



# TAOGLAS®



## Datasheet

### Shockwave 450-470MHz Permanent Mount

**Part No:**  
TLS.20.1F11

**Description:**

Shockwave 450-470MHz  
Permanent Mount External Antenna  
N Type(M) connector

**Features:**

CDMA 450-470MHz with 41% efficiency  
Mechanically robust for indoor/outdoor applications  
Height: 79.45mm(3.13") ; Diameter : 42mm(1.65")  
IP67 Waterproof  
N type(M) connector  
RoHS & REACH Compliant

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## 1. Introduction



The Shockwave TLS.20.1F11 is a mechanically robust, waterproof, external antenna operating at the 450-470MHz with 1 meter low loss TGC-200 cable and SMA(M) connector. It has been designed to be used on a ground plane.

Typical Applications Include:

- Public safety
- Smart meters
- Mesh networks
- Transportation

The antenna has greater than 41% efficiency and -1.38dBi peak gain with the application band on a 30x30 cm ground plane. Stable radiation patterns over low angles provide 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.20 antenna is IP67 waterproof resistant against high pressure water jets in commercial cleaning environments, which makes the antenna ideal for 450-470MHz applications in harsh outdoor environments.

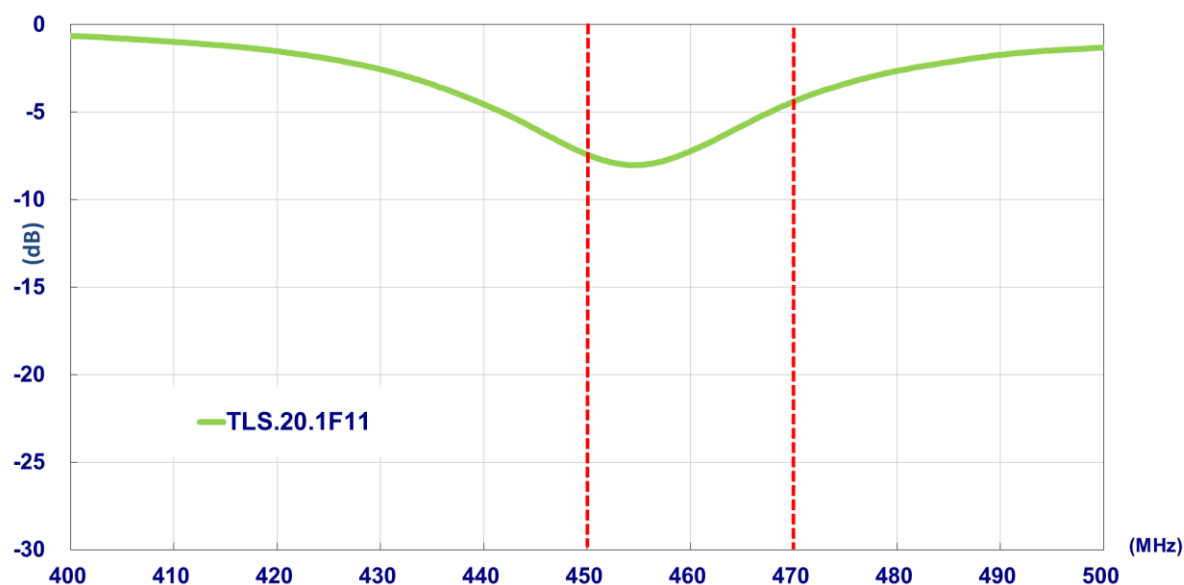
Cable lengths and connector types are customizable. Contact your regional Taoglas customer support team for further information.

## 2. Specifications

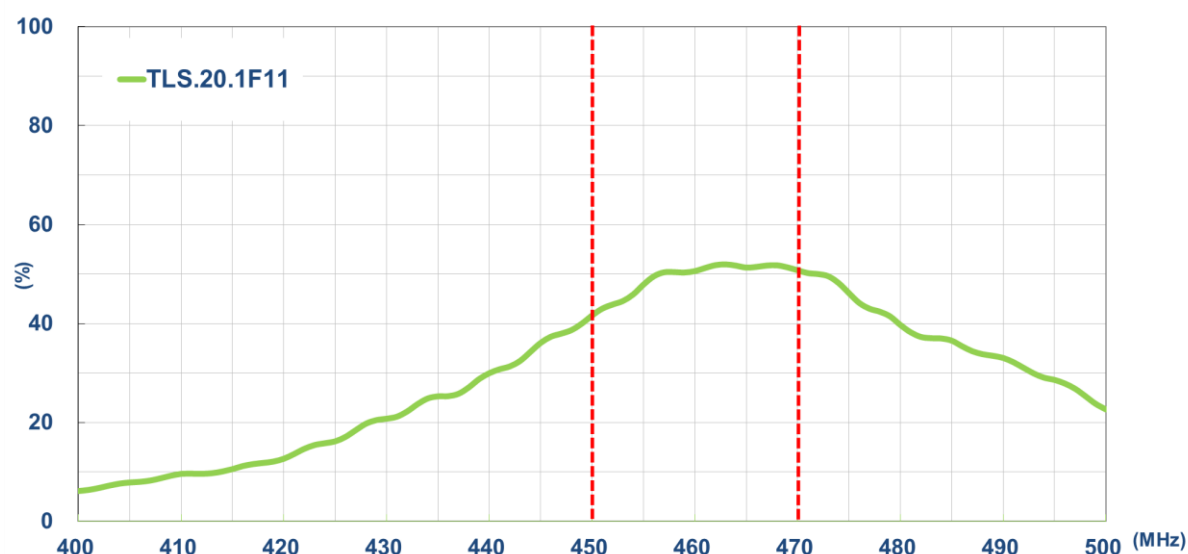
ELECTRICAL			
Operation Band	CDMA450		
Operation Frequency (MHz)	450	460	470
	On 30 x 30 cm ground plane		
Efficiency (%)	41.61	50.58	50.76
Peak Gain (dBi)	-2.25	-1.38	-1.39
Average Gain (dBi)	-3.80	-2.96	-2.94
Return Loss (dB)	< -3		
Impedance	50 Ω		
Polarization	Vertical		
Radiation Property	Omni-Directional		
Max Input Power	100 W		
MECHANICAL			
Dimension (mm)	Height: 79.45mm(3.13") ; Diameter : 42mm(1.65")		
Connector	N type (M)		
Material	Housing : UV Resistant ABS , Base : Nickel Plated Zinc Alloy		
Weight (g)	130		
Rec. Torque for Mounting	4.018 N.m		
Max. Torque for Mounting	9.8 N.m		
ENVIRONMENTAL			
Waterproof Rating	IP67		
Operation Temperature	-40°C to 85°C		
Humidity	Non-condensing 65°C 95% RH		

## 3. Antenna Characteristics

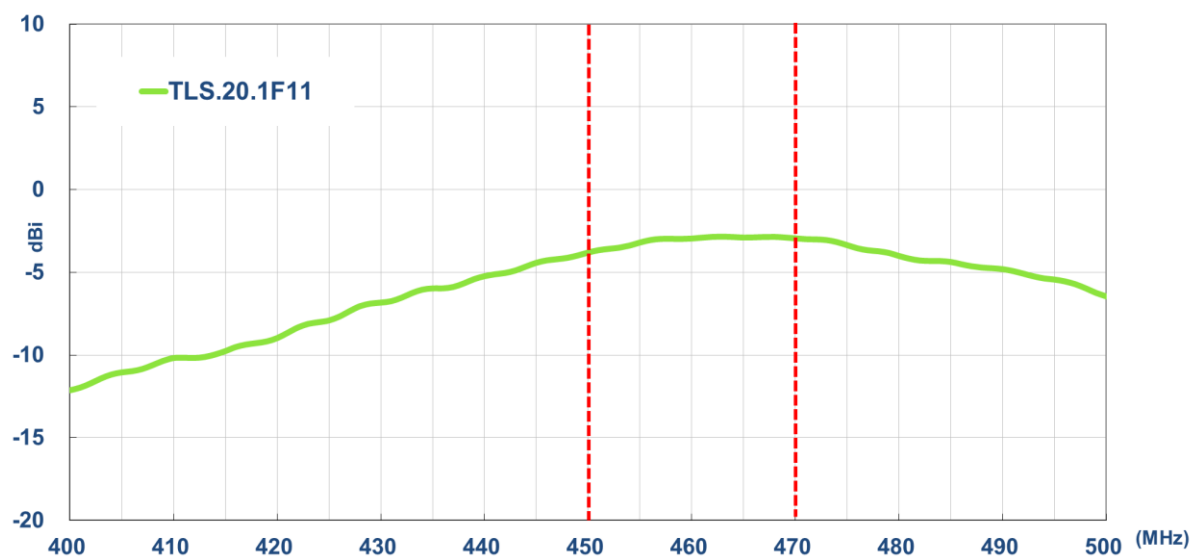
### 3.1 Return Loss



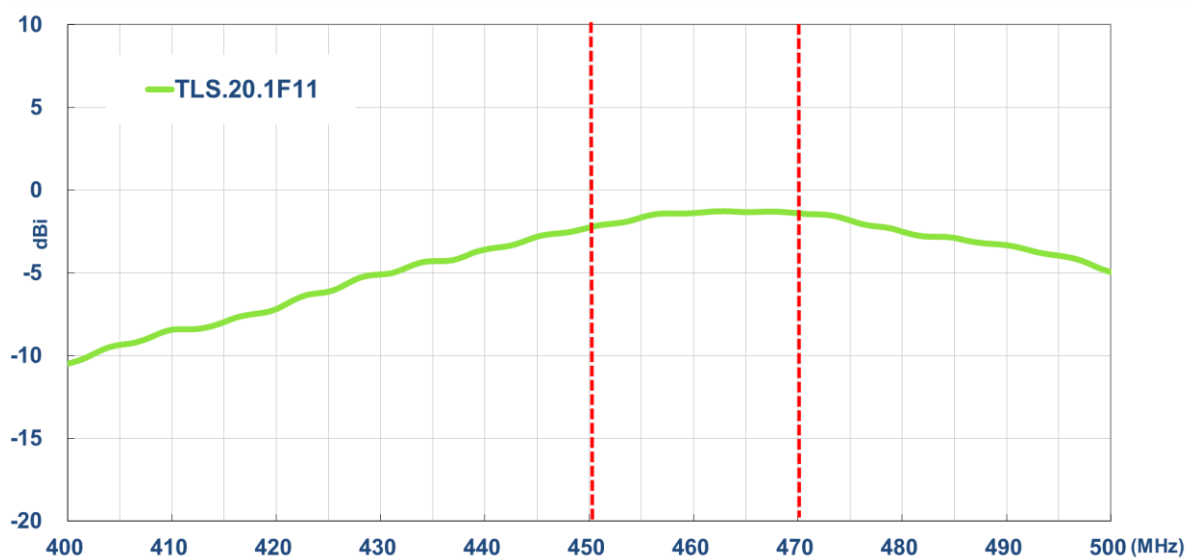
### 3.2 Efficiency



### 3.3 Average Gain



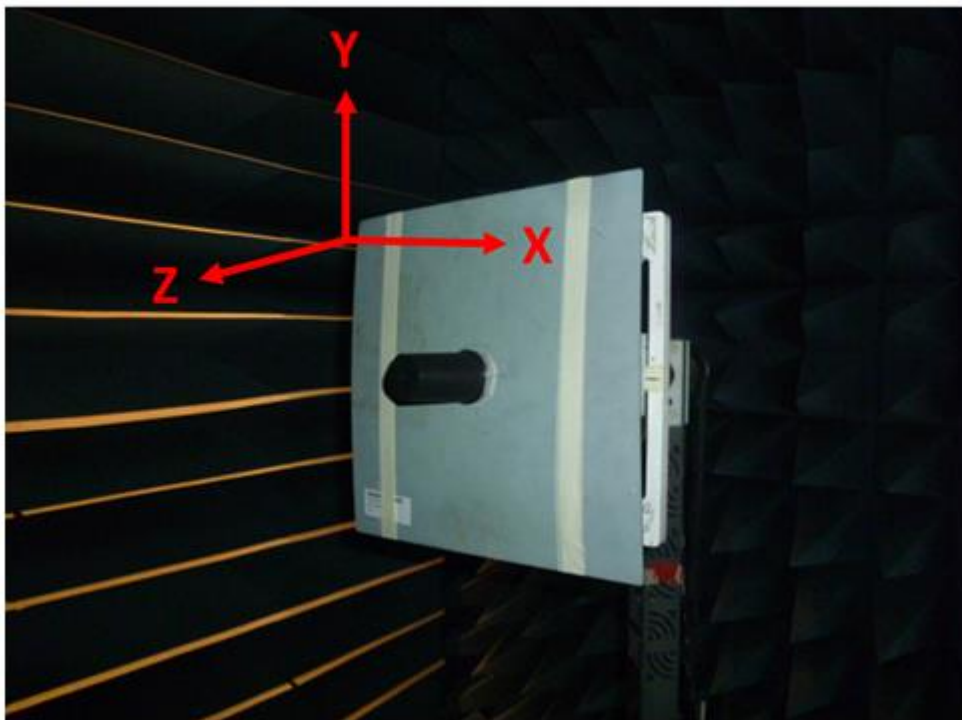
### 3.4 Peak Gain



## 4. Radiation Patterns

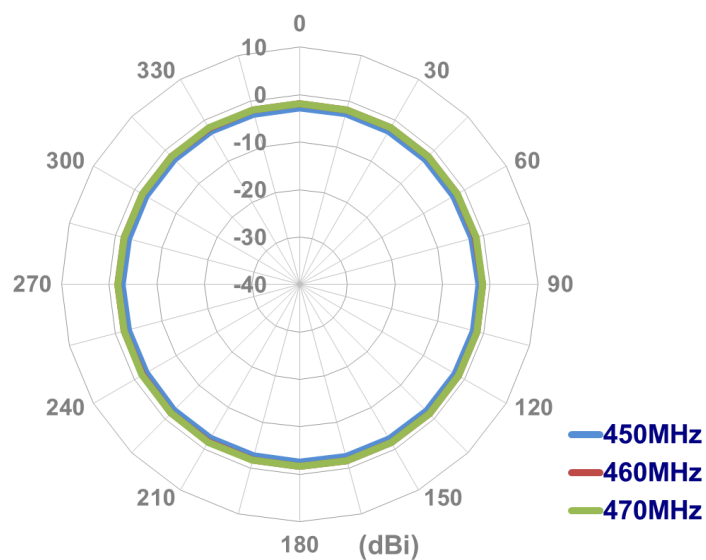
### 4.1 Test Setup

The TLS.20 antenna is tested in a CTIA certified ETS-Lindgren Anechoic Chamber. The test setup is shown below.

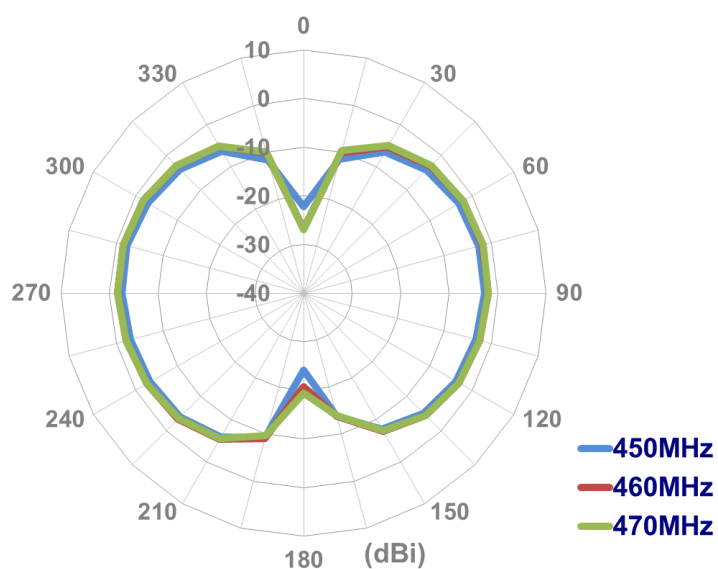


## 4.2 2D radiation Patterns

### XY Plane

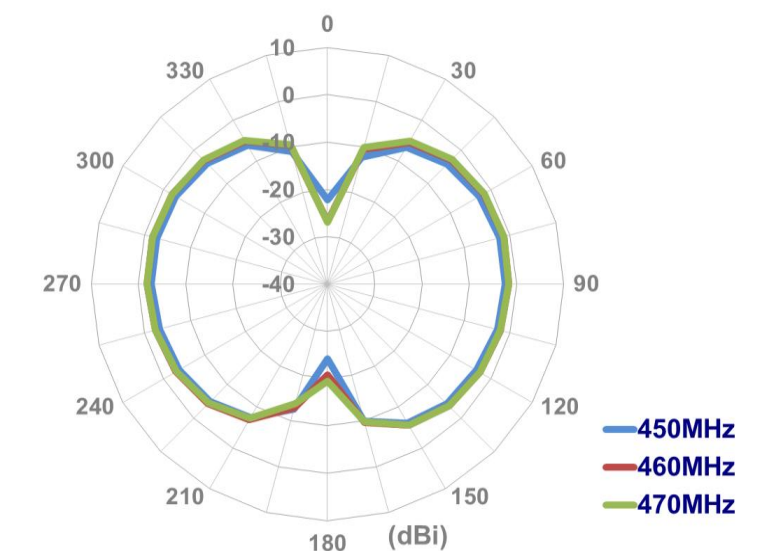


### XZ Plane



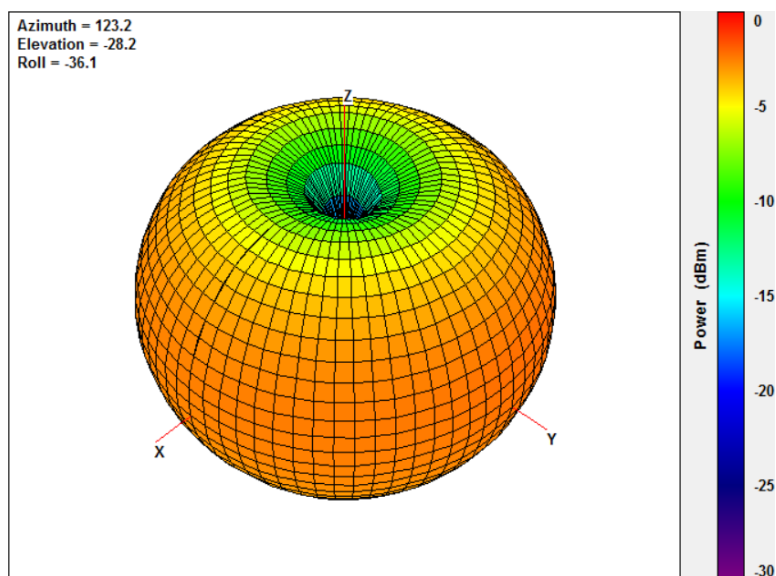


## YZ Plane

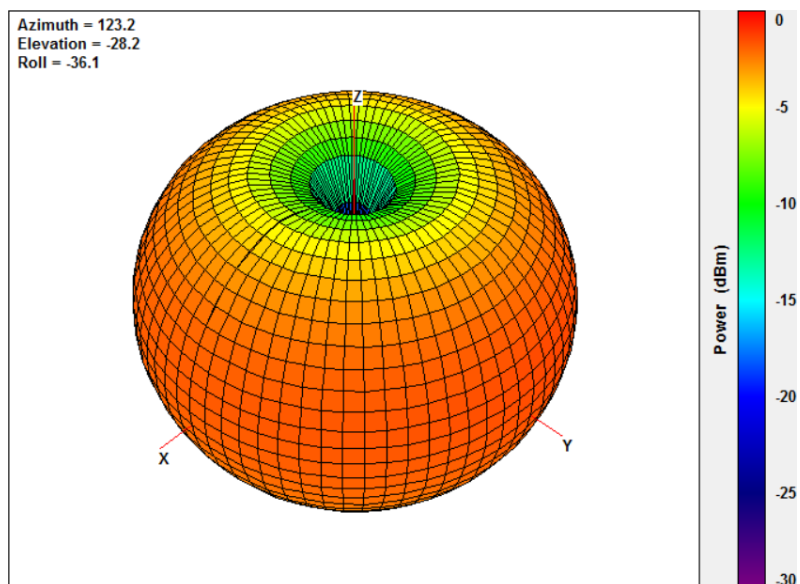


## 4.3 3D radiation Patterns

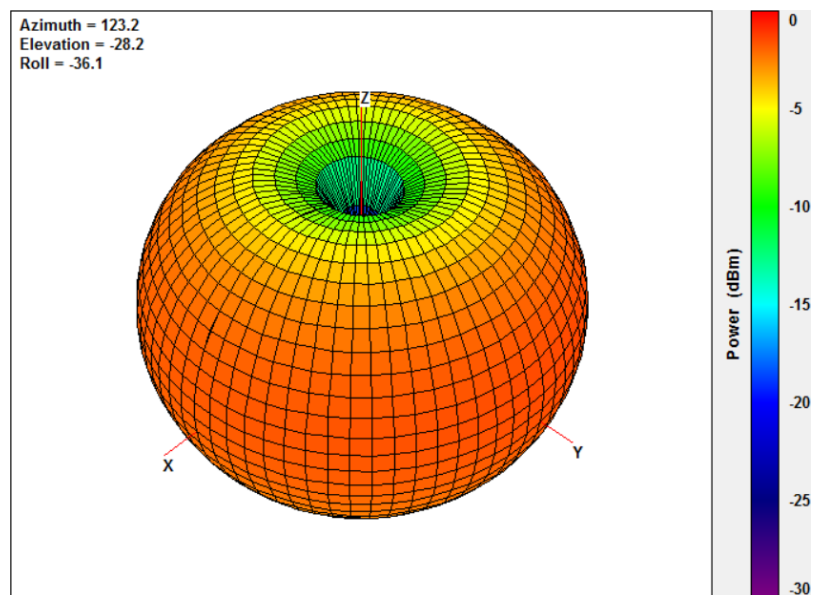
450MHz



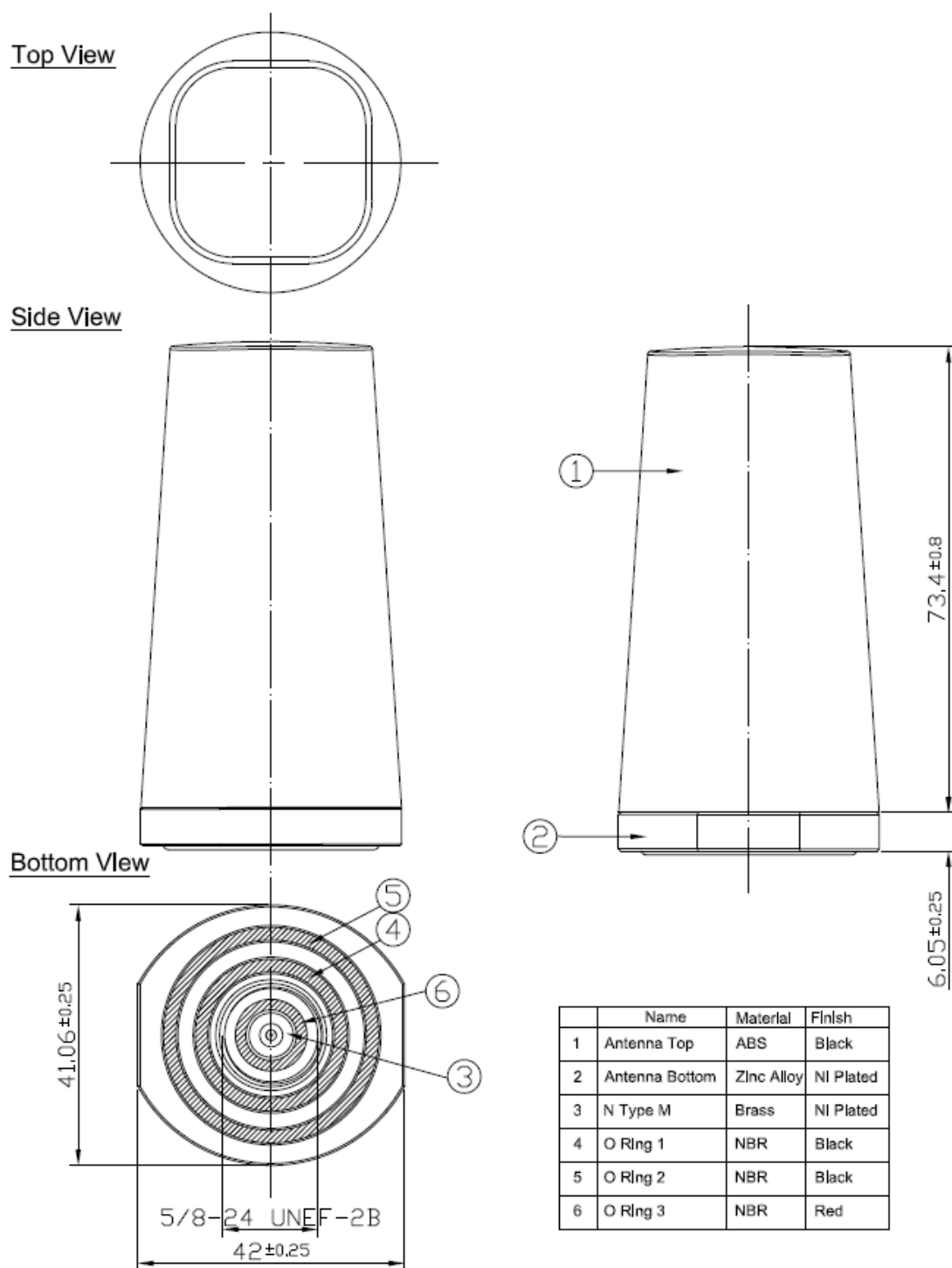
460MHz



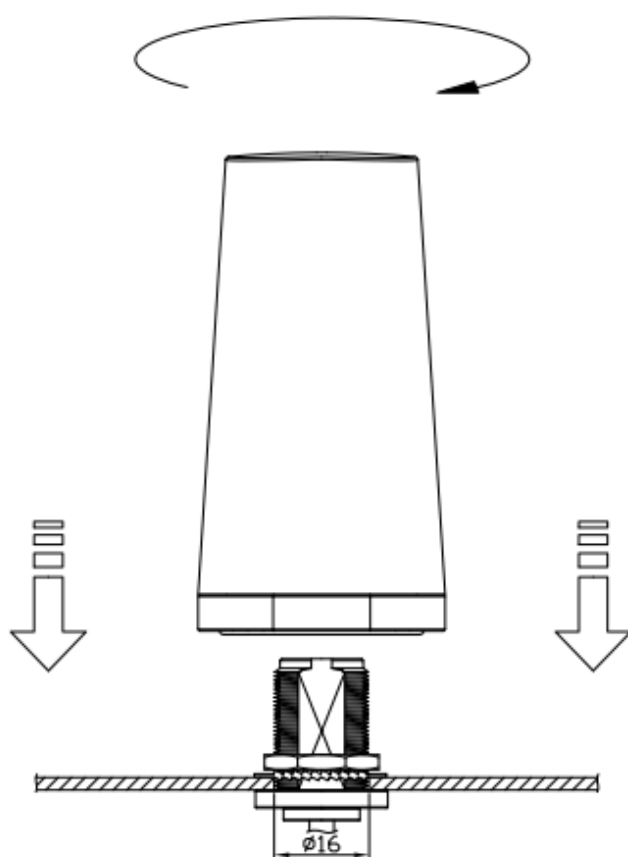
470MHz



## 5. Mechanical Drawing (Units: mm)



## 6. Installation Guidelines

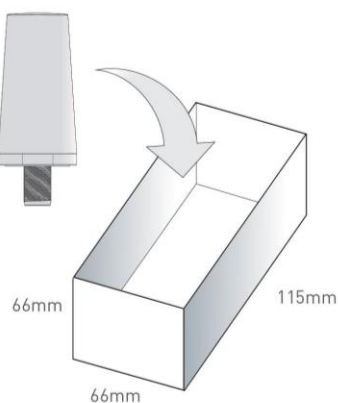


Recommended torque for mounting is 4.018 N.m or 41 kgf.cm

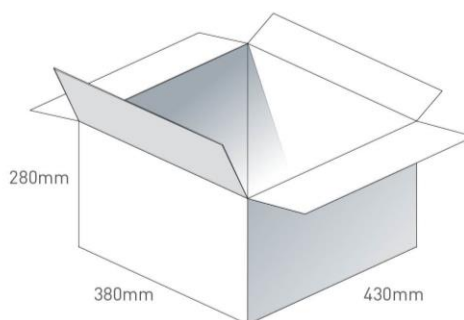
Maximum torque for mounting is 9.8 N.m or 100 kgf.cm

## 7. Packaging

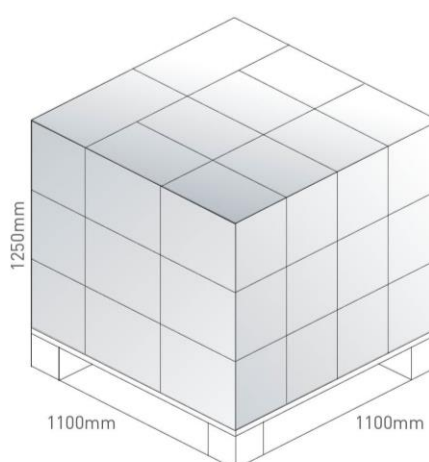
1 No. TLS.20.1F11 per small box  
Box Dimensions - 66 x 66 x 115mm  
Weight - 170g



1 Outer Carton  
Carton Dimensions - 430 x 380 x 280mm  
60 pcs TLS.20.1F11 per carton  
Weight - 10.59Kg



Pallet Dimensions 1100\*1100\*1250mm  
30 Cartons per Pallet  
10 Cartons per layer  
3 Layers



## Changelog for the datasheet

**SPE-15-8-065 – TLS.20.1F11**

### Revision: B (Current Version)

Date:	2022-09-12
Changes:	Updated specifications
Changes Made by:	Cesar Sousa

### Previous Revisions

#### Revision: A (Original First Release)

Date:	2021-09-28
Notes:	
Author:	Jack Conroy



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