Pulse | LARSEN Antennas
A YAGEO Company

TECHNICAL DATA SHEET

Description: 860-930MHz Embedded Helical Antenna

Series: SMD Helical Antenna

PART NUMBER: W3136

Features:

- 860-930MHz
- Impedance 50 Ohm
- Plastic support helical antenna
- Length 29.5mm,
- Gain 2dBi
- SMD Mounting on PCB
- RoHS Compliant

Applications:

- 868MHz and 915MHz ISM Band Systems
- IoT systems
- Metering, Automation
- Security, surveillance
- Remote controls, toys

All dimensions are in mm / inches

Issue: 1943

RoHS COMPLIANT

For more information:

Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
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Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
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Zeppelinstrasse 15
Herrenberg, Germany
Tel: 49 7032 7806 0

Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

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ELECTRICAL SPECIFICATIONS

Antenna Type	Helical monopole
Frequency	860-930MHz
Nominal Impedance	50 Ω
VSWR	Max 2.5
Radiation Pattern	Omni
Gain	2 dBi
Efficiency	65%
Polarization	Linear
Power Withstanding	2W

MECHANICAL SPECIFICATIONS

Overall Length	29.5mm
Weight	2.52g
Antenna Color / Material	White
Fix system	SMD+Glue
Recommended Glue	Resinlab EP1320LV Black
Solder Paste Thickness	Min 0.15mm
MSL	3

ENVIRONMENTAL SPECIFICATIONS

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

OTHER SPECIFICATIONS

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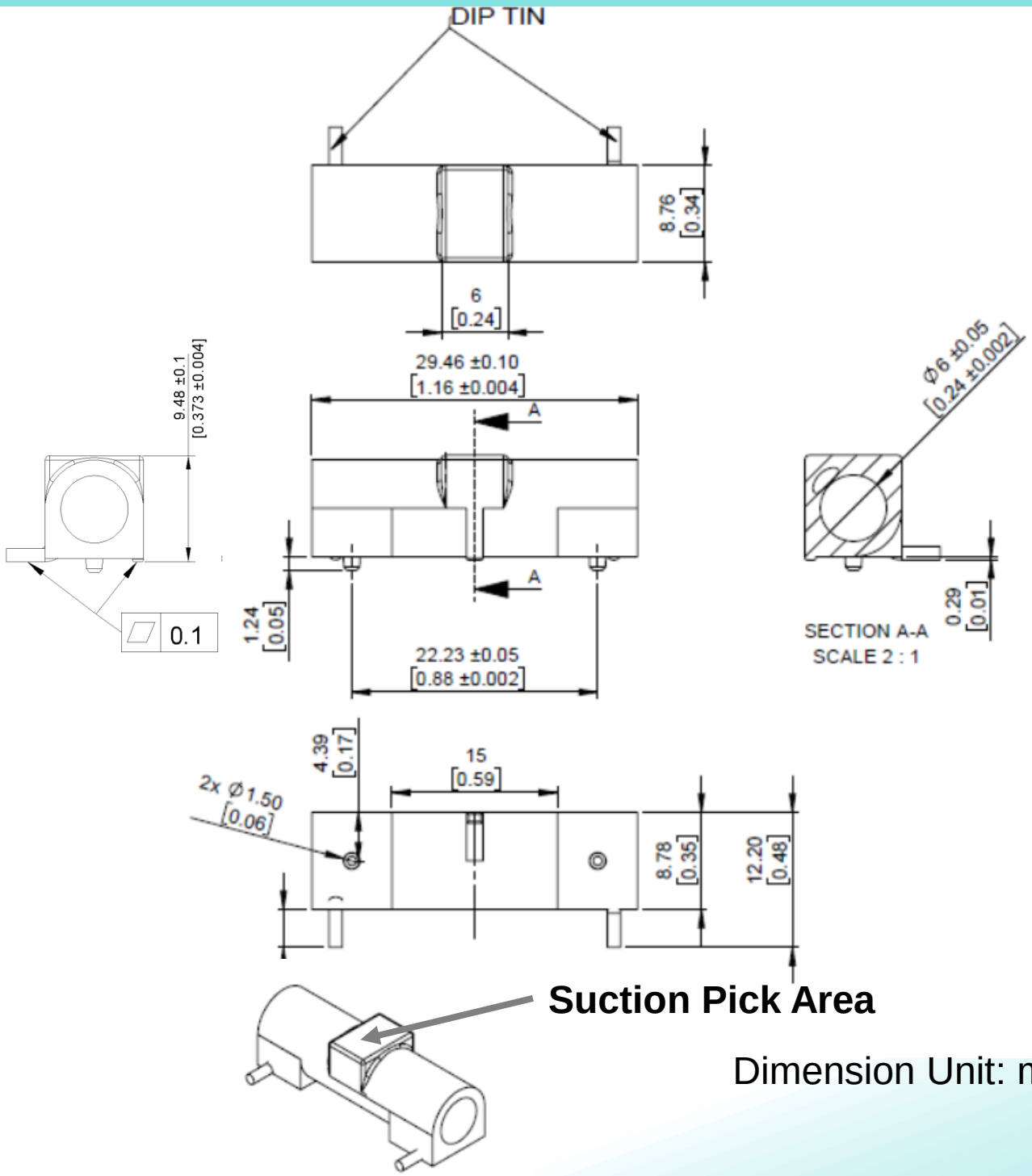
MECHANICAL DRAWING



Dimension Unit: mm[inch]

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FIX SYSTEM RECOMMENDATION

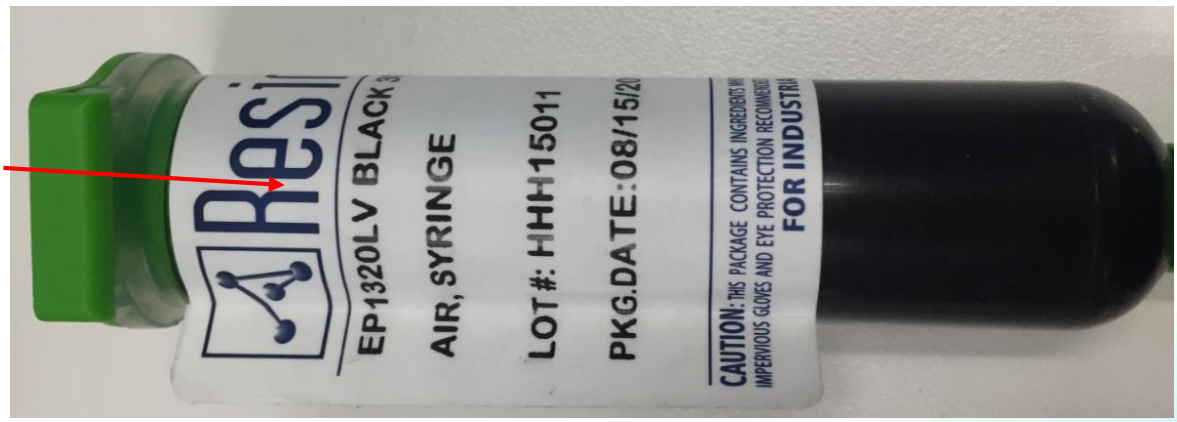
Fix system

1. SMD process
2. Solder paste thickness: minimum 0.15mm
3. Glue is required, Recommended Glue: Resinlab EP1320LV Black, usage and position see below recommended area.

Solder paste

Glue

Recommended Glue Type



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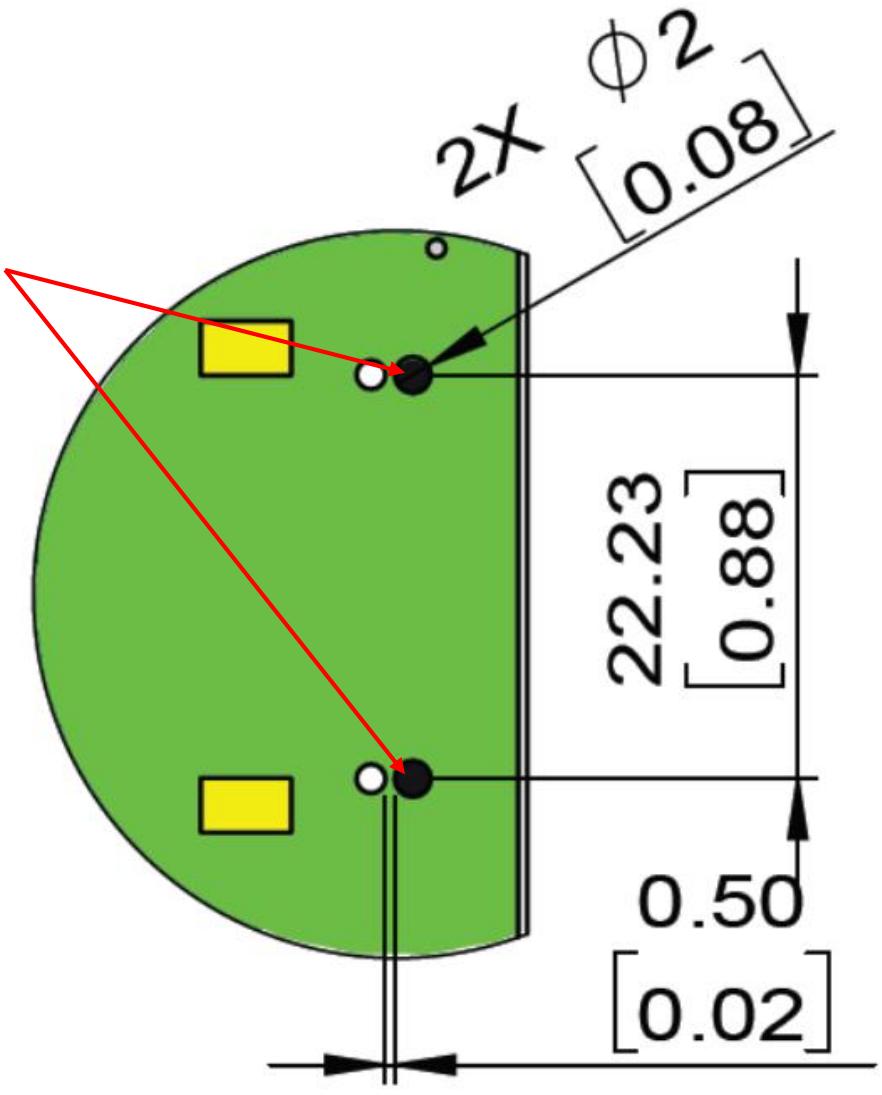
FIX SYSTEM RECOMMENDATION

Fix system

1. Glue position on PCB for recommendation

Glue position on PCB for recommendation



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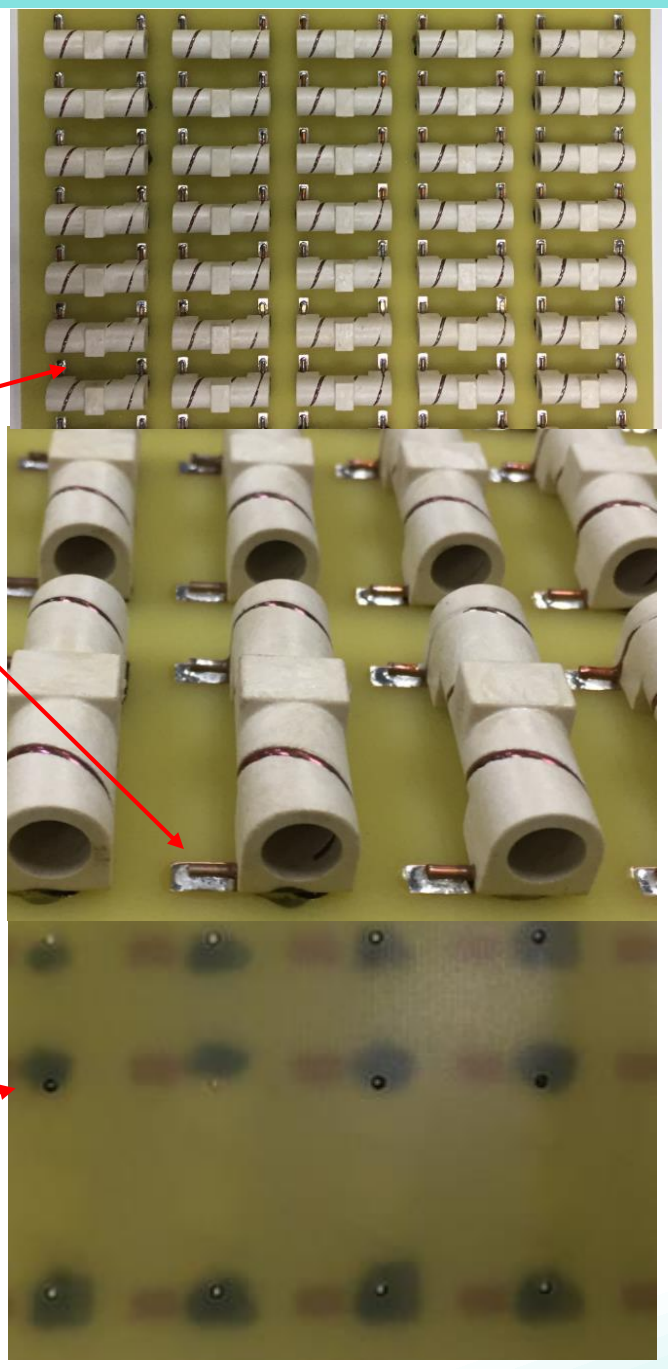
FIX SYSTEM RECOMMENDATION

Solder effect



Back view of glue area

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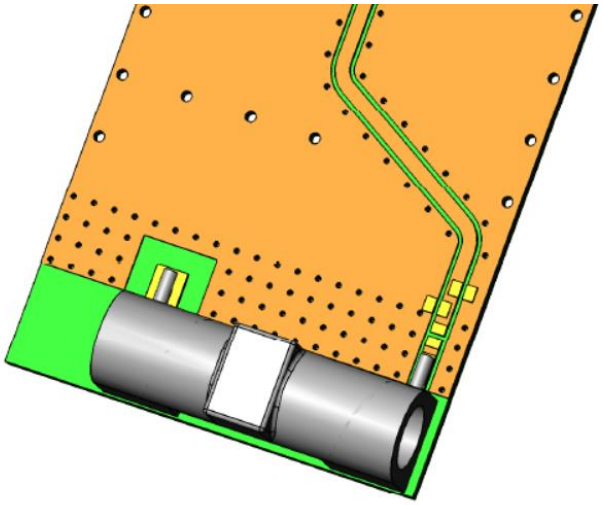
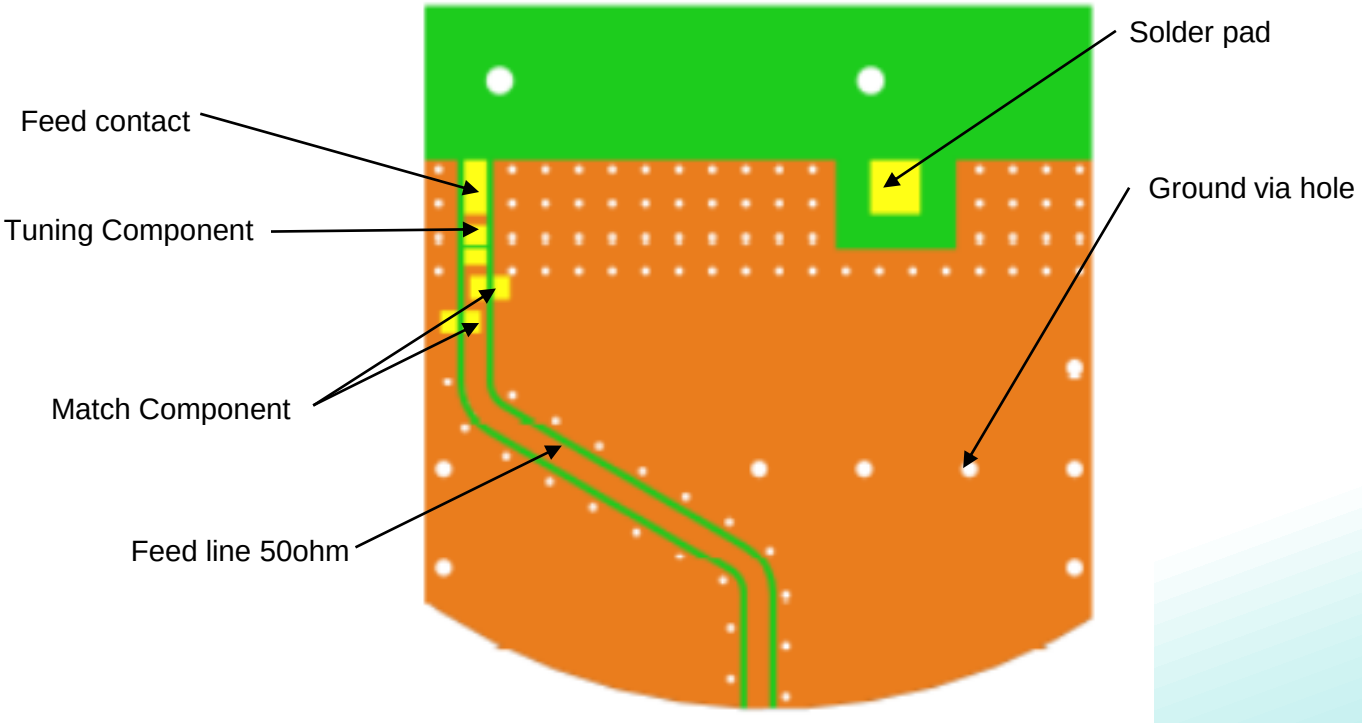
TEST SETUP

PWB Layout for W3136 SMD Helical Antenna





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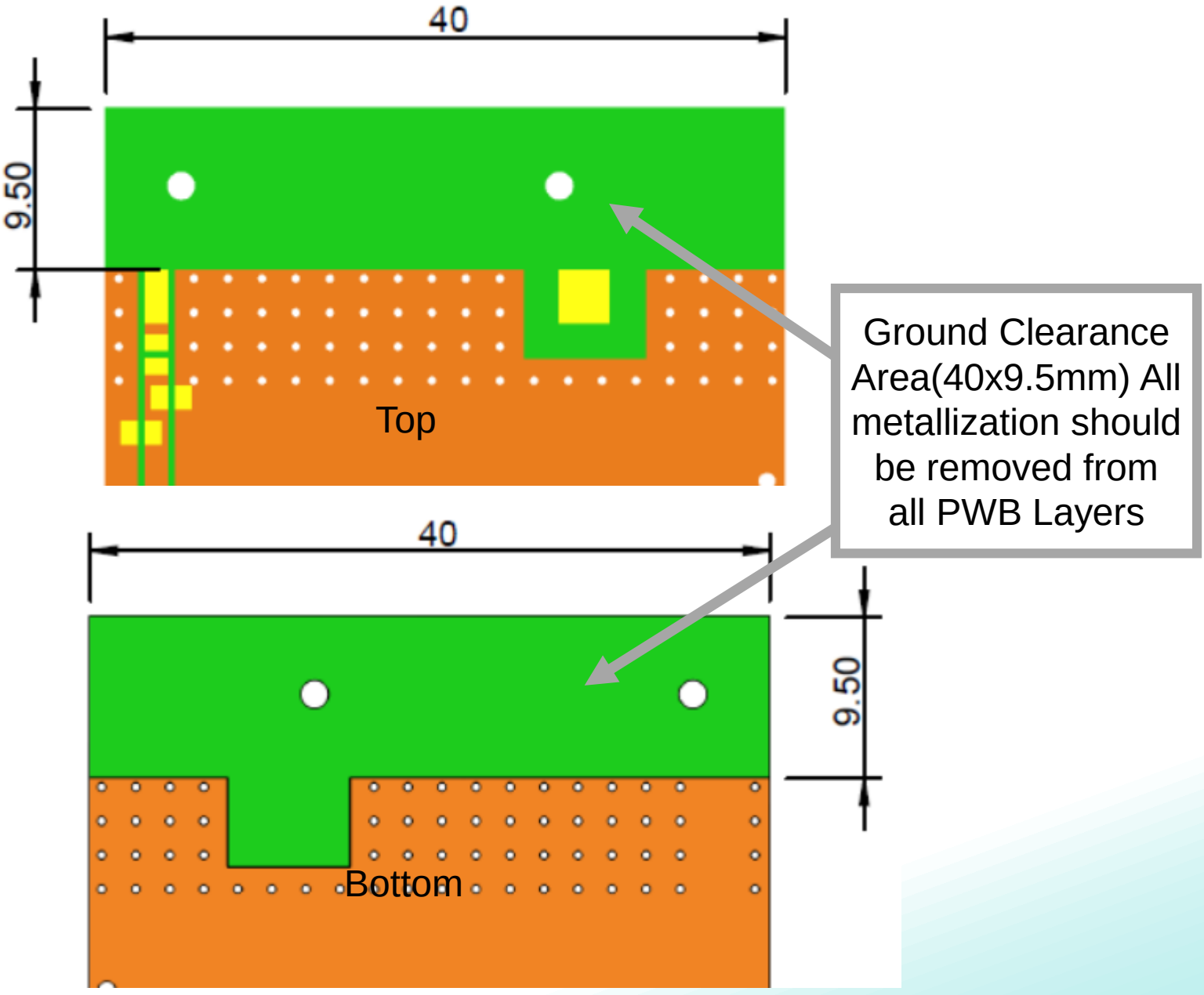
PWB ground clearance area (Top):40x9.5mm
PWB ground clearance area (Bottom):40x9.5mm



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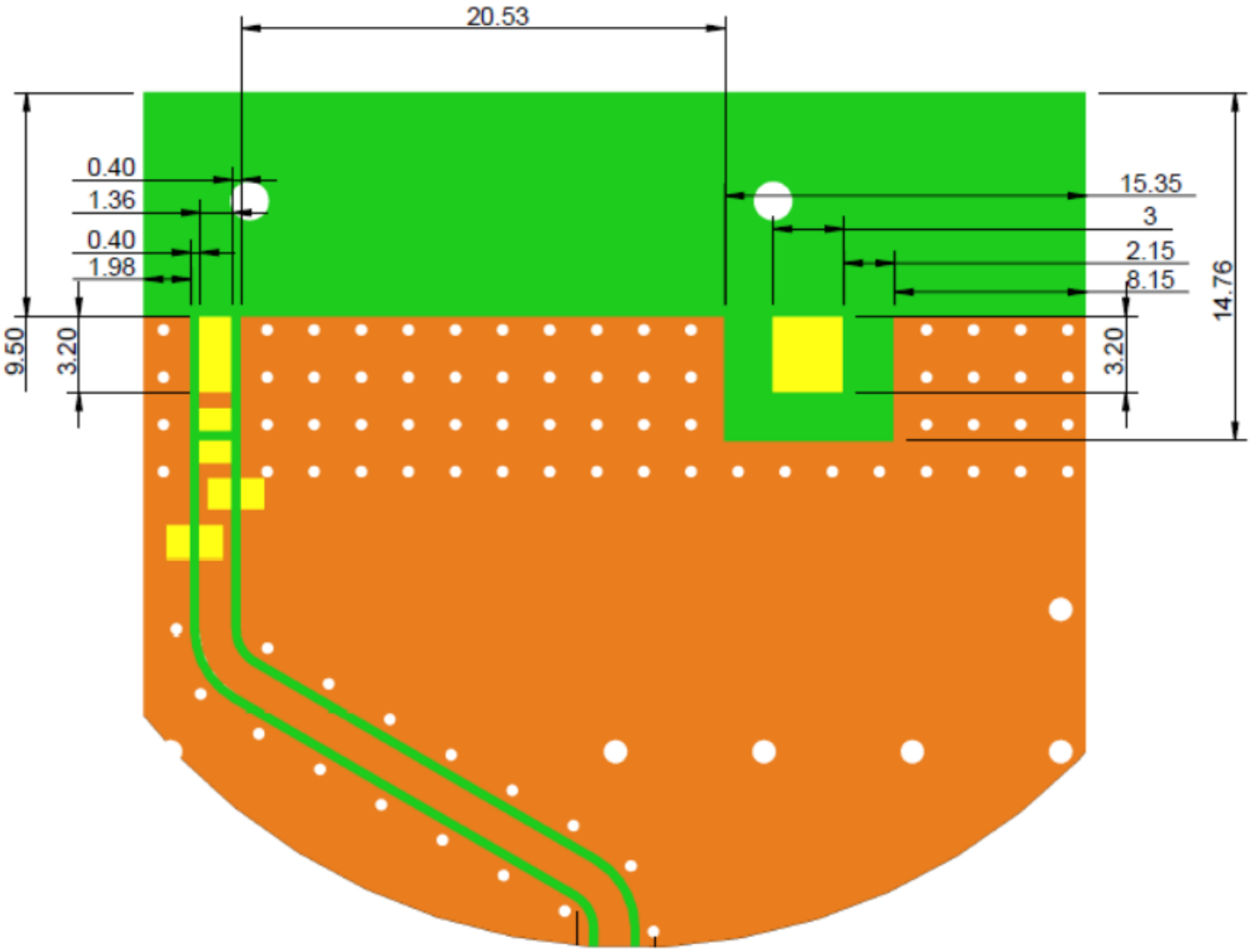
PWB Pad dimension in top copper



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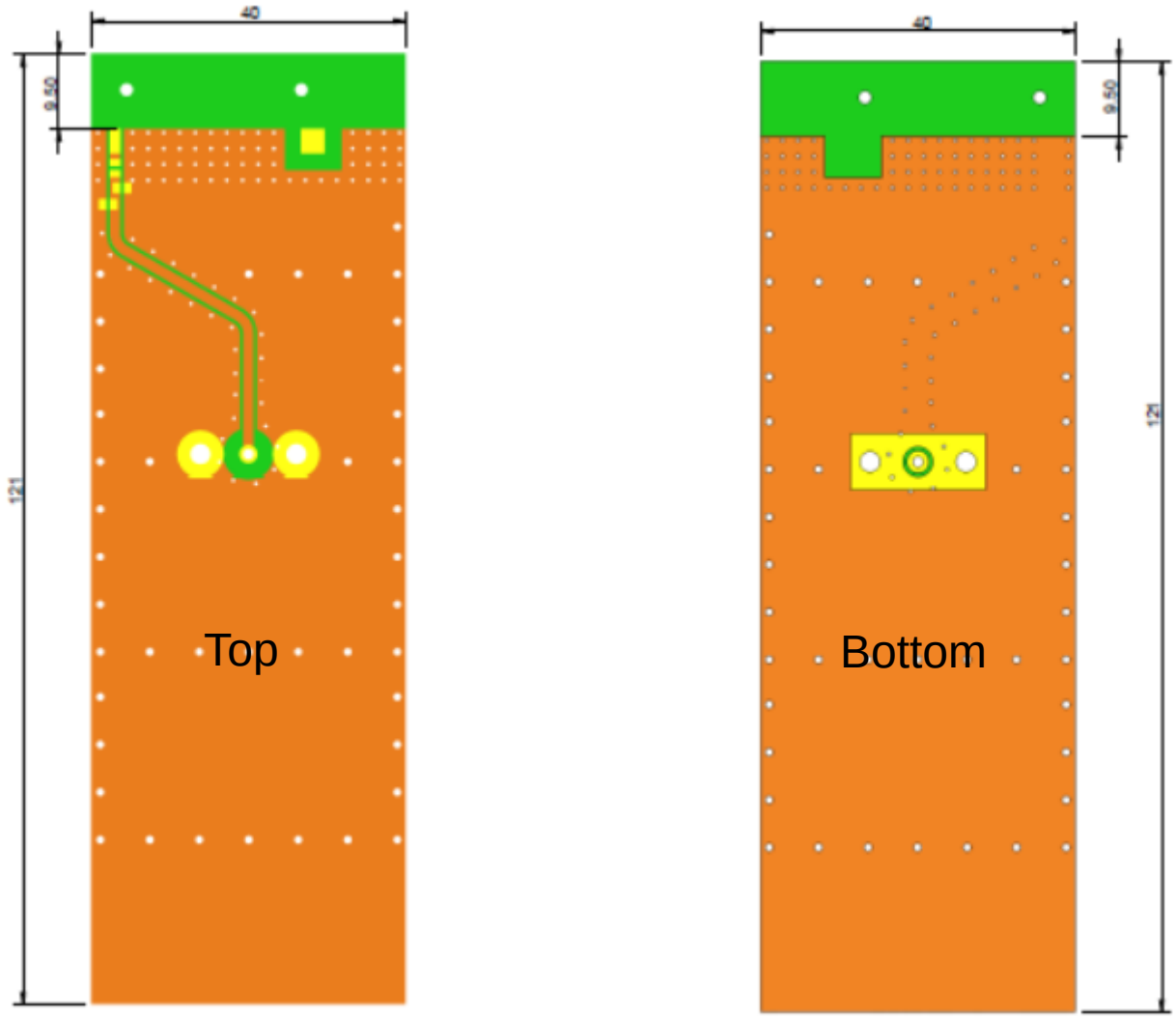
TEST SETUP

PWB Layout, Pulse PWB size:121x40mm, Thickness 1.0mm, other size boards can be used depending on customer size.



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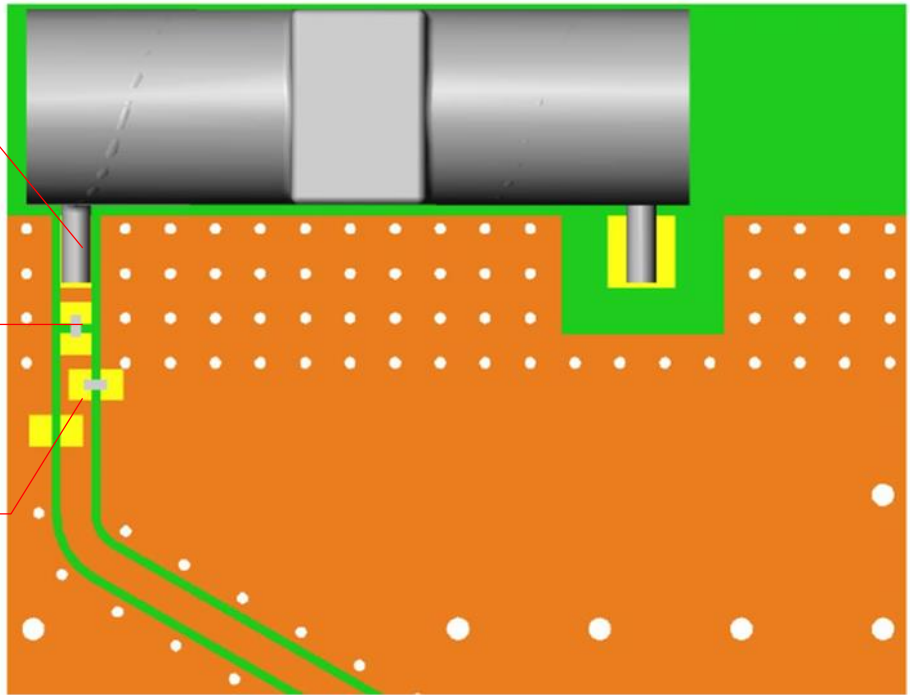
PWB Layout, Pulse PWB size:121x40mm, Thickness 1.0mm, other size boards can be used depending on customer size.

Antenna feed point

Capacitance for S11 matching , 3.6pF, series

Inductance for S11 matching , 8.2nH, shunt



Note : Exact matching and tuning components value depend on application , board size ,cover etc.

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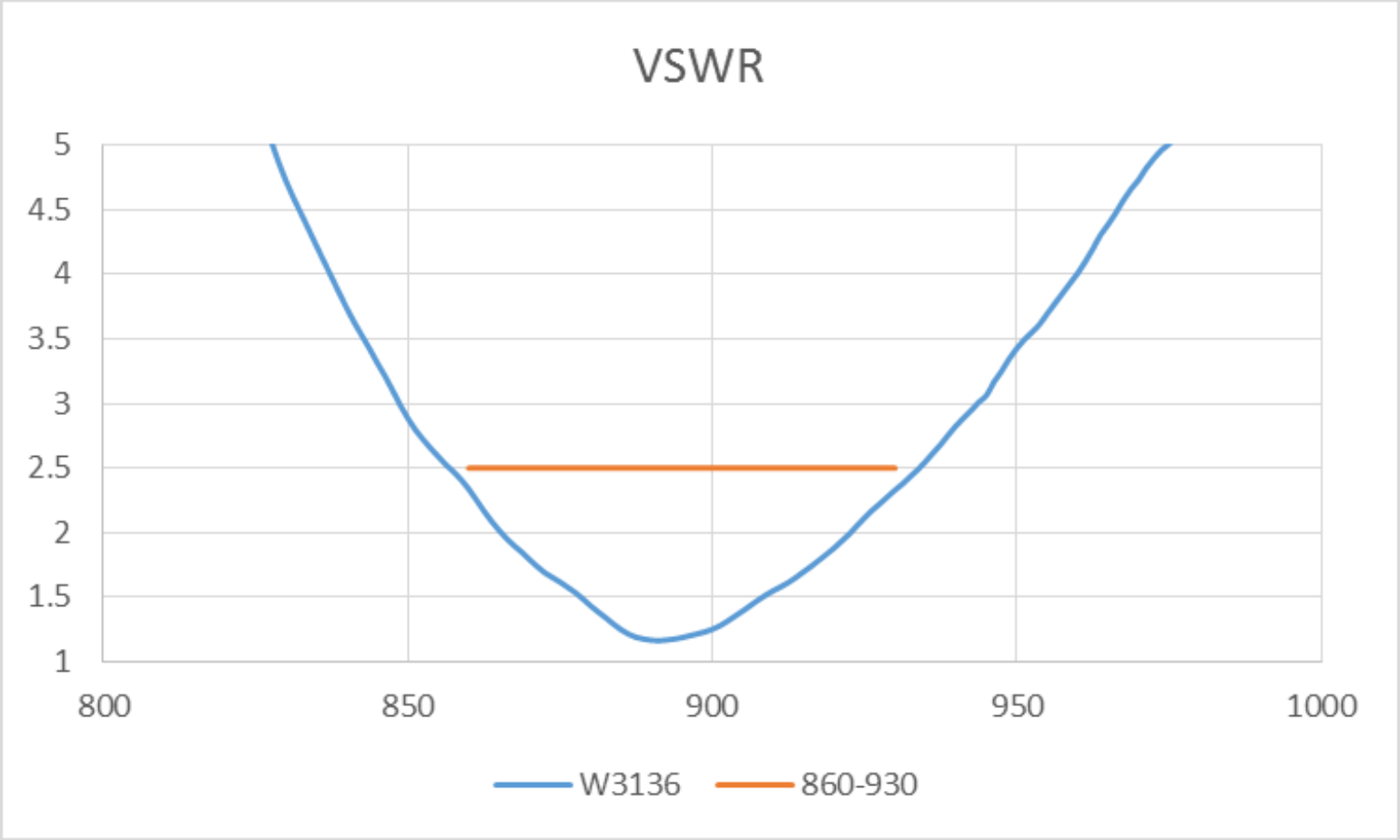
CHARTS

Measured on the 121x40mm test board with tuning and matching circuit



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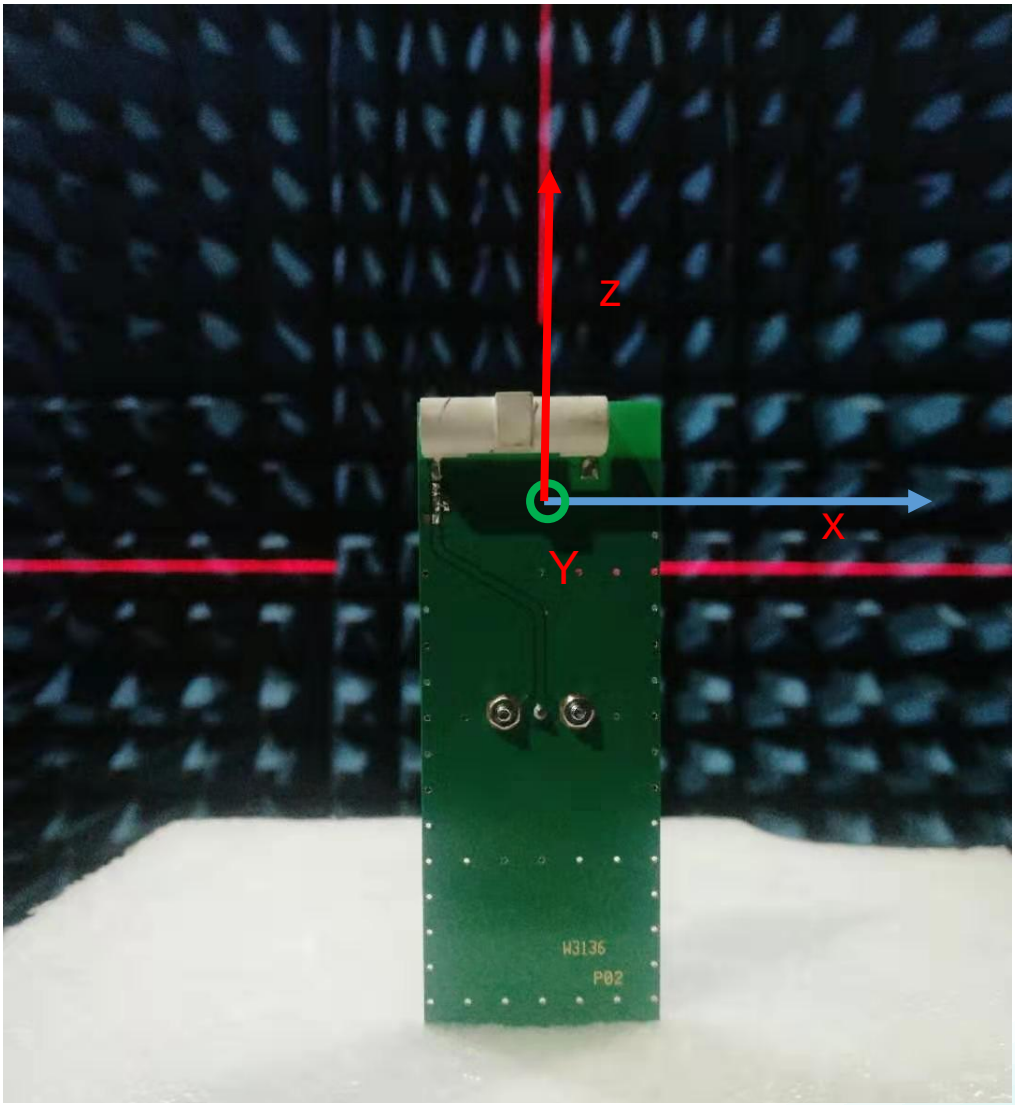
Measured on the 121x40mm test board with tuning and matching circuit.
Test in PSU China Chamber.



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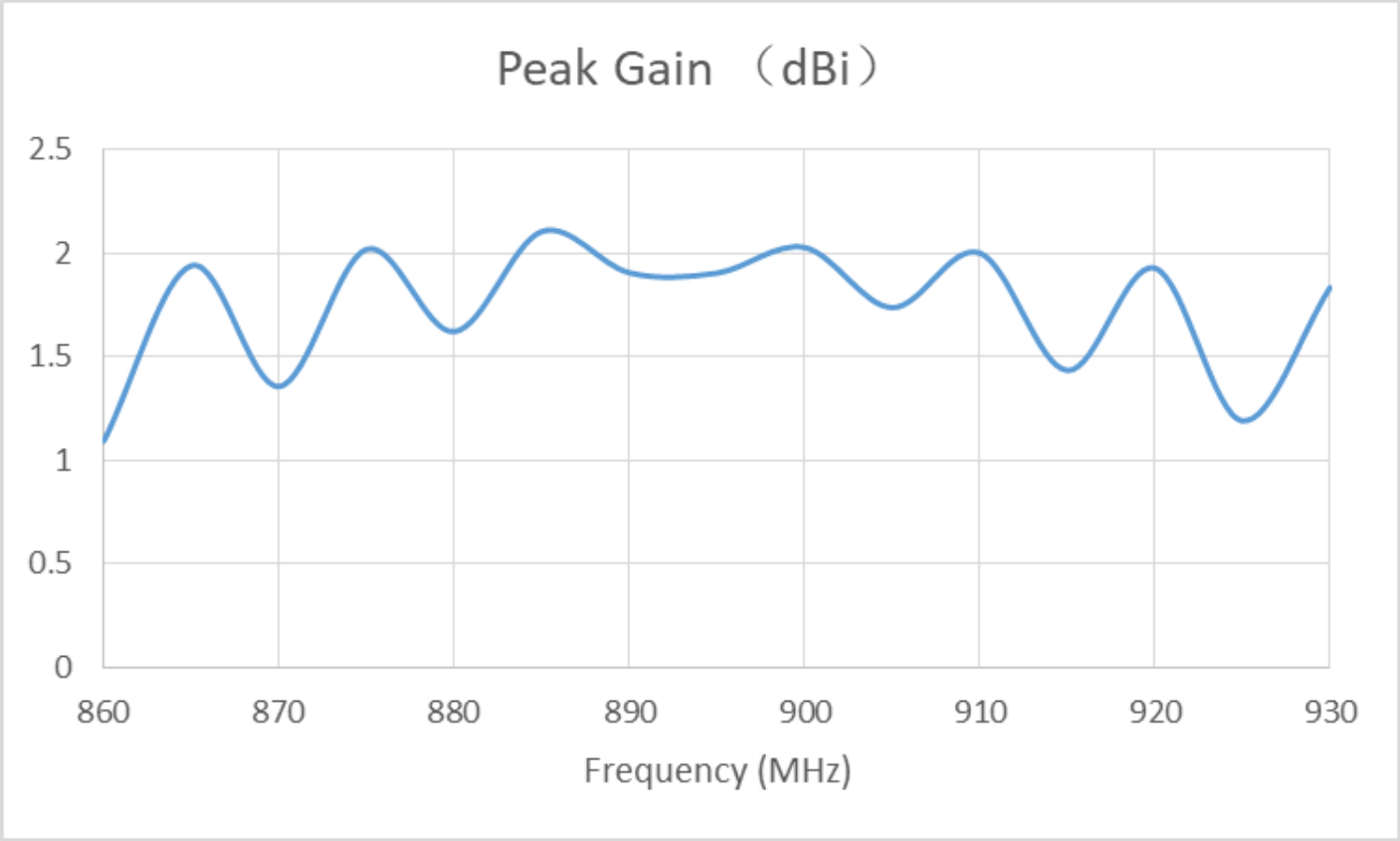

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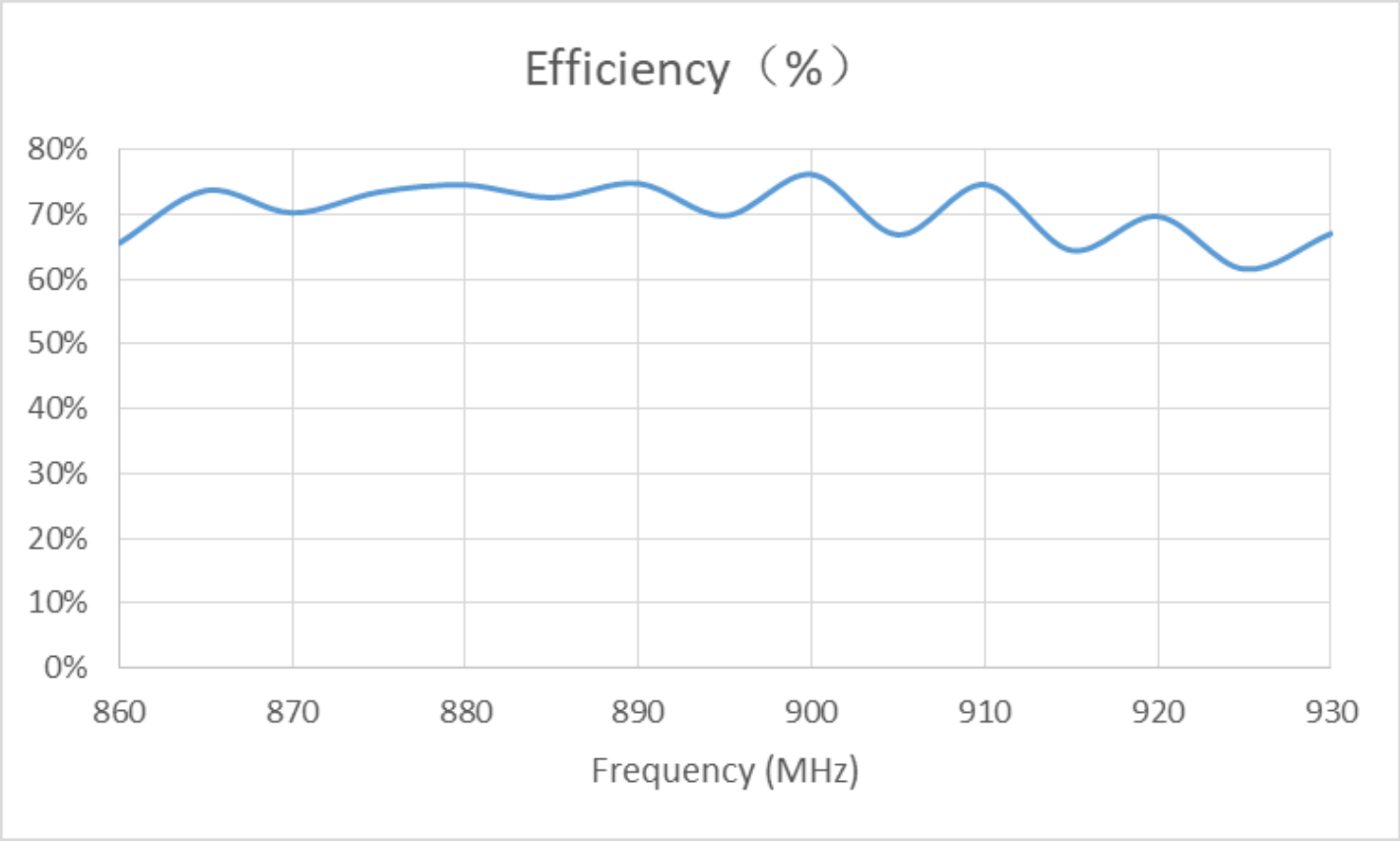

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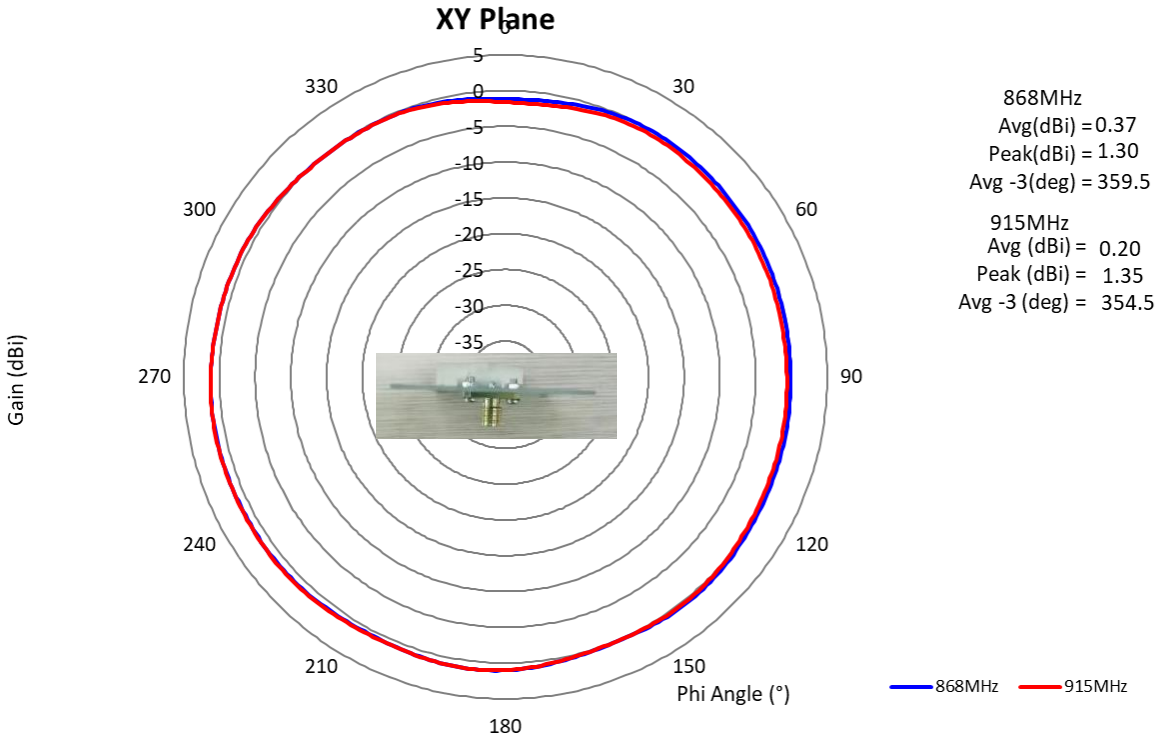
CHARTS

Typical radiation pattern in free space



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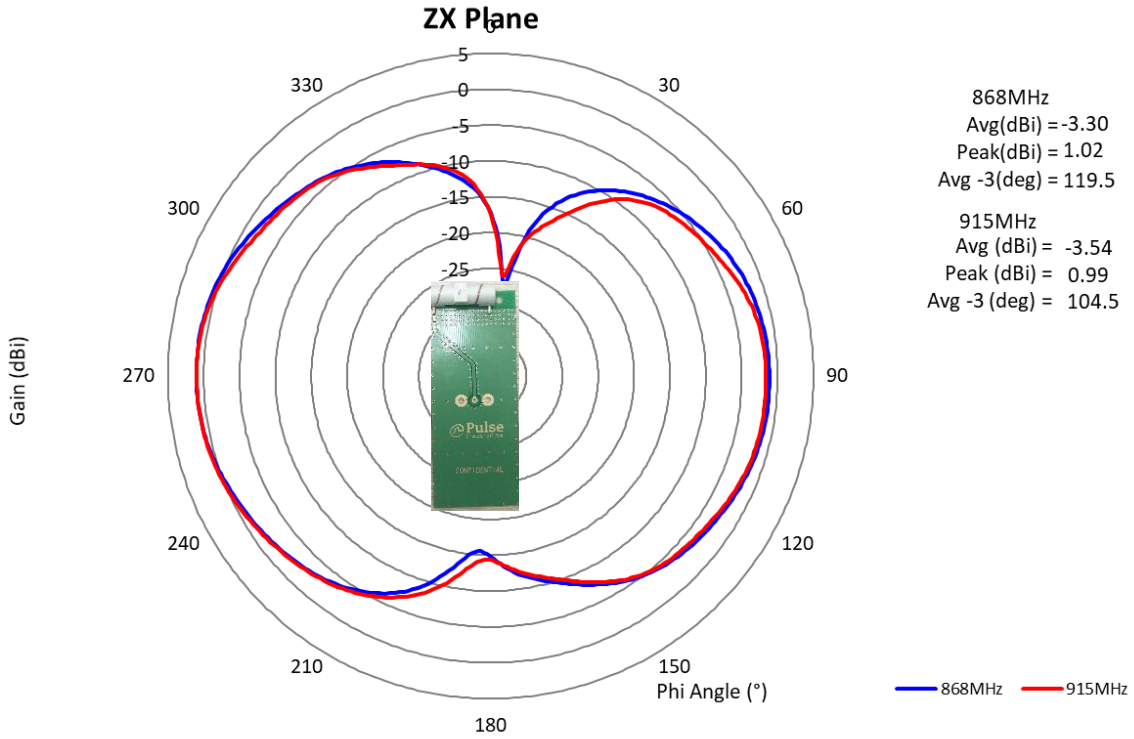

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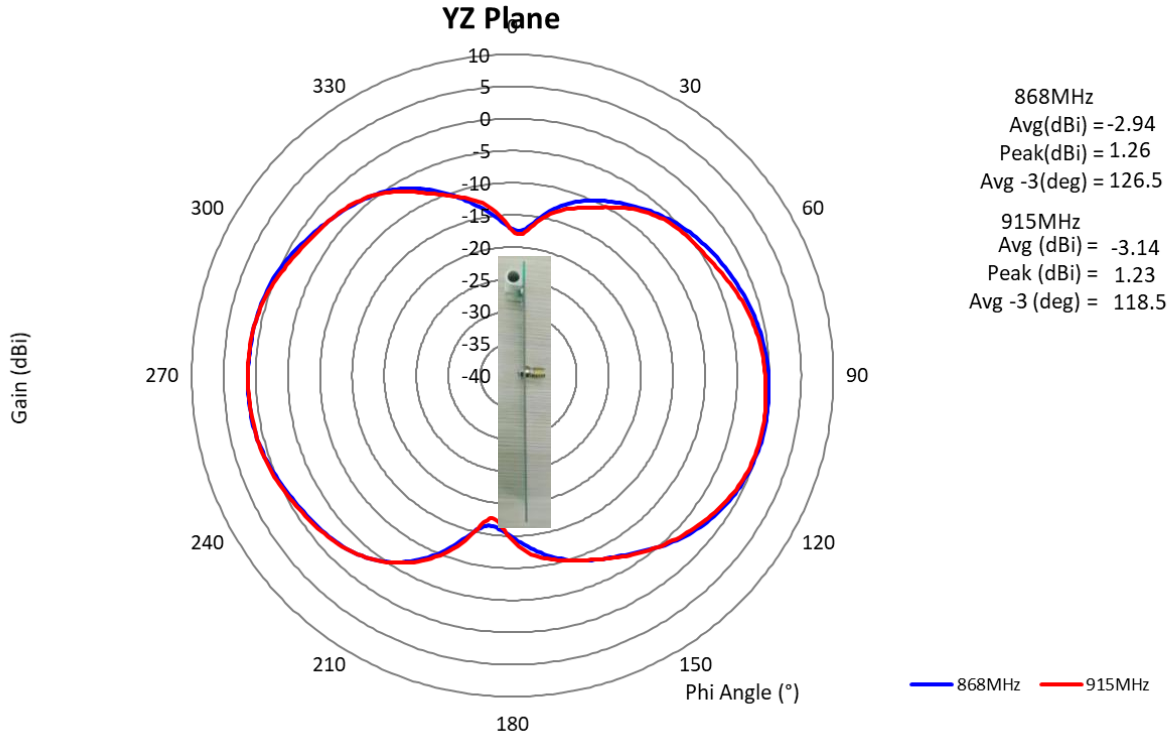

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Recommendation for reflow soldering process

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

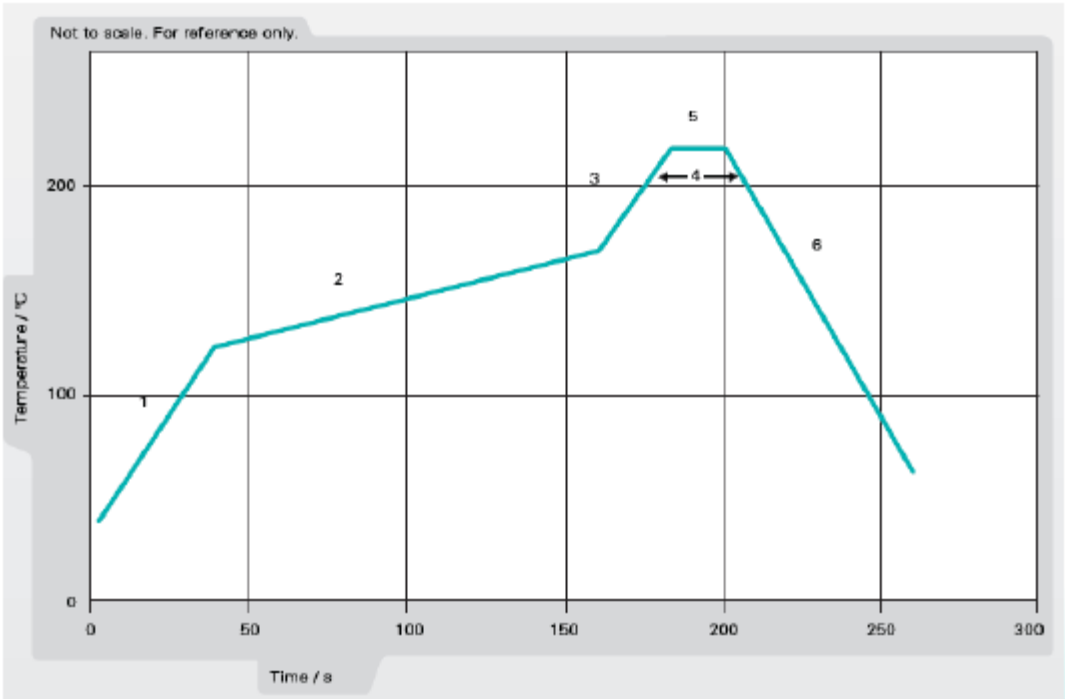

Figure 1. Minimum temperature profile recommendation for reflow soldering process

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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 60 sec
5	Time above 230 °C	Max 50 sec
6	Time above 250 °C	Max 10 sec
7	Peak temperature in reflow	260 °C for 5 seconds
8	Temperature gradient in cooling	Max -5 °C/s

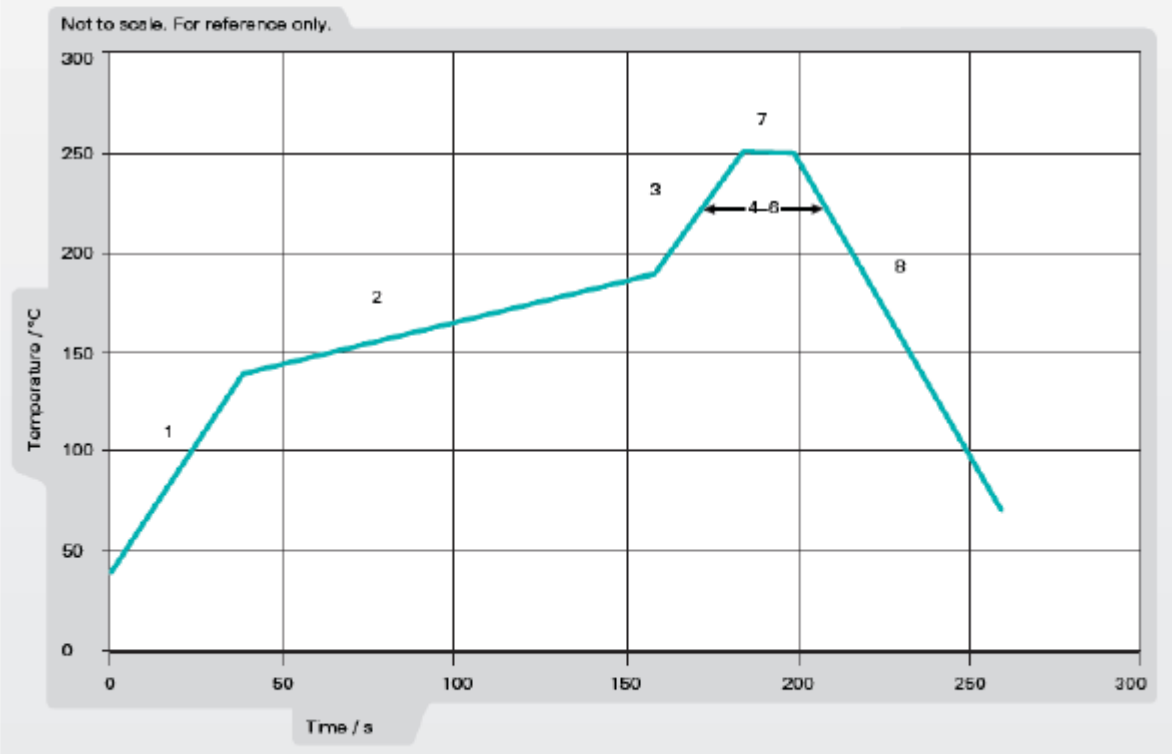

Figure 2. Maximum temperature profile recommendation for reflow soldering process