



Product Name: GNSS Receiver (RS-232)

Part Number: H2A3GR33000000

Features:

- U-blox 10 engine
- Maximum position availability with concurrent reception of 4 GNSS
- Low profile, Robust, IPX7 Water proof enclosure, Magnetic Mount
- Ultra low power consumption without compromising GNSS performance
- Excellent Tracking Sensitivity, -167dBm
- Advanced spoofing and jamming detection
- Quick Time-to-First-Fix Cold Start
- RoHS & REACH Compliant

Applications:

- Vehicle navigation
- Agriculture Machinery Tracking
- Robotic/Autonomous Application

GNSS Receiver (RS-232)

MODEL: GR33GDR1

Rev.A

I. Specifications:

Items	Specifications	
Application Bands	GPS	GLONASS
Frequencies (MHz)	1575.42	1602
Efficiency (%)	84.92	80.72
Average Gain (dBi)	-0.71	-0.93
Peak Gain (dBi)	6.44	5.97
Axial Ratio	4.18	5.85
V.S.W.R	< 2	
Return loss	< -10	
Test Condition	With housing	
Impedance (Ω)	50	
Polarization	R.H.C.P. (Right-Handed Circular Polarization)	
Physical Construction		
Dimension (mm)	ϕ 115.00(D) x 106(H)	
Weight	Typ 250 g without cable	
Case Material	High-impact plastics	
Environmental Conditions		
Temperature ($^{\circ}$C)	Operating: -30 ~ +80	
	Storage: -40 ~ +80	
ESD Protection (IEC 61000-4-2 level 4)	\pm 8 KV (Contact discharge) \pm 15 KV (Air discharge)	
Communication		
Protocol	NMEA 0183	
Interface	RS232	

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Interface Capability	
Output Sentences	GGA (1sec) · GSA (1sec) · GSV (1sec) · RMC (1sec)
Baud Rate	4800bps
Performance	
Built in Antenna element	High-reliability ceramic patch
Receiver type	u-blox M10 receiver GPS L1 C/A, QZSS L1 C/A L1S, GLONASS L1OF SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGA
Sensitivity*	Tracking and nav. -167 dBm
TTFF*	Cold start 28 sec. Typical Hot start 1 sec. Typical
Position accuracy**	1.5 m CEP
Velocity accuracy ***	0.05 m/s
Nav update rate	1Hz
Accuracy of time pulse signal	RMS 30ns 99% 60ns
Input Voltage	8 ~ 35V
Power Consumption	Typical 25mA @ 12V

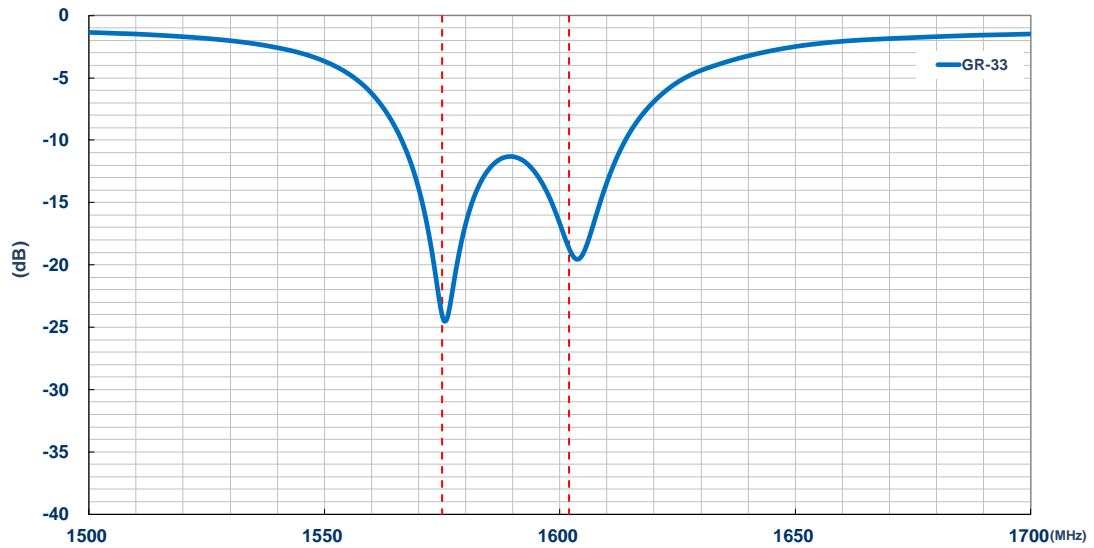
*All satellites at -130 dBm, > 6 SVs · Use u-blox u-center test

**CEP, 50%, 24 hours static, -130 dBm, > 6 SVs

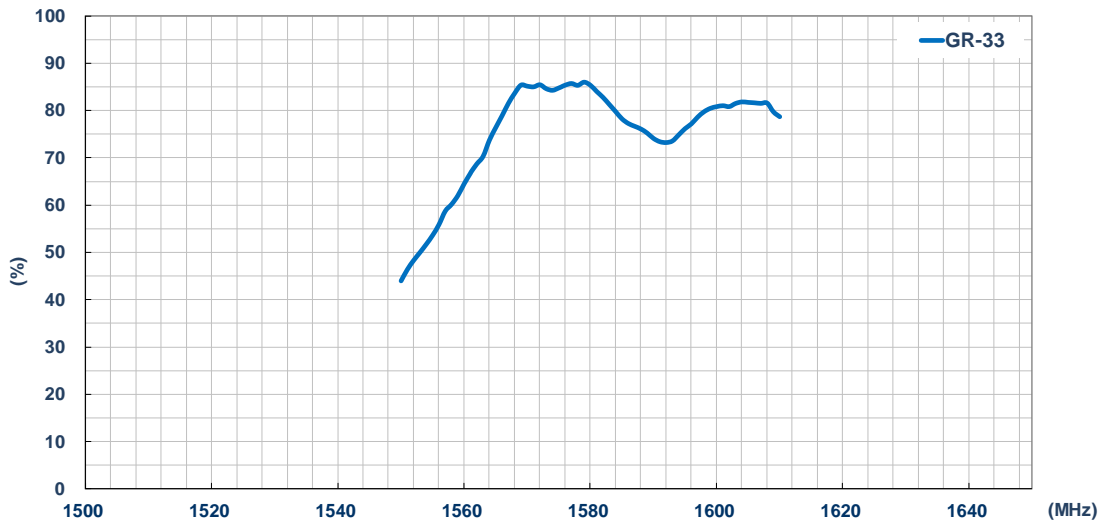
*** 50% @ 30 m/s

II. Antenna Technical Parameters:

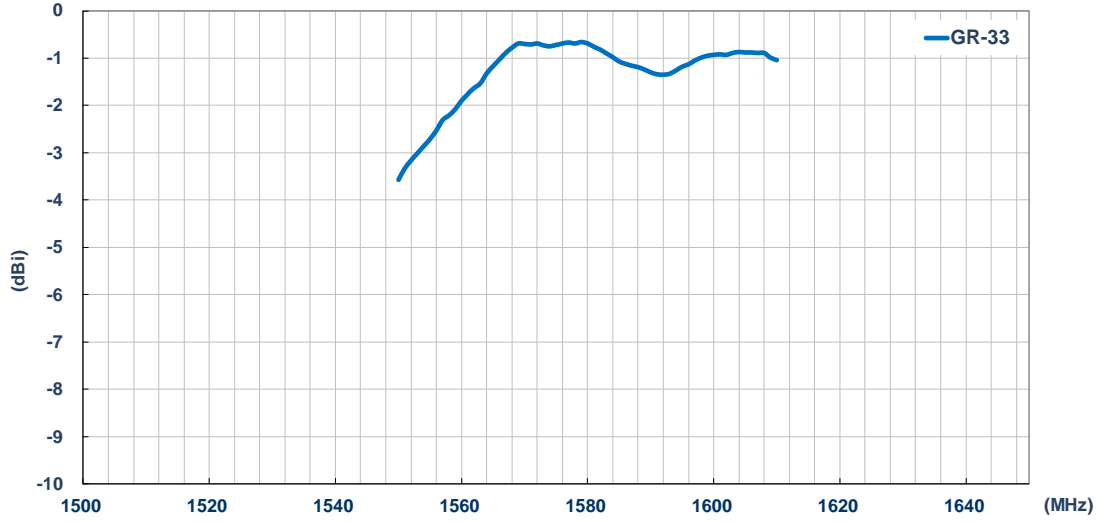
S11 parameters (dB):



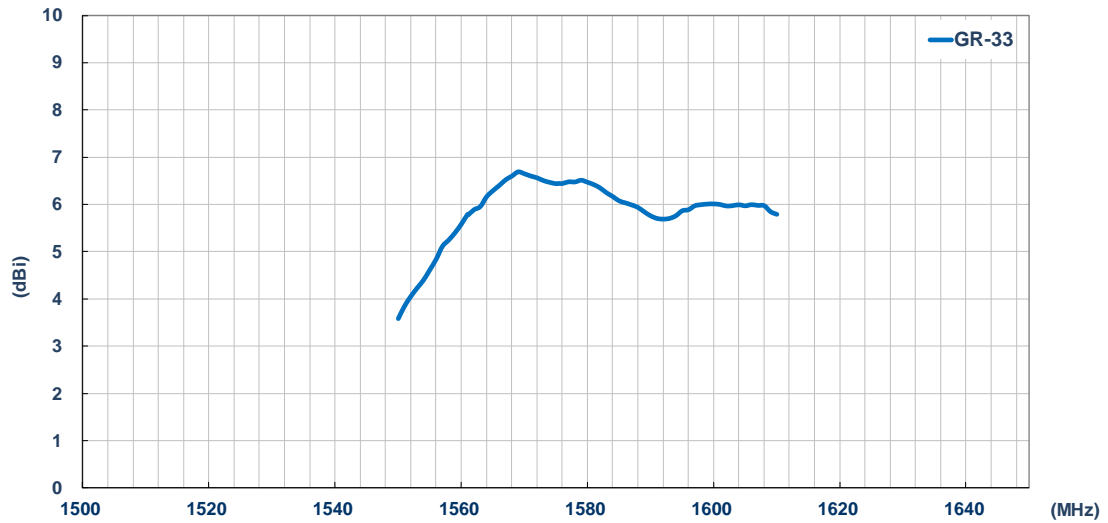
Efficiency (%):



Average Gain (dBi):

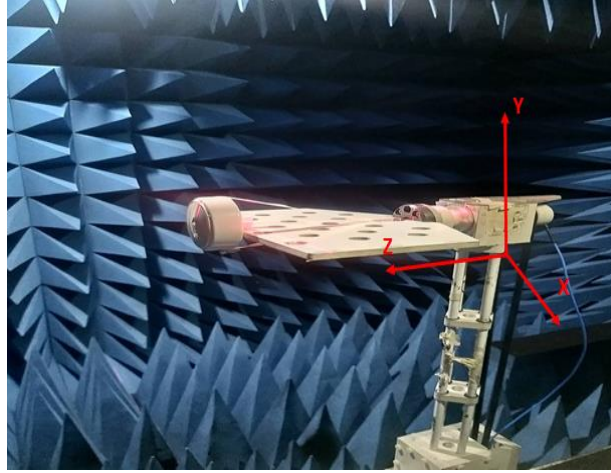


Peak Gain (dBi):



III. Antenna Radiation Pattern Measurement:

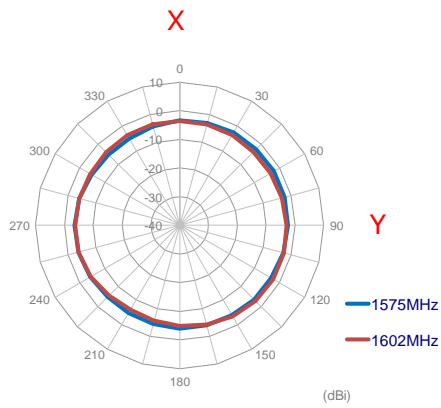
The antenna radiation patterns are measured in 3D Anechoic Chamber. The measurement setup is as shown below,



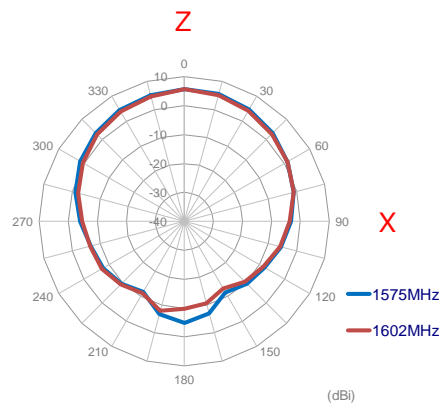
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IV. 2D Radiation Pattern

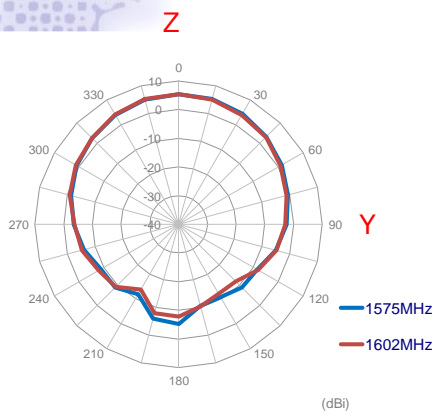
X-Y plane



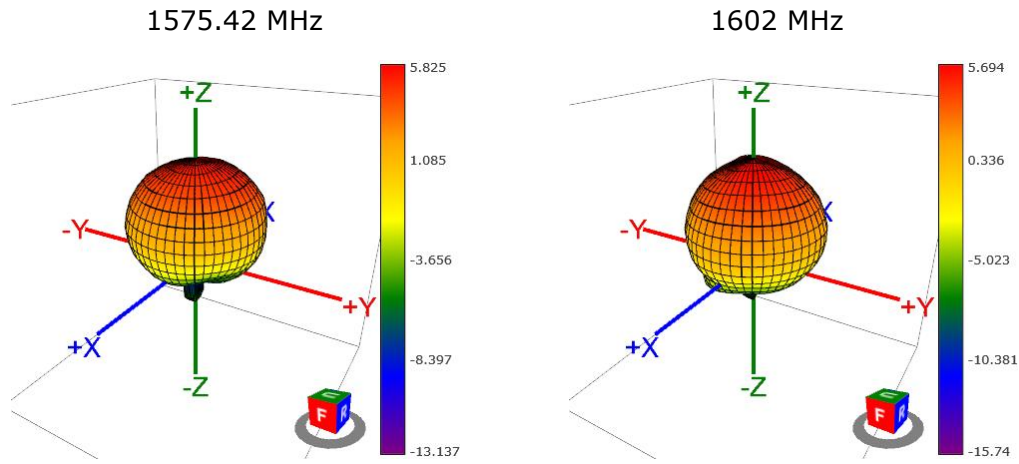
X-Z plane



Y-Z plane

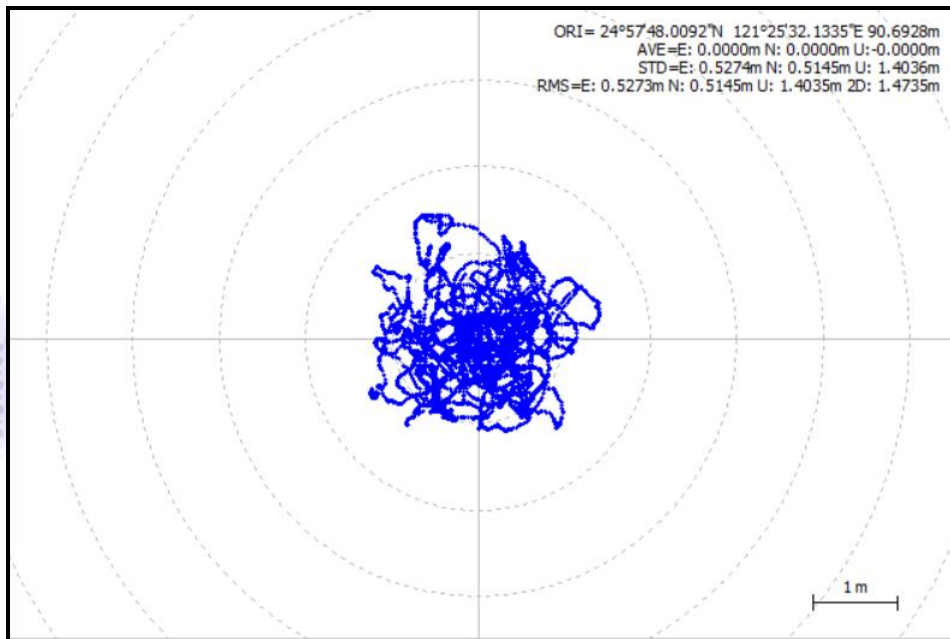


V. 3D Radiation Pattern



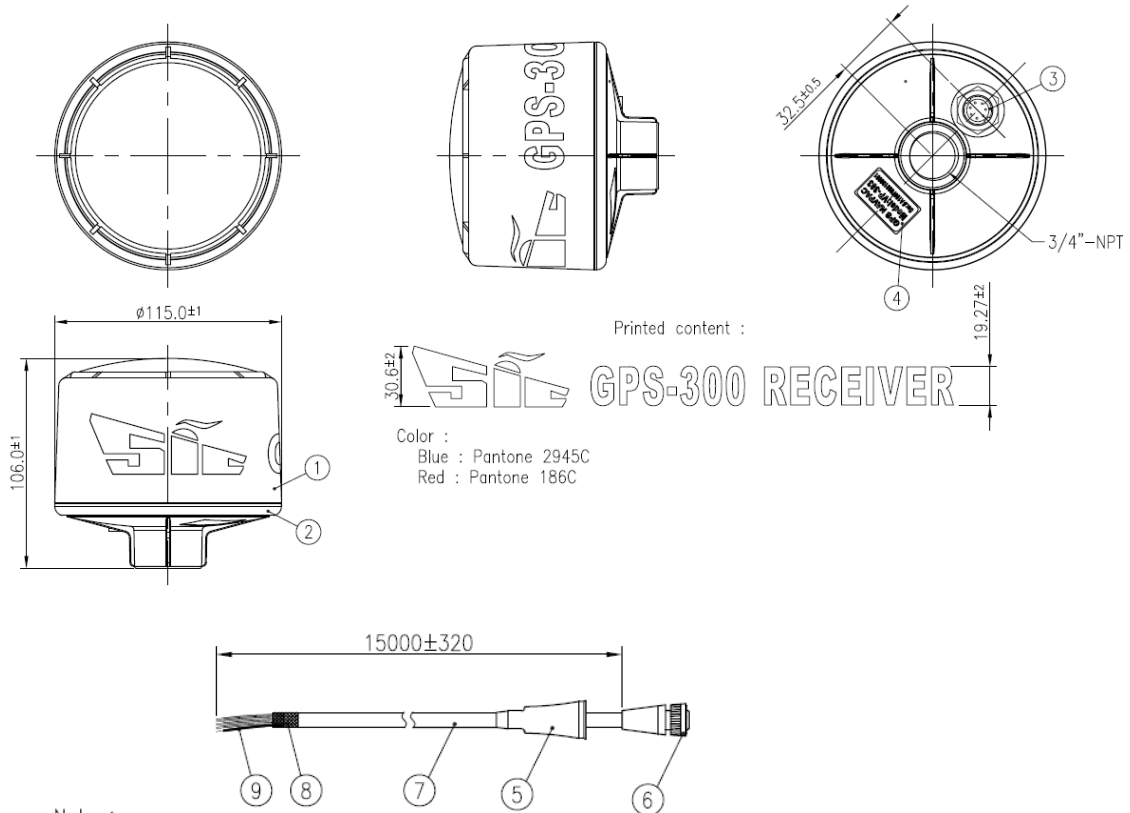
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VI. Horizontal Position Accuracy



*CEP=0.6139m

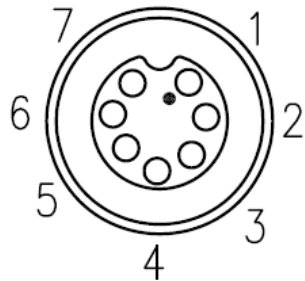
VII. Mechanical Drawing (Unit:mm):



- Notes:
1. All material must be RoHS compliant.
 2. IP Code : IP67.

9	Heat Shrink Tube -2	EVA	Black	1
8	Heat Shrink Tube -1	EVA	Black	1
7	Cable (UL2464/24AWG/7C/OD6.0)	PVC	Black	1
6	7Pin(J) Connector	Nylon+GF	Black	1
5	Waterproof Case	Silicone	Transparent	1
4	Label	Polyester	Silver	1
3	7-Pin Connector	Nylon+GF	Black	1
2	Bottom Base	PBT+PC	White	1
1	Top Housing	PBT+PC	White	1
No	NAME	MATERIAL	FINISH	Q'TY

Connector Pin Definitions



Precautions:

Black dots indicate PIN # 1.

Opposite PIN # 1 is PIN # 7.

Connector		Function	Description
PIN1	White	RXD	RS232 Receiver , Input Signal
PIN2	Green	TXD	RS232 Transmit , Output Signal
PIN3	Yellow	N/A	NC
PIN4	Blue	N/A	NC
PIN5	Purple	1PPS	Time Pulse Signal
PIN6	Black	GND	Power ground
PIN7	Red	VIN	Power input 8 to 35V DC