



Shure BLE Module

**Measurements of Shure
BLE Module
For Regulatory Approval
BLE (2402–2480 MHz)**

Shure Incorporated
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1. Shure BLE Module

BLE Antenna Information

Model (Part No.)	Description	Manufacturer
2450AT42E010B	ANTENNA, 2.4GHz, -2.0 dBi PEAK GAIN	Johanson Technology

BLE Antenna 3D patterns

- BLE Module with Chip Antenna
- Test frequency = 2402 MHz
- Maximum gain = -0.7 dBi

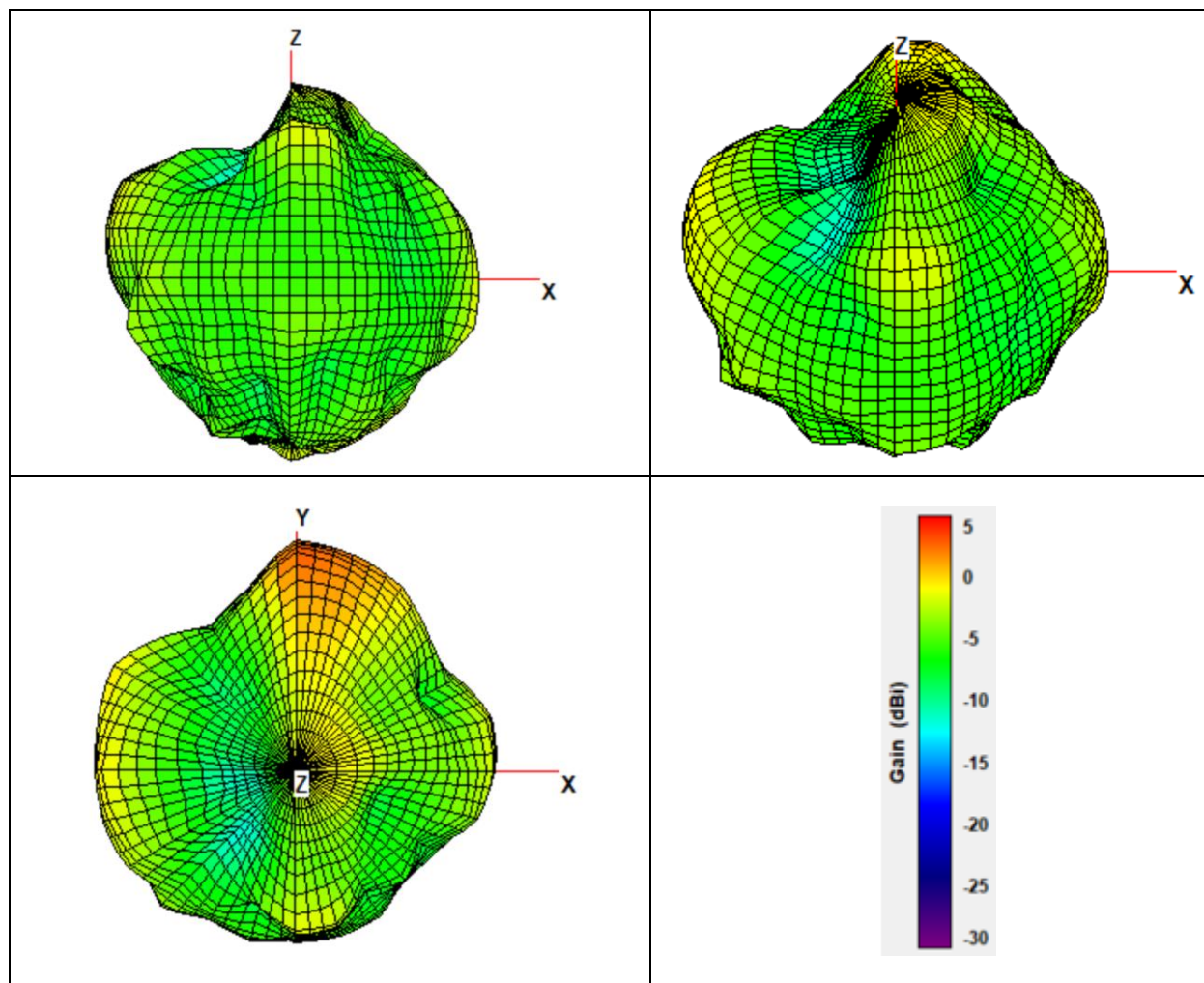


Figure 1 – BLE Module (2402 MHz) 3D radiation patterns and scale

- BLE Module with Chip Antenna
- Test frequency = 2440 MHz
- Maximum gain = -1.0 dBi

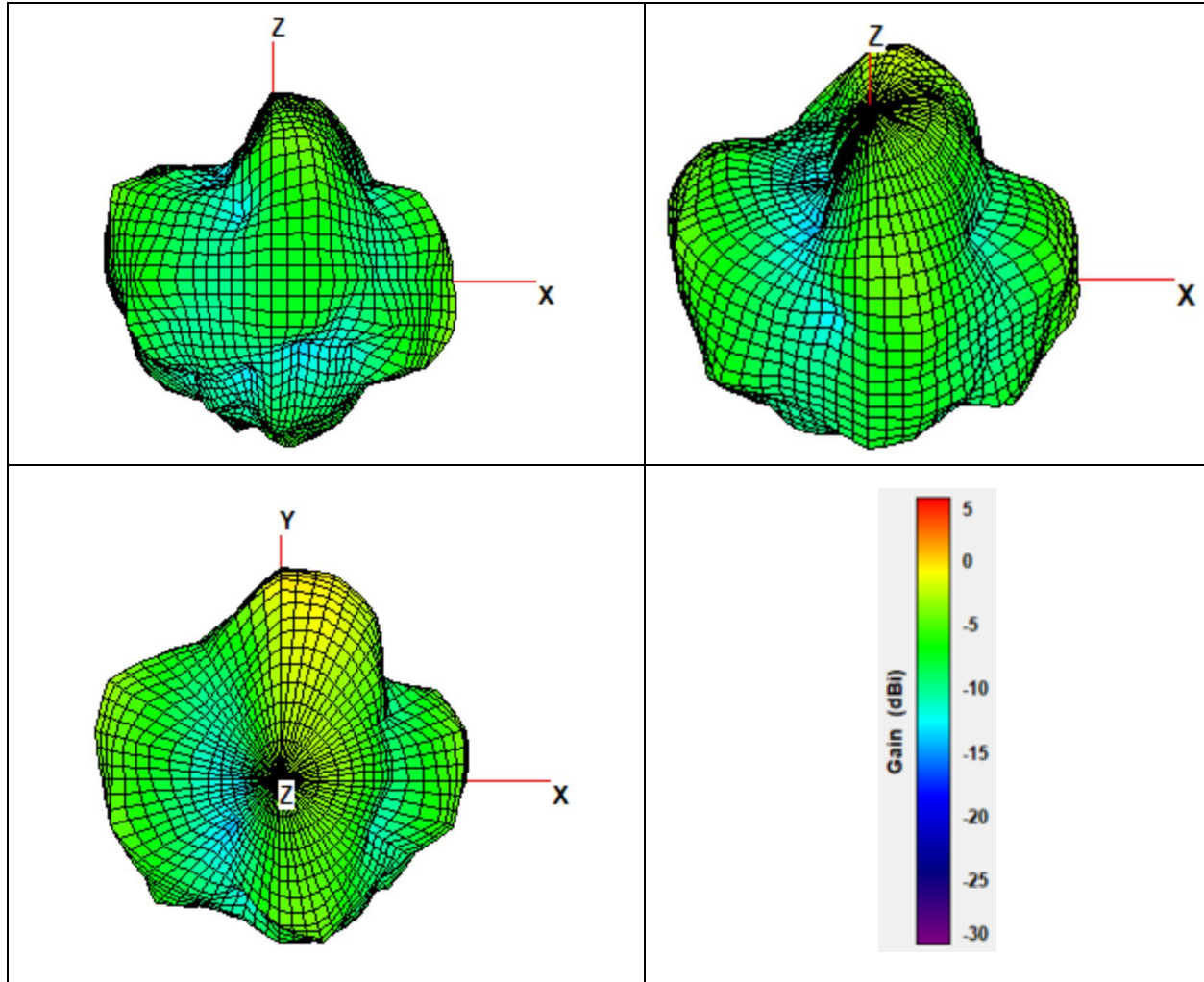


Figure 2 – BLE Module (2440 MHz) 3D radiation patterns and scale

- BLE Module with Chip Antenna
- Test frequency = 2480 MHz
- Maximum gain = -1.5 dBi

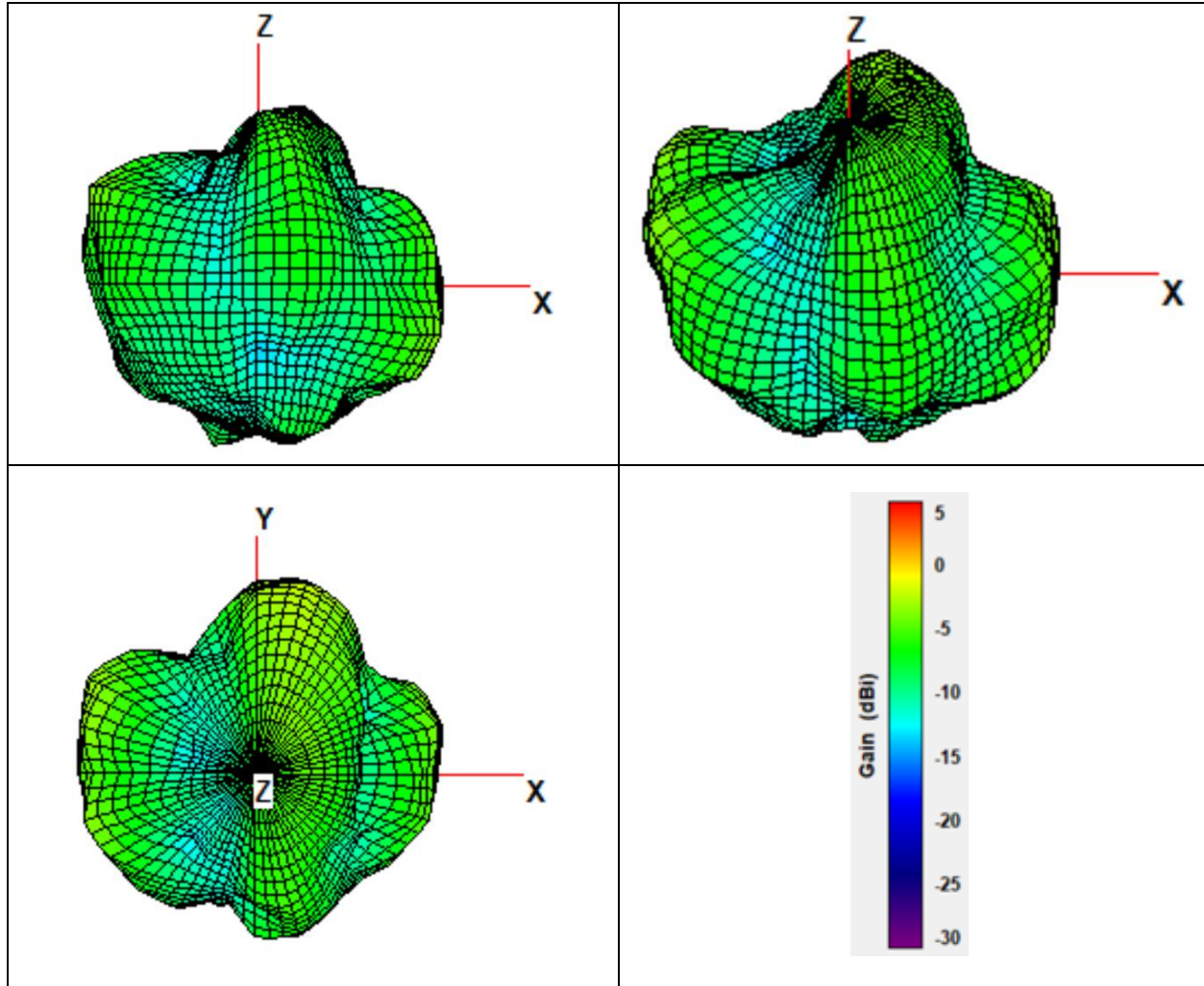


Figure 3 – BLE Module (2480 MHz) 3D radiation patterns and scale

2. Appendix

2.1 Supporting Test Equipment List

- E5071C ENA series Vector Network Analyzer 100kHz-8.5GHz
- ets model 2090 multi device controller
- ets lindgren model 3164-10 3164-10 Open Boundary Quad-Ridged Horn 400MHz-10GHz
- ets lindgren model no 3126-1920 precision sleeve dipole 1728-2112MHz
- EMQuest Data Acquisition and Analysis Software v1.12

2.2 Antenna Chamber Diagram and Reference Angles and DUT Pictures

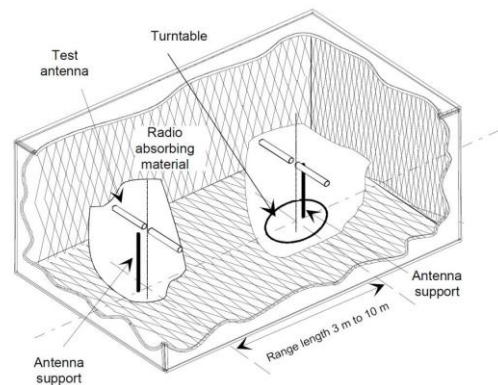


Figure 4 – Diagram of Shure antenna chamber. Designed per ETSI EN 300 422-1, section D-1



Figure 5 – Photo of Shure Antenna Test Chamber.

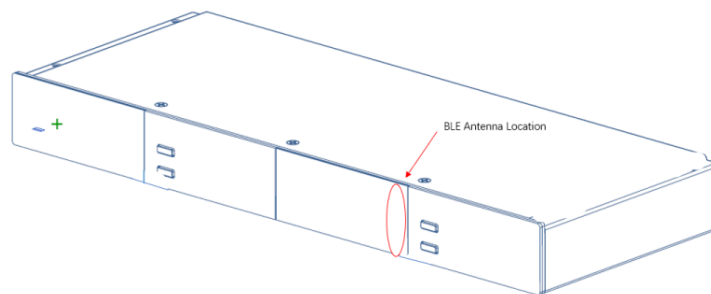


Figure 6 – Photo of front panel with BLE antenna location.

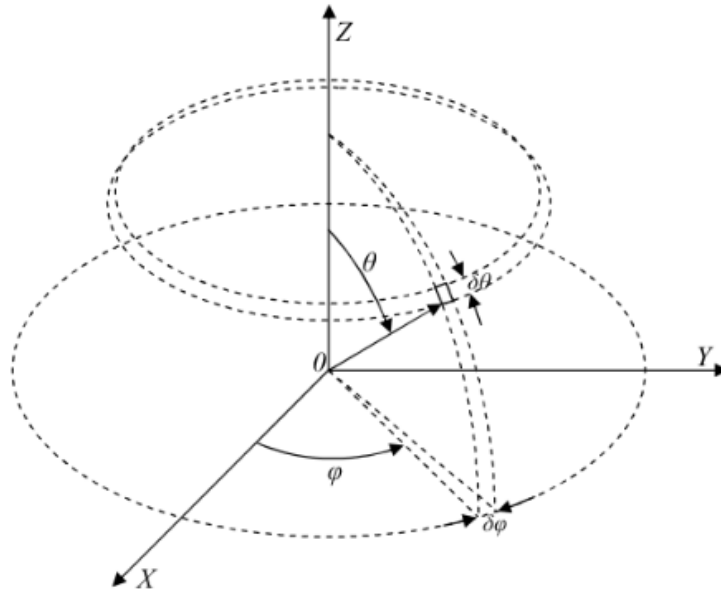


Figure 7 – Antenna reference Angle

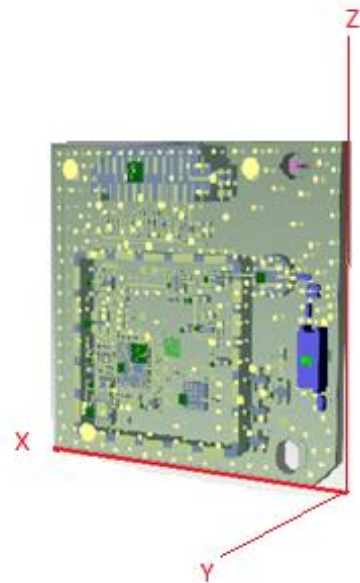
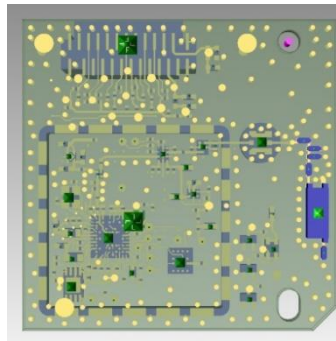
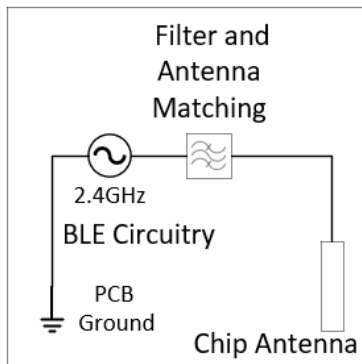


Figure 8 – BLE Module Chip Antenna Connection Block Diagram and DUT Orientation.

Shure BLE PCB Module measures 32mm X 32mm, Chip Antenna Measures 5mm X 2mm