

SPECIFICATION

PATENTED

- Part No. : **TG.30.8111**
- Product Name : Apex Black Straight TG.30
Ultra-Wideband 4G LTE Antenna
- Feature : LTE / GSM / CDMA /DCS /PCS / WCDMA / UMTS /
HSDPA / GPRS / EDGE /GPS /Wi-Fi
698~960MHz, 1575.42MHz,1710~2700MHz
Patented
Typical 70%+ Efficiency and 3dBi+ Peak Gain
Dipole Swivel Terminal Antenna
Straight SMA(M) Connector
RoHS Compliant



1. Introduction

The Apex Black Straight TG.30 Dipole LTE Antenna – is primarily designed for use with 4G LTE modules and devices that require the highest possible efficiency and peak gain to deliver best in class throughput on all major cellular (4G/3G/2G) bands worldwide for access points, terminals and routers. The antenna is a ground plane independent antenna with a SMA (M) connector and swivel mechanism that allows the antenna part to be rotated around the connector. The Apex exhibits high efficiency across the ultra wide band and is backward compatible with 2G and 3G cellular applications such as GSM, LTE, UMTS, Wi-Fi and even has GPS included for Assisted GPS and/or E911 applications. With very high efficiency on every cellular band globally it is an ideal solution for any device requiring high, reliable performance. It is also guaranteed to meet any type approval or carrier certification requirements from a RF standpoint. It is an omnidirectional antenna and the radiation patterns display this and are stable across all bands.

It has a quality robust IP67 UV resistant housing (SMA connector is IP65) for use with wireless terminals. The swivel mechanism allows the antenna part itself to be orientated in different directions and can help avoid touching off other antennas or objects close by as well as helping with isolation by orientating the antenna in different directions in MIMO systems or when other TG.30 antennas are present on the same device.

This patented antenna is available in White and Black versions. It is also available with Hinged and Right Angle connectors.

2. Specification

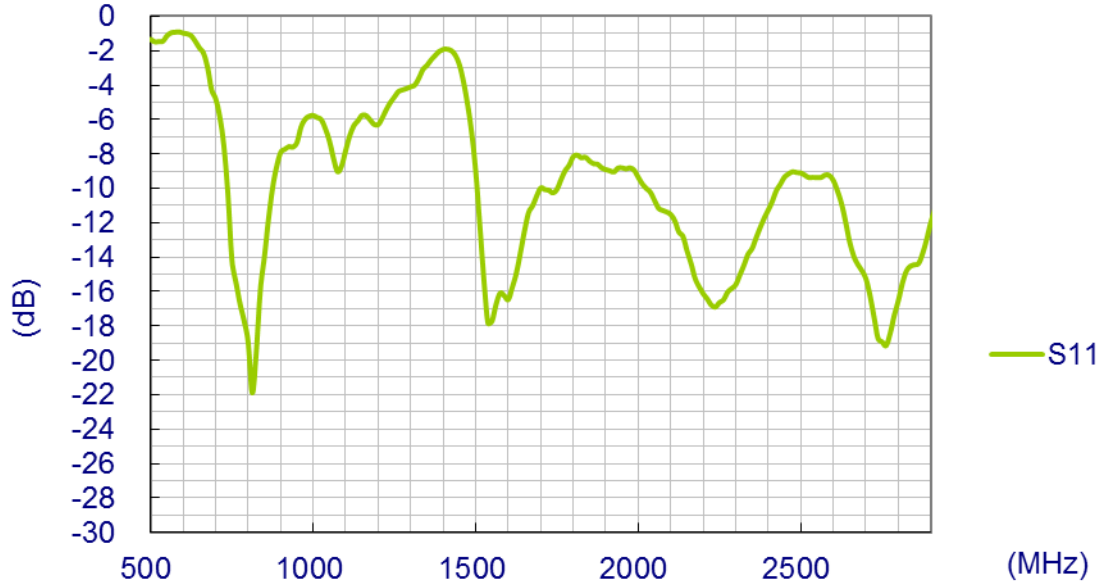
| ELECTRICAL | | | | | | | |
|------------------------|----------------------------|---------|---------|-------------|-------------|-------------|-----------|
| Frequency (MHz) | 700~800 | 824~960 | 1575.42 | 1710 ~ 1880 | 1850 ~ 1990 | 1710 ~ 2170 | 2400~2700 |
| Peak Gain (dBi) | | | | | | | |
| Free Space | 2.0 | 1.2 | 0.3 | 2.4 | 3.0 | 3.0 | 4.2 |
| 30x30cm GP | 3.0 | 1.5 | 2.9 | 3.7 | 3.6 | 3.7 | 6.5 |
| Average Gain | | | | | | | |
| Free Space | -0.7 | -1.1 | -1.7 | -0.2 | -0.5 | -0.2 | -0.7 |
| 30x30cm GP | -0.3 | -1.0 | -1.2 | -0.4 | -0.6 | -0.4 | -0.4 |
| Efficiency | | | | | | | |
| Free Space | 86% | 78% | 67% | 82% | 89% | 55% | 60% |
| 30x30cm GP | 90% | 68% | 75% | 82% | 86% | 70% | 72% |
| Impedance | 50Ω | | | | | | |
| Polarization | Linear | | | | | | |
| Radiation Pattern | Omnidirectional | | | | | | |
| Input Power | 10 W | | | | | | |
| MECHANICAL | | | | | | | |
| Casing | UV Resistant, PC/ABS | | | | | | |
| Connector | SMA Male | | | | | | |
| ENVIRONMENTAL | | | | | | | |
| Temperature Range | -40°C to 85°C | | | | | | |
| Humidity | Non-condensing 65°C 95% RH | | | | | | |

| LTE BANDS | | | |
|--------------------|---|-------------------------------|----------------|
| Band Number | LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / TD-SCDMA | | |
| | Uplink | Downlink | Covered |
| 1 | UL: 1920 to 1980 | DL: 2110 to 2170 | ✓ |
| 2 | UL: 1850 to 1910 | DL: 1930 to 1990 | ✓ |
| 3 | UL: 1710 to 1785 | DL: 1805 to 1880 | ✓ |
| 4 | UL: 1710 to 1755 | DL: 2110 to 2155 | ✓ |
| 5 | UL: 824 to 849 | DL: 869 to 894 | ✓ |
| 7 | UL: 2500 to 2570 | DL: 2620 to 2690 | ✓ |
| 8 | UL: 880 to 915 | DL: 925 to 960 | ✓ |
| 9 | UL: 1749.9 to 1784.9 | DL: 1844.9 to 1879.9 | ✓ |
| 11 | UL: 1427.9 to 1447.9 | DL: 1475.9 to 1495.9 | ✗ |
| 12 | UL: 699 to 716 | DL: 729 to 746 | ✓ |
| 13 | UL: 777 to 787 | DL: 746 to 756 | ✓ |
| 14 | UL: 788 to 798 | DL: 758 to 768 | ✓ |
| 17 | UL: 704 to 716 | DL: 734 to 746 (LTE only) | ✓ |
| 18 | UL: 815 to 830 | DL: 860 to 875 (LTE only) | ✓ |
| 19 | UL: 830 to 845 | DL: 875 to 890 | ✓ |
| 20 | UL: 832 to 862 | DL: 791 to 821 | ✓ |
| 21 | UL: 1447.9 to 1462.9 | DL: 1495.9 to 1510.9 | ✗ |
| 22 | UL: 3410 to 3490 | DL: 3510 to 3590 | ✗ |
| 23 | UL: 2000 to 2020 | DL: 2180 to 2200 (LTE only) | ✓ |
| 24 | UL: 1625.5 to 1660.5 | DL: 1525 to 1559 (LTE only) | ✓ |
| 25 | UL: 1850 to 1915 | DL: 1930 to 1995 | ✓ |
| 26 | UL: 814 to 849 | DL: 859 to 894 | ✓ |
| 27 | UL: 807 to 824 | DL: 852 to 869 (LTE only) | ✓ |
| 28 | UL: 703 to 748 | DL: 758 to 803 (LTE only) | ✓ |
| 29 | UL: - | DL: 717 to 728 (LTE only) | ✓ |
| 30 | UL: 2305 to 2315 | DL: 2350 to 2360 (LTE only) | ✓ |
| 31 | UL: 452.5 to 457.5 | DL: 462.5 to 467.5 (LTE only) | ✗ |
| 32 | UL: - | DL: 1452 - 1496 | ✗ |
| 35 | | 1850 to 1910 | ✓ |
| 38 | | 2570 to 2620 | ✓ |
| 39 | | 1880 to 1920 | ✓ |
| 40 | | 2300 to 2400 | ✓ |
| 41 | | 2496 to 2690 | ✓ |
| 42 | | 3400 to 3600 | ✗ |
| 43 | | 3600 to 3800 | ✗ |

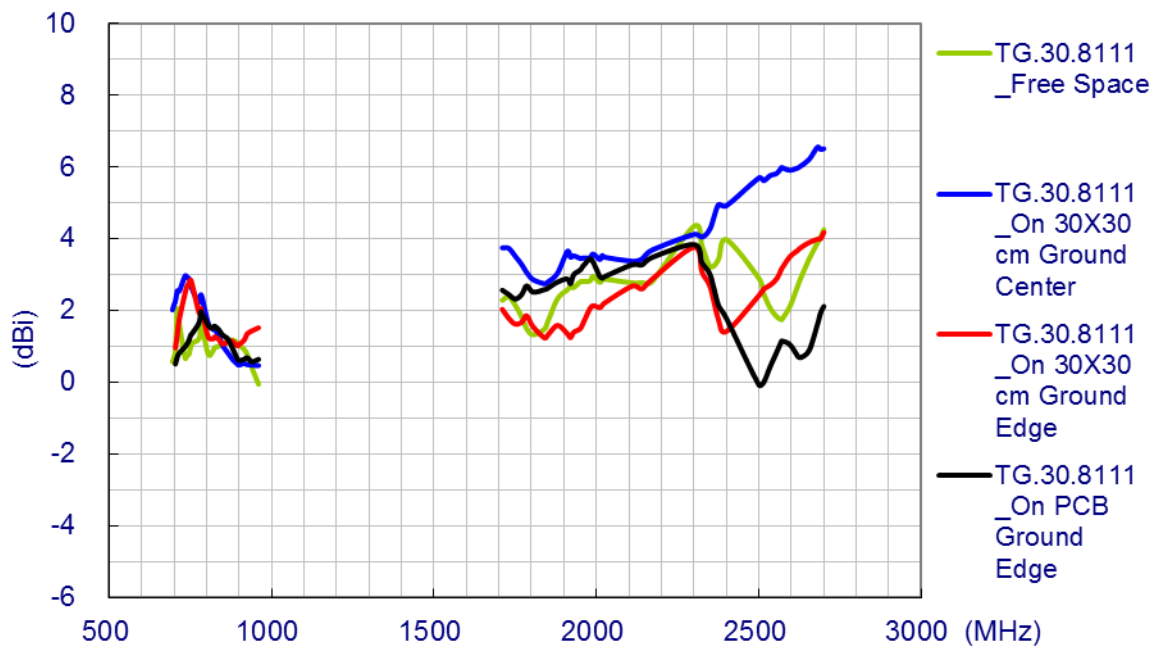
*Covered bands represent an efficiency greater than 20%

3. Antenna Characteristics

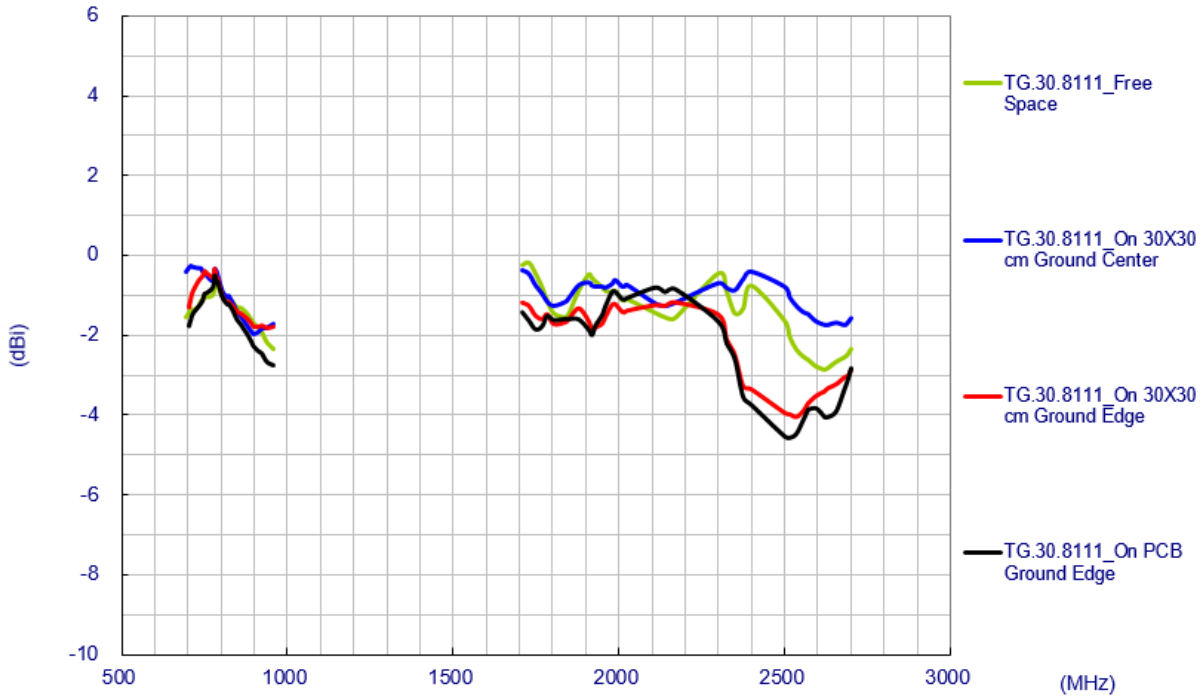
3.1 Return Loss



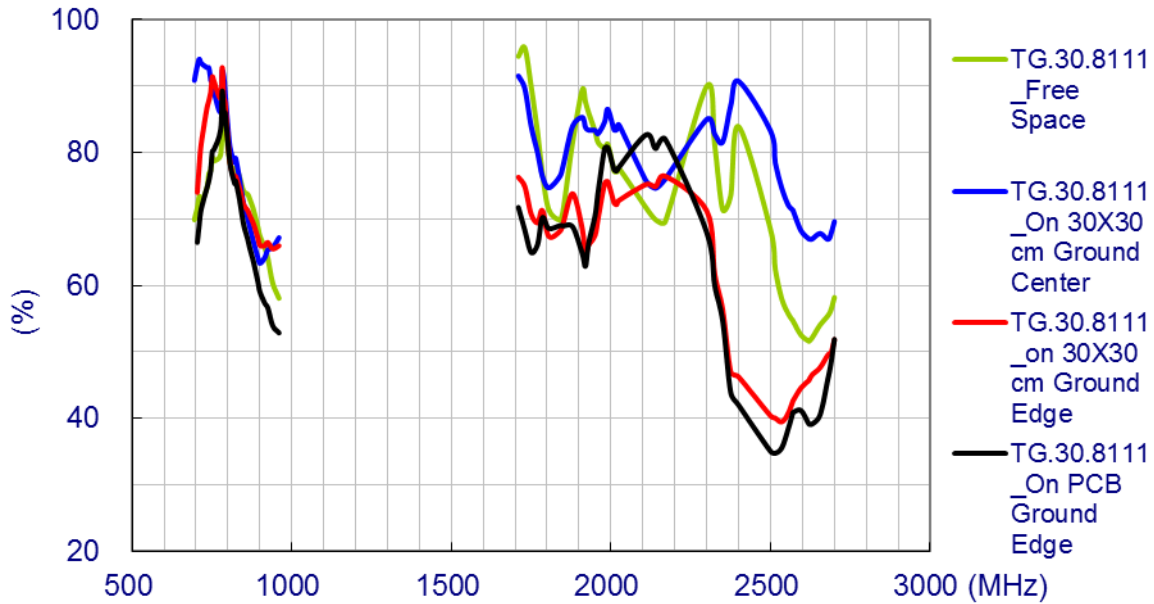
3.2 Peak Gain



3.3 Average Gain

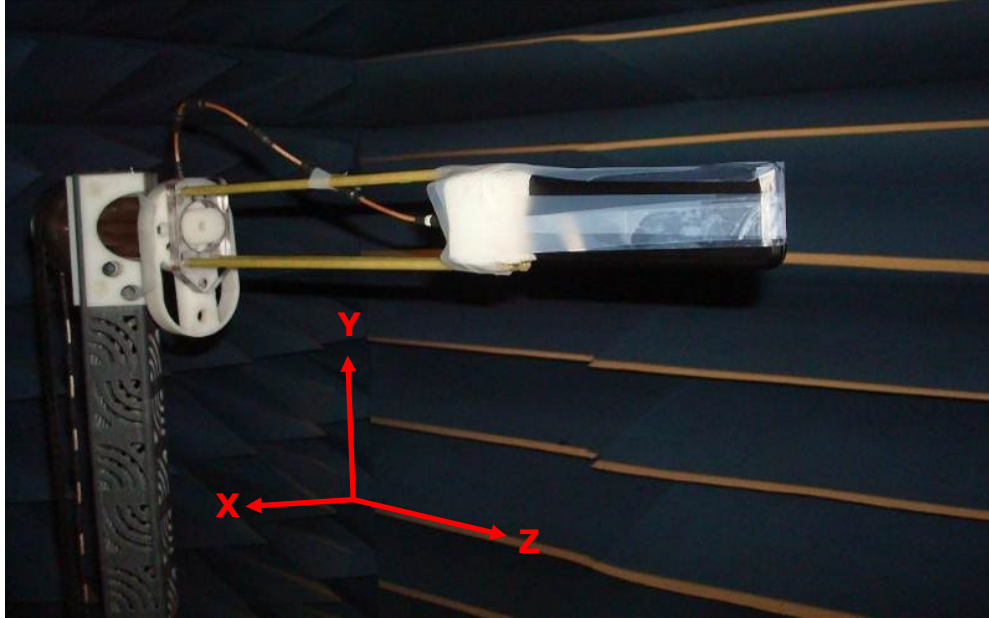


3.4 Efficiency



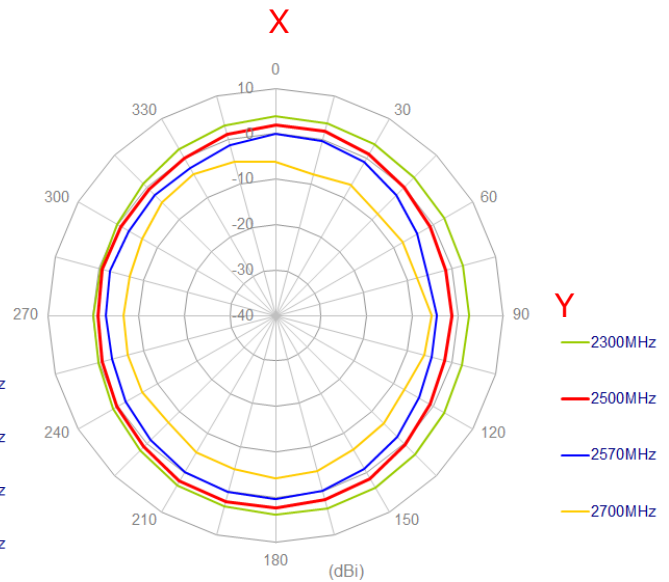
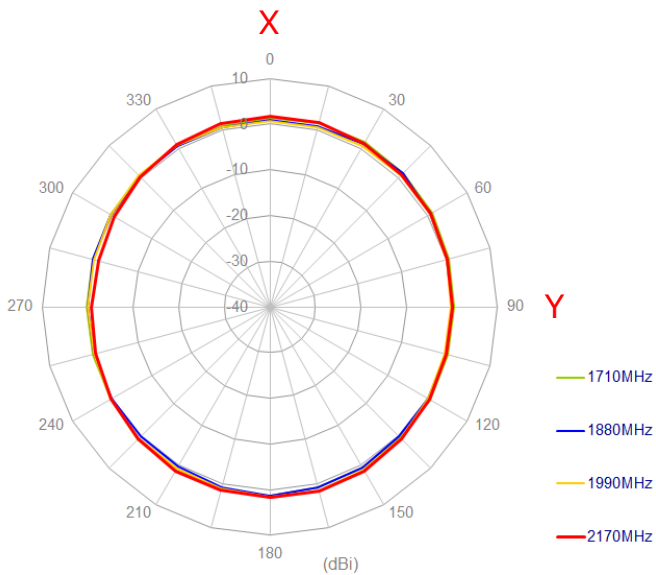
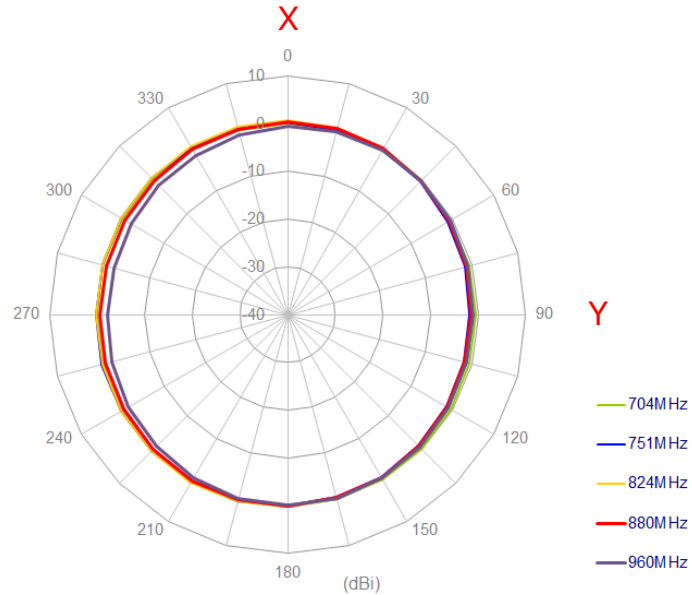
4. Antenna Radiation Patterns

4.1 Antenna setup (Free Space)

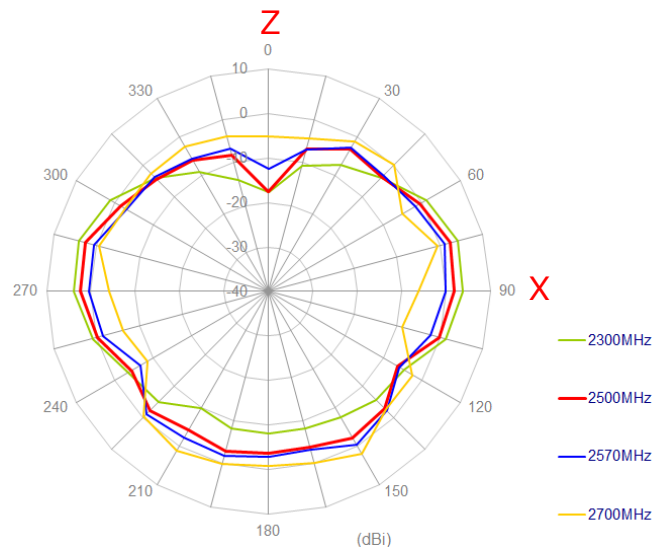
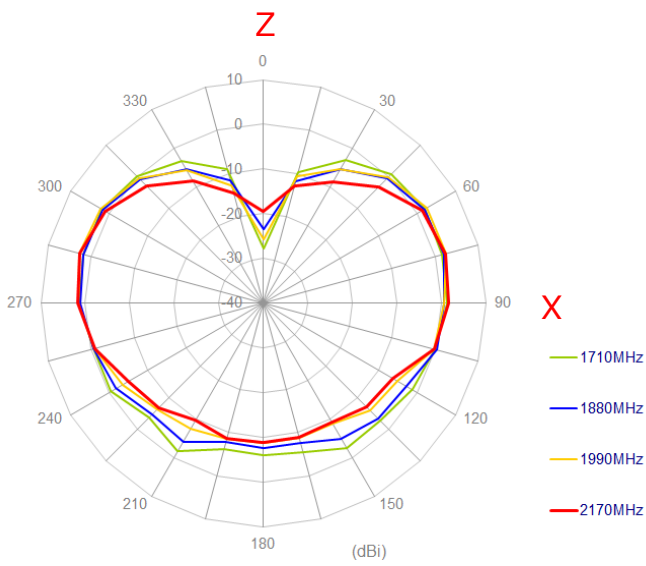
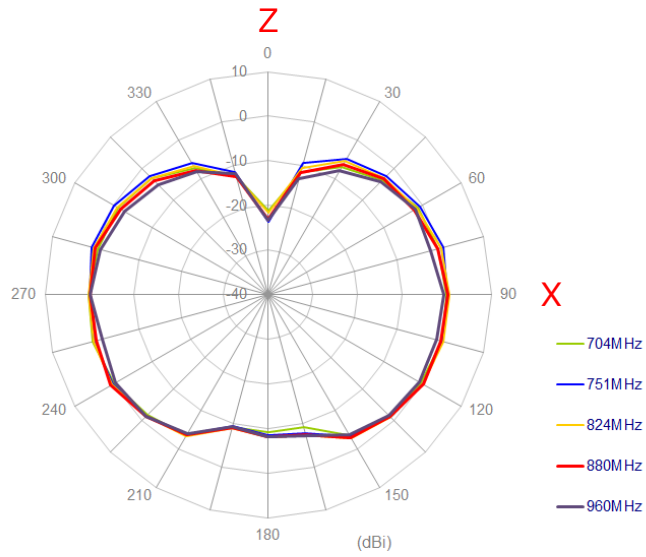


4.2 Radiation Patterns (Free Space)

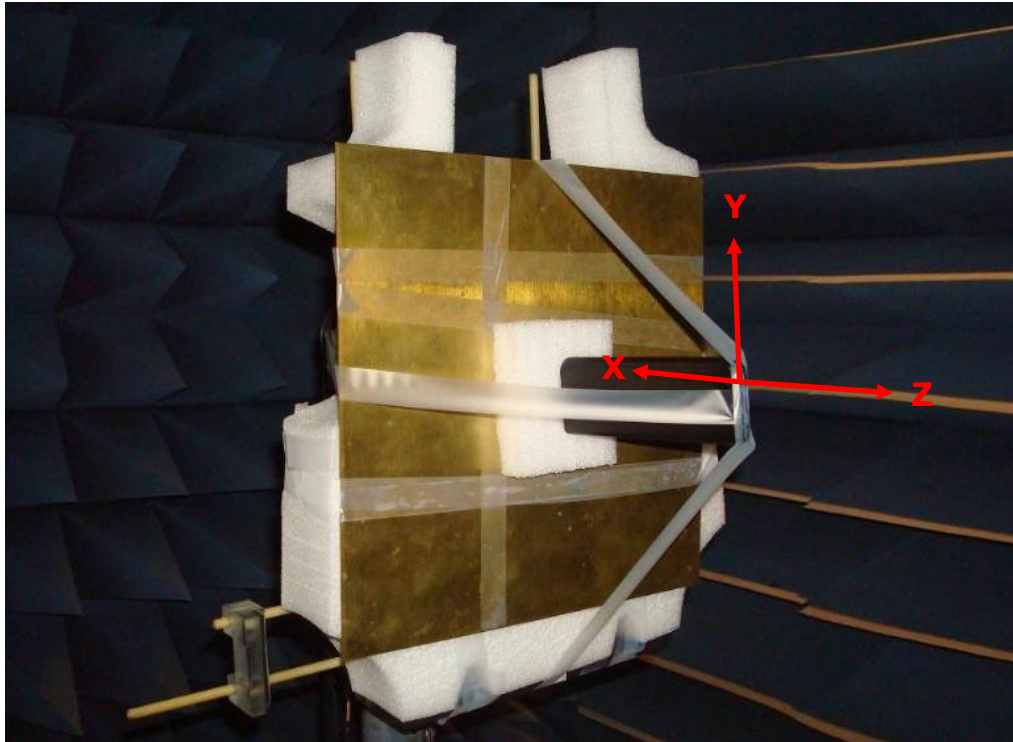
XY Plane



XZ Plane

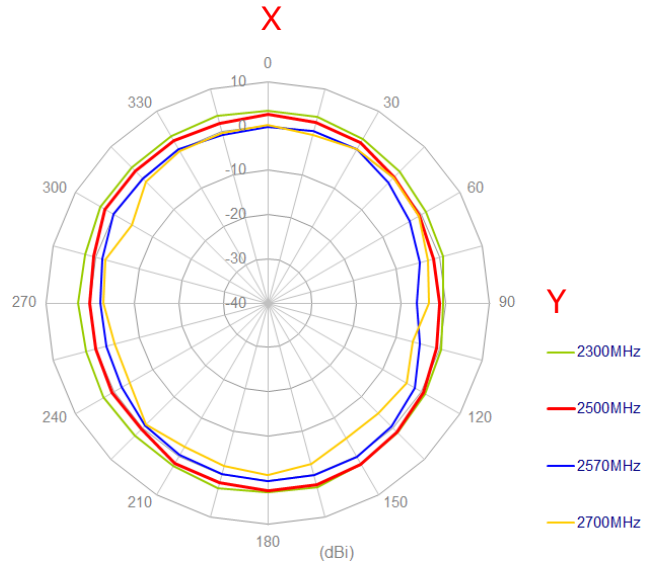
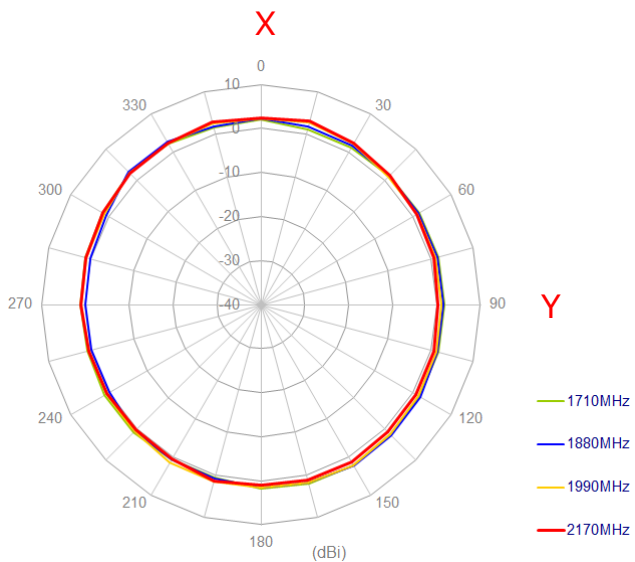
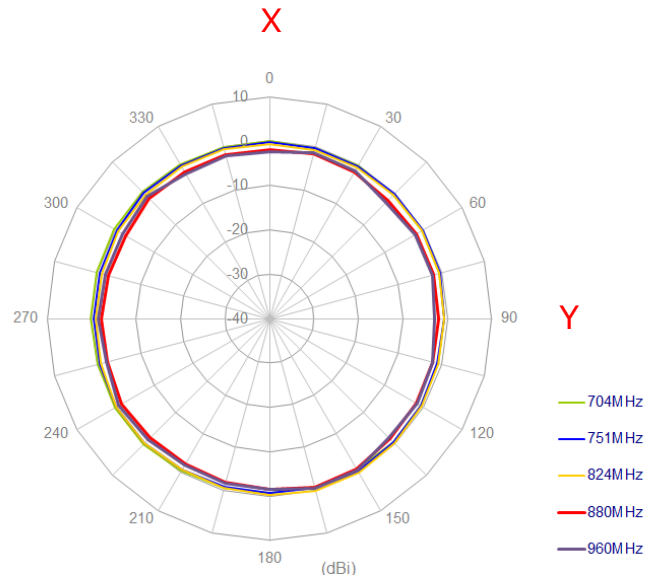


4.3 Antenna setup (On 300*300mm ground center)

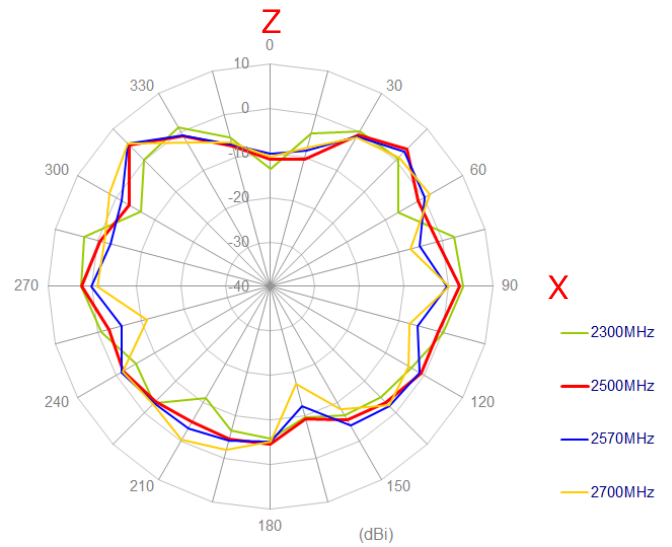
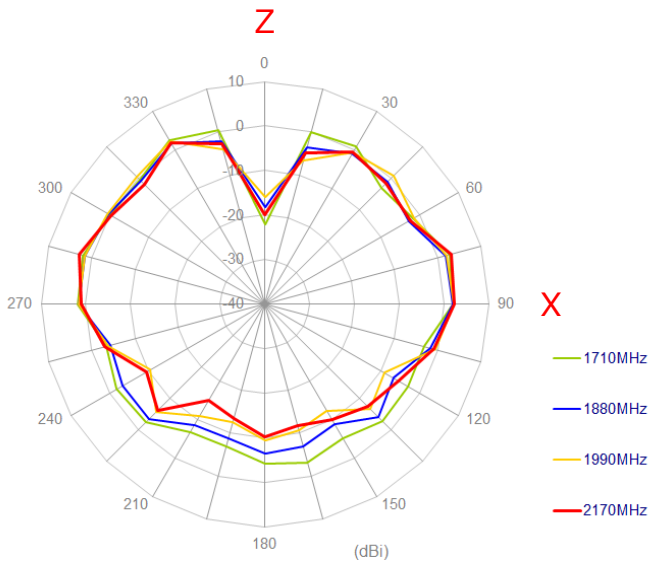
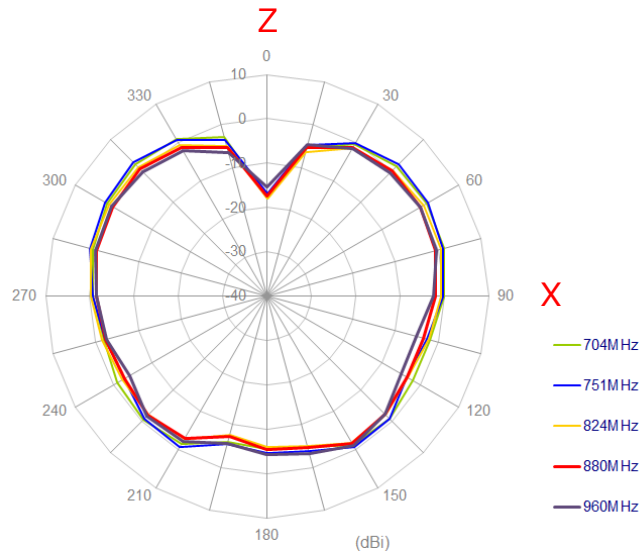


4.4 Radiation Patterns (On 300*300mm ground center)

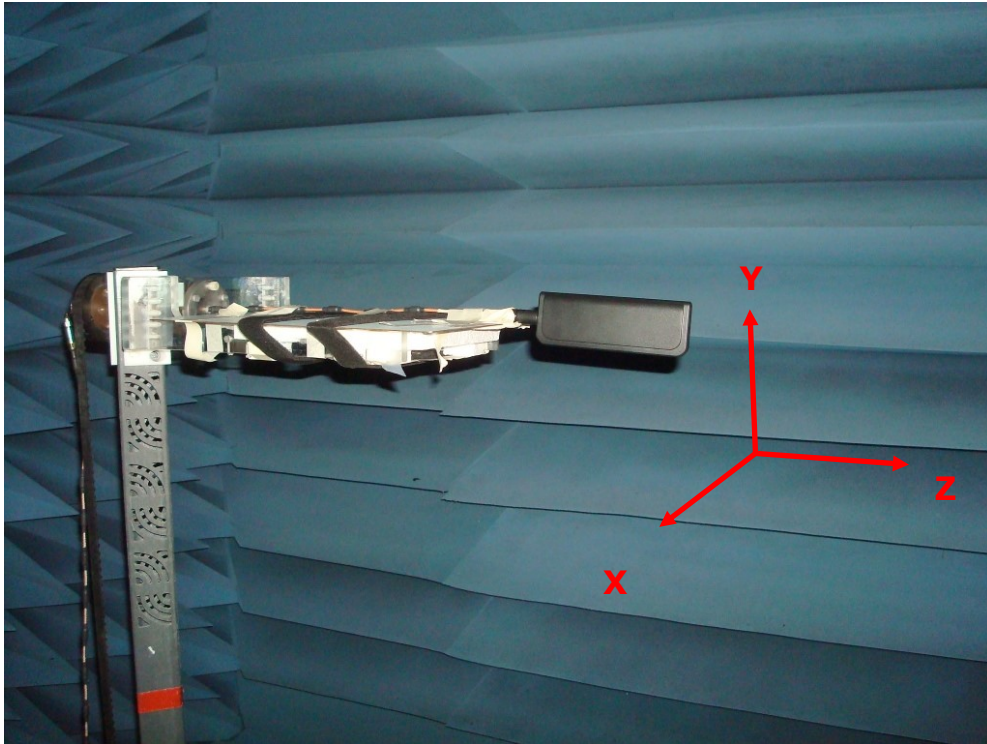
XY plane



XZ Plane

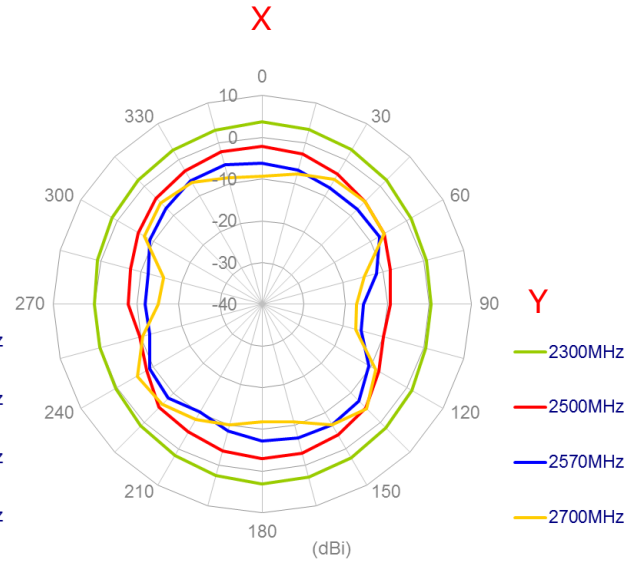
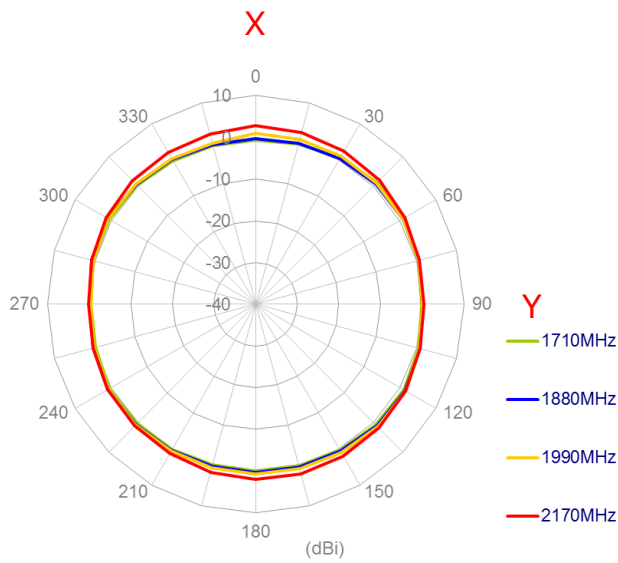
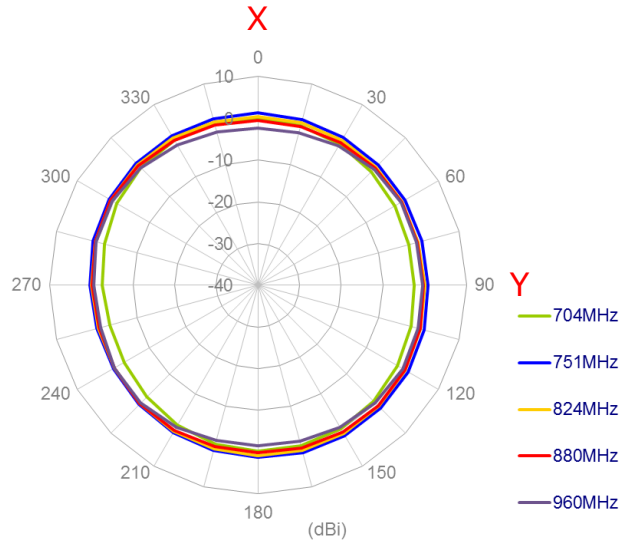


4.5 Antenna setup (On 300*300mm ground edge)

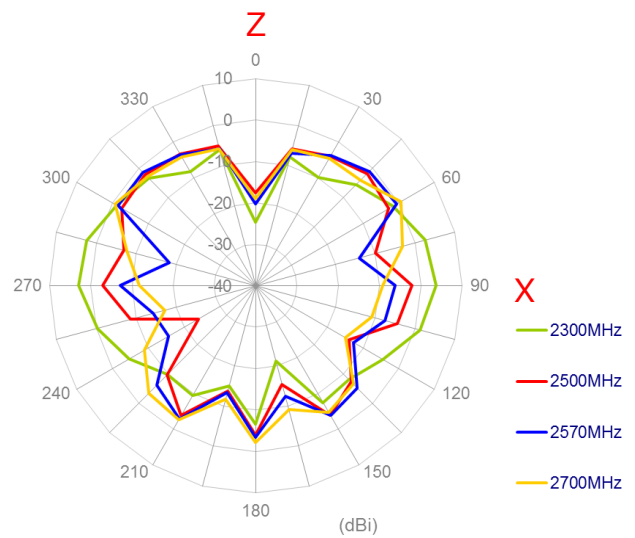
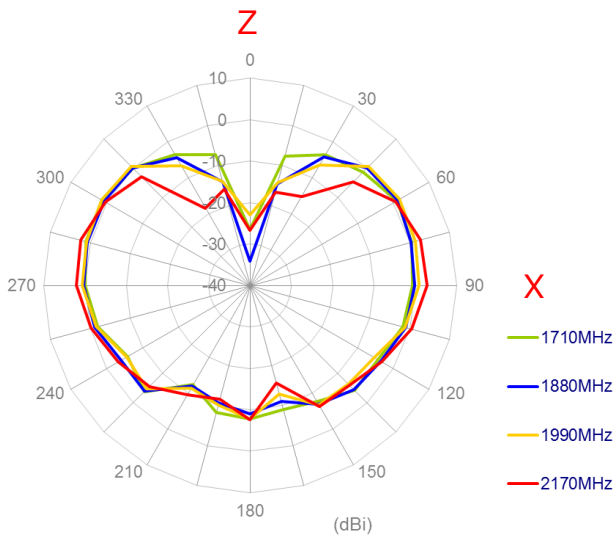
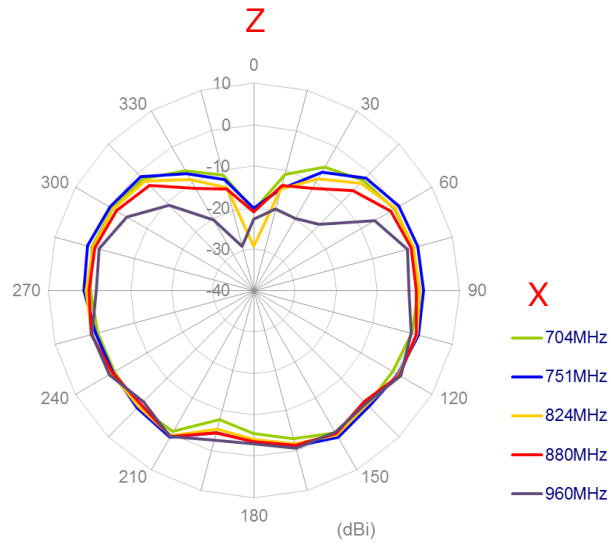


4.6 Radiation Patterns (On 300*300mm ground edge)

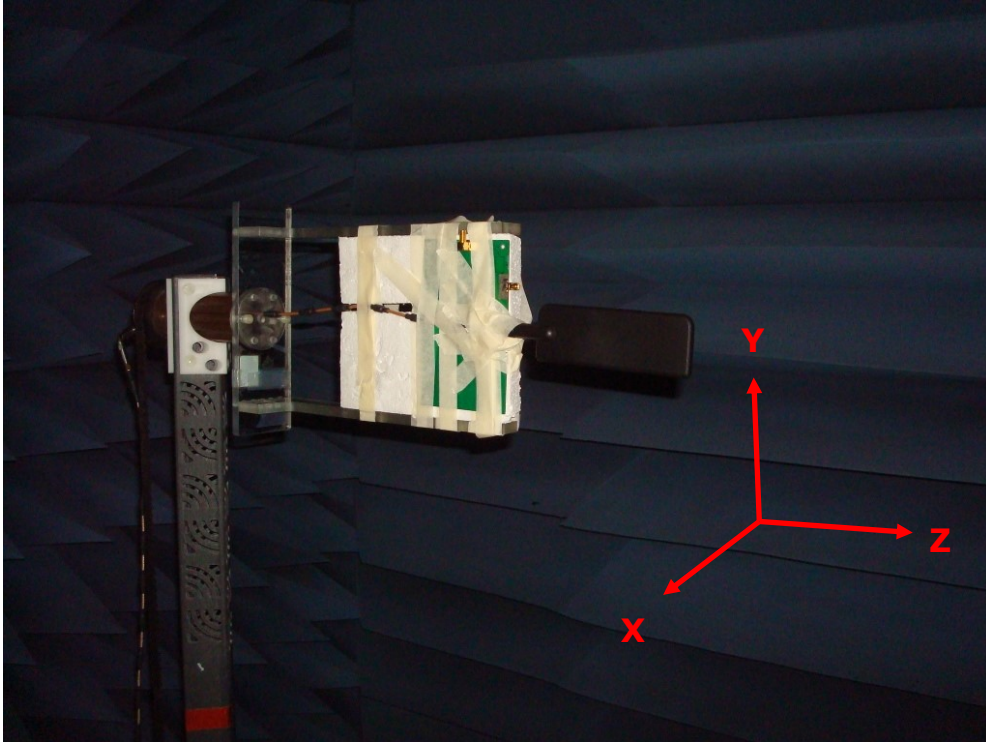
XY Plane



XZ Plane

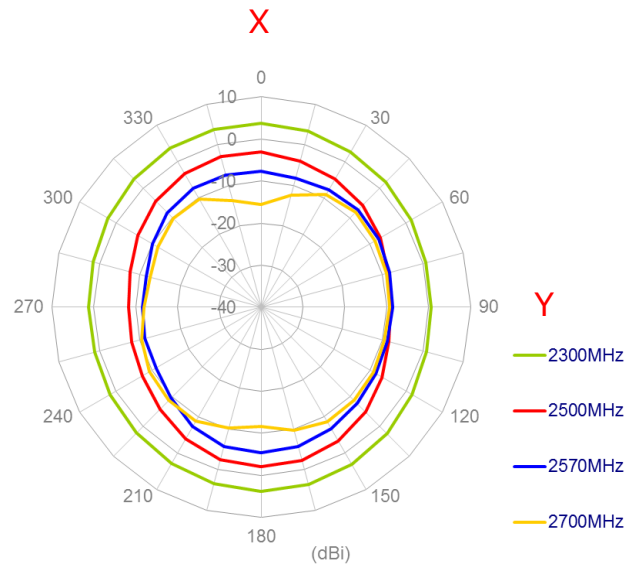
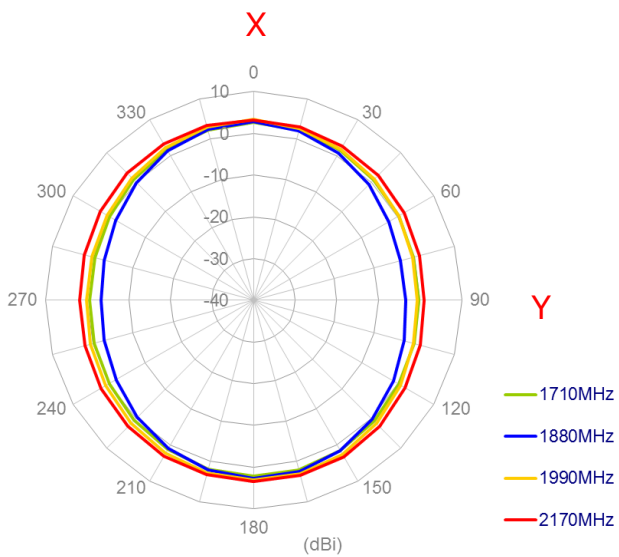
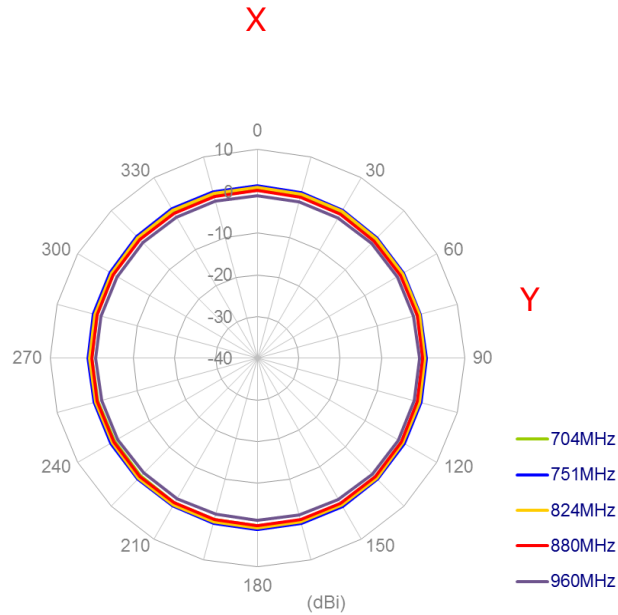


4.7 Antenna setup (On ground edge)

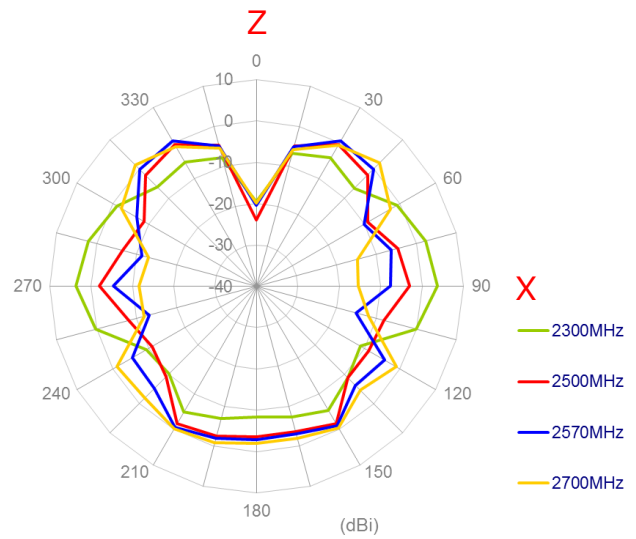
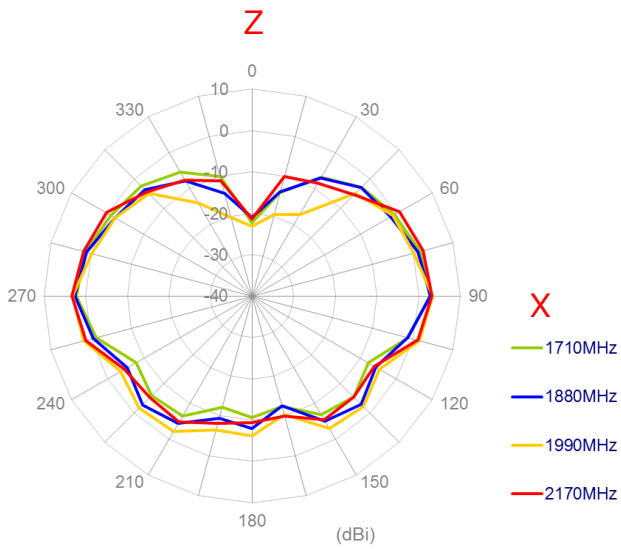
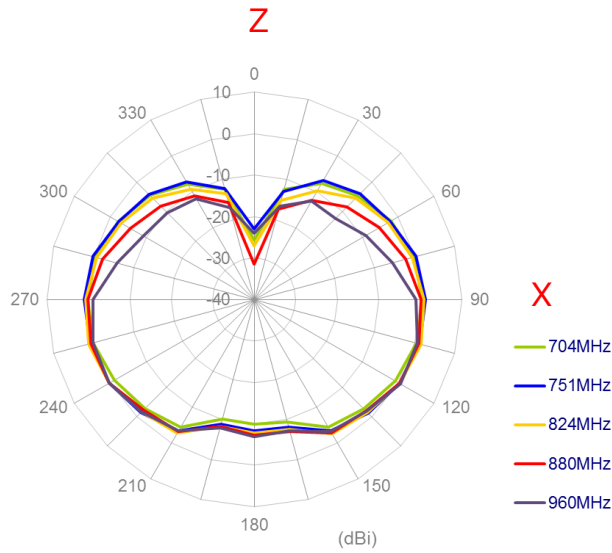


4.8 Radiation Patterns (On ground edge)

XY Plane

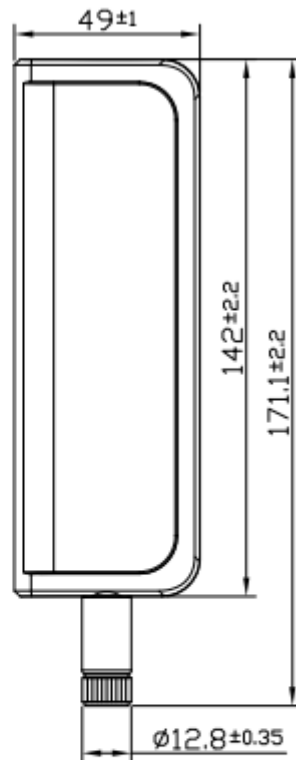


XY Plane

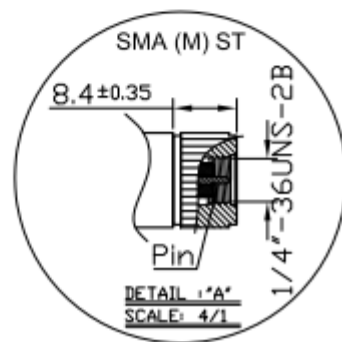
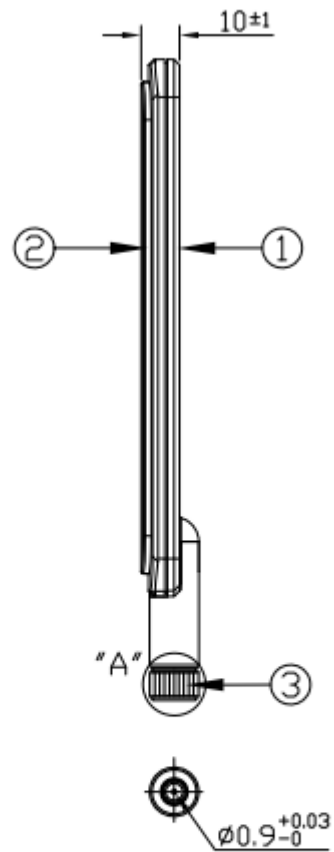


5 Drawing (Unit: mm)

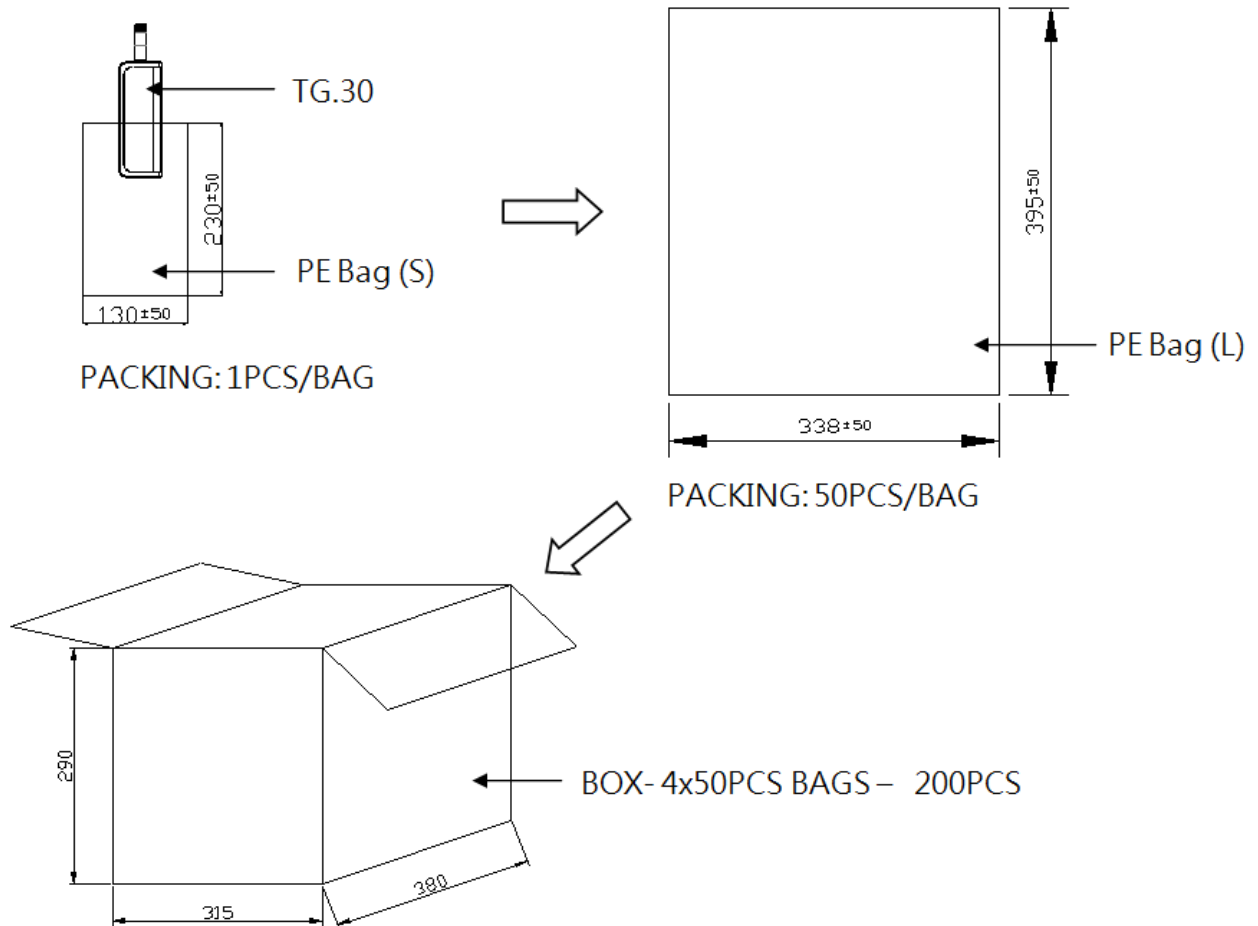
Front View



Side View



6 Packaging (Unit: mm)



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