TG.35.8113W

Specification

Part No.	**TG.35.8113W**
Product Name	Apex II – White Hinged TG.35 Ultra-Wideband 4G LTE Antenna
Feature	Highest efficiency for worldwide LTE and WiFi LTE / HSPA / GSM / CDMA /DCS /PCS / WCDMA / UMTS / GPRS / EDGE /GPS /Wi-Fi 224mm * 58mm 698MHz to 960MHz, 1575.42MHz 1710MHz to 2700Mhz 5150MHz to 5850MHz Dipole Swivel Terminal Antenna Hinged 90° termination with SMA(M) Connector Connector customizable RoHS Compliant

1. Introduction

The hinged Apex II TG.35 Ultra-Wideband Dipole Antenna has been designed to cover all Cellular, ISM and Wi-Fi working frequencies in the 700-6000 MHz spectrum. Evolved from the already highly successful Apex TG.30, this second generation has the highest wide-band efficiency in its range of any terminal antenna on the market today.

The Apex II has been primarily designed for use with 4G LTE modules and devices that require the highest possible efficiency and peak gain to deliver best in class throughput on all major cellular (2G/3G/4G) bands worldwide for access points, terminals and routers. High efficiency is vital for applications such as high speed video and real-time streaming, or high capacity MIMO networks on public transportation.

This attractive slim-line antenna is ground plane independent, meaning it does not need to be connected to the ground-plane of a device to radiate efficiently, on the other hand neither is it seriously detuned by connecting to a ground-plane, thus avoiding a problem notorious to smaller antennas.

It comes with a SMA (M) connector and swivel mechanism that allows the antenna part to be rotated to fit in tight environments.

The Apex II is backward compatible with 3G and 2G cellular applications such as HSPA, GSM, GPRS, UMTS, WI-FI and even has GPS included for Assisted GPS and/or E911 applications.

In summary the Apex II is the ideal solution for any device requiring high, reliable performance. It will meet most type approval or carrier certification requirements from an efficiency standpoint. The antenna also makes an excellent reference antenna for test purposes. It has been designed as an omni-directional antenna and the radiation patterns prove this, being stable across all bands.

Connector type is customizable. Housing comes in White too. Contact Taoglas regional sales office for more information.

2. Specifications

ELECTRICAL								
Standard		LTE/GSM/CDMA 700/850/900	GPS/GLONASS	LTE/GSM/HSPA/CDMA 700/1800/1900	UMTS/HSPA 2100	Wi-Fi 2400	LTE 2600	Wi-Fi 5800
Frequency (MHz)		698~960	1565~1612	1710~1990	1920~2170	2400~2500	2500~2700	4800~6000
EFFICIENCY (%)								
In free space	Straight	53.92	55.66	64.44	62.55	49.61	53.14	56.35
	Bent	56.51	55.19	68.87	68.72	53.41	54.11	55.84
On 150*90mm ground plane edge	Straight	84.72	66.85	71.00	71.43	56.21	52.22	51.59
	Bent	80.92	71.38	71.62	71.14	52.81	53.28	51.82
On 30*30cm ground plane center	Straight	59.06	51.56	62.34	61.21	67.43	53.51	51.25
	Bent	57.15	36.67	52.88	57.70	60.70	58.10	56.74
On 30*30cm ground plane edge	Straight	59.62	48.19	65.51	64.78	63.28	56.84	56.30
	Bent	53.18	41.91	63.43	62.24	62.99	46.66	47.09
AVERAGE GAIN (dBi)								
In free space	Straight	-2.71	-2.55	-1.91	-2.05	-3.05	-2.76	-2.59
	Bent	-2.50	-2.61	-1.63	-1.64	-2.72	-2.67	-2.63
On 150*90mm ground plane edge	Straight	-0.74	-1.75	-1.50	-1.46	-2.50	-2.82	-2.92
	Bent	-0.96	-1.46	-1.45	-1.48	-2.77	-2.74	-2.89
On 30*30cm ground plane center	Straight	-2.31	-2.88	-2.06	-2.13	-1.74	-2.72	-2.94
	Bent	-2.44	-4.36	-2.78	-2.40	-2.18	-2.37	-2.52
On 30*30cm ground plane edge	Straight	-2.26	-3.17	-1.85	-1.89	-2.01	-2.45	-2.58
	Bent	-2.81	-3.78	-1.99	-2.08	-2.02	-3.32	-3.37
PEAK GAIN (dBi)								
In free space	Straight	4.42	1.59	3.15	2.70	4.93	4.43	2.55
	Bent	3.16	1.64	3.37	3.34	3.28	3.06	2.09
On 150*90mm ground plane edge	Straight	3.28	3.70	4.79	5.02	2.50	2.36	2.67
	Bent	2.77	3.24	4.07	4.35	4.47	3.80	2.68
On 30*30cm ground plane center	Straight	6.37	0.75	3.34	3.39	6.44	6.92	5.29
	Bent	6.47	5.12	6.27	6.44	5.78	8.14	6.05
On 30*30cm ground plane edge	Straight	4.87	1.70	3.62	4.01	4.63	6.02	4.87
	Bent	4.78	4.07	5.95	5.45	5.87	3.89	4.59
Impedance		50Ω						
Polarization		Linear						
Radiation Pattern		Omni						
Input Power		5 W						
MECHANICAL								
Casing		UV Resistant PC/ABS						
Connector		SMA Male Hinged 90°						
Weight		75g						
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						

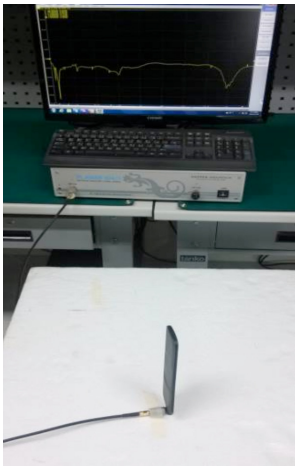
***Note : Product is not suitable for vibrating environment**

3. Antenna Characteristics

3.1 Testing setup

In free space

Antenna straight



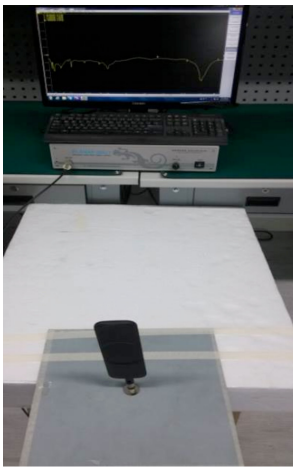
Antenna bent 90°

On 150*90mm ground plane edge

Antenna straight

Antenna bent 90°

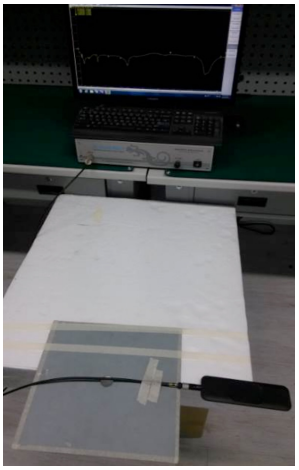
On 30cm*30cm ground plane center



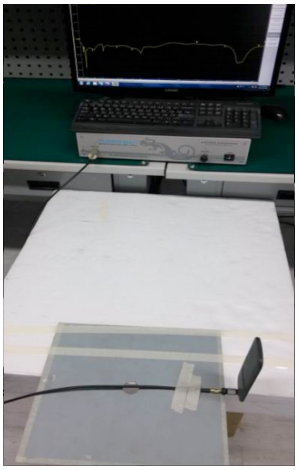
Antenna straight

Antenna bent 90°

On 30cm*30cm ground plane edge

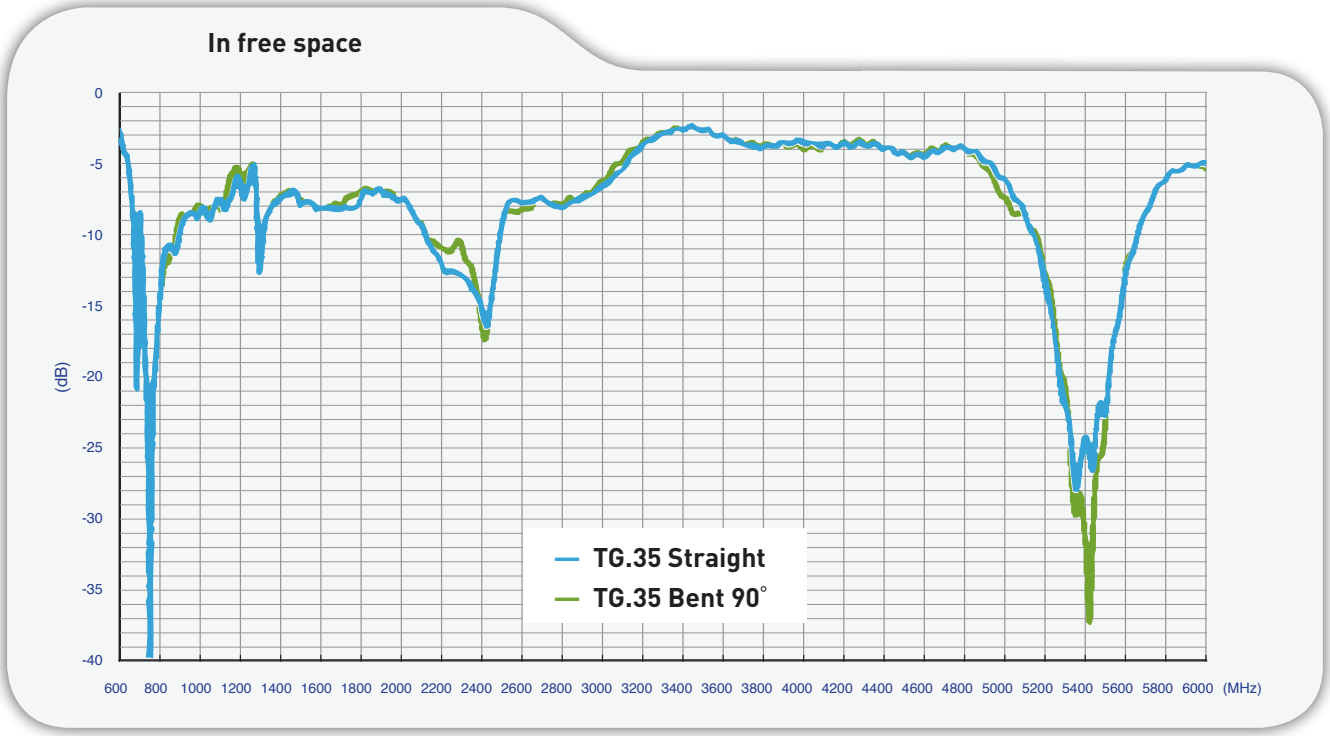


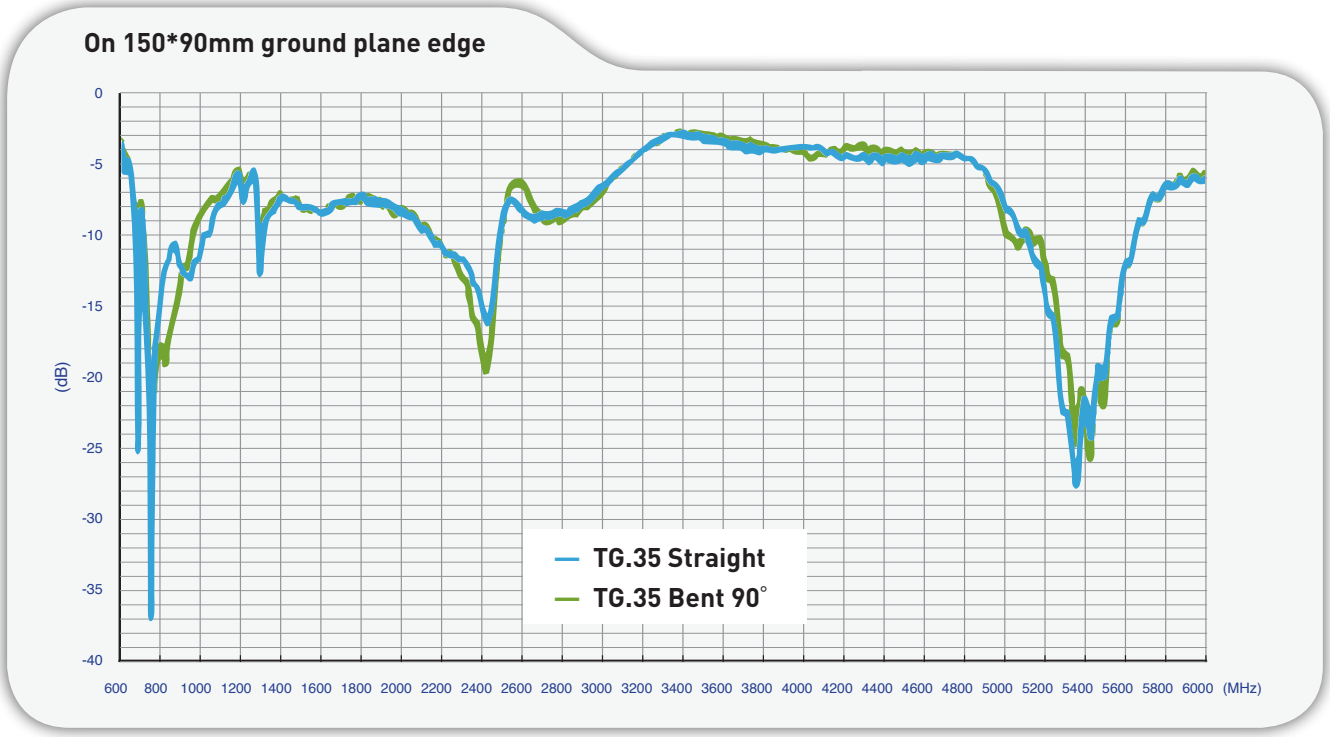
Antenna straight



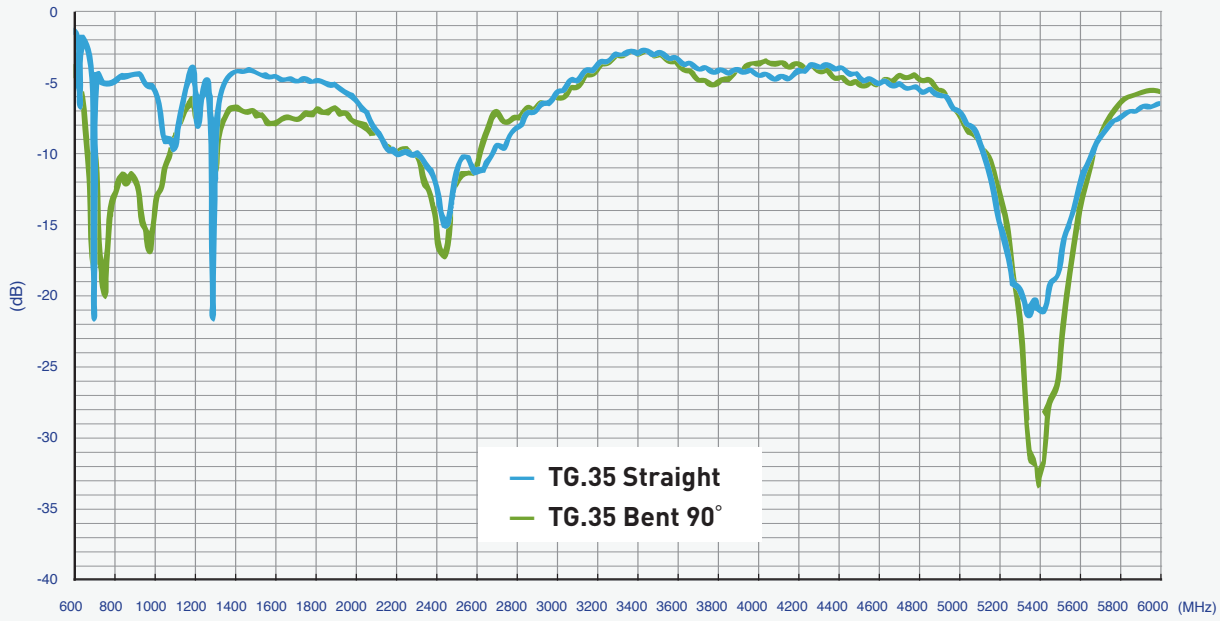
Antenna bent 90°

3.2 Return Loss

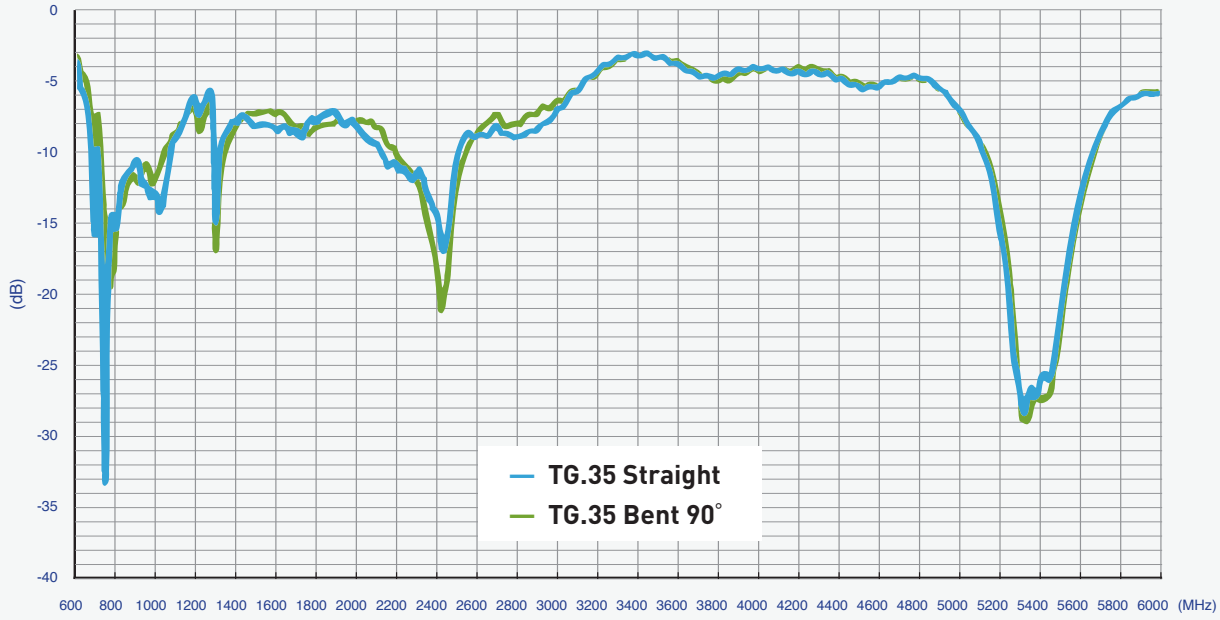




On 30cm*30cm ground plane center

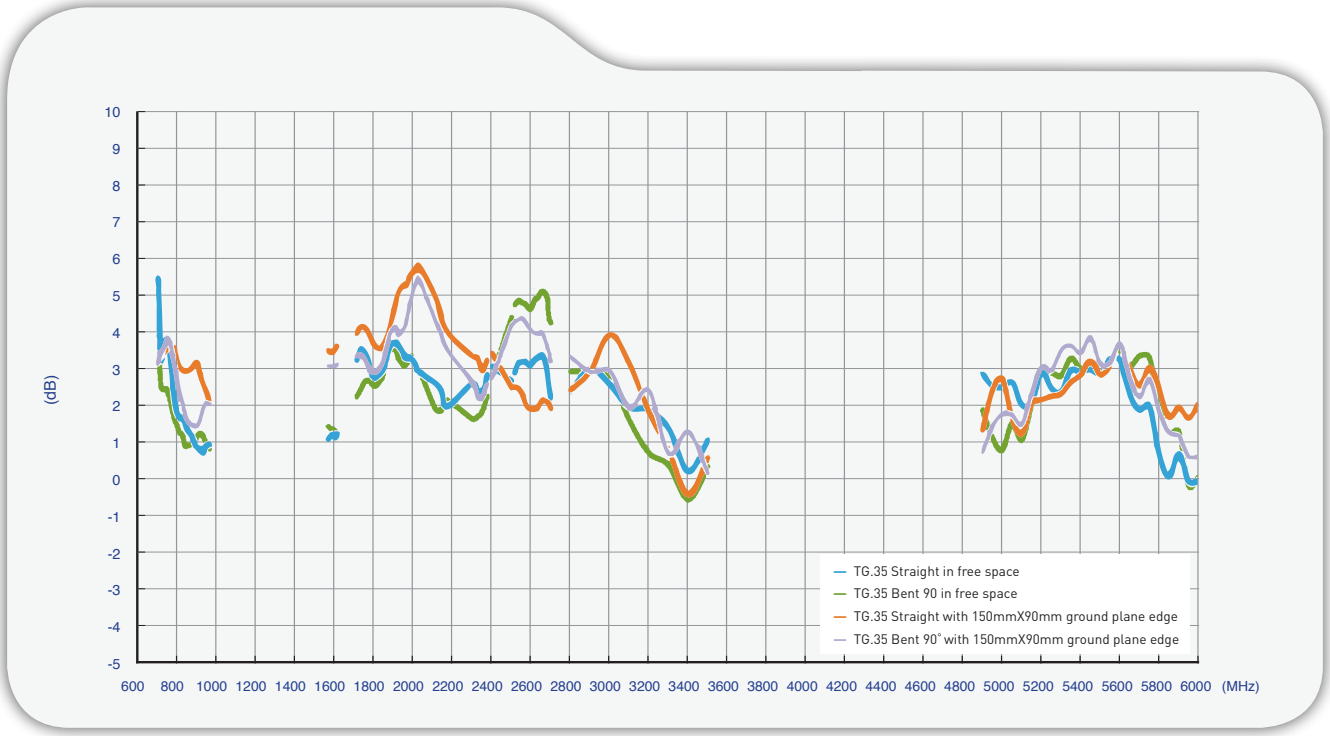


On 30cm*30cm ground plane edge

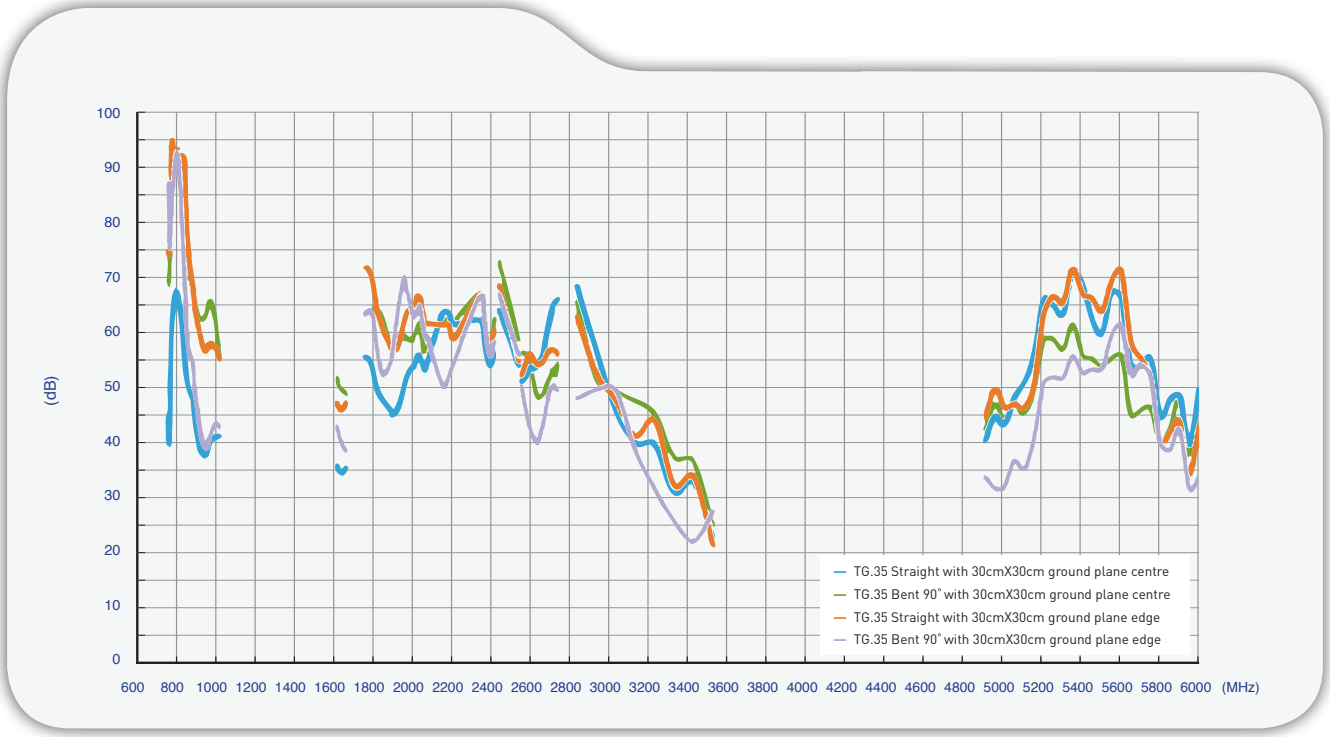


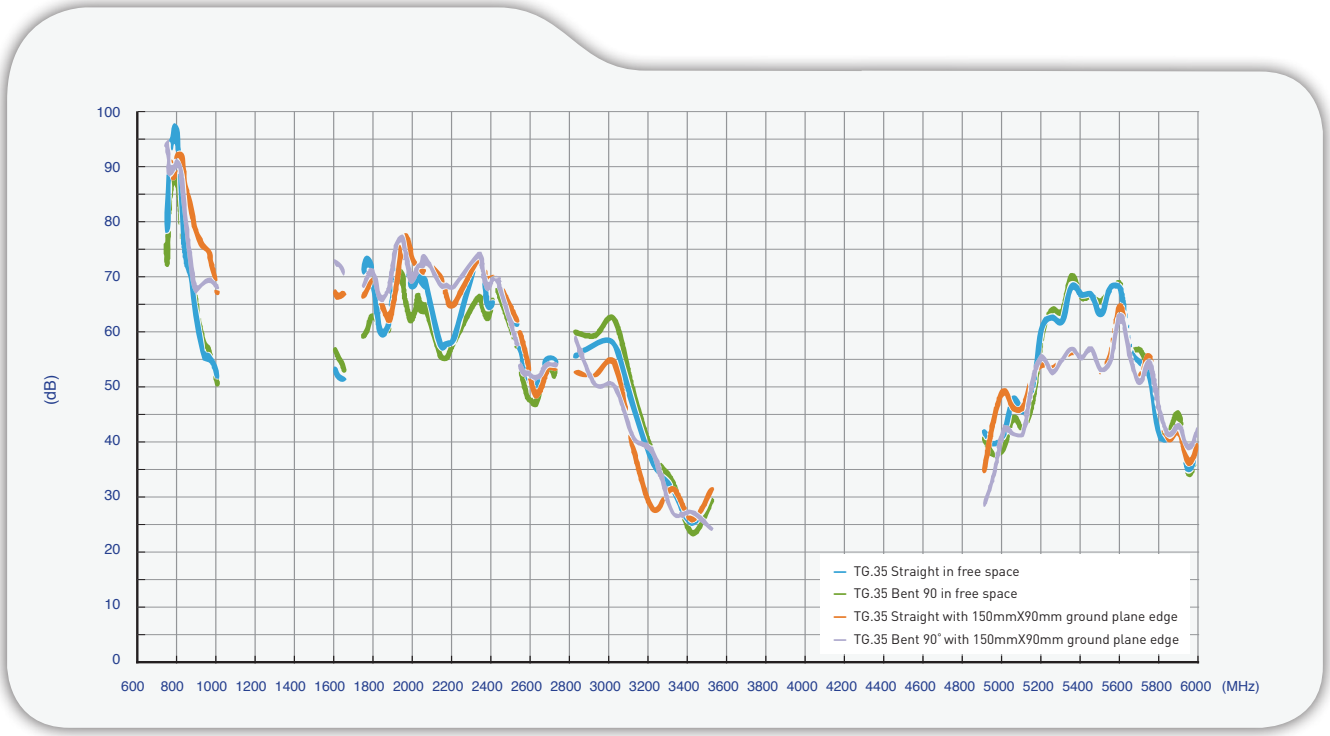
3.3 Peak Gain


10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
(dB)
600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 3000 3200 3400 3600 3800 4000 4200 4400 4600 4800 5000 5200 5400 5600 5800 6000 (MHz)
TG.35 Straight with 30cmX30cm ground plane centre
TG.35 Bent 90˚ with 30cmX30cm ground plane centre
TG.35 Straight with 30cmX30cm ground plane centre
TG.35 Bent 90˚ with 30cmX30cm ground plane centre

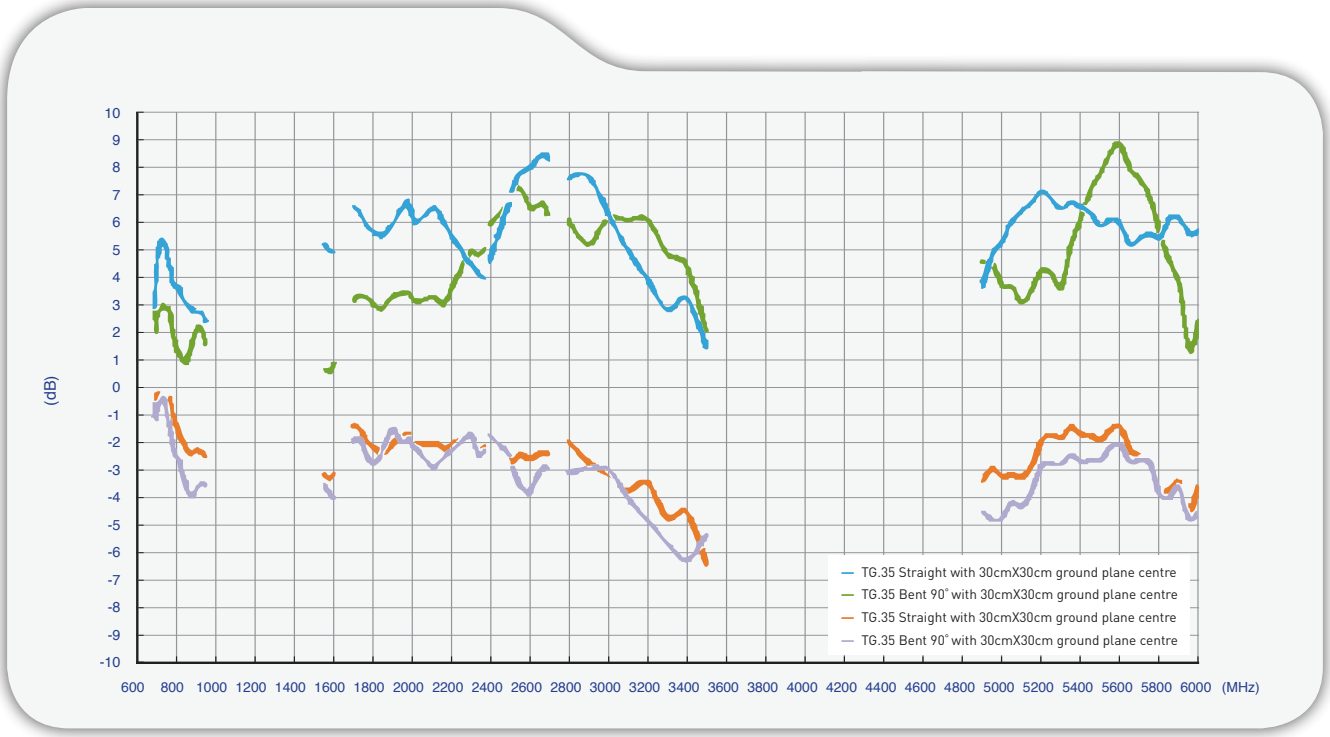

10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
(dB)
600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 3000 3200 3400 3600 3800 4000 4200 4400 4600 4800 5000 5200 5400 5600 5800 6000 (MHz)
TG.35 Straight in free space
TG.35 Bent 90 in free space
TG.35 Straight with 150mmX90mm ground plane edge
TG.35 Bent 90˚ with 150mmX90mm ground plane edge

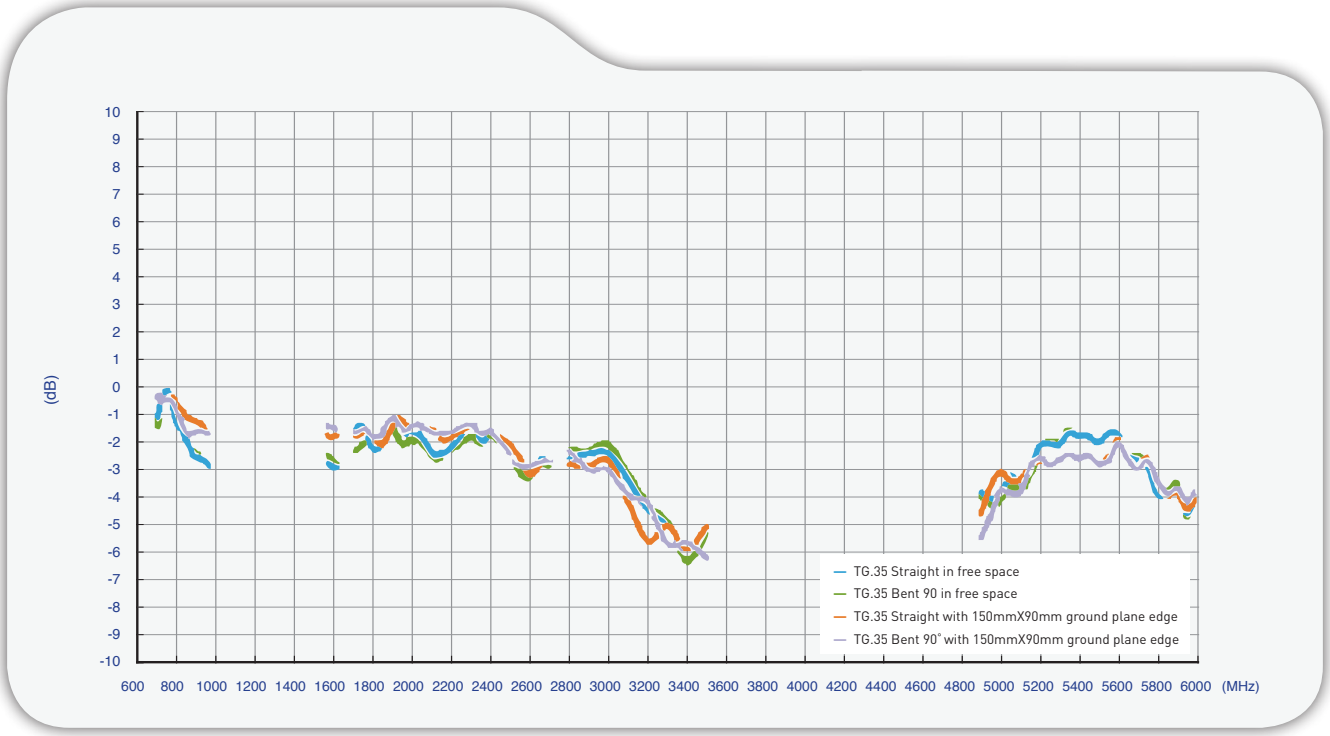
3.4 Efficiency





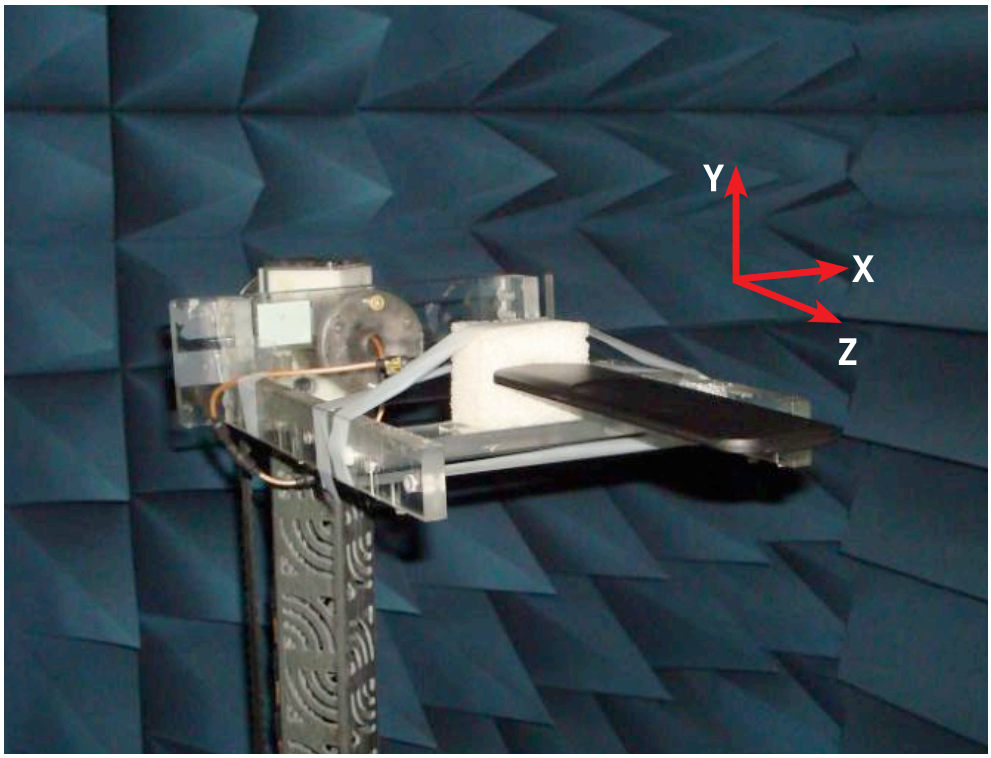
3.5 Average Gain





4. Antenna Radiation Patterns

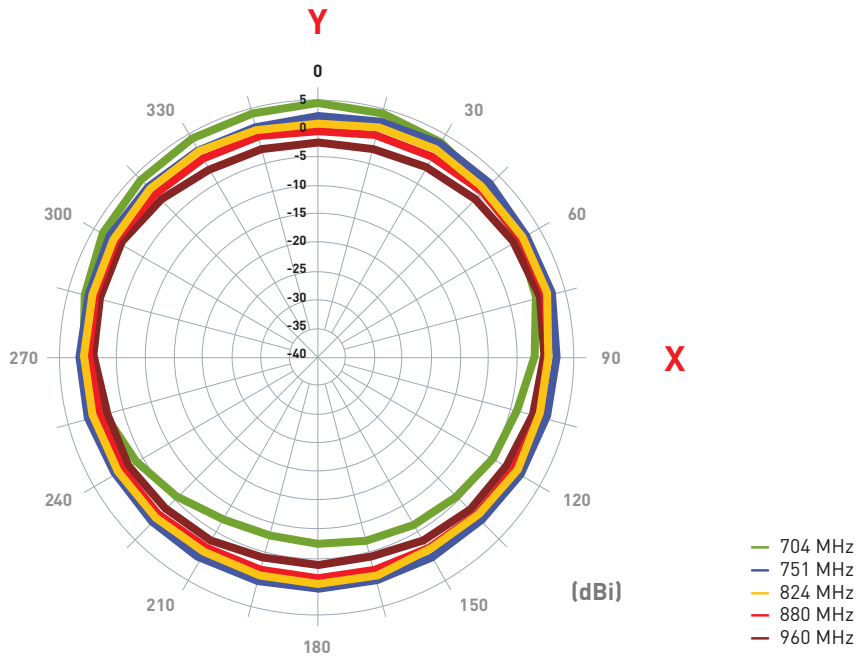
4.1 Antenna setup - Antenna straight in the free space



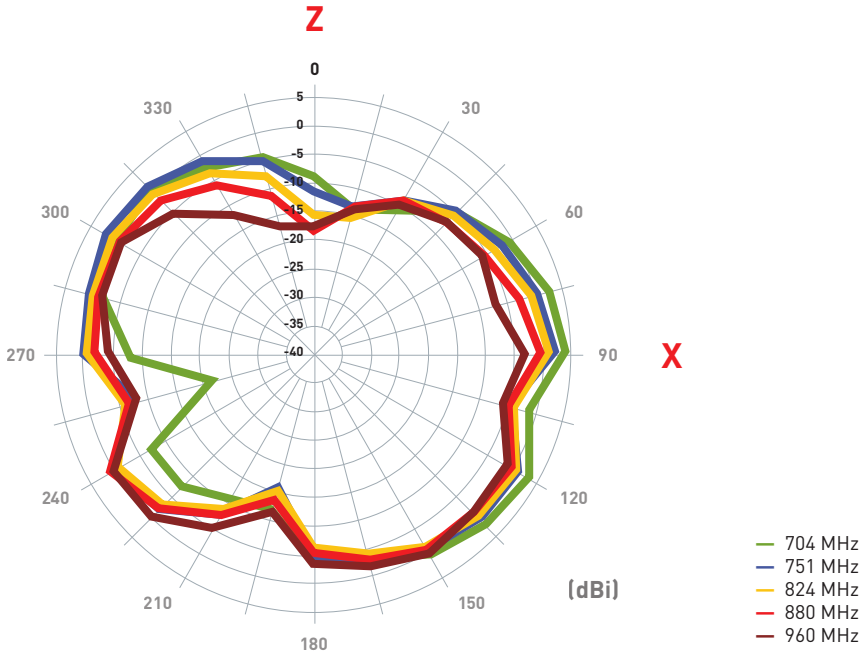
4.2 Antenna radiation patterns

4.2.1 Antenna straight in free space

XY Plane

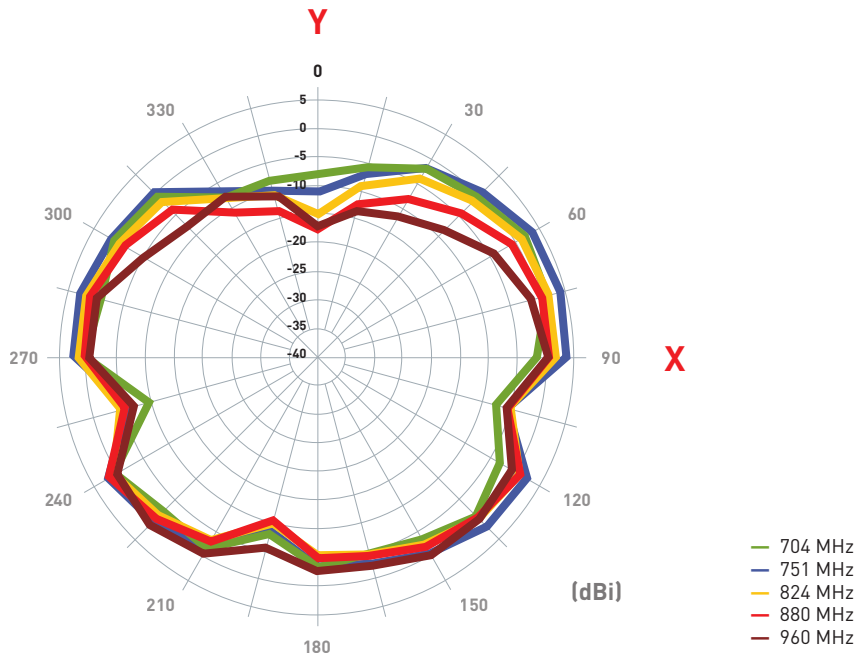


XZ Plane

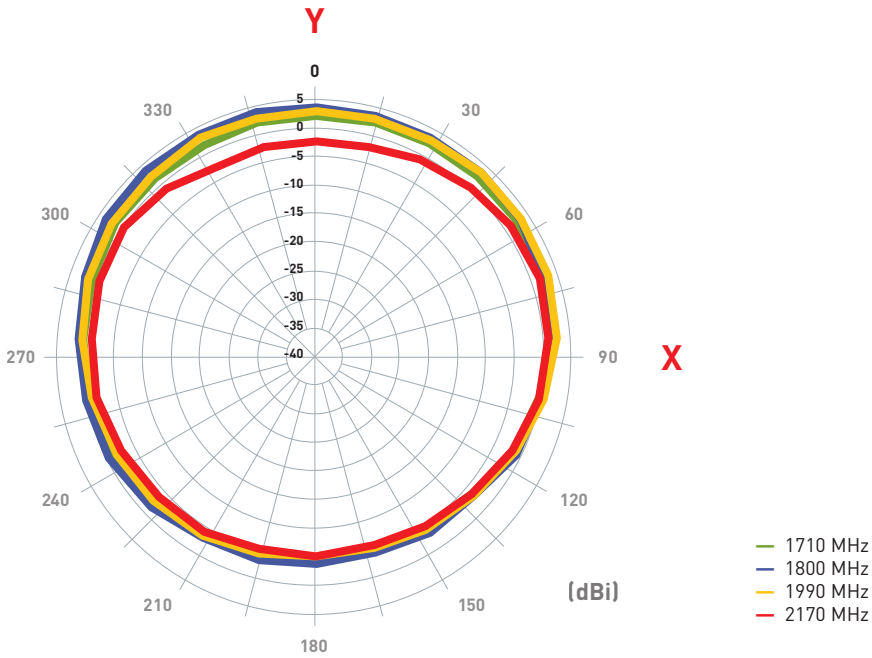


4.2.1 Antenna straight in free space

YZ Plane

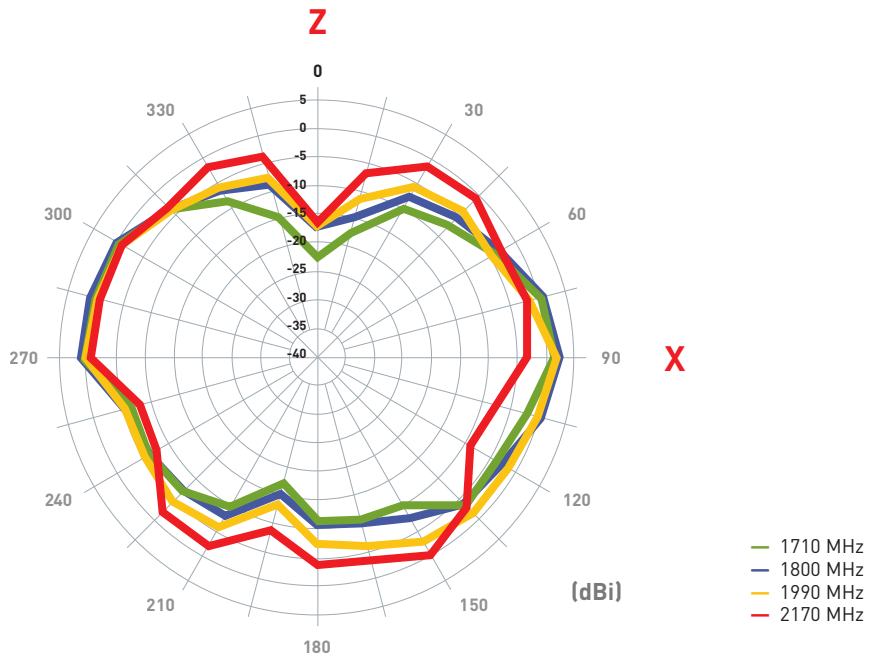


XY Plane

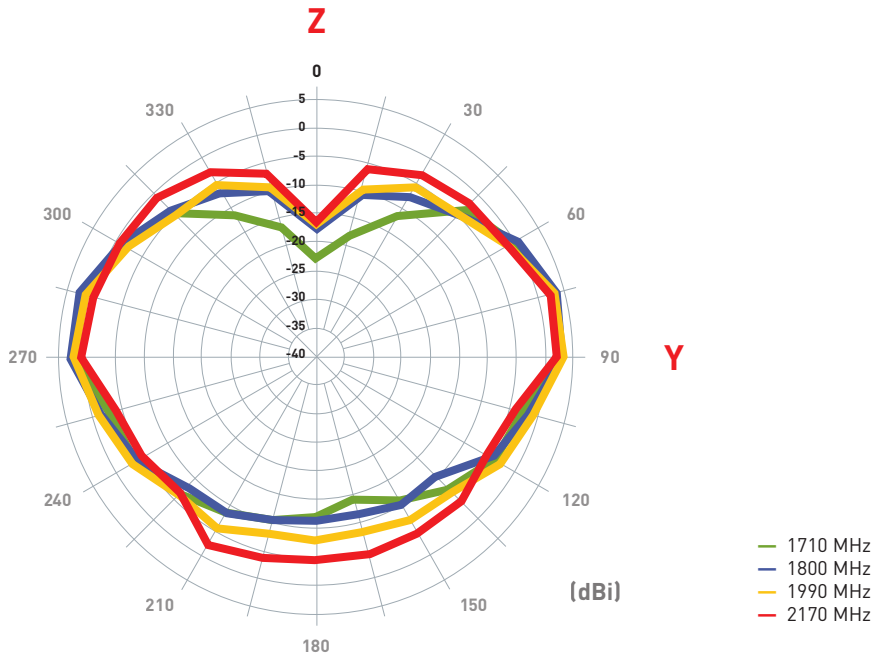


4.2.1 Antenna straight in free space

XZ Plane

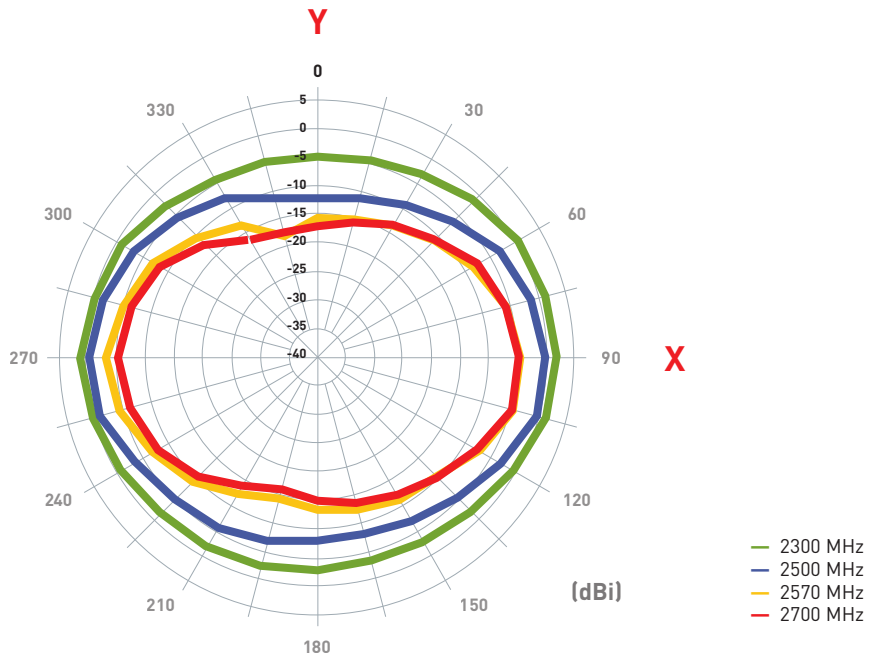


YZ Plane

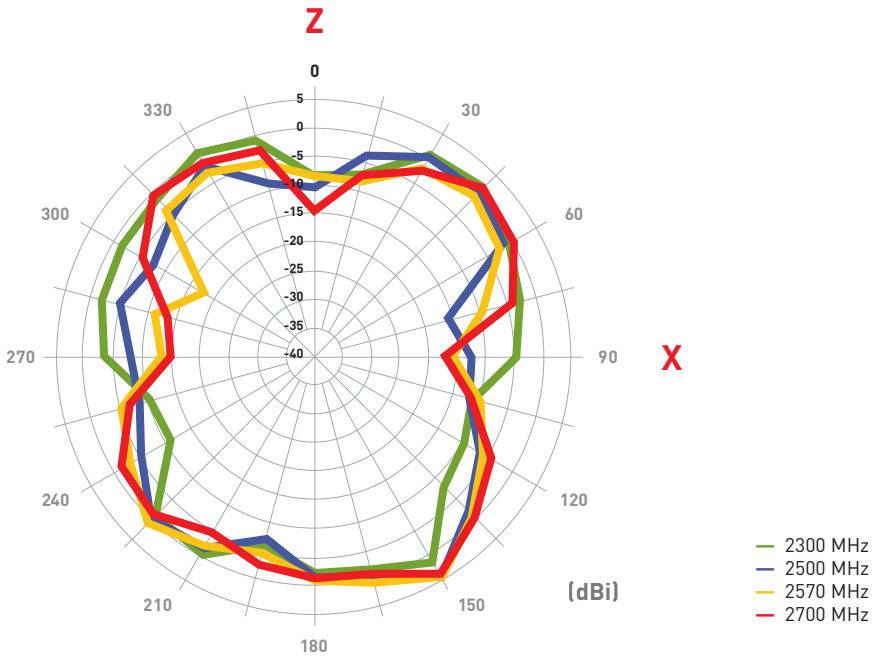


4.2.1 Antenna straight in free space

XY Plane

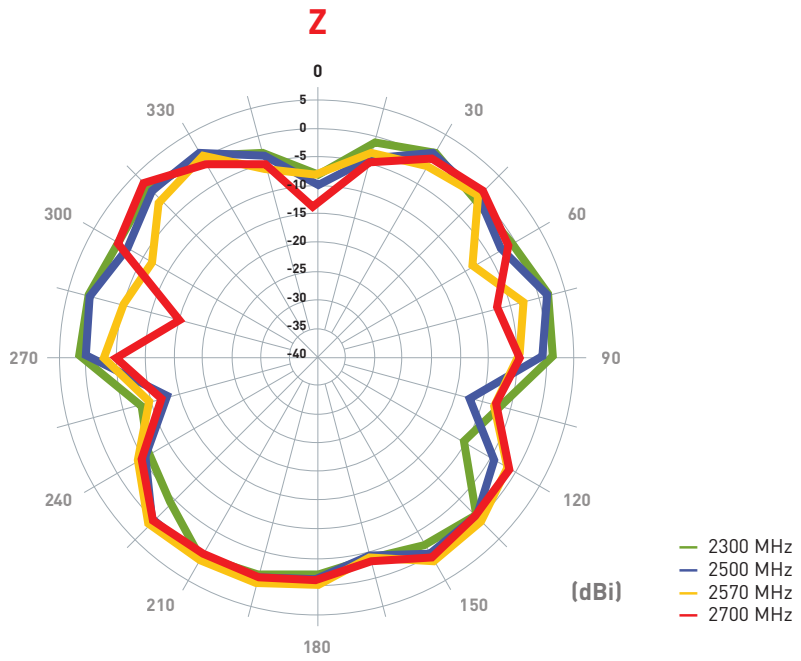


XZ Plane

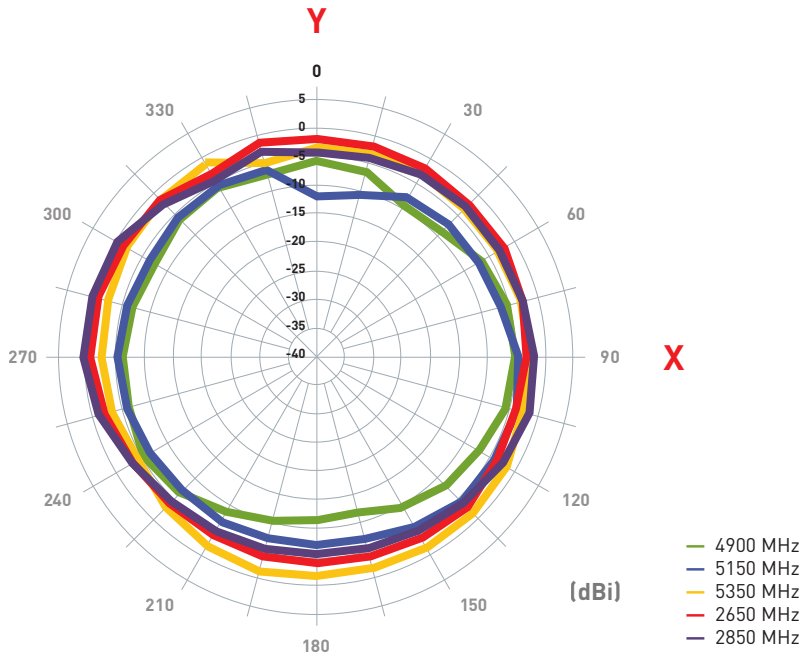


4.2.1 Antenna straight in free space

YZ Plane

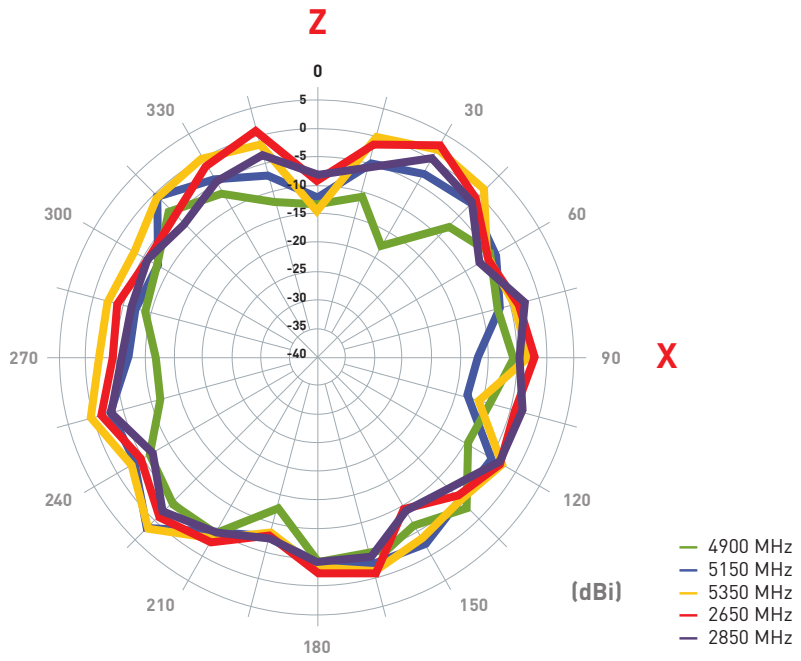


XY Plane

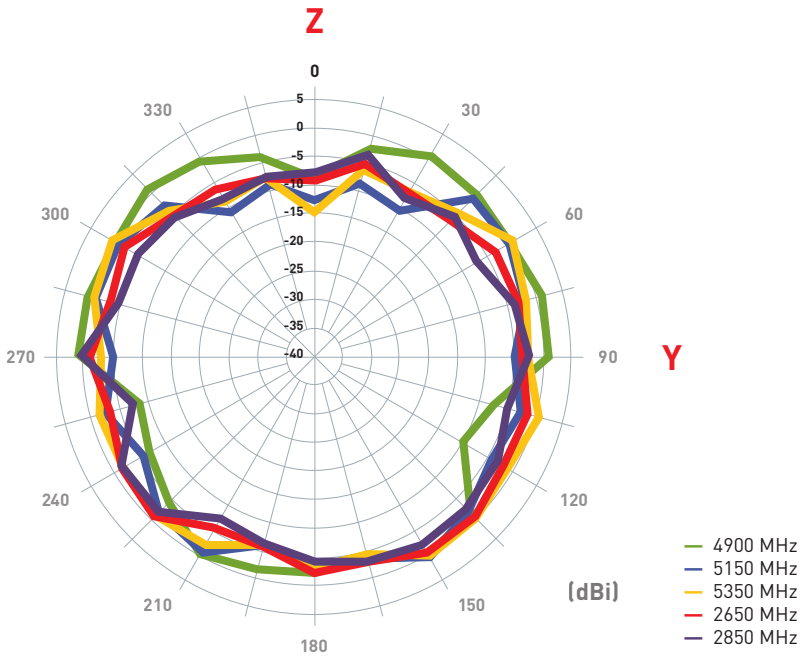


4.2.1 Antenna straight in free space

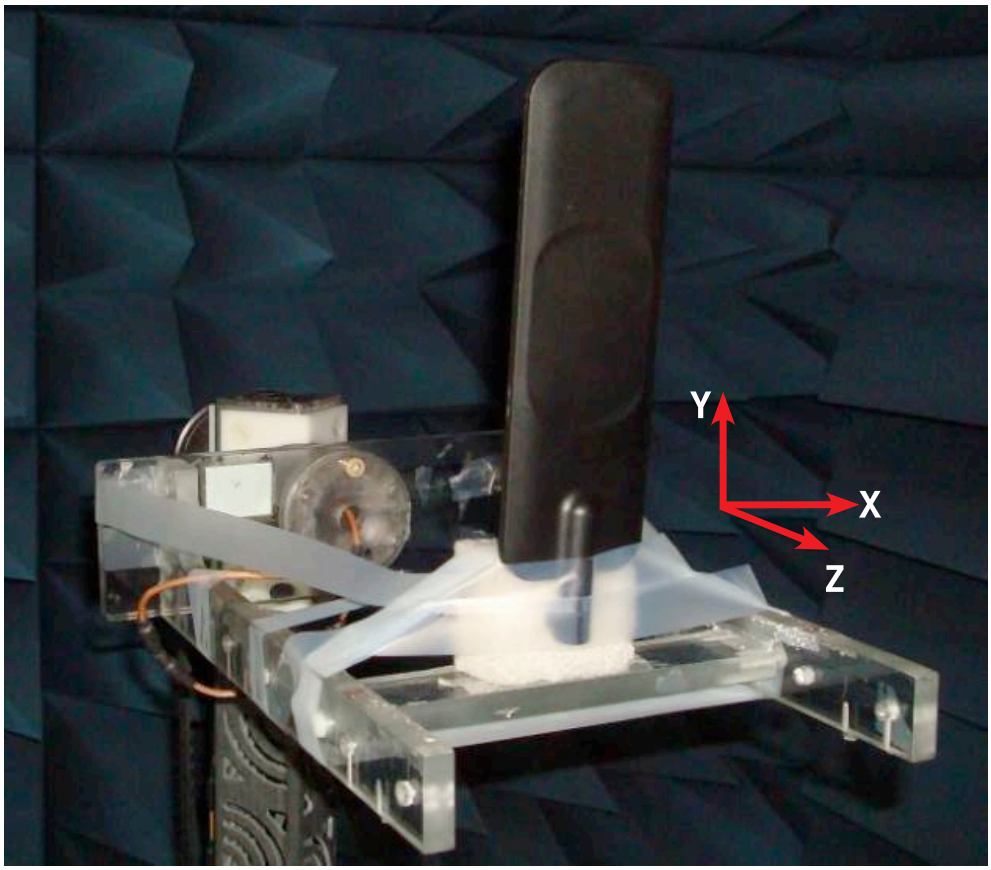
XZ Plane



YZ Plane



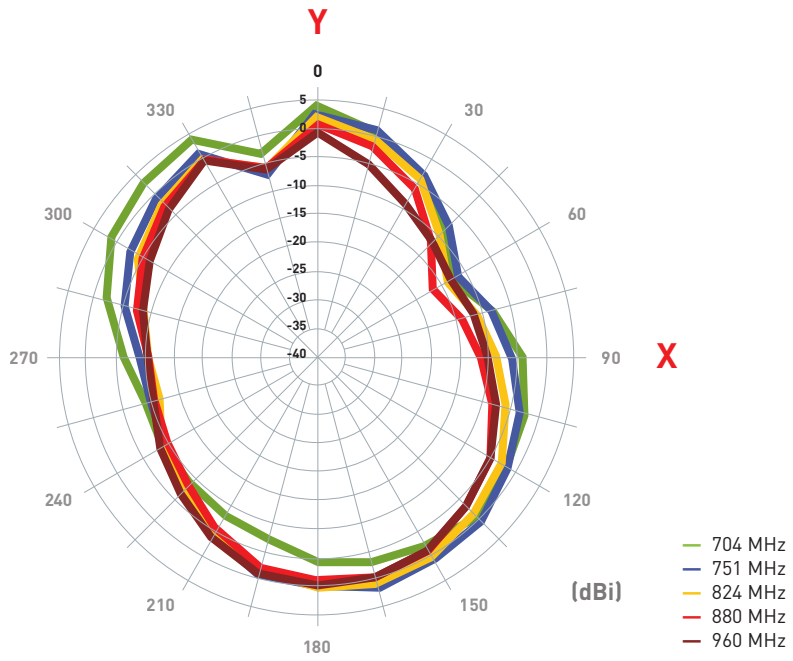
4.3 Antenna bent 90° in free space



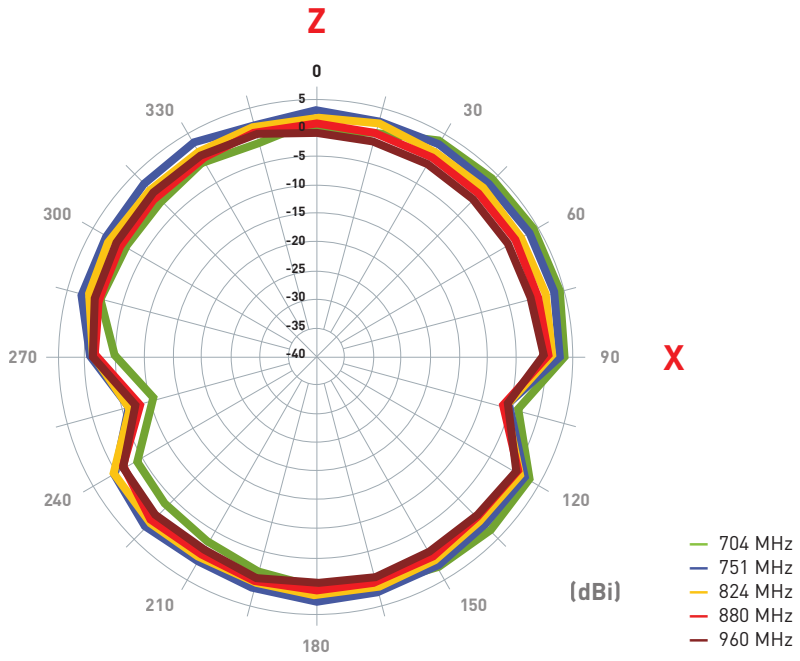
4.4 Antenna radiation patterns

4.4.1 Antenna bent 90 in free space

XY Plane

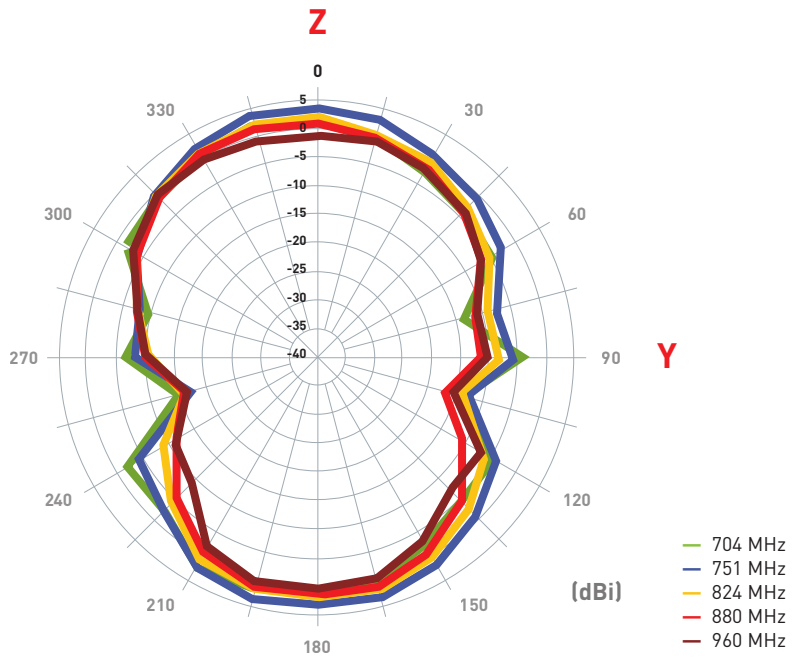


XZ Plane

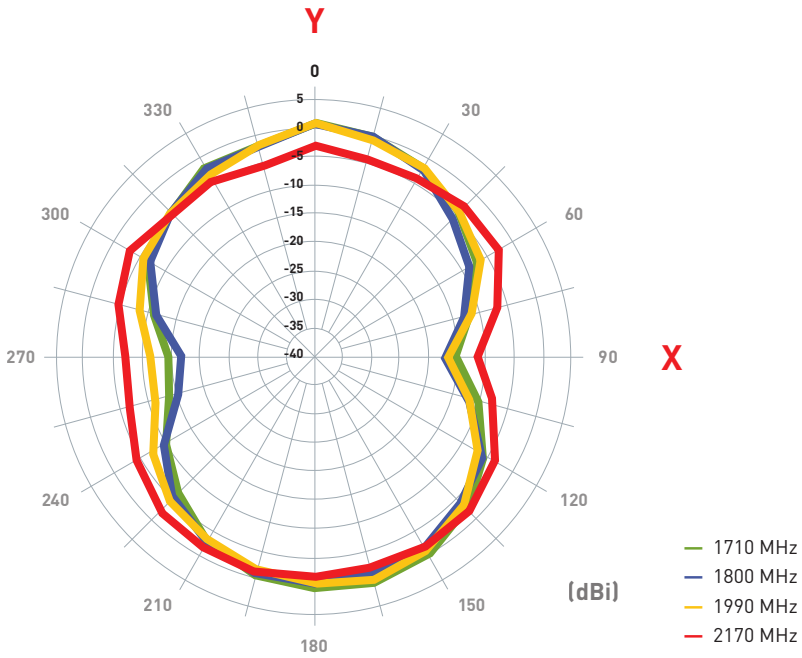


4.4.1 Antenna bent 90 in free space

YZ Plane

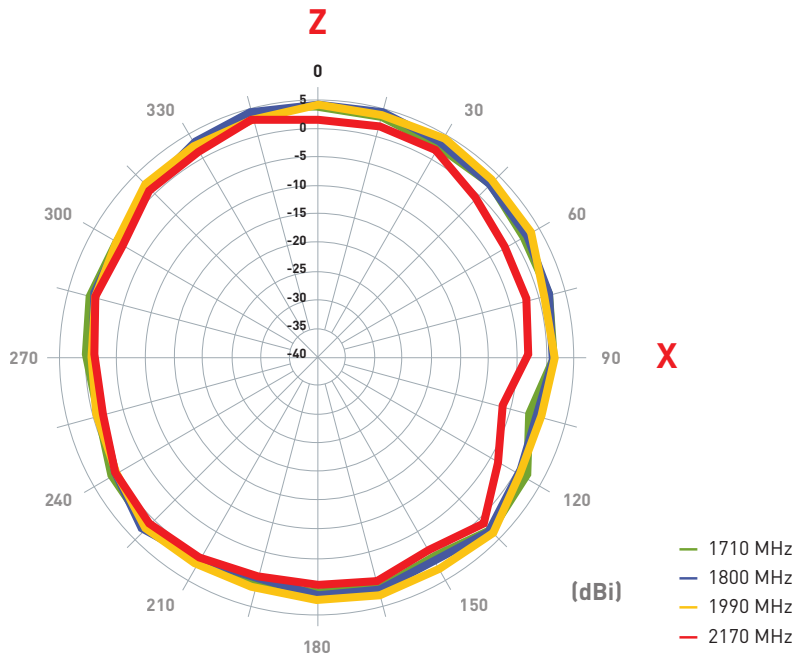


XY Plane

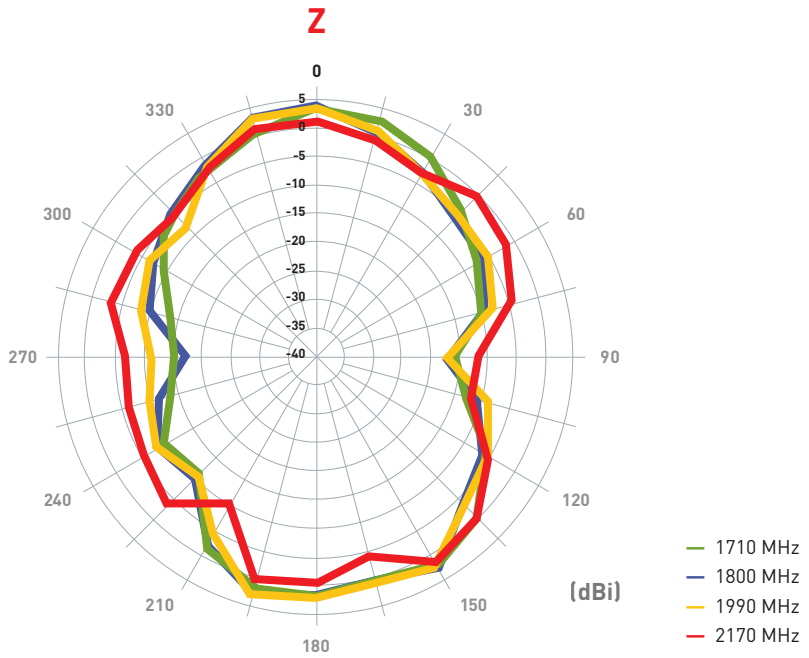


4.4.1 Antenna bent 90 in free space

XZ Plane

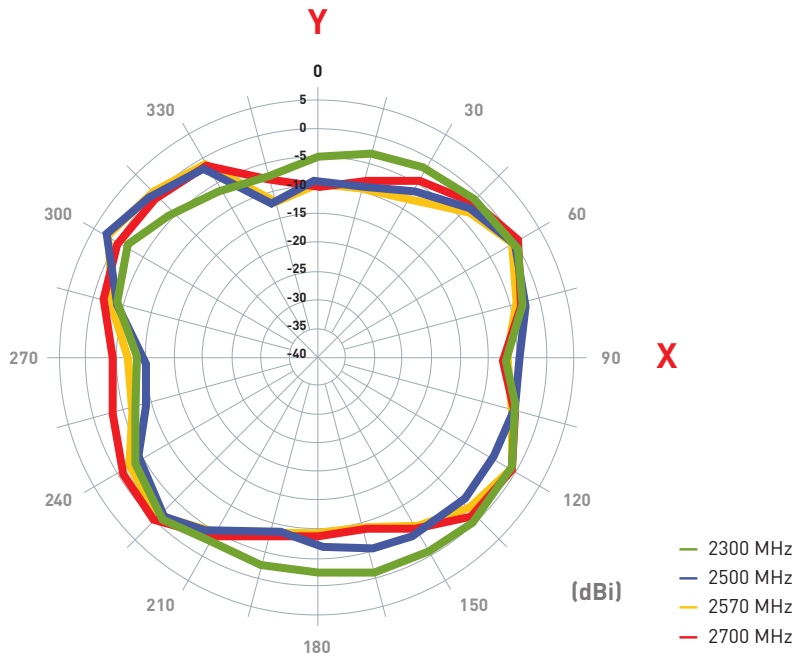


YZ Plane

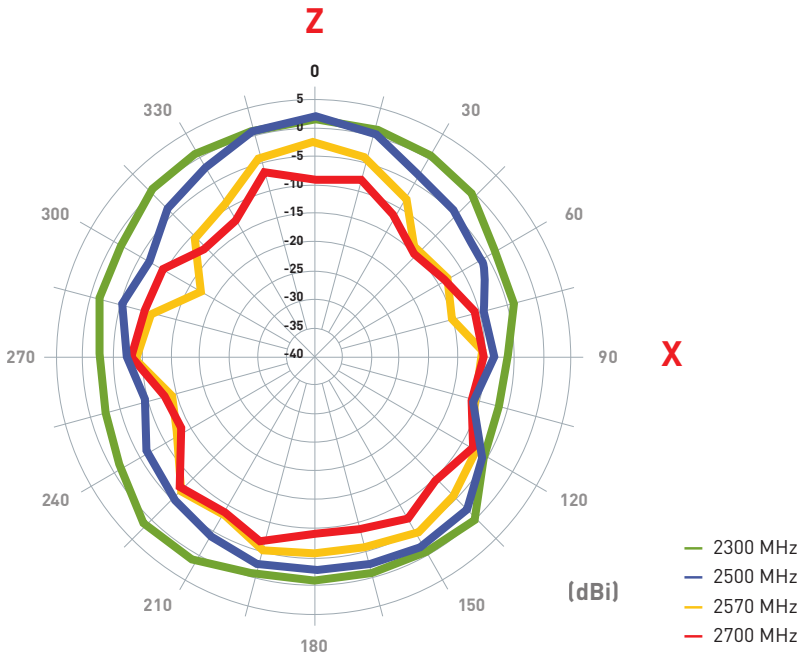


4.4.1 Antenna bent 90 in free space

XY Plane

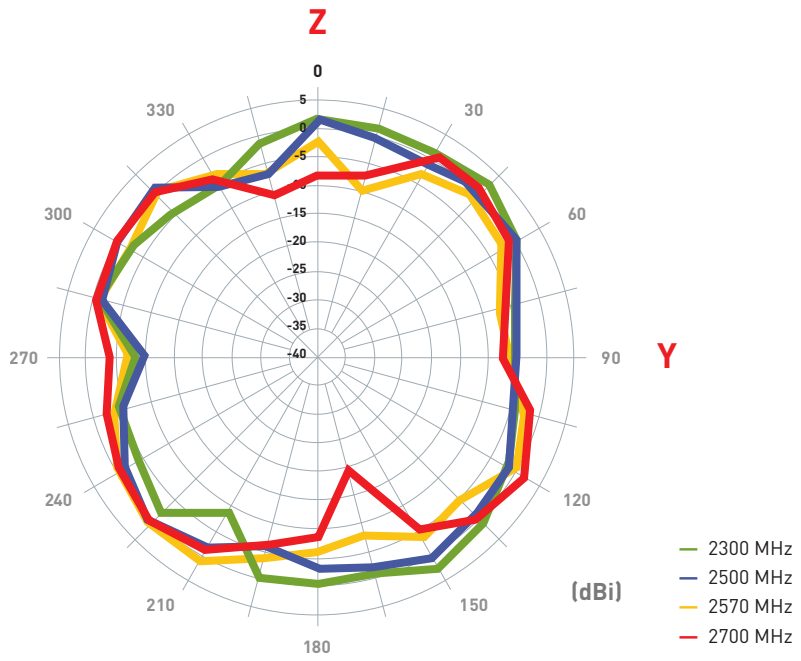


XZ Plane

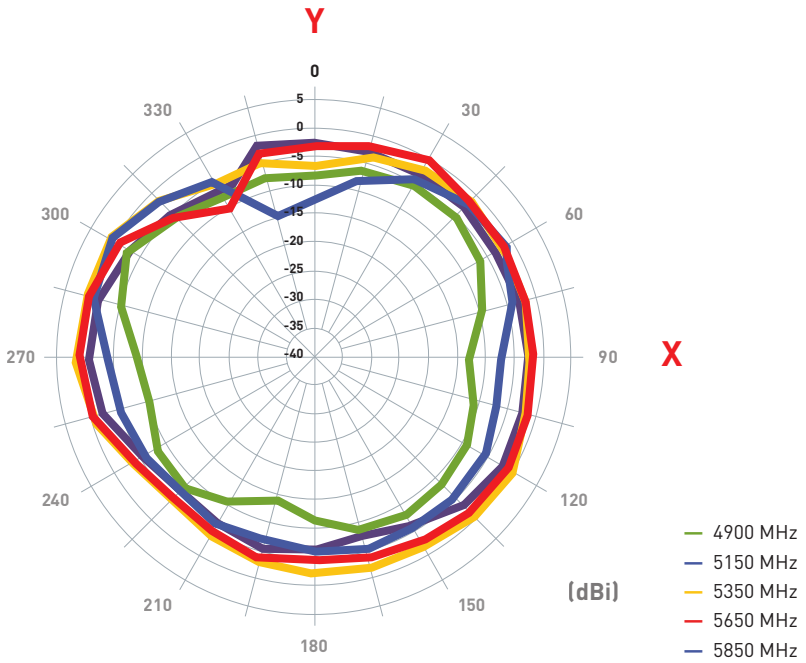


4.4.1 Antenna bent 90 in free space

YZ Plane

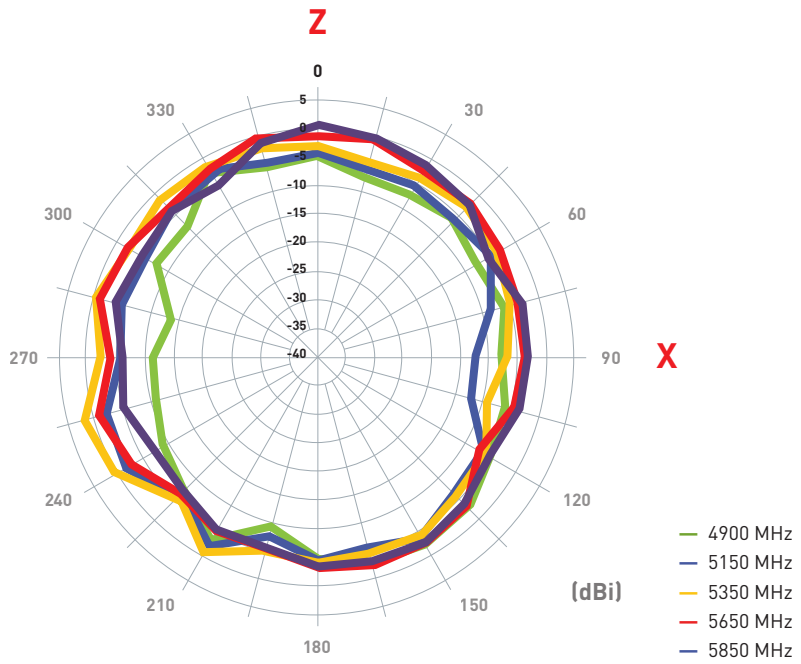


XY Plane

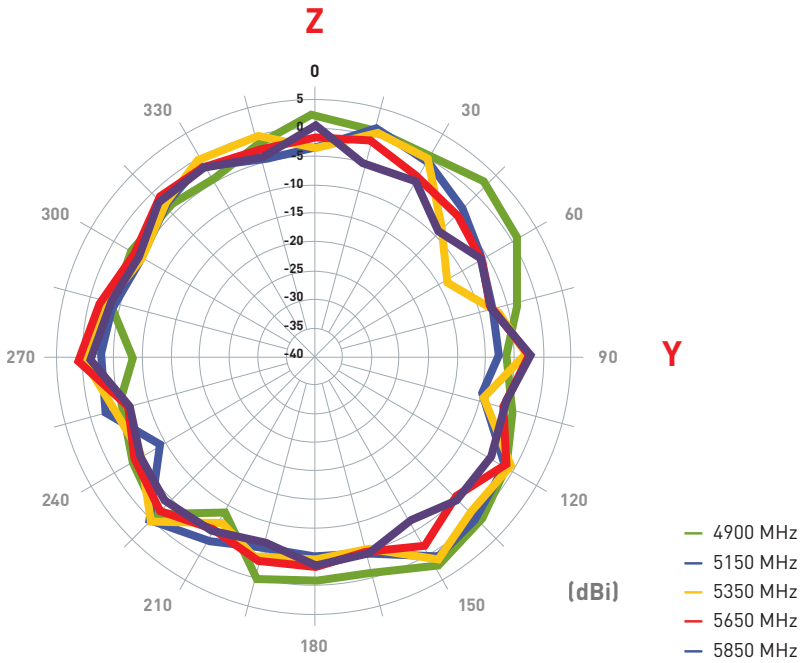


4.4.1 Antenna bent 90 in free space

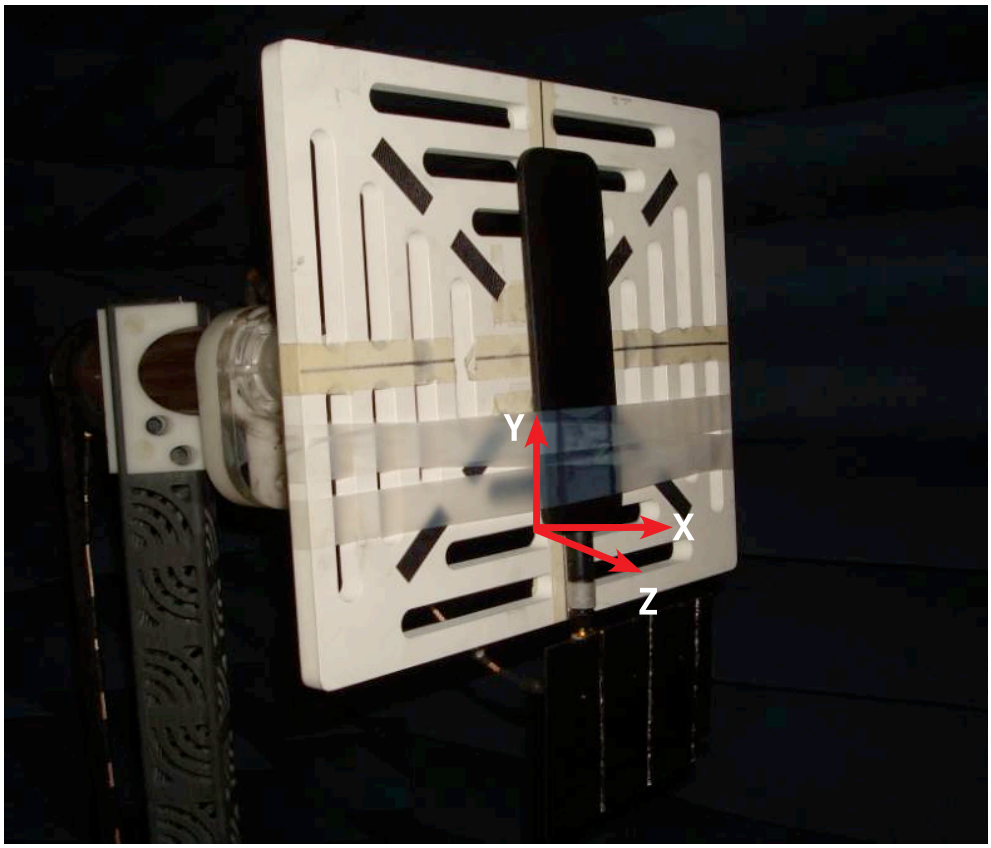
XZ Plane



YZ Plane



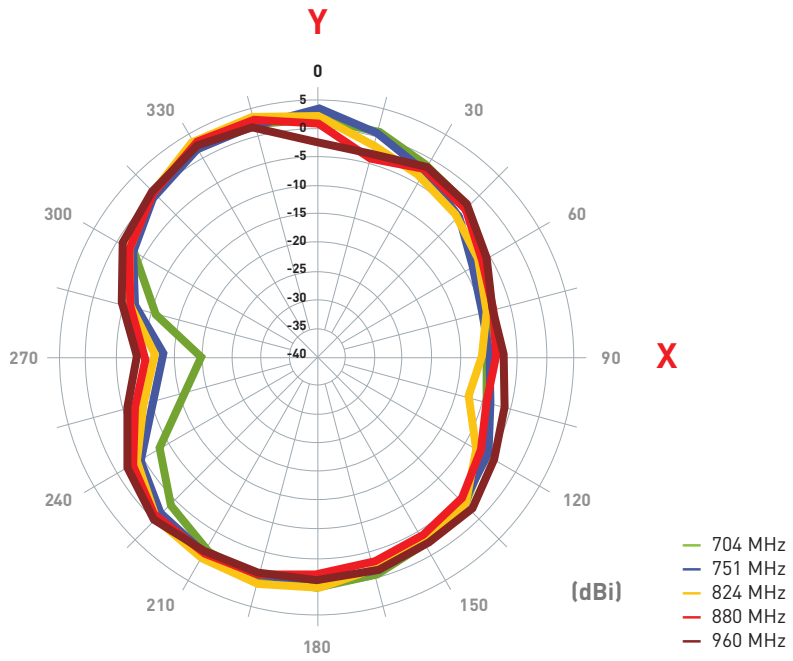
4.5 Antenna setup - Antenna bent 90 with 90mmx150mm ground plane



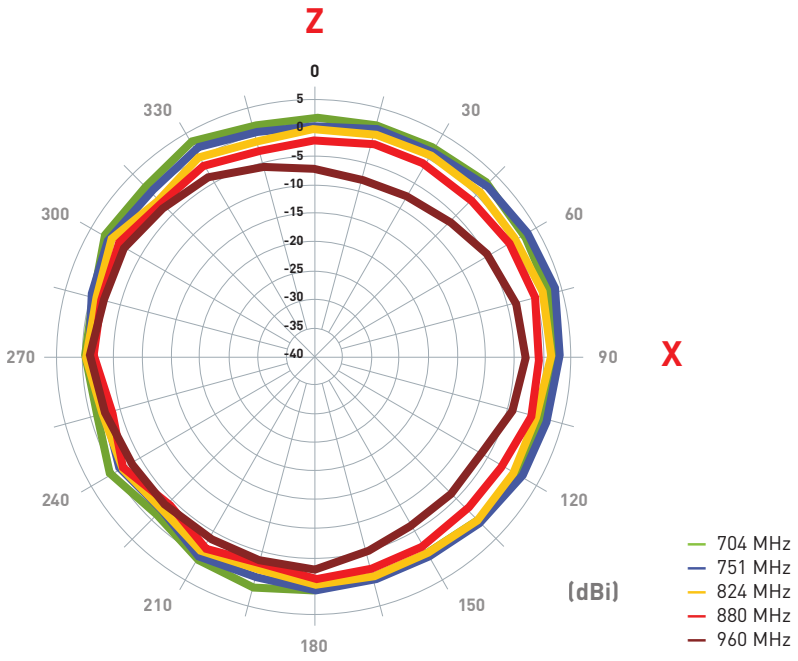
4.6 Antenna radiation patterns

4.6.1 Antenna bent 90 with 90mmx150mm ground plane

XY Plane

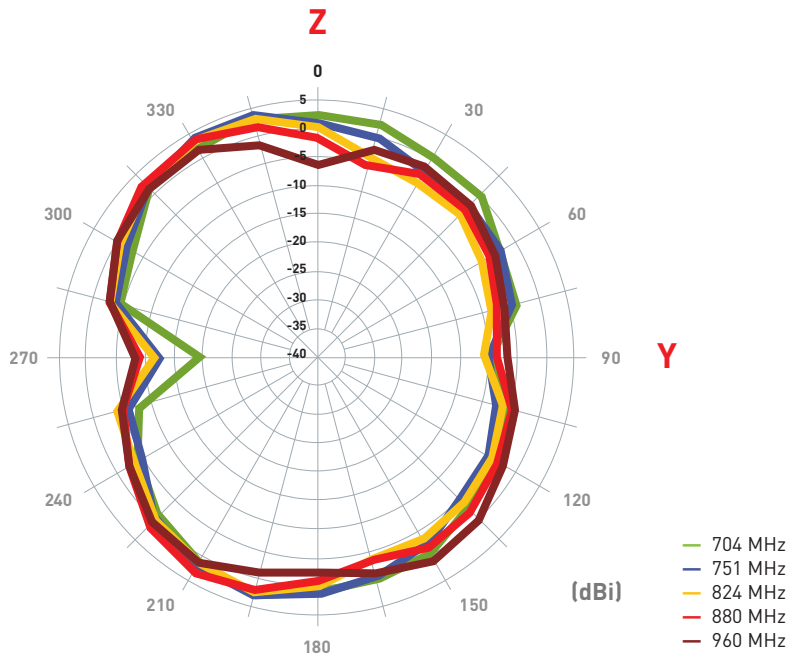


XZ Plane

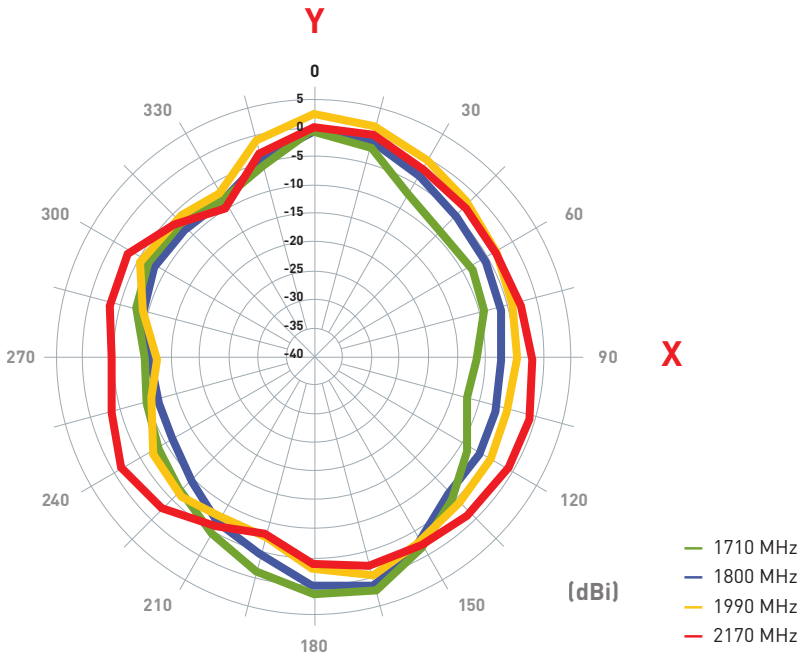


4.6.1 Antenna bent 90 with 90mmx150mm ground plane

YZ Plane

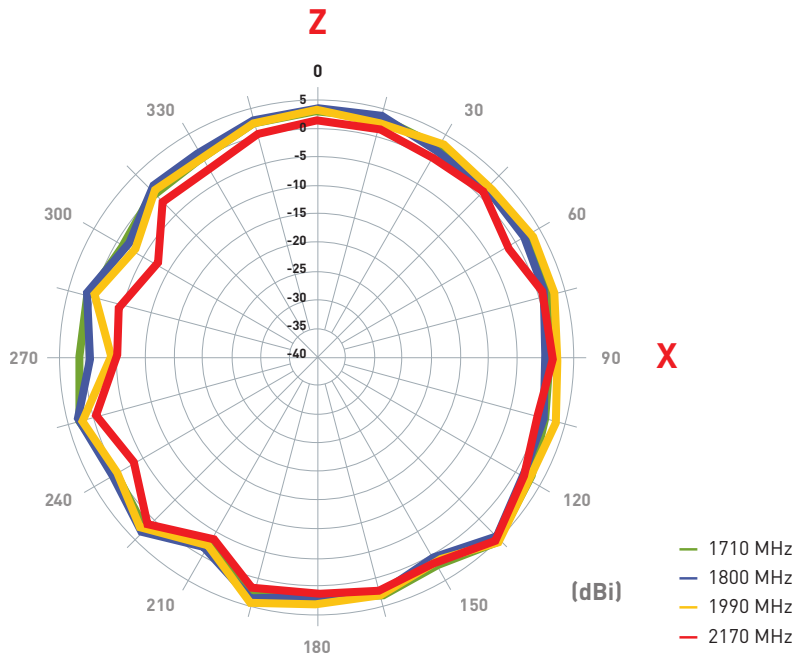


XY Plane

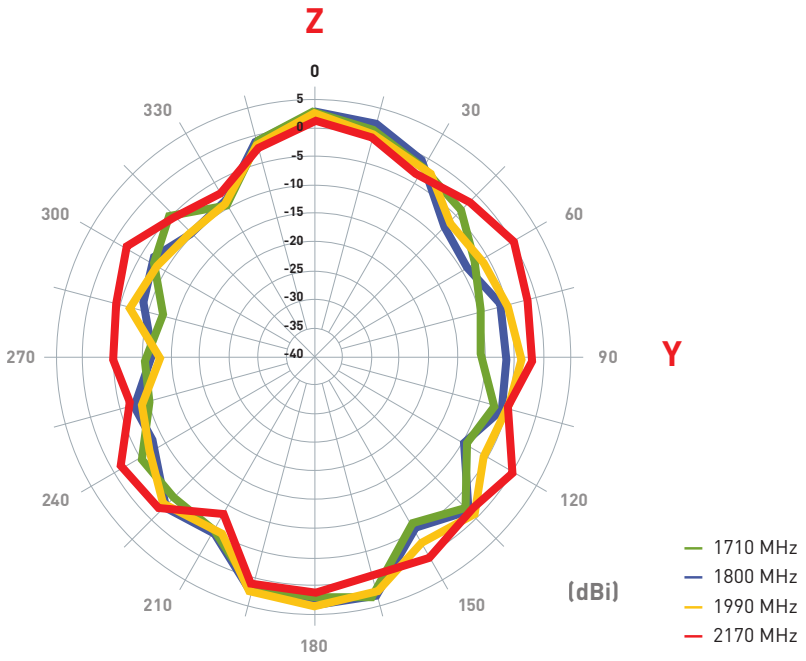


4.6.1 Antenna bent 90 with 90mmx150mm ground plane

XZ Plane

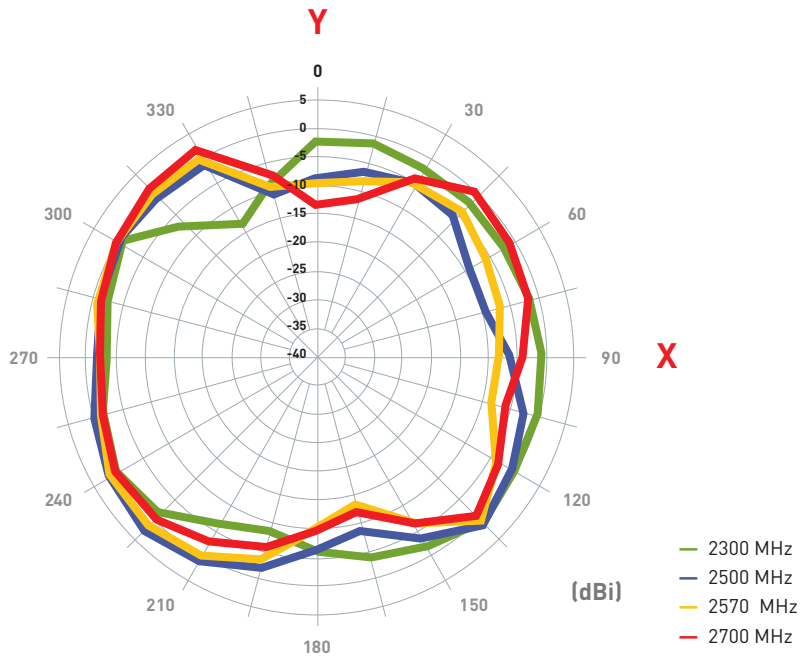


YZ Plane

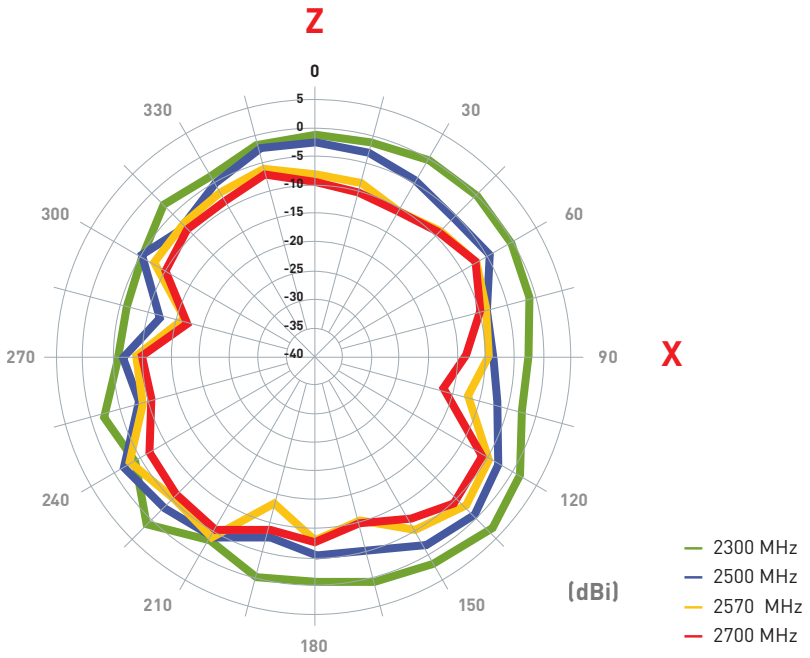


4.6.1 Antenna bent 90 with 90mmx150mm ground plane

XY Plane

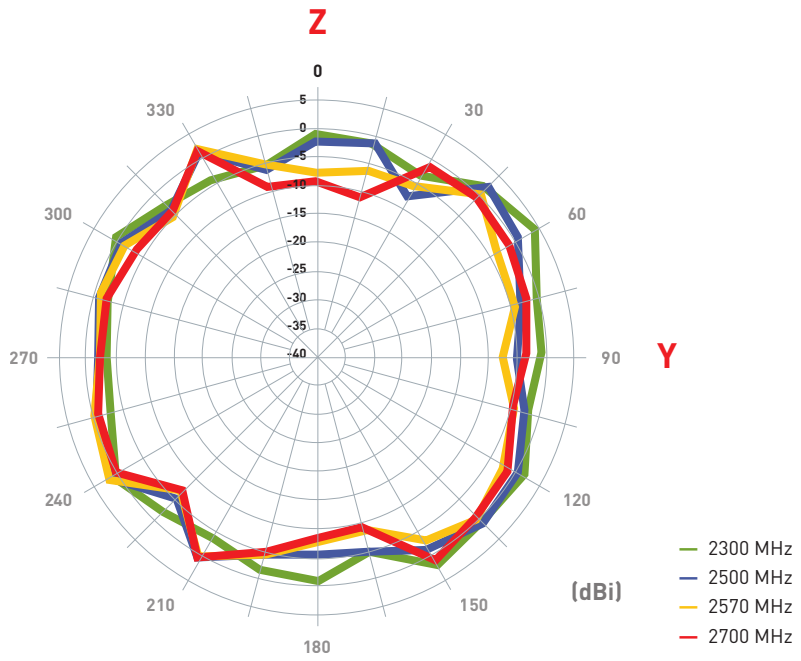


XZ Plane

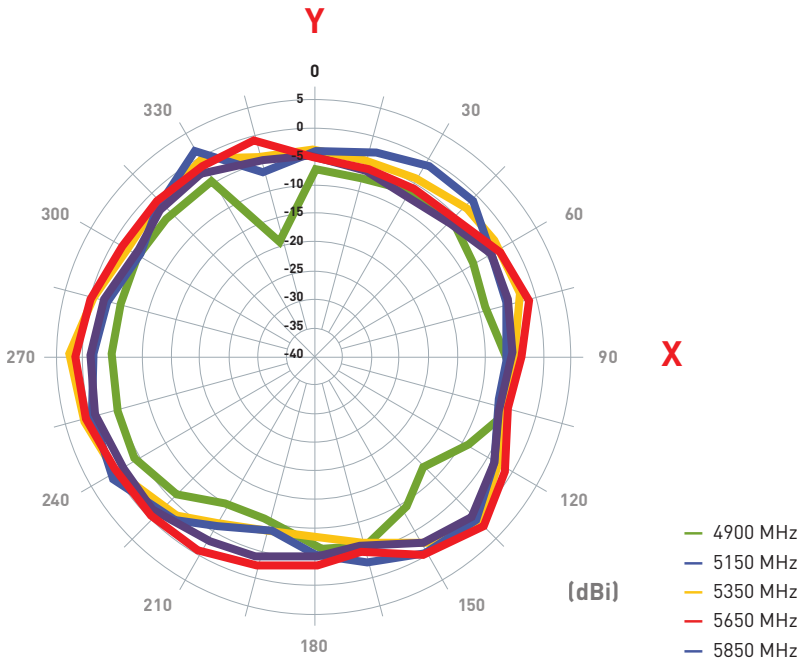


4.6.1 Antenna bent 90 with 90mmx150mm ground plane

YZ Plane

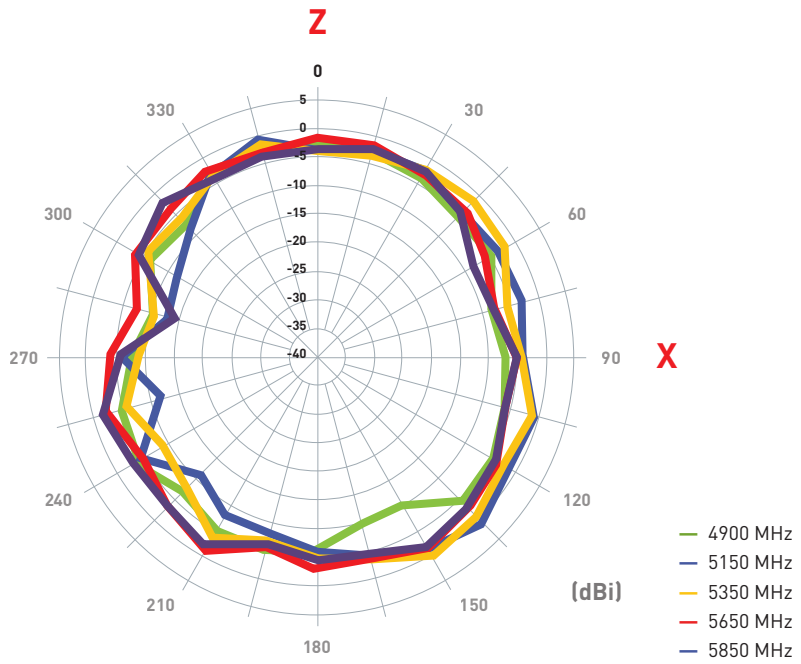


XY Plane

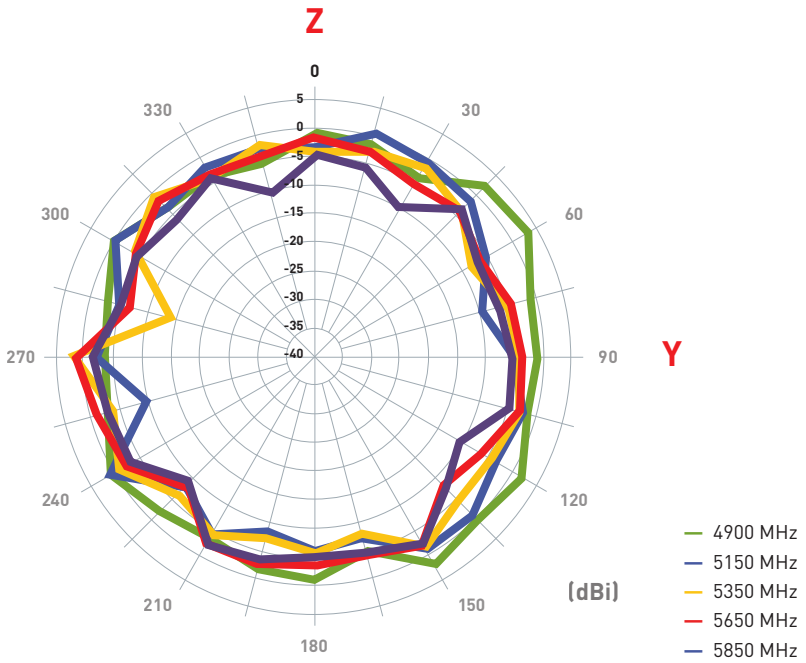


4.6.1 Antenna bent 90 with 90mmx150mm ground plane

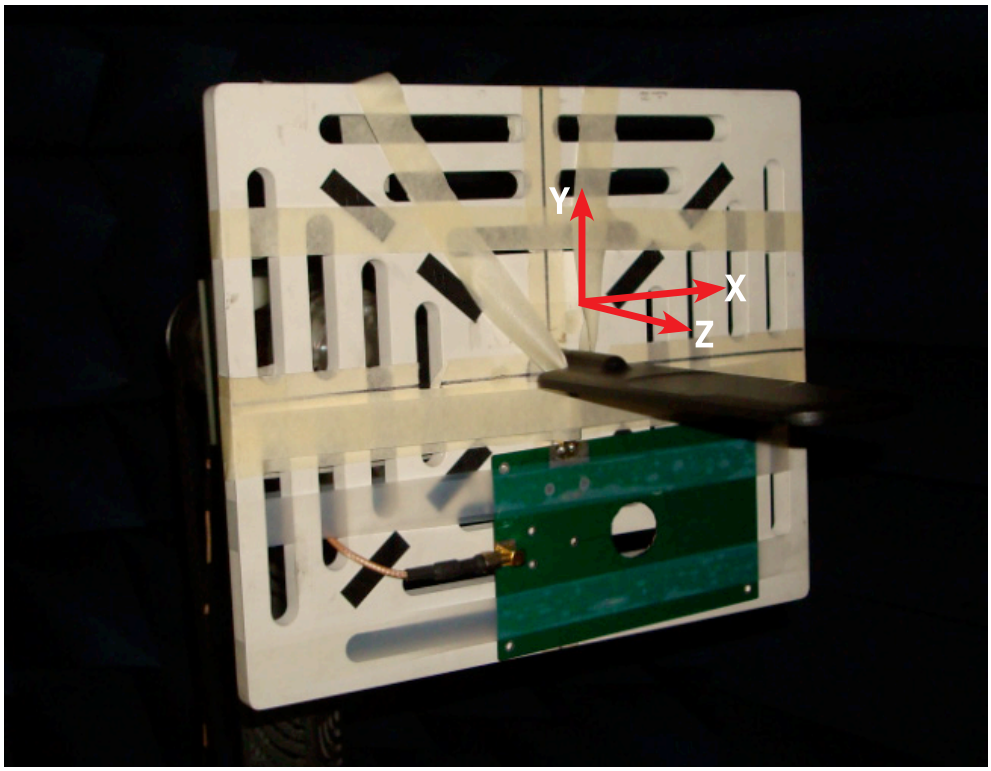
XZ Plane



YZ Plane



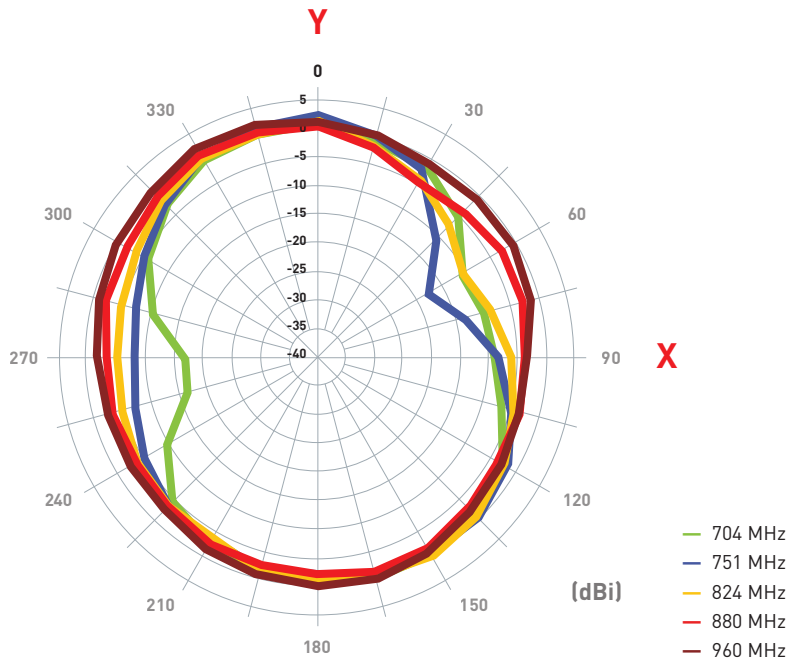
4.7 Antenna setup - Antenna bent 90 with 90mmx150mm ground plane



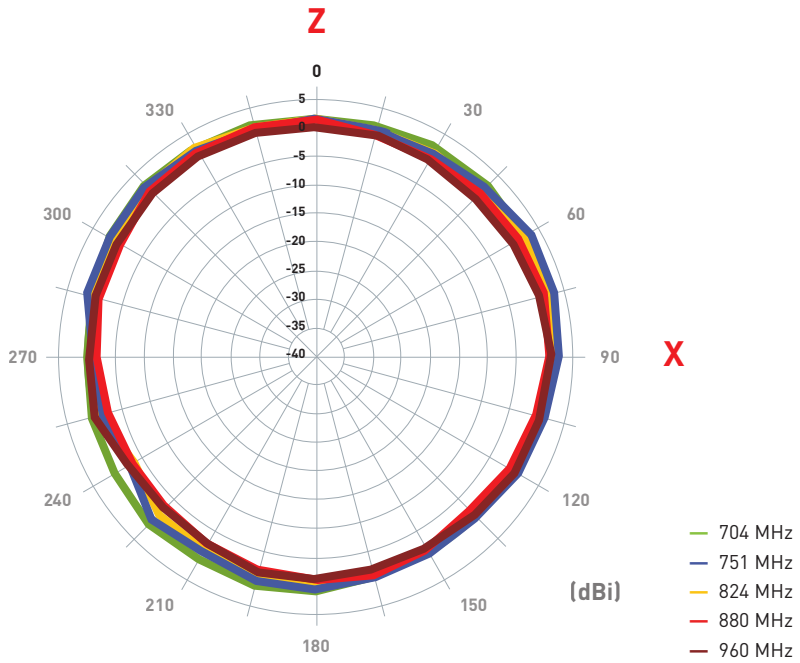
4.8 Antenna radiation patterns

4.8.1 Antenna bent 90 with 90mmx150mm ground plane

XY Plane

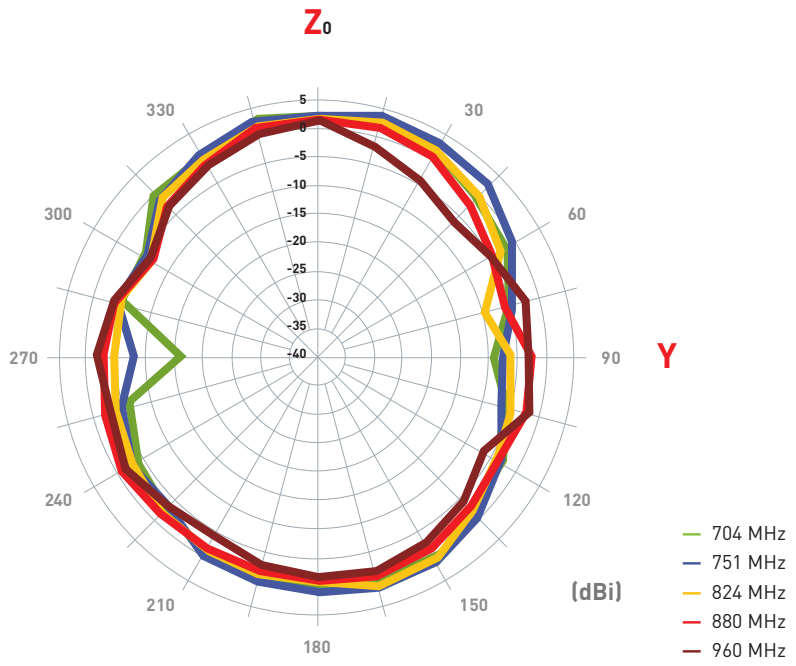


XZ Plane

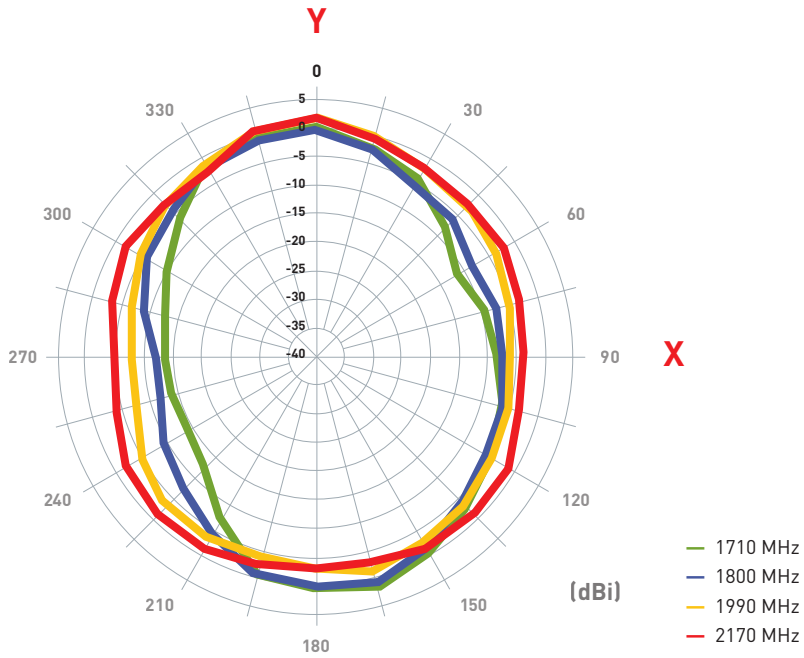


4.8.1 Antenna bent 90 with 90mmx150mm ground plane

YZ Plane

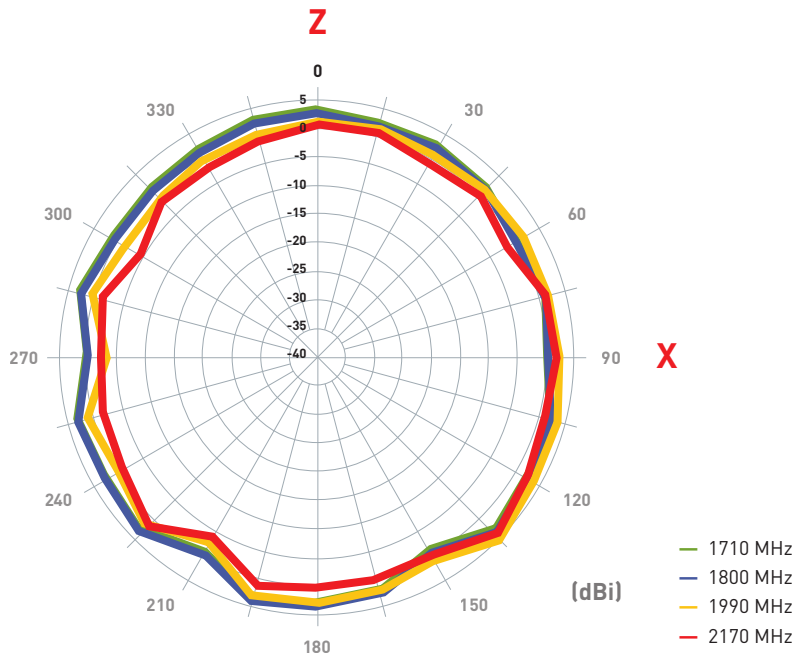


XY Plane

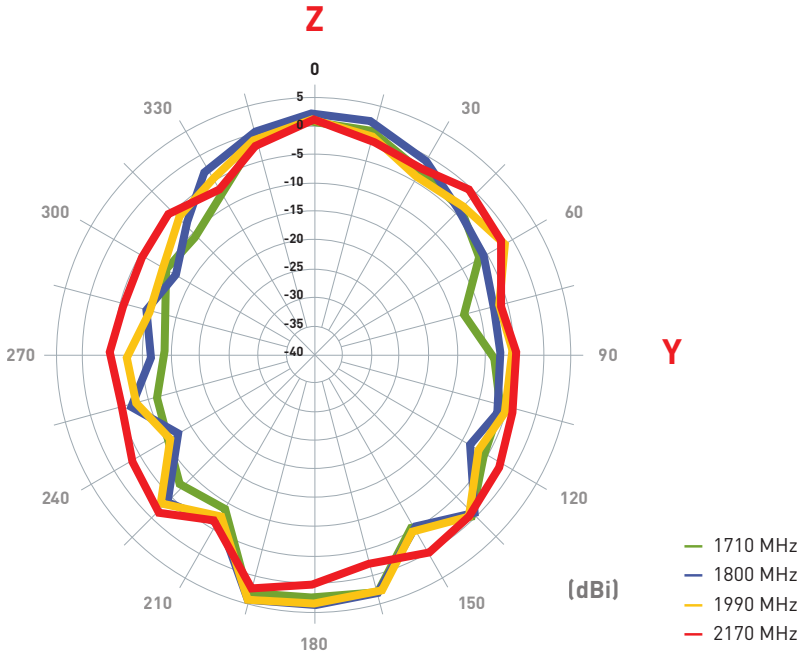


4.8.1 Antenna bent 90 with 90mmx150mm ground plane

XZ Plane

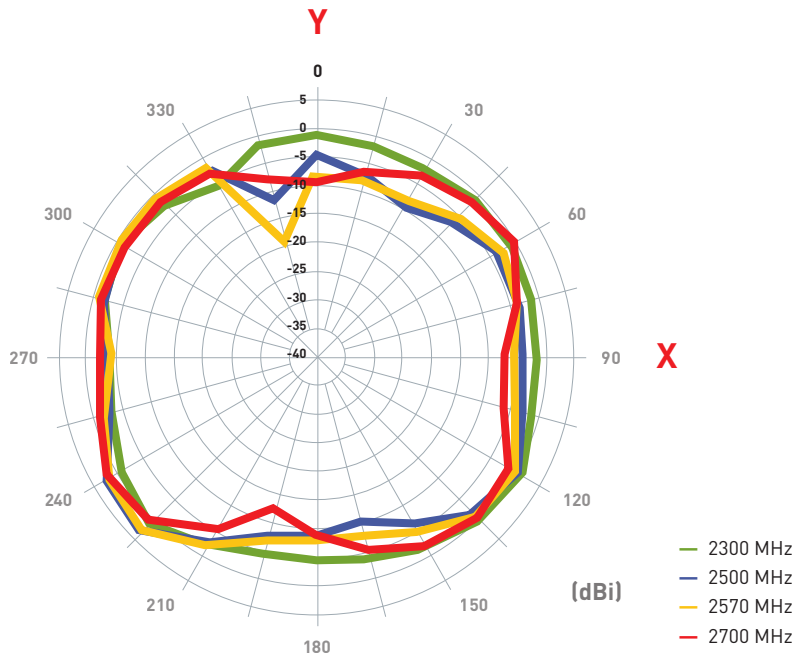


YZ Plane

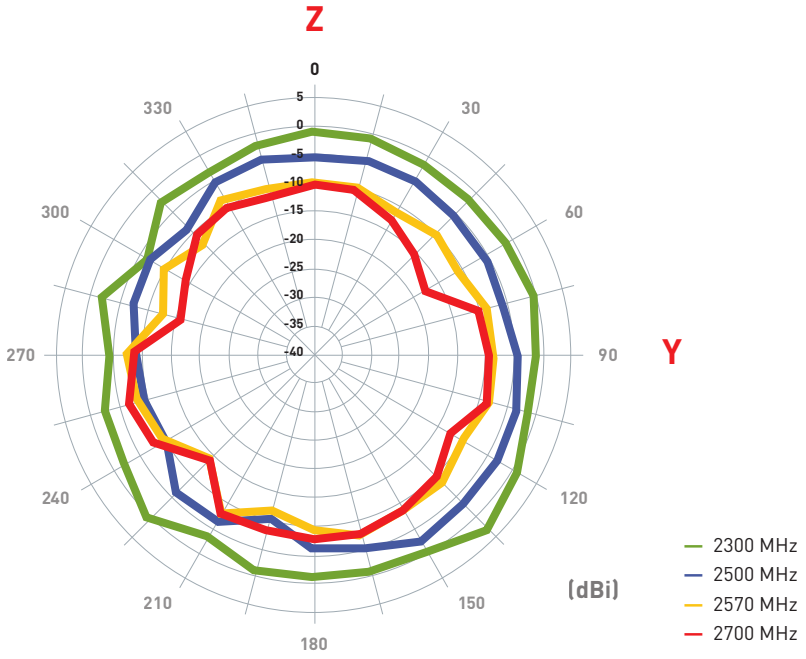


4.8.1 Antenna bent 90 with 90mmx150mm ground plane

XY Plane

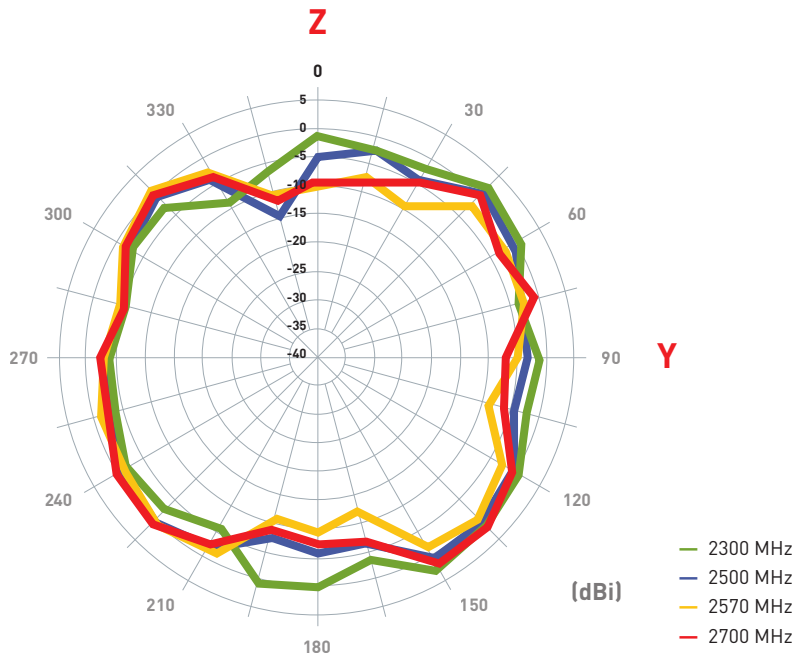


XZ Plane

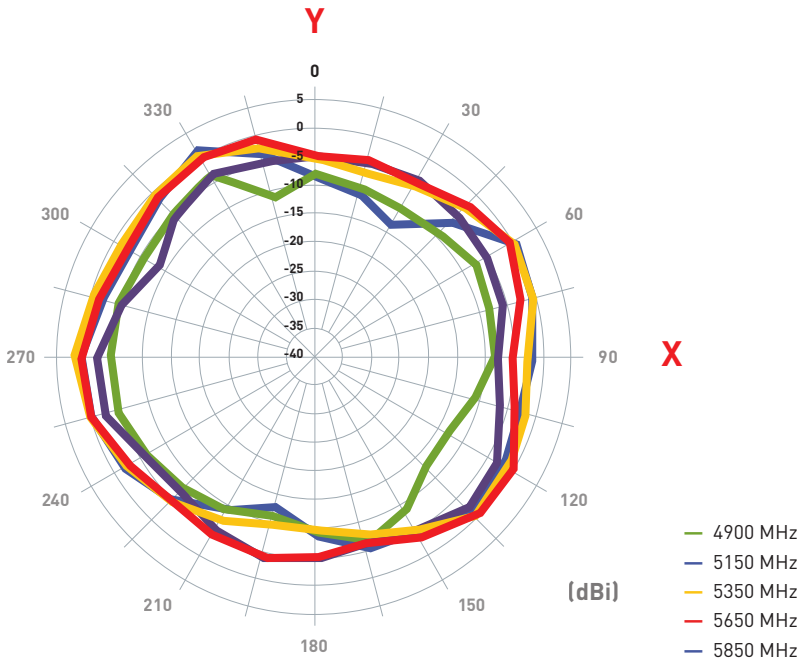


4.8.1 Antenna bent 90 with 90mmx150mm ground plane

YZ Plane

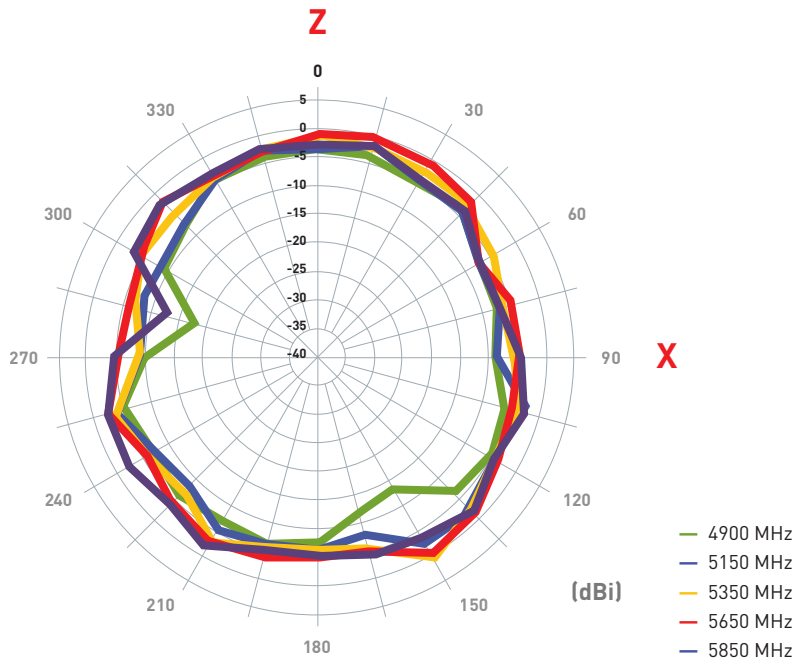


XY Plane

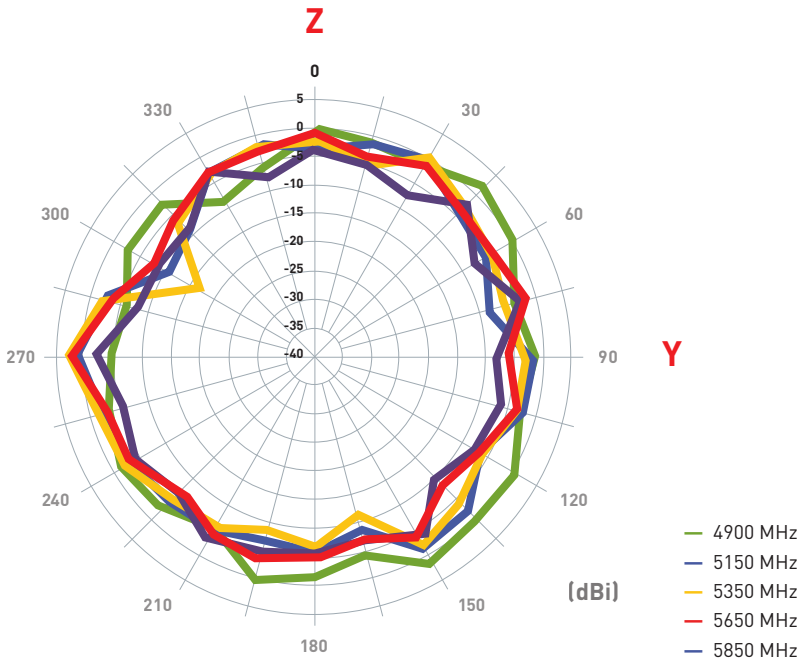


4.8.1 Antenna bent 90 with 90mmx150mm ground plane

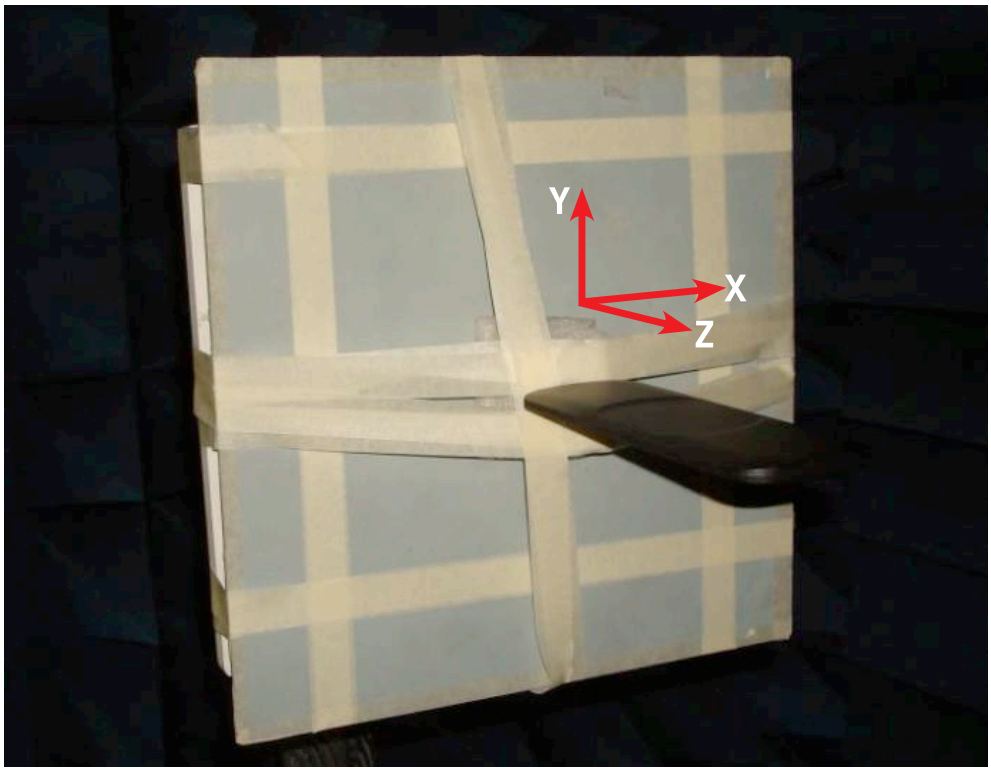
XZ Plane



YZ Plane



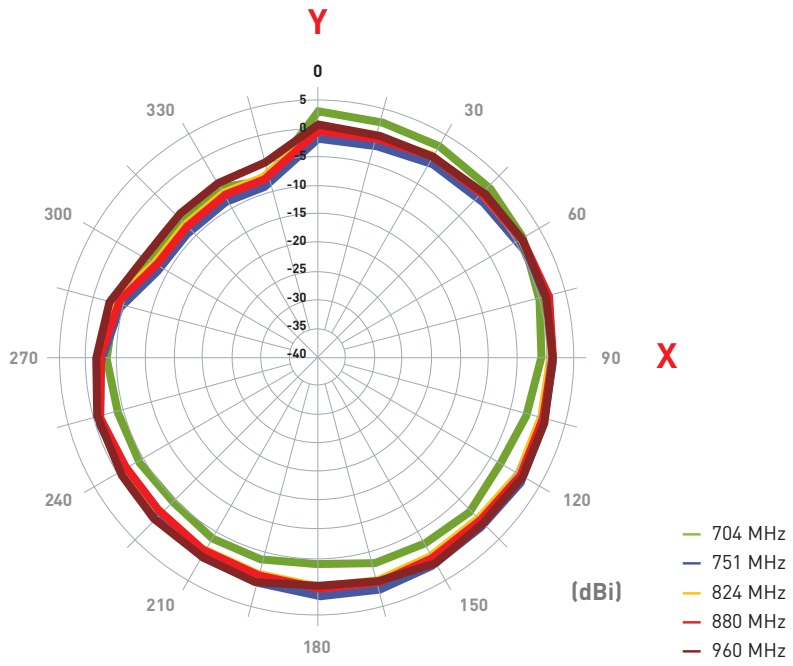
4.9 Antenna setup - Antenna straight with 30x30cm ground plane center



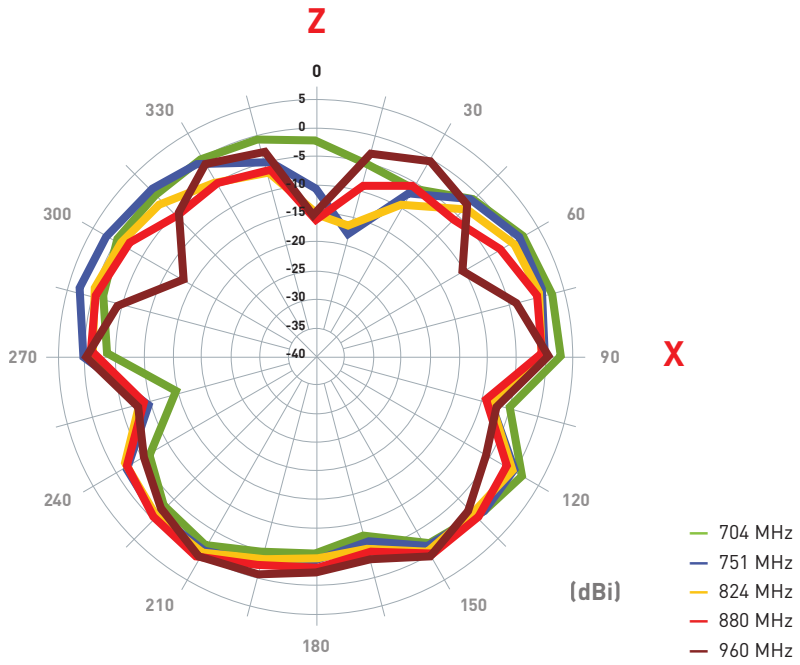
4.10 Antenna radiation patterns

4.10.1 Antenna straight with 30x30cm ground plane center

XY Plane

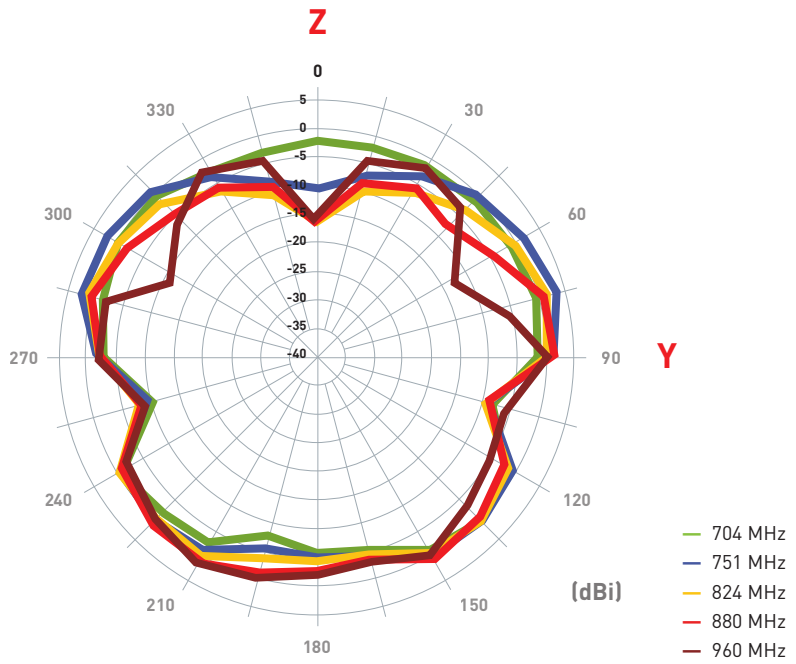


XZ Plane

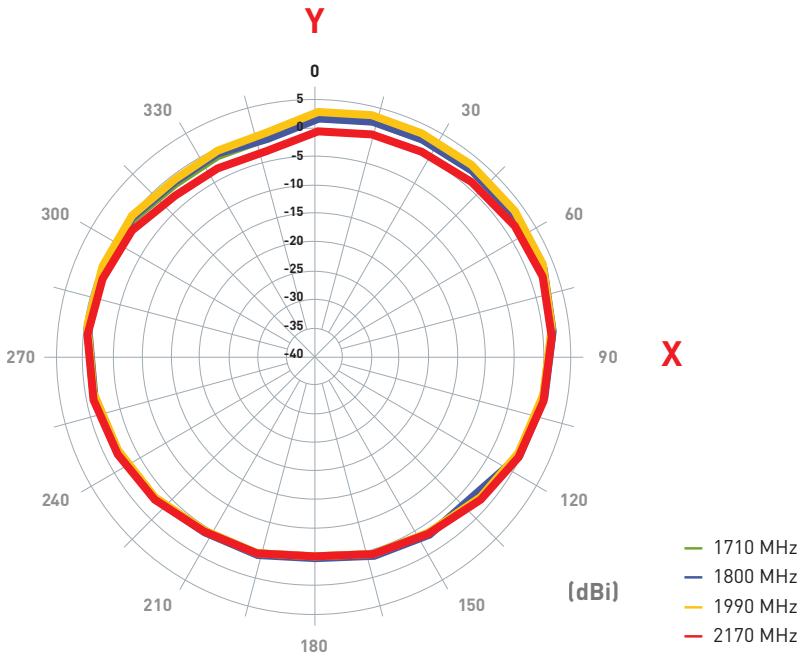


4.10.1 Antenna straight with 30x30cm ground plane center

YZ Plane

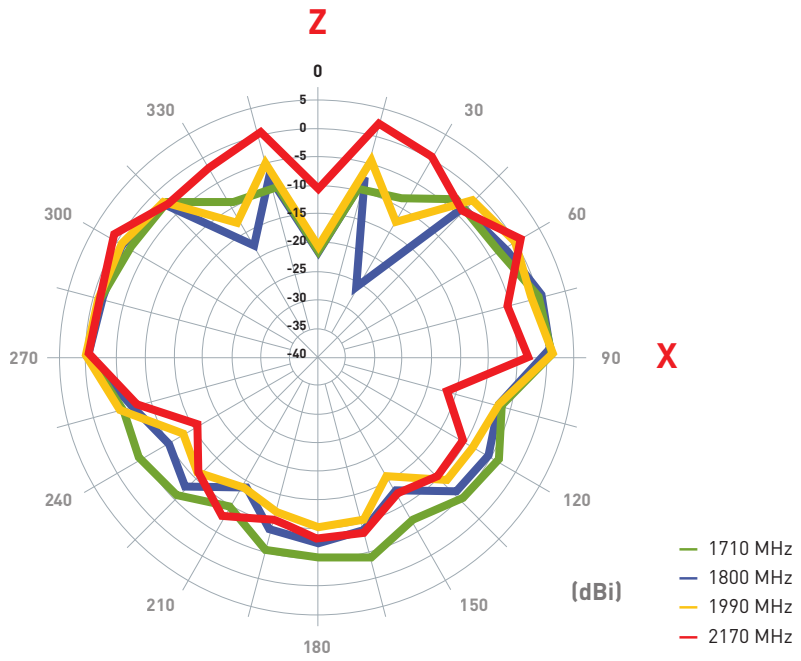


XY Plane

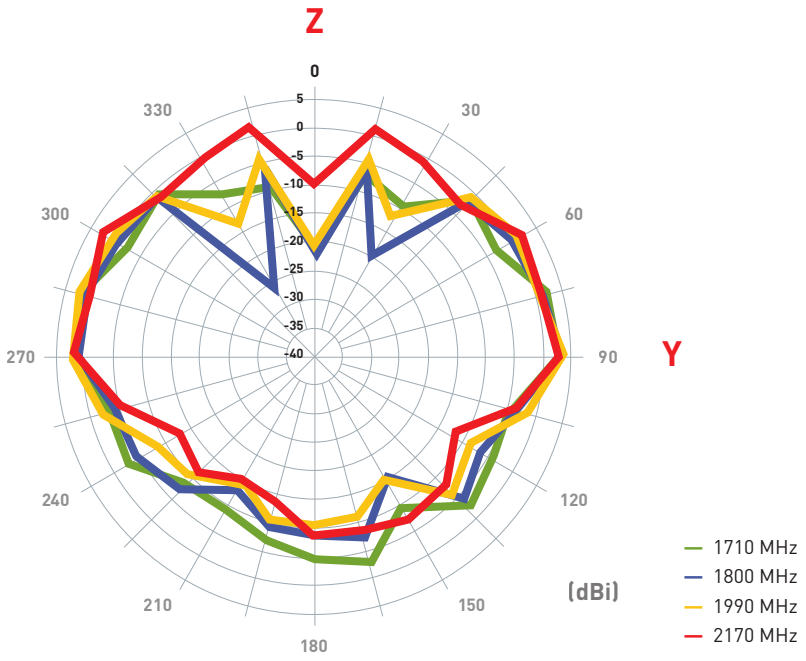


4.10.1 Antenna straight with 30x30cm ground plane center

XZ Plane

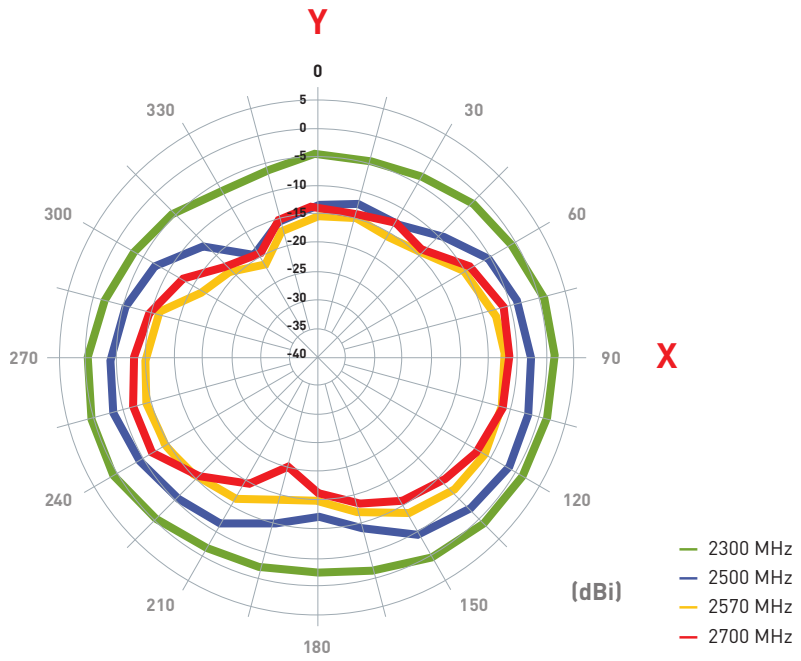


YZ Plane

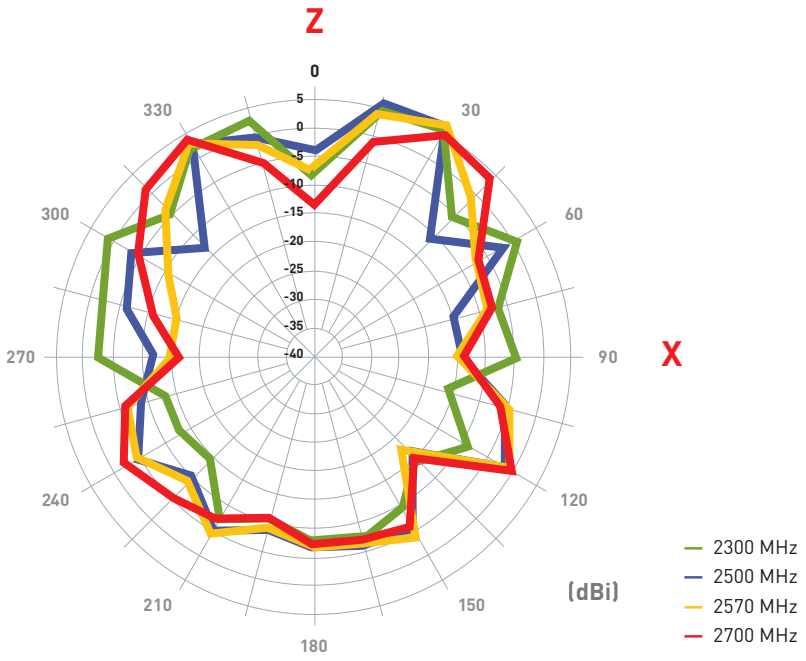


4.10.1 Antenna straight with 30x30cm ground plane center

XY Plane

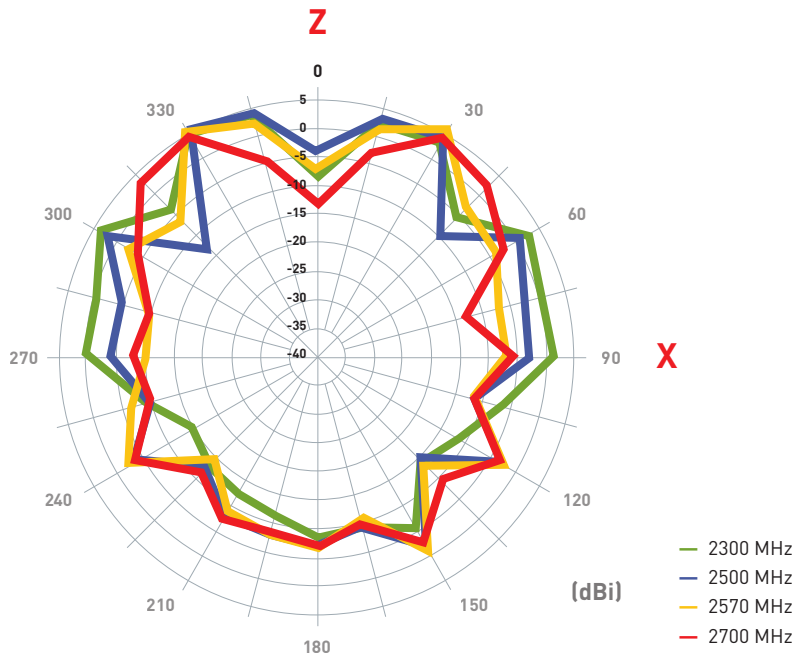


XZ Plane

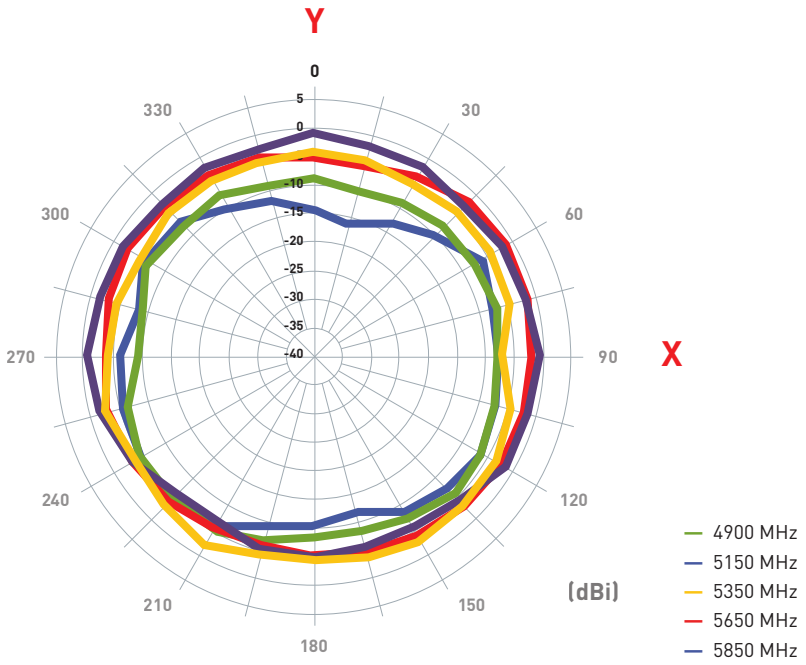


4.10.1 Antenna straight with 30x30cm ground plane center

YZ Plane

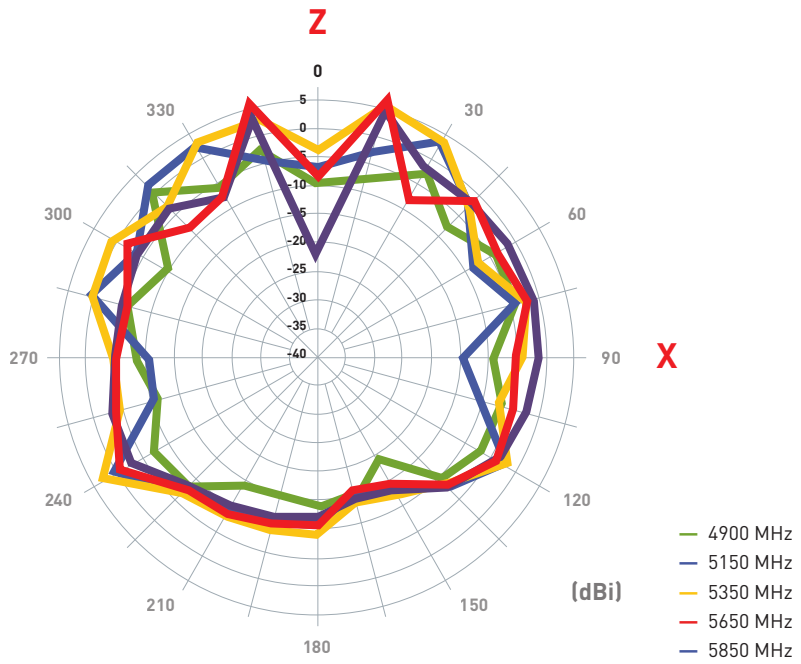


XY Plane

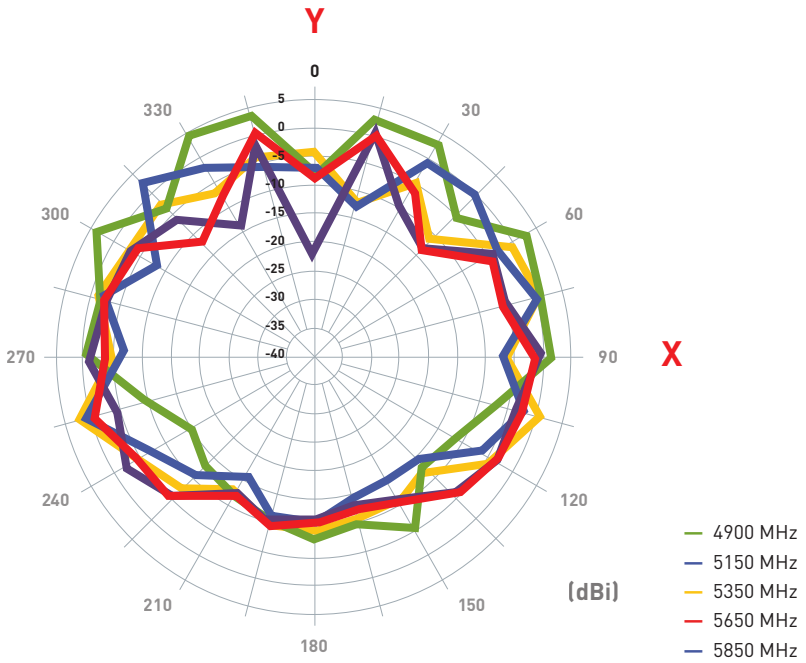


4.10.1 Antenna straight with 30x30cm ground plane center

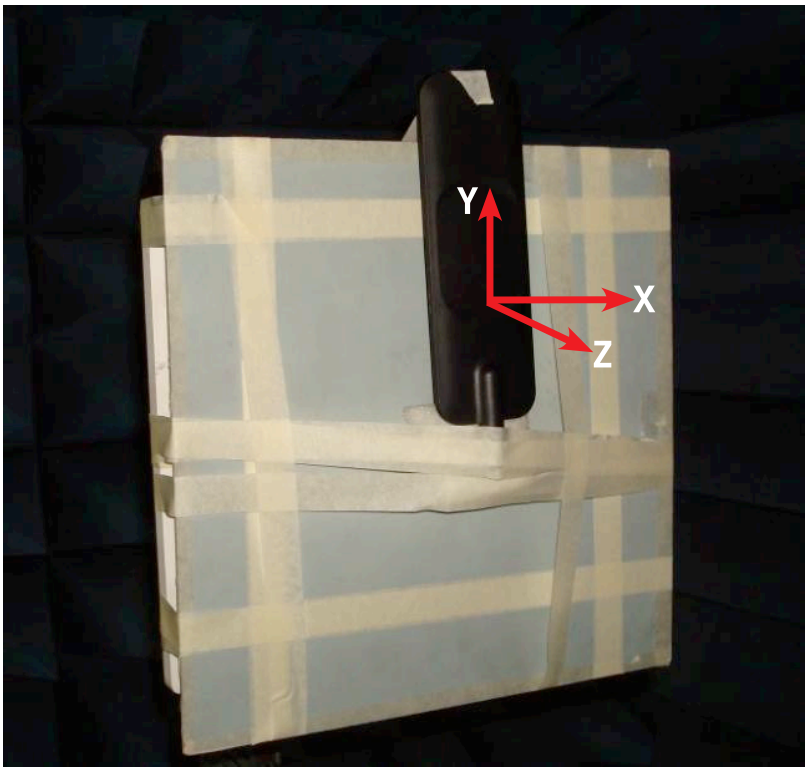
XZ Plane



YZ Plane



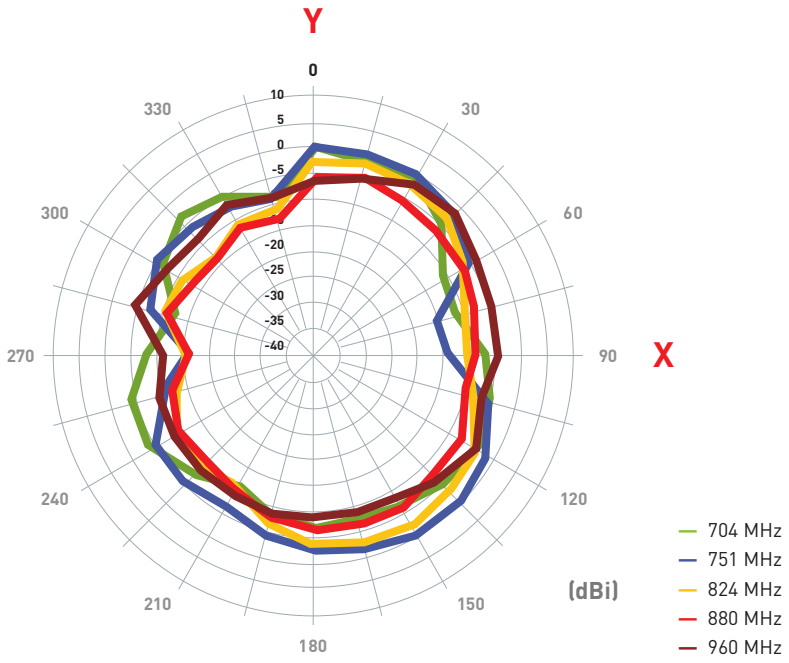
4.11 Antenna setup - Antenna bent 90 with 30x30cm ground plane center



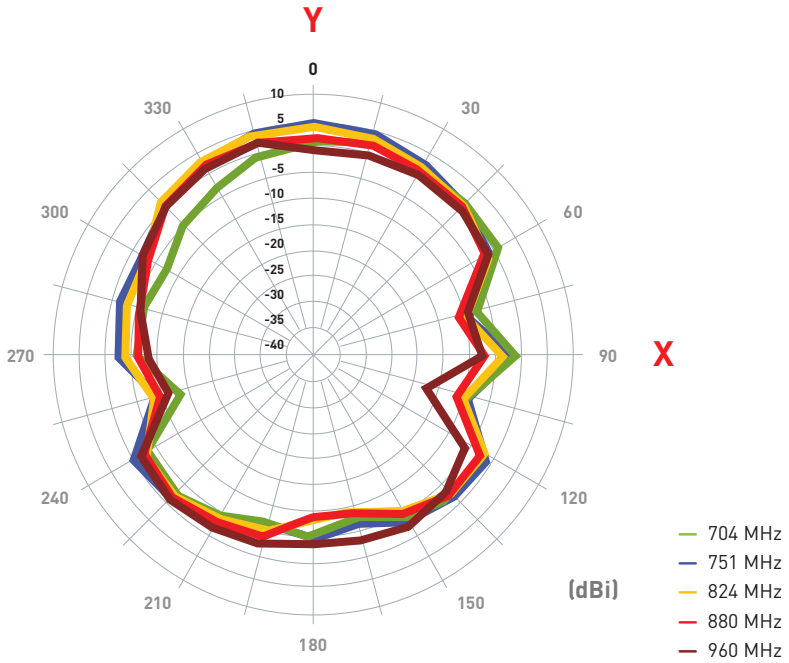
4.12 Antenna radiation patterns

4.12.1 Antenna bent 90 with 30x30cm ground plane center

XY Plane

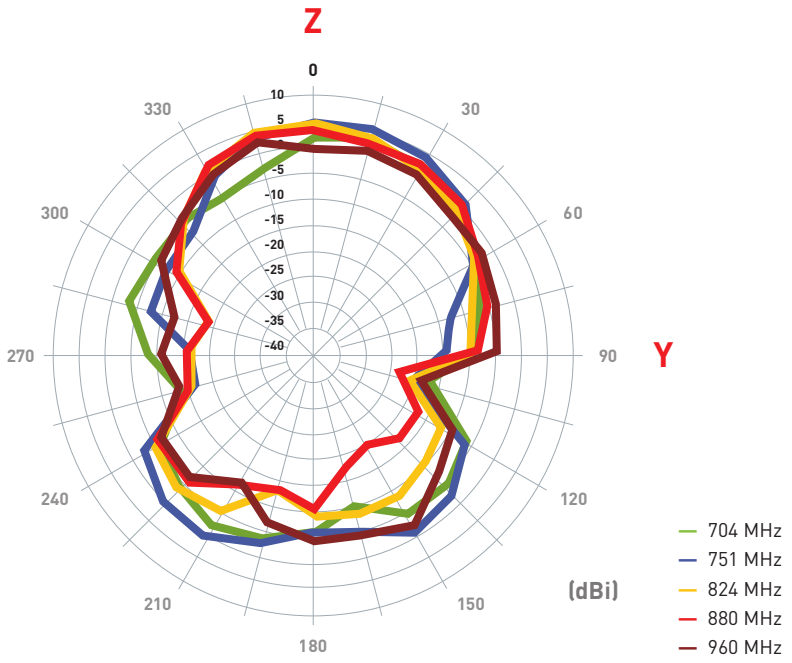


XZ Plane

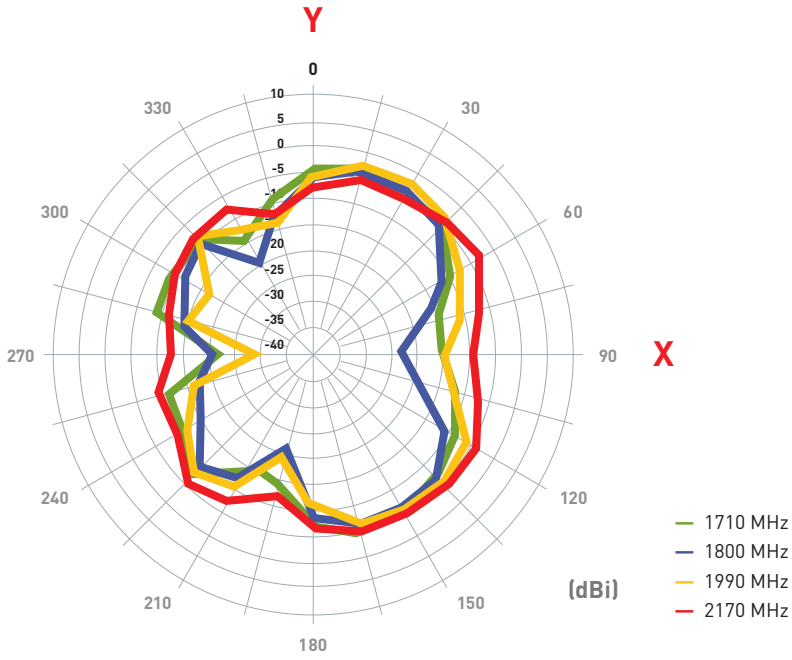


4.12.1 Antenna bent 90 with 30x30cm ground plane center

YZ Plane

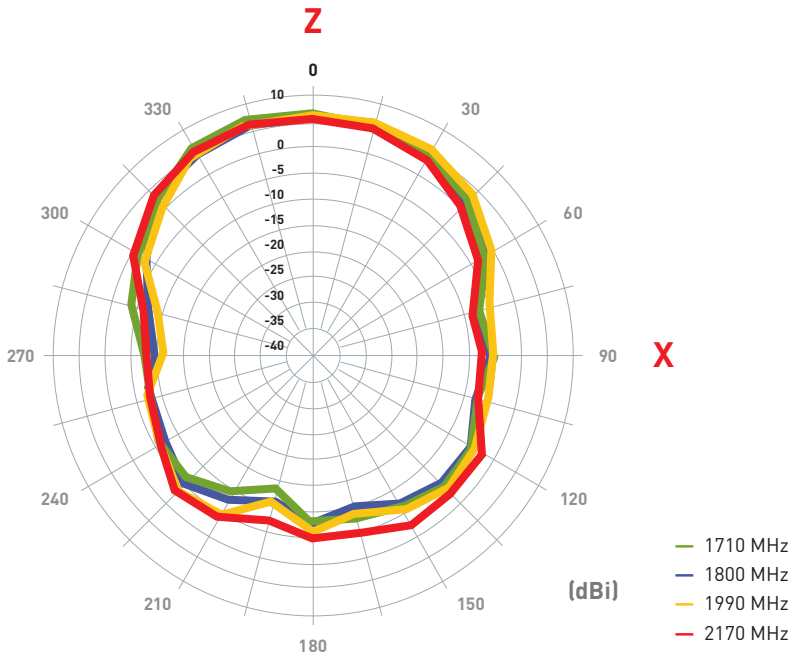


XY Plane

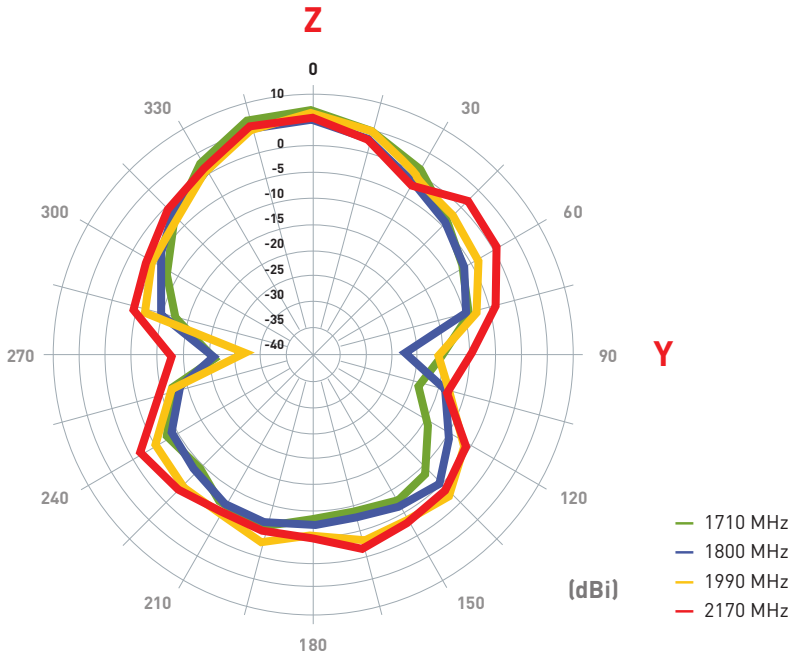


4.12.1 Antenna bent 90 with 30x30cm ground plane center

XZ Plane

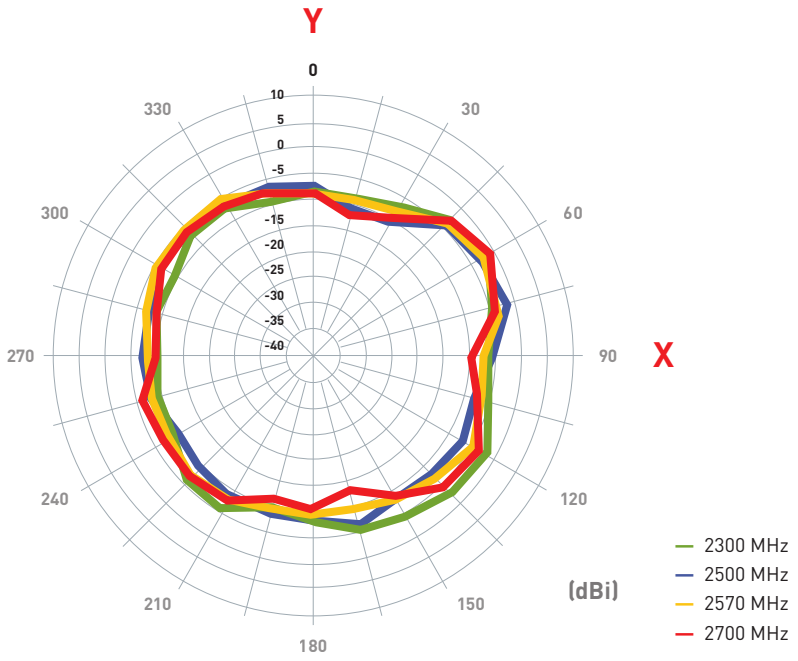


ZY Plane

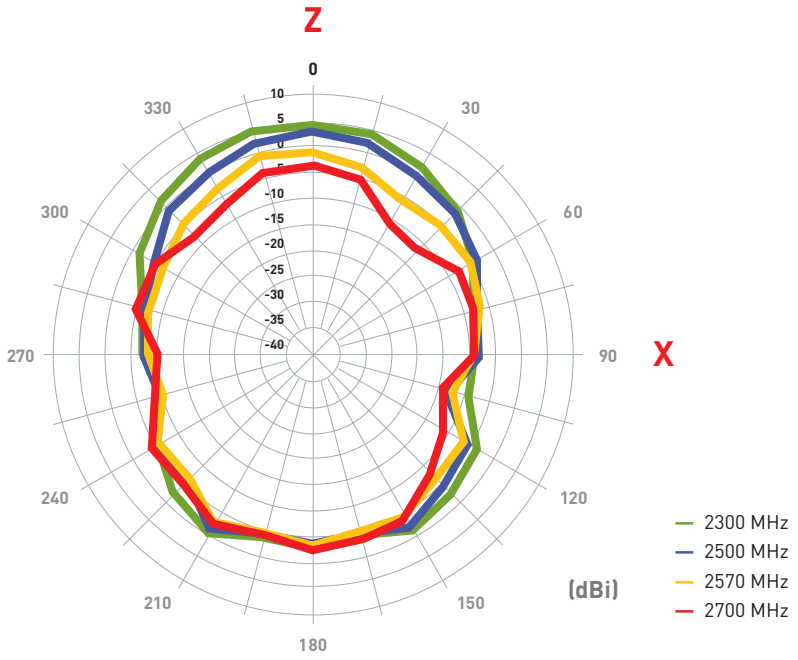


4.12.1 Antenna bent 90 with 30x30cm ground plane center

XY Plane

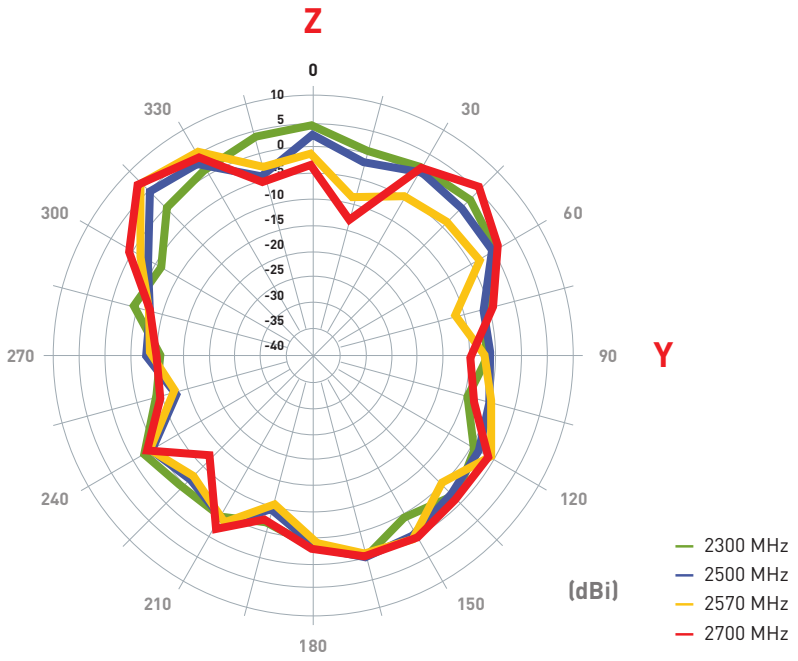


XZ Plane

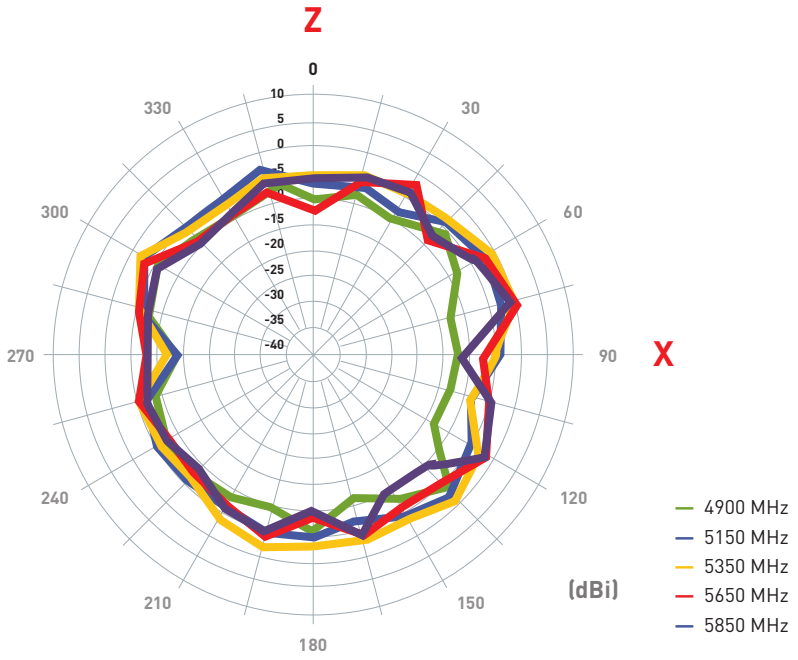


4.12.1 Antenna bent 90 with 30x30cm ground plane center

YZ Plane

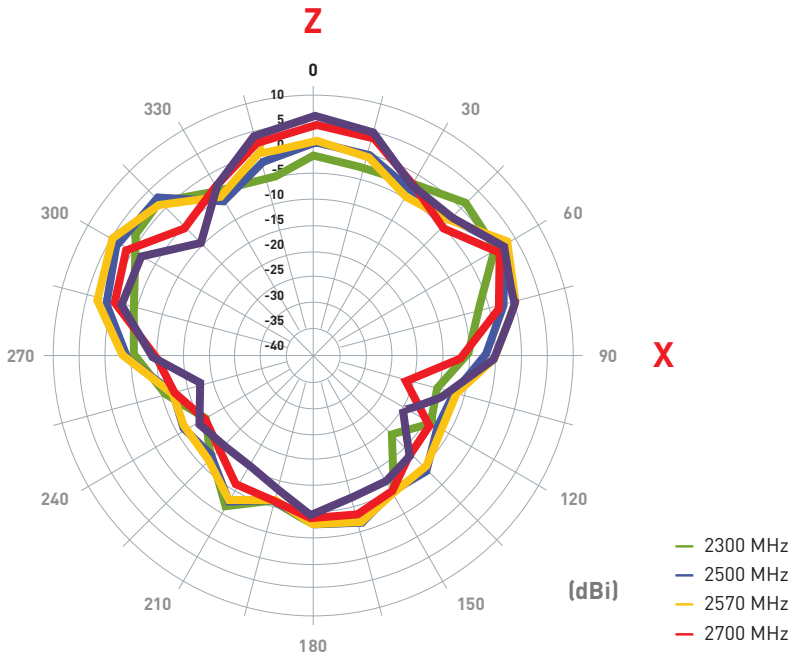


XY Plane

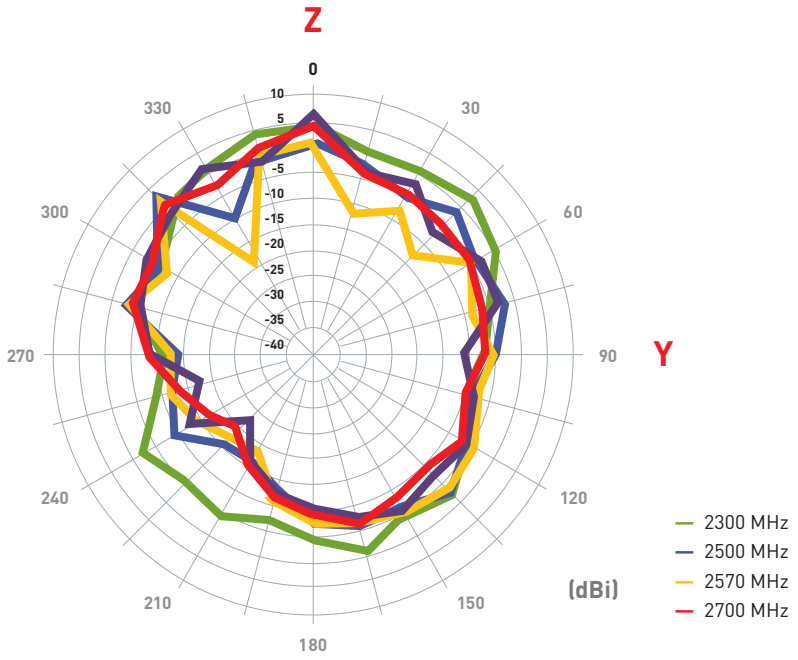


4.12.1 Antenna bent 90 with 30x30cm ground plane center

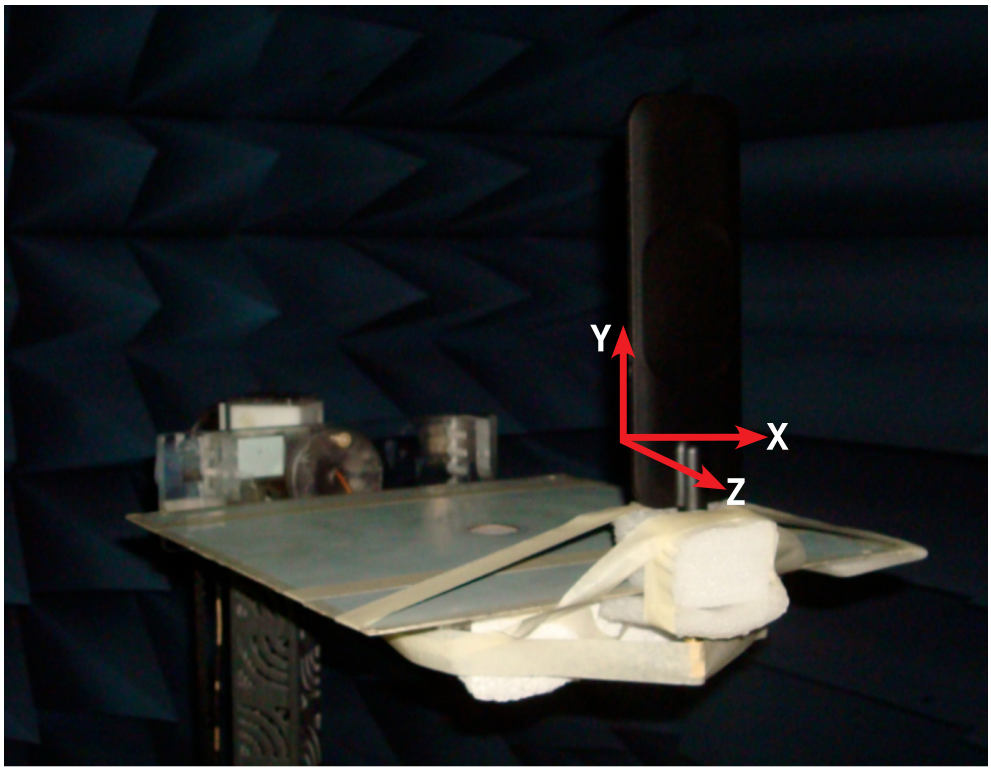
XZ Plane



YZ Plane



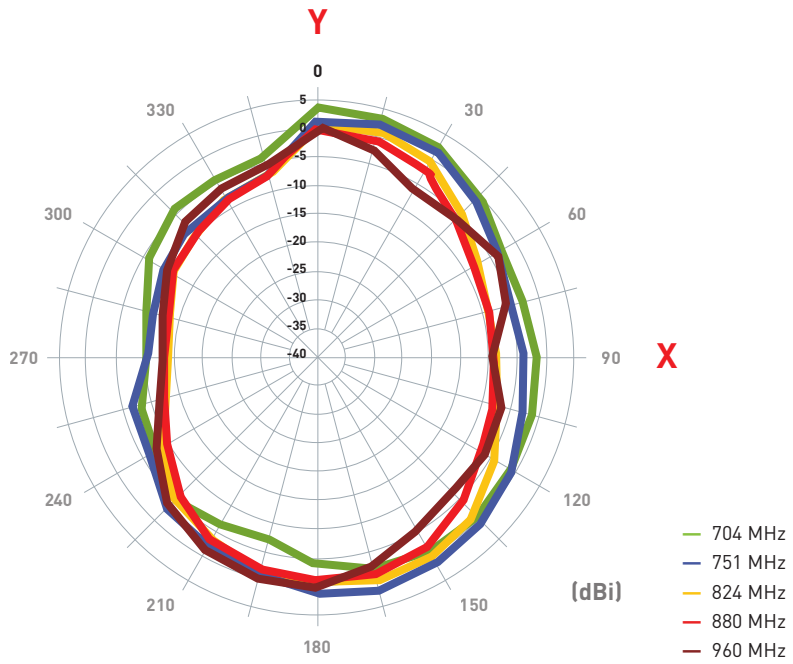
4.13 Antenna setup - Antenna straight with 30x30cm ground plane edge



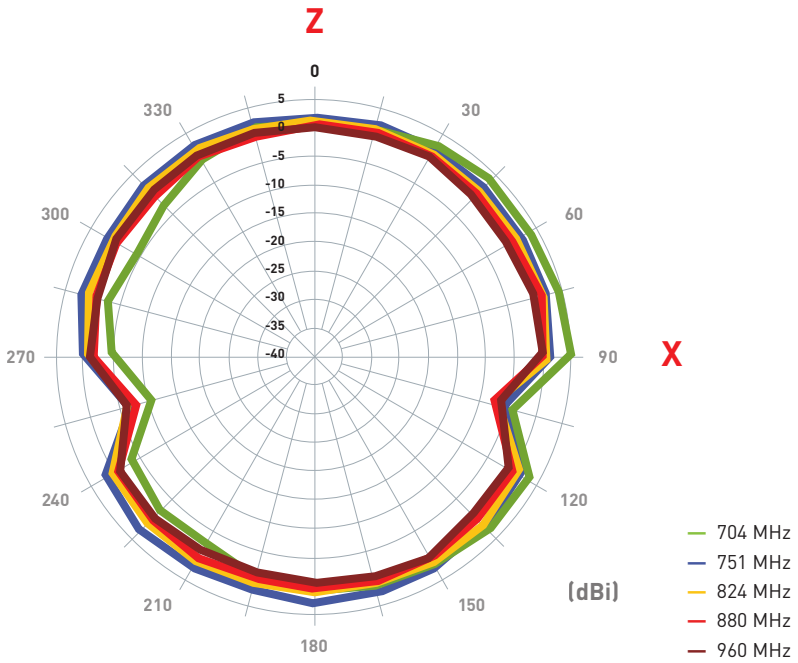
4.14 Antenna radiation patterns

4.14.1 Antenna straight with 30x30cm ground plane edge

XY Plane

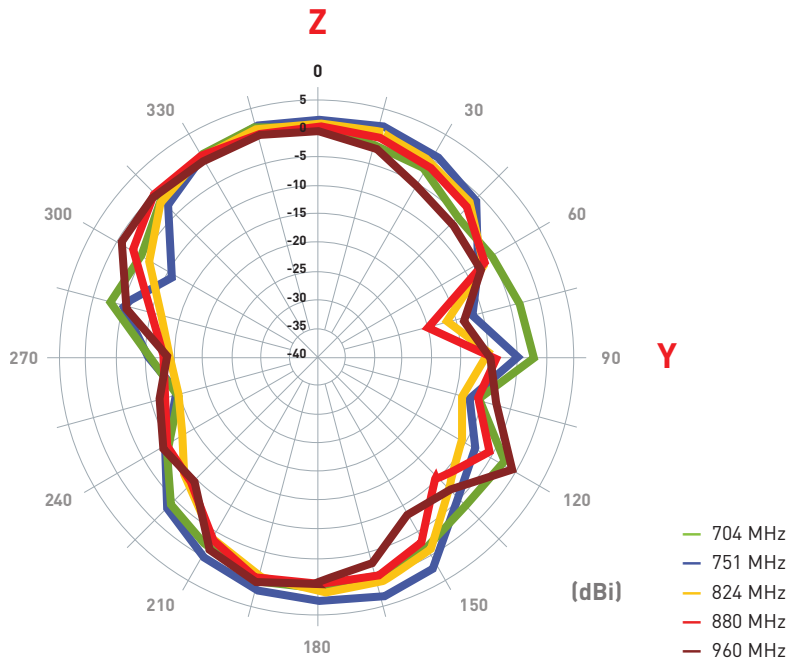


XZ Plane

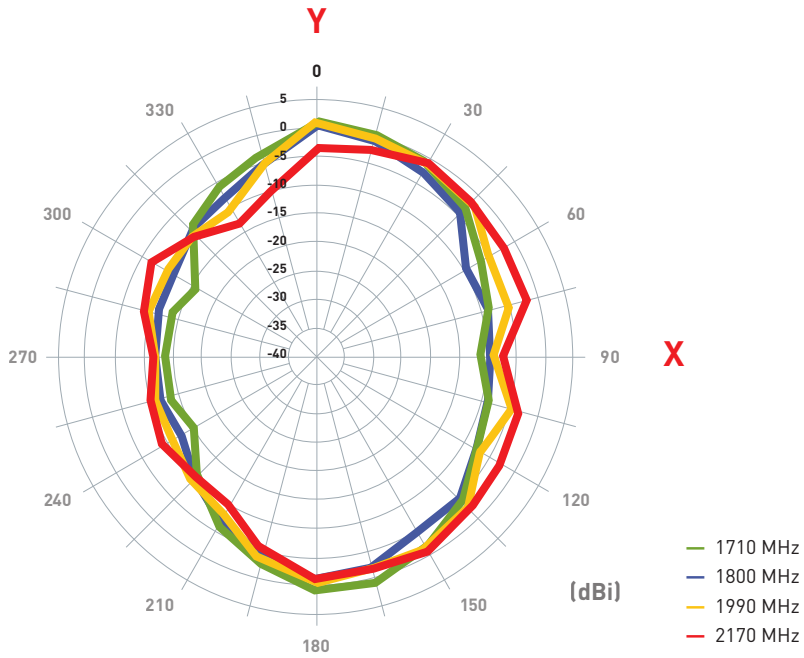


4.14.1 Antenna straight with 30x30cm ground plane edge

YZ Plane

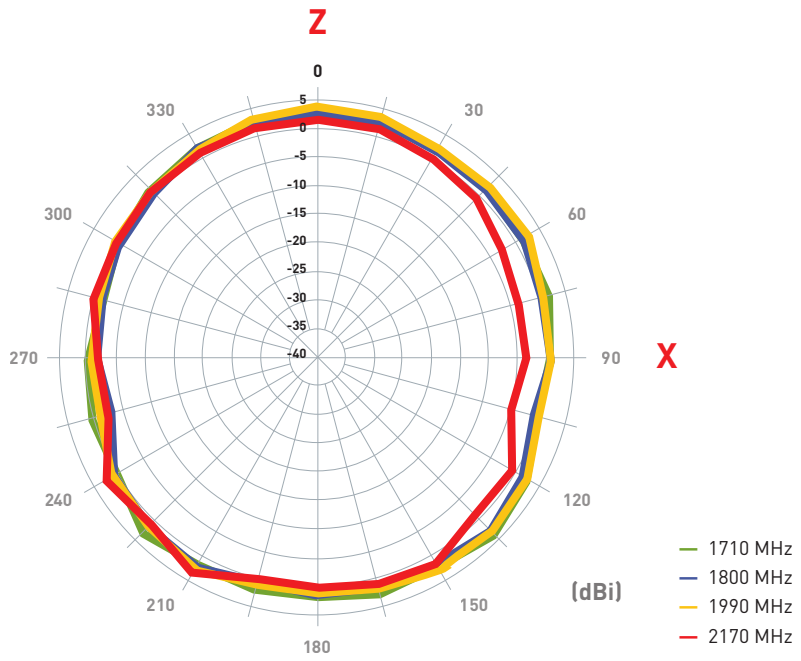


XY Plane

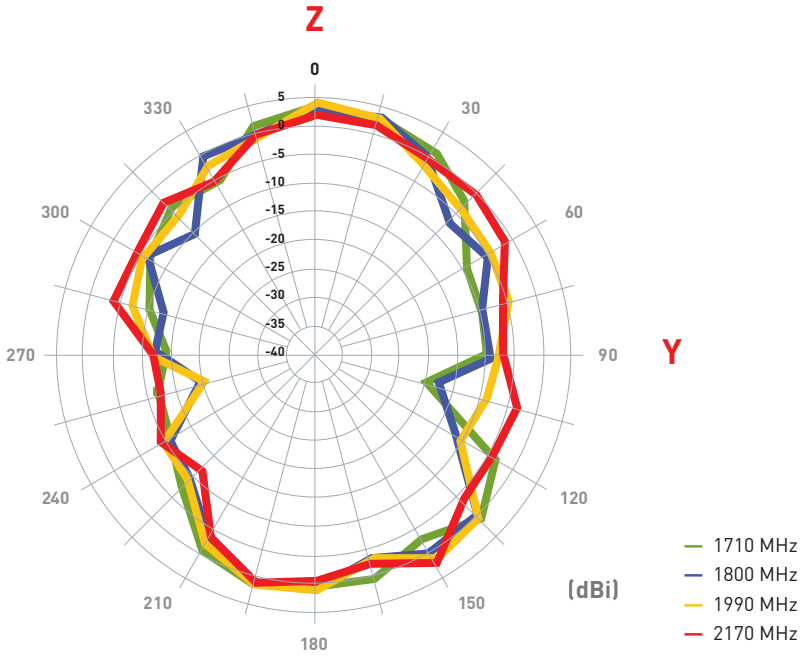


4.14.1 Antenna straight with 30x30cm ground plane edge

XZ Plane

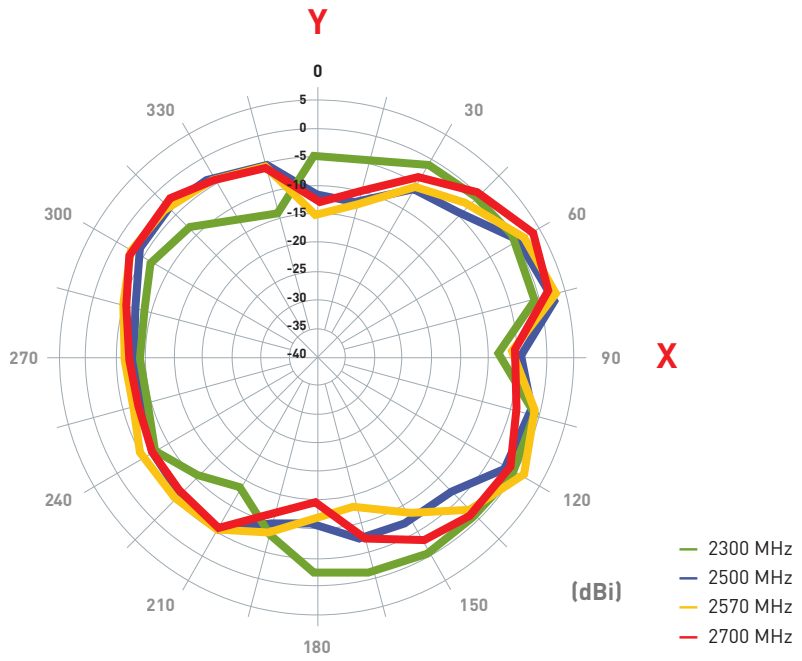


YZ Plane

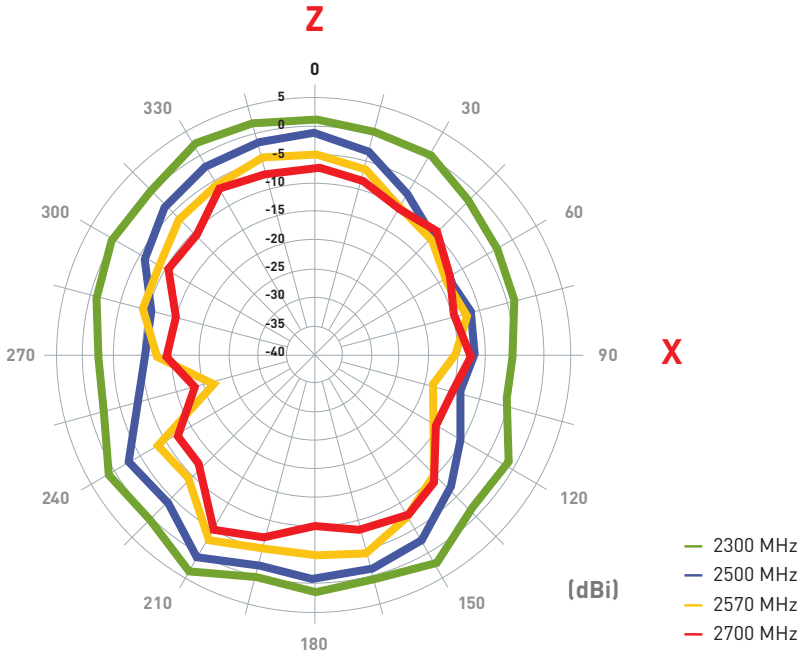


4.14.1 Antenna straight with 30x30cm ground plane edge

XY Plane

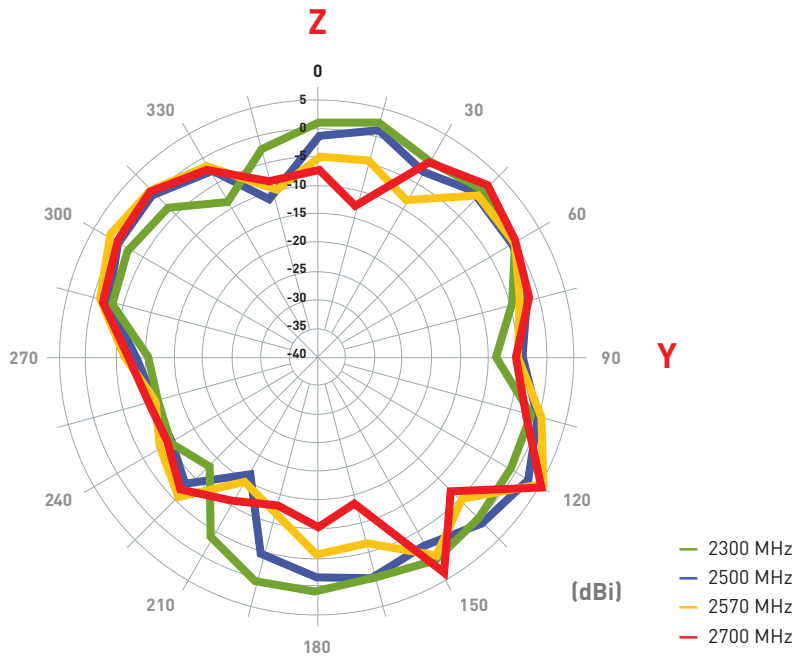


XZ Plane

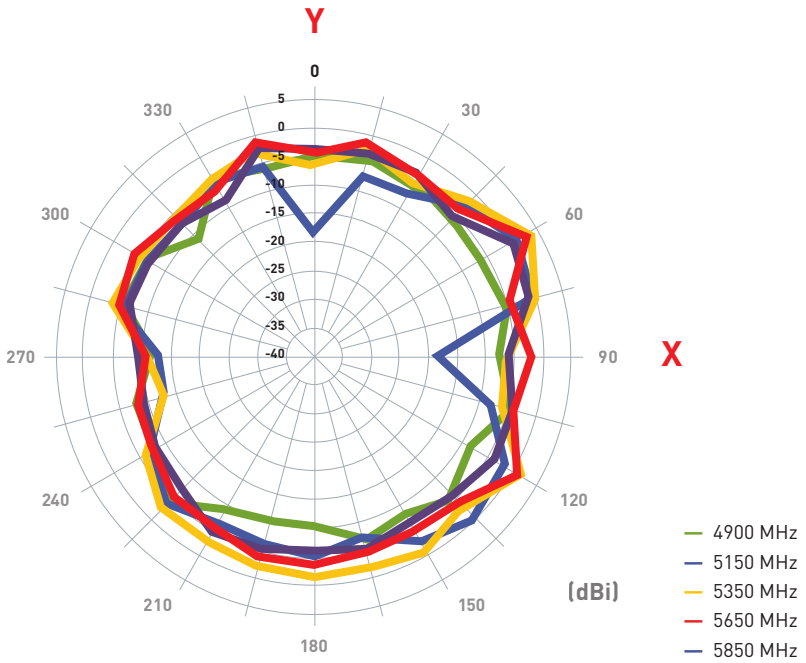


4.14.1 Antenna straight with 30x30cm ground plane edge

YZ Plane

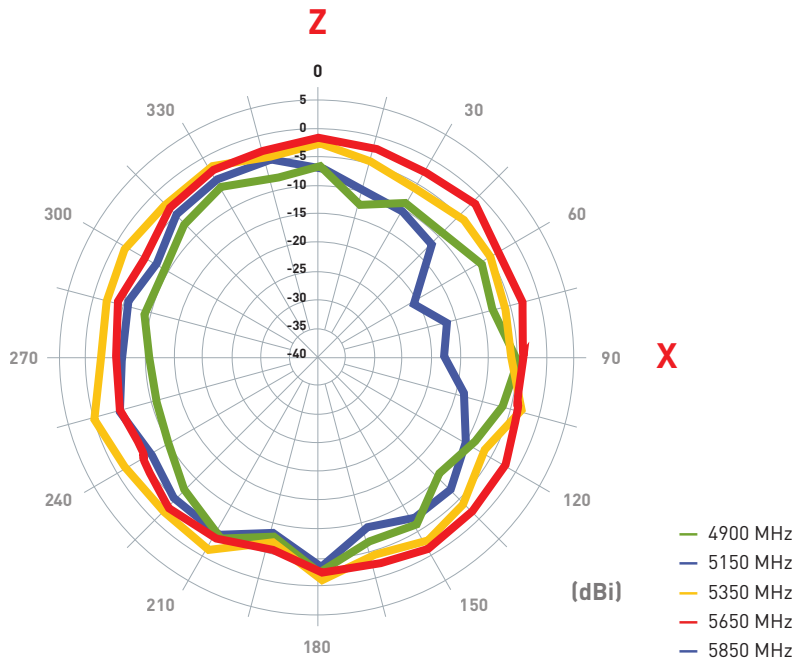


XY Plane

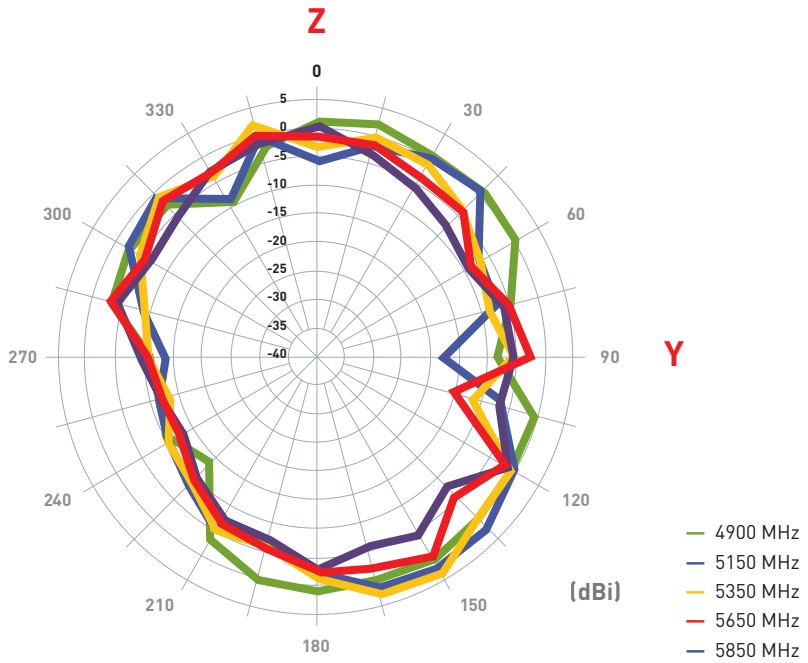


4.14.1 Antenna straight with 30x30cm ground plane edge

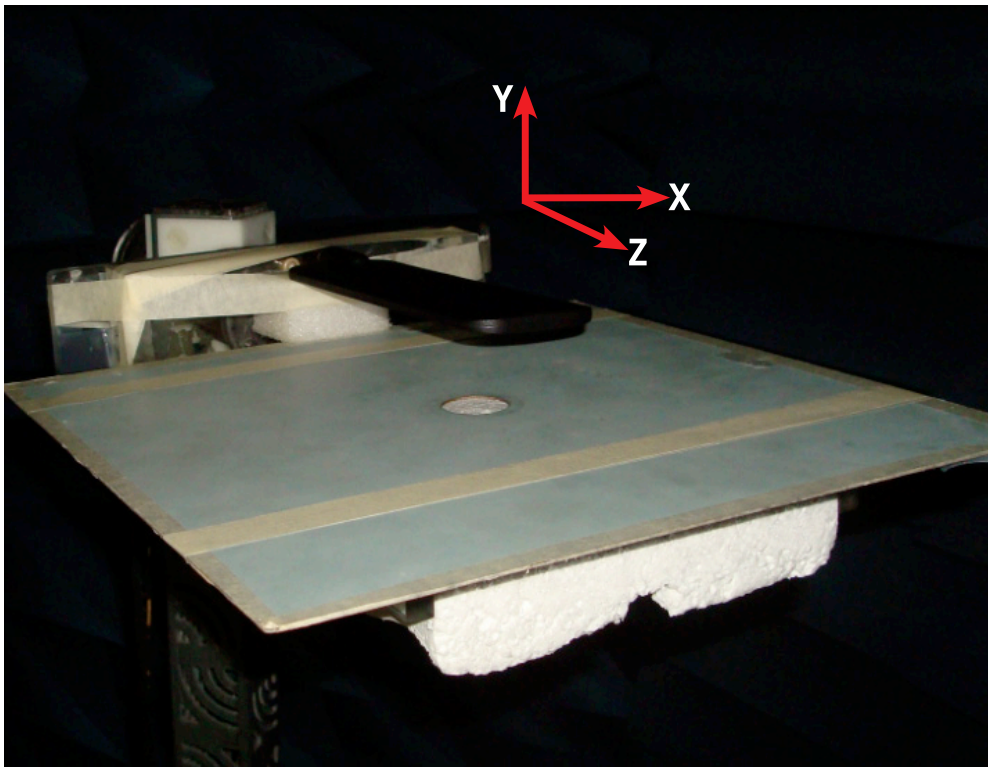
XZ Plane



YZ Plane



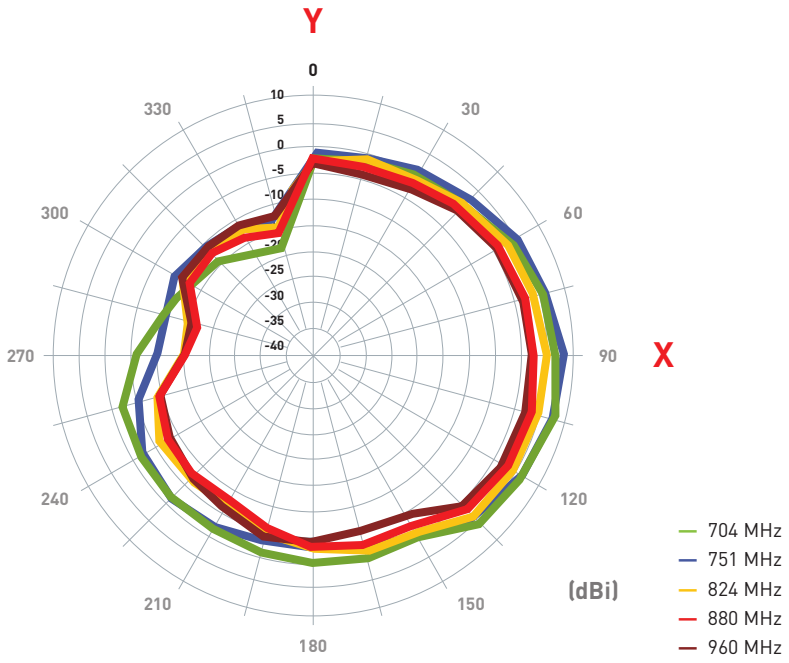
4.15 Antenna setup - Antenna bent 90 with 30x30cm ground plane edge



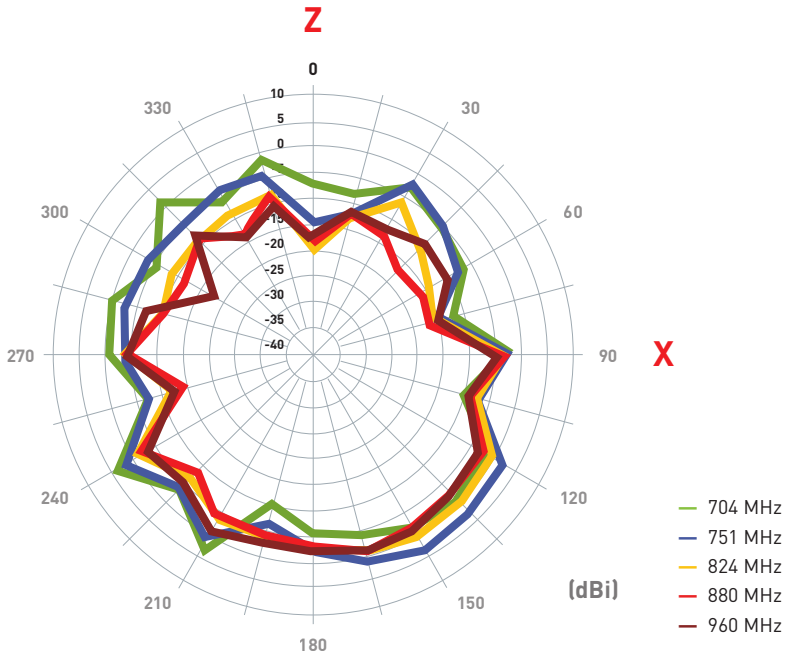
4.16 Antenna radiation patterns

4.16.1 Antenna bent 90 with 30x30cm ground plane edge

XY Plane

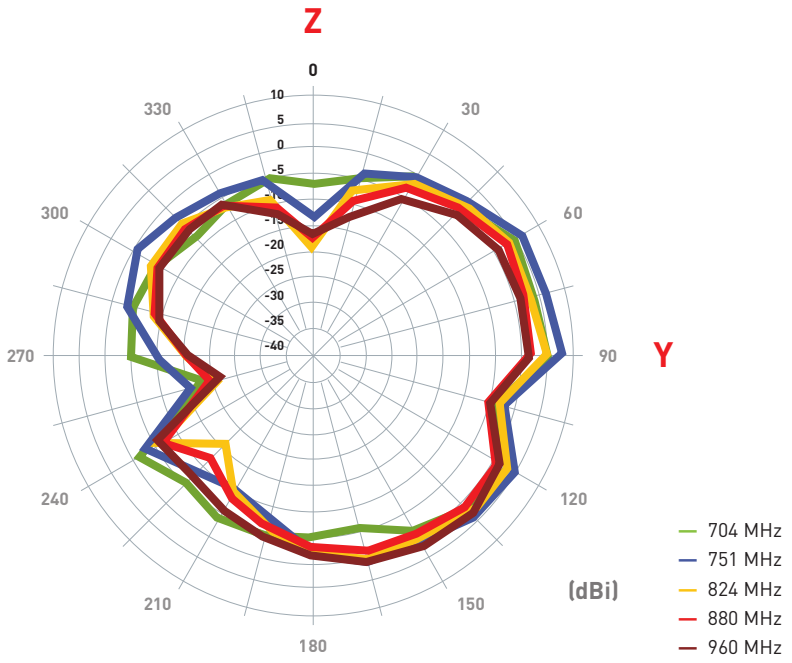


XZ Plane

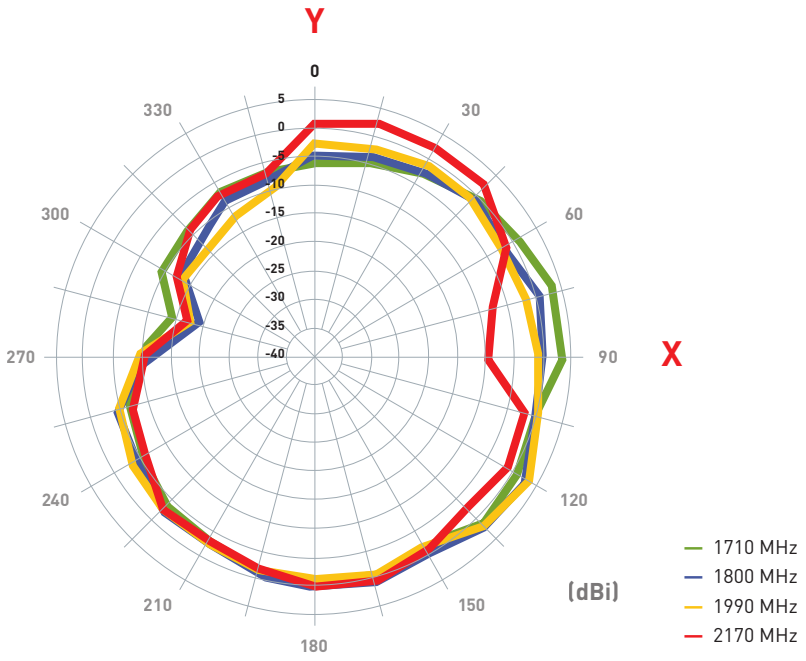


4.16.1 Antenna bent 90 with 30x30cm ground plane edge

YZ Plane

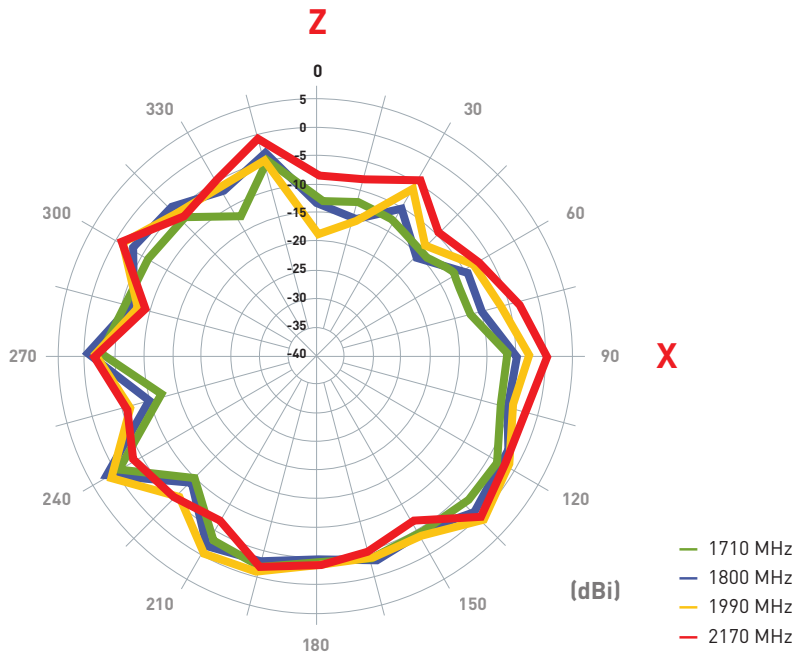


XY Plane

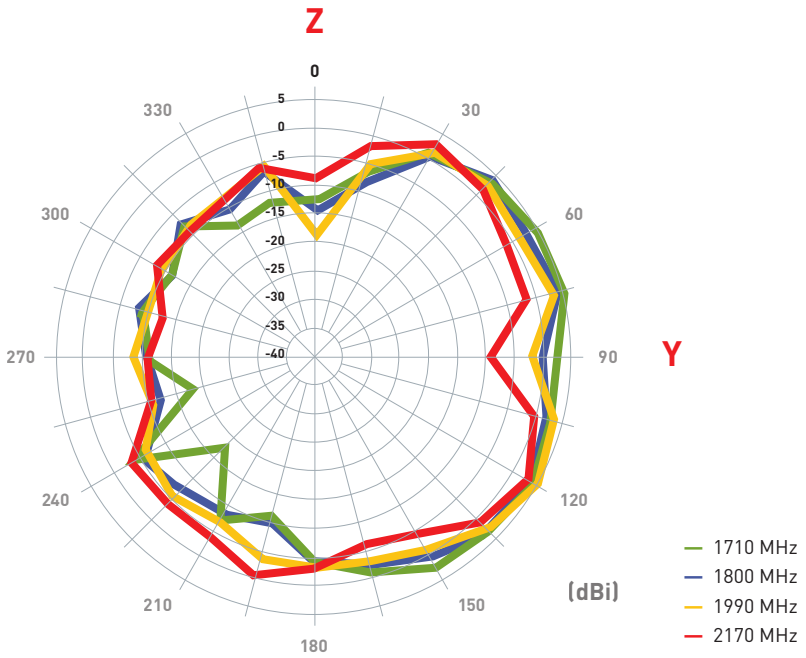


4.16.1 Antenna bent 90 with 30x30cm ground plane edge

XZ Plane

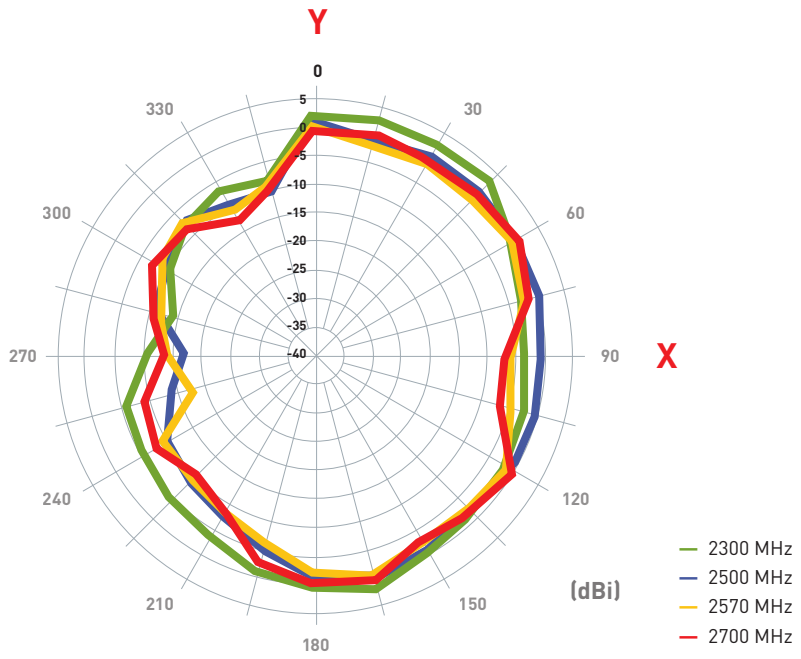


YZ Plane

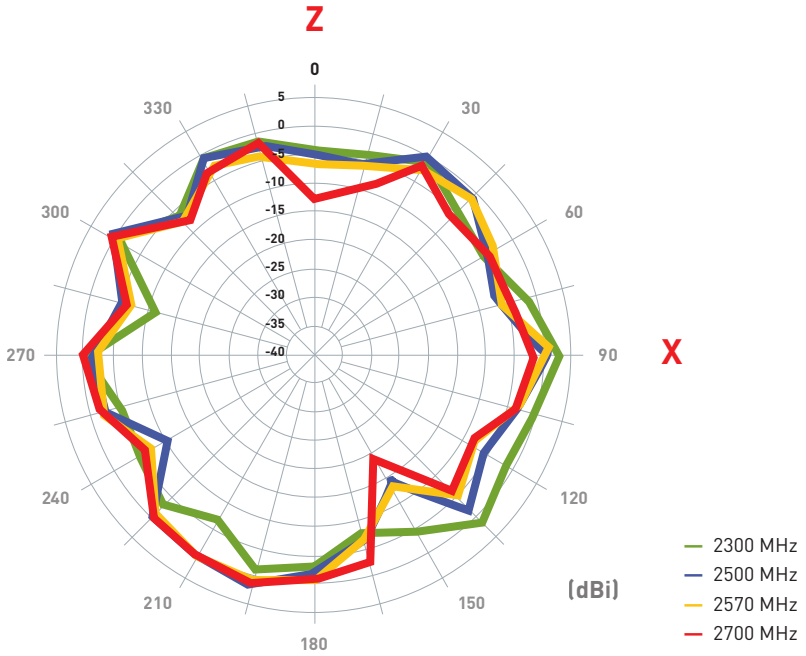


4.16.1 Antenna bent 90 with 30x30cm ground plane edge

XY Plane

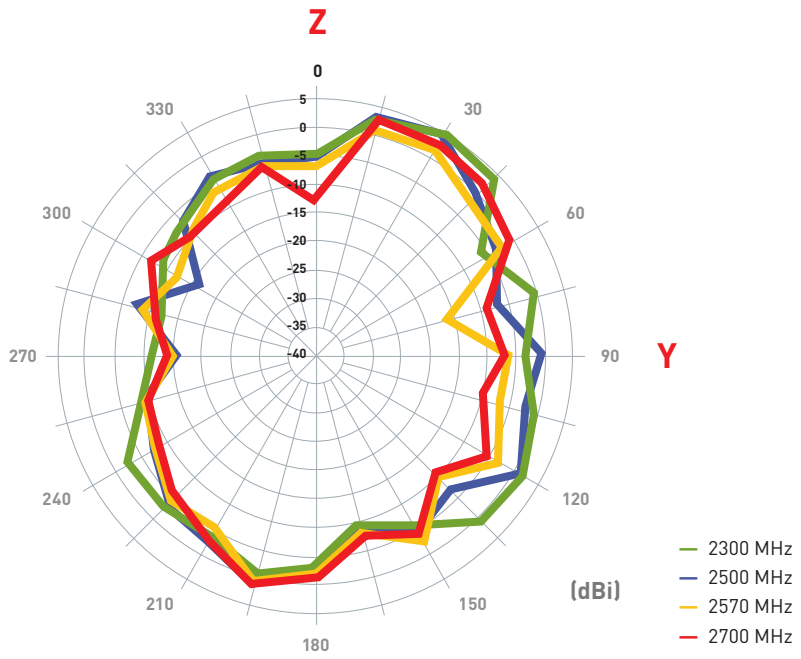


XZ Plane

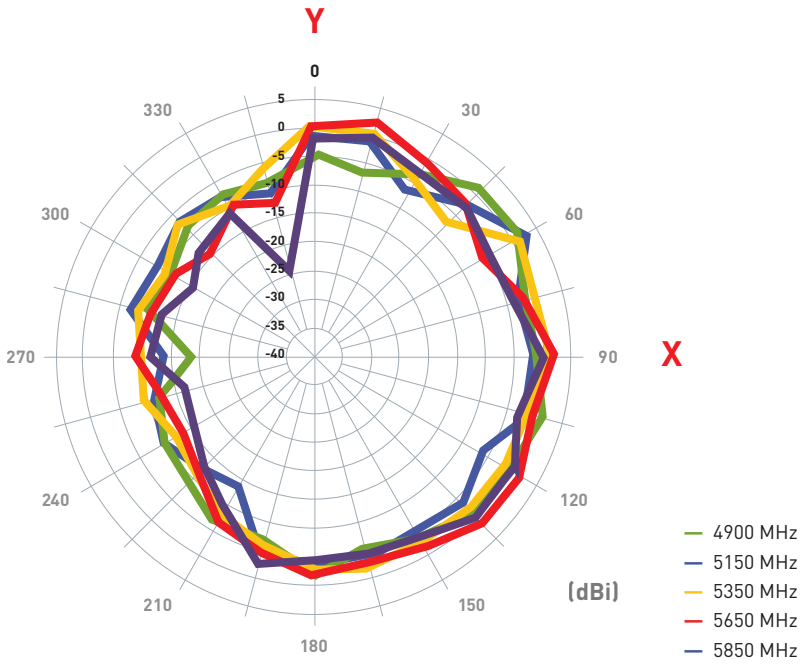


4.16.1 Antenna bent 90 with 30x30cm ground plane edge

YZ Plane

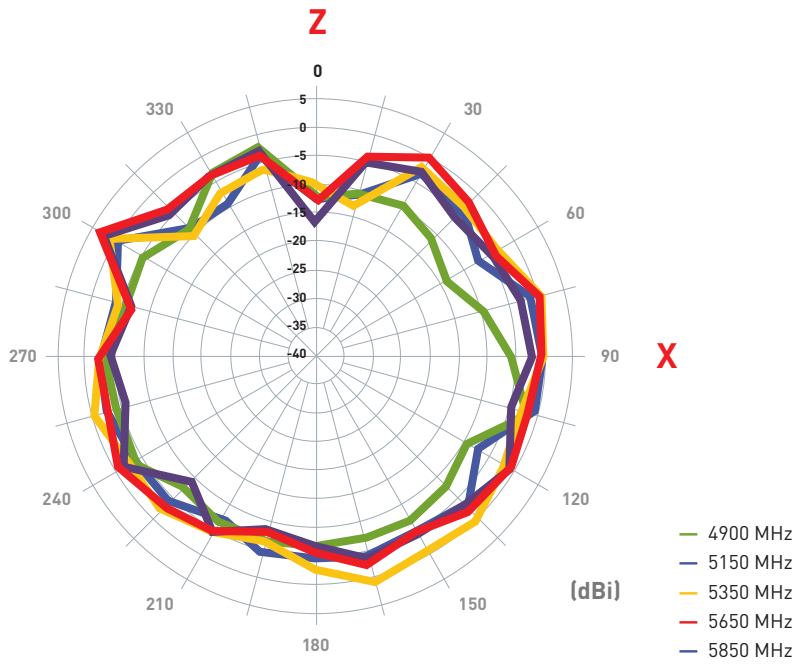


XY Plane

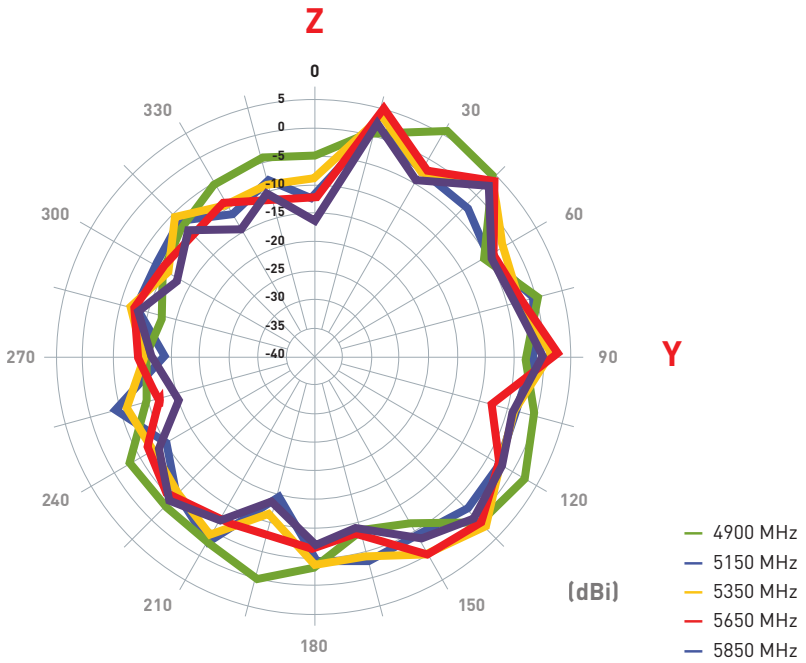


4.16.1 Antenna bent 90 with 30x30cm ground plane edge

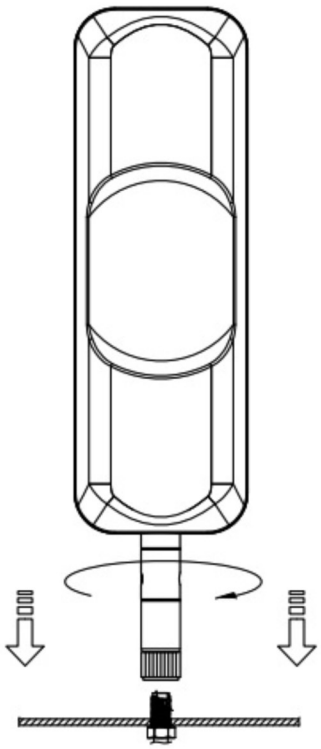
XZ Plane



YZ Plane



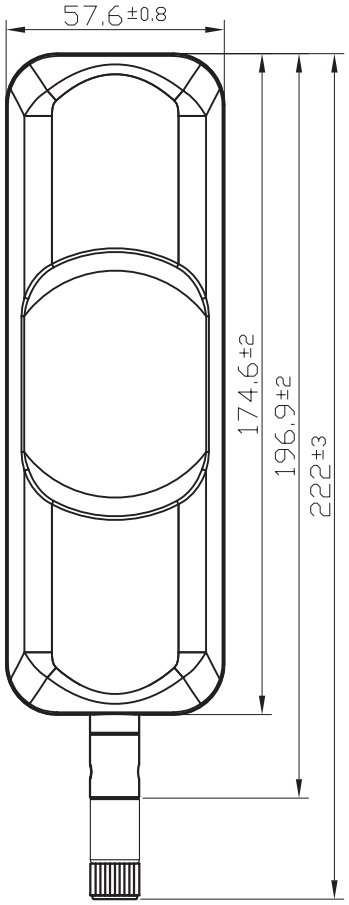
5. Installation



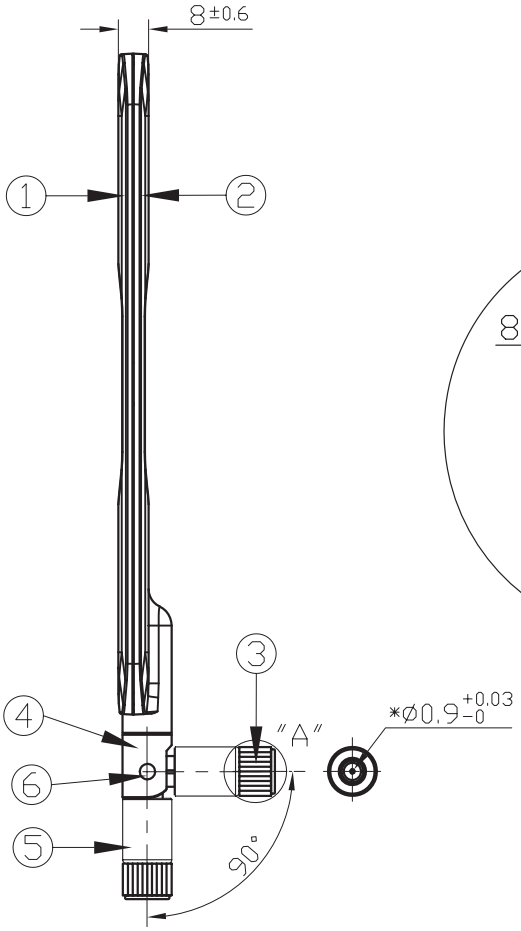
Recommended torque for mounting is 0.9 N·m
Maximum torque for mounting is 1.176 N·m

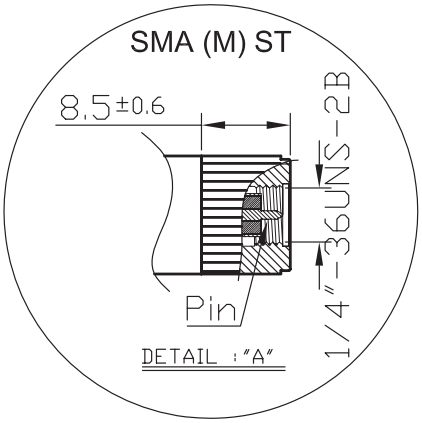
6. Drawing

Front View

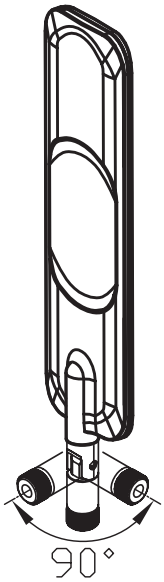


Side View





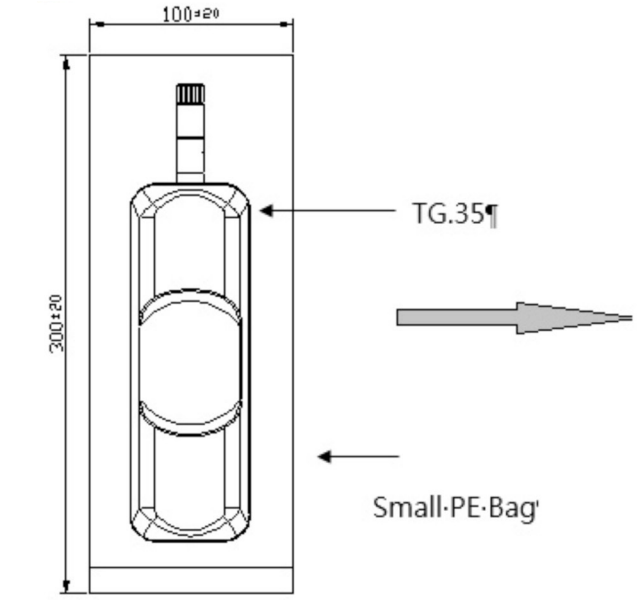
3D View



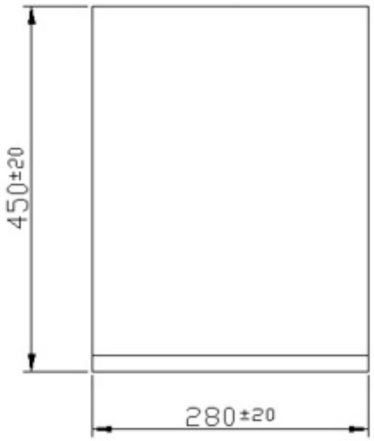
	Name	Material	Finish	Qty
1	Housing Top TG35	ABS	White	1
2	Housing Bottom TG35	ABS	White	1
3	SMA(M) ST	Brass	Nickel	1
4	Hinge Top TG35	POM	White	1
5	Hinge Bottom	ABS	White	1
6	Rotary Shaft	Brass	Nickel	2

7. Packaging

1pc TG.35 per small PE Bag
75g



10 small PE b ags in 1 large PE bag
0.75Kg



60 Cartons per pallet
Pallet Dims: 110*110*15cm
6000 pcs per pallet

10 Large PE bags per box
7.9Kg