



Antenna test report

Customer name: Handhol
Project name: F2
Report version: V2.0
RF engineer: Wei Xing
Tel: 13530159694
Test time: 2026-01-21



Test report table of contents

- ❧1. Matching circuit
- ❧2. Test instruments and equipment
- ❧3. Mobile environment processing
- ❧4. 3D darkroom test data
- ❧5. Test data of the secondary antenna

Manufacturer: Shenzhen Hande Iot Technology Co.,Ltd
Address: 702-3, Building 5, Gonglian Fuji Innovation Park, No. 58 Ping'an Road, Dafu Community, Guanlan Street,
Longhua District, Shenzhen



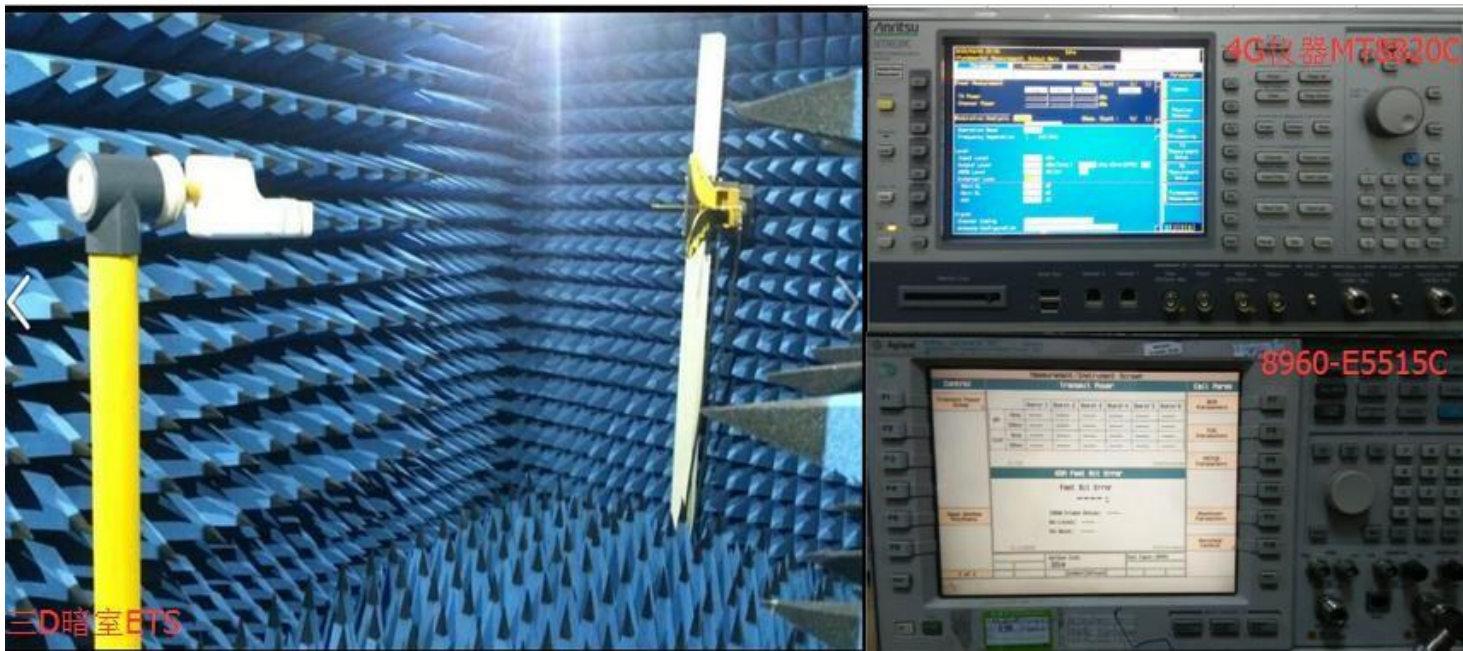
Testing facility (testing equipment)

Test system: 3D dark room

Test environment: temperature $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$, humidity $50\% \pm 15\%$

Test equipment: Use network analyzer Agilent E5062C for testing passive data

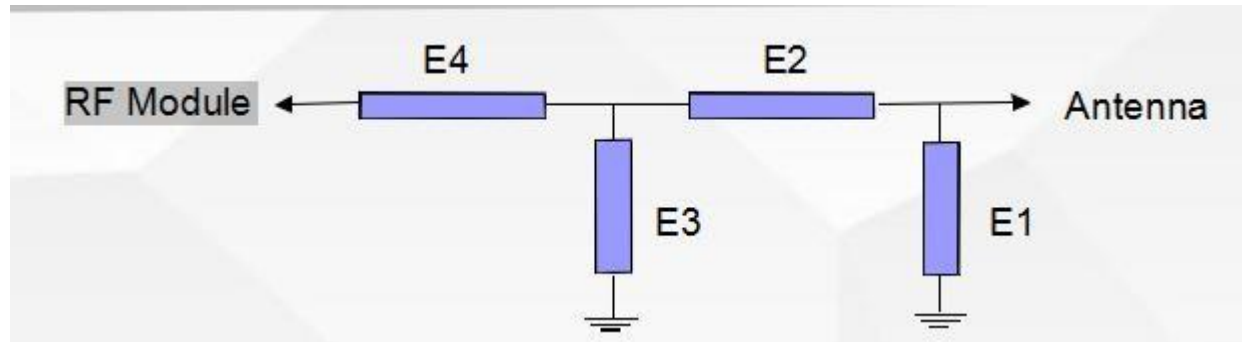
When testing active data, use the comprehensive tester Agilent 8960/4G instrument MT8820C



Antenna frequency band (antenna band)

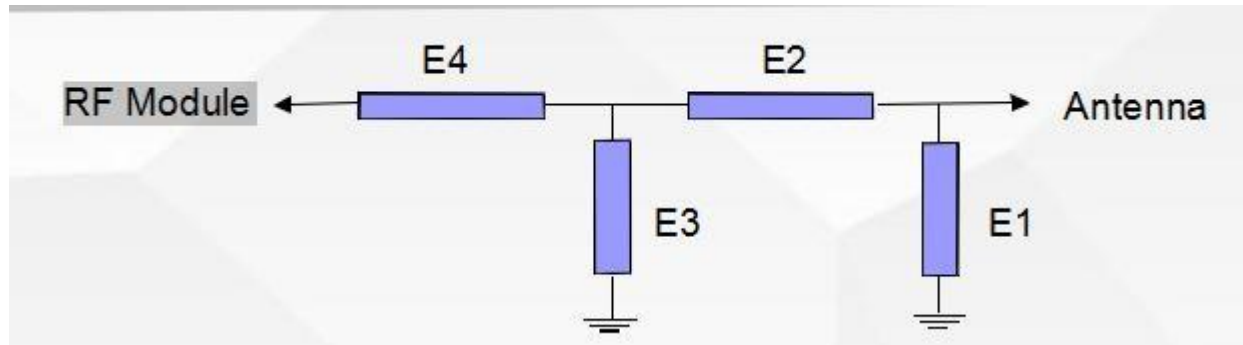
Machine type	Smart straight board				
		Band information	Trapezoidal form	Matching changes	
Information about antenna types and frequency bands	main antenna	GSM. 2. 3.5.8 WCDMA B1. B2. B5.B8 LTE. B38 B39 B40 B41 B1 B2 .B3 B4 B5 B7. B8 B12 B17 B20	PIFA	deny	
	slave antenna	WiFi BT gps NFC	PIFA	deny	
	diversity antenna				
Antenna material	Main antenna FPC; secondary antenna FPC.				

Building-out circuit (matching circuit)



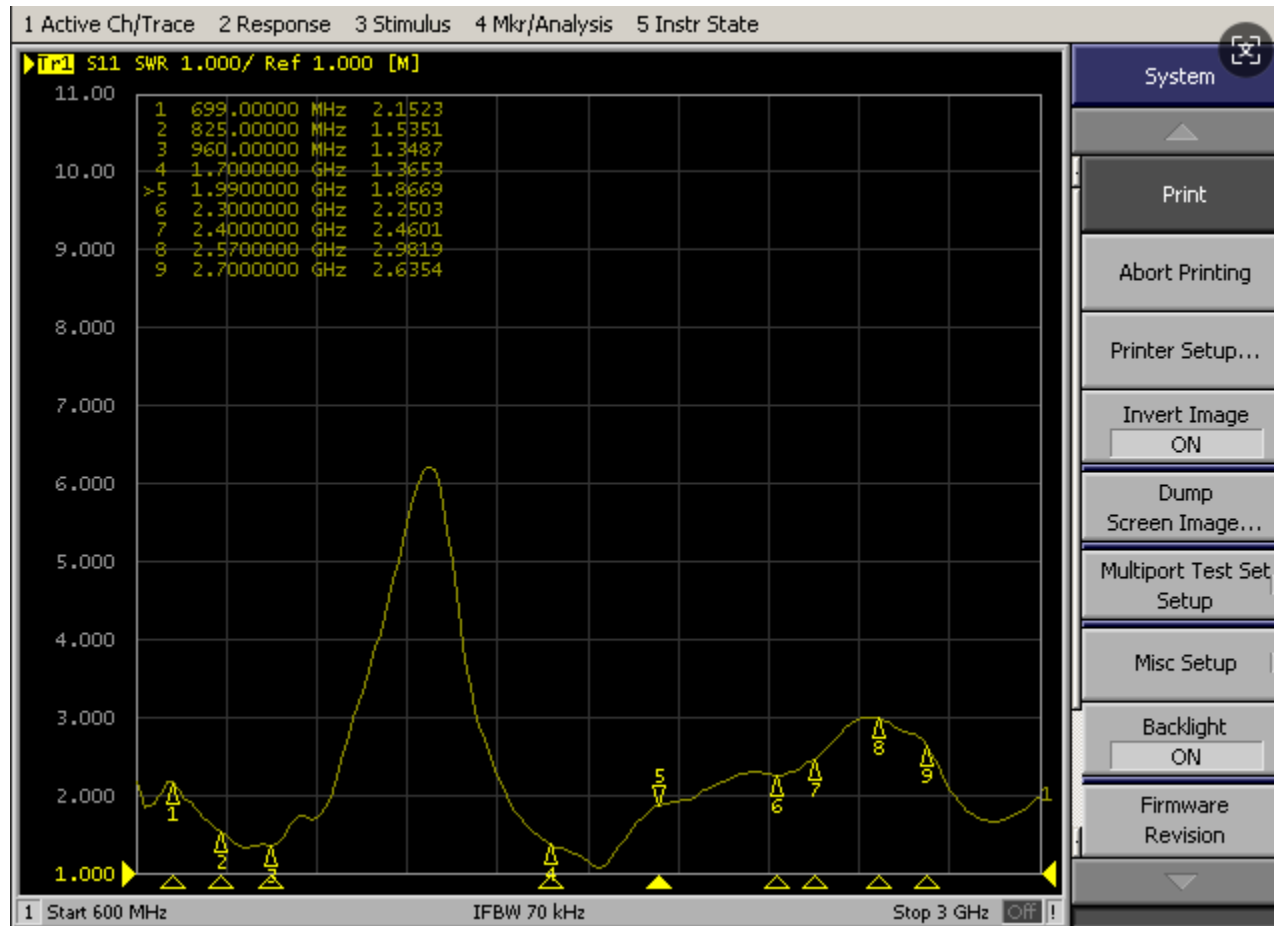
		Element	Value	Illustration of the drawings
main antenna		E 1 (0201)		The original matching circuit of the motherboard is unmodified
		E2(0201)		
		E3(0201)		
		E4(0201)		

Building-out circuit (matching circuit)



Three-in-one antenna	Element	Value	Illustration of the drawings
	E1(0201)		The original matching circuit of the motherboard has not been modified.
	E2(0201)		
	E3(0201)		
	E4(0201)		

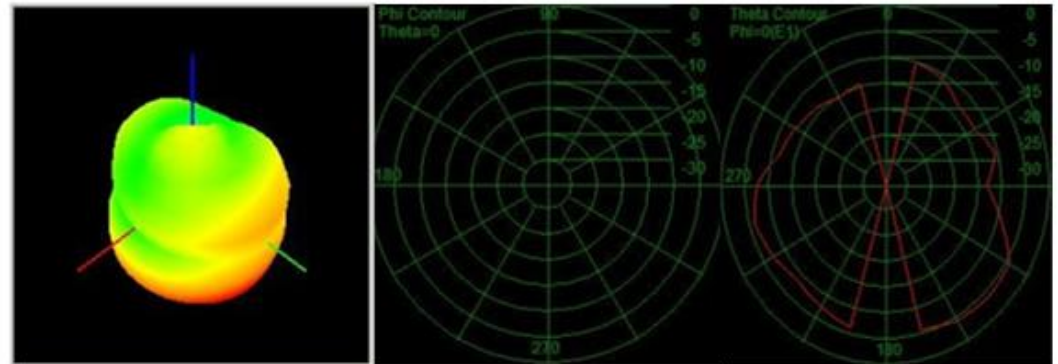
2G/3G/4G antenna



2G/3G/4G antenna

Channel	Gain(dBi)	Efficiency(%)
704	-1.2	14.5
730	-1.3	16.5
824	-1.0	22.4
880	-1.8	26.5
910	-2.0	25.4
960	-2.2	22.0
1700	1.2	38.5
1750	1.6	39.2
1800	1.8	40.2
1850	1.92	37.6
1900	1.34	35.2
1950	0.92	33.8
2000	0.76	32.6
2050	0.46	30.6
2100	0.37	30.0
2150	0.21	29.6

820-960

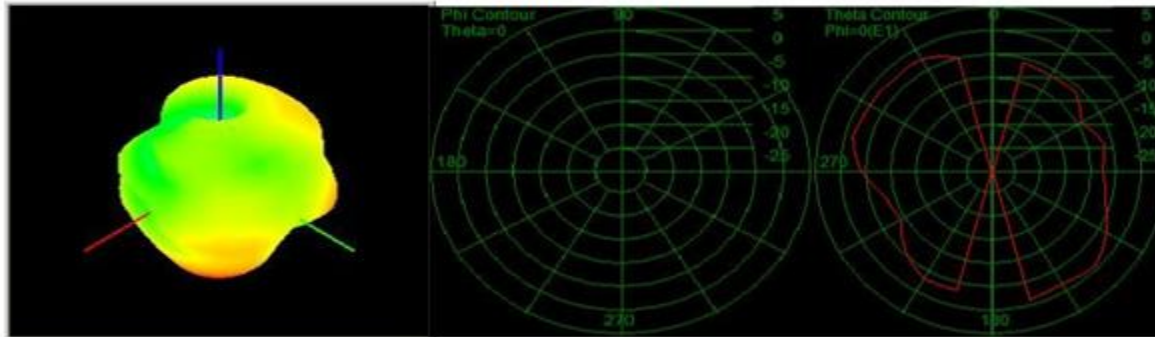


880-960

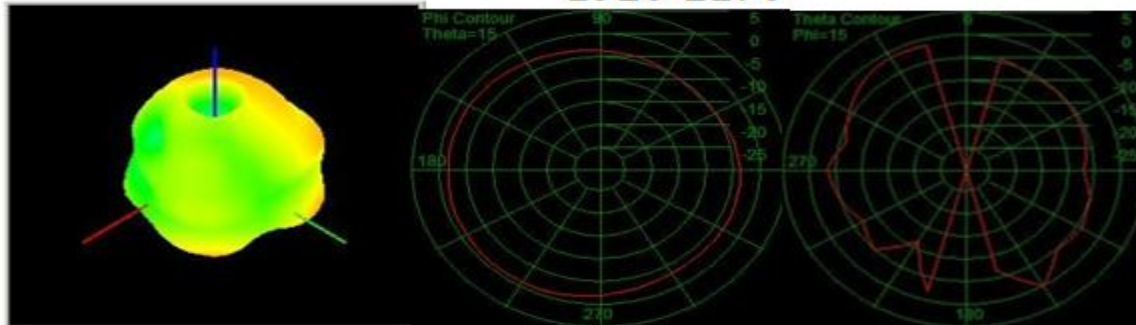


2G/3G/4G antenna

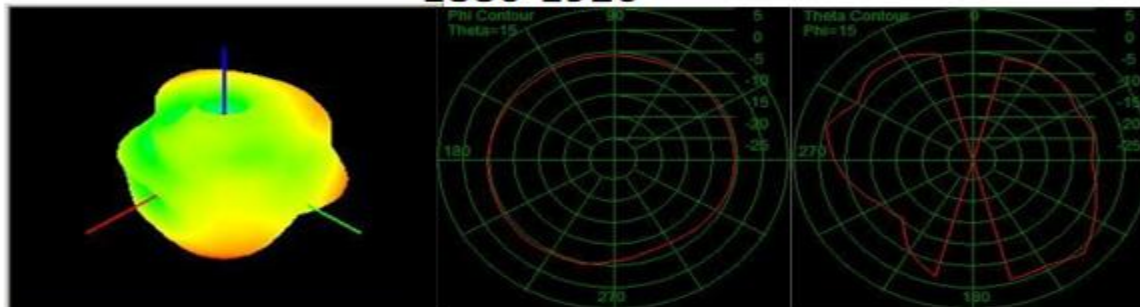
1880-1998



1920-2170



1880-1920



2G/3G/4G antenna

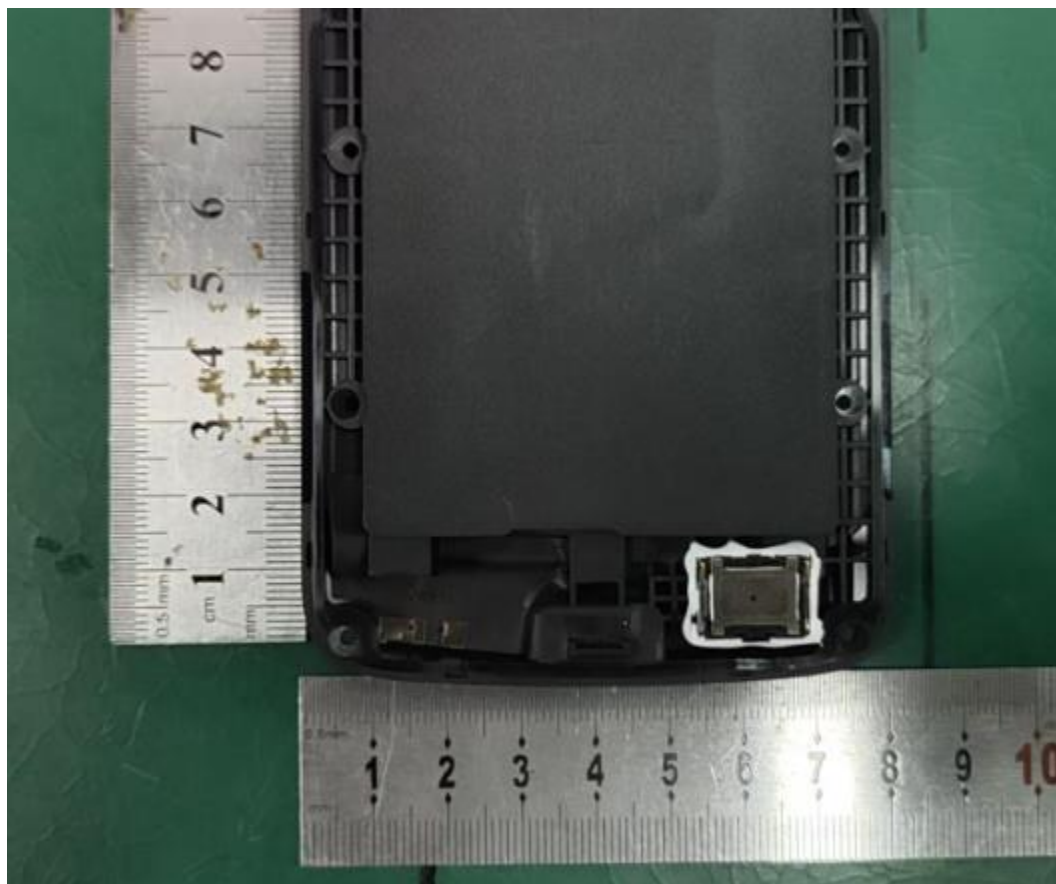
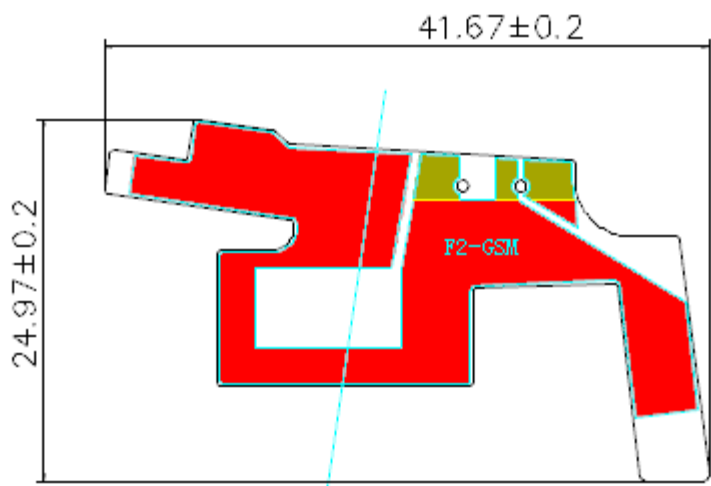
Frequency band	Channel	TRP (dBm)	TIS (dBm)	Frequency band	Channel	TRP (dBm)	TIS (dBm)
EGSM 900	Low	26.4	-104.3	DCS 1800	Low	25.3	-103.5
	Mid	26.1	-104.2		Mid	26.2	-103.4
	Hig	25.6	-103.5		Hig	26.5	-103.2
EGSM 850	Low	25.0	-103.2	PCS 1900	Low	25.3	-103.2
	Mid	25.2	-103.0		Mid	25.6	-103.6
	Hig	25.4	-102.0		Hig	25.3	-103.2
WCDMA Band 1	Low	17.6	-104.2	WCDMA Band 5	Low	16.4	-103.2
	Mid	17.3	-104.6		Mid	16.8	-103.3
	Hig	18.3	-104.2		Hig	17.0	-103.0
WCDMA Band 2	Low	18.4	-103.0	WCDMA Band 8	Low	17.5	-104.2
	Mid	17.3	-103.2		Mid	17.3	-104.0
	Hig	17.0	-103.1		HIG	16.8	-103.0

2G/3G/4G antenna

Frequency band	Channel	TRP (dBm)	TIS (dBm)	Frequency band	Channel	TRP(dBm)	TIS(dBm)
LTE B34	Low	17.8	-89.6	LTE B38	Low	17.2	-88.3
	Mid	18.0	- 89.8		Mid	17.5	-88.2
	Hig	17.3	-89.3		Hig	17.4	-88.4
LTE B39	Low	18.3	-90.3	LTE B40	Low	16.3	-89.6
	Mid	18.4	-90.6		Mid	17.4	-89.2
	Hig	18.0	-90.2		Hig	18.0	-89.4
LTE B41	Low	17.2	-88.3				
	Mid	17.3	-88.4				
	Hig	17.0	-88.3				
LTE B1	Low	17.8	-91.3	LTE B2	Low	18.3	-91.0
	Mid	18.0	-91.2		Mid	17.6	-91.0
	Hig	18.3	-91.6		Hig	17.0	-91.4
LTE B3	Low	16.8	-93.4				
	Mid	18.3	-93.5				
	Hig	18.7	-93.6				

2G/3G/4G antenna

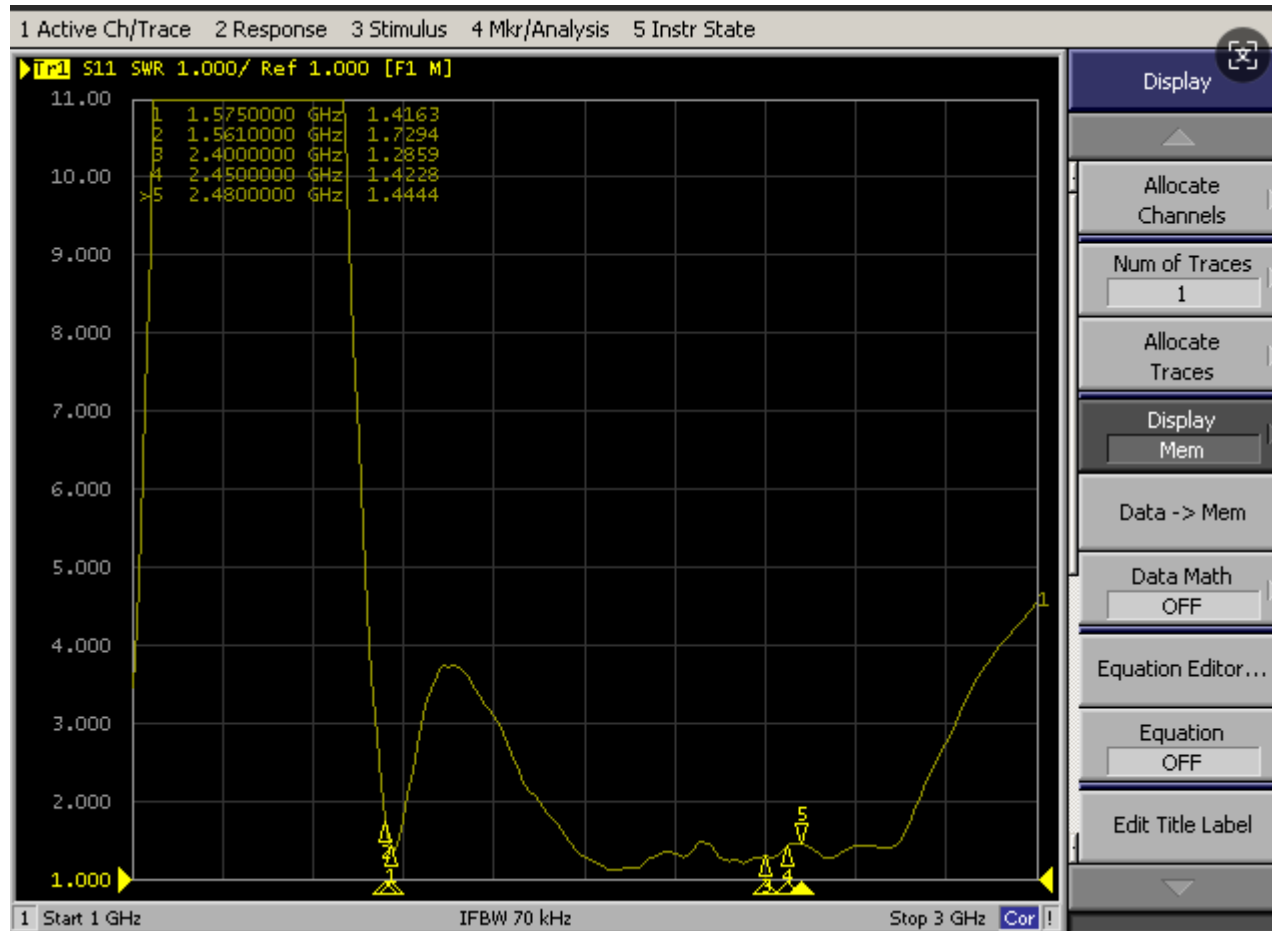
Frequency band	Channel	TRP(dBm)	TIS(dBm)	Frequency band	Channel	TRP(dBm)	TIS(dBm)
LTE B5	Low	16.5	-90.2	LTE B7	Low	18.2	-91.5
	Mid	16.7	-90.6		Mid	18.5	-91.8
	Hig	17.2	-90.2		Hig	18.2	-91.4
LTE B8	Low	17.8	-89.6	LTE B12	Low	17.2	-90.2
	Mid	17.6	-89.3		Mid	17.0	-90.6
	Hig	16.3	-89.2		Hig	16.8	-90.8
LTE B17	Low	16.8	-90.2	LTE B20	Low	16.2	-90.4
	Mid	16.5	-90.4		Mid	16.2	-90.3
	Hig	16.5	-90.1		Hig	16.5	-90.5
	Low				Low		
	Mid				Mid		
	Hig				Hig		



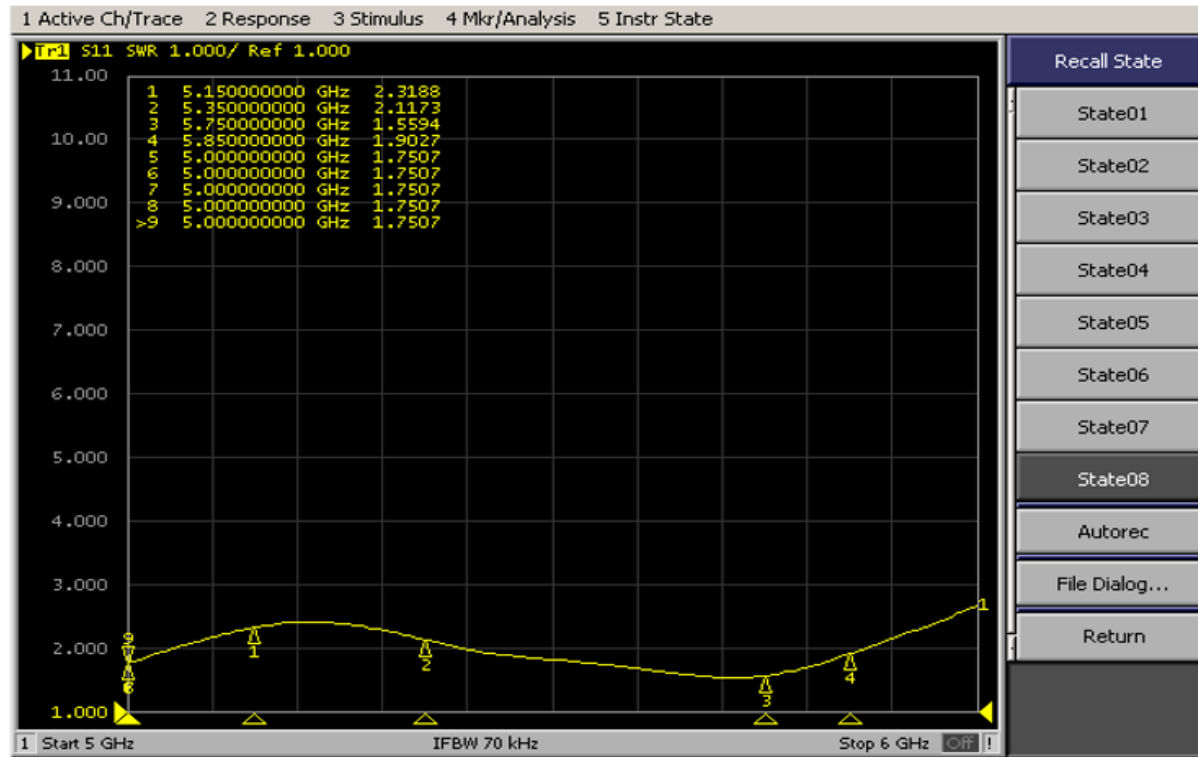
GPS/WIFI/BT antenna

GPS	Maximum signal strength	Number of stars searched	average positioning time	weather regime	GP S
	43	18	47	clear day	
WIFI	Receive signal strength at 10m from WIFI router		Normal distance for barrier-free Internet access		
	49		20		
BT	Clear communication distance for the disabled				
	10m				

WIFI antenna



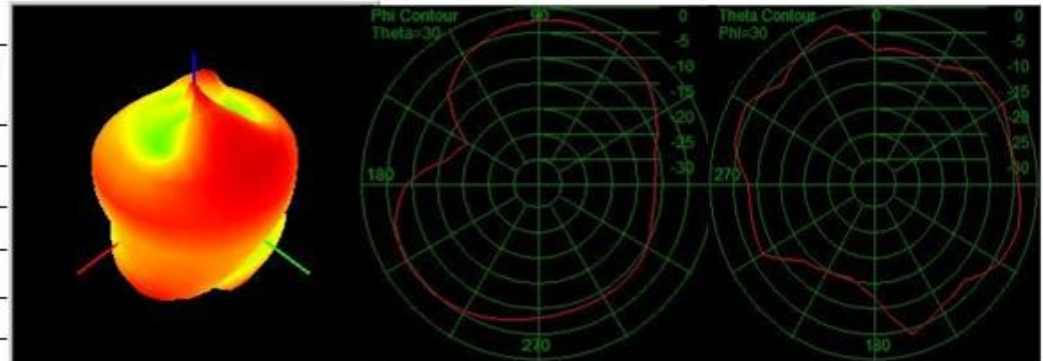
WIFI antenna



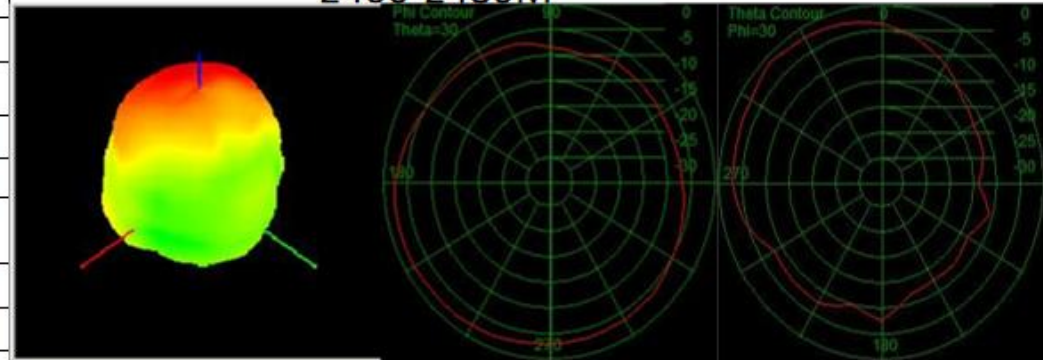
WIFI GPS BT antenna

Channel	Gain(dBi)	Efficiency(%)
1560	0.82	46.3
1570	0.67	44.8
1580	0.35	41.6
2400	0.62	40.5
2450	1.07	43.6
2480	1.13	45.2
5150	0.35	41.8
5200	0.43	42.6
5250	0.65	43.8
5300	0.72	44.2
5350	0.75	44.8
5400	0.82	43.7
5450	1.02	45.2
5600	0.63	42.4
5650	0.75	40.3
5700	0.89	43.0
5750	1.05	44.8
5800	1.12	45.6
5850	1.20	46.7

1560-1580M



2400-2480M



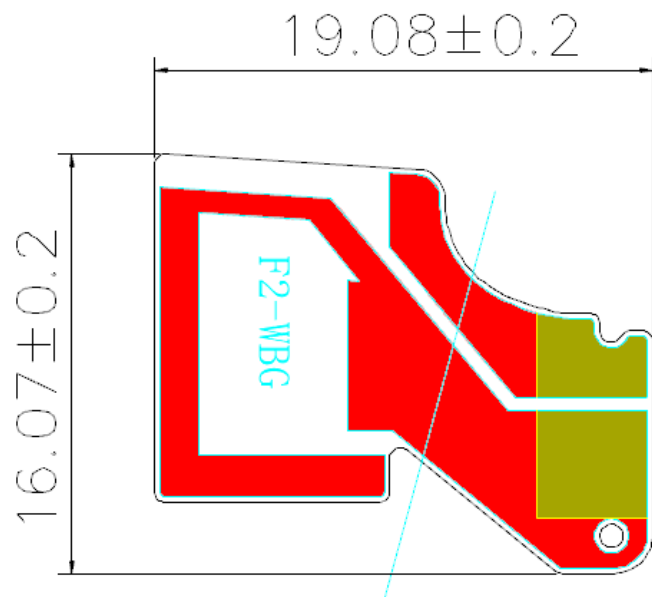
5150-5850M



WIFI antenna

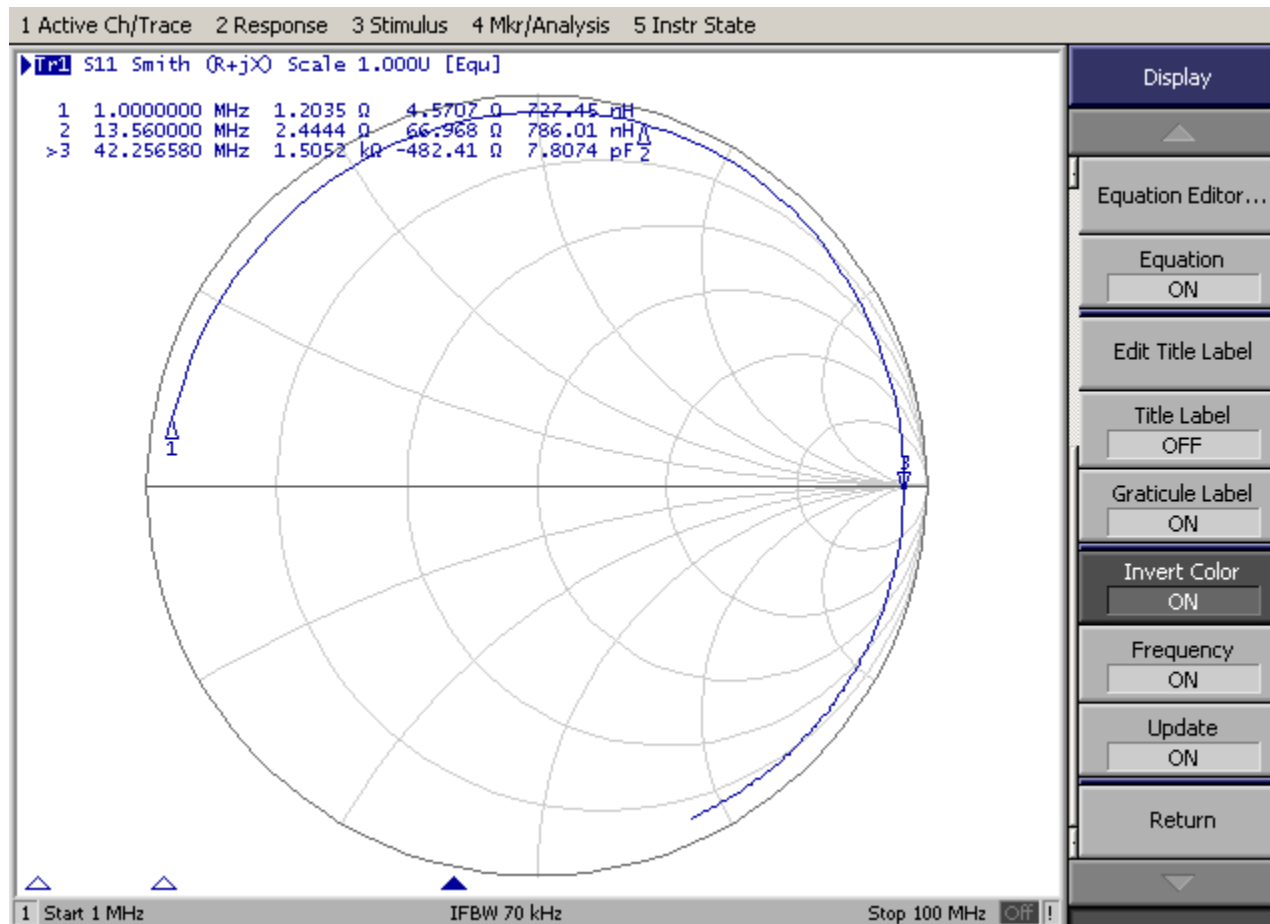
Frequency band	Channel	TRP(dBm)	TIS(dBm)	Frequency band	Channel	TRP(dBm)	TIS(dBm)
802.11B	1	14.6	-83.6	802.11A	36	12.6	-70.2
	6	15.8	-83.5		149	14.3	-70.5
	11	14.5	-83.4		165	14.3	-70.7

WIFI antenna



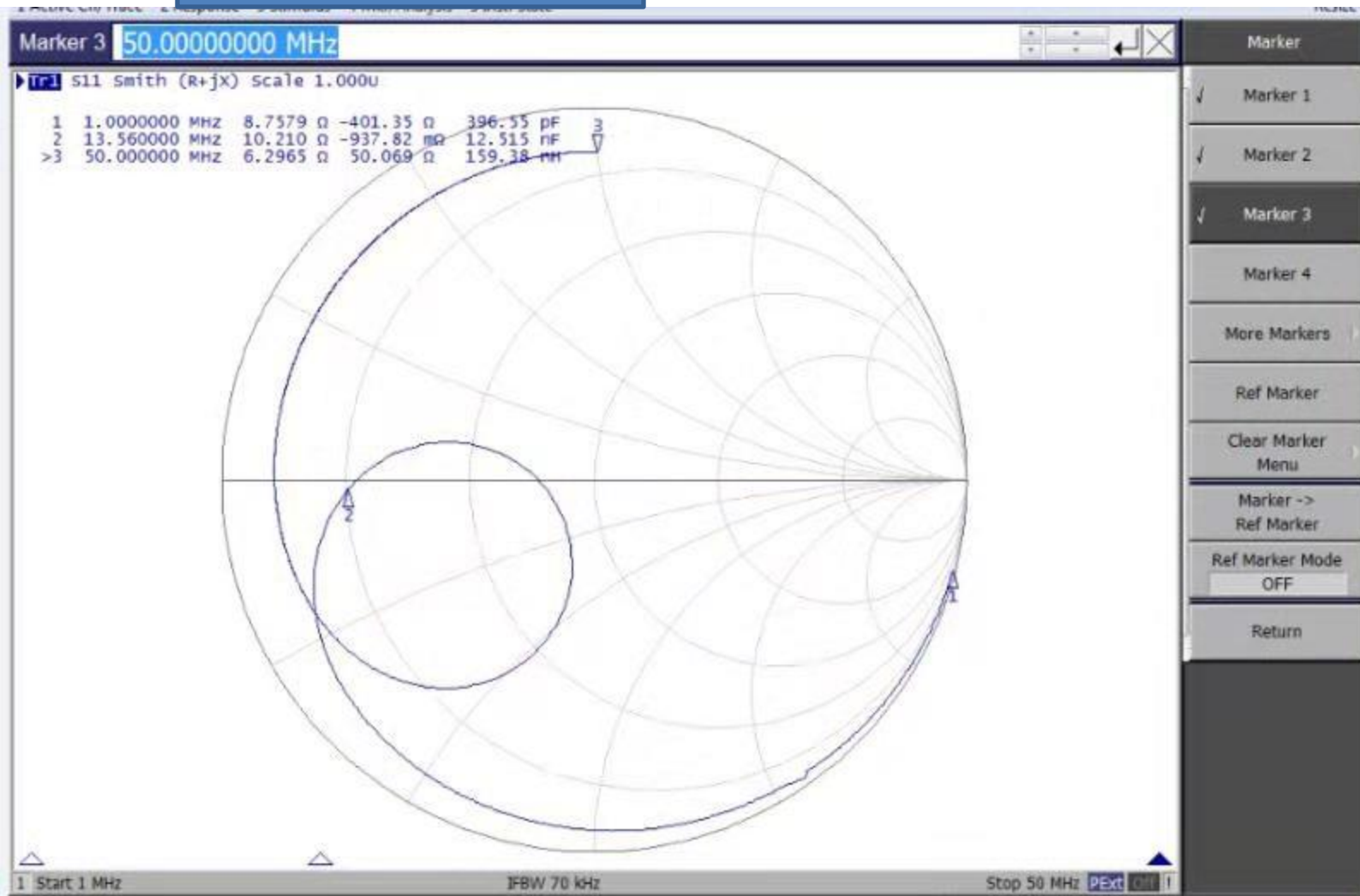
NFC antenna: 13.56MHz, ANT:1.0dBi

Antenna body



NFC antenna

Impedance of the whole
machine





NFC antenna

Card reading communication distance

Reader mode		
	Type2	50mm
	Type3	40mm
	Type4	10mm
	Type5	30mm

