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PRODUCT BRIEF

NWT-GPS-TNC

ACTIVE GPS/GNSS ANTENNA WITH INTEGRATED LNA

EXECUTIVE SUMMARY

The NWT-GPS-TNC is an active GPS/GNSS antenna assembly featuring an integrated Low Noise Amplifier (LNA) powered directly by the connected GPS receiver. By delivering high gain and low noise figures across primary GNSS frequency bands, this unit ensures reliable signal acquisition in challenging environment deployments, such as deep pit mines, indoor industrial facilities, and high-interference zones.

KEY FEATURES & SPECIFICATIONS

Feature	Specification
Form Factor	Weatherproof IP67 Enclosure
Operating Frequency Range	1559 MHz – 1606 MHz
Antenna Polarization	Right-Hand Circular Polarization (RHCP)
LNA Gain	28 ± 3 dB
Operating Voltage	2.7 V – 3.3 V D
Connector Type	TNC Male

SUPPORTED FREQUENCY BANDS

Constellation	Band / Channel	Center Frequency (MHz)	Bandwidth (MHz)	Supported
GPS	L1	1575.42	1565 – 1586	Yes
GLONASS	G1 / L1OC / L1OF	1601.00	1595 – 1606	Yes
Galileo	E1	1575.42	1563 – 1588	Yes
BeiDou (BDS)	B1C / B1I	1575.42 / 1561.10	1559 – 1592	Yes
QZSS	L1	1575.42	1573 – 1578	Yes

RADIATION & RF MEASURED TEST DATA

Frequency (MHz)	Efficiency (%)	Peak Gain (dBi)	LNA Gain (dB)	Noise Figure (dB)	VSWR
1561	48.1%	0.33	28.7	2.40	1.18
1575	53.2%	0.67	29.2	2.00	1.34
1602	40.2%	0.61	28.0	2.35	1.38

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Detailed Technical Specifications

1. MECHANICAL & ENVIRONMENTAL SPECIFICATIONS

Parameter	Specification	Status / Notes
Dimensions	75 mm × 75 mm × 25 mm	Enclosure Specification
Weight	~ 120 g	Including Cable/Connector
Materials	PCBA + Ceramic Element + RF Cable	UV-Stabilized PC Housing
Operating Temperature	-40 °C to +85 °C	Industrial Grade
Storage Temperature	-40 °C to +85 °	Industrial Grade
Compliance	RoHS & REACH Compliant	Verified

2. ELECTRICAL PERFORMANCE

ANTENNA ELEMENT

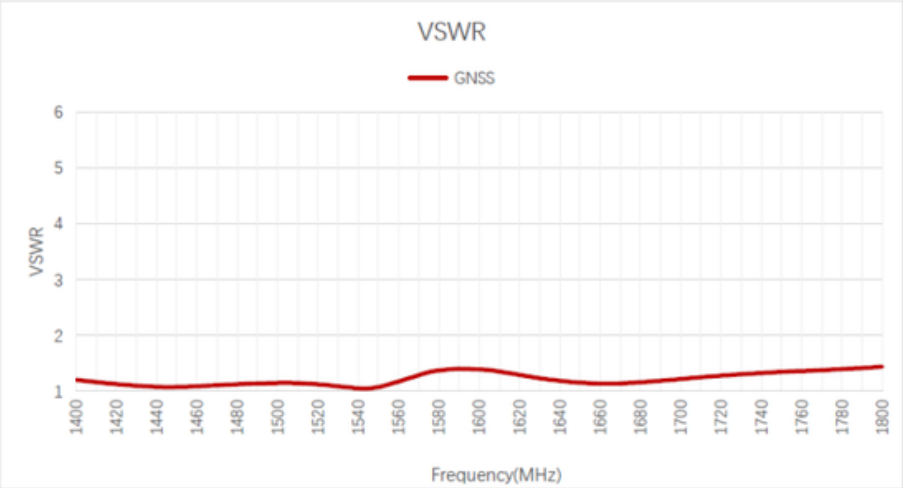
Parameter	Specification
Frequency Range	1559 – 1606 MHz
Impedance	50 Ω
Radiation Pattern	Directional
Polarization	RHCP

INTEGRATED LNA

Parameter	Specification
LNA Gain	28 ± 3 dB
Noise Figure	≤ 2.5 dB
Output VSWR	< 2.0
Out-of-Band Attenuation	≥ 45 dB (f0 ± 100 MHz, f0 = 1580 MHz)
Operating Voltage	2.7 – 3.3 V DC
Current Drain	8 ± 3 mA @ 3.3 V
Impedance	50 Ω

Detailed Technical Specifications

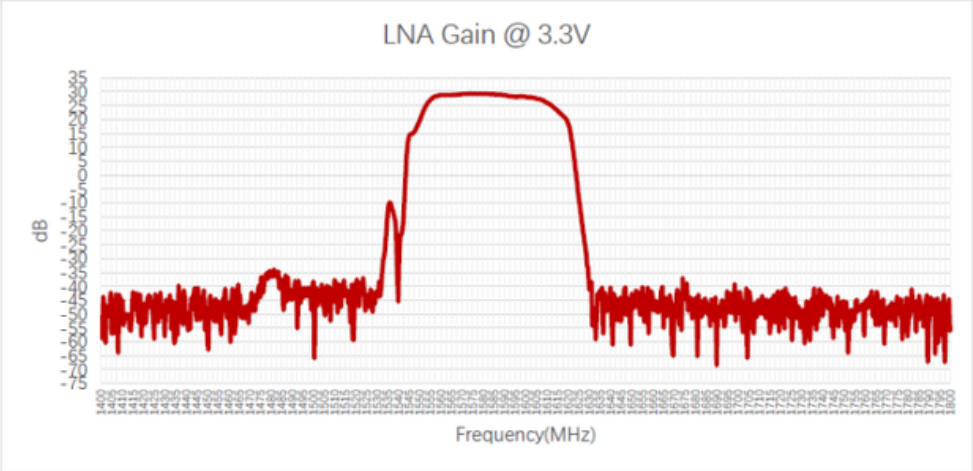
VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	1.18	1.34	1.38

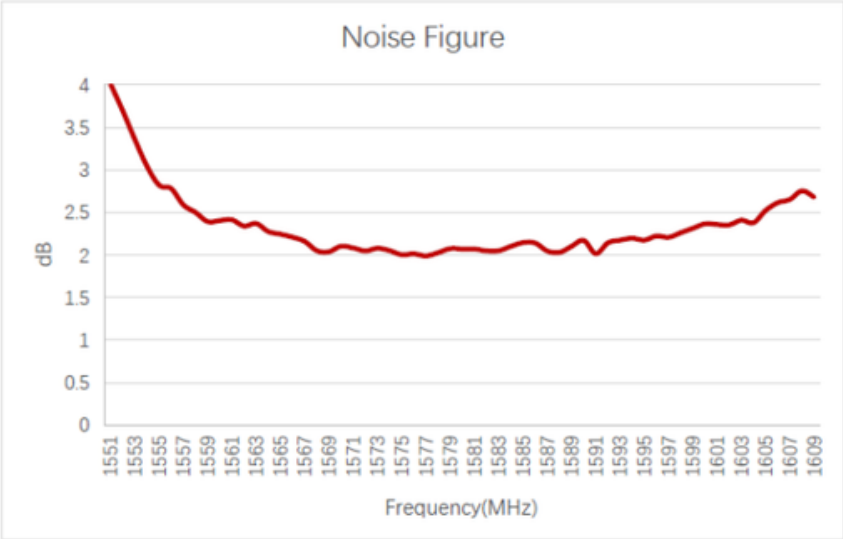
LNA Gain



LNA Gain (db)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	-	-	-	-	-	28.7	29.2	28.0

Noise Figure

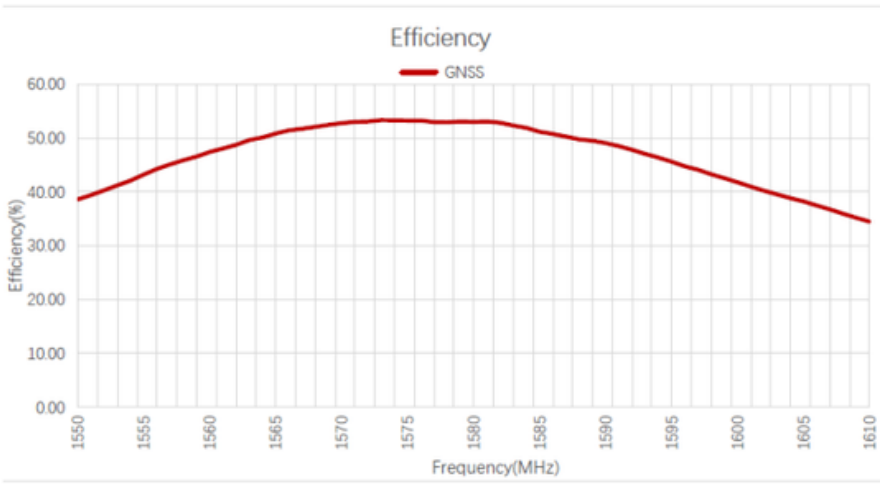


Noise Figure (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Noise Figure (dB)	-	-	-	-	-	2.4	2	2.35

Radiation Performance

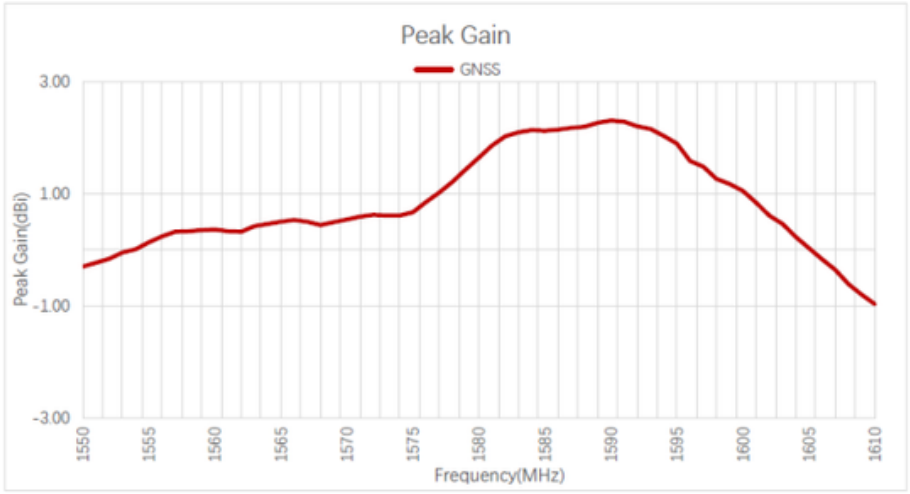
Efficiency



Efficiency (%)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	48.1	53.2	40.2

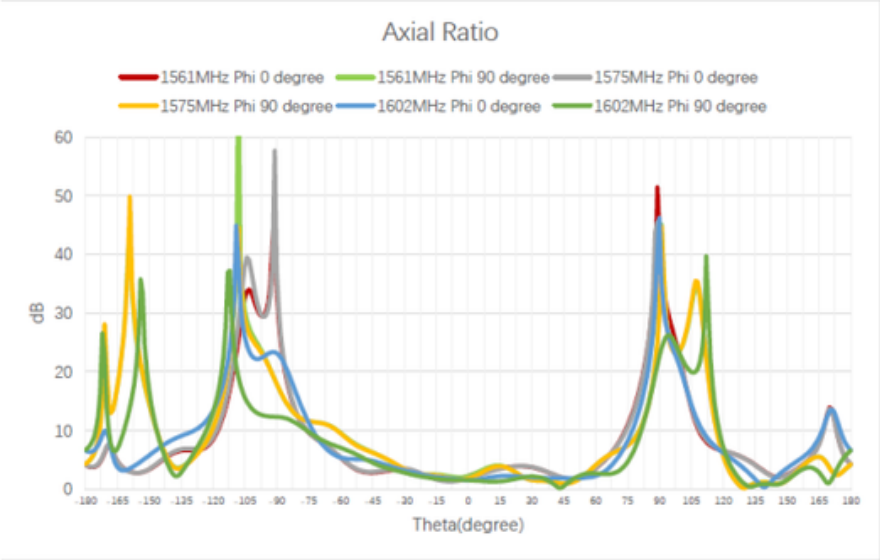
Peak Gain



Peak Gain (dBi)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-	0.33	0.67	0.61

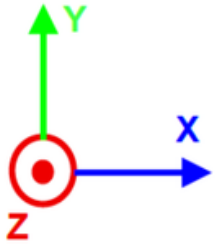
Axial Ratio



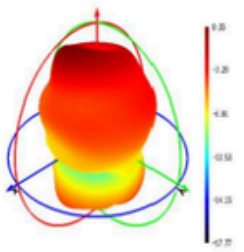
Axial Ratio (dB)

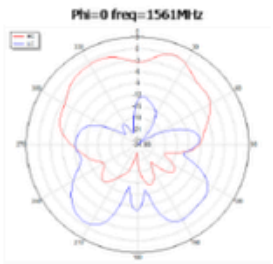
Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
Axial Ratio (dB)	Phi = 0 (deg) Theta = 0 (deg)	-	-	-	-	-	2.21	1.79	1.52
	Phi = 90 (deg) Theta = 0 (deg)	-	-	-	-	-	2.21	1.79	1.52

Radiation Patterns

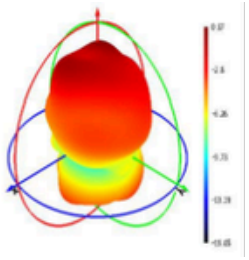


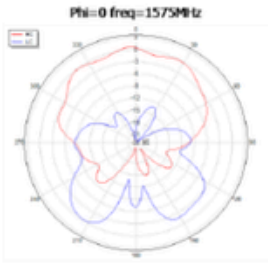
1561 MHz

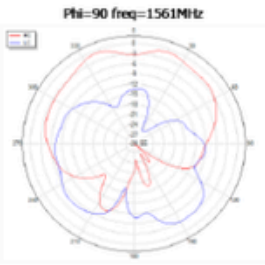


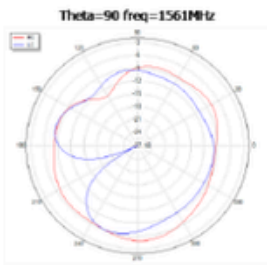


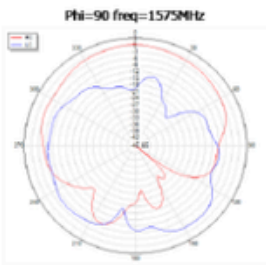
1575 MHz

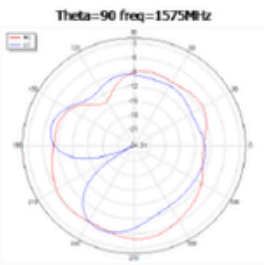












1602 MHz