



**SUNNYWAY**

# **4G&5G Glue Stick Antenna**

**PN: SH19280IB56**



**Sunnyway Technology**

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## 1. Electrical Specifications

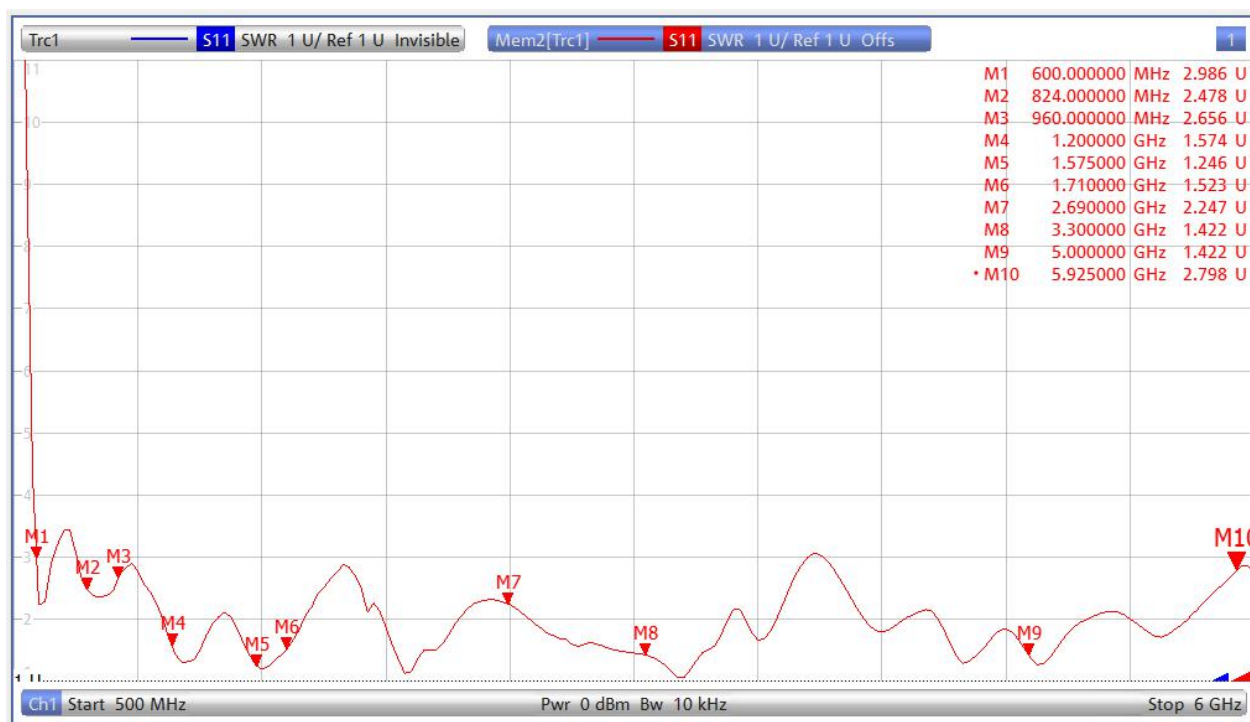
|                               |                  |
|-------------------------------|------------------|
| Frequency range               | 600~6000mhz      |
| Peak Gain(dBi )               | 3~4dBi           |
| Average Gain(dBi )            | -1~-3dB          |
| Polarization mode             | Linear           |
| VSWR                          | ~2-3             |
| Return Loss                   | ~-6              |
| Efficiency(%)                 | 40~60%           |
| Radiation pattern             | Omni-Directional |
| Output impedance ( $\Omega$ ) | 50               |
| Max. Input Power(W)           | 25               |

## 2. Mechanical and Environmental Specification

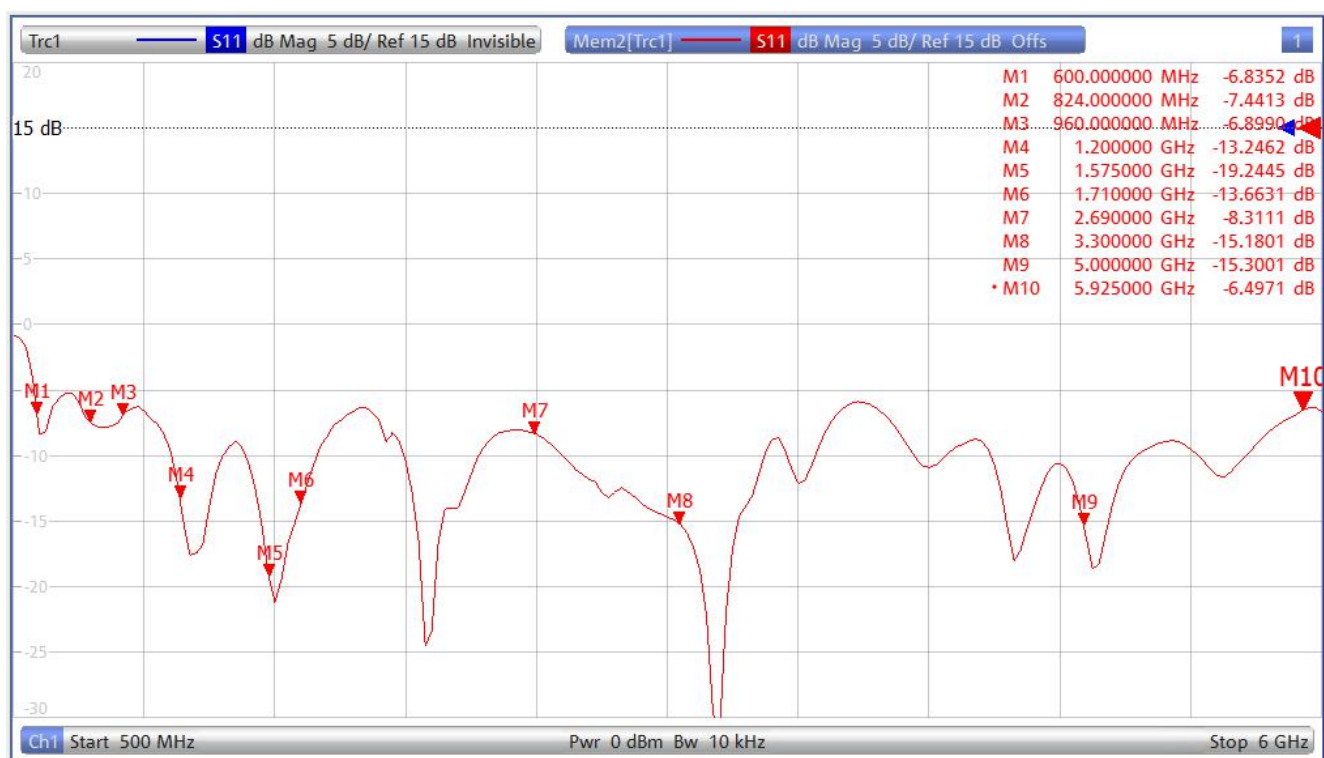
|                            |                   |
|----------------------------|-------------------|
| Mounting Type              | Connector Mount   |
| Connector Type             | SMA (M)           |
| Antenna size(mm)           | 220 x 28 x 8      |
| Material                   | ABS+PC            |
| Operating Temperature (°C) | - 40 °C ~ + 85 °C |
| Storage Temperature(°C)    | - 40 °C ~ + 85 °C |

## 3. Antenna parameters

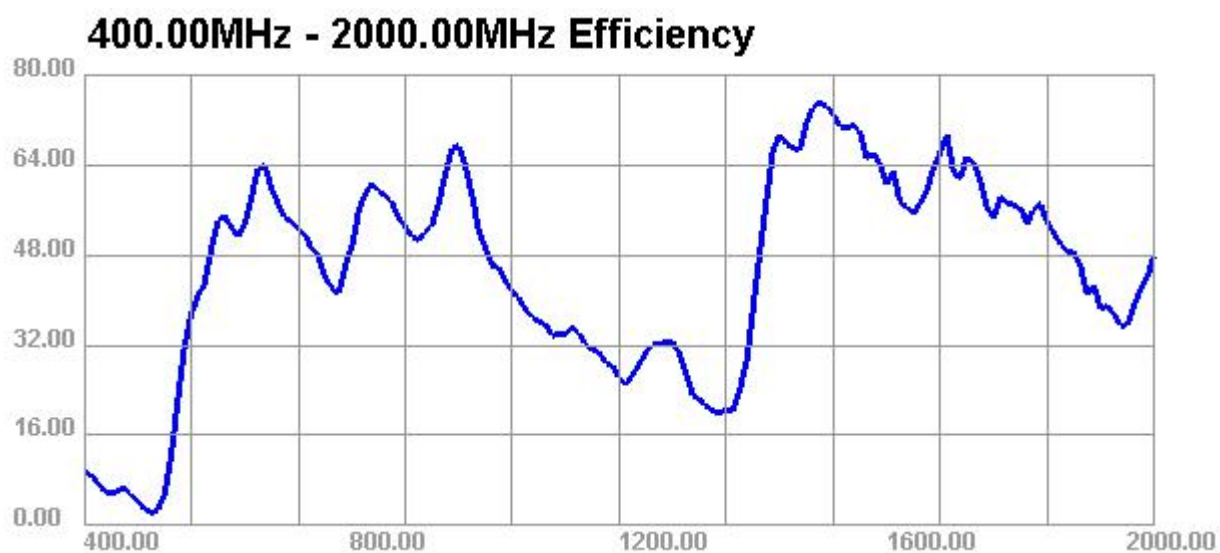
| FRE (MHz)         | 600  | 824  | 960  | 1200  | 1575  | 1710  | 2690 | 3300  | 5000  | 5925 |
|-------------------|------|------|------|-------|-------|-------|------|-------|-------|------|
| VSWR              | 2.9  | 2.4  | 2.6  | 1.5   | 1.2   | 1.5   | 2.2  | 1.4   | 1.4   | 2.7  |
| Return Loss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



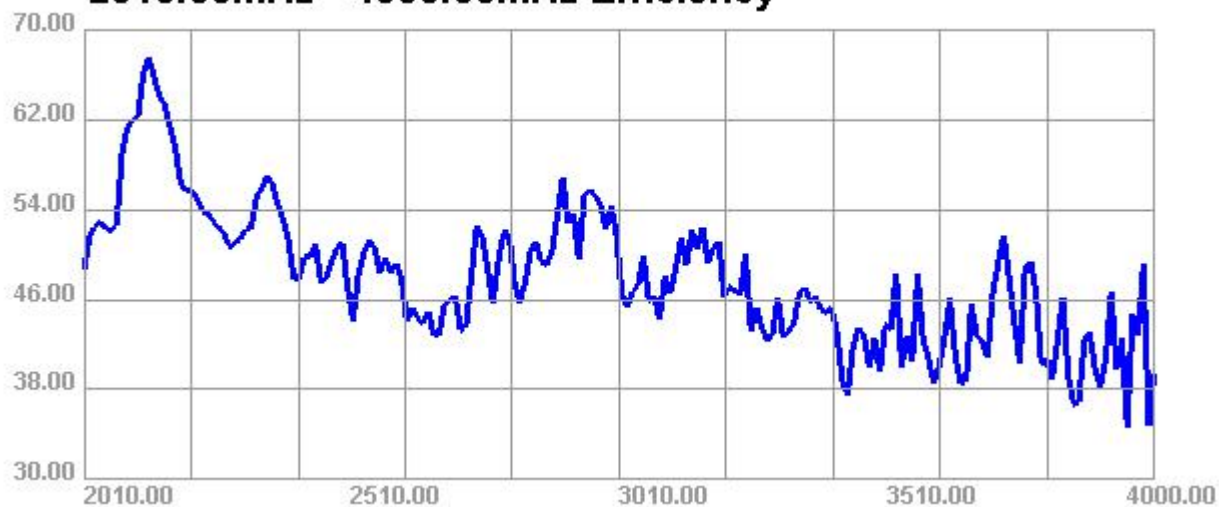
VSWR



## Return Loss



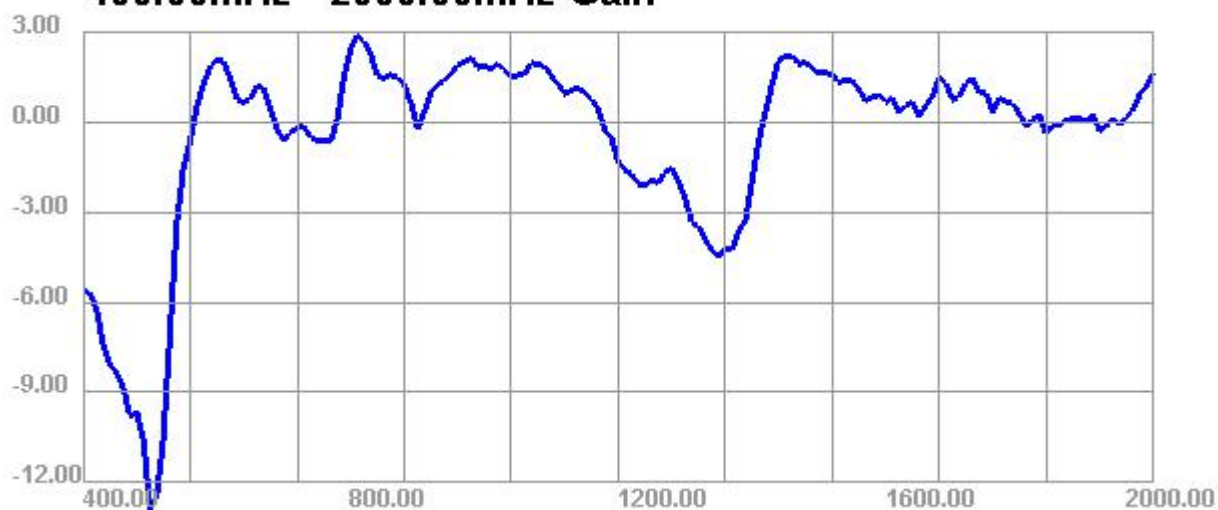
### 2010.00MHz - 4000.00MHz Efficiency



### 4010.00MHz - 6000.00MHz Efficiency



### 400.00MHz - 2000.00MHz Gain



**2010.00MHz - 4000.00MHz Gain****4010.00MHz - 6000.00MHz Gain**

| Freq<br>(MHz) | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) | Freq<br>(MHz) | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) | Freq<br>(MHz) | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) |
|---------------|-------------|--------------|---------------|---------------|-------------|--------------|---------------|---------------|-------------|--------------|---------------|
| 600           | 54.02       | -2.67        | 2.09          | 2010          | 48.69       | -3.13        | 1.67          | 4010          | 31.12       | -5.07        | 0.67          |
| 610           | 54.96       | -2.6         | 2.01          | 2020          | 51.62       | -2.87        | 1.75          | 4020          | 45.46       | -3.42        | 1.43          |
| 620           | 53          | -2.76        | 1.44          | 2030          | 52.58       | -2.79        | 1.94          | 4030          | 43.11       | -3.65        | 1.51          |
| 630           | 51.16       | -2.91        | 0.76          | 2040          | 52.89       | -2.77        | 2.18          | 4040          | 43.49       | -3.62        | 1.45          |
| 640           | 53.62       | -2.71        | 0.65          | 2050          | 52.29       | -2.82        | 2.43          | 4050          | 34.39       | -4.64        | 1.03          |

|     |       |       |       |      |       |       |      |      |       |       |      |
|-----|-------|-------|-------|------|-------|-------|------|------|-------|-------|------|
| 650 | 58.31 | -2.34 | 0.77  | 2060 | 52.16 | -2.83 | 2.64 | 4060 | 36.11 | -4.42 | 0.88 |
| 660 | 63.28 | -1.99 | 1.22  | 2070 | 52.58 | -2.79 | 2.82 | 4070 | 38.15 | -4.19 | 0.94 |
| 670 | 63.9  | -1.95 | 1.13  | 2080 | 58.89 | -2.3  | 3.81 | 4080 | 49.56 | -3.05 | 1.99 |
| 680 | 59.84 | -2.23 | 0.43  | 2090 | 61.28 | -2.13 | 3.73 | 4090 | 43.87 | -3.58 | 2.08 |
| 690 | 57.08 | -2.44 | -0.25 | 2100 | 61.89 | -2.08 | 3.52 | 4100 | 38.87 | -4.1  | 1.47 |
| 700 | 54.64 | -2.62 | -0.63 | 2110 | 62.29 | -2.06 | 3.47 | 4110 | 36.38 | -4.39 | 1.04 |
| 710 | 53.95 | -2.68 | -0.33 | 2120 | 66.13 | -1.8  | 4.09 | 4120 | 39.72 | -4.01 | 0.94 |
| 720 | 52.83 | -2.77 | -0.2  | 2130 | 67.51 | -1.71 | 4.1  | 4130 | 44.73 | -3.49 | 1.77 |
| 730 | 51.62 | -2.87 | -0.16 | 2140 | 65.74 | -1.82 | 4.18 | 4140 | 43.21 | -3.64 | 1.98 |
| 740 | 49.12 | -3.09 | -0.51 | 2150 | 64.02 | -1.94 | 4.13 | 4150 | 35.69 | -4.47 | 1.37 |
| 750 | 47.87 | -3.2  | -0.61 | 2160 | 63.28 | -1.99 | 3.87 | 4160 | 35.22 | -4.53 | 0.54 |
| 760 | 44.15 | -3.55 | -0.6  | 2170 | 61.31 | -2.12 | 3.79 | 4170 | 37.21 | -4.29 | 1.38 |
| 770 | 42.23 | -3.74 | -0.64 | 2180 | 59.28 | -2.27 | 3.39 | 4180 | 38.59 | -4.14 | 1.3  |
| 780 | 41.14 | -3.86 | 0.08  | 2190 | 56.11 | -2.51 | 3.37 | 4190 | 38.32 | -4.17 | 0.68 |
| 790 | 45.86 | -3.39 | 1.54  | 2200 | 55.74 | -2.54 | 3.01 | 4200 | 33.43 | -4.76 | 0.24 |
| 800 | 49.41 | -3.06 | 2.42  | 2210 | 55.73 | -2.54 | 2.98 | 4210 | 34.54 | -4.62 | 0.78 |
| 810 | 55.54 | -2.55 | 2.87  | 2220 | 54.97 | -2.6  | 2.92 | 4220 | 35.7  | -4.47 | 1.39 |
| 820 | 58.95 | -2.29 | 2.68  | 2230 | 53.78 | -2.69 | 3.09 | 4230 | 40.96 | -3.88 | 2.4  |
| 830 | 60.69 | -2.17 | 2.26  | 2240 | 53.74 | -2.7  | 2.94 | 4240 | 35.1  | -4.55 | 0.24 |
| 840 | 59.29 | -2.27 | 1.52  | 2250 | 52.91 | -2.76 | 2.92 | 4250 | 39.5  | -4.03 | 3.66 |
| 850 | 58.53 | -2.33 | 1.47  | 2260 | 52.48 | -2.8  | 3.06 | 4260 | 34.09 | -4.67 | 0.11 |

|      |       |       |       |      |       |       |      |      |       |       |      |
|------|-------|-------|-------|------|-------|-------|------|------|-------|-------|------|
| 860  | 57.42 | -2.41 | 1.56  | 2270 | 51.94 | -2.85 | 2.84 | 4270 | 43.24 | -3.64 | 1.63 |
| 870  | 54.63 | -2.63 | 1.5   | 2280 | 50.68 | -2.95 | 2.6  | 4280 | 42.13 | -3.75 | 1.7  |
| 880  | 53.07 | -2.75 | 1.21  | 2290 | 51.09 | -2.92 | 2.68 | 4290 | 41.42 | -3.83 | 1.74 |
| 890  | 51.18 | -2.91 | 0.64  | 2300 | 51.35 | -2.89 | 2.54 | 4300 | 35.61 | -4.48 | 0.7  |
| 900  | 50.74 | -2.95 | -0.25 | 2310 | 52.26 | -2.82 | 2.7  | 4310 | 35.73 | -4.47 | 0.93 |
| 910  | 52.07 | -2.83 | 0.34  | 2320 | 52.31 | -2.81 | 2.62 | 4320 | 36.93 | -4.33 | 1.09 |
| 920  | 53.19 | -2.74 | 1.02  | 2330 | 55.05 | -2.59 | 2.64 | 4330 | 43.35 | -3.63 | 1.5  |
| 930  | 57.31 | -2.42 | 1.26  | 2340 | 55.94 | -2.52 | 2.63 | 4340 | 45.1  | -3.46 | 1.87 |
| 940  | 62.26 | -2.06 | 1.35  | 2350 | 56.95 | -2.45 | 2.6  | 4350 | 42.65 | -3.7  | 1.45 |
| 950  | 67.05 | -1.74 | 1.58  | 2360 | 56.24 | -2.5  | 2.45 | 4360 | 39.92 | -3.99 | 0.82 |
| 960  | 67.4  | -1.71 | 1.9   | 2370 | 54.43 | -2.64 | 2.18 | 4370 | 41.72 | -3.8  | 0.8  |
|      |       |       |       | 2380 | 53.09 | -2.75 | 2.18 | 4380 | 43.15 | -3.65 | 2.03 |
| 1420 | 57.58 | -2.4  | 0.31  | 2390 | 51.17 | -2.91 | 1.81 | 4390 | 40.81 | -3.89 | 1.23 |
| 1430 | 66.71 | -1.76 | 1.26  | 2400 | 47.84 | -3.2  | 1.33 | 4400 | 41.17 | -3.85 | 1.55 |
| 1440 | 69.42 | -1.58 | 2.05  | 2410 | 47.92 | -3.19 | 1.43 | 4410 | 39.71 | -4.01 | 0.76 |
| 1450 | 67.77 | -1.69 | 2.17  | 2420 | 49.86 | -3.02 | 1.77 | 4420 | 43.13 | -3.65 | 1.93 |
| 1460 | 67.03 | -1.74 | 2.23  | 2430 | 49.74 | -3.03 | 1.25 | 4430 | 41.01 | -3.87 | 2.29 |
| 1470 | 66.64 | -1.76 | 1.93  | 2440 | 50.89 | -2.93 | 1.34 | 4440 | 43.45 | -3.62 | 2.14 |
| 1480 | 71.5  | -1.46 | 1.98  | 2450 | 47.54 | -3.23 | 0.87 | 4450 | 40.76 | -3.9  | 1.39 |
| 1490 | 74.3  | -1.29 | 1.79  | 2460 | 48.02 | -3.19 | 0.99 | 4460 | 41.59 | -3.81 | 2.47 |
| 1500 | 75.01 | -1.25 | 1.62  | 2470 | 49.31 | -3.07 | 0.62 | 4470 | 39.53 | -4.03 | 2.03 |



|      |       |       |      |      |       |       |       |      |       |       |       |
|------|-------|-------|------|------|-------|-------|-------|------|-------|-------|-------|
| 1510 | 74.48 | -1.28 | 1.65 | 2480 | 50.69 | -2.95 | 0.71  | 4480 | 42.24 | -3.74 | 2.38  |
| 1520 | 72.98 | -1.37 | 1.58 | 2490 | 51.01 | -2.92 | 0.78  | 4490 | 39.09 | -4.08 | 1.46  |
| 1530 | 70.82 | -1.5  | 1.31 | 2500 | 46.94 | -3.28 | 0.4   | 4500 | 40.12 | -3.97 | 2.06  |
| 1540 | 70.67 | -1.51 | 1.42 | 2510 | 44.19 | -3.55 | 0.22  | 4510 | 39    | -4.09 | 0.65  |
| 1550 | 71.01 | -1.49 | 1.36 | 2520 | 48.24 | -3.17 | 0.46  | 4520 | 43.09 | -3.66 | 2.05  |
| 1560 | 69.95 | -1.55 | 1.09 | 2530 | 50.23 | -2.99 | 0.55  | 4530 | 43.12 | -3.65 | 1.61  |
| 1570 | 65.02 | -1.87 | 0.7  | 2540 | 51.25 | -2.9  | 0.45  | 4540 | 40.55 | -3.92 | 1.58  |
| 1580 | 66.11 | -1.8  | 0.84 | 2550 | 50.63 | -2.96 | 0.2   | 4550 | 43.52 | -3.61 | 1.59  |
| 1590 | 64.11 | -1.93 | 0.9  | 2560 | 48.36 | -3.16 | -0.38 | 4560 | 43.44 | -3.62 | 1.75  |
| 1600 | 60.65 | -2.17 | 0.65 | 2570 | 49.73 | -3.03 | -0.35 | 4570 | 42.53 | -3.71 | 1.63  |
| 1610 | 62.74 | -2.02 | 0.8  | 2580 | 48.35 | -3.16 | -0.23 | 4580 | 38.99 | -4.09 | 1.56  |
| 1620 | 57.43 | -2.41 | 0.3  | 2590 | 49.28 | -3.07 | -0.71 | 4590 | 42.6  | -3.71 | 1.88  |
| 1630 | 56.51 | -2.48 | 0.58 | 2600 | 47.77 | -3.21 | -0.42 | 4600 | 35.71 | -4.47 | 0.57  |
| 1640 | 55.3  | -2.57 | 0.65 | 2610 | 44.1  | -3.56 | -0.84 | 4610 | 37.88 | -4.22 | 1.18  |
| 1650 | 57.29 | -2.42 | 0.19 | 2620 | 45.36 | -3.43 | -0.85 | 4620 | 34.3  | -4.65 | 0.17  |
| 1660 | 59.55 | -2.25 | 0.57 | 2630 | 44.37 | -3.53 | -0.52 | 4630 | 35.03 | -4.56 | 0.99  |
| 1670 | 63.56 | -1.97 | 0.84 | 2640 | 43.91 | -3.57 | -0.33 | 4640 | 29.7  | -5.27 | 0.13  |
| 1680 | 66.2  | -1.79 | 1.49 | 2650 | 45.01 | -3.47 | -0.18 | 4650 | 29.08 | -5.36 | -0.17 |
| 1690 | 69.23 | -1.6  | 1.3  | 2660 | 42.8  | -3.69 | -0.22 | 4660 | 31.04 | -5.08 | 0.11  |
| 1700 | 62.62 | -2.03 | 0.74 | 2670 | 42.95 | -3.67 | -0.62 | 4670 | 33.61 | -4.74 | 0.57  |
| 1710 | 61.56 | -2.11 | 0.86 | 2680 | 45.61 | -3.41 | -0.48 | 4680 | 32.61 | -4.87 | -0.1  |

|      |       |       |       |      |       |       |       |      |       |       |      |
|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|------|
| 1720 | 65.6  | -1.83 | 1.29  | 2690 | 45.96 | -3.38 | -0.47 | 4690 | 30.74 | -5.12 | 0.13 |
| 1730 | 64.37 | -1.91 | 1.47  | 2700 | 46.21 | -3.35 | -0.39 | 4700 | 36.28 | -4.4  | 0.21 |
| 1740 | 61.22 | -2.13 | 0.96  | 2710 | 43.28 | -3.64 | -0.18 | 4710 | 35.35 | -4.52 | 1.55 |
| 1750 | 56.56 | -2.47 | 0.95  | 2720 | 43.59 | -3.61 | -0.25 | 4720 | 39.65 | -4.02 | 0.75 |
| 1760 | 54.62 | -2.63 | 0.33  | 2730 | 48.11 | -3.18 | 0     | 4730 | 38.09 | -4.19 | 0.65 |
| 1770 | 58.33 | -2.34 | 0.83  | 2740 | 52.6  | -2.79 | 0.28  | 4740 | 37.69 | -4.24 | 0.62 |
| 1780 | 57.28 | -2.42 | 0.66  | 2750 | 51.62 | -2.87 | -0.02 | 4750 | 36.91 | -4.33 | 1.31 |
| 1790 | 56.9  | -2.45 | 0.61  | 2760 | 48.81 | -3.11 | 0.03  | 4760 | 42.9  | -3.68 | 3.35 |
| 1800 | 56.37 | -2.49 | 0.27  | 2770 | 45.74 | -3.4  | -0.1  | 4770 | 42.03 | -3.76 | 1.83 |
| 1810 | 53.59 | -2.71 | -0.16 | 2780 | 49.3  | -3.07 | 0.2   | 4780 | 41.7  | -3.8  | 1.43 |
| 1820 | 56.17 | -2.5  | 0.11  | 2790 | 52.02 | -2.84 | 0.65  | 4790 | 38.9  | -4.1  | 1.5  |
| 1830 | 57.07 | -2.44 | 0.24  | 2800 | 51.88 | -2.85 | 0.7   | 4800 | 40.27 | -3.95 | 2.12 |
| 1840 | 53.75 | -2.7  | -0.39 | 2810 | 47.54 | -3.23 | 0.54  | 4810 | 41.32 | -3.84 | 1.88 |
| 1850 | 51.93 | -2.85 | -0.09 | 2820 | 45.8  | -3.39 | 0.23  | 4820 | 45.08 | -3.46 | 2.24 |
| 1860 | 49.88 | -3.02 | -0.09 | 2830 | 47.57 | -3.23 | 0.57  | 4830 | 46.61 | -3.32 | 2.4  |
| 1870 | 48.74 | -3.12 | 0.06  | 2840 | 50.26 | -2.99 | 0.17  | 4840 | 45.17 | -3.45 | 2.85 |
| 1880 | 48.59 | -3.13 | 0.09  | 2850 | 51.18 | -2.91 | 0.38  | 4850 | 45.15 | -3.45 | 2.91 |
| 1890 | 45.9  | -3.38 | 0.12  | 2860 | 49.27 | -3.07 | 0.19  | 4860 | 46.93 | -3.29 | 1.83 |
| 1900 | 41.1  | -3.86 | -0.01 | 2870 | 49.14 | -3.09 | 0.24  | 4870 | 53.49 | -2.72 | 2.79 |
| 1910 | 42.52 | -3.71 | 0.25  | 2880 | 50.29 | -2.98 | 0.55  | 4880 | 55.06 | -2.59 | 2.54 |
| 1920 | 38.5  | -4.14 | -0.3  | 2890 | 53.6  | -2.71 | 1.05  | 4890 | 56.83 | -2.45 | 3    |

|      |       |       |       |      |       |       |       |      |       |       |      |
|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|------|
| 1930 | 38.94 | -4.1  | -0.14 | 2900 | 56.86 | -2.45 | 1.39  | 4900 | 59.71 | -2.24 | 3.46 |
| 1940 | 37.49 | -4.26 | 0.14  | 2910 | 52.75 | -2.78 | 0.62  | 4910 | 59.67 | -2.24 | 3.55 |
| 1950 | 35.49 | -4.5  | -0.14 | 2920 | 53.67 | -2.7  | 0.76  | 4920 | 65.22 | -1.86 | 4.23 |
| 1960 | 35.67 | -4.48 | 0.19  | 2930 | 49.55 | -3.05 | 0.07  | 4930 | 58.97 | -2.29 | 3.97 |
| 1970 | 39.25 | -4.06 | 0.4   | 2940 | 55.33 | -2.57 | 0.38  | 4940 | 69.65 | -1.57 | 4.89 |
| 1980 | 41.97 | -3.77 | 0.91  | 2950 | 55.82 | -2.53 | 0.33  | 4950 | 62.89 | -2.01 | 4.8  |
| 1990 | 44.24 | -3.54 | 1.19  | 2960 | 55.24 | -2.58 | 0.09  | 4960 | 64.45 | -1.91 | 5.16 |
| 2000 | 47.93 | -3.19 | 1.66  | 2970 | 54.4  | -2.64 | 0.23  | 4970 | 61.05 | -2.14 | 3.94 |
|      |       |       |       | 2980 | 52.28 | -2.82 | -0.17 | 4980 | 65.99 | -1.81 | 5.72 |
|      |       |       |       | 2990 | 54.35 | -2.65 | 0.26  | 4990 | 59.8  | -2.23 | 4.2  |
|      |       |       |       | 3000 | 51.7  | -2.87 | 0.17  | 5000 | 65.31 | -1.85 | 4.75 |
|      |       |       |       | 3010 | 46.49 | -3.33 | 0.31  | 5010 | 62.66 | -2.03 | 4.31 |
|      |       |       |       | 3020 | 45.31 | -3.44 | -0.15 | 5020 | 64.7  | -1.89 | 4.11 |
|      |       |       |       | 3030 | 46.78 | -3.3  | 0.13  | 5030 | 57.43 | -2.41 | 3.87 |
|      |       |       |       | 3040 | 47.21 | -3.26 | 1.06  | 5040 | 65.73 | -1.82 | 4.16 |
|      |       |       |       | 3050 | 49.85 | -3.02 | 1.08  | 5050 | 63.68 | -1.96 | 4.6  |
|      |       |       |       | 3060 | 45.94 | -3.38 | 0.24  | 5060 | 55.09 | -2.59 | 3.16 |
|      |       |       |       | 3070 | 46.31 | -3.34 | 1.02  | 5070 | 61.52 | -2.11 | 2.87 |
|      |       |       |       | 3080 | 44.28 | -3.54 | 0.98  | 5080 | 61.95 | -2.08 | 3.55 |
|      |       |       |       | 3090 | 48.15 | -3.17 | 1.37  | 5090 | 61.1  | -2.14 | 4.01 |
|      |       |       |       | 3100 | 46.61 | -3.31 | 1.07  | 5100 | 64.99 | -1.87 | 4.28 |

|      |       |       |      |      |       |       |      |
|------|-------|-------|------|------|-------|-------|------|
| 3110 | 48.76 | -3.12 | 1.38 | 5110 | 74.59 | -1.27 | 4.85 |
| 3120 | 51.4  | -2.89 | 1.48 | 5120 | 65.46 | -1.84 | 3.68 |
| 3130 | 49.13 | -3.09 | 1.14 | 5130 | 67.03 | -1.74 | 4.21 |
| 3140 | 52.14 | -2.83 | 2.07 | 5140 | 68.14 | -1.67 | 4.02 |
| 3150 | 50.44 | -2.97 | 1.27 | 5150 | 63.12 | -2    | 3.73 |
| 3160 | 52.51 | -2.8  | 1.31 | 5160 | 67.08 | -1.73 | 3.97 |
| 3170 | 49.3  | -3.07 | 0.54 | 5170 | 64.96 | -1.87 | 3.84 |
| 3180 | 50.57 | -2.96 | 1.06 | 5180 | 69.56 | -1.58 | 4.12 |
| 3190 | 51.24 | -2.9  | 1.42 | 5190 | 62.29 | -2.06 | 4.07 |
| 3200 | 46.25 | -3.35 | 0.97 | 5200 | 65.09 | -1.86 | 4.37 |
| 3210 | 47.16 | -3.26 | 0.79 | 5210 | 66.4  | -1.78 | 4.18 |
| 3220 | 46.8  | -3.3  | 0.78 | 5220 | 72.83 | -1.38 | 6.04 |
| 3230 | 46.43 | -3.33 | 0.79 | 5230 | 64.64 | -1.89 | 4.4  |
| 3240 | 50.02 | -3.01 | 0.68 | 5240 | 62.86 | -2.02 | 4.18 |
| 3250 | 43.27 | -3.64 | 1.1  | 5250 | 60.18 | -2.21 | 4.08 |
| 3260 | 45.33 | -3.44 | 0.43 | 5260 | 65.76 | -1.82 | 4.31 |
| 3270 | 43.57 | -3.61 | 1.23 | 5270 | 64.61 | -1.9  | 5.13 |
| 3280 | 42.4  | -3.73 | 0.37 | 5280 | 62.96 | -2.01 | 3.88 |
| 3290 | 42.89 | -3.68 | 0.32 | 5290 | 55.45 | -2.56 | 4.5  |
| 3300 | 46.19 | -3.35 | 0.85 | 5300 | 62.18 | -2.06 | 4.73 |
| 3310 | 42.62 | -3.7  | 0.28 | 5310 | 63.92 | -1.94 | 4.51 |

|      |       |       |       |      |       |       |      |
|------|-------|-------|-------|------|-------|-------|------|
| 3320 | 43.14 | -3.65 | 0.82  | 5320 | 66.19 | -1.79 | 5.13 |
| 3330 | 43.98 | -3.57 | 0.63  | 5330 | 64.24 | -1.92 | 4.34 |
| 3340 | 46.49 | -3.33 | 0.75  | 5340 | 66.97 | -1.74 | 4.68 |
| 3350 | 47.09 | -3.27 | 1.14  | 5350 | 63.79 | -1.95 | 4.34 |
| 3360 | 45.9  | -3.38 | 0.82  | 5360 | 69.29 | -1.59 | 5.27 |
| 3370 | 46.28 | -3.35 | 1.28  | 5370 | 62.45 | -2.04 | 4.73 |
| 3380 | 45.15 | -3.45 | 1.44  | 5380 | 55.57 | -2.55 | 3.61 |
| 3390 | 44.89 | -3.48 | 1.45  | 5390 | 61.54 | -2.11 | 4.27 |
| 3400 | 45.28 | -3.44 | 2.51  | 5400 | 60.52 | -2.18 | 4.1  |
| 3410 | 43    | -3.67 | 1.36  | 5410 | 61.78 | -2.09 | 4.31 |
| 3420 | 38.73 | -4.12 | 3.13  | 5420 | 63.22 | -1.99 | 3.91 |
| 3430 | 37.54 | -4.26 | -0.14 | 5430 | 54.64 | -2.62 | 3.85 |
| 3440 | 41.86 | -3.78 | 1.02  | 5440 | 50.23 | -2.99 | 3.1  |
| 3450 | 43.56 | -3.61 | 1.08  | 5450 | 63.04 | -2    | 4.52 |
| 3460 | 42.8  | -3.69 | 0.74  | 5460 | 59.73 | -2.24 | 3.67 |
| 3470 | 39.93 | -3.99 | 0.62  | 5470 | 59.23 | -2.27 | 4.13 |
| 3480 | 42.54 | -3.71 | 1.61  | 5480 | 63.79 | -1.95 | 4.28 |
| 3490 | 39.62 | -4.02 | 0.82  | 5490 | 68.82 | -1.62 | 4.64 |
| 3500 | 43.82 | -3.58 | 1.37  | 5500 | 64.12 | -1.93 | 4.93 |
| 3510 | 43.39 | -3.63 | 1.19  | 5510 | 67.84 | -1.69 | 4.6  |
| 3520 | 48.3  | -3.16 | 1.49  | 5520 | 62.01 | -2.08 | 4.82 |

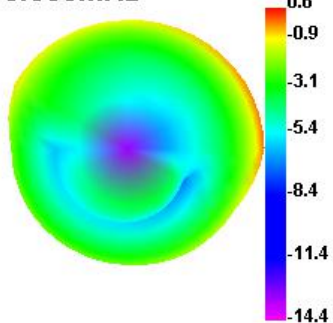
|      |       |       |      |      |       |       |      |
|------|-------|-------|------|------|-------|-------|------|
| 3530 | 40.1  | -3.97 | 0.7  | 5530 | 65.15 | -1.86 | 4.04 |
| 3540 | 42.76 | -3.69 | 0.84 | 5540 | 70.16 | -1.54 | 4.74 |
| 3550 | 40.55 | -3.92 | 1.53 | 5550 | 62.06 | -2.07 | 4.58 |
| 3560 | 48.21 | -3.17 | 1.89 | 5560 | 59.85 | -2.23 | 4.17 |
| 3570 | 42.57 | -3.71 | 1.29 | 5570 | 64.57 | -1.9  | 4.51 |
| 3580 | 40.8  | -3.89 | 0.76 | 5580 | 61.58 | -2.11 | 4.17 |
| 3590 | 38.63 | -4.13 | 0.91 | 5590 | 59.04 | -2.29 | 3.78 |
| 3600 | 40.13 | -3.97 | 0.61 | 5600 | 59.59 | -2.25 | 4.08 |
| 3610 | 42.65 | -3.7  | 1.41 | 5610 | 60.74 | -2.17 | 3.9  |
| 3620 | 46.1  | -3.36 | 2    | 5620 | 59.61 | -2.25 | 4.41 |
| 3630 | 41.09 | -3.86 | 1.01 | 5630 | 62.22 | -2.06 | 4    |
| 3640 | 38.55 | -4.14 | 0.78 | 5640 | 52.63 | -2.79 | 3.67 |
| 3650 | 38.74 | -4.12 | 1.19 | 5650 | 56.17 | -2.5  | 3.62 |
| 3660 | 45.52 | -3.42 | 2.26 | 5660 | 54.97 | -2.6  | 4    |
| 3670 | 42.78 | -3.69 | 1.13 | 5670 | 62.27 | -2.06 | 3.48 |
| 3680 | 42.27 | -3.74 | 1.42 | 5680 | 60.32 | -2.2  | 4.55 |
| 3690 | 40.88 | -3.89 | 1.41 | 5690 | 62.35 | -2.05 | 3.86 |
| 3700 | 46.61 | -3.32 | 1.65 | 5700 | 55.5  | -2.56 | 3.89 |
| 3710 | 49.33 | -3.07 | 1.41 | 5710 | 64.47 | -1.91 | 4.34 |
| 3720 | 51.72 | -2.86 | 2.59 | 5720 | 63.2  | -1.99 | 4.25 |
| 3730 | 47.93 | -3.19 | 1.77 | 5730 | 65.19 | -1.86 | 4.5  |

|      |       |       |       |      |       |       |      |
|------|-------|-------|-------|------|-------|-------|------|
| 3740 | 44.03 | -3.56 | 0.83  | 5740 | 63.92 | -1.94 | 4.37 |
| 3750 | 40.38 | -3.94 | 1.47  | 5750 | 58.33 | -2.34 | 3.6  |
| 3760 | 48.96 | -3.1  | 1.4   | 5760 | 61.71 | -2.1  | 4.17 |
| 3770 | 49.46 | -3.06 | 0.97  | 5770 | 69.65 | -1.57 | 4.63 |
| 3780 | 46.66 | -3.31 | 0.94  | 5780 | 63.12 | -2    | 4.42 |
| 3790 | 40.35 | -3.94 | -0.28 | 5790 | 64.43 | -1.91 | 4.67 |
| 3800 | 40.63 | -3.91 | -0.34 | 5800 | 59.22 | -2.28 | 4.15 |
| 3810 | 39.02 | -4.09 | -0.18 | 5810 | 60.95 | -2.15 | 4.02 |
| 3820 | 42.33 | -3.73 | 0.42  | 5820 | 60.69 | -2.17 | 3.57 |
| 3830 | 46.24 | -3.35 | 0.79  | 5830 | 66.66 | -1.76 | 4.13 |
| 3840 | 39.2  | -4.07 | 0.42  | 5840 | 65.17 | -1.86 | 4.01 |
| 3850 | 36.7  | -4.35 | -0.32 | 5850 | 67.78 | -1.69 | 4.67 |
| 3860 | 36.93 | -4.33 | 0.08  | 5860 | 55.44 | -2.56 | 3.95 |
| 3870 | 42.4  | -3.73 | 0.57  | 5870 | 66.57 | -1.77 | 3.79 |
| 3880 | 43.08 | -3.66 | 0.77  | 5880 | 61.33 | -2.12 | 3.33 |
| 3890 | 39.79 | -4    | 0.83  | 5890 | 65.26 | -1.85 | 2.89 |
| 3900 | 38.24 | -4.18 | 0.52  | 5900 | 62.7  | -2.03 | 4.25 |
| 3910 | 40.84 | -3.89 | 1.11  | 5910 | 59.49 | -2.26 | 3.18 |
| 3920 | 46.69 | -3.31 | 1.34  | 5920 | 59.62 | -2.25 | 2.74 |
| 3930 | 39.87 | -3.99 | 1.38  | 5930 | 61.71 | -2.1  | 3.25 |
| 3940 | 42.48 | -3.72 | 1.2   | 5940 | 63.05 | -2    | 3.14 |

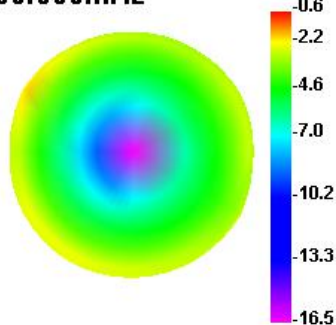
|      |       |       |      |      |       |       |      |
|------|-------|-------|------|------|-------|-------|------|
| 3950 | 34.68 | -4.6  | 0.47 | 5950 | 62.83 | -2.02 | 2.75 |
| 3960 | 44.68 | -3.5  | 1.81 | 5960 | 55.82 | -2.53 | 3.19 |
| 3970 | 42.88 | -3.68 | 1.54 | 5970 | 60.75 | -2.16 | 2.86 |
| 3980 | 49.1  | -3.09 | 2    | 5980 | 58.45 | -2.33 | 3.4  |
| 3990 | 34.71 | -4.59 | 0.42 | 5990 | 59.04 | -2.29 | 2.53 |
| 4000 | 39.53 | -4.03 | 0.99 | 6000 | 56.32 | -2.49 | 2.13 |

## Directional pattern

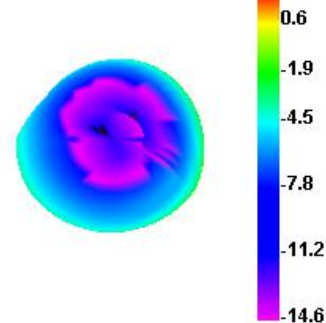
600.000MHz



700.000MHz

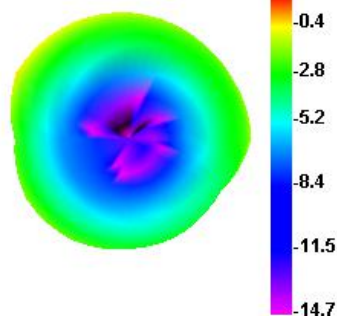


800.000MHz

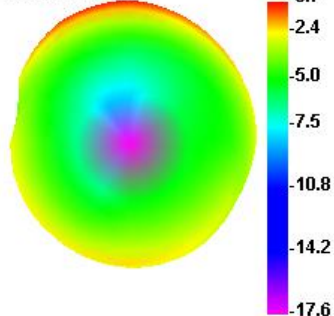




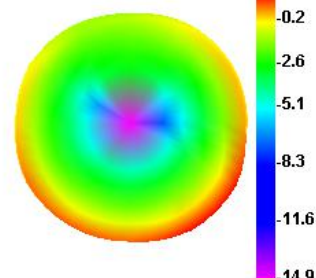
900.000MHz



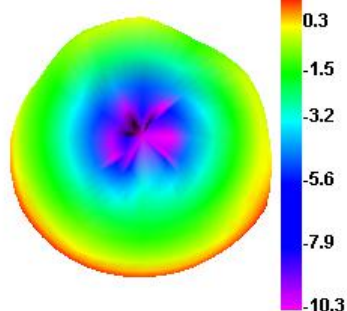
1200.000MHz



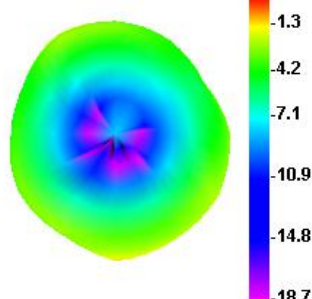
1570.000MHz



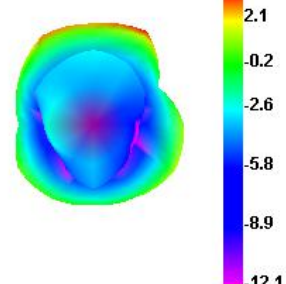
1700.000MHz



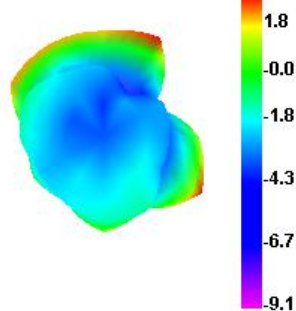
1900.000MHz



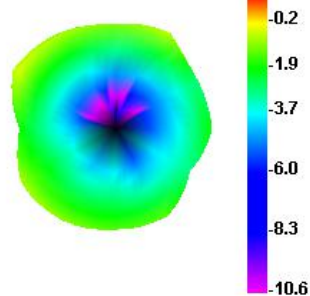
2170.000MHz



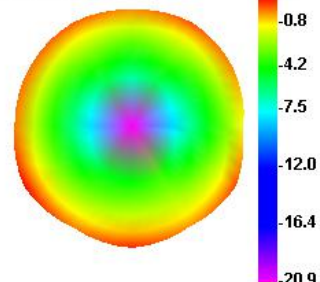
2300.000MHz



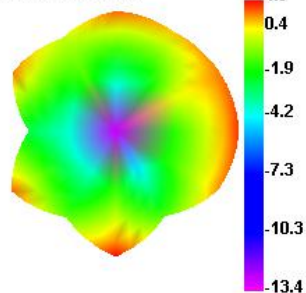
2690.000MHz



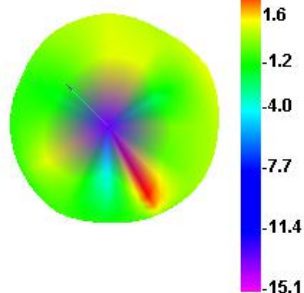
3300.000MHz



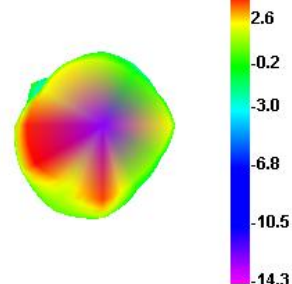
5000.000MHz



5200.000MHz



5900.000MHz





## 4. Antenna Drawings

