u-blox dual-band PCB trace antenna

Features

- Gain: 1.74 dBi @ 2.4 GHz and 1.63 dBi @ 5 GHz
- Integrated into the module PCB
- 50 Ω impedance
- L x W: 8.2 x 3.2 mm
- RoHS Compliant

Applications

- 2.4 GHz and 5 GHz ISM band systems

1 Introduction

The “u-blox dual-band PCB trace antenna” works on WiFi, Bluetooth, Zigbee ISM band at both 2.4 GHz and 5 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 dual-band PCB trace antenna is integrated on. In the case it concerns, the measurement was conducted for an IRIS-W106 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 dual-band 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.

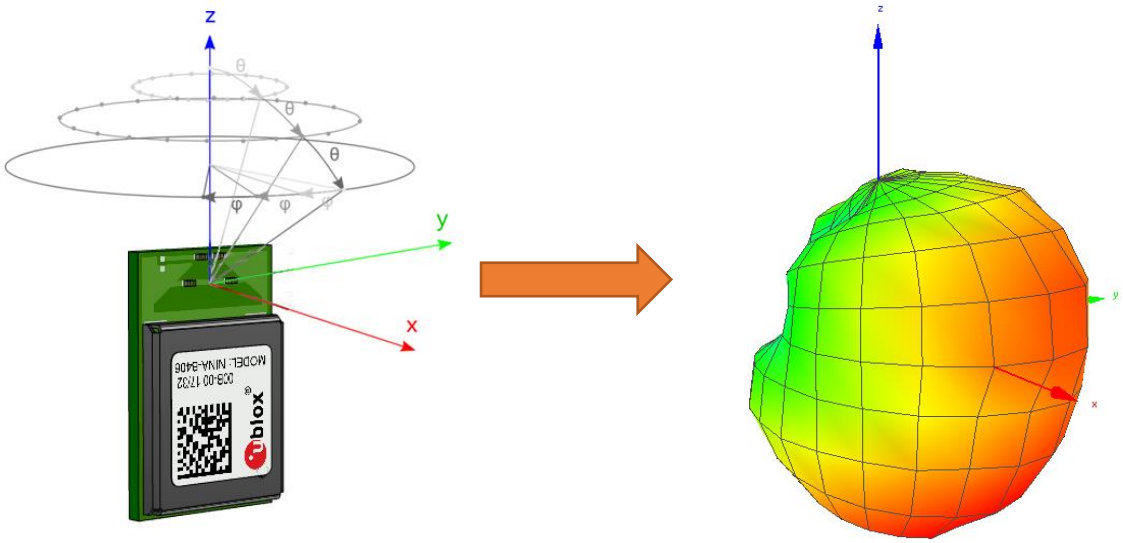
2.1 Antenna gain

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	+1.74 (Azimuth 300 deg and Elevation 0 deg)	50 Ω
5180 - 5865	+1.63 (Azimuth 240 deg and Elevation 75 deg)	50 Ω

2.2 Radiation pattern

The below picture describes how the IRIS-W106 module is aligned to the XYZ-coordinate system.



The radiation patterns in the following pictures show the relative output power of an IRIS-W106 module equipped with the u-blox dual-band PCB trace antenna transmitting at 0 dBm output power, for both 2.4 GHz and 5 GHz respectively.

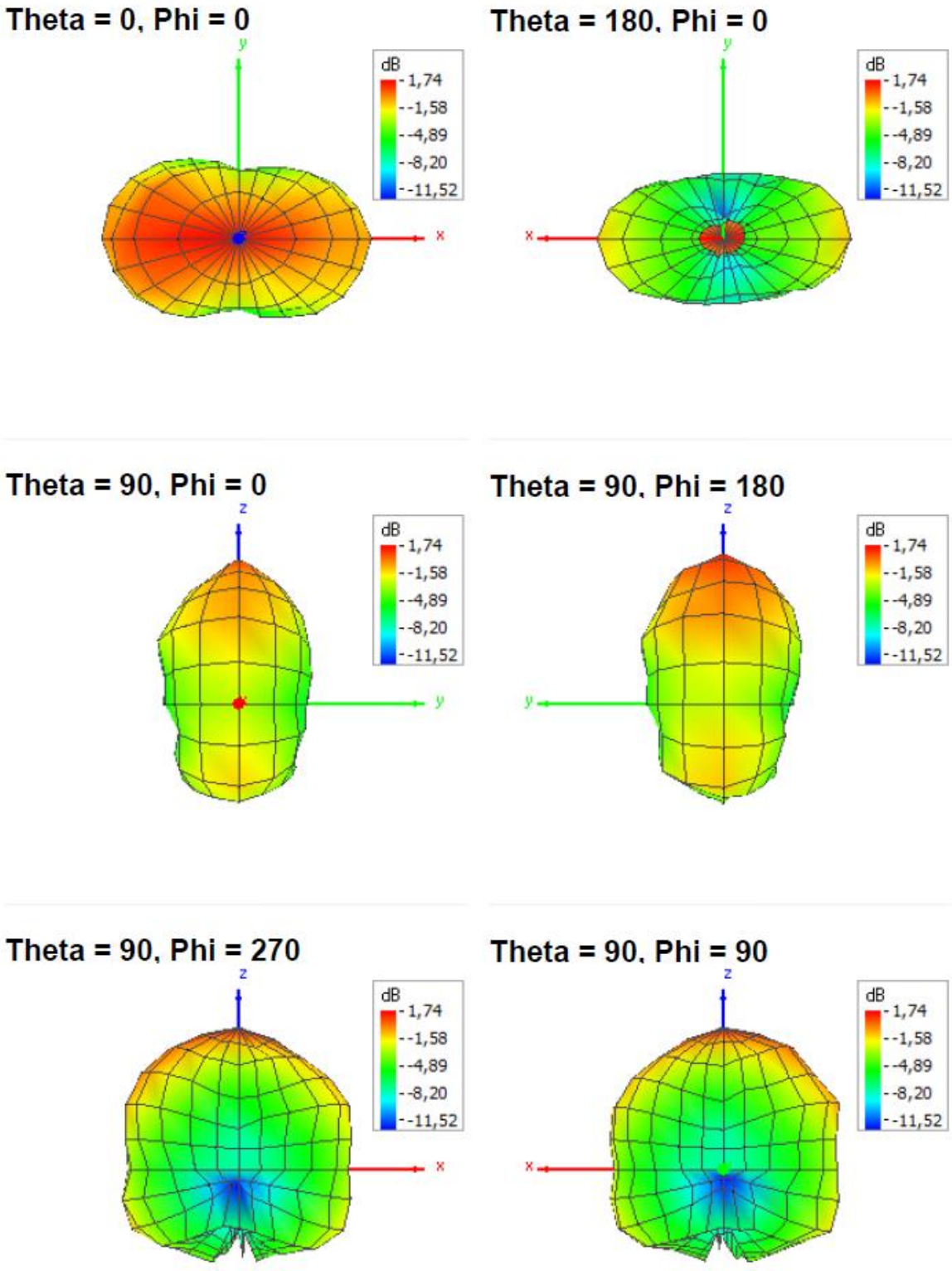


Figure 2: Radiation patterns of u-blox dual-band PCB trace antenna at 2.4 GHz

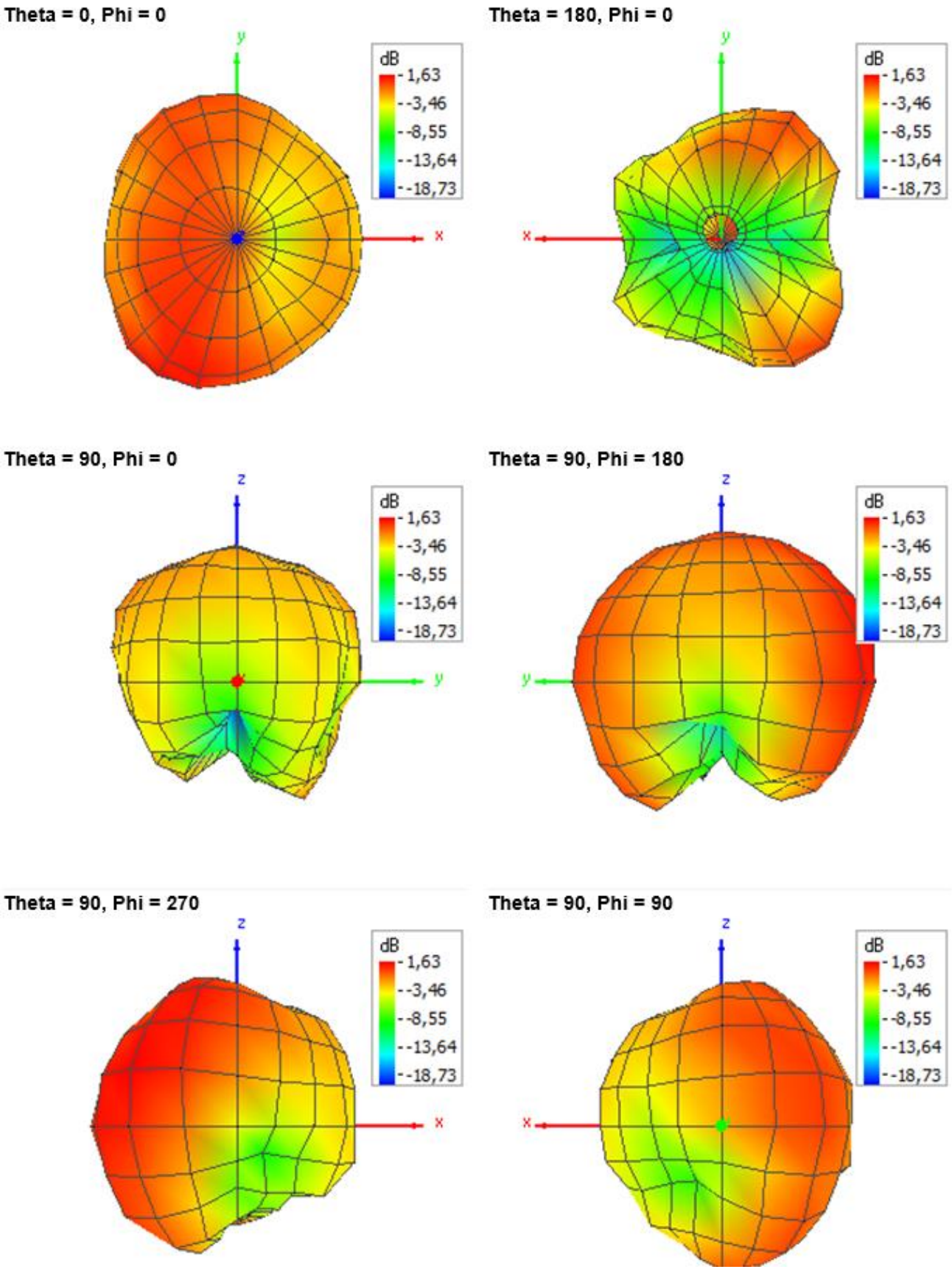


Figure 2: Radiation patterns of blox dual-band PCB trace antenna at 5 GHz

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	23/5/2024