

Specification for Approval

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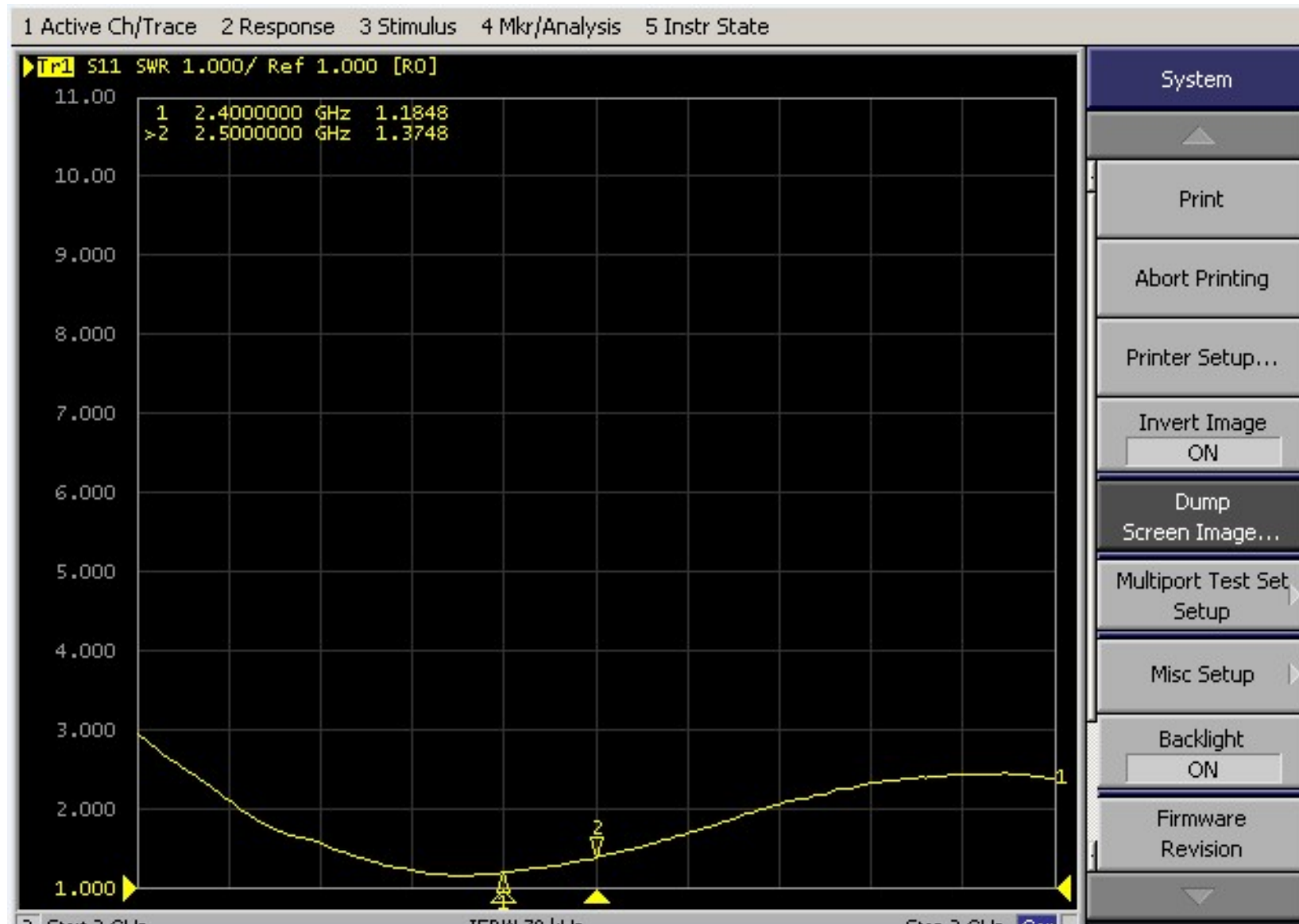
Customer:		Vendor:	HL Tronics
Customer P/N:	-	HL P/N:	6NA1648
Customer Device Name:	-	HL Device Name:	Q-2425-02PS
Version:	A	Approval Date:	2024-04-12

Internal Approval		
Approved By:	Checked By:	Prepared By:
Wei Zhang	Wei Zhang	Yan Zhuang
Customer Approval		

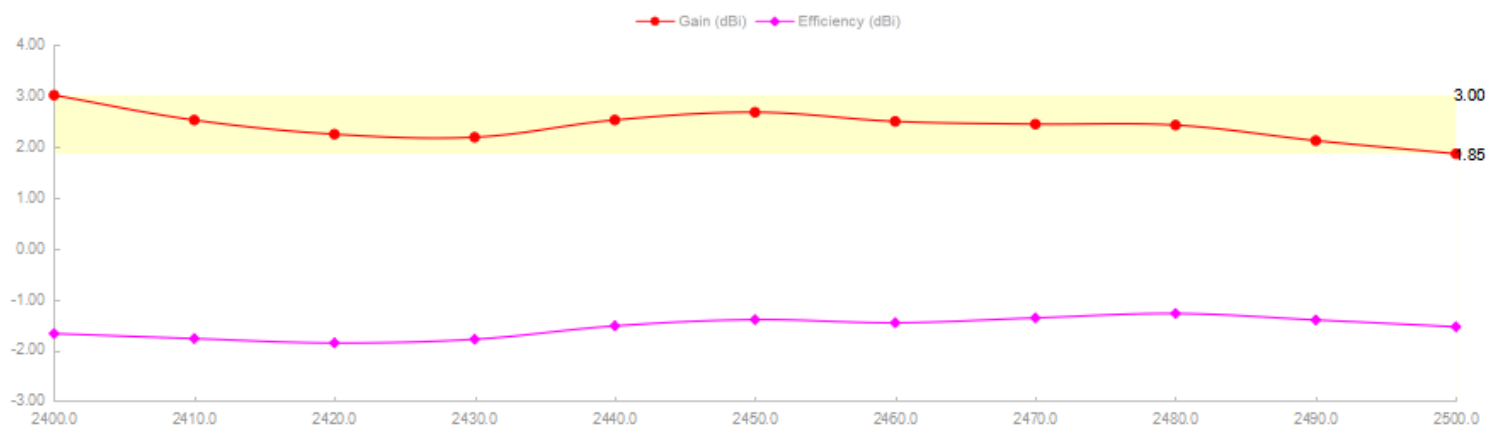
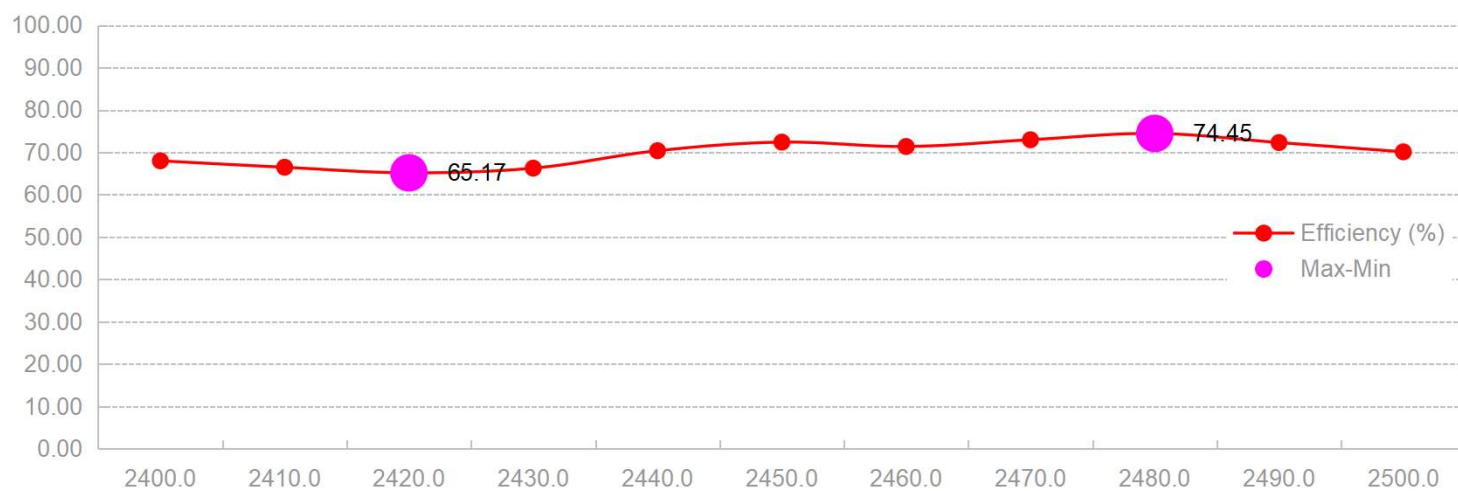
➤ **Electrical Specifications:**

NO.	Item	Specifications
1	Model No.	Q-2425-02PS
2	Frequency range (MHz)	2400-2500MHz
3	VSWR	≤2.0
4	Peak Gain	3dbi
5	Impedance	50Ω

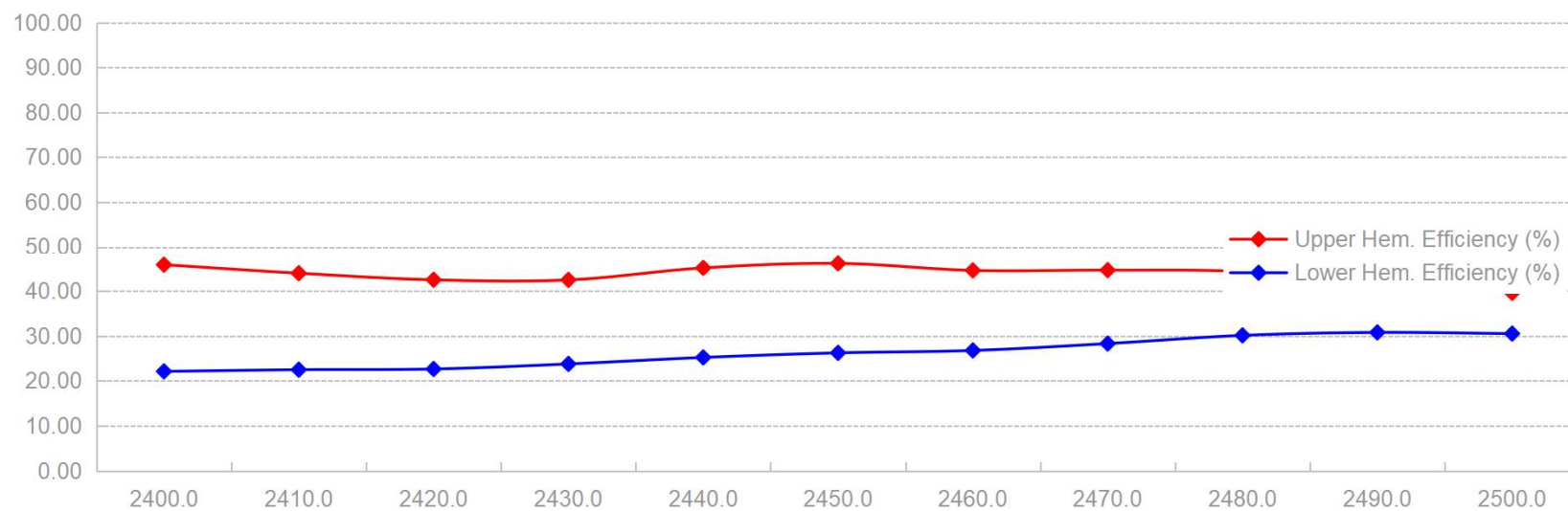
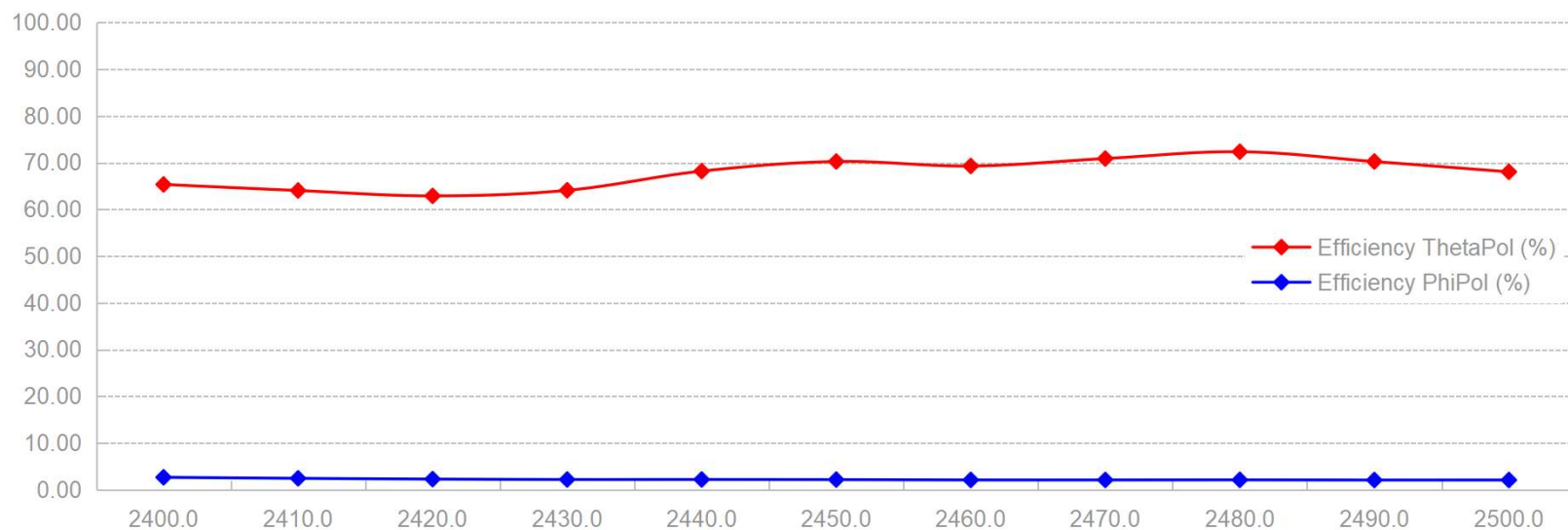
1. S-Parameters(VSWR)



2. Antenna Efficiency & Peak Gain

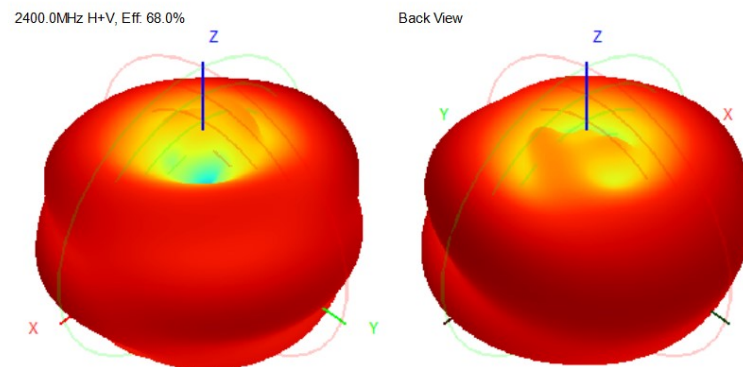


2. Antenna Efficiency & Peak Gain

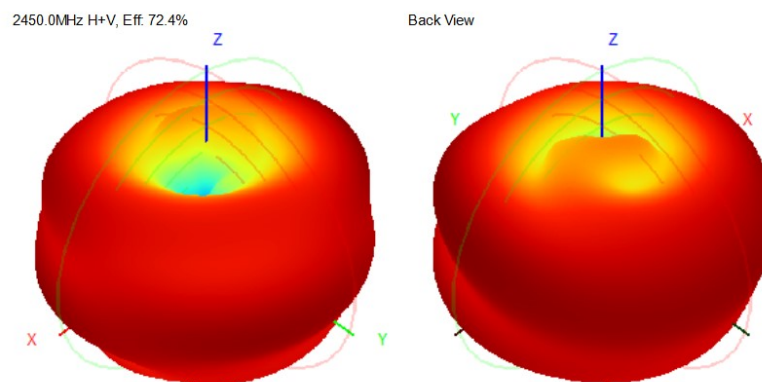


3. Radiation patterns (2G)

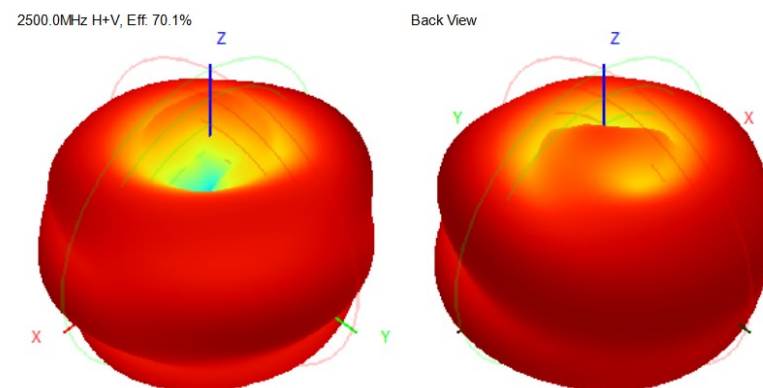
2400MHz



2450MHz

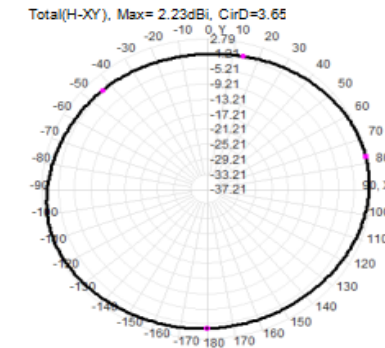
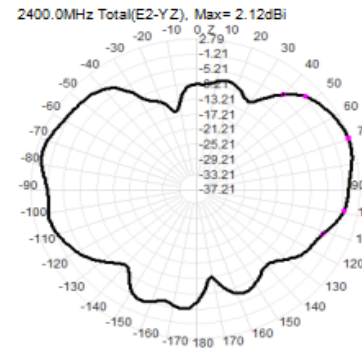
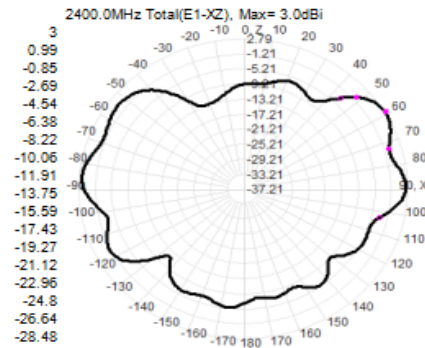


2500MHz

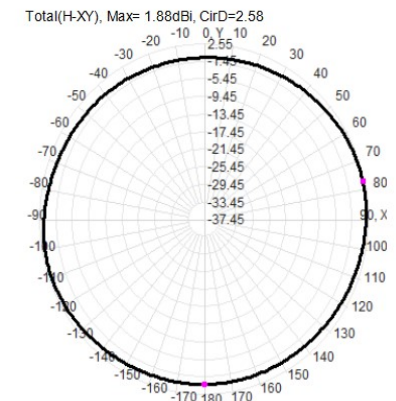
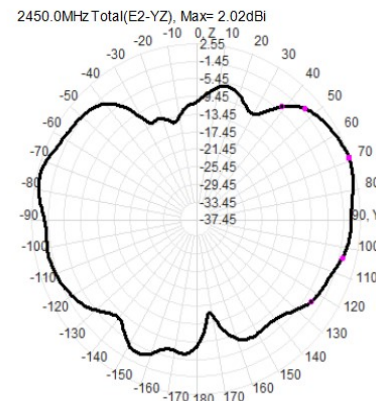
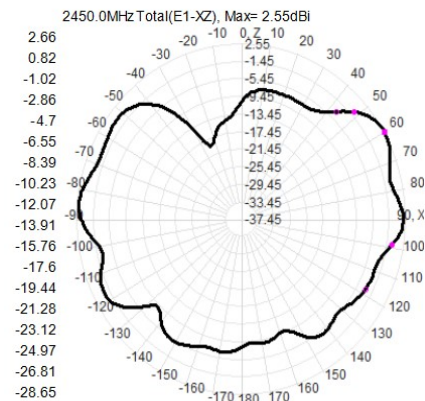


3. Radiation patterns (2G)

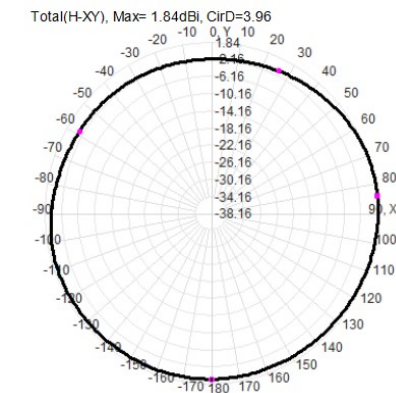
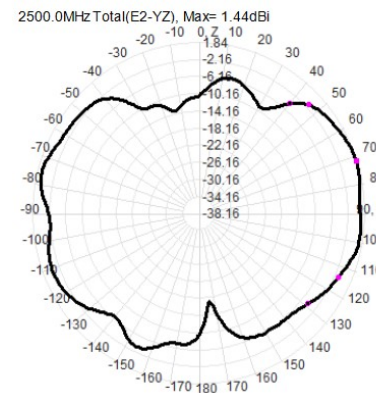
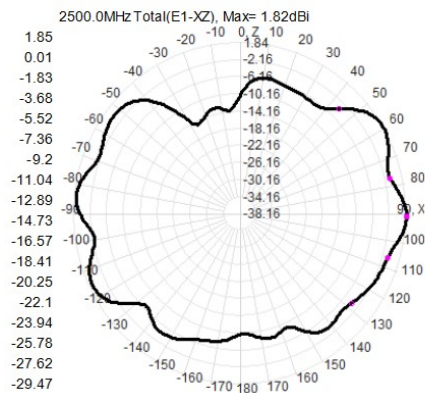
2400MHz



2450MHz



2500MHz



4.Summary

1.Test Data as below

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)	-1.68	-1.77	-1.86	-1.79	-1.53	-1.40	-1.46	-1.37	-1.28	-1.41	-1.54
Gain (dBi)	3.0	2.51	2.23	2.17	2.51	2.66	2.48	2.43	2.41	2.11	1.85
Efficiency (%)	68.00	66.48	65.17	66.27	70.38	72.41	71.38	72.97	74.45	72.31	70.12
Directivity (dB)	4.51	4.28	4.09	3.96	4.04	4.07	3.95	3.80	3.69	3.52	3.39
Peak Gain Position (Theta)	58.00	59.00	58.00	58.00	58.00	58.00	59.00	60.00	69.00	90.00	91.00
Peak Gain Position (Phi)	171.00	176.00	170.00	166.00	163.00	163.00	169.00	178.00	231.00	172.00	175.00
Efficiency ThetaPol (%)	65.34	64.03	62.89	64.08	68.19	70.24	69.28	70.88	72.34	70.23	68.03
Efficiency PhiPol (%)	2.66	2.44	2.28	2.19	2.20	2.17	2.10	2.10	2.11	2.08	2.08
Upper Hem. Efficiency (%)	45.88	43.98	42.51	42.49	45.16	46.17	44.60	44.66	44.32	41.52	39.59
Lower Hem. Efficiency (%)	22.12	22.50	22.65	23.78	25.22	26.24	26.78	28.31	30.13	30.80	30.53

T90(H)Roundness	3.65	3.73	3.64	3.34	2.89	2.58	2.61	2.93	3.40	3.83	3.96
Gain 15deg (dBi)											
E1(XZ)Lobe width	25.00	25.00	25.00	26.00	27.00	51.00	52.00	52.00	54.00	55.00	29.00
E1(XZ)front-to-back ratio	8.37	8.67	8.91	8.68	8.31	7.93	7.64	7.45	7.27	7.09	6.69
E2(YZ)Lobe width	52.00	55.00	56.00	58.00	59.00	58.00	58.00	57.00	60.00	64.00	68.00
E2(YZ)front-to-back ratio	6.92	6.98	6.88	6.55	6.19	5.96	5.94	6.03	6.05	5.76	5.17
Axis ratio at maximum gain(P)	22.52	24.63	23.22	23.18	23.35	23.69	25.88	31.84	21.38	23.75	25.00
Elevation angle 10 degrees worst (large) axis ratio(P)	93.62	91.22	100.36	60.66	60.37	61.98	95.93	75.01	74.53	79.86	64.80
Hc(XY)Lobe width	302.00	296.00	298.00	316.00	360.00	360.00	360.00	360.00	311.00	283.00	275.00
Hc(XY)front-to-back ratio	1.60	1.53	1.51	1.51	1.53	1.54	1.48	1.33	1.22	1.22	1.33
Left circular polarization efficiency(%)	32.11	31.50	30.99	31.74	34.04	35.16	34.69	35.60	36.46	35.39	34.34
Right circular polarization efficiency(%)	35.88	34.98	34.17	34.53	36.34	37.25	36.69	37.38	38.00	36.92	35.78
Empty											

