



# TAOGLAS®



## Datasheet

### Hercules Wi-Fi 6 Permanent Mount Antenna

**Part No:**  
**WS.03.B.305151**

**Description:**

Hercules –Low Profile Wi-Fi 6 Permanent Mount Antenna  
Covering Frequencies 2.4 – 2.5 / 5.1 - 5.8 / 5.9 - 7.125GHz

**Features:**

Low Profile Permanent Mount Antenna  
Covers 2.4/5.8GHz as well as Wi-Fi 6 Frequencies: 5.9-7.125GHz  
UV and Vandal Resistant ABS Housing  
IP65 Rated Enclosure  
Dimensions: Ø49 x 29mm  
Connector: RP-SMA Male  
Cable: 3m of TGC-200  
RoHS & Reach Compliant

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## 1. Introduction



The Hercules WS.03 is a high efficiency, high gain permanent mount antenna designed to cover all Wi-Fi bands including frequencies for Wi-Fi 6, up to 7.125GHz. It has omni-directional gain across both bands ensures constant reception and transmission making the WS.03 an ideal solution for varied Wi-Fi applications.

The Hercules has been designed for the most robust of use in challenging environments, with durable UV-resistant ASA housing that is IP65 rated, resistant to vandalism and with heavy duty work with extra thick thread for secure mounting.

At only 29mm high, with a diameter of 49mm, it is a covert

Typical Applications Include:

- Remote Monitoring
- Gateways and Routers
- HD Video Streaming
- Smart Cities

Many module manufacturers specify peak gain limits for any antennas that are to be connected to that module. Those peak gain limits are based on free-space conditions. In practice, the peak gain of an antenna tested in free-space can degrade by at least 1 or 2dBi when put inside a device. So ideally you should go for a slightly higher peak gain antenna than mentioned on the module specification to compensate for this effect, giving you better performance.

The cable and connectors are fully customizable, for further information please contact your regional Taoglas customer support team.

## 2. Specifications

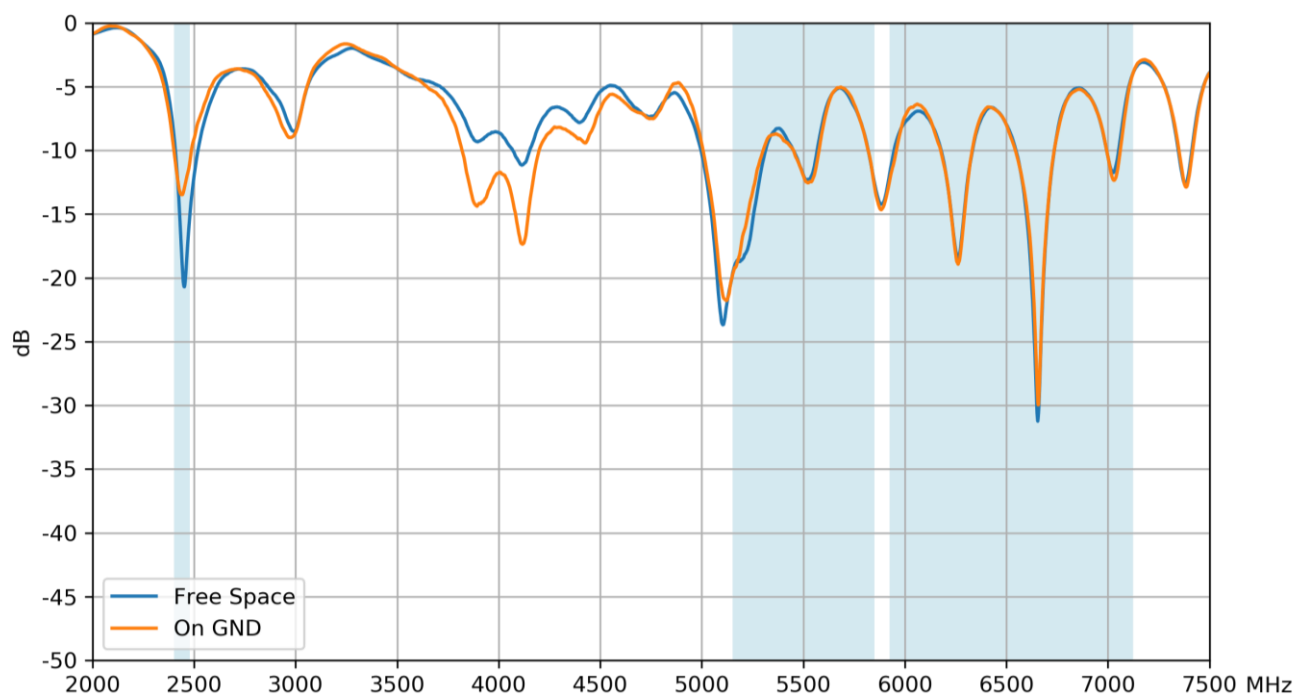
Wi-Fi Electrical									
Band	Frequency (MHz)		Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max Input Power
2.4GHz Wi-Fi	2400~2500	Free space	57.9	-2.37	4.85	50 $\Omega$	Linear	Omni-Directional	10W
		30x30cm Ground Plane	58.2	-2.35	3.25				
5.8GHz Wi-Fi	5150~5850	Free space	42.2	-3.74	5.25				
		30x30cm Ground Plane	43.8	-3.59	5.46				
7.1GHz Wi-Fi 6	5925~7125	Free Space	72.5	-2.19	6.00				
		Ground Plane	69.7	-2.07	8.23				

\*Tested on a 30x30cm Ground Plane & In Free Space.

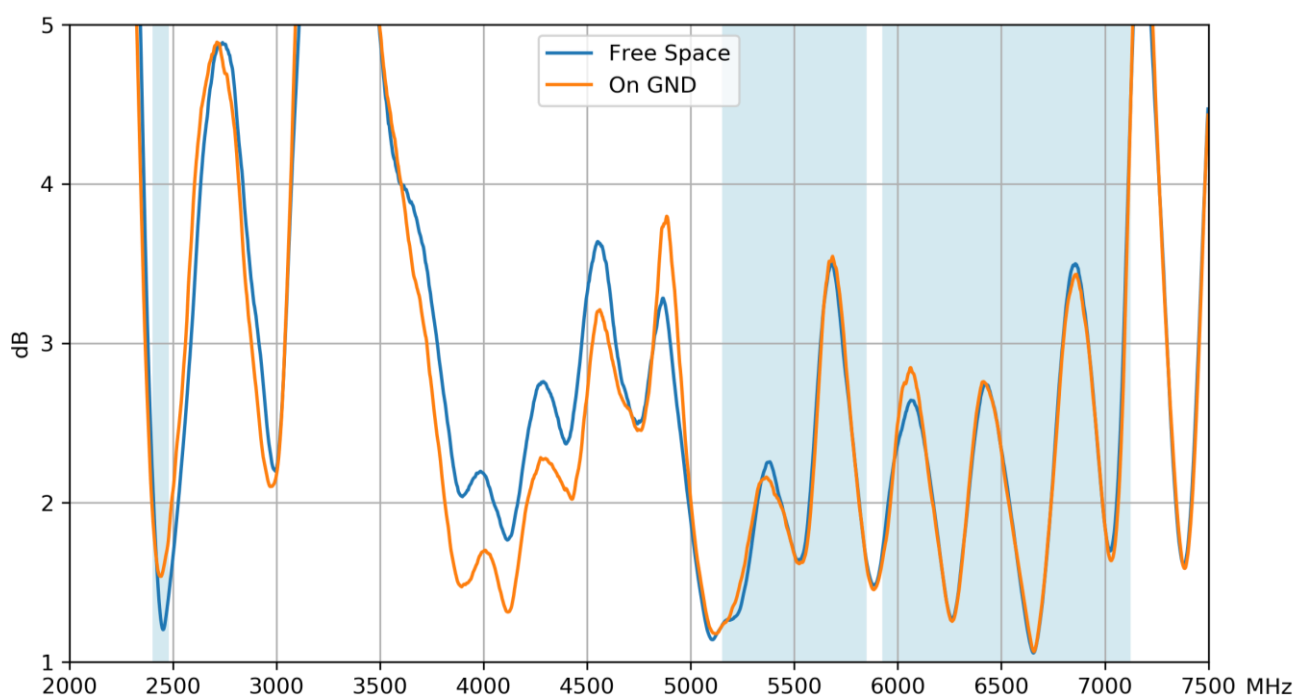
Mechanical	
Height	29 mm
Planner Dimension	49 mm
Casing	ASA
Cable	3000mm of TGC-200
Connector	Reverse Polarity SMA Male
Base and Thread	Zinc Alloy
Thread Diameter	M18
Sealant	Silicon Rubber
Weight	130g
Recommended Mounting Torque	24.5N·m
Maximum Mounting Torque	29.4N·m
Environmental	
Temperature Range	-40°C to 85°C
Humidity Level	Non-condensing 65°C 95% RH
Ingress Protection	IP65

## 3. Antenna Characteristics

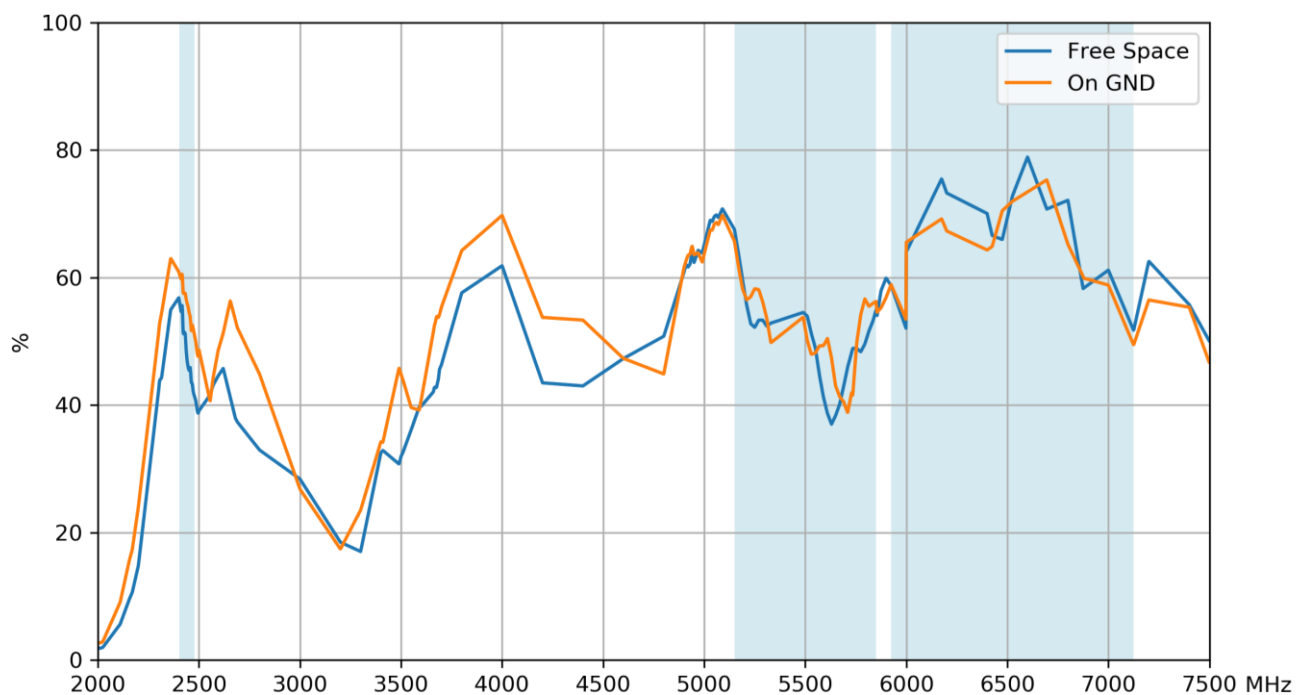
### 3.1 Return Loss



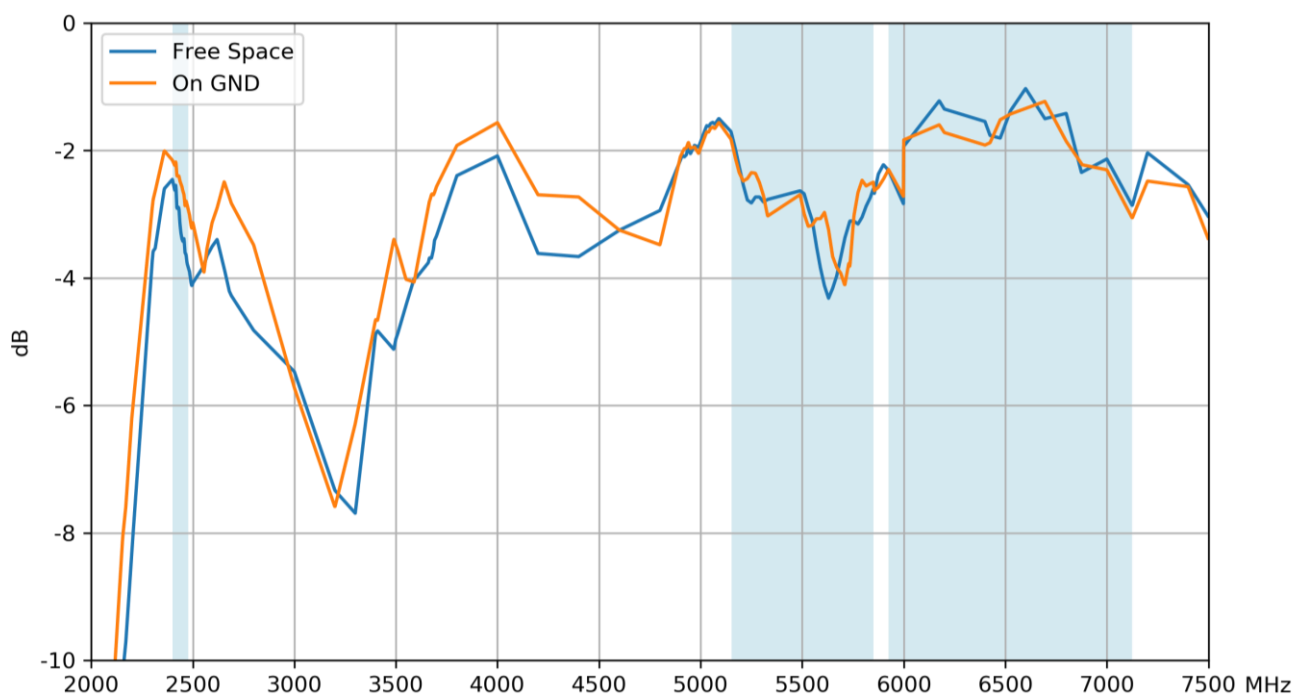
### 3.2 VSWR



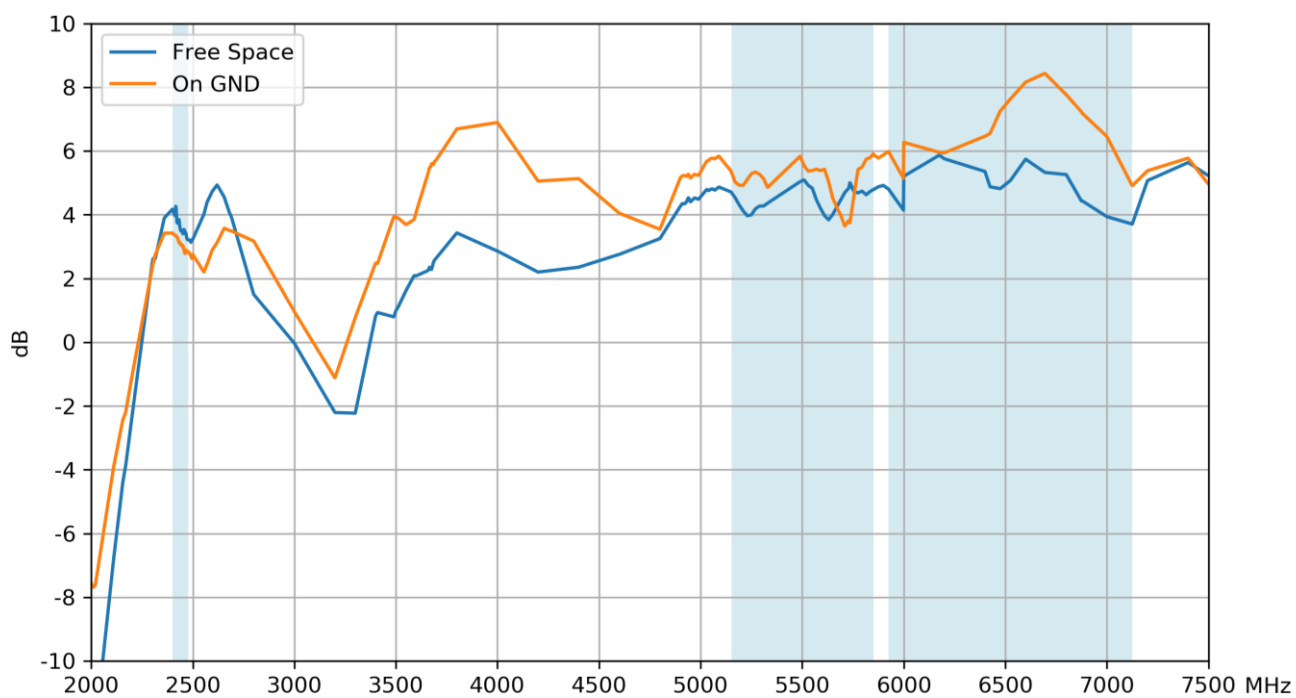
### 3.3 Efficiency



### 3.4 Average Gain

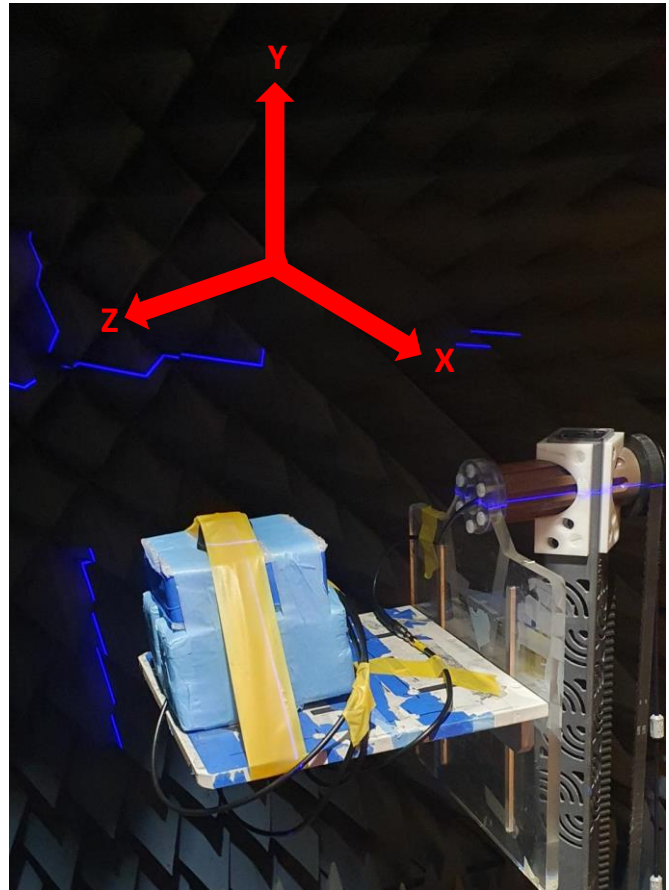
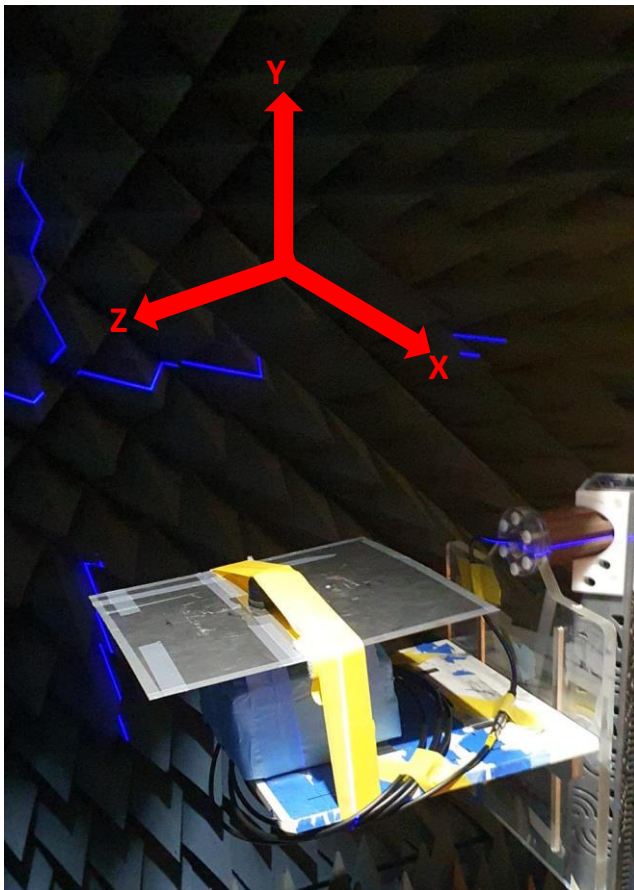


### 3.5 Peak Gain



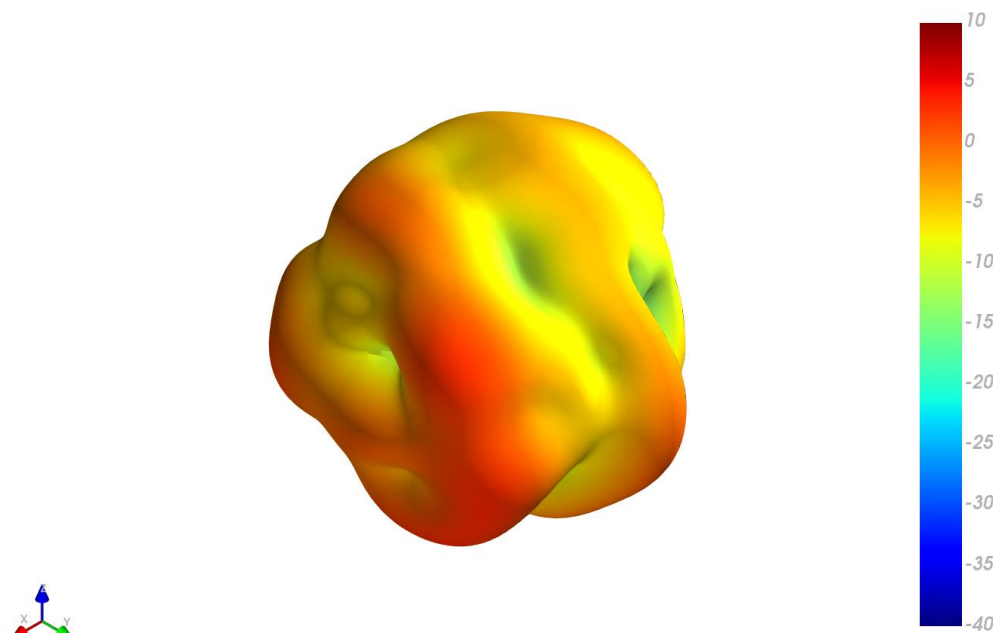
## 4. Radiation Patterns

### 4.1 Test Setups

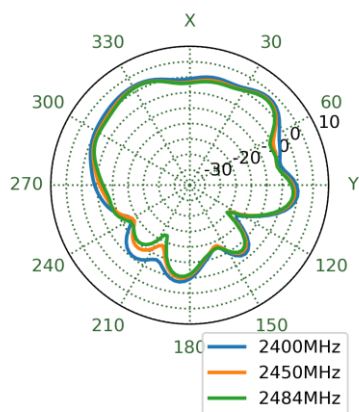


## 4.2 Free Space 3D and 2D Radiation Patterns

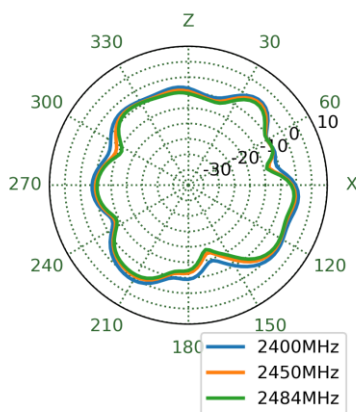
2450MHz



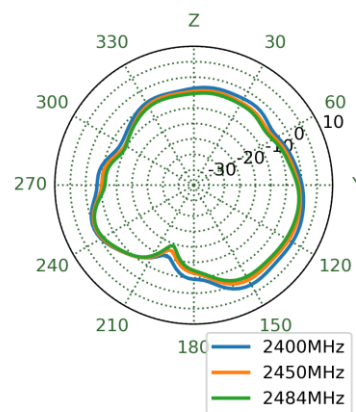
XY Plane



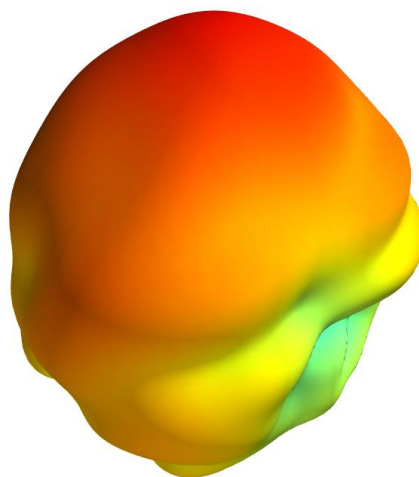
XZ Plane



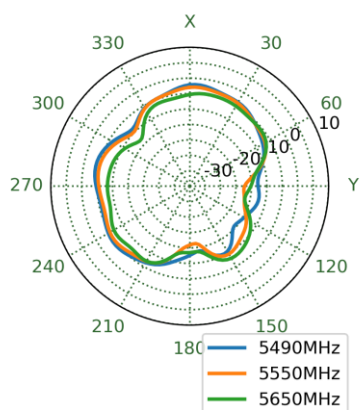
YZ Plane



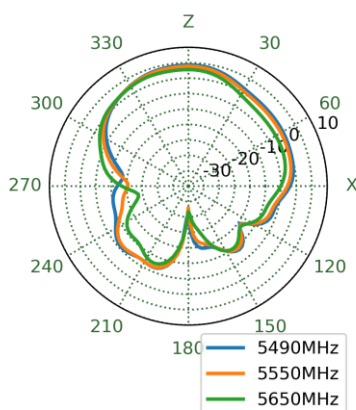
5550MHz



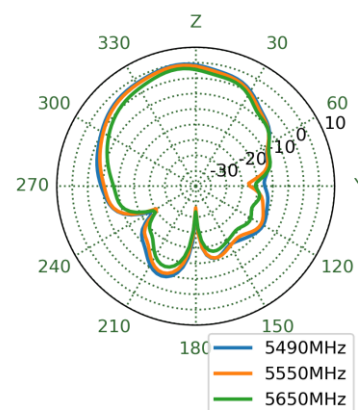
XY Plane



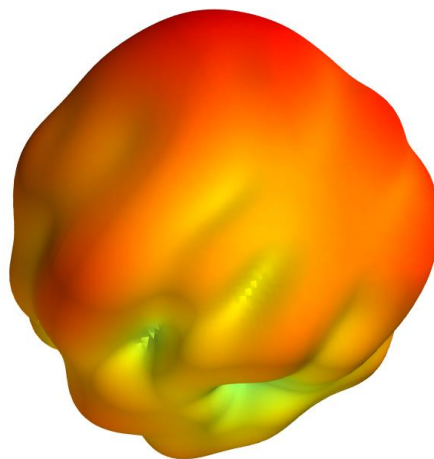
XZ Plane



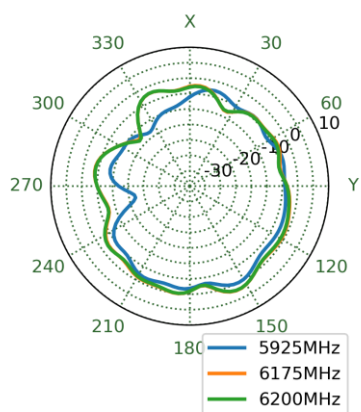
YZ Plane



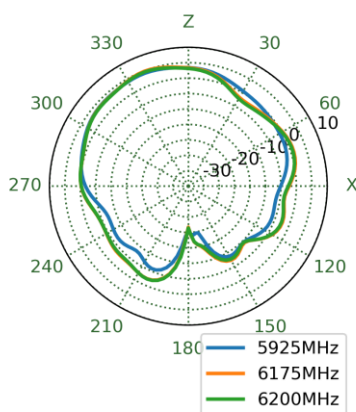
# 6175MHz



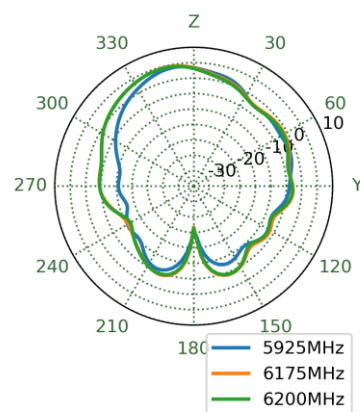
XY Plane



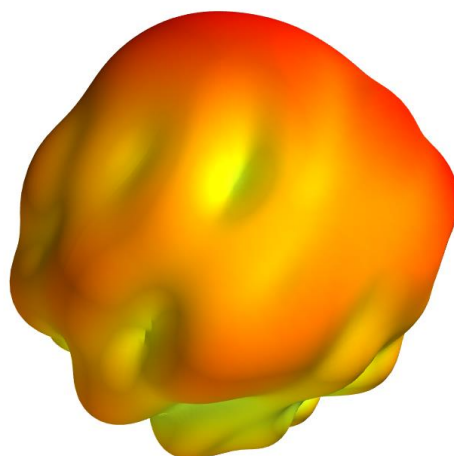
XZ Plane



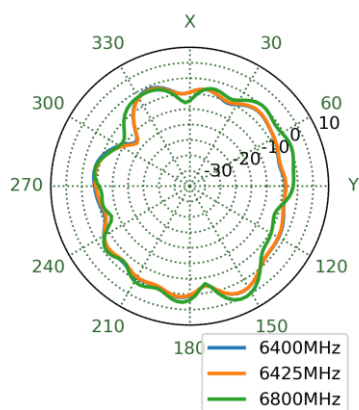
YZ Plane



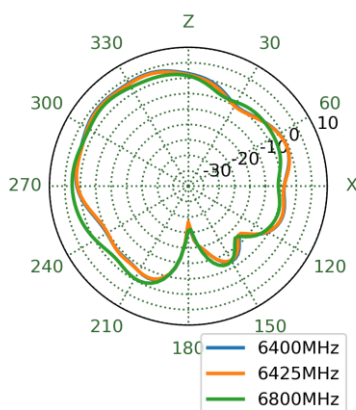
# 6425MHz



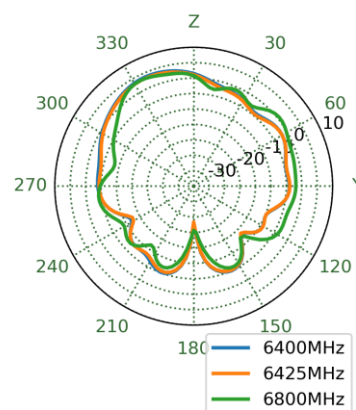
XY Plane



XZ Plane

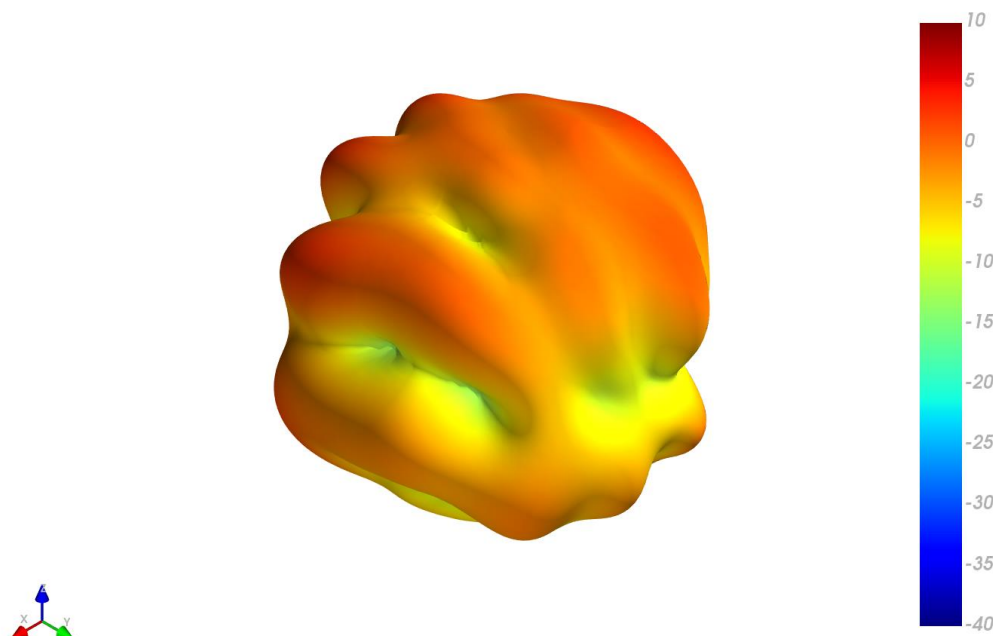


YZ Plane

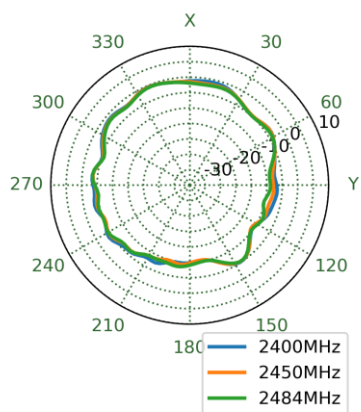


### 4.3 Ground Plane 3D and 2D Radiation Patterns

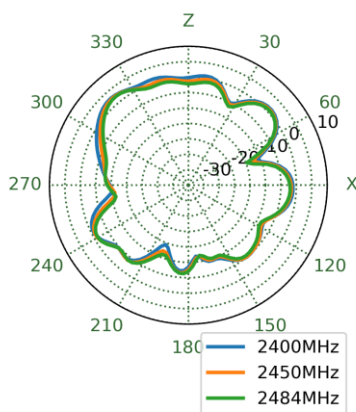
2450MHz



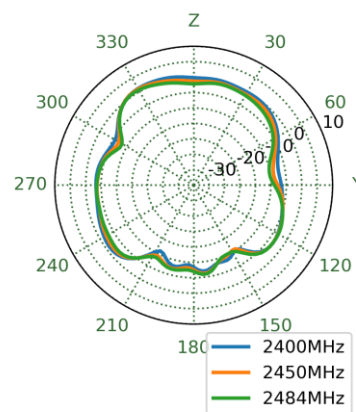
XY Plane



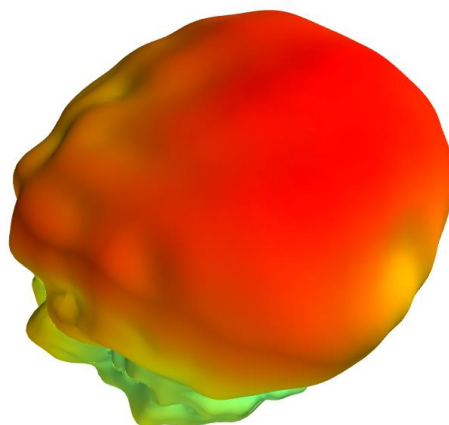
XZ Plane



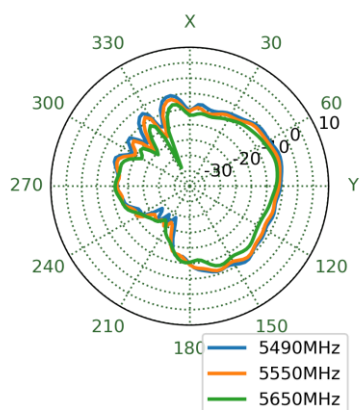
YZ Plane



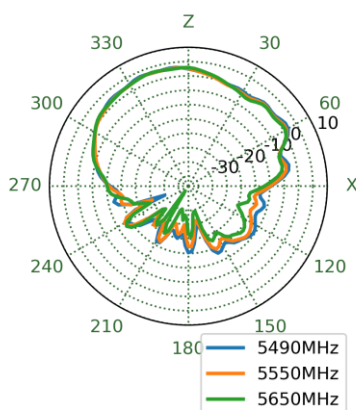
# 5550MHz



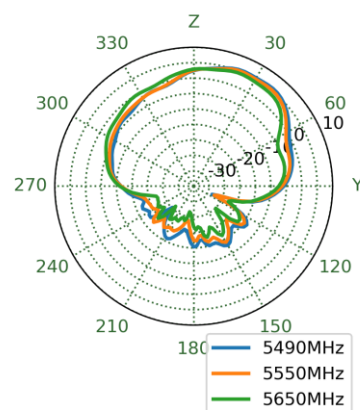
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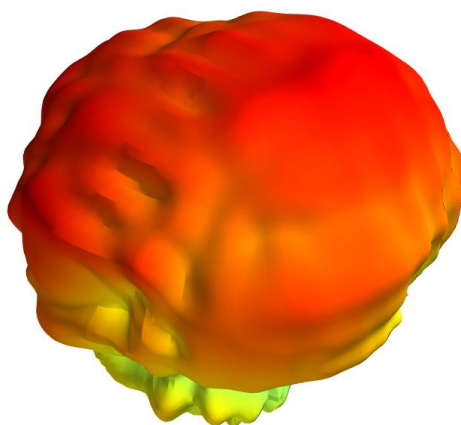
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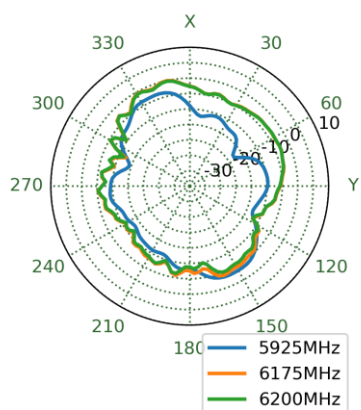
YZ Plane



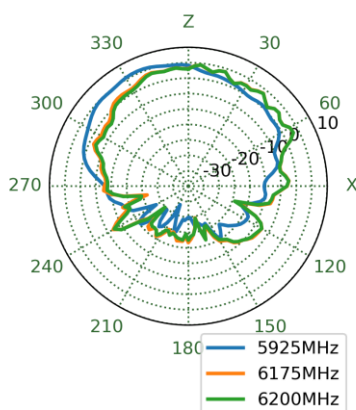
# 6175MHz



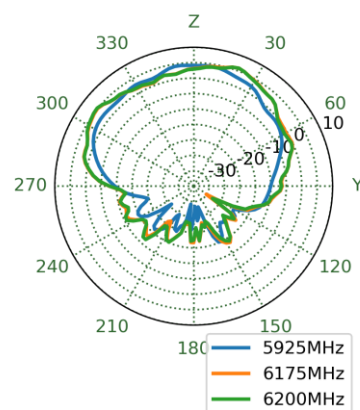
XY Plane



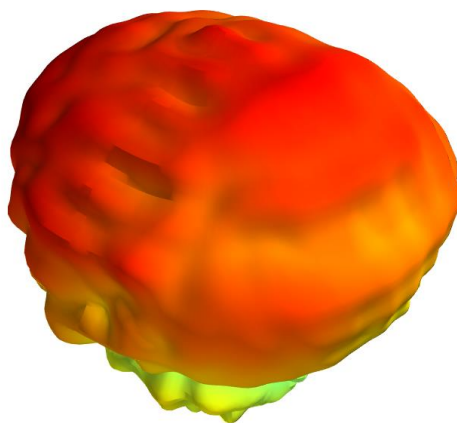
XZ Plane



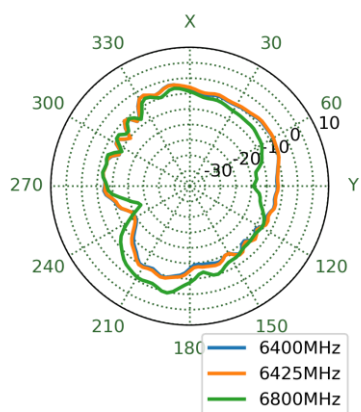
YZ Plane



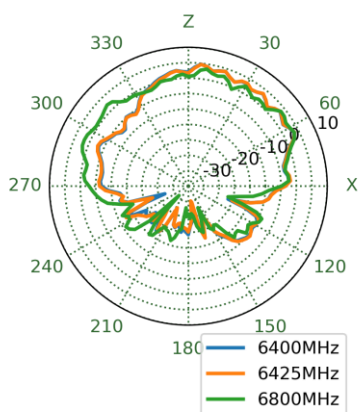
## 6425MHz



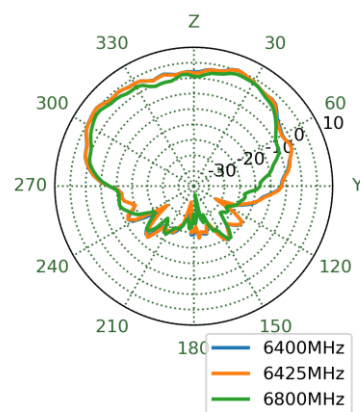
XY Plane



XZ Plane



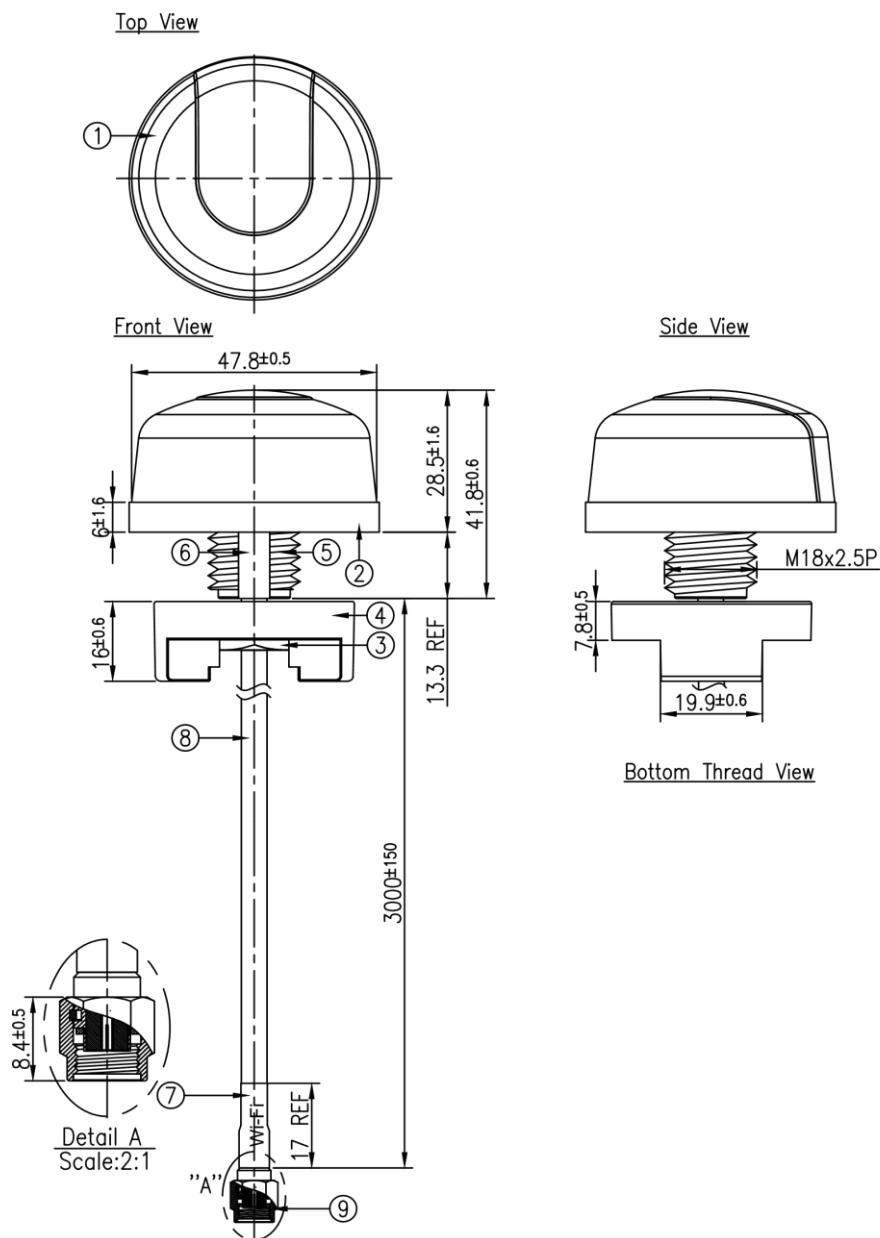
YZ Plane




## 5. Mechanical Drawing (Units: mm)

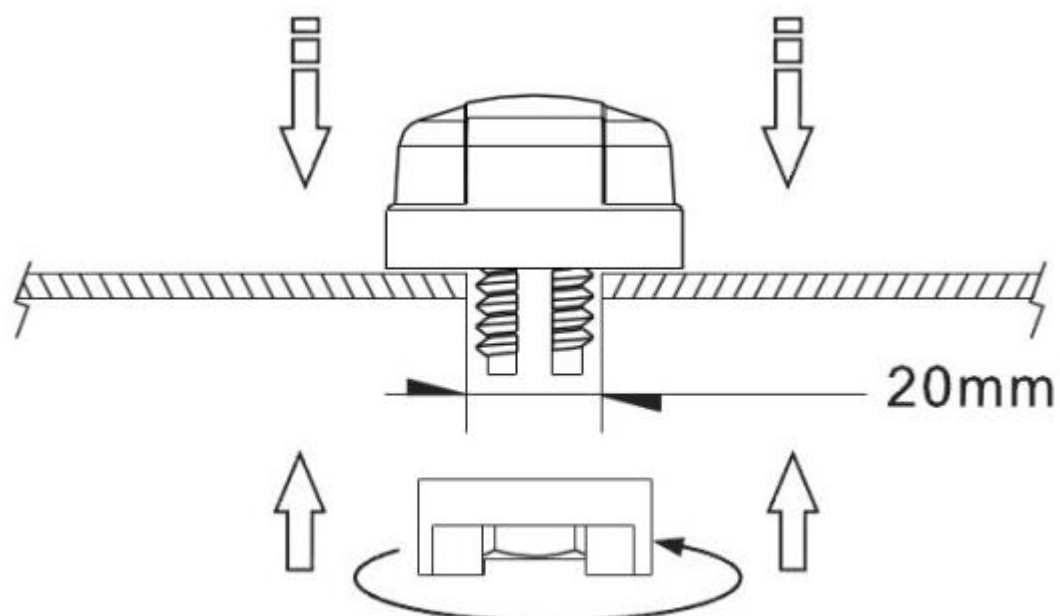
ISO NO.: EDW-21-8-0100  
STATE: Release  
NOTES:

REV.	DESCRIPTION	ENG.	APPROVED	DATE
001	Initial Design		Aaron	2021/01/21



APPROVED BY: Aaron	<div><p>TAOGLAS</p><p>TW Design Centre</p><p>This drawing and its inherent design concepts are property of Taoglas. Not to be copied or given to third parties without the written consent of Taoglas.</p></div>			
CHECK BY:				
DRAWN BY: Aaron				
DATE: 2021/01/21				
UNLESS OTHERWISE SPECIFIED TOLERANCES ON:				
THIRD ANGLE PROJECTION	UNIT: mm	SCALE: 1:1.25	PAGES: 1/1	REV. D01

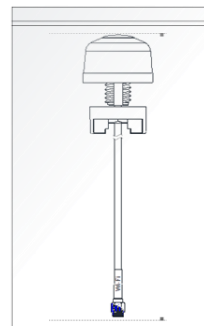
## 6. Installation Guidelines



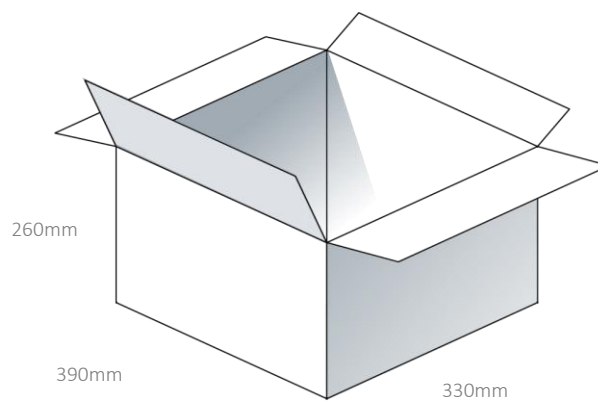
Recommended torque for Mounting is 24.5N·m  
Maximum torque for mounting is 29.4N·m

## 7. Packaging

1pc WS.03.B.305151 per PE Bag  
Weight - 130g

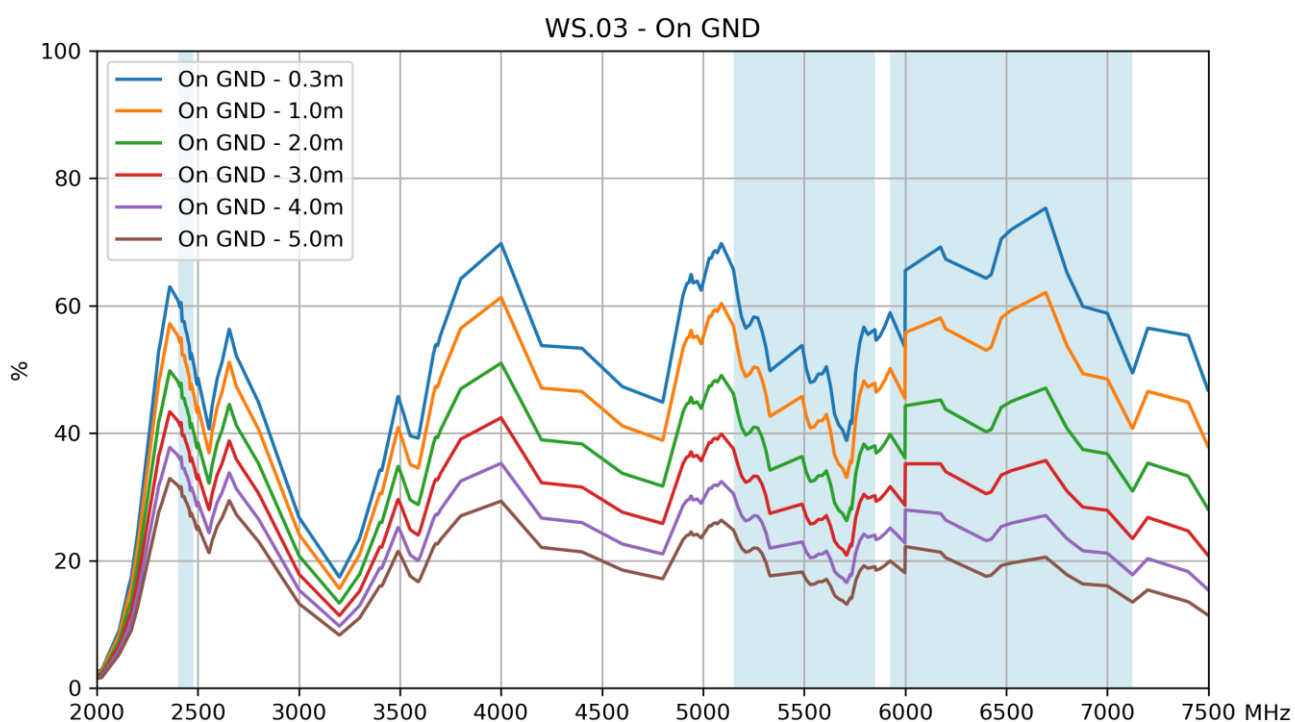
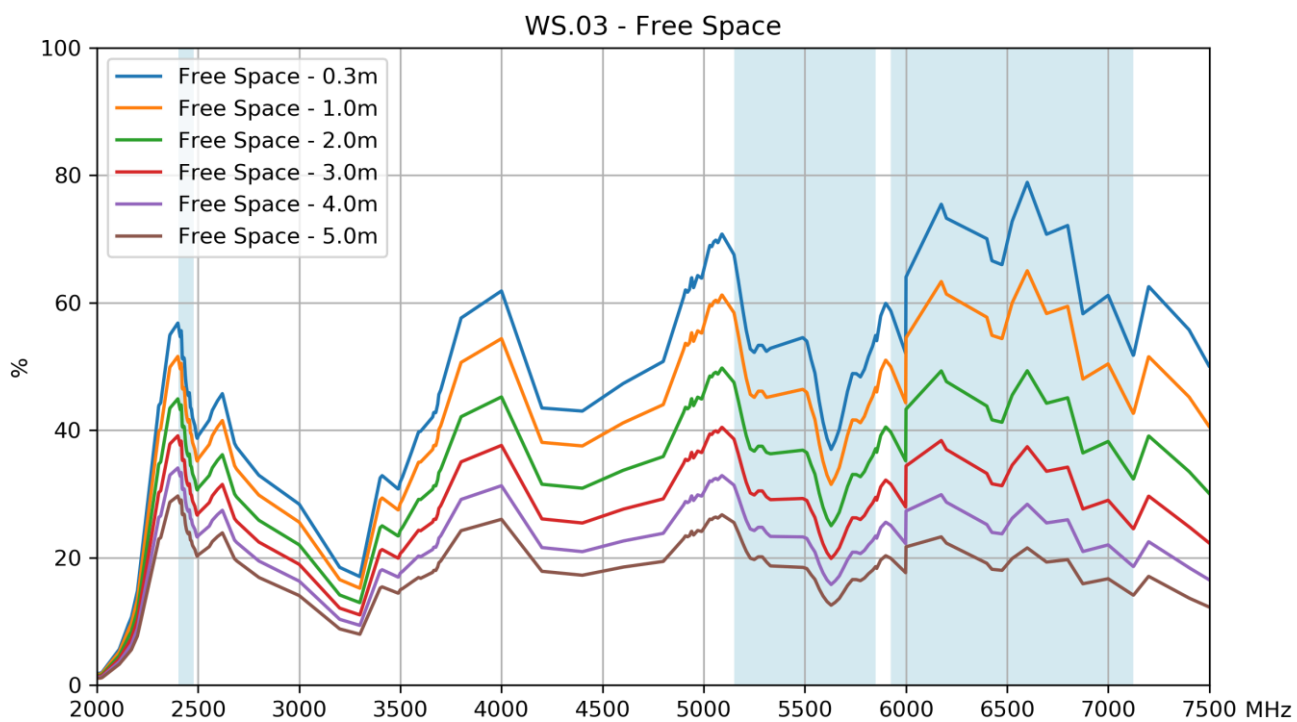


50pcs WS.03.B.305151 per carton  
Dimensions - 390\*330\*260mm  
Weight - 6.75Kg

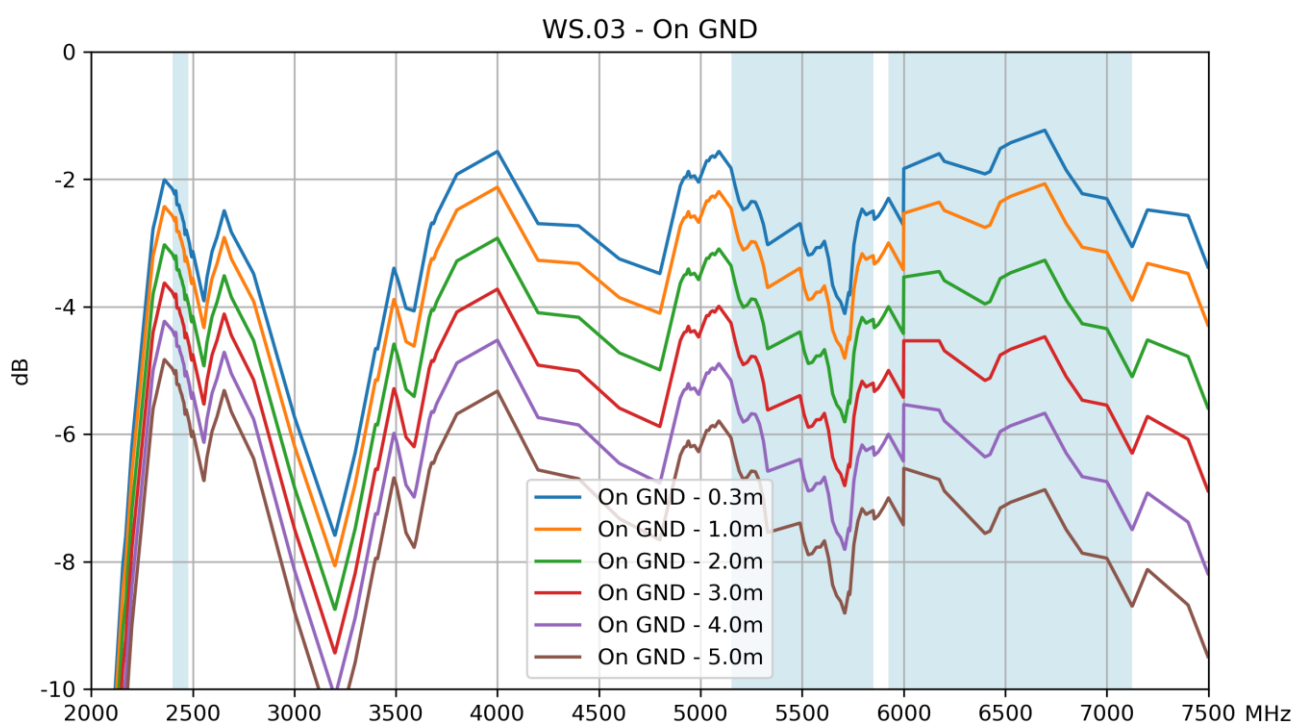
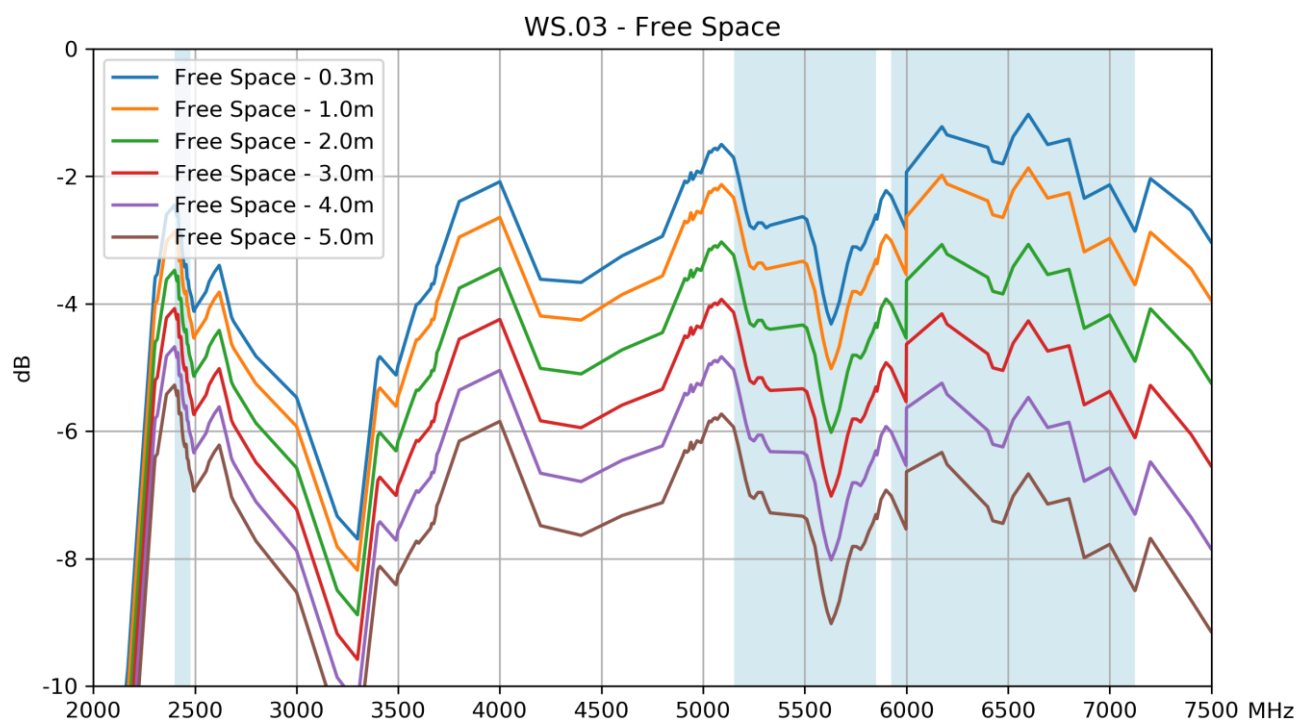


## 8. Application Note

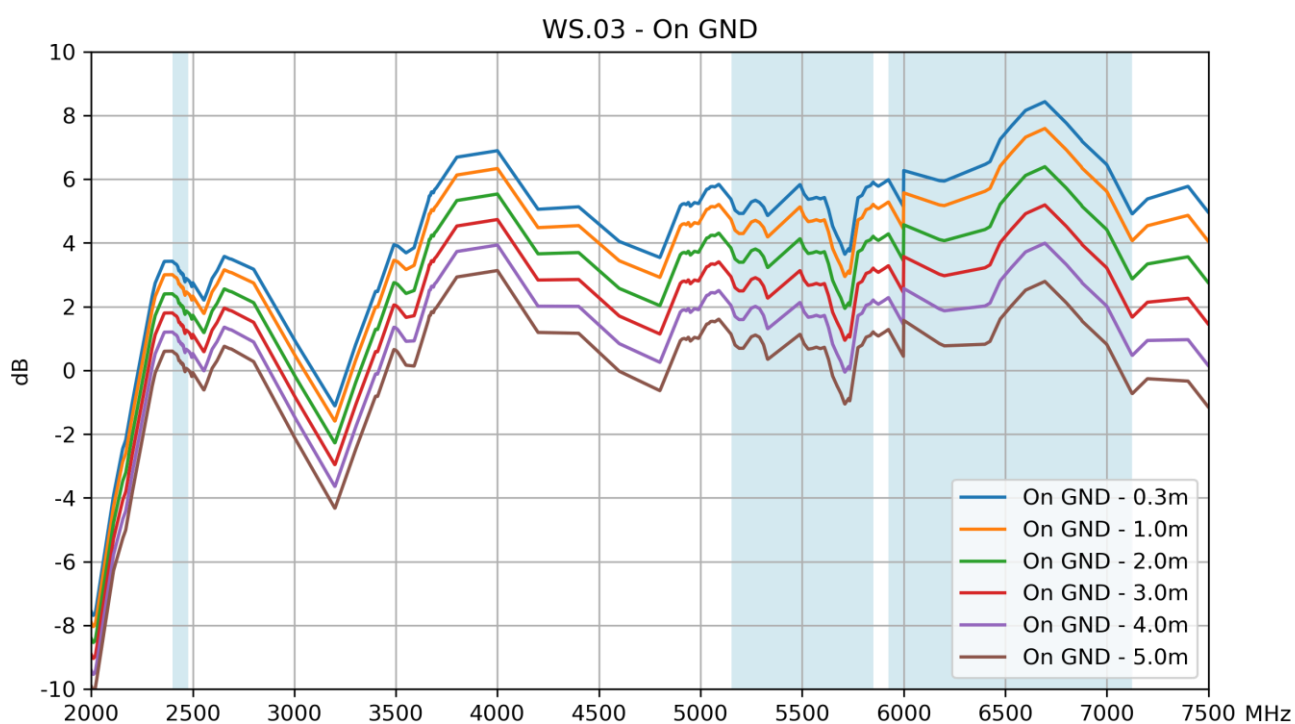
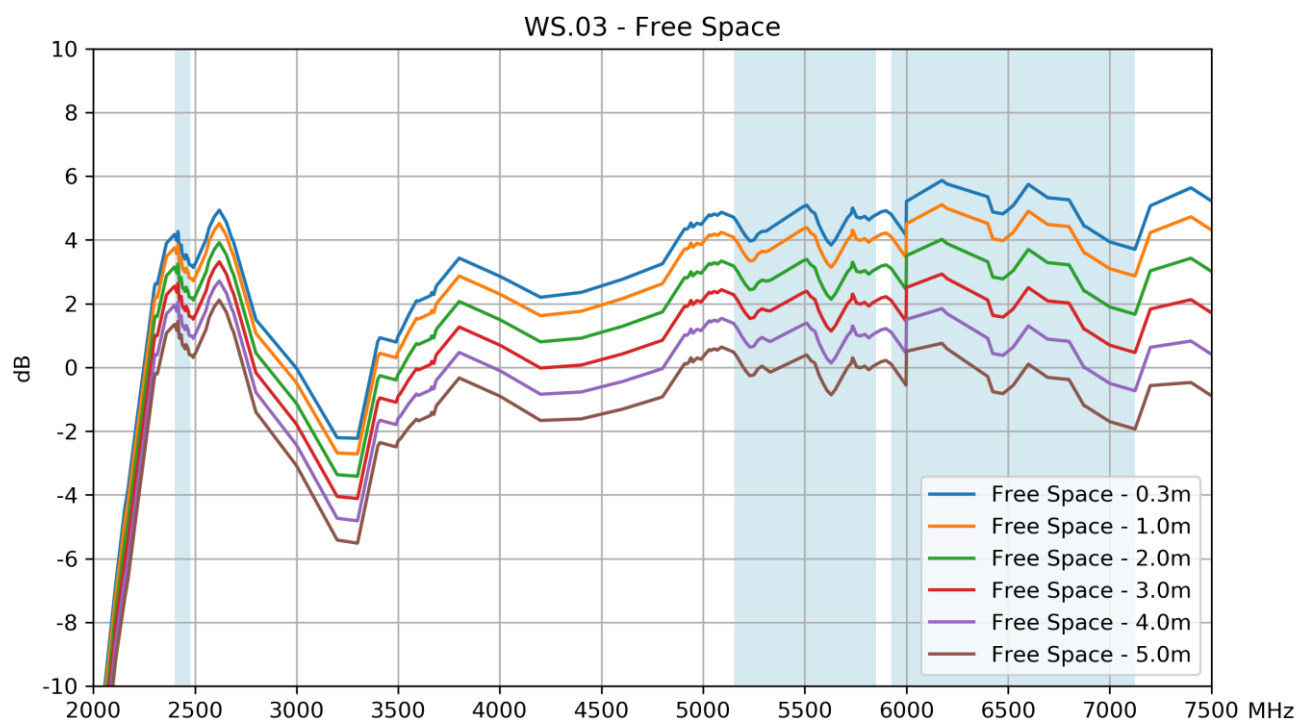
### 8.1 Efficiency



## 8.2 Average Gain



### 8.3 Peak Gain



## Changelog for the datasheet

**SPE-21-8-022 – WS.03.B.305151**

### Revision: C (Current Version)

Date:	2022-12-14
Notes:	Updated data
Author:	Evan Murphy

### Previous Revisions

#### Revision: B

Date:	2021-11-22
Notes:	Updated IP65 rating
Author:	Erik Landi

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

Date:	2021-03-31
Notes:	
Author:	Jack Conroy



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