

东莞市思普嘉电子科技有限公司

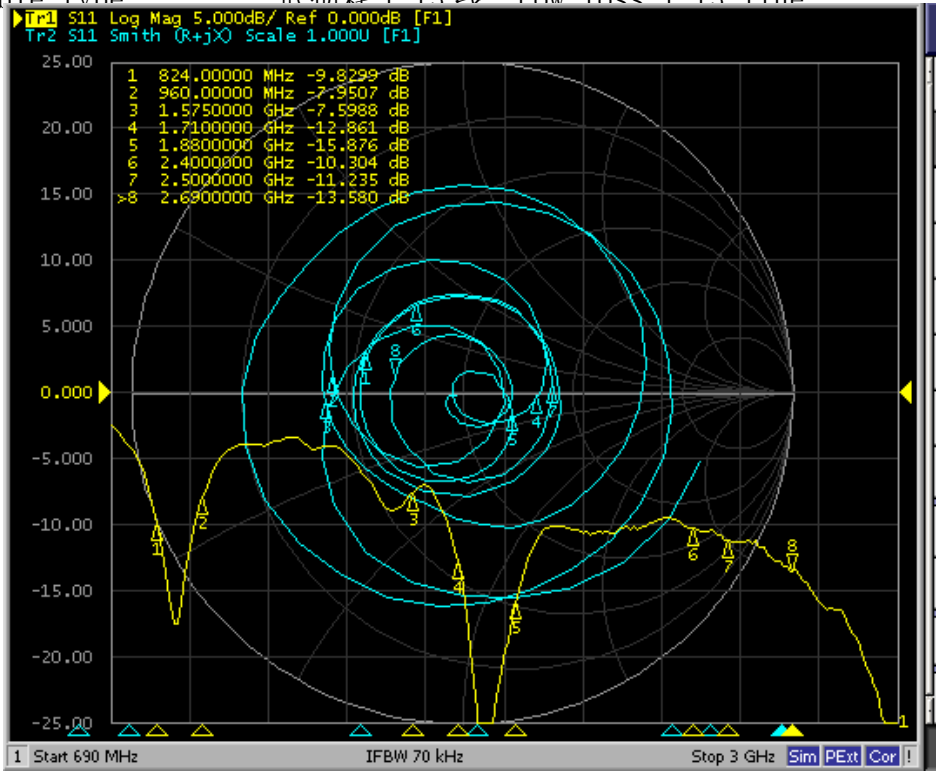
Dongguan Sipujia Electronic Technology Co., Ltd .

广东省东莞市大朗镇白云前东二街15号4栋301室
Room 301, Building 4, No. 15, Baiyun Qian East Second Street, Dalang Town, Dongguan City,
Guangdong Province

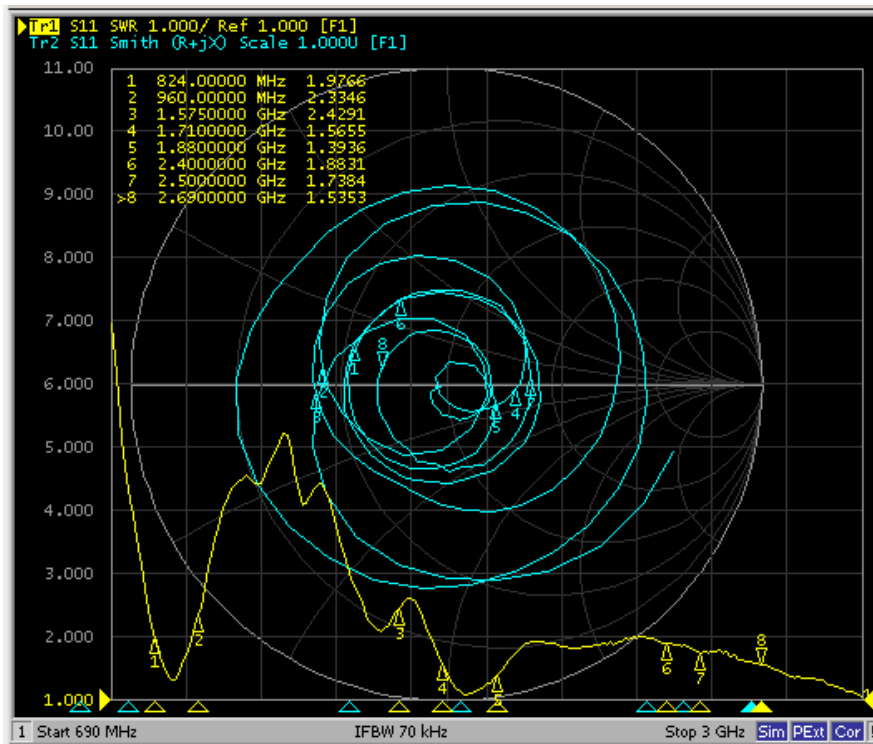
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样品承认书			
Specification For Approval			
客户名称: Customer:			
供应商名称: Supplier:	东莞市思普嘉电子科技有限公司 Dongguan Sipujia Electronic Technology Co., Ltd.		
		供应商料号: Supplier Part Number:	HW006
日期/Date:		日期/Date:	
联系人/Name:		联系人/Name:	
邮件/E-mail:		邮件/E-mail:	
电话/TEL:		电话/TEL:	
传真/FAX:		传真/FAX:	

一. 天线指标如下: The antenna specifications are as follows:

频带 Frequency	700-960MHz, 1710- 2690MHz
天线方向性Antenna Directivity	类偶极子Quasi-dipole
增益 MAX (dBi)	4.2 (10cm 线缆测试)(10cm cable test)
效率 Efficiency (%)	≥20, ≤85 (10cm 线缆测试)(10cm cable test)
驻波比 S.W.R.	700-960MHz ≤3.5 1710- 2690MHz≤2.5
标准阻抗 (Ohm)	50 Ohm
接头类型 Connector type	QFK1 代 Or Other
极化方式 Polarization	线极化 Linear
最大输入功率 Max input power	20W
天线颜色 Antenna color	黑色 black
电缆线类型 Cable type	低损耗 1.13 线 Low-loss 1.13 line

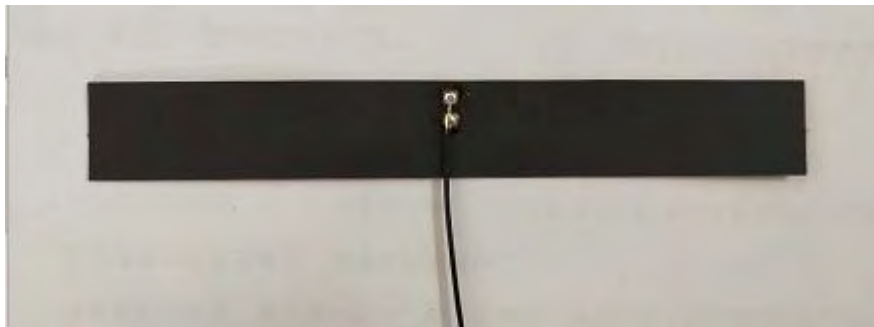


S11（图 1）



驻波比 (图 2)

二. 天线实拍图 Real shot of the antenna



三. 工作条件Working conditions

温度 Temperature: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

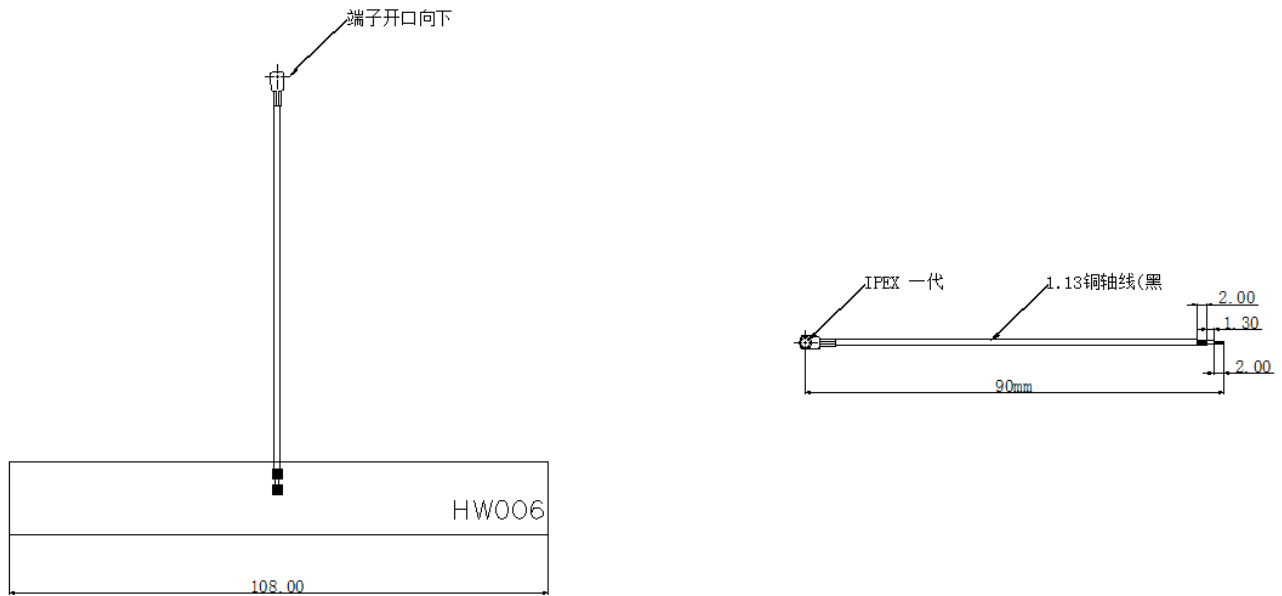
湿度 Humidity: $95\% \sim 100\%$

四. 储藏条件Storage condition

温度 Temperature: $-45^{\circ}\text{C} \sim +85^{\circ}\text{C}$

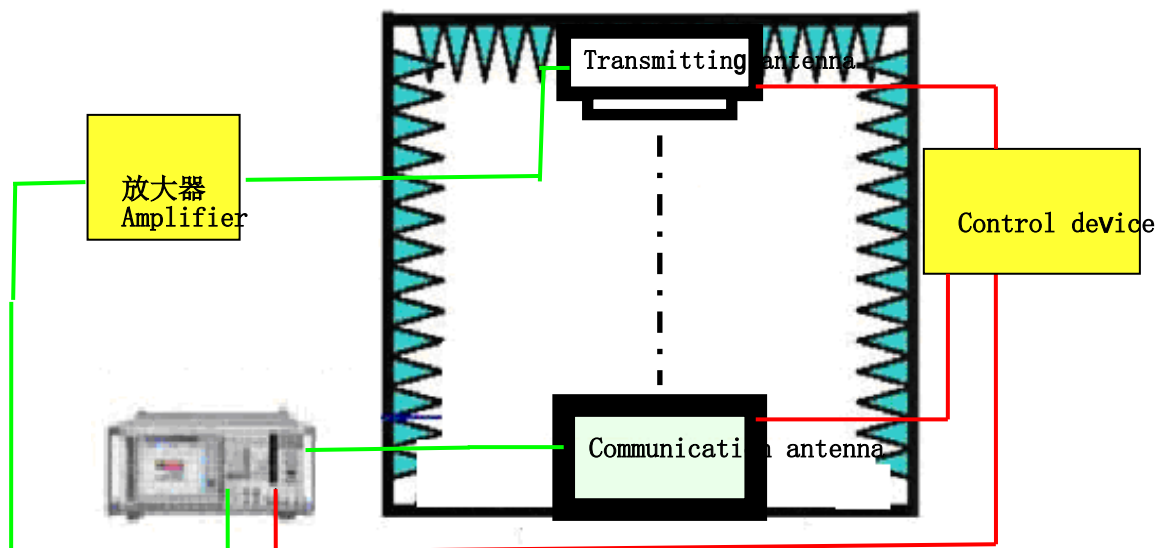
湿度 Humidity: $\leq 75\%$

五、电缆头及电缆线Cable heads and cables



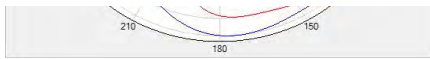
六. 天线增益, 效率测试Antenna gain and efficiency testing

- 1、Gain efficiency test: (tested using a 10 cm cable connection)
2. (1) Test equipment: microwave anechoic chamber, vector network analyzer, amplifier, feeder, controller, computer, turntable controller, etc.

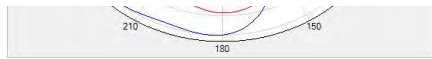
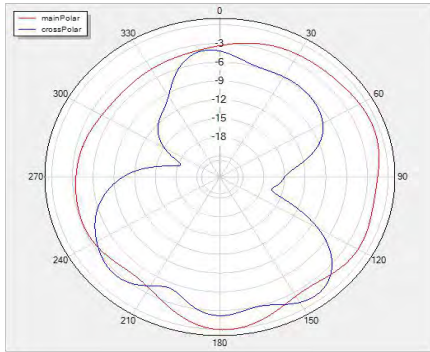


2、结果如下: The results are as follows:

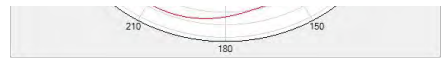
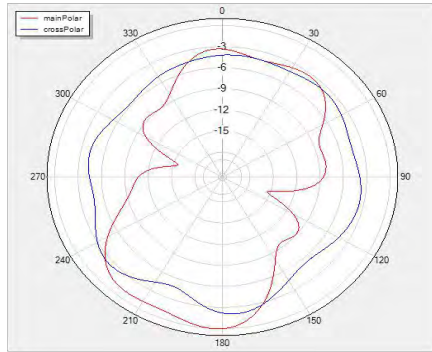
Gain&Efficiency&PhaseCenter 增益、效率和相位中心				
frequency 频率(MHz)	gain 增益(dBi)	directivity 方向性系数	efficiency 效率(dB)	efficiency 效率(%)
700	-2.9	4.46	-7.36	18.38
720	-3.77	4.52	-8.29	14.81
740	-3.7	4.19	-7.9	16.23
760	-3.69	3.99	-7.68	17.05
780	-3.5	3.89	-7.38	18.26
800	-2.67	3.52	-6.19	24.04
820	-1.93	3.58	-5.5	28.16
840	-2.29	3.16	-5.45	28.51
860	-0.37	4.41	-4.78	33.29
880	1.39	4.92	-3.53	44.38
900	3.46	5.95	-2.49	56.37
920	5.07	6.63	-1.56	69.81
940	6.03	6.95	-0.92	80.97
960	6.13	6.78	-0.65	86.01
980	6.35	6.71	-0.35	92.16
1000	6.2	6.54	-0.34	92.45
1420	-11.3	3.92	-15.22	3
1460	-10.15	4.3	-14.45	3.59
1500	-7.49	5.14	-12.62	5.47
1520	-6.18	5.01	-11.19	7.61
1700	0.92	4.77	-3.84	41.26
1710	1.77	4.96	-3.19	48
1750	2.87	5.36	-2.49	56.38
1790	3.7	5.17	-1.47	71.24
1830	4.74	5.85	-1.11	77.51
1870	4.74	5.7	-0.97	80.01
1910	4.22	5.09	-0.87	81.89
1950	3.65	4.55	-0.9	81.22
1990	3.03	4.06	-1.03	78.82
2030	3.49	4.7	-1.21	75.71
2070	4.02	4.64	-0.62	86.64
2110	3.85	4.4	-0.55	88.16
2150	3.38	4.49	-1.11	77.37
2190	3.12	4.62	-1.5	70.77
2230	3.26	5	-1.74	66.98
2270	3.02	4.51	-1.49	71.03
2310	3.08	4.37	-1.29	74.24
2350	3.32	5.05	-1.73	67.18
2390	3.42	5.24	-1.82	65.78
2430	3.28	5.25	-1.97	63.58
2470	3.21	5.34	-2.13	61.17
2510	3.01	5.13	-2.12	61.34
2550	2.78	4.94	-2.16	60.75
2590	3.31	5	-1.69	67.8
2630	3.52	5.27	-1.75	66.83
2670	3.55	5.27	-1.72	67.34
2710	3.42	5.33	-1.91	64.41



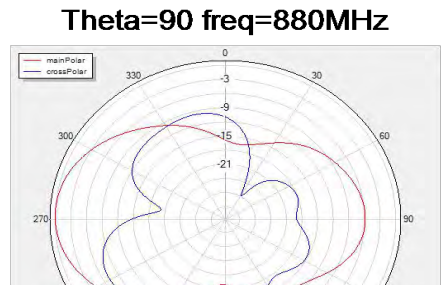
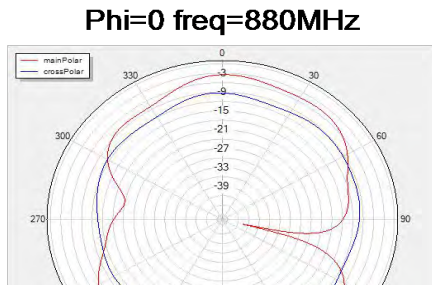
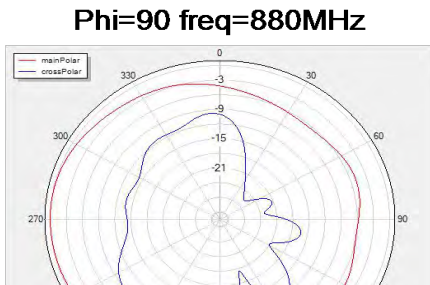
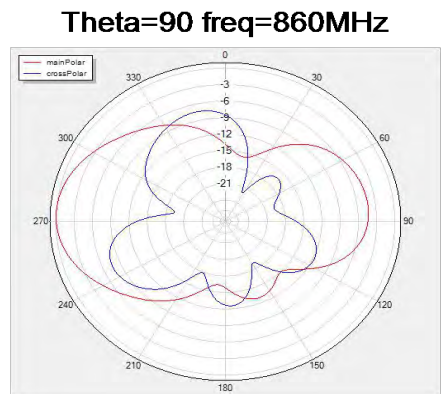
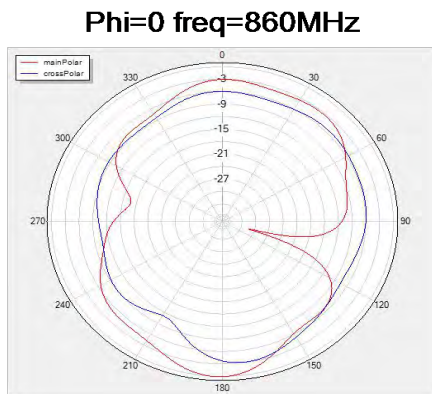
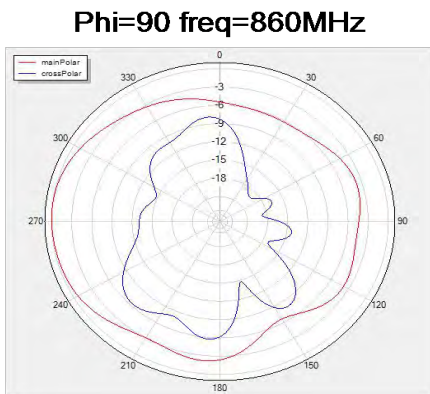
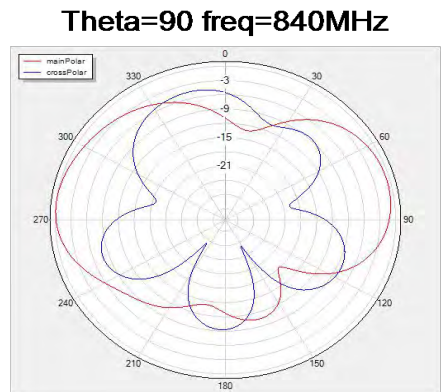
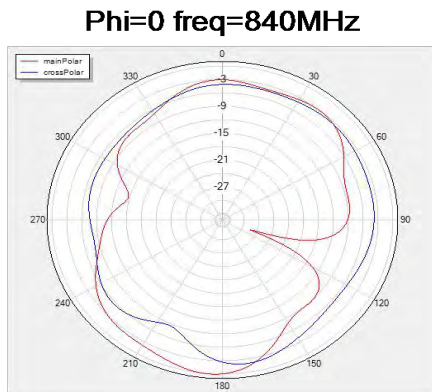
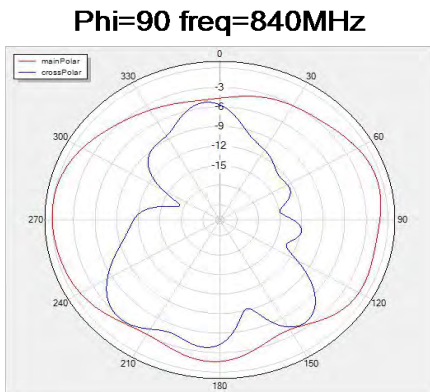
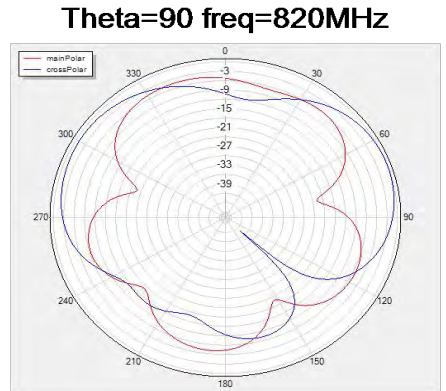
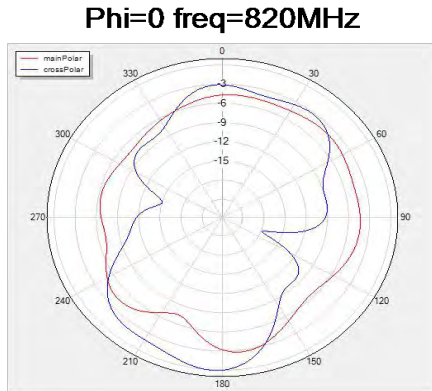
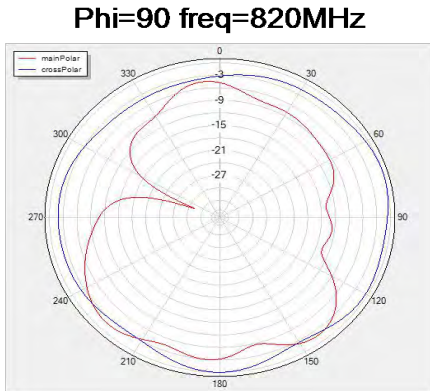
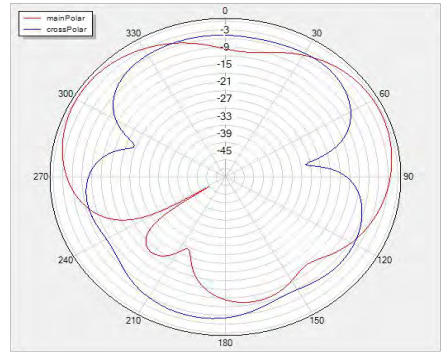
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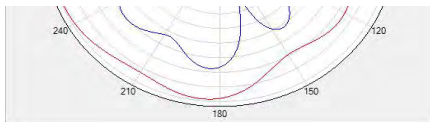


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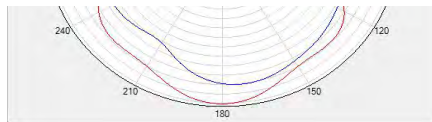


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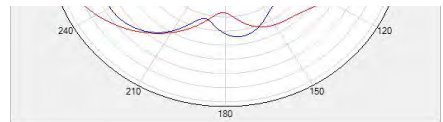




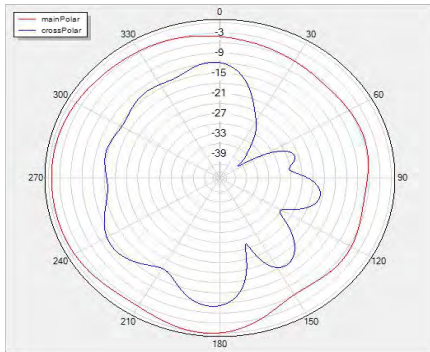
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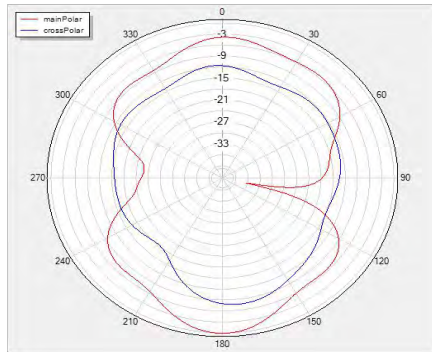
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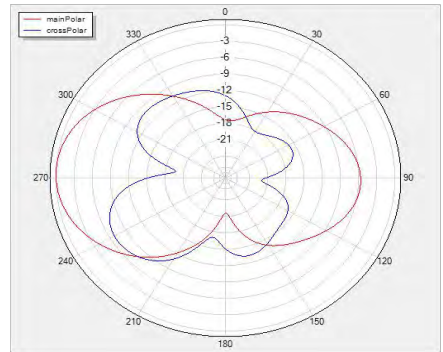
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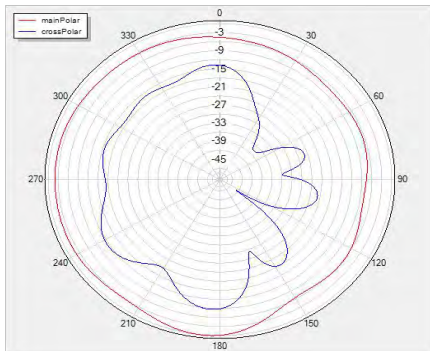
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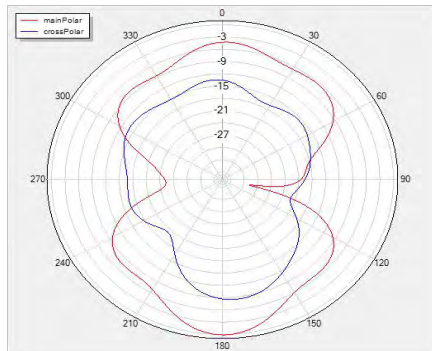
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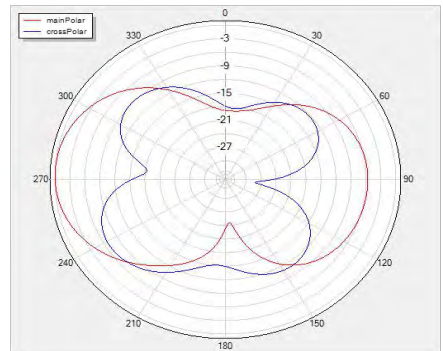
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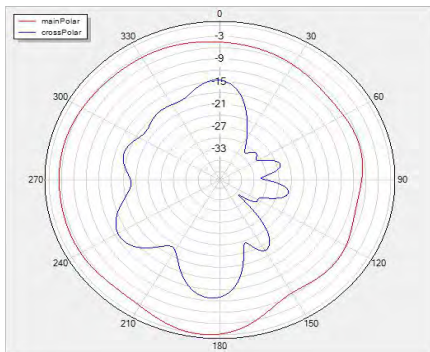
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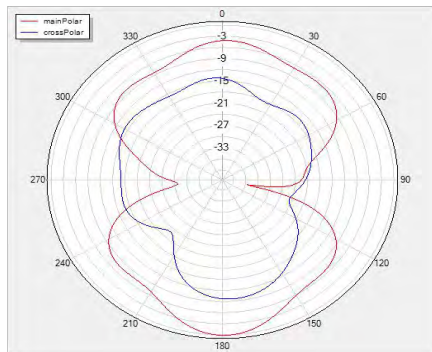
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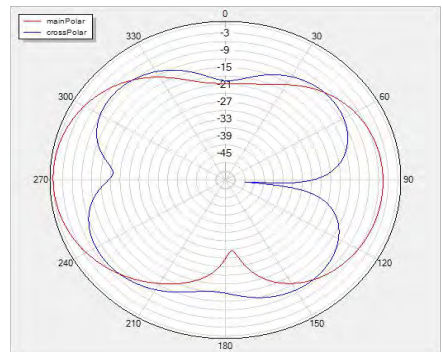
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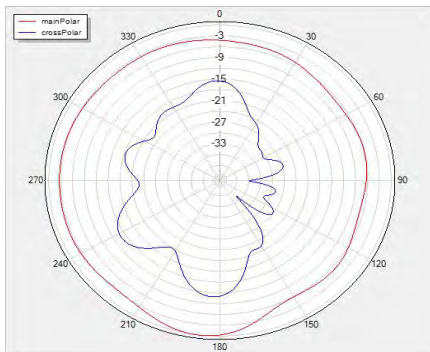
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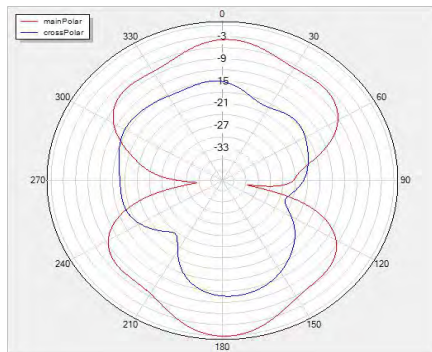
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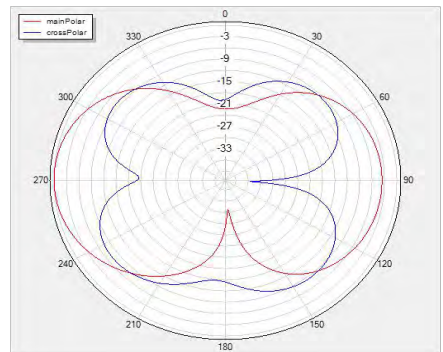
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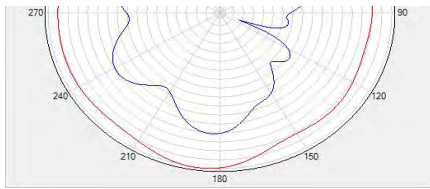
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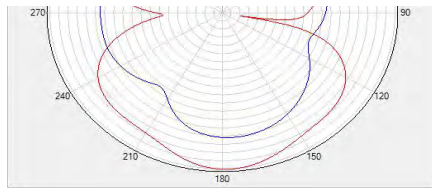
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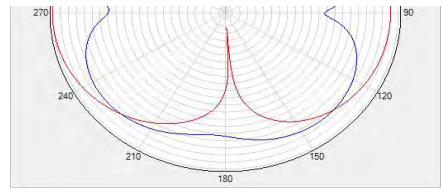
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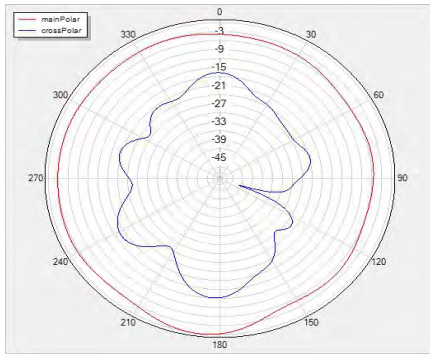
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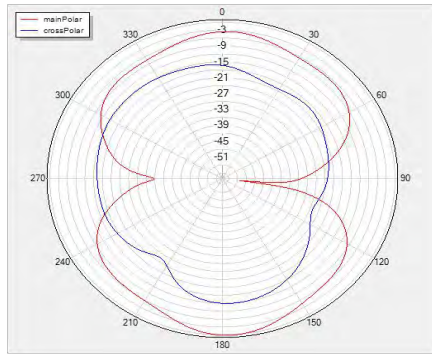
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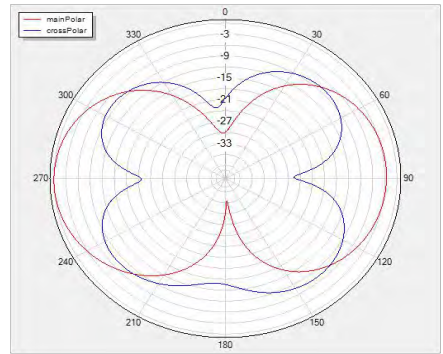
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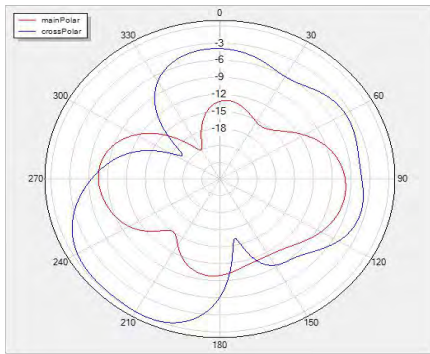
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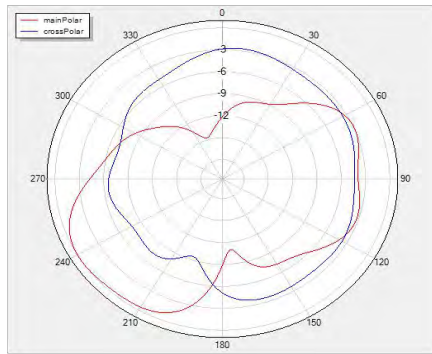
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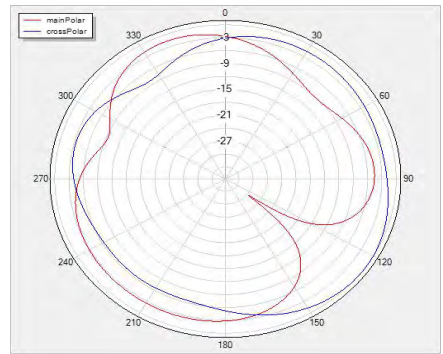
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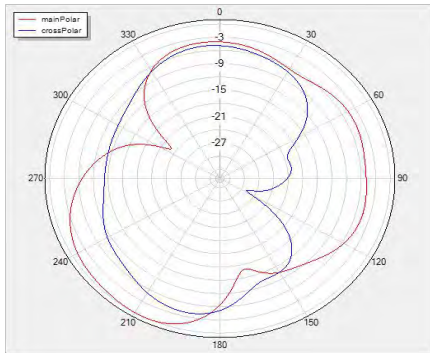
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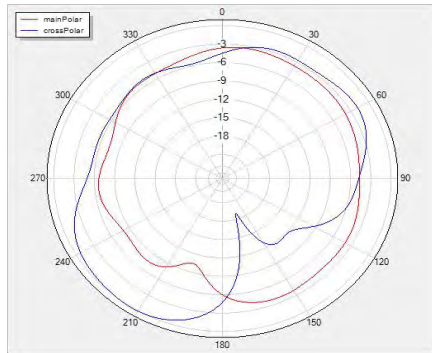
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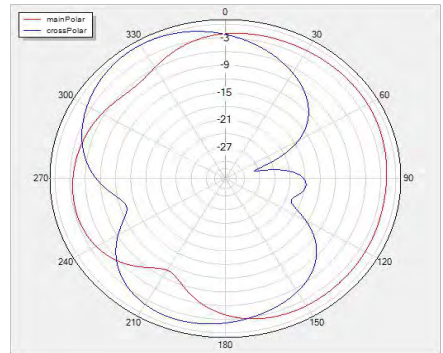
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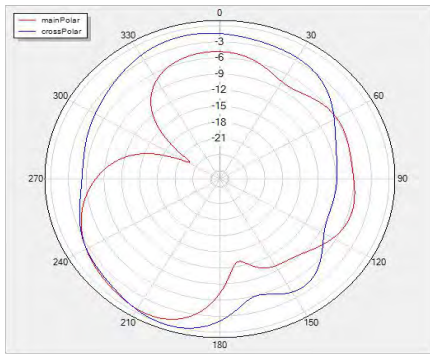
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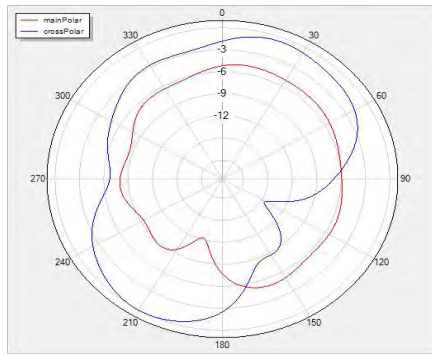
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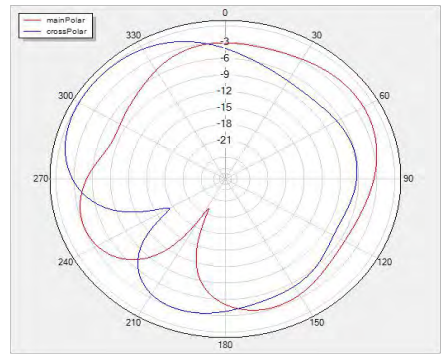
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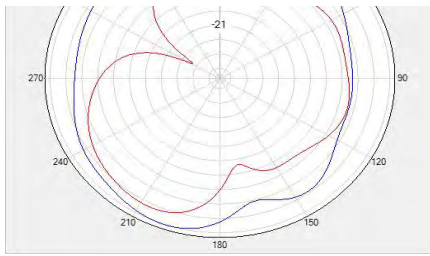
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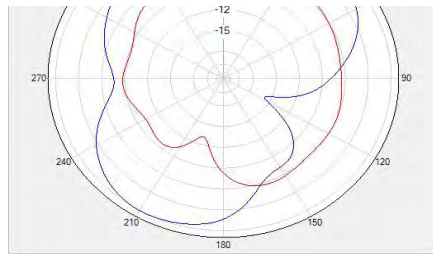
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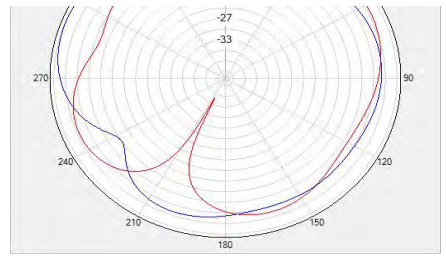
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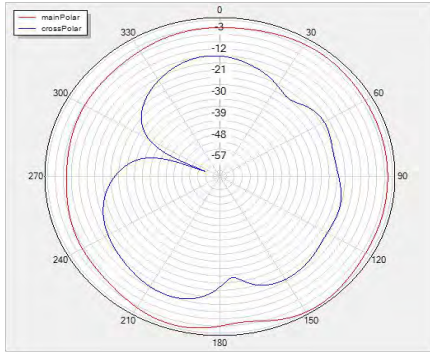
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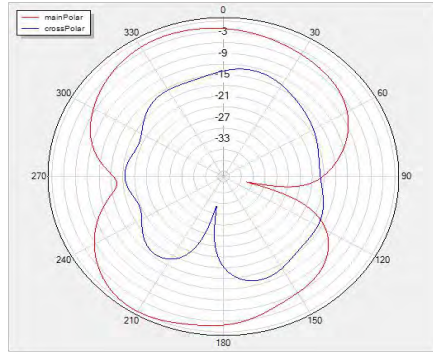
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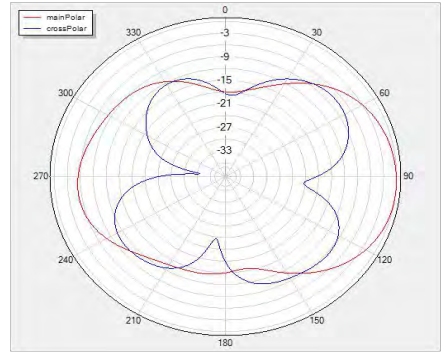
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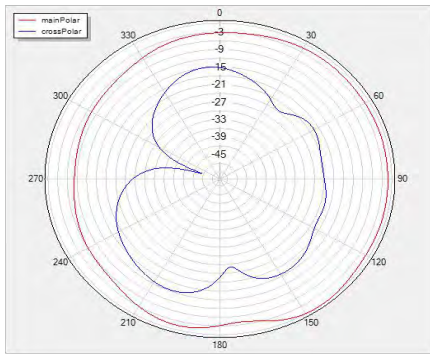
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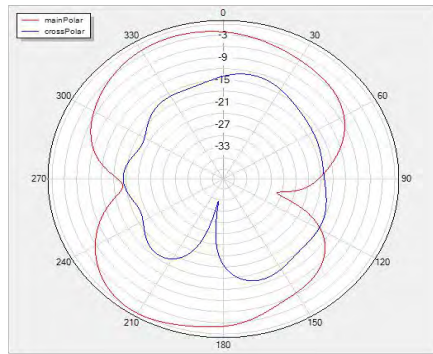
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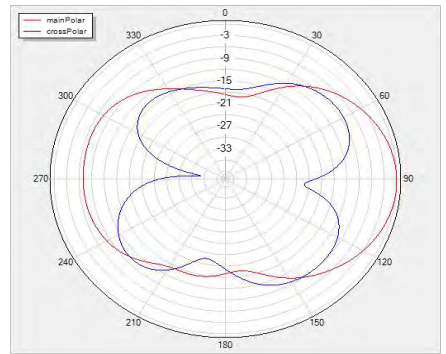
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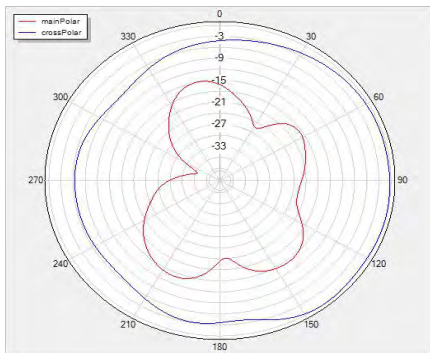
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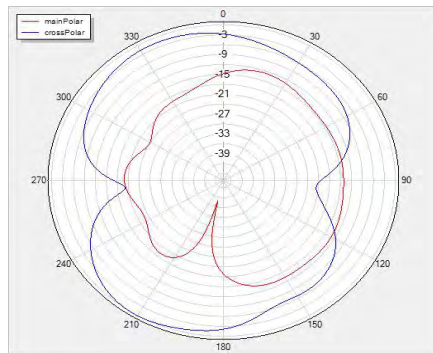
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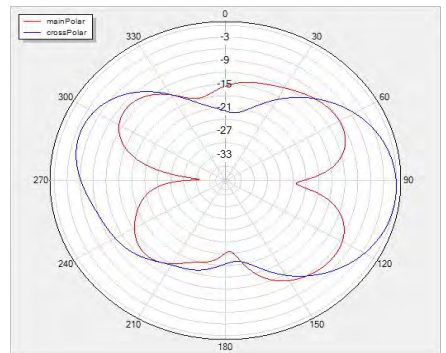
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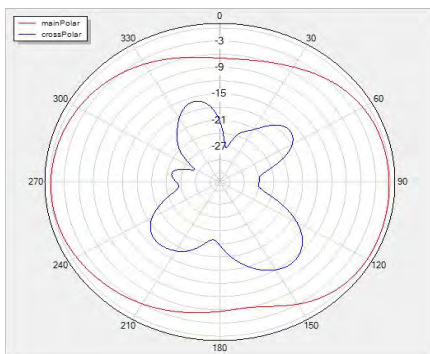
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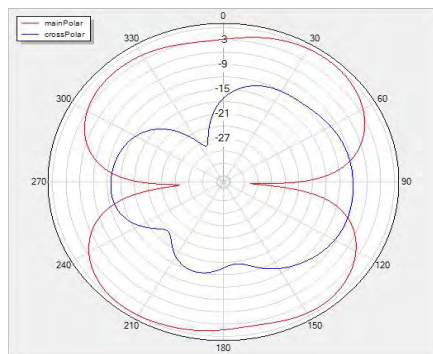
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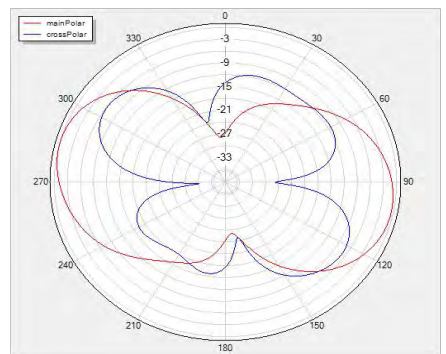
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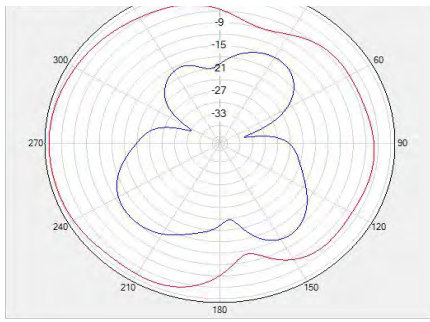
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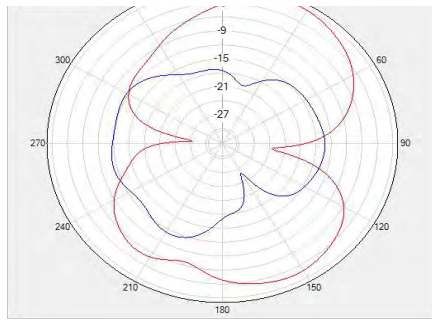
Phi=0 deg freq=1830MHz



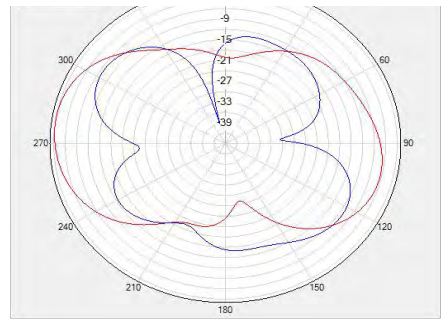
Theta=90 deg freq=1830MHz



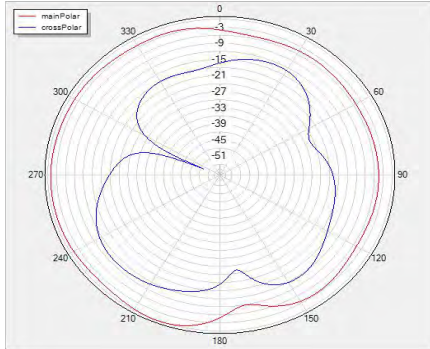
Phi=90 deg freq=1870MHz



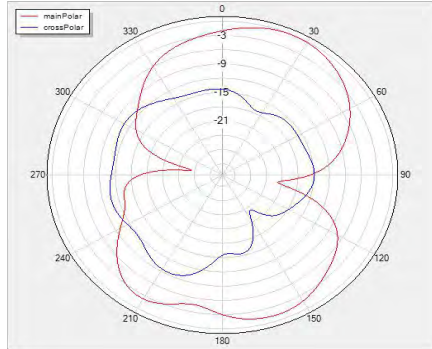
Phi=0 deg freq=1870MHz



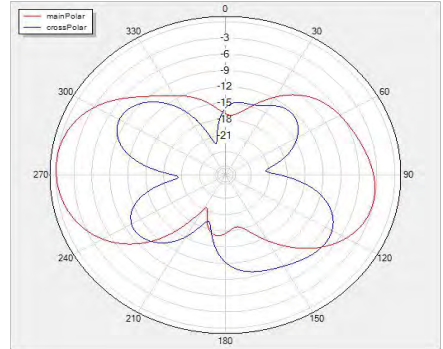
Theta=90 deg freq=1870MHz



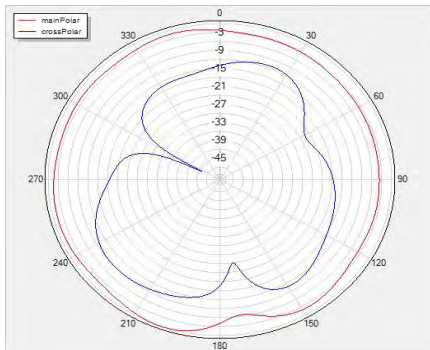
Phi=90 deg freq=1910MHz



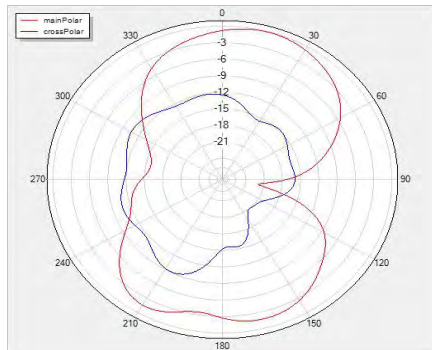
Phi=0 deg freq=1910MHz



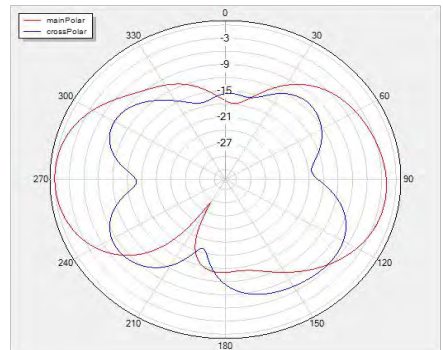
Theta=90 deg freq=1910MHz



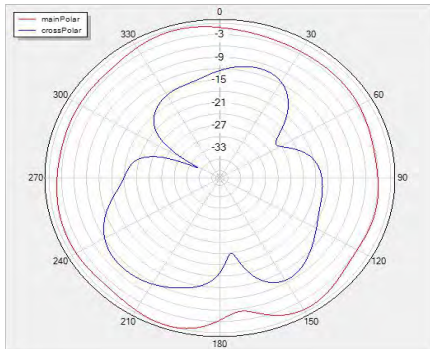
Phi=90 deg freq=1950MHz



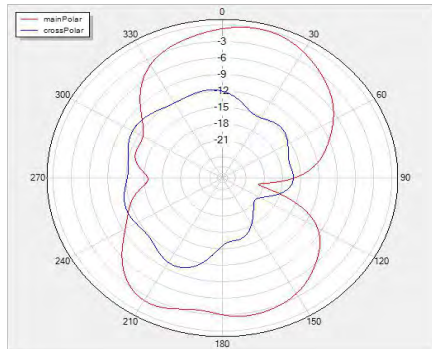
Phi=0 deg freq=1950MHz



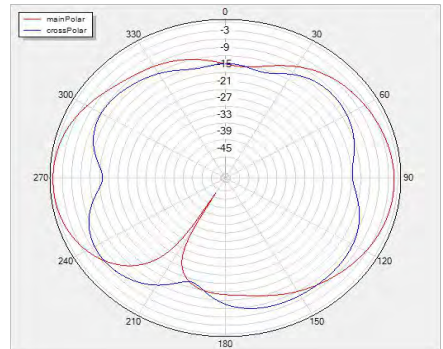
Theta=90 deg freq=1950MHz



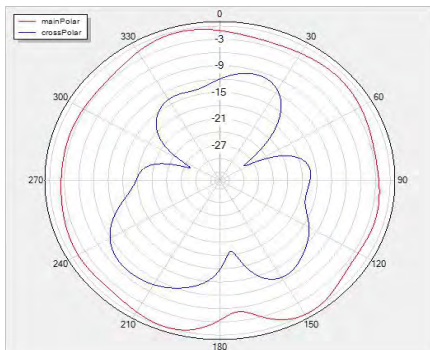
Phi=90 deg freq=1990MHz



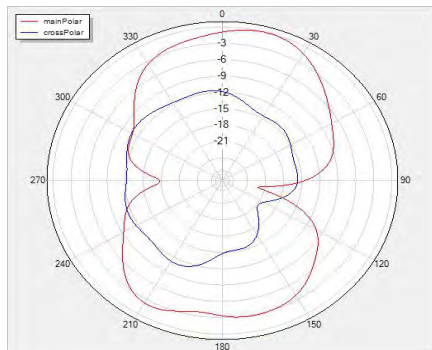
Phi=0 deg freq=1990MHz



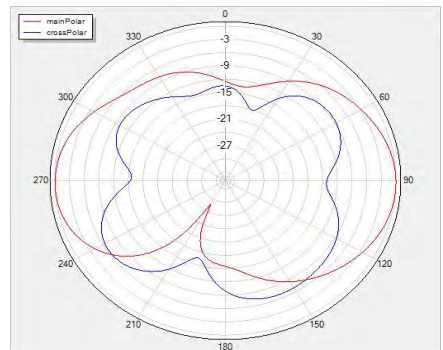
Theta=90 deg freq=1990MHz



Phi=90 deg freq=2030MHz

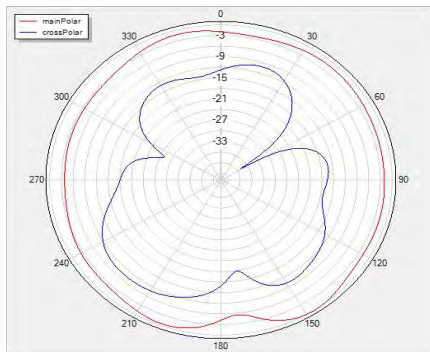


Phi=0 deg freq=2030MHz

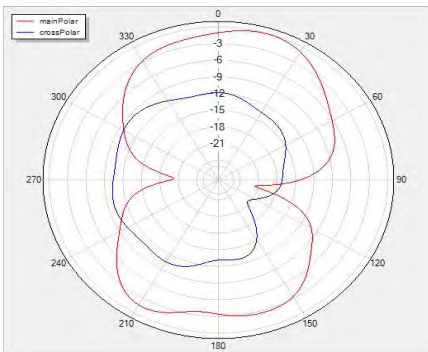


Theta=90 deg freq=2030MHz

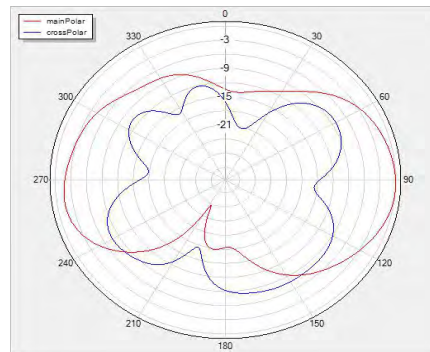
$\Phi=90$ freq=2030MHz



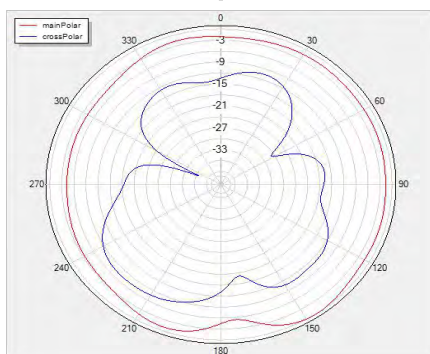
$\Phi=0$ freq=2030MHz



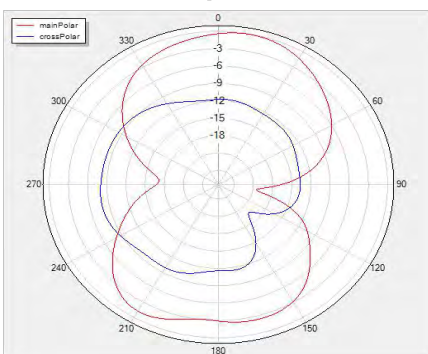
$\Gamma_{\text{eta}}=90$ freq=2030MHz



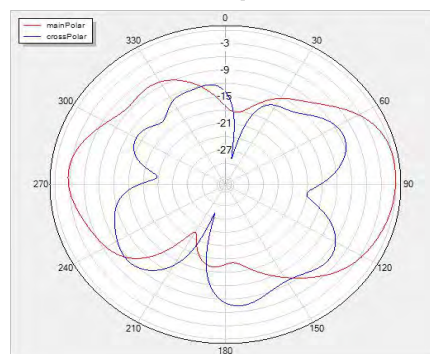
$\Phi=90$ freq=2070MHz



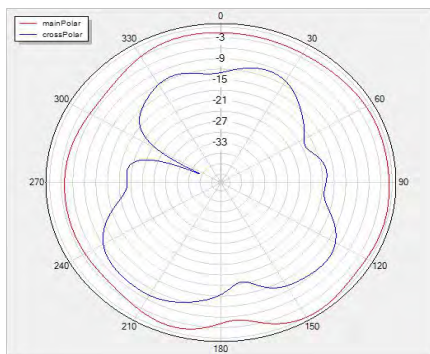
$\Phi=0$ freq=2070MHz



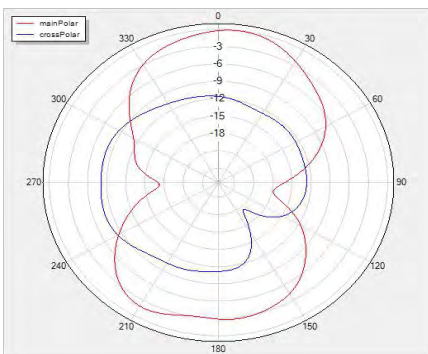
$\Theta=90$ freq=2070MHz



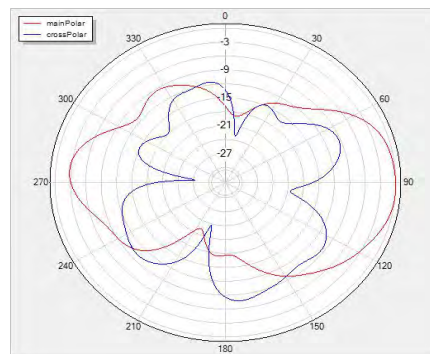
$\Phi=90$ freq=2110MHz



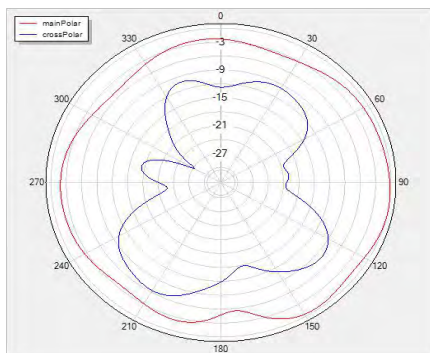
$\Phi=0$ freq=2110MHz



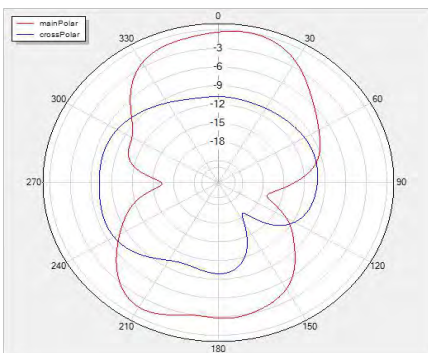
$\Theta=90$ freq=2110MHz



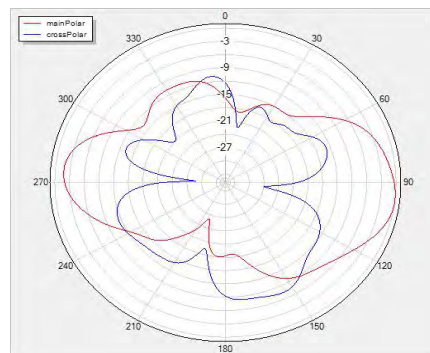
$\Phi=90$ freq=2150MHz



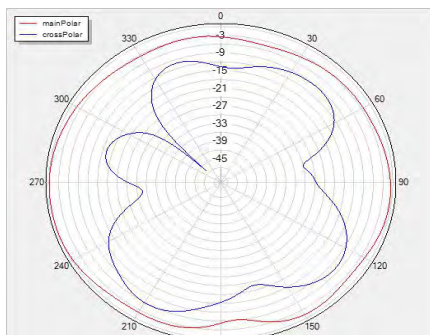
$\Phi=0$ freq=2150MHz



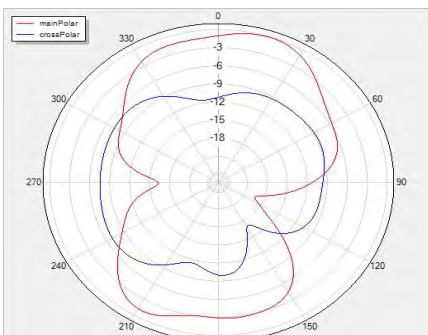
$\Theta=90$ freq=2150MHz



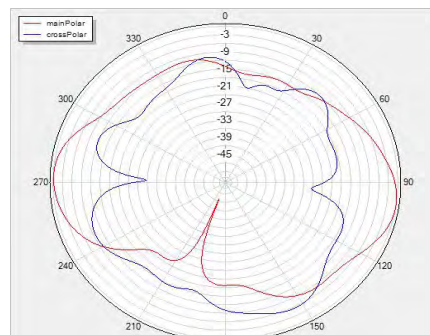
$\Phi=90$ freq=2190MHz



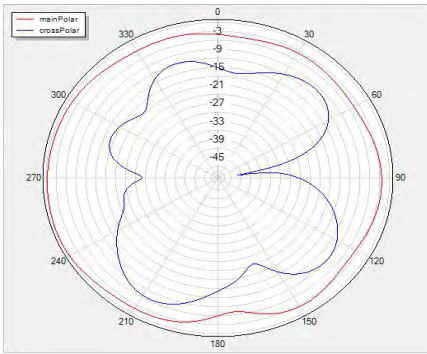
$\Phi=0$ freq=2190MHz



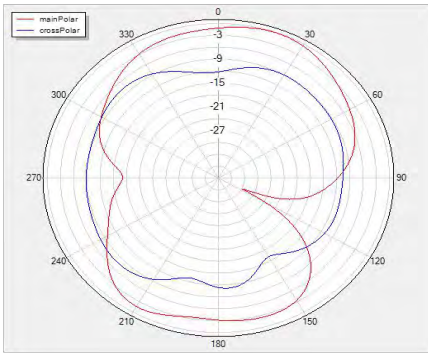
$\Theta=90$ freq=2190MHz



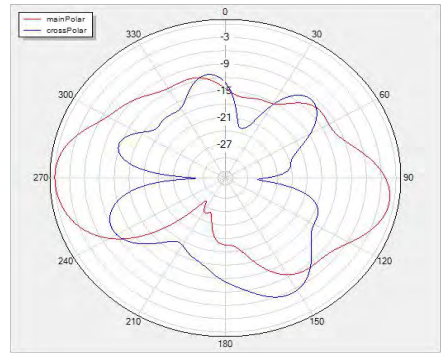
Phi=90 freq=2230MHz



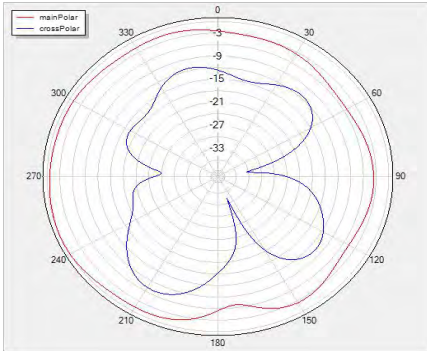
Phi=0 freq=2230MHz



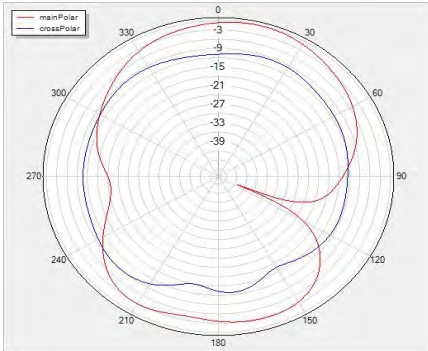
Theta=90 freq=2230MHz



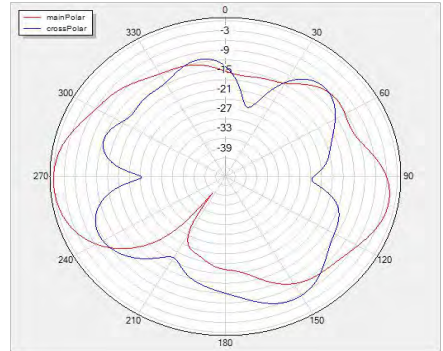
Phi=90 freq=2270MHz



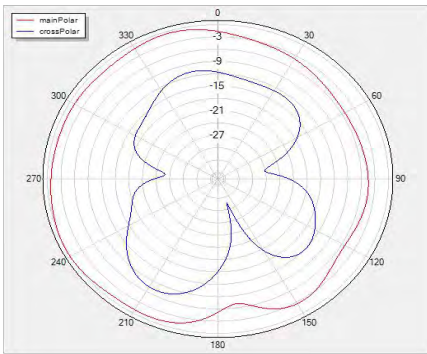
Phi=0 freq=2270MHz



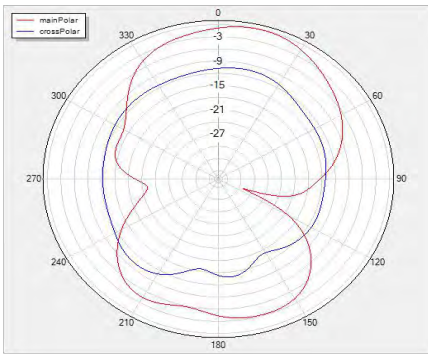
Theta=90 freq=2270MHz



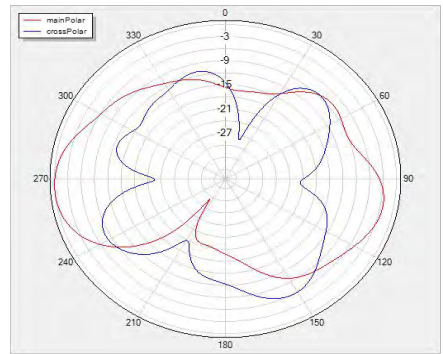
Phi=90 freq=2310MHz



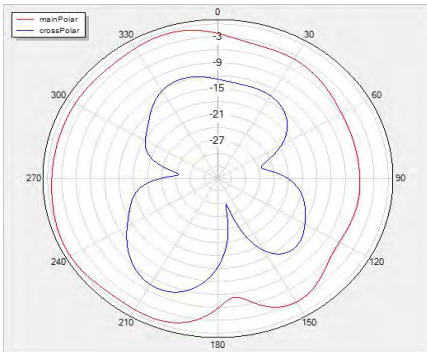
Phi=0 freq=2310MHz



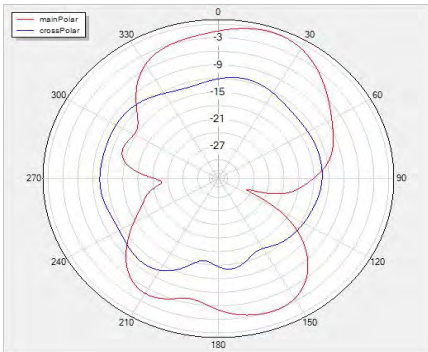
Theta=90 freq=2310MHz



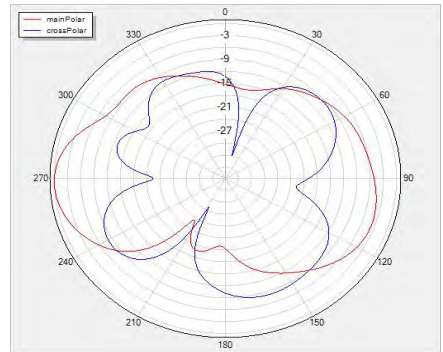
Phi=90 freq=2350MHz



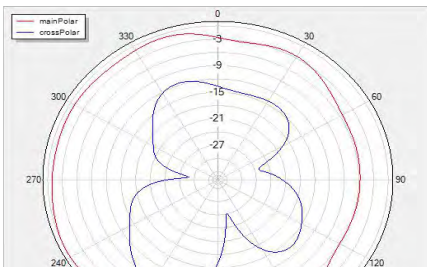
Phi=0 freq=2350MHz



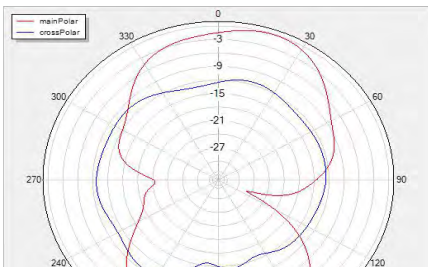
Theta=90 freq=2350MHz



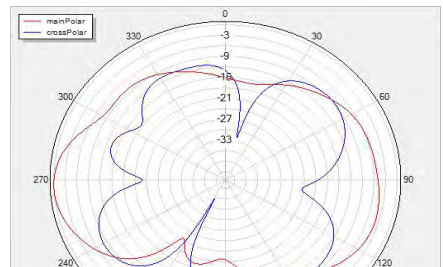
Phi=90 freq=2390MHz

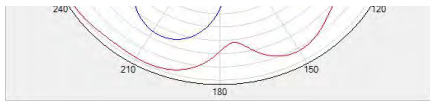


Phi=0 freq=2390MHz

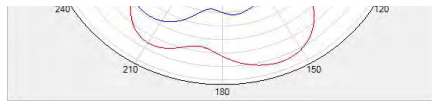
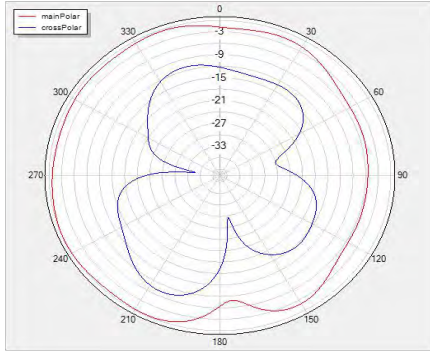


Theta=90 freq=2390MHz

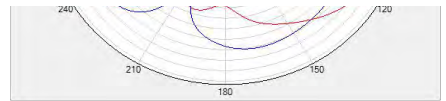
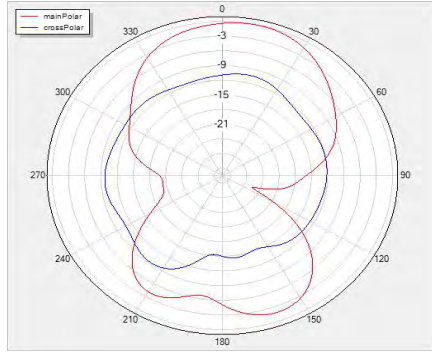




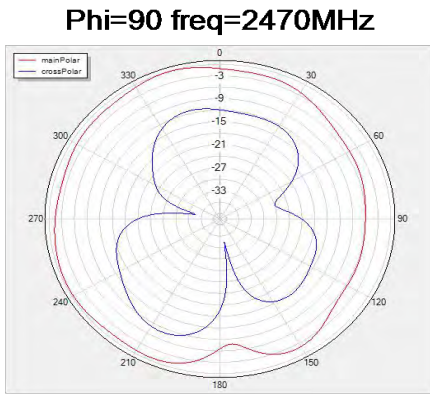
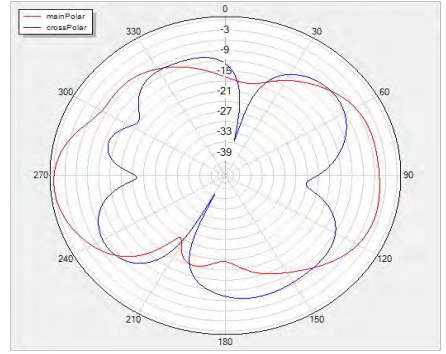
Phi=90 freq=2430MHz



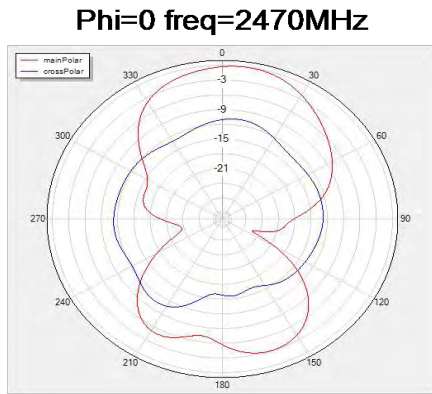
Phi=0 freq=2430MHz



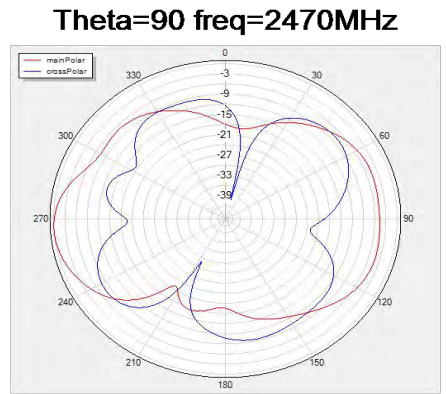
Theta=90 freq=2430MHz



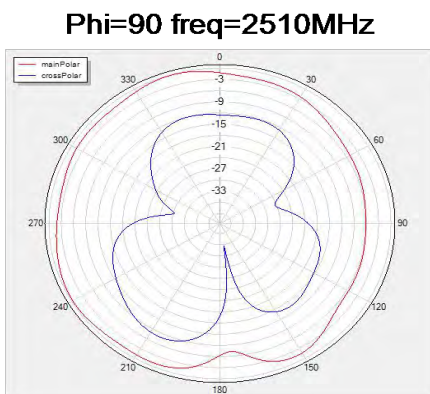
Phi=90 freq=2470MHz



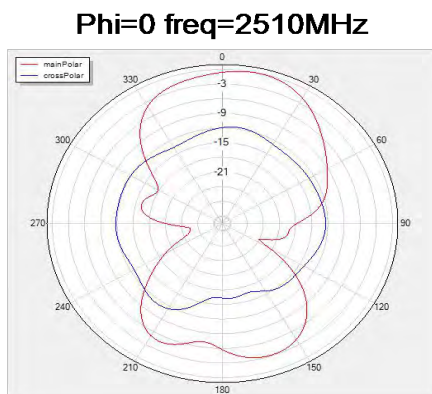
Phi=0 freq=2470MHz



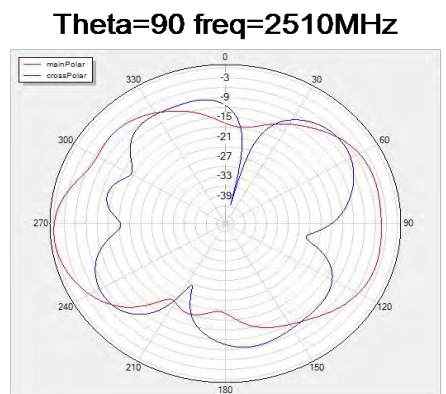
Theta=90 freq=2470MHz



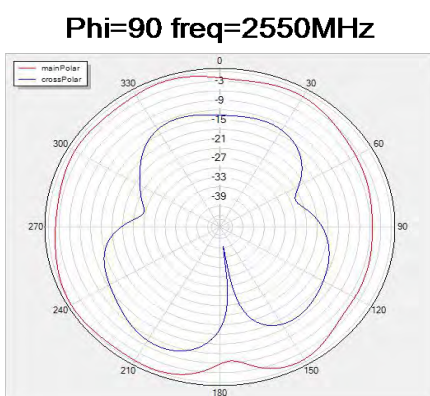
Phi=90 freq=2510MHz



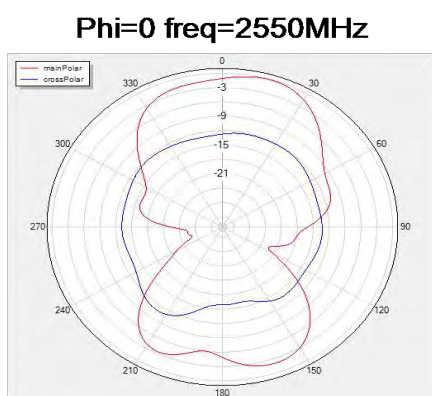
Phi=0 freq=2510MHz



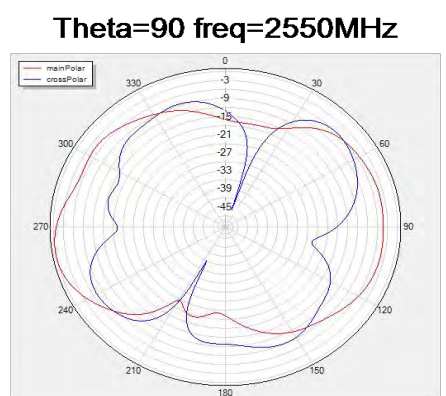
Theta=90 freq=2510MHz



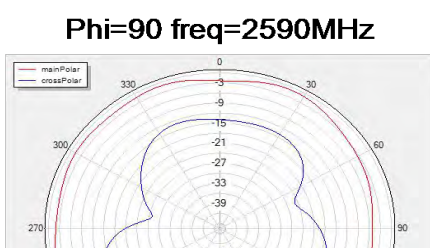
Phi=90 freq=2550MHz



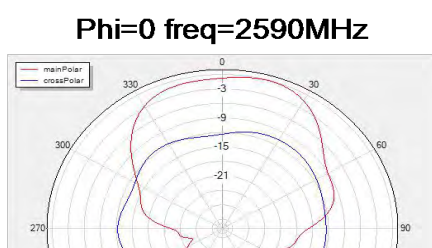
Phi=0 freq=2550MHz



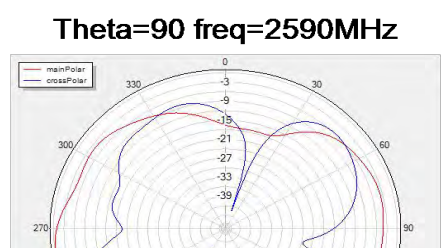
Theta=90 freq=2550MHz



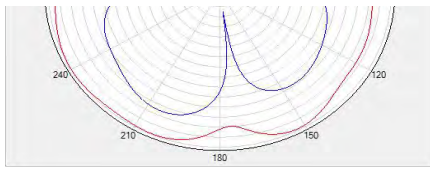
Phi=90 freq=2590MHz



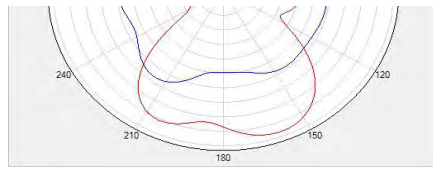
Phi=0 freq=2590MHz



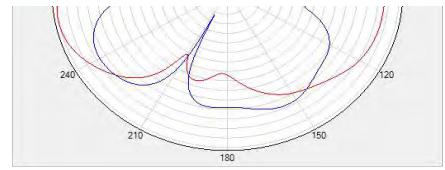
Theta=90 freq=2590MHz



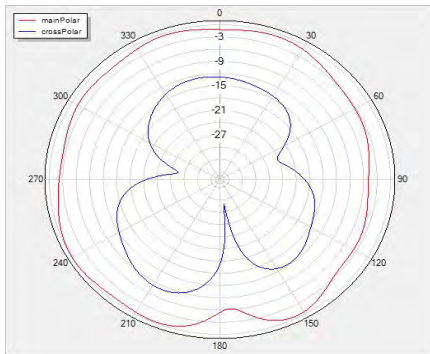
$\Phi=90$ freq=2630MHz



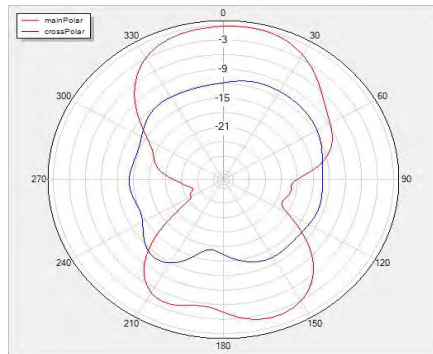
$\Phi=0$ freq=2630MHz



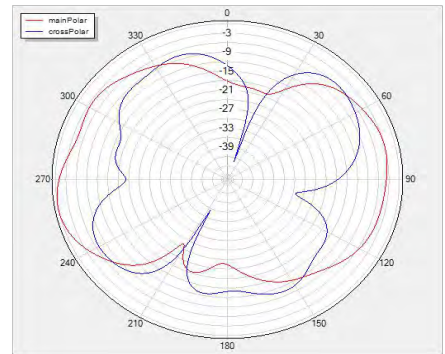
$\Theta=90$ freq=2630MHz



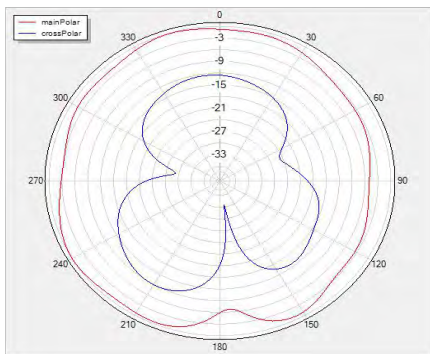
$\Phi=90$ freq=2670MHz



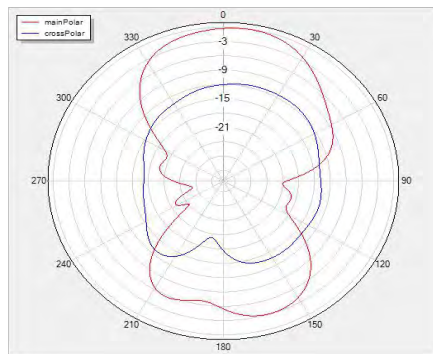
$\Phi=0$ freq=2670MHz



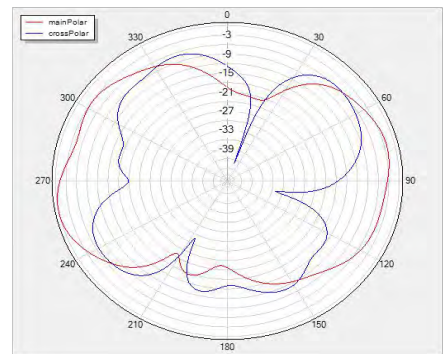
$\Theta=90$ freq=2670MHz



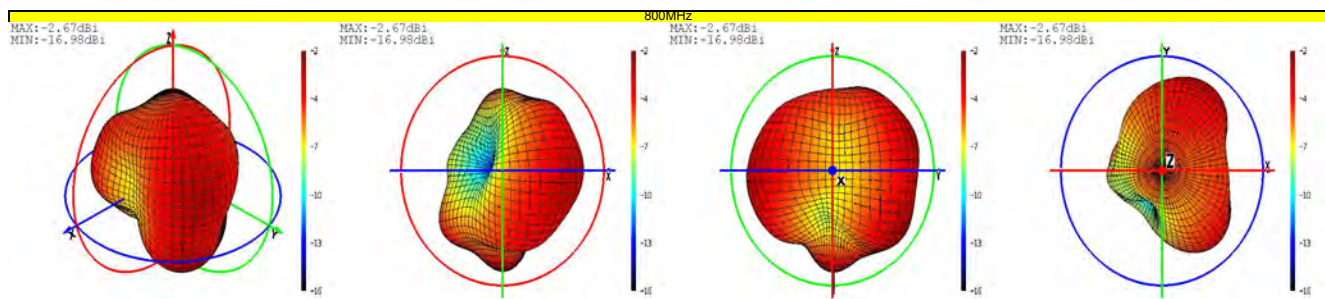
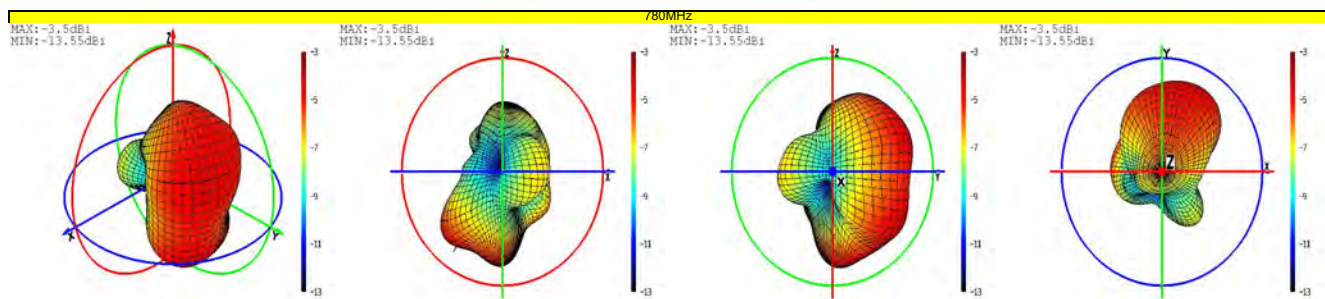
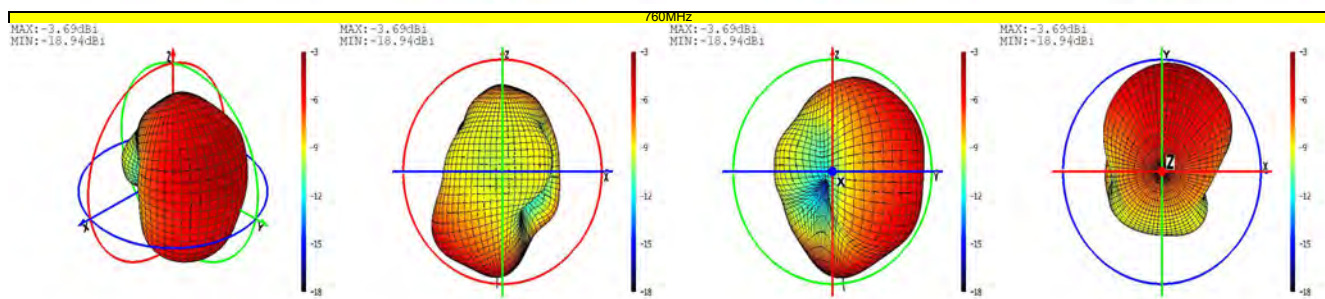
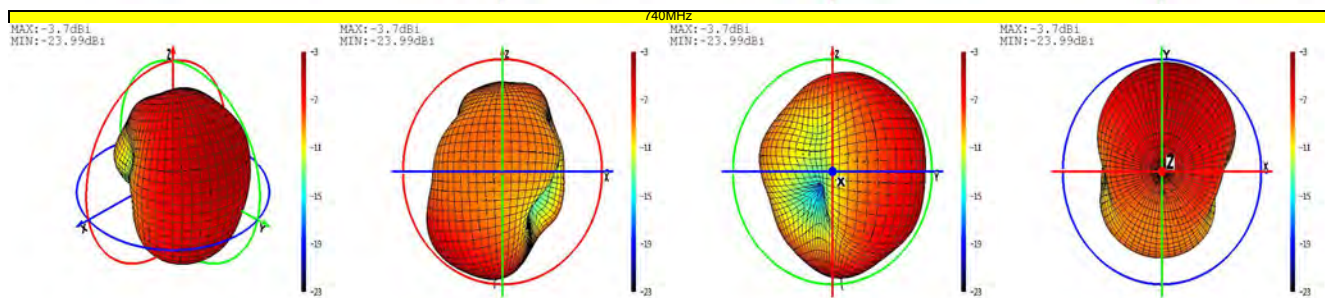
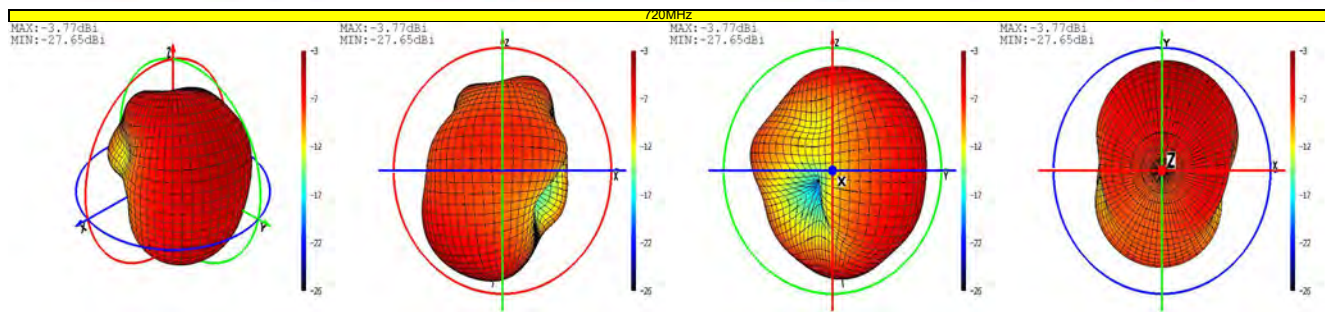
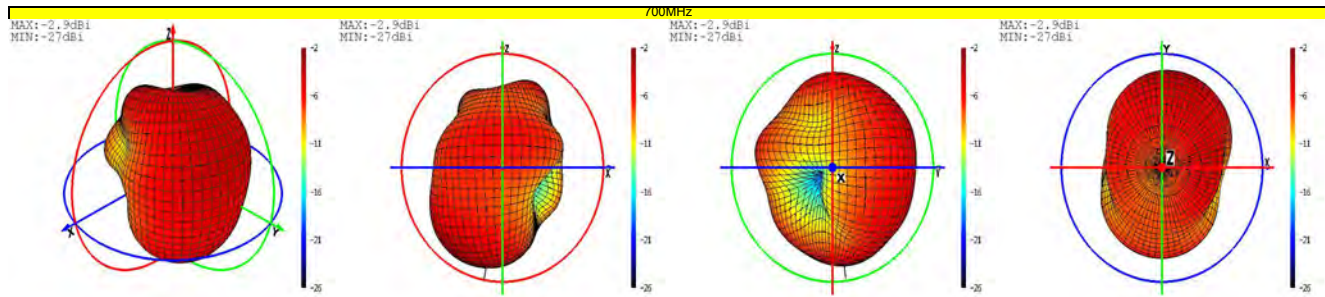
$\Phi=90$ freq=2710MHz



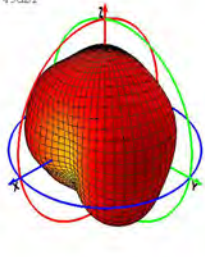
$\Phi=0$ freq=2710MHz



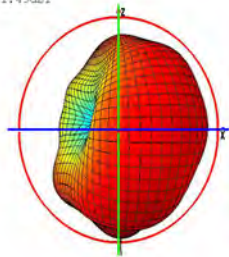
$\Theta=90$ freq=2710MHz



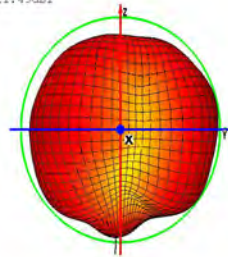
MAX:-1.93dB1
MIN:-21.49dB1



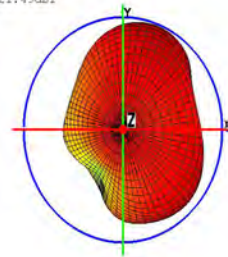
MAX:-1.93dB1
MIN:-21.49dB1



MAX:-1.93dB1
MIN:-21.49dB1

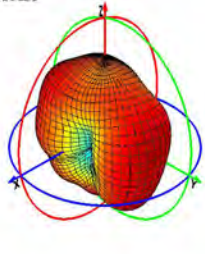


MAX:-1.93dB1
MIN:-21.49dB1

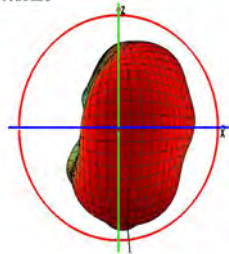


840MHz

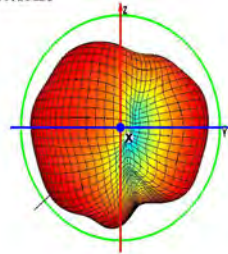
MAX:-2.29dB1
MIN:-16.23dB1



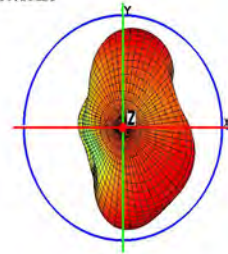
MAX:-2.29dB1
MIN:-16.23dB1



MAX:-2.29dB1
MIN:-16.23dB1

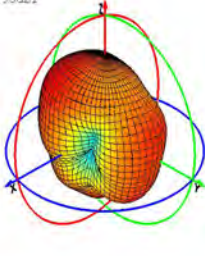


MAX:-2.29dB1
MIN:-16.23dB1

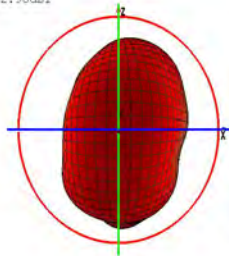


880MHz

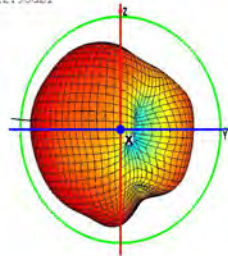
MAX:-0.37dB1
MIN:-22.98dB1



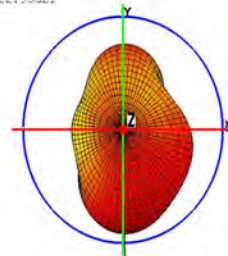
MAX:-0.37dB1
MIN:-22.98dB1



MAX:-0.37dB1
MIN:-22.98dB1

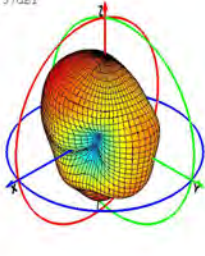


MAX:-0.37dB1
MIN:-22.98dB1

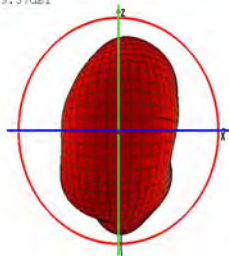


880MHz

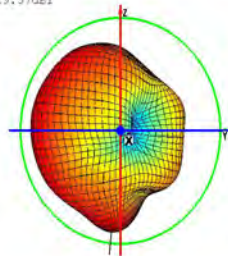
MAX:1.39dB1
MIN:-19.57dB1



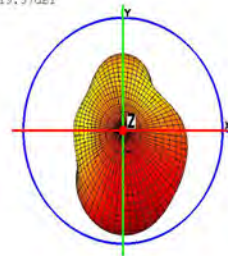
MAX:1.39dB1
MIN:-19.57dB1



MAX:1.39dB1
MIN:-19.57dB1

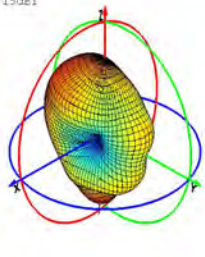


MAX:1.39dB1
MIN:-19.57dB1

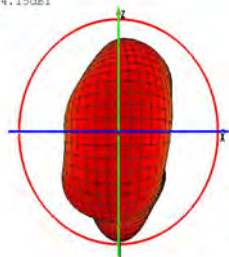


900MHz

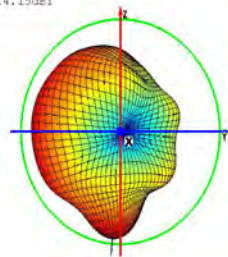
MAX:3.46dB1
MIN:-14.15dB1



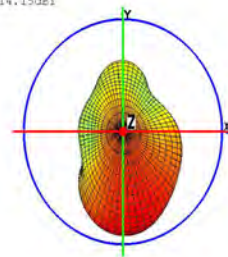
MAX:3.46dB1
MIN:-14.15dB1



MAX:3.46dB1
MIN:-14.15dB1

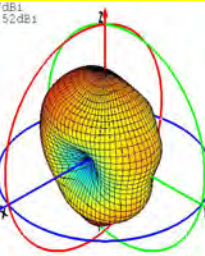


MAX:3.46dB1
MIN:-14.15dB1

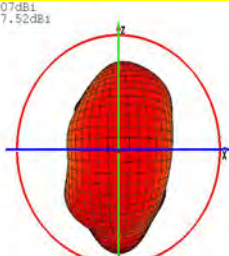


920MHz

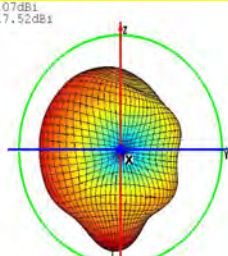
MAX:5.07dB1
MIN:-17.52dB1



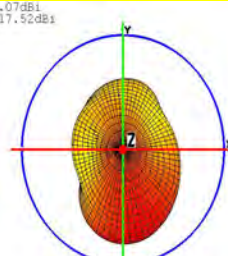
MAX:5.07dB1
MIN:-17.52dB1



MAX:5.07dB1
MIN:-17.52dB1



MAX:5.07dB1
MIN:-17.52dB1



940MHz

MAX:6.03dB1
MIN:-18.46dB1



MAX:6.03dB1
MIN:-18.46dB1

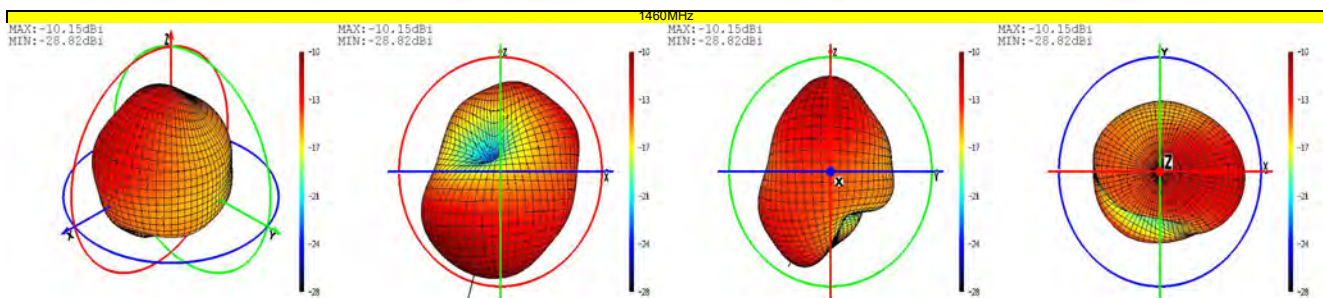
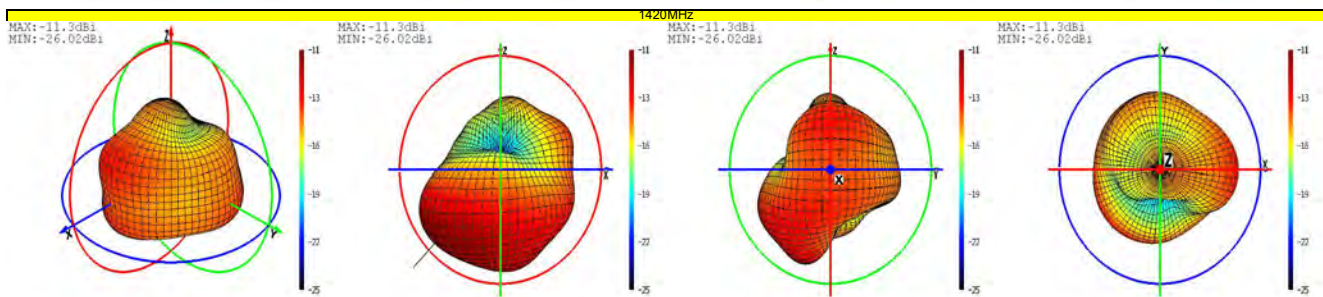
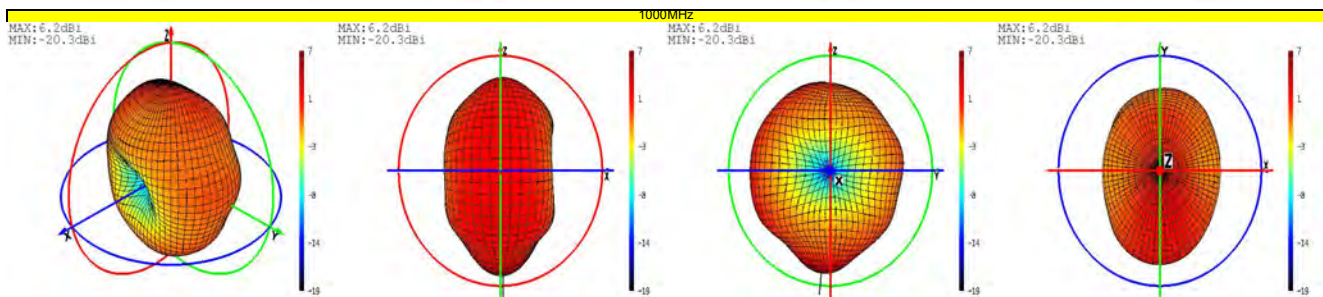
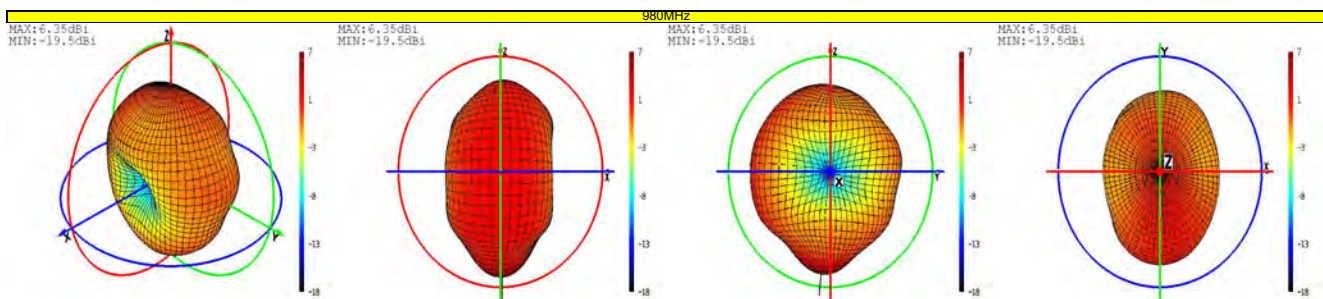
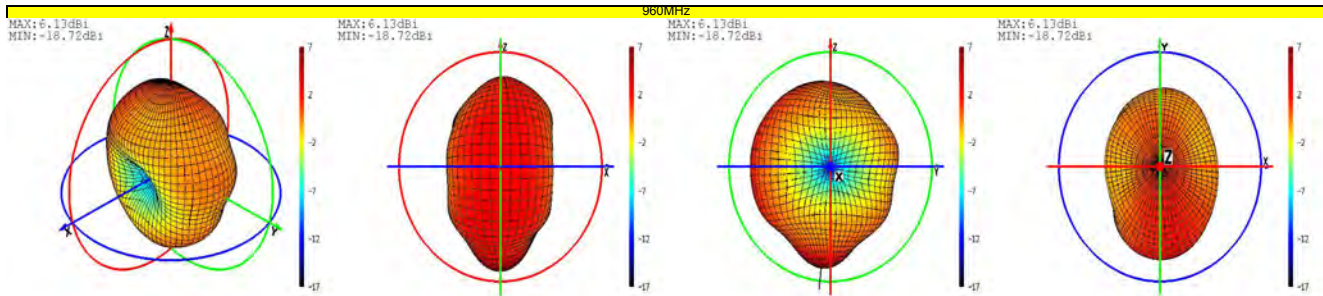
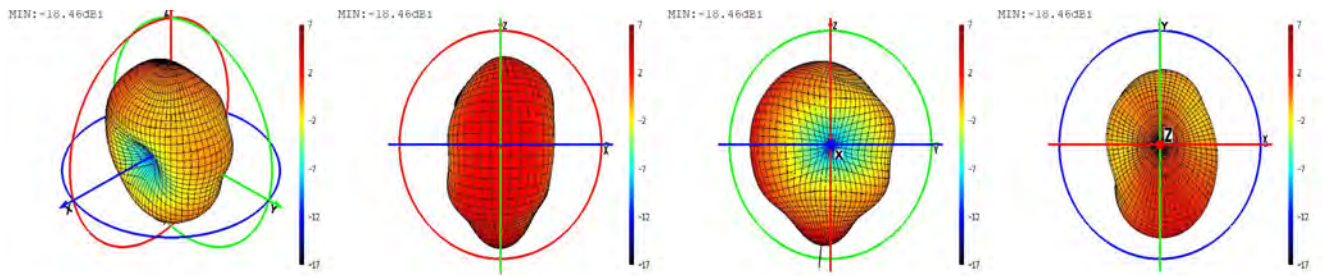


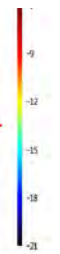
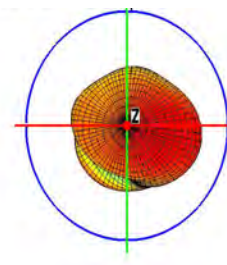
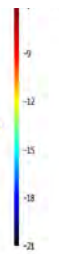
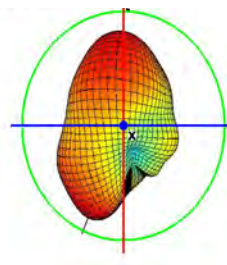
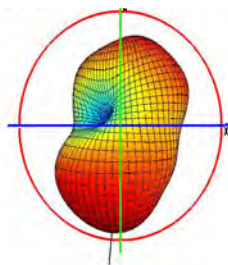
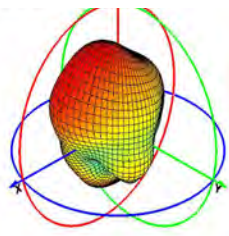
MAX:6.03dB1
MIN:-18.46dB1



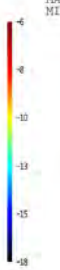
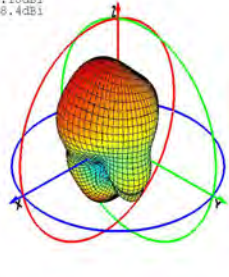
MAX:6.03dB1
MIN:-18.46dB1



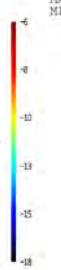
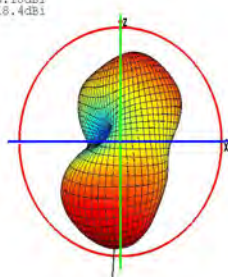




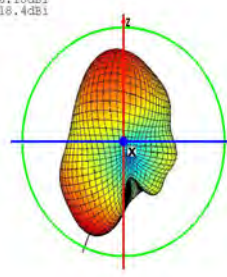
MAX:-6.18dB
MIN:-18.4dB



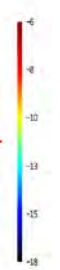
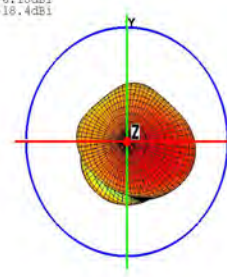
MAX:-6.18dB
MIN:-18.4dB



MAX:-6.18dB
MIN:-18.4dB

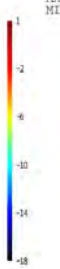
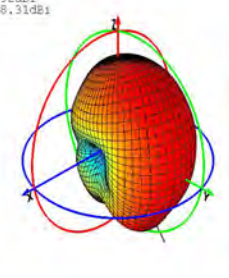


MAX:-6.18dB
MIN:-18.4dB

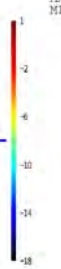
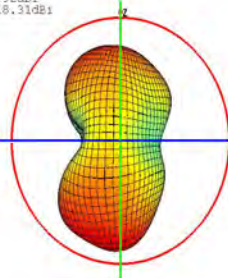


1520MHZ

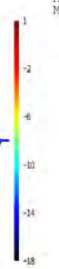
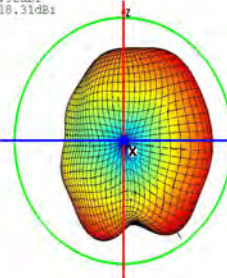
MAX:0.92dB
MIN:-18.31dB



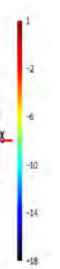
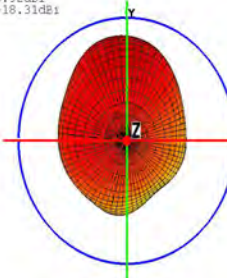
MAX:0.92dB
MIN:-18.31dB



MAX:0.92dB
MIN:-18.31dB

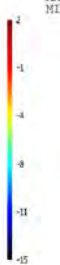
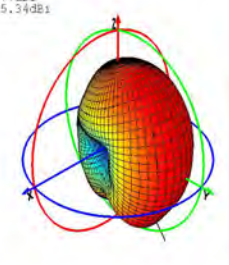


MAX:0.92dB
MIN:-18.31dB

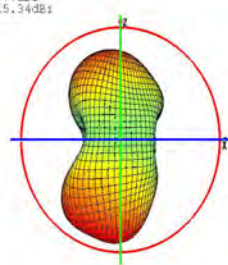


1700MHZ

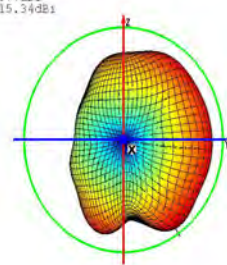
MAX:1.77dB
MIN:-15.34dB



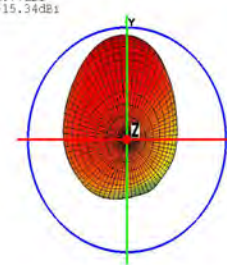
MAX:1.77dB
MIN:-15.34dB



MAX:1.77dB
MIN:-15.34dB

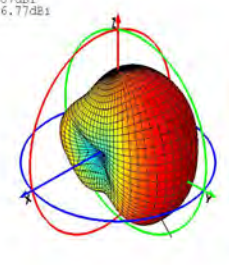


MAX:1.77dB
MIN:-15.34dB

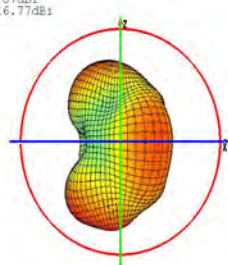


1710MHZ

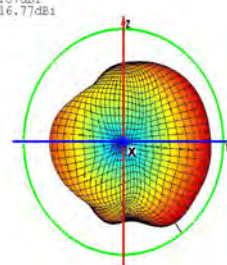
MAX:2.87dB
MIN:-16.77dB



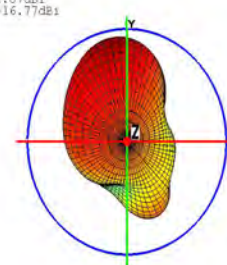
MAX:2.87dB
MIN:-16.77dB



MAX:2.87dB
MIN:-16.77dB

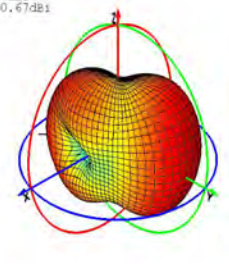


MAX:2.87dB
MIN:-16.77dB

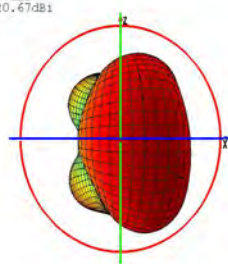


1750MHZ

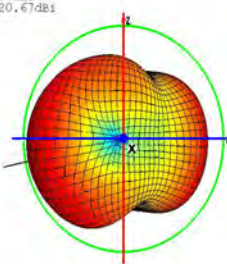
MAX:3.74dB
MIN:-20.67dB



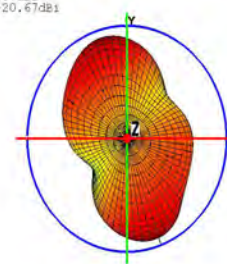
MAX:3.74dB
MIN:-20.67dB



MAX:3.74dB
MIN:-20.67dB



MAX:3.74dB
MIN:-20.67dB



1790MHZ

MAX:4.74dB
MIN:-14.74dB



MAX:4.74dB
MIN:-14.74dB



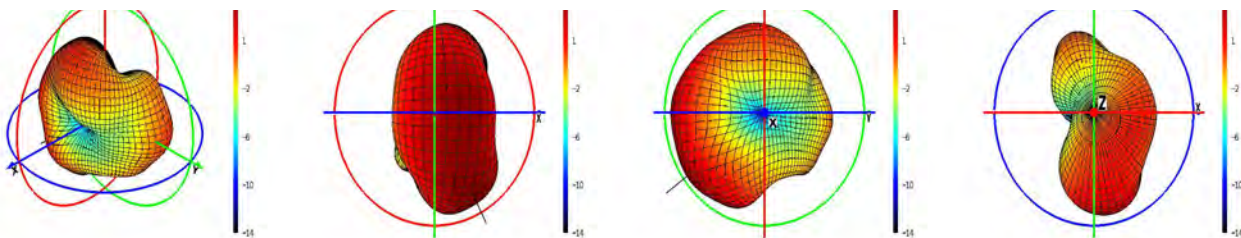
MAX:4.74dB
MIN:-14.74dB



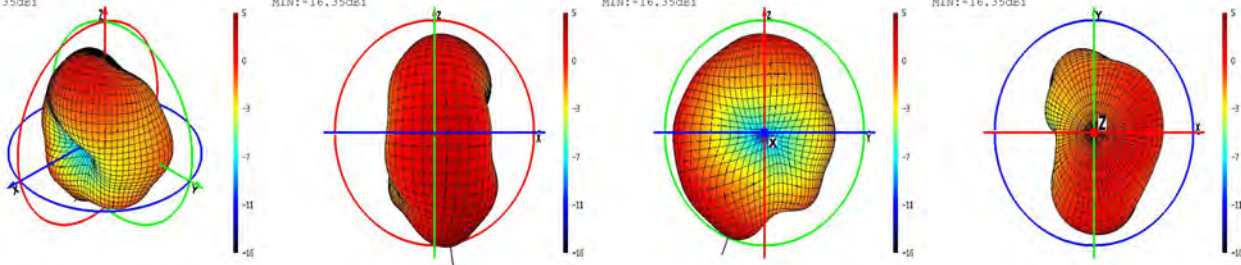
MAX:4.74dB
MIN:-14.74dB



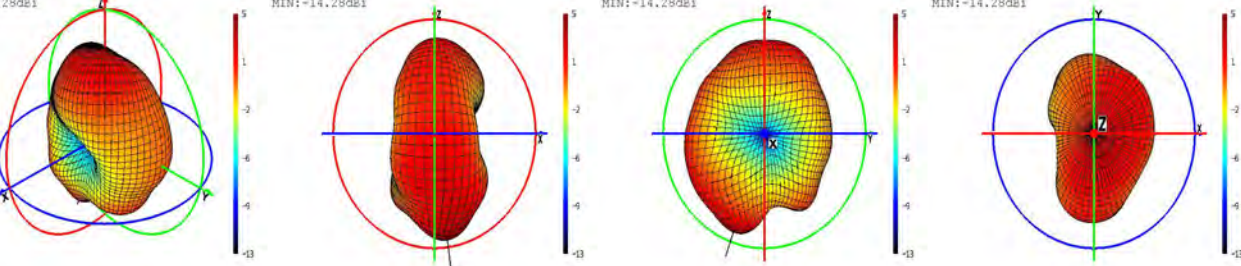
1830MHZ



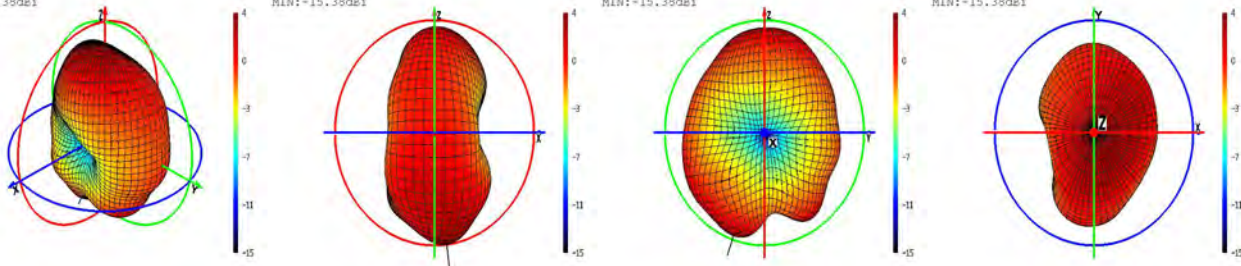
1870MHz
MAX: 4.74dBm
MIN: -16.35dBm



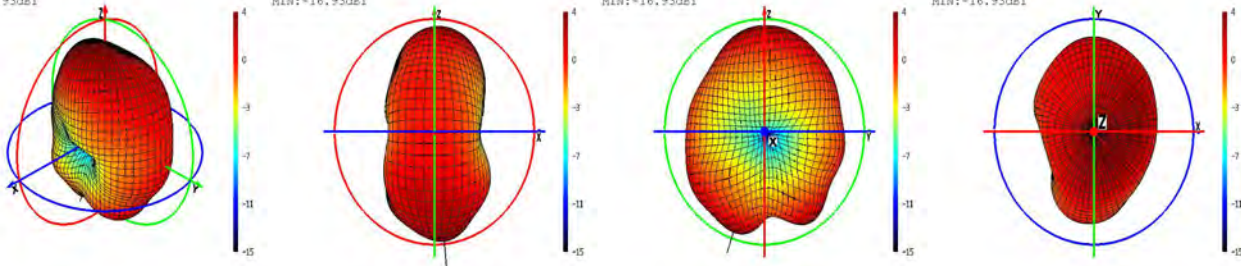
1870MHz
MAX: 4.22dBm
MIN: -14.28dBm



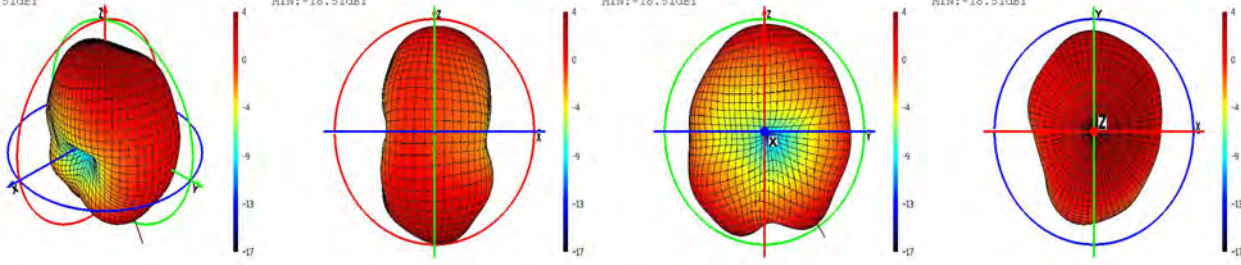
1870MHz
MAX: 3.65dBm
MIN: -15.38dBm



1870MHz
MAX: 3.03dBm
MIN: -16.93dBm

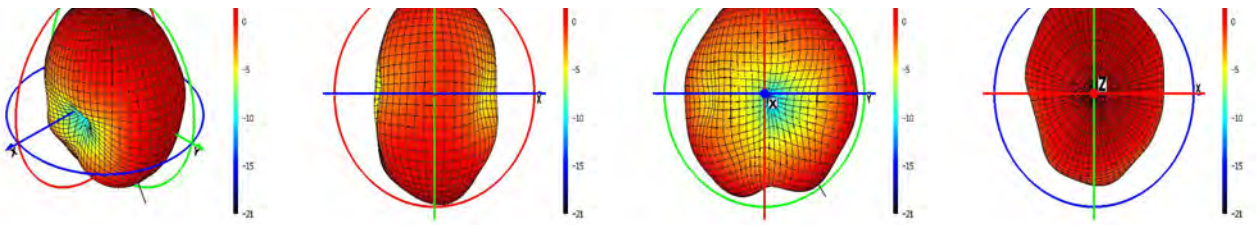


2030MHz
MAX: 3.49dBm
MIN: -18.51dBm

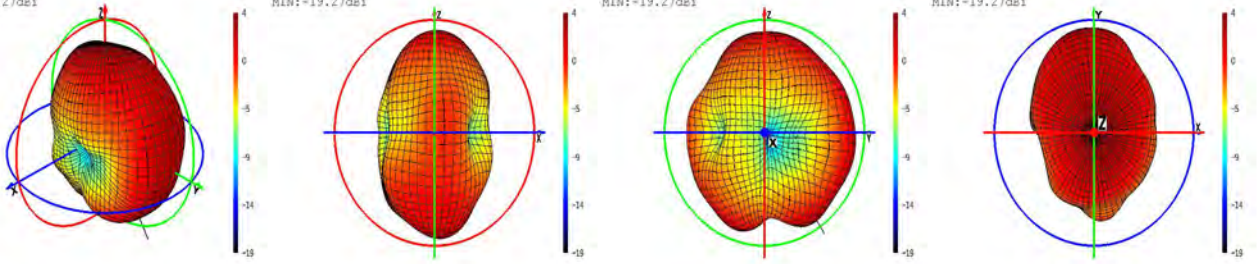


2070MHz
MAX: 4.02dBm
MIN: -22.01dBm

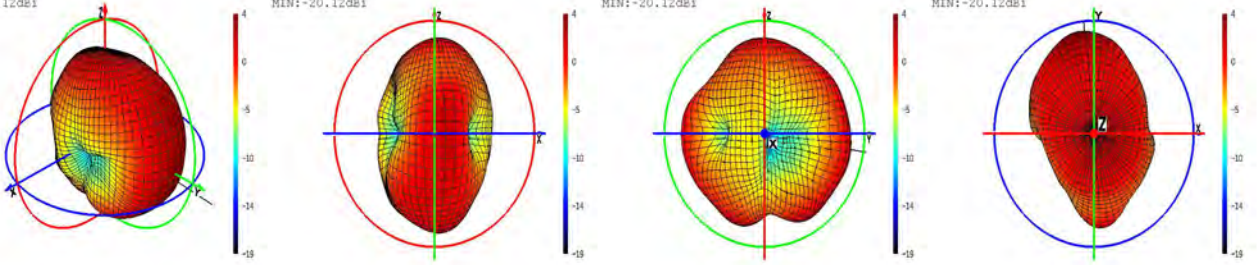




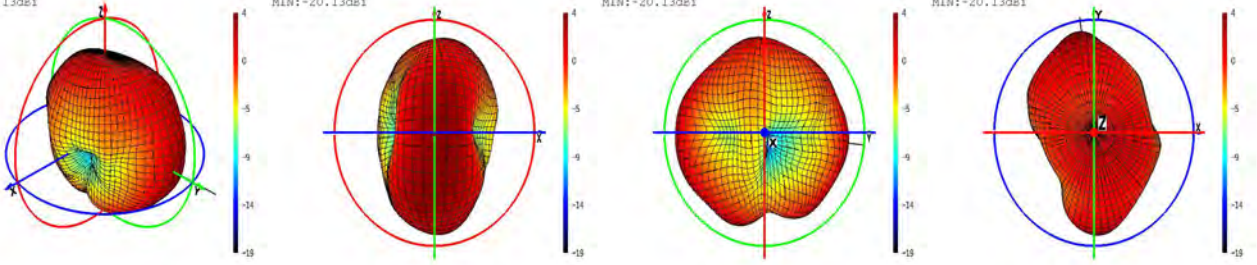
2110MHz
 MAX: 3.85dB1
 MIN: -19.27dB1



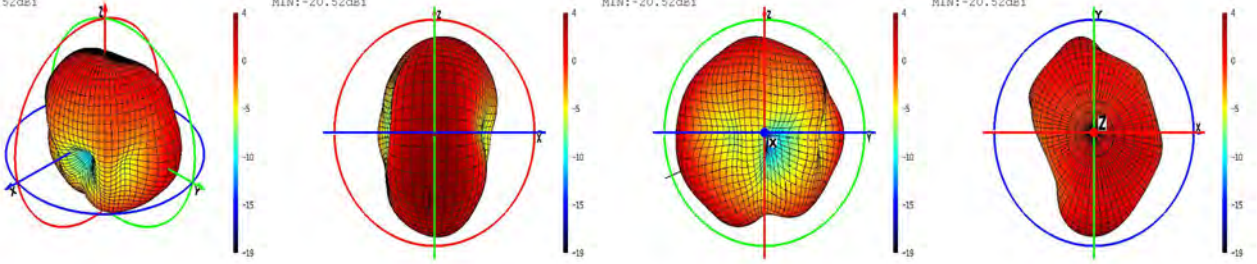
2150MHz
 MAX: 3.38dB1
 MIN: -20.12dB1



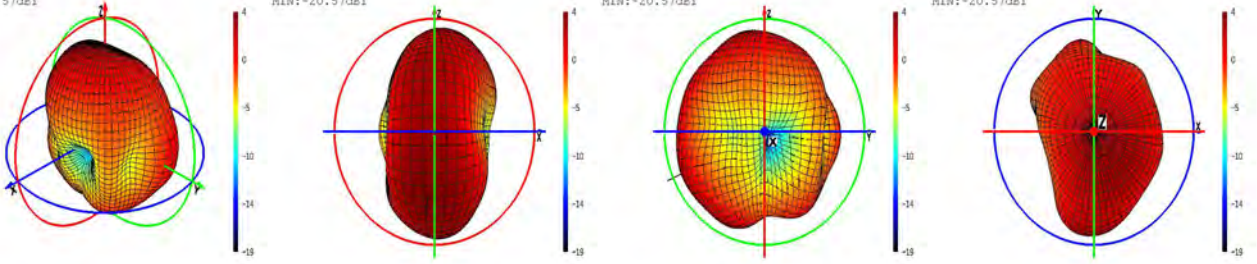
2190MHz
 MAX: 3.12dB1
 MIN: -20.13dB1



2230MHz
 MAX: 3.26dB1
 MIN: -20.52dB1

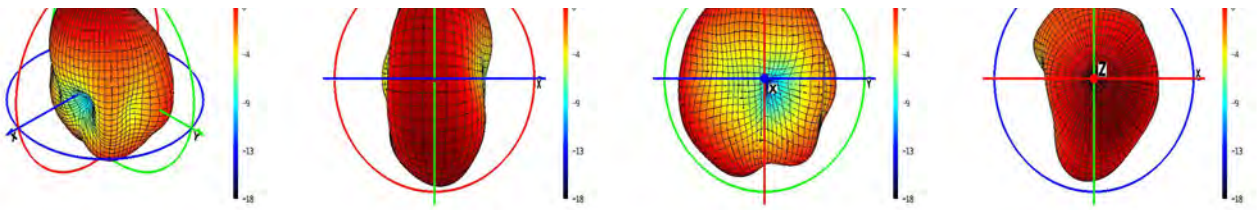


2270MHz
 MAX: 3.02dB1
 MIN: -20.57dB1

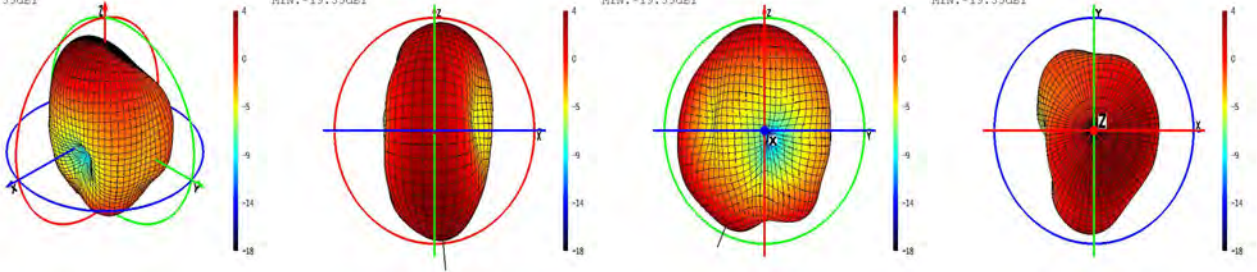


2310MHz
 MAX: 3.08dB1
 MIN: -18.92dB1

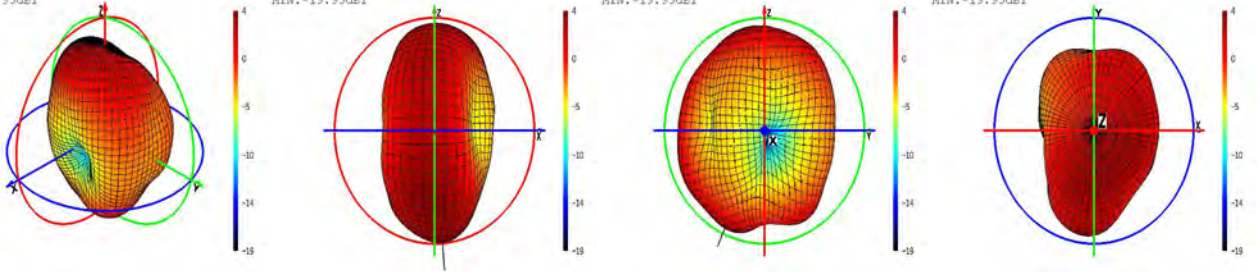




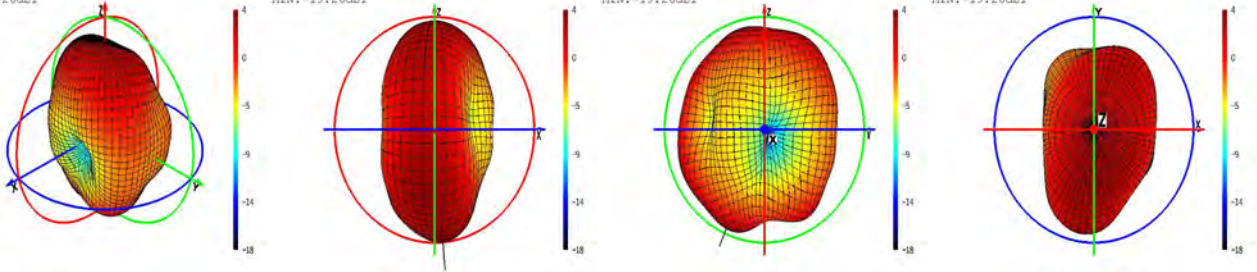
2350MHz
MAX: 3.32dB
MIN: -19.55dB



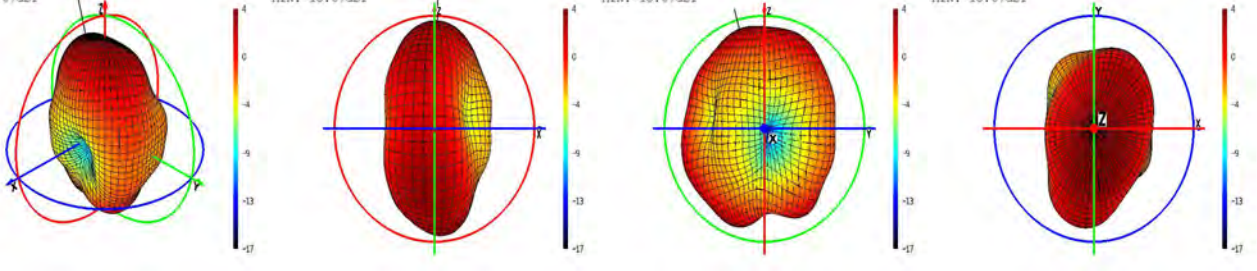
2390MHz
MAX: 3.42dB
MIN: -19.95dB



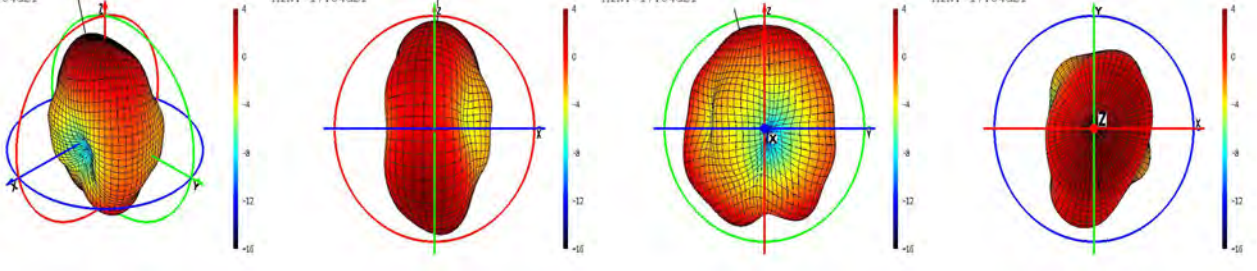
2430MHz
MAX: 3.28dB
MIN: -19.26dB



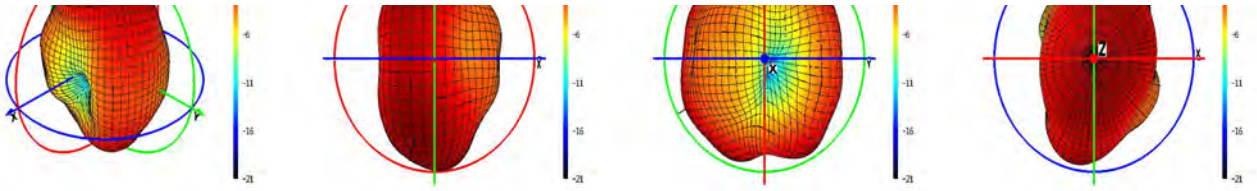
2470MHz
MAX: 3.21dB
MIN: -18.67dB



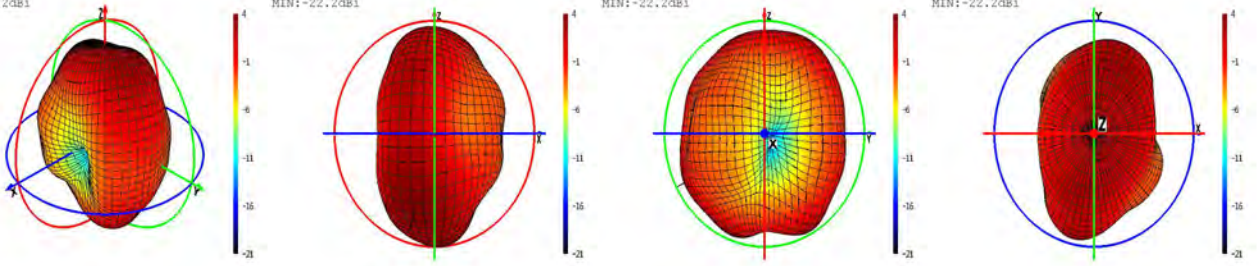
2510MHz
MAX: 3.01dB
MIN: -17.84dB



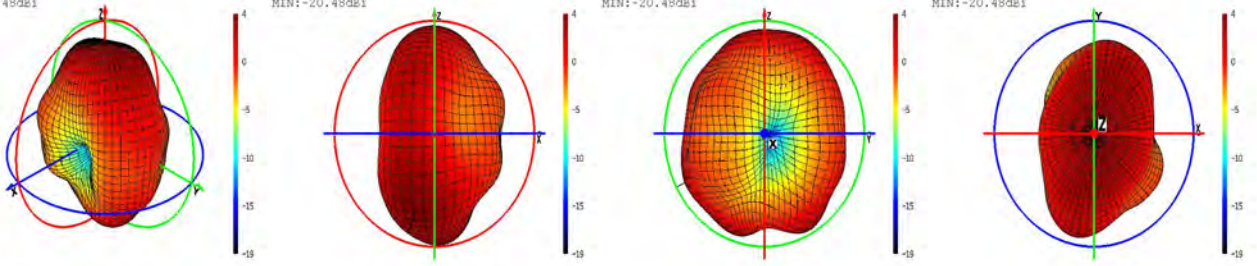
2550MHz
MAX: 2.78dB
MIN: -22.17dB



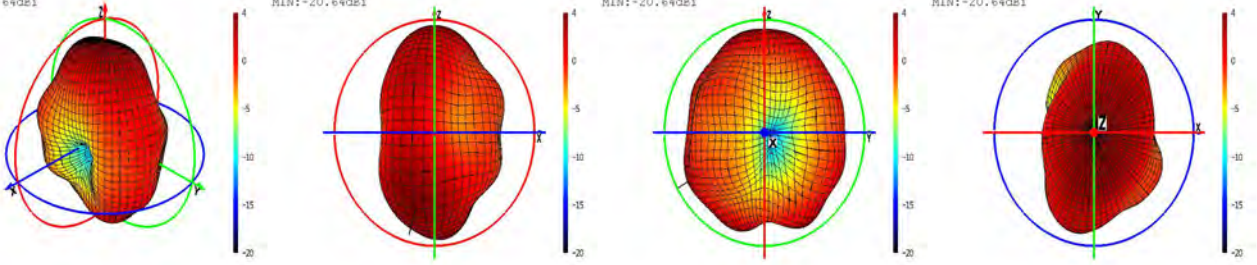
2590MHz
MAX: 3.31dB1
MIN: -22.2dB1



2630MHz
MAX: 3.52dB1
MIN: -20.48dB1



2670MHz
MAX: 3.55dB1
MIN: -20.64dB1



2710MHz
MAX: 3.42dB1
MIN: -20.6dB1

