



Dongguan Hengxin Electronic Technology Co., Ltd.

SPECIFICATION FOR APPROVAL

Customer :

Product Nam:

4G FPC integrated antenna

part number :

HX-P652-U. FL4

Sample delivery

2025. 11. 05

date:

Mark	Check	Sample delivery person	Datelanded
	Zhao Shougang	Gong Yinming	2025.11.05

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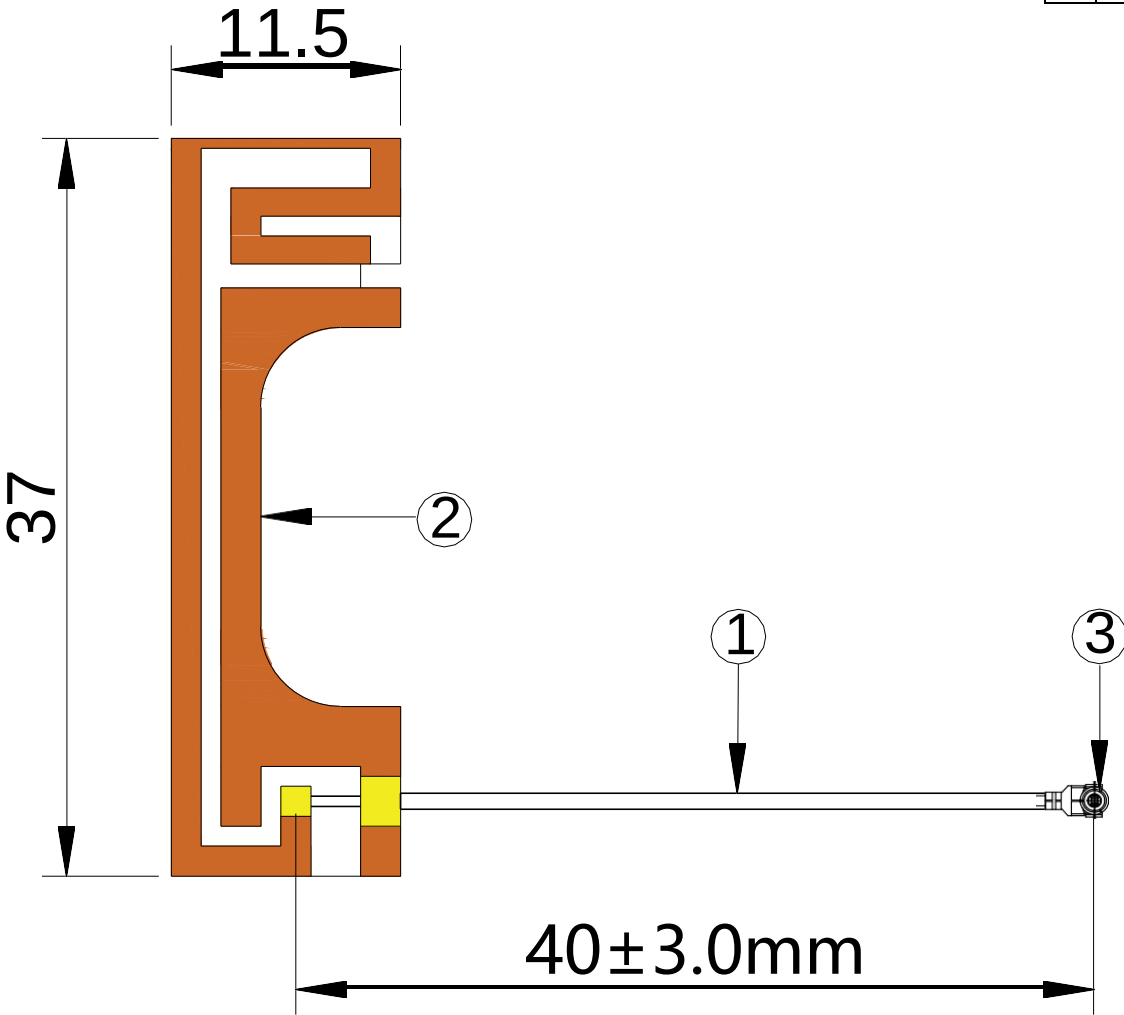
Http://www.nogps.com

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RoHS
Compatible

序号	日期	原因	确认人
B			
C			
D			



Fourth generation
terminal

3	HX-CI-UFL-01	Connector	U.FL4 Connector	1
2	HX-P652	FPC	37*11.5*0.25mm	1
1	HX-CB-0.81B	Coaxial Cable	SHOWA-O.D. 0.81mm	1
No.	Part Number	Name	Material	Q'ty
	1	2	3	4

Dongguan Hengxin Electronic Technology Co., Ltd.				
PART NAME: 4G FPC				
PART NO.:HX-P652			DATE: 2025-11-05	
APPROVED BY	CHECKED BY	DESIGNED BY	UNITS: mm SCALE: 1/1 REVISION: A	Tolerance
				X.X ±0.50
				X.XX±0.15
				X° ±3°
	6	7		8

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- 2. Specification**
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1. Reliability Testing

Test Item	Procedure	Requirement
1. Visual inspection and Dimension Check	Applicable methods using x5 magnification	follow specification
2. Rapid Changing of Temperature	-40°C (30minutes) to 90°C (30minutes); 24 cycles	After 2 hours recovery: 1. no visible damage 2. Freq. Tol.: < ±5%
3. Damp Heat	24 hours at 60°C; 90 ~ 95% RH	After 2 hours recovery: 1. no visible damage 2. Freq. Tol. : < ±5%
4. Endurance	24 hours at 90°C	After 2 hours recovery: 1. no visible damage 2. Freq Tol.: < ±5%

Specification

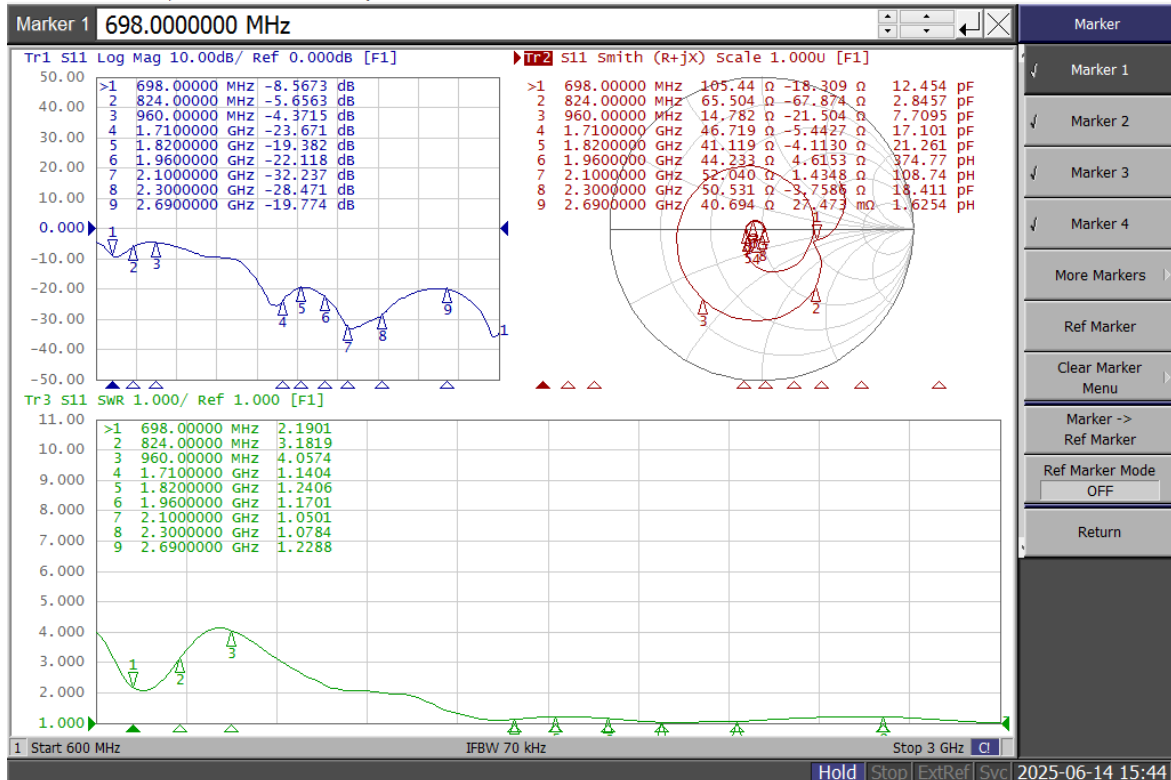
A. Electrical Characteristics	
Working Frequency	800/900/1800/1900/2300~2700MHz
V.S.W.R.	< 2.0 @
Typical Antenna Gain	Peak Gain : 2 ± 0.5 dBi Average Gain : 2 ± 0.5 dBi
Polarization	Linear\Horizontal
Impedance	50 Ohm
B. Material & Mechanical Characteristics	
Material of Radiator	Spring Line
Material of Plastic	Body:FPC
Material of Coaxial Cable	0.81
Connector Type	U.FL4
C. Environmental	
Operation Temperature	- 30 °C ~ + 85 °C
Storage Temperature	- 30 °C ~ + 85 °C

2. S Parameter Test Data

E5071C Network Analyzer

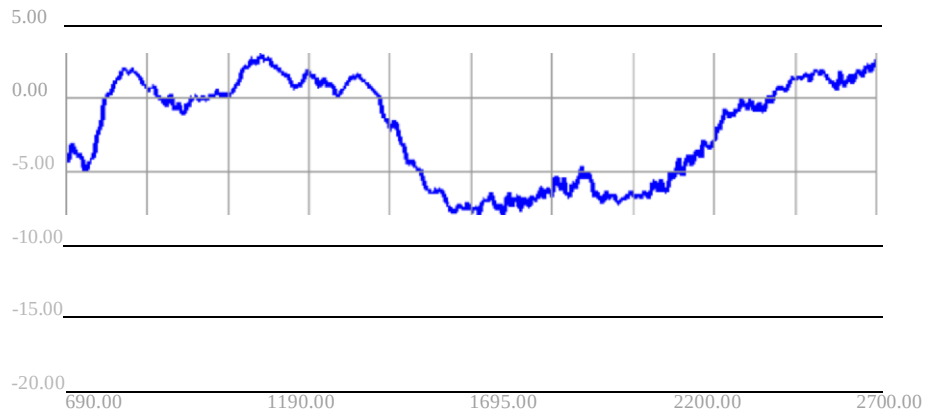
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State

Resize

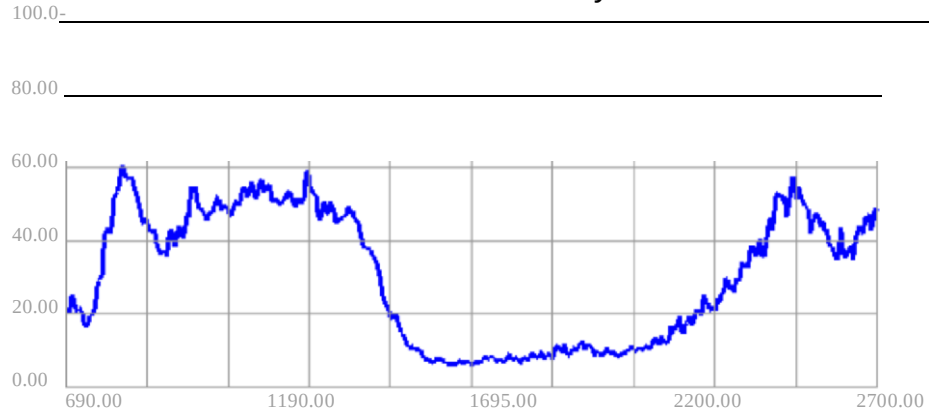


Passive Test For 4G全													
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	irectivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)	
690	20.18	-6.95	-4.44	-6.59	9.308	10.876	-4.44	-13.67	2.51	30	35.05	35.37	
695	20.33	-6.92	-4.33	-6.48	9.405	10.926	-4.33	-13.85	2.59	30	35.04	35.46	
700	21.09	-6.76	-3.95	-6.1	9.678	11.41	-3.95	-14.49	2.8	30	34.99	35.35	
750	19.53	-7.09	-4.26	-6.41	9.341	10.184	-4.26	-14.72	2.84	15	37.08	36.27	
800	42	-3.77	0.19	-1.96	21.377	20.622	0.19	-10.01	3.96	15	38.39	37.99	
850	57.4	-2.41	1.79	-0.36	24.385	33.013	1.79	-15.66	4.2	15	38.4	37.98	
900	42.24	-3.74	0.61	-1.54	16.17	26.072	0.61	-19.27	4.35	15	38.49	38.52	
950	43.26	-3.64	0.21	-1.94	17.748	25.509	0.21	-11.49	3.85	15	38.58	38.98	
1200	50.98	-2.93	2.22	0.07	18.479	32.5	2.22	-12.44	5.14	0	41	41.17	
1205	50.38	-2.98	2.01	-0.14	18.297	32.082	2.01	-11.91	4.99	15	41.07	41.31	
1210	51.44	-2.89	2.08	-0.07	18.564	32.874	2.08	-11.33	4.97	45	41.19	41.26	
1215	50.59	-2.96	2.02	-0.13	18.112	32.477	2.02	-13.13	4.98	0	41.26	41.22	
1220	50.05	-3.01	1.85	-0.3	18.066	31.984	1.85	-15.42	4.86	0	41.37	41.37	
1225	49.8	-3.03	1.6	-0.55	18.365	31.431	1.6	-18.16	4.63	0	41.59	41.48	
1230	51.46	-2.89	1.59	-0.56	19.189	32.272	1.59	-20.52	4.48	0	41.73	41.46	
1235	51.14	-2.91	1.47	-0.68	19.001	32.143	1.47	-19.34	4.35	0	41.77	41.55	
1240	53.34	-2.73	1.52	-0.63	19.772	33.573	1.52	-16.13	4.24	0	42.04	41.73	
1245	53.29	-2.73	1.26	-0.89	19.909	33.379	1.26	-13.52	3.99	0	42.42	41.78	
1250	51.66	-2.87	0.88	-1.27	19.297	32.363	0.88	-11.45	3.75	0	42.52	41.92	
1280	51.83	-2.85	1.21	-0.94	18.562	33.266	1.21	-11.18	4.06	15	43.79	43.39	
1285	58.09	-2.36	1.73	-0.42	20.846	37.248	1.73	-11.26	4.09	15	44.27	43.33	
1290	58.94	-2.3	1.86	-0.29	21.383	37.561	1.86	-11.67	4.15	0	44.3	43.41	
1295	54.85	-2.61	1.51	-0.64	20.1	34.752	1.51	-12.73	4.12	0	43.98	43.57	
1300	53.37	-2.73	1.46	-0.69	19.498	33.872	1.46	-13.42	4.19	0	43.9	43.43	
1305	52.6	-2.79	1.44	-0.71	19.23	33.37	1.44	-13.93	4.23	0	43.85	42.99	
1310	51.96	-2.84	1.37	-0.78	19.289	32.675	1.37	-15.66	4.22	0	43.67	42.79	
1315	46.2	-3.35	0.79	-1.36	17.62	28.582	0.79	-17.73	4.15	0	43.22	42.77	
1320	45.75	-3.4	0.73	-1.42	17.721	28.032	0.73	-19.37	4.13	0	42.89	42.68	
1325	48.26	-3.16	1.12	-1.03	18.754	29.504	1.12	-22	4.28	0	42.86	42.53	
1330	50.58	-2.96	1.33	-0.82	19.71	30.866	1.33	-22.24	4.29	0	42.87	42.46	
1335	47.65	-3.22	0.96	-1.19	18.513	29.14	0.96	-30.02	4.18	0	42.78	42.59	
1340	47.32	-3.25	0.72	-1.43	18.36	28.958	0.72	-30.49	3.97	0	42.62	42.66	
1350	49.1	-3.09	0.88	-1.27	18.29	30.814	0.88	-24.07	3.97	0	42.92	42.81	
1390	49.23	-3.08	1.05	-1.1	17.4	31.833	1.05	-14.73	4.13	30	42.86	42.97	
1395	47.95	-3.19	1.27	-0.88	16.74	31.213	1.27	-19.2	4.46	30	42.69	43.08	
1400	48	-3.19	1.49	-0.66	16.88	31.123	1.49	-24.5	4.67	30	42.52	42.99	
1405	45.84	-3.39	1.34	-0.81	16.412	29.429	1.34	-24.98	4.73	30	42.64	42.78	
1410	45.62	-3.41	1.42	-0.73	16.472	29.145	1.42	-20.57	4.83	30	42.71	42.78	
1415	44.71	-3.5	1.56	-0.59	16.165	28.549	1.56	-17.71	5.06	30	42.73	43.11	
1420	41.64	-3.81	1.34	-0.81	15.21	26.427	1.34	-16.06	5.14	30	42.59	42.98	
1425	39.3	-4.06	1.18	-0.97	14.725	24.575	1.18	-14.35	5.24	30	42.67	42.73	
1430	37.75	-4.23	1.03	-1.12	14.513	23.24	1.03	-15.36	5.26	30	42.74	42.76	
1435	38.35	-4.16	1.04	-1.11	14.955	23.399	1.04	-17.07	5.2	30	42.82	43	
1500	18.83	-7.25	-2.02	-4.17	8.259	10.57	-2.02	-20.35	5.23	0	43.71	42.94	
1600	6.9	-11.61	-6.57	-8.72	3.058	3.838	-6.57	-20.86	5.04	0	42.61	42.8	
1700	6.51	-11.86	-7.65	-9.8	3.163	3.352	-7.65	-27.8	4.21	0	42.01	42.42	
1800	7.94	-11	-7.02	-9.17	3.902	4.039	-7.02	-26.18	3.98	0	43.68	43.04	
1900	9.43	-10.25	-5.99	-8.14	5.165	4.267	-5.99	-24.08	4.26	75	42.99	42.97	
2000	8.73	-10.59	-6.73	-8.88	4.711	4.02	-6.73	-21.23	3.86	90	43.86	42.9	
2005	9.94	-10.03	-6.36	-8.51	5.348	4.588	-6.36	-21.73	3.66	135	43.64	43.17	
2100	10	-10	-6.79	-8.94	4.954	5.043	-6.79	-22.51	3.21	120	42.77	43.01	
2150	13.67	-8.64	-5.67	-7.82	6.757	6.914	-5.67	-18.96	2.97	120	42.54	42.65	
2210	19.25	-7.16	-4.18	-6.33	9.463	9.784	-4.18	-20.48	2.97	45	43.9	43.59	
2300	20.87	-6.81	-2.8	-4.95	10.014	10.852	-2.8	-16.33	4.01	0	44.94	44.83	
2400	35.83	-4.46	-0.97	-3.12	16.879	18.949	-0.97	-21.73	3.49	0	45.1	45.07	
2500	51.37	-2.89	1.18	-0.97	25.65	25.724	1.18	-11.8	4.07	75	45.47	45.4	
2600	34.73	-4.59	0.53	-1.62	17.76	16.969	0.53	-17.23	5.12	60	44.57	44.68	
2650	42.02	-3.77	1.63	-0.52	20.35	21.67	1.63	-22.11	5.4	0	45.36	45.28	
2655	43.86	-3.58	1.87	-0.28	21.005	22.851	1.87	-21.1	5.45	0	45.5	45.42	
2660	42.19	-3.75	1.59	-0.56	20.119	22.072	1.59	-19.87	5.34	0	45.61	45.44	
2665	41.9	-3.78	1.41	-0.74	19.981	21.92	1.41	-18.48	5.18	0	45.84	45.59	
2670	45.89	-3.38	1.84	-0.31	21.82	24.073	1.84	-16.97	5.22	30	46.08	45.83	
2675	46.69	-3.31	2.11	-0.04	22	24.691	2.11	-16.09	5.42	30	46.01	45.8	
2680	47.16	-3.26	2.25	0.1	22.034	25.122	2.25	-15.32	5.51	15	46.11	45.86	
2685	42.72	-3.69	1.77	-0.38	19.87	22.855	1.77	-15.33	5.46	30	45.84	45.56	
2690	45.49	-3.42	2.01	-0.14	20.997	24.488	2.01	-16.08	5.43	30	46.15	45.89	
2695	48.87	-3.11	2.44	0.29	22.236	26.63	2.44	-17.04	5.55	30	46.49	46.23	
2700	47.91	-3.2	2.44	0.29	21.652	26.256	2.44	-18.31	5.64	0	46.62	46.29	

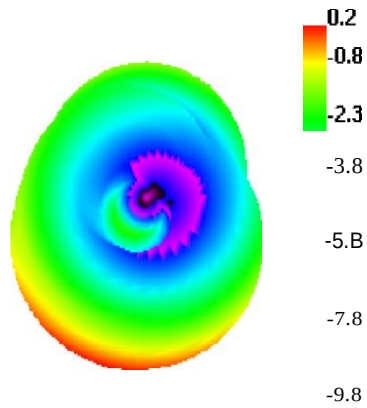
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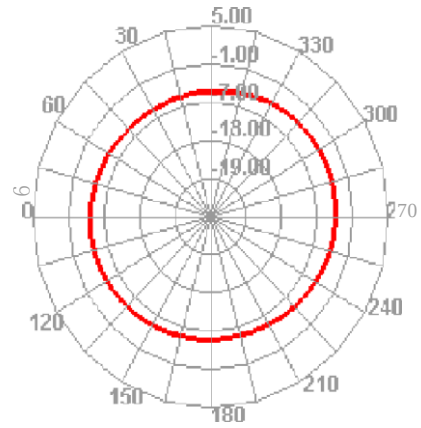
690.00MHz - 2700.00MHz Efficiency



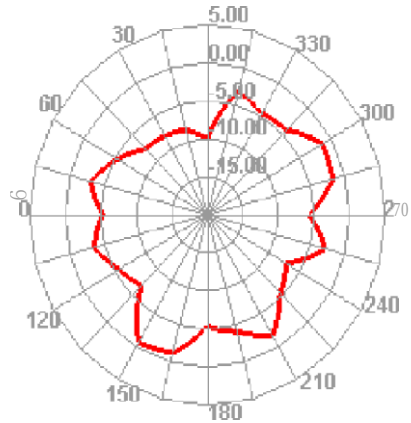
800.000MHz



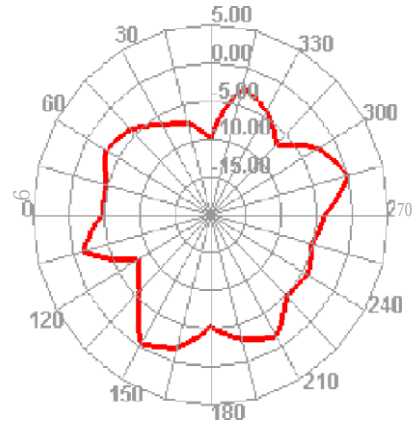
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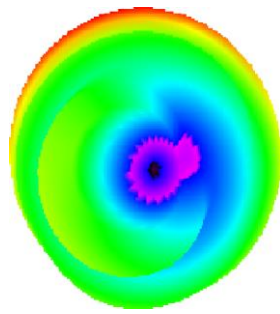
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800.000MHz E:2

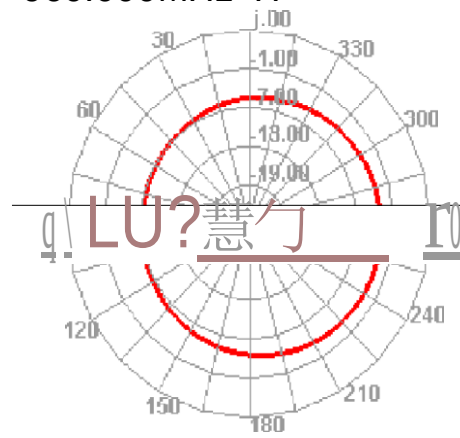


960.000MHz

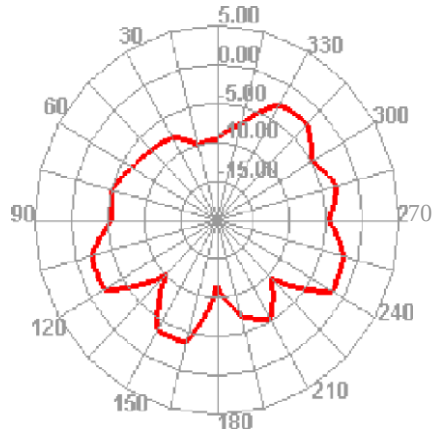


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-3.4
-4.9
-6.9
-8.9
-10.9

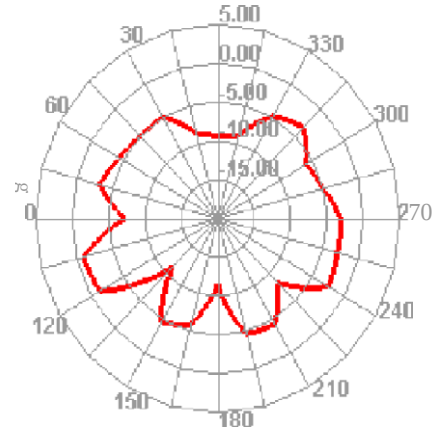
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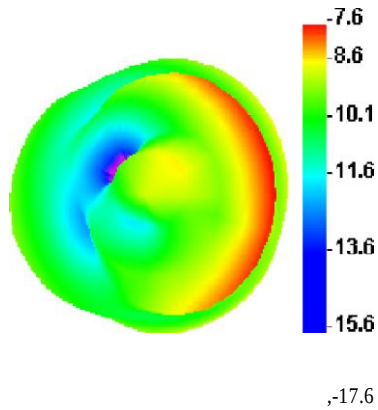
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960.000MHz E:2

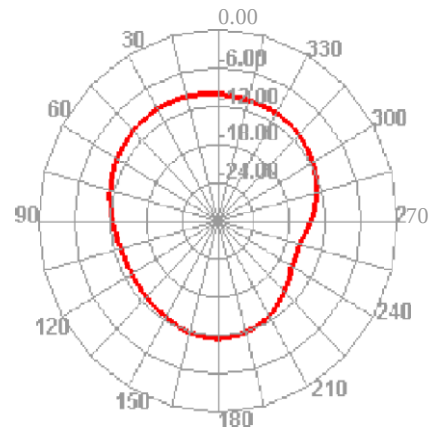


1700.000MHz

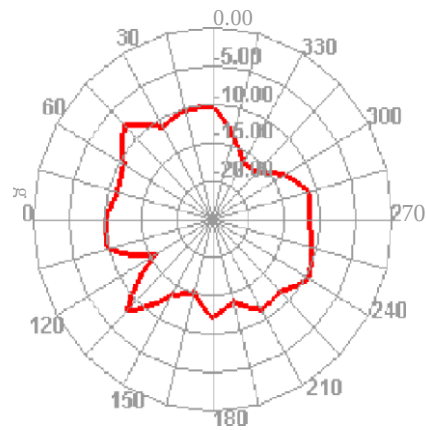


-7.6
-8.6
-10.1
-11.6
-13.6
-15.6
-17.6

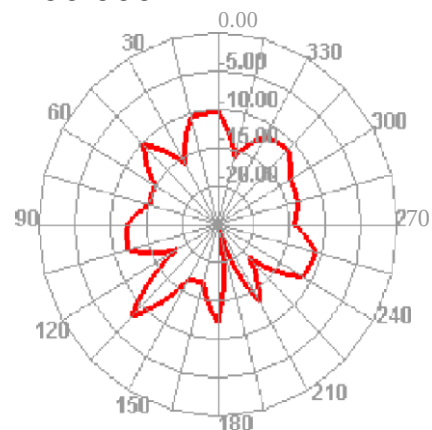
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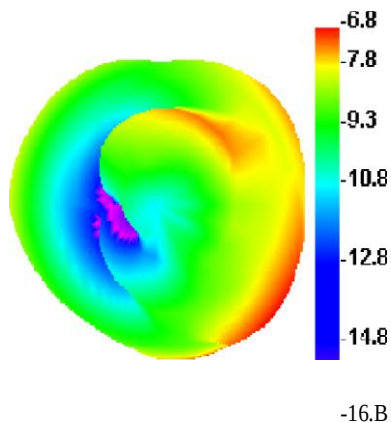
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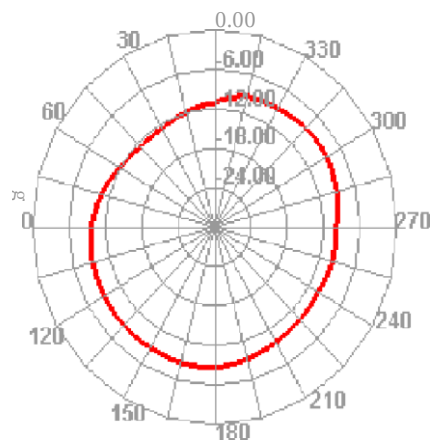
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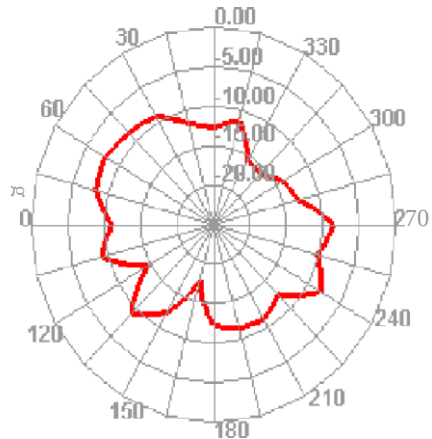
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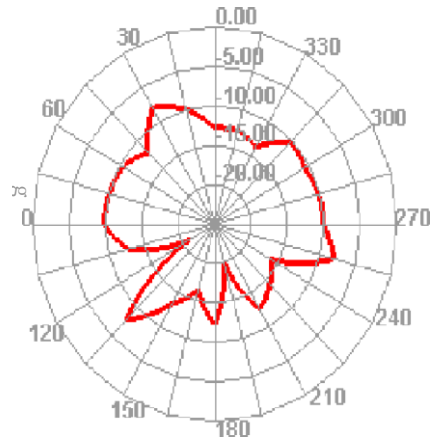
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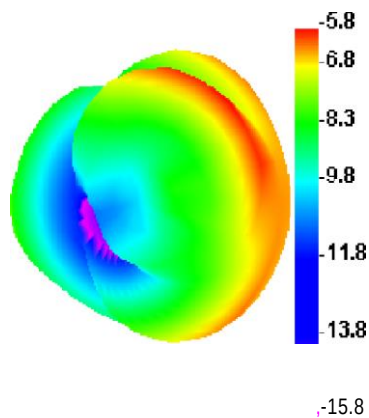
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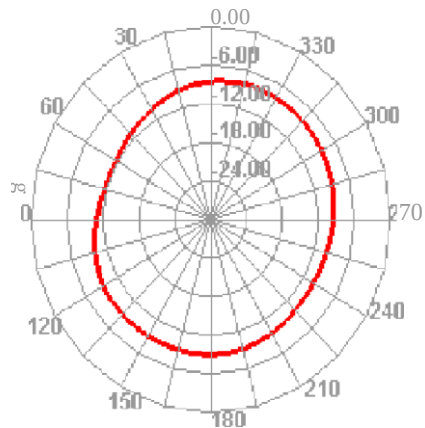
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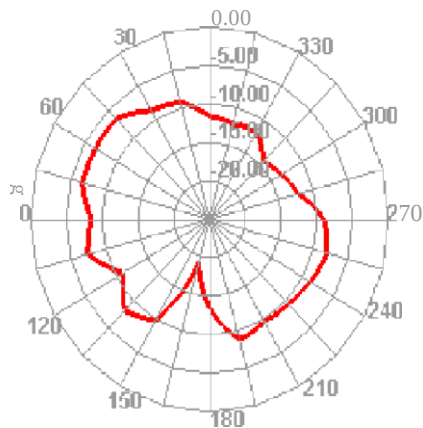
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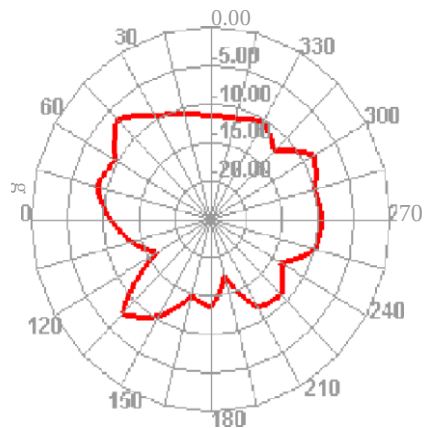
1950.000MHz H



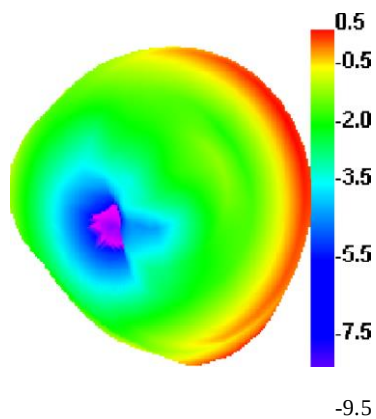
1950.000MHz E1



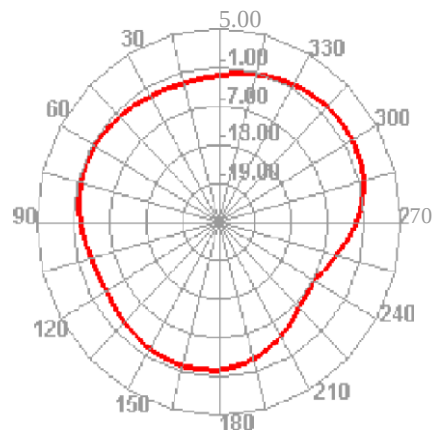
1950.000MHz E2



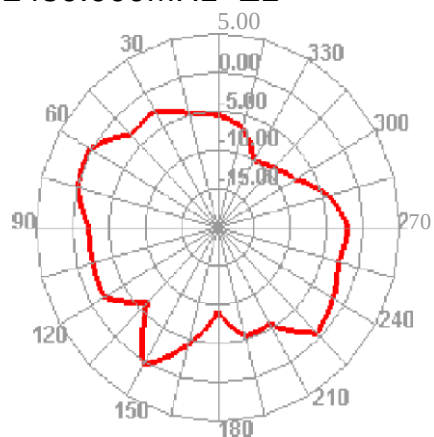
2450.000MHz



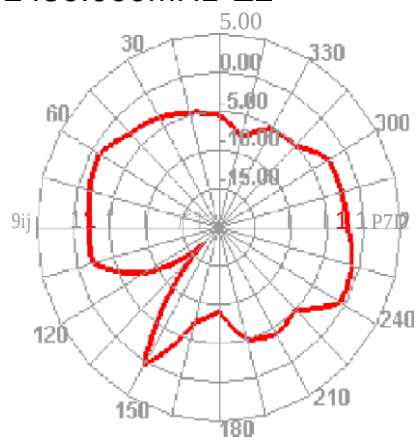
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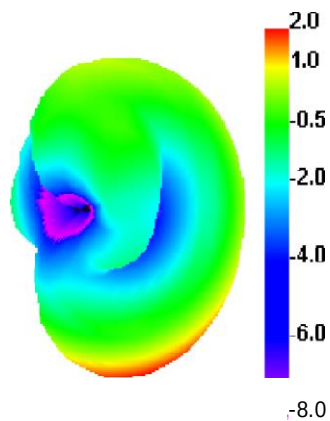
2450.000MHz E1



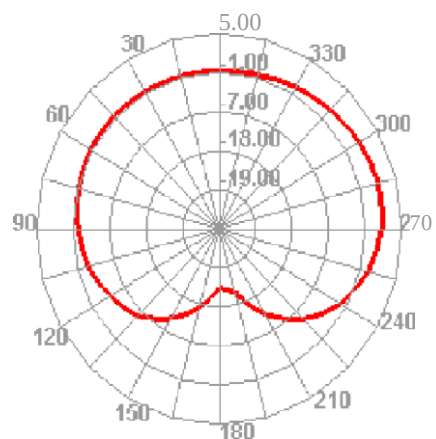
2450.000MHz E2



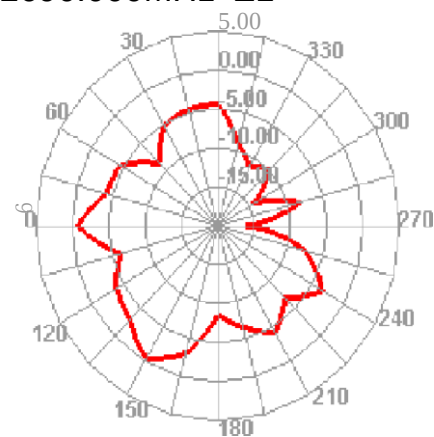
2690.000MHz



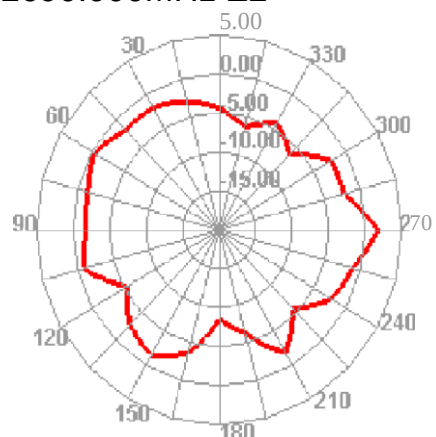
2690.000MHz H



2690.000MHz E1



2690.000MHz E2



3. Antenna Radiation Pattern

Testing Equipment Specification:

Antenna Anechoic Chamber Dimension: 8 x 4 x 4 m

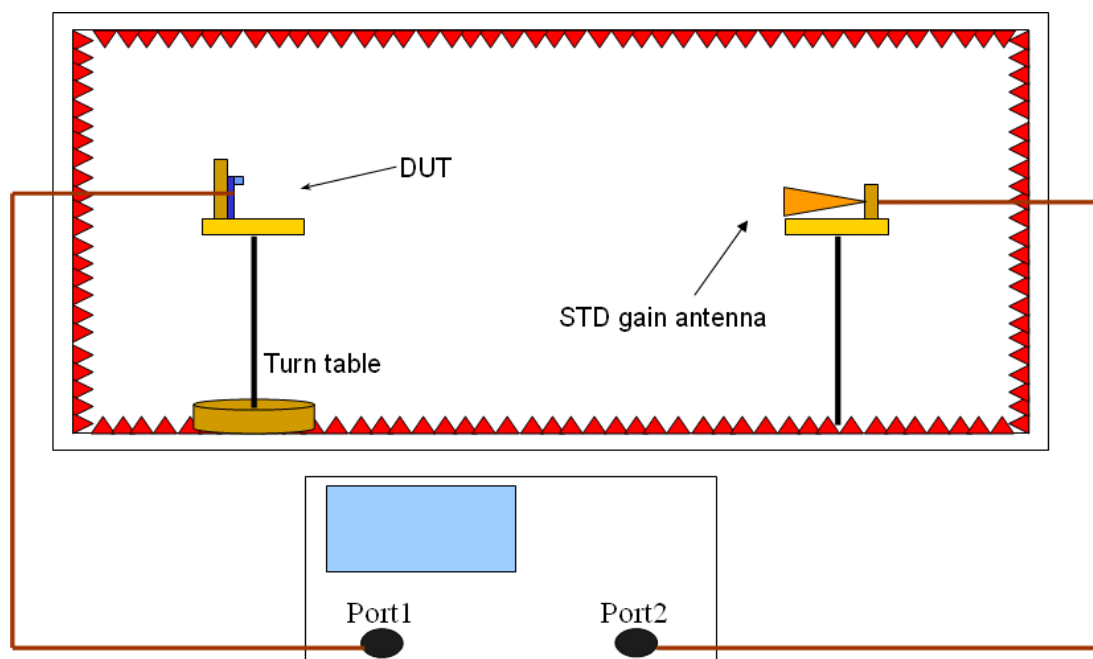
Quiet Zone: 600mm @1 GHz

Isolation: >100dB @ 1 MHz ~ 10 GHz

Testing Equipment: Agilent 5071B

Received Antenna: 0.7 ~ 6.0 GHz for Gain Calibration

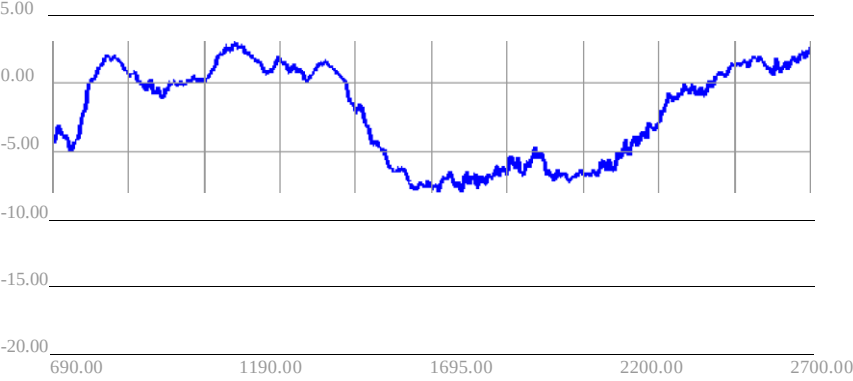
Double Ridged Horn Antenna



Product Specification			
Type	RF-0.81	part number P/N	
Structure drawing			
Structure characteristics			
Structure	Item	Standard value	
1. Inner conductor	Material	Silverplated copper wire	
	Makeup:total / O.D. of every	7/0.05±0.005	
	(Intertwist)NOM. O.D. (mm)	0.15±0.01	
2. Insulation	Material	FEP	
	Color	Natural	
	Dia. (approx)	0.41±0.03	
3. Outer conductor	Material	Tinned copper	
	Type	Weaving	
	Makeup:total / O.D. of every wire(mm)	8/5/0.05±0.005	
	Dia. (approx)	0.60±0.03	
	Coverage ratio(%)	90%±5	
4. Jacket	Material	FEP	
	Color	Black, White, Gray, or upon request	
	Dia. (approx)	0.81±0.05	
Concentricity (Inner conductor and Insulation)		≥90%	
Electrical characteristics			
Characteristic impedance (Ω)		50±3.0	
Standing wave ratio		≤1.4@0~6GHz	
Max. operating frequency(MHz)		6000	
Dielectric strength between inner and outer conductor		AC 1000V for 1min	
Capacitance(pF/m)		98	
Tensile strength(kgf/mm ²)		1.76	

Frequency	Standard value(dB/1m)
1GHz	≤ 3.6
2GHz	≤ 5.1
3GHz	≤ 6.2
4GHz	≤ 7.5
5GHz	≤ 8.5
6GHz	≤ 9.4
Dependability	
Item	Standard value
Min.bending radius static (mm)	4
Operating temperature (℃)	-55~+200
Storage environment	Temperature: Below 30℃; Humidity: 20% to 65%
The best save cycle	The effectiveness of tin decreases after 2 months or more, but the electrical properties remain unaffected. After stripping in hot and humid summer conditions, the material needs to be transferred as quickly as possible.
Processing temperature	It can withstand the conditions of 250℃~260℃ for a short period; however, above 300℃, there will be a phenomenon of thermal decomposition.
Teflon Shrink	Insulating layer: $\leq 0.2\text{mm}$; Coating layer: $\leq 0.3\text{mm}$
Packing	
Standard unit for the 1000m/reel length of packaging, each set up to allow 5 joints, the joint shortest length of 10m, The finished cable shall be packed not be damaged during transportation .	
Others	
Special processing technology, please use after consultation with the supplier .	

690.00MHz - 2700.00MHz Gain



690.00MHz - 2700.00MHz Efficiency

