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# SPECIFICATION

## Ultra-Wideband Adhesive Type External Antenna

- Part No. : **GSA.8827.A.101111 Phoenix**
- Product Name : 4G/3G/2G Ultra-wideband I-Bar Antenna for First-Tier Automotive Application
- Feature : LTE / GSM / CDMA /DCS /PCS / WCDMA / UMTS / HSDPA / GPRS / EDGE / GPS / Wi-Fi  
 698MHz to 960MHz, 1575.42MHz, 1710MHz to 2700Mhz  
 1M RG-174 cable with SMA(M) connector  
 Ingress protection rating IP65  
 Low profile for easy installation  
 Fully customizable cable length and connector  
 105mm\*30\*7.7mm  
**RoHS compliant**



## 1. Introduction

The GSA.8827 Phoenix Ultra-Wideband I-Bar antenna is a robust high efficiency cellular antenna for use with all 4G/3G/2G cellular modules worldwide.

Its slim-line design allows for covert and convenient installation in automotive vehicles, its omnidirectional gain across all bands ensures constant reception and transmission. GSA.8827 is manufactured and tested in a TS16949 first tier automotive approved facility, and it has gone through full PPAP design, reliability and quality audits.

The Phoenix finds its application particularly in first-tier automotive application, aftermarket and telematics.

With its unique ultra-wide band dipole design, the Phoenix has exceptional industry performance characteristics considering its very low profile at 7.7mm and has a compact size of only 105mm\*30mm.

This antenna is designed to be mounted on glass or plastic (not on metal). It comes with strong 3M double-sided adhesive for a permanent and secure fix to your vehicle interior. The antenna is UV Resistant. Cable lengths and connectors are fully customizable.



## 2. Specification

ELECTRICAL									
Frequency (MHz)	703~803	824~894	880~960	1710 ~ 1880	1575.42	1850 ~ 1990	1710 ~ 2170	2490~2690	
Free Space Peak Gain (dBi)									
Cable length (meter)	0.3	1.21	1.46	2.70	2.67	2.99	3.32	3.43	1.67
	1	2.83	1.71	2.93	1.57	2.14	2.32	2.65	1.49
	2	1.51	1.70	2.87	0.54	0.77	0.78	1.10	-0.38
	3	-0.70	0.49	0.51	-0.93	-0.67	-0.47	-0.36	-1.66
Free Space Average Gain (dBi)									
Cable length (meter)	0.3	-3.36	-2.99	-2.08	-1.09	-1.53	-1.29	-1.08	-3.24
	1	-1.62	-3.06	-1.79	-2.09	-2.17	-2.20	-1.99	-4.02
	2	-3.30	-4.20	-3.81	-3.29	-3.68	-3.76	-3.59	-5.71
	3	-5.73	-4.83	-4.25	-4.35	-4.84	-4.87	-4.75	-7.17
Free Space Efficiency (%)									
Cable length (meter)	0.3	46.38	49.09	62.06	77.13	70.38	74.65	78.23	47.89
	1	69.63	52.93	67.41	61.68	59.94	61.68	63.92	39.71
	2	47.75	37.61	44.04	47.39	42.40	42.62	44.36	26.91
	3	26.88	34.17	37.59	37.10	32.35	33.07	33.64	19.28
On glass Peak Gain (dBi)									
Cable length (meter)	0.3	0.91	0.74	0.98	2.35	3.75	4.56	5.34	3.50
	1	2.79	1.90	-0.13	1.54	3.25	4.56	4.34	3.44
	2	0.34	1.47	1.65	0.97	1.53	2.30	2.69	1.47
	3	0.16	-0.43	-0.55	-0.28	0.51	0.84	1.13	-0.55
On glass Average Gain (dBi)									
Cable length (meter)	0.3	-2.63	-2.49	-2.67	-1.29	-1.35	-1.10	-1.03	-2.91
	1	-2.25	-3.14	-2.96	-2.22	-2.04	-1.98	-1.99	-3.85
	2	-3.78	-4.63	-3.65	-3.27	-3.63	-3.46	-3.50	-5.73
	3	-4.51	-4.90	-5.12	-4.59	-5.12	-5.02	-5.06	-7.62
On glass Efficiency (%)									
Cable length (meter)	0.3	54.84	56.39	54.13	74.28	73.29	77.81	80.31	51.78
	1	59.84	48.85	50.97	59.95	62.47	77.81	63.36	41.57
	2	42.41	34.53	43.29	47.10	43.36	45.17	44.80	26.95
	3	35.51	32.33	30.85	34.73	30.80	31.64	31.24	17.43

ELECTRICAL	
Impedance	50Ω
Polarization	Linear
Radiation Pattern	Omni
Input Power	50 W
MECHANICAL	
Casing	UV Resistant PC/ABS
Connector	SMA Male (customizable)
Cable	RG-174
Dimensions	105*30*7.7mm
Waterproof	IP-65
Weight	50g
ENVIRONMENTAL	
Temperature Range	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH
Shock (Drop Test)	1m drop on concrete 6 axes
Cable Pull	8kgf

\* After comparison, the antenna performance on the plastic base is the same with free space.

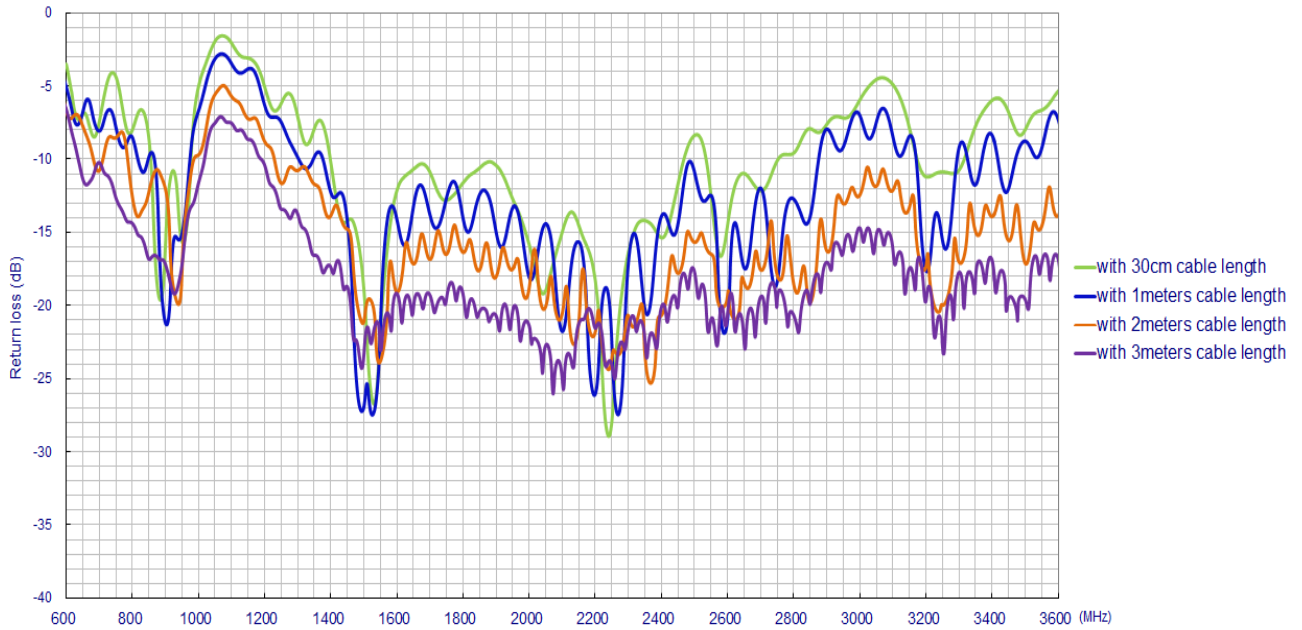
LTE BANDS			
Band Number	LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / TD-SCDMA		
	Uplink	Downlink	Covered
1	UL: 1920 to 1980	DL: 2110 to 2170	✓
2	UL: 1850 to 1910	DL: 1930 to 1990	✓
3	UL: 1710 to 1785	DL: 1805 to 1880	✓
4	UL: 1710 to 1755	DL: 2110 to 2155	✓
5	UL: 824 to 849	DL: 869 to 894	✓
7	UL: 2500 to 2570	DL: 2620 to 2690	✓
8	UL: 880 to 915	DL: 925 to 960	✓
9	UL: 1749.9 to 1784.9	DL: 1844.9 to 1879.9	✓
11	UL: 1427.9 to 1447.9	DL: 1475.9 to 1495.9	✗
12	UL: 699 to 716	DL: 729 to 746	✓
13	UL: 777 to 787	DL: 746 to 756	✓
14	UL: 788 to 798	DL: 758 to 768	✓
17	UL: 704 to 716	DL: 734 to 746 (LTE only)	✓
18	UL: 815 to 830	DL: 860 to 875 (LET only)	✓
19	UL: 830 to 845	DL: 875 to 890	✓
20	UL: 832 to 862	DL: 791 to 821	✓
21	UL: 1447.9 to 1462.9	DL: 1495.9 to 1510.9	✗
22	UL: 3410 to 3490	DL: 3510 to 3590	✓
23	UL: 2000 to 2020	DL: 2180 to 2200 (LTE only)	✓
24	UL: 1625.5 to 1660.5	DL: 1525 to 1559 (LTE only)	✓
25	UL: 1850 to 1915	DL: 1930 to 1995	✓
26	UL: 814 to 849	DL: 859 to 894	✓
27	UL: 807 to 824	DL: 852 to 869 (LTE only)	✓
28	UL: 703 to 748	DL: 758 to 803 (LTE only)	✓
29	UL: -	DL: 717 to 728 (LTE only)	✓
30	UL: 2305 to 2315	DL: 2350 to 2360 (LTE only)	✓
31	UL: 452.5 to 457.5	DL: 462.5 to 467.5 (LTE only)	✗
32	UL: -	DL: 1452 - 1496	✗
35		1850 to 1910	✓
38		2570 to 2620	✓
39		1880 to 1920	✓
40		2300 to 2400	✓
41		2496 to 2690	✓
42		3400 to 3600	✓
43		3600 to 3800	✗

\*Covered bands represent an efficiency greater than 20%

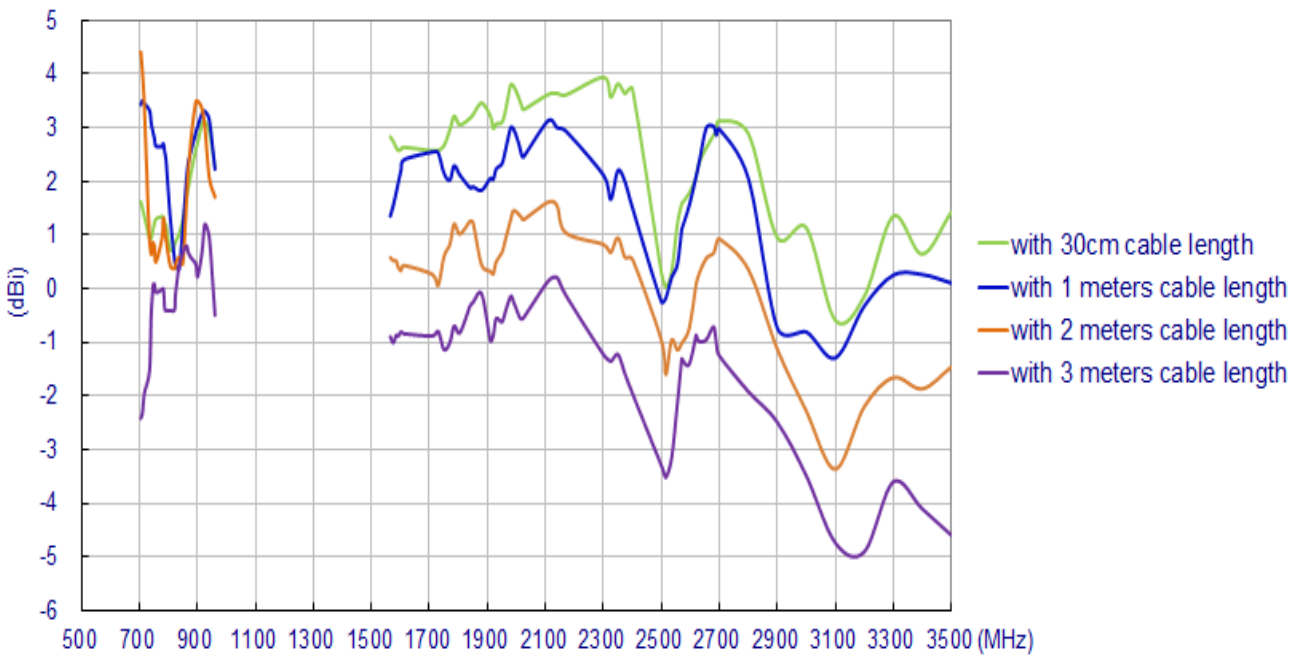
### 3. Antenna Characteristics

#### 3.1. Antenna Characteristics (In Free Space)

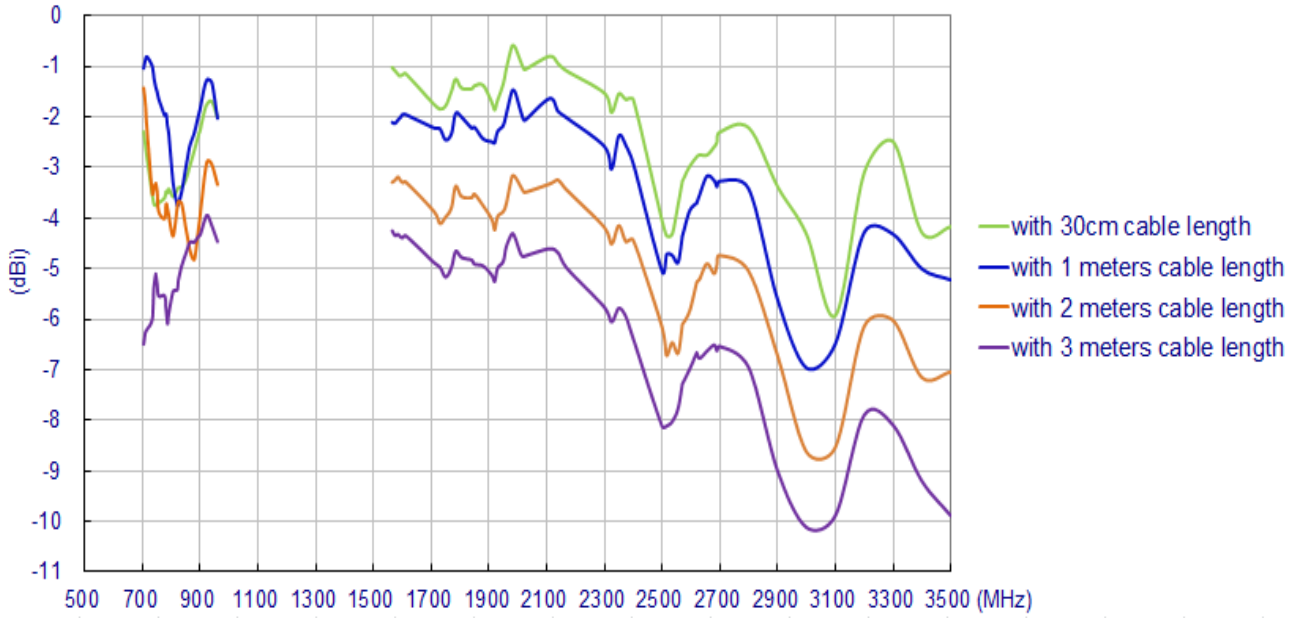
##### 3.1.1. Return Loss



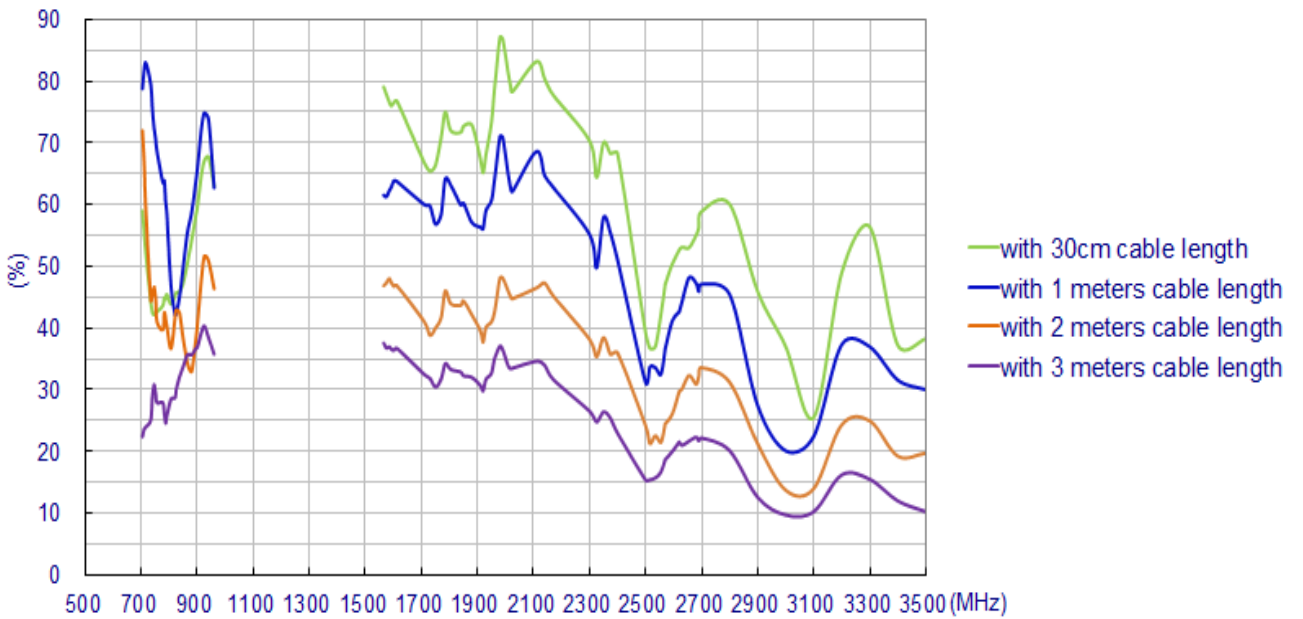
##### 3.1.2. Peak Gain



### 3.1.3. Average Gain



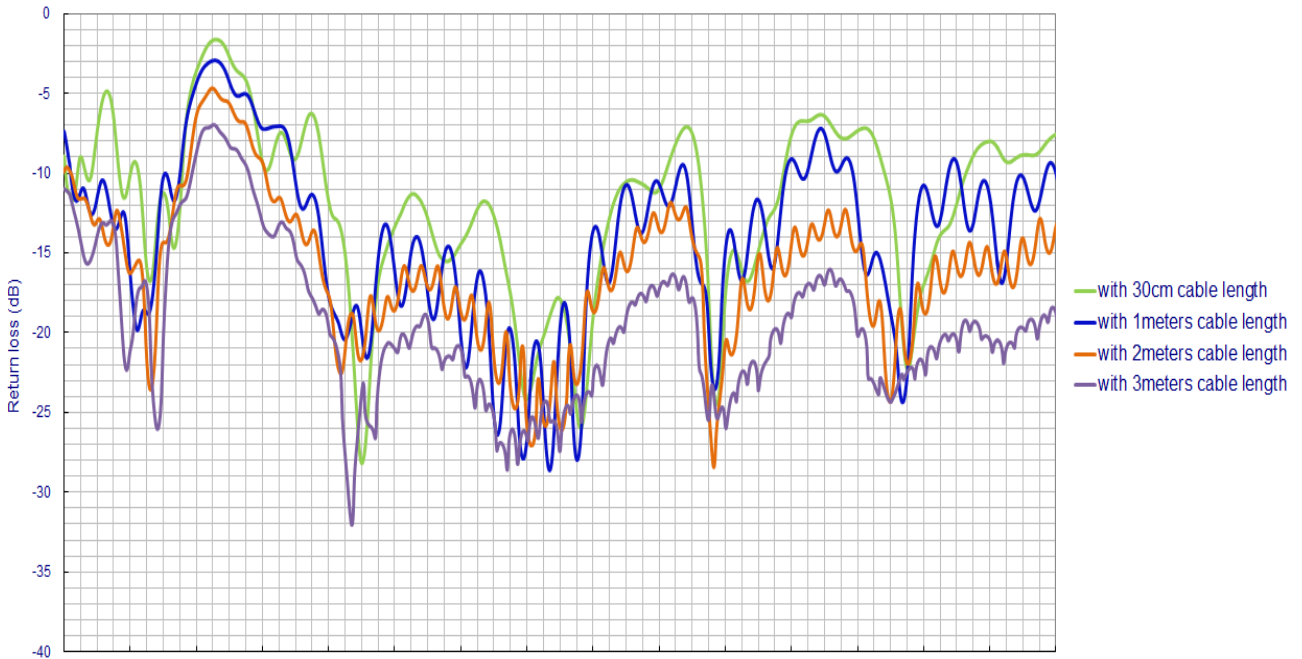
### 3.1.4. Efficiency



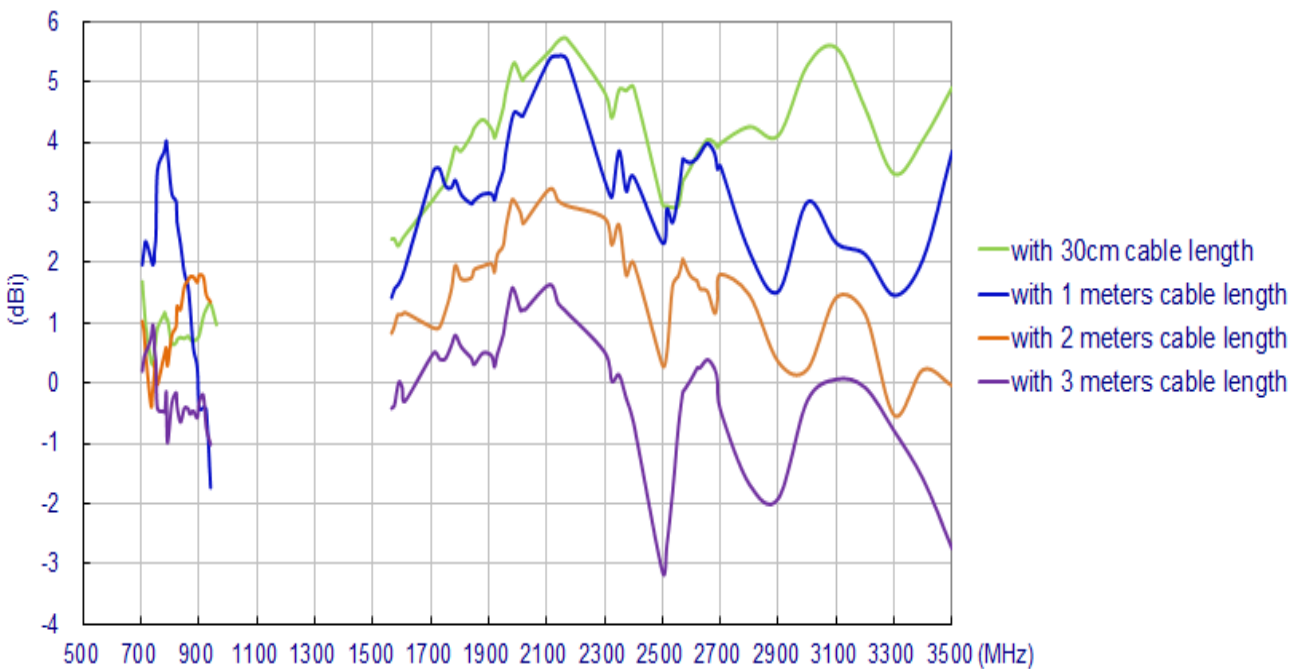


## 3.2. Antenna Characteristics (On Glass)

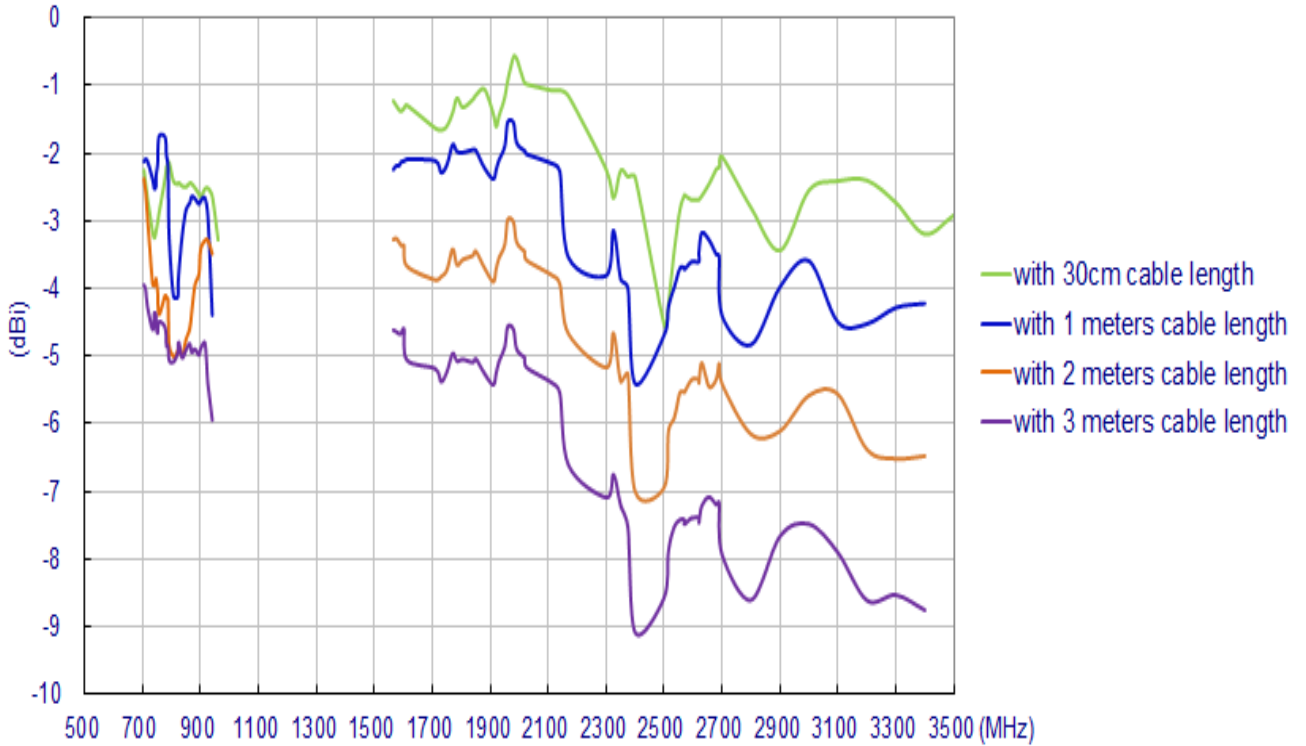
### 3.2.1. Return Loss



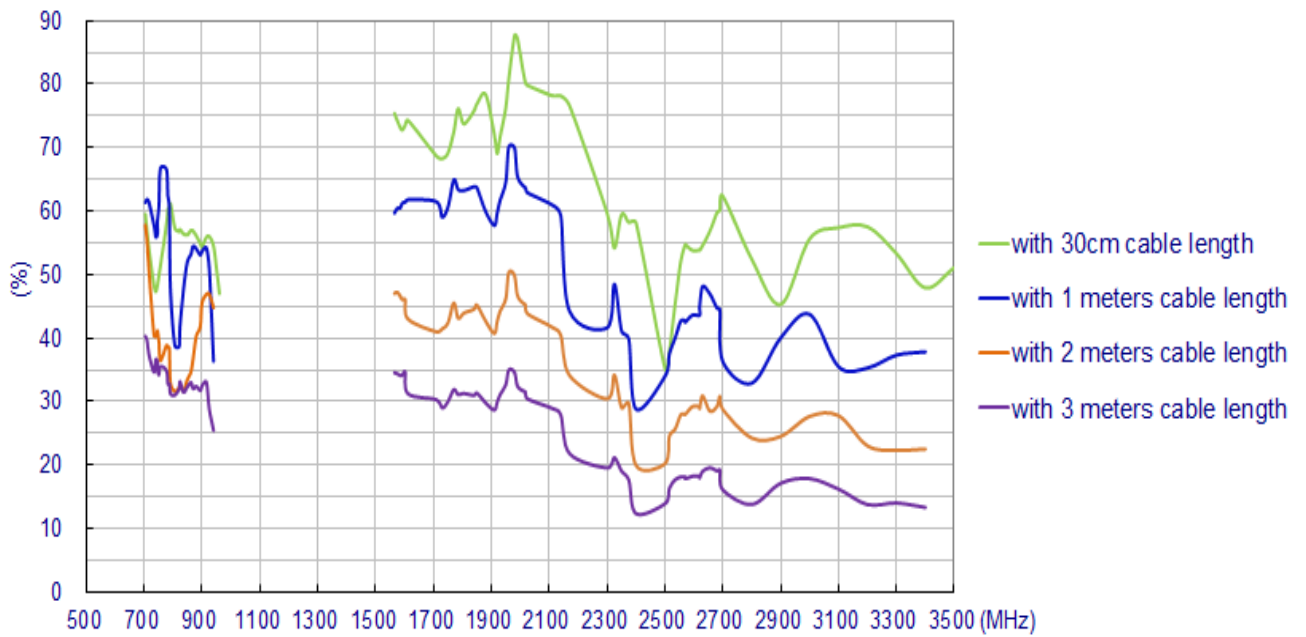
### 3.2.2. Peak Gain



### 3.2.3. Average Gain

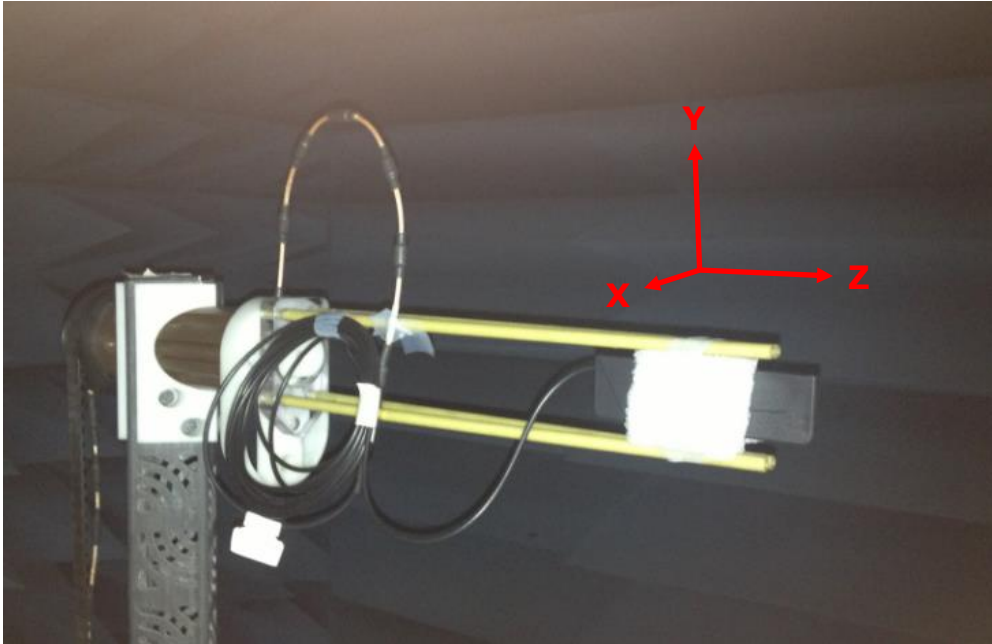


### 3.2.4. Efficiency



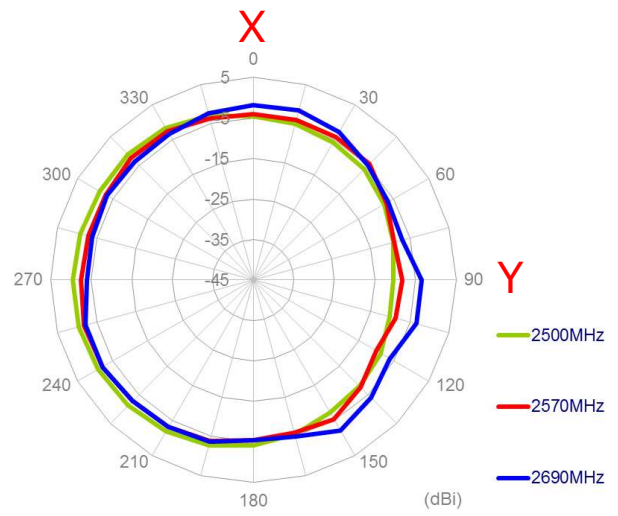
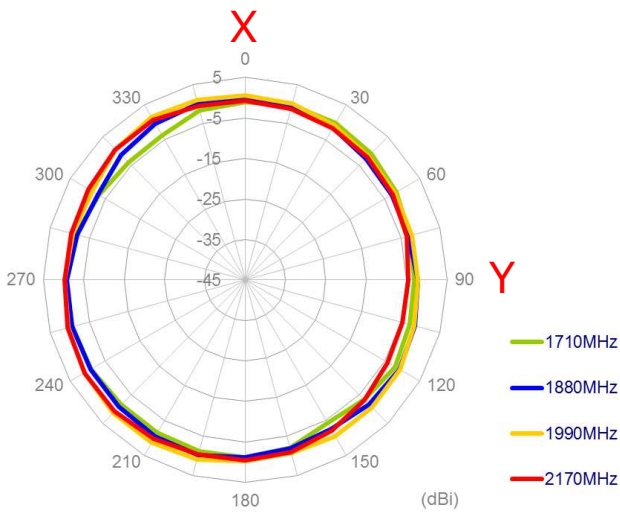
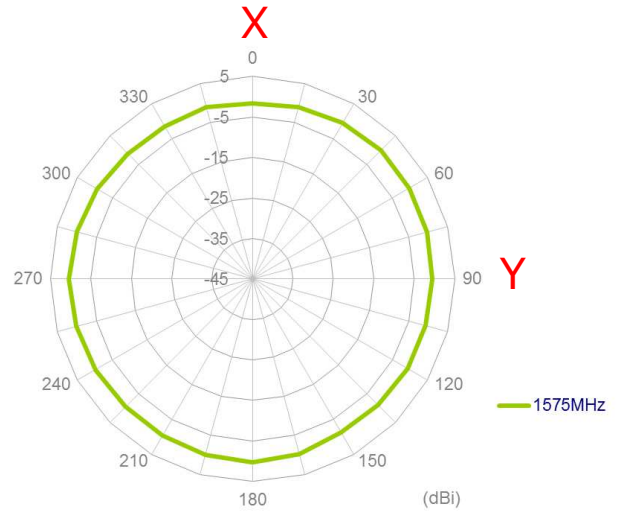
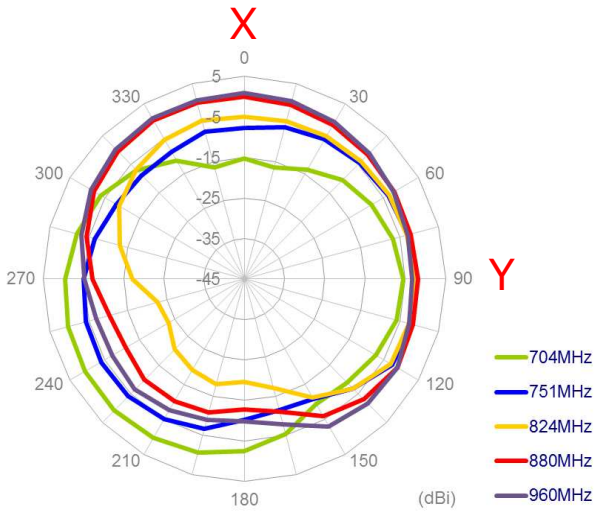
## 4. Antenna Radiation Patterns

### 4.1. Antenna Setup (Free Space with 1 Meter Cable Length)

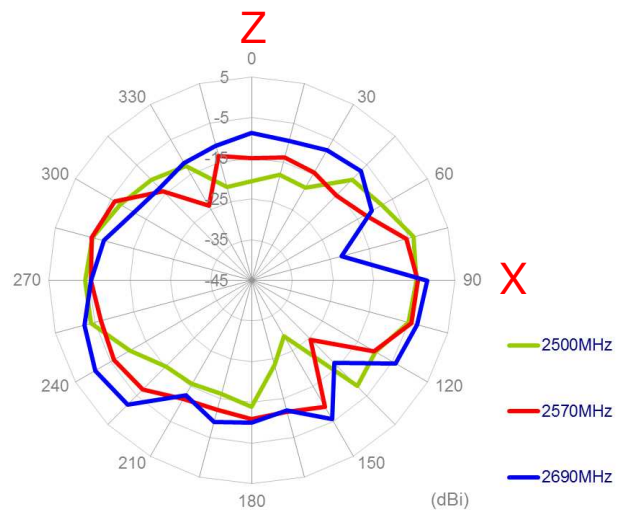
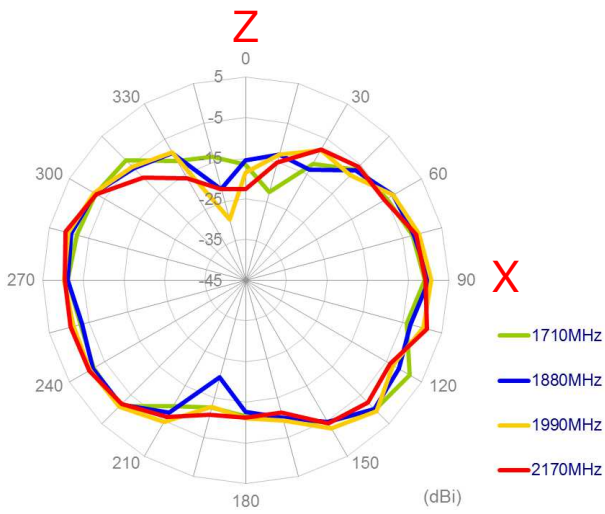
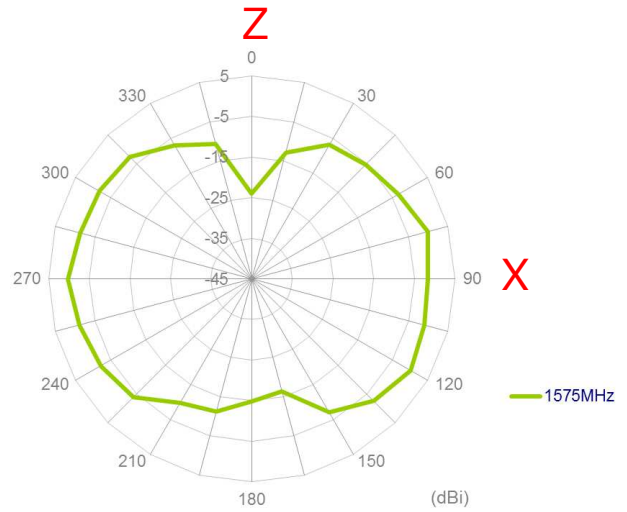
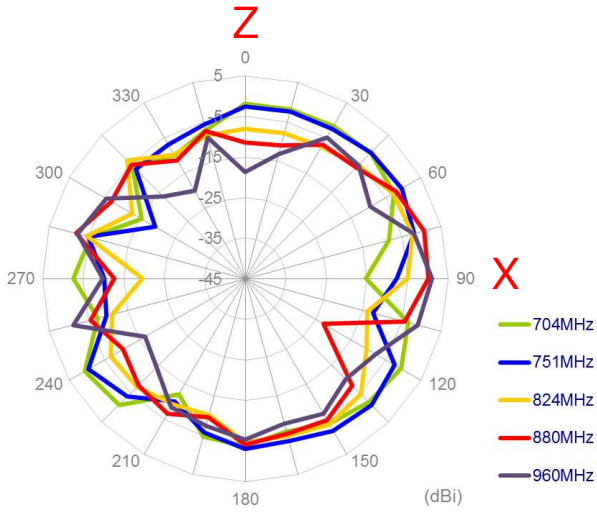


### 4.1.1. Radiation Patterns

#### XY Plane

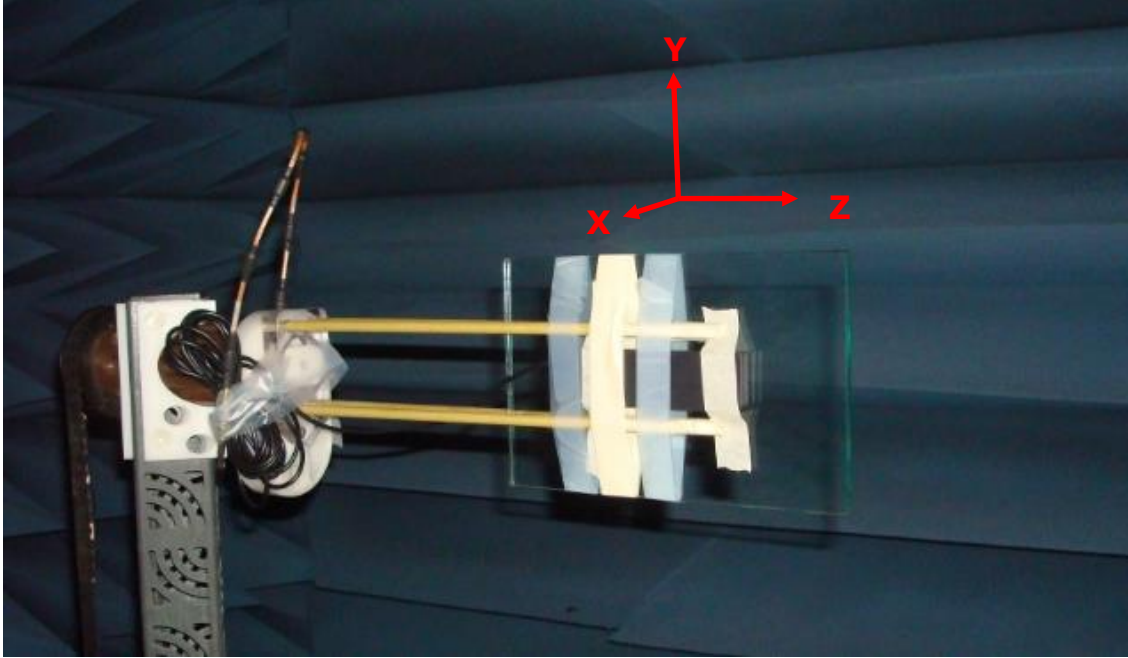


### XZ Plane



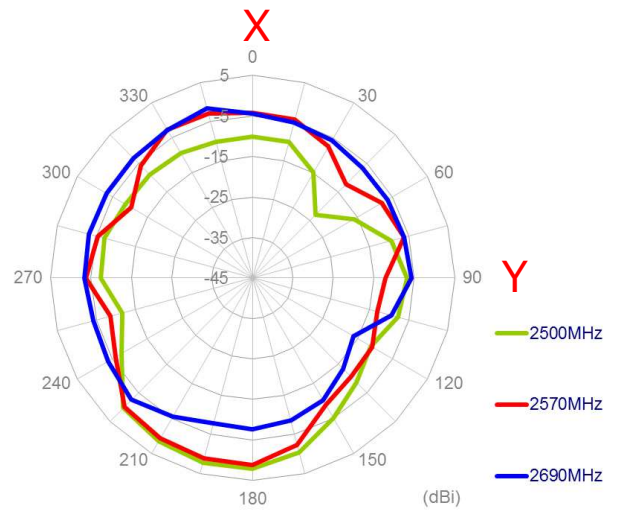
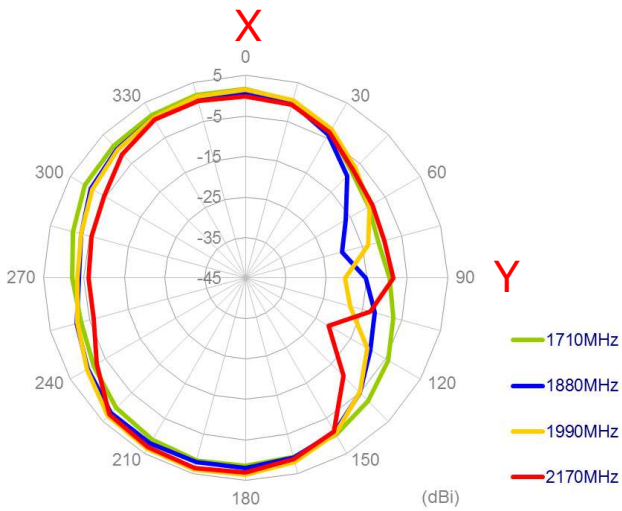
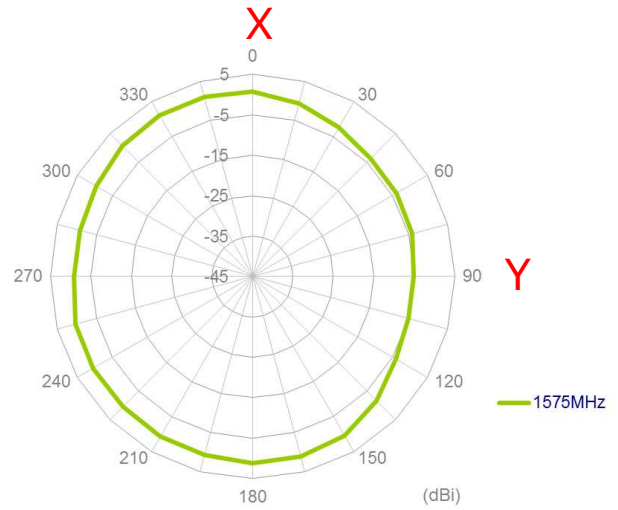
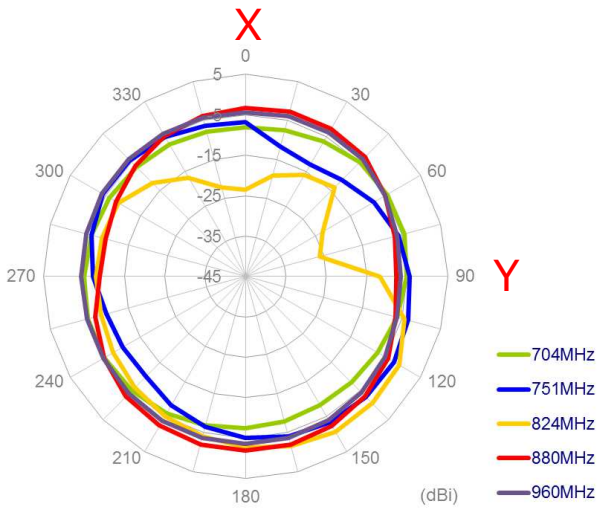


## 4.2. Antenna Setup (On Glass with 1 Meter Cable Length)

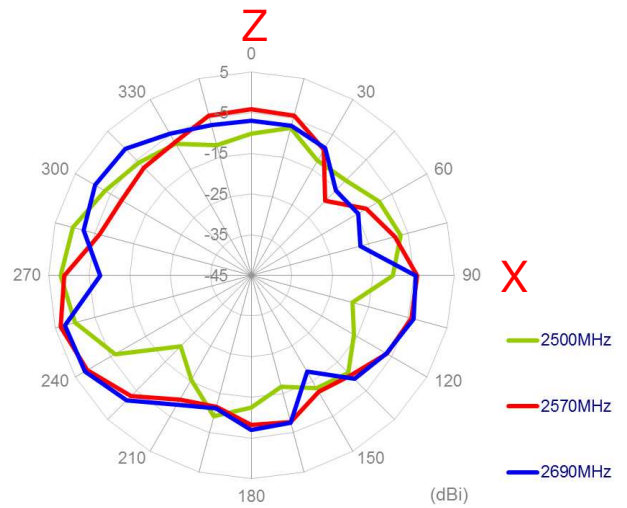
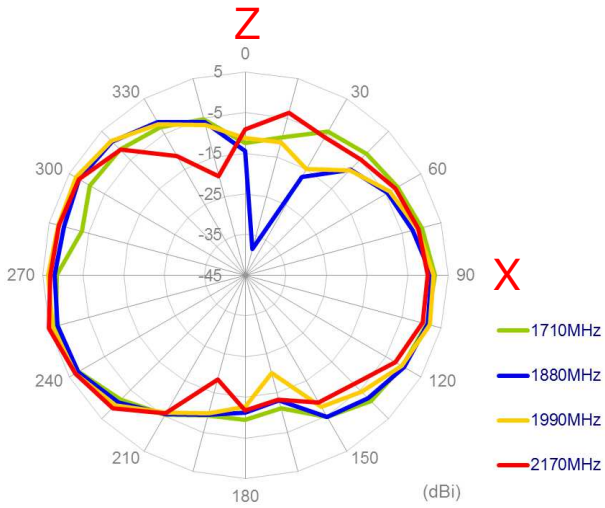
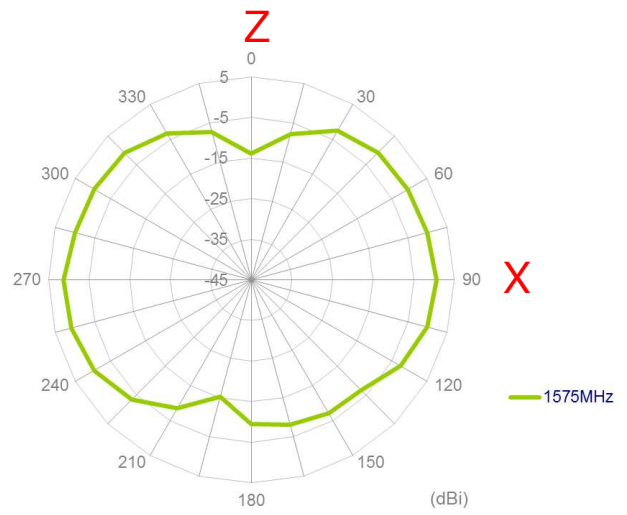
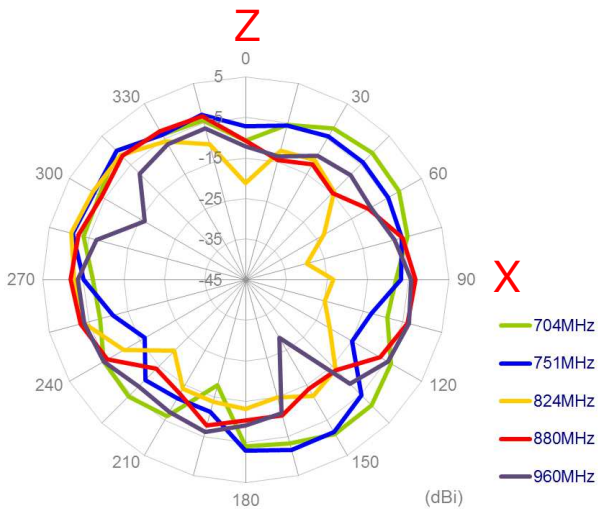


### 4.2.1. Radiation Patterns

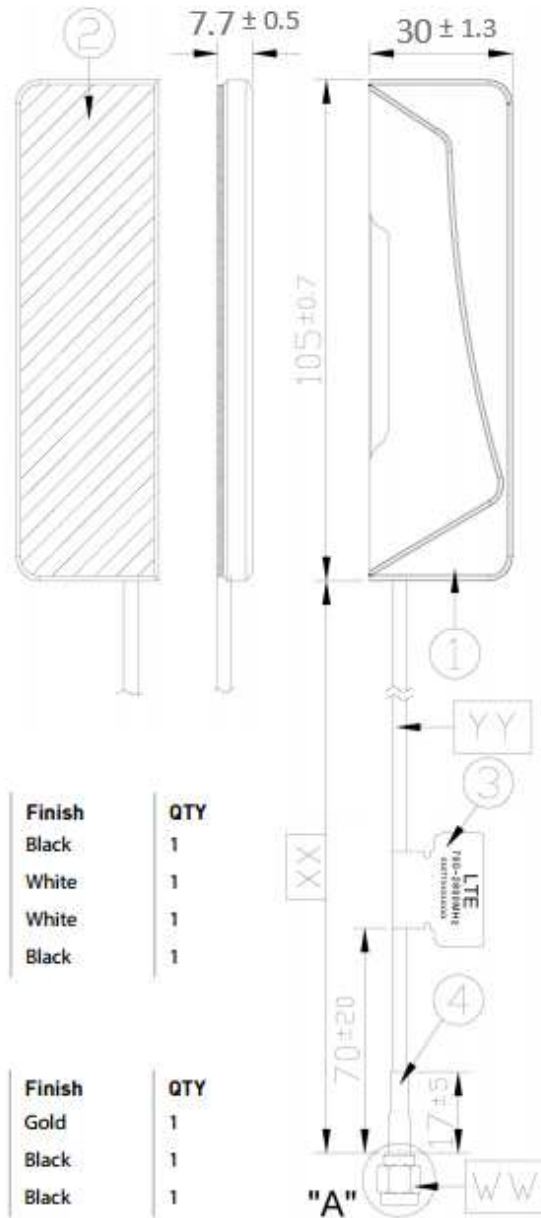
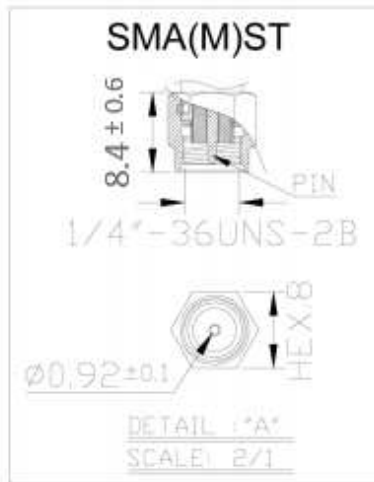
#### XY Plane



### XZ Plane



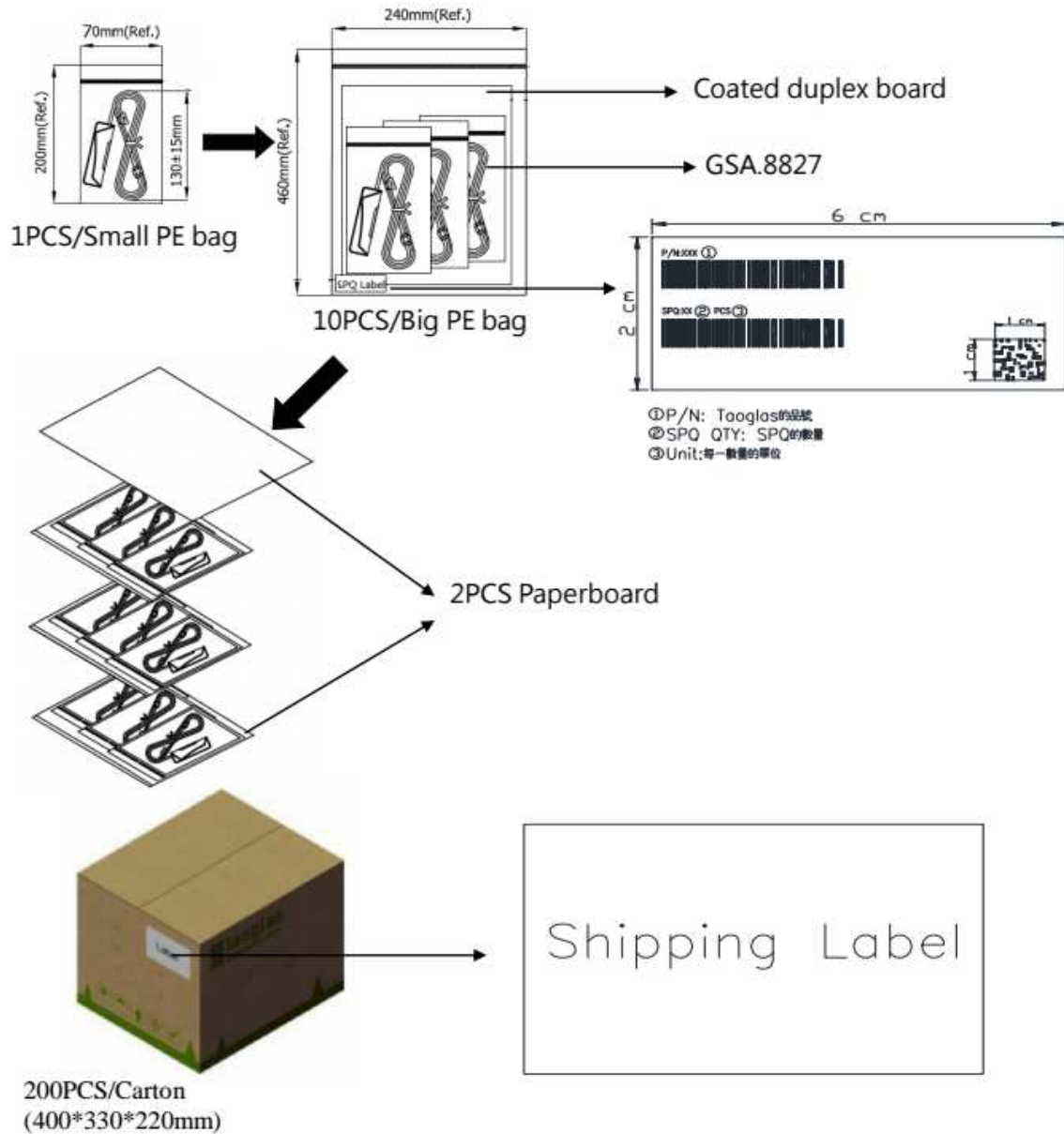
## 5. Mechanical Drawing (Unit: mm)



	Name	P/N	Material	Finish	QTY
1	Housing	000112G000015A	PC+ABS	Black	1
2	Double Sided Adhesive	001011J0000XXA	3M 1600T	White	1
3	LTE Label	001012G000015A	Coated Paper	White	1
4	Heat Shrink Tube	001311F0000XXA	PE	Black	1

	Name	P/N	Spec	Finish	QTY
WW	Connector Type	200212G000015A	SMA(M)ST	Gold	1
XX	Cable Length		$1000 \pm 30$ mm	Black	1
YY	Cable Type	301313A0000XXA	RG174	Black	1

## 6. Packaging



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