Specification

Part No.	:	**CA.51**
Product Name	:	DSRC / C-V2X / V2V / V2X / V2I 5900MHz Ceramic Chip Antenna
Feature	:	5.9GHz C-V2X Ceramic SMD Mount Chip Antenna 5850MHz to 5925MHz Peak Gain 2dBi Stable and Reliable Performance Linear Polarized & High Efficiency Low Profile, Compact Size Manufactured in an IATF16949 Approved Facility Dimensions: 1.6*0.8*0.3mm **RoHS & REACH Compliant**

1. Introduction

The Taoglas CA.51 5.9GHz is a ceramic chip antenna specifically designed for C-V2X (& DSRC) applications and exhibits high-efficiency in a miniature SMD mount ceramic antenna with a small footprint requirement. This ceramic chip antenna uses the main PCB as its ground plane, thereby increasing antenna efficiency and decreasing the assembly cost. It is tuned for different PCB sizes by simply changing the value of the matching circuit. At 1.6mm*0.8mm*0.3mm, it is one of the smallest antennas available worldwide. This antenna is delivered on tape and reel.

C-V2X is the communications medium of choice for active safety V2V/V2X (Vehicle-to-Vehicle and Vehicle-to-Other) systems. Primarily allocated for vehicle safety applications, C-V2X supports high-speed, low-latency, short-range, V2V/V2X wireless communications.

For further optimization to customer-specific device environments and for support to integrate and test this antennas performance in your device, contact your regional Taoglas Customer Services Team

Applications

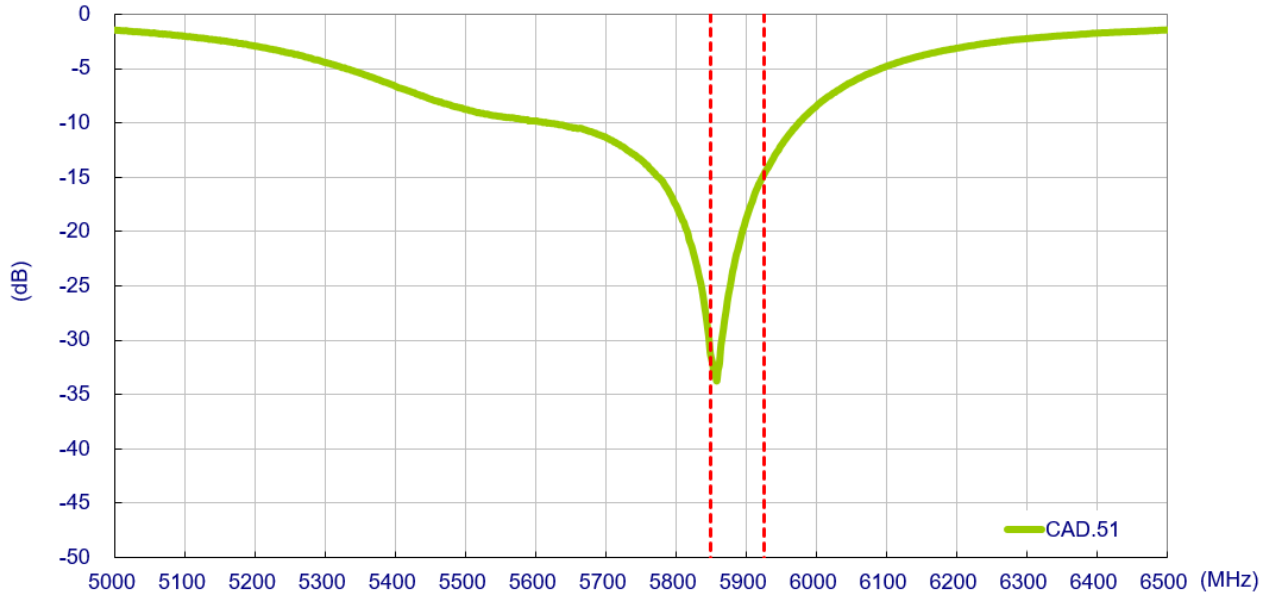
IEEE 802.11p (WAVE- Wireless Access in the Vehicular Environment)
DSRC (Dedicated Short Range Communication) systems for V2V / V2I / V2X

2. Specification Table

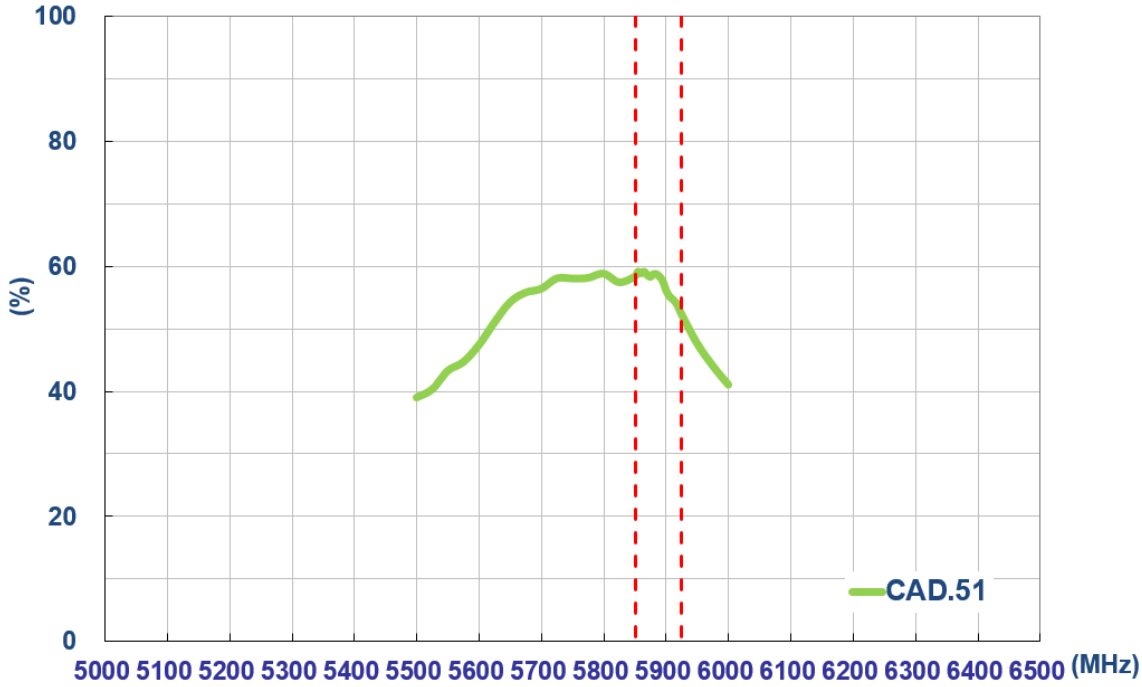
Electrical Characteristics*	
Operation Frequency Band	5850~5925 MHz
Bandwidth	110 MHz (typical)
Peak Gain	2.87 dBi (typical)
Efficiency	57.08% (typical)
Average Gain	-2.44 dBi
VSWR	2 max.
Impedance	50Ω
Polarization	Linear
Radiation Pattern	Omni-Directional
Input Power	2W
MECHANICAL	
Dimensions	1.6*0.8*0.3mm
Ground plane	40*40mm (Recommended)
Material	Ceramic
ENVIRONMENTAL	
Temperature Range	-40°C to 85°C
Temperature Coefficient of Frequency	0±20 ppm/°C max. (@-40°C to 85°C)
Humidity	Non-condensing 65°C 95% RH

*Antenna tested on 40mm*40mm evaluation board.

3. Return Loss

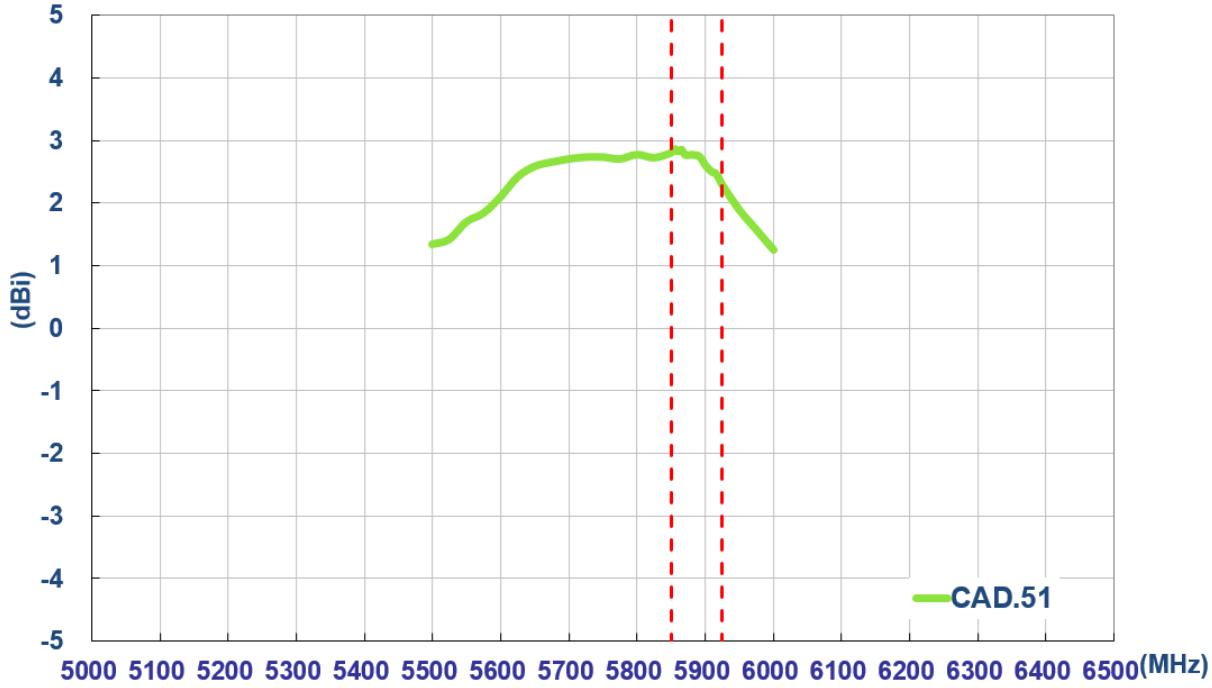


4. Efficiency



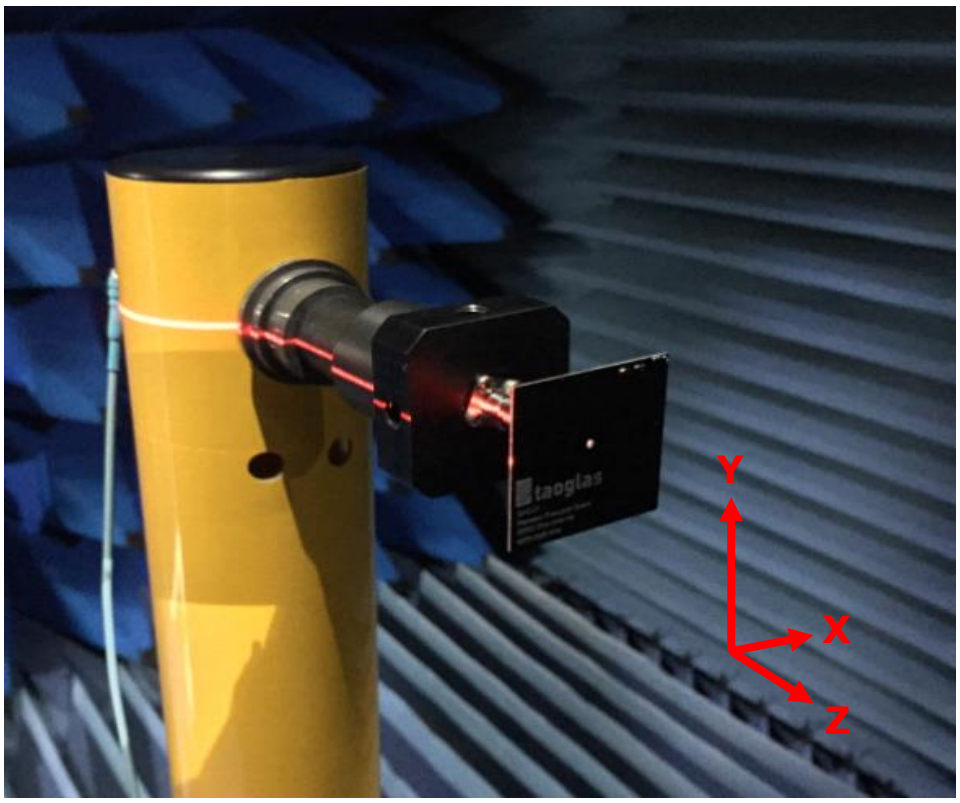
5. Average Gain

6. Peak Gain



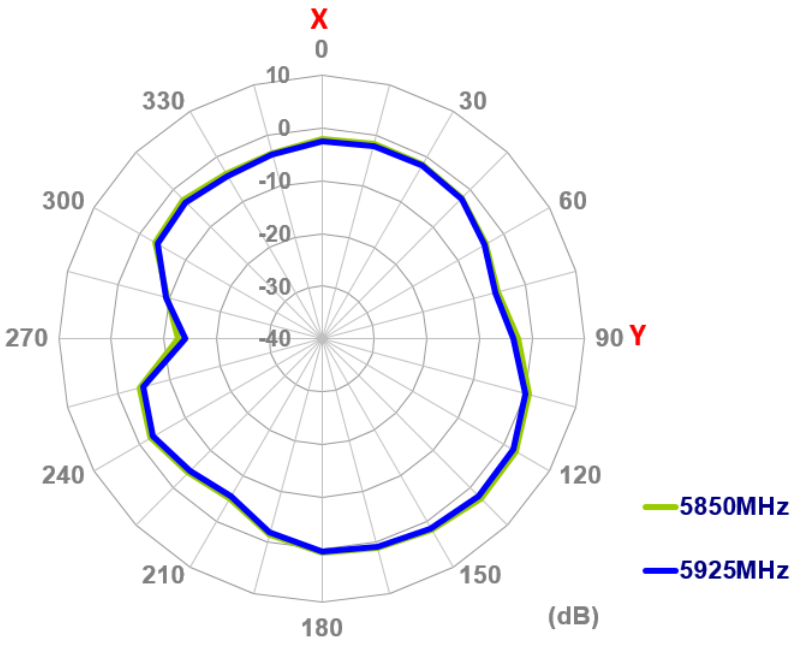
7. Antenna Radiation Patterns

7.1. Test Setup – Antenna on Evaluation Board

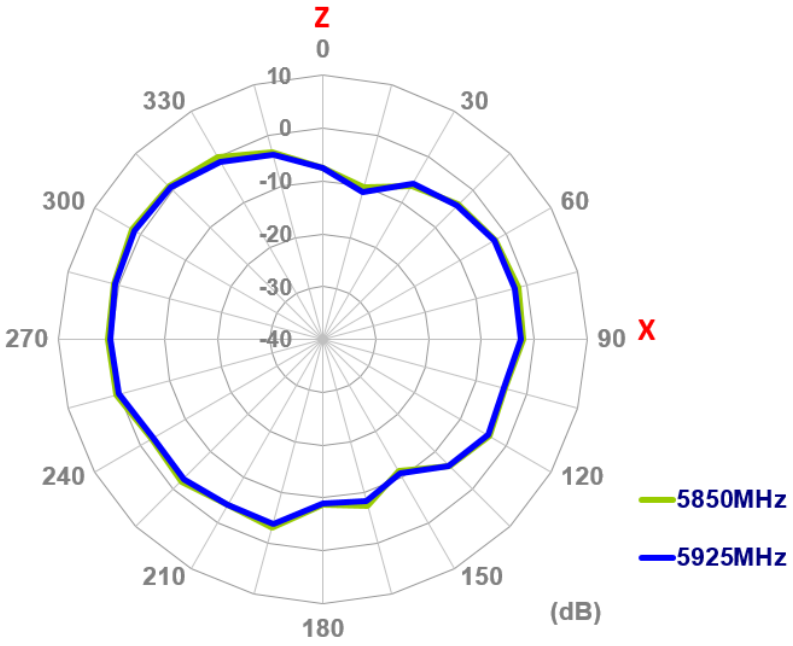


7.2. 2D Radiation Pattern

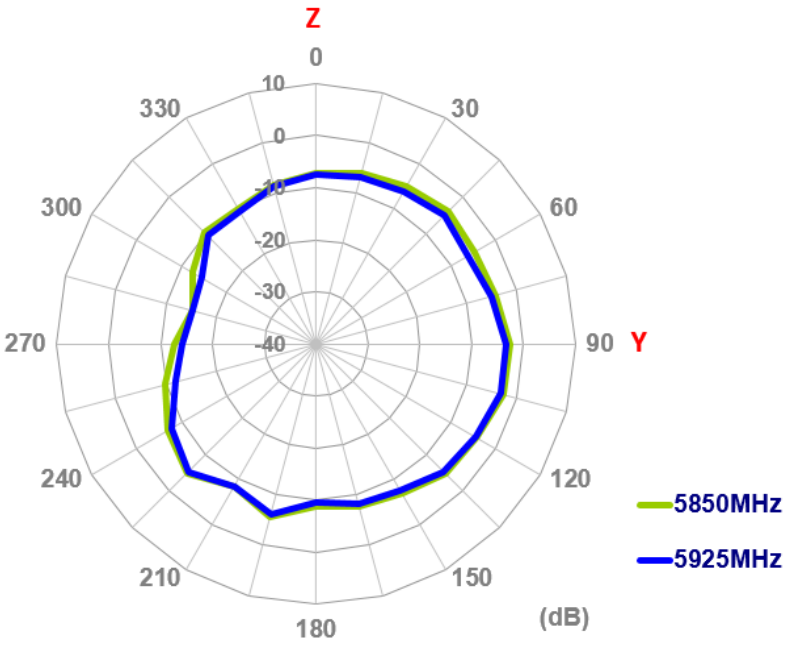
XY Plane



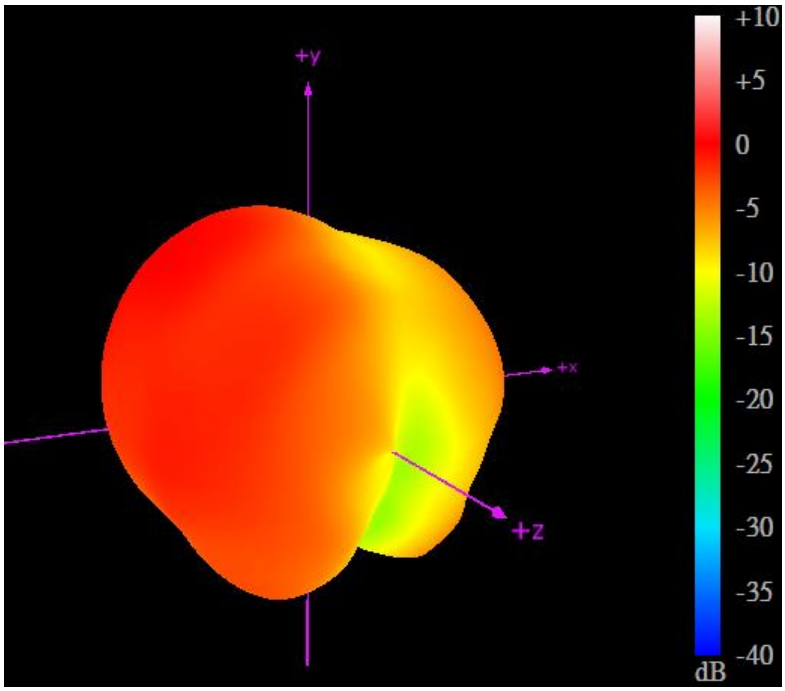
XZ Plane



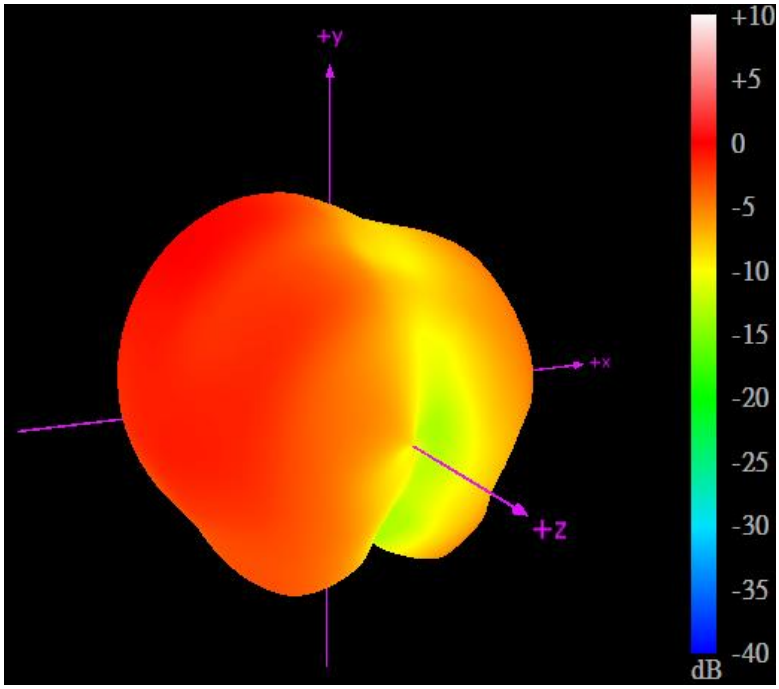
YZ Plane


Z
0
30
60
90
Y
120
150
180
210
240
270
300
330
10
0
-10
-20
-30
-40
(dB)
5850MHz
5925MHz

7.3. 3D Radiation Pattern



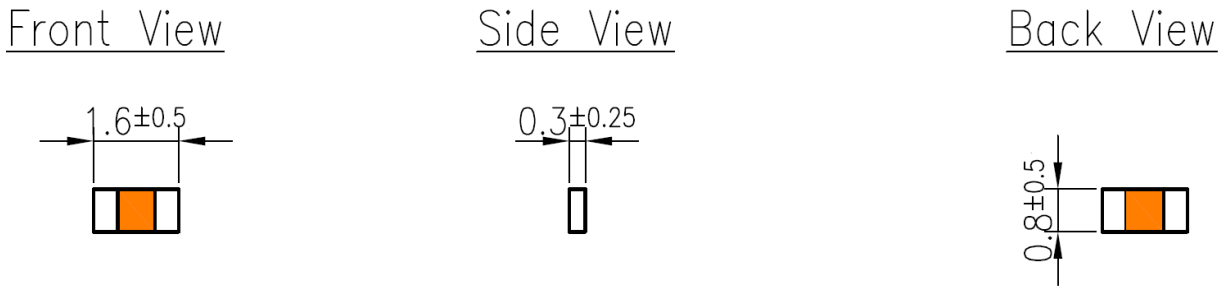
5850MHz



5925MHz

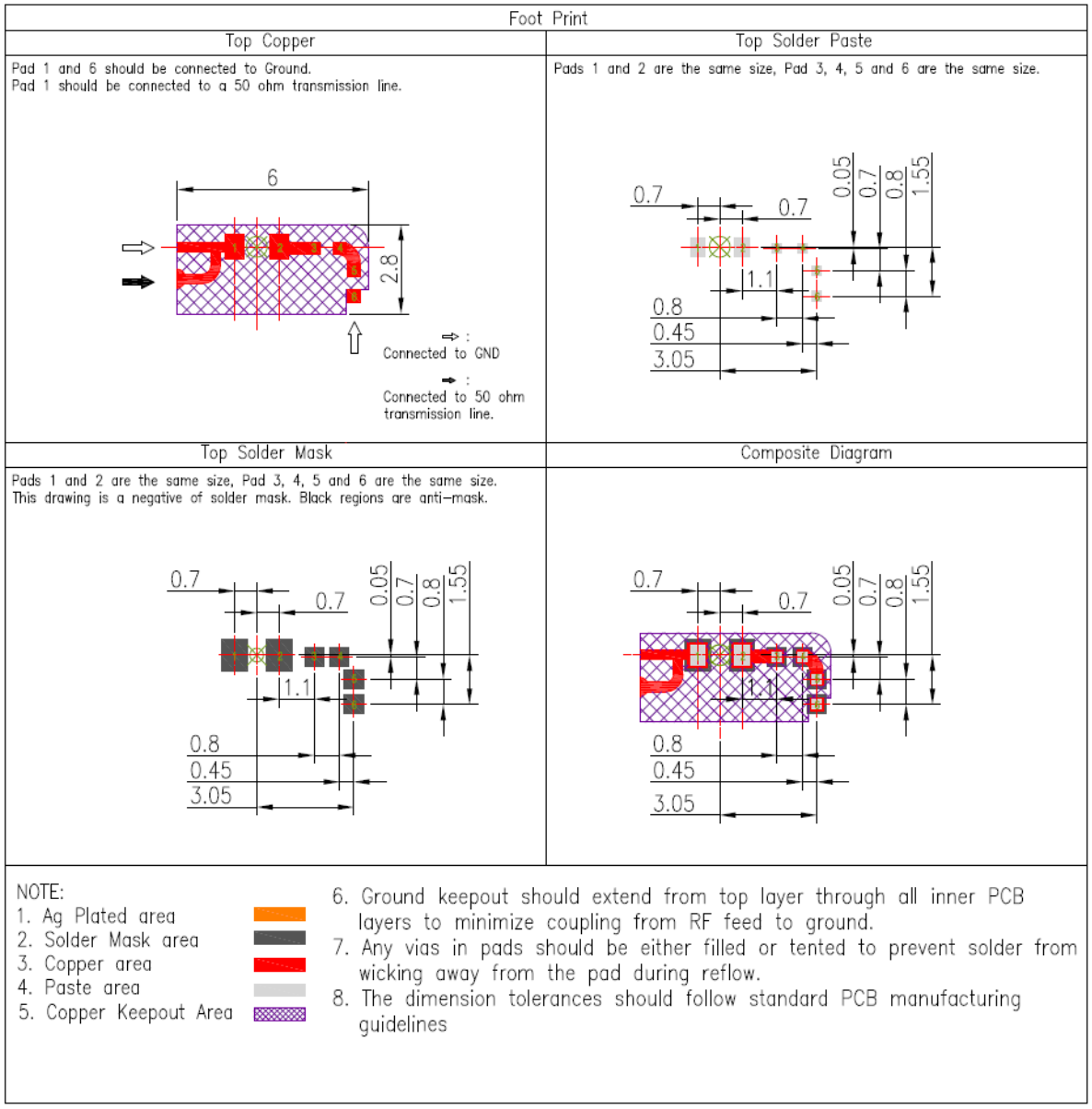
8. Mechanical Drawings (Unit: mm)

8.1. Antenna Dimension and Drawing



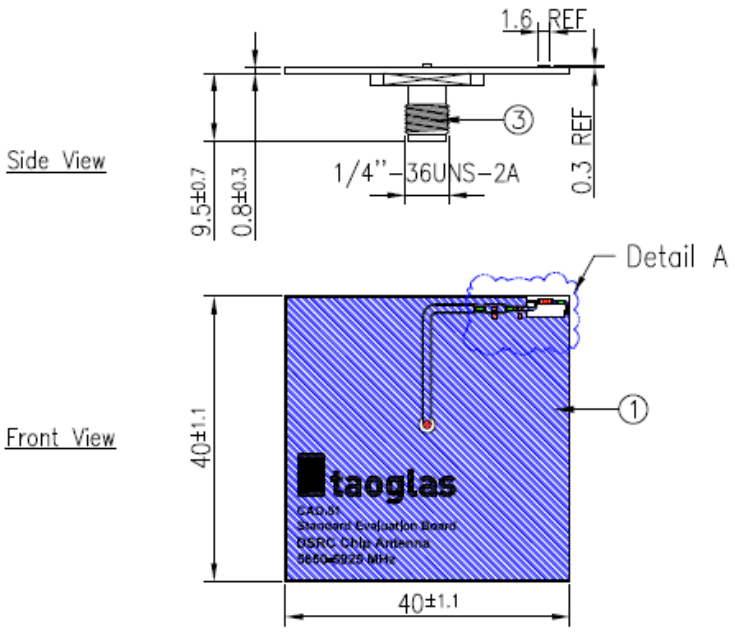
Unit: mm

8.2. Antenna Footprint



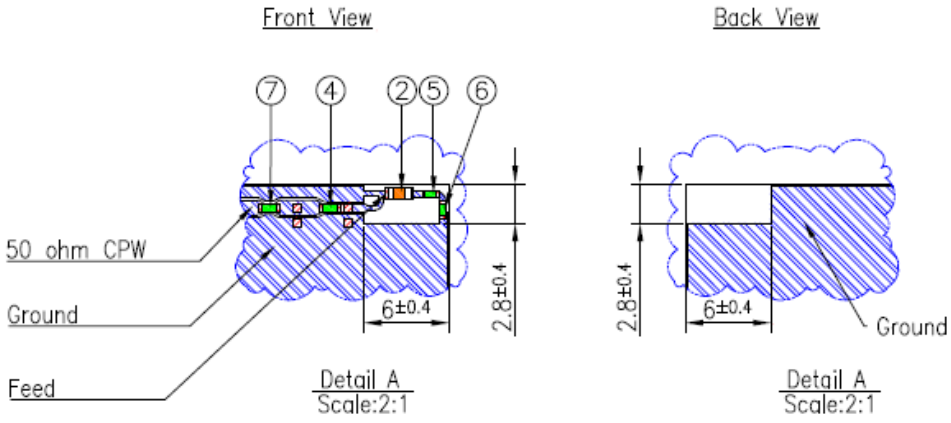
*Taoglas is able to provide CAD drawing file to customers for evaluation.

8.3. Evaluation Board CAD.51



Unit: mm

FootPrint

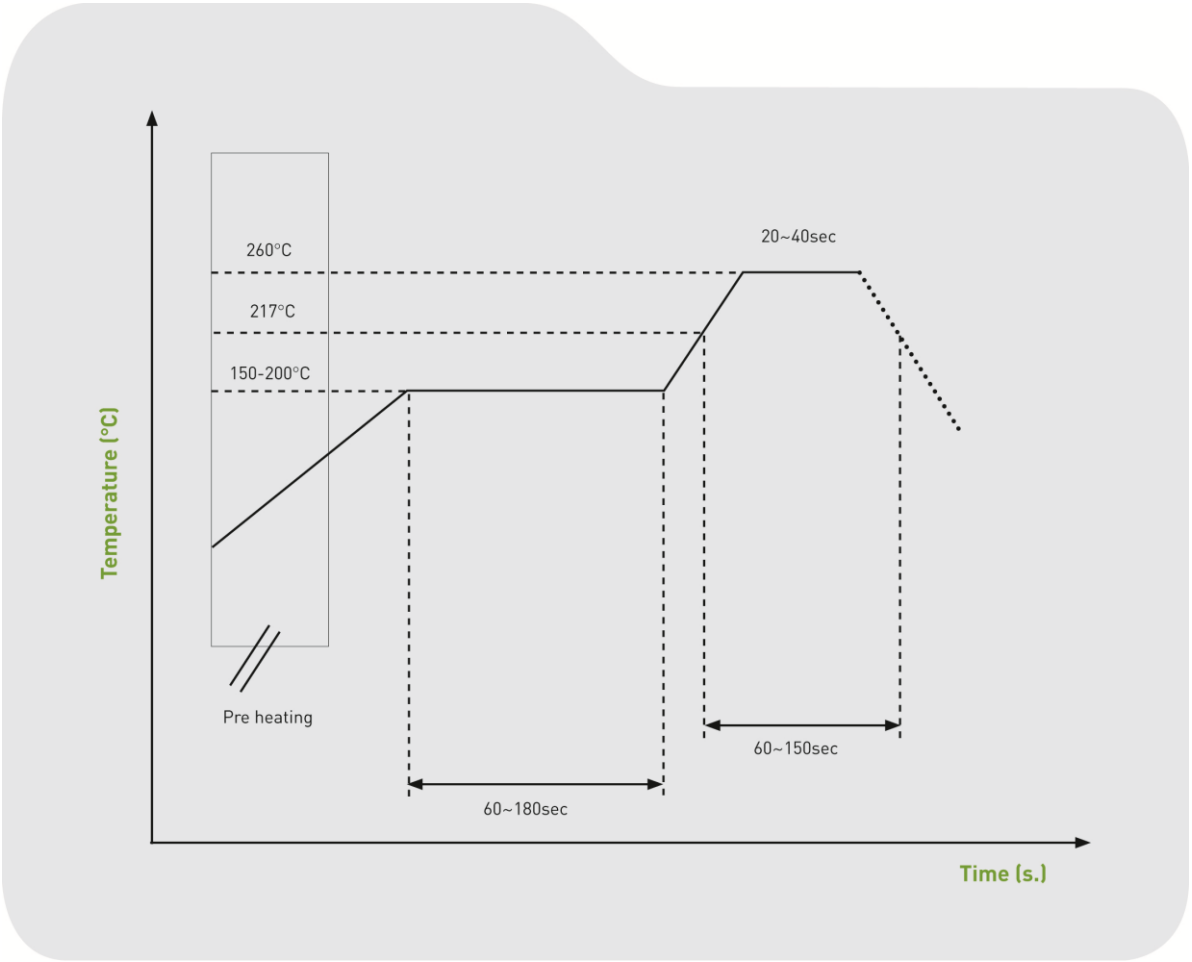


	Name	P/N	Material	Finish	QTY
1	CA.51 EVB Board	100216E000012A	FR4 0.8t	Black	1
2	CA.51 Chip Antenna	001516E060012A	Ceramic	N/A	1
3	SMA(F) ST	200413F000012A	Brass	Au Plated	1
4	Inductor 1.2nH (0402)	001516L000012A	Ceramic	N/A	1
5	Capacitor 6.8pF (0201)	001516B190012A	Ceramic	N/A	1
6	Capacitor 5.6pF (0201)	001517B000012A	Ceramic	N/A	1
7	Capacitor 2.7pF (0402)	001513F010012A	Ceramic	N/A	1

NOTES:
1. Solder Area
2. Logo & Text Ink Printing : White
3. Copper
4. Matching Component

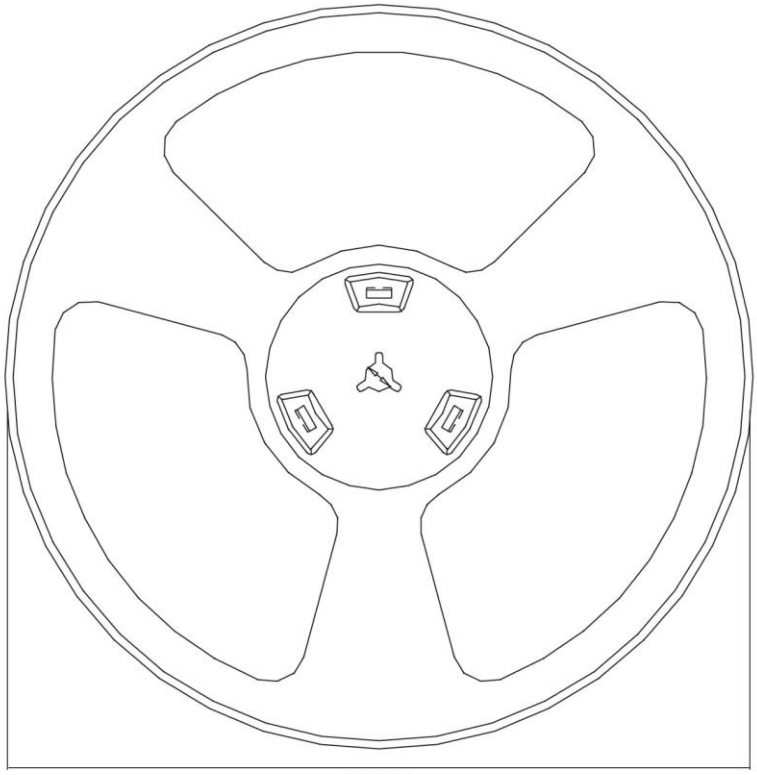
9. Soldering Conditions

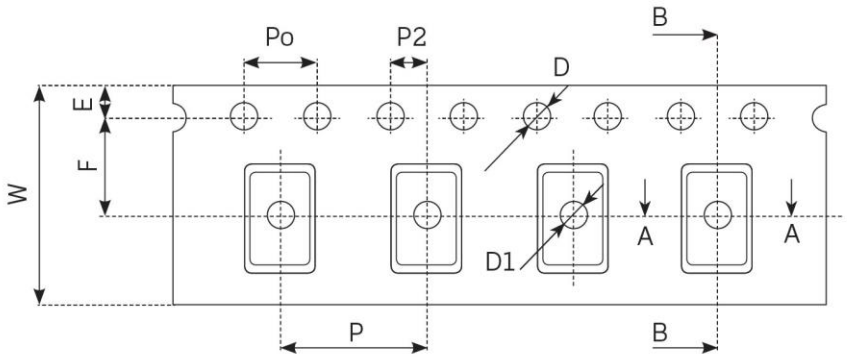
Typical Soldering profile for lead-free process:



10. Packaging

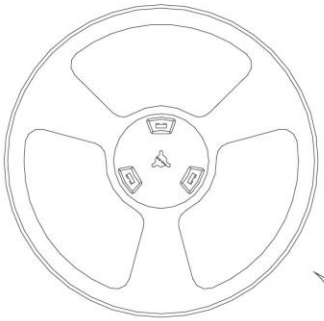
5000 pc CA.51 per reel
Dimensions - Ø180*11mm
Weight - 159.8g



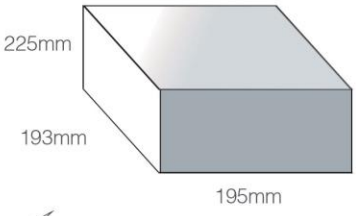


W : 12.00mm
P : 8.00mm
E : 1.75mm
F : 5.50mm
P2 : 2.00mm
D : 1.50mm
D1 :
Po : 4.00mm

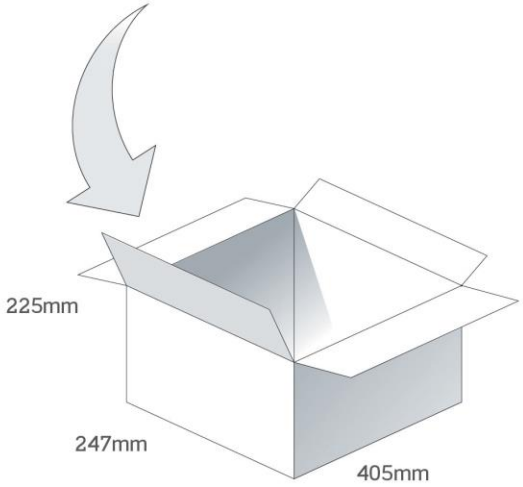
5000 pcs CA.51 reel
Dimensions - 180*180*11mm
Weight - 159.8g



50,000 pcs CA.51 / 10 Reel in small box
Dimensions - 193*225*195mm
Weight - 1.6Kg



2 small boxes, 100,000 pcs in one carton
Carton Dimensions - 247*405*225mm
Weight - 3.2Kg



Pallet Dimensions 1200*1000*1310mm
40 Cartons per Pallet
8 Cartons per layer
5 Layers