



TAOGLAS®



Datasheet

Part No:
GVLB208.A

Description

Super Compact Multiband GNSS L1-L5 Single Feed Stacked Patch 20 x 20 x 8mm

Features:

- Easy to integrate Single Feed GNSS Patch
- Compact 20x20mm Footprint
- Covering L1 & L5
- Dims: 20 x 20 x 8mm
- RoHS & Reach Compliant

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1. Introduction



The Taoglas GVLB208.A is a high-performance, single-feed stacked patch antenna engineered to support next-generation multi-frequency Global Navigation Satellite System (GNSS) applications. Designed in an ultra-compact $20 \times 20 \times 8$ mm form factor, this ceramic antenna provides robust coverage of the L1 and L5 bands, enabling enhanced positioning accuracy, improved multipath rejection, and superior performance in challenging environments.

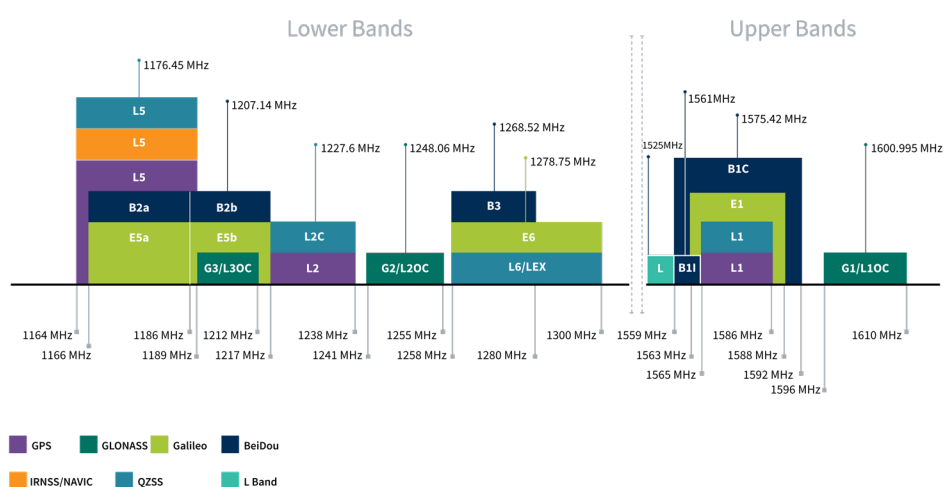
With its Right-Hand Circular Polarization (RHCP), stable gain characteristics, and optimized efficiency across key GNSS constellations—including GPS, GLONASS, Galileo, BeiDou, QZSS, IRNSS, and SBAS—the GVLB208.A is suited for high-precision navigation, timing, asset tracking, and industrial applications. Its pin-mount design allows straightforward integration with host PCBs, while compliance with RoHS and REACH standards ensures broad applicability in commercial and industrial deployments.

Typical Applications Include:

- Autonomous Vehicles
- Precision Agriculture
- Surveying and Mapping
- UAVs and Drones
- Timing and Synchronization
- Asset Tracking and Security
- Wearables and Personal Navigation Devices

2. Specification

GNSS Frequency Bands					
GPS	L1 1575.42 MHz	L2 1227.6 MHz	L5 1176.45 MHz		
	■	□	■		
GLONASS	G1 1602 MHz	G2 1248 MHz	G3 1207 MHz		
	□	□	□		
Galileo	E1 1575.24 MHz	E5a 1176.45 MHz	E5b 1201.5 MHz	E6 1278.75 MHz	
	■	■	□	□	
BeiDou	B1C 1575.42 MHz	B1I 1561 MHz	B2a 1176.45 MHz	B2b 1207.14 MHz	B3 1268.52 MHz
	■	□	■	□	□
L-Band	L-Band 1542 MHz				
	□				
QZSS (Regional)	L1 1575.42 MHz	L2C 1227.6 MHz	L5 1176.45 MHz	L6 1278.75e6	
	■	□	■	□	
IRNSS (Regional)	L5 1176.45 MHz				
	■				
SBAS	L1/E1/B1 1575.42 MHz	L5/B2a/E5a 1176.45 MHz	G1 1602 MHz	G2 1248 MHz	G3 1207 MHz
	■	■	□	□	□



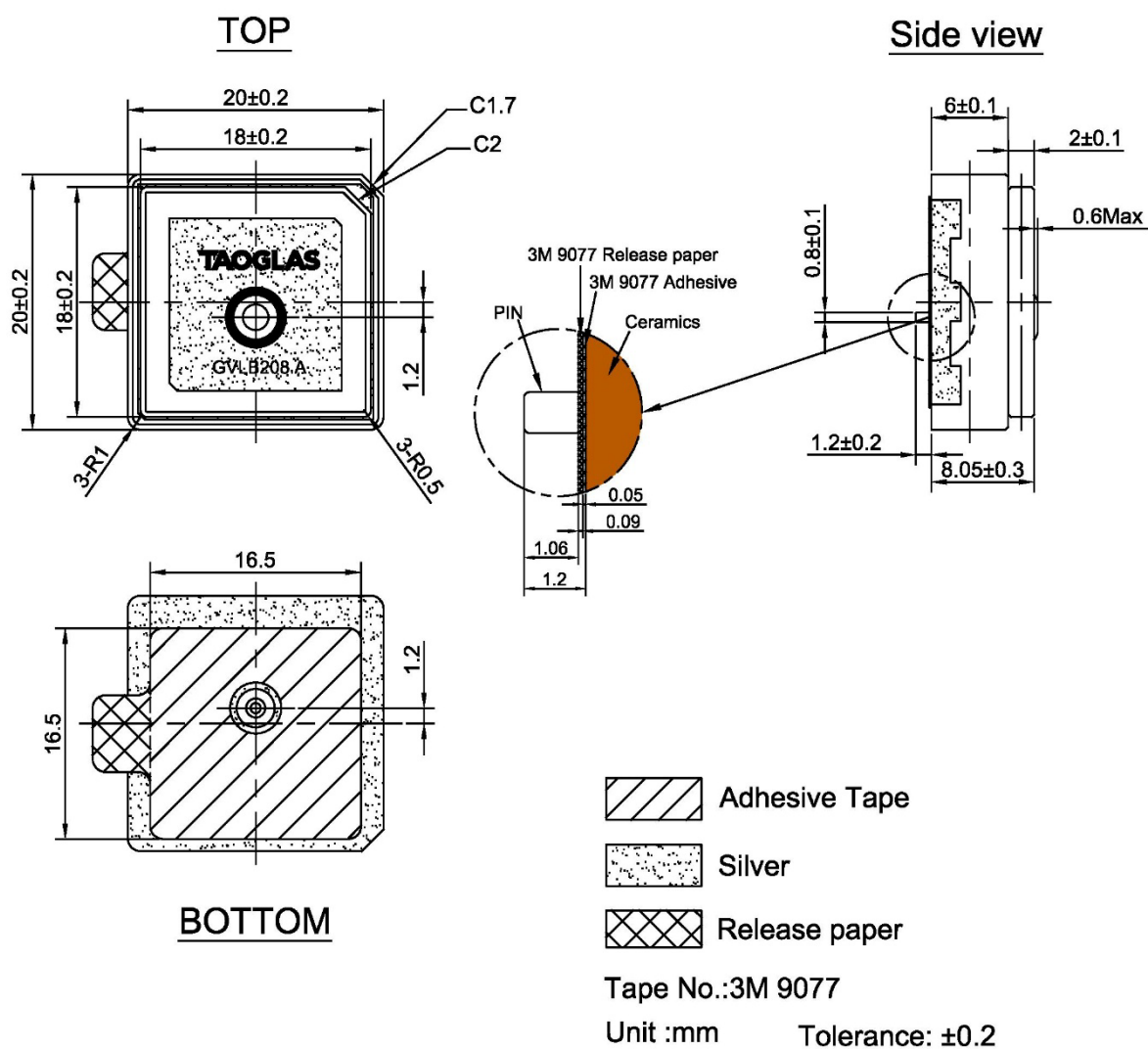
GNSS Bands and Constellations

GNSS Electrical		
Frequency (MHz)	1176.45	1575.42
Efficiency (%)	49.8	50.2
Average Gain (dB)	-3.4	-3.2
Peak Gain (dBi)	0.4	1.5
Axial Ratio (dB)	4.1	4.14
Polarization	RHCP	
Impedance	50 Ω	

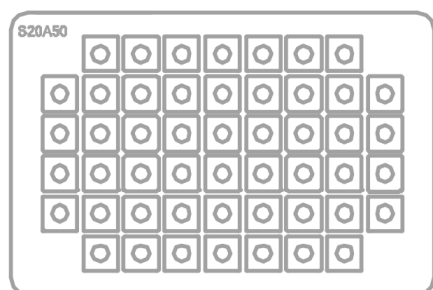
Mechanical	
Dimensions	20mm x 20mm x 8.8mm
Weight	16g
Material	Ceramic
Mounting type	Pin mount

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

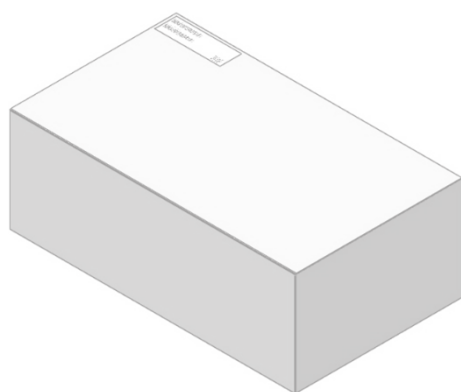
3. Mechanical Drawing



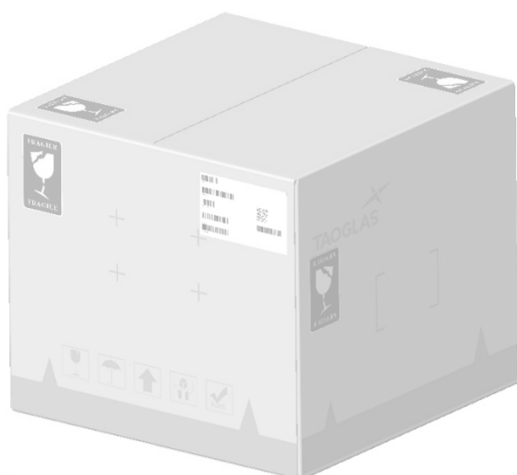
4. Packaging



- ✓ 50 PCS / Tray
- ✓ Carton(mm): 255x169.5x14.5



- ✓ 200 PCS / Box
- ✓ Box(mm): 280x187x70
- ✓ Weight (Kg): 4 ±3%
- ✓ SPQ Label



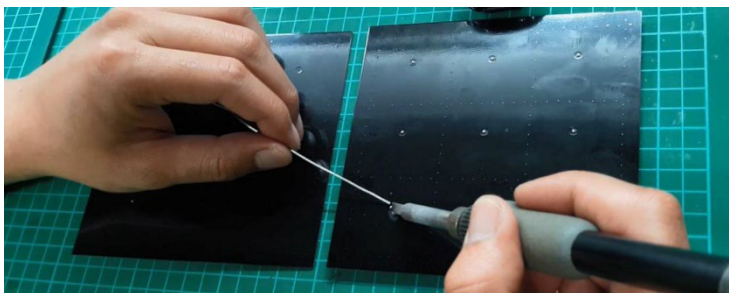
- ✓ 800 PCS / Carton
- ✓ Carton(mm): 405x293x185
- ✓ Weight (Kg): 16 ±3%
- ✓ Carton Label

5. Soldering Recommendations

5.1 Manual Soldering Machine

Soldering Temperature: 360-380°C

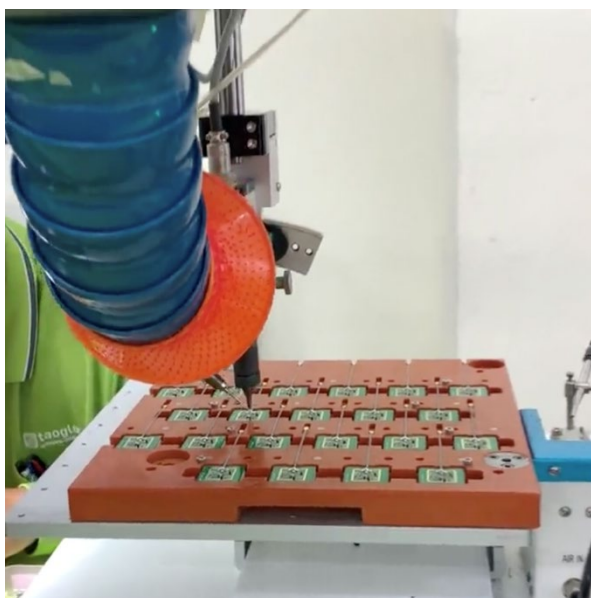
Soldering Duration: 3~4 seconds



5.2 Automated Ferrochrome Soldering Machine

Soldering Temperature: 360-380°C

Soldering Duration: 3~4 seconds



Please note that this process will require a one-time fixture to be made for each PCB design.

6. Antenna Characteristics

6.1 Test Setup

AUT

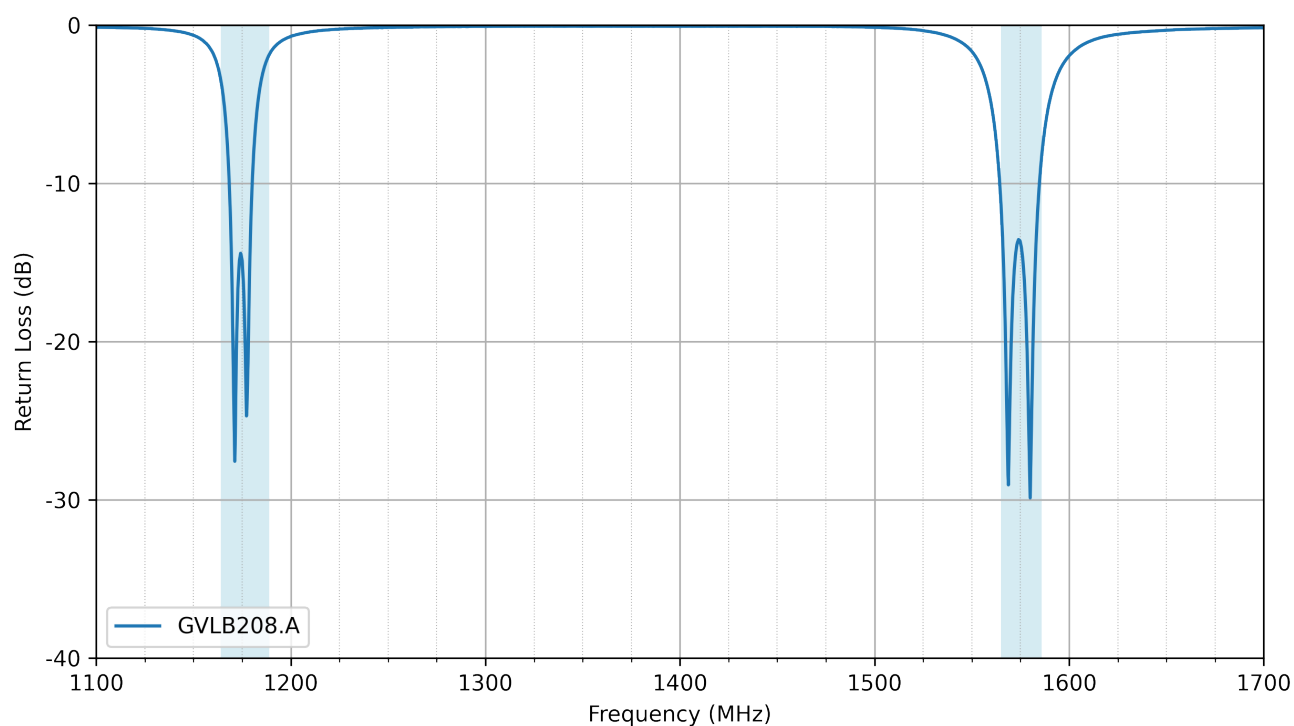


Vector Network Analyzer

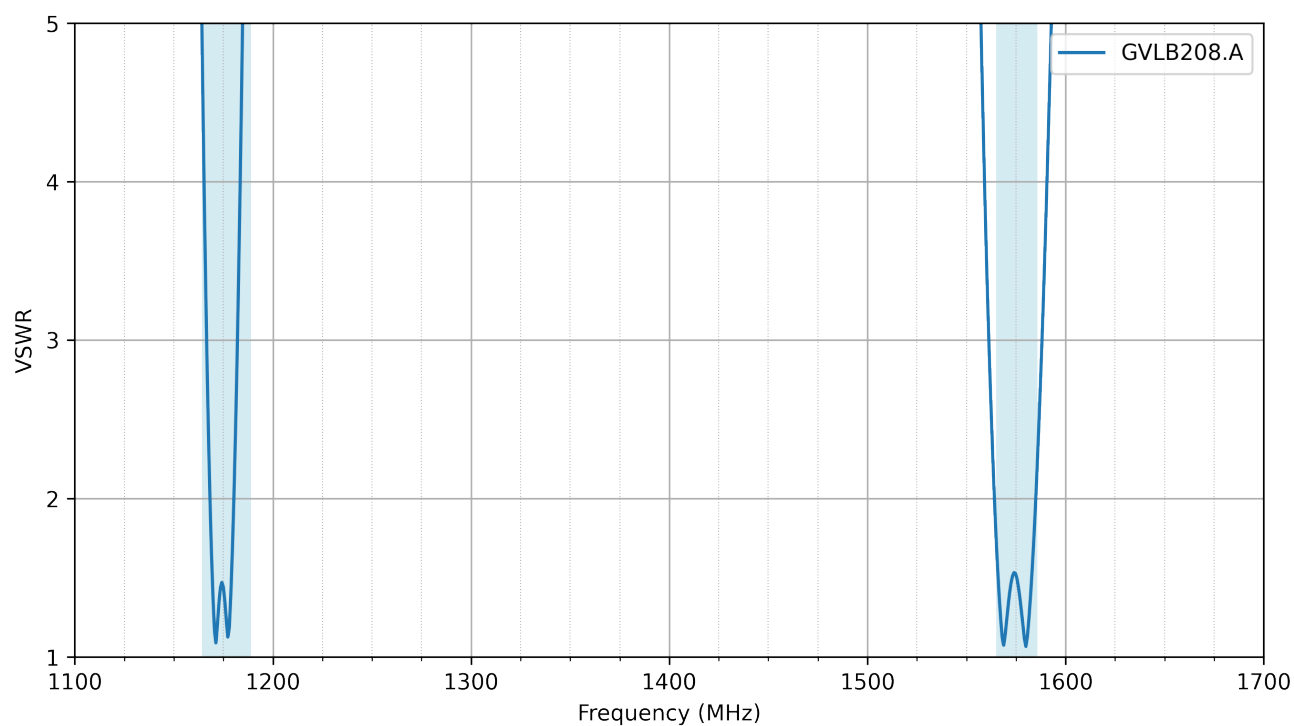


VNA Test Set-up

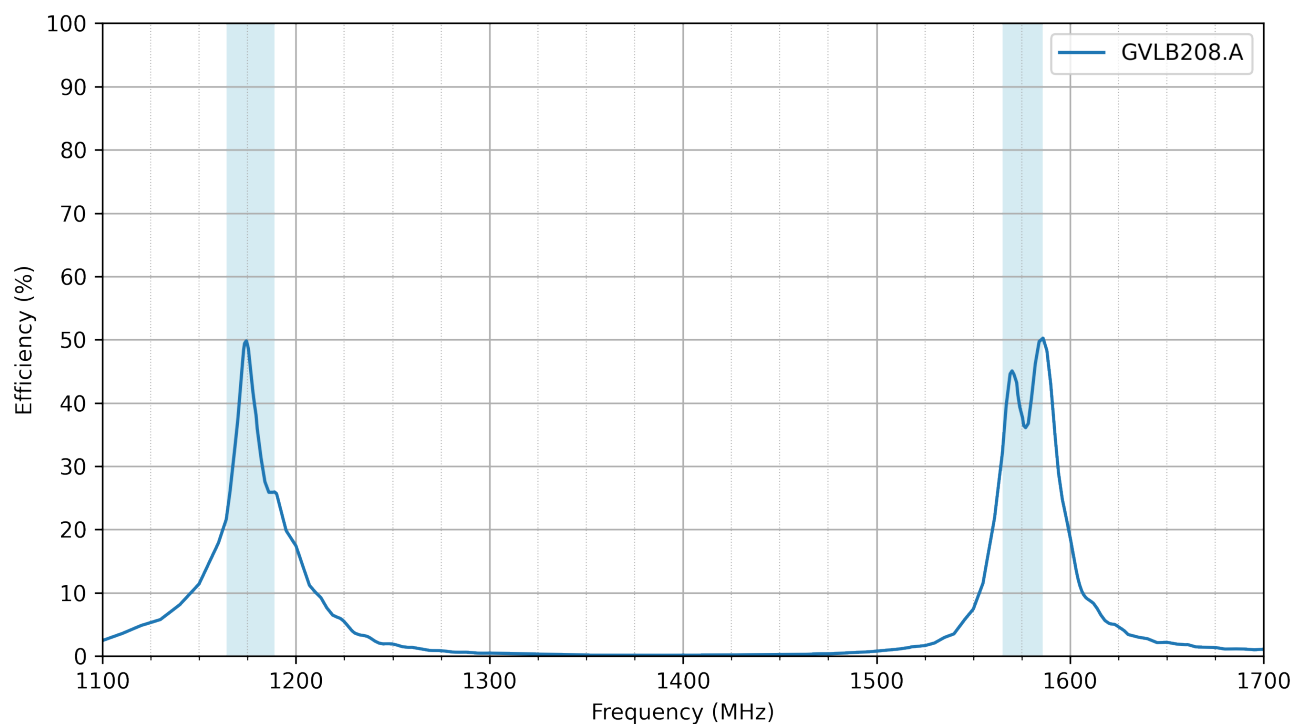
6.2 Return Loss



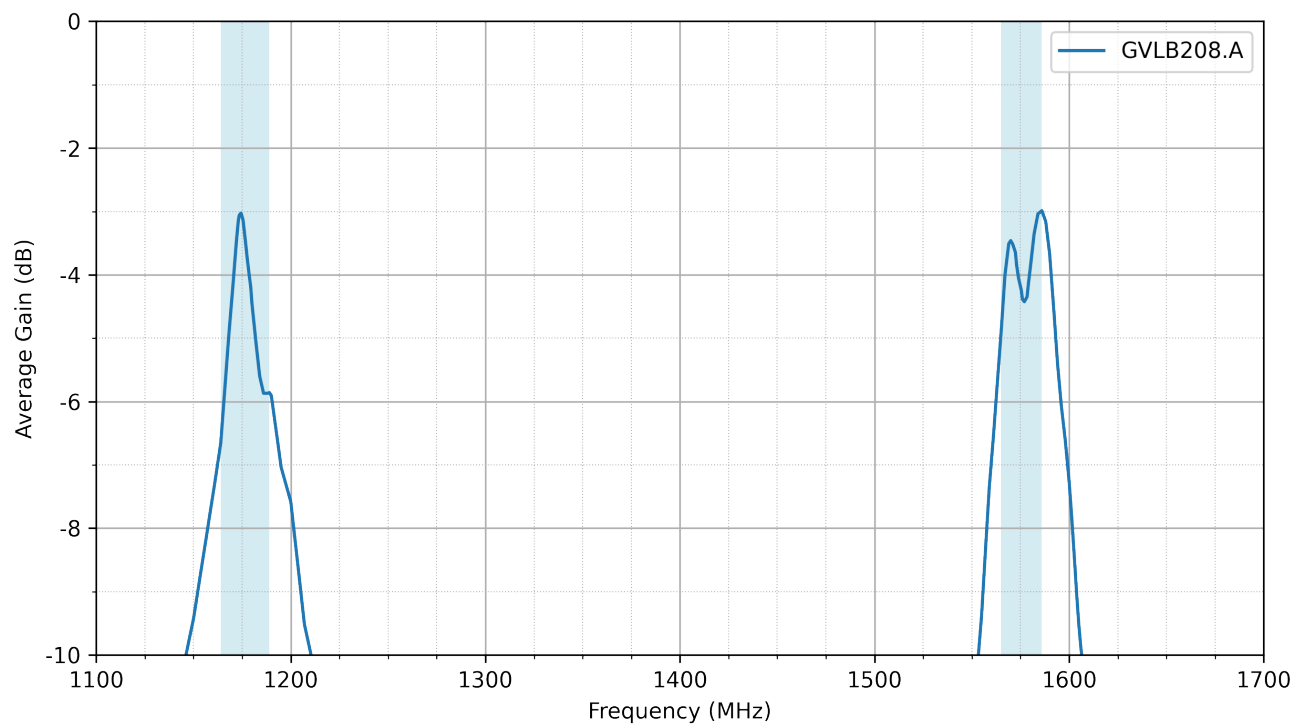
6.3 VSWR



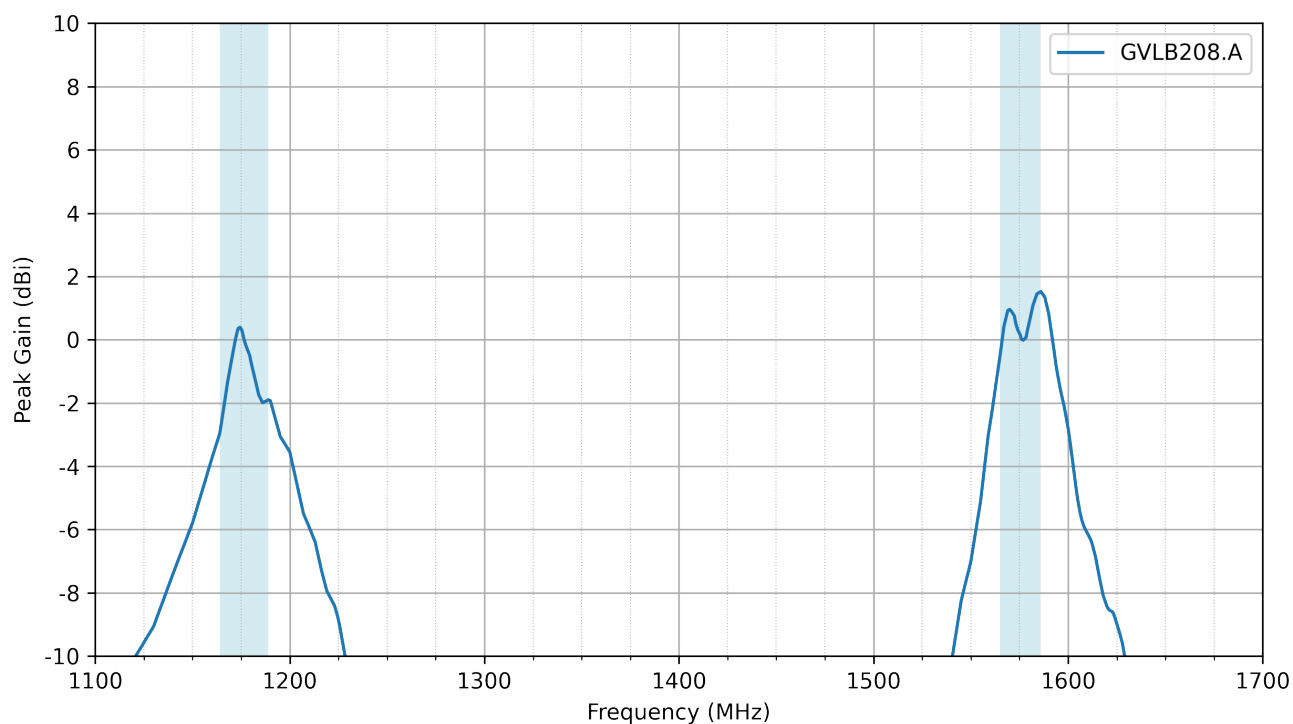
6.4 Efficiency



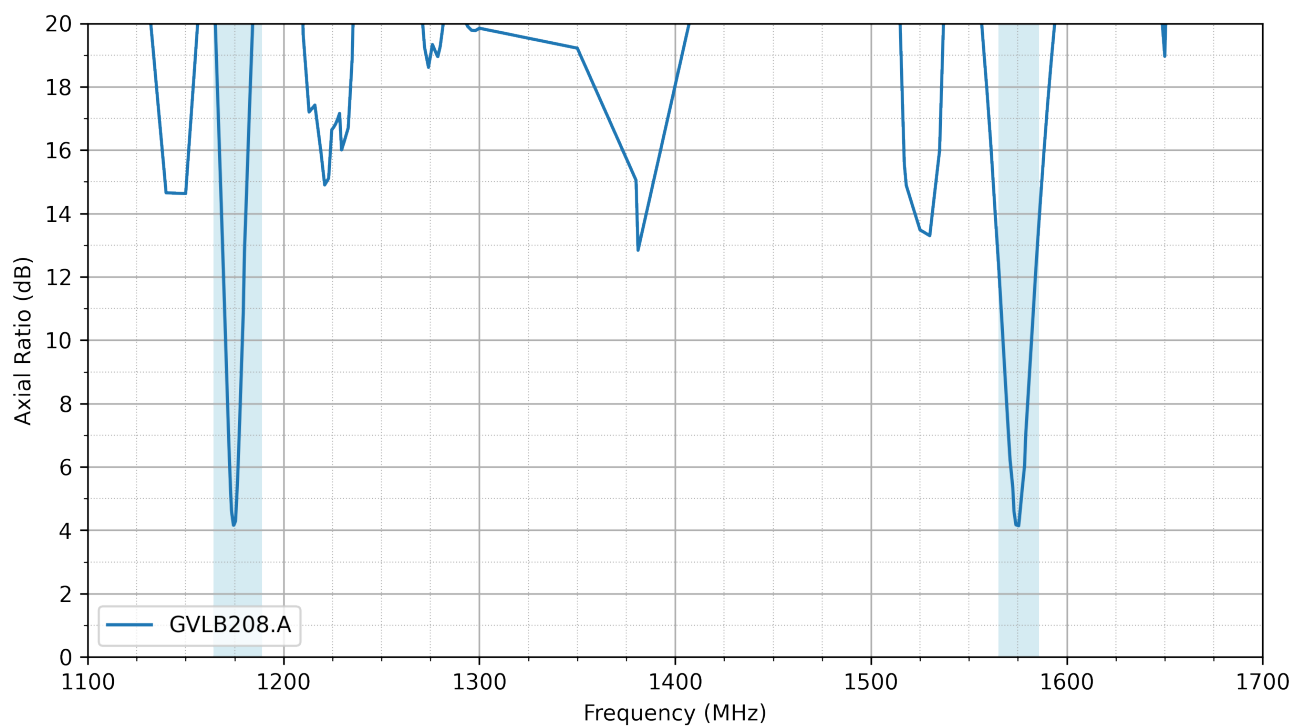
6.5 Average Gain



6.6 Peak Gain

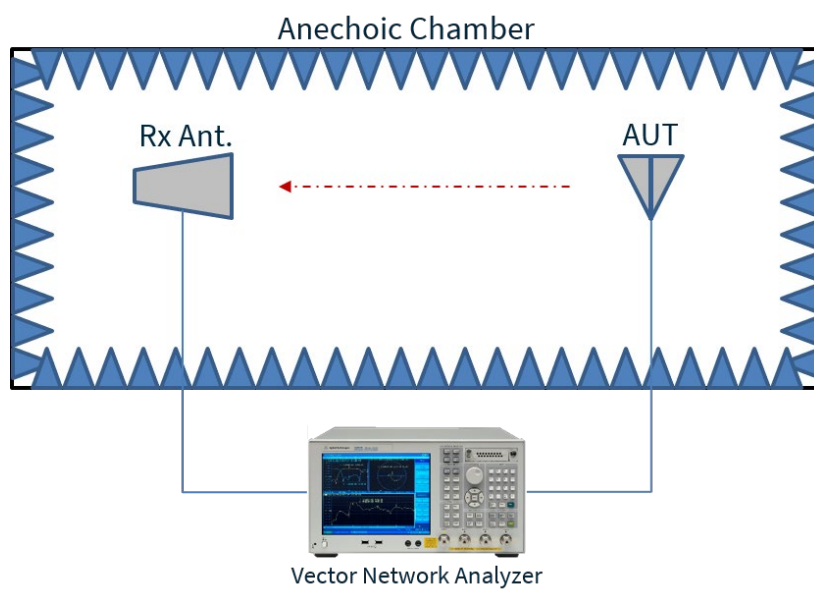


6.7 Axial Ratio



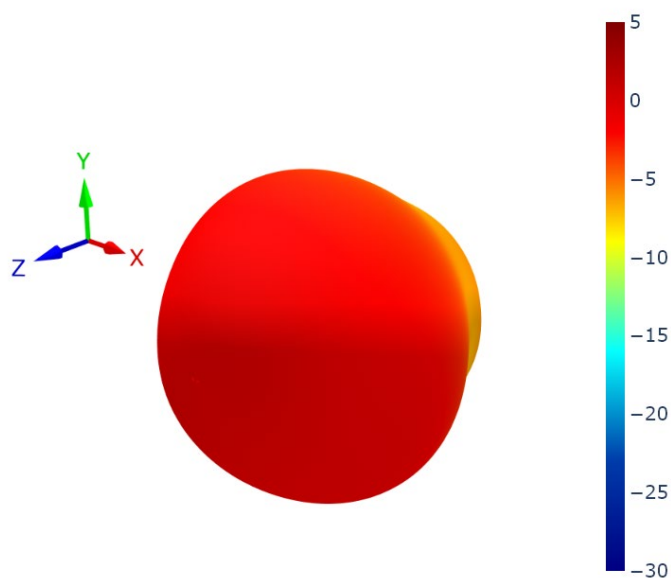
7. Radiation Patterns

7.1 Test Setup

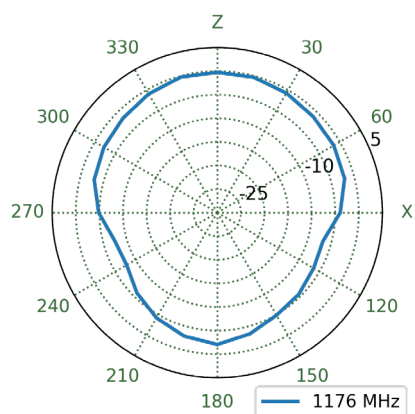


Chamber Test Set-up

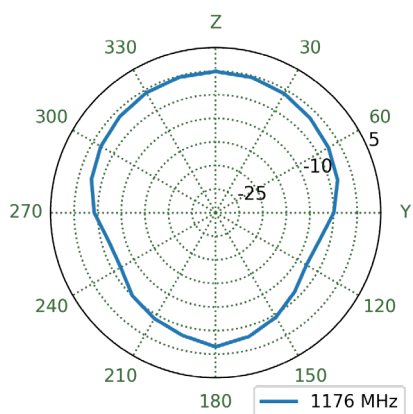
7.2 Patterns at 1176 MHz



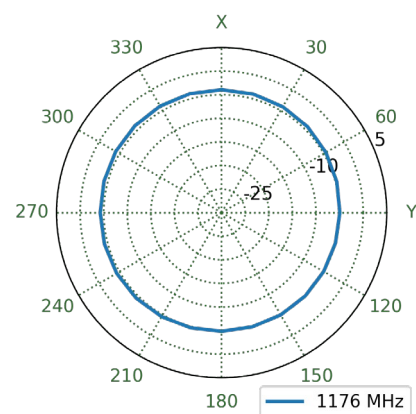
XZ Plane



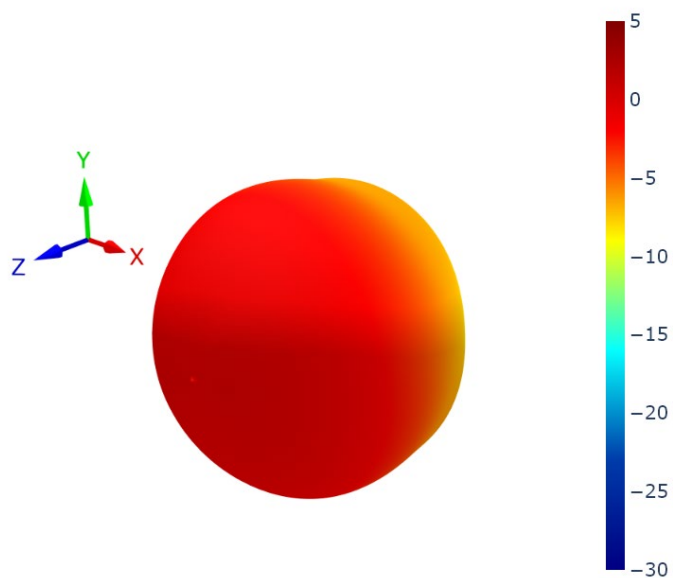
YZ Plane



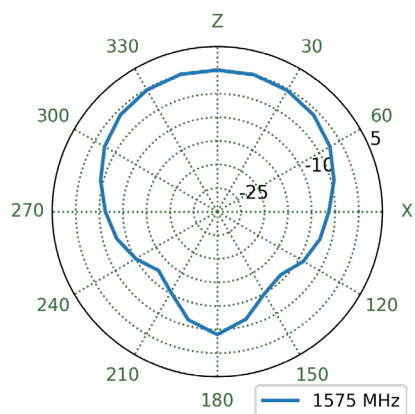
XY Plane



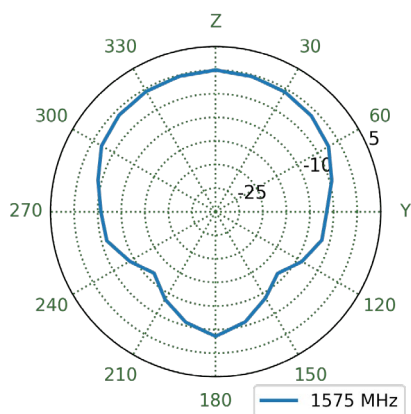
7.3 Patterns at 1575 MHz



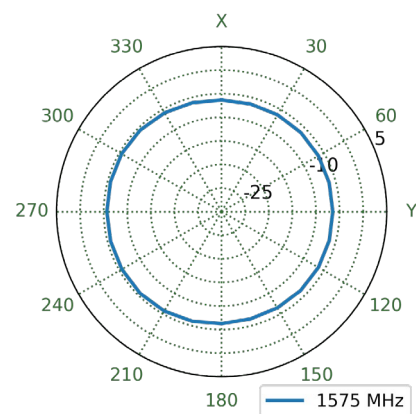
XZ Plane



YZ Plane



XY Plane



Changelog for the datasheet

SPE-25-8-318– GVLB208.A

Revision: A (Original First Release)

Date:	2025-11-21
Notes:	Initial Release
Author:	Gary West

Previous Revisions



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