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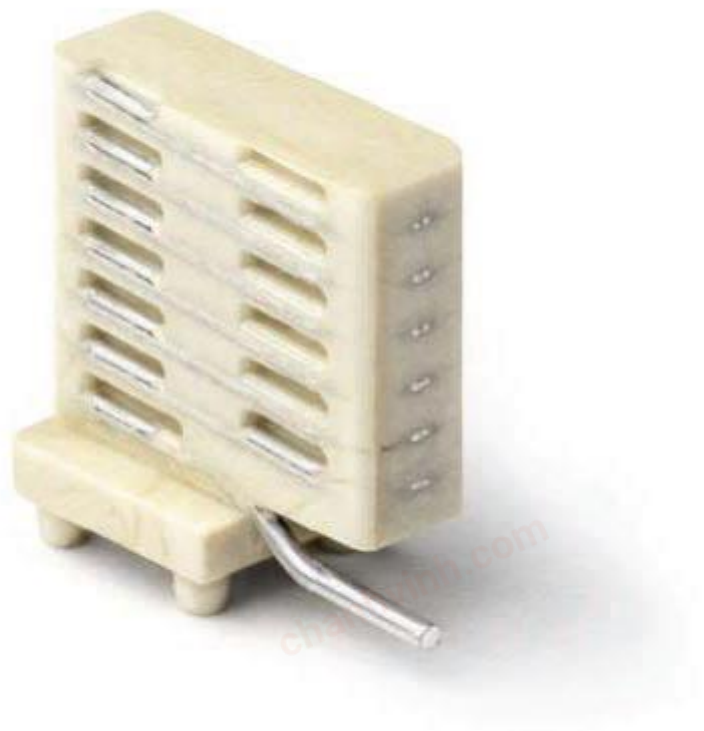
TECHNICAL DATA SHEET

Description: 850 MHz RX Diversity Helical SMD Antenna

Series: Helical SMD Antenna

PART NUMBER: W3118A



Features:

- Vertical mount on board
- Compact size W x L x H (2.5 x 8 x 8 mm)
- Low weight (390 mg)
- Lead Free materials
- Fully SMD compatible
- Glue needed between antenna and PCB
- Lead free soldering compatible
- Tape and reel packing

Applications:

- GSM Cellualr 850 Band
- 869-894 MHz
- ISM 868 MHz

Issue: 2046

RoHS COMPLIANT

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Tel: 86 512 6807 9998

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ELECTRICAL SPECIFICATIONS

Frequency	869-894MHz
Nominal Impedance	50 Ω
Return Loss	＜-9 dB
Radiation Pattern	Omni
Gain	-1dBi
Efficiency	35%
Polarization	Vertical
Power Withstanding	3W

MECHANICAL SPECIFICATIONS

Dimension	2.5 x 8 x 8 mm
Weight	0.39 g
Antenna Materia	Plastic : LCP
	Helix : Sn Plated Spring Steel

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-40 ~ +85 ° C
Storage Temperature	-40 ~ +85 ° C
RoHS Compliant	Yes

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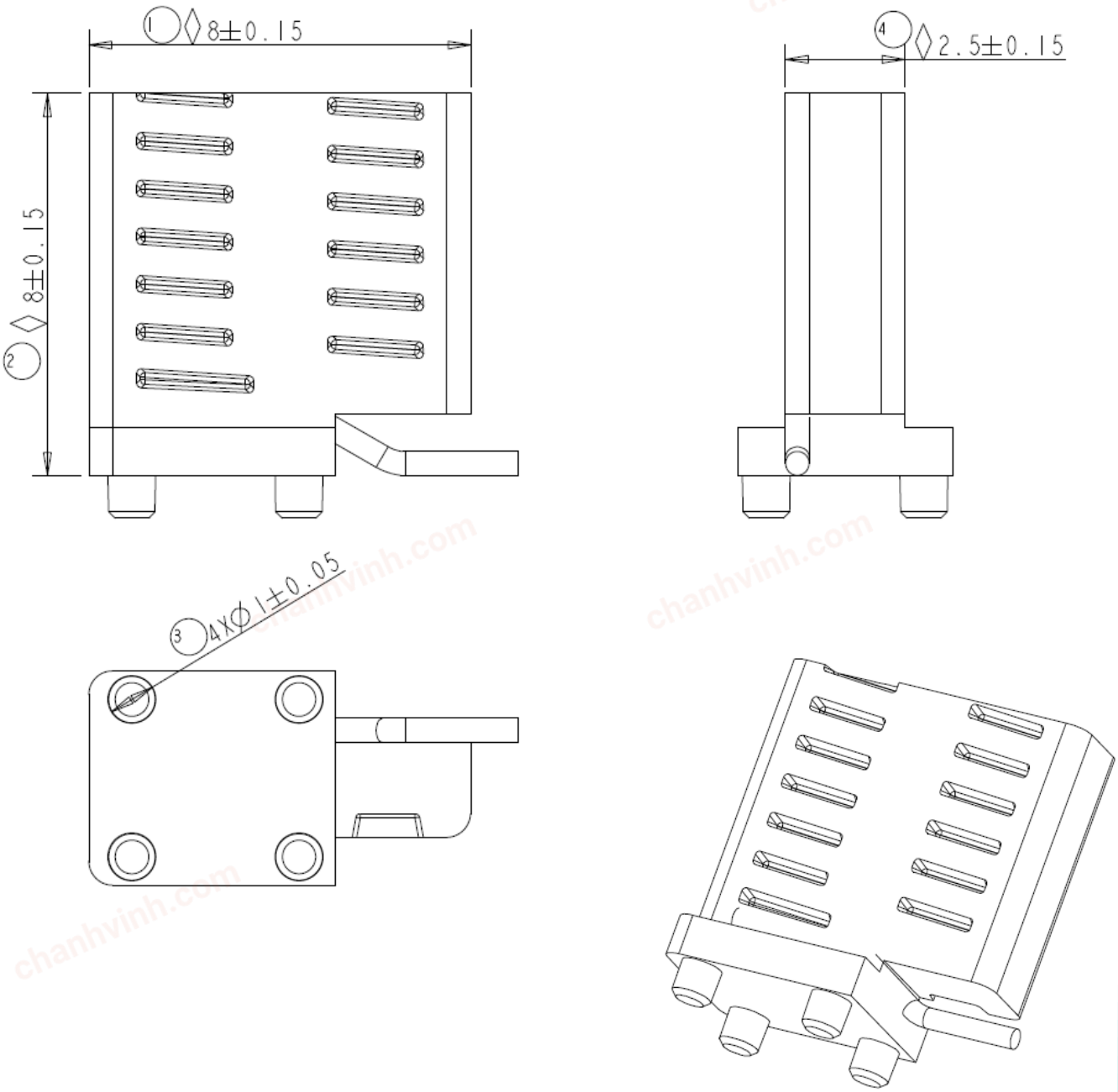
MECHANICAL DRAWING



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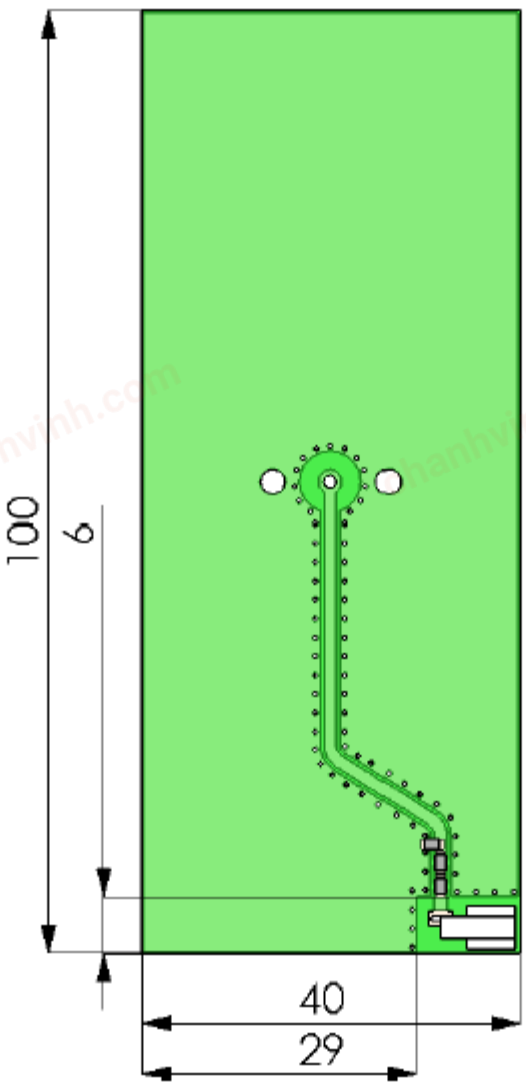
PWB Layout

Test board layout

Ground cleared under antenna, clearance area **6.00 mm x 11.00 mm**

Feed line should be designed to mach 50 Ω characteristic impedance, depending on PWB material and thickness.

Matching and tuning component values depend on application and surrounding mechanics / materials



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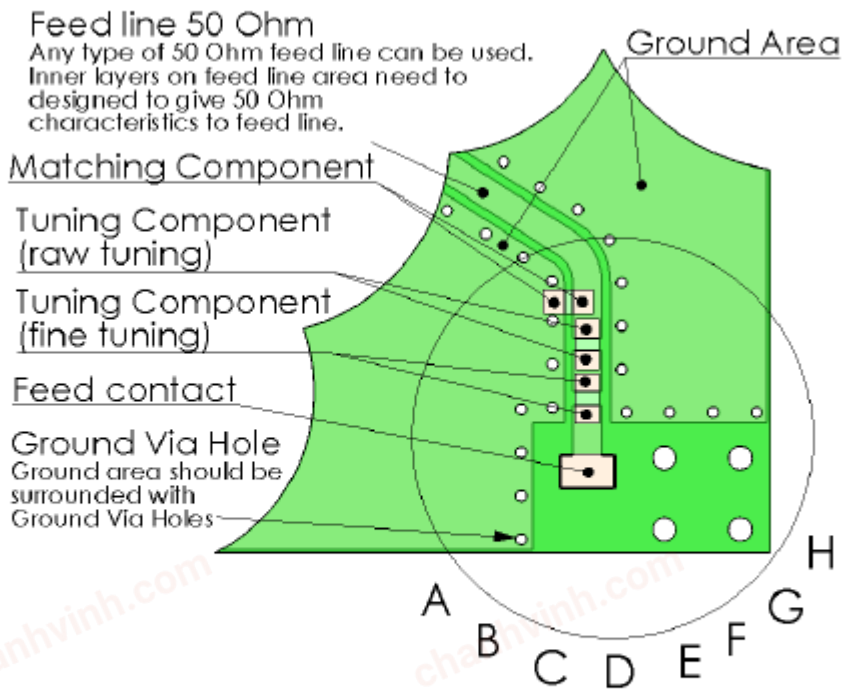
PWB Layout

Note: All dimensions are in metric system.



Components on test board

Matching component = 5n6H inductor

Tuning component (raw tuning) = 8n2H inductor

Tuning component (fine tuning) = 1n8H inductor

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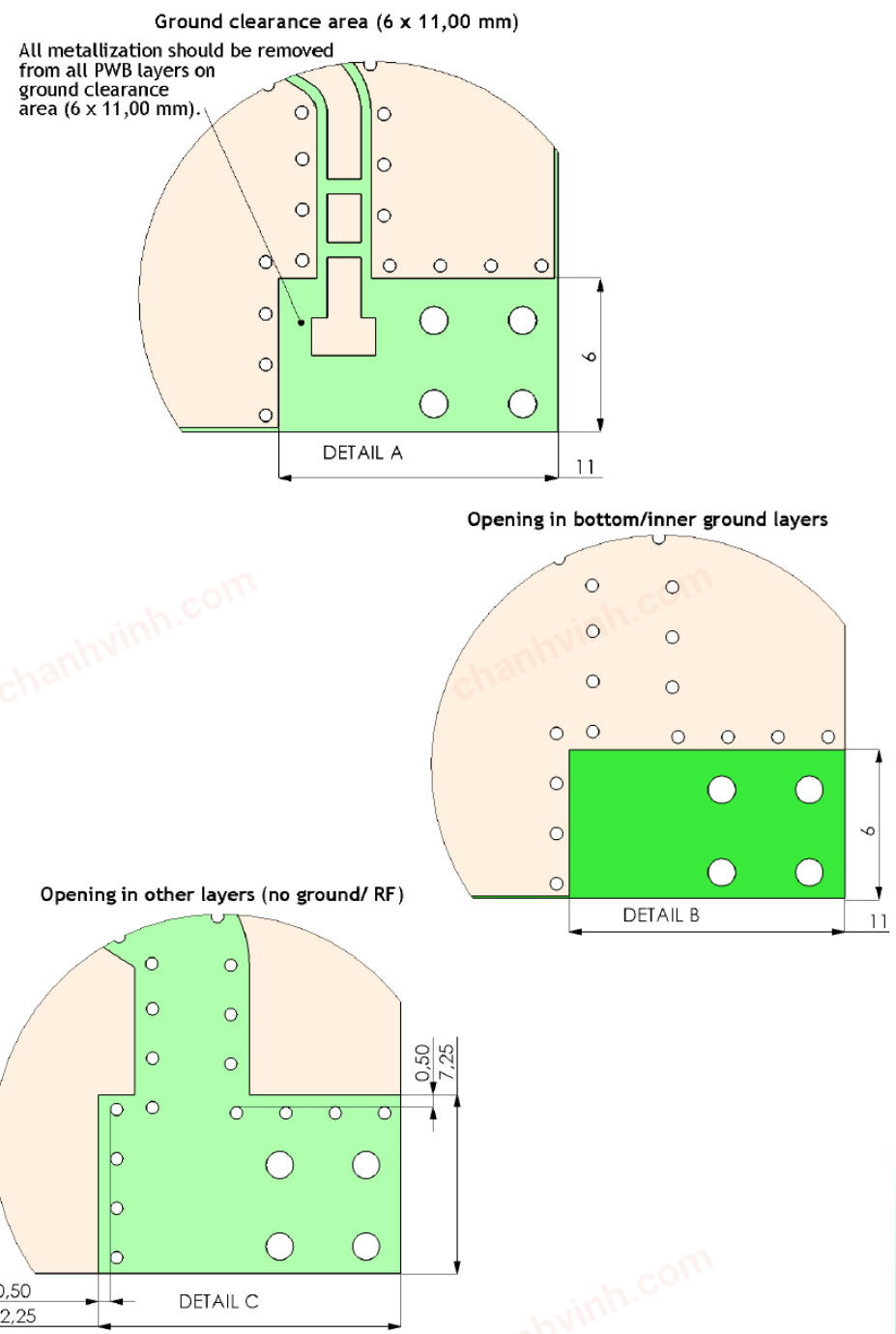
PWB Layout

Ground clearance area for W3118A



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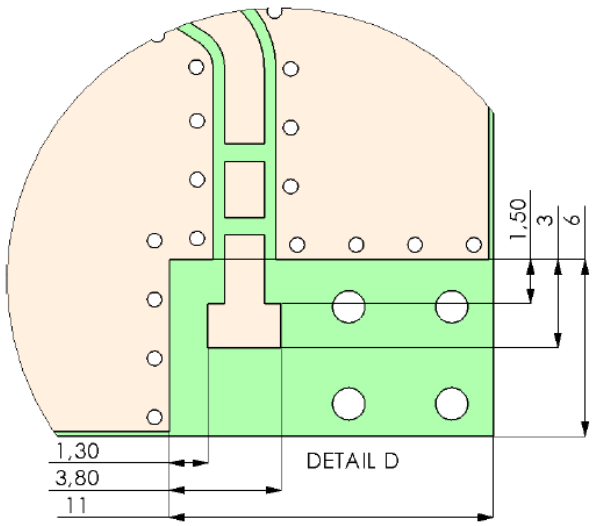
PWB Layout

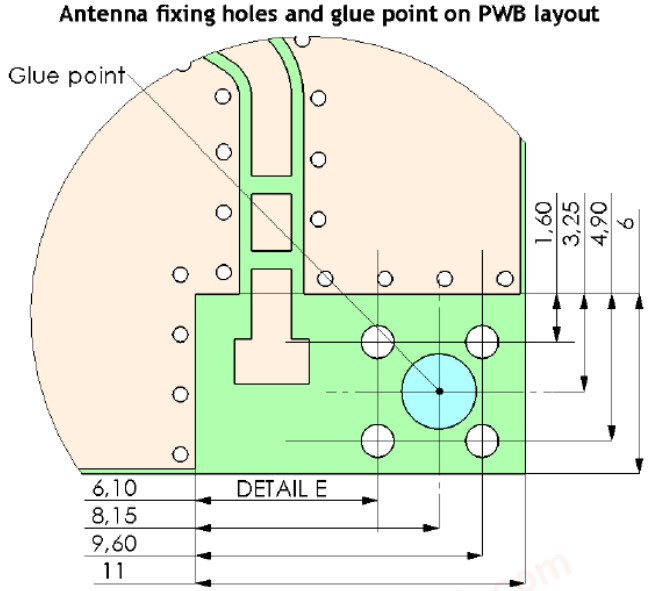
PWB pad dimensions and antenna attachment for W3118A

Pad dimensions in top copper



It is recommended to use glue between antenna and PWB to get enough mechanical strength.

Antenna fixing holes and glue point on PWB layout



The glue could be SMD-adhesive (Heraeus PD 955M) or hot setting adhesive, depending on manufacturing method. (Reflow or hand soldering)

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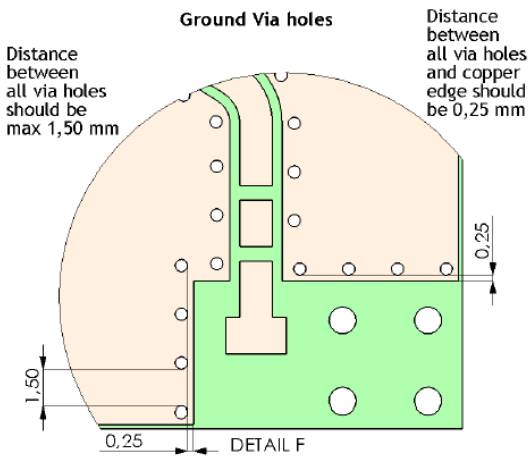
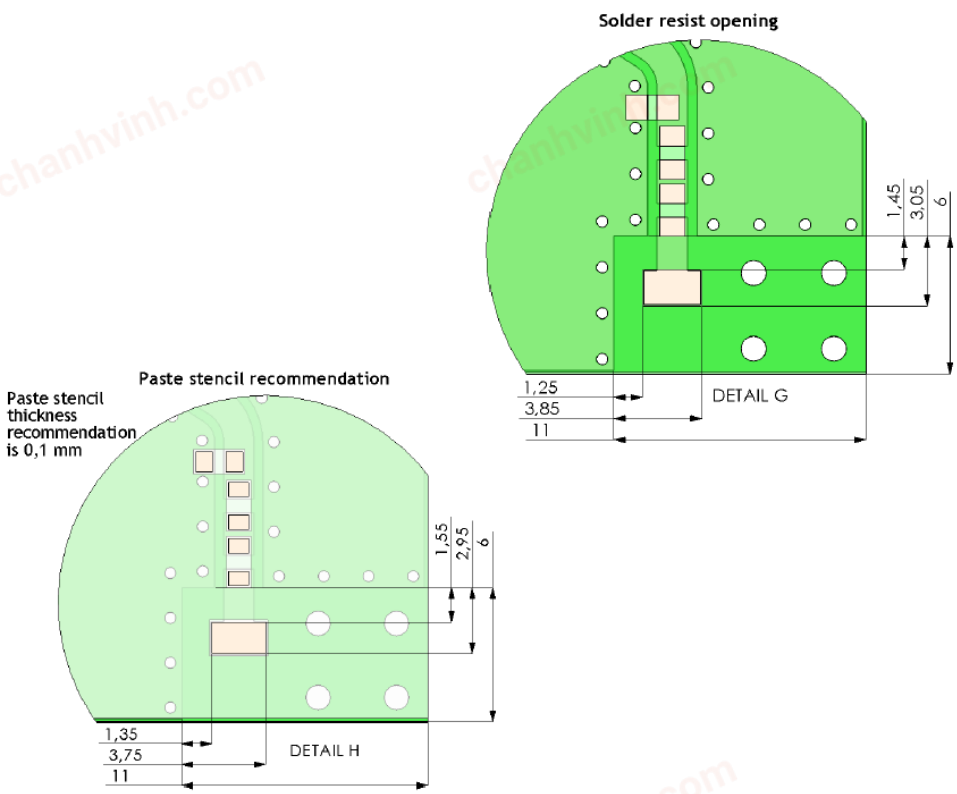
PWB Layout

Typical ground via hole placement in PWB layout for W3118A



Solder resist opening and Paste stencil recommendation for W3118A



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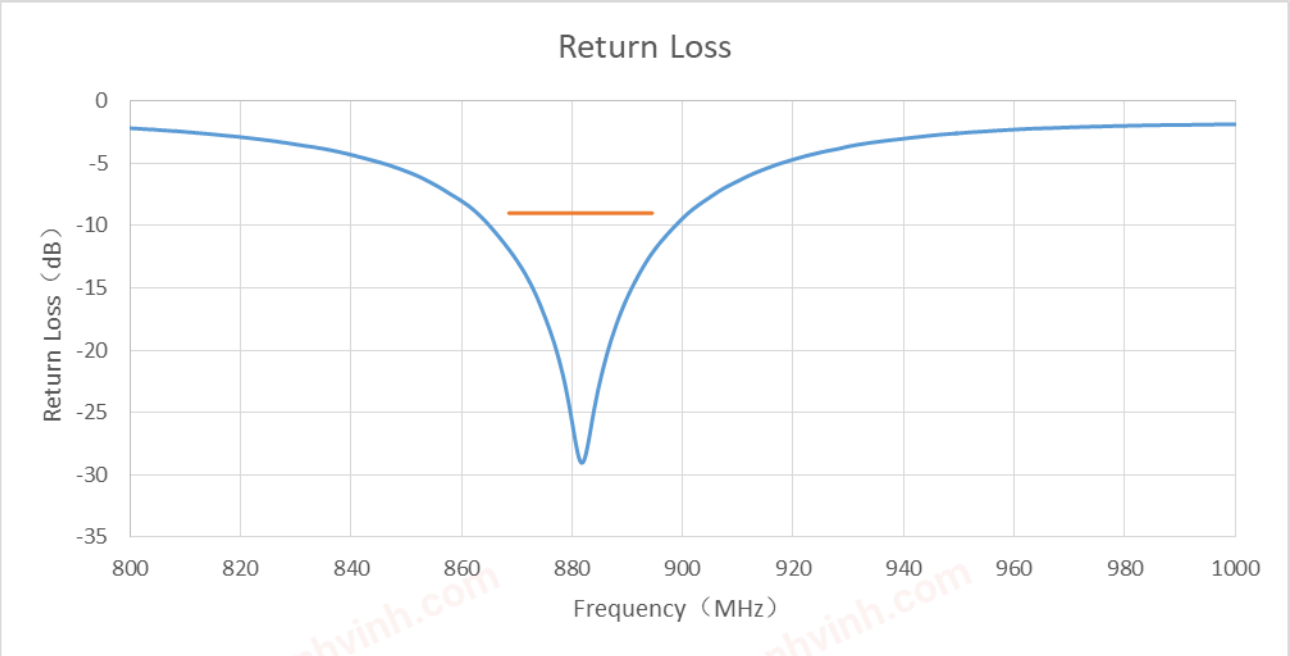
CHARTS

Return Loss



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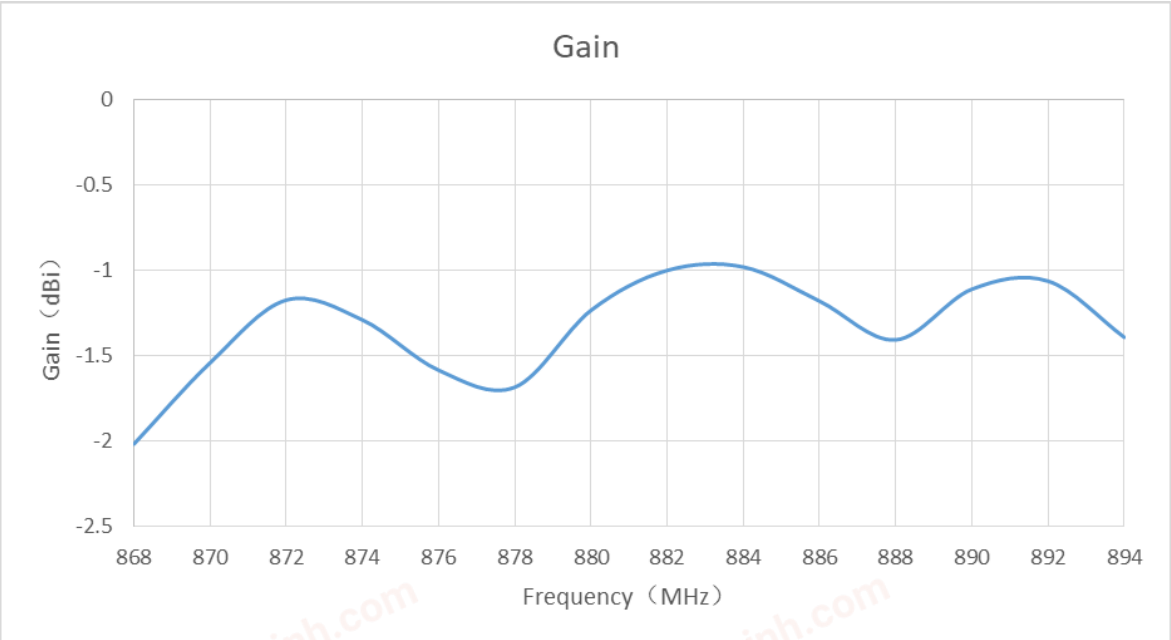
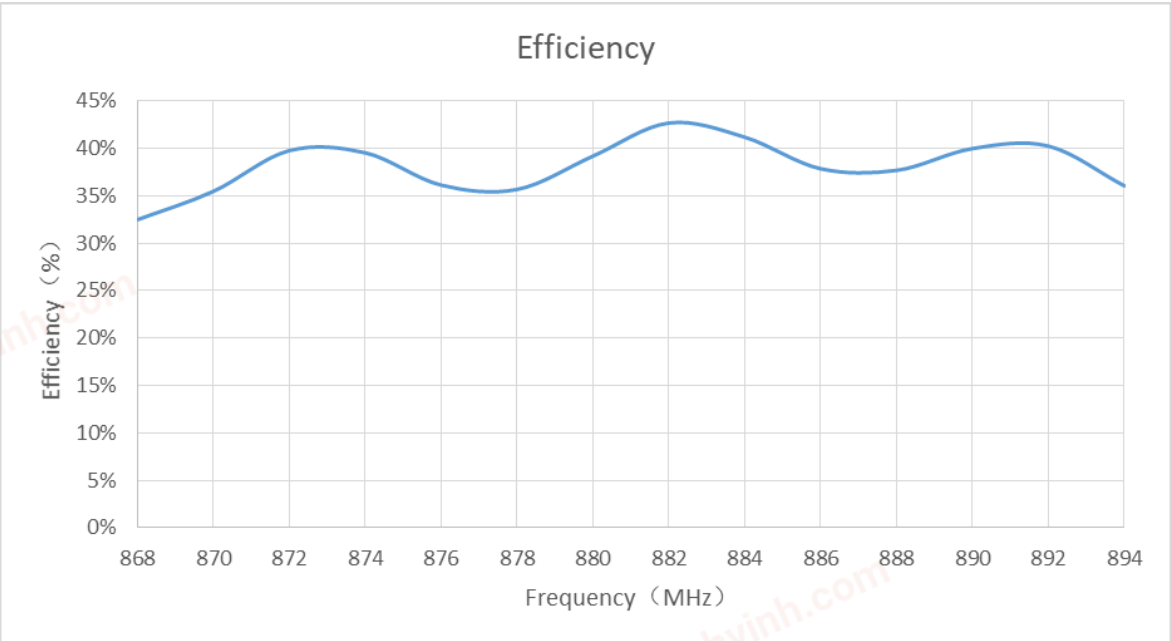
CHARTS

Gain



Radiation Efficiency



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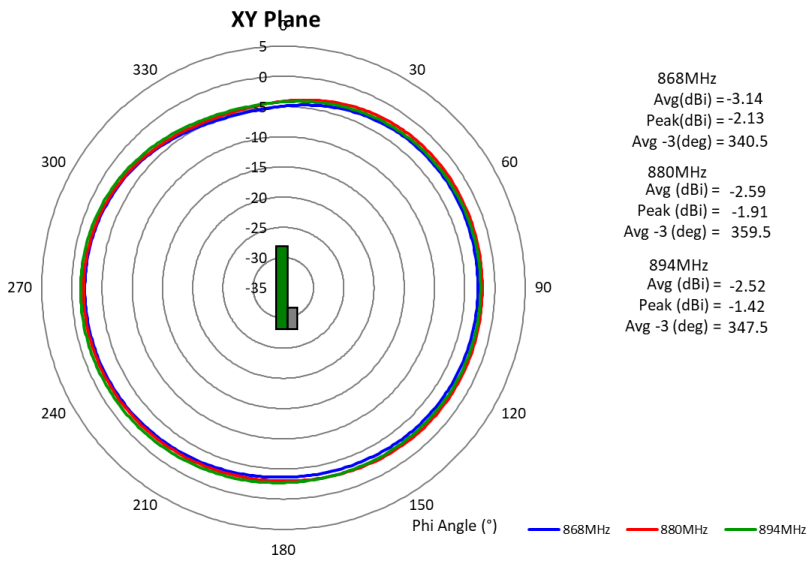
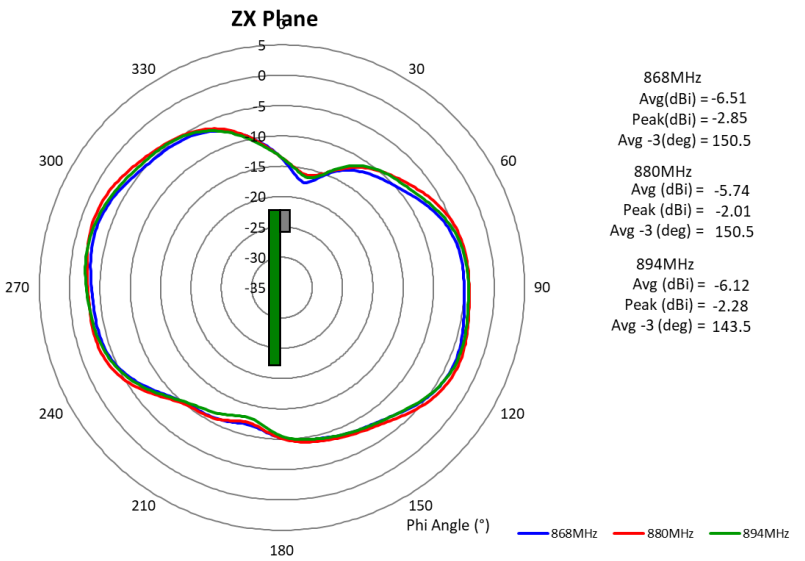


868MHz
Avg(dBi) = -3.14
Peak(dBi) = -2.13
Avg -3(deg) = 340.5

880MHz
Avg (dBi) = -2.59
Peak (dBi) = -1.91
Avg -3 (deg) = 359.5

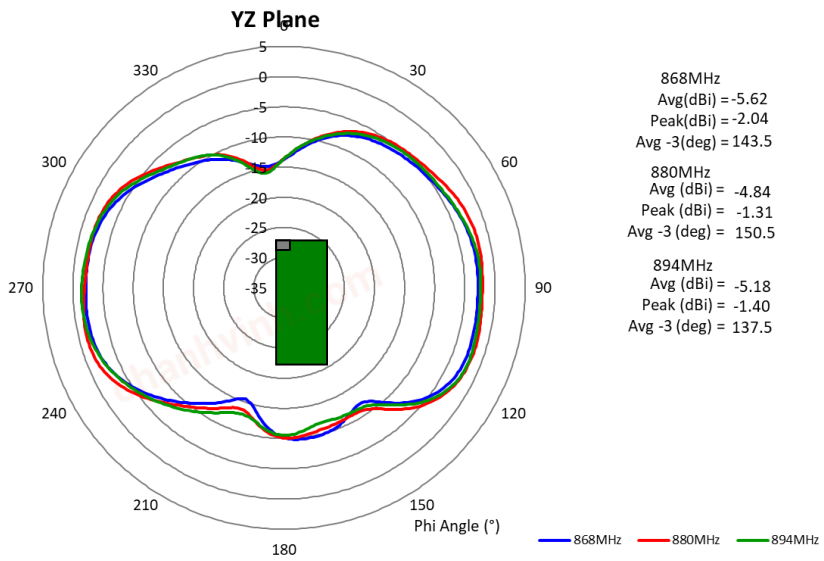
894MHz
Avg (dBi) = -2.52
Peak (dBi) = -1.42
Avg -3 (deg) = 347.5



868MHz
Avg(dBi) = -6.51
Peak(dBi) = -2.85
Avg -3(deg) = 150.5

880MHz
Avg (dBi) = -5.74
Peak (dBi) = -2.01
Avg -3 (deg) = 150.5

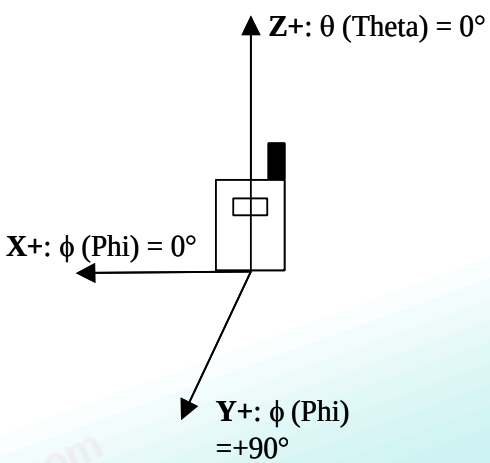
894MHz
Avg (dBi) = -6.12
Peak (dBi) = -2.28
Avg -3 (deg) = 143.5



868MHz
Avg(dBi) = -5.62
Peak(dBi) = -2.04
Avg -3(deg) = 143.5

880MHz
Avg (dBi) = -4.84
Peak (dBi) = -1.31
Avg -3 (deg) = 150.5

894MHz
Avg (dBi) = -5.18
Peak (dBi) = -1.40
Avg -3 (deg) = 137.5



Issue: 2046

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Recommendation for reflow soldering process

Printing stencil thickness 0,15 - 0,25 mm is recommended for the solder paste. The maximum soldering temperature should not exceed 260°C. The temperature profile recommendations for reflow soldering process is presented in the Figures 1 and 2. The reflow profile presented in figure 1 describes minimum reflow temperatures. The reflow profile presented in figure 2 describes maximum reflow temperatures. located at the center of the coverage area.

	Method of heat transfer	Controlled hot air convection
1	Average temperature gradient in preheating	2.5 °C/s
2	Soak time	2-3 minutes
3	Max temperature gradient in reflow	3 °C/s
4	Time above 217 °C	Max 30 sec
5	Peak temperature in reflow	230 °C for 10 seconds
6	Temperature gradient in cooling	Max -5 °C/s

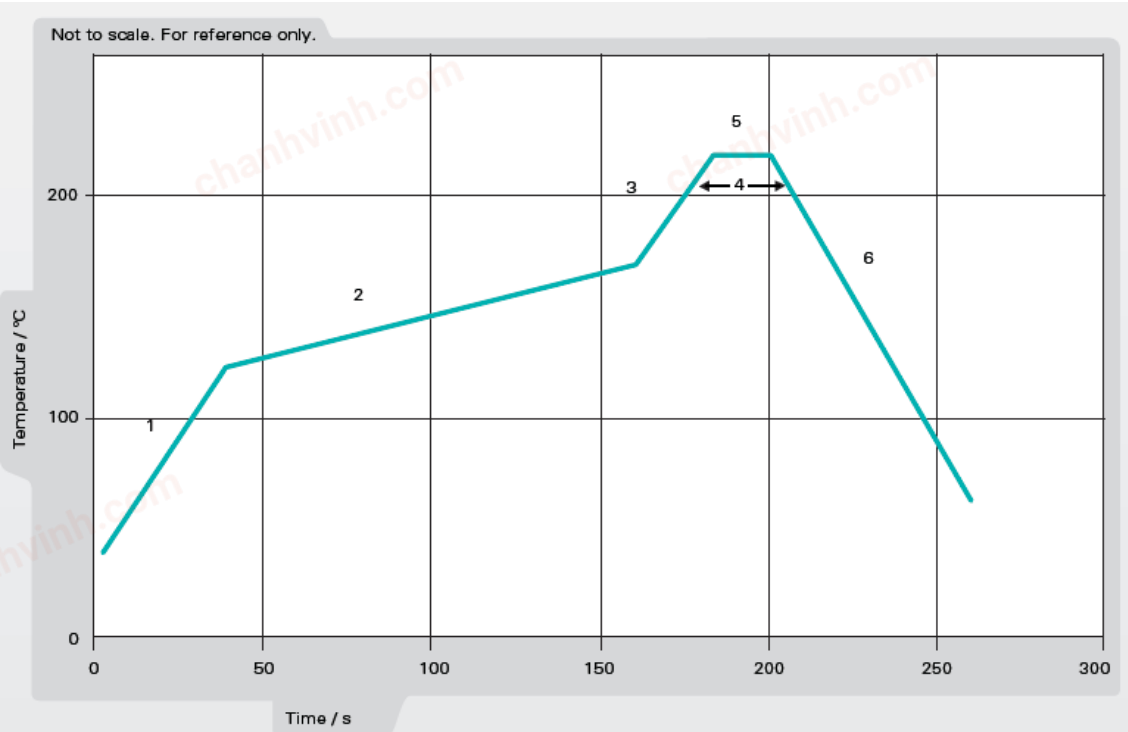

Figure 1. Minimum temperature profile recommendation for reflow soldering process

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PACKAGING

600pcs antennas packed in a tape & reel.

1 label on each tape & reel with part number, date code and Qty.

4 tape & reels of antennas (total 2400pcs antennas) packed in a Carton

1 label on each Carton with part number, date code and Qty.

P.S.: The antenna is placed vertically in the tape & reel, so it can be picked and placed for the SMT process.













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