



AQUILA LITE

Quadrifilar Helical GNSS Antenna

SZA-N-5G51

Key Features

- Multi constellation reception for GPS, GLONASS, BDS, and Galileo
- Wideband support for L1 L2 L5, E1 E5 E6, B1 B2 B3 draw
- 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 plus PC radome with IP67 protection
- Operating temperature from minus 45°C to plus 85°C

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 plus 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 draw
- ◆ 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 plus PC radome with IP67 protection
- ◆ Operating temperature from minus 45°C to plus 85°C

Applications

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

2 Mechanical Specifications

Part Number	SZA-N-5G51
Name	AQUILA LITE
Dimensions (mm)	40.8 × 43.5 Ø
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-ofband Rejection	Axial Ratio	Impedance
L5, E5a, E5b, E5, B2a, B2b, B2, L2, L2, E6	1164-1278	>2.00	>35	≤1.5	50 ohm
L1, E1, B1, G1, L band (SBAS), B1C, E2-L1-E	1525-1615		>40		

4 LNA Specifications

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

5 Phase Centre Characteristics

Phase Center Variation (mm)	Typical ≤ ±3mm
Phase Centre Reference	Mechanical axis (see drawing on page 5)

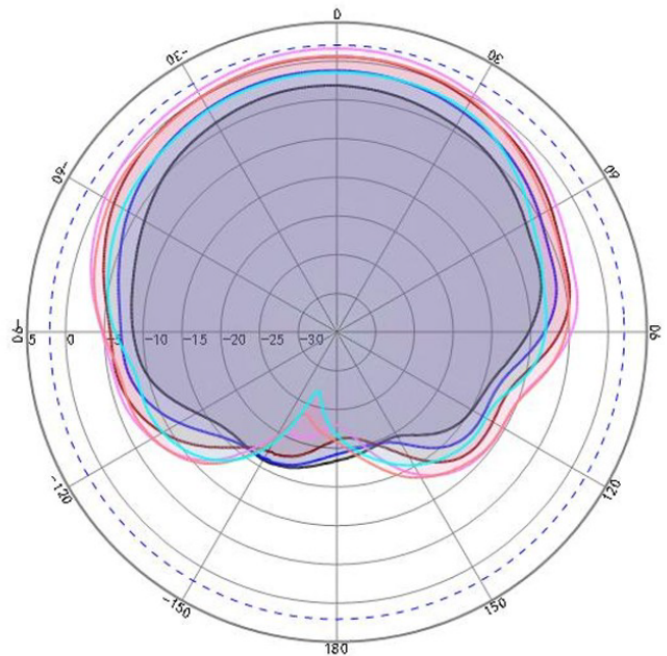
6 Environmental

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

3 2D Polar Plots

FREQUENCY RANGE: 1176 - 1268 MHZ

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



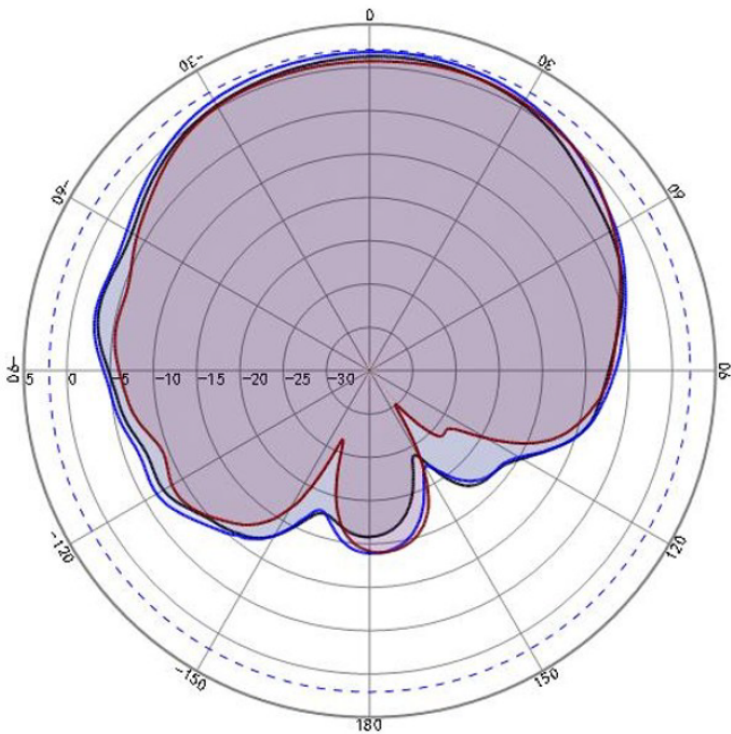
Passive Antenna Vertical Plane Radiation Pattern @ L2

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

4 2D Polar Plots

FREQUENCY RANGE: 1561 - 1602 MHZ

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



Passive Antenna Vertical Plane Radiation Pattern @ L1

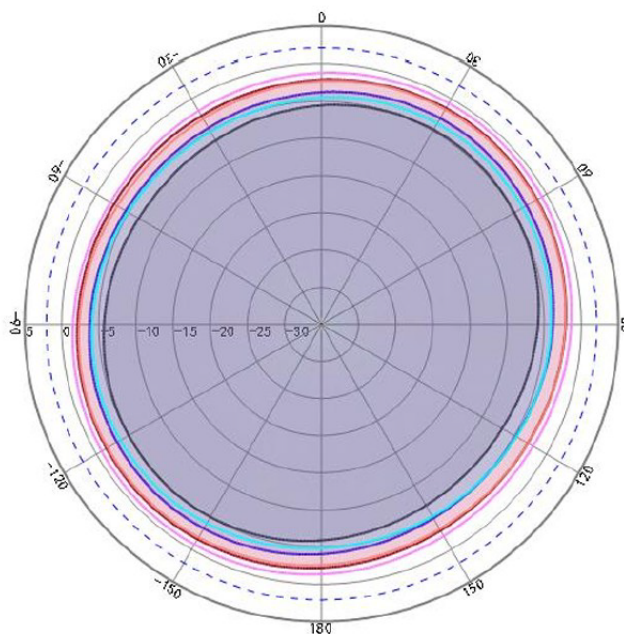
Frequency (MHz)	Polarization	Peak Gain (dBi)	HPBW (3dB) (Deg)
1561	RHCP	2.6	108
1575		2.9	107
1602		2.9	94

5 2D Polar Plots

FREQUENCY RANGE: 1176 - 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

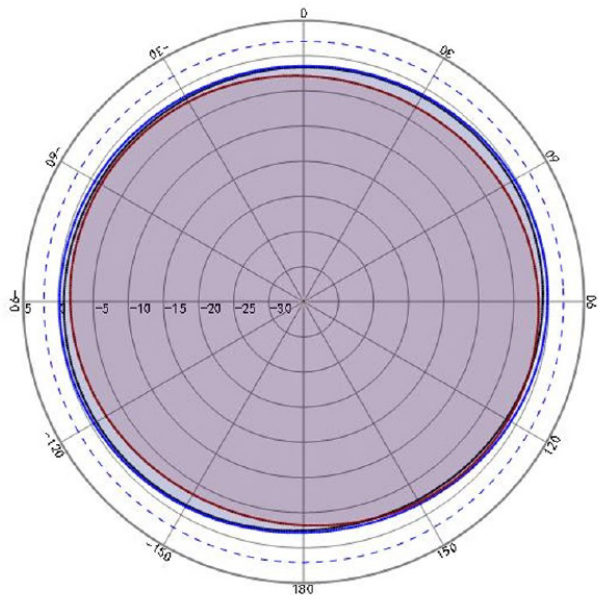
Frequency (MHz)	Circularity (dB)
1176	1.2
1192	1.0
1207	0.9
1227	0.8
1246	0.9
1268	0.8

6 2D Polar Plots

FREQUENCY RANGE: 1561 - 160 MHZ

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

Azimuth radiation pattern shown to illustrate radiation uniformity around 360 degrees

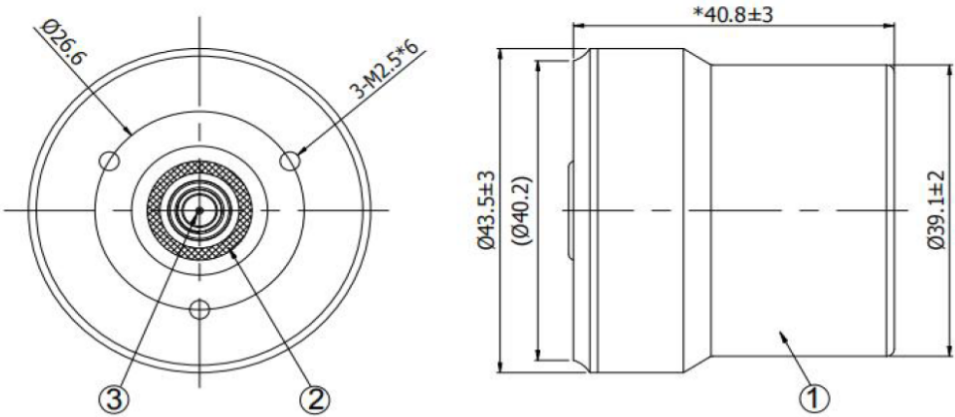


RHCP Circularity in Azimuth Plane @ L1

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.

7 Mechanical Drawing

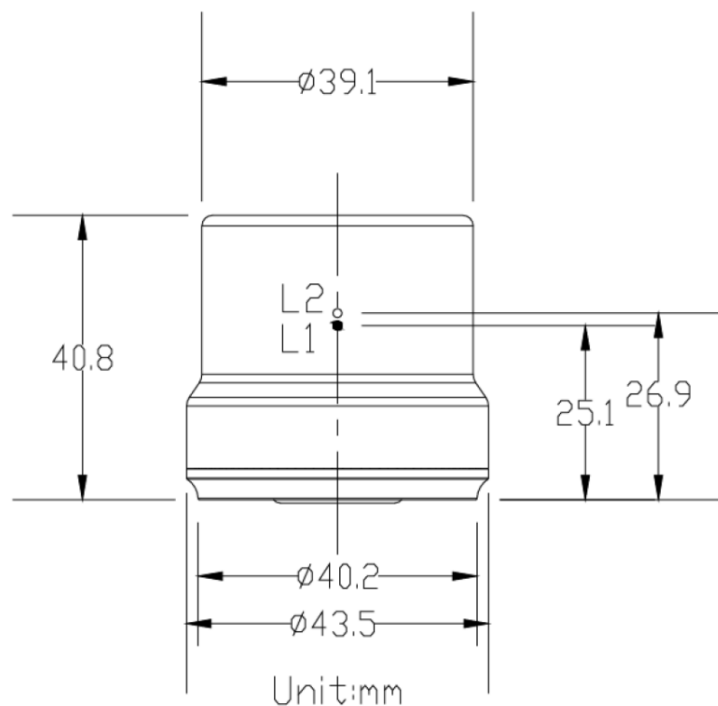


- 1.ELECTRICAL PROPERTIES :
- 1.1 Frequency Range.....1164~1278MHz&1525~1615MHz
 - 1.2 Impedance.....50 Ohm Nominal
 - 1.3 VSWR.....2.0(Max)
 - 1.4 LNA Gain.....35±3dB
 - 1.5 DC Voltage.....3~15V
2. Waterproof:IP67
- 3.These Products are in conformity with ROHS 2.0
- 4.Connector complied with the 48-hour 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

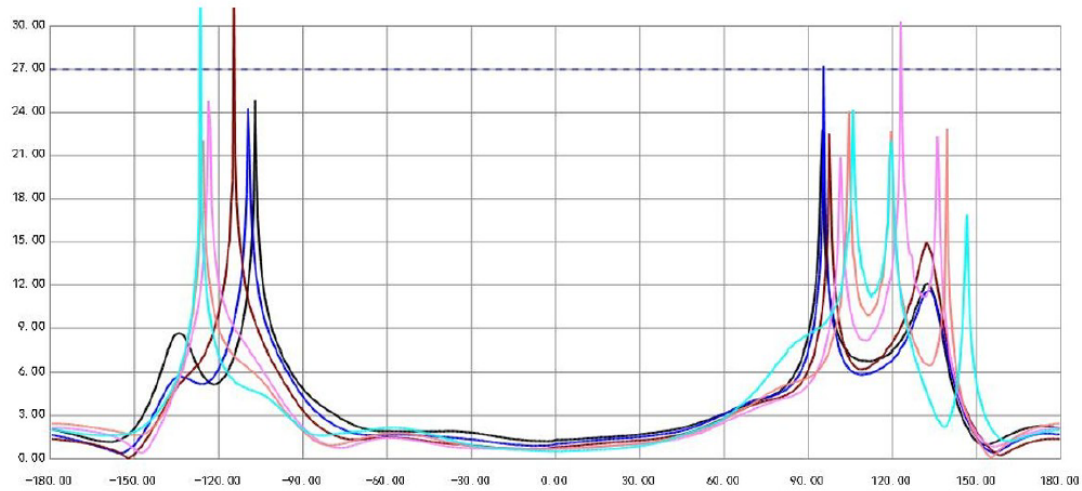
8 Phase Centre Reference

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 Axial Ratio

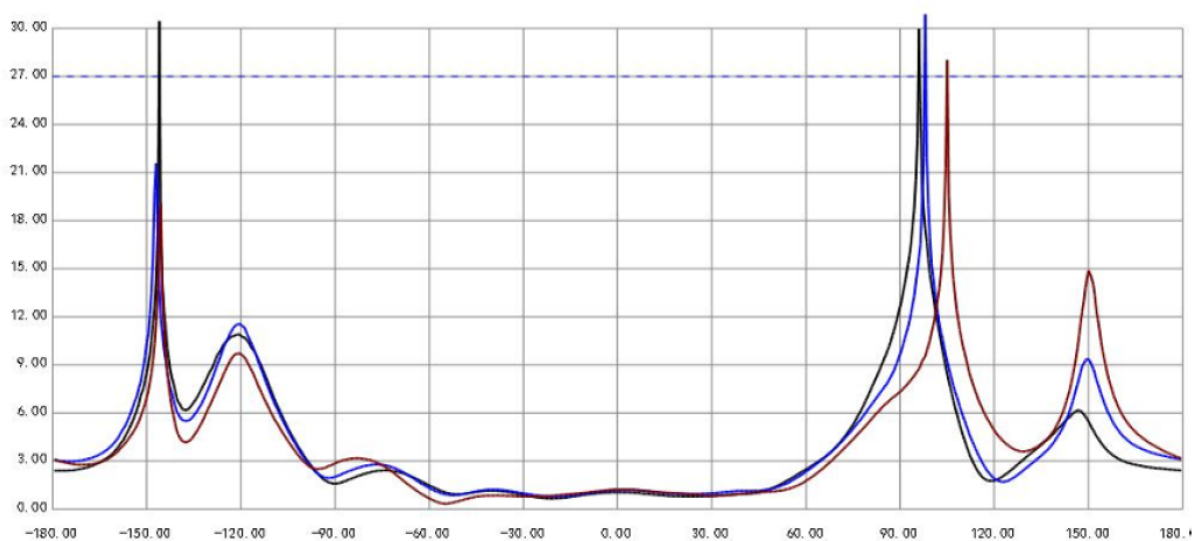
Axial Ratio at Zenith @ L2



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

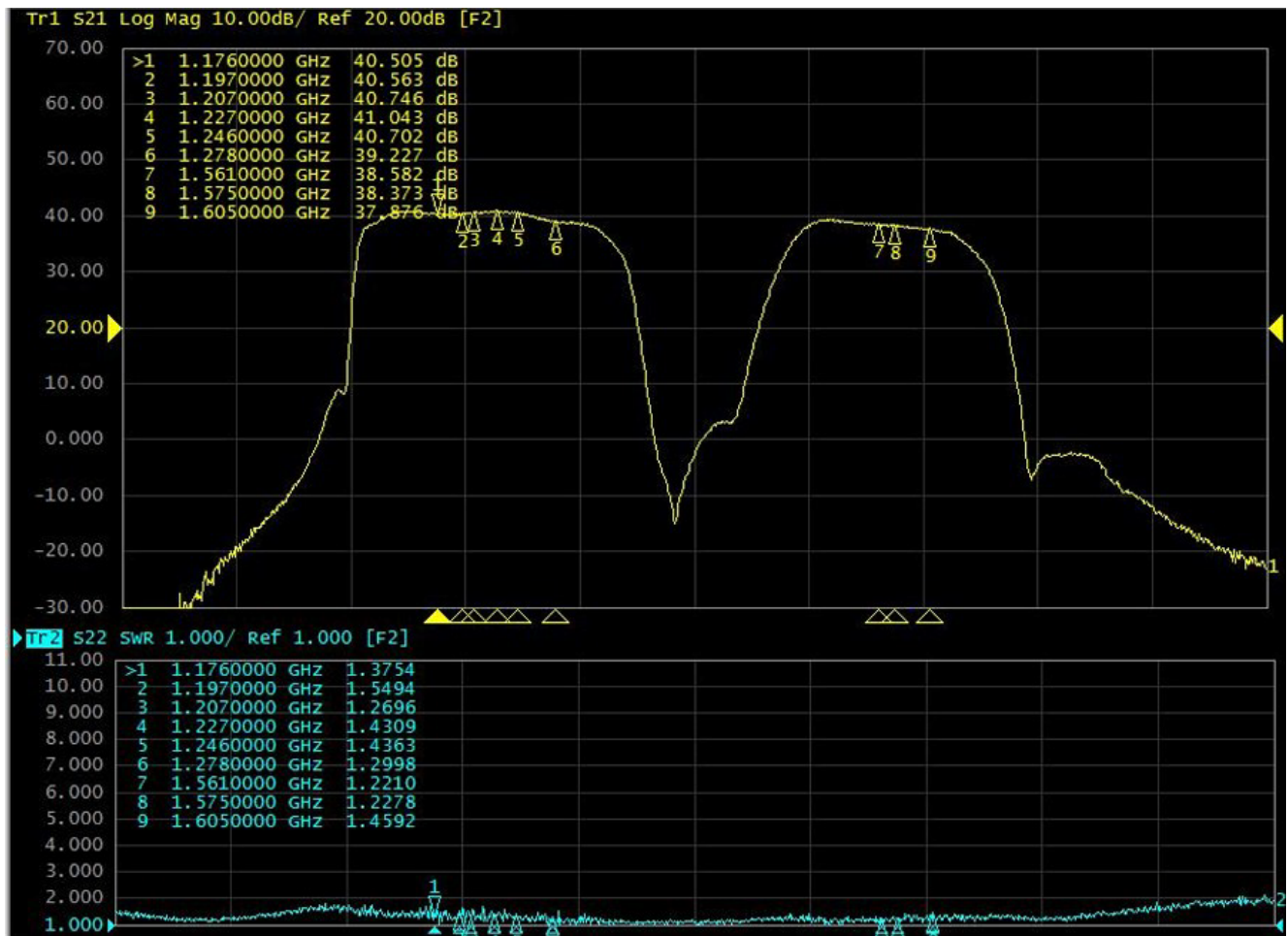
10 Axial Ratio

Axial Ratio at Zenith @ L1



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

11 LNA Gain / VSWR



12 Packaging

Antennas packed in PE bag (1 per bag)

Bulk (units individually bagged and boxed; standard carton quantity: 50)

13 Material Regulation

The antenna has been assessed to conform to RoHS requirements. A certificate of conformance is available upon request.

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