Approval Sheet

客户名称 CWELL

(Customer Name）

产品名称 W555 Antenna (GSM /GPS+WIFI+BT/LTE)

(Specification)

客户料号

(Customer P/N)

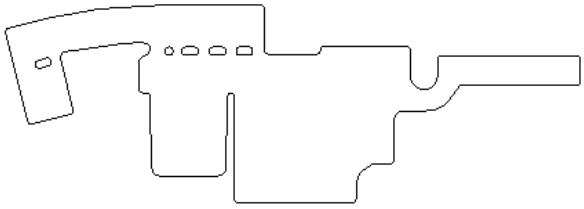
产品料号

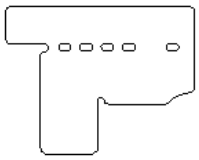
(O/I)

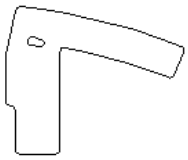
送样日期 2022-9-14

（Date）

1. Project pictures (for reference only)





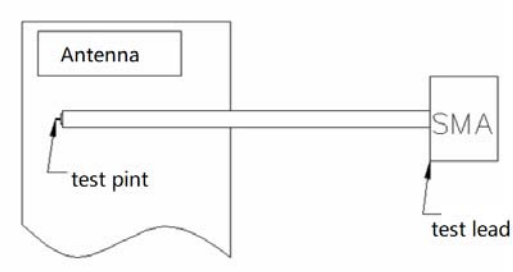


GSM Antenna **GPS/WIFI+BT Antenna** **DRX Antenna**

2. Passive testing

Purpose: To test the passive parameters of the antenna as accurately as possible.

Method: This fixture uses a 50 ohm coaxial cable, one end is connected to the test point at the back end of the matching circuit of the mobile phone motherboard (front part of the RF test hole), and the other end is connected to the SMA connector. The details are as follows:

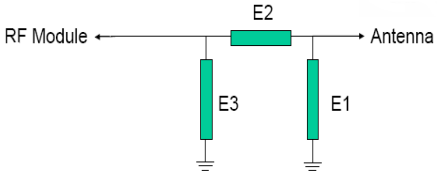


The following table is the test index for the performance of the W555 mass-produced antenna:

MT90C-S_MAIN_V1.0				
	frequency (MHz)	VSWR	frequency (MHz)	VSWR
frequency band	TX		RX	
GSM850	824-849	≤3.5	869-894	≤3.0
GSM900	880-915	≤3.5	925-960	≤3.5
DCS1800	1710-1785	≤3.0	1805-1880	≤2.5
PCS1900	1850-1910	≤2.8	1930-1990	≤3.2
WCDMA-850	824-849	≤3.5	869-894	≤3.5
WCDMA-900	880-915	≤3.5	925-960	≤3.5
WCDMA-1700	1710-1785	≤3.0	1805-1880	≤2.5
WCDMA-1900	1850-1910	≤2.8	1930-1990	≤3.2
WCDMA-2100	1710-1755	≤3.5	2110-2155	≤3.5

LTE-FDD-B1	1920-1980	≤2.0	2110-2170	≤2.0
LTE-FDD-B2	1850-1910	≤2.8	1930-1990	≤3.2
LTE-FDD-B3	1710-1785	≤2.5	1805-1880	≤2.5
LTE-FDD-B4	1710-1785	≤2.5	1805-1880	≤2.5
LTE-FDD-B5	824-849	≤3.5	869-894	≤3.0
LTE-FDD-B7	2505-2565	≤2.0	2625-2685	≤2.0
LTE-FDD-B8	880-913	≤2.0	930-955	≤2.0
LTE-FDD-B12	703-706	≤2.0	733-740	≤2.0
LTE-FDD-B17	709-711	≤2.0	739-741	≤2.0
LTE-FDD-B18	824-849	≤3.5	869-894	≤3.0
LTE-FDD-B19	824-849	≤3.5	869-894	≤3.0
LTE-FDD-B20	837-857	≤3.0	796-816	≤3.0
LTE-FDD-B25	880-913	≤2.0	930-955	≤2.0
LTE-FDD-B26	1710-1785	≤2.5	1805-1880	≤2.5
LTE-FDD-B28	708-743	≤2.0	763-798	≤2.0
LTE-TDD-B38	2570-2620	≤2.0	2570-2620	≤2.0
LTE-TDD-B40	2310-2390	≤2.0	2310-2390	≤2.0
LTE-TDD-B41	2550-2660	≤2.0	2550-2660	≤2.0
LTE-FDD-B66	1710-1785	≤2.5	1805-1880	≤2.5

3. Matching circuit



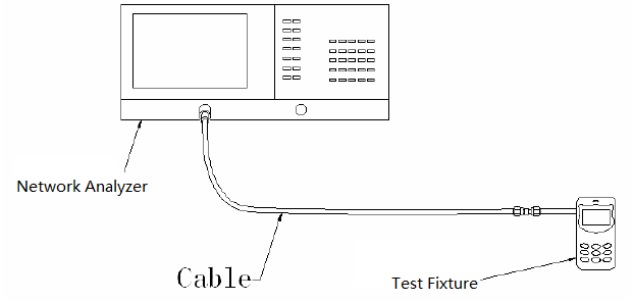
Element	match value
E1 (0201)	
E2 (0201)	0 ohm
E3 (0201)	

4. S11 test

4.1 S11 Test Method Description Specification Standard

The sequential connections of the VSWR test set are:HW555753ESNetwork Analyzer→50 Ohm Coaxial Cable→120mm long copper pipe→Test Fixture。

Handling of the test fixture: Use a hard cable to lead out the SMA-J connector from the 50 ohm test point of the antenna on the mobile phone PCB, connect it to the copper tube with the choke coil, and then connect to other devices in turn.



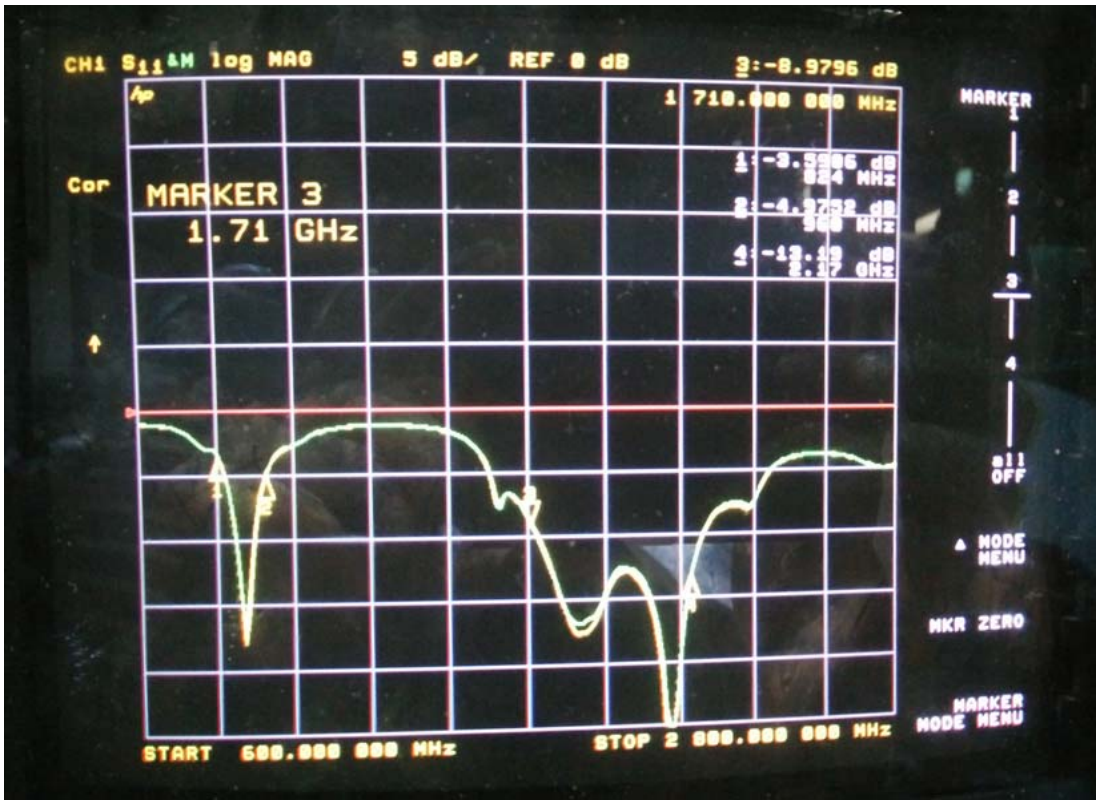
Test schematic

4.2 S11 parameters

The table below shows the VSWR values at the edge frequency points of the W555 antenna's operating frequency band. The related waveforms of Return Loss and VSWR obtained from the test are shown in the attachment.

	W555Antenna				
frequency (MHz)	824	960	1710	1990	2170
free space	9.1	2.2	6.0	5.7	3.6

4.3 S11



驻波比(VSWR)

5. Power and Sensitivity Testing

5.1 Test Data

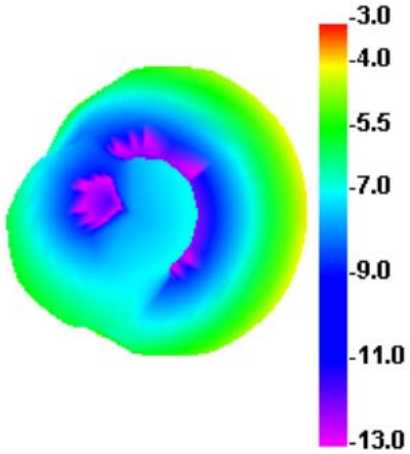
channel	GSM850			GSM900			DCS1800			PCS1900		
	CH128	CH192	CH251	CH1	CH62	CH124	CH512	CH698	CH885	CH512	CH661	CH810
TRP	26.04	26.37	26.39	26.18	26.59	27.03	23.43	2379	24.12	24.08	24.13	24.18
TIS			-101.03			-101.16			-102.42			-102.44
channel	WCDMA-2100			WCDMA-1900			WCDMA-1700			WCDMA-850		
	CH10562	CH10700	CH10838	CH9938	CH9662	CH9800	CH1537	CH1637	CH1738	CH4357	CH4408	CH4458
TRP	16.89	17.03	17.09	17.18	17.29	17.3	17.12	17.23	17.25	15.89	16.13	16.29
TIS			-101.24			-103.09			-102.45			-102.28
channel	WCDMA-900											
	CH2937	CH3012	CH3083									
TRP	15.92	16.19	16.46									
TIS			-101.29									

channel	LTE-FDD-B1			LTE-FDD-B2			LTE-FDD-B3			LTE-FDD-B4		
	CH18050	CH18300	CH18550	CH18650	CH18900	CH19150	CH19250	CH19575	CH19900	CH20000	CH20175	CH20350
TRP	16.98	17.26	17.39	17.03	16.93	16.87	16.85	16.93	17.57	17.05	17.11	17.26
TIS			-89.25			-90.24			-90.02			-90.27
channel	LTE-FDD-B5			LTE-FDD-B7			LTE-FDD-B8			LTE-FDD-B12		
	CH20450	CH20525	CH20600	CH20800	CH21100	CH21400	CH21500	CH21625	CH21750	CH23060	CH23095	CH23130
TRP	15.86	16.01	16.32	16.34	15.48	15.42	15.16	15.78	16.03	15.03	15.14	15.28
TIS			-89.23			-88.07			-89.75			-88.76
channel	LTE-FDD-B13			LTE-FDD-B17			LTE-FDD-B18			LTE-FDD-B19		
	CH23230	CH23230	CH23230	CH23780	CH23790	CH23800	CH23900	CH23925	CH23950	CH24050	CH24075	CH24100
TRP		16.03		15.36	15.78	16.12	15.89	15.93	16.55	16.42	16.23	15.78
TIS		-88.26				-89.12			-89.23			-88.34
channel	LTE-FDD-B20			LTE-FDD-B25			LTE-FDD-B26			LTE-FDD-B28A		
	CH24200	CH24300	CH24400	CH26090	CH26365	CH06640	CH26740	CH26865	CH26990	CH27300	CH27370	CH27300
TRP	16.25	16.54	16.03	17.02	16.83	16.78	16.78	17.06	17.25	15.13	15.22	15.44
TIS			-90.24			-90.05			-89.47			-89.28
channel	LTE-TDD-B28B			LTE-TDD-B38			LTE-TDD-B40			LTE-TDD-66		
	CH21500	CH21625	CH21750	CH37850	CH38000	CH38150	CH38750	CH39150	CH39550	CH40340	CH40260	CH41140
TRP	15.03	15.14	15.36	16.14	15.74	15.58	15.23	15.49	15.65	16.02	15.48	15.39
TIS			-88.17			-88.23			-88.43			-87.89
channel	LTE-TDD-66											
	CH132022	CH132322	CH132622									
TRP	16.78	16.86	17.1									
TIS			-89.25									

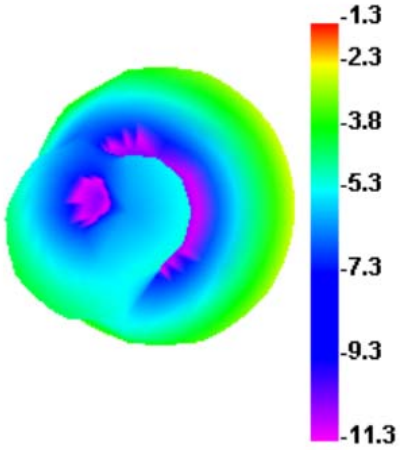
Antenna Gain:

Frequence:	Gain
708MHZ	-0.5dBi
824 MHZ	-0.4dBi
960 MHZ	-0.3dBi
1.71GHZ	-0.3dBi
1.98 GHZ	-0.4dBi
2.17GHZ	-0.3dBi
2.31GHZ	-0.1dBi
2.68GHZ	-0.2dBi

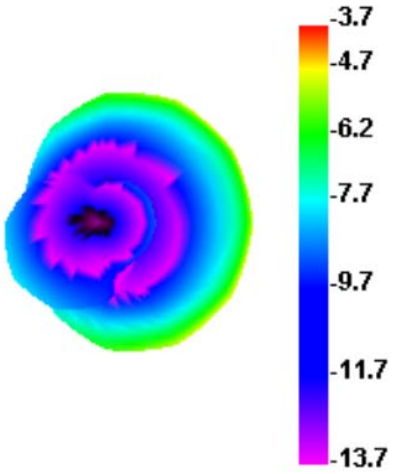
3Dphi
708MHZ



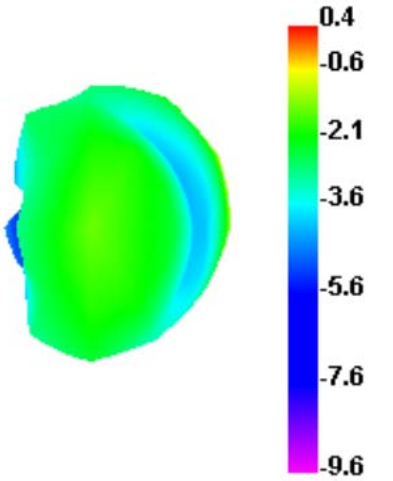
824 MHZ



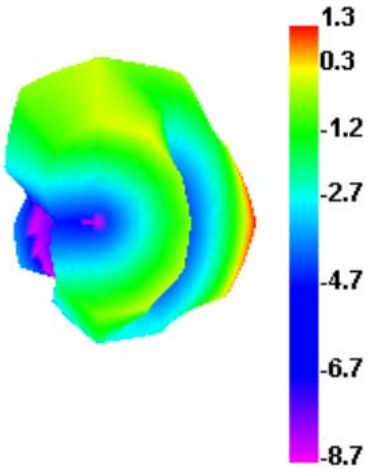
960 MHZ



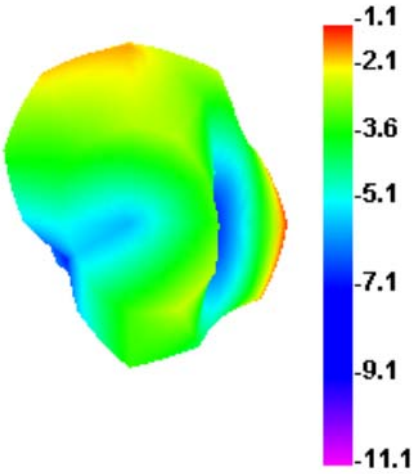
1.71GHZ



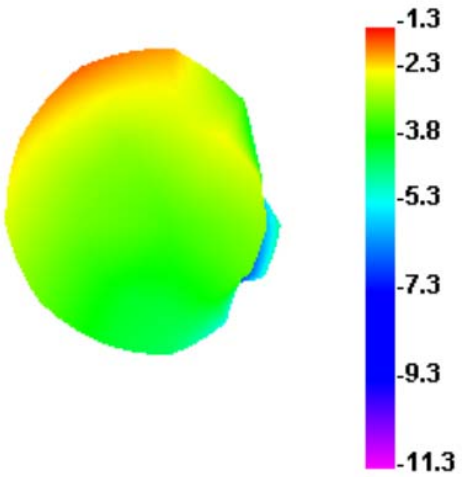
1.98 GHZ



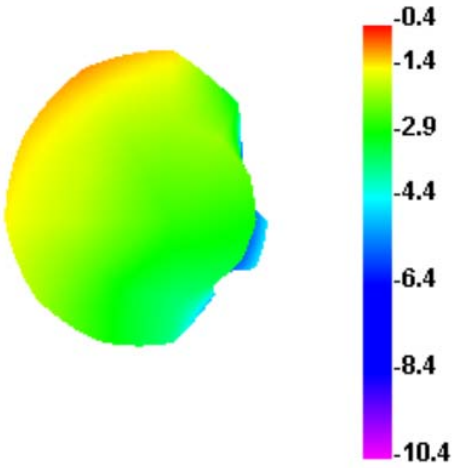
2.17GHZ



2.31GHZ



2.68GHZ



BT/WIFI:
Passive parameter diagram:

BT/WIFI:
Passive efficiency

Freq (MHz)	Effi (%)
2400	35.32
2440	36.22
2480	36.64

BT/2.4WIFI

Freq (MHz)	Effi (%)
5150	32.22
5450	32.61
5850	33.42

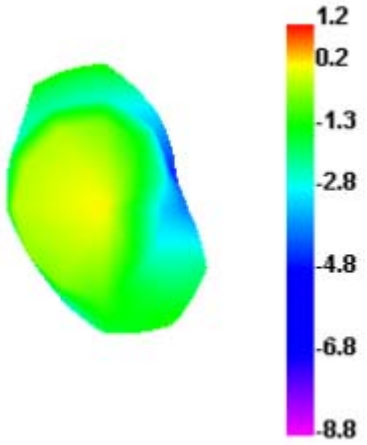
5.8WIFI

BT/2.4/5.8WIFI:Gain

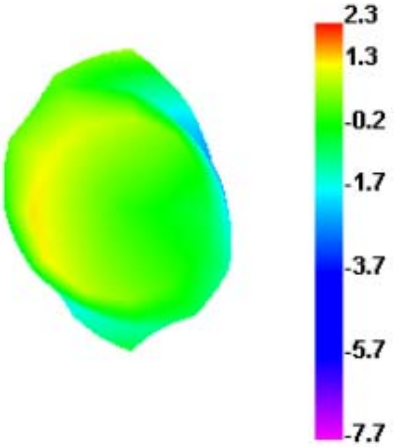
Frequence:	Gain
2.4GHZ	**0.7dBi**
2.44GHZ	**0.8dBi**
2.48GHZ	**0.8dBi**
5.15GHZ	**0.5dBi**
5.45GHZ	**0.6dBi**
5.85GHZ	**0.6dBi**

3Dphi

BT/2.4WIFI

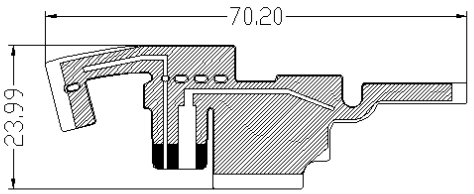


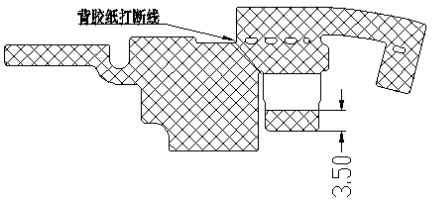
5.8WIFI



7. Structural drawings

料号	颜色	色号	供应商色号





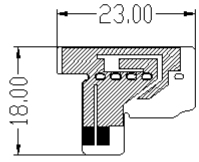
注：
1. "*"为重点尺寸,孔位以适配为准 ；
2. FPC材料:电解铜,半对三分之一；
3. 反面背胶(3M300LSE)；
4. 未标公差尺寸,模具冲出尺寸公差为±0.2, 铜箔线条尺寸公差为±0.05,
标重点的孔公差为±0.03；
5. 实心部分为镀金区，画斜线的为铜箔区，画交叉线的为背胶区 ；
6. 表面涂黑油亚光磨砂；
7. Pb、Hg、Cr+6、PBBs、PBDEs各项小于500PPM，Cd小于50PPM。

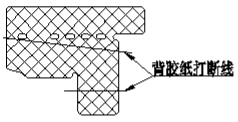
日期	修改内容	版本	备注

深圳市德仕勤科技有限公司

	机型	W555	日期	2022-07-29	页码 1/1
	项目编号		结构设计		
	零件名称	GSM FPC(主天线)	射频设计		
	零件料号		审核		
	材质	PI	确认		
图纸保存路径	外观处理		单位	mm 比例 FIT	版本 T:A

料号	颜色	色号	供应商色号





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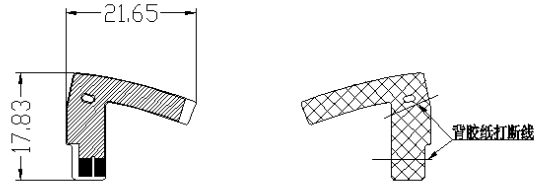
深圳市德仕勤科技有限公司

	机型	W555	日期	2022-07-29	页码 1/1
	项目编号		结构设计		
	零件名称	GPS FPC(天线)	射频设计		
	零件料号		审核		
	材质	PI	确认		
图纸保存路径	外观处理		单位	mm 比例 FIT	版本 T:A

料 号	颜 色	色 号	供应商色号



注：
1. "★"为重点尺寸,孔位以适配为准 ；
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日期	修 改 内 容	版 本	备 注

深 圳 市 德 仕 勤 科 技 有 限 公 司

机 型	W555	日期	2022-07-29	页码	1 / 1
项目编号		结构设计			
零件名称	GSM FPC(主天线)	组装设计			
零件料号		审 核			
材 质	PI	确 认			
图纸保存路径	外观处理	单位	mm	比例	FIT	版本	T:A

Antenna assembly picture