

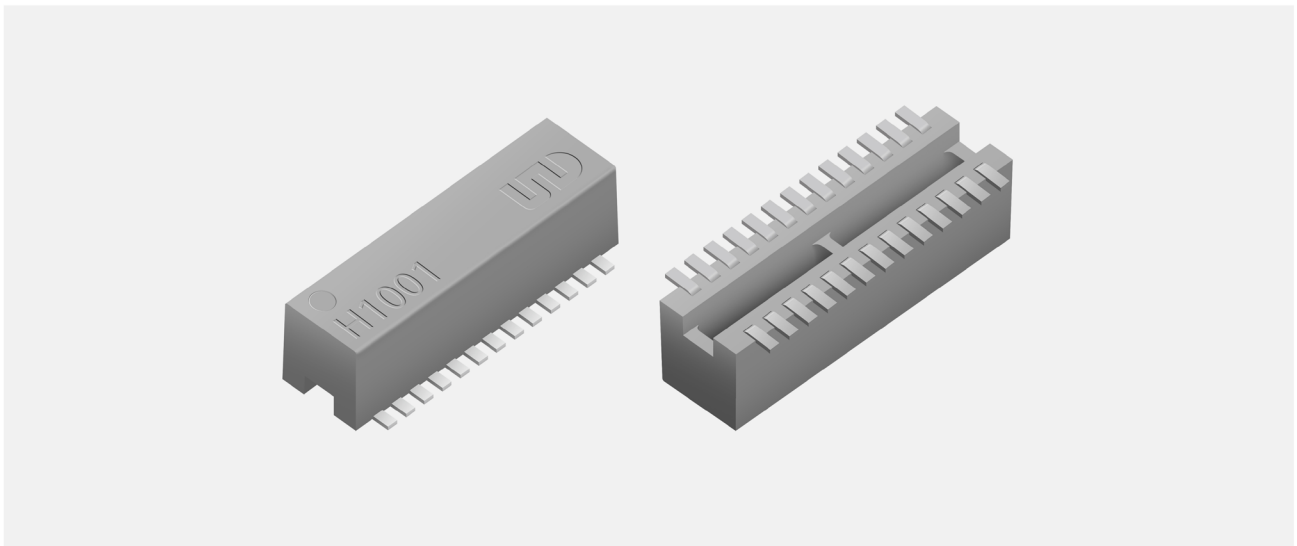
# SYMMETRIC ANTENNA WITH MULTI-MODE FUNCTIONALITY

**4G LTE-M 824-960 MHz | 1710-2690 MHz**

© We support frequency customization.

Clearance Area: 18 x 52 mm

Dimensions: 14.5 x 5.6 x 4.3 mm (Tolerance:  $\pm 0.15$  mm)



Model: ADCH001

PN: M01-X21506UWB5





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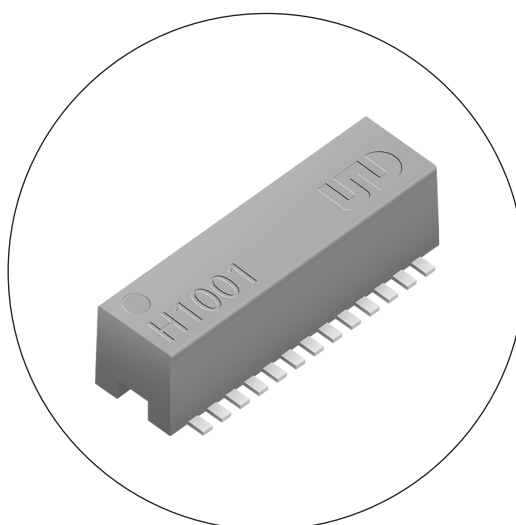
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## 1 FEATURES & BENEFITS

- Low Profile
- Light Weight
- Easy to Integrate
- Intended for SMD Mounting
- Reduced Cost and Time-to-Market

## 2 APPLICATIONS

- IoT Devices
- Smart Cities
- Smart Agriculture
- Consumer Tracking
- Smart Metering
- Smart Agriculture



Antenna Image

## 3 ORDER INFORMATION

|              |                                                                       |
|--------------|-----------------------------------------------------------------------|
| Product Name | H1001 4G LTE/Cellular Symmetric Antenna with Multi-Mode Functionality |
| Model        | ADCH001                                                               |
| Part Number  | M01-X21506UWB5                                                        |
| Dimensions   | 14.5 x 5.6 x 4.3 mm                                                   |
| Weight       | 0.4g                                                                  |
| Mounting     | SMT                                                                   |
| Packaging    | Tape & Reel                                                           |
| MOQ          | 1000 pcs/reel                                                         |

| REV. | DESCRIPTION      | APPD. | DATE       |
|------|------------------|-------|------------|
| A    | INITIAL RELEASED | Chen  | 2024/03/30 |

NOTES:  
1.HOUSING:ICP, COLOR:GRAY  
2.TERMINAL:PHOSPHOR BRONZE TIN PLATING.

VIEW A

| Ref. | Min      | Mon   | Max   |
|------|----------|-------|-------|
| A    | 14.35    | 14.50 | 14.65 |
| B    | 3.85     | 4.00  | 4.15  |
| C    | 5.40     | 5.60  | 5.80  |
| D    | 4.15     | 4.30  | 4.45  |
| D1   | 0.05     | 0.10  | 0.15  |
| D2   | 4.10     | 4.20  | 4.30  |
| e    | 1.00 BSC |       |       |
| F    | 0.17     | 0.20  | 0.23  |
| G    | 0.45     | 0.50  | 0.55  |
| H    | 2.40     | 2.60  | 2.80  |
| Θ    | 0°       | 1°    | 2°    |
| N    | 26       |       |       |

DIMENSIONS ARE IN MILLIMETERS  
UNLESS OTHERWISE SPECIFIED

TOLERANCES  
ANGLES = ±3°

UP TO 6 = ±0.1

6-40 = ±0.2

40-120 = ±0.6

120-315 = ±1.0

ABOVE 315 = ±1.6

**ABOOSTY** 壹比通

TITLE:

H1001

PART NO.:

CUS P/N:

APPD:

CHKD:

DR:

DWG NO.:

SCALE

SHEET

REV.

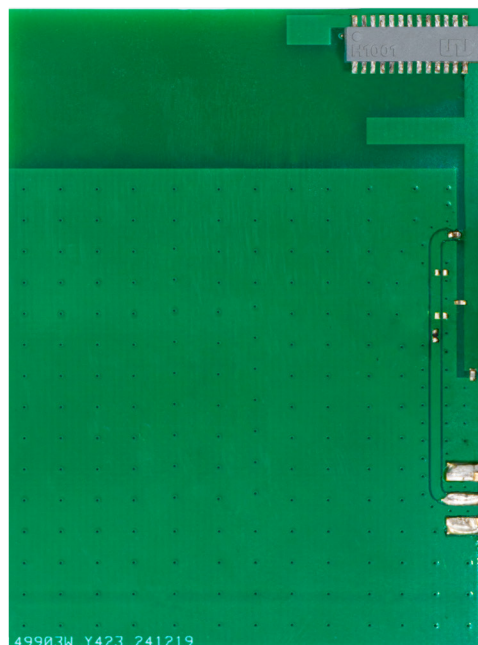
V01

## 5 REFERENCE GUIDE

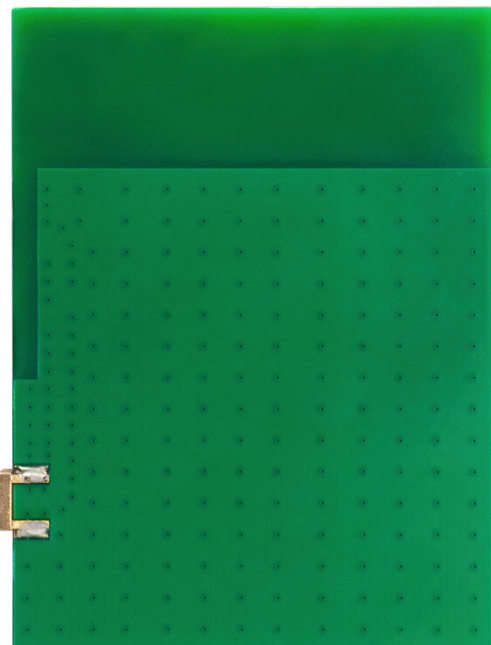
| Technical Features                                                                                                                                    | 824-960 MHz          | 1710-2690 MHz |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------|
| Max VSWR                                                                                                                                              | 4.12 : 1             | 2.32 : 1      |
| Max Efficiency                                                                                                                                        | 71.96%               |               |
| Max Return Loss                                                                                                                                       | -4.31 dB             |               |
| Peak Gain                                                                                                                                             | Up to 2.36 dBi (Typ) |               |
| Polarization                                                                                                                                          | Linear               |               |
| Input Impedance                                                                                                                                       | 50 Ω                 |               |
| Operating Temperature                                                                                                                                 | -40°C to +85°C       |               |
| Relative Humidity                                                                                                                                     | 10 to 70%            |               |
| All data were measured in free space and on a reference ground plane of 72 mm length, 52 mm width, and 1.6 mm thickness. Application data might vary. |                      |               |

## 6 EVALUATION BOARD WITH THE ANTENNA

The evaluation board provides operation at 698-960, 1710-2690 MHz.  
Evaluation Board dimension: 72 x 52 x 1.6 mm



Top View

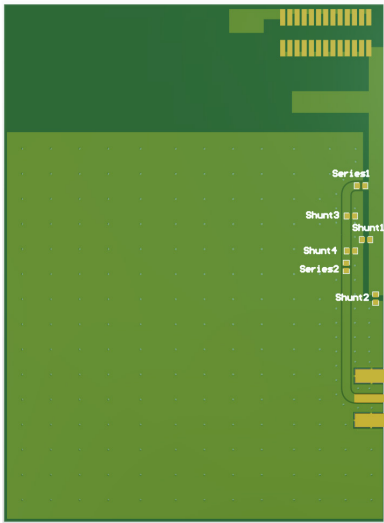


Back View

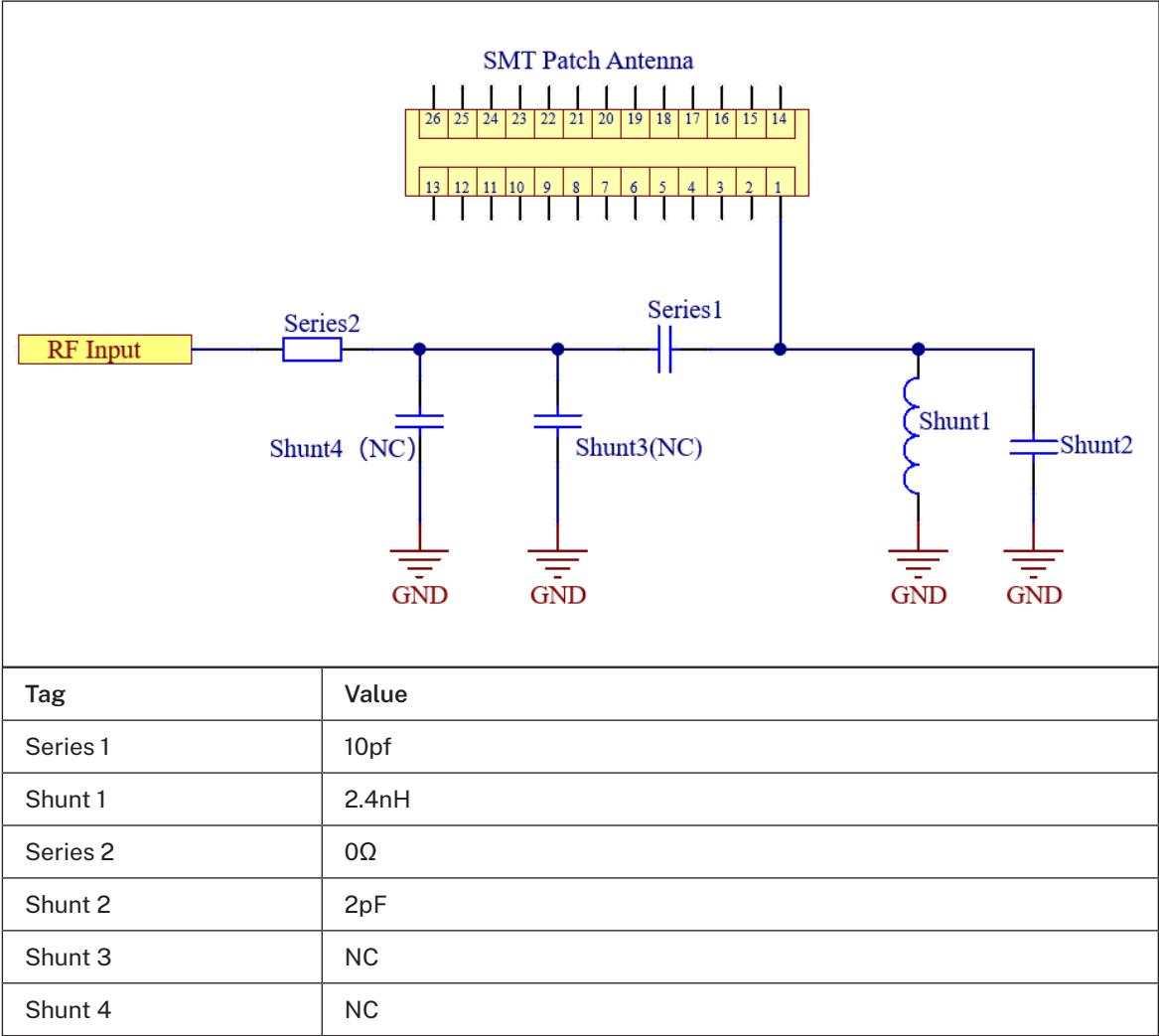
Clearance Area: 18.0 x 52.0 mm



## 7 MATCHING NETWORK



It's strongly recommended to place the antenna near the edge of the board. Maximum antenna performance is achieved by placing the antenna towards one of the corners of the PCB and with the feed point of the antenna as close to same corner of the PCB as possible.



Technical drawing of a building facade showing two elevations with dimensions and a grid pattern.

**Left Elevation:**

- Overall width: 72.15
- Overall height: 52.87
- Grid pattern: 12 columns by 12 rows of circles.
- Dimensions from left edge:
  - 2.05 (to start of grid)
  - 40.56 (to end of grid)
  - 12.75 (to end of grid, from a vertical line)
- Dimensions from right edge:
  - 17.81 (to end of grid)
  - 15.11 (to end of grid)
  - 12.11 (to end of grid)
- Other dimensions: 21.50 (width of a section), 1.60 (height of a section).

**Right Elevation:**

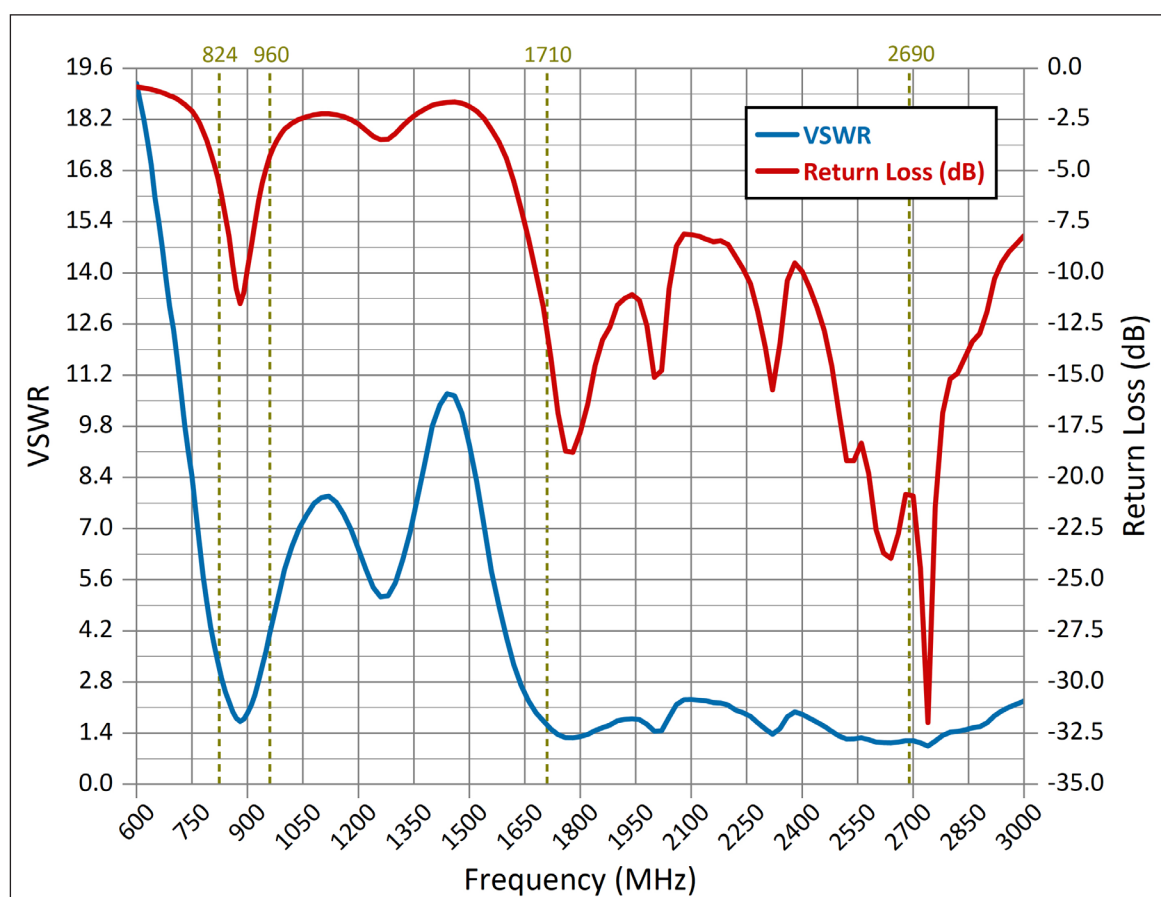
- Overall width: 41.36
- Overall height: 2.86
- Grid pattern: 12 columns by 12 rows of circles.
- Dimensions from left edge:
  - 17.81 (to end of grid)

## 9 ELECTRICAL PERFORMANCE

### © Note

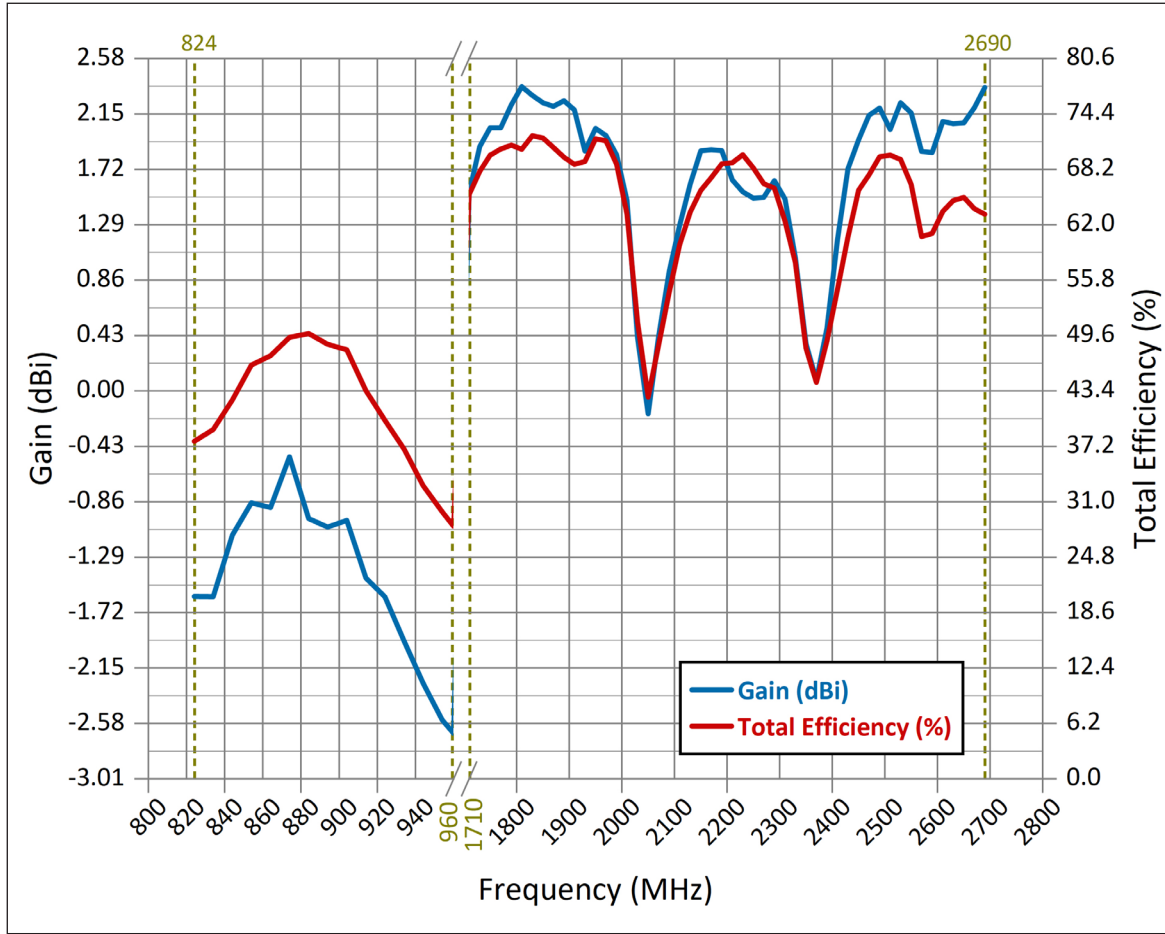
The data displayed in Chapter 10 were measured in free space and on a reference ground plane of 72mm length, 52 mm width, and 1.6 mm thickness.

### 9.1 VSWR and Return Loss (dB)





## 9.2 Gain (dBi) and Total Efficiency (%)

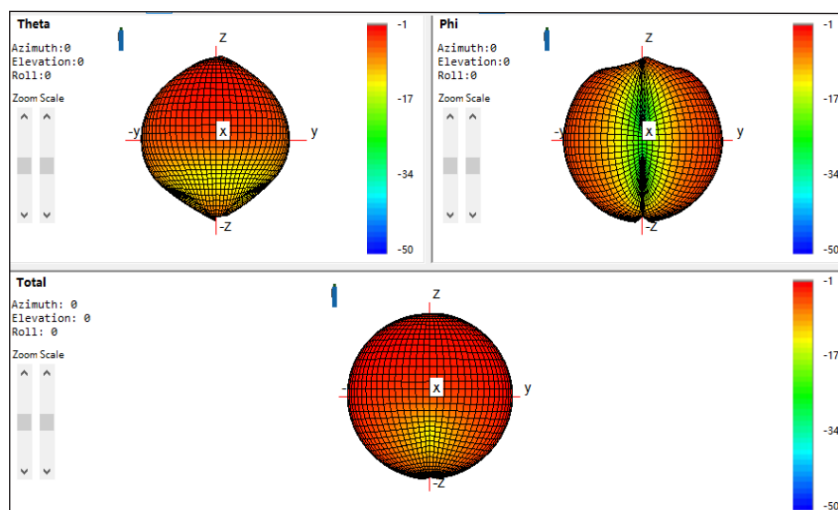
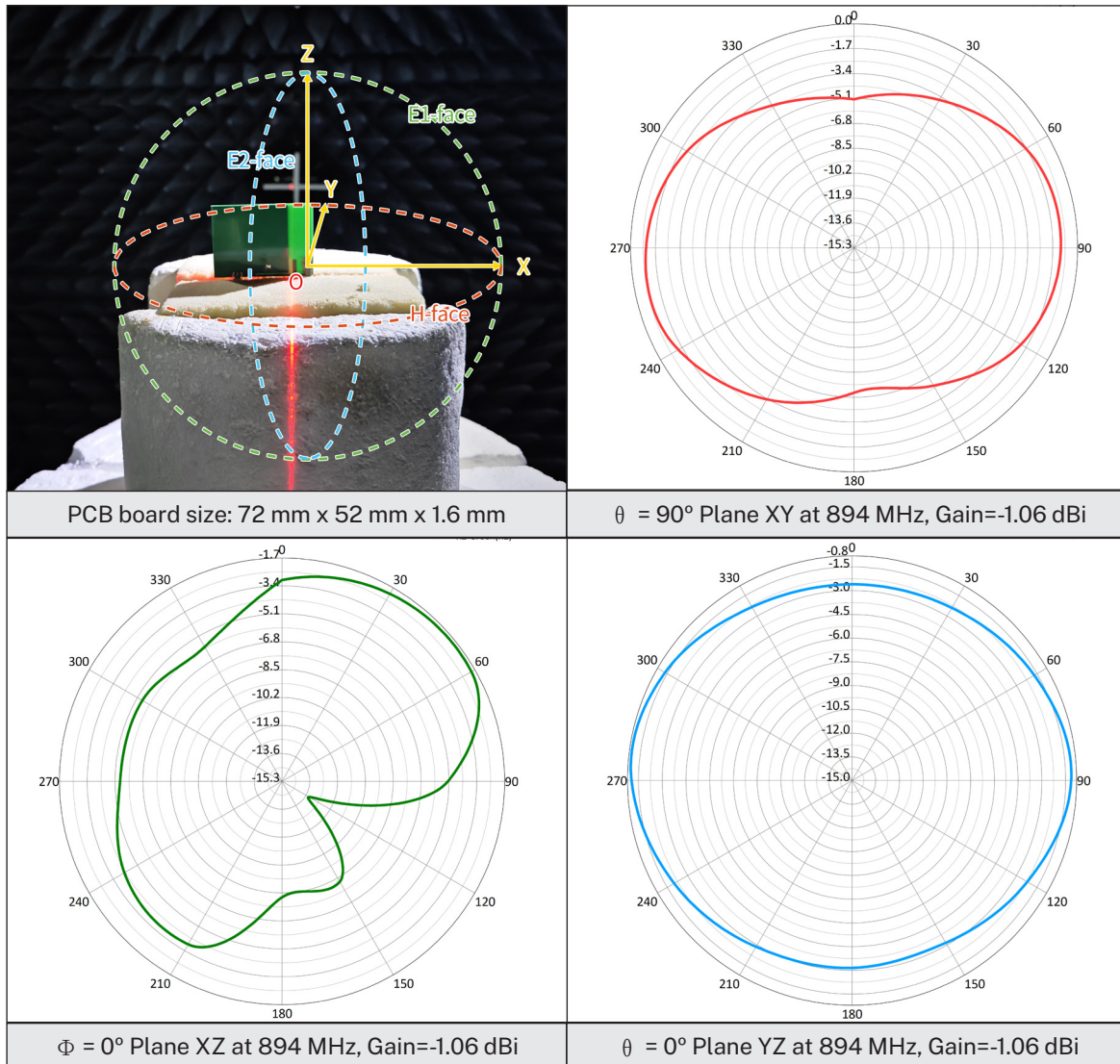


| Antenna Data |            |                |            |            |                |
|--------------|------------|----------------|------------|------------|----------------|
| Freq (MHz)   | Gain (dBi) | Efficiency (%) | Freq (MHz) | Gain (dBi) | Efficiency (%) |
| 824          | -1.59      | 71.96          | 904        | -1.00      | 69.83          |
| 834          | -1.60      | 71.70          | 914        | -1.45      | 69.80          |
| 844          | -1.12      | 71.61          | 924        | -1.60      | 69.80          |
| 854          | -0.87      | 71.38          | 934        | -1.94      | 69.62          |
| 864          | -0.90      | 70.91          | 944        | -2.27      | 69.57          |
| 874          | -0.51      | 70.66          | 954        | -2.55      | 69.31          |
| 884          | -0.99      | 70.48          | 960        | -2.66      | 69.09          |
| 894          | -1.06      | 70.45          |            |            |                |



| Freq (MHz) | Gain (dBi) | Efficiency (%) | Freq (MHz) | Gain (dBi) | Efficiency (%) |
|------------|------------|----------------|------------|------------|----------------|
| 1710       | 1.54       | 68.94          | 2210       | 1.64       | 59.74          |
| 1730       | 1.90       | 68.82          | 2230       | 1.55       | 57.76          |
| 1750       | 2.04       | 68.79          | 2250       | 1.50       | 54.83          |
| 1770       | 2.04       | 68.76          | 2270       | 1.50       | 54.44          |
| 1790       | 2.22       | 68.34          | 2290       | 1.63       | 51.11          |
| 1810       | 2.36       | 67.96          | 2310       | 1.49       | 49.84          |
| 1830       | 2.29       | 67.57          | 2330       | 1.03       | 49.41          |
| 1850       | 2.24       | 67.25          | 2350       | 0.37       | 49.01          |
| 1870       | 2.21       | 66.60          | 2370       | 0.08       | 48.63          |
| 1890       | 2.25       | 66.49          | 2390       | 0.49       | 48.51          |
| 1910       | 2.18       | 66.09          | 2410       | 1.18       | 48.20          |
| 1930       | 1.86       | 65.87          | 2430       | 1.73       | 48.02          |
| 1950       | 2.04       | 65.85          | 2450       | 1.95       | 47.35          |
| 1970       | 1.98       | 65.38          | 2470       | 2.14       | 46.29          |
| 1990       | 1.83       | 65.06          | 2490       | 2.19       | 44.37          |
| 2010       | 1.48       | 64.69          | 2510       | 2.03       | 43.43          |
| 2030       | 0.41       | 63.80          | 2530       | 2.24       | 42.71          |
| 2050       | -0.18      | 63.50          | 2550       | 2.16       | 42.40          |
| 2070       | 0.42       | 63.41          | 2570       | 1.86       | 40.11          |
| 2090       | 0.93       | 63.23          | 2590       | 1.85       | 39.09          |
| 2110       | 1.28       | 63.16          | 2610       | 2.09       | 37.77          |
| 2130       | 1.60       | 62.43          | 2630       | 2.07       | 36.91          |
| 2150       | 1.86       | 61.04          | 2650       | 2.08       | 32.81          |
| 2170       | 1.87       | 60.67          | 2670       | 2.20       | 29.87          |
| 2190       | 1.86       | 60.63          | 2690       | 2.36       | 28.27          |

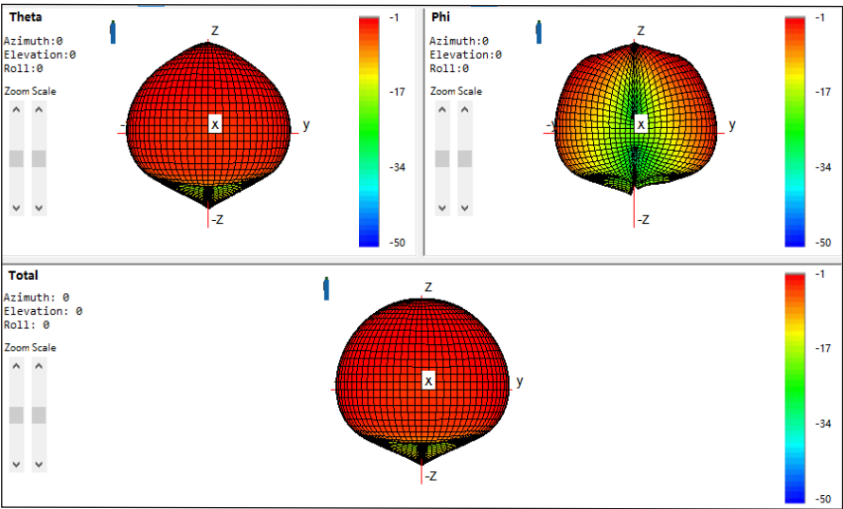
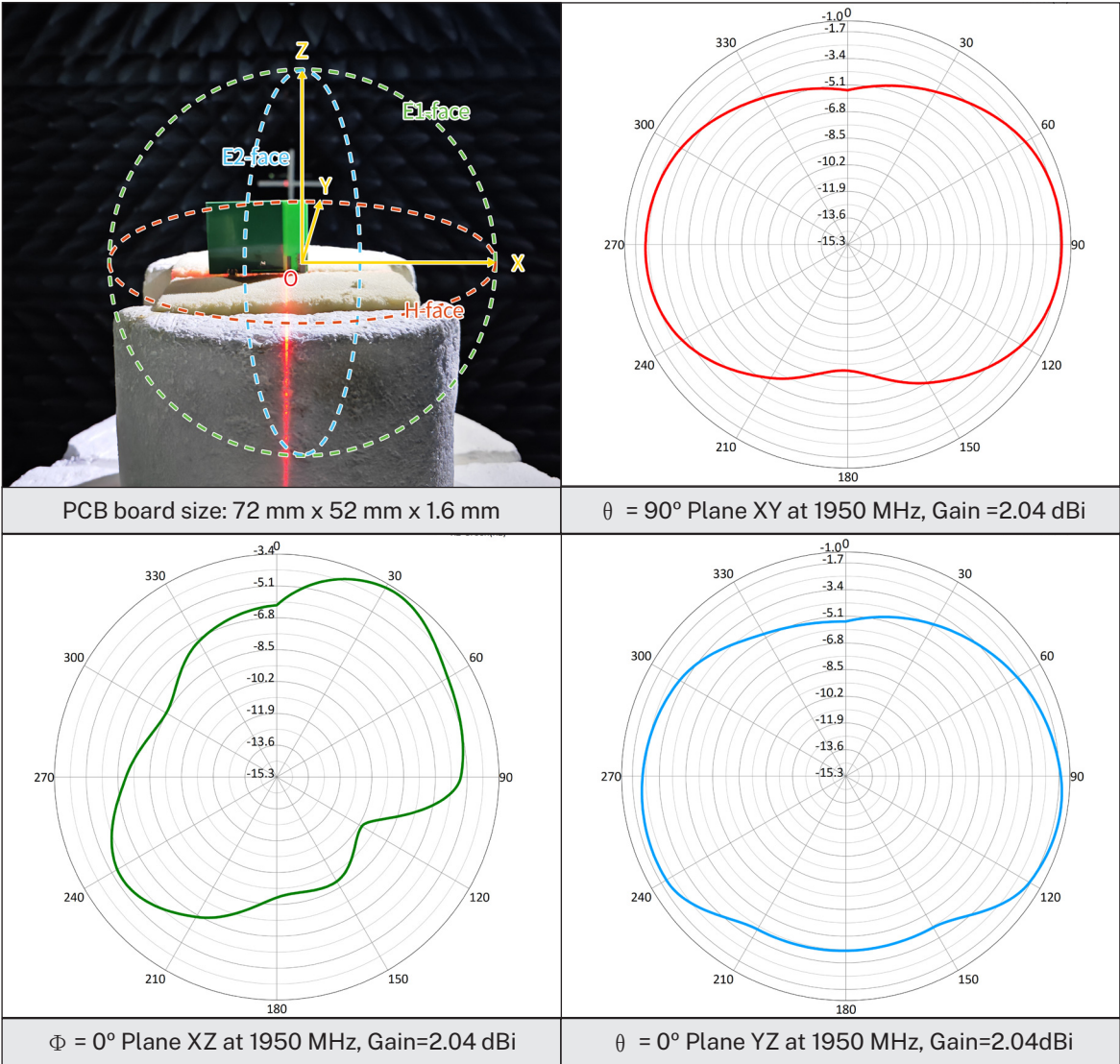
### 9.3 2D and 3D Radiation Patterns (824-960 MHz)



@ 894MHz, Gain=-1.06 dBi



### 9.4 2D and 3D Radiation Patterns (1710-2170 MHz)

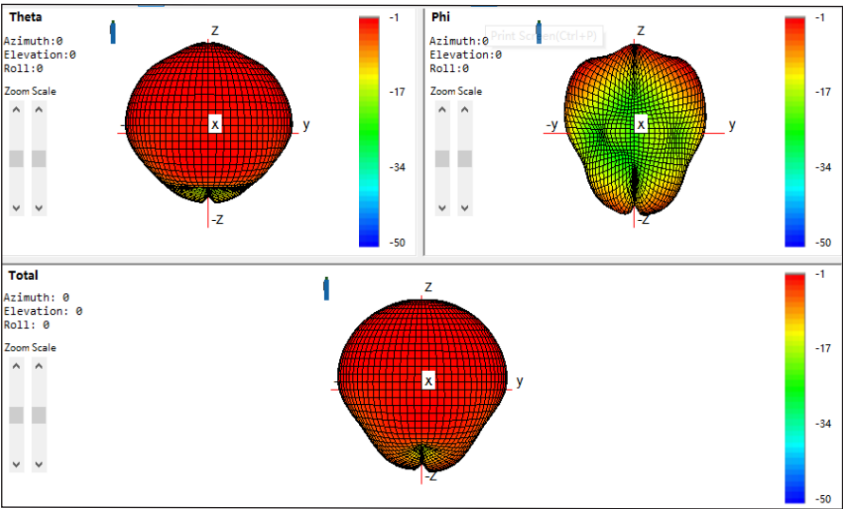
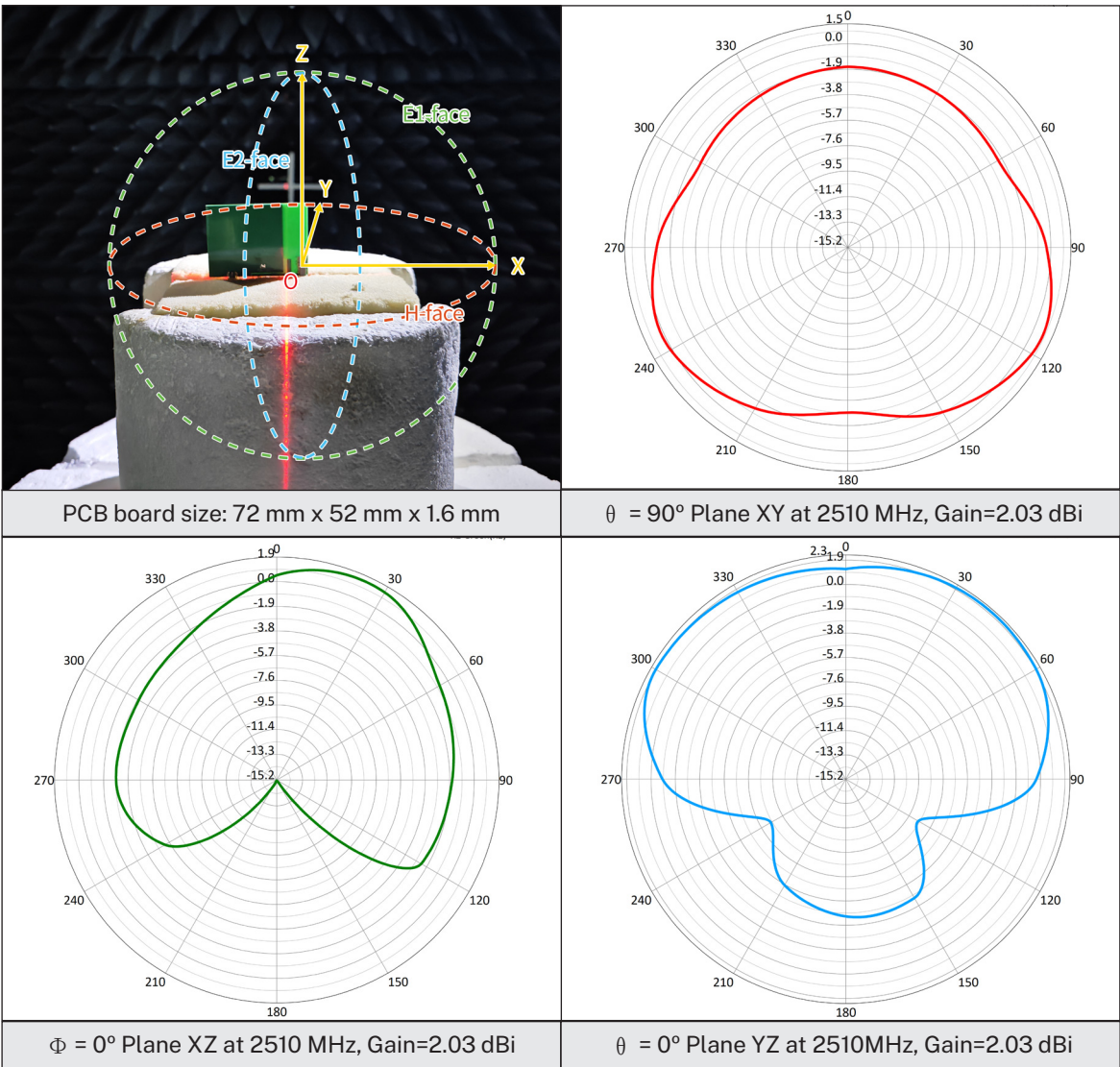


@ 1950MHz, Gain=2.04dBi





### 9.5 2D and 3D Radiation Patterns (2300-2690 MHz)



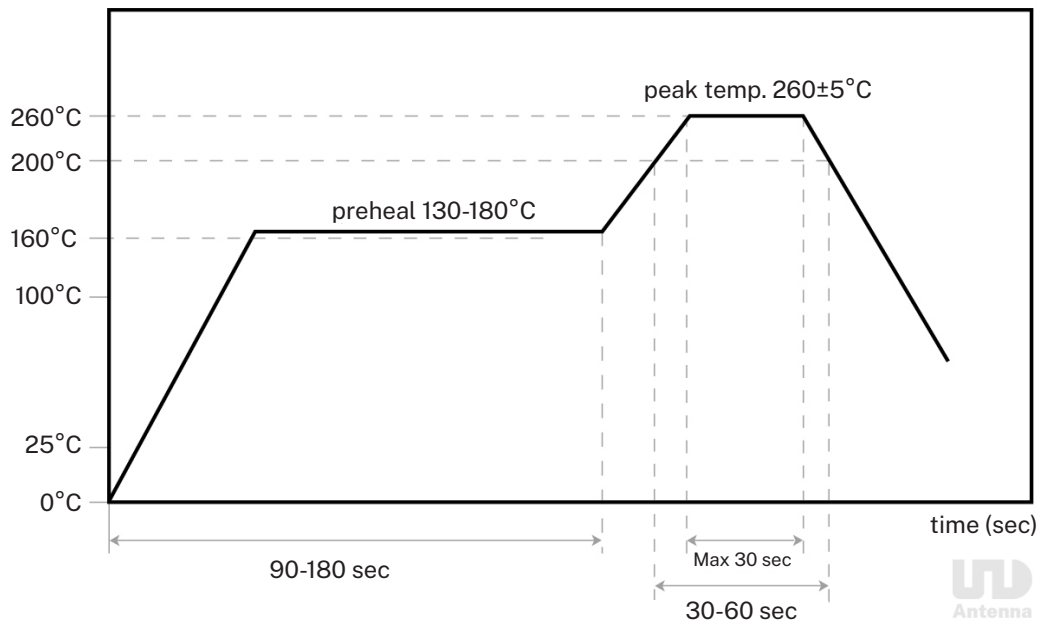
@ 2510MHz, Gain=2.03 dBi

## 10 SOLDERING CONDITIONS

This antenna is suitable for lead free soldering.

The reflow duration should be adjusted to create good solder joints without raising the antenna temperature beyond the allowed maximum of 260°C.

The figure below shows the temperature profile for soldering.



## 11 PACKAGING

### 11.1 Optimal Storage Conditions for Packaged Reels

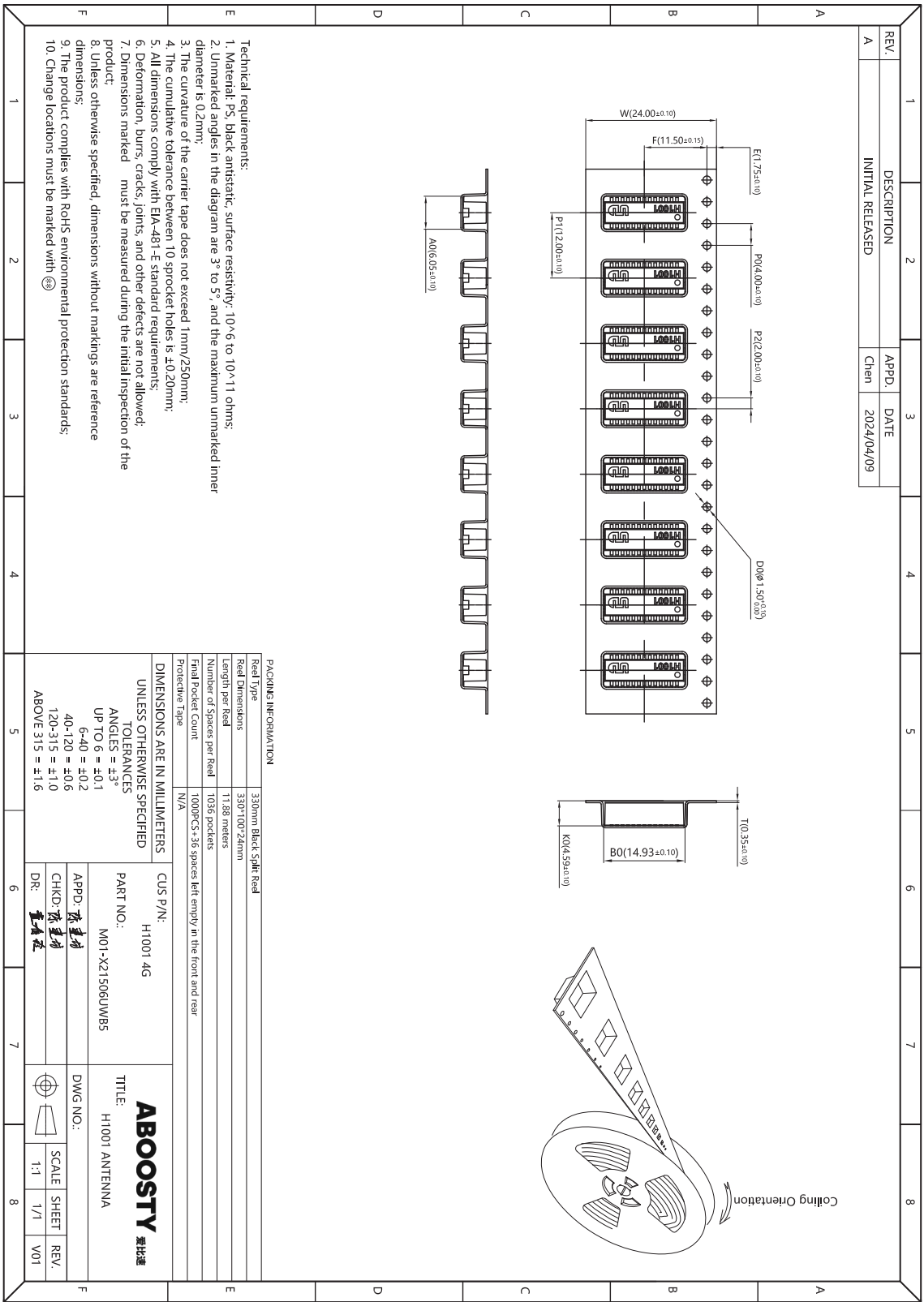
|               |                                                                             |
|---------------|-----------------------------------------------------------------------------|
| Temperature   | -5°C to 40°C                                                                |
| Humidity      | Less than 70% RH                                                            |
| Shelf life    | 18 months                                                                   |
| Storage place | Away from corrosive gas and direct sunlight                                 |
| Packaging     | Reels should be stored in unopened sealed manufacturer's plastic packaging. |

#### © Note

Storage of open reels of antennas is not recommended due to possible oxidation of pads on antennas. If short-term storage is necessary, then it is highly recommended that the bag containing the antenna reel is re-sealed and stored in like storage conditions as in the above table.



11.2 Packagings and Dimensions (Unit: mm)





## 12 ANTENNA CERTIFICATION

|                                                                                                                                         |                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| RoHS Approval                                                                                                                           | Compliant [2011/65/EU&2015/863]     |
| REACH Approval                                                                                                                          | Conform or declared [(EC)1907/2006] |
| Hazardous material regulation conformance: A certificate of conformance is available upon request. Feel free to consult us for details. |                                     |

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# ABOOSTY WELCOME ALL ANTENNA OEM/ODM PROJECTS

## Why Choose ABOOSTY



10+ years in antenna R&D, production, and OEM/ODM



MES system supported factory; 50M+ units annual output capacity



Factory directly competitive price



Quick price and lead time estimate



Innovative and patented design solutions



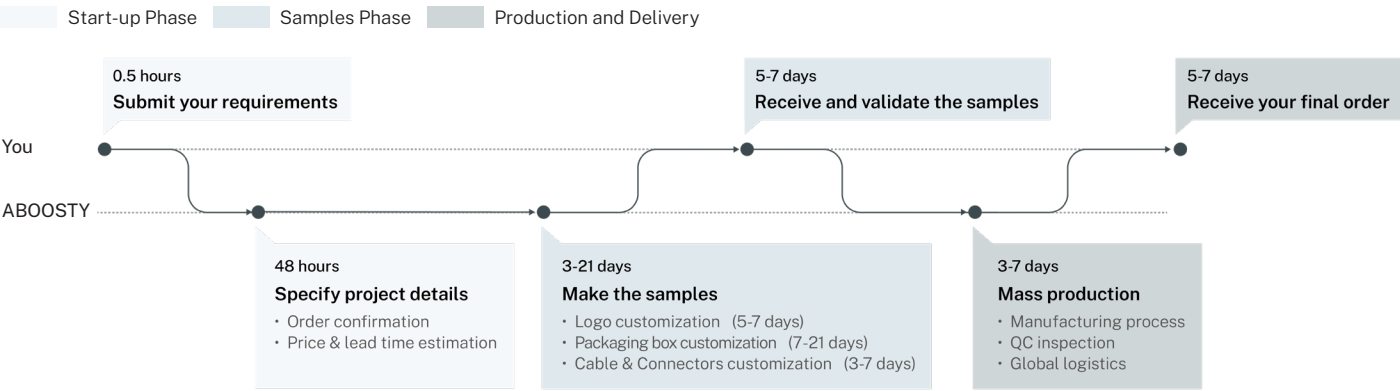
Professional team support & prompt reply within 24h

## What We Provide

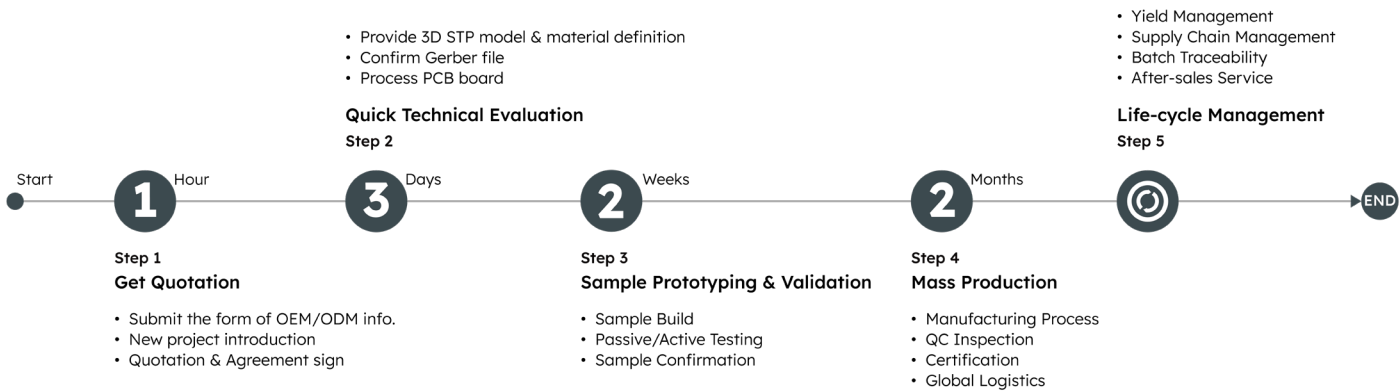
| OEM/ODM Services | Light Customization                                                                                          | Deep Customization                                                                                                                                                                                                   |
|------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <ul style="list-style-type: none"><li>• Logo</li><li>• Packaging</li><li>• Cables &amp; Connectors</li></ul> | <ul style="list-style-type: none"><li>• In-depth tailoring for specific applications</li><li>• Functional enhancements</li><li>• Environmental adaptations</li><li>• Vertical certifications</li><li>• ...</li></ul> |

## Custom Process

### Light Customization Process



### Deep Customization Process



**Note:** You can let us handle the PCB prototyping or do it yourself. Choosing self-prototyping may add 2 to 5 weeks to the timeline.

Boost Your Signal  
with Our Antennas

# ABOOSTY

A Globally Leading Manufacturer and Supplier of  
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