

SHEN ZHEN U. E. TECHNOLOGY CO., LTD



深圳市优E科技有限公司

## **Antenna test report**

**For**

星丽扬晨

**Product name**

**F111(900M~1800M)**

**Jun.10.2010**

Confidential

Shenzhen **U.E.** Technology Co., Ltd has possession of the proprietary information provided in this presentation and this proprietary information shall be kept in strict confidence and not disclosed to any person or firm without the prior written consent of **U.E.**.

**Product Information**

<b>Product Name</b>	星丽扬晨
<b>Product Number</b>	
<b>Customer Name</b>	F111(900M~1800M)
<b>Customer Number</b>	
<b>Product Version</b>	
<b>Frequency Bands</b>	900~1800
<b>Others</b>	

**Documentation**

<b>Version Number</b>	<b>Date</b>	<b>Distribution List</b>

	<b>Signature</b>	<b>Date</b>
<b>Written By</b>	唐文	2010/06/10
<b>Confirmed By</b>	戴海军	2010/06/10
<b>Approved By</b>	欧阳清	2010/06/10

## **Contents**

### **1.0 Overview**

#### **1.1 Frequency Band**

#### **1.2 Special Information**

### **2.0 Summary of the test results**

#### **2.1 Results**

#### **2.2 Conclusion**

### **3.0 Test Setup**

#### **3.1 Test Method**

#### **3.2 Test Facilities**

#### **3.3 Test Condition**

#### **3.4 Antenna proposed**

#### **3.5 Antenna mounted**

#### **3.6 Matching Circuit used**

### **4 Test Results**

#### **4.1 TRP and NHPRP**

#### **4.2 TIS and NHPIS**

#### **4.3 Test. Conduction**

#### **4.4 Efficiency**

#### **4.5 Gain**

### **5 Charts (optional)**

## 1.0 Overview

The electronic performance of the antenna supporting [星丽杨晨 F111](#) mobile phone is introduced in this report.

### 1.1 Frequency Band

The antenna designed for the handset phone mentioned above should cover the frequency bands checked in the following chart:

Band Name	Frequency Range	Test required	
GSM850	824MHz to 894MHz		No
GSM900	880MHz to 960MHz	Yes	
DCS	1710MHz to 1880MHz	Yes	
DCS	1850MHz to 1990 MHz		No

### 1.2 Special information

**Not mentioned in this product.**

## 2.0 Summary of the test results

### 2.1 Results

- l The return loss data is acceptable for all bands.
- l The gain and efficiency performance is also acceptable for these bands.
- l The TRP and TIS of all bands is acceptable.

Summary data shown in the following table:

Frequency Band	Return Loss	Average Gain dBi	Average Efficiency
GSM900	< - 5.9	-4.96688721	32.8158411%
PCS1800	< - 6.18	-2.5187216	40.6667%

### 2.2 Conclusion

The performance of the antenna designed for the handset phone is acceptable.

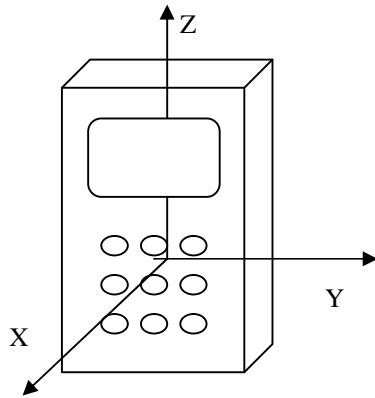
### 3.0 Test Setup

All data presented here is collected at the standard antenna development facilities.

#### 3.1 Test Method

The antenna under test (AUT) is placed in an impedance test room to conduct VSWR measurements. A  $50\ \Omega$  coaxial cable is connected to the  $50\ \Omega$  point at the switch connector on the PCB. The ferrite beads loaded coaxial cable is used to minimize the influence of induced current on the outside of the cabling.

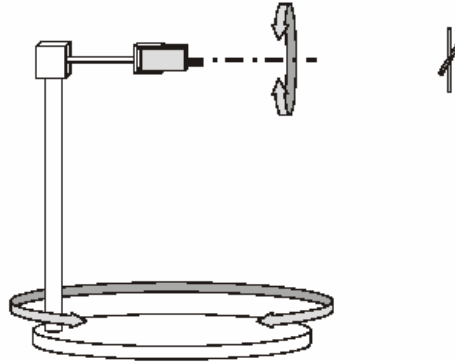
The gain of the antenna is measured in the standard chamber. The antenna is measured in free space in H Plane (XOY Plane), E planes (XOZ Plane and YOZ Plane) with position setting up according to Fig.1.



**Fig.1 Position ORI, Antenna is set vertical straight.**  
XOY Plane defined as H Plane.

**The efficiency is calculated accordingly.**

**The combined- axis positioning system shown in the following picture is used.**



**TRP and TIS are tested and calculated according to CTIA standard.**

### **3.2 Test Facilities**

**3m Standard Chamber**

**Network Analyzer, TRP/TIS Test system**

**Ferrite beads**

### **3.3 Test Condition**

**The Antenna is measured in the room temperature environment.**

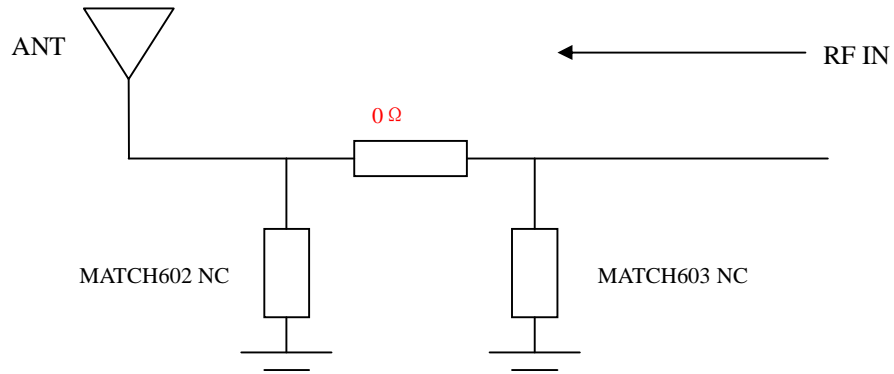
### **3.4 Antenna proposed**

**Fig.2 shows the antenna designed for the handset phone.**

**Fig.2 Antenna proposed**



### 3.6 Matching Circuit used



**Fig4. Matching circuit**

## 4 Test Results

### 4.1 TRP and NHPRP

Freq. Band	Channel No.	TRP	NHPRP $\pm 30^\circ$
GSM900	1	28.6	28.0
	62	29.2	28.6
	124	29.7	29.1
DCS	512	24.75	24.07
	698	25.85	25.12
	885	25.65	25.09

### 4.2 TIS and NHPIS

Freq. Band	Channel No.	TIS
GSM900	1	- 102.1
	62	- 102.3
	124	- 102.5
DCS	512	- 102.77
	698	- 101.99
	885	- 100.53

## 4.3 Test. Conduction

## 4.3. 1 F111-V2.0 PCBA cable RF test. Conduction:

Test conditions: DownLink Cell power: -70dBm Cable loss: 0.5dB for GSM ;0.8dB for DCS;

GSM TX	Power	1	62	124	Frequency errors (40 信道)< 90 Hz	Phase error Peak/ RMS (40 信道)< 20 / 5deg
Standard	model	#1	#1	#1		
32±1	Lev5	31.1	31.3	31.4	12	3.2/1.2
40±2	RX Level	38	39	40	1#机	263
优于 -106	GSM RX Sensitivity	-107	-107	-107	The maximum average call current （mA） <300	
The normal index						
DCS TX	Power	512	698	885	Frequency errors (700 信道)<180Hz	Phase error Peak/ RMS (700 信道)< 20 / 5deg
Standard	model	#1	#1	#1		
30±1	Lev0	28.1	280	27.9	28	4.5/1.6
40±2	RX Level	41	41	41	1#机	218
优于 -105	DCS RX Sensitivity	-107	-107	-107	The maximum average call current （mA） <260	
The normal index						

## 4.3.2、F111 model machine antenna coupling test index:

Test conditions: TC-5062A Coupling compensation Settings: GSM: -20dB, DCS: -28dB ;

DownLink Cell Power: -70dBm

GSM TX	Power	1	62	124	Frequency errors (62 channel)< 90 Hz	Peak/ RMS
Standard	model	1#	1#	1#		(40 channel < 20 / 5deg
>29	Lev5	29. 4	29. 6	30. 7	-25Hz	1.6/0.7
40±3	RX Level	38	36	36	The maximum average call current (mA )<350	293
优于 -104	GSM RX Sensitivity	-105	-104	-104		
GSM LEV5 Whether there is in the call button interference and failures?						No
DCS TX	Power	512	698	885	Frequency errors (698 channel)< 180 Hz	Peak/ RMS
Standard	model	1#	1#	1#		(698 channel)< 20 / 5deg
>28.5	Lev0	28. 2	28. 1	28. 1	-30	2.5/1.2
40±7	RX Level	40	37	35	The maximum average call current (mA )<350	295
优于 -104	GSM RX Sensitivity	-107	-106	-106		
DCS LEV0 Whether there is in the call button interference and failures?						No

#### 4.4 Efficiency

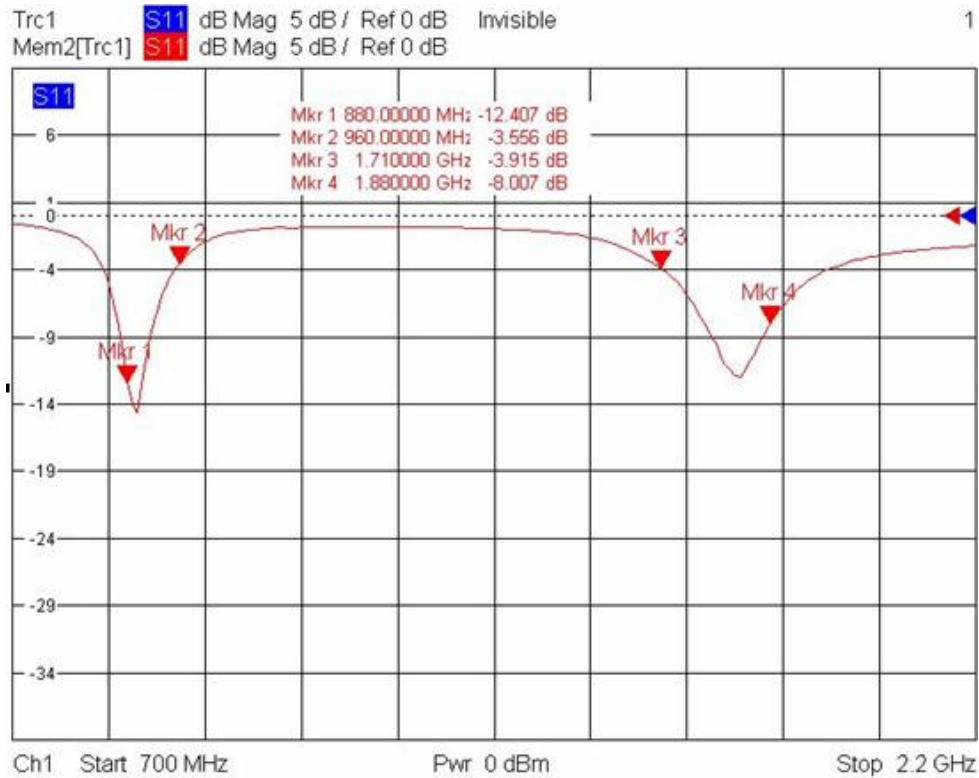
Frequency Band	Frequency	Efficiency (%)
GSM900	880MHz	20.3066%
	920MHz	40.1054%
	960MHz	42.5794%
	Average	32.8158%
DCS	1710MHz	27.0136%
	1800MHz	48.5253%
	1880MHz	46.4621%
	Average	40.6667%

**4.5 Gain**

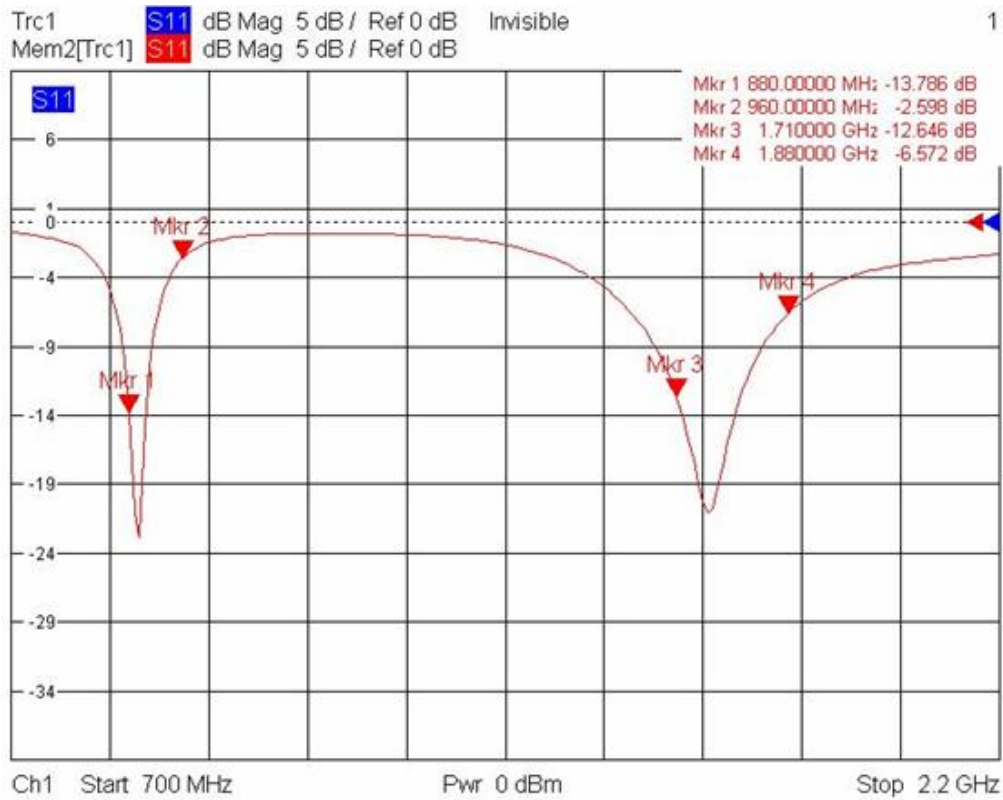
Frequency Band	Frequency	Peak Gain (dBi)	Average Gain	
			H Plane	Spherical
<b>GSM900</b>	<b>880MHz</b>	-1.46	-3.598768559	-6.923618869
	<b>920MHz</b>	0.97	-1.663533741	-3.967973712
	<b>960MHz</b>	0.14	-2.61368698	-4.946509446
	<b>Average</b>	-0.1166	-2.62532976	-5.066747874
<b>DCS1800</b>	<b>1850MHz</b>	-0.78	-5.055017379	-5.526309599
	<b>1920MHz</b>	-2.7	-5.996683101	-2.109464385
	<b>1990MHz</b>	-4.71	-7.188731549	-2.321716217
	<b>Average</b>	-2.733333333	-6.0801428	-3.3191634

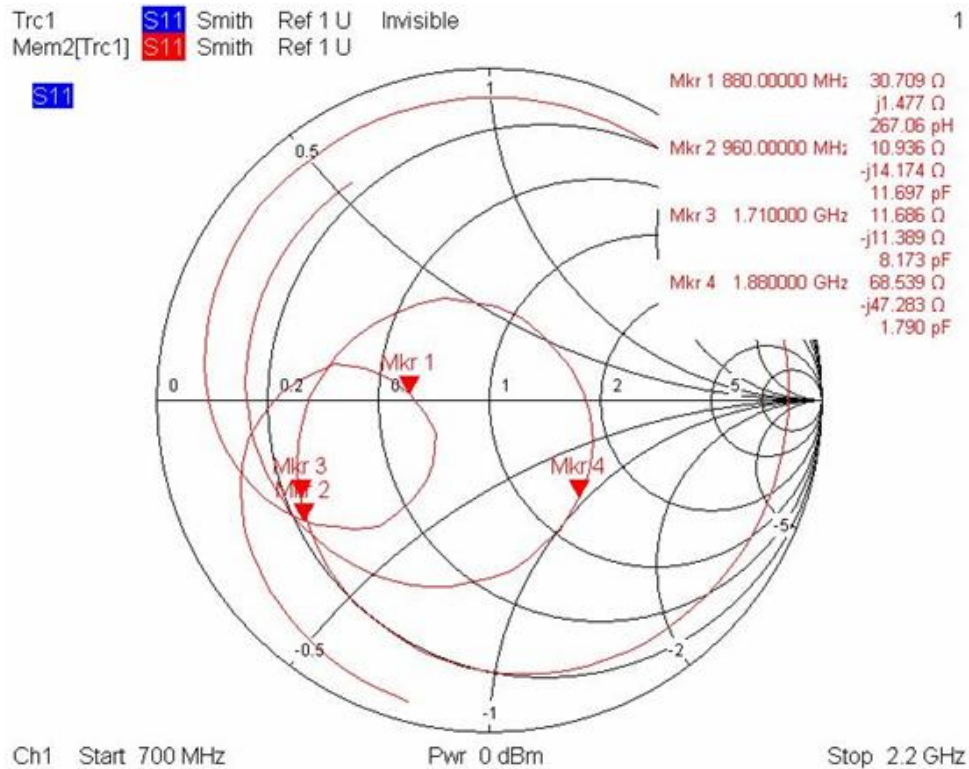
## 5 Charts (optional)

### Return Loss (Full band):

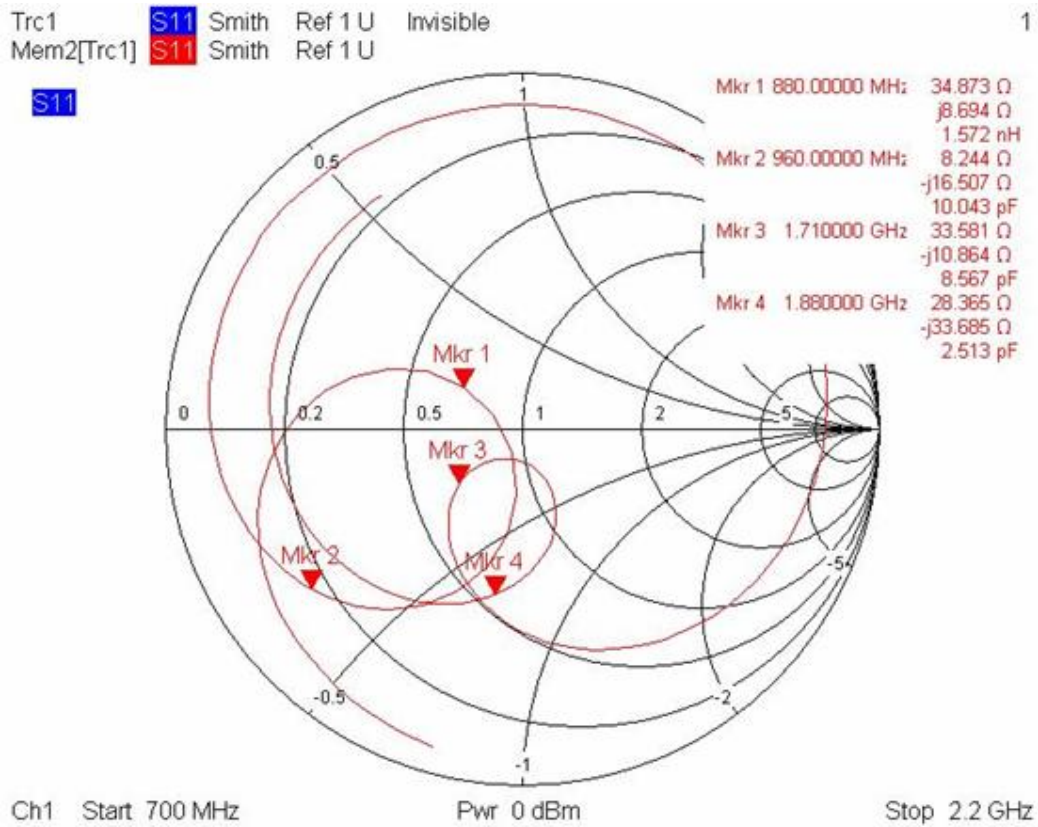


## RETURN LOSS (Free state)

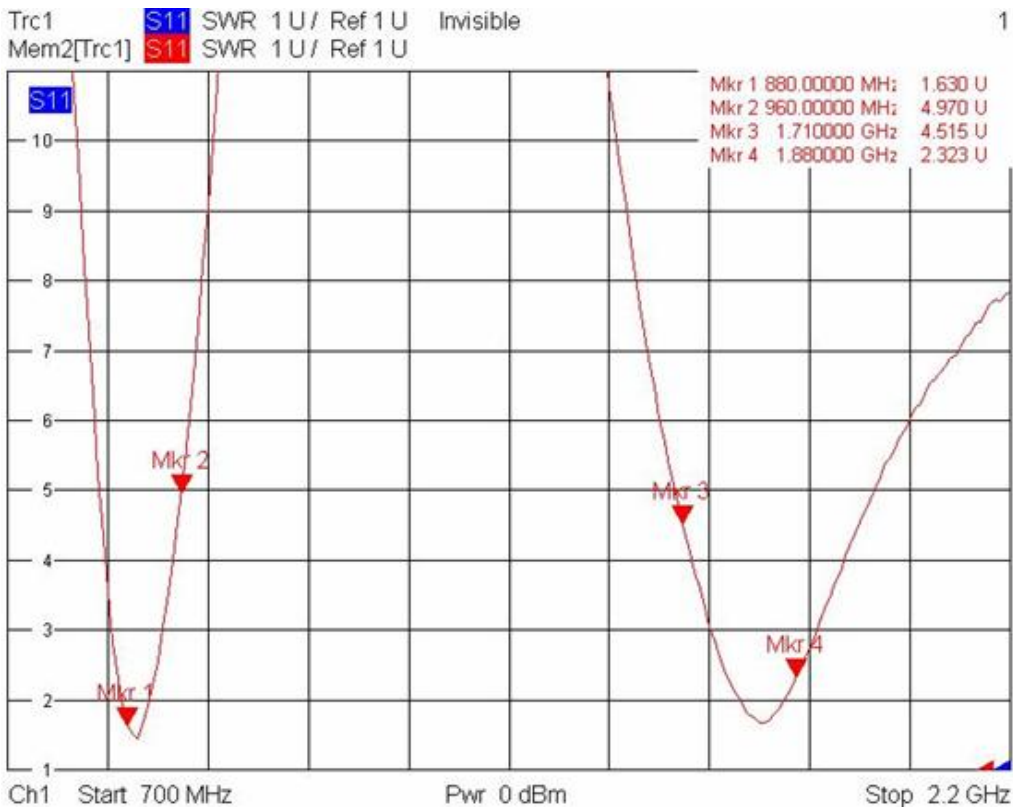
**Return Loss (Full band):****RETURN LOSS (Hand state)**

**Smith Chart (Full band):****Smith Chart(Free state)**



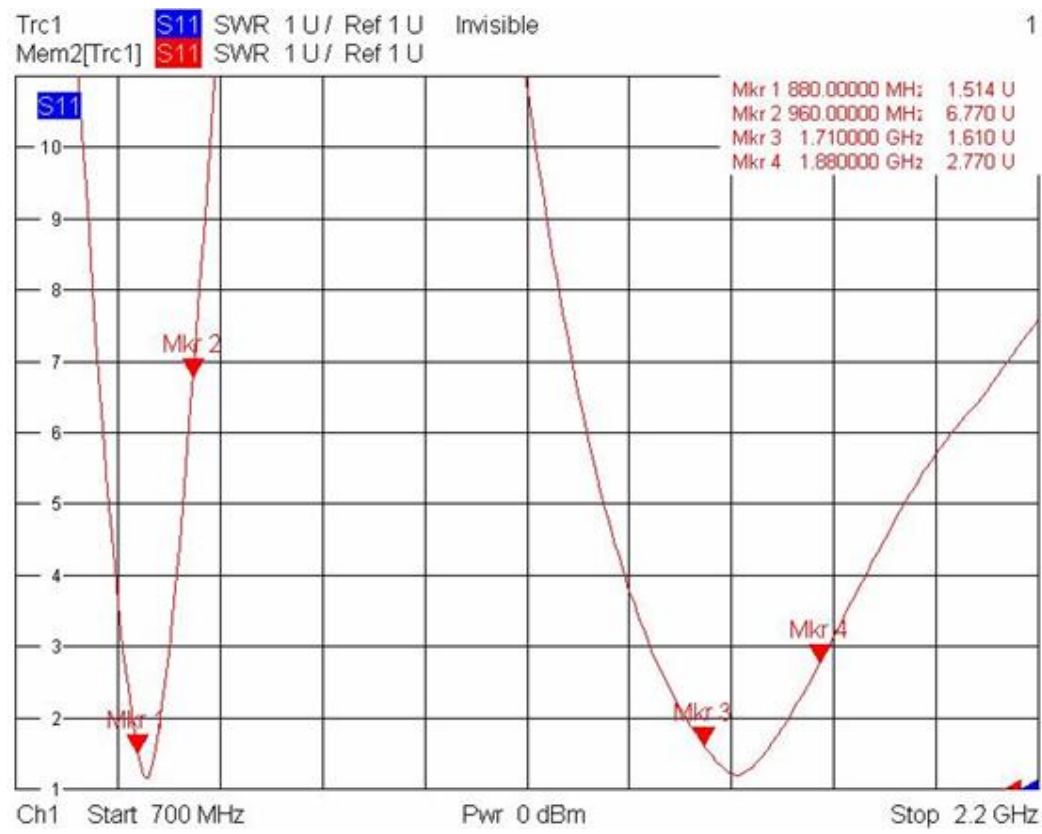
**Smith Chart (Full band):****Smith Chart (Hand state)**

SWR((Full band):



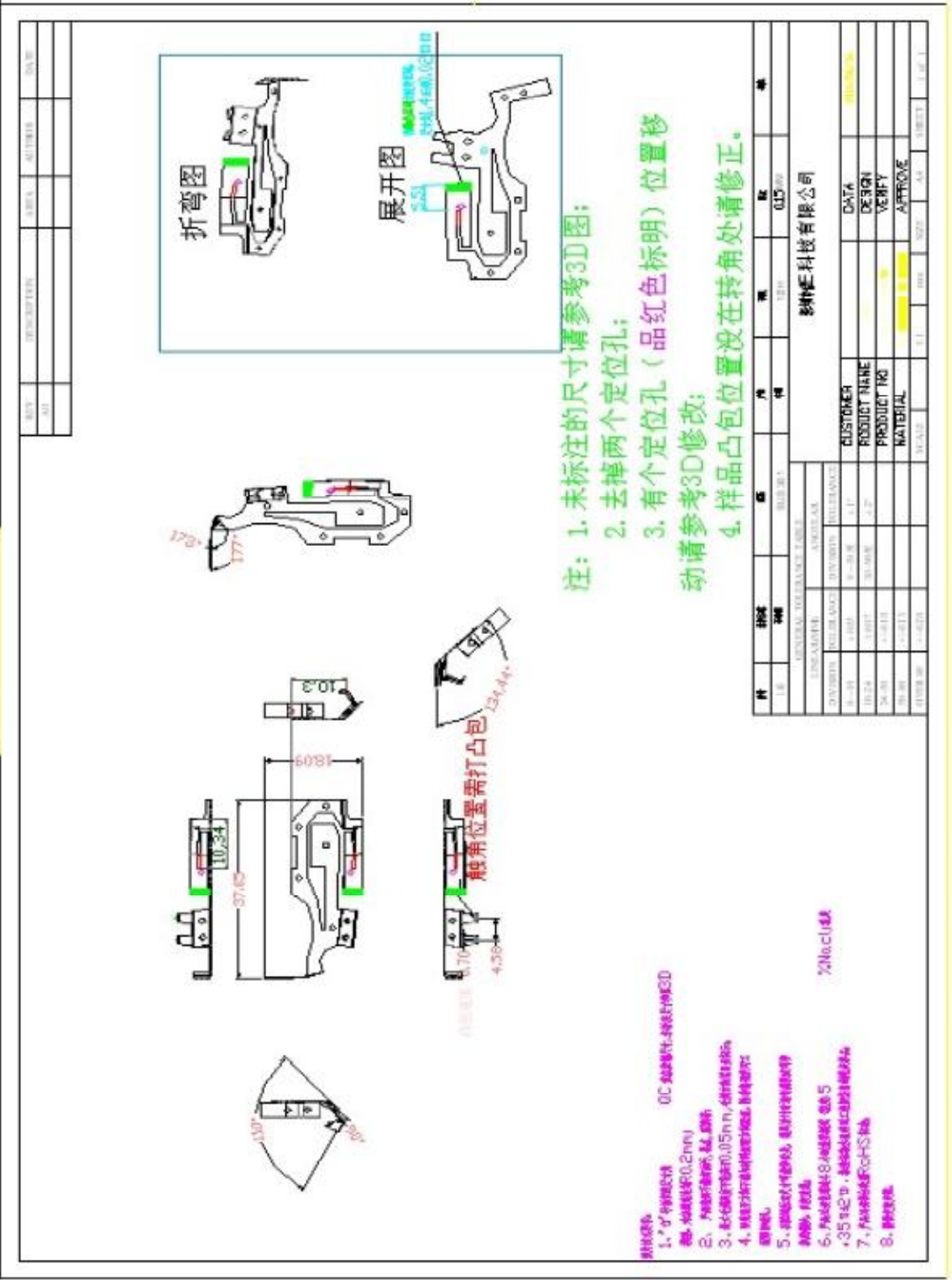
SWR(Free state)

SWR((Full band):



SWR (Hand state)

GSM antenna size effect



[illegible]

**Please note: this antenna and matching circuit is only suitable for use in the test report is specified on the phone F111 shell!**