

RTL8822EU(LGSWNAC62)_WN8122BTIAC-HF-19 Antenna Passive Test Report Ver 1.2

12th Aug , 2025

Test date : 6th July , 2025

R&D Antenna Engineer
Test Personnel : Steven



- **Test site/Equipment calibration Date/Method**
- **Test Setup Description**
- **Antenna Definition**
- **Antenna Features**
- **Antenna V.S.W.R & Isolation**
- **Antenna 3D radiation pattern /Antenna Efficiency**
- **Antenna Drawing**

Test site, equipment, test method

Site: No.8, Sec 2, Guangfu Rd., Hsinchu City, Taiwan, R.O.C

Arcadyan Technology Corporation ETS.LINDGREN AMS-8923 Antenna Measurement System

23 dual-polarized antennas

Experiment software: ETS passive measurement.prm

Table of experimental equipment

Test equipment	Manufacture	Type
Network analyzer	Keysight	E5080B
Antenna test system	ETS.LINDGREN	AMS-8923

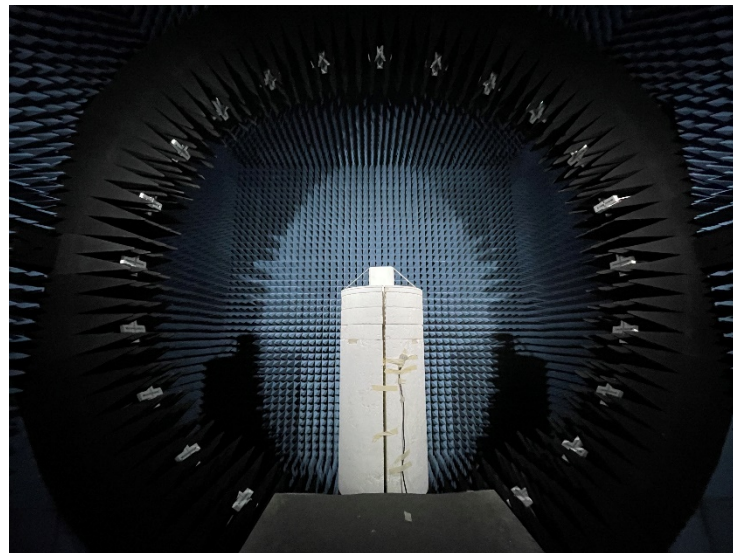
Antenna test equipment calibration Date

- Keysight E5080B ENA Vector Network Analyzer



regular calibration on 15th/April./2025

- ETS LINDGREN OTA Chamber (AMS-8923-195-G)



regular calibration on 15th/April./2025

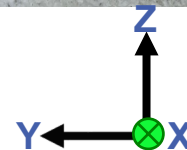
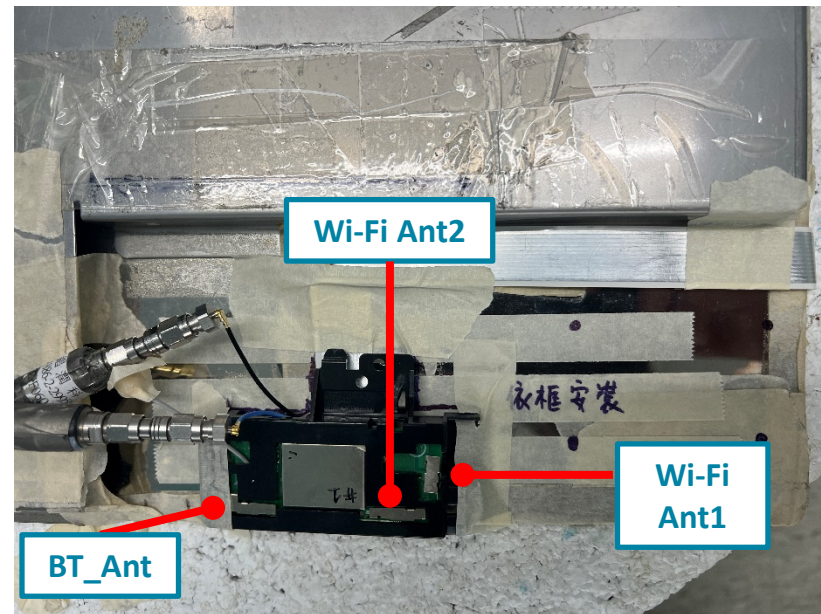
- Place the device at the center of the chamber.
- Connect the antenna cable to RF cable of the chamber
- Run IETS-Lindgren SW test measurement
- Get 3D data in 2.8125 degree step from phi 0° ~ 360° and theta -90° ~ $+90^{\circ}$, including efficiency, peak gain, 2D & 3D radiation pattern.

Antenna Definition

■ Antenna Definition

	2.4GHz	5GHz
Wi-Fi Ant1	V	V
Wi-Fi Ant2	V	V
BT Ant	V	

Location	Description	Manufacturer/ PN
ANT1 (Wi-Fi)	13.6mmx4.5mmx3.9mm T:0.3mm	MASTER WAVE TECHNOLOGY 120800094700J
ANT2 (Wi-Fi)	19.5mmx4.2mmx4.0mm T:0.3mm	Huizhou Speed Wireless Technology 120800165300J
BT ANT (BT)	15mmx6.5mmx4.0mm T:0.3mm	Huizhou Speed Wireless Technology 120800165500J



Antenna Features

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■ Antenna Features

- Dual Bands Wi-Fi & BT ANT
- Main Frequency: 2.45GHz, 5.5GHz
- Frequency range : From 2.40 to 2.50GHz, 5GHz~6GHz
- Operating temperature range: -35 to +95°C (typ.)
- Wi-Fi ANT Material : Metal press
- BT ANT material : Metal press

■ Antenna Characteristics

Wi-Fi Ant1

Antenna Performance				
Parameter	Min	Typ	Max	Unit
Frequency Range	2400	2450	2500	MHz
	5000	5500	5875	MHz
Directivity	-	Omni	-	-
Full Bands Average Gain	-	-3.10	-	dBi
Full Bands Peak Gain		-	3.09	
V.S.W.R	3.1	-	-	
Isolation			-8.5	dB under
Impedance		50		Ohm
Radiation Material		Metal		

Wi-Fi Ant2

Antenna Performance				
Parameter	Min	Typ	Max	Unit
Frequency Range	2400	2450	2500	MHz
	5000	5500	5875	MHz
Directivity	-	Omni	-	-
Full Bands Average Gain	-	-2.77	-	dBi
Full Bands Peak Gain		-	2.78	
V.S.W.R	2.0	-	-	
Isolation			-8.5	dB under
Impedance		50		Ohm
Radiation Material		Metal		

■ Antenna Characteristics

BT Ant

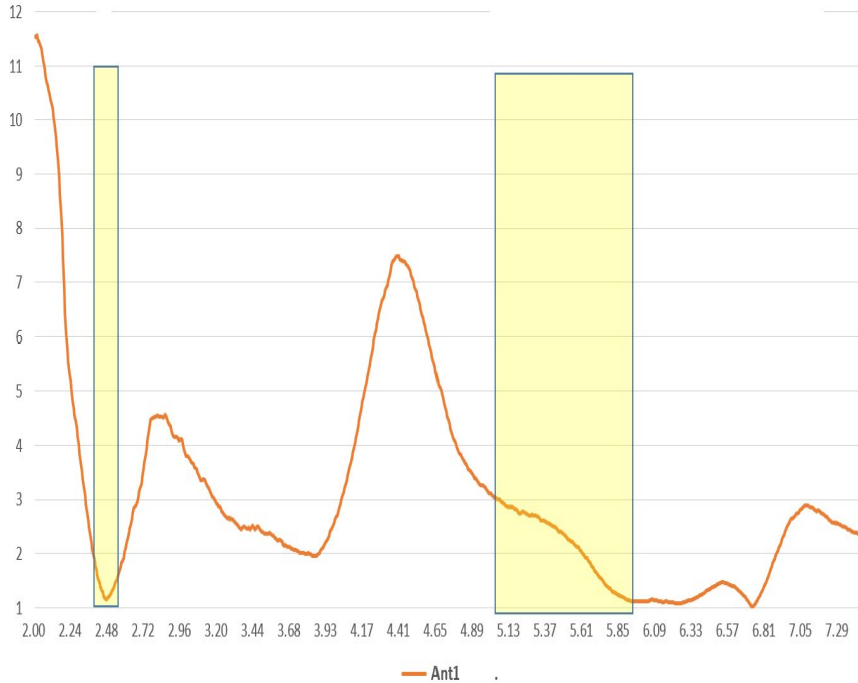
Antenna Performance				
Parameter	Min	Typ	Max	Unit
Frequency Range	2400	2450	2500	MHz
Directivity	-	Omni	-	-
Full Bands Average Gain	-	-7.23	-	dBi
Full Bands Peak Gain		-	-2.05	
V.S.W.R	3.55	-	-	
Isolation			-16.44	dB under
Impedance		50		Ohm
Radiation Material		Metal		

Antenna Return Loss (VSWR) & Isolation

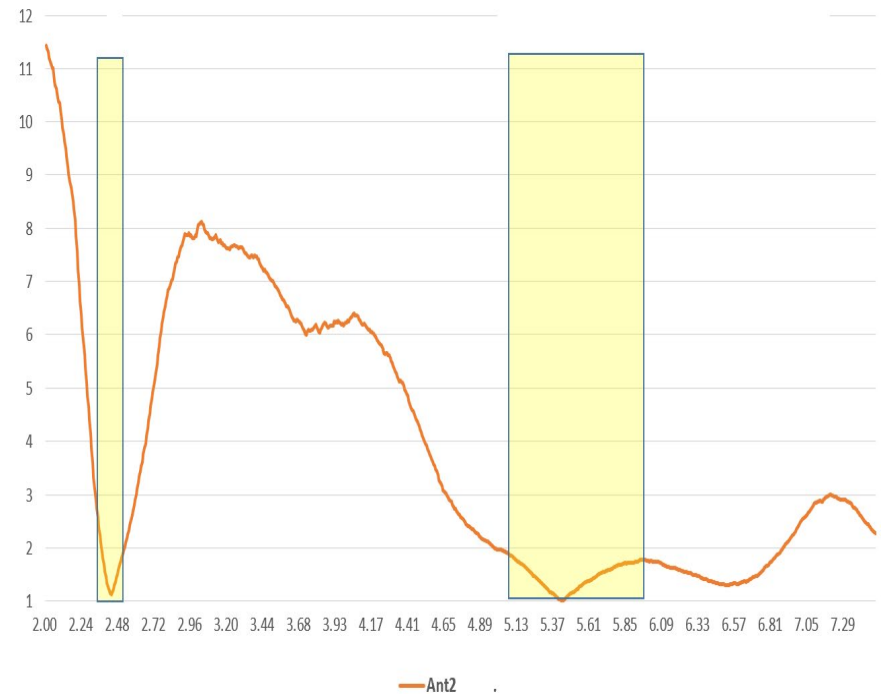

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- The VSWR of these antennas.

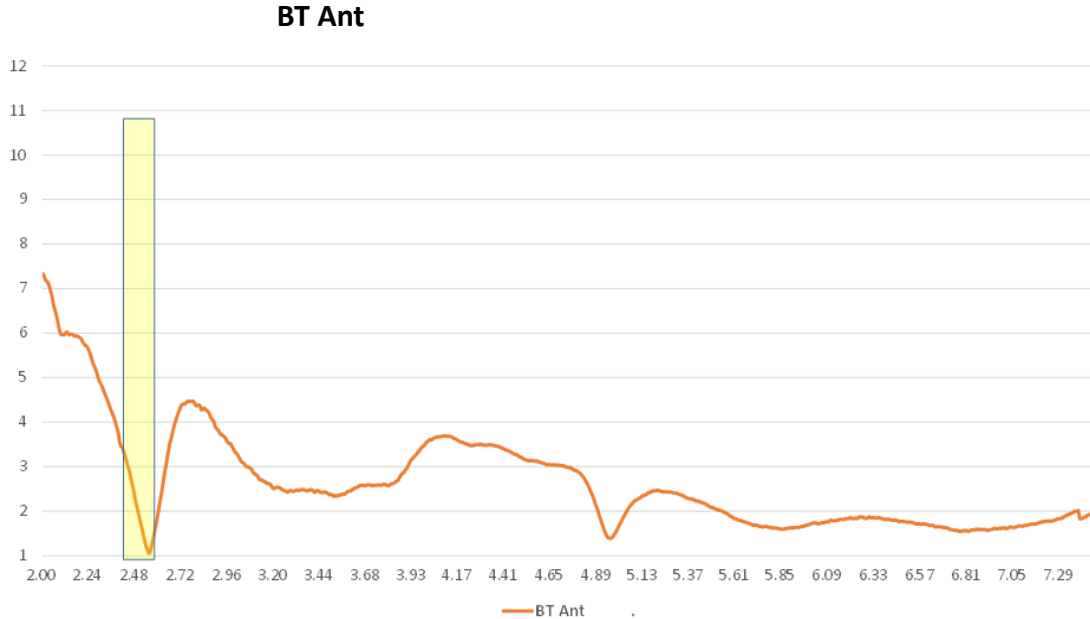
Wi-Fi Ant1



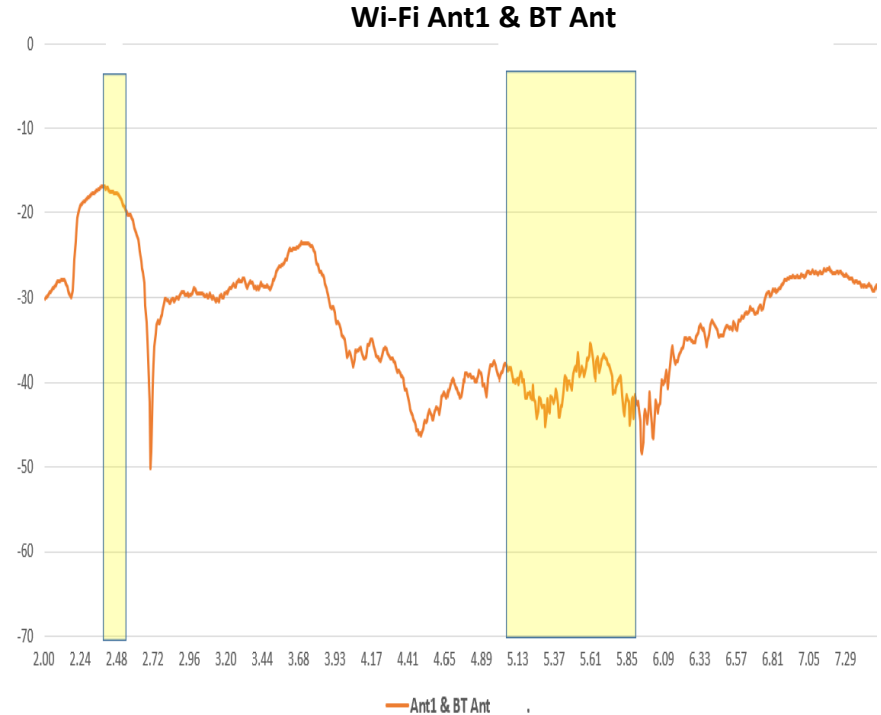
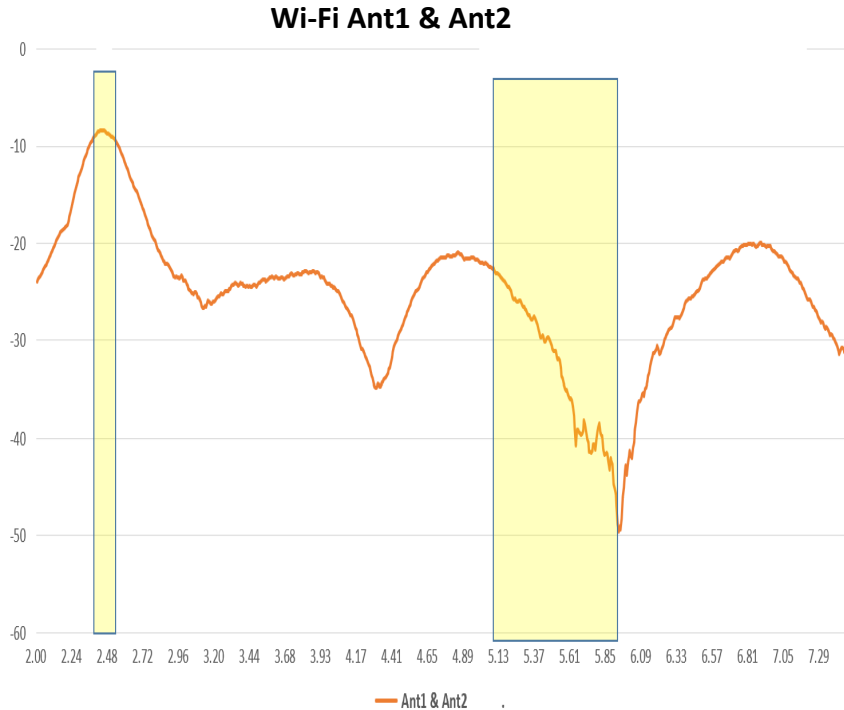
Wi-Fi Ant2



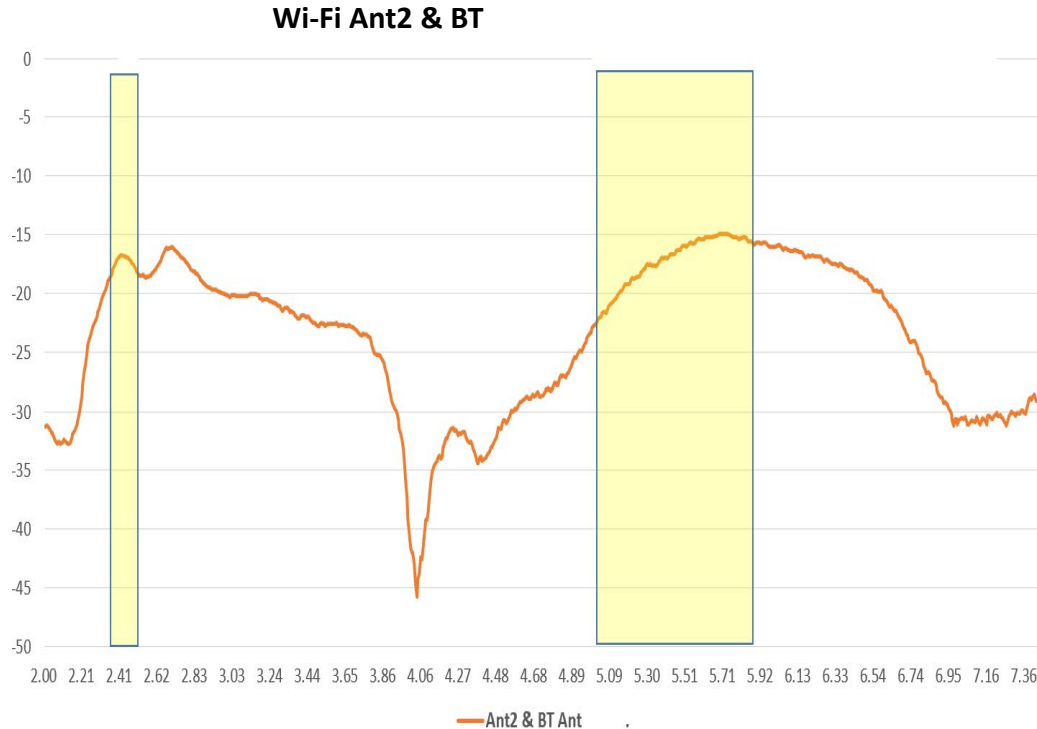
- The VSWR of these antennas.



- The isolation of these antennas.



- The isolation of these antennas.

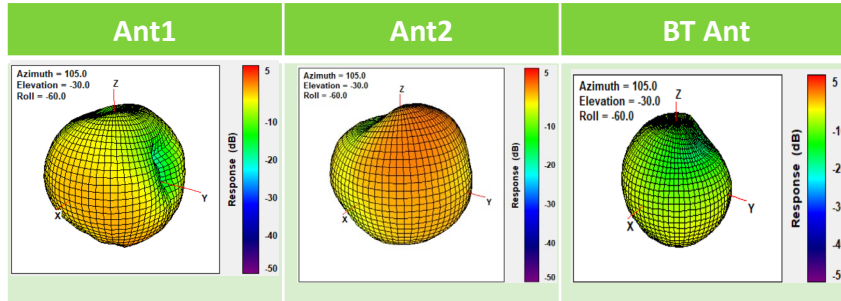


Antenna 3D Radiation Pattern & Antenna Efficiency

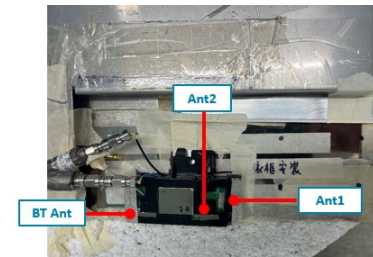
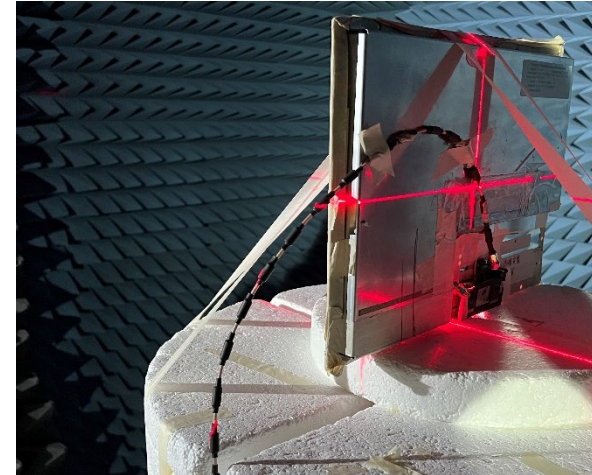
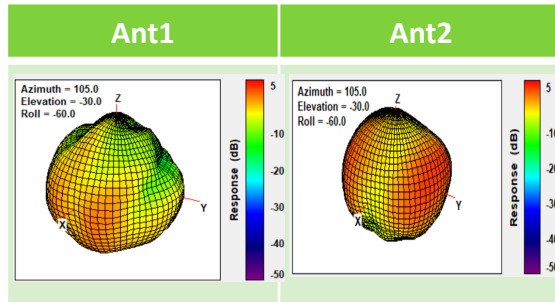
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S1 Antenna 3D Radiation Pattern

2/G Band_2442 MHz



5/G Band_5500 MHz



■ Efficiency List:

Frequency (MHz)		2412	2427	2442	2450	2457	2472	2484	5180	5250	5350	5470	5500	5745	5850	5955	5985
Wi-Fi Ant1	Peak Gain	1.32	1.64	1.90	1.84	1.80	1.60	1.55	1.01	1.24	1.66	2.47	2.83	2.61	2.68	2.85	3.09
	Average Gain	-3.88	-3.61	-3.15	-3.07	-3.03	-3.09	-3.06	-3.88	-3.86	-3.88	-3.48	-3.19	-2.43	-2.16	-1.91	-1.92
	Efficiency (%)	40.92	43.58	48.38	49.32	49.80	49.05	49.48	40.89	41.07	40.97	44.93	47.99	57.13	60.77	64.38	64.21

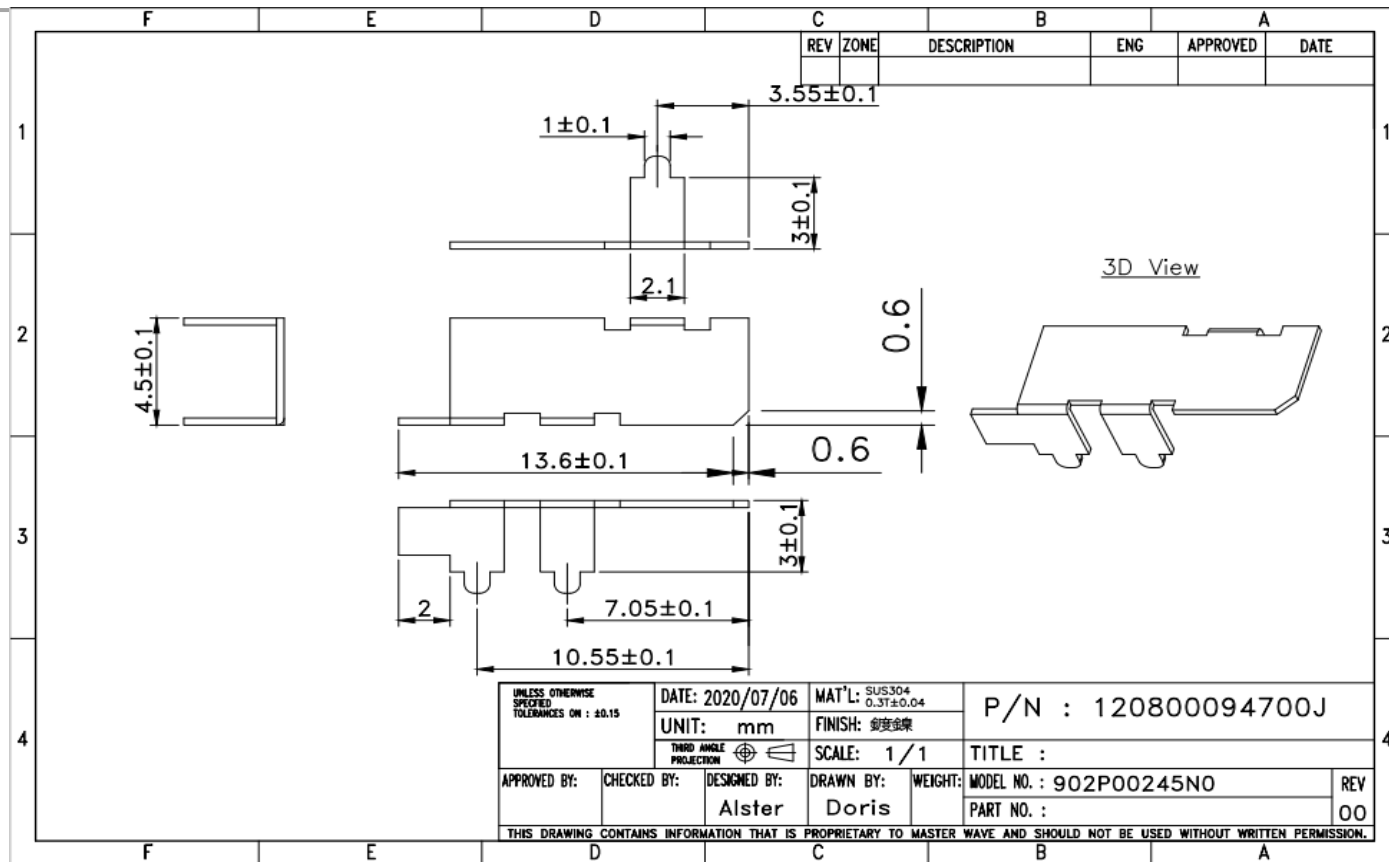
Frequency (MHz)		2412	2427	2442	2450	2457	2472	2484	5180	5250	5350	5470	5500	5745	5850	5955	5985
Wi-Fi Ant2	Peak Gain	-0.15	-0.20	-0.13	-0.10	-0.01	-0.37	-0.35	2.21	2.45	2.66	2.52	2.67	2.78	2.55	2.33	2.08
	Average Gain	-3.17	-3.33	-3.32	-3.40	-3.42	-3.89	-3.90	-2.61	-2.28	-1.84	-1.58	-1.59	-2.41	-2.48	-2.41	-2.66
	Efficiency (%)	48.15	46.45	46.55	45.67	45.47	40.82	40.76	54.77	59.11	65.40	69.57	69.36	57.47	56.46	57.36	54.23

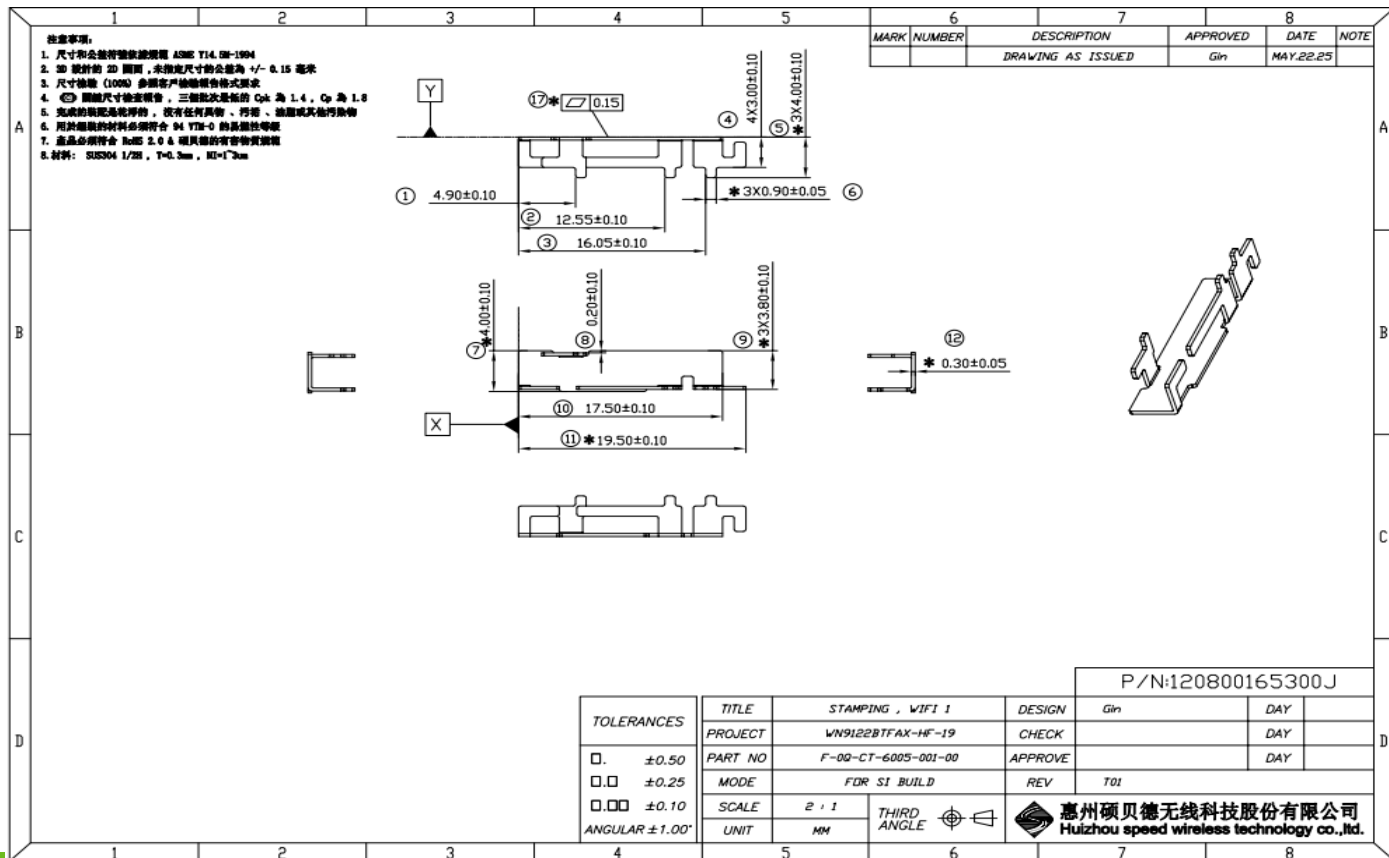
Frequency (MHz)		2412	2427	2442	2450	2457	2472	2484
BT Ant	Peak Gain	-3.00	-2.73	-2.44	-2.45	-2.25	-2.17	-2.05
	Average Gain	-7.99	-7.60	-7.15	-7.17	-6.98	-6.93	-6.82
	Efficiency (%)	15.89	17.38	19.27	19.20	20.05	20.26	20.79

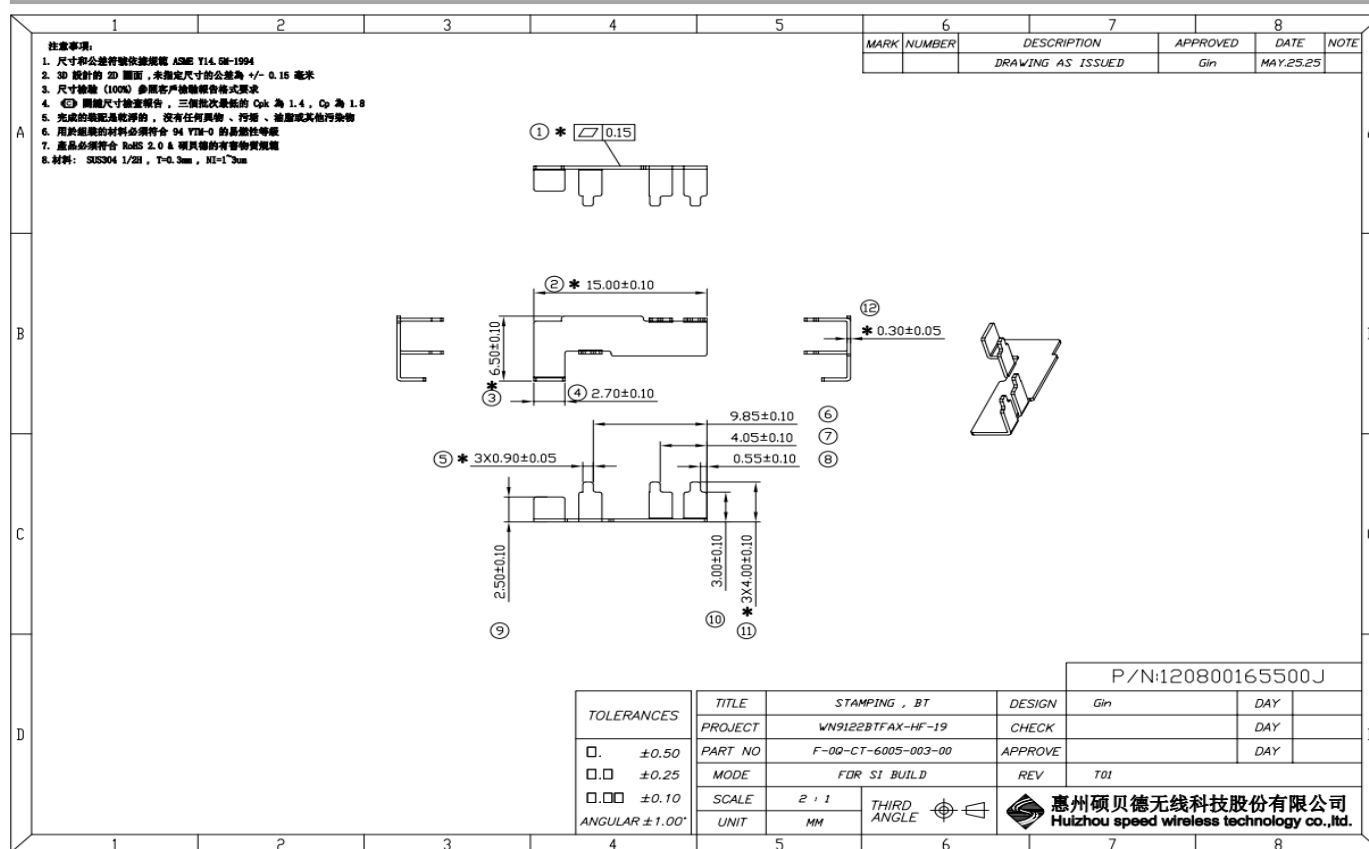
Antenna Drawing

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Wi-Fi Ant1 Antenna









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