

# APPLICATION NOTE FOR ILA ANTENNA SERIES INTEGRATION



VERSION 1

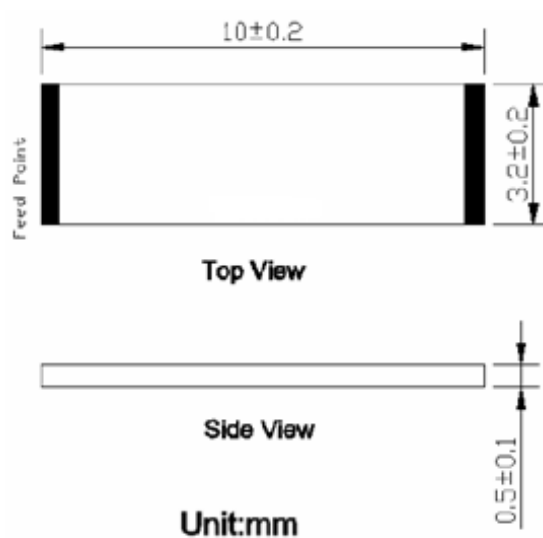
VERSION	DATE	PAGE	DESCRIPTION	CENTRE	APPROVED
1	12/03/2010	All	Integration Note	Taiwan	Ronan Quinlan

## Application Note

### I. BASICS

#### Characteristics

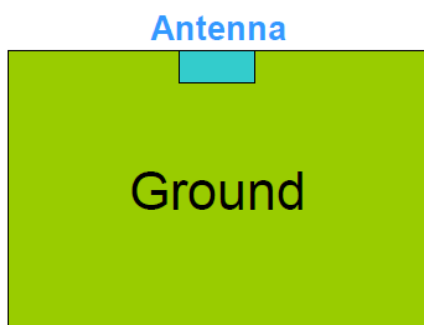
- Slim and Small (1.0\*3.2\*0.5mm)
- Wider Frequency
- High efficiency (70%)
- Omni-Directional
- Fully conform to (SMT) Process
- RoHS Appliance



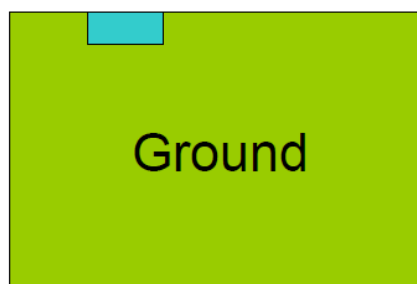
### II. APPLICATIONS

- ISM Band Application
- RFID System

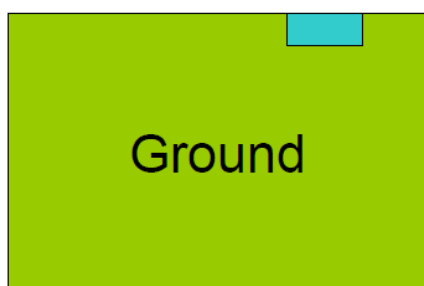
### III. ANTENNA POSITION



Single antenna-p1

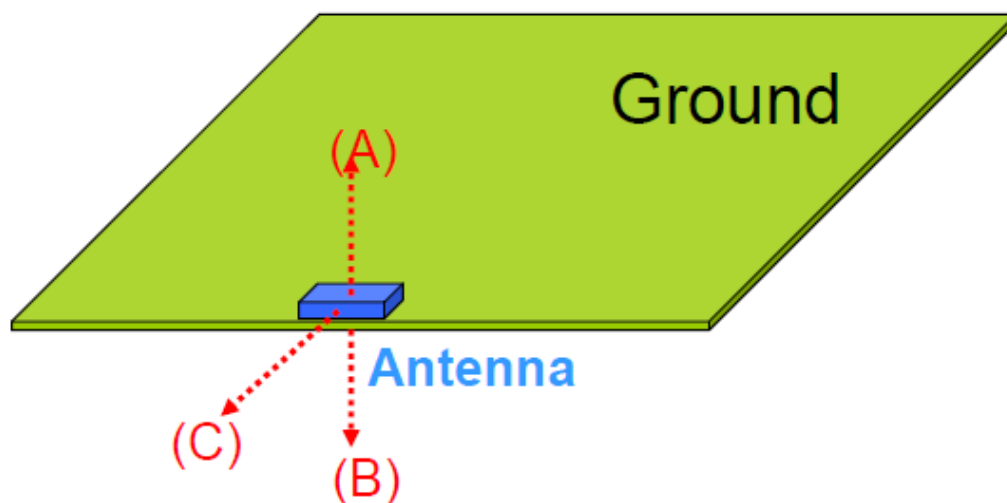


Single antenna-p2



Single antenna-3

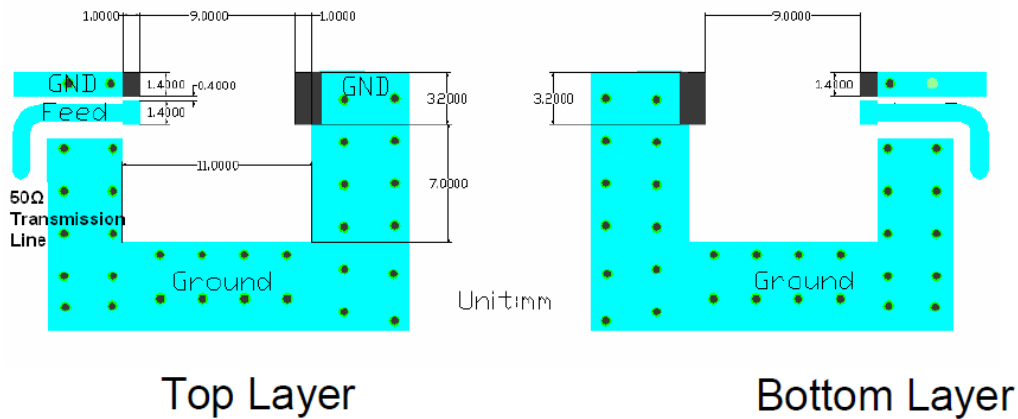
Application Note



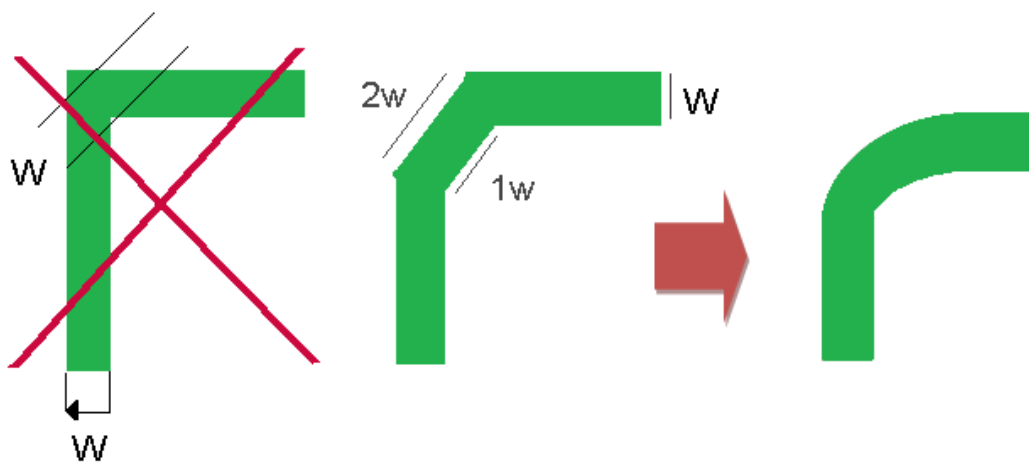
- Antenna should be put just right at the edge of PCB, It will be much better to put antenna at the centre of PCB
- Keep ground area around antenna as symmetrical as possible
- It is better to have at least 50mm x 20mm PCB size
- Antenna has no orientation; it will show just the same performance when turned from left to right or top to bottom
- NO metal components are allowed in the (A), (B) and (C) direction as illustrated above

Application Note

IV. LAYOUT GUIDE

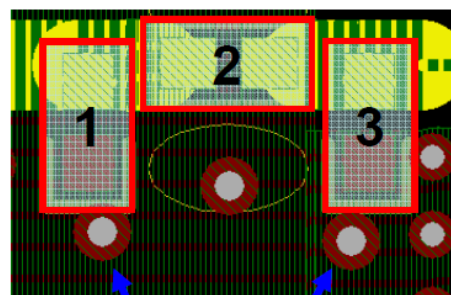
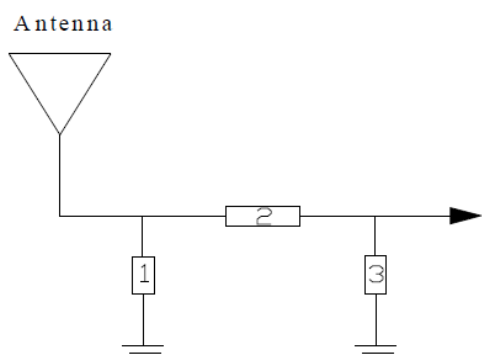


- Both top and bottom layers need a clearance area
- It needs at least 7.0mm clearance under antenna
- Via should be as close to the clearance area as possible, It performs better, has a grounding effect
- Both Position G need to connect to ground directly
- Impedance of feeding line should be 50 Ω
- 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  $\pi$  matching circuit after feeding line and as close as possible. Component 1 and 3 need to connect to ground directly.

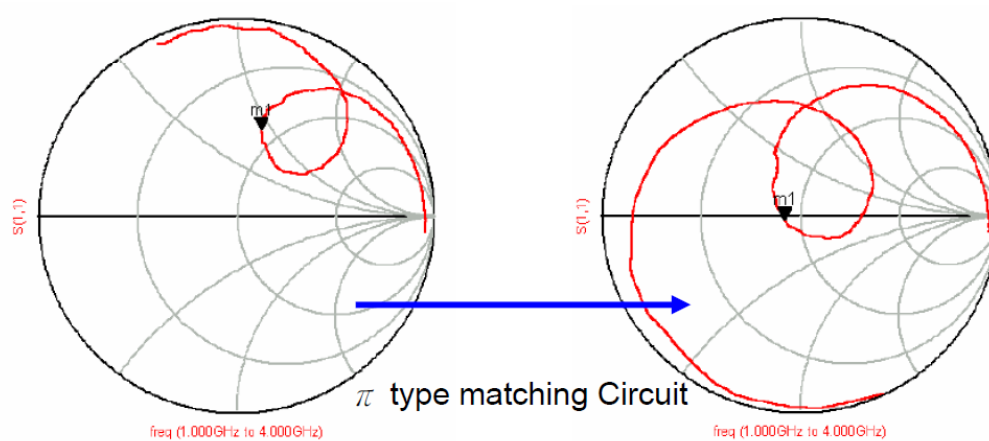
Application Note



Grounding directly

Application Note

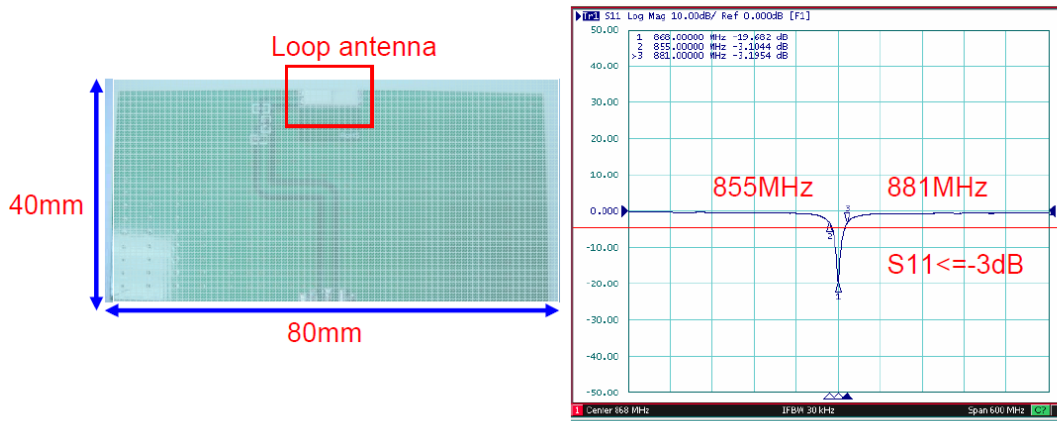
V. MATCHING



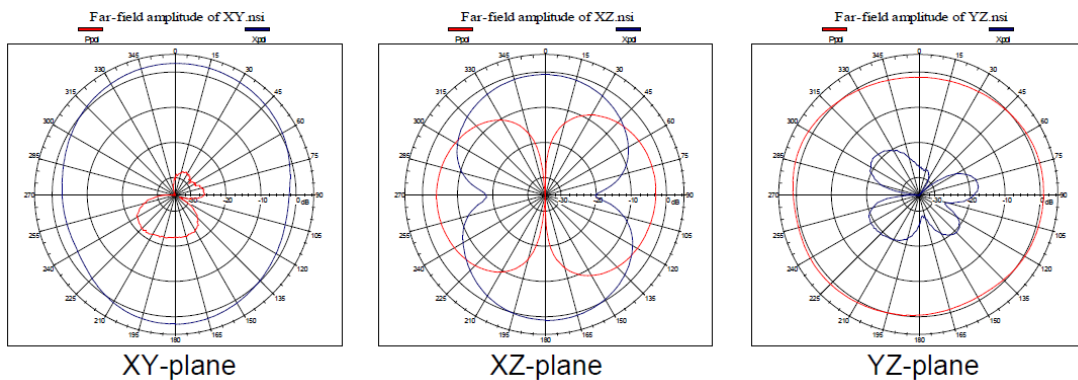
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### VI. REAL CASE (ILA.02 - 855~881MHz)

#### VI.I Return Loss



#### VI.II Radiation Pattern at 868MHz



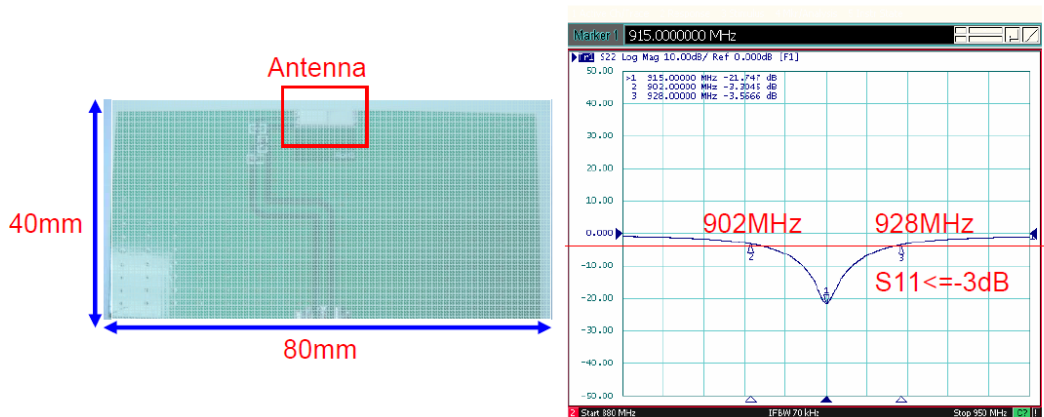
Plane	XY	XZ	YZ
Peak gain	2.5	0.6	1.5
Average gain	-0.2	-1.9	-0.1

(Unit:dBi)

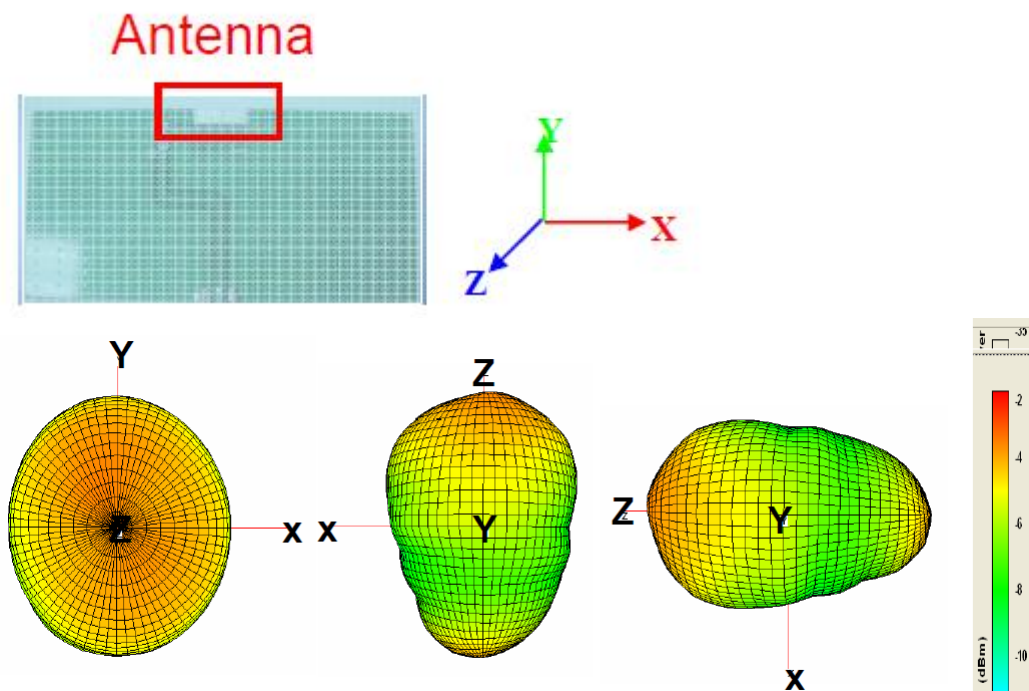
## Application Note

### VII. REAL CASE (ILA.01 - 902~928MHz)

#### VII.I Return Loss



#### VII.II Radiation Pattern at 915MHz



Frequency	Efficiency	Peak gain
915MHz	69.7%	0.92dBi