

# Antenna

# **YC0017BA** Datasheet

## Antenna Services

Version: 1.6

OC (Antenna Only): **YC0017BA**

OC (Antenna + EVB): **YC0017BAEVB**

Date: 2021-12-06

Status: Released



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# About the Document

## Revision History

Version	Date	Author	Note
-	2021-06-04	Kenny YIN/ Aria CHU	Creation of the document
1.0	2021-06-04	Kenny YIN/ Aria CHU	First official release
1.1	2021-07-05	Aria CHU	Added the test condition in Chapter 4.5 and EVB size in Chapter 7.
1.2	2021-08-04	Aria CHU	Updated the first picture (Chapter 4.5).
1.3	2021-09-16	Winfred WU	1. Added Chapters 8, 9, and 10. 2. Updated the drawing (Chapter 7).
1.4	2021-09-27	Aria CHU	1. Updated the antenna drawing (Chapter 6). 2. Added Chapter 7.
1.5	2021-09-28	Aria CHU	Added the new OC YC0017BAEVB on the cover.
1.6	2021-12-06	Aria CHU	Updated the product description in Chapter 1.

## Contents

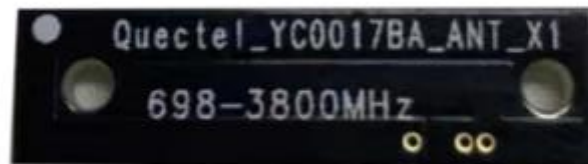
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## 1 Product Description

This Quectel embedded 4G FPC antenna covers main 4G LTE bands and is compatible with 3G/2G/LPWA bands. Featuring high efficiency and gain, it is an ideal antenna for a smooth and stable connection with high-efficiency data transmission even under the influence of the device's internal structure. Ground plane independent, it's designed to be mounted directly to the underside of either a plastic or non-metallic enclosure. Ease of integration with a cable and connector which can be customized to meet your product design and RF module.

## 2 Product Features

- LTE
- High efficiency
- Excellent performance



### 3 Product Specifications

#### Passive Electrical Specifications

Frequency Range	700–960 MHz, 1710–2700 MHz, 3400–3800 MHz
Input Impedence	50 $\Omega$
VSWR	$\leq 4.0$
Gain	$\leq 4.0$ dBi
Polarization Type	Linear

#### Mechanical Specifications

Antenna Size	25 mm $\times$ 7 mm $\times$ 3 mm
Casing	FR4
Connector Type	SMD
Working Temperature	-40 $^{\circ}$ C to +85 $^{\circ}$ C
Radome Color	Black
IP Rating	-
Mounting Type	-

## 4 Overall Performance

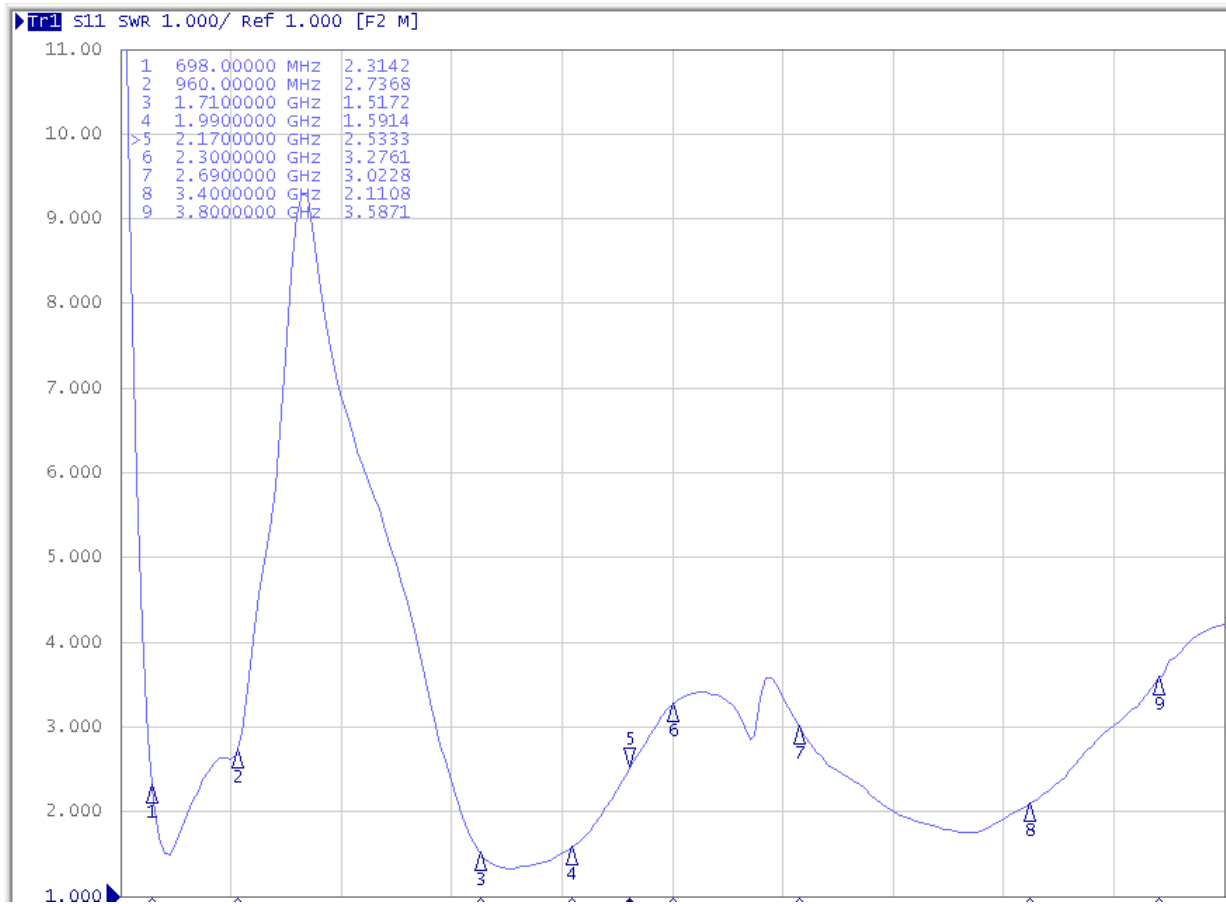
### 4.1. Test Environment

- KEYSIGHT VNA Network Analyzer E5063A 100 kHz – 8.5 GHz
- RayZone® 2800 Chamber 5G (FR1) SISO/MIMO, 400 MHz – 8.0 GHz



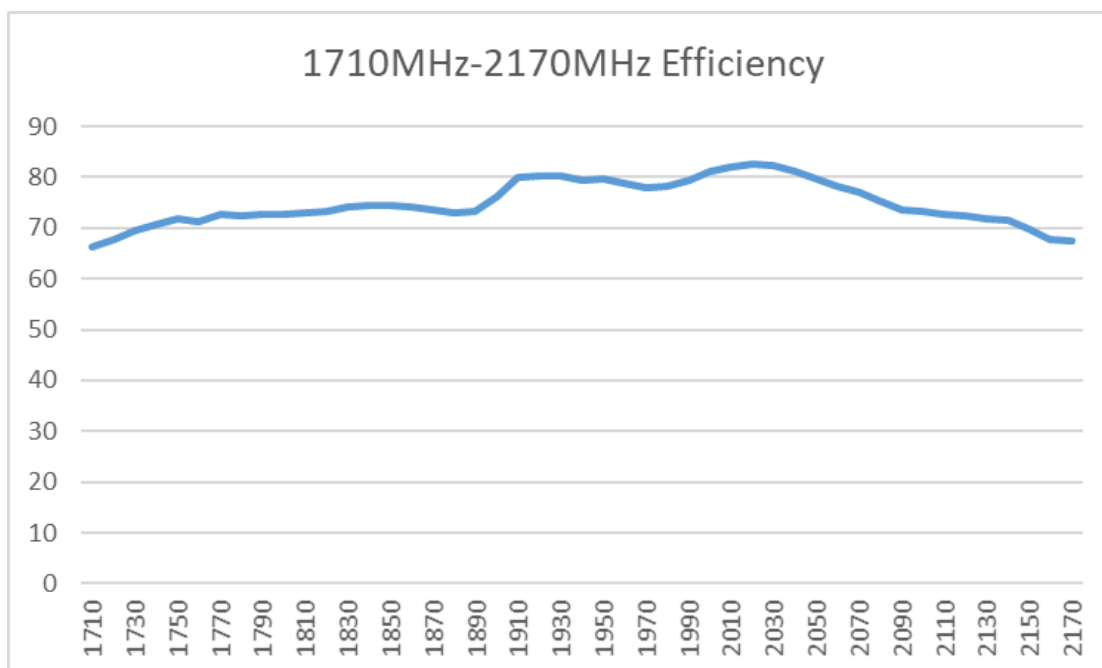
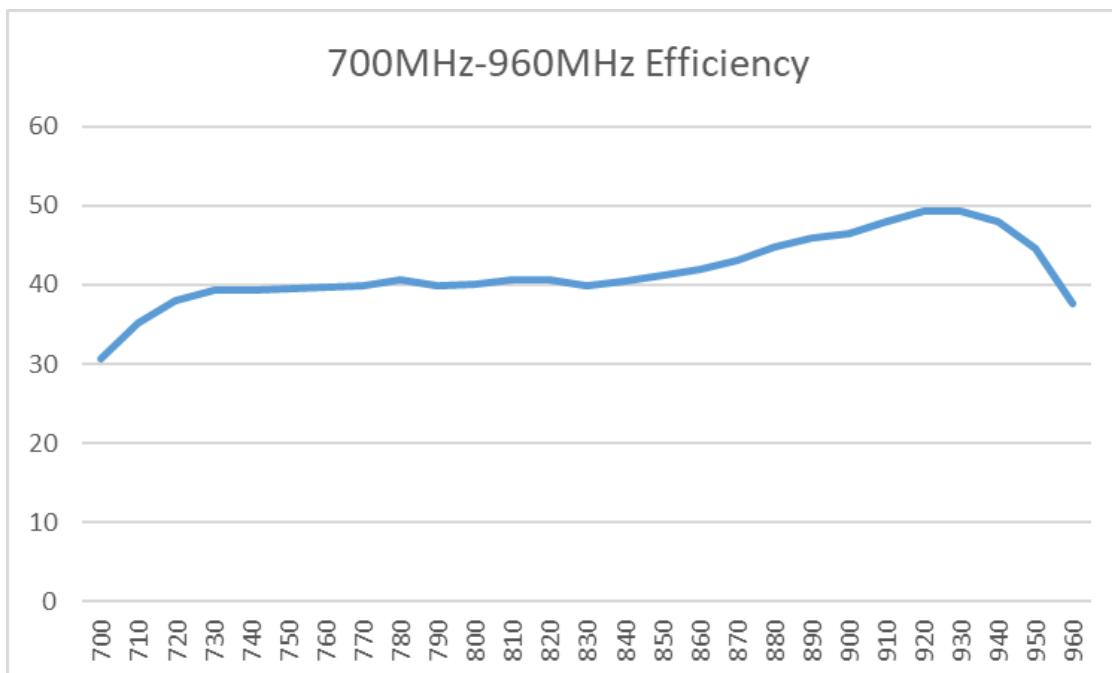


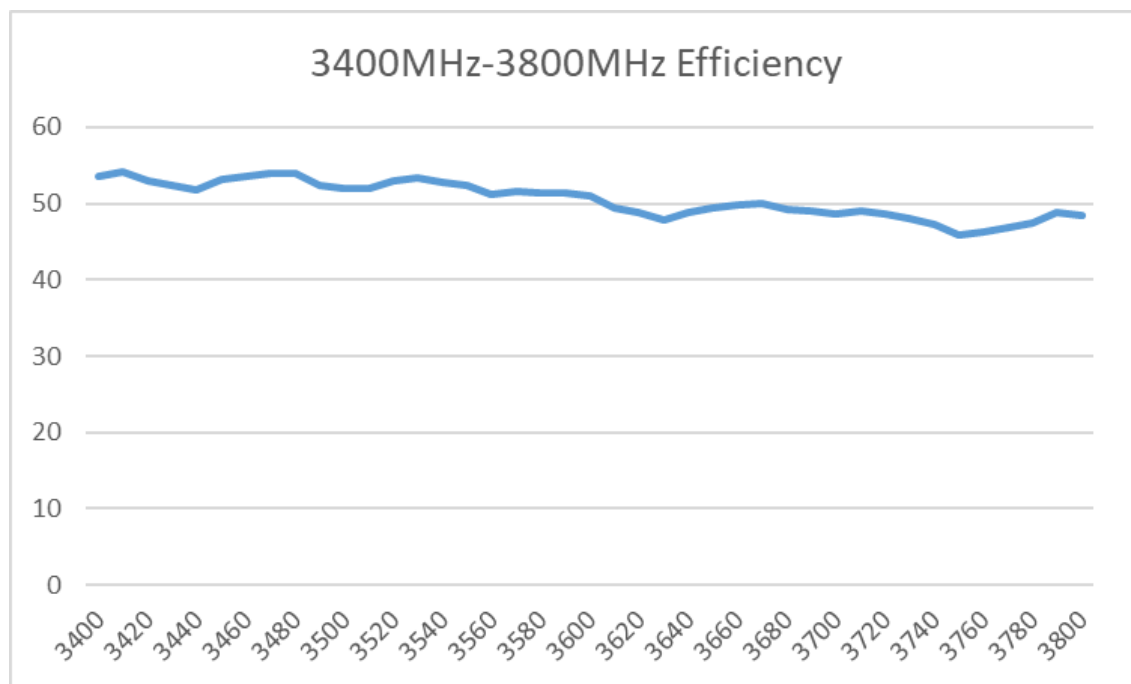
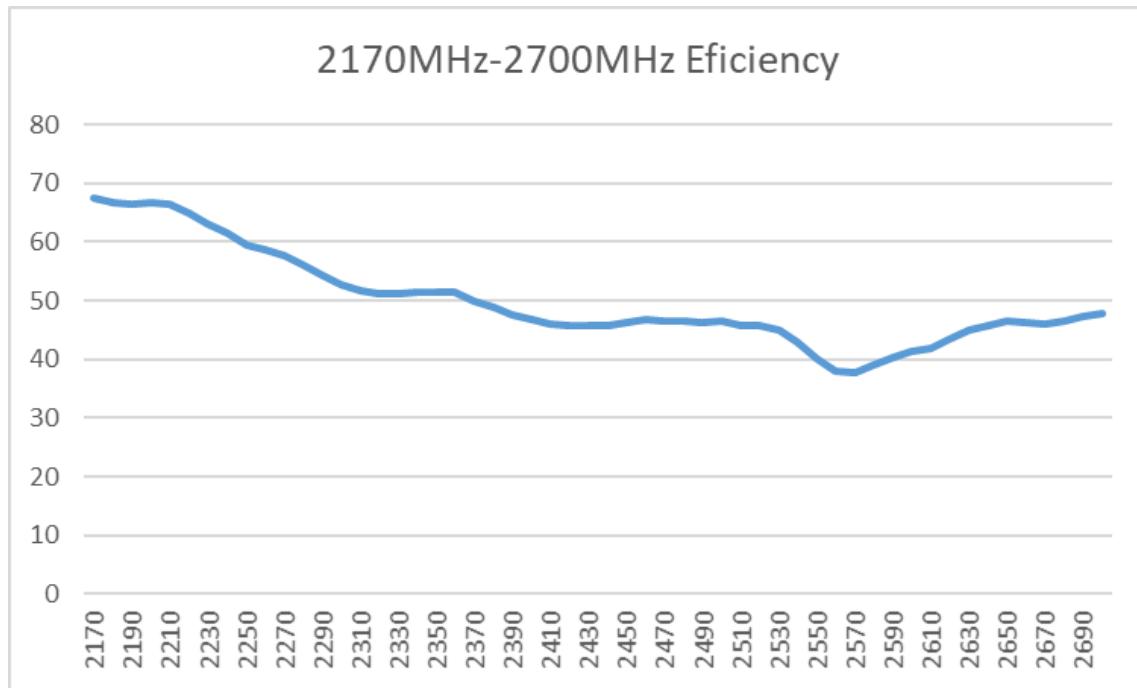
## 4.2. VSWR



Frequency (MHz)	698	960	1710	1990	2170	2300	2690	3400	3800
VSWR	2.31	2.73	1.51	1.59	2.53	3.27	3.02	2.11	3.58

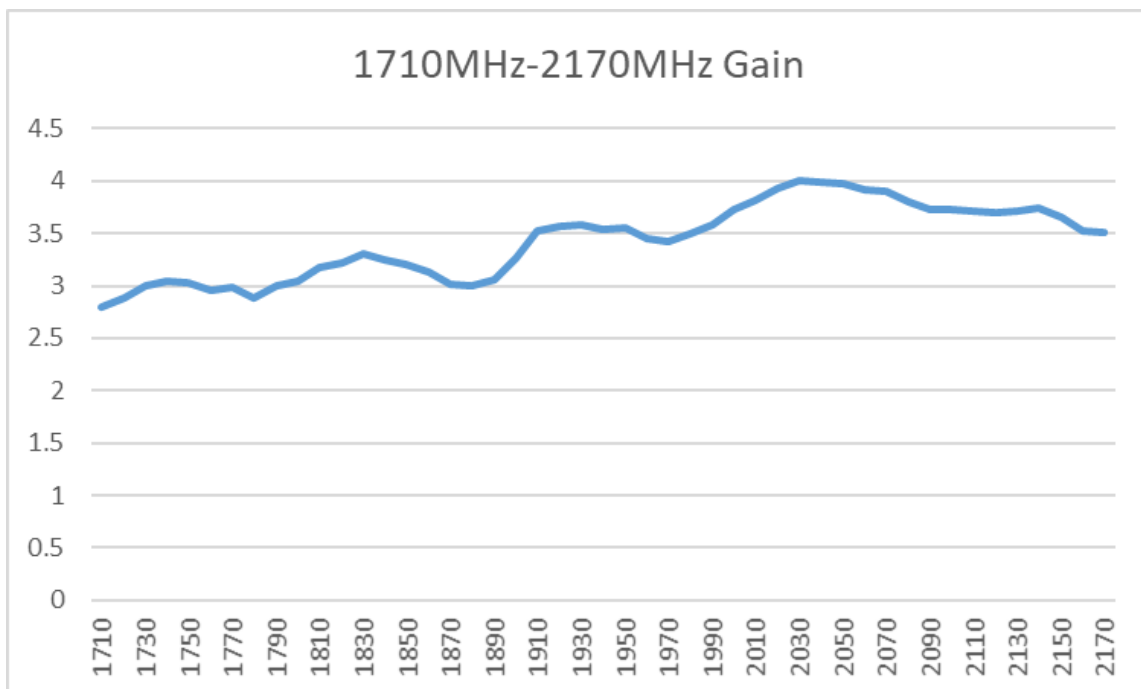
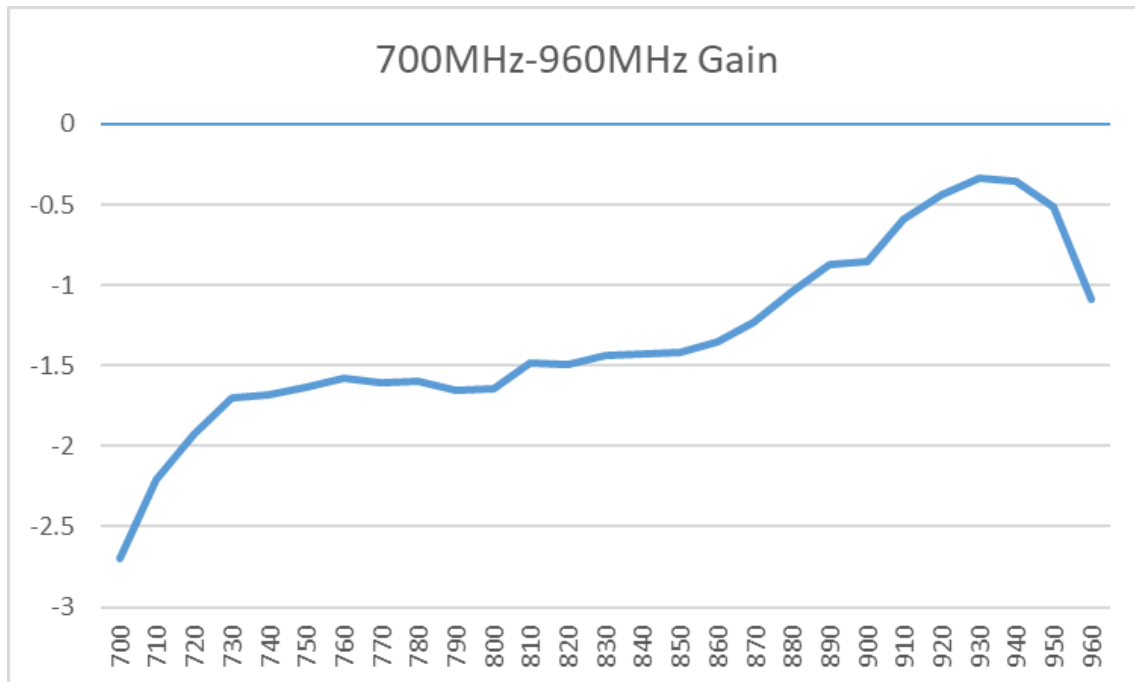
### 4.3. Efficiency

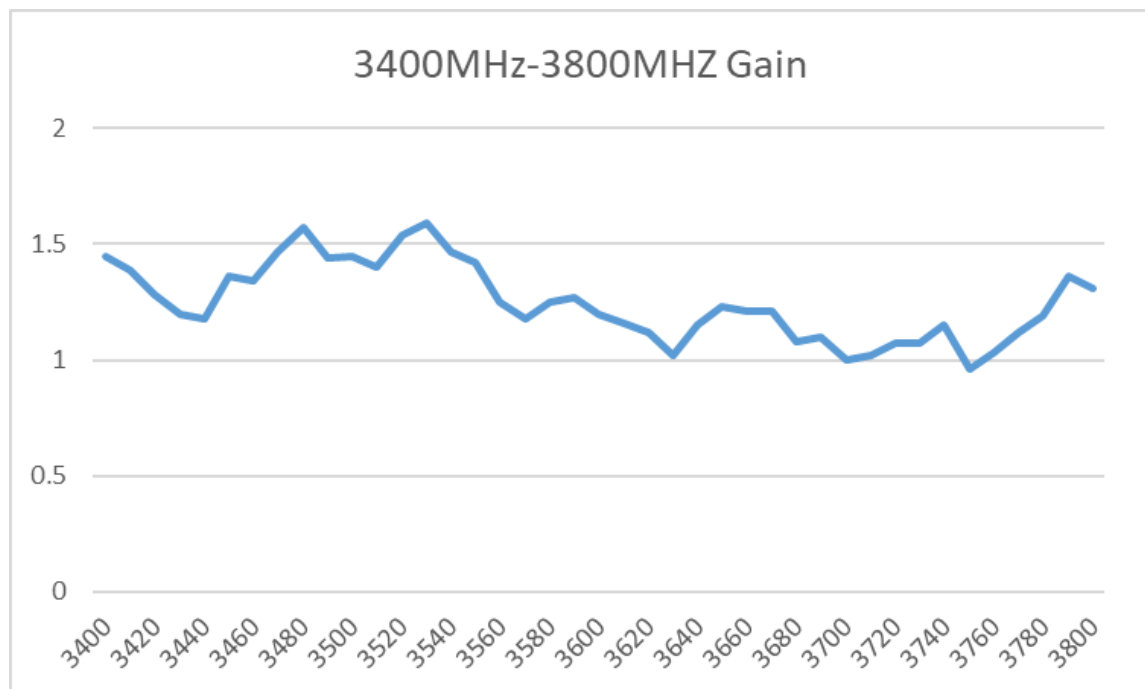
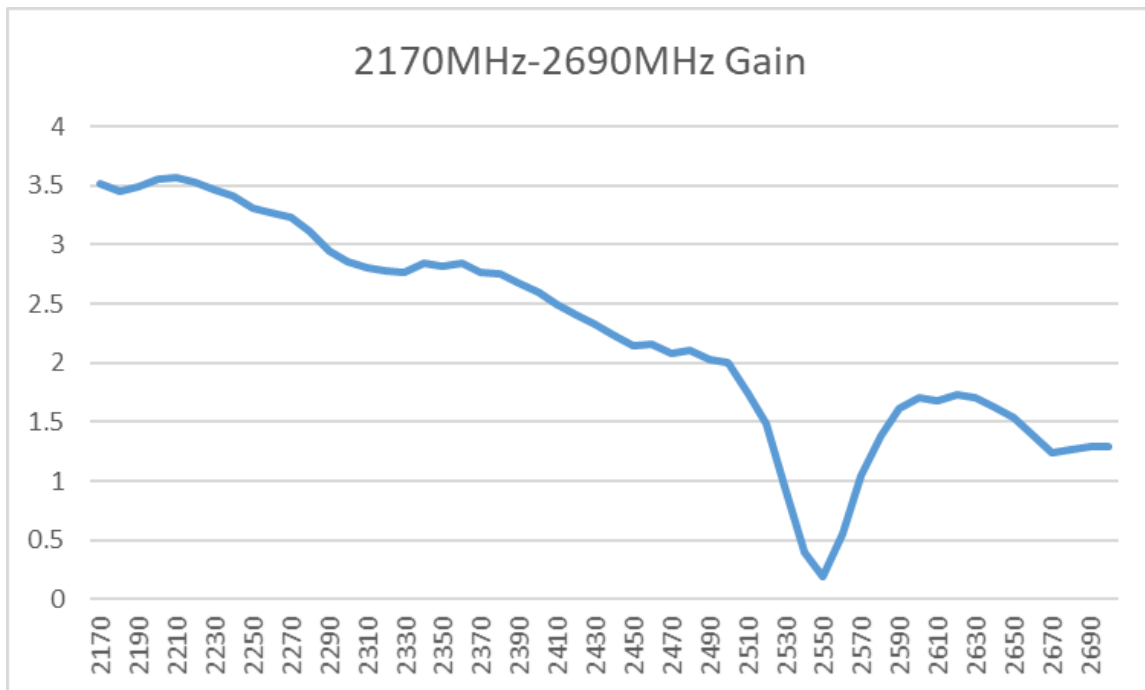




Frequency (MHz)	700	960	1710	1990	2170	2300	2700	3400	3800
Efficiency (%)	30.65	37.62	66.25	79.47	67.46	52.63	47.82	53.58	48.43

#### 4.4. Gain

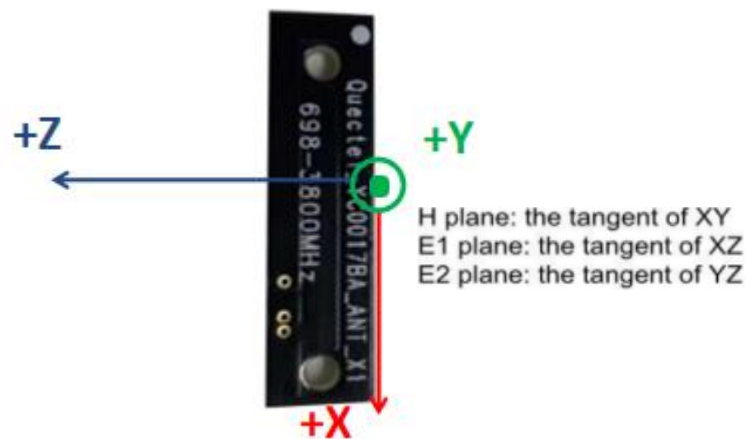
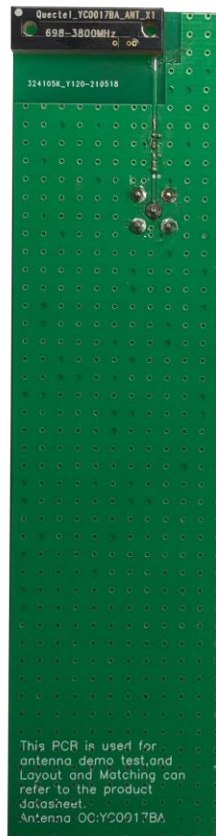


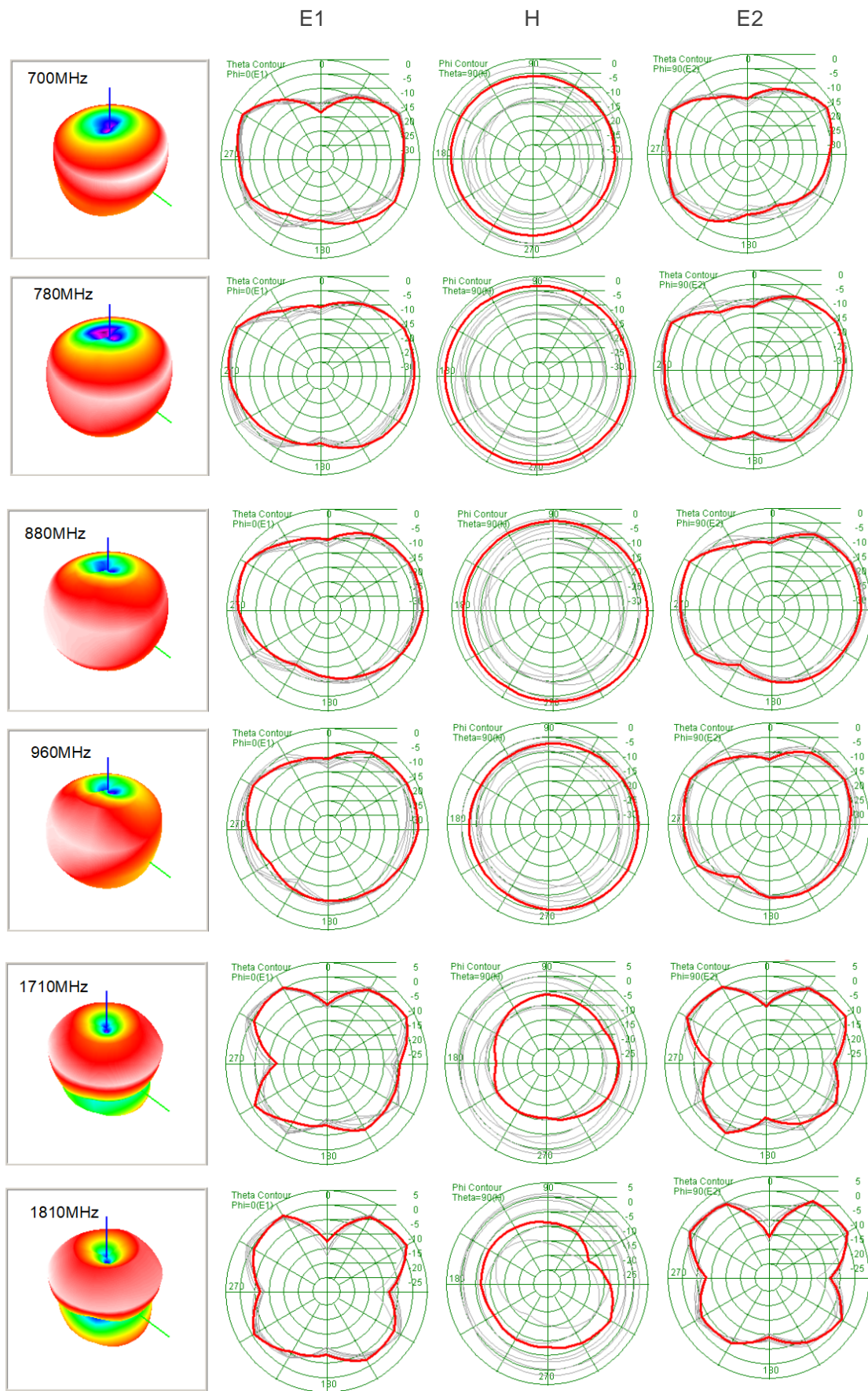


Frequency (MHz)	700	960	1710	1990	2170	2300	2700	3400	3800
Gain (dBi)	-2.70	-1.09	2.79	3.59	3.51	2.86	1.29	1.45	1.31

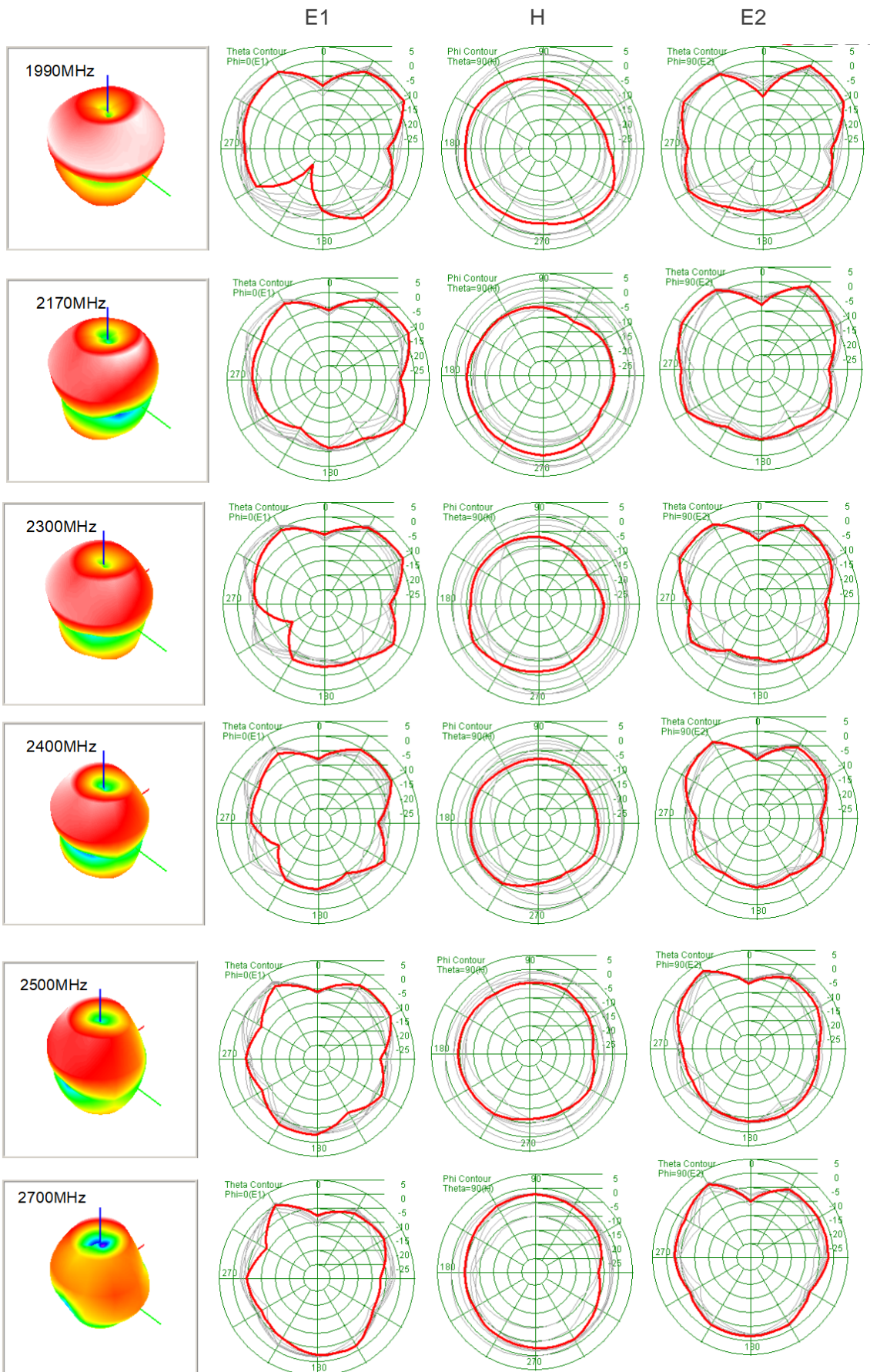
## 4.5. Radiation Pattern

- Test Condition: with ground plane (EVB size: 36 mm × 140 mm).

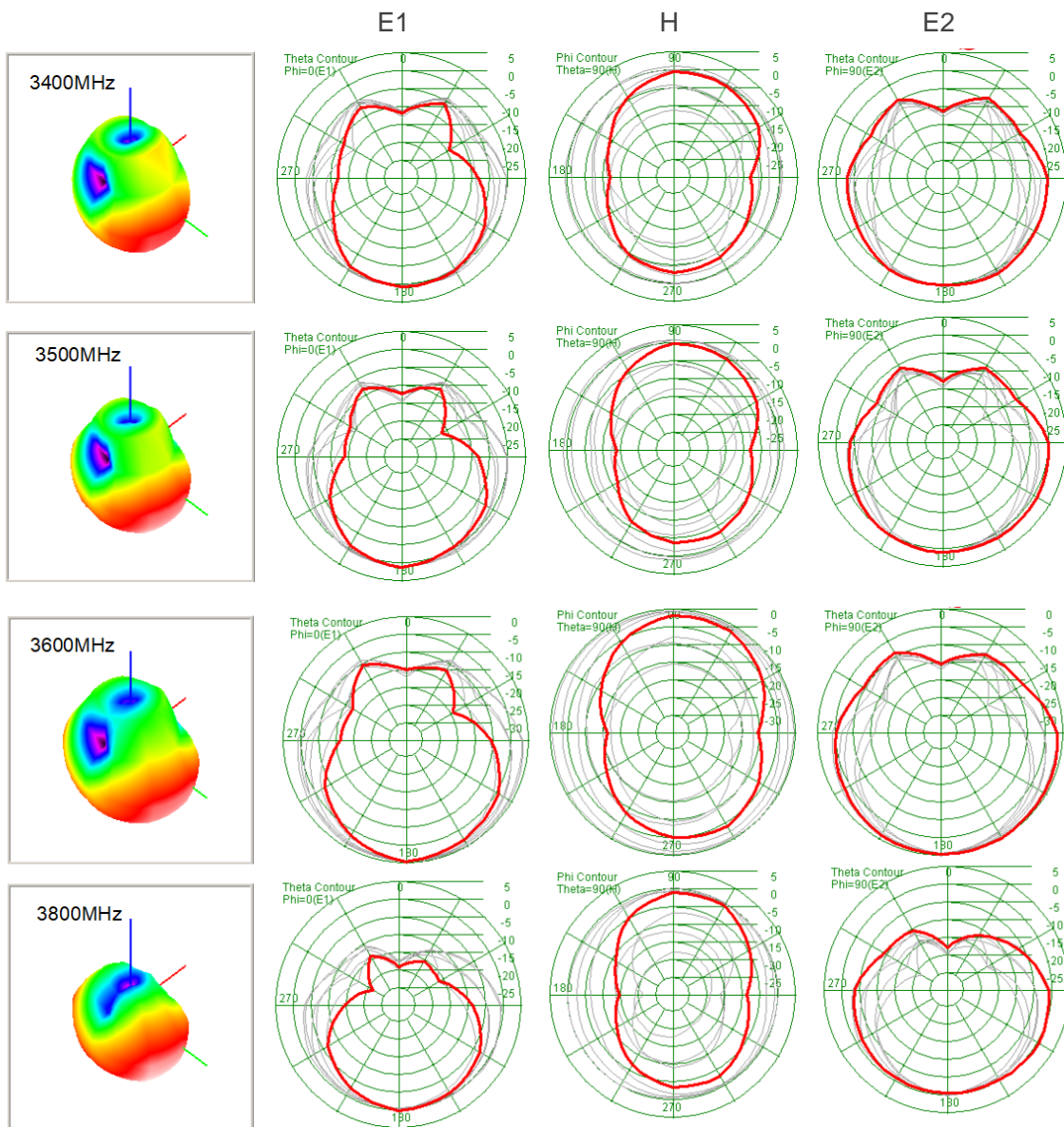




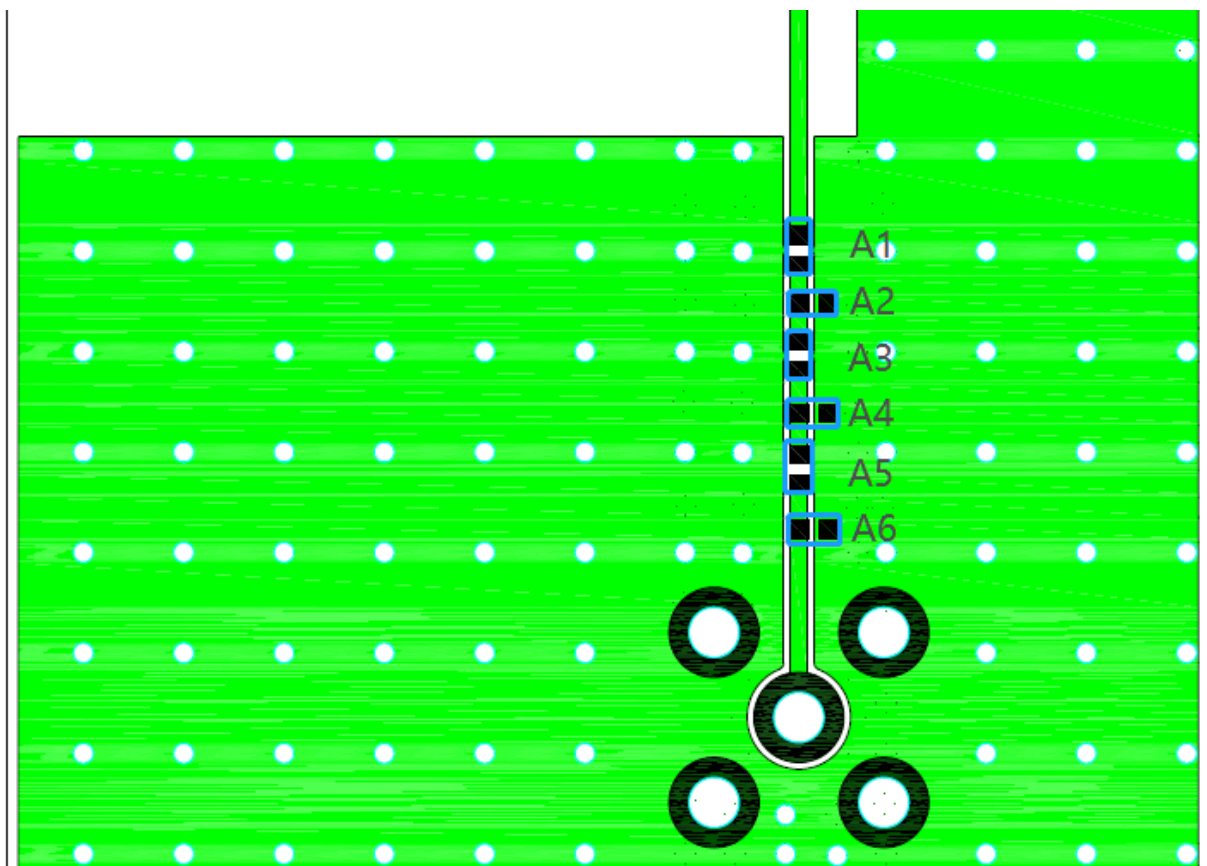
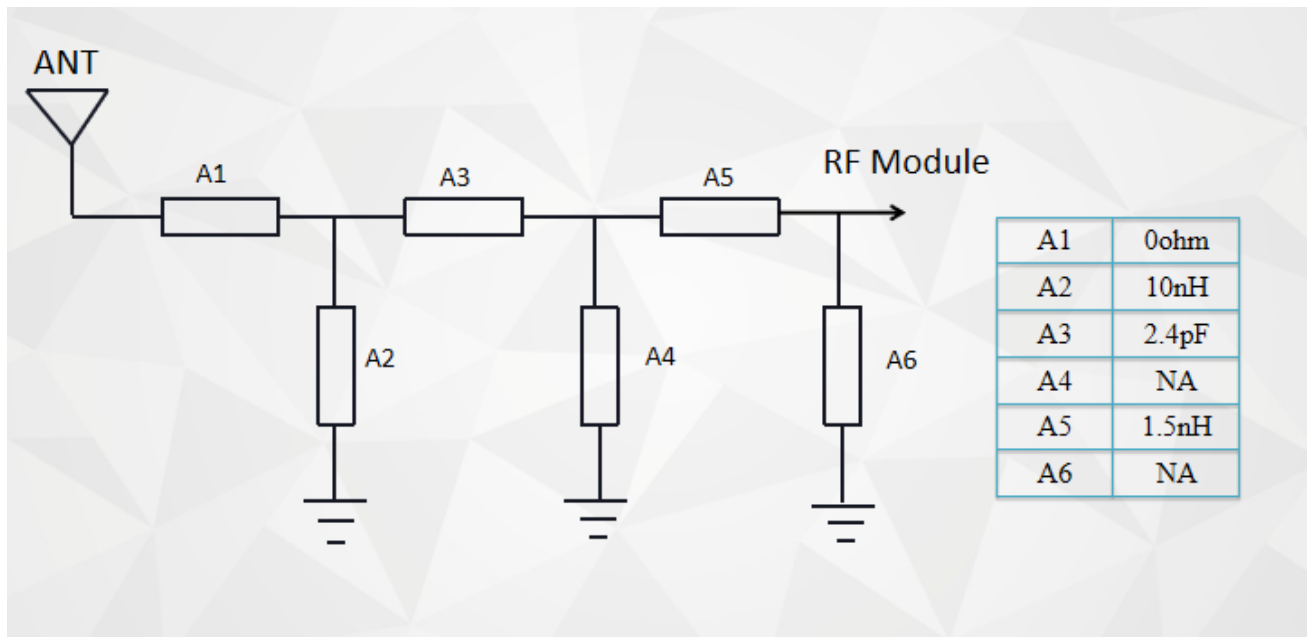




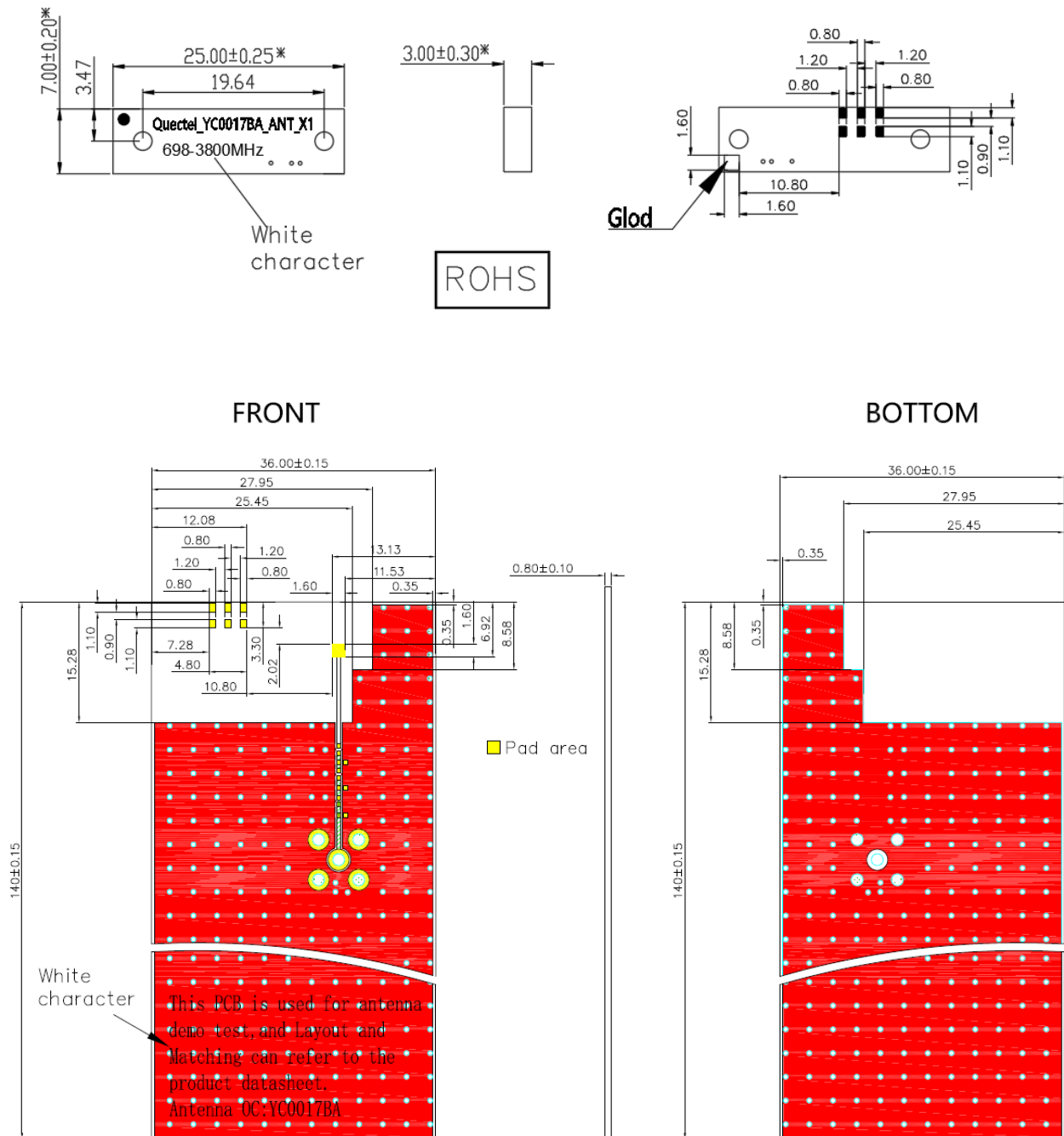




## 5 Matching Circuit

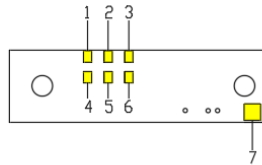


## 6 Product Size



## 7 Schematic Symbol and Pin Definition

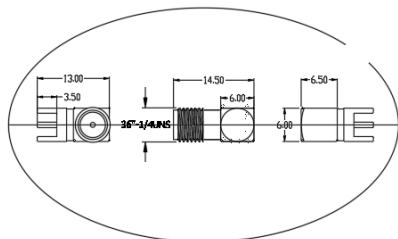
The pin assignment for the antenna is as follows. The antenna has 7 pins and only one works. All other pins are designed for mechanical strength.



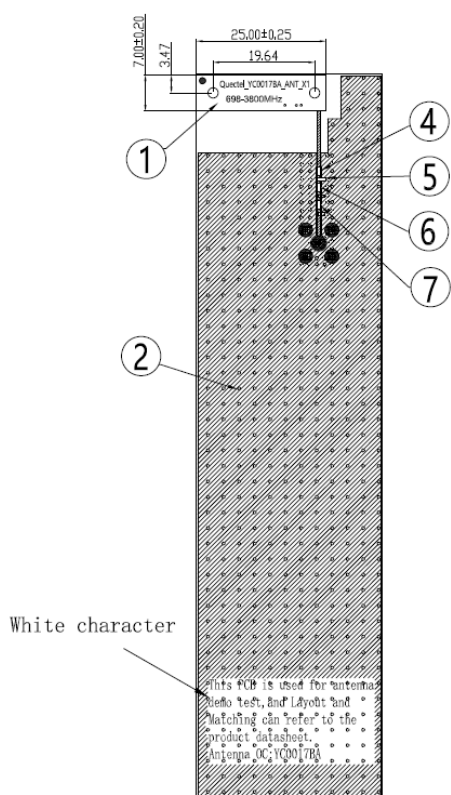
Front:Perspective View

PAD NO.	Description
1	Not used (mechanical only)
2	Not used (mechanical only)
3	Not used (mechanical only)
4	Not used (mechanical only)
5	Not used (mechanical only)
6	Not used (mechanical only)
7	Feed

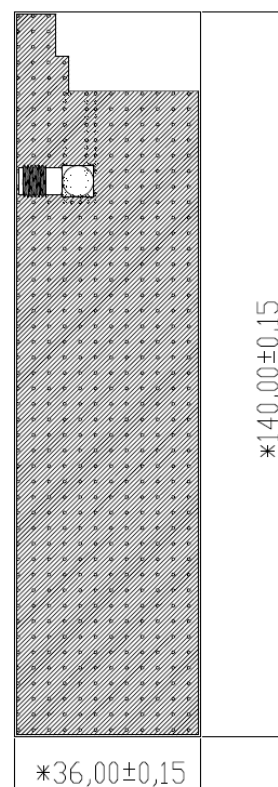
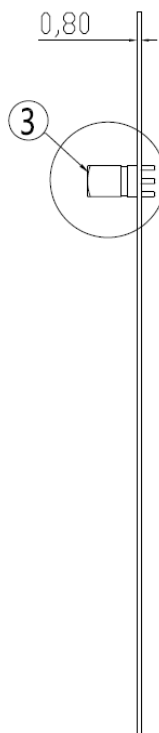
## 8 EVB Size



	Name	Material	Brand	QTY	NO
1	Antenna	FR4 3.0t	BLACK	1	
2	PCBA	FR4 0.8t	Green	1	
3	SMA-K	Brass	Gold Plated	1	
4	0 ohm Inductor(0402)	Ceramics	N/A	1	
5	10 nH Inductor(0402)	Ceramics	MURATA	1	LQG15HS10NJ02
6	2.4 pF Inductor(0402)	Ceramics	MURATA	1	GCM1555C1H2R4BA16
7	1.5 nH Inductor(0402)	Ceramics	MURATA	1	LQG15HS1N5S02



Front

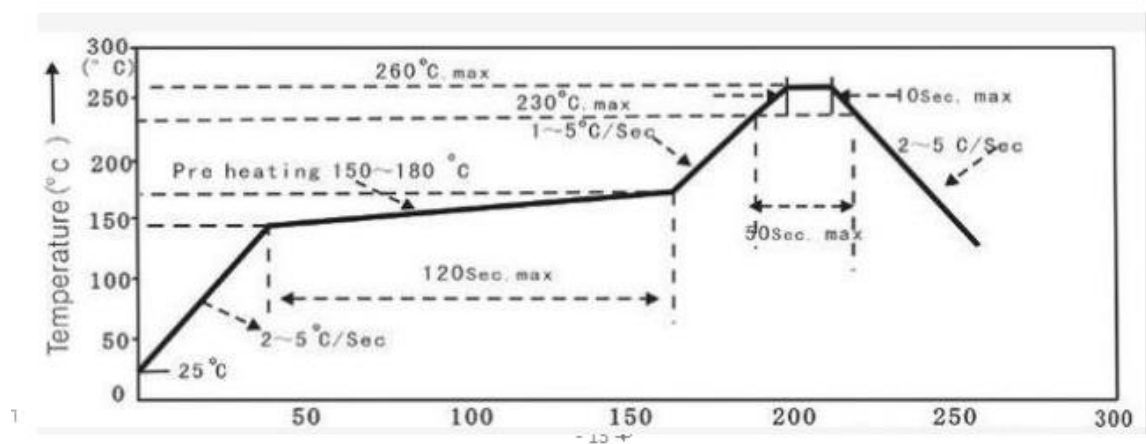


Back

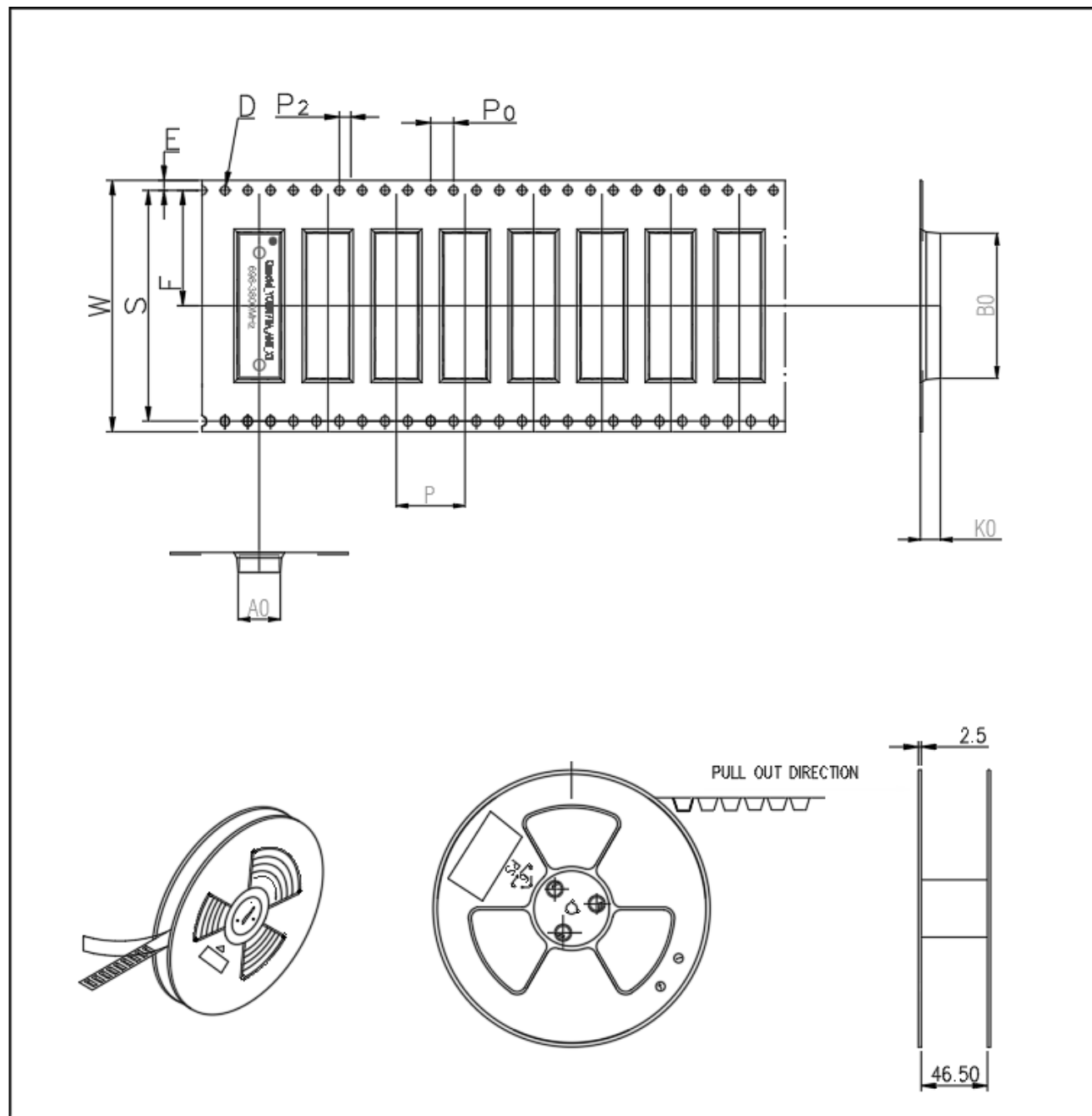
## 9 Soldering Temperature

Phase	Profile Features	PB-Free Assembly (Max.)
RAMP-UP	Avg. Ramp-up Rate (T <sub>smax</sub> to T <sub>p</sub> )	3 °C/second (Max.)
PREHEAT	Temperature Min. (T <sub>smin</sub> )	150 °C
	Temperature Max. (T <sub>smax</sub> )	180 °C
	Time (T <sub>smin</sub> to T <sub>smax</sub> )	120 seconds (Max.)
REFLOW	Temperature (T <sub>L</sub> )	210 °C
	Total Time above T <sub>L</sub> (t <sub>l</sub> )	50 seconds (Max.)
PEAK	Temperature (T <sub>p</sub> )	260 °C
	Time (t <sub>p</sub> )	10 seconds (Max.)
RAMP-DOWN	Rate	5 °C/second (Max.)

## 10 Reflow Profile



## 11 Package



ITEM	W	A <sub>0</sub>	A <sub>1</sub>	B <sub>0</sub>	B <sub>1</sub>	K <sub>0</sub>	P	F	E <sub>0</sub>	D	P <sub>0</sub>	P <sub>2</sub>	T
DIM	44.00 <sup>+0.30</sup> <sub>-0.30</sub>	7.40 <sup>+0.10</sup> <sub>-0.10</sub>	-- <sup>+0.10</sup> <sub>-0.10</sub>	25.40 <sup>+0.10</sup> <sub>-0.10</sub>	-- <sup>+0.10</sup> <sub>-0.10</sub>	3.50 <sup>+0.10</sup> <sub>-0.10</sub>	12.0 <sup>+0.10</sup> <sub>-0.10</sub>	20.20 <sup>+0.15</sup> <sub>-0.15</sub>	1.75 <sup>+0.10</sup> <sub>-0.10</sub>	1.50 <sup>+0.10</sup> <sub>-0.00</sub>	4.00 <sup>+0.10</sup> <sub>-0.10</sub>	2.00 <sup>+0.10</sup> <sub>-0.10</sub>	0.35 <sup>+0.05</sup> <sub>-0.05</sub>
ALTERNATE													

Custom Confirm: \_\_\_\_\_ Date: \_\_\_\_\_ ☐ Accept ☐ Rejection Reason: \_\_\_\_\_

- 10 sprocket hole pitch cumulative tolerance
- Carrier camber not to exceed 1mm in 250mm.
- A<sub>0</sub> and B<sub>0</sub> measured on a plane 0.3mm above the bottom of the pocket.
- K<sub>0</sub> measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
- All dimensions meet EIA-481-2A requirements.
- Material: black Conductive Polystyrene.
- Thickness: 0.35±0.05 mm.
- Packing length per 13" reel : 18.60Meters.
- Component loader per 13" reel :1500PCS 18.60M
- Vacuum packaging, desiccant in each package, pizza box packaging

FY

Customer P/N: SAF41282A

Mold No. :		Approved by:	CHENGTAO
Date:	2021-09-01		
Unit:	mm	Reviewed by:	CHENGTAO
Ratio:	1:1		
		Designed by:	HUWENMING



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