

HW Platforms / R&D
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Polar 6B Antenna technical document for FCC

Revision History:

Rev	Date	By	Description of Change
v.1.0	September 10 2024	PN	Initial release
v.2.0	September 13 2024	PI	Fixed antenna gain

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1 General information

1.1 Antenna information

Antennas:

1. 1164 – 1215 MHz GNSS L5 Antenna
2. 1559 – 1610 MHz GNSS L1 antenna
3. 2402 – 2480 MHz Bluetooth Antenna
 - o Peak gain -1dBi
 - o Efficiency -8dB

Antenna details:

- Integrated L-antenna
- WxLxH (40x40x1.75) mm³

Antenna location:

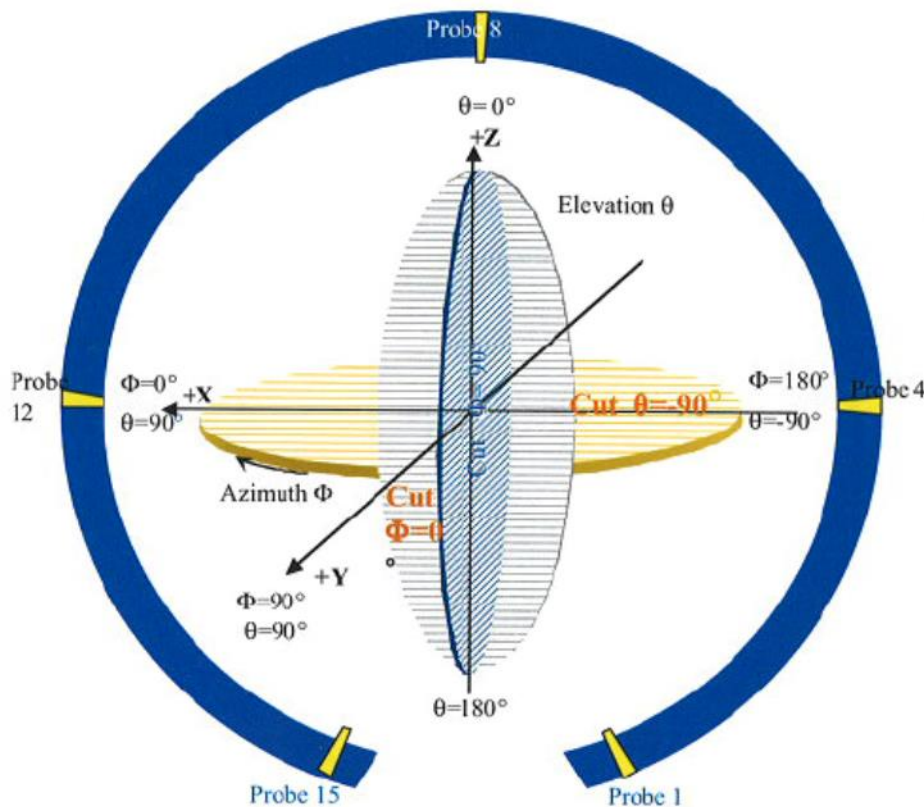
- GNSS antennas are located around the display. BLE antenna is integrated into main PWB.



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2 Measurement coordinate system

Antenna efficiency and radiation pattern were measured with Satimo StarLab -antenna measurement system.



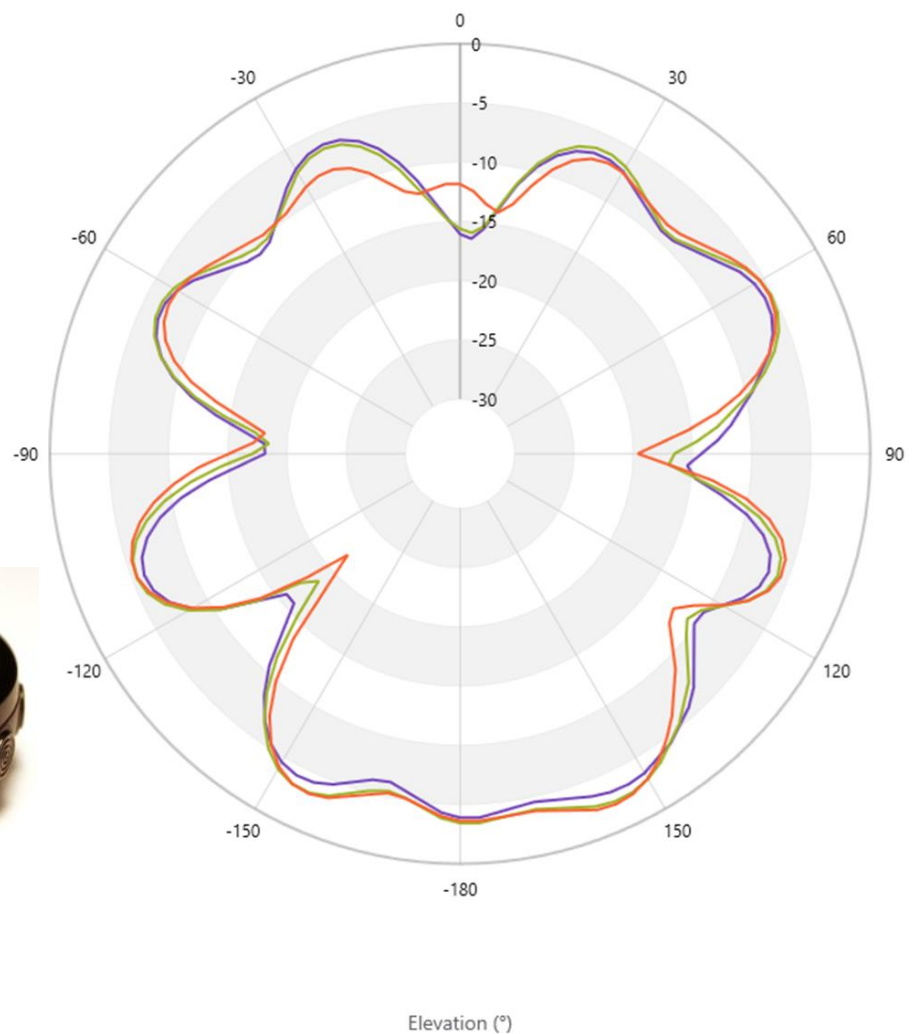
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2.1 Bluetooth antenna measurements

2.1.1 Bluetooth antenna cut diagrams

2.1.1.1 Phi = 0 deg (XZ-plane)

— 0° 2400.00 MHz EH
— 0° 2440.00 MHz EH
— 0° 2480.00 MHz EH



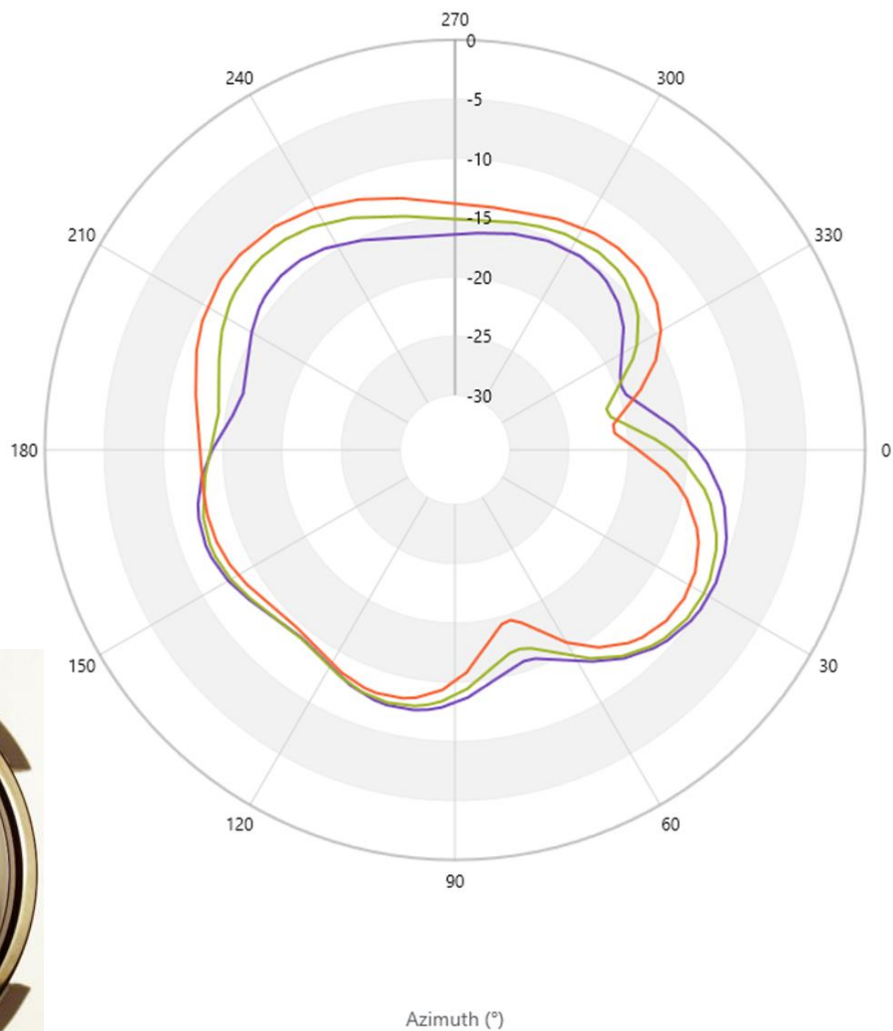
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2.1.1.2 Theta = 90 deg (XY-plane)

— 90° 2400.00 MHz ETotol
— 90° 2440.00 MHz ETotol
— 90° 2480.00 MHz ETotol



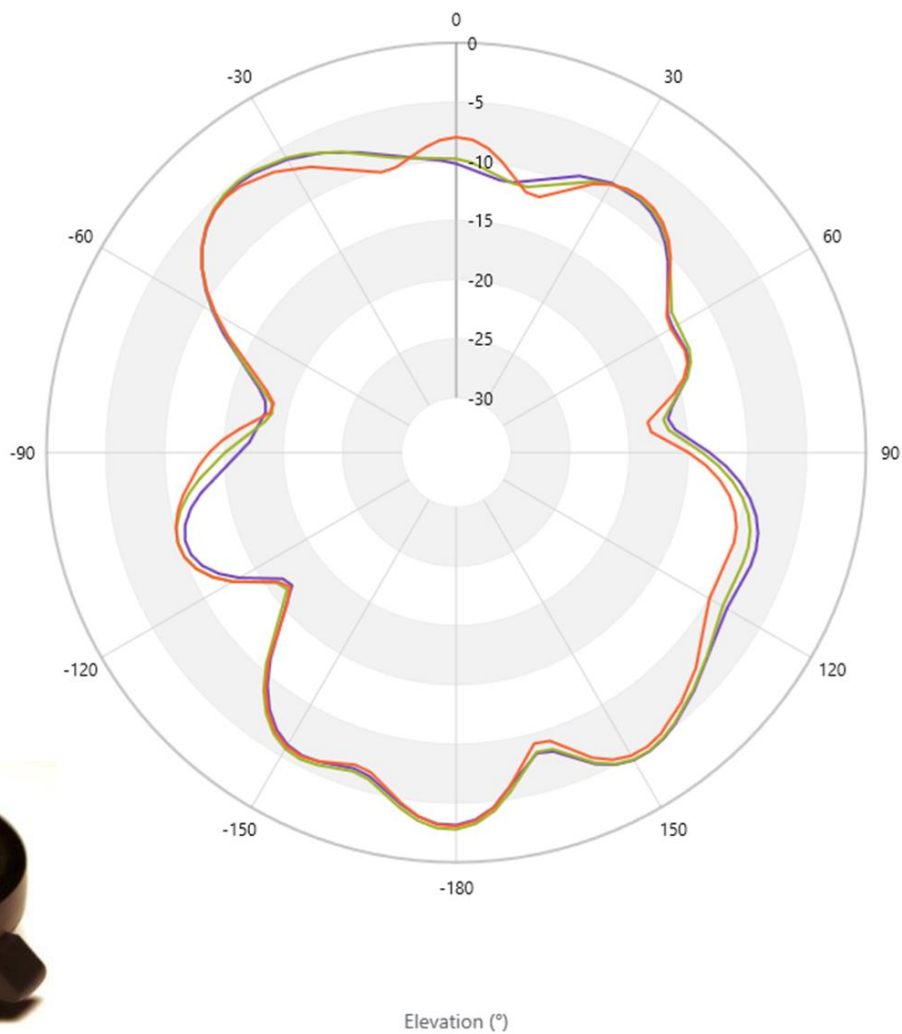
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2.1.1.3 Phi = 90 deg (YZ-plane)

— 90° 2400.00 MHz ETotal
— 90° 2440.00 MHz ETotal
— 90° 2480.00 MHz ETotal



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3 Measurement system

3.1 Main Specifications of antenna measurement system

3.1.1 Equipment:

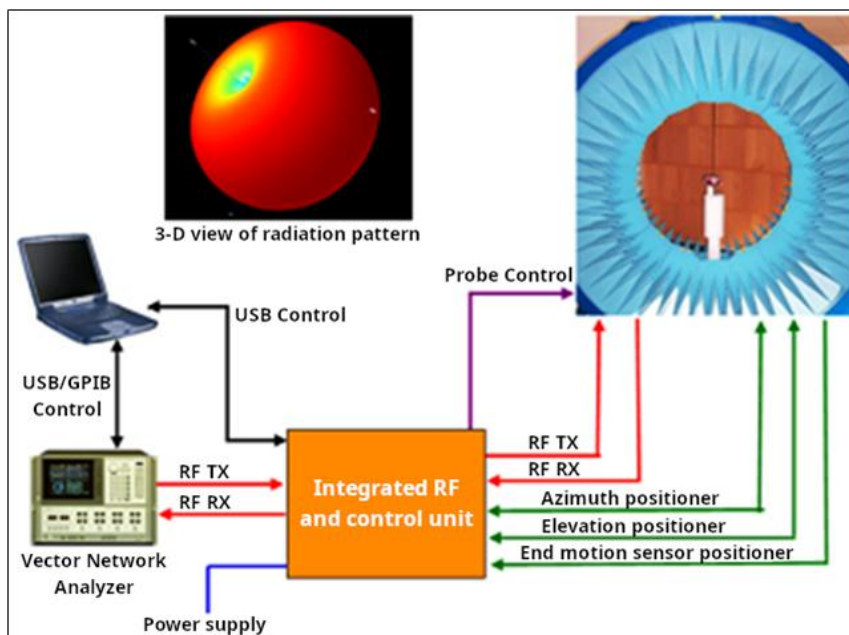
StarLab with anechoic enclosure, delivered by Satimo, France

- Frequency range 0.65 GHz – 6 GHz
- Accuracy
 - o Peak antenna gain
 - < +/- 1.1 dB within 0.8 – 1.0 GHz
 - < +/- 0.8 dB within 1.0 – 6.0 GHz
- Dynamic range: 50 dB (VNA driven)

3.1.2 Measurement device:

VNA Agilent E5071C, 9 kHz – 8.5 GHz

- Calibration antenna
 - o Horn antenna SH650, 0.65 GHz – 12 GHz



Satimo StarLab block diagram