HW Platforms / R&D
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Antenna technical document for Polar 5S

Revision History:

Rev	Date	By	Description of Change
v.1.0	13.12.2023	PN	Initial release
v.2.0	26.01.2024	PI	Confidential text removed from header

Table of Contents

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1 General information

1.1 Antenna information

Antennas:

- One physical antenna functioning as:
    1. 1164-1215MHz GNSS L5 Antenna
    2. 1559-1610MHz GNSS L1 antenna
    3. 2402-2480MHz Bluetooth Antenna
        - Peak gain -4.0dBi
        - Efficiency -12.0dB

Antenna details:

- Integrated antenna
- WxLxH (48.5x48.5x1.9) mm^3

Antenna location:

- Antenna is located around the display as an aluminium bezel ring.

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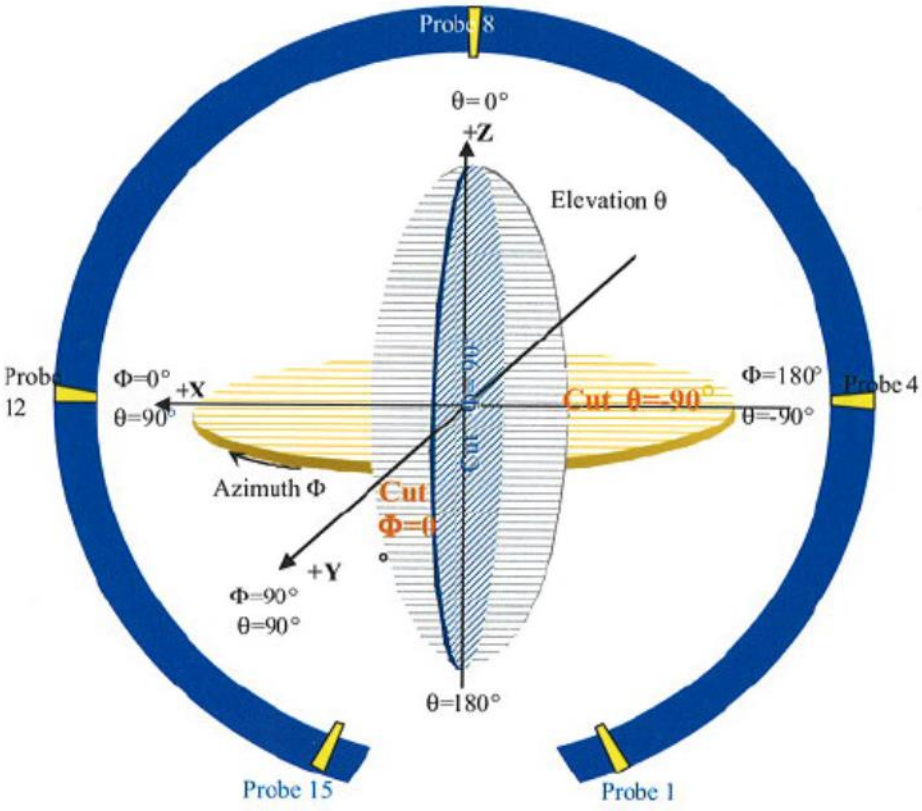
2 Measurement coordinate system

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



The coordinate system of the measurement chamber

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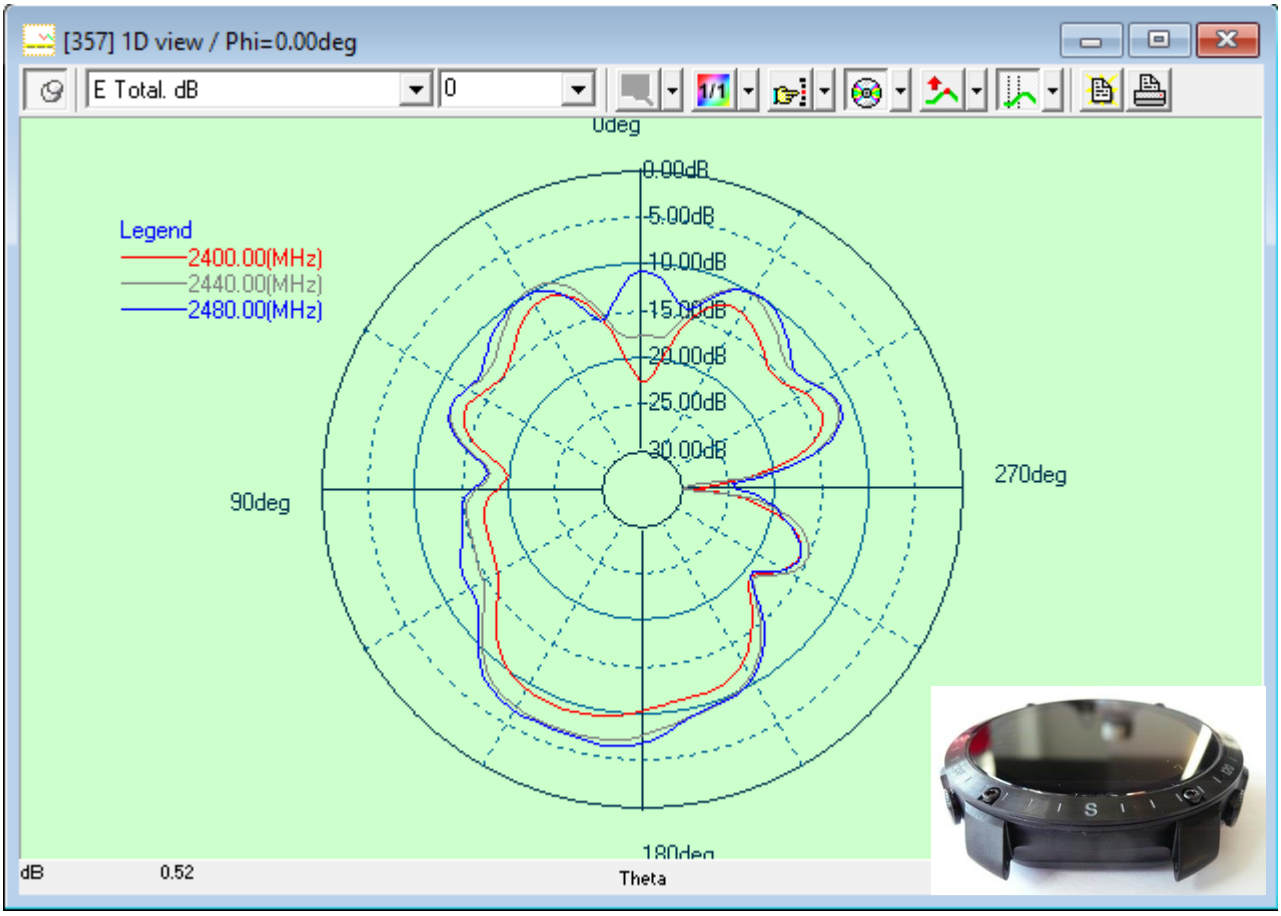
2.1 Bluetooth antenna measurements

2.1.1 Bluetooth antenna cut diagrams

2.1.1.1 Phi = 0 deg (XZ-plane)



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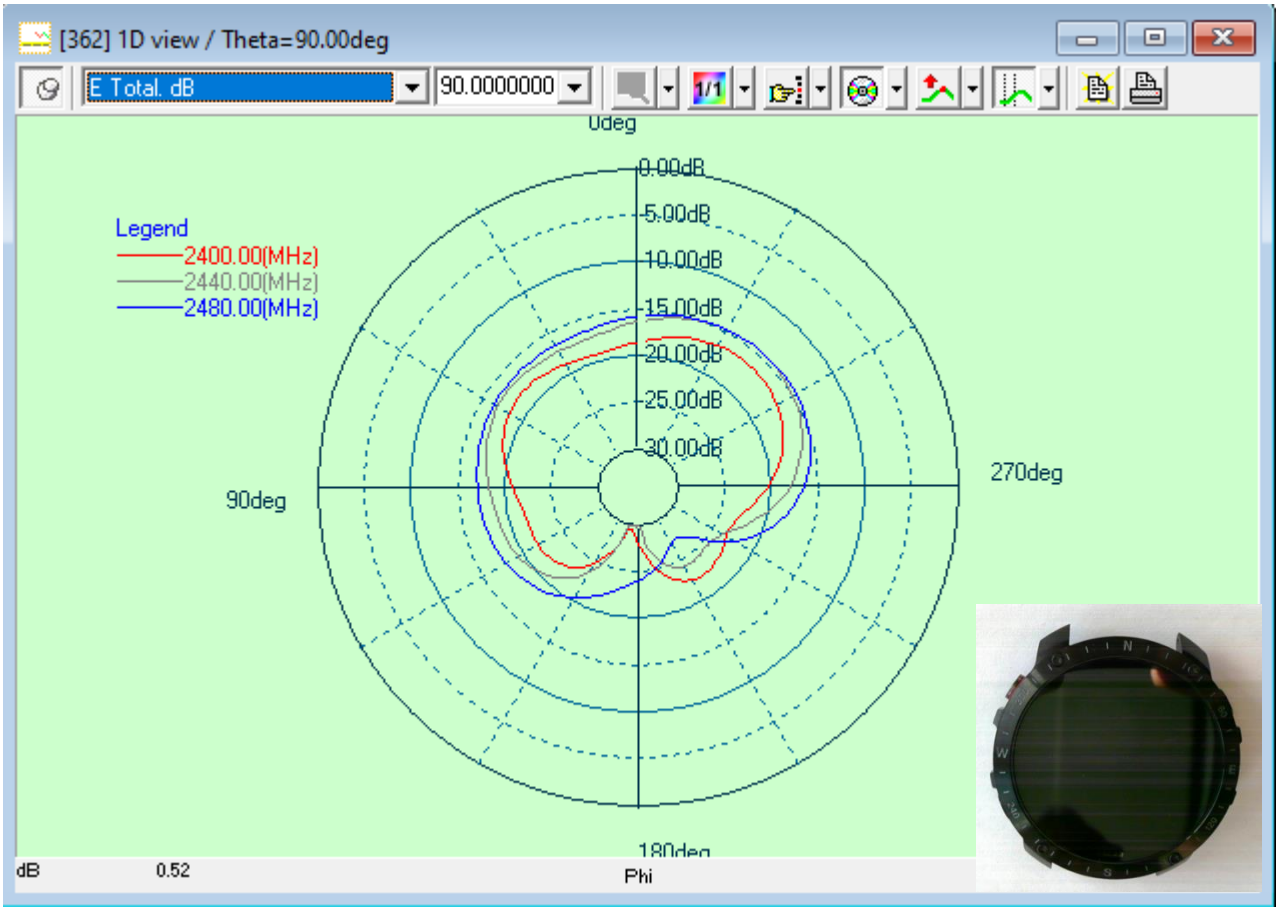
2.1.1.2 Theta = 90 deg (XY-plane)



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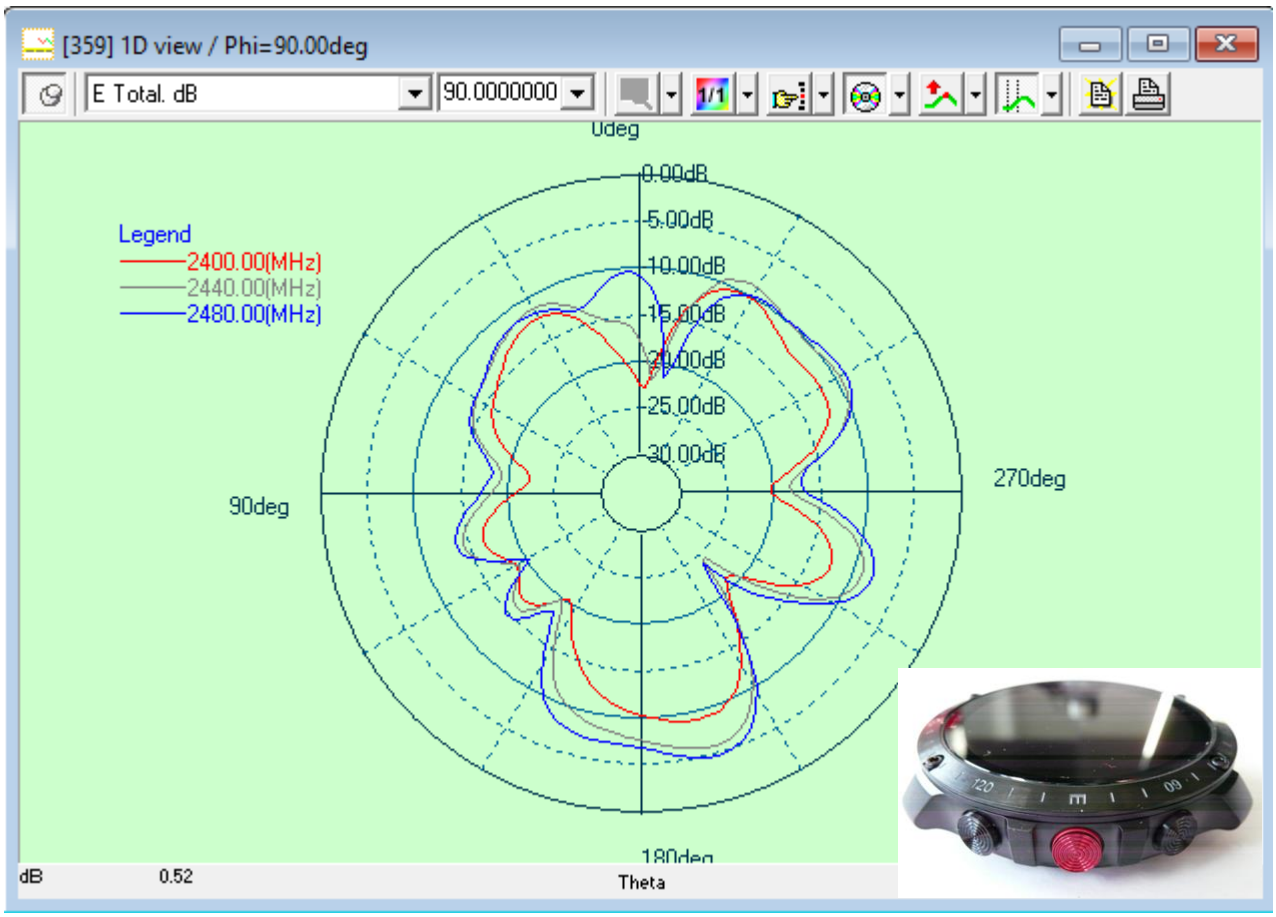
2.1.1.3 Phi = 90 deg (YZ-plane)



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3 Measurement system

3.1 Main Specifications of antenna measurement system

3.1.1 Equipment

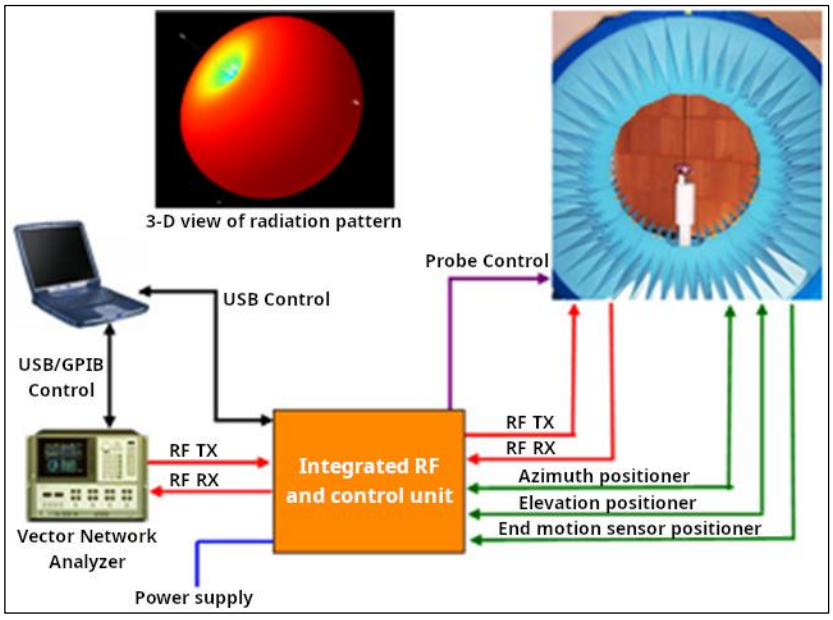
StarLab with anechoic enclosure, delivered by Satimo, France

- Frequency range 0.65 GHz – 6 GHz
- Accuracy
    - 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
    - Horn antenna SH650, 0.65 GHz – 12 GHz



Satimo StarLab block diagram