AJ979XF+-MAR

CALIAN
Confidence. Engineered.

Anti-Jam Multi-Constellation Full-Band Antenna

Frequency Coverage: GPS & QZSS L1, L2, L5, L6 | GALILEO E1, E5a, E5b, E6 | BEIDOU B1, B2a, B2b, B3 | GLONASS G1, G2, G3 | NavIC L5

The AJ979XF+-MAR supports GPS/QZSS-L1/L2/L5/L6, GLONASS-G1/G2/G3, Galileo-E1/E5a/E5b/E6, BeiDou-B1/B2b/B2a/B3, and NavIC-L5 frequency bands, including the satellite-based augmentation system (SBAS) available in the region of operation [WAAS (North America), EGNOS (Europe), MSAS (Japan), or GAGAN (India)].

The AJ979XF+-MAR Anti-Jam antenna is designed to mitigate interference and jamming signals broadcast from near ground-based transmitters. The radiation pattern of the Low Elevation Angle Nulling Antenna (LEANA) provides 20 dB (typical) wideband suppression for all GNSS band signals received at an elevation angle of 0° through to approximately 15°. This level of attenuation was demonstrated to mitigate jamming signal broadcasts at an elevation angle of 10° such that the AJ979XF+-MAR can be up to 10 times closer, compared to a standard HC977XF helical antenna, to the source of interference without being jammed. The combination of Calian's low elevation angle nulling radiation pattern and eXtended Filtering (deep filtering and high linearity) technologies provides a one-two punch to jamming and RF noise. At the same time, the AJ979XF+-MAR's radiation pattern above 20° elevation angle provides excellent gain and a phase center that supports accurate and precise positioning.

Calian's eXtended Filtering+ (XF+) technology features > 80 dB of out-of-band rejection from 700MHz to 2500MHz and separates the LNA's upper and lower signal amplification channels; if one channel is jammed the other remains usable. In North America, Ligado signals at 1525 - 1536 MHz can especially impact GNSS antennas that support space-based L-band correction services (1539 - 1559 MHz). New LTE signals in Europe [Band 32 (1452 - 1496 MHz)] and Japan [Bands 11 and 21 (1476 – 1511 MHz)] have also been observed to interfere with GNSS signals. In addition, Inmarsat satellite communication (uplink: 1626.5 - 1660.5 MHz) can also affect GNSS signals, and the AJ979XF+-MAR provides strong rejection of marine L-band interference sources including Iridium and Inmarsat signals from 1616 to 1660 MHz, supporting reliable GNSS performance in challenging maritime RF environments.

The Calian AJ979XF+-MAR antenna is ideal for all mission critical positioning, navigation and timing applications.



Applications

- Marine applications
- Mission-critical global positioning
- Timing applications
- Law enforcement and public safety

Features

- Great axial ratio (1.0 dB typ.)
- Low LNA noise (2.5 dB typ.)
- High-rejection XF+ Filtering
- High-gain LNA (40 dB typ.)
- Wide voltage input range (2.5 to 16 VDC)
- ESD circuit protection (15 kV)
- IPX9K weather-proof housing
- RoHS and REACH compliant
- 20 dB attenuation at 0-15° Elevation

Benefits

- Operates under ground-based jamming
- Circular polarisation throughout the full bandwidth
- Superior multipath signal rejection
- Excellent signal-to-noise ratio
- Excellent out-of-band signal rejection
- Increased system accuracy
- Ideal for noisy RF environments

About Calian: With global headquarters and manufacturing in Ottawa, Canada, Calian is a leading manufacturer of high-precision antennas and components for Global Navigation Satellite System (GNSS) applications. Calian's mission is to support the needs of a new generation of positioning systems by delivering unprecedented antenna precision at competitive prices. Learn more at www.calian.com/gnss

Contact us:
info.gnss@calian.com
T: +1 613 591-3131

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Anti-Jam Multi-Constellation Full-Band Antenna

Frequency Coverage:

Antenna

Technology	Full-frequency, RHCP quadrifilar helix

		Gain dBic typ. at Zenith	Axial Ratio dB at Zenith
GNSS			
GPS / QZSS	L1	2.5	≤ 1.0
	L2	3.7	≤ 1.0
	L5	1.9	≤ 1.0
GLONASS	G1	1.8	≤ 1.0
	G2	3.0	≤ 1.0
	G3	3.0	≤ 1.0
Galileo	E1	2.5	≤ 1.0
	E5A	1.9	≤ 1.0
	E5B	3.0	≤ 1.0
	E6	1.7	≤ 1.0
BeiDou	B1	2.5	≤ 1.0
	B2b	3.3	≤ 1.0
	B2a	1.9	≤ 1.0
	B3	2.5	≤ 1.0
IRNSS / NavIC	L5	1.9	≤ 1.0
QZSS	L6	1.7	-
L-Band Services (1525 MHz - 1559 MHz)		-	-
Satellite Communications			
Iridium		-	-
Globalstar		-	-
Other			
Axial Ratio at 10°	-	Efficiency	-
PC Variation	-	PCO	

Mechanicals

Size	90.0 mm (dia.) x 180 mm (h.)
Weight	245 g
Material	Radome: EXL9330, Base: Al, plastic cover
Mount	Though-hole
Available Connectors	TNC or type-N (female)

Environmental

Operating Temperature	-40 °C to + 85 °C
Storage Temperature	-50 °C to + 95 °C
Vibration	MIL-STD-810H Method 514.5
Shock	MIL-STD-810G Method 516.6
Salt Fog	MIL-STD-810H Method 509.7
IP Rating	IPX9K
Compliance	IEC 60945, IPC-A-610, FCC, RED / CE Mark, RoHS, REACH

Warranty

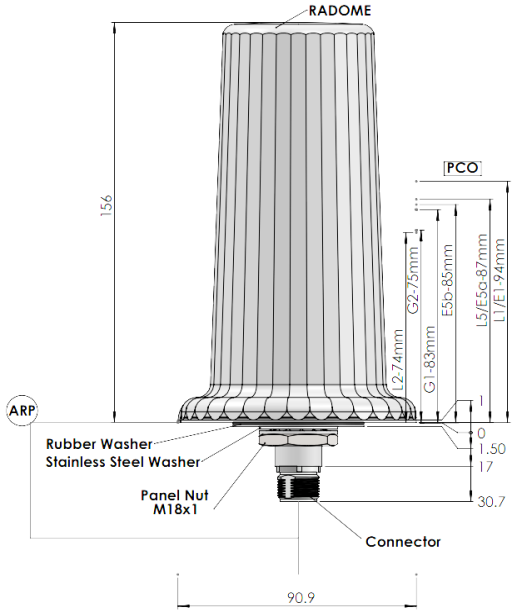
Parts and Labour	3-year (land) or 1-year (marine) standard warranty

Low Noise Amplifier (LNA) - Measured at 3V and 25°C

Frequency Bandwith		Out of Band Rejection
Lower Band	1164 - 1300 MHz	> 85 dB @ < 1100 MHz > 90 dB @ > 1325 MHz > 90 dB @ < 1500 MHz
L-Band Corr.	-	> 75 dB @ < 1526 MHz > 47 dB @ < 1536 MHz > 80 db @ > 1616 MHz > 90 dB @ > 1700 MHz
Upper Band	1559 - 1606 MHz	

Architecture	eXtended Filtering+
Gain	40 dB typ.
Noise Figure	2.5 dB typ.
VSWR	< 1.5:1 typ., 2:1 max.
Supply Voltage Range	2.5 to 16 VDC nominal (12 VDC rec. max..)
Supply Current	17 mA typ.
ESD Circuit Protection	15 kV air discharge
P 1dB Output	7 dBm typ.
Group Delay	10 ns (L1), 4 ns (L2), 11 ns (L5)

Mechanical Diagram - Units in 'mm' or 'inches' where specified



Ordering Information

Part Number **33-AJ979XF+-MAR-xx**

where xx = connector type, 01 = TNC (female), 14 = type-N (female)

Please refer to our **Ordering Guide** to review available radomes and connectors at:
https://at.calian.com/gnss/information-support/part-number-ordering-guide/

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