

		No. of File: GYF-FN-HD01-V1.2	
Sample Approval Sheet			
Specification For Approval			
客户名称: Customer:	Farnear IoT Co., Ltd Farnear Electronics Co., Ltd		
供应商名称: Customer:	深圳市广源发电子有限公司 SHENZHEN GUANGYUANFA ELECTRONIC CO.,LTD		
客户料号:		供应商料号:	GYF-FN-HD01-V1.2
Description:	FPC Antenna: Material 一对半 3M9471 with double side Tape +0.2mm PI 补强	配用机型:	FN-HD01
Supplier confirm(盖章):		Customer confirm(盖章):	
Maker: 黄望春	Structure: 黄望春		
Check: 骆业辉	Date: 2025.03.25		

Catalog

1.SPEC

- 1.1 Electrical specification
- 1.2 Antenna frequency range

2. Match the circuit diagram

3. Sctructure

- 3.1 Antenna composition

4. Test machine

5. VSWR test connection

- 5.1 Test connection

6. Test

- 6.1 Test site
- 6.2 Instrument for testing
- 6.3 Antenna data

7. Spec of Drawing

- 7.1 Drawing
- 7.2 Test sample size
- 7.3 BOM

8. Reliability Testing

- 8.1 Report of Reliability Testing
- 8.2 Product storage description

9. Operating Temperature

9. Antenna Position

FN-HD01 Antenna

1.SPEC

1.1 Electrical specification

This report mainly provides the test status of various electrical and structural performance parameters of FN-HD01 antenna.

SPEC and Models	GYF Part Number
4G Antenna	GYF-FN-HD01-V1.2

1.2 Antenna frequency range

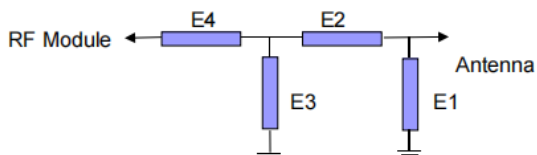
Specification of electrical performance of mass production antenna.

Model	FN-HD01			
Antenna	FPC			
Frequency and Material	Main Antenna	Frequency		Material
		2G		FPC
		3G		
		LTE	B2/B4/B5/B12	
	Other Antenna	Diversity	/	/
		WiFi	/	/
		GPS	/	/
Requirements	Perform according to customer requirements			

2. Match the circuit diagram

匹配电路说明

天线匹配无改动



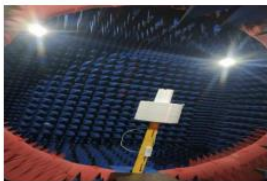
Element	Value
E1 (0402)	N/A
E2 (0402)	0欧姆
E3 (0402)	N/A
E4 (0402)	0欧姆

3. Sctructure

3.1 Antenna composition

The antenna is mainly composed of a flexible line printing plate. (FPC)

4. Test machine

			
24探头微波暗室	CMW500	7*4*3M ETS微波暗室	Agilent 8960
			
Agilent E5071B	高低温实验箱	MT8820C	HP8753ES
测试系统 ETS 暗室 24探头OTA暗室	测试环境 温度: 22℃±3℃ 湿度: 50%±15%	有源测试 支持2G/3G/4G 支持NB-IoT/CAT-M/BT/WIFI	无源测试 700MHz—6G

5 . VSWR test connection

5.1 Test connection: Test device connected as: **R&S ZVL Network Analyzer**→**Cable**→**Test Fixture**

6.Test

6.1 Test site: GYF Microwave Dark Chamber. Test frequency range is 400MHz—6GHz, The static area is 50cm circle, and the reflectivity is less than -50 dB.

6.2 Instrument for testing: Agilent5071B, CMW500, Agilent8960 E5515C, standard horn antenna, 24 probe OTA Microwave Dark Chamber test system, Printer etc.

6.3 Antenna Data

Frequency (MHz)	Efficiency (dBi)	Gain (dBi)	Efficiency (%)	Frequency (MHz)	Efficiency (dBi)	Gain (dBi)	Efficiency (%)
700.0	-8.84	-14.52	13.06	1700.0	-6.80	-4.08	20.91
710.0	-8.76	-13.78	13.29	1720.0	-6.63	-3.96	21.75
720.0	-8.68	-13.08	13.56	1740.0	-6.77	-5.79	21.04
730.0	-8.56	-12.04	13.92	1760.0	-6.19	-6.98	24.02
740.0	-8.45	-11.19	14.30	1780.0	-5.85	-5.32	25.98
750.0	-8.34	-10.63	14.66	1800.0	-6.88	-4.77	20.51
760.0	-8.35	-10.38	14.64	1820.0	-6.59	-4.43	21.91
770.0	-8.40	-10.84	14.44	1840.0	-6.19	-3.45	24.04
780.0	-8.45	-11.46	14.28	1860.0	-5.79	-1.79	26.39
790.0	-8.51	-11.79	14.08	1880.0	-5.67	-1.35	27.07
800.0	-8.47	-11.15	14.23	1900.0	-5.88	-2.48	25.83

810.0	-8.38	-10.16	14.52	1920.0	-5.83	-2.85	26.09
820.0	-8.35	-9.57	14.62	1940.0	-5.58	-2.31	27.70
830.0	-8.41	-9.91	14.43	1960.0	-5.04	-1.81	26.36
840.0	-8.54	-11.18	14.01	1980.0	-4.79	-1.93	28.16
850.0	-8.62	-11.98	13.74	2000.0	-4.77	-1.90	28.34
860.0	-8.69	-12.58	13.51	2020.0	-4.74	-1.60	28.55
870.0	-8.77	-13.30	13.27	2040.0	-4.59	-1.26	29.73
880.0	-8.86	-14.51	13.02	2060.0	-4.48	-0.66	30.67
890.0	-8.95	-16.14	12.75	2080.0	-4.47	-0.60	30.76
900.0	-9.00	-17.58	12.59	2100.0	-4.50	-0.17	30.48
910.0	-9.05	-19.33	12.45	2120.0	-4.55	0.05	30.06
				2140.0	-4.25	0.00	32.61
				2160.0	-4.15	-0.07	33.44
				2180.0	-4.33	-0.18	31.87

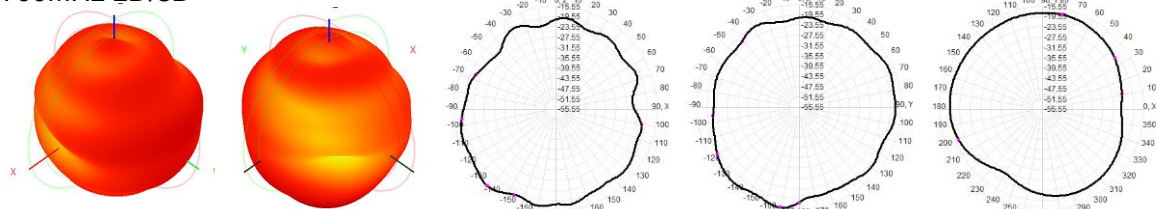
BAND	B5		
CH	L	M	H
TRP	13.41	13.52	13.6
TIS			-82.13

BAND	B12		
CH	L	M	H
TRP	12.52	12.75	13.16
TIS			-80.23

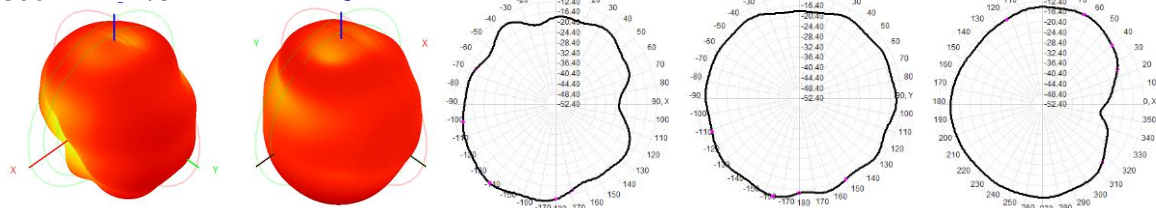
BAND	B2		
CH	L	M	H
TRP	16.41	17.22	17.56
TIS			-88.34

BAND	B4		
CH	L	M	H
TRP	17.24	17.56	17.48
TIS			-89.68

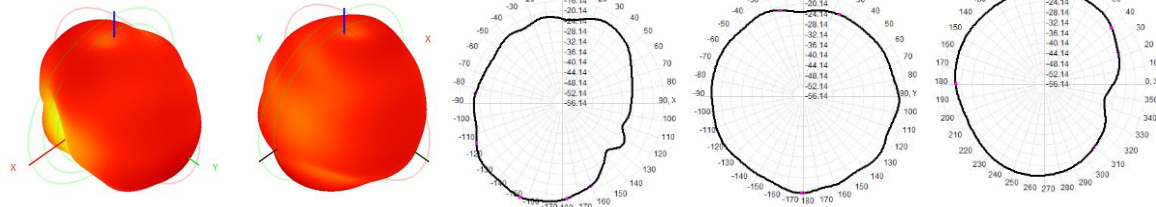
700MHz 2D/3D

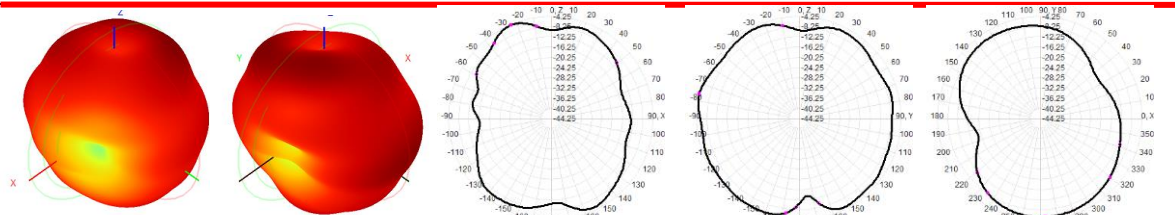


800MHz 2D/3D

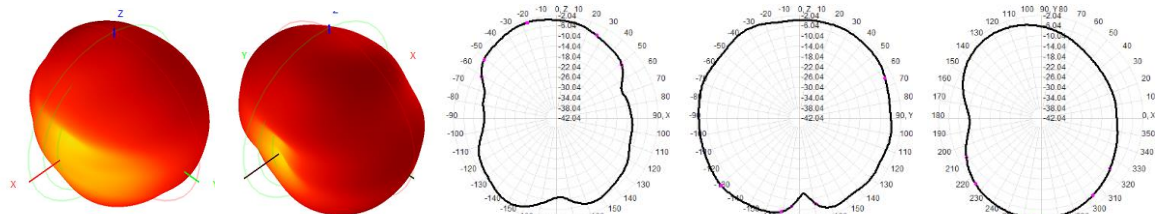


890MHz 2D/3D

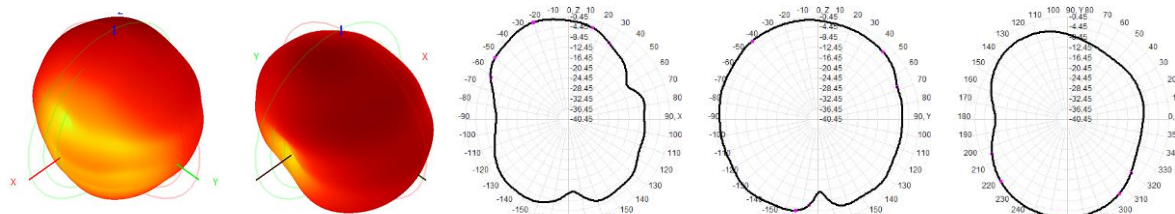




1980MHz 2D/3D



2160MHz 2D/3D



7. Spec of Drawing

7.1 Drawing

1		3		4	
项目名称	FN-HD01	版次	修改内容	设计	审核
字符内容	GYF-FN-HD01-V1.2	A0	初版发行		
检验方法	□目测 □卡尺 □网分 □万用表				

0.2mm的PI补强

24.97±0.2

17.15±0.2

离型纸打断线

工艺要求

1. 材质：单面电解铜一对半材质
2. 背胶：3M 300LE9471
3. 油墨：无卤油墨，亚黑亚白
3. 字符：亚黑 印 亚白字符
4. 馈点：镀镍
5. 表面无压伤，划痕，油污，斑点等不良

GYF 深 圳 市 广 源 发 电 子 有 限 公 司	
一般公差:	名称: GYF-FN-HD01-V1.2
X ± 0.5	料号:
.X ± 0.25	材质: 单面板电解铜
.XX ± 0.10	颜色: 亚黑
.XXX ± 0.05	比例: 1:1
ANGULAR <± 0.5°	单位: mm
	版次: A0

7.2 Check the size of test sample

Item	FN-HD01	P/N	GYF-FN-HD01-V1.2	Date	2025.03.25			
No. Item	SPEC	Real test data					Judge	Remark
		1	2	3	4	5		
1	24.97	24.96	24.99	25.02	24.95	24.98	OK	
2	17.15	17.12	17.16	17.15	17.17	17.13	OK	
3								
4								
5								
6								
7								
8								

7.3 BOM

ITEM	FN-HD01	Parts No.	GYF-FN-HD01-V1.2	Date	2025.03.25
No.	Kinds	Material	Spec	Usage	
1	FPC antenna	One and Half	24.97*17.15mm	1	
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

8. Reliability Testing

8.1 Report of Reliability Testing

Item	FN-HD01	P/N	GYF-FN-HD01-V1.2	Date	2025.3.18
Test Quantity	15pcs	Start	3/18/09:15	Finish	3/21/11:25
Item	Test standard		Test Quantity	Test Result	Remark
Salt spray corrosion test	(1) Test temperature: brine test $35^{\circ}\text{C} \pm 2^{\circ}\text{C}$; Pressure barrel $47^{\circ}\text{C} \pm 1^{\circ}\text{C}$ (2) Test conditions/methods: brine concentration above 5%, solution PH value: 6.5~7.2, air pressure: 1.0~1.2kg/c m^2 , test time according to product requirements set test time (3) After the test is completed: 2 hours later, observe the surface oxidation and discoloration of the product surface, and the coating falls off		5pcs	OK	Test time 24H
Low temperature test	(1) Temperature: -30°C (-25°C -- pilot stage) (2) Test time: 20 hours/Packaging conditions: No packaging (3) The product under test is placed in the high and low temperature test box without turning on the machine. After the temperature in the box is adjusted to 25°C and the humidity is 65%, the temperature will drop to -30°C within 1 hour, and the humidity will be turned off. After 20 hours of insulation, the temperature will rise to normal temperature after 1 hour, and the performance test will be conducted after 2 hours. Appearance and structure: the antenna appearance surface has no defects, and the antenna should not be deformed, warped and damaged, and the performance is normal, and the standing wave ratio should not exceed 10% of the product standard		5pcs	OK	Test time 20H
High temperature test	(1) Temperature: $+70^{\circ}\text{C}$ ($+65^{\circ}\text{C}$ -- pilot stage) Humidity 85% (80%-- pilot stage) (2) Test time: 20 hours/Packaging conditions: No packaging (3) The product under test is not turned on and placed in a high and low temperature test box. After the temperature in the box is adjusted to 25°C and the humidity is 65%, the temperature is heated to $+70^{\circ}\text{C}$ within 1 hour, the humidity is 85%, and		5pcs	OK	

	the temperature is cooled to normal temperature after 1 hour, and the performance test is carried out after 2 hours. Appearance and structure: the antenna appearance surface has no defects, and the antenna should not be deformed, warped and damaged, and the performance is normal, and the standing wave ratio should not exceed 10% of the product standard			
--	--	--	--	--

8.2 Product storage description

1. The exposed part of the finger conductor should be treated with surface coating (anti-rust), such as gold plating, OSP, tin plating, etc. The storage environment should avoid corrosive gases.

2. The antenna temperature should be controlled 21-38℃, and the humidity should be controlled 50-70%. High temperature will make 3M glue melt, resulting in poor antenna viscosity.

3. It is recommended that if the initial bonding temperature is lower than 10 ° C, it is not suitable for bonding, so the adhesive is too hard and cannot be firmly bonded to the object; However, if it is already attached, the adhesion at low temperatures is also satisfactory.

3. Under the condition of 21℃ and 50% relative humidity, the storage period is 24 months from the date of production in the original packaging state.

9. Operating Temperature

Part	Temperature
Coaxial wire	-40~80℃
FPC	-50~280℃
3m tape	-30-80℃

10. Antenna Position

