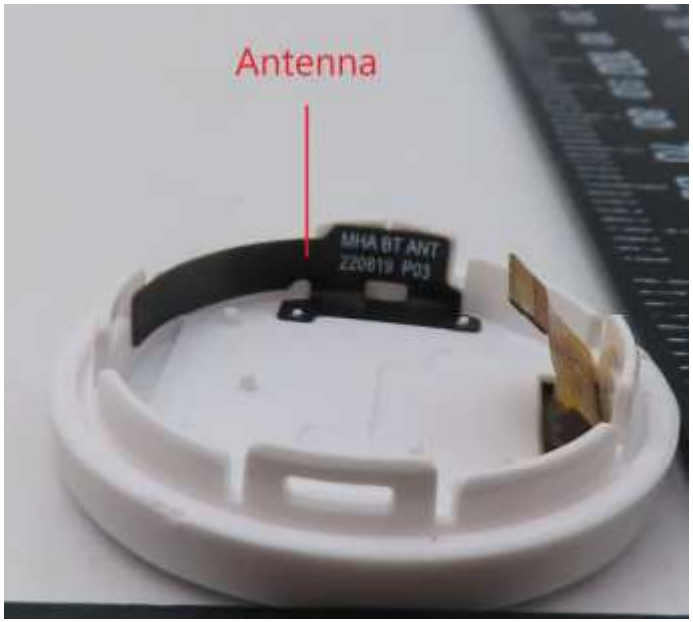
MHA antenna test result

20240223

Quanta
Product Design Center

MHA Antenna Placement

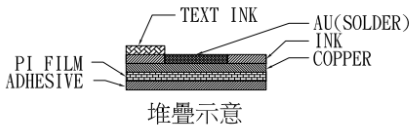


MHA Antenna drawing

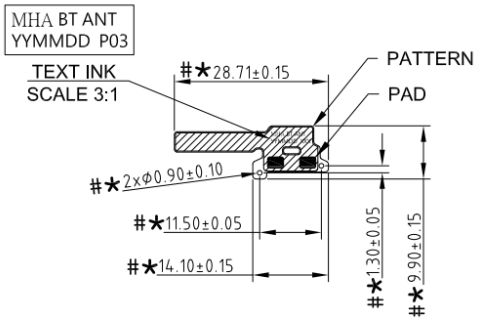
MOD	REVISION DESCRIPTION	DATE / EDITOR
P01	New Realease	2022.07.12 / Alvin
P02	Modify FPC outline	2022.08.10 / Alvin
P03	Modify FPC outline Change Adhesive	2022.08.17/ Alvin

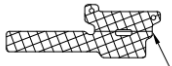
Please follow Pulse Limits for the hazardous substances (RoHS, halogens) In the document "Pulse Hazardous Substances (HS) Limits (RPGE002-03)" and "Vendor Survey Questionnaire, Material Composition (LOM-SAF-L0040)".

Reliability Test Spec accorinding to WIHS7.5.33 (Reliability Test Working Instruction) Default test standard is Test Standard A if no definition



堆疊示意





NOTE :
1. FPC： ED有膠基材 Cu:0.5oz PI : 0.5mil
2. 露銅區域表面處理：Ni 3um-6um / Au 0.05um
3. 背膠：3M 468
4. 文字: 白色文字，字高0.8
5. 油墨: 霧黑色油墨
6. 背膠黏貼不可溢膠
7. 印刷字體嚴禁有無法辨識現象
8. 物料承認後,未經許可嚴禁擅自換料
9. 標示" * "記號的尺寸為重點管制尺寸
10. 標示" # "記號的尺寸為CPK管制尺寸
11. 此產品及其附屬包裝材料的均質成份須滿足無鹵管制要求: Br<900ppm,Cl<900ppm,Br+Cl<1500ppm

ITEM NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	QTY
2			
1			

Confidential
This is a proprietary information of Pulse Suzhou.
No reporduction/copying is allowed without permission.

Functional Characteristics Key :(Cpk requirement : Cpk>)
◊ Process Capability Studies required(total pcs)
♦ Ongoing Statistical Process Control Required (total pcs)
* Critical dimension need to be measured, no CPK requirement (total pcs)

QUANTA PART NO : DQ602485300

Pulse (Suzhou) Wireless Products Co., Ltd
99 HUOJU RD,SUZHOU NEW DISTRICT SUZHOU 215009 P.R.CHINA
WWW.PULSEELECTRONICS.COM/ANTENNAS

SCALE	1:1	DESIGN	ALVIN 20220712
		CHECKED	CHENG 20220712
		APPROVED	CHENG 20220712

PRODUCT(S): TZ24853
ITEM NAME: MHA BT ANTENNA
DOCUMENT NUMBER: TZ24853
PART REVESION: P03
DOCUMENT VERSION: P3

MOD	DATE	NAME
P03	20220817	Alvin
P02	20220810	Alvin

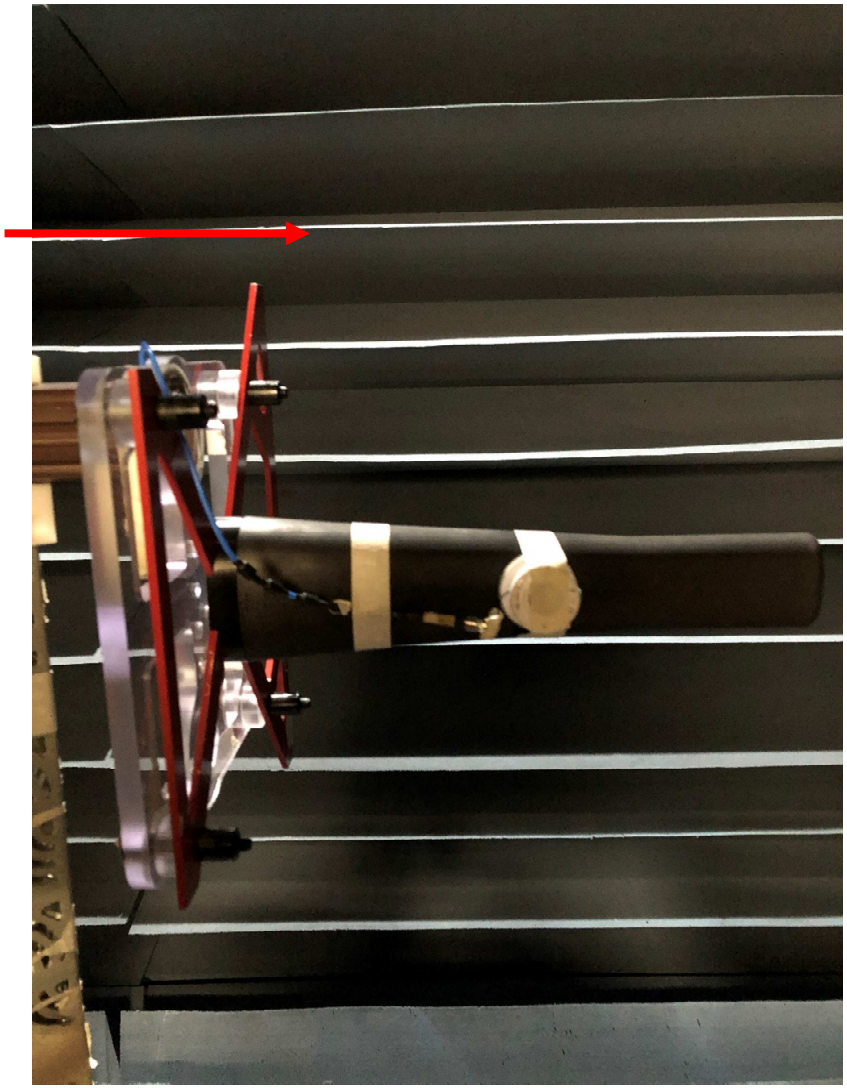
MHA Antenna Spec.

Antenna	Antenna Peak Gain (dBi)	Antenna Type	**Brand Name/Supplier**	**Model Name**
Bluetooth Antenna	-1.66	FPC Antenna	Pulse (Suzhou) Wireless Products Co., Ltd 99 HUOJU RD, SUZHOU, NEW DISTRICT SUZHOU 215009 P. R. CHINA	TZ24853

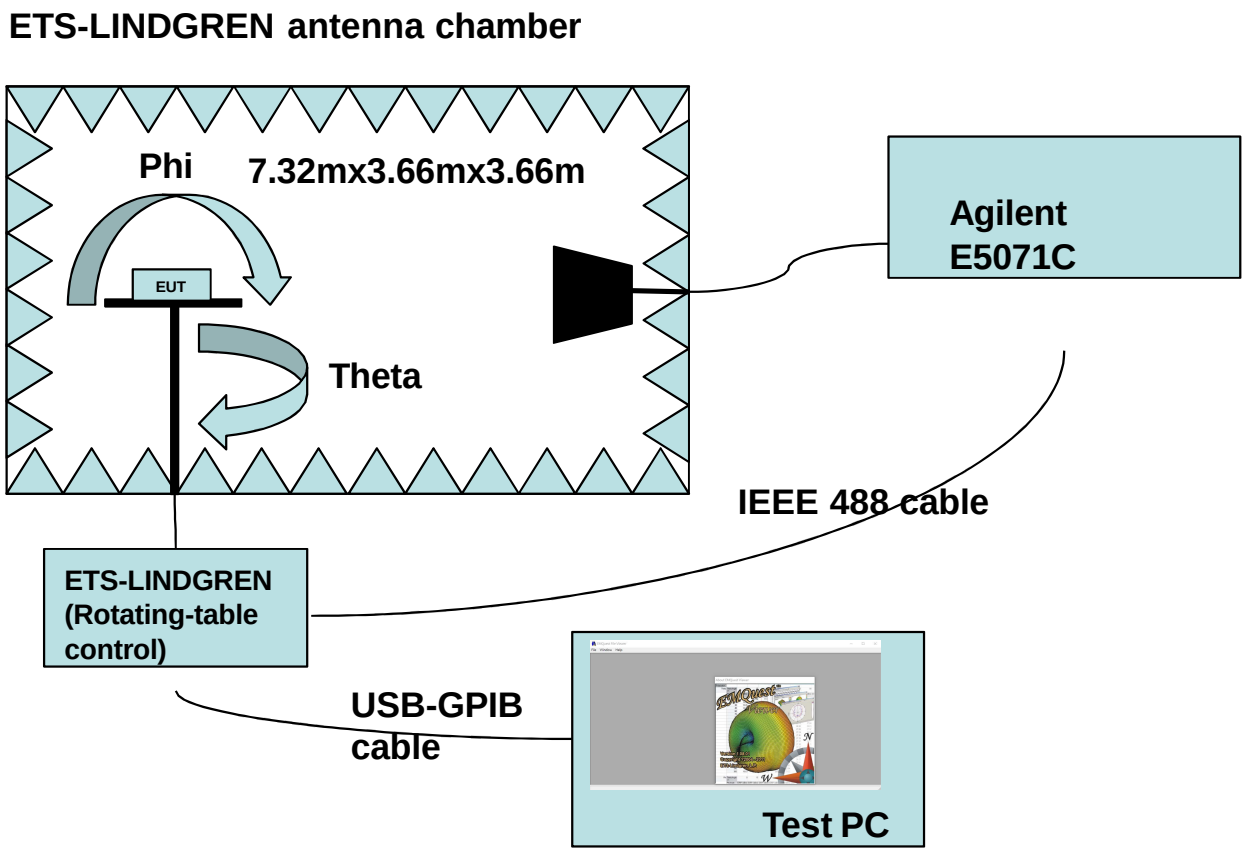
Test Information

Item	Description
Model Name	MHA EARPIECE
Test condition	Radiation
Test Engineer	Rod Cheng
Company	Quanta Computer Inc.
Company Address	NO.188, Wenhua 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C.)
Test Environment	ETS-Lindgren AMS-8500 Antenna Measurement System
Test Software	ETS-Lindgren EMQuest Data Acquisition and Analysis Software
Test Date	07/19/2022

Test Information

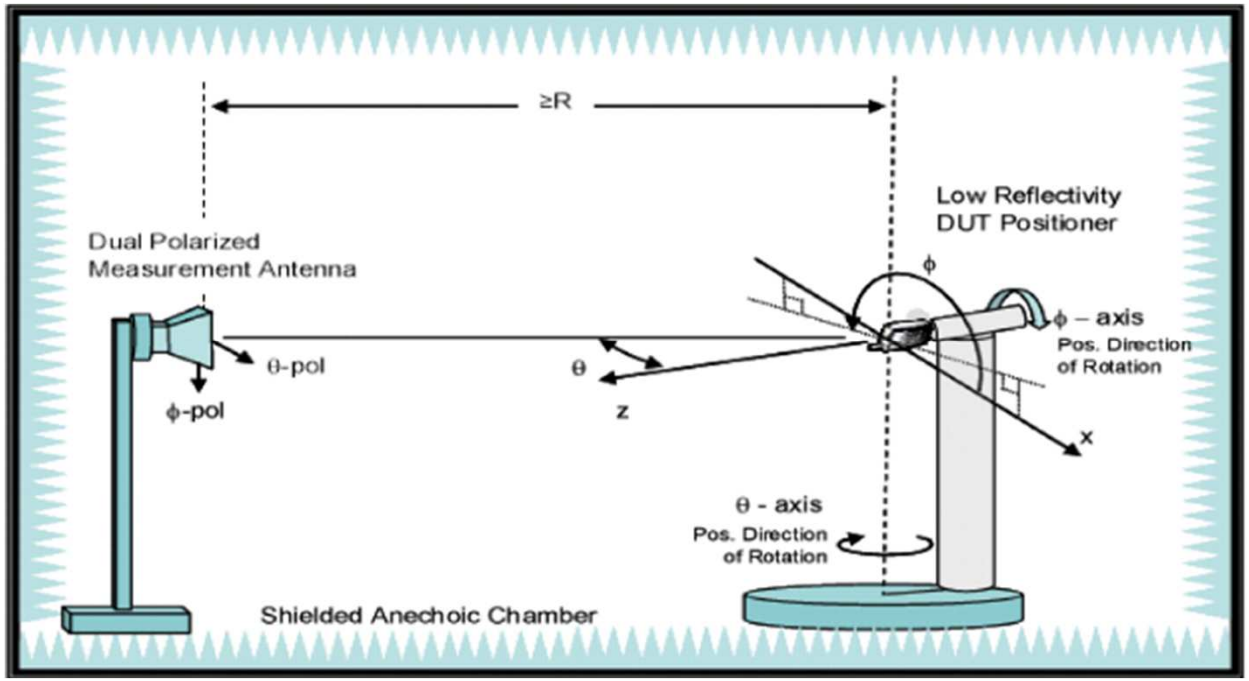


Test block diagram



Test Configuration

ETS-Lindgren AMS-8500 antenna measurement system with a size of 7.32(L) x 3.66(W) x 3.66 (H) m^3 is used for antenna performance test, which is based on the great-circle test method defined by CTIA. The multi-axis positioning system (MAPS) rorates the DUT around two orthogonal axes for full spherical coverage.

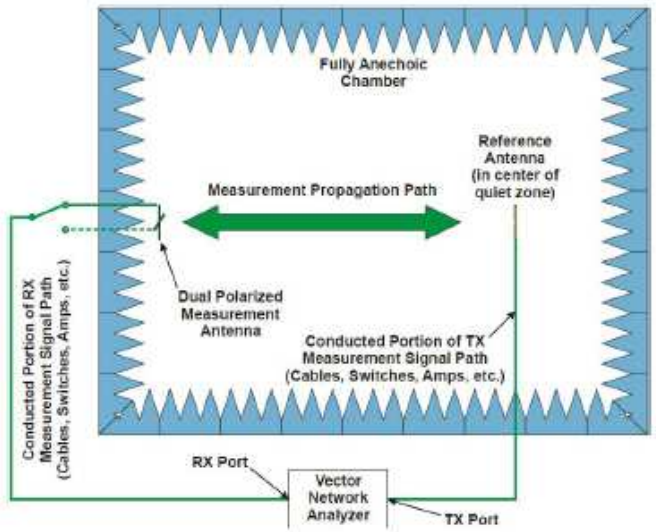


Test Equipment list

Equipment type	Model	Remark
ENA Series Network analyzer	Agilent E5071C	100KHz~8.5GHZ
Rotating table control	ETS-LINDGREN EMC Center	
Chamber	ETS-LINDGREN AMS8500	700MHz~6GHz
Horn Antenna	ETS-LINDGREN 6164-04	700MHz~6GHz
USB-GPIB cable	NI	
IEEE 488 cable	NI	

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.

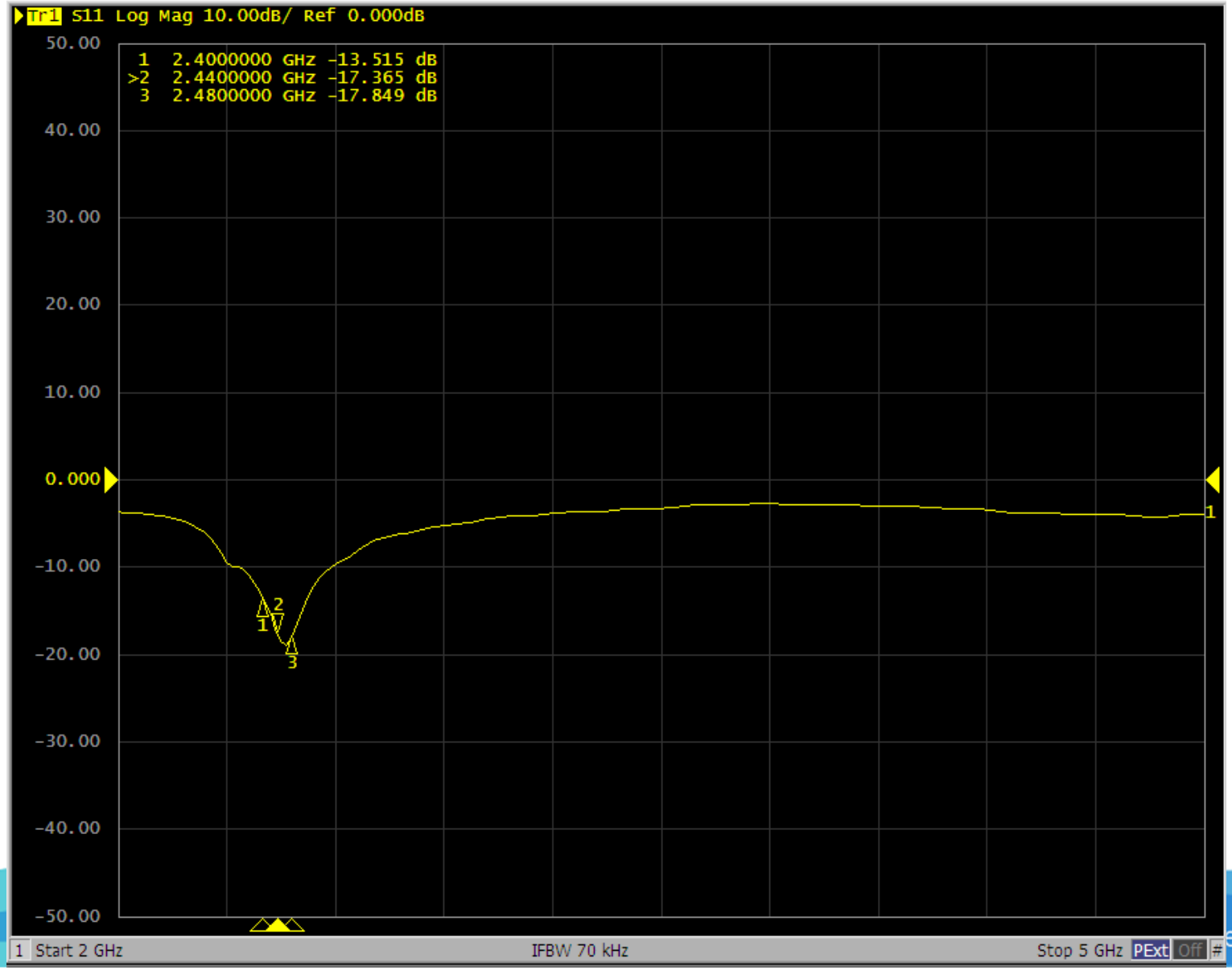


Equipment Description	Manufacture	Model No.	Calibrated Date	Calibrated Until
PXA Signal Analyzer	Keysight	N9030A	2022/06/28	2023/06/28
Network Analyzer	Keysight	E5017C	2022/07/04	2023/07/04
Switch Control system	Keysight	3499A	2022/07/04	2023/07/04
Horn Antenna	ETS Lindgren	6164-04	2022/07/04	2023/07/04
Chamber	ETS Lindgren	ASM-8500	2022/07/10	2023/07/10

Antenna Performance

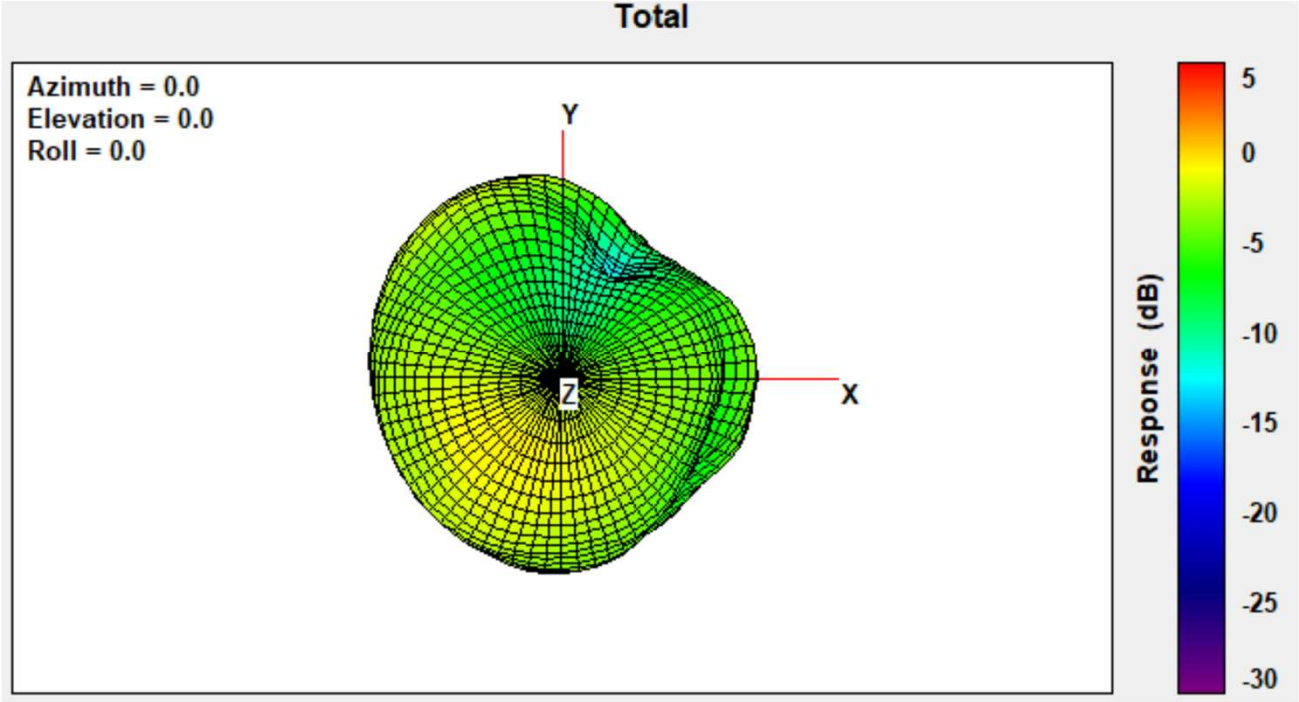
Frequency (GHz)	MHA BT Antenna
2.40	-6.99 dB(20.00%) Peak Gain:-2.32 dB
2.44	-6.35 dB(23.17%) Peak Gain:-2.44 dB
2.48	-6.89 dB(20.46%) Peak Gain:-1.66 dB

Return Loss


Tr1 S11 Log Mag 10.00dB/ Ref 0.000dB
1 2.4000000 GHz -13.515 dB
>2 2.4400000 GHz -17.365 dB
3 2.4800000 GHz -17.849 dB
50.00
40.00
30.00
20.00
10.00
0.000
-10.00
-20.00
-30.00
-40.00
-50.00
1 Start 2 GHz
IFBW 70 kHz
Stop 5 GHz
PExt
Off

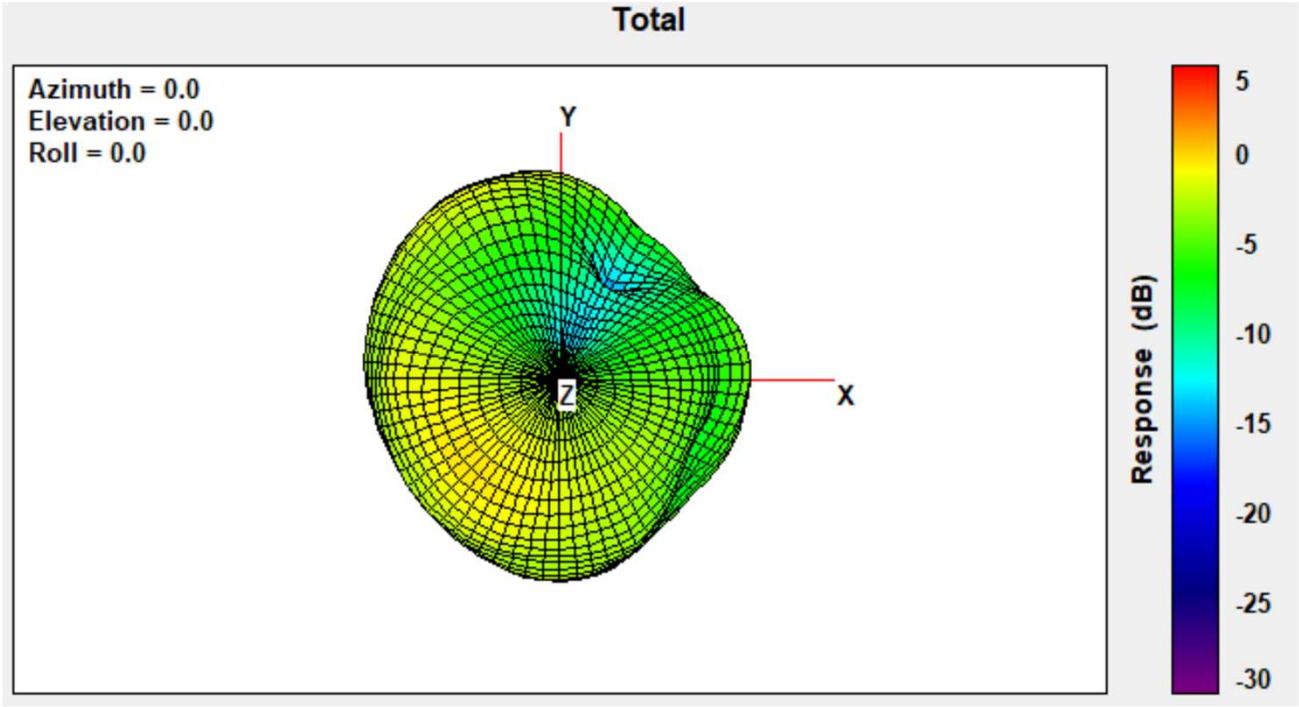
Antenna Radiated pattern

2.40 GHz



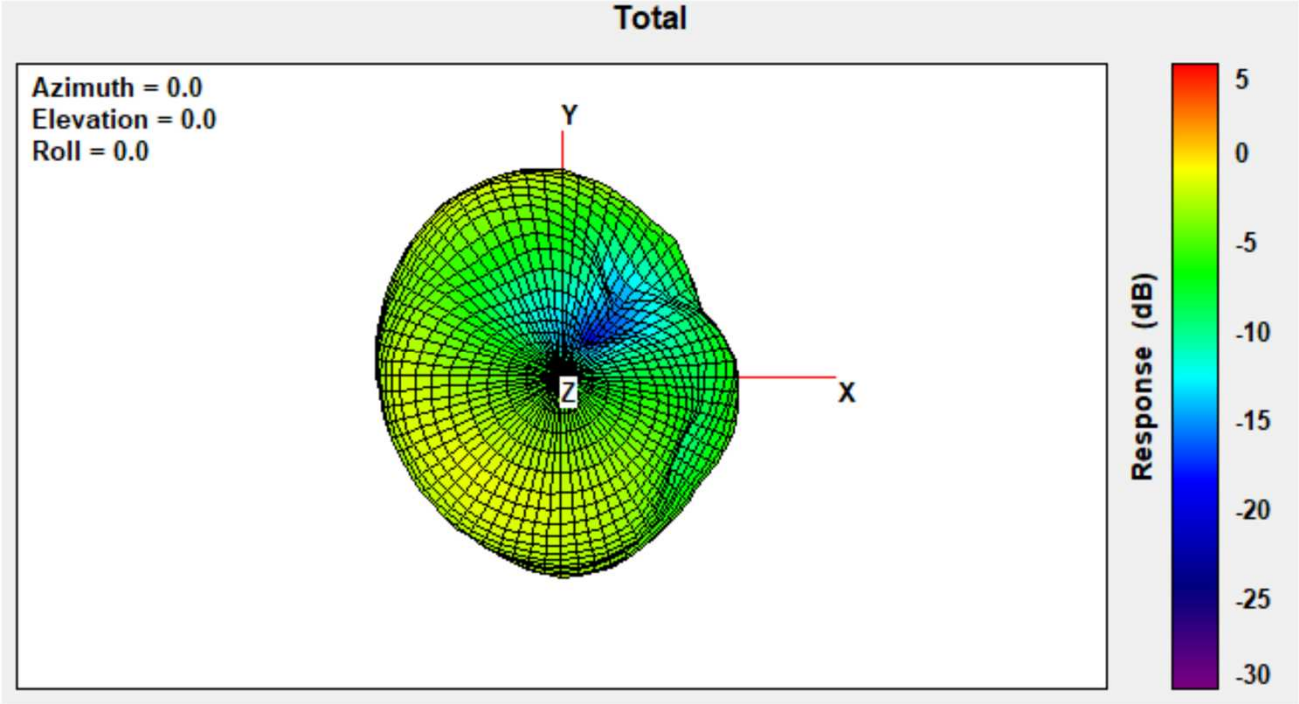
Antenna Radiated pattern

2.44 GHz



Antenna Radiated pattern

2.48 GHz



Test setup and Produce

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