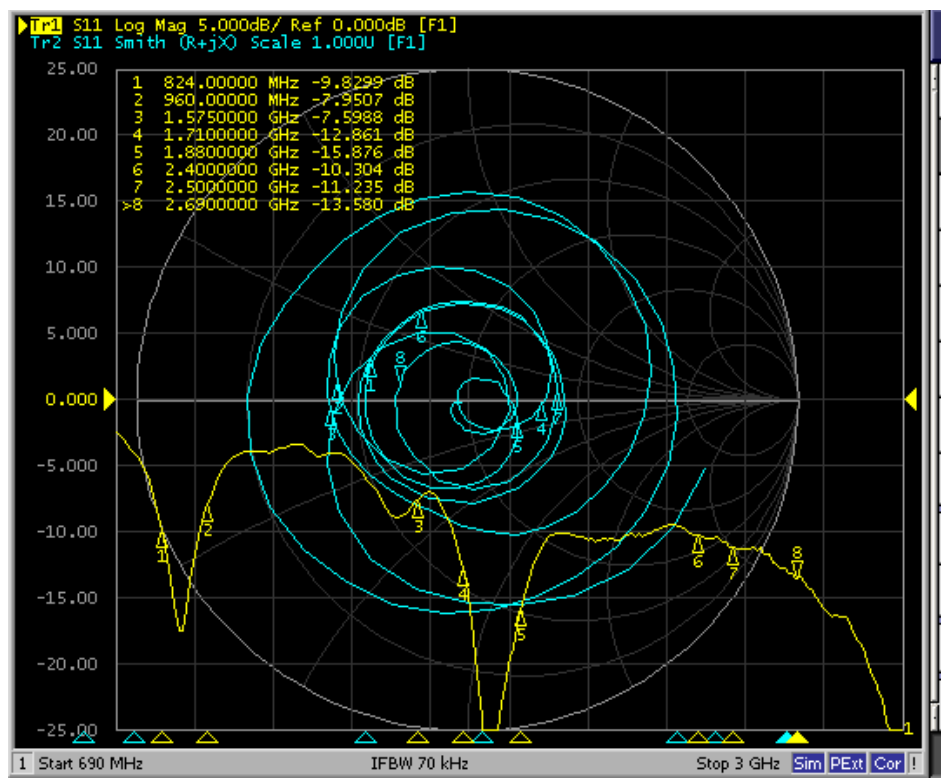


东莞市思普嘉电子科技有限公司

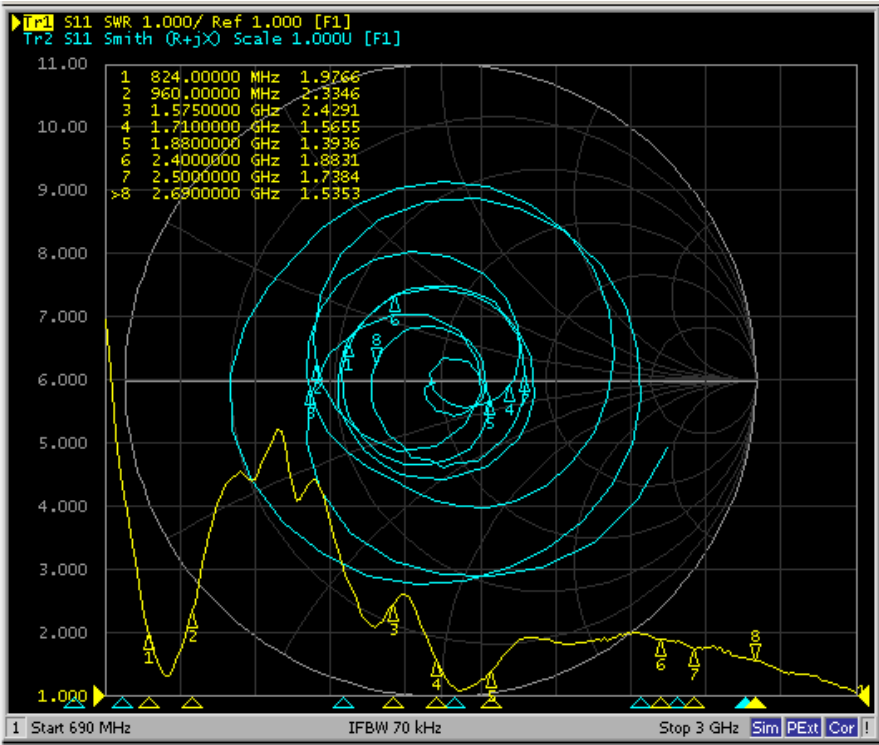
|                            |                |            |       |
|----------------------------|----------------|------------|-------|
|                            |                |            | 文件编号: |
| 样品承认书                      |                |            |       |
| Specification For Approval |                |            |       |
| 客户名称:<br>Customer:         |                |            |       |
| 供应商名称:<br>Supplier:        | 东莞市思普嘉电子科技有限公司 |            |       |
| 客户料号:                      |                | 供应商料号:     | HW006 |
| 产品描述:                      |                | 配用机型:      |       |
| 客户承认(盖章):                  |                | 供应商承认(盖章): |       |
|                            |                |            |       |
| 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:

|                        |                                      |
|------------------------|--------------------------------------|
| 频带 Frequency           | 700-960MHz, 1710- 2690MHz            |
| 天线方向性                  | 类偶极子                                 |
| 增益 MAX (dBi)           | 4.2 (10cm 线缆测试)                      |
| 效率 Efficiency (%)      | ≥20, ≤85 (10cm 线缆测试)                 |
| 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                                   |
| 电缆线类型 Cable type       | 低损耗 1.13 线                           |



S11 (图 1)



驻波比（图 2）

二. 天线实拍图



三. 工作条件

温度 Temperature: -40℃~+85℃

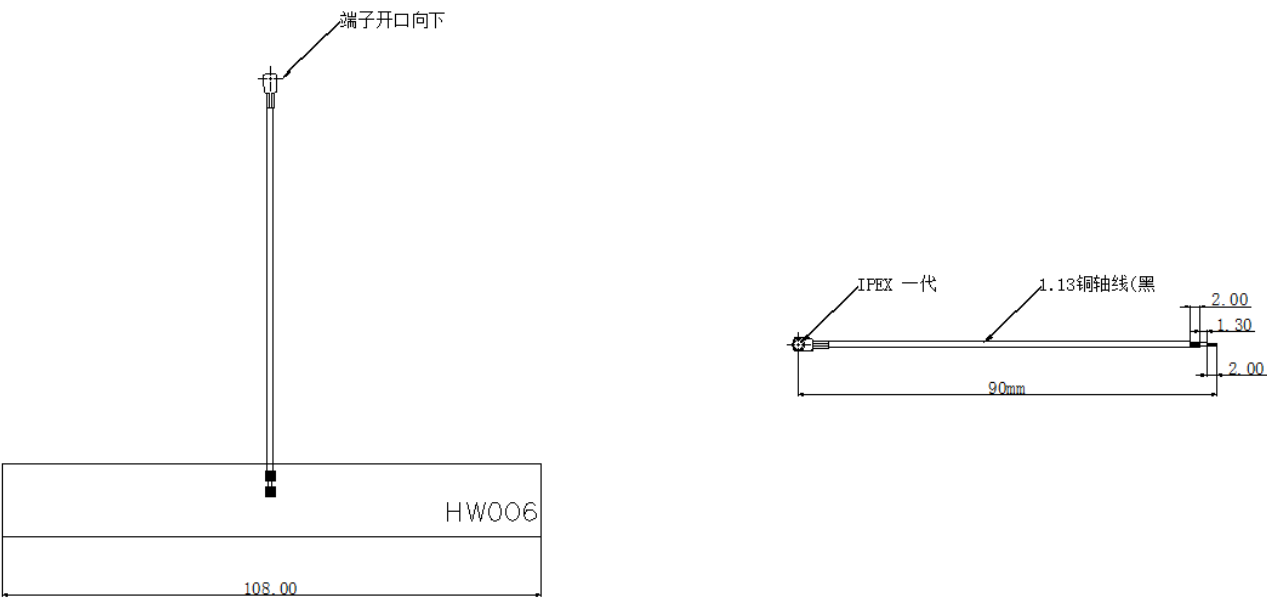
湿度 Humidity: 95%~100%

四. 储藏条件

温度 Temperature: -45℃~+85℃

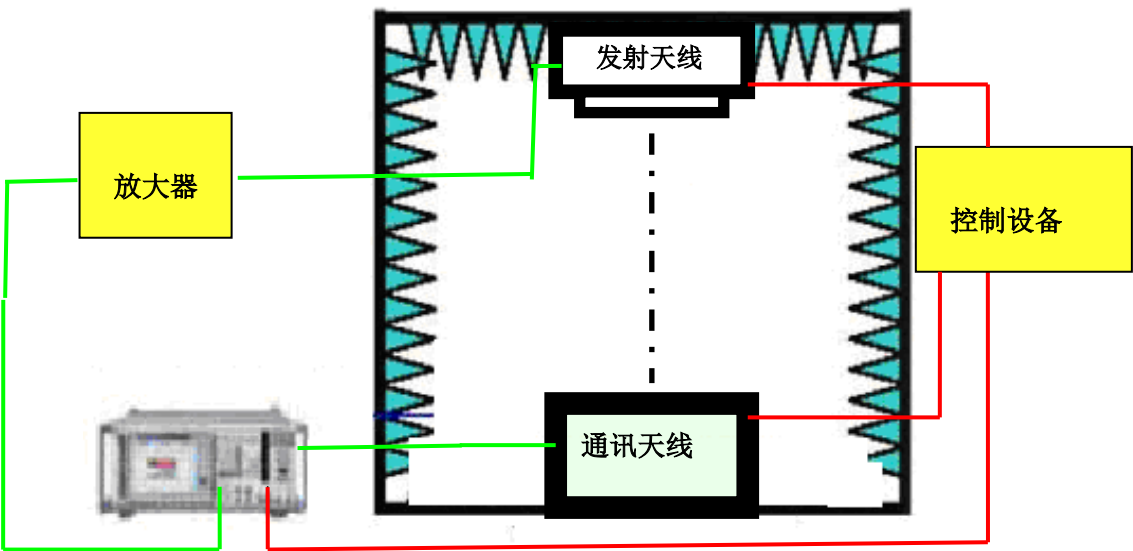
湿度 Humidity: ≤75%

五、电缆头及电缆线



六、 天线增益，效率测试

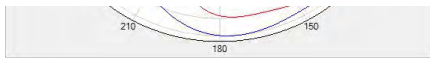
- 1、增益效率测试：（采用 10cm 线缆连接测试）
- 2、(1)测试设备：微波暗室，矢量网络分析仪，放大器，馈电器，控制器，电脑，转台控制器等。  
(2)测试示意图：



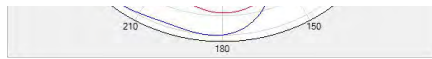
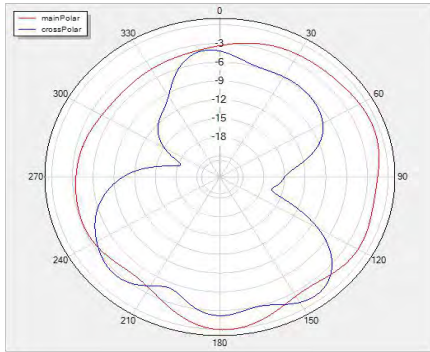
2、结果如下：

| Gain&Efficiency&PhaseCenter<br>增益、效率和相位中心 |                 |                      |                      |                     |
|-------------------------------------------|-----------------|----------------------|----------------------|---------------------|
| frequency<br>频率(MHz)                      | gain<br>增益(dBi) | directivity<br>方向性系数 | efficiency<br>效率(dB) | efficiency<br>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               |

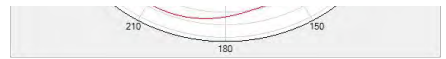
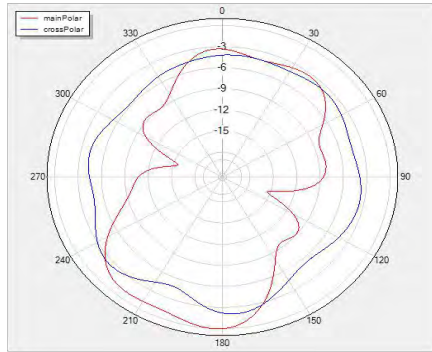




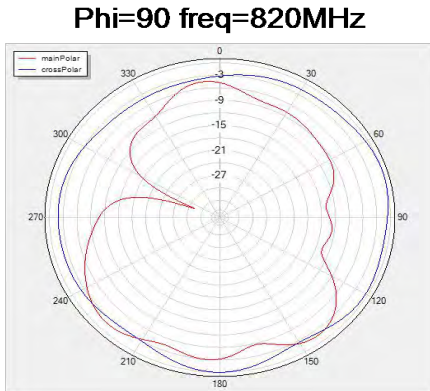
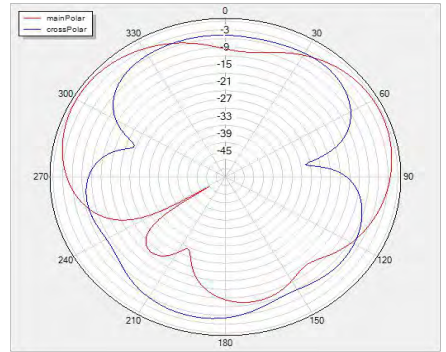
**Phi=90 freq=800MHz**



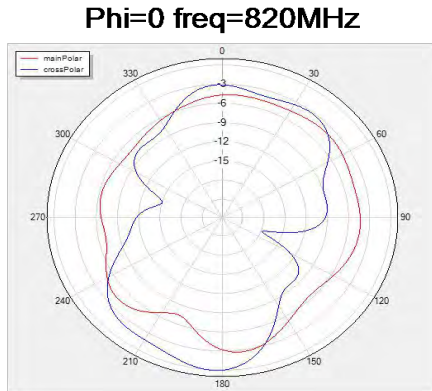
**Phi=0 freq=800MHz**



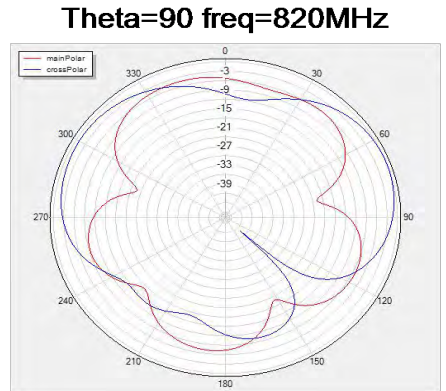
**Theta=90 freq=800MHz**



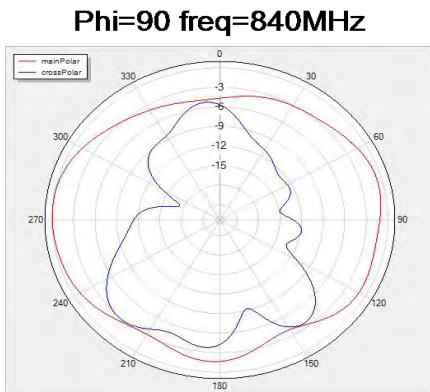
**Phi=90 freq=820MHz**



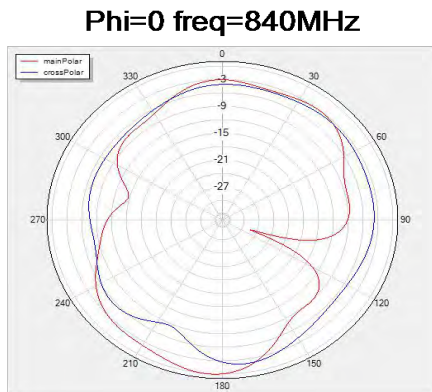
**Phi=0 freq=820MHz**



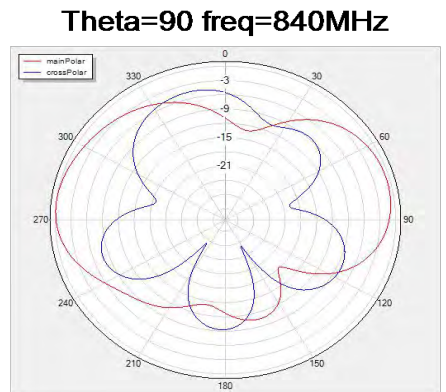
**Theta=90 freq=820MHz**



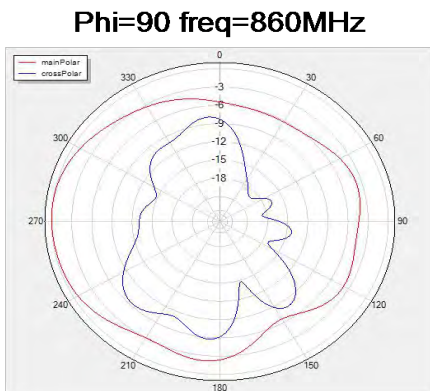
**Phi=90 freq=840MHz**



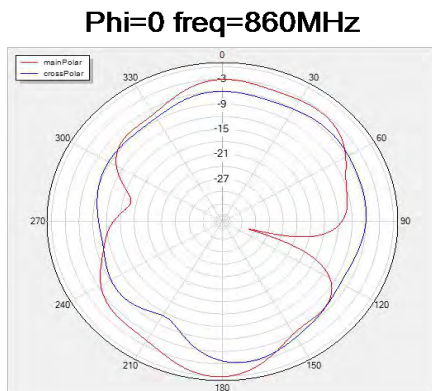
**Phi=0 freq=840MHz**



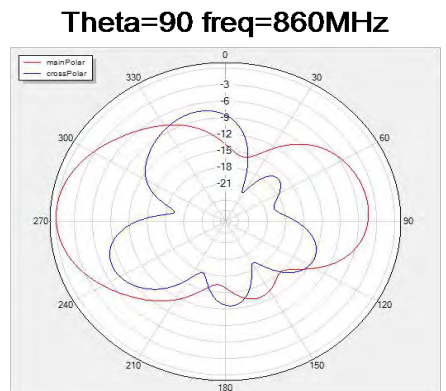
**Theta=90 freq=840MHz**



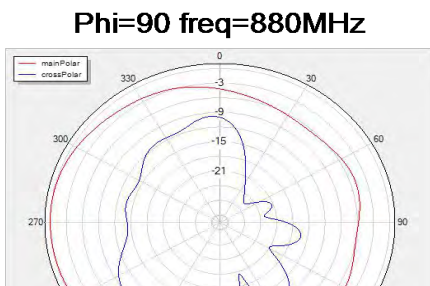
**Phi=90 freq=860MHz**



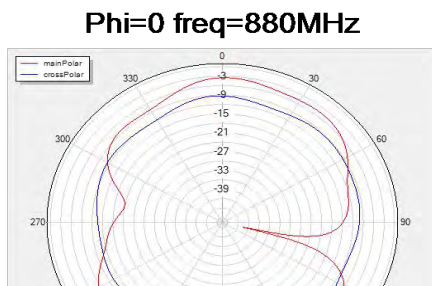
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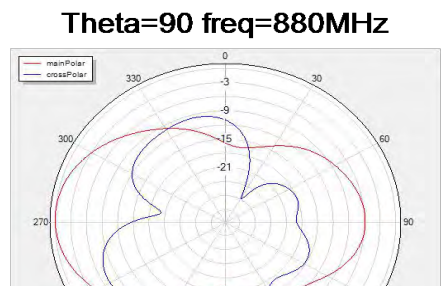
**Theta=90 freq=860MHz**



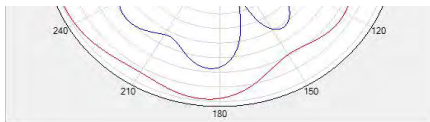
**Phi=90 freq=880MHz**



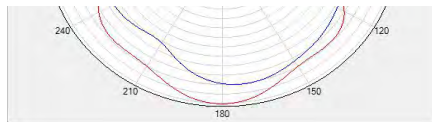
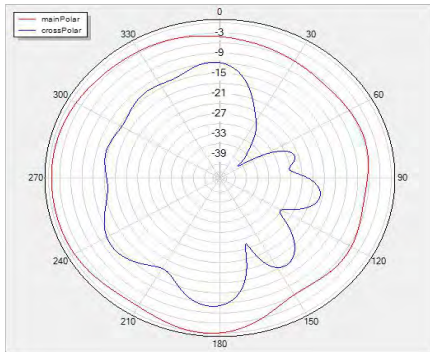
**Phi=0 freq=880MHz**



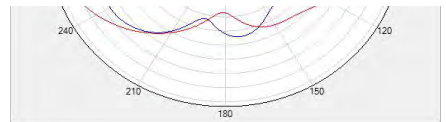
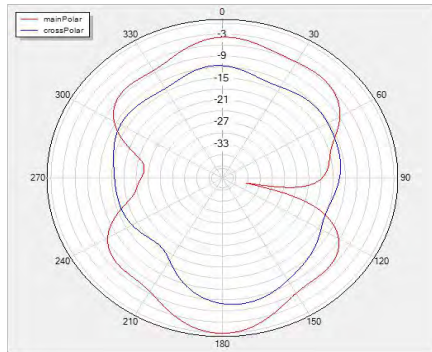
**Theta=90 freq=880MHz**



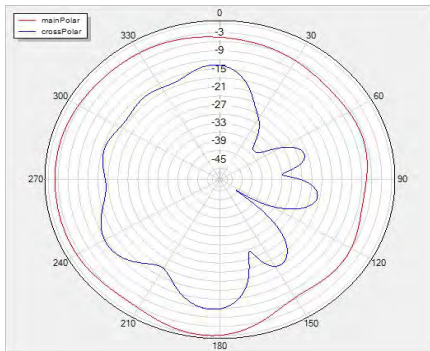
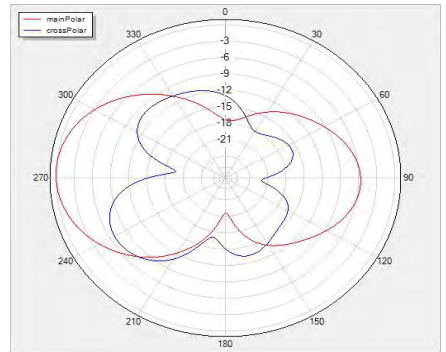
**Phi=90 freq=900MHz**



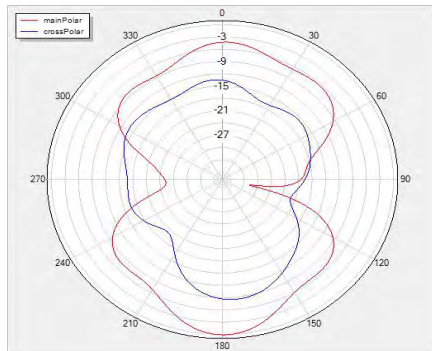
**Phi=0 freq=900MHz**



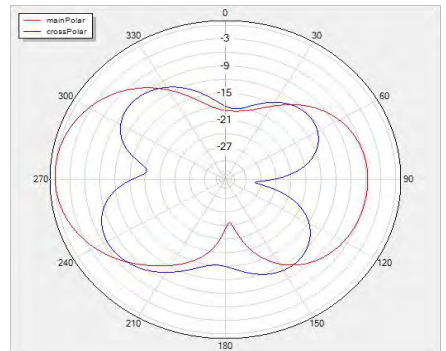
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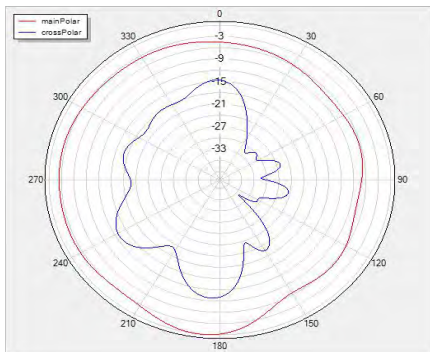
**Phi=90 freq=920MHz**



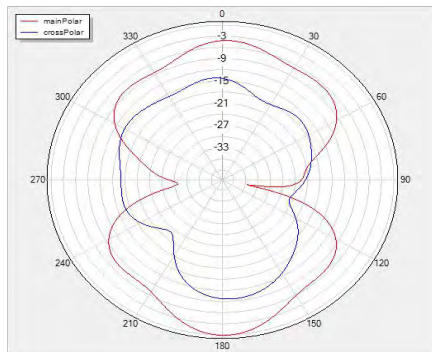
**Phi=0 freq=920MHz**



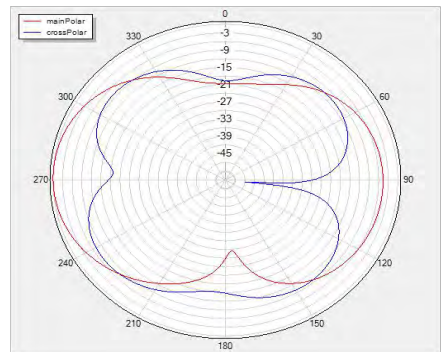
**Theta=90 freq=920MHz**



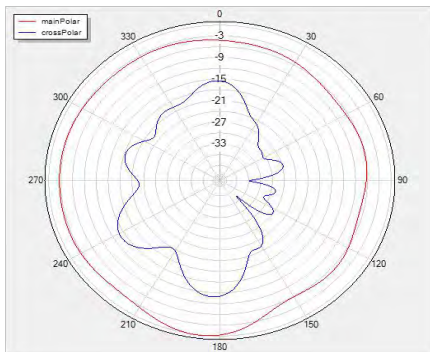
**Phi=90 freq=940MHz**



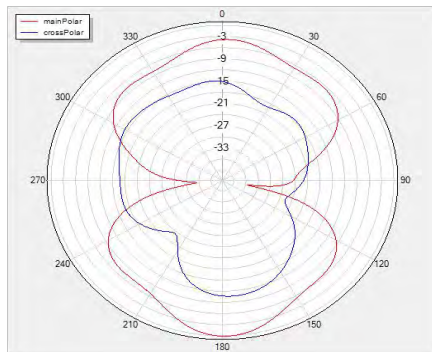
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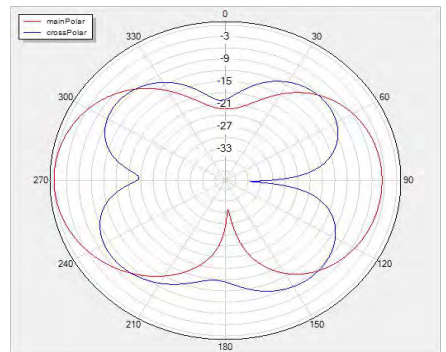
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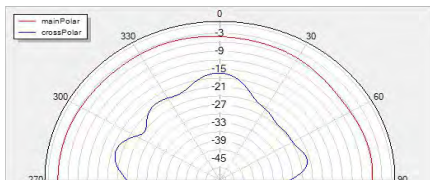
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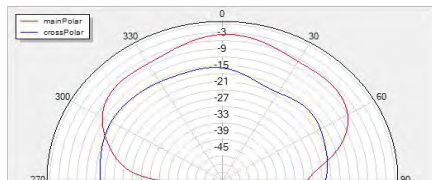
**Phi=0 freq=960MHz**



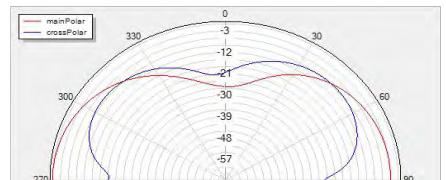
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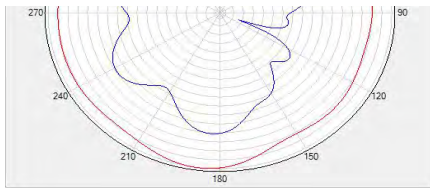
**Phi=90 freq=980MHz**



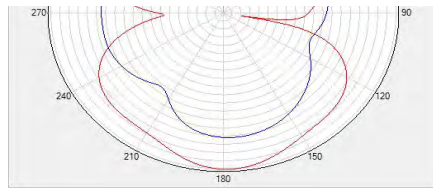
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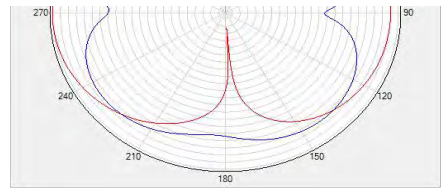
**Theta=90 freq=980MHz**



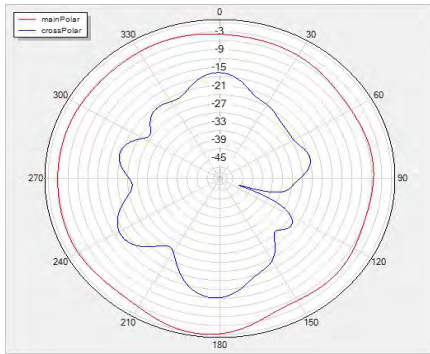
**Phi=90 freq=1000MHz**



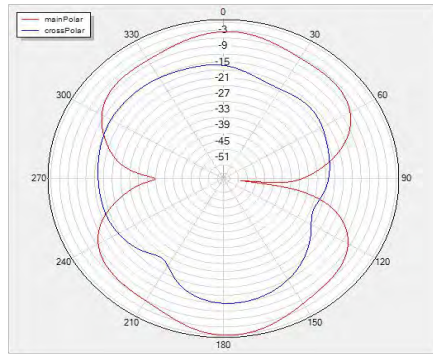
**Phi=0 freq=1000MHz**



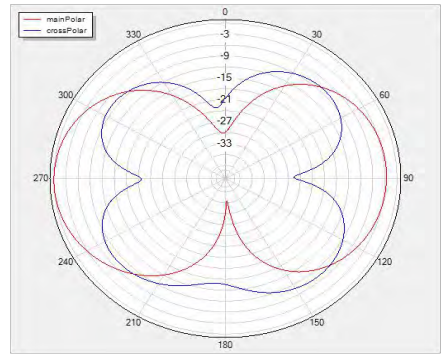
**Theta=90 freq=1000MHz**



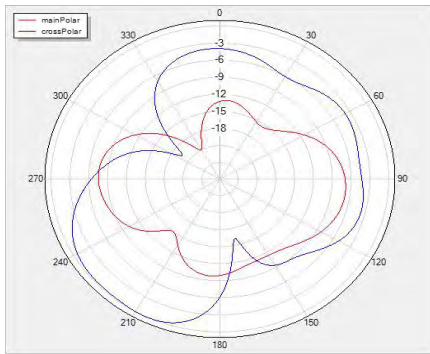
**Phi=90 freq=1420MHz**



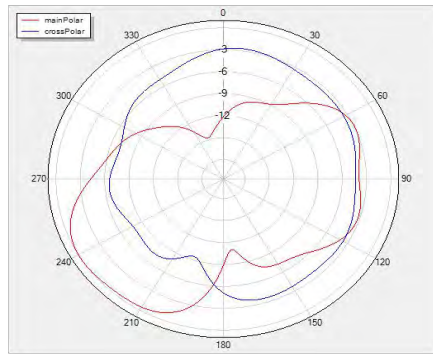
**Phi=0 freq=1420MHz**



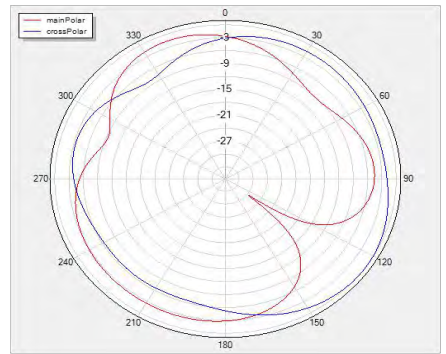
**Theta=90 freq=1420MHz**



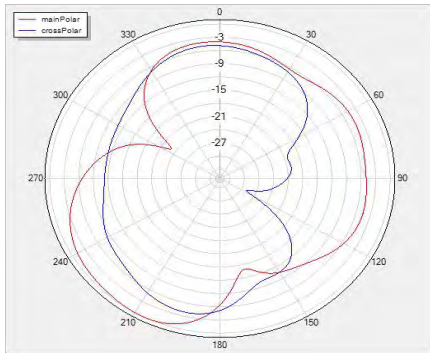
**Phi=90 freq=1460MHz**



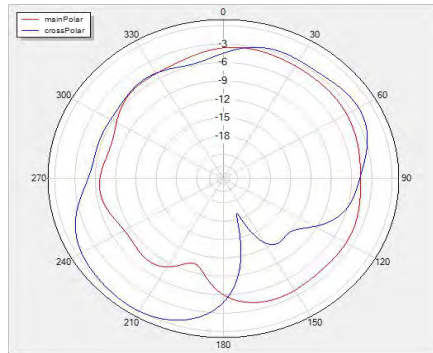
**Phi=0 freq=1460MHz**



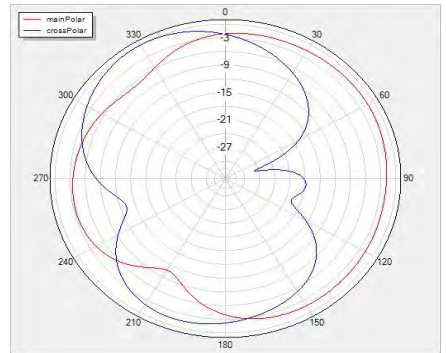
**Theta=90 freq=1460MHz**



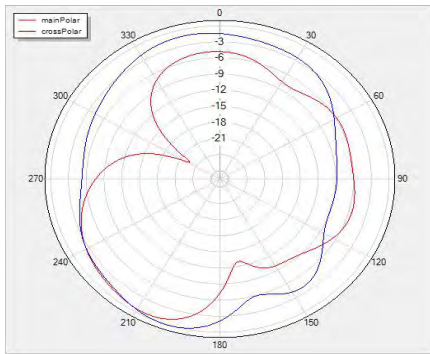
**Phi=90 freq=1500MHz**



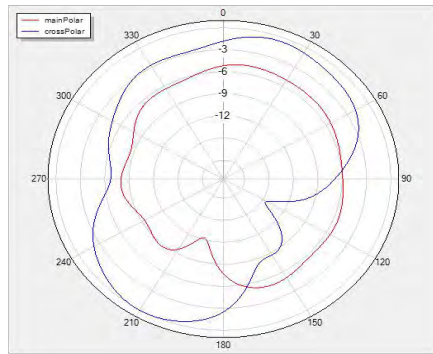
**Phi=0 freq=1500MHz**



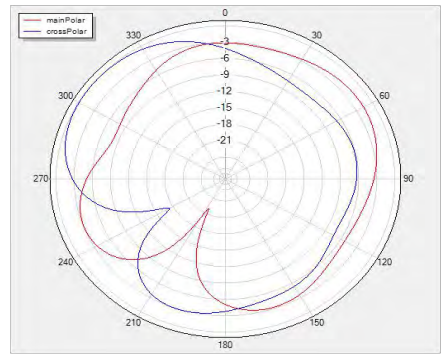
**Theta=90 freq=1500MHz**



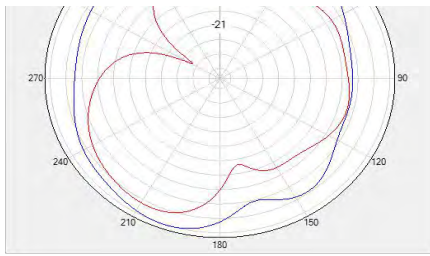
**Phi=90 freq=1520MHz**



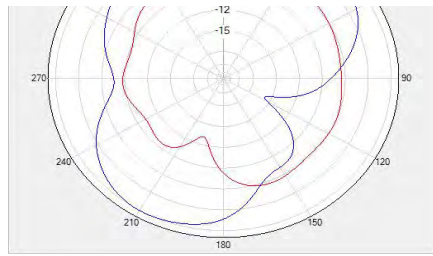
**Phi=0 freq=1520MHz**



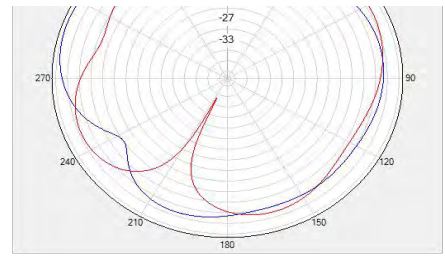
**Theta=90 freq=1520MHz**



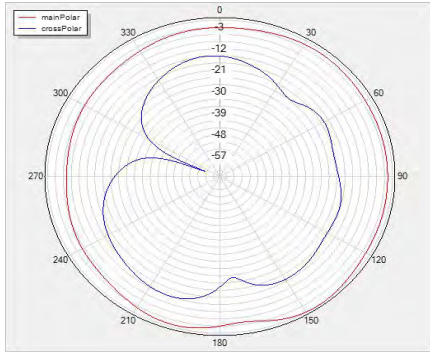
**Phi=90 deg=freq=1700MHz**



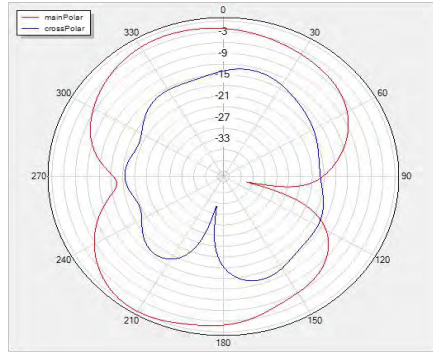
**Phi=0 deg=freq=1700MHz**



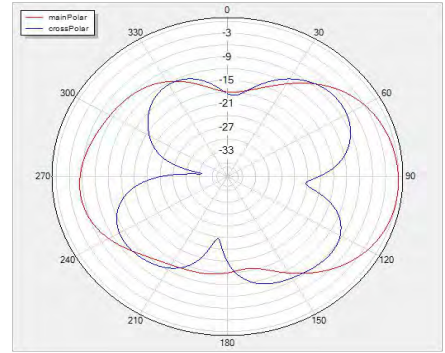
**Theta=90 deg=freq=1700MHz**



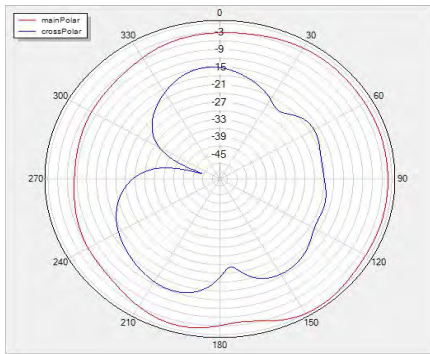
**Phi=90 deg=freq=1710MHz**



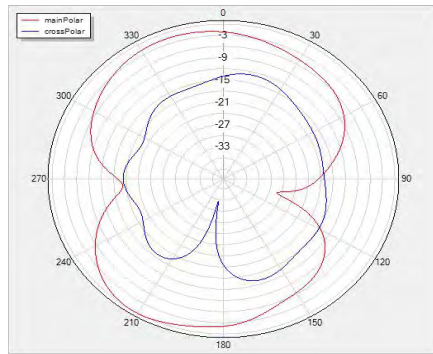
**Phi=0 deg=freq=1710MHz**



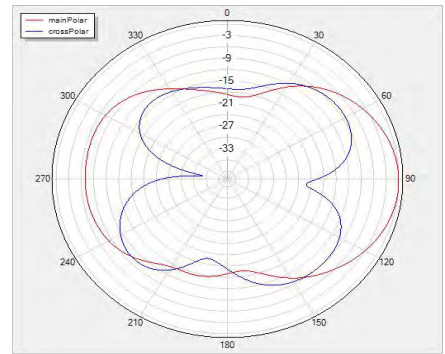
**Theta=90 deg=freq=1710MHz**



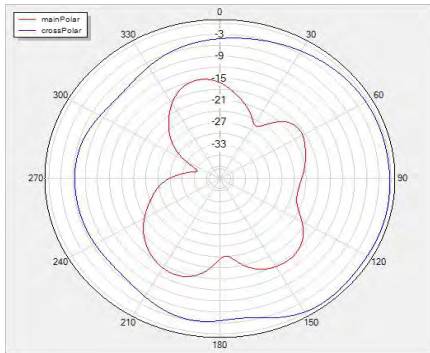
**Phi=90 deg=freq=1750MHz**



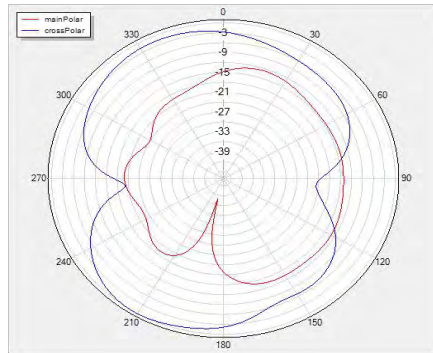
**Phi=0 deg=freq=1750MHz**



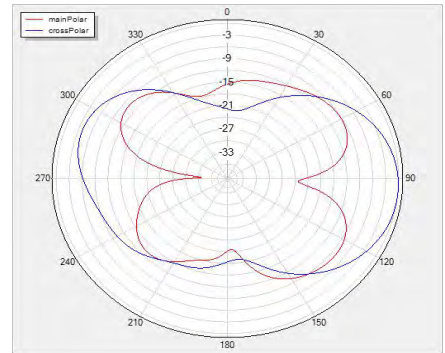
**Theta=90 deg=freq=1750MHz**



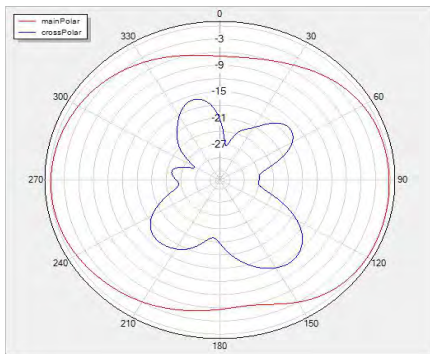
**Phi=90 deg=freq=1790MHz**



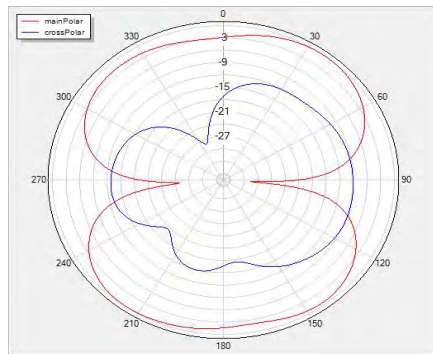
**Phi=0 deg=freq=1790MHz**



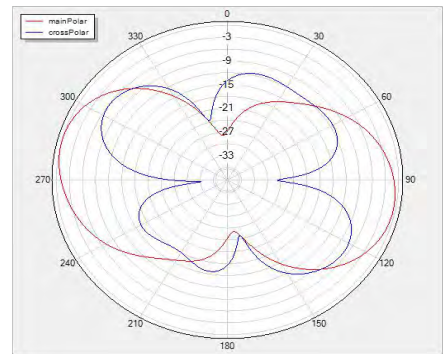
**Theta=90 deg=freq=1790MHz**



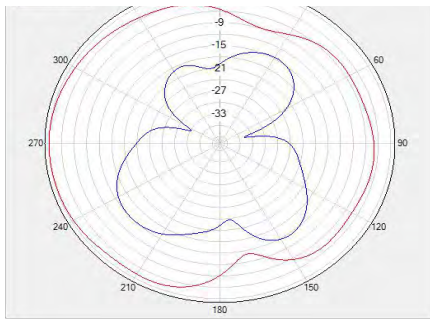
**Phi=90 deg=freq=1830MHz**



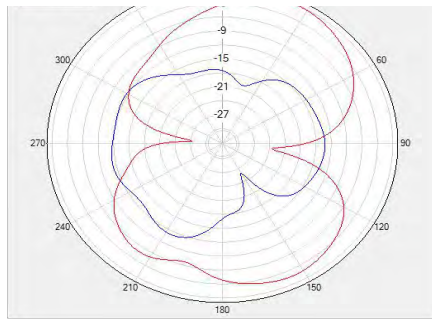
**Phi=0 deg=freq=1830MHz**



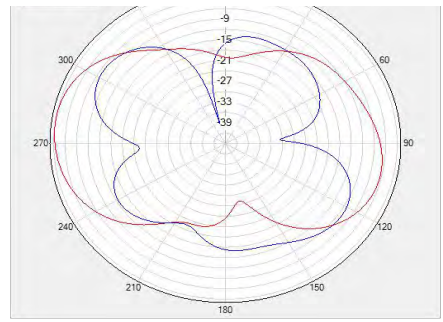
**Theta=90 deg=freq=1830MHz**



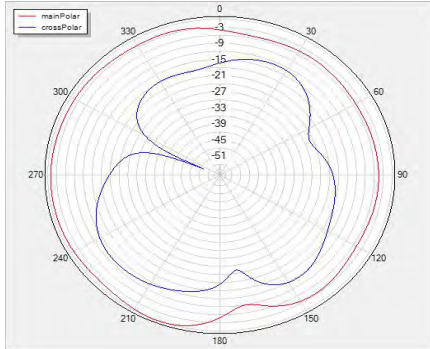
**Phi=90 freq=1870MHz**



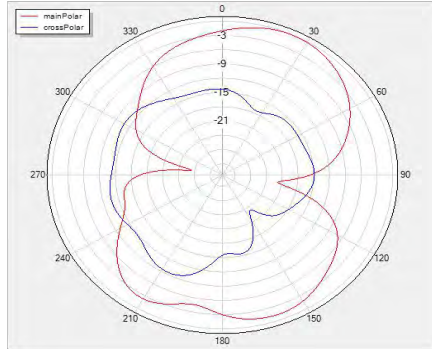
**Phi=0 freq=1870MHz**



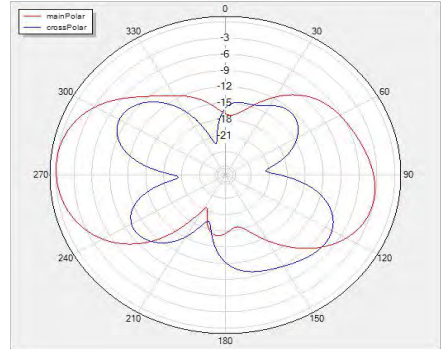
**Theta=90 freq=1870MHz**



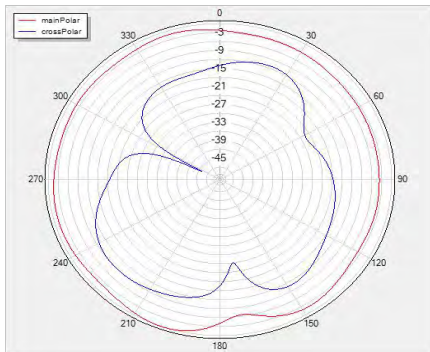
**Phi=90 freq=1910MHz**



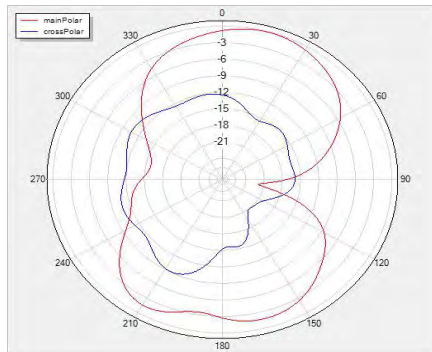
**Phi=0 freq=1910MHz**



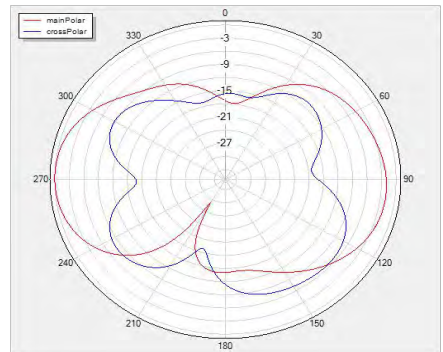
**Theta=90 freq=1910MHz**



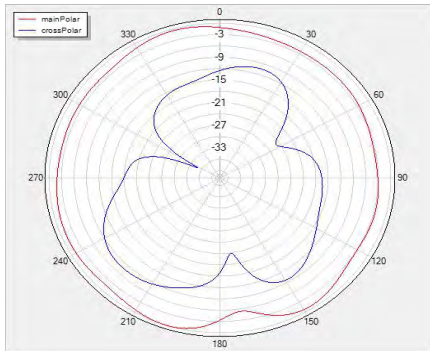
**Phi=90 freq=1950MHz**



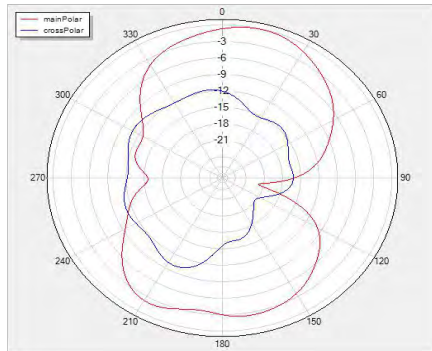
**Phi=0 freq=1950MHz**



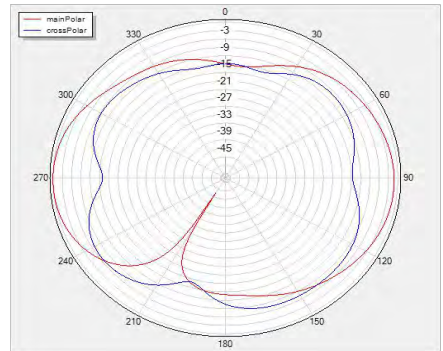
**Theta=90 freq=1950MHz**



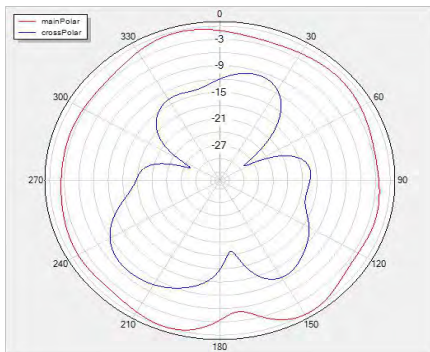
**Phi=90 freq=1990MHz**



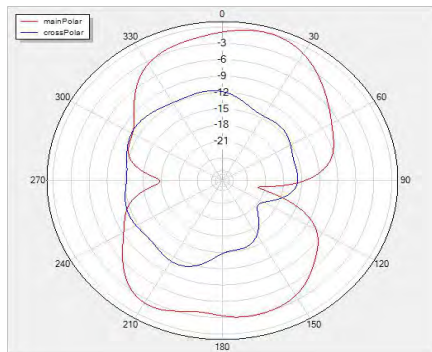
**Phi=0 freq=1990MHz**



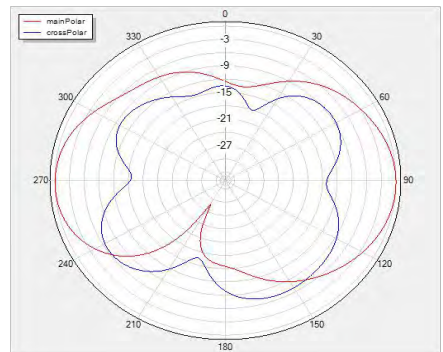
**Theta=90 freq=1990MHz**



**Phi=90 freq=2030MHz**

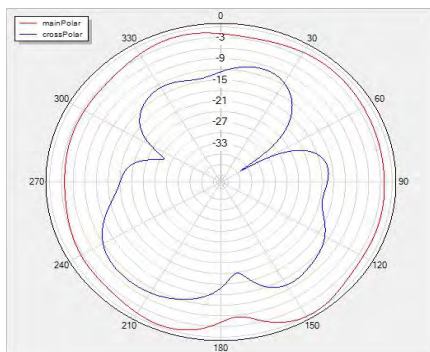


**Phi=0 freq=2030MHz**

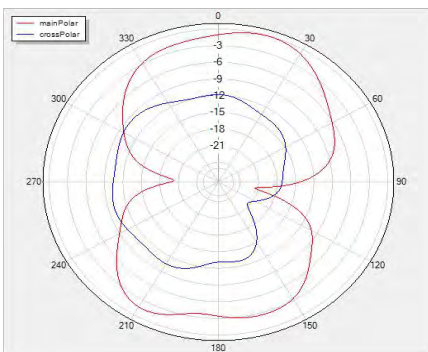


**Theta=90 freq=2030MHz**

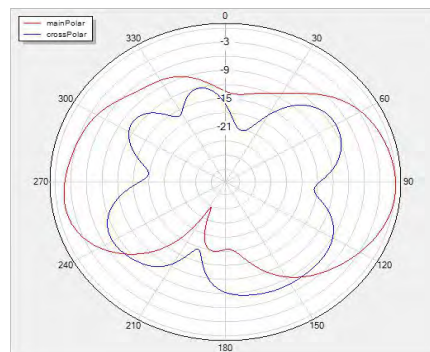
**PNI=90 treq=2030MHZ**



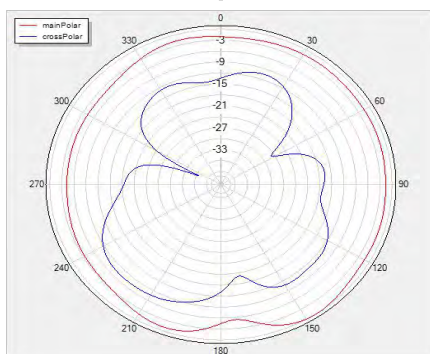
PN1=0 treq=2030MHZ



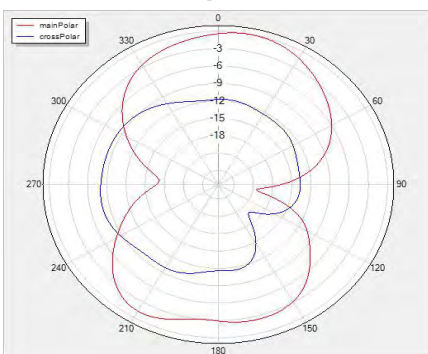
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l neta=90 treq=2030MHz
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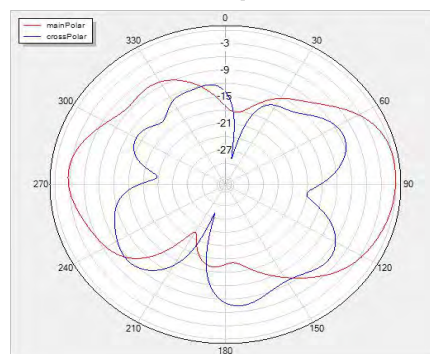
Phi=90 freq=2070MHz



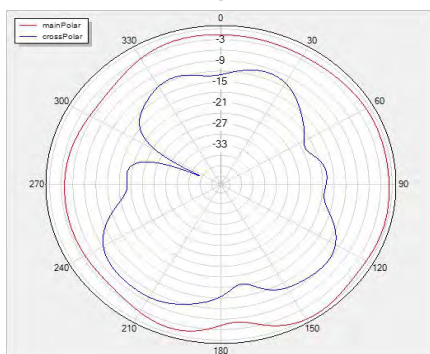
Phi=0 freq=2070MHz



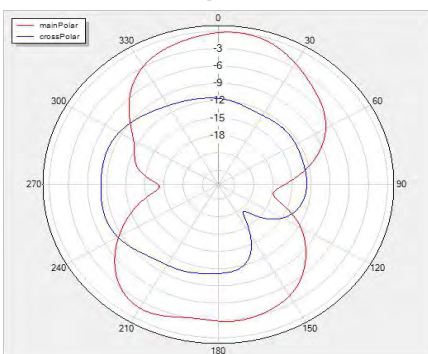
Theta=90 freq=2070MHz



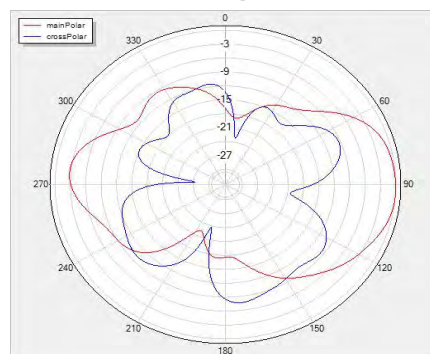
Phi=90 freq=2110MHz



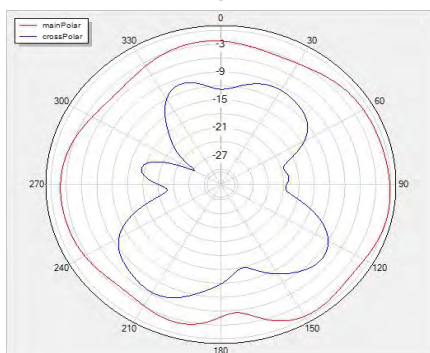
Phi=0 freq=2110MHz



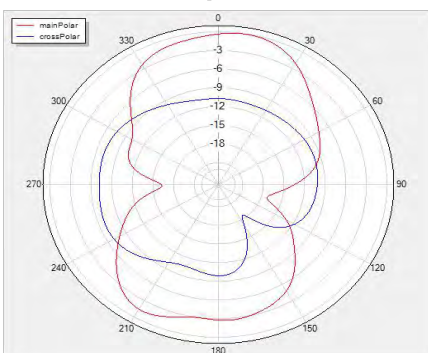
Theta=90 freq=2110MHz



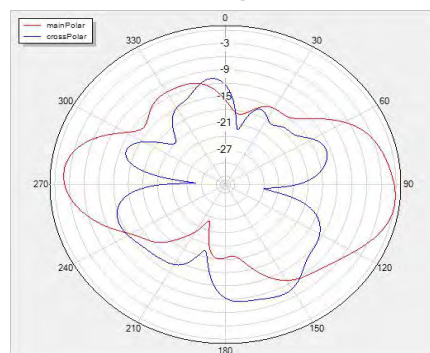
Phi=90 freq=2150MHz



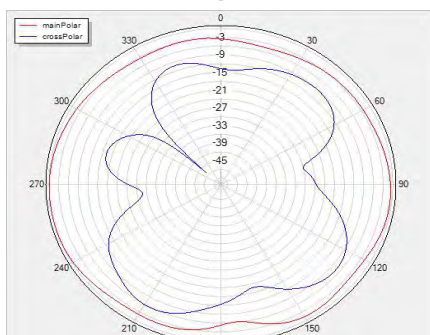
Phi=0 freq=2150MHz



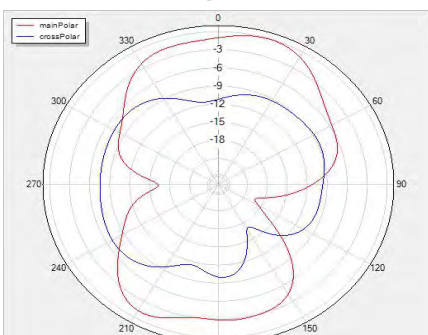
Theta=90 freq=2150MHz



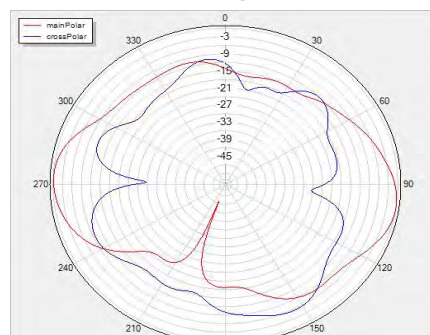
Phi=90 freq=2190MHz

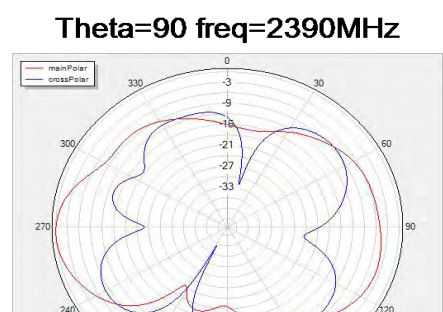
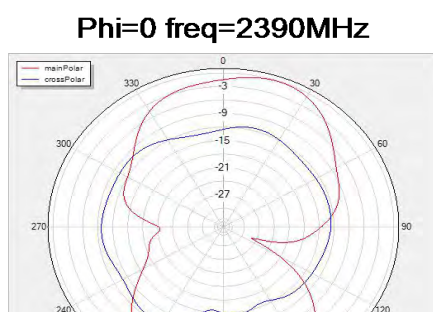
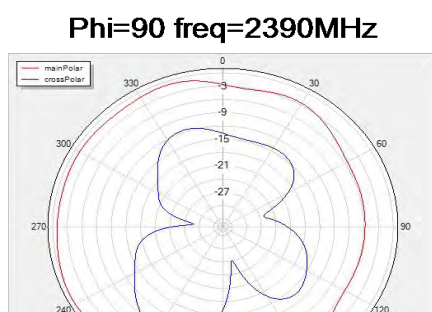
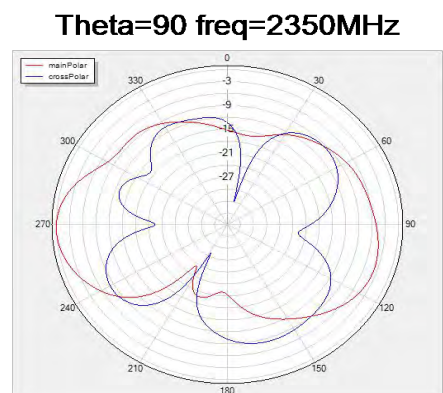
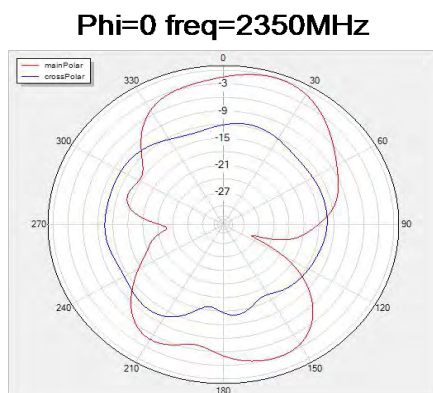
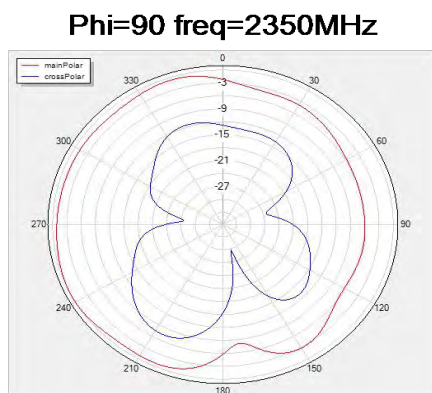
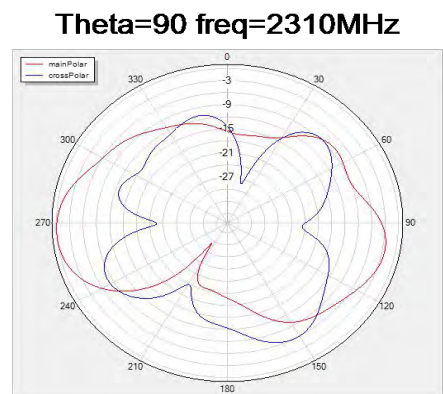
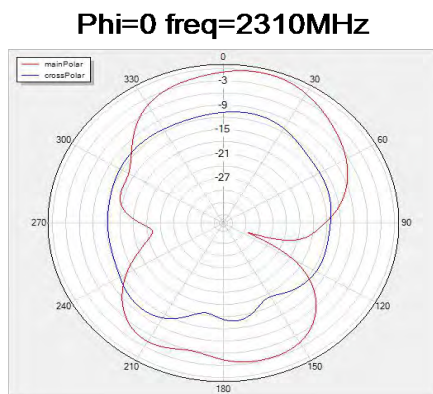
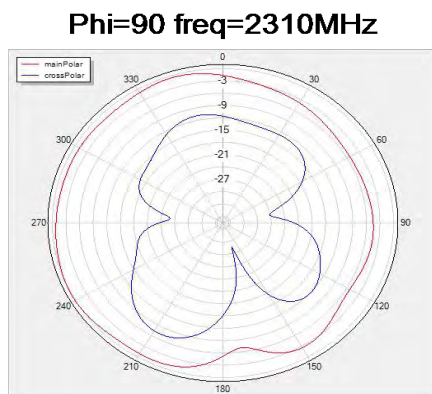
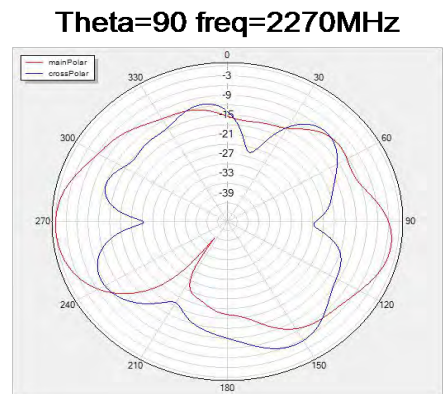
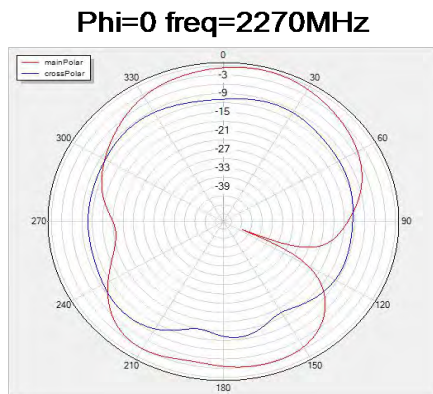
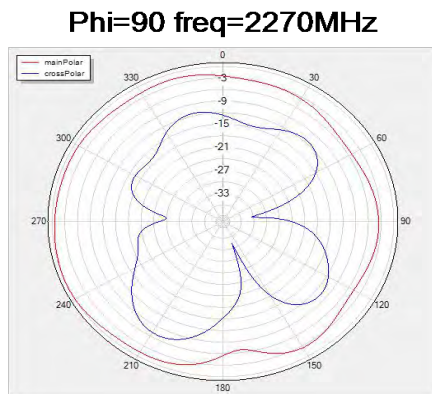
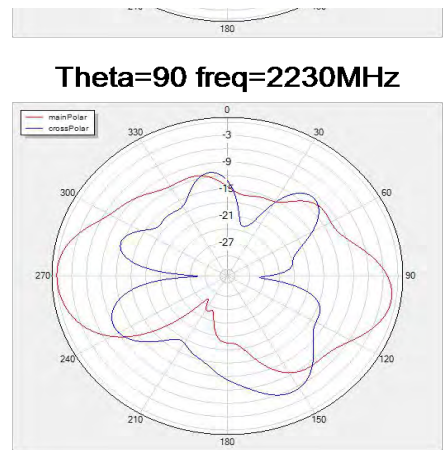
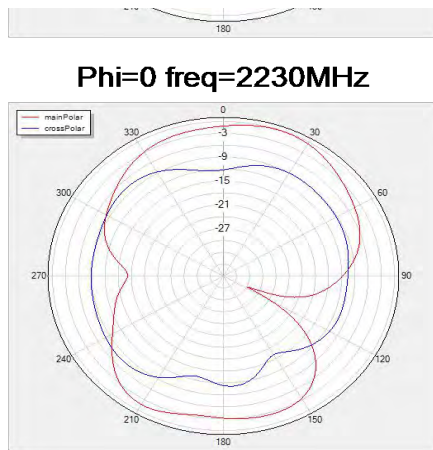
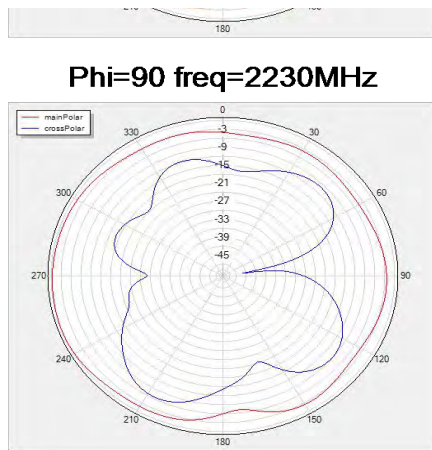


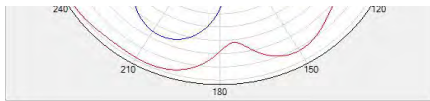
Phi=0 freq=2190MHz



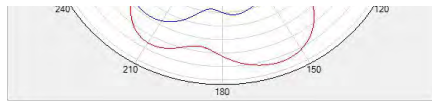
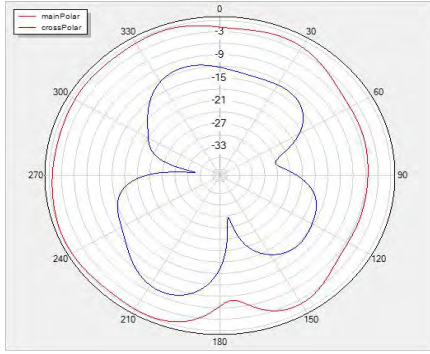
Theta=90 freq=2190MHz



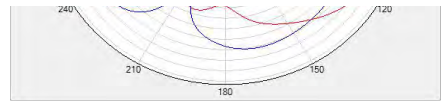
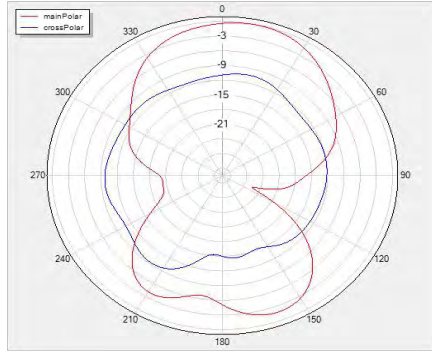




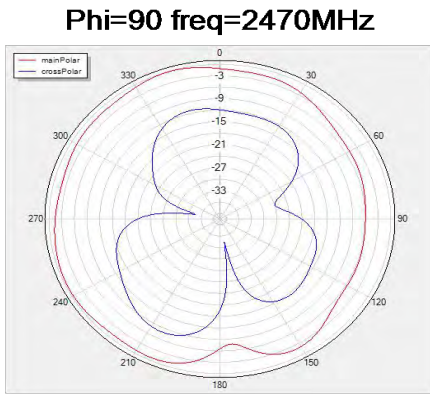
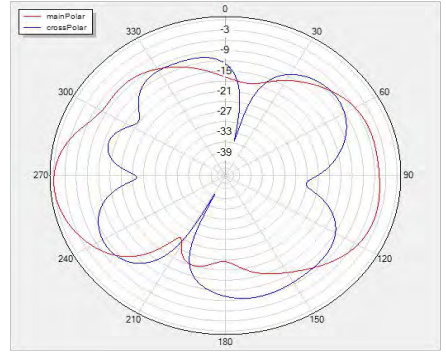
**Phi=90 freq=2430MHz**



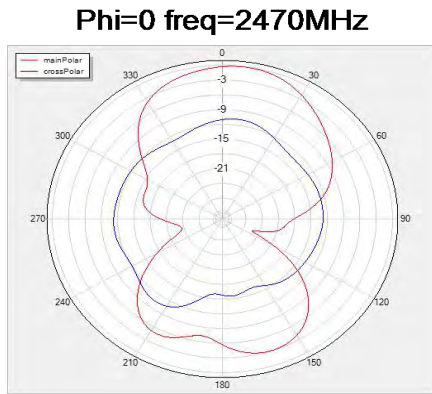
**Phi=0 freq=2430MHz**



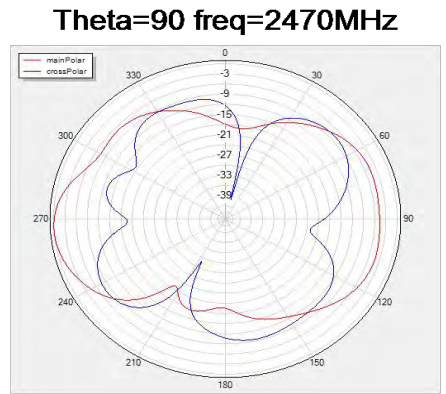
**Theta=90 freq=2430MHz**



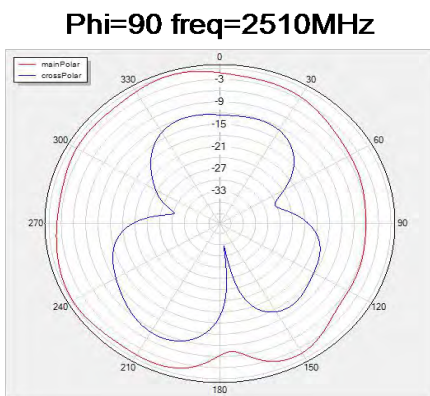
**Phi=90 freq=2470MHz**



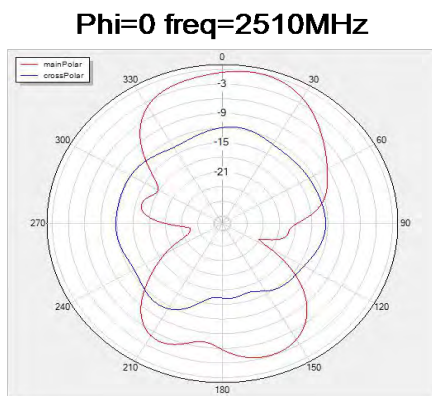
**Phi=0 freq=2470MHz**



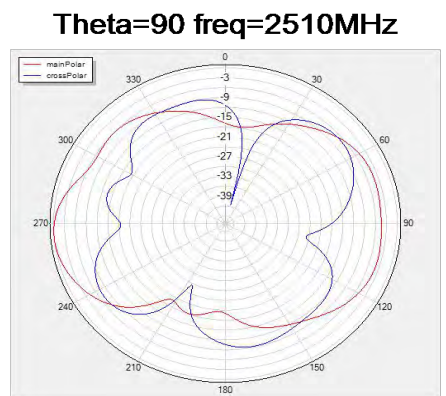
**Theta=90 freq=2470MHz**



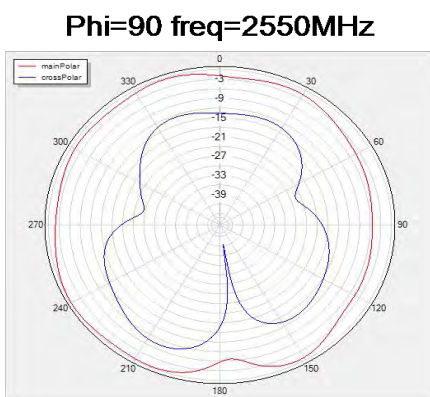
**Phi=90 freq=2510MHz**



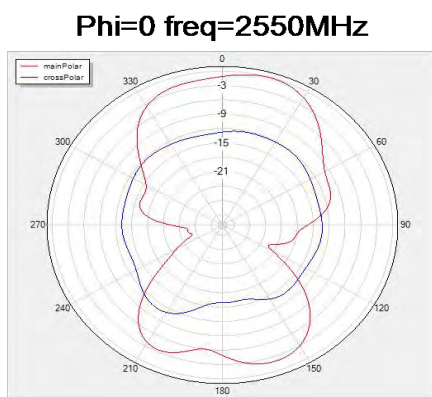
**Phi=0 freq=2510MHz**



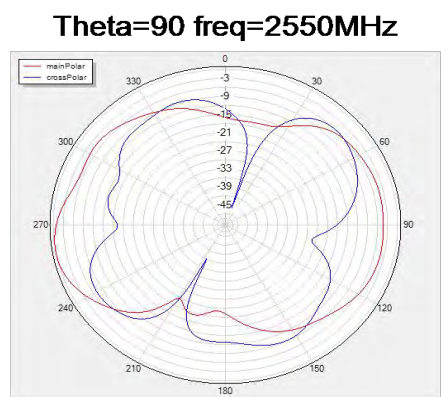
**Theta=90 freq=2510MHz**



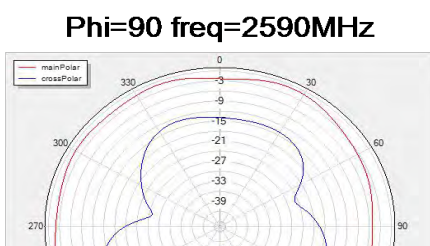
**Phi=90 freq=2550MHz**



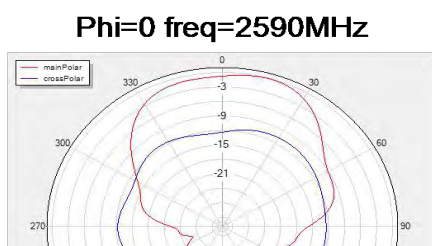
**Phi=0 freq=2550MHz**



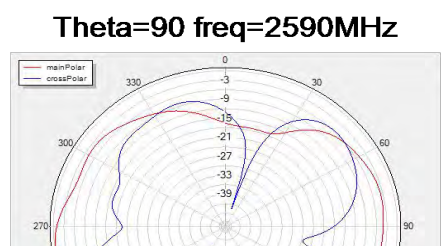
**Theta=90 freq=2550MHz**



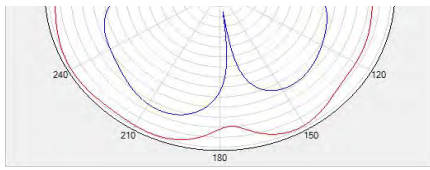
**Phi=90 freq=2590MHz**



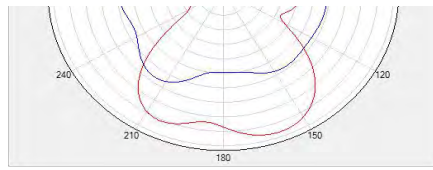
**Phi=0 freq=2590MHz**



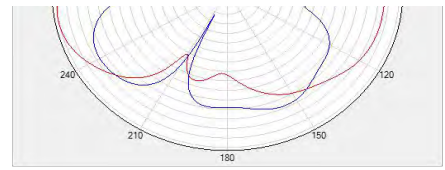
**Theta=90 freq=2590MHz**



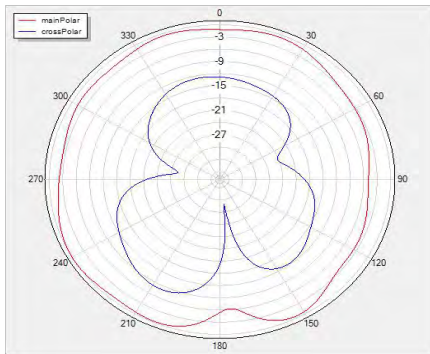
**$\Phi=90^\circ$  freq=2630MHz**



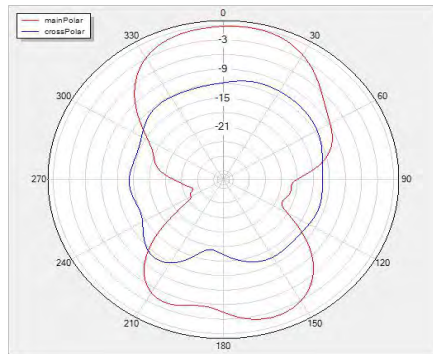
**$\Phi=0^\circ$  freq=2630MHz**



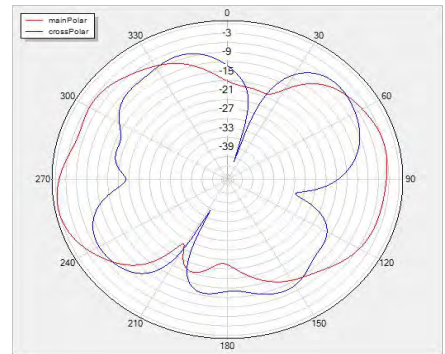
**$\Theta=90^\circ$  freq=2630MHz**



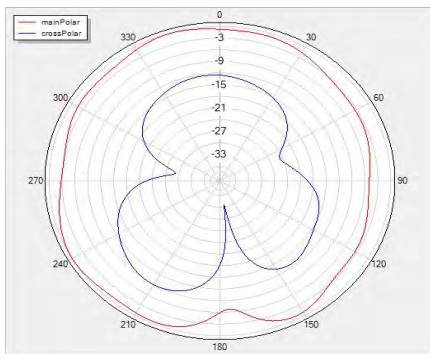
**$\Phi=90^\circ$  freq=2670MHz**



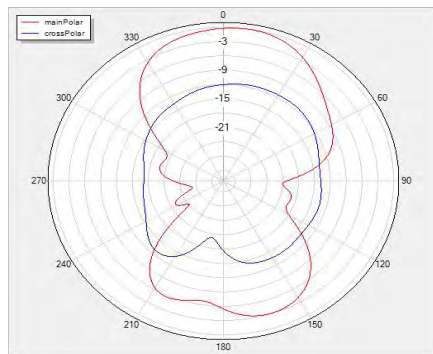
**$\Phi=0^\circ$  freq=2670MHz**



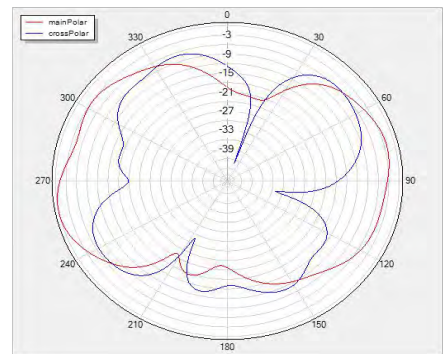
**$\Theta=90^\circ$  freq=2670MHz**



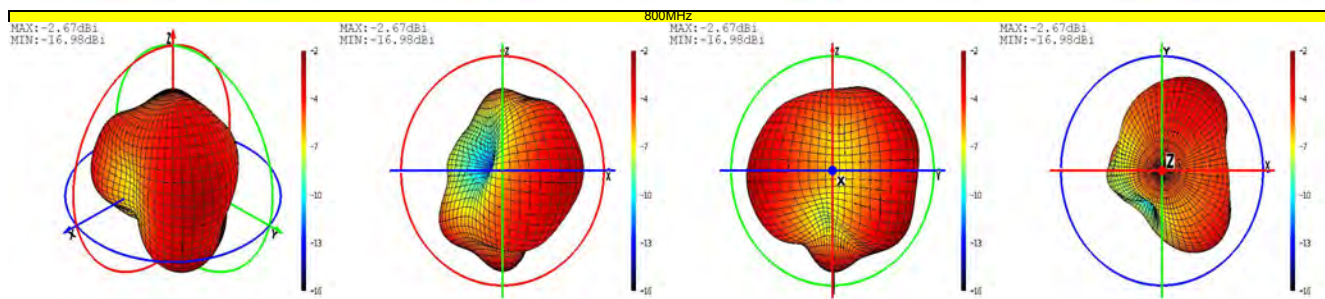
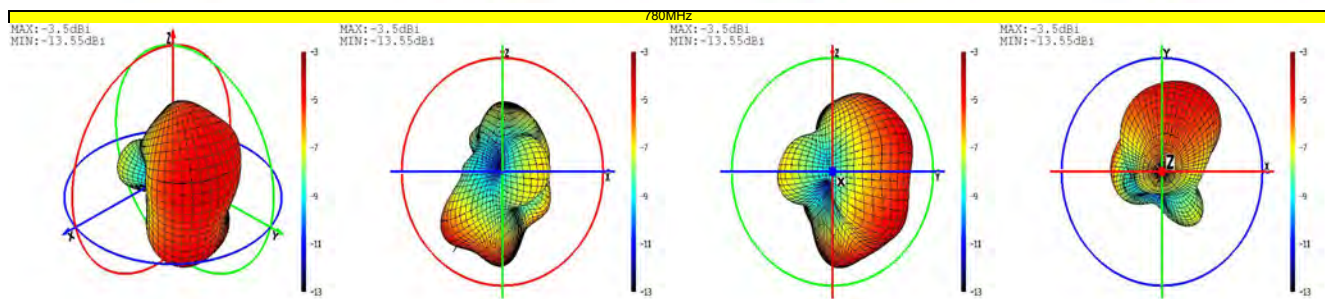
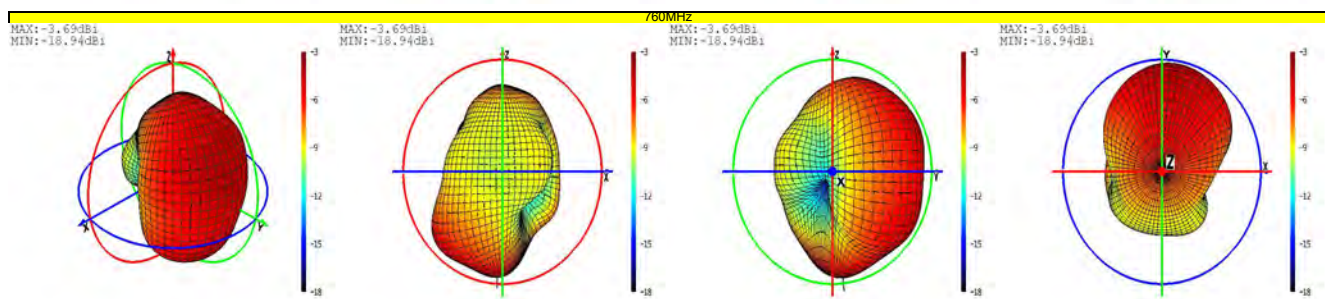
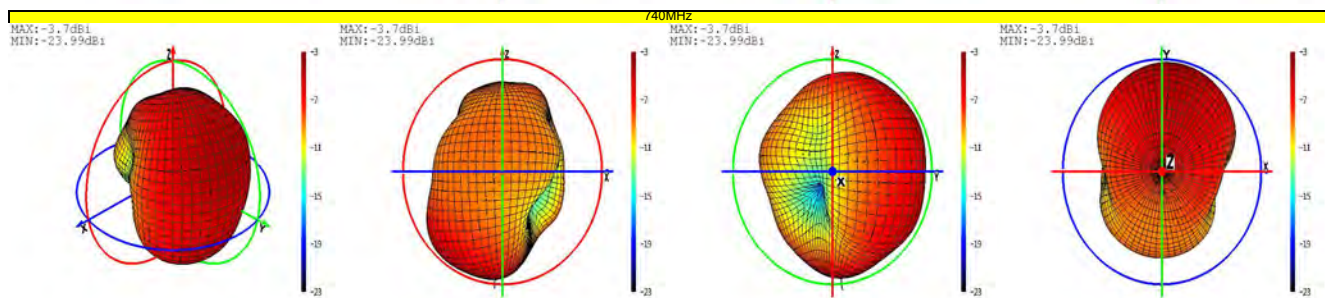
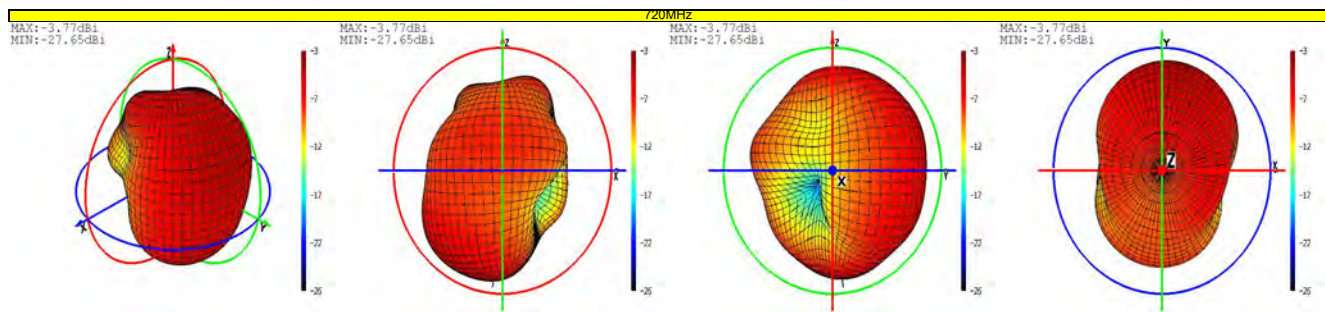
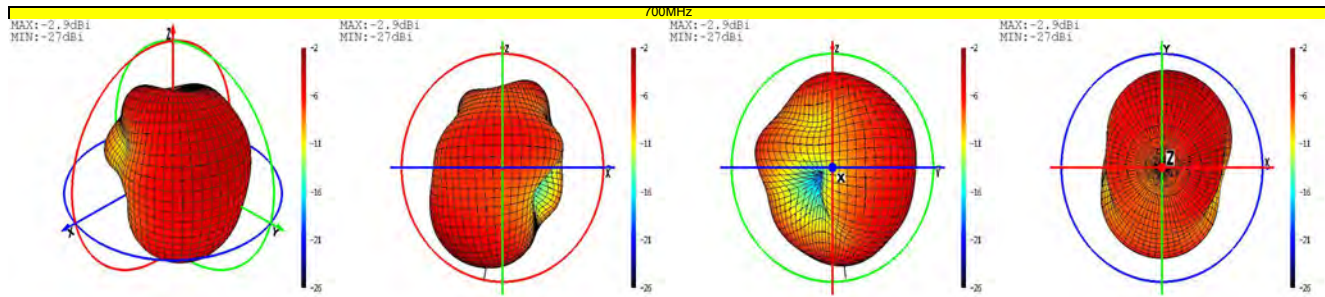
**$\Phi=90^\circ$  freq=2710MHz**



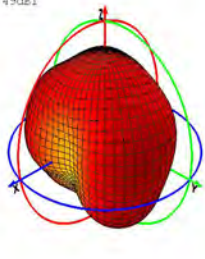
**$\Phi=0^\circ$  freq=2710MHz**



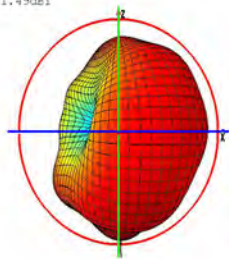
**$\Theta=90^\circ$  freq=2710MHz**



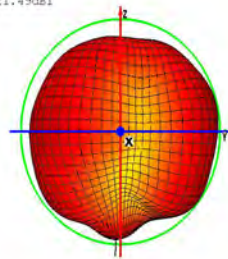
MAX:-1.93dB1  
MIN:-21.49dB1



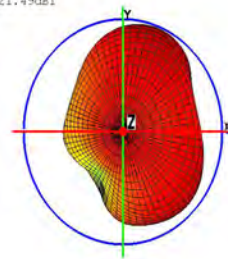
MAX:-1.93dB1  
MIN:-21.49dB1



MAX:-1.93dB1  
MIN:-21.49dB1

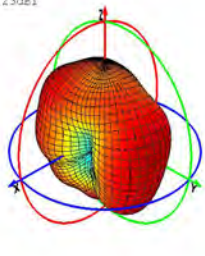


MAX:-1.93dB1  
MIN:-21.49dB1

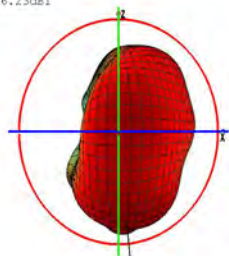


840MHz

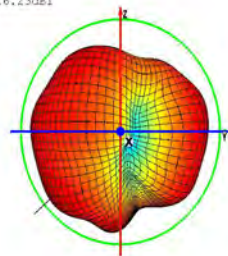
MAX:-2.29dB1  
MIN:-16.23dB1



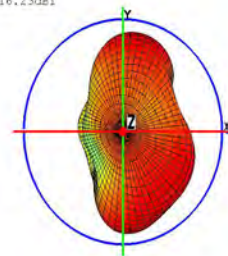
MAX:-2.29dB1  
MIN:-16.23dB1



MAX:-2.29dB1  
MIN:-16.23dB1

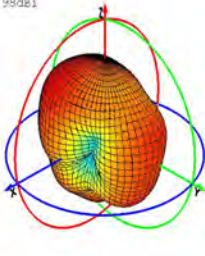


MAX:-2.29dB1  
MIN:-16.23dB1

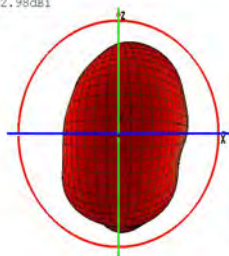


880MHz

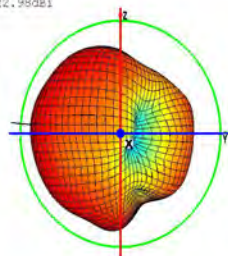
MAX:-0.37dB1  
MIN:-22.98dB1



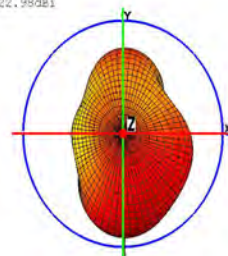
MAX:-0.37dB1  
MIN:-22.98dB1



MAX:-0.37dB1  
MIN:-22.98dB1

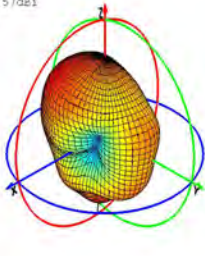


MAX:-0.37dB1  
MIN:-22.98dB1

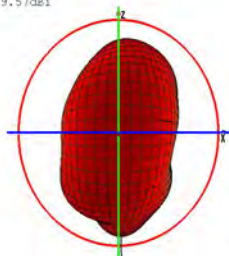


880MHz

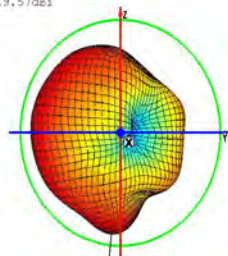
MAX:1.39dB1  
MIN:-19.57dB1



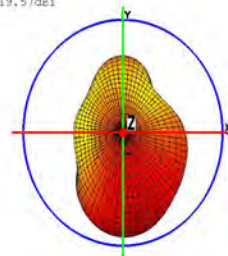
MAX:1.39dB1  
MIN:-19.57dB1



MAX:1.39dB1  
MIN:-19.57dB1

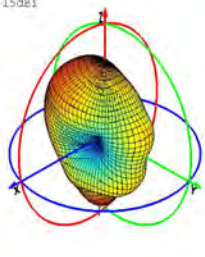


MAX:1.39dB1  
MIN:-19.57dB1

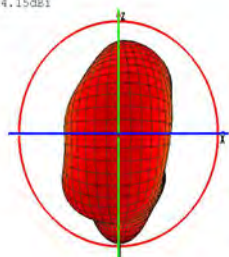


900MHz

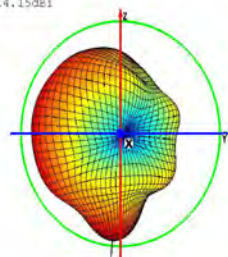
MAX:3.46dB1  
MIN:-14.15dB1



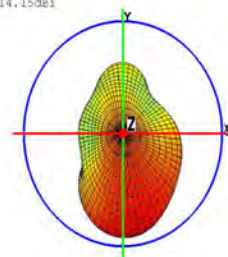
MAX:3.46dB1  
MIN:-14.15dB1



MAX:3.46dB1  
MIN:-14.15dB1

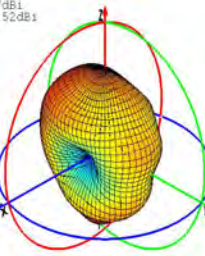


MAX:3.46dB1  
MIN:-14.15dB1

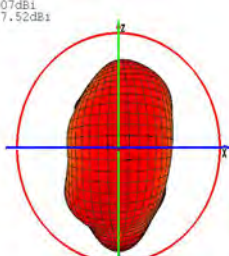


920MHz

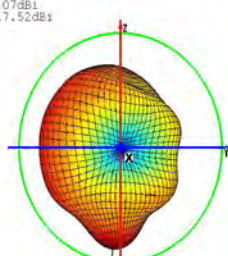
MAX:5.07dB1  
MIN:-17.52dB1



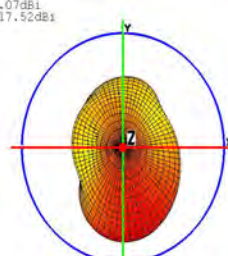
MAX:5.07dB1  
MIN:-17.52dB1



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

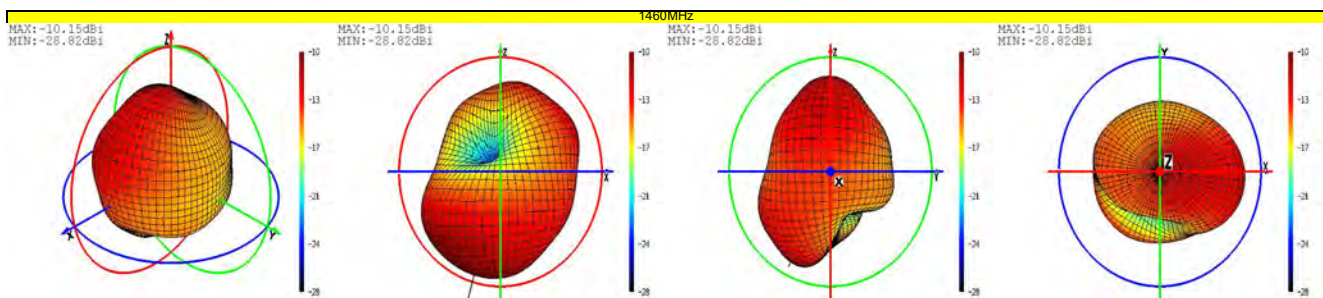
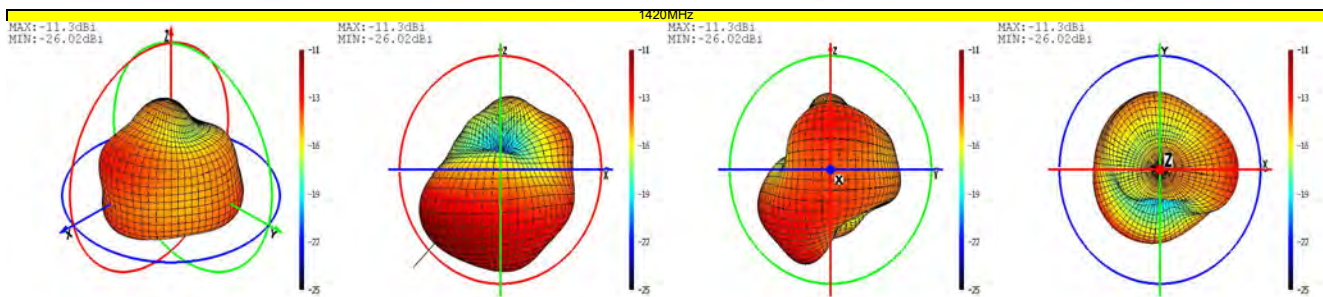
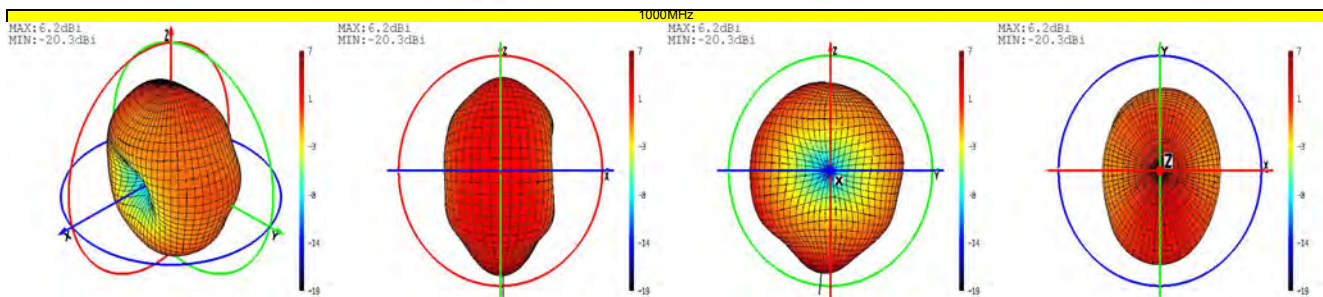
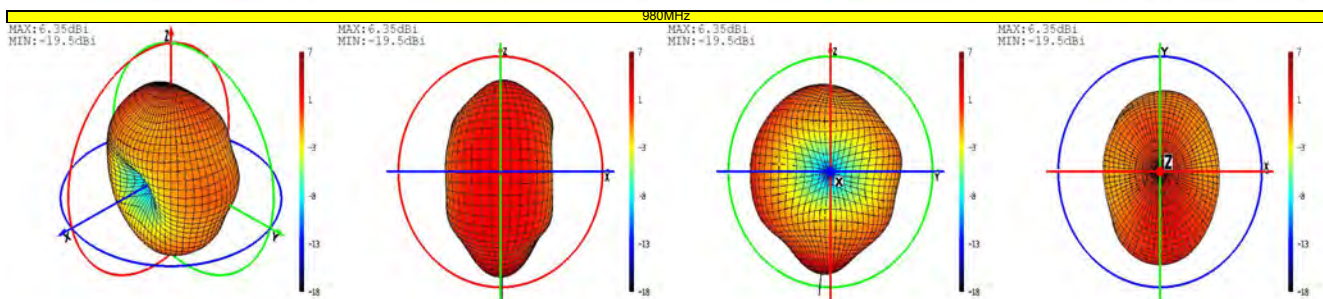
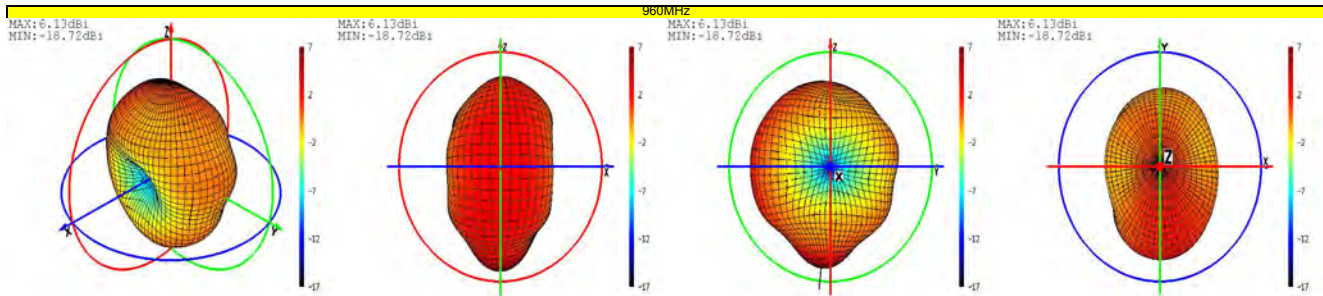
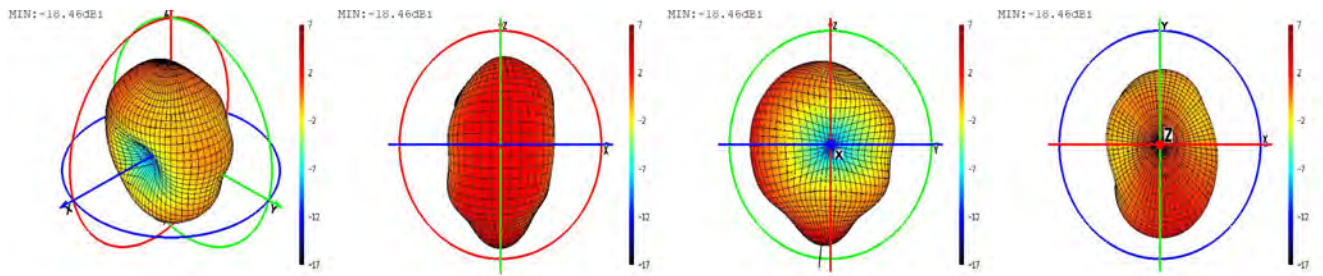


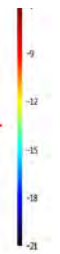
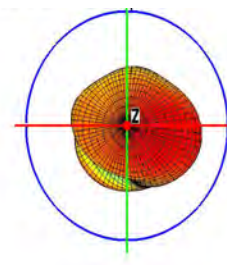
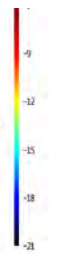
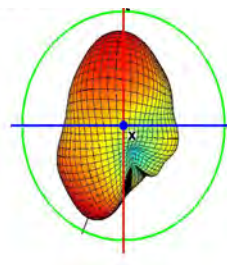
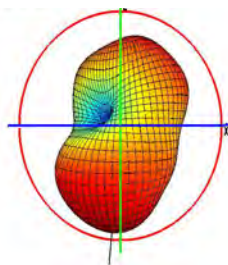
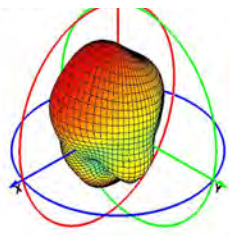
MAX:6.03dB1  
MIN:-18.46dB1



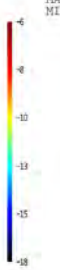
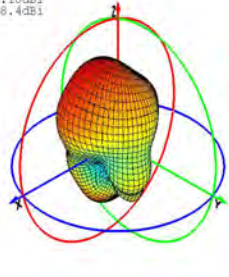
MAX:6.03dB1  
MIN:-18.46dB1



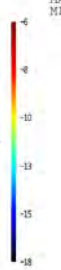
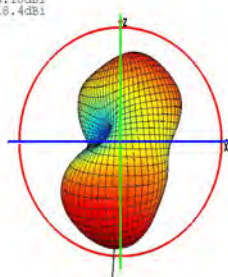




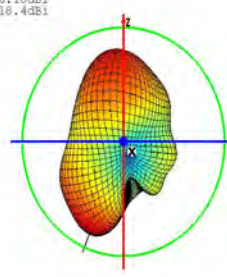
MAX:-6.18dB  
MIN:-18.4dB



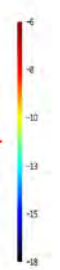
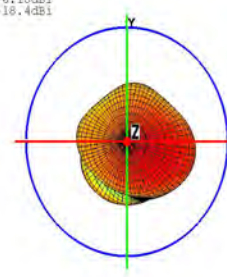
MAX:-6.18dB  
MIN:-18.4dB



MAX:-6.18dB  
MIN:-18.4dB

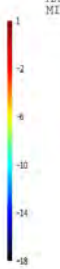
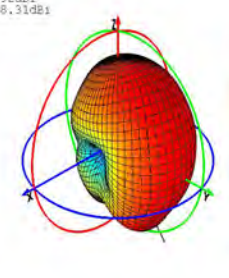


MAX:-6.18dB  
MIN:-18.4dB

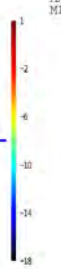
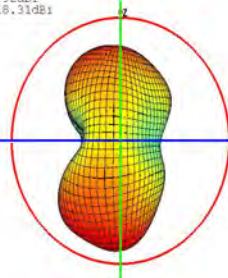


1520MHZ

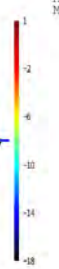
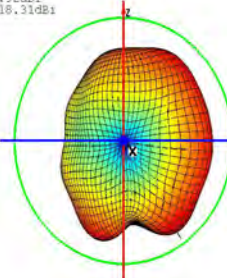
MAX:0.92dB  
MIN:-18.31dB



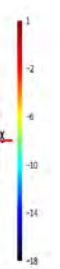
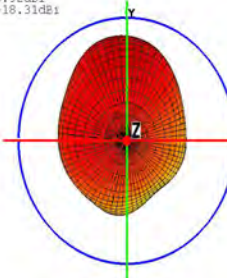
MAX:0.92dB  
MIN:-18.31dB



MAX:0.92dB  
MIN:-18.31dB

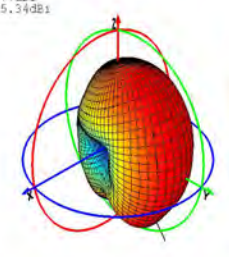


MAX:0.92dB  
MIN:-18.31dB

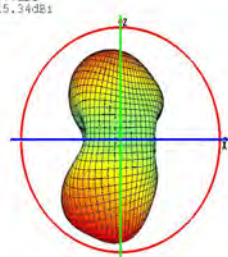


1700MHZ

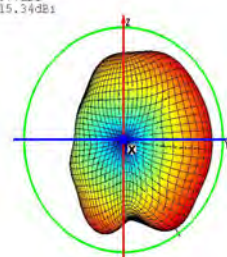
MAX:1.77dB  
MIN:-15.34dB



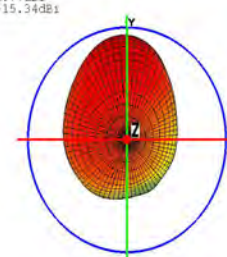
MAX:1.77dB  
MIN:-15.34dB



MAX:1.77dB  
MIN:-15.34dB

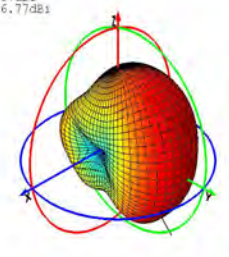


MAX:1.77dB  
MIN:-15.34dB

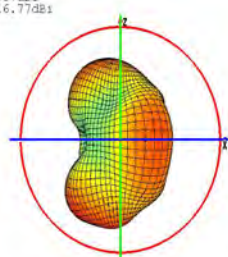


1710MHZ

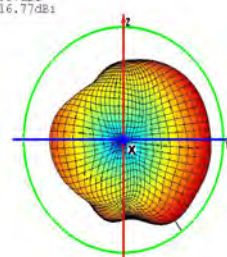
MAX:2.87dB  
MIN:-16.77dB



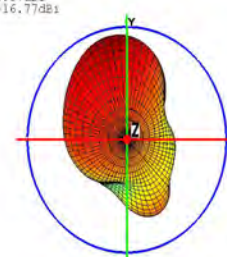
MAX:2.87dB  
MIN:-16.77dB



MAX:2.87dB  
MIN:-16.77dB

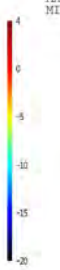
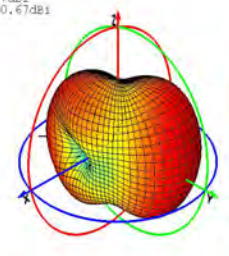


MAX:2.87dB  
MIN:-16.77dB

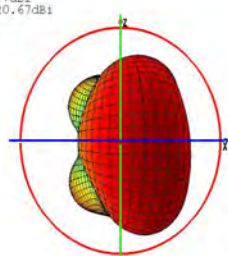


1750MHZ

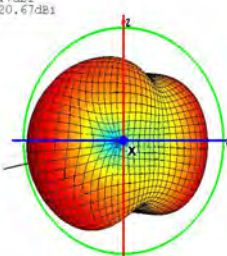
MAX:3.74dB  
MIN:-20.67dB



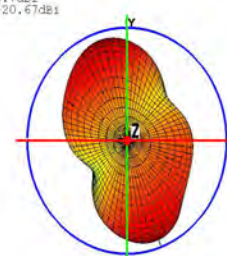
MAX:3.74dB  
MIN:-20.67dB



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



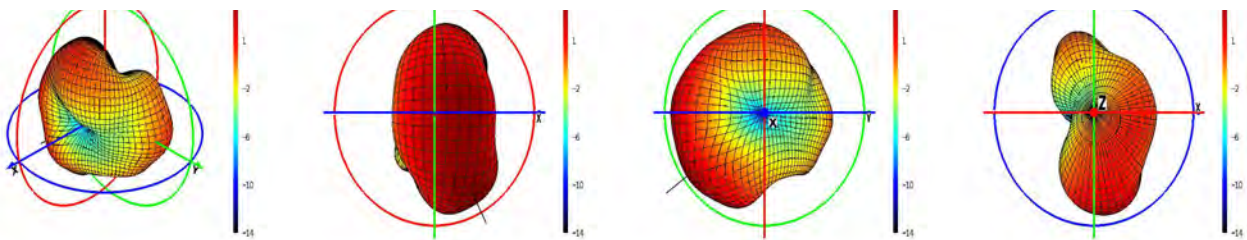
MAX:4.74dB  
MIN:-14.74dB



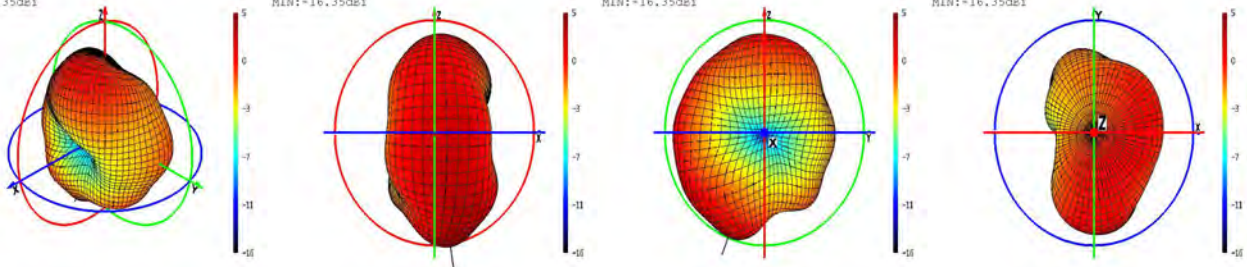
MAX:4.74dB  
MIN:-14.74dB



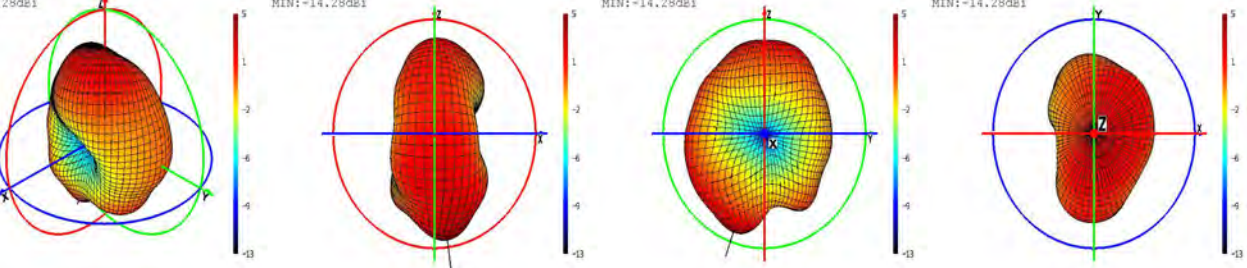
1830MHZ



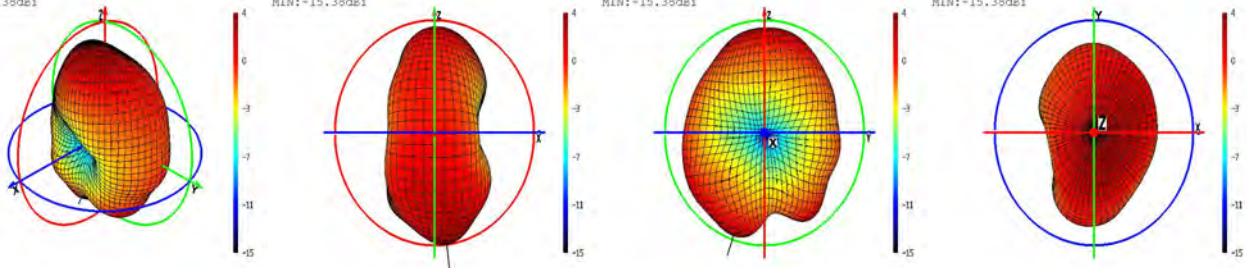
1870MHz  
 MAX: 4.74dB1  
 MIN: -16.35dB1



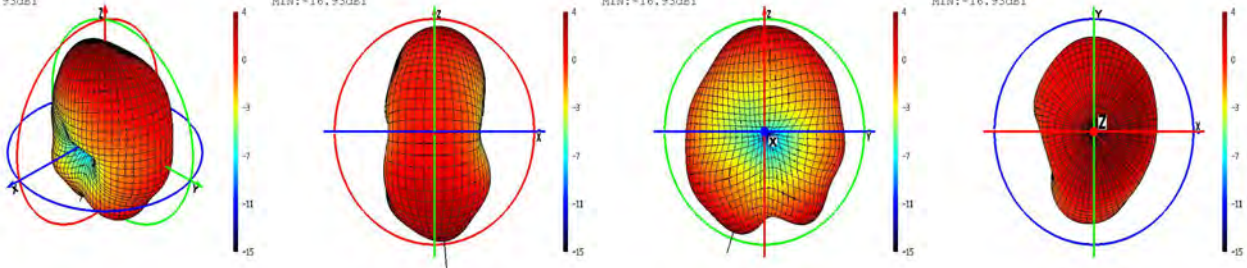
1870MHz  
 MAX: 4.22dB1  
 MIN: -14.28dB1



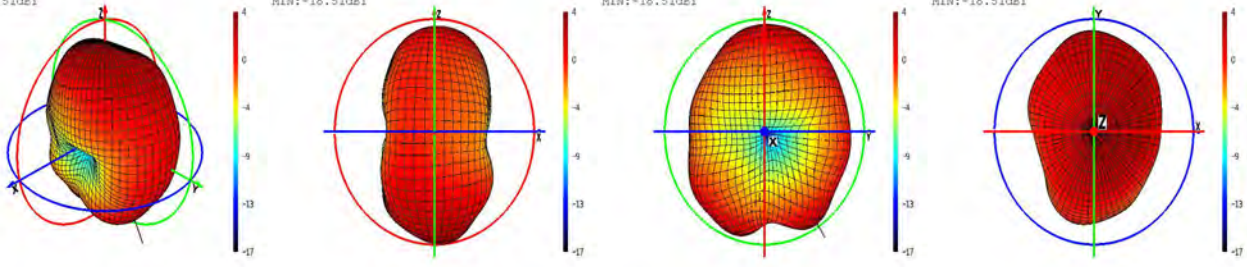
1890MHz  
 MAX: 3.65dB1  
 MIN: -15.38dB1



1890MHz  
 MAX: 3.03dB1  
 MIN: -16.93dB1

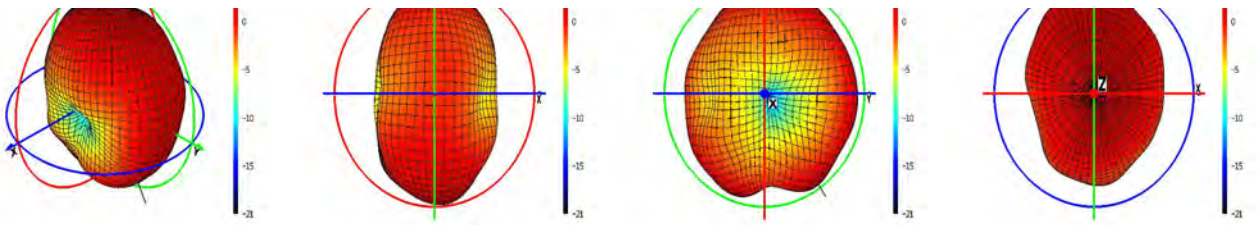


2030MHz  
 MAX: 3.49dB1  
 MIN: -18.51dB1

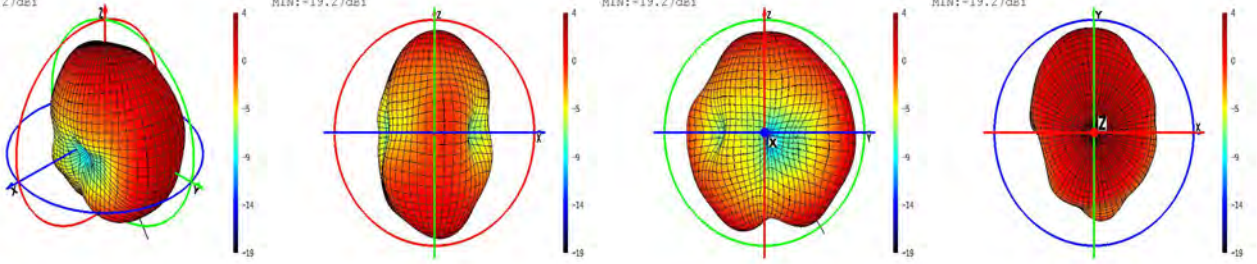


2070MHz  
 MAX: 4.02dB1  
 MIN: -22.01dB1

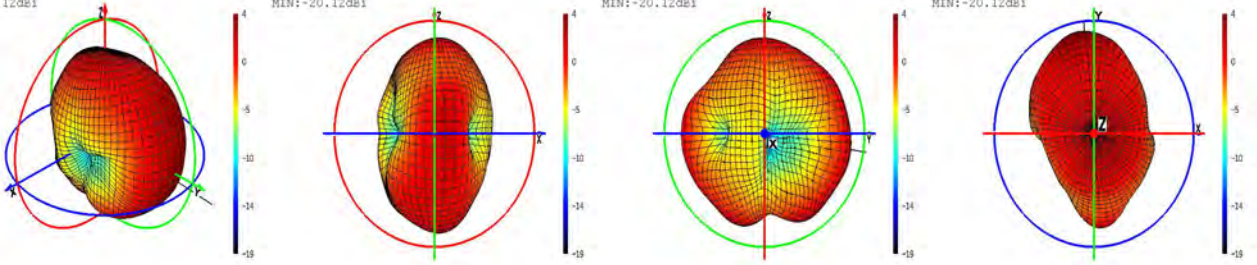




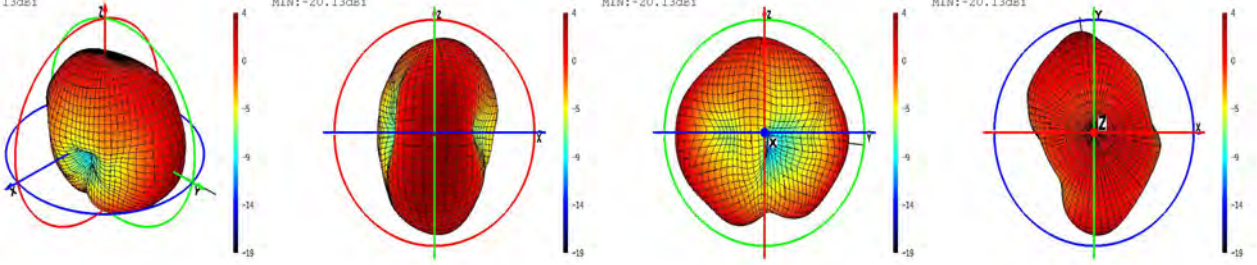
2110MHz  
MAX: 3.85dB1  
MIN: -19.27dB1



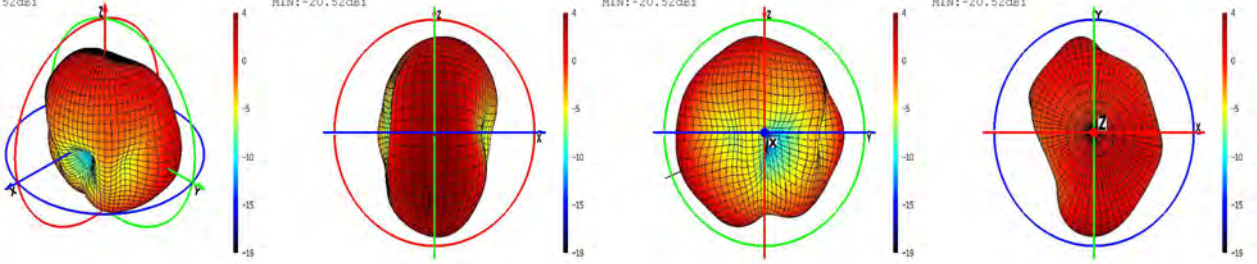
2150MHz  
MAX: 3.38dB1  
MIN: -20.12dB1



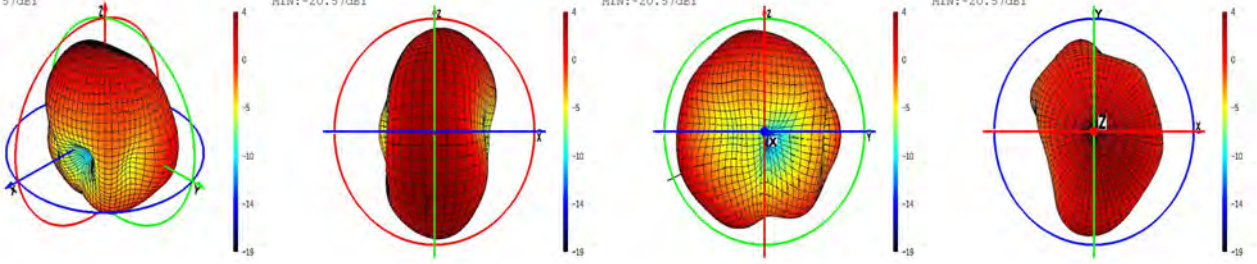
2190MHz  
MAX: 3.12dB1  
MIN: -20.13dB1



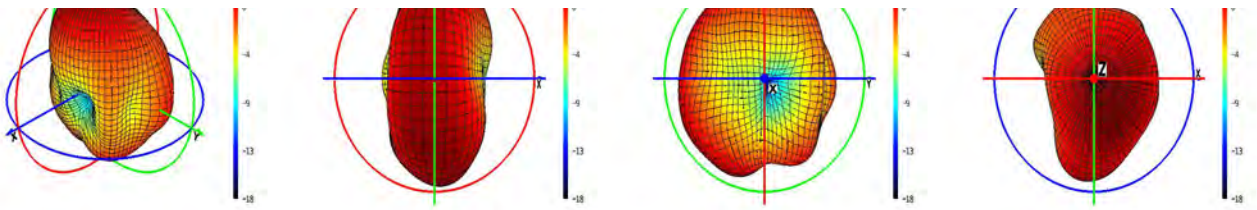
2230MHz  
MAX: 3.26dB1  
MIN: -20.52dB1



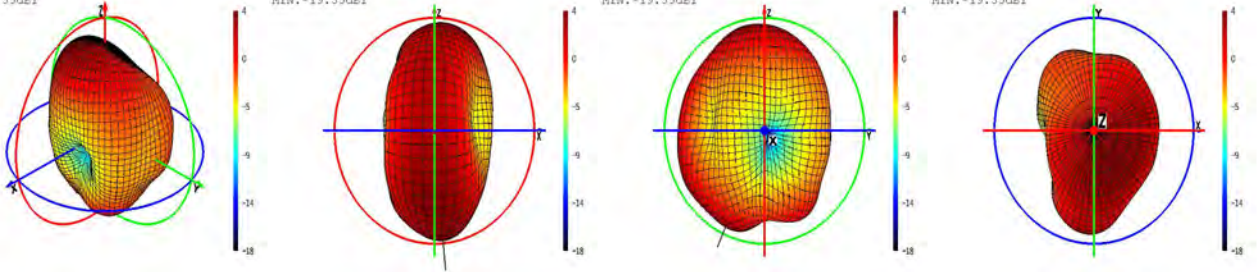
2270MHz  
MAX: 3.02dB1  
MIN: -20.57dB1



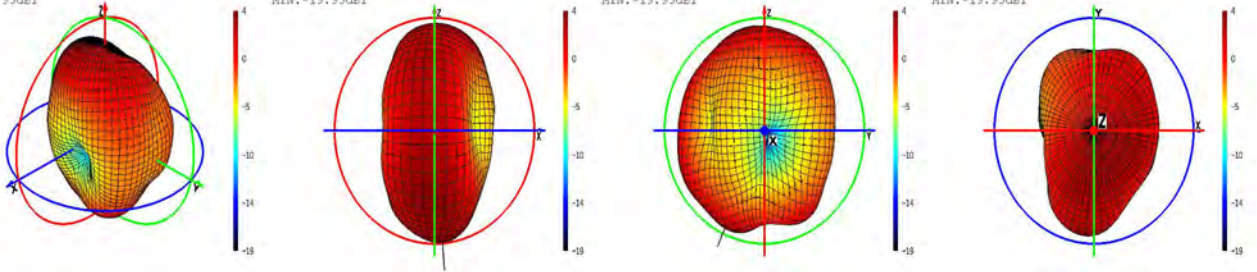
2310MHz  
MAX: 3.08dB1  
MIN: -18.92dB1



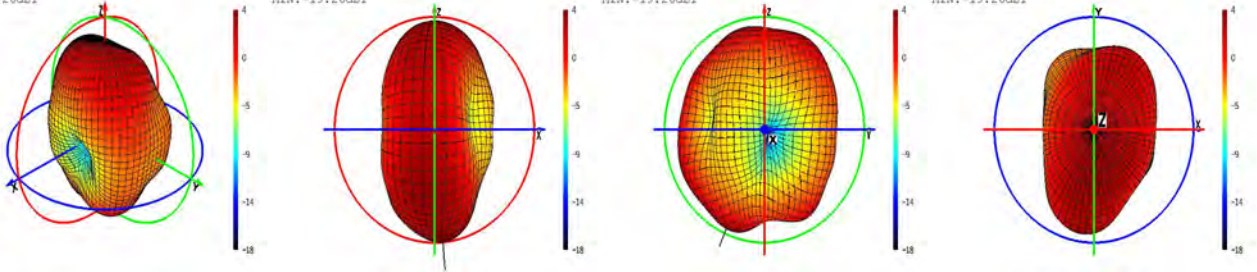
2350MHz  
MAX: 3.32dBm  
MIN: -19.55dBm



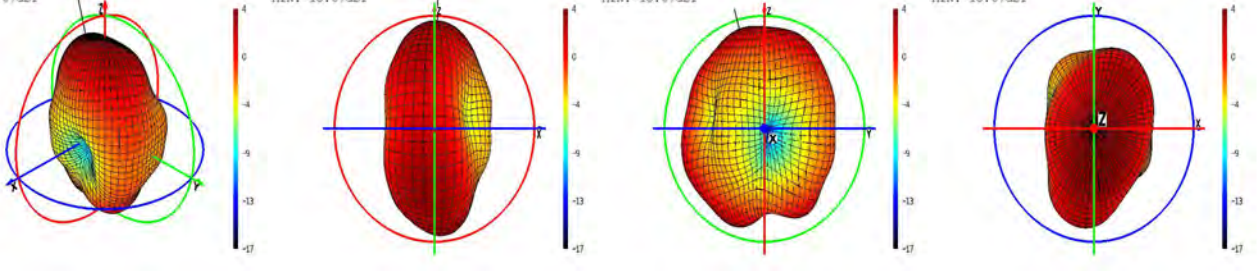
2390MHz  
MAX: 3.42dBm  
MIN: -19.95dBm



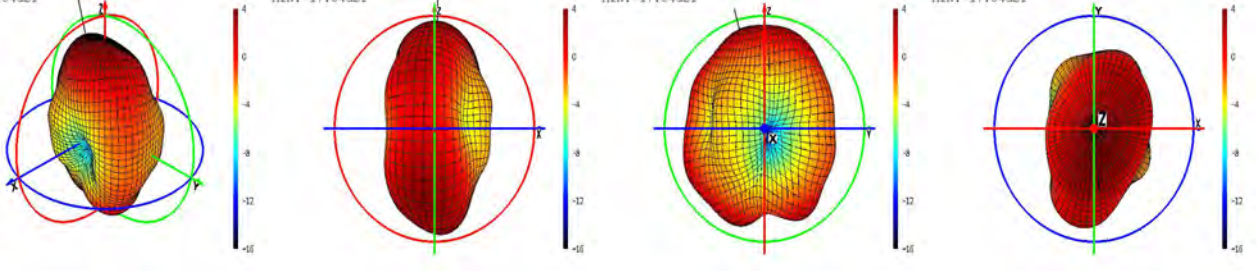
2430MHz  
MAX: 3.28dBm  
MIN: -19.26dBm



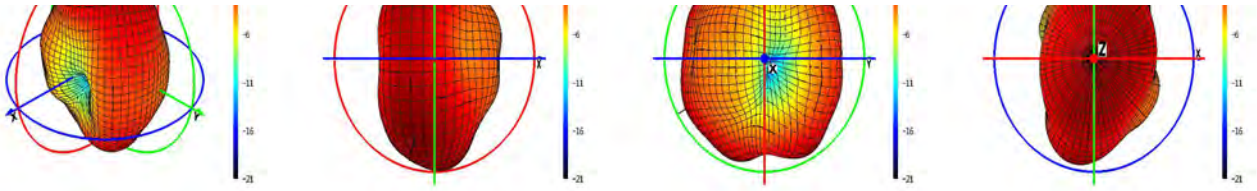
2470MHz  
MAX: 3.21dBm  
MIN: -18.67dBm



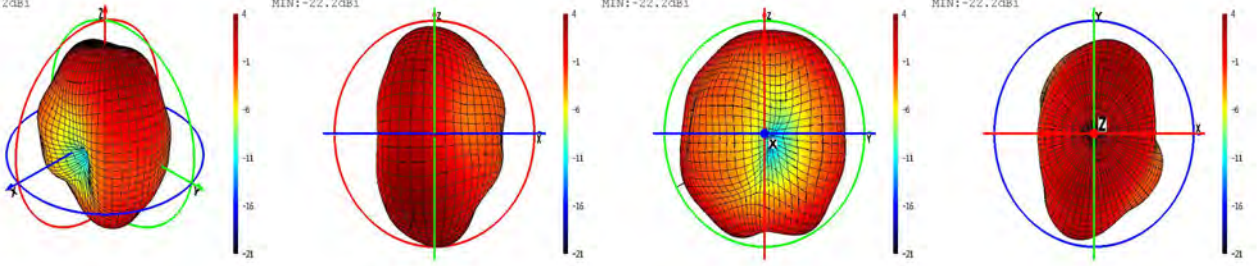
2510MHz  
MAX: 3.01dBm  
MIN: -17.84dBm



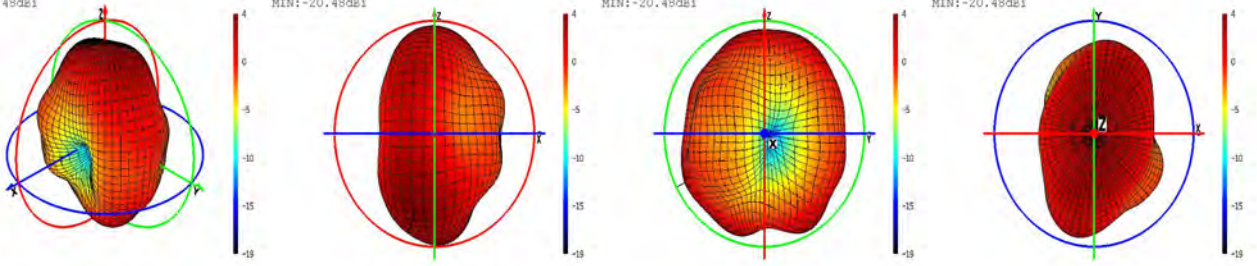
2550MHz  
MAX: 2.78dBm  
MIN: -22.17dBm



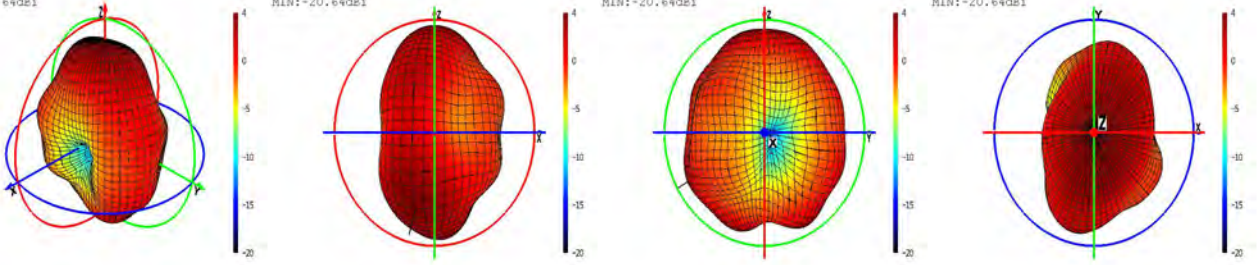
2590MHz  
MAX: 3.31dB1  
MIN: -22.2dB1



2630MHz  
MAX: 3.52dB1  
MIN: -20.48dB1



2670MHz  
MAX: 3.55dB1  
MIN: -20.64dB1



2710MHz  
MAX: 3.42dB1  
MIN: -20.6dB1

