

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.

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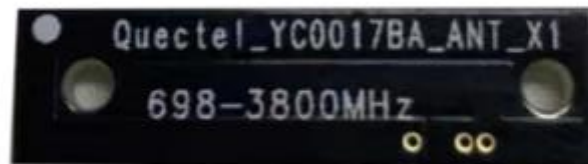
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1 Product Description

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 Ω
VSWR	≤ 4.0
Gain	≤ 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	-

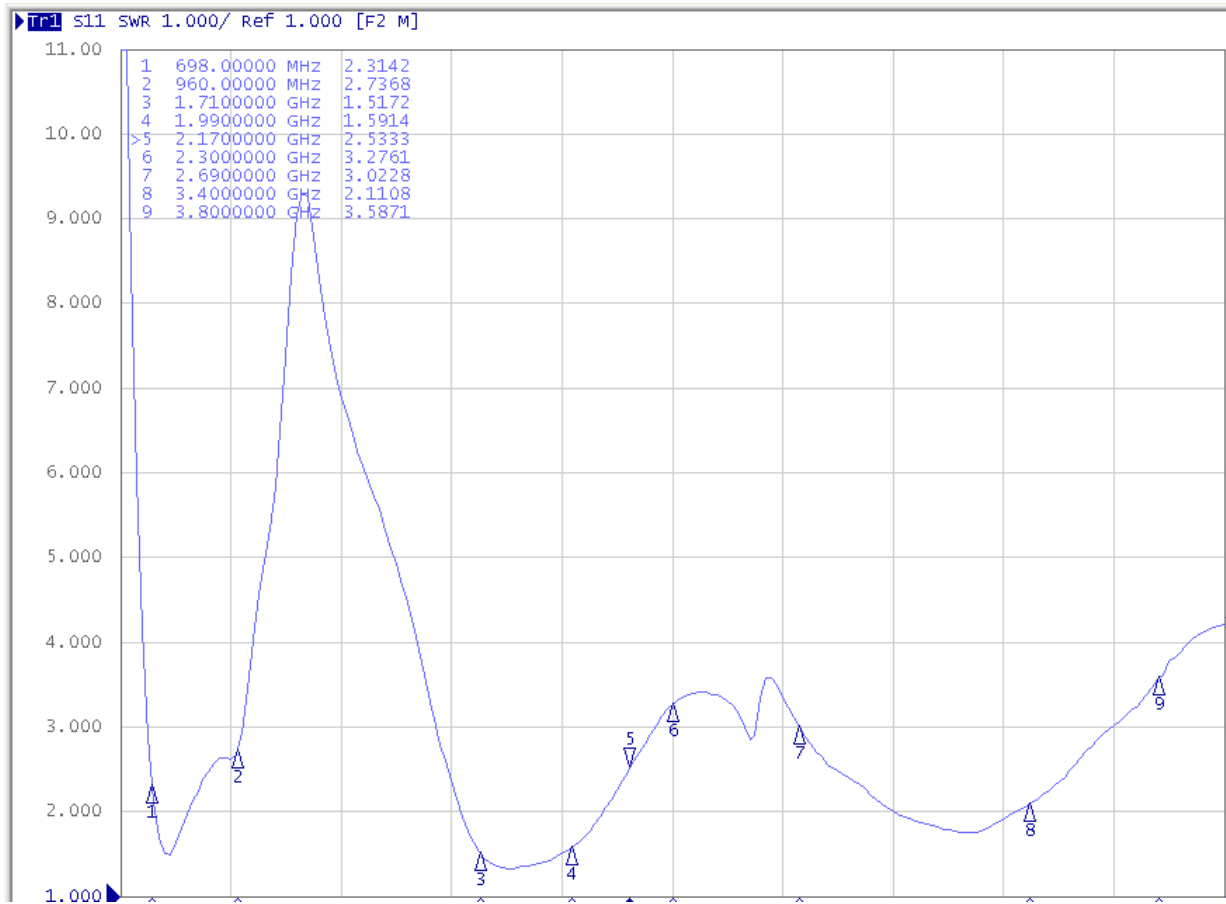
4 Overall Performance

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

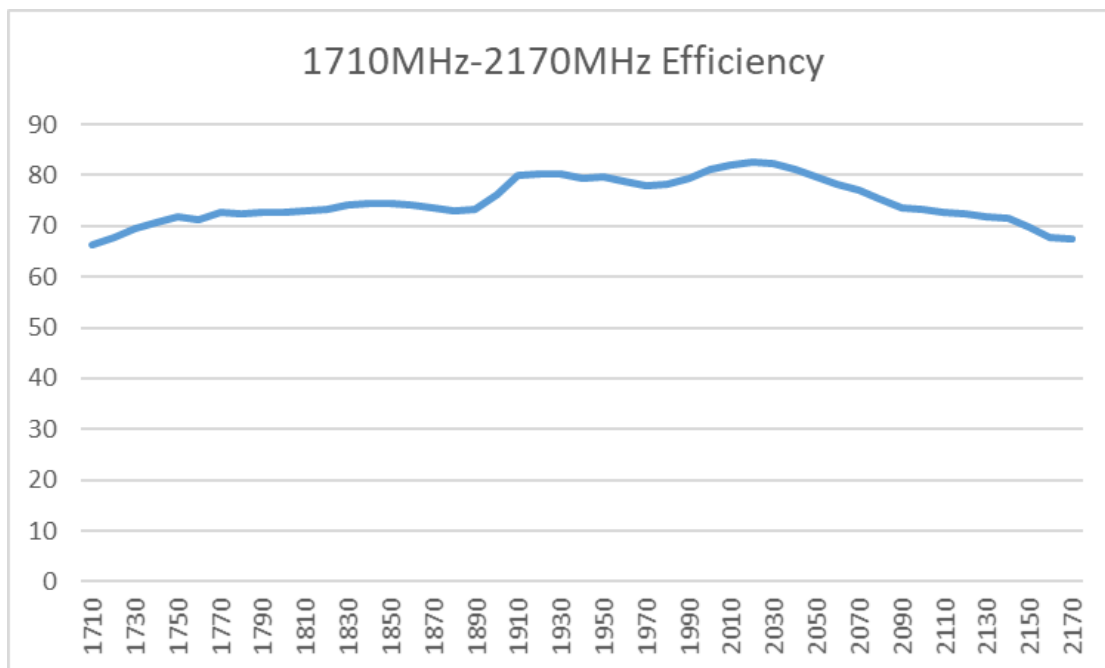
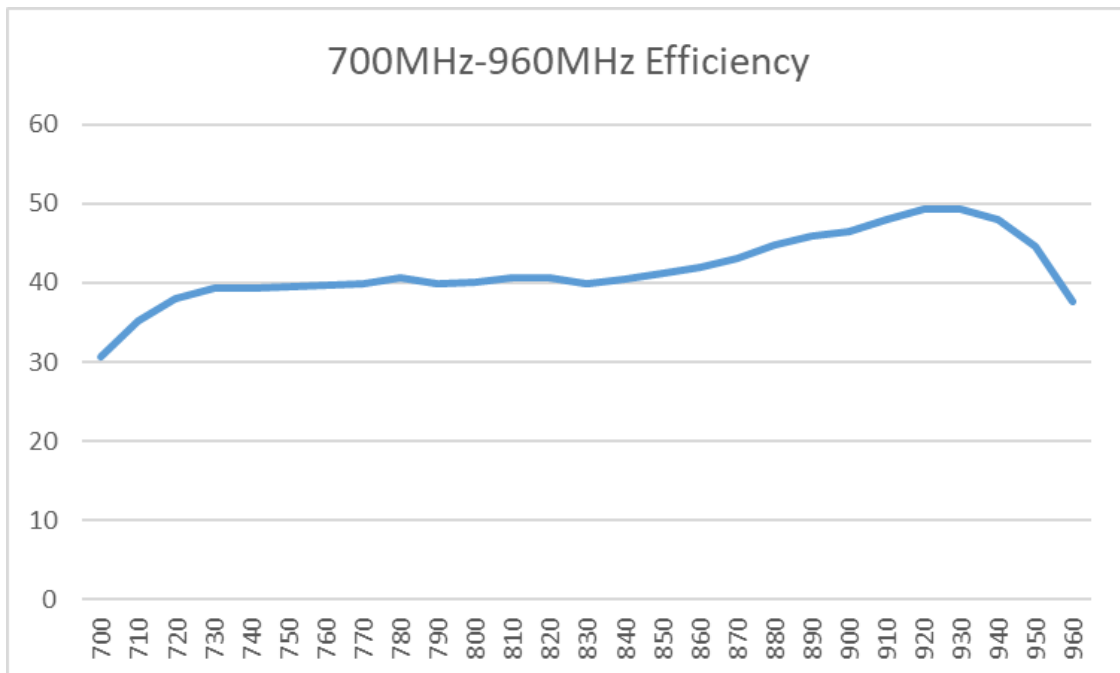


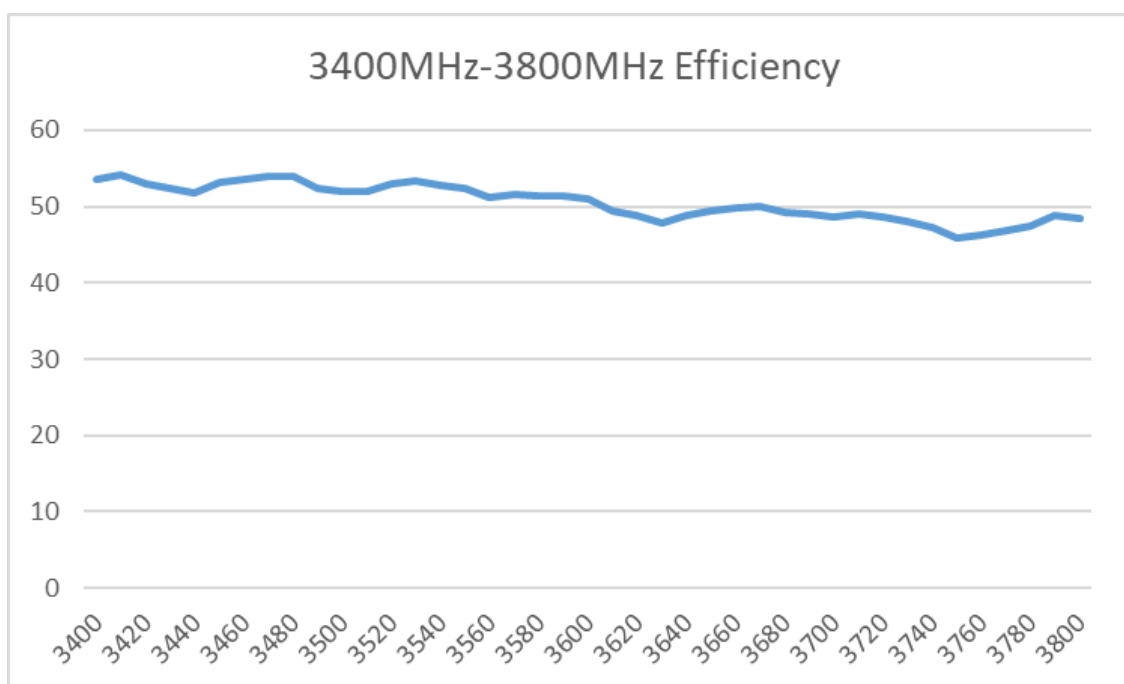
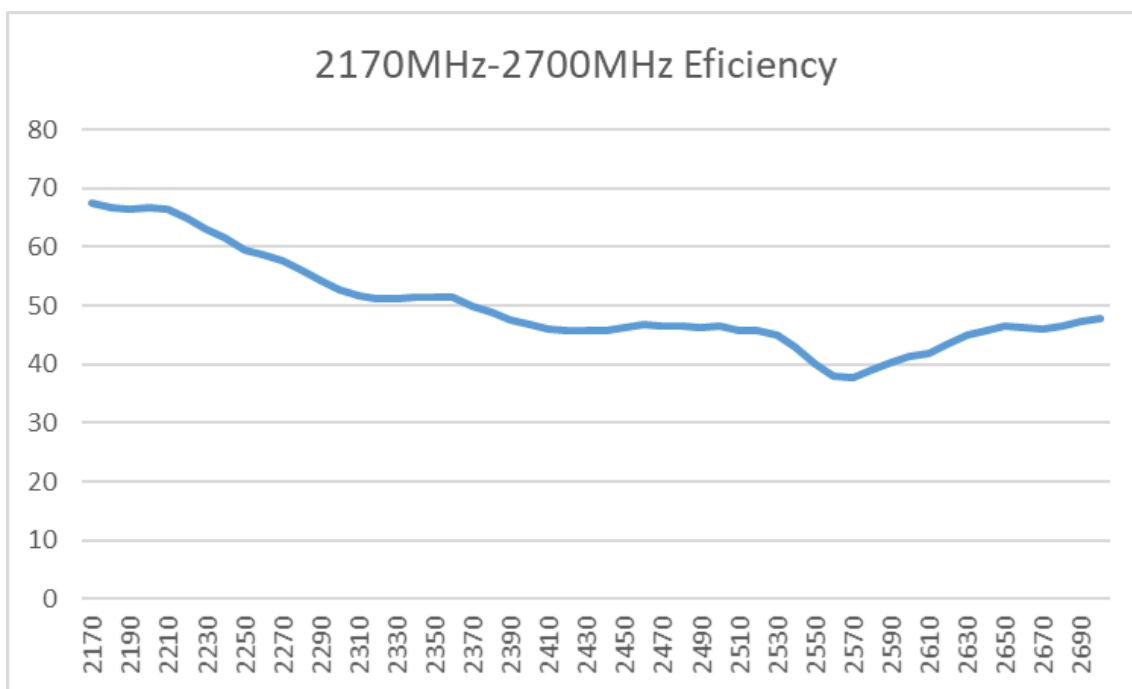
4.2. VSWR



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

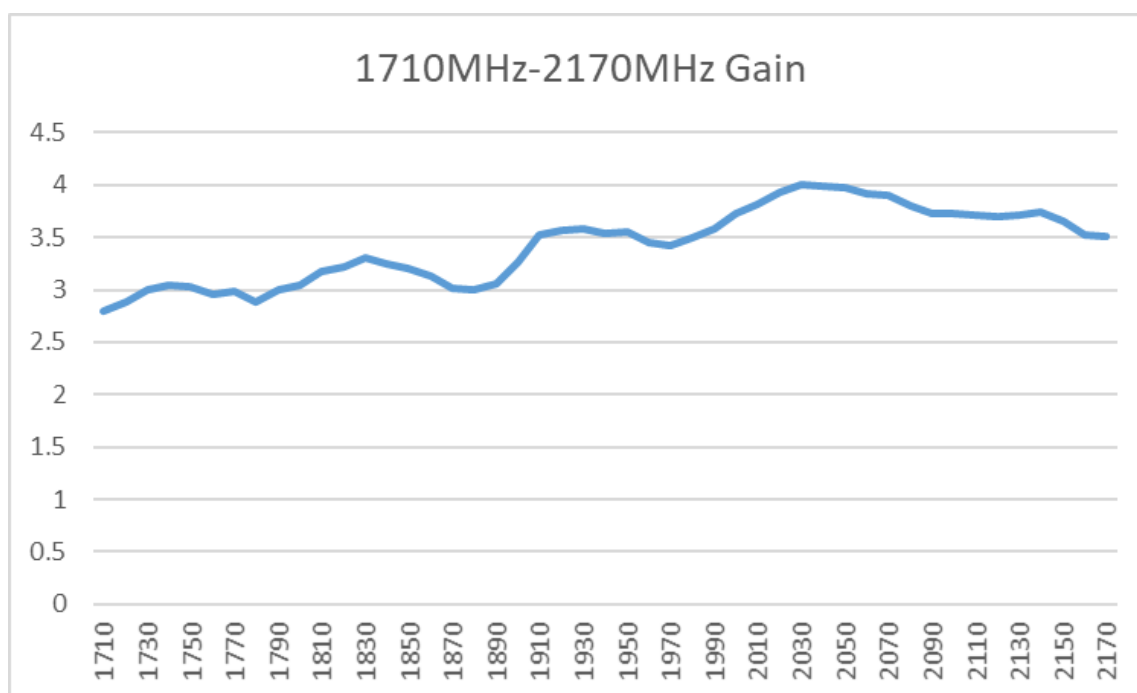
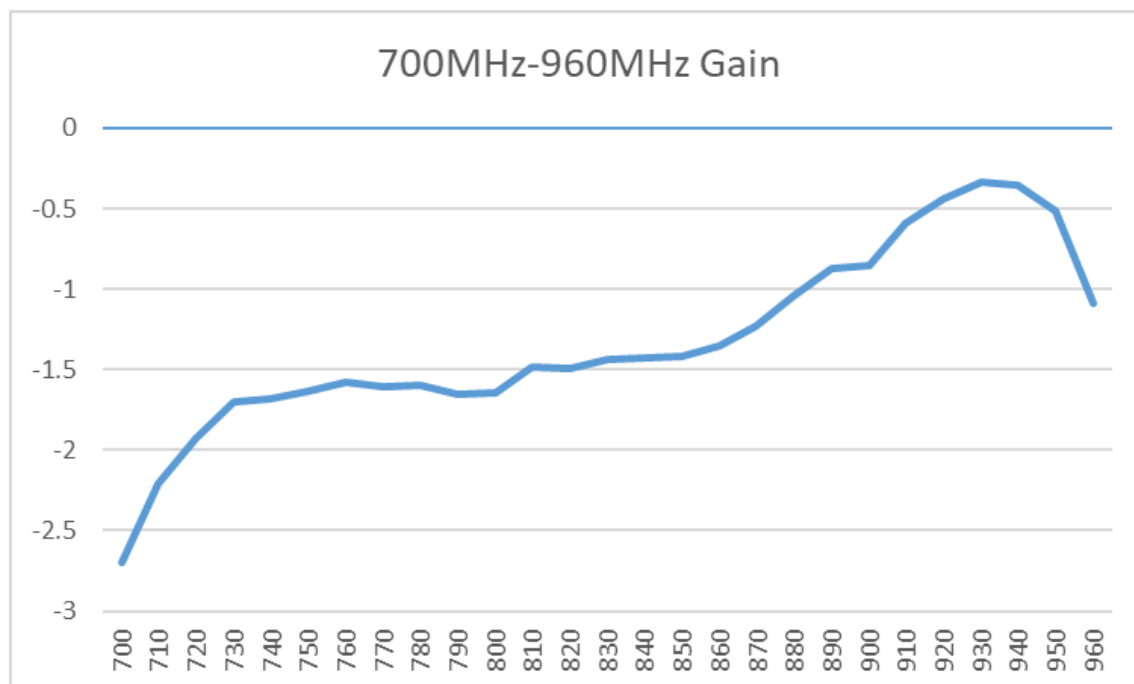
4.3. Efficiency

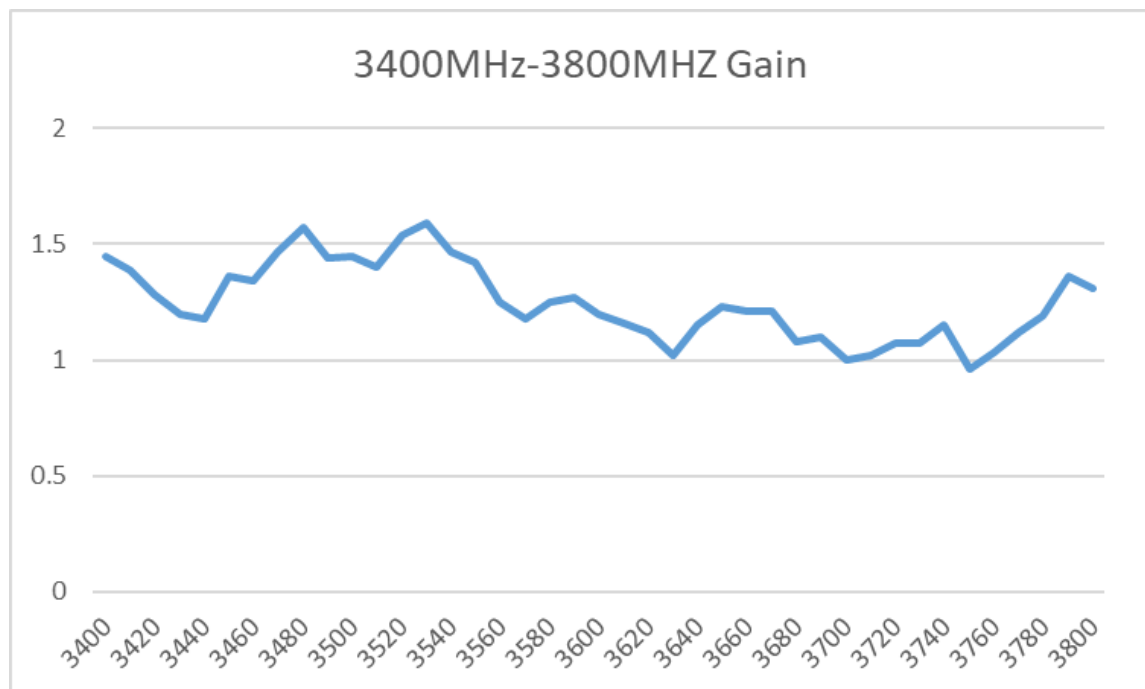
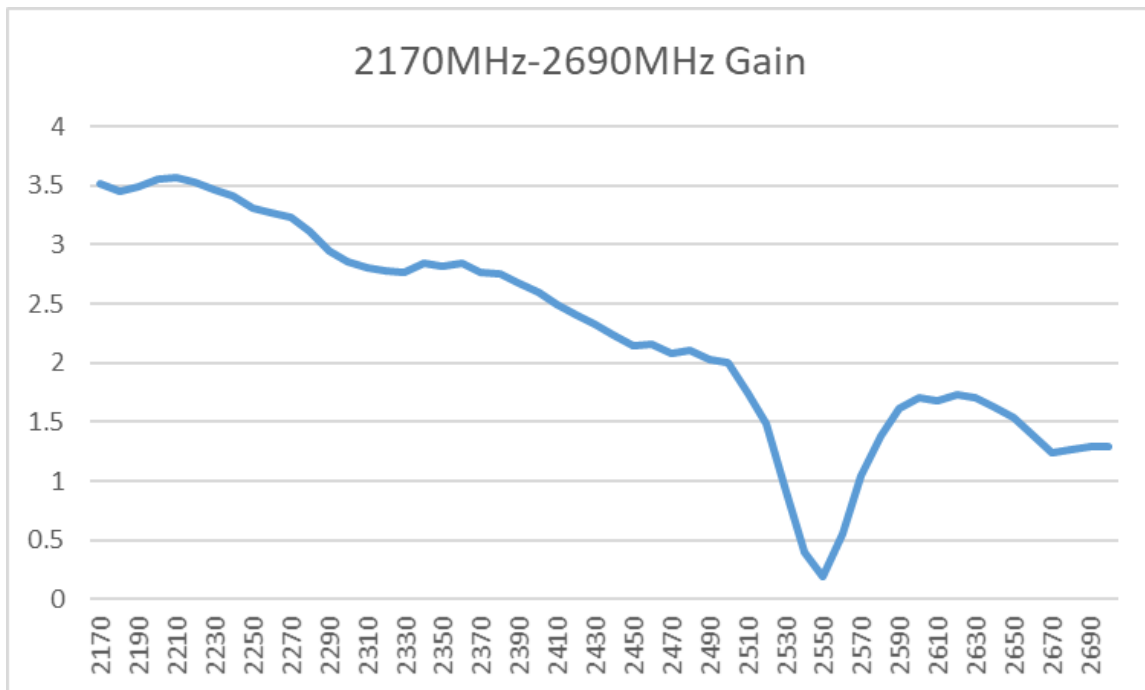




Frequency (MHz)	700	960	1710	1990	2170	2300	2700	3400	3800
Efficiency (%)	30.65	37.62	66.25	79.47	67.46	52.63	47.82	53.58	48.43

4.4. Gain

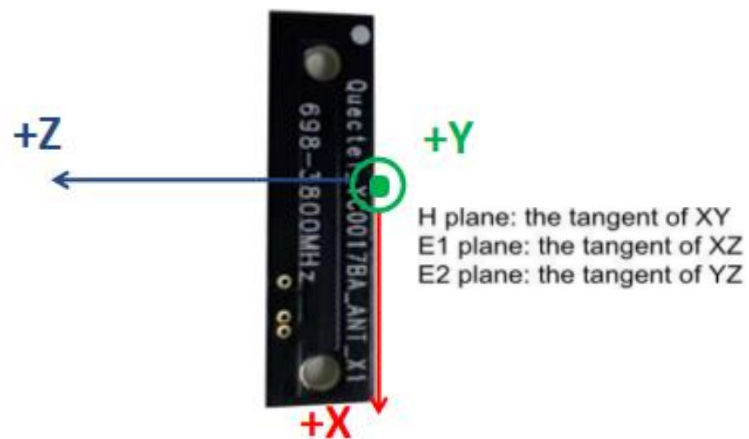
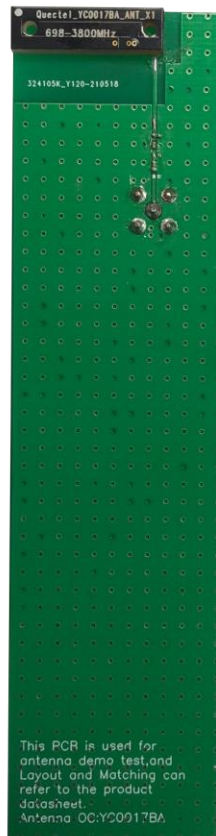


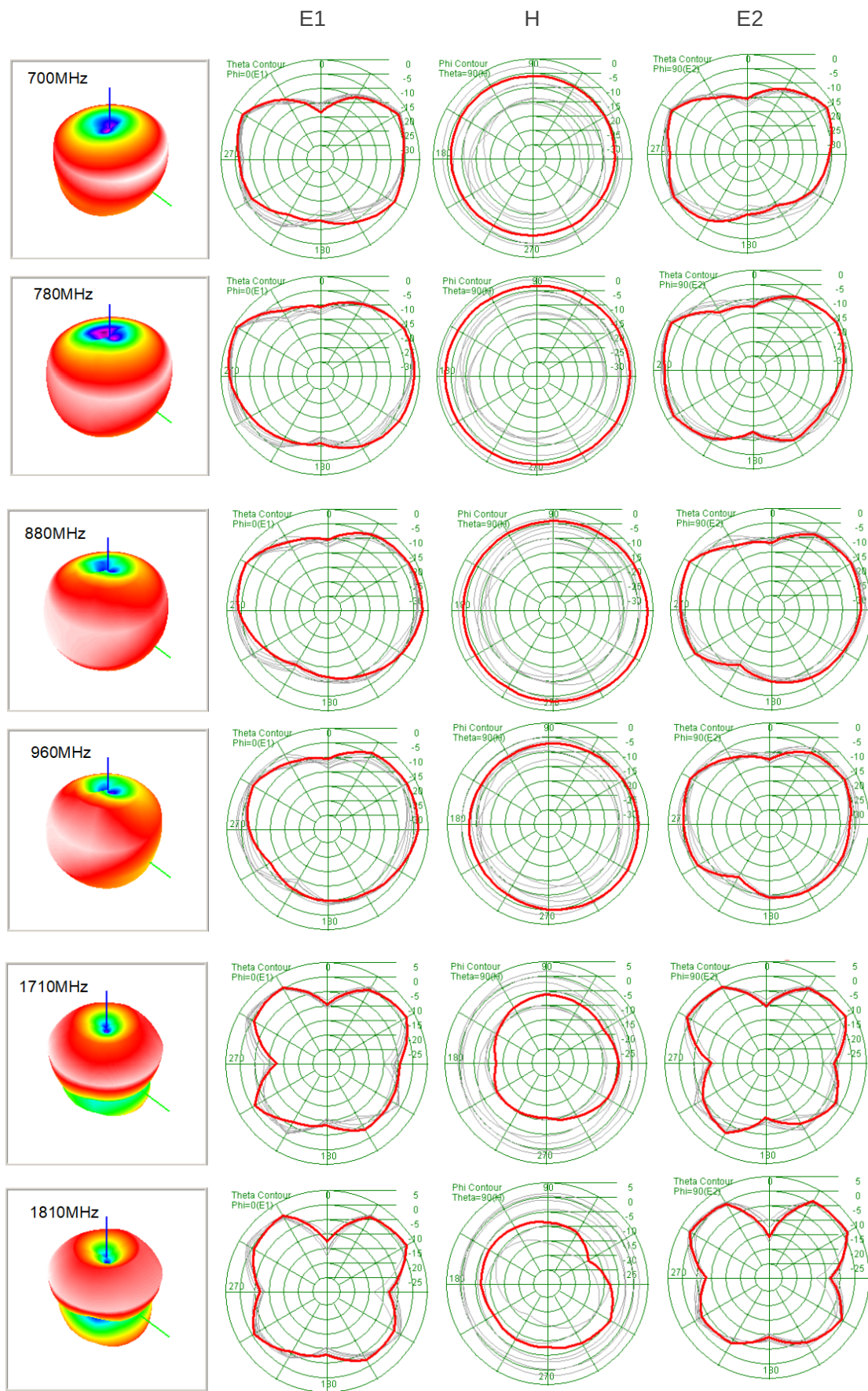


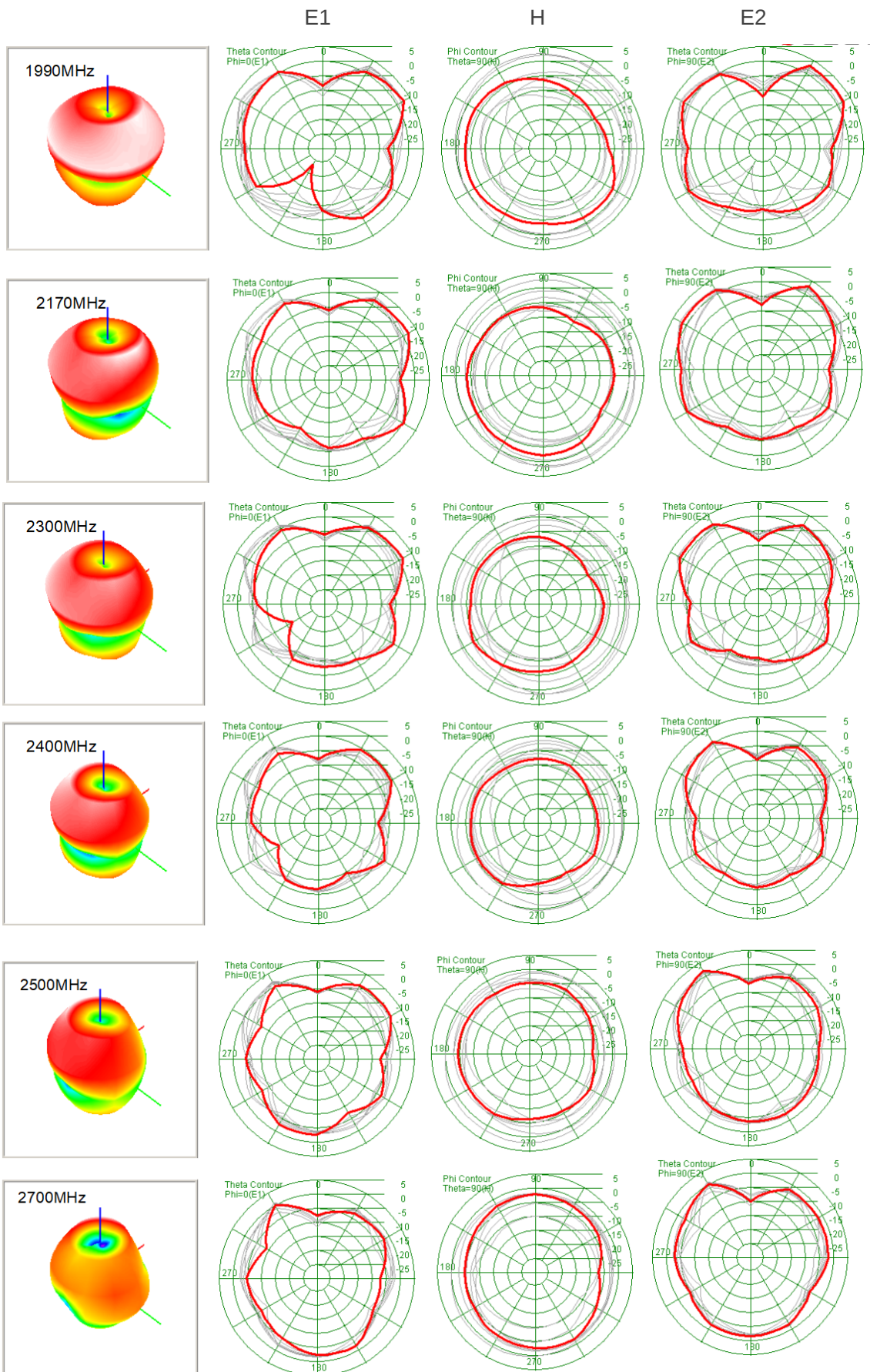
Frequency (MHz)	700	960	1710	1990	2170	2300	2700	3400	3800
Gain (dBi)	-2.70	-1.09	2.79	3.59	3.51	2.86	1.29	1.45	1.31

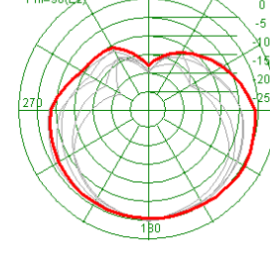
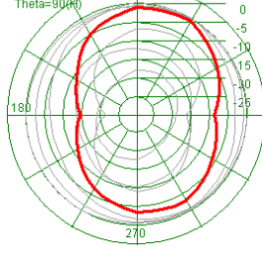
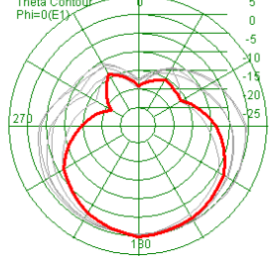
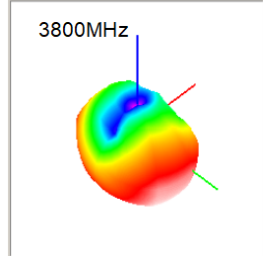
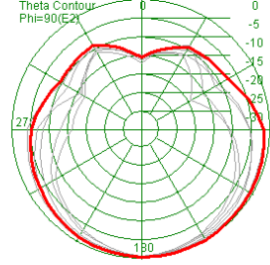
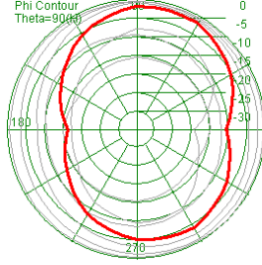
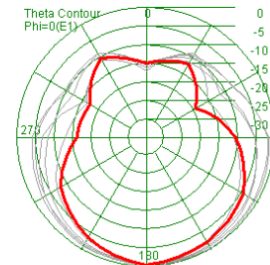
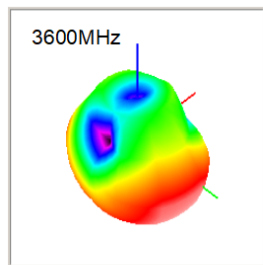
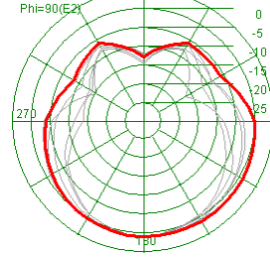
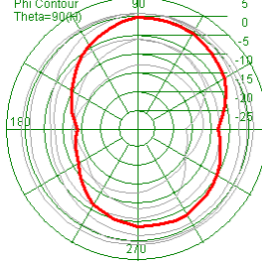
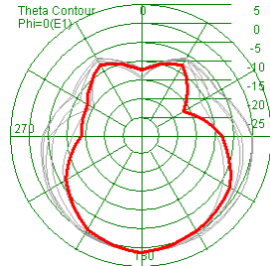
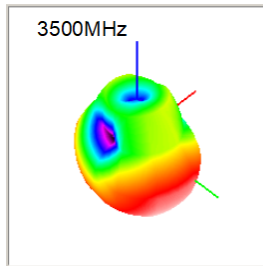
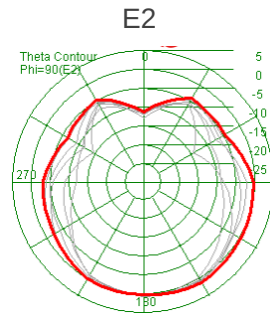
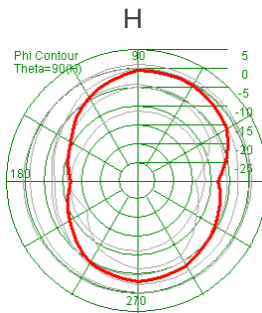
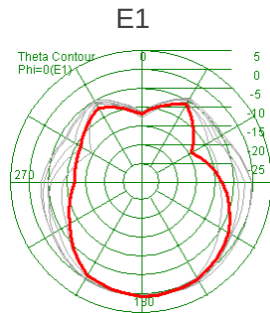
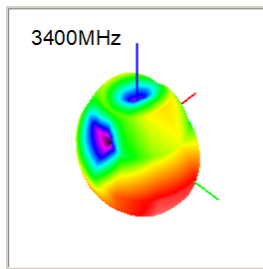
4.5. Radiation Pattern

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

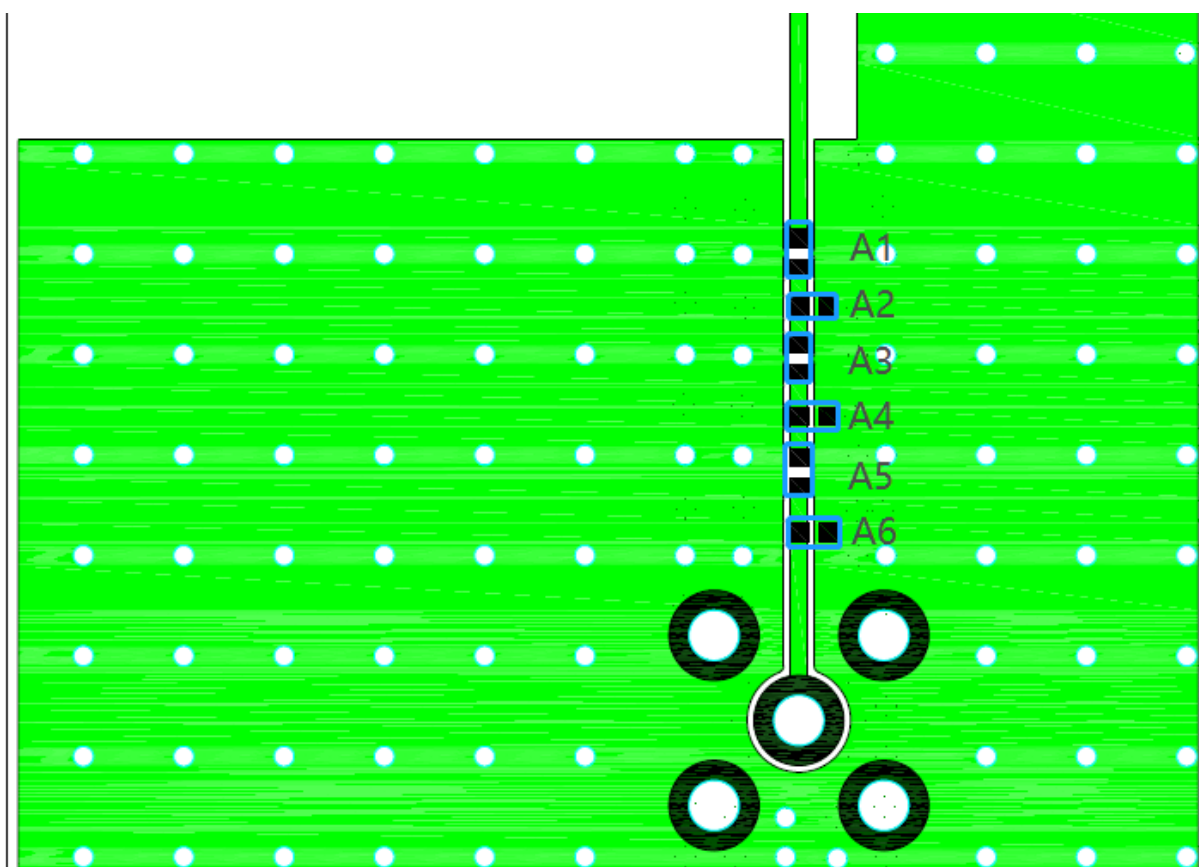
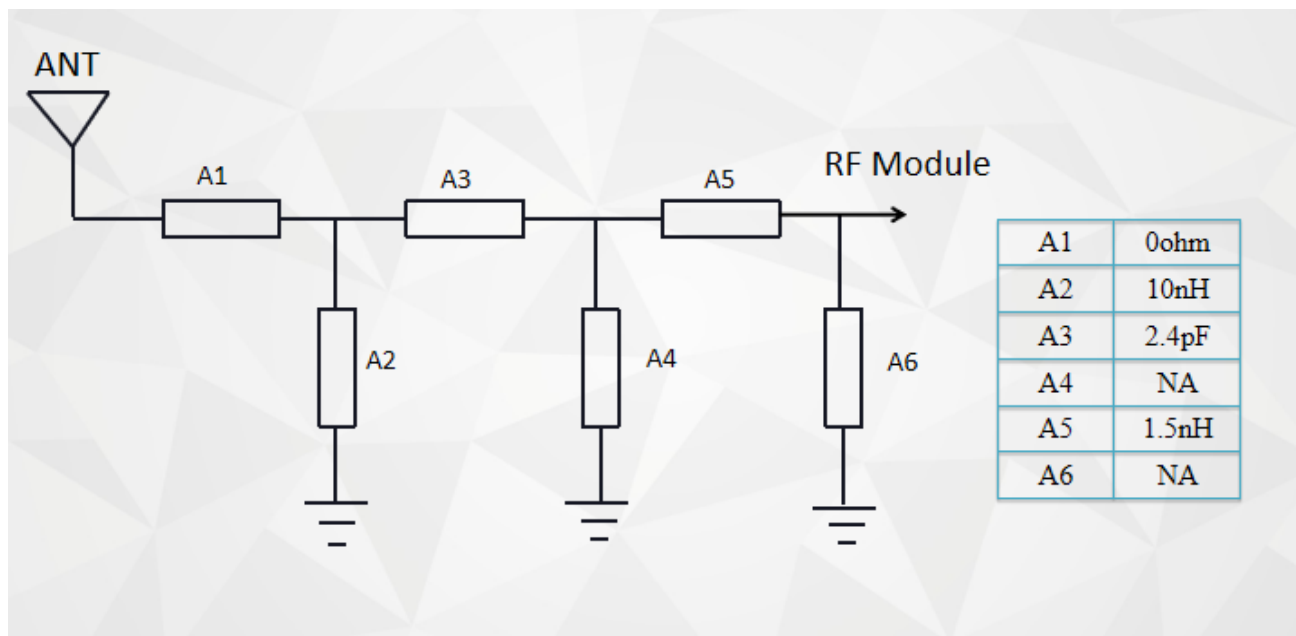




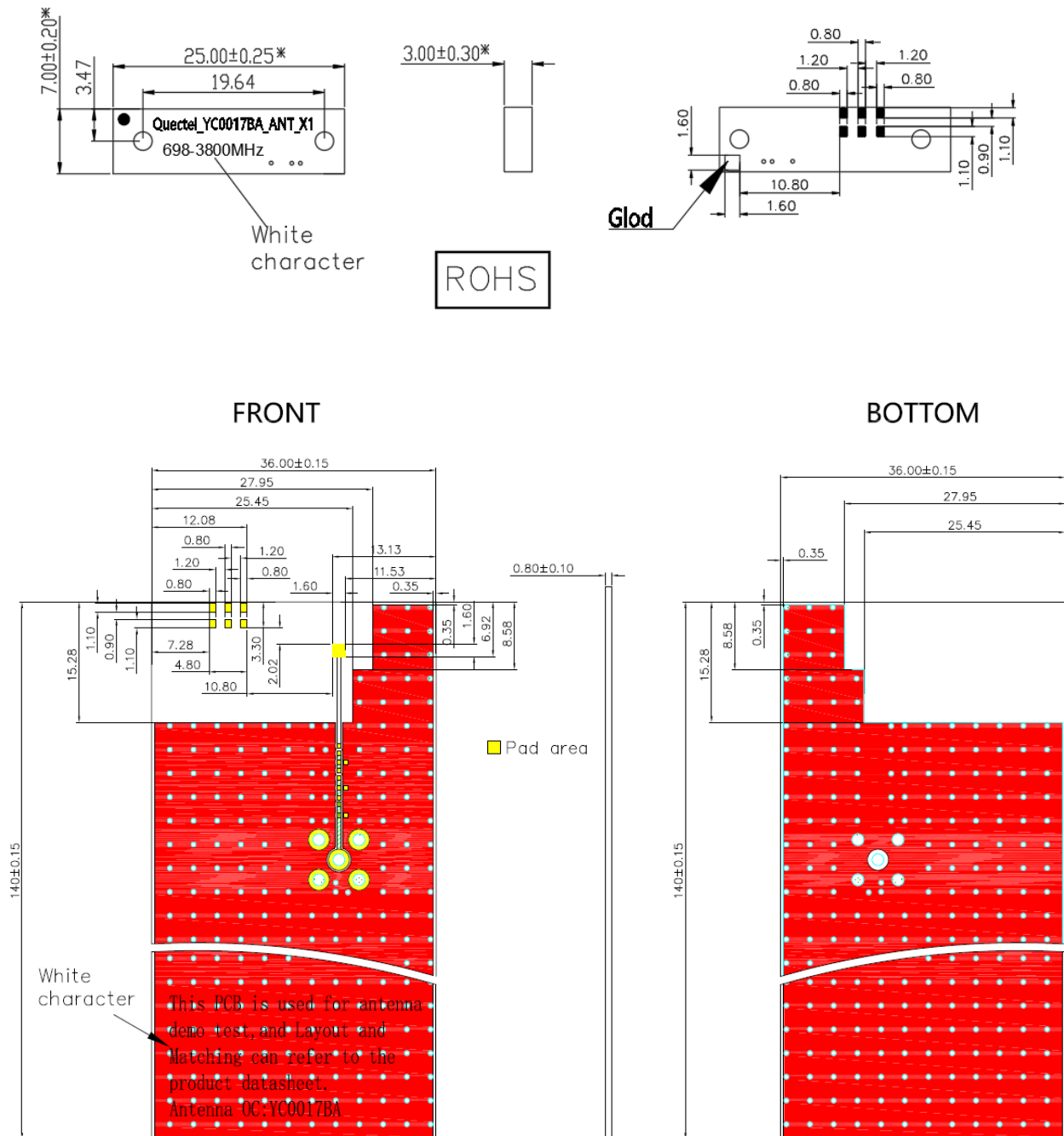




5 Matching Circuit

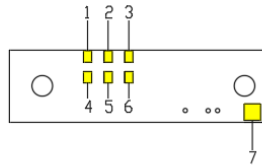


6 Product Size



7 Schematic Symbol and Pin Definition

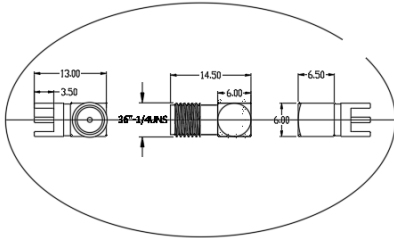
The pin assignment for the antenna is as follows. The antenna has 7 pins and only one works. All other pins are designed for mechanical strength.



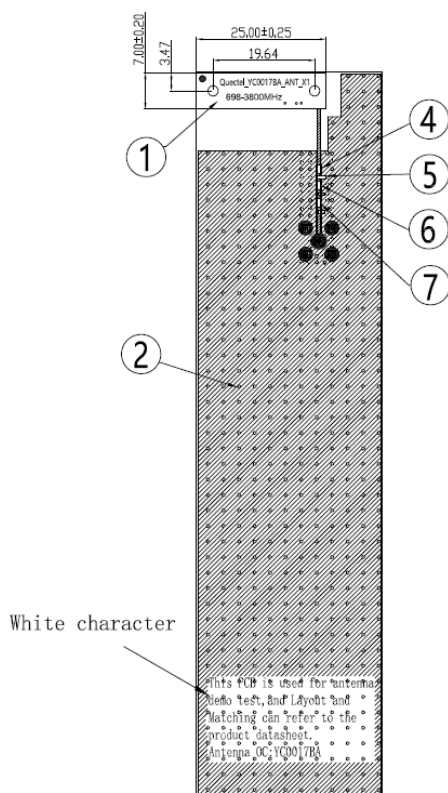
Front:Perspective View

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

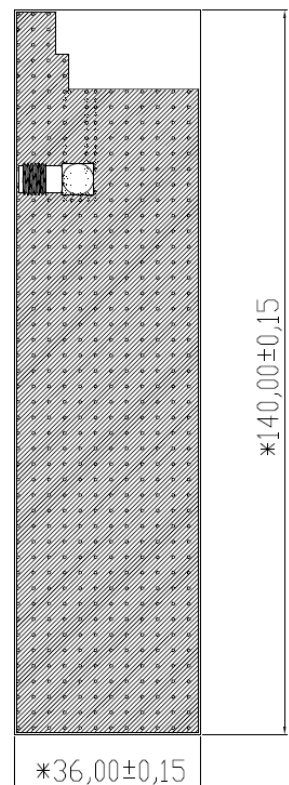
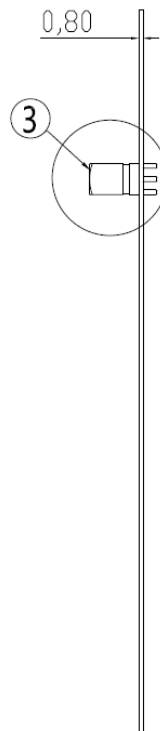
8 EVB Size



	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

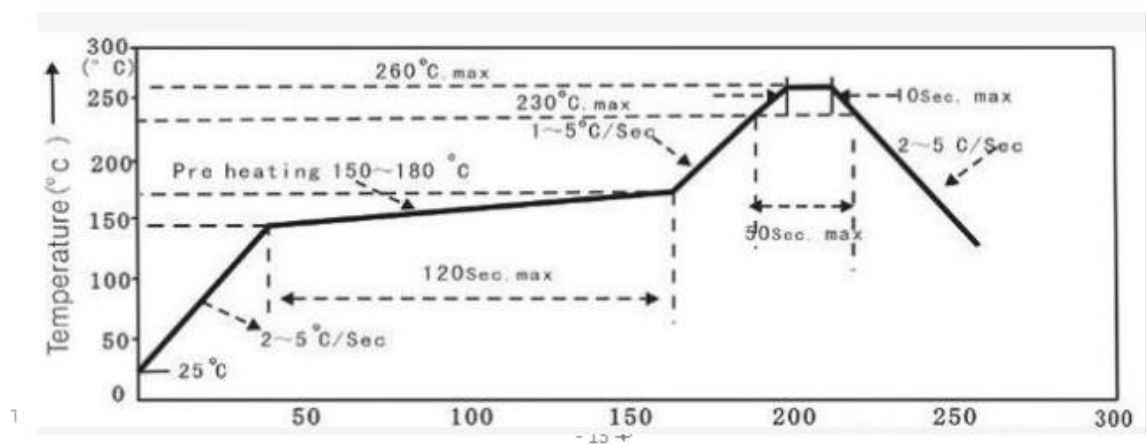


Back

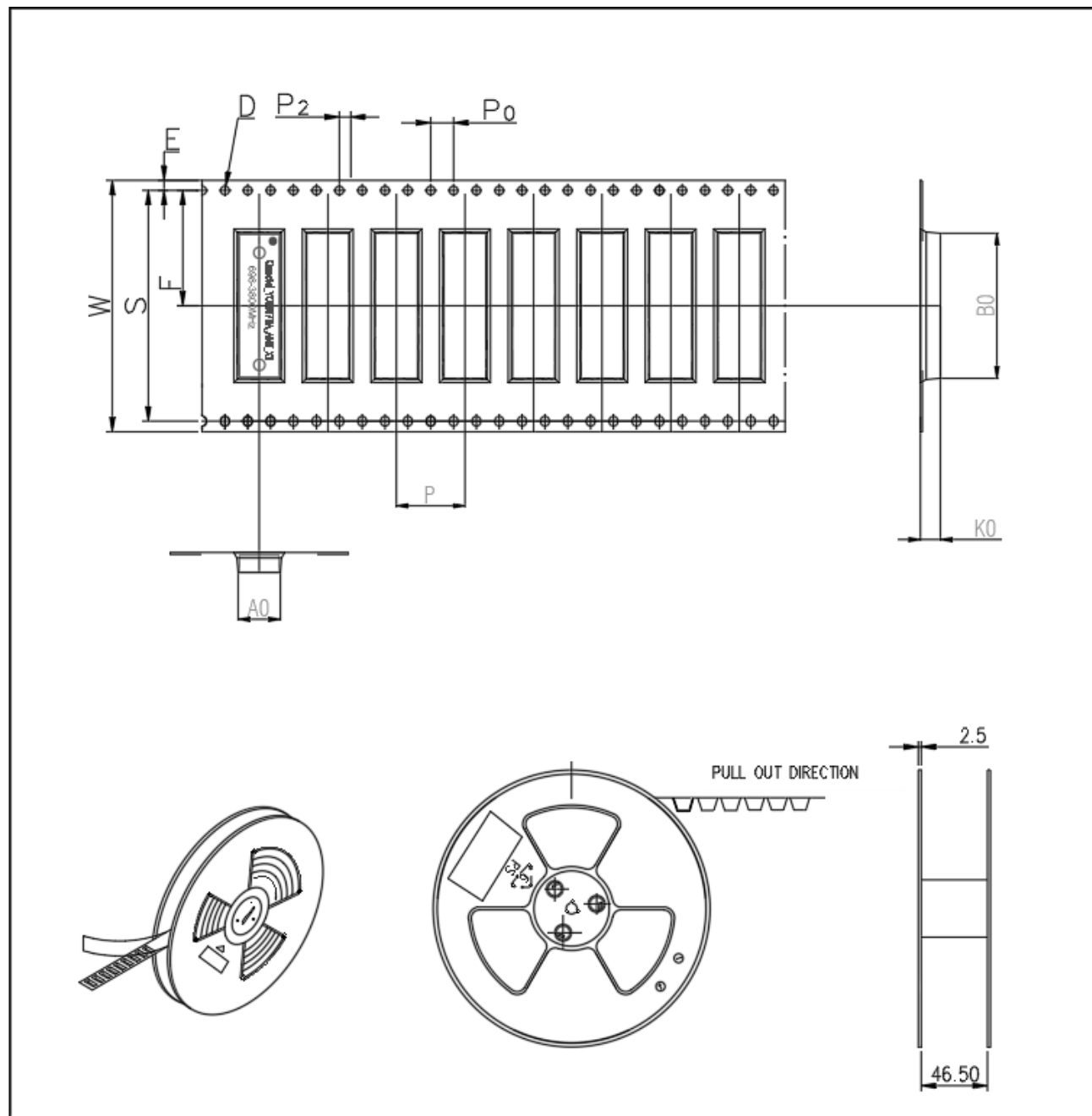
9 Soldering Temperature

Phase	Profile Features	PB-Free Assembly (Max.)
RAMP-UP	Avg. Ramp-up Rate (T _{smax} to T _p)	3 °C/second (Max.)
PREHEAT	Temperature Min. (T _{smin})	150 °C
	Temperature Max. (T _{smax})	180 °C
	Time (T _{smin} to T _{smax})	120 seconds (Max.)
REFLOW	Temperature (T _L)	210 °C
	Total Time above T _L (t _l)	50 seconds (Max.)
PEAK	Temperature (T _p)	260 °C
	Time (t _p)	10 seconds (Max.)
RAMP-DOWN	Rate	5 °C/second (Max.)

10 Reflow Profile



11 Package



ITEM	W	A ₀	A ₁	B ₀	B ₁	K ₀	P	F	E ₀	D	P ₀	P ₂	T
DIM	44.00 ^{+0.30} _{-0.30}	7.40 ^{+0.10} _{-0.10}	-- ^{+0.10} _{-0.10}	25.40 ^{+0.10} _{-0.10}	-- ^{+0.10} _{-0.10}	3.50 ^{+0.10} _{-0.10}	12.0 ^{+0.10} _{-0.10}	20.20 ^{+0.15} _{-0.15}	1.75 ^{+0.10} _{-0.10}	1.50 ^{+0.10} _{-0.00}	4.00 ^{+0.10} _{-0.10}	2.00 ^{+0.10} _{-0.10}	0.35 ^{+0.05} _{-0.05}
ALTERNATE													

Custom Confirm: _____ Date: _____ ☐ Accept ☐ Rejection Reason: _____

- 10 sprocket hole pitch cumulative tolerance
- Carrier camber not to exceed 1mm in 250mm.
- A₀ and B₀ measured on a plane 0.3mm above the bottom of the pocket.
- K₀ 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