TAOGLAS

Datasheet

Active L-Band Patch Antenna

Part No:
ALPDF254.07.0100C

Description:

Active L-Band Dual Feed Patch Antenna

With 100mm 1.37mm Cable and I-PEX MHFI U.FL Connector

Features:

Active L-Band Only Patch with Dual pin configuration

Covering Bands:

• L-Band 1525-1559MHz

Low Axial Ratio

Cable: 100mm 1.37mm Cable

Connector: I-PEX MHFI U.FL

CE Certified

RoHS & Reach Compliant

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1. Introduction

The Taoglas ALPDF254 is an active L-Band patch antenna for use on the L-Band spectrum required for positioning correction services. The antenna exhibits excellent gain and good radiation pattern stability leading to a reliable performance, enabling a high precision GNSS receiver to reach accuracies down to centimeter level. The satellite L-band communication system allows GNSS correction service providers to broadcast a variety of services on specific channels, satellites and beams, and the ALPDF254 has been expertly designed to be used in conjunction with L-Band receivers.

Typical applications include:
- UAVs and Robotics
- Autonomous Vehicles
- Precision Agriculture

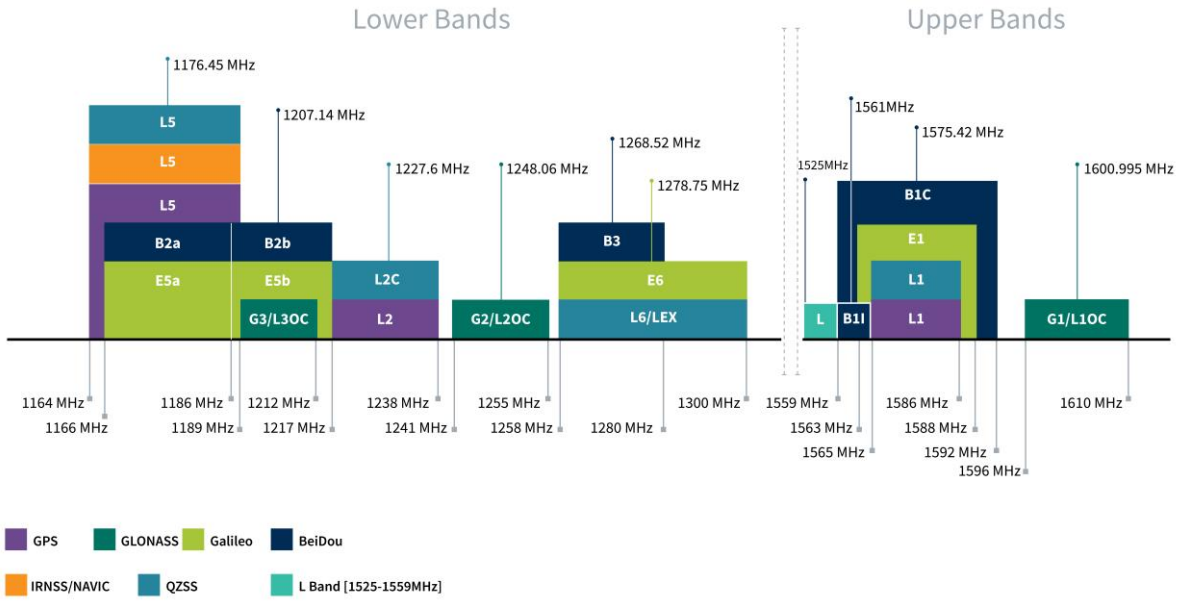
The ALPDF254 includes LNAs and front-end SAW filters to reduce out of band noise, such as from nearby cellular transceivers. It offers better protection from nearby radiated power surges and greatly reduces the probability of damaging your receiver from nearby transmissions. The ALPDF254 has 1 cable feed as the two pin feeds are combined with a hybrid coupler to get the best possible axial ratio for L-Band applications.

The cable and connector are fully customizable, subject to NRE and MOQ. For further information please contact your regional Taoglas customer support team.

2. Specifications

GNSS Frequency Bands Covered						
GPS	L1	L2	L5			
	☐	☐	☐			
GLONASS	G1	G2	G3			
	☐	☐	☐			
Galileo	E1	E5a	E5b	E6		
	☐	☐	☐	☐		
BeiDou	B1	B2a	B2b	B3		
	☐	☐	☐	☐		
L-Band	L					
	■					
QZSS (Regional)	L1	L2C	L5	L6		
	☐	☐	☐	☐		
IRNSS (Regional)	L5					
	☐					
SBAS	L1/E1/B1	L5/B2a/E5a	G1	G2	G3	
	☐	☐	☐	☐	☐	

*SBAS systems: WASS(L1/L5), EGNOSS(E1/E5a), SDCM(G1/G2/G3), SNAS(B1,B2a), GAGAN(L1/L5), QZSS(L1/L5), KAZZ(L1/L5).



GNSS Bands and Constellations

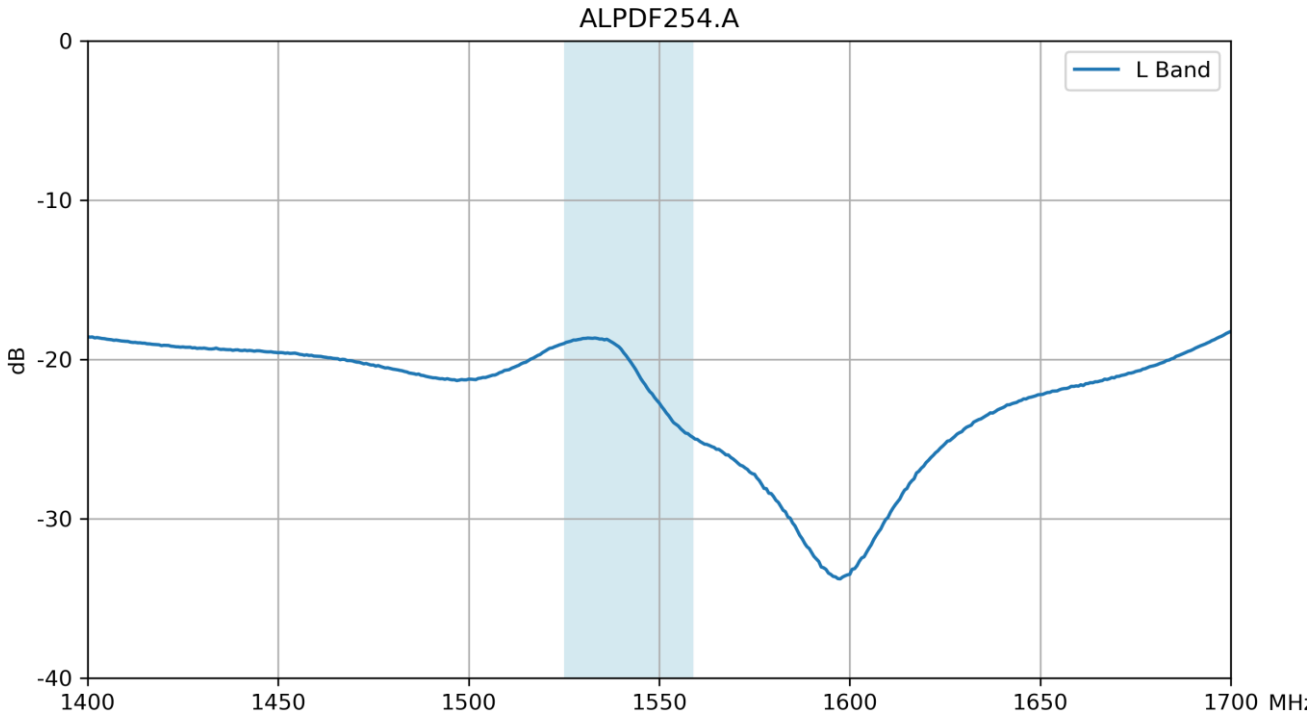
Electrical	
Frequency (MHz)	**1525-1559**
Efficiency	40%
Average Gain	-4.1dB
Peak Gain	1dBi
Axial Ratio	3dB
Radiation Pattern	Directional
Polarization	RHCP
Impedance	50Ω

LNA and Filter Electrical Properties	
Frequency (MHz)	**1525-1559**
VSWR (max.)	2:1
Gain@1.8V ~ 5V	28.4 dB
Noise@1.8V ~5V	2.0 dB
Power consumption@1.8V ~5V	4.9 mA

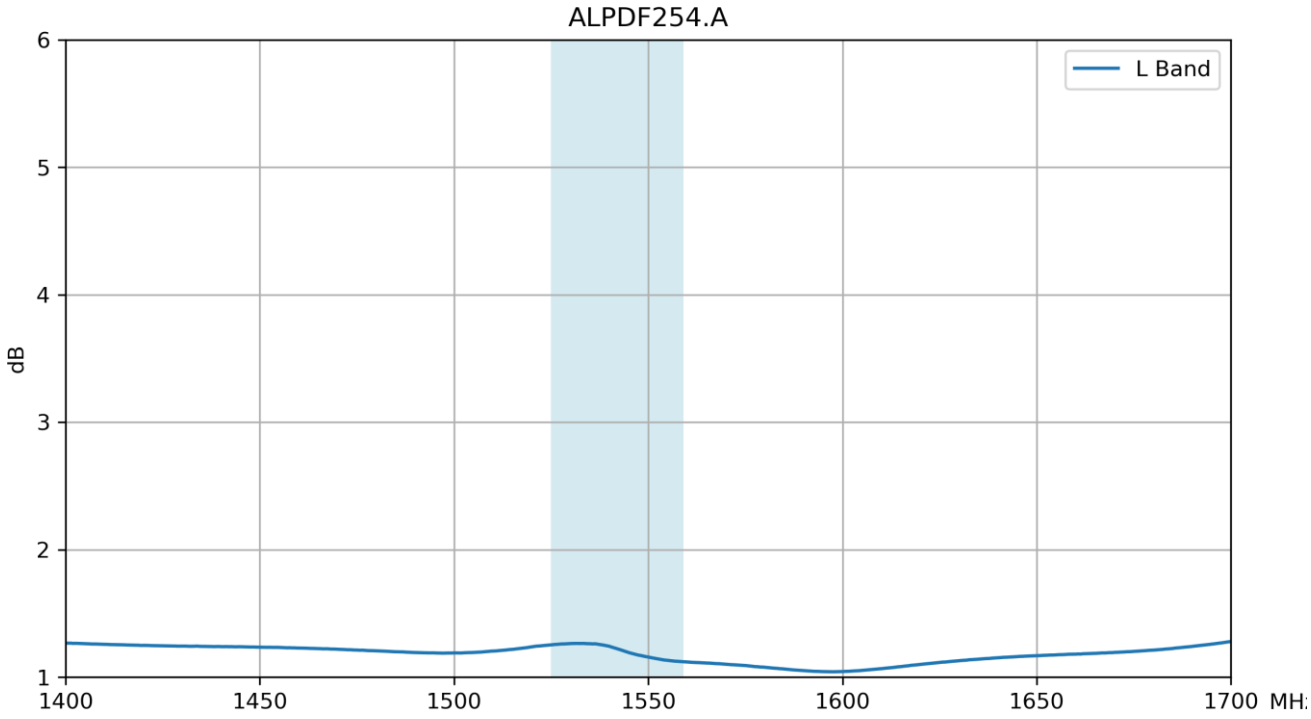
Mechanical	
Housing Dimensions	35*35*8.3 mm
Material	Ceramic + PCB + Shielding Case
Cable	100mm 1.37mm Coax
Connector	I-PEX MHF®HT U.FL Compatible
Environmental	
Temperature Range	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH
RoHS Compliant	Yes
REACH Compliant	Yes

3. Antenna Characteristics

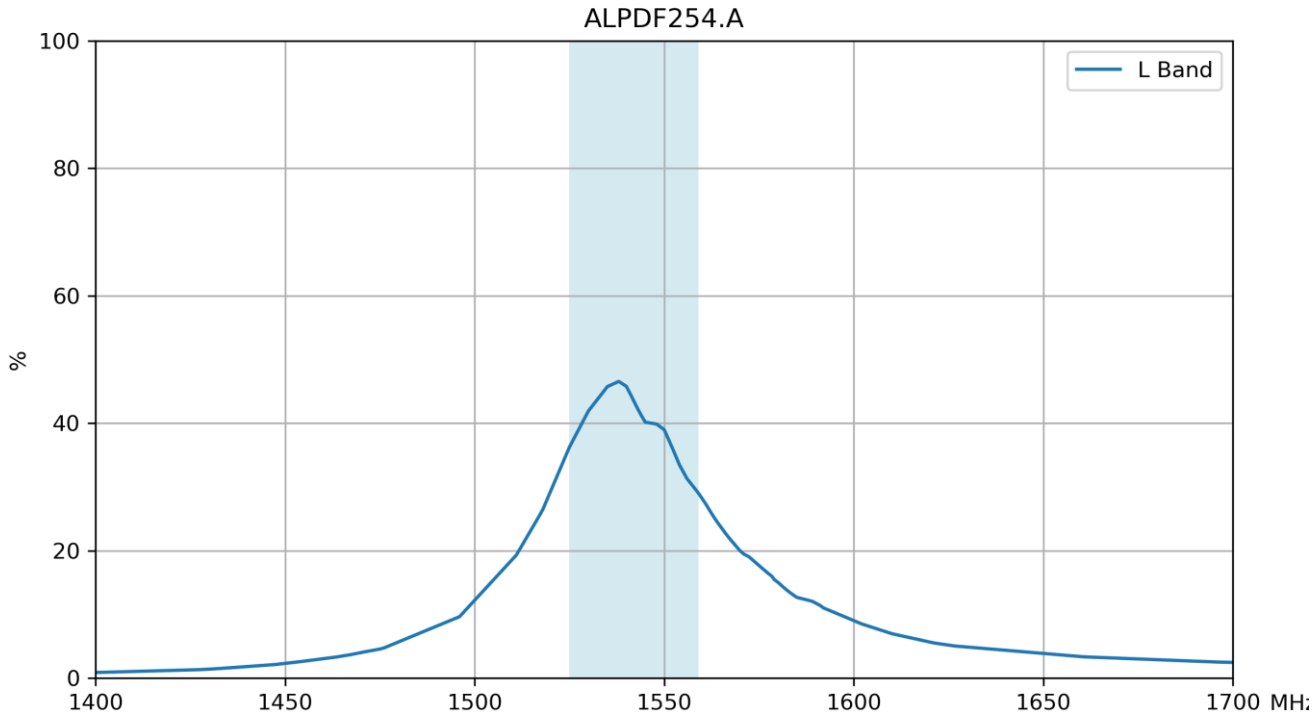
3.1 Return Loss (dB)



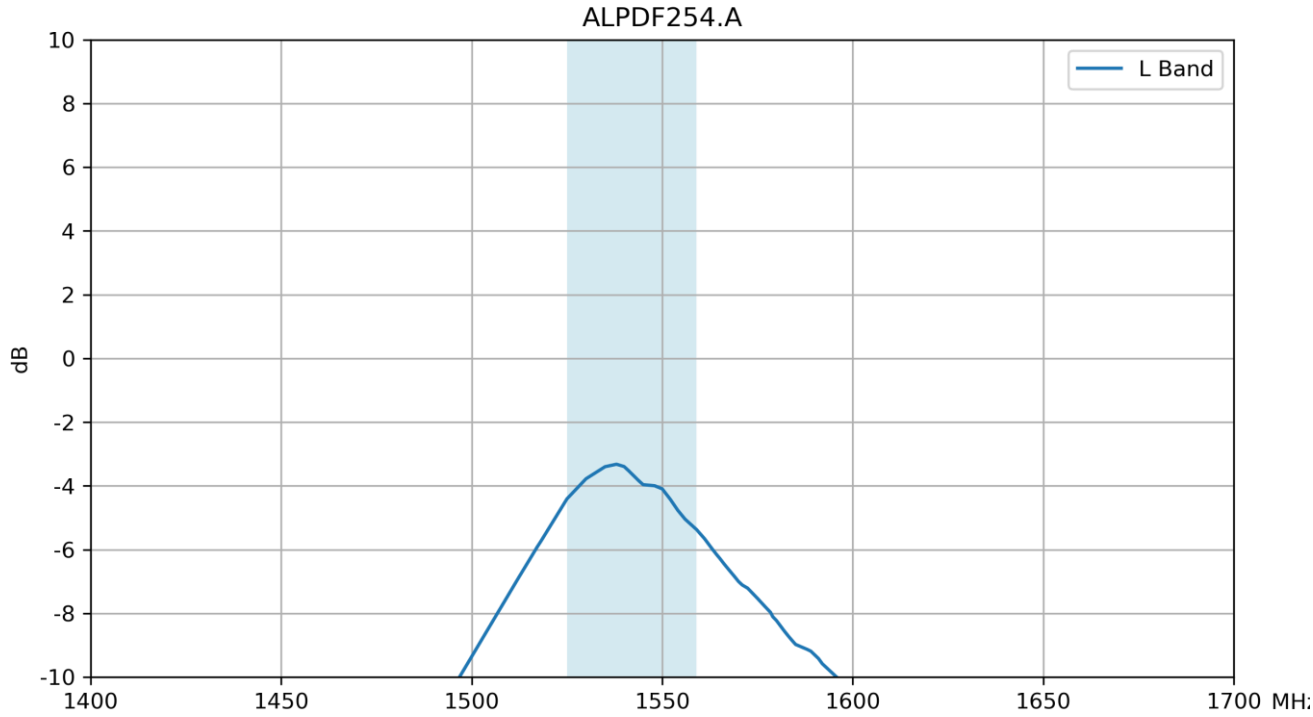
3.2 VSWR



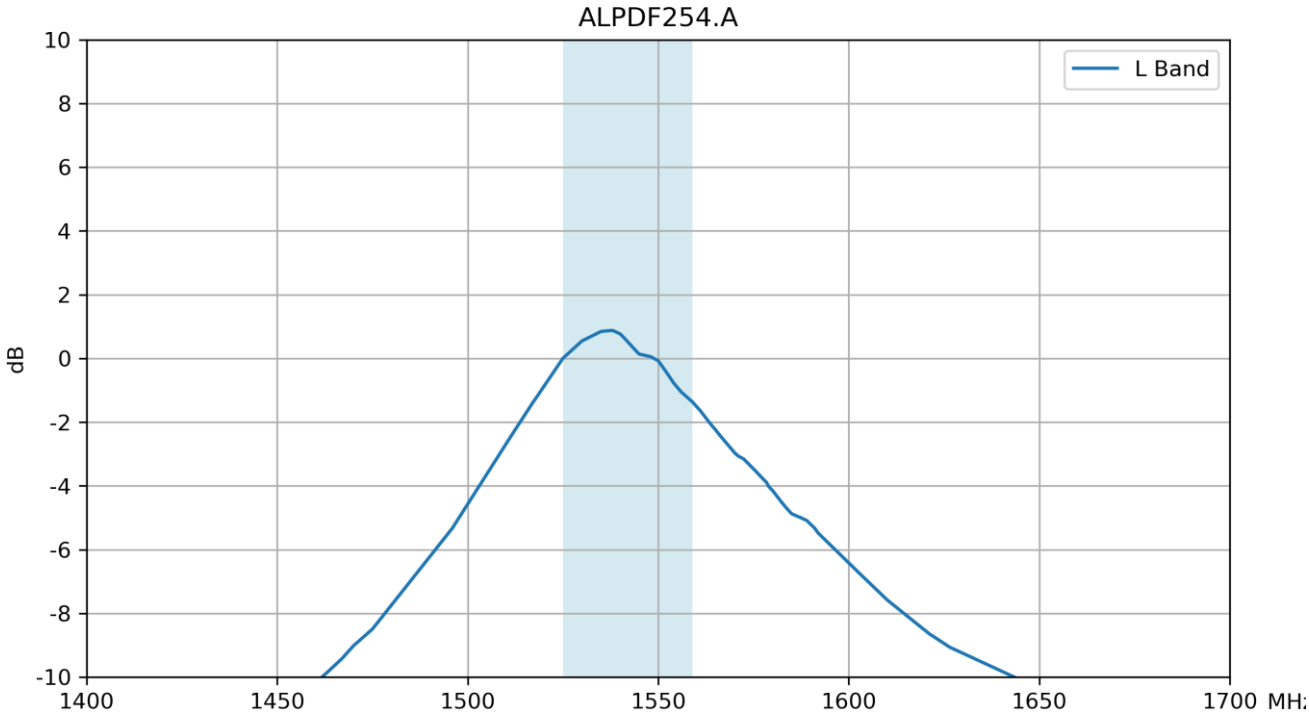
3.3 Efficiency (%)



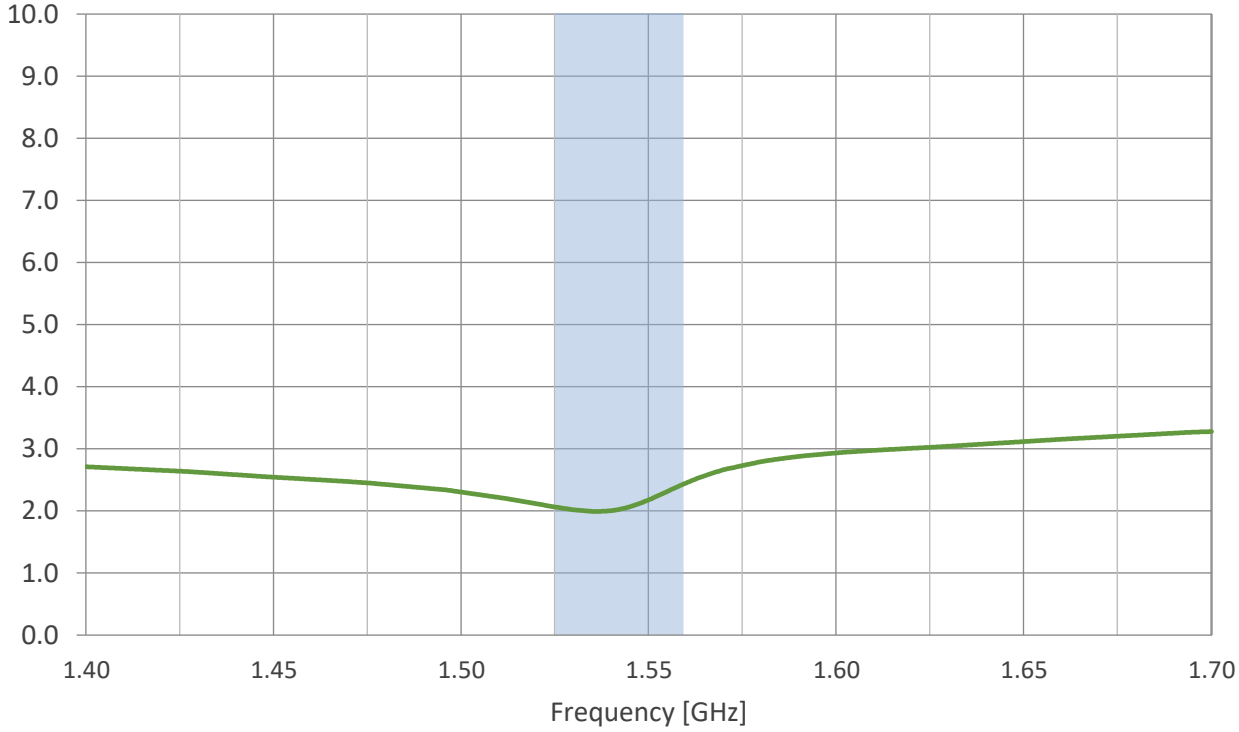
3.4 Average Gain (dB)



3.5 Peak Gain (dBi)

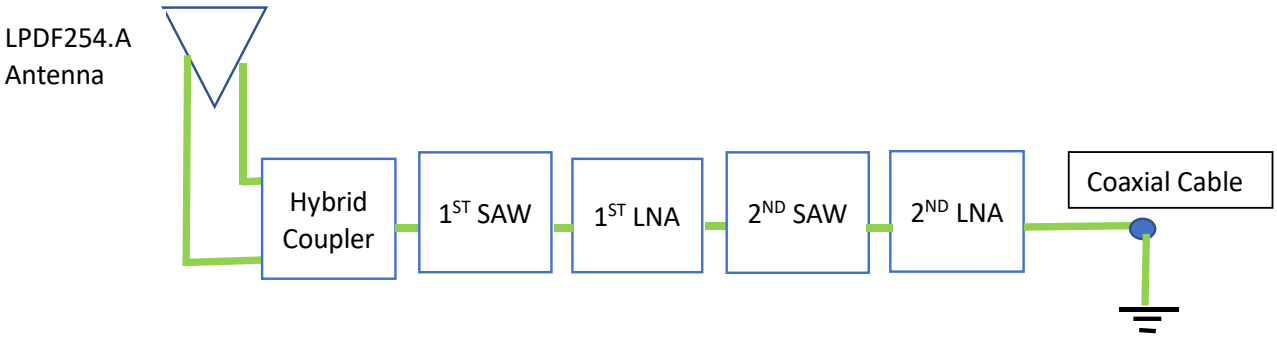


3.6 Axial Ratio

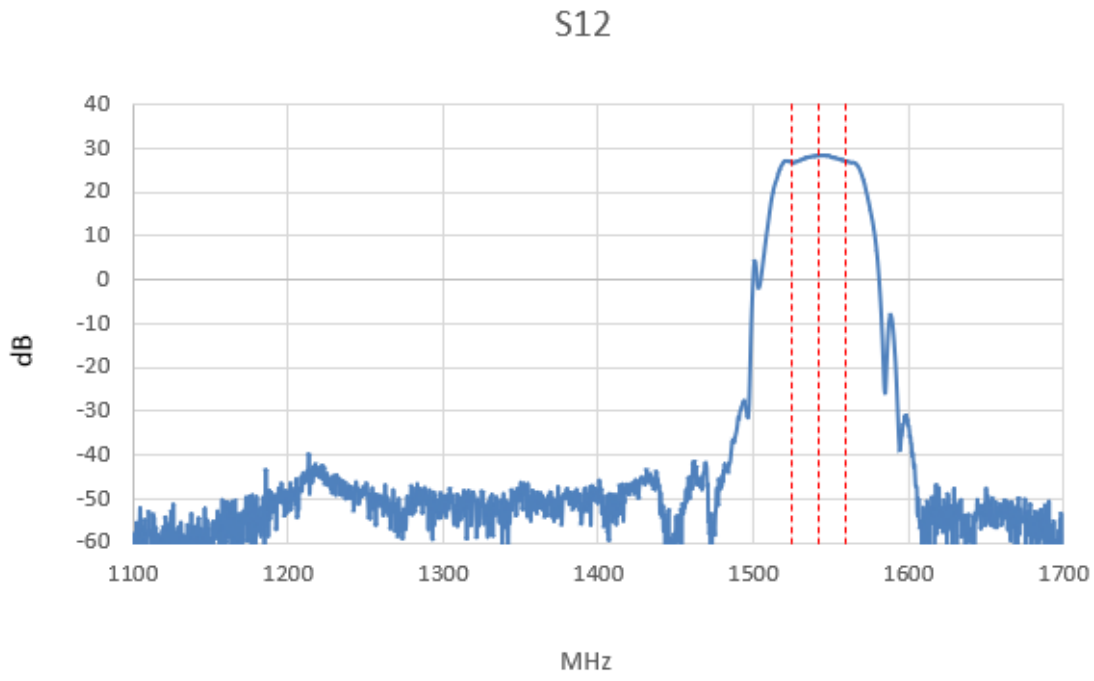


4. Active Antenna Characteristics

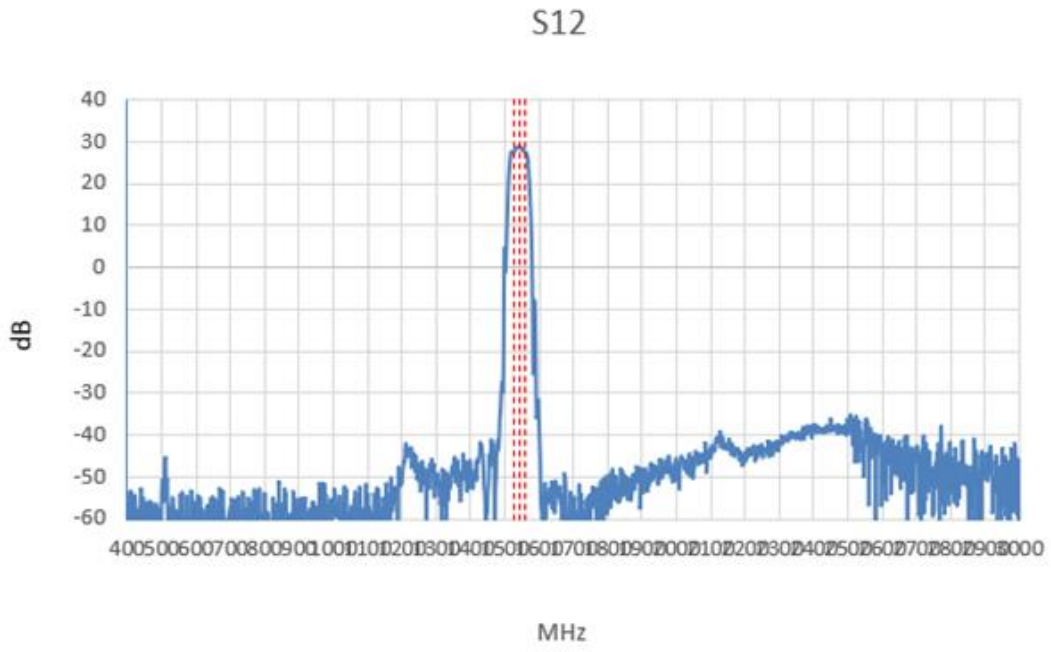
4.1 LNA Block Diagram



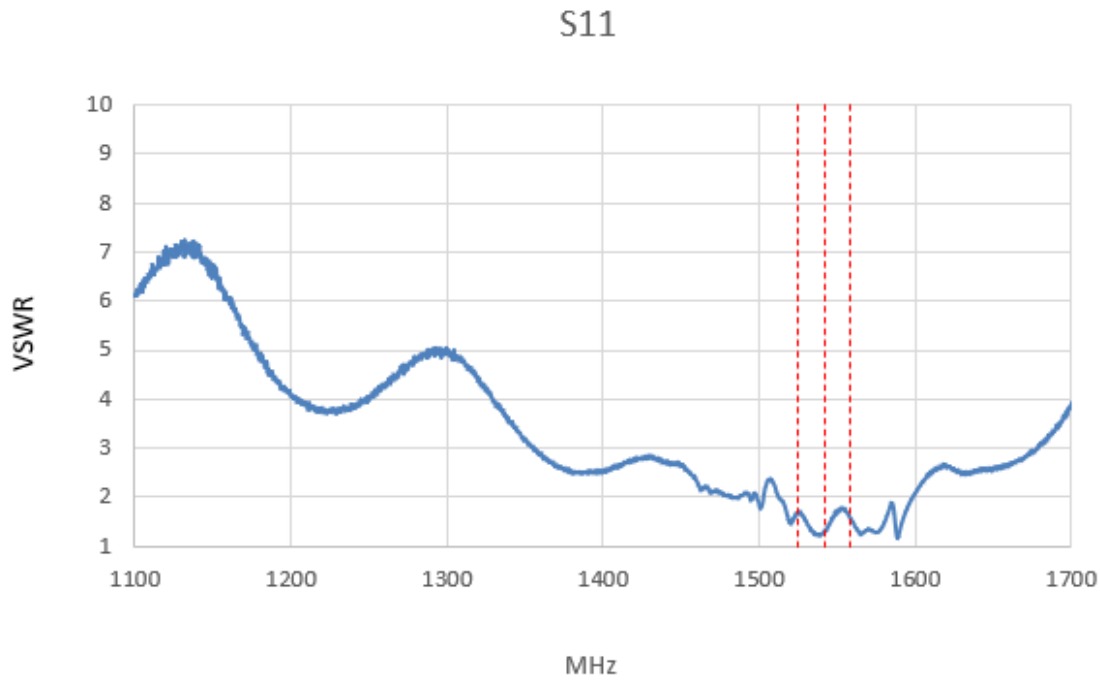
4.2 S12 Gain @3V



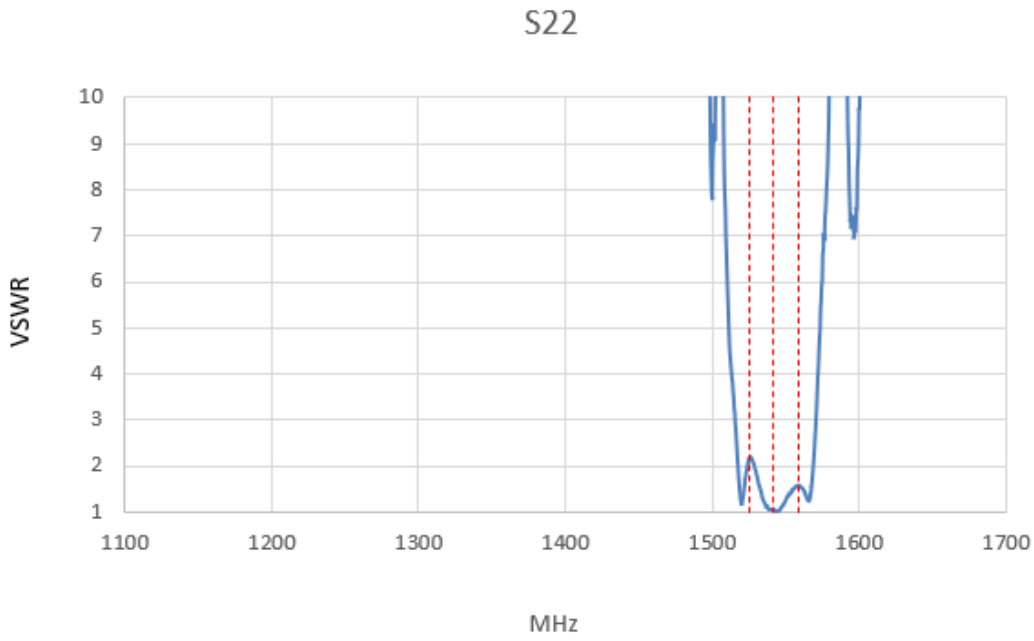
4.3 Out of Band Rejection



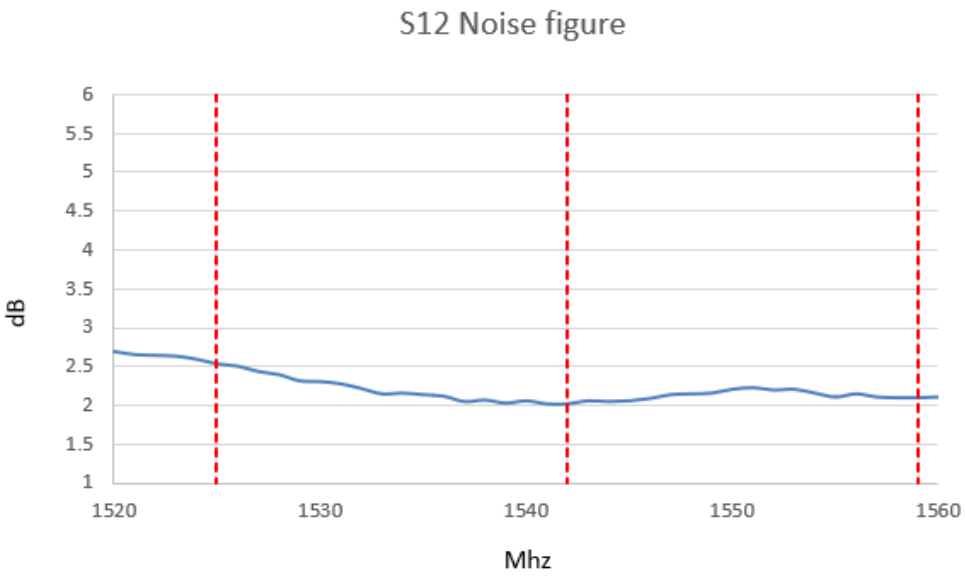
4.4 S11-Output VSWR



4.5 S22-Input VSWR

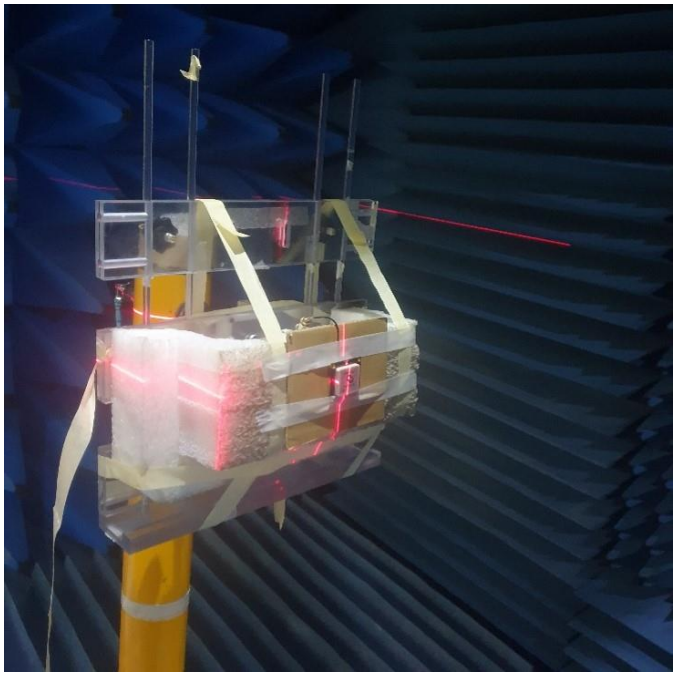


4.6 Noise Figure

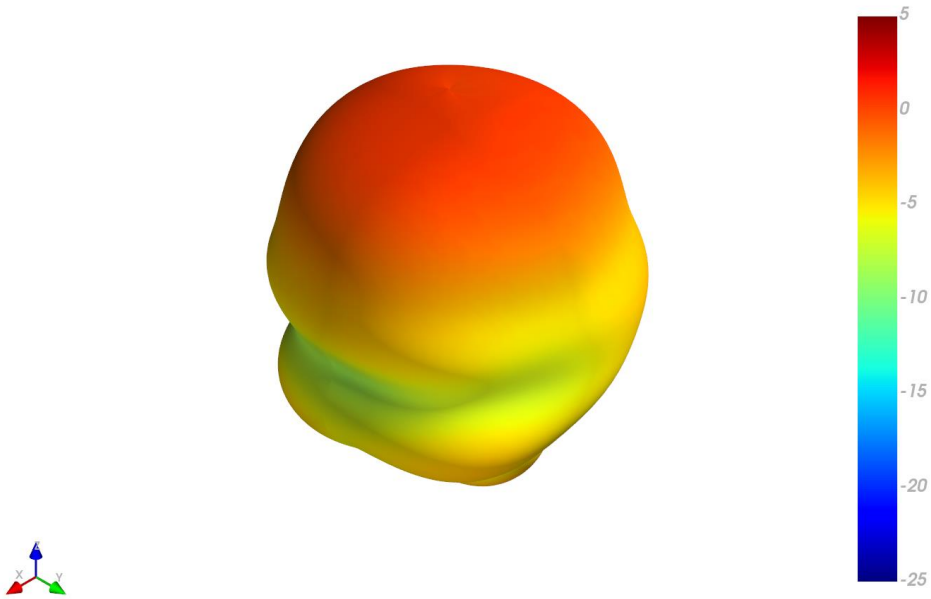


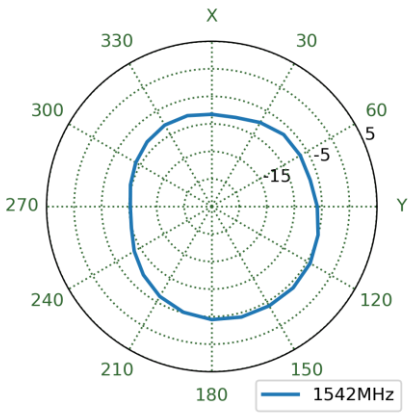
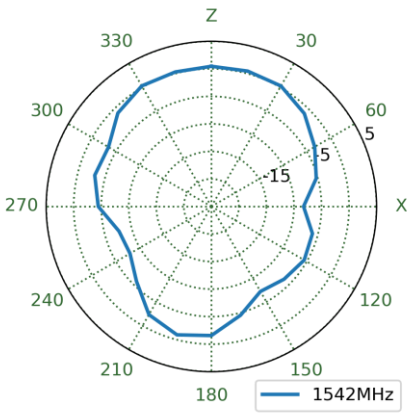
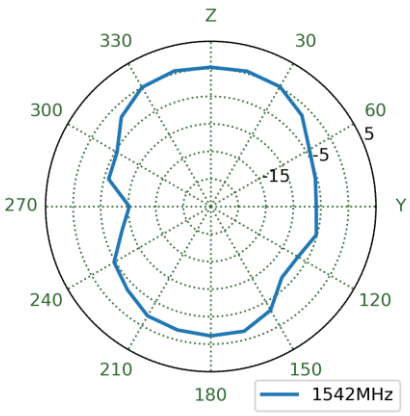
5. Radiation Patterns

5.1 Test Setup – Free Space



5.2 1542MHz 3D and 2D Radiation Patterns



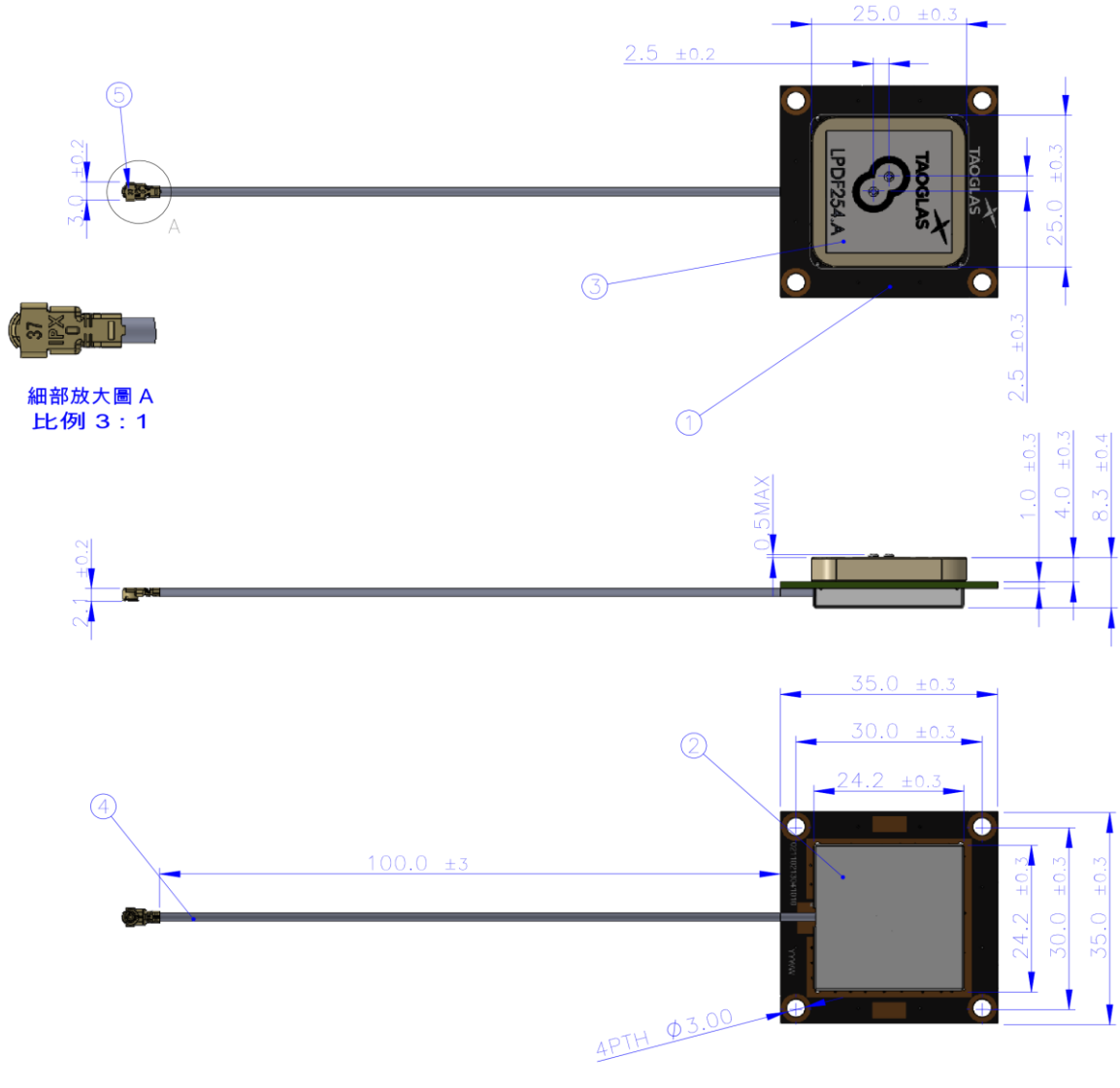
XY Plane	XZ Plane	YZ Plane
		

6. Mechanical Drawing

ISO NO.: EDW-23-8-0783
STATE: Release
NOTES:

REV	ZONE	DESCRIPTION	ENG	APPROVED	DATE
D01	All	Initial design	Aaron	Chozen	2023/6/14

* All material must be RoHS compliant.
* Use this drawing together with the corresponding 3D CAD database file to fully describe the part.
* The connector orientation has a fixed position to the antenna as per drawing.
* ""*"" Critical Dimensions."



	Name	Material	Finish	Qty
1	PCB	FR4	Black	1
2	Shielding Case	SECC	Nature	1
3	Patch	Ceramic	Clean	1
4	1.37 Coaxial cable	FEP	Gray	1
5	IPEX.MHF1(20351-112R-37)	Brass	Au Plated	1

APPROVED BY: Chozen
CHECK BY: Aaron
DRAWN BY: Aaron
DATE: 2023/6/14
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

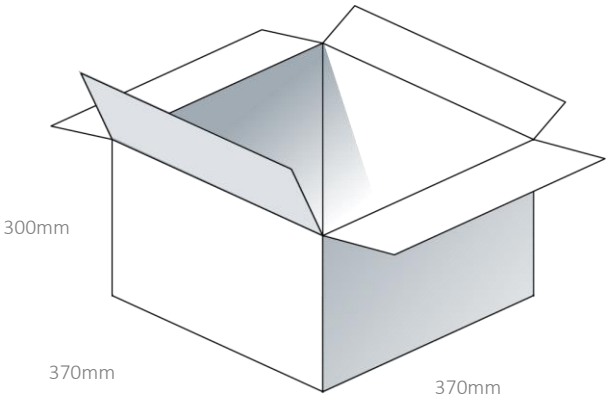
TITLE: Active L-Band Dual Feed Patch Antenna 25*25*4mm with 1.37mm I-PEX MHFI
PART NO.: ALPDF254.07.0100C
UNIT: mm | SCALE: 1:1 | PAGES: 1/1 | REV. D01

7. Packaging

1pcs ALPDF254.07.0100C per Small PE Bag

100pcs ALPDF254.07.0100C per Large PE Bag

300pcs ALPDF254.07.0100C per carton
Dimensions - 370*370*300mm



Changelog for the datasheet

SPE-23-8-282 – ALPDF254.07.0100C

Revision: A (Original First Release)	
Date:	2022-09-28
Notes:	Initial Release
Author:	Jack Conroy

Previous Revisions

Revision: B	
Date:	2020-05-28
Notes:	Added Field Test Results
Author:	Victor Pinazo

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