



东莞市千木电子科技有限公司

Qianmu Electronics Technology Co. Ltd

SPECIFICATION

customer

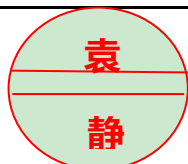
Product Name

2.4G spring antenna

Item number

Customer part number

Sample delivery date:

Customer confirmation			Supplier confirmation	
engineering	quality	produce	approval	Sample sender
				

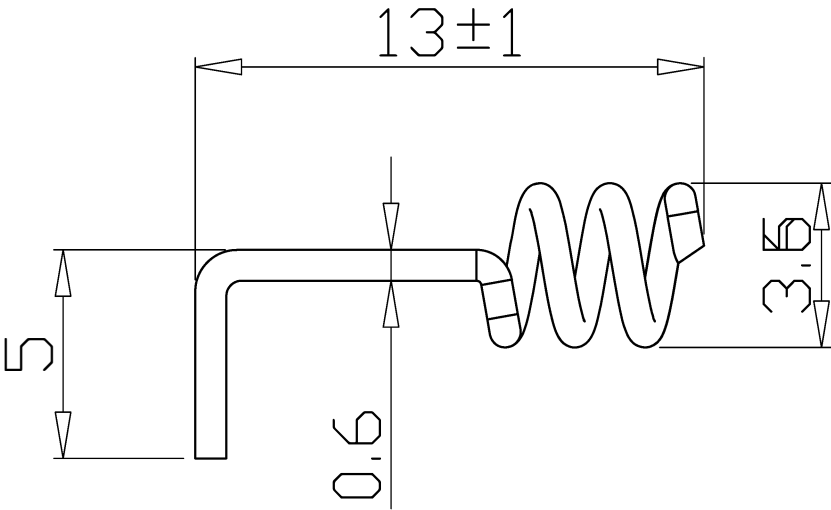
TEL : 0769-88002357 FAX: 0769-88002357

E-mail:276974640@qq.com

<http://qianmugps.1688.com>

RoHS
Compatible

NO	date	reason	CONFIRMED BY
B			
C			
D			



Zen spring technology requires tolerances:

spring material	Technical requirements for spring tolerance:	Diameter	0.6mm
Rotation direction	right rotation	Effective number of rotations	3T
Foot out method	Middle out feet	Pin Length	5.0mm
Upper dimensions of spring			
Lower dimension of spring			
spring height			

PART NAME: 2. 4G spring antenna

PART NO.:

DATE: 2025-06-24

APPROVED BY

CHECKED BY

DESIGNED BY

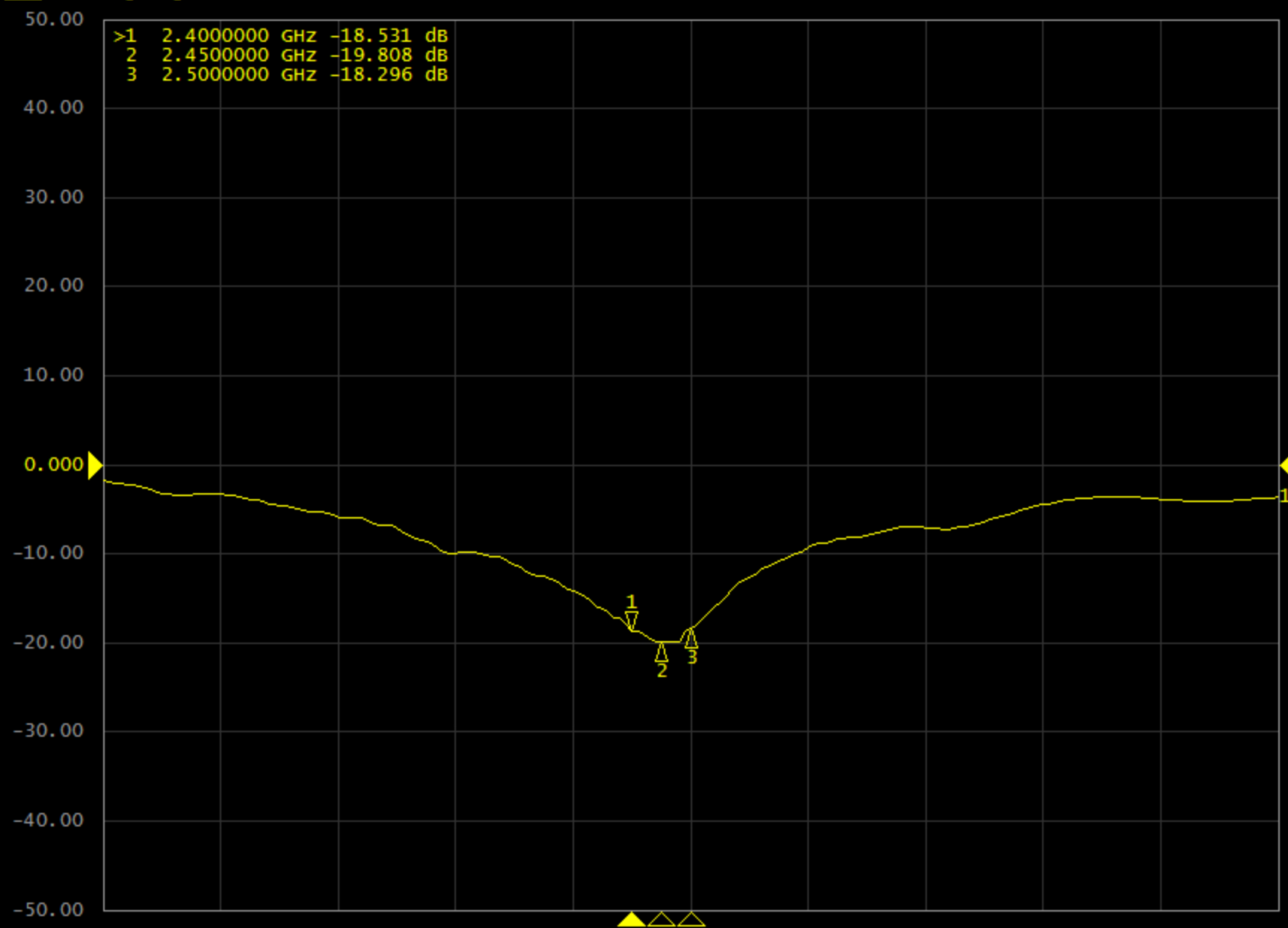


Tolerance
X.X ±0.50
X.XX ±0.15
X° ±3°



UNITS: mm
SCALE: 1/1
REVISION: A

► Tr1 S11 Log Mag 10.00dB/ Ref 0.000dB [F1 Del]



Format

Log Mag

Log Mag

Phase

Group Delay

Smith

Polar

Lin Mag

SWR

Real

Imaginary

Expand
PhasePositive
Phase

Return

1 Center 2.5 GHz

IFBW 70 kHz

Span 2 GHz PExt C!

Meas

Stop

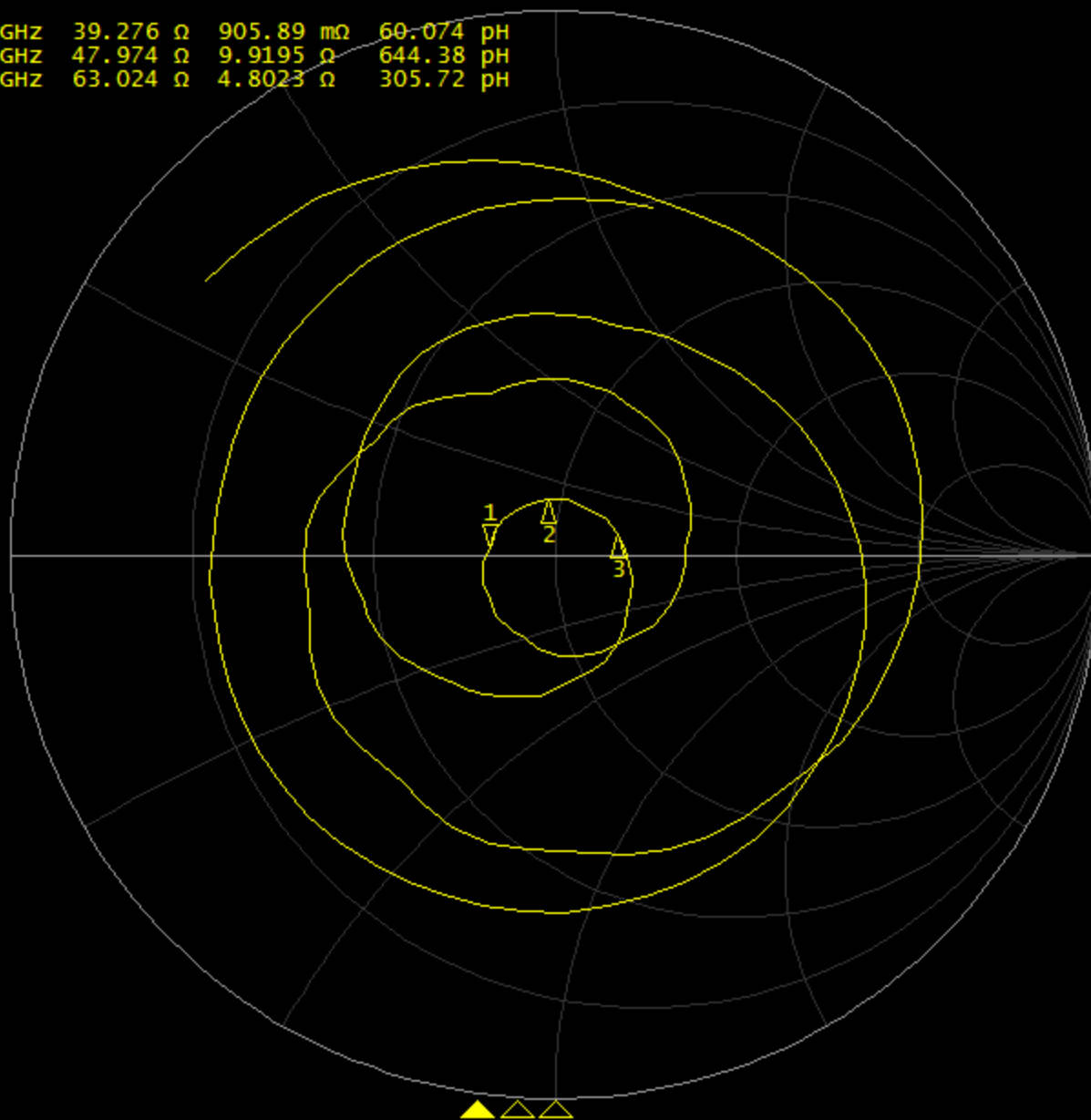
ExtRef

Svc

2025-04-18 23:29

▶ Tr1 S11 Smith (R+jX) Scale 1.000U [F1 Del]

>1	2.4000000	GHz	39.276 Ω	905.89 m Ω	60.074 pF
2	2.4500000	GHz	47.974 Ω	9.9195 Ω	644.38 pF
3	2.5000000	GHz	63.024 Ω	4.8023 Ω	305.72 pF



Format

Smith (R+jX)

Log Mag

Phase

Group Delay

Smith

R + jX

Polar

Lin Mag

SWR

Real

Imaginary

Expand
PhasePositive
Phase

Return

1 Center 2.5 GHz

IFBW 70 kHz

Span 2 GHz PExt Cl !

Meas

Stop

ExtRef

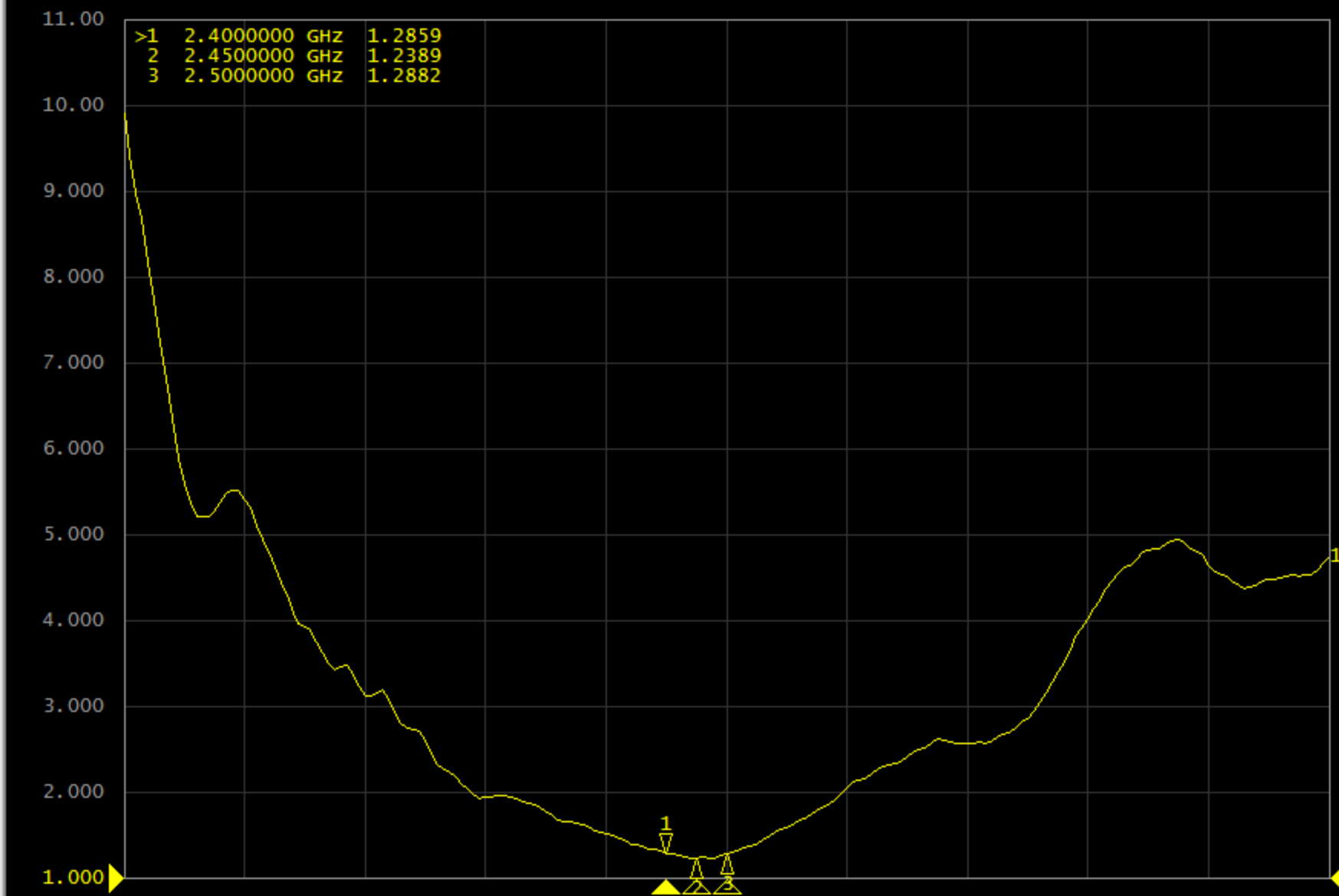
Svc

2025-04-18 23:29

Span 2 GHz



► Tr1 S11 SWR 1.000/ Ref 1.000 [F1 Del]



1 Center 2.5 GHz

IFBW 70 kHz

Span 2 GHz PExt C!

Meas Stop ExtRef Svc

2025-04-18 23:28

Stimulus

Start

1.5000 GHz

Stop

3.5000 GHz

Center

2.5000 GHz

Span

2.0000 GHz

Return

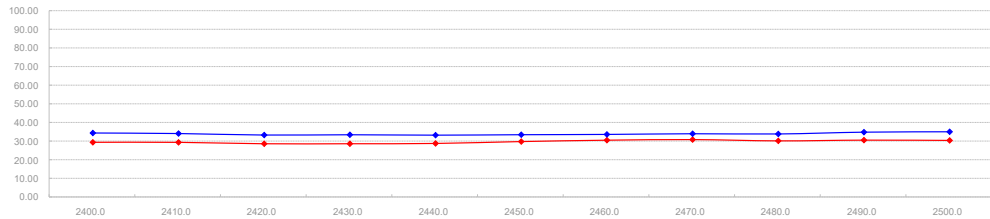
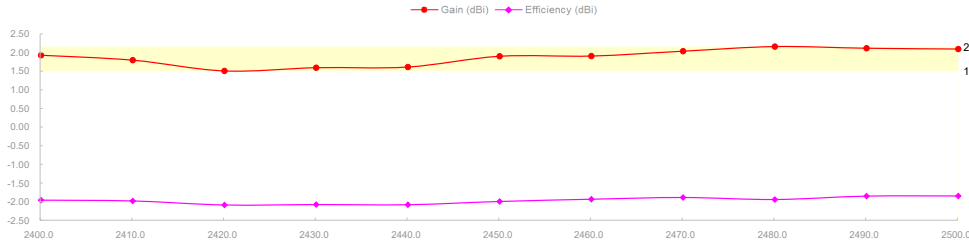
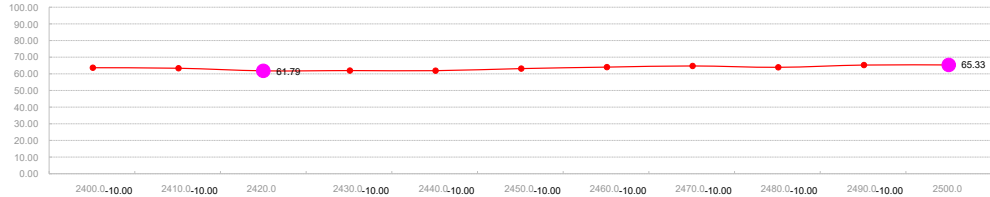


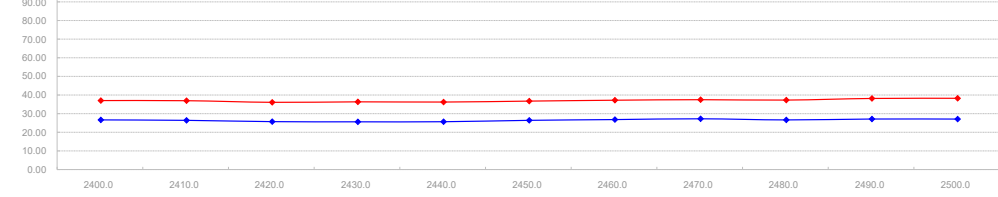
TEST REPORT

Frequency ID	1	2	3	4	5	6	7	8	9	10	11
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
Efficiency (dBi)	-1.96	-1.98	-2.09	-2.08	-2.08	-2.00	-1.94	-1.89	-1.94	-1.85	-1.85
Gain (dBi)	1.93	1.80	1.51	1.59	1.61	1.90	1.91	2.04	2.16	2.12	2.10
Efficiency (%)	63.67	63.35	61.79	61.96	61.90	63.15	64.03	64.73	63.92	65.28	65.33
Directivity (dB)	3.89	3.78	3.60	3.67	3.70	3.90	3.84	3.93	4.10	3.97	3.94
Peak Gain Position (Theta)	8.00	9.00	9.00	48.00	48.00	94.00	97.00	50.00	50.00	49.00	79.00
Peak Gain Position (Phi)	288.00	289.00	291.00	287.00	289.00	305.00	306.00	85.00	86.00	87.00	81.00
Efficiency ThetaPol (%)	29.33	29.31	28.56	28.57	28.72	29.73	30.46	30.79	30.11	30.50	30.35
Efficiency PhiPol (%)	34.33	34.04	33.24	33.39	33.17	33.41	33.57	33.93	33.81	34.78	34.99
Upper Hem. Efficiency (%)	37.02	36.95	36.08	36.34	36.23	36.73	37.21	37.49	37.28	38.16	38.24
Lower Hem. Efficiency (%)	26.64	26.40	25.71	25.62	25.67	26.41	26.82	27.23	26.64	27.12	27.09

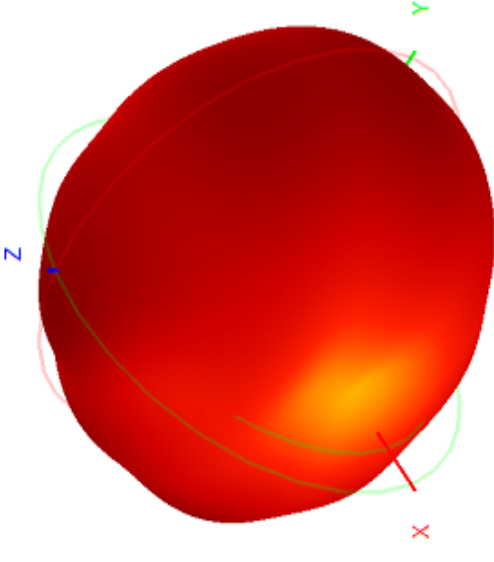
T90 (H) roundness	12.76	13.18	13.22	12.99	13.25	13.34	13.62	14.20	15.18	15.72	15.09
Gain 15deg (dBi)											
E1 (XZ) lobe width	55.00	57.00	61.00	63.00	73.00	69.00	67.00	67.00	69.00	70.00	66.00
E1 (XZ) front to back ratio	2.52	2.52	2.62	2.83	2.77	2.31	1.77	1.40	1.34	1.47	1.80
E2 (YZ) lobe width	205.00	210.00	215.00	218.00	219.00	221.00	208.00	191.00	179.00	179.00	185.00
E2 (YZ) front to back ratio	5.74	5.33	4.81	4.87	5.42	6.01	6.42	6.61	6.60	6.39	6.28
Axis ratio at maximum gain (P)	34.55	37.92	37.05	17.87	20.24	13.08	12.84	8.26	8.22	8.15	8.61
Axis ratio (P) at vertex (Theta=0)	18.21	19.09	20.31	21.33	22.42	24.35	27.31	31.23	34.34	31.71	26.99
Wave (deg) side ratio (P) at elevation angle of 18 degree	65.21	46.56	50.46	49.93	57.88	68.39	45.41	48.33	53.91	71.67	60.70
Hc (XY) lobe width	72.00	72.00	71.00	77.00	74.00	69.00	67.00	65.00	74.00	71.00	69.00
Hc (XY) before and after ratio	0.39	0.69	0.55	0.05	0.03	0.03	0.04	0.06	0.22	0.82	0.88
Left circular polarization efficiency (%)	28.50	28.35	27.65	27.77	27.81	28.53	29.11	29.49	28.99	29.27	28.88
Right circular polarization efficiency (%)	35.16	35.00	34.14	34.19	34.08	34.62	34.92	35.24	34.93	36.00	36.46
Cross polarization ratio at maximum gain (1=0° polarization)	0.56	0.35	0.47	8.03	7.93	9.84	10.08	1.14	1.42	1.68	4.18
Cross polarization ratio at maximum gain (horizontal and vertical polarization)	28.51	32.48	30.33	6.56	6.94	3.70	3.38	8.04	7.89	7.69	6.18
100 degree Phi cycle worst cross polarity ratio (1=0° peak)	0.01	0.01	0.00	0.00	0.02	0.03	0.00	0.03	0.00	0.01	0.04
100 degree Phi worst cross polarization ratio (horizontal and vertical)	0.03	0.01	0.01	0.09	0.04	0.09	0.02	0.06	0.01	0.04	0.05
100 degree (Phi)Percent cross polarization ratio per circle (1=0°)	0.01	0.05	0.03	0.06	0.08	0.08	0.09	0.06	0.17	0.02	0.01
100 degree (Phi)Percent cross polarization ratio (horizontal)	0.02	0.02	0.01	0.02	0.04	0.00	0.02	0.05	0.01	0.02	0.00
Down tilt angle parameter of asymmetric antenna											
Downward tilt angle of main value (average)	84.40	83.10	80.39	75.21	69.90	68.45	67.87	65.42	64.91	62.50	59.19

Empty

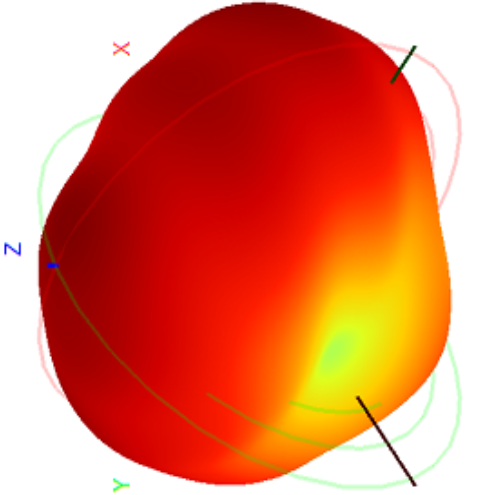




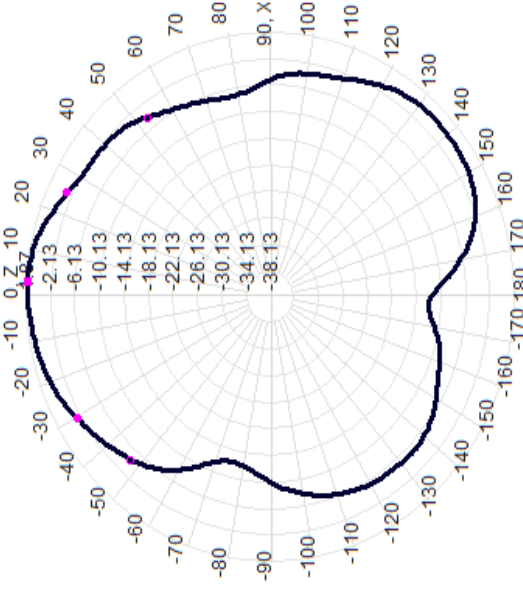
2400.0MHz H+V, Eff: 63.7%



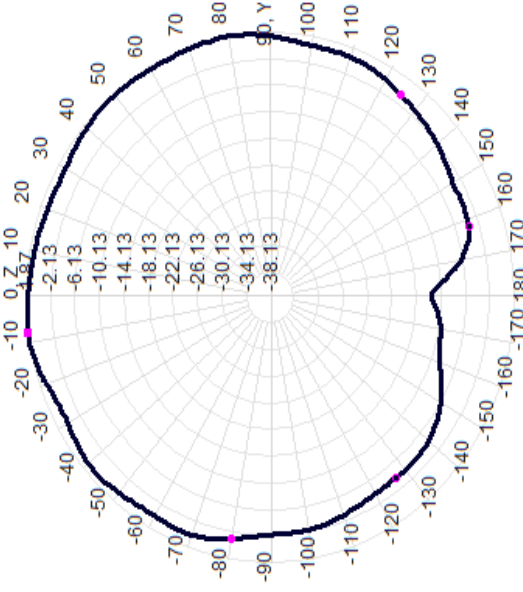
Back View



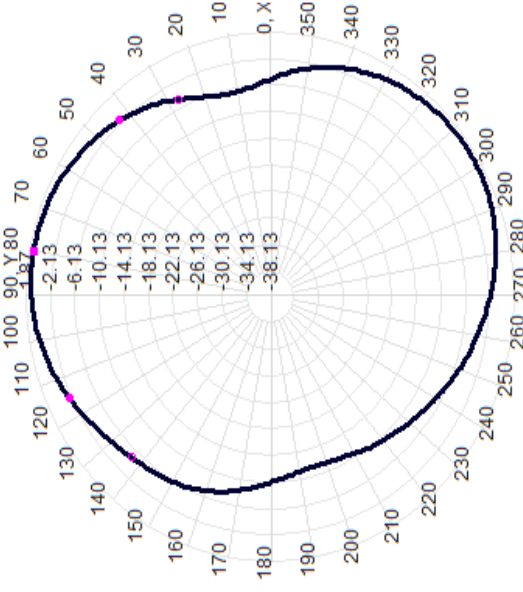
2400.0MHz Total(E1-XZ), Max= 1.61dBi



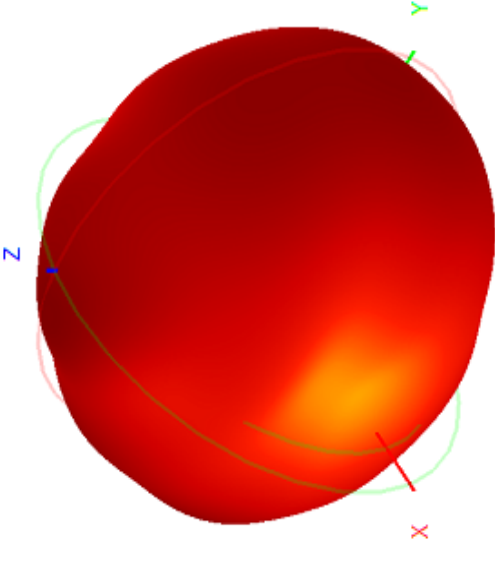
2400.0MHz Total(E2-YZ), Max= 1.87dBi



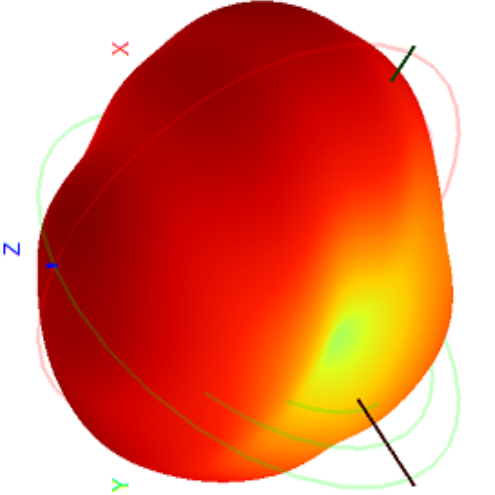
Total(H-XY), Max= 1.18dBi, CirD=12.76



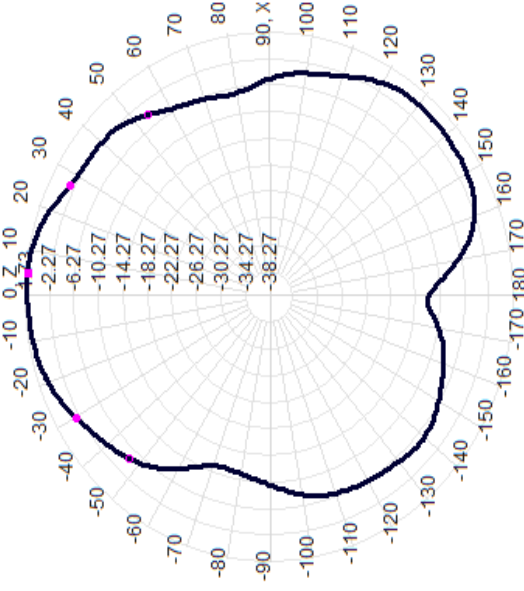
2410.0MHz H+V, Eff: 63.4%



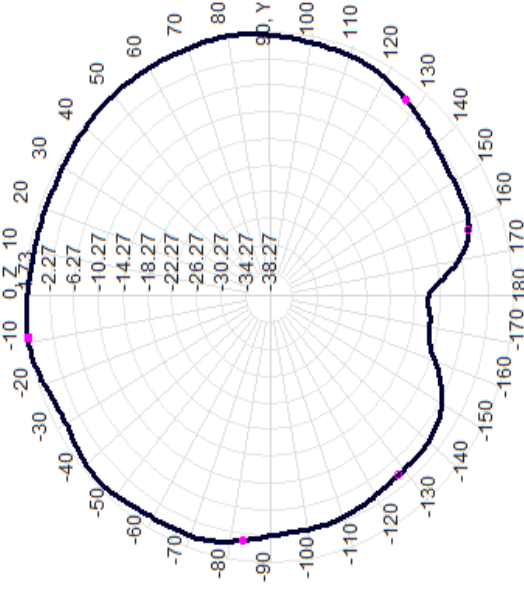
Back View



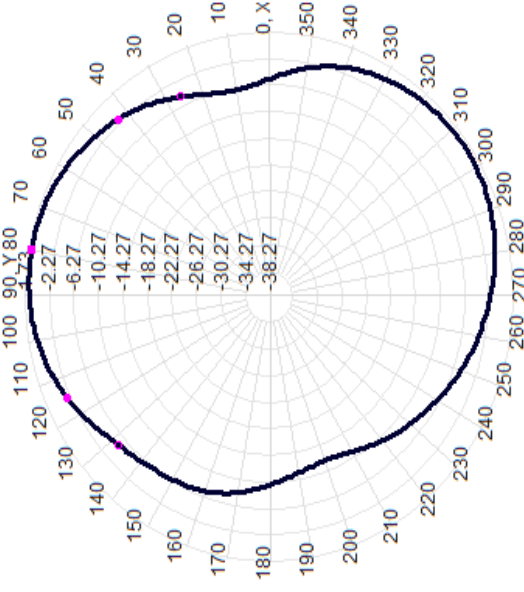
2410.0MHz Total(E1-XZ), Max= 1.43dBi



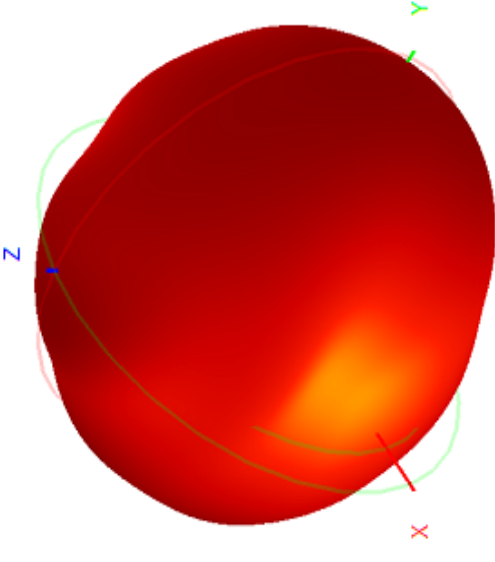
2410.0MHz Total(E2-YZ), Max= 1.73dBi



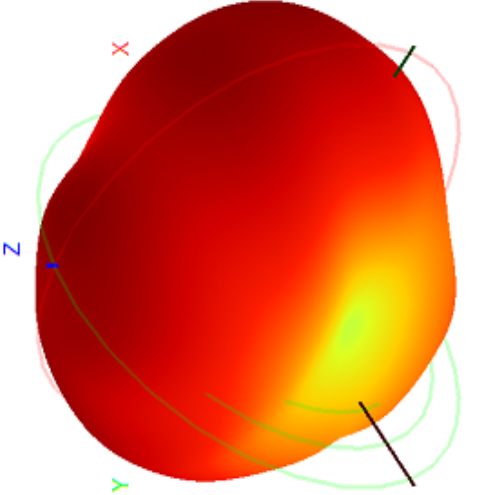
Total(H-XY), Max= 1.25dBi, CirD=13.18



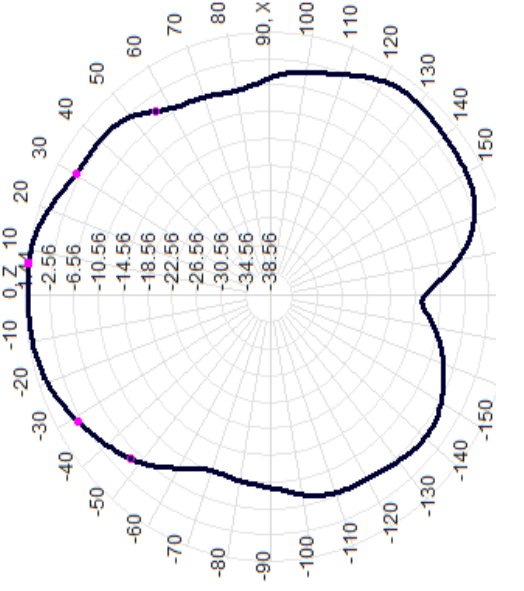
2420.0MHz H+V, Eff: 61.8%



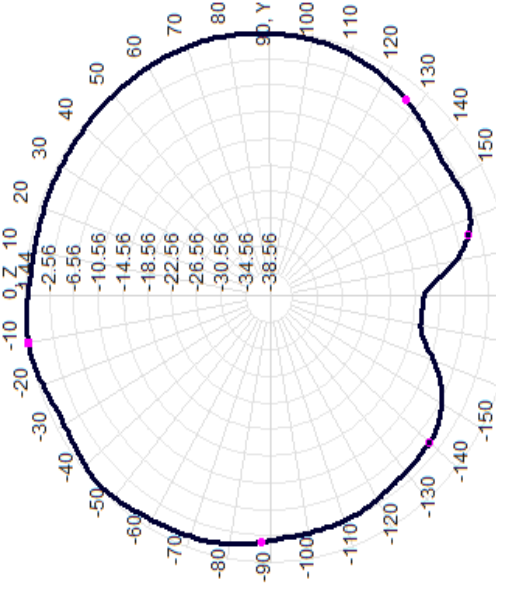
Back View



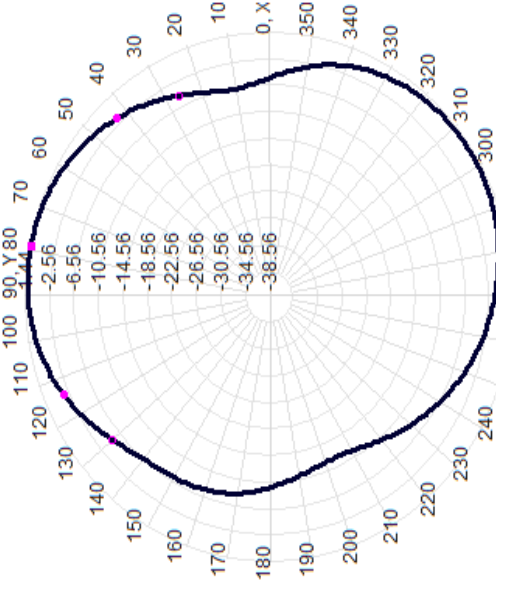
2420.0MHz Total(E1-XZ), Max= 1.09dBi

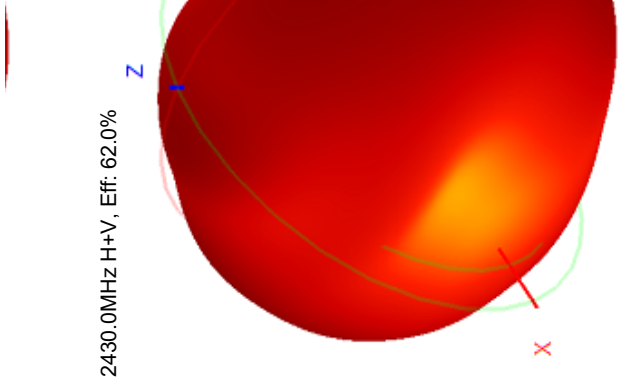


2420.0MHz Total(E2-YZ), Max= 1.44dBi

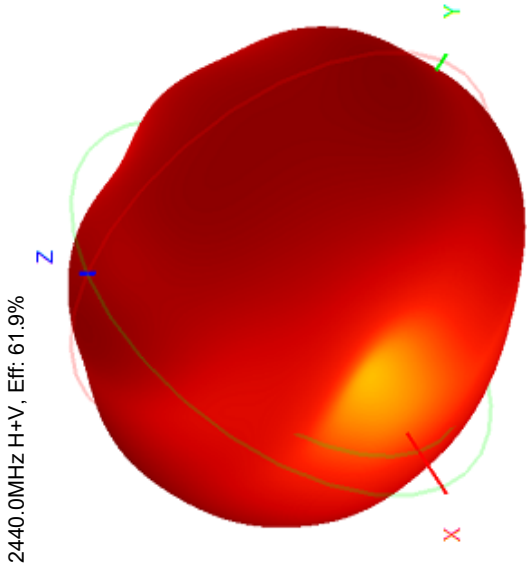
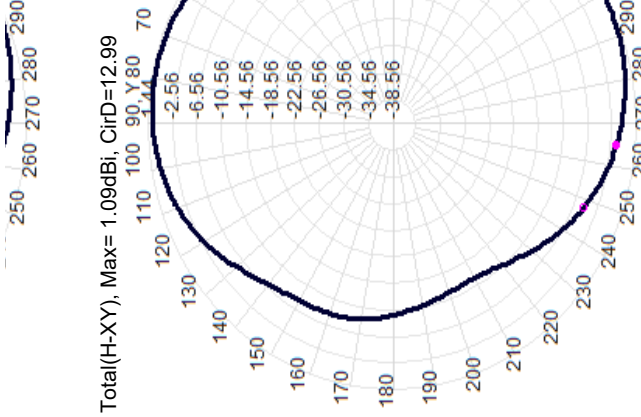
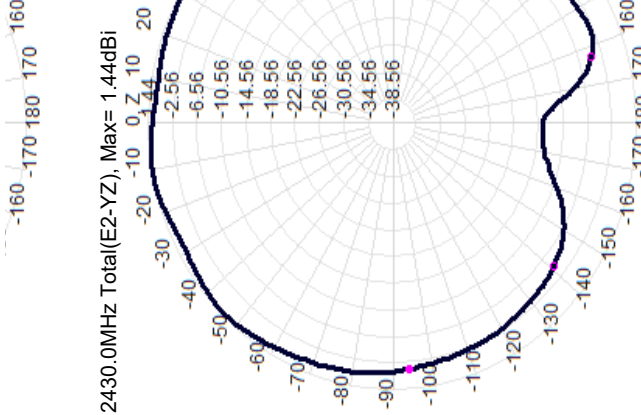
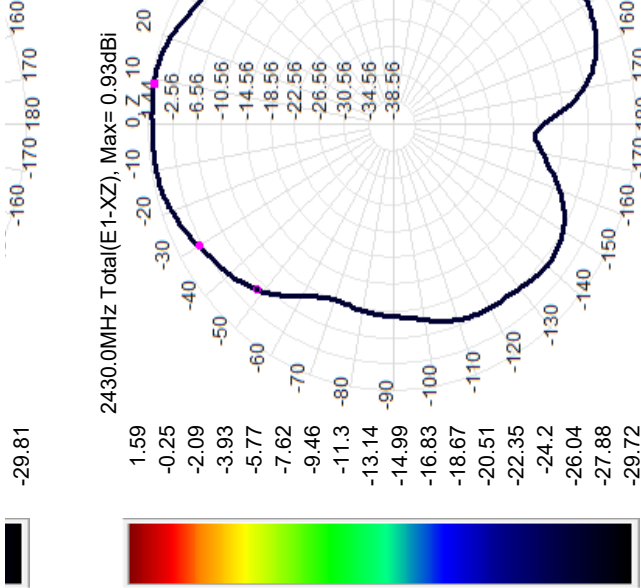
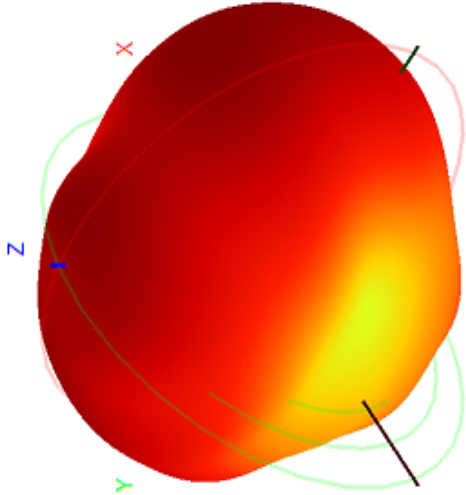


Total(H-XY), Max= 1.18dBi, CirD=13.22

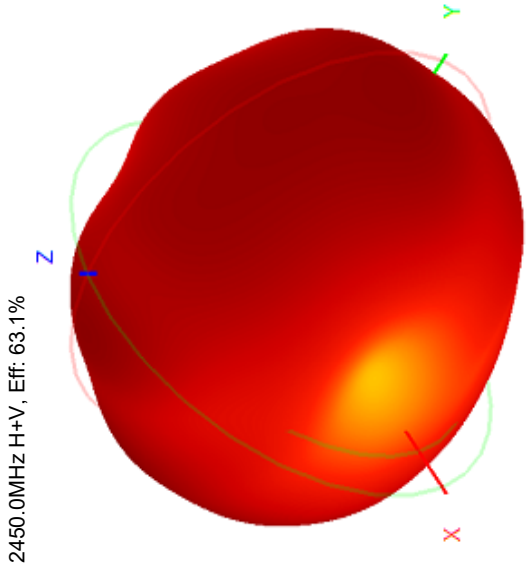
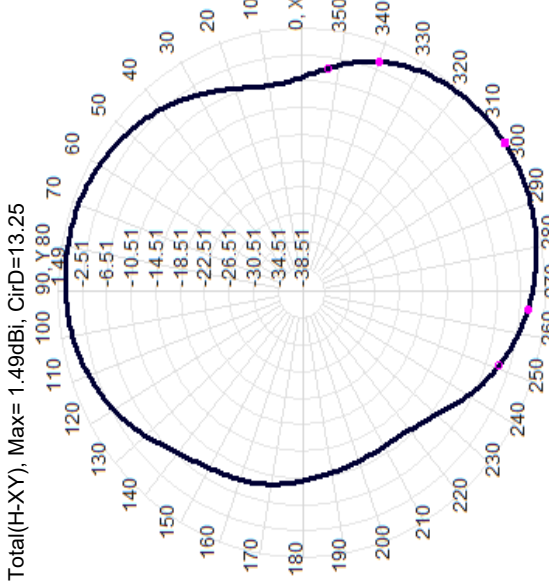
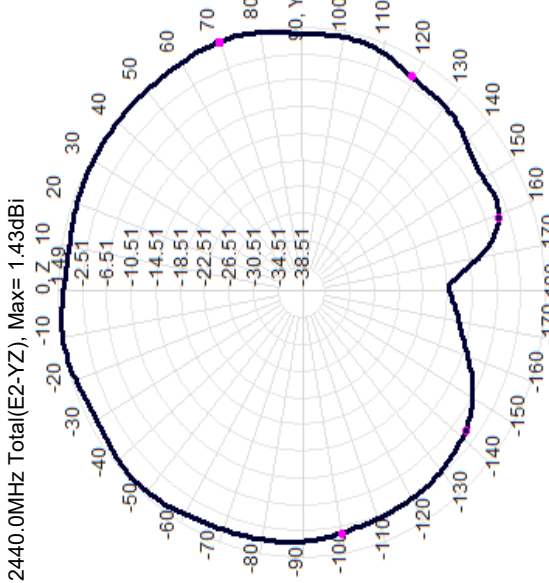
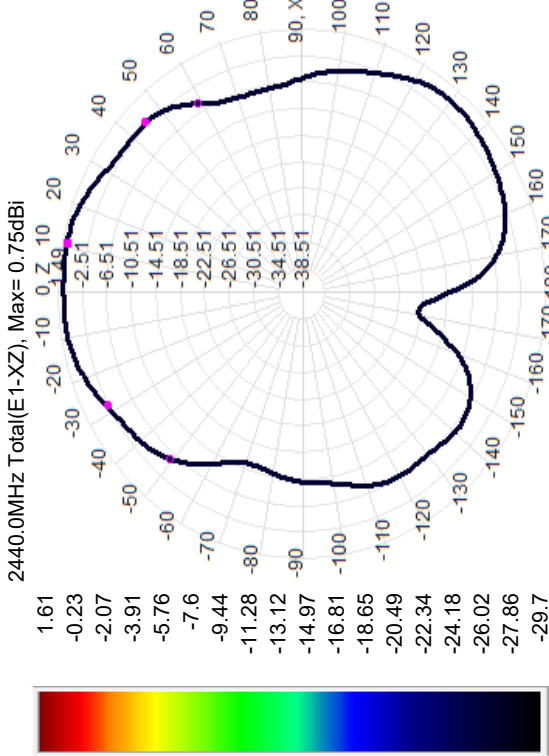
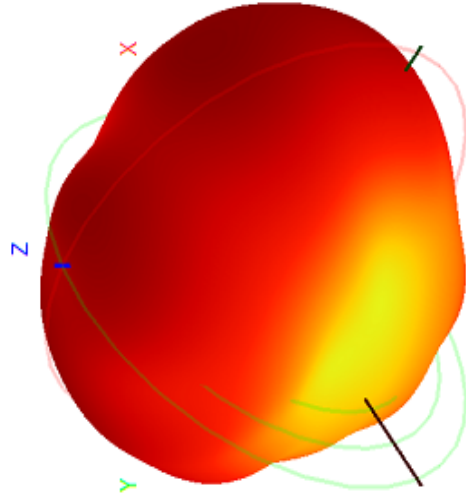




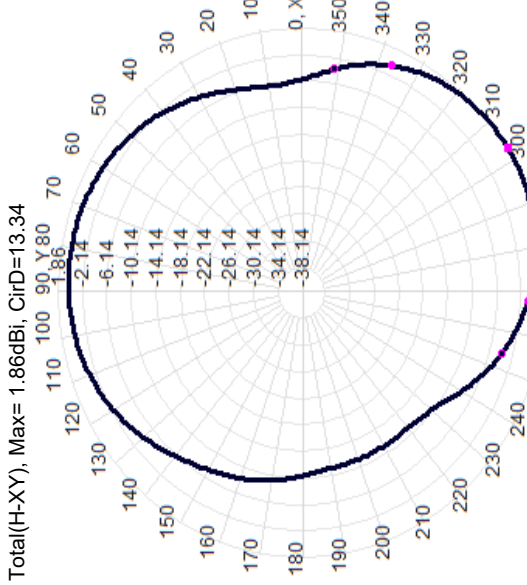
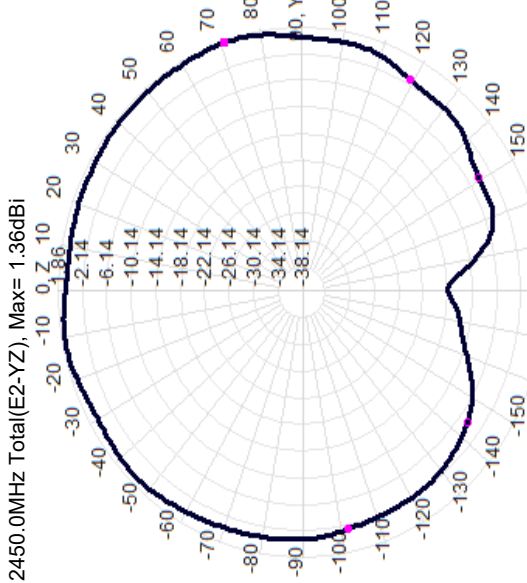
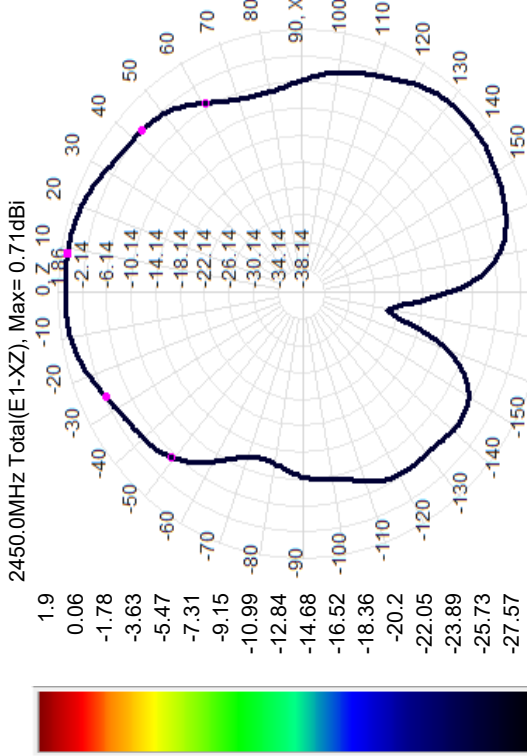
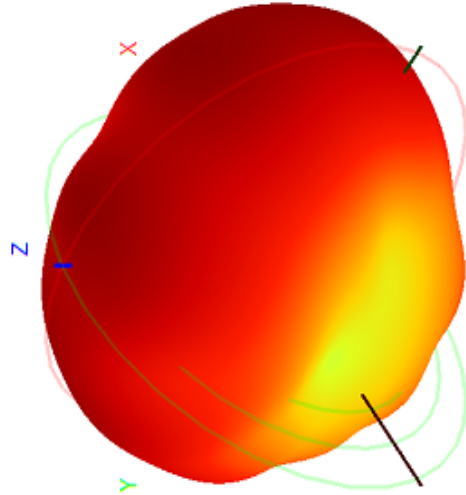
Back View

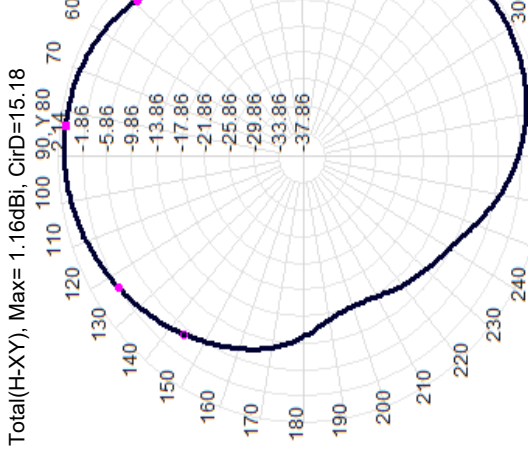
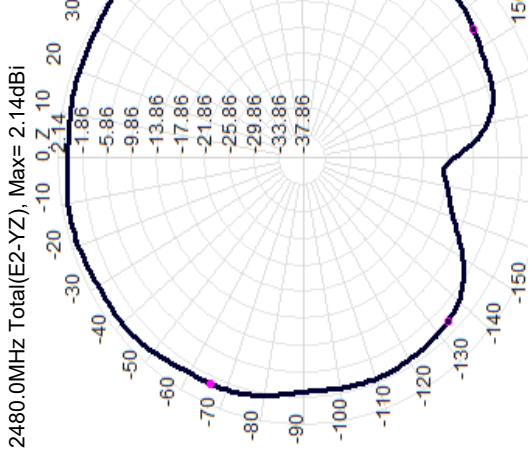
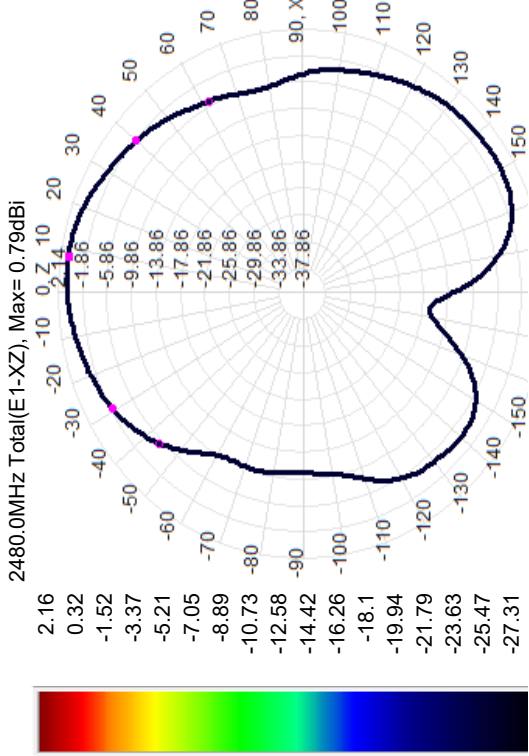
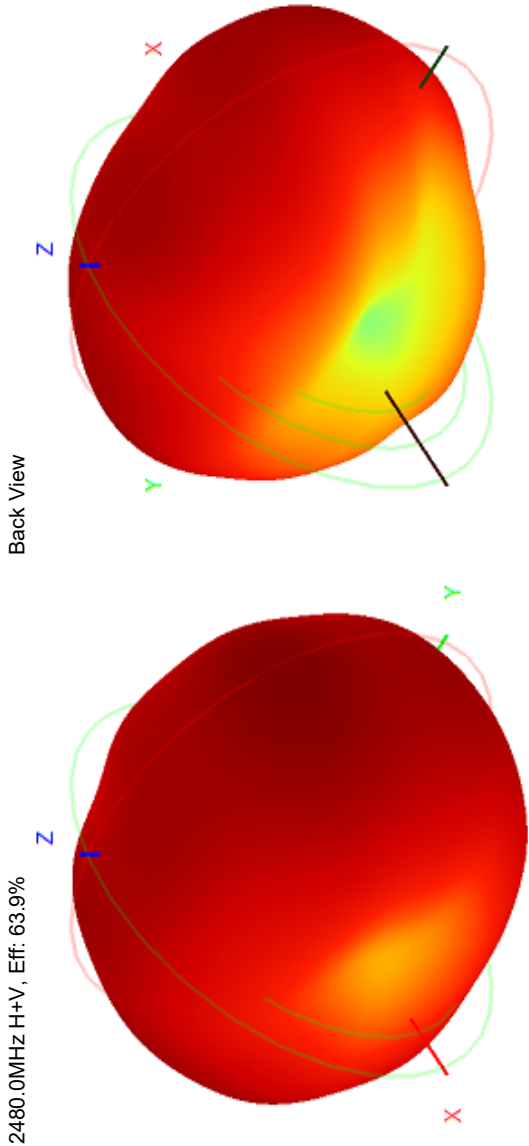
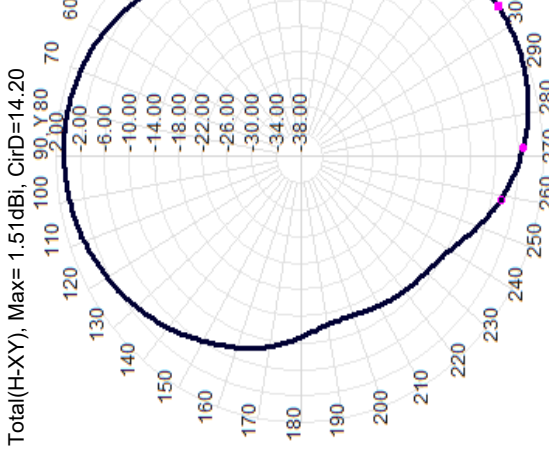
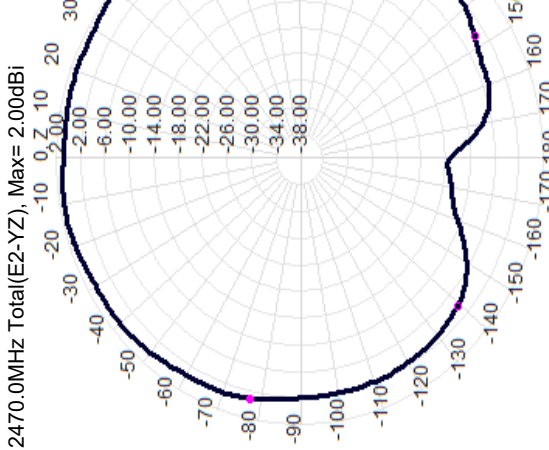
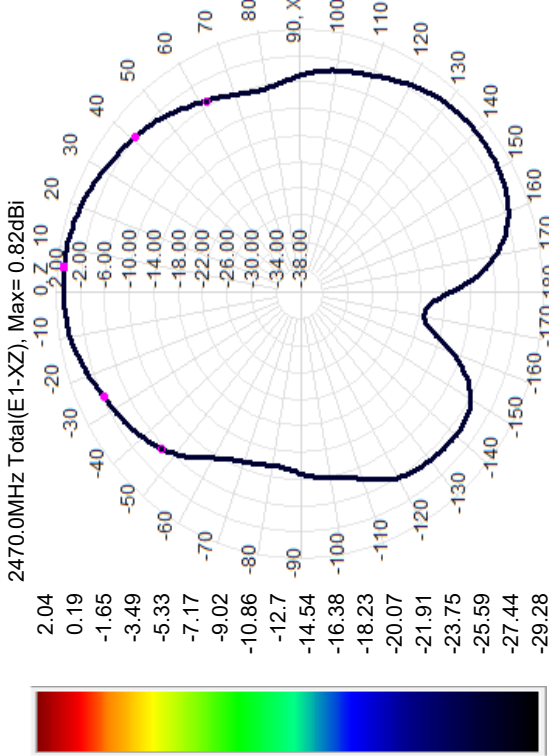
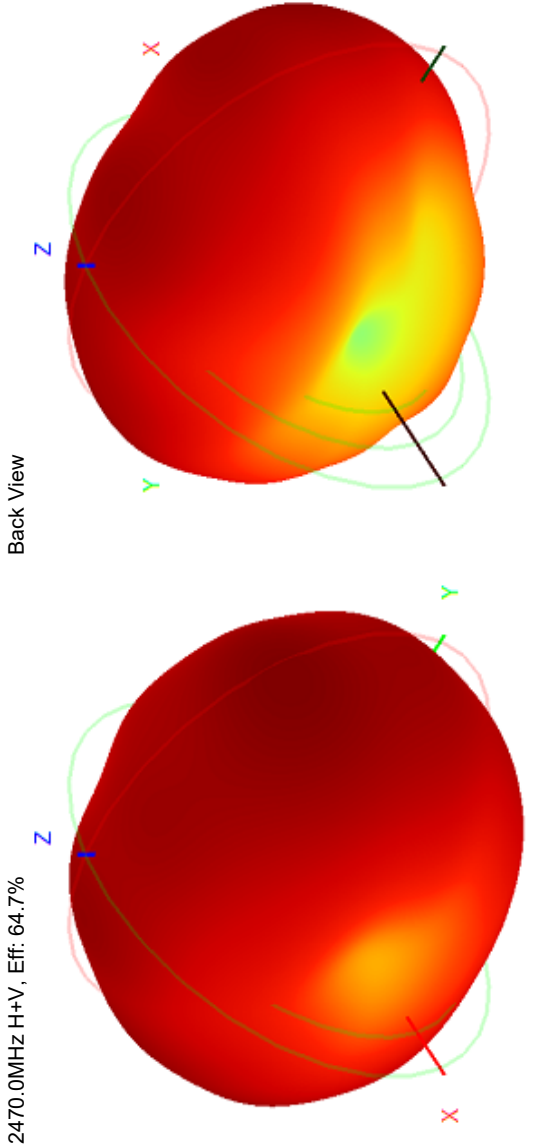
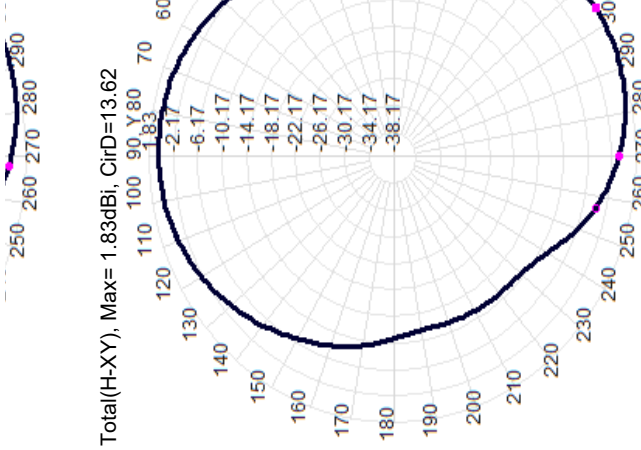
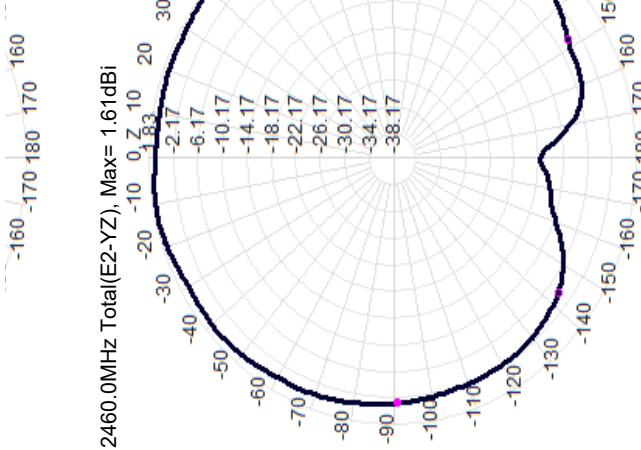
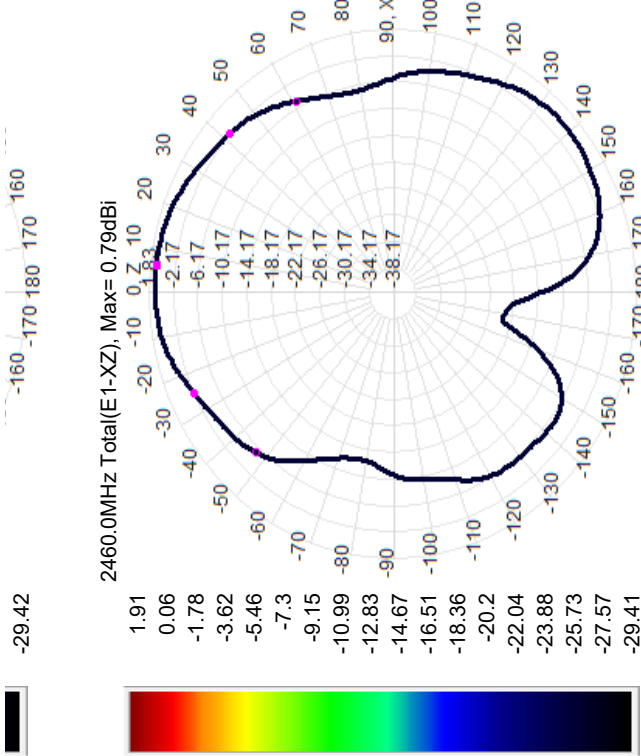
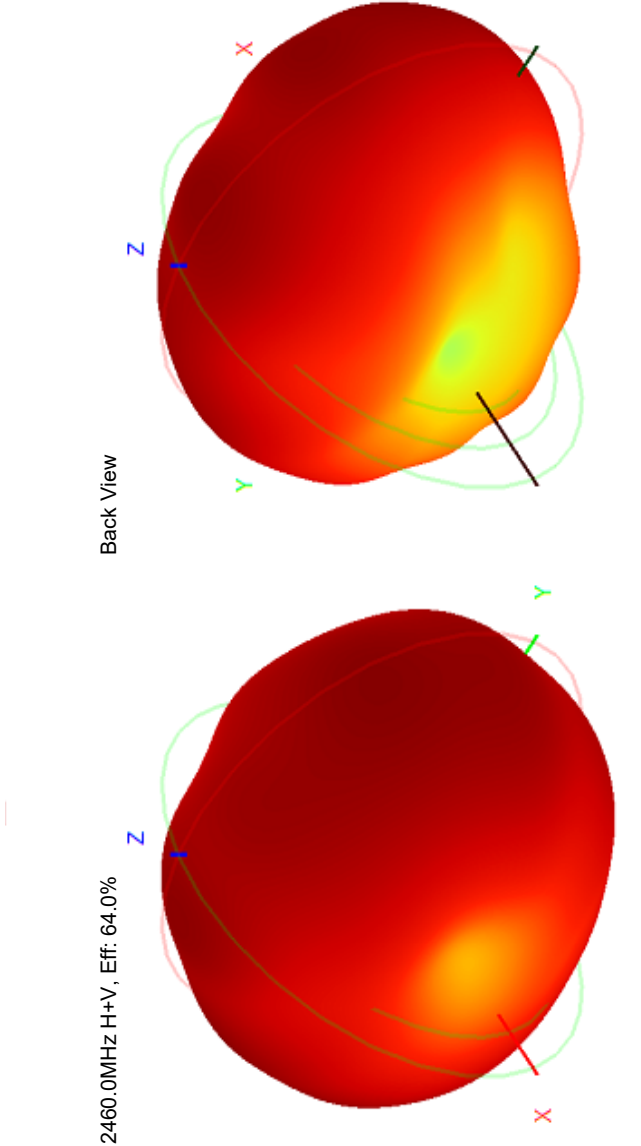


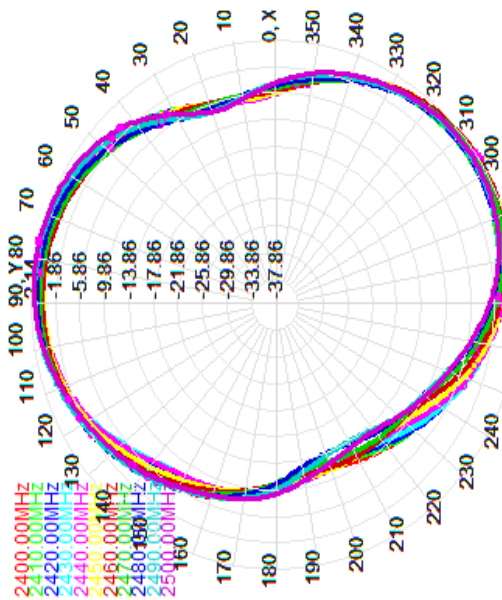
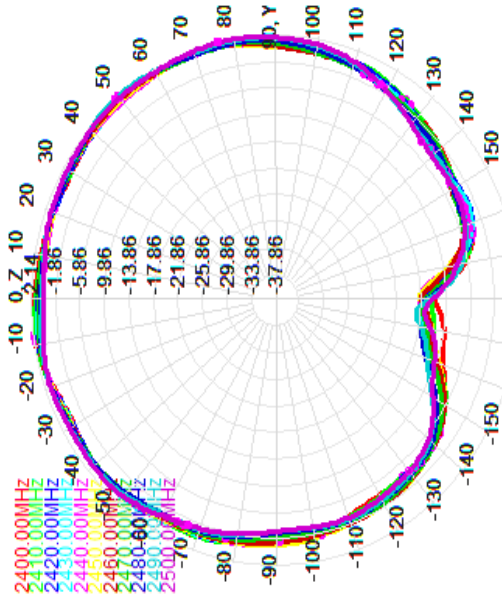
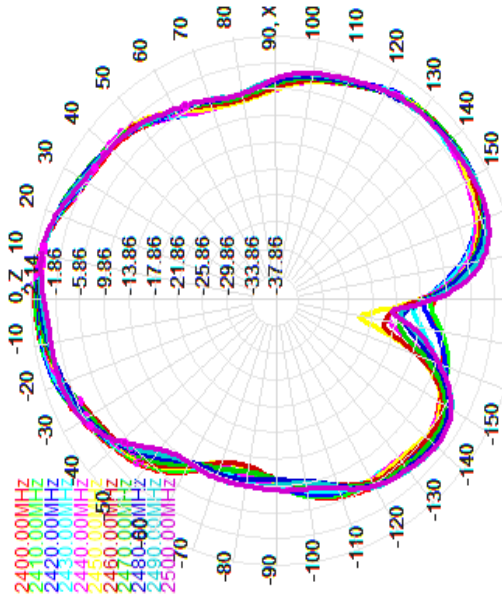
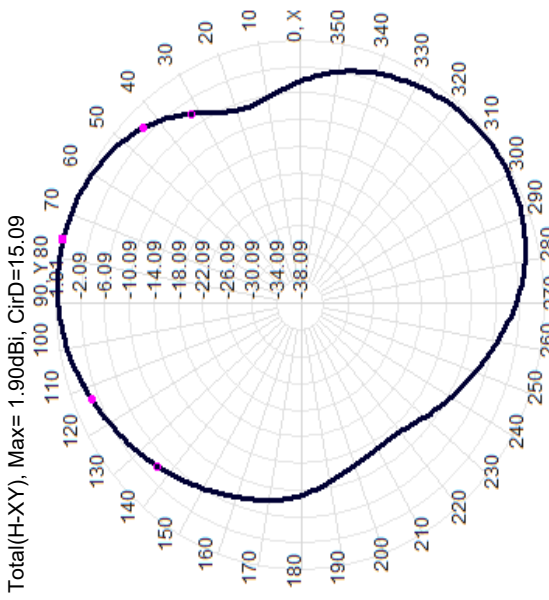
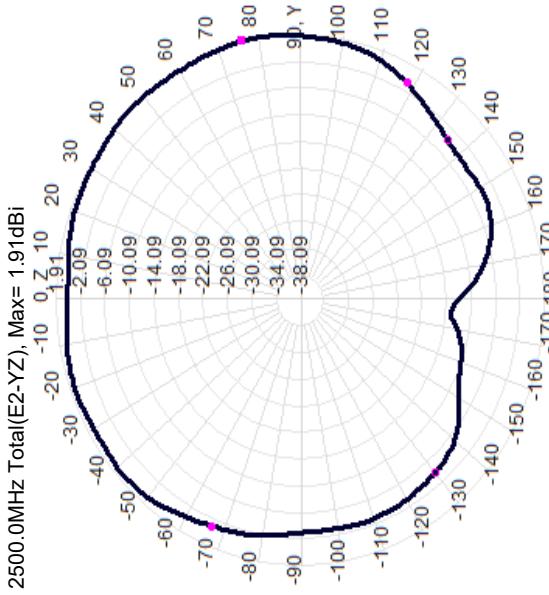
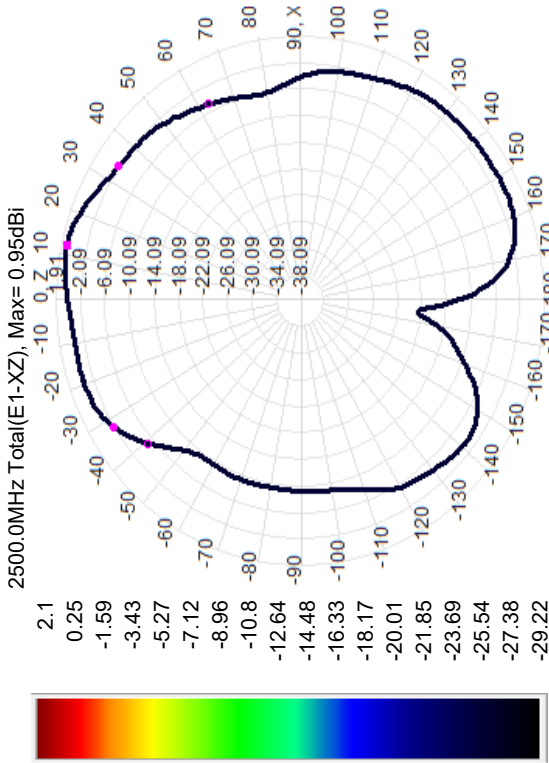
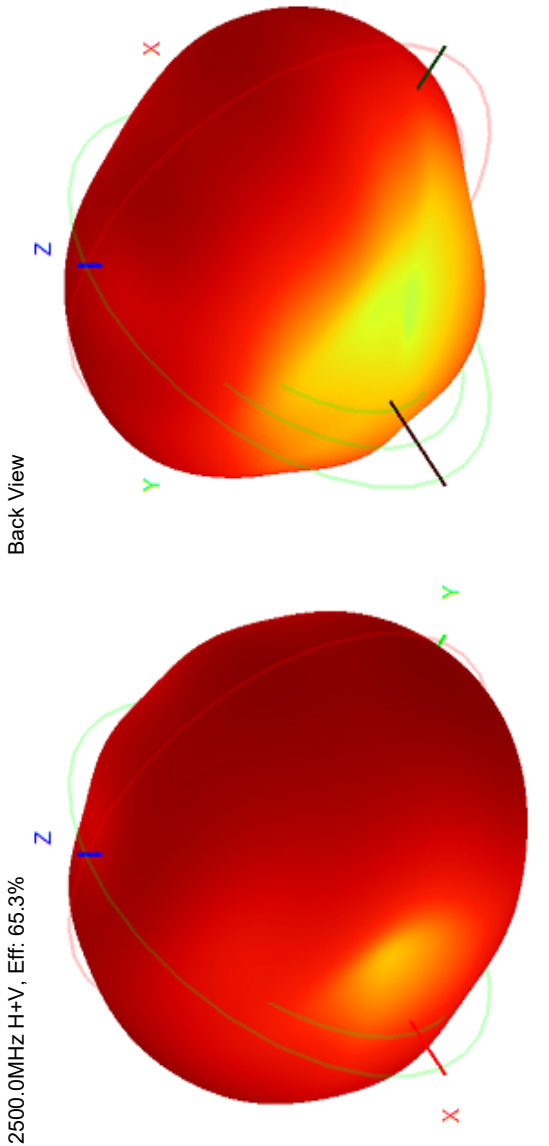
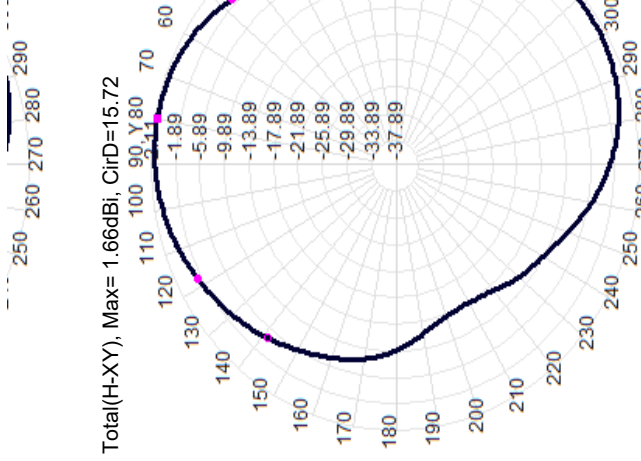
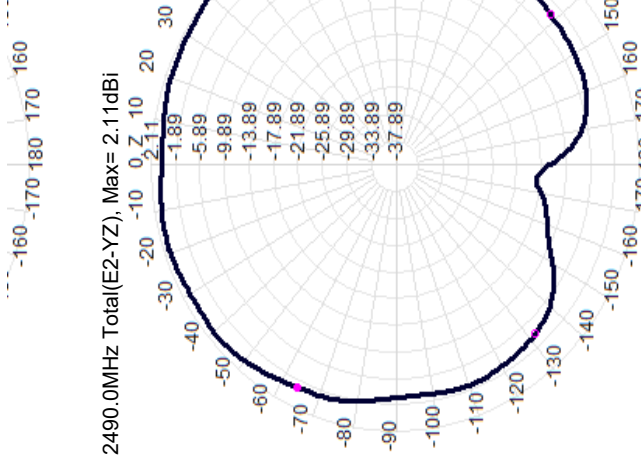
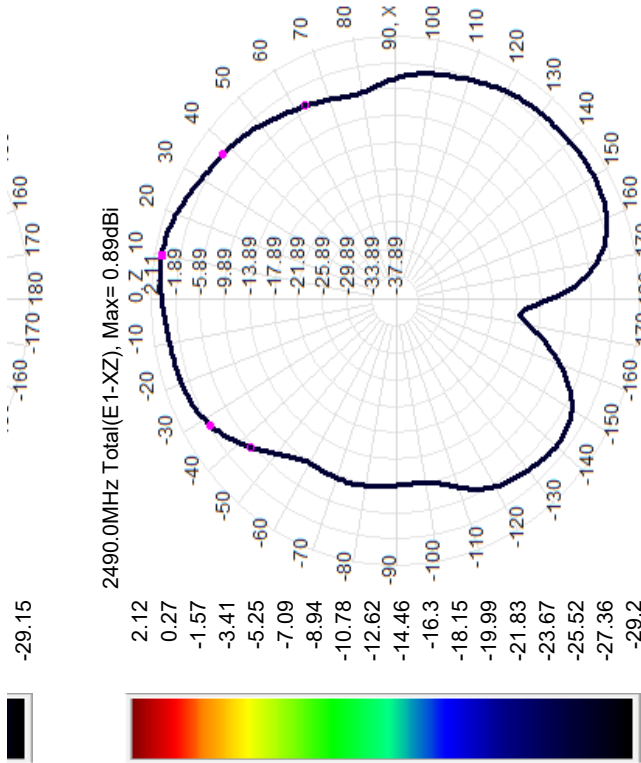
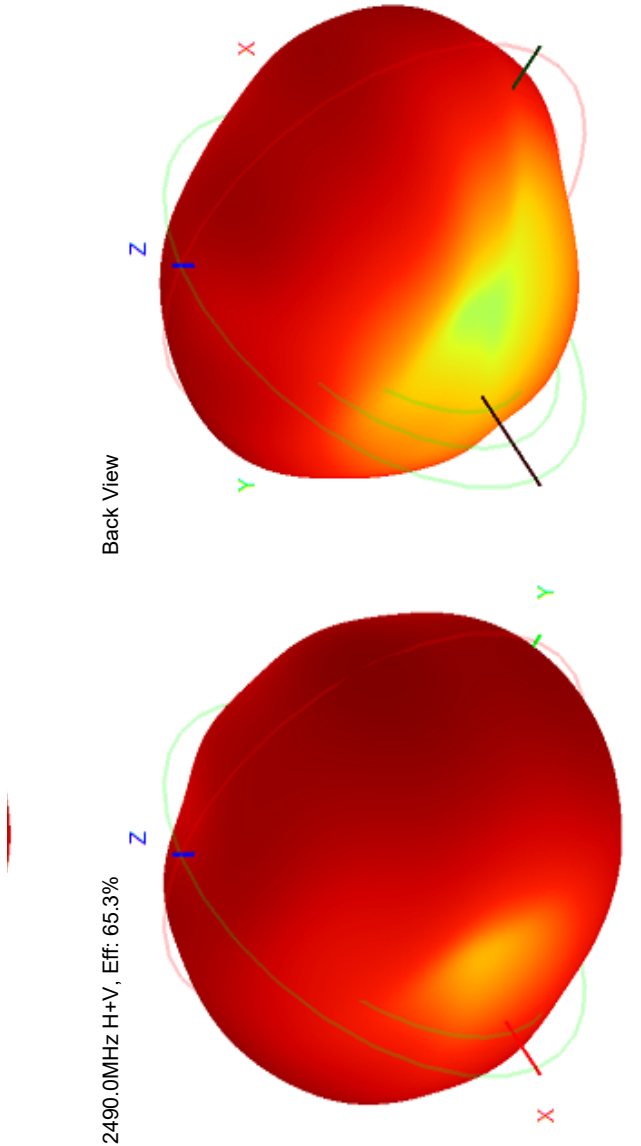
Back View



Back View







-160 -170 180 170 160

-160 -170 180 170 160

250 260 270 280 290