



LTE MIMO External Antenna  
Model: HB15H  
External Antenna  
Product Number: H2MA301D100100

Preliminary Engineering Specification

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# 1 Introduction

The HB15H External antenna is an omni-directional, IP67 waterproof M2M external antenna, combines 2 of high performance cellular LTE full band antenna, covering LTE bands 698 to 960 & 1710 to 2700 & 3400 to 3800MHz

The HB15H is ideal for use on non-metal surface.

## Features

- \* IP67 Antenna
- \* 2 \* 4G MIMO LTE Antenna: 698 to 960 & 1710 to 2700 & 3400 to 3800MHz
- \* Dimensions: 150 x 64 x 17 mm
- \* RoHS compliant.

## Applications

- \* Automotive telematics
- \* Fleet management.
- \* Teleportation.

## 2 Electrical Specifications

CELLULAR/4G LTE ANTENNA 1						
Frequency(MHz)		698~960	1710~2170	2300~2400	2490~2690	3400~3800
Efficiency (%)	1M	60.3	59.5	56.9	50.2	43.0
	2M	50.9	51.1	50.3	40.6	34.2
Average gain (dB)	1M	-2.2	-2.3	-2.4	-3.0	-3.7
	2M	-2.9	-2.9	-3.0	-3.9	-4.7
Peak gain (dBi)	1M	4.0	4.2	2.5	2.7	2.2
	2M	3.1	3.2	2.4	1.5	1.4
Impedance( $\Omega$ )	50					
Polarization	Linear					
V.S.W.R.	<5	<3				
Cable	KSR200 low loss cable					
Connector	SMA(M) ST					

CELLULAR/4G LTE ANTENNA 2						
Frequency(MHz)		698~960	1710~2170	2300~2400	2490~2690	3400~3800
Efficiency (%)	1M	57.0	51.6	55.6	49.1	33.3
	2M	50.0	42.5	48.0	38.9	27.0
Average gain (dB)	1M	-2.4	-2.9	-2.5	-3.1	-4.8
	2M	-3.0	-3.7	-3.2	-4.1	-5.7
Peak gain (dBi)	1M	3.8	3.8	1.4	2.4	1.9
	2M	3.1	3.2	1.2	1.4	1.1
Impedance( $\Omega$ )		50				
Polarization		Linear				
V.S.W.R.		<5	<3			
Cable		KSR200 low loss cable				
Connector		SMA(M) ST				

MECHANICAL	
Antenna Dimensions	150 * 64 * 17 mm
Waterproof	IP67
Cable type*	KSR200
Cable Length*	2M
Connector*	SMA(M) ST
Mounting Type	Adhesive mount

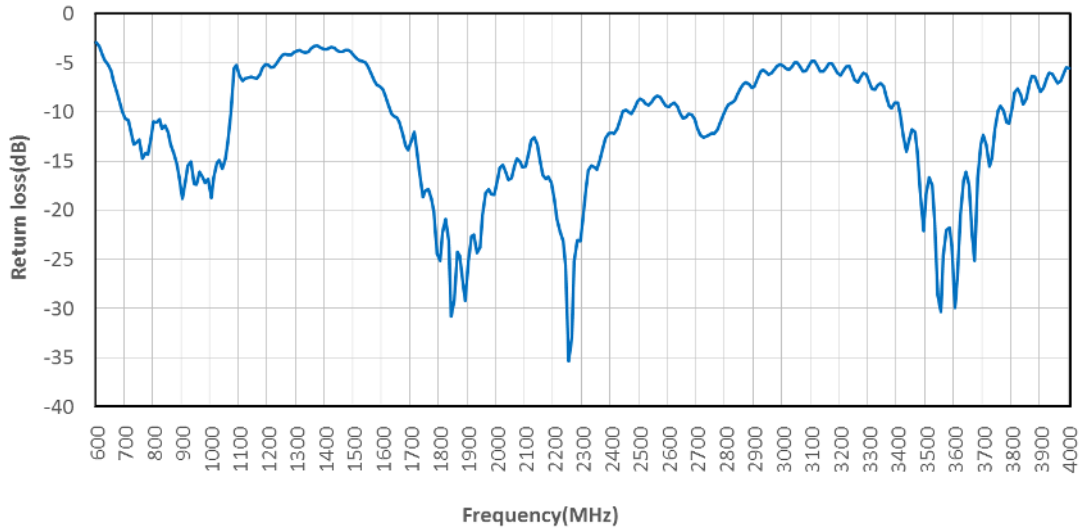
\*The connector, cable length, and cable type can be tailor made upon request.

ENVIRONMENTAL	
Operation Temperature	-40~+85 °C
Storage Temperature	-40~+85 °C

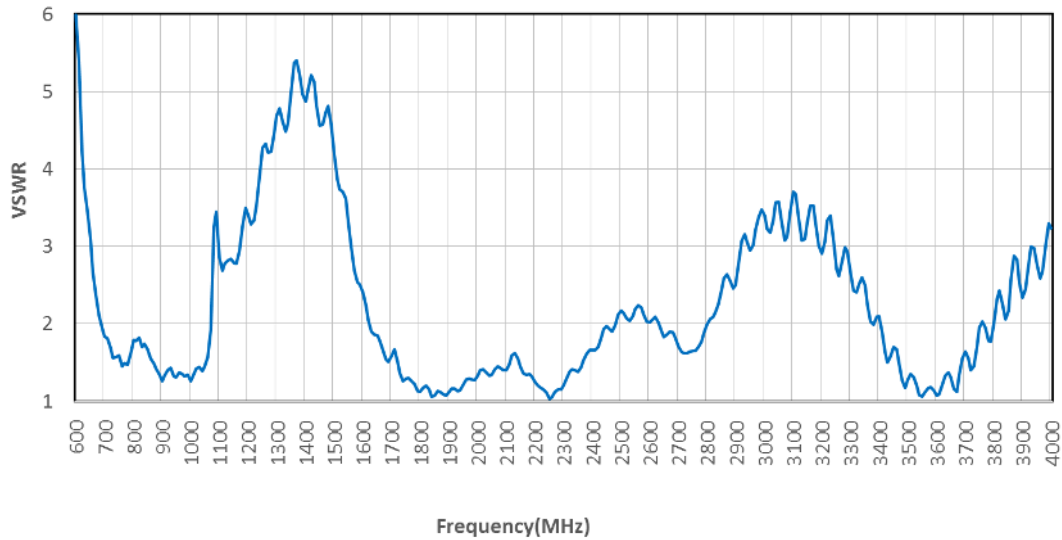
# 3 Antenna Characteristics

## 3.1 Cellular/LTE Antenna 1

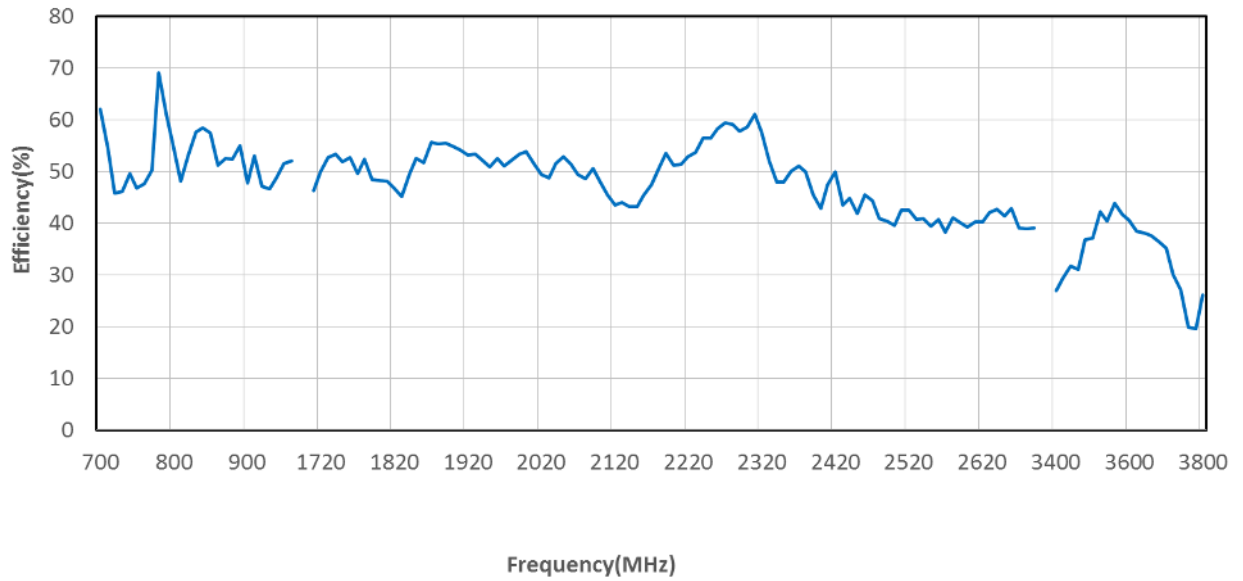
### 3.1.1 Return Loss



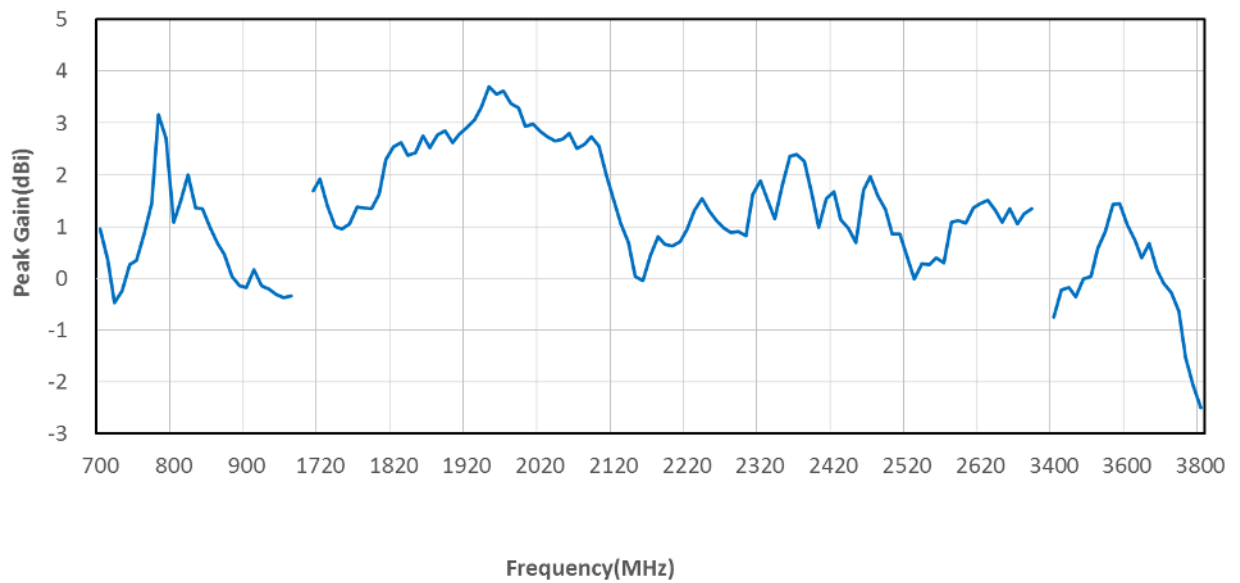
### 3.1.2 VSWR



### 3.1.3 Efficiency

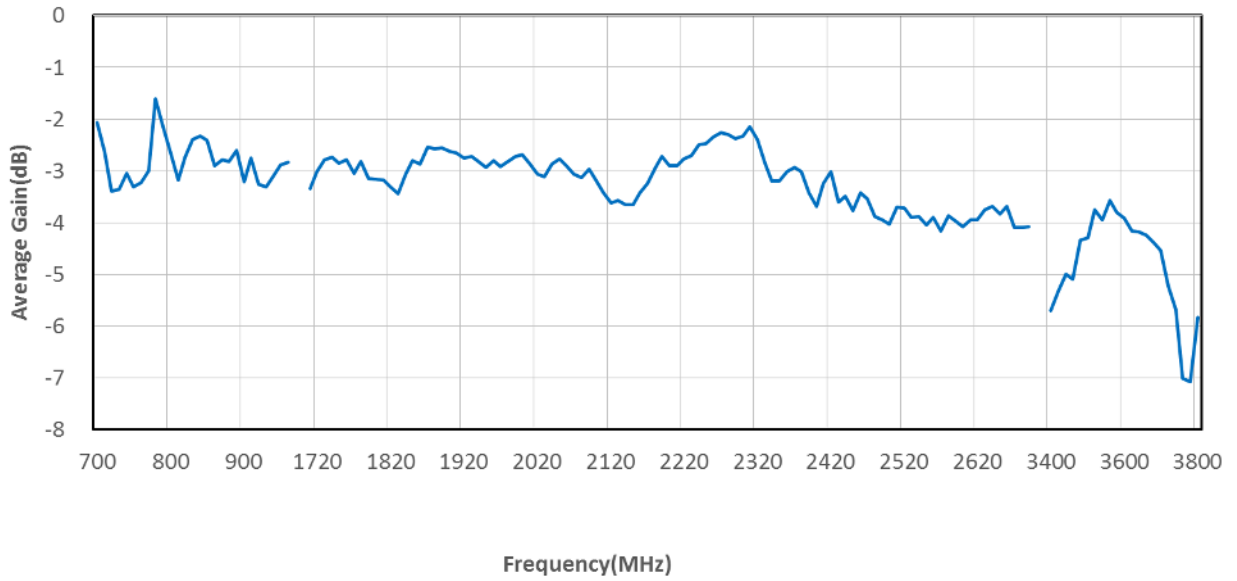


### 3.1.4 Peak Gain



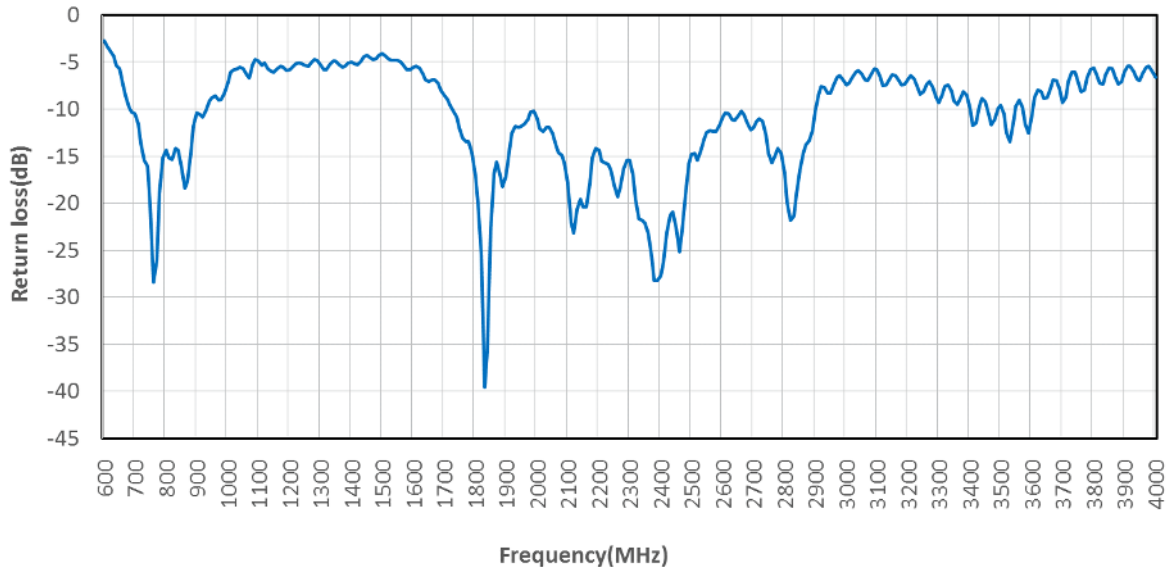


### 3.1.5 Average Gain

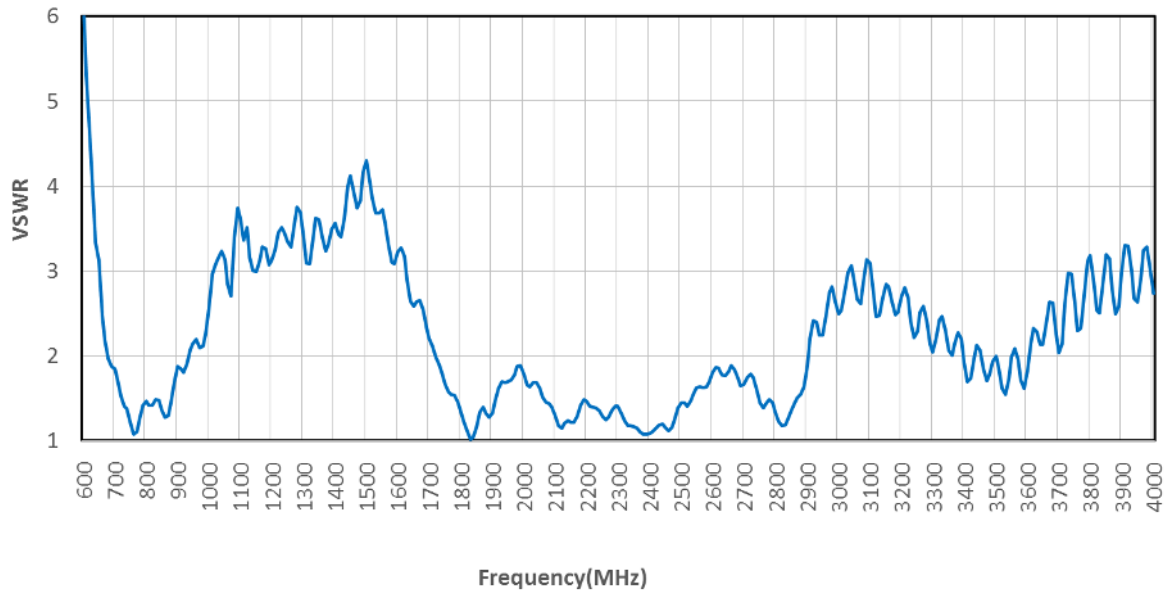


## 3.2 Cellular/LTE Antenna 2

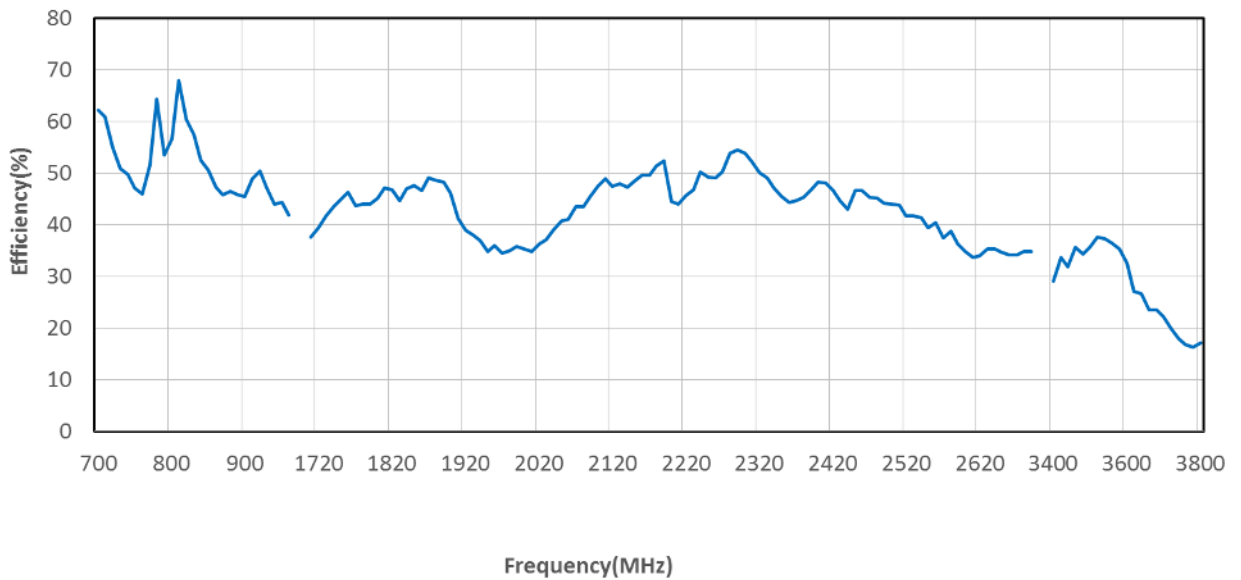
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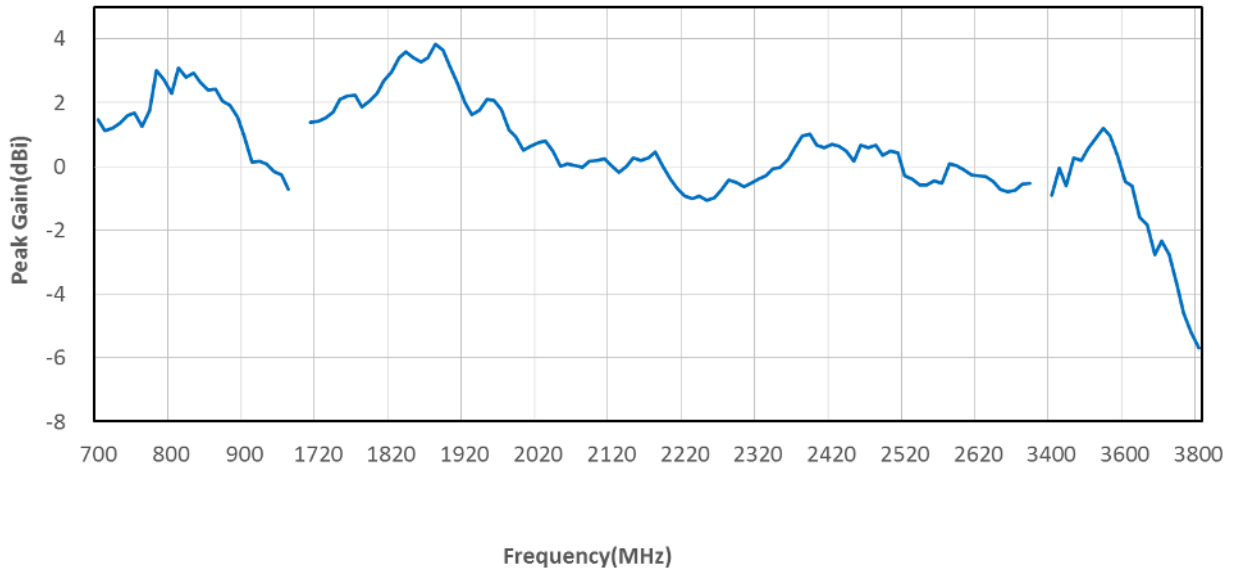
### 3.2.2 VSWR



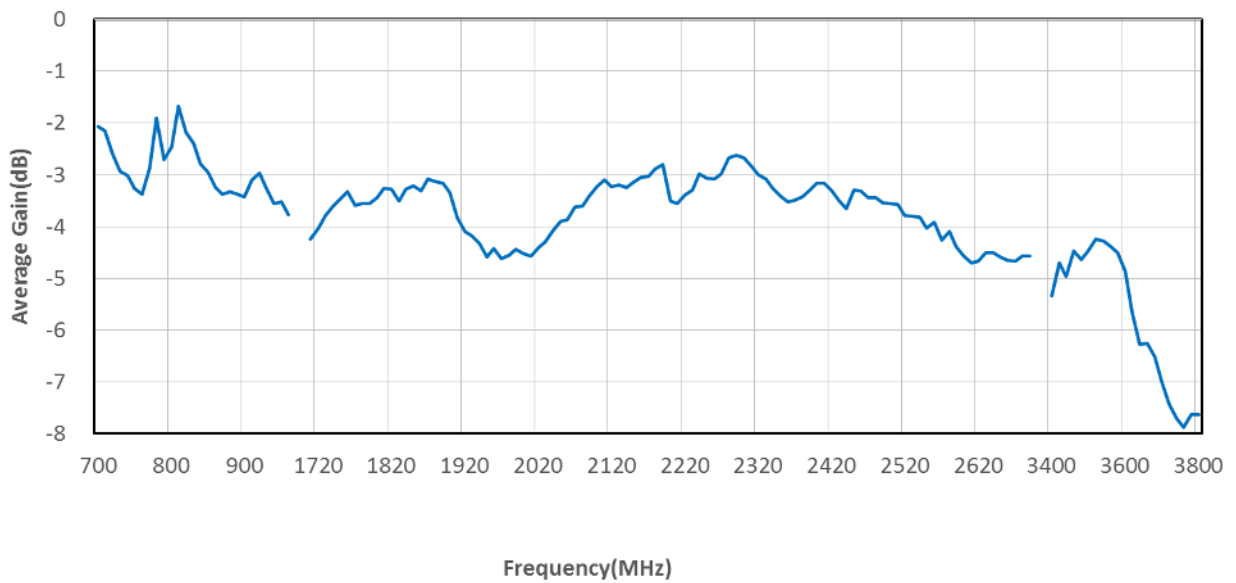
### 3.2.3 Efficiency



### 3.2.4 Peak Gain

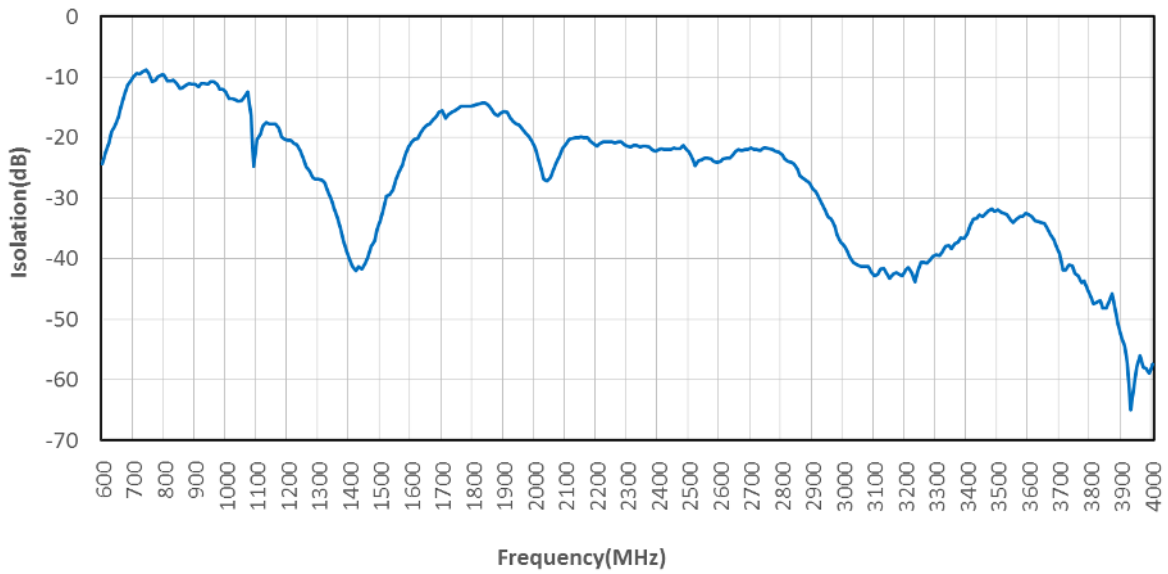


### 3.2.5 Average Gain



### 3.3 Isolation

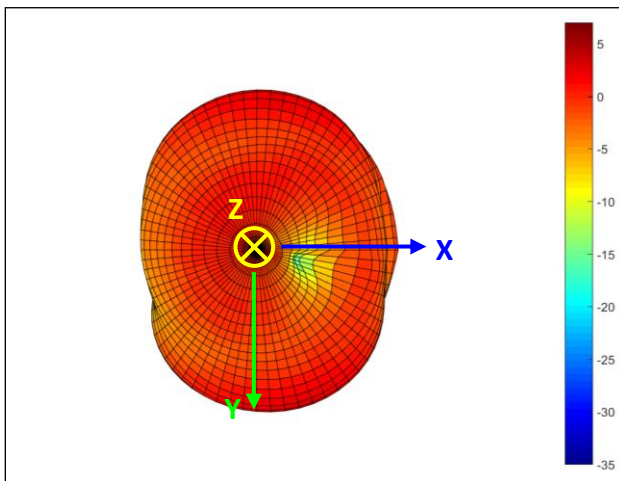
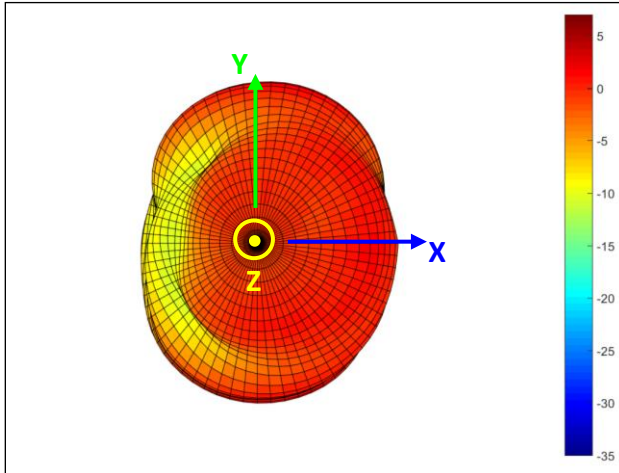
#### LTE antenna 1 and LTE antenna 2

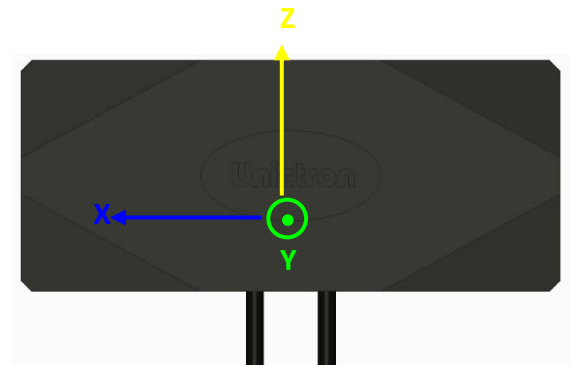
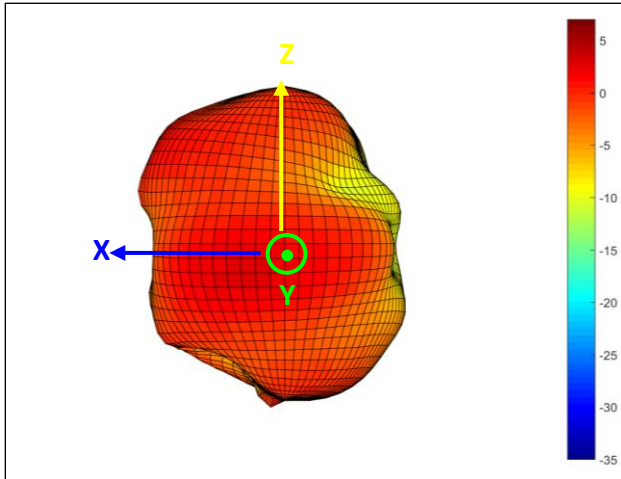


# 4 Radiation Gain Pattern of LTE Antenna 1

## 4.1 698~960MHz Band

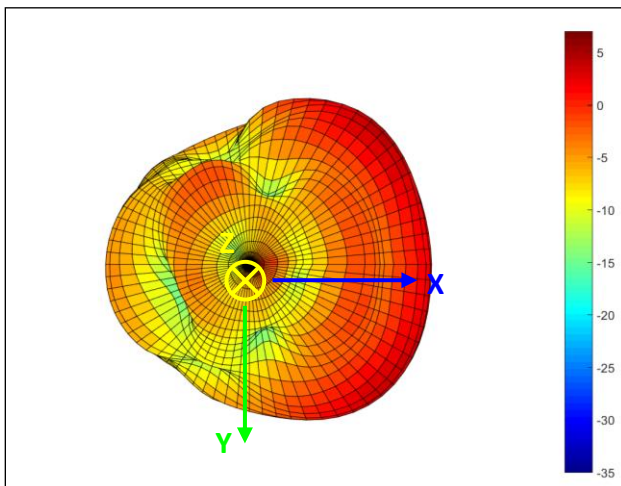
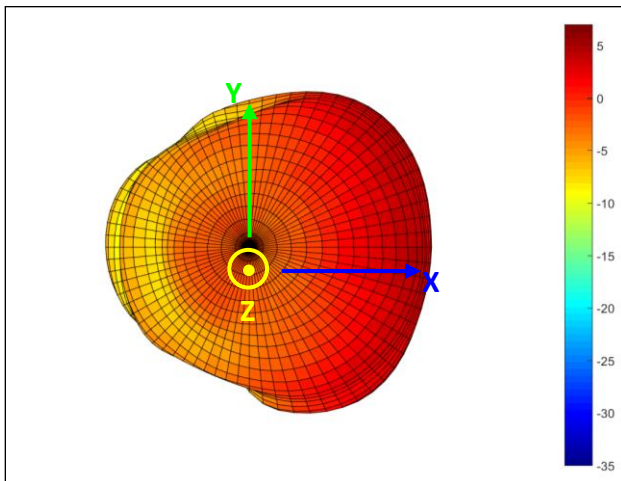
3D Radiation Gain Pattern @ 830 MHz (Unit: dBi)

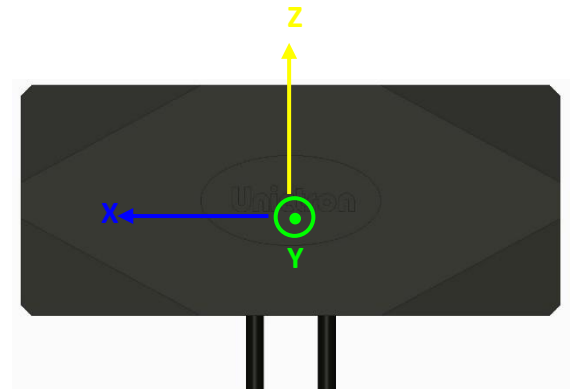
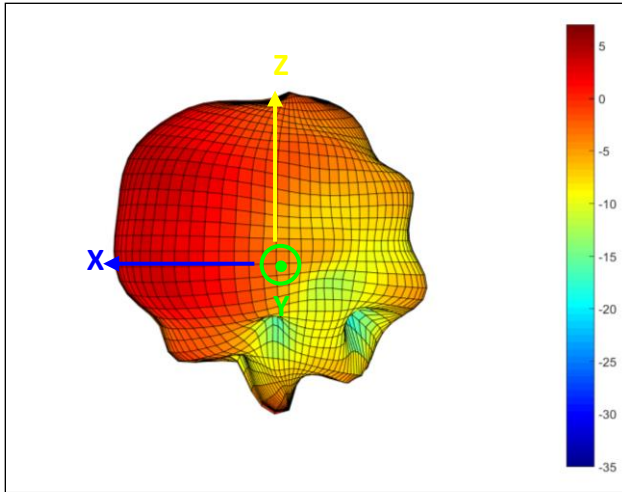




#### 4.2 1710~2170MHz Band

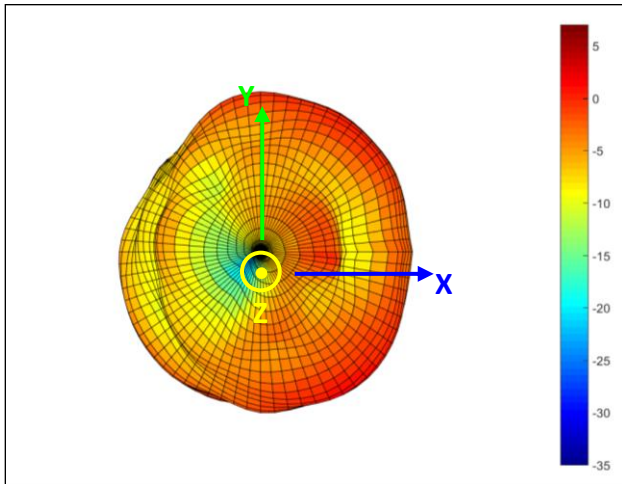
#### 3D Radiation Gain Pattern @ 1940 MHz (Unit: dBi)



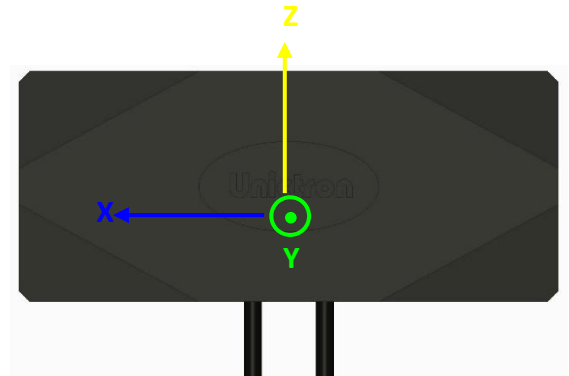
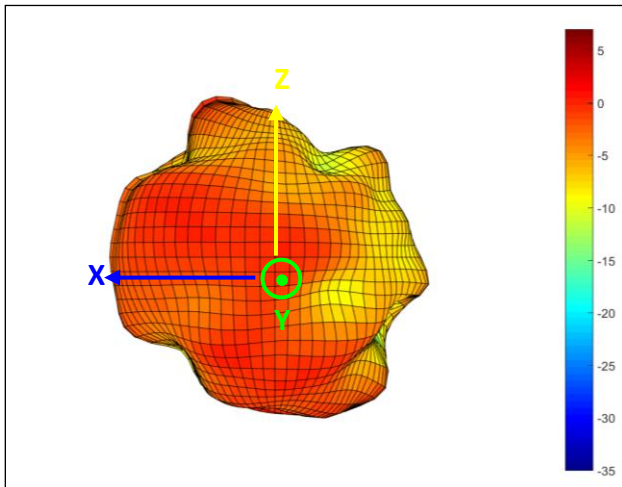
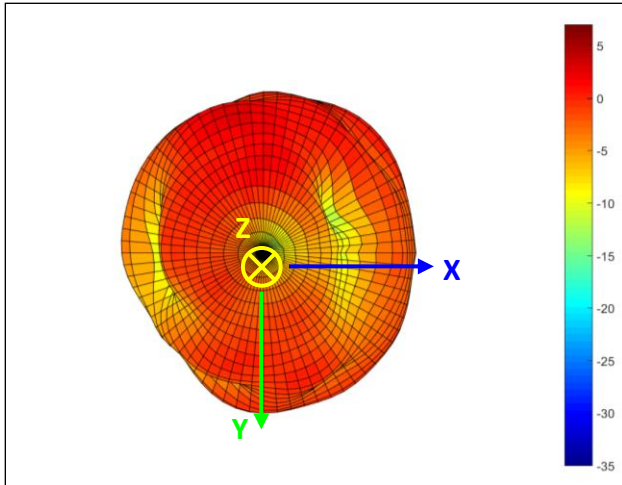


### 4.3 2300~2400MHz Band

3D Radiation Gain Pattern @ 2350 MHz (Unit: dBi)

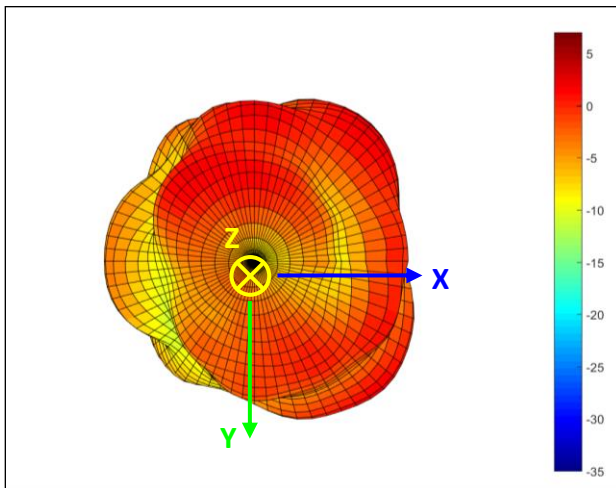
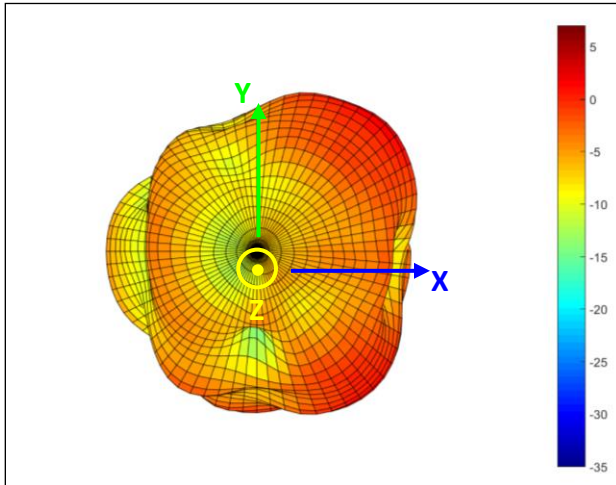


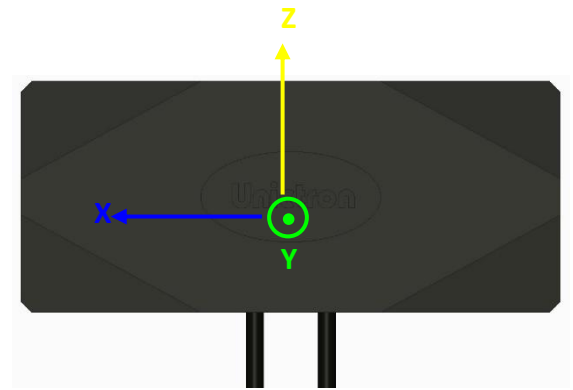
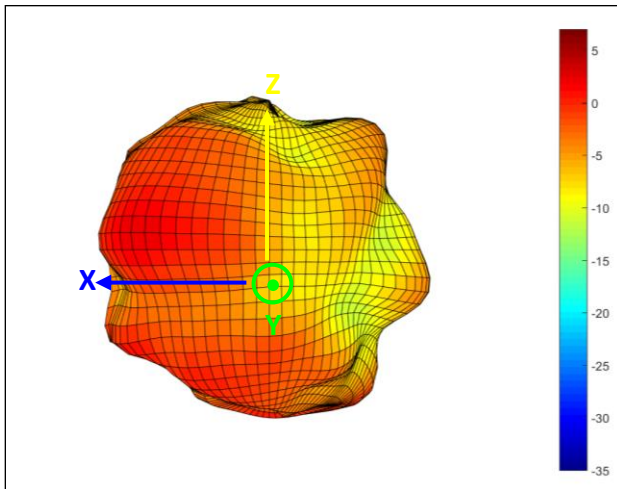




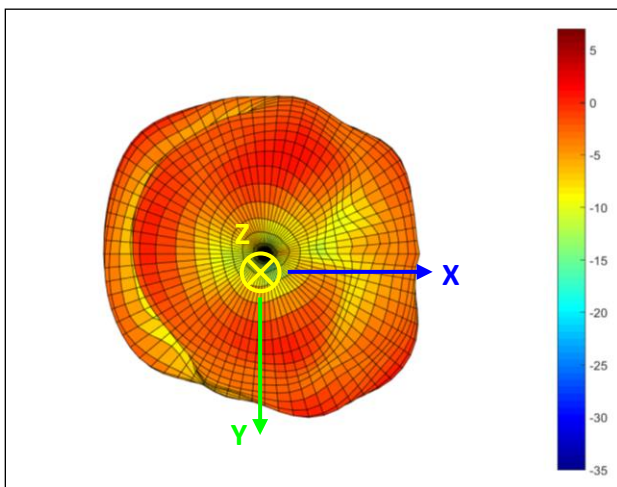
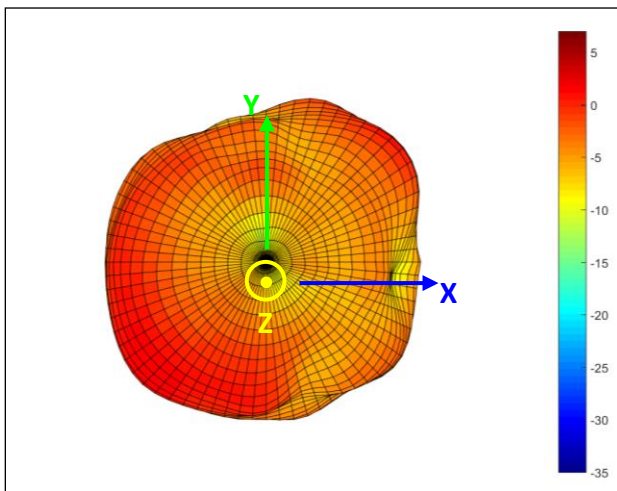
#### 4.4 2490~2690MHz Band

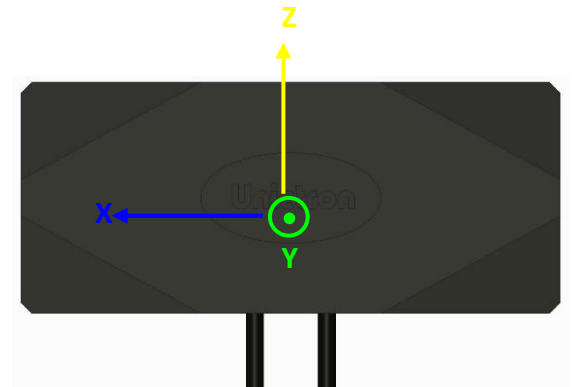
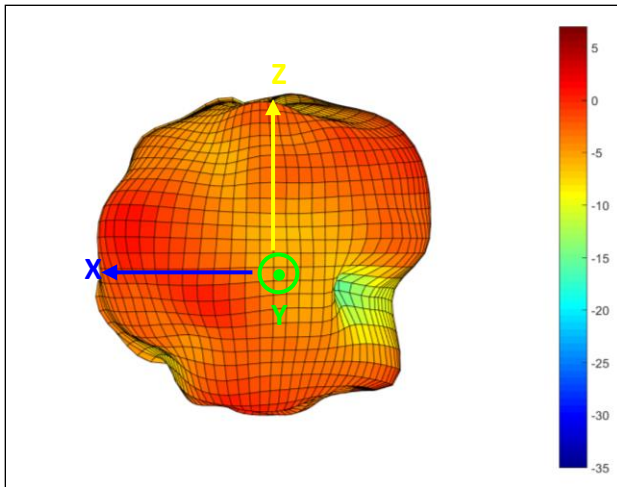
#### 3D Radiation Gain Pattern @ 2590 MHz (Unit: dBi)





4.5 7.5. 3400~3800MHz Band  
3D Radiation Gain Pattern @ 3600 MHz (Unit: dBi)

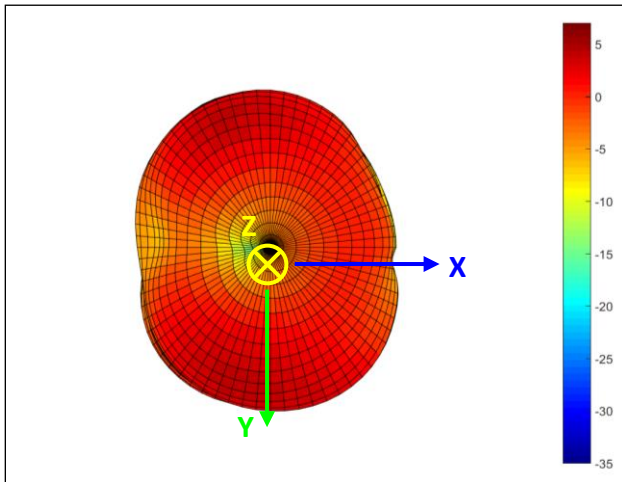
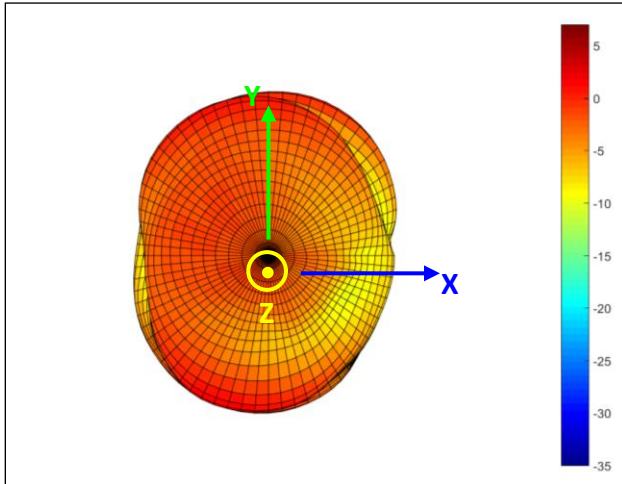


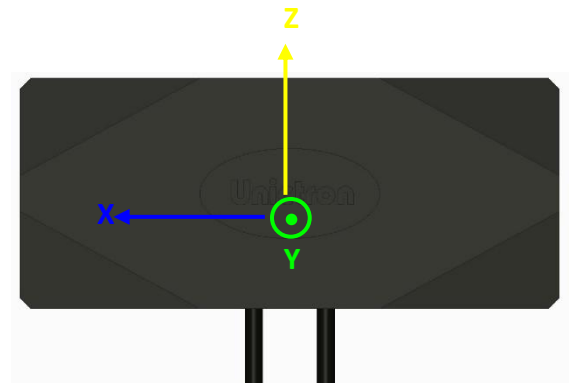
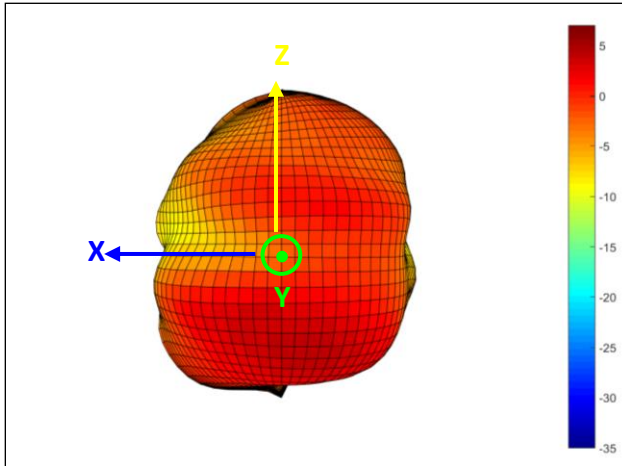


# 5 Radiation Gain Pattern of LTE Antenna 2

## 5.1 698~960MHz Band

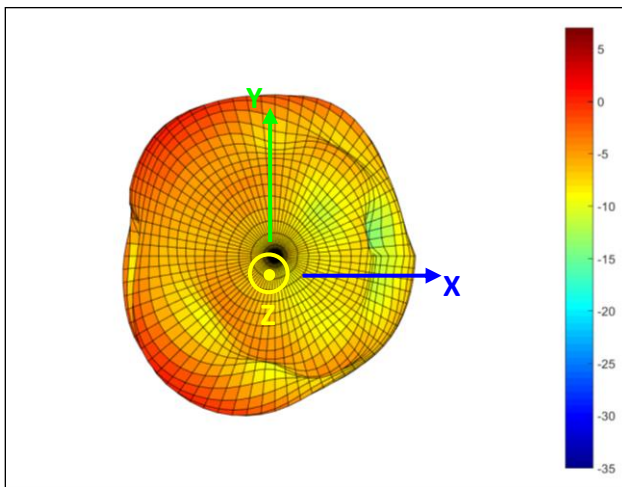
3D Radiation Gain Pattern @ 830 MHz (Unit: dBi)

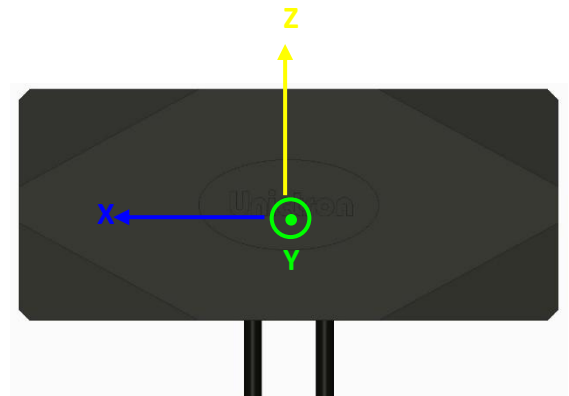
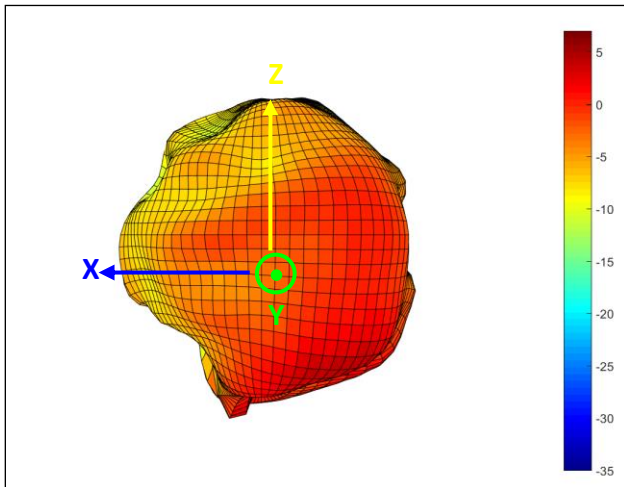
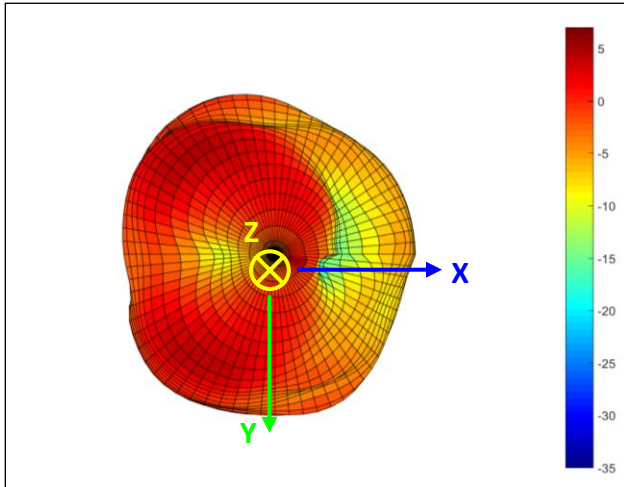




### 5.2 1710~2170MHz Band

3D Radiation Gain Pattern @ 1940 MHz (Unit: dBi)

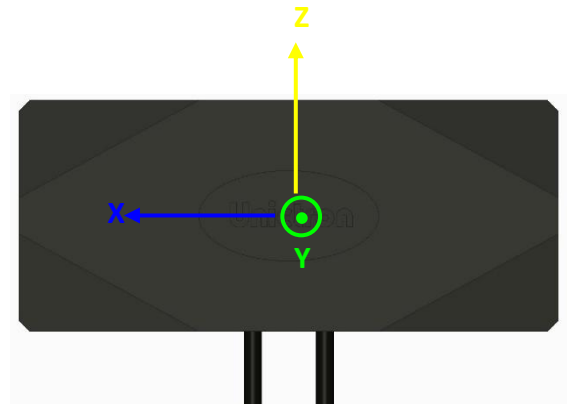
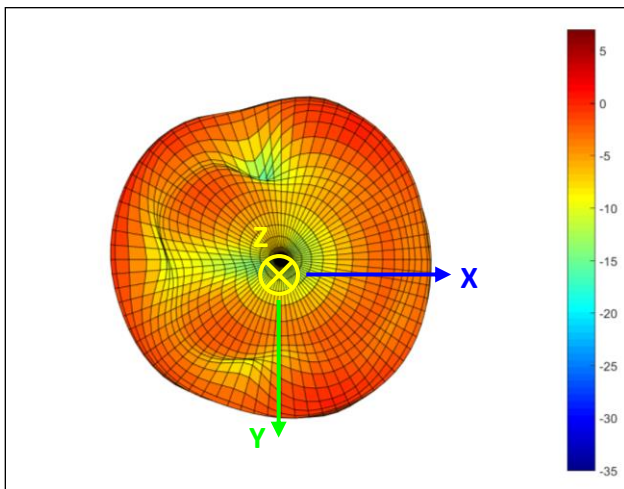
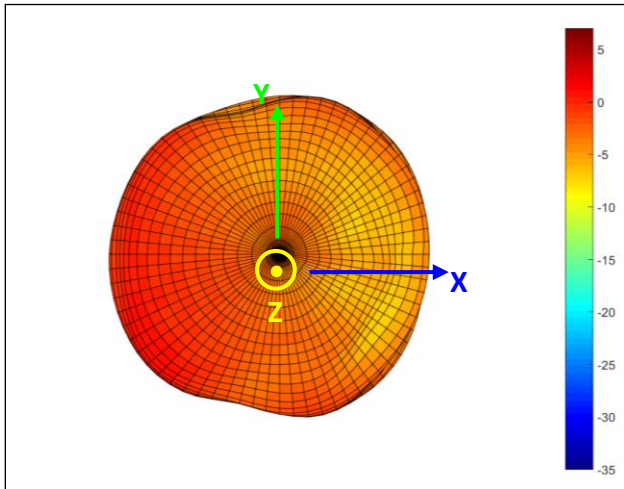




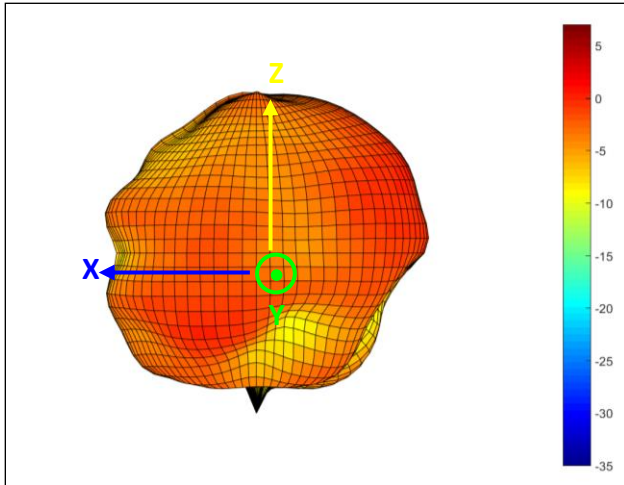


### 5.3 2300~2400MHz Band

3D Radiation Gain Pattern @ 2350 MHz (Unit: dBi)

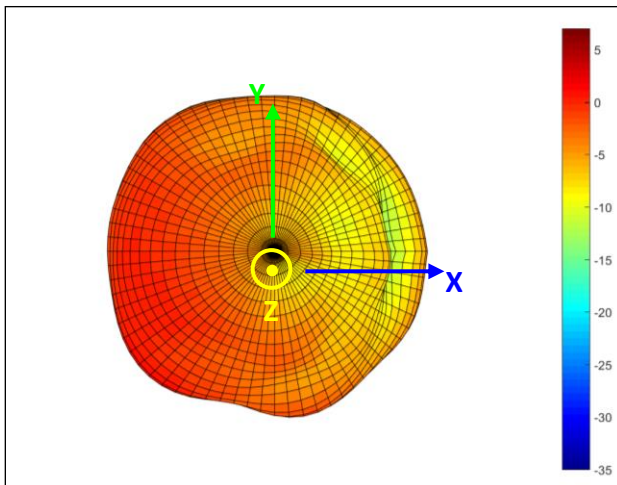


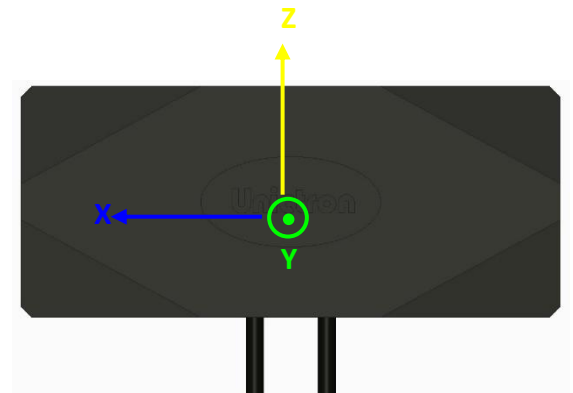
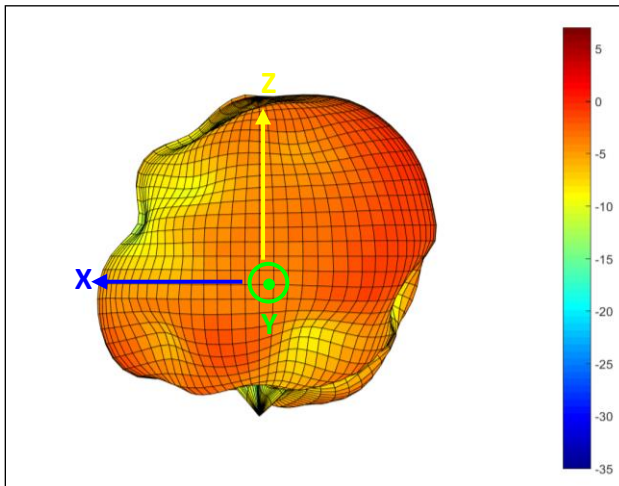
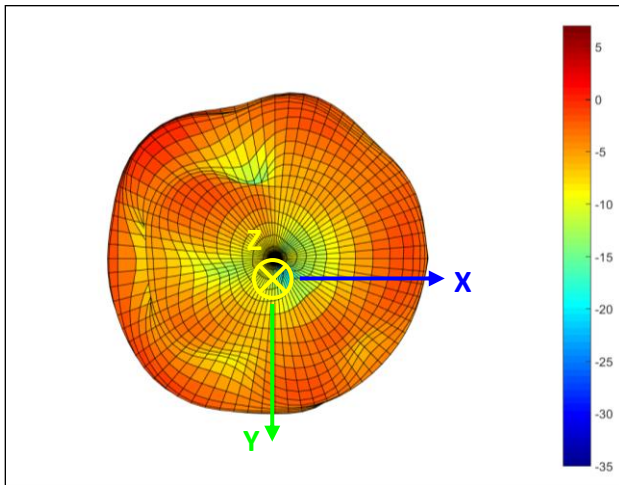




### 5.4 2490~2690MHz Band

3D Radiation Gain Pattern @ 2590 MHz (Unit: dBi)





### 5.5 3400~3800MHz Band

3D Radiation Gain Pattern @ 3600 MHz (Unit: dBi)

