Dated: November 04 2025

TENDER

SUBJECT: REQUIREMENT OF RESPONSE/QUOTE WITH TIMELINES FOR MIL STANDARD TESTING FACILITY.

REFERENCE: CSIO041125/01

1. TEST FACILITY/TEST CENTRE (NABL APPROVED OR EQUIVALENT) FOR AIRWORTHY ITEMS, MIL-STD 810 F/G/H, MIL STD 461-C/E/G, MIL STD-704-D WITH HANDBOOK
2. PREFERENCE WILL BE GIVEN TO THE FACILITY/TEST CENTRE HAVING TESTS UNDER ONE ROOF.
3. REPRESNTATIVES/TEAM FOR OBSERVING THE TESTS SHOULD BE ALLOWED.
4. QUOTE VALIDITY: 90 DAYS
5. NO THIRD PARTY INVOLVEMENT.
6. PAYMENTS WILL BE CLEARED AFTER SUCCESSFUL TESTING/REPORTS AS PER CSIR-CSIO GUIDELINES.
7. TECHNICAL DETAILS/REQUIREMENTS: ATTACHED
8. CONTACT DETAILS: harry.garg.csio@csir.res.in
9. LAST DATE: 1 WEEK FROM DATE OF TENDER
10. TERMS & CONDITIONS AS PER CSIR-CSIO RULES.

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REQUIRMENTS OF TESTS

MIL-STD-461G, As per MIL-STD-704D, HDBK-704-8

Sl. No.	Type of test	Severity	Remarks
1.	Lightning Tests i. Pin Injection Test ii. Cable Bundle / Ground plane susceptibility test	Unit shall be protected against the induced effects of lightning as per B3K33 - RTCA-DO-160E Chapter 22	
2.	EMI/EMC Tests	As per MIL-STD-461G	
3.	Power Supply Test	As per MIL-STD-704D HDBK-704-8	
4.	Sinusoidal Vibration (Resonance search)	Limited to resonance search tests from 5 Hz to 2000Hz at 1g [Limited to duration of frequency sweep 5Hz to 2000Hz] Nos of Axis: 3 Nos of sweeps: 3/axis	• This test shall be conducted before and after conduct of random vibration tests with equipment in off state. • No resonance shall be observed for the equipment up to 200Hz Note: If the resonance frequency is less than 200Hz the unit shall be dwelled for 15 minute as applicable at each resonance frequency.
5.	Random Vibration – Flight Envelope (Operating)	Random vibration level from 15Hz to 2000 Hz as per power spectral density given in figure 32. Duration: 1 Hour/Axis in all three axis	• The equipment shall be energized & performance shall be monitored during the test. • Any test interruptions due to failure of the vibration system, recover the system and continue the vibration from point of failure.
6.	Acceleration (operational) (b) Acceleration (Structural)	a) 12 ‘g’ in all 6 directions. 1 min. in each direction. [Unit in operational during the test] b) 18’g’ in all 6 directions 1 min. in each direction	

		[Unit to OFF during Test]	
7.	Combined Altitude, Temperature and Humidity (CATH) Test	Total 10 cycles	• The Combined Temperature, Humidity and Altitude test is to be used in addition to the individual test when considering the potential synergistic and /or flight safety effect.
8.	Altitude Test (Low pressure)	Pressure Corresponding to 65000±100 feet (~20 Km) Altitude (i.e., 54.7 mbars 41.025 mm of Hg) Duration=1hr soak (operational) followed by single operational checkout.	• Rate of change of Altitude = 210m/s with positive chamber temperature.
9.	Low temperature storage Cum operation	a. Soak (Storage) at -55°C (+0 -2) °C Duration: 4 hours b. Stabilize (operational) at-40°C (+0 -2) °C Duration: 2 hours	• The Low temperature storage tests shall be followed by Low temperature operational test to be conducted at -40°C (+0 -2) °C for the test items as in installed condition. The rate of change of temperature of the chamber shall be less than 3°C /min. Soak test item at -40°C -2°C for duration of 2 hours following the temperature stabilization. • Carry out visual examination and operation checks with equipment still at -40°C -2°C. • Equipment should be capable of cold start at -40°C within a warm-up time of 2 min.
10.	Thermal shock (non operating)	Stabilize at temperature T1=-55°C -2°C, soak for 1 hr, transfer & stabilize at T2=71°C +2°C & soak it for 1 hr. Transfer it to T1 -55°C -2°C and soak for 1 hr. This constitutes 1 cycle. No. of cycles: 3	• Equipment shall be in non-operating condition • Transfer from low temperature chamber to high temperature chamber and vice versa to be affected within 1 min.
11.	High temperature (Storage cum operating)	From 35°C to 71°C diurnal cycle as given in Figure 35. Number of cycles: 7	• Carryout one operational check at the maximum temperature of 71 °C of the test item after allowing stabilization during 1st, 4th & 7th cycle.
	Additional Constant High Temperature Test	72˚C duration 20 minute 87˚C duration 5 minute 122˚C duration 2 minute	• Equipment shall be in ON condition

12.	Blowing Rain Test	Rain fall rate: 10cm/hr (within 25 % or +/- 1.2cm/hr) Droplet size: 0.5 to 4.5mm Wind velocity: 18m/sec (40mph) at 45˚ from the horizontal. Test duration: 30 min (configuration as installed on the aircraft) If required operate the test item during the last 10 minutes of the 30-minute rain exposure.	i. All connectors on the equipment shall be protected by connecting to the respective mating connector. ii. Carryout visual examination without any recovery period. Measure and document any free water found inside the protected area of the test item. iii. Carryout functional check. In case water has penetrated the test item, judicious judgement must be used before operation of the test item.
13.	Shock Functional Test	20g Saw tooth (or 15g half sine) for 11ms. 3 shocks in each of orthogonal axis.	• The equipment shall be operational and monitored during the test.
14.	Crash Hazard	40g saw tooth (30g half sine) 11ms 2 Shocks in each of orthogonal axis (maximum of 12 shocks)	• The equipment shall be installed in unpacked condition, in non- functional state and the unit function shall be verified post-crash tests.
15.	Sand and Dust (Since Sand test facility is not available in India so only Dust test will be performed)	Blowing sand (Procedure-II), Air velocity 18 to 29m/s, RH≤ 30% Temp 65°C, 90 minute/face (EUT is symmetrical in shape and only upper face is exposed rest is concealed in aircraft structure. Test will be conducted on actual working condition) Blowing dust (Procedure-I) Air velocity 1.5 to 8.9m/s RH≤ 30% Dust concentration 10.6±7gm/m^3 6 hours at 23°C, 6 hours at 65°C	• If unscheduled test interruption occurs, carryout the visual examination and continue the test from the point of interruption after ensuring enough stabilising condition are achieved. • (Alternatively, the test procedure as per JSS 55555 can also be used for Dust test)
16.	Humidity	a. Temperature regime: 30ºC to 60ºC b. Relative humidity:85% to 95% temp. humidity diurnal cycle as per Figure 36. c. Number of Cycle: 10	• Carryout one functional check at during 1st, 5th & 10th cycle. Functional checks after the test to be carried out within recovery period.
17.	Solar Radiation (Actinic effect)	Accelerate intensity of Heat Flux @ 1120W/m2 (±4 % or 15 W/m2 Whichever is greater), at chamber temperature of 43°C + 2°C ON time -20 Hour OFF time - 4 Hours	

S/N	EMI/EMC Tests	Applicability
1.	CE102	Conducted Emission, Power leads, 10KHz to 10MHz
2.	CS101	Conducted Susceptibility, Power leads, 30Hz to 150KHz
3.	CE07	Conducted emission test for DC POWER leads for switching transient with limit +50% to -150%.
4.	CS114	Conducted Susceptibility, Power leads,bulk cable injection, 10KHz to 200MHz
5.	CS115	Conducted Susceptibility , the test is for verifying the ability of the test sample to withsatand impulse signals coupled onto EUT associated cabling.
6.	CS116	Conducted Susceptibility for all the interconnecting cables, including power cables, and individual high side power leads. This test is applicable from 10kHz to 100MHz.
7.	CS118	Personnel borne electrostatics discharge ±8kV, First Peak Current: 30A
8.	RE102	Radiated Emission , Electric Field 2MHz to 18 GHz.
9.	RS103	Radiated Sussceptability, Electric Field, 200V/m, 2MHz to 40 GHz

		This constitutes one cycle. Total 10 cycles	
18.	Icing/Freezing Rain	Droplet size – 1.0 to 1.5 mm. Ice of 6 mm layer followed by 13 mm layer. Water temp 5 ºC spray on top, side, front and rear @ 25 cubic m/hr. Uniform water spray for 1 hour.	