Specification

Part No.	:	**WM.90.A.305111**
Product Name	:	Wall Mount Flexible Whip Monopole High Gain 4G/3G/2G Wide-band Cellular Antenna
Feature	:	698-960MHz /1710-2690MHz Suitable for Cat-M1/LTE-M Unique - High peak gain on all bands Wide-band High efficiency Flexible Inner Steel Core Whip IP65, Robust Structure, Aesthetic 3m CFD-200 SMA(M)ST Cable is hidden internally **RoHS & Reach Compliant**

1. Introduction

The WM.90 wall mount flexible whip monopole has high performance on all common 4G/3G/2G & Cat M1/LTE-M bands used worldwide. Taoglas specifications are compiled completely from real-life testing in state of the art CTIA approved 3D anechoic chambers. Peak gain, average gain/efficiency are both optimized to provide extended coverage area in the azimuth (horizontal direction), while also maintaining an Omni-directional pattern for close in reception/transmission. Testing of the whip antenna on the bracket, in free-space, and on a reference ground-plane has been done to show the benefit of the L-bracket.

This antenna delivers wider coverage areas and more reliable connections for professional customers in the automotive, industrial industries. The whip is made up of a flexible inner steel core covered by TPU so extremely resistant to collisions and maintaining its original shape and RF performance. The whip and the connection internally to the bracket is IP65 waterproof.

The bracket allows complete concealment of the cable for a more secure integration and cleaner installation. The cable can also be routed out of the back wall of the bracket into the interior of the mounting wall for added security against vandalism. The standard version comes with 3 meters extremely low loss CFD-200 (0.3dB against 0.7dB for RG-58) to allow for flexibility of placement. The cable and connector can be completely customized, the whip itself can also be changed for different frequency bands or gain requirements.

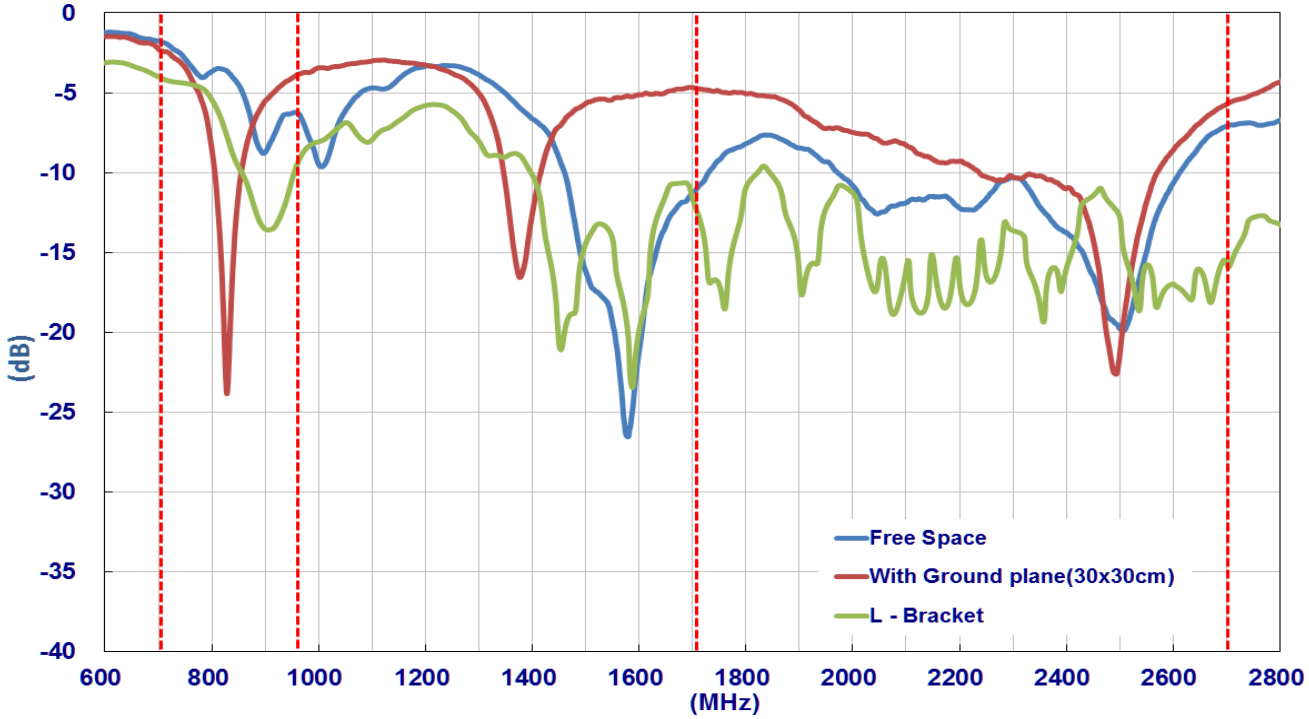
2. Specification

ELECTRICAL							
Frequency (MHz)	698~798	824~896	880~960	1710~1880	1850~1990	1710~2170	2570~2690
Peak Gain (dBi)							
Free Space	-2.11	-1.30	-0.27	2.45	3.35	2.83	3.45
On 30cm*30cm GND	-2.75	-0.84	2.02	4.65	5.09	4.55	4.65
L - Bracket	-1.11	2.53	1.80	1.81	2.23	2.22	1.80
Average Gain (dBi)							
Free Space	-6.30	-5.33	-4.59	-1.85	-1.51	-1.73	-2.13
On 30cm*30cm GND	-5.76	-4.62	-3.03	-1.73	-1.44	-1.69	-1.84
L - Bracket	-5.58	-2.33	-2.44	-2.71	-3.03	-2.75	-2.88
Efficiency (%)							
Free Space	23.49	29.32	35.08	65.41	70.84	67.30	61.58
On 30cm*30cm GND	26.60	34.93	50.32	67.30	71.81	67.94	65.54
L - Bracket	27.92	58.66	57.15	53.86	49.86	53.24	51.59
Return Loss (dB)	<-3	<-6	<-4	<-5	<-5	<-6	<-6
Impedance	50Ω						
Polarization	Linear						
Radiation Pattern	Omni						
Input Power	2 W						
Tested Power	10 W						
MECHANICAL							
Height	248 ± 5 mm						
Base Diameter	17.08 ± 0.2 mm						
Whip Diameter	4 ± 0.2 mm						
Casing	ABS						
Connector	SMA Male						
Weight	420g						
ENVIRONMENTAL							
Temperature Range	-40°C to 85°C						
Humidity	Non-condensing 65°C 95% RH						

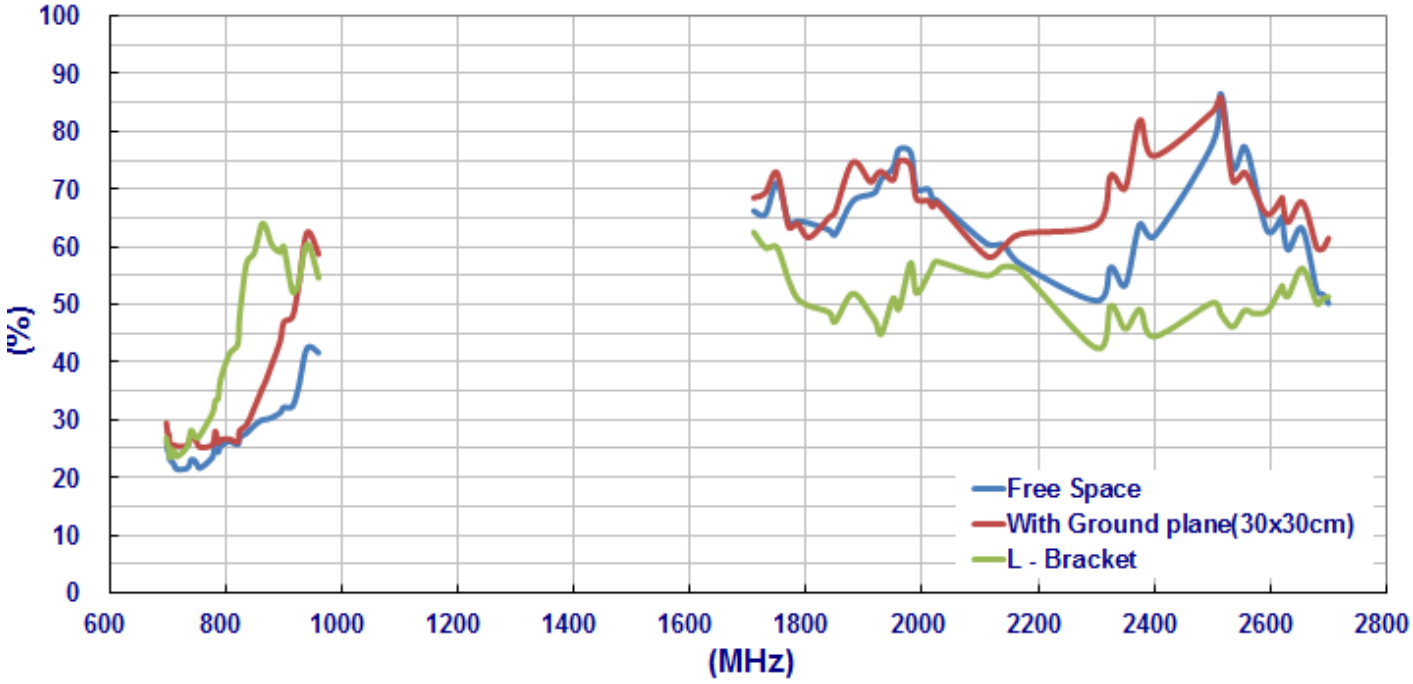
*Tested with 3m CFD-200 SMA(M)ST.

3. Antenna Characteristics

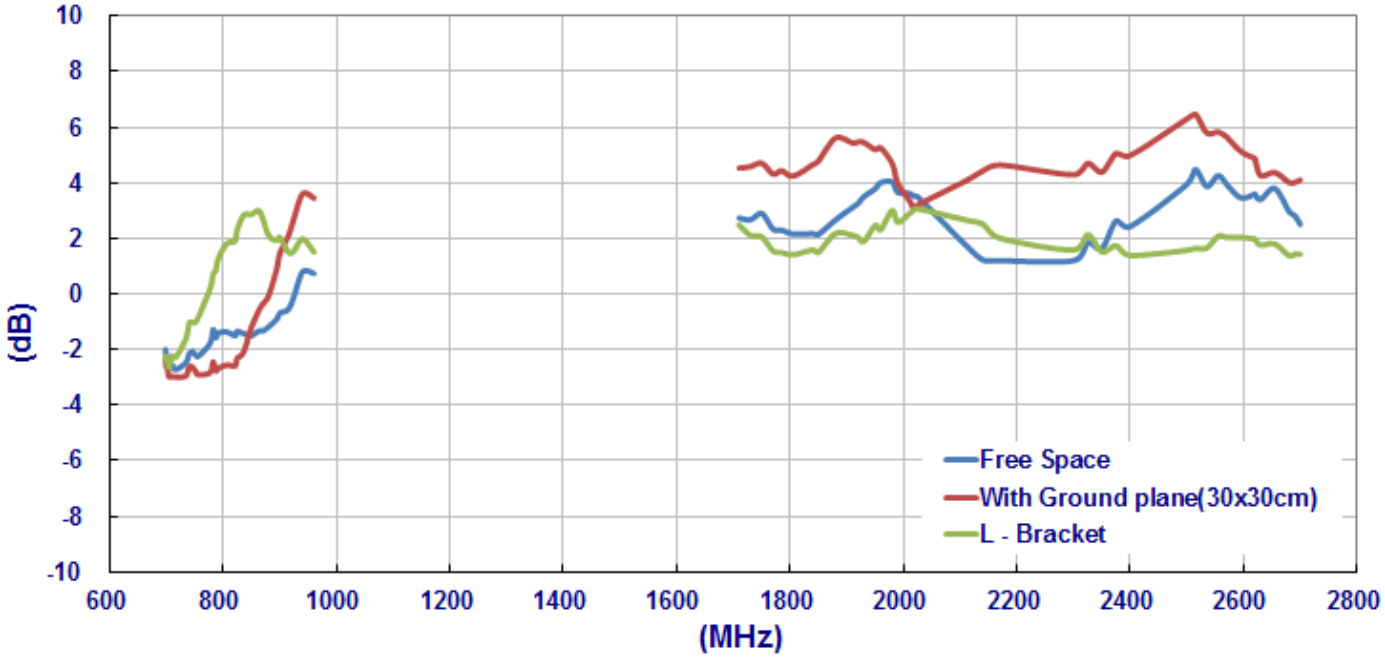
3.1 Return loss



3.2 Antenna Efficiency



3.3 Peak Gain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(dB)
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1600
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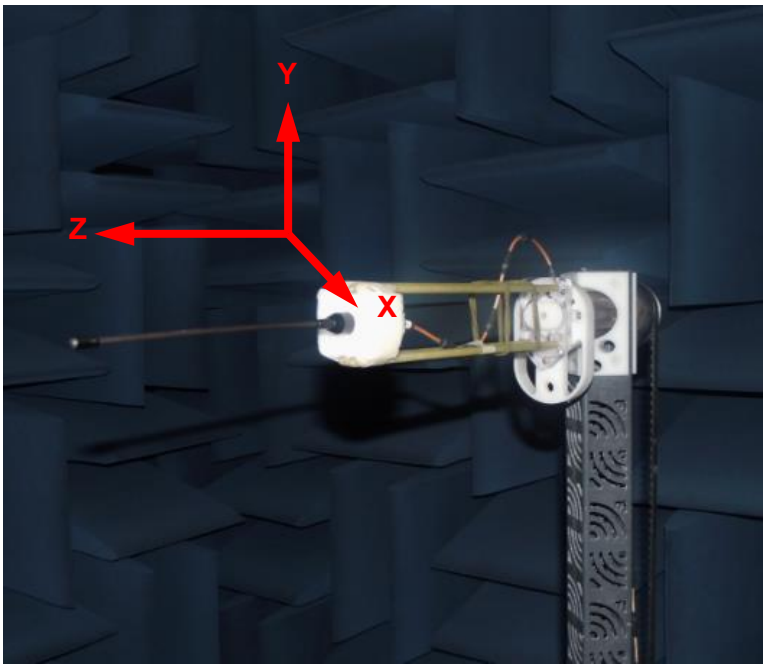
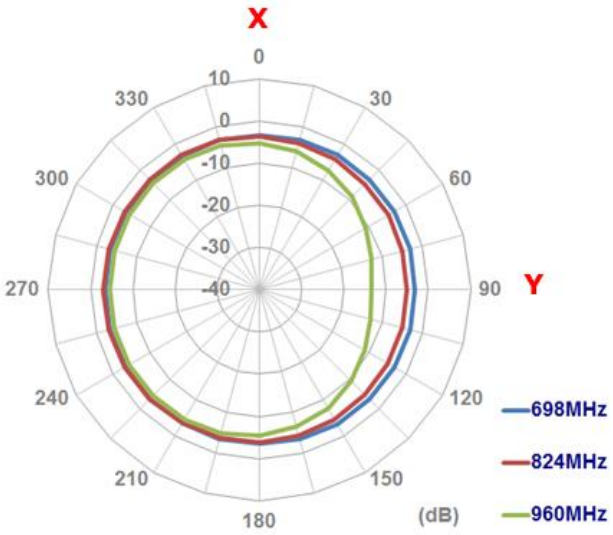
2000
2200
2400
2600
2800
(MHz)
Free Space
With Ground plane(30x30cm)
L - Bracket

4. Antenna 2D Radiation Patterns

4.1 Antenna Stand Alone



XY Plane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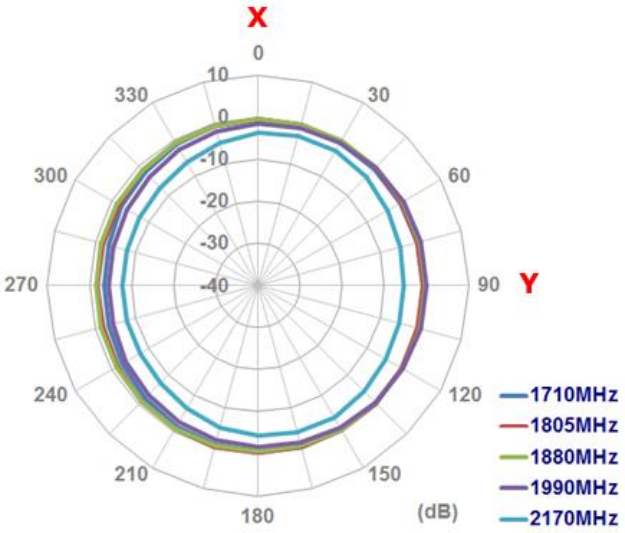
(dB)
698MHz
824MHz
960MHz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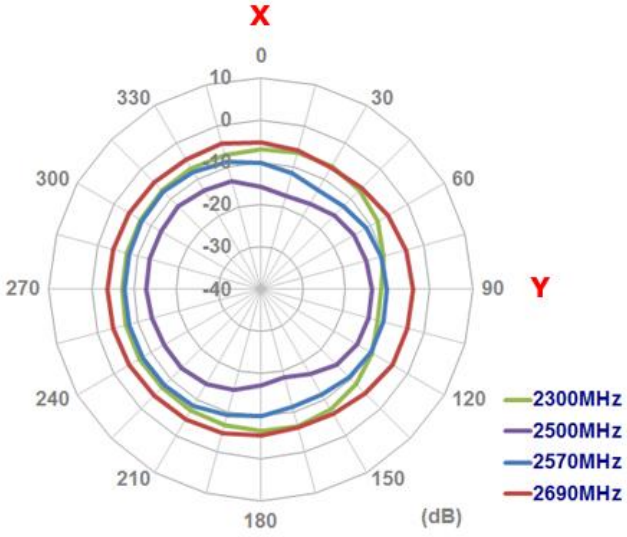
(dB)
1710MHz
1805MHz
1880MHz
1990MHz
2170MHz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-10
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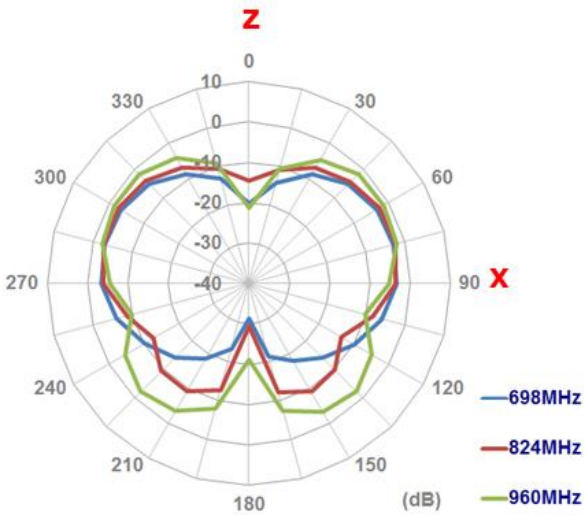
-30
-40
(dB)
2300MHz
2500MHz
2570MHz
2690MHz

XZ Plane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(dB)
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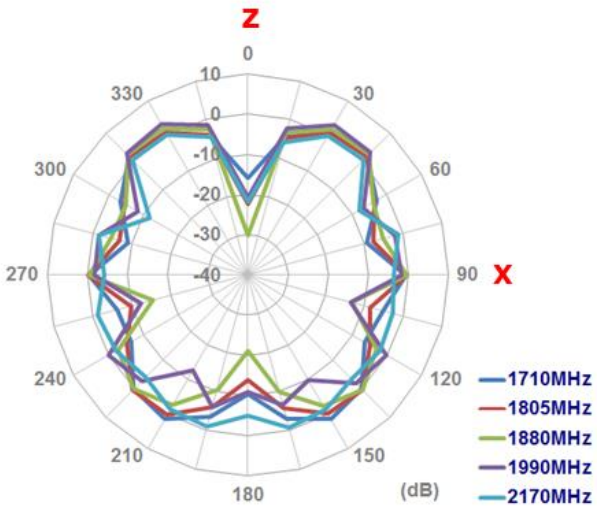
824MHz
960MHz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(dB)
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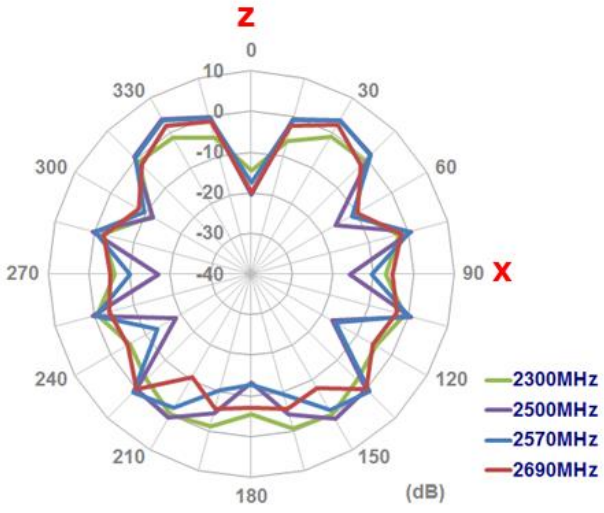
1805MHz
1880MHz
1990MHz
2170MHz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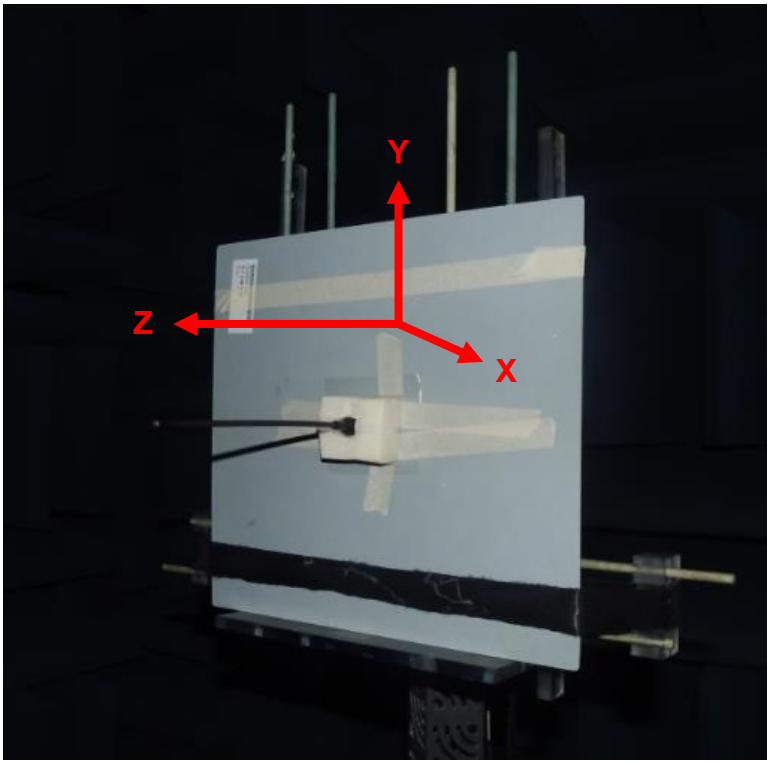
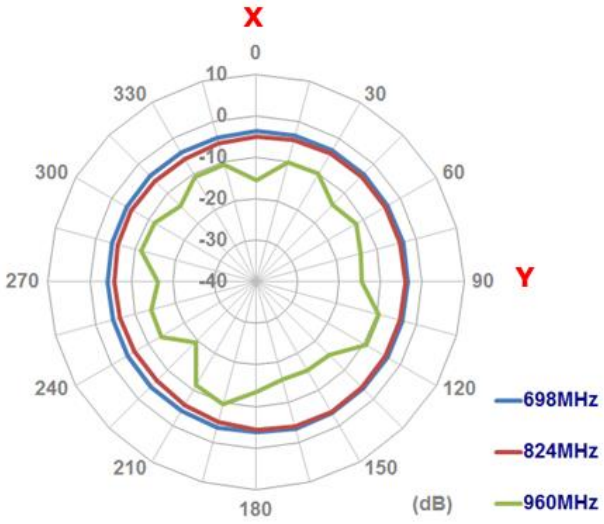
(dB)
2300MHz
2500MHz
2570MHz
2690MHz

4.2 Antenna with Ground plane (30*30cm)



XY Plane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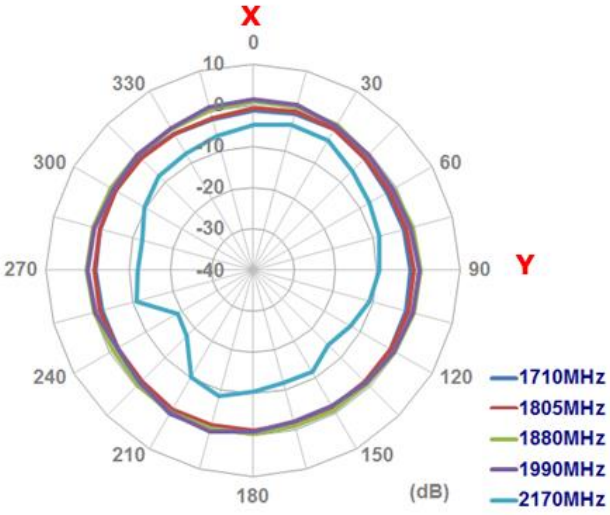
824MHz
960MHz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(dB)
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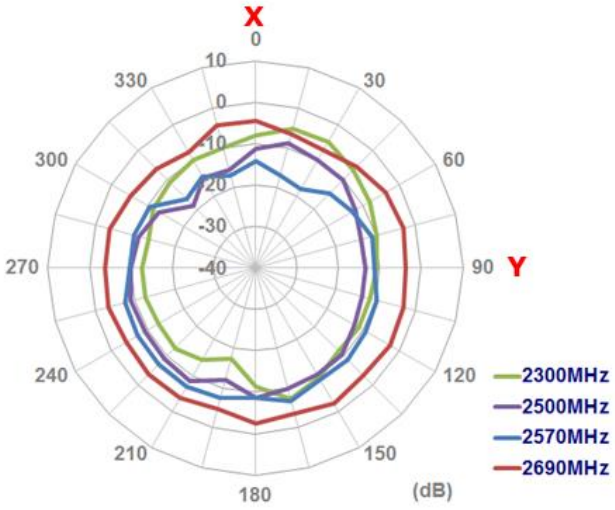
1880MHz
1990MHz
2170MHz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(dB)
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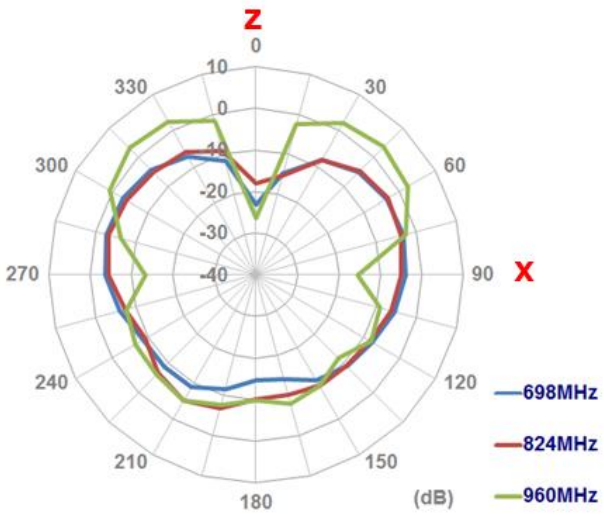
2500MHz
2570MHz
2690MHz

XZ Plane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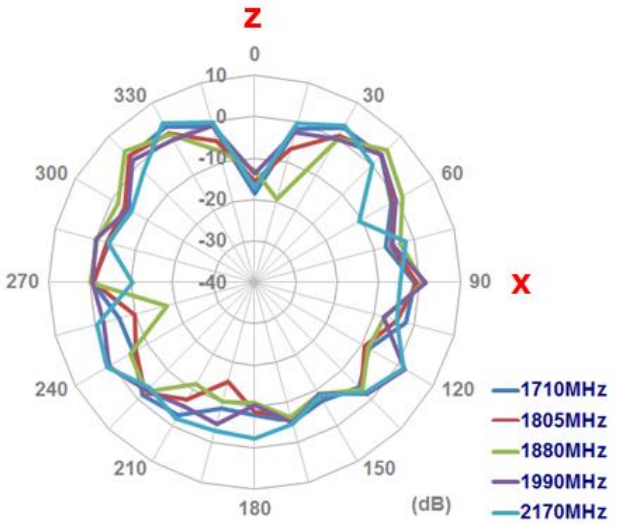
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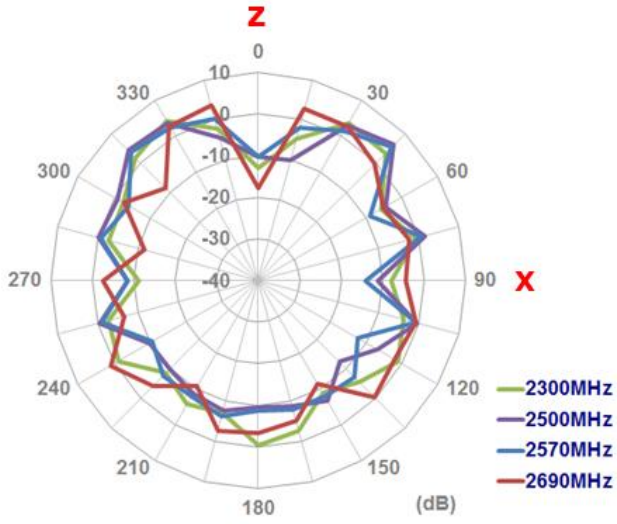
1880MHz
1990MHz
2170MHz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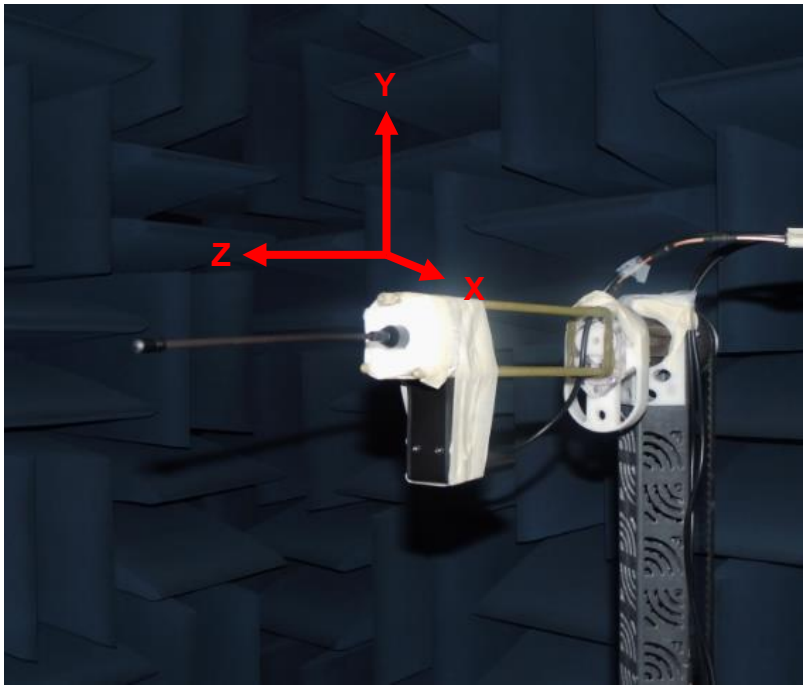
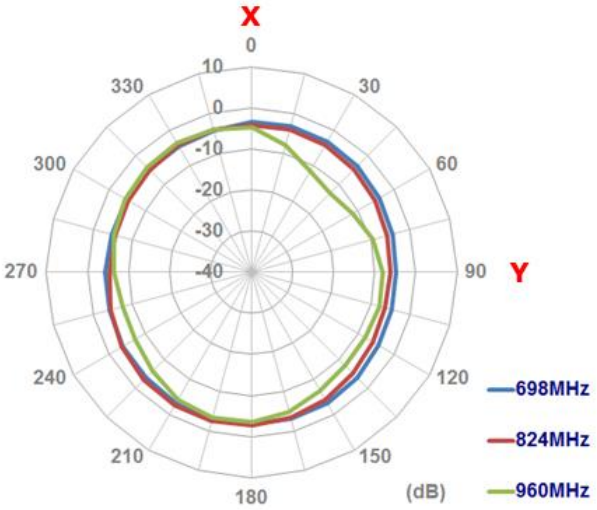
(dB)
2300MHz
2500MHz
2570MHz
2690MHz

4.3 Antenna with L-Bracket



XY Plane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(dB)
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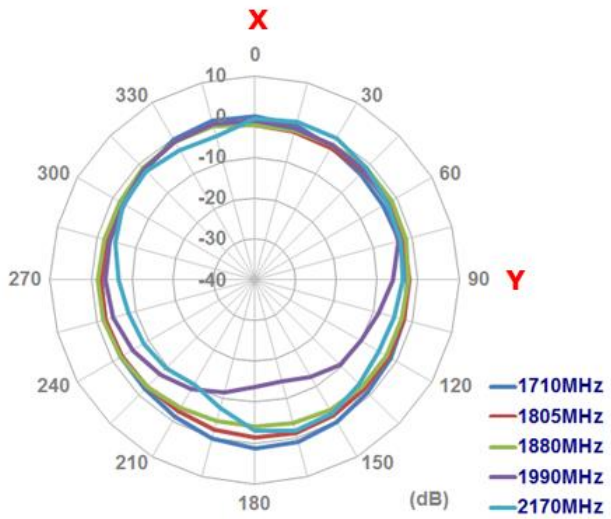
824MHz
960MHz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(dB)
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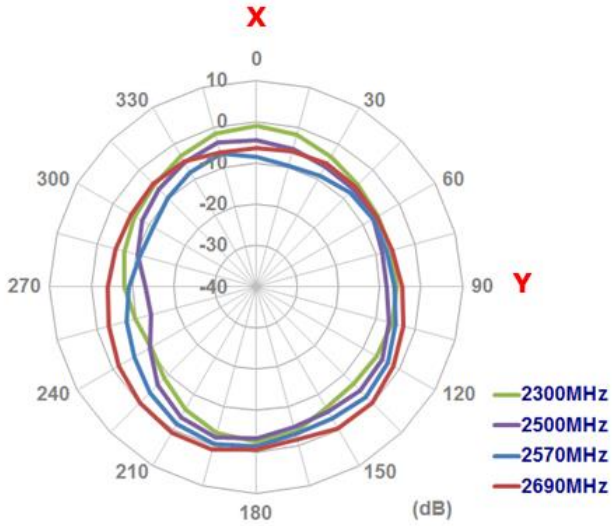
1805MHz
1880MHz
1990MHz
2170MHz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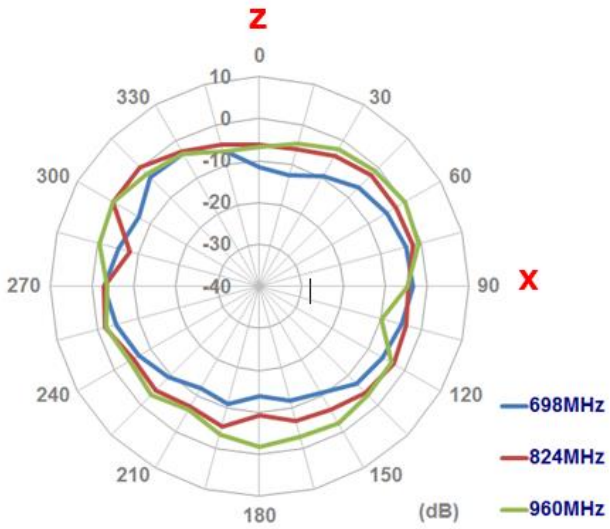
(dB)
2300MHz
2500MHz
2570MHz
2690MHz

XZ Plane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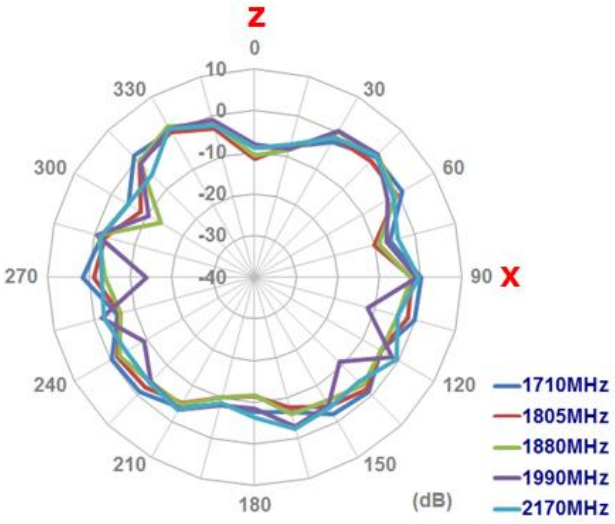
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(dB)
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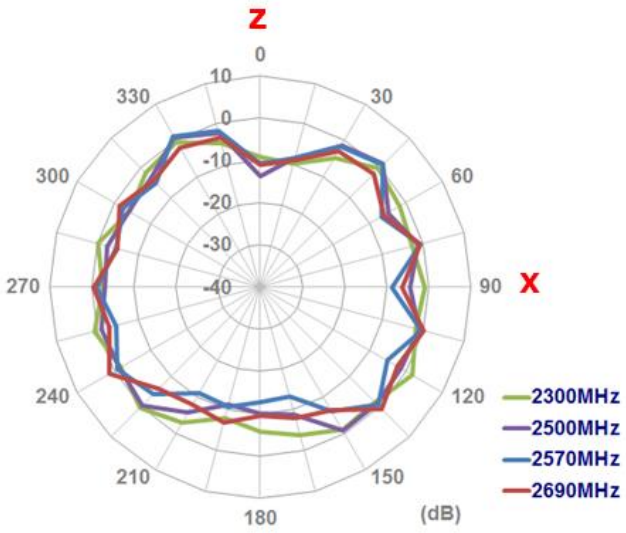
1880MHz
1990MHz
2170MHz


Z
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330
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-10
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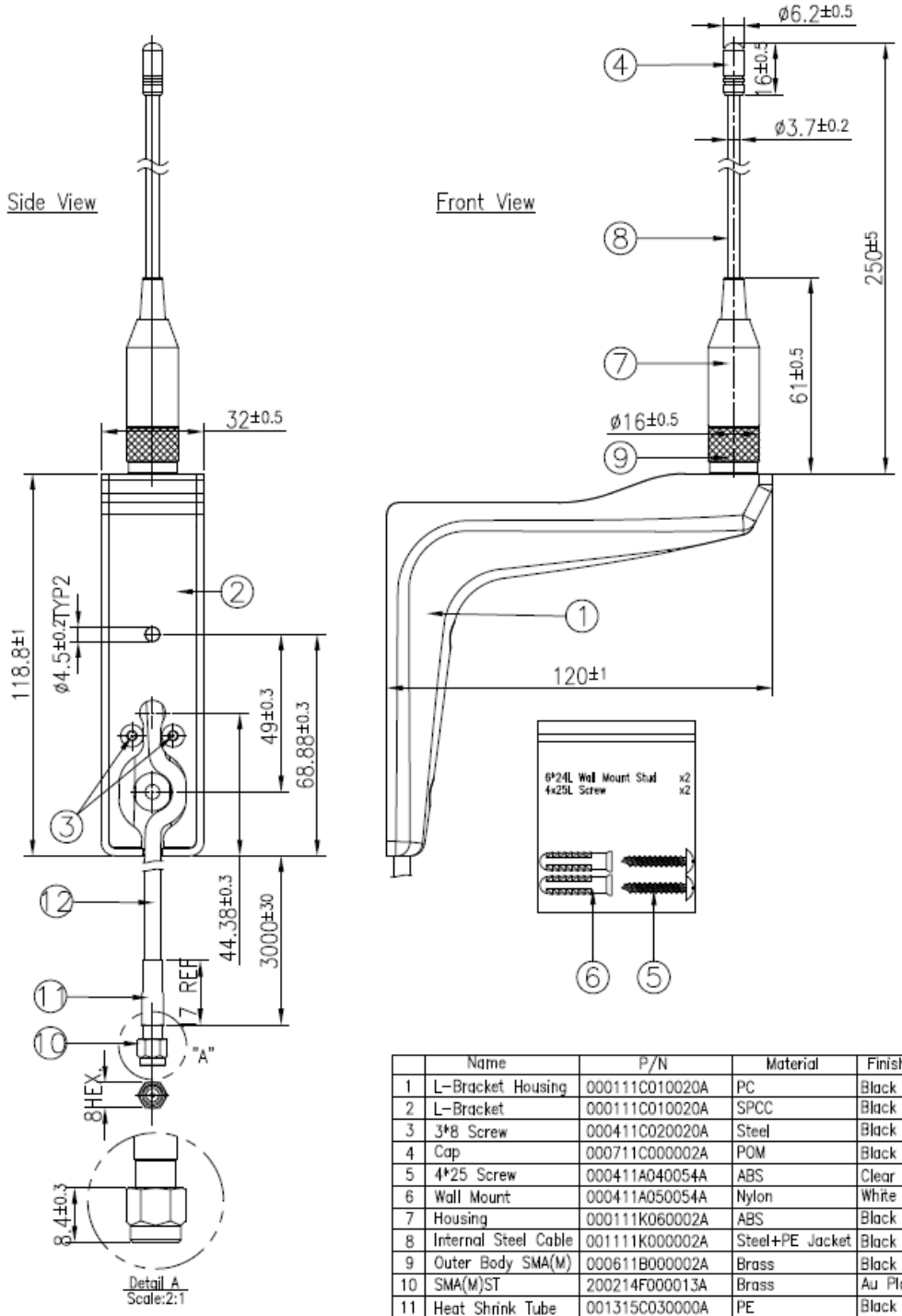
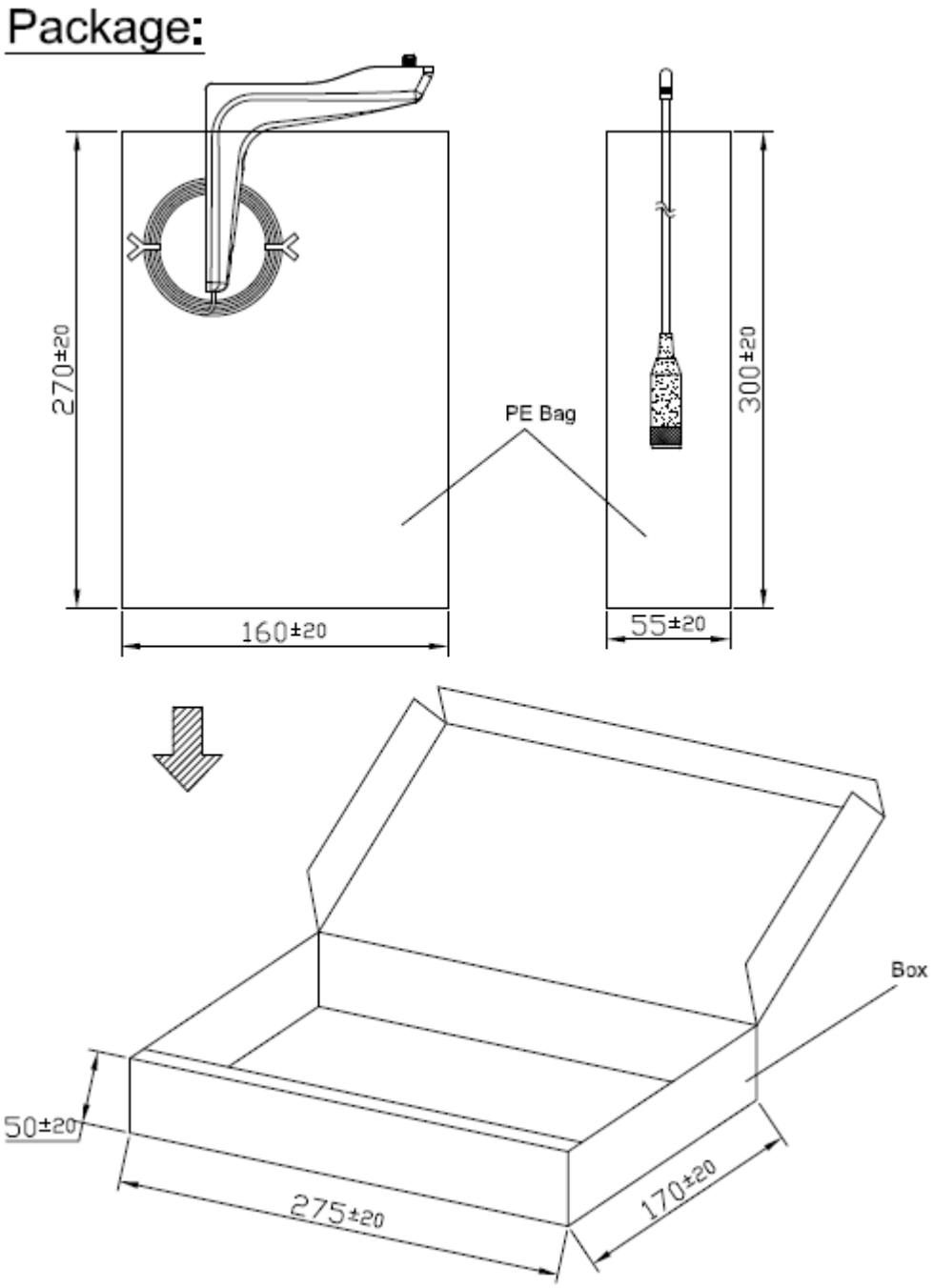
-30
-40
(dB)
2300MHz
2500MHz
2570MHz
2690MHz

5. Mechanical Drawing



	Name	P/N	Material	Finish	QTY
1	L-Bracket Housing	000111C010020A	PC	Black	1
2	L-Bracket	000111C010020A	SPCC	Black	1
3	3*8 Screw	000411C020020A	Steel	Black	6
4	Cap	000711C000002A	POM	Black	1
5	4*25 Screw	000411A040054A	ABS	Clear	2
6	Wall Mount	000411A050054A	Nylon	White	2
7	Housing	000111K060002A	ABS	Black	1
8	Internal Steel Cable	001111K000002A	Steel+PE Jacket	Black	1
9	Outer Body SMA(M)	000611B000002A	Brass	Black	1
10	SMA(M)ST	200214F000013A	Brass	Au Plated	1
11	Heat Shrink Tube	001315C030000A	PE	Black	1
12	CFD200 Cable	301415C010000A	PVC	Black	1

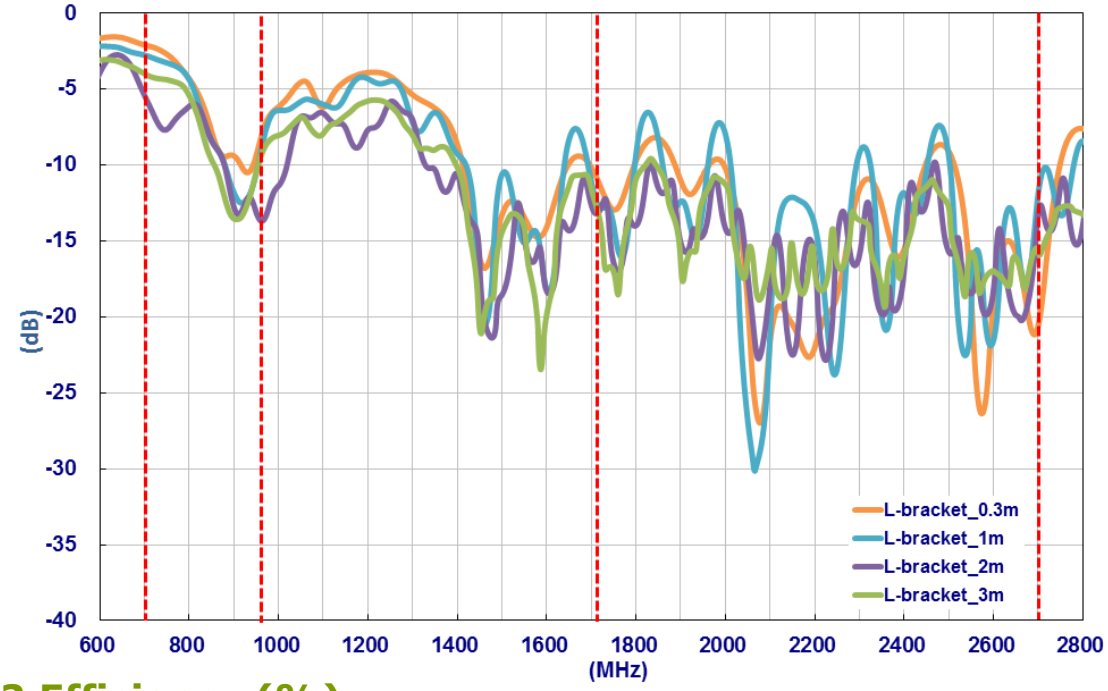
6. Packaging (Unit: mm)



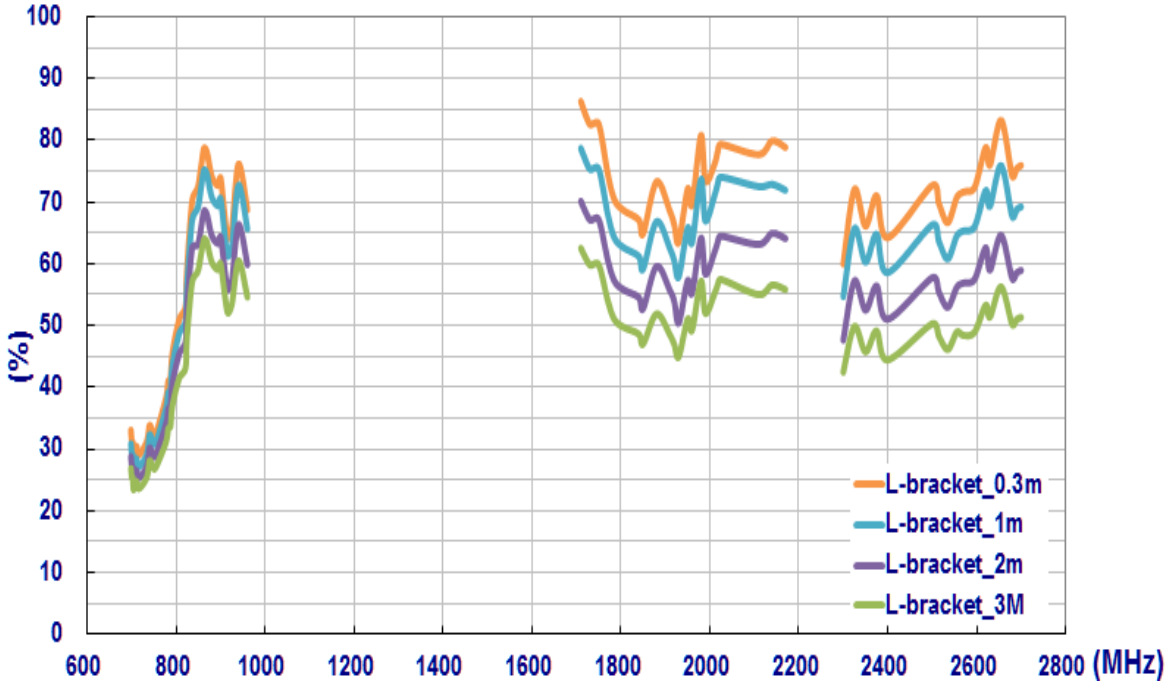
7. Application Note

The performance of WM.90 with L bracket depending on different cable lengths is shown as below.

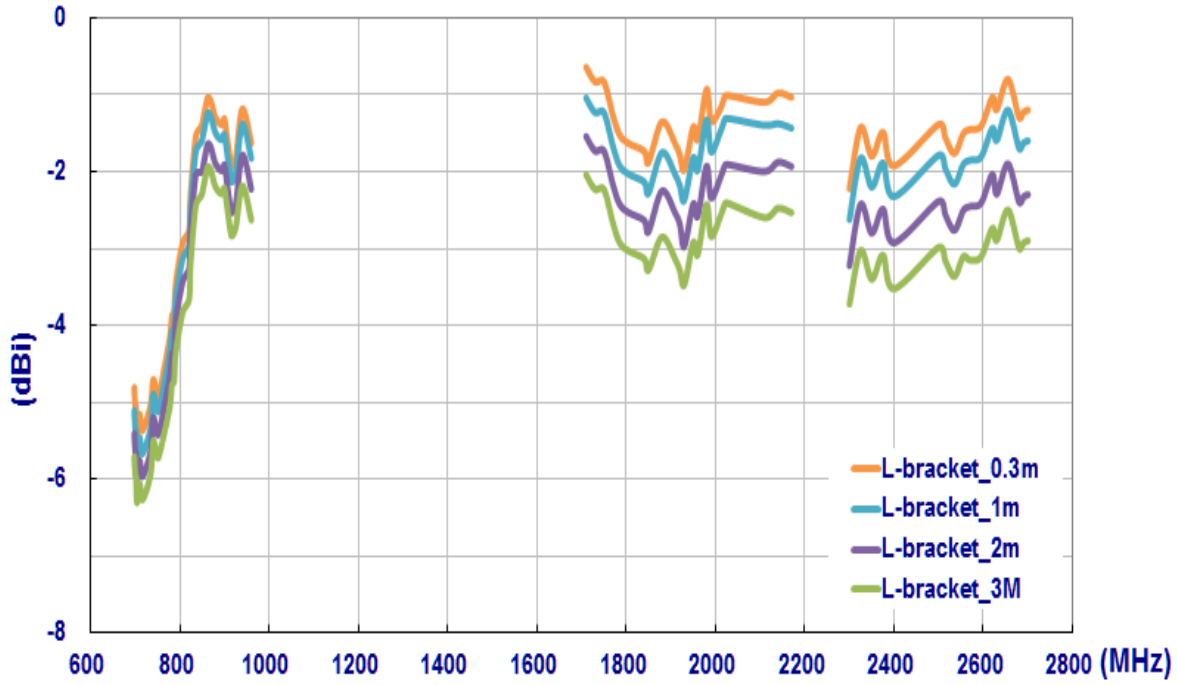
7.1 Return Loss



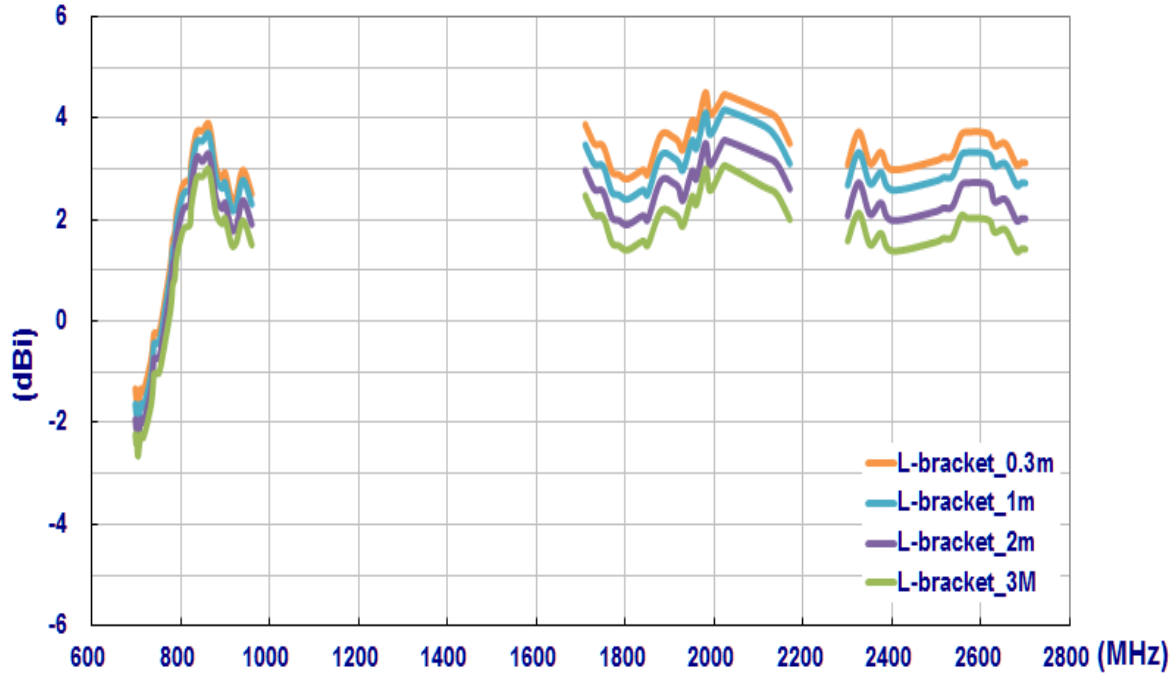
7.2 Efficiency (%)



7.3 Average Gain (dBi)



7.4 Peak Gain(dBi)



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