ΤΟΡΟΟΛ





The CR-G5 is a choke ring antenna based on Topcon's TA-5 full spectrum GNSS antenna element. The TA-5 antenna element utilizes an array of vertical convex dipoles. This antenna provides Full Wave tracking technology for existing and future GNSS signals.

The antenna addresses the evolving requirements for reference networks and infrastructure monitoring applications.

- High-end Geodetic Antenna
- Topcon's TA-5 vertical convex dipole antenna element for full spectrum GNSS signal tracking
- Topcon designed choke ring groundplane
- Environmentally sealed
- Improved phase center stability in vertical over expanded GNSS frequency band. Improved low elevated satellites tracking

Operating Frequency Range Lower band 1230 MHz±70 MHz (L5, E5B, E3, L2, G2, E4, E6) Upper band 1665 MHz±50 MHz (E2, L1, E1, G1, OmniStar, SBAS, CDGPS) Out of Band Rejection -60 dBc (typical) Upper band (1232 MHz ± 100 MHz) -60 dBc (typical) f < 1000 MHz -60 dBc (typical) Gain, Noise Figure and VSWR -60 dBc (typical) LNA Gain 43 dB (typical) Gain at Zenith (90°) Lower band: +7.5 dB (typical) Upper band: +3.5 dB (typical) Upper band: +3.5 dB (typical) Gain Roll-Off (rom Zenith to Horizon) Lower band: -16.5 dB (typical) Upper band: s1.3 dB (typical) Upper band: -13.3 dB (typical) Noise Figure 1.0 dB (typical) VSWR 1.5 : 1 Differential Propagation Delay (typical) Lower band: 3 ns (maximum) Upper band: -50°C to 70°C Storage: -50°C to 70°C Storage: -50°C to 70°C Storage: -50°C to 70°C Storage: -50°C to 70°C Storage: -50°C to 70°C Vibration dF16.6, Broad band noise (random vibration), along each of 3 axes. Procedure 1 - Functional Shock, Table 5116.6, Fig. 516.6-V Humidity 95% (Method 507.5)		
Upper band 1565 MH2±50 MH2 (E2, L1, E1, G1, OmniStar, SBAS, CDGPS) Out of Band Rejection -60 dBc (typical) Lower band (1232 MH2 ± 100 MH2) -60 dBc (typical) 1 -60 dBc (typical) f < 1000 MH2 -60 dBc (typical) f < 1000 MH2 -60 dBc (typical) Gain, Noise Figure and VSWR -60 dBc (typical) LNA Gain 43 dB (typical) Gain at Zenith (90°) Lower band: +7.5 dB (typical) Upper band: -13 dB (typical) Upper band: -13 dB (typical) Gain Roll-Off (from Zenith to Horizon) Lower band: 3 ns (maximum) Upper band: -13 dB (typical) Upper band: -13 dB (typical) VSWR 1.5 : 1 Differential Propagation Delay (typical) Lower band: 3 ns (maximum) Upper band: 3 ns (maximum) Upper band: 3 ns (maximum) Vbroomental Enclosure Enclosure MIL-STD-810G Temperature (Methods 501.4, 02.4) Operating: -50°C to 70°C Storage: -55°C to 85°C Wate / Dust Rating IP67 IEC 60529 Vibration Method 516.6, along each of 3 axes. Procedure I - Functional Shock, Table 516.6, IF16, 516.6-8, accelerative forces up to 40g Shock Table 516.6, IF16, 516.6-8, accelerative forces up to 40g Shock Table 516.6, IF16, 516.6	Operating Frequency Range	
Out of Band Rejection Lower band (1232 MHz \pm 100 MHz) -60 dBc (typical) Upper band (1568.5 MHz \pm 150 MHz) -60 dBc (typical) f < 1000 MHz	Lower band	1230 MHz±70 MHz (L5, E5B, E3, L2, G2, E4, E6)
Lower band (1232 MHz ± 100 MHz) -60 dBc (typical) Upper band (1568.5 MHz ±150 MHz) -40 dBc (typical) f < 1000 MHz	Upper band	1565 MHz±50 MHz (E2, L1, E1, G1, OmniStar, SBAS, CDGPS)
Upper band (1568.5 MHz ±150 MHz) -40 dBc (typical) f < 1000 MHz	Out of Band Rejection	
f < 1000 MHz	Lower band (1232 MHz \pm 100 MHz)	-60 dBc (typical)
f > 1750 MHz -60 dBc (typical) Gain, Noise Figure and VSWR LNA Gain LNA Gain 43 dB (typical) Gain at Zenith (90") Lower band: +7.5 dB (typical) Upper band: +5 dB (typical) Upper band: +5 dB (typical) Gain Roll-Off (from Zenith to Horizon) Upper band: +6.5 dB (typical) Noise Figure 1.0 dB (typical) VSWR 1.5 : 1 Differential Propagation Delay (typical) Lower band: 3 ns (maximum) Upper band: 3 ns (maximum) Upper band: 3 ns (maximum) Norinal Impedance 50 Ohm Enclosure MIL-STD-810G Temperature (Methods 501.4, 02.4) Operating: -50°C to 70°C Storage: -55°C to 85°C Vibration Vibration Method 514.6, Broad band noise (random vibration), along each of 3 axes, Category 4, table 514.6C-IV Humidity 95% (Method 507.5) Shock Method 516.6.1, Fig. 516.6-8, accelerative forces up to 40g Sait Fog 5% (Method 509.4) Drop Test Repeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome) RoHS Compliant Yes Power Input Voltage Input Voltage 3 to 12 VDC Power Consumption 100 mA (typical) Physical .1 kg (Tapcon anti-snow spherical dome) <td>Upper band (1568.5 MHz ± 150 MHz)</td> <td>-40 dBc (typical)</td>	Upper band (1568.5 MHz ± 150 MHz)	-40 dBc (typical)
Gain, Noise Figure and VSWR UN Gain 43 dB (typical) LNA Gain 43 dB (typical) Gain at Zenith (90") Lower band: +7.5 dB (typical) Upper band: +5 dB (typical) Upper band: +16.5 dB (typical) Upper band: -13 dB (typical) Upper band: -13 dB (typical) Noise Figure 1.0 dB (typical) VSWR 1.5 : 1 Differential Propagation Delay (typical) Lower band: 3 ns (maximum) Upper band: 3 ns (maximum) Upper band: 3 ns (maximum) Noise Figure 50 Ohm Environmental Enclosure Enclosure MIL-STD-810G Temperature (Methods 501.4, 02.4) Operating: -50°C to 70°C Storage: -55°C to 85°C Water / Dust Rating IP67 IEC 60529 Vibration Method 514.6, Broad band noise (random vibration), along each of 3 axes, Category 4, table 514.6C-IV Humidity 95% (Method 509.4) Shock Method 516.6, along each of 3 axes. Procedure 1 - Functional Shock, Table 516.61, Fig. 516.6-8, accelerative forces up to 40g Salt Fog 5% (Method 509.4) Drop Test Repeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome) RoHS Compliant <	f < 1000 MHz	-60 dBc (typical)
LNA Gain 43 dB (typical) Gain at Zenith (90") Lower band: +7.5 dB (typical) Upper band: +5 dB (typical) Upper band: -16.5 dB (typical) Gain Roll-Off (from Zenith to Horizon) Lower band: -16.5 dB (typical) Noise Figure 1.0 dB (typical) VSWR 1.5 : 1 Differential Propagation Delay (typical) Lower band: 3 ns (maximum) Upper band: 3 ns (maximum) Upper band: 3 ns (maximum) Nominal Impedance 50 Ohm Enclosure MIL-STD-810G Temperature (Methods 501.4, 02.4) Operating: -50°C to 70°C Storage: -55°C to 85°C Vater / Dust Rating IP67 IEC 60529 Vibration Method 514.6, Broad band noise (random vibration), along each of 3 axes, Category 4, table 514.6C-IV Humidity 95% (Method 507.5) Shock Method 516.6, along each of 3 axes. Procedure 1 - Functional Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40g Salt Fog 5% (Method 509.4) Drop Test Repeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome) RoHS Compliant Yes Power 100 mA (typical) Physical 380 x 155.5 mm (antenna without an	f > 1750 MHz	-60 dBc (typical)
Gain at Zenith (90°) Lower band: +7.5 dB (typical) Upper band: +5 dB (typical) Upper band: +16.5 dB (typical) Moise Figure 1.0 dB (typical) Noise Figure 1.0 dB (typical) Upper band: -13 dB (typical) VSWR Differential Propagation Delay (typical) Lower band: 3 ns (maximum) Upper band: -13 dB (typical) Lower band: 3 ns (maximum) Nominal Impedance 50 Ohm Enclosure MIL-STD-810G Temperature (Methods 501.4, 02.4) Operating: -50°C to 70°C Storage: -55°C to 85°C Vibration Vibration Method 514.6, Broad band noise (random vibration), along each of 3 axes, Category 4, table 514.6C-IV Humidity 95% (Method 507.5) Shock Method 516.6, along each of 3 axes. Procedure 1 - Functional Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40g Salt Fog 5% (Method 509.4) Drop Test Repeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome) RoHS Compliant Yes Power 100 mA (typical) Physical 380 x 155.5 mm (antenna without anti-snow dome) 380 x 292 mm (with SCIGN anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow	Gain, Noise Figure and VSWR	
Upper band: +5 dB (typical)Gain Roll-Off (from Zenith to Horizon)Lower band: -16.5 dB (typical) Upper band: -13 dB (typical)Noise Figure1.0 dB (typical)VSWR1.5 : 1Differential Propagation Delay (typical)Lower band: 3 ns (maximum) Upper band: 3 ns (maximum)Nominal Impedance50 OhmEnclosureMIL-STD-810GTemperature (Methods 501.4, 02.4)Operating: -50°C to 70°C Storage: -55°C to 85°CWater / Dust RatingIP67 IEC 60529VibrationMethod 514.6, Broad band noise (random vibration), along each of 3 axes, Category 4, table 514.6C-IVHumidity95% (Method 507.5)ShockMethod 516.6, along each of 3 axes. Procedure I - Functional Shock, Table 516.6-I, Fg. 516.6-8, accelerative forces up to 40gSalt Fog5% (Method 509.4)Drop TestRepeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome)RoHS CompliantYesPower100 mA (typical)Physical3 to 12 VDCPower Consumption100 mA (typical)Physical380 x 155.5 mm (antenna without anti-snow spherical dome) 415 x 287 mm (with SCIAN anti-snow spherical dome) 415 x 287 mm (with SCIAN anti-snow spherical dome)Weight4.9 kg (antenna) 1.1 kg (forcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)	LNA Gain	43 dB (typical)
Upper band: -13 dB (typical) Noise Figure 1.0 dB (typical) VSWR 1.5 : 1 Differential Propagation Delay (typical) Lower band: 3 ns (maximum) Upper band: 3 ns (maximum) Nominal Impedance 50 Ohm Enclosure MIL-STD-810G Temperature (Methods 501.4, 02.4) Operating: -50°C to 70°C Storage: -55°C to 85°C Water / Dust Rating IP67 IEC 60529 Vibration Method 514.6, Broad band noise (random vibration), along each of 3 axes, Category 4, table 514.6C-IV Humidity 95% (Method 507.5) Shock Method 516.6, along each of 3 axes. Procedure I - Functional Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40g Shock Method 516.6, along each of 3 axes. Procedure I - Functional Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40g Shock Method 516.6, along each of 3 axes. Procedure I - Functional Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40g Shock Method 516.6, along each of 3 axes. Procedure I - Functional Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40g Porp Test Repeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome) Power 100 mA (typical) Power 100 mA (typical) <	Gain at Zenith (90°)	
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Differential Propagation Delay (typical)Lower band: 3 ns (maximum) Upper band: 3 ns (maximum)Nominal Impedance50 OhmEnvironmentalImage: S0 OhmEnclosureMIL-STD-810GTemperature (Methods 501.4, 02.4)Operating: -50°C to 70°C Storage: -55°C to 85°CWater / Dust RatingIP67 IEC 60529VibrationMethod 514.6, Broad band noise (random vibration), along each of 3 axes, Category 4, table 514.6C-IVHumidity95% (Method 507.5)ShockMethod 516.6, along each of 3 axes. Procedure I - Functional Shock, Table 516.6-1, Fig. 516.6-8, accelerative forces up to 40gSalt Fog5% (Method 509.4)Drop TestRepeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome)RoHS CompliantYesPowerInou Ma (typical)Physical380 x 155.5 mm (antenna without anti-snow dome) a80 x 292 mm (with Topcon anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow spherical dome) 6 kg (antenna) 1.1 kg (Topcon anti-snow spherical dome)	Noise Figure	1.0 dB (typical)
Image: Constraint of the second sec	VSWR	1.5 : 1
Environmental Enclosure MIL-STD-810G Temperature (Methods 501.4, 02.4) Operating: -50°C to 70°C Storage: -55°C to 85°C Water / Dust Rating IP67 IEC 60529 Vibration Method 514.6, Broad band noise (random vibration), along each of 3 axes, Category 4, table 514.6C-IV Humidity 95% (Method 507.5) Shock Method 516.6, along each of 3 axes. Procedure 1 - Functional Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40g Salt Fog 5% (Method 509.4) Drop Test Repeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome) RoHS Compliant Yes Power 100 mA (typical) Physical 380 x 155.5 mm (antenna without anti-snow dome) 380 x 292 mm (with Topcon anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow spherical dome) Weight 4.9 kg (antenna) 1.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)	Differential Propagation Delay (typical)	
EnclosureMIL-STD-810GTemperature (Methods 501.4, 02.4)Operating: -50°C to 70°C Storage: -55°C to 85°CWater / Dust RatingIP67 IEC 60529VibrationMethod 514.6, Broad band noise (random vibration), along each of 3 axes, Category 4, table 514.6C-IVHumidity95% (Method 507.5)ShockMethod 516.6, along each of 3 axes. Procedure I - Functional Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40gSait Fog5% (Method 509.4)Drop TestRepeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome)RoHS CompliantYesPower100 mA (typical)Physical380 x 155.5 mm (antenna without anti-snow dome) 380 x 292 mm (with Topcon anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow spherical dome) 4.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna) 1.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)	Nominal Impedance	50 Ohm
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Storage: -55% to 85%Water / Dust RatingIP67 IEC 60529VibrationMethod 514.6, Broad band noise (random vibration), along each of 3 axes, Category 4, table 514.6C-IVHumidity95% (Method 507.5)ShockMethod 516.6, along each of 3 axes. Procedure I - Functional Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40gSalt Fog5% (Method 509.4)Drop TestRepeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome)RoHS CompliantYesPowerInput Voltage1 to 0 mA (typical)PhysicalDimensions (d x h)380 x 155.5 mm (antenna without anti-snow dome) 380 x 292 mm (with SCIGN anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow spherical dome) 6 kg (antenna) 1.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)	Enclosure	MIL-STD-810G
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of 3 axes, Category 4, table 514.6C-IV Humidity 95% (Method 507.5) Shock Method 516.6, along each of 3 axes. Procedure I - Functional Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40g Salt Fog 5% (Method 509.4) Drop Test Repeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome) RoHS Compliant Yes Power Input Voltage Input Voltage 3 to 12 VDC Power Consumption 100 mA (typical) Physical 380 x 155.5 mm (antenna without anti-snow dome) 380 x 292 mm (with Topcon anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow short dome) Weight 4.9 kg (antenna) 1.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)	Water / Dust Rating	IP67 IEC 60529
Shock Method 516.6, along each of 3 axes. Procedure I - Functional Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40g Salt Fog 5% (Method 509.4) Drop Test Repeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome) RoHS Compliant Yes Power Input Voltage Input Voltage 3 to 12 VDC Power Consumption 100 mA (typical) Physical 380 x 155.5 mm (antenna without anti-snow dome) 380 x 292 mm (with Topcon anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow short dome) Weight 4.9 kg (antenna) 1.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)	Vibration	
Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40g Salt Fog 5% (Method 509.4) Drop Test Repeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome) RoHS Compliant Yes Power Input Voltage Input Voltage 3 to 12 VDC Power Consumption 100 mA (typical) Physical 380 x 155.5 mm (antenna without anti-snow dome) 380 x 292 mm (with Topcon anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow short dome) Weight 4.9 kg (antenna) 1.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)	Humidity	95% (Method 507.5)
Drop Test Repeated drops from the height of 1 m on concrete surface. All sides – top, bottom and border (with dome) RoHS Compliant Yes Power Input Voltage Input Voltage 3 to 12 VDC Power Consumption 100 mA (typical) Physical Junensions (d x h) 380 x 155.5 mm (antenna without anti-snow dome) 380 x 292 mm (with Topcon anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow short dome) Weight 4.9 kg (antenna) 1.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)		Method 516.6, along each of 3 axes. Procedure I - Functional Shock, Table 516.6-I, Fig. 516.6-8, accelerative forces up to 40g
All sides – top, bottom and border (with dome) RoHS Compliant Yes Power Input Voltage Input Voltage 3 to 12 VDC Power Consumption 100 mA (typical) Physical 380 x 155.5 mm (antenna without anti-snow dome) 380 x 292 mm (with Topcon anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow short dome) Weight 4.9 kg (antenna) 1.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)	Salt Fog	5% (Method 509.4)
Power Input Voltage 3 to 12 VDC Power Consumption 100 mA (typical) Physical	Drop Test	
Input Voltage 3 to 12 VDC Power Consumption 100 mA (typical) Physical	RoHS Compliant	Yes
Power Consumption 100 mA (typical) Physical	Power	
Physical Dimensions (d x h) 380 x 155.5 mm (antenna without anti-snow dome) 380 x 292 mm (with Topcon anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow short dome) Weight 4.9 kg (antenna) 1.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)	Input Voltage	3 to 12 VDC
Dimensions (d x h) 380 x 155.5 mm (antenna without anti-snow dome) 380 x 292 mm (with Topcon anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow short dome) Weight 4.9 kg (antenna) 1.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)	Power Consumption	100 mA (typical)
380 x 292 mm (with Topcon anti-snow spherical dome) 415 x 287 mm (with SCIGN anti-snow short dome) Weight 4.9 kg (antenna) 1.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)	Physical	
1.1 kg (Topcon anti-snow spherical dome) 6 kg (antenna with Topcon anti-snow spherical dome)	Dimensions (d x h)	380 x 292 mm (with Topcon anti-snow spherical dome)
	Weight	1.1 kg (Topcon anti-snow spherical dome)
	Connector	



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