

ACTIVE GNSS HELICAL

AQUILA LITE

Compact Active Quadrifilar Helical GNSS Antenna

SZA-N-5G51

BANDS

L1 / L2 / L5 / L6 / L-band

LNA GAIN

35 dB typical

CONNECTOR

SMA Male

RATING

IP67

L2 / L5 / L6	1164 to 1278 MHz	Covers GPS L5, L2; Galileo E5a, E5b, E5, E6; BeiDou B2a, B2b, B2
L1 / L-BAND	1525 to 1615 MHz	Covers GPS L1, Galileo E1, BeiDou B1, B1C, GLONASS G1, SBAS, L band

Key Features

- GPS, GLONASS, BDS, Galileo: L1 L2 L5 L6
- Compact 40 mm helix, RHCP, low axial ratio
- 35 dB LNA, 3 to 15 V
- SMA male, IP67 ABS + PC radome
- 45°C to +85°C operation

1 Introduction

AQUILA LITE is a compact, high performance Active Quadrifilar Helical GNSS Antenna designed for applications that demand reliable multi band positioning in a reduced form factor. With a shortened 40 mm body, AQUILA LITE integrates a carefully engineered RHCP helix to deliver stable phase characteristics and consistent gain across all major global navigation satellite systems. It supports GPS L1 L2 L5, GLONASS L1 L2 L3, BDS B1 B2 B3, and Galileo E1 E5 E6, ensuring dependable performance in space constrained designs where signal conditions may vary. An integrated low noise amplifier improves sensitivity and signal acquisition, maintaining robust GNSS lock even in challenging RF environments. The durable ABS + PC enclosure and IP67 sealing provide reliable protection for outdoor and industrial applications. Compared with other compact helical GNSS antennas, AQUILA LITE offers wideband capability, strong RHCP purity, and stable electrical performance, now delivered in a lighter, shorter mechanical form.

— Features

- ◆ Multi constellation reception for GPS, GLONASS, BDS, and Galileo
- ◆ Wideband support for L1 L2 L5, E1 E5 E6, B1 B2 B3
- ◆ RHCP polarization with low axial ratio
- ◆ Integrated low noise amplifier with 35 dB typical gain
- ◆ DC input range from 3 to 15 V
- ◆ Compact helix structure for stable phase center performance
- ◆ SMA male connector
- ◆ ABS + PC radome with IP67 protection
- ◆ Operating temperature from -45°C to +85°C

— Applications

- | | |
|---|---|
| ◆ Compact high precision GNSS receivers | ◆ Industrial timing and synchronization |
| ◆ Survey and mapping equipment | ◆ UAV, robotics, and autonomous platforms |
| ◆ Precision agriculture systems | ◆ Asset tracking and fleet positioning |

2 Mechanical Specifications

Part Number	SZA-N-5G51
Name	AQUILA LITE
Dimensions (mm)	40.8 × Ø 43.5
Weight	< 32 g
Antenna Type	Quadrifilar Helical GNSS Antenna
Connector*	SMA Male
Housing Material	ABS + PC

*Alternate cable length and connectors available on request

3 Electrical / RF Specifications

Band	Frequency Range (MHz)	Peak Gain (dBic)	Out of Band Rejection (dB)	Axial Ratio	Impedance
L5, L2, E5a, E5b, E5, E6, B2a, B2b, B2	1164 to 1278	>2.00	>35	≤1.5	50 Ω
L1, E1, B1, B1C, G1, SBAS, L band	1525 to 1615		>40		

4 LNA Specifications

Frequency Range (MHz)	DC Voltage (V)	Current (mA) Typical	Gain (dB) Typical	VSWR	Noise Figure (dB)
1164 to 1278	3 to 15	25	35	≤2.00	≤2.00
1525 to 1615					

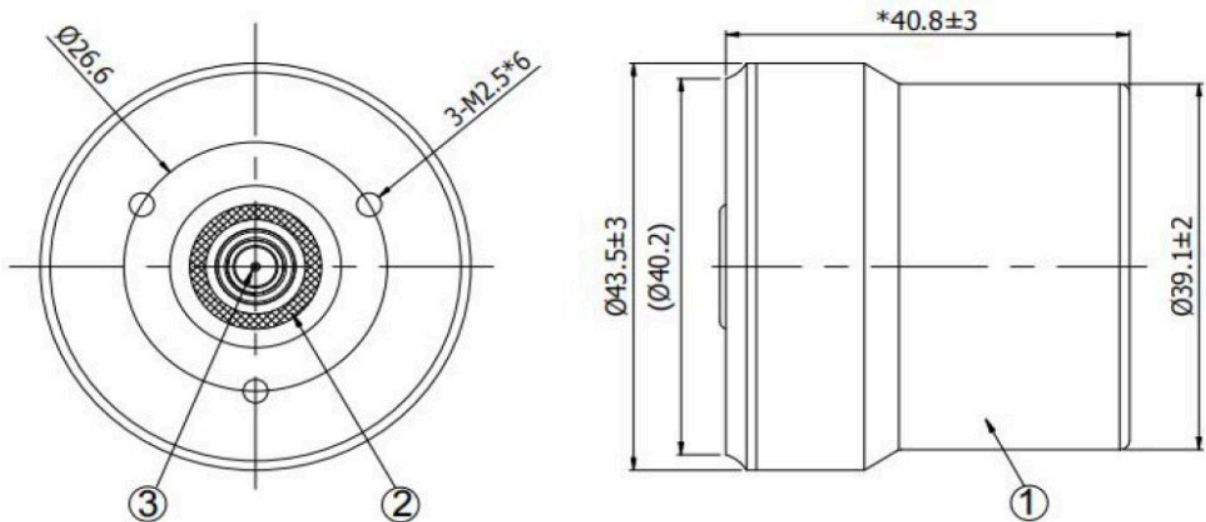
5 Phase Centre Characteristics

Phase Centre Variation	Typical ≤ ±3 mm
Phase Centre Reference	Mechanical axis (see Phase Centre Reference drawing)

6 Environmental

Operational Temperature	-45 to +85°C
Storage Temperature	-45 to +85°C
Relative Humidity (Storage)	65 ±20% RH
IP Rating	IP67
RoHS and REACH compliant	Yes

7 Mechanical Drawing



1.ELECTRICAL PROPERTIES :

- 1.1 Frequency Range.....1164~1278MHz&1525~1615MHz
- 1.2 Impedance.....50 Ohm Nominal
- 1.3 VSWR.....2.0(Max)
- 1.4 LNA Gain.....35±3dB
- 1.5 DC Voltage.....3~15V

2. Waterproof:IP67

3.These Products are in conformity with ROHS 2.0

4.Connector complied with the 48-hour salt spray test

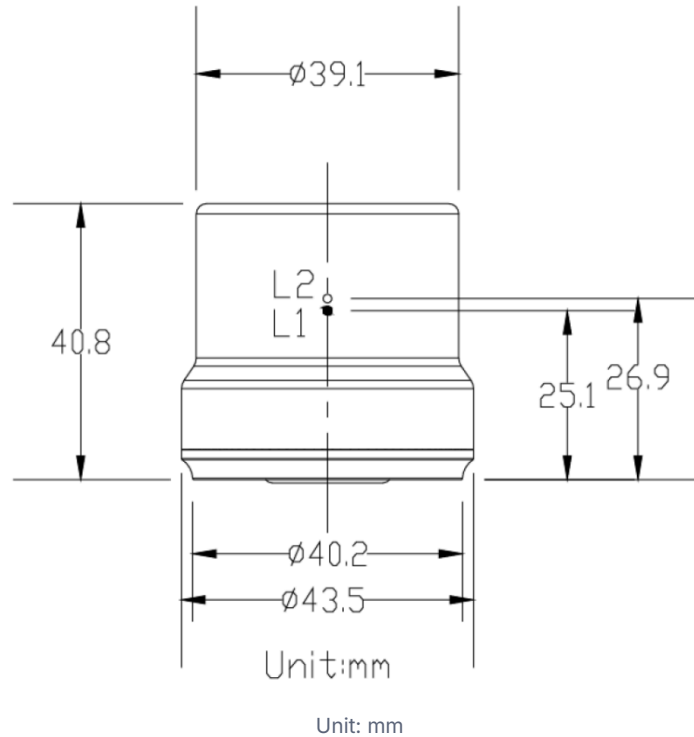
5.Important dimensions marked "*" and () for reference

3	Connector	SMA-J;Gold Plated	1
2	O-Ring	O-ring;Rubber	1
1	Antenna-Cover	ABS+PC, Black	1
NO	DESCRIPTION		Q'TY

All dimensions in mm

8 Phase Centre Reference

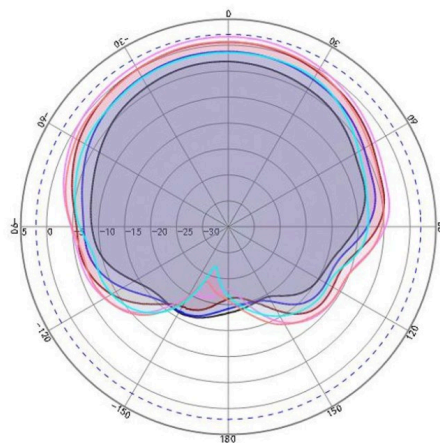
The antenna phase centre is located on the mechanical axis as defined in the associated mechanical drawing. Due to the quadrifilar helical structure, the phase centre behaviour is inherently stable across elevation angles.



9

2D Polar Plot: Elevation 1176 to 1268 MHz

Elevation Radiation Pattern @ L2 ($\phi = 0^\circ$)



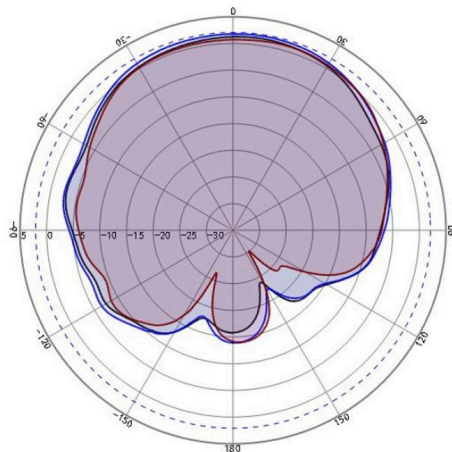
Passive Antenna Vertical Plane Radiation Pattern @ L2

Frequency (MHz)	Polarization	Peak Gain (dBi)	HPBW (3dB) (Deg)
1176	RHCP	-1.3	112
1192		0.6	109
1207		2.3	114
1227		3.1	108
1246		2.4	107
1268		0.5	119

10

2D Polar Plot: Elevation 1561 to 1602 MHz

Elevation Radiation Pattern @ L1 ($\phi = 0^\circ$)



Passive Antenna Vertical Plane Radiation Pattern @ L1

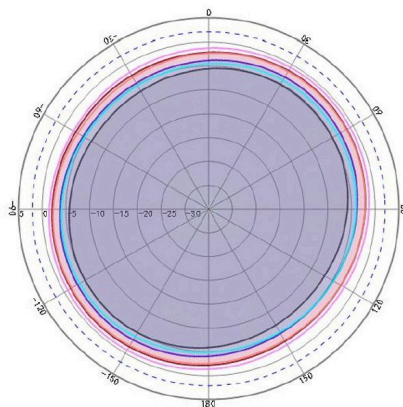
Frequency (MHz)	Polarization	Peak Gain (dBi)	HPBW (3dB) (Deg)
1561	RHCP	2.6	108
1575		2.9	107
1602		2.9	94

11

2D Polar Plot: Azimuth 1176 to 1268 MHz

Azimuth Radiation Pattern @ L2 ($\theta = 90^\circ$)

Azimuth radiation pattern shown to illustrate radiation uniformity around 360 degrees



RHCP Circularity in Azimuth Plane @ L2

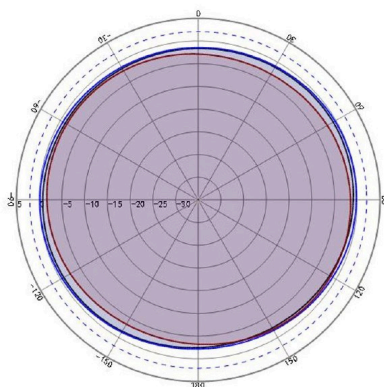
Frequency (MHz)	Circularity (dB)
1176	1.2
1192	1.0
1207	0.9
1227	0.8
1246	0.9
1268	0.8

12

2D Polar Plot: Azimuth 1561 to 1602 MHz

Azimuth Radiation Pattern @ L1 ($\theta = 90^\circ$)

Azimuth radiation pattern shown to illustrate radiation uniformity around 360 degrees



RHCP Circularity in Azimuth Plane @ L1

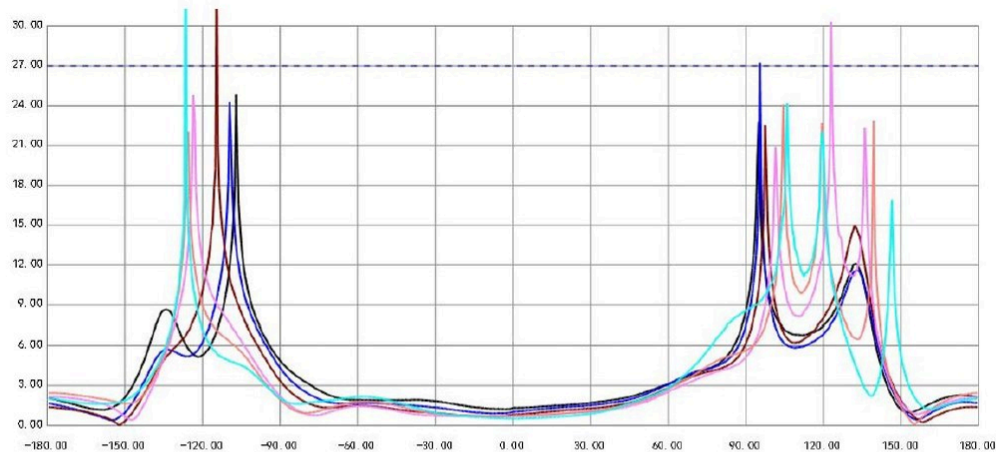
Frequency (MHz)	Circularity (dB)
1561	1.2
1575	1.2
1602	1.2

Circularity values represent RHCP polarization uniformity in the azimuth plane. Lower values indicate improved circular polarization performance.

13

Axial Ratio at L2

Axial Ratio at Zenith @ L2

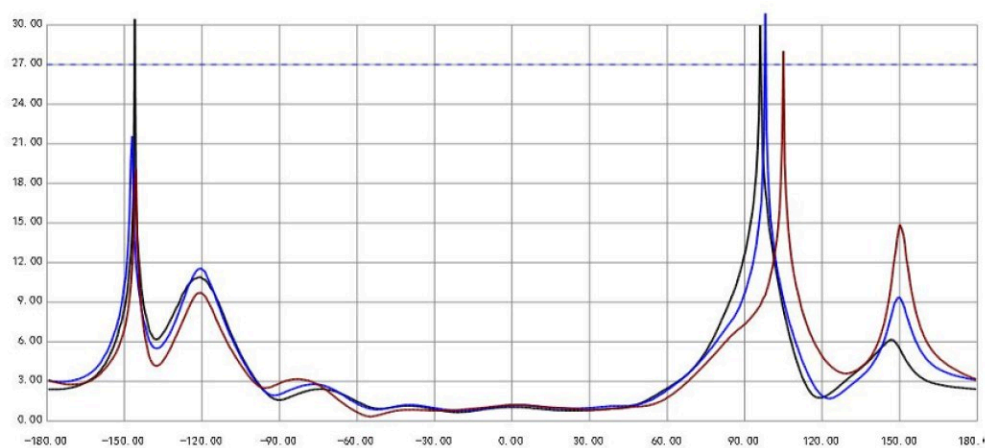


Frequency (MHz)	Axial Ratio at Zenith (dB)
1176	1.3
1192	1.0
1207	0.8
1227	0.7
1246	0.7
1268	0.5

14

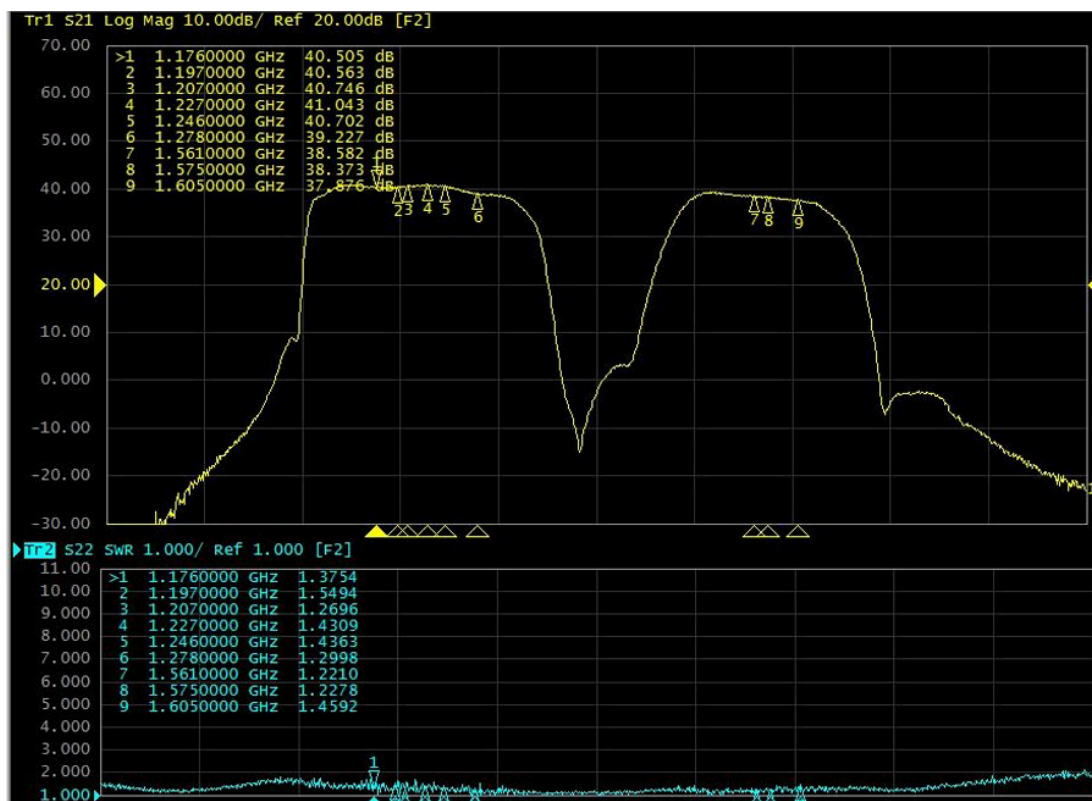
Axial Ratio at L1

Axial Ratio at Zenith @ L1



Frequency (MHz)	Axial Ratio at Zenith (dB)
1561	1.0
1575	1.1
1602	1.2

15 LNA Gain (S21) and Output VSWR (S22)



16 Packaging

- Antennas packed in PE bag (1 per bag)
- Bulk: units individually bagged and boxed; standard carton quantity: 50

17 Compliance

ROHS

Compliant

Conforms to EU RoHS Directive 2011/65/EU as amended by Delegated Directive (EU) 2015/863.

REACH

Compliant

Conforms to EU REACH Regulation (EC) No 1907/2006.

CERTIFICATE

On request

A certificate of conformance is available upon request from sales@synzen.com.tw.

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