

# NLAD Cheetah®



## Data Acquisition Unit Specifications

Test Method	Impact Resonance
Controller	Samsung Galaxy
A/D Converter	20 MHz, 12-Bit
Dynamic Range	48 dB
Data Length	8192 points
Data Storage	10 Gb
Alarms	Audio and "traffic light" visual display
Port for Data Download	USB 2.0
Dimensions	8.6L x 5W x 2.9H in (218L x 127W x 74H mm)
Weight	1.75 pounds (794 g)
Power	
AC Adapter	100-220 Vac 50-60 Hz
Battery Pack	8-Cell Lithium-Ion
Continuous Operation	3 Hrs with battery pack
Environmental	
Operating Temperature	32°F to 120°F (0°C to 49°C)
Storage Temperature	-4°F to 126°F (-20°C to 52°C)

## REMIH Specifications

Receiver Bandwidth	2 kHz to 30 kHz
Cable Length	5 ft (1.5 m)
Connector	Turck
LED Display	0-399 Impact level strength
Impact Rate	Up to 10 per second
Impactor Material	Phenolic
Solenoid	25 million cycles

The NLAD Cheetah® merges simplicity and accuracy in composite damage detection. A handheld device, it quickly assesses delaminations, disbonds, and degradation in a wide range of advanced materials.

The NLAD Cheetah relies on Impact Resonance testing, which involves applying an impact to the outside surface of a composite material and measuring the near field response. Using NLAD's rapid electromechanical impact hammer (REMIH), the NLAD Cheetah rapidly delivers gentle, controllable taps to the material surface.

Immediately after each impact, the vibrations are recorded by an acoustic broadband receiver and analyzed to determine the material's state. By only testing one side, it can detect a disbond on either side of a composite structure.

The NLAD Cheetah eliminates the human subjectivity of traditional tap testing, increasing precision while requiring minimal training. It provides simple PASS/FAIL indications for the user, as well as A-scans, acquiring information from both the time domain and the frequency domain.

Tests can be saved to the device and used to generate a map of the structure, and its defect locations. The user can email test data directly from the NLAD Cheetah for historical record-keeping or further review.

Typically, the types of material damage of interest for composite structures are mechanical disbonding, delaminations, crushed core, thermal degradation, and voids, all of which have been successfully detected by the NLAD Cheetah.

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## Operation

- Locates and quantifies disbonds, delaminations, crushed core, thermal degradation, and voids, presenting the relevant data with an intuitive touch-screen interface running on Android operating system.
- Lightweight and hand-held for field deployment.
- Ease of use reduces aircraft downtime by enhancing routine inspection procedures.
- Provides rapid assessment testing in cases of suspected damage while in the field.
- Audio alarm and “traffic light” visual display indicate condition of material under test.
- Battery-operated with a “low battery level” indication.
- Shoulder strap for one-hand operation.
- USB, Wi-Fi and Bluetooth connections to copy data files from the instrument, enabling data to be instantly transmitted via the internet for off-site expert analysis.
- Ten Gigabytes of internal storage (expandable with Micro-SD cards), can store over two million readings or signatures. Save and archive them with meaningful filenames to easily build a database of historical information.
- Application software upgrades for advanced functions can be downloaded and installed remotely through the NLAD Cheetah® website.
- The REMIH’s switch membrane starts and stops testing, and increases or decreases the impact strength.
- Impact strength setting is displayed on the REMIH by an LED screen.
- The REMIH has a tri-color LED indicator that illuminates green, yellow, or red to indicate material condition as pass, intermediate or fail respectively.



## Target NDI Applications

### **Composite Aerospace Components**

- *Rotary Wings*
- *Aircraft Fuselage*
- *Nacelle Systems*
- *Aircraft Control Surfaces*
- *Honeycomb Sandwich Structures*
- *Composite Turbine Fan Blades*

### **Wind and Motor Sports**

- *Automotive passenger cells*
- *Automotive body panels*
- *Sailboat spars and masts*
- *Boat hulls*



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