

APPLICATION NOTE FOR WLA.01 ANTENNA INTEGRATION



VERSION 1

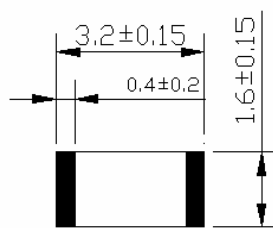
VERSION	DATE	PAGE	DESCRIPTION	CENTRE	APPROVED
1	03/02/2010	All	Integration Note	Taiwan	Ronan Quinlan

Application Note

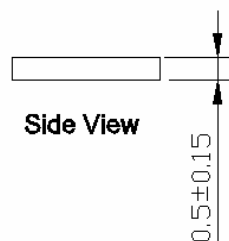
I. BASICS

Characteristics

- Slim and Small (3.2*1.6*0.5mm)
- Wider Frequency
- High efficiency (80%)
- Omni-Directional
- Fully conform to (SMT) Process
- RoHS Appliance



Top View



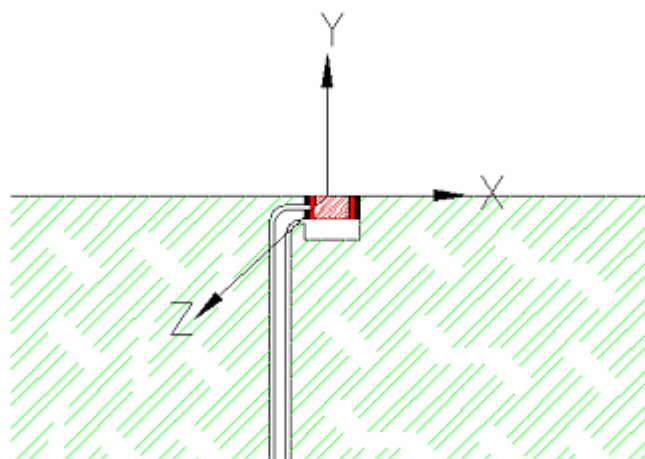
Side View

Unit : mm

II. APPLICATIONS

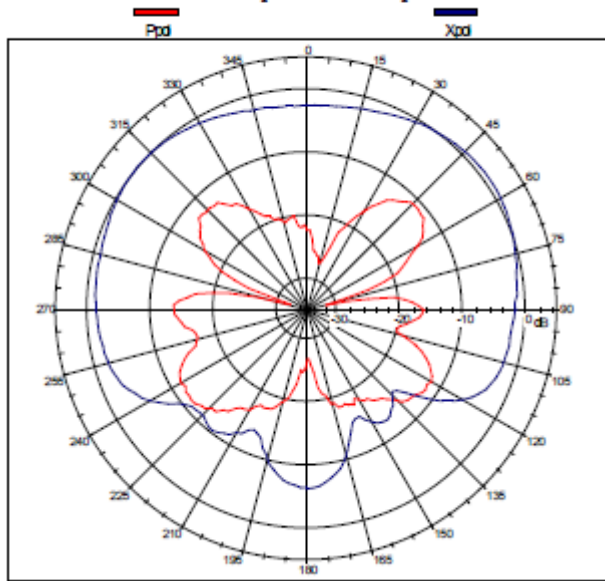
- Bluetooth head-sets
- Handheld Device
- WLAN (IEEE802.11 b/g)
- ZigBee
- PCMCIA Wireless Modem, USB dongle

III. RADIATION PATTERNS



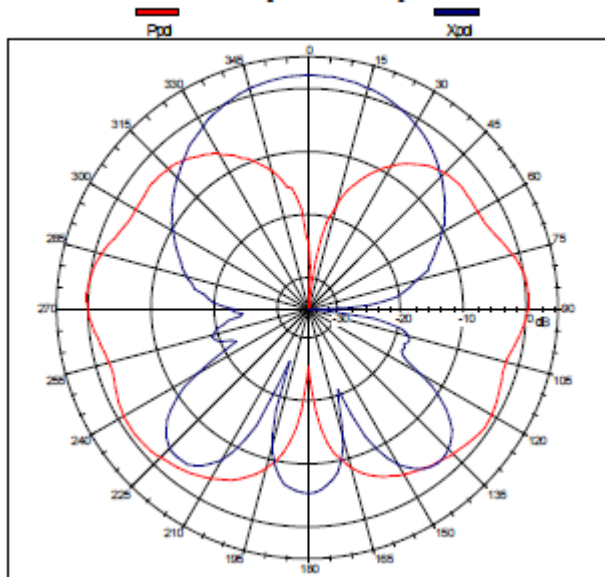
Application Note

Far-field amplitude of E2 plane.nsi



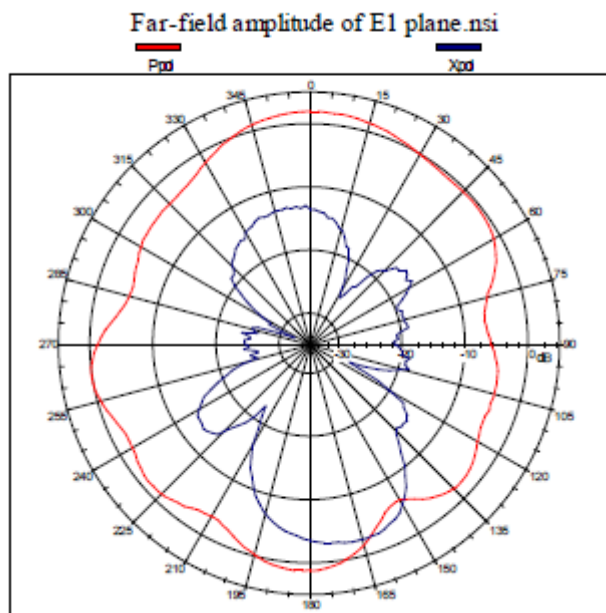
XY Plane

Far-field amplitude of H plane.nsi



XZ Plane

Application Note

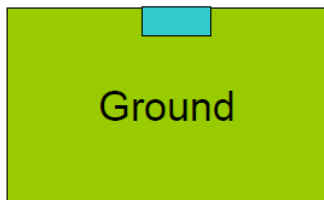


YZ Plane

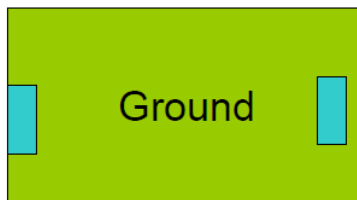
IV. ANTENNA POSITION

IV.I AP Router

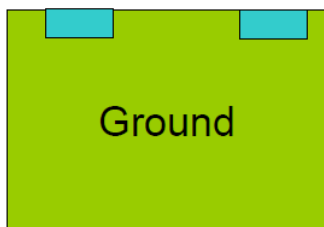
Antenna



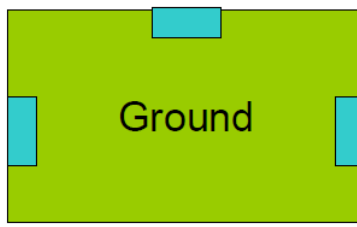
One antenna



Two antennas-1



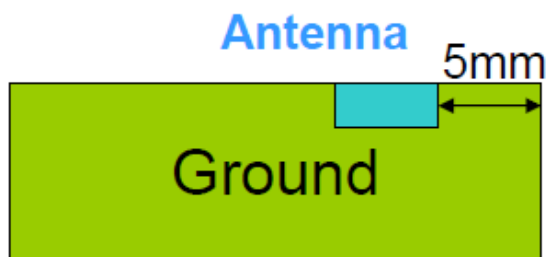
Two antennas-2



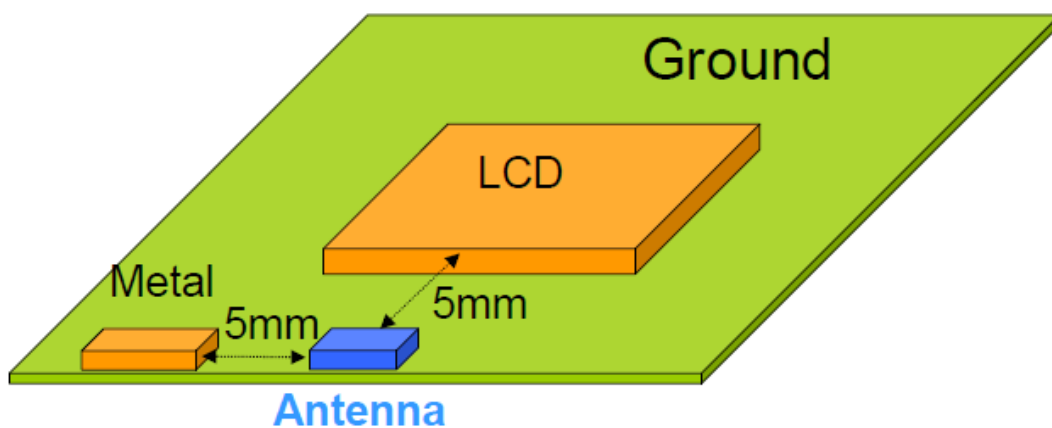
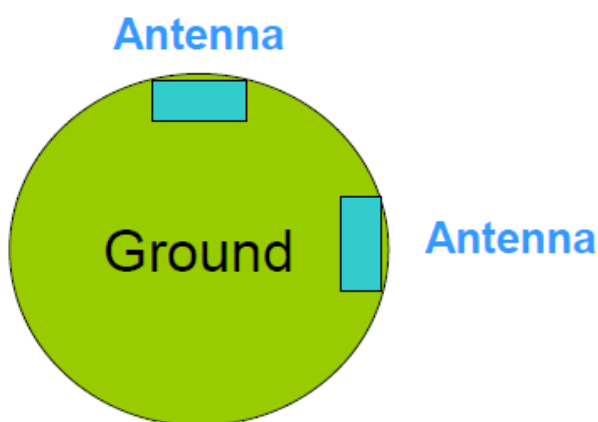
Three antennas

Application Note

IV.II USB Dongle/RF Module/Bluetooth head-sets



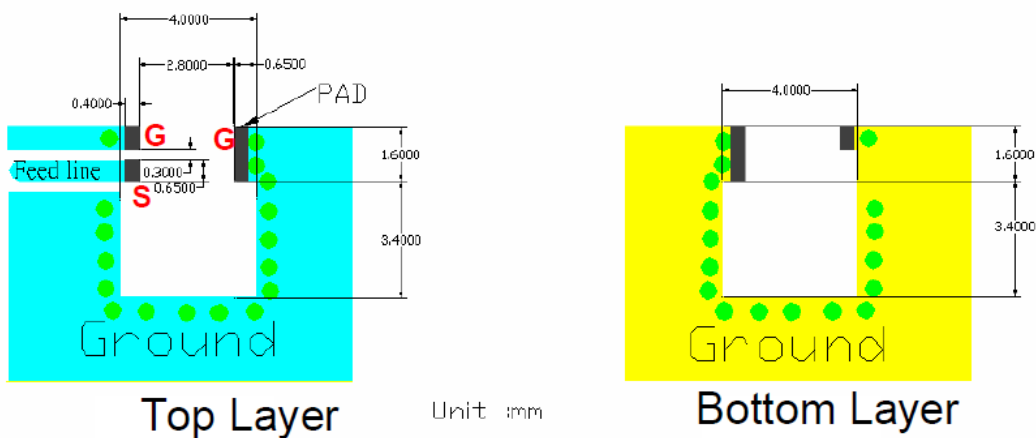
IV.III RF Module/Bluetooth head-sets (Two antennas)



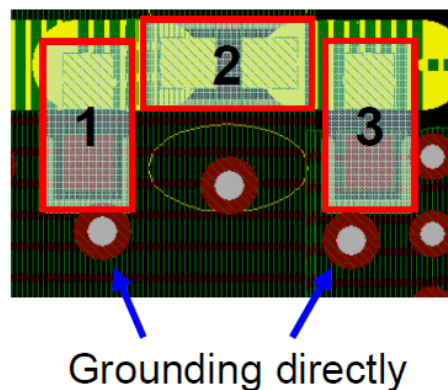
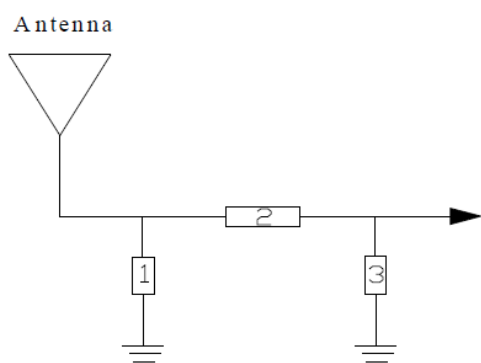
- Antenna should be put just right at the edge of PCB, It will be much better to put antenna at the centre of PCB
- Keep ground area around antenna as symmetrical as possible
- It needs at least 5 mm clearance between LCD panel/shielding and antenna
- It is better to have at least 35mm x 10mm PCB size

Application Note

V. LAYOUT GUIDE

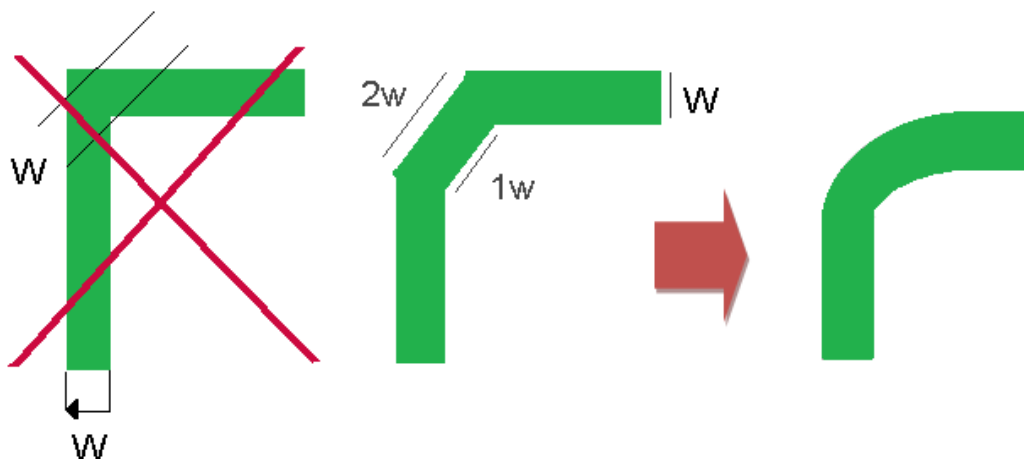


- Both top and bottom layers need a clearance area
- It needs at least 3.4 mm clearance under antenna
- Via should be as closer clearance area as possible, It performs better grounding effect
- Both Position G need to connect to ground directly
- Put a π matching circuit after feeding line and as close as possible. Component 1 and 3 need to connect to ground directly.

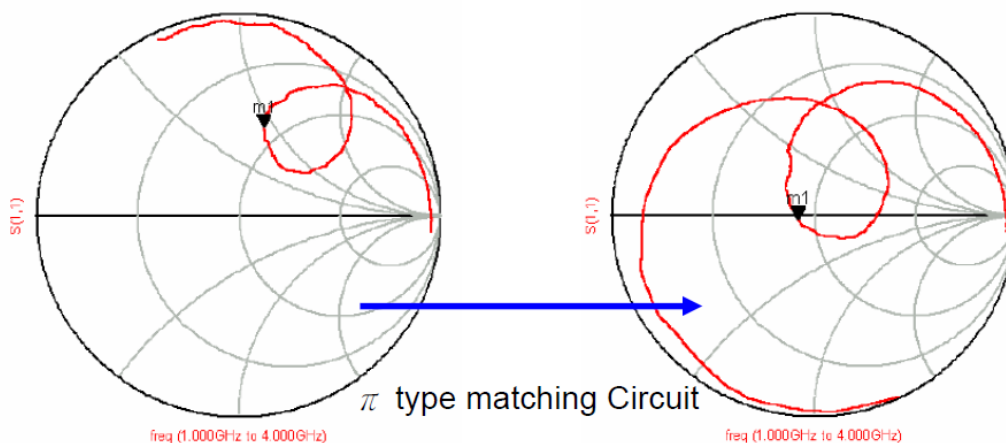


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- Impedance of feeding line should be 50Ω
- If feeding line needs to make a turn, it needs to avoid turning at a 90 degree angle, It should turn at 45 degree angle or turn at arc as below



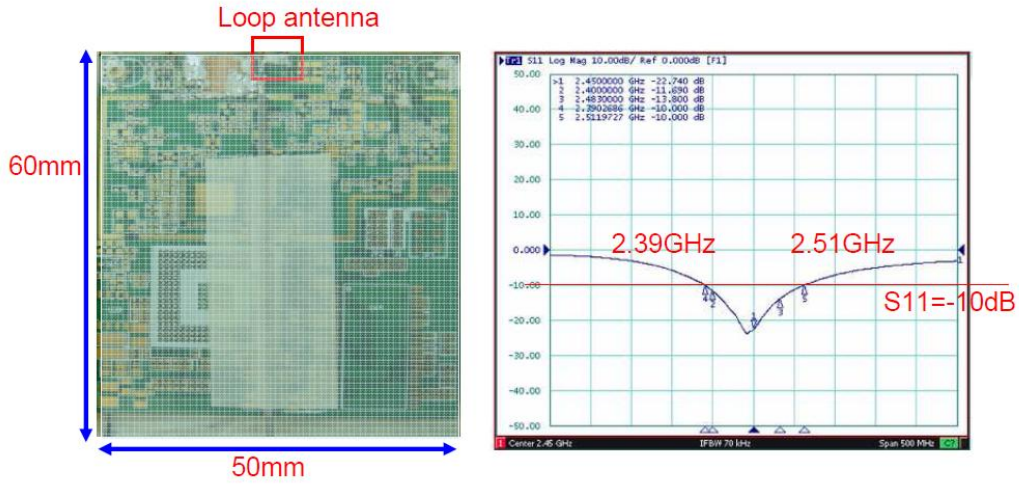
VI. MATCHING



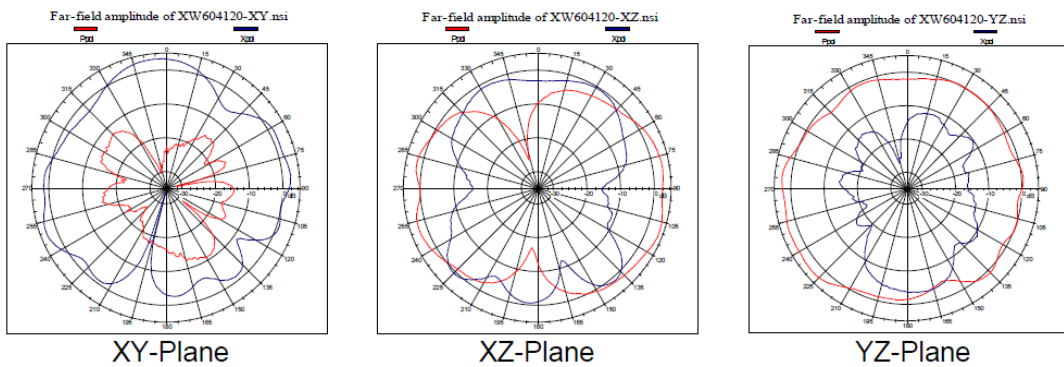
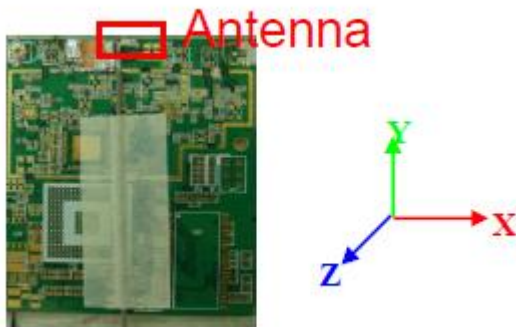
Application Note

VII. REAL CASE

VII.I Return Loss



VII.II Radiation Pattern



Plane	XY	XZ	YZ
Peak Gain	3.39	3.73	2.85
Average Gain	-1.39	0.75	-0.11

(Unit:dBi)