

## Specification

- Part No. : **TG.10.0113**
- Product Name : **Triton** - 4G/3G/2G Terminal Antenna for Cellular Gateways and Routers with Assisted GPS Hinged SMA(M)
- Features : LTE / GSM / CDMA /GPS/ DCS /PCS / WCDMA / UMTS / HSPA / GPRS / EDGE /IMT  
698MHz to 960MHz, 1710MHz to 2690Mhz  
Dipole Terminal Antenna  
Hinged SMA(M) Connector  
Dimensions: Length 168\*18\*13mm, Ø13mm  
**RoHS Compliant**



## **1. Introduction**

The TG.10 Triton dipole Antenna designed primarily for use with 3G and 4G Cellular Gateways and Routers, with assisted GPS. It does not require a ground-plane to connect to. It has a quality robust PC+ABS housing. The antenna has a SMA(M) connector. It can be used straight or hinged 90 degrees. The antenna has a wide-band high efficiency response on nearly all 4G/3G/2G frequency bands worldwide, and can also be used for other cellular and wireless applications such as GSM, and 2.4GHz Wi-Fi.

## 2. Specification

ELECTRICAL										
In free space										
Frequency (MHz)	703~803	824~894	880~960	1575.42	1710 ~1880	1850 ~1990	1920 ~2170	2305 ~2360	2490 ~2690	3400 ~3600
<b>Efficiency (%)</b>										
straight	41.82	33.71	26.83	26.17	41.01	35.76	39.76		46.48	
bent	48.78	45.62	40.51	26.82	49.05	43.56	47.78		55.37	
<b>Average Gain(dBi)</b>										
straight	-3.80	-4.74	-5.73	-5.82	-3.92	-4.48	-4.03		-3.44	
bent	-3.12	-3.41	-3.93	-5.71	-3.14	-3.62	-3.22		-2.63	
<b>Peak Gain(dBi)</b>										
straight	0.34	0.03	-0.48	-1.85	0.67	-0.07	0.23		2.04	
bent	-0.21	0.35	0.22	-2.00	1.00	0.65	1.30		3.45	
With 15cm X 9cm ground										
Frequency (MHz)	703~803	824~894	880~960	1575.42	1710 ~1880	1850 ~1990	1920 ~2170	2305 ~2360	2490 ~2690	3400 ~3600
<b>Efficiency (%)</b>										
straight	71.68	49.29	43.13	20.87	57.84	67.45	74.31		66.25	
bent	74.12	61.90	51.94	23.16	53.64	67.19	73.14		68.20	
<b>Average Gain(dBi)</b>										
straight	-1.45	-3.08	-3.66	-6.80	-2.38	-1.74	-1.30		-1.84	
bent	-1.30	-2.09	-2.86	-6.35	-2.71	-1.76	-1.36		-1.70	
<b>Peak Gain(dBi)</b>										
straight	2.85	1.20	0.19	-2.47	2.34	3.57	4.22		3.95	
bent	1.43	0.79	-0.13	-1.44	2.08	2.69	2.96		4.44	
On 30cmX30cm ground plane edge										
Frequency (MHz)	703~803	824~894	880~960	1575.42	1710 ~1880	1850 ~1990	1920 ~2170	2305 ~2360	2490 ~2690	3400 ~3600
<b>Efficiency (%)</b>										
straight	57.56	41.53	42.09	18.06	75.91	71.83	68.52		57.08	
bent	57.30	48.37	42.12	20.37	72.62	71.93	70.21		58.98	
<b>Average Gain(dBi)</b>										
straight	-2.41	-3.82	-3.76	-7.43	-1.20	-1.44	-1.65		-2.50	
bent	-2.42	-3.19	-3.76	-6.90	-1.39	-1.43	-1.54		-2.36	
<b>Peak Gain(dBi)</b>										
straight	2.96	0.68	-0.01	-3.02	3.37	2.83	2.82		3.17	
bent	0.61	-0.78	-0.87	-2.61	3.49	4.63	4.76		3.12	

On 30cmX30cm ground plane center										
Frequency (MHz)	703~803	824~894	880~960	1575.42	1710 ~1880	1850 ~1990	1920 ~2170	2305 ~2360	2490 ~2690	3400 ~3600
<b>Efficiency (%)</b>										
straight	42.15	28.00	20.35	24.88	39.11	49.92	55.35		47.74	
bent	27.52	21.92	15.49	24.23	61.22	64.56	62.92		56.43	
<b>Average Gain(dBi)</b>										
straight	-3.76	-5.65	-6.92	-6.04	-4.09	-3.04	-2.58		-3.33	
bent	-5.63	-6.67	-8.12	-6.15	-2.14	-1.90	-2.02		-2.52	
<b>Peak Gain(dBi)</b>										
straight	-0.06	-0.66	-1.81	-2.50	0.98	2.01	2.33		2.07	
bent	-0.31	-2.93	-4.79	1.22	4.11	5.42	4.94		4.70	
Impedance		50Ω								
Polarization		Linear								
Radiation Pattern		Omni								
Input power		5 W								
MECHANICAL										
Dimensions	Length 168*18*13mm,Φ13mm									
Casing	PC+ABS									
Connector	Hinged SMA Male									
Weight	24g									
Recommended Torque for Mounting	0.9 N·m									
Max Torque for Mounting	1.176 N·m									
ENVIRONMENTAL										
Temperature Range	-40°C to 85°C									
Humidity	Non-condensing 65°C 95% RH									

\*All the bent testing are at 90 degrees bent.

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. Testing Setup

In free space

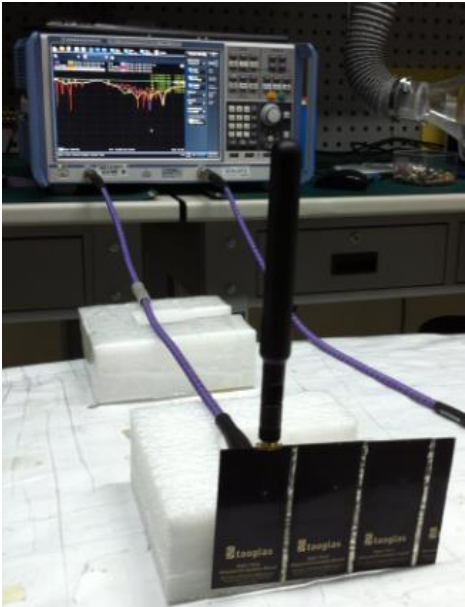


Antenna straight

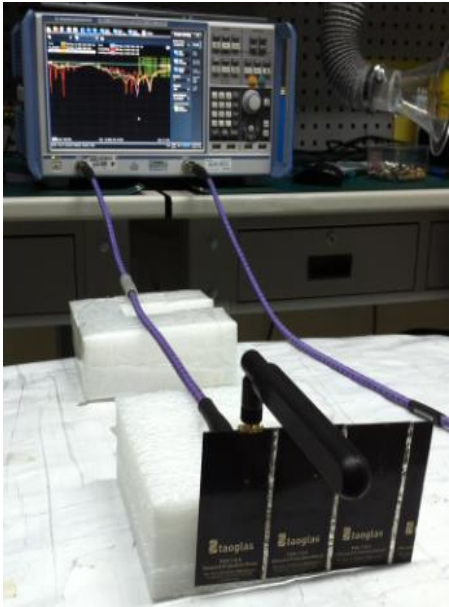


Antenna bent

On 15 X 9cm ground plane



Antenna straight



Antenna bent

On 30cm X 30cm ground plane edge



Antenna straight

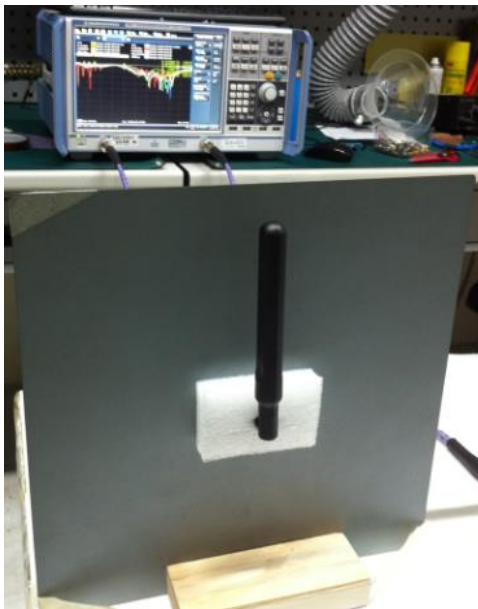


Antenna bent

On 30cm X 30cm ground plane center



Antenna straight

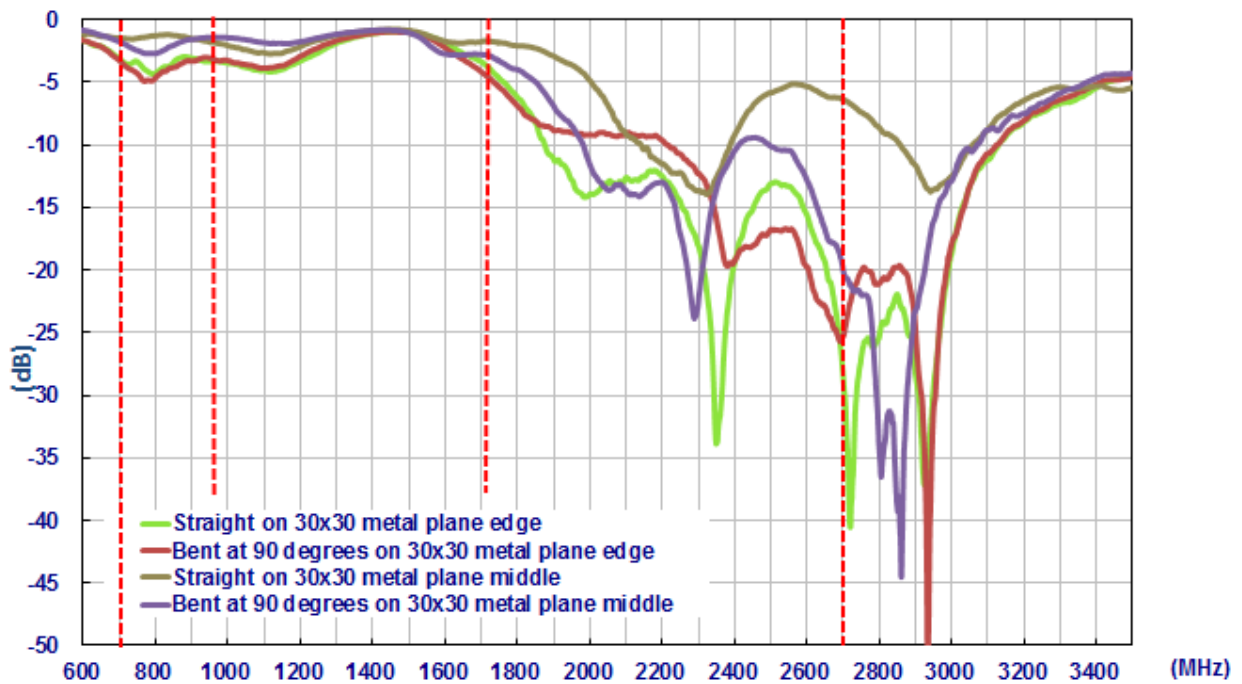
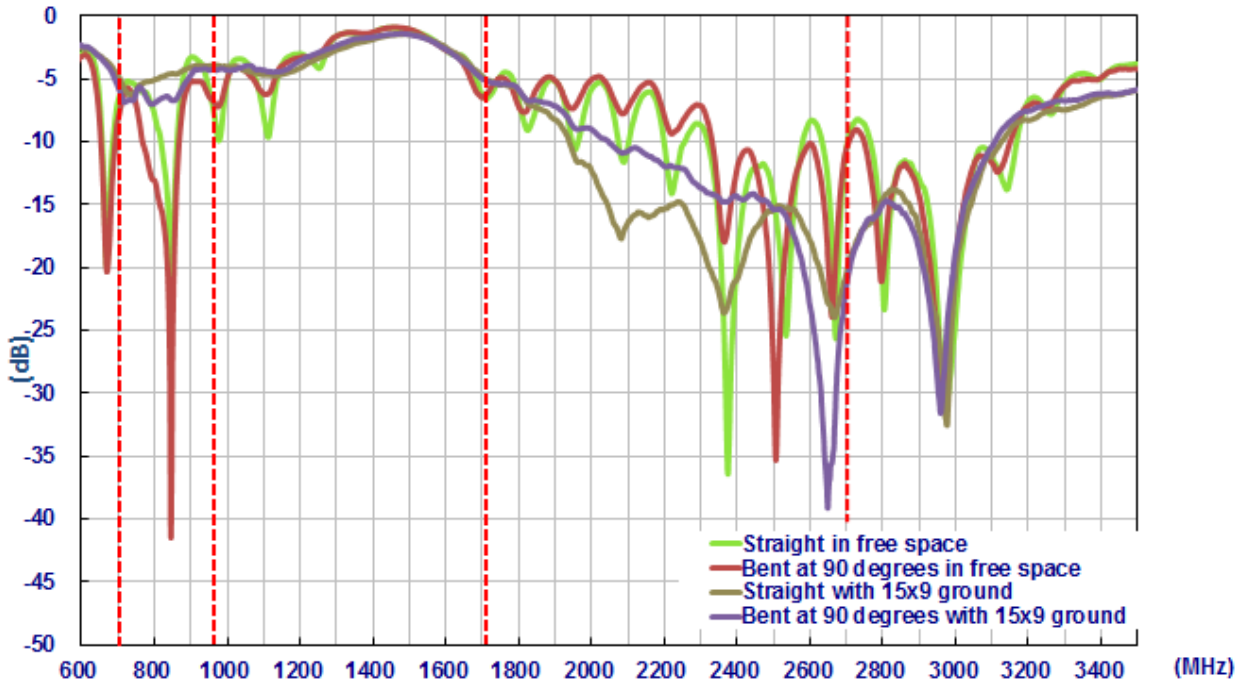


Antenna bent



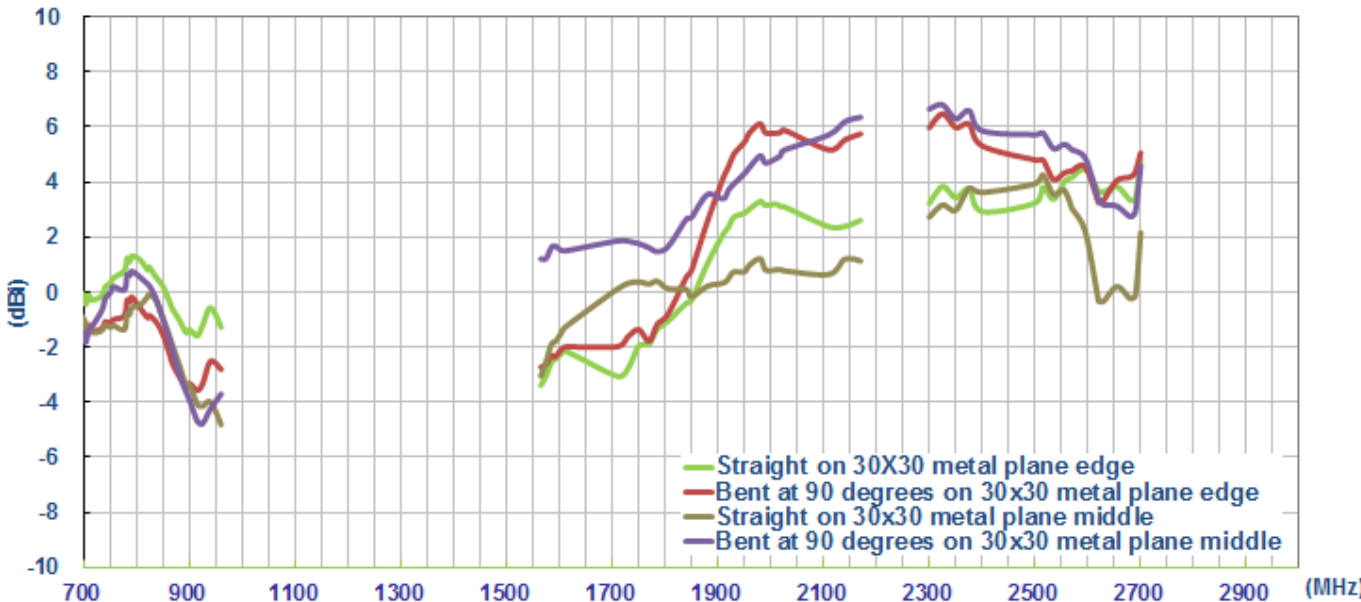
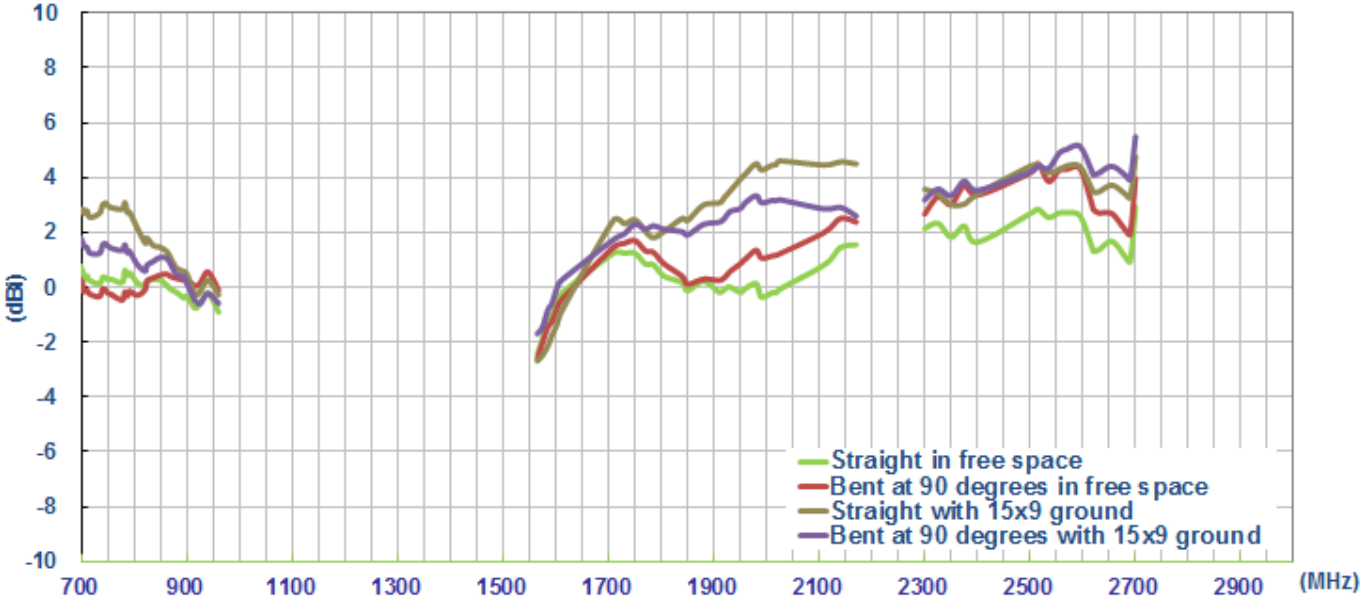


## 3.2. Return Loss

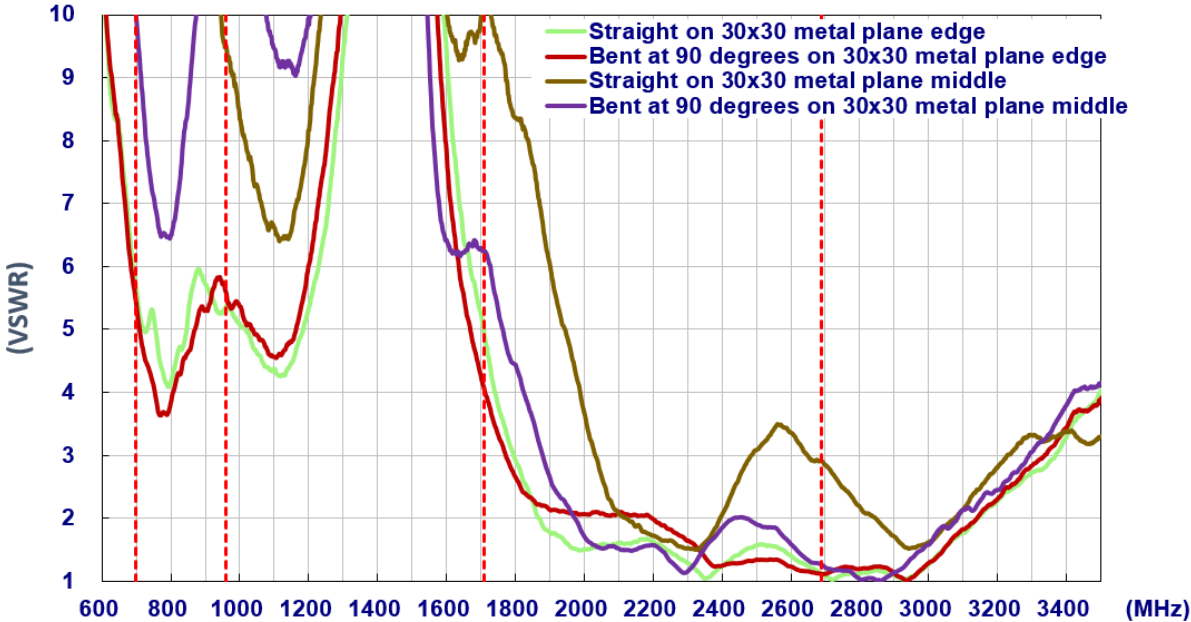
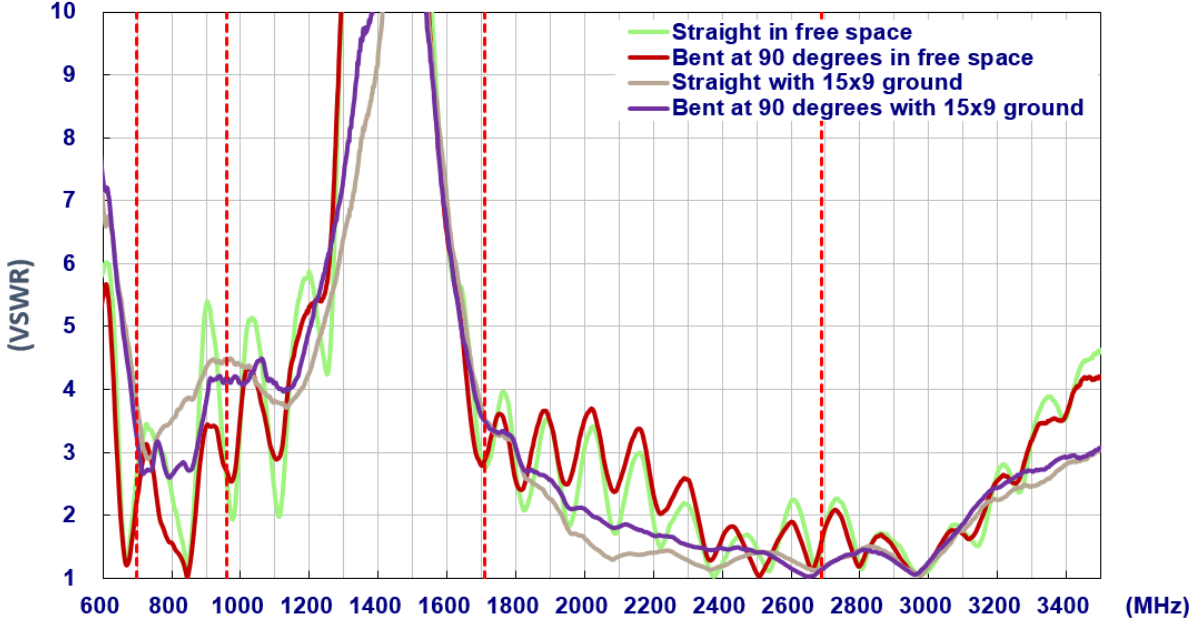




**3.3. Peak Gain**

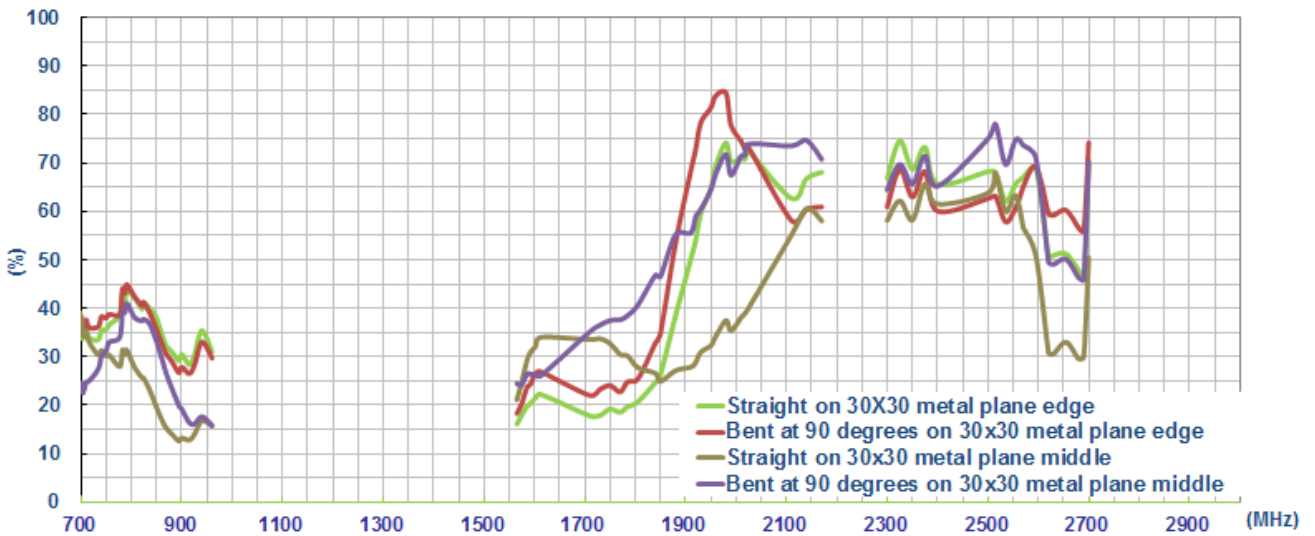
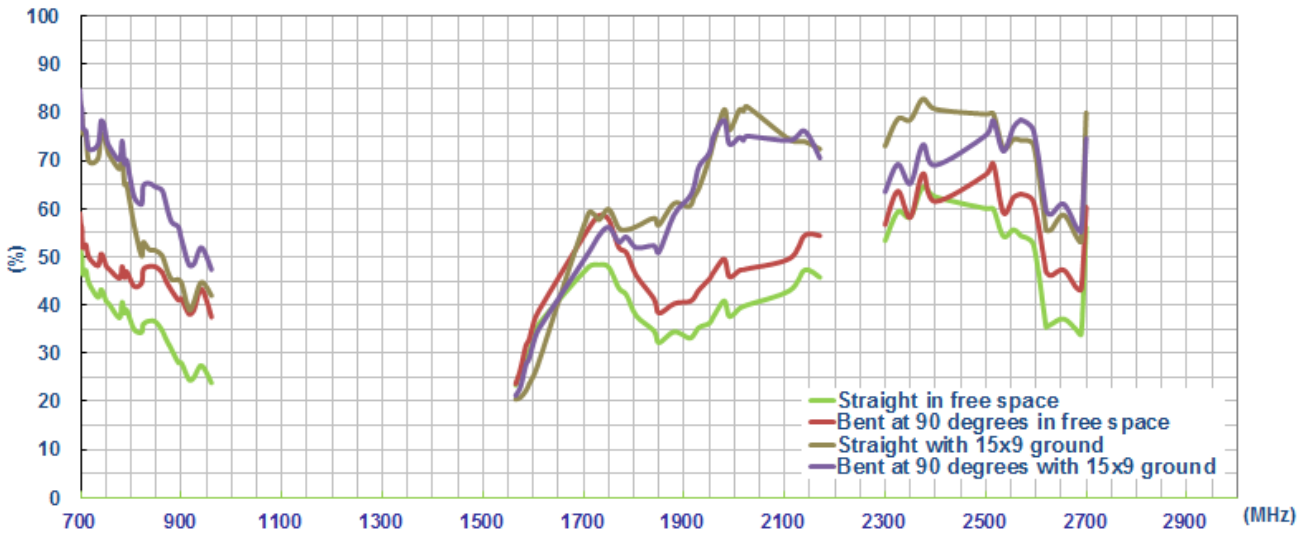


**3.4. VSWR**



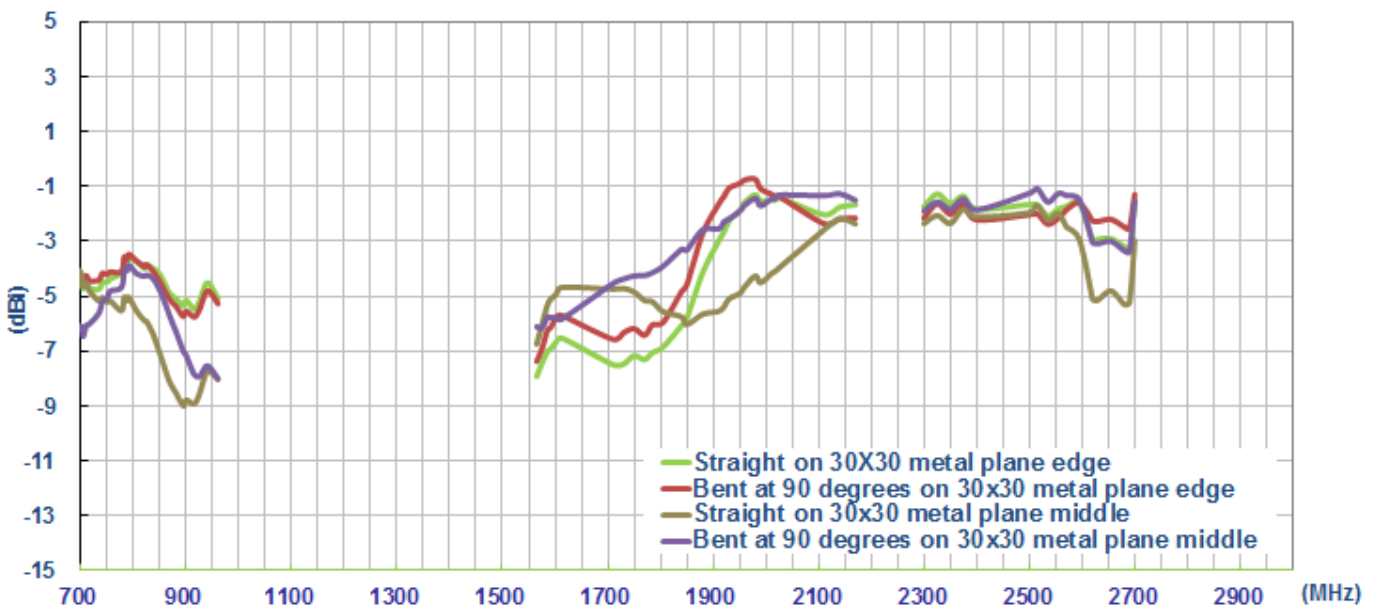
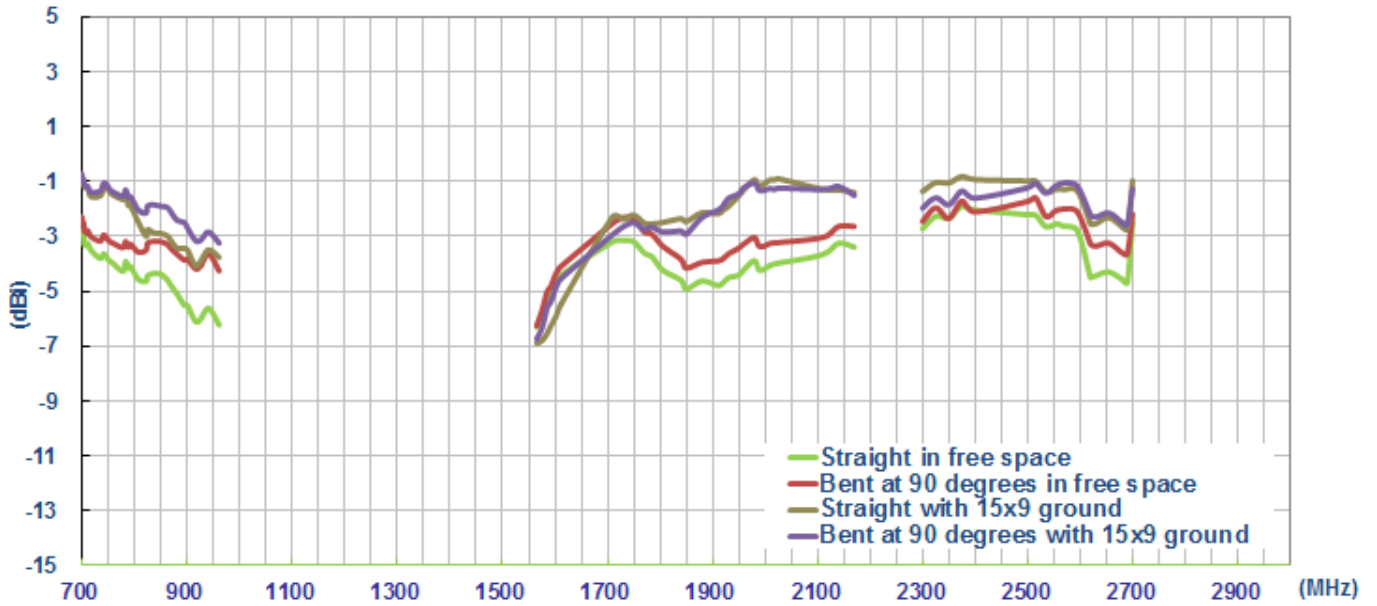


## 3.5. Efficiency



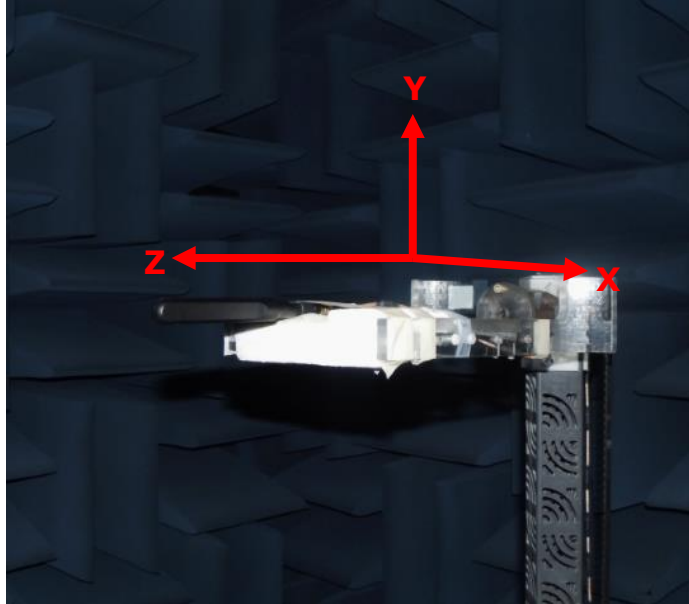


## 3.6. Average Gain



## 4. Antenna Radiation Patterns

### 4.1. Antenna Setup – Straight In Free Space

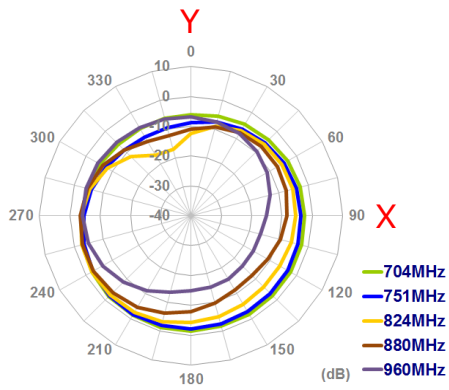


Antenna straight in free space

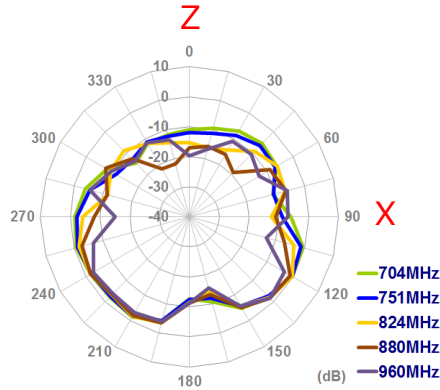


## 4.2. Antenna Radiation Patterns

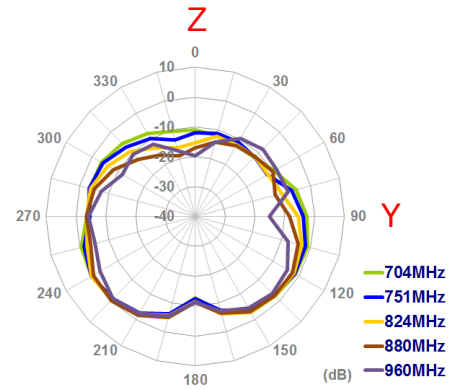
XY Plane



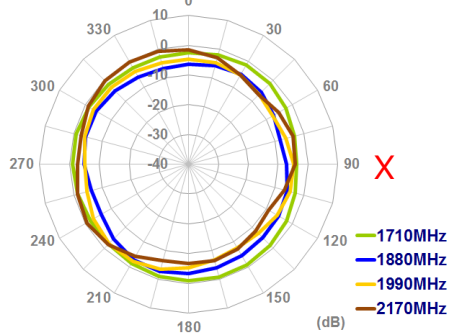
XZ Plane



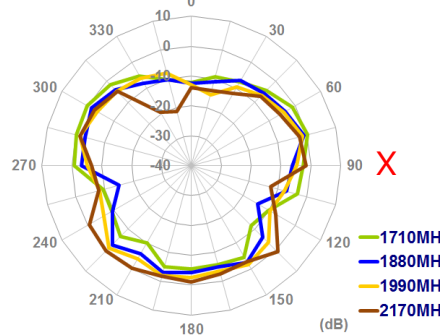
YZ Plane



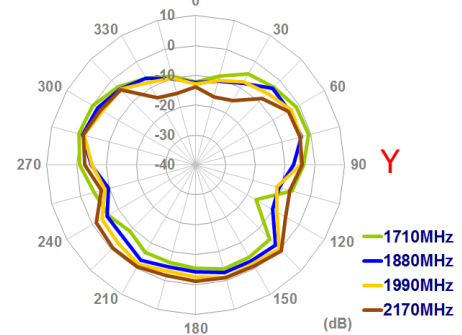
Y



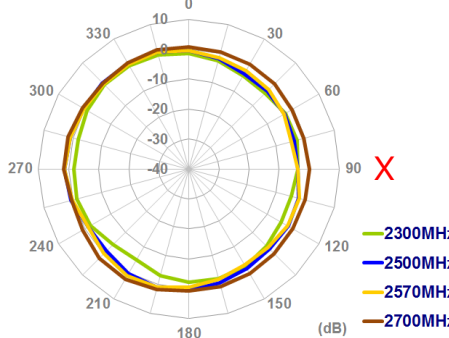
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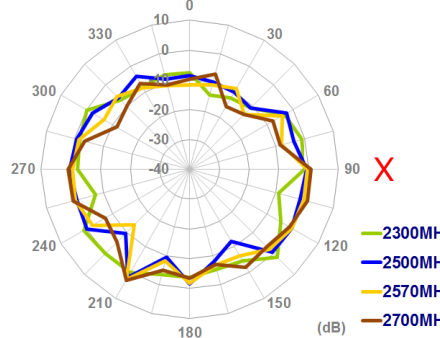
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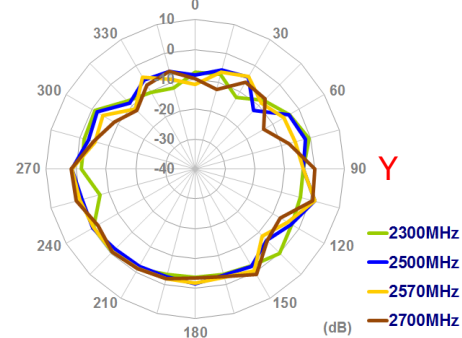
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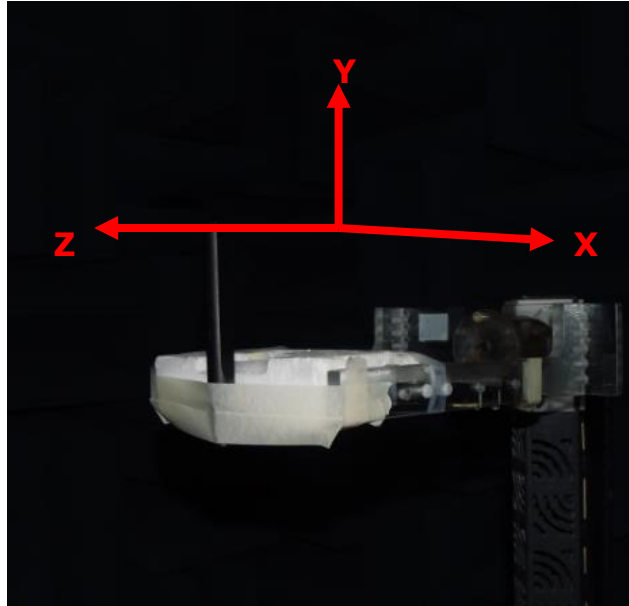
Z



Z



### 4.3. Antenna Setup – Bent At 90 Degrees In Free Space

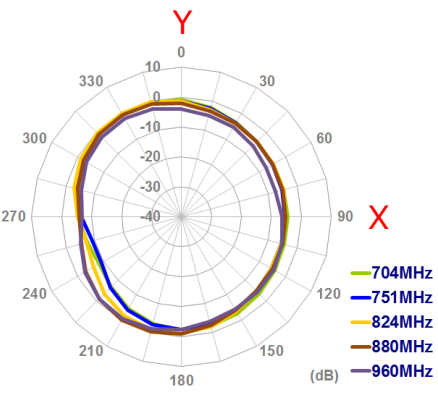


Antenna bent 90 degrees in free space

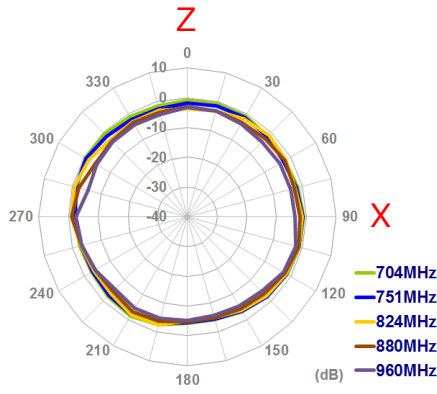


### 4.4. Antenna Radiation Patterns

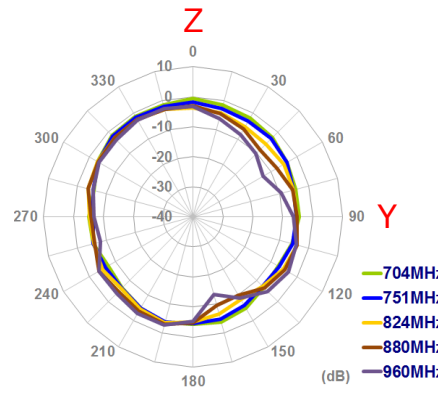
XY Plane



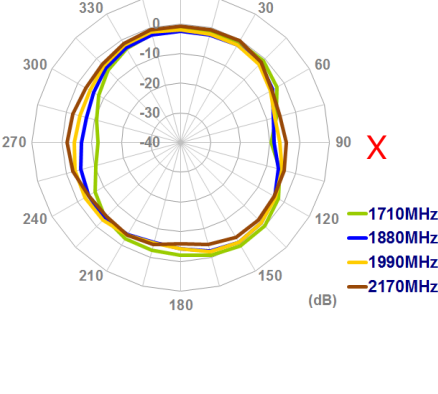
XZ Plane



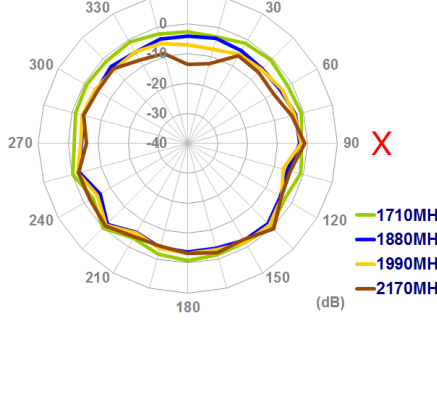
YZ Plane



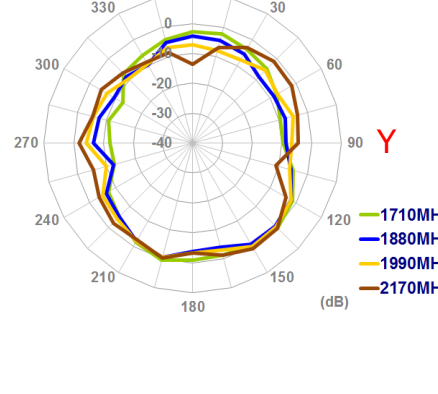
XY Plane



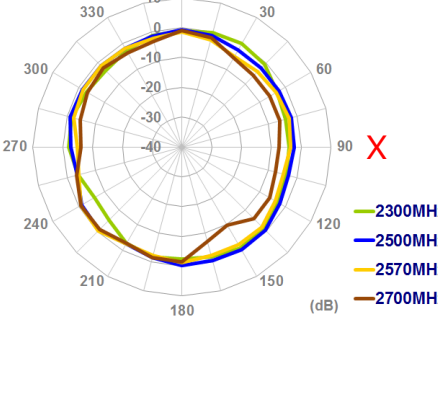
XZ Plane



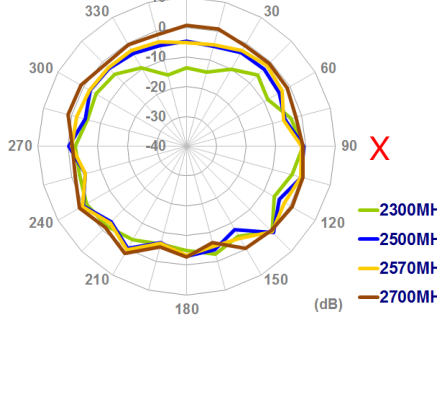
YZ Plane



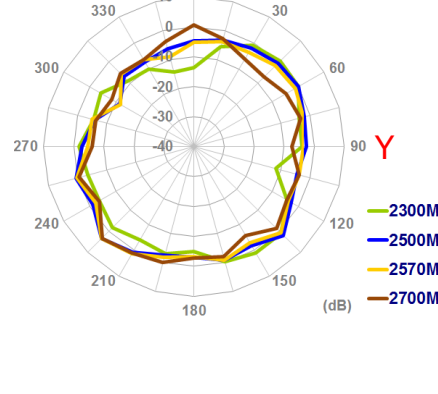
XY Plane



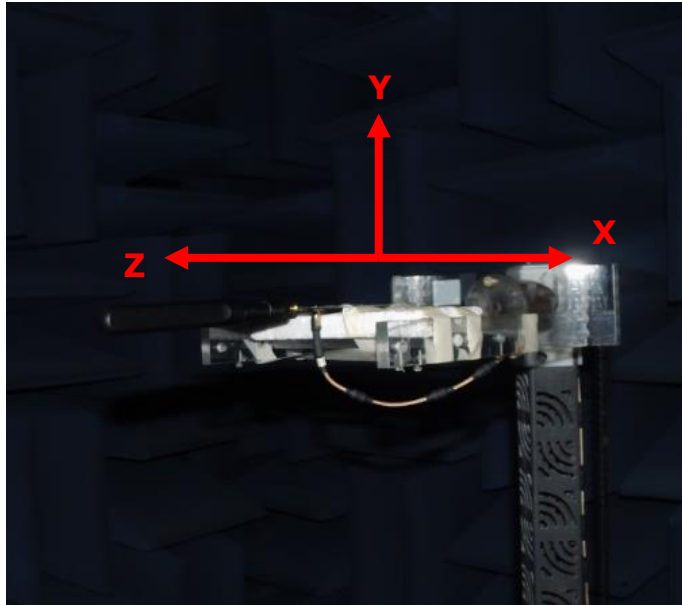
XZ Plane



YZ Plane



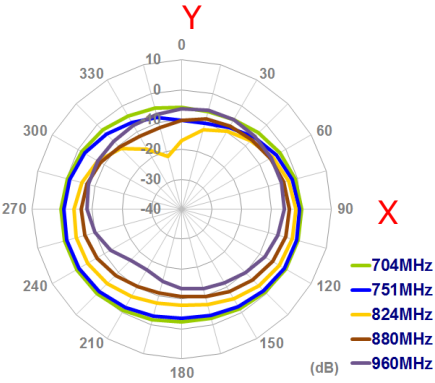
#### 4.5. Antenna Setup – Straight With 15cmX9cm Ground Plane



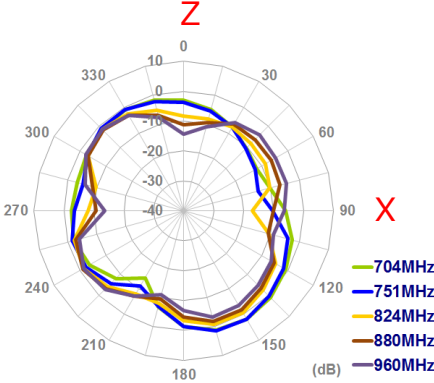
Antenna Straight with 15cm X 9cm ground plane

**4.6. Antenna Radiation Patterns**

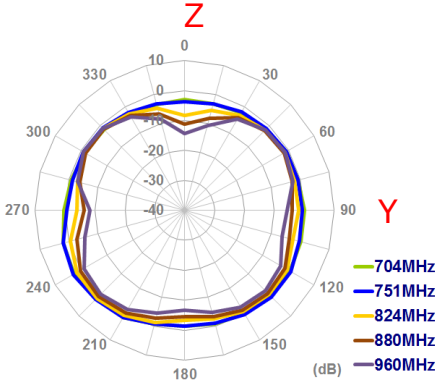
XY Plane



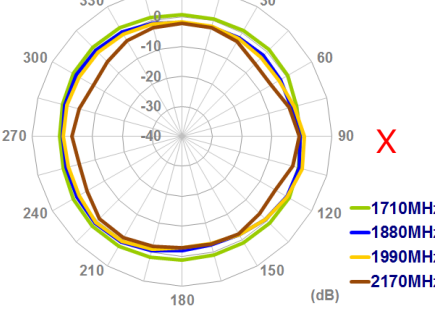
XZ Plane



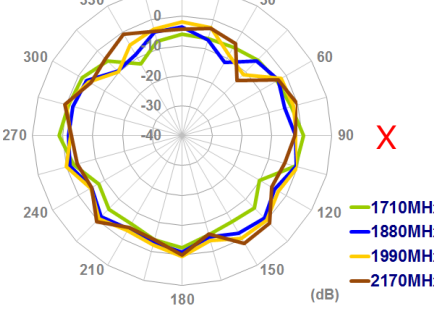
YZ Plane



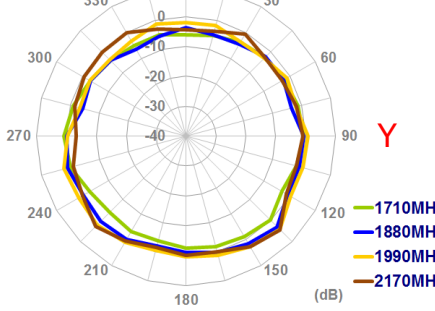
XY Plane



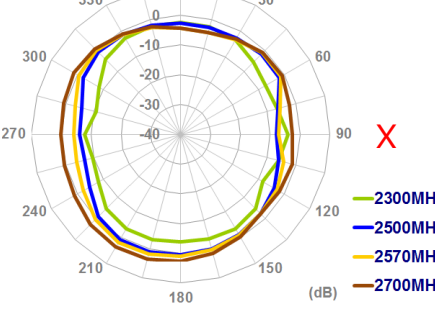
XZ Plane



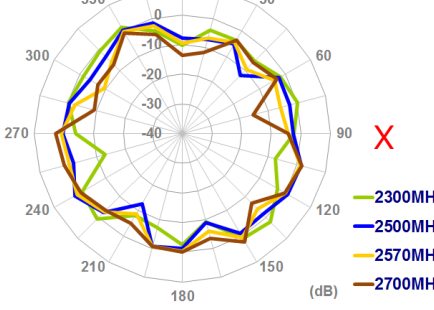
YZ Plane



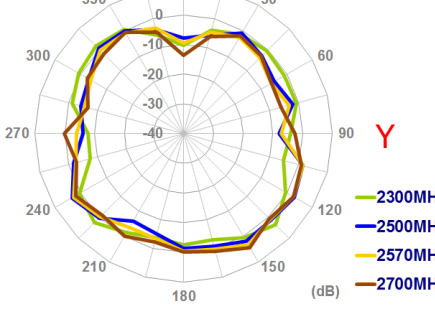
XY Plane



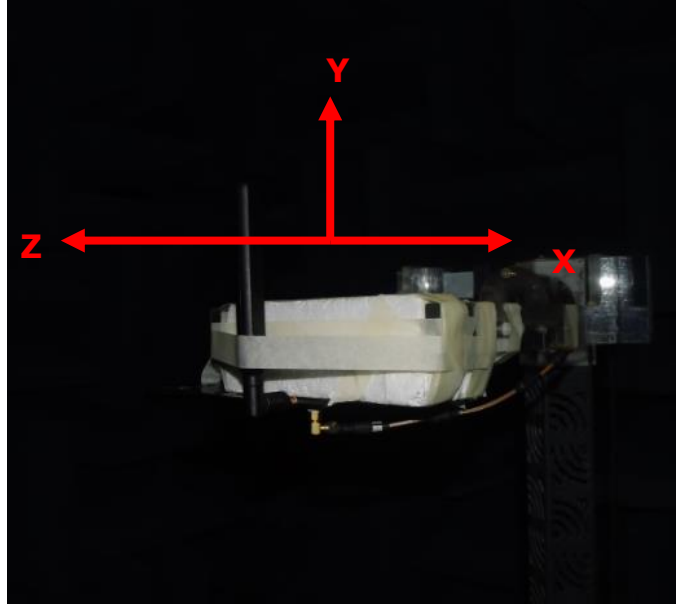
XZ Plane



YZ Plane



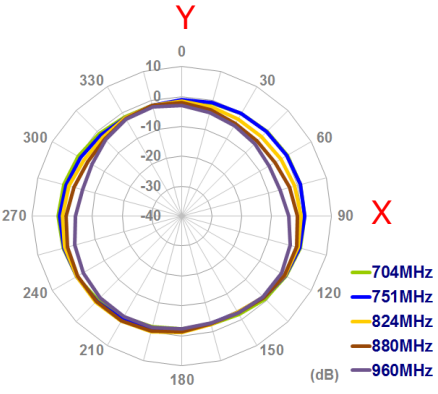
#### 4.7. Antenna Setup – Bent At 90 Degrees With 15cm X 9cm Ground Plane



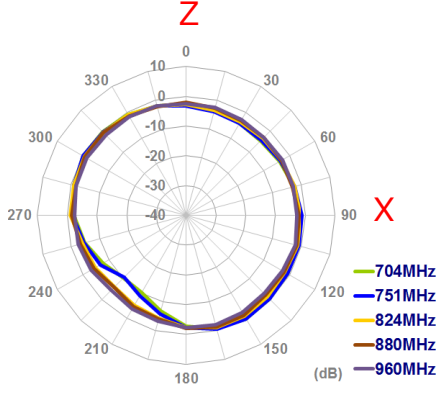
Antenna bent 90 degrees with 15cm X 9cm ground plane

**4.8. Antenna Radiation Patterns**

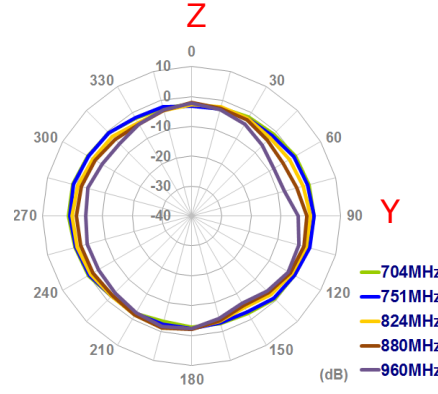
XY Plane



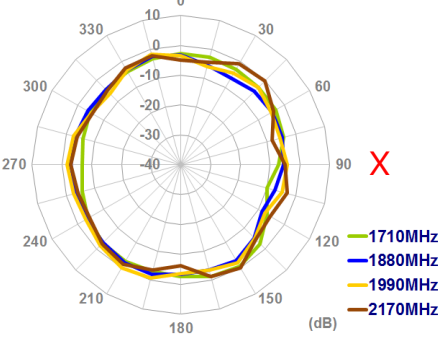
XZ Plane



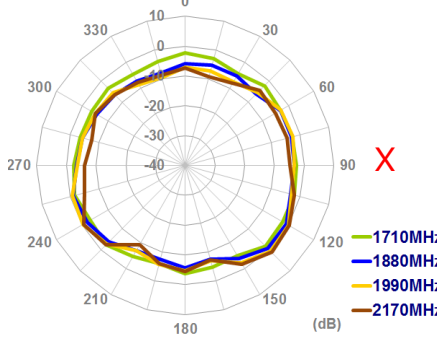
YZ Plane



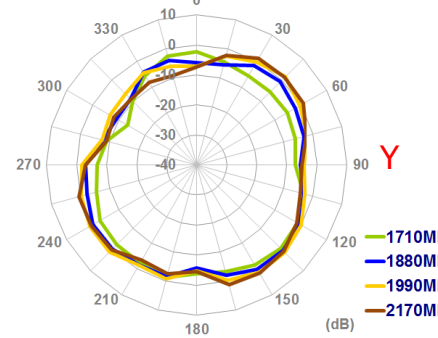
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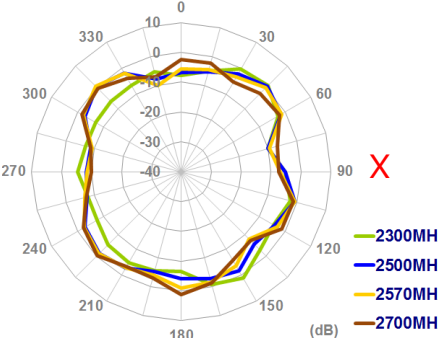
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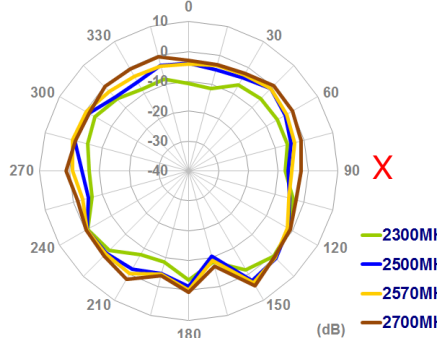
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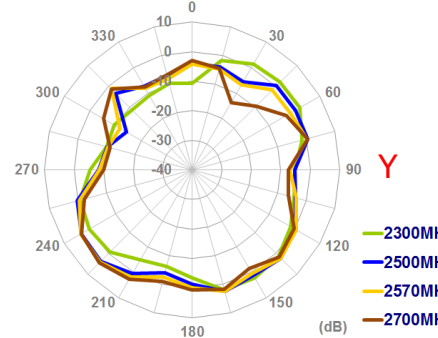
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Z



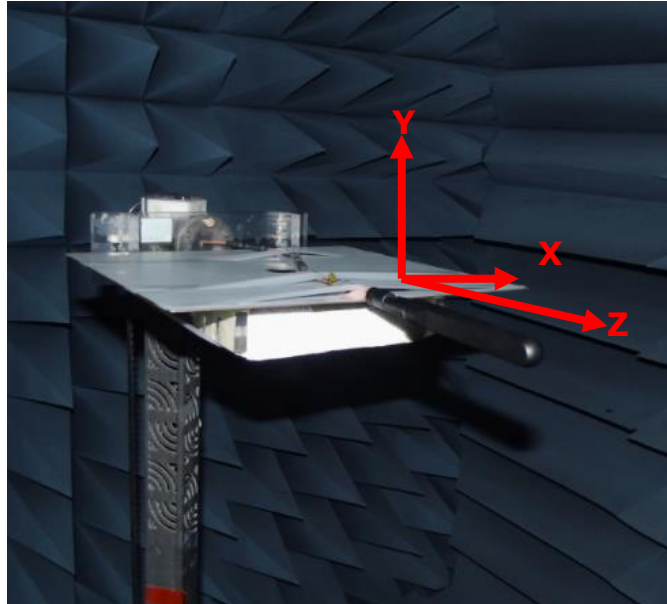
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#### **4.9. Antenna Setup – Straight With 30cm X 30cm Ground Plane Edge**



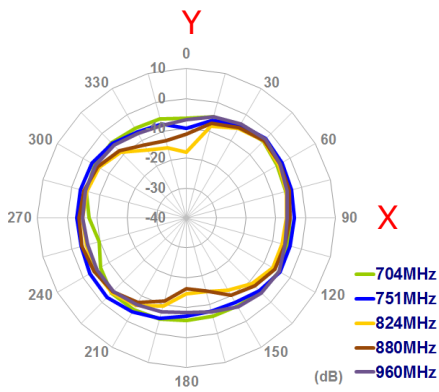
**Antenna straight with 30cm X 30cm ground plane edge**



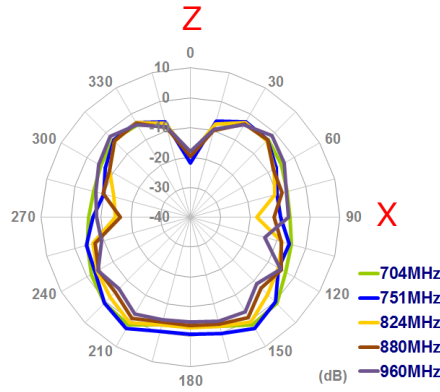


## 4.10. Antenna Radiation Patterns

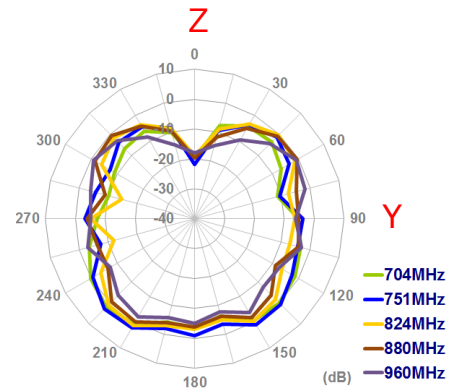
XY Plane



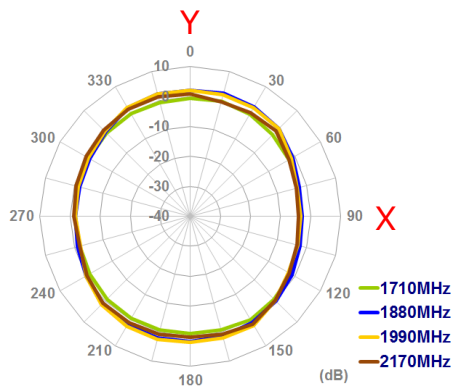
XZ Plane



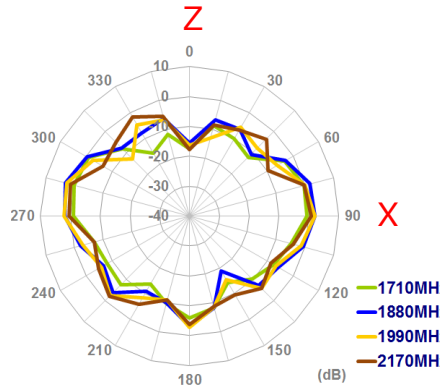
YZ Plane



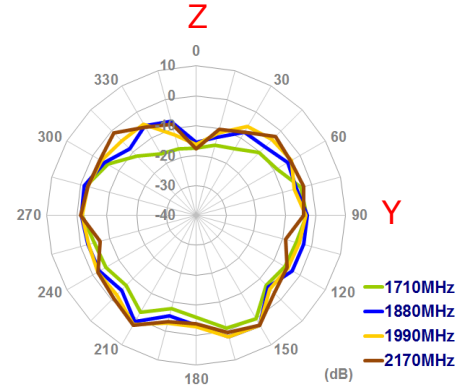
XY Plane



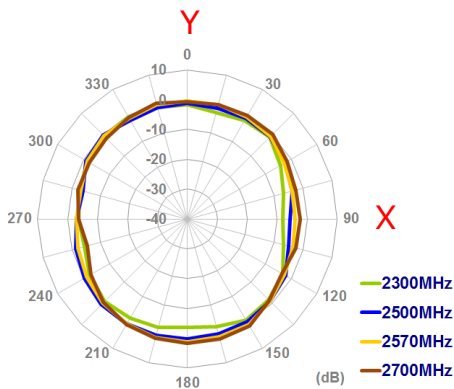
XZ Plane



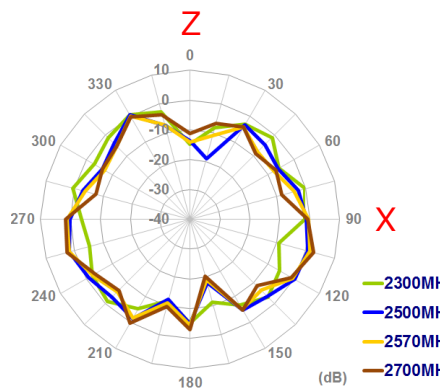
YZ Plane



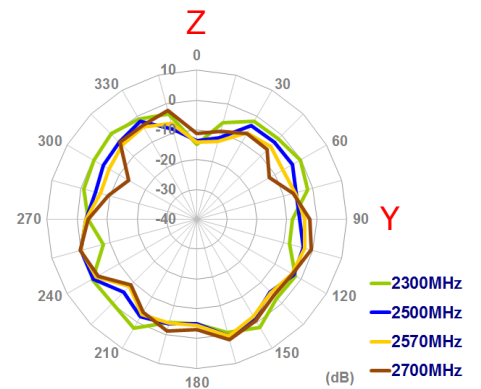
XY Plane



XZ Plane

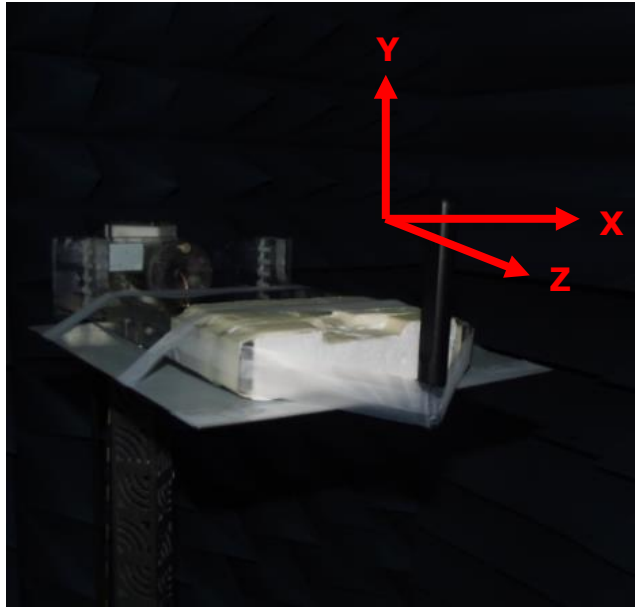


YZ Plane





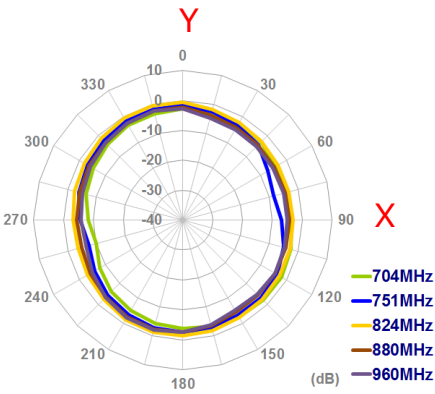
#### 4.11. Antenna Setup – Bent At 90 Degrees With 30 X 30cm Ground Plane Edge



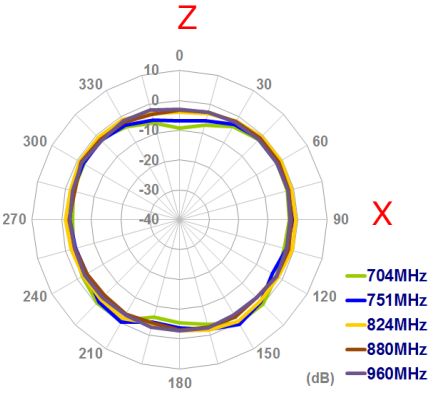
Antenna bent 90 degrees with 30cm X 30cm ground plane edge

**4.12. Antenna Radiation Patterns**

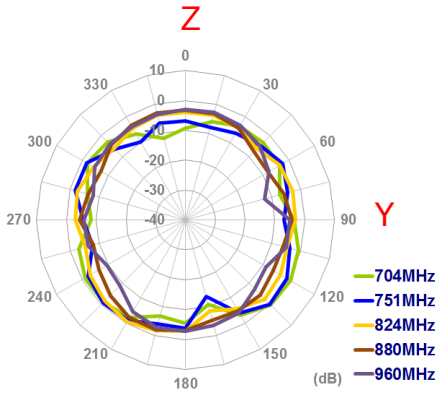
XY Plane



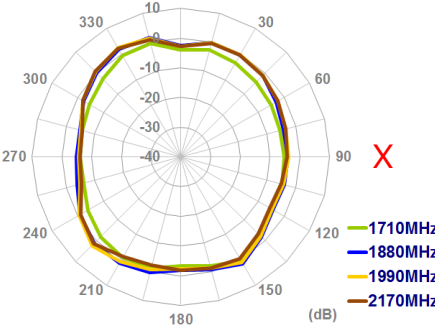
XZ Plane



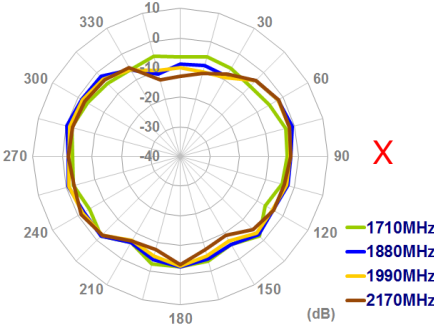
YZ Plane



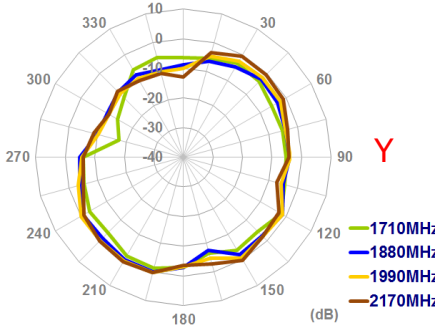
Y



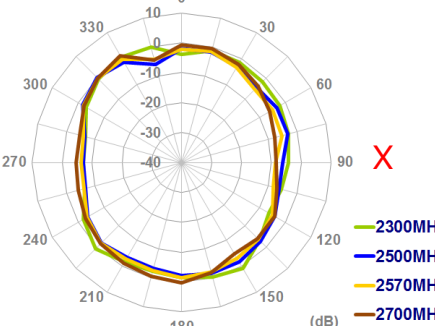
Z



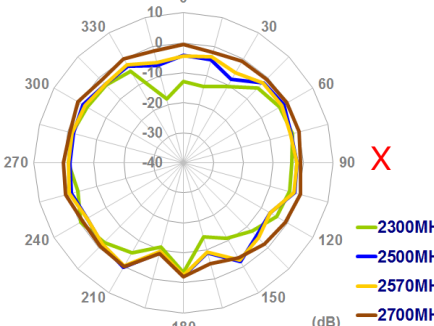
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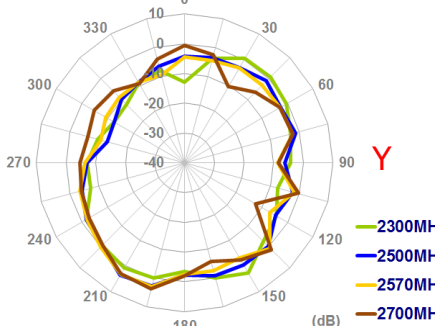
Y



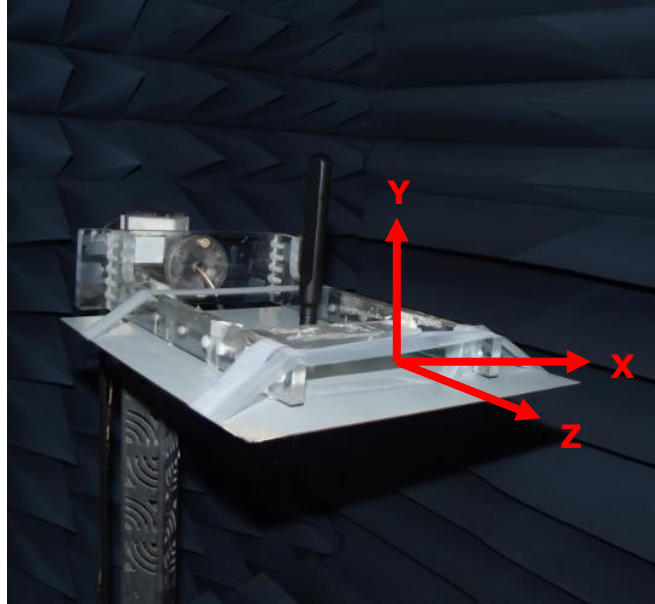
Z



Z



#### 4.13. Antenna Setup – Straight with 30cm X 30cm Ground Plane Center

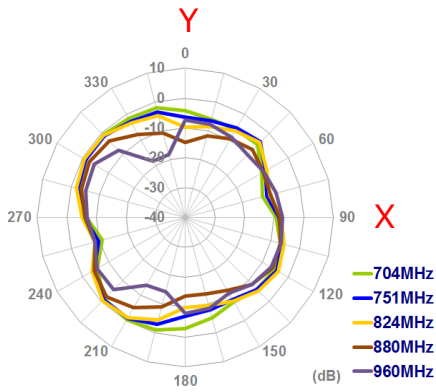


**Antenna straight with 30cm x 30cm ground plane center**

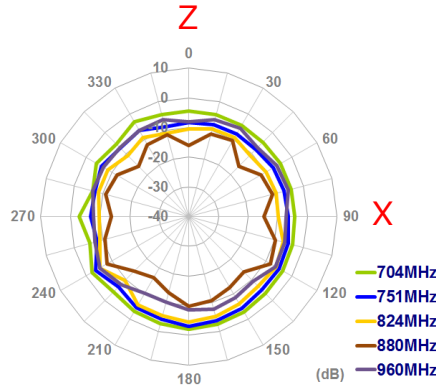


## 4.14. Antenna Radiation Patterns

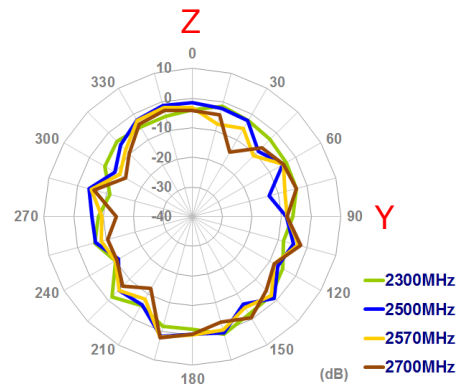
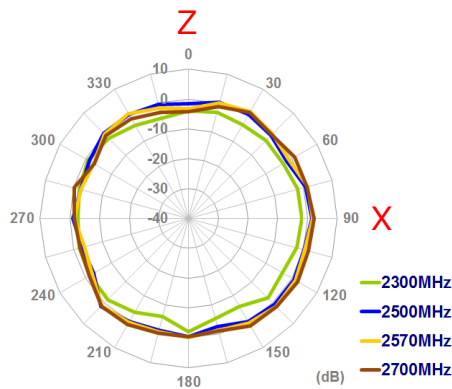
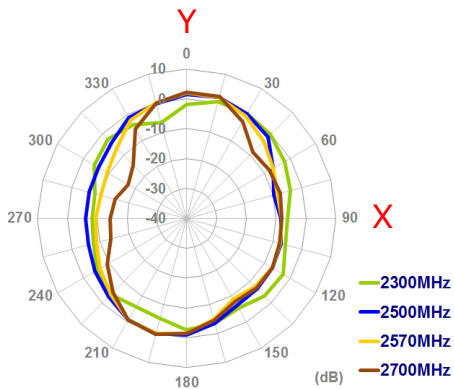
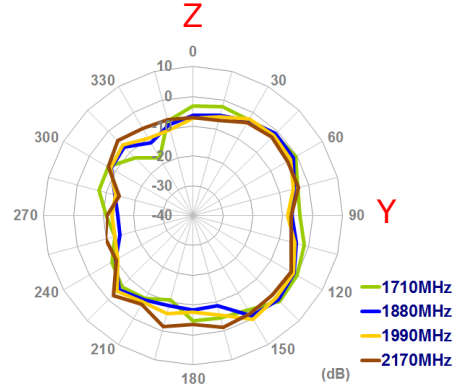
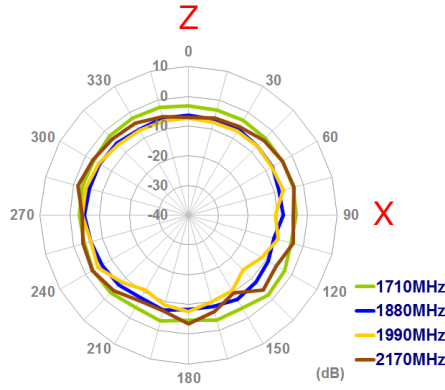
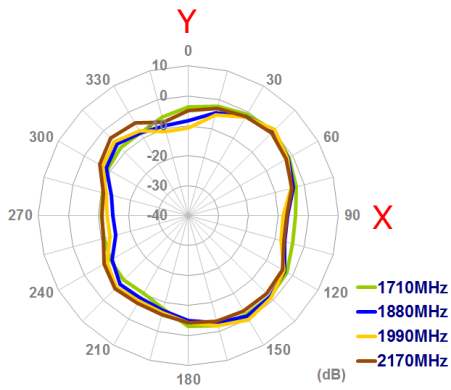
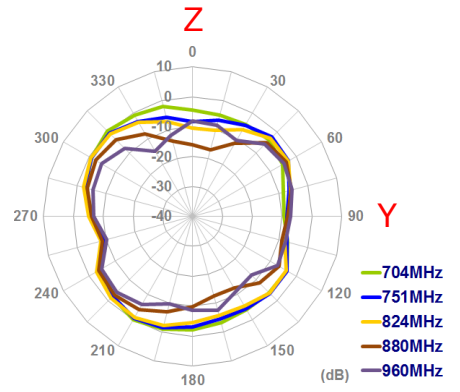
XY Plane



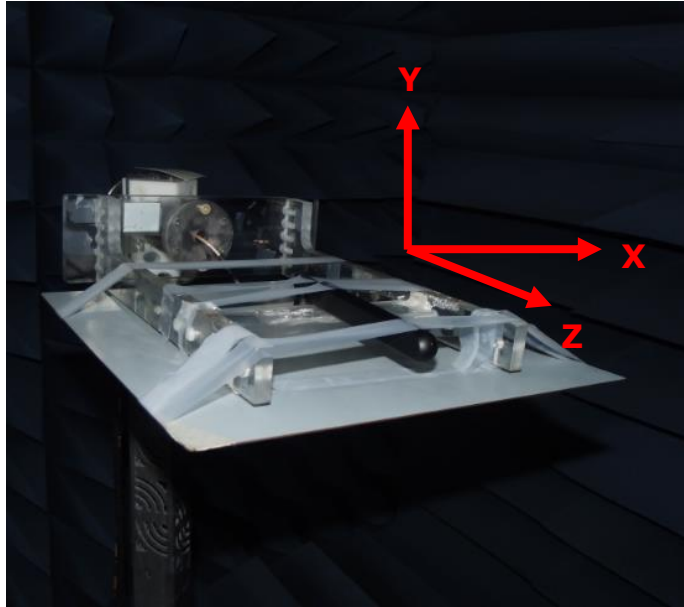
XZ Plane



YZ Plane



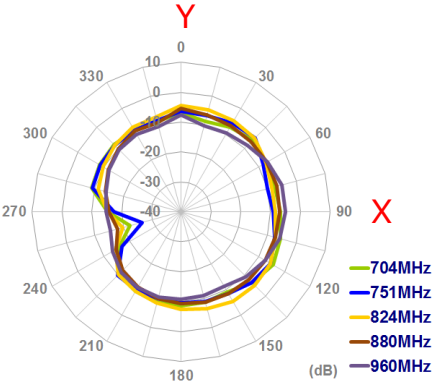
#### 4.8 Antenna Setup – bent At 90 Degrees With 30cm X 30cm Ground Plane Center



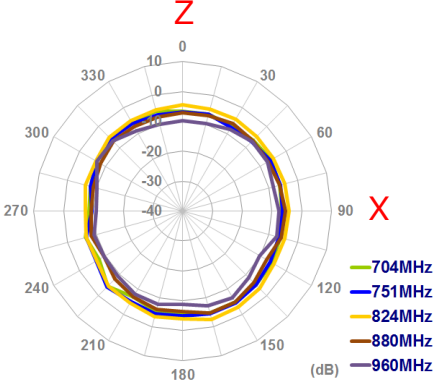
Antenna bent 90 degrees with 30cm x 30cm ground plane center

**4.15. Antenna Radiation Patterns**

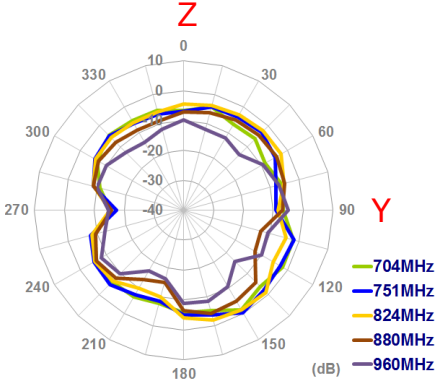
XY Plane



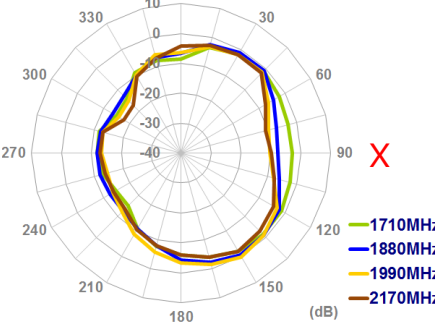
XZ Plane



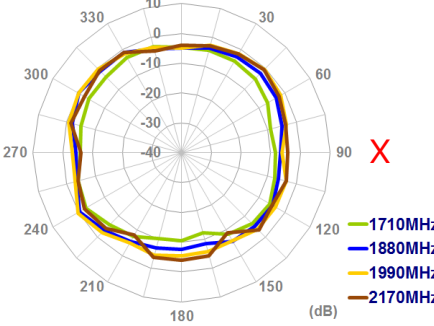
YZ Plane



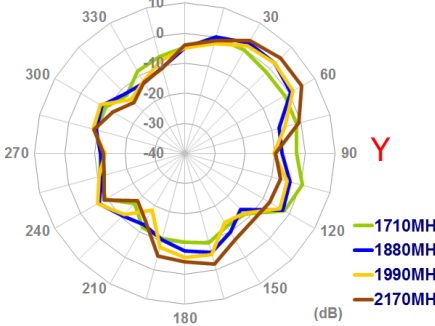
Y



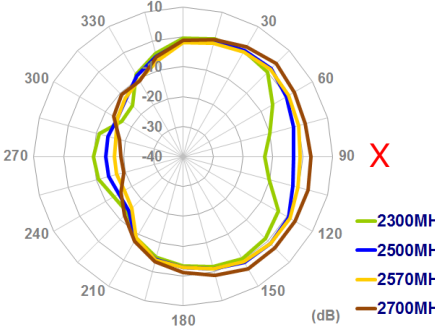
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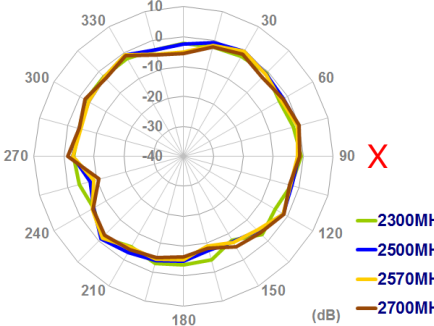
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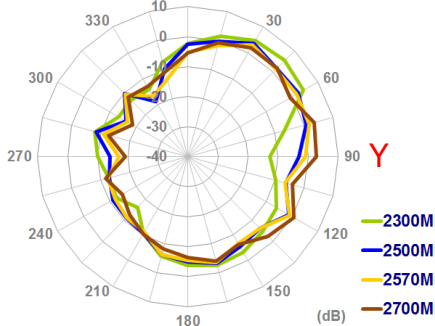
Y



Z

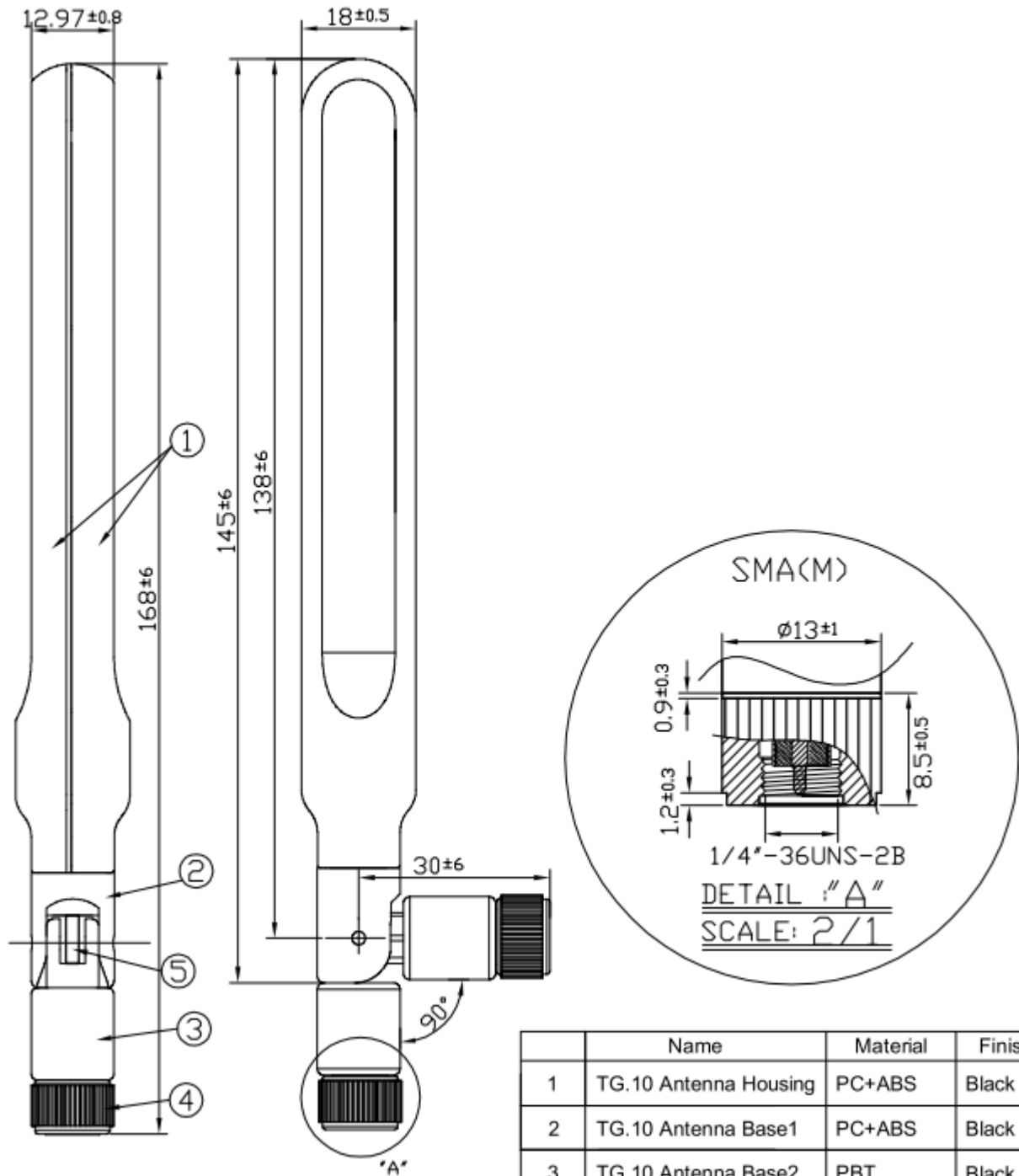


Z





## 5. Drawing



	Name	Material	Finish	QTY
1	TG.10 Antenna Housing	PC+ABS	Black	2
2	TG.10 Antenna Base1	PC+ABS	Black	1
3	TG.10 Antenna Base2	PBT	Black	1
4	SMA(M)	Brass	Black	1
5	RG178 Cable	RG178	Brown	1





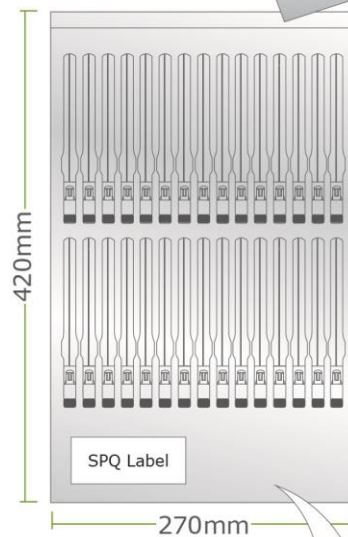
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## 6. Packaging

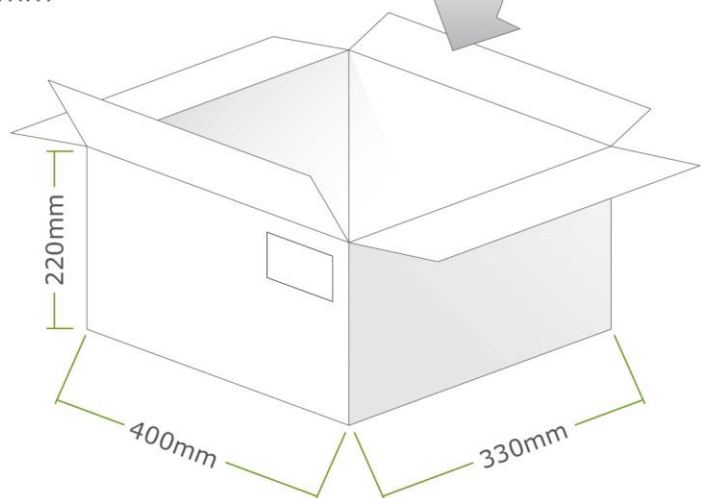
10pc TG.10.0113 per PE Bag  
Bag Dimensions - 260\*105mm  
Weight - 0.23Kg



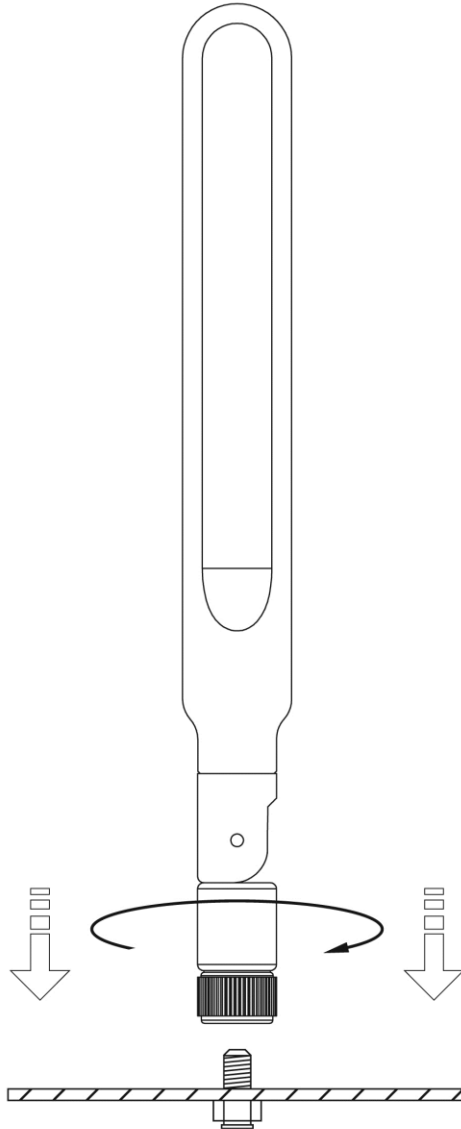
50pc TG.10.0113 per SPQ Bag  
Bag Dimensions - 270\*420mm  
Weight - 1.2Kg



300pcs TG.10.0113 per Carton  
Carton Dimensions - 400\*330\*220mm  
Weight - 8Kg



## 7. Installation



Recommended torque for mounting is 0.9 N·m  
Maximum torque for mounting is 1.176 N·m

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