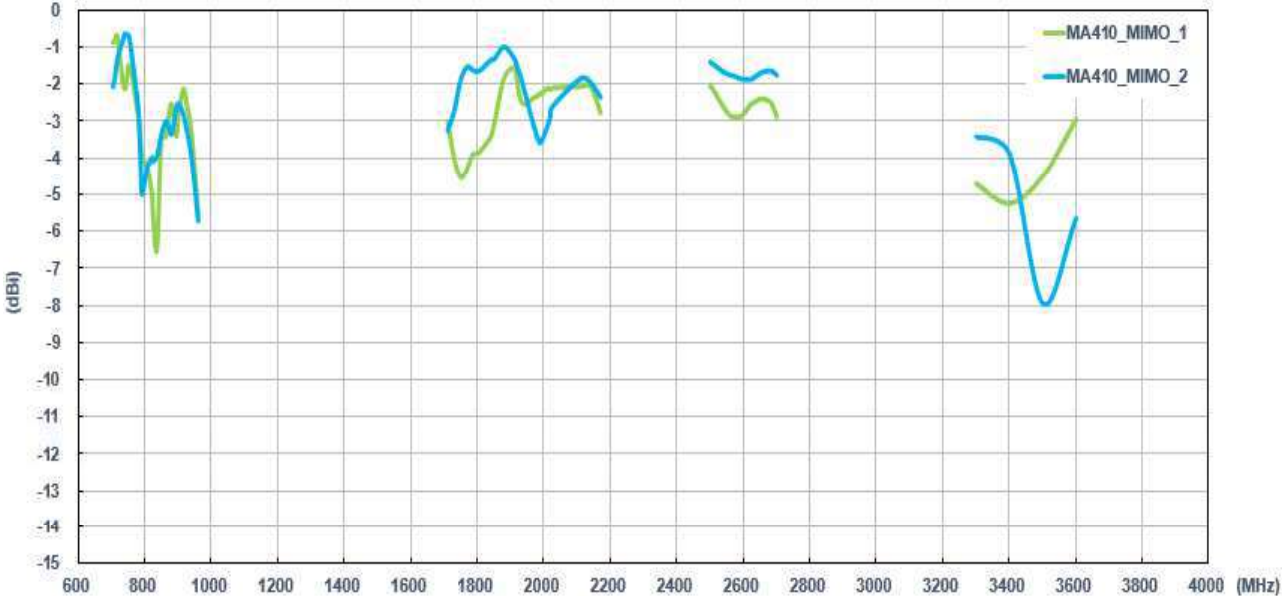
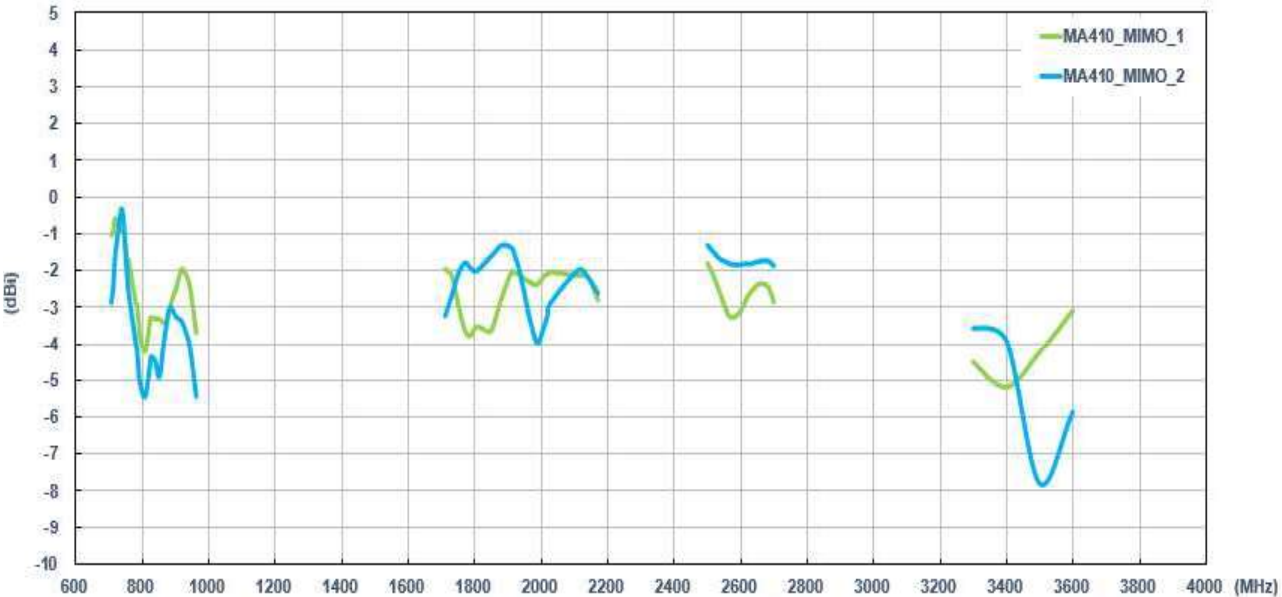


3.3.5. LTE Antenna Average gain

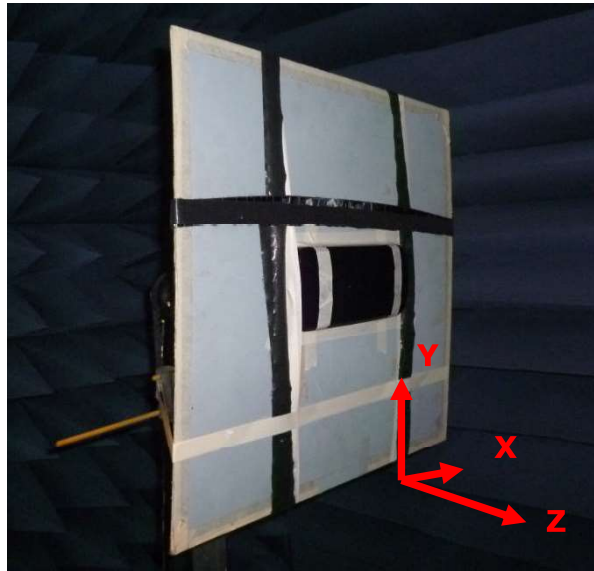
Setup on the 50\*50cm ground plane with 1 meter cable length



Setup in free space with 1 meter cable length



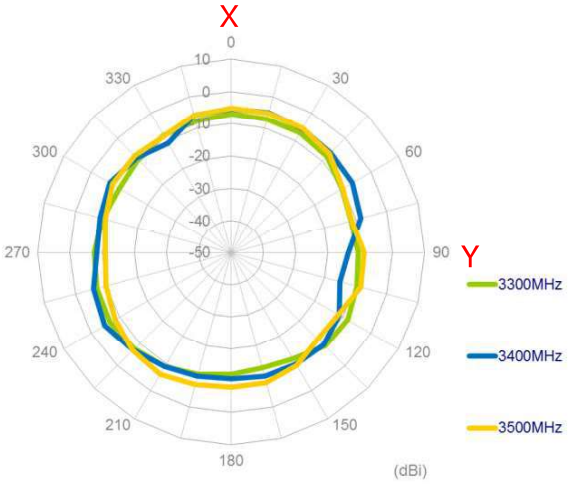
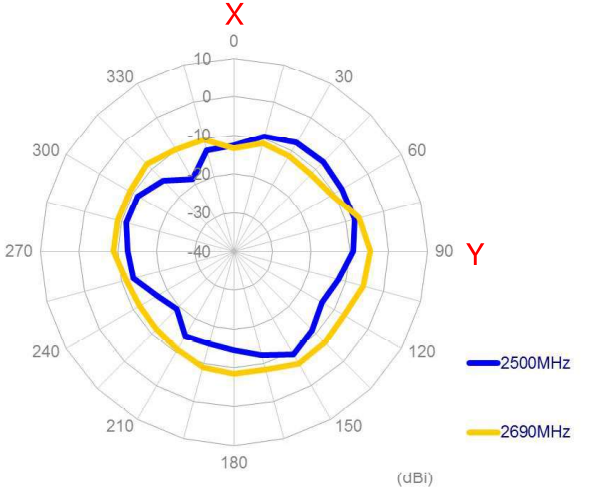
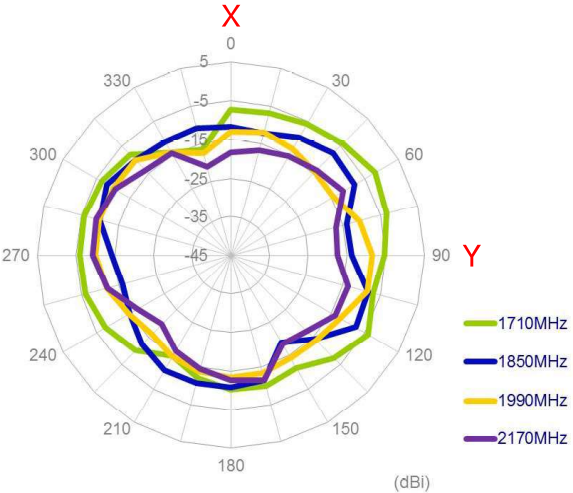
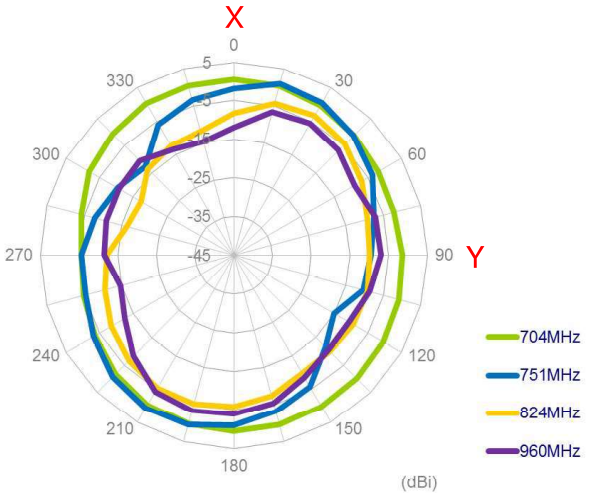
### 3.3.6. Test Setup for Antenna Radiation Pattern (ETS Anechoic chamber)



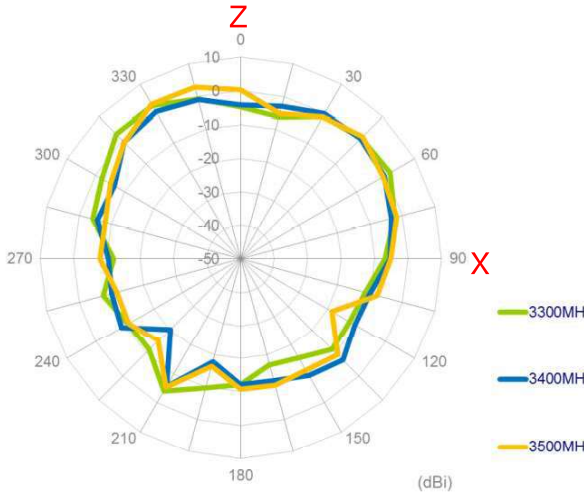
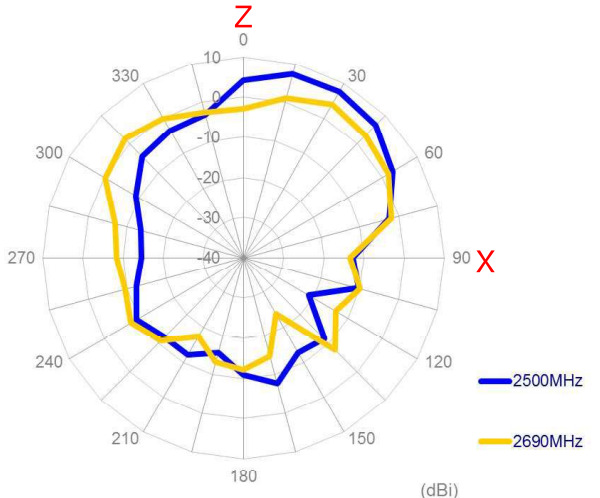
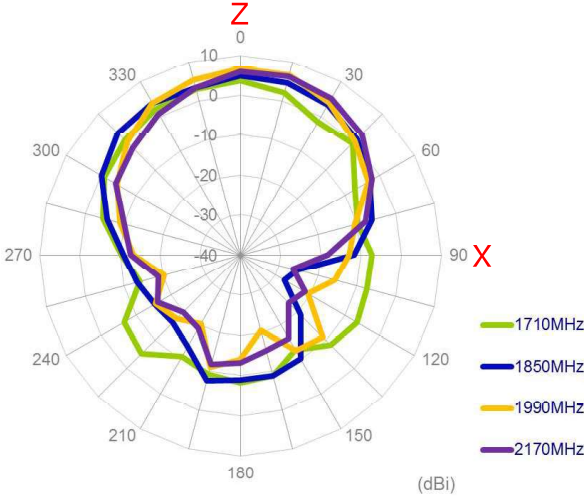
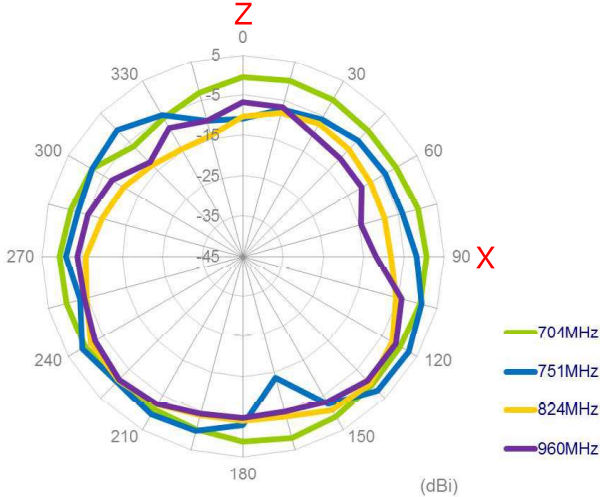
On the 50\*50cm ground plane

3.3.7. 2D Radiation pattern (MIMO1 with 1M cable length on the 50\*50 ground plane)

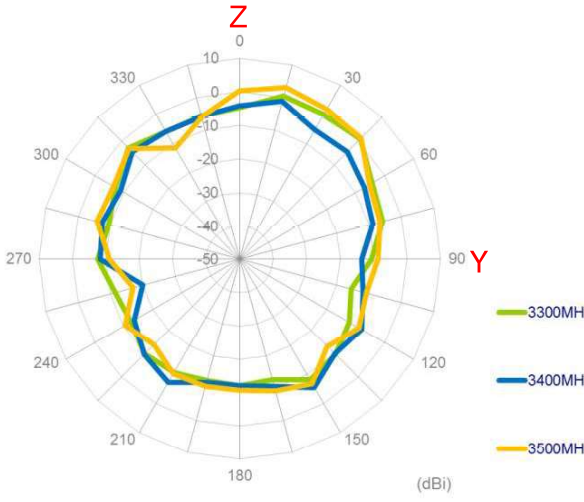
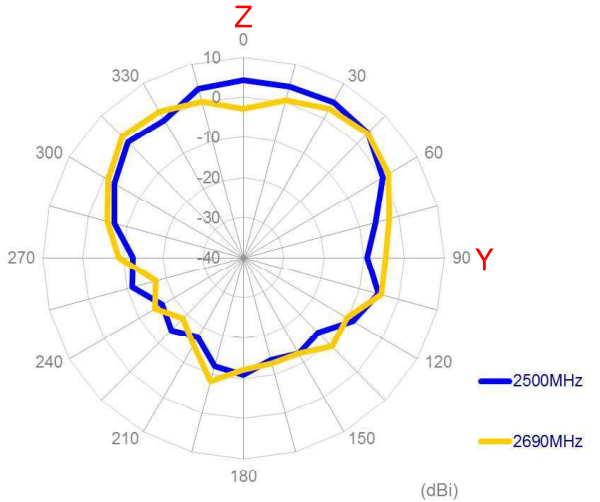
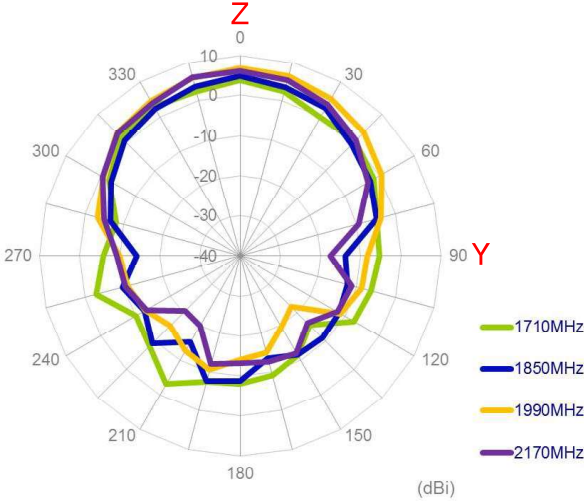
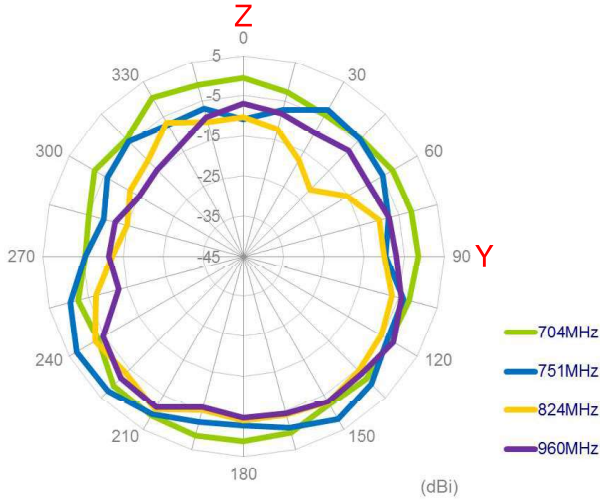
**XY Plane**



**XZ Plane**

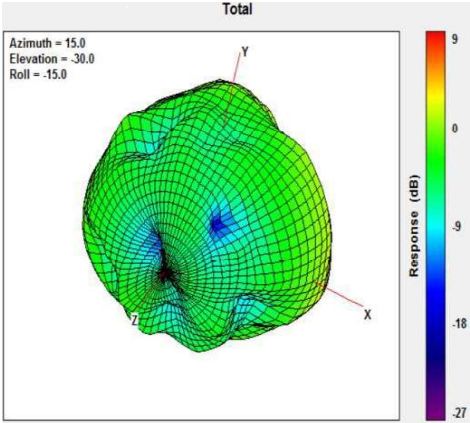


**YZ Plane**

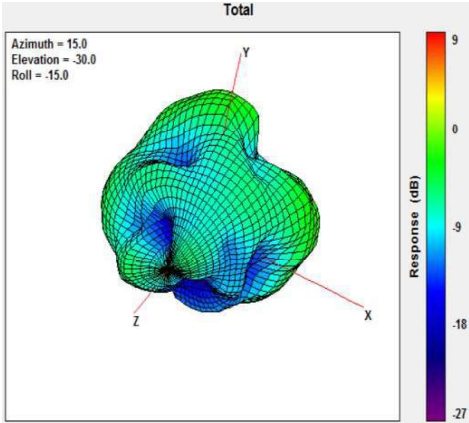




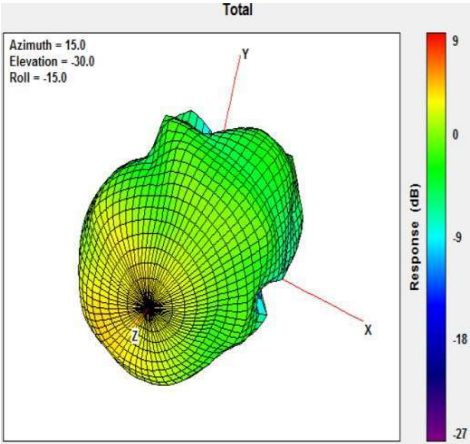
3.3.8. 3D Radiation pattern (MIMO1 with 1M cable length on the 50\*50 ground plane)



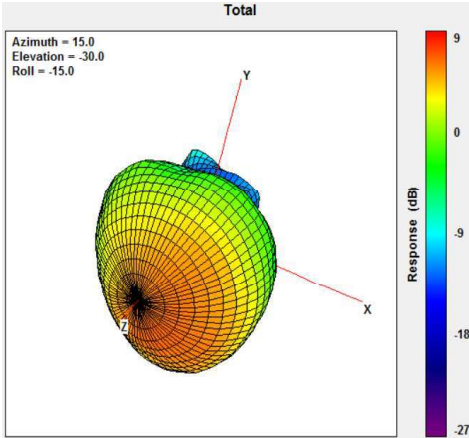
704MHz



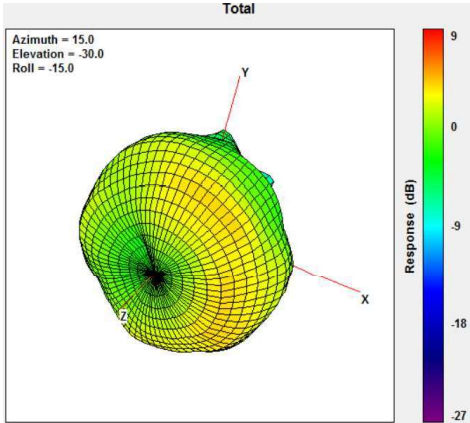
960MHz



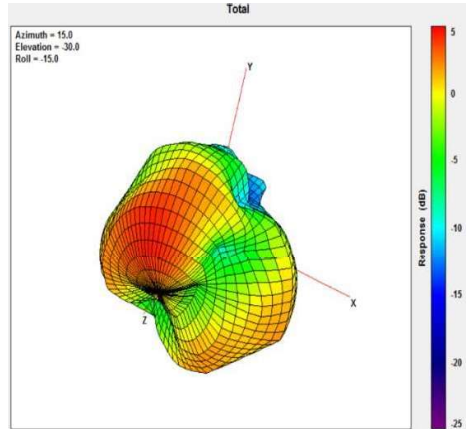
1710MHz



2170MHz



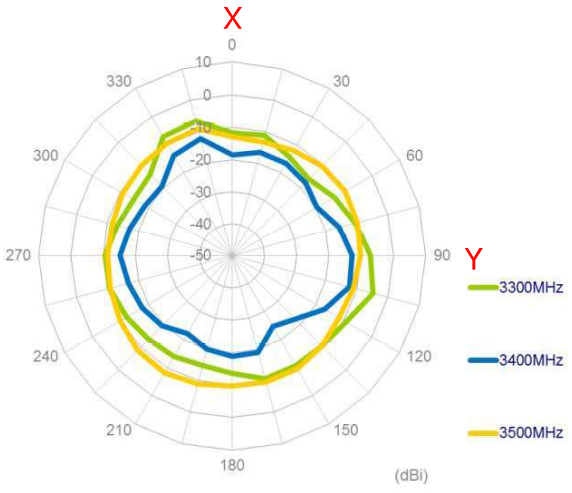
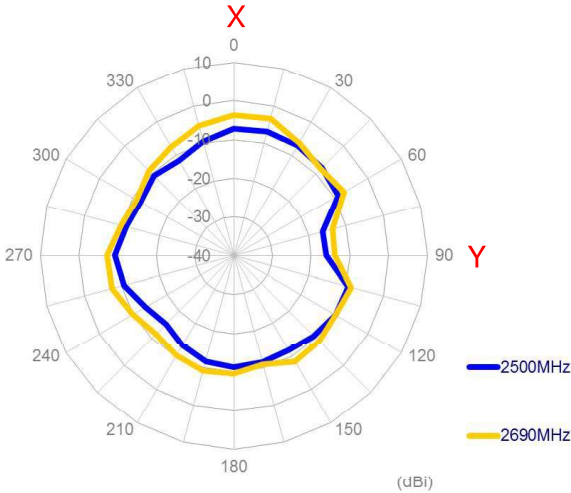
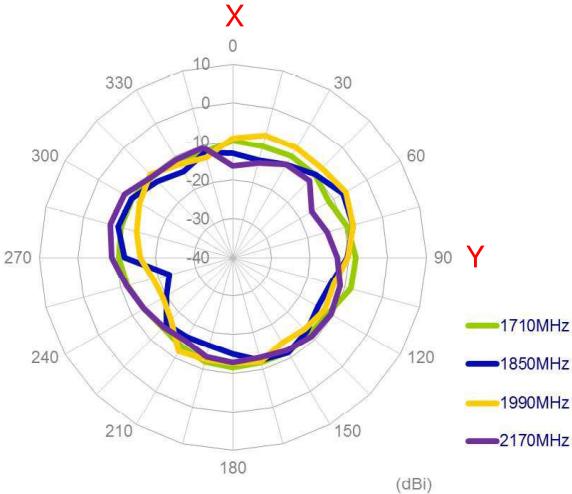
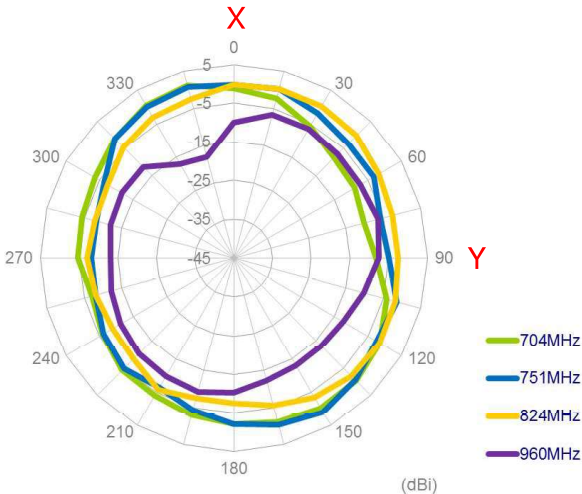
2690MHz



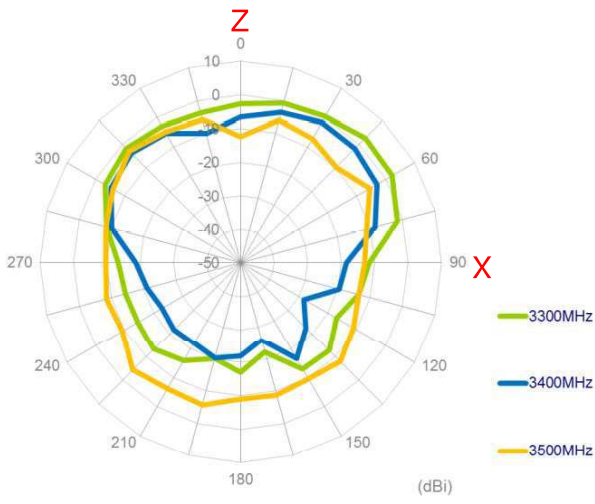
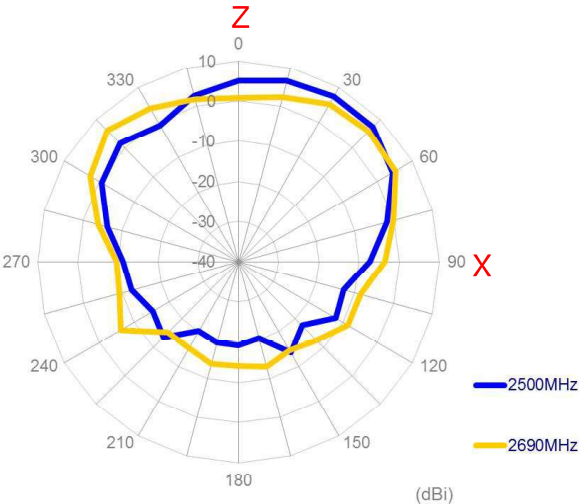
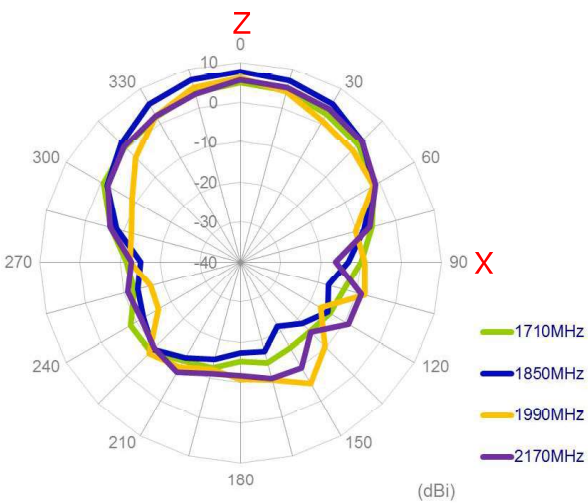
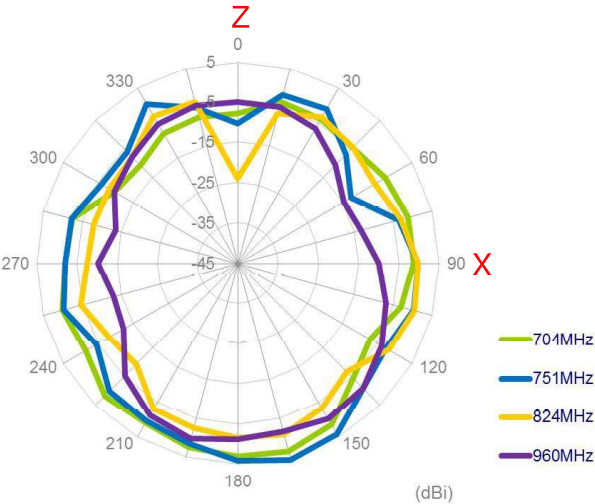
3500MHz

3.3.9. 2D Radiation pattern (MIMO2 with 1M cable length on the 50\*50 ground plane)

**XY Plane**

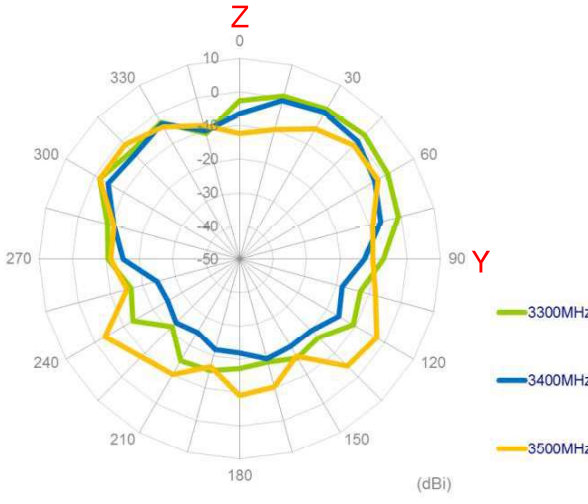
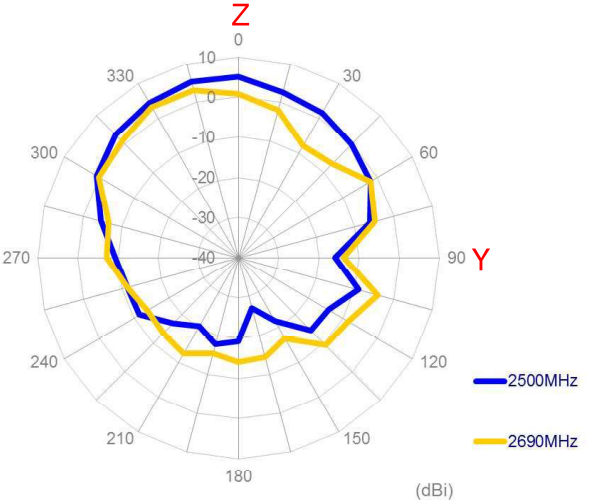
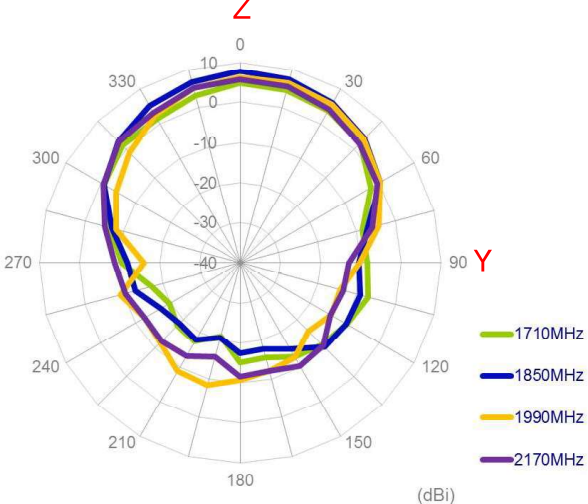
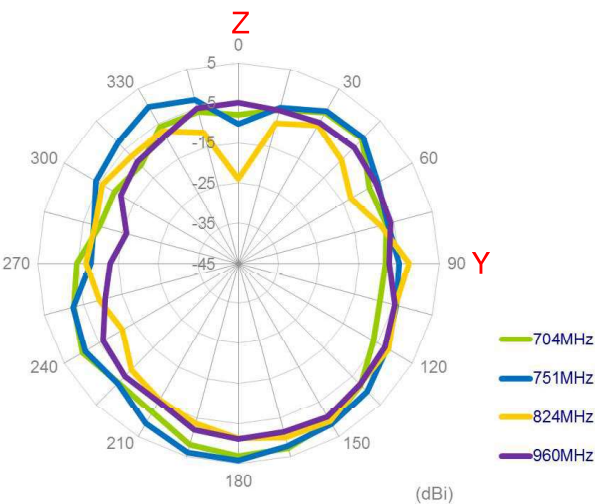


**XZ Plane**

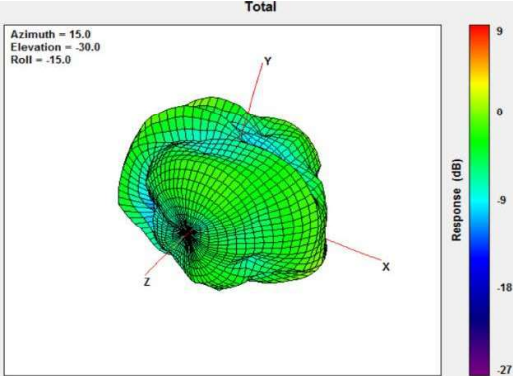




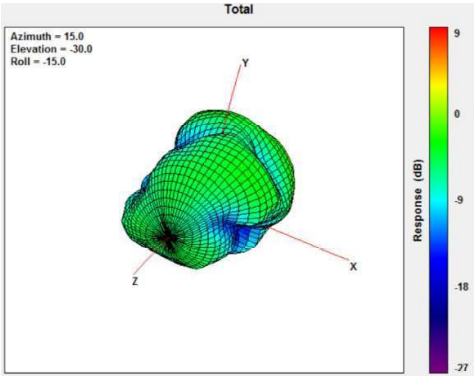
**YZ Plane**



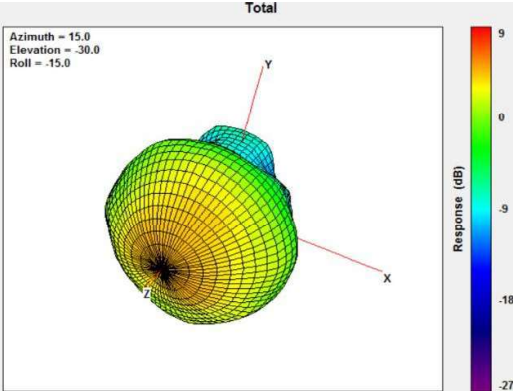
3.3.10. 3D Radiation pattern (MIMO2 with 1M cable length on the 50\*50 ground plane)



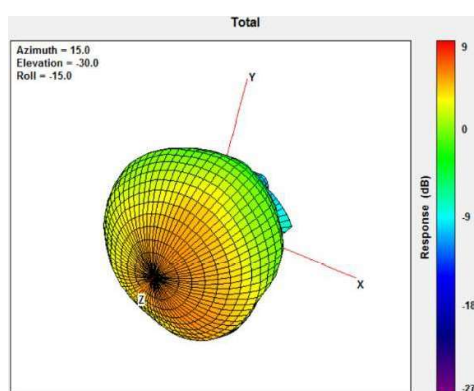
704MHz



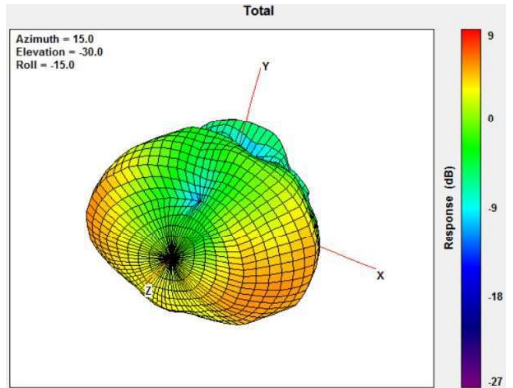
960MHz



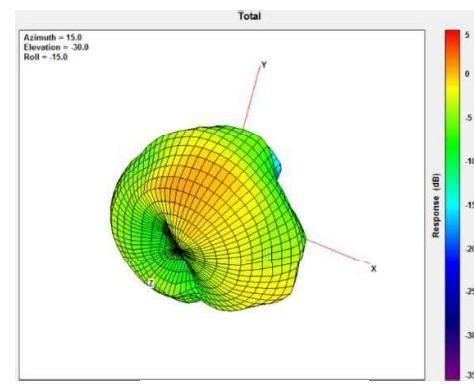
1710MHz



2170MHz

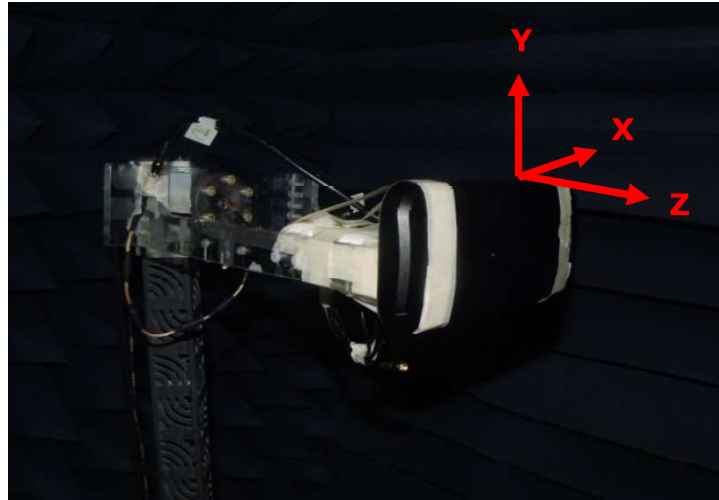


2690MHz



3500MHz

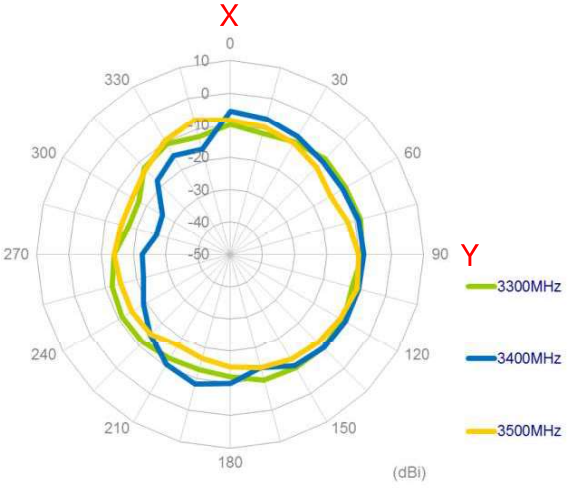
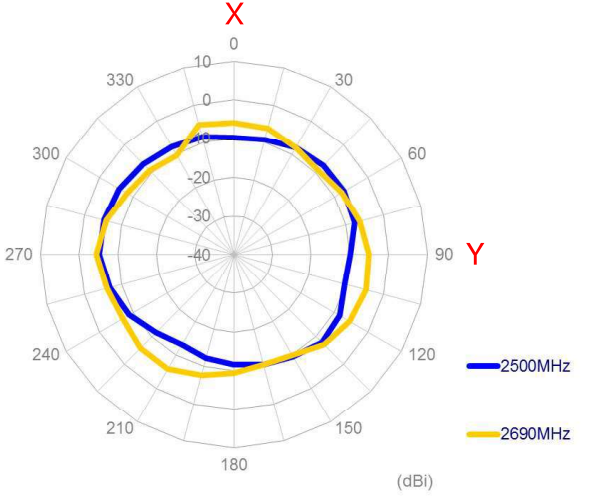
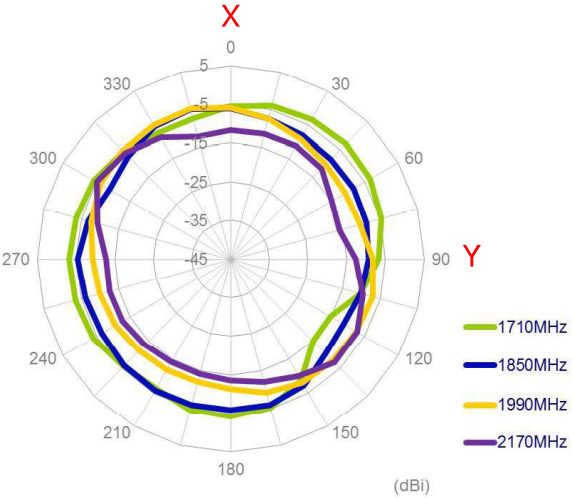
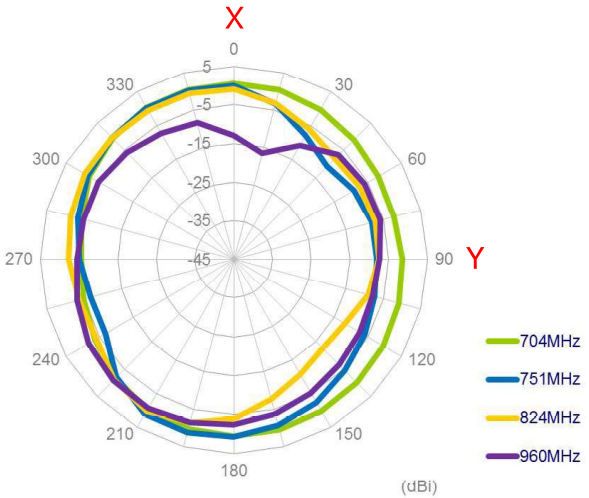
### 3.3.11. Test Setup for Antenna Radiation Pattern (ETS Anechoic chamber)



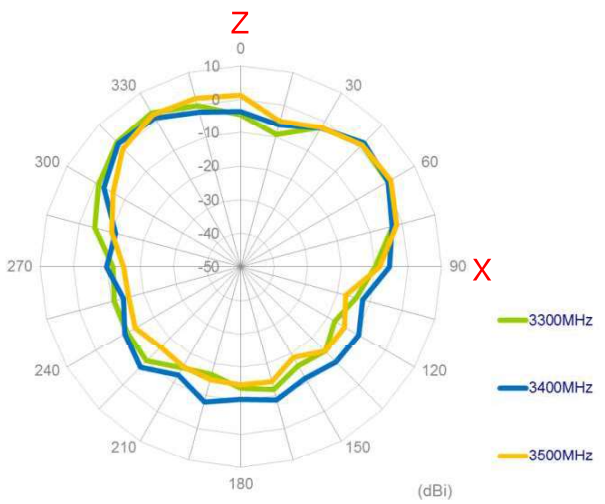
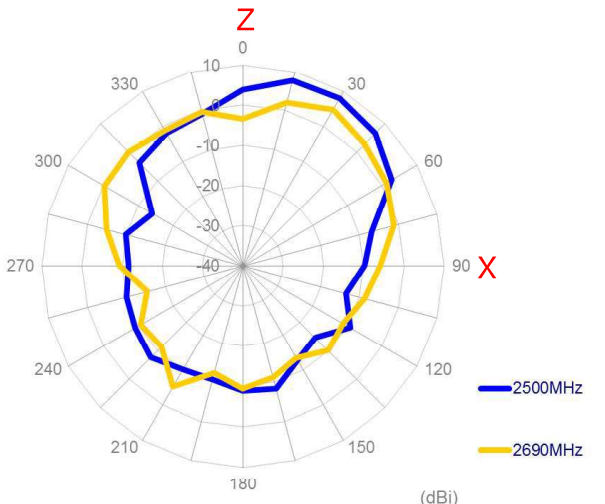
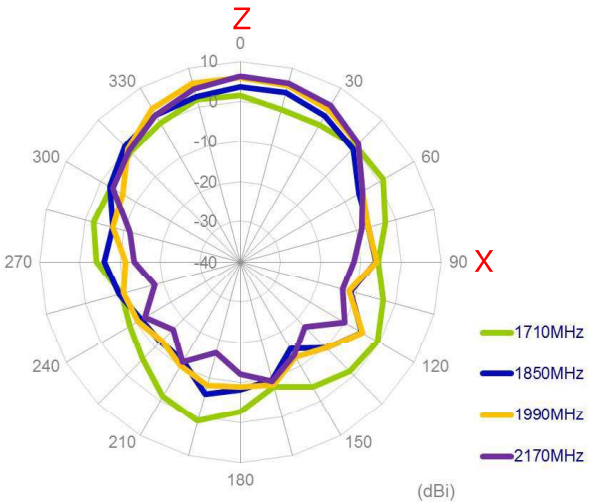
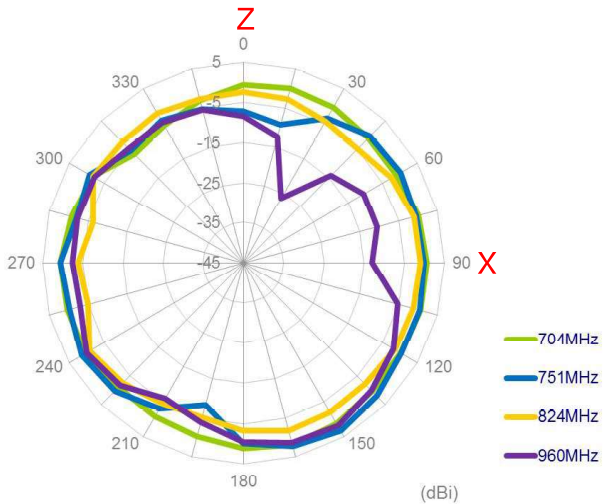
In free space

3.3.12. 2D Radiation pattern (MIMO1 with 1M cable length in free space)

**XY Plane**

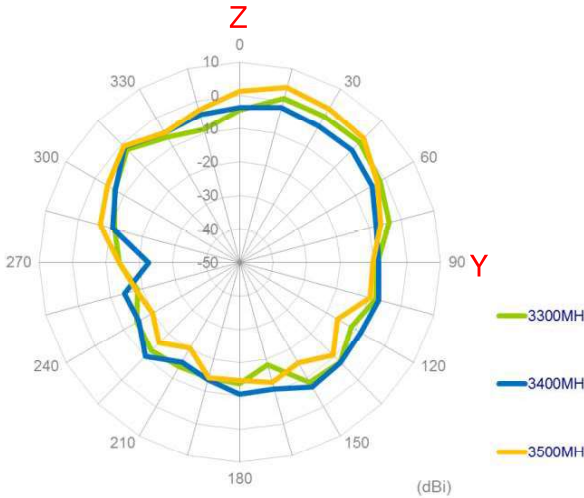
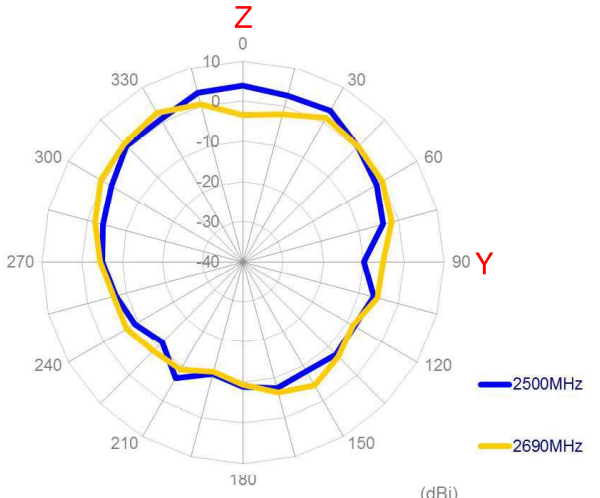
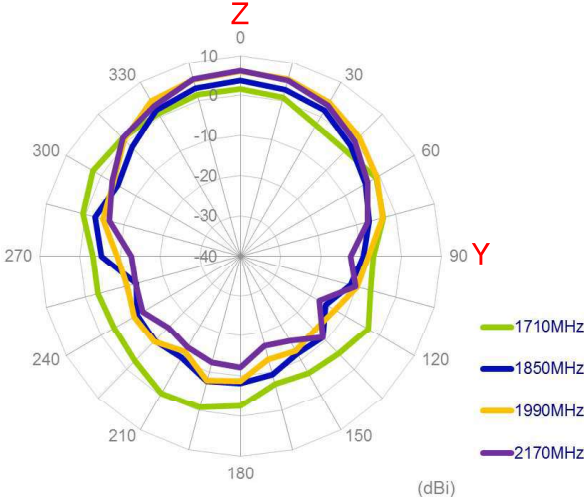
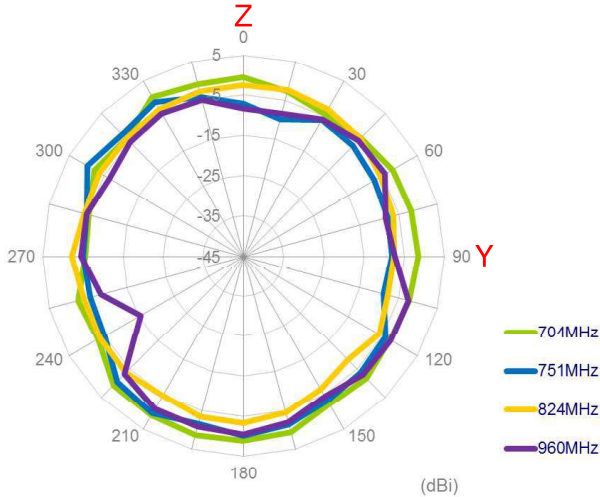


**XZ Plane**

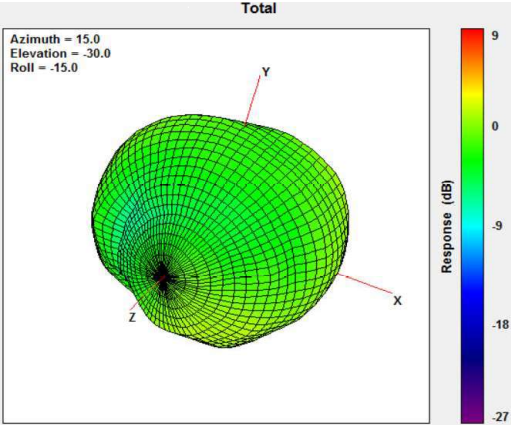




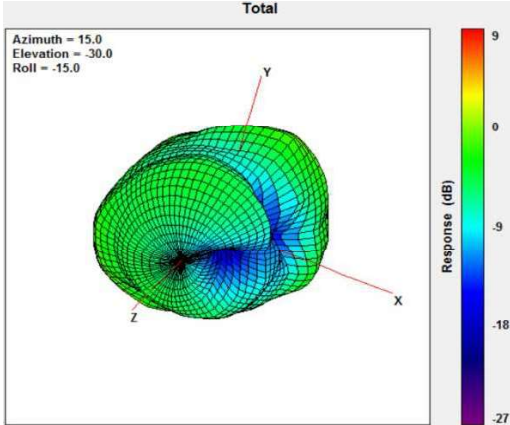
**YZ Plane**



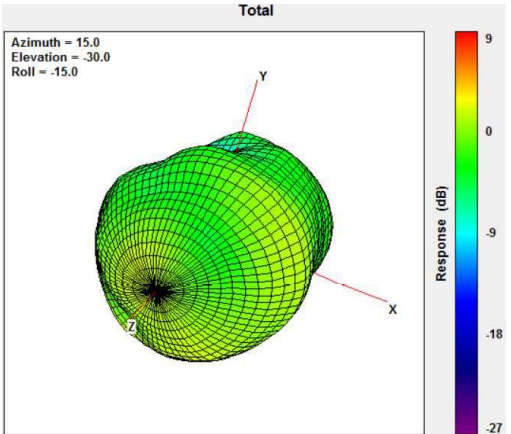
3.3.13. 3D Radiation pattern (MIMO1 with 1M cable length in free space)



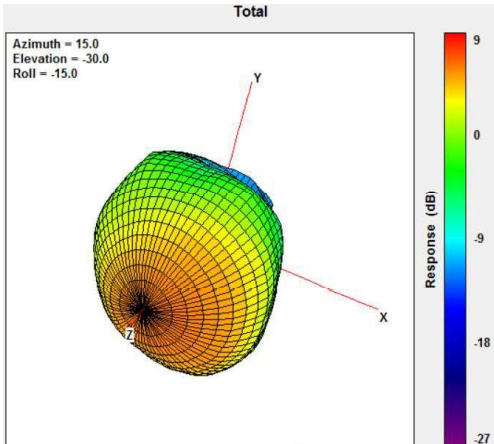
704MHz



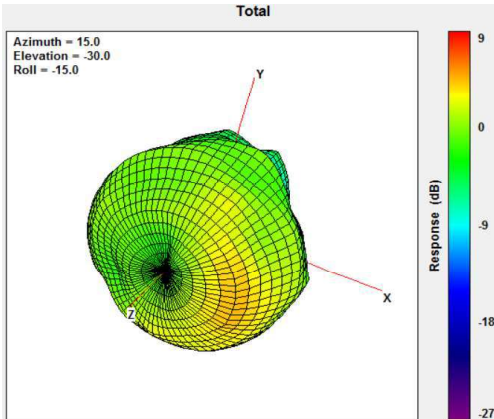
960MHz



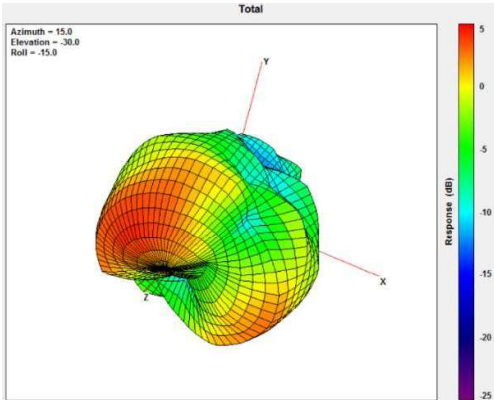
1710MHz



2170MHz



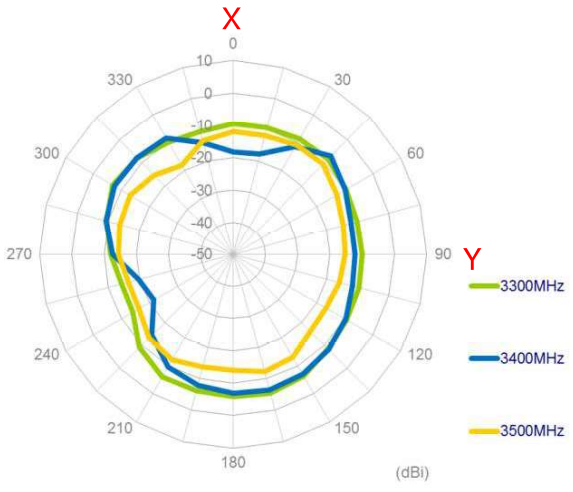
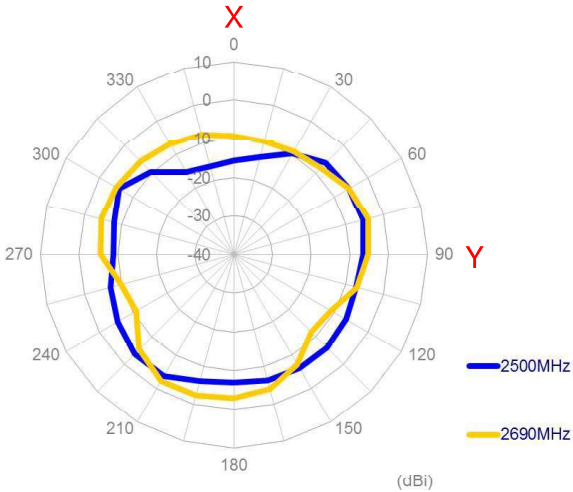
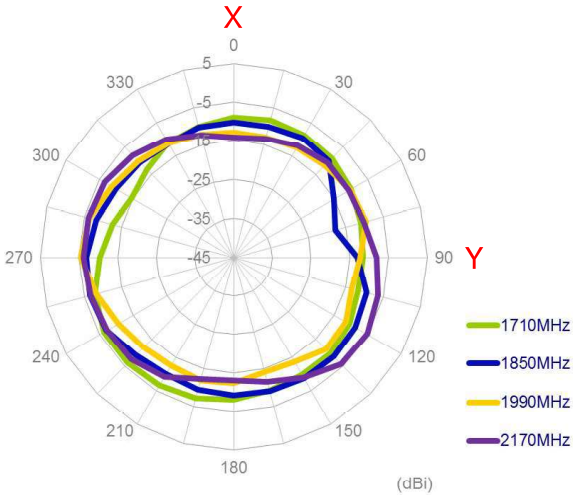
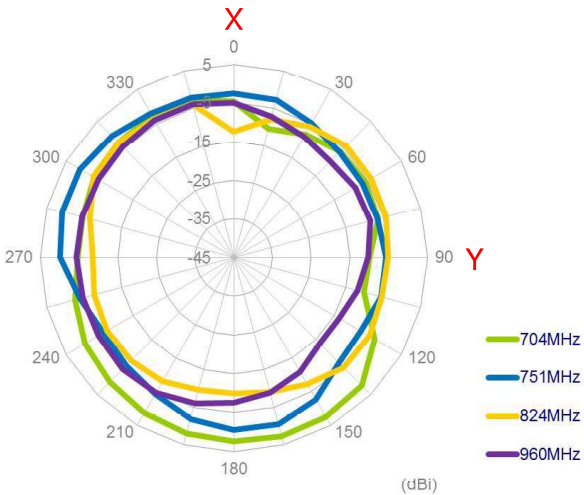
2690MHz



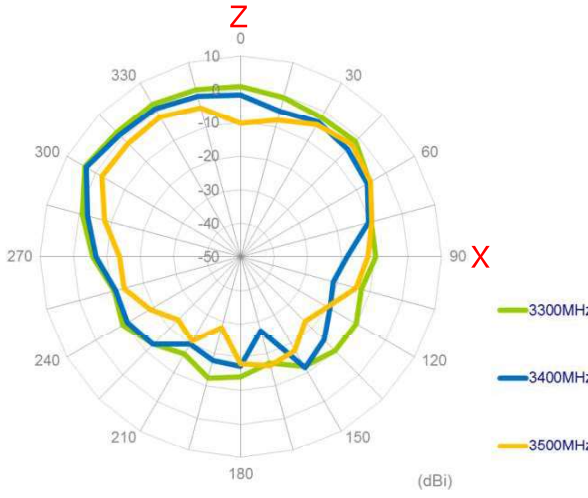
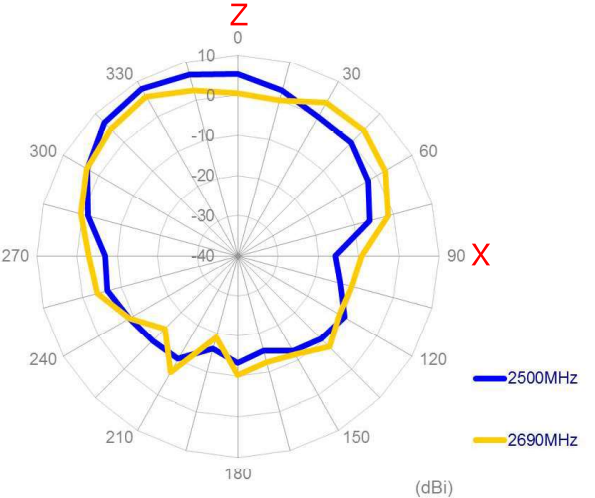
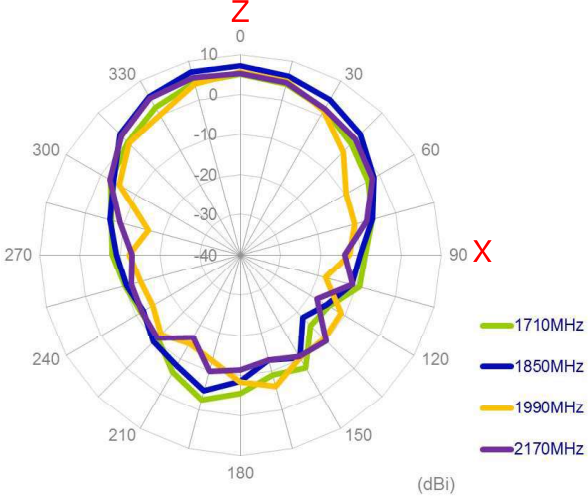
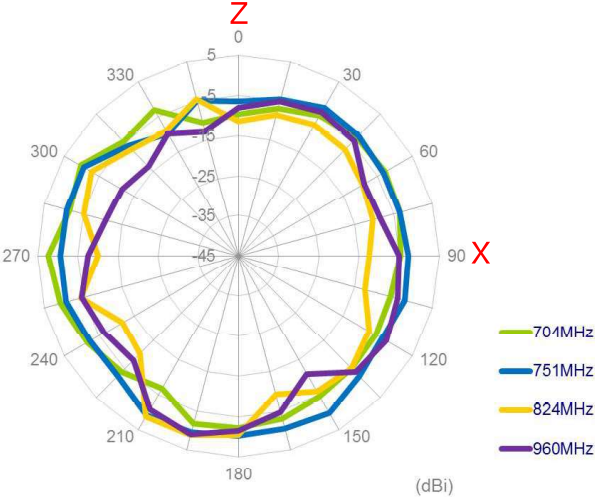
3500MHz

3.3.14. 2D Radiation pattern (MIMO2 with 1M cable length in free space)

**XY Plane**

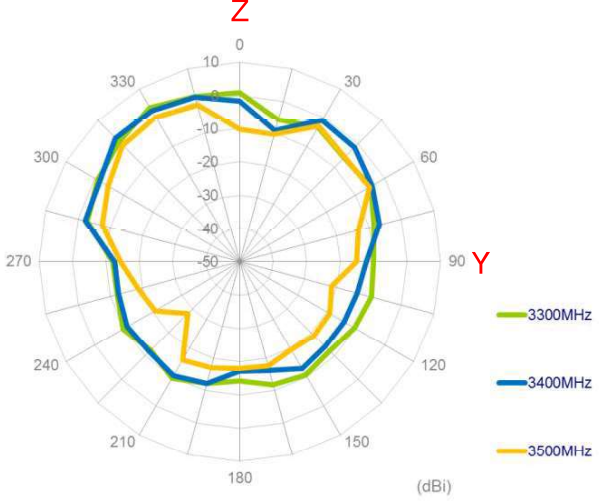
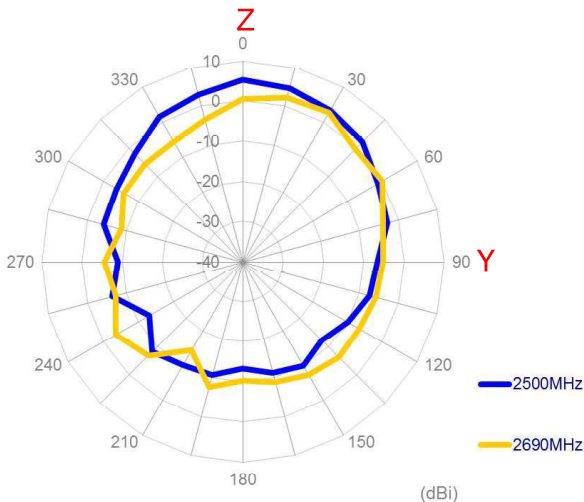
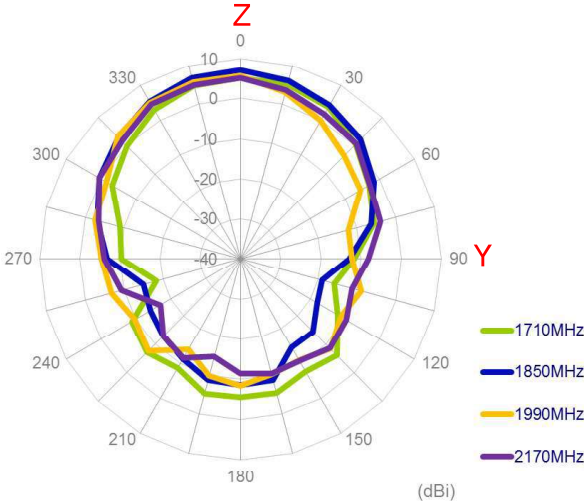
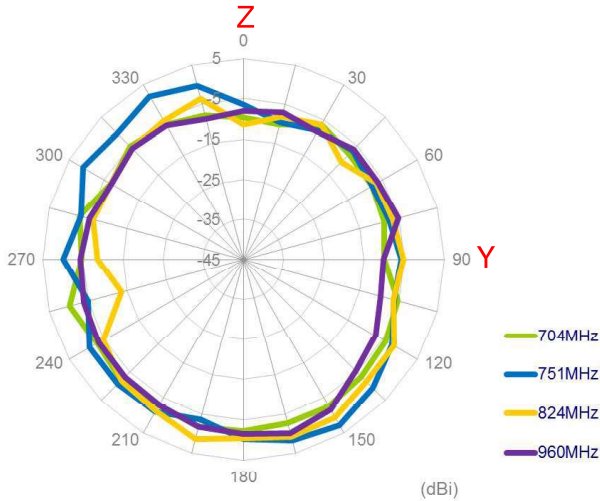


**XZ Plane**



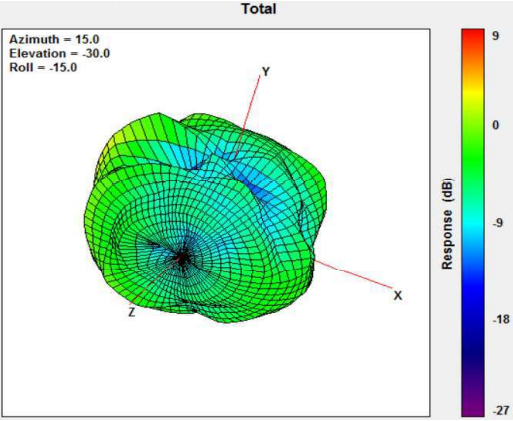


**YZ Plane**

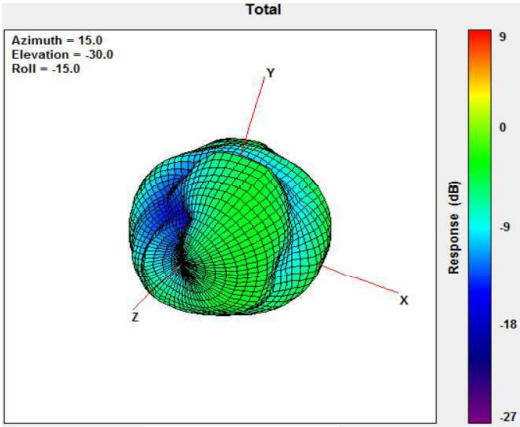




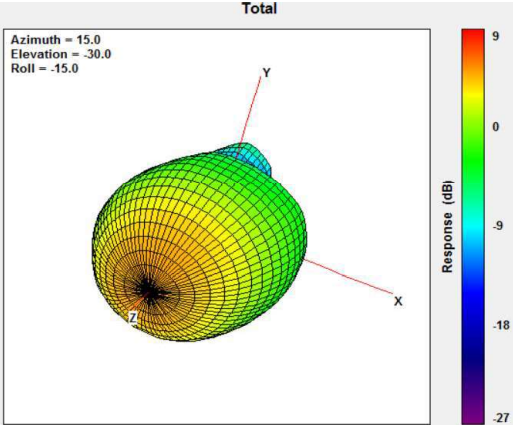
3.3.15. 2D Radiation pattern (MIMO2 with 1M cable length in free space)



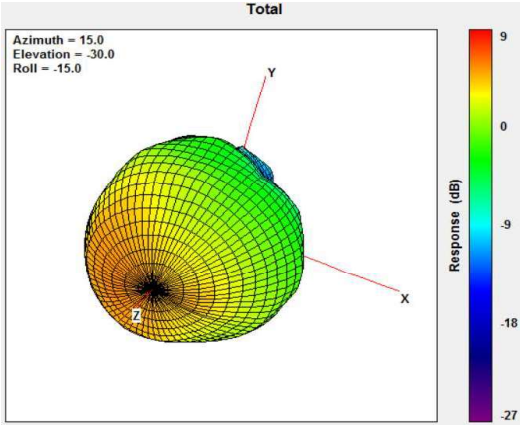
704MHz



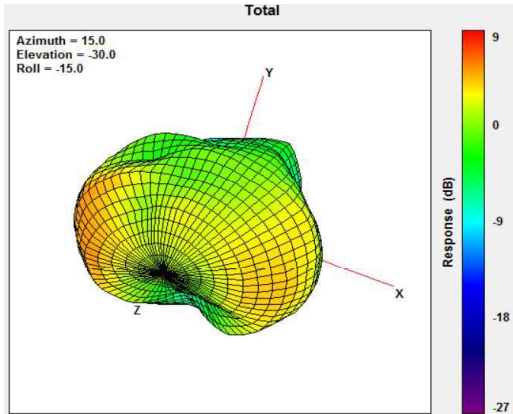
960MHz



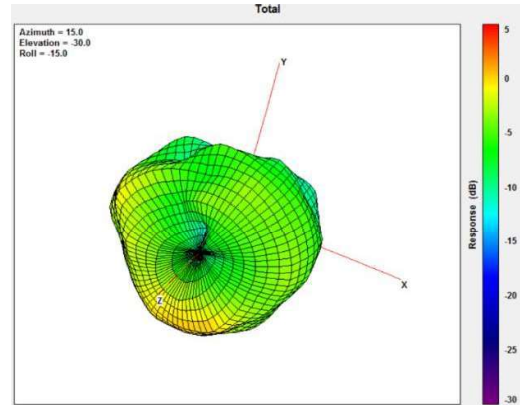
1710MHz



2170MHz

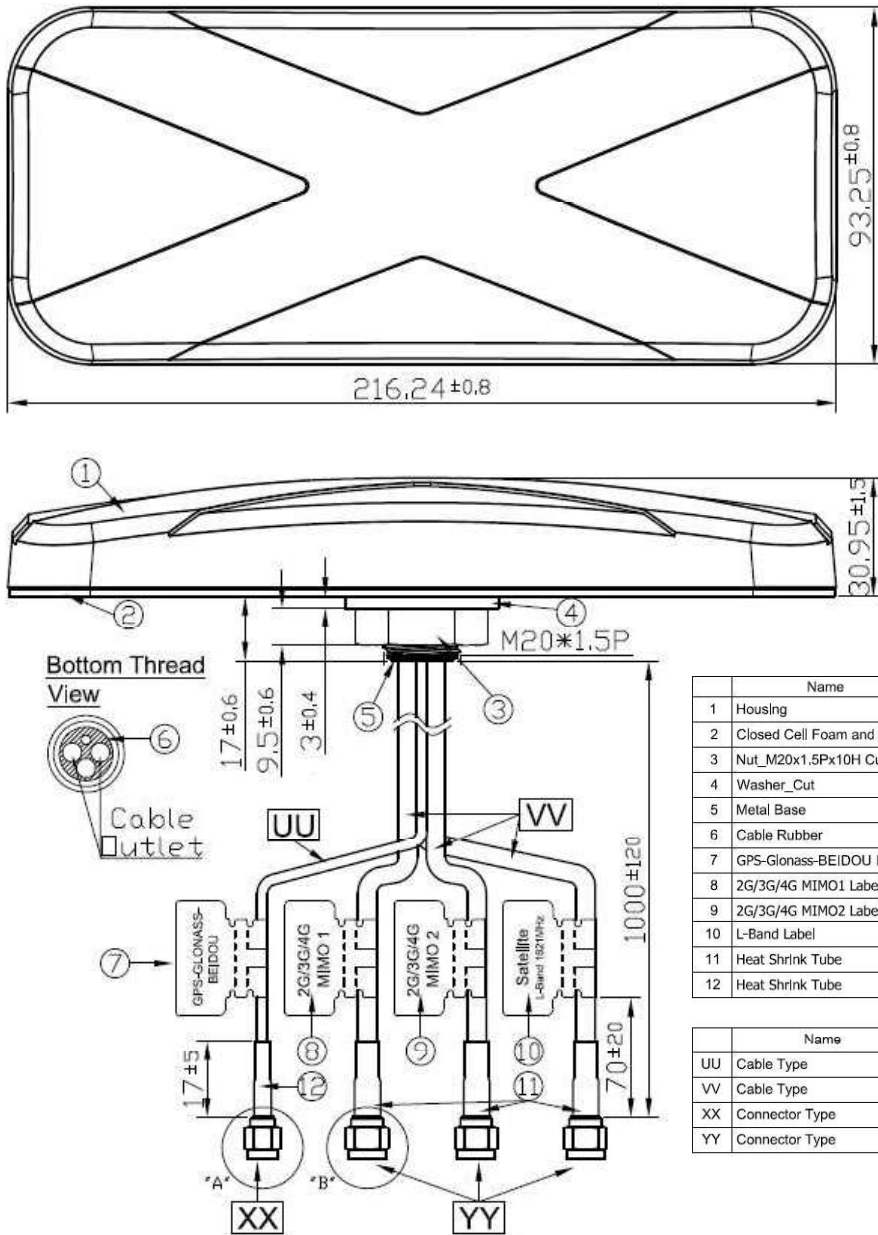


2690MHz



3500MHz

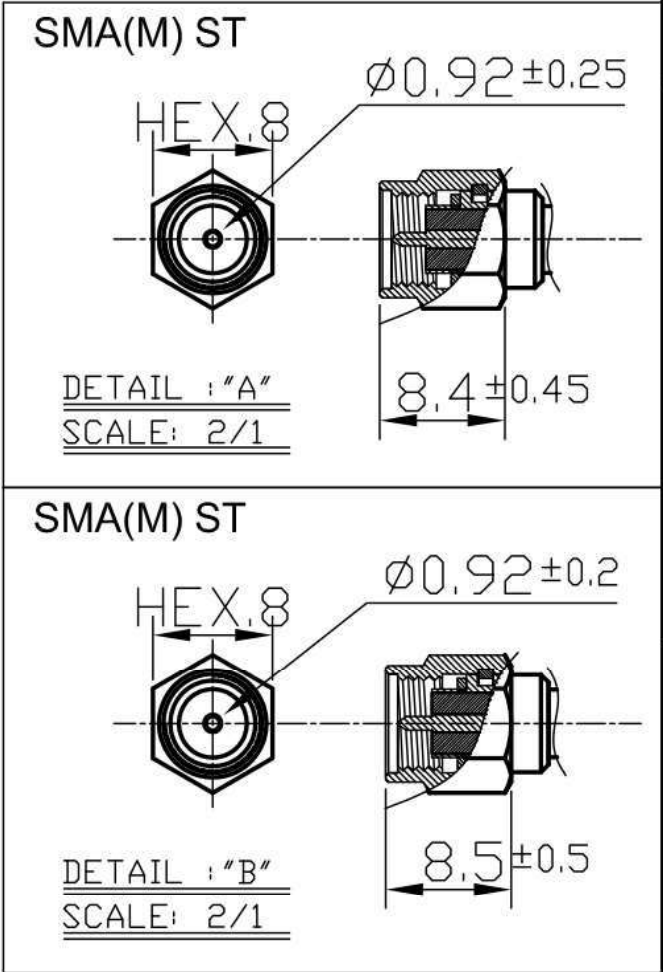
## 4. Mechanical Drawing (Unit: mm)



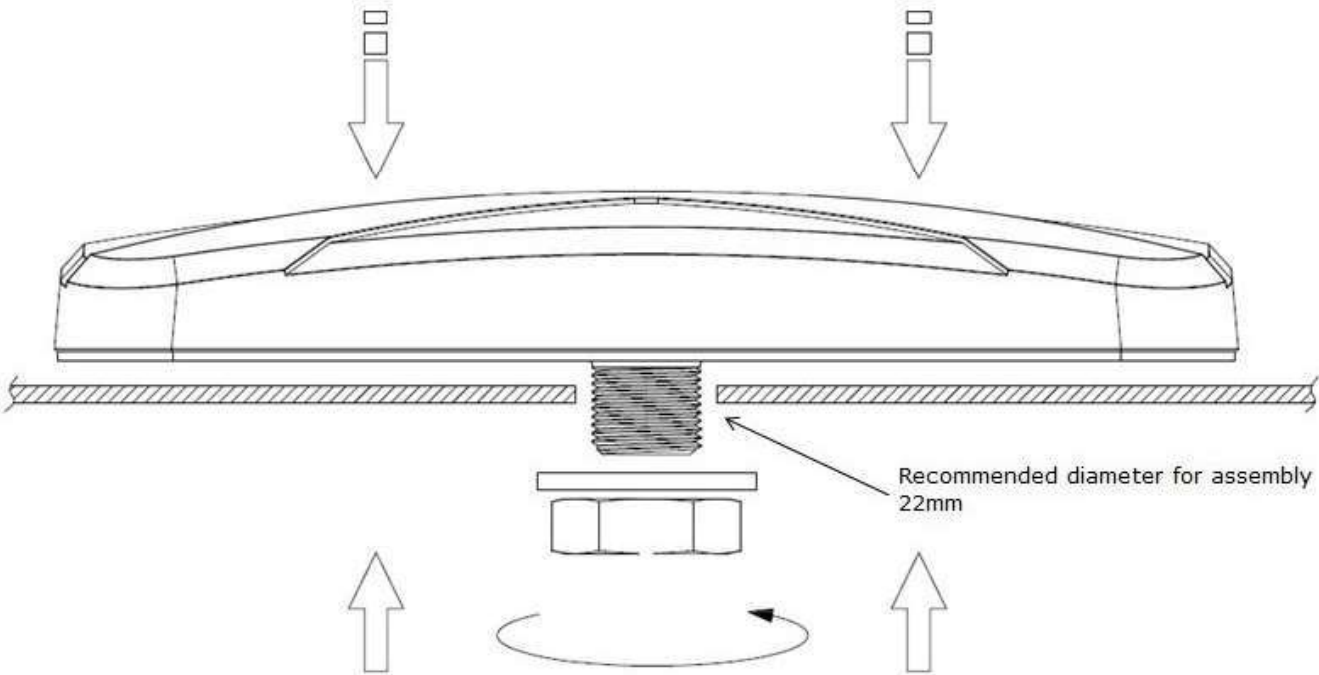
	Name	P/N	Material	Finish	QTY
1	Housing	000113K000066A	ABS+PC	Black	1
2	Closed Cell Foam and Adhesive Tape	001013K000039A	3M 9448+CR-4305	Black	1
3	Nut_M20x1.5Px10H Cut	000413E030061A	Steel	NI Plated	1
4	Washer_Cut	000413E040061A	Steel	NI Plated	1
5	Metal Base	000313K000060A	AL	NI Plated	1
6	Cable Rubber	000713E000063A	Silicone Rubber	Black	1
7	GPS-Glonass-BEIDOU Label	001014E030051A	Coated Paper	Orange	1
8	2G/3G/4G MIMO1 Label	001012L080051A	Coated Paper	Gray	1
9	2G/3G/4G MIMO2 Label	001012L090051A	Coated Paper	White	1
10	L-Band Label	001014I000051A	Coated Paper	Mocassin	1
11	Heat Shrink Tube	001311F010013A	PE	Black	3
12	Heat Shrink Tube	001311F000013A	PE	Black	1

	Name	P/N	Spec	Finish	QTY
UU	Cable Type	301313A000013A	RG174	Black	1
VV	Cable Type	301412K010013A	CFD200	Black	3
XX	Connector Type	200212G000013A	SMA(M)ST	Gold	1
YY	Connector Type	200214F000013A	SMA(M)ST	Gold	3

**4.1 Connector Drawing (Unit: mm)**



## 5. Installation



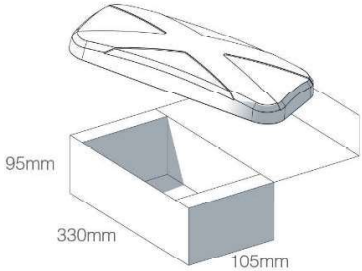
Recommended torque for mounting is 29.4 N.m  
Maximum torque for mounting is 39.2 N.m

# 6. Packaging

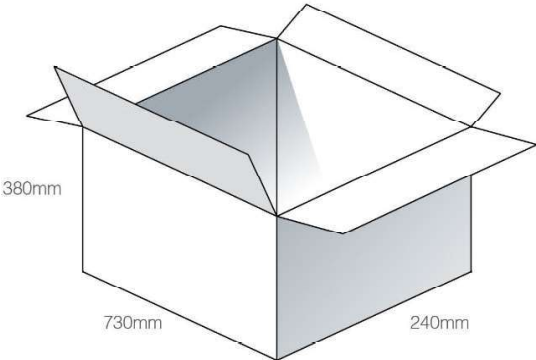
## MA410.A.LBIJ.001

### Packaging Specifications

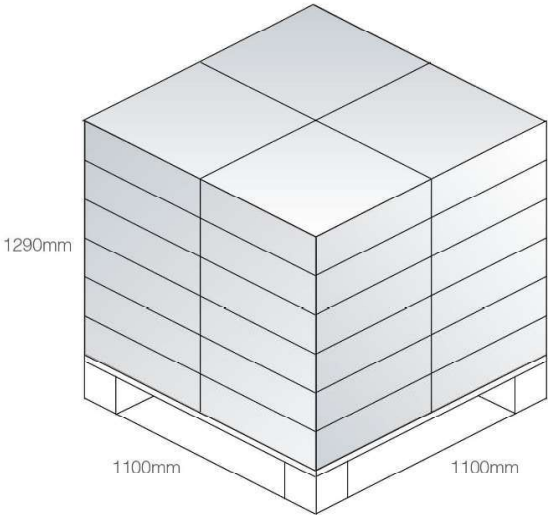
1pc MA410.A.LBIJ.001 per small box  
 Box Dimensions - 95\*330\*105mm  
 Weight - 700g



14 small boxes in one carton  
 Carton Dimensions - 730\*380\*240mm  
 Weight - 10.3Kg



Pallet Dimensions 1100\*1100\*1590mm  
 24 Cartons per Pallet  
 4 Cartons per layer  
 6 Layers



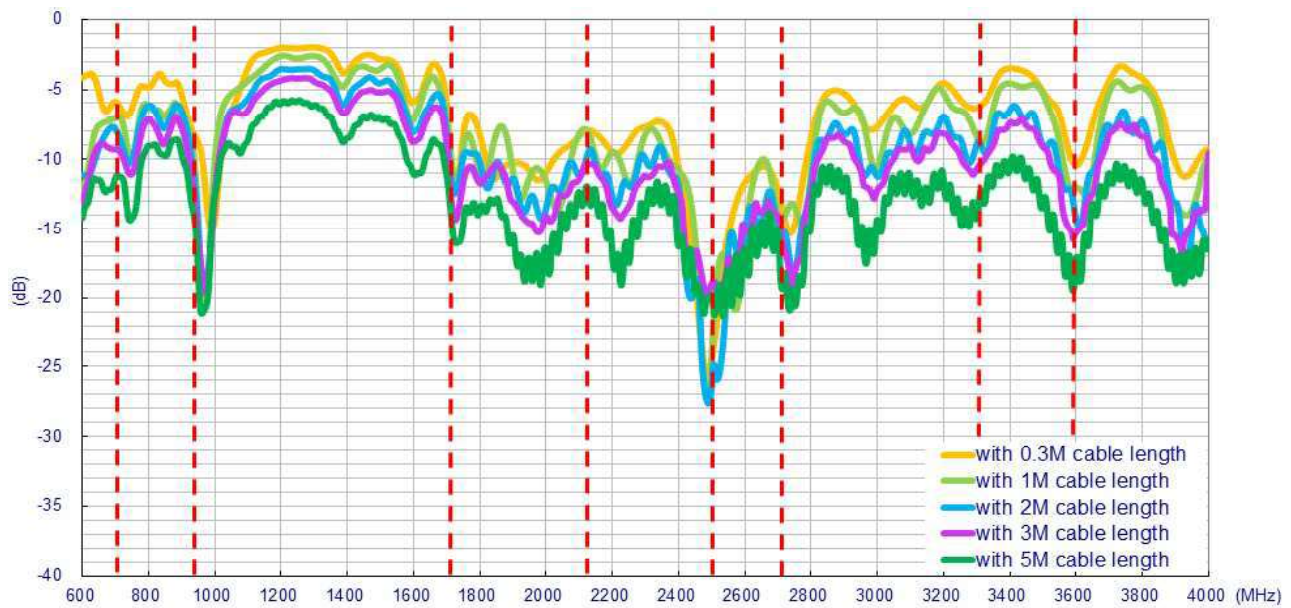


## 7. Application Note (LTE MIMO Antenna)

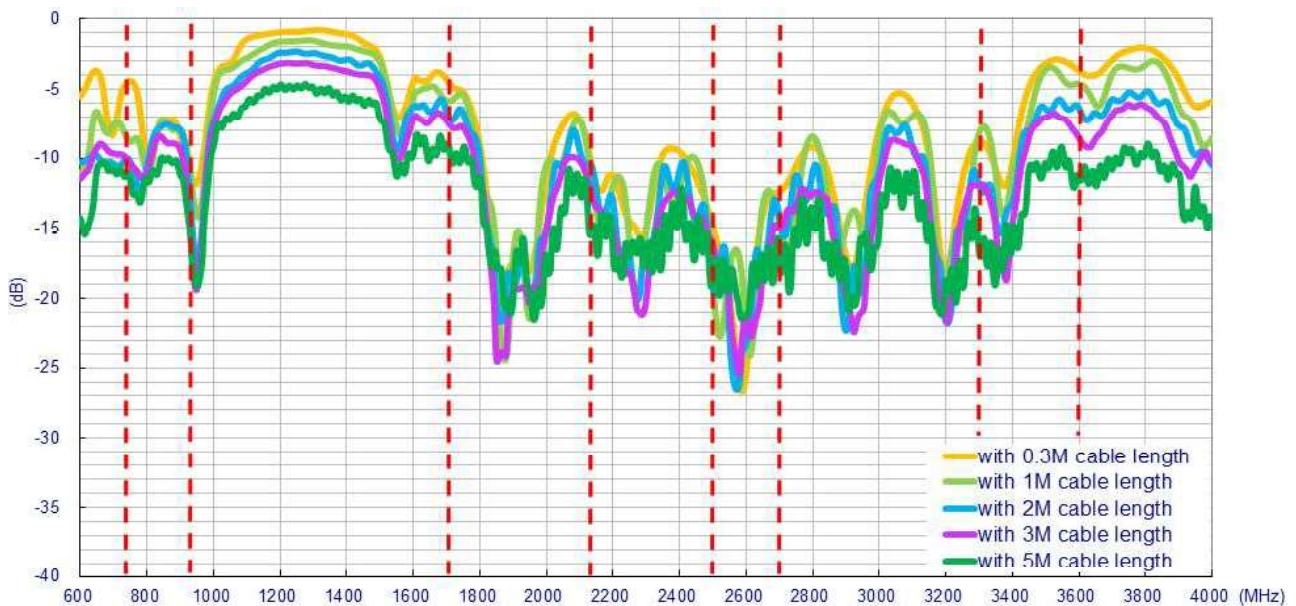
The MA410 antenna performance with different cable lengths and different environments is shown below.

### 7.1. On the 50\*50cm ground plane

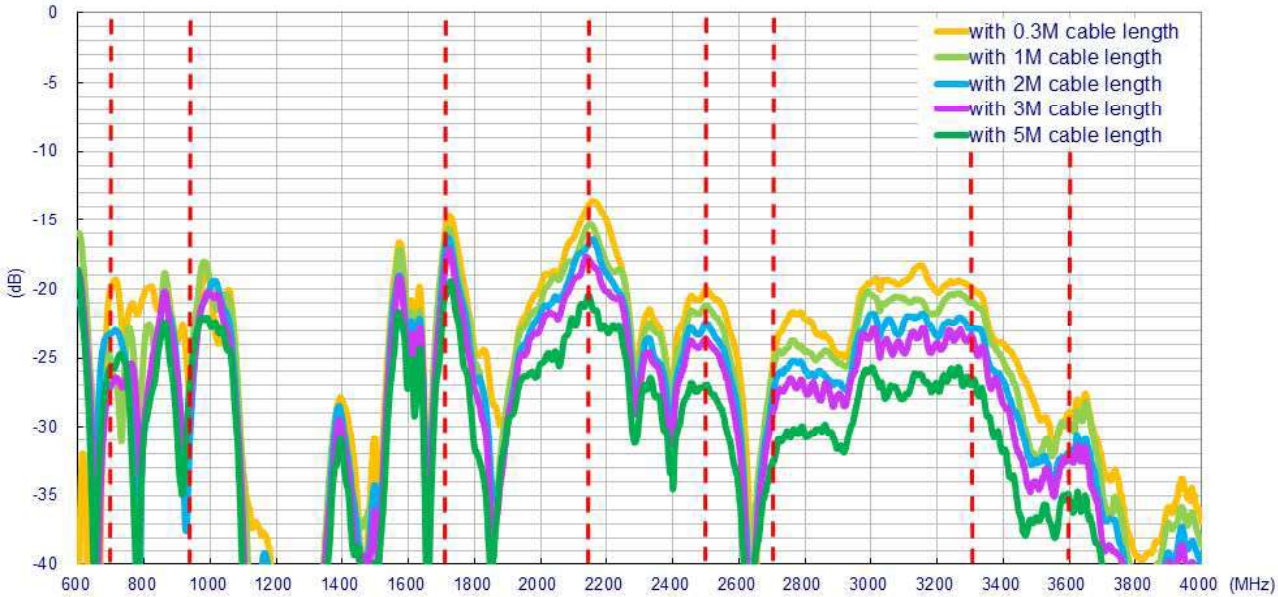
#### 7.1.1. Return Loss (MIMO\_1 on the 50\*50cm ground plane)



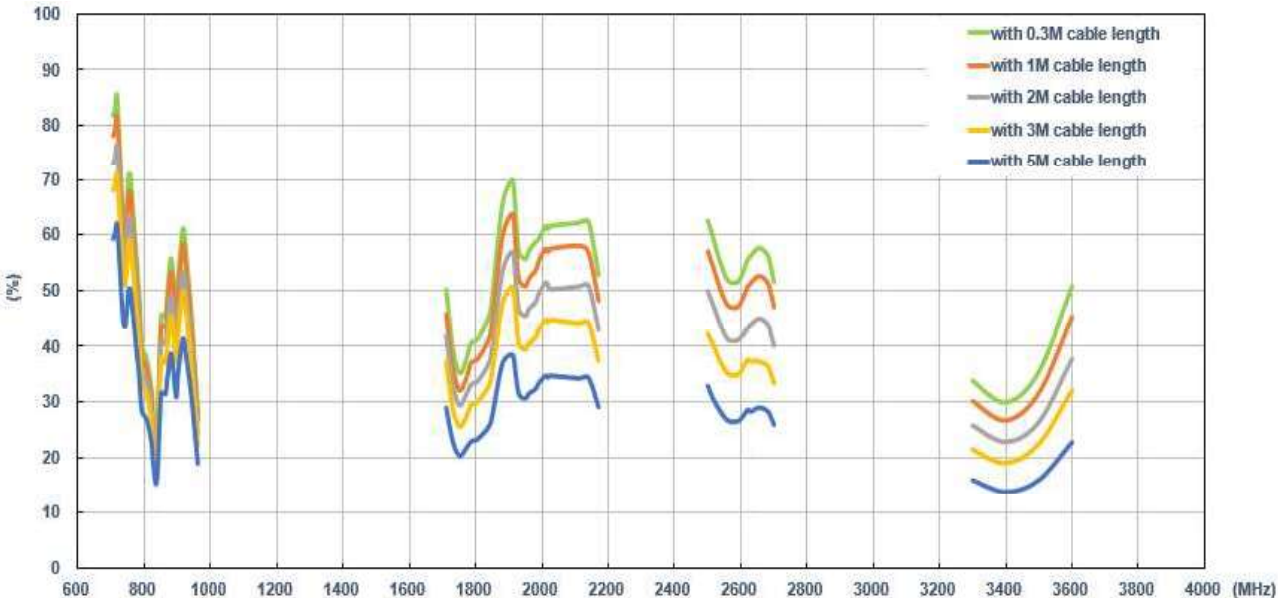
#### 7.1.2. Return Loss (MIMO\_2 on the 50\*50cm ground plane)



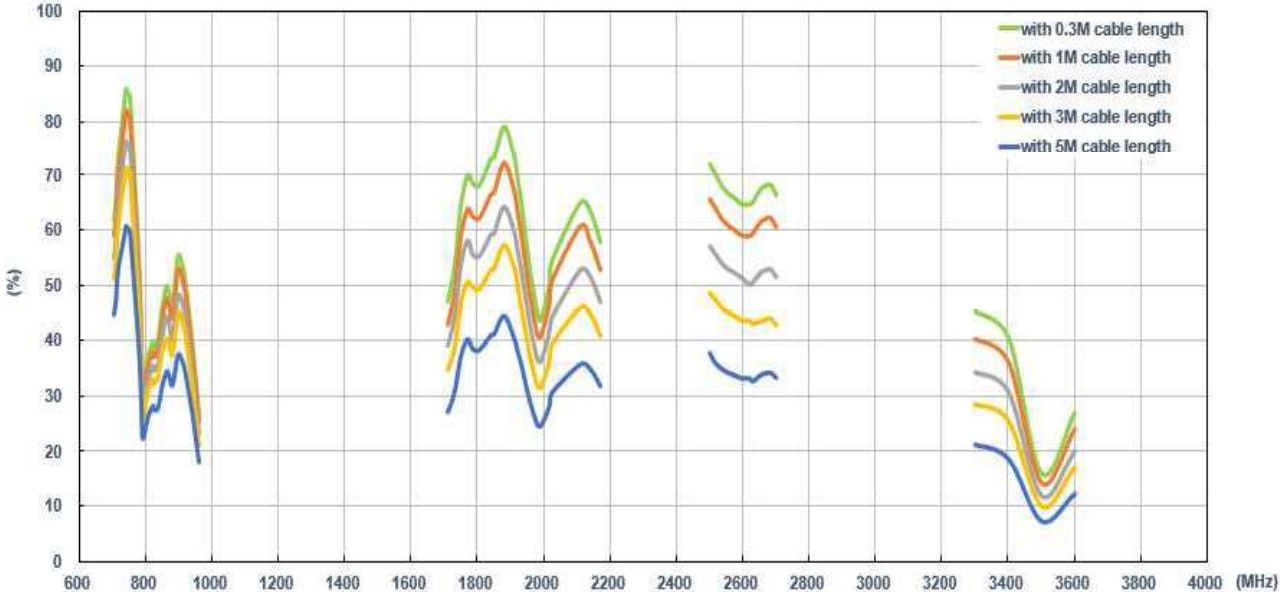
7.1.3. MIMO 1 & MIMO 2 Isolation (on the 50\*50cm ground plane)



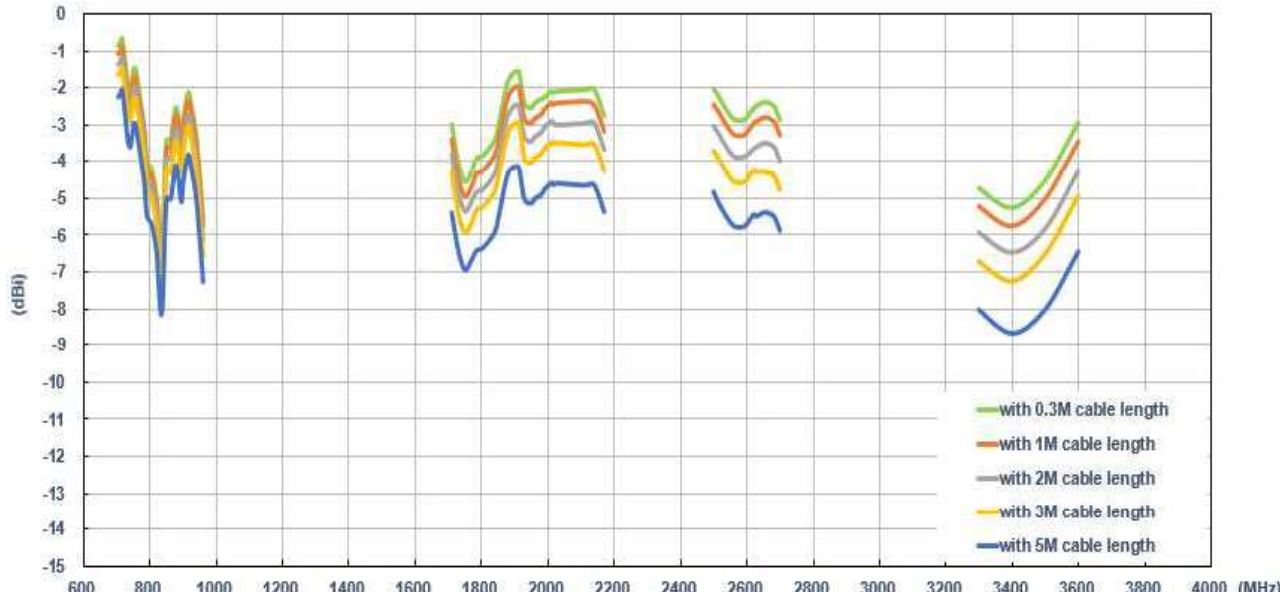
7.1.4. Efficiency (MIMO\_1 on the 50\*50cm ground plane)



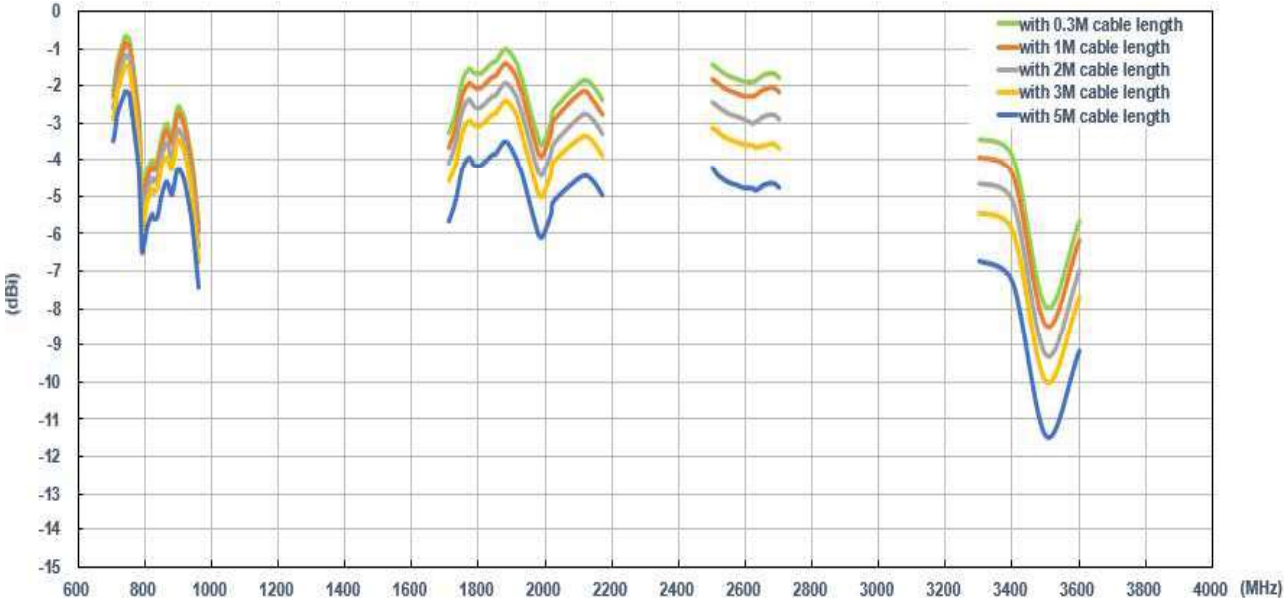
7.1.5. Efficiency (MIMO\_2 on the 50\*50cm ground plane)



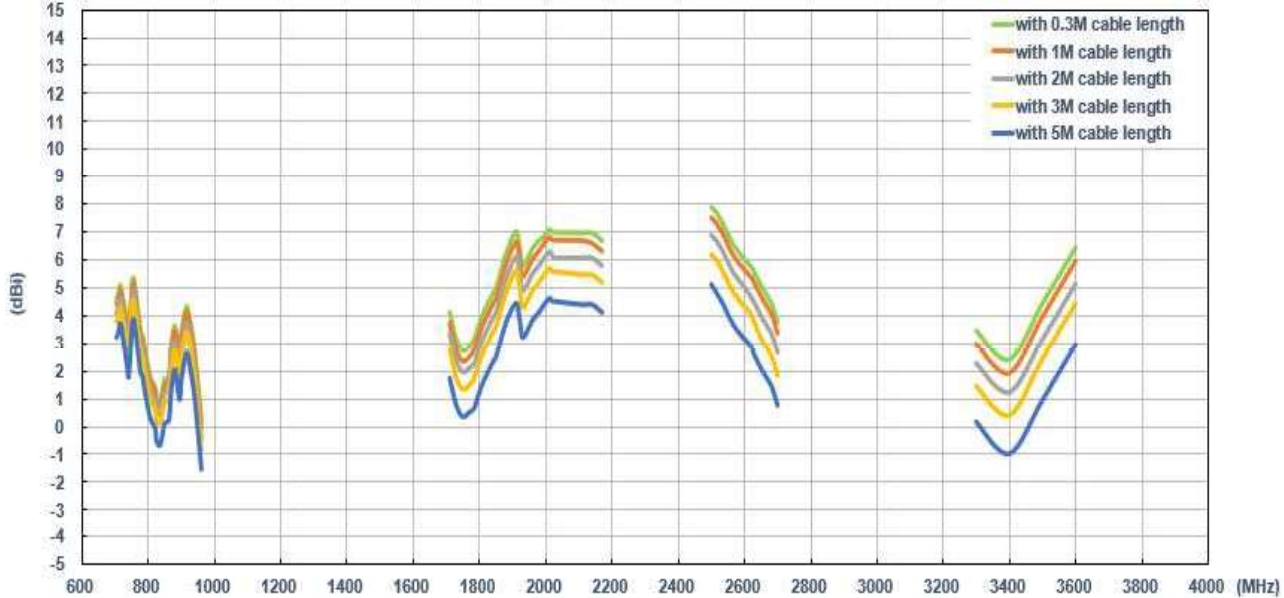
7.1.6. Average Gain (MIMO\_1 on the 50\*50cm ground plane)



7.1.7. Average Gain (MIMO\_2 on the 50\*50cm ground plane)

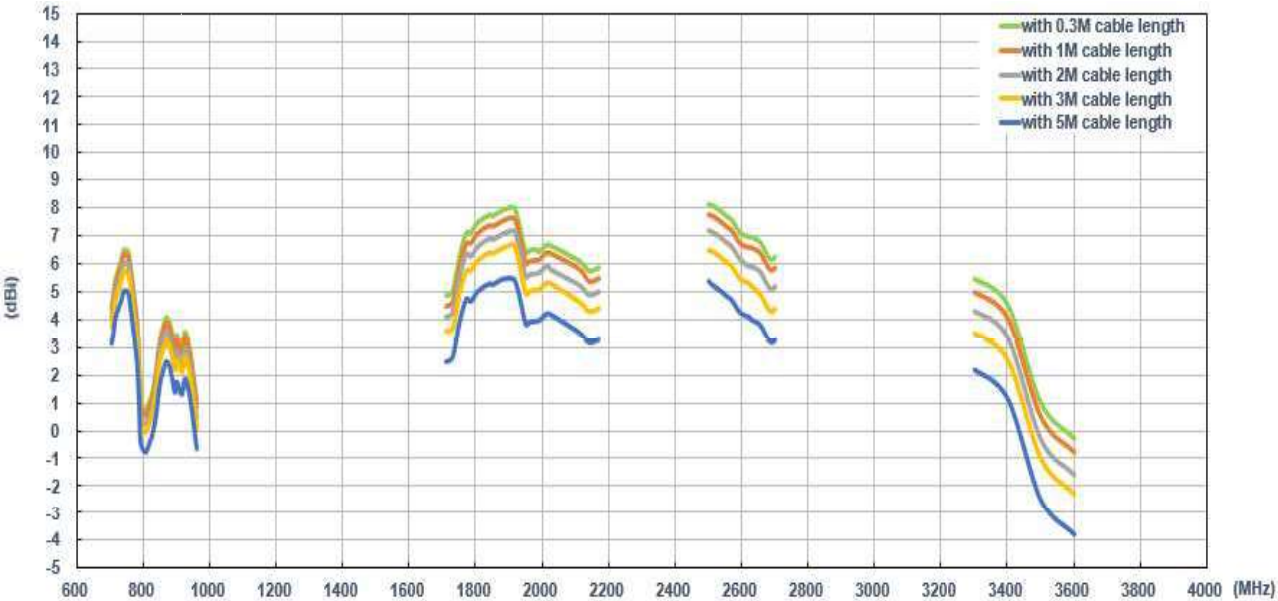


7.1.8. Peak Gain (MIMO\_1 on the 50\*50cm ground plane)



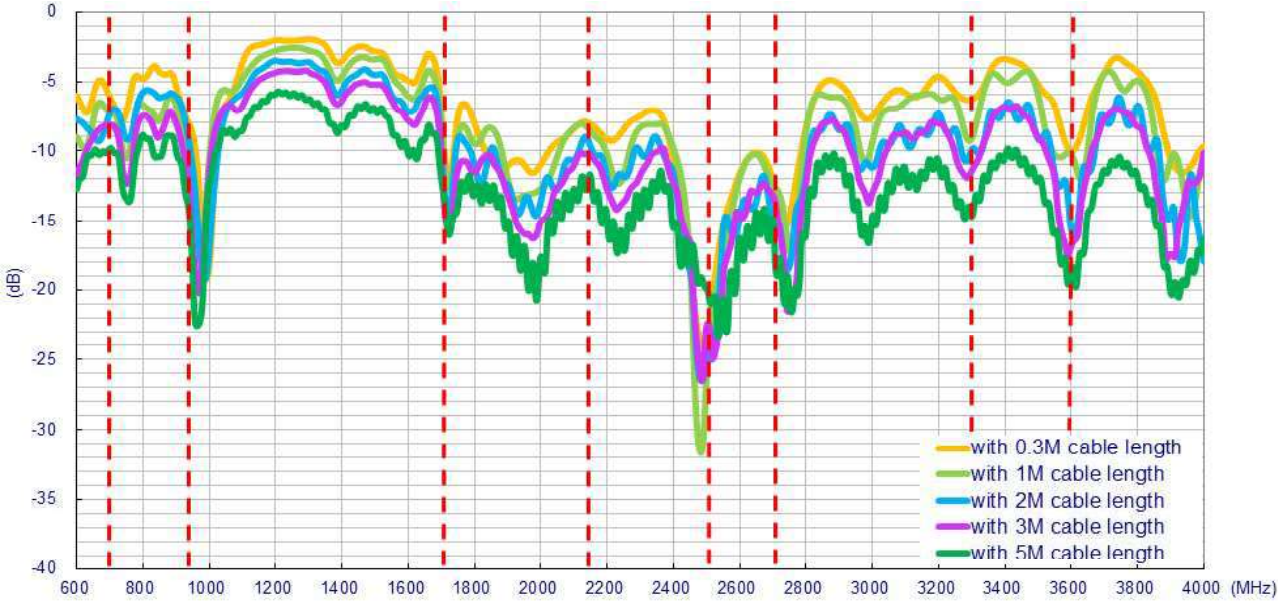


7.1.9. Peak Gain (MIMO\_2 on the 50\*50cm ground plane)



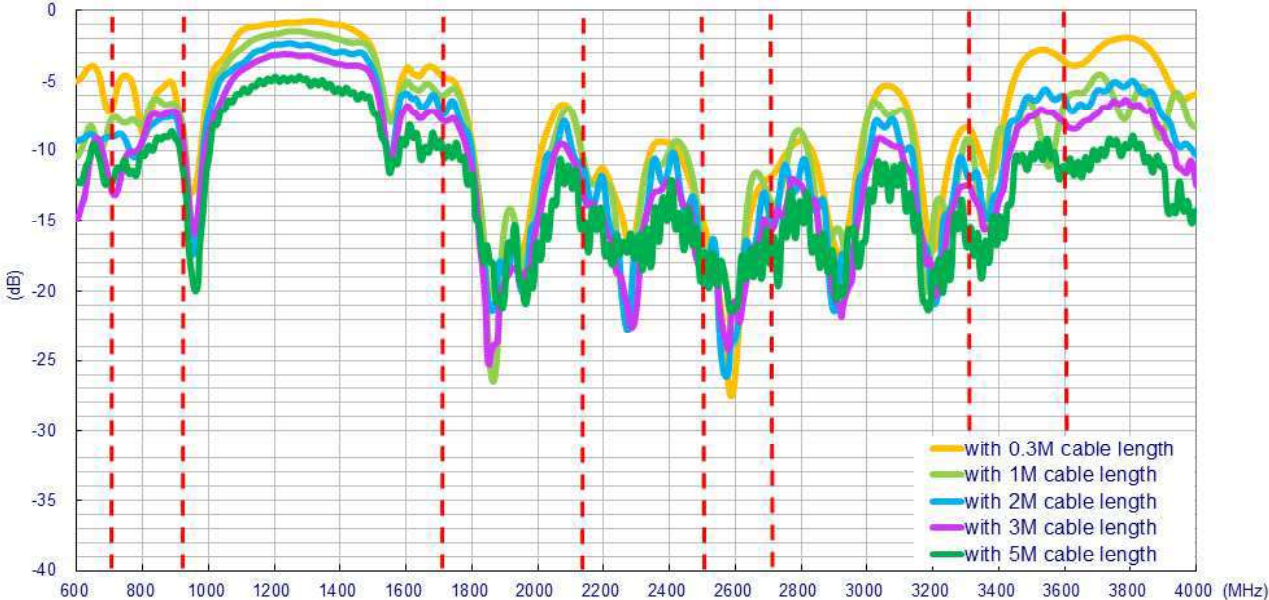
7.2. In free space

7.2.1. Return Loss (MIMO\_1 in free space)

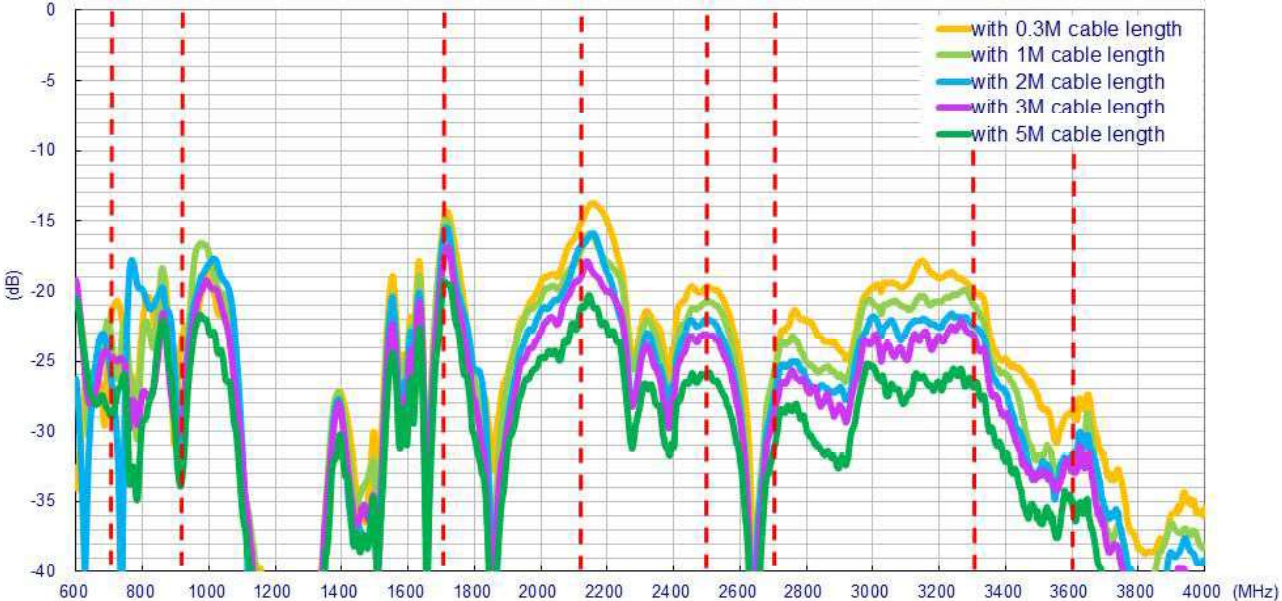




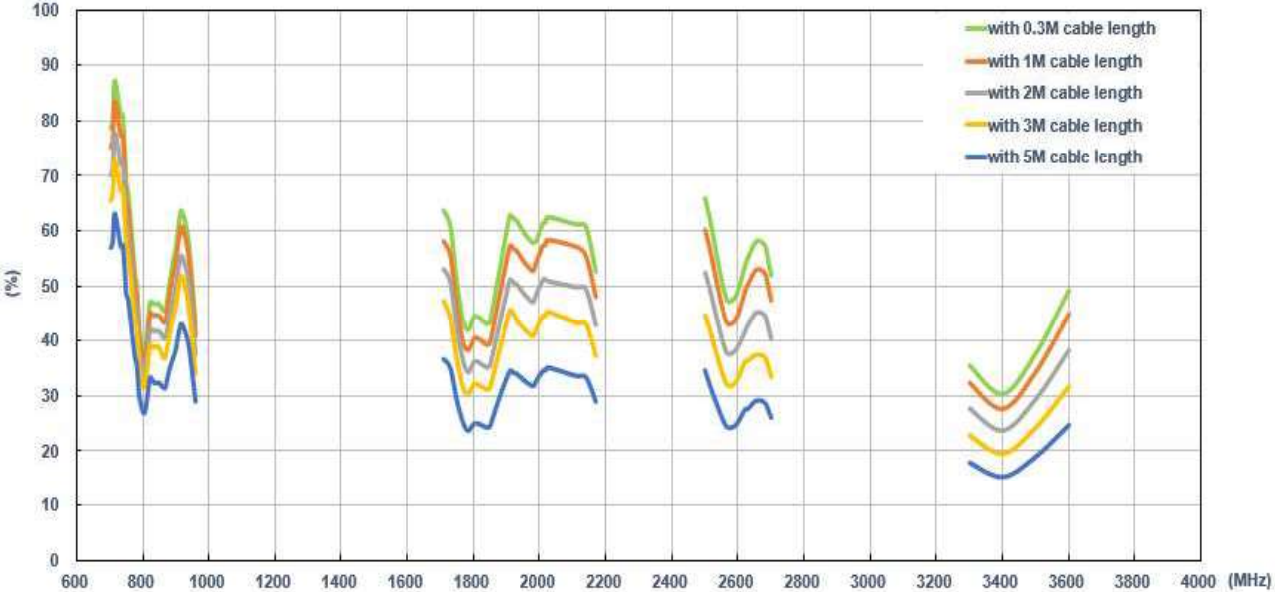
7.2.2. Return Loss (MIMO\_2 in free space)



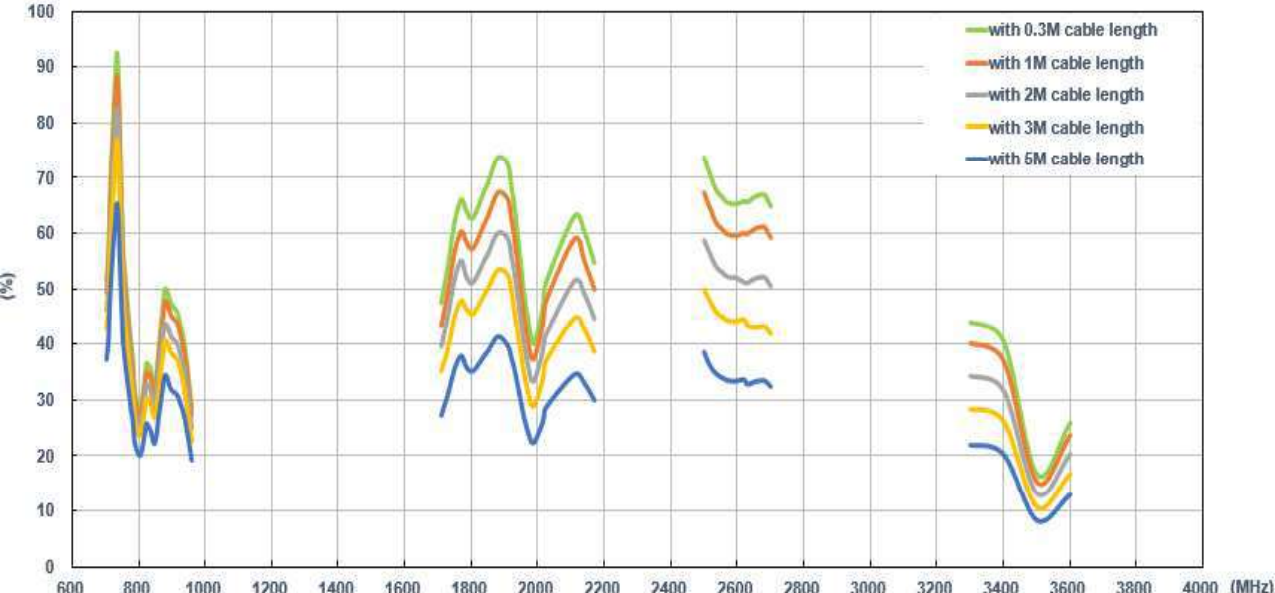
7.2.3. MIMO1 & MIMO2 Isolation (in free space)



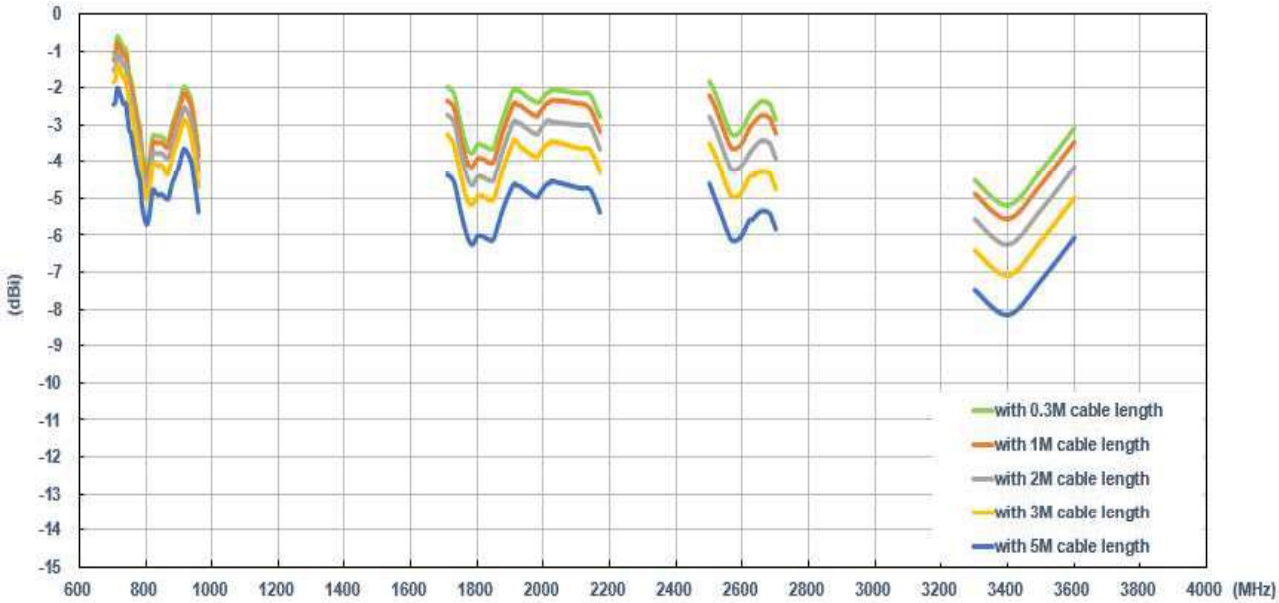
7.2.4. Efficiency (MIMO\_1 in free space)



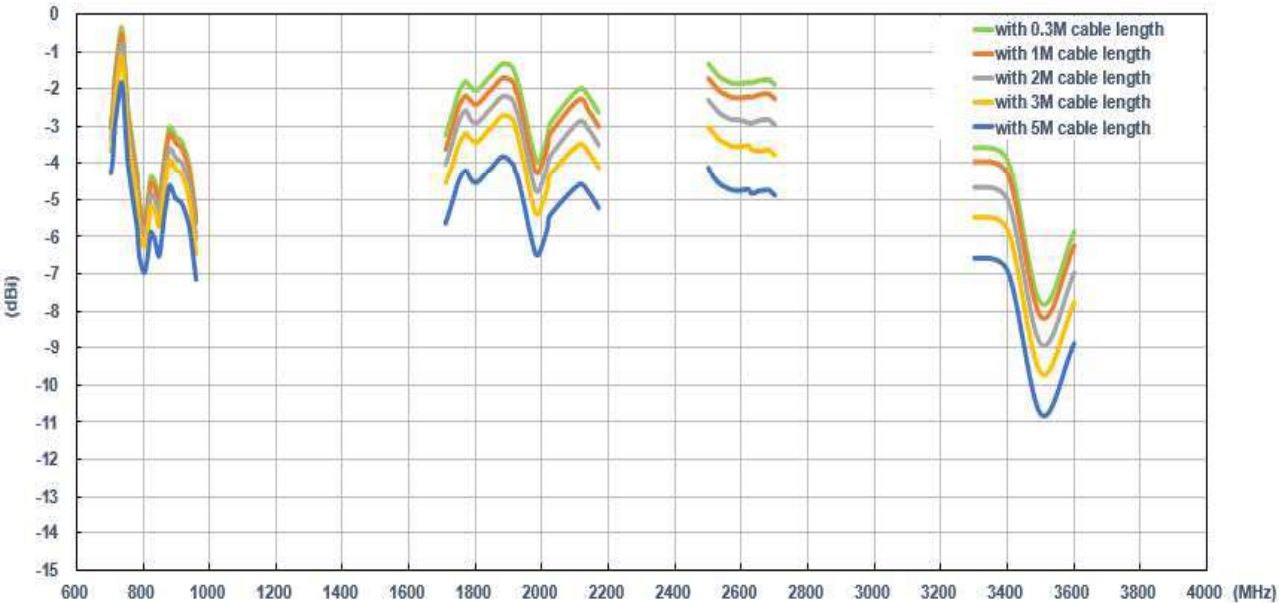
7.2.5. Efficiency (MIMO\_2 in free space)



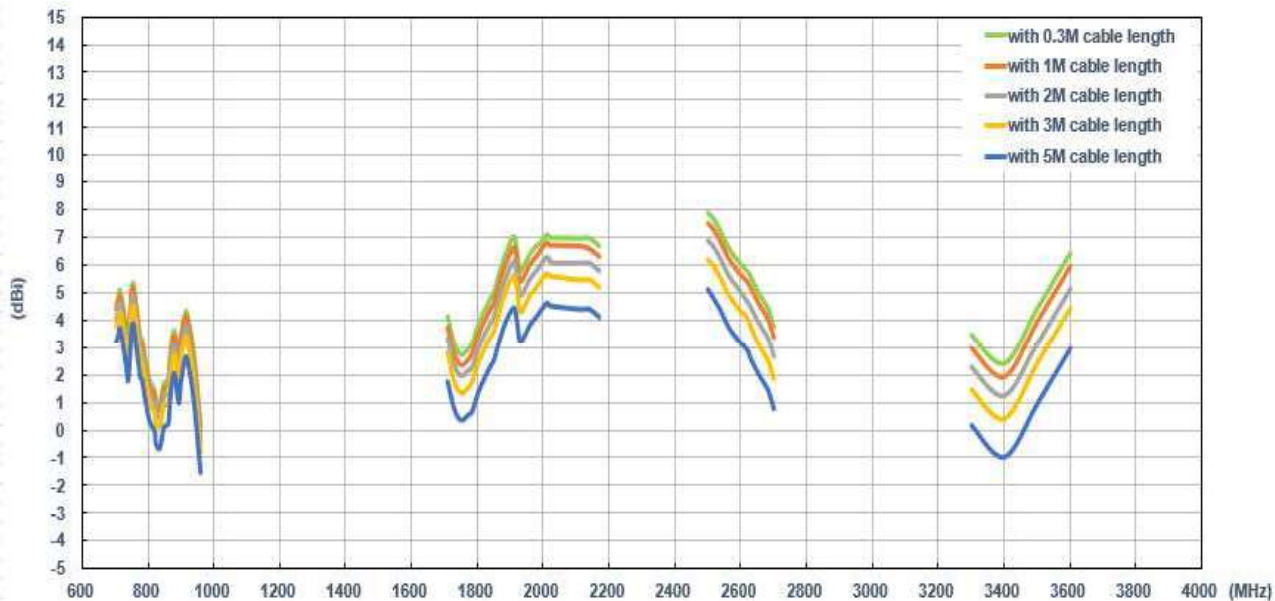
7.2.6. Average Gain (MIMO\_1 in free space)



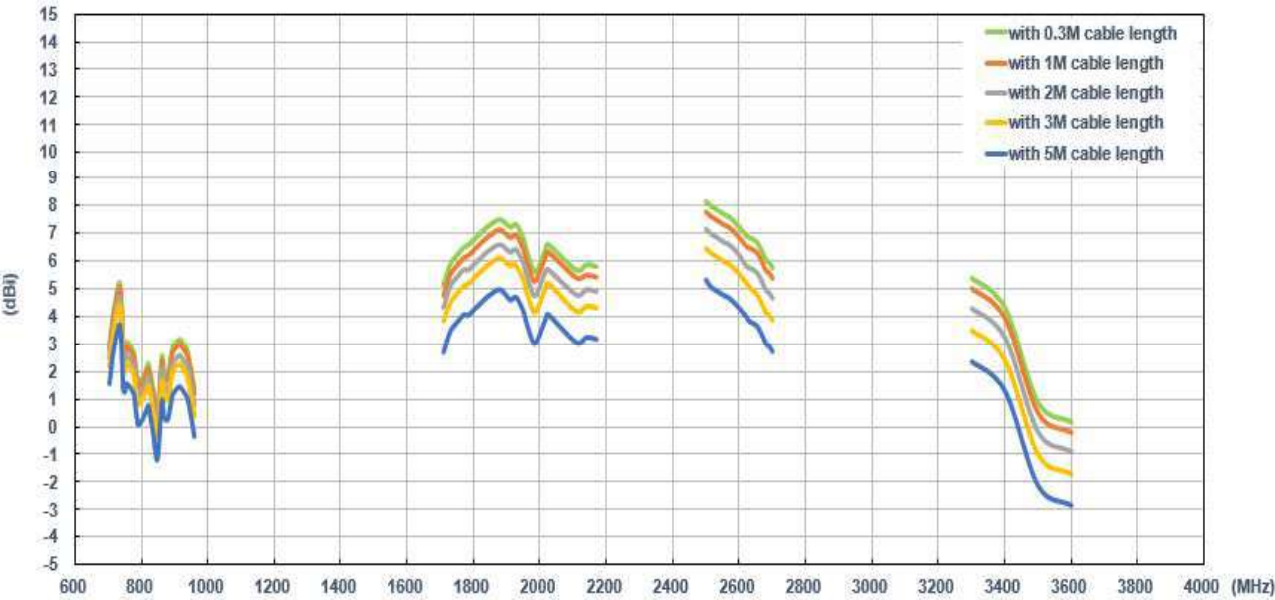
7.2.7. Average Gain (MIMO\_2 in free space)



7.2.8. Peak Gain (MIMO\_1 in free space)



7.2.9. Peak Gain (MIMO\_2 in free space)



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