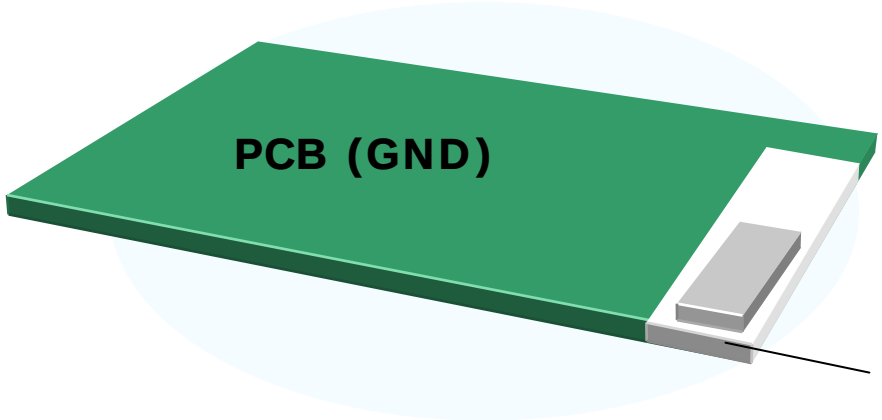
Antenna Design Guide
AH 104N2450D1

20110214V1.1

TAIYO YUDEN

http://www.ty-top.com

2.4/5GHz Monopole Antenna



2.4GHz／5GHz: AH 104N2450D

Keep Out Area **（No GND Area）**	Recommended Size 6.5 x 21 mm (136.5mm²) or more
Antenna Layout	Corner of PCB
Radiation Pattern	Normal (Omni)

Data Sheet (2.4GHz Band)

Shapes

L= 10.0 ± 0.3 mm
W= 4.0 ± 0.3 mm
T= 1.0 ± 0.3 mm

Feature

* Wide Band
* High Performance

Actual data

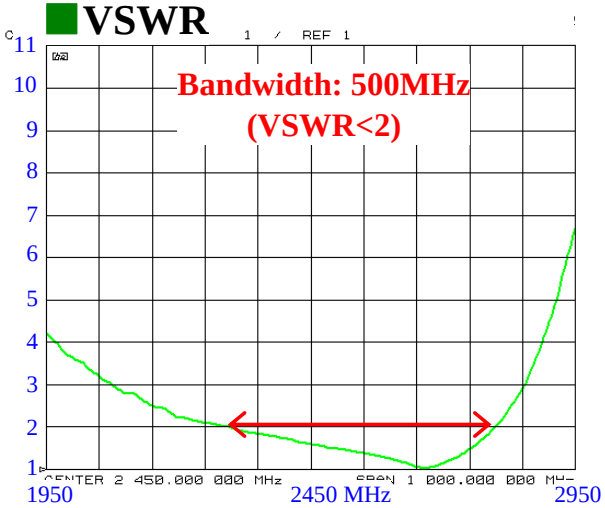
Efficiency : -1.3dB (73%)
Peak Gain : 2.1dBi @2450MHz
Average Gain : 0.3dBi (ZX plane-Vertical polarization)

*on Taiyo Yuden's Evaluation Board (54 x 12 mm)
*Element-GND Distance : 1.5 mm

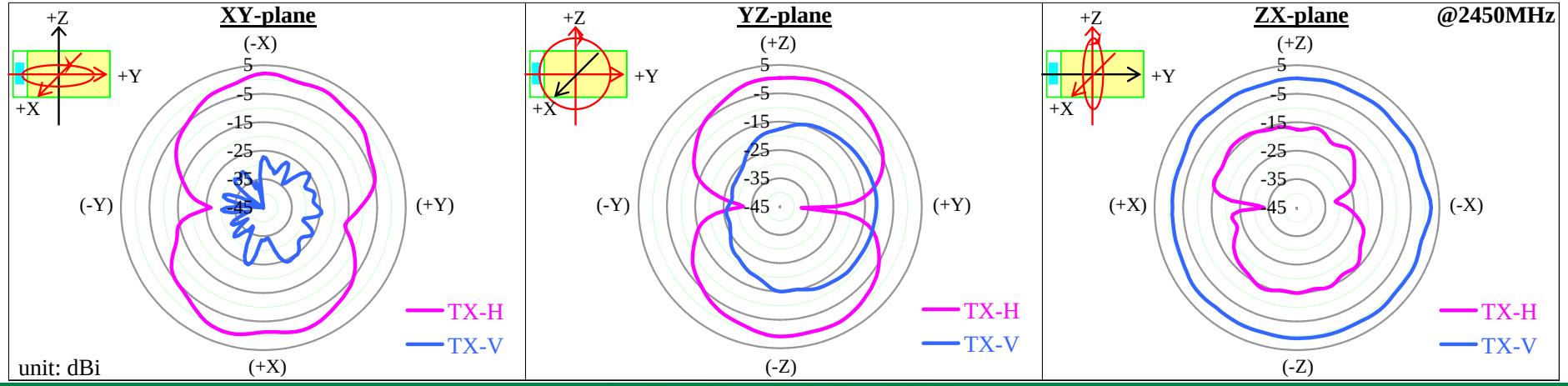
Electrical Characteristics

			2400MHz	2450MHz	2500MHz
Efficiency [dB]			**-1.4 (72%)**	**-1.3 (73%)**	**-1.2 (76%)**
Peak gain [dBi]			**1.7**	**2.1**	**1.4**
Average gain [dBi]	XY-plane	TX-H	**-2.6**	**-2.5**	**-2.5**
		TX-V	**-29.5**	**-29.0**	**-29.1**
	YZ-plane	TX-H	**-2.4**	**-2.5**	**-2.5**
		TX-V	**-15.1**	**-15.1**	**-15.3**
	ZX-plane	TX-H	**-17.1**	**-17.0**	**-16.8**
		TX-V	**0.3**	**0.3**	**0.5**

VSWR



Radiation Pattern



Data Sheet (5GHz Band)

Shapes

L= 10.0 ± 0.3 mm
W= 4.0 ± 0.3 mm
T= 1.0 ± 0.3 mm

Feature

* Wide Band
* High Performance

Actual data

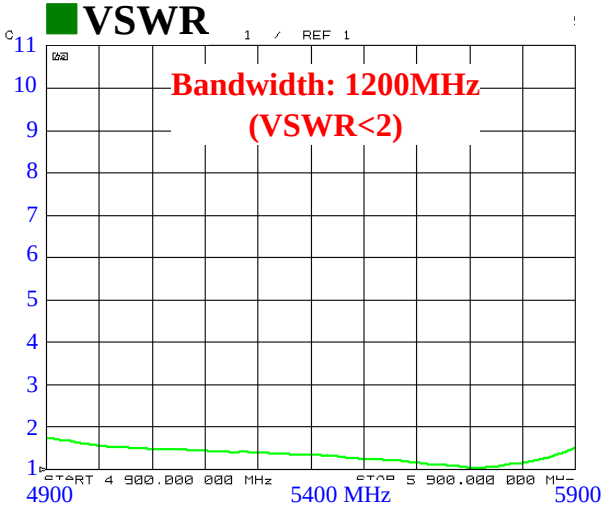
Efficiency : -1.6dB (69%)
Peak Gain : 2.4dBi @5250MHz

*on Taiyo Yuden's Evaluation Board (54 x 12 mm)
*Element-GND Distance : 1.5 mm

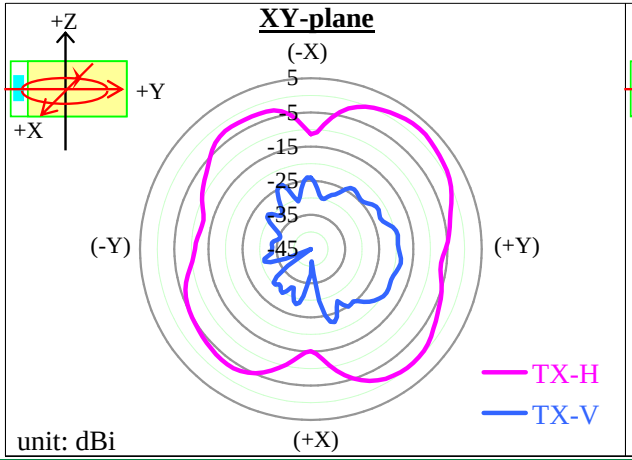
Electrical Characteristics

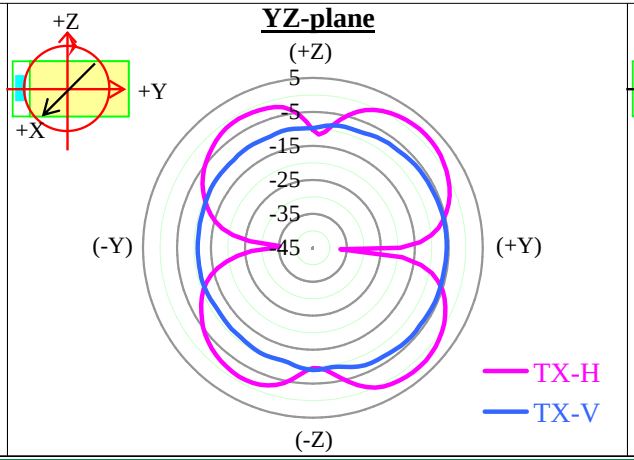
			4900MHz	5250MHz	5900MHz
Efficiency [dB]			**-2.0 (64%)**	**-1.6 (69%)**	**-2.0 (64%)**
Peak gain [dBi]			**2.2**	**2.4**	**2.4**
Average gain [dBi]	XY-plane	TX-H	-3.2	-3.1	-3.2
		TX-V	-25.4	-24.6	-22.7
	YZ-plane	TX-H	-3.0	-2.6	-3.0
		TX-V	-7.7	-8.2	-8.8
	ZX-plane	TX-H	-10.9	-10.8	-12.3
		TX-V	-12.0	-10.6	-6.3

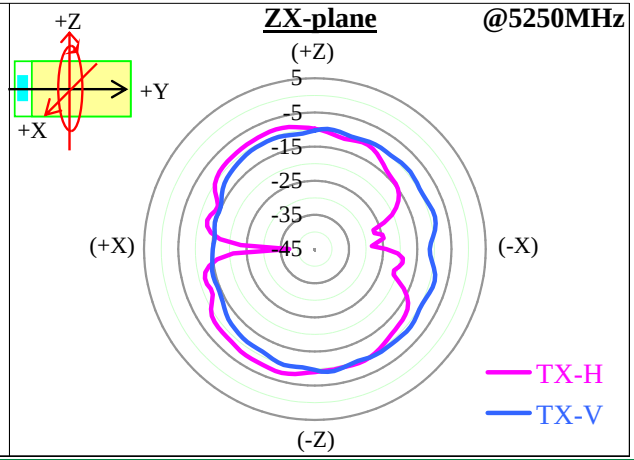
VSWR



Radiation Pattern

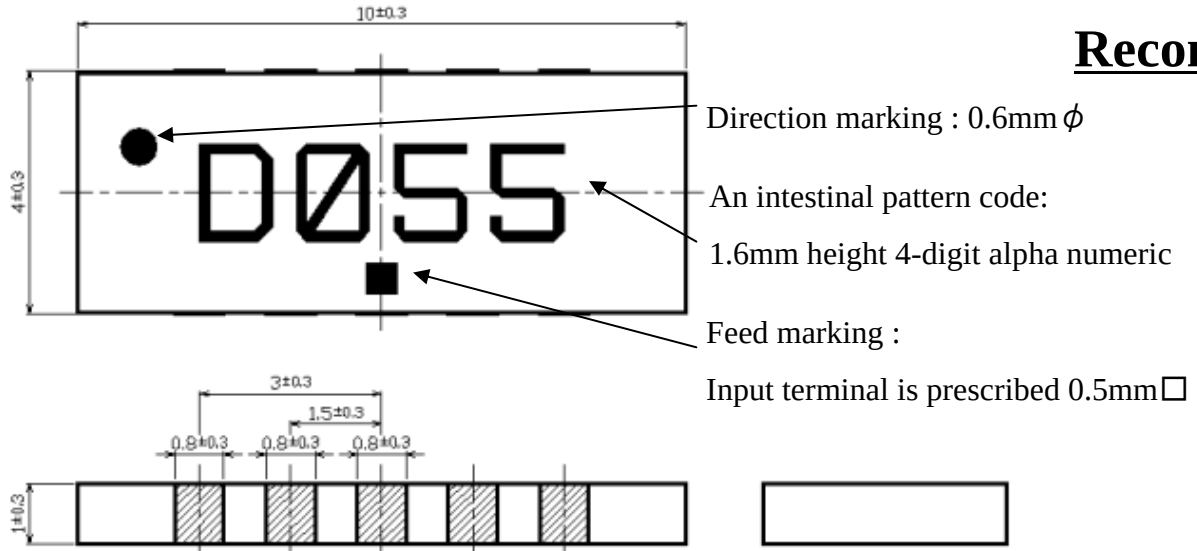




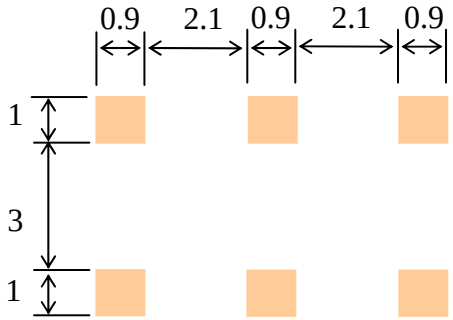


Dimensions and Land pattern

External Dimensions



Recommended Land Pattern



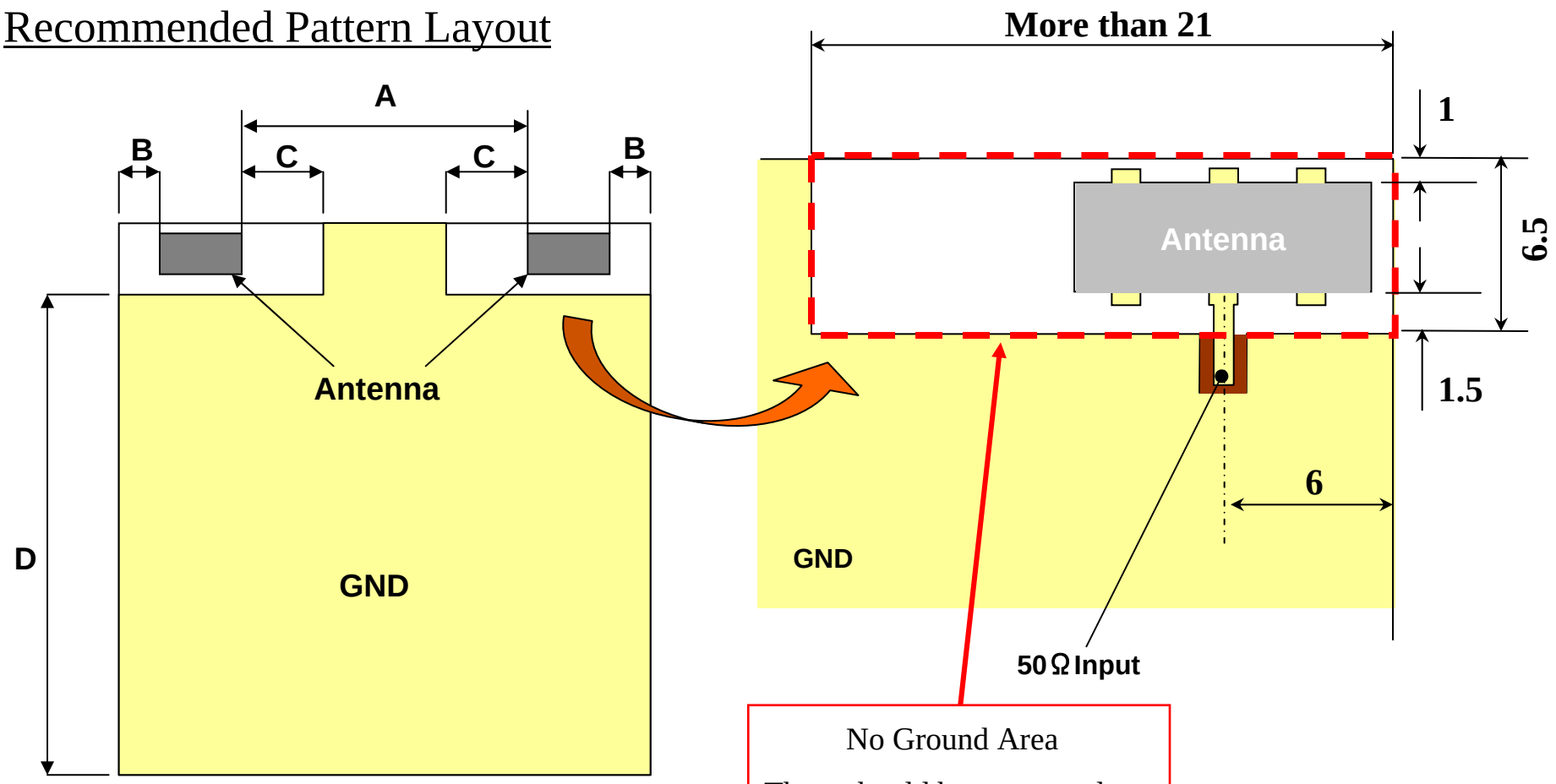
Unit: mm

1	NC	6	NC
2	D	7	D
3	FEED	8	NC
4	D	9	D
5	NC	10	NC

Electrode D shall not be soldered.

Design Guide

Recommended Pattern Layout



A : More than 30mm
B : Less than 5mm
C : More than 10mm
D : More than 50mm

No Ground Area

There should be no ground whatsoever within the antenna mounting area (within the red dotted line) including inner layer.

Design Guide

Precautions

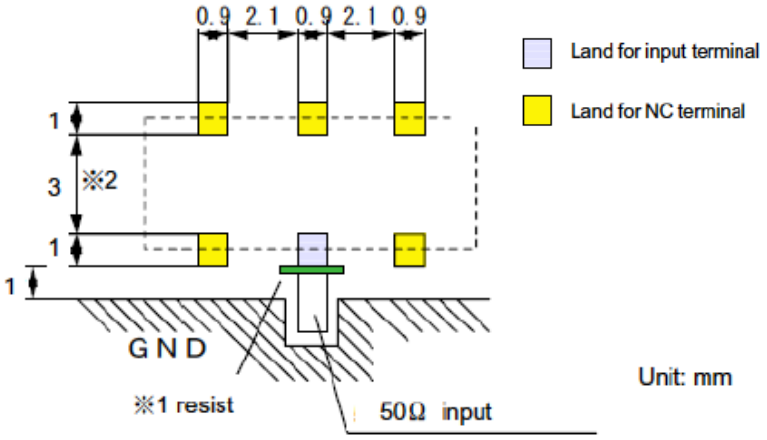
Ⅰ. Surface GND layer around the antenna area should be connected with inner GND layer via through hole.

Ⅱ. Matching circuit line should be designed as 50Ω.

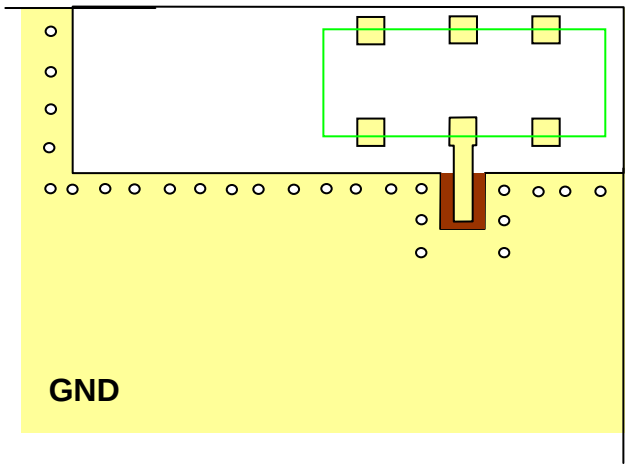
Ⅲ. Thickness of PCB can be flexible.

Ⅳ. Since our recommended board design including ground and keep-out area is pre-optimized which requires no matching circuit, it is recommended to follow the provided reference design.

Recommended land pattern



Example of through hole



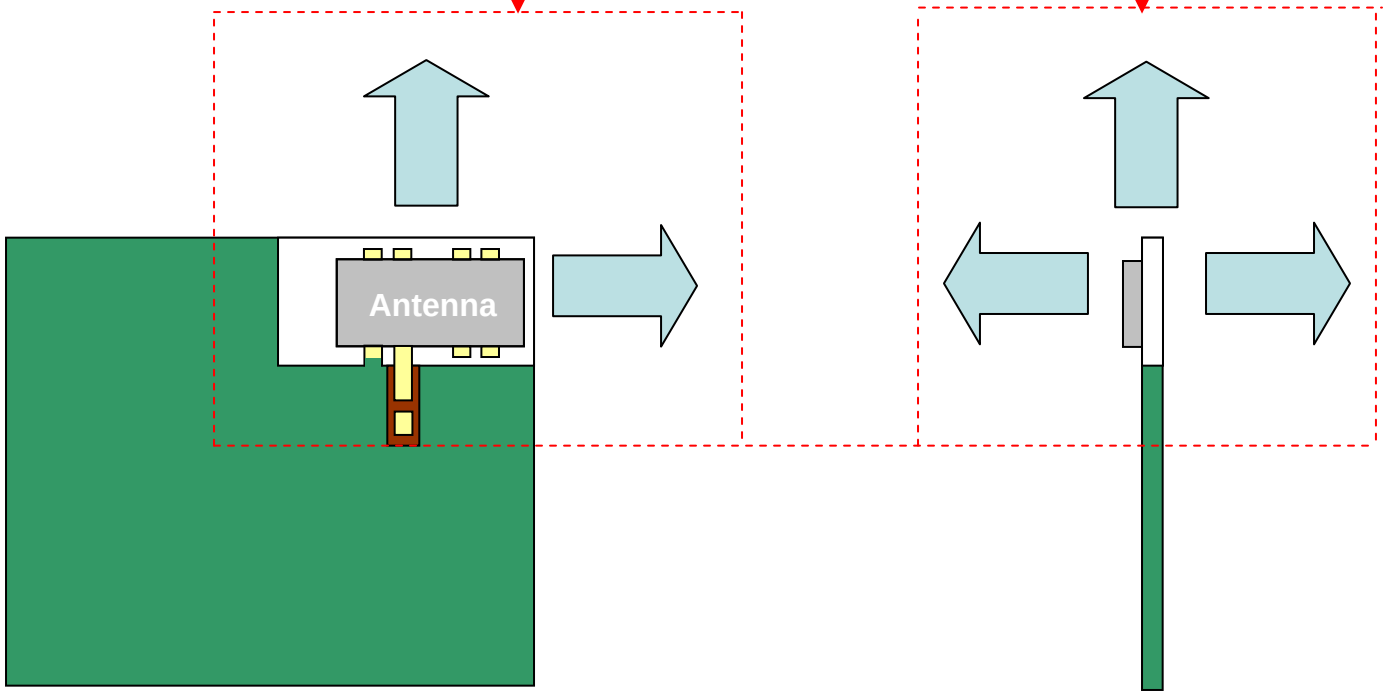
※1 A solder area is set at solder resist.

※2 Do not arrange the surface and inside of layer pattern near the antenna mounting area.
（Refer to our company evaluation circuit board）

Design Guide

Metal Avoidance Area

Please do not set close to a metal housing, paint including the metal, board GND, the metal chassis,etc.



Front or Back

Side