

Electronics & Infotronics Lab-GARC

In view of close proximity of IT hubs of country, NATRIP is in process of establishing the state of the art Electronics & Infotronics Lab at GARC-Chennai. The increasing use of electronics features in vehicle at every aspect such as Powertrain, Comfort, Security Systems, Infotainment leads to establish this state of art facility to provide all testing, validation and developmental need to manufactures of such systems under one roof and at reasonable price, which helps in further development of the industry. The centre will be able to provide test facility as per ISO 16750 specification and full fill all test needs of the industries such as :

- **SIL (Software In The Loop) test.**
- **HIL (Hardware In The Loop) test.**
- **HMI (Human Machine Interface) test.**

The facility of the lab divide under three parts namely Electrical, Mechanical and Climatic loads. The details of facility is as follows:

Facilities at electronics & infotronics lab - GARC

1. Electrical loads

| Sl no. | Test equipment | Key specification requirements |
|---------------|----------------------------------|--|
| 1 | Power supply units DC Voltage | Supply Voltage: 0 to 42V Continuously variable Current rating: 25 A |
| 2 | Power supply units AC Voltage | Supply Voltage: 0 to 42V Continuously variable Current rating: 25 A |
| 3 | High voltage (flash tester) | Supply Voltage: 500 V AC Frequency: 50 to 60 Hz |
| 4 | Insulation resistance tester | Supply voltage: 500 V DC |
| 5 | Power supply units- AC | Modulation of Voltage at different frequency |

2. Mechanical loads

| Sl no. | Type of test | Test equipment | Key specification requirements |
|--------|--------------------------------------|--|---|
| 1 | Environmental Stress Screening (ESS) | Vibration shaker with climatic chamber | <p>Climatic chamber: -70°C to +180°C</p> <p style="padding-left: 40px;">Capacity: 2200 litres</p> <p style="padding-left: 40px;">Ramp rate: 15°K /min</p> <p>Vibration shaker:</p> <p style="padding-left: 40px;">Frequency sweep: 5 Hz to 2000 Hz</p> <p style="padding-left: 40px;">Force rating: 2200 kg</p> <p style="padding-left: 40px;">Velocity: 2 m/s</p> <p style="padding-left: 40px;">Displacement: 50.8 mm</p> <p style="padding-left: 40px;">Vibration type: Sinusoidal</p> <p style="padding-left: 40px;">Amplitude of acceleration: 300 m/s²</p> <p style="padding-left: 40px;">Vibration type: Random</p> <p style="padding-left: 40px;">Amplitude of acceleration: 300 m/s²</p> |
| 2 | Mechanical shock | Mechanical shock tester | <p style="padding-left: 40px;">Shock wave form: half sinusoidal</p> <p style="padding-left: 40px;">Acceleration: 50,000 m/s²</p> |
| 3 | Drop test | No special equipment | Concrete or Steel plate for dropping the samples |

3. Climatic loads

| Sl no. | Type of test | Test equipment | Key specification requirements |
|--------|--|--|--|
| 1 | Temperature cycling Humidity heat cycling Damp heat cycling Dry heat steady state | Cold heat climatic chambers | Temperature range: -70°C to +180°C Humidity: 10 to 98% RH at temperature: 10 to 95°C Capacity: 1500 litres Ramp rate: 5°K /min |
| 2 | Thermal shock test | Thermal shock chamber | Transfer rate of test samples from -70°C to +180°C within 30 s |
| 3 | Ice water shock test | Water splash test chamber | Heating facility for sample to +180°C Splashing cold water at a temperature of 0 to 4°C on the sample Immersing facility with water at a temperature of 0 to 4°C |
| 4 | Corrosion test with flow of mixed gas | Corrosion chamber | Larger volume for actuating the products with the test fixtures |
| 5 | Solar radiation test | Solar radiation chamber-Special equipment | - |
| 6 | Protection against dust and water | Water splash and water jet chamber as per DIN | As per DIN 400050 Part 9 IP 6K9K |
| | | Dust chamber as per DIN 400050 Part 9 IP 6K9K | |
| | | Dust chamber as per IS standard 3105 | |
| | | Dust chamber as per IS 9000 | |