

# ITRONIX®

A GENERAL DYNAMICS COMPANY

12825 East Mirabeau Parkway  
Spokane WA 99216

## DECLARATION OF CONFORMITY

GoBook® XR-1 Environmental Test Criteria

Type of Equipment: Ruggedized laptop Computer with Radio and Telecommunication features.

**Brand Name/Trade Mark:** GoBook XR-1                      **Model:** IX270

Itronix Corporation, 12825 E Mirabeau Parkway, Spokane Valley, WA 99216 USA  
Telephone: 509-624-6600      FAX: 509-742-1672

The following standard or technical specifications have been met:

<u>Shock</u>	<u>Standard</u>	<u>Method</u>	<u>Result</u>
Drop	MIL STD 810F (Modified)	516.5	Pass
Bench Handling Storage & Operating	MIL STD 810F (Modified)	516.5	Pass
<u>Vibration</u>			
Random & Sinusoidal	MIL STD 810F	514.5	Pass
Truck Transport	ASTM 4169	11.5.2	Pass
<u>Temperature</u>			
High Temp Storage & Operating	MIL STD 810F (Modified)	501.4	Pass
Low Temp Storage & Operating	MIL STD 810F (Modified)	502.4	Pass
Temperature Shock	MIL STD 810F (Modified)	503.4	Pass
Cold Boot	Itronix Corporation		Pass
<u>Sealing</u>			
Water Resistance	MIL STD 810F (Modified)	506.4	Pass
Water & Dust Ingress Protection	IEC 60529	IP-54	Pass
<u>Humidity</u>			
Low Pressure Storage & Operating	MIL STD 810F	507.4	Pass
ESD (Electrostatic Discharge)	IEC	801-2	Pass
Mechanical Life Testing	Itronix Corporation		Pass

**This product complies with the standards listed above. Itronix Corporation has an internal product control system that ensures compliance between the manufactured products and the technical documentation.**

Spokane, Washington  
(Place of issue)

November 20, 2006  
(Date of Issue)

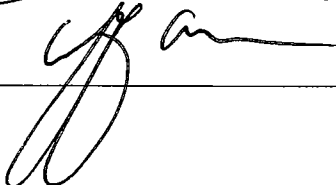
Anne M. Mettler, Product Line Manager:  
(Name & Function)

  
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David Stockham, Sr. Manager Mechanical:

  
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Cliff Allen, Director of Engineering:

  
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## GoBook XR-1 Environmental Test Criteria

TEST		STANDARD	DESCRIPTION
(Drop) Shock		MIL STD 810F, Method 516.5, Procedure IV, <u>Modified</u>	36" drop to 2" of plywood in the following attitudes at room temp: 26 drops. One drop to each face, edge and corner. Modified: Height Modified from 48" to 36" <u>Unit is not operating</u>
Bench Handling	Storage	MIL STD 810F, Method 516.5 Procedure VI, <u>Modified+</u>	Place unit on a hard bench surface. Lift right side of unit and place a 10cm block under edge. Quickly slide bench out from edge, allowing unit to drop onto bench. Repeat for a total of 50 times in 10 second intervals on all four corners of the unit. Modified: From 1 drop on each corner to 50 drops on each corner <u>Unit is not operating</u>
	Operating	<u>Itronix Developed</u> Test Basis: MIL STD Bench handling, modified for operation	Place unit on a hard bench surface. Lift right side of unit and place a 7cm block under edge. Quickly slide bench out from edge, allowing unit to drop onto bench. Lift and drop same edge a total of 25 times in 10 second intervals. Repeat this procedure for all four corners of the unit. <u>Unit is operating, running all BurnIn tests in a continuous loop.</u>
Random & Sinusoidal Vibration		MIL STD 810F, Method 514.5, Procedure I, Category 24, Fig. 514.5C-17	Fig. 17: Power Spectral Density = .04 G <sup>2</sup> /Hz @ 20 to 1000 Hz, descending 6 dB/Oct to 2000 Hz. 60 minutes per axis, 3 axes. <u>Unit is not operating</u>
		MIL STD 810F, Method 514.5, Procedure I, Category 24, Fig. 514.5C-18	Fig 18: Logarithmic sweeps 5 to 500 Hz Beginning at 0.20 inch [5mm] displacements, 30 minutes per axis, 3 axes. <u>Unit is not operating</u>
Truck Transport Vibration		ASTM 4169-99 Truck Assurance Level II Schedule E 11.5.2	Power Spectral Density ranges 0.00001 to 0.01 G <sup>2</sup> /Hz, Frequency range is 1 to 200 Hz. Overall GRMS is 0.52. 90 minutes per axis, 3 axes. <u>Unit is operating and accessing the HDD</u>
T E M P E R A T U R E	H I G H	Storage	MIL STD 810F, Method 501.4, Procedure I <u>Modified+</u>
		Operating	MIL STD 810F, Method 501.4, Procedure II <u>Modified+</u>
	L O W	Storage	MIL STD 810F, Method 502.4, Procedure I <u>Modified+</u>
		Operating	MIL STD 810F, Method 502.4, Procedure II
			Temperature: 75°C [167°F] Seven 24 hour cycles. Modified: Temperature from 71°C [160°F] to 75°C [167°F] <u>Unit is not operating</u>
			Temperature: 60°C [140°F] Five 24-hour cycles. Modified: Temperature from 49°C [120°F] to 60°C [140°F] <u>Unit is operating, running all BurnIn tests in a continuous loop.</u>
			Temperature: -55°C [-67°F] One 24-hour cycle Modified: Temperature from -51°C [-60°F] to -55°C [-67°F] <u>Unit is not operating.</u>
			Temperature: -23°C [-4°F] (Basic Cold) One 24 hour cycle. <u>Unit is operating, running all BurnIn tests in a continuous loop.</u>

TEST		STANDARD	DESCRIPTION
Non-Operating Temperature Shock		MIL STD 810F, Method 503.4, Procedure I <u>Modified+</u>	<p>Low Temperature -55°C [-67°F] High temperature: 75°C [167°F]</p> <p>Four (4) cycles: Begin in low temperature; end in low temperature. Four (4) hour minimum temperature stabilization in each temperature. Five (5) minute max exchange time.</p> <p>Modified: Low Temperature from -51°C [-60°F] to -55°C [-67°F] Modified: High Temperature from 71°C [160°F] to 75°C [167°F]</p> <p><u>Unit is not operating.</u></p>
Cold Boot		<u>Itronix Developed</u> Test Basis: Manufacturers Spec. and testing results	<p>-23°C [-10°F] Hard Disk Drive boot-up test. Display CCFL to start at -23°C [-10°F].</p> <p>Warm up time (from button push to start of boot) under 5 minutes. Display luminance to meet SQA test plan specifications.</p> <p><u>Unit is booted on external power</u></p>
Water Resistance		MIL STD 810F Method 506.4, Procedure II, <u>Modified</u>	<p>Water pressure of 40 PSIG [275.8 Kpa-Gauge] Minimum of 4 in/hr [100 mm/hr], Ten minutes per axis, 6 axes.</p> <p>Modified: From 40 minutes per axis to 10 minutes per axis</p> <p><u>Unit is not operating.</u></p>
Water Ingress Protection		IP 54 IEC 529, (EN 60529), (IEC 60529)	<p>Water volume: Flow rate of 10.0 l/min ± 5% [2.64 gpm], spray nozzle with counterbalance shield removed.</p> <p>Orientation: All practical directions (all external surfaces). Duration: 5 Minutes</p> <p><u>Unit is not operating.</u></p>
Dust Ingress Protection		IP 54 IEC 529, (EN 60529), (IEC 60529)	<p>Particle size: smaller than 75 um, Dust density: 2kg/m<sup>3</sup> Duration: 8 Hrs. Category 2</p> <p><u>Unit is not operating.</u></p>
Humidity		MIL STD 810F, Method 507.4	<p>Temperature: Cycles between 30°C [86°F] and 60° [140°F] Humidity: 85% and 95% +/- 10% Ten 24 hour cycles.</p> <p><u>Unit is operating and accessing the HDD</u></p>
Low Pressure	Storage	MIL STD 810F, Method 500.4, Procedure I <u>(Modified+)</u>	<p>Procedure I: Bring unit to PSIG @ 30,000 Ft [9,144 meters]: Maximum rate of 2000 feet per minute. Vacuum to be held for one hour, @ Room Temp</p> <p>Modified: from 15,000 Ft [4,572 meters] to 30,000 Ft [9,144 meters]</p> <p><u>Unit is not operating</u></p>
	Operating	MIL STD 810F, Method 500.4, Procedure II <u>(Modified)</u>	<p>Procedure II: Bring unit to PSIG @ 10,000 Ft [3,048 meters]: Maximum rate of 2000 feet per minute. Vacuum to be held for one hour, @ Room Temp</p> <p>Modified: from 15,000 Ft [4,572 meters] to 10,000 Ft [3,048 meters]</p> <p><u>Unit is operating and accessing the HDD</u></p>

TEST	STANDARD	DESCRIPTION																						
ESD	IEC 801-2	<p>+/- 4kV [Contact discharge]: No noticeable effect  +/- 8kV [Contact discharge]: No data or program loss reboots or resets  +/- 15kV [Air discharge]: No component failure (hard error) Test all external contacts, connectors, and screws with five discharges per polarity under the two conditions:  <u>Unit is operating, HDD accessing, on battery power.</u>  <u>Unit is operating, HDD accessing, on external power.</u></p>																						
Mechanical Life Testing	Cycling Mechanical components to verify five-year life expectancy	<p>Mechanical components such as display hinges and cabling, doors, keyboards, connectors, antenna etc. <u>are cycled the number of times they are expected to perform in the 5 year life of a rugged product:</u></p>																						
		<table border="0"> <tr> <td>Display hinges:</td> <td>6,000/year</td> </tr> <tr> <td>Power:</td> <td>1,300/year</td> </tr> <tr> <td>Battery pack:</td> <td>1,000/year</td> </tr> <tr> <td>HDD Connector:</td> <td>750/year</td> </tr> <tr> <td>RJ-11</td> <td>1,300/year</td> </tr> <tr> <td>RJ-45:</td> <td>1,300/year</td> </tr> <tr> <td>"D" Connectors:</td> <td>1,040/year</td> </tr> <tr> <td>USB:</td> <td>1,040/year</td> </tr> <tr> <td>Keyboard keys:</td> <td>100,000/year</td> </tr> <tr> <td>Smart Card reader:</td> <td>5,200/year</td> </tr> <tr> <td>Fire Wire connector:</td> <td>1,040/year</td> </tr> <tr> <td>SIM for GPRS:</td> <td>2/year</td> </tr> </table>	Display hinges:	6,000/year	Power:	1,300/year	Battery pack:	1,000/year	HDD Connector:	750/year	RJ-11	1,300/year	RJ-45:	1,300/year	"D" Connectors:	1,040/year	USB:	1,040/year	Keyboard keys:	100,000/year	Smart Card reader:	5,200/year	Fire Wire connector:	1,040/year
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