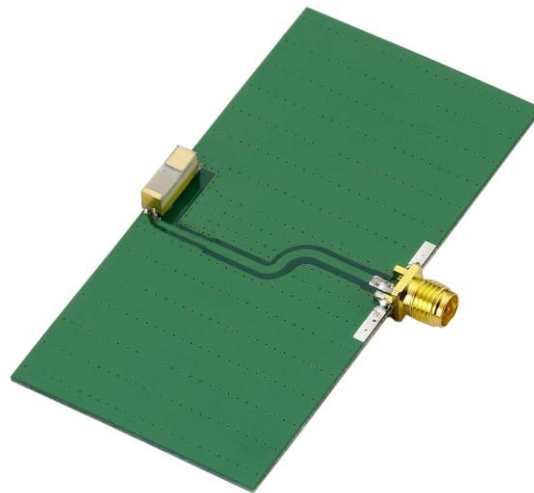


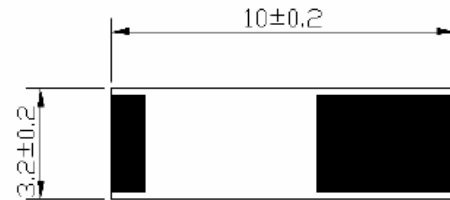
**APPLICATION NOTE
FOR
GLA.02 ANTENNA INTEGRATION**



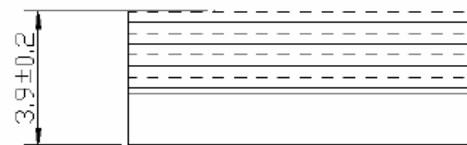
1. BASICS

Characteristics

- Small (10.0*3.2*4mm)
- Wider Frequency
- High efficiency (80%)
- Omni-Directional
- Fully conform to (SMT) Process
- RoHS Appliance



Top View

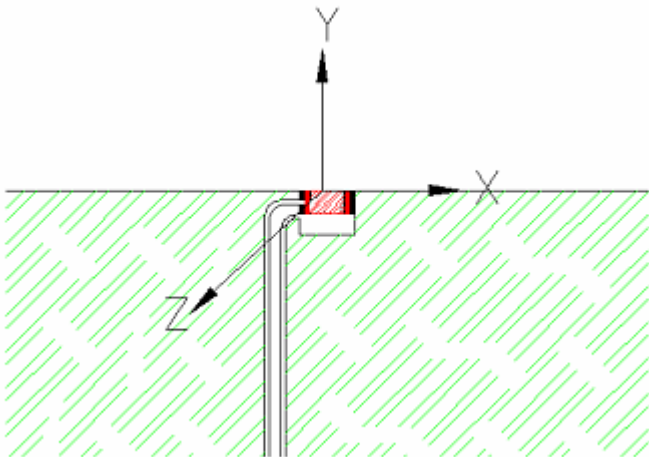


Side View

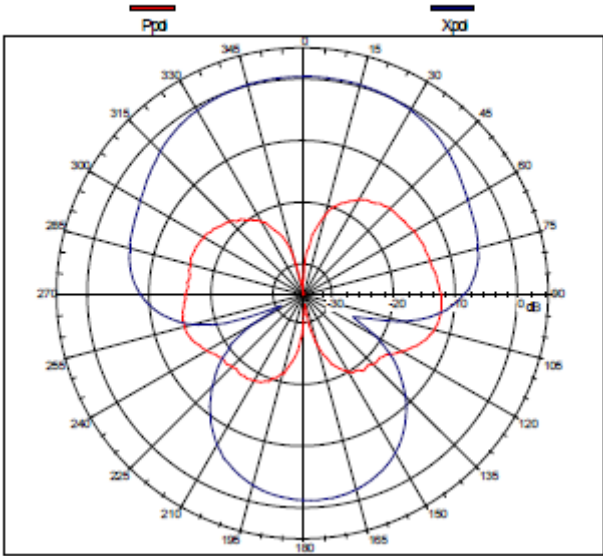
2. APPLICATIONS

- Solution for small device that requires a very high receiving frequency such as
 - PND
 - Smart Phone, mobile phone
 - Tracking Device

3. RADIATION PATTERNS

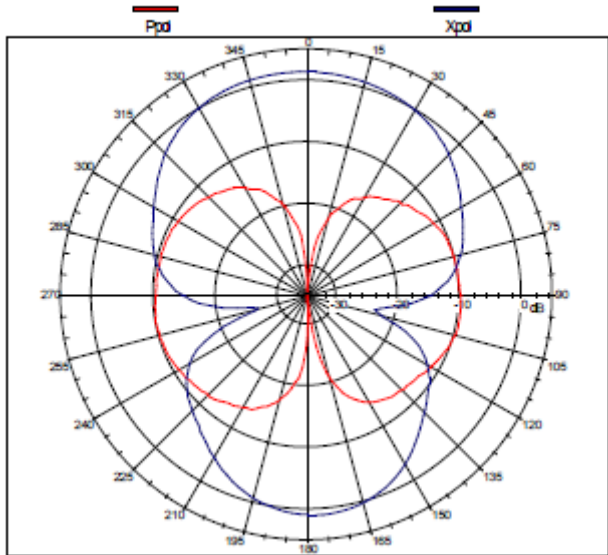


Far-field amplitude of XY-plane.nsi
1575MHz



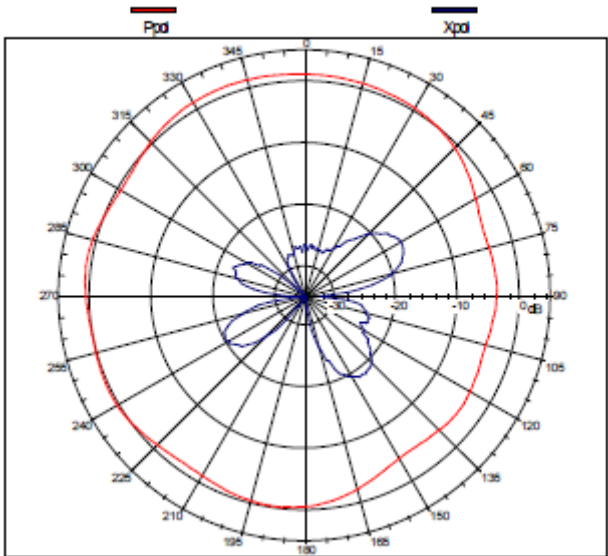
XY Plane

Far-field amplitude of XZ-plane.nsi
1575MHz



XZ Plane

Far-field amplitude of YZ-plane.nsi
1575MHz



YZ Plane

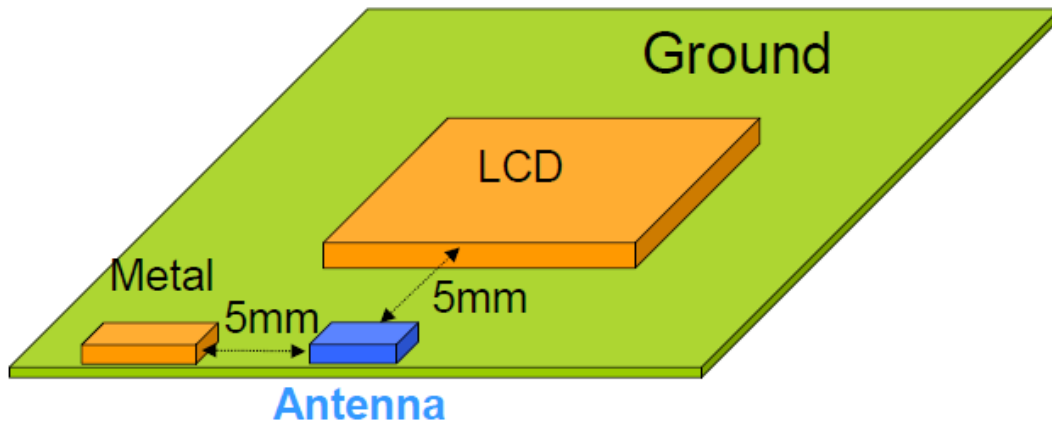
4. ANTENNA POSITION

4.1 PND

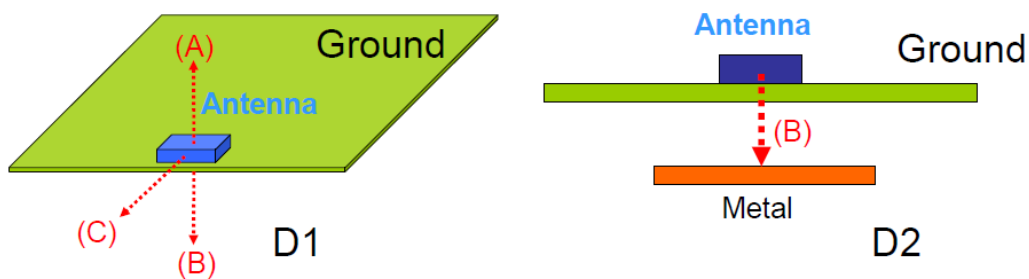


4.2 Smart Phone



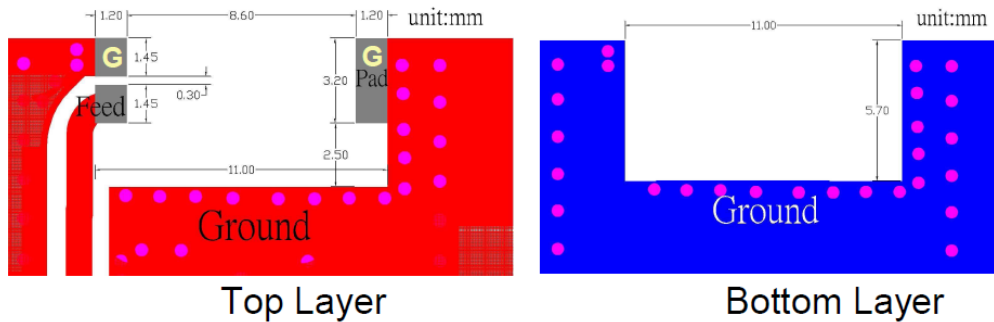


- Antenna should be put just right at the edge of PCB, It will be much better to put antenna at the centre of PCB
- Keep ground area around antenna as symmetrical as possible
- It needs at least 5 mm clearance between LCD panel/shielding and antenna
- It is better to have at least 50mm x 20mm PCB size

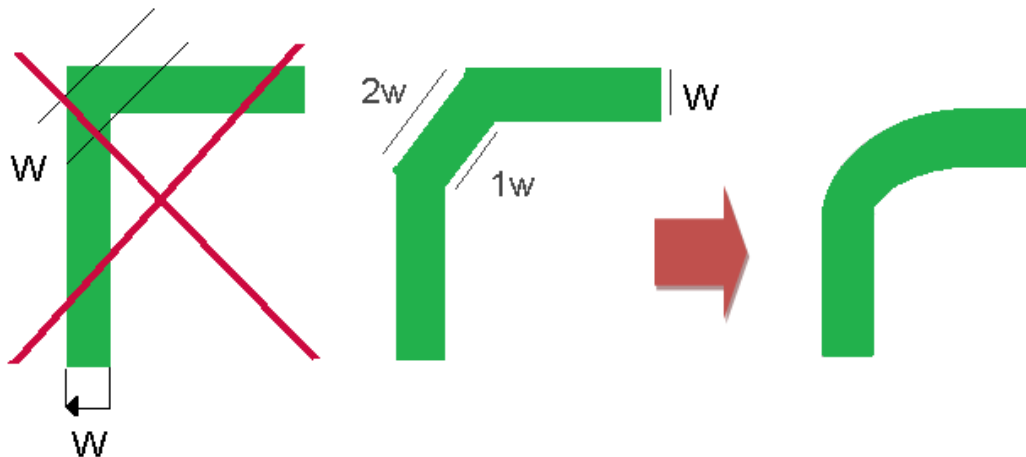


- [D1] NO metal components are allowed in the (A), (B) and (C) direction as illustrated above
- [D2] If the (B) direction (bottom) has metal on it- the antenna radiation efficiency will still be good, performance will be much better the further you can position the antenna from metal

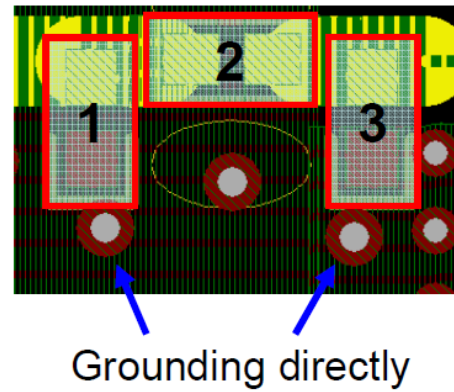
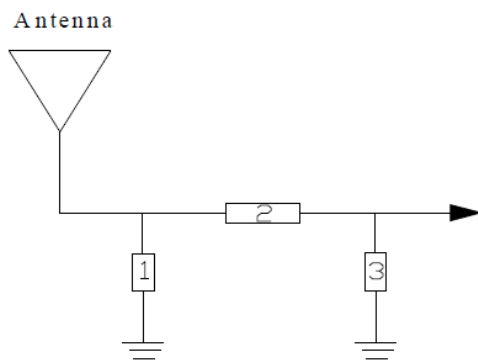
5. LAYOUT GUIDE



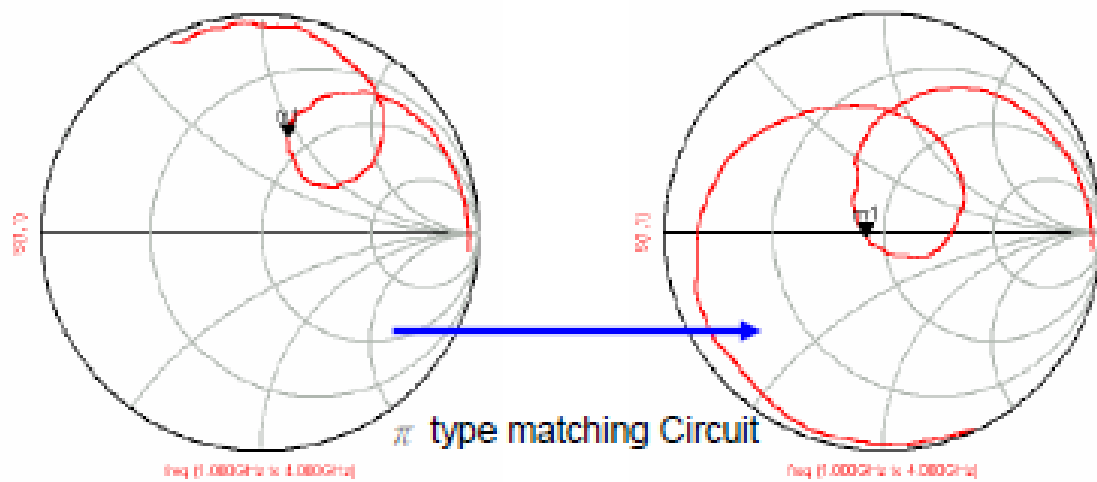
- Both top and bottom layers need a clearance area
- It needs at least 2.5mm clearance under antenna
- Via should be as close to the clearance area as possible, It performs better, has a grounding effect
- Both Position G need to connect to ground directly
- Impedance of feeding line should be 50 Ω
- If feeding line needs to make a turn, it needs to avoid turning at a 90 degree angle, It should turn at 45 degree angle or turn at arc as below



- Put a π matching circuit after feeding line and as close as possible. Component 1 and 3 need to connect to ground directly.

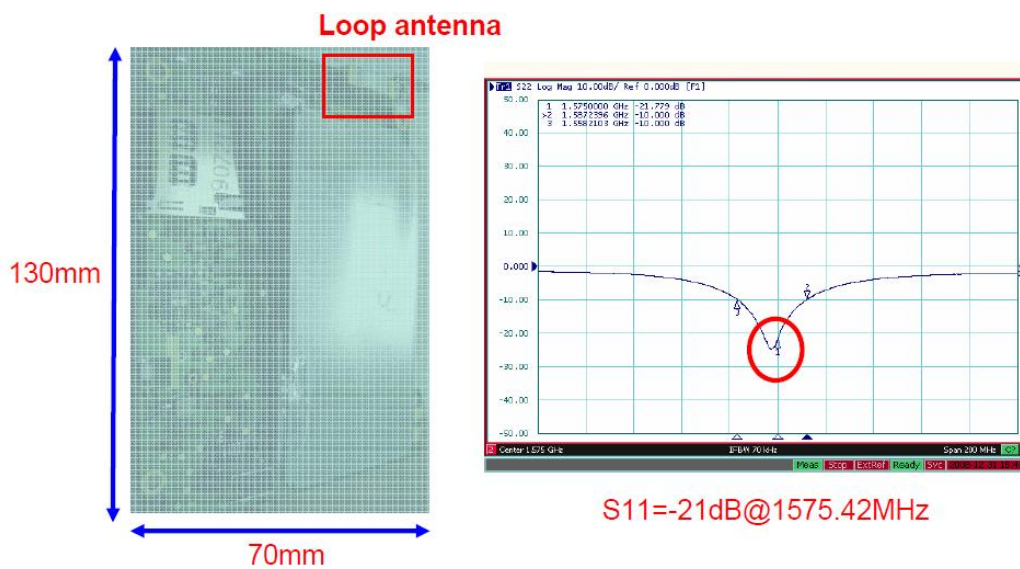


6. MATCHING



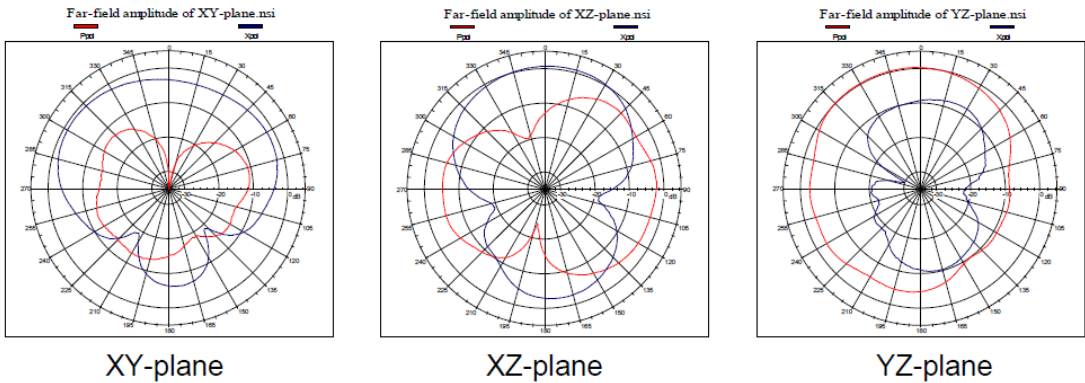
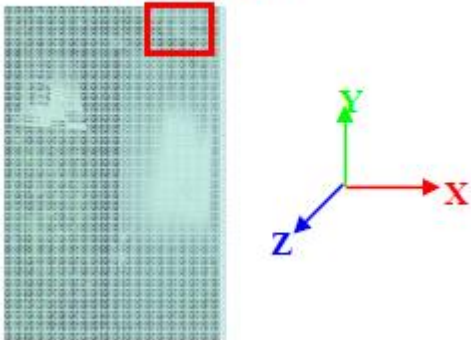
7. REAL CASE

7.1 Return Loss



7.2 Radiation Pattern

Antenna



Plane	XY	XZ	YZ
Peak gain	-0.79	1.26	0.66
Average gain	-5.48	-2.68	-3.81

(Unit:dBi)