TAOGLAS



Datasheet

Shockwave 450-470MHz Permanent Mount

Part No:
TLS.20.1F21

Description:

Shockwave 450-470MHz

Permanent Mount External Antenna

N Type(F) connector

Features:

CDMA 450-470MHz with 46% efficiency

Mechanically robust for indoor/outdoor applications

Height: 79.45mm(3.13") ; Diameter : 42mm(1.65")

IP67 Waterproof

N type(F) connector

RoHS & REACH Compliant

1. Introduction 3
2. Specifications 4
3. Antenna Characteristics 5
4. Radiation Patterns 7
5. Mechanical Drawing 12
6. Installation Guidelines 13
7. Packaging 14

Changelog

Taoglas makes no warranties based on the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Taoglas reserves all rights to this document and the information contained herein. Reproduction, use or disclosure to third parties without express permission is strictly prohibited.

1. Introduction



The Shockwave TLS.20.1F21 is a mechanically robust, waterproof, external antenna operating at the 450-470MHz with a N type (F) 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 46% efficiency and -2.6dBi 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.

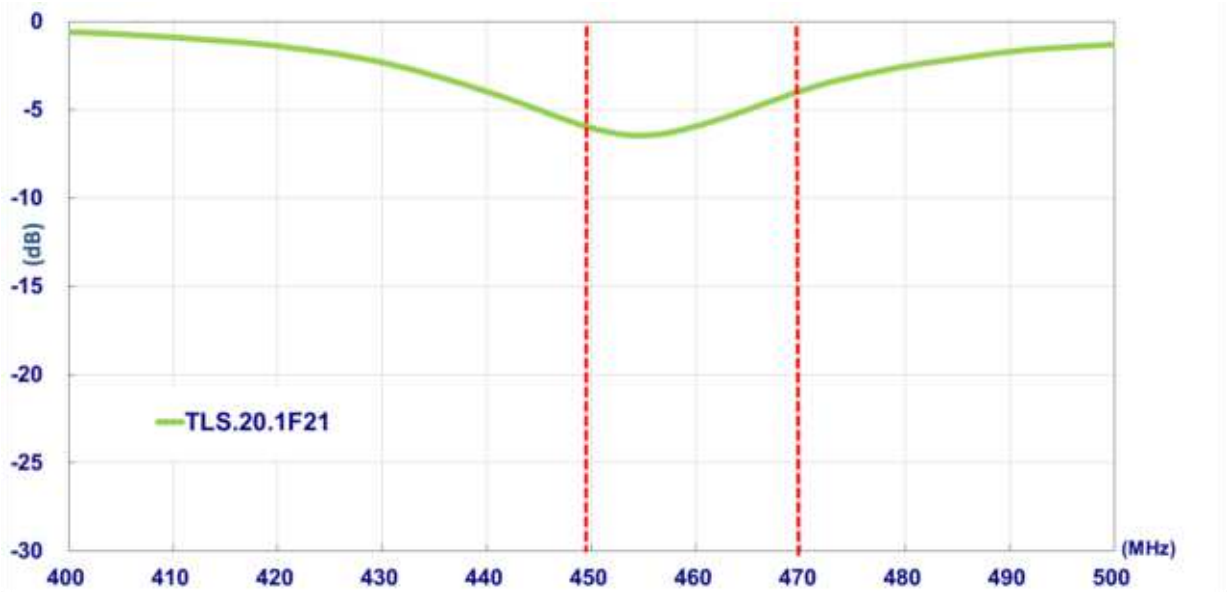
Cable lengths and connector types are customizable. Contact your regional Taoglas customer support team for further information.

2. Specifications

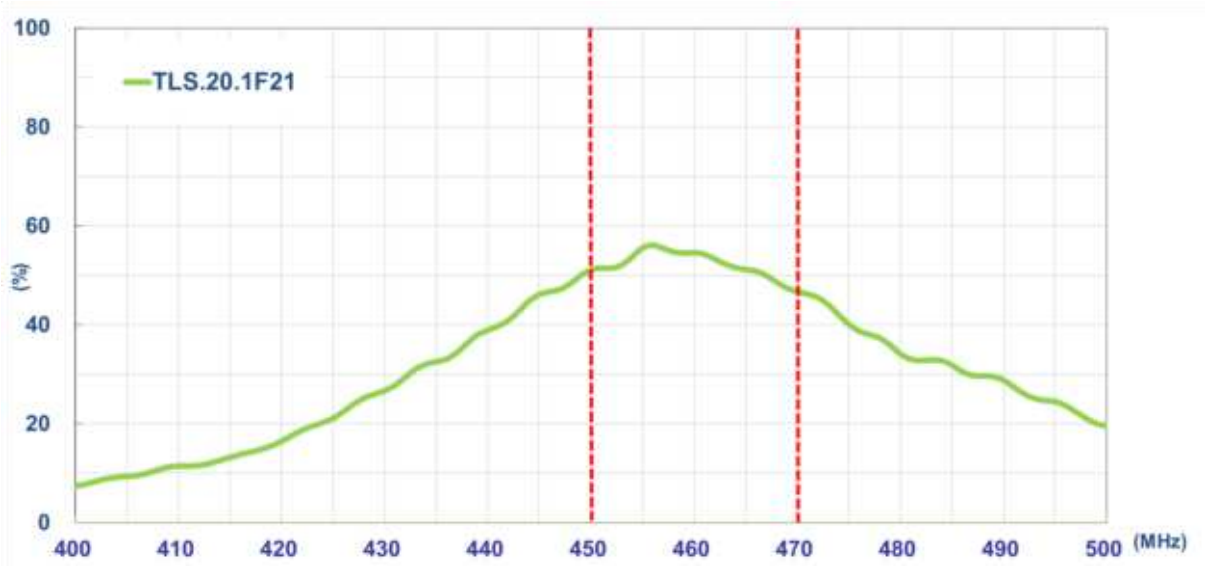
ELECTRICAL			
Operation Band	CDMA450		
Operation Frequency (MHz)	450	460	470
	On 30 x 30 cm ground plane		
Efficiency (%)	51.17	54.59	46.78
Peak Gain (dBi)	-1.50	-1.14	-1.80
Average Gain (dBi)	-2.90	-2.62	-3.29
Return Loss (dB)	< -3		
Impedance	50 Ω		
Polarization	Vertical		
Radiation Property	Omni-Directional		
Max Input Power	35 W		
MECHANICAL			
Dimension (mm)	Height: 79.45mm(3.13") ; Diameter : 42mm(1.65")		
Connector	N type (F)		
Material	Housing : UV Resistant ABS , Base : Nickel Plated Zinc Alloy		
Weight (g)	169		
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

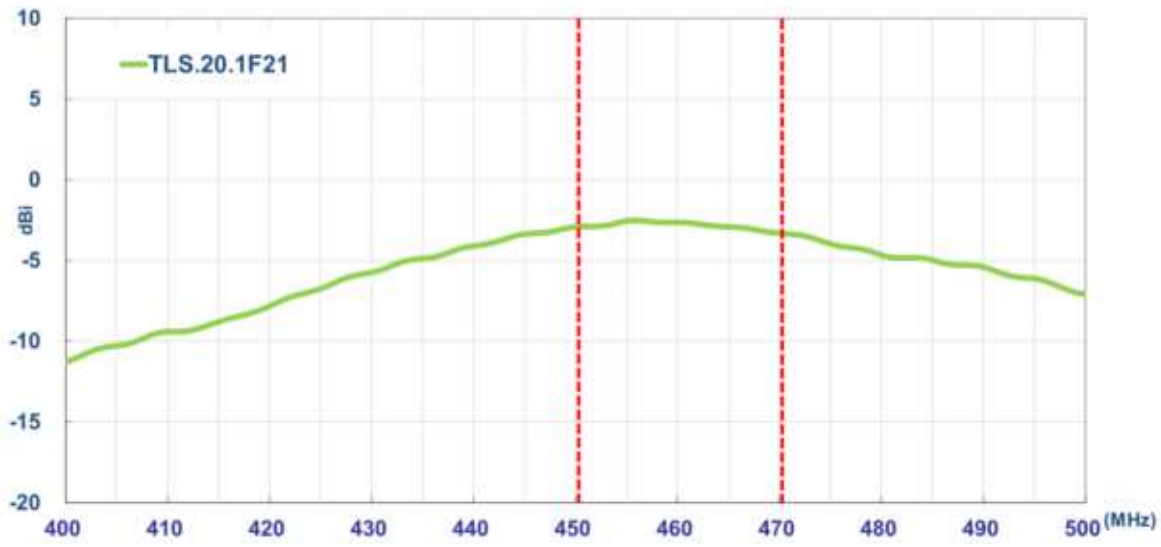
3.1 Return Loss



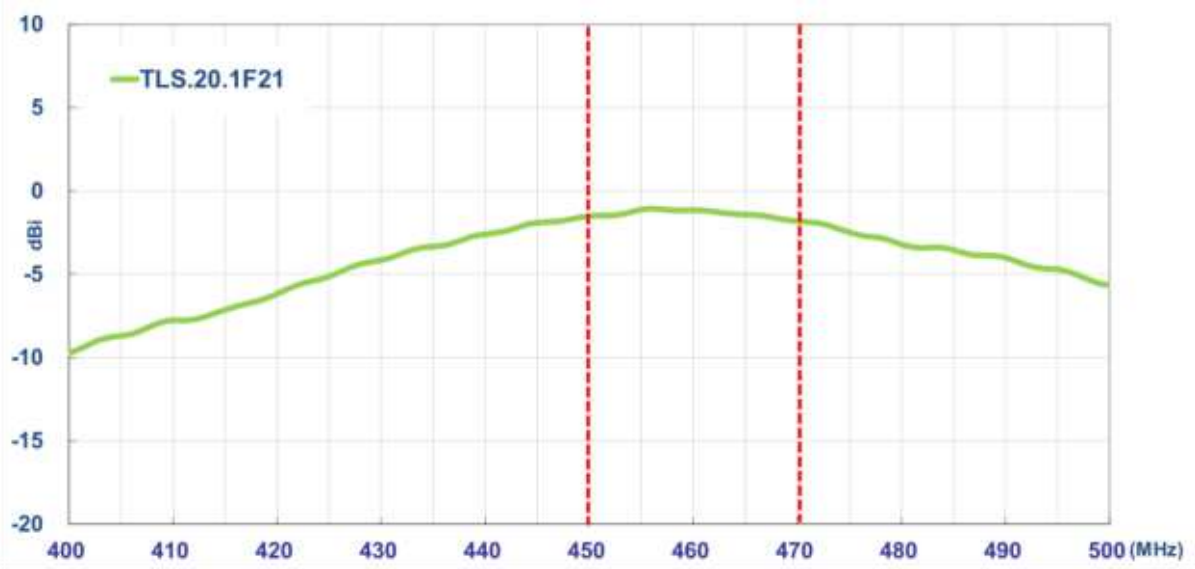
3.2 Efficiency



3.3 Average Gain



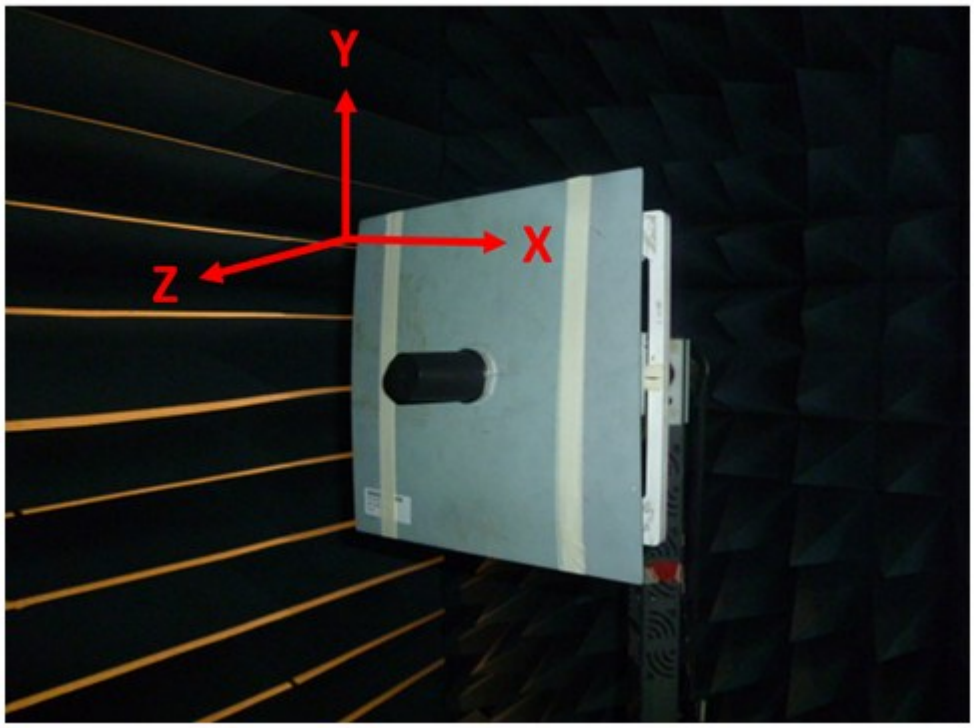
3.4 Peak Gain



4. Radiation Patterns

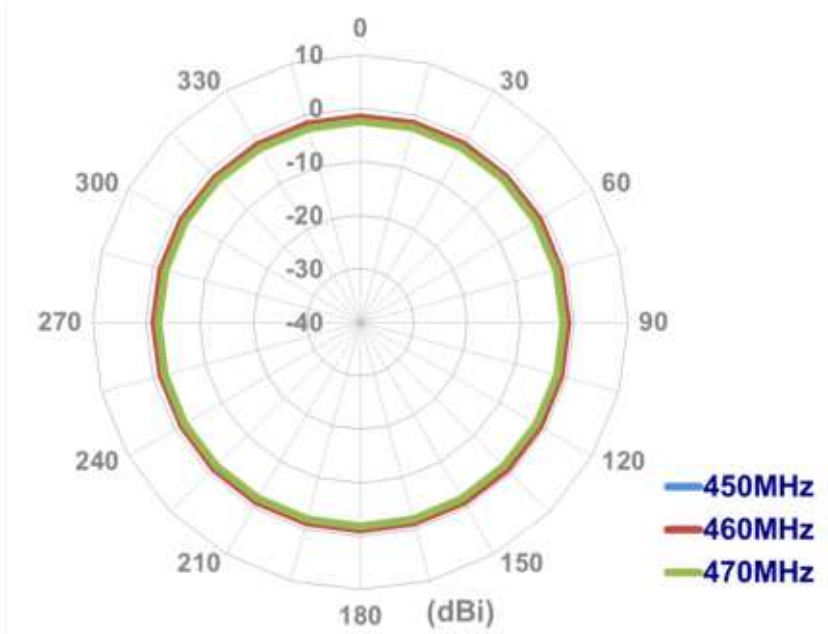
4.1 Test Setup

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

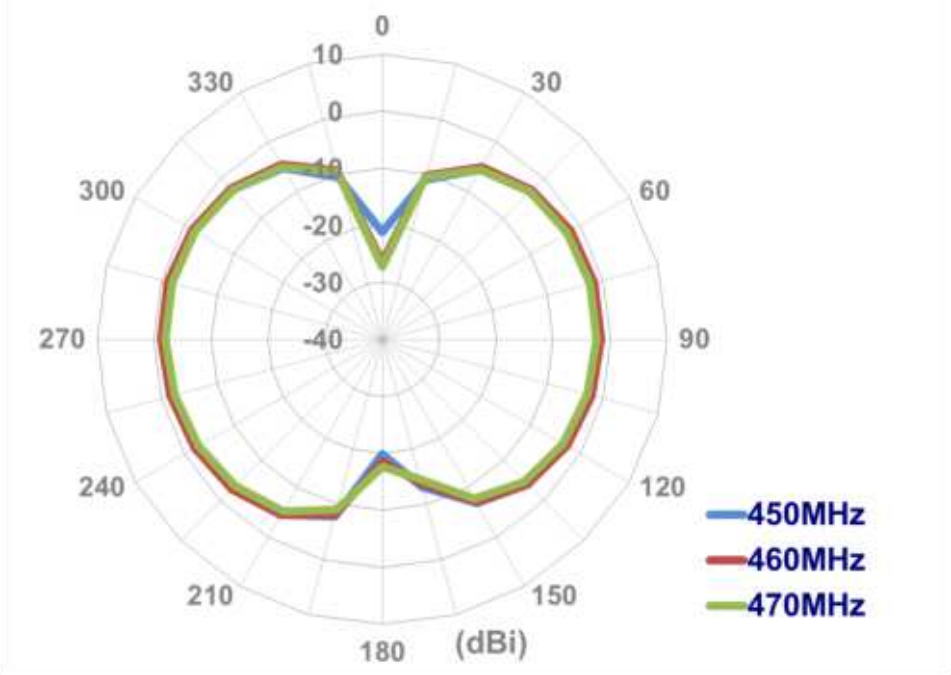


4.2 2D radiation Patterns

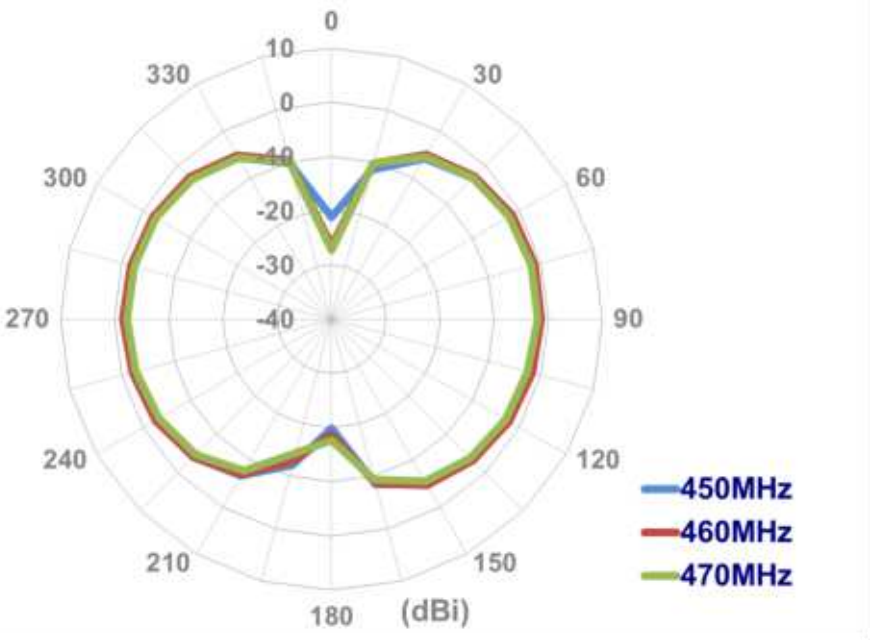
XY Plane



XZ Plane

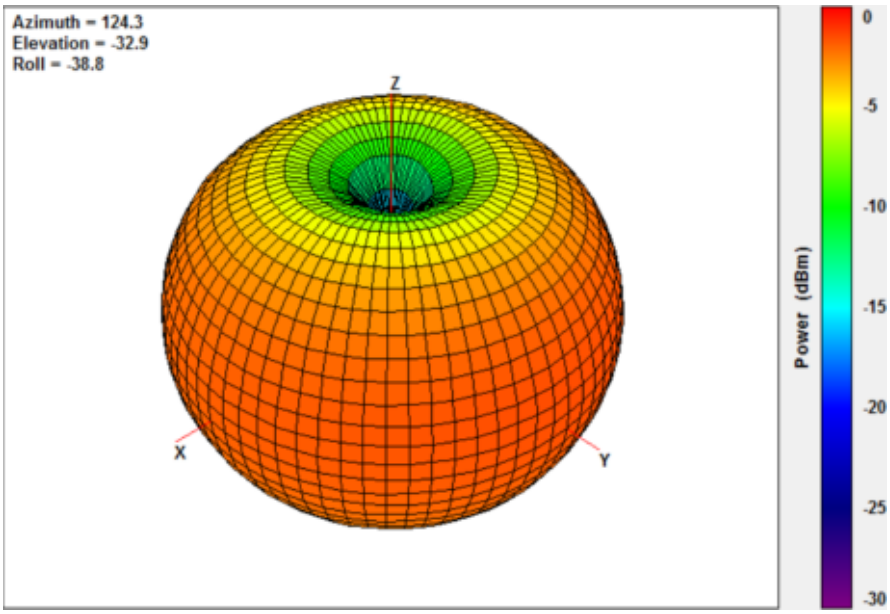


YZ Plane

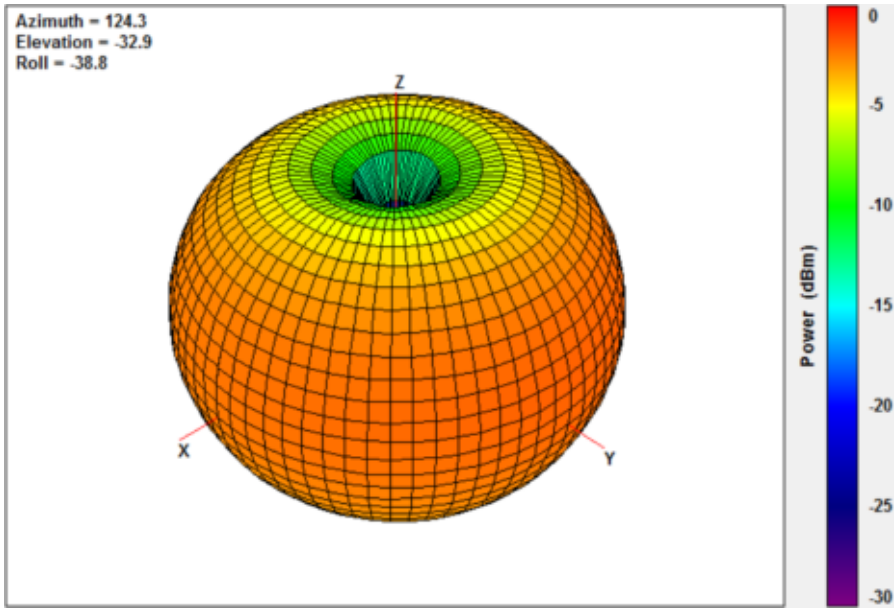

0
30
60
90
120
150
180
210
240
270
300
330
10
0
-10
-20
-30
-40
(dBi)
450MHz
460MHz
470MHz

4.3 3D radiation Patterns

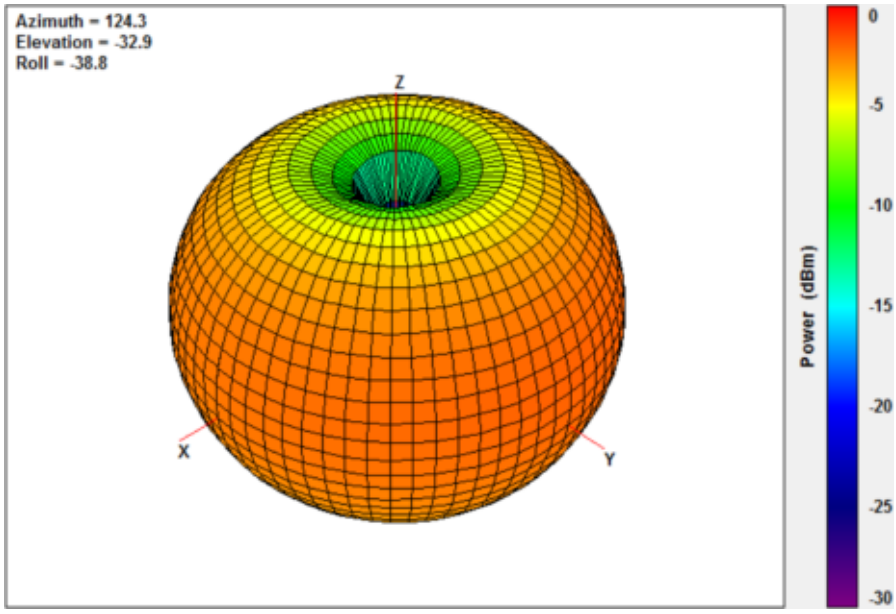
450MHz



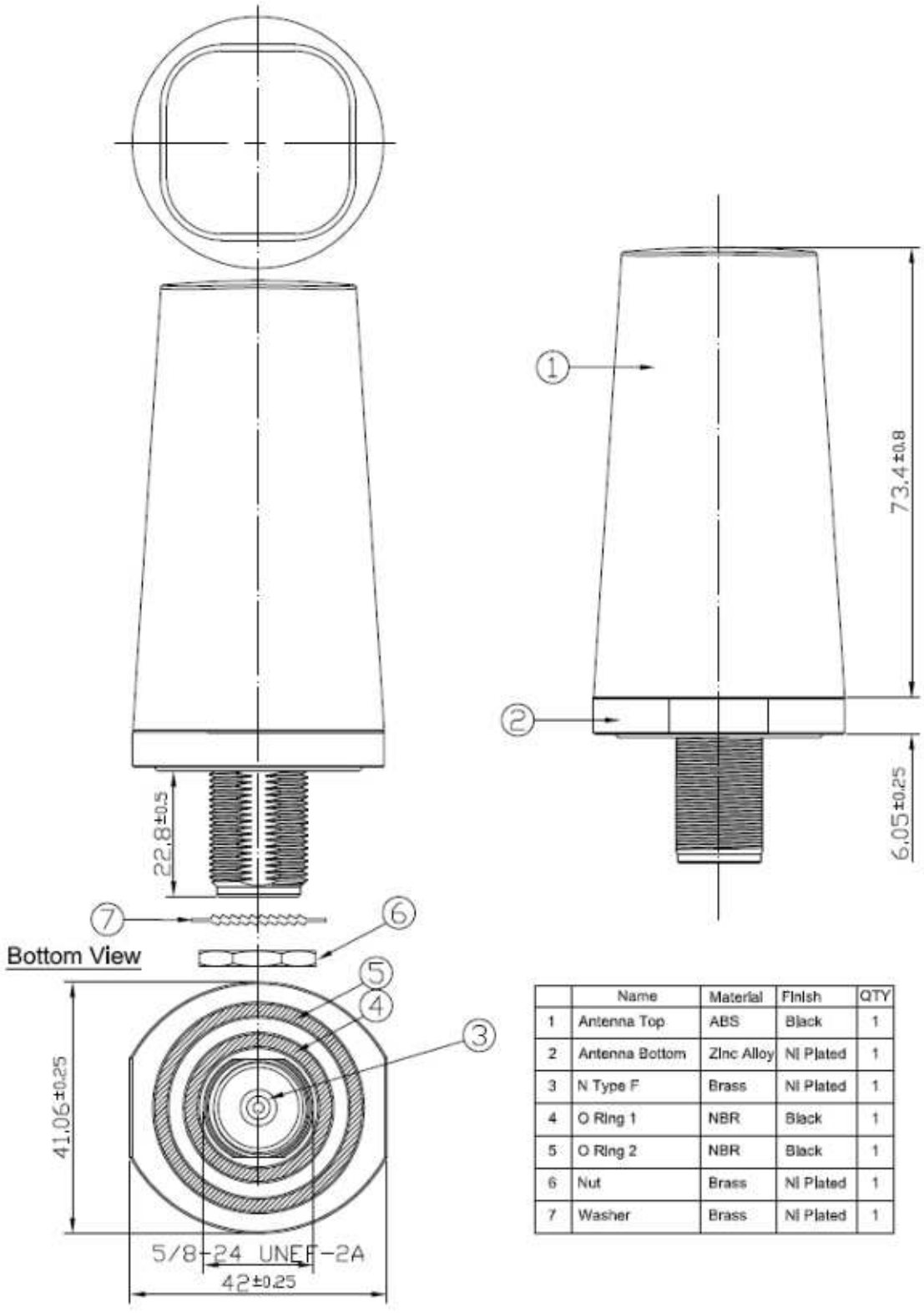
460MHz



470MHz

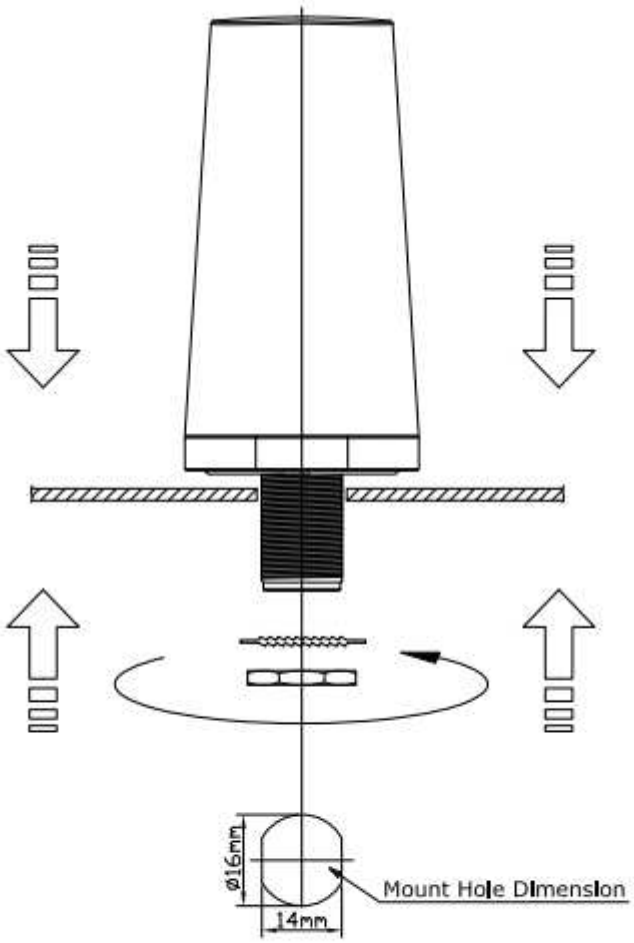

Azimuth = 124.3
Elevation = -32.9
Roll = -38.8
Z
X
Y
Power (dBm)
0
-5
-10
-15
-20
-25
-30

5. Mechanical Drawing (Units: mm)



	Name	Material	Finish	QTY
1	Antenna Top	ABS	Black	1
2	Antenna Bottom	Zinc Alloy	Ni Plated	1
3	N Type F	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

6. Installation Guidelines



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

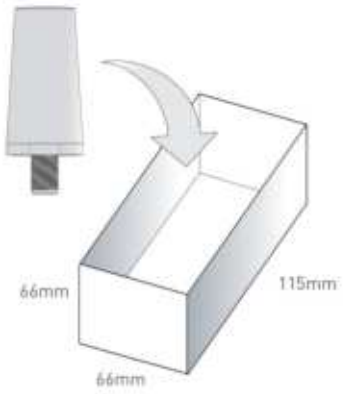
Maximum torque for mounting is 9.8 N.m or 100 kgf.cm

7. Packaging

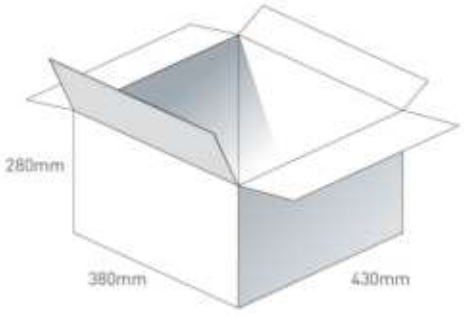
TLS.20.1F21

Packaging Specifications

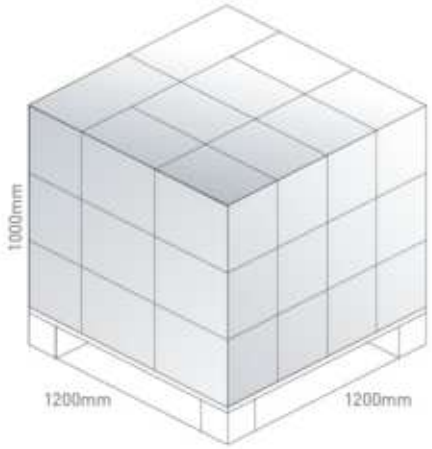
1 No. TLS.20.1F21 per small box
Box Dimensions - 66 x 66 x 115mm
Weight - 210g



1 Outer Carton
Carton Dimensions - 430 x 380 x 280mm
60 pcs TLS.20.1F21 per carton
Weight - 13.02Kg



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



Changelog for the datasheet

SPE-15-8-066 – TLS.20.1F21

Revision: D (Current Version)	
Date:	2026-06-11
Changes:	Updated Max Power Input
Changes Made by:	Cesar Sousa

Previous Revisions

Revision: C	
Date:	2023-09-13
Changes:	Updated specifications
Changes Made by:	Cesar Sousa

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

Revision: A (Original First Release)	
Date:	2021-09-28
Notes:	
Author:	Jack Conroy



www.taoglas.com

© Taoglas