

Letter of Certification

GPS Networking, Inc. products (MIL-ALDCBS1X2, MIL-ALDCBS1X4, MIL-ALDCBS1X8) were tested and certified to the following standards and specifications as summarized below:

Electromagnetic Interference Qualification Test Summary

MIL STD TEST	Method and Procedures	Test Sample # or Serial #	RESULTS	OUTCOME
RE102	MIL-STD-461E, Section 5.16	Test Samples: #4, #9, #13	The GPS Splitters had no emissions above the limits specified in figure RE102-3 of MIL-STD-461E 10 kHz to 30 MHz in Vertical polarization and from 30 MHz to 18 GHz in Vertical and Horizontal antenna polarizations.	PASS
CE102	MIL-STD-461E, Section 5.5	Test Samples: #4, #9, #13	The GPS Splitters had no emissions exceeding the limit specified for +28V, shown in Figure CE102-1 of MIL-STD-461E, from 10kHz - 10MHz on +28VDC_UNSWT, and on the 28V_RTN power leads with input power set to +28VDC.	PASS
CE106	MIL-STD-461E, Section 5.6	Test Samples: #4, #9, #13	The GPS Splitters had no emissions exceeding 34 dBμV operating excluding the allowed ±5% of the operating frequency, from 1MHz to 31.5GHz on any splitter output.	PASS
CS101	MIL-STD-461E, Section 5.7	Test Samples: #4, #9, #13	The GPS Splitters had no performance degradation when subjected to voltage levels specified in Figure CS101-1, Curve 2 (126dBμV to 96.5dBμV) from a frequency range of 30Hz to 150kHz on each individual power lead (+28VDC and +28VDC_UNSWT) and Figure CS101-2.	PASS
CS103	MIL-STD-461E, Section 5.8	Test Samples: #1 #6, #11	The GPS Splitters had no performance degradation in SNR when subjected to frequency and amplitudes similar to other inter-modulation products identified for GNSS L-Band frequencies	PASS
CS104	MIL-STD-461E, Section 5.9	Test Samples: #1, #6, #11	The GPS Splitters had no performance degradation when subjected to spurious responses (30MHz to 1625MHz) injected at the antenna input	PASS
CS114	MIL-STD-461E, Section 5.12	Test Samples: #1, #6, #11	The GPS Splitters had no performance degradation when subjected to RF signals coupled using injection probe drive levels in Figure CS114-1 Curve 3 (49 to 89dBμA) from a frequency range of 10kHz to 200MHz	PASS
CS115	MIL-STD-461E, Section 5.13	Test Samples: #1, #6, #11	The GPS Splitters had no performance degradation when subjected to impulse signals coupled on the cables using Figure CS115-1 at 30Hz rate for one minute for a minimum pulse of 30ns from 0 to 5 Amps.	PASS

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MIL STD TEST	Method and Procedures	Test Item Serial No.	Results	Outcome
CS116	MIL-STD-461E, Section 5.14	Test Samples: #1, #6, #11	The GPS Splitters had no performance degradation when subjected to sinusoidal transients coupled on the cables and power leads using Figure CS116-1 & CS116-2 for a minimum pulse of one pulse per second at maximum amplitude of 5A for frequencies of .01, 0.1, 1, 10 30, and 100MHz.	PASS
RS103	MIL-STD-461E, Section 5.19	Test Samples: #1, #6, #11	The GPS Splitters had no performance degradation from radiated electric fields: vertical polarized field 20V/m from 2MHz - 30MHz; both vertical and horizontal polarized field 20V/m from 30MHz to 1GHz, 60V/m from 1GHz to 18GHz.	PASS
DC Steady State	MIL-STD-704C	Test Samples: #2, #7, #12	The GPS Splitters showed no signs of degradation in performance when subjected to ripple dc voltage (0.1Hz at 10Hz, 0.3VRMS at 100Hz, 0.98VRMS at 1000Hz, 1.0VRMS at 1100Hz, 0.1 VRMS at 10,000Hz) at +22VDC and +29VDC.	PASS
Voltage Transients	MIL-STD-704C	Test Samples: #2, #7, #12	The GPS Splitters showed no signs of degradation in performance after a momentary power interruption (positive transient voltage of +29VDC and negative transient voltage of of +22VDC) was applied	PASS
DC Undervoltage/Overvoltage	MIL-STD-704C	Test Samples: #2, #7, #12	The GPS Splitters showed no signs of degradation in performance when an undervoltage (0VDC) or overvoltage (+50VDC) is applied.	PASS
Power Interruption	MIL-STD-704C	Test Samples: #2, #7, #12	The GPS Splitters showed no signs of degradation in performance when a momentary power interruption of the DC power supply was induced for 50ms, 250ms, and 7s.	PASS
Immunity to Transient	RTCA-DO-160E	Test Samples: #2, #7, #12	The GPS Splitters showed no signs of degradation in performance with spikes coupled to cables and power leads with a minimum of 50 transients applied with each polarity (+600V, +50) within one minute.	PASS
Lightning & Surge	MIL-HDBK-419A	Test Samples: #2, #7, #12	The GPS Splitters showed no signs of degradation in performance when a lightning electrical transient is applied 10 times per pin positive and negative. (+800V, +40amps).	PASS

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Environmental Qualification Test Summary (MIL-STD-810C):

MIL STD TEST	Method and Procedures	Test Item Serial No.	Results	Outcome
Vibration-Functional & Endurance	MIL-STD-810C, MTD 514.2	Test Samples: #4, #9, #14	The GPS Splitters showed no signs of degradation in performance when subjected to Functional and Endurance Level Vibration involving discrete sinusoidal frequencies superimposed on a random vibration environment of 0.10 G2/Hz over a frequency range of 10-2000 Hz for all three axes	PASS
Functional Shock	MIL-STD-810C, MTD. 516.2	Test Samples: #4, #9, #14	The GPS Splitters showed no degradation in functional performance when subjected to three sawtooth pulse shocks of 20G peak acceleration in both directions along each of the 3 orthogonal axes	PASS
Crash Shock	MIL-STD-810C, MTD. 516.2	Test Samples: #4, #9, #14	The GPS Splitters maintained structural integrity when subjected to two sawtooth pulse shocks of 40G peak acceleration in both directions along each of the 3 orthogonal axes	PASS
Temperature-Altitude	MIL-STD-810C, MTD. 504.1, Pro. I, Cat. 5	Test Samples: #4, #9, #14	The GPS Splitters showed no signs of degradation in performance when subjected to a combination of temperature varying (-62 degC to +85 degC) and altitude (-1800 ft to 50,000 ft)	PASS
Temperature Shock	MIL-STD-810C MTD 503.1, Pro. I	Test Samples: #4, #9, #14	The GPS Splitters showed no signs of deterioration after the unit was rapidly cycled between low temperature extremes of -57 degC and high temperature extremes of +71 degC.	PASS
Humidity	MIL-STD-810C, Mtd 507.1, Procedure I	Test Samples: #3, #8, #13	The GPS Splitters showed no signs of degradation in performance during or after testing when subjected to humidity > 95% and temperatures of +60°C and +30°C for 10 days. Final inspection showed absolutely no evidence of corrosion.	PASS
Salt Fog	MIL-STD-810C, Mtd 509.1,	Test Samples: #5, #10, #15	The GPS Splitters showed no signs of degradation in performance before, after 48 hr exposure, and 48 hours dry period. Splitters were subjected to salt concentration of 5% at a temperature of 35°C for a 48 hour period. Absolutely no evidence of corrosion was present after 48 hr exposure or after 48hr dry period.	PASS

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MIL STD TEST	Method and Procedures	Test Item Serial No.	Results	Outcome
Touch Temperature	GPS Networking Test Procedures Qualification	Test Samples: #4, #9, #14	The GPS Splitters did not exceed surface temperature of 45 ^o C when the equipment was operating at 29 ^o C ambient for a 4 hour period.	PASS
Overpressure	RTCA-DO-160	Test Samples: #4, #9, #14	The GPS Splitters showed no signs of degradation in performance after subjected to a pressure of 185kPa for 10 minutes.	PASS
Decompression	RTCA-DO-160	Test Samples: #4, #9, #14	The GPS Splitters showed no signs of degradation in performance before, during, or after being subjected to a rapid decompression from 50,000 ft to 10,000 ft in less than 5 seconds and maintained for 5 minutes before returning to 50,000 ft.	PASS
Design Load-Limit	MIL-STD-810C, MTD 513.2, Pro II	Test Samples: #4, #9, #14	The GPS Splitters showed no signs of degradation in performance before, during, or after being subjected to the following load forces: Forward 2.0g; Aft 1.5g; Up 3.2g; Down 7.0g; Side 2.5g. Splitters also maintained structural integrity when subjected to the load forces.	PASS
Design Load-Ultimate	MIL-STD-810C, MTD 513.2, Pro. I	Test Samples: #4, #9, #14	The GPS Splitters showed no signs of degradation in performance after being subjected to the following load forces: Forward 9.0g; Aft 2.25g; Up 4.8g; Down 10.5g; Side 3.75g. Splitters also maintained structural integrity when subjected to the load forces.	PASS
Acoustic Noise Generation	GPS Networking Test Procedures Qualification	Test Samples: #4, #9, #14	The GPS Splitters did not exceed the maximum permitted acoustic noise when operating. Recorded octave bands were measured at the frequencies from 45 to 20,000 Hz at four positions perpendicular and 36" from the Splitters.	PASS
Sand & Dust	MIL-STD-810C, MTD 510.1	Test Samples: #5, #10, #15	The GPS Splitters showed no signs of degradation in performance after being subjected to blowing sand and dust at a concentration of 0.3g/ft ³ at 63 ^o C (145 ^o F) for a duration of 22 hrs. Final inspection showed no evidence of internal/external corrosion.	PASS
Fungus	MIL-STD-810C, MTD 508.1	Test Samples: #5, #10, #15	The GPS Splitters showed no signs of degradation in performance after being subjected to fungi at 30 ^o C for a duration of 28 days with a relative humidity of 95%. Final inspection showed no evidence of fungal growth.	PASS

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