



# Letter of Certification

GPS Networking, Inc. products (MIL-LDCBS1X2, MIL-HIALDCBS1X2, MIL-ALDCBS1X2, MILDCBS1X4, MIL-HIALDCBS1X4, MIL-ALDCBS1X4, MIL-ALDCBS1X8, MIL-HIALDCBS1X8) were tested and certified to the following standards and specifications as summarized below:

## MIL-STD-461F

Test	Description	Result
<b>CE102: Conducted Emissions</b>	DC Power Leads 10kHz to 10MHz	<b>Pass</b>
<b>CS101: Conducted Susceptibility</b>	DC Power Leads 30 Hz to 150 kHz	<b>Pass</b>
<b>CS114: Conducted Susceptibility</b>	Bulk Cable Injection 10 kHz to 200 MHz	<b>Pass</b>
<b>CS115: Conducted Susceptibility</b>	Bulk Cable Injection, Impulse Excitation 5 amps at 30 Hz	<b>Pass</b>
<b>CS116: Conducted Susceptibility</b>	Bulk Cable Injection, Damped Sinusoidal Transients 10 kHz to 100 MHz	<b>Pass</b>
<b>RE102: Radiated Emissions</b>	E-field Emission Detection 10 kHz to 18 GHz	<b>Pass</b>
<b>RE103: Radiated E-field Susceptibility</b>	2 MHz to 18GHz at 50 V/m	<b>Pass</b>

## MIL-STD-810

Test	Description	Result
<b>Ambient Temperature- Operating Cold</b>	The GPS splitters was subjected to a two-hour exposure at -40°C following stabilization. After the exposure the splitters were verified and instrumented with a thermocouple to determine stabilization.	<b>Pass</b>
<b>Ambient Temperature- Operating Hot</b>	The GPS splitters were subjected to a two-hour exposure at +71°C following stabilization. After the exposure the splitters were verified and instrumented with a thermocouple to determine stabilization.	<b>Pass</b>
<b>Ambient Temperature- Non-Operating Cold</b>	The GPS splitters were exposed to -40°C and allow to stabilize and then maintained a period of 2 hours. All transition rates were set at 2°C/minute with T/C attached to the sample for temperature monitoring.	<b>Pass</b>
<b>Ambient Temperature- Non-Operating Hot</b>	The GPS splitters were exposed to +71°C and allowed to stabilize and then maintained a period of 4 hours. All transition rates were set at 2°C/minute.	<b>Pass</b>

<b>Operating Altitude</b>	The GPS splitters were subjected to an exposure at an altitude of 45,000 ft. and all transitions were made at no greater than 10m/s or approximately 2,000 ft. per minute.	<b>Pass</b>
<b>Non-Operating Altitude-(Storage)</b>	The GPS splitters were non-operating and subjected to at least 1 hour of exposure at an altitude of 45,000 feet. All transitions were made at no greater than 10m/s or approximately 2,000 feet per minute.	<b>Pass</b>
<b>Random on Random Vibration</b>	The GPS splitters (Lab temp +68degF) (lab humidity 30%RH) were operational and were tested functional at 5.71 gRMS and tested endurance 6.6 gRMS for one hour in all axes. After testing the frequency response was measured to ensure the 1.575GHz was +/- 1.5 and the SWR is <2.	<b>Pass</b>
<b>Random on Random Vibration</b>	The GPS splitters (Lab temp +72°F) (lab humidity 41%RH) were operational and were tested functional at 5.1 gRMS and tested endurance 5.92 gRMS for one hour in all axes. After testing the frequency response was measured to ensure the 1.575GHz was +/- 1.5 and the SWR is <2.	<b>Pass</b>
<b>Random on Random Vibration</b>	The GPS splitters (Lab Temp +78°F) (lab humidity 32%RH) were operational and exposed to random vibration of ground, air and ship transportation for all 4 axes. Breakpoints were 5Hz was kept at .02g <sup>2</sup> /Hz and 8Hz was kept at .15g <sup>2</sup> /Hz.	<b>Pass</b>
<b>Functional Shock Test</b>	The GPS splitters were sawtooth shock tested with functional shock at 20G, 11ms-3 pulses per direction.	<b>Pass</b>
<b>Crash Shock Test</b>	The GPS splitters were sawtooth shock tested with functional shock at 40G, 11ms-2 pulses per direction.	<b>Pass</b>
<b>Bench Handling</b>	The GPS splitters without covers were subjected to 4 impacts on a solid wooden bench top by raising the edges to either 4"height, a 45 deg angle, and a point of counter-balance. This exposure was also tested on the rear(mounting) and front (labeling) faces.	<b>Pass</b>
<b>Acceleration-(Operational)</b>	The GPS splitters were exposed to 9.5g's of acceleration exposure in each of six directions with power at 12Vdc. Maintained 9.5g's for a period of 1 minute.	<b>Pass</b>
<b>Acceleration-(Non-operational)</b>	The GPS splitters were exposed to 14 g's of acceleration exposure in each of six directions with no power. Maintained 14 g's for a period of 1 minute.	<b>Pass</b>
<b>Temperature Shock</b>	The GPS splitters were tested with 3 cycles of temperature shock of extremes at -57°C and +71°C. The duration was for 2 hours.	<b>Pass</b>
<b>Humidity</b>	The GPS splitters non-operating were exposed to +23°C and 50%RH for a period of 24 hours. The transition from +30°C and 95%RH and then stabilized. The splitters were tested (10) 24-hour cycles of temperatures from +30°C and +60°C with 95%RH.	<b>Pass</b>
<b>Salt Fog</b>	The GPS splitters were exposed for 24 hours of salt fog at a temperature of +35°C, and then followed by a 24-hour drying period at lab ambient conditions. The test was conducted for a total of 2 complete cycles of exposure and drying.	<b>Pass</b>

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<b>Blowing Dust</b>	The GPS splitters were exposed to blowing dust at +23°C and +70°C for a duration of 6 hours (faces only). The dust concentration was 10 +/- 7 g/m <sup>3</sup> and the wind speed was 1.5-8.9m/s. Hold the splitters for 2 hours in between testing.	<b>Pass</b>
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## RTCA DO-160G

<b>Test</b>	<b>Description</b>	<b>Result</b>
<b>Overpressure</b>	The GPS splitters non-operating were subjected to a 10-minute, minimum exposure at a pressure of 184.8kPa (26.8 PSIA).	<b>Pass</b>

## Other Tests & Standards

<b>Test</b>	<b>Description</b>	<b>Result</b>
<b>Touch Temperature</b>	The GPS splitters were tested to a four-hour dwell at +29°C and instrumented with thermocouples for monitoring of surface temperature. The temperature did not exceed +49°C.	<b>Pass</b>