Antenna test report

client		**project name**		Date	2023.04.03
Radio frequency engineer		structural engineer		frequ ency band	WIFI:2.4G 5.8G

testing environment

The test was conducted in free space（anechoic chamber）。

Satimo 3D Chamber 6×4×4(m)

gilent 8960 E5515c

twork analyzer-R&S ZVL2.MatchingCircuit

2.1 Test site

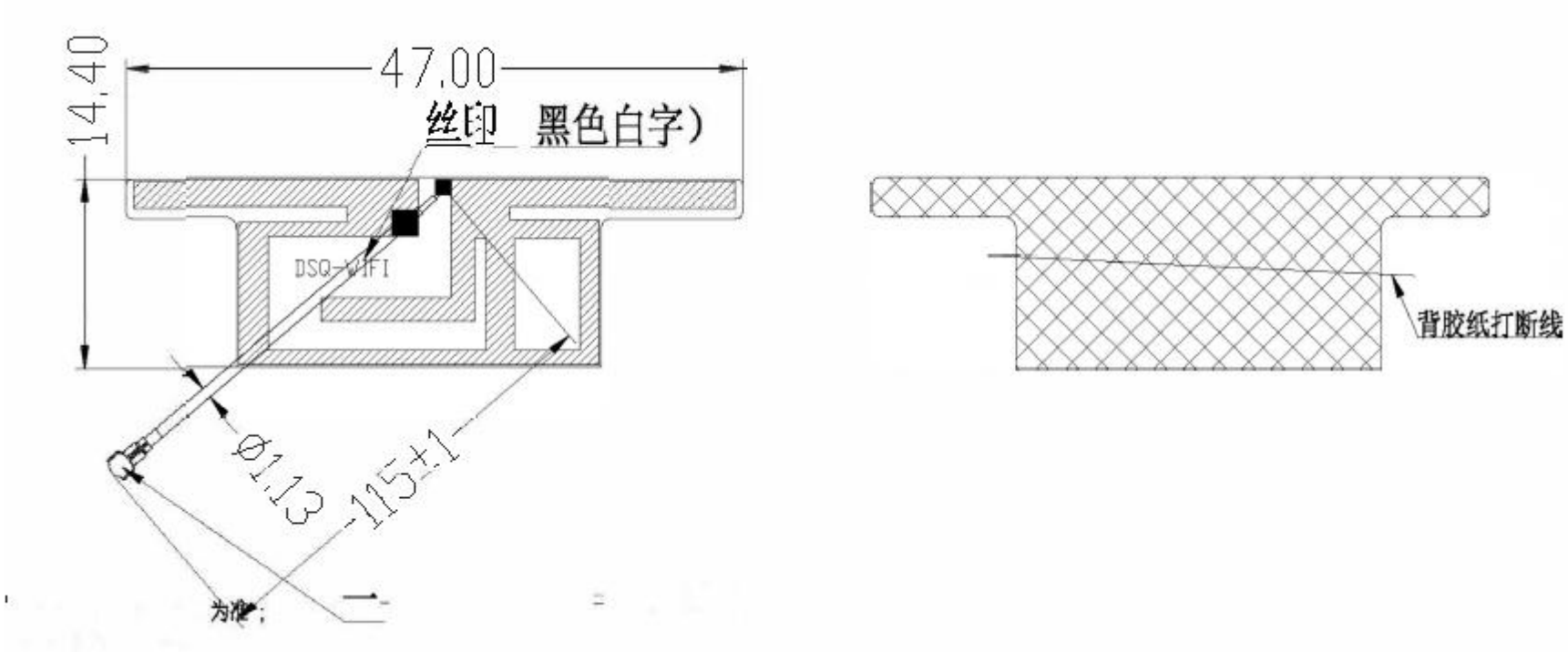
YESHENGTONG microwave anechoic chamber: test frequency range is 400MHz -- 6GHz, static zone range is 50cm circle, reflectance is less than -50 dB。

2.2 Instrument for testing

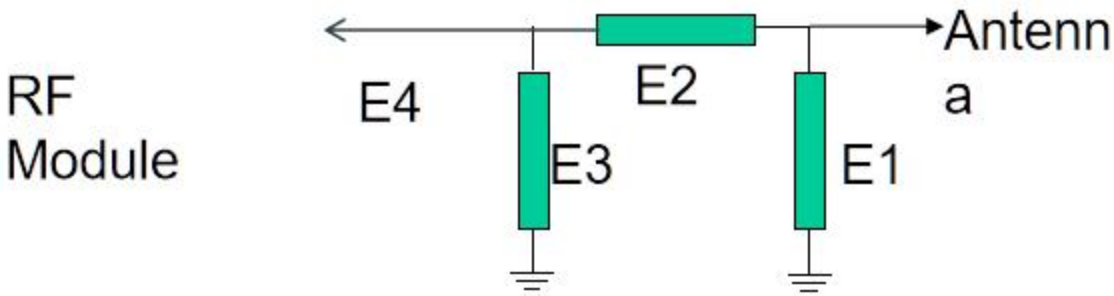
R&S ZVL network analyzer, Agilent8960 E5515C, CMW500, standard horn antenna, French SATIMO-SG18SYSTEM system, printer, etc.

Antenna installation mode

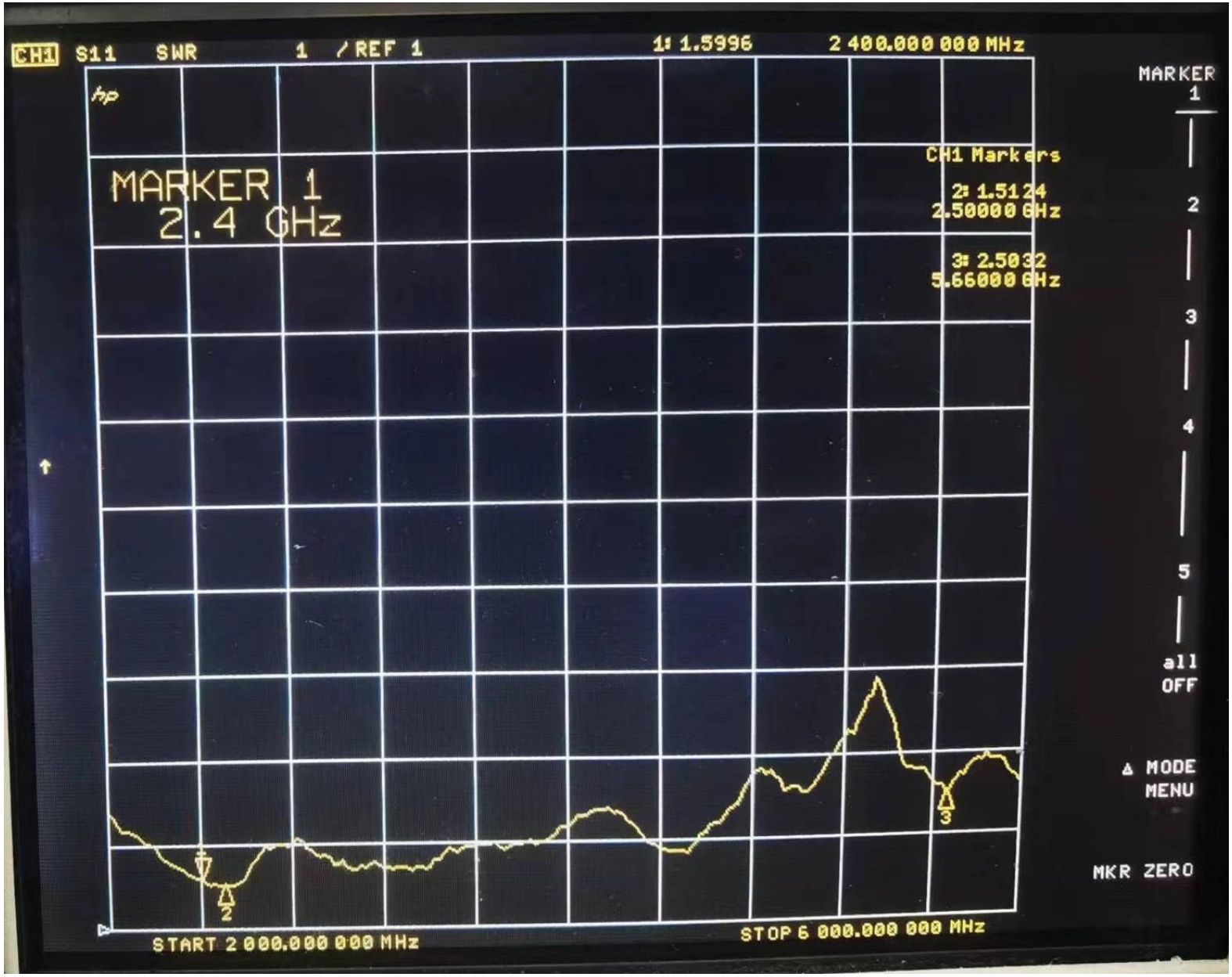
unit： mm



antenna loading coil （The customer original match is unchanged ）



Smith diagram of standing wave return loss of passive test data



2.4G passive test data gain efficiency

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)	-2.72	-2.83	-2.89	-2.95	-3.06	-2.91	-3.01	-3.18	-3.47	-3.29	-2.97
Gain (dBi)	0.78	0.57	0.51	0.55	0.46	0.52	0.26	0.14	0.16	0.51	0.79
Efficiency (%)	53.49	52.10	51.35	50.66	49.40	51.22	50.01	48.03	44.93	46.87	50.43
Directivity (dB)	3.50	3.40	3.40	3.50	3.52	3.43	3.27	3.33	3.64	3.80	3.76
Peak Gain Position (Theta)	92.00	75.00	81.00	79.00	77.00	77.00	77.00	91.00	91.00	91.00	91.00
Peak Gain Position (Phi)	247.00	227.00	236.00	232.00	228.00	224.00	223.00	292.00	293.00	294.00	295.00
Efficiency ThetaPol (%)	51.75	50.36	49.52	48.81	47.53	49.30	48.24	46.24	43.16	45.07	48.59
Efficiency PhiPol (%)	1.74	1.74	1.83	1.85	1.87	1.92	1.77	1.79	1.77	1.80	1.83
Upper Hem. Efficiency (%)	27.91	27.45	27.44	27.34	26.75	27.60	26.56	25.25	23.65	24.98	27.52
Lower Hem. Efficiency (%)	25.59	24.65	23.91	23.32	22.65	23.62	23.45	22.78	21.29	21.89	22.90

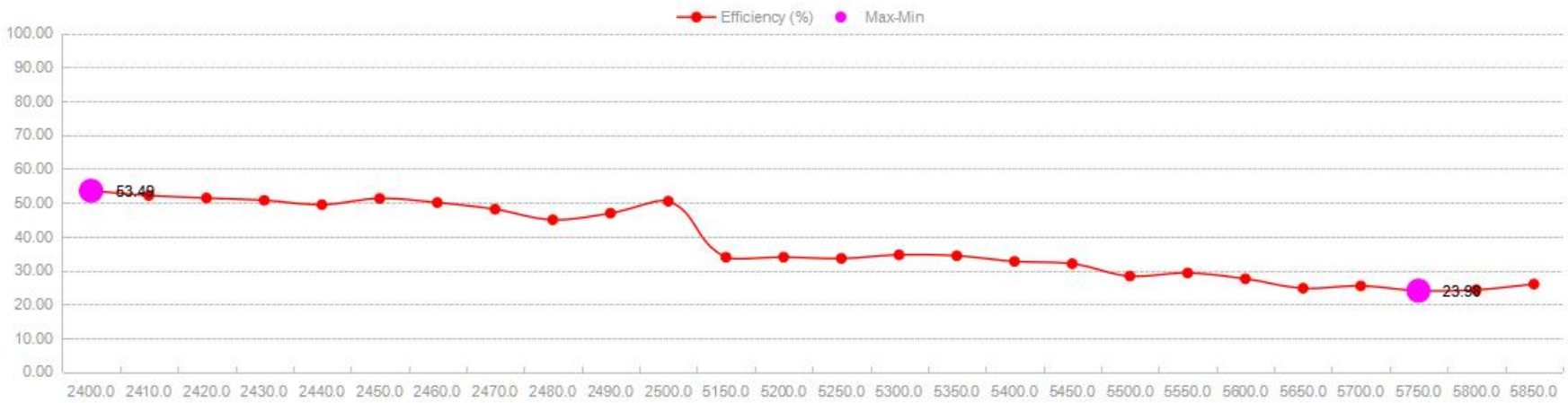
T90(H)圆度	4.78	4.81	4.98	5.34	5.48	5.28	5.07	5.21	5.76	6.03	6.15
Gain 15deg (dBi)											
E1(XZ)波瓣宽度	69.00	71.00	71.00	71.00	70.00	73.00	75.00	76.00	76.00	76.00	76.00
E1(XZ)前后比	5.51	5.92	6.12	5.65	5.16	4.98	5.26	5.70	5.73	5.38	5.01
E2(YZ)波瓣宽度	66.00	66.00	67.00	68.00	68.00	68.00	66.00	65.00	64.00	62.00	61.00
E2(YZ)前后比	5.53	5.76	6.27	6.51	6.68	6.72	6.10	5.40	4.87	4.84	5.33
最大增益处轴比(P)	15.72	14.97	15.17	13.56	12.54	12.94	13.73	27.28	27.21	28.19	29.25
仰角10度最差(大)轴比(P)	64.23	58.47	60.21	57.12	56.58	59.00	69.98	80.38	63.08	68.34	57.59
Hc(XY)波瓣宽度	213.00	216.00	214.00	206.00	202.00	204.00	209.00	208.00	202.00	193.00	191.00
Hc(XY)前后比	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00
左旋圆极化效率(%)	28.24	27.21	27.42	26.75	26.11	27.29	26.33	26.00	24.70	25.83	27.74
右旋圆极化效率(%)	25.25	24.89	23.94	23.91	23.29	23.93	23.68	22.03	20.24	21.04	22.69

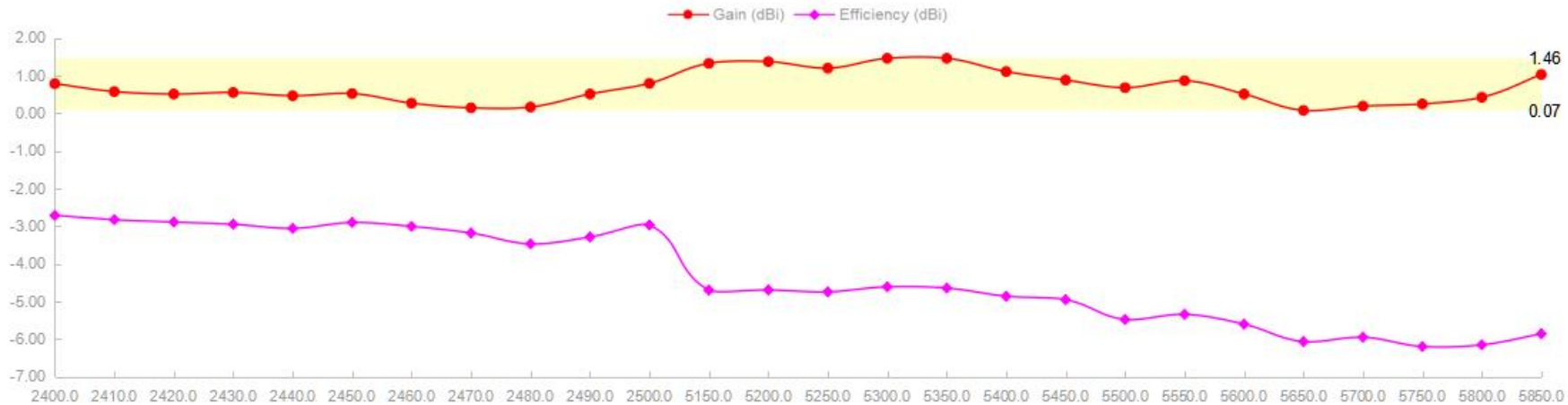
5.8G passive test data gain efficiency

12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
5150.0	**5200.0**	**5250.0**	**5300.0**	**5350.0**	**5400.0**	**5450.0**	**5500.0**	**5550.0**	**5600.0**	**5650.0**	**5700.0**	**5750.0**	**5800.0**	**5850.0**
-4.70	**-4.70**	**-4.75**	**-4.61**	**-4.65**	**-4.86**	**-4.96**	**-5.48**	**-5.35**	**-5.61**	**-6.07**	**-5.95**	**-6.20**	**-6.16**	**-5.86**
1.32	1.37	1.20	1.46	1.46	1.10	0.88	0.68	0.86	0.51	0.07	0.19	0.24	0.42	1.03
33.87	**33.90**	**33.51**	**34.56**	**34.29**	**32.63**	**31.94**	**28.30**	**29.20**	**27.50**	**24.71**	**25.39**	**23.98**	**24.23**	**25.92**
6.03	6.07	5.94	6.07	6.10	5.97	5.84	6.16	6.21	6.11	6.14	6.14	6.45	6.58	6.89
80.00	146.00	146.00	146.00	146.00	146.00	143.00	32.00	29.00	144.00	145.00	144.00	144.00	144.00	144.00
35.00	69.00	67.00	69.00	71.00	69.00	45.00	121.00	117.00	46.00	48.00	49.00	52.00	54.00	59.00
23.21	23.18	22.92	23.80	23.44	22.02	21.19	18.49	18.70	17.18	15.12	15.39	14.43	14.48	15.44
10.66	10.71	10.60	10.76	10.85	10.61	10.76	9.81	10.50	10.32	9.59	10.00	9.55	9.75	10.49
18.32	18.38	18.57	19.27	19.42	18.63	18.46	16.47	16.86	15.60	13.95	14.23	13.09	13.03	13.62
15.55	15.52	14.94	15.29	14.87	14.00	13.48	11.83	12.34	11.90	10.76	11.16	10.89	11.20	12.30

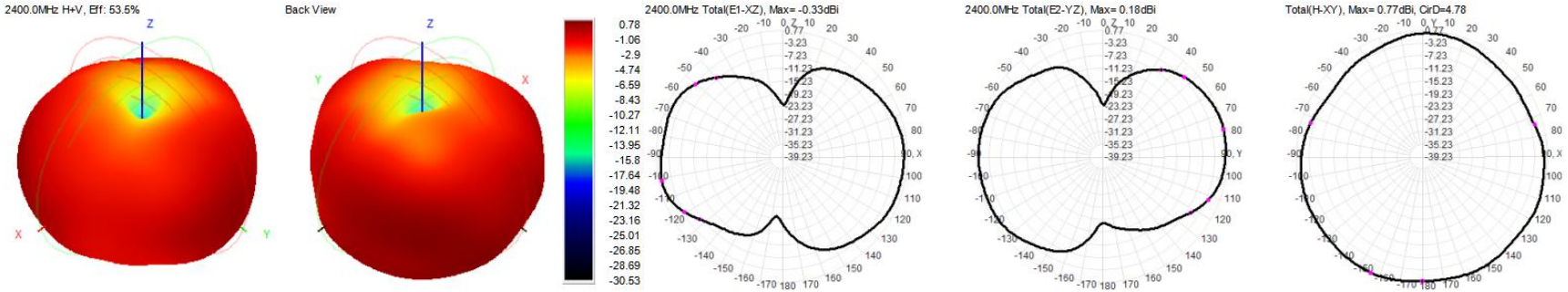
18.83	17.14	15.65	15.15	13.73	12.95	14.20	15.41	12.93	12.32	10.90	10.88	11.99	11.43	11.45
50.00	58.00	24.00	23.00	23.00	22.00	23.00	23.00	23.00	44.00	44.00	47.00	36.00	33.00	33.00
1.67	0.33	2.62	2.39	2.63	2.84	1.84	2.21	1.97	0.35	0.28	1.17	1.22	2.42	2.17
33.00	34.00	38.00	32.00	31.00	31.00	30.00	47.00	47.00	43.00	36.00	33.00	32.00	31.00	29.00
0.00	0.00	0.09	0.17	0.31	0.56	0.92	0.34	0.47	0.29	0.00	0.00	0.06	0.08	0.19
42.56	4.88	16.44	13.87	12.62	12.96	25.38	13.02	11.15	31.43	24.68	20.43	17.18	16.45	14.13
75.02	68.18	55.71	64.91	73.12	82.01	71.60	49.03	48.32	51.85	48.86	53.77	56.91	51.77	50.91
38.00	38.00	54.00	53.00	55.00	60.00	42.00	40.00	60.00	56.00	51.00	47.00	47.00	46.00	48.00
0.60	0.57	0.46	0.27	0.24	0.19	0.15	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.84	18.06	16.90	17.21	16.86	15.99	15.67	16.24	17.12	13.37	12.28	12.82	12.23	12.44	13.22
15.03	15.84	16.62	17.35	17.43	16.64	16.27	12.05	12.08	14.13	12.43	12.56	11.75	11.79	12.71

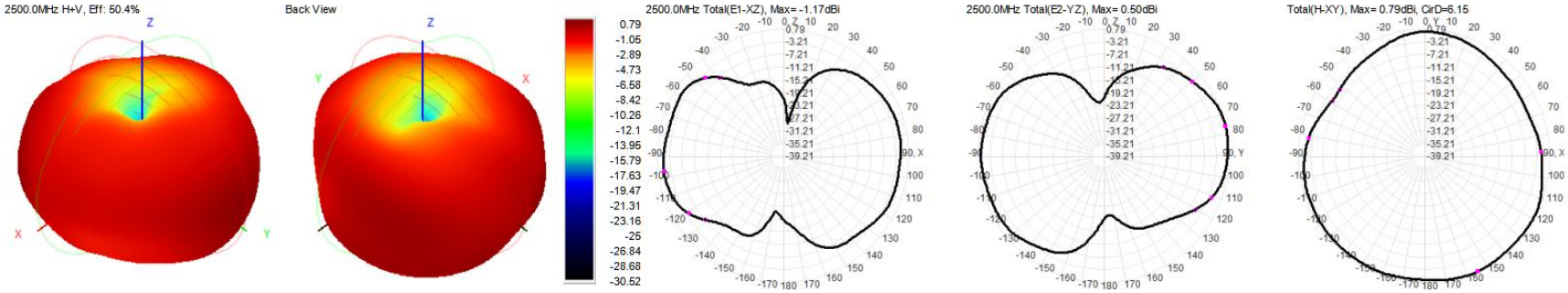
Curve of passive test data

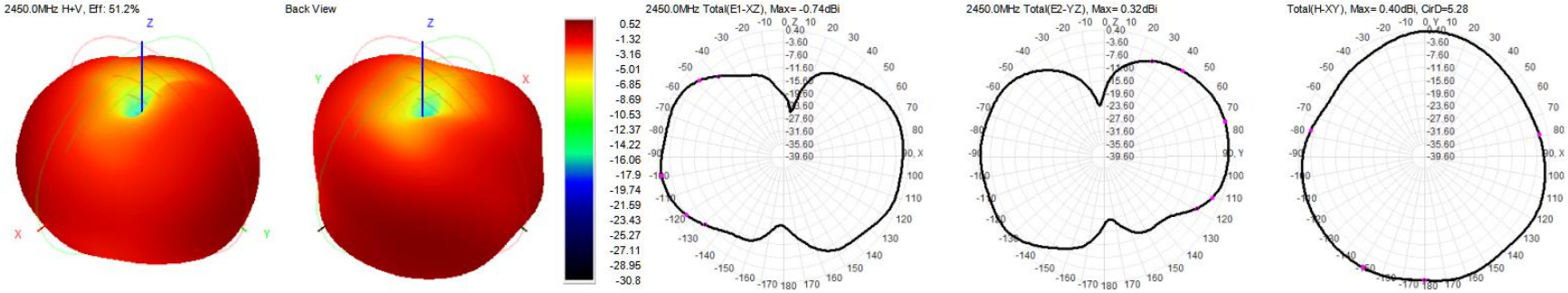
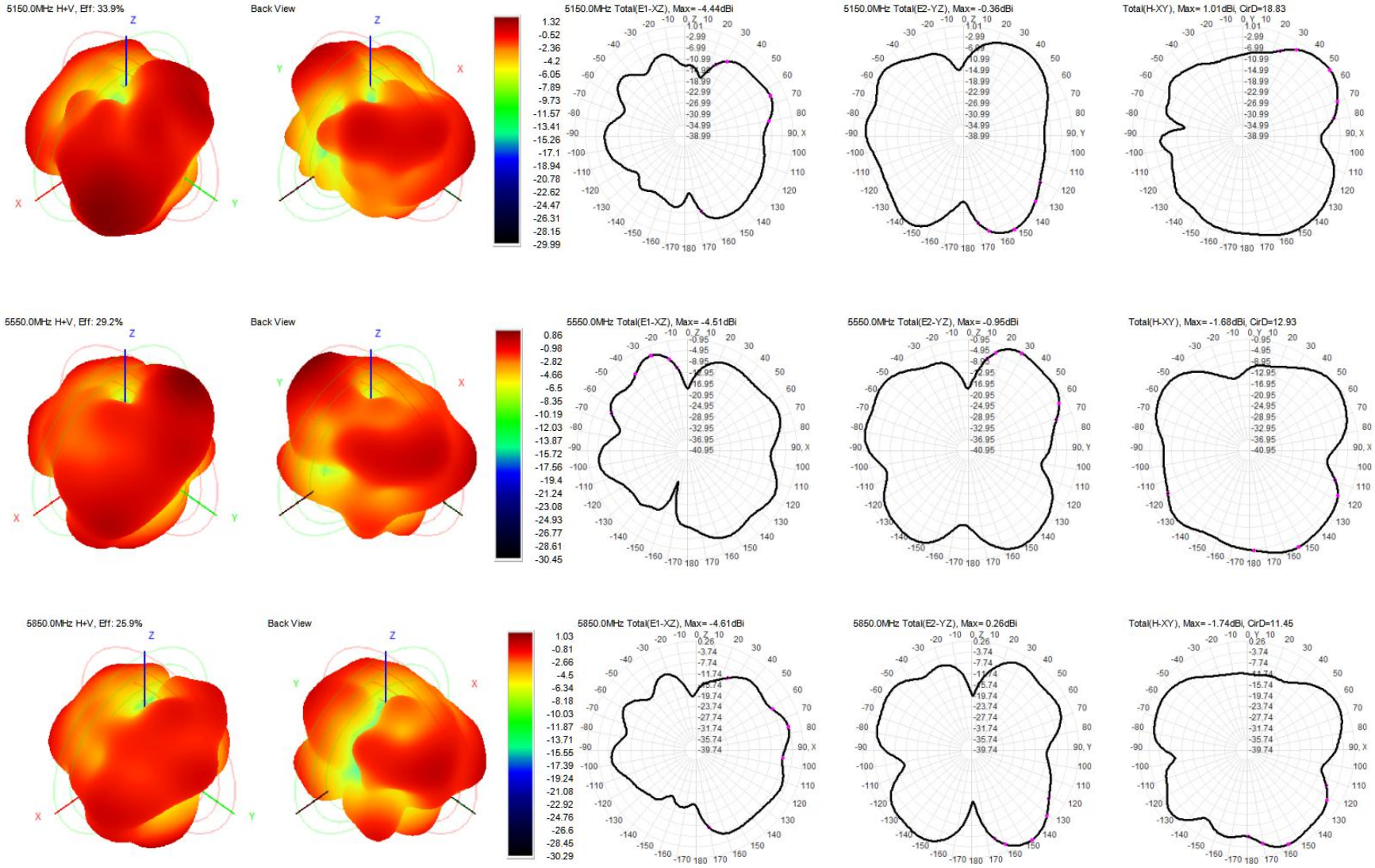




2.4G 3D diagram of passive test data







5.8G 3D diagram of passive test data