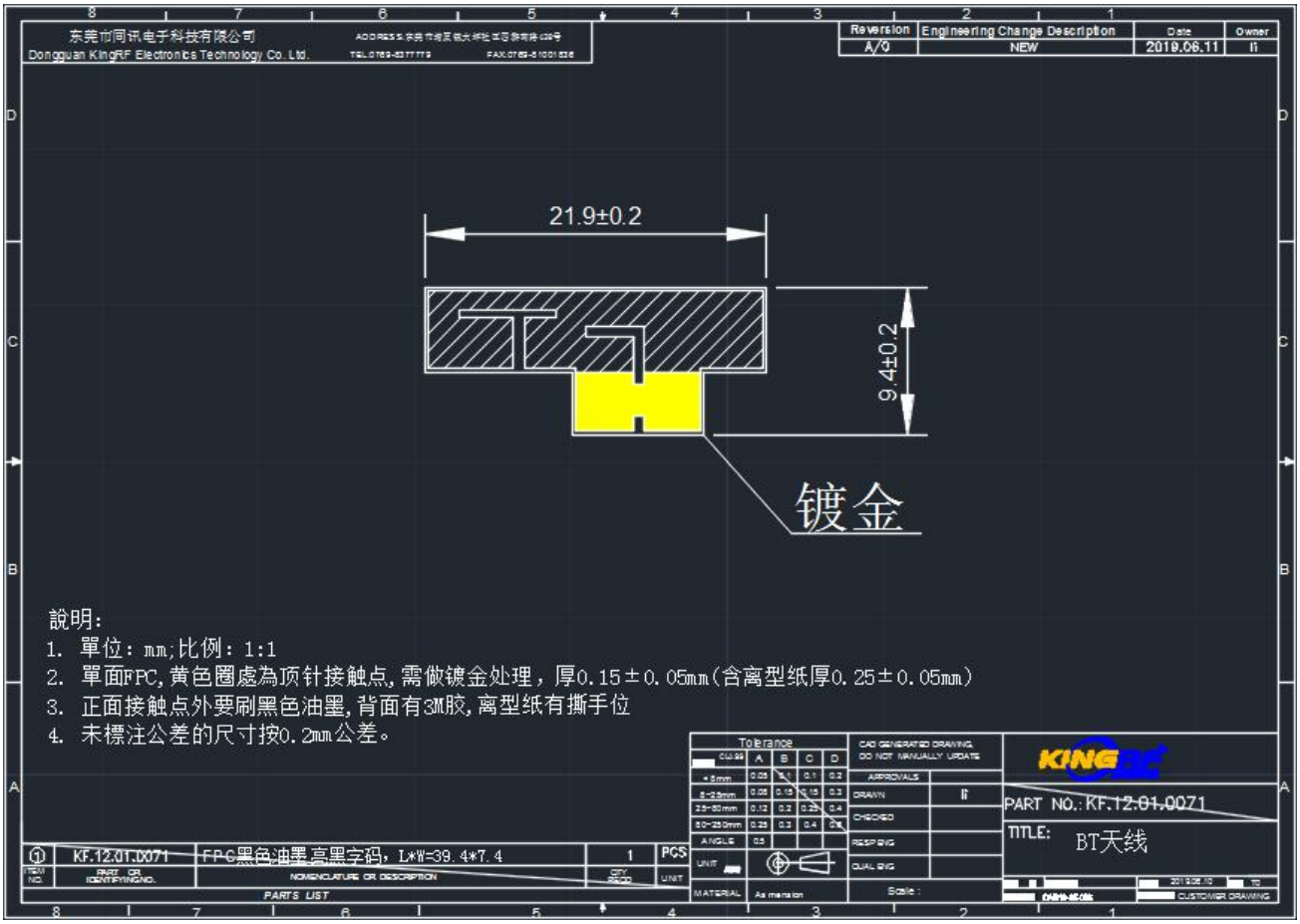
Dongguan KingRF Electronics Technology Co.,Ltd
Floor 2, A Building, Junteng Science and Technology Park,
No.61,Pujiang Road,Daning Community, Dongguan, China

Specification

(Product name)： 2.4G FPC BT built-in antenna

(Specification of goods)：FPC Black

1. （Appearance dimension）

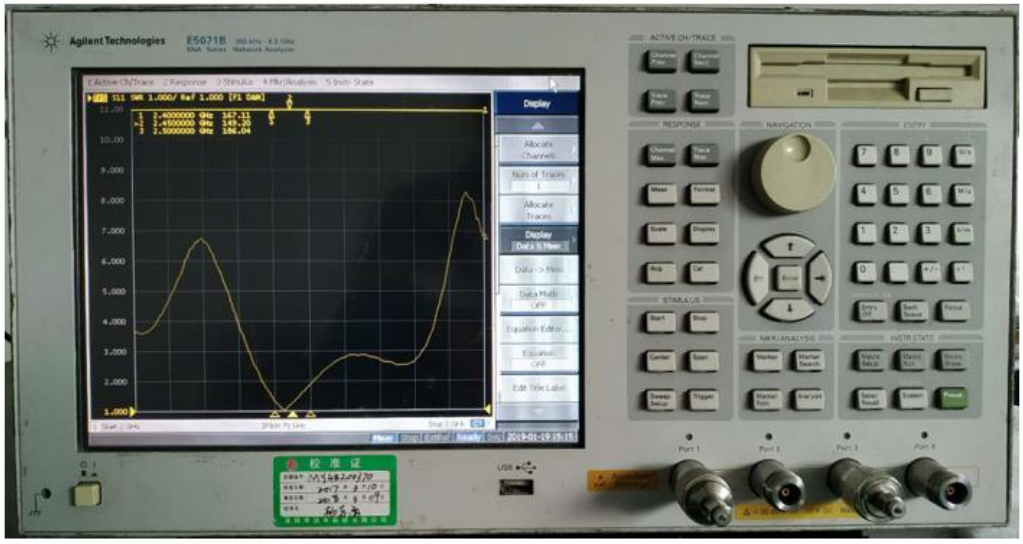


2. (Product Parameter)

Name / Project	2.4G FPC BT built-in antenna	Model	2.4G FPC BT ANTENNA
Frequency range (MHz)	2400-2500	Frequency (MHz)	2400-2500
bandwidth (MHz)	100	Bandwidth (MHz)	100
Polarization	线极化	Polarization Type	linear polarization
Gain (dBi)	3.7	Gain (dBi)	2
VSWR	≤2.2	VSWR	≤2.2
Input Impedance (Ω)	50	Input Impedance (Ω)	50
Cable length (mm)	/	Cable length (mm)	/
Cable color	/	Cable Colour	/
Interface	顶针	Connector Type	Thimble
Operating temperature	-40~+85℃	Operation temperature (℃)	-40~+85
Storage temperature	-40~+85℃	Store temperat (℃)	-40~+85

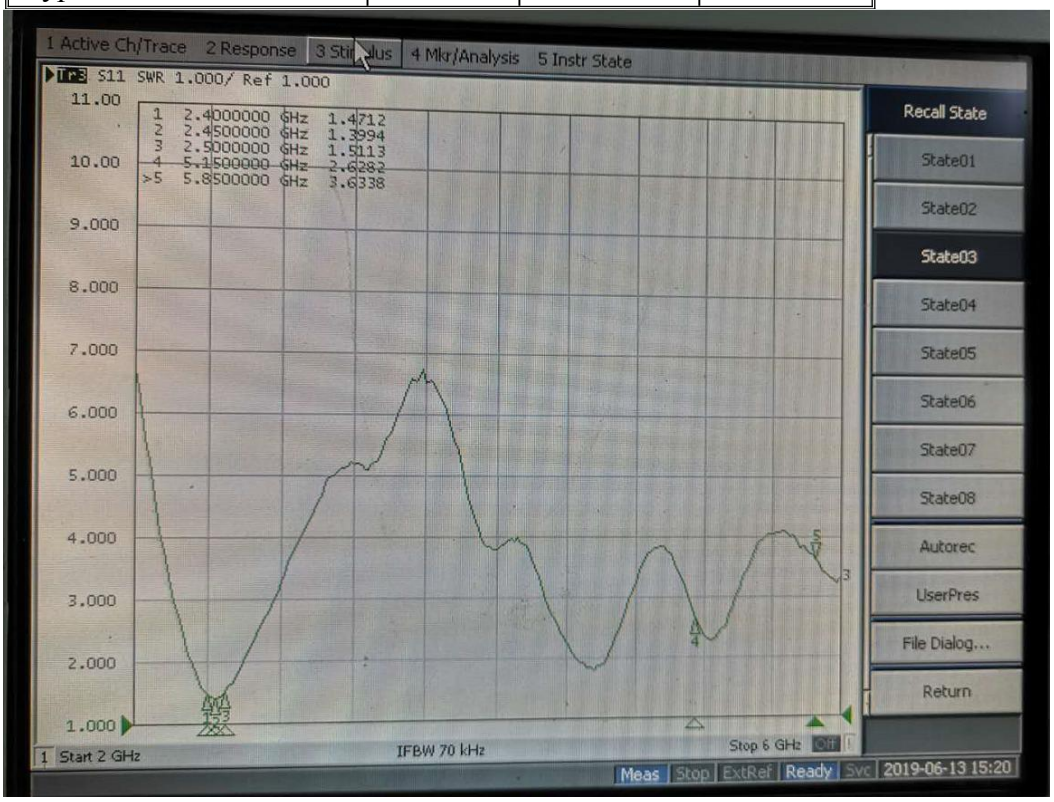
3.（Antenna performance test）

E5071B



3.1. VSWR .Measurement frequency points and VSWR value

Frequency Band(MHz)	2400	2450	2500
Typical Value:	1.47	1.39	1.51



3.2 Efficiency and Gain

- **Measuring instruments: microwave darkroom, network analyzer, standard antenna.**
- **Microwave Darkroom Description:**

This is the microwave darkroom set up by our company in Shenzhen. This microwave darkroom belongs to a far-field measurement system. The size of the darkroom is 7.0m x 4.0m x 3.0m, and the size of the quiet zone is 15cm x 15cm x 15cm.

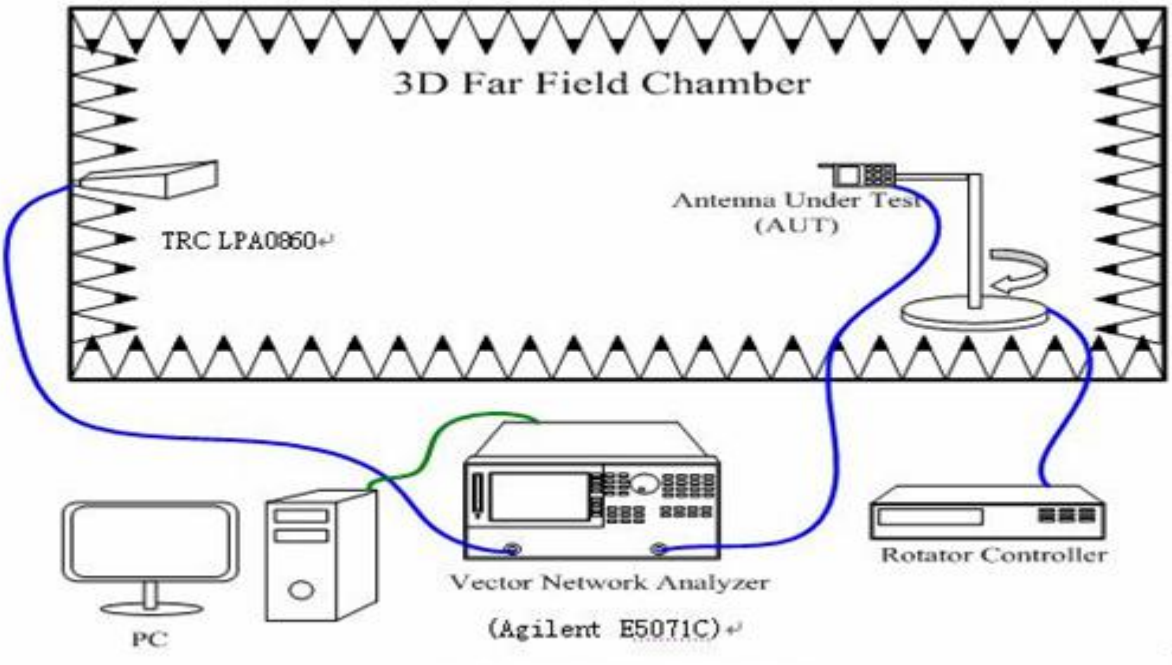


图. 1. 微波暗室内部仪器设置 r.

Fig. 1 is the instrument setup and network analyzer connection diagram in the microwave darkroom. The distance from the transmitting antenna (the transmitting antenna model used in this darkroom is TRC LPA0860 800MHZ-6GHZ) to the antenna under test (AUT) is 1.35 meters. The antenna under test is placed on a rotating platform. By controlling the rotation angle of the turntable, the antenna under test can be roughly and more accurately measured. The antenna under test is placed on the rotating platform, and the 360-degree field strength data of each plane (ZY plane and ZX plane) is measured. Then the antenna under test is replaced with a standard dipole antenna (the standard dipole antenna model used in this darkroom is TRC AD series dipole antenna 800MHz~2500MHz) and its 360-degree field strength data is measured to convert the gain standard value. The gain value and radiation pattern of the antenna under test can be obtained through the conversion of formula 1.

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

G_{AUT} : Gain of AUT

G_{stand} : Gain of Standard Gain Antenna

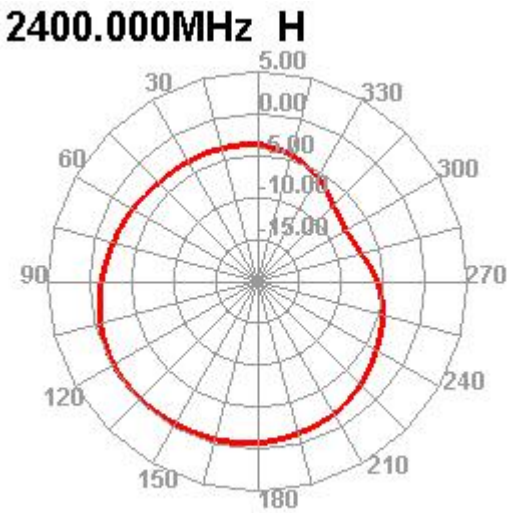
P_{AUT} : Measured Power of AUT

P_{stand} : Measured Power of Standard Gain Antenna

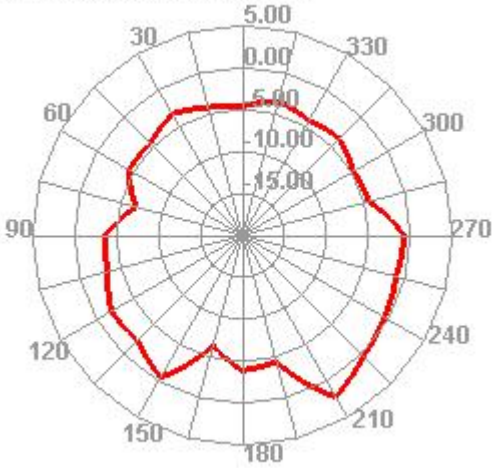
Efficiency and Gain

Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
2400	49.88	-3.02	2.33
2410	43.78	-3.59	1.95
2420	50.66	-2.95	2.4
2430	48.97	-3.1	2.25
2440	57.01	-2.44	2.68
2450	46.66	-3.31	1.88
2460	59.95	-2.22	3.15
2470	47.57	-3.23	2.24
2480	63.11	-2	3.7
2490	58.03	-2.36	3.42
2500	64.08	-1.93	3.67

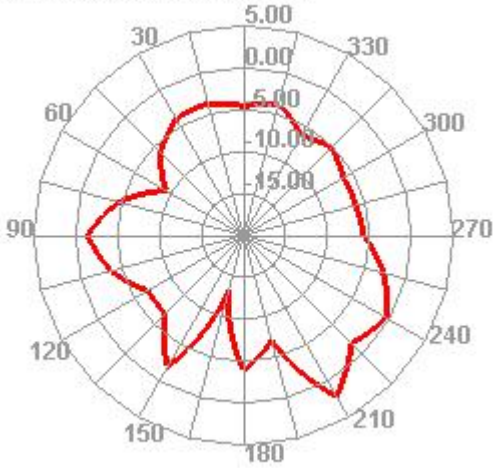
Patterns



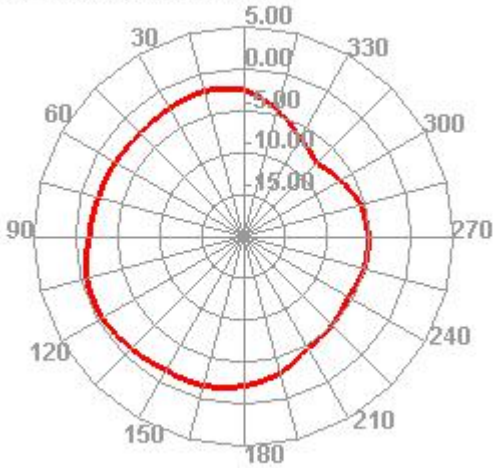
2400.000MHz E1



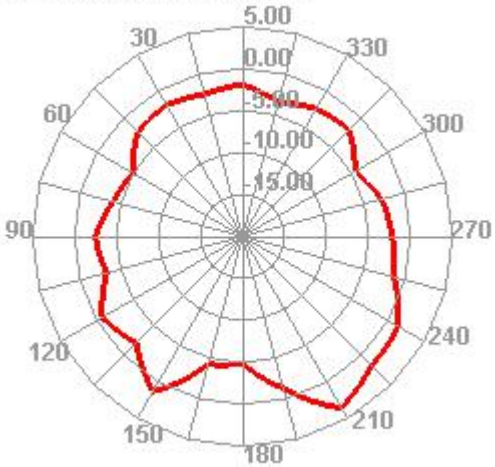
2400.000MHz E2



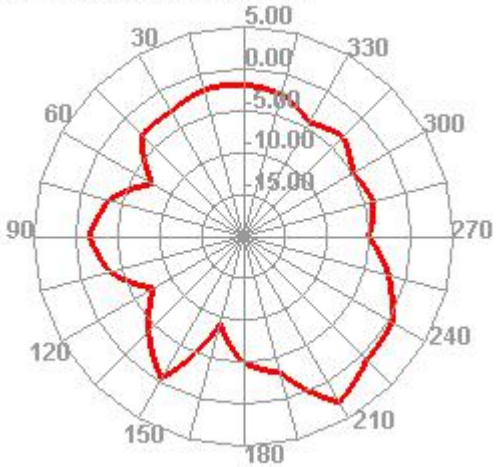
2500.000MHz H



2500.000MHz E1



2500.000MHz E2



Environmental and reliability testing

project	Reference standards, experimental conditions	Judgment basis	Sample quantity/ defective quantity (PCS)	Experimental/Testing Equipment
collision	GB/T 2423.6-1995 Acceleration: 200m/s2 Clash pulse duration: 6ms Number of collisions per minute: 40~80 times Total collisions: 400 times in the vertical direction, 300 times in the front and back, left and right horizontal directions, a total of 1000 times.	The electrical characteristics requirements should be met and the mechanical properties should be normal, but the scratches, whitening and bending on the appearance should be within the allowable range.	5/0	Collision test machine
vibration	GB/T 2423.10-1995 Test Fc Frequency: 10~30; 30~50Hz; Amplitude at resonance point: 0.35mm Amplitude: 0.75mm Duration: 0.5 hours in each direction of X, Y & Z. Cycle: 1min; Test after 1 hour after the experiment.	There is no looseness in the firmware, no cracking or fatigue in the components; No components fall off, no solder joints break; The electrical performance indicators meet the technical specifications;	5/0	Vibration testing machine
Retention	Verification conditions: The connector and the ends of the wire are fixed on the clamp of the pull-out force machine, and the pull-out force is zero. Verification method: Manually pull at a constant speed until the IPEX connector and the wire fall off.	>10N	5/0	Pull-out testing machine
fall	GB/T2423.8-95 Fall from 100cm to the floor 10 times. GB/ T2423.8-95	1.No obvious abnormality in appearance 2.After the test, all electrical properties meet the specification requirements and should meet the electrical characteristics requirements, and the mechanical properties are normal, but the scratches, whitening and bending on the appearance are within the allowable range.	5/0	Drop test machine
High temperature storage	GB/T 2423.2-2001 Test B Environmental conditions: +85±3℃ for 96H After the test, place at room temperature for 24 hours Test after time.	The surface coating should not peel off, crack, wrinkle, or separate; Non-metallic structural parts should not be permanently deformed, cracked, or debonded; Mobile components should not be stuck or detached; Electrical performance indicators should meet technical specifications.	10/0	Temperature and humidity cycle test chamber

Low temperature storage	GB/T 2423.1-2001 Test A Environmental conditions: -40±3℃ for 96H. After the test, place the sample at room temperature for 24 hours.	The surface coating should not peel off, crack, wrinkle, or separate; Non-metallic structural parts should not be permanently deformed, cracked, or debonded; Mobile components should not be stuck or detached; Electrical performance indicators should meet technical specifications	10/0	Temperature and humidity cycle test chamber
High and low temperature cycle	GB/T2423.22-2002 Test N: Place the antenna in a constant temperature box at T1 = -40° C for 30 minutes, then increase the temperature to T2 = 80° C over 60 minutes, then maintain this temperature for 30 minutes, with a relative humidity of 50% RH, and repeat this cycle 20 times.	The surface coating should not peel off, crack, wrinkle, or separate; Non-metallic structural parts should not be permanently deformed, cracked, or debonded; Mobile components should not be stuck or detached; Electrical performance indicators should meet technical specifications	10/0	Temperature and humidity cycle test chamber
Damp heat test	GB/T 2423.3-1993 Test Ca: Environmental conditions: 40 ±2℃, relative humidity 80~90%, placed for 96 hours. After the experiment, place at room temperature for 24 hours and then test.	1.No significant abnormality in appearance 2. After the test, all electrical properties meet the specification requirements. Mechanical properties and electrical properties meet the specification range.	10/0	Temperature and humidity cycle test chamber
Salt spray test	GB/T 2423.18-2000 Test Kb Place the test sample in a salt spray test chamber and spray the test sample with salt water having a concentration of (5 ±1)%, a temperature of 35℃ ±1℃, and a sedimentation rate of (1-2)ml/50mm2*h. After 48 hours, check the appearance.	There is no rust, and the mechanical and electrical properties meet the specification range.	5/0	Salt spray testing machine