

SPECIFICATION

- Part No. : **TI.15.3113**
- Product Name : 433MHz ISM Band Dipole Antenna
- Feature : SMA(M) Connector
Hinge design for optimal reception
RoHS Compliant



I. Introduction

TI.15 series is high performance 433MHz Omni-directional dipole antenna. This SMA plug mount antenna is ideal for general purpose use. The hinge design enables the antenna to be positioned at the optimal reception angle.

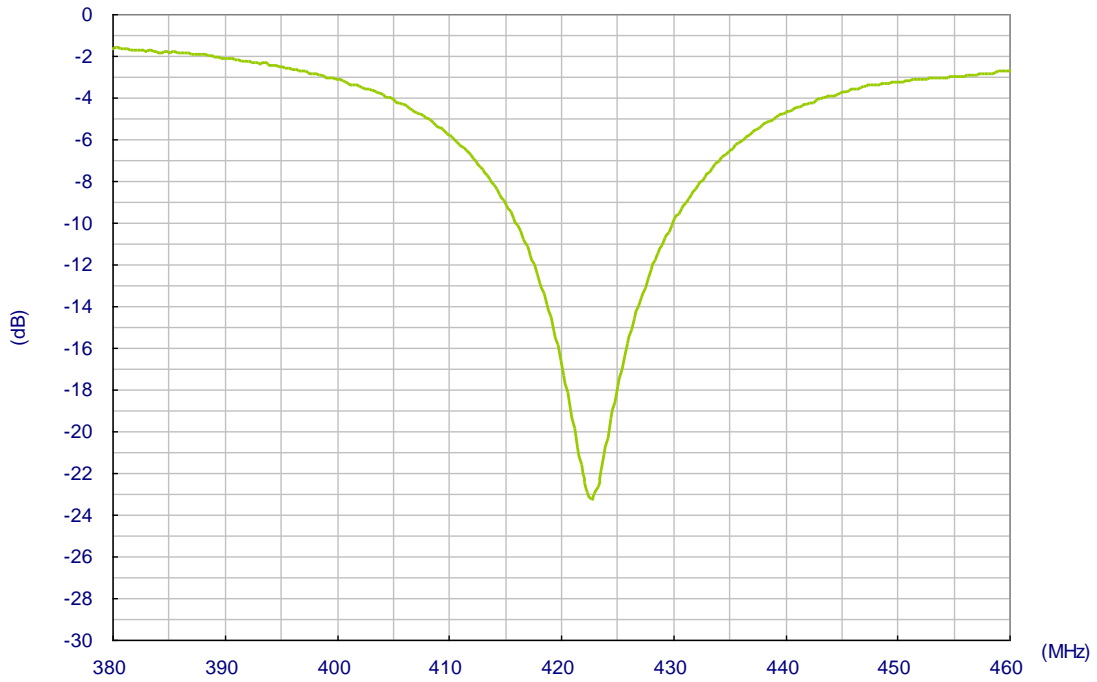
II. Specification

ELECTRICAL	
Centre Frequency	433.05~434.79MHz
Average Gain	-9.0dBi
Peak Gain	-4.7dBi
Efficiency	12%
VSWR	1.5 : 1 max
Polarization	Linear
Impedance	50 Ω
MECHANICAL	
Dimensions	198 x φ 13 mm
Housing Material	ABS + PC
Connector	SMA(M)
Weight	21g
ENVIRONMENTAL	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 105°C
Relative Humidity	40% to 95%

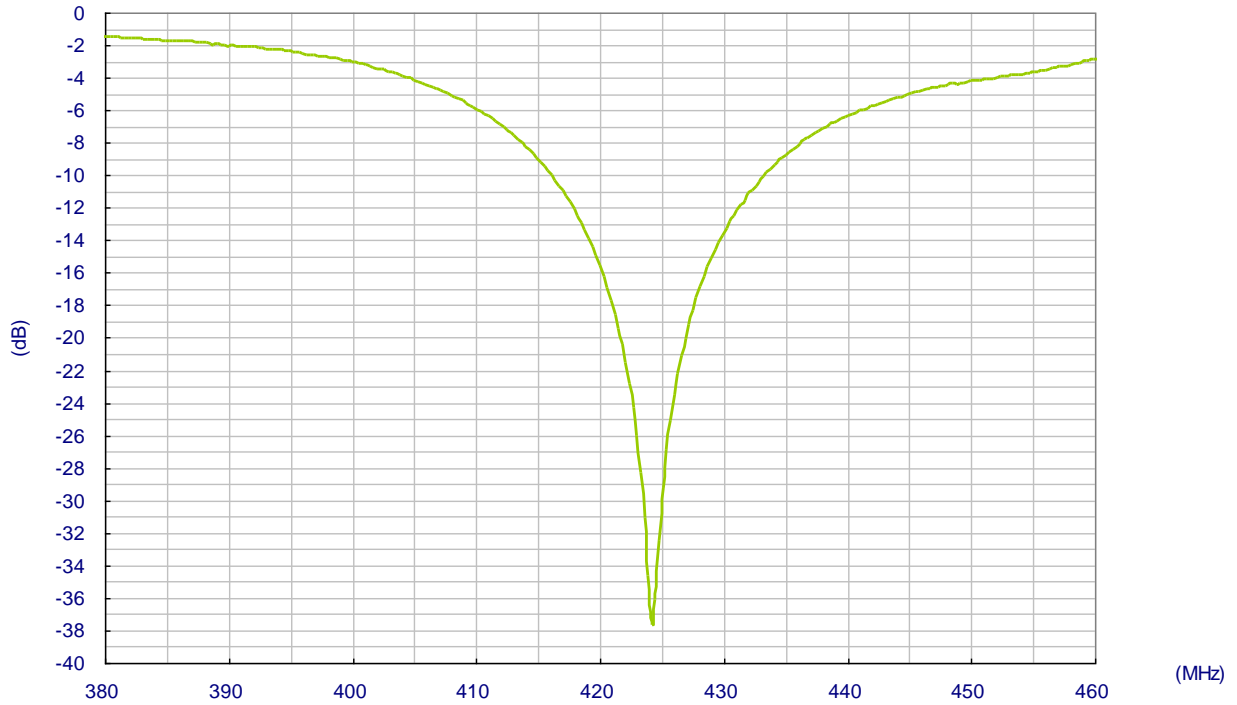
* Electrical properties are measured with the antenna in bend position in free space.

III. Antenna S11 Property

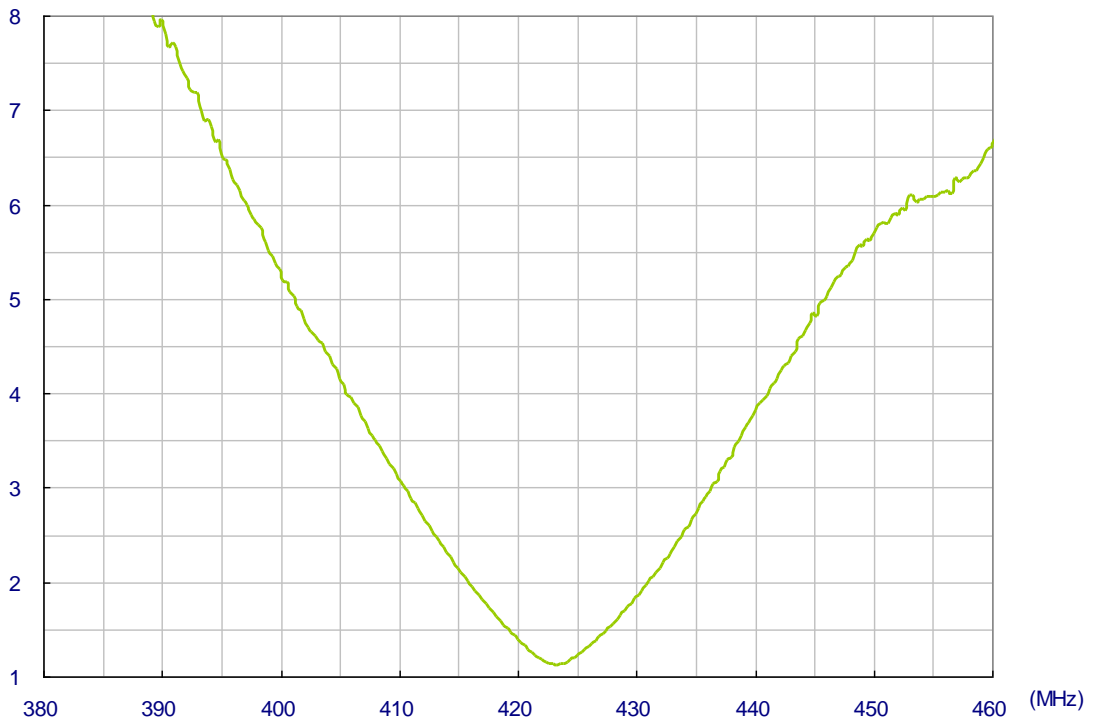
III.1. Bend Position Return Loss



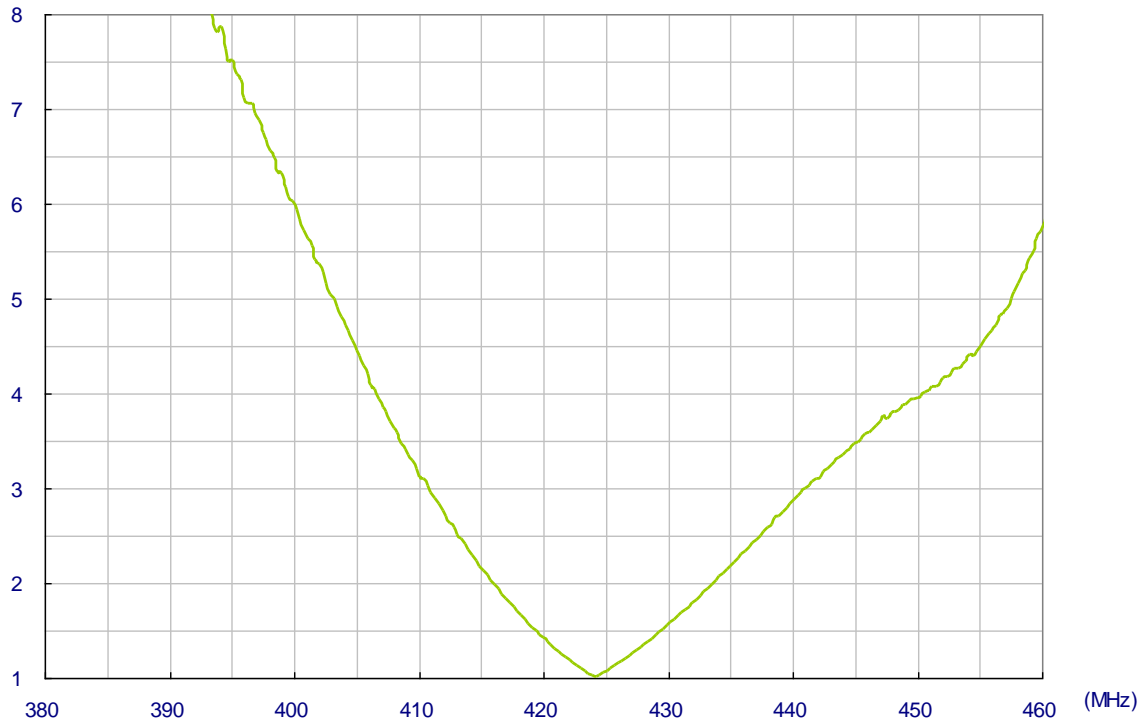
III.2. 180 Degree Straight Position Return Loss



III.3. Bend Position VSWR

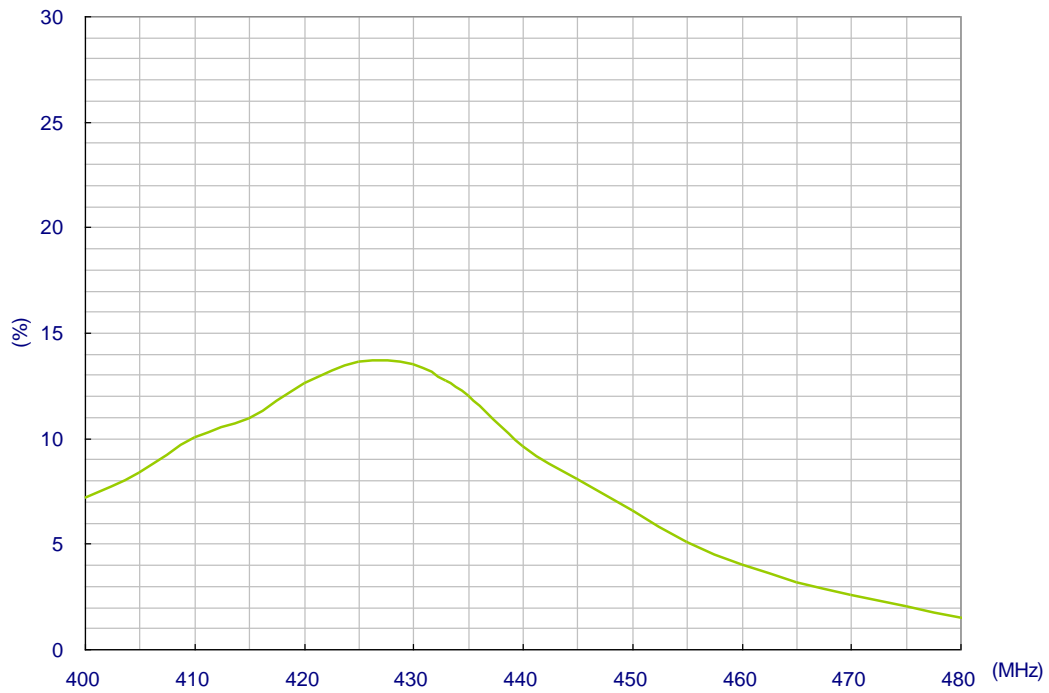


III.4. Straight Position VSWR

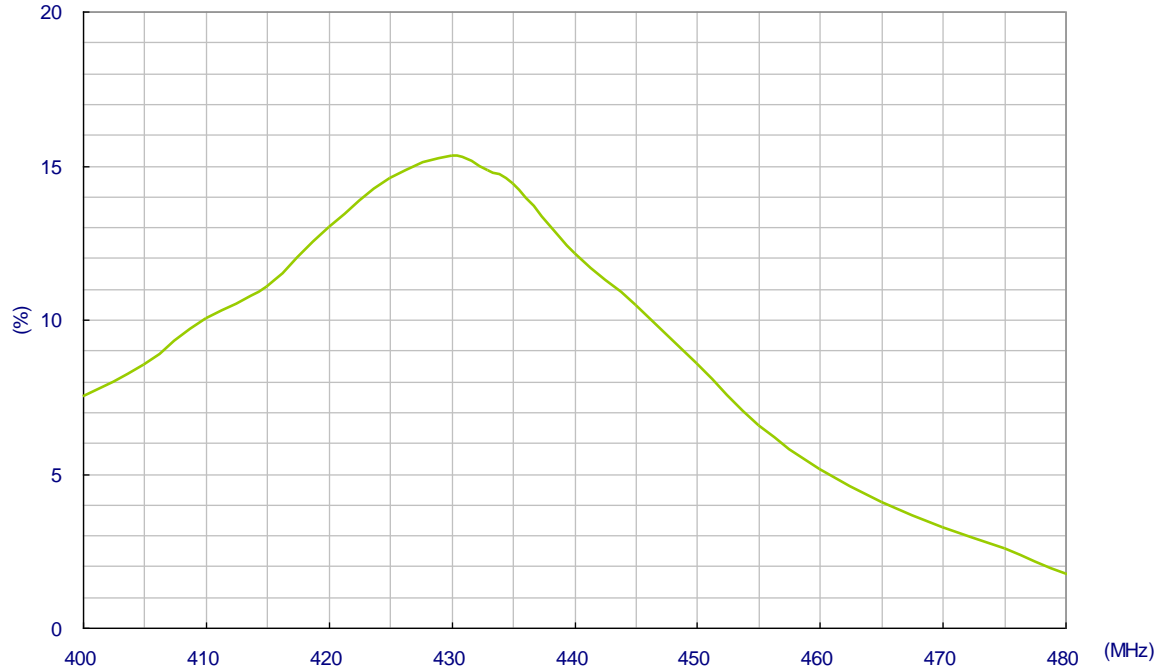


IV. Antenna Radiation Property

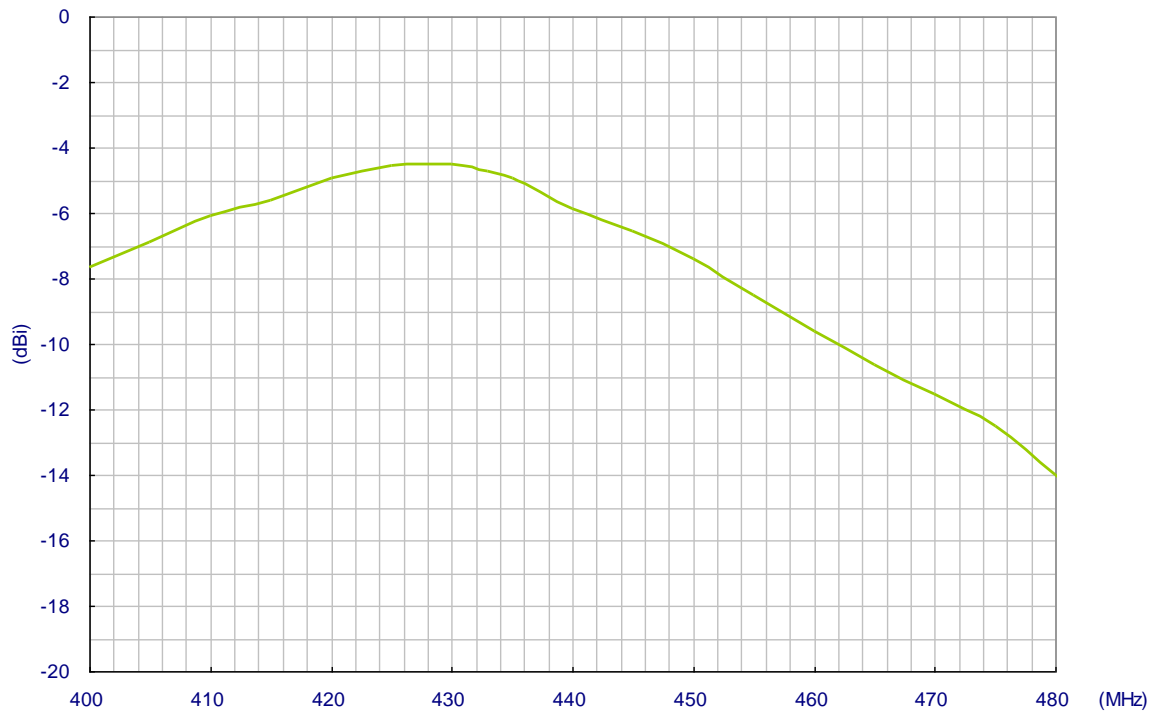
IV.1. Bend Position Radiation Efficiency



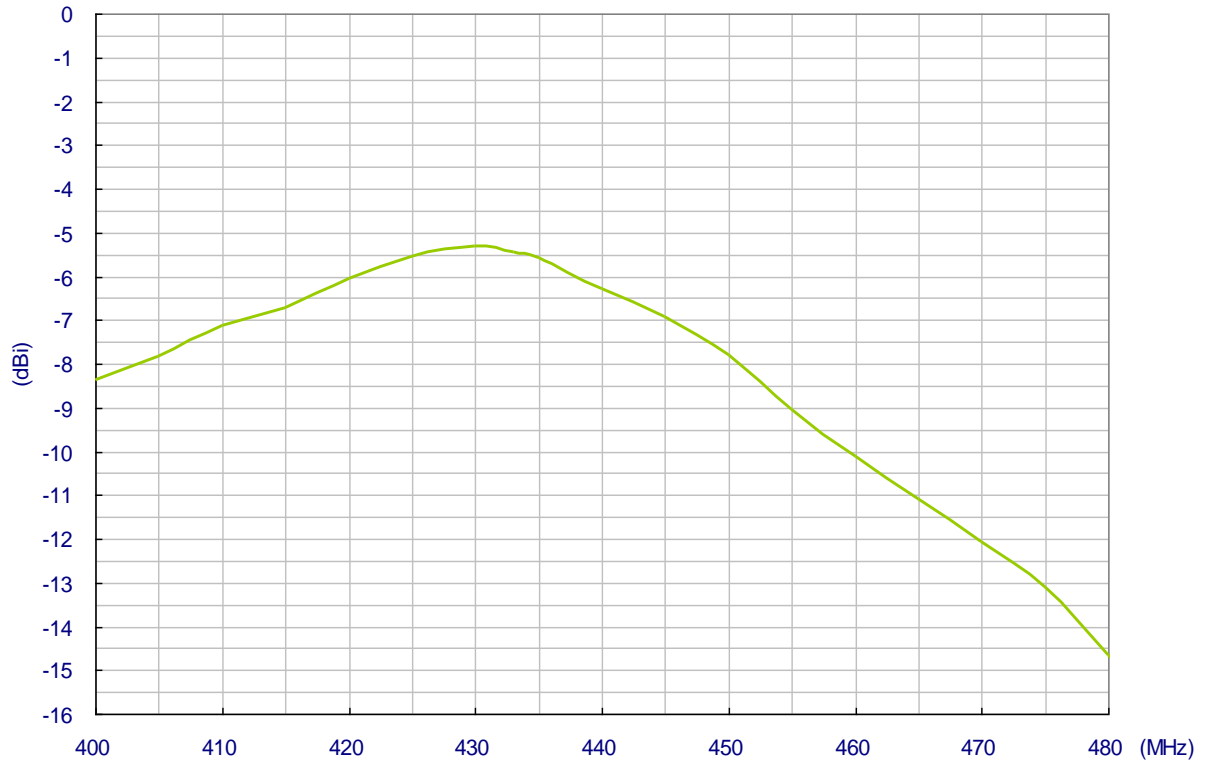
IV.2. Straight Position Radiation Efficiency



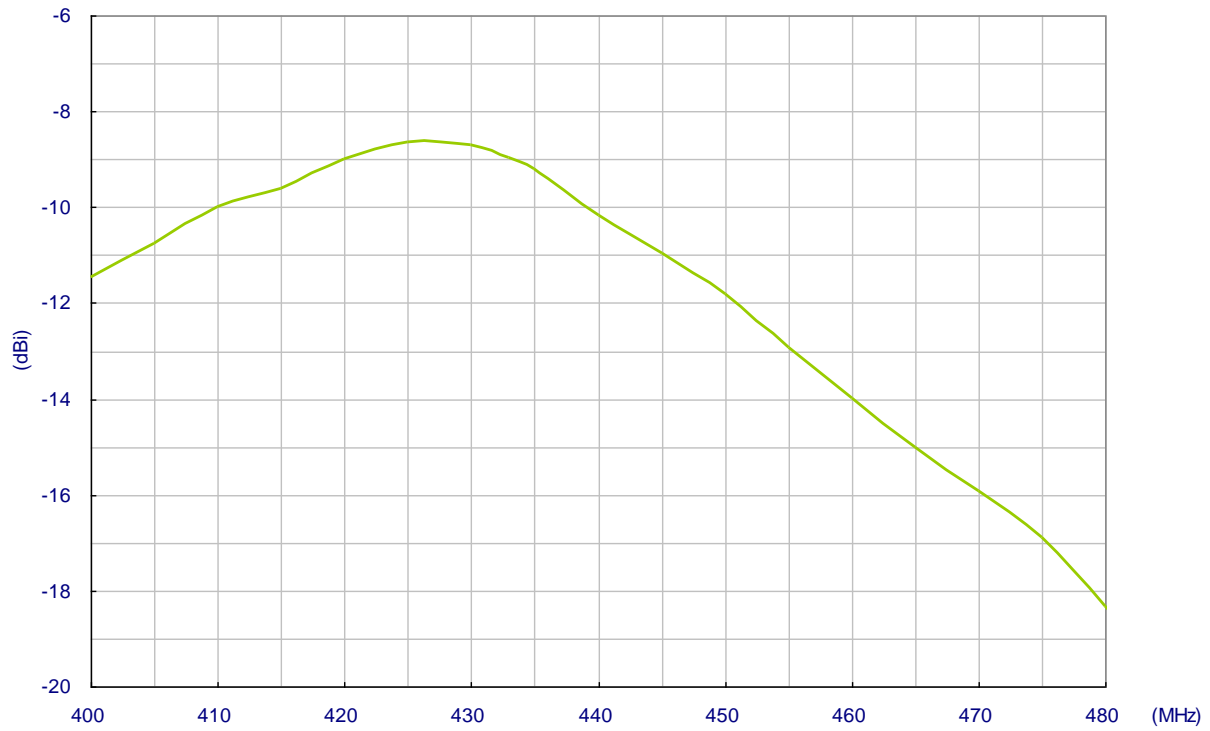
IV.3. Bend Position Peak Gain



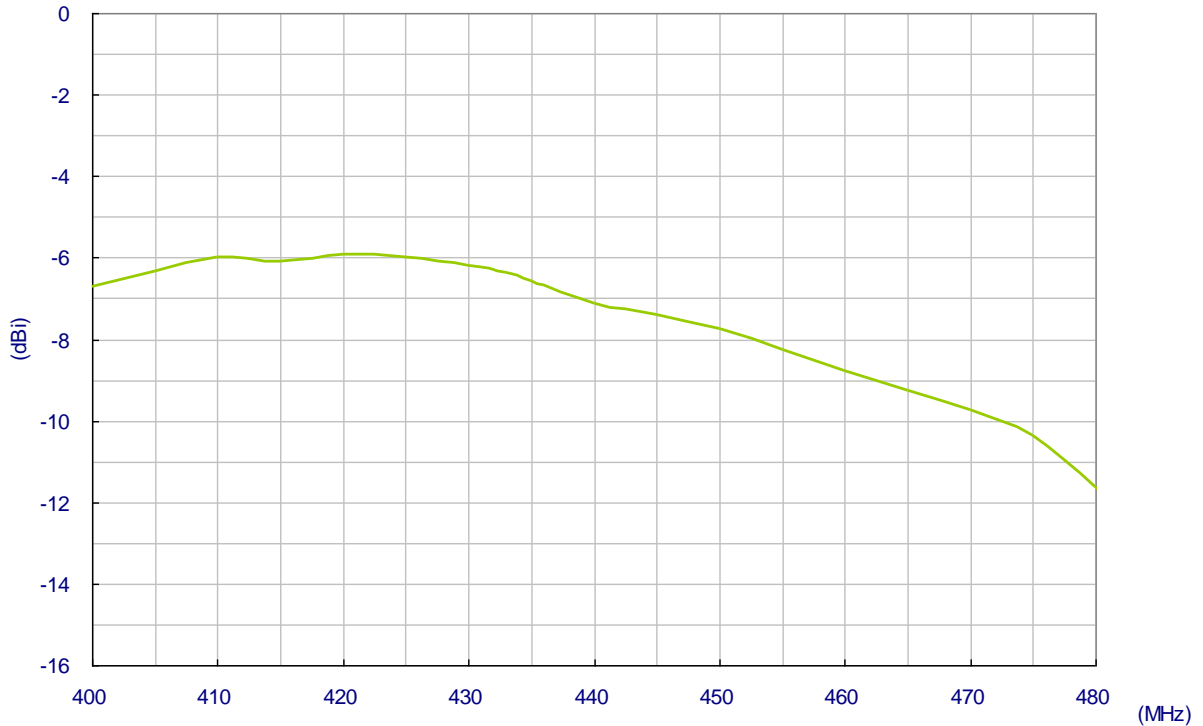
IV.4. Straight Position Peak Gain



IV.5. Bend Position Average Gain

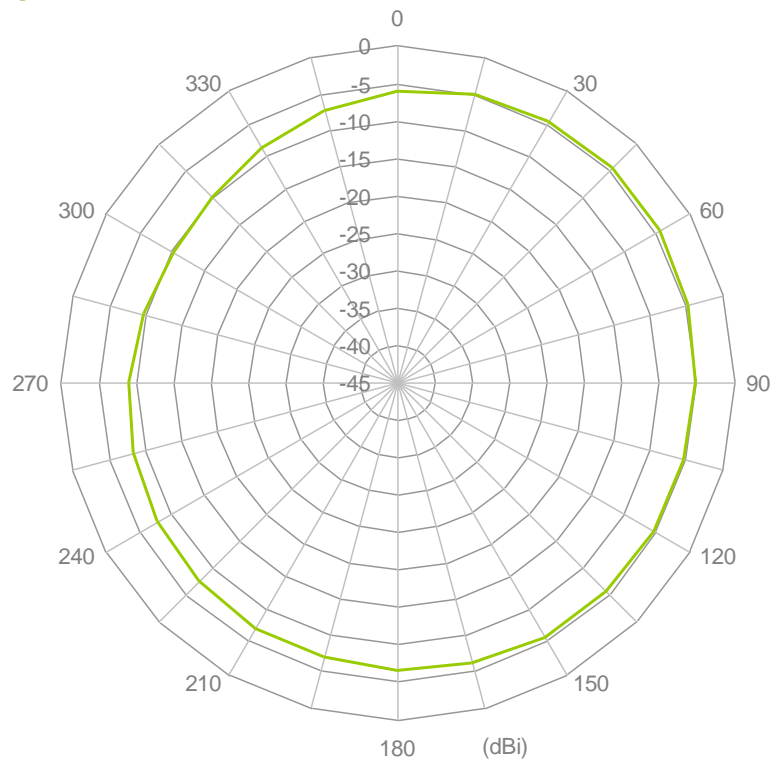


IV.6. Straight Position Average Gain

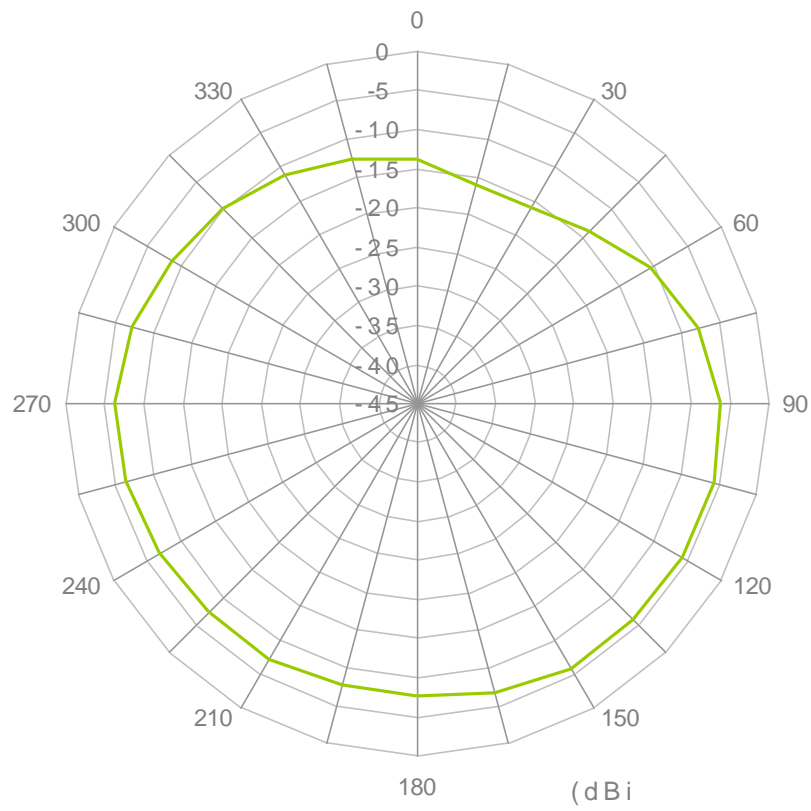


IV.7. 433MHz Bend Position Radiation Pattern

H-plane Radiation

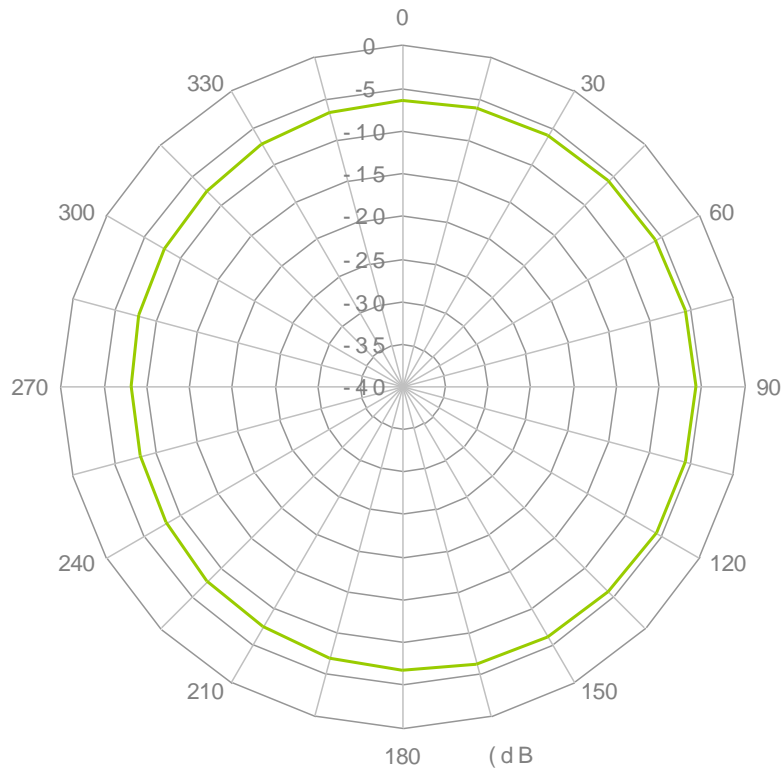


E-plane Radiation

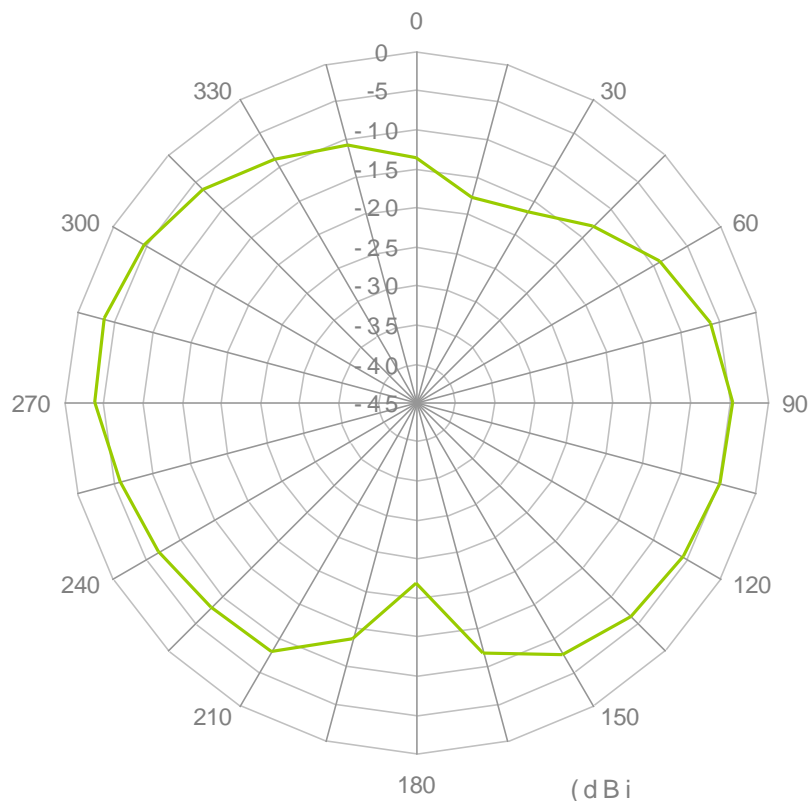


IV.8. 433MHz Straight Position Radiation Pattern

H-plane Radiation



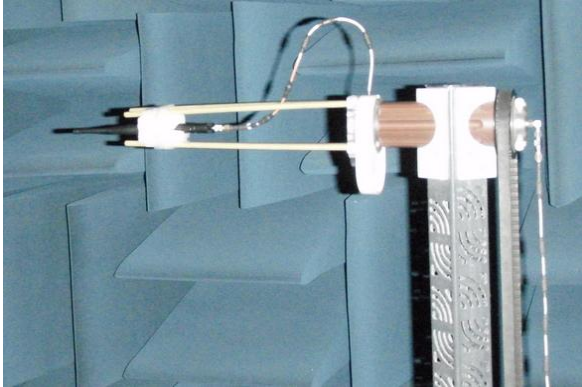
E-plane Radiation



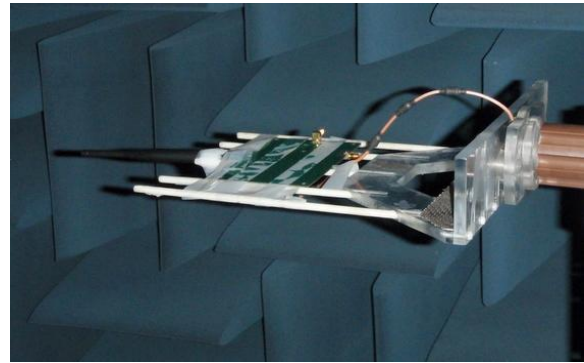
V. Ground Plane Effect

TI.15 may be mounted near a piece of ground plane. The ground plane changes the antenna radiation property. We have placed TI.15 in different near-ground scenarios and observe its radiation behaviors. Four different antenna placements were tested --

1. Free Space
2. Small Ground (15 x 9cm) – common size of CPE devices. TI.15 is mounted at the longer edge for testing.
3. Big Ground Edge (45 x 30cm) – simulate the effect of mounting antenna on a base station device. TI.15 is mounted at the centre of the longer edge.
4. Big Ground Centre (45 x 30cm) – simulate the effect of mounting antenna in a centre of a big ground plane, such as vehicle top.



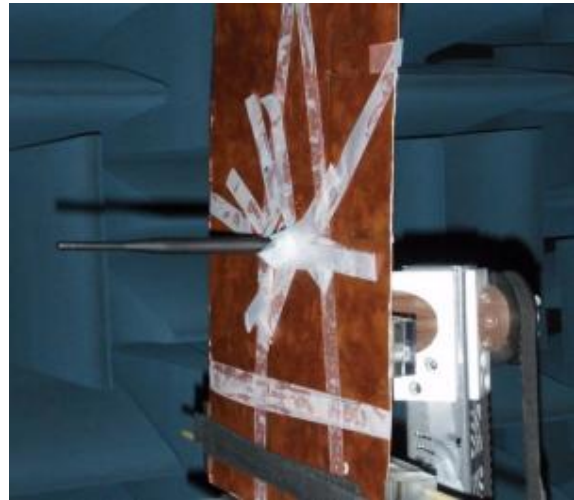
Free space



Small ground edge



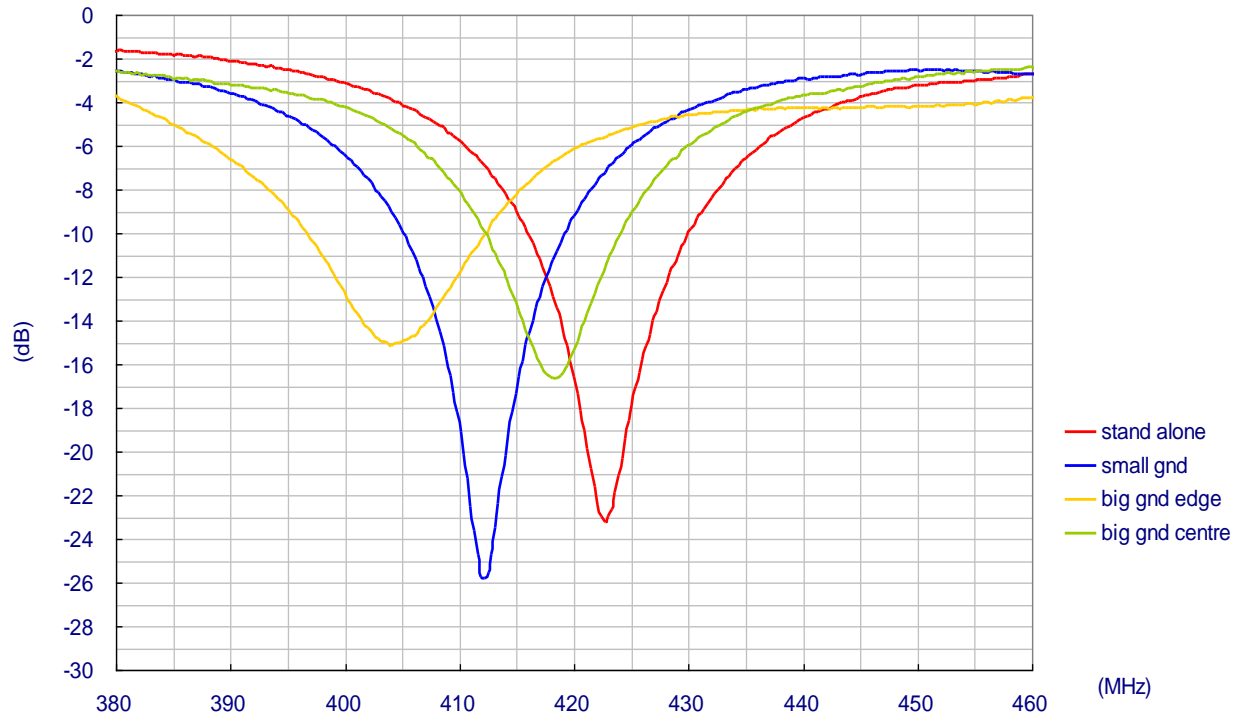
Big ground edge



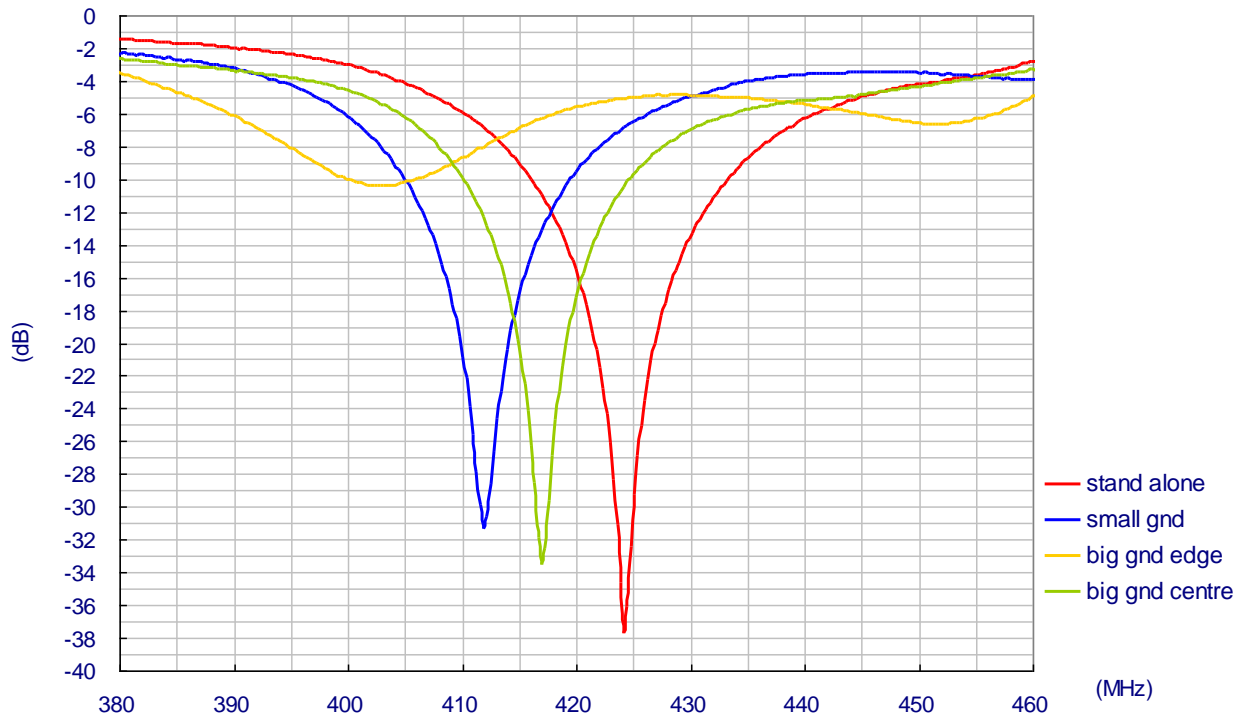
Big ground center

VI. S11 Performance of TI.15 with Different Ground

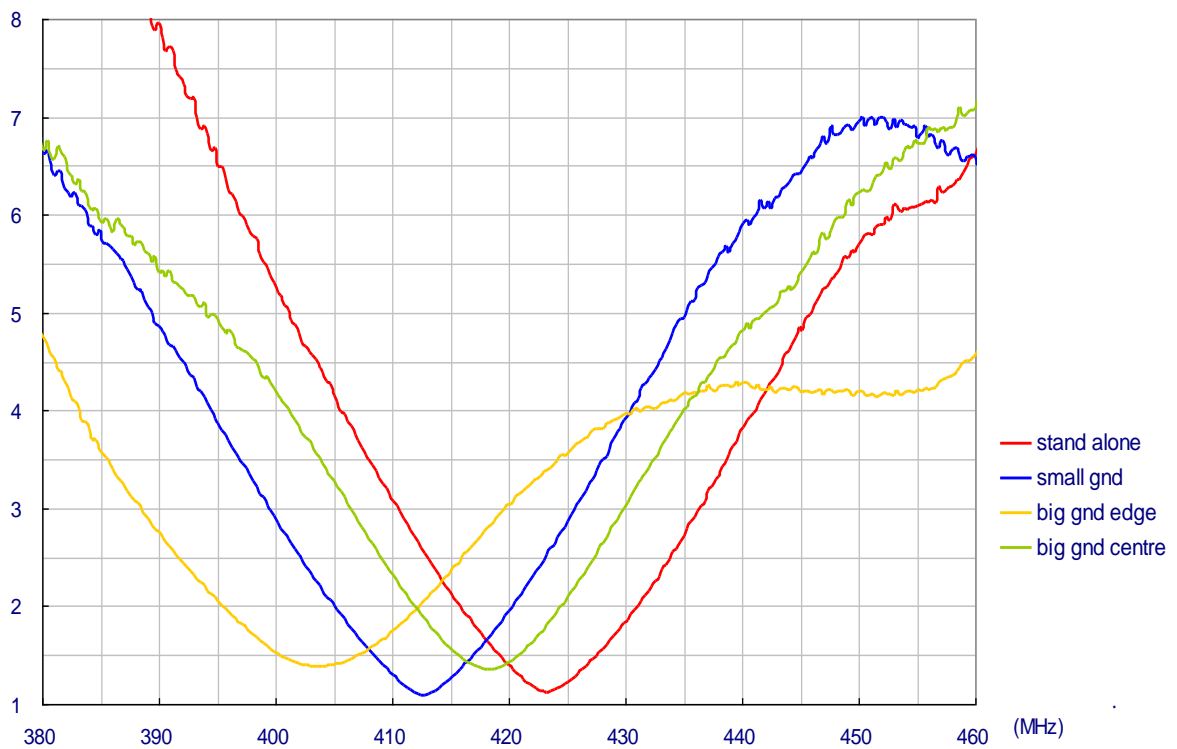
Bend Position Return Loss



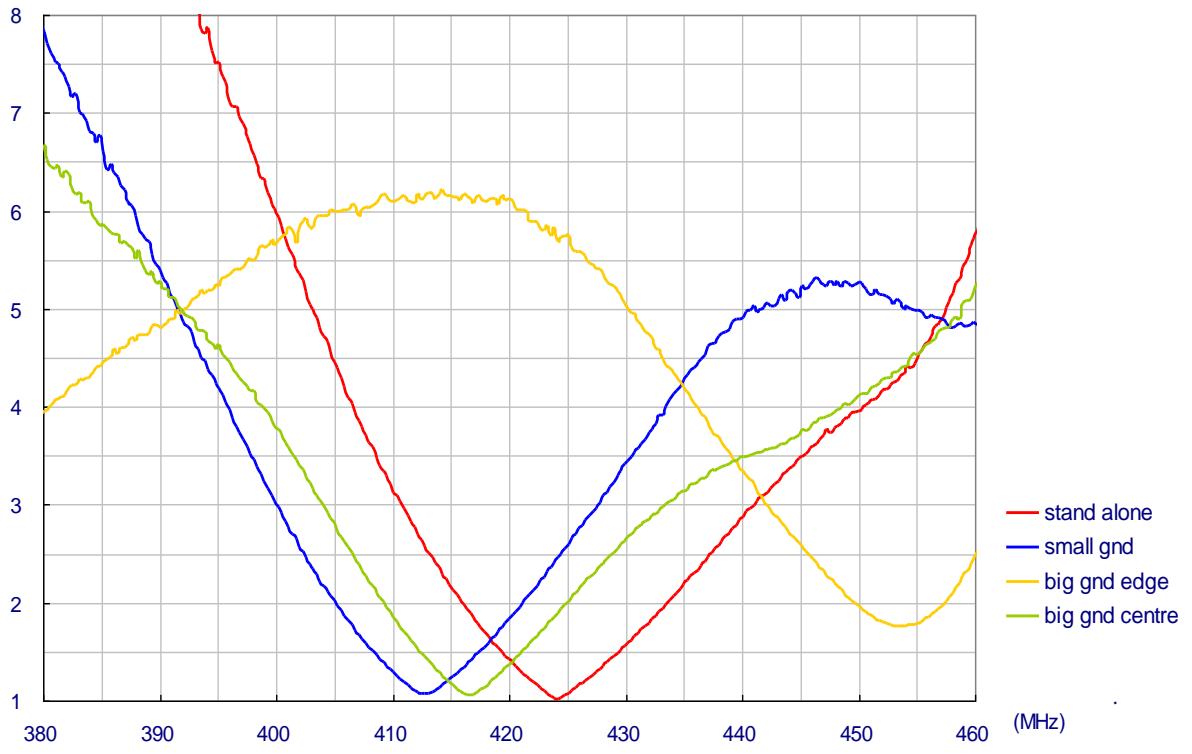
Straight Position Return Loss



Bend Position VSWR

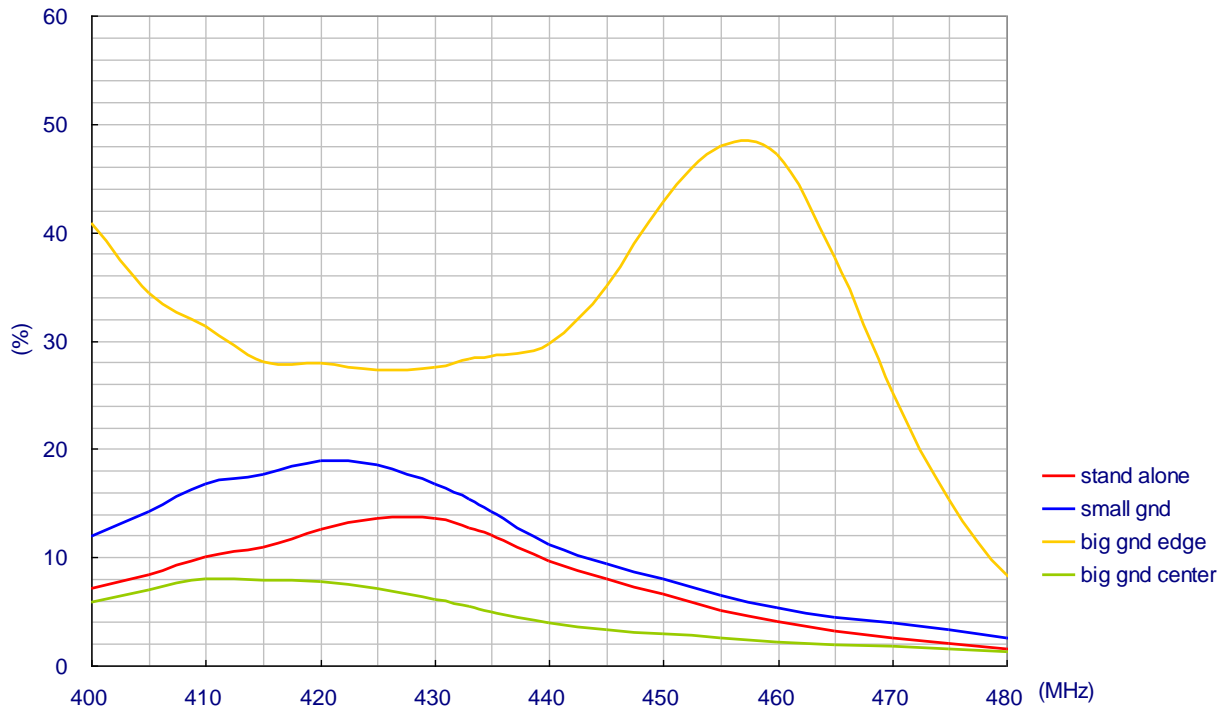


Straight Position VSWR

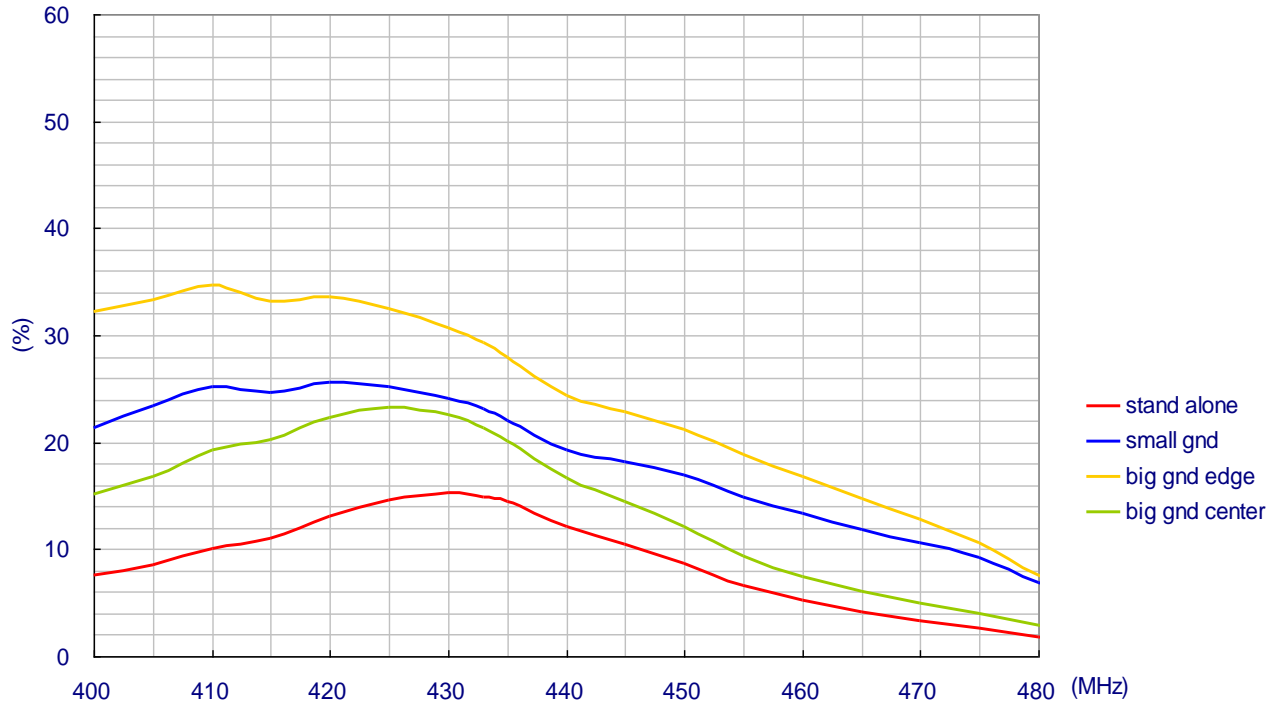


VII. Antenna Radiation Property

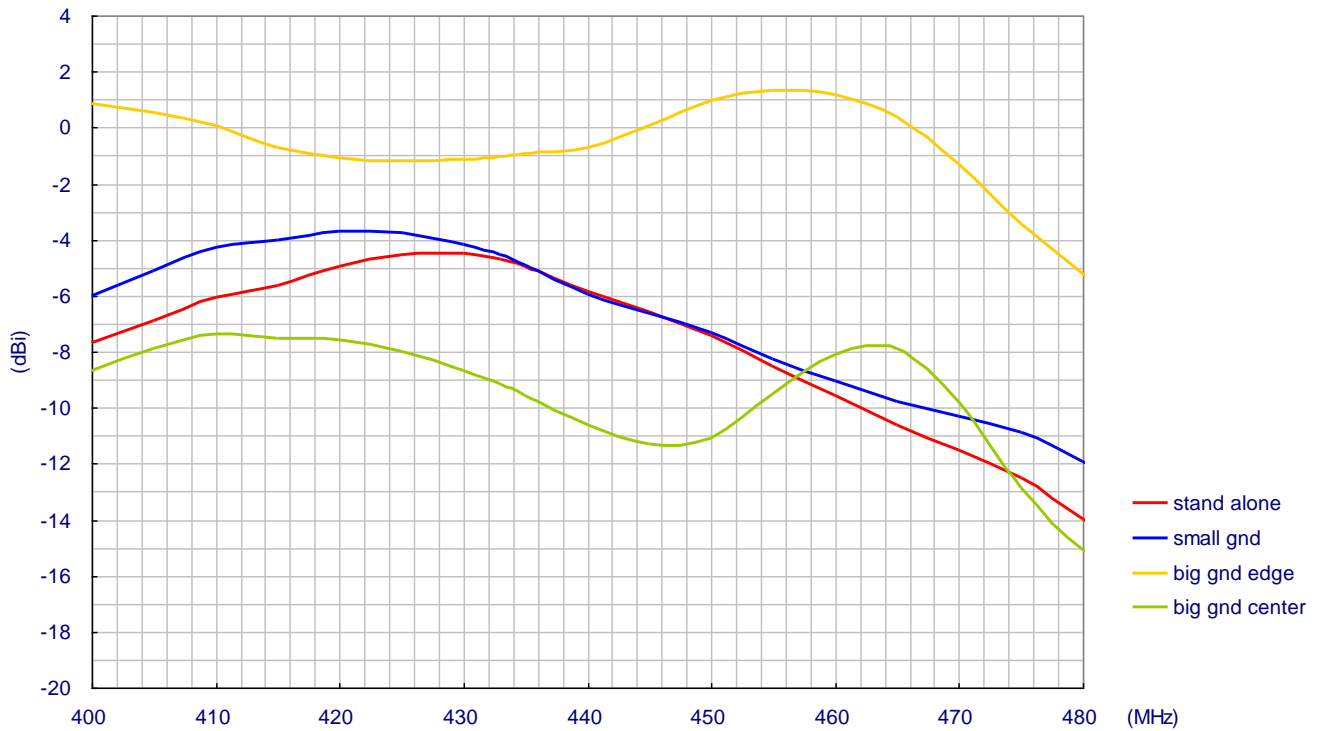
VII.1. Bend Position Radiation Efficiency



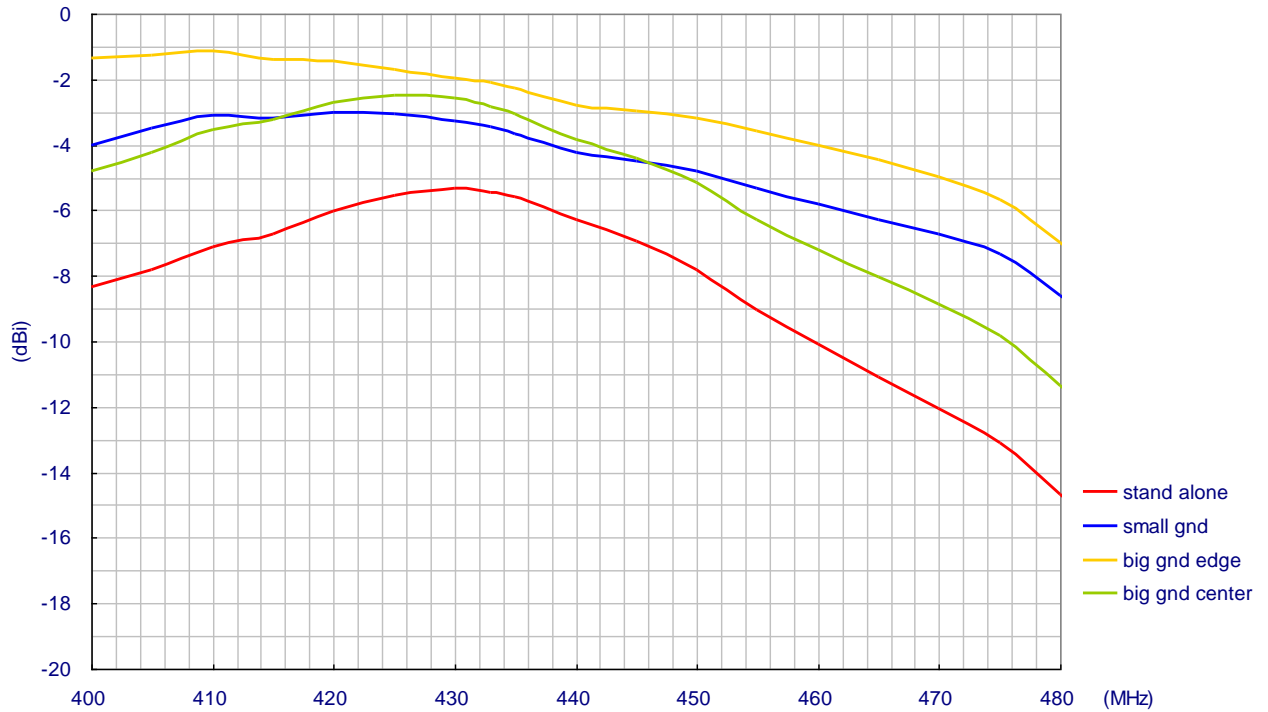
VII.2. Straight Position Radiation Efficiency



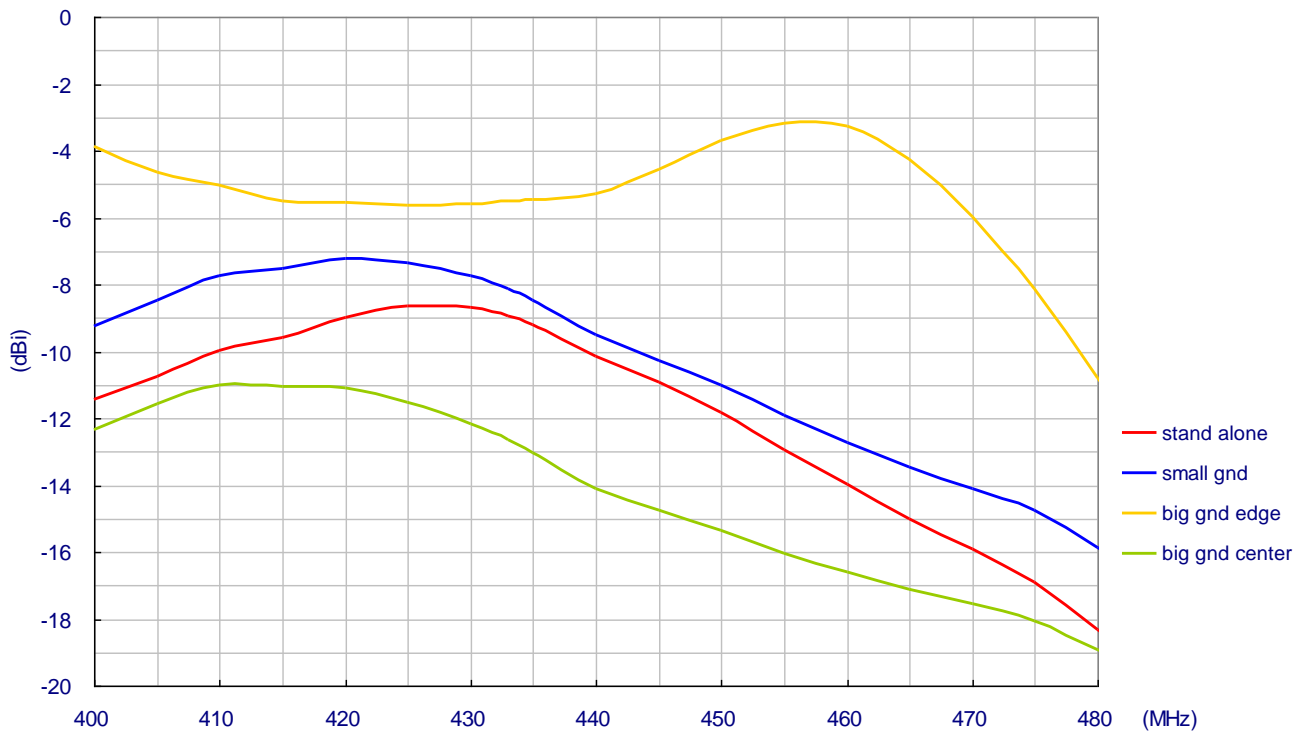
VII.3. Bend Position Peak Gain



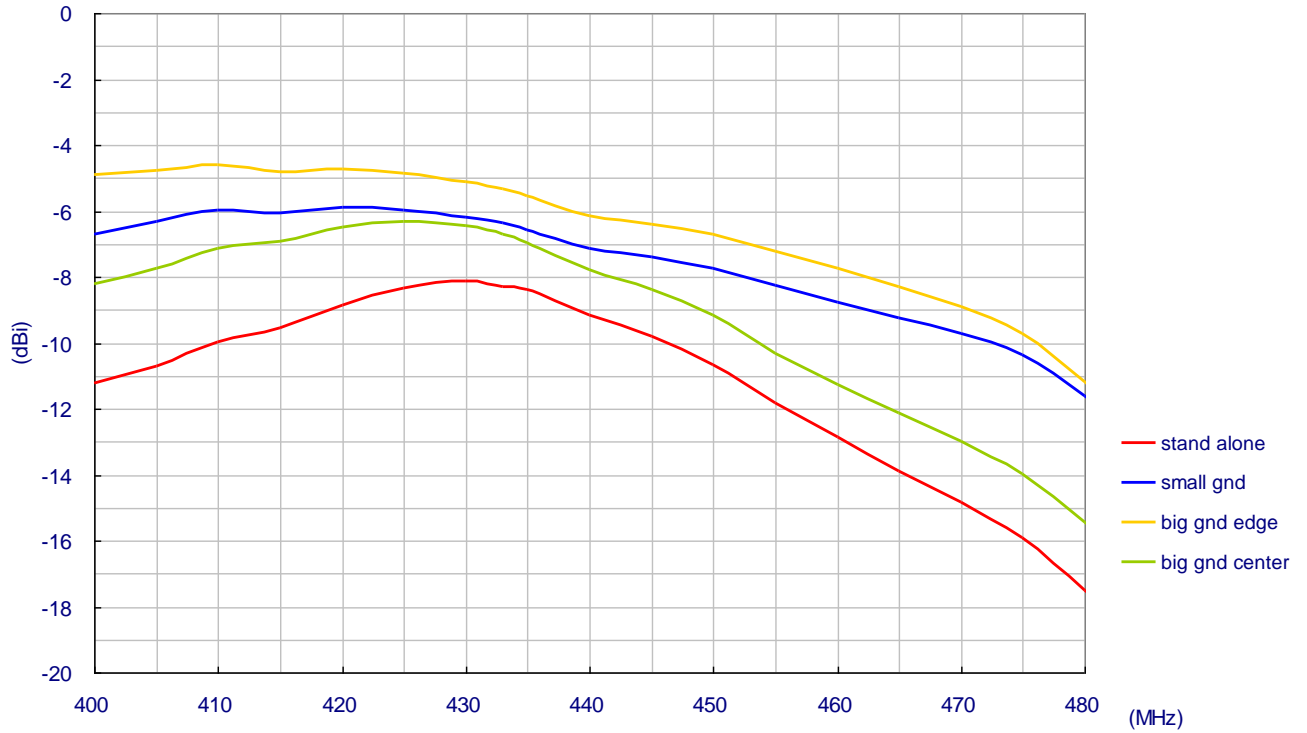
VII.4. Straight Position Peak Gain



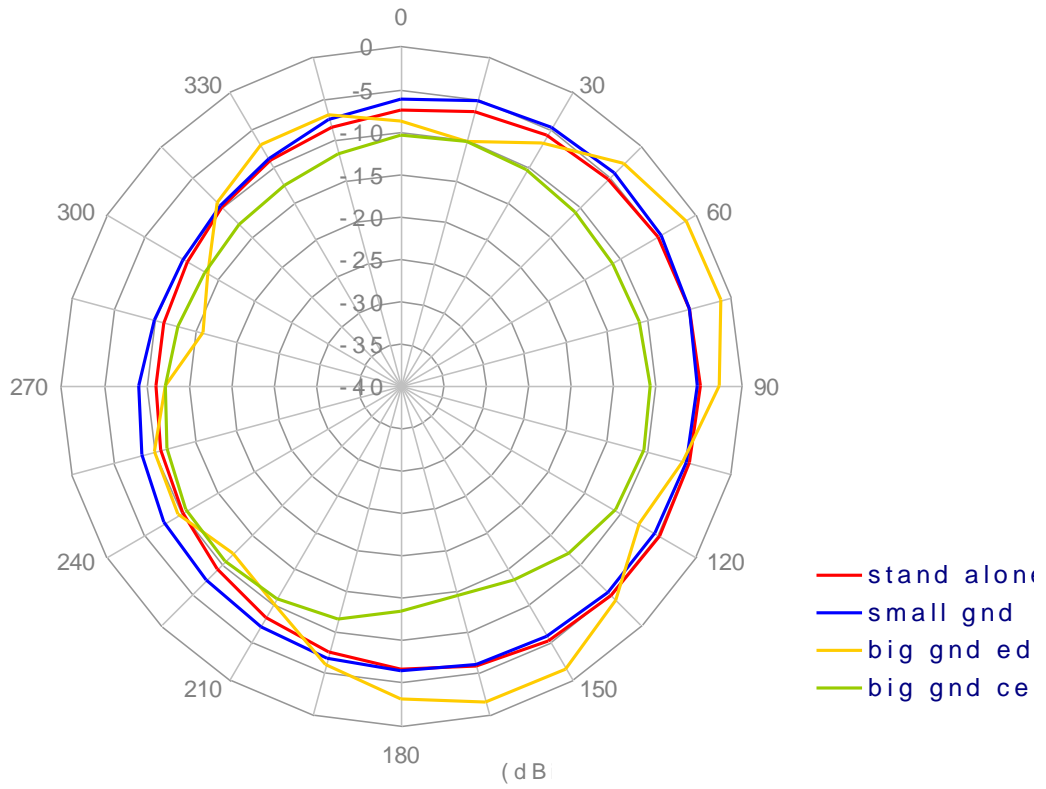
VII.5. Bend Position Average Gain



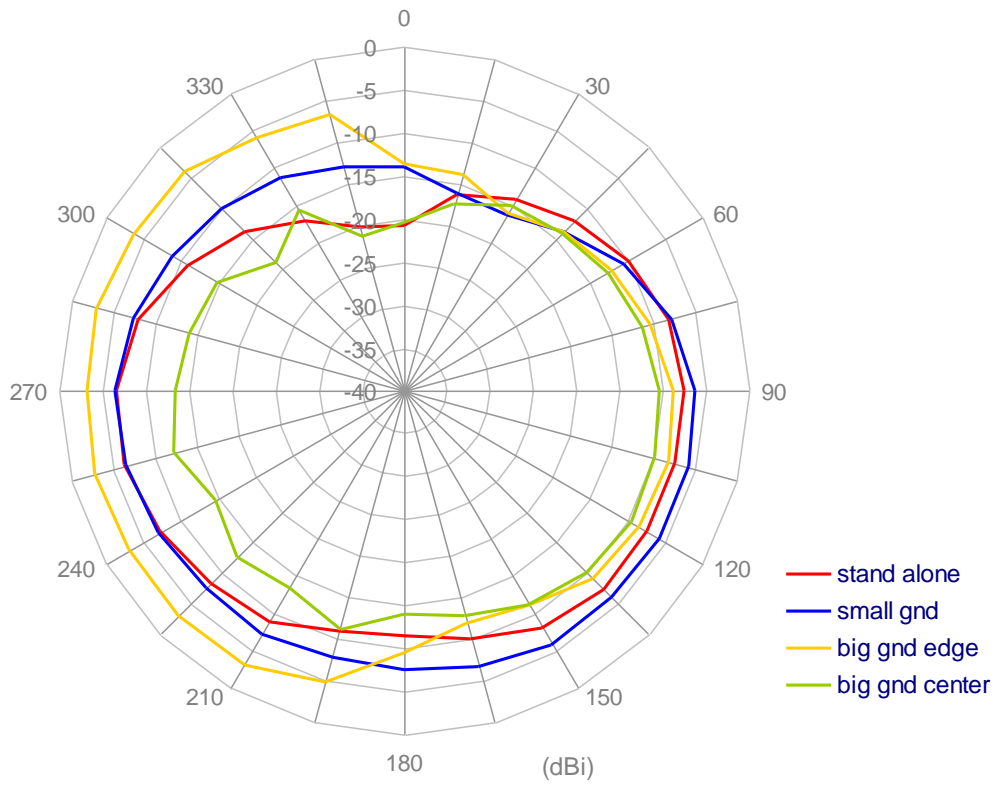
VII.6. Straight Position Average Gain



VII.7. 433MHz Bend Position Radiation Pattern H-plane Radiation

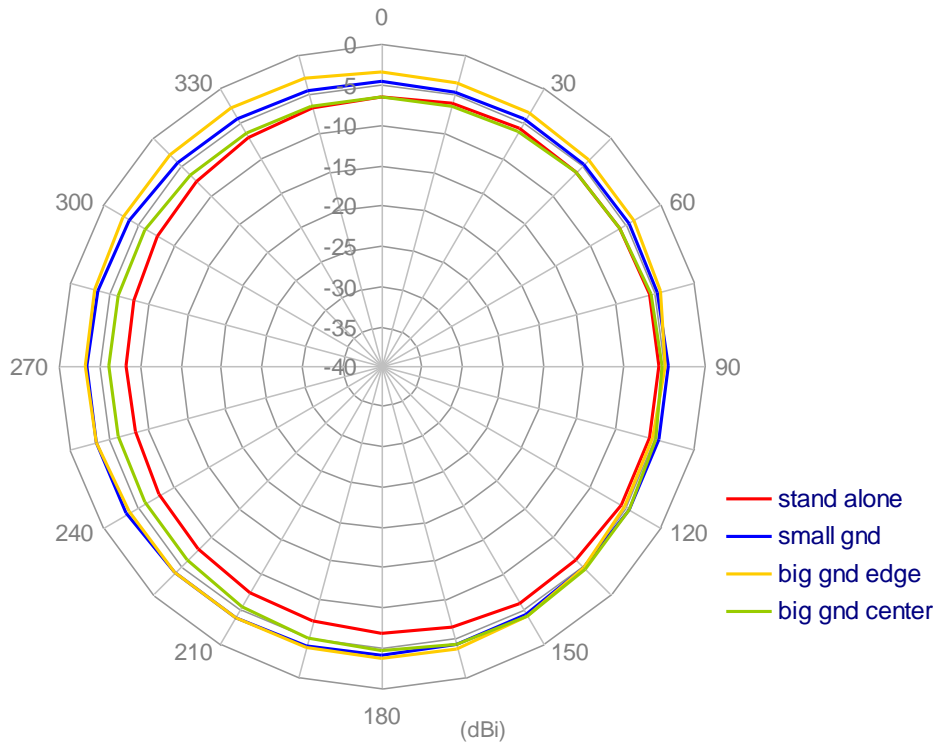


E-plane Radiation

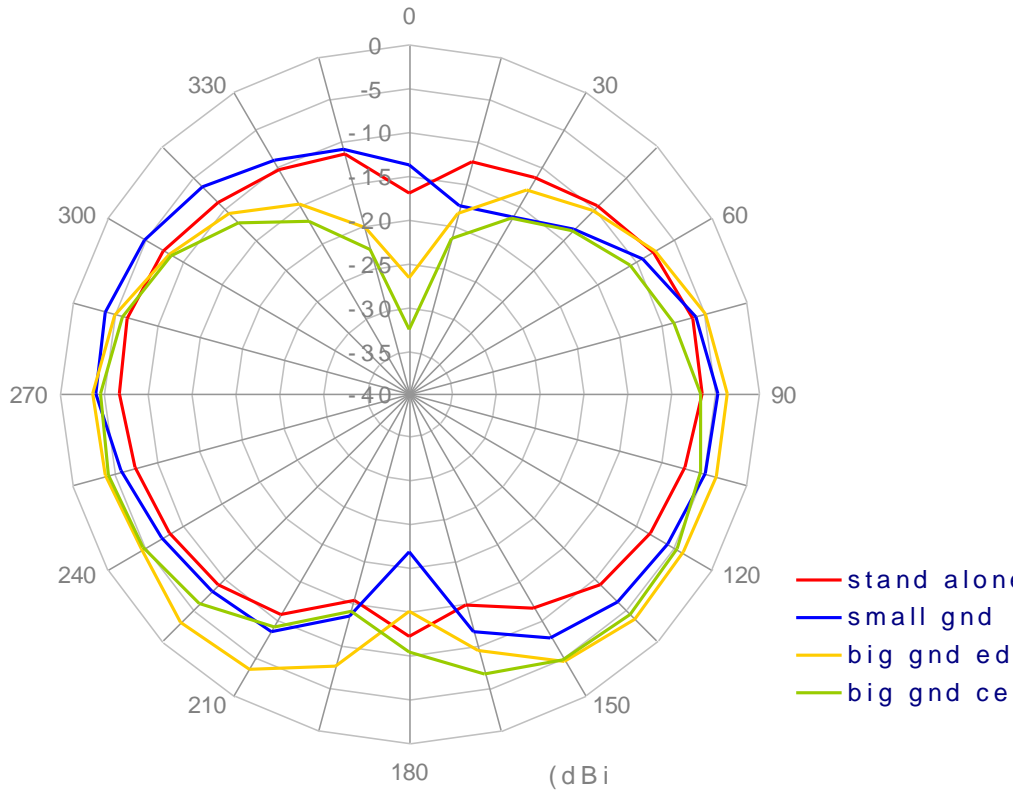


VII.8. 433MHz Straight Position Radiation Pattern

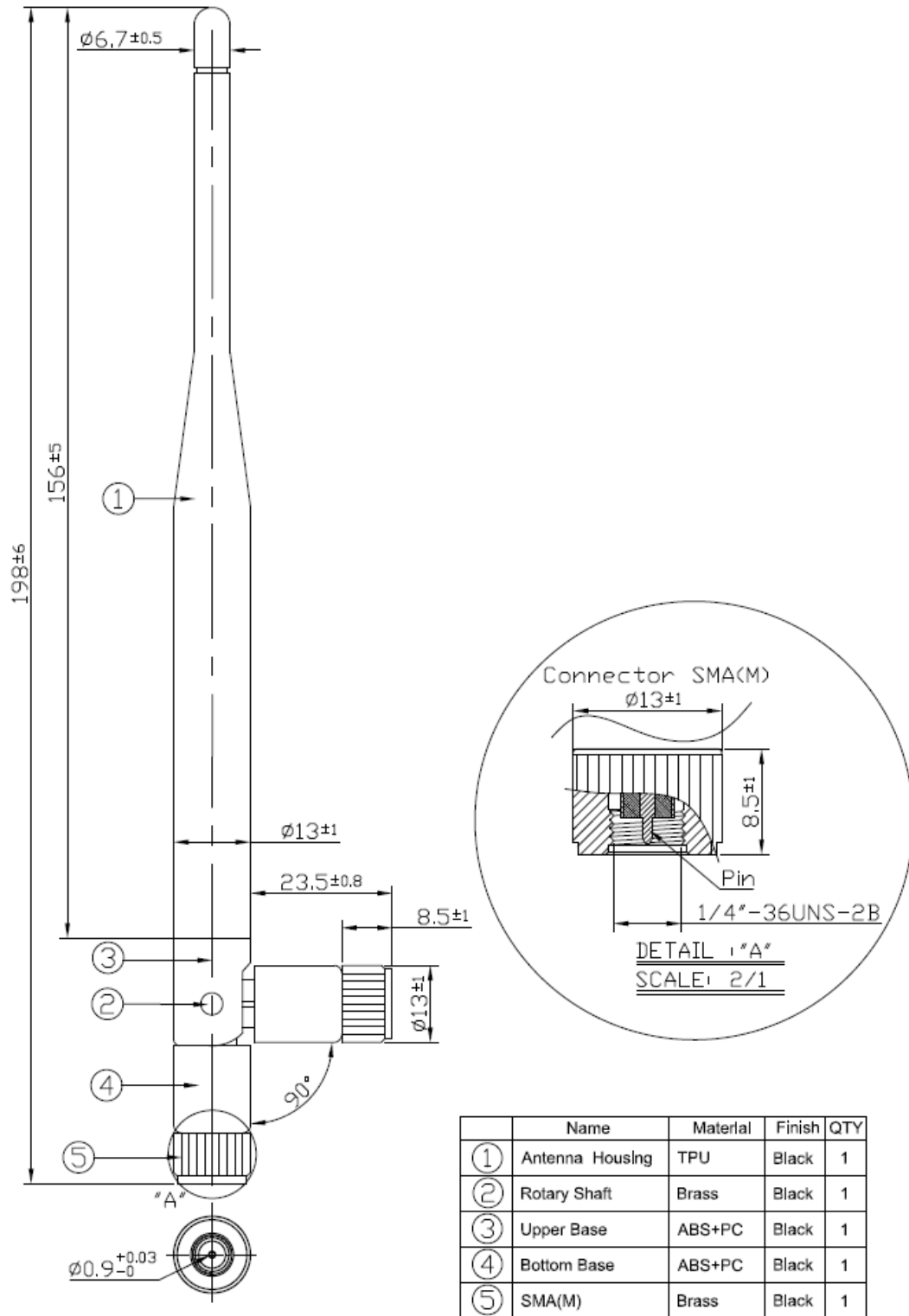
H-plane Radiation



E-plane Radiation



VIII. Mechanical Drawing



Unit : mm

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