Product Acknowledgment

Custmer :

Description : 2.4G 2DB FPC Antenna RF1.13+IPEX,L=80mm

Part No. :

Customer P/N :

Date : 2022-1-17

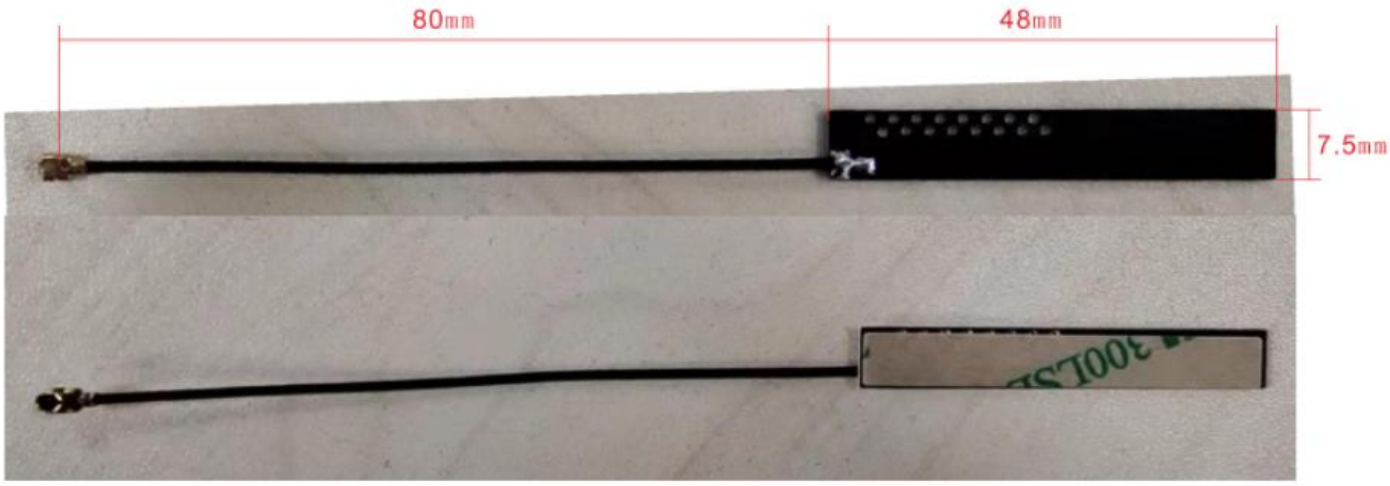
Engineering Department	QC Department	Sales Department
Zhou Min	Zhuang Jiawen	Zhang Fuli

Signature and seal of the customer

Engineering Department	QC Department	Purchasing Department

*** Attachment column of samples confirmed by customers**

1. Product Structure Diagram

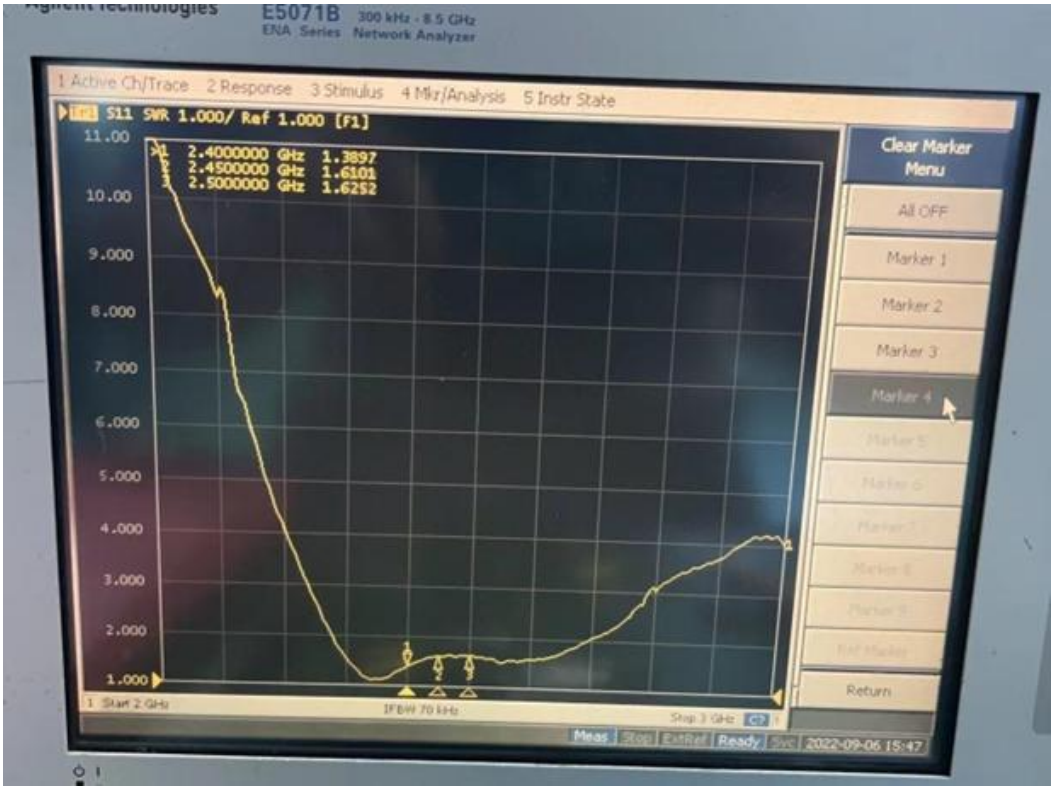


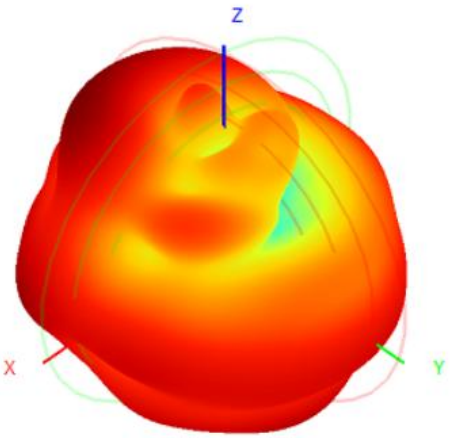
2. Electrical technical parameters

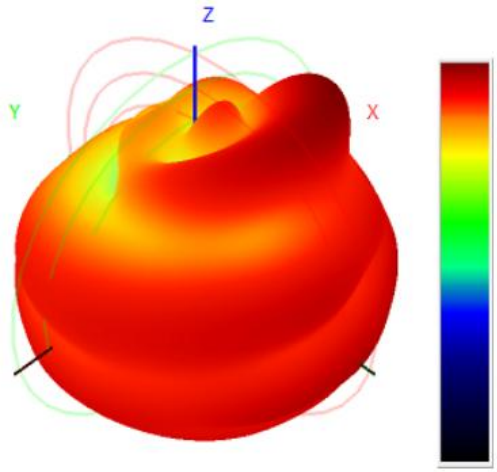
Electrical Specifications	
Frequency Range	2400-2500Mhz
VSWR	≤1.5
Input Impedance	50 Ω
Mechanical Specifications	
Antenna Color	Black
Cable length	80mm
Working Temperature	-40℃~+ 85℃
Working Humidity	20~ 80%

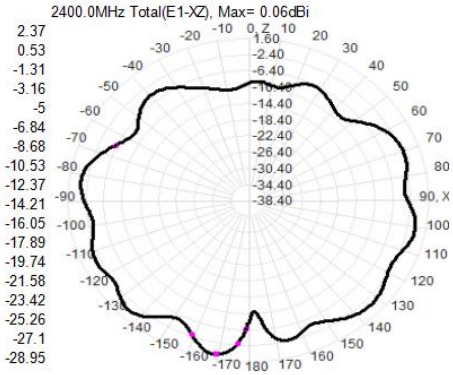
3. 2400.0MHz H+V, View

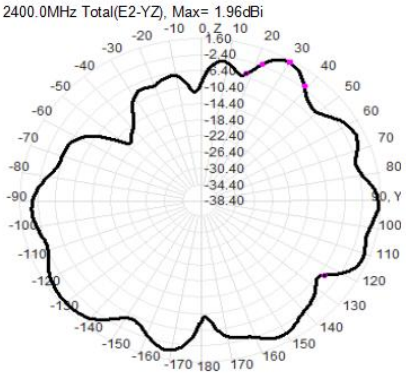
Network distribution test diagram：

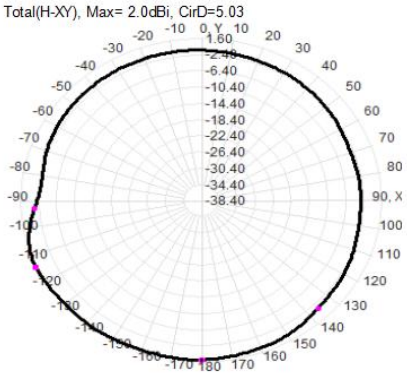


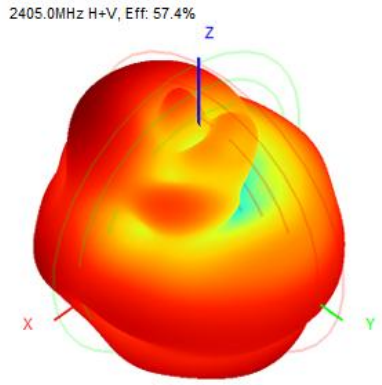

Z
X
Y

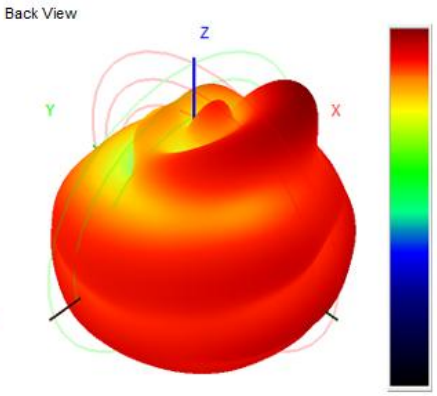

Z
Y
X

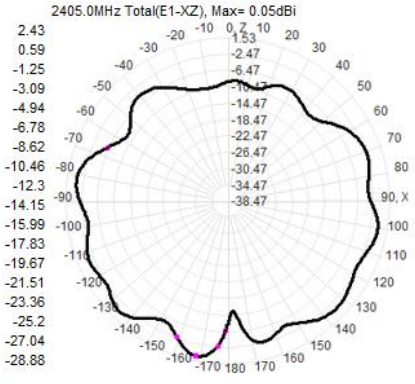

2400.0MHz Total(E1-XZ), Max= 0.06dBi
2.37
0.53
-1.31
-3.16
-5
-6.84
-8.68
-10.53
-12.37
-14.21
-16.05
-17.89
-19.74
-21.58
-23.42
-25.26
-27.1
-28.95
1.60
-2.40
-6.40
-10.40
-14.40
-18.40
-22.40
-26.40
-30.40
-34.40
-38.40
90, X


2400.0MHz Total(E2-YZ), Max= 1.96dBi
1.60
-2.40
-6.40
-10.40
-14.40
-18.40
-22.40
-26.40
-30.40
-34.40
-38.40
90, Y


Total(H-XY), Max= 2.0dBi, CirD=5.03
1.60
-2.40
-6.40
-10.40
-14.40
-18.40
-22.40
-26.40
-30.40
-34.40
-38.40
90, X


2405.0MHz H+V, Eff: 57.4%
Z
X
Y


Back View
Z
Y
X


2405.0MHz Total(E1-XZ), Max= 0.05dBi
2.43
0.59
-1.25
-3.09
-4.94
-6.78
-8.62
-10.46
-12.3
-14.15
-15.99
-17.83
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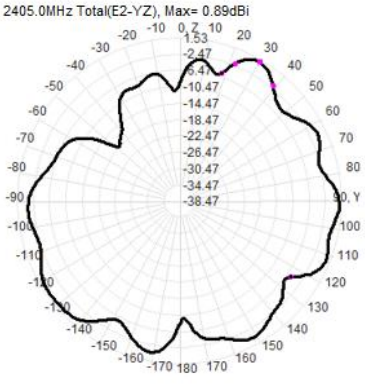
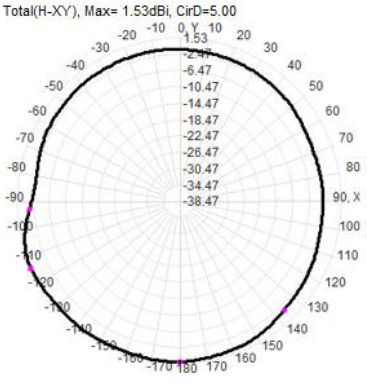
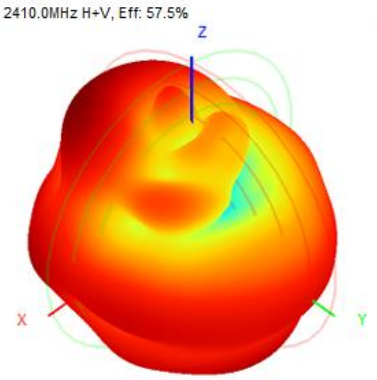
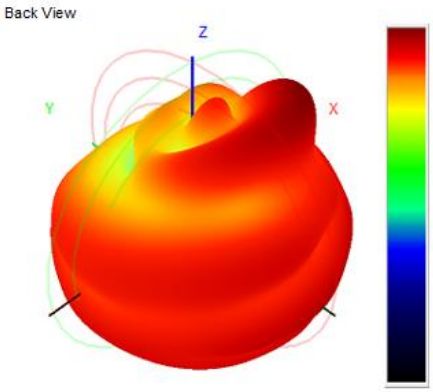
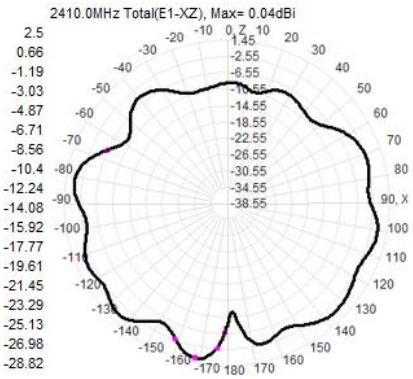
-21.51
-23.36
-25.2
-27.04
-28.88


2405.0MHz Total(E2-YZ), Max= 0.89dBi


Total(H-XY), Max= 1.53dBi, CirD=5.00


2410.0MHz H+V, Eff: 57.5%
Z
X
Y


Back View
Z
Y
X


2410.0MHz Total(E1-XZ), Max= 0.04dBi
2.5
0.66
-1.19
-3.03
-4.87
-6.71
-8.56
-10.4
-12.24
-14.08
-15.92
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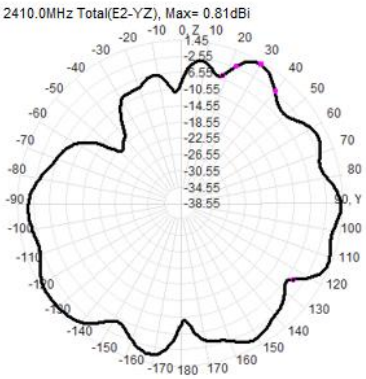
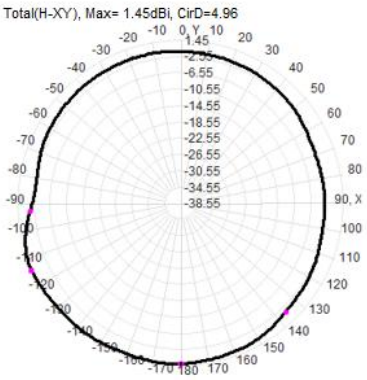
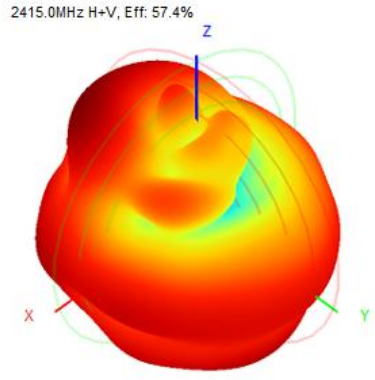
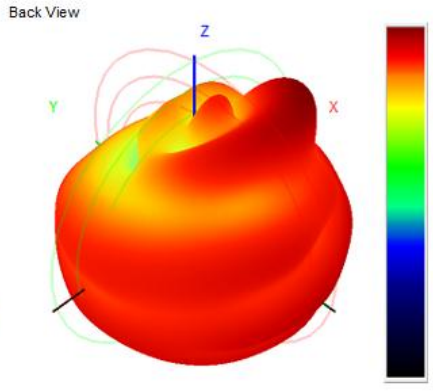
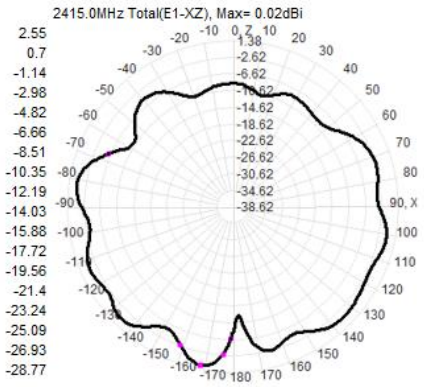
-21.45
-23.29
-25.13
-26.98
-28.82

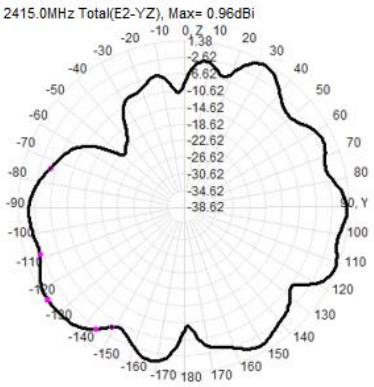

2410.0MHz Total(E2-YZ), Max= 0.81dBi

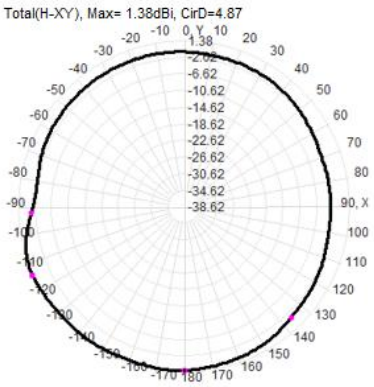

Total(H-XY), Max= 1.45dBi, CirD=4.96

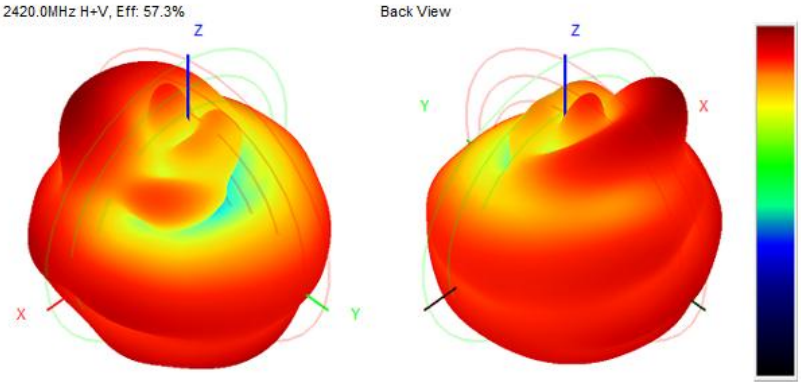

2415.0MHz H+V, Eff: 57.4%
Z
X
Y

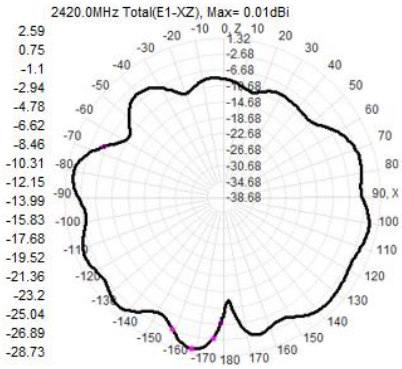

Back View
Z
Y
X

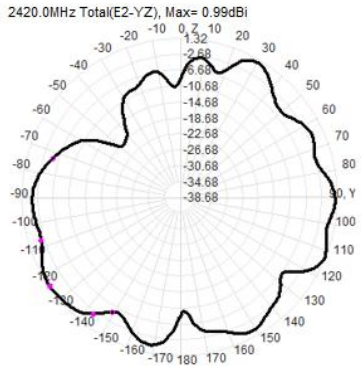

2415.0MHz Total(E1-XZ), Max= 0.02dBi
2.55
0.7
-1.14
-2.98
-4.82
-6.66
-8.51
-10.35
-12.19
-14.03
-15.88
-17.72
-19.56
-21.4
-23.24
-25.09
-26.93
-28.77

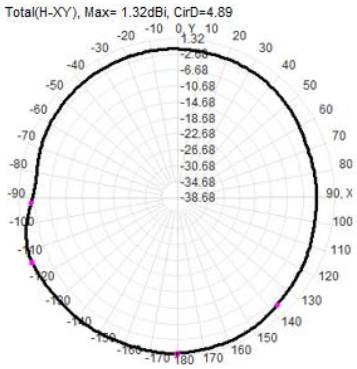

2415.0MHz Total(E2-YZ), Max= 0.96dBi

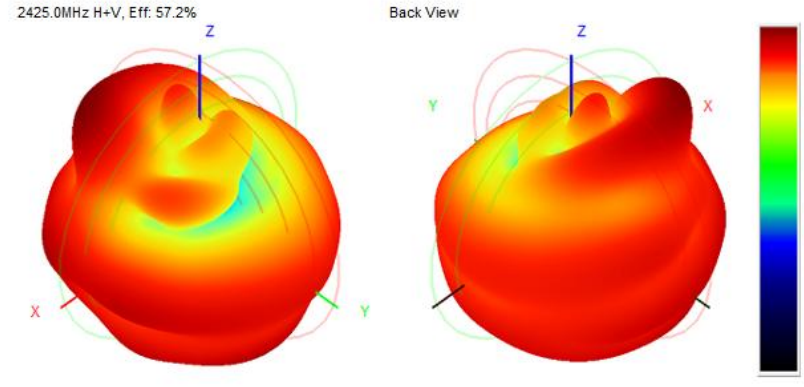

Total(H-XY), Max= 1.38dBi, CirD=4.87

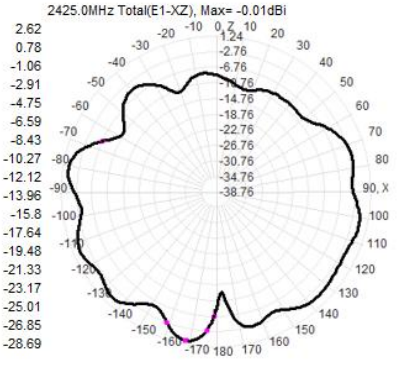

2420.0MHz H+V, Eff: 57.3%
Back View
Z
X
Y

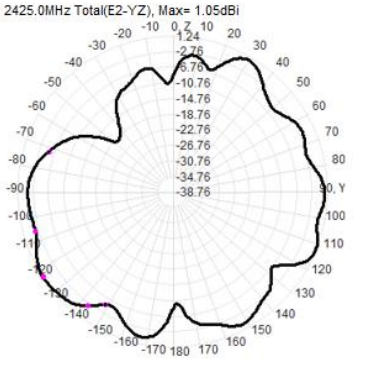

2420.0MHz Total(E1-XZ), Max= 0.01dBi
2.59
0.75
-1.1
-2.94
-4.78
-6.62
-8.46
-10.31
-12.15
-13.99
-15.83
-17.68
-19.52
-21.36
-23.2
-25.04
-26.89
-28.73

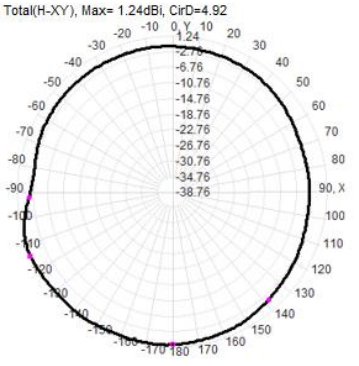

2420.0MHz Total(E2-YZ), Max= 0.99dBi

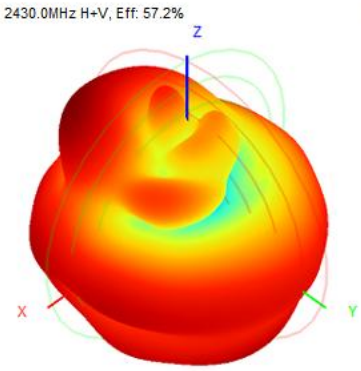

Total(H-XY), Max= 1.32dBi, CirD=4.89

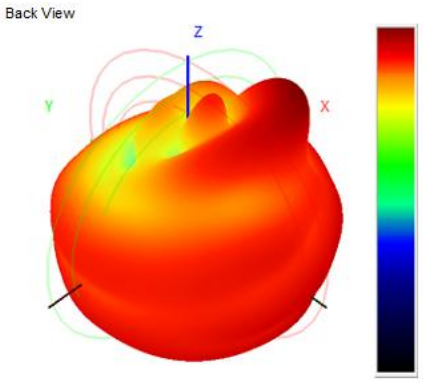

2425.0MHz H+V, Eff: 57.2%
Back View
Z
X
Y

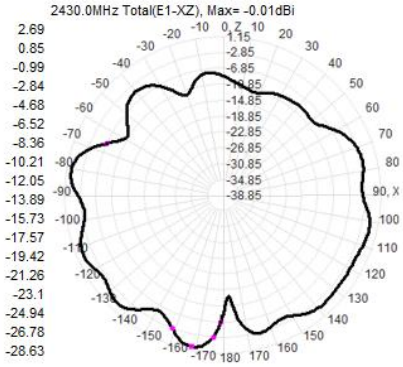

2425.0MHz Total(E1-XZ), Max= -0.01dBi
2.62
0.78
-1.06
-2.91
-4.75
-6.59
-8.43
-10.27
-12.12
-13.96
-15.8
-17.64
-19.48
-21.33
-23.17
-25.01
-26.85
-28.69

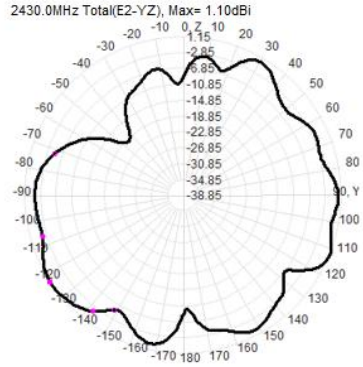

2425.0MHz Total(E2-YZ), Max= 1.05dBi

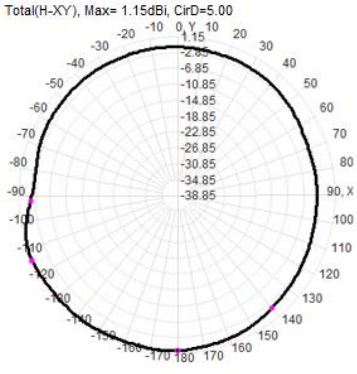

Total(H-XY), Max= 1.24dBi, CirD=4.92

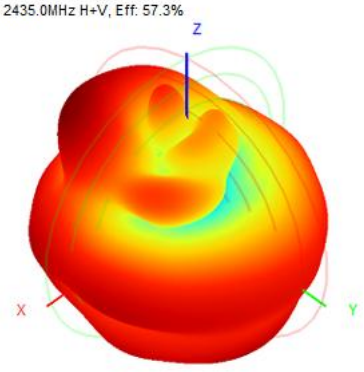

2430.0MHz H+V, Eff: 57.2%
Z
X
Y

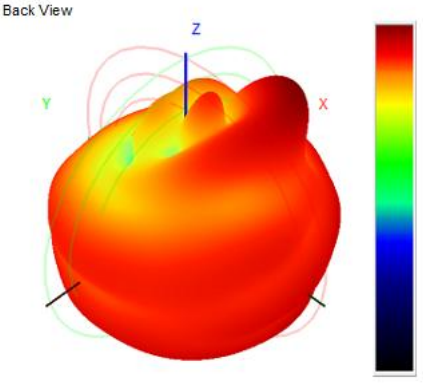

Back View
Z
Y
X

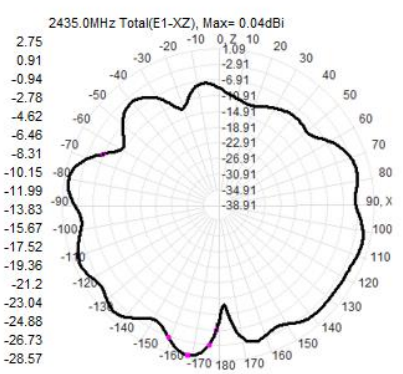

2430.0MHz Total(E1-XZ), Max= -0.01dBi
2.69
0.85
-0.99
-2.84
-4.68
-6.52
-8.36
-10.21
-12.05
-13.89
-15.73
-17.57
-19.42
-21.26
-23.1
-24.94
-26.78
-28.63


2430.0MHz Total(E2-YZ), Max= 1.10dBi


Total(H-XY), Max= 1.15dBi, CirD=5.00


2435.0MHz H+V, Eff: 57.3%
Z
X
Y


Back View
Z
Y
X


2435.0MHz Total(E1-XZ), Max= 0.04dBi
2.75
0.91
-0.94
-2.78
-4.62
-6.46
-8.31
-10.15
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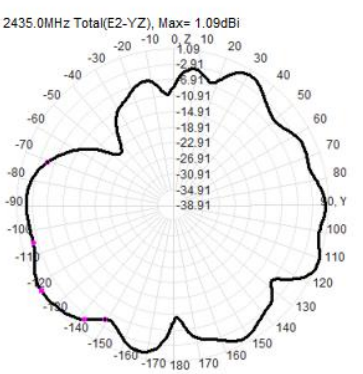
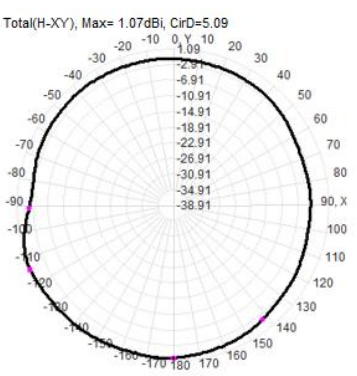
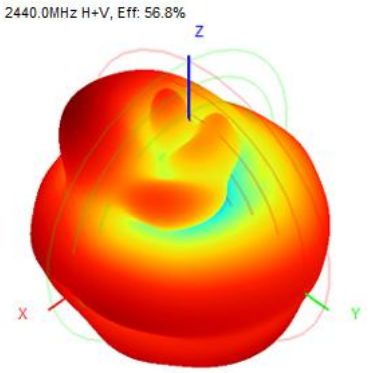
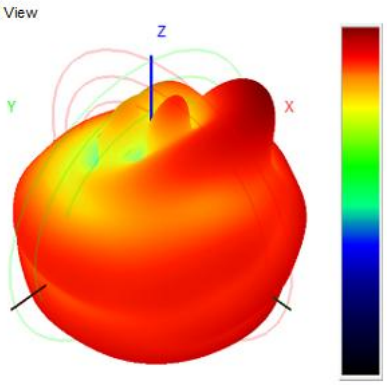
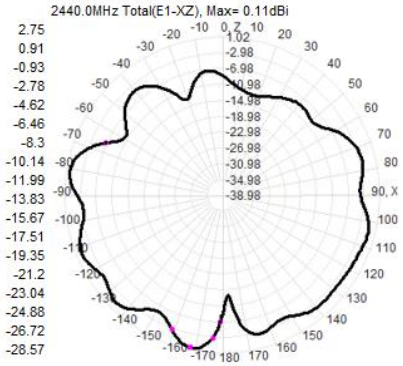
-21.2
-23.04
-24.88
-26.73
-28.57


2435.0MHz Total(E2-YZ), Max= 1.09dBi


Total(H-XY), Max= 1.07dBi, CirD=5.09


2440.0MHz H+V, Eff: 56.8%
Z
X
Y


Back View
Z
Y
X


2440.0MHz Total(E1-XZ), Max= 0.11dBi
2.75
0.91
-0.93
-2.78
-4.62
-6.46
-8.3
-10.14
-11.99
-13.83
-15.67
-17.51
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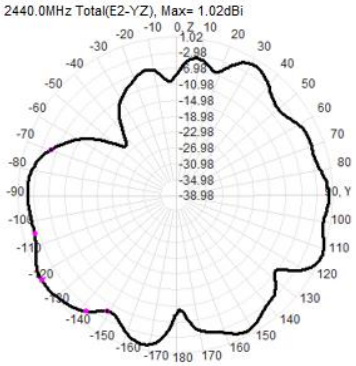
-21.2
-23.04
-24.88
-26.72
-28.57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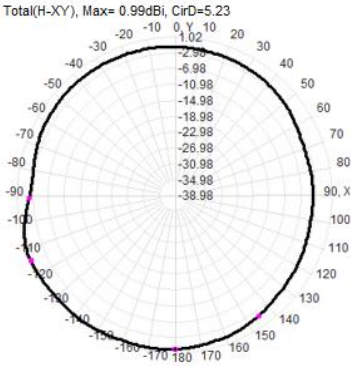
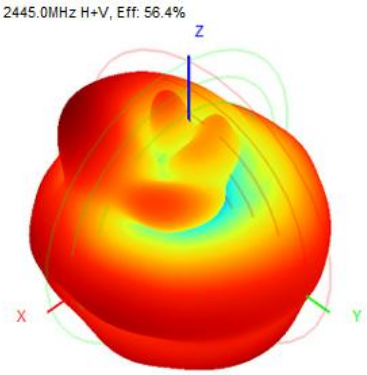
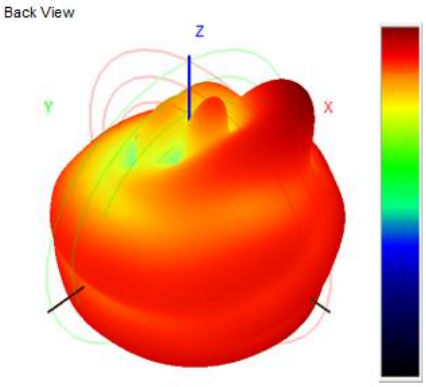
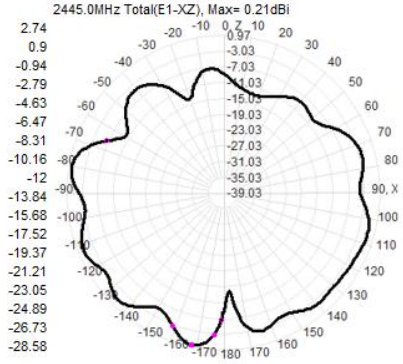
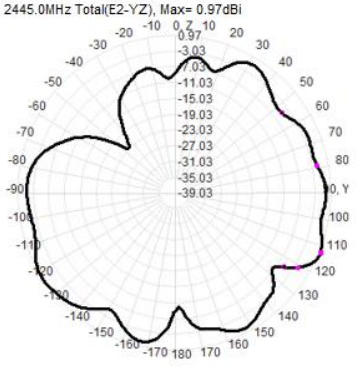
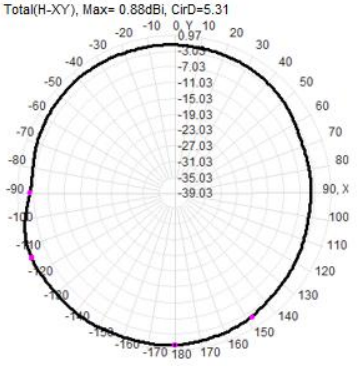

Total(H-XY), Max= 0.99dBi, CirD=5.23

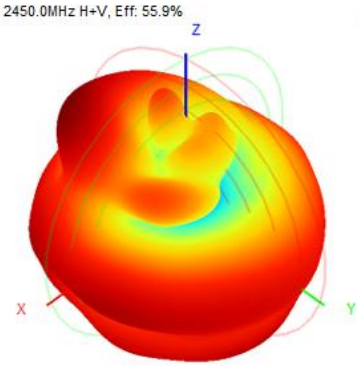

2445.0MHz H+V, Eff: 56.4%
Z
X
Y

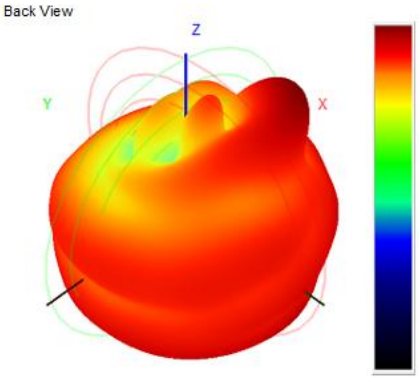

Back View
Z
Y
X

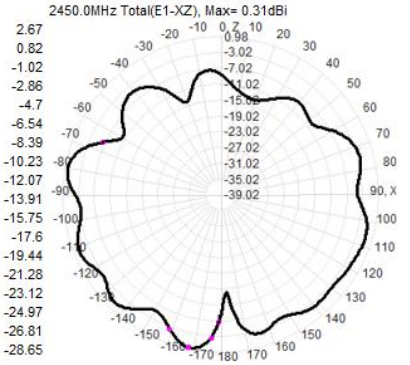

2445.0MHz Total(E1-XZ), Max= 0.21dBi
2.74
0.9
-0.94
-2.79
-4.63
-6.47
-8.31
-10.16
-12
-13.84
-15.68
-17.52
-19.37
-21.21
-23.05
-24.89
-26.73
-28.58

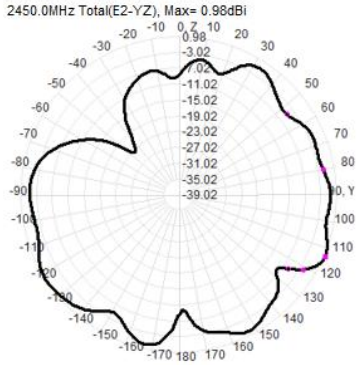

2445.0MHz Total(E2-YZ), Max= 0.97dBi

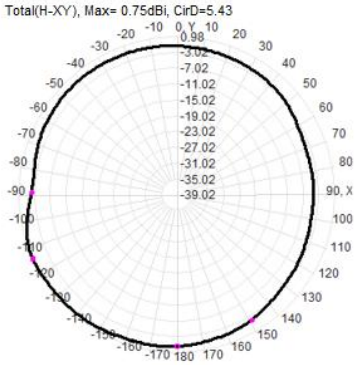

Total(H-XY), Max= 0.88dBi, CirD=5.31

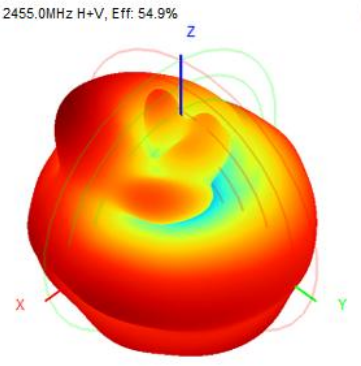

2450.0MHz H+V, Eff: 55.9%
Z
X
Y

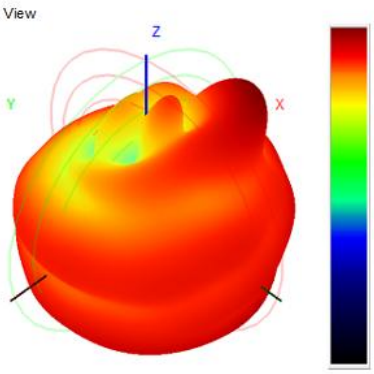

Back View
Z
Y
X

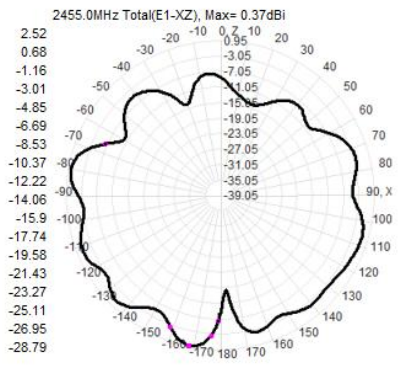

2450.0MHz Total(E1-XZ), Max= 0.31dBi
2.67
0.82
-1.02
-2.86
-4.7
-6.54
-8.39
-10.23
-12.07
-13.91
-15.75
-17.6
-19.44
-21.28
-23.12
-24.97
-26.81
-28.65

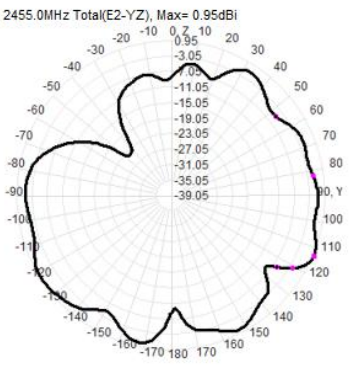

2450.0MHz Total(E2-YZ), Max= 0.98dBi

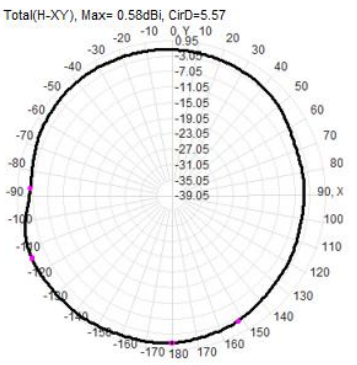

Total(H-XY), Max= 0.75dBi, CirD=5.43

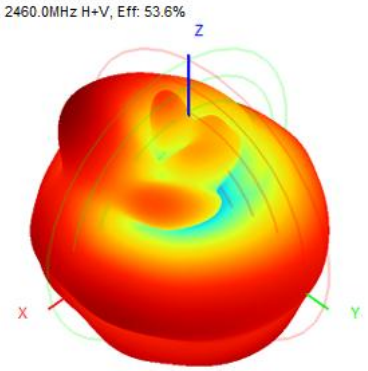

2455.0MHz H+V, Eff: 54.9%
Z
X
Y

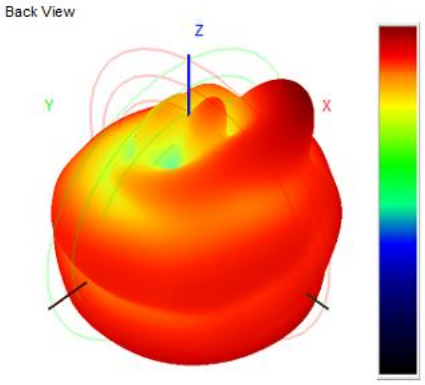

Back View
Z
Y
X

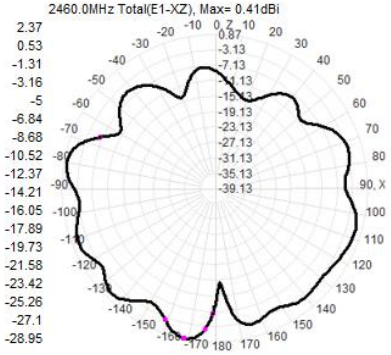

2455.0MHz Total(E1-XZ), Max= 0.37dBi
2.52
0.68
-1.16
-3.01
-4.85
-6.69
-8.53
-10.37
-12.22
-14.06
-15.9
-17.74
-19.58
-21.43
-23.27
-25.11
-26.95
-28.79

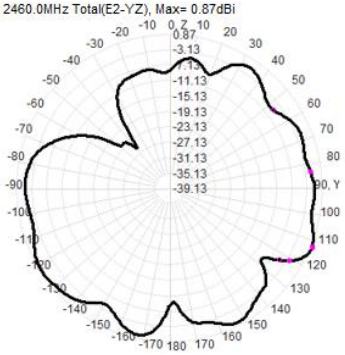

2455.0MHz Total(E2-YZ), Max= 0.95dBi

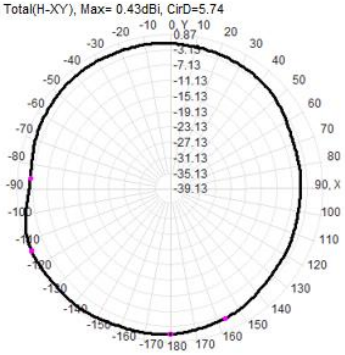

Total(H-XY), Max= 0.58dBi, CirD=5.57

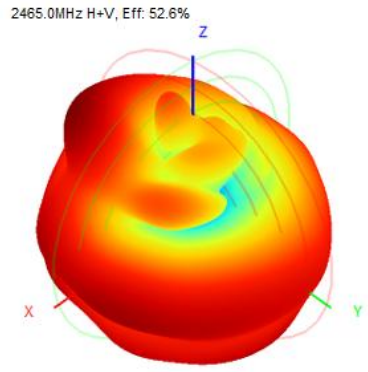

2460.0MHz H+V, Eff: 53.6%
Z
X
Y

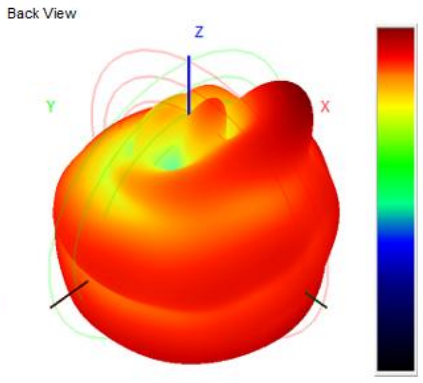

Back View
Z
Y
X

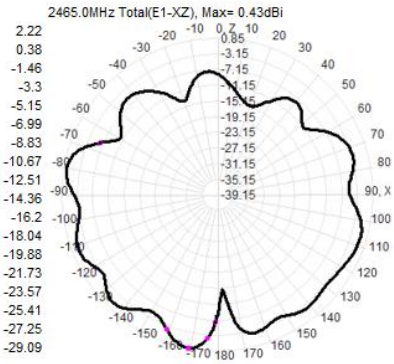

2460.0MHz Total(E1-XZ), Max= 0.41dBi
2.37
0.53
-1.31
-3.16
-5
-6.84
-8.68
-10.52
-12.37
-14.21
-16.05
-17.89
-19.73
-21.58
-23.42
-25.26
-27.1
-28.95
90, X

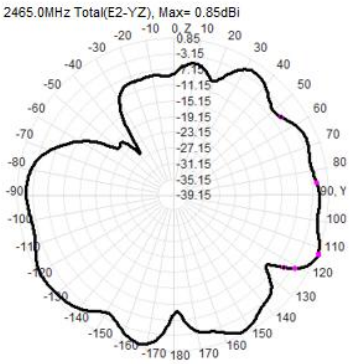

2460.0MHz Total(E2-YZ), Max= 0.87dBi
90, Y

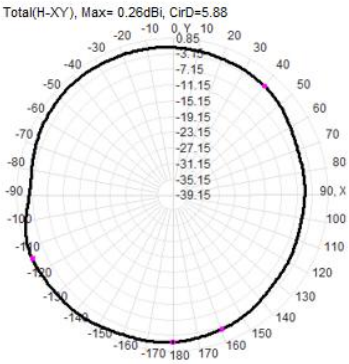

Total(H-XY), Max= 0.43dBi, CirD=5.74
90, X


2465.0MHz H+V, Eff: 52.6%
Z
X
Y

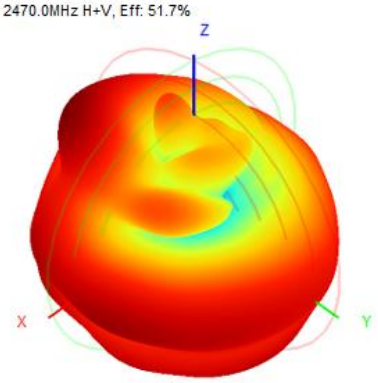

Back View
Z
Y
X


2465.0MHz Total(E1-XZ), Max= 0.43dBi
2.22
0.38
-1.46
-3.3
-5.15
-6.99
-8.83
-10.67
-12.51
-14.36
-16.2
-18.04
-19.88
-21.73
-23.57
-25.41
-27.25
-29.09
90, X

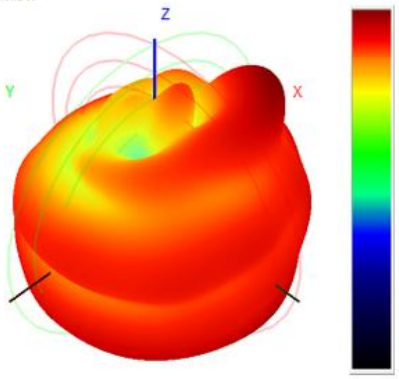

2465.0MHz Total(E2-YZ), Max= 0.85dBi
90, Y


Total(H-XY), Max= 0.26dBi, CirD=5.88
90, X

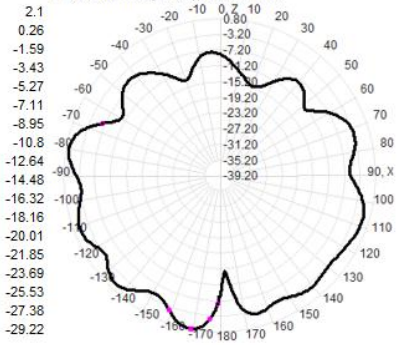
2470.0MHz H+V, Eff: 51.7%



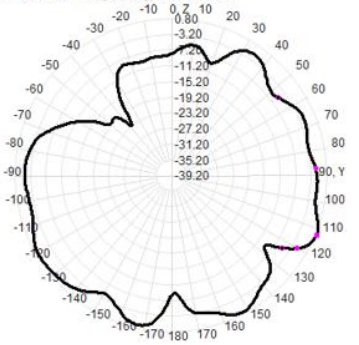
Back View



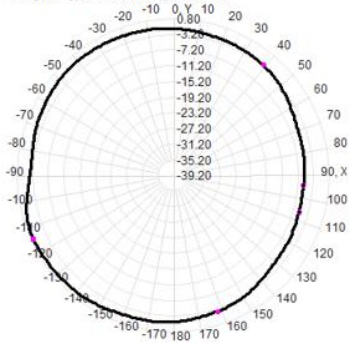
2470.0MHz Total(E1-XZ), Max= 0.44dBi



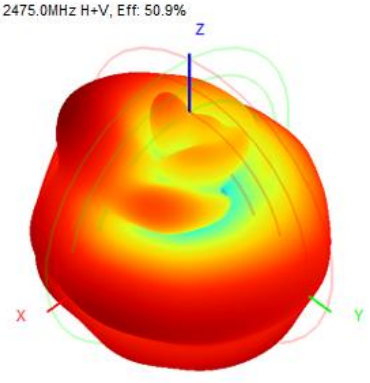
2470.0MHz Total(E2-YZ), Max= 0.80dBi



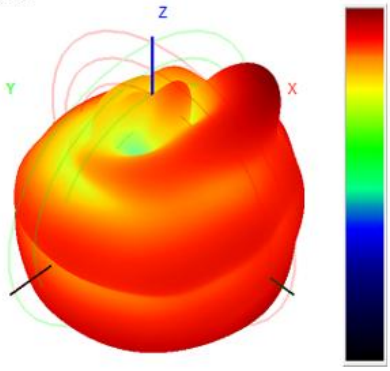
Total(H-XY), Max= 0.09dBi, CirD=6.11



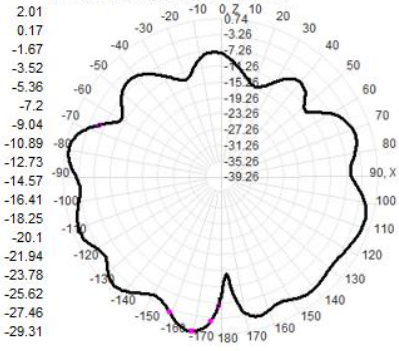
2475.0MHz H+V, Eff: 50.9%



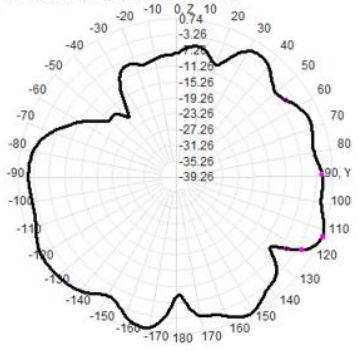
Back View



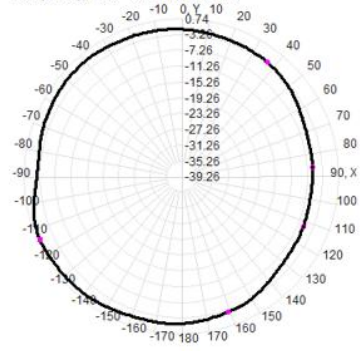
2475.0MHz Total(E1-XZ), Max= 0.45dBi



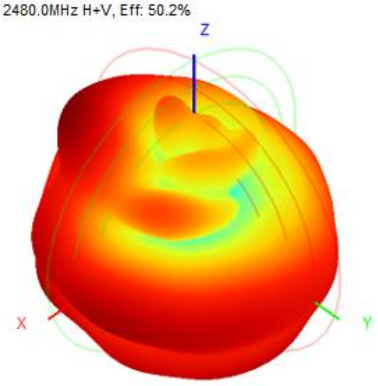
2475.0MHz Total(E2-YZ), Max= 0.74dBi



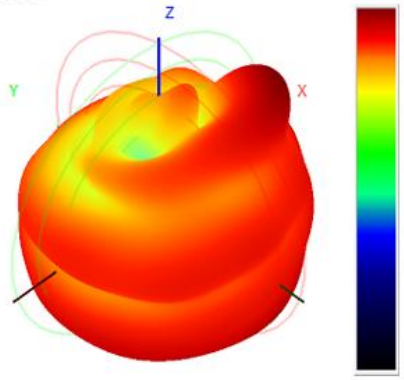
Total(H-XY), Max= -0.04dBi, CirD=6.27

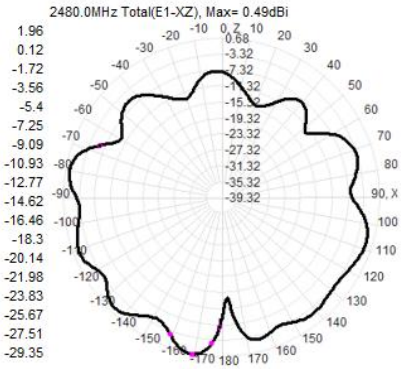


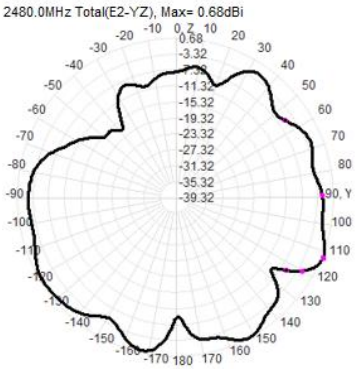
2480.0MHz H+V, Eff: 50.2%

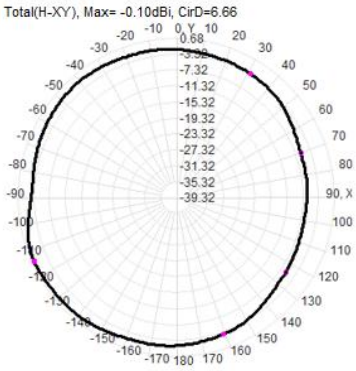


Back View

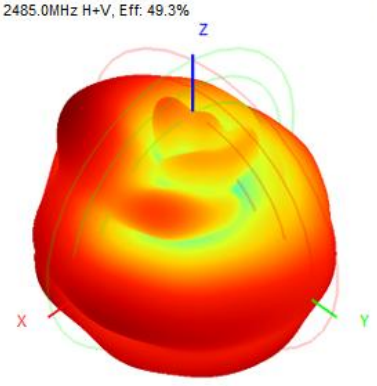




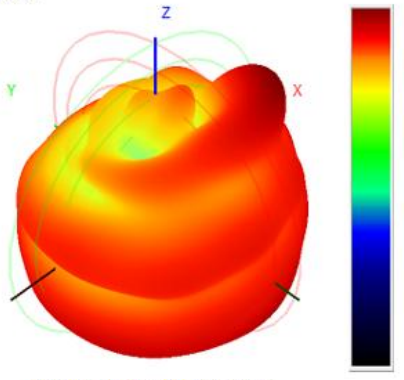


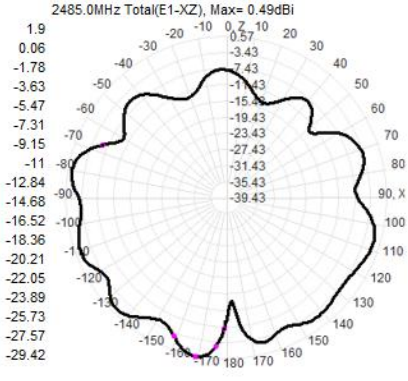


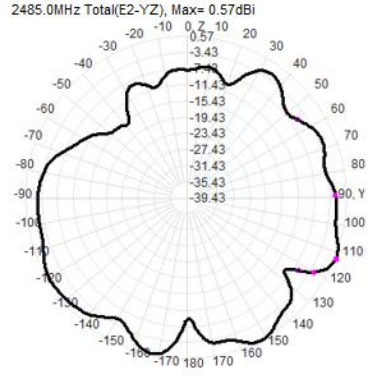
2485.0MHz H+V, Eff: 49.3%

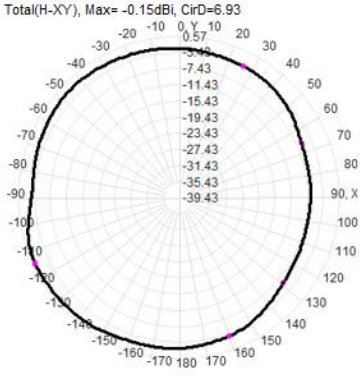


Back View

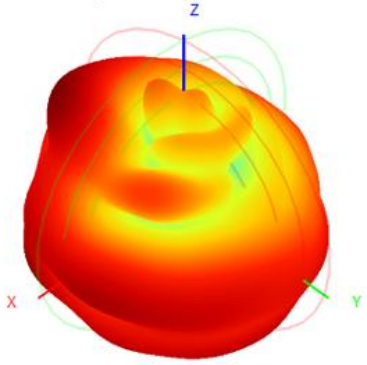




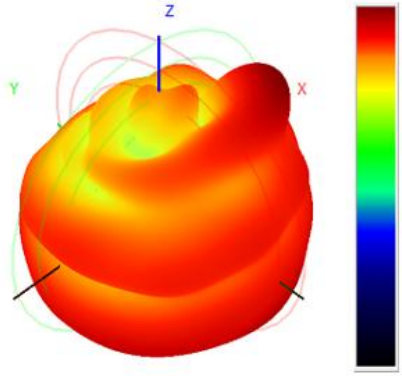




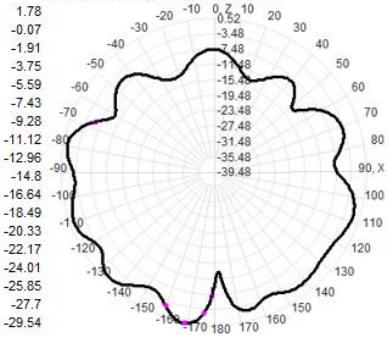
2490.0MHz H+V, Eff: 48.3%



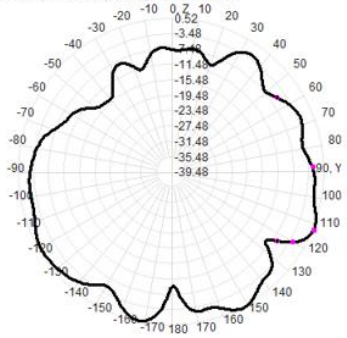
Back View



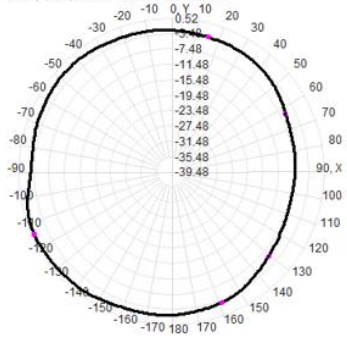
2490.0MHz Total(E1-XZ), Max= 0.52dBi



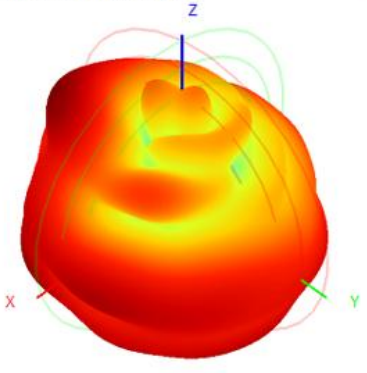
2490.0MHz Total(E2-YZ), Max= 0.48dBi



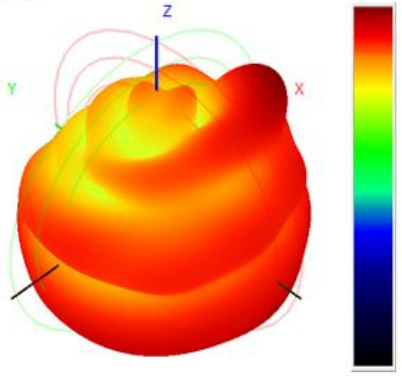
Total(H-XY), Max= -0.15dBi, CirD=7.49



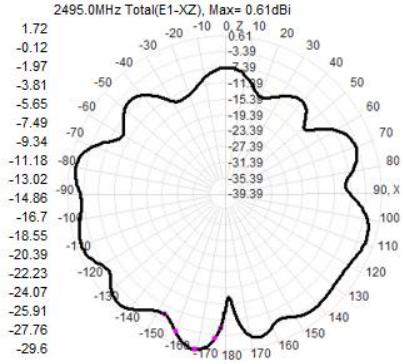
2495.0MHz H+V, Eff: 47.7%



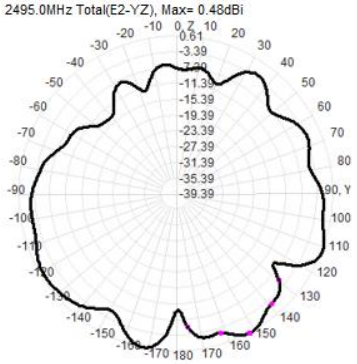
Back View



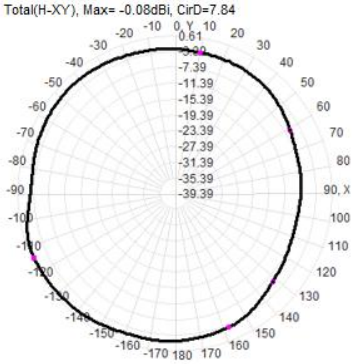
2495.0MHz Total(E1-XZ), Max= 0.61dBi

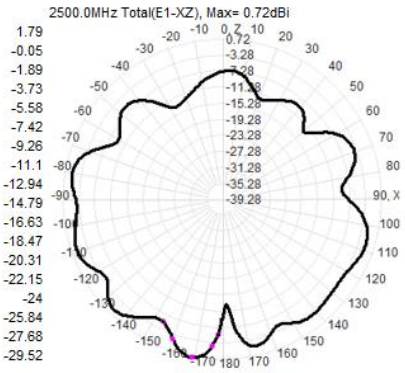


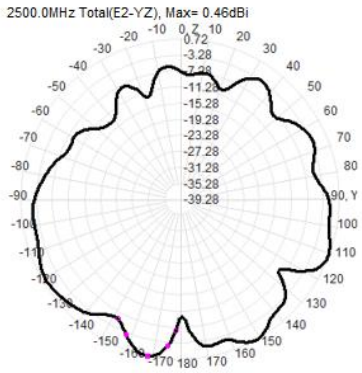
2495.0MHz Total(E2-YZ), Max= 0.48dBi

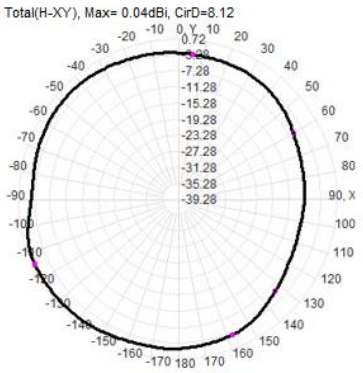


Total(H-XY), Max= -0.08dBi, CirD=7.84









4. Antenna test data

Frequency ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Frequency (MHz)	2400.0	2405.0	2410.0	2415.0	2420.0	2425.0	2430.0	2435.0	2440.0	2445.0	2450.0	2455.0	2460.0	2465.0	2470.0	2475.0	2480.0	2485.0	2490.0	2495.0	2500.0
Efficiency (dBi)	-2.40	-2.41	-2.41	-2.41	-2.42	-2.42	-2.42	-2.42	-2.45	-2.49	-2.53	-2.61	-2.71	-2.79	-2.87	-2.93	-2.99	-3.07	-3.16	-3.22	-3.26
Gain (dBi)	1.90	2.10	2.01	2.01	1.90	2.10	1.90	2.01	1.90	1.96	1.98	1.96	1.98	3.00	1.96	2.01	1.96	1.90	1.98	2.01	2.13
Efficiency (%)	57.56	57.42	57.48	57.39	57.25	57.24	57.23	57.26	56.82	56.41	55.85	54.89	53.58	52.62	51.68	50.91	50.23	49.26	48.32	47.67	47.18
Directivity (dB)	4.77	4.84	4.90	4.96	5.01	5.04	5.11	5.17	5.21	5.23	5.20	5.13	5.08	5.01	4.97	4.94	4.95	4.97	4.94	4.94	5.05
Peak Gain Position (Theta)	34.00	34.00	35.00	35.00	35.00	36.00	36.00	36.00	37.00	37.00	37.00	37.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	102.00	101.00
Peak Gain Position (Phi)	320.00	319.00	321.00	321.00	321.00	322.00	322.00	322.00	323.00	323.00	323.00	322.00	322.00	322.00	322.00	321.00	322.00	322.00	322.00	334.00	334.00
Efficiency ThetaPol (%)	46.17	45.87	45.79	45.58	45.36	45.33	45.24	45.31	45.04	44.86	44.59	43.99	43.14	42.54	41.92	41.41	41.00	40.42	39.86	39.52	39.35
Efficiency PhiPol (%)	11.38	11.55	11.68	11.81	11.90	11.91	11.98	11.94	11.78	11.56	11.26	10.90	10.44	10.08	9.76	9.50	9.23	8.84	8.46	8.15	7.83
Upper Hem. Efficiency (%)	23.29	22.68	22.21	21.81	21.58	21.55	21.60	21.69	21.61	21.49	21.22	20.72	20.09	19.49	18.82	18.14	17.54	16.84	16.11	15.56	15.18
Lower Hem. Efficiency (%)	34.27	34.74	35.26	35.58	35.67	35.69	35.62	35.57	35.21	34.92	34.63	34.17	33.49	33.13	32.86	32.77	32.70	32.43	32.21	32.12	32.01