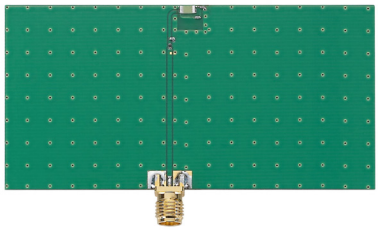
GGBLA.01.A
Front

GGBLA.01.A
Back



GGBLAD.01.A
Evaluation Board
for GGBLA.01.A

Unifier

GGBLA.01.A

Specification

Part No.	**GGBLA.01.A**
Product Name	**Unifier** GPS/GLONASS/BEIDOU Ceramic SMD Antenna
Feature	3.2*1.6*0.5mm Low profile Ceramic Loop antenna Omni-Directional RoHS compliant

1. Introduction

Taoglas have developed a unique ceramic miniature loop antenna series for GPS-GLONASS-BEIDOU applications. At 3.2*1.6*0.5mm, the Unifier GGBLA.01.A Loop antenna is a miniature edge mounted SMD antenna, designed for small space requirements.
Typical applications are small sized automotive navigation or position tracking systems and hand-held devices when GNSS function is needed.

The radiation pattern is more omni-directional than traditional patch antennas. The Unifier antenna series wide bandwidth allows high efficiency, stable reception on all three GPS, Glonass and Beidou bands from 1555MHz to 1602MHz

Efficiencies of 64% to 85% are achievable. Peak gain of 3.3dBi places this antenna gain performance within the range of a much larger 15mm to 18mm patch antennas.

Based on the loop effect this antenna works best when placed on the centre of the edge of the board, but can still work better than traditional linear polarized chip antennas even when placed at corners as substitute.

The Unifier GGBLA.01.A is delivered on tape and reel and now allows M2M customers to use an omni-directional antenna in devices where orientation of the product is unknown. Like all small antennas, care must be taken to ensure the device ground-plane layout and antenna matching has been done correctly, Taoglas offers professional gerber review, transmission line design, general integration support and final matching service of the GGBLA.01.A on your device board at our regional labs worldwide.

Contact your regional Taoglas sales office for immediate support.

2. Specification

Electrical GPS Band	
Working Frequency*	1575.42MHz
VSWR	2.0 : 1 max
Polarization	Linear
Gain	Peak gain: 3.2 Typ.
Impedance	50 Ω

Electrical GLONASS Band	
Working Frequency*	1598~1608MHz
VSWR	2.0 : 1 max
Polarization	Linear
Gain	Peak gain: 2.6 Typ.
Impedance	50 Ω

Electrical COMPASS-BEIDOU Band	
Working Frequency*	1561 MHz
VSWR	2.0 : 1 max
Polarization	Linear
Gain	Peak gain: 2.8 Typ.
Impedance	50 Ω

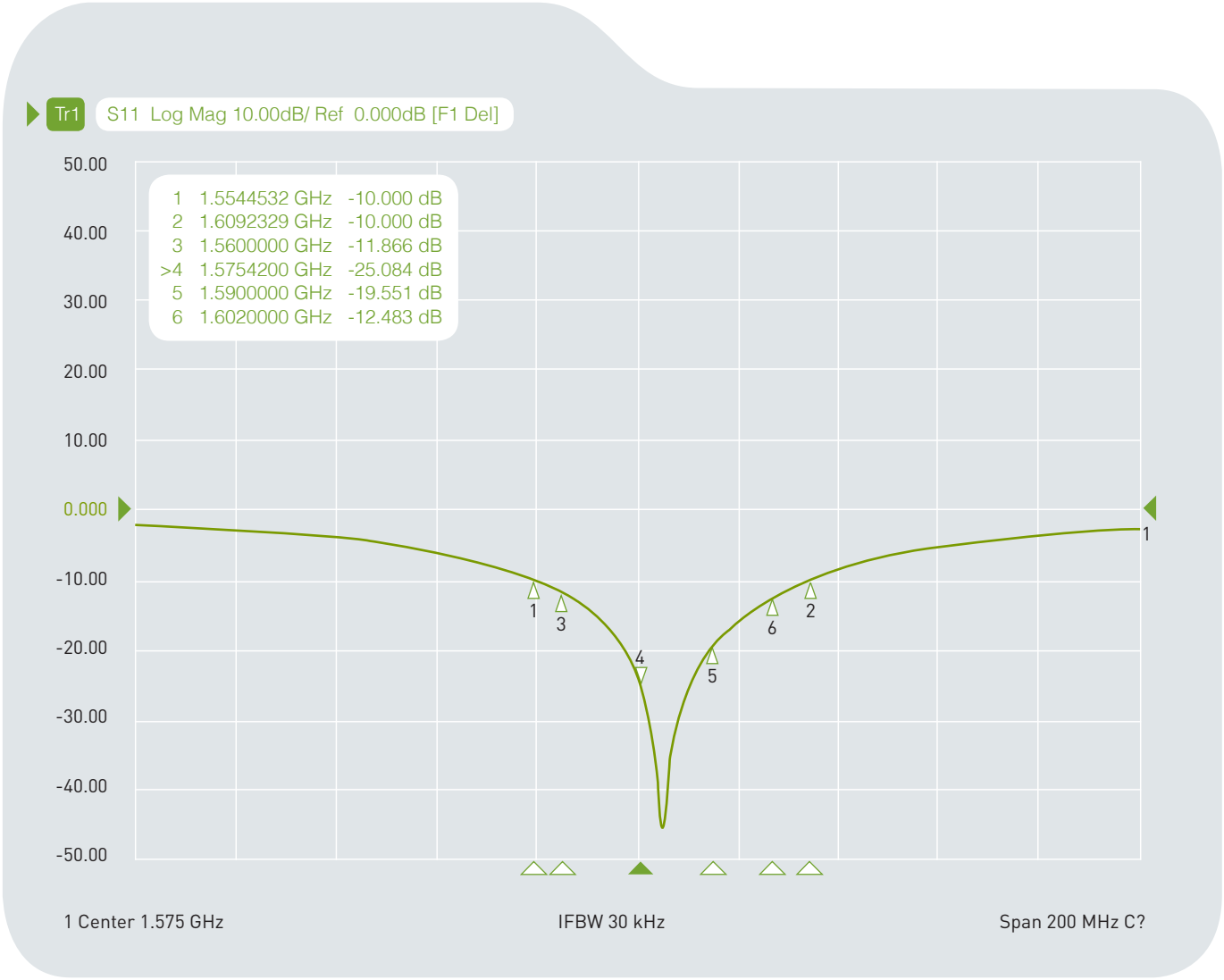
Mechanical	
Dimensions	3.2 x 1.6 x 0.5 mm
Material	Ceramic

Environmental	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Humidity	20% to 70%

* Measured on a 80*40mm ground plane

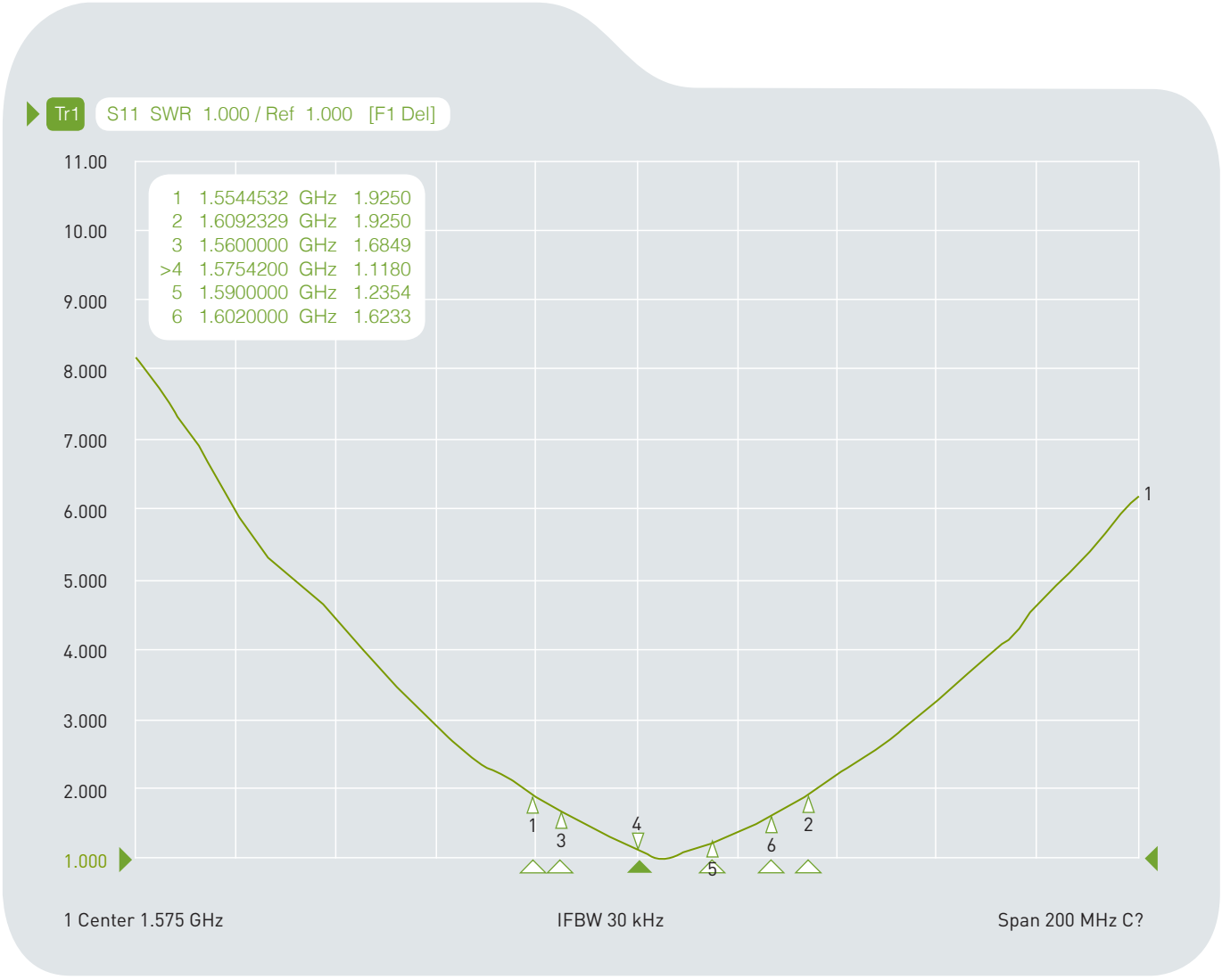
3. Antenna Characteristics

3.1 Return Loss



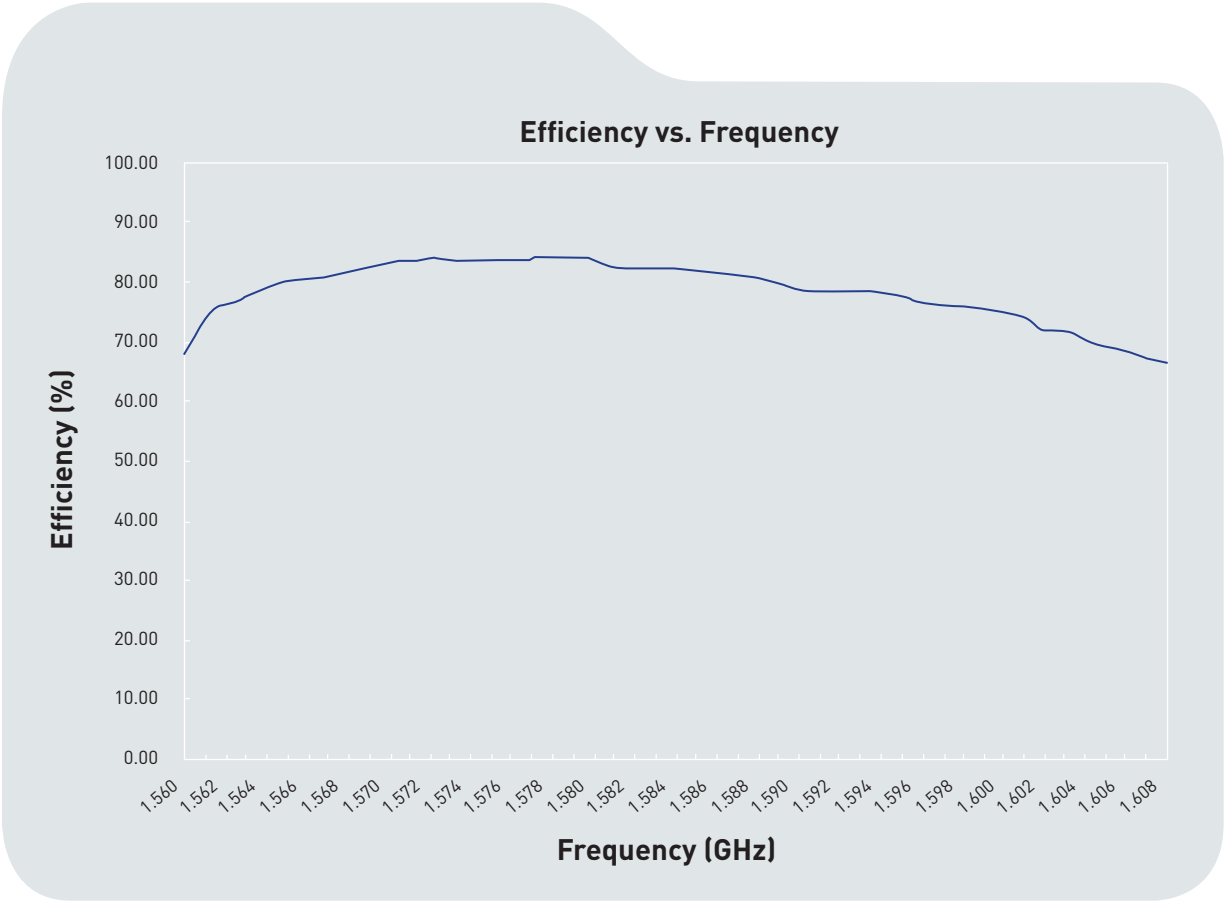
3. Antenna Characteristics

3.2 VSWR



3. Antenna Characteristics

3.3 Efficiency



3.4 Efficiency and Gain Table

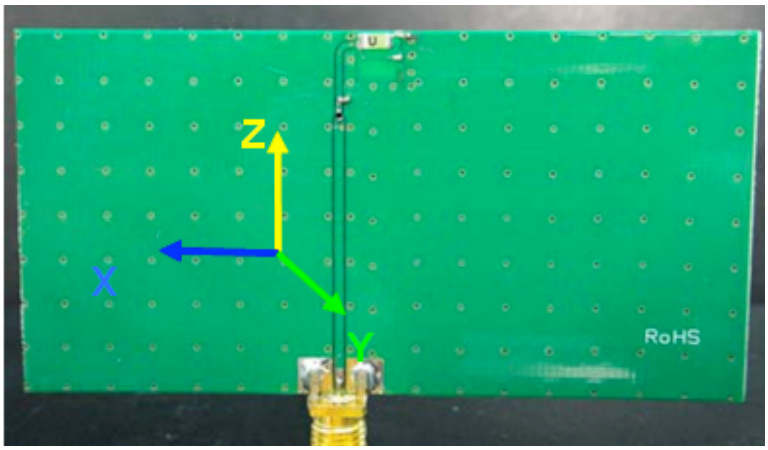
Frequency (GHz)	1.560	1.561	1.562	1.563	1.564	1.565	1.566	1.567	1.568	1.569	1.570	1.571	1.572	1.573	1.574	1.575	1.576	1.577	1.578	1.579	1.580
Efficiency (dB)	-1.68	-1.29	-1.18	-1.10	-1.02	-0.97	-0.94	-0.91	-0.88	-0.85	-0.79	-0.77	-0.76	-0.78	-0.79	-0.79	-0.78	-0.76	-0.76	-0.75	-0.77
Efficiency (%)	67.93	74.32	76.22	77.64	79.09	80.00	80.55	81.11	81.67	82.24	83.38	83.77	83.96	83.58	83.38	83.43	83.58	83.96	83.96	84.16	83.77
Gain (dBi)	2.82	2.90	2.99	3.05	3.10	3.14	3.17	3.20	3.21	3.24	3.29	3.29	3.30	3.28	3.29	3.29	3.29	3.29	3.29	3.28	3.26

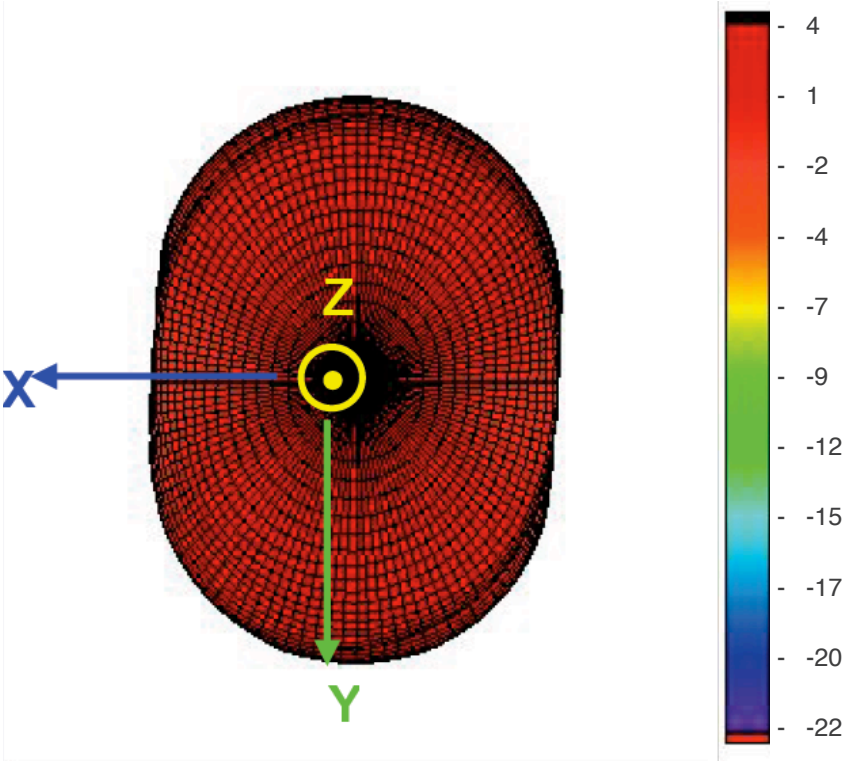
Frequency (GHz)	1.581	1.582	1.583	1.584	1.585	1.586	1.587	1.588	1.589	1.590	1.591	1.592	1.593	1.594	1.595	1.596	1.597	1.598	1.599	1.600	1.601
Efficiency (dB)	-0.84	-0.84	-0.85	-0.85	-0.87	-0.89	-0.93	-0.94	-0.98	-1.05	-1.04	-1.04	-1.04	-1.07	-1.10	-1.17	-1.19	-1.21	-1.21	-1.24	-1.30
Efficiency (%)	82.36	82.43	82.24	82.24	81.86	81.49	80.74	80.55	79.82	78.54	78.72	78.72	78.72	78.18	77.64	76.43	76.05	75.70	75.70	75.18	74.14
Gain (dBi)	3.16	3.17	3.14	3.12	3.11	3.08	3.05	3.03	2.99	2.93	2.93	2.92	2.90	2.88	2.84	2.82	2.77	2.75	2.74	2.71	2.66

Frequency (GHz)	1.602	1.603	1.604	1.605	1.606	1.607	1.608
Efficiency (dB)	-1.65	-1.45	-1.54	-1.60	-1.67	-1.73	-1.78
Efficiency (%)	71.98	71.63	70.16	69.20	68.09	67.16	66.39
Gain (dBi)	2.58	2.54	2.46	2.41	2.36	2.31	2.28

4. 3D Antenna Radiation Pattern

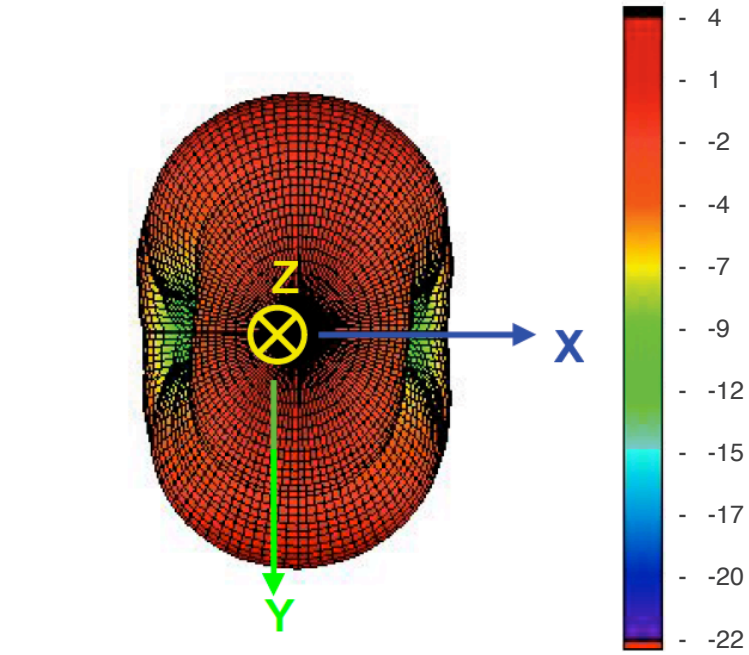
4.1 Beidou 1560MHz (80*40mm ground plane)

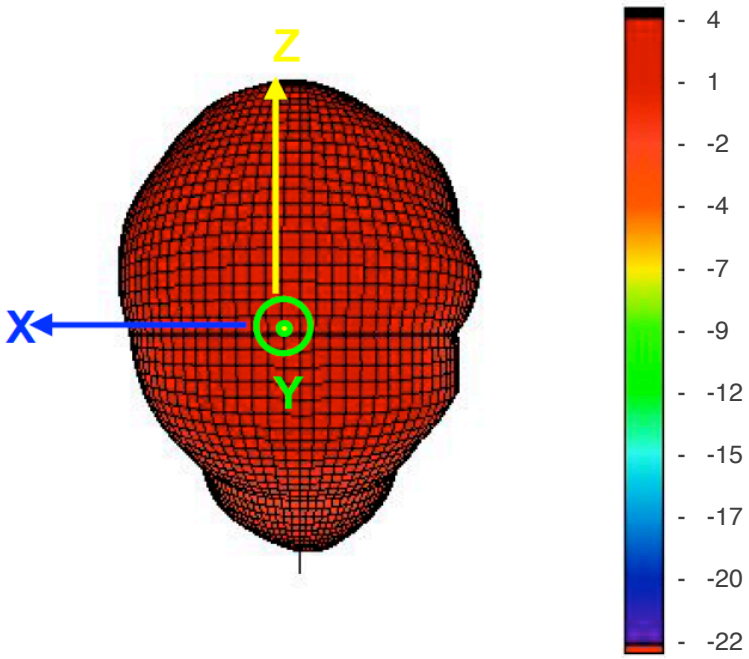




4. 3D Antenna Radiation Pattern

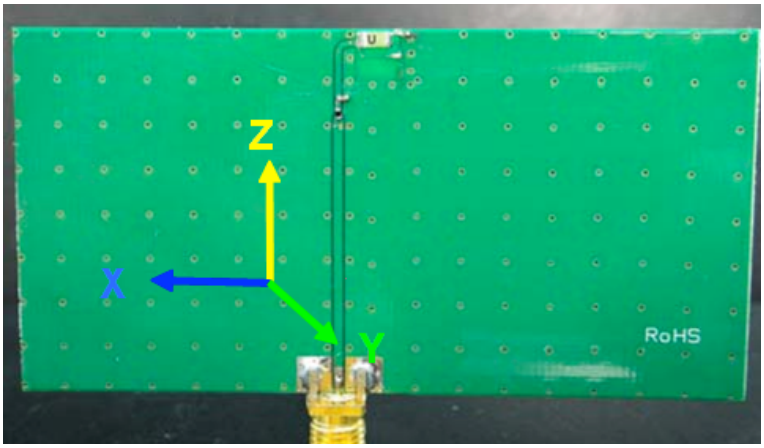
4.1 Beidou 1560MHz (80*40mm ground plane)

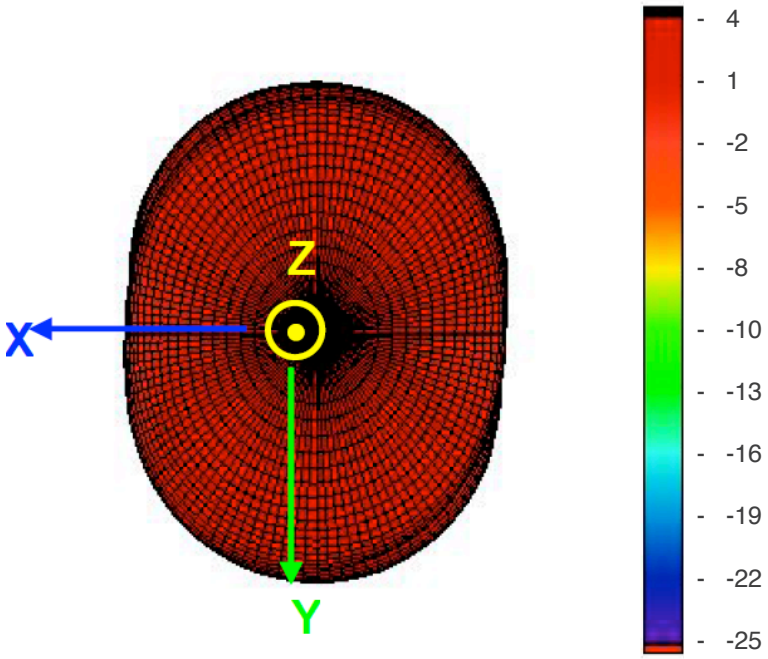




4. 3D Antenna Radiation Pattern

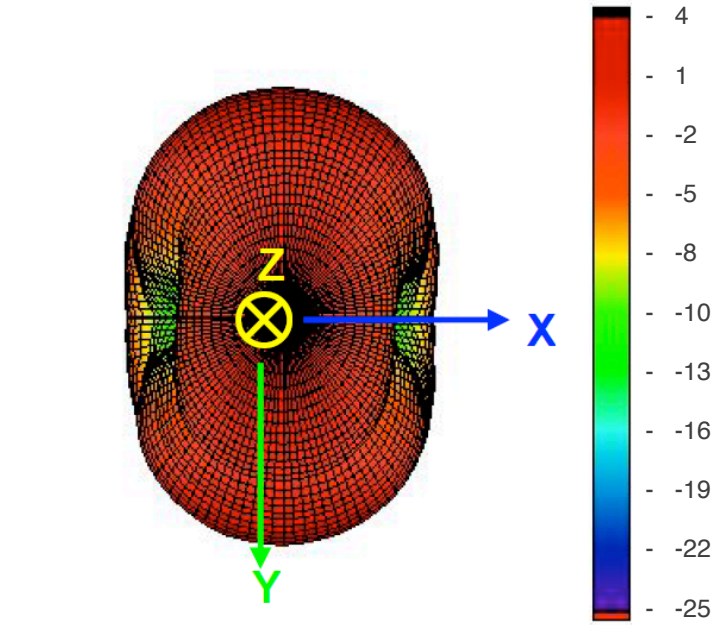
4.2 GPS 1575MHz (80*40mm Ground Plane)

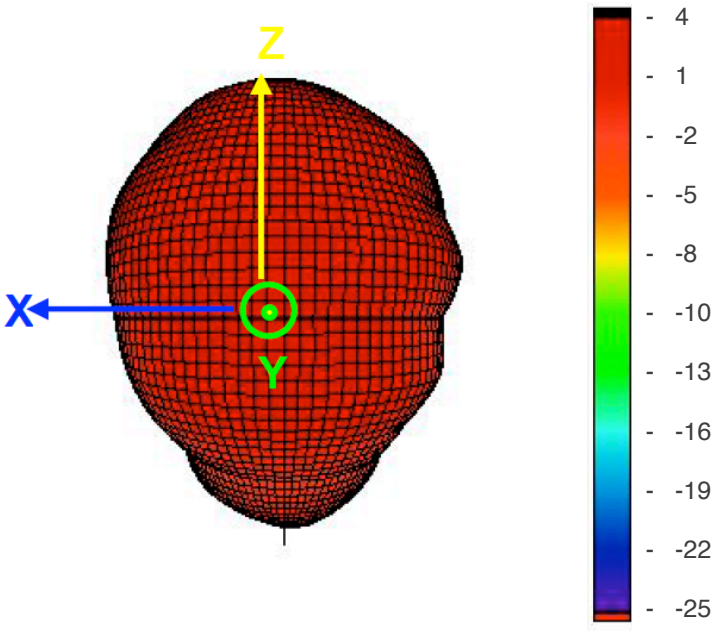




4. 3D Antenna Radiation Pattern

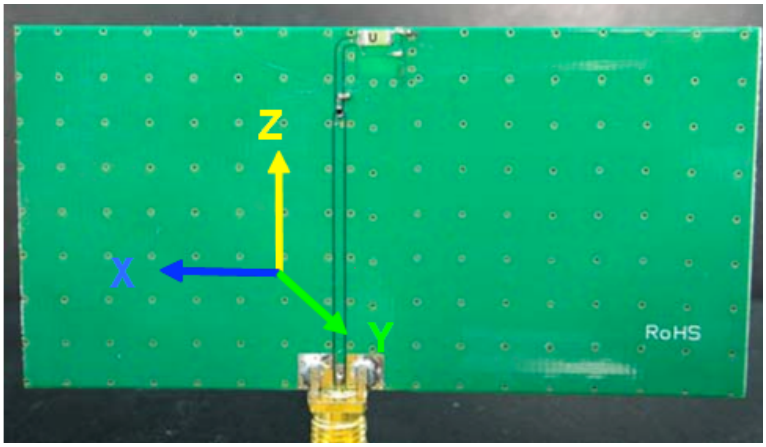
4.2 GPS 1575MHz (80*40mm Ground Plane)





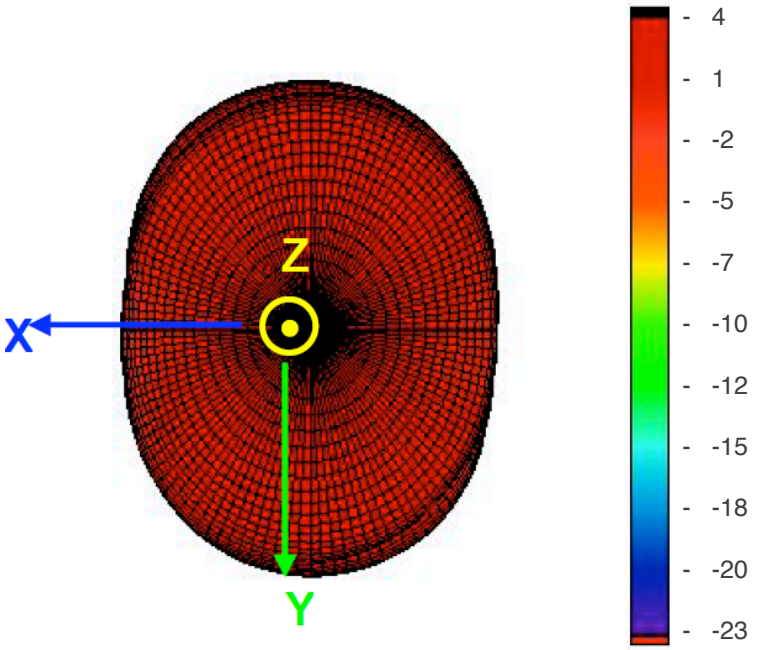
4. 3D Antenna Radiation Pattern

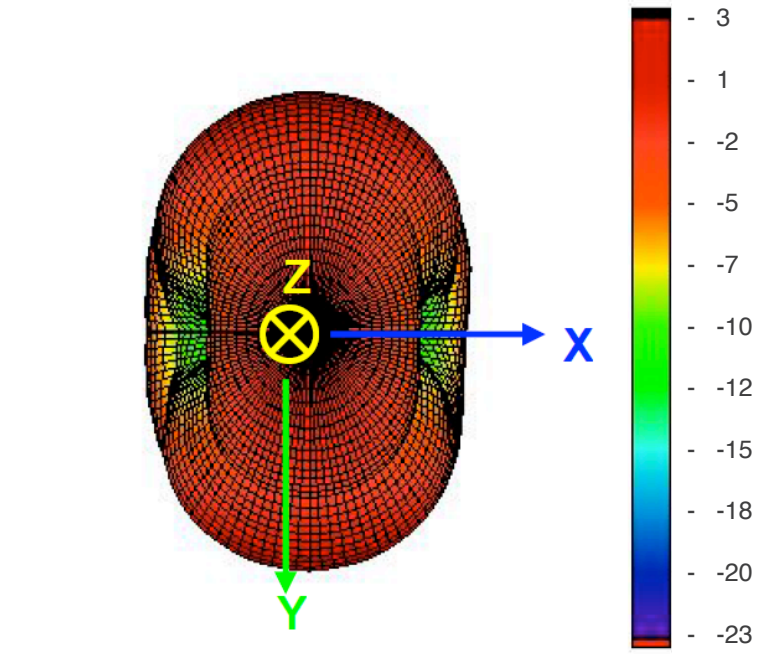
4.3 Glonass 1602MHz (80*40mm Ground Plane)



4. 3D Antenna Radiation Pattern

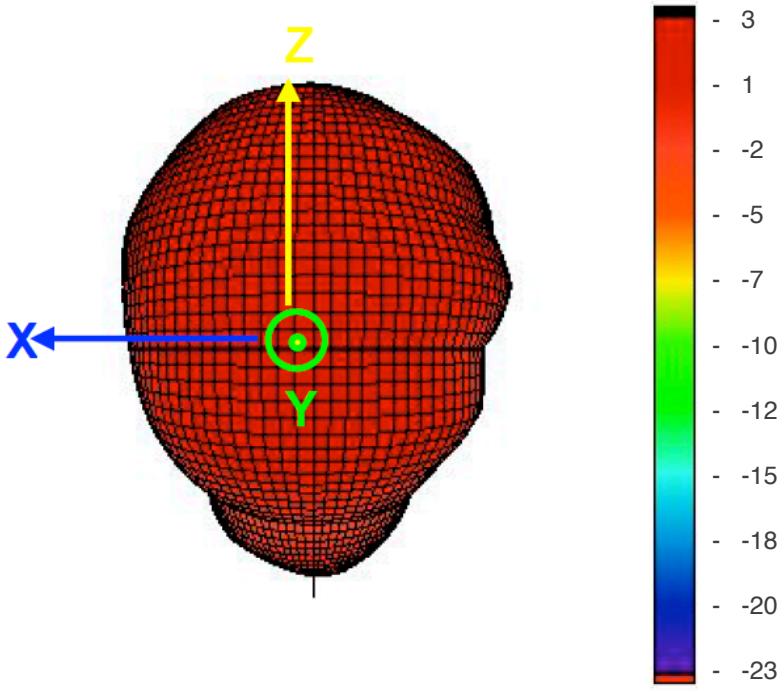
4.3 Glonass 1602MHz (80*40mm Ground Plane)



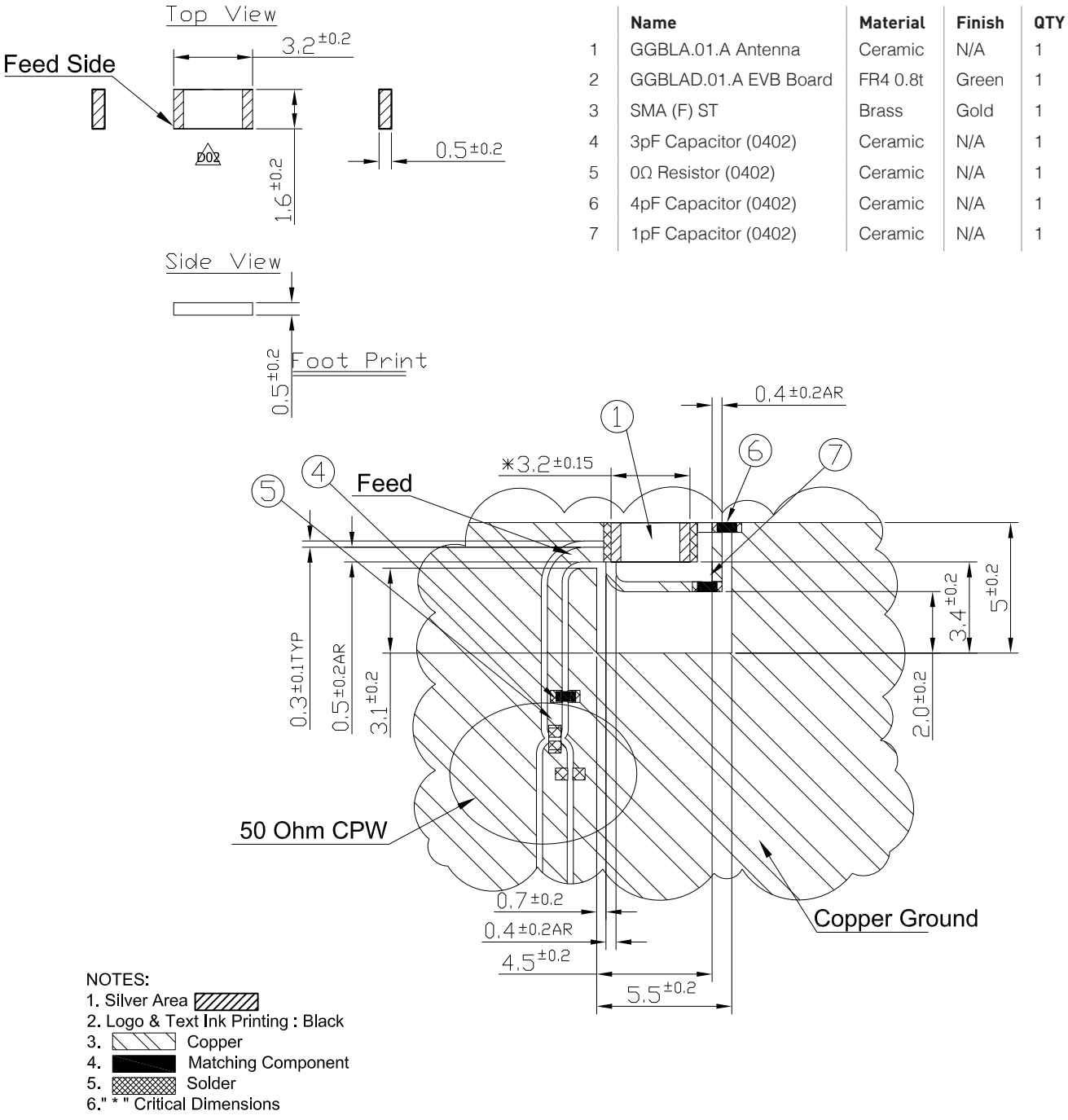


4. 3D Antenna Radiation Pattern

4.3 Glonass 1602MHz (80*40mm Ground Plane)



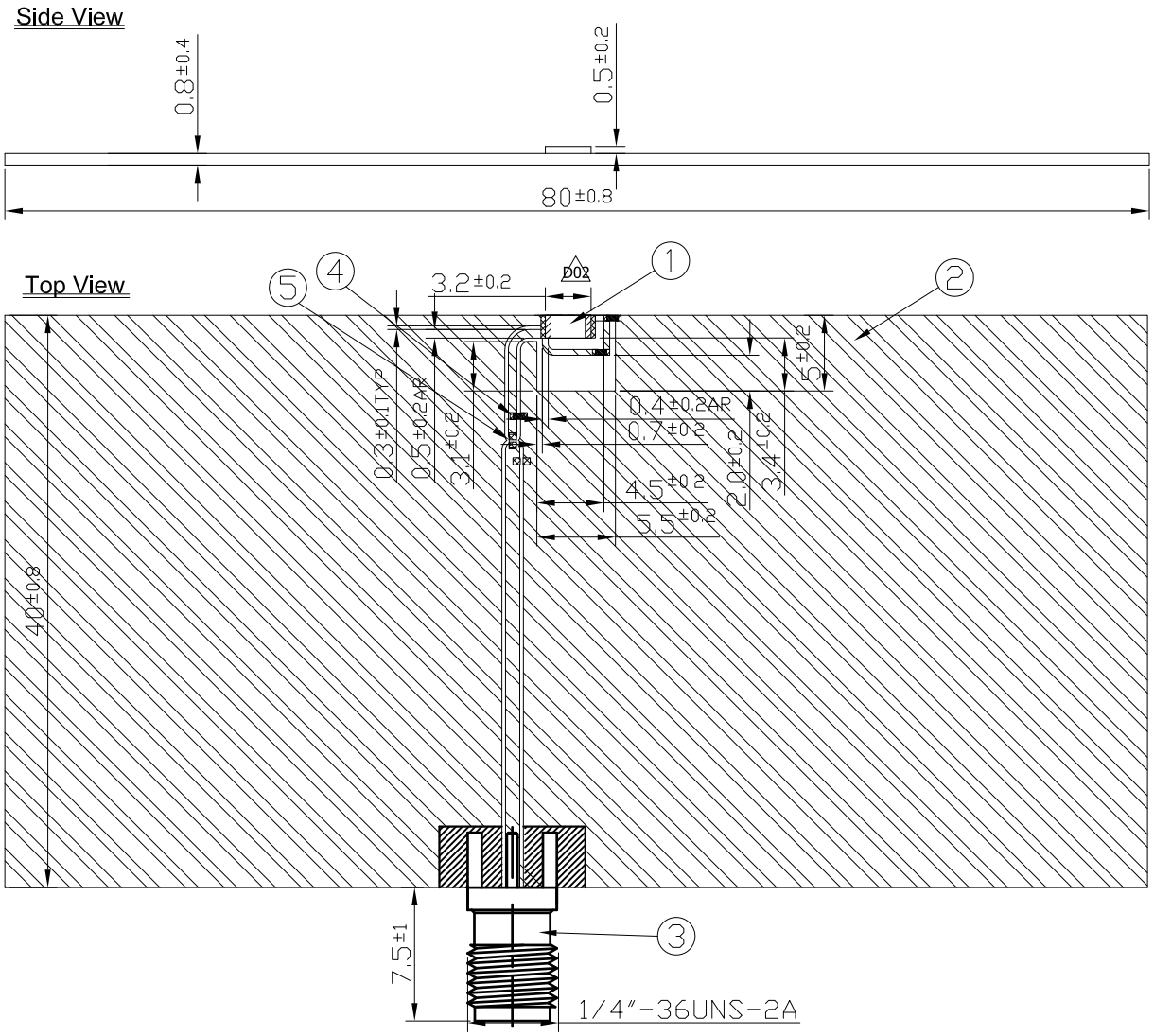
5. Drawing



	Name	Material	Finish	QTY
1	GGBLA.01.A Antenna	Ceramic	N/A	1
2	GGBLAD.01.A EVB Board	FR4 0.8t	Green	1
3	SMA (F) ST	Brass	Gold	1
4	3pF Capacitor (0402)	Ceramic	N/A	1
5	0Ω Resistor (0402)	Ceramic	N/A	1
6	4pF Capacitor (0402)	Ceramic	N/A	1
7	1pF Capacitor (0402)	Ceramic	N/A	1

NOTES:
1. Silver Area
2. Logo & Text Ink Printing : Black
3. Copper
4. Matching Component
5. Solder
6." * " Critical Dimensions

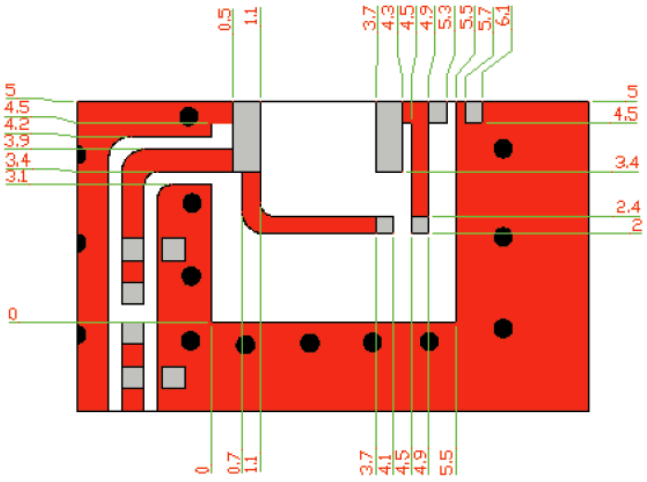
6. Drawing EVB



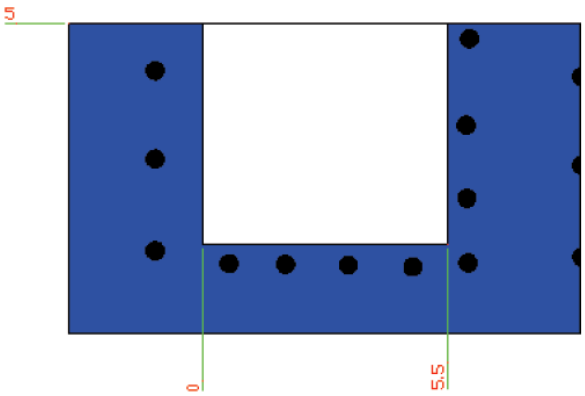
	Name	Material	Finish	QTY
1	GGBLA.01.A Antenna	Ceramic	N/A	1
2	GGBLAD.01.A EVB Board	FR4 0.8t	Green	1
3	SMA (F) ST	Brass	Gold	1
4	3pF Capacitor (0402)	Ceramic	N/A	1
5	0Ω Resistor (0402)	Ceramic	N/A	1
6	4pF Capacitor (0402)	Ceramic	N/A	1
7	1pF Capacitor (0402)	Ceramic	N/A	1

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

7. Layout Guide



Top View

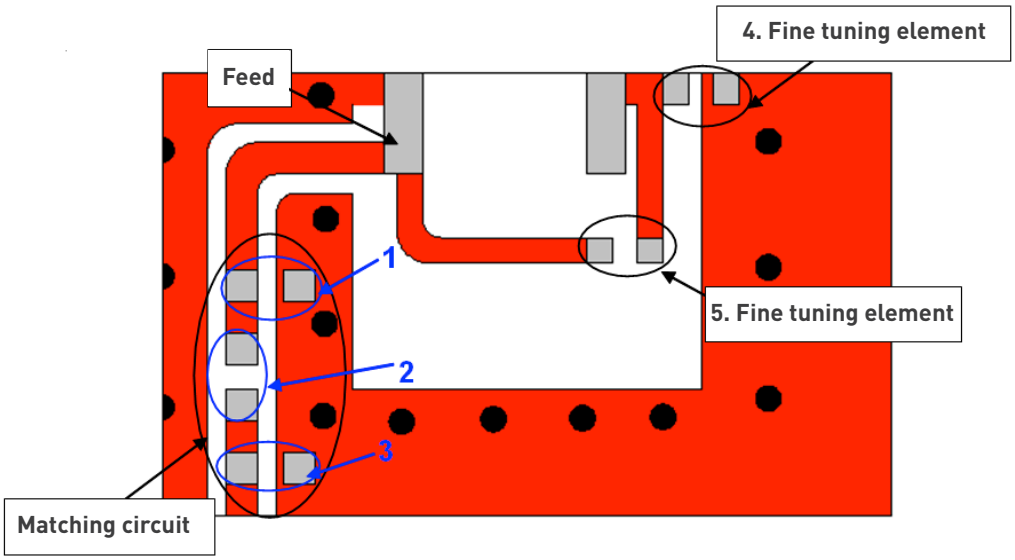


Bottom View

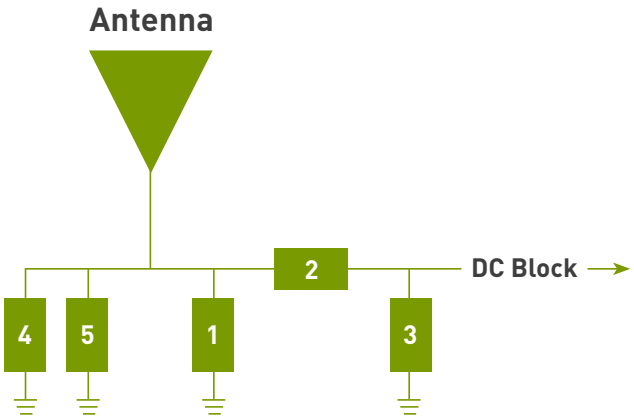
Unit : mm

8. Frequency Tuning

8.1 Antenna Tuning



8.2 Matching Circuit (Centre frequency 1575.42Mhz @ 80*40mm Ground)

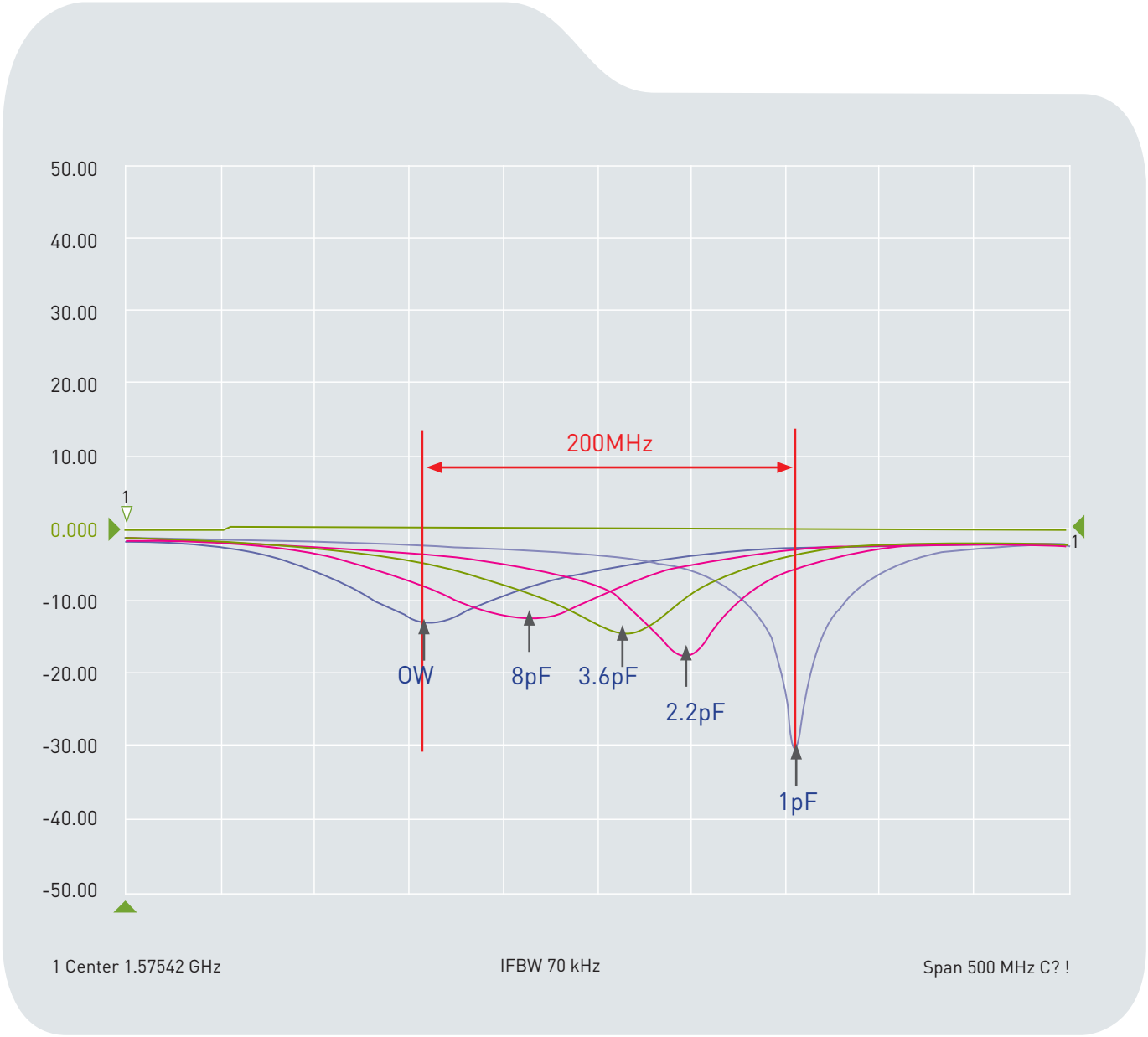


System Matching Circuit Component

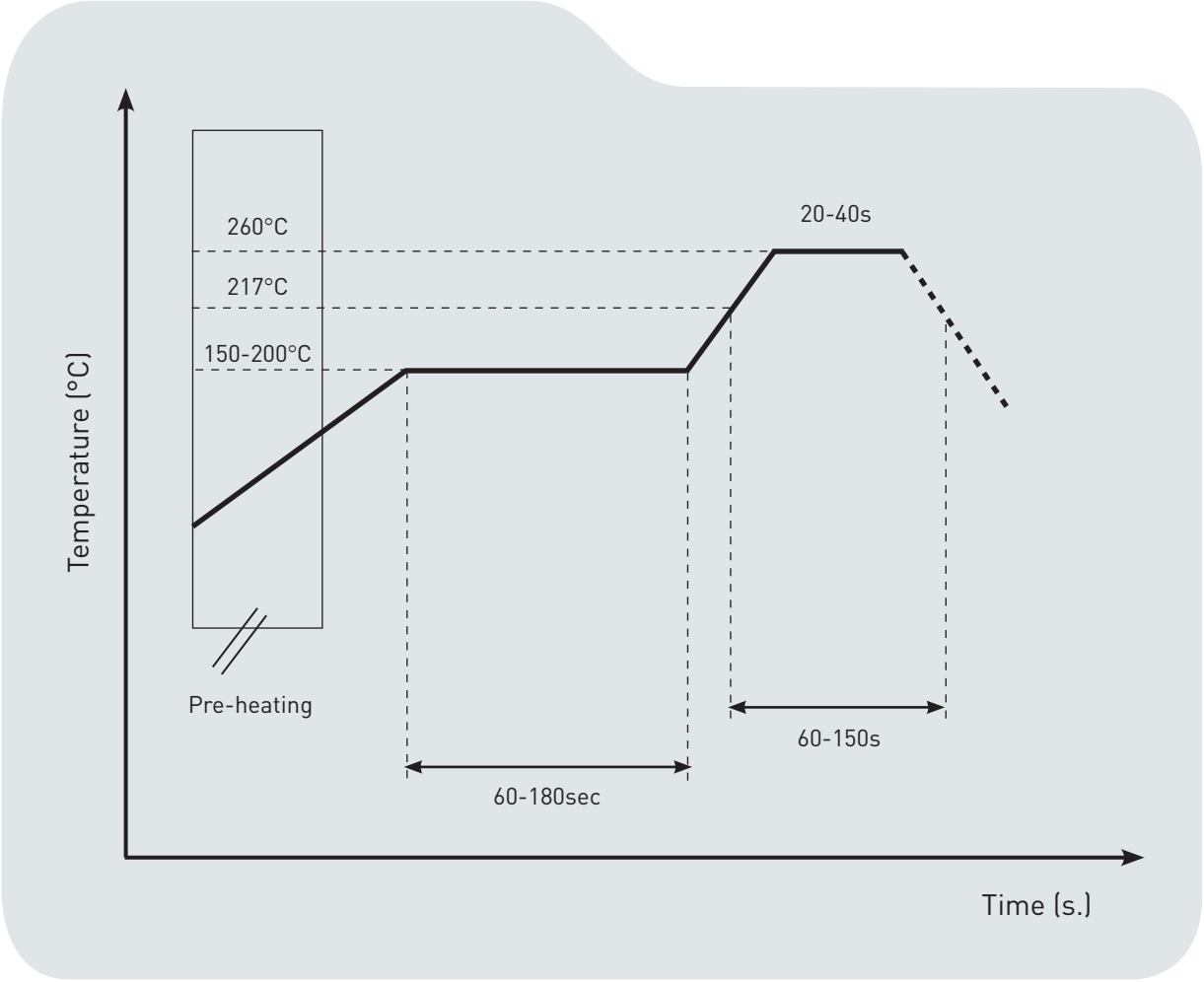
Location	Description	Vendor	Tolerance
1	3 pF	DARFON (0402)	±0.1pF
2	0Ω	(0402)	-
3	N/A	-	-
Fine tuning element 4	4 pF	DARFON (0402)	±0.1pF
Fine tuning element 5	1 pF	DARFON (0402)	±0.1pF

8. Frequency Tuning

8.3 Fine tuning element vs. Center Frequency



9. Recommended Reflow Profile



10. Packaging

(1) Quantity / Reel: 6000pcs/Reel

(2) Plastic tape: