
Antenna Test Report

Vendor Name:ShenZhen ZhongKeRui Electronics CO., LTD.

Product model:NT301

Frequency band: 2.4G

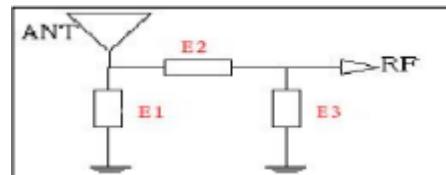
Watchmaking: Wen Caihui	Rf Engineer: Wen Caihui	
Date: 2025.8.21		

Debugging resume:

Revision date	Revise the interior	Reviser	Version
2025.4.10	Sample testing	Wen Caihui	V1.0
2025.8.21	Optimize the antenna	Wen Caihui	V4.0

1. Antenna matching (original mainboard matching)

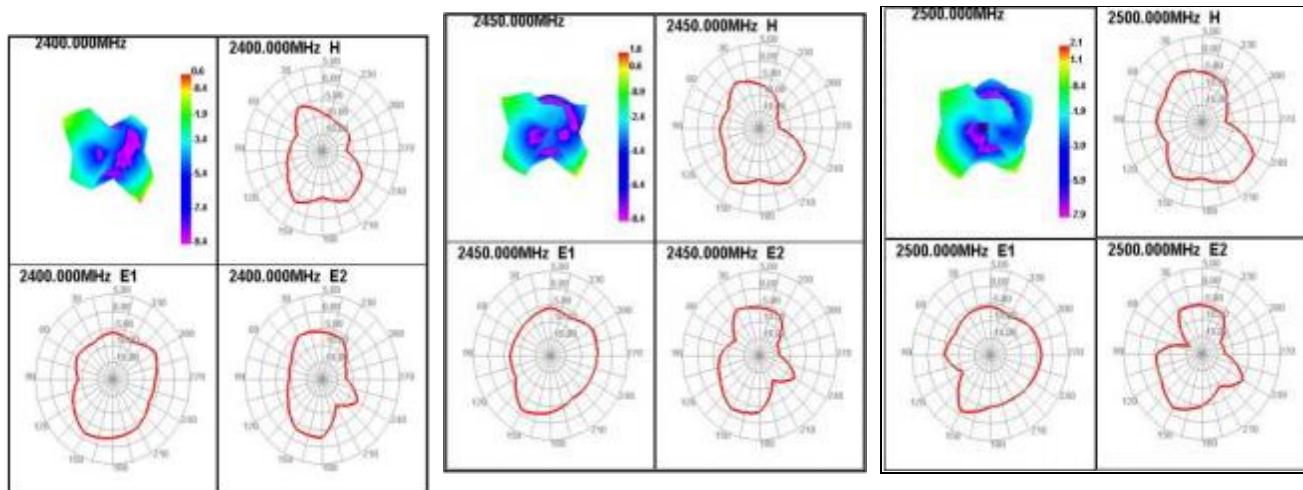
FPC	E1	E2	E3



2. Passive OTA data for FPC antennas:

Freq (MHz)	Effi (%)	Gain (dBi)
2400	34.26	0.58
2410	33.08	0.72
2420	33.75	0.96
2430	34.35	1.27
2440	34.61	1.44
2450	35	1.58
2460	35.19	1.7
2470	35.86	1.89
2480	35.93	1.97
2490	38.43	2.29
2500	36.1	2.06

3. Antenna pattern:



4. Antenna installation position:



5. Testing equipment

- Measuring instruments: microwave anechoic chamber, network analyzer, standard antenna.

- Description of microwave anechoic chamber

This is the microwave anechoic chamber set up by our company in Shenzhen. This microwave anechoic chamber is a far-field measurement system. The size of the anechoic chamber is 7.0 meters x4.0 meters x3.0 meters, and the size of the Quiet zone (Quiet zone) is 15 centimeters x15 centimeters x15 centimeters.

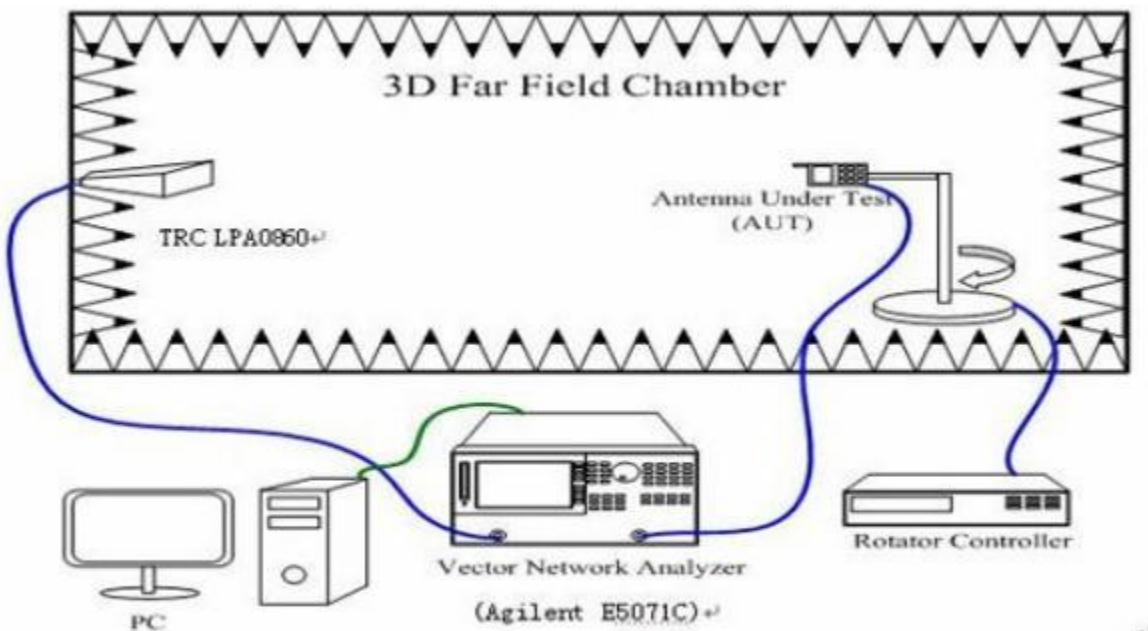


图. 1. 微波暗室内部仪器设置

Figure 1 shows the instrument setup in the microwave anechoic chamber and the connection diagram of the network analyzer. The distance from the transmitting antenna (the model of the transmitting antenna used in this anechoic chamber is TRC LPA0860 800MHZ-6GHZ) to the antenna under test (AUT) is 1.35 meters.

The antenna to be tested is placed on a rotating platform. By controlling the rotation Angle of the turntable, a rough and relatively accurate measurement of the antenna to be tested can be made.

Place the antenna to be tested on the rotating table and measure the 360-degree field strength data of each plane (ZY plane and ZX plane). Let's move on to the day to be measured

The line was replaced with a standard dipole antenna (the model of the standard dipole antenna used in this andarkroom is TRC AD series dipole antenna 800MHz - 2500MHz), and the 360-degree field strength data was measured to be used as the conversion gain standard value.

The gain value and pattern of the antenna under test can be obtained through the conversion of Equation 1.

$$G_{AUT} = G_{stand} + P_{AUT} - P_{stand}$$

G_{AUT} : Gain of AUT

G_{stand} : Gain of Standard Gain Antenna

P_{AUT} : Measured Power of AUT

P_{stand} : Measured Power of Standard Gain Antenna