

## SPECIFICATION

**Part No.** : **TLS.30.105111**

**Description** : Shockwave 433MHz  
Permanent Mount External Antenna  
1M CFD-200 SMA(M) connector

**Features** : ISM 433MHz with 56% efficiency  
Mechanically robust for indoor/outdoor applications  
Height: 79.45mm(3.13") ; Diameter : 42mm(1.65")  
IP67 and IP69K Waterproof  
1 meter of low loss CFD-200 cable  
SMA(M) connector  
RoHS compliant



## 1. Introduction

The Shockwave TLS.30.105111 is a mechanically robust, waterproof, external antenna operating at the 433MHz ISM band with 1 meter low loss CFD-200 cable and SMA(M) connector. It has been designed to be used on a Ground Plane.

Common applications are, for example :

- Mesh networks
- Indoor/outdoor asset monitoring
- Security systems
- Remote control systems
- Heavy-duty equipment/vehicle communication in harsh environments

The antenna has 56% efficiency and -0.54dBi peak gain at ISM 433MHz on a 30x30 cm ground plane. Stable radiation patterns over low angles provides consistent gain in the horizontal plane, meaning that it is especially suitable for mesh networks or hot spots.

A unique indent tab on the base of the antenna allows a wrench to be used to solidly lock the antenna on top of its mounting location while tightening up the nut beneath the metal panel. Waterproof O-rings around the bottom base prevent water from leaking under the antenna.

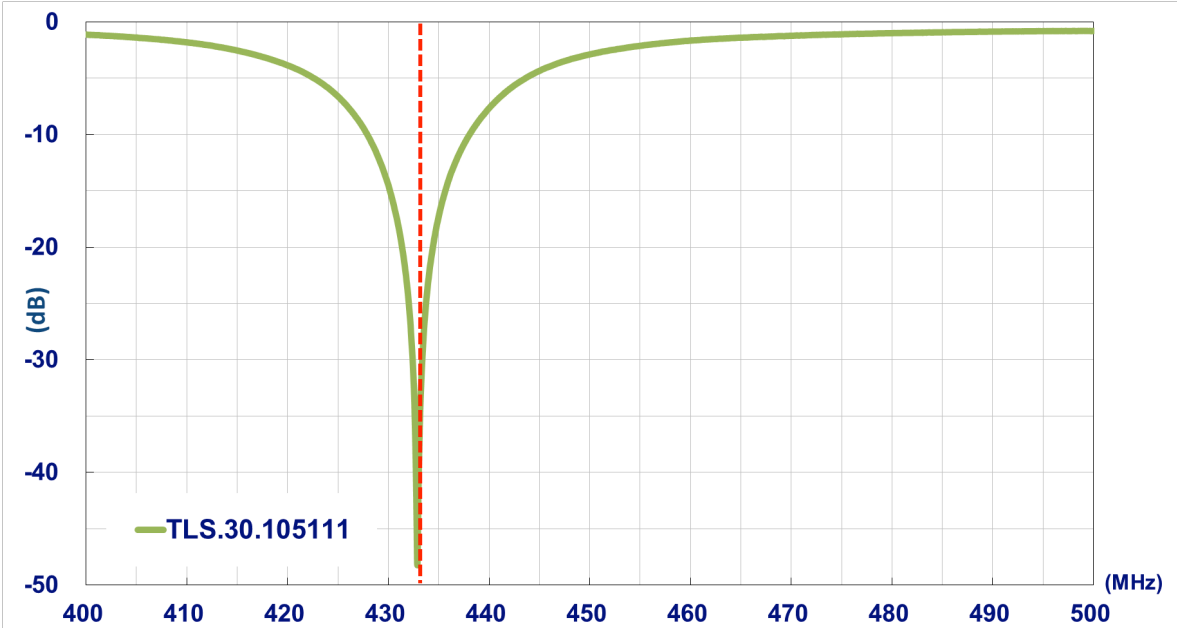
The TLS.30 antenna is IP67 waterproof and IP69K resistant against high pressure water jets in commercial cleaning environments, which makes the antenna ideal for ISM 433MHz applications in harsh outdoor environments.

## 2. Specification

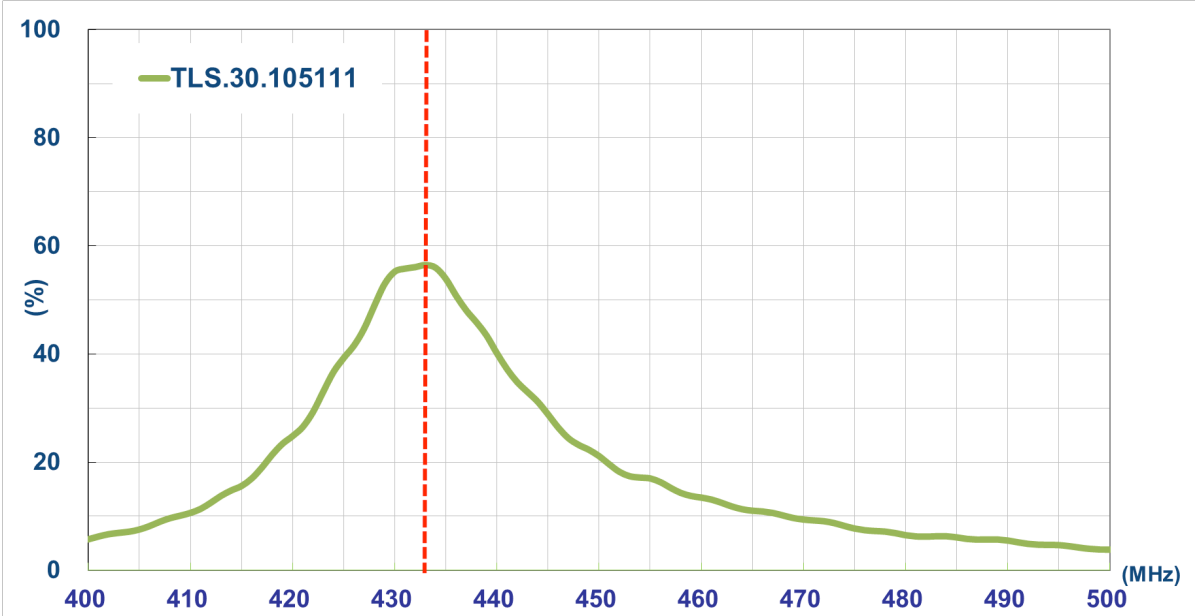
ELECTRICAL	
Application Band	ISM433
Operation Frequency	433 MHz
	On 30 x 30 cm ground plane
Efficiency (%)	56.46 %
Peak Gain (dBi)	-0.54
Average Gain (dBi)	-2.48
Return Loss (dB)	<-15
Impedance	50 Ω
Polarization	Vertical
Radiation Property	Omni-Directional
Max Input Power	100 W
MECHANICAL	
Dimension (mm)	Height: 79.45mm(3.13") ; Diameter : 42mm(1.65")
Cable	1 meter CFD-200
Connector	SMA(M)
Material	Housing : UV Resistant ABS , Base : Nickel Plated Zinc Alloy
Weight (g)	205
Rec. Torque for Mounting	4.018 N.m
Max. Torque for Mounting	9.8 N.m
ENVIRONMENTAL	
Waterproof Rating	IP67 and IP69K
Operation Temperature	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH

### 3. Antenna Characteristics

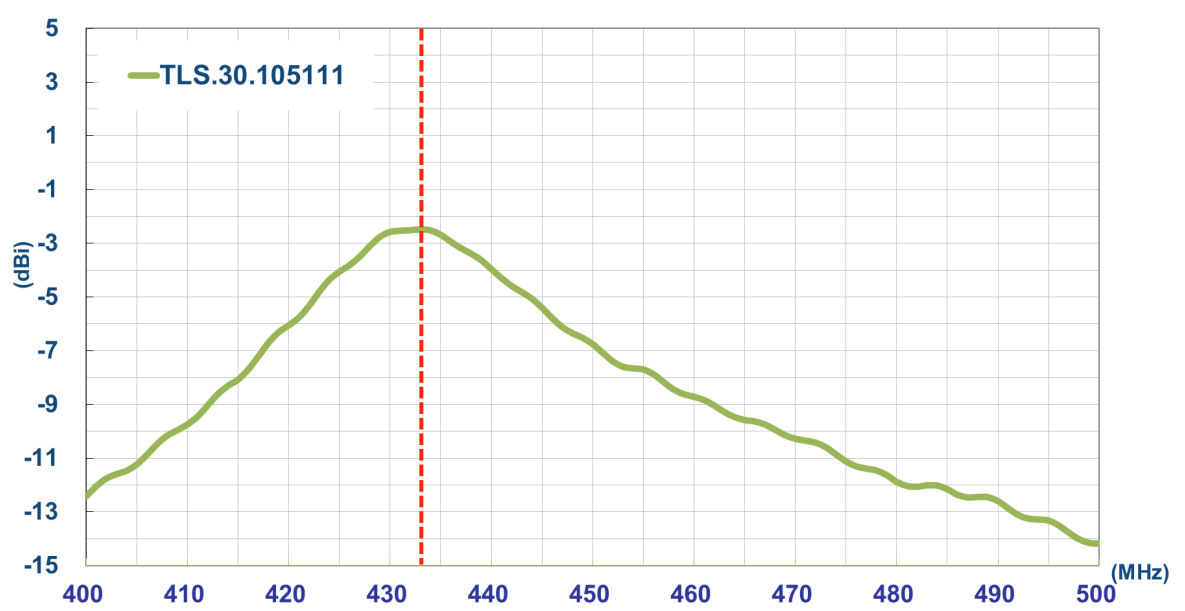
#### 3.1. Return Loss



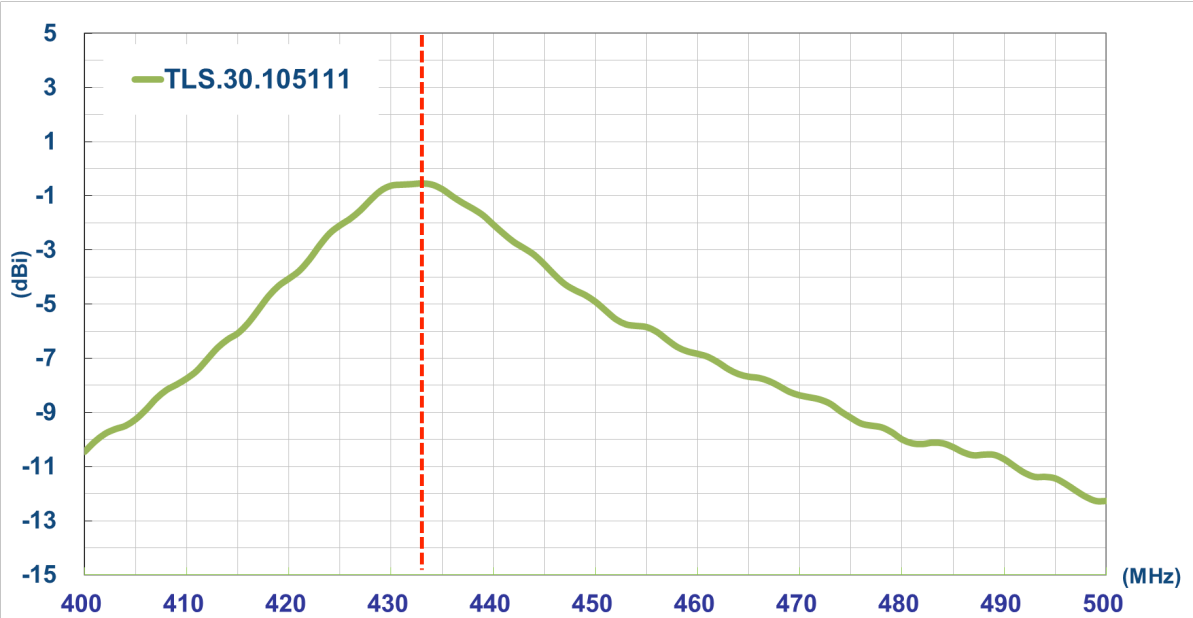
#### 3.2. Efficiency



**3.3. Average Gain**



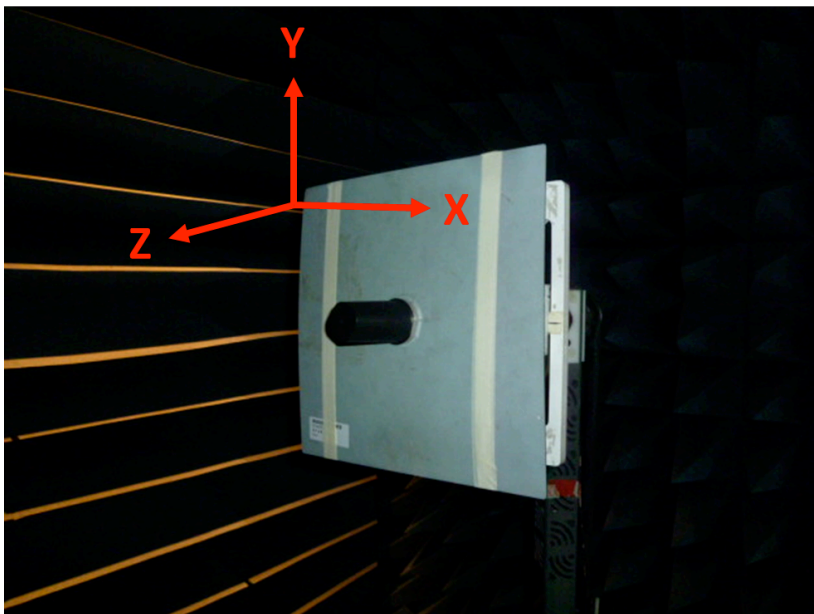
**3.4. Peak Gain**



## 4. Antenna Radiation Pattern

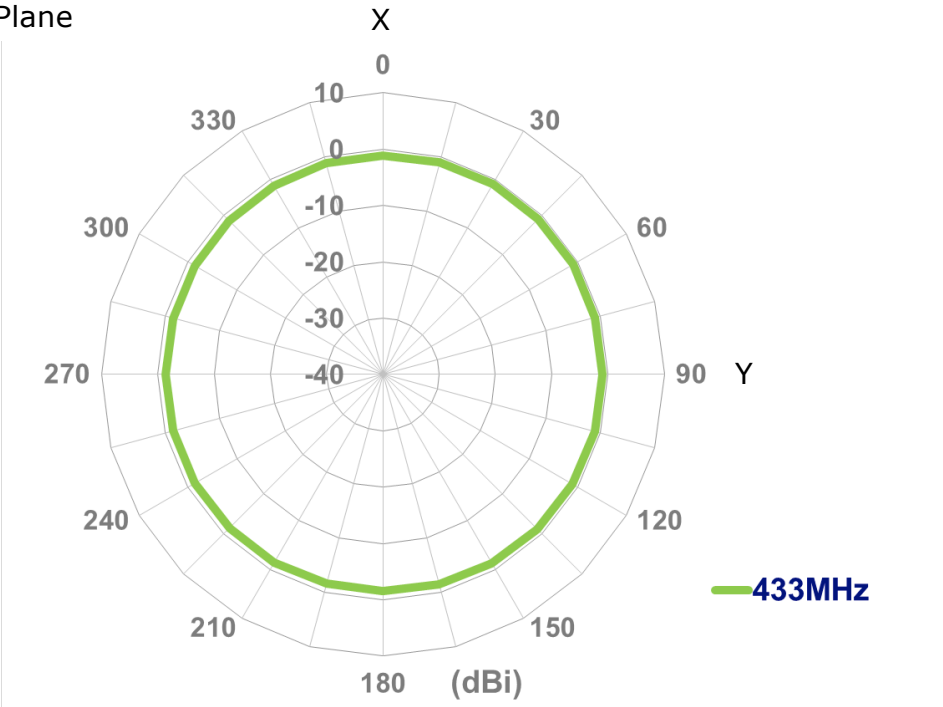
### 4.1. Measurement Setup

The TLS.30 antenna is tested in a CTIA certified ETS-Lindgren Anechoic Chamber. The test setup is shown below.

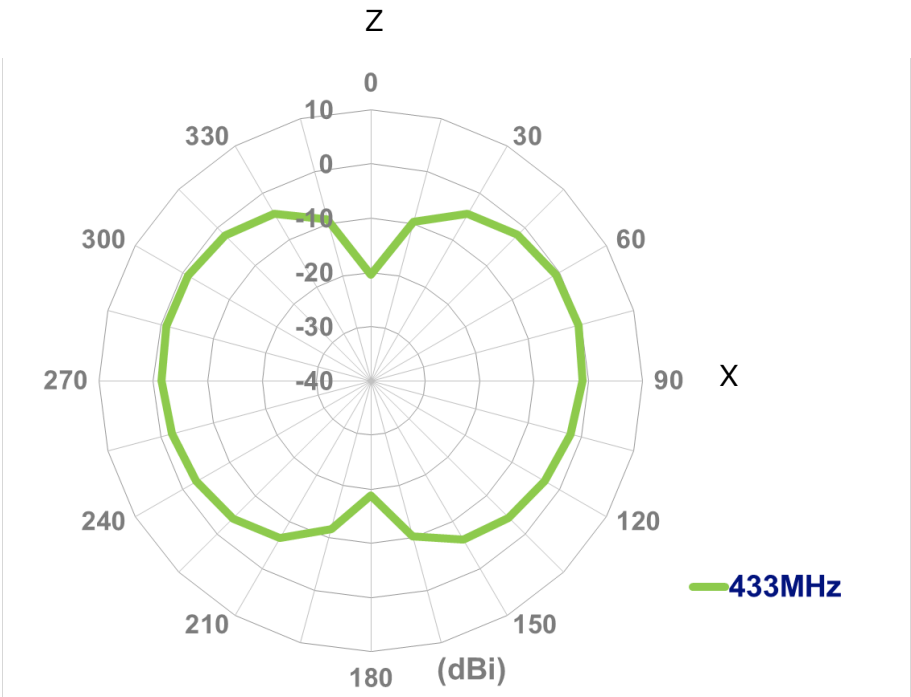


**4.2. 2D Radiation Pattern**

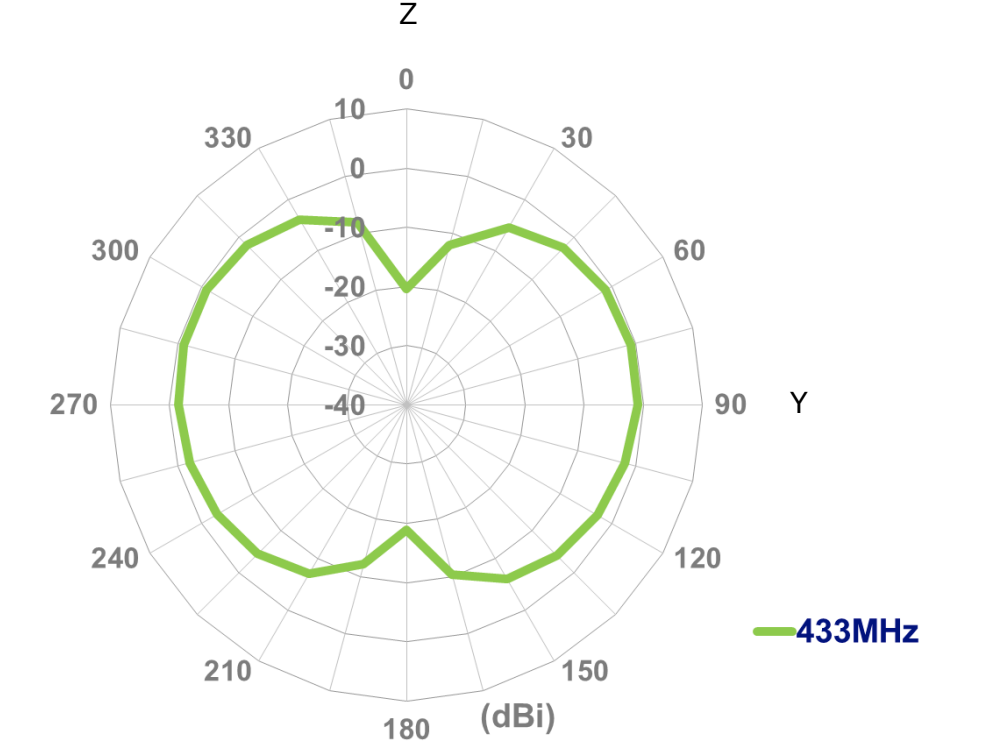
XY Plane



XZ Plane



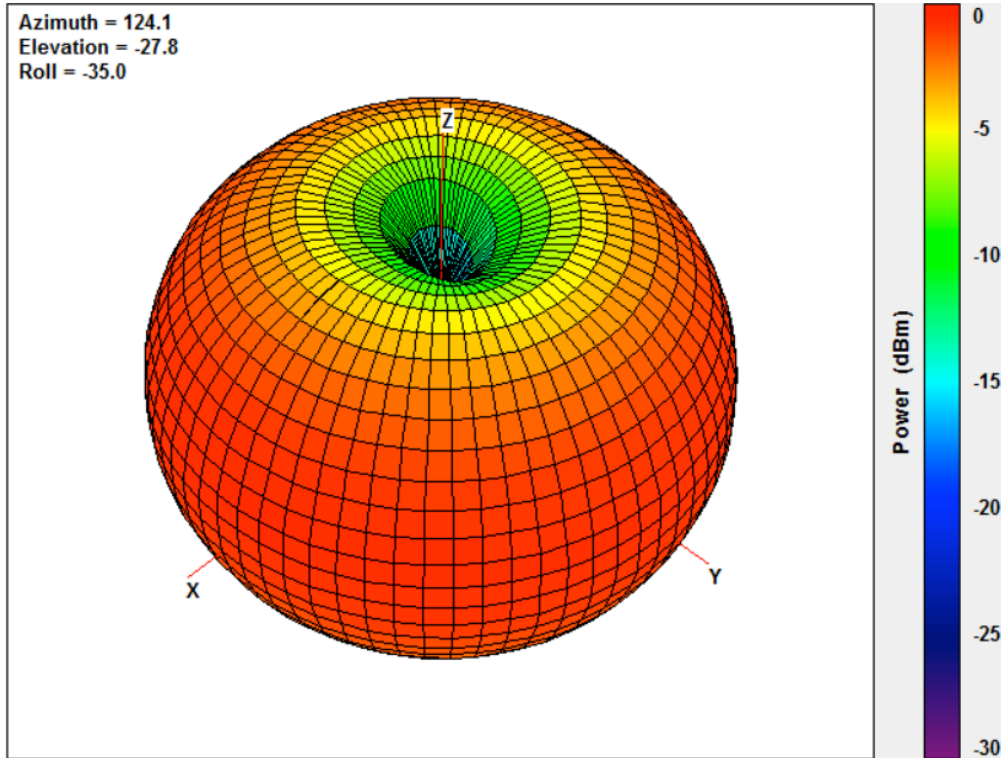
YZ Plane





### 4.3. 3D Radiation Pattern

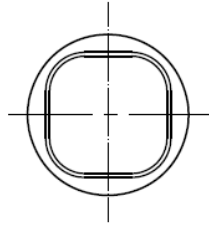
@433MHz



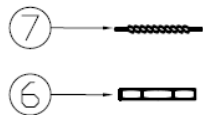
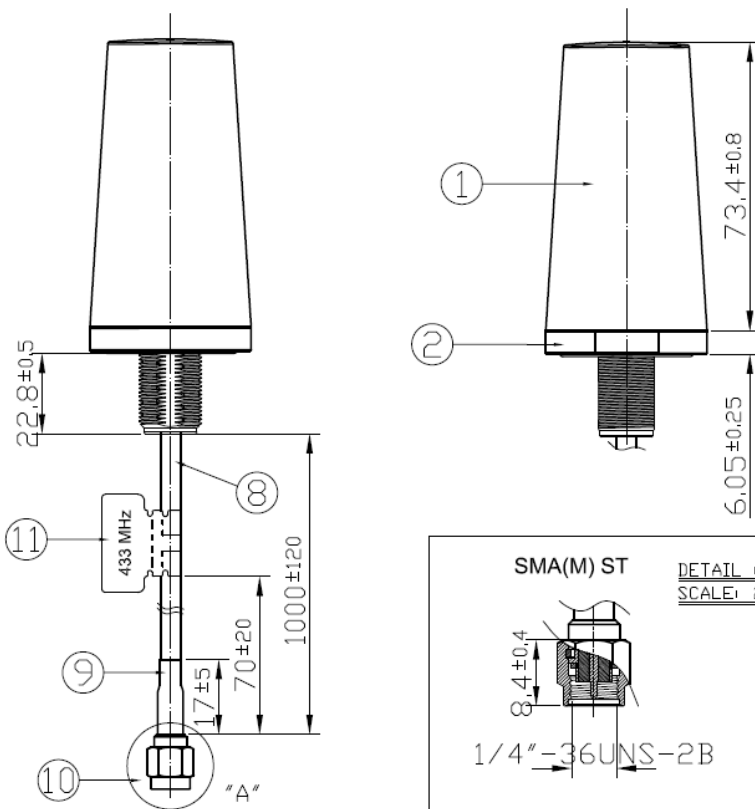


## 5. Mechanical Drawing

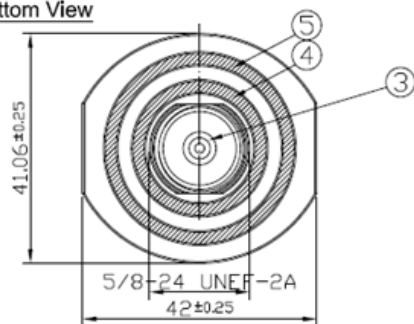
Top View



Side View



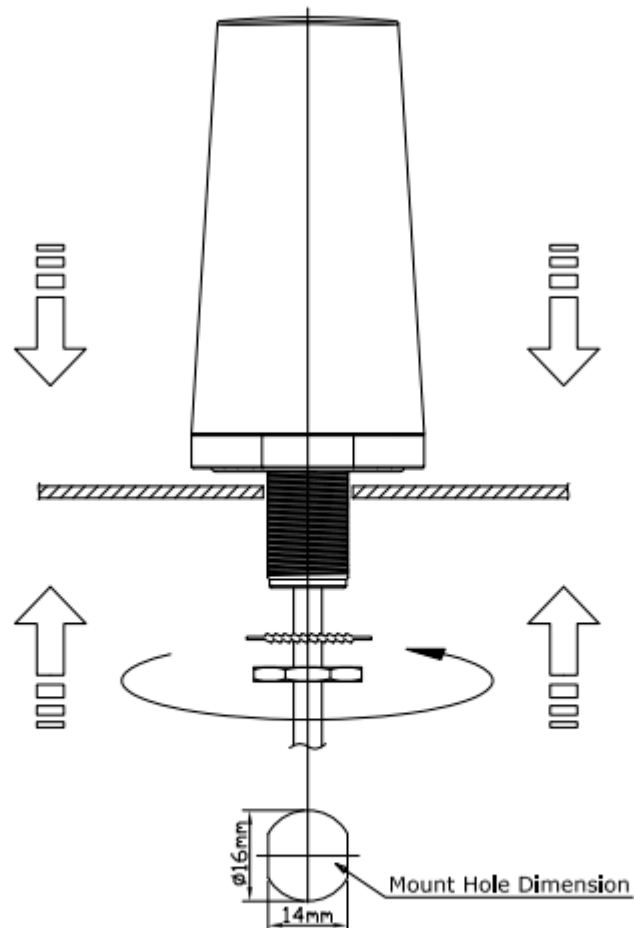
Bottom View



Unit : mm

	Name	Material	Finish	QTY
1	Antenna Top	ABS	Black	1
2	Antenna Bottom	Zinc Alloy	Ni Plated	1
3	TLS Thread	Brass	Ni Plated	1
4	O Ring 1	NBR	Black	1
5	O Ring 2	NBR	Black	1
6	Nut	Brass	Ni Plated	1
7	Washer	Brass	Ni Plated	1
8	CFD200 Coaxial Cable	PVC	Black	1
9	Heat Shrink Tube	PE	Black	1
10	SMA(M)ST	Brass	Gold Plated	1
11	433 MHz Label	Coated Paper	Khaki	1

## 6. Installation



Recommended torque for mounting is 4.018 N.m or 41 kgf.cm

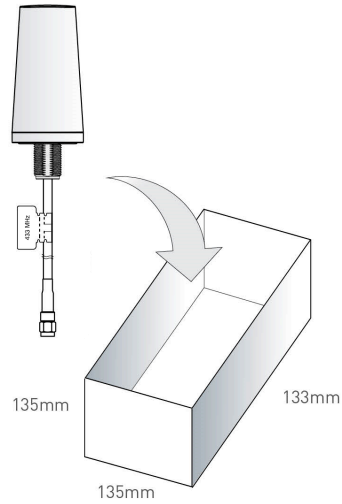
Maximum torque for mounting is 9.8 N.m or 100 kgf.cm

## 7. Packaging

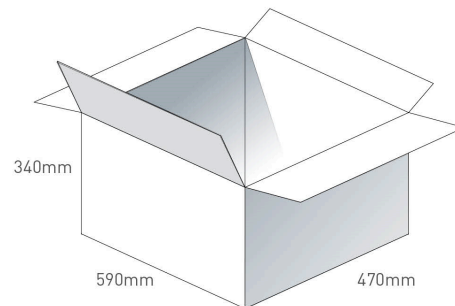
### TLS.30.105111

#### Packaging Specifications

1 No. TLS.30.105111 per small box  
 Box Dimensions - 135 x 135 x 133mm  
 Weight - 280g



1 Outer Carton  
 Carton Dimensions - 590 x 470 x 340mm  
 24 pcs TLS.30.105111 per carton  
 Weight - 8.5Kg



Pallet Dimensions 1100\*1100\*1510mm  
 16 Cartons per Pallet  
 4 Cartons per layer  
 4 Layers

