



Part 1 – Annex 6

Technical Specifications

Contract number FFI-82442 Vibration Shaker (26/00636)

1 SPECIFICATION OF REQUIREMENTS AND ASSIGNMENT CRITERIA

FFI intends to procure a complete electrodynamic shaker system for vibration testing. The system shall support three-axis testing, requiring both a slip table and a head expander.

Based on current assessments, an air-cooled shaker is preferred; however, water-cooled alternatives will also be considered.

1.1 Mandatory ("shall") requirements

1. The offered system shall include, as a minimum:
 - Electrodynamic shaker
 - Slip table
 - Cooling system
 - Head expander
 - Power amplifier
 - Vibration controller, including software.
2. Shaker controller shall contain minimum 8 channels.
3. Slip table and head expander shall be manufactured from magnesium.
4. Head expander shall have a operational frequency range of 5-2000Hz.
5. Working area/size of the slip table and head expander shall be 900x900mm.
6. Slip table and head expander shall have a 100mm grid insert pattern, in addition to the armature pattern.
7. The vibration controller software shall minimum include the following test modes:
 - Sine
 - Random
 - Classical shock
 - Shock Response Spectrum (SRS)
 - Sine/Random on random
8. Minimum shaker performance specifications:
 - Sine force: 70kN
 - Random force: 70kN
 - Sine acceleration, peak: 100g
 - Sine velocity: 1,8m/s
 - Displacement: 75mm
 - Frequency range: 5-2500Hz
9. Delivery: DAP, FFI-Kjeller.
10. The supplier shall specify and include on-site installation assistance.
11. On-site training shall be provided.
12. All software and documentation shall be supplied in English.
13. Documentation shall be provided in electronic format. Paper copies may be supplied in addition.
14. Any required export licenses or similar permits shall be obtained and arranged by the supplier prior to delivery in order to avoid delays.

1.2 Desirable ("should") requirements

- a) The system should be easy to reconfigure between vertical and horizontal test configurations.

- b) An option for automatic reorientation (see item a) should be available.
- c) The system should include an automated solution for continuous centering of the slip table.
- d) Higher shock performance than the minimum specified is desirable.
- e) An automatic system for optimizing power consumption based on test severity should be available.
- f) Overall power consumption should be as low as practicable.
- g) FFI should be able to perform system calibration in-house.
- h) Armature insert size should be M8.
- i) Optional subsystems improving ease of operation should be quoted separately.
- j) Optional subsystems providing enhanced or higher performance should be quoted separately.
- k) The vibration controller should offer a priced option for a total of 16 or more channels.
- l) A minimum one-year warranty against manufacturing or component failures (excluding misuse) shall be provided; longer warranty periods are preferred.

1.3 Information required in the tender

- The tender shall include a summary description of the power consumption optimization features.
- The tender shall include complete user documentation for the system.
- The tender shall include information about software upgrade pricing policy (Annex 7).
- The tender shall include information about foreseen terms of export license, if applicable.