

# Delphi Environmental Testing Services in Langenlonsheim, Germany

Leveraging our highly experienced local team, Delphi offers comprehensive environmental testing services from our Langenlonsheim facility. From requirements analysis, specification review and root cause analysis to re-design support and reliability testing, the team is dedicated to serving your environmental testing needs.

### ► Capabilities

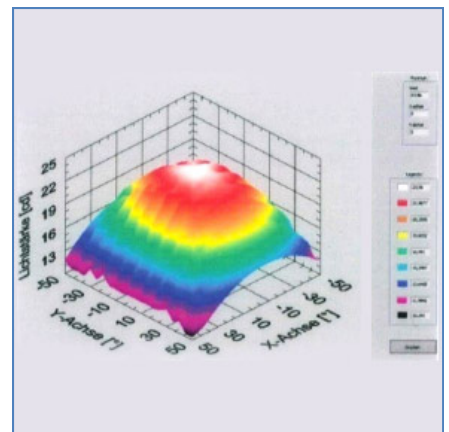
- **Vibration**
  - Maximum payload: 160kg
  - Frequency range: DC to 3000Hz
  - Sine peak: 10kN, 735.5m/s<sup>2</sup>
  - Random: 10kN, 588.4m/s<sup>2</sup>
  - Half sine peak bump force: 30kN
  - Displacement: 50.8mm peak-peak
  
- **Thermal / Climatic**
  - Temperature cycling: -70°C to 180°C
  - Climatic cycling (with dew option)
  - PTC: maximum 15K/minute, maximum 2000L
  - Temperature: maximum 300°C
  - Temperature shock: 2- and 3-chamber method
  
- **Illumination Measurement Analysis**
  - Light density: maximum 9000cd/m<sup>2</sup>
  - Wavelength: 380nm to 780nm
  - Testing range objective: TT 50-260
  - Luminous density: 1.1cd/m<sup>2</sup> to 3300cd/m<sup>2</sup>
  - Testing range objective: TT 55-507
  - Luminous density: 3cd/m<sup>2</sup> to 9000cd/m<sup>2</sup>
  
- **Noise / Acoustics Analysis**
  - Chamber noise level: 16dB (A)
  - Chamber size: 3.5m x 3.5m
  - Artemis multi-channel data acquisition / analysis software:
    - Terz / Octave / PSD
  - Acoustic camera to identify source of noise
  
- **Visual Inspection**
  - Stereoscopic microscope
  - Scan system for PCBs (86megapixel)
  - Werth optical analysis system
  
- **Material / Tear Down Analysis**
  - Scanning electron microscope (SEM) with energydispersive X-ray unit (EDX)
  - Qualitative and quantitative elemental analysis of surfaces of contact systems



Vibration Testing Unit



Thermal / Climatic Testing Chambers



Illumination Measurement Analysis

- **Fourier-Transform Infrared Spectrometer**
  - Wave number range: 4000 to 400cm<sup>-1</sup>
  - Method of determination: Diamant-ATR-Technik
- **Other Environmental Tests**
  - Corrosive gas according to IEC 68-2-60
  - Water deposition according to DIN-40050 T9 IP X1-X4
  - Dust deposition according to SAE J575
  - Salt mist deposition according to IEC 68-2-52 and EN 60068-2-11

### ▶ **Contact Information**

For more information on the environmental testing services offered in Langenlonsheim, Germany contact:

Validation Testing Services  
An den Nahewiesen 16-18  
D - 55450 Langenlonsheim  
Germany  
Tel: 49.0.6704.912.512  
E-mail: [test-validation-services@delphi.com](mailto:test-validation-services@delphi.com)



**Acoustic Chamber**



**Visual Inspection Equipment**