

# ***Chip Antenna Guideline for LDA Series***

## ***Ver1.0a***

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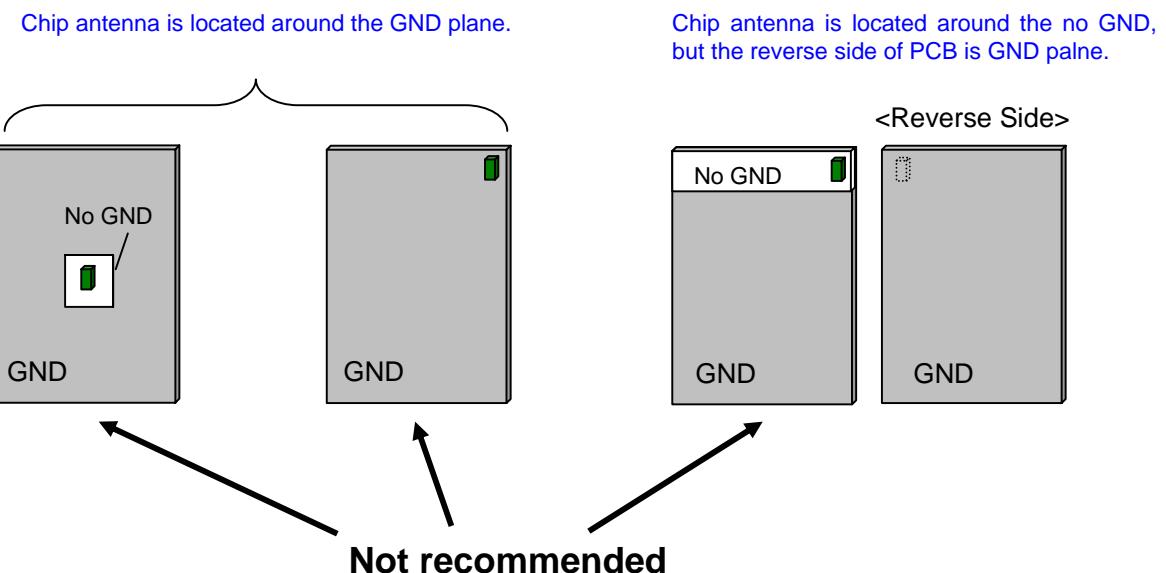
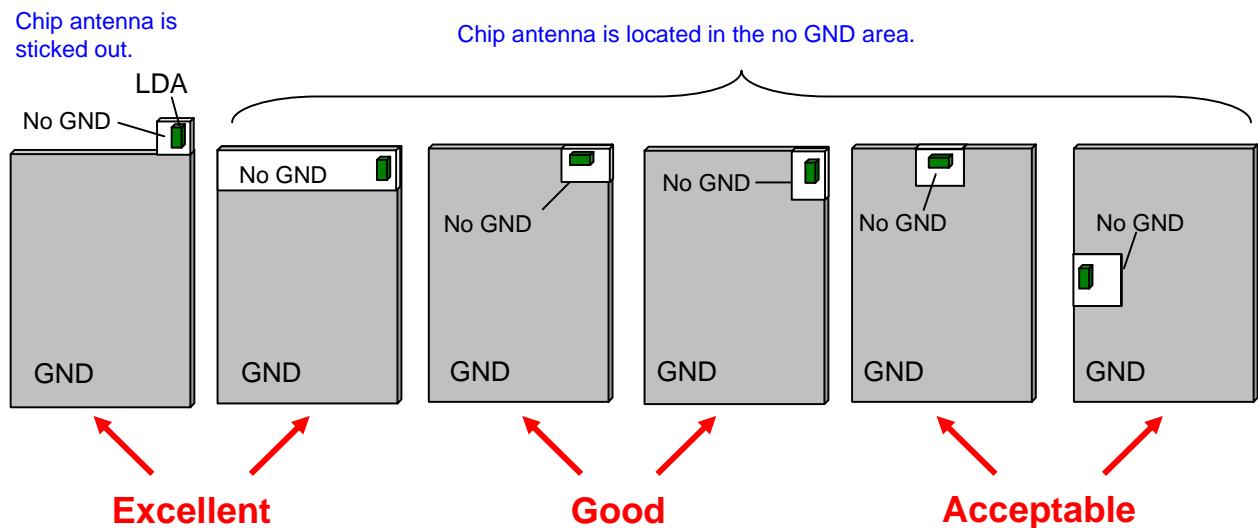
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## 1. Chip Antenna Position

### 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

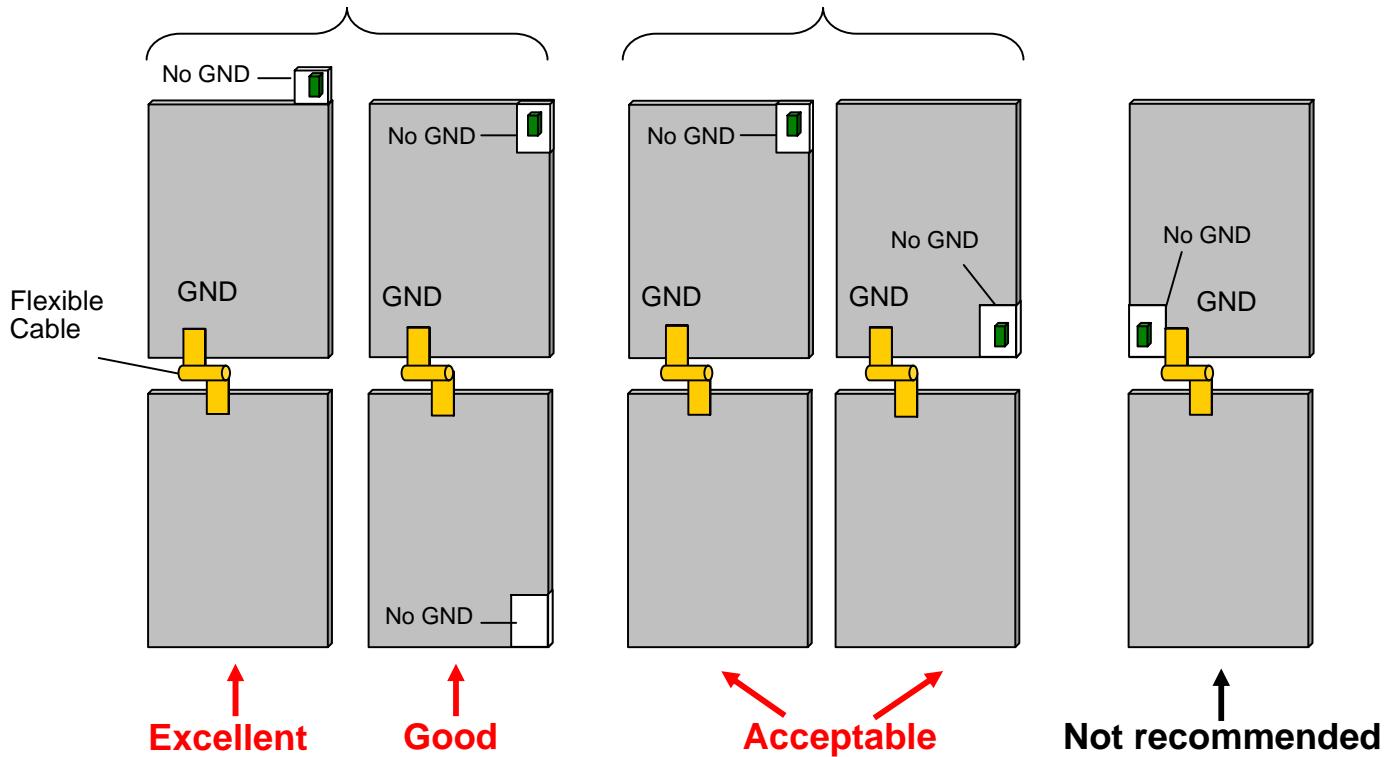


## 1-2. Flip type

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

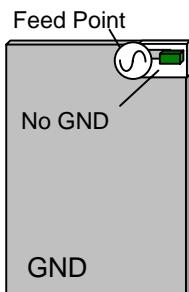


## 2. Antenna Direction & Feed Point Position

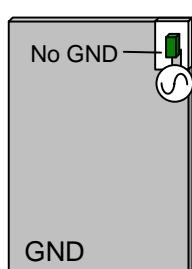
### Points

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

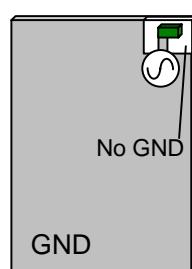
The open terminal of chip antenna is pointed to outside of PCB, and the feed point of chip antenna is located at the edge of PCB.



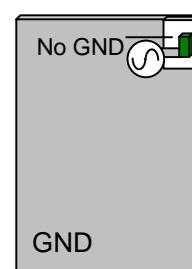
Good



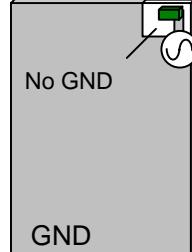
The open terminal of chip antenna is pointed to outside of PCB, however the feed point is located at the inside of PCB.



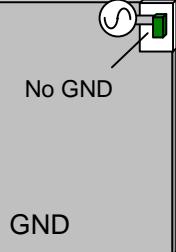
Acceptable



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



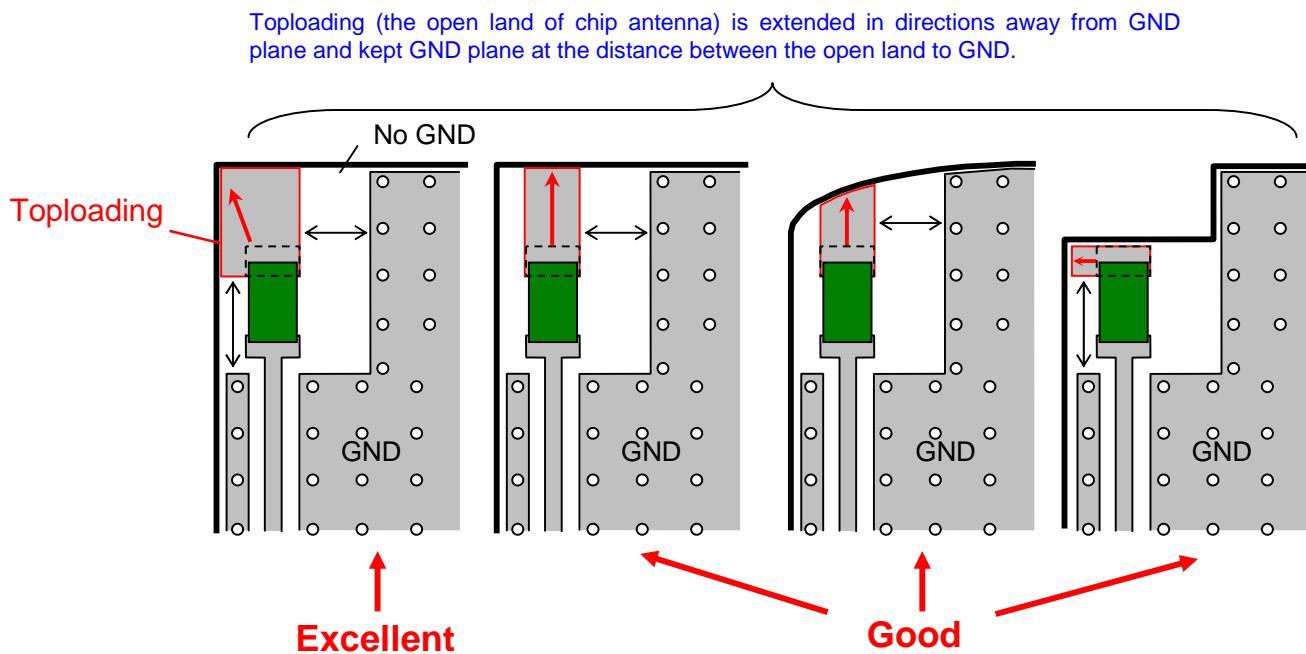
Not recommended



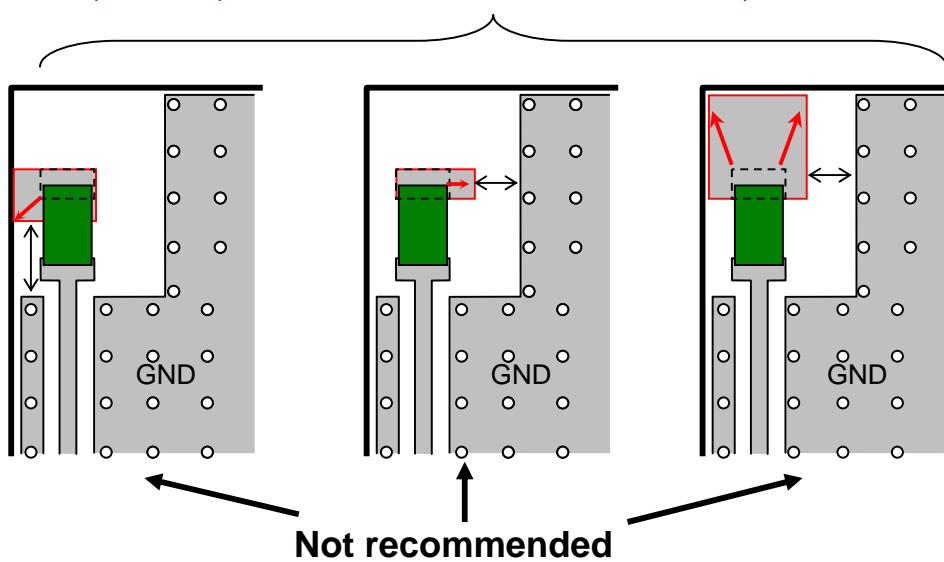
### 3. Toploading (Extension of Chip antenna Open Land)

#### Points

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



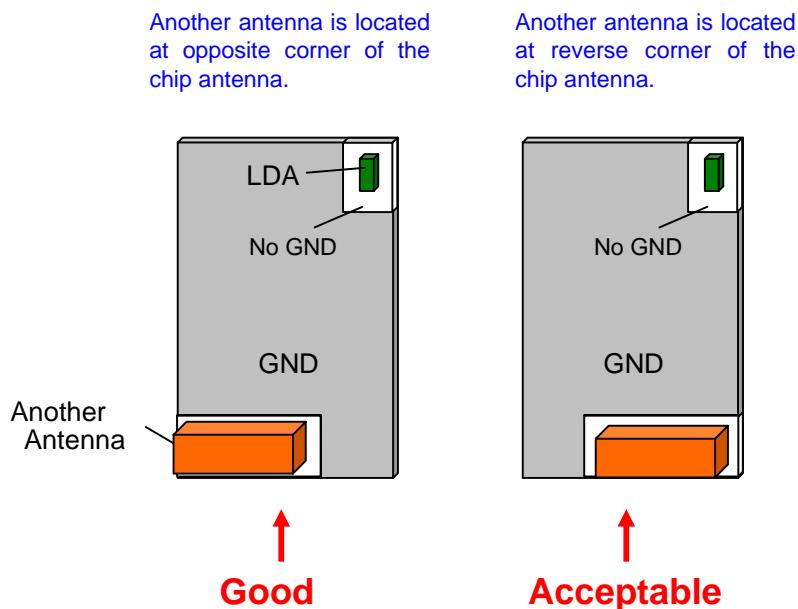
Chip antenna open land is extended in directions close from GND plane.



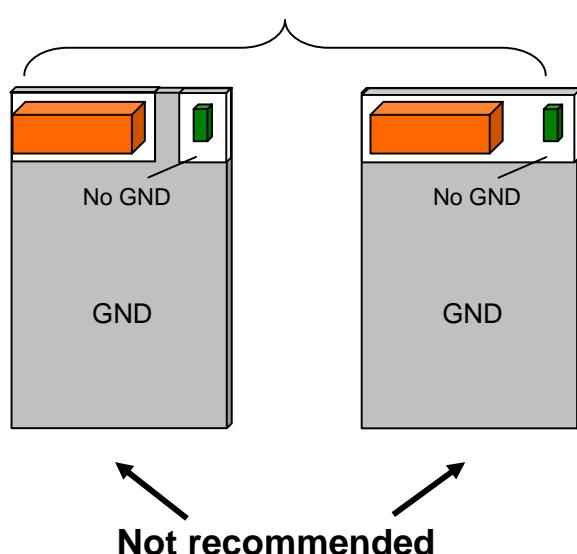
## 4. Another Antenna Position

### Points

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



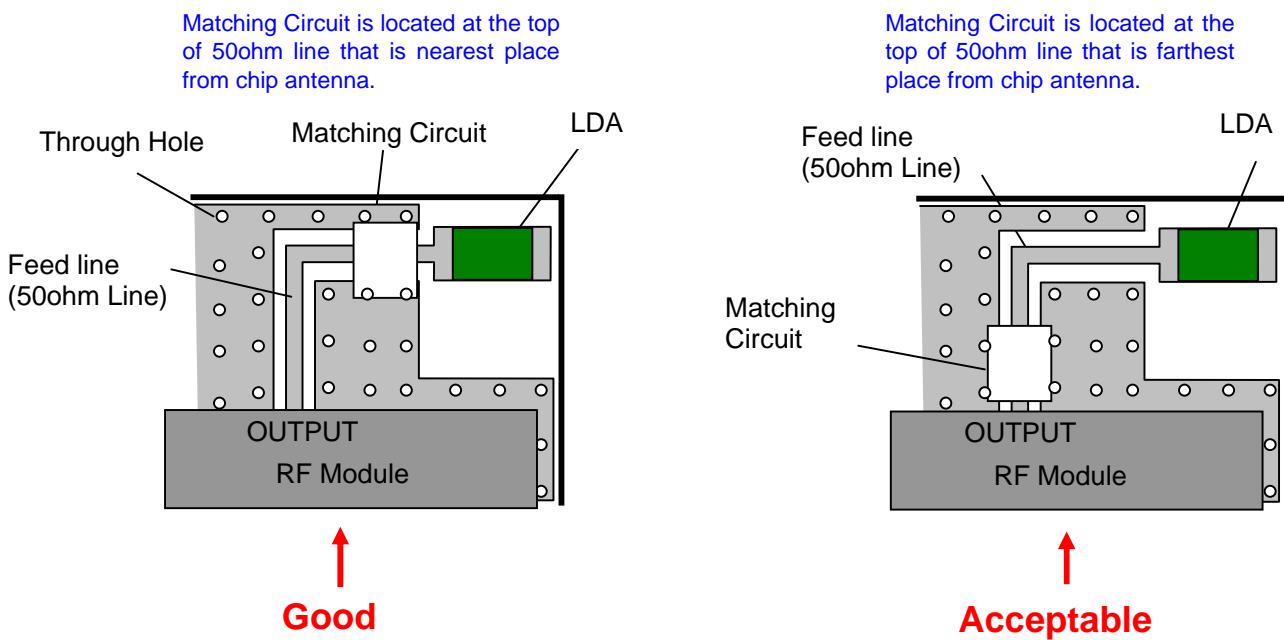
Another antenna is located close the chip antenna.



## 5. Matching Circuit Position

### Points

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

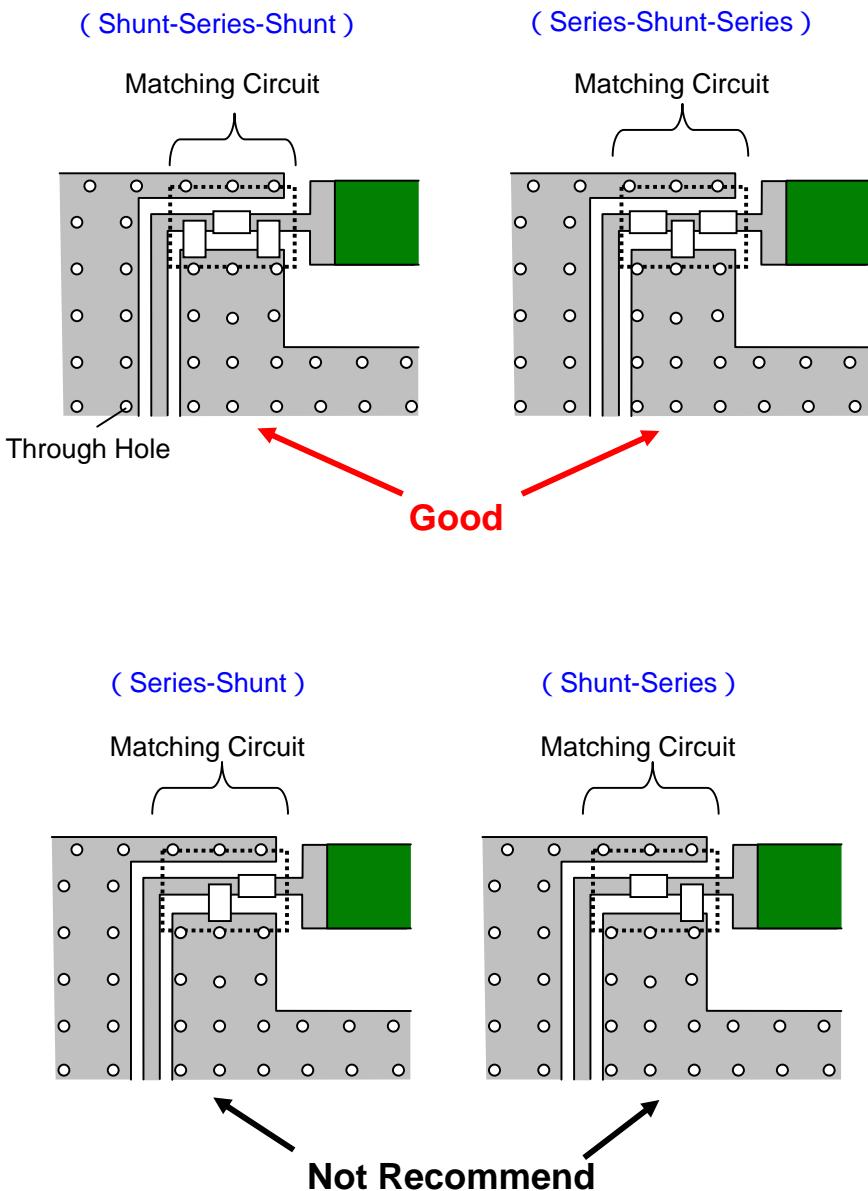


## 6. Structure of Matching Circuit

### Points

- Matching circuit is composed of three device.

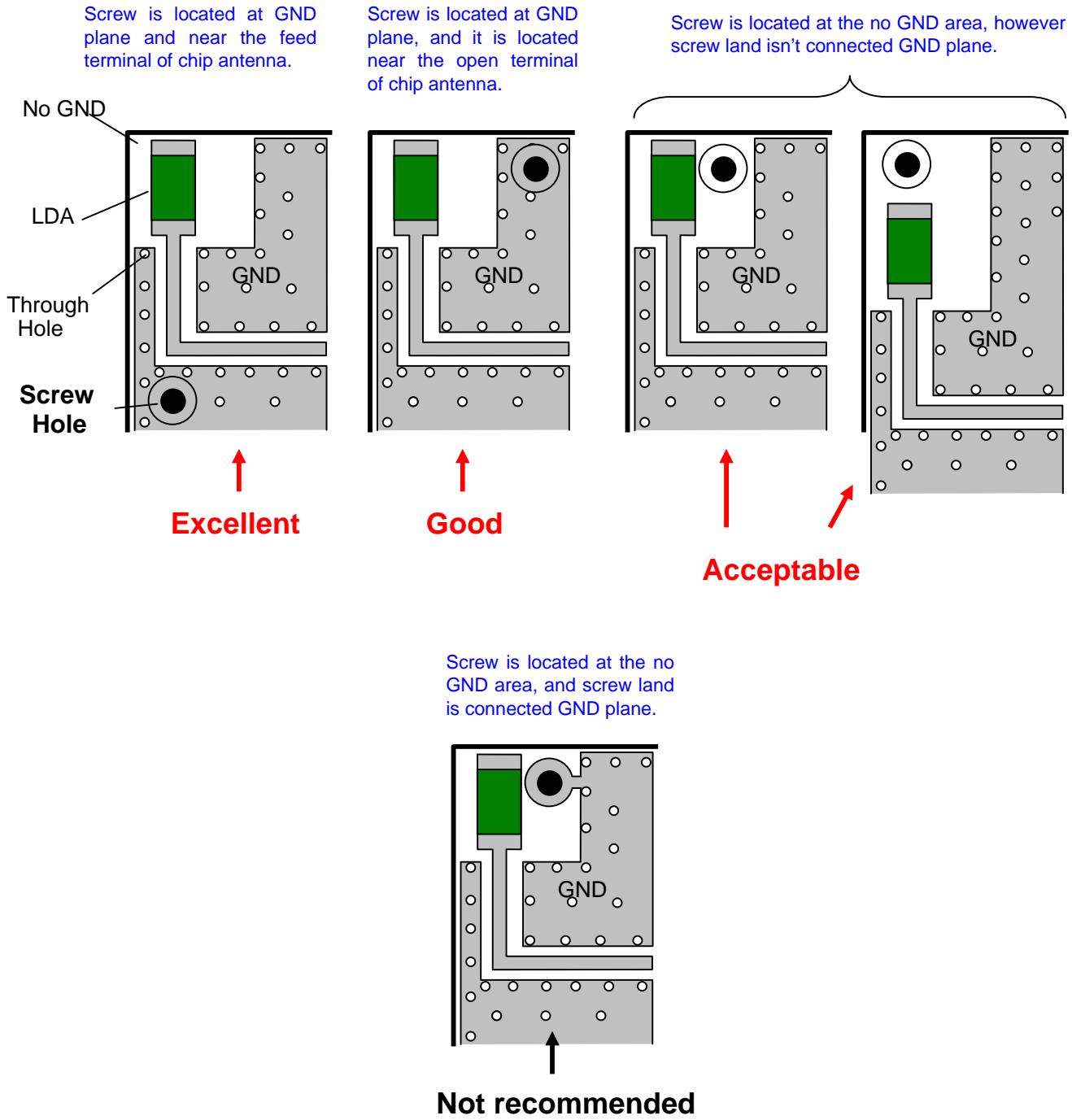
(Note: When series components are not needed, 0-ohm resistance is needed to mount there.)



## 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.



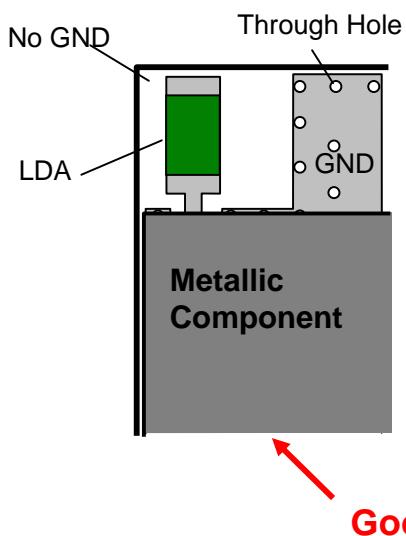
## 8. Metallic Component Position

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

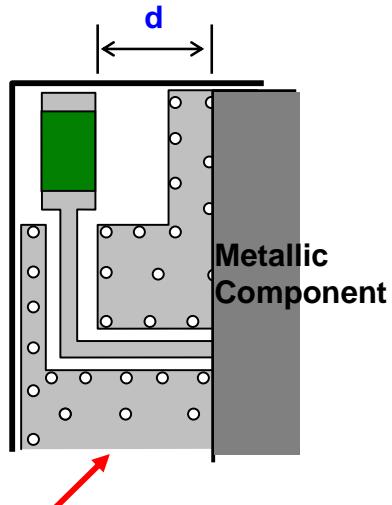
### Points

- 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).

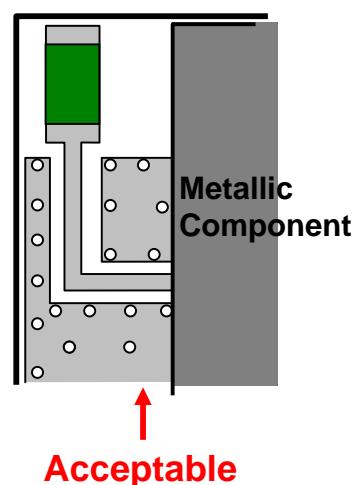
Metallic Component is located near the chip antenna feed terminal, but the no GND area isn't covered with metallic component.



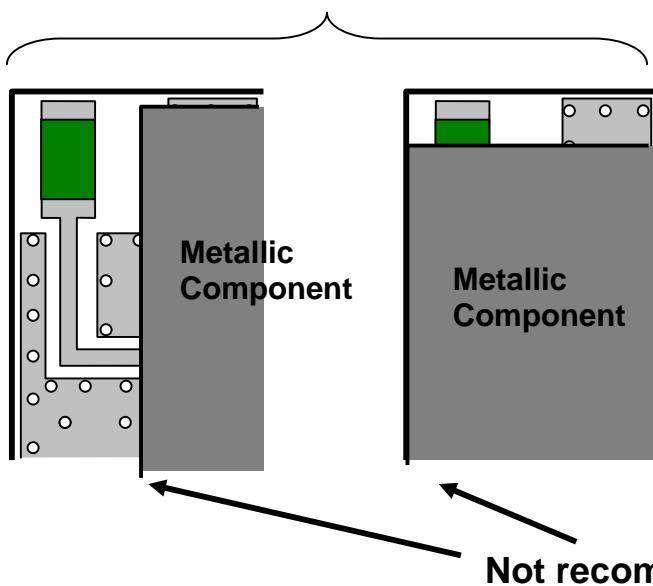
Metallic Component is kept at a distance "d", between chip antenna to metallic component is longer than the height of itself, however the no GND area isn't covered with metallic component.



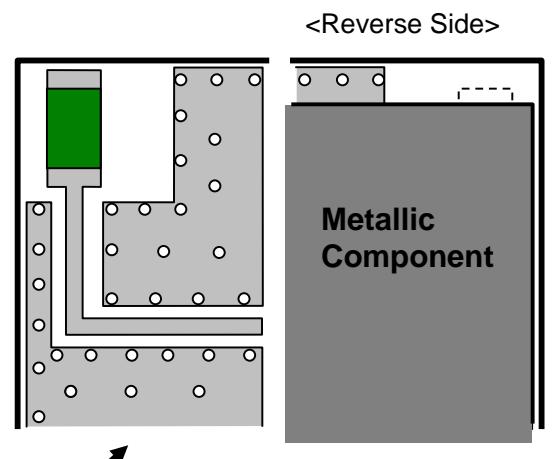
Metallic Component is located near the chip antenna open terminal, however the no GND area isn't covered with metallic component.



The no GND area is covered with metallic component.



The no GND area is covered with metallic component is located on the reverse side of PCB.

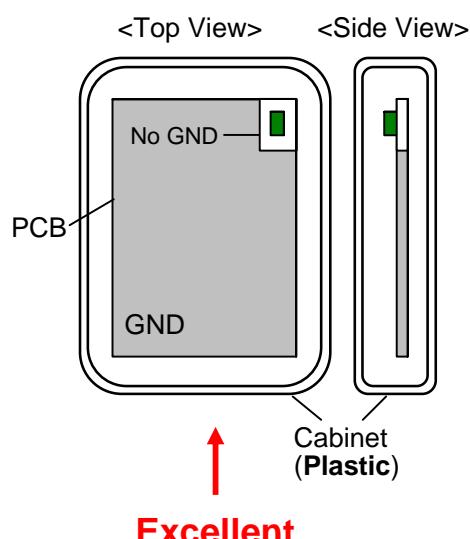


## 9. Cabinet

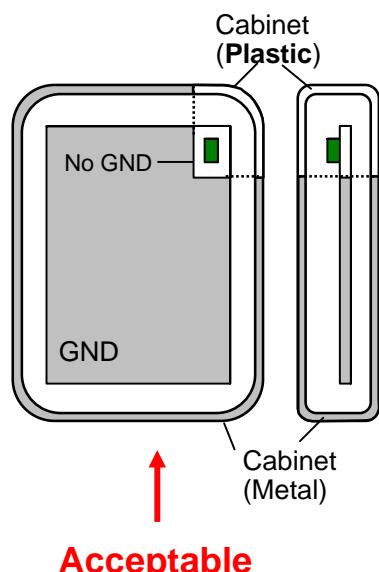
### Points

- **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)**

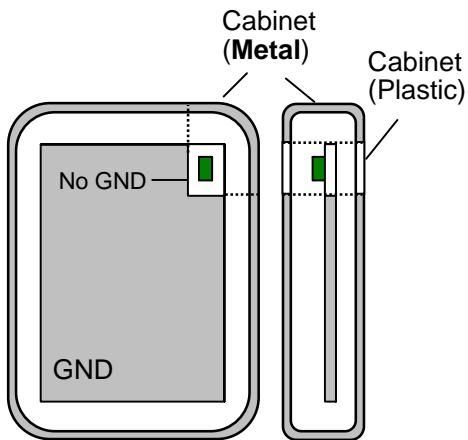
Cabinet material is all plastic.



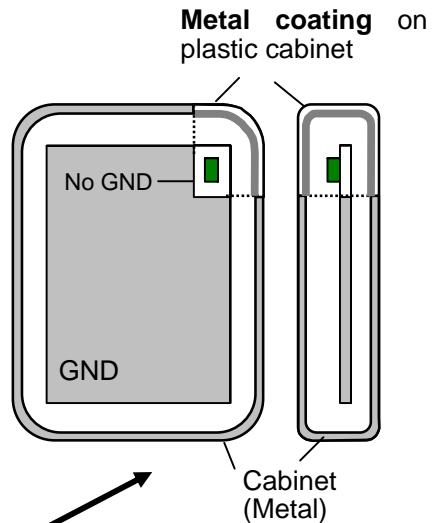
Cabinet material is metal and plastic, however the no GND area isn't covered with metal cabinet.



Cabinet material is metal and plastic, and the no GND area is covered with metal cabinet.

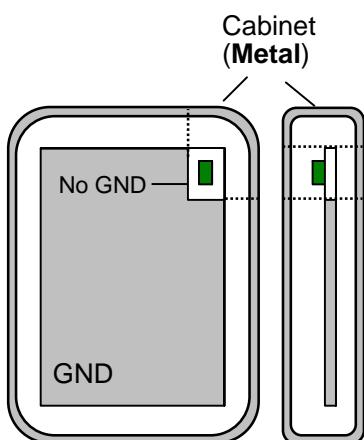


Cabinet material is metal and plastic, however the no GND area isn't covered with metal cabinet.



**Not recommended**

Cabinet material is metal, and the no GND area is covered with metal cabinet.



**Not recommended**

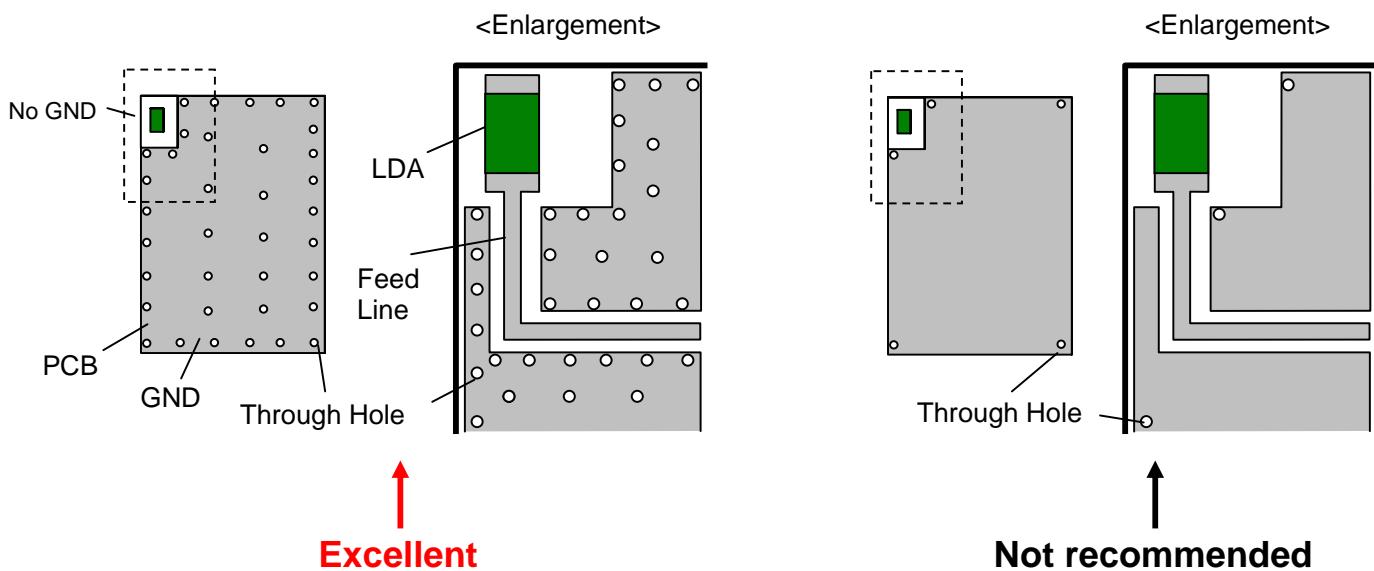
## 10. Through Hole Position

### 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.

Through Holes are little.

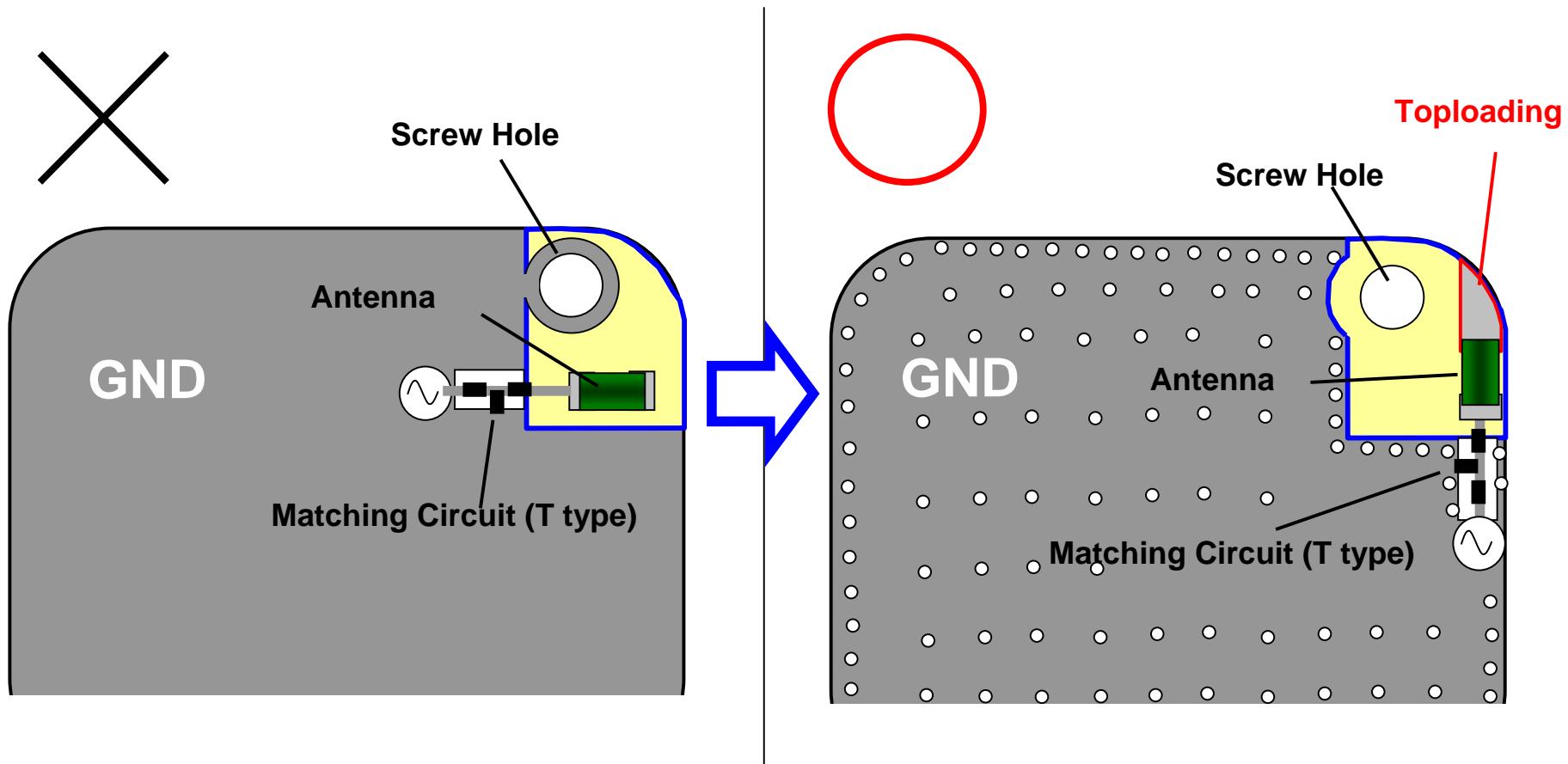


(\*\*Note: We recommend the pitch of through holes is less than 3mm.)

## Layout Examples No.1

### [Points]

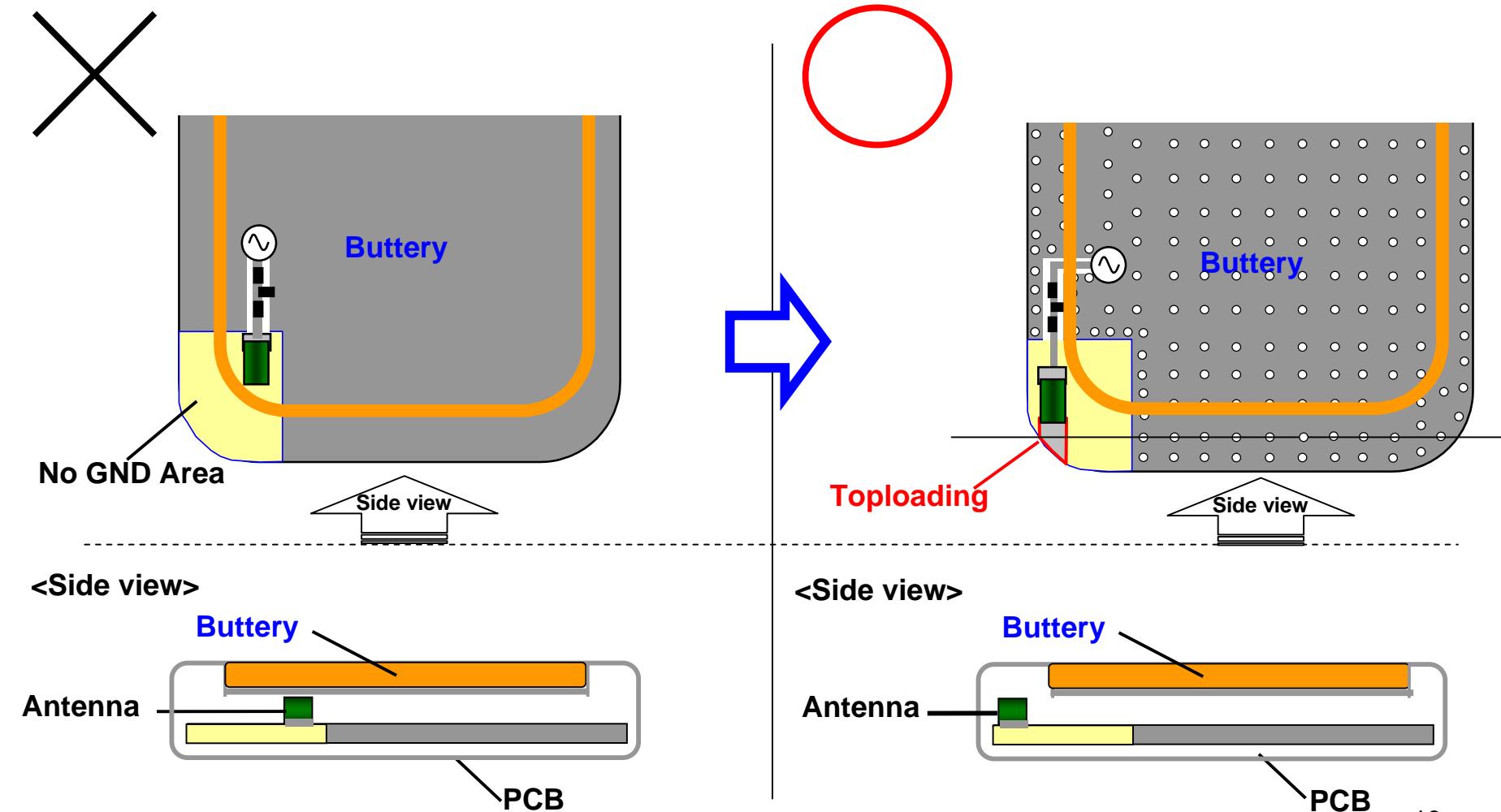
- a) Please make though hole GND area as many as possible (especially, edge of GND and space near antenna).
- b) Don't connect screw hole near antenna to GND.
- c) Area near antenna is Non GND Area at all layer.
- d) Please extend Toploading(Extension of Chip antenna Open Land) to the edge of PCB .



## Layout Examples No.2

### [Points]

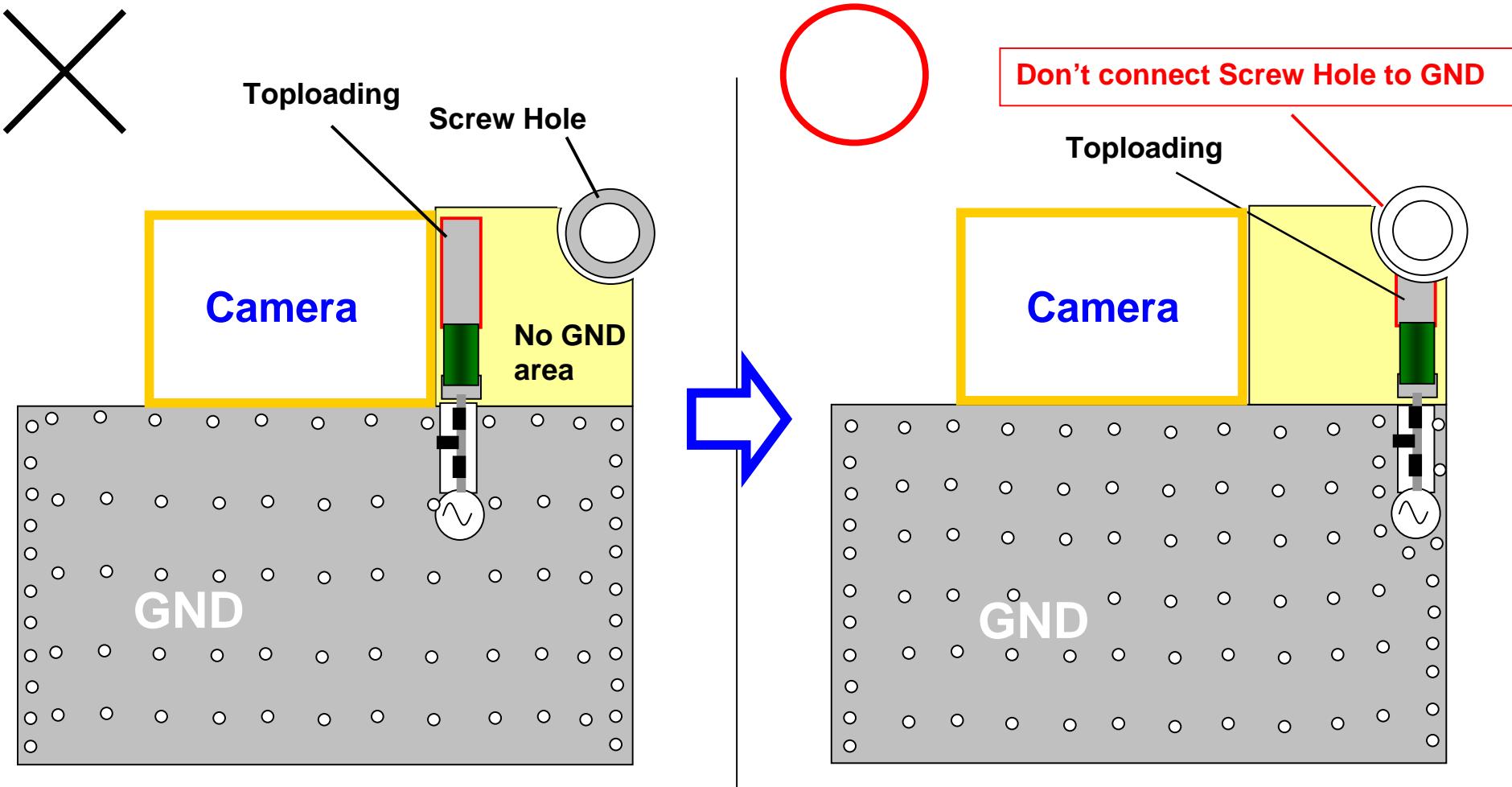
- a) Please shift the Antenna in directions away from Buttery.
- b) When no GND area covered with LCD, it cannot get good performance similer to Buttery.
- c) Please extend Toploading(Extension of Chip antenna Open Land) to the edge of PCB .



## Layout Examples No.3

### [Points]

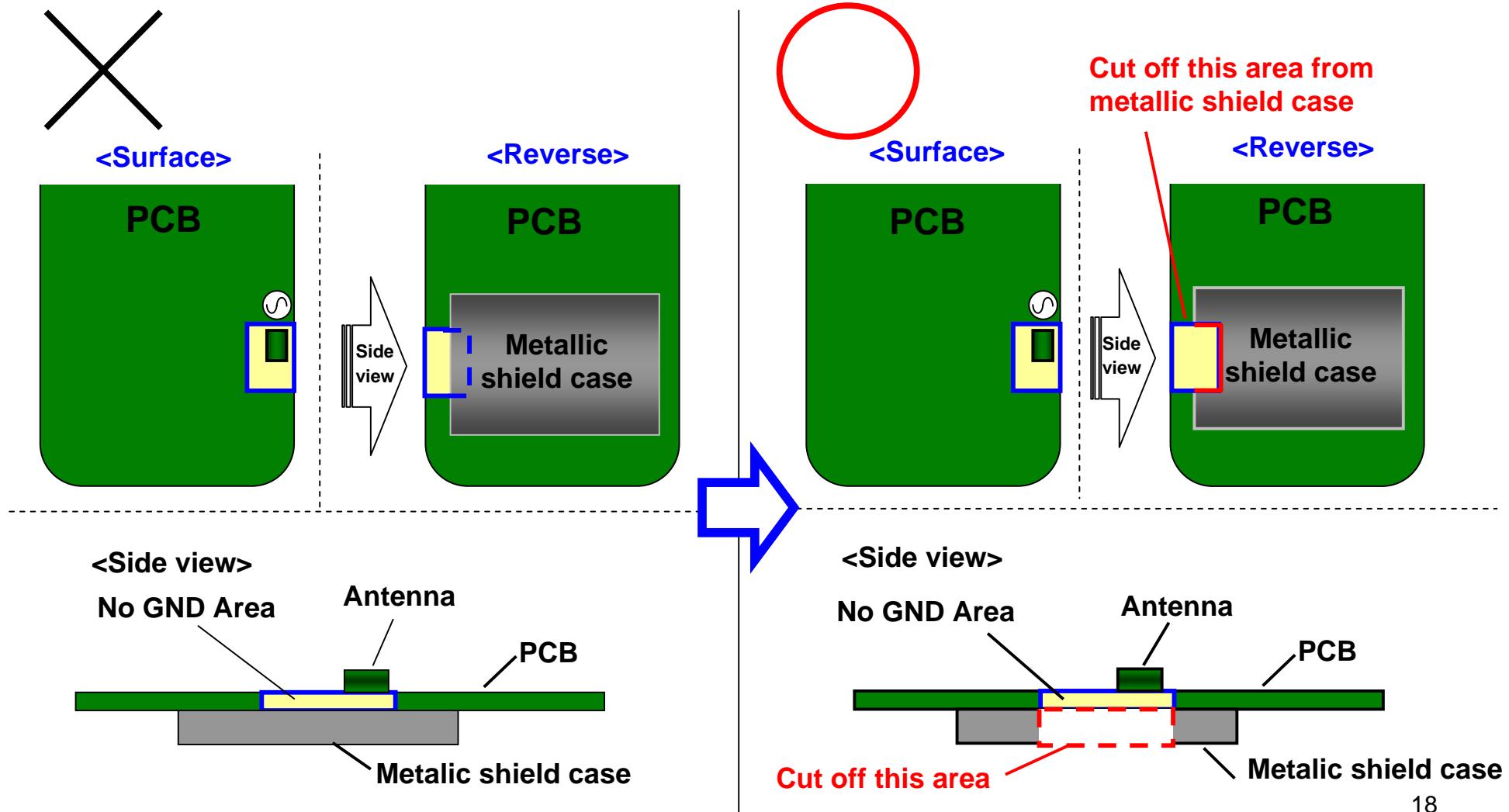
a) Camera or other metallic components are located as distant as possible from the open terminal of chip antenna.  
(the reverse side of no GND area,too)



## Layout Examples No.4

### [Points]

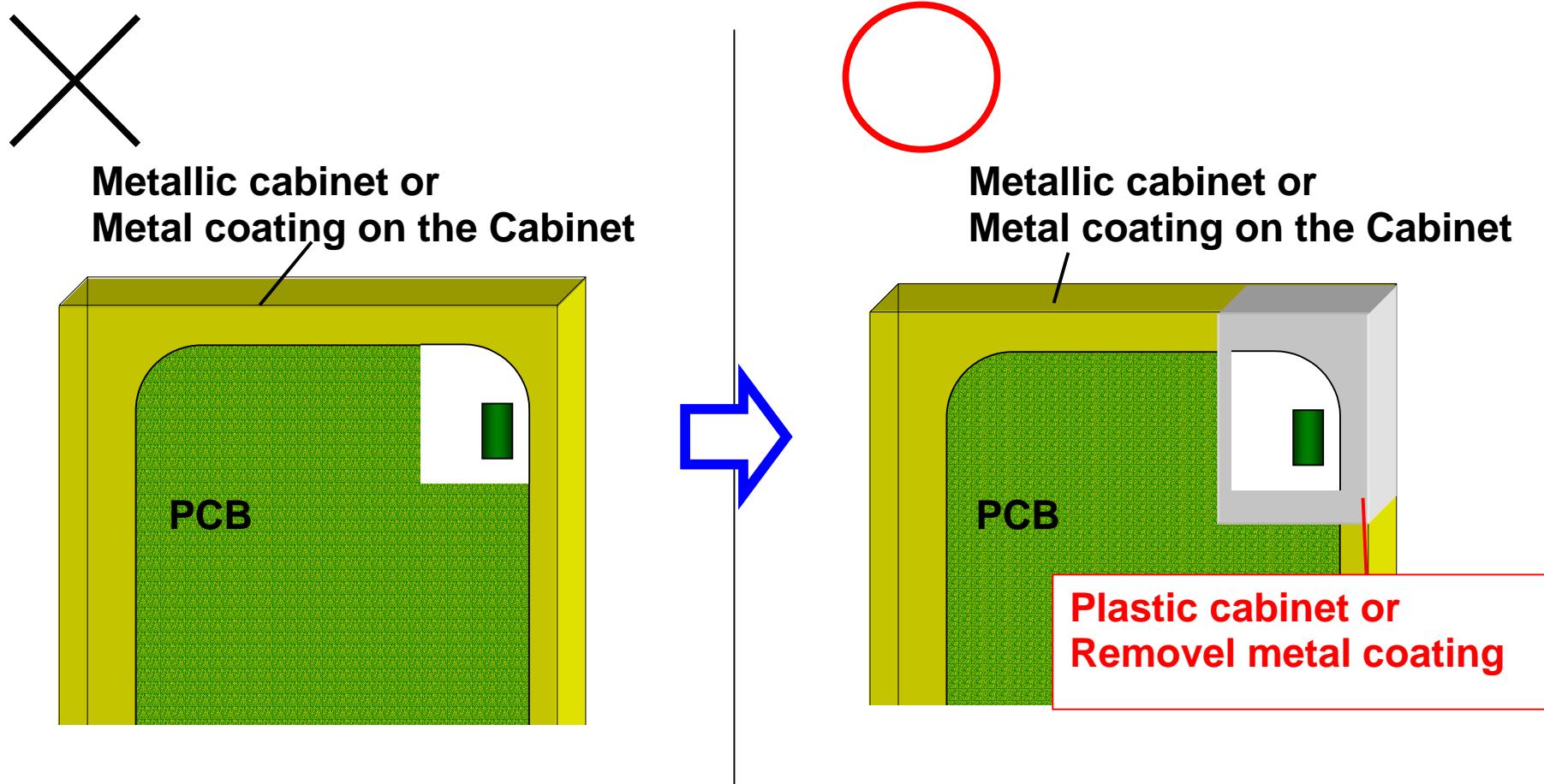
- a) Don't be the reverse side of antenna covered with metallic shield case.
- b) If it has Metallic shield case in reverse side of antenna, must change to plastic shield case (fig.1) or cut off metallic shield case(fig.2).



## Layout Examples No.5

### [Points]

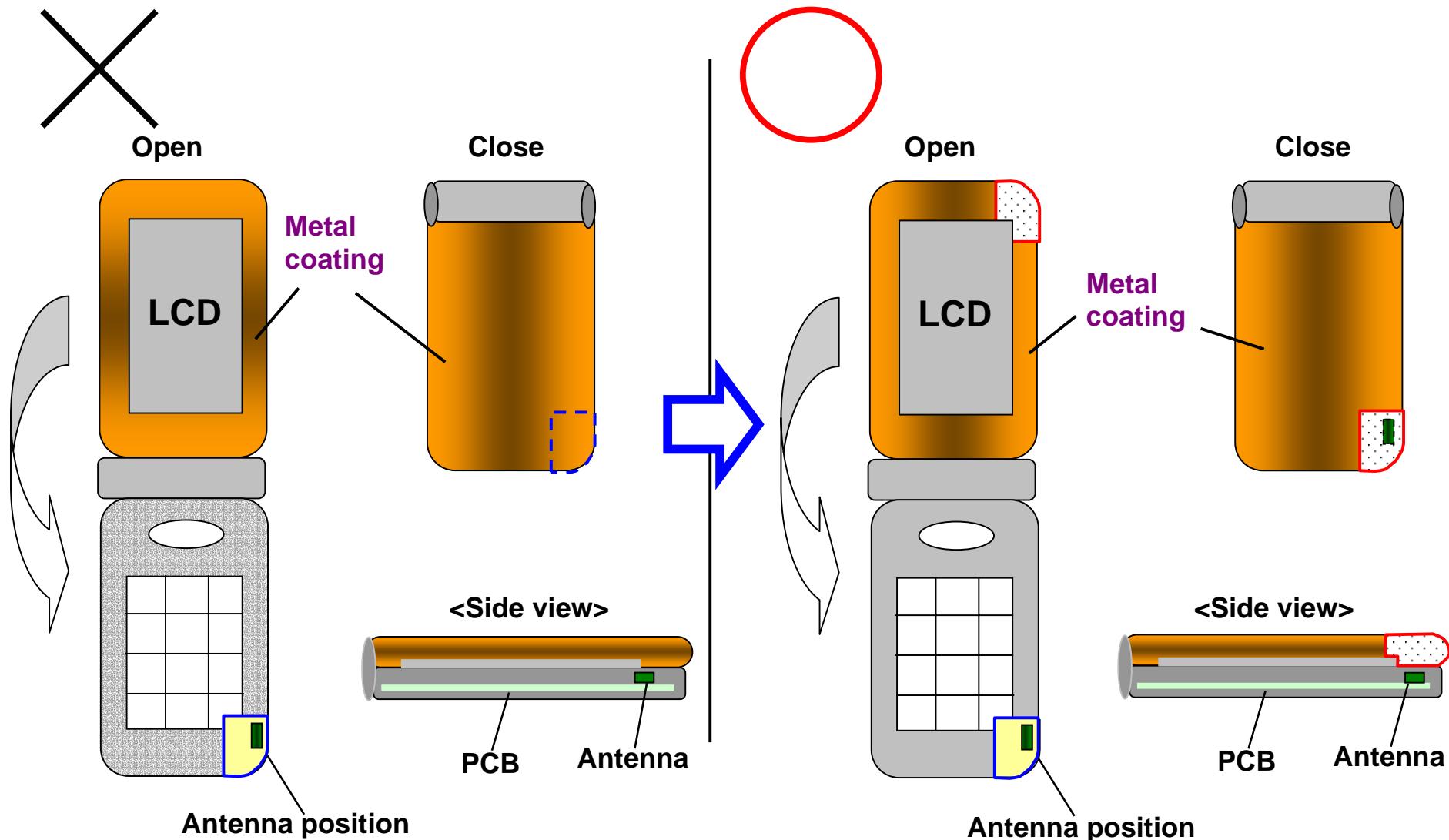
a) Don't be the no GND area covered with metallic cabinet or metal coating on the plastic cabinet (in direction from the top, bottom and side of the no GND area).



## Layout Examples No.6

### [Points]

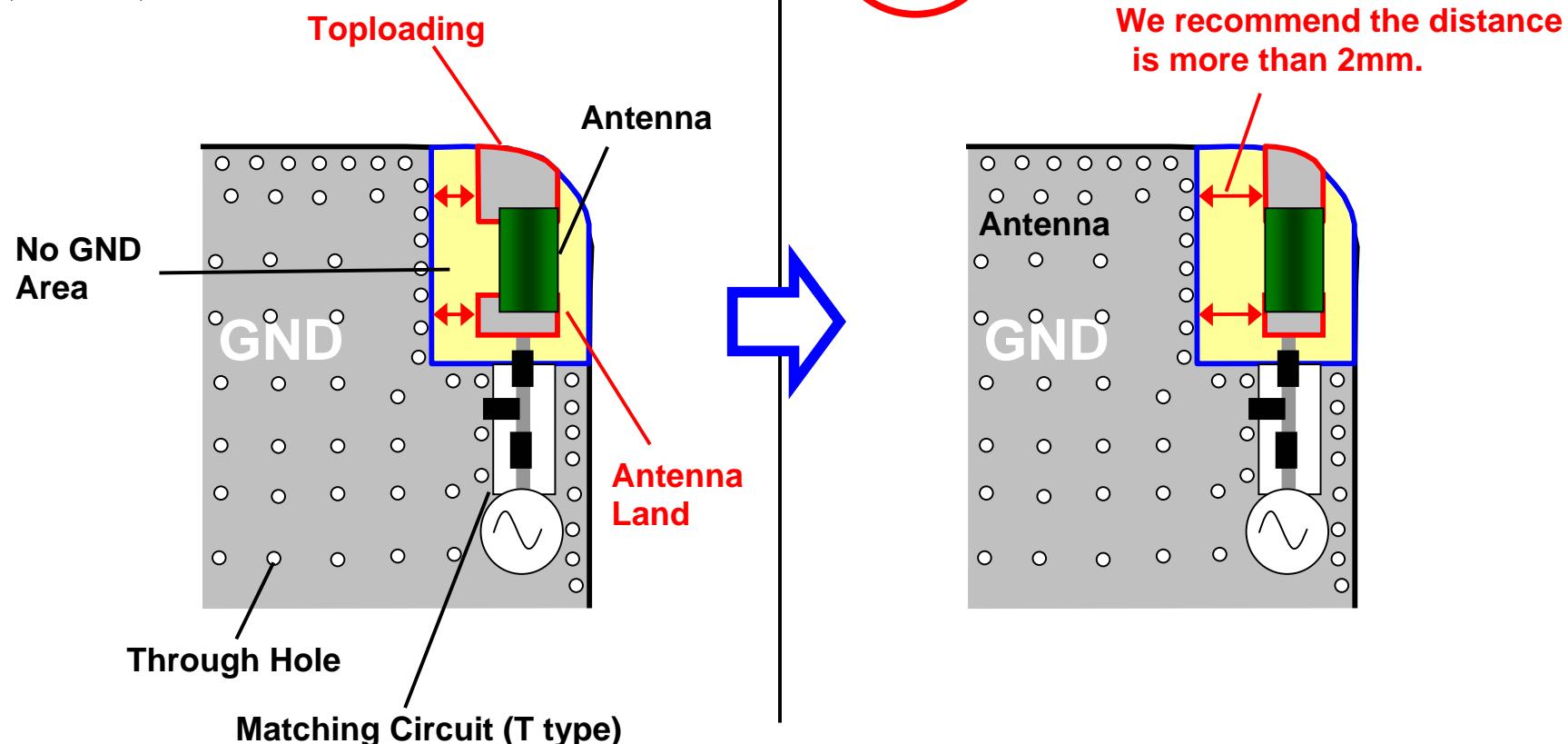
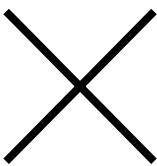
a) Please remove metal coating on cabinet of LCD side as large as possible.



## Layout Examples No.7

### [Points]

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



## 射 频 和 天 线 设 计 培 训 课 程 推 荐

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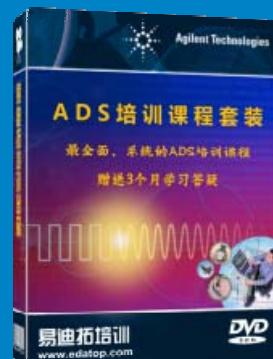
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该套装精选了射频专业基础培训课程、射频仿真设计培训课程和射频电路测量培训课程三个类别共 30 门视频培训课程和 3 本图书教材；旨在引领学员全面学习一个射频工程师需要熟悉、理解和掌握的专业知识和研发设计能力。通过套装的学习，能够让学员完全达到和胜任一个合格的射频工程师的要求…

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课程网址：<http://www.edatop.com/peixun/ads/13.html>



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## HFSS 天线设计培训课程套装

套装包含 6 门视频课程和 1 本图书, 课程从基础讲起, 内容由浅入深, 理论介绍和实际操作讲解相结合, 全面系统的讲解了 HFSS 天线设计的全过程。是国内最全面、最专业的 HFSS 天线设计课程, 可以帮助您快速学习掌握如何使用 HFSS 设计天线, 让天线设计不再难…

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详情浏览: <http://www.edatop.com/peixun/antenna/116.html>

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