

天线规格书

Antenna Datasheet

产品品名/product Model No: VA27019BT

客户物料编码/Item Number:

发行日期/Issue Date : 2025-05-19

1.天线规格 Antenna specifications

此天线为 WIFI 内置天线，由同轴线端子构成，天线线长为 $185\pm1\text{mm}$ ，一端带 IPX 天线端子。

This antenna is a built-in WIFI antenna, consisting of a coaxial cable terminal, the antenna line length is $185\pm1\text{mm}$, and one end has an IPX antenna terminal.



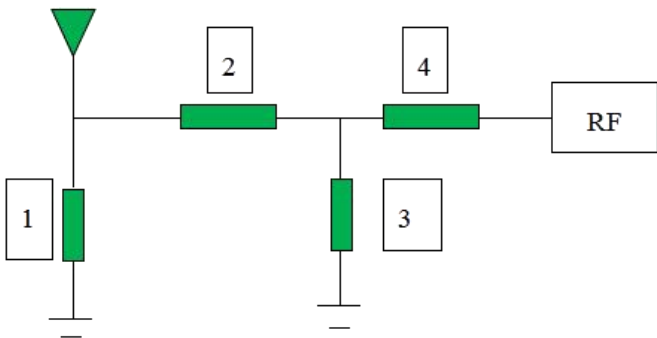
2.天线电器性能 Antenna electrical performance

项目 Parameter	参数 Specification	单位 Units
频率 Frequency	2.4	GHz
频宽 Bandwidth	100 (Min.)	MHz
最大增益 Peak Gain	1.72	dBi
最高效率 Peak Efficiency	34.60%	%
阻抗 Impedance	50	Ω
最大功率 Max Power	4	W
驻波比 VSWR	≤ 2	
线缆直径 Cable Diameter	1.13mm	

2.1 天线的匹配电路 Antenna matching circuit

此项目匹配电路如图。

The matching circuit of this project is shown in the figure.



元件编号 Part number	1	2	3	4
匹配元件参数 Match component parameters	NC	0Ω	NC	0Ω

2.2 天线测试的设置 Antenna Test Setup

测试装置依次的连接为：Agilent E5071B 网络分析仪®50 欧姆的同轴 Cable®120mm 长的铜管®测试治具

测试治具的处理：从平板 PCB 上天线 50 欧姆测试点处用一根硬质电缆引出 SMA-J 接头，与套有扼流圈的铜管连接，再依次连接其他装置。

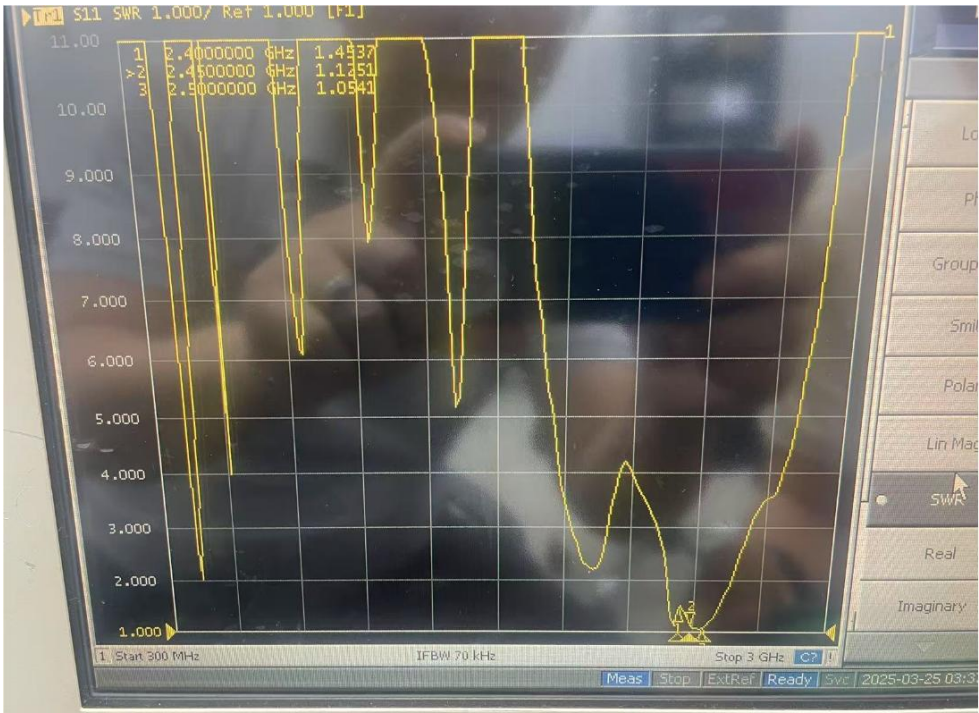
The test equipment is connected in sequence: Agilent E5071B network analyzer® 50 ohm coaxial cable® 120 mm long copper tube® test fixture

Test fixture processing: Use a hard cable to lead out the SMA-J connector from the 50 ohm

test point of the antenna on the flat PCB, connect it to the copper tube with a choke, and then connect other devices in sequence.



2.3 驻波比测试 VSWR test

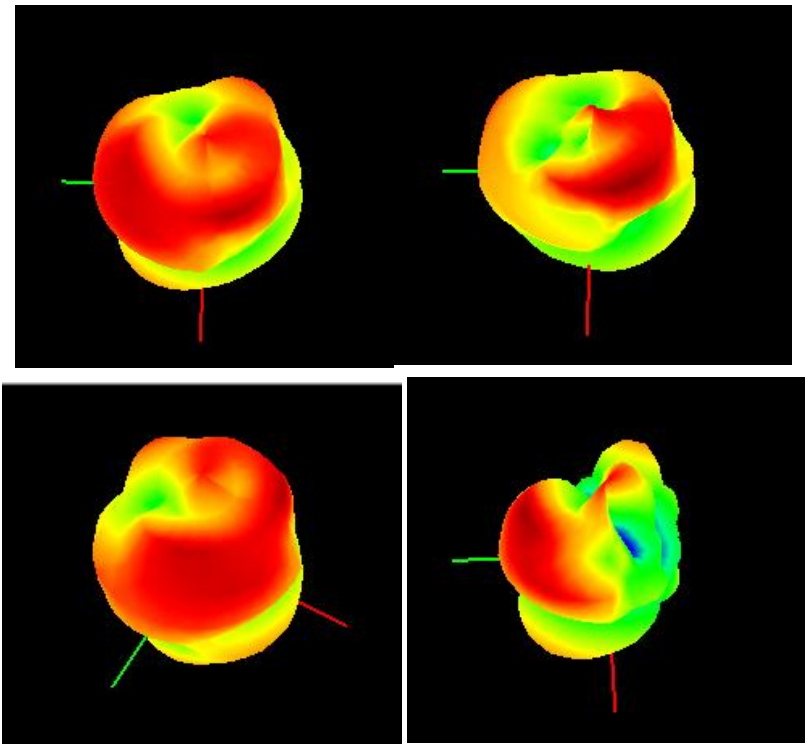


频率 (MHZ)	2400	2450	2500
驻波比 VSWR	1.4537	1.1251	1.0541

2.4 暗室无源测试数据 Darkroom passive test data

频点 Freq (MHz)	增益 Gain (dBi)	效率 Efficiency (%)
2400	1.62	31.70%
2410	1.13	30.10%
2420	1.24	32.50%
2430	1.57	33.10%
2440	1.68	33.50%
2450	1.72	34.20%
2460	1.68	34.60%
2470	1.54	34.10%
2480	1.49	33.10%
2490	1.37	31.70%
2500	1.32	30.20%

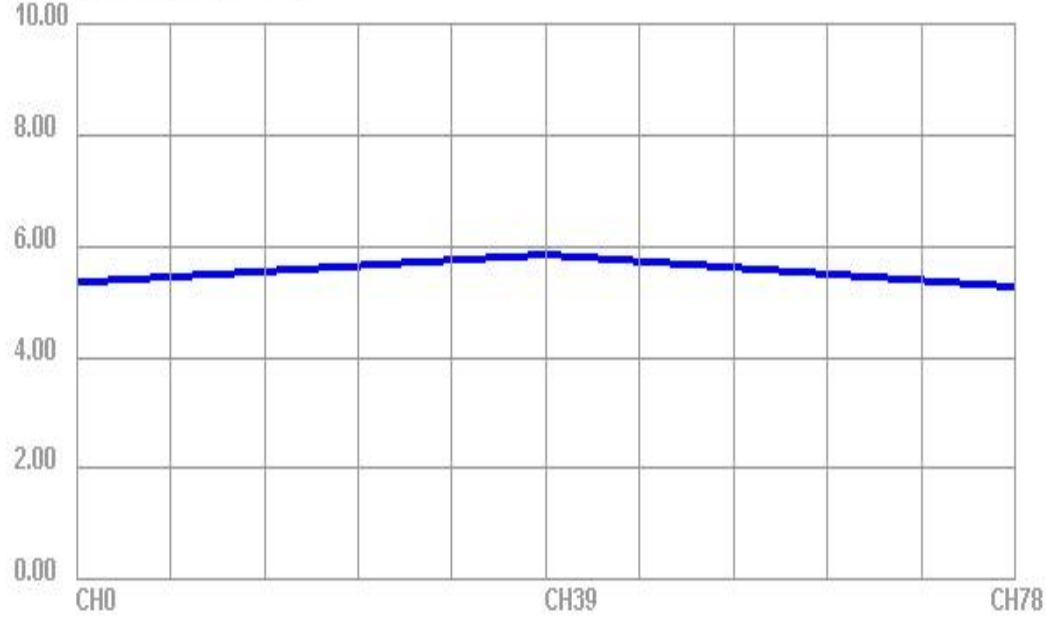
天线无源 3D 方向图（自由空间） Antenna passive 3D pattern (free space)



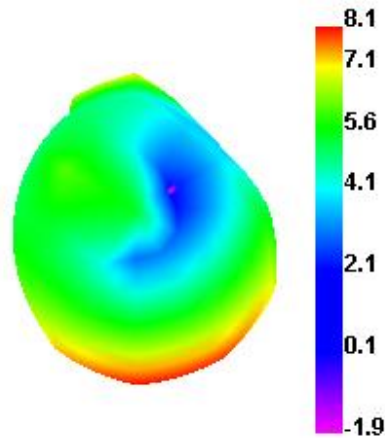
2.5 暗室有源测试数据 Darkroom active test data

Test Result	Bluetooth TRP		
	0	39	78
Frequency (MHz)	2400	2450	2500
TRP (dBm)	5.35	5.85	5.27
NHPRP (dBm)	4.12	4.45	3.75
MAX (dBm)	8.05	8.52	7.71
EIRP peak	8.05	8.52	7.71
Min (dBm)	-0.21	1.02	1.72
Attenuation Horizontal	42.77	43.31	42.97
Attenuation Vertical	42.87	43.19	42.81

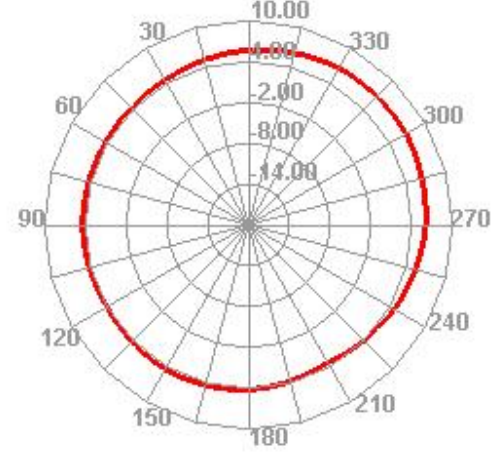
Bluetooth TRP



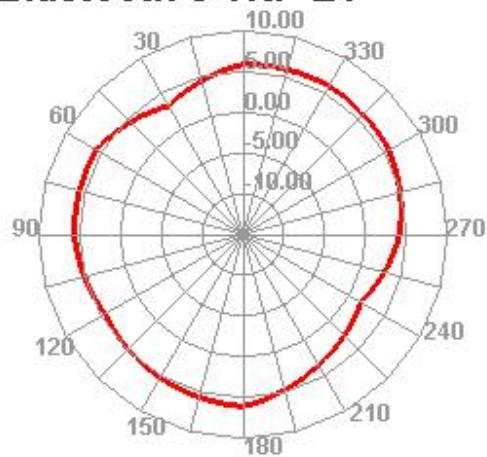
Bluetooth 0 TRP



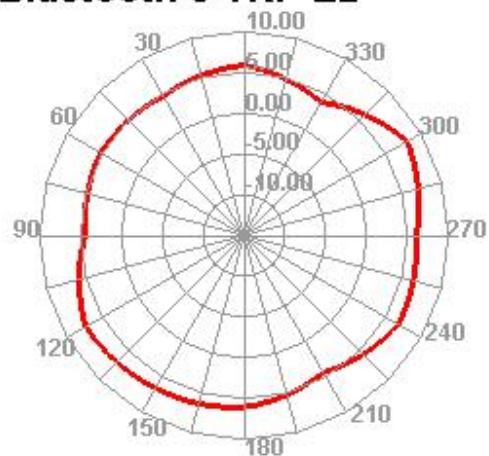
Bluetooth 0 TRP H



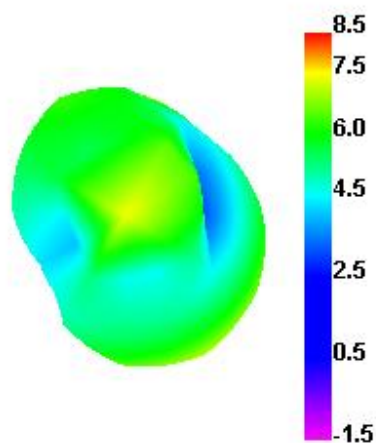
Bluetooth 0 TRP E1



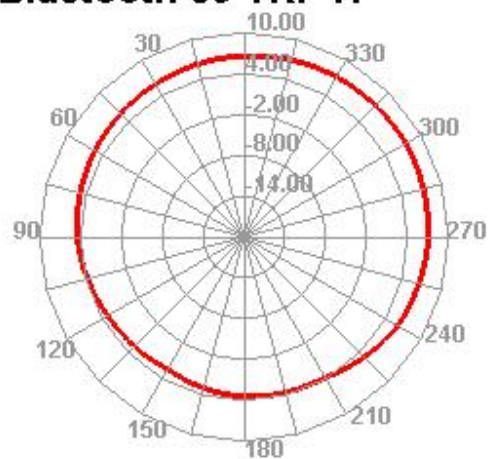
Bluetooth 0 TRP E2



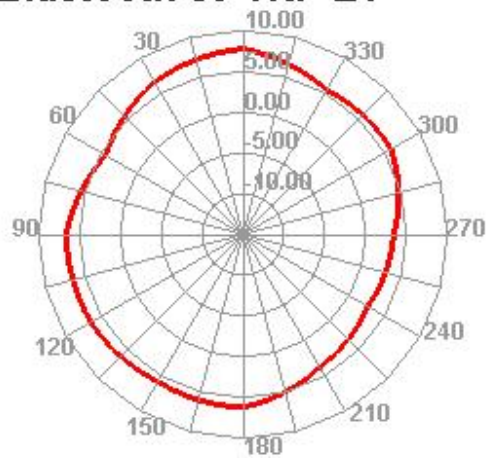
Bluetooth 39 TRP



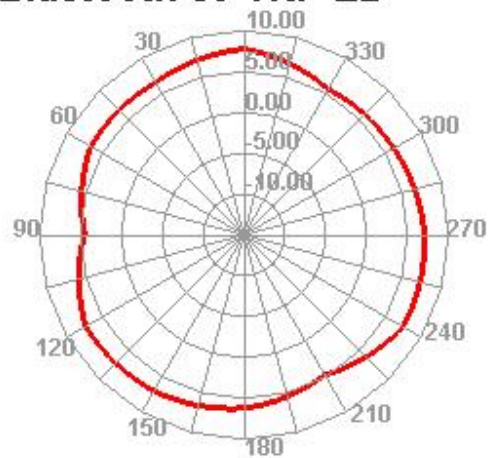
Bluetooth 39 TRP H



Bluetooth 39 TRP E1

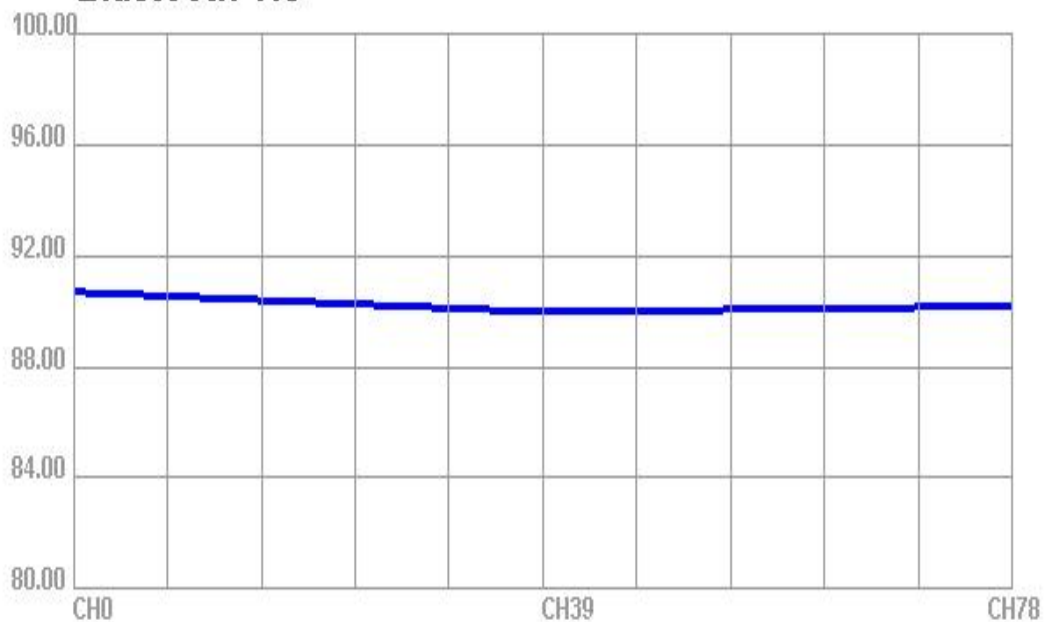


Bluetooth 39 TRP E2

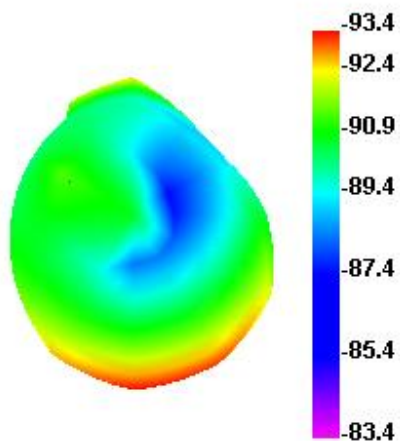


Test Result	Bluetooth TIS		
	0	39	78
Frequency (MHz)	2400	2450	2500
TIS (dBm)	-90.7	-89.97	-90.19
NHPIS (dBm)	-89.47	-88.58	-88.67
RSSIAve	7.84	7.56	7.35
MaxPosRSSI	9.46	9.98	9.56
MaxPosSens	-92.32	-92.4	-92.4
MAX (dBm)	10.55	10.23	9.79
EIS peak	10.55	10.23	9.79
Min (dBm)	2.25	2.73	3.8
Attenuation Horizontal	45.32	45.03	45.06
Attenuation Vertical	45.32	44.9	44.9

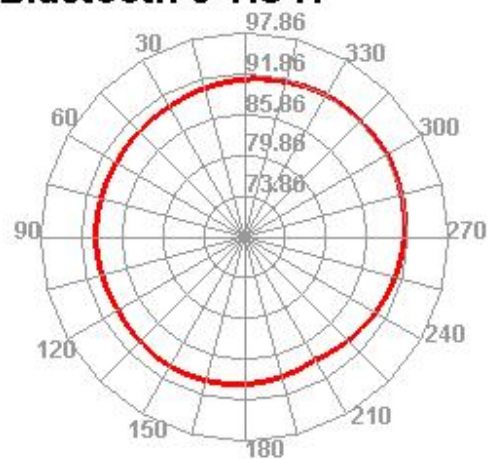
Bluetooth TIS



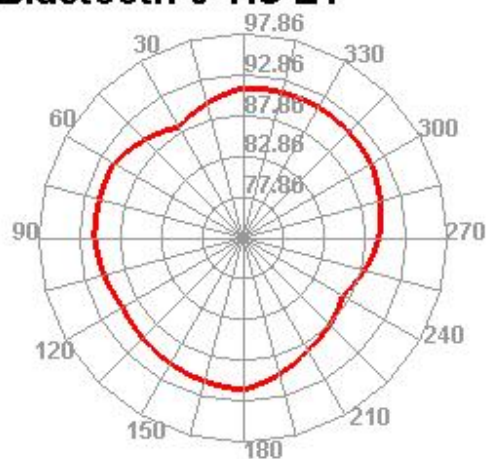
Bluetooth 0 TIS



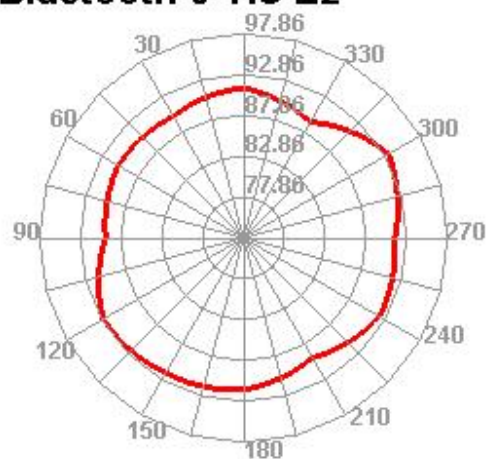
Bluetooth 0 TIS H



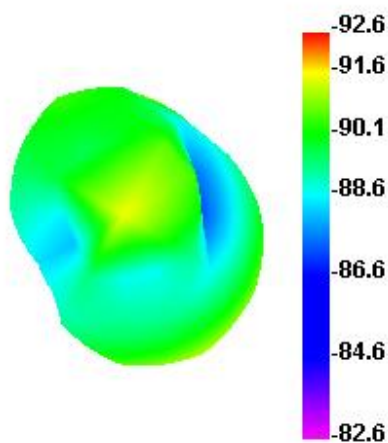
Bluetooth 0 TIS E1



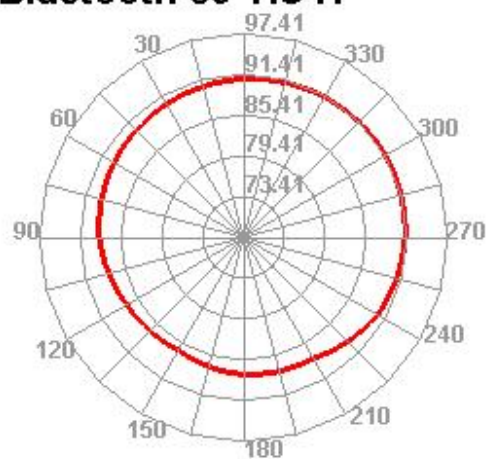
Bluetooth 0 TIS E2



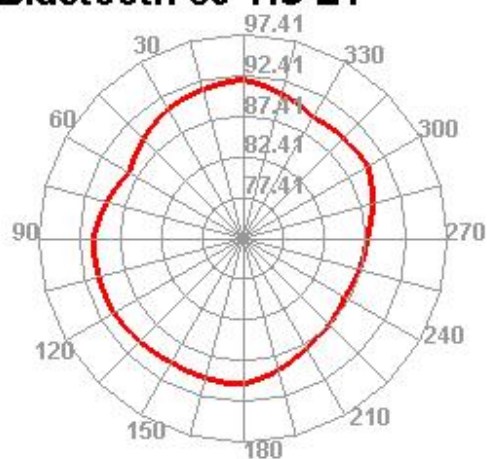
Bluetooth 39 TIS



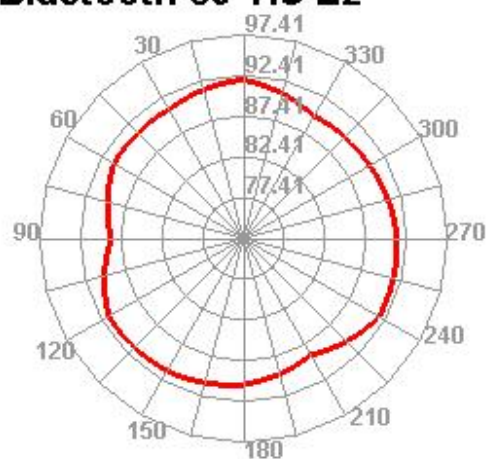
Bluetooth 39 TIS H



Bluetooth 39 TIS E1



Bluetooth 39 TIS E2



3.安装和建议 Installation and recommendations

此机器可安装的区域如图所示：

The area where this machine can be installed is shown in the figure:



此外安装过程注意如下：

In addition, please note the following during the installation process:

- 天线的下方不应出现线路布局、接地层。There should be no circuit layout or ground layer under the antenna.
- 天线不应和金属物体放置太近，比如电池、芯片等，不应与电池等金属物有重叠。
The antenna should not be placed too close to metal objects, such as batteries and chips, and should not overlap with batteries and other metal objects.
- 注意内部缆线（如电池电源线）最好不要太靠近天线。It is best not to place internal cables (such as battery power cables) too close to the antenna.
- 在最终产品方案上进行天线匹配，可以减短调节周期；而在光板上往往需要反复调节。Antenna matching on the final product solution can shorten the adjustment cycle; on the bare board, repeated adjustments are often required.
- 不要使用金属外壳或带金属的塑料外壳盖在天线周围。Do not use a metal case or a plastic case with metal around the antenna.