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MQio Antenna Test Report

Jul. 29, 2025

Johnson Yu

Antenna Design Department

Antenna Details

- Sercomm integrated 2 antennas into the mockup
 - 1 SubG antenna (868MHz and 915MHz band of operation)
 - 1 BLE antenna (2.4-2.5GHz band of operation)

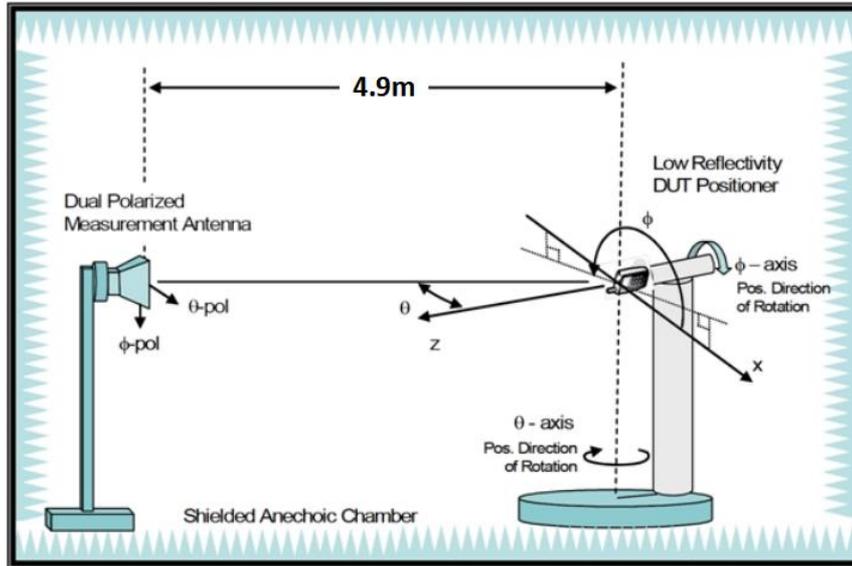
Ant	Operating Band	P/N	Type	Material	Feeding
LoRa	868MHz & 915MHz	6172009LIQ	PIFA	Metal	Trace
BLE	2400MHz ~ 2500MHz	6172009MIQ	PIFA	Metal	Trace

Test Information

Item	Description
Brand Name	MQIO
Equipment	Comcast
Test Location	8F, No. 3-1, YuanQu St. Taipei, Taiwan 115 R.O.C.
Test Condition	Radiation
Test Engineer	Johnson Yu, Sercomm
Test Environment	ETS-Lindgren AMS-8500 Antenna Measurement Chamber
Test Date	Apr. 07, 2025
Measurement control	EMQuest V1.09

Test Configuration

ETS-Lindgren AMS-8500 antenna measurement system with a size of $7.32(L) \times 3.66(W) \times 3.66(H)$ m³ is used for antenna performance test, which is based on the great-circle test method defined by CTIA. The multi-axis positioning system (MAPS) rotates the DUT around two orthogonal axes for full spherical coverage.



ETS-Lindgren AMS-8500



Final Proposal For:

Customer: Sercomm Corporation

Product: AMS-8500 Antenna Measurement System

Application: Radiated Wireless Antenna Measurements over the frequency range from 700 MHz to 10 GHz

Proposal Number: 009-14-0078183R3

Submission Date: 11,June, 2014



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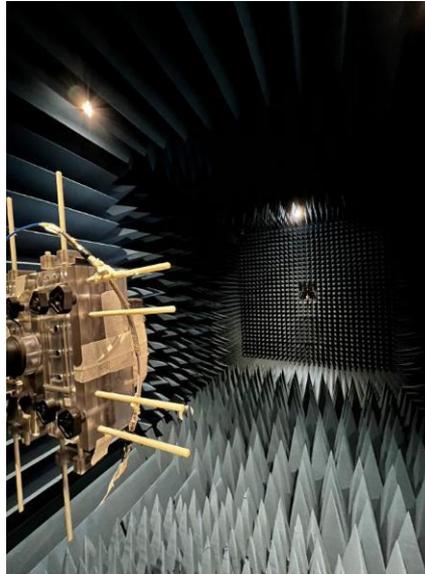


Lab Code: 20021212-00

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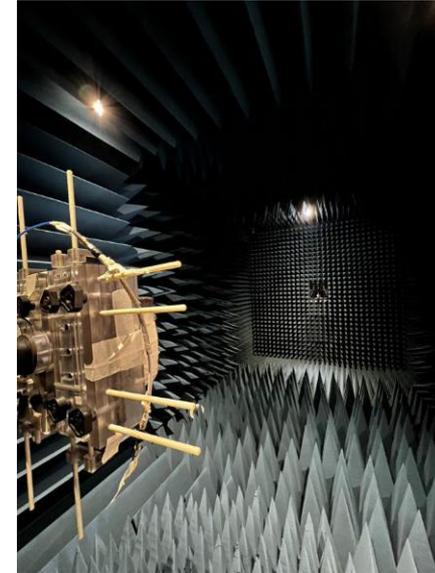
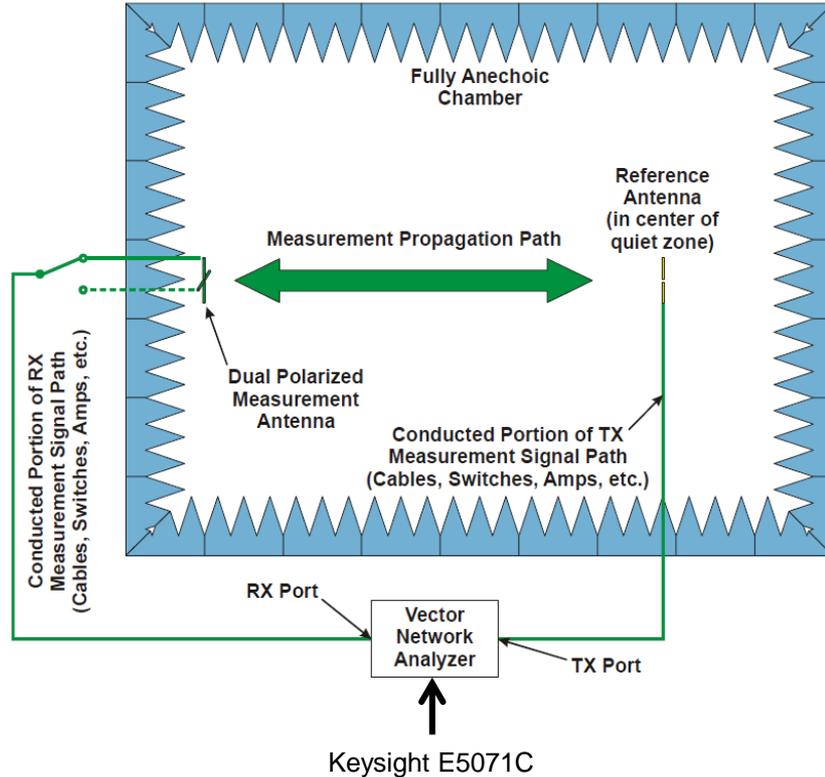
Test Setup & Procedure

1. Fix the DUT on the dielectric support structure and connect the feeding cable to the antenna used for test
2. Set measurement parameters such as frequency range and sampling angle
3. Perform test and then get far-field data (radiation pattern, gain, efficiency)
4. Repeat test procedure for other antennas



Test Equipment & Calibration

Network analyzer and reference antennas are used for calibration. Path loss and cable loss for different frequency bands can be checked and calculated.

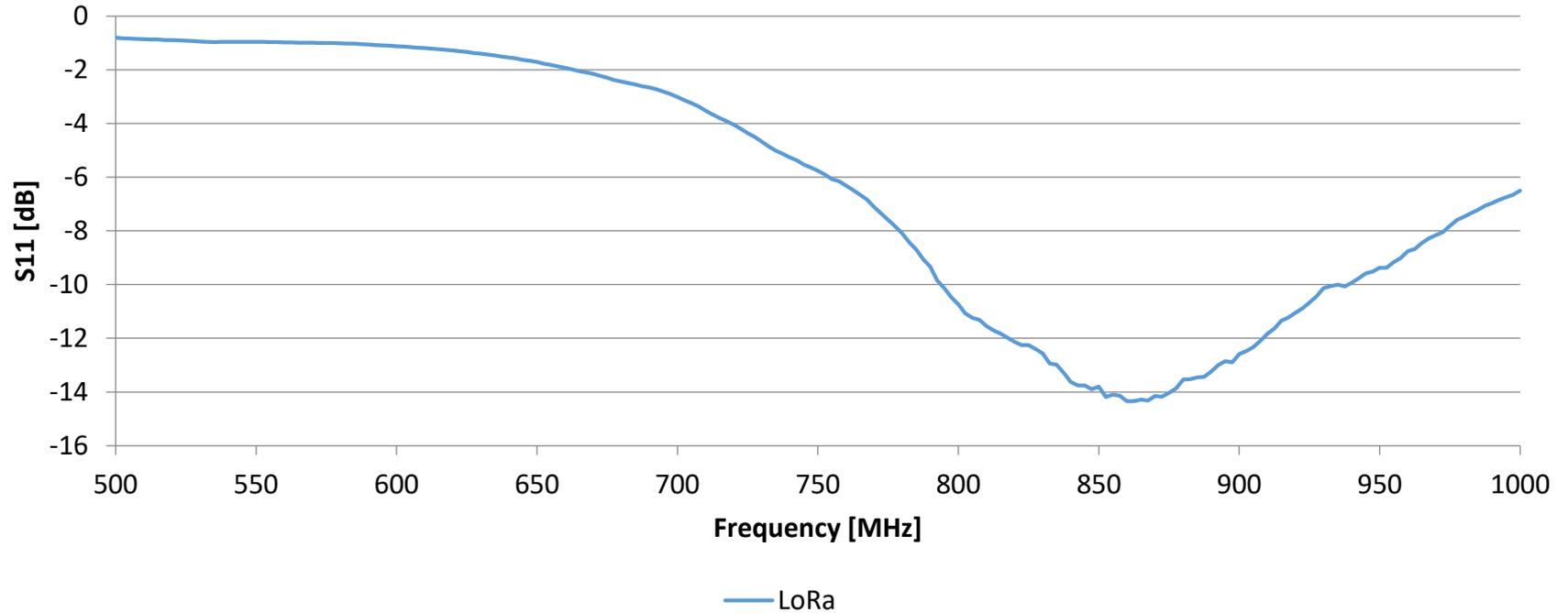


Test Equipment & Calibration

Instrument	Brand	Characteristics	Model No.	Serial No.	Calibration Date	Calibration Due Date
Precision Sleeve Dipole	ETS-Lindgren	700 MHz ~ 900 MHz	3126-700	00169715	Nov. 21, 2024	Nov. 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	900 MHz ~ 1000 MHz	3126-900	00169592	Nov. 21, 2024	Nov. 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	1400 MHz ~ 1700 MHz	3126-1550	00164599	Nov. 21, 2024	Nov. 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	1700 MHz ~ 2000 MHz	3126-1850	00169588	Nov. 21, 2024	Nov. 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	2000 MHz ~ 2300 MHz	3126-2150	00169593	Nov. 21, 2024	Nov. 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	2300 MHz ~ 2700 MHz	3126-2500	00169597	Nov. 21, 2024	Nov. 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	3000 MHz ~ 4000 MHz	3126-3500	00239652	Nov. 21, 2024	Nov. 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	4000 MHz ~ 5000 MHz	3126-4500	00239796	Nov. 21, 2024	Nov. 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	5000 MHz ~ 6000 MHz	3126-5500	00169728	Nov. 21, 2024	Nov. 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	6000 MHz ~ 7200 MHz	3126-6500	00235488	Nov. 21, 2024	Nov. 21, 2025
Horn Antenna	SCHWARZBECK	1 GHz ~ 18 GHz	BBHA 9120D	BBHA 9120D-1294	Sep. 7, 2024	Sep. 7, 2025
EMQuest Antenna Measurement Software	ETS-Lindgren	Control chamber system	EMQ-100	1437	Non-Calibration Required	Non-Calibration Required
VNA	Keysight	9 KHz ~ 8.5 GHz	E5071C	MY46316900	July 15, 2025	July 15, 2026

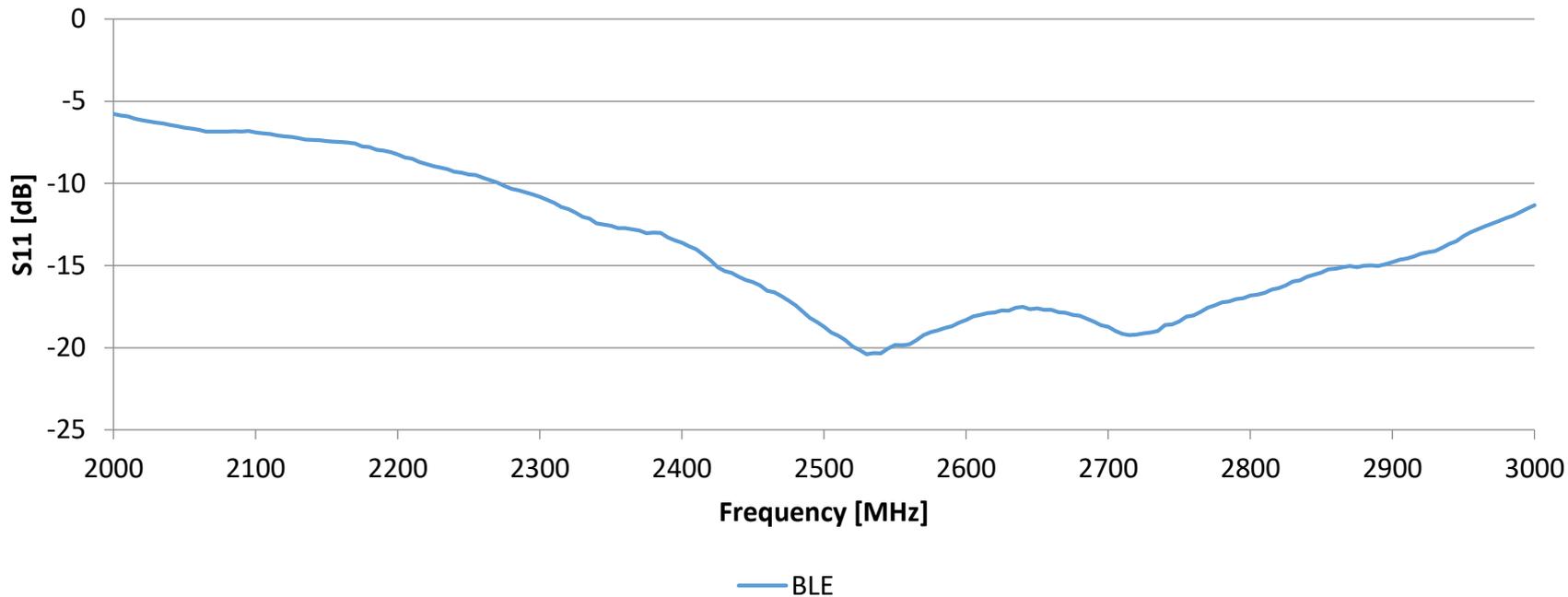
Return Loss - LoRa

LoRa



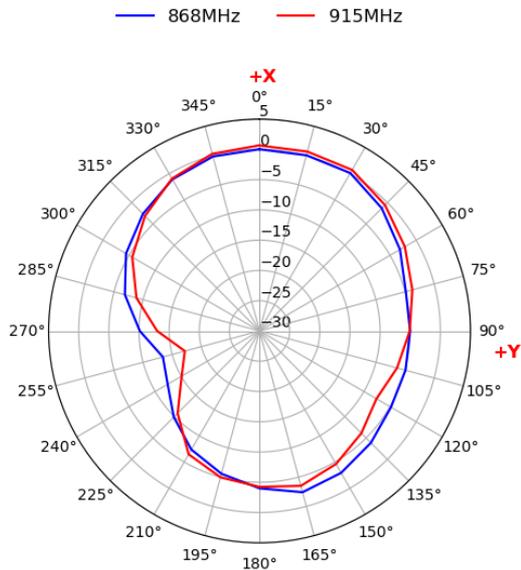
Return Loss - BLE

BLE

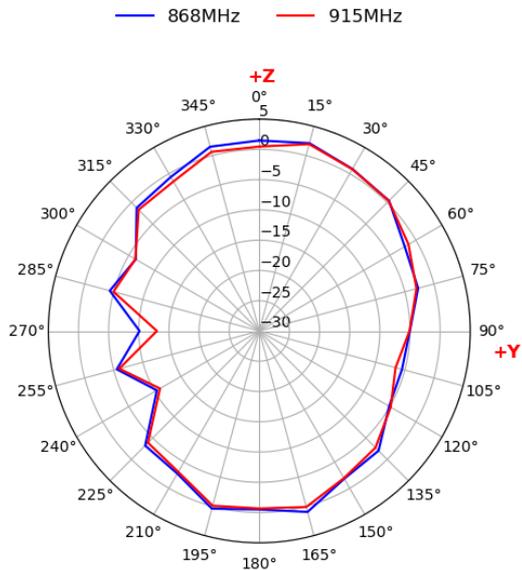


2D Radiation Pattern - LoRa

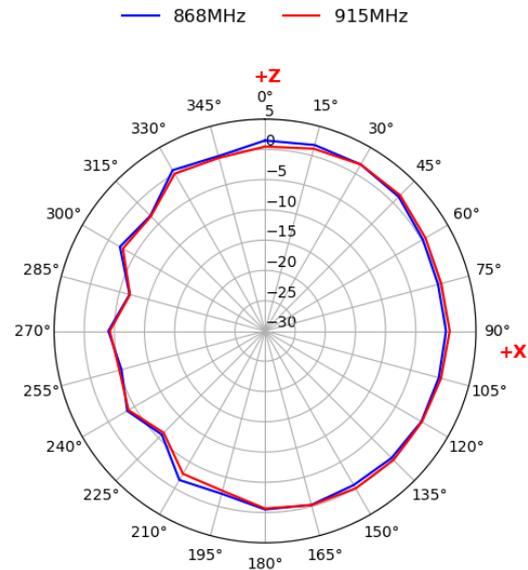
07.29.15.13.00 LoRa_XY plane - Az



7.29.15.13.00 LoRa_YZ plane - Front

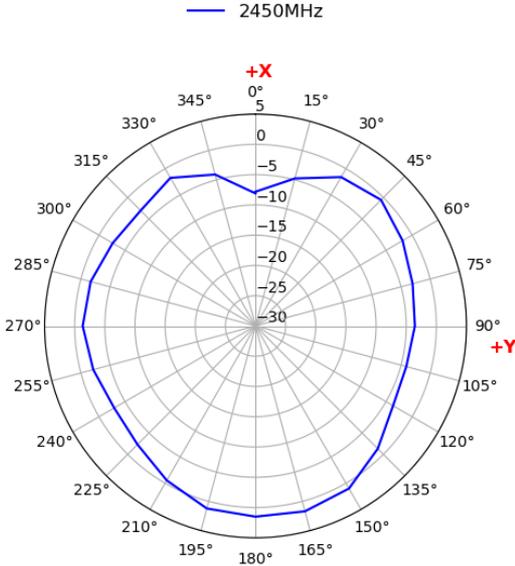


7.29.15.13.00 LoRa_XZ plane - Side

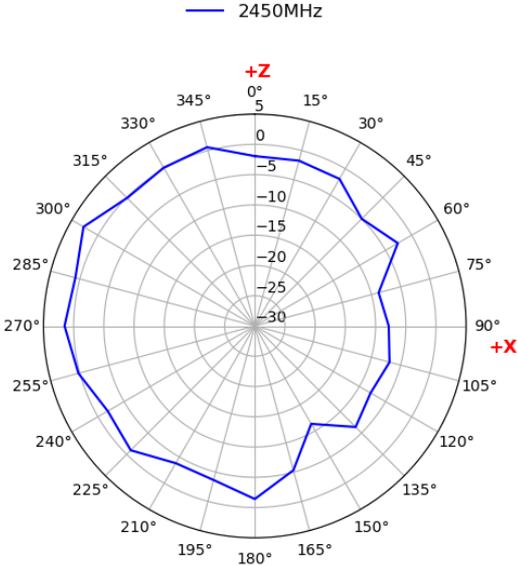


2D Radiation Pattern - BLE

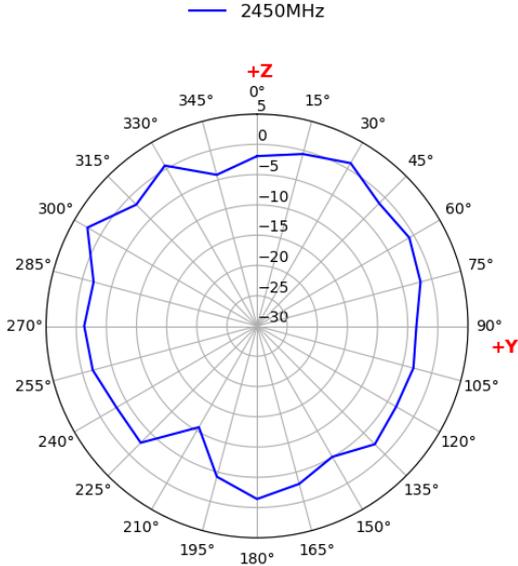
5.07.29.15.17.06 BLE_XY plane - Azi



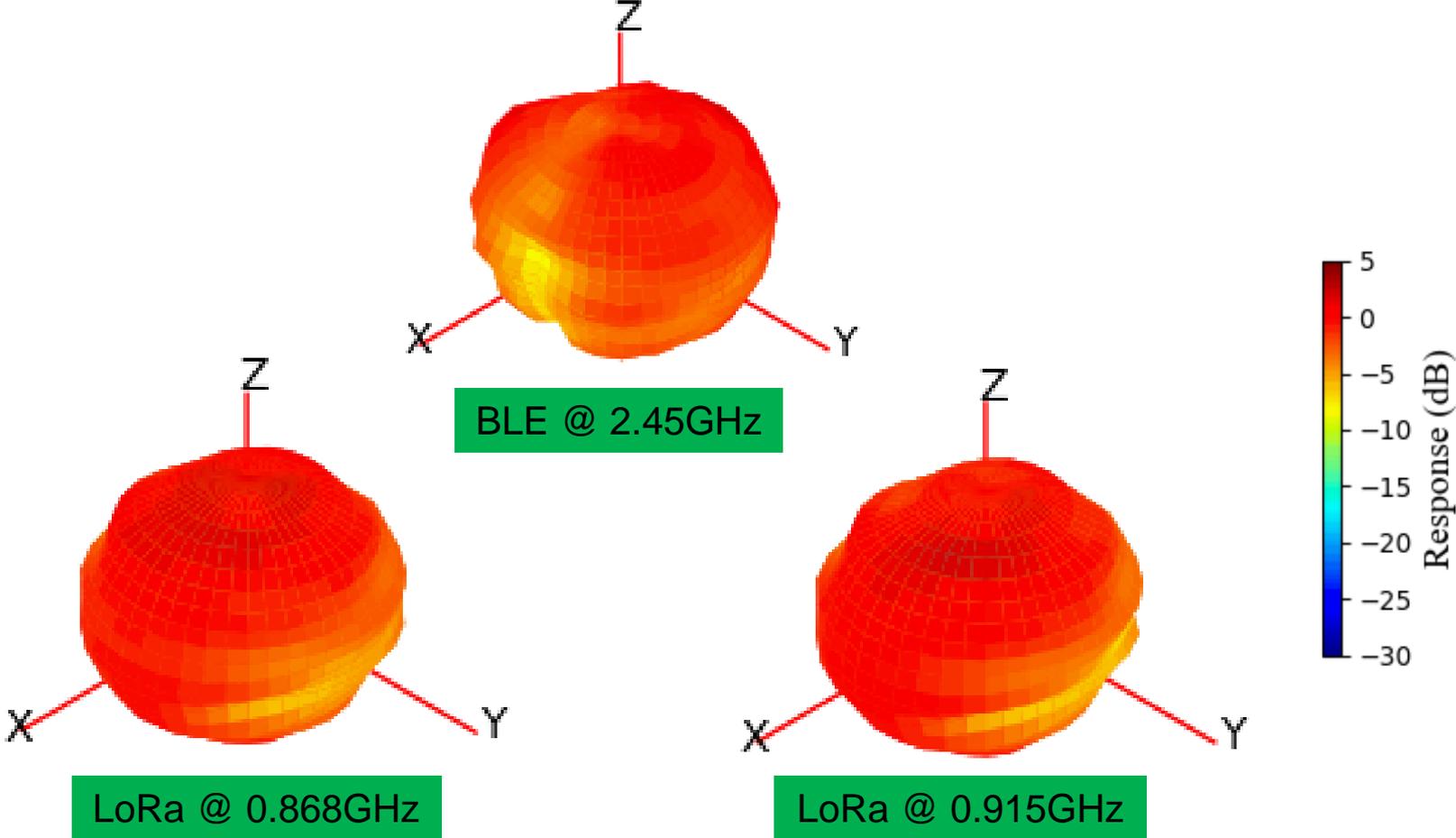
07.29.15.17.06 BLE_XZ plane - Side



17.29.15.17.06 BLE_YZ plane - Front



3D Radiation Pattern - LoRa & BLE



Peak Gain & Efficiency

Freq. (MHz)	LoRa Antenna	
	Efficiency (%)	Peak Gain (dBi)
863	62.75	2.34
865	63.82	2.45
868	64.15	2.56
902	62.97	2.62
915	62.05	2.48
928	61.43	2.35

Freq. (MHz)	BLE Antenna	
	Efficiency (%)	Peak Gain (dBi)
2400	66.5	3.05
2450	67.7	3.15
2500	68.2	3.24

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