GPS L1&L2&L5 TELA Antenna Module (EVB+NT15D)

Engineering Specification

1. Product Number

H	2	M	1	W	0	1	1	0	0	0	1	0	0

2. Features

The NT15D can simultaneously receive the following signals:

*GPS L1/L2/L5
*BeiDou (BDS) B1/B2/B3
*QZSS L1/L2/L5/E6
*GLONASS G1/G2/G3
*Galileo (GAL) E1/E5/E6
*IRNSS L5

3. Applications

* Smartphones
* Wearables
* Tablets
* Digital Cameras

4. Description

The NT15D GNSS antenna module is ingeniously combined with Unictron's TELA(Tuning Element Loop Antenna) and frequency tuner, supports multi-band simultaneously reception of GPS/GLONASS/BDS/Galileo/QZSS/IRNSS navigations, and as a result, achieves lane-level accuracy outdoors and much higher resistance to multipath and reflected signals in urban scenarios, as well as higher immunity to interference and jamming.

Prepared by : Wen	Designed by : George	Checked by : Mike	Approved by : Herbert

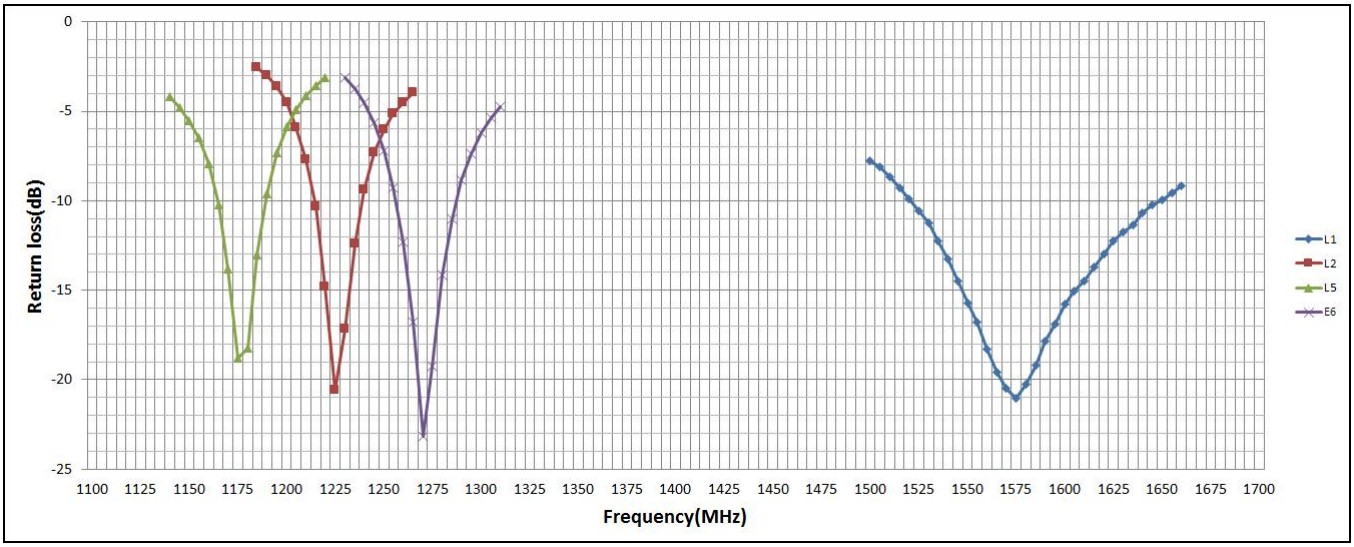
TITLE : GPS L1&L2&L5 TELA Antenna Module(EVB+NT15D) Engineering Specification	DOCUMENT NO.	H2M1W011000100	REV. Pre

5. Specification

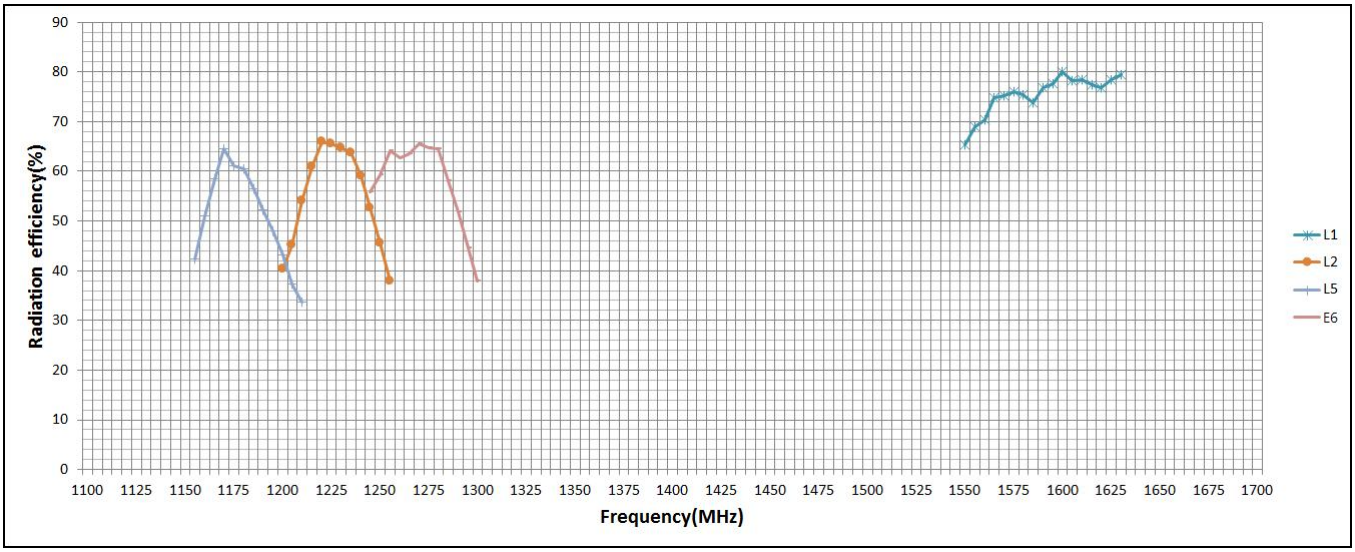
Specification				
Navigation	GPS L1/ GLONASS G1/ Galileo E1/ BDS B1/ QZSS L1	GPS L2/ GLONASS G2/ QZSS L2	GPS L5/ GLONASS G3/ Galileo E5/ BDS B2/ QZSS L5/ IRNSS L5	Galileo E6/ BDS B3/ QZSS E6
Frequency (MHz)	1575.42	1227.6	1176.45	1278.75
Efficiency (%)	78 Typ.	64 Typ.	61 Typ.	65 Typ.
Bandwidth (MHz)	125 Typ.	26 Typ.	25 Typ.	30 Typ.
VSWR	< 2.0			
Impedance (Ω)	50			
Polarization	Linear			
Dimension (mm)	15 x 10 x 1.5			
Power Supply (V)	1.8~3.6 (VDD) 1.35 ~3.5 (control voltage)			
Mounting	23-pin stamp holes			
Test Condition	80 x 40mm Evaluation Board			

6. Characteristics

6.1 Return Loss

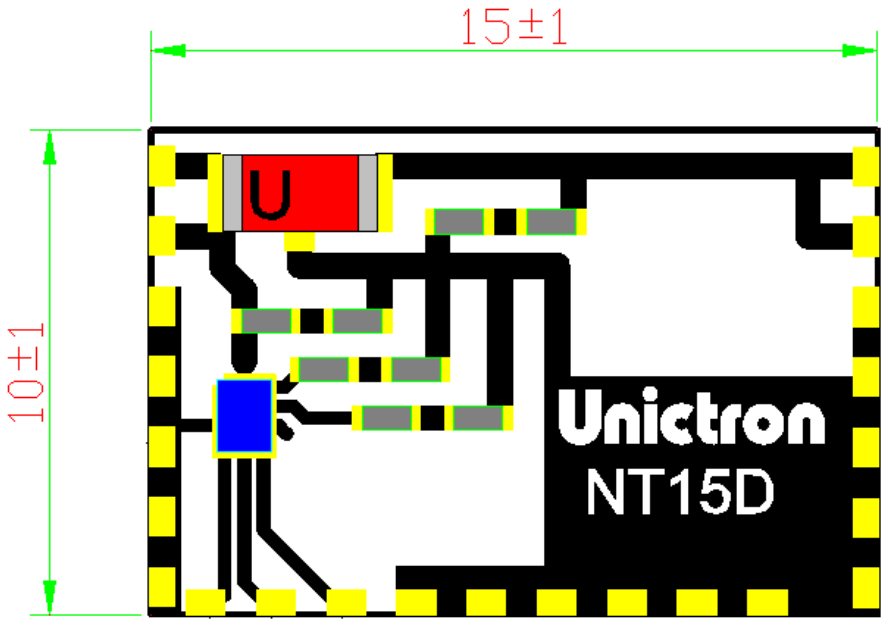


6.2 Radiation Efficiency

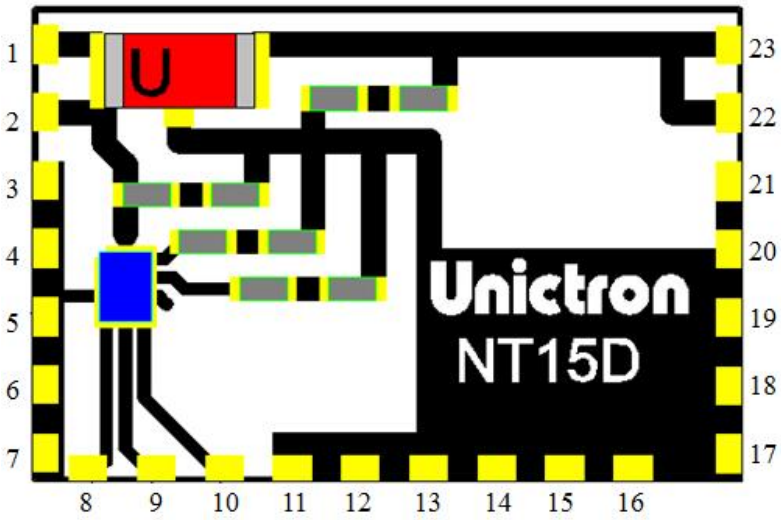


7. Antenna Dimensions & Footprint (unit: mm)

7.1. Antenna Dimension

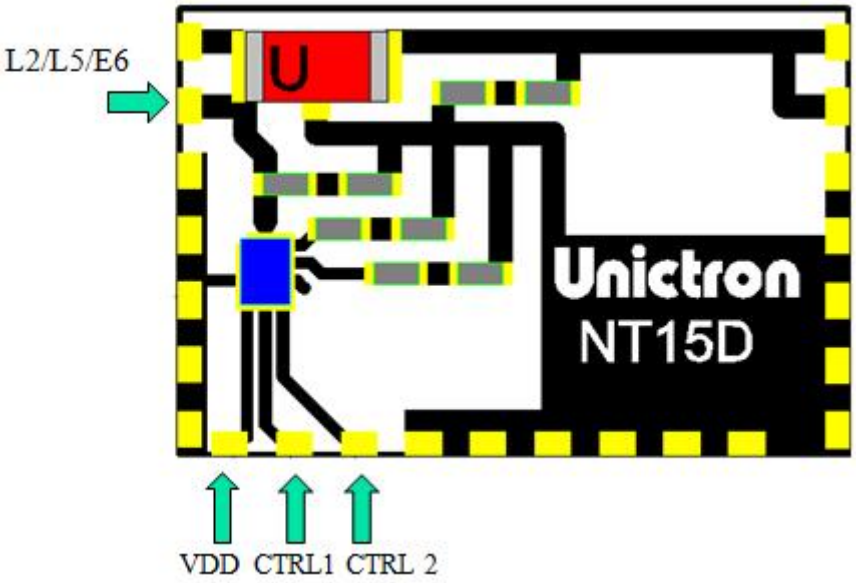


7.2. PIN Configuration

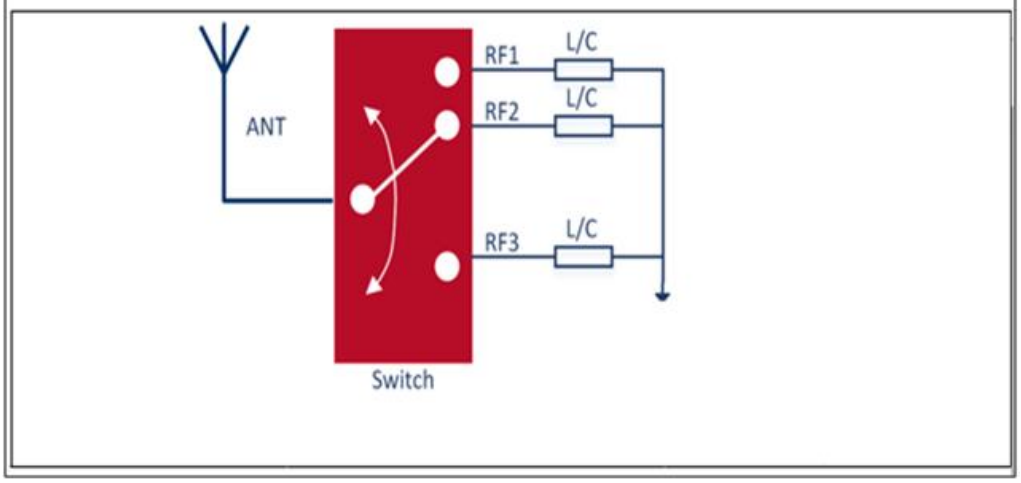


PIN	SYMBOL	PIN	SYMBOL
1	GND	13	GND
2	L2/L5/E6	14	GND
3	GND	15	GND
4	GND	16	GND
5	GND	17	GND
6	GND	18	GND
7	GND	19	GND
8	VDD	20	GND
9	CTRL1	21	GND
10	CTRL2	22	L1
11	GND	23	GND
12	GND		

7.3. Logic Table for Frequency Control



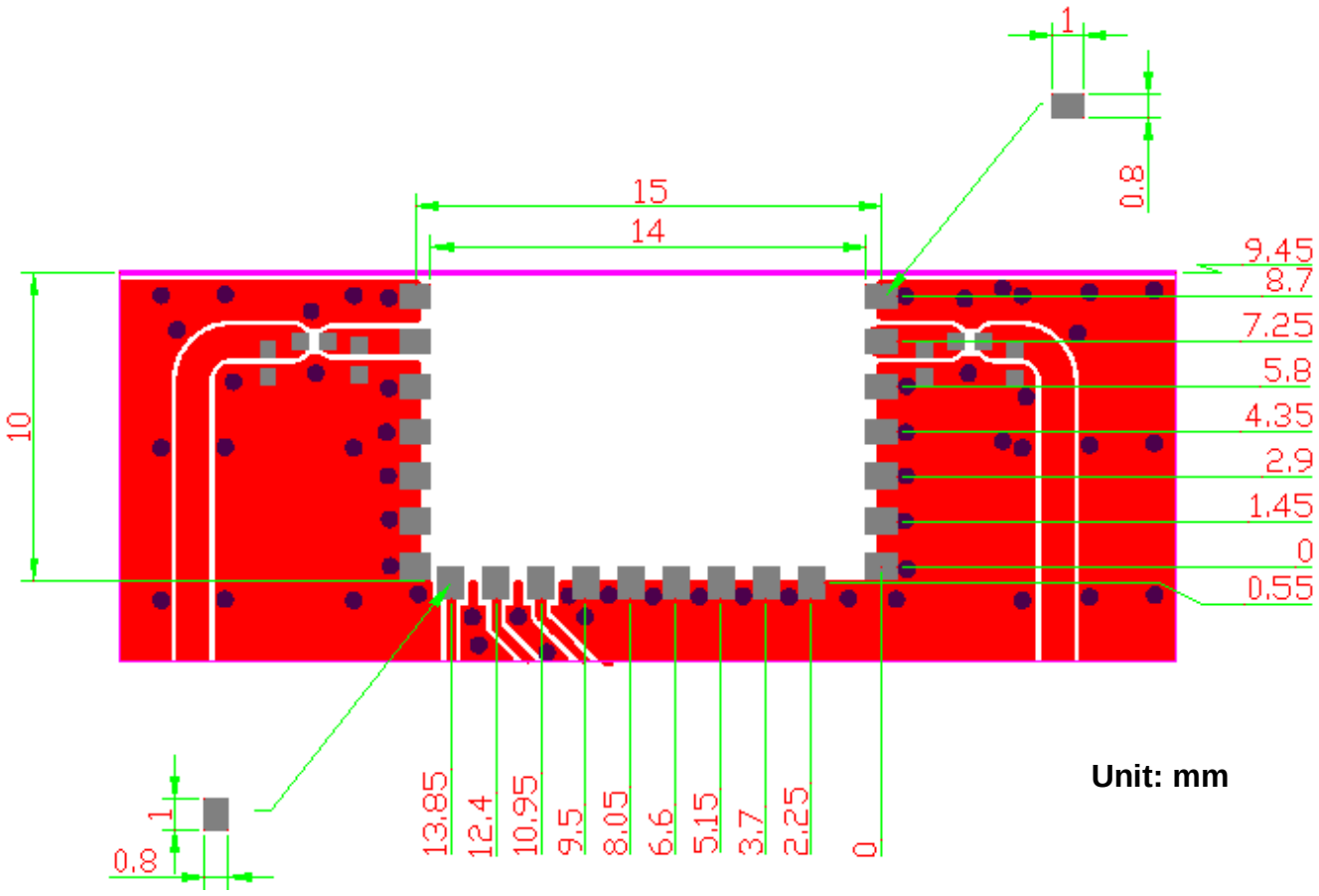
CTRL1	CTRL2	Mode
0	1	E5/L5
1	0	L2
1	1	E6



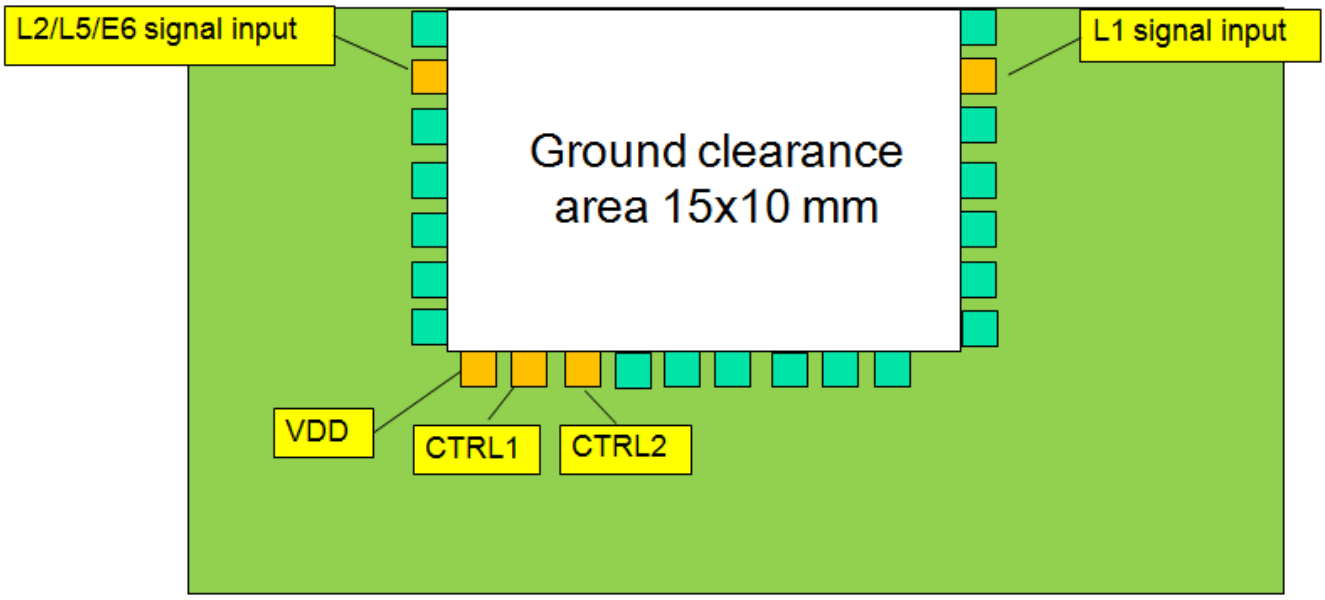
General Recommendations

- Do not operate above 3.6V supply voltage. Otherwise on chip RF blocking capacitors will degrade and fail
- Do not operate below 1.8 V supply voltage to ensure a defined operation mode. Using lower supply voltages can cause increased losses and degraded linear performance.
- The logic high voltage has to stay below the supply voltage. For example, when operating VDD = 2.5V, the logic voltage should not exceed VDD = 2.5V.

7.4. PCB Footprint for Host Board



Unit: mm



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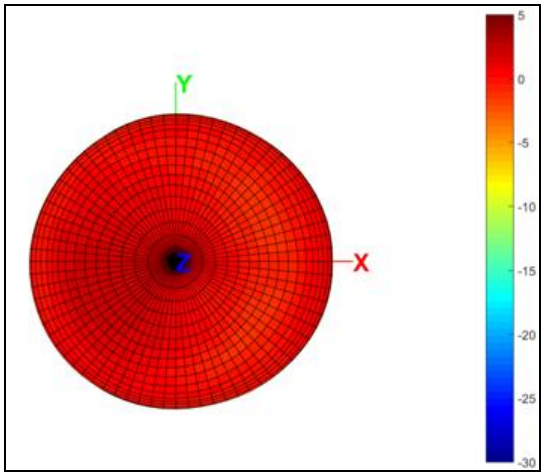
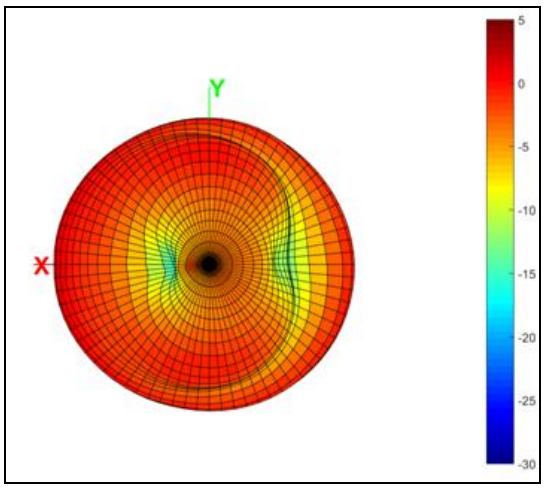
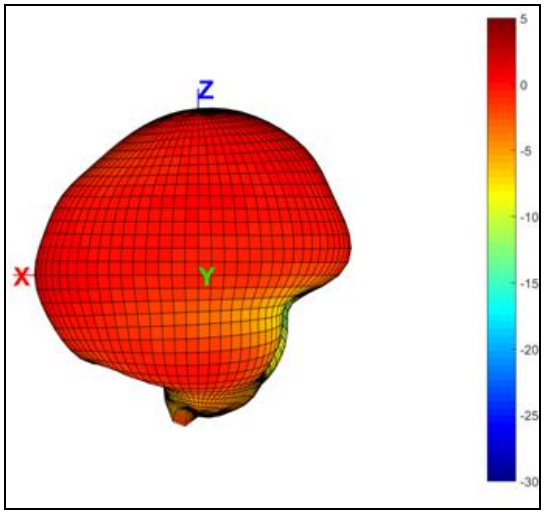
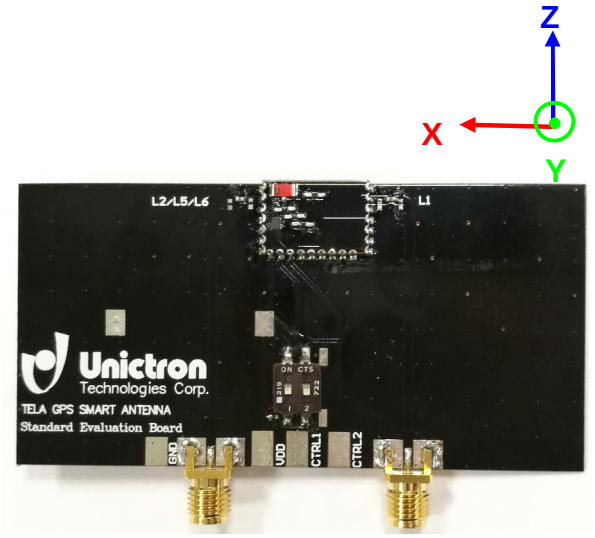
8. Radiation Gain Pattern

8.1. 3D Gain Pattern @ E1/L1 1575 MHz (unit: dBi)

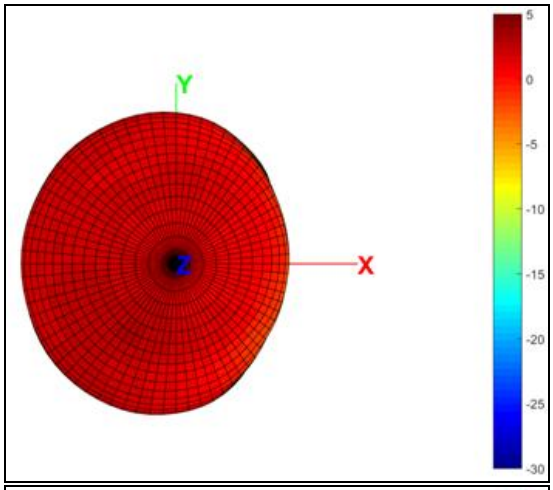


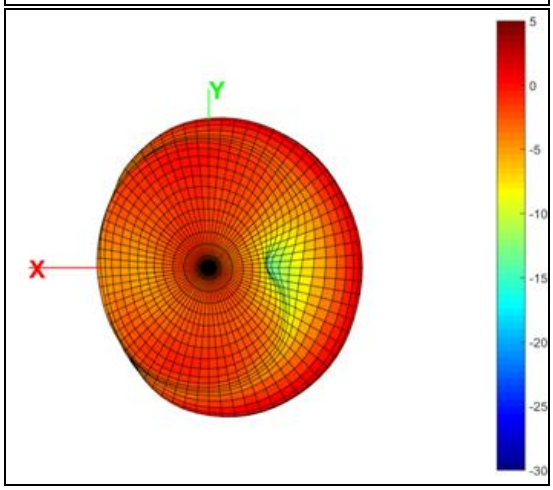


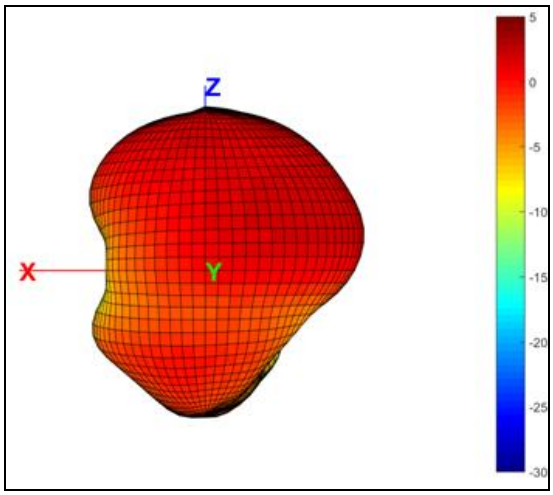


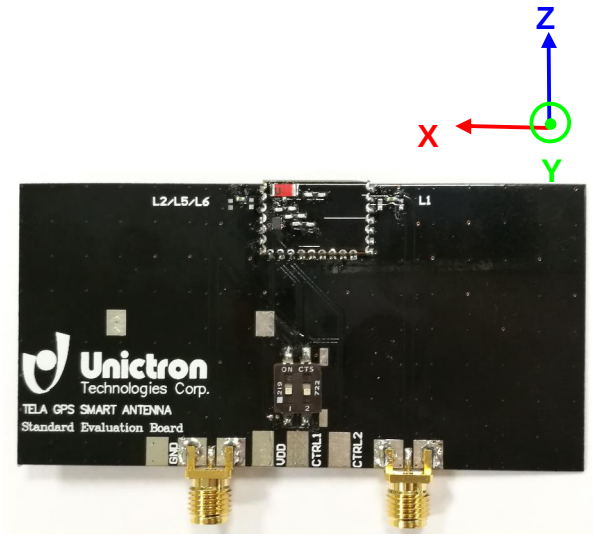


8.2. 3D Gain Pattern @ L2 1227 MHz (unit: dBi)

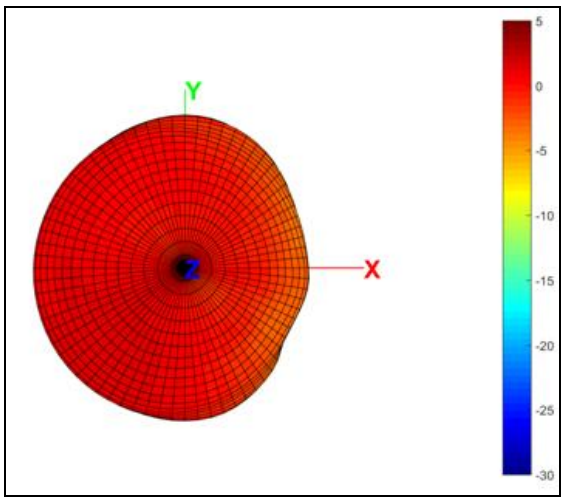


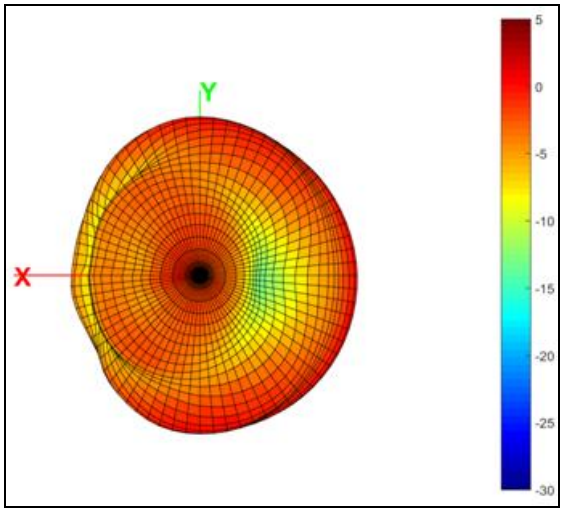


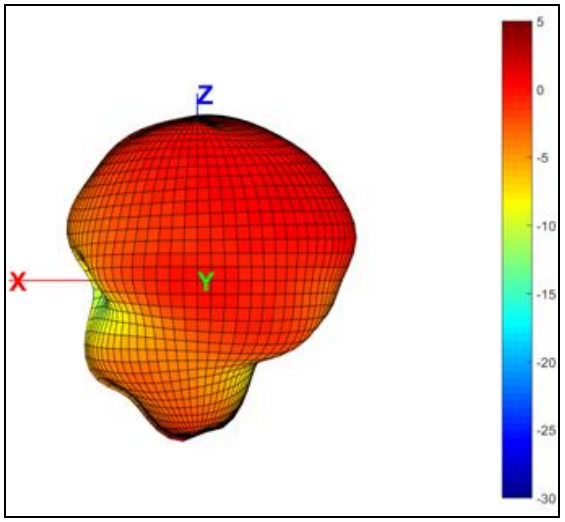


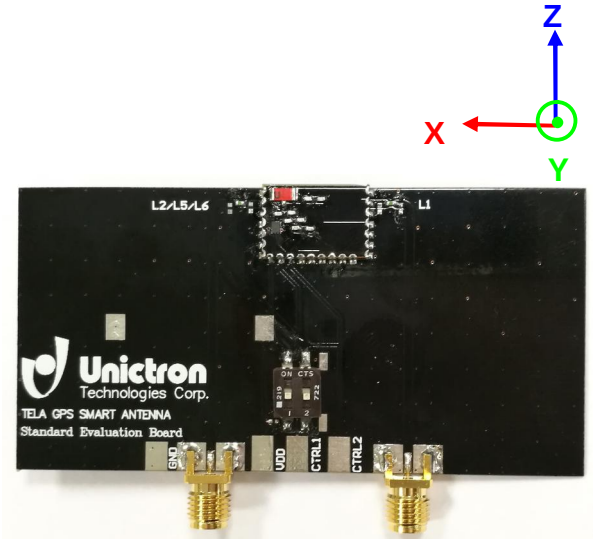


8.3. 3D Gain Pattern @ E5/L5 1176 MHz (unit: dBi)

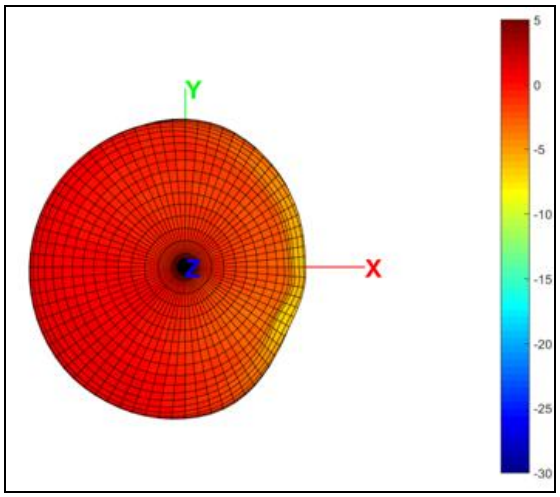


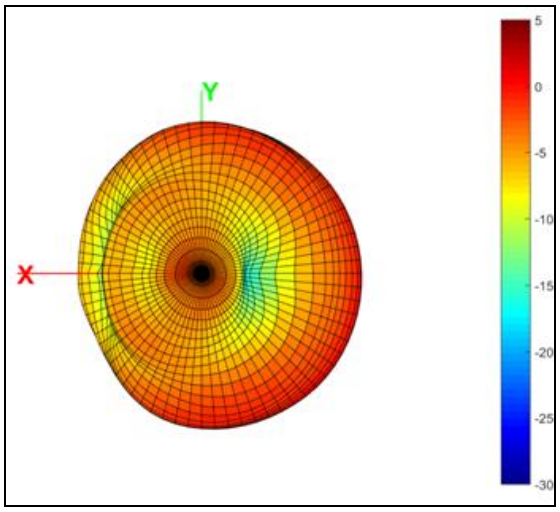


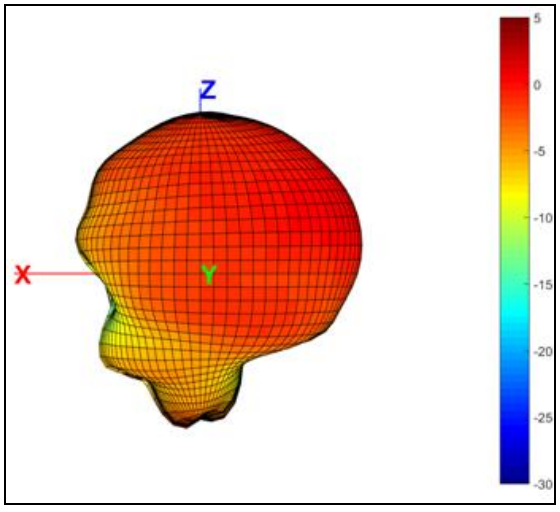


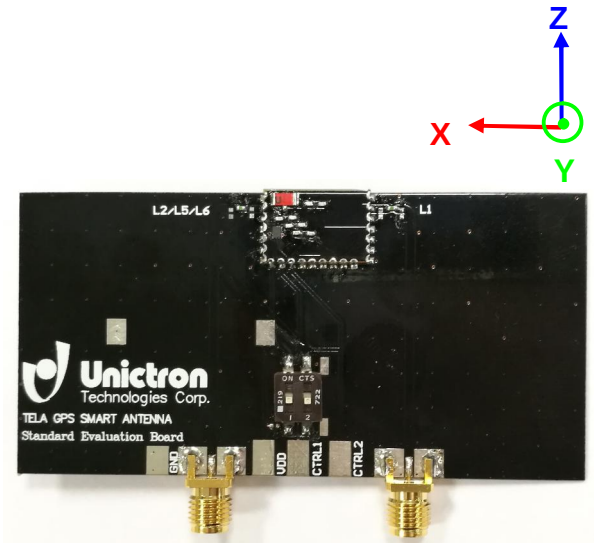


8.4. 3D Gain Pattern @ E6 1278 MHz (unit: dBi)



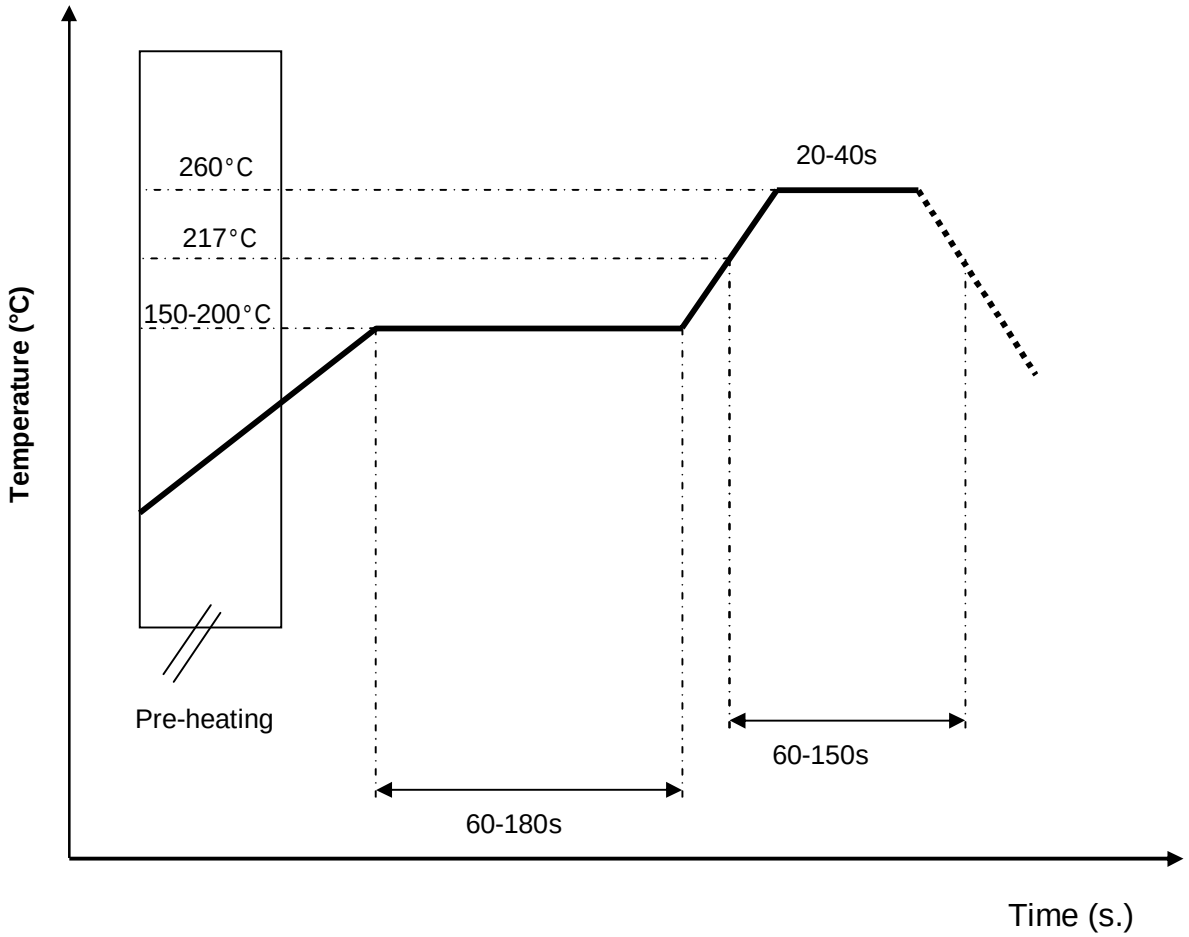






9. Soldering Conditions

Typical Soldering Profile for Lead-free Process



*Recommended Solder Paste Alloy: SAC305(Sn 96.5/ Ag 3/ Cu 0.5) Lead Free Solder Paste

10. Operating & Storage Conditions

10.1. Operating

(1) Operating Temperature: -30℃ to 85℃

(2) Relative Humidity: 10% to 70%

10.2. Storage (sealed)

(1) Storage Temperature: -5℃ to 40℃

(2) Relative Humidity: 20% to 70%

(3) Shelf Life: 1 year

11. Notice

(1) Installation Guide:

Please refer to Unictron's application note "General guidelines for the installation of Unictron's chip antennas" for further information.

(2) All specifications are subject to change without notice.