

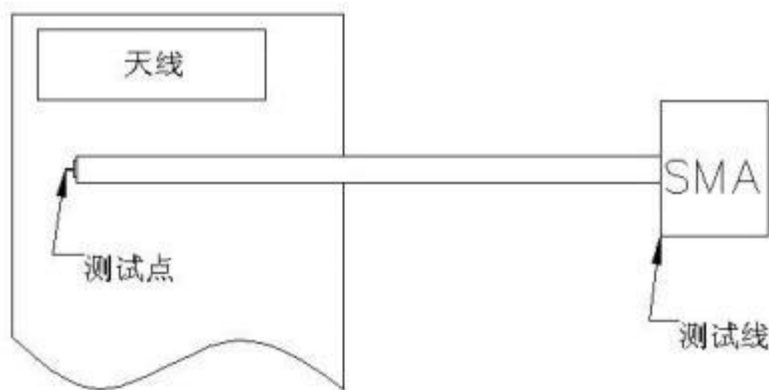
## 1、无源测试治具/Passive test treatment gear

目的：尽可能准确地测试天线的无源参数。

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

制作方法：手机制具是用一根 50 欧姆的同轴电缆，一端连在手机主板的匹配电路后端（射频测试孔前端）的测试点上，另一端连接 SMA 接头。示意图如下：

Preparation method: The hand mechanism uses a 50 ohm coaxial cable, one end is connected to the test point of the back end of the mobile phone motherboard (the front end of the RF test hole), and the other end is connected to the SMA connector. The schematic diagram is as follows:



## 2、S11 测试/S11 test

2.0 S11 测试方法说明 / 2.0 S11 Description of the test method: :

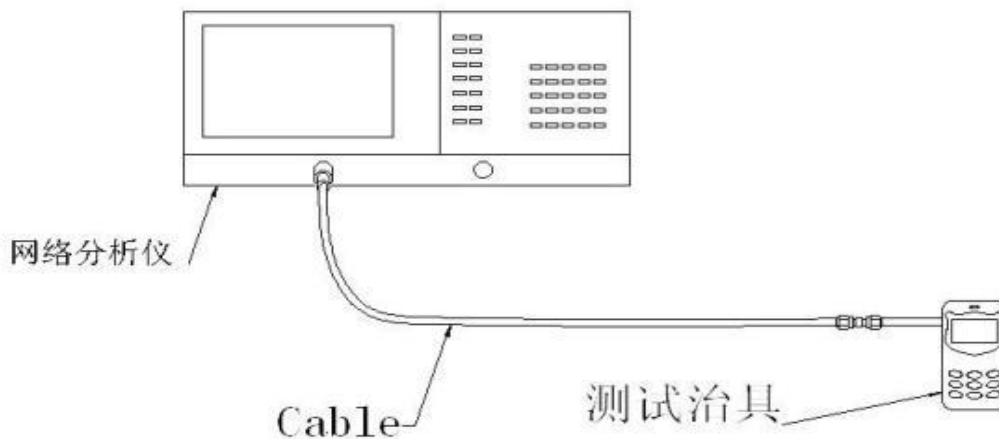
测试设备：网络分析仪(安捷伦 8753D)

Test Equipment: Network Analyzer (Agilent 8753D)

测试方法：用一根 50 欧姆 CABLE 电缆从仪器测试端口导出，使用校准件校准后连接手机制具的 SMA 接头，记录相关频点对应的回波损耗和驻波比。

Test method: Export a 50 ohm CABLE cable from the instrument test port, use the SMA connector of the calibration, and record the echo loss and standing wave ratio corresponding to the relevant frequency point.

测试示意图如下 / The test schematic diagram is as follows: :



测试示意图

## 2.1 S11 参数/S11 parameter

WIFI 天线/ WIFI antenna

Frequency (MHZ)	2400	2450	2500
return loss (dB)	-19	-25	-18
standing-wave ratio (SWR)	1.4	1.5	1.2



## 3、暗室测试/Dark room test

4.0 测试设备/4.0 Test the equipment

测试系统: ETS 屏蔽暗室

Test system: the ETS-shielded dark room

测试环境: 温度  $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$  , 湿度  $50\% \pm 15\%$

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

测试设备: 测试无源数据时, 使用网络分析仪 Agilent E5071B

Test equipment: Use the network analyzer Agilent E5071B when testing the passive data

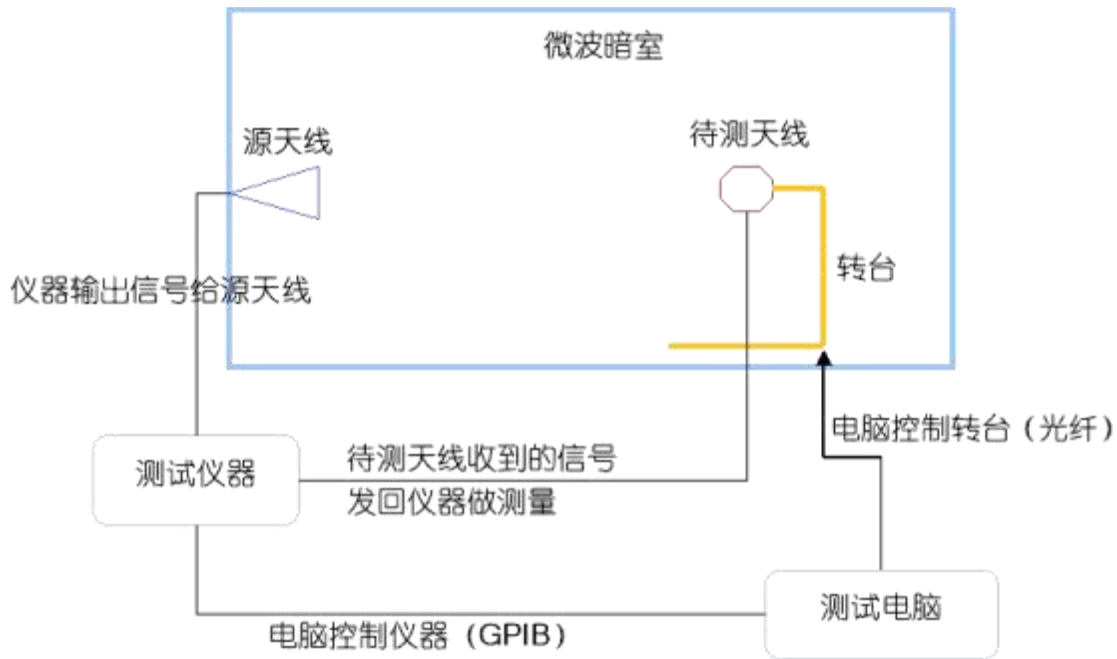
测试有源数据时, 使用综合测仪 CMW500

When testing the active data, use the integrated meter CMW500

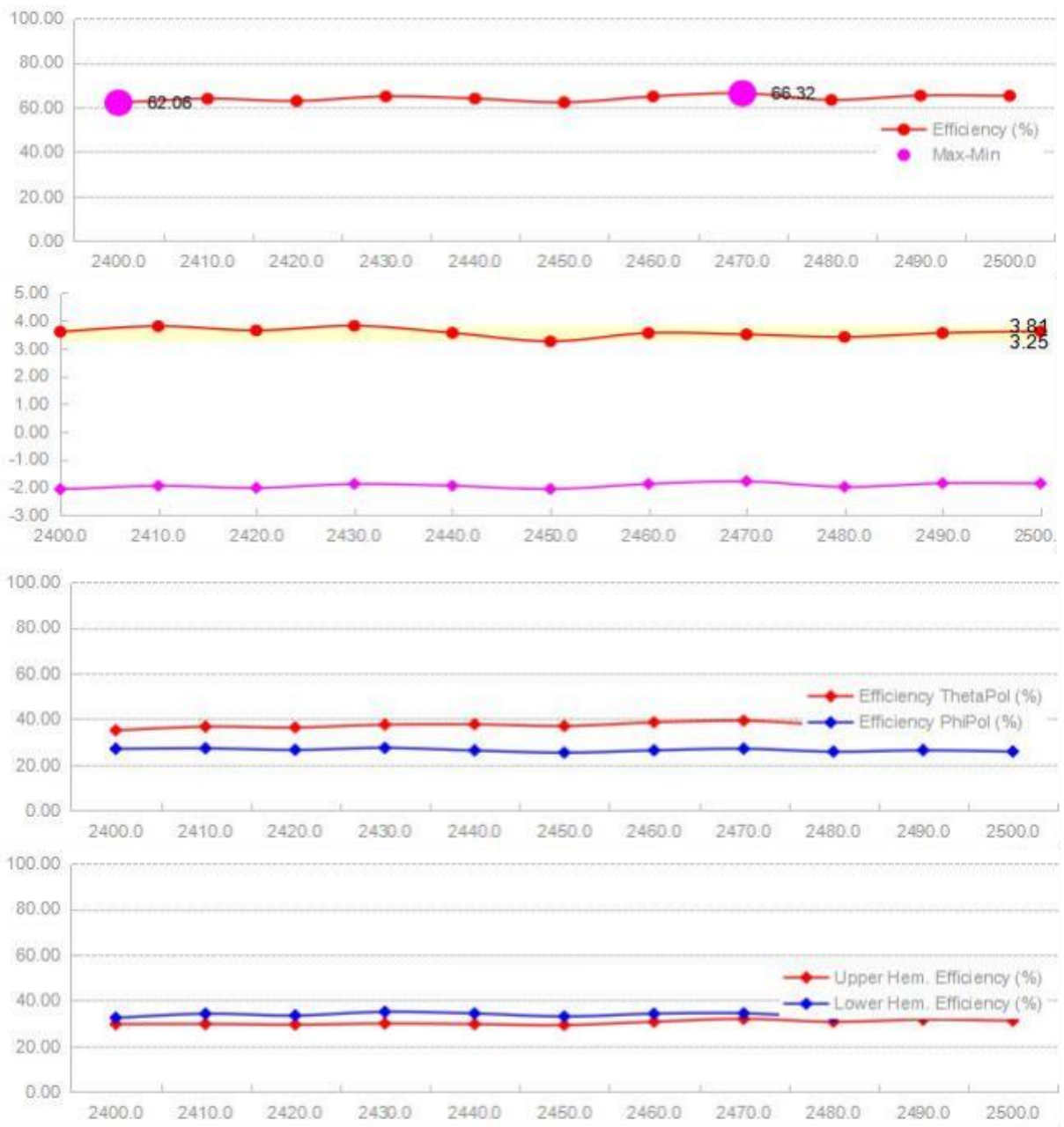
### 3.1 测试方法描述及图示:

测试系统由暗室、转台、源天线系统、测试仪器和控制电脑组成。其中测试电脑是整个系统的控制者, 在测试的时候, 测试电脑控制转台转动到某角度, 然后控制仪器进行空间衰减测试, 得到的原始数据收集后, 进行数据补偿和修正, 最后得到测试数据。示意图如下:

The test system consists of dark room, turntable, source antenna system, test instrument and control computer. Among them, the test computer is the controller of the whole system. During the test, the test computer controls the turntable to a certain Angle, and then controls the instrument for spatial attenuation test. After the original data is collected, the data compensation and correction are made, and the test data is finally obtained. The schematic diagram is as follows:



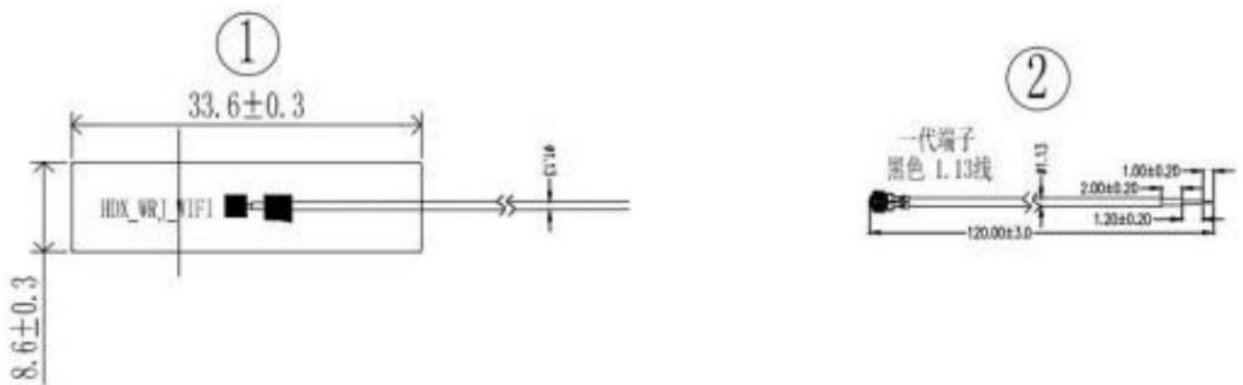
Frequency ID	1	2	3	4	5	6	7	8	9	10	11
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
Efficiency (dBi)	-2.07	-1.95	-2.02	-1.88	-1.94	-2.06	-1.88	-1.78	-1.98	-1.85	-1.86
Gain (dBi)	3.60	3.80	3.65	3.81	3.56	3.25	3.55	3.50	3.41	3.55	3.61
Efficiency (%)	62.06	63.88	62.85	64.92	63.96	62.24	64.90	66.32	63.34	65.28	65.17
Directivity (dB)	5.67	5.74	5.66	5.69	5.50	5.31	5.43	5.29	5.39	5.41	5.47
Peak Gain Position (Theta)	87.00	168.00	168.00	168.00	167.00	167.00	139.00	140.00	142.00	76.00	144.00
Peak Gain Position (Phi)	204.00	100.00	97.00	91.00	90.00	88.00	111.00	111.00	112.00	211.00	112.00
Efficiency ThetaPol (%)	35.09	36.68	36.34	37.55	37.71	36.96	38.58	39.31	37.63	38.95	39.40
Efficiency PhiPol (%)	26.97	27.20	26.51	27.37	26.24	25.28	26.32	27.01	25.71	26.33	25.78
Upper Hem. Efficiency (%)	29.65	29.70	29.43	29.88	29.65	29.25	30.68	31.92	30.67	31.58	31.14
Lower Hem. Efficiency (%)	32.40	34.18	33.42	35.04	34.31	32.99	34.22	34.39	32.67	33.71	34.04



#### 4、Antenna Test Report :

Not available

#### 5、WIFI antenna drawing dimensions



1、Standard \* is the key dimension, and the unlisted tolerance dimension is  $\pm 0.15$ mm

2、The unmarked tolerance is: X=  $\pm 2$  X.X=  $\pm 0.5$  X.XX=  $\pm 0.2$

3、unit: mm