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Shenzhen Qianmu Communication Technology Co., LTD

Shenzhen Qianmu Communication Technology Co., Ltd.

Focus on antenna solution, design and production

Client: Hegson

project :

Date: November 15, 2024

Frequency: XU JUN JIE



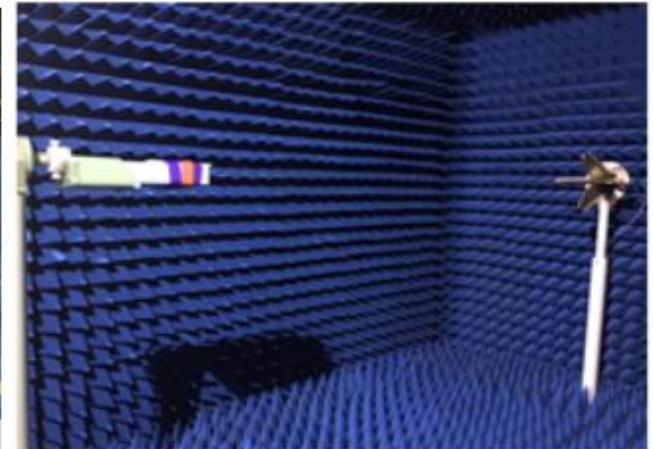
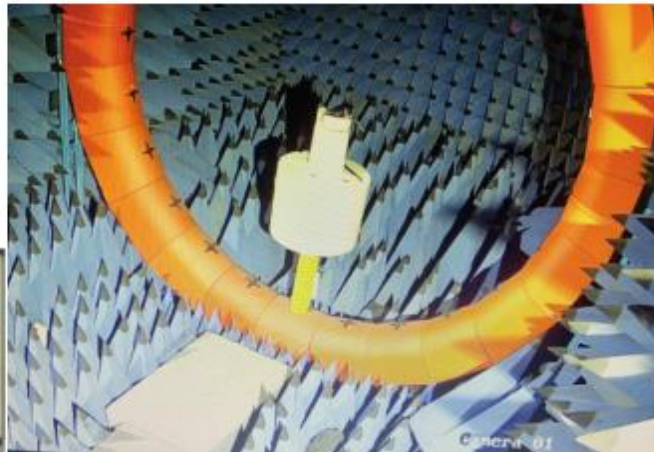
catalogue

1. testing environment
2. Instructions for debugging records of previous tests
3. Description of matching circuit
4. Source test data
5. Conduct test data
6. Call current sound simulation test
7. Environmental handling instructions
8. GPS/WIFI/BT passive parameters
9. GPS/WIFI/BT test results
10. sum up



testing environment

	test item	equipment
1. Parameter S (S-parameter)	1. Return loss (log Mag) 2. Voltage standing wave ratio (SWR)	Network analyzer: Agilent E5071B × 2 HP 8753D PROTEK A338
2. Active test (Active)	1. Transmission power (TRP) 2. Acceptance sensitivity (TIS) 3.frequency error 4.Screen off, screen on	1. Darkroom: Feitu 7x4x3 m (24 probes 3D) Chamber ETS 5x3x3 m (3D) Chamber 2. Comprehensive tester: Agilent 8960 × 2 CMW500 ×3/CMU200
3.Non-source testing (Passive)	1. Antenna gain (Gain) 2. Antenna efficiency (Efficiency)	1. Darkroom: Feitu 7x4x3 m (24 probes 3D) Chamber ETS 5x3x3 m (3D) Chamber 2. Network analyzer: Agilent E5071B





Instructions for debugging records of previous tests

date	edition	Edition	Debugging record description
2025.04.05	A		Debug the prototype

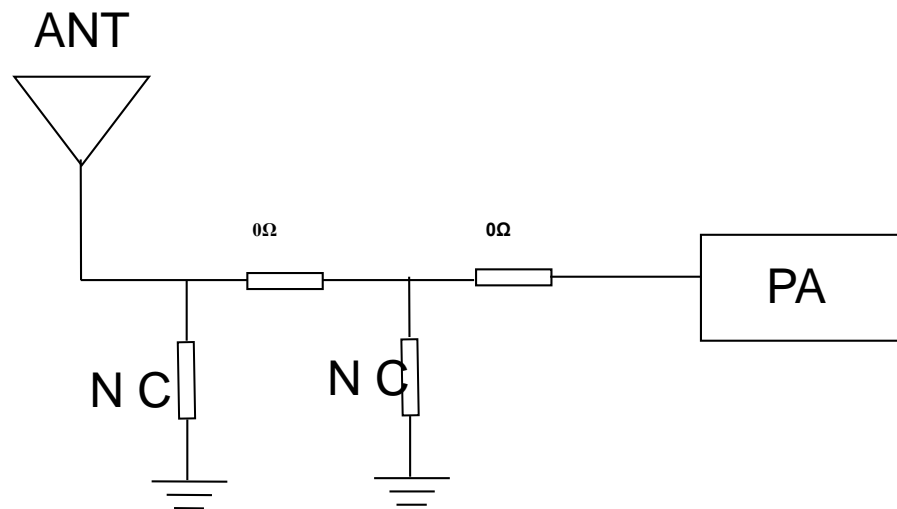


Machine debugging instructions

type	projector						
Edition	motherboard						
Antenna profile	main antenna	frequency range		Antenna status	Antenna type	Design area	Match changes
		2G	N/A	N/A	N/A	N/A	N/A
		3G	N/A				
		4G	N/A				
	Other antennas	WIFI/BT	2. 4/5G	/	PIFA	motherboard	not have
		GPS	N/A				
		diversity	N/A	N/A	N/A	N/A	N/A
Sample status	Debug the prototype			Environmental treatment	not have		



Match circuit-antenna



The matching circuit is unchanged



Sourceless efficiency/gain

FEITUKEJI											
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
Point Values											
Ant. Port Input Pwr. (dBm)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tot. Rad. Pwr. (dBm)	-3.99	-4.08	-4.14	-4.29	-4.37	-4.42	-4.45	-4.62	-4.81	-4.87	-4.95
Peak EIRP (dBm)	1.47	1.36	1.24	1.02	0.89	0.80	0.87	0.79	0.65	0.51	0.28
Directivity (dBi)	5.46	5.44	5.39	5.32	5.26	5.22	5.31	5.41	5.45	5.38	5.23
Efficiency (dB)	-3.99	-4.08	-4.14	-4.29	-4.37	-4.42	-4.45	-4.62	-4.81	-4.87	-4.95
Efficiency (%)	39.90	39.10	38.50	37.20	36.60	36.10	35.90	34.50	33.10	32.60	32.00
Gain (dBi)	1.47	1.36	1.24	1.02	0.89	0.80	0.87	0.79	0.65	0.51	0.28
NHPRP $\pm \pi/4$ (dBm)	-5.48	-5.58	-5.65	-5.81	-5.89	-5.93	-5.95	-6.13	-6.32	-6.38	-6.48
NHPRP $\pm \pi/6$ (dBm)	-7.01	-7.10	-7.17	-7.31	-7.38	-7.42	-7.44	-7.62	-7.81	-7.88	-7.99
NHPRP $\pm \pi/8$ (dBm)	-8.20	-8.29	-8.34	-8.47	-8.53	-8.56	-8.57	-8.74	-8.92	-8.99	-9.12
Upper Hem. PRP (dBm)	-5.88	-5.94	-6.01	-6.18	-6.28	-6.35	-6.38	-6.57	-6.75	-6.79	-6.84
Lower Hem. PRP (dBm)	-8.50	-8.64	-8.71	-8.82	-8.86	-8.88	-8.89	-9.05	-9.24	-9.32	-9.47
Upper Hem. PRP (%)	25.81	25.44	25.04	24.07	23.57	23.19	23.00	22.05	21.16	20.92	20.71
Lower Hem. PRP (%)	14.13	13.67	13.47	13.13	13.01	12.94	12.92	12.43	11.91	11.70	11.30

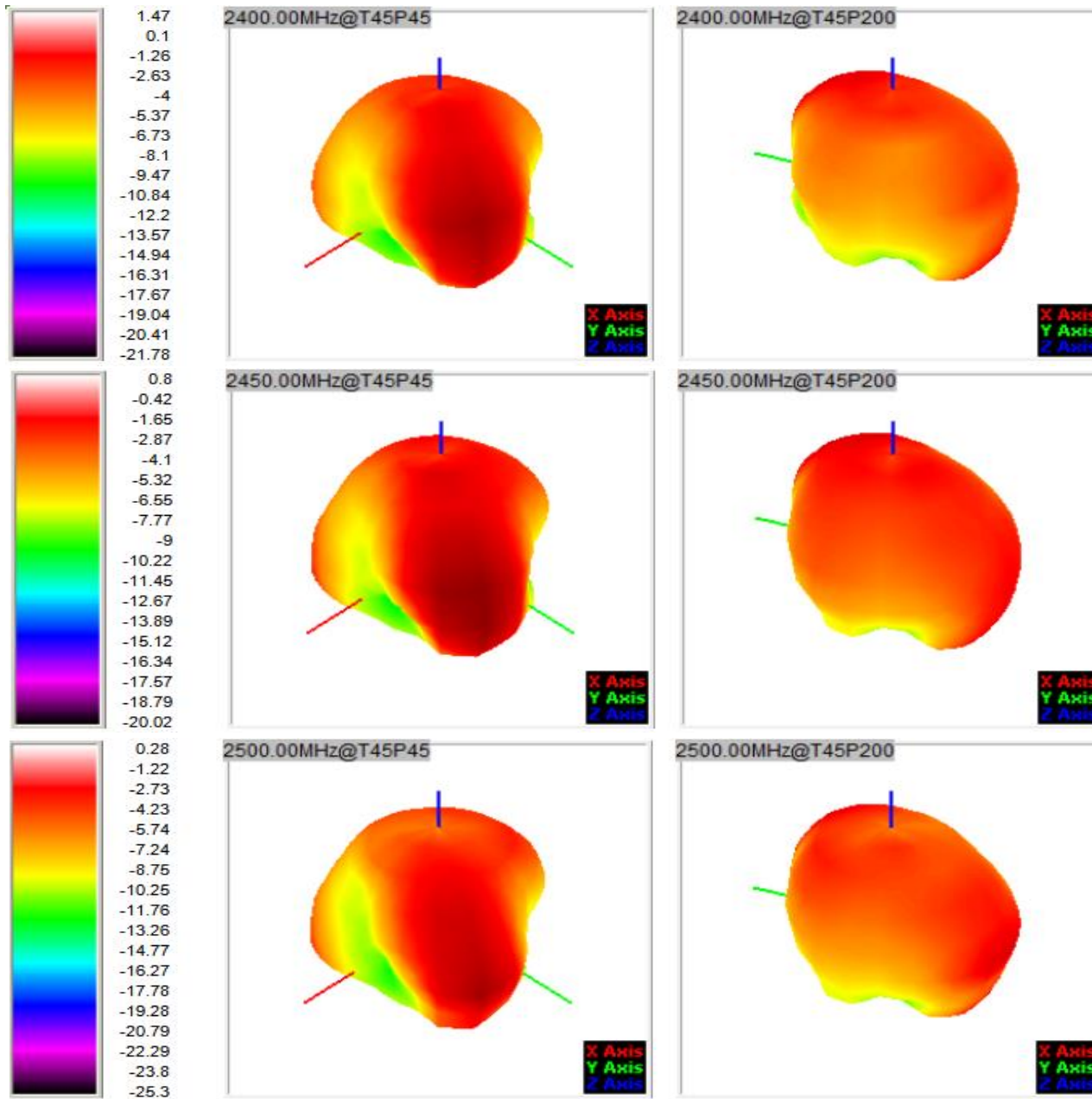


Sourceless efficiency/gain

FEITUKEJI															
Frequency ID	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Frequency (MHz)	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
Point Values															
Ant. Port Input Pwr. (dBm)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tot. Rad. Pwr. (dBm)	-3.66	-3.38	-3.34	-3.00	-3.32	-3.72	-3.25	-3.66	-4.02	-4.03	-4.46	-4.66	-4.75	-5.28	-5.03
Peak EIRP (dBm)	0.56	1.15	1.31	1.82	1.77	1.48	1.93	1.19	0.48	0.34	0.46	0.30	-0.33	-0.72	-0.60
Directivity (dBi)	4.22	4.52	4.65	4.81	5.09	5.20	5.18	4.85	4.49	4.37	4.93	4.96	4.43	4.55	4.43
Efficiency (dB)	-3.66	-3.38	-3.34	-3.00	-3.32	-3.72	-3.25	-3.66	-4.02	-4.03	-4.46	-4.66	-4.75	-5.28	-5.03
Efficiency (%)	43.00	46.00	46.30	50.20	46.50	42.40	47.30	43.10	39.60	39.60	35.80	34.20	33.50	29.70	31.40
Gain (dBi)	0.56	1.15	1.31	1.82	1.77	1.48	1.93	1.19	0.48	0.34	0.46	0.30	-0.33	-0.72	-0.60
NHPRP $\pm\pi/4$ (dBm)	-5.29	-5.10	-5.09	-4.62	-5.01	-5.53	-4.99	-5.42	-5.73	-5.63	-6.08	-6.29	-6.36	-6.82	-6.54
NHPRP $\pm\pi/6$ (dBm)	-6.89	-6.77	-6.78	-6.24	-6.75	-7.36	-6.64	-7.12	-7.41	-7.23	-7.70	-7.89	-7.94	-8.39	-8.13
NHPRP $\pm\pi/8$ (dBm)	-8.16	-8.11	-8.11	-7.50	-8.17	-8.82	-7.95	-8.50	-8.78	-8.51	-9.01	-9.15	-9.20	-9.69	-9.43
Upper Hem. PRP (dBm)	-5.97	-5.52	-5.51	-5.35	-5.47	-5.86	-5.57	-5.92	-6.47	-6.62	-7.04	-7.35	-7.58	-8.10	-8.00
Lower Hem. PRP (dBm)	-7.51	-7.47	-7.39	-6.78	-7.41	-7.83	-7.08	-7.57	-7.68	-7.50	-7.96	-8.02	-7.96	-8.48	-8.08
Upper Hem. PRP (%)	25.32	28.07	28.11	29.15	28.39	25.94	27.71	25.57	22.57	21.77	19.77	18.43	17.46	15.48	15.84
Lower Hem. PRP (%)	17.73	17.91	18.24	21.00	18.14	16.49	19.60	17.49	17.07	17.79	16.01	15.78	16.01	14.19	15.56

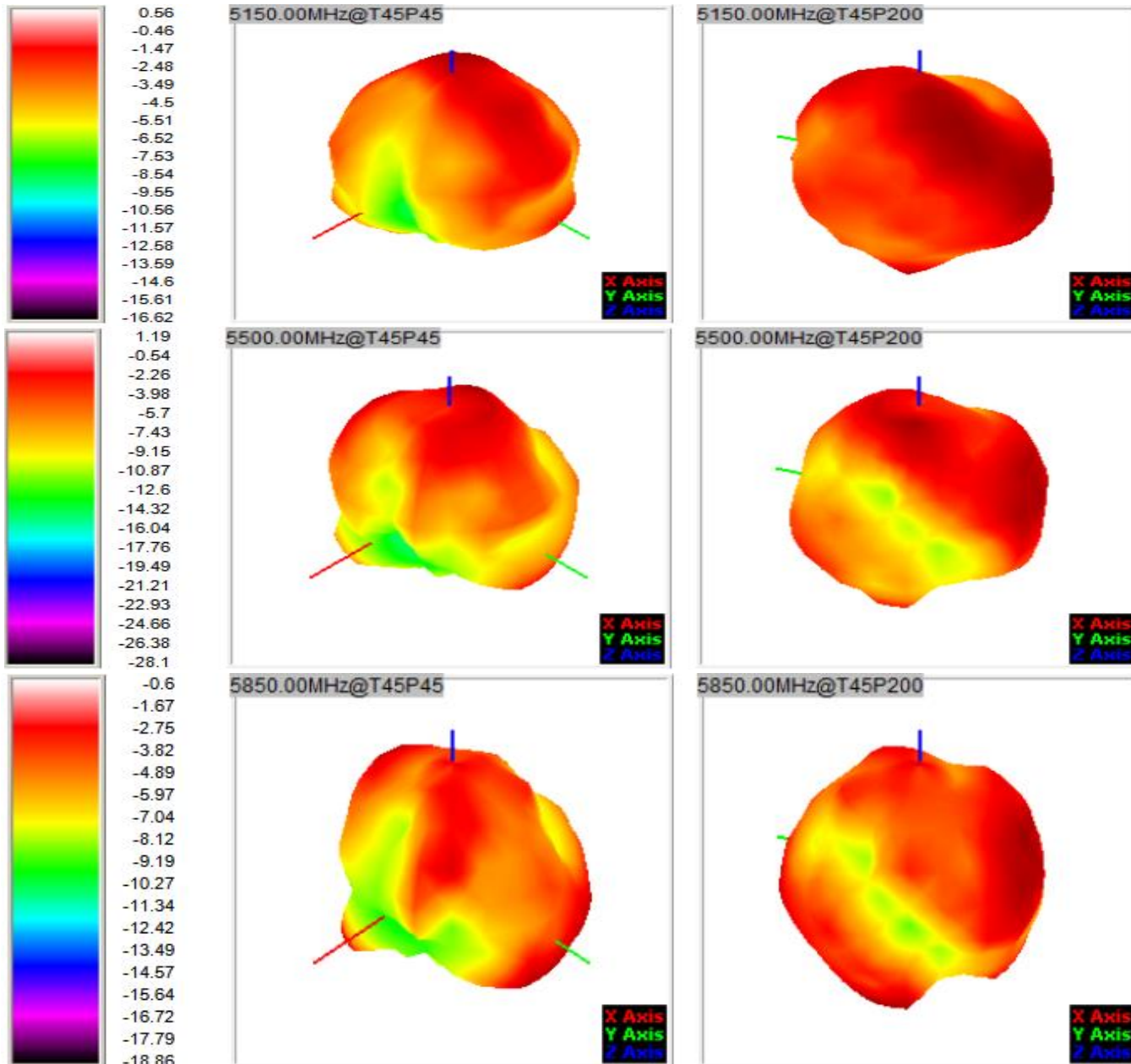


Sourceless-3D Pattern



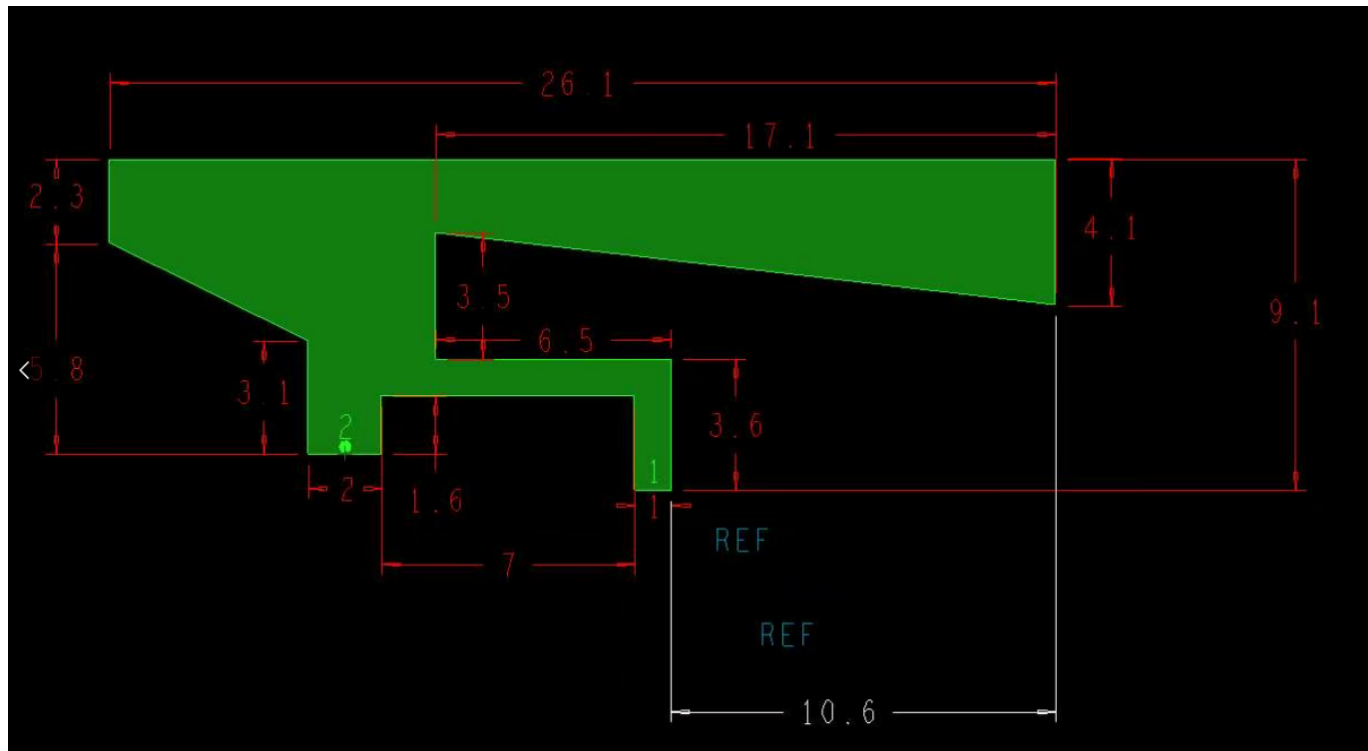


Sourceless-3D Pattern





Shape and size of the plate antenna





Prompt instructions

1. This data only refers to the data generated by the prototype provided by the customer, and does not represent the final mass production status of the customer.
2. Please confirm carefully the matching circuit modification and environmental treatment instructions in our report.
3. Please cooperate to provide trial production prototype to our company for secondary verification before mass production; if there is any material change, software update and environment
Please inform in advance about processing, etc.
4. If the customer needs a third party to retest, or send the sample machine to the customer for testing, please come to our company for verification before sending the sample machine; prevent the machine
It is different from the debugging machine.
5. Our company does not accept the machine data other than our debugging and other test data in the dark room, but can refer to it;
Except for the certified dark room, if there is a difference in the data, everything should be based on the debugger to find the reason.



thanks !

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