



AdvEOLab by AdvEOTec

State of the art measurements

Optoelectronics is a high growth emerging sector that requires rapid and efficient performance evaluation for market-driven products. Various techniques allow characterisation under different conditions.

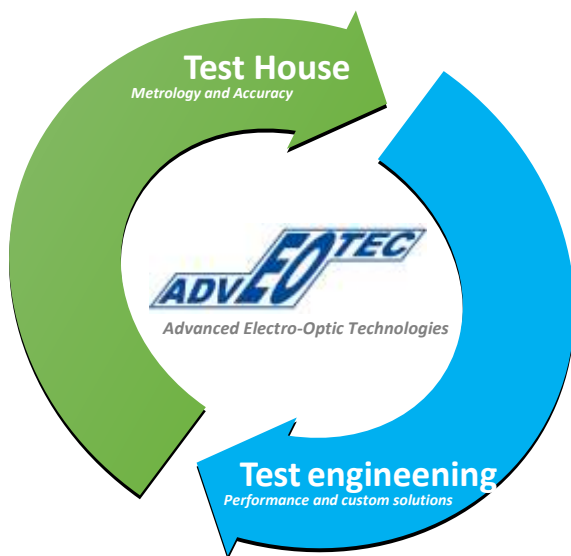
AdvEOLab gathers the Test House services offered by AdvEOTec ranging from single component test to full space qualification program.

Manufacturers, integrators, designers and users can interact with our experts on a confidential basis. Access is given to a modern laboratory dedicated to :

- measurements, tests,
- reliability evaluation, qualification,
- performance assessment and analysis of components and systems, with emphasis to photonics, optoelectronics, optronics, and optical technologies, UV (Ultra-violet), visible and to IR (Infrared) bands.

Your samples :

- **Components and subsystems** (optoelectronics, electrical and optical)
- **Sources** : Lasers CW or pulsed, Laser diodes, Light Emitting Diodes (LED), opto-couplers, ...
- **Detectors** : imagers (CMOS, CCD), photodiodes, phototransistors, High speed and RF, ...
- **Optical functions** : Modulators, Wavelength conversion module, Couplers, Data transmission, ...
- **Passive Optical Components** guided or free space, Optical fibers and functions, Lenses, Mirrors, polarisers, filters, ...
- **Connectors** : optical, electrical



Test, Evaluation & Qualification

AdvEOTec, the European test house specialized in photonics and optoelectronics, operates its own laboratories and brings with its experts a whole service to test the performances, to evaluate the reliability, and to qualify selected parts of components and sub-systems devoted to demanding and severe environment such as space, avionics, transportation, medical, ...

Climatic Tests

High and low temperature storage
Damp heat storage
Temperature cycling
Thermal shock
Accelerated ageing in air, nitrogen or other gaseous atmospheres
Special tests : moisture, salt spray, fungus, thermomechanical, ...



Vacuum tests

Primary and secondary vacuum test down 10^{-7} mbar
Thermal management in vacuum
Vacuum Thermal Cycling
Clean room environment (class 100)
Monitoring : Optical, Electrical, Pressure, contaminants...



Mechanical tests

Fiber Pull test with in-situ monitoring
Vibration, shock
PIND Test
Electrical and optical contact cut off monitoring down to 2ns



Radiation tests

Proton radiation
Gamma radiation
In-situ performance monitoring



Tests ESD & COD

ESDS Tests (Electrostatic Discharge Sensitivity)
EOS Tests (Electrical Overstress)
Optical COD test on laser diodes (Catastrophic Optical Damage)



Solar simulator testing (high directivity)

Solar test at AM1.5, AM1.0, AM1.0 (higher energy on request)
Combined testing with : sun simulator, temperature and vacuum



Leak tests and hermeticity (including optical and photonic components with or without fiber)

Fine and Gross leak test

Non-exhaustive list

Standard Operating Procedures are set up for each programme in order to ensure traceability and reliability of test results. These procedures are applied from component reception and during all the sequences. Our methods and procedures have been audited by our customers (Space, Aeronautic, Military, Telecommunications...).

Our laboratories comply with the IEC 61340-5-1&2 standards for ESD protection.



Optoelectronics : Measurement, Characterisation and Monitoring

Optical Sources and Emitters

- Optical power versus laser current, $L(I)$
- Monitoring photodiode versus laser current, $I_{mon}(I)$
- Laser voltage versus laser current, $V(I)$
- Optical spectrum (UV, Visible, IR)
- Optical bandwidth, FWHM
- Wavelength, λ
- Return Loss, RL
- TEC power consumption (ThermoElectricCooler)
- Polarisation Extinction Ratio, PER
- Optical Noise measurements, RIN
- Low level, $I(V)$
- Laser Linewidth, (MHz) or $\Delta\lambda$
- Optical divergence
- Thermal resistance (non destructive method), R_{th}



Optical sensors and receivers

- I_{dark} versus voltage, $I_d(V)$
- Responsivity, $S(I, \lambda)$ [A/W], Quantum efficiency
- Photocurrent versus voltage, $I_{ph}(V)$
- Capacitance, $C(V)$
- Response time measurement, T_r, T_f
- Avalanche gain versus voltage, $M(V)$
- Optical crosstalk, XT



Passive devices (fibre or free space)

- Insertion Loss, IL
- Return Loss, RL
- Polarisation Dependence loss, PDL
- Spectral transmission and reflection
- Wavelength dependence loss
- Mode Field Diameter, MFD
- Crosstalk, XT



Optical systems

- Photometry (Photopic, Scotopic)
- Radiometry, Fluorescence



Visual Inspection

Internal and external visual inspection

Defect cartography: residues, scratches, particles, ...



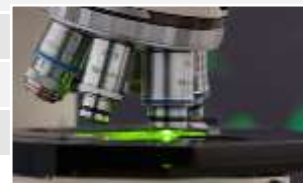
Analysis and Modelling

Conformance and reliability analysis, FMEA

Statistical analysis

Non destructive and destructive physical analyses, NDPA and DPA

Electric Optical, thermo-mechanic and radiation modelling



Expertise and Support

Technological consulting : clean room, packaging, industrialisation

Training and support for technology deployment

Definition & Validation of Specifications

Industry technical/economic surveys, search and evaluation of manufacturers



National, European and International standards and regulations

Telecommunication: Telcordia, GR 468, GR1209, GR1221, IEC, ETSI...

Space: ESC, MIL STD 883, MIL STD 750, ESCC-Q-20B...

Aeronautics: NF EN 2591, EUROCAE ED14/RTCA DO160, MIL STD 461...

Defence/Military: MIL STD 883, MIL STD 750, MIL STD 1553, MIL STD 810...

Connector applications : IEC 60 300, Telcordia 1209, Telcordia 1221, NF EN 2591...

More applications: Transportation, Industry, Energy, Biotechnologies...



Service Department

The activities presented in this leaflet are managed by AdvEOTec's Services Department. Find more information on our brochures available on our web site www.adveotec.com.

Industry Department

The needs for measurement benches, test and control systems are given to AdvEOTec's Industry Department, not only from internal requirement, but also to serve our customers from the specification to delivery, this includes design, procurements, assembly, software development, system industrialisation, and the operator training. AdvEOTec ensures the regular servicing and updates.

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Advanced Electro-Optic Technologies