

u-blox PCB trace antenna

Features

- +3 dBi gain
- Integrated into the module PCB
- 50 Ω impedance
- L x W: 8.2 x 3.2 mm
- RoHS Compliant

Applications

- 2.4 GHz ISM band systems



1 Introduction

The “u-blox PCB trace antenna” works on WiFi, Bluetooth, Zigbee and ISM band at 2.4 GHz. This antenna is created with antenna technology licensed by Abracon. It is integrated into the module PCB.

2 Specifications

As the antenna is integrated into the module PCB, the antenna performance is verified with the specific module where the PCB trace antenna is integrated on. In the case it concerns, the measurement was conducted for a NINA-B506 module mounted on its evaluation board with Rohde & Schwarz DST200 RF diagnostic chamber test system.

The measurements are taken ‘in circles’, aligned around the z-axis with the u-blox PCB trace antenna transmitting 0 dBm output power. The circles are separated by θ° , the elevation step size configured via software, EMC32. All measurement points along the circles are separated by φ° , whatever the azimuth step size is set to be.

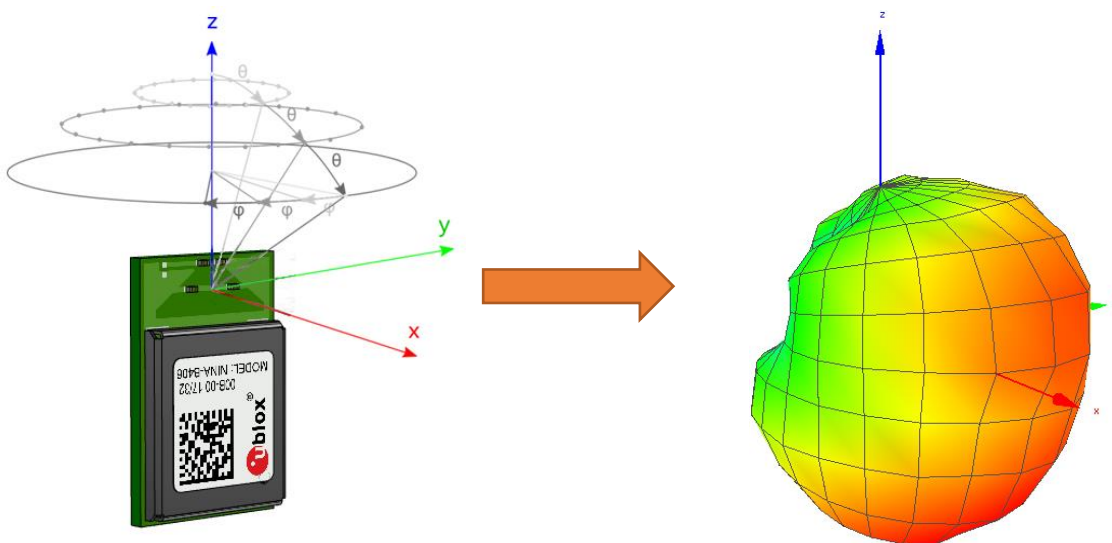
2.1 Antenna gain

The gain of the antenna in its optimal direction, as shown in the following table, is +3 dBi.

| Frequency Range (MHz) | Peak gain (dBi) | Impedance |
|-----------------------|--|-------------|
| 2402 -2480 | +3.0 (Azimuth 300 deg and Elevation 15 deg) | 50 Ω |

2.2 Radiation pattern

The below picture describes how the NINA-B506 module is aligned to the XYZ-coordinate system. The radiation patterns in the following table show the relative output power of a NINA-B506 module equipped with the u-blox PCB trace antenna transmitting at 0 dBm output power. Both horizontal and vertical antenna polarizations are shown, as well as the total of both.

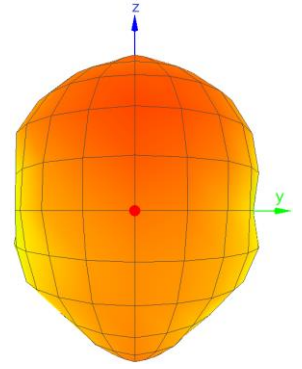
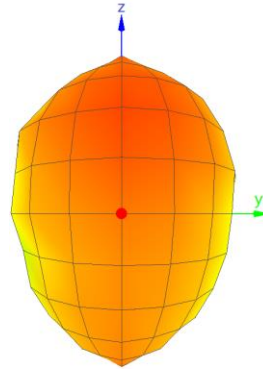
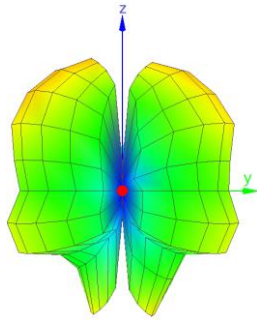


| View | Vertical polarization | Horizontal polarization | Total (Vertical + Horizontal) |
|------|-----------------------|-------------------------|-------------------------------|
|------|-----------------------|-------------------------|-------------------------------|

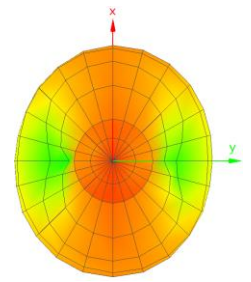
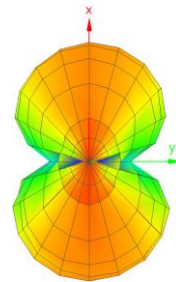
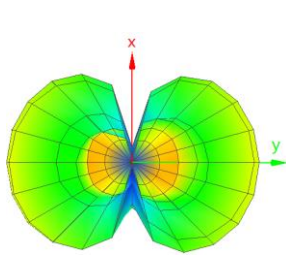
Antenna Gain (dBi)

-25 -20 -15 -10 -5 0 5

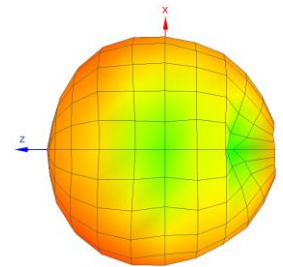
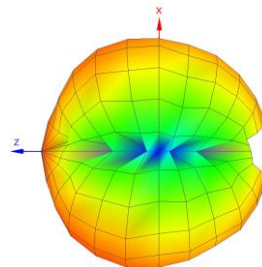
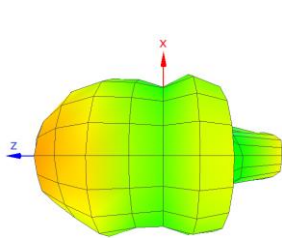
Top view, YZ plane
positive X direction



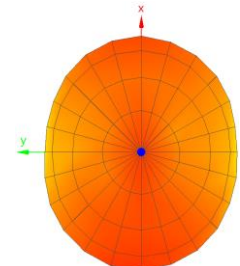
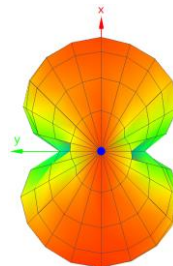
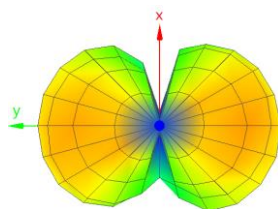
Side view, XY plane
negative Z direction

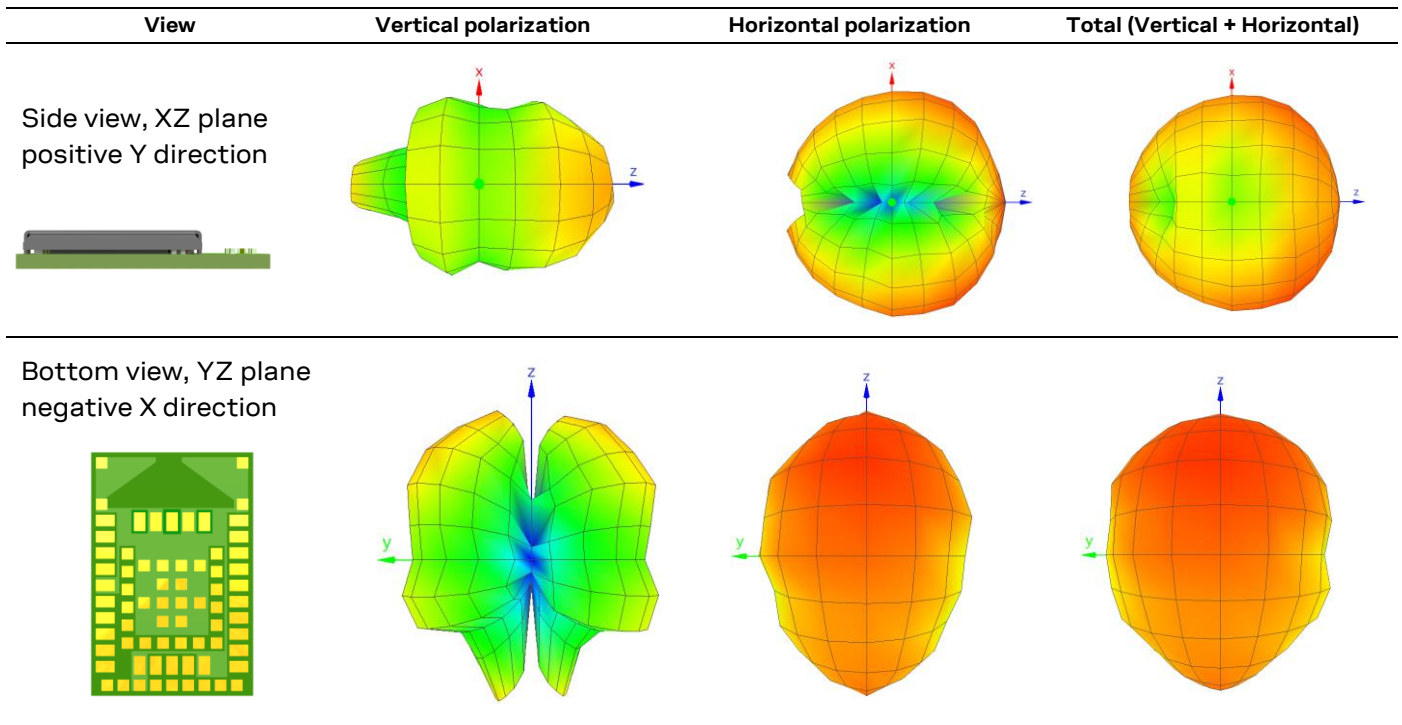


Side view, XZ plane
negative Y direction



Side view, XY plane
positive Z direction





3 Test equipment used for measurement

| Equipment Name | Description | Manufacturer | Last calibration |
|-----------------------|---|-----------------|------------------|
| DST200 chamber | RF diagnostic chamber test system | Rohde & Schwarz | N/A |
| FSW Spectrum Analyzer | Signal and spectrum analyzer | Rohde & Schwarz | Aug/2020 |
| DST-B215 antenna | 4 W, Dual Linear Polarized Antenna from 0.4 GHz to 18 GHz | Rohde & Schwarz | N/A |

4 Dates

| | |
|--------------|------------|
| Date of test | 21/11/2023 |
|--------------|------------|