

## 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.

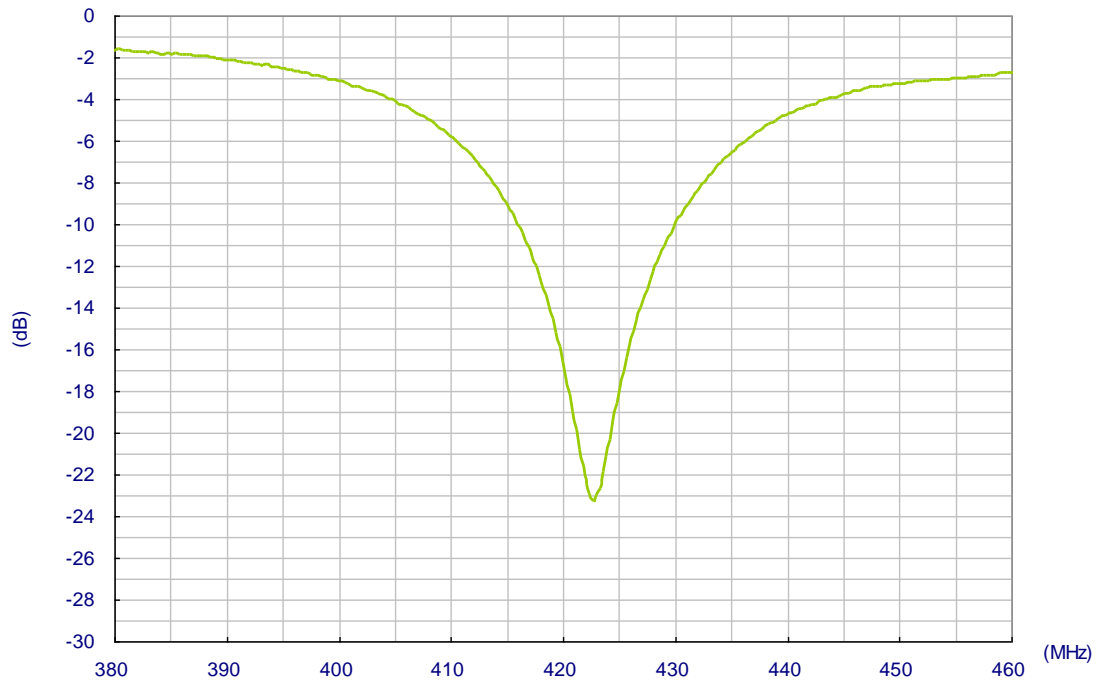
## 2. Specification

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 φ13 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%

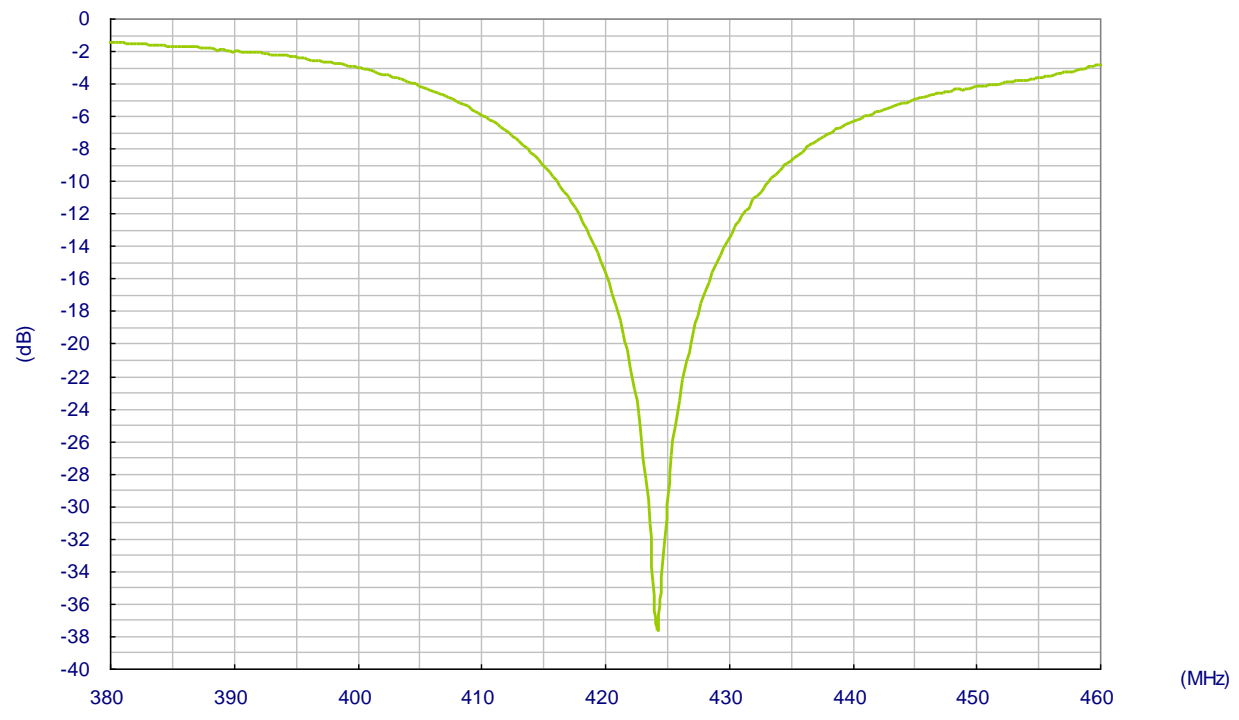
\* Electrical properties are measured with the antenna in bend position in free space.

## 3. Antenna S11 Property

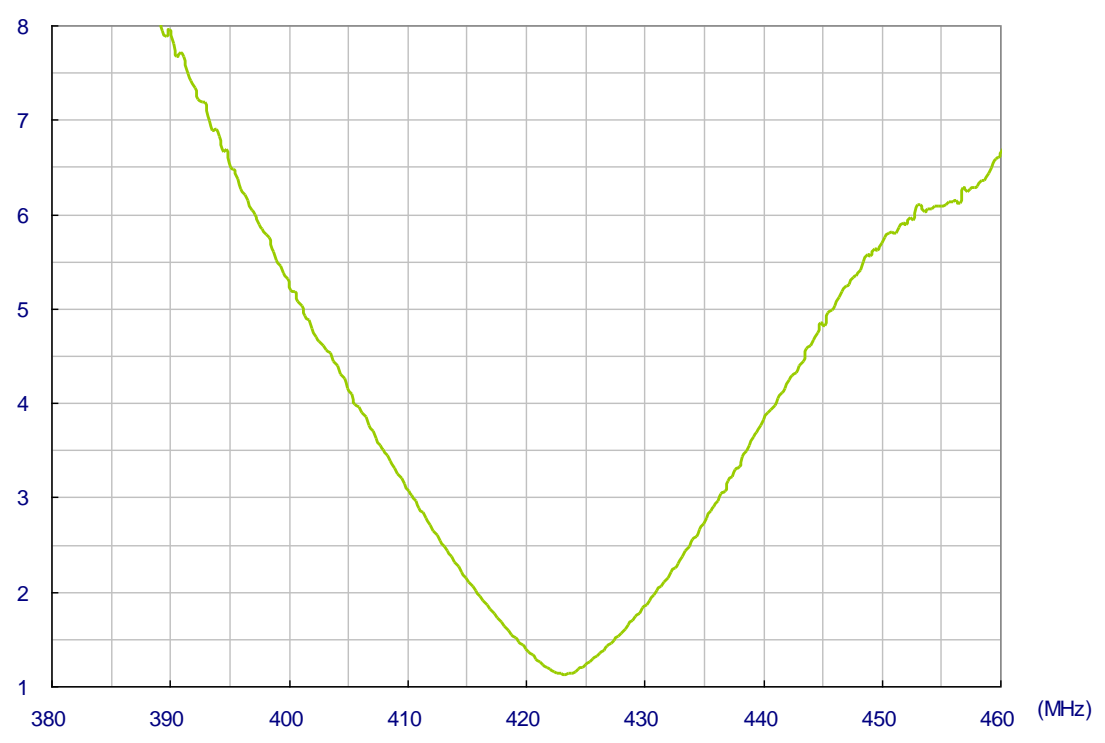
### 3.1. Bend Position Return Loss



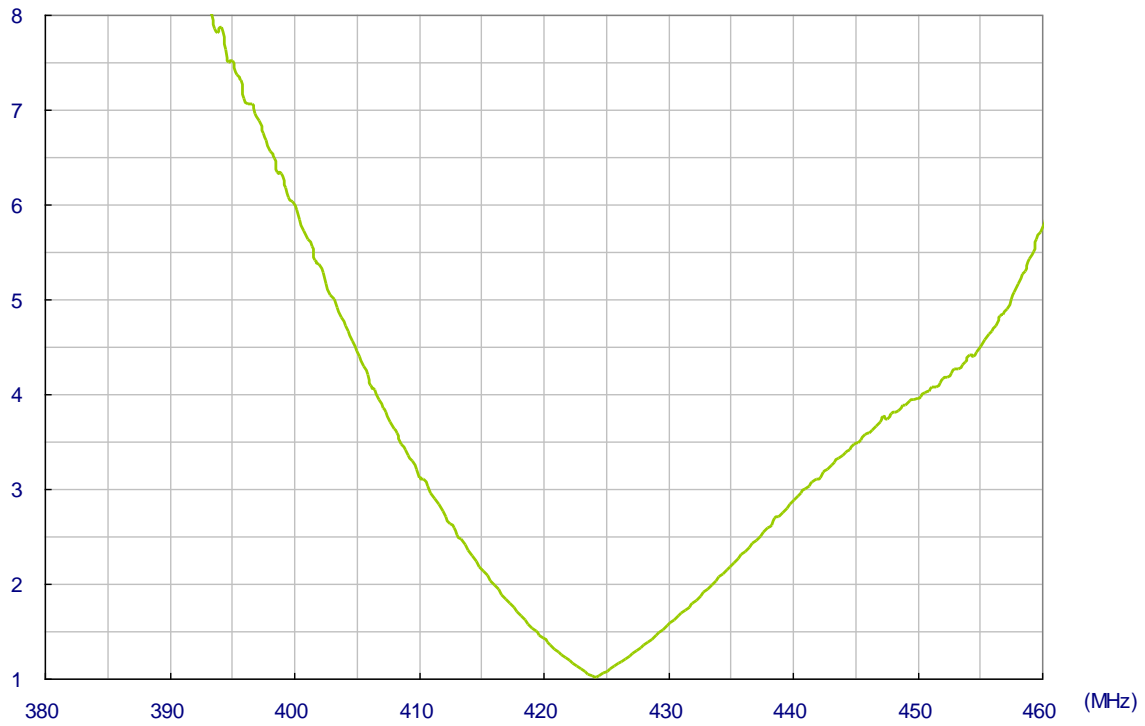
### 3.2. 180 Degree Straight Position Return Loss



### 3.3. Bend Position VSWR

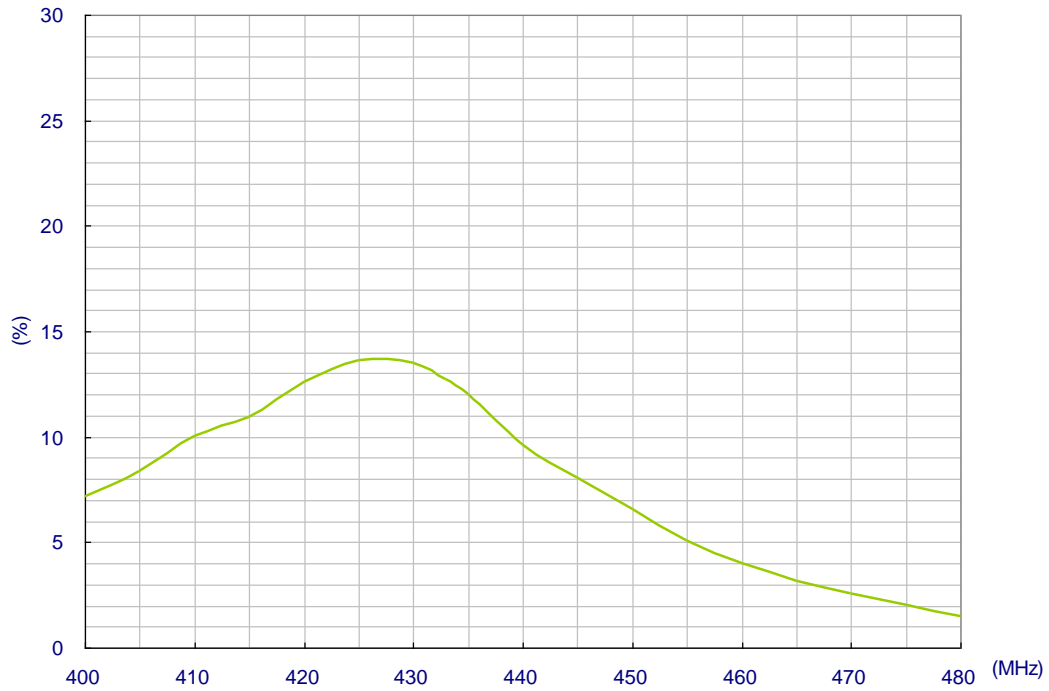


### 3.4. Straight Position VSWR

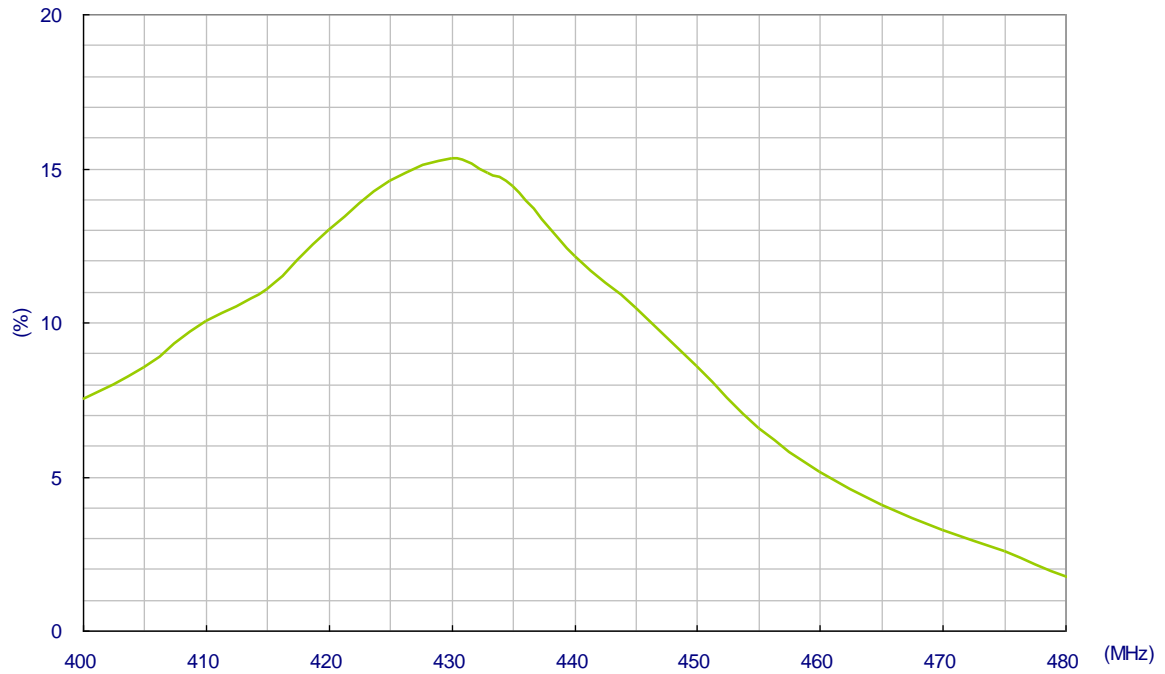


## 4. Antenna Radiation Property

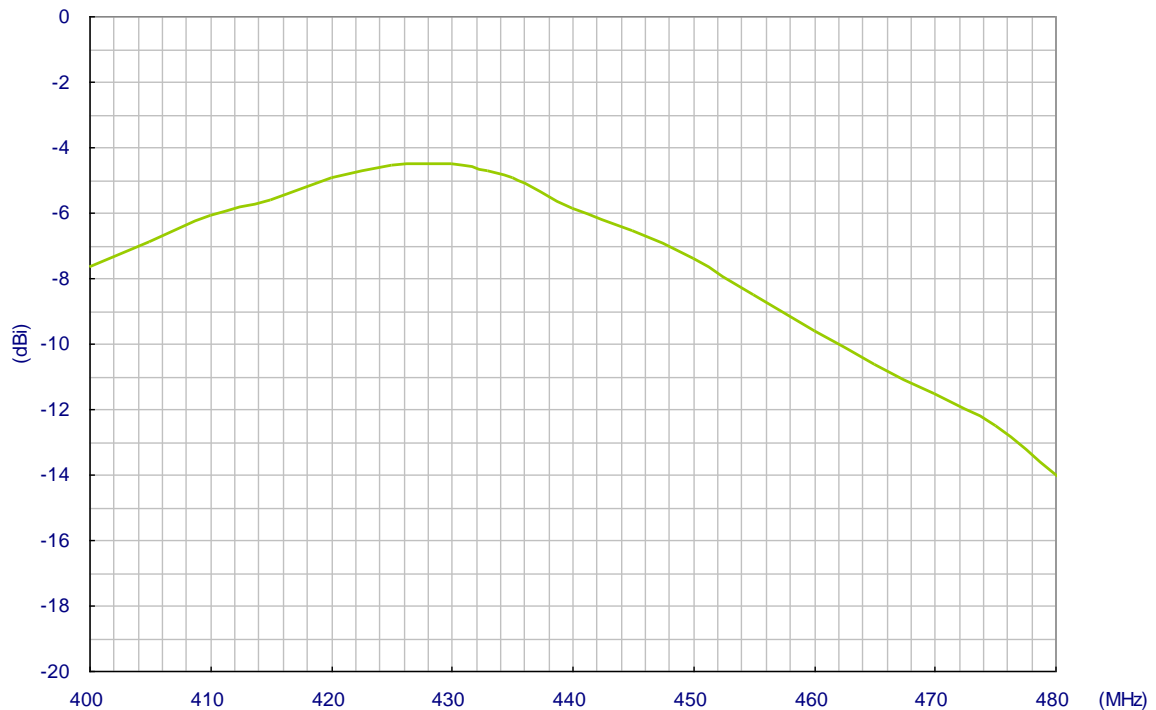
### 4.1. Bend Position Radiation Efficiency



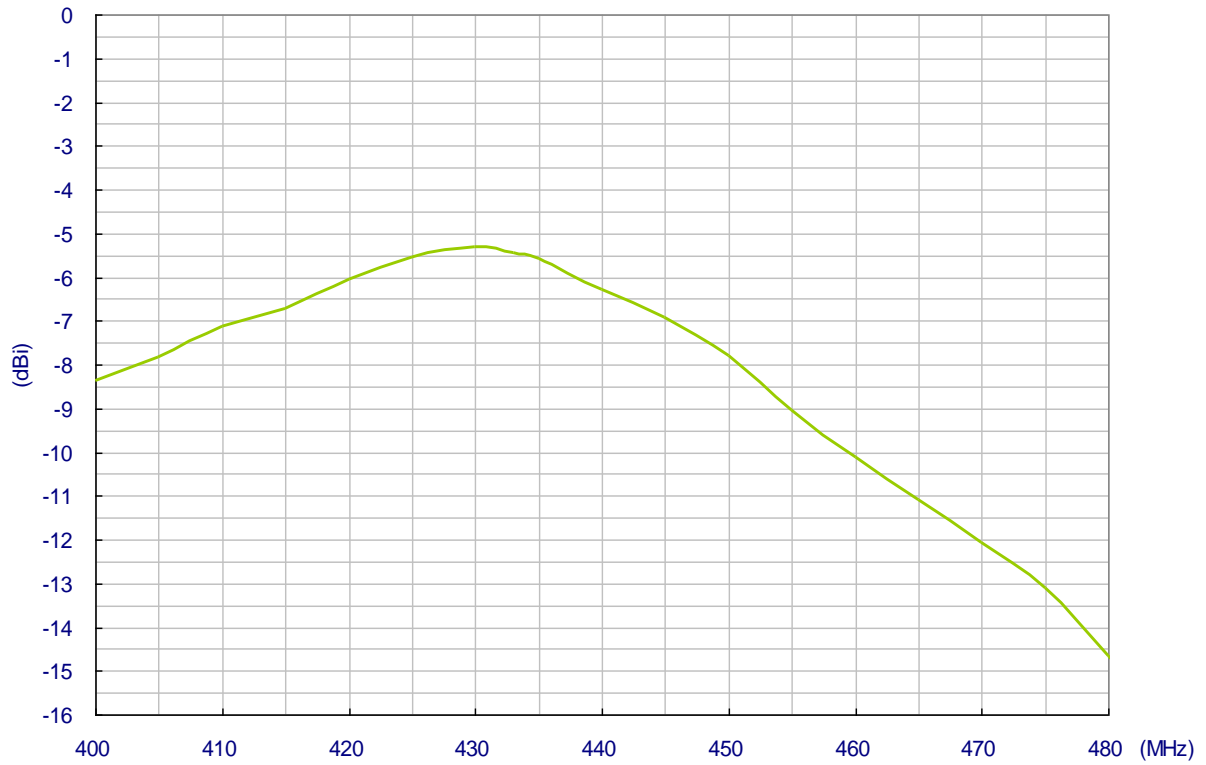
## 4.2. Straight Position Radiation Efficiency



## 4.3. Bend Position Peak Gain

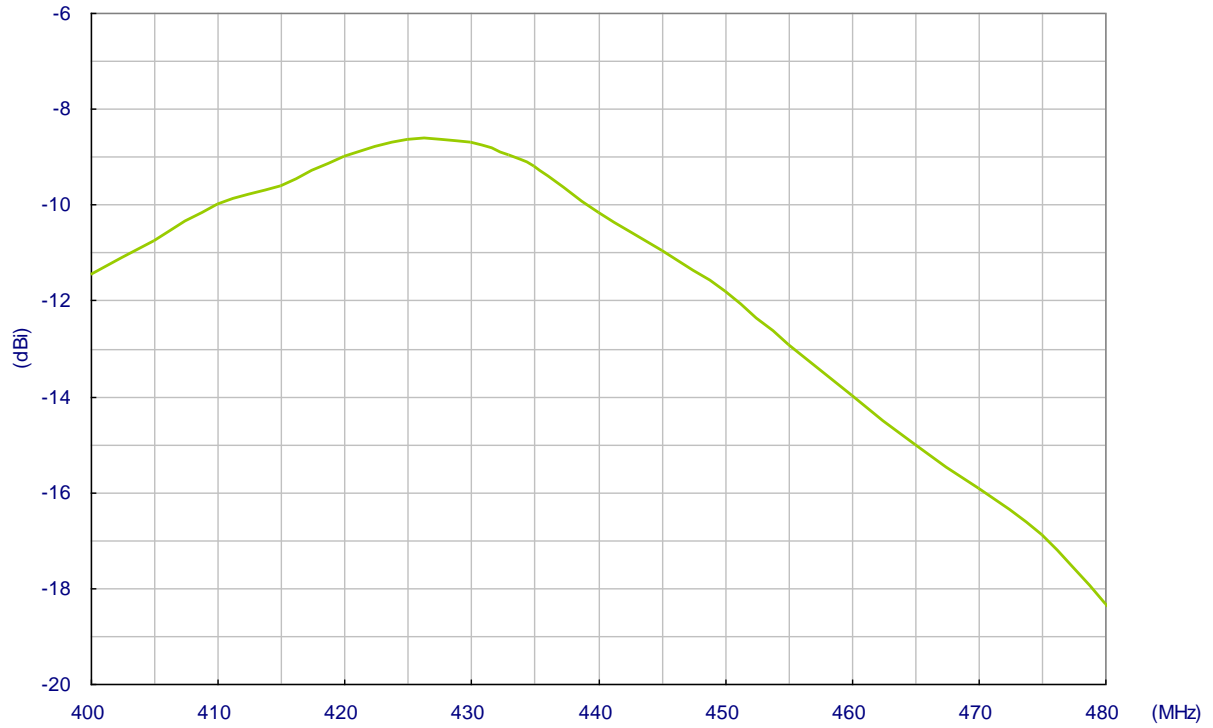


#### 4.4. Straight Position Peak Gain

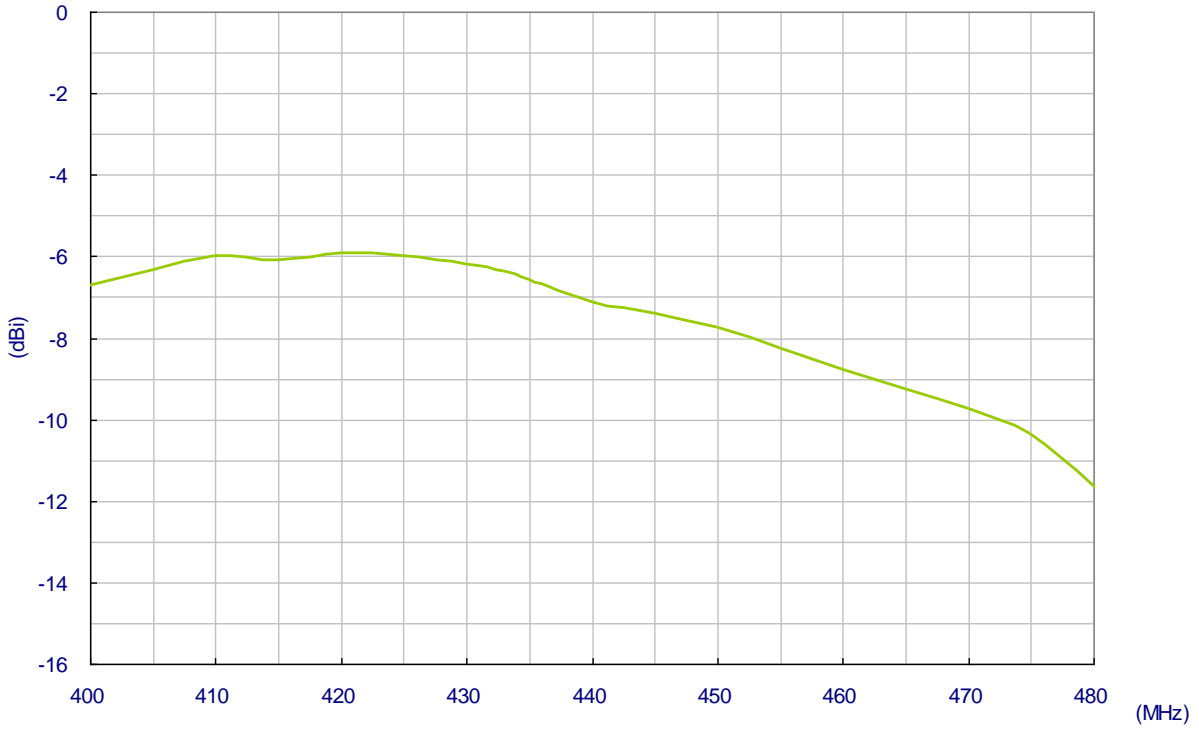




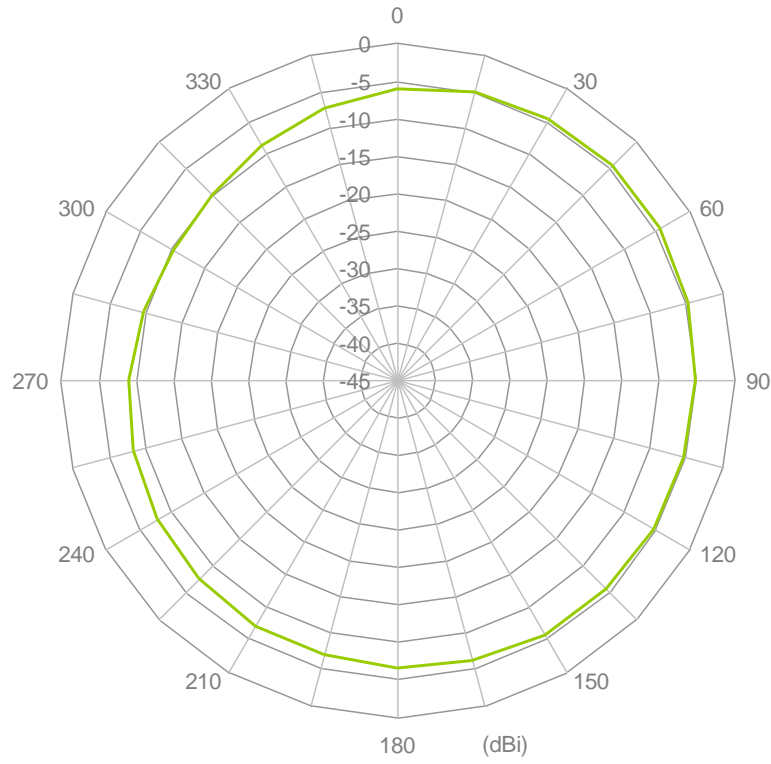
## 4.5. Bend Position Average Gain



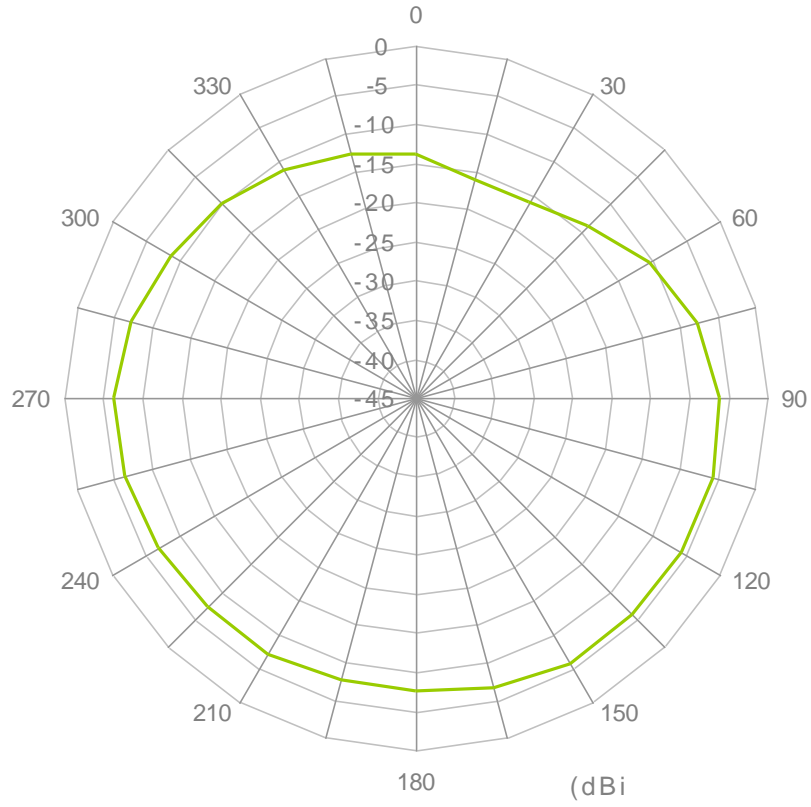
### 4.6. Straight Position Average Gain



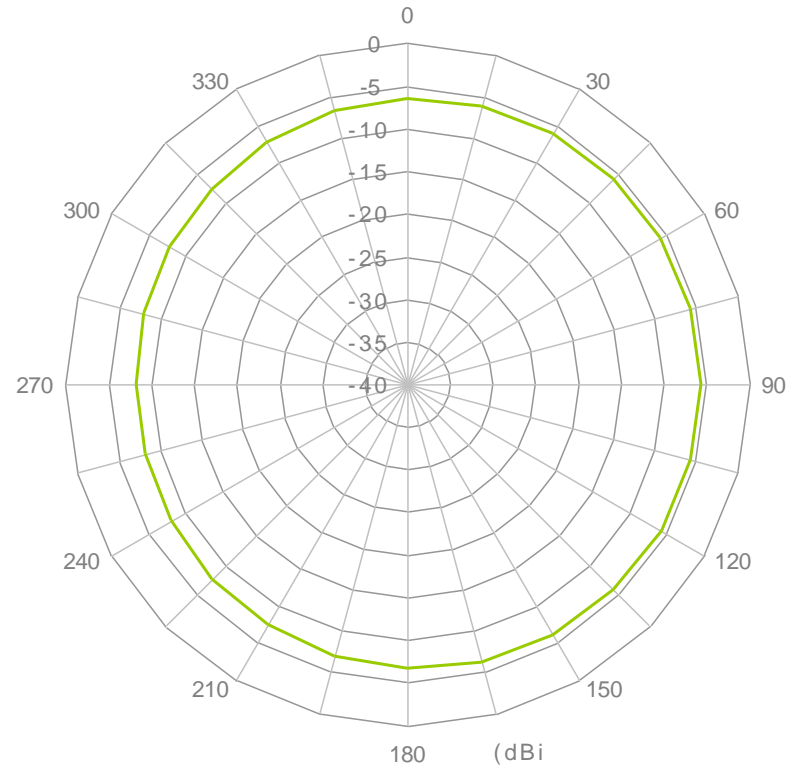
### 4.7. 433MHz Bend Position Radiation Pattern H-plane Radiation



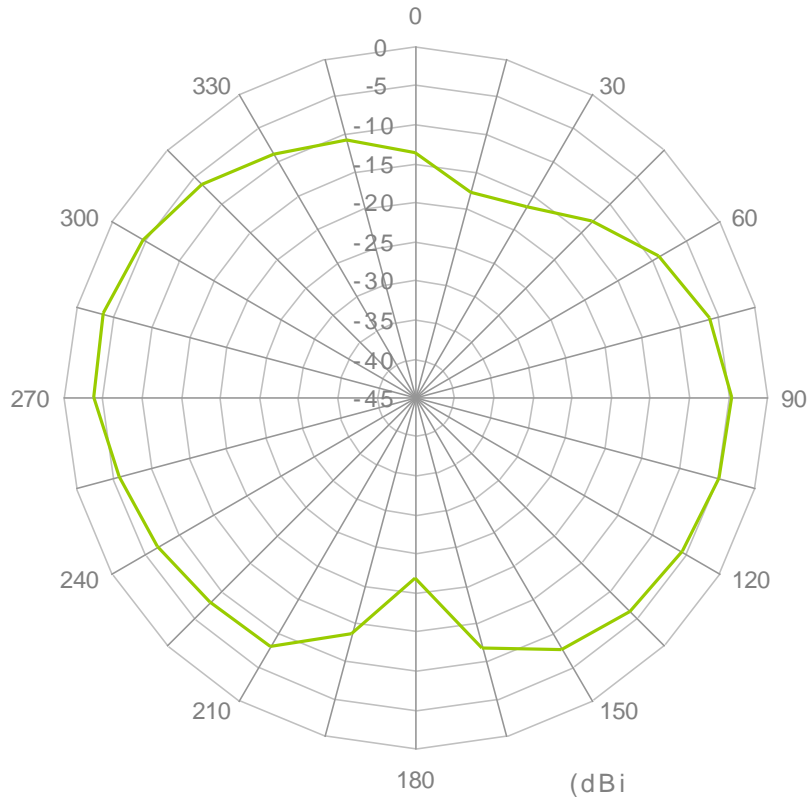
# E-plane Radiation



### 4.8. 433MHz Straight Position Radiation Pattern H-plane Radiation



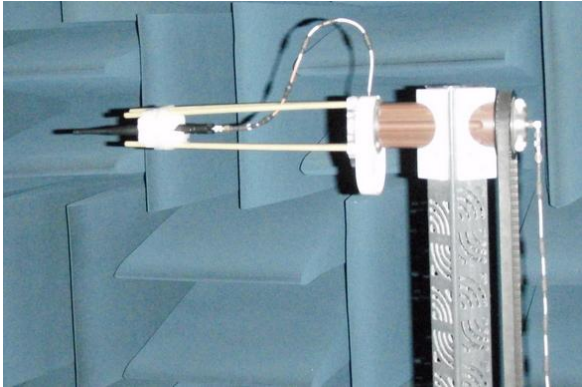
## E-plane Radiation



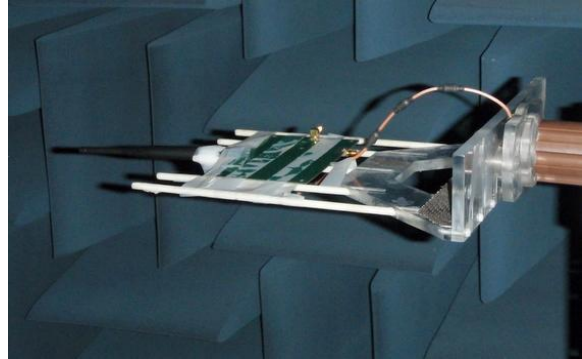
## 5. Ground Plane Effect

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.



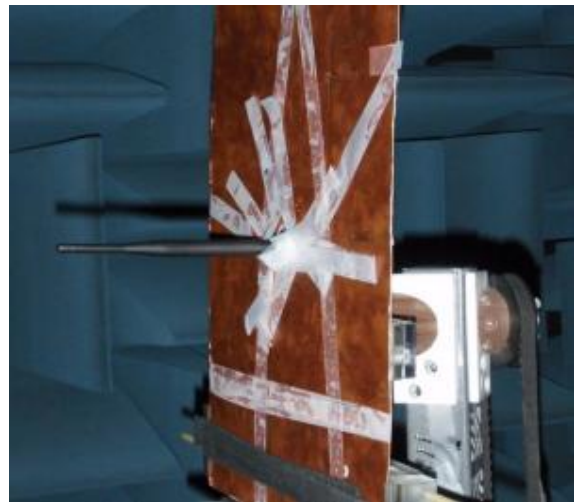
Free space



Small ground edge



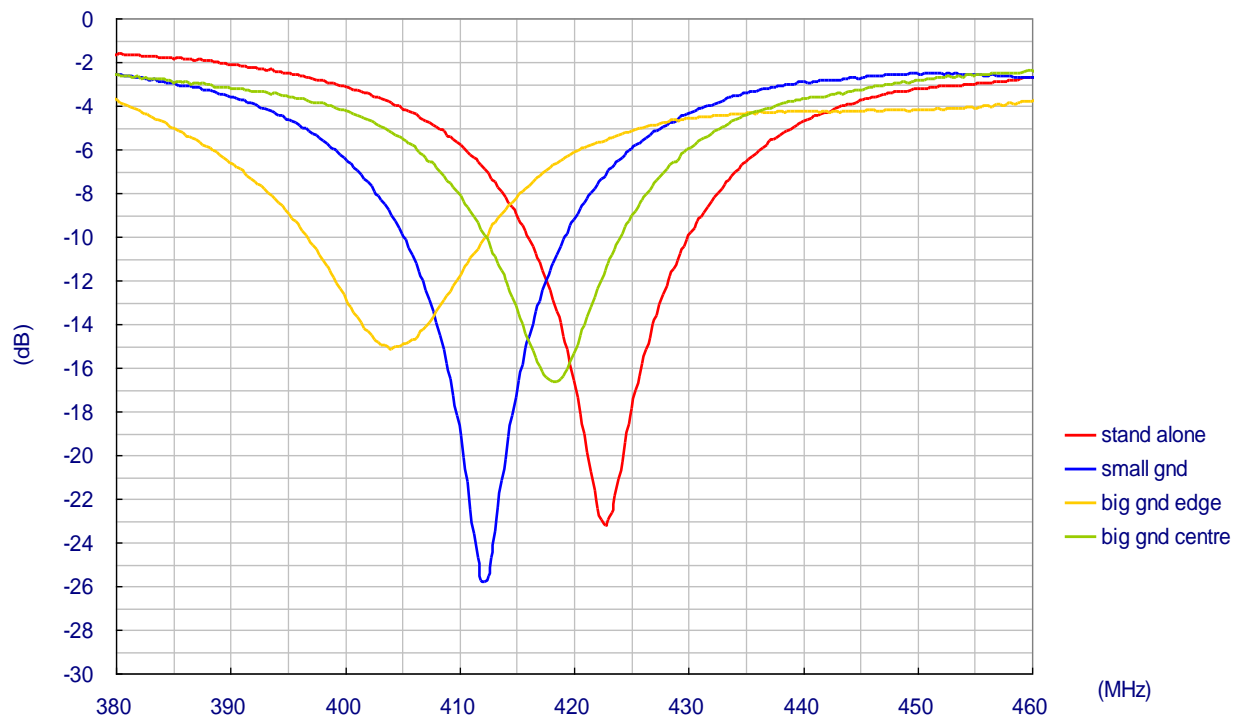
Big ground edge



Big ground center

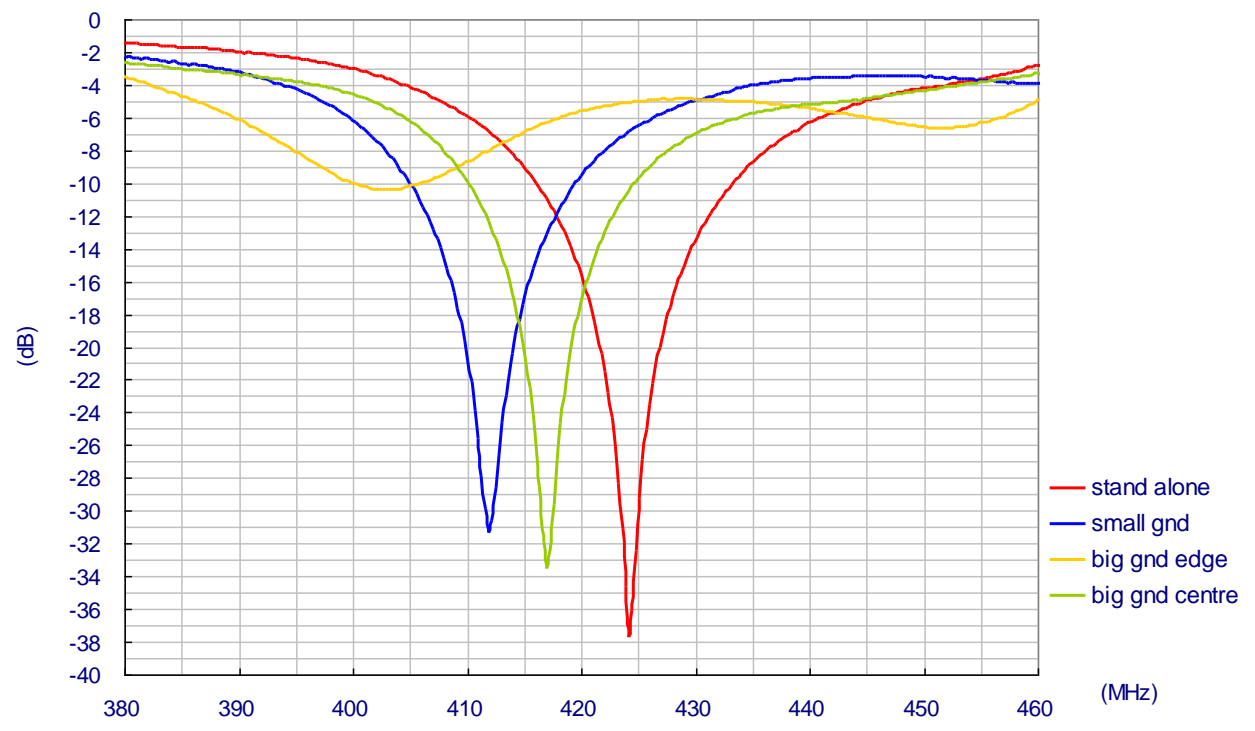
## 6.S11 Performance of TI.15 with Different Ground

### 6.1 Bend Position Return Loss

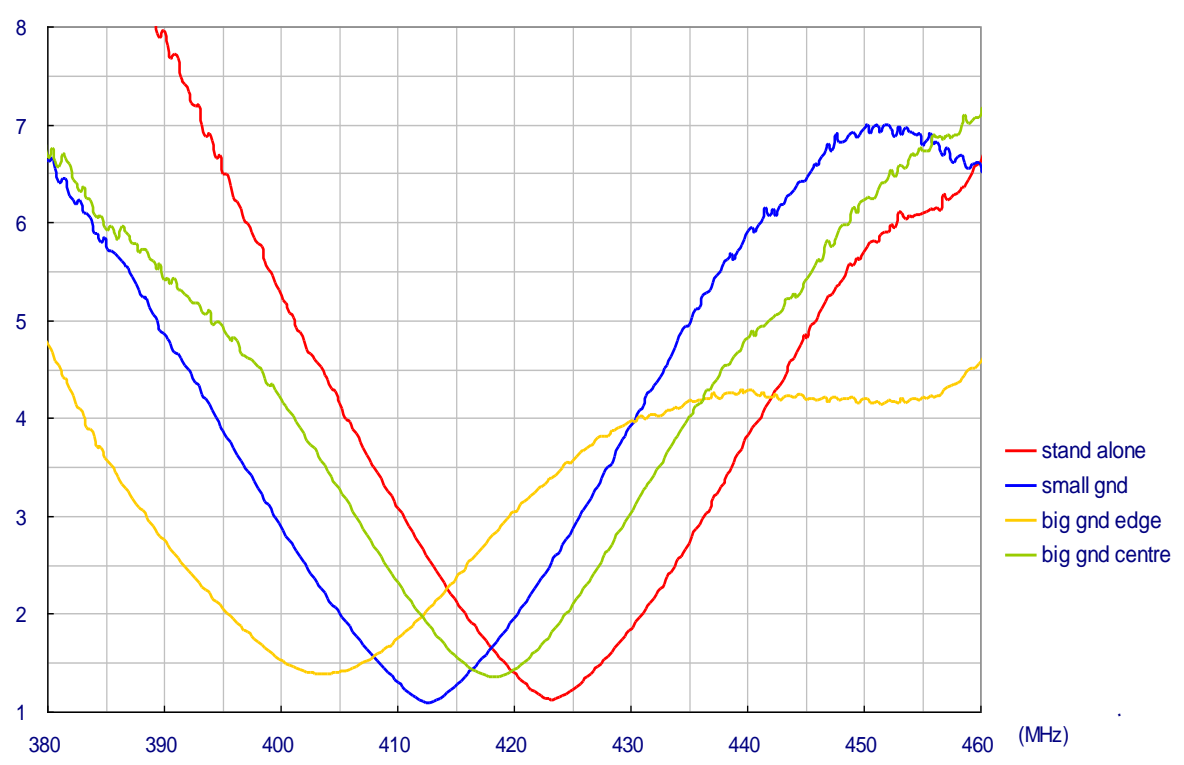




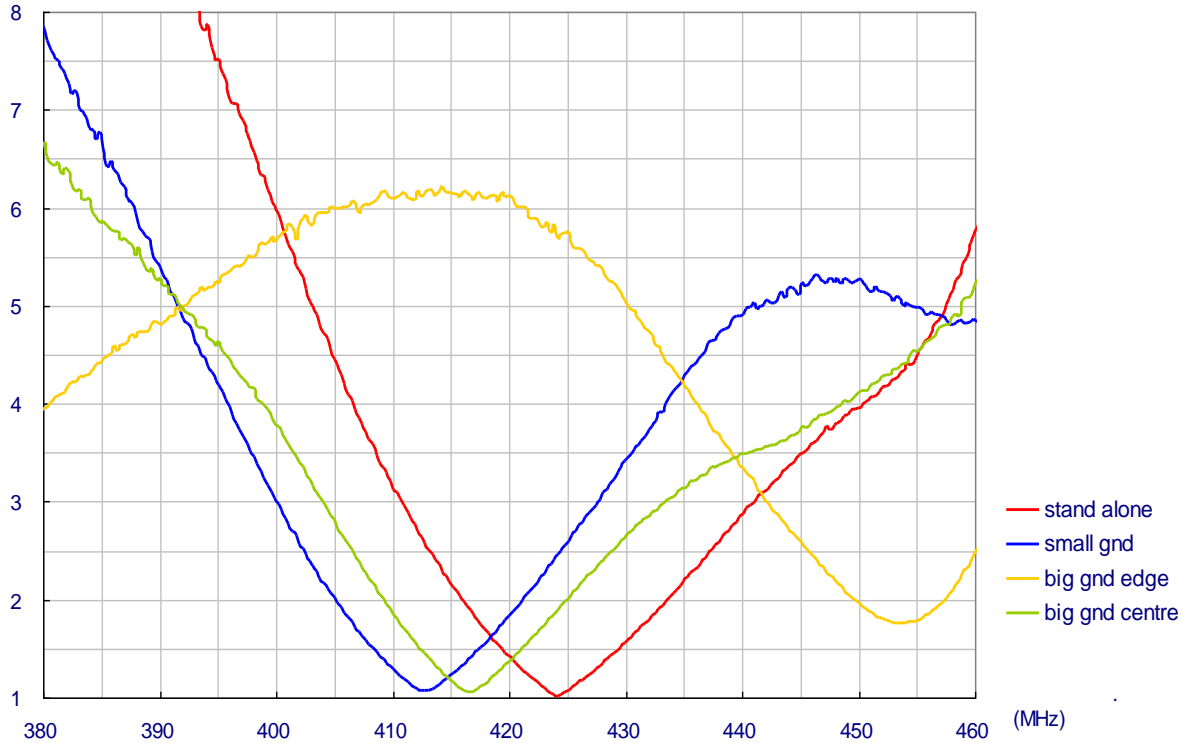
## 6.2 Straight Position Return Loss



## 6.3 Bend Position VSWR

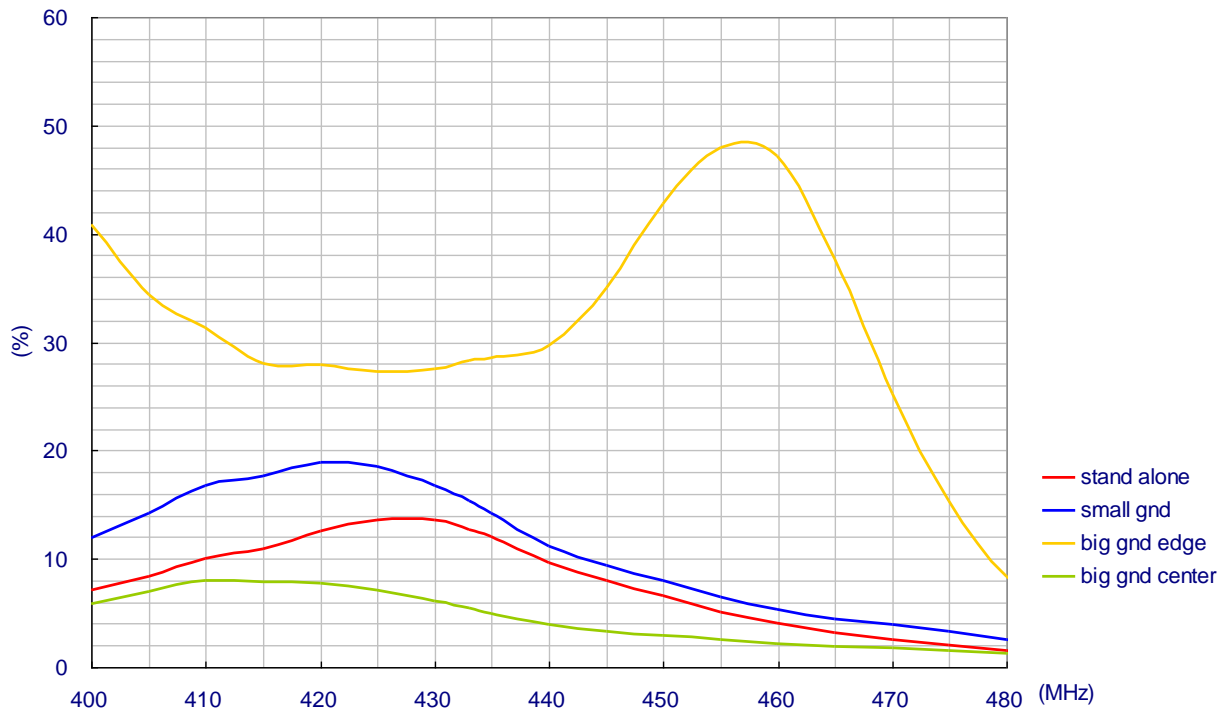


## 6.4 Straight Position VSWR

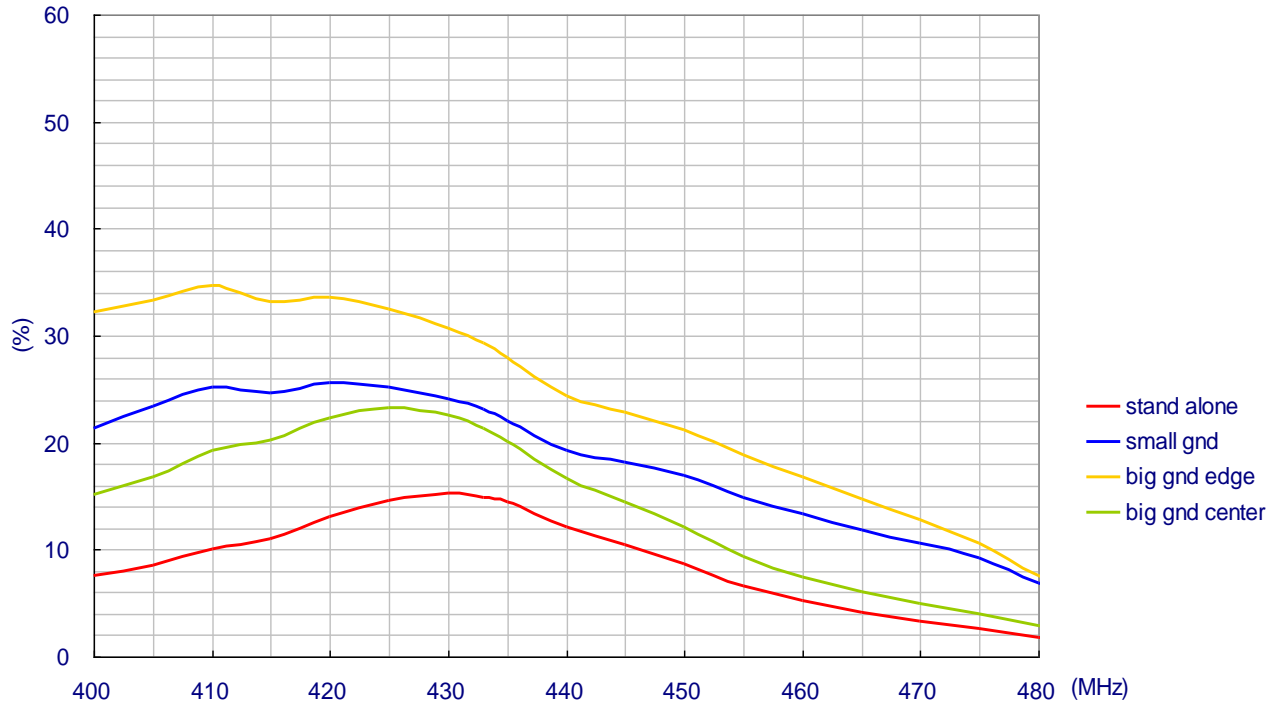


## 7. Antenna Radiation Property

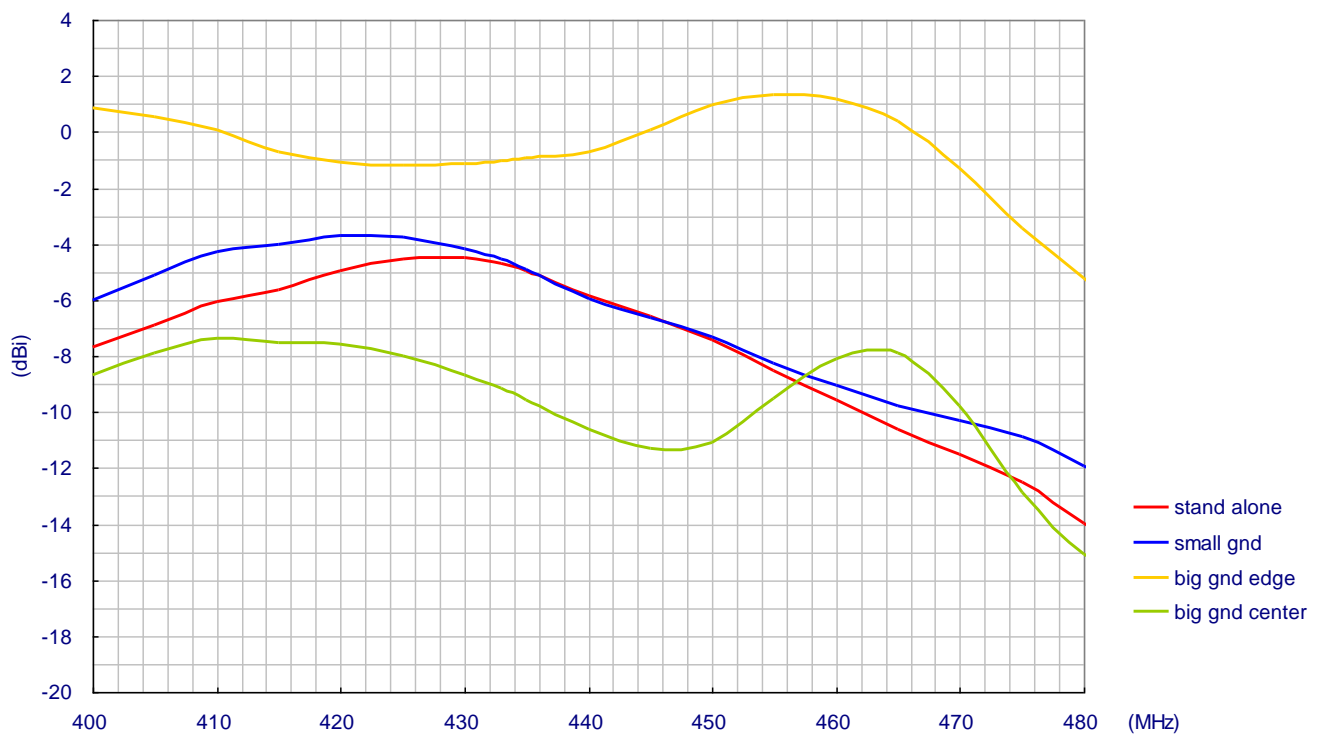
### 7.1. Bend Position Radiation Efficiency



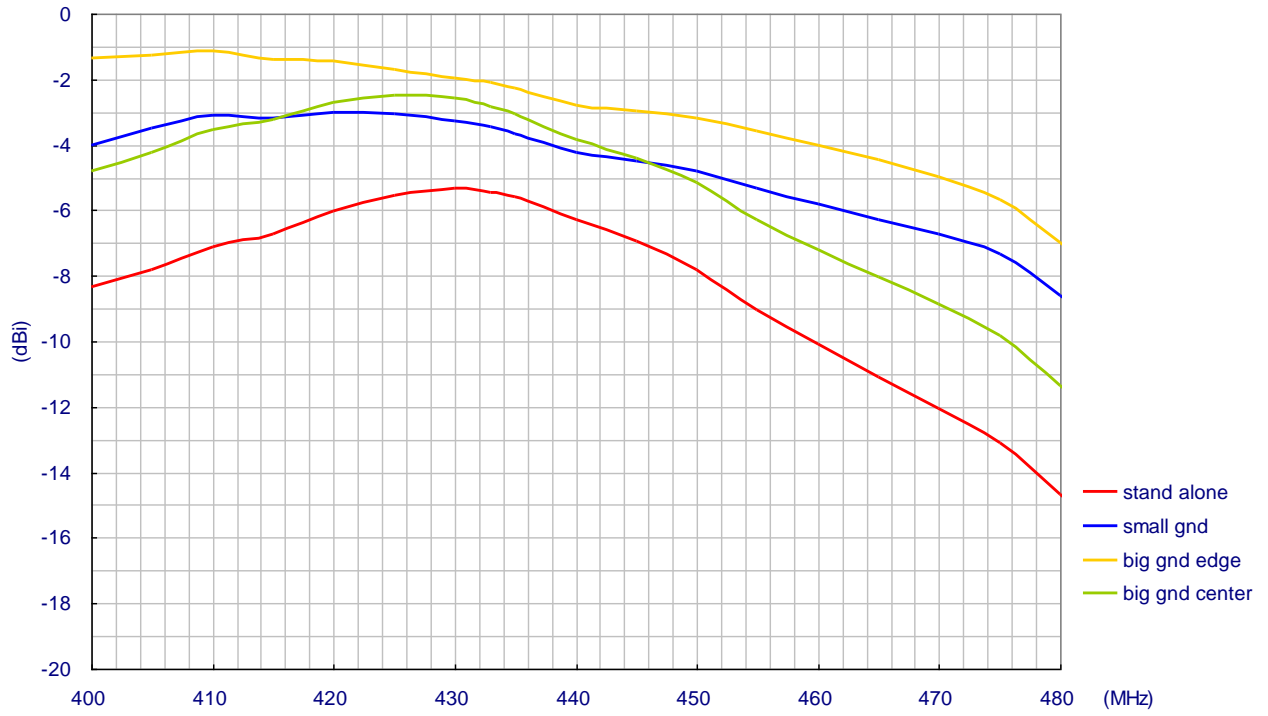
## 7.2. Straight Position Radiation Efficiency



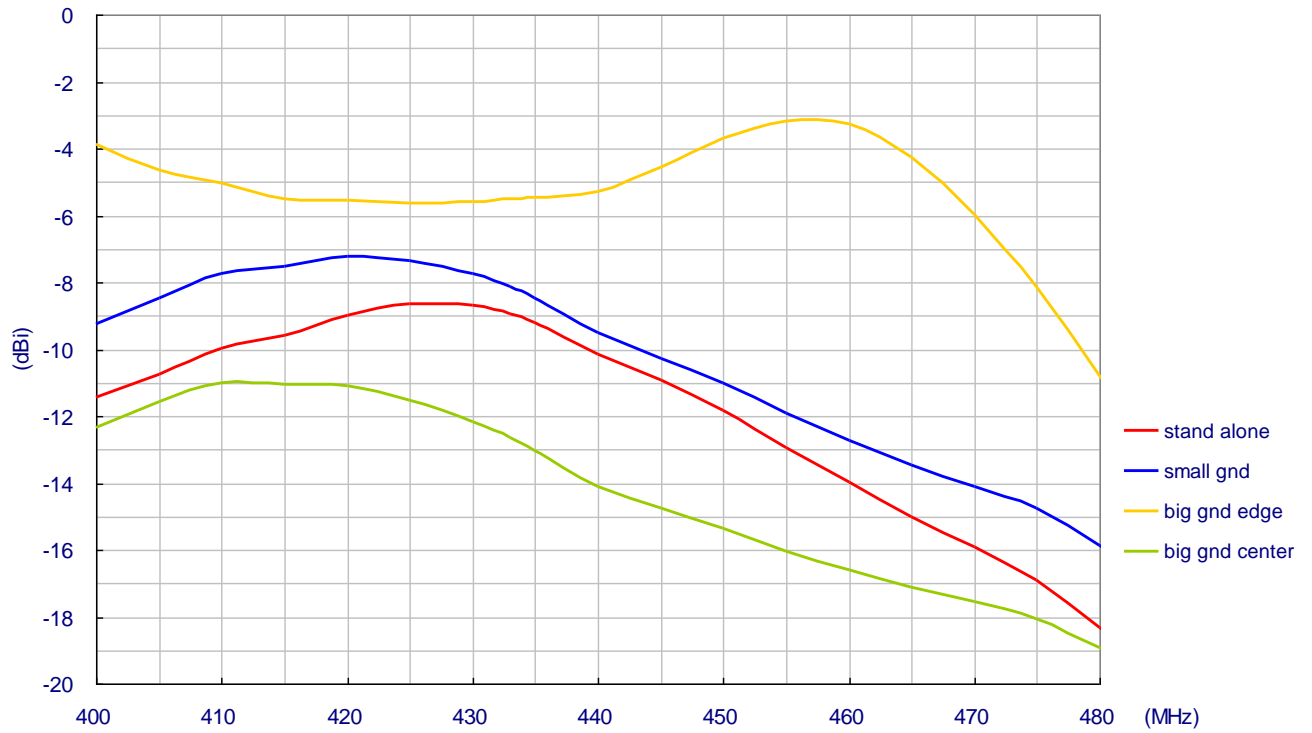
## 7.3. Bend Position Peak Gain



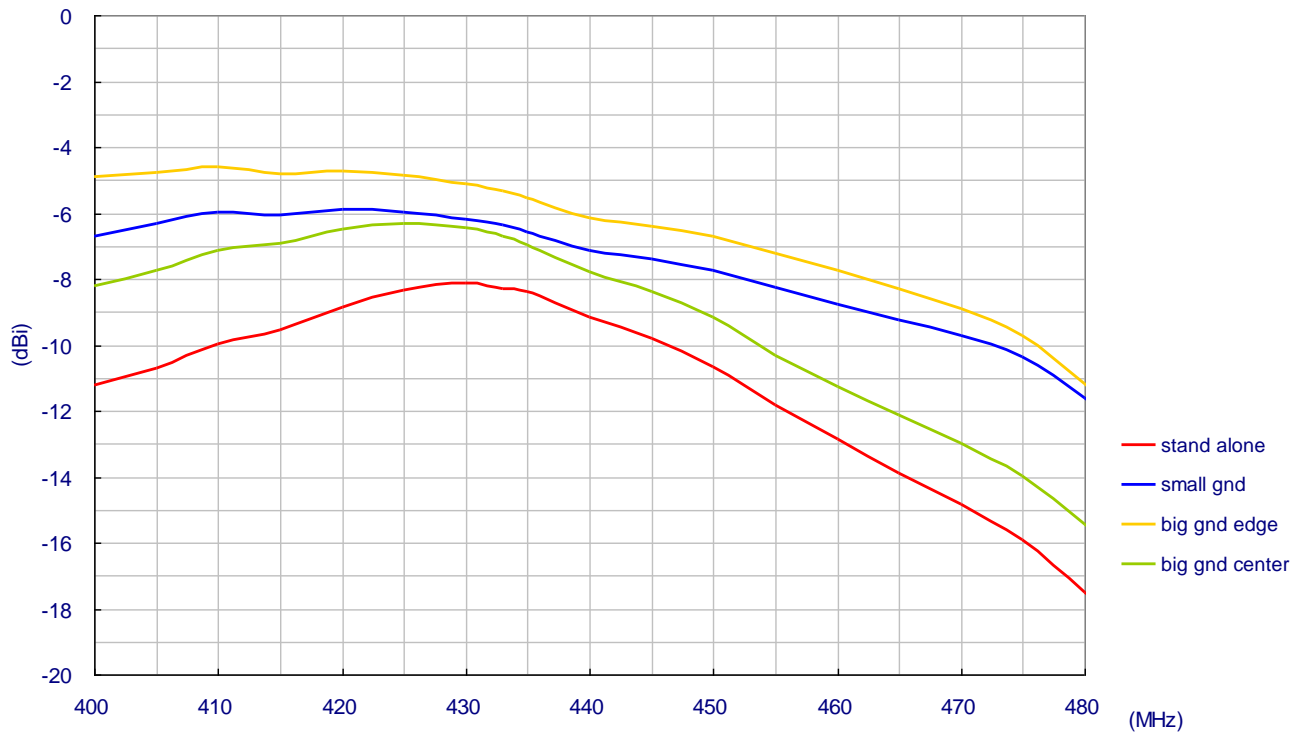
### 7.4. Straight Position Peak Gain



## 7.5. Bend Position Average Gain

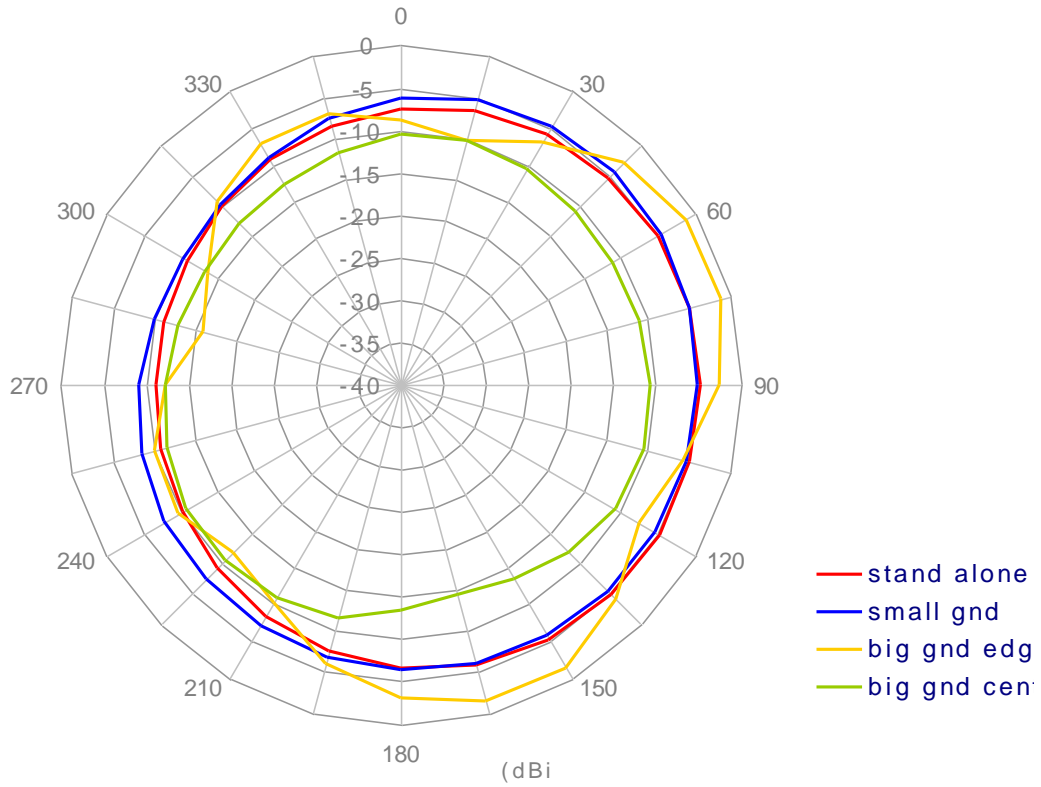


## 7.6. Straight Position Average Gain



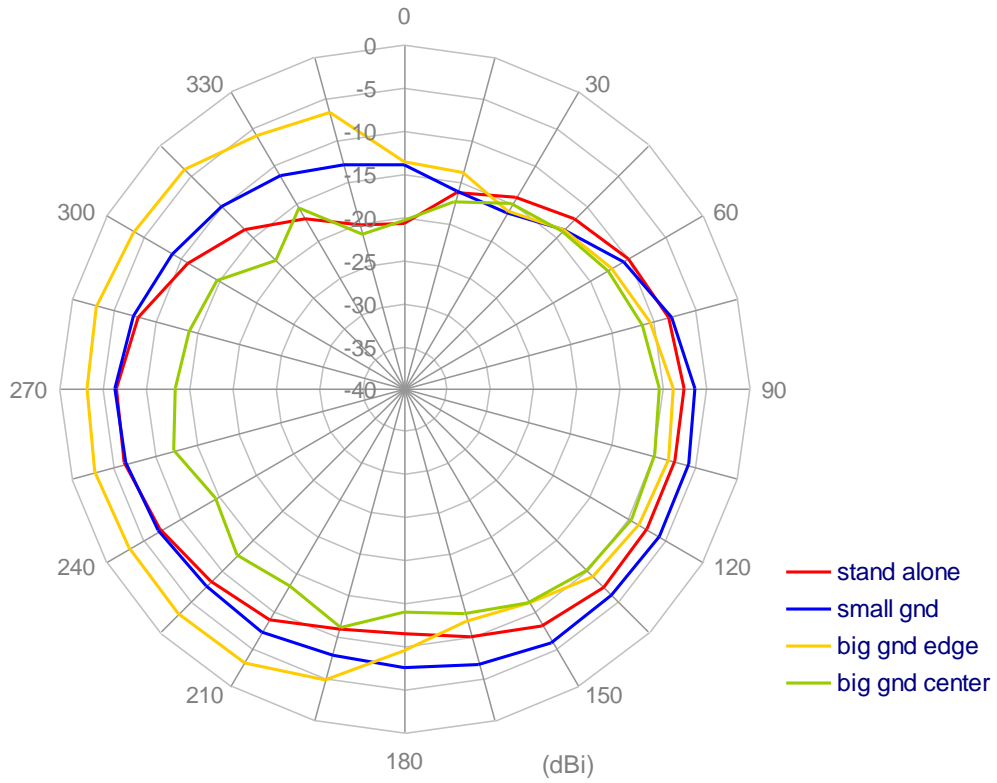
## 7.7. 433MHz Bend Position Radiation Pattern

### H-plane Radiation



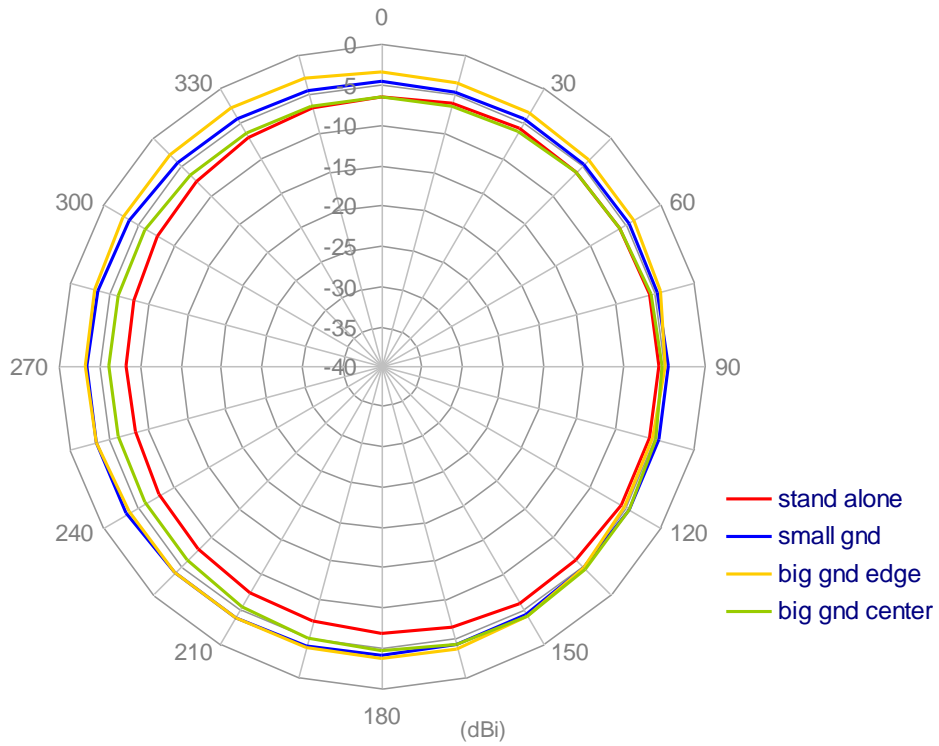


## E-plane Radiation

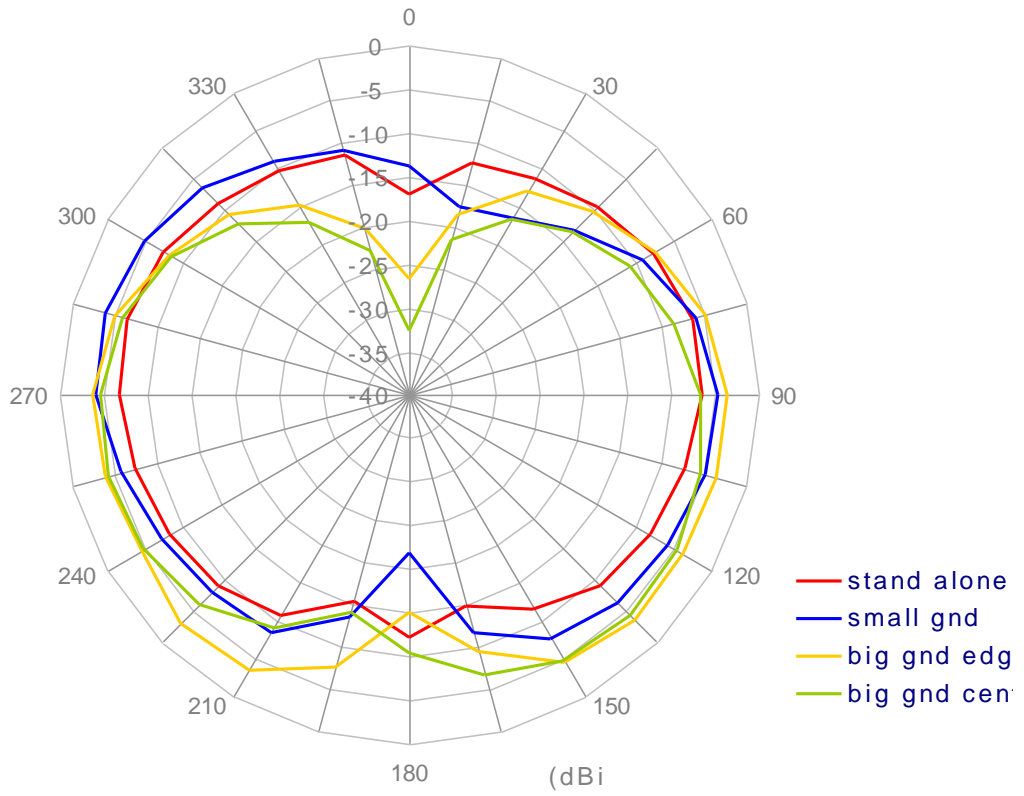


## 7.8. 433MHz Straight Position Radiation Pattern

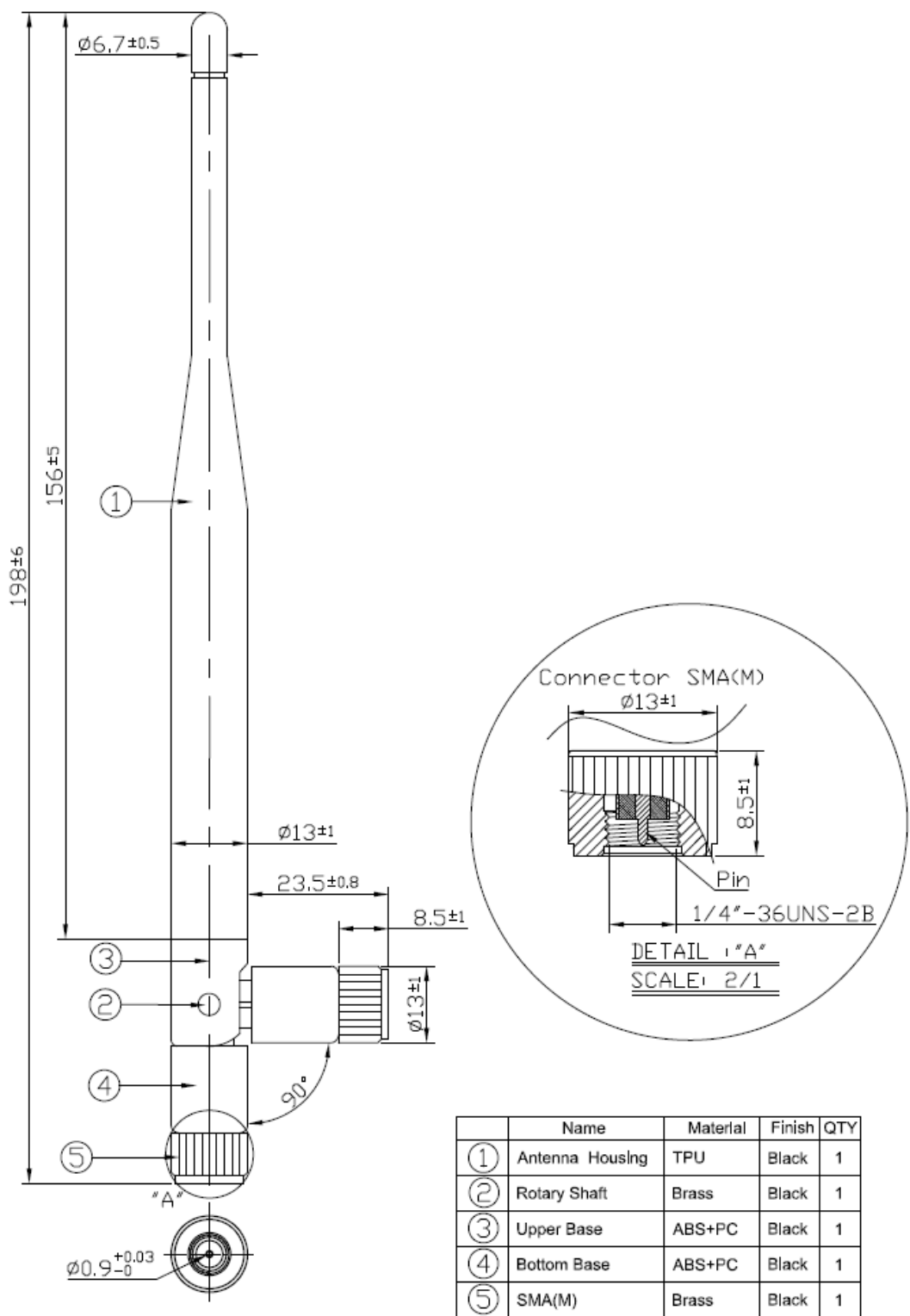
### H-plane Radiation



## E-plane Radiation



## 8. Mechanical Drawing (unit:mm)



	Name	Material	Finish	QTY
①	Antenna Housing	TPU	Black	1
②	Rotary Shaft	Brass	Black	1
③	Upper Base	ABS+PC	Black	1
④	Bottom Base	ABS+PC	Black	1
⑤	SMA(M)	Brass	Black	1