

**Series: SMD Helical Antenna**

**Description:** 860-930MHz Embedded 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

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### ELECTRICAL SPECIFICATIONS

|                    |                  |
|--------------------|------------------|
| Antenna Type       | Helical monopole |
| Frequency          | 860-930MHz       |
| Nominal Impedance  | 50 Ω             |
| VSWR               | Max 2.5          |
| Radiation Pattern  | Omn              |
| 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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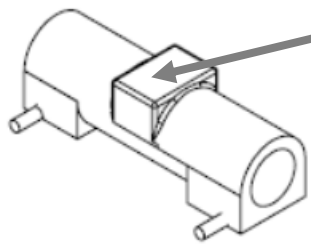
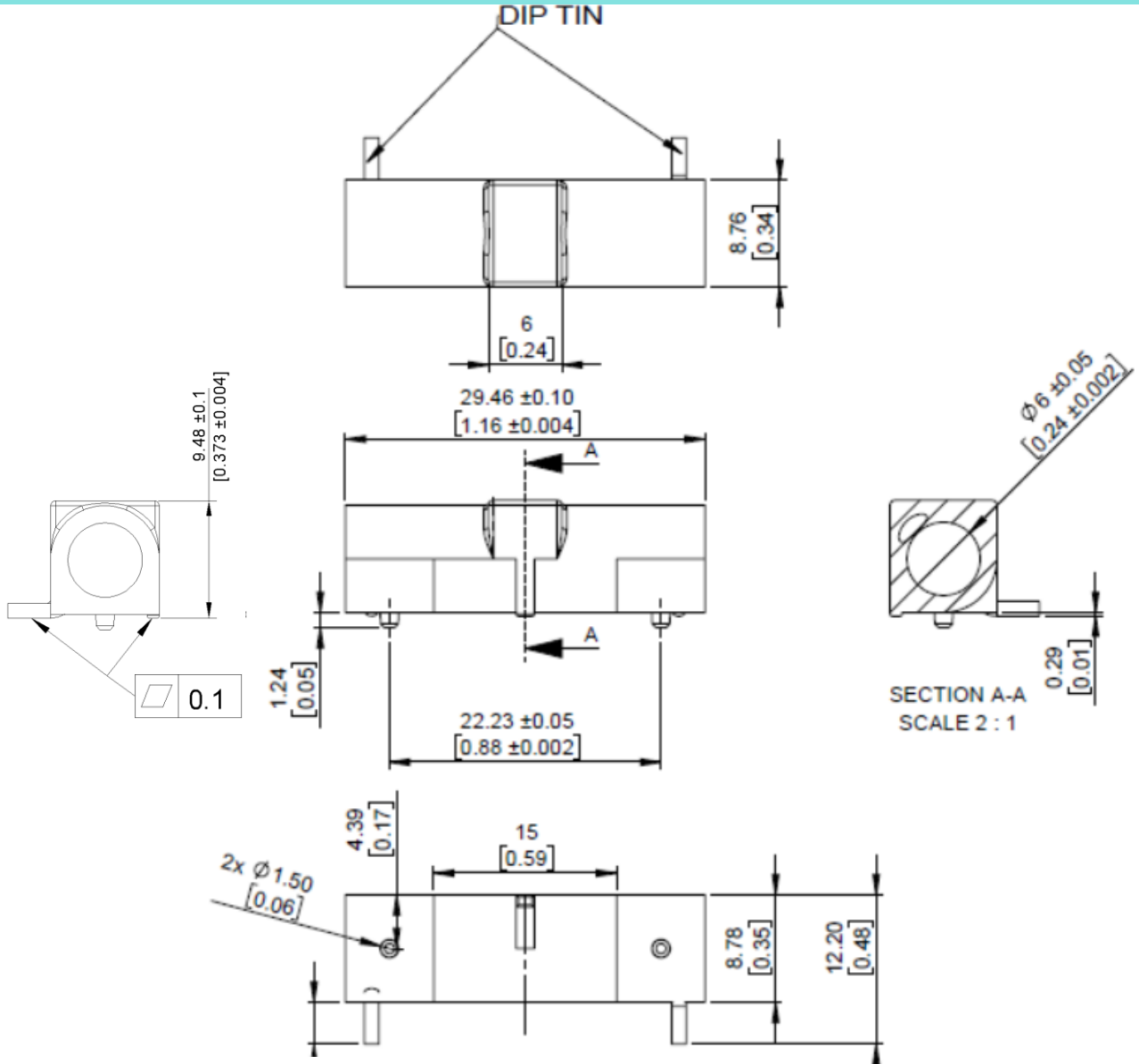
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**MECHANICAL DRAWING**



**Suction Pick Area**

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.



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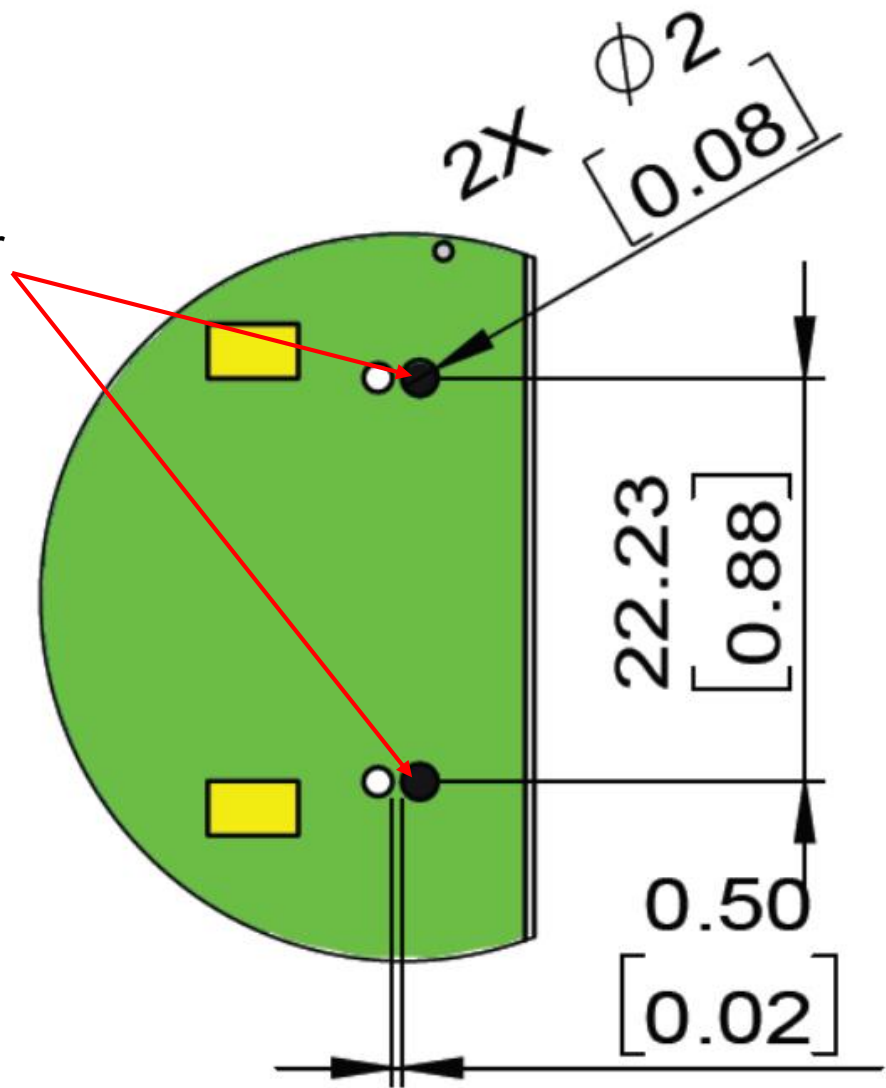
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**FIX SYSTEM RECOMMENDATION**

Fix system

1. Glue position on PCB for recommendation

Glue position on PCB for recommendation



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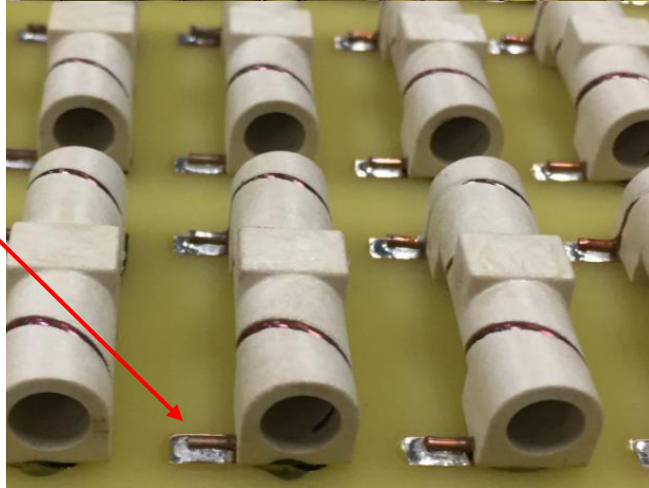
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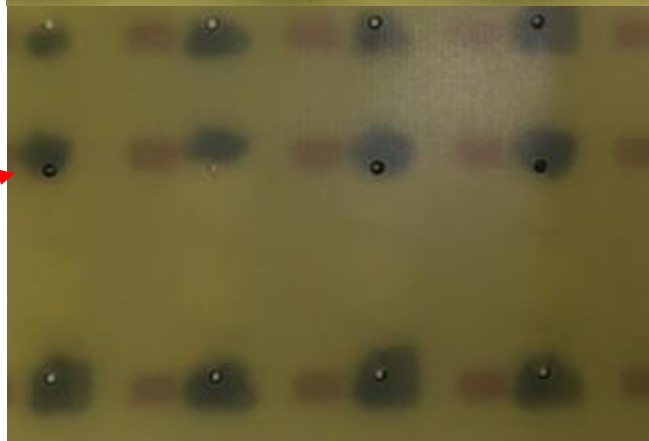
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**FIX SYSTEM RECOMMENDATION**

Solder effect



Back view of glue area



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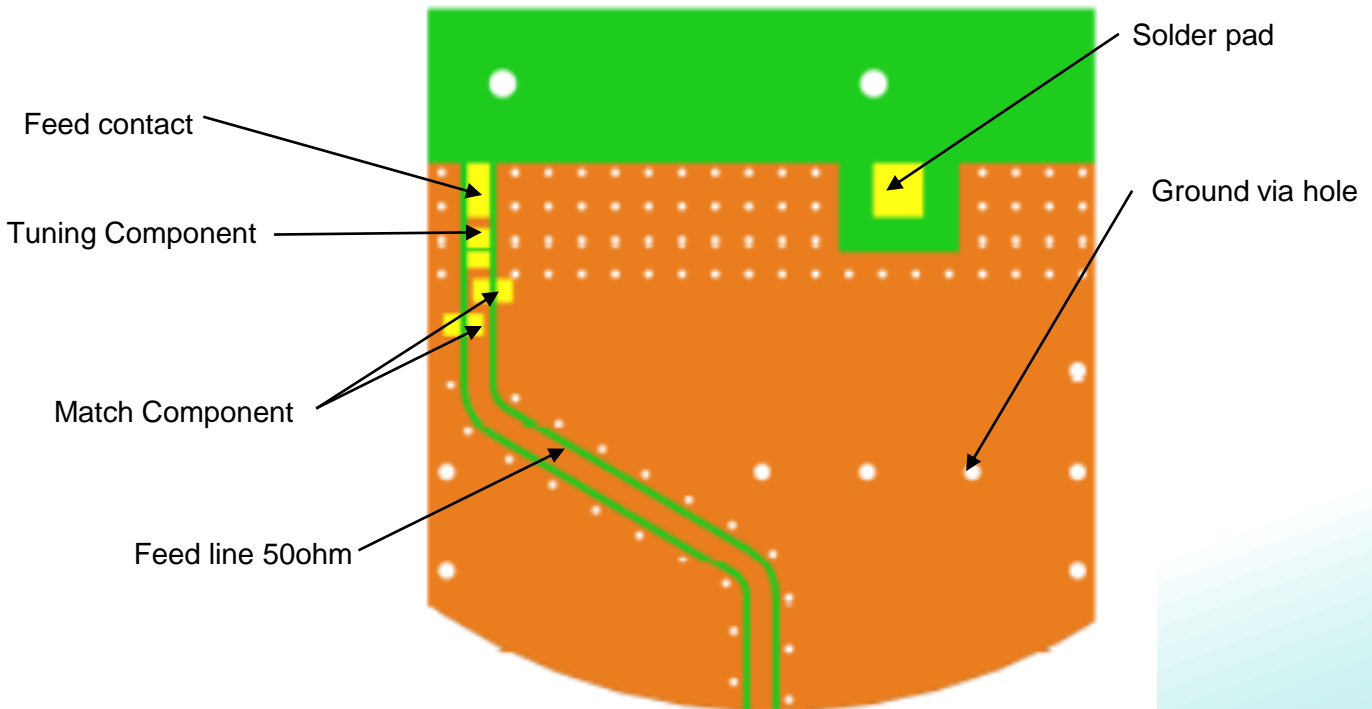
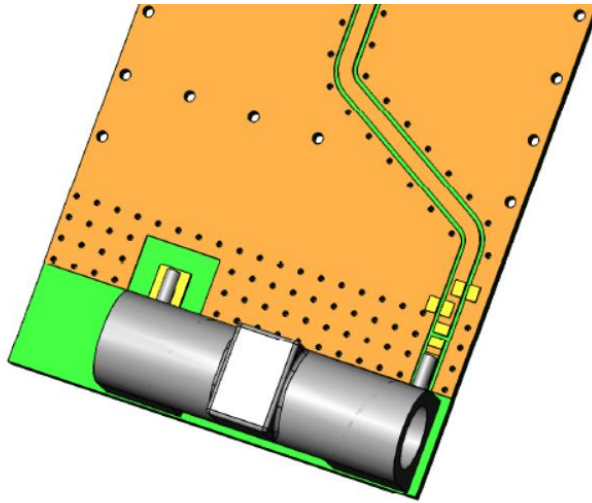
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TEST SETUP

PWB Layout for W3136 SMD Helical Antenna



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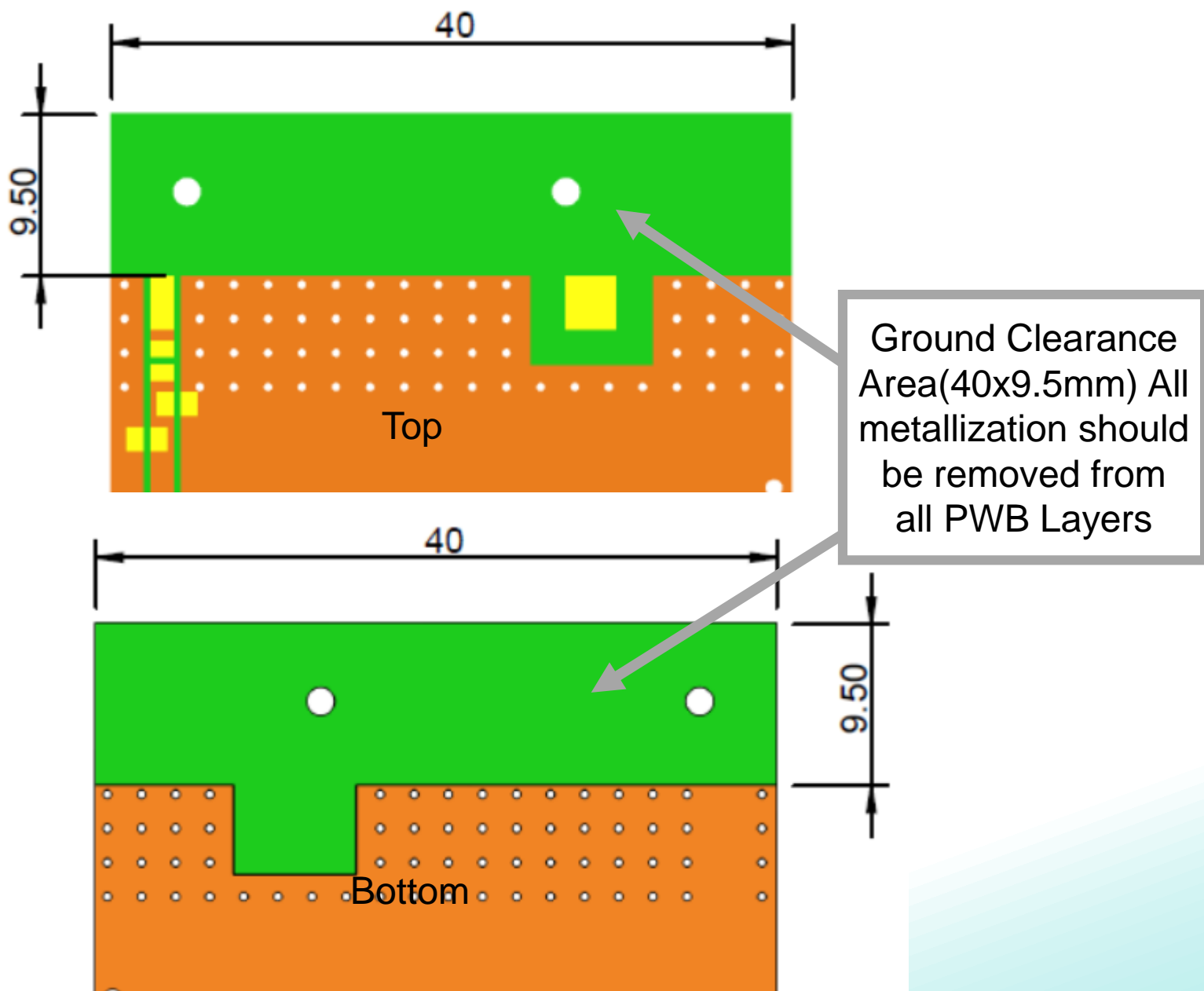
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TEST SETUP

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



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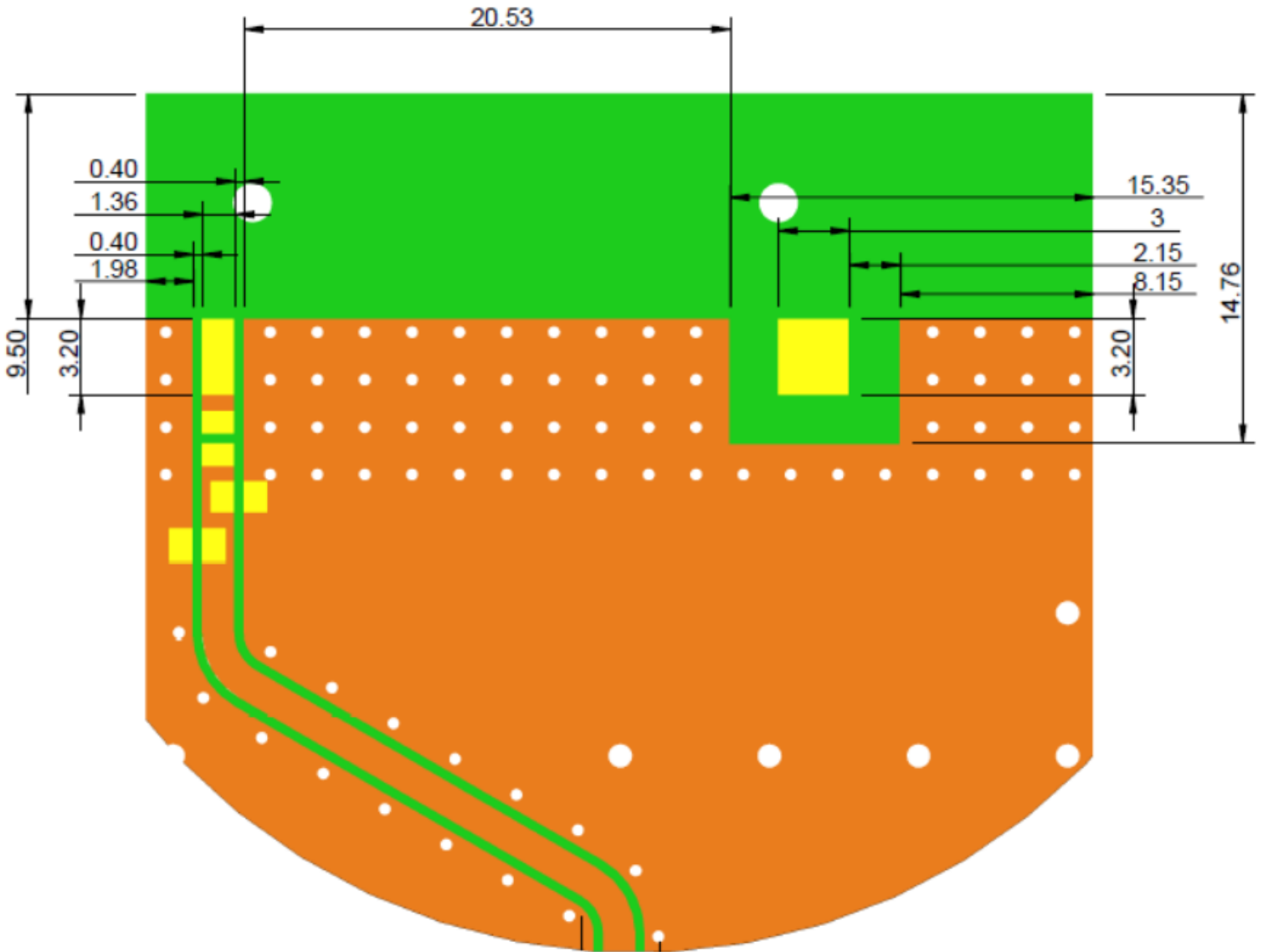
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TEST SETUP

PWB Pad dimension in top copper



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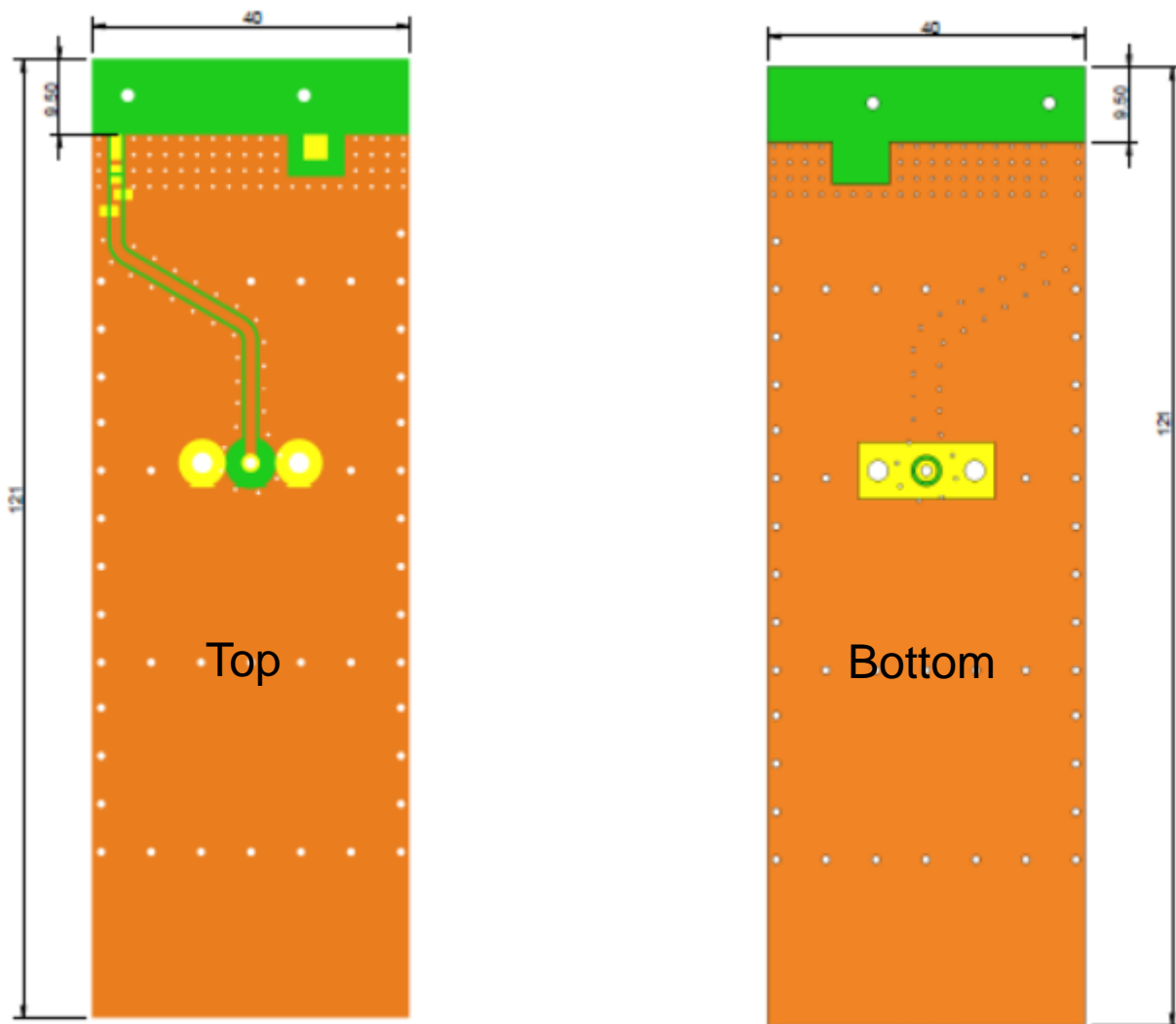
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**TEST SETUP**

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



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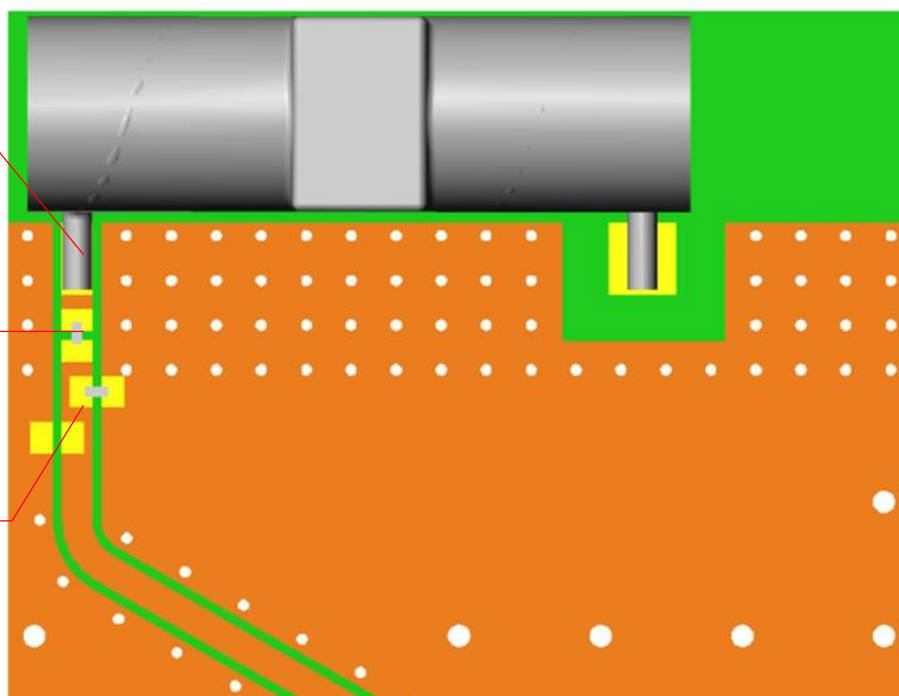
### TEST SETUP

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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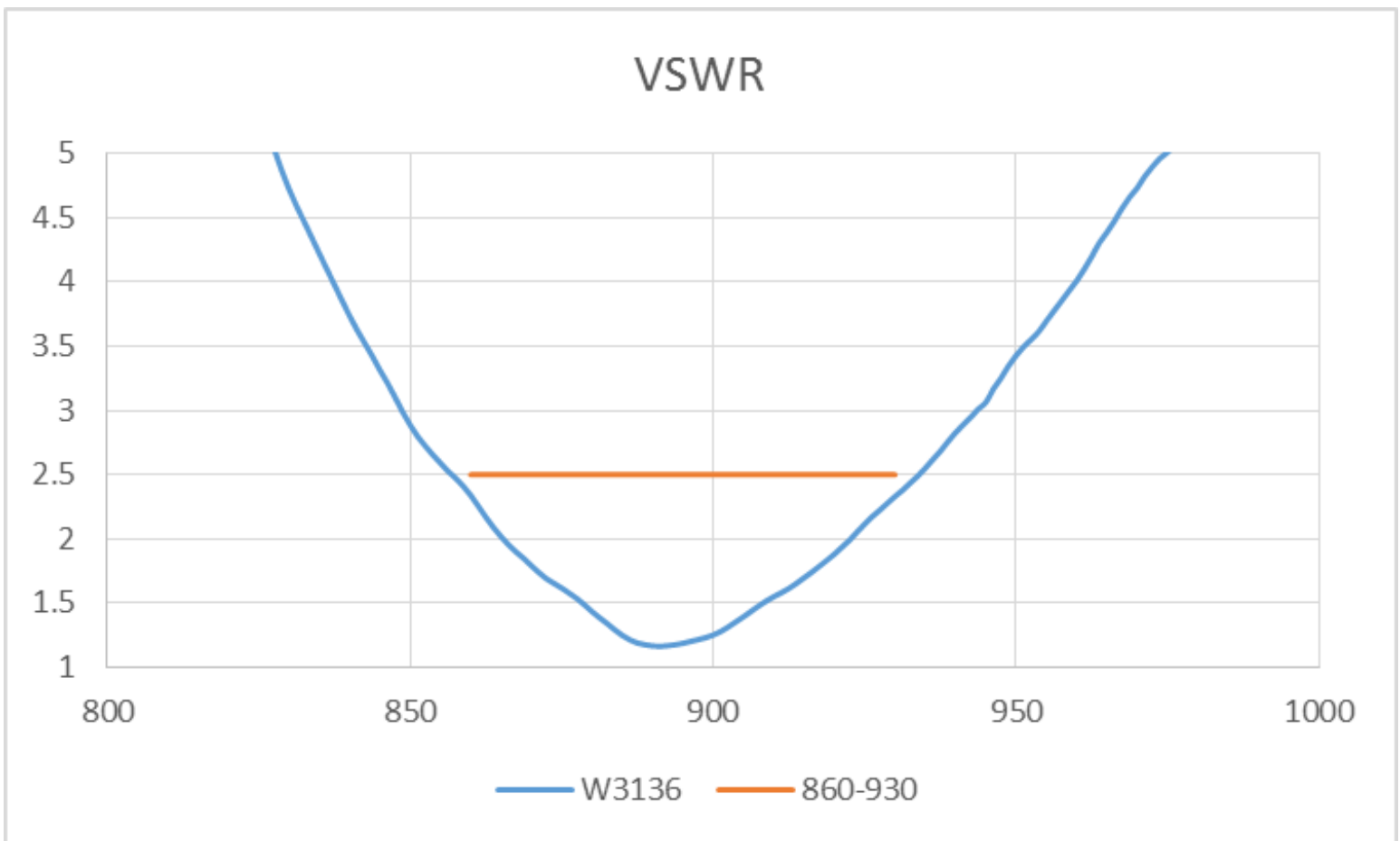
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CHARTS

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



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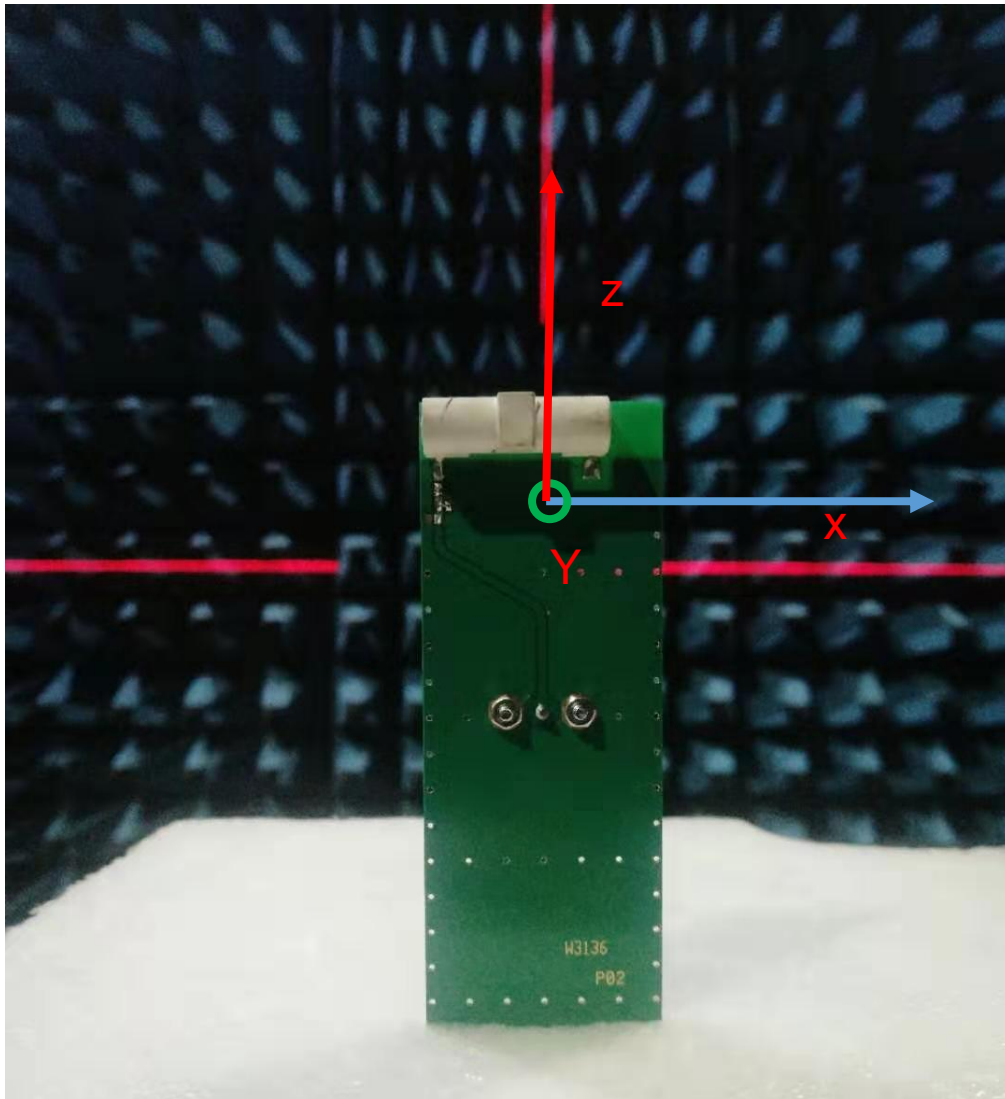
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### TEST SETUP

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

Test in PSU China Chamber.



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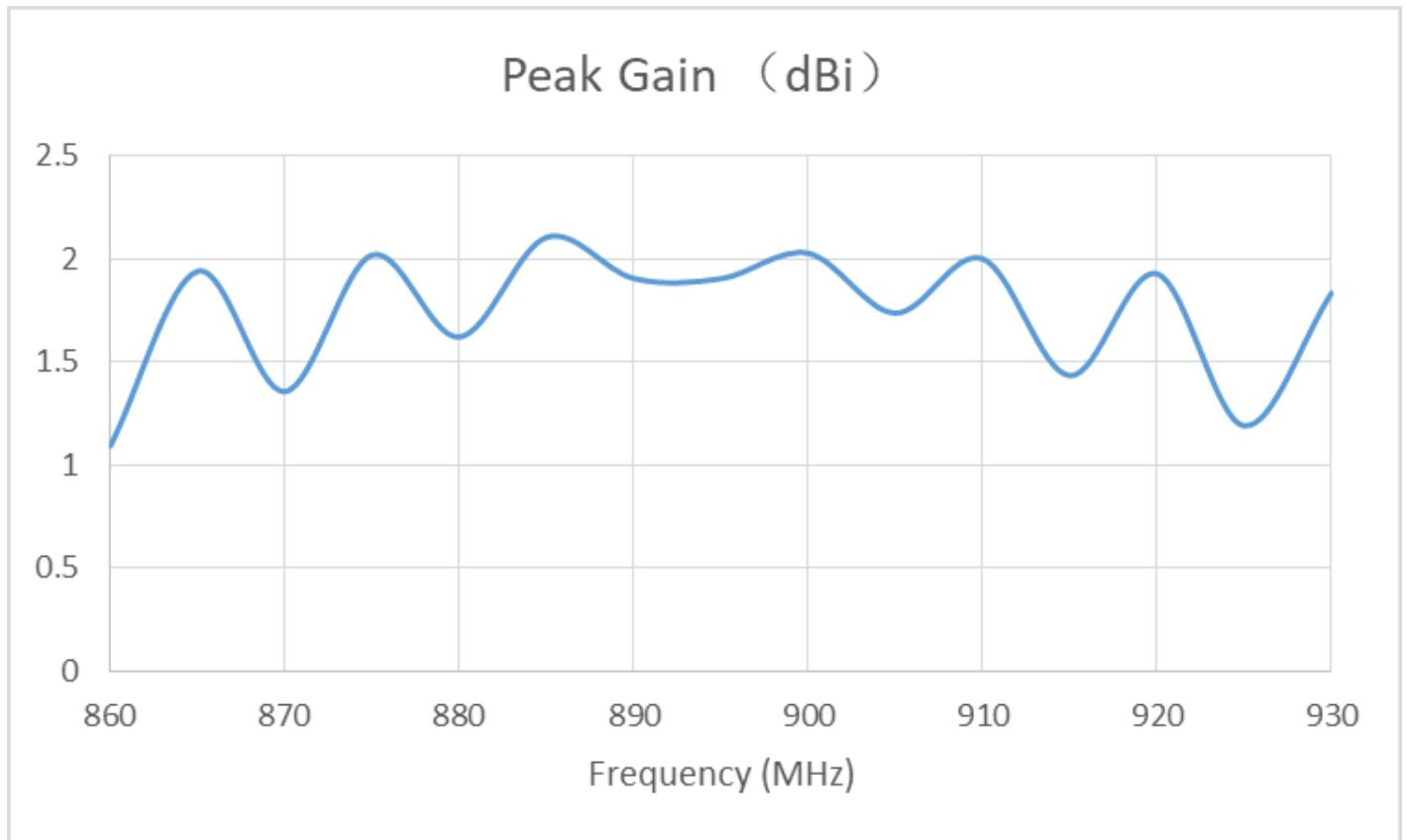
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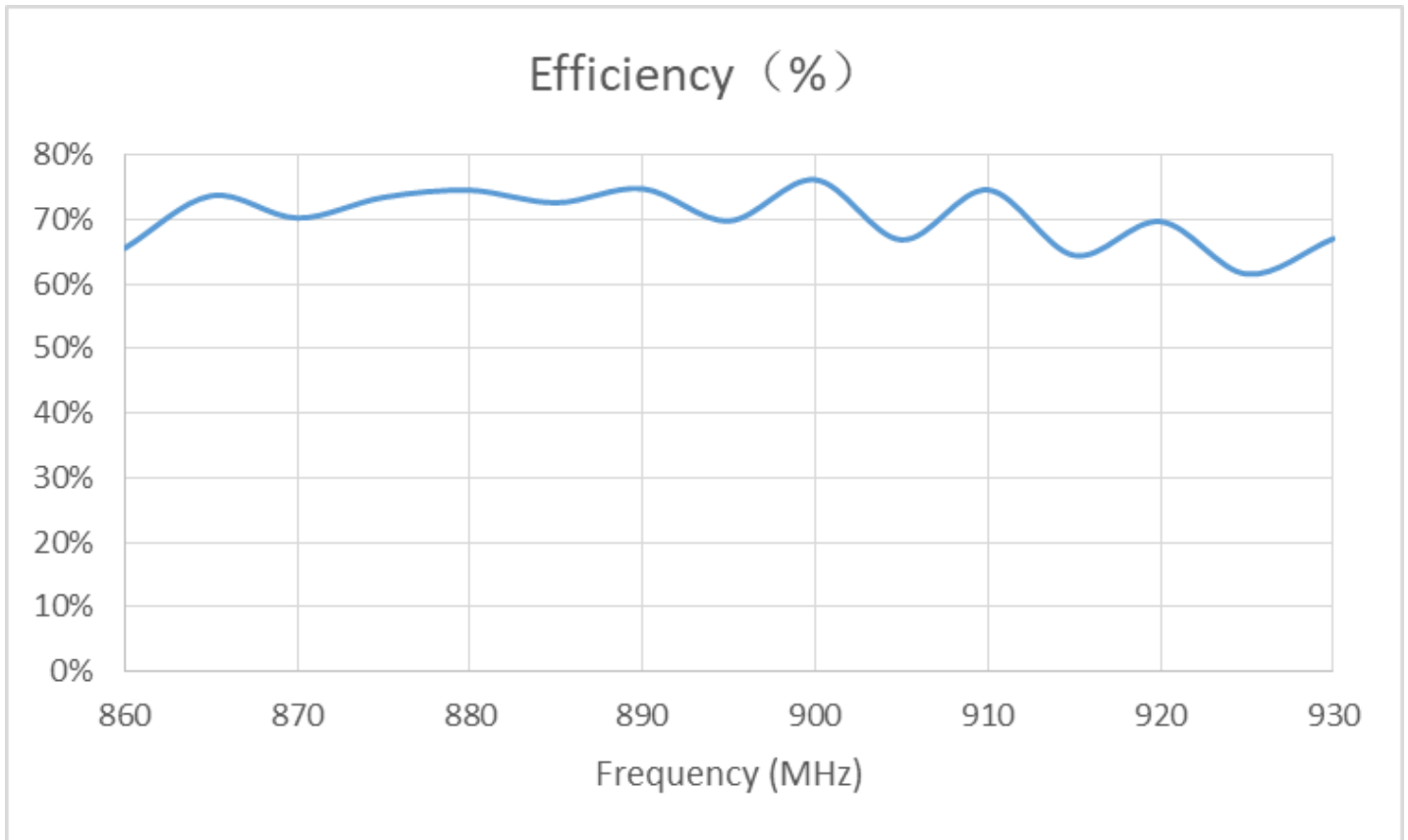


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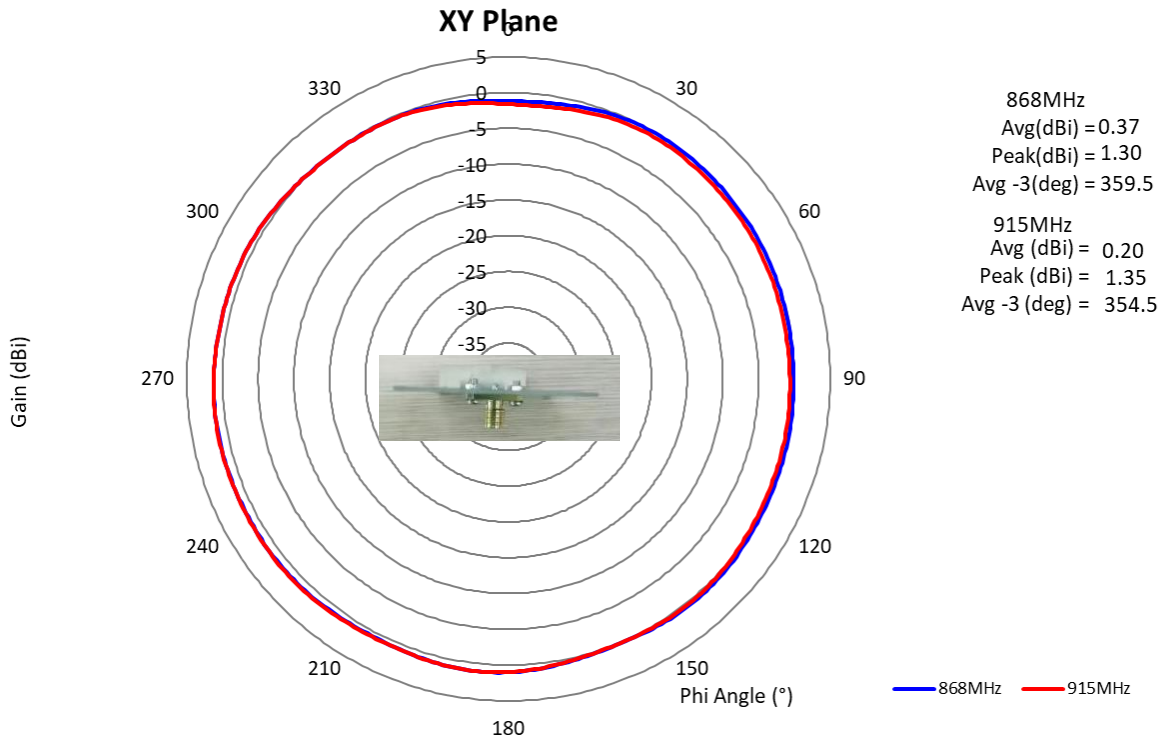
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CHARTS

Typical radiation pattern in free space



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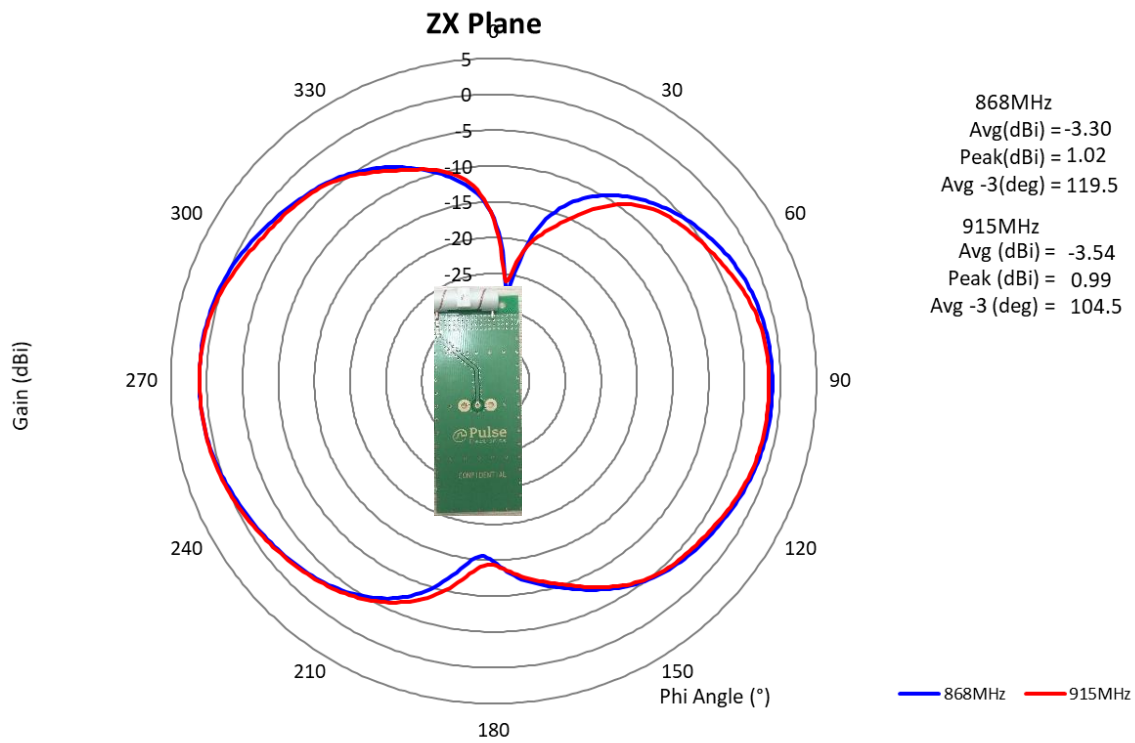
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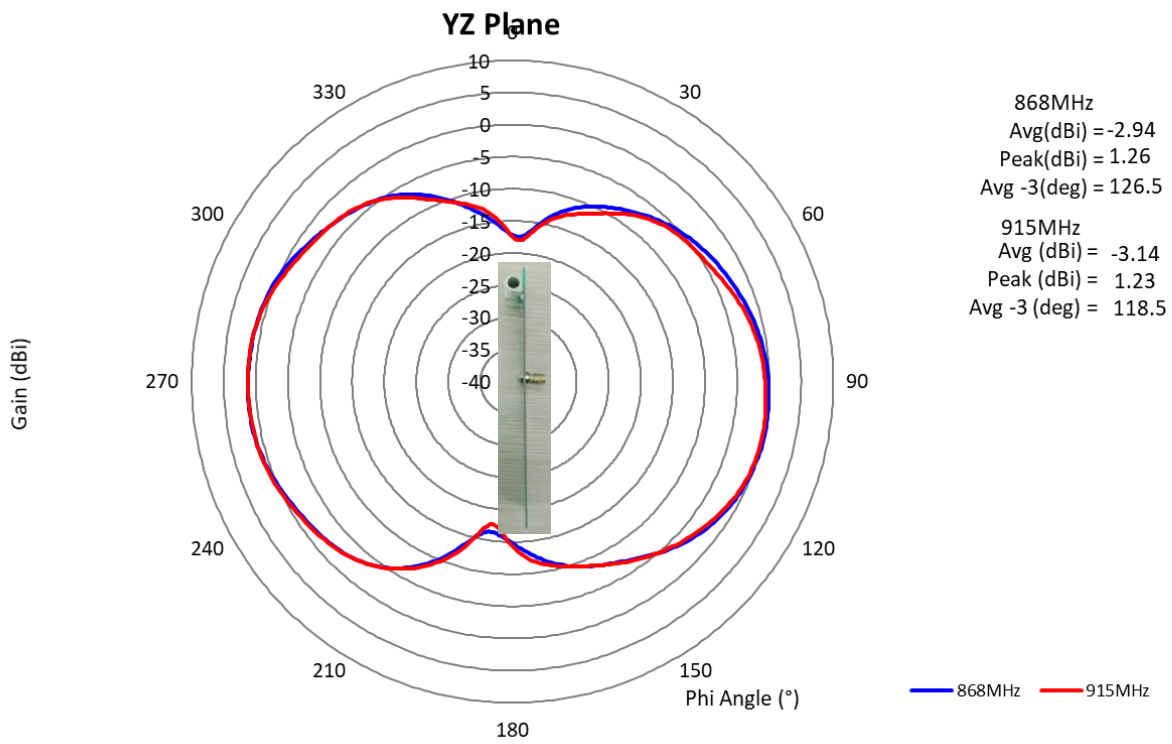
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**Recommendation for reflow soldering process**

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                   |

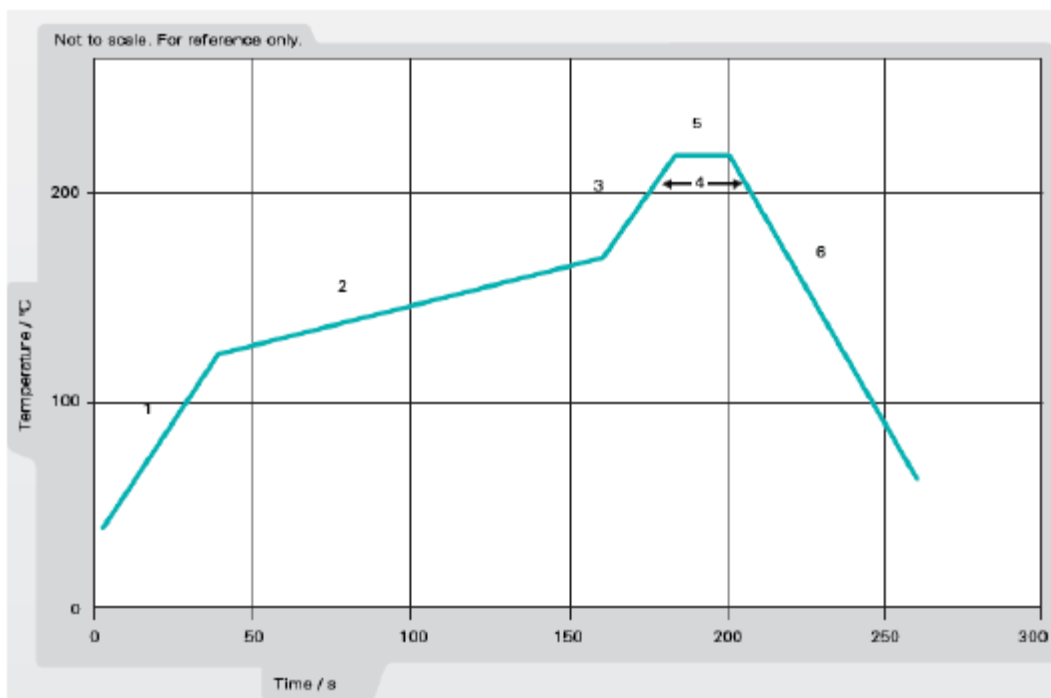
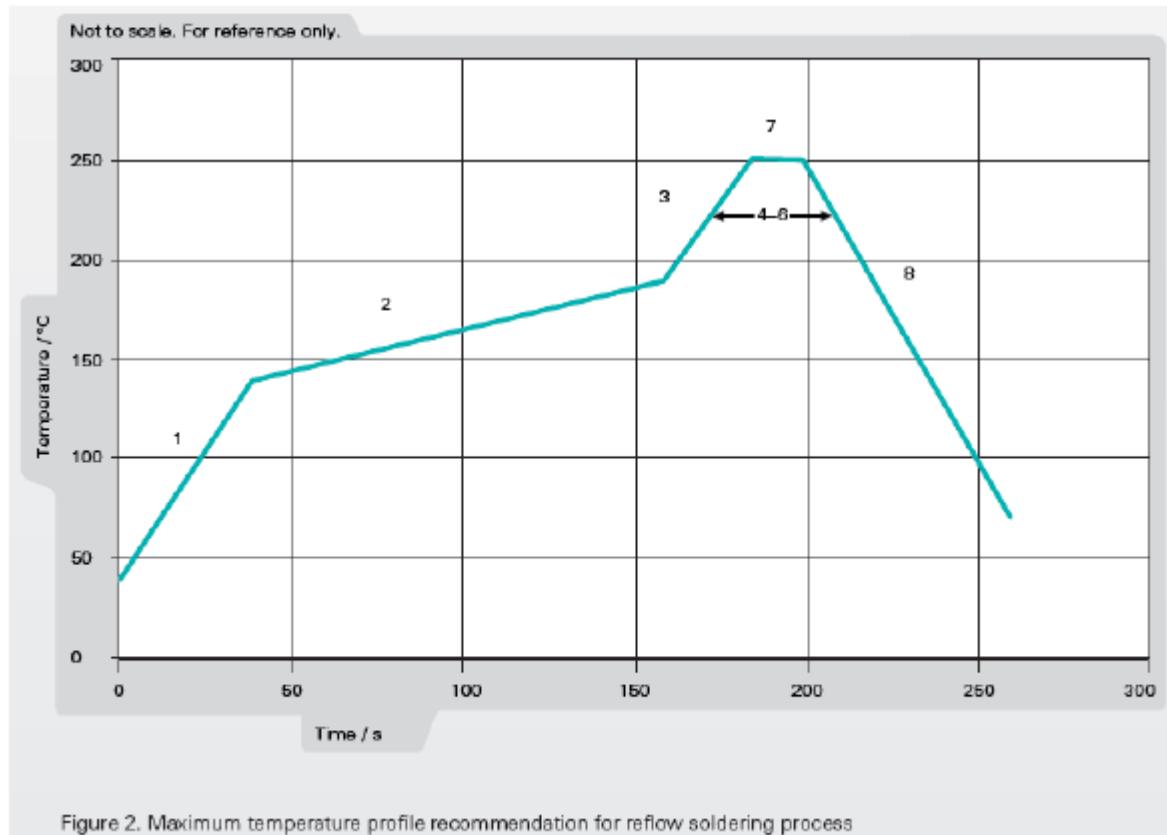


Figure 1. Minimum temperature profile recommendation for reflow soldering process

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**Recommendation for reflow soldering process**

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



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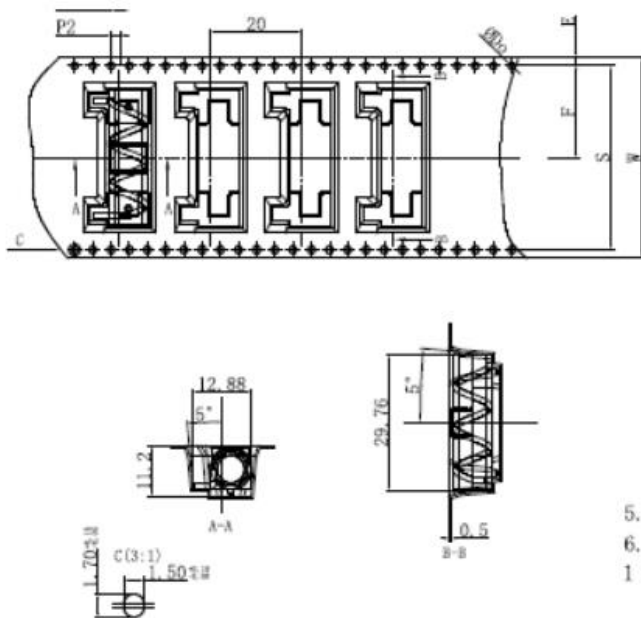
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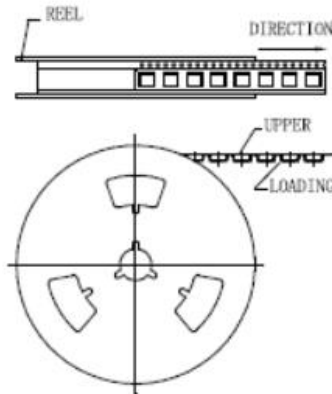


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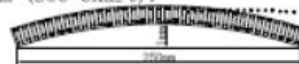
**PACKAGING**



REFERENCE VIEW



- 5. All the size design with reference to the EIA - 481 - C - 2003.
- 6. Loading within 250 mm length maximum curvature is less than 1 mm (see chart).



Notes:

- 1. 10 side hole of the cumulative tolerance cannot be more than + / - 0.2 mm.
- 2. Material specifications: PS black antistatic, thickness of 0.50 mm.
- 3. 13 inches (100) axis reel package length: 4.6 m. (the front air bag length: 0.33 m, parts packing length: 4 m, after a period of empty packet length: 0.33 meters).
- 4. 13 inches (100) axis reel packaging components to the total number of stars: 230. (the front air bag star count: 15, actual packing parts the number: 200, after a period of empty bag star count: 15).

| Manufacture Data |        |
|------------------|--------|
| Total PCS        | 230PCS |
| Reel             | 13"/44 |
| Package Qty      | 200PCS |

**Total 200 PCS In Reel**  
**Reel Size: 330MM[13INCH]**  
**Total 2 PCS Reel In Package Box**  
**Package Box Size:350x350x120mm**

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