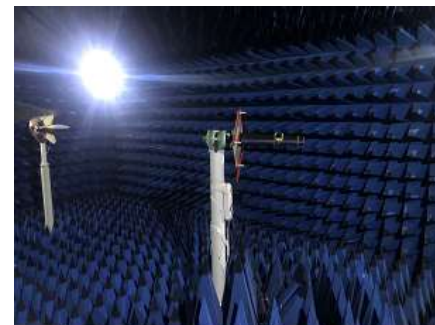


Qiwu LG12

Antenna simulation report

R&D: Wang Jieshi
Report Version: V0.1
Date: 2025-6-11

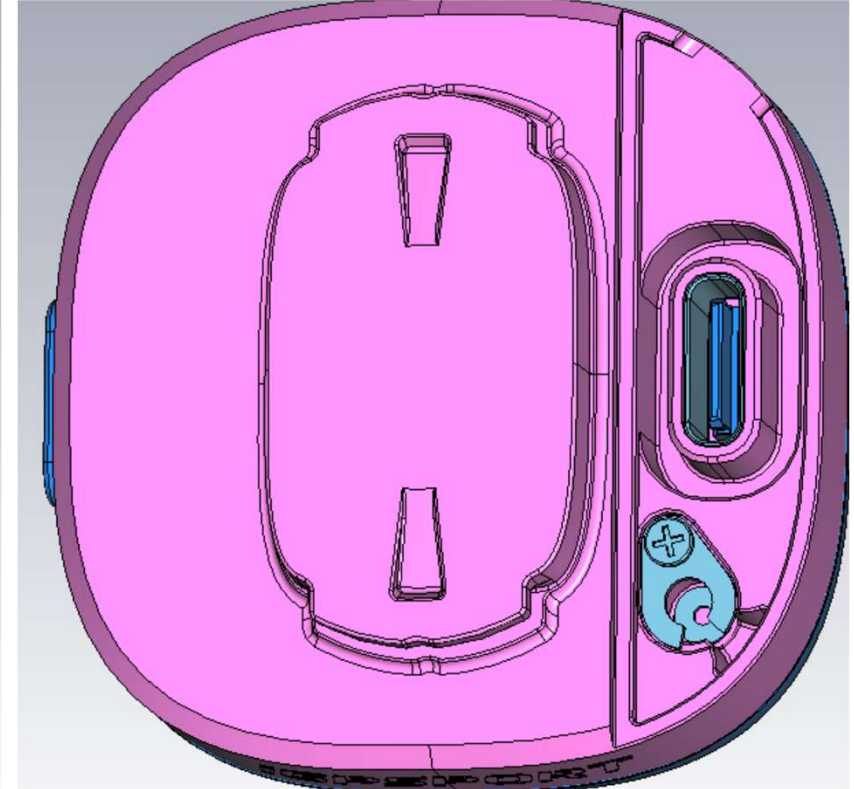
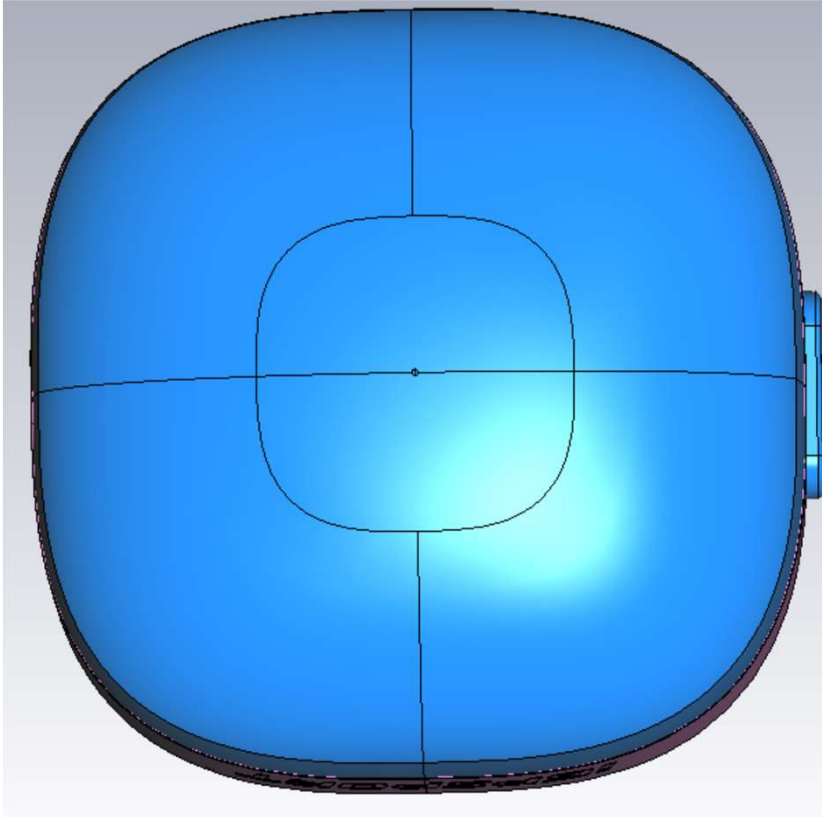


Overview of the machine

Materials:
All plastic BT equipment

Band requirements:
BT Antenna

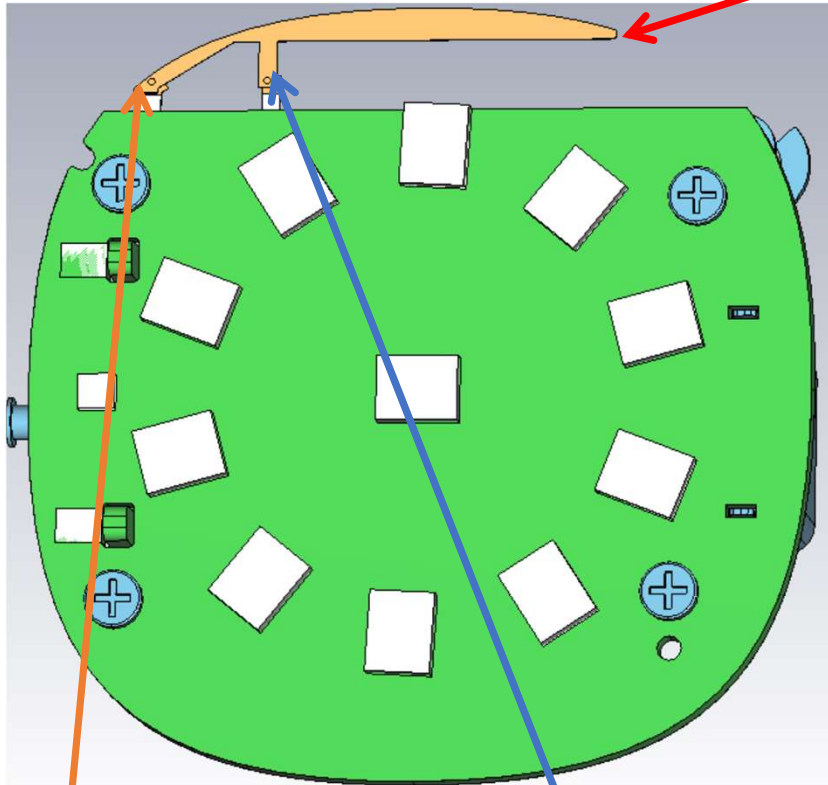
Implement at:
On-board



Antenna solution

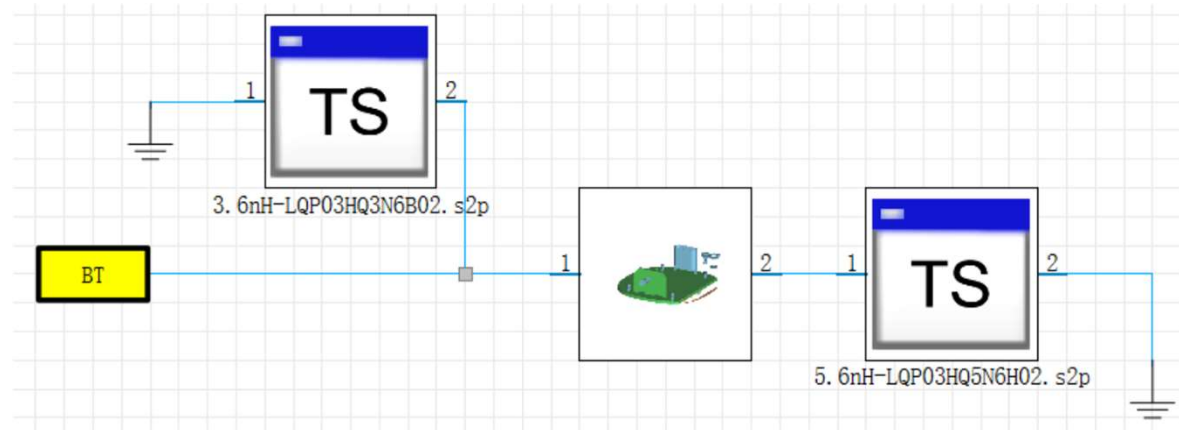
The wiring is achieved through on-board implementation on the PCB board.

Antenna is PIFA



POR1
FEED

POR2
GND



Antenna
matching

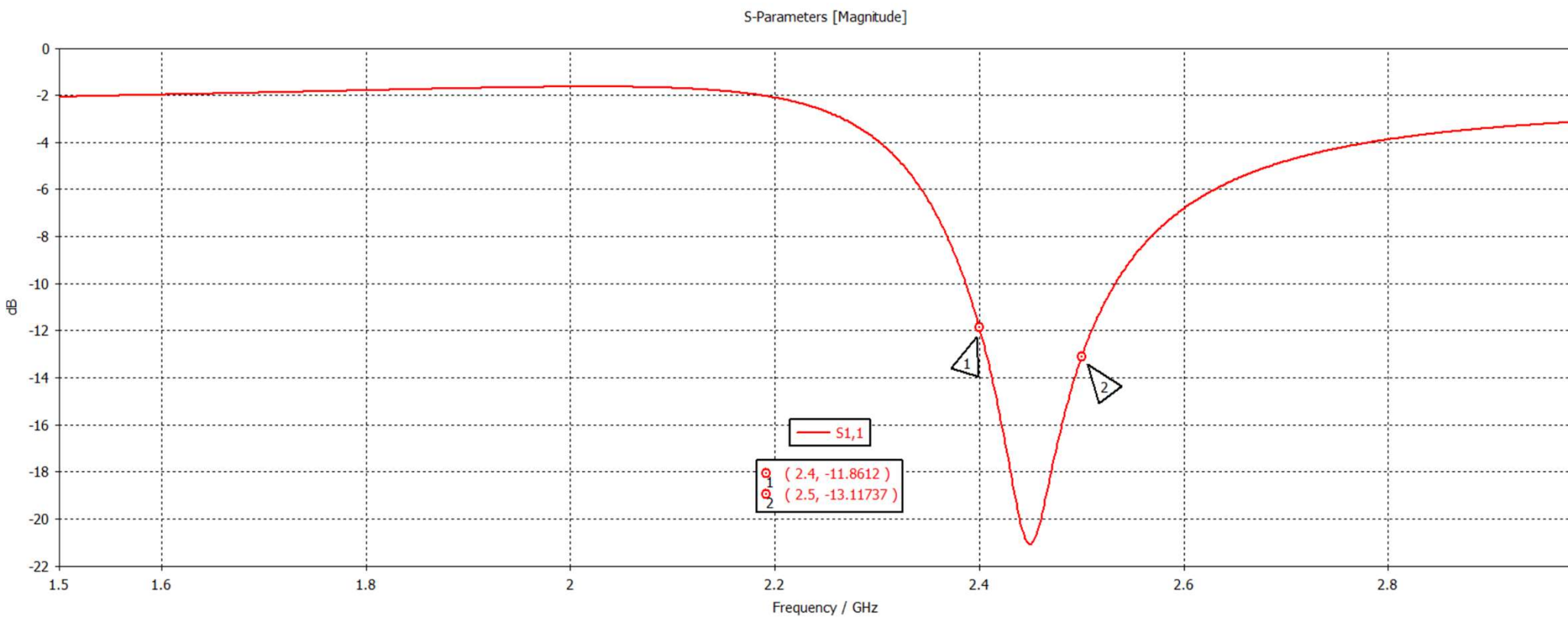
Antenna simulation
performance
Passive & Active data
Simulation performance



Passive	Case 1 Initial State		Measurement Difference	Cable loss	Device Loss	Case 1 Expected Actual Performance
Frequency Band	Total System					Total System
BT-1	59.60%	-2.25	-1	0	-0.5	-3.75
Active			Case 1 Estimated Performance			
	Expected Conduction		Estimated OTA			
	TX	RX	TPP	TIS		
BT-1	10	-92	6.25	-87.25		

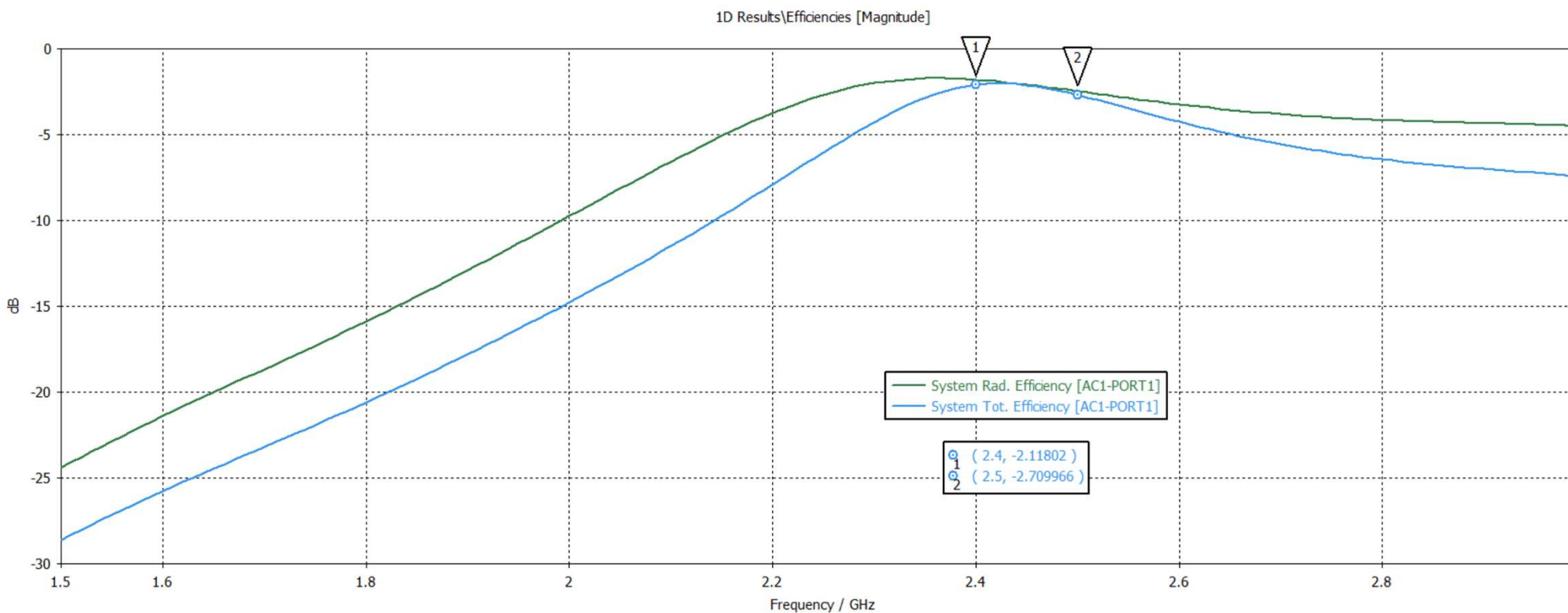
Summary:
1. The antenna is feasible and
has low risks.

S11 ANT Simulation
performance



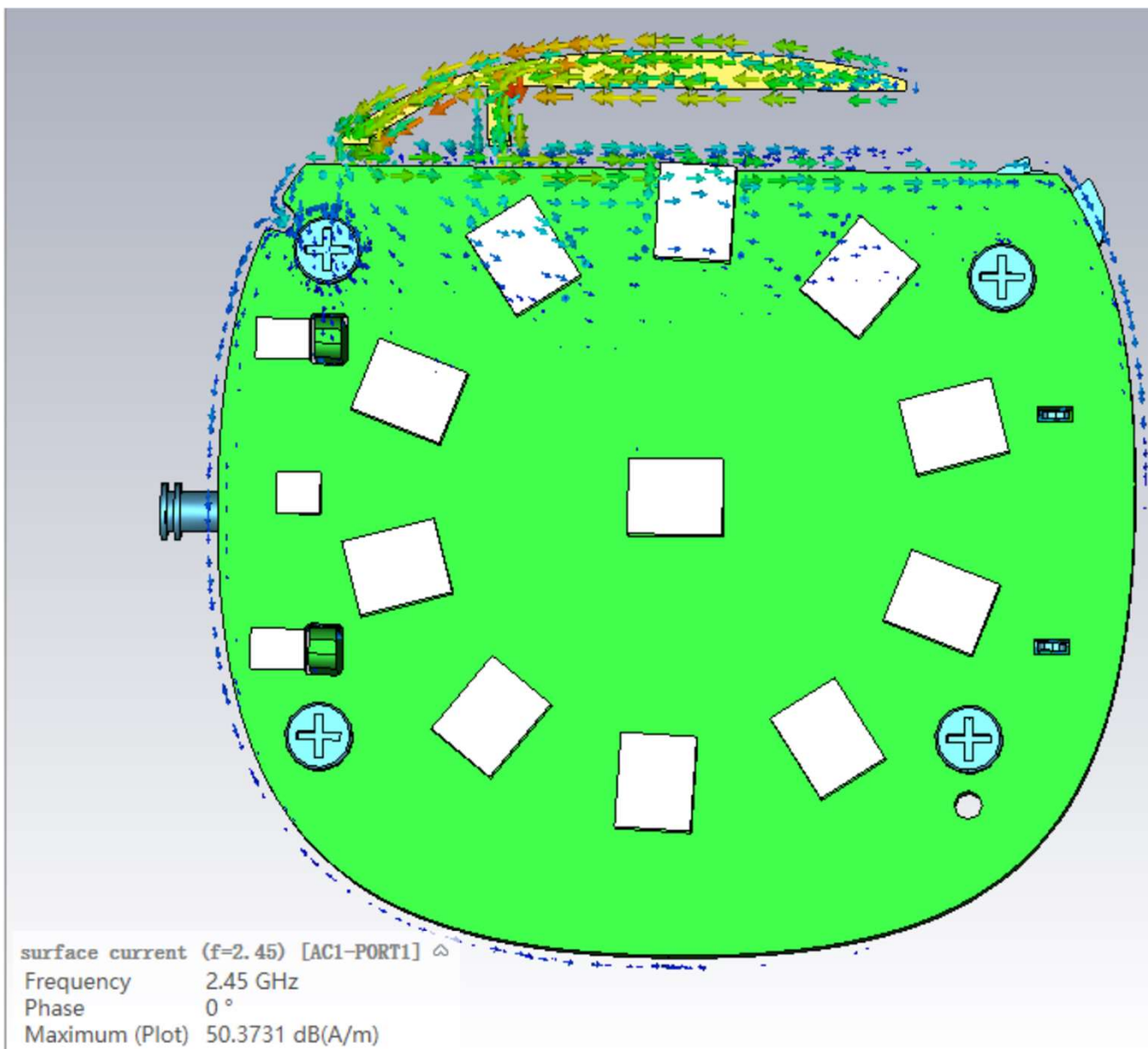
效率曲线

ANT Simulation performance



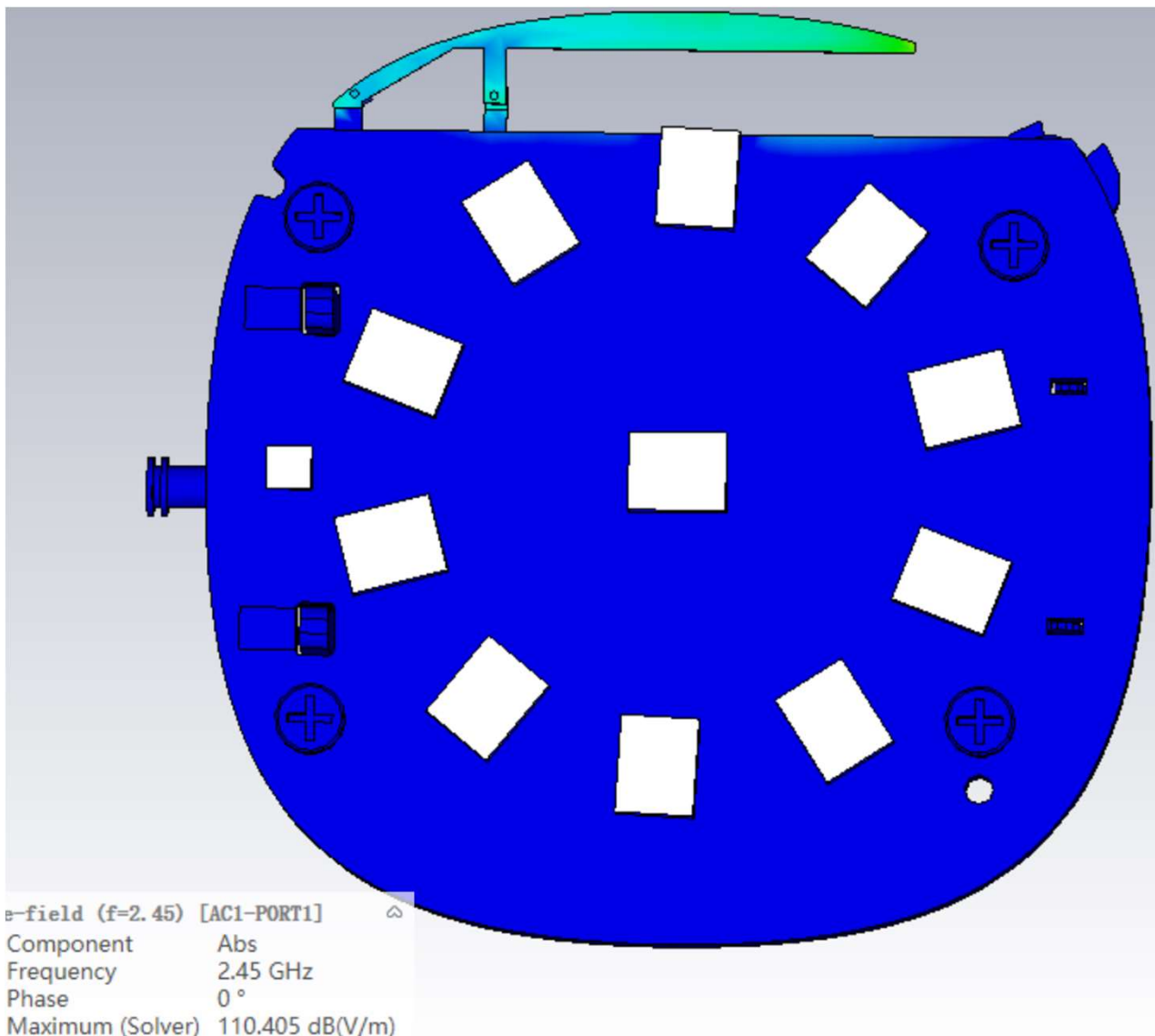
天线电流分布

ANT Simulation performance

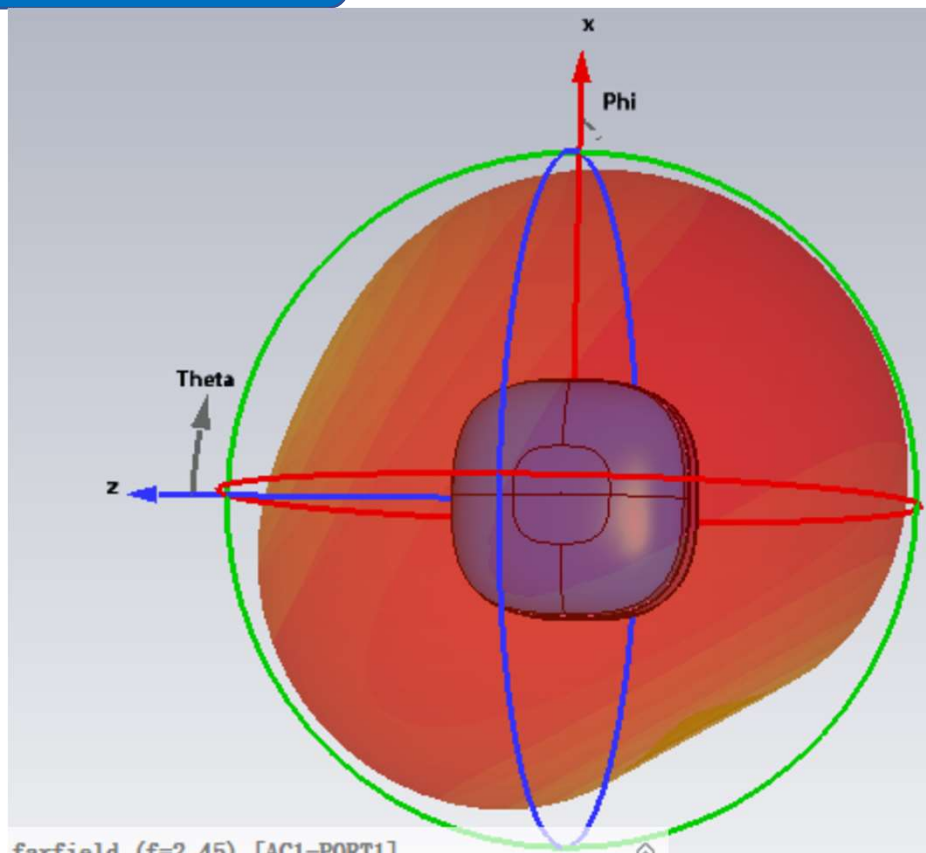


天线电场分布

ANT Simulation performance

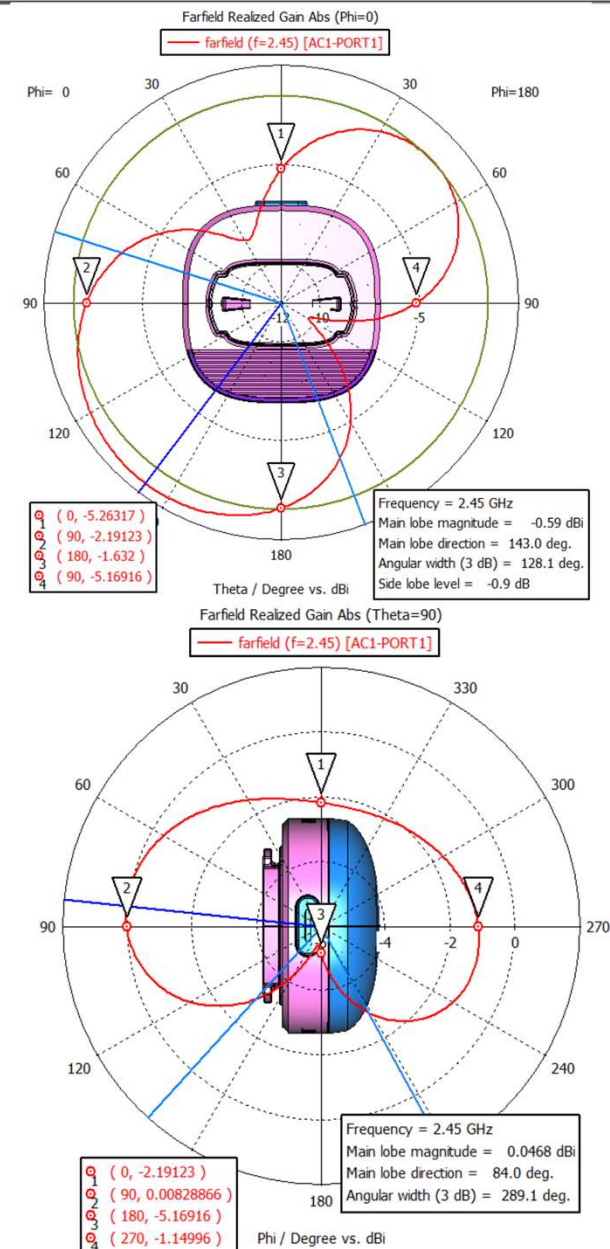


天线自由远场方向图
ANT Simulation

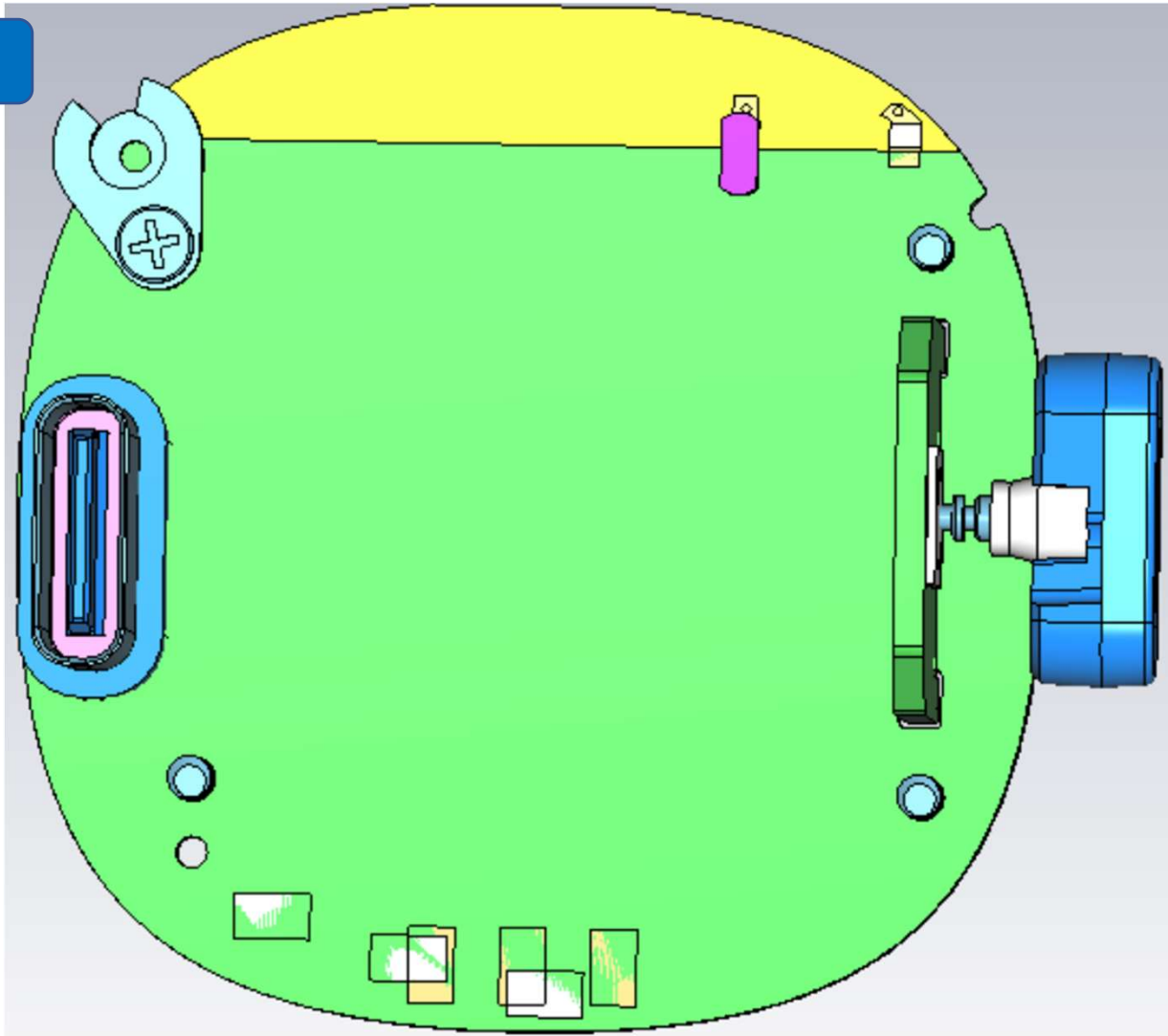


farfield (f=2.45) [AC1-PORT1]

Type	Farfield enabled (kR >> 1)
Approximation	Abs
Component	Directivity
Output	2.45 GHz
Frequency	-2.111 dB
System Rad. Effic. [AC1-PORT1]	-2.145 dB
System Tot. Effic. [AC1-PORT1]	2.234 dBi
Dir.	

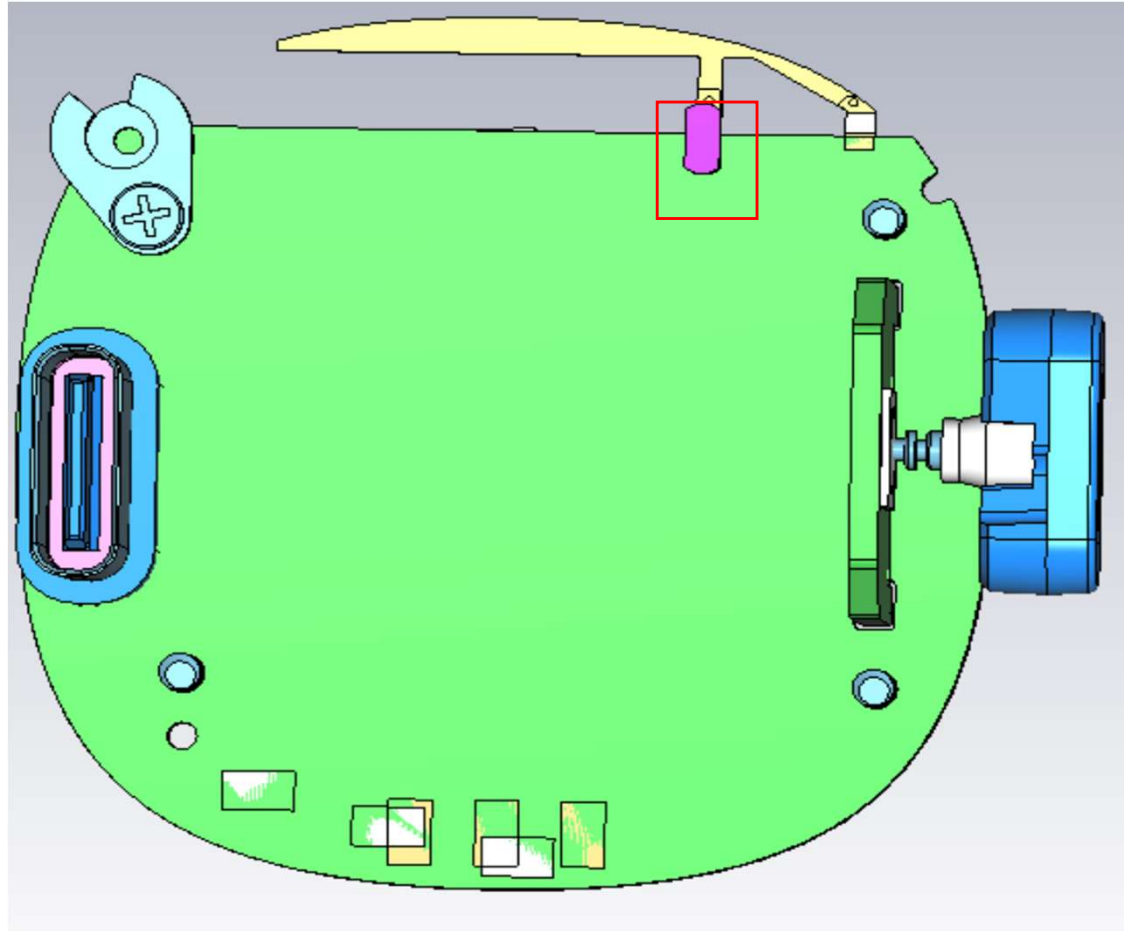


PCB Design
Suggestions

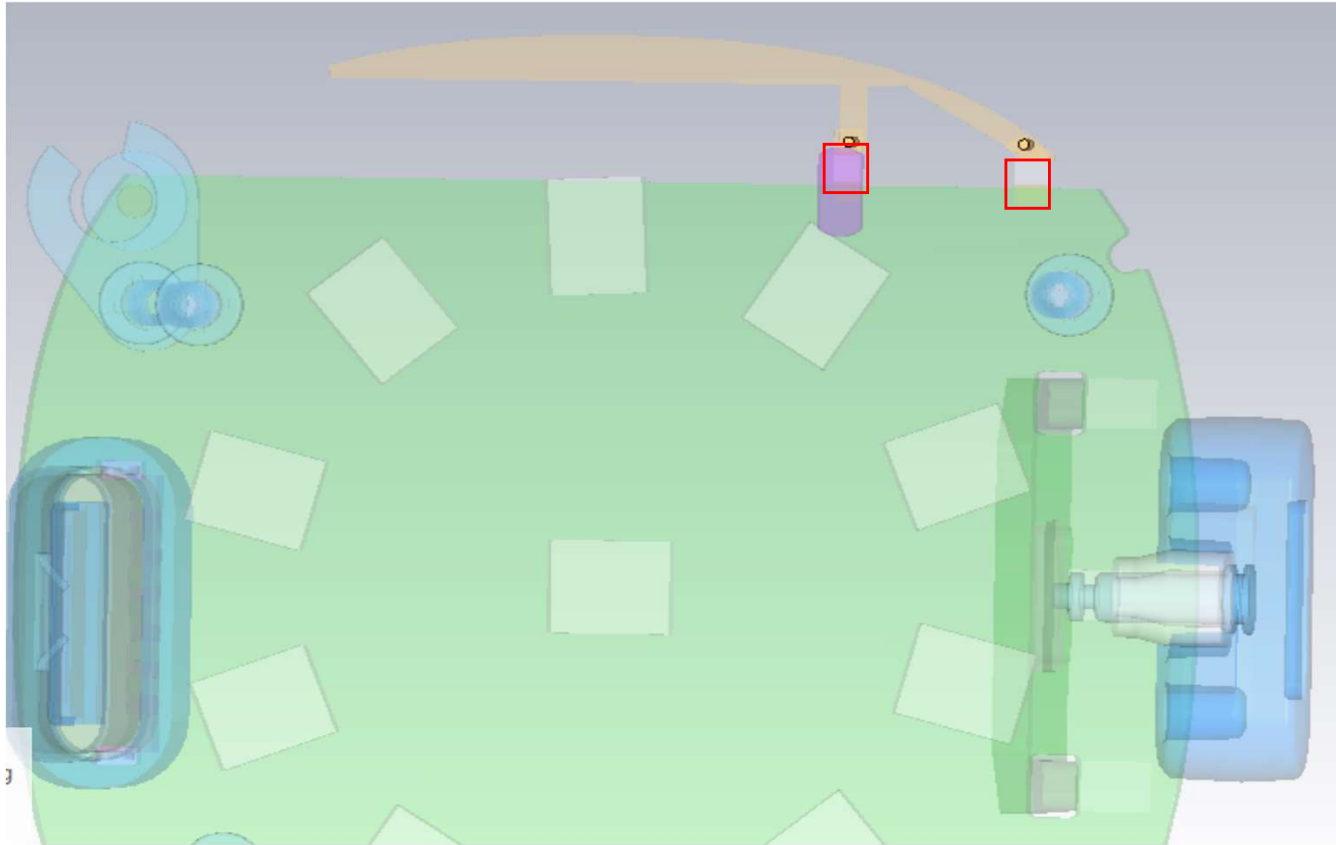


The mainboard in the yellow frame area is cleared

PCB Design
Suggestions



A ground device position is added in the red frame area to tune the BT resonance length

**PCB Design
Suggestions**

The red frame area is designed with VIA holes, and the radiator is placed on the other side of the PCB, so that the radiating volume is away from the battery, which improves the antenna performance.

仿真总结

Simulation performance

Summary:
The current antenna is risk-free in terms of feasibility.

Thank you!



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