TAOGLAS®

Datasheet

Taoglas Invisible Antenna™

Part No:
TFX257.B

Description

TFX257.B - Wi-Fi Transparent Antenna

Features:

Wi-Fi (including Wi-Fi 6) 2.4-2.5, 4.9-5.8, 5.9-7.125GHz
Transparent – Ultra Low Profile
Dimensions: 32mm * 114mm
Connector: RP-SMA(F)
RoHS & Reach Compliant

1. Introduction

The TFX257 is a first of its kind, invisible antenna designed to cover the entire spectrum of Wi-Fi bands. The TFX257 has been expertly engineered by Taoglas with innovation in mind, the design is based on our excellent design history in pioneering flexible PCB antenna technology. TFX257 is supplied with pre adhered adhesive for ease of installation and has an enclosed carrier terminated with a RP-SMA Female connector.

The invisible flexible antennas are an alternative to standard Flexible PCB antennas where the user may want to install an antenna in a covert area or on a surface, they may want to keep visible. The performance of the antenna is based on the environment where it is placed, care should be taken to mount at least 20mm from metal components where possible.

Typical Applications Include:

- Automotive and Commercial Transportation
- EV Charging and Parking Bays
- Digital Signage and Display screens
- Point Of Sale Kiosks

The installation of the Taoglas Invisible Antenna™ series follows a similar installation method to flexible PCB antennas. Installing a transparent material may show obvious flaws/debris, take care to wipe the area clean before adhering the antenna. The flexible antenna can be disconnected from the body to make installation easier. Where support may be an issue, we would advise using a double-sided adhesive on the housing to ensure the housing body installation does not add any additional pull force to the antenna as this will affect the antenna's performance and the adhesive's performance. The feed is not designed to be load bearing and loads of over 0.5Kg can break or damage the feed resulting in the antenna disconnecting.

The TFX257 is connected via a RP-SMA Female connector for ease of installation. If a custom connector is required, please contact your regional Taoglas customer support team.

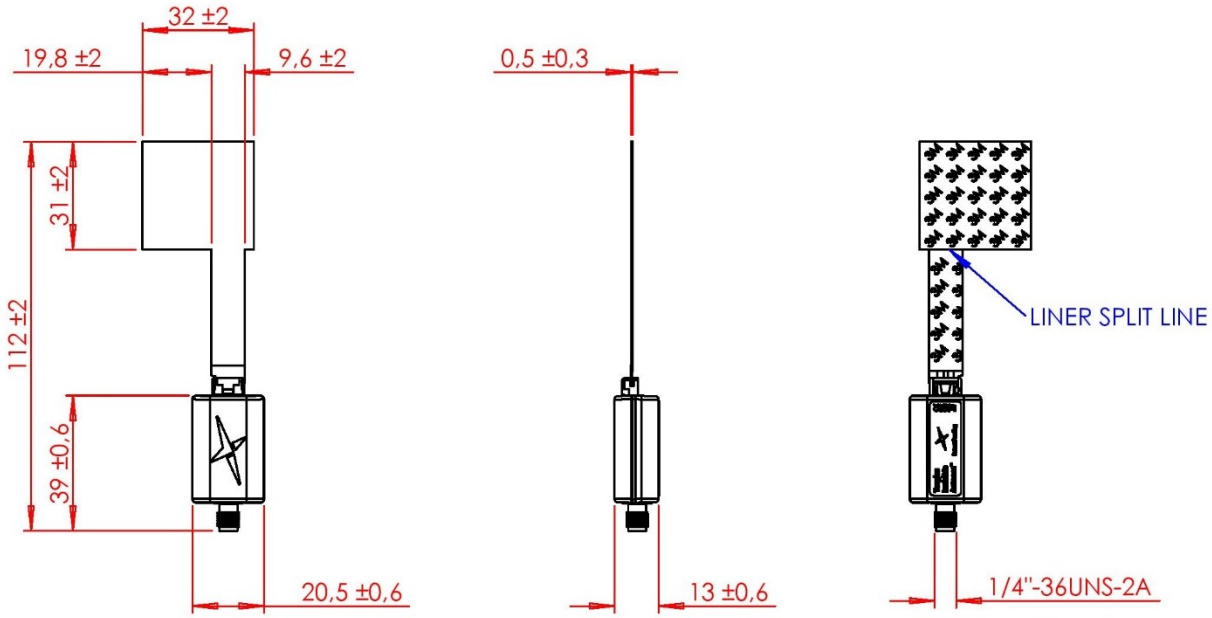
2. Specification

Wi-Fi Electrical								
Band	Frequency (MHz)	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
Wi-Fi - 2GHz	2400-2500	53.2	-2.74	3.90	50 Ω	Linear	Omni	2W
Wi-Fi - 5GHz	5150-5850	37.8	-4.23	6.34				
Wi-Fi - 6GHz	5925-7125	28.4	-5.47	5.65				
***Tested on 4mm Acrylic.**								

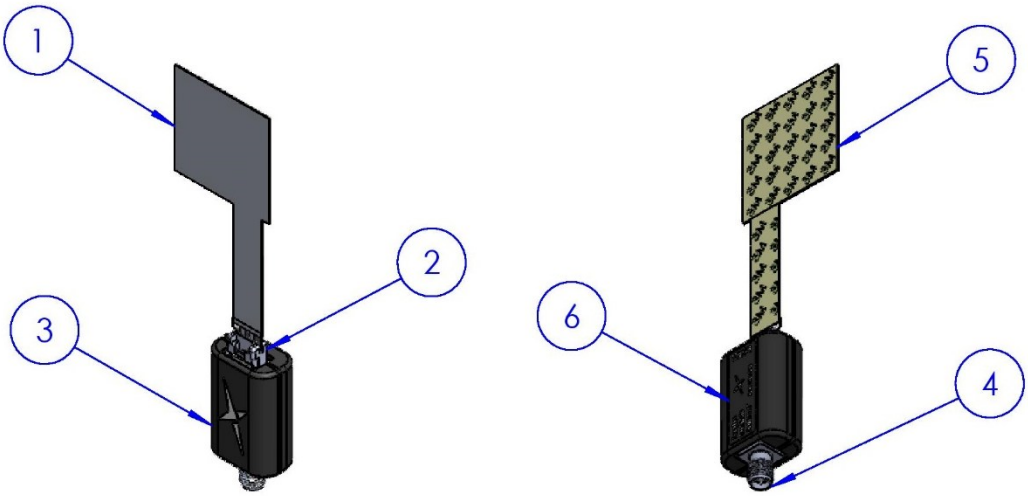
Mechanical	
Dimensions	32 x 114mm
Weight	5g
Material (Housing)	ABS/PC
Material (Antenna)	PET
VLT (Visible Light Transmission)	78.1% TCF (Transparent Conductive Film)
Connector	RP-SMA(F)

Environmental	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Relative Humidity	Non-condensing 65°C 95% RH

3. Mechanical Drawing

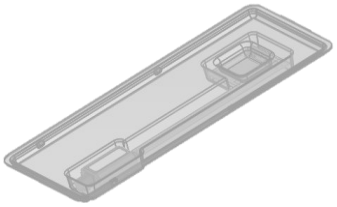


ITEM NO.	DESCRIPTION	MATERIAL	FINISH	QTY
1	TRANSPARENT FLEX Wi-Fi ANTENNA COVERING 2.4 - 5 - 7.125 GHz	PET	CLEAR	1
2	FPC-to-BOARD CONNECTOR ADAPTOR 2 CONTACT	LCP	BLACK	1
3	ANTENNA PCB HOUSING	ABS/PC	BLACK	1
4	RP-SMA(F)	BRASS	GOLD	1
5	ADHESIVE + LINER	ADHESIVE	BROWN LINER	1
6	PATENT PENDING LABEL	PET	GLOSS	1

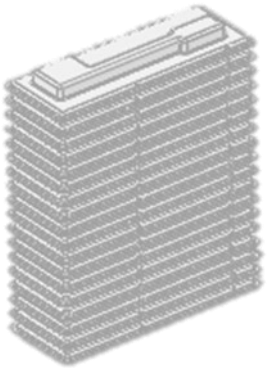


4. Packaging

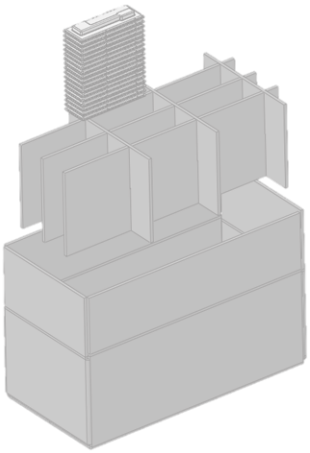
1 PCS / Blister Box
Box: 216.6 x 84.5 x 19.3mm
Weight: 34g



18 PCS / Column

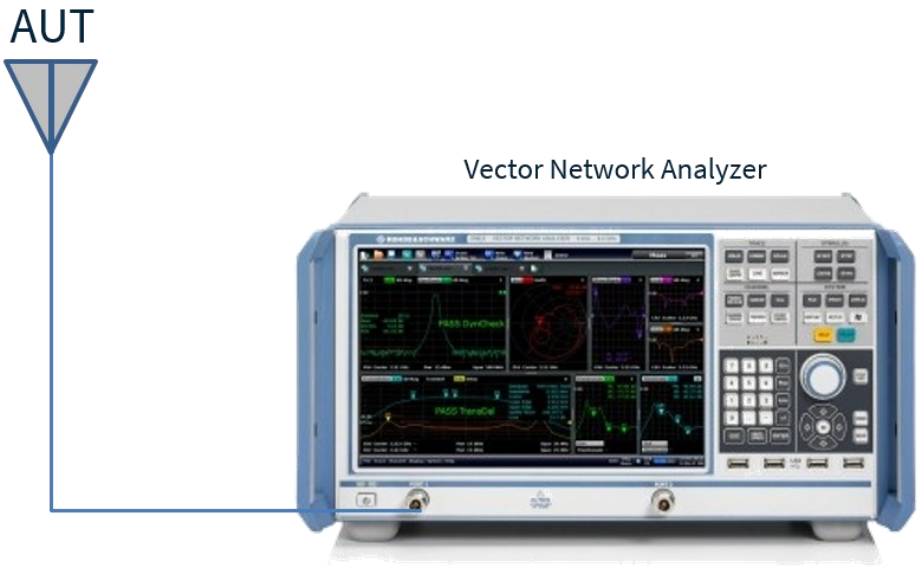


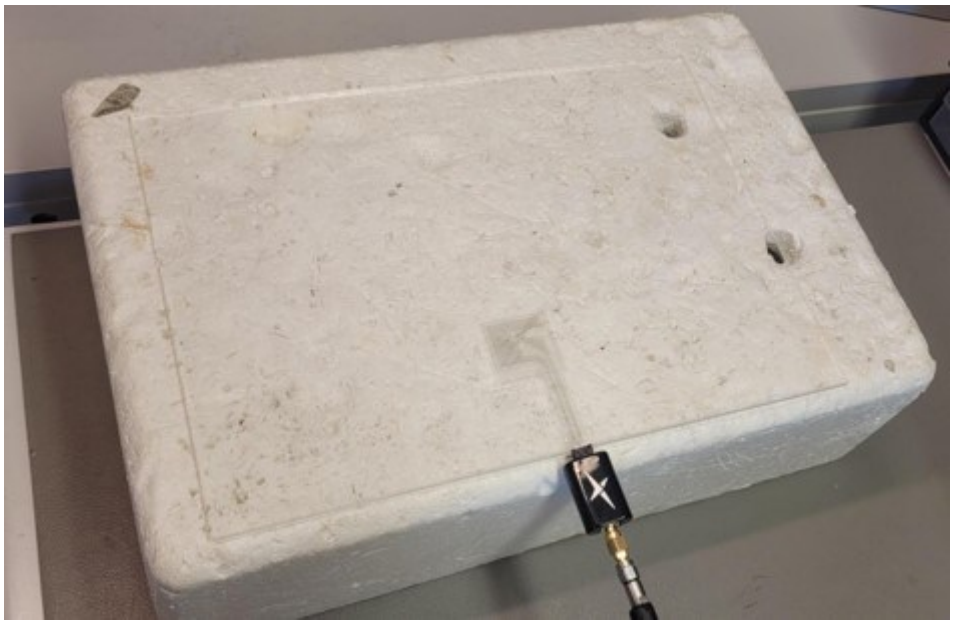
216 PCS / Carton
1 SET / Partition board
Carton: 740 x 370 x 300mm
Carton Label
Weight: 9.42Kg



5. Antenna Characteristics

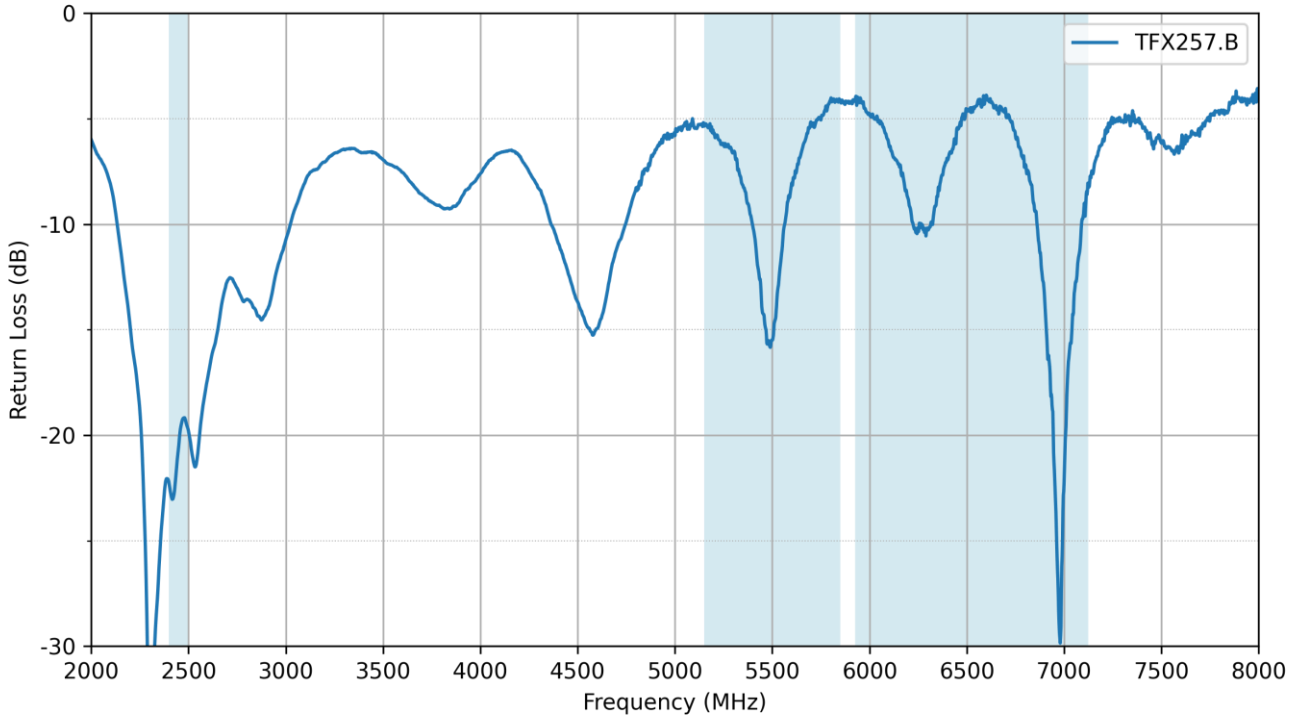
5.1 Test Setup



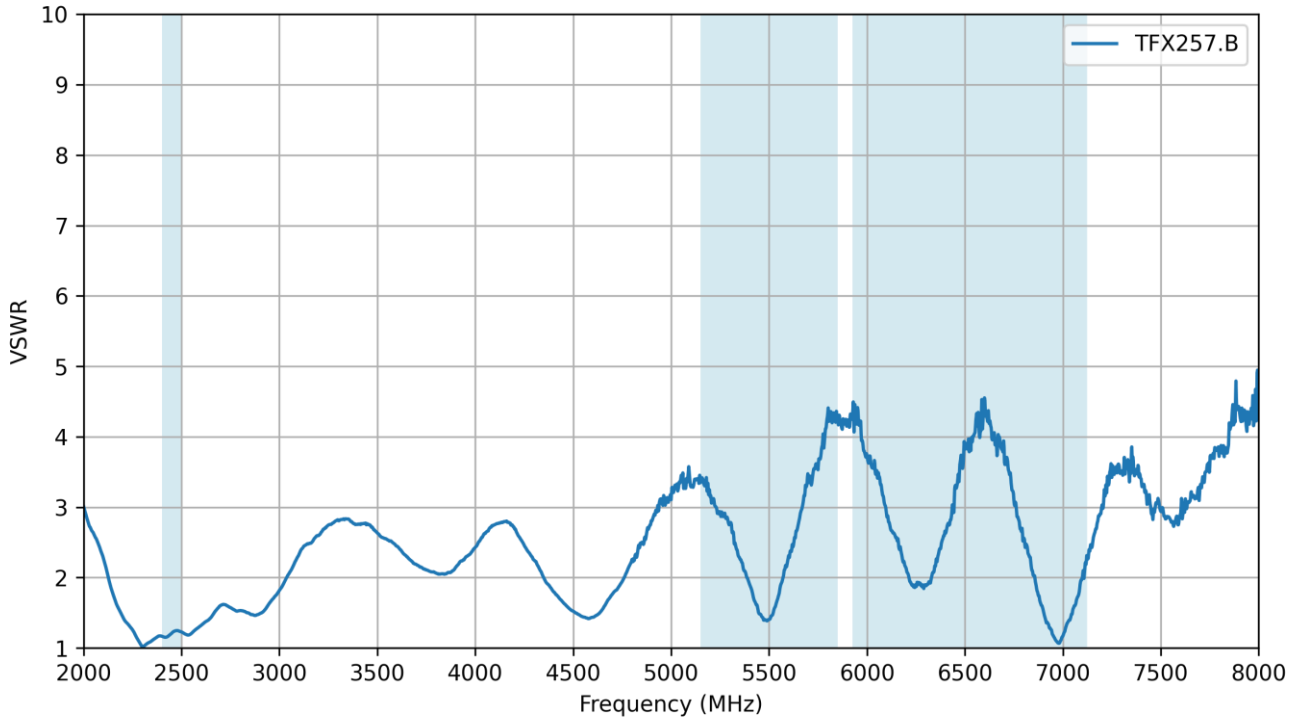


VNA Test Set-up on 4mm Acrylic

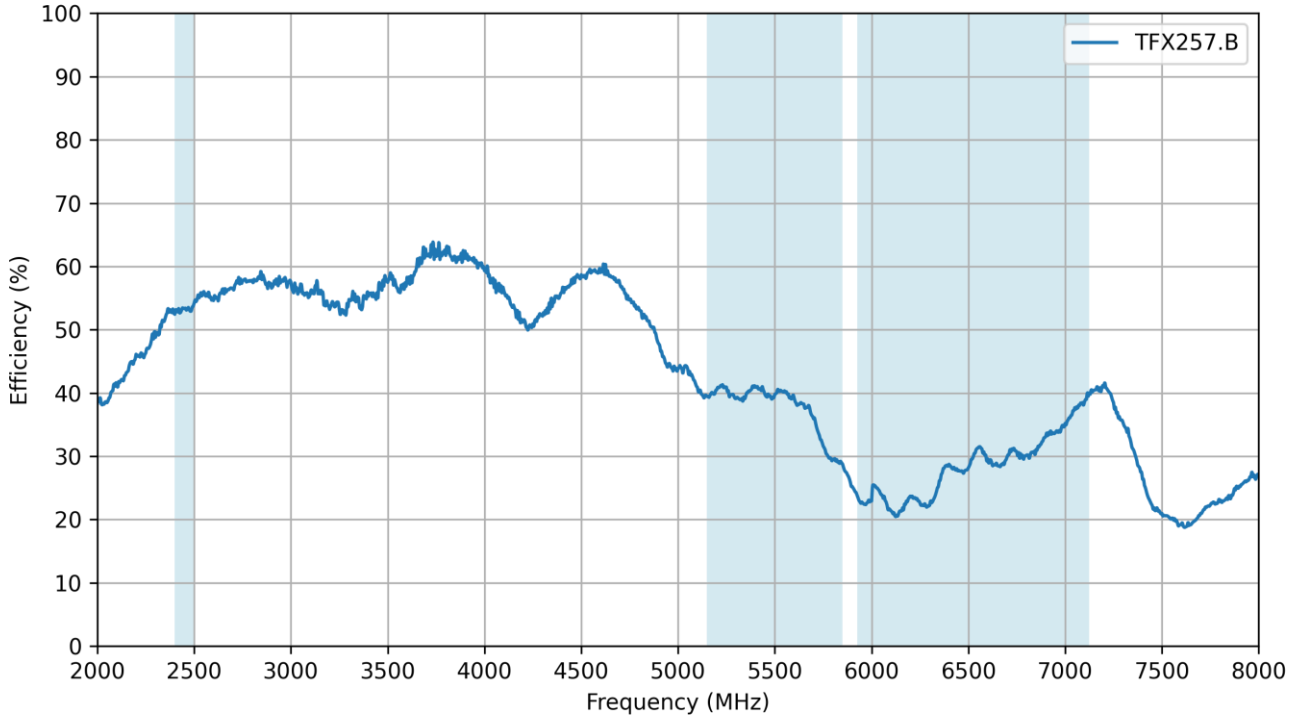
5.2 Return Loss



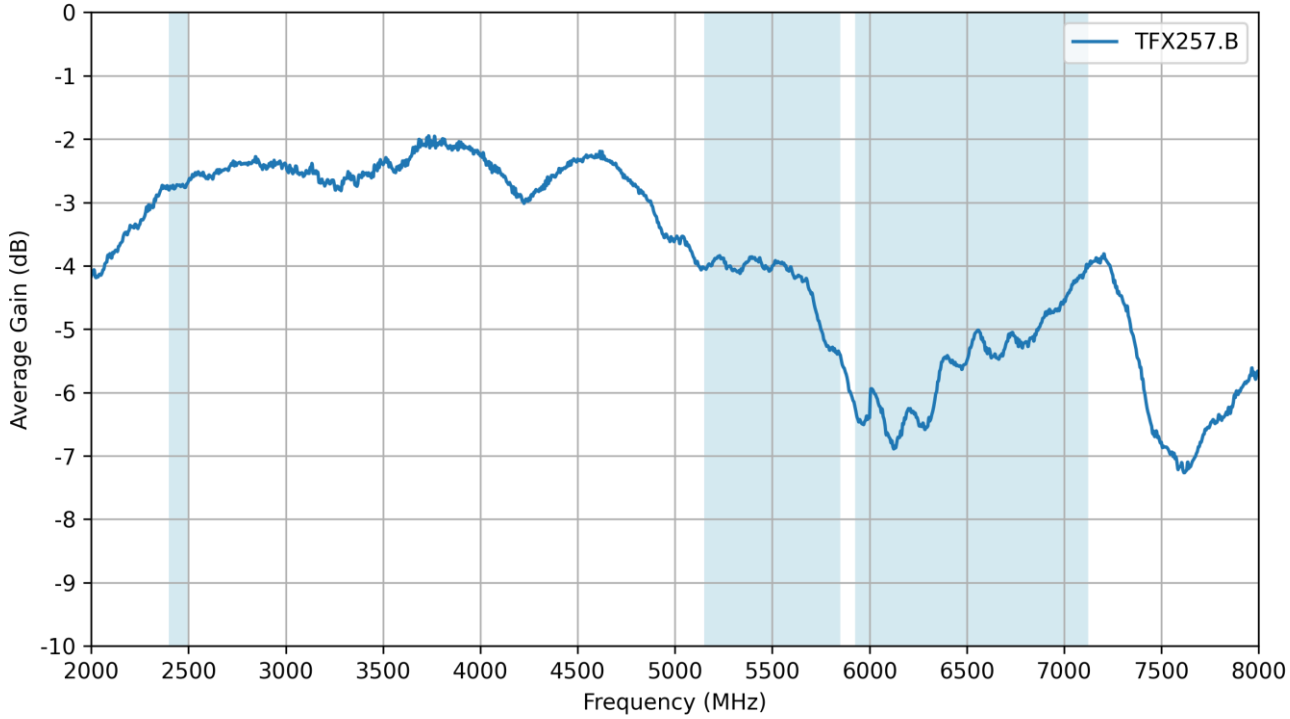
5.3 VSWR



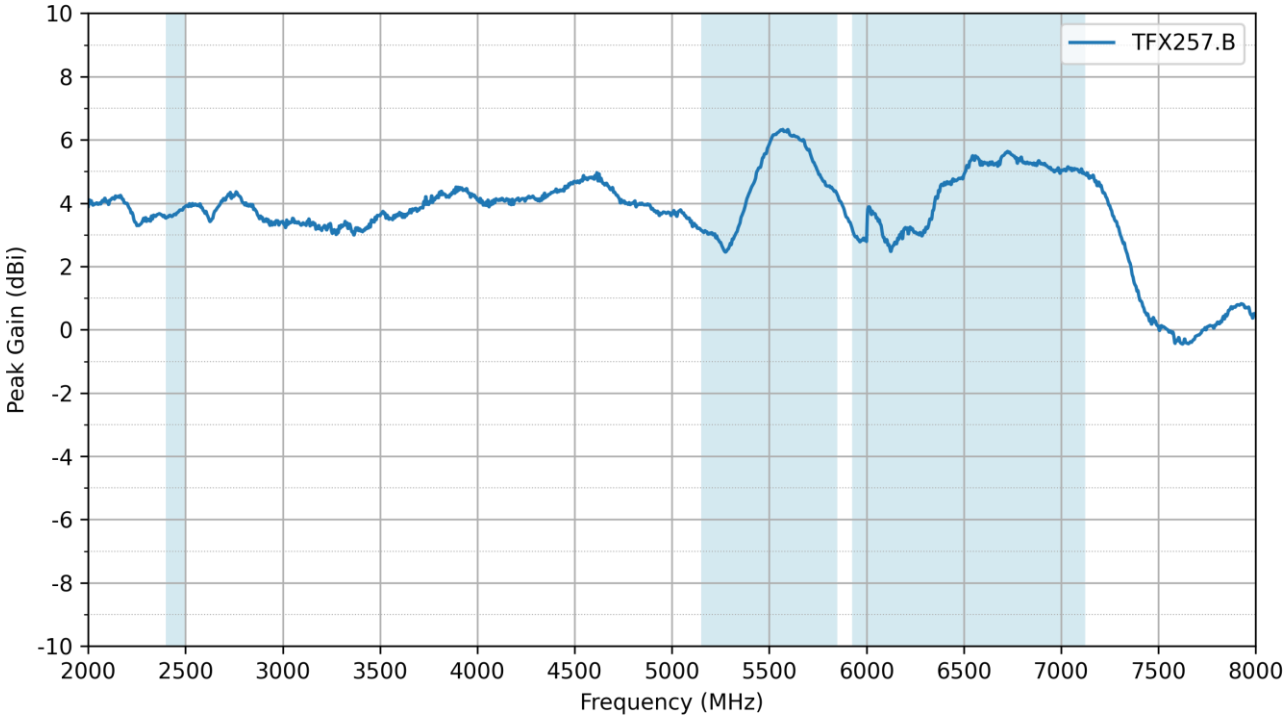
5.4 Efficiency



5.5 Average Gain

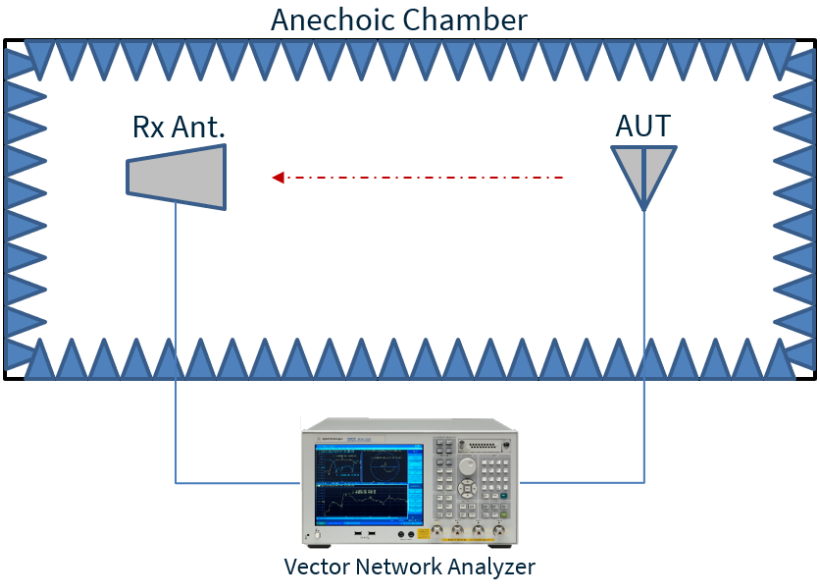


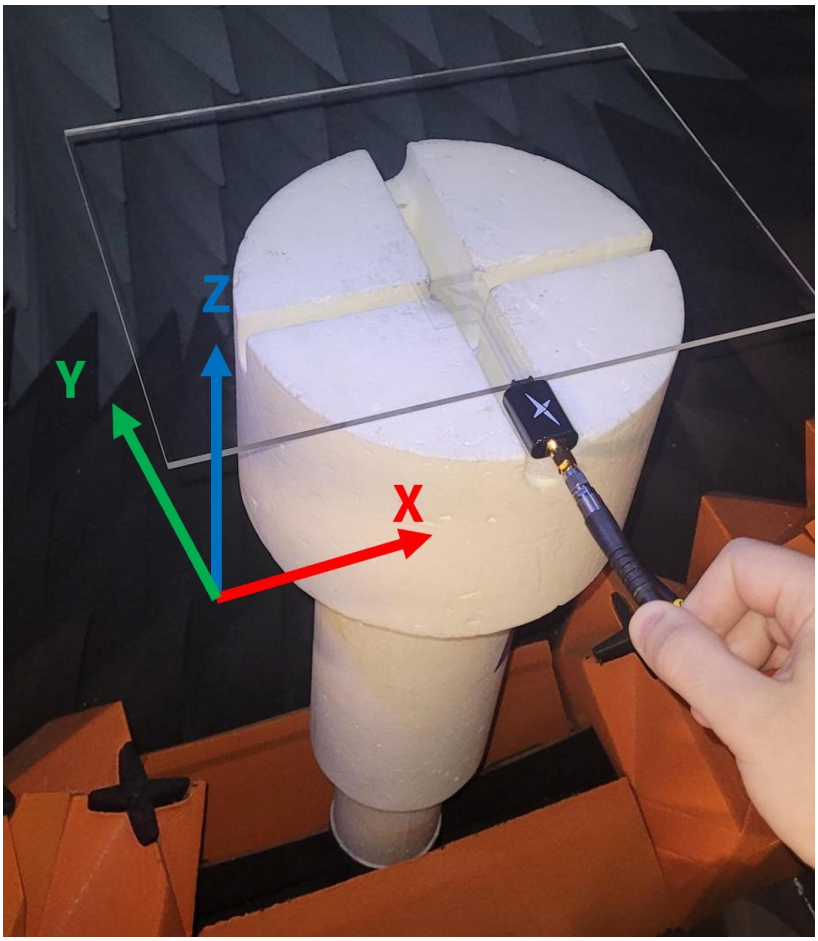
5.6 Peak Gain


TFX257.B
Peak Gain (dBi)
Frequency (MHz)
10
8
6
4
2
0
-2
-4
-6
-8
-10
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000

6. Radiation Patterns

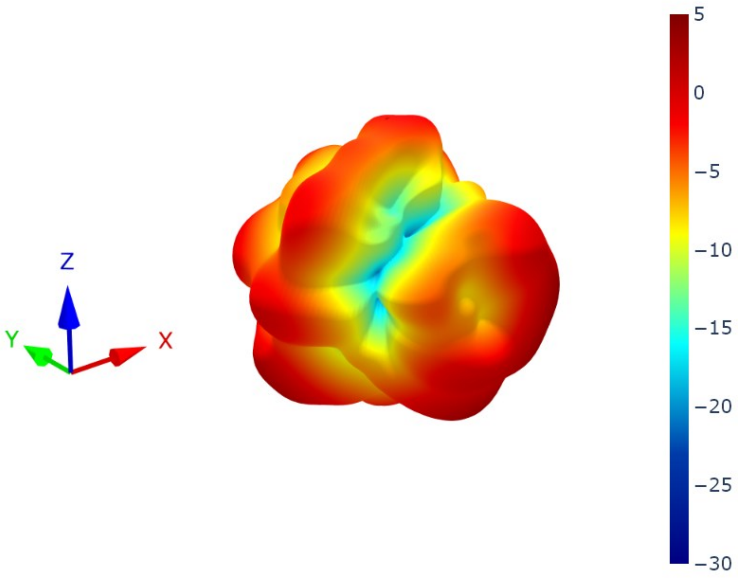
6.1 Test Setup



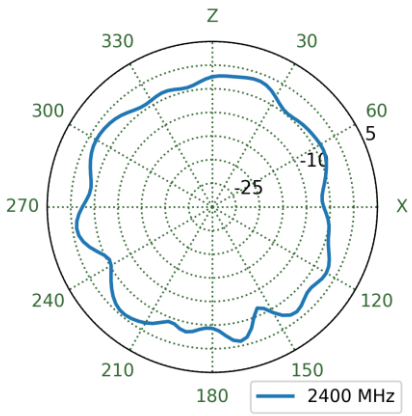


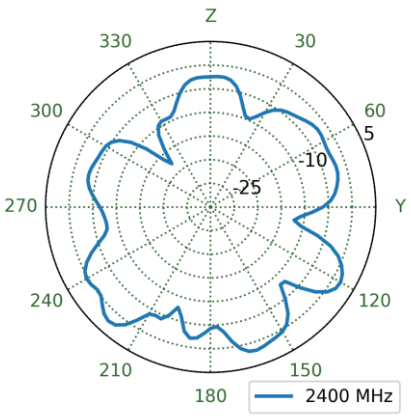
Chamber Test Set-up on 4mm Acrylic

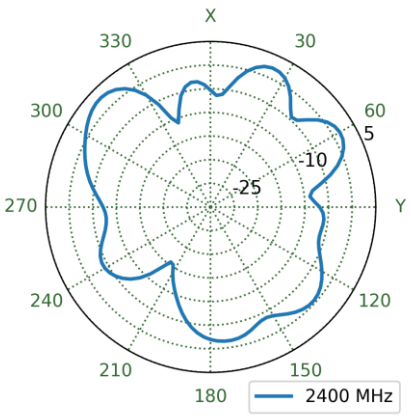
6.2 Patterns at 2400 MHz



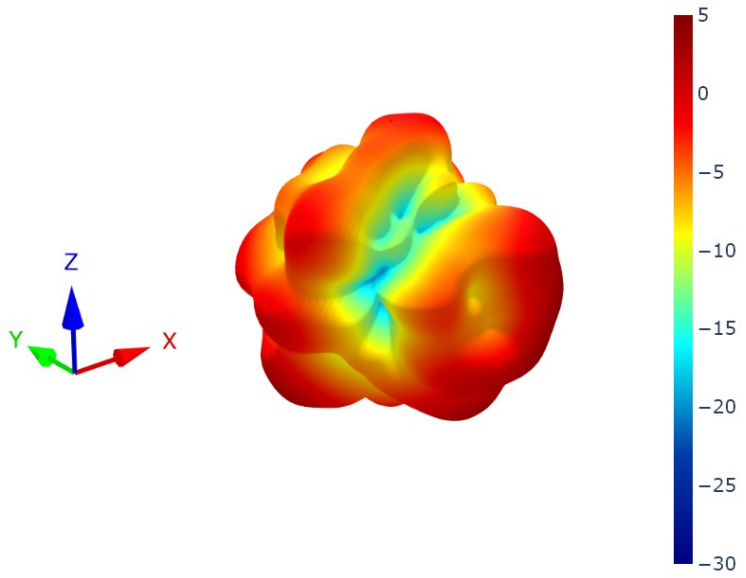
XZ Plane	YZ Plane	XY Plane

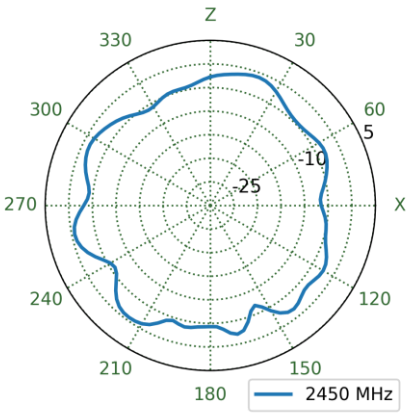
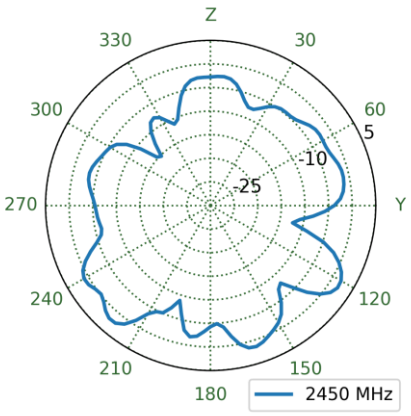
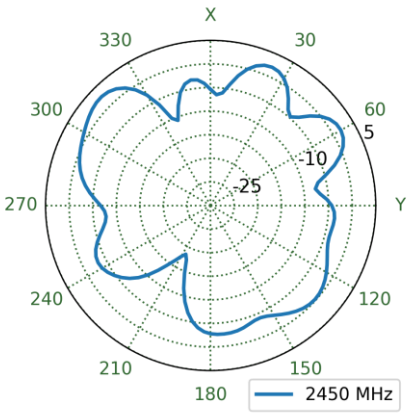




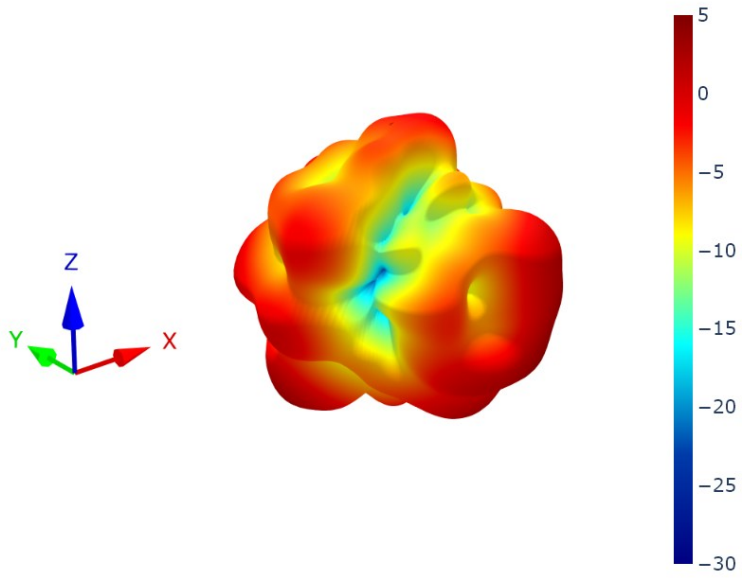


6.3 Patterns at 2450 MHz

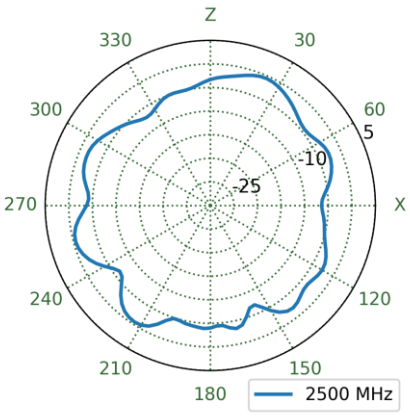


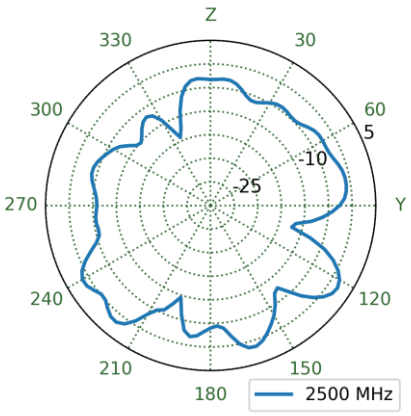
XZ Plane	YZ Plane	XY Plane
		

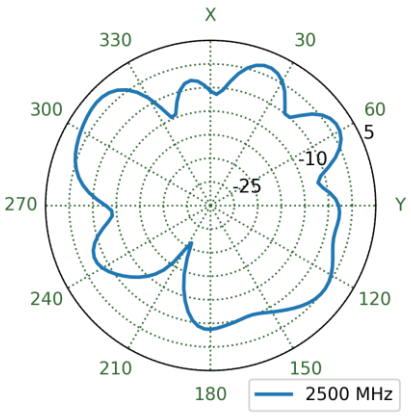
6.4 Patterns at 2500 MHz



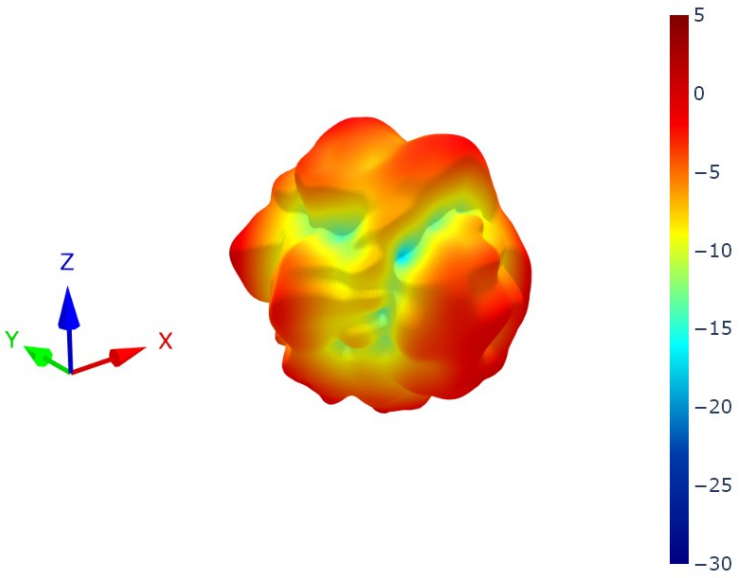
XZ Plane	YZ Plane	XY Plane

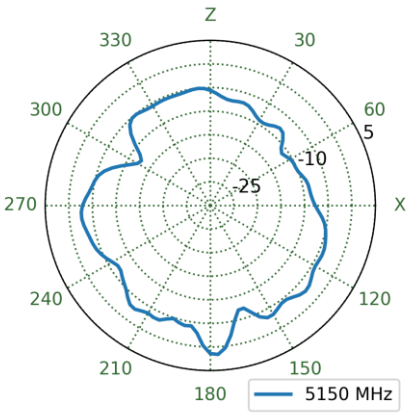
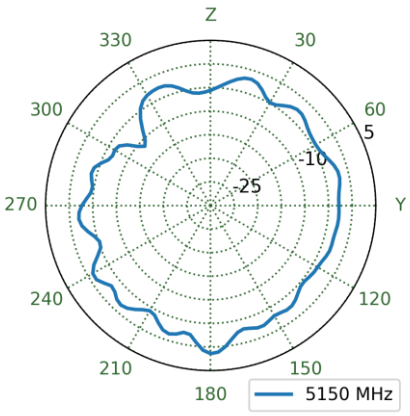
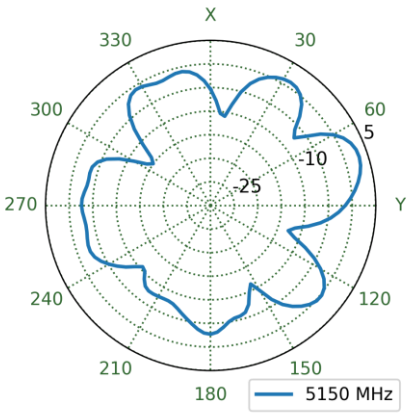




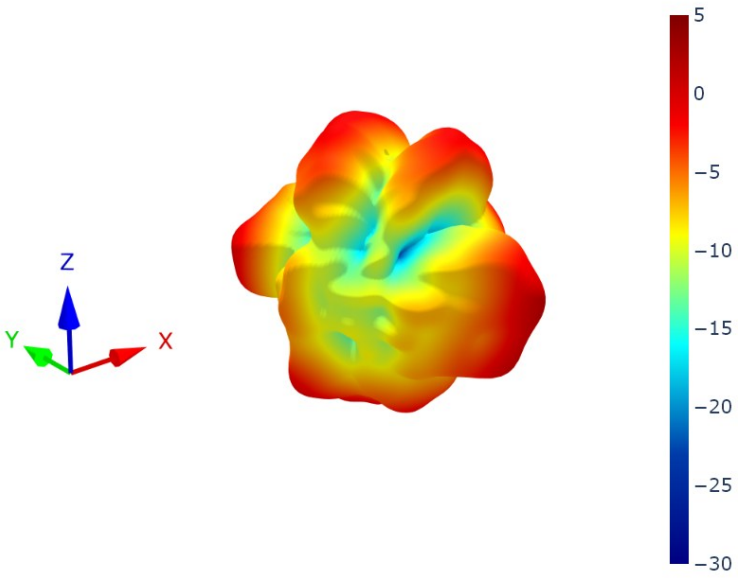


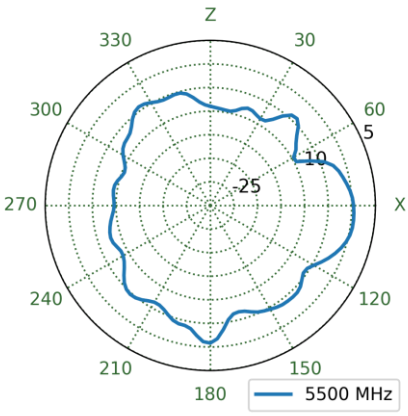
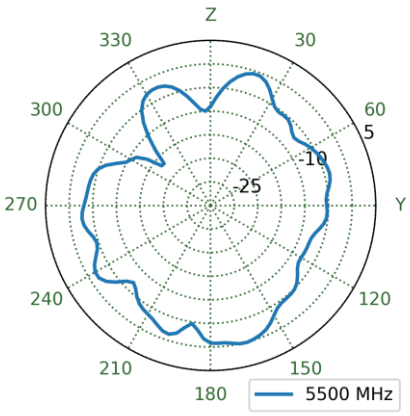
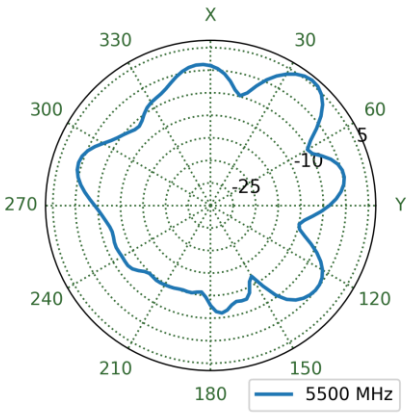
6.5 Patterns at 5150 MHz



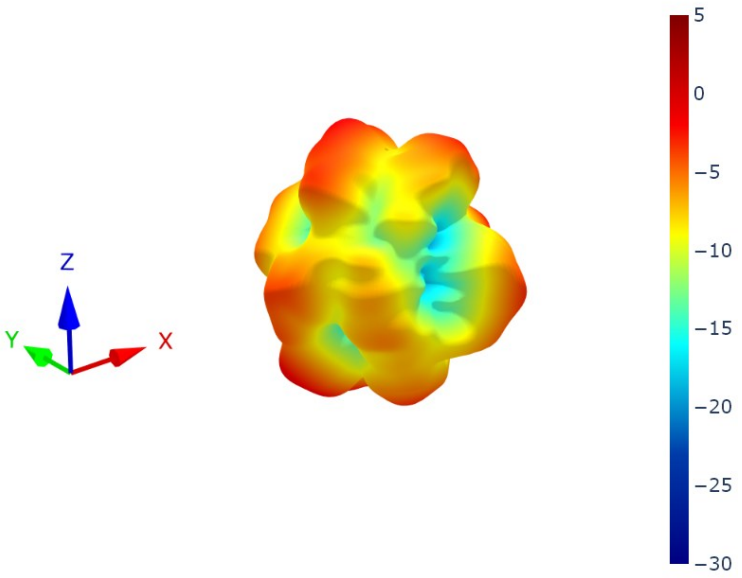
XZ Plane	YZ Plane	XY Plane
		

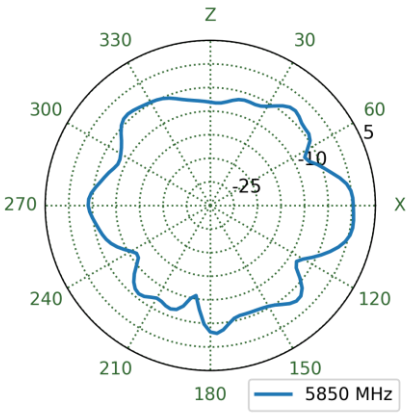
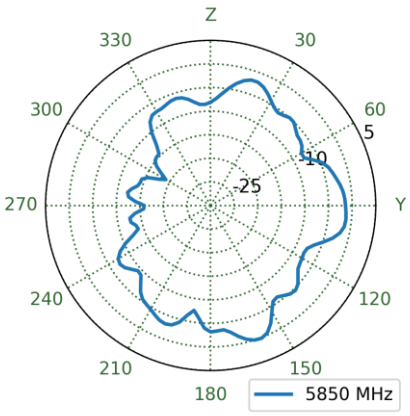
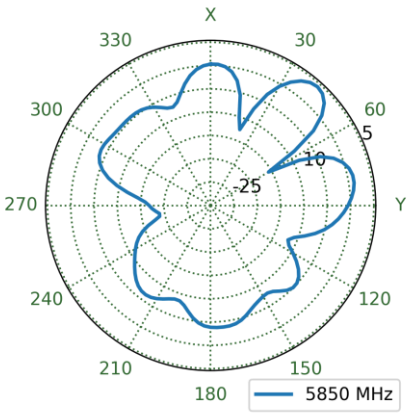
6.6 Patterns at 5500 MHz



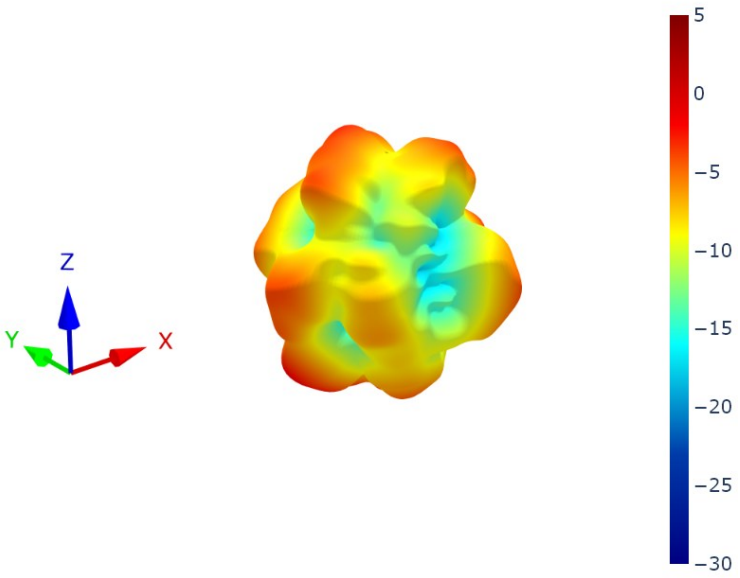
XZ Plane	YZ Plane	XY Plane
		

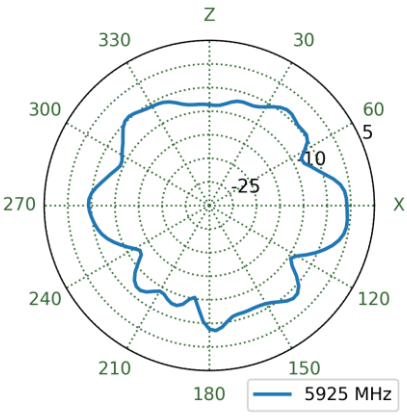
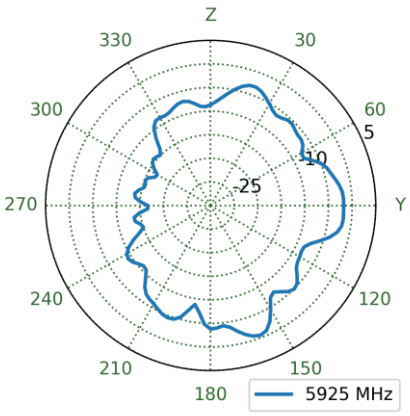
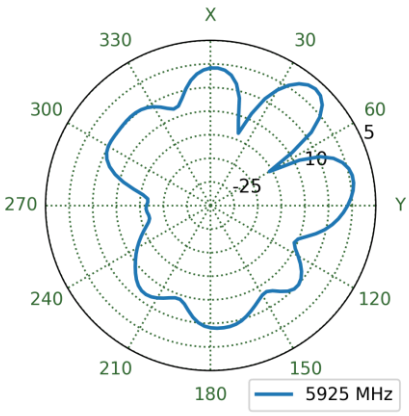
6.7 Patterns at 5850 MHz



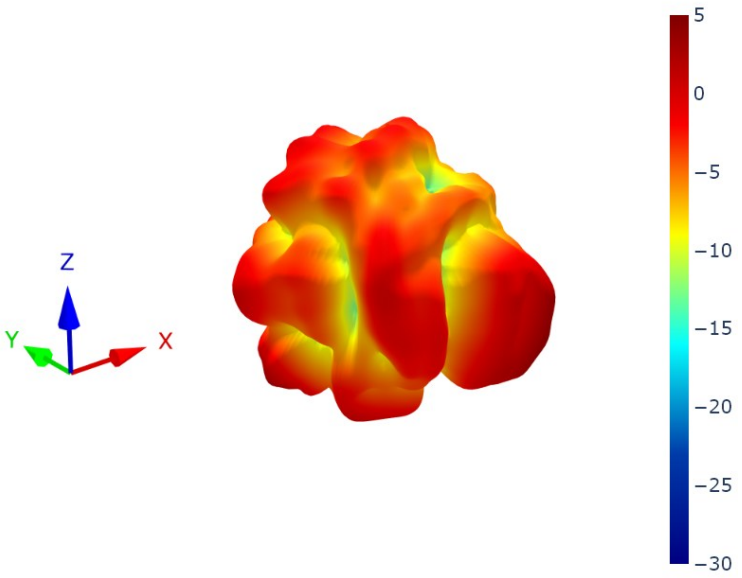
XZ Plane	YZ Plane	XY Plane
		

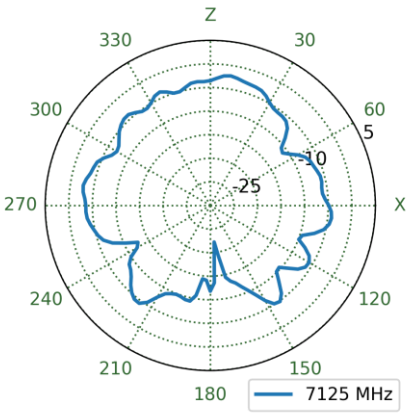
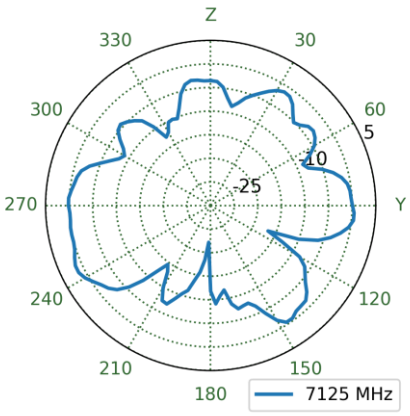
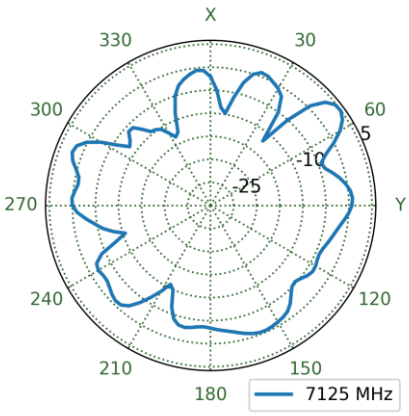
6.8 Patterns at 5925 MHz



XZ Plane	YZ Plane	XY Plane
		

6.9 Patterns at 7125 MHz



XZ Plane	YZ Plane	XY Plane
		

Changelog for the datasheet

SPE-22-8-228 – TFX257.B

Revision: A (Original First Release)	
Date:	2024-09-17
Notes:	Initial Release
Author:	Gary West

Previous Revisions

TAOGLAS®

www.taoglas.com