

# 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

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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)

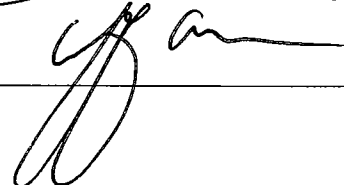
Anne M. Mettler, Product Line Manager:  
(Name & Function)

  
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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,<br>Method 516.5,<br>Procedure IV,<br><u>Modified</u>                        | 36" drop to 2" of plywood in the following attitudes at room temp:<br>26 drops. One drop to each face, edge and corner.<br>Modified: Height Modified from 48" to 36"<br><u>Unit is not operating</u>  |
| Bench Handling                                      | Storage          | MIL STD 810F,<br>Method 516.5<br>Procedure VI,<br><u>Modified+</u>                        | Place unit on a hard bench surface.<br>Lift right side of unit and place a 10cm block under edge. Quickly slide bench out from edge, allowing unit to drop onto bench.<br>Repeat for a total of 50 times in 10 second intervals on all four corners of the unit.<br>Modified: From 1 drop on each corner to 50 drops on each corner<br><u>Unit is not operating</u>                 |
|   | Operating        | <u>Itronix Developed</u><br>Test Basis:<br>MIL STD Bench handling, modified for operation | Place unit on a hard bench surface.<br>Lift right side of unit and place a 7cm block under edge. Quickly slide bench out from edge, allowing unit to drop onto bench.<br>Lift and drop same edge a total of 25 times in 10 second intervals.<br>Repeat this procedure for all four corners of the unit.<br><u>Unit is operating, running all BurnIn tests in a continuous loop.</u> |
| Random & Sinusoidal Vibration                       |                  | MIL STD 810F,<br>Method 514.5,<br>Procedure I,<br>Category 24,<br>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.<br><u>Unit is not operating</u>  |
|   |                  | MIL STD 810F,<br>Method 514.5,<br>Procedure I,<br>Category 24,<br>Fig. 514.5C-18          | Fig 18: Logarithmic sweeps 5 to 500 Hz<br>Beginning at 0.20 inch [5mm] displacements, 30 minutes per axis, 3 axes.<br><u>Unit is not operating</u>  |
| Truck Transport Vibration                           |                  | ASTM 4169-99<br>Truck Assurance Level II<br>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.<br>Overall GRMS is 0.52. 90 minutes per axis, 3 axes.<br><u>Unit is operating and accessing the HDD</u>   |
| T<br>E<br>M<br>P<br>E<br>R<br>A<br>T<br>U<br>R<br>E | H<br>I<br>G<br>H | Storage   | MIL STD 810F,<br>Method 501.4,<br>Procedure I<br><u>Modified+</u>   |
|   |                  | Operating   | MIL STD 810F,<br>Method 501.4,<br>Procedure II<br><u>Modified+</u>  |
|   | L<br>O<br>W      | Storage   | MIL STD 810F,<br>Method 502.4,<br>Procedure I<br><u>Modified+</u>   |
|   |                  | Operating   | MIL STD 810F,<br>Method 502.4,<br>Procedure II  |
|   |                  |   | Temperature: 75°C [167°F]<br>Seven 24 hour cycles.<br>Modified: Temperature from 71°C [160°F] to 75°C [167°F]<br><u>Unit is not operating</u>   |
|   |                  |   | Temperature: 60°C [140°F]<br>Five 24-hour cycles.<br>Modified: Temperature from 49°C [120°F] to 60°C [140°F]<br><u>Unit is operating, running all BurnIn tests in a continuous loop.</u>  |
|   |                  |   | Temperature: -55°C [-67°F]<br>One 24-hour cycle<br>Modified: Temperature from -51°C [-60°F] to -55°C [-67°F]<br><u>Unit is not operating.</u>   |
|   |                  |   | Temperature: -23°C [-4°F] (Basic Cold)<br>One 24 hour cycle.<br><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]<br/>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]<br/>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><br>Test Basis:<br>Manufacturers Spec. and testing results | <p>-23°C [-10°F] Hard Disk Drive boot-up test.<br/>Display CCFL to start at -23°C [-10°F].</p> <p>Warm up time (from button push to start of boot) under 5 minutes.<br/>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]<br/>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<br>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).<br/>Duration: 5 Minutes</p> <p><u>Unit is not operating.</u></p>  |
| Dust Ingress Protection         |           | IP 54<br>IEC 529, (EN 60529), (IEC 60529)  | <p>Particle size: smaller than 75 um,<br/>Dust density: 2kg/m<sup>3</sup><br/>Duration: 8 Hrs.<br/>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]<br/>Humidity: 85% and 95% +/- 10%<br/>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]:<br/>Maximum rate of 2000 feet per minute.<br/>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]:<br/>Maximum rate of 2000 feet per minute.<br/>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<br/> +/- 8kV [Contact discharge]: No data or program loss reboots or resets<br/> +/- 15kV [Air discharge]: No component failure (hard error) Test all external contacts, connectors, and screws with five discharges per polarity under the two conditions:<br/> <u>Unit is operating, HDD accessing, on battery power.</u><br/> <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 |
| 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  |  |                 |            |        |            |               |            |                |          |       |            |        |            |                 |            |      |            |                |              |                    |            |                      |            |
| SIM for GPRS:           | 2/year  |  |                 |            |        |            |               |            |                |          |       |            |        |            |                 |            |      |            |                |              |                    |            |                      |            |