

Chip Antenna Guideline for LDA Series

Ver1.0a

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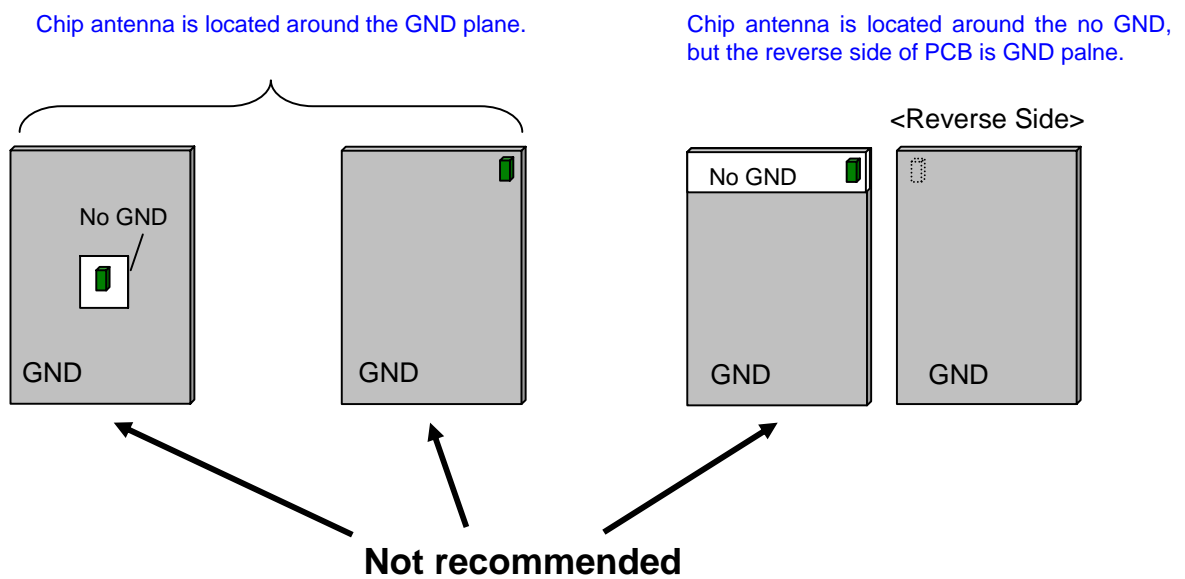
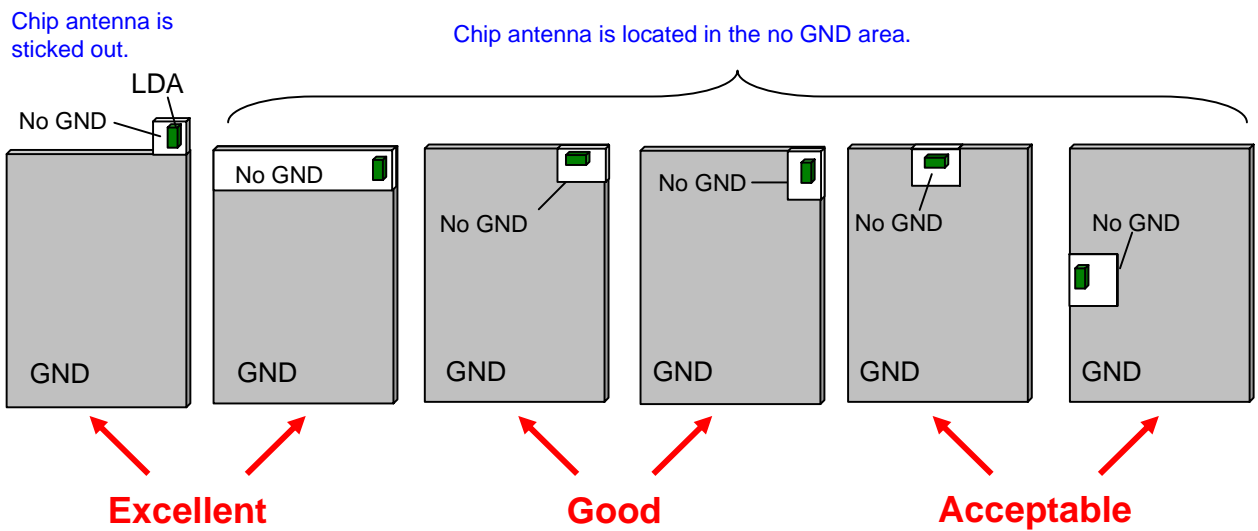
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1. Chip Antenna Position

Points

- Chip antenna is located in the no GND area (the reverse side of PCB, too).
- The no GND is as large as possible.

1-1. Simple Board

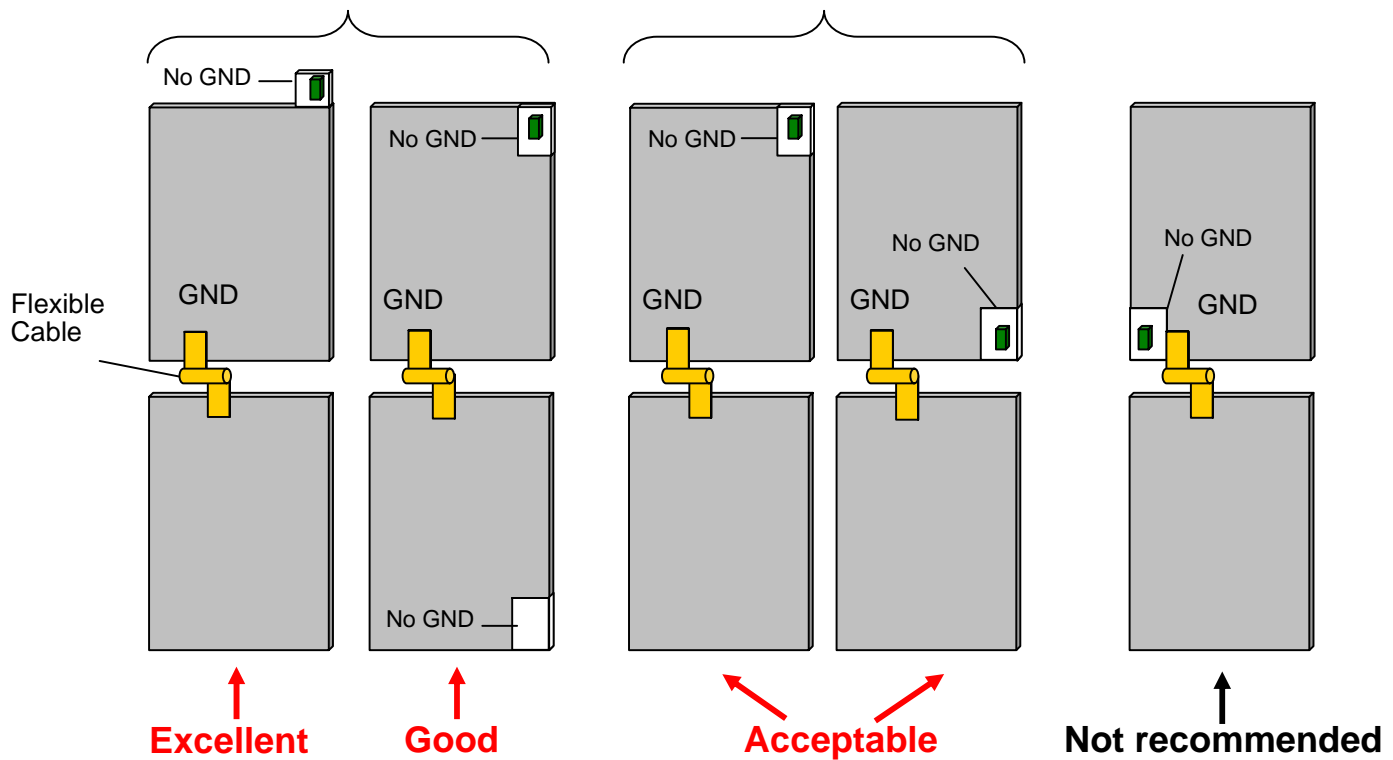


1-2. Flip type

When cabinet is closed, antenna and the no GND area isn't covered with GND plane of the opposite PCB.

Chip antenna is located on the no GND area.

Chip antenna is located near the Flexible Cable. Flexible Cable influence antenna performance

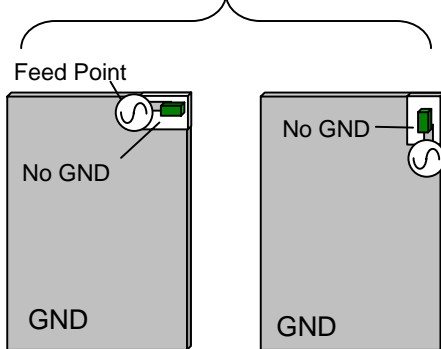


2. Antenna Direction & Feed Point Position

Points

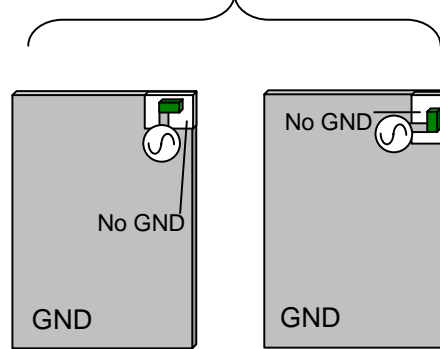
- The open terminal of chip antenna is pointed to outside.
- The feed point of chip antenna is located at the edge of PCB.

The open terminal of chip antenna is pointed to outside of PCB, and the feed point of chip antenna is located at the edge of PCB.



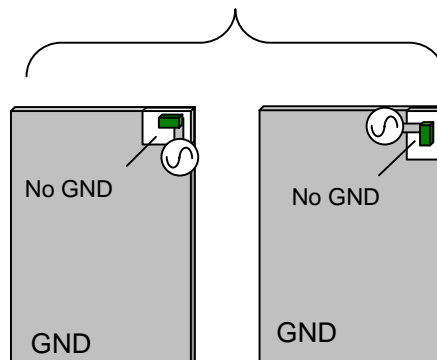
Good

The open terminal of chip antenna is pointed to outside of PCB, however the feed point is located at the inside of PCB.



Acceptable

Feed point is located at the edge of PCB, however the open terminal of chip antenna is pointed to GND plane of PCB.



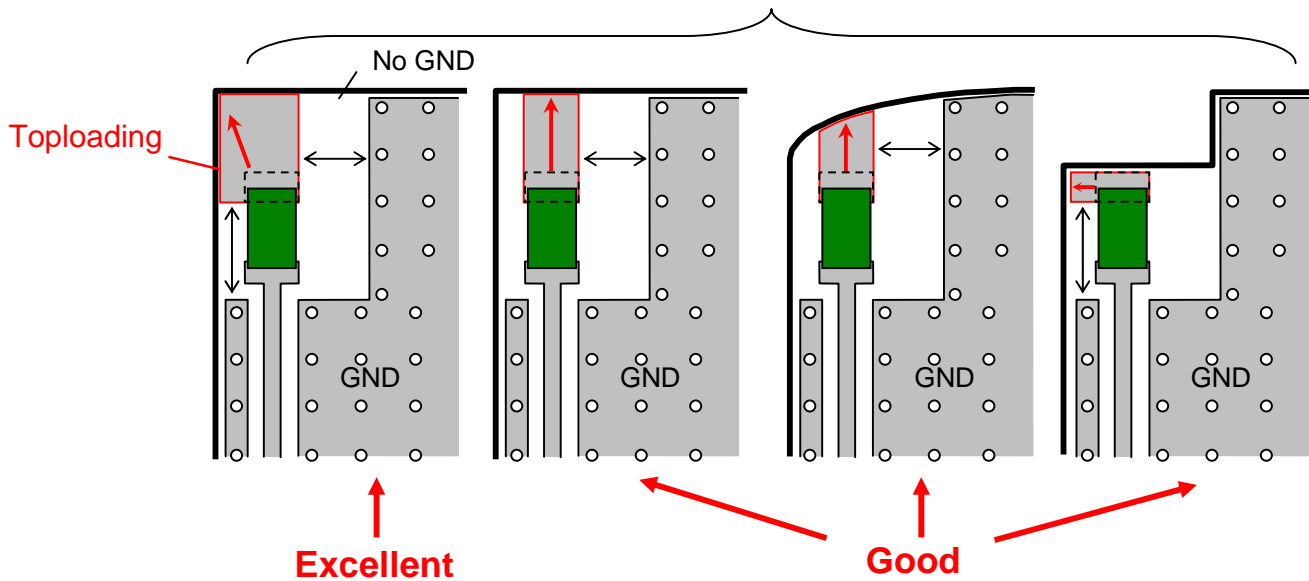
Not recommended

3. Toploading (Extension of Chip antenna Open Land)

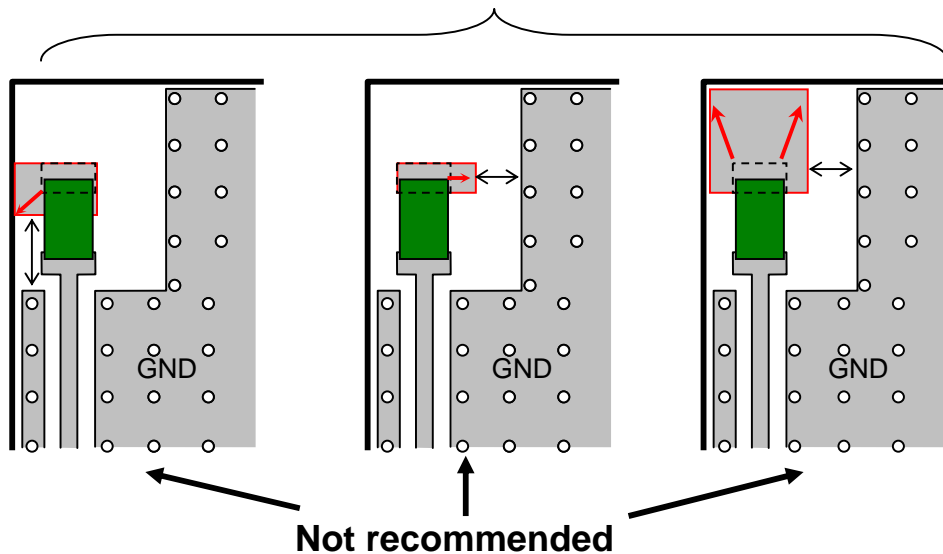
Points

- Correctly toploading improve antenna performance.
- Toploading is extended in directions away from GND plane.
(Don't extend land in directions close GND.)

Toploading (the open land of chip antenna) is extended in directions away from GND plane and kept GND plane at the distance between the open land to GND.



Chip antenna open land is extended in directions close from GND plane.



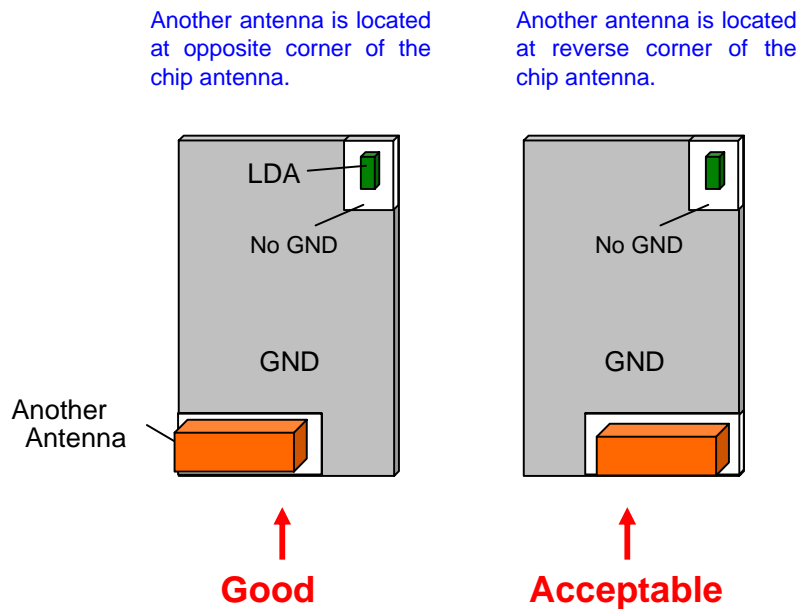
Not recommended

All information contained here is subject to change without prior notice.

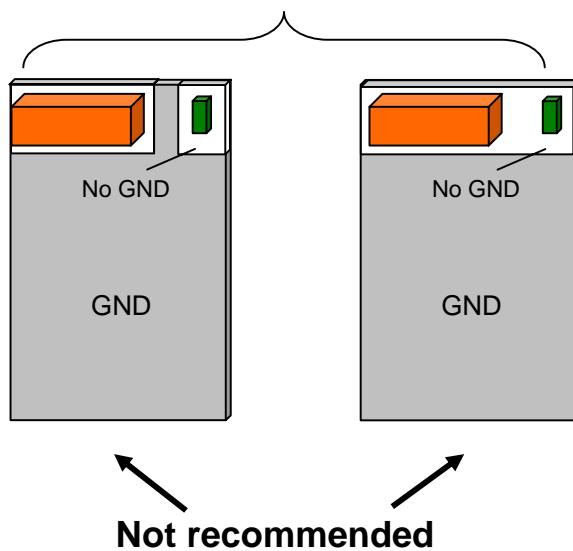
4. Another Antenna Position

Points

- Chip antenna is located as distant as possible from another antenna.



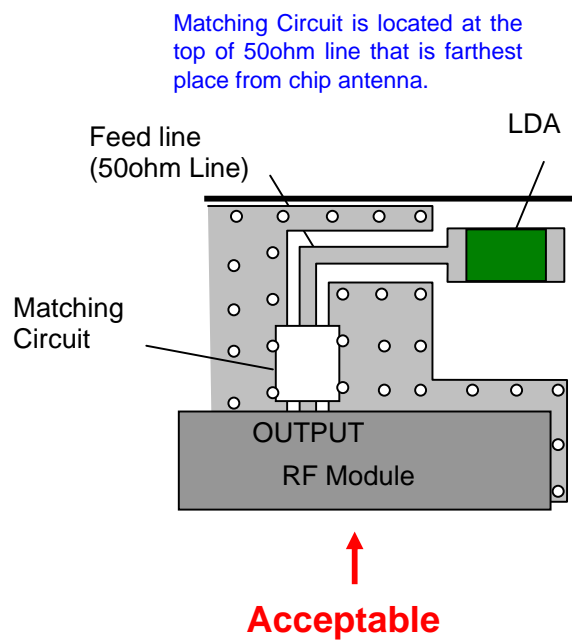
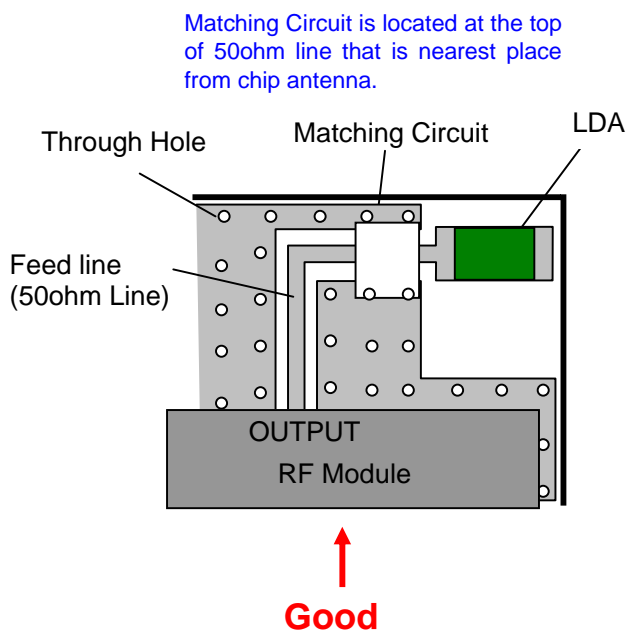
Another antenna is located close the chip antenna.



5. Matching Circuit Position

Points

- Matching circuit is located near chip antenna.
- The feed line of chip antenna is 50ohm line.

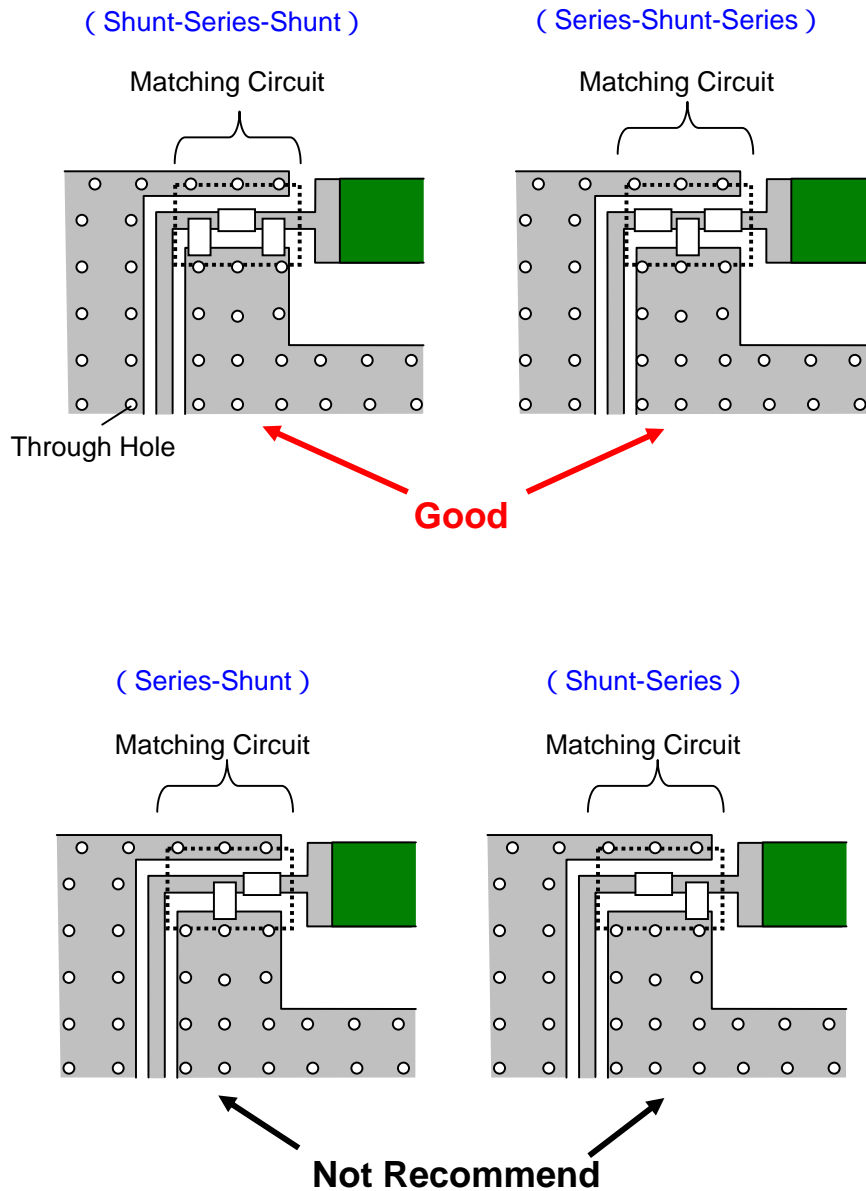


6. Structure of Matching Circuit

Points

- Matching circuit is composed of three device.

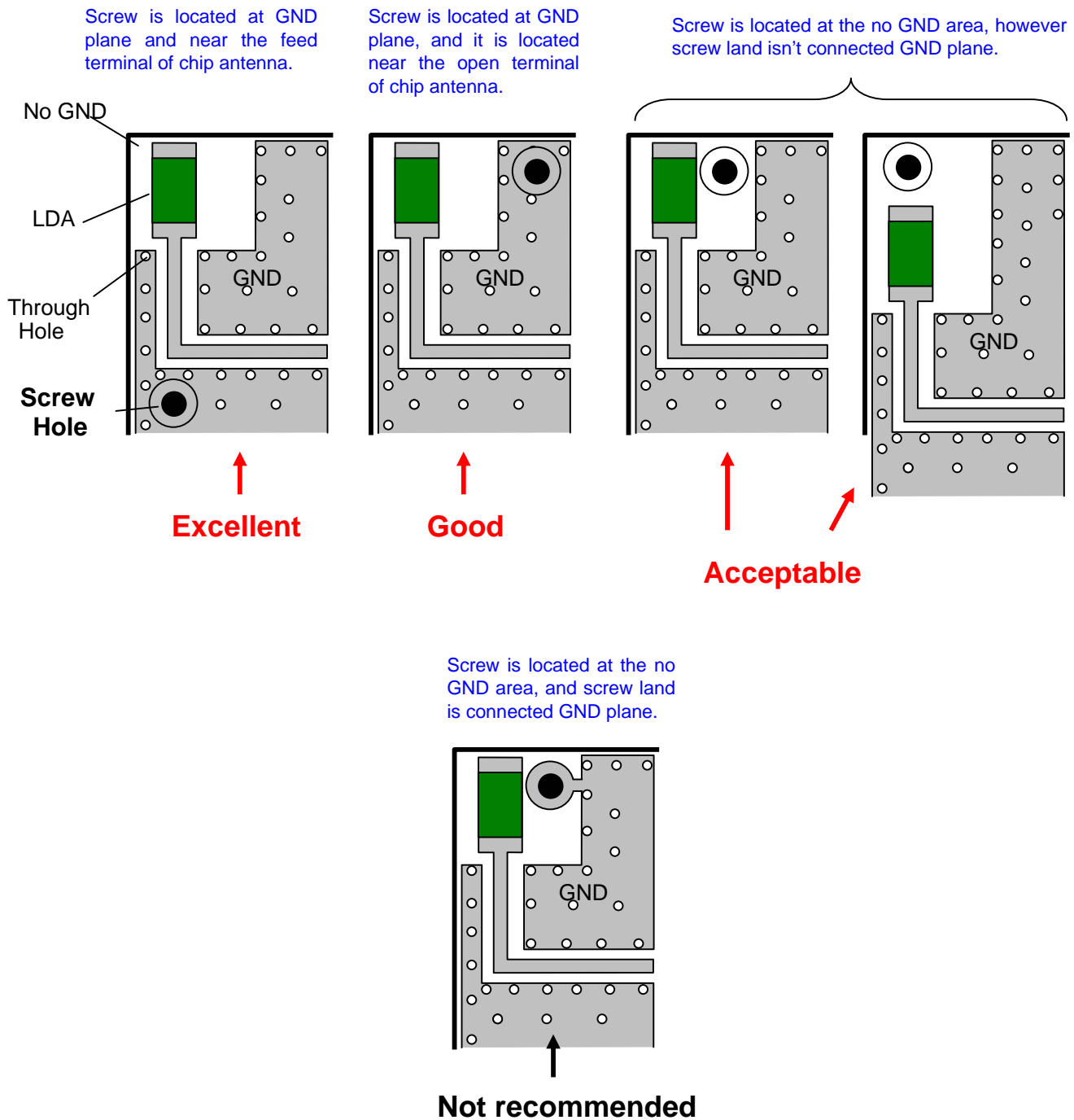
(Note: When series components are not needed, 0-ohm resistance is needed to mount there.)



7. Screw Position

Points

- Screw is located as distant as possible from the open terminal of chip antenna.
- Don't be screw connected to GND plane.

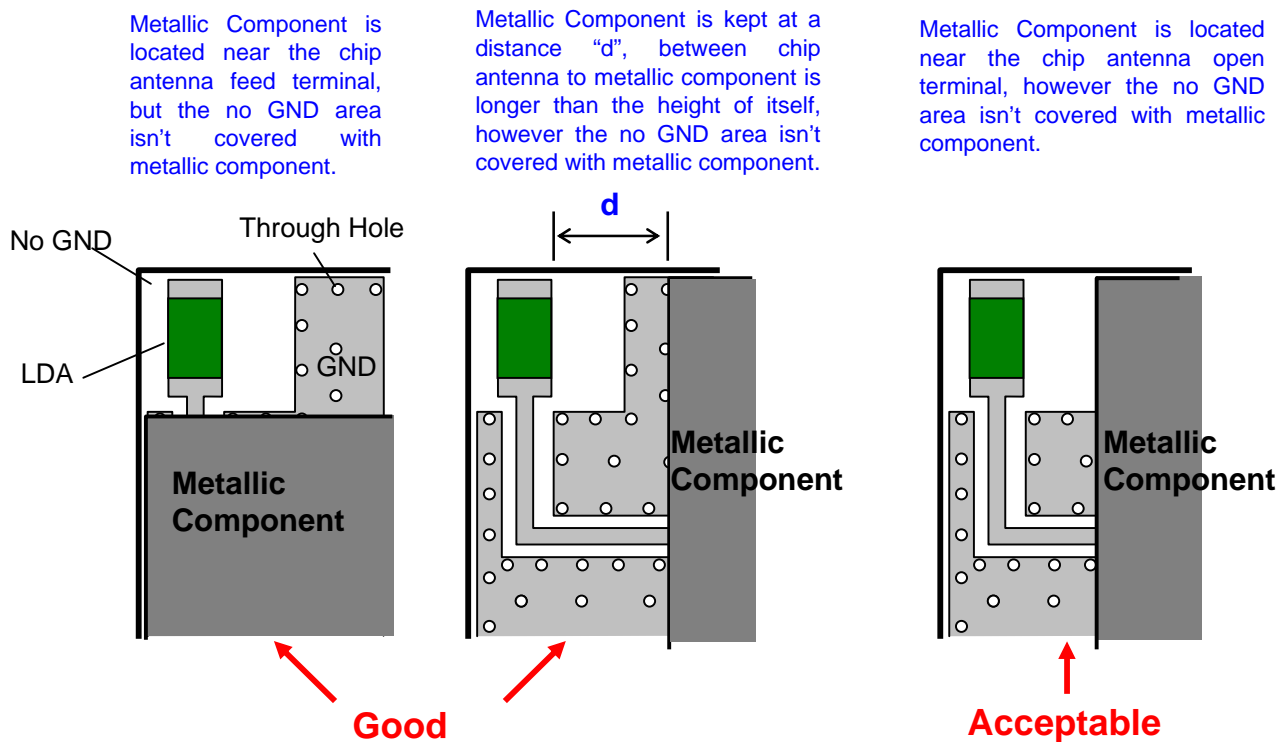


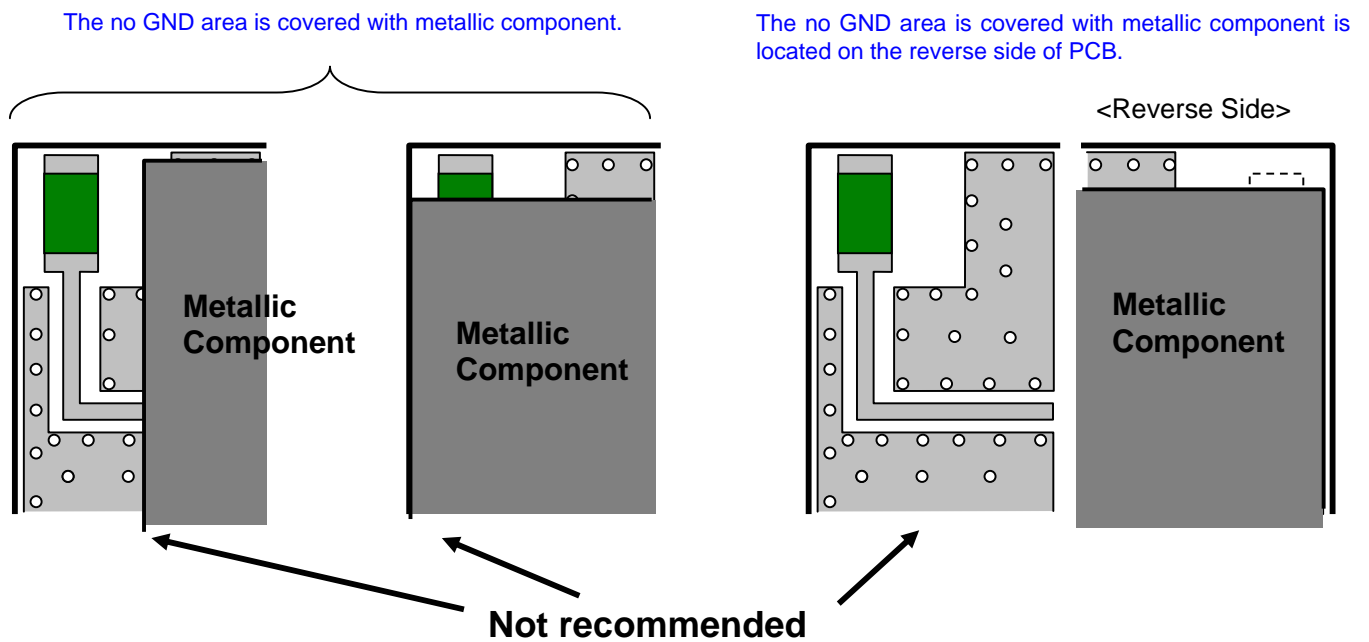
8. Metallic Component Position

*Metallic Component means Battery, Shield case, LCD, Camera, Vibrator, Connector and other metallic part. (except screw is showed at the previous page)

Points

- Don't be the no GND area covered with metallic component.
(the reverse side of no GND area, too)
- Metallic component is located as distant as possible from the open terminal of chip antenna (longer than the height of metallic component).



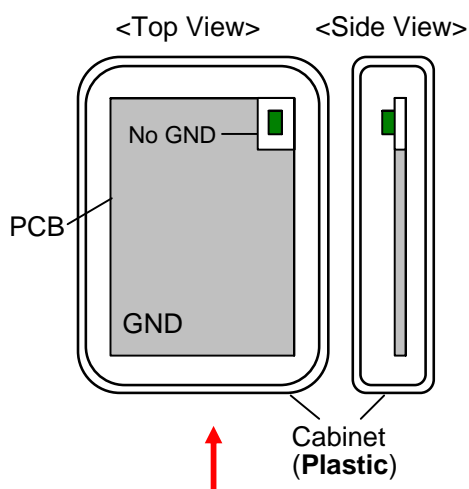


9. Cabinet

Points

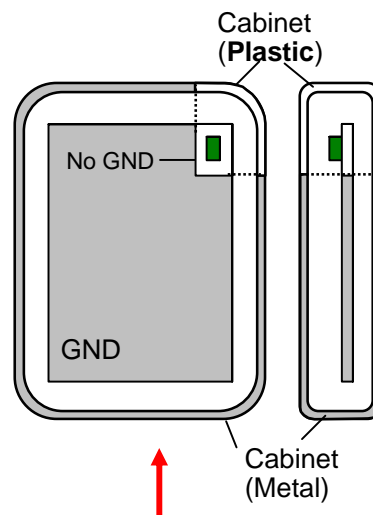
- Don't be the no GND area covered with metallic cabinet or metal coating on the plastic cabinet. (in direction from the top, bottom and side of the no GND area)

Cabinet material is all plastic.

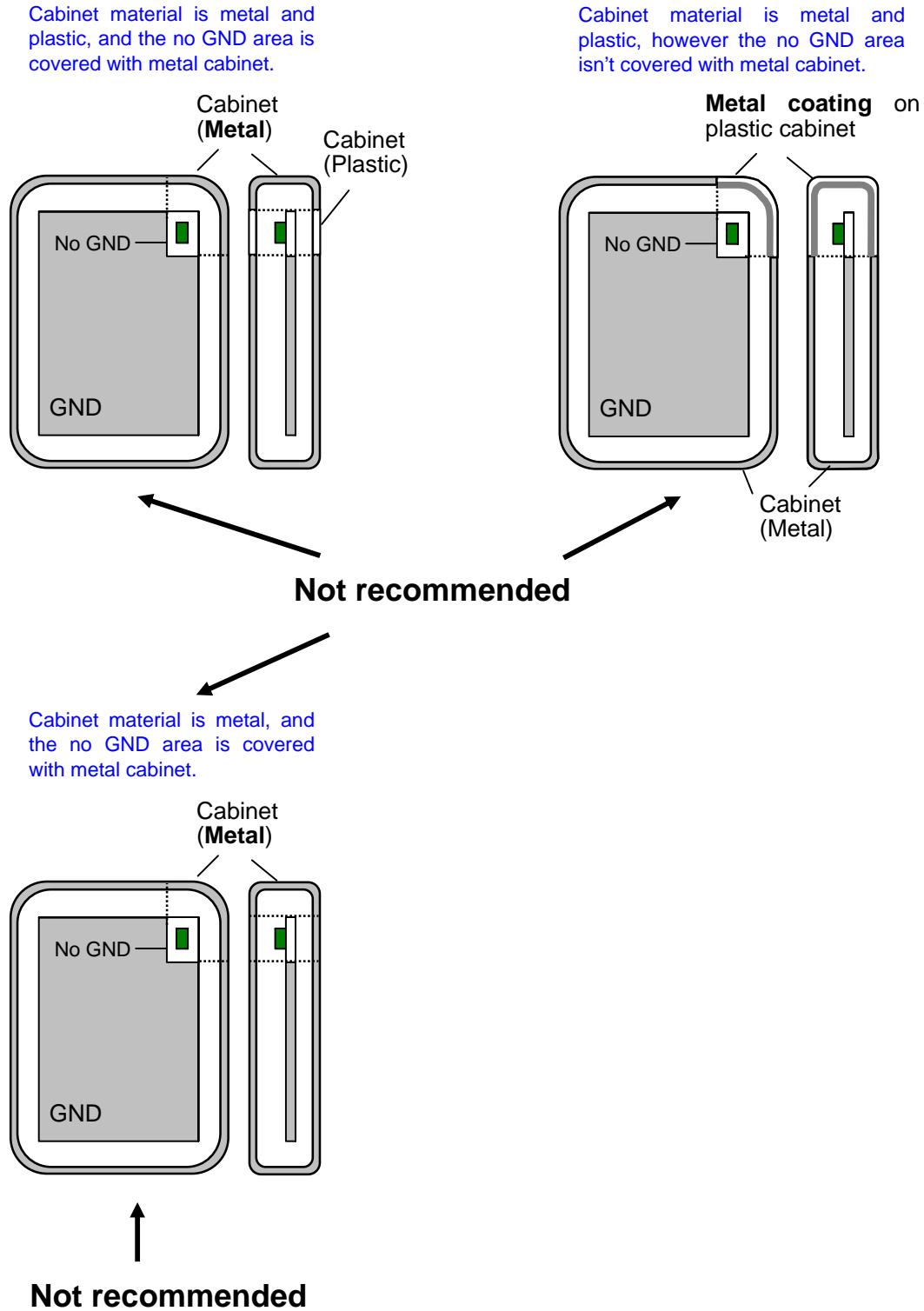


Excellent

Cabinet material is metal and plastic, however the no GND area isn't covered with metal cabinet.



Acceptable

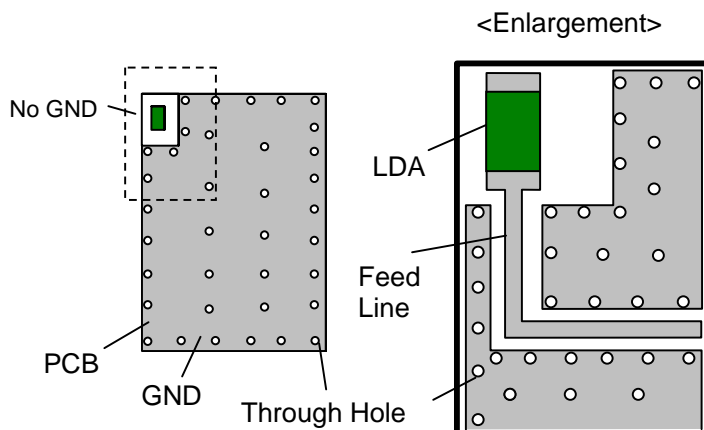


10. Through Hole Position

Points

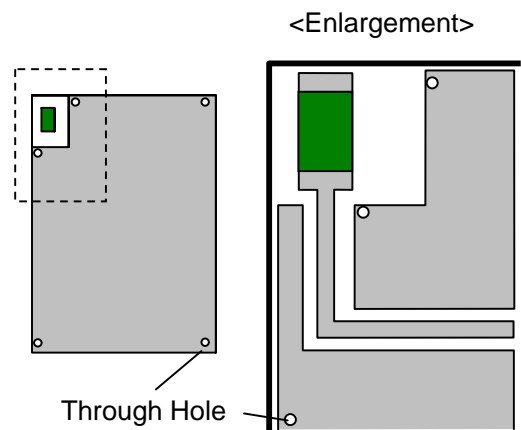
- Through holes are located on the edge of PCB at regular pitch (less than 3mm).
- Through holes are located on GND plane equally.
- Through holes are along the feed line of chip antenna.

Through Holes are located on the Edge of PCB and GND plane equally and along the feed line of chip antenna.



↑
Excellent

Through Holes are little.



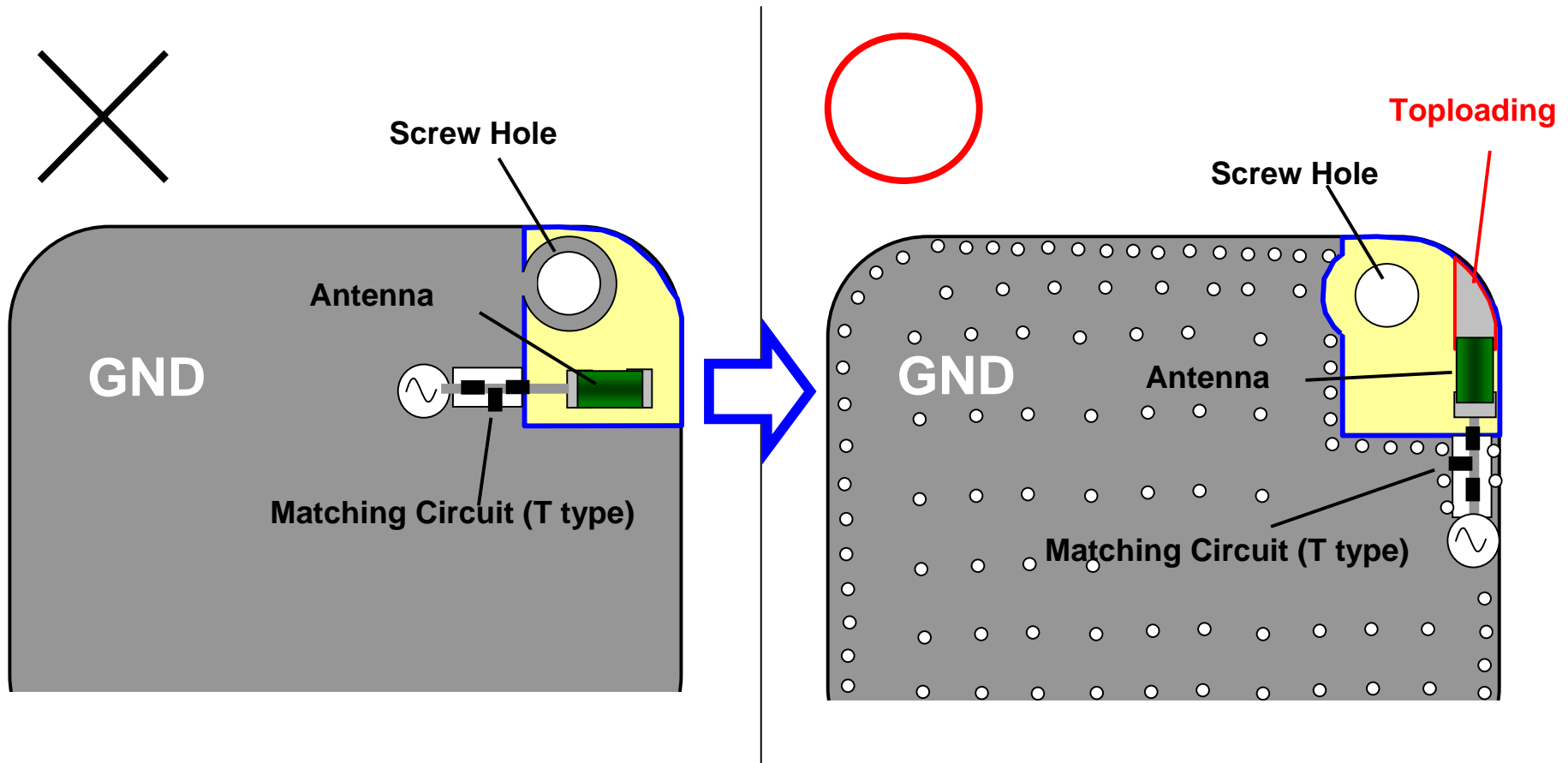
↑
Not recommended

(Note: We recommend the pitch of through holes is less than 3mm.)**

Layout Examples No.1

[Points]

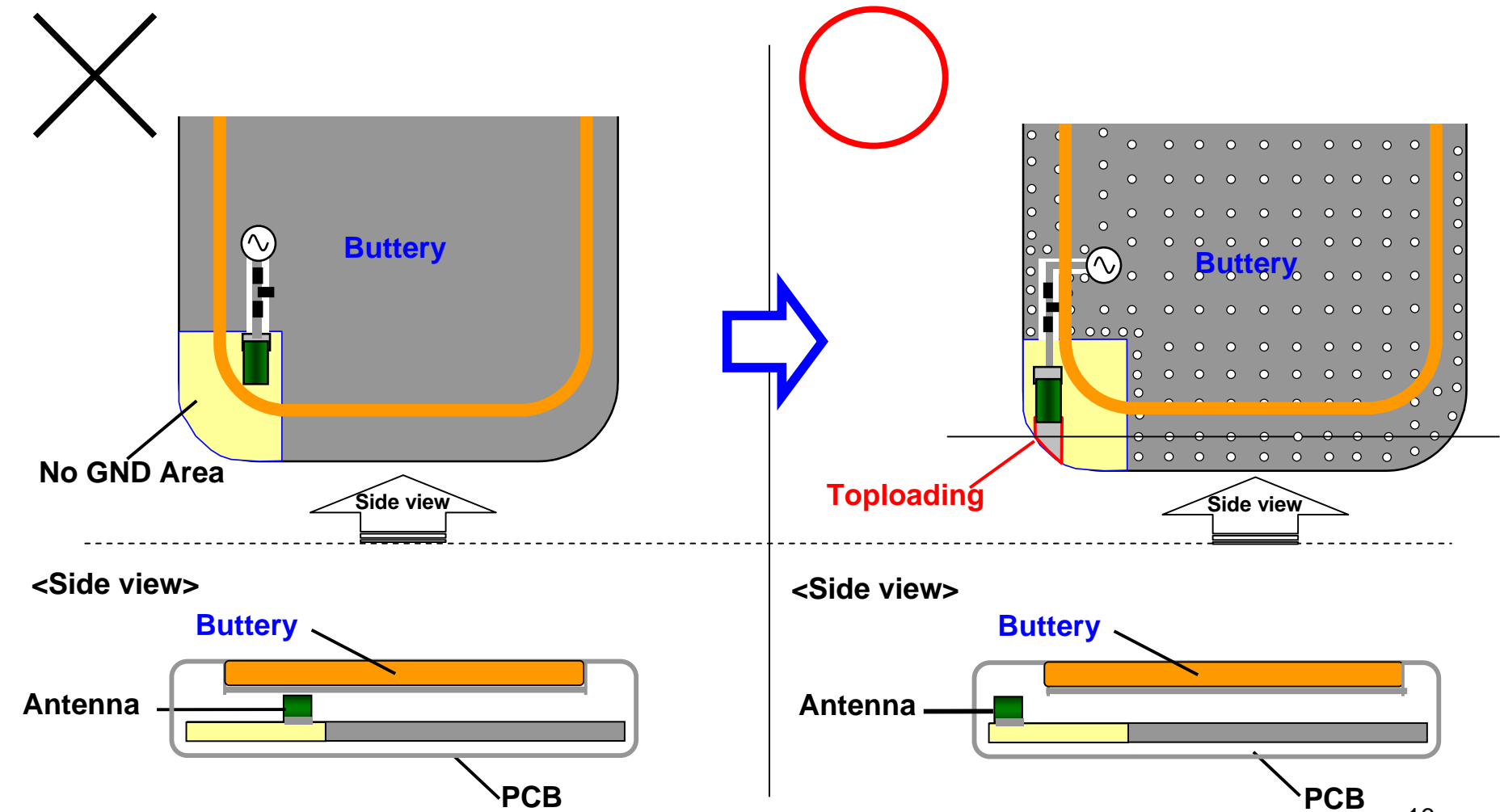
- a) Please make though hole GND area as many as possible (especially, edge of GND and space near antenna).
- b) Don't connect screw hole near antenna to GND.
- c) Area near antenna is Non GND Area at all layer.
- d) Please extend Toploading(Extension of Chip antenna Open Land) to the edge of PCB .



Layout Examples No.2

[Points]

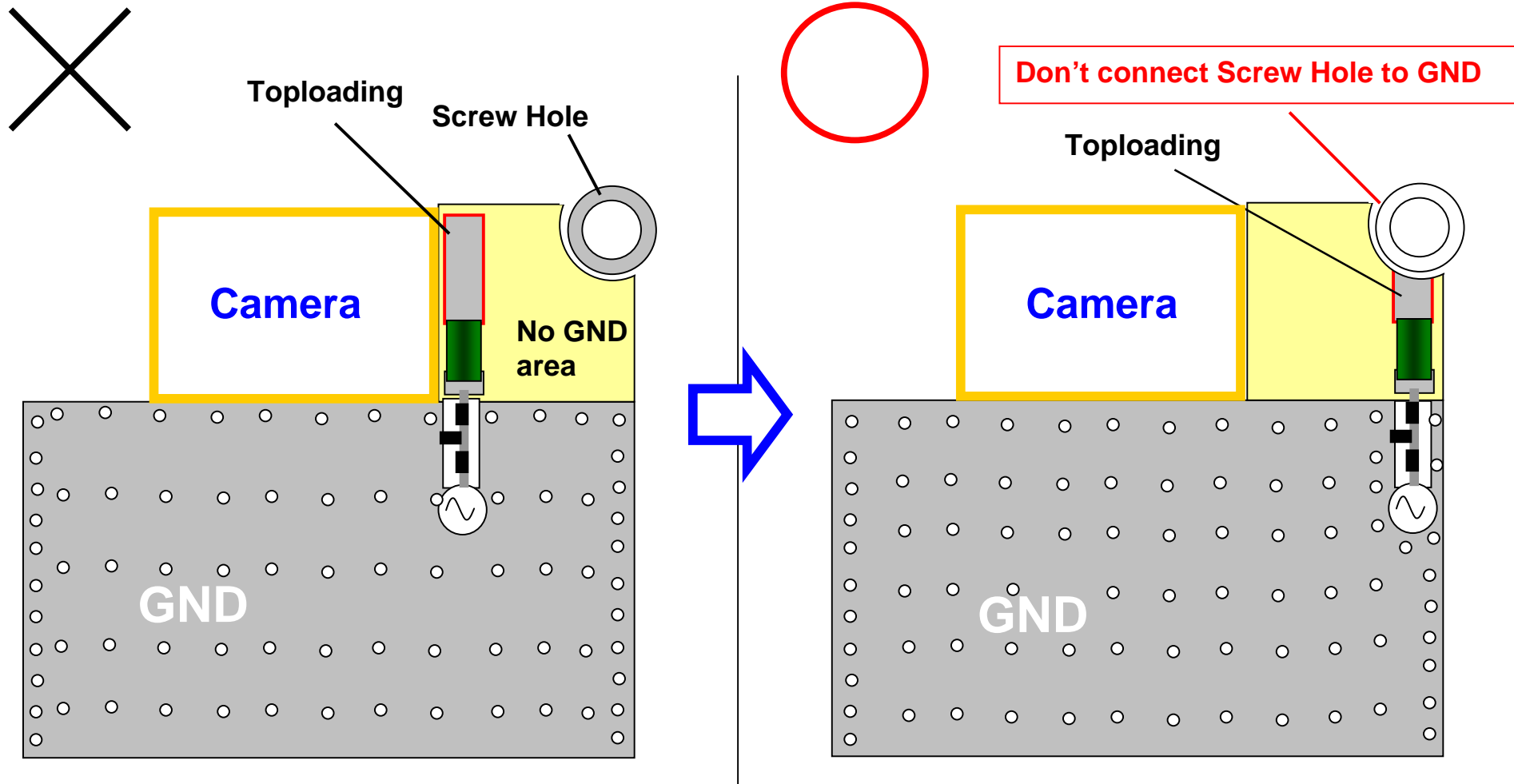
- a) Please shift the Antenna in directions away from Buttery.
- b) When no GND area covered with LCD, it cannot get good performance similar to Buttery.
- c) Please extend Toploading(Extension of Chip antenna Open Land) to the edge of PCB.



Layout Examples No.3

[Points]

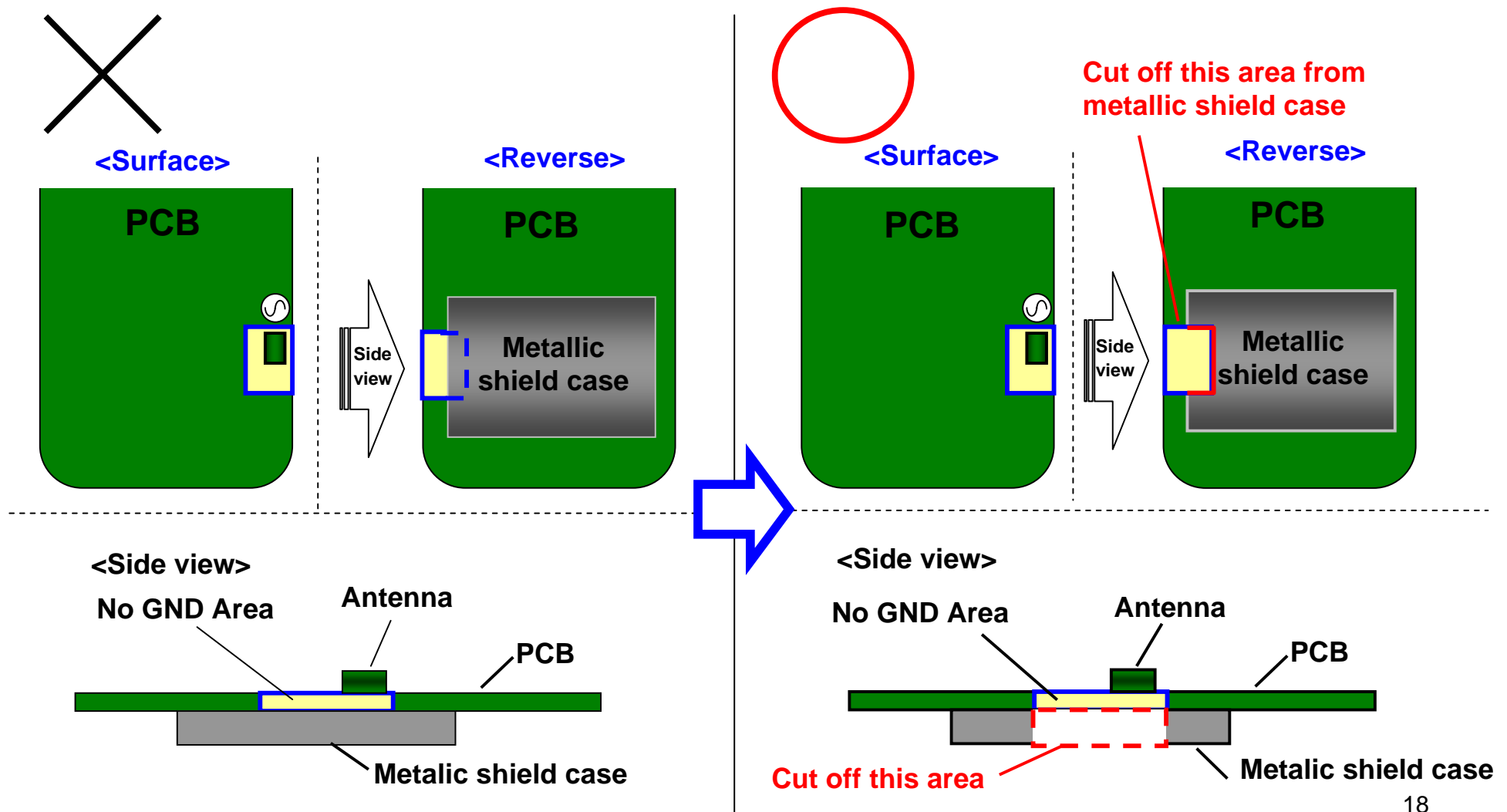
- a) Camera or other metallic components are located as distant as possible from the open terminal of chip antenna.
(the reverse side of no GND area, too)



Layout Examples No.4

[Points]

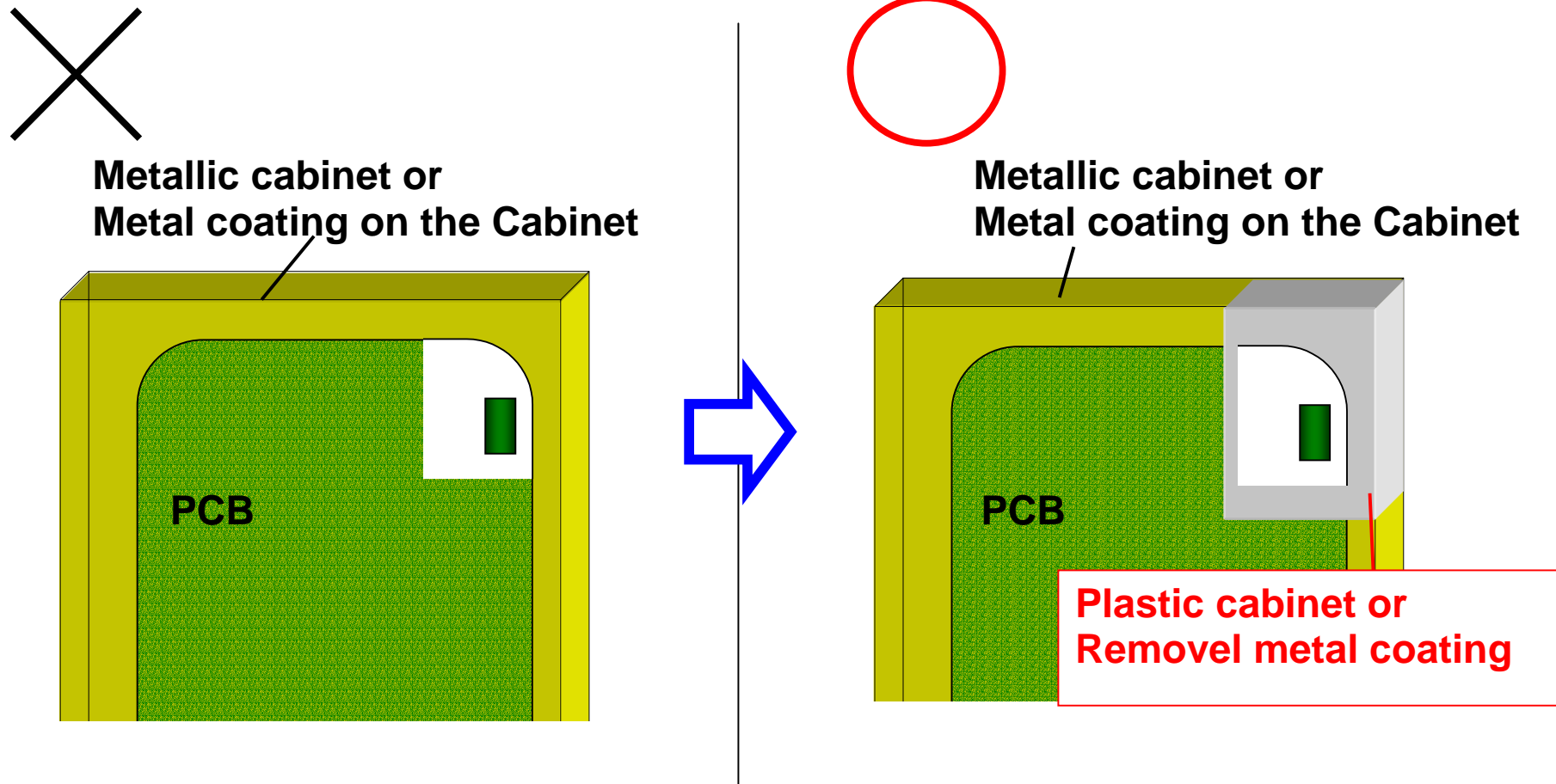
- a) Don't be the reverse side of antenna covered with metallic shield case.
- b) If it has Metallic shield case in reverse side of antenna, must change to plastic shield case (fig.1) or cut off metallic shield case(fig.2).



Layout Examples No.5

[Points]

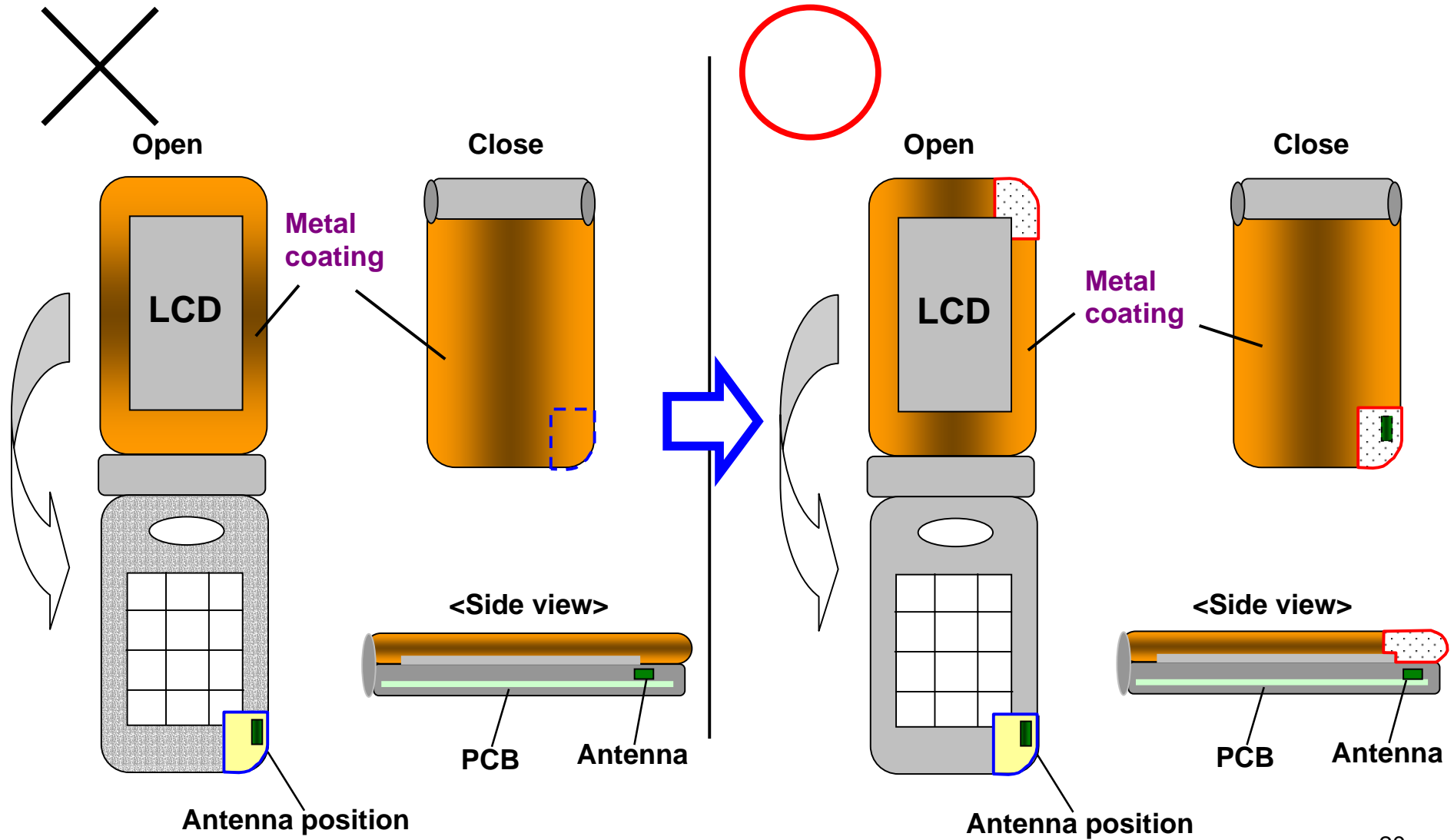
- a) Don't be the no GND area covered with metallic cabinet or metal coating on the plastic cabinet
(in direction from the top, bottom and side of the no GND area).



Layout Examples No.6

[Points]

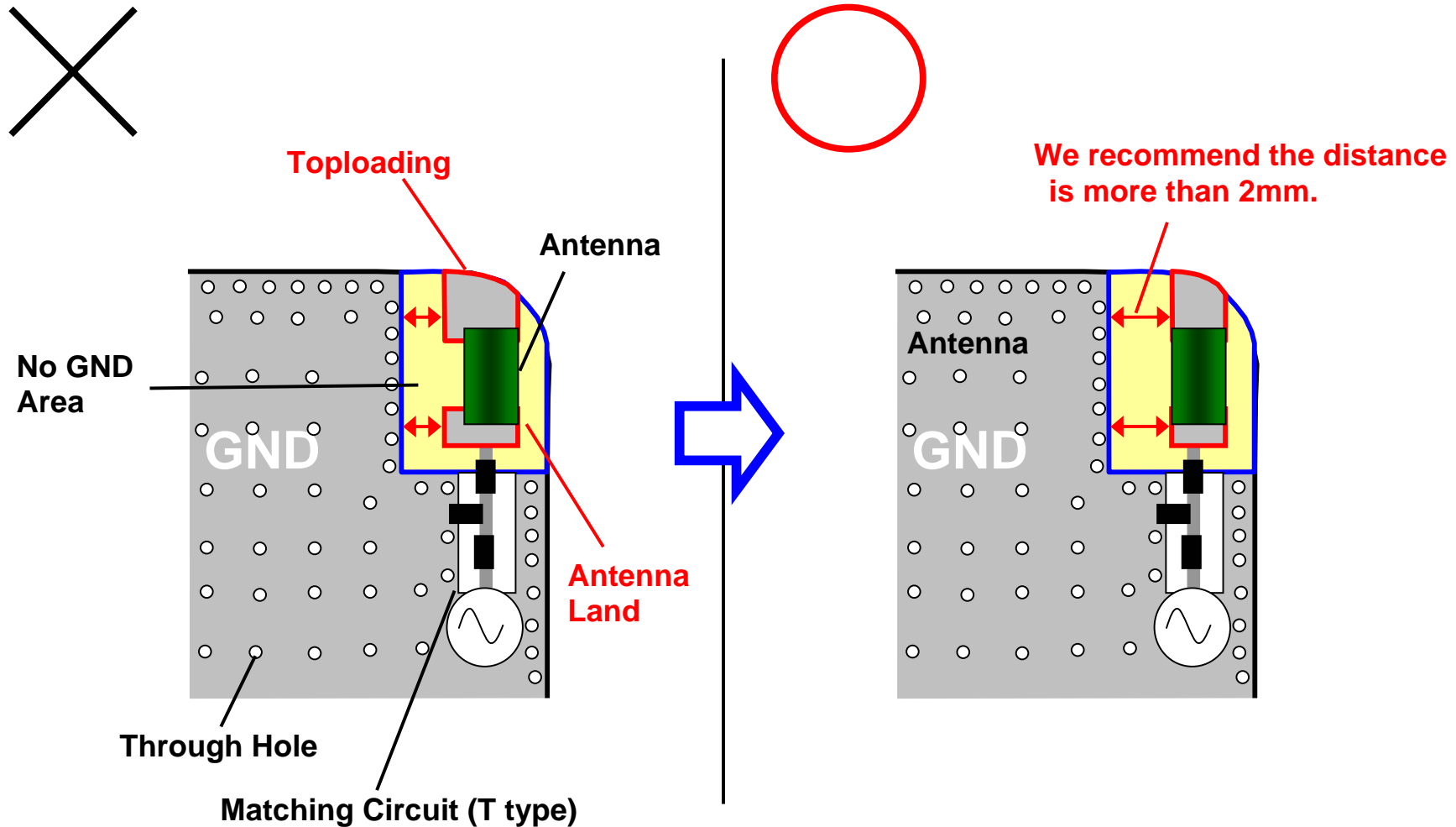
a) Please remove metal coating on cabinet of LCD side as large as possible.



Layout Examples No.7

[Points]

a) Please keep away Antenna Lands and Toploading from GND at the side of Antenna as far as possible.



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