reflection coefficient for 868MHz version

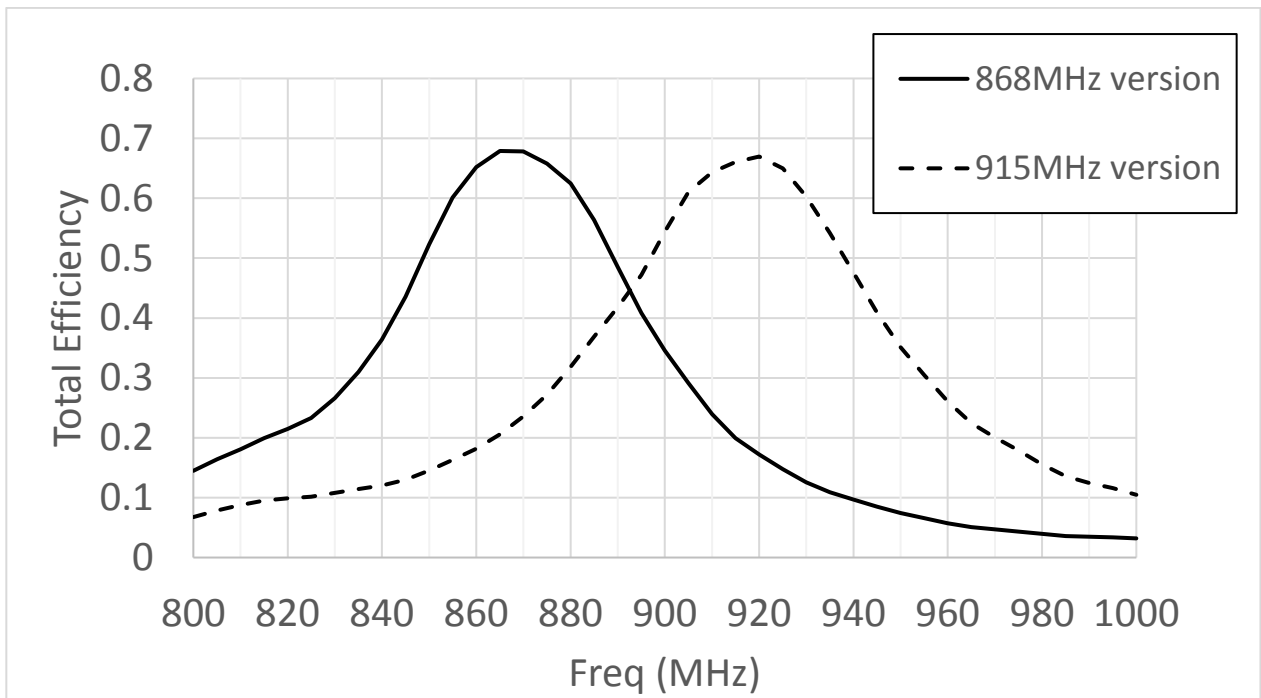


Measured Total Efficiency, Peak Realized Gain in dBic and Axial Ratio for 868MHz version

8. Antenna radiation pattern

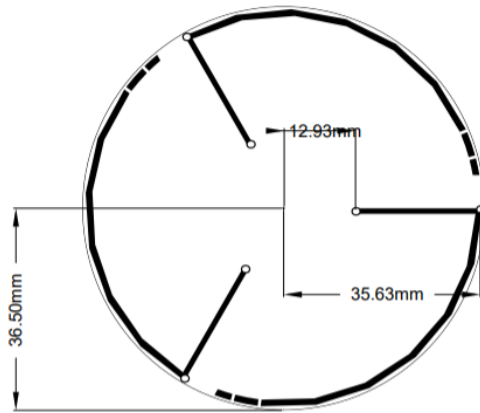


Measured LHCP Realized Gain and RHCP Realized Gain at phi=0° and phi =90° at 868MHz

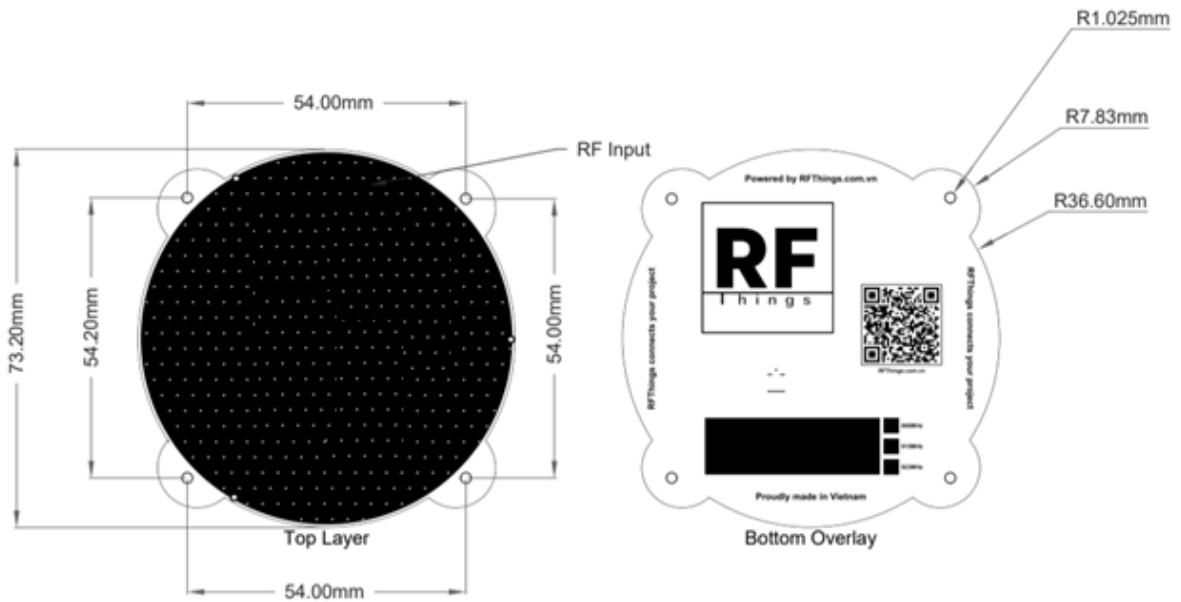


Measured total Efficiency for 868MHz and 915MHz version

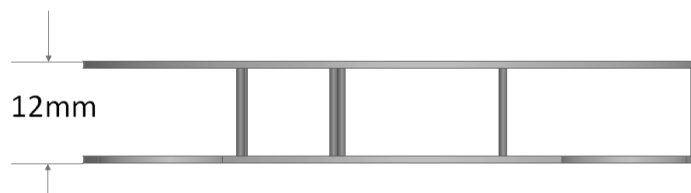
9. Antenna dimensions



Top antenna view



Bottom antenna view



Side antenna view

10. Antenna integration

This antenna has been optimized to be integrated 10mm above a metallic ground plane without any dielectric radome in the close proximity. Any integration with dielectric and metallic material in close proximity may have large influence on the antenna performance. For any question regarding the antenna integration, please contact us at : rfthings.vietnam@gmail.com

For large quantity, customization of the RF performance, form factor or silk design is possible upon request.