TAOGLAS

Datasheet

Part No:
GW.05.AE23

Description:

Dual-Band Wi-Fi 2.4~2.5GHz/5.15~7.2GHz Terminal Mount Monopole Antenna

Also Covering Wi-Fi 6 Frequencies

Features:

High Efficiency – with and without ground plane

Wi-Fi 2.4/5.8/7.1GHz

Covers Wi-Fi 6 Frequencies: 5.9-7.2GHz

Extremely Compact – 69.6mm

Aesthetic look and feel

Unique can rotate 360 degrees and articulate through 180 degrees

Max Peak Gain compliant with most Wi-Fi modules

Connector: Fakra Code I Beige SMB(F)

Dimensions: 69.6*Ø10mm

CE Certified

RoHS & Reach Compliant

CE

1. Introduction

The GW.05 dual band Wi-Fi Hinged Rotatable Antenna is a high efficiency monopole antenna with the capacity to cover Wi-Fi 6 frequencies up to 7.125GHz. Compared to other much larger antennas on the market, it has superior wide-band high efficiency characteristics. The direct mount Fakra connector enables a more robust mating to the device compared to a SMA, the locking feature prevents the antenna coming loose due to vibration or shock. The FAKRA Connector means it is also suitable for use in conjunction with the next generation of Routers and Gateways.

The GW.05, as all monopole antennas, works best connected directly to the ground-plane of the device main PCB or to the outside of a metal housing. However, it still has very good performance (>50%) even without connecting to a ground-plane, making it the best all round small Wi-Fi terminal antenna on the market.

In the un-grounded installation condition, it also comes below the max peak gain requirements for most Wi-Fi modules which are usually 2dBi, so it can comply with FCC regulations. The GW.05 is for Wi-Fi, WLAN, Zigbee, Bluetooth, and 802.11a/b/g/n/ac applications.

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.

Upon testing of any of our antennas with your device and a selection of appropriate layout, integration technique, or cable, Taoglas can make sure any of our antennas' peak gain will be below the peak gain limits. Taoglas can then issue a specification and/or report for the selected antenna in your device that will clearly show it complying with the peak gain limits, so you can be assured you are meeting regulatory requirements for that module.

For example, a module manufacturer may state that the antenna must have less than 2dBi peak gain, but you don't need to select an embedded antenna that has a peak gain of less than 2dBi in free-space. This will give you a less optimized solution. It is better to go for a slightly higher free-space peak gain of 3dBi or more if available. Once that antenna gets integrated into your device, performance will degrade below this 2dBi peak gain due to the effects of GND plane, surrounding components, and device housing. If you want to be absolutely sure, contact Taoglas and we will test. Choosing a Taoglas antenna with a higher peak gain than what is specified by the module manufacturer and enlisting our help will ensure you are getting the best performance possible without exceeding the peak gain limits.

It is better not to select an embedded antenna with very low free-space peak gain (<2dBi) directly, as this antenna would have worse performance in your device, and lead to compromised performance compared to using a Taoglas antenna.

This antenna's colour and connector and be customized subject to NRE, for further information please contact your regional Taoglas customer support team.

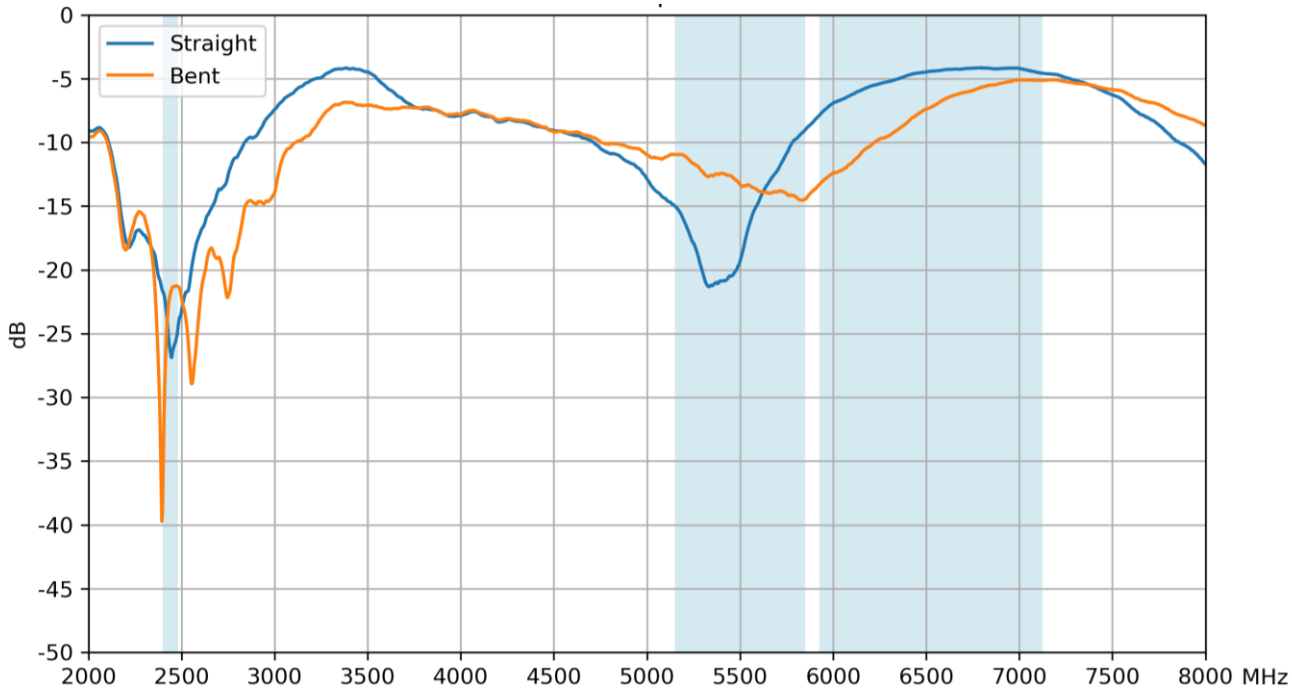
2. Specifications

Free Space Electrical									
Band	**Frequency (MHz)**	**Setup**	**Efficiency (%)**	**Average Gain (dB)**	**Peak Gain (dBi)**	**Impedance**	**Max Power Input**	**Polarization**	**Radiation Pattern**
2.4GHz Wi-Fi	2400~2500	Straight	60.3	-2.19	-0.83	50Ω	10W	Linear	Omnidirectional
		90° Bent	46.3	-3.35	2.92				
5.8GHz Wi-Fi	5150~5850	Straight	64.2	-1.93	2.64				
		90° Bent	65.8	-1.82	2.91				
7.1GHz Wi-Fi 6	5925~7125	Straight	33.6	-4.74	1.41				
		90° Bent	53.3	-2.73	2.61				

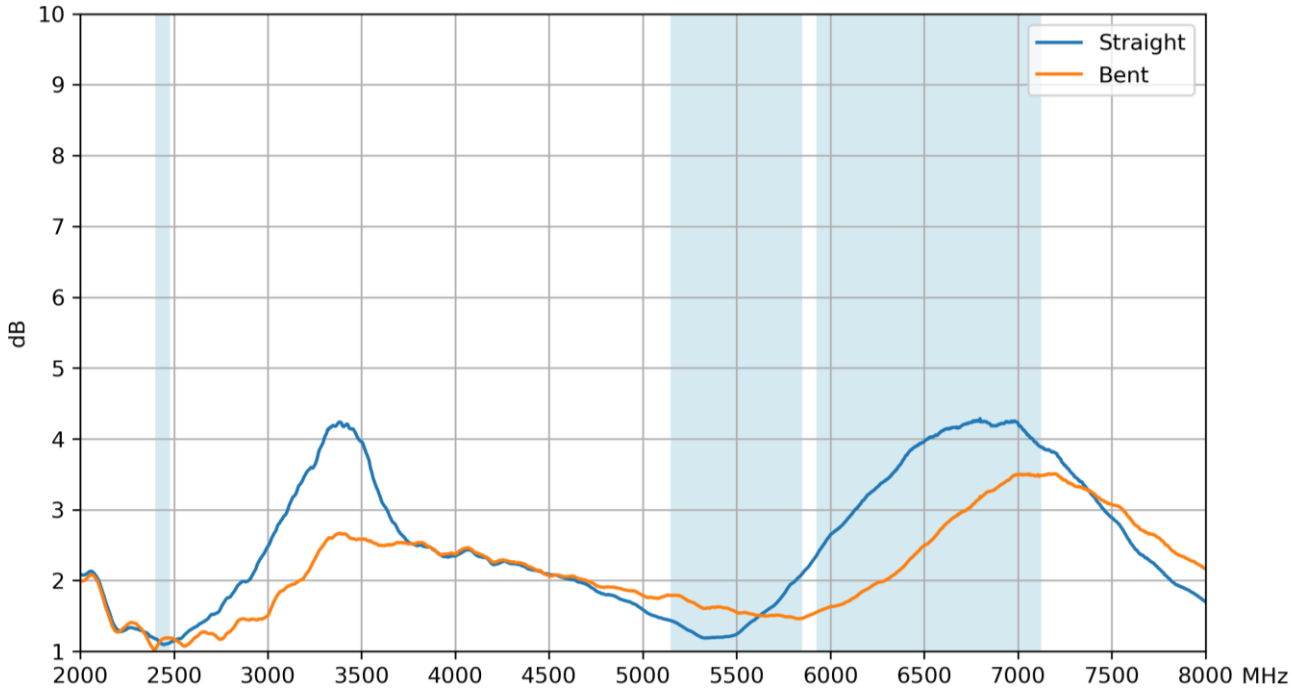
Mechanical	
Antenna length	69.6mm
Antenna Diameter	10mm
Casing	POM
Connector	FAKRA Code I Beige Jack
Weight	8g
Environmental	
Operation Temperature	-40°C ~ + 85°C
Storage Temperature	-40°C ~ + 85°C
Humidity	Non-condensing 65°C 95% RH

3. Antenna Characteristics

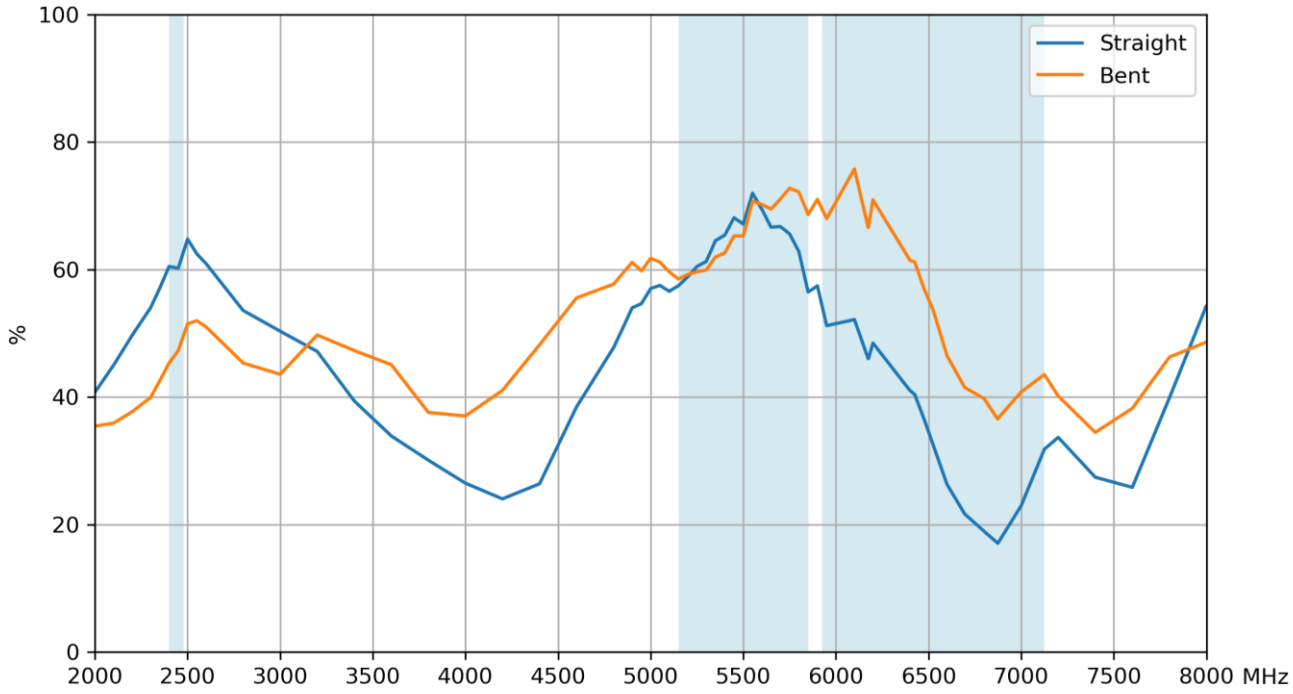
3.1 Return Loss – Free Space



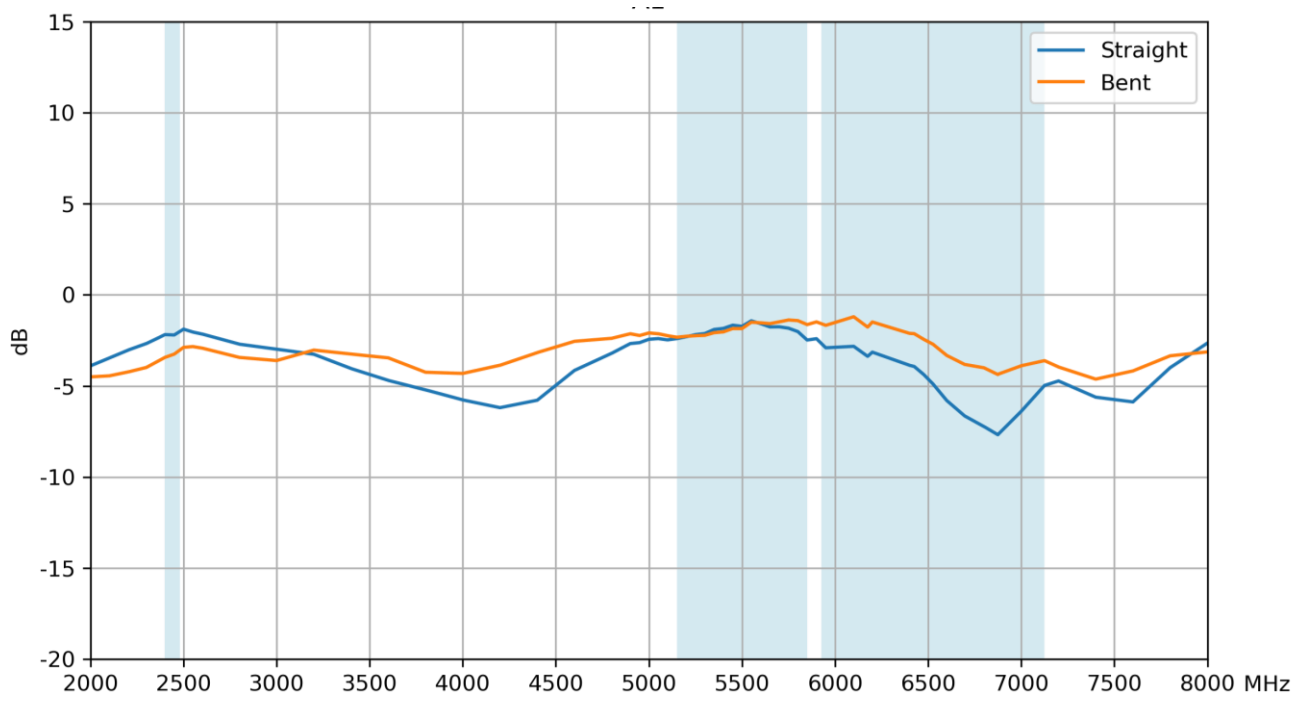
3.2 VSWR – Free Space



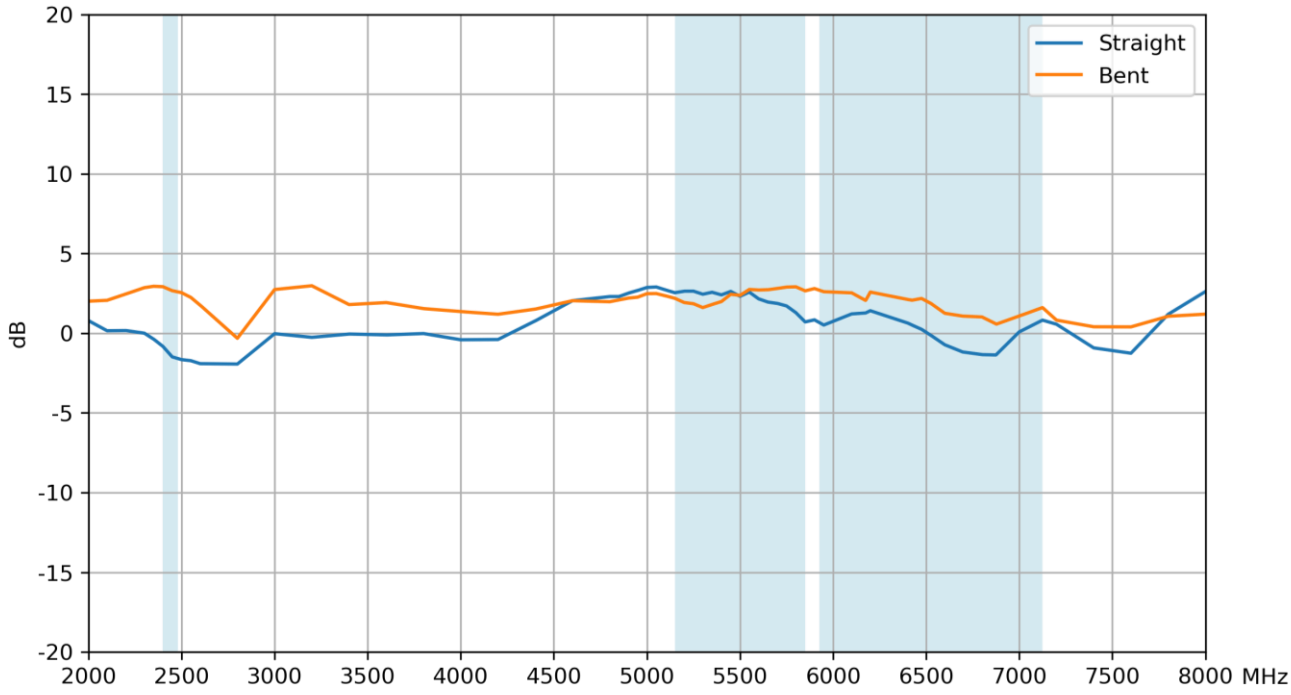
3.3 Efficiency – Free Space



3.4 Average Gain – Free Space

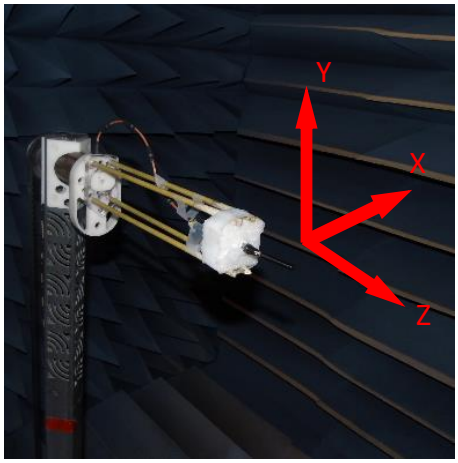


3.5 Peak Gain – Free Space

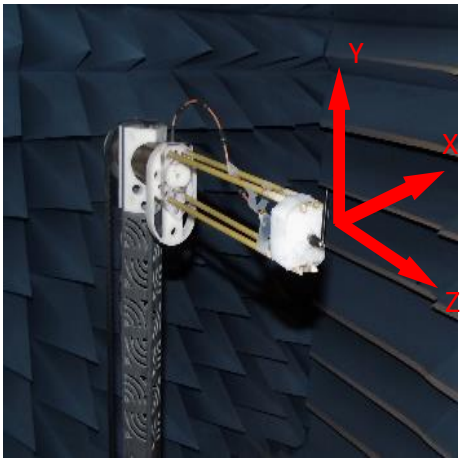


4. Radiation Patterns

4.1 Test Setup – Straight

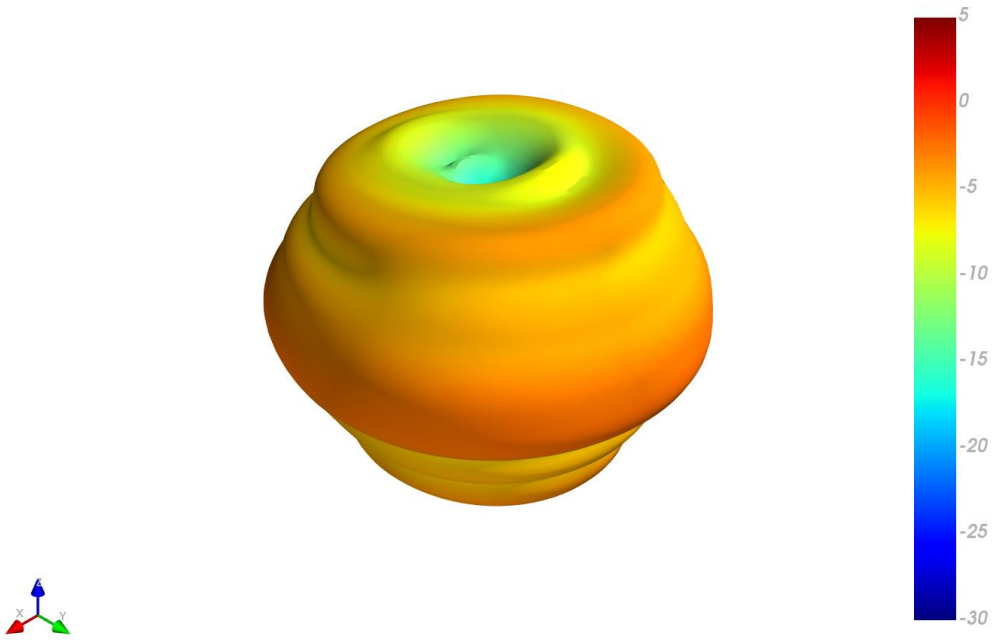


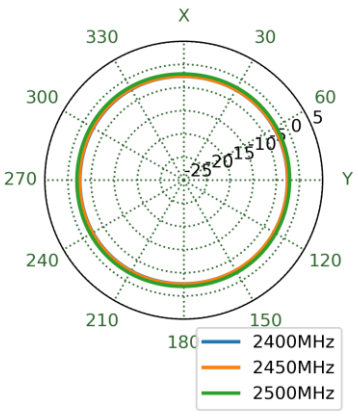
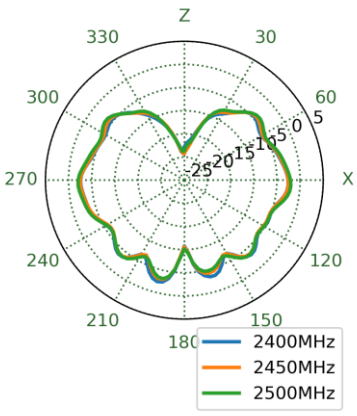
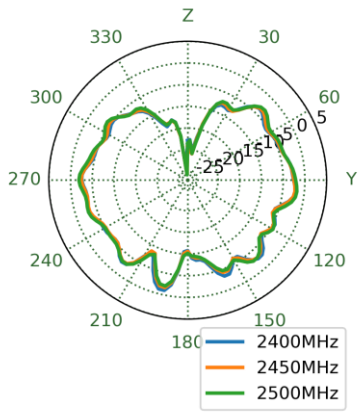
4.2 Test Setup – Bent (90°)



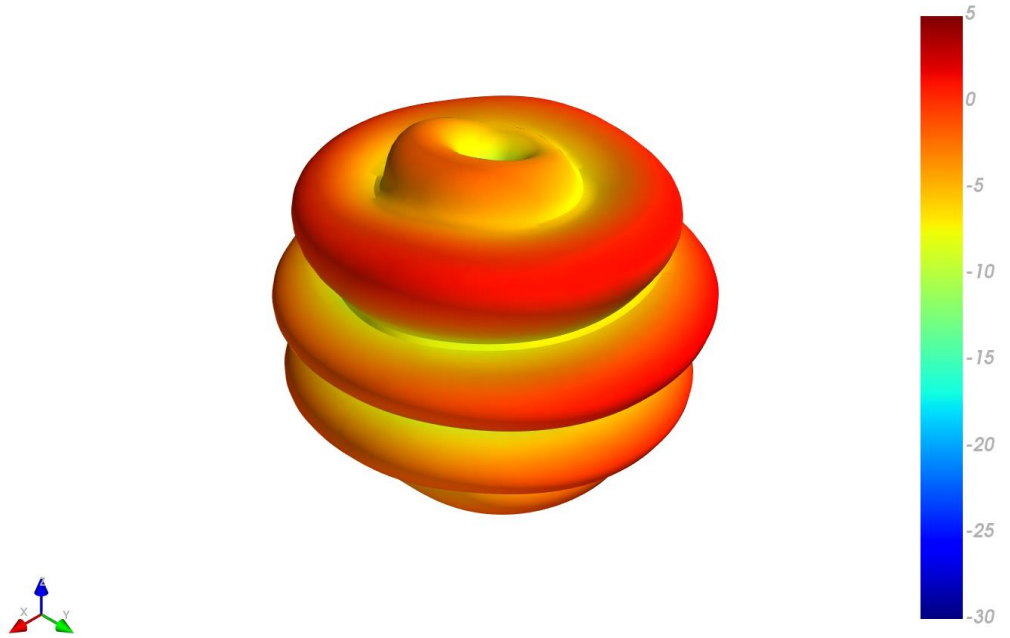
4.2 Straight 3D and 2D Radiation Patterns

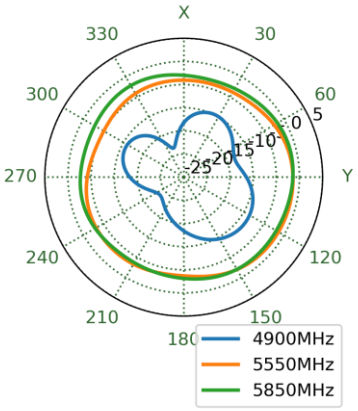
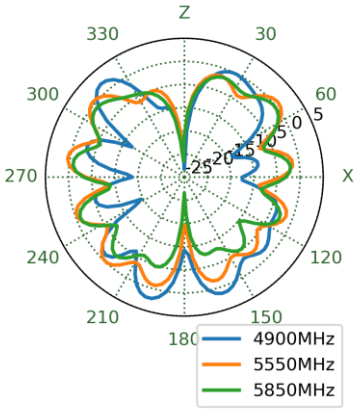
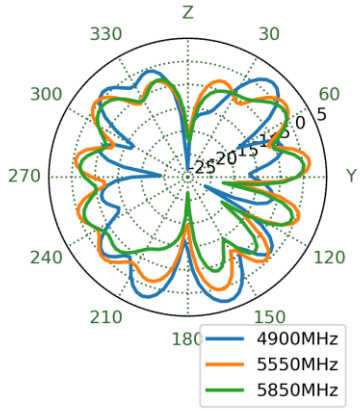
2450MHz



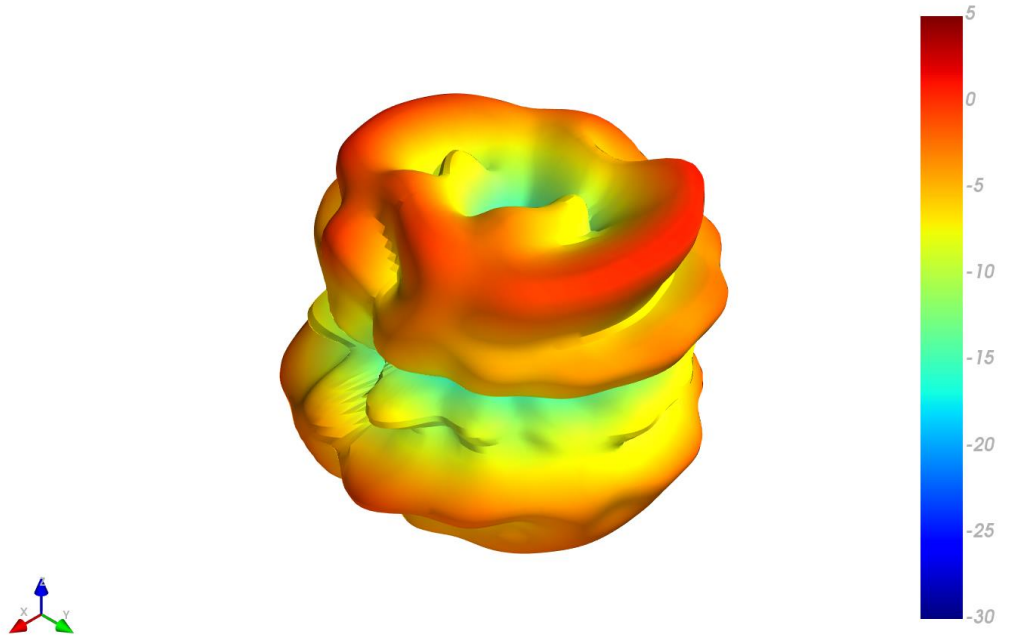
XY Plane	XZ Plane	YZ Plane
		

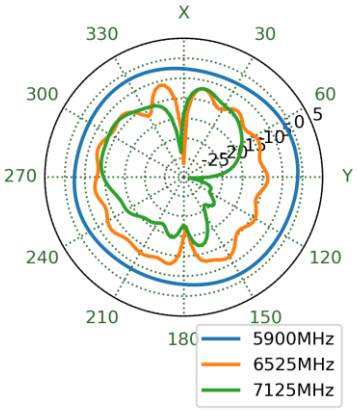
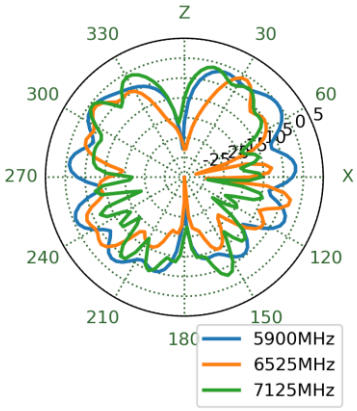
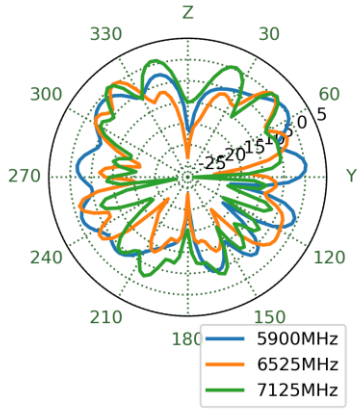
5550MHz



XY Plane	XZ Plane	YZ Plane
		

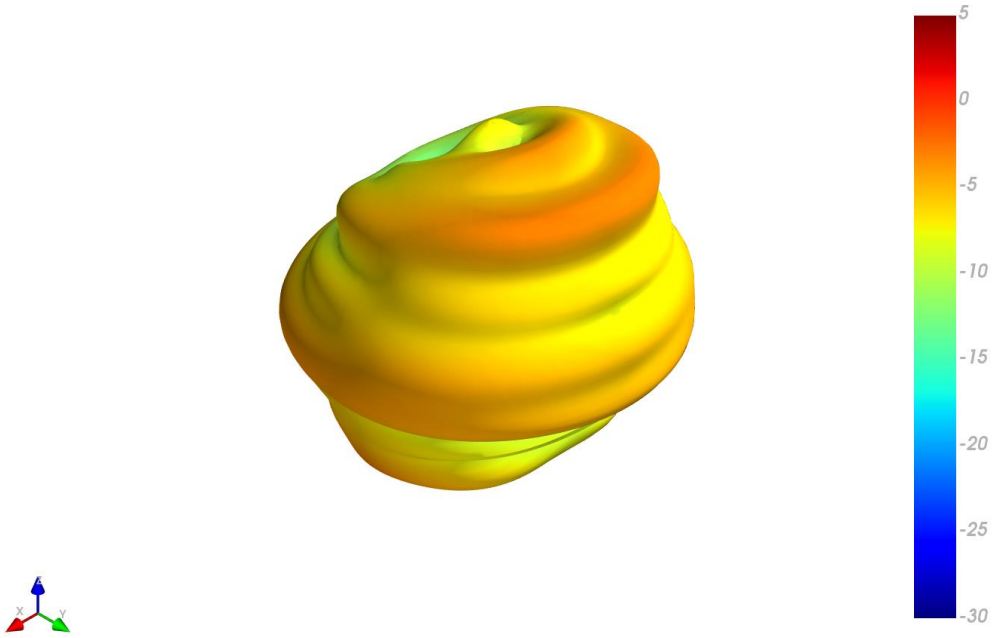
6525MHz

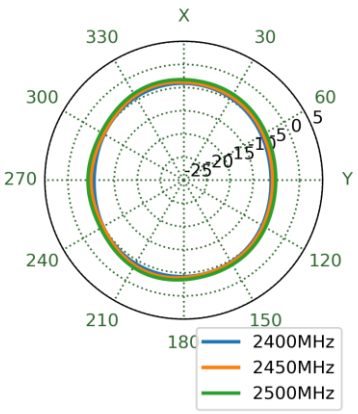
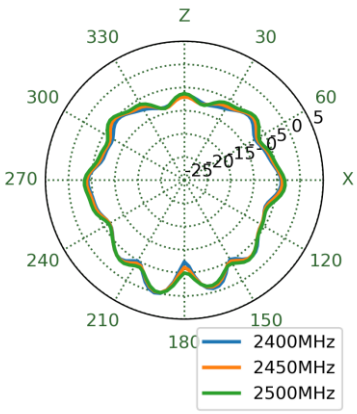
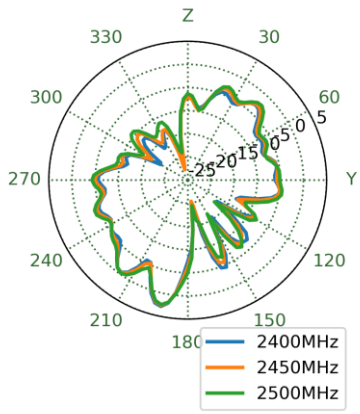


XY Plane	XZ Plane	YZ Plane
		

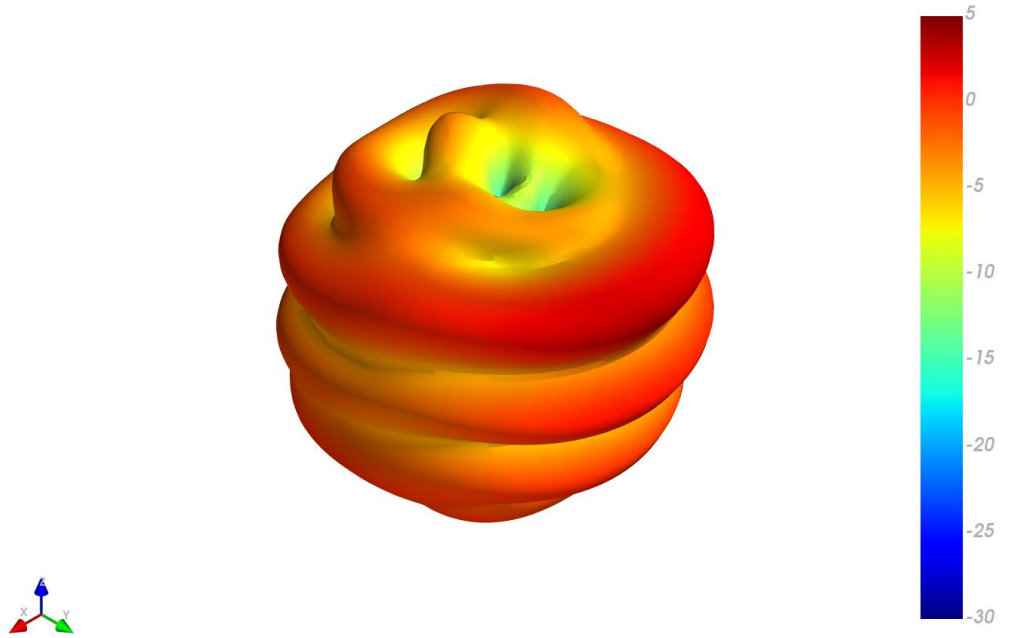
4.3 Bent 3D and 2D Radiation Patterns

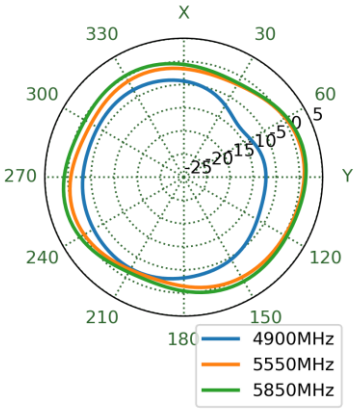
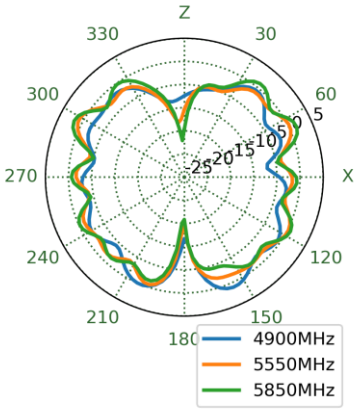
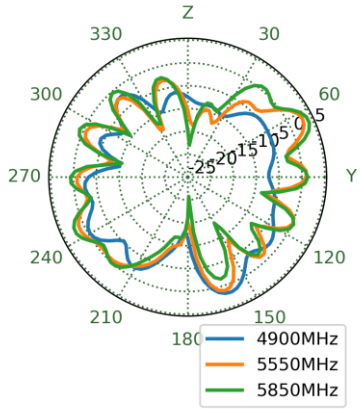
2450MHz



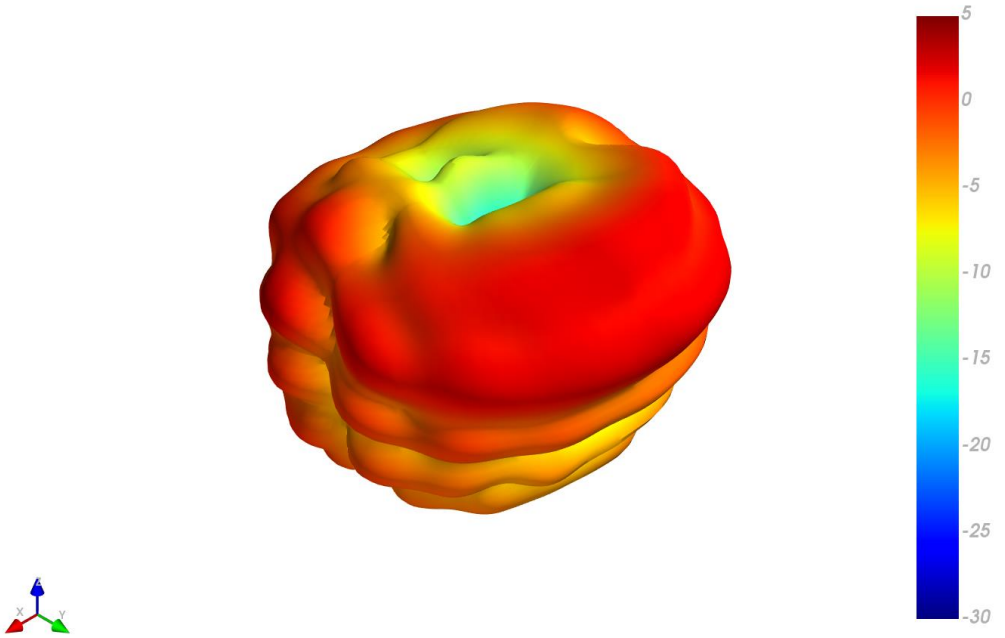
XY Plane	XZ Plane	YZ Plane
		

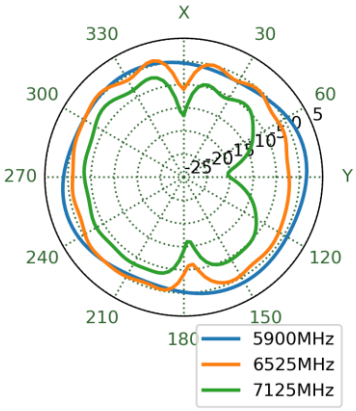
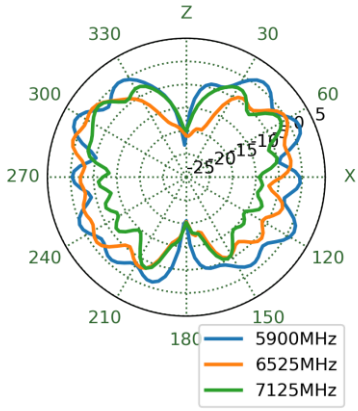
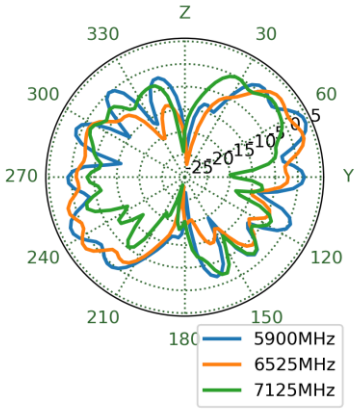
5550MHz



XY Plane	XZ Plane	YZ Plane
		

6525MHz

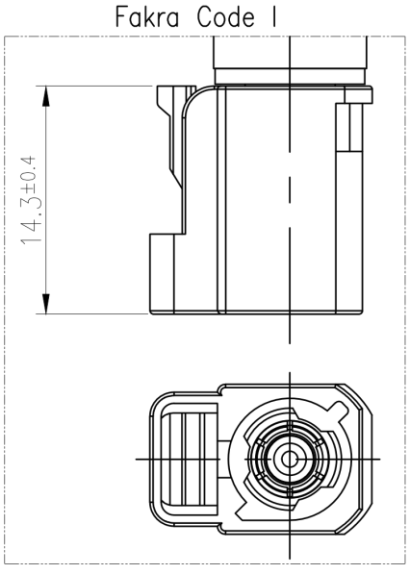


XY Plane	XZ Plane	YZ Plane
		

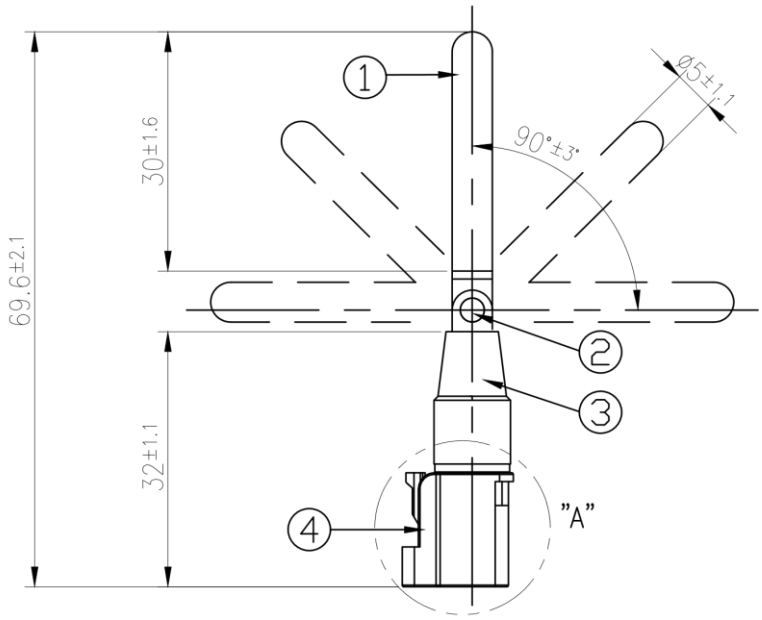
5. Mechanical Drawing (Units: mm)

ISO NO.: EDW-21-8-1420
STATE: Release
NOTES: 1. All material must be RoHS compliant.

REV.	DESCRIPTION	ENG.	APPROVED	DATE
D01	Initial Design	Chi	Aaron	2021/12/08



Detail A
Scale:2:1



	Name	Material	Finish	QTY
1	Housing	POM	Black	1
2	Hinge	Brass	Ni Plated	1
3	Cap	POM	Black	1
4	FAKRA CODE I SMB(F)ST	PA66	Beige	1

APPROVED BY:	Aaron
CHECK BY:	Aaron
DRAWN BY:	Chi
DATE:	2021/12/08
UNLESS OTHERWISE SPECIFIED TOLERANCES ON:	XX.±0.5 X.±0.3 .X±0.2 .XX±0.1 .XXX±0.05
THIRD ANGLE PROJECTION	

TAOGLAS. TW Design Centre

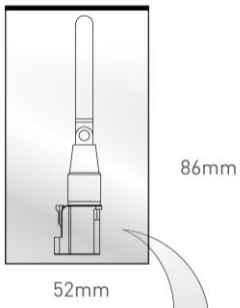
TITLE : 2.4/5.8GHz Terminal mount Monopole Antenna Hinged Fakra Code I Beige SMB(F)

PART NO. : GW.05.AE23

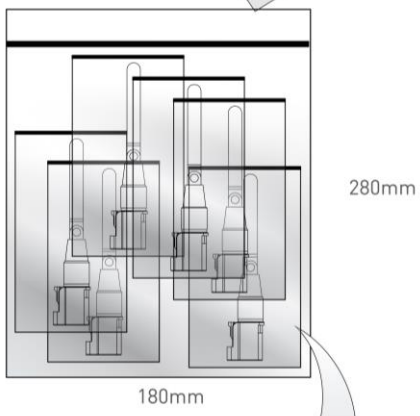
UNIT:	SCALE:	PAGES:	REV.
mm	1.25:1	1/1	D01

6. Packaging

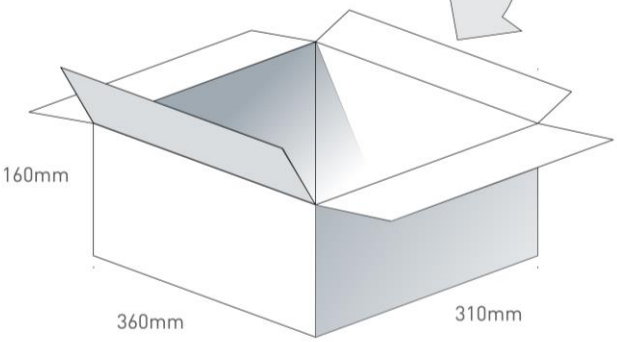
1pc GW.05.AE23 per small PE bag
Bag Dimensions - 86*52 mm
Weight - 8.5g



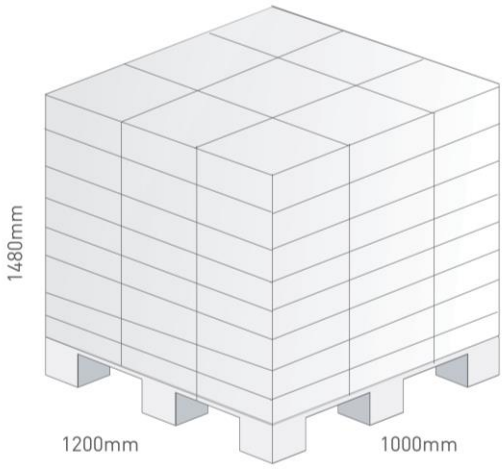
100pcs GW.05.AE23 per large PE bag
Bag Dimensions - 280*180 mm
Weight - 0.85Kg



1000pcs GW.05.AE23 per carton
Carton Dimensions - 360*310*160mm
Weight - 9Kg



Pallet Dimensions 1200mm*1000mm*1480mm
72 Cartons per Pallet
9 Cartons per layer
8 Layers



Changelog for the datasheet

SPE-21-8-121 – GW.05.AE23

Revision: A (Original First Release)	
Date:	2021-12-13
Notes:	
Author:	Jack Conroy

Previous Revisions