

SPECIFICATION

- Part No.** : **DCP.5900.12.4.A.02**
- Description** : 6dBi 5.9GHz 12mm
DSRC Ceramic Patch Antenna
- Features** : 5850MHz to 5925MHz DSRC band
For V2V and V2X Applications
Dimensions: 12mm*12mm*4mm
Peak Gain 6dBi
Pin type Ceramic Patch Antenna
Tuned on 70mm*70mm ground plane

RoHS compliant



1. Introduction

The DCP.5900 is a 12*12*4 mm embedded ceramic DSRC Patch antenna. It is a high performance compact 6dBi directional antenna designed to operate at 5850 MHz to 5925 MHz for DSRC systems.

DSRC (Dedicated Short Range Communications) is the communications media of choice for active safety V2V/V2X (Vehicle to Vehicle and Vehicle to Other) systems, primarily allocated for vehicle safety applications. DSRC supports high speed, low latency, short- range V2V/V2X wireless communications. The DCP.5900 ceramic patch antenna is mounted via pin and double-sided adhesive. This antenna has been tuned for a centre position on a 70mm *70mm ground plane and features world leading efficiency at 75%.

The polarization has been designed to be circularly polarized to enable a more stable system signal strength on moving vehicles.

For further optimization to customer specific device environments where positioning is off centre or a different ground-plane size, a custom tuned patch antenna can be supplied, subject to NRE and MOQ. Contact your regional Taoglas office for this, and for support to integrate and test this antenna's performance in your device.

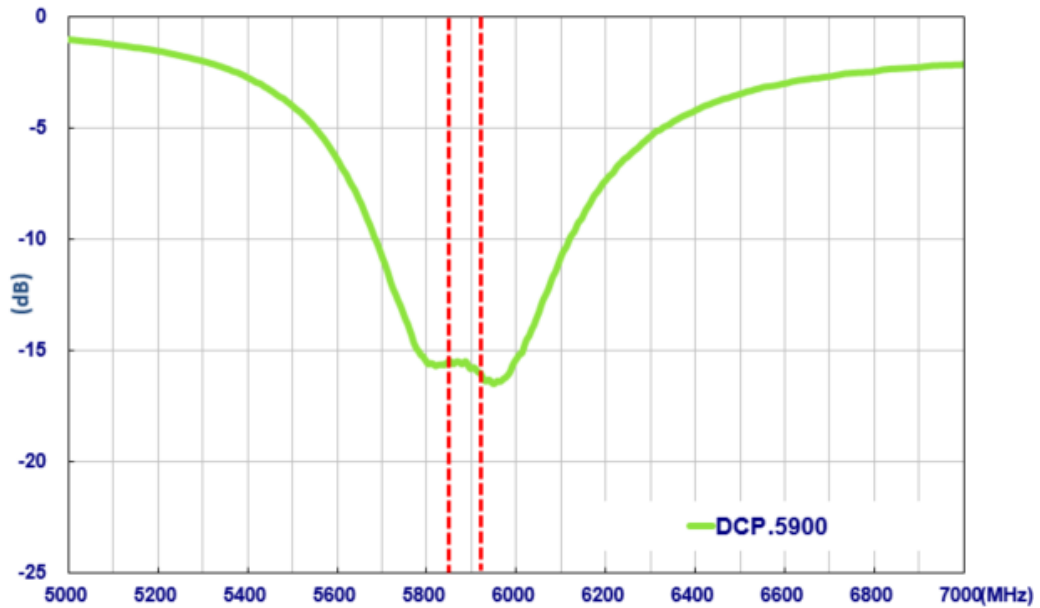
2. Specification

ELECTRICAL		
Operation Frequency	5850 MHz	5925 MHz
Efficiency	75.25 %	75.19 %
Peak Gain	5.32 dBi	5.89 dBi
Average Gain	-1.24	-1.24
Gain at Zenith	4.5 dBi typ	4.5 dBi typ
VSWR	1.8 max	
Antenna Polarization	RHCP	
Impedance	50 ohms	
MECHANICAL		
Ceramic Dimension	12 x 12 x 4 mm	
Pin Diameter	0.85 mm	
Pin Length	1.7mm	
Weight	2.1 g	
ENVIRONMENTAL		
Operation Temperature	-40°C to 105°C	
Humidity	Non-condensing 65°C 95% RH	

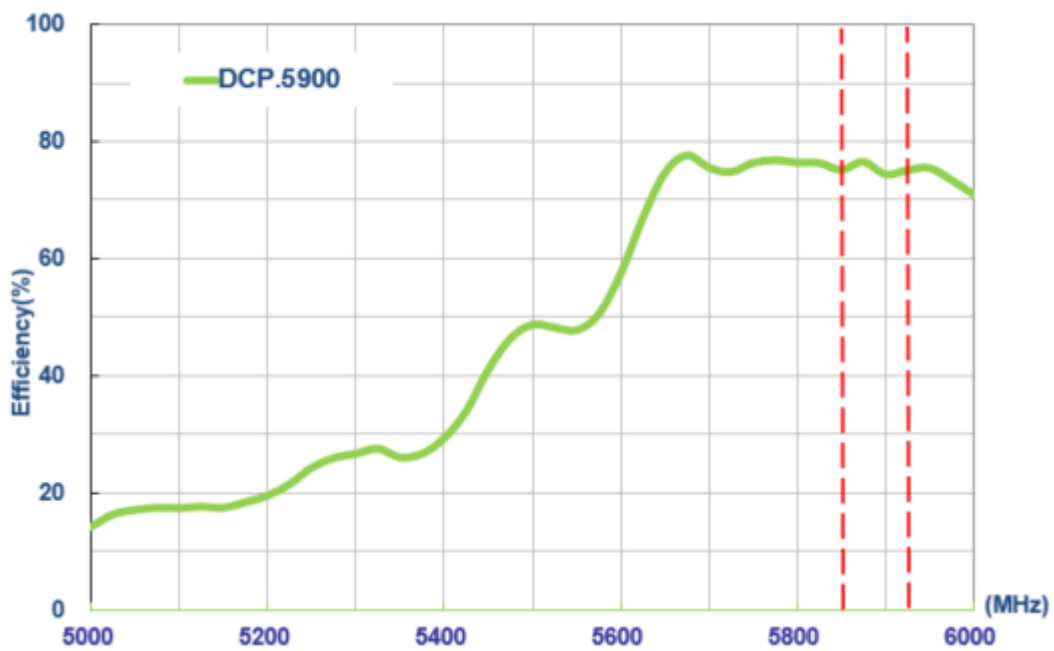
*All tests done on a 70mm*70mm ground plane.

3. Antenna Characteristics

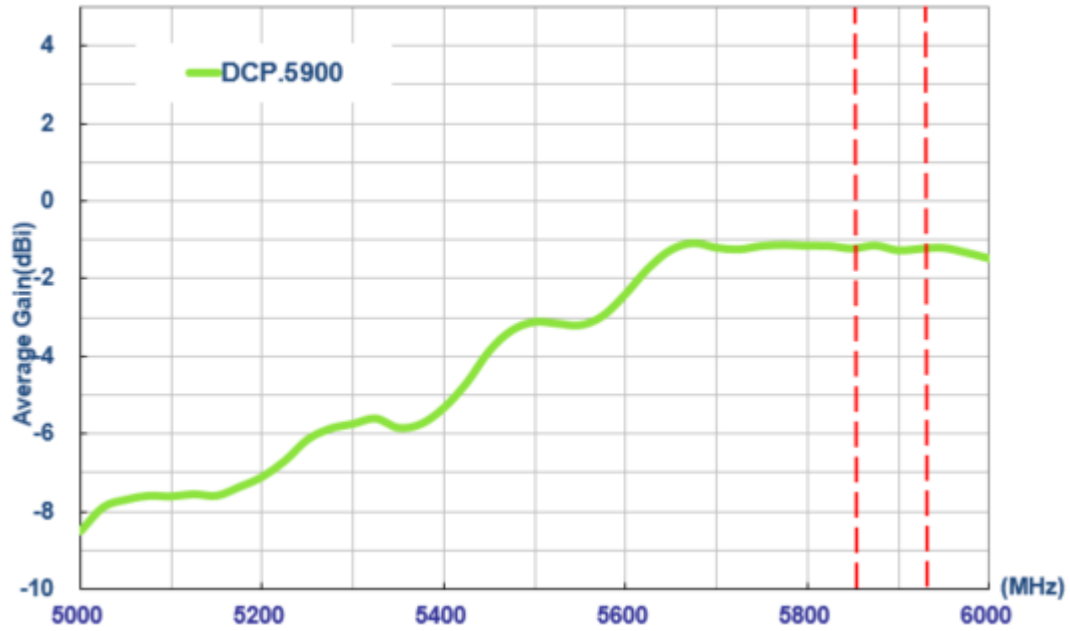
3.1 Return Loss



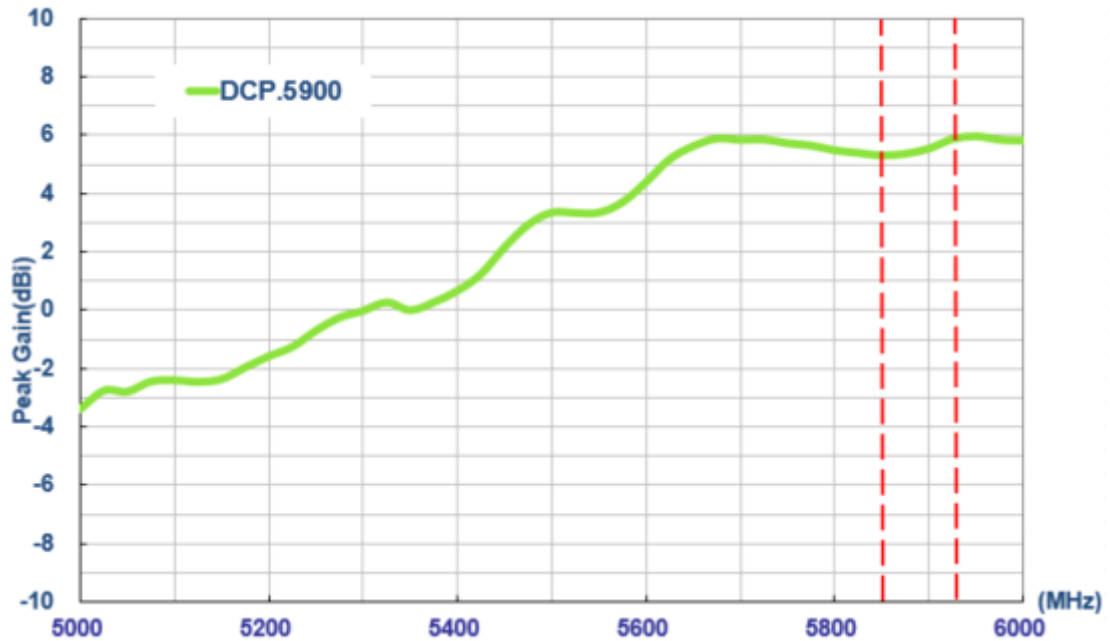
3.2 Efficiency



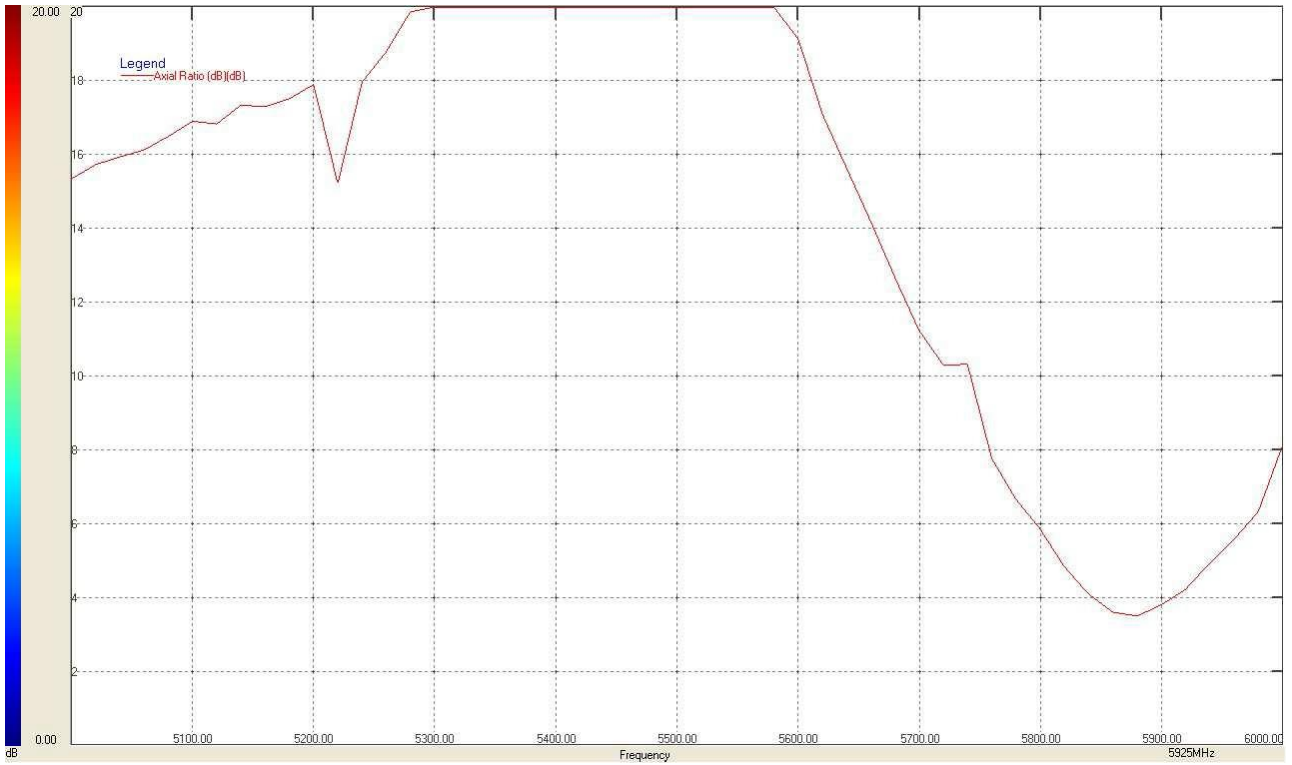
3.3 Average Gain



3.4 Peak Gain

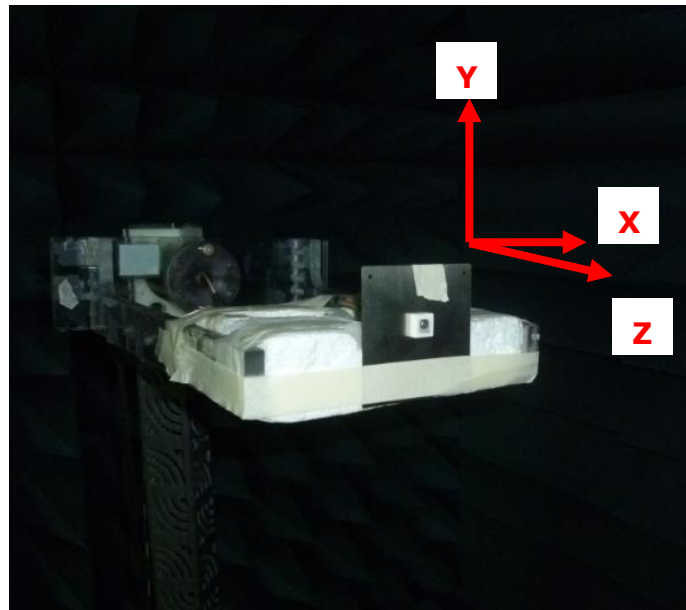


3.5 Axial Ratio

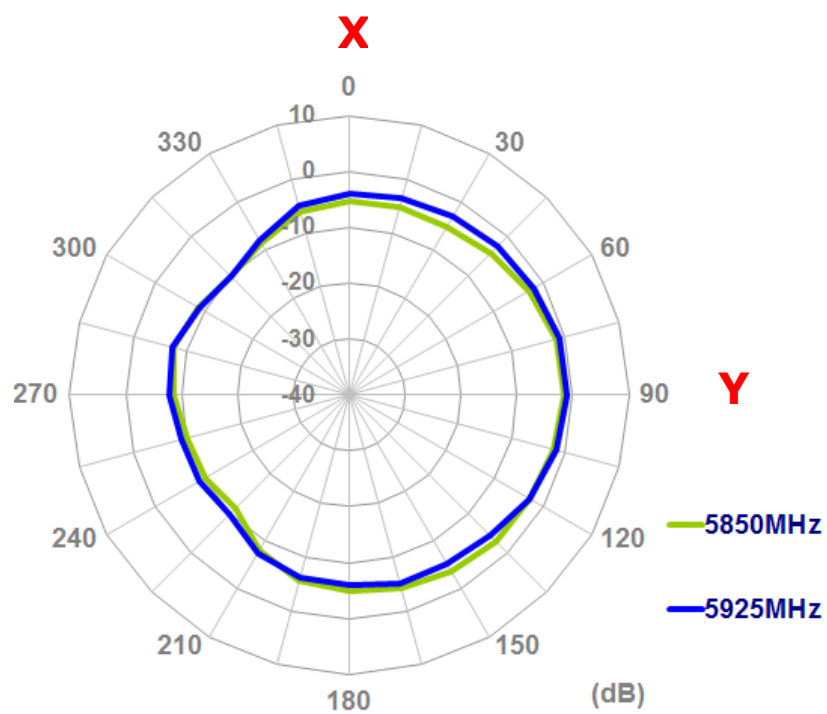


4. Antenna Radiation Pattern

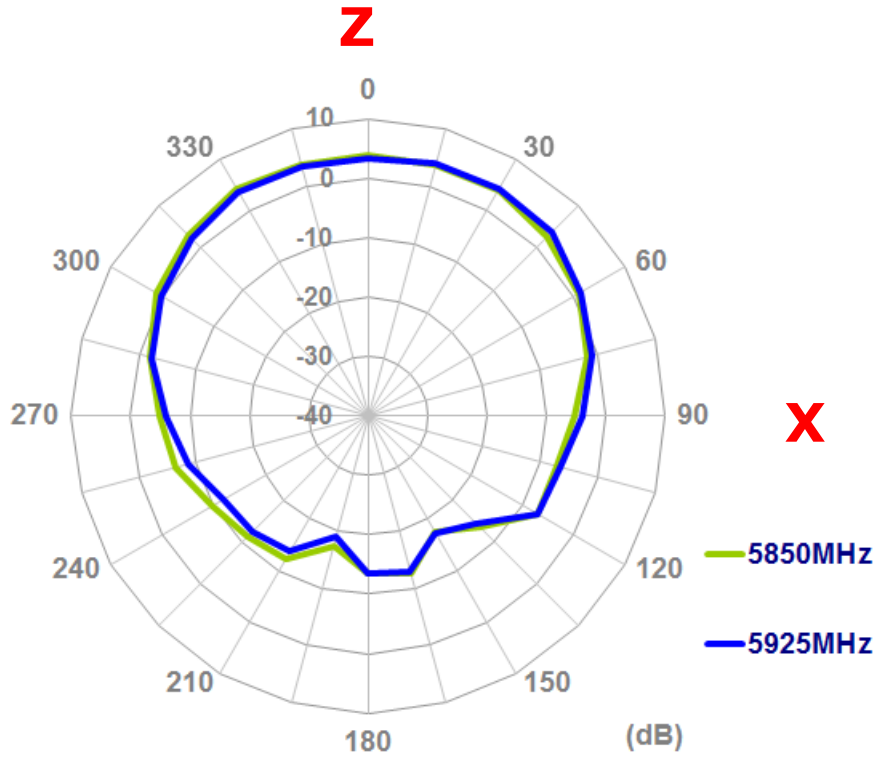
4.1 Measurement Setup



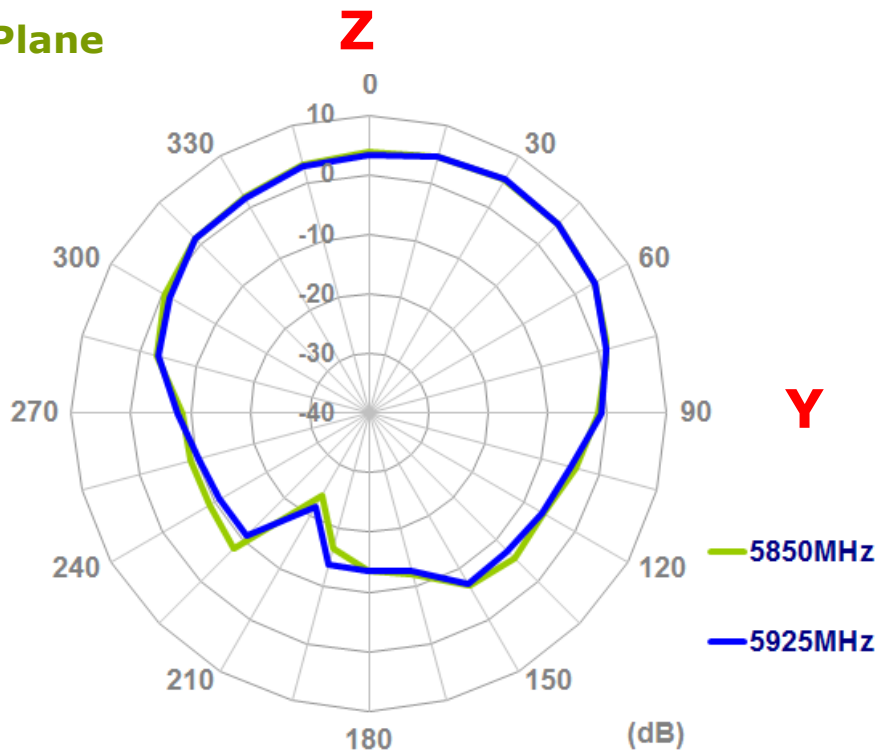
4.2 XY-Plane



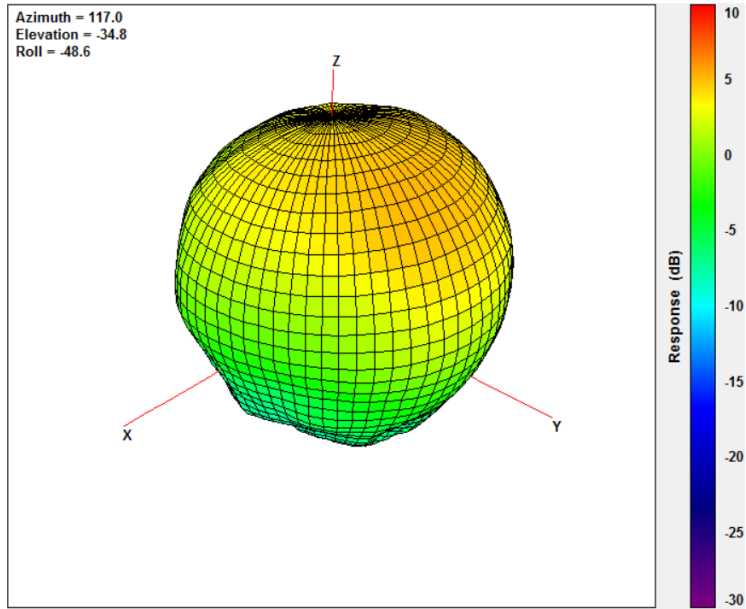
4.3 XZ-Plane



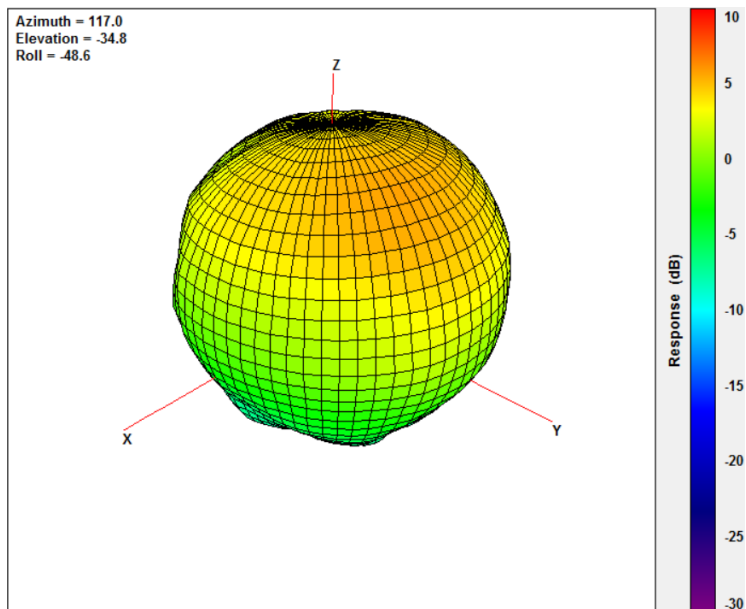
4.4 YZ-Plane



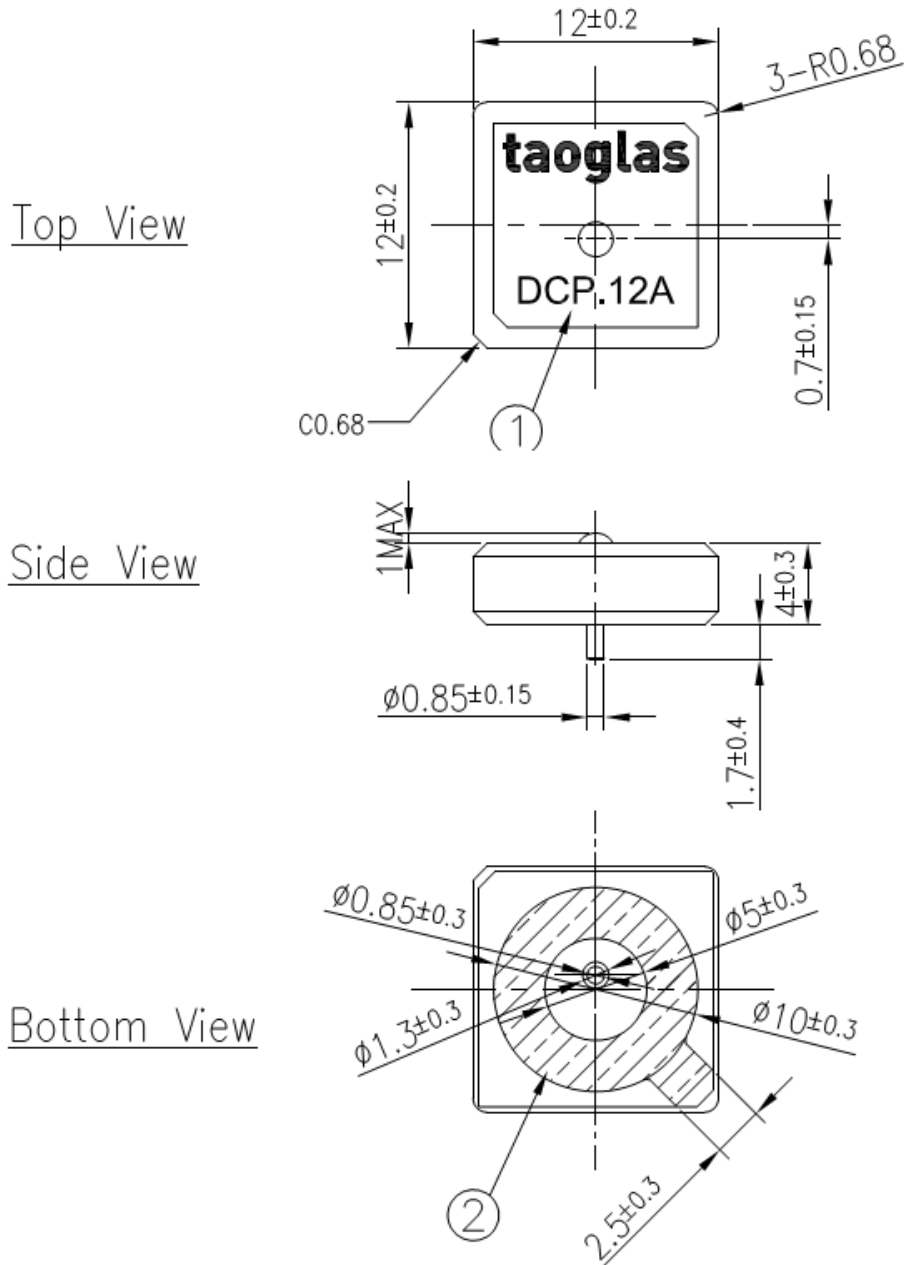
4.5 3D Radiation Patterns (5850 MHz)



4.6 3D Radiation Patterns (5925 MHz)



5. Mechanical Drawing



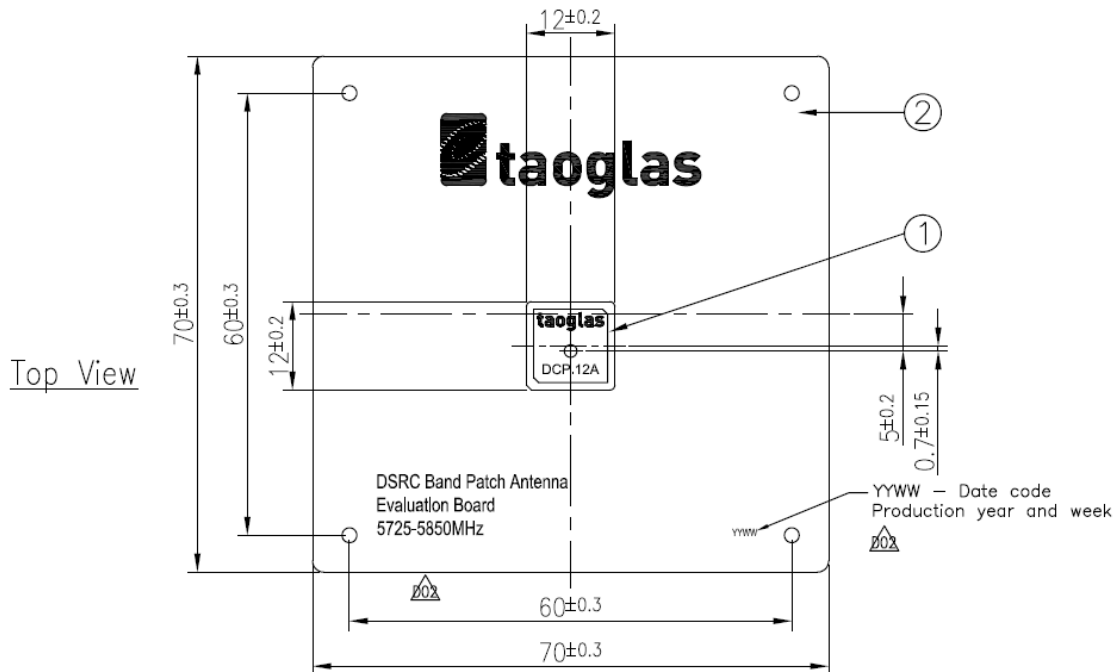
NOTE:

1. Double sided adhesive area. 

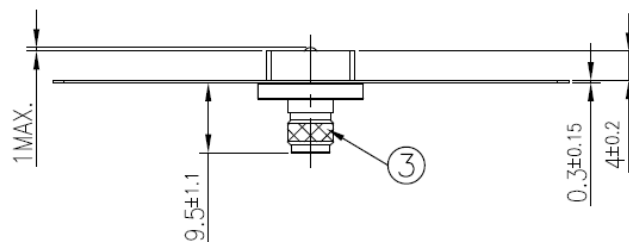
	Name	Material	Finish	QTY
1	DCP.12 Patch 12x12x4	Ceramic	Clear	1
2	Double sided Adhesive	NITTO 5015	White Liner	1

Unit:mm

6. DCPD.12A EVB



Side View

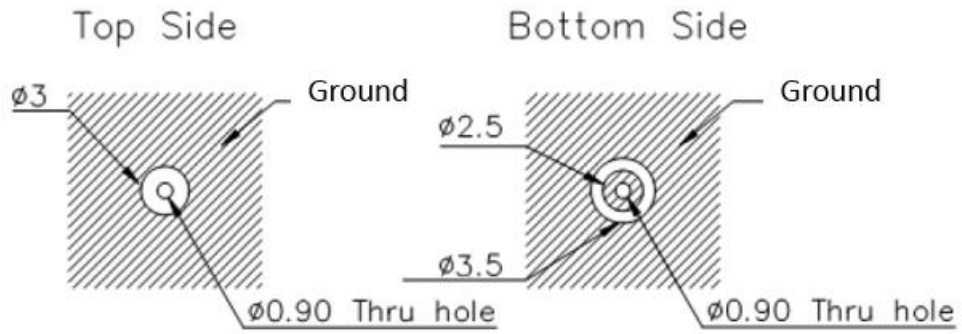


NOTES:

- 1.All material must be RoHS compliant.
- 2.Open/short QC, VSWR required.

	Name	P/N	Material	Finish	QTY
1	DCPD.12A Patch 12x12x4mm	001515H010007A	Ceramic	Clear	1
2	Ground-Plane(70x70x0.3mm)	000514B000007A	Brass	Silver	1
3	SMA(F) ST	200413L000007A	Brass	Gold	1

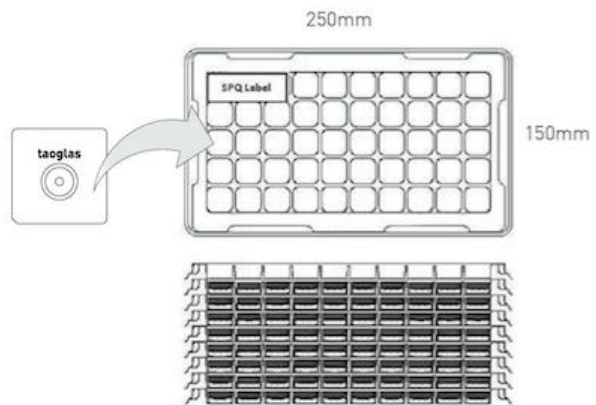
7. PCB Footprint Recommendation



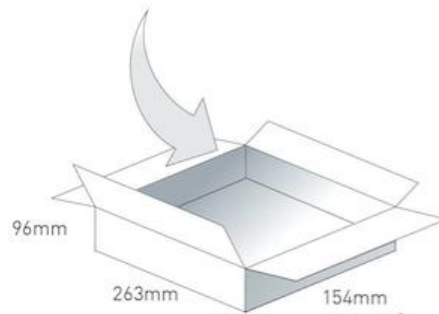
TOP: ± 0.20
UNIT: mm

8. Packaging

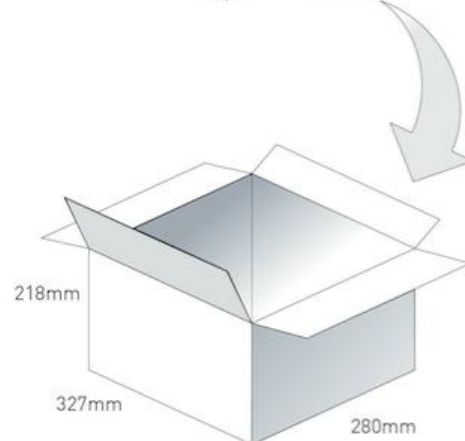
50 pcs DCP.5900.12.4.A.02 per tray
 Tray Dimensions - 250*150*80mm
 Total Weight - 150g



8 trays / 400 pcs per box
 Box Dimensions - 263*154*96
 Weight - 1.4Kg

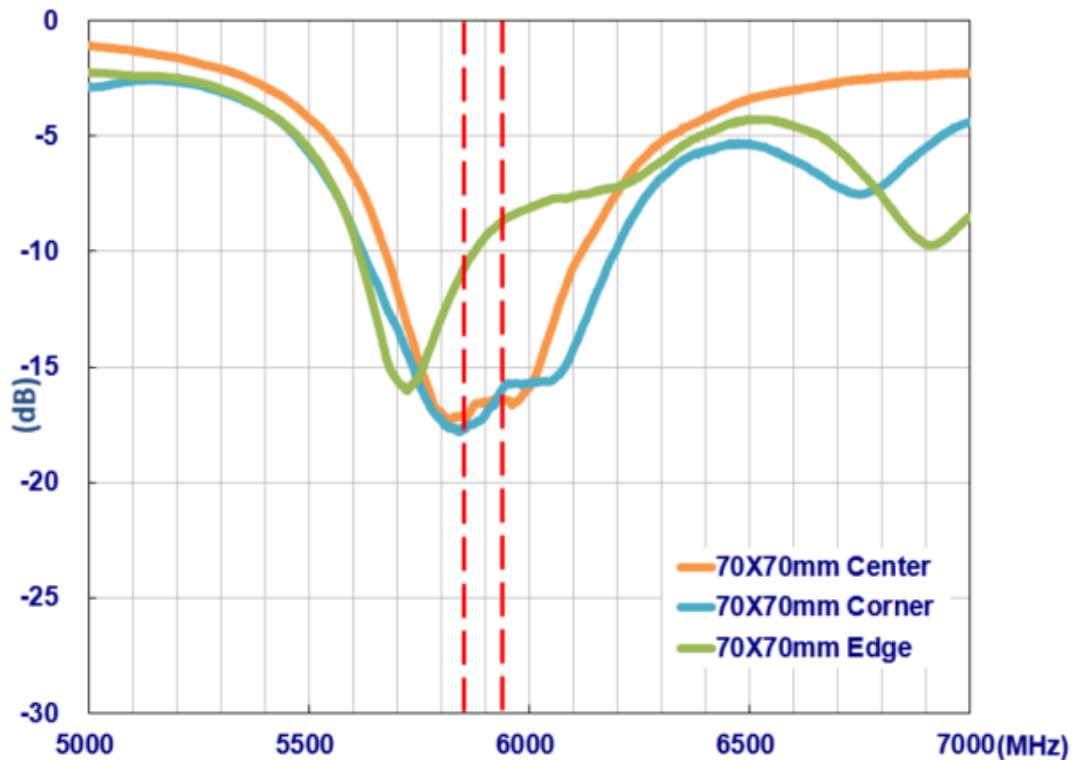
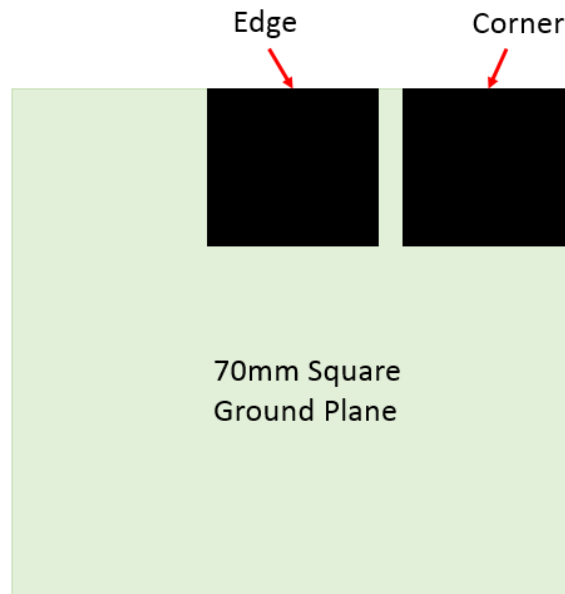


4 boxes / 1600 pcs per carton
 Carton Dimensions - 327*280*218mm
 Weight - 6.4Kg



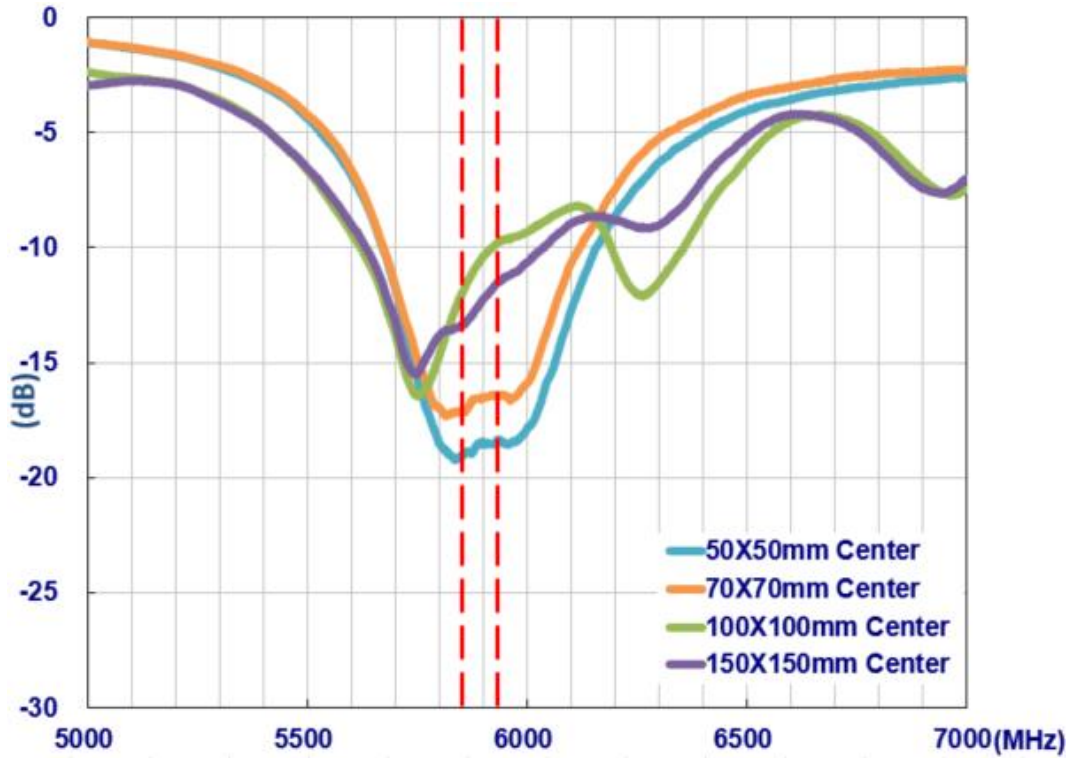
9. Application Note

The DCP.5900 DSRC patch antenna is designed for 70mm*70mm ground plane center. Taoglas provides the experimental reference below if the antenna isn't placed at the center of ground plane. Please refer to the return loss data shown in the graph below.



Return Loss

Antenna performance on different ground plane sizes is shown below. (The antenna locaton is at the center of ground plane)



Return Loss