

ANT Gain

RAK7266

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➤ LoRa ANT (Dipole Antenna (M/N: RAKARJ14) with 2.3dBi)

Features

- Frequency Range: 902~928 MHz
- Max Gain: 2.3 dBi
- VSWR: ≤ 1.5
- High efficiency
- Vertically polarized

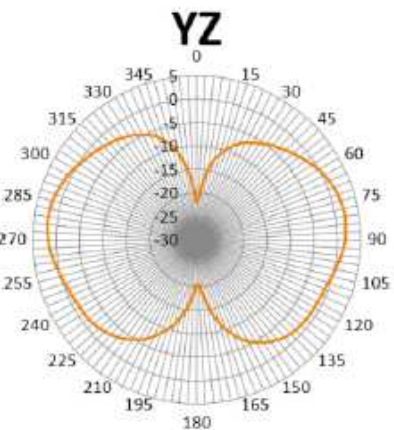
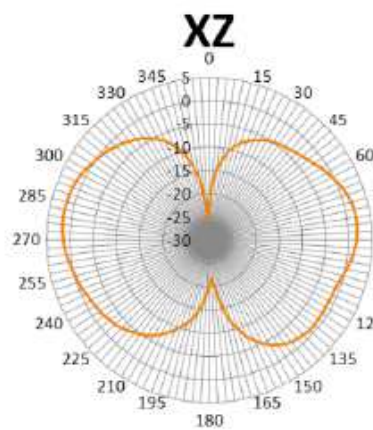
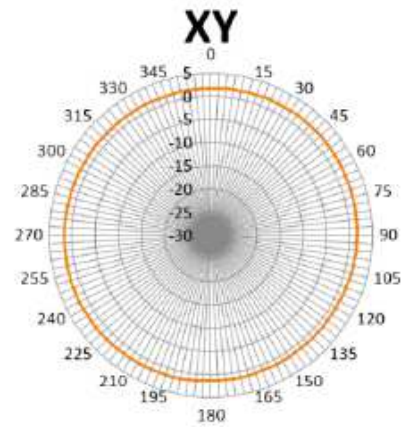
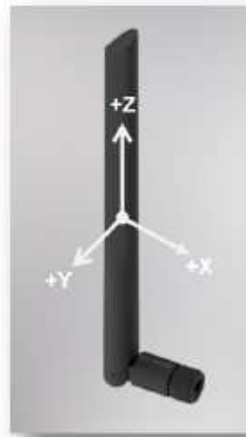


Figure 1: RAKARJ16 Antenna Overview

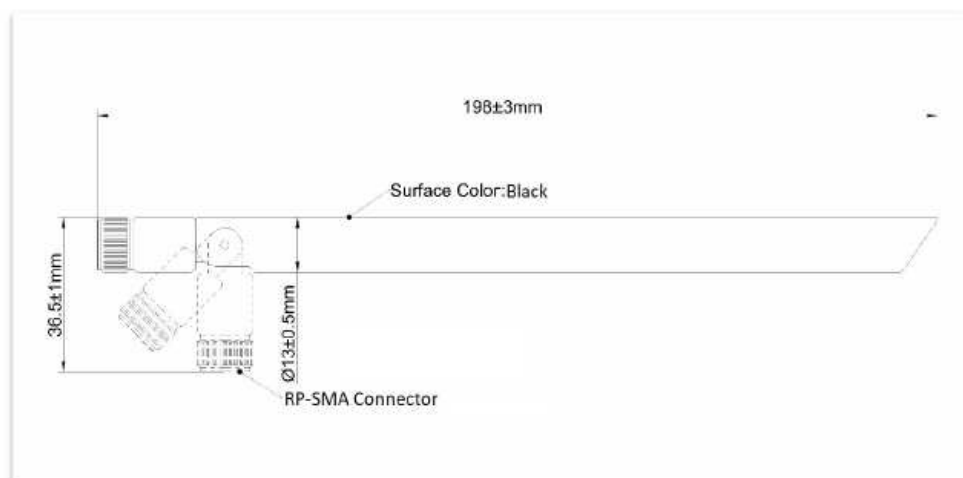
Specifications

Model	RAKARJ16	
Frequency Range	902 MHz~928 MHz	
Peak Gain	2.3 dBi	
VSWR	≤ 1.5	
Frequency (MHz)	Gain (dBi)	Efficiency (%)
902	2.3	82.6
904	2.2	82.3
906	2.2	82.7
908	2.3	84.0
910	2.3	85.0
912	2.3	85.7
914	2.3	86.0
916	2.2	86.1
918	2.2	85.9
920	2.2	86.0
922	2.2	86.4
924	1.9	85.9
926	1.9	85.1
928	2.1	85.5
Average	-	84.9

Radiation Patterns



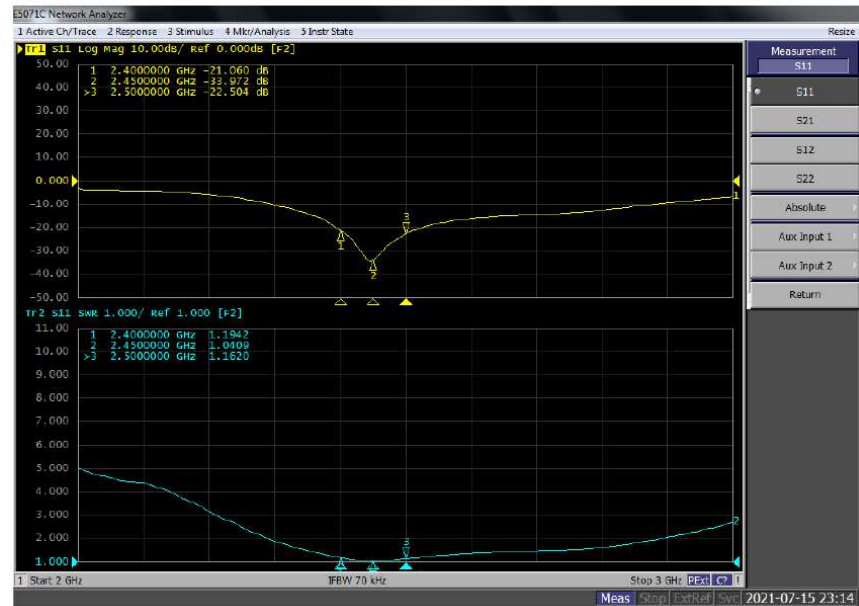
Mechanical Characteristics



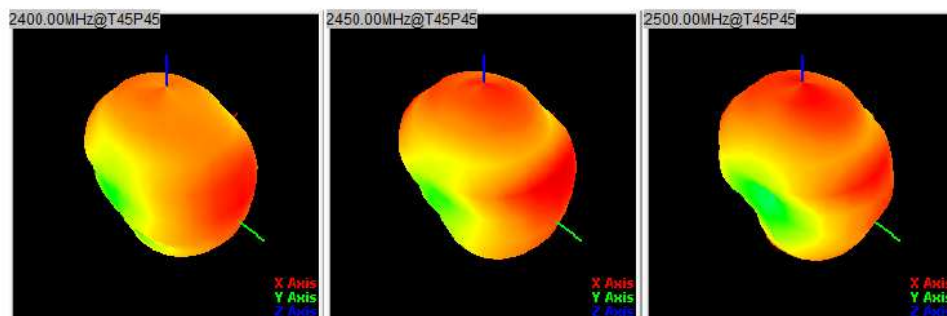
➤ 2.4GHz Wi-Fi ANT (PCB antenna (M/N: 6147F00013) with 3dBi)

Freq.(MHz)	2400	2450	2500
VSWR	1.19	1.04	1.16
Gain(dBi)	2.96	3.0	2.91
Eff.	71.4%	74.4%	74.9%

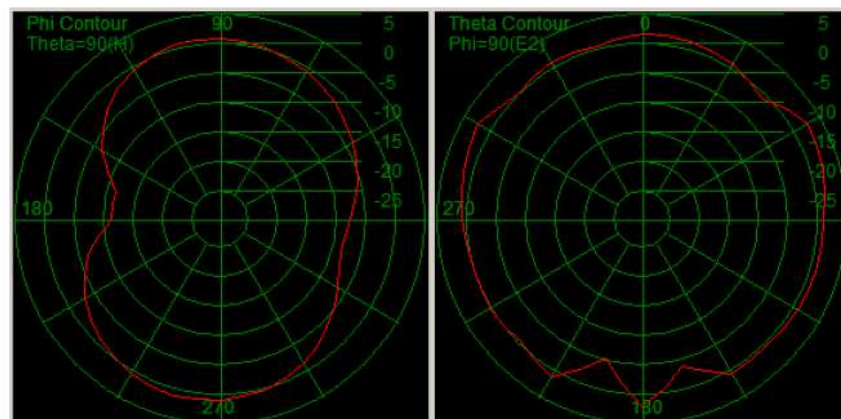
S11(ANT1)



Radiation patterns:3D



Radiation patterns at 2450MHz:2D



➤ **LTE ANT (External ANT (Dipole antenna))**

600MHz: 0.63dBi

824MHz: 1.58dBi

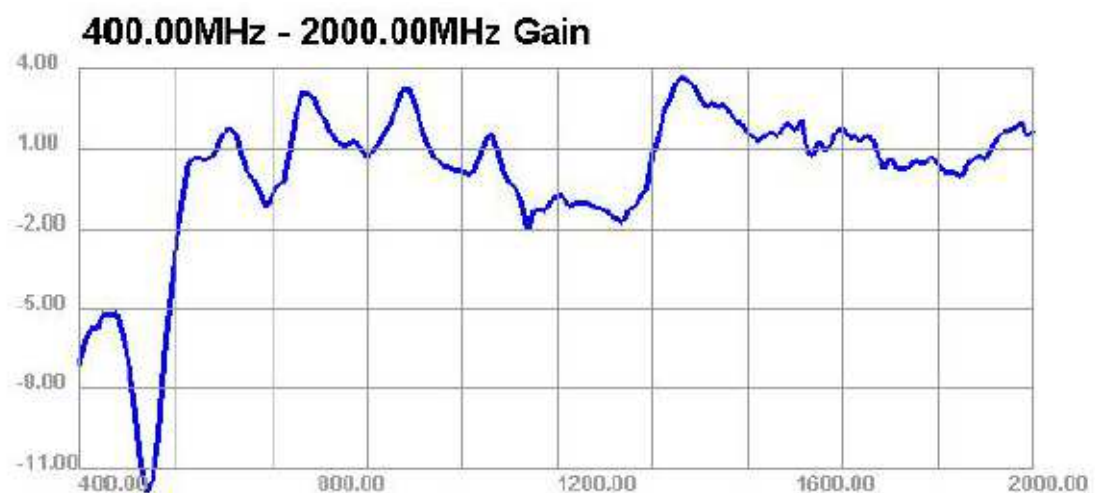
1710MHz: 1.25dBi

1. Electrical Specification

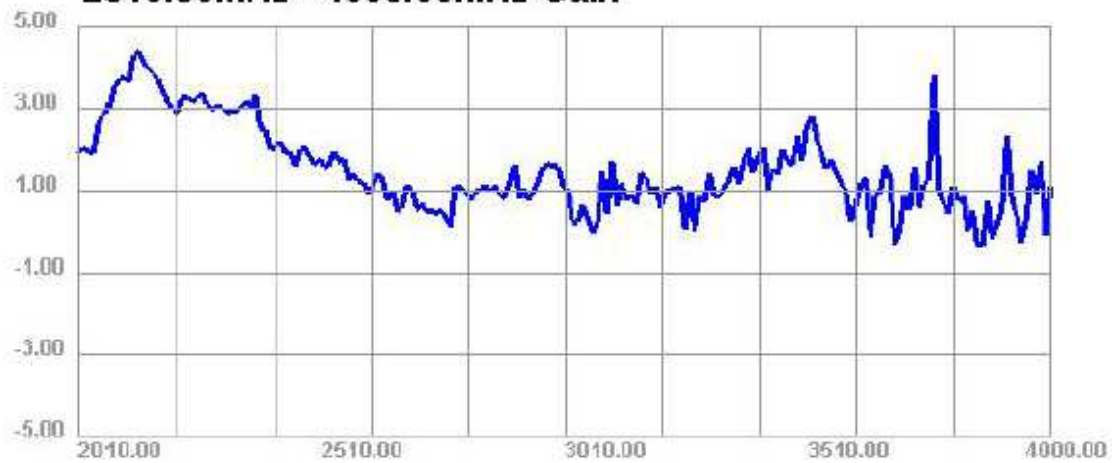
Standards	5G/4G/3G/2G/NB-iot/CAT M1/WiFi/BT
Frequency range (MHz)	600~6000MHz
Peak Gain (dBi)	-2.0~5.5dBi
Average Gain (dB)	-6.0~-0.7dB
VSWR	< 3.5

FRE (MHz)	600	824	960	1200	1575	1710	2690	3300	5000	5925
VSWR	2.9	2.4	2.6	1.5	1.2	1.5	2.2	1.4	1.4	2.7
Return Loss	-6.8	-7.4	-6.8	-13.2	-19.2	-13.6	-8.3	-15.1	-15.3	-6.4
Eff (%)	49.9	42.8	62.9	36.2	75.4	67.8	50.8	47.6	52.6	44.4
PEAK Gain (dBi)	0.63	1.58	2.65	-0.75	1.87	1.25	0.99	1.44	1.88	3.02

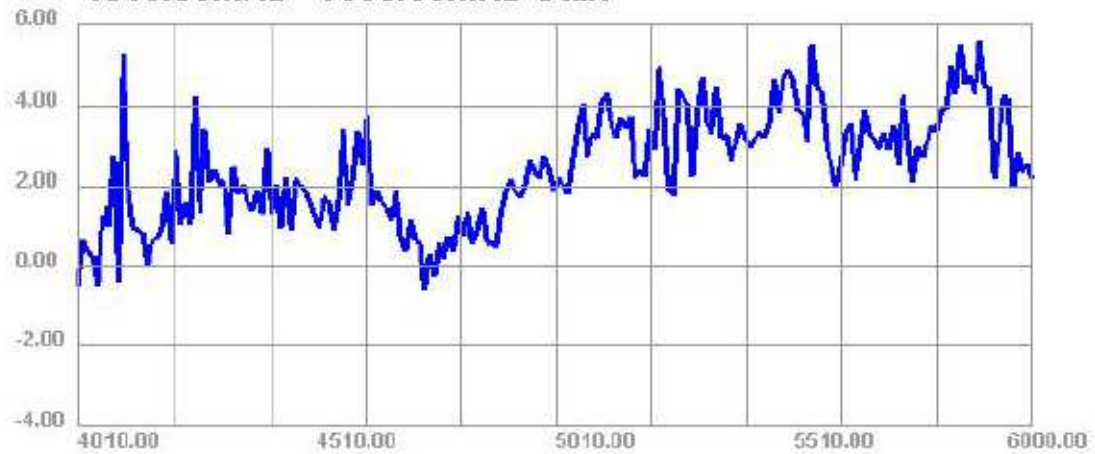
Gain



2010.00MHz - 4000.00MHz Gain

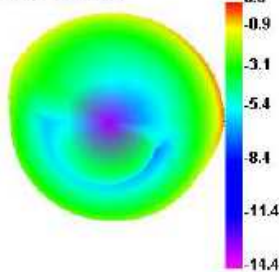


4010.00MHz - 6000.00MHz Gain

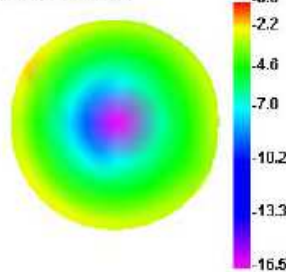


Directional Pattern

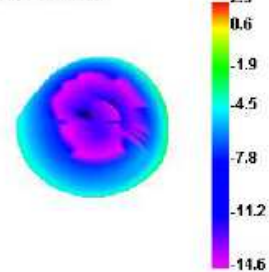
600.000MHz

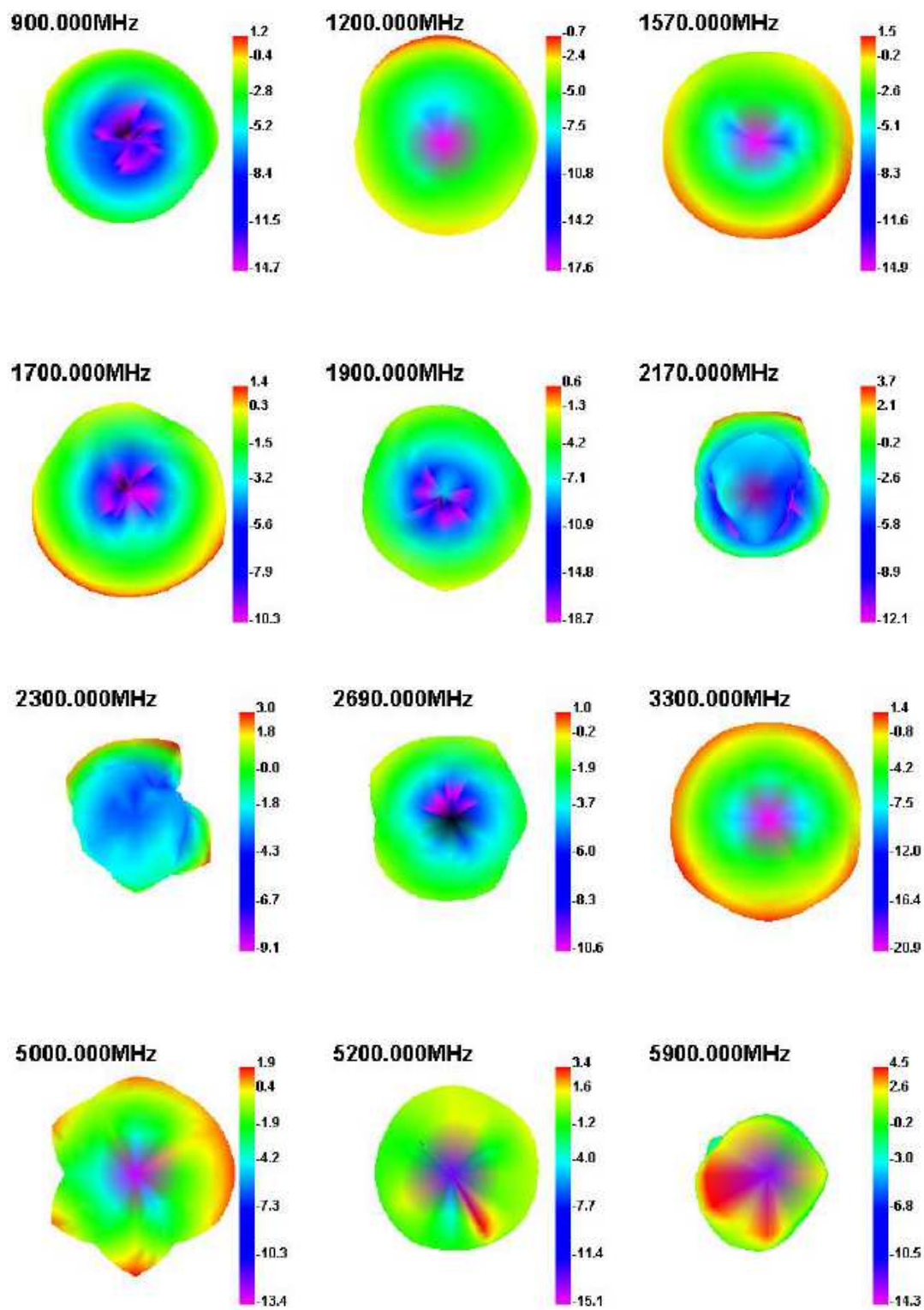


700.000MHz

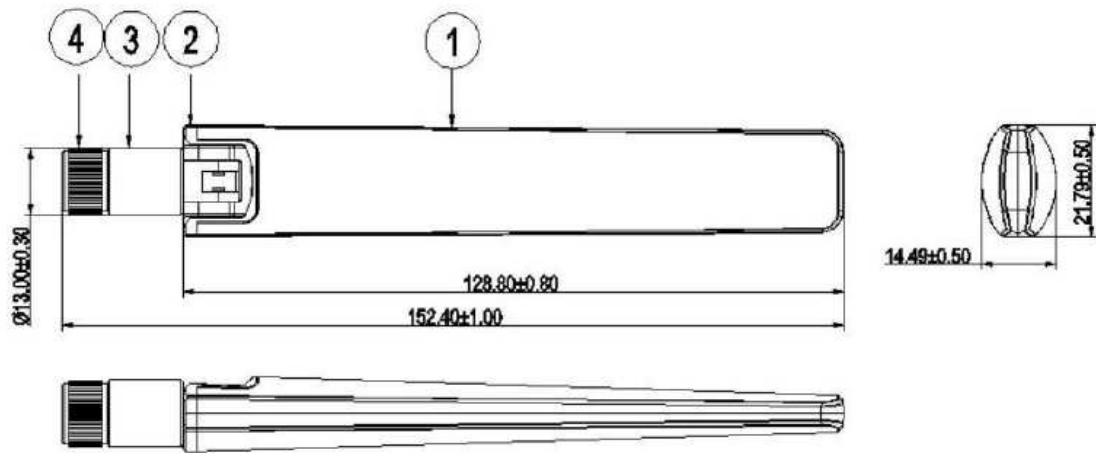


800.000MHz





4. Antenna Drawing



4	SMA	SMA-内螺纹内孔	black	1
3	Lower Firmware	ABS	black	1
2	Upper firmware	ABS	black	1
1	noumenon	ABS	black	1
Series	Component name	Specification	Color	Quantity

➤ **LTE ANT (Internal ANT (PCB antenna):**

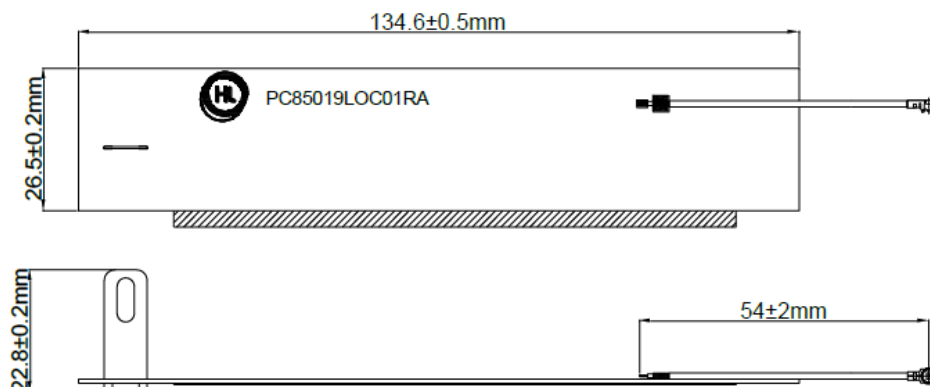
698MHz: 2.9dBi
 720MHz: 2.8dBi
 780MHz: 2.9dBi
 820MHz: 1.0dBi
 840MHz: 0.6dBi
 1710MHz: 3.4dBi
 1850MHz: 2.3dBi



Antenna Specification Summary

Wireless Standard	LTE
Frequency Range	698-894MHZ; 1710-2690MHZ
Peak Realized Gain(Max)	2.9dBi @780MHz ,3.5dBi @2300MHz
Realized Efficiency	39% @780MHz ,45% @2300MHz
Return Loss	<-6.4dB
Polarization	Linear Polarization
Axial Ratio	/
Radiation Pattern	Omni-directional
Feed Impedance	50Ω

Principal Product Dimensions



Radiation Pattern Characteristics

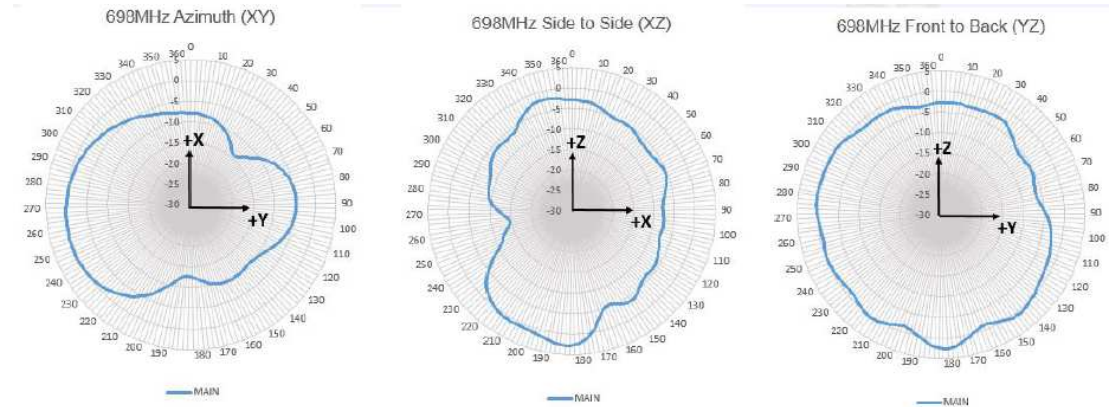


Figure 5. Measured radiation pattern characteristics in principal planes at 698MHz.

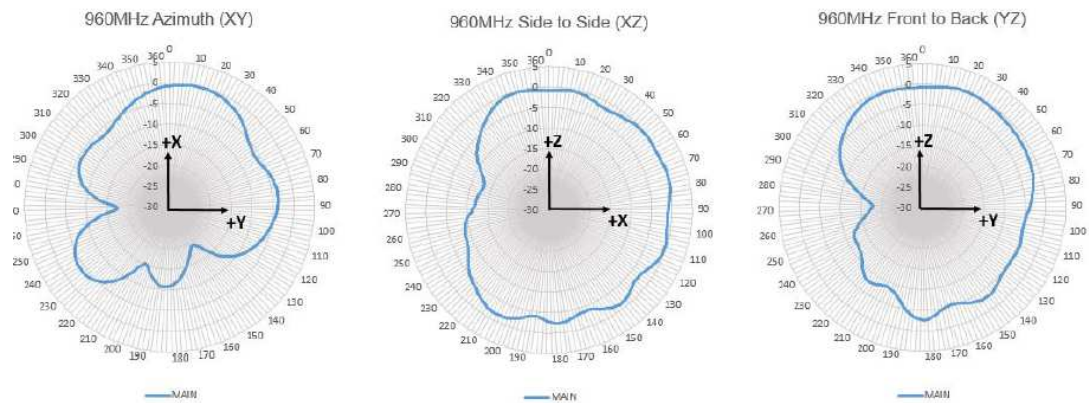


Figure 6. Measured radiation pattern characteristics in principal planes at 960MHz.

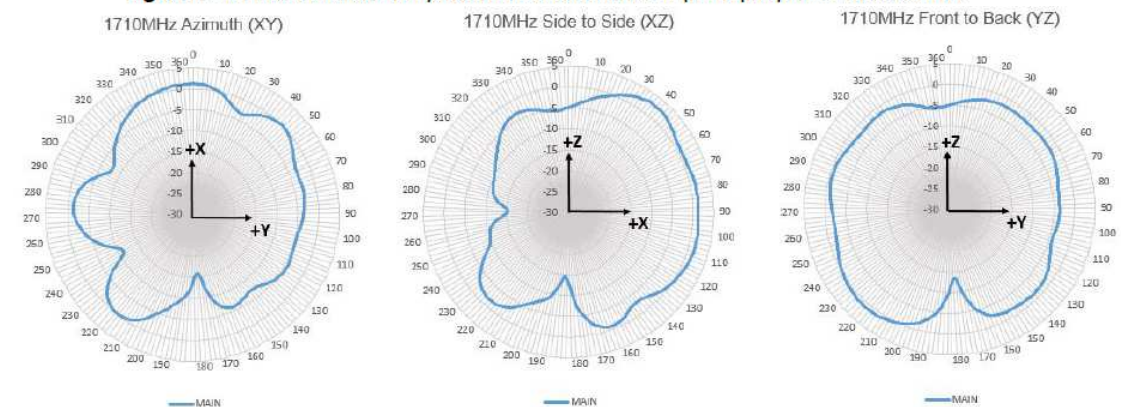


Figure 7. Measured radiation pattern characteristics in principal planes at 1710MHz.

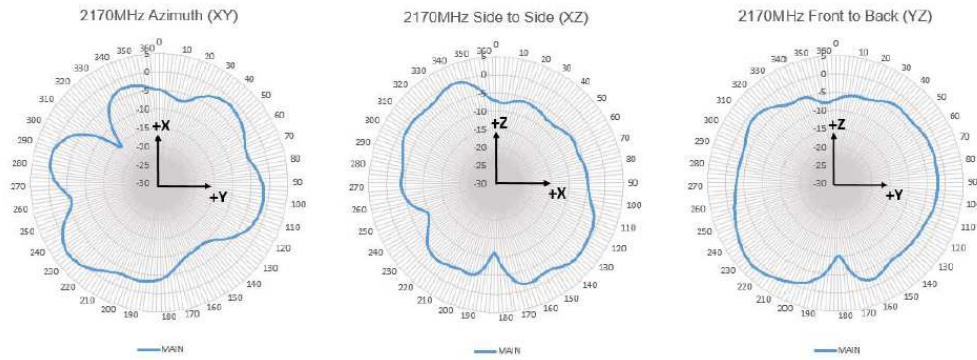


Figure 8.Measured radiation pattern characteristics in principal planes at 2170MHz.

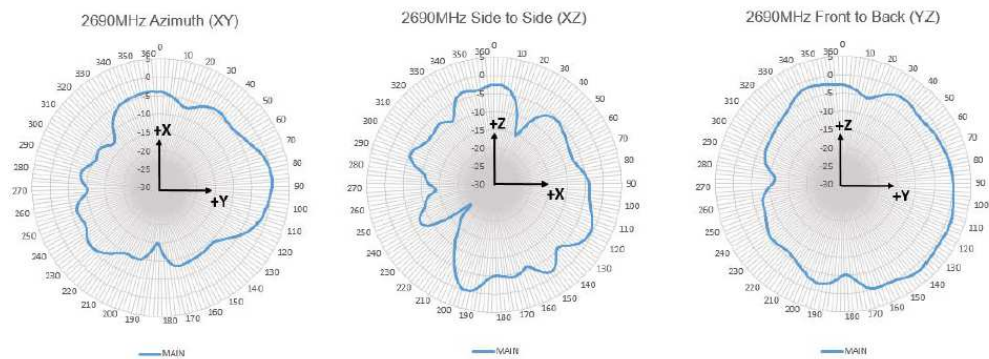
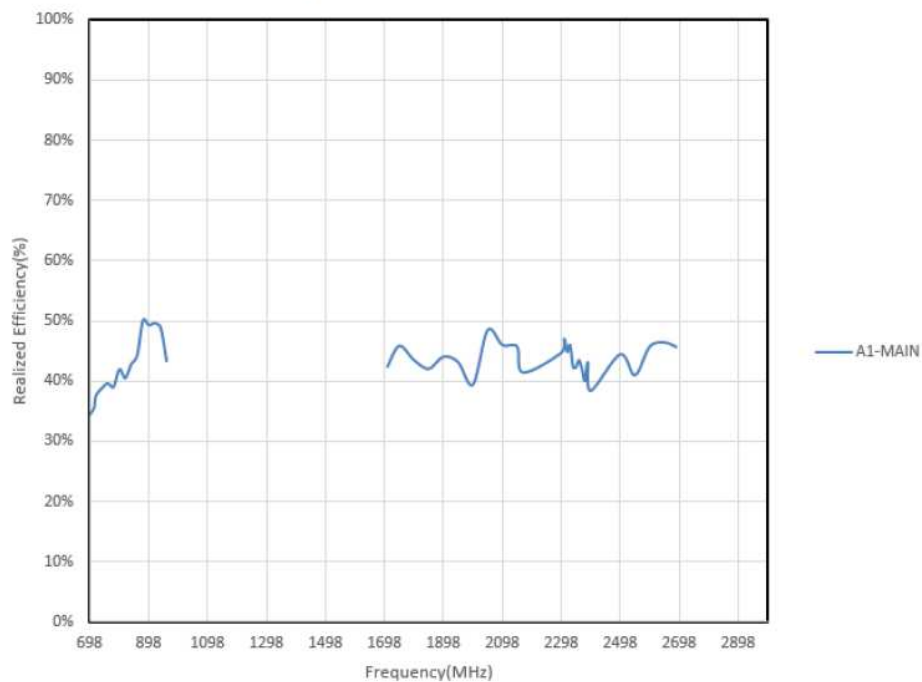
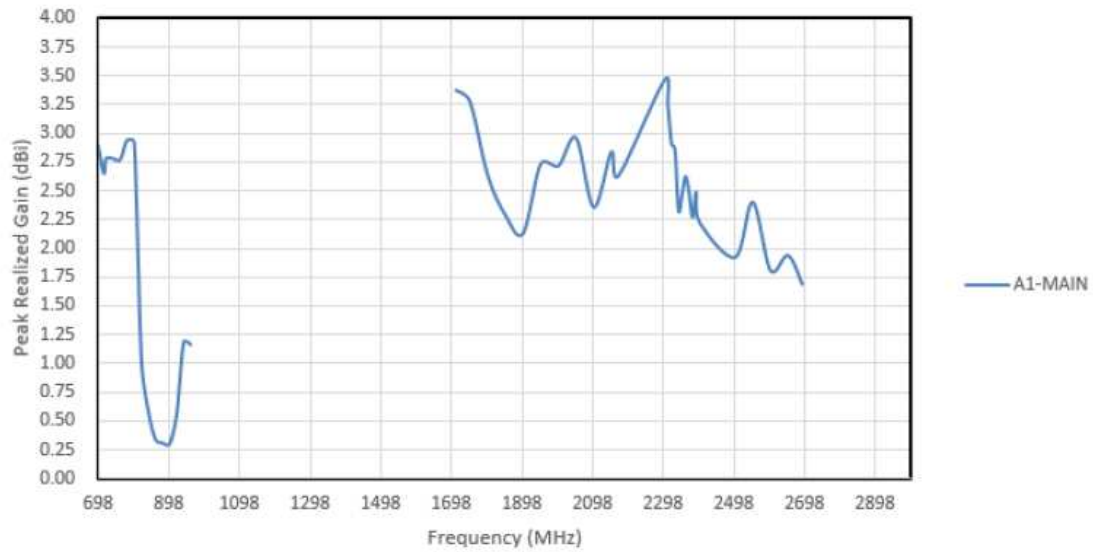


Figure 9.Measured radiation pattern characteristics in principal planes at 2690MHz.

Realized Efficiency and Peak Realized Gain



Measured realized efficiency over frequency.



Measured peak realized gain over frequency.

Summary of realized efficiency and peak realized gain results

Frequency(MHZ)	Efficiency	Peak Realized Gain (dBi)
698	34%	2.9
714	36%	2.7
720	37%	2.8
740	39%	2.8
760	40%	2.8
780	39%	2.9
800	42%	2.9
820	40%	1.0
840	43%	0.6
860	44%	0.3
880	50%	0.3
900	49%	0.3
920	49%	0.6
940	49%	1.2
960	43%	1.2
1710	42%	3.4
1750	46%	3.3
1800	43%	2.6
1850	42%	2.3
1900	44%	2.1

1950	43%	2.7
2000	39%	2.7
2050	48%	3.0
2100	46%	2.4
2150	46%	2.8
2170	41%	2.6
2300	45%	3.5
2310	47%	3.2
2320	45%	2.9
2330	46%	2.9
2340	42%	2.3
2350	42%	2.5
2360	43%	2.6
2370	42%	2.5
2380	40%	2.3
2390	43%	2.5
2400	38%	2.2
2500	44%	1.9
2550	41%	2.4
2600	46%	1.8
2650	46%	1.9
2690	46%	1.7
Average	43%	2.2