

Antenna Information

Item	Contents
Antenna Type	Chip Antenna
Antenna peak gain	0.1 dBi
Manufacturer / Model name	YAGEO Corporation / 3216
Address of manufacturer	3F, 233-1, Baoqiao Rd. Xindian Dist., New Taipei City 23145 Taiwan
Test Laboratory	YAGEO Corporation
Antenna Length	3.2 mm
Antenna Width	1.6 mm



Chip Antenna

Yageo 3216 2.4GHz Monopole Mode Chip Antenna Proposal For Microchip Taiwan

**Wireless Components BU
LTCC RF R&D Department**

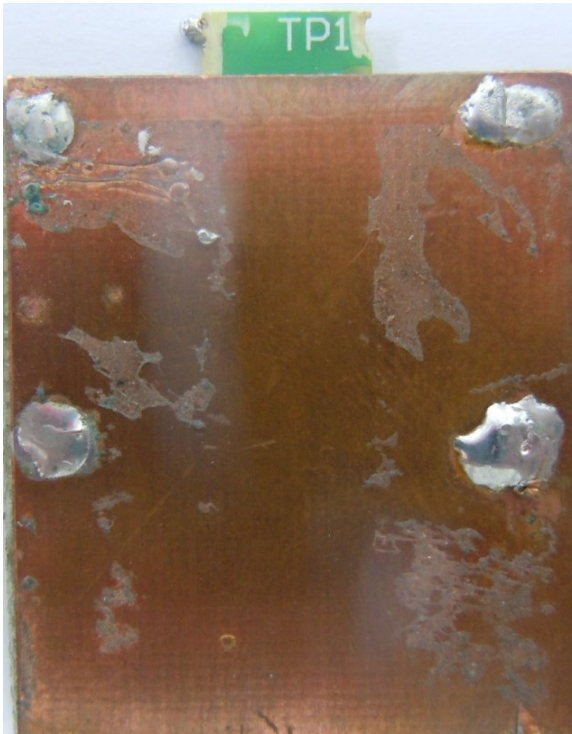
Project Information

- Customer : Microchip Taiwan (台灣超傑)
- Project Name : BM71BLES1FC2
- Product : Module
- Antenna size : 3.2x1.6x1.2 mm (3216 Monopole)
- Antenna type : 3216 2.4GHz, TN
- Antenna P/N: ANT3216LL00R2400A
- Report date : 2015/05/11
- Version : 4-2

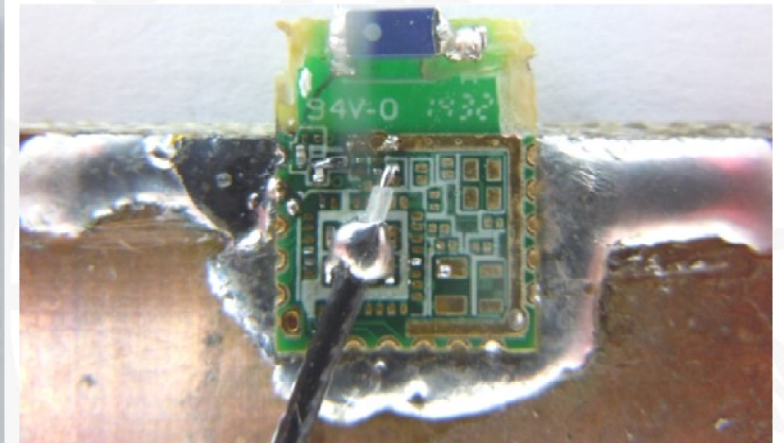
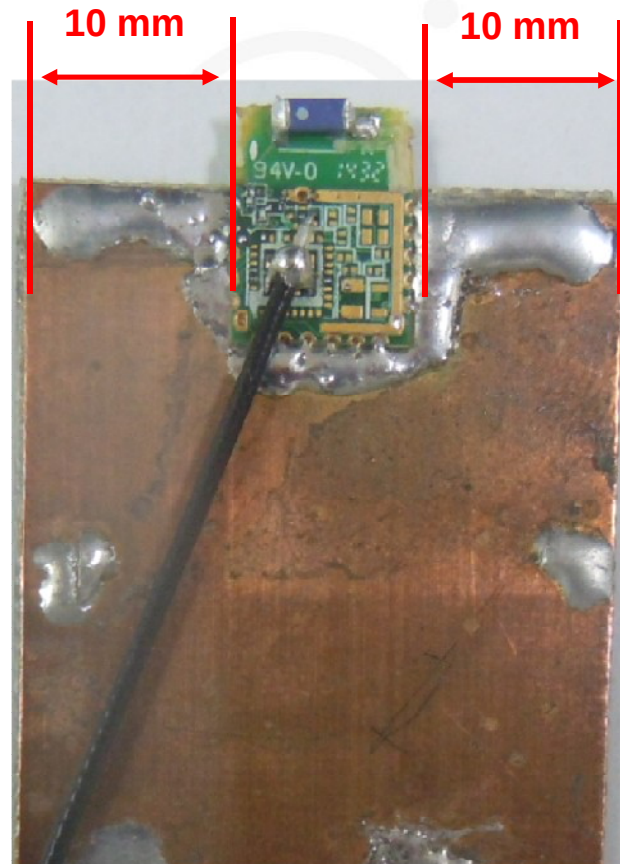
Yageo Chip Antenna

PCBA overview

Bottom view



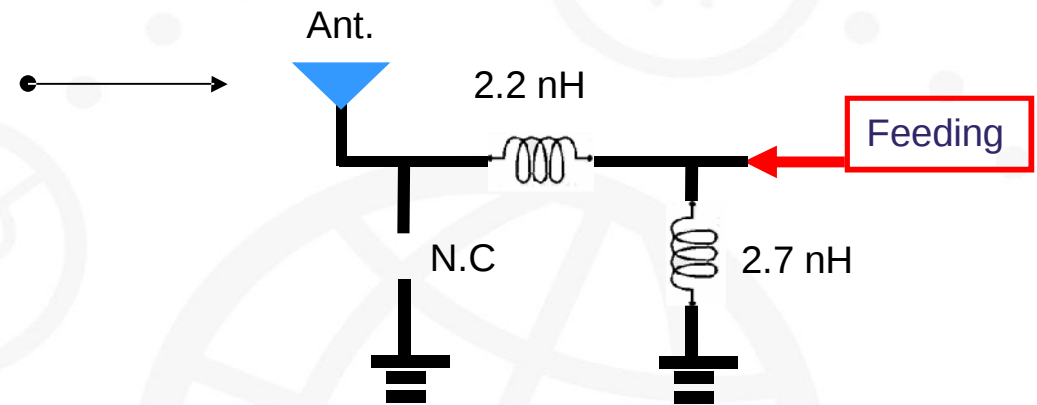
Top view



Matching Circuit

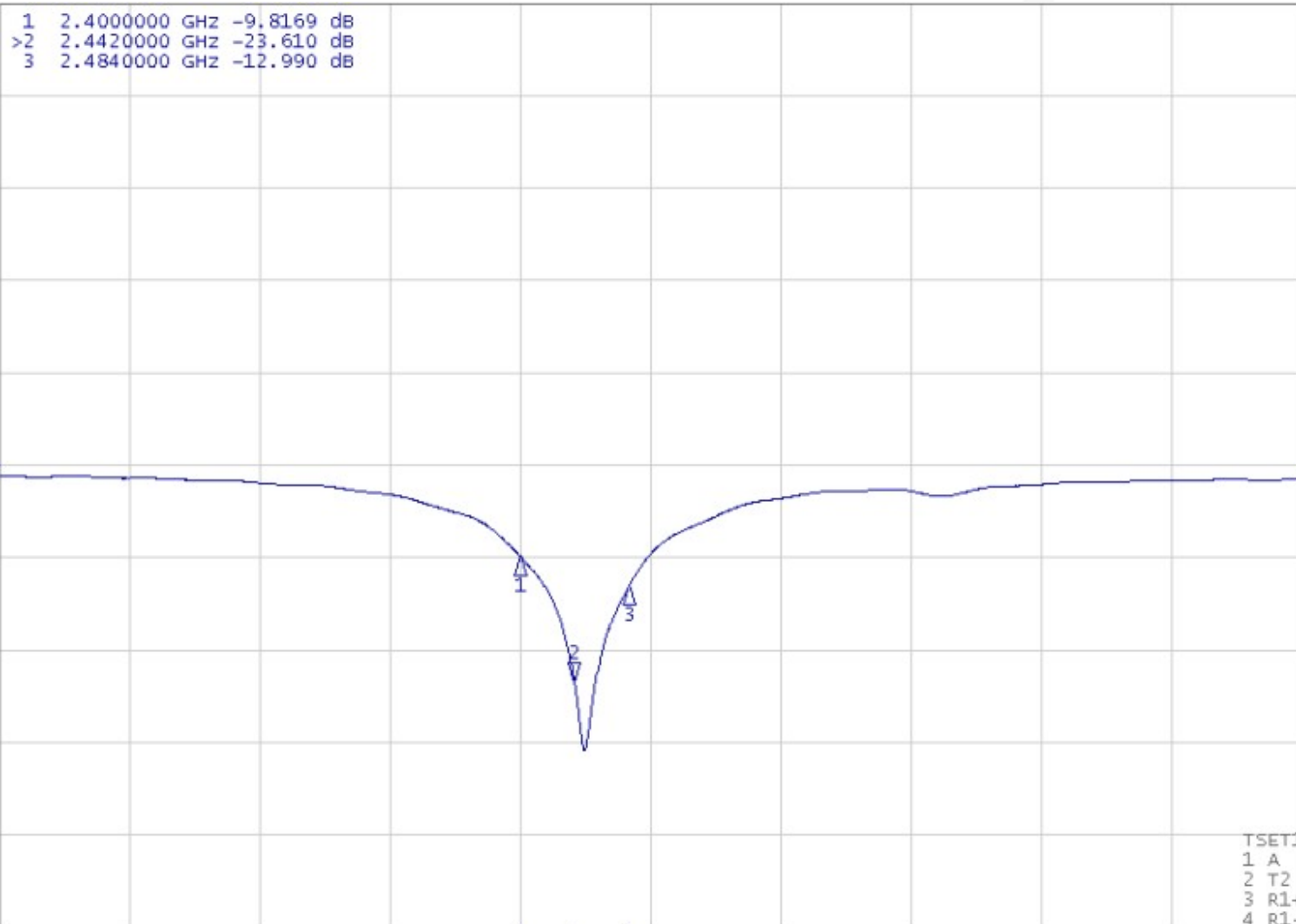
3216 2.4GHz, TN

- Series: 2.2 nH [P/N: CLH0603T-2N2S-F (Chilisin)]
- Shunt: 2.7 nH [P/N: CLH0603T-2N7S-F (Chilisin)]
- Shunt: No connect



S-Parameter

3216 2.4GHz, TN

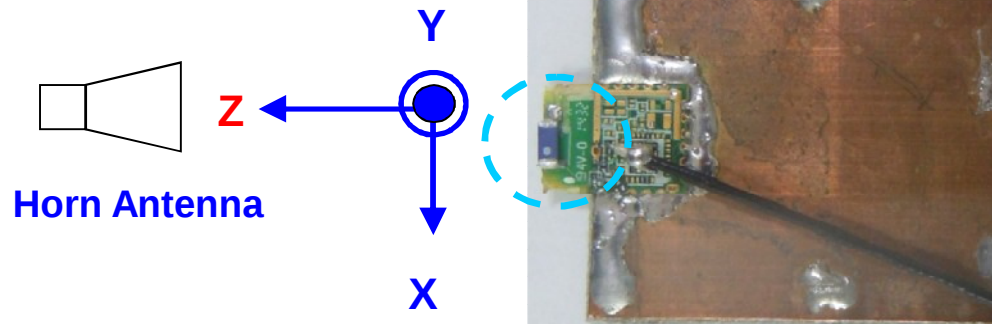


Frequency (MHz)	S11 (dB)
2400	-9.8
2450	-23.6
2484	-12.9

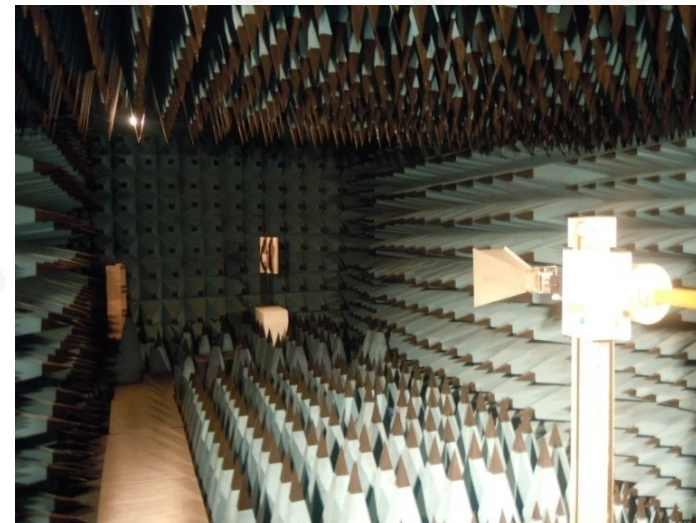
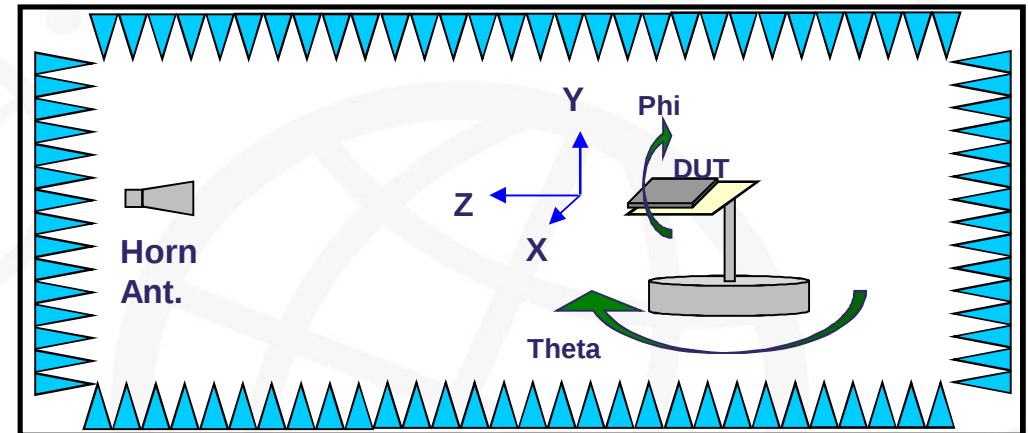
Measurement Configuration (Passive Mode)

3216 2.4GHz, TN

[Direction Definition]



[Testing Environment]



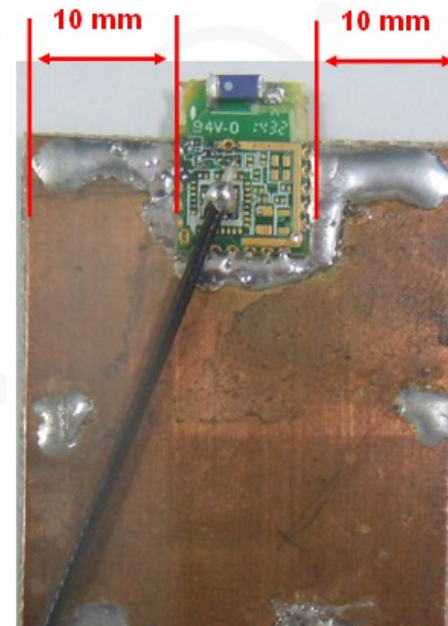
Yageo Proposed Antenna Performance Summary

3216 2.4GHz, TN

Antenna	3216 TN		
Frequency (GHz)	2.4	2.442	2.484
S11 (dB)	-9.8	-23.6	-12.9
Max. Gain (dBi)	-0.8	0.1	0.2
Avg. Gain (dBi)	-3.8	-3.7	-3.7
Efficiency (%)	41.2	42.7	41.9

Good performance!

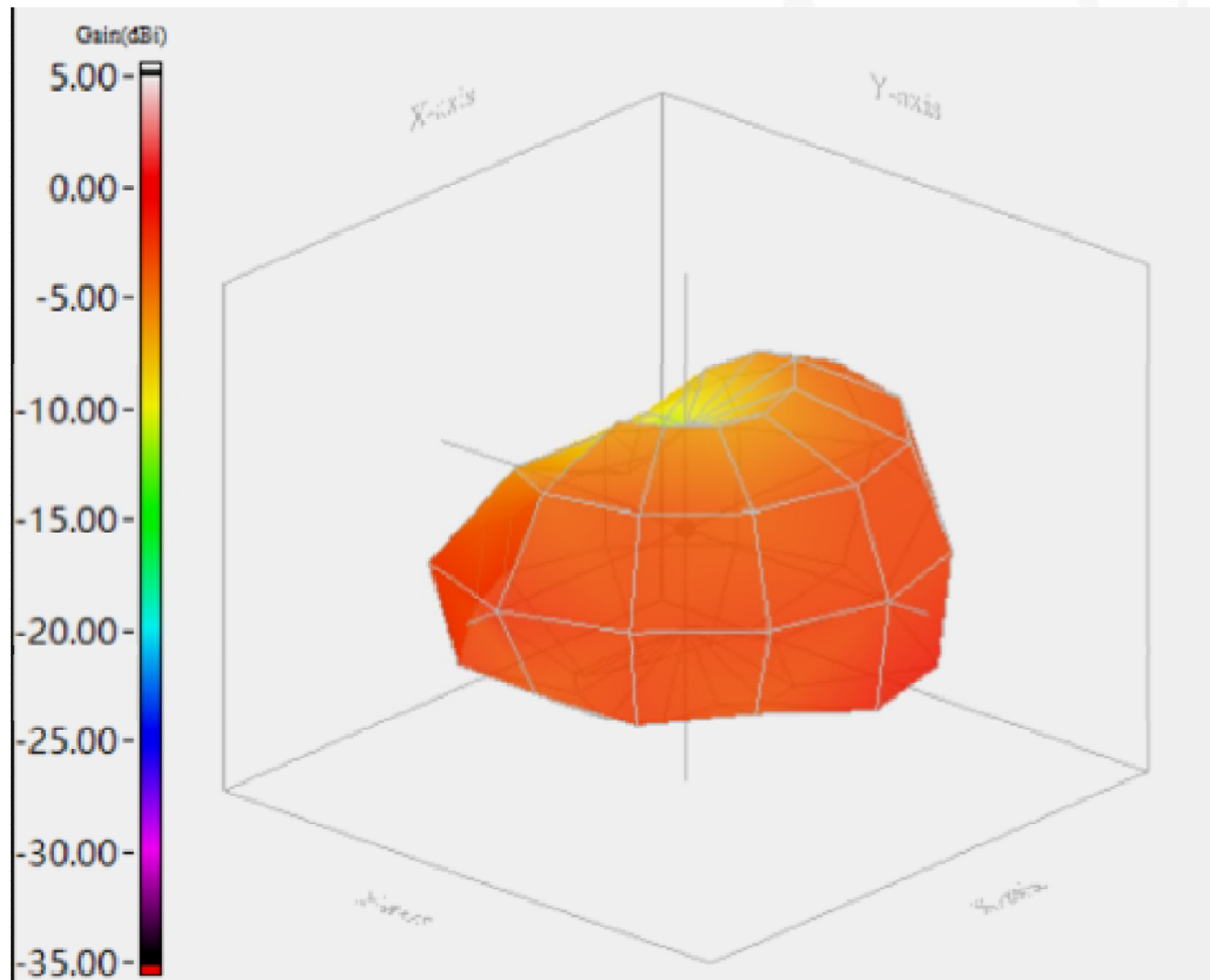
Top view



3D Radiation Pattern

3216 2.4GHz, TN

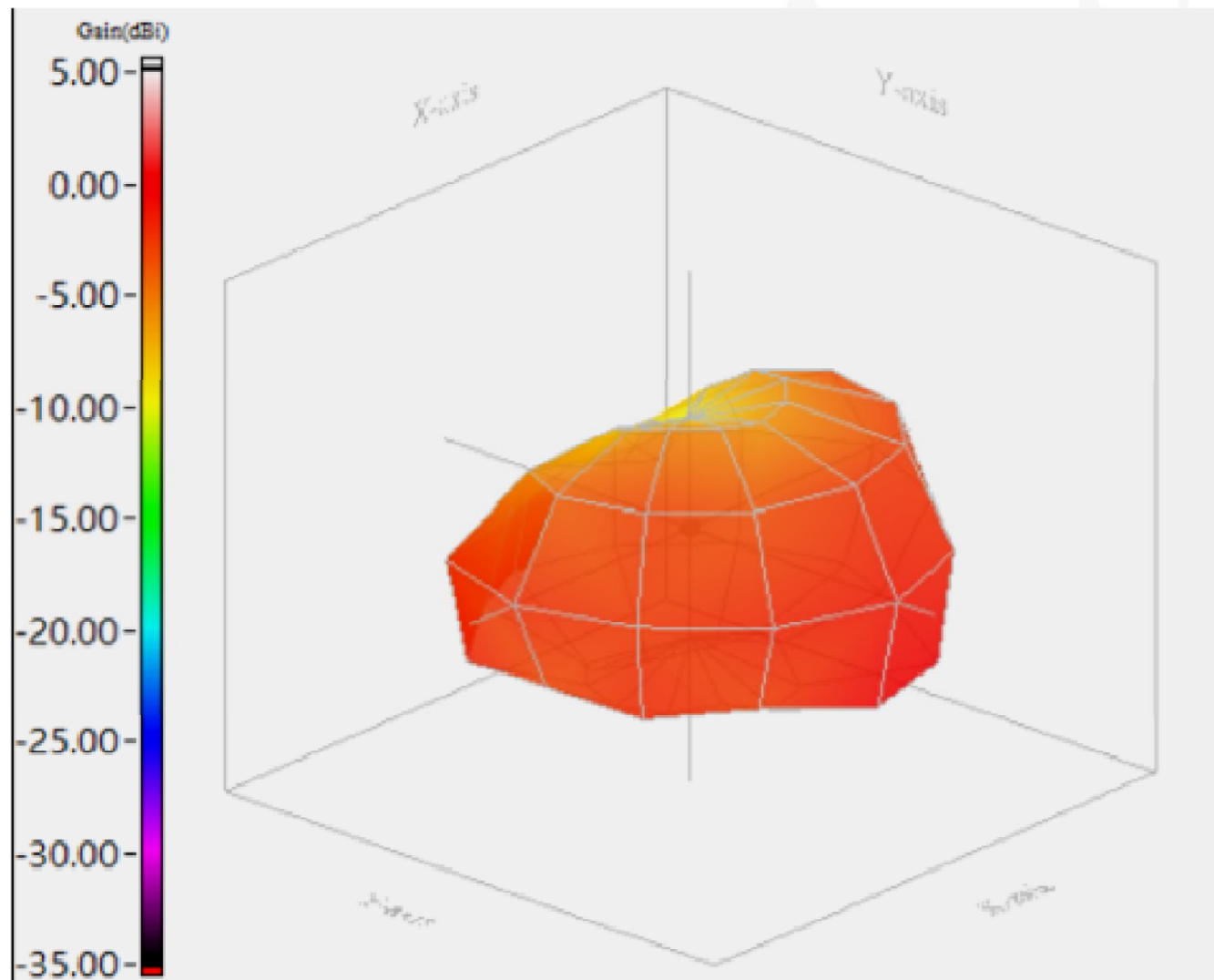
2.4 GHz



3D Radiation Pattern

3216 2.4GHz, TN

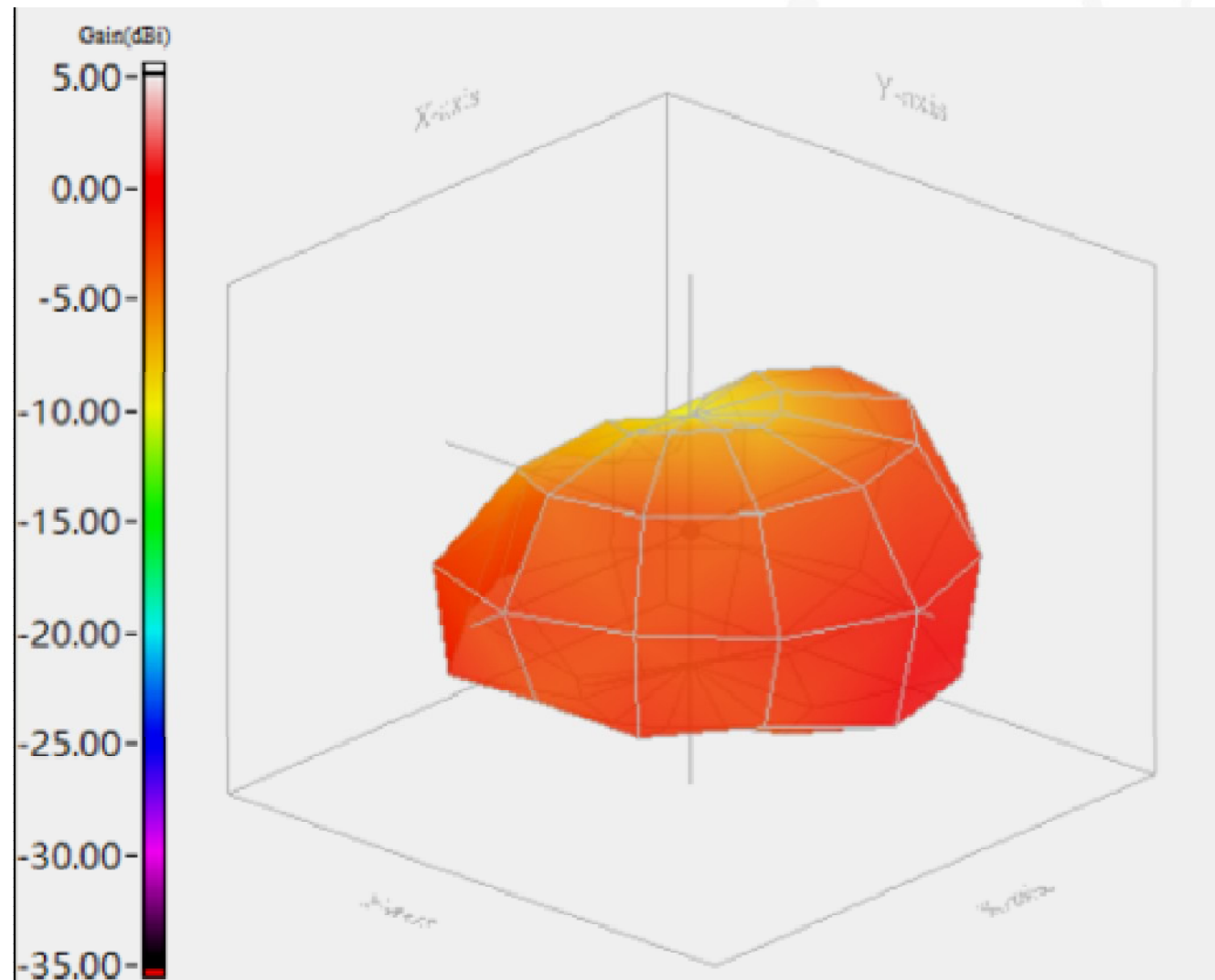
2.442 GHz



3D Radiation Pattern

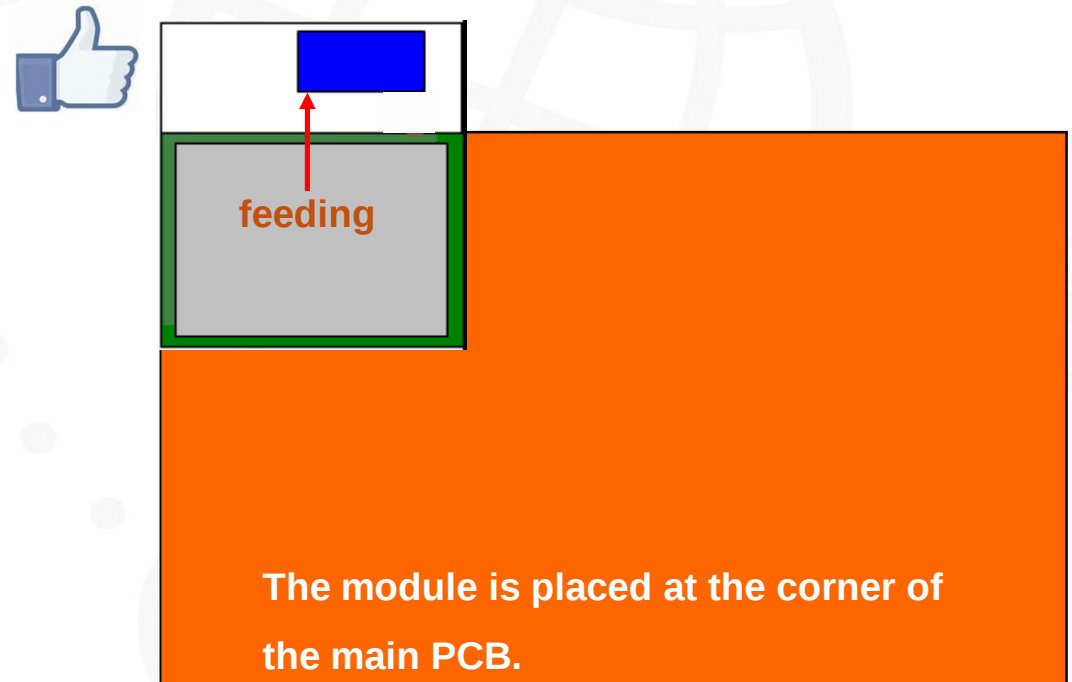
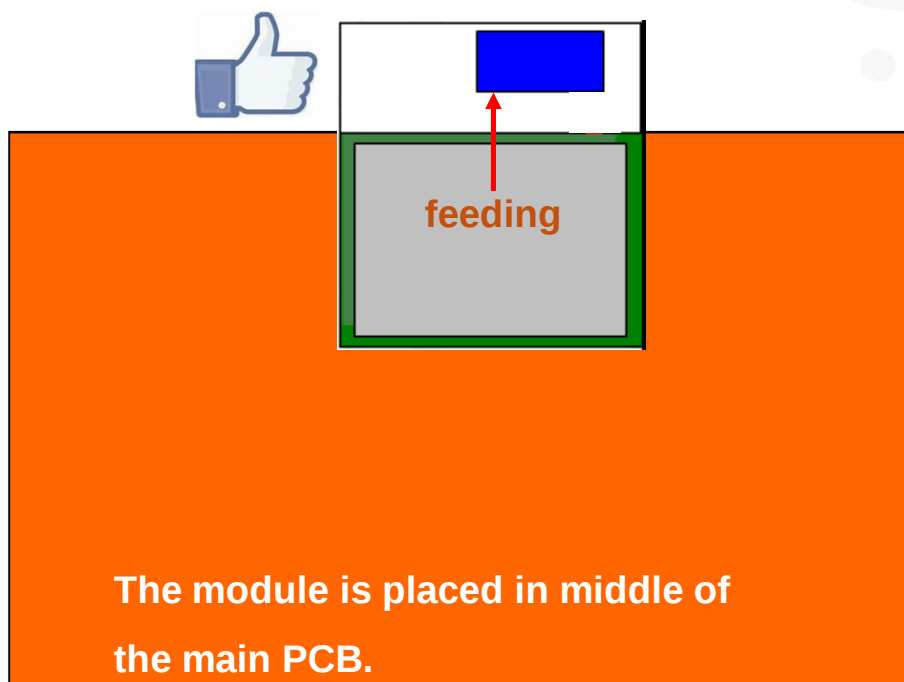
3216 2.4GHz, TN

2.484 GHz



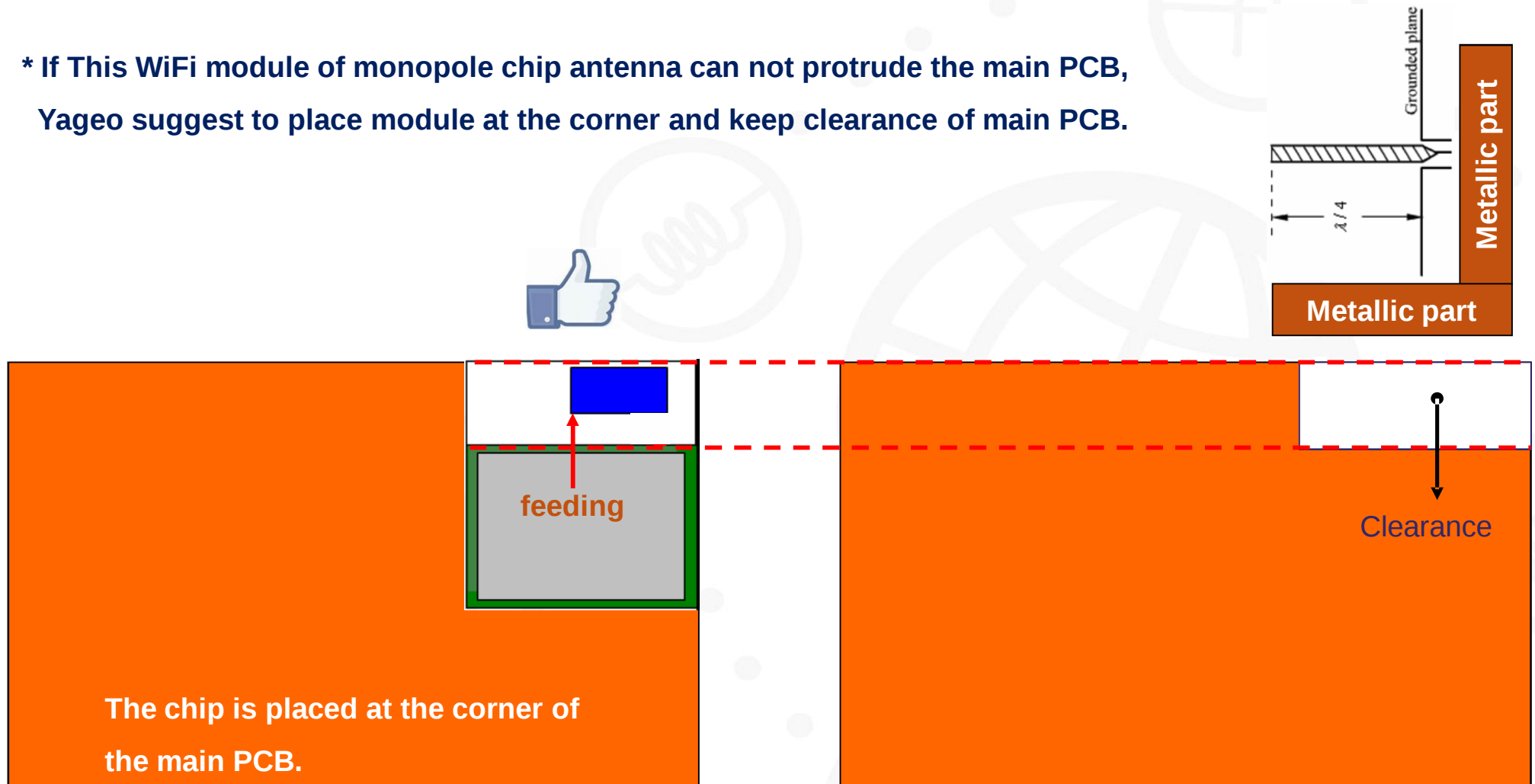
Suggestion of Module Placement on the Main PCB

* This WiFi module of monopole chip antenna will has good performance when module protrude the main PCB, like below illustration:



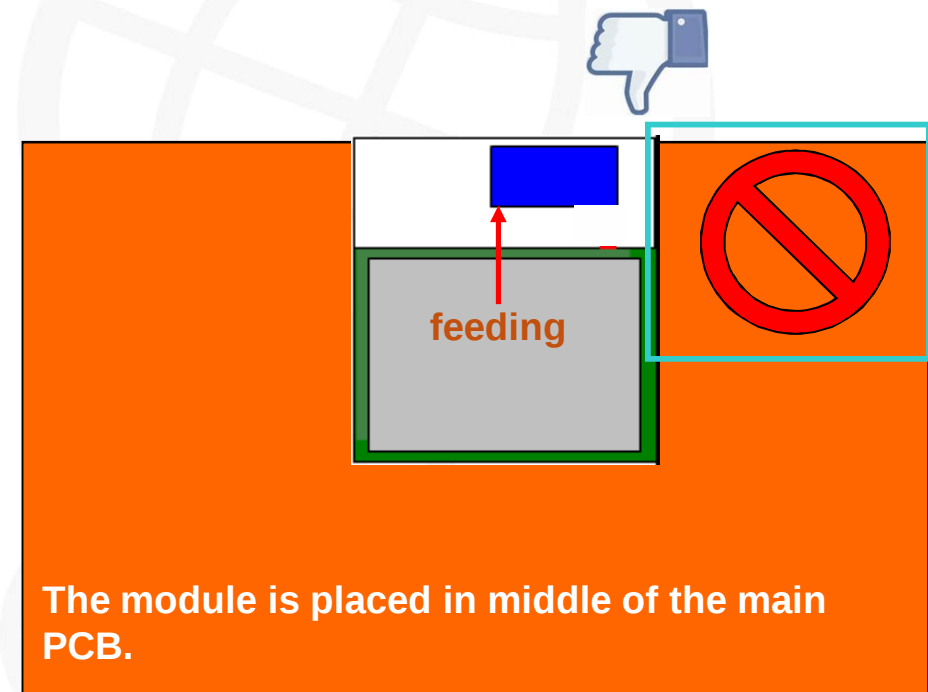
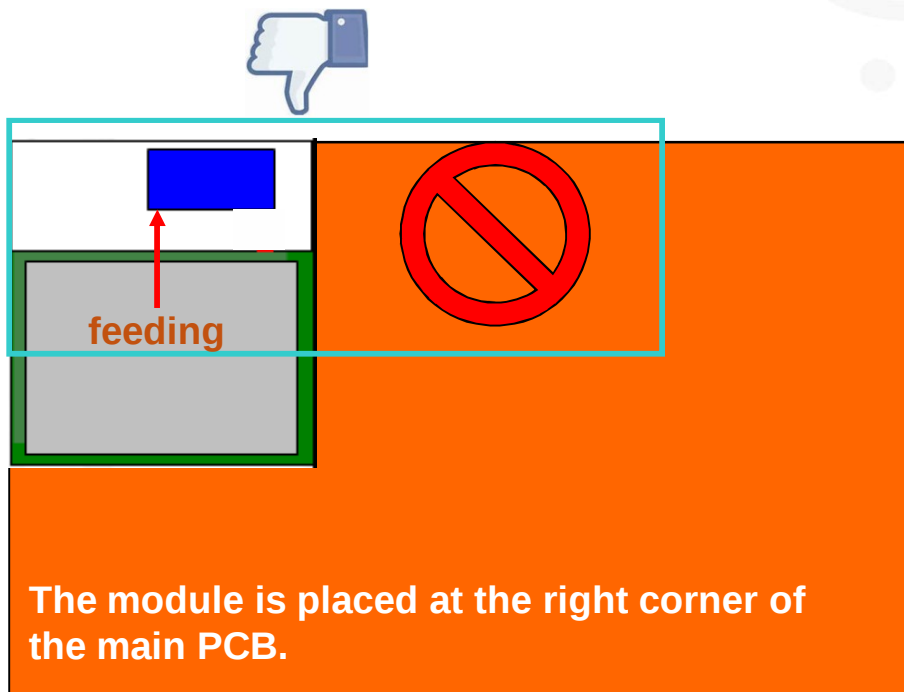
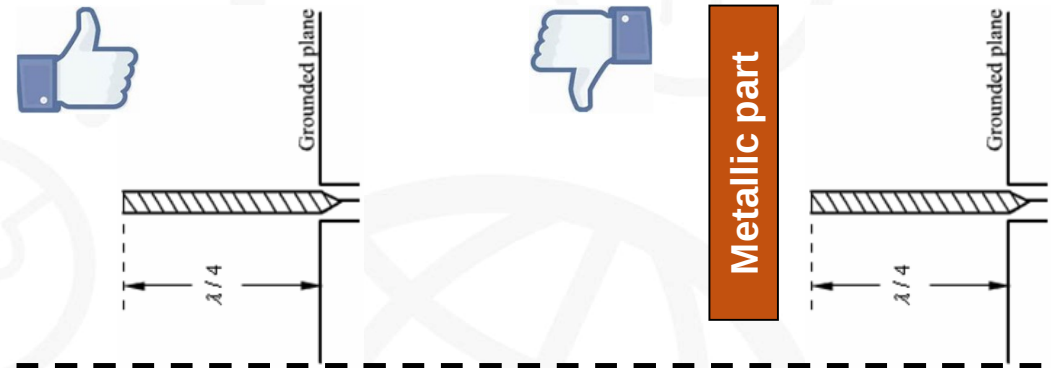
Suggestion of Module Placement on the Main PCB

- * If This WiFi module of monopole chip antenna can not protrude the main PCB, Yageo suggest to place module at the corner and keep clearance of main PCB.



Suggestion of Module Placement on the Main PCB

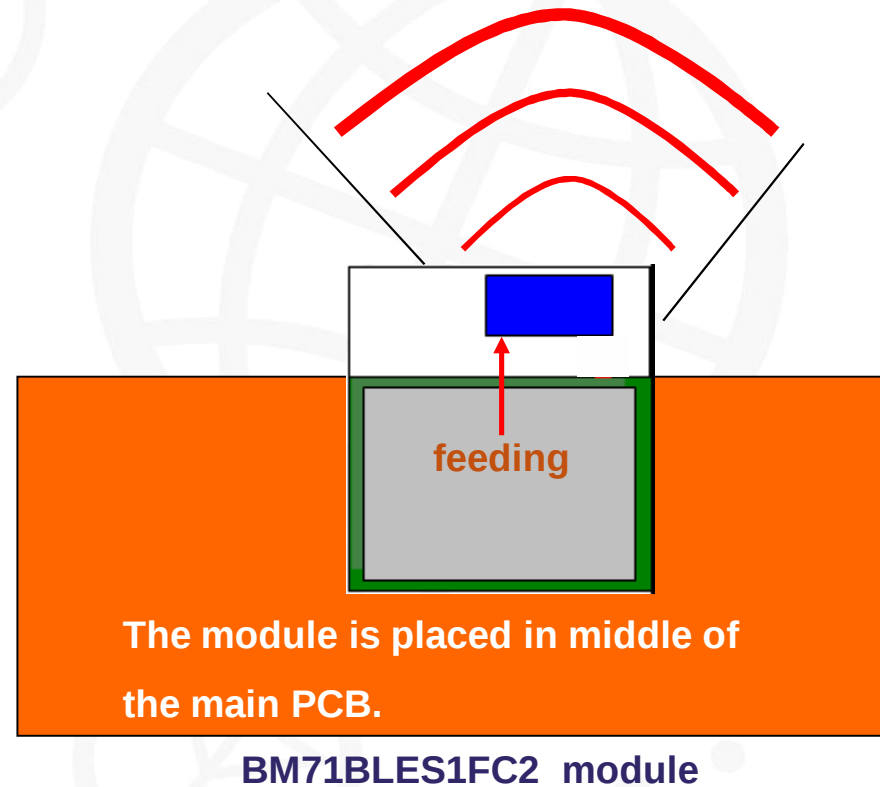
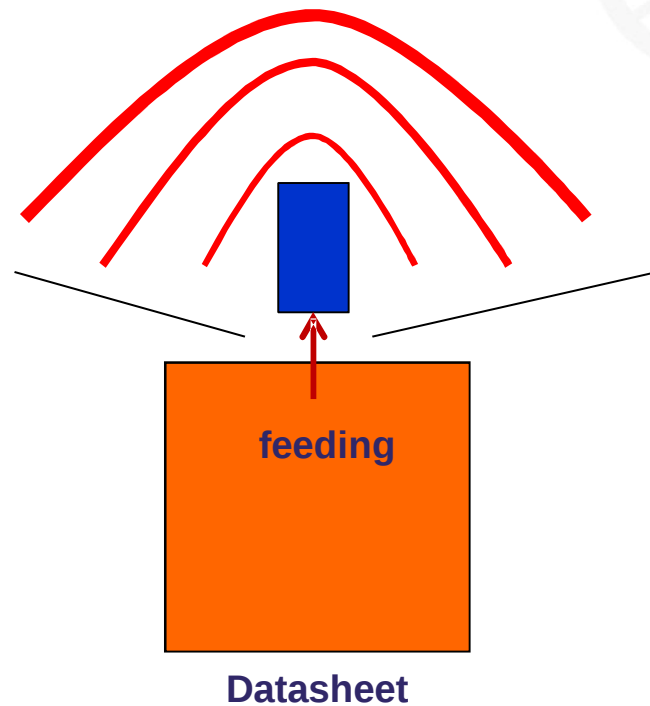
* Since monopole will be impacted by feeding direction, Yageo do not suggest to place module like below illustration:



The monopole antenna performance comparison between datasheet and BM71BLES1FC2 module

*Antenna set up for Datasheet , with omnidirectional radiation pattern

*On BM71BLES1FC2, the antenna placement limits the radiation pattern which causes the performance does not as good as datasheet described



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Thank you