Accura GNSS L1/L5 Stacked Patch Multi-Band Antenna

Part No:
GVLB258.A

Description:
Single Feed Stacked Patch Antenna for GNSS L1 / L5, GLONASS, BeiDou B1

Features:
Single Feed Stacked Patch Assembly
Covering Bands
- GPS L1 & L5
- BeiDou B1
- Galileo E1 & E5a
- GLONASS G1
- IRNSS L5

Pin Mount
Dimensions: 25*25*8.12mm
RoHS & REACH Compliant
1. Introduction 3
2. Specifications 4
3. Antenna Characteristics 5
4. Radiation Patterns 8
5. Mechanical Drawing 11
6. Footprint 12
7. Packaging 13

Changelog 14

Taoglas makes no warranties based on the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Taoglas reserves all rights to this document and the information contained herein. Reproduction, use or disclosure to third parties without express permission is strictly prohibited.
The Taoglas Accura GVLB258.A, is a multi-band GPS, BeiDou/Compass and IRNSS, high-performance directional antenna for high precision GPS and BeiDou accuracy and fast positioning. It utilizes a 25*25*8mm advanced wide-band dual stacked ceramic patch antenna with optimized gain for GPS L1/L5, Galileo, GLONASS and BeiDou bands.

Typical Applications Include:

- RTK
- Wearables
- Navigation
- Security
- Transportation
- Autonomous Vehicles
- Agriculture

The GVLB258.A has been tuned and tested on a 70 x 70 mm ground plane and exhibits excellent radiation patterns. The GVLB258.A has been optimised to cover the bands required for the next generation of L1/L5 GNSS receivers that are currently on the market.

Patch antennas can be specifically tuned to customer-specific device environments, subject to NRE and MOQ. Contact your regional Taoglas customer support team to request these services or additional support to integrate and test this antenna’s performance in your device.
# 2. Specifications

## GNSS Frequency Bands Covered

<table>
<thead>
<tr>
<th>Constellation</th>
<th>L1</th>
<th>L2</th>
<th>L5</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS</td>
<td>■</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GLONASS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Galileo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beidou</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QZSS (Regional)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRNSS (Regional)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SBAS</td>
<td>L1/E1/B1</td>
<td>L5/B2a/E5a</td>
<td>G1</td>
</tr>
</tbody>
</table>

- **■**: GNSS Frequency Bands Covered.
- **□**: GNSS Frequency Bands Not Covered.

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

---

### GNSS Bands and Constellations

![GNSS Bands and Constellations Diagram](attachment:image.png)
### Mechanical

- **Planner Dimension**: 25*25*8mm
- **Ground Plane**: 70*70mm
- **Connection Type**: Pin & Adhesive Mount

### Environmental

- **Temperature Range**: -40°C to 85°C
- **Humidity**: Non-condensing 65°C 95% RH

### Electrical

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>GPS L5 / GLONASS E5a / IRNSS L5 / BeiDou B2a</th>
<th>BeiDou B1</th>
<th>GPS L1 / Galileo E1</th>
<th>GLONASS G1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1166-1186</td>
<td></td>
<td>1559-1563</td>
<td>1563-1587</td>
<td>1593-1610</td>
</tr>
<tr>
<td>Efficiency (%)</td>
<td>58.5</td>
<td>68.5</td>
<td>60.7</td>
<td>62.5</td>
</tr>
<tr>
<td>Peak Gain(dBi)</td>
<td>2.31</td>
<td>2.94</td>
<td>2.87</td>
<td>3.08</td>
</tr>
<tr>
<td>Average Gain(dB)</td>
<td>-2.33</td>
<td>-1.64</td>
<td>-2.17</td>
<td>-2.04</td>
</tr>
<tr>
<td>Polarization</td>
<td></td>
<td></td>
<td>R.H.C.P.</td>
<td></td>
</tr>
<tr>
<td>Radiation Pattern</td>
<td></td>
<td></td>
<td>Omni</td>
<td></td>
</tr>
<tr>
<td>Impedance</td>
<td></td>
<td></td>
<td>50 Ω</td>
<td></td>
</tr>
</tbody>
</table>
3. Antenna Characteristics

3.1 Return Loss

![Return Loss Graph](image)

Return Loss:
- 1169MHz @ -6dB to 1185MHz @ -6dB
- 1551MHz @ -6dB to 1604MHz @ -6dB

L1+L5 Band

3.2 Efficiency

![Efficiency Graph](image)

GVLB258.A

1100 1150 1200 1250 1300 1350 1400 1450 1500 1550 1600 1650 1700 MHz

%
3.3 Average Gain

![Average Gain Graph]

3.4 Peak Gain

![Peak Gain Graph]
3.5 Axial Ratio – X-Z

Frequency [GHz]

GVLB258.A
4. Radiation Patterns

4.1 Test Setup

Tested on 70*70mm Ground Plane Evaluation Board
4.2 2D Radiation Patterns

1176MHz

<table>
<thead>
<tr>
<th>XY Plane</th>
<th>XZ Plane</th>
<th>YZ Plane</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="XY Plane Diagram" /></td>
<td><img src="image2" alt="XZ Plane Diagram" /></td>
<td><img src="image3" alt="YZ Plane Diagram" /></td>
</tr>
</tbody>
</table>
1561MHz

XY Plane | XZ Plane | YZ Plane
1575MHz

<table>
<thead>
<tr>
<th>XY Plane</th>
<th>XZ Plane</th>
<th>YZ Plane</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="XY Plane Diagram" /></td>
<td><img src="image" alt="XZ Plane Diagram" /></td>
<td><img src="image" alt="YZ Plane Diagram" /></td>
</tr>
</tbody>
</table>
1602MHz

XY Plane

XZ Plane

YZ Plane
5. Mechanical Drawing (Units: mm)

Front View

Side View

Bottom View

Detail A
Scale: 4:1

ISO NO.: EDW-21-8-0598
STATE: Release
NOTES:
1. Double Sided Adhesive Area
2. Soldermask Area

REV. DESCRIPTION ENG. APPROVED DATE
1 Initial Design Aron Yan Wing 2021/05/06

25±0.4
18±0.3

2.5±0.3
0.5 MAX
8.12±0.4
2.4±0.4

25±0.4
18±0.3

φ0.8±0.1

21.5±0.5

21.5±0.5

APPROVED BY: Wing
CHECK BY: Adam
DRAWN BY: Aron Yan
DATE: 2021/05/06

TITLE: GPS/GLONASS/BeiDou Single Feed Stacked Patch L1:1575.42MHz L5:1176.45MHz B1:1550.87MHz

PART NO.: GVLB258.A

<table>
<thead>
<tr>
<th>Name</th>
<th>Material</th>
<th>Finish</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Panel(-6P18W)</td>
<td>Ceramic</td>
<td>Clear</td>
</tr>
<tr>
<td>2</td>
<td>Panel(-6P18W)</td>
<td>Ceramic</td>
<td>Clear</td>
</tr>
</tbody>
</table>

This drawing and its chorded design concept are property of Taoglas. Not to be copied or given to third parties without the written consent of Taoglas.
6. Footprint

Top View

- Ground
- Ø 3
- Ø 1 Thru Hole

Bottom View

- Ground
- Ø 2.5
- Ø 3.5
- Ø 0.9 Thru Hole

Tolerance: ±0.20
Unit:mm
7. Packaging

- **24pcs GV-LB258.A per Tray**
  - Tray Dimensions: 255*144*8mm
  - Weight: 0.460Kg

- **96pcs GV-LB258.A per Inner Carton**
  - Dimensions: 263*154*96mm
  - Weight: 2Kg

- **384pcs GV-LB258.A per Large Carton**
  - Dimensions: 327*280*218mm
  - Weight: 9Kg

**Pallet Dimensions:**
- 1200*1000*1280mm
- 36 Cartons Per Pallet
- 9 Cartons Per Layer, 4 Layers
Changelog for the datasheet

**SPE-21-8-082 – GVLB258.A**

<table>
<thead>
<tr>
<th>Revision: A (Original First Release)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>2021-09-06</td>
</tr>
<tr>
<td>Notes:</td>
<td>Initial Release</td>
</tr>
<tr>
<td>Author:</td>
<td>Jack Conroy</td>
</tr>
</tbody>
</table>

**Previous Revisions**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>