

# ANTENNA INFORMATION

OEM	Lenovo
ODM	Wistron
Platform model name	TP00137A; TP00137B;TP00137C;TP00137D
Intel platform (ex: Yes, No or NA)	Yes
Platform type (ex: regular NB, convertible PC, AIO...etc)	Convertible PC
SAR minimum separation (mm)	2.1

Antenna manufacturer	AVX
Address	Unit 4A&4B,Building B6, No.3009 Guanguang Road,Guangming science and technology park,Guangming district, Shenzhen,518107, P.R.China
Antenna Part number	Main: 025.901X3.0001                      Aux: 025.901X4.0001
Antenna type (ex: PIFA, Dipole...etc)	PIFA

Antenna Peak gain w/ cable loss (dBi)*										
	2.4GHz 2400-2483.5 MHz	5.2GHz 5150-5250MHz	5.3GHz 5250-5350MHz	5.6GHz 5470-5725MHz	5.8GHz 5725-5850MHz	5.9GHz 5850-5895MHz	6.2GHz 5925-6425MHz	6.5GHz 6425-6525MHz	6.7GHz 6525-6875MHz	7.0 GHz 6875-7125MHz
Main	0.67	-1.83	-1.86	-0.56	-0.17	-0.17	-0.14	-0.36	0.72	1.86
Aux	1.9	-0.87	-1.55	-1.68	-1.68	-1.68	-1.39	-1.9	1.35	1.35

Cable Assembly Part Number and Information					
	Cable PN	Cable length(cm)	Cable diameter(mm)	Impedance(ohm)	Connector type
Main	5004320	10.8	1.13	50	IPEX-4
Aux	5004326	23.2	1.13	50	IPEX-4

\* 3D Antenna Peak Gain required being test in system basis.

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## 1. Intel Reference Gain and Type

Antenna Peak gain w/ cable loss (dBi)											
Band/Frequency		2.4GHz 2400-2483.5 MHz	5.2GHz 5150-5250MHz	5.3GHz 5250-5350MHz	5.6GHz 5470-5725MHz	5.8GHz 5725-5850MHz	5.9GHz 5850-5895MHz	6.2GHz 5925-6425MHz	6.5GHz 6425-6525MHz	6.7GHz 6525-6875MHz	7.0 GHz 6875-7125MHz
Design	EU/UK	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
PIFA	For WiFi 6E and earlier	3.24	3.64	3.73	4.77	4.97	4.72	4.83	4.30	5.37	5.59
	From WiFi 7	2.95	5.11	4.55	5.15	5.13	4.45	5.02	5.02	4.96	4.96
Dipole	For WiFi 6E and earlier	2.89	2.92	3.19	4.41	4.22	4.22	4.83	4.30	4.49	5.34
	From WiFi 7	2.95	4.03	4.11	5.15	5.13	4.45	5.02	4.71	4.49	4.96

### 3D Peak Antenna gain should be equal or greater than -2 dBi

If a host integrator plans to use a lower gain antenna of the same type, additional CBP(FCC)/EDT(EU) testing need to be performed while the module is installed in the host.

## 2. Document Revision History

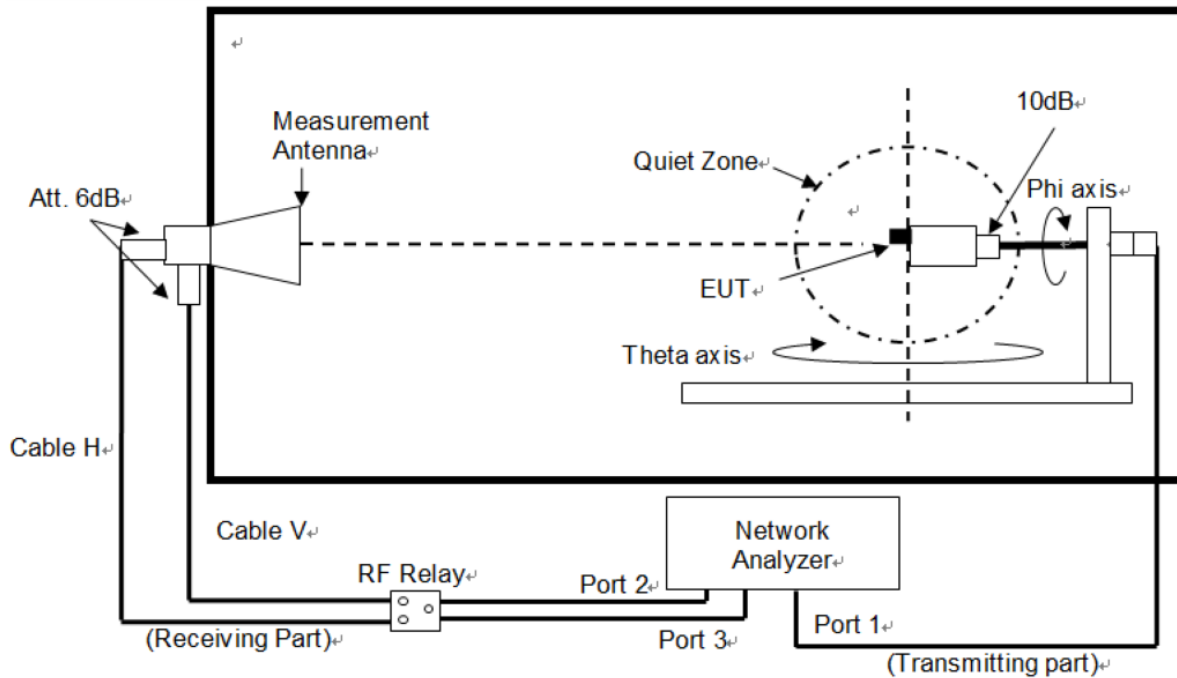
Revision #	Revision Details	Issued Date
Rev. 00	First Issue for UNII4 update filing	2023.12.12

### 3. Test & System Description

#### 3.1 Measurement Method and System

Eleven conical cuts are required to capture data at every 15 degrees from the DUT, whereas only five are required to capture data at 30-degree intervals; with the top (theta = 0 degrees) and bottom (theta = 180 degrees) positions only requiring the measurement of a single data point each. For systems that are unable to reach the theta = 180 degrees position (i.e. for devices mounted to a pedestal which prevents the measurement antenna from reaching theta = 180 degrees), the value at that point may be extrapolated from the average of the neighboring conical cut. Typically, the DUT will be mounted to a low loss dielectric structure and positioned in the center of the test volume. The measurement antenna will be positioned at a starting theta angle (e.g. zero degrees) relative to the DUT. The DUT will then be rotated relative to the measurement antenna around the full 360 degrees of phi rotation. The measurement antenna will then be positioned at the next theta angle relative to the the DUT, and the process repeated until all conical cuts have been measured.

#### 3.2 Test setup



### 3.3 Equipment list

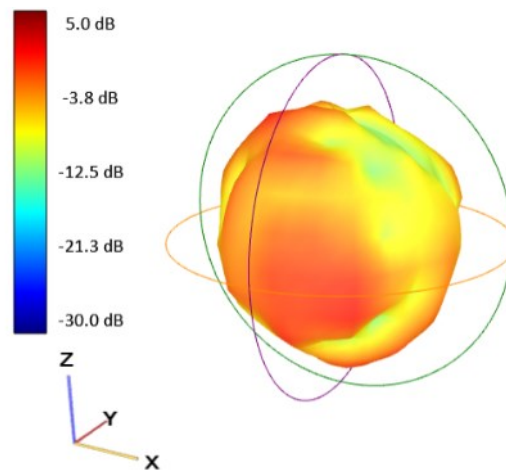
ID#	Device	Type/Model	Serial #	Manufacturer
009-000	Spherical full anechoic chamber	WPTC	P28765-00651-001-PRB	Rohde & Schwarz
009-001	Measurement software (v11.30)	AMS32	100084	Rohde & Schwarz
152-000	Cross-polarized vivaldi antenna	TC-TA85CP	101018	Rohde & Schwarz
345-000	Switch unit + LNA	TC-ELAMP-D	1533.6350.02	Rohde & Schwarz
335-000	Positionner	NCD	173167577	Maturo
143-000	Spectrum analyser	UXA N9040B	US57212210	Keysight
130-000	Signal generator	SMB 100A	178217	Rohde & Schwarz

#### 4. Radiation characteristics of antenna loaded in Host Platform

##### Main Antenna

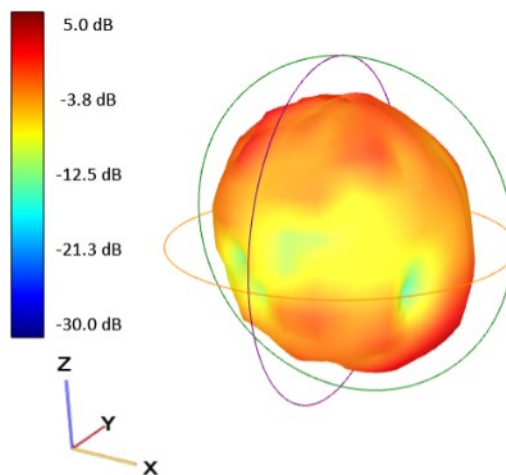
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	0.67



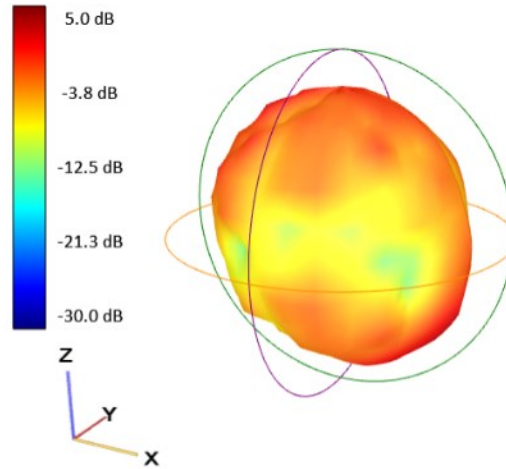
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	-1.83



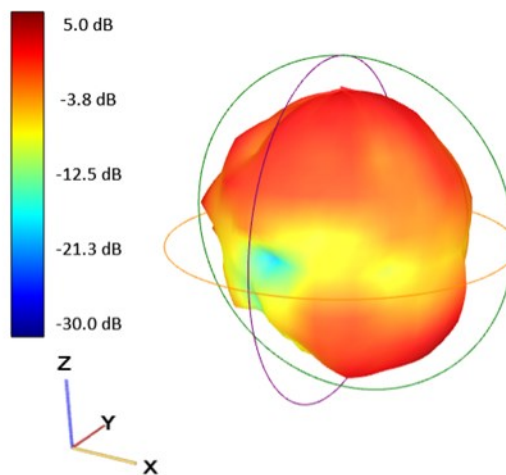
## Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	-1.86



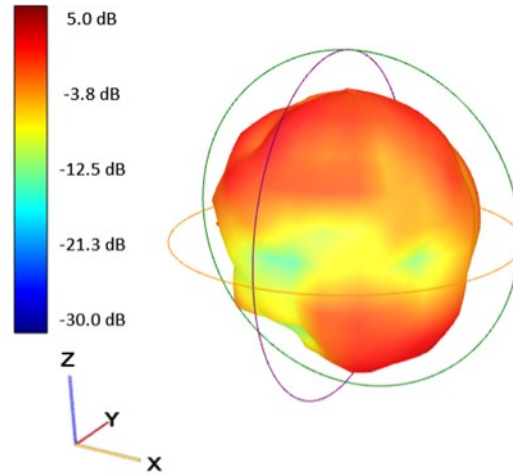
## Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	-056



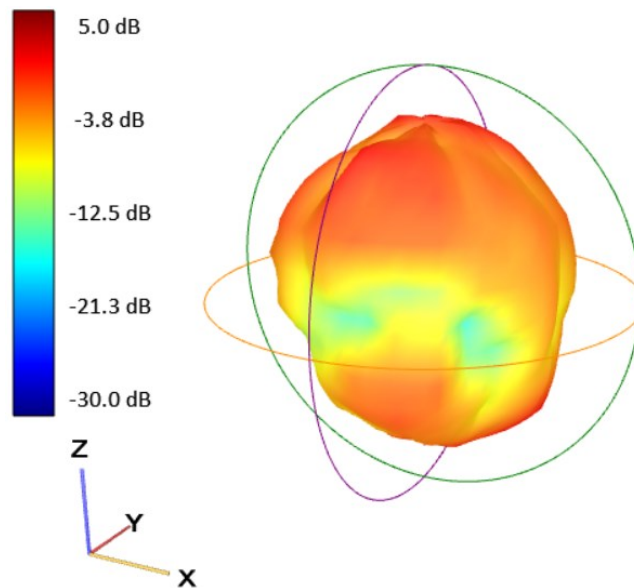
## Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	-0.17



## Max Antenna 3D Radiation Pattern 5850-5895 MHz

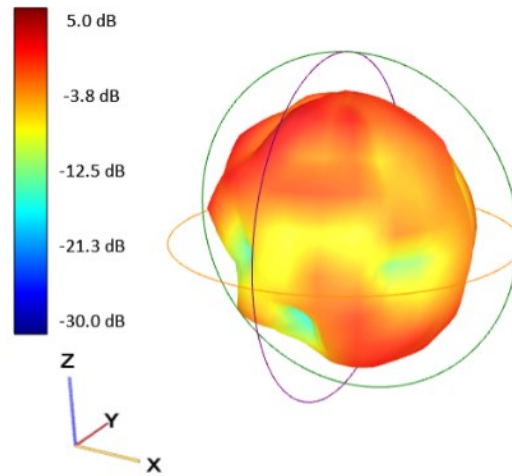
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	-0.17





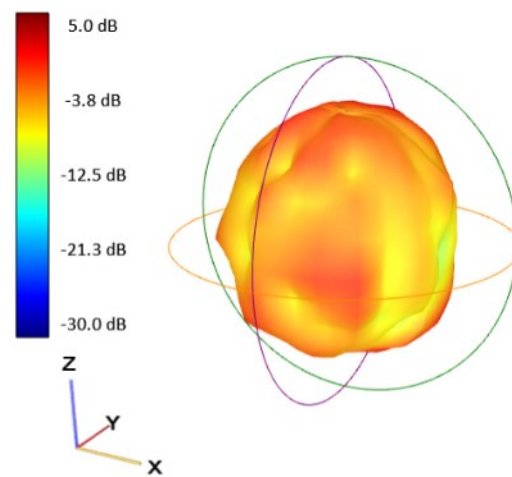
## Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	-0.14



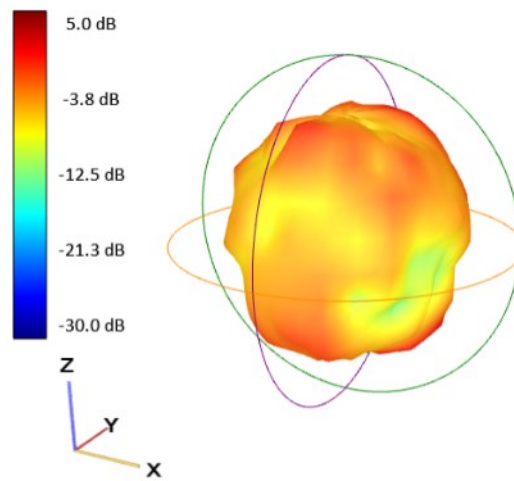
## Max Antenna 3D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	-0.36



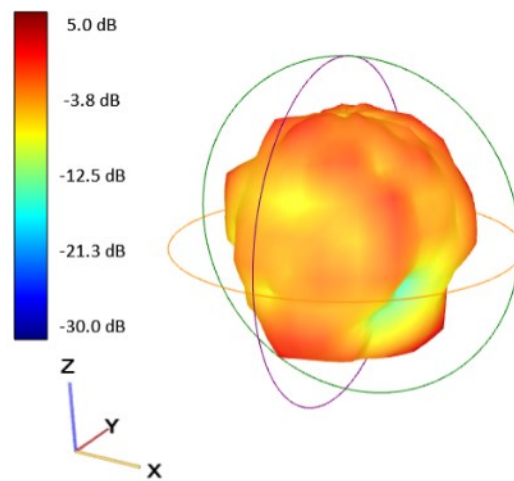
## Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	0.72



## Max Antenna 3D Radiation Pattern 6875-7125 MHz

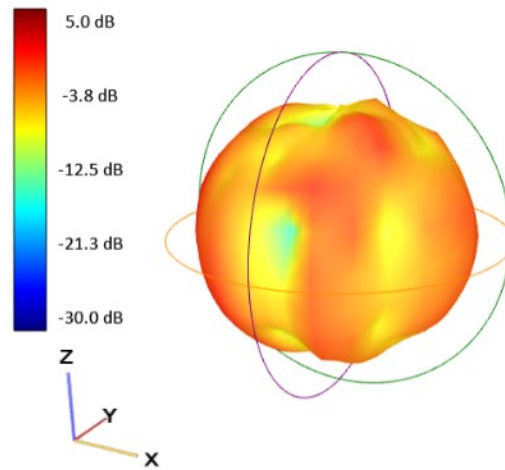
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	1.86



### Auxiliary Antenna

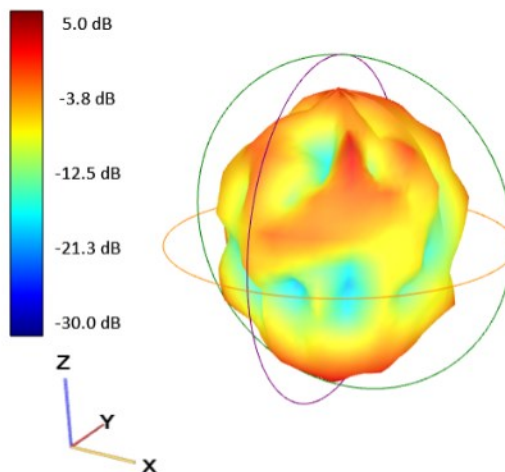
#### Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	1.9



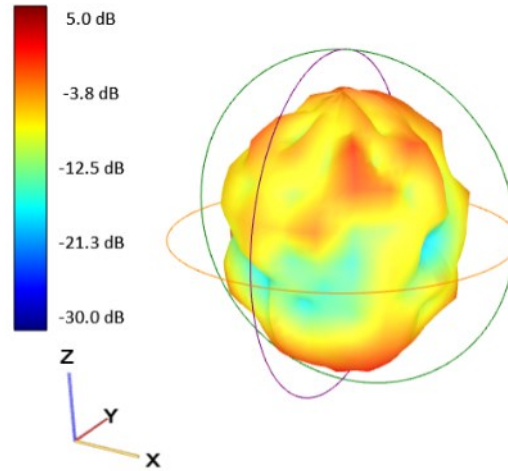
#### Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	-0.87



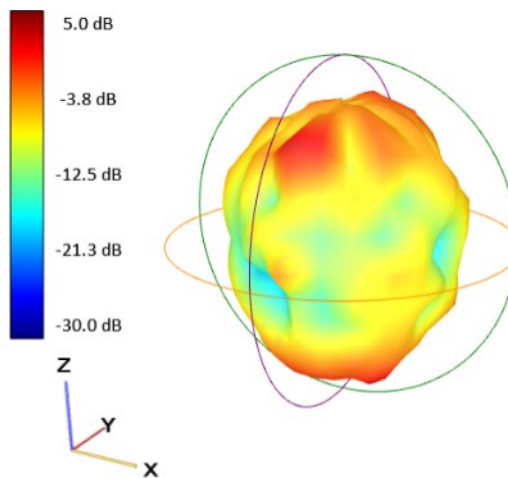
## Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	-1.55



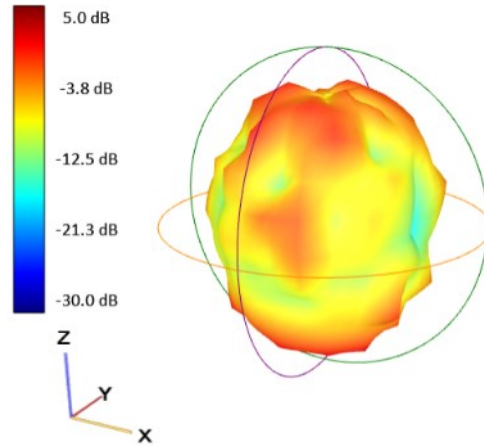
## Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	-1.68



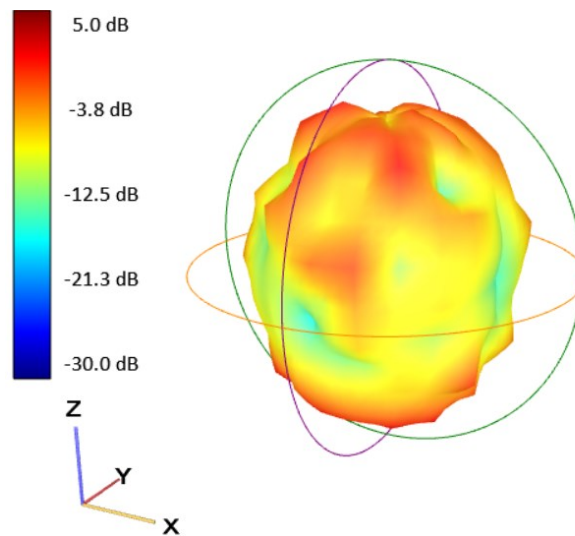
## Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	-1.68



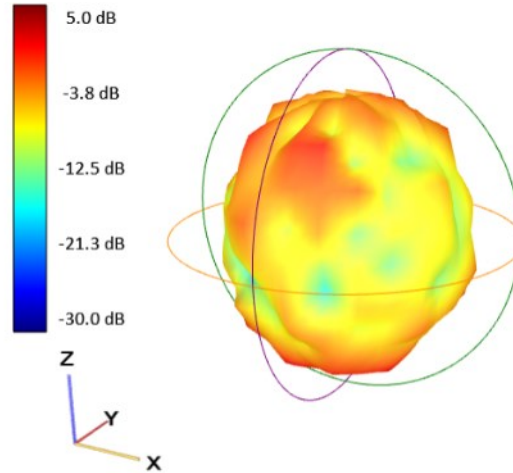
## Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	-1.68



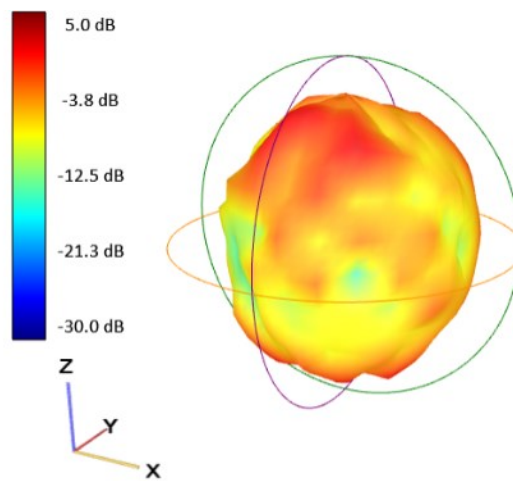
## Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	-1.39



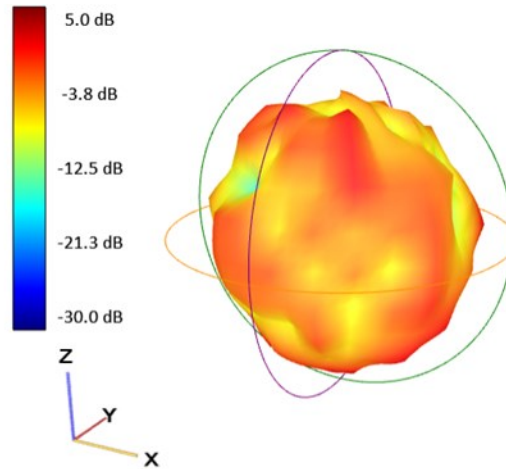
## Max Antenna 3D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	-1.9



## Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	1.35



## Max Antenna 3D Radiation Pattern 6875-7125 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	1.35

