

## Contents

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**1. Antenna Gain:**

|           | Gain_BT ANT                                                                                | Gain_WIFI1 ANT                                                                                         | Gain_WIFI2 ANT                                                                                         |
|-----------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
|           | Frequency range of operation:<br>2400-2500 MHz<br>Antenna Type:<br>Integral (PIFA Antenna) | Frequency range of operation:<br>2400-2500 & 5150-5850 MHz<br>Antenna Type:<br>Integral (PIFA Antenna) | Frequency range of operation:<br>2400-2500 & 5150-5850 MHz<br>Antenna Type:<br>Integral (PIFA Antenna) |
| Bluetooth | 3.50dBi                                                                                    | n/a                                                                                                    | n/a                                                                                                    |
| WIFI 2.4G | n/a                                                                                        | 3.05dBi                                                                                                | 4.44dBi                                                                                                |
| WIFI 5.2G | n/a                                                                                        | 4.06dBi                                                                                                | 3.75dBi                                                                                                |
| WIFI 5.8G | n/a                                                                                        | 3.98dbi                                                                                                | 3.82dBi                                                                                                |

The product has one ANT for Bluetooth, two ANT's for WIFI 2.4G/5.2G/5.8G.

## 2. Antenna Datasheet for BT ANT

**WA-M-LB-02-269-B Specification****1. Explanation of part number :**

WA    -    M    -    LB    -    02    -    269    -    B  
 (1)        (2)        (3)        (4)        (5)        (6)

- (1) Product Type: Wireless Antenna  
 (2) Material: Metal + Holder + Cable + Rubber  
 (3) Frequency: 2400-2500MHZ ;  
 (4) Coaxial Cable Type: 02  
 (5) Suffix: 269  
 (6) Vehicle use: Before loading

**2. Operating Condition:**

Temperature                -40    to    +85°C  
 Humidity                    20    to    85% RH

**3. Storage Condition:**

Temperature                -40    to    +85°C  
 Humidity                    20    to    85% RH

Recommended storage condition ( storage period of one year ) :

Store in room condition as listed below: Temperature -20°C~+45°C, Humidity 80% Max

UNLESS OTHER SPECIFIED TOLERANCES ON :

X = ±                    X.X = ±0.15            X.XX = ±0.15

ANGLES = ±                    HOLEDIA = ±

SCALE : /

UNIT : mm

DRAWN BY : 李志强

CHECKED BY : 李志强

DESIGNED BY : 王俐

APPROVED BY : 唐龙

TITLE : WA-M-LB-02-269-B Specification



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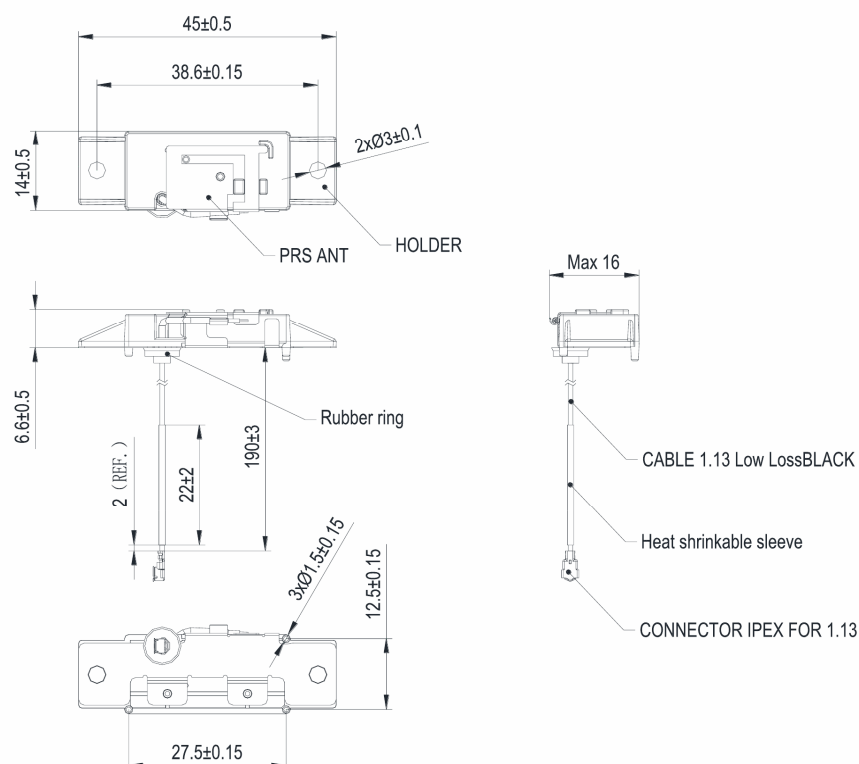
DOCUMENT  
 NO.

ENS000163110

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**4. Electrical Specification :**

|                    |                 |
|--------------------|-----------------|
| Frequency Band     | 2.40GHz~2.50GHz |
| Polarization       | Linear          |
| Peak Gain          | >1dBi           |
| Average Efficiency | >40%            |
| Impedance          | 50Ω Typ.        |

**5. Mechanical Specification :**

UNLESS OTHER SPECIFIED TOLERANCES ON :

X = ±      X.X = ±0.15      X.XX = ±0.15

ANGLES = ±      HOLEDIA = ±

SCALE : /      UNIT : mm

DRAWN BY : 李志强      CHECKED BY : 李志强

DESIGNED BY : 王俐      APPROVED BY : 唐龙

TITLE : WA-M-LB-02-269-B Specification



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NO.

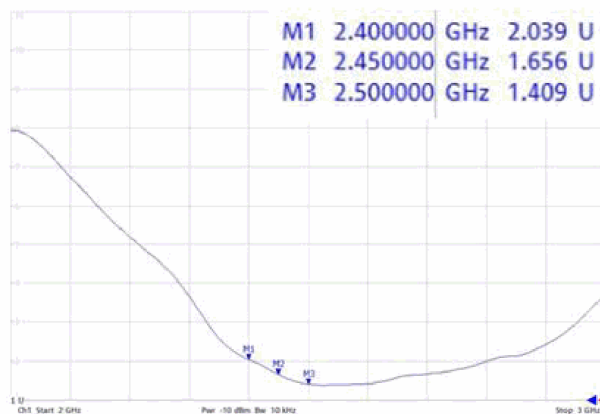
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## 6. Electrical Characteristics (In customer machine):

### 6.1 VSWR

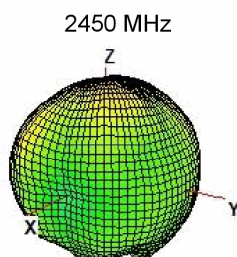


| Frequency (Unit MHz) | 2400 | 2450 | 2500 |
|----------------------|------|------|------|
| VSWR (SPEC)          | ≤2.5 |      |      |
| VSWR                 | 2.04 | 1.66 | 1.41 |

### 6.2 Antenna Passive Test Result

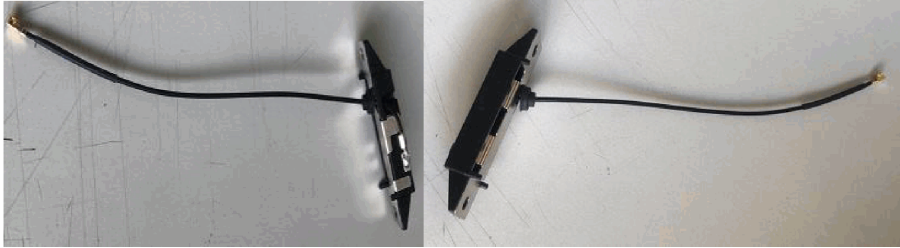
| Frequency(MHz) | Peak Gain(dBi) | Efficiency (%) |
|----------------|----------------|----------------|
| 2400           | 2.41           | 46.62          |
| 2450           | 2.41           | 48.38          |
| 2500           | 3.50           | 58.11          |

### 6.3 3D Gain Pattern



|                                        |                             |                                                                                                                                                                                                       |                                 |
|----------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| UNLESS OTHER SPECIFIED TOLERANCES ON : |                             |  <b>佳邦科技股份有限公司</b><br><b>INPAQ TECHNOLOGY CO., LTD.</b>                                                            |                                 |
| X = ±                                  | X.X = ±0.15    X.XX = ±0.15 |                                                                                                                                                                                                       |                                 |
| ANGLES = ±                             | HOLEDIA = ±                 | THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION |                                 |
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| DRAWN BY : 李志强                         | CHECKED BY : 李志强            |                                                                                                                                                                                                       |                                 |
| DESIGNED BY : 王俐                       | APPROVED BY : 唐龙            |                                                                                                                                                                                                       |                                 |
| TITLE : WA-M-LB-02-269-B Specification |                             | DOCUMENT NO.                                                                                                                                                                                          | ENS000163110<br>PAGE REV.<br>P1 |

## 7.实物图:



|                                           |                             |                                                                                                                                                                                                                  |              |           |
|-------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
| UNLESS OTHER SPECIFIED TOLERANCES ON :    |                             | <div></div> <div>佳邦科技股份有限公司</div> <div>INPAQ TECHNOLOGY CO., LTD.</div>                                                       |              |           |
| X = ±                                     | X.X = ±0.15    X.XX = ±0.15 |                                                                                                                                                                                                                  |              |           |
| ANGLES = ±                                | HOLEDIA = ±                 | <div>THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION</div> |              |           |
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| DRAWN BY : 李志强                            | CHECKED BY : 李志强            |                                                                                                                                                                                                                  |              |           |
| DESIGNED BY : 王俐                          | APPROVED BY : 唐龙            |                                                                                                                                                                                                                  |              |           |
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## 3. Antenna Datasheet for WIFI1 ANT

**WA-M-LA-02-271-B Specification****1. Explanation of part number :**

WA    -    M    -    LA    -    02    -    271    -    B  
 (1)        (2)        (3)        (4)        (5)        (6)

**(1) Product Type: Wireless Antenna****(2) Material: Metal + Holder + Cable + Rubber****(3) Frequency: 2400-2500MHz · 5150~5850 MHz****(4) Coaxial Cable Type: 02****(5) Suffix: 271****(6) Vehicle use: Before loading****2. Operating Condition:**

Temperature                    -40    to    +85°C

Humidity                        20    to    85% RH

**3. Storage Condition:**

Temperature                    -40    to    +85°C

Humidity                        20    to    85% RH

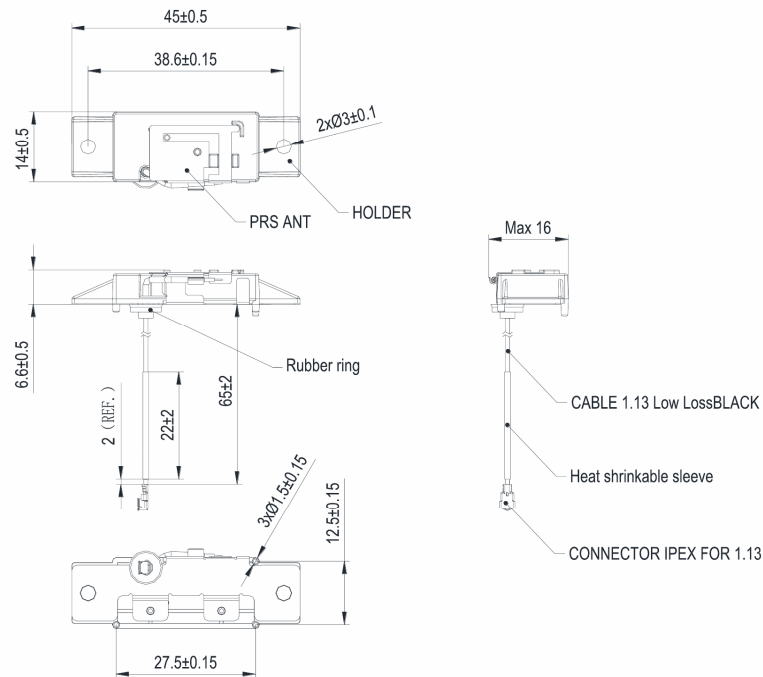
Recommended storage condition ( storage period of one year ) :

Store in room condition as listed below: Temperature -20°C~+45°C, Humidity 80% Max

|                                        |                             |                                                                                                                                                                                                       |           |
|----------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| UNLESS OTHER SPECIFIED TOLERANCES ON : |                             | <b>INPAQ TECHNOLOGY CO., LTD.</b>                                                                                                                                                                     |           |
| X = ±                                  | X.X = ±0.15    X.XX = ±0.15 |                                                                                                                                                                                                       |           |
| ANGLES = ±                             | HOLEDIA = ±                 | THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION |           |
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| DRAWN BY : 李志强                         | CHECKED BY : 李志强            |                                                                                                                                                                                                       |           |
| DESIGNED BY : 王例                       | APPROVED BY : 唐龙            |                                                                                                                                                                                                       |           |
| TITLE : WA-M-LA-02-271-B Specification |                             | DOCUMENT NO.                                                                                                                                                                                          | PAGE REV. |
|                                        |                             | ENS000163120                                                                                                                                                                                          | P1        |

**4. Electrical Specification :**

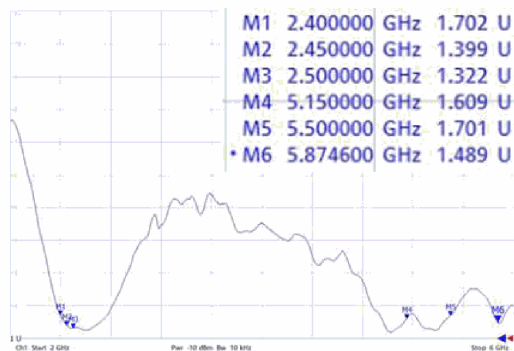
|                    |                 |                 |
|--------------------|-----------------|-----------------|
| Frequency Band     | 2.40GHz~2.50GHz | 5.15GHz~5.85GHz |
| Polarization       | Linear          | Linear          |
| Peak Gain          | >1dBi           | >2.5dBi         |
| Average Efficiency | >40%            | >40%            |
| Impedance          | 50Ω Typ.        | 50Ω Typ.        |

**5. Mechanical Specification :****6. Electrical Characteristics ( In customer machine ) :****6.1 VSWR**

|                                                                                                                   |                  |                                                                                                                                                                                                       |           |
|-------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| UNLESS OTHER SPECIFIED TOLERANCES ON :<br>X = ±      X.X = ±0.15      X.XX = ±0.15<br>ANGLES = ±      HOLEDIA = ± |                  | INPAQ TECHNOLOGY CO., LTD.                                                                                                                                                                            |           |
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| DESIGNED BY : 王俐                                                                                                  | APPROVED BY : 唐龙 |                                                                                                                                                                                                       |           |
| TITLE : WA-M-LA-02-271-B Specification                                                                            |                  | DOCUMENT NO.                                                                                                                                                                                          | PAGE REV. |
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| Frequency (Unit MHz) | 2400       | 2450 | 2500 | 5150       | 5450 | 5850 |
|----------------------|------------|------|------|------------|------|------|
| VSWR (SPEC)          | $\leq 2.5$ |      |      | $\leq 2.5$ |      |      |
| VSWR                 | 1.70       | 1.40 | 1.32 | 1.61       | 1.70 | 1.49 |



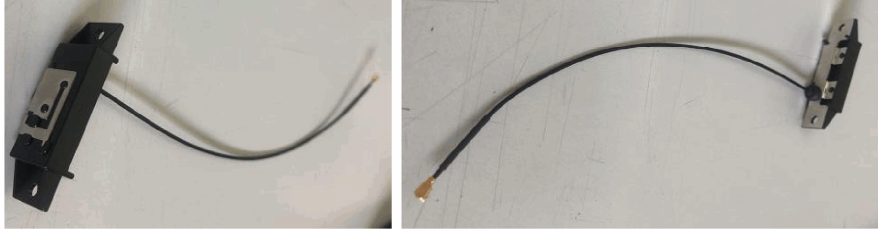
## 6.2 Antenna Passive Test Result

| Frequency(MHz) | Peak Gain(dBi) | Efficiency (%) |
|----------------|----------------|----------------|
| 2400           | 1.40           | 43.05          |
| 2450           | 2.59           | 55.56          |
| 2500           | 3.05           | 54.64          |
| 5150           | 4.06           | 59.26          |
| 5450           | 4.06           | 63.18          |
| 5850           | 3.98           | 62.59          |

## 6.3 3D Gain Pattern (2450 MHz)



|                                        |                             |                                                                                                                                                                                                       |           |
|----------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| UNLESS OTHER SPECIFIED TOLERANCES ON : |                             | INPAQ TECHNOLOGY CO., LTD.                                                                                                                                                                            |           |
| X = ±                                  | X.X = ±0.15    X.XX = ±0.15 |                                                                                                                                                                                                       |           |
| ANGLES = ±                             | HOLEDIA = ±                 | THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION |           |
| SCALE : /                              | UNIT : mm                   |                                                                                                                                                                                                       |           |
| DRAWN BY : 李志强                         | CHECKED BY : 李志强            |                                                                                                                                                                                                       |           |
| DESIGNED BY : 王俐                       | APPROVED BY : 唐龙            |                                                                                                                                                                                                       |           |
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|                                        |                             | ENS000163120                                                                                                                                                                                          | P1        |

**7. Physical picture :**

|                                        |                                    |                                                                                                                                                                                                       |           |
|----------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| UNLESS OTHER SPECIFIED TOLERANCES ON : |                                    | <b>INPAQ TECHNOLOGY CO., LTD.</b>                                                                                                                                                                     |           |
| $X = \pm$                              | $X.X = \pm 0.15$ $X.XX = \pm 0.15$ |                                                                                                                                                                                                       |           |
| ANGLES = $\pm$                         | HOLEDIA = $\pm$                    | THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION |           |
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| DRAWN BY : 李志强                         | CHECKED BY : 李志强                   |                                                                                                                                                                                                       |           |
| DESIGNED BY : 王俐                       | APPROVED BY : 唐龙                   |                                                                                                                                                                                                       |           |
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|                                        |                                    | ENS000163120                                                                                                                                                                                          | P1        |

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## 4. Antenna Datasheet for WIFI2 ANT

**WA-M-LA-02-273-B Specification****1. Explanation of part number :**

WA    -    M    -    LA    -    02    -    273    -    B  
 (1)        (2)        (3)        (4)        (5)        (6)

- (1) Product Type: Wireless Antenna  
 (2) Material: Metal + Holder + Cable + Rubber  
 (3) Frequency: 2400-2500MHz · 5150~5850 MHz  
 (4) Coaxial Cable Type: 02  
 (5) Suffix: 273  
 (6) Vehicle use: Before loading

**2. Operating Condition:**

Temperature                -40    to    +85°C  
 Humidity                    20    to    85% RH

**3. Storage Condition:**

Temperature                -40    to    +85°C  
 Humidity                    20    to    85% RH

Recommended storage condition ( storage period of one year ) :

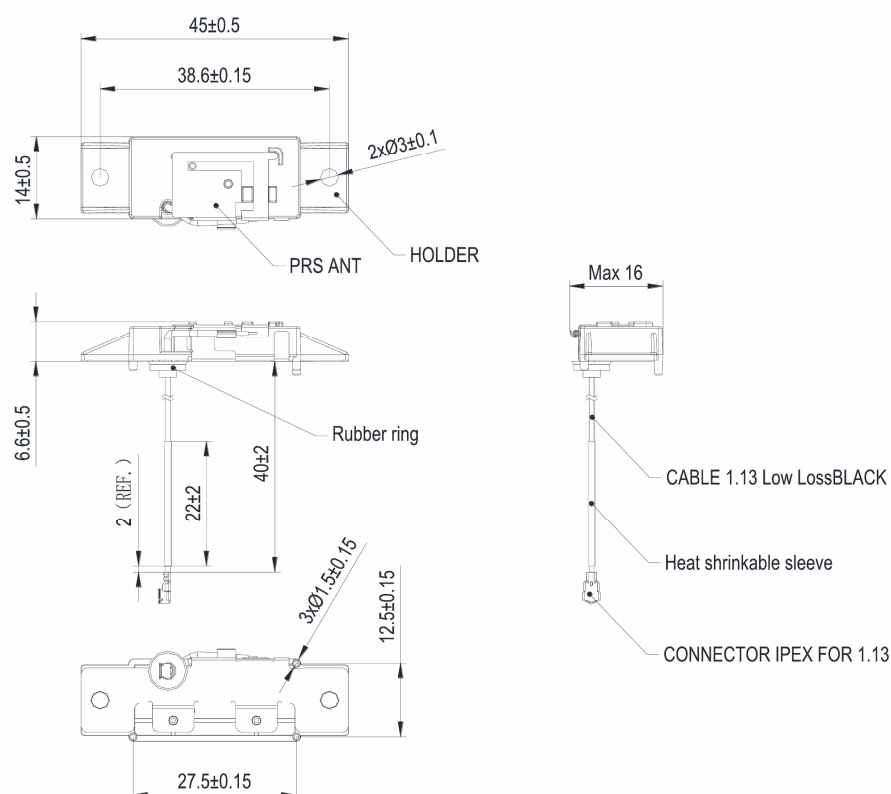
Store in room condition as listed below: Temperature -20°C~+45°C, Humidity 80% Max

|                                        |                             |                                                                                                                                                                                                       |           |
|----------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| UNLESS OTHER SPECIFIED TOLERANCES ON : |                             | <b>INPAQ TECHNOLOGY CO., LTD.</b>                                                                                                                                                                     |           |
| X = ±                                  | X.X = ±0.15    X.XX = ±0.15 |                                                                                                                                                                                                       |           |
| ANGLES = ±                             | HOLEDIA = ±                 | THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION |           |
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| DRAWN BY : 李志强                         | CHECKED BY : 李志强            |                                                                                                                                                                                                       |           |
| DESIGNED BY : 王俐                       | APPROVED BY : 唐龙            |                                                                                                                                                                                                       |           |
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|                                        |                             | ENS000164730                                                                                                                                                                                          | P0        |

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**4. Electrical Specification :**

|                    |                 |                 |
|--------------------|-----------------|-----------------|
| Frequency Band     | 2.40GHz~2.50GHz | 5.15GHz~5.85GHz |
| Polarization       | Linear          | Linear          |
| Peak Gain          | >1dBi           | >2.5dBi         |
| Average Efficiency | >40%            | >40%            |
| Impedance          | 50Ω Typ.        | 50Ω Typ.        |

**5. Mechanical Specification :**

|                                        |  |                            |  |
|----------------------------------------|--|----------------------------|--|
| UNLESS OTHER SPECIFIED TOLERANCES ON : |  | INPAQ TECHNOLOGY CO., LTD. |  |
| X.X = ±0.15    X.XX = ±0.15            |  |                            |  |
| ANGLES = ±                             |  |                            |  |

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## 6. Electrical Characteristics ( In customer machine ) :

### 6.1 VSWR

| Frequency (Unit MHz) | 2400       | 2450 | 2500 | 5150       | 5450 | 5850 |
|----------------------|------------|------|------|------------|------|------|
| VSWR (SPEC)          | $\leq 2.5$ |      |      | $\leq 2.5$ |      |      |
| VSWR                 | 2.26       | 2.06 | 1.94 | 1.37       | 1.58 | 1.19 |



### 6.2 Antenna Passive Test Result

| Frequency(MHz) | Peak Gain(dBi) | Efficiency (%) |
|----------------|----------------|----------------|
| 2400           | 4.05           | 42.26          |
| 2450           | 4.12           | 45.61          |
| 2500           | 4.44           | 49.67          |
| 5150           | 3.75           | 54.70          |
| 5450           | 2.88           | 55.96          |
| 5850           | 3.82           | 62.00          |

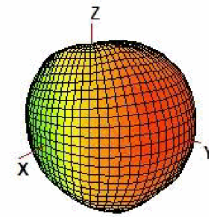
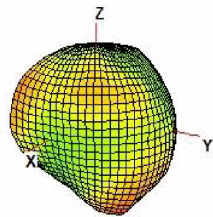
### 6.3 3D Gain Pattern (2450 MHz)

2450 MHz

5450 MHz

|                                                                          |                  |                                                                                                                                                                                                       |              |           |
|--------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
| UNLESS OTHER SPECIFIED TOLERANCES ON :                                   |                  | INPAQ TECHNOLOGY CO., LTD.                                                                                                                                                                            |              |           |
| X = ±                      X.X = ±0.15                      X.XX = ±0.15 |                  |                                                                                                                                                                                                       |              |           |
| ANGLES = ±                      HOLEDIA = ±                              |                  | THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION |              |           |
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| DRAWN BY : 李志强                                                           | CHECKED BY : 李志强 |                                                                                                                                                                                                       |              |           |
| DESIGNED BY : 王俐                                                         | APPROVED BY : 唐龙 |                                                                                                                                                                                                       |              |           |
| TITLE : WA-M-LA-02-273-B    Specification                                |                  | DOCUMENT NO.                                                                                                                                                                                          | ENS000164730 | PAGE REV. |
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### 7. Physical picture :



|                                        |                                    |                                                                                                                                                                                                       |           |
|----------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| UNLESS OTHER SPECIFIED TOLERANCES ON : |                                    | <b>INPAQ TECHNOLOGY CO., LTD.</b>                                                                                                                                                                     |           |
| $X = \pm$                              | $X.X = \pm 0.15$ $X.XX = \pm 0.15$ |                                                                                                                                                                                                       |           |
| ANGLES = $\pm$                         | HOLEDIA = $\pm$                    | THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION |           |
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| DRAWN BY : 李志强                         | CHECKED BY : 李志强                   |                                                                                                                                                                                                       |           |
| DESIGNED BY : 王俐                       | APPROVED BY : 唐龙                   |                                                                                                                                                                                                       |           |
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