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深圳市千目通讯科技有限公司

Shenzhen Qianmu Communication Technology Co., Ltd.

Focus on antenna scheme, design and production

Customer:

Item: 818

Date: September 6, 2022

Version: A1

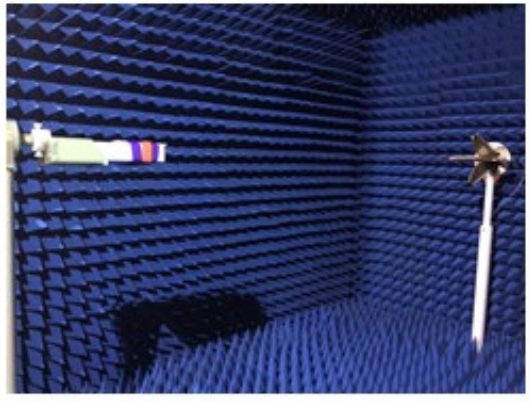
Radio frequency: ZHENG LI GUO

Test environment

	Test item	Equipment
1. S-parameter	1. Return Loss (Return Loss) 2. Voltage standing wave ratio (VSWR)	Network Analyzer: Agilent E5071B HP 8753D
2. Active Test (Active)	1. Transmit power (TRP) 2. Receiving sensitivity (TIS) 3. Frequency error 4. Screen off, screen on	1. Darkroom: ETS 7x4x3 m (3D) Chamber ETS 5x3x3 m (3D) Chamber 2. Comprehensive tester: Agilent 8960 E5515B × 2 StarPoint SP6011
3. Passive testing (Passive)	1. Antenna gain (Gain) 2. Antenna Efficiency	1. Darkroom: ETS 7x4x3 m (3D) Chamber ETS 5x3x3 m (3D) Chamber 2. Network Analyzer: Agilent E5071B HP 8753D



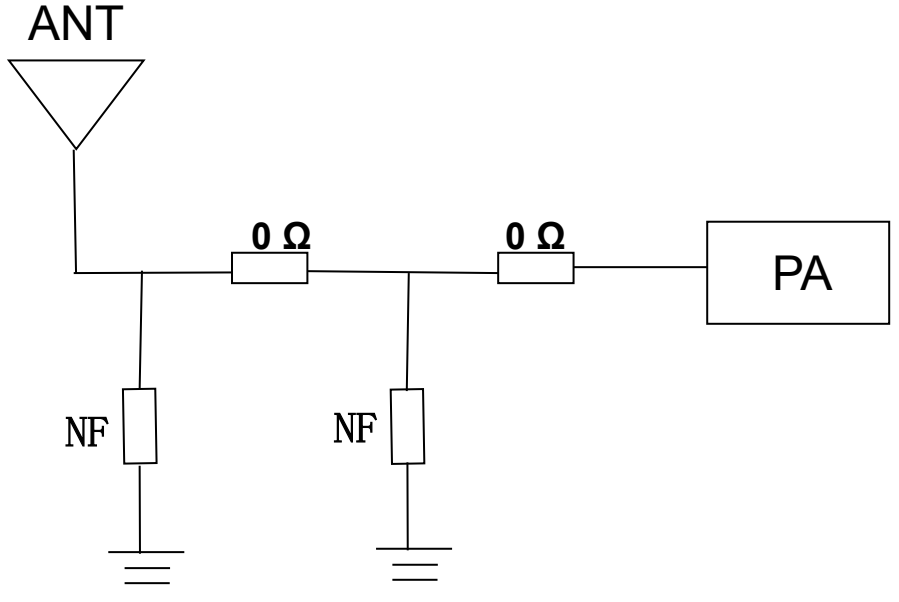




Description of previous debugging records

Date	Version	Commissioning record description
2022-9-6	A1	External antenna 815-920

Matching circuit

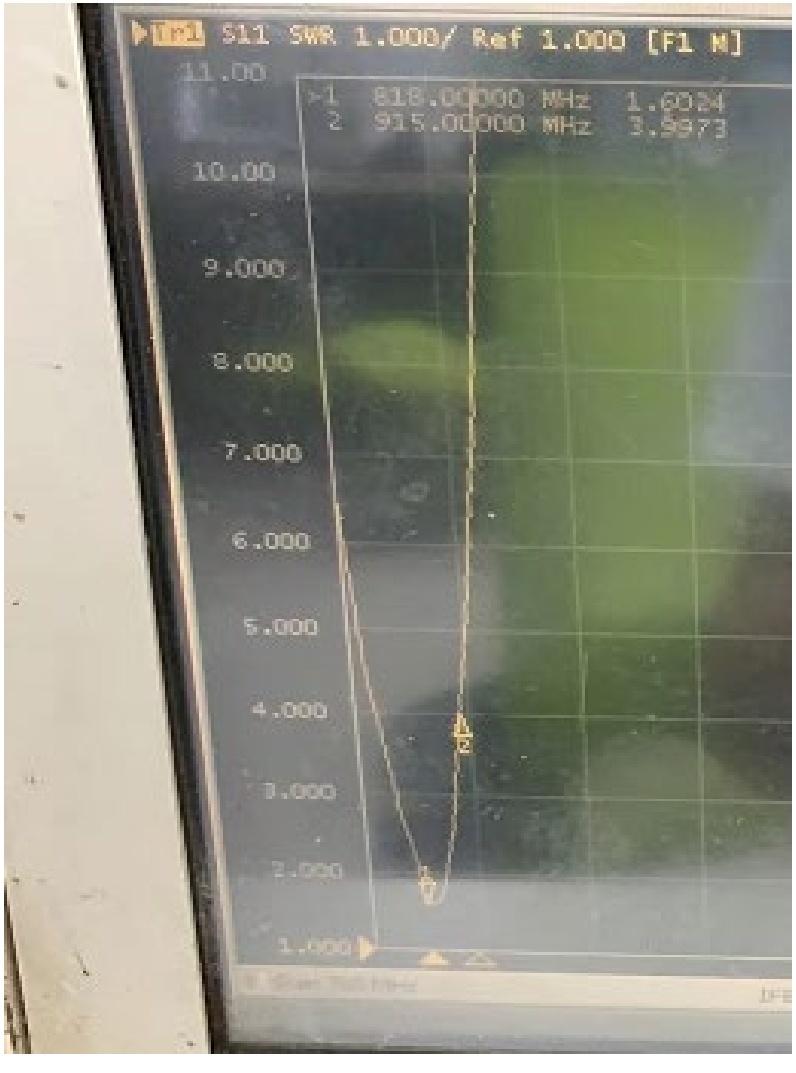


Your original matching circuit has not been changed

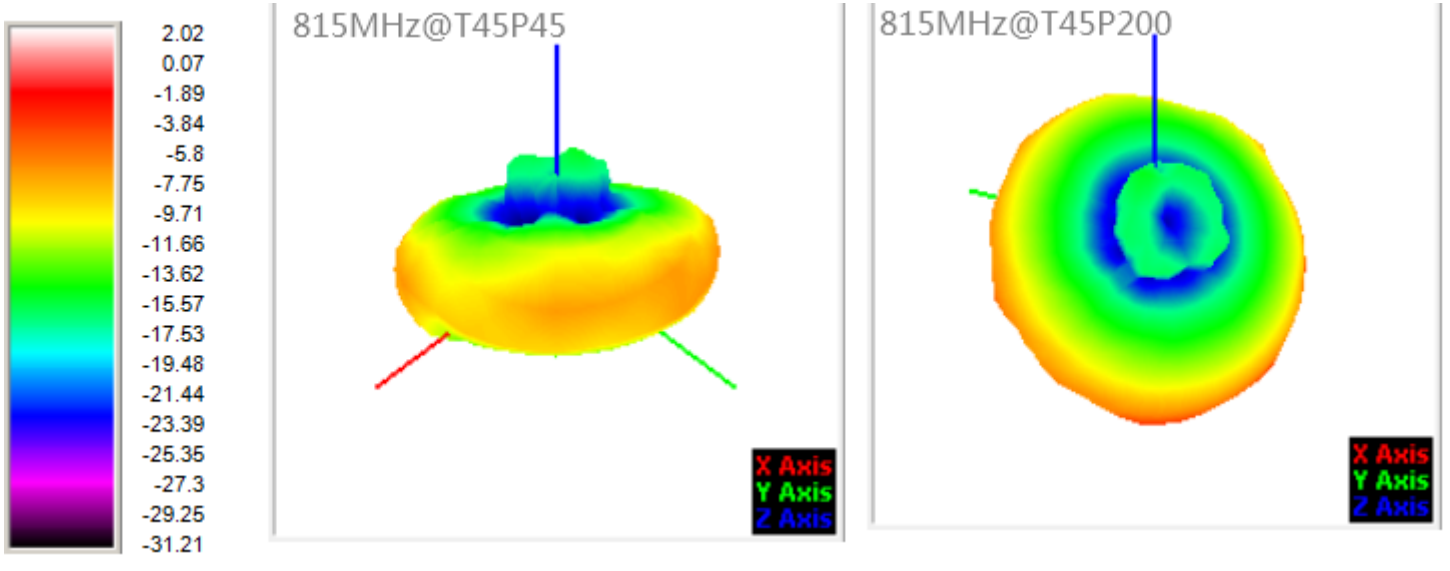
Antenna passive efficiency gain data

FEITUKEJI												
Frequency ID	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Frequency (MHz)	**815.0**	**825.0**	**835.0**	**845.0**	**855.0**	**865.0**	**875.0**	**885.0**	**895.0**	**905.0**	**915.0**	**920.0**
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
Tot. Rad. Pwr. (dBm)	**-5.03**	**-5.10**	**-5.29**	**-5.36**	**-5.16**	**-5.12**	**-5.45**	**-5.54**	**-5.75**	**-5.85**	**-5.80**	**-5.83**
Peak EIRP (dBm)	**2.02**	**2.11**	**1.94**	**1.76**	**1.82**	**1.08**	**0.98**	**0.66**	**0.26**	**0.24**	**0.25**	**0.23**
Directivity (dBi)	7.05	7.21	7.23	7.12	6.99	6.81	6.53	6.20	6.02	6.09	6.05	6.07
Efficiency (dB)	**-5.03**	**-5.10**	**-5.29**	**-5.36**	**-5.16**	**-5.12**	**-5.45**	**-5.54**	**-5.75**	**-5.85**	**-5.80**	**-5.83**
Efficiency (%)	**31.40**	**30.90**	**29.60**	**29.10**	**30.40**	**30.70**	**28.50**	**27.90**	**26.60**	**26.00**	**26.30**	**26.17**
Gain (dBi)	2.02	2.11	1.94	1.76	1.82	1.08	0.98	0.66	0.26	0.24	0.25	0.23
NHPRP ±Pi/4 (dBm)	-5.40	-5.47	-5.65	-5.73	-5.52	-5.48	-5.81	-5.90	-6.12	-6.21	-6.16	-6.18
NHPRP ±Pi/6 (dBm)	-6.44	-6.51	-6.71	-6.79	-6.59	-6.53	-6.86	-6.96	-7.18	-7.27	-7.22	-7.24
NHPRP ±Pi/8 (dBm)	-7.43	-7.51	-7.73	-7.83	-7.62	-7.56	-7.88	-7.98	-8.21	-8.29	-8.23	-8.26
Upper Hem. PRP (dBm)	-8.71	-8.84	-9.03	-9.06	-8.79	-8.71	-9.03	-9.16	-9.38	-9.45	-9.40	-9.42
Lower Hem. PRP (dBm)	-7.45	-7.49	-7.67	-7.77	-7.63	-7.62	-7.96	-8.02	-8.23	-8.33	-8.28	-8.31
Upper Hem. PRP (%)	13.46	13.06	12.51	12.41	13.21	13.45	12.51	12.13	11.55	11.34	11.47	11.41
Lower Hem. PRP (%)	17.98	17.84	17.09	16.69	17.24	17.29	16.00	15.79	15.03	14.69	14.85	14.72

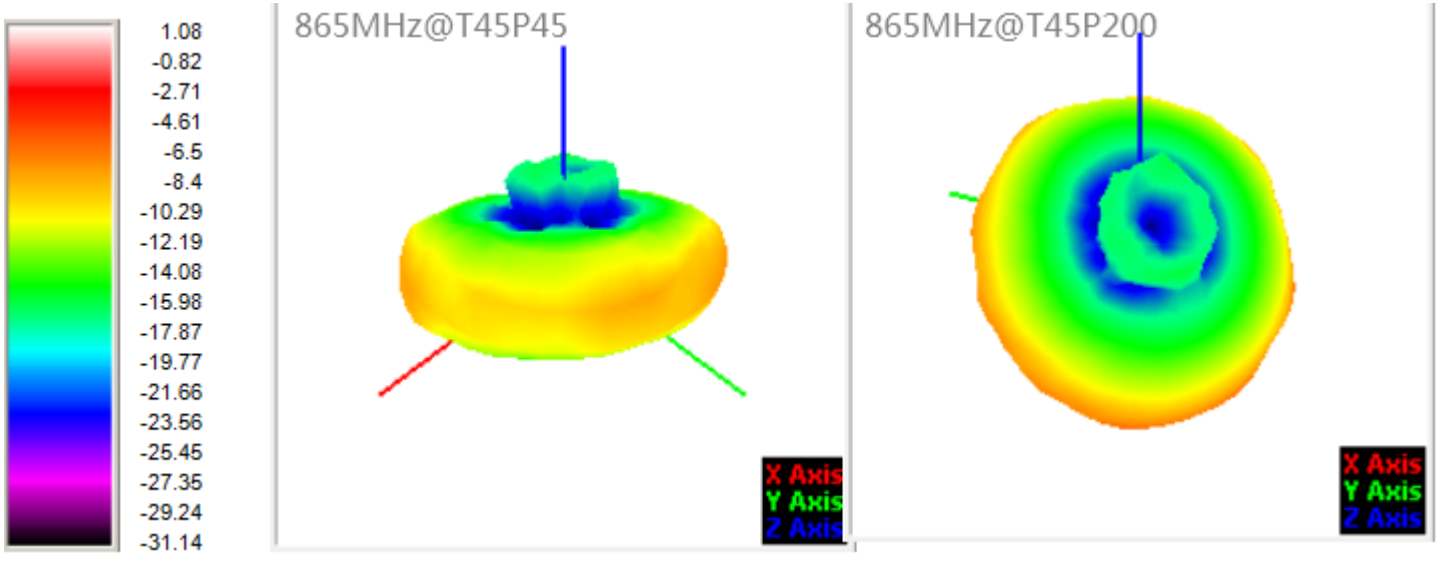
Antenna standing wave pattern



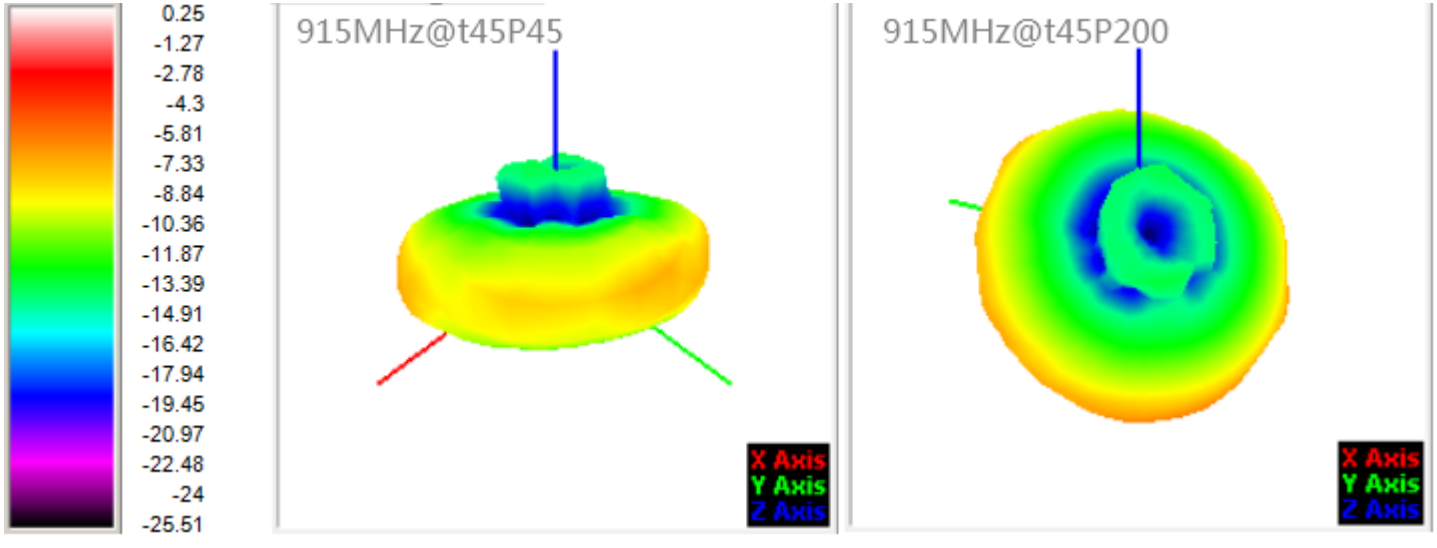
Antenna Pattern and Apple Pattern



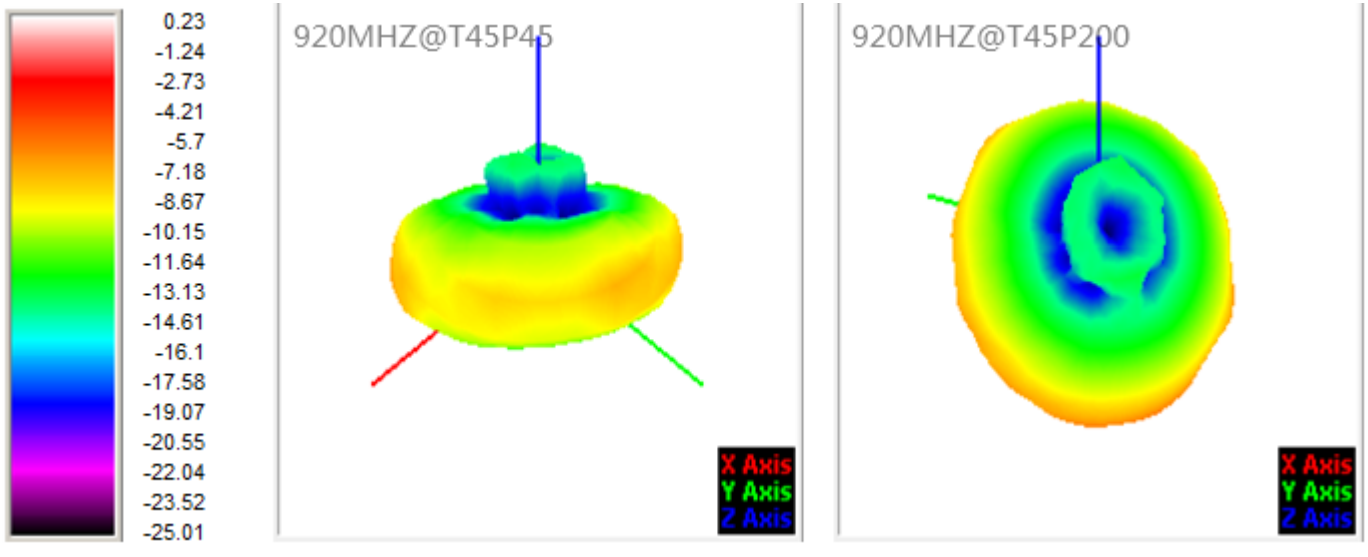
Antenna Pattern and Apple Pattern



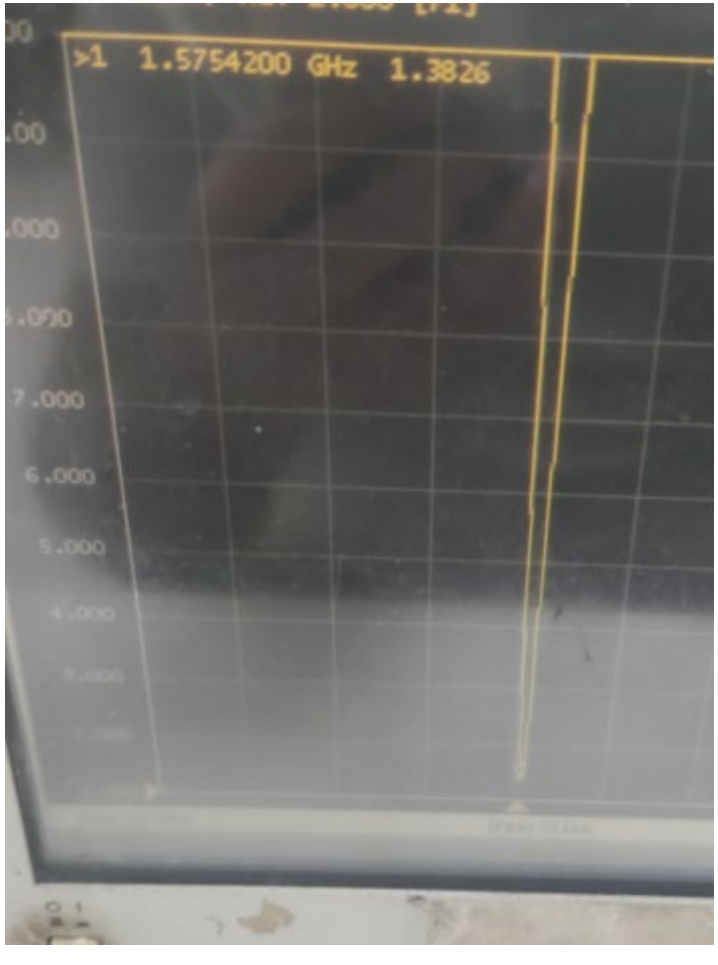
Antenna Pattern and Apple Pattern



Antenna Pattern and Apple Pattern

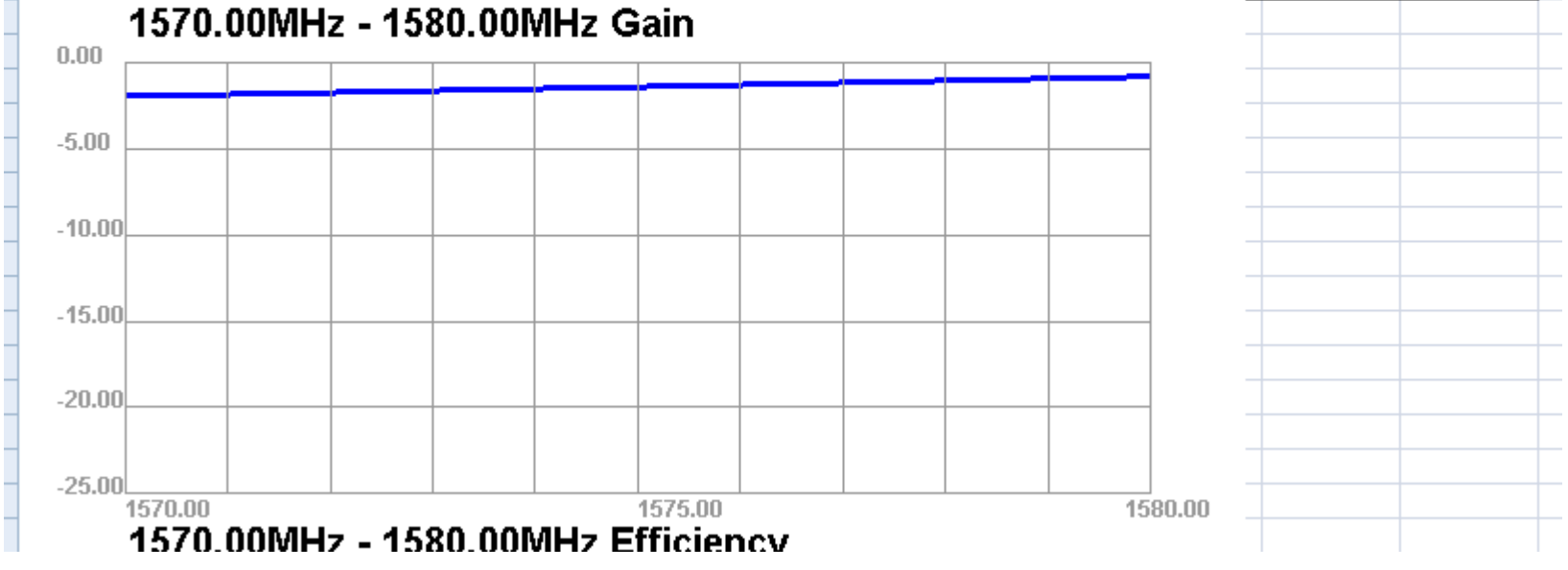


GPS standing wave map



GPS Efficiency and Gain

Passive Test For GPS										
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHIS (%)	DHIS (%)	Max (dB)	Min (dB)	Attenut Hor	Attenut Ver
1570	34.69	-4.6	-1.97	-4.12	21.742	12.95	-1.97	-8.95	43.55	43.76
1575	38.81	-4.11	-1.42	-3.57	23.142	15.671	-1.42	-10.6	43.55	43.71
1580	43.06	-3.66	-0.83	-2.98	25.06	18.004	-0.83	-11.02	43.56	43.66



Prompt description

Hint:
1. This data is only for the data generated by the prototype provided by the customer, and does not represent the final mass production status of the customer;
Second, please carefully confirm the description of matching circuit modification and environmental treatment in our report;
Third, before mass production, please cooperate to provide trial production prototype to our company for secondary verification; If there is material replacement, software update and environmental treatment, please inform in advance;
4. If the customer needs a third-party retest or sends it to the customer for test, please go to our company for verification and then send the prototype; Prevent the difference between the machine and the debugging machine;
Five: Our company does not accept, we debug other machine data and other darkroom test data, but can refer to, authentication darkroom except, if the data is different, all the debugging machine shall prevail to find the reason.

Antenna Photo

Lora Antenna:

GPS Antenna:

Thank you!