MEINBERG
The Synchronization Experts.

GPSANTv2 Antenna

High-Performance Antenna Engineered for Time, Frequency, and Phase Synchronization

The GPSANTv2 antenna is designed by Meinberg to provide superior GPS & Galileo reception performance. An evolution of Meinberg's distinctive and dependable GPSANT, the GPSANTv2 is also optimized for use with Meinberg's industry-leading time & frequency synchronization servers.

Product Highlights

| The next-generation GPS & Galileo antenna from Meinberg, specially designed for use with Meinberg time servers

| Functional dome housing made of injection-molded ABS for optimum performance in elevated outdoor environments

| Integrated frequency downscaler allows for over 1 km of transmission line using industry-standard coaxial cable

| New integrated surge protector to provide the best possible protection against lightning strikes

| Superior multipath rejection for mitigation of signal reflections, especially in built-up environments, enabling very high signal-to-noise ratio (approx. 50 dB)

| Improved radiation pattern reduces interference from incidental and deliberate transmissions from certain directions

Physical Specifications

Housing	ABS Plastic
Weight	1.4 kg (3.1 lbs), including mounting kit

Accessories Included

Antenna mounting kit for wall and pole mounting, comprising: mounting tube, pole clamp, 4x 8 mm drywall anchors, 4x M6x45 drywall screws, 4x spacer washers, 4x M6 nuts (wrench size 10 mm), 8x M4 nuts (wrench size 7 mm), 8x M4x12 screws, 2x pole grips, 2x U-bolts (for max. pole diameter 60 mm).

Connection

Connector Type	Type-N, female
Nominal Impedance	50 Ω
Voltage Standing Wave Ratio (VSWR)	≤ 1.5 : 1
Grounding	M8 threaded bolt and hex nut for use with corresponding ring lug

Electrical Specifications

Voltage Draw	15 V, ±3 V (via antenna cable)
Current Draw	Nominal: Approx. 100 mA @ 15 V (via antenna cable) Maximum: 115 mA

Cable Requirements

Supported Cables	RG58 C/U (max. length 300 m)
	RG213 (max. length 700 m)
	H2010 Ultraflex (max. length 1100 m)

Clock Compatibility

The GPSANTv2 is compatible with all standard Meinberg GPS and GNS-UC clock technologies. If you intend to use the GPSANTv2 with a Meinberg GPS clock whose design predates the year 2000, please inquire with our Sales Team beforehand as to whether the GPSANTv2 is suitable for your device.

Operating Conditions

Supported Operating Temperature Range	–60 °C to +80 °C (–76 °F to 176 °F)
IP Rating	IP 65
Estimated MTBF*	5365937 hours

* Mean Time Between Failures. Calculated according to Telcordia Issue 3.

Signal Reception & Processing

Supported Services	GPS L1 C/A
	Galileo E1 B/C
Reception Frequency	1575.42 MHz (GPS L1/Galileo E1 band)
Bandwidth	9 MHz (3 dB loss at bandwidth limits)
Axial Ratio	≤ 3 dB at zenith
Gain	5.0 dBiC at zenith (typical)
Pre-Selection	1575.42 MHz +/- 20 MHz (-20 dB)
Mixing Frequency	10 MHz (from receiver)
Intermediate Frequency	35.4 MHz
Out-of-Band Rejection	≥ 70 dB @ 1555 MHz
	≥ 55 dB @ 1595 MHz
Conversion Gain	59 dB ± 3 dB
Conversion Delay	Typically 170 ns, ± 5 ns
Reception Polarization	Right-handed circular polarization
Noise Figure	1.8 dB (typical), 3 dB (maximum) @ +25 °C

Immunity Specifications

ESD Immunity	Level 4 (as per IEC 61000-4-2)
	Contact Discharge: 8 kV
	Air Discharge: 15 kV
Surge Immunity	Level 4 (as per IEC 61000-4-5)
	Test Level: 4000 V
	Max. Peak Current @ 2 Ω: 2000 A

Conformity

EU Radio Equipment Directive 2014/53/EU (CE)
UK Radio Equipment Regulations 2017 (as amended) (UKCA)

Health and Safety	EN IEC 62368-1:2020 + A11:2020
Electromagnetic Compatibility	ETSI EN 301 489-19 V2.1.1 (2019-04)
	ETSI EN 301 489-1 V2.2.3 (2019-11)
	EN IEC 61000-6-2:2019
	EN IEC 61000-6-3:2021
	EN 55035:2017/A11:2020
	EN 55032:2015 + AC:2016 + A11:2020 + A1:2020
Use of GNSS Frequency Bands	ETSI EN 303 413 V1.2.1 (2021-04)

RoHS 2011/65/EU + 2015/863/EU (CE)
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (as amended) (UKCA)

Prevention	EN IEC 63000:2018

Support & Disposal

| Technical Support	Free lifetime support via telephone and email, including firmware updates
Warranty	Three-year warranty, extendable upon request
WEEE Status	The purchase of this product is considered to be a "B2B" transaction (non-household product) for the purposes of the EU Waste of Electrical and Electronic Equipment Directive; the product falls under Category 6, "Small IT and Telecommunications Equipment". For disposal, it can be returned to the manufacturer to ensure WEEE compliance. Any transportation expenses for returning this product (at end-of-life) must be covered by the end user, while Meinberg will cover the costs for the waste disposal itself.

Signal Transmission Performance

The GPSANTv2 features an integrated frequency downscaler that converts the signal on the GPS L1/Galileo E1 1575.42 MHz band to a significantly lower frequency of 35 MHz. This allows for transmission of the signal over up to 1100 m of suitable standard coaxial cable without any amplification. Please note when planning your transmission route that amplifiers cannot be used due to the bidirectional exchange of signals.
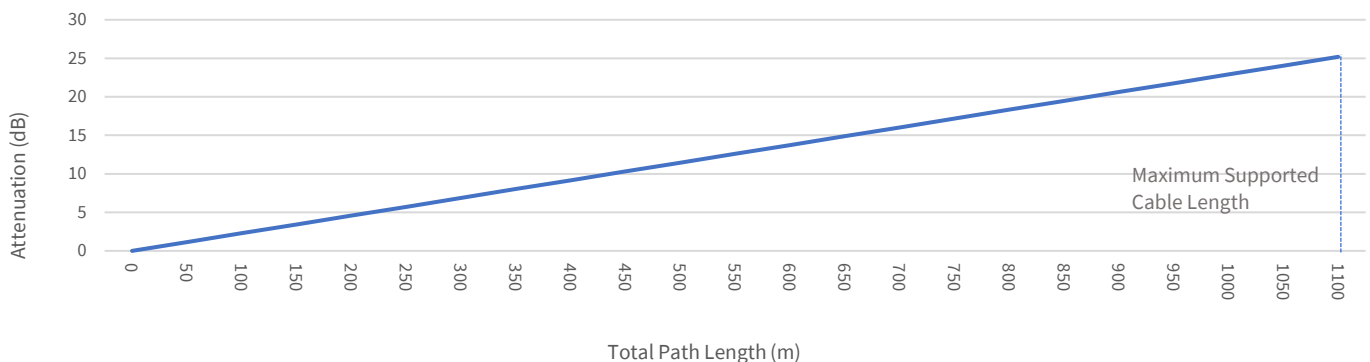
Signal Attenuation with RG58C/U Cable at 35 MHz (Intermediate Frequency)*
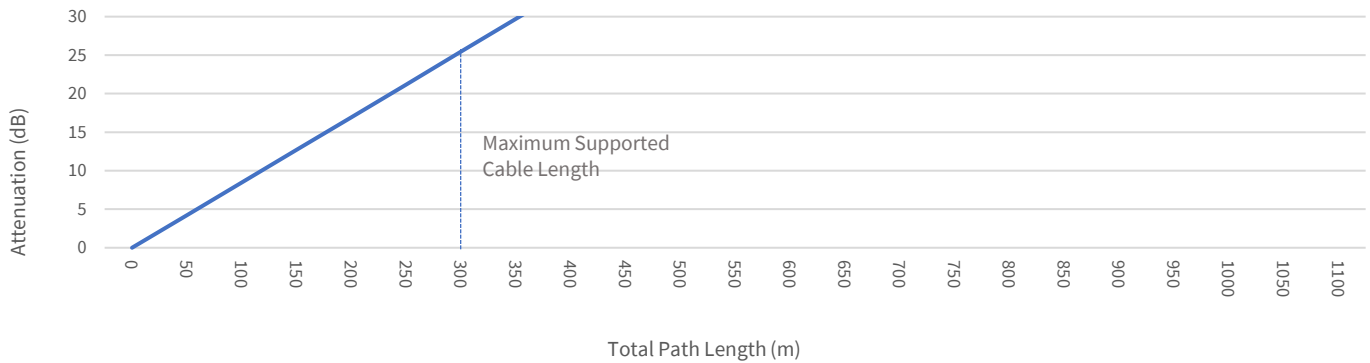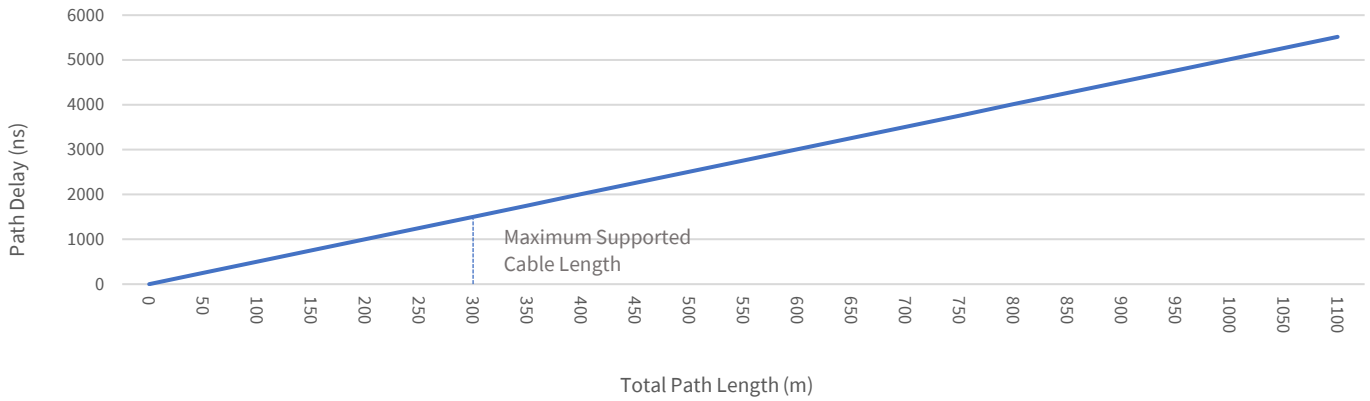

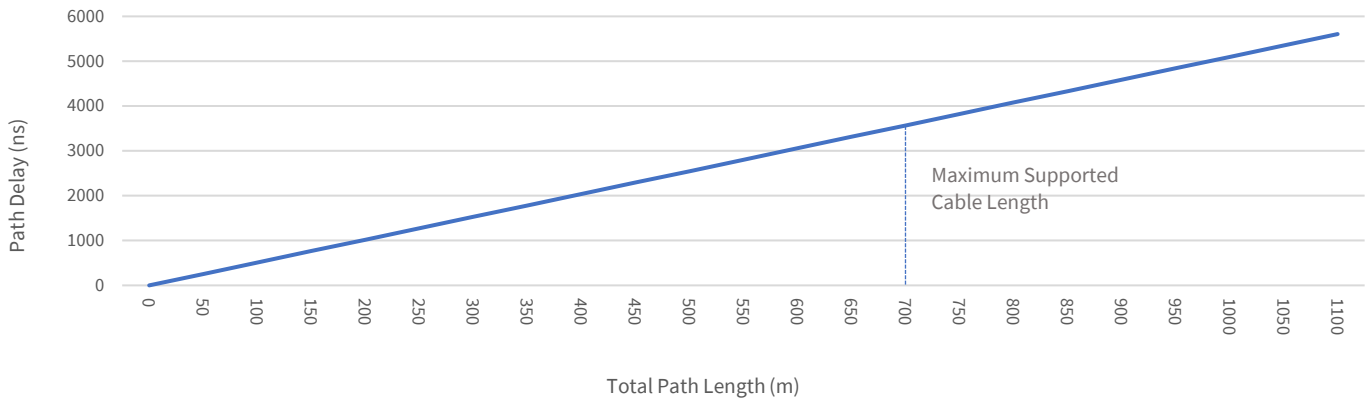## Signal Attenuation with RG213 Cable at 35 MHz (Intermediate Frequency)*
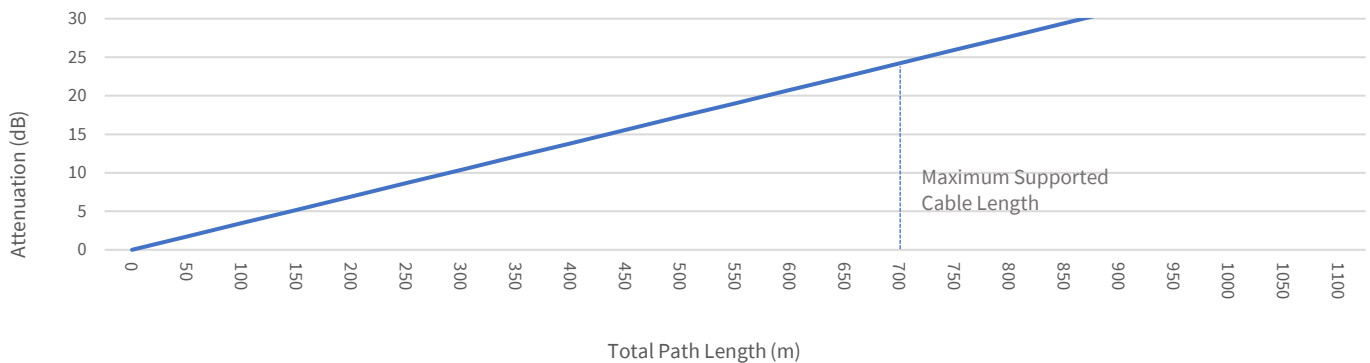
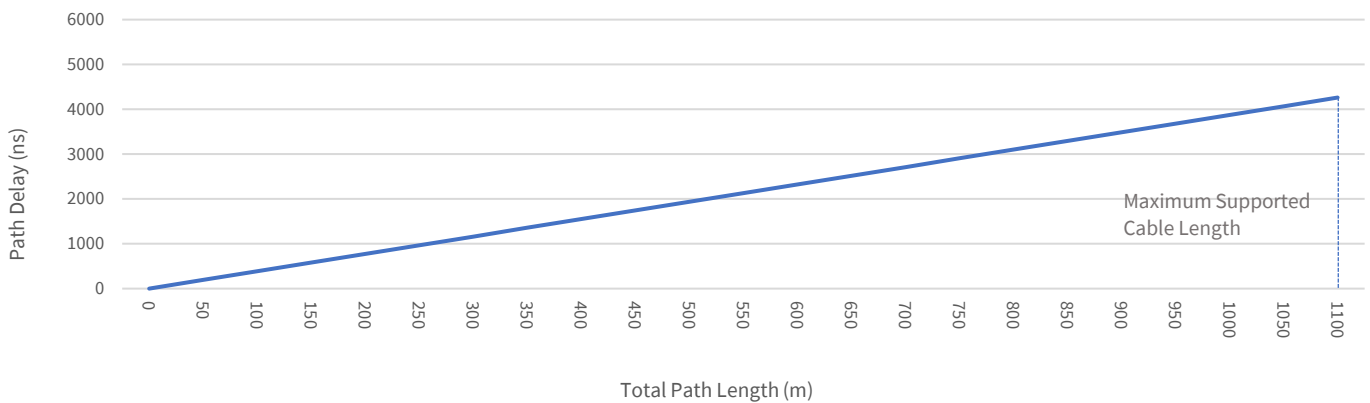## Signal Attenuation with H2010 Ultraflex Cable at 35 MHz (Intermediate Frequency)*

Signal Path Delay with RG58C/U Cable at 35 MHz (Intermediate Frequency)*

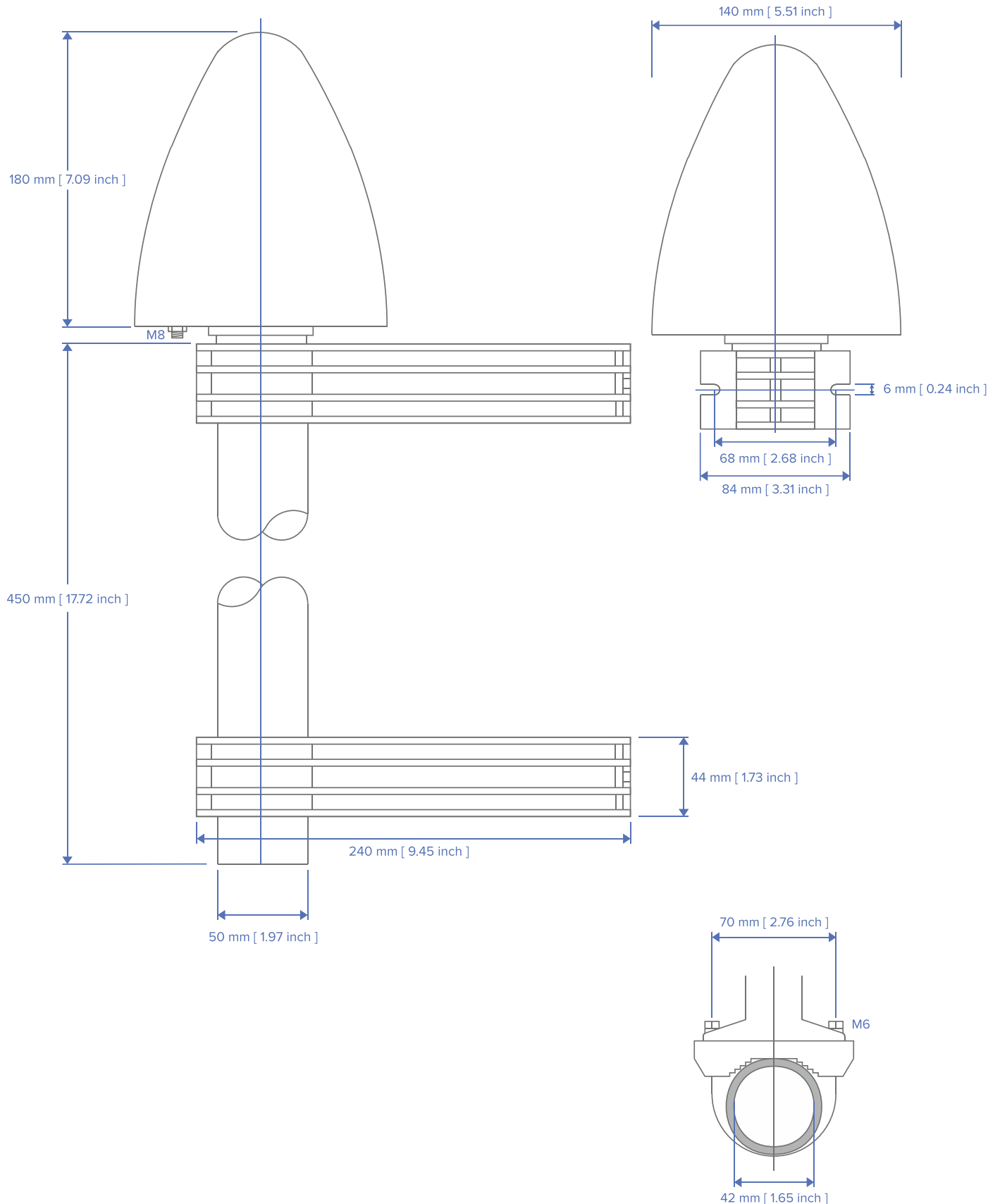## Signal Path Delay with RG213 Cable at 35 MHz (Intermediate Frequency)*

Signal Path Delay with H2010 Ultraflex Cable at 35 MHz (Intermediate Frequency)*


* **Test conditions:** Propagation time and signal attenuation measured on 100 m of continuous RG58C/U, RG213, and H2010 Ultraflex coaxial cable. Graph calculated based on the known assumption that, if cable specifications and frequency are constants, path attenuation (and, by extension, signal propagation delay) has a linear relationship to path length.
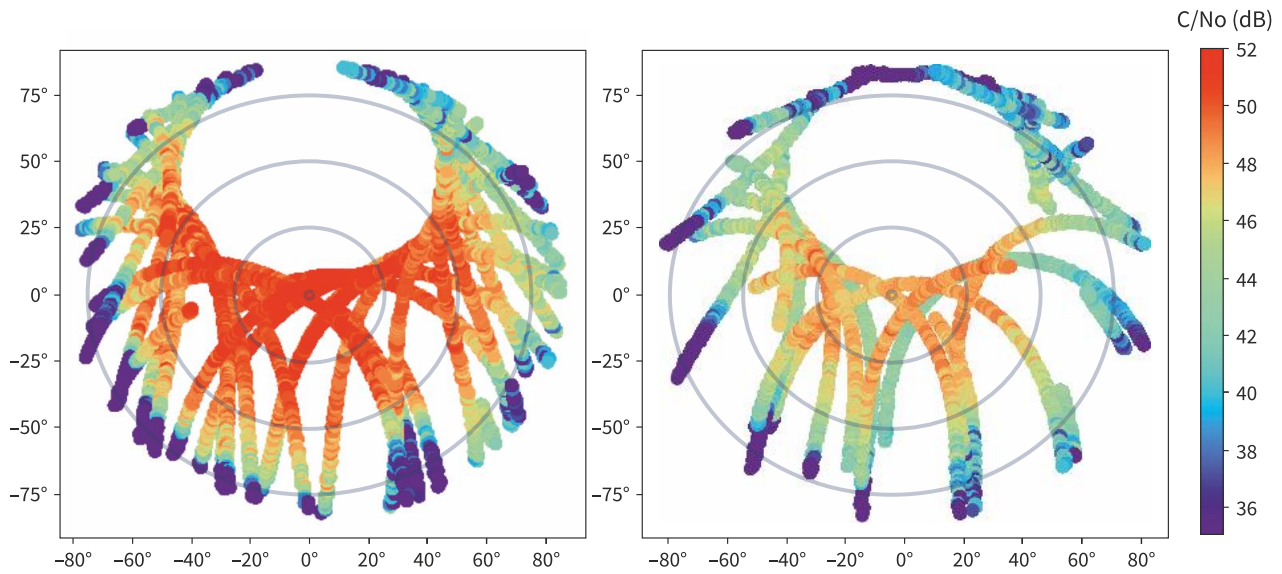
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Dimensions

180 mm [7.09 inch]

M8

450 mm [17.72 inch]

50 mm [1.97 inch]

240 mm [9.45 inch]

140 mm [5.51 inch]

6 mm [0.24 inch]

68 mm [2.68 inch]

84 mm [3.31 inch]

44 mm [1.73 inch]

70 mm [2.76 inch]

M6

42 mm [1.65 inch]

Assembly

| Item	Description	QTY
1	Antenna	1
2	M8 grounding stud	1
3	safety washer	1
4	M8 hex nut	1
5	Antenna pole	1
6	M4 hex nut	8
7	M4 x 12 phillips-head screw	8
8	threaded U-bolt (pole diameter max. 60 mm)	2
9	M6 spacer	4
10	M6 hex nut	4
11	pole clamp halves	4
12	pole bracket	2
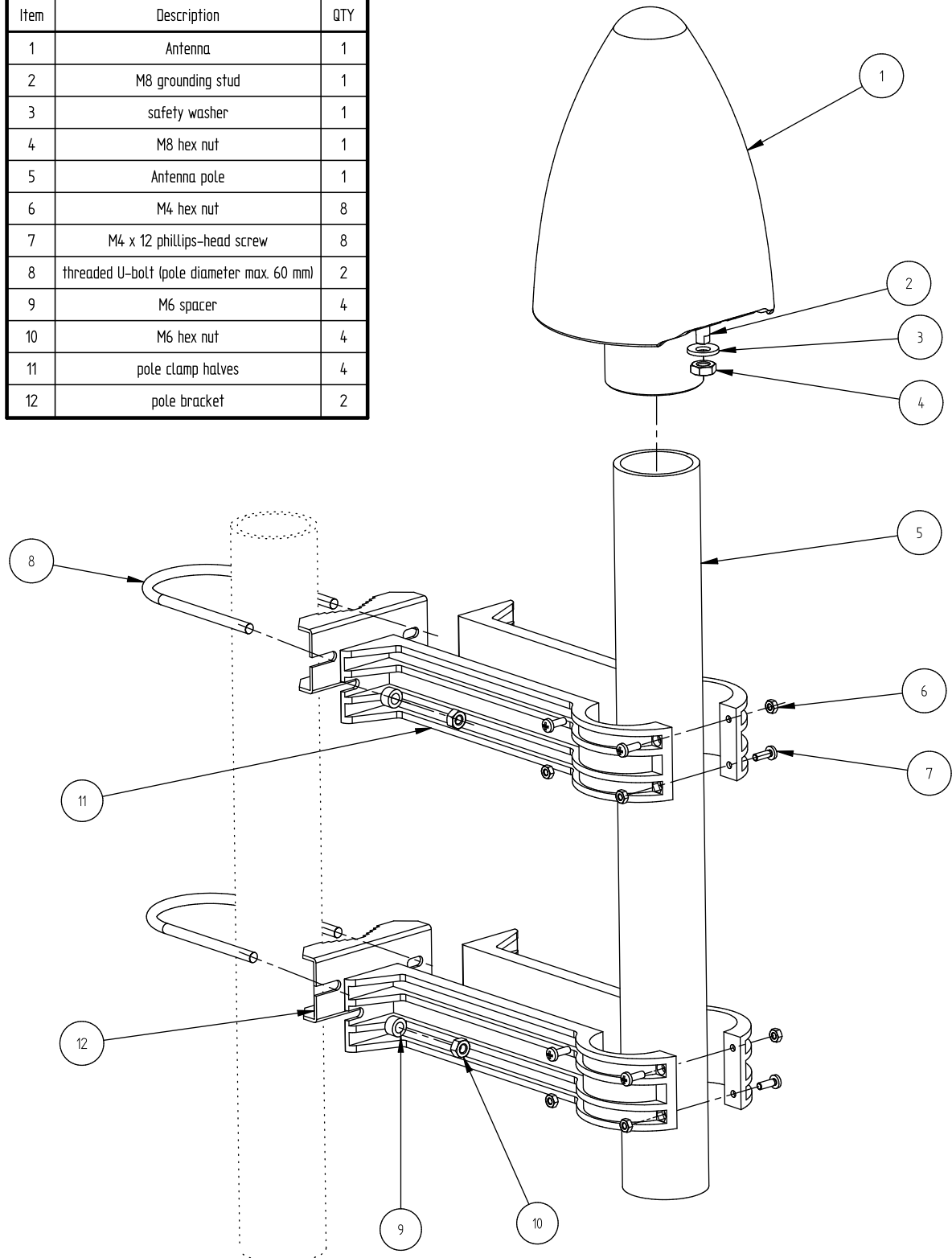
Carrier-to-Noise Skyplots

Sample skyplots of carrier-to-noise ratios in dB for reception of GPS *(left)* and Galileo *(right)* taken using Meinberg GNS-UC receiver under ideal conditions (no signal obstacles within 10 meters) at angles of up to approx. 85° in all directions from zenith to horizon.
Note: The reduced data sample available for Galileo is due to the lower number of satellites in service for the Galileo constellation.
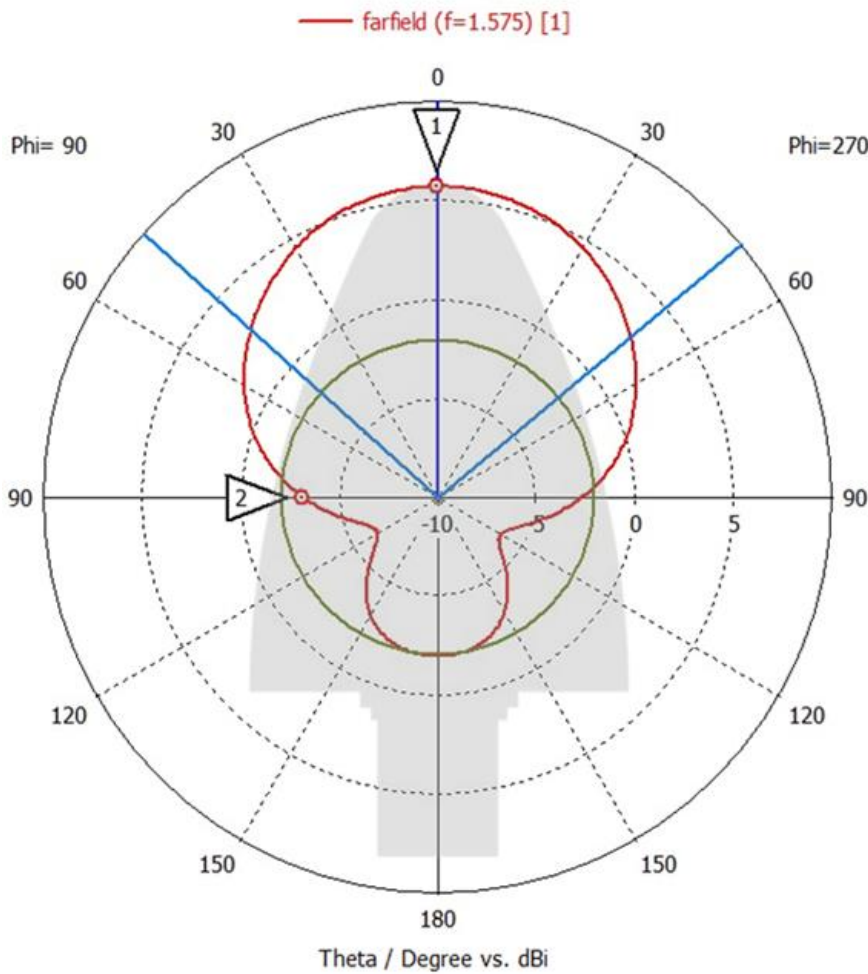
Frequency Response Curve
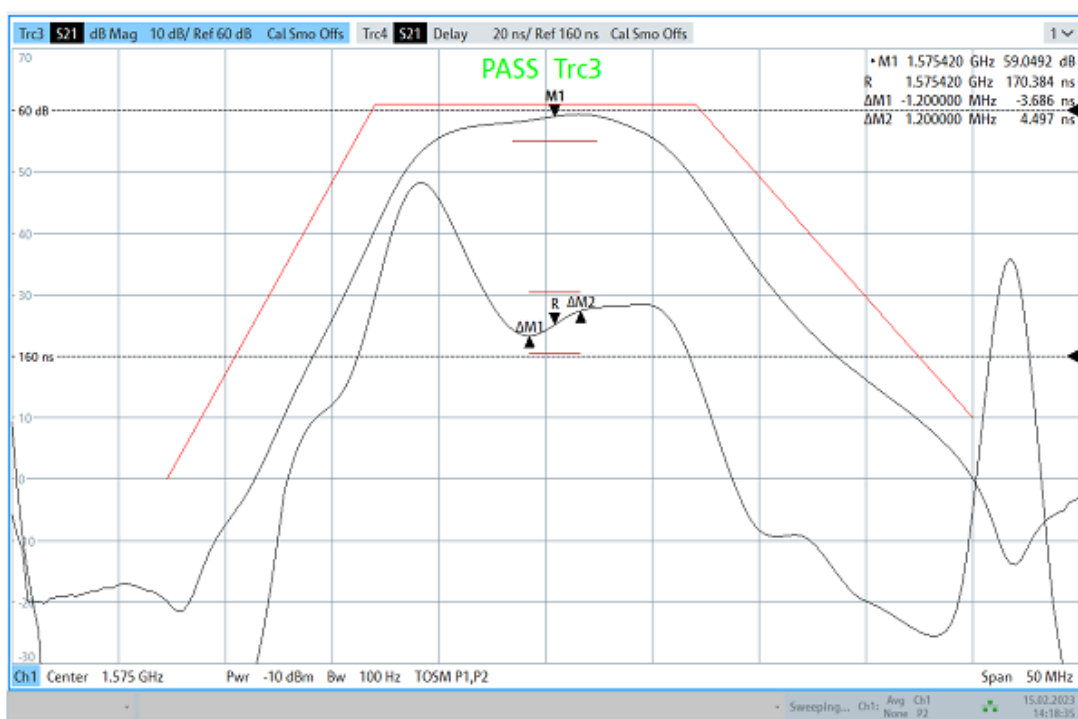
Frequency-response curve illustrating the production benchmark (**red**), the gain curve with the center frequency of 1575.42 MHz (**M1**), and the delay curve (**R**) with delay variations between 1574.22 MHz (**ΔM1**) and 1576.62 MHz (**ΔM2**)

Farfield Directivity Pattern

Farfield Directivity Abs (Phi=90)

— farfield (f=1.575) [1]

① (0.279786, 5.6963)
② (89.7047, -3.13298)

Frequency = 1.575 GHz
Main lobe magnitude = 5.7 dBi
Main lobe direction = 0.0 deg.
Angular width (3 dB) = 98.6 deg.
Side lobe level = -7.7 dB

Theta / Degree vs. dBi

Comparison with Predecessor Model

	Original GPSANT ("GPSANTv1")	GPSANTv2
Supply Voltage	15 V DC	15 V DC
Current Draw	115 mA	100 mA
3 dB Bandwidth	9 MHz	9 MHz
IF Gain	60 dB	56 dB
Group Delay Ripple	40 ns	5 ns
Max. RF Input Power	10 dBm	12 dBm
3 dB Vertical Angle	160°	100°
Out-of-Band Rejection 0–6 GHz	> 15 dB	> 70 dB
Grounding Terminal	☐	☑
IEC 61000-4-5 Surge Immunity	☐	☑