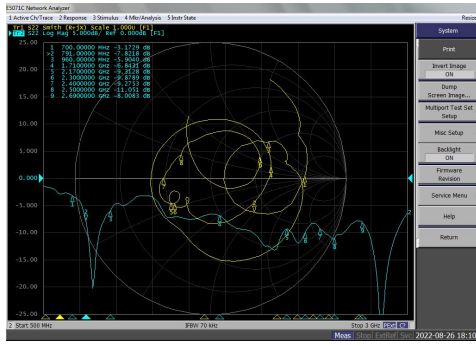
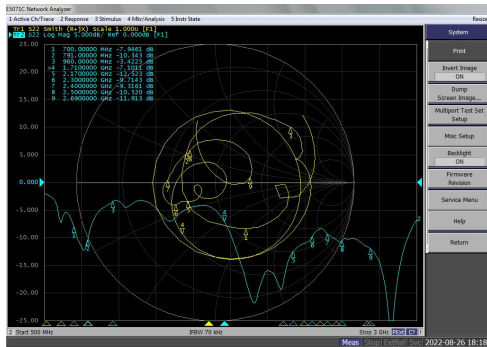




## 791-862 1450-1500



## 703-803

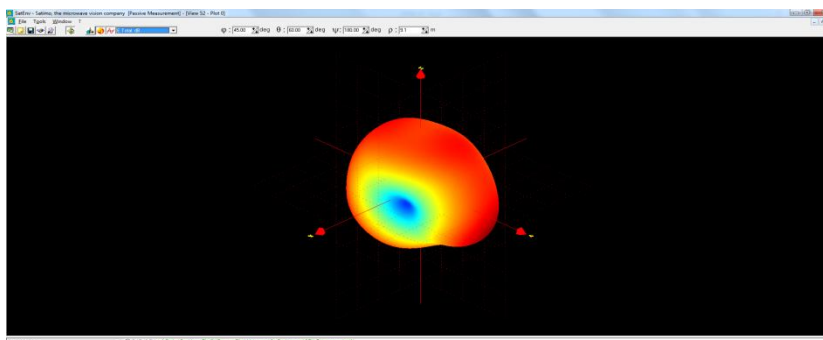


Efficiency&Gain: 效率换算平均增益=10\*log(对应的效率)

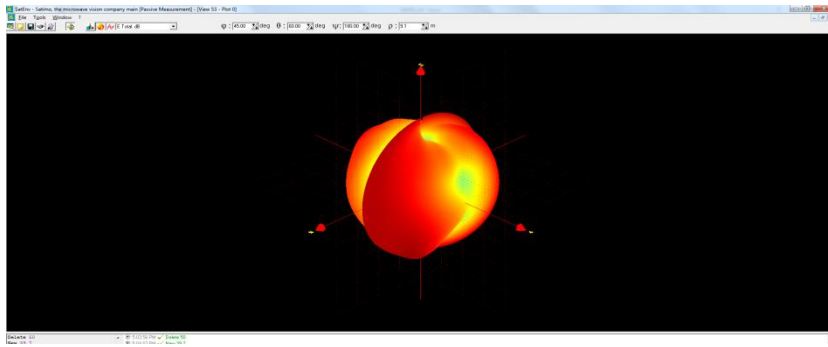
| f(MHz) | Efficiency | Average gain | Max gain | f(MHz) | Efficiency | Average gain | Max gain | f(MHz) | Efficiency | Average gain | Max gain |
|--------|------------|--------------|----------|--------|------------|--------------|----------|--------|------------|--------------|----------|
| 880    | 44%        | -3.5         | 0.9      | 1930   | 52%        | -2.9         | 2.4      | 2330   | 47%        | -3.3         | 0.3      |
| 890    | 45%        | -3.4         | 1.2      | 1950   | 48%        | -3.2         | 2.1      | 2350   | 46%        | -3.3         | 0.4      |
| 900    | 45%        | -3.5         | 1.4      | 1970   | 49%        | -3.1         | 2.6      | 2370   | 42%        | -3.8         | 0.3      |
| 910    | 43%        | -3.6         | 1.0      | 1990   | 48%        | -3.2         | 2.8      | 2390   | 39%        | -4.1         | 0.3      |
| 920    | 41%        | -3.9         | 0.4      | 2010   | 44%        | -3.6         | 2.7      | 2410   | 37%        | -4.4         | 0.0      |
| 930    | 39%        | -4.0         | 0.0      | 2030   | 42%        | -3.7         | 2.3      | 2430   | 35%        | -4.5         | 0.0      |
| 940    | 38%        | -4.2         | -0.2     | 2050   | 43%        | -3.6         | 2.6      | 2450   | 33%        | -4.8         | 0.3      |
| 950    | 38%        | -4.2         | -0.4     | 2070   | 47%        | -3.3         | 2.5      | 2470   | 33%        | -4.9         | 0.8      |
| 960    | 40%        | -4.0         | -0.5     | 2090   | 50%        | -3.0         | 2.2      | 2490   | 34%        | -4.7         | 1.1      |
| 1710   | 55%        | -2.6         | 3.7      | 2110   | 52%        | -2.8         | 2.3      | 2510   | 37%        | -4.4         | 1.3      |
| 1730   | 57%        | -2.4         | 3.5      | 2130   | 55%        | -2.6         | 2.1      | 2530   | 39%        | -4.1         | 1.7      |
| 1750   | 57%        | -2.5         | 3.2      | 2150   | 57%        | -2.4         | 1.5      | 2550   | 41%        | -3.9         | 1.9      |
| 1770   | 57%        | -2.5         | 3.5      | 2170   | 55%        | -2.6         | 1.2      | 2570   | 43%        | -3.6         | 2.0      |
| 1790   | 58%        | -2.4         | 3.8      | 2190   | 54%        | -2.7         | 0.7      | 2590   | 46%        | -3.4         | 2.0      |
| 1810   | 58%        | -2.4         | 3.4      | 2210   | 52%        | -2.8         | 0.3      | 2610   | 47%        | -3.3         | 2.3      |
| 1830   | 56%        | -2.5         | 3.5      | 2230   | 51%        | -2.9         | 0.1      | 2630   | 45%        | -3.4         | 1.9      |
| 1850   | 58%        | -2.4         | 3.7      | 2250   | 51%        | -3.0         | 0.2      | 2650   | 45%        | -3.4         | 1.7      |
| 1870   | 57%        | -2.5         | 2.8      | 2270   | 50%        | -3.0         | 0.3      | 2670   | 45%        | -3.4         | 1.9      |
| 1890   | 54%        | -2.7         | 2.2      | 2290   | 47%        | -3.3         | 0.3      | 2690   | 48%        | -3.2         | 1.9      |
| 1910   | 55%        | -2.6         | 2.4      | 2310   | 47%        | -3.3         | 0.5      |        |            |              |          |

## 3D Pattern:

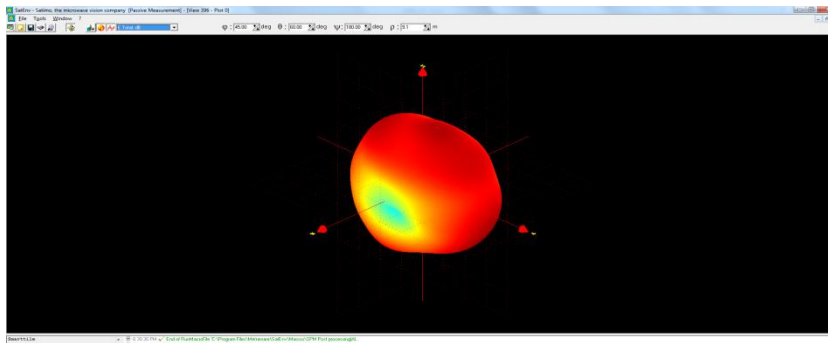
### 880-960



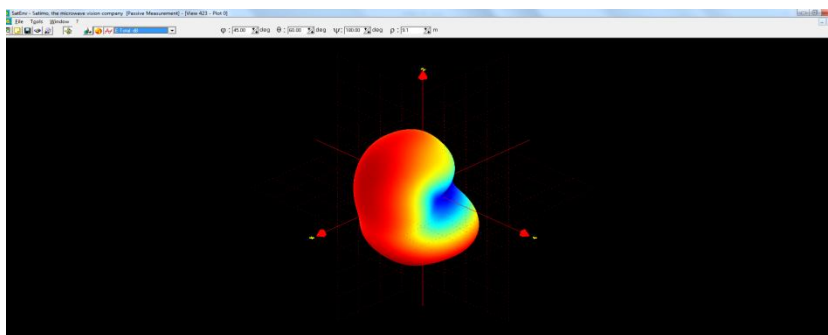
1710-2690



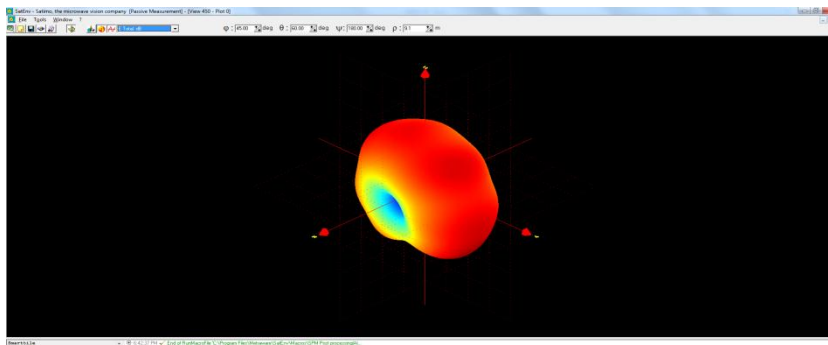
791-862



1450-1500



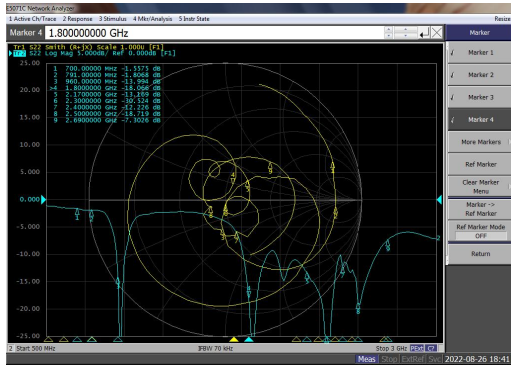
700-800



DIV Antenna

S11:

820-960 1800-2700

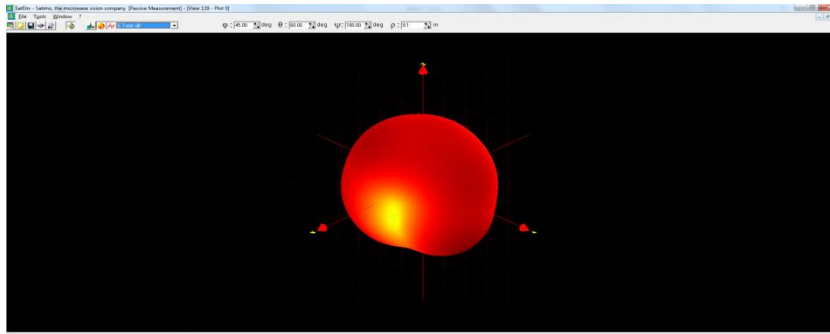


Efficiency&Gain: 效率换算平均增益=10\*log (对应的效率)

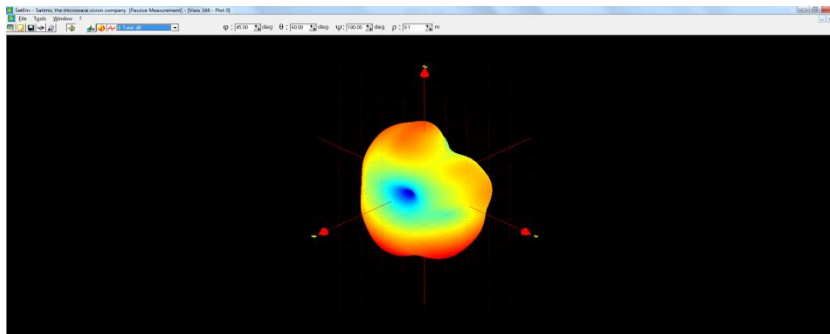
| f(MHz) | Efficiency | Average gain | Max gain | f(MHz) | Efficiency | Average gain | Max gain |
|--------|------------|--------------|----------|--------|------------|--------------|----------|
| 910    | 28%        | -5.5         | -2.1     | 2200   | 39%        | -4.1         | 2.1      |
| 920    | 32%        | -4.9         | -1.3     | 2220   | 40%        | -3.9         | 2.2      |
| 930    | 36%        | -4.4         | -0.6     | 2240   | 41%        | -3.8         | 2.7      |
| 940    | 40%        | -4.0         | 0.3      | 2260   | 41%        | -3.9         | 2.8      |
| 950    | 43%        | -3.7         | 0.8      | 2280   | 41%        | -3.9         | 3.2      |
| 960    | 45%        | -3.5         | 1.3      | 2300   | 41%        | -3.8         | 3.5      |
| 1800   | 45%        | -3.5         | 3.5      | 2320   | 40%        | -4.0         | 3.6      |
| 1820   | 46%        | -3.4         | 3.8      | 2340   | 40%        | -4.0         | 4.0      |
| 1840   | 43%        | -3.7         | 3.4      | 2360   | 41%        | -3.9         | 4.1      |
| 1860   | 38%        | -4.3         | 2.5      | 2380   | 41%        | -3.9         | 3.9      |
| 1880   | 33%        | -4.9         | 2.1      | 2400   | 40%        | -4.0         | 3.7      |
| 1900   | 29%        | -5.3         | 1.6      | 2420   | 41%        | -3.9         | 3.5      |
| 1920   | 27%        | -5.6         | 0.5      | 2440   | 41%        | -3.9         | 3.2      |
| 1940   | 27%        | -5.7         | 0.2      | 2460   | 41%        | -3.9         | 3.1      |
| 1960   | 27%        | -5.7         | -0.2     | 2480   | 38%        | -4.2         | 2.9      |
| 1980   | 27%        | -5.7         | -0.3     | 2500   | 37%        | -4.3         | 2.5      |
| 2000   | 27%        | -5.8         | -1.0     | 2520   | 37%        | -4.4         | 1.9      |
| 2020   | 26%        | -5.8         | -1.2     | 2540   | 36%        | -4.5         | 1.8      |
| 2040   | 25%        | -6.0         | -1.3     | 2560   | 33%        | -4.8         | 1.5      |
| 2060   | 24%        | -6.2         | -1.2     | 2580   | 33%        | -4.8         | 1.3      |
| 2080   | 25%        | -6.0         | -1.5     | 2600   | 33%        | -4.8         | 0.9      |
| 2100   | 26%        | -5.9         | -1.2     | 2620   | 32%        | -4.9         | 0.7      |
| 2120   | 28%        | -5.5         | -0.6     | 2640   | 29%        | -5.4         | -0.1     |
| 2140   | 30%        | -5.2         | 0.1      | 2660   | 27%        | -5.7         | -0.5     |
| 2160   | 34%        | -4.7         | 0.6      | 2680   | 26%        | -5.9         | -0.6     |
| 2180   | 36%        | -4.5         | 1.3      | 2700   | 24%        | -6.1         | -0.7     |

3D Pattern:

920-960



1800-2700



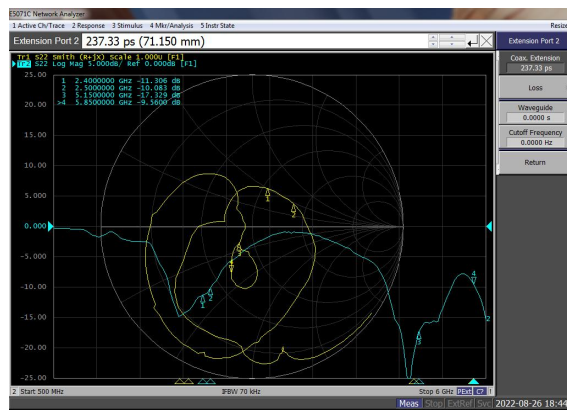
WiFi Antenna

S11:

## WIFI1



## WIFI2



Efficiency&Gain: 效率换算平均增益=10\*log (对应的效率)

## WIFI1

| f(MHz) | Efficiency | Average gain | Max gain | f(MHz) | Efficiency | Average gain | Max gain |
|--------|------------|--------------|----------|--------|------------|--------------|----------|
| 2400   | 32%        | -4.9         | 4.2      | 5150   | 32%        | -4.9         | 0.4      |
| 2410   | 33%        | -4.8         | 4.4      | 5200   | 33%        | -4.8         | 0.2      |
| 2420   | 34%        | -4.7         | 4.5      | 5250   | 33%        | -4.8         | 0.0      |
| 2430   | 34%        | -4.7         | 4.4      | 5300   | 33%        | -4.8         | 0.7      |
| 2440   | 34%        | -4.6         | 4.4      | 5350   | 34%        | -4.7         | 0.6      |
| 2450   | 35%        | -4.6         | 4.3      | 5400   | 36%        | -4.4         | 0.4      |
| 2460   | 35%        | -4.6         | 4.2      | 5450   | 34%        | -4.6         | 0.2      |
| 2470   | 34%        | -4.6         | 4.1      | 5500   | 33%        | -4.8         | 0.0      |
| 2480   | 34%        | -4.7         | 4.1      | 5550   | 36%        | -4.4         | 0.1      |
| 2490   | 34%        | -4.7         | 3.9      | 5600   | 35%        | -4.6         | 0.0      |
| 2500   | 35%        | -4.6         | 3.7      | 5650   | 36%        | -4.4         | 0.2      |
|        |            |              |          | 5700   | 35%        | -4.5         | -0.4     |
|        |            |              |          | 5750   | 36%        | -4.5         | 0.6      |
|        |            |              |          | 5800   | 36%        | -4.4         | 0.7      |
|        |            |              |          | 5850   | 39%        | -4.1         | 1.4      |

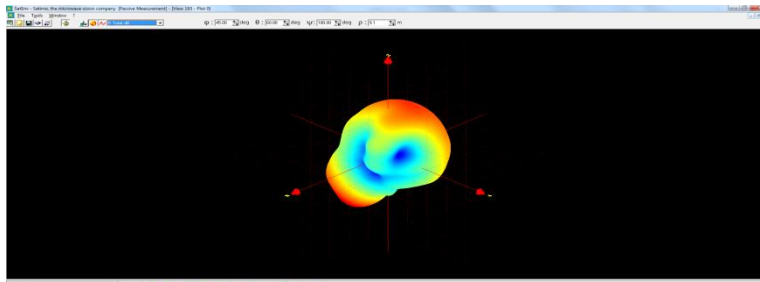
## WIFI2

| f(MHz) | Efficiency | Average gain | Max gain | f(MHz) | Efficiency | Average gain | Max gain |
|--------|------------|--------------|----------|--------|------------|--------------|----------|
| 2400   | 65%        | -1.9         | 3.1      | 5150   | 56%        | -2.5         | 3.2      |
| 2410   | 65%        | -1.9         | 3.1      | 5200   | 53%        | -2.7         | 2.8      |
| 2420   | 65%        | -1.9         | 2.9      | 5250   | 55%        | -2.6         | 2.9      |
| 2430   | 64%        | -1.9         | 2.9      | 5300   | 52%        | -2.8         | 2.9      |
| 2440   | 65%        | -1.9         | 2.9      | 5350   | 45%        | -3.4         | 2.9      |
| 2450   | 66%        | -1.8         | 2.9      | 5400   | 39%        | -4.0         | 2.8      |
| 2460   | 66%        | -1.8         | 2.9      | 5450   | 44%        | -3.6         | 3.0      |
| 2470   | 66%        | -1.8         | 2.8      | 5500   | 43%        | -3.6         | 3.1      |
| 2480   | 65%        | -1.9         | 2.5      | 5550   | 45%        | -3.4         | 3.2      |
| 2490   | 64%        | -1.9         | 2.3      | 5600   | 45%        | -3.4         | 2.8      |
| 2500   | 64%        | -1.9         | 2.5      | 5650   | 46%        | -3.4         | 2.8      |
|        |            |              |          | 5700   | 45%        | -3.4         | 2.5      |
|        |            |              |          | 5750   | 51%        | -3.0         | 2.7      |
|        |            |              |          | 5800   | 60%        | -2.2         | 3.6      |
|        |            |              |          | 5850   | 54%        | -2.7         | 2.8      |

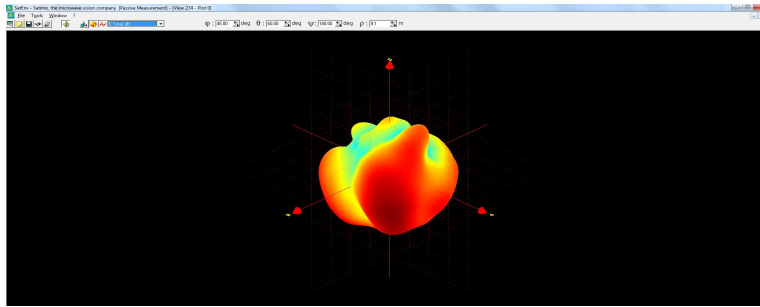
3D Pattern:

## WIFI1

2400-2500

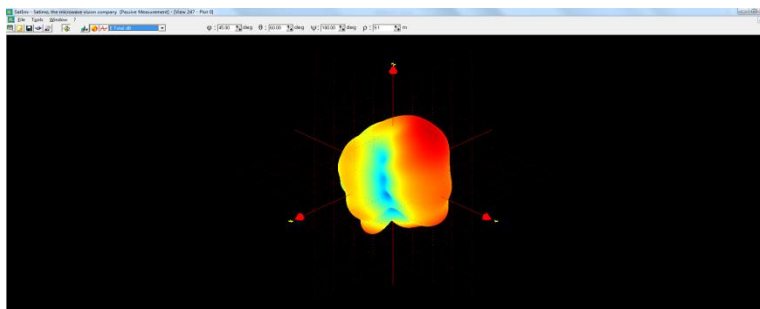


5150-5850

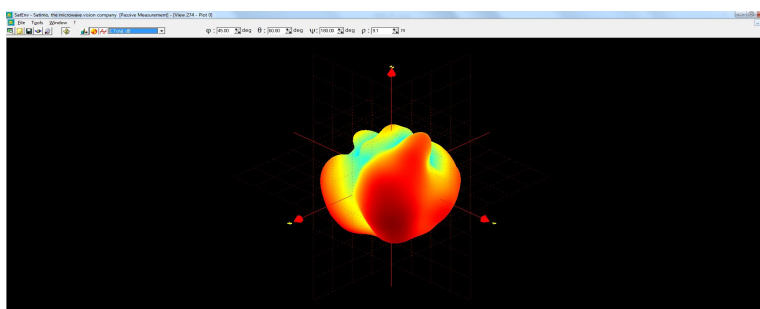


WIF12

2400-2500



5150-5850



According to KDB 662911

beamforming directional gain =  $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}] \text{ dBi}$