

SPECIFICATION

Part No. : **TI.15.3113**

Product Name : 433MHz ISM Band Dipole Antenna

Feature : SMA(M) Connector
Hinge design for optimal reception
RoHS Compliant



1. 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.

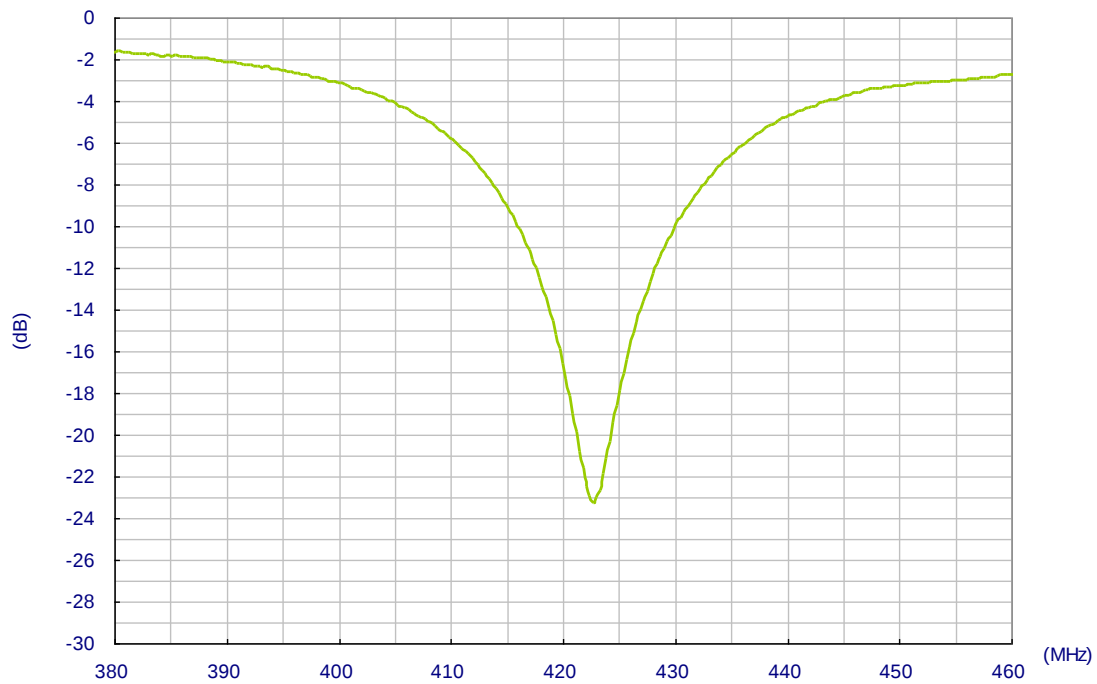
2. Specification

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 $\varnothing$ 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%

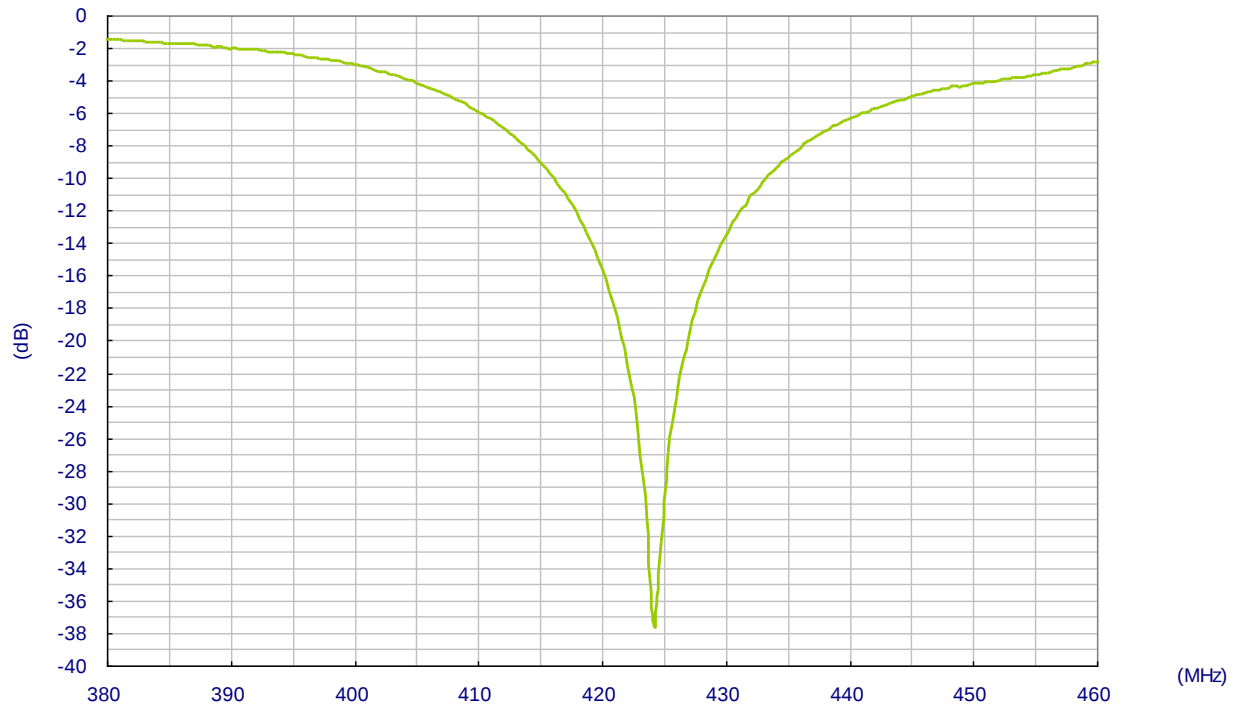
* Electrical properties are measured with the antenna in bend position in free space.

3. Antenna S11 Property

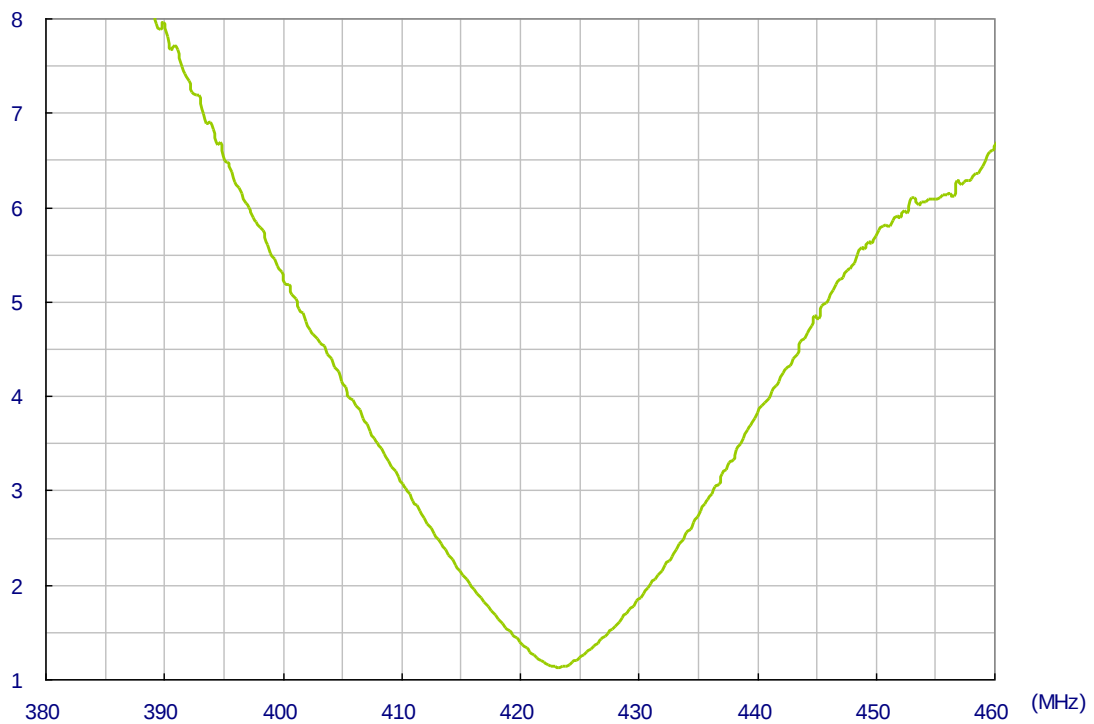
3.1. Bend Position Return Loss



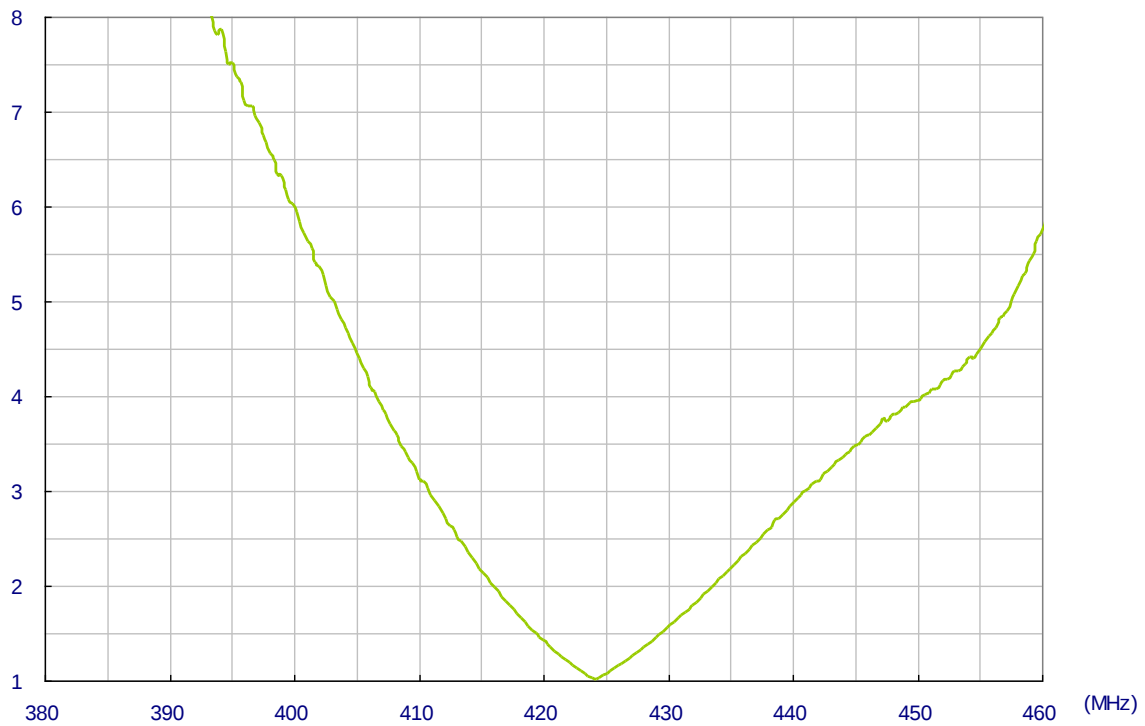
3.2. 180 Degree Straight Position Return Loss



3.3. Bend Position VSWR

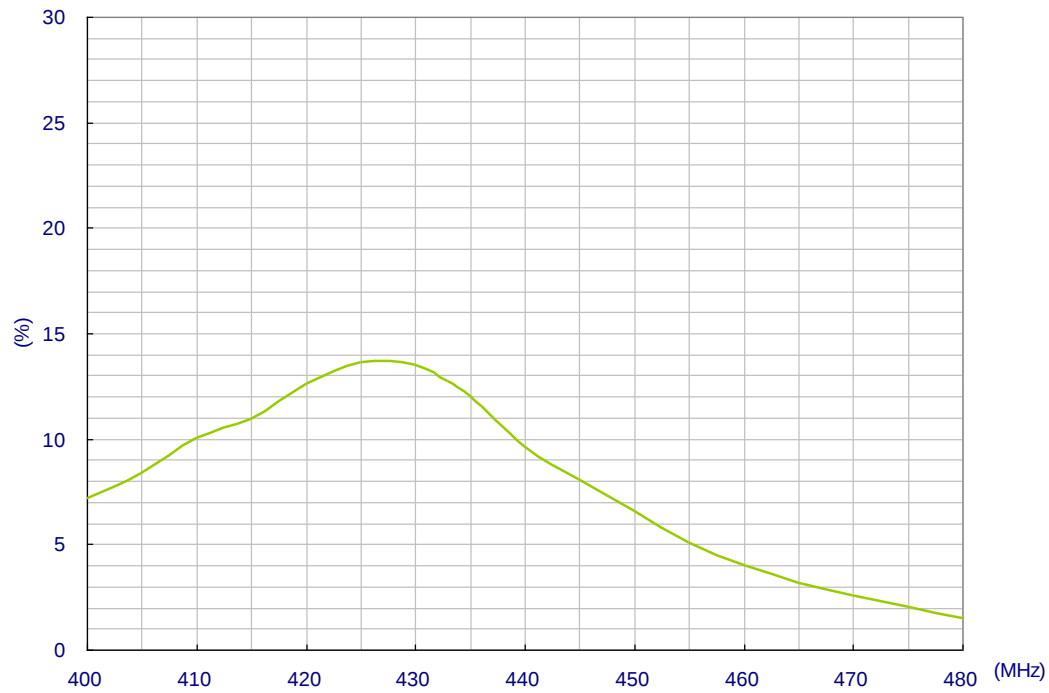


3.4. Straight Position VSWR

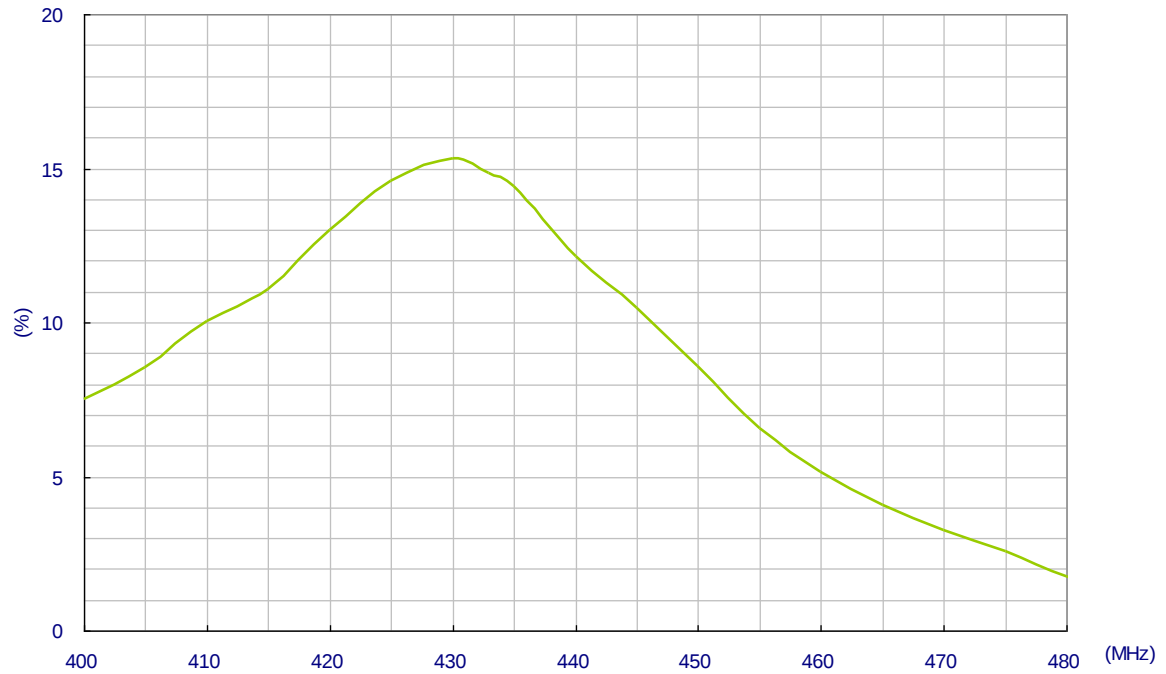


4. Antenna Radiation Property

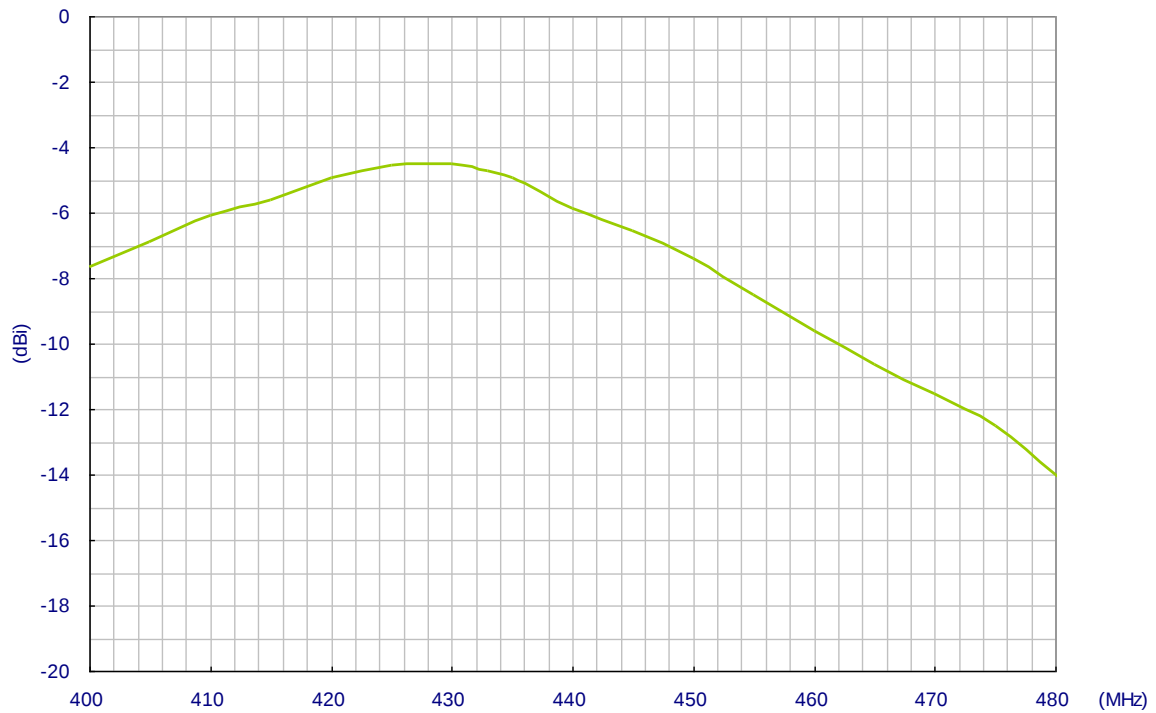
4.1. Bend Position Radiation Efficiency



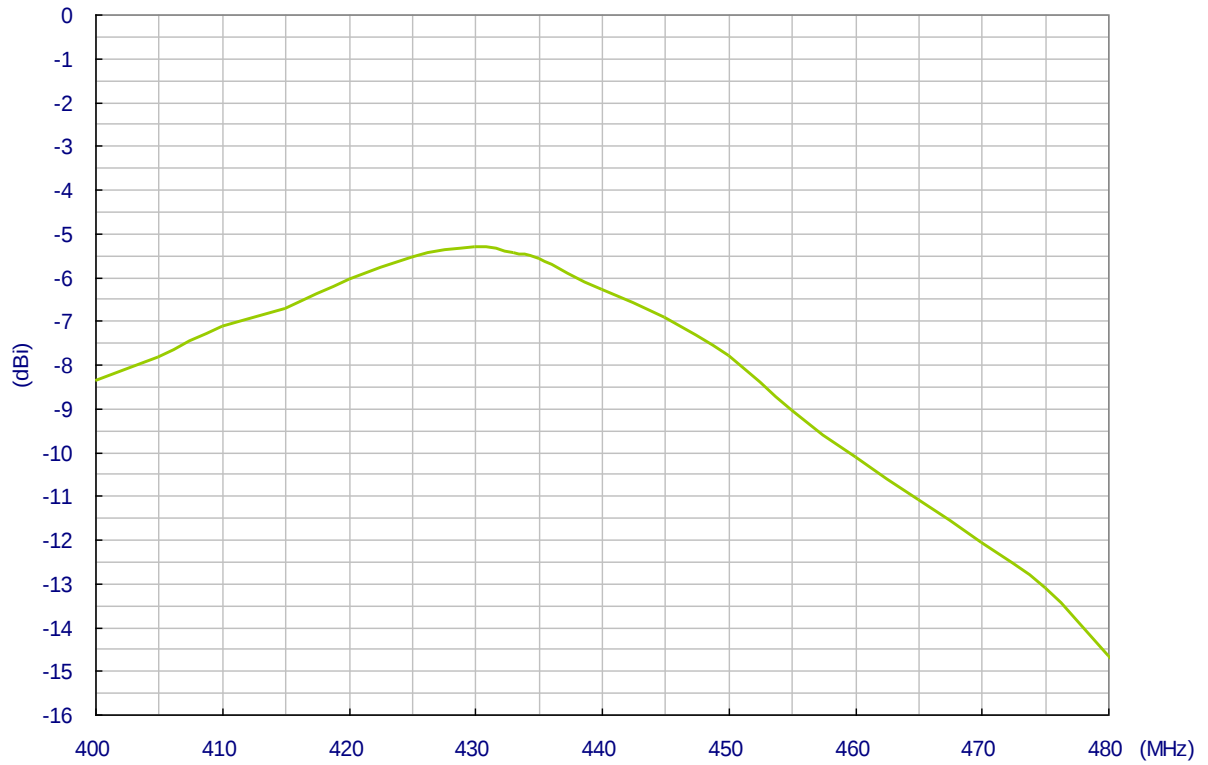
4.2. Straight Position Radiation Efficiency



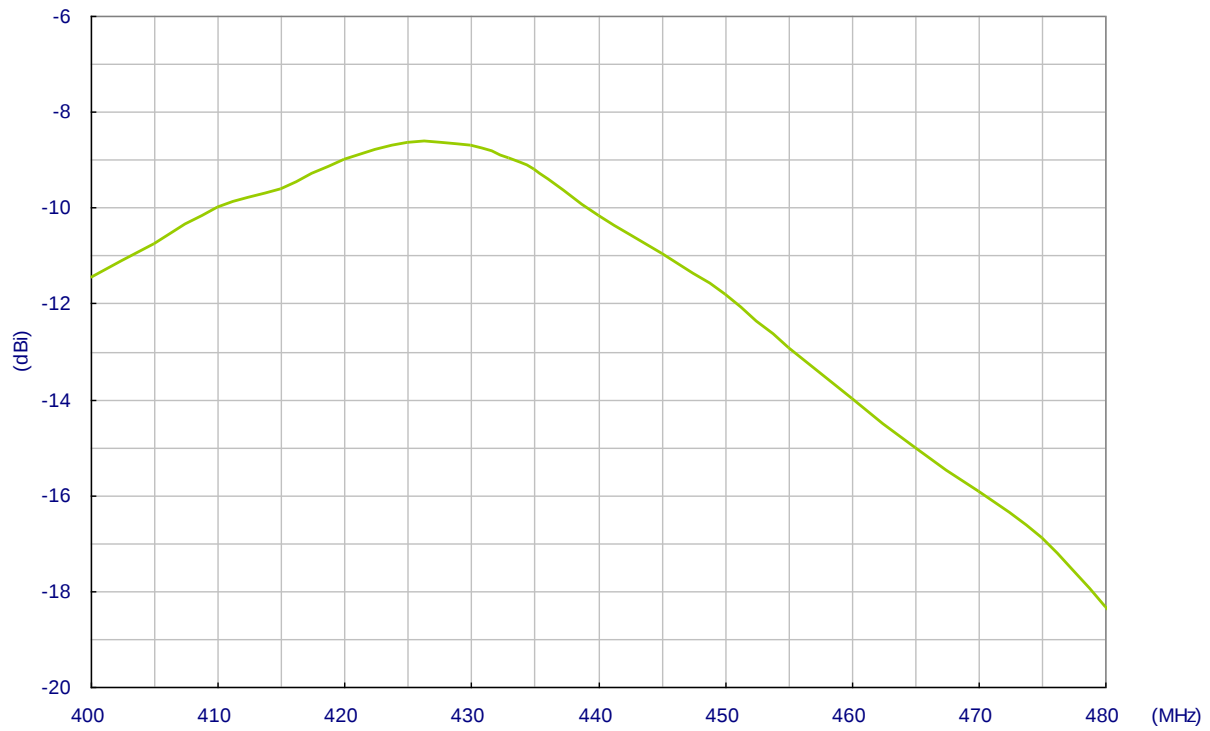
4.3. Bend Position Peak Gain



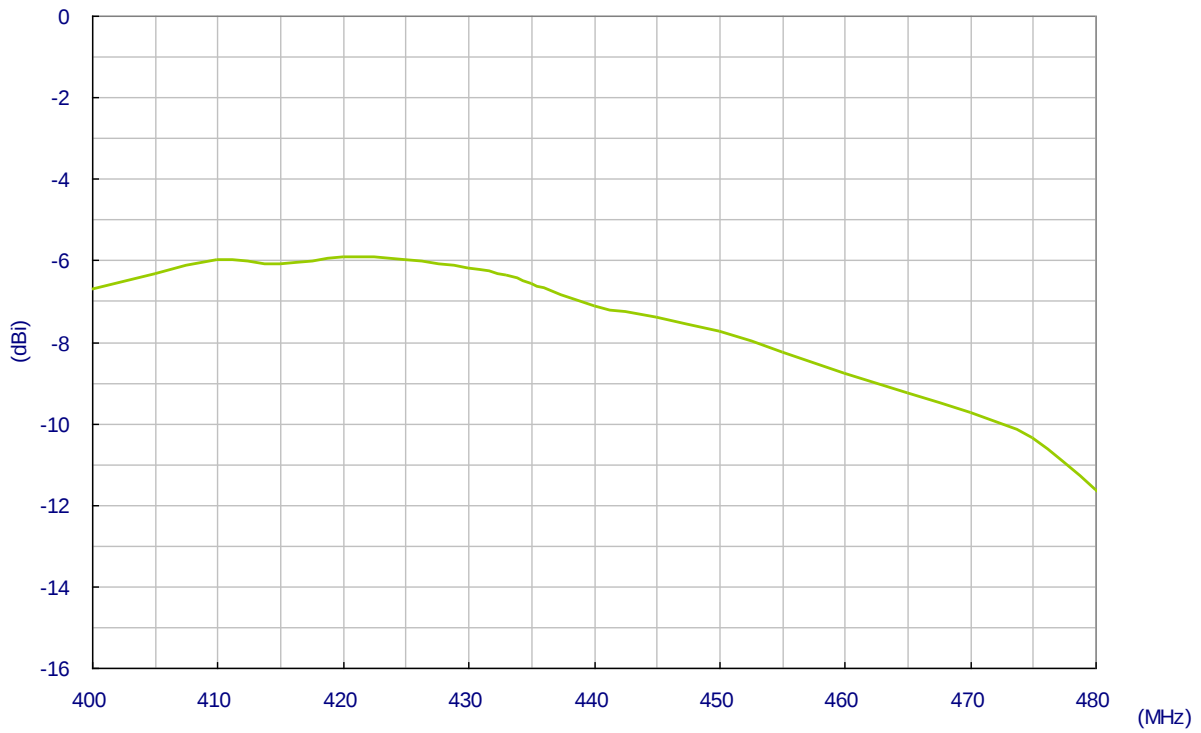
4.4. Straight Position Peak Gain



4.5. Bend Position Average Gain

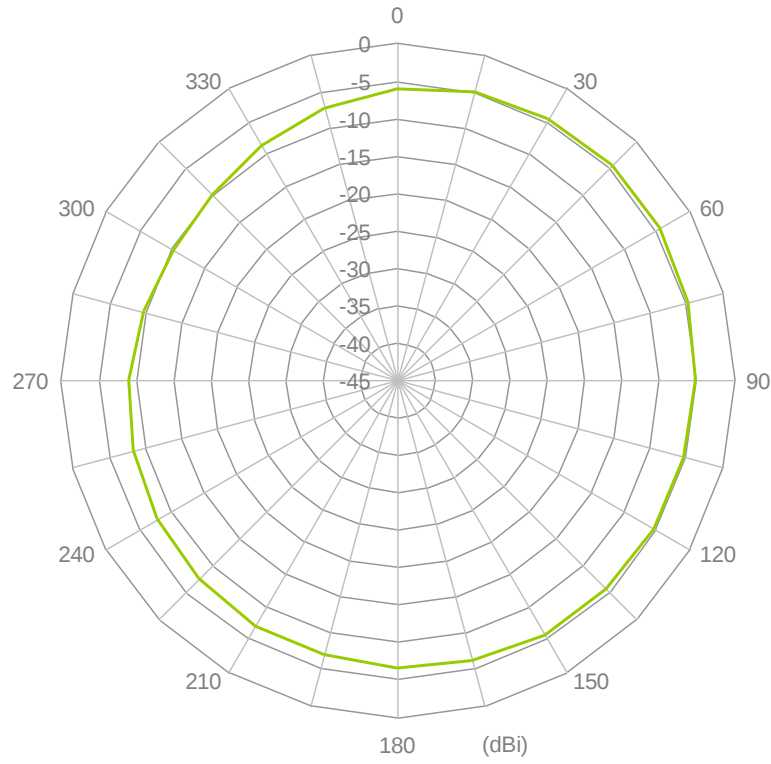


4.6. Straight Position Average Gain

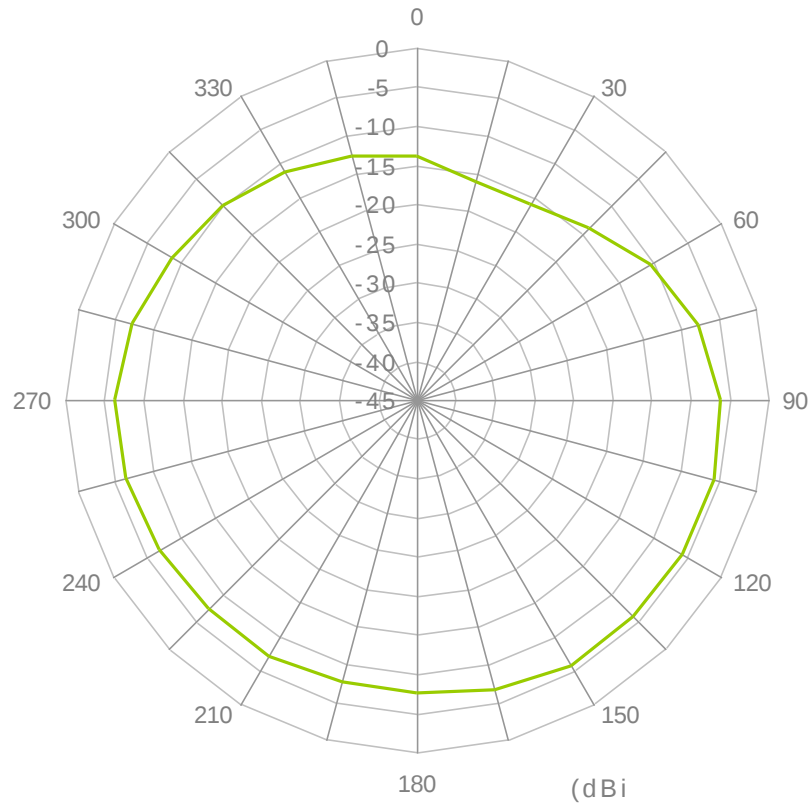


4.7. 433MHz Bend Position Radiation Pattern

H-plane Radiation

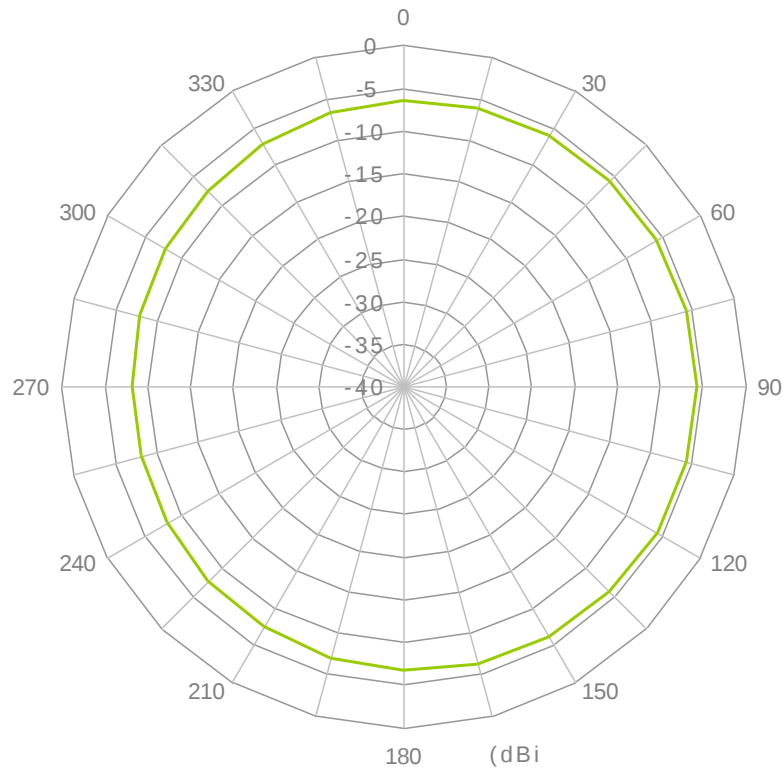


E-plane Radiation

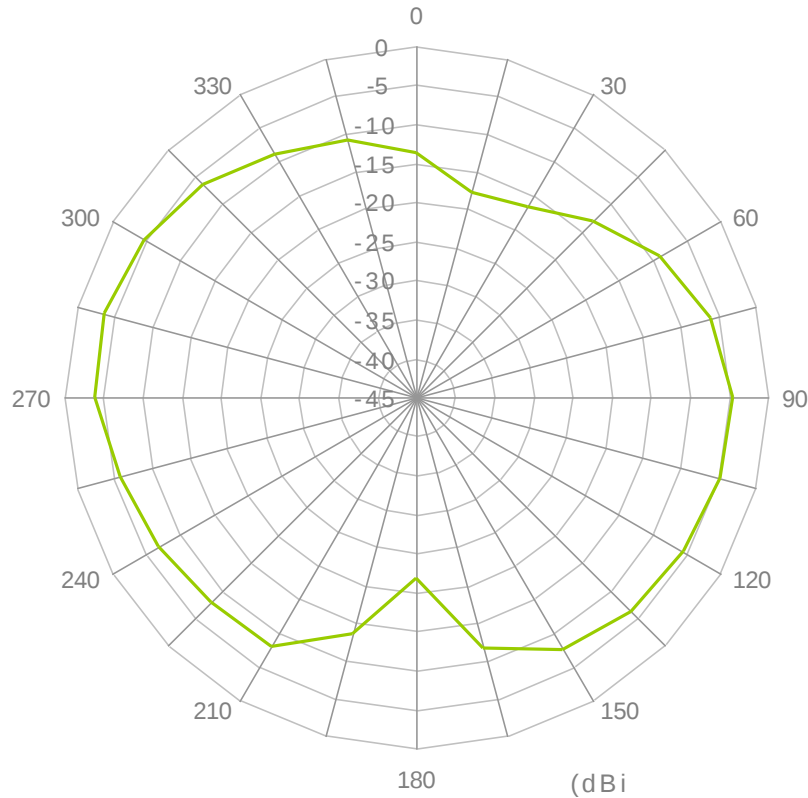


4.8. 433MHz Straight Position Radiation Pattern

H-plane Radiation



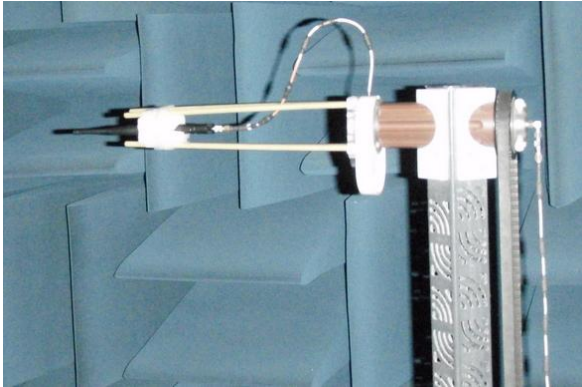
E-plane Radiation



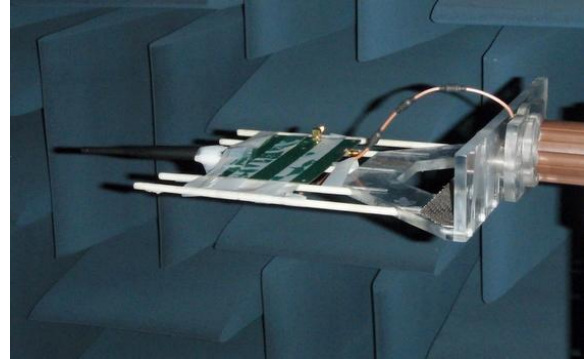
5. Ground Plane Effect

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.



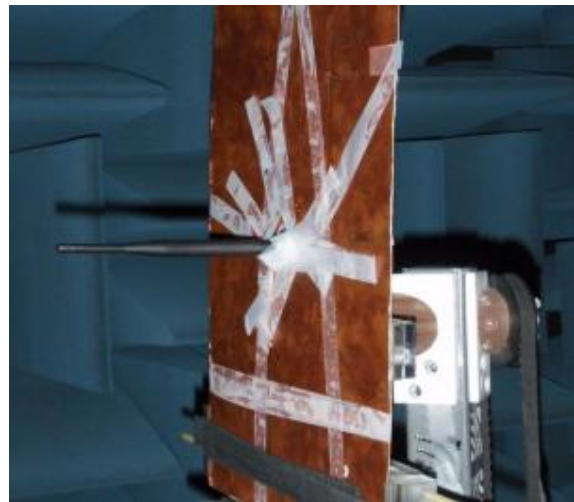
Free space



Small ground edge



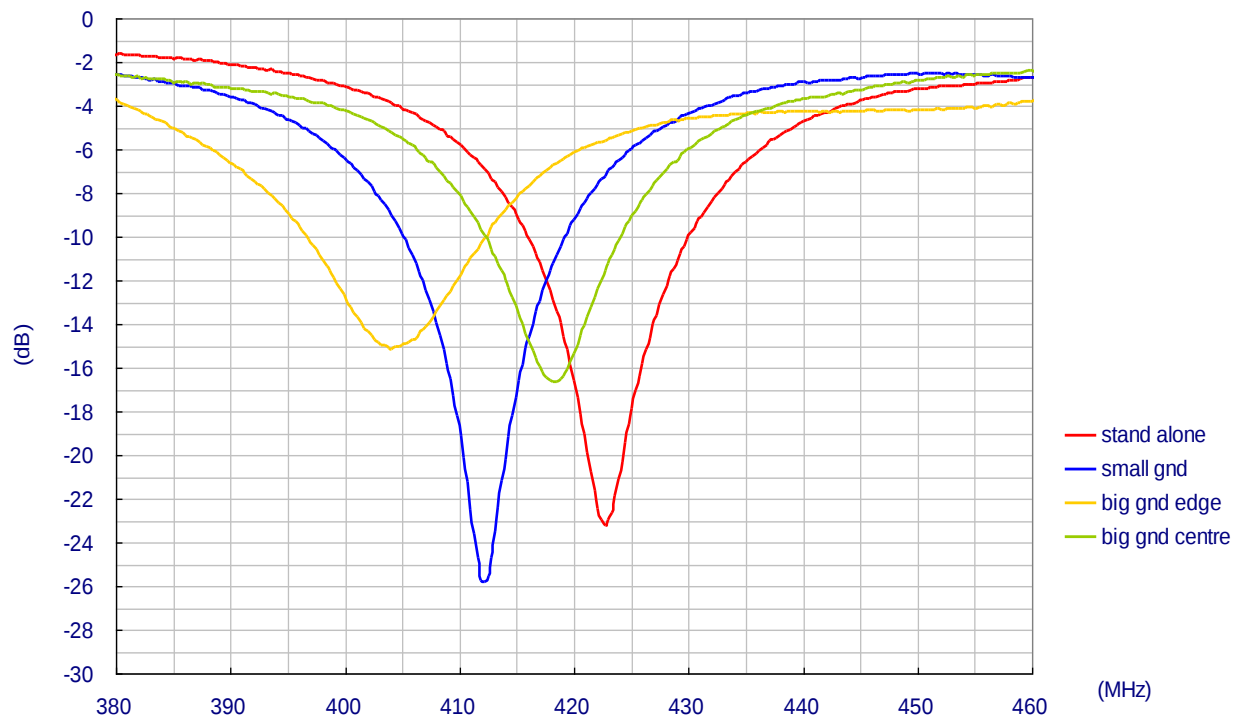
Big ground edge



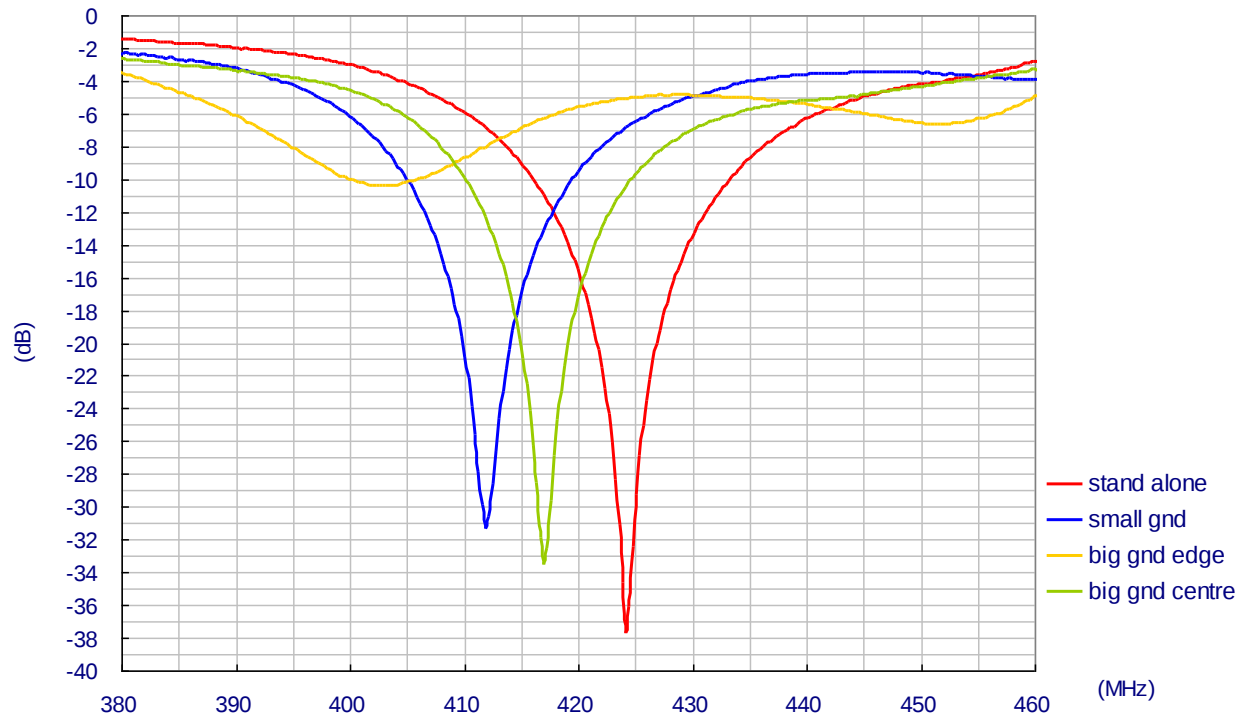
Big ground center

6.S11 Performance of TI.15 with Different Ground

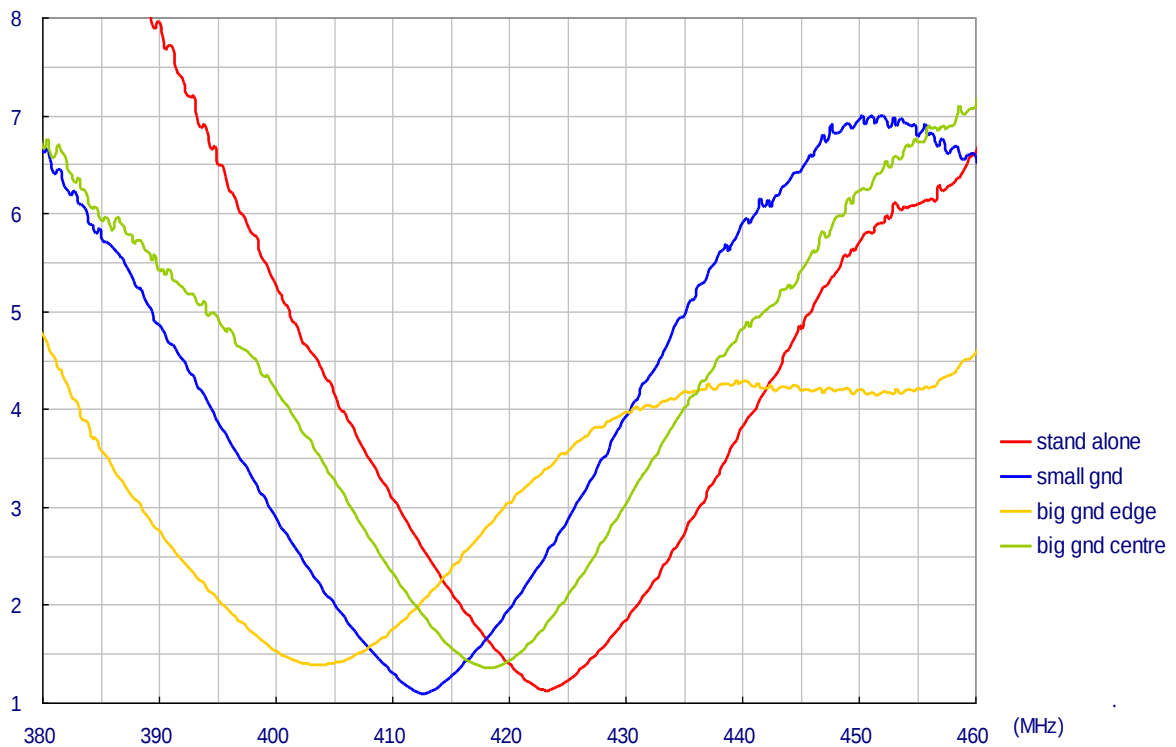
6.1 Bend Position Return Loss



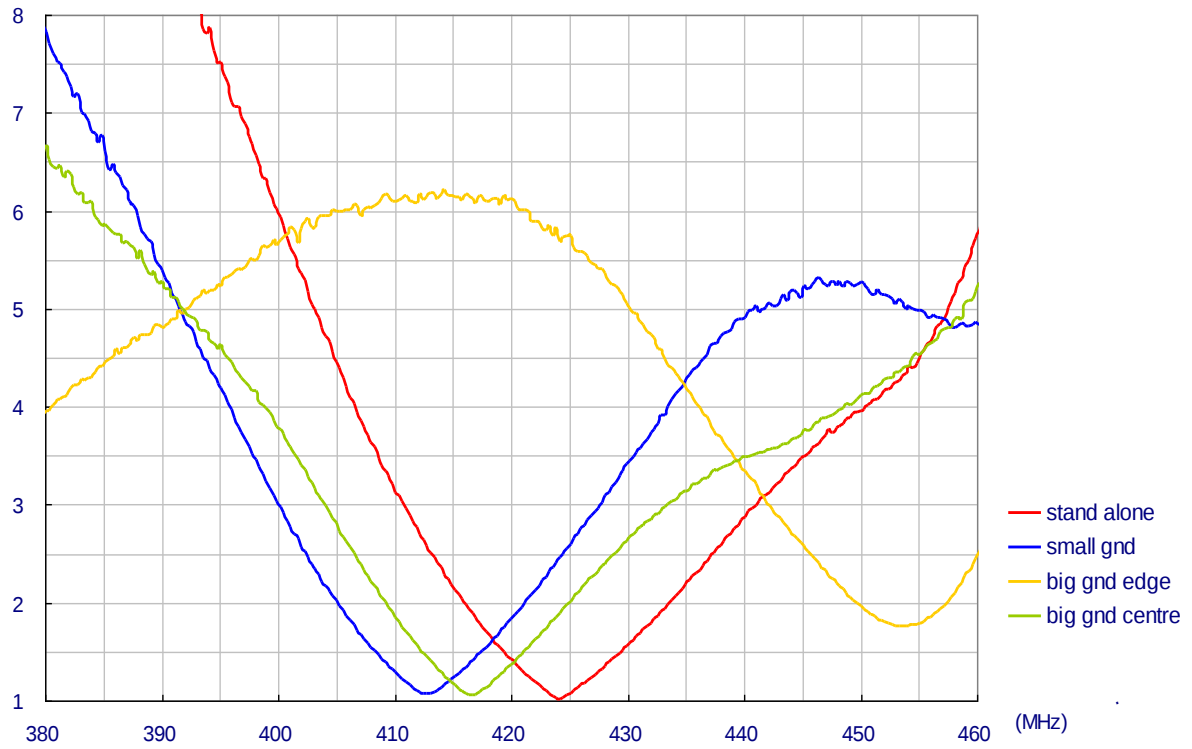
6.2 Straight Position Return Loss



6.3 Bend Position VSWR

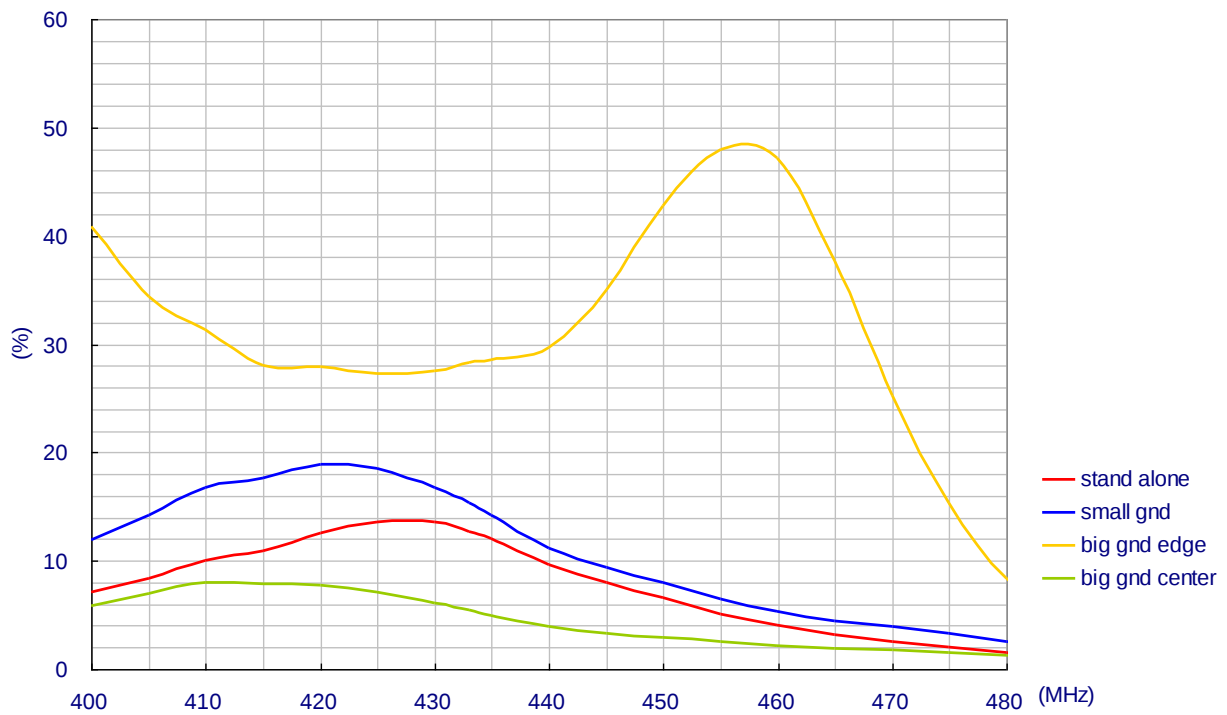


6.4 Straight Position VSWR

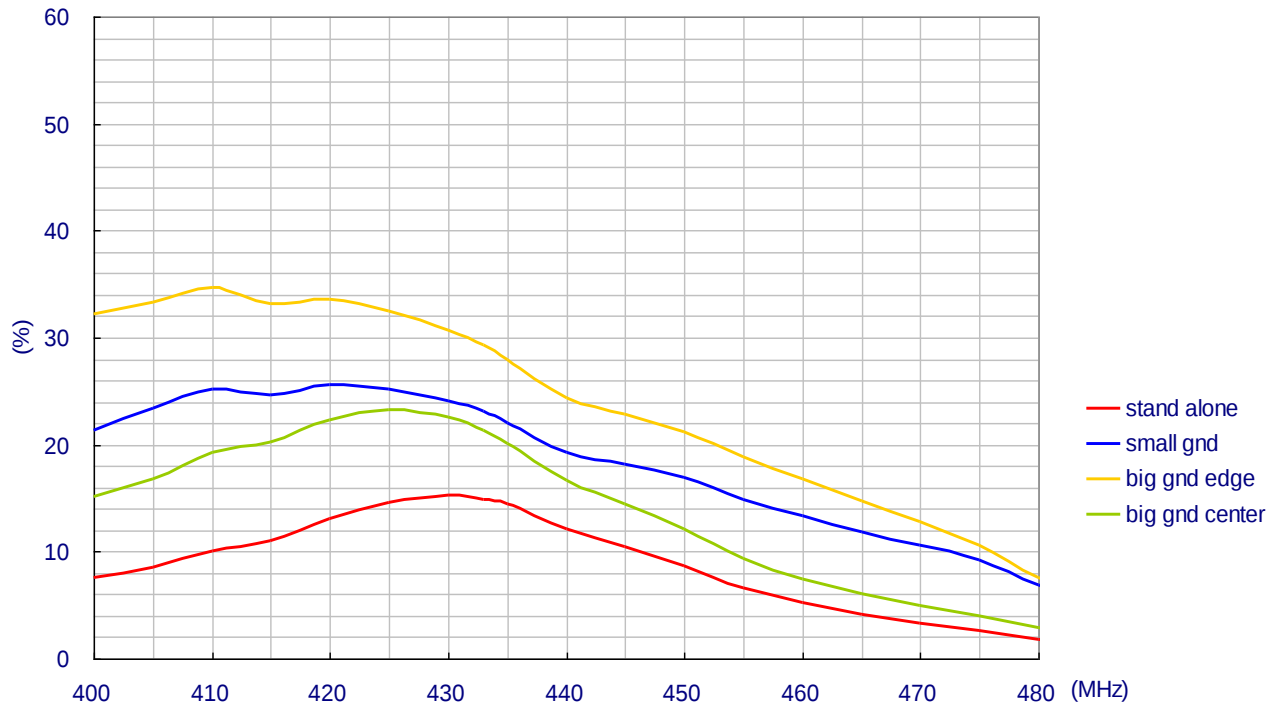


7. Antenna Radiation Property

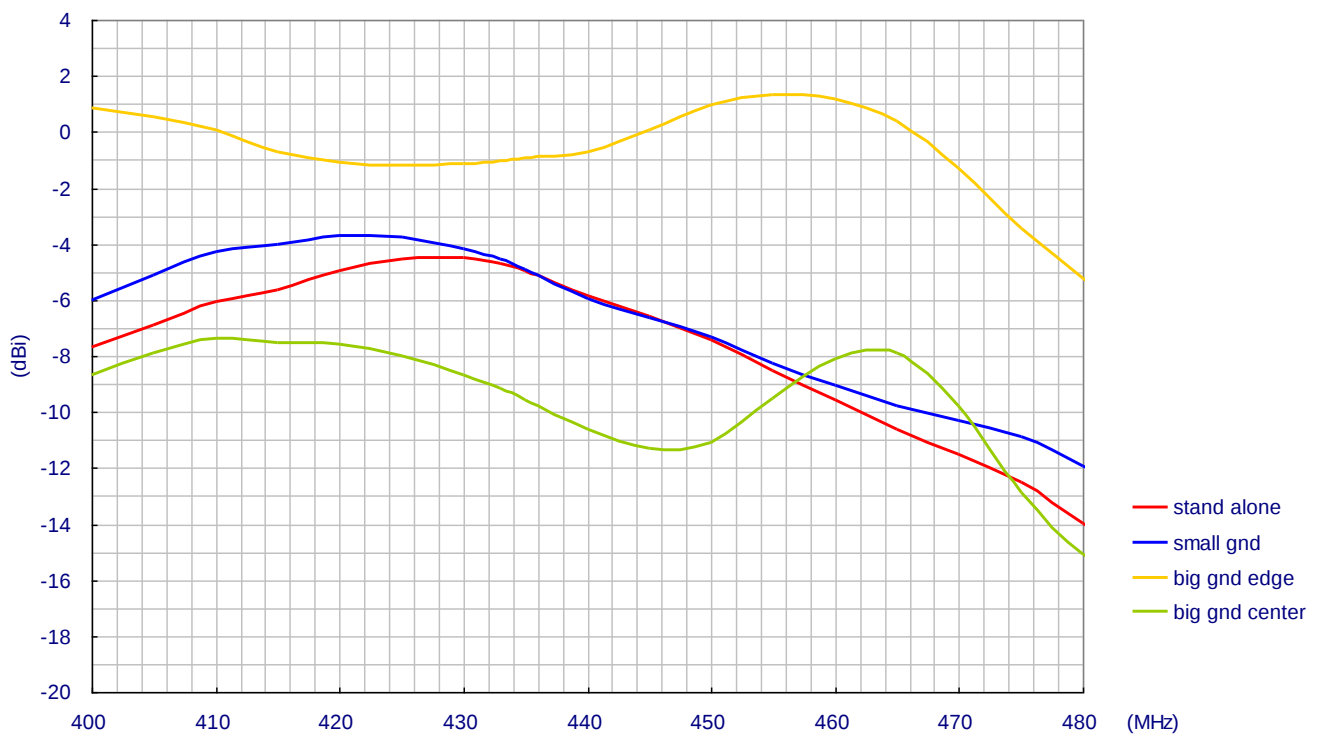
7.1. Bend Position Radiation Efficiency



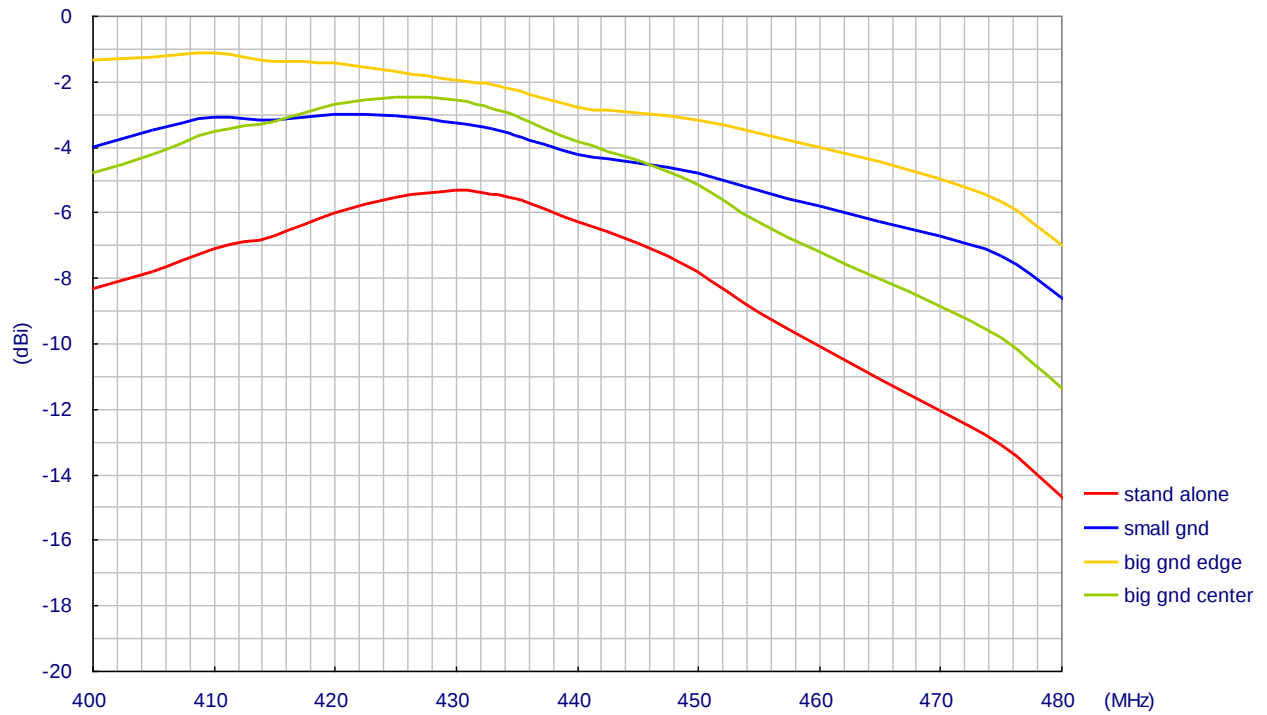
7.2. Straight Position Radiation Efficiency



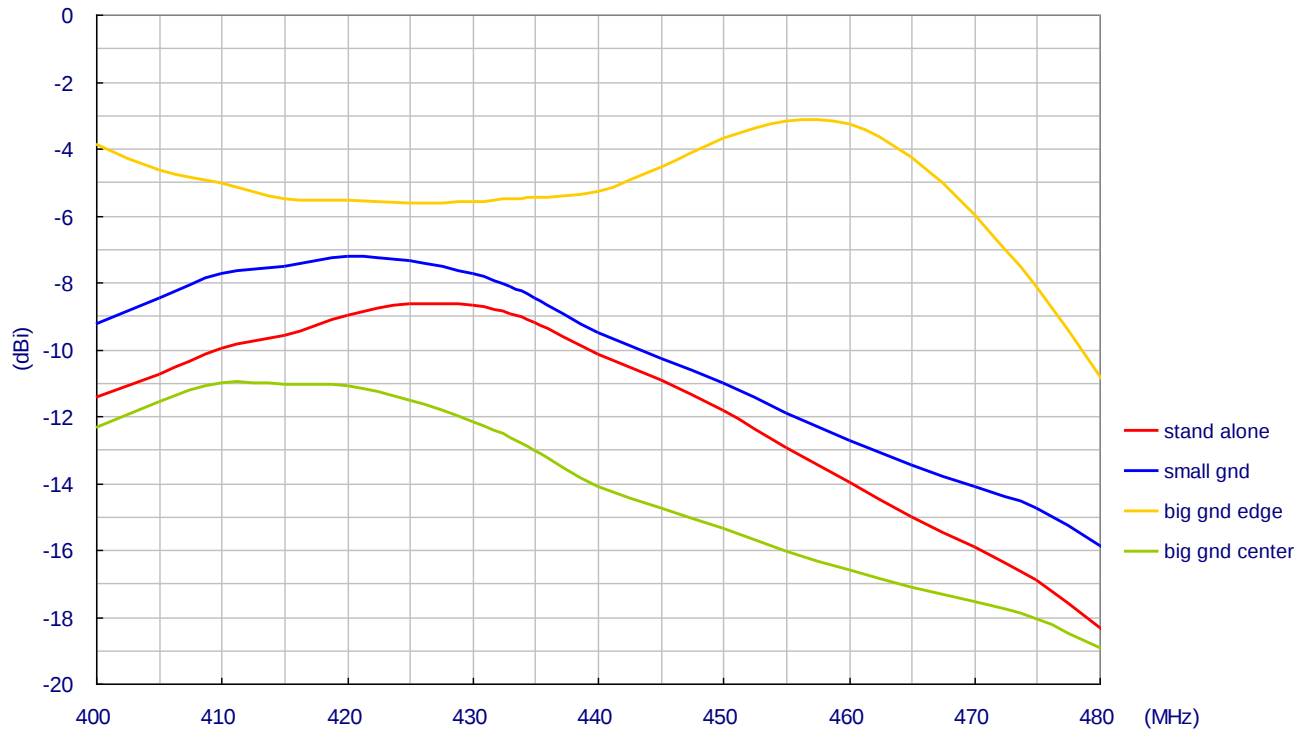
7.3. Bend Position Peak Gain



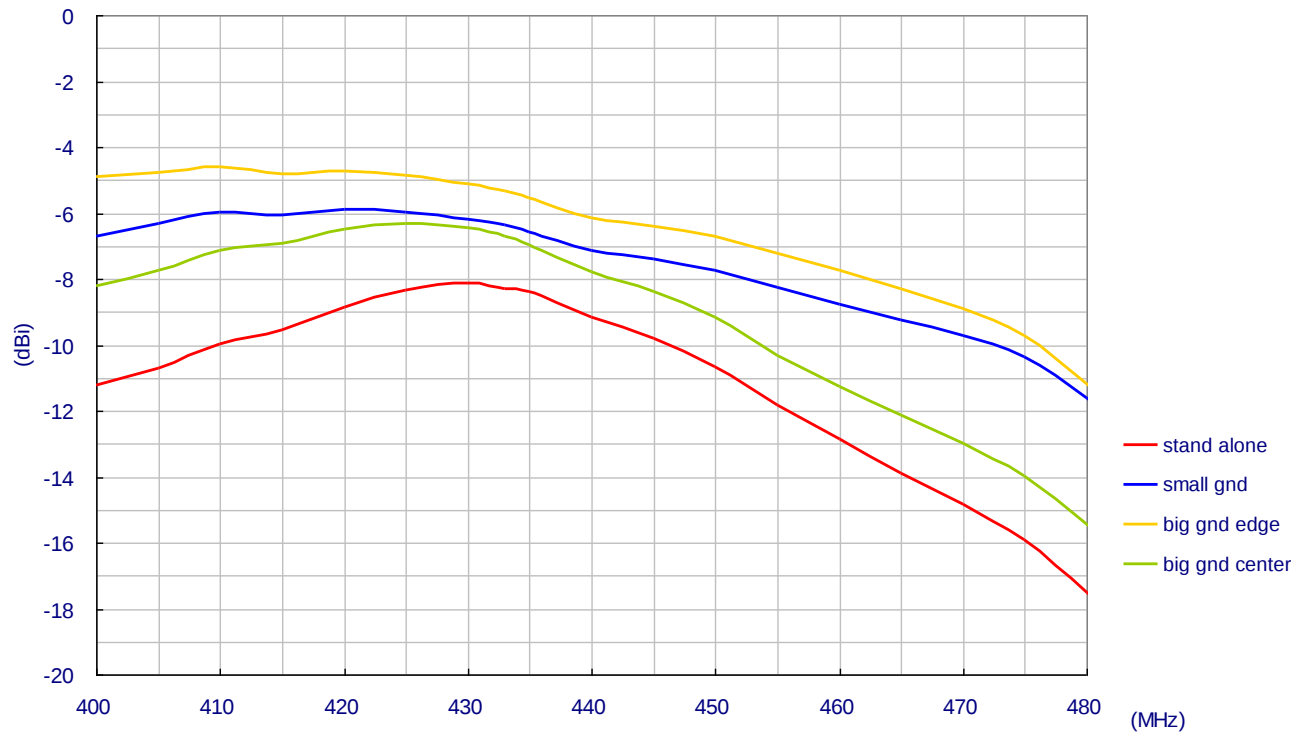
7.4. Straight Position Peak Gain



7.5. Bend Position Average Gain

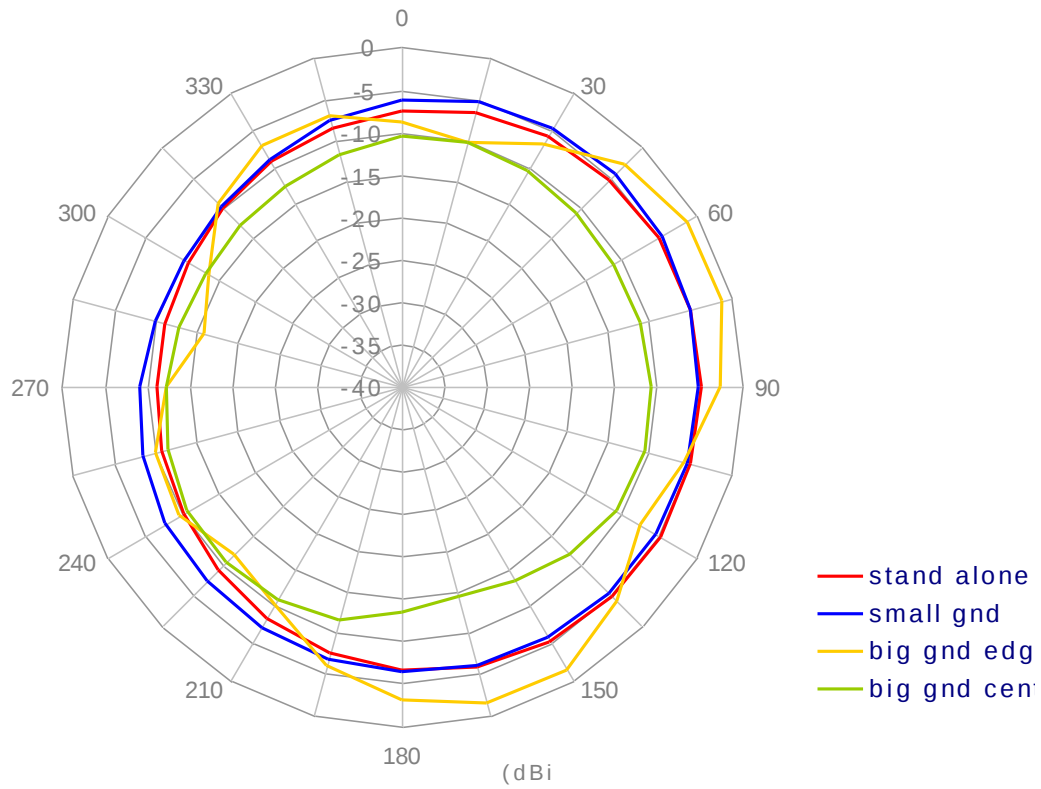


7.6. Straight Position Average Gain

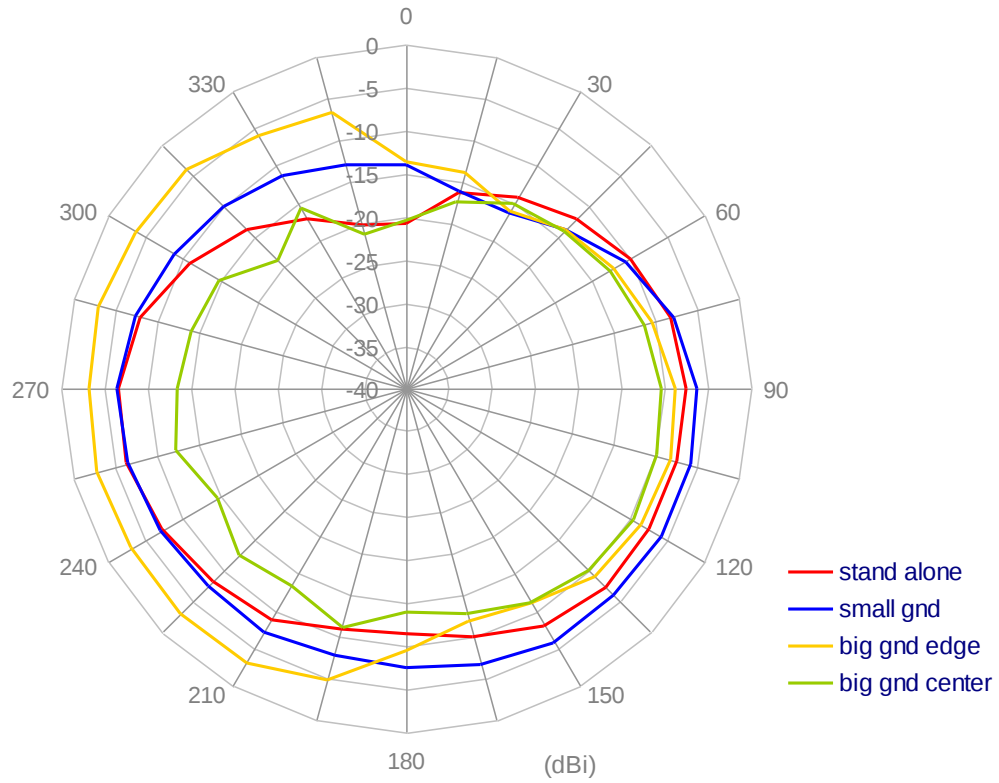


7.7. 433MHz Bend Position Radiation Pattern

H-plane Radiation

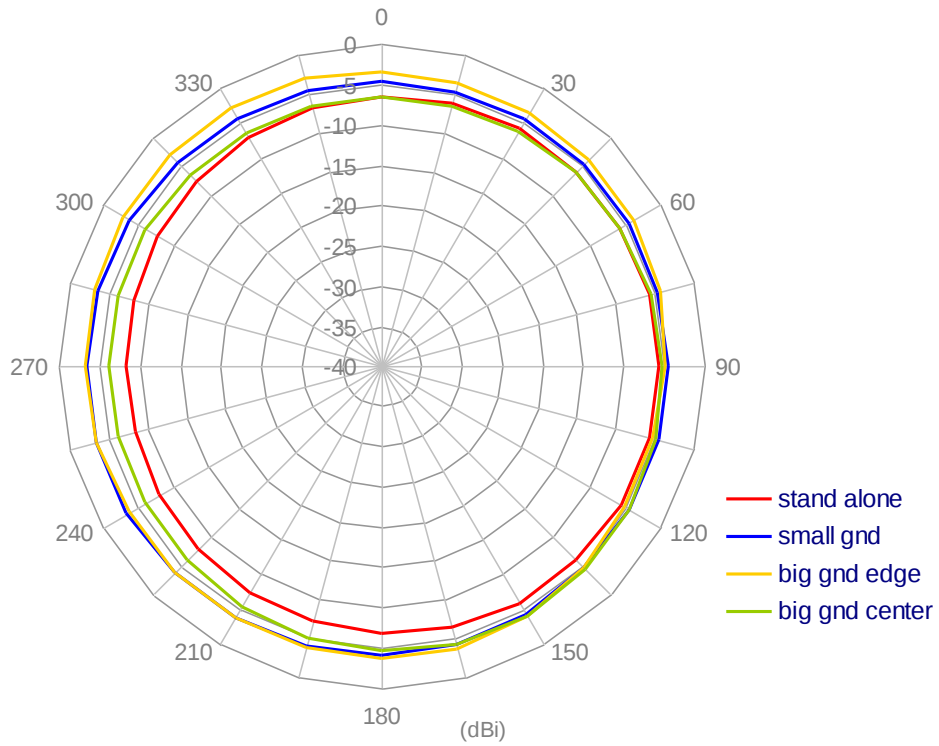


E-plane Radiation

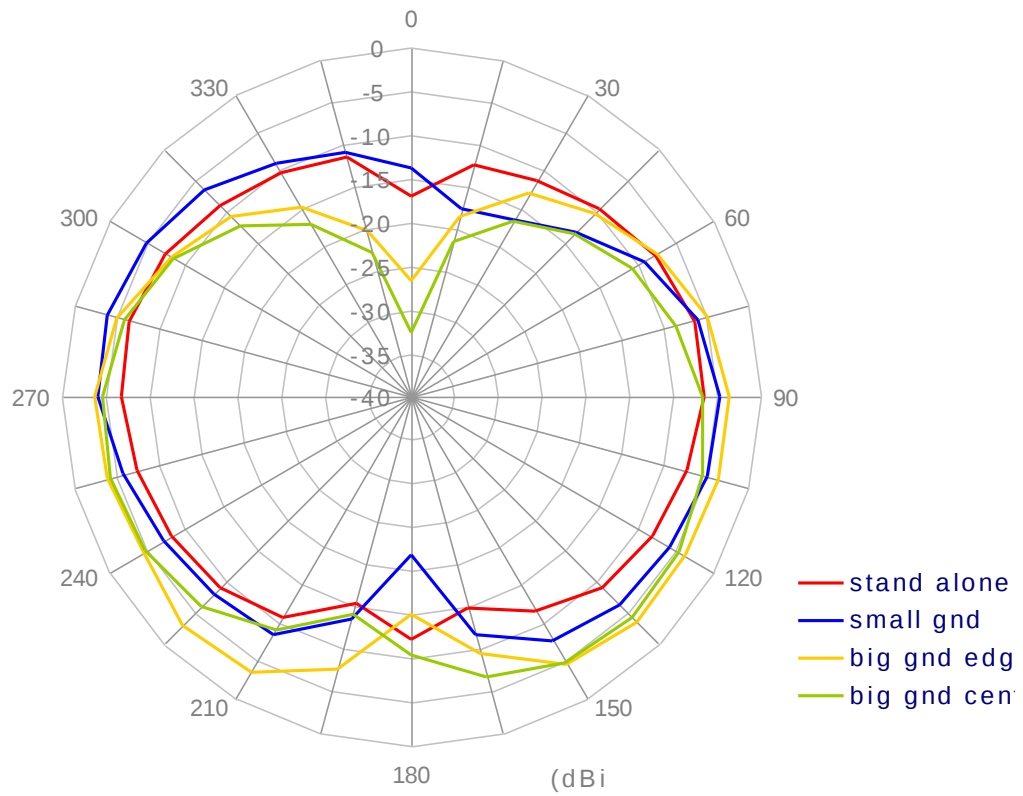


7.8. 433MHz Straight Position Radiation Pattern

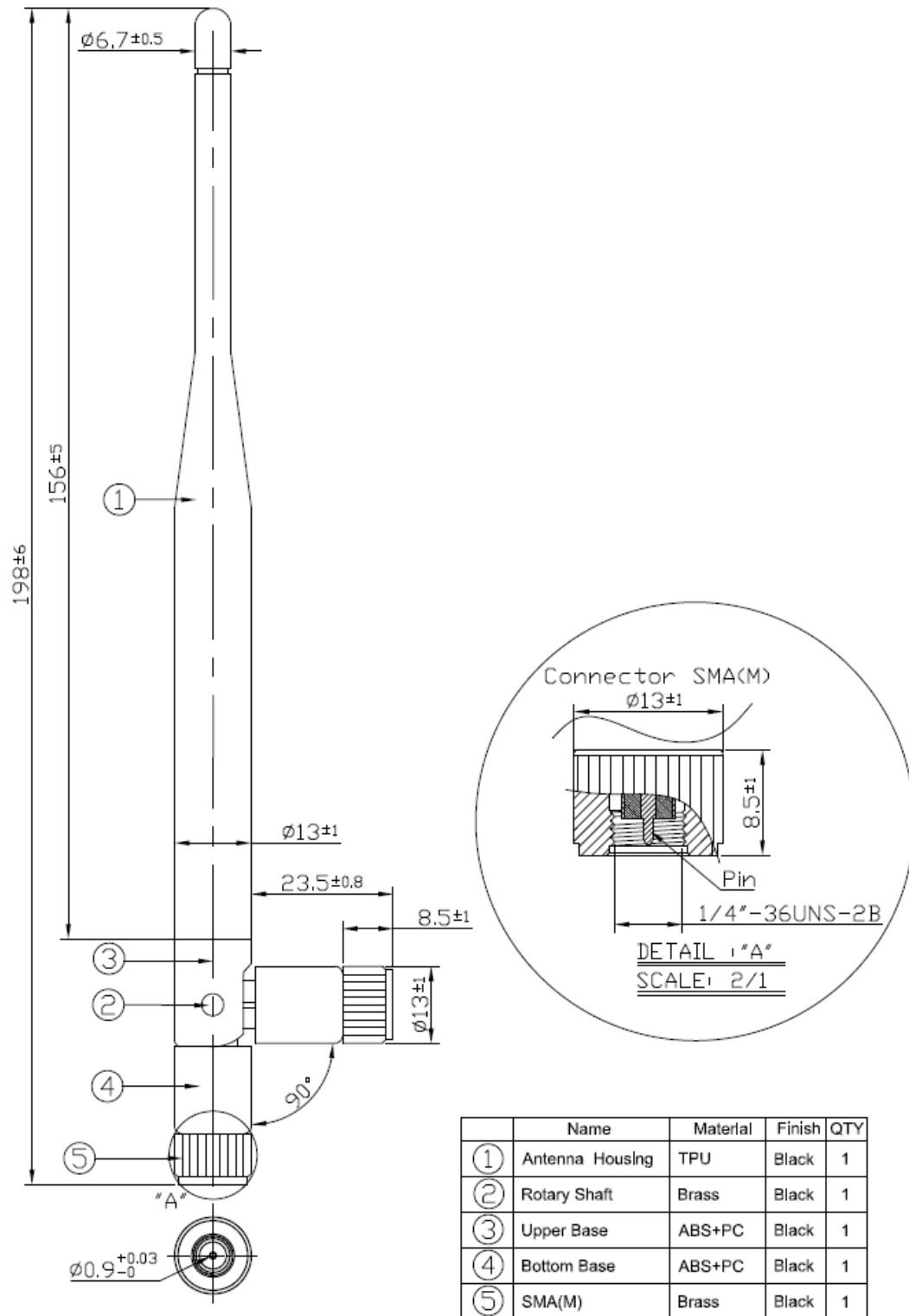
H-plane Radiation



E-plane Radiation



8. Mechanical Drawing (unit:mm)



Mouser Electronics

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