CEIA - Section LACE



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LABORATORY OF ELECTROMAGNETIC COMPATIBILITY





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CEIA - Section LACE

LACE - Laboratory of Electromagnetic Compatibility

LACE is a section of CEIA SpA company that has been carrying out measurement and testing activities in the electromagnetic fields sector for over 30 years

- **1987 LACE began its activities in 1987**, supporting the production of electronic instrumentation for domestic and foreign markets.
- 1994 CEIA SpA is recognised by the Ministry for Universities and Research as a **Highly qualified external laboratory**
- **1998** The Laboratory was recognised by the Ministry of Communication as a **Competent Body for Electromagnetic Compatibility**
- **2007** The Laboratory is recognised by the Ministry of Economic Development as a **Notified Body for Electromagnetic Compatibility**
- 2018 LACE is accredited by ACCREDIA in accordance with UNI CEI EN ISO / IEC 17025 as test laboratory LAB No. 1714L



HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS







ELECTROMAGNETIC COMPATIBILITY



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Electromagnetic compatibility tests

LACE performs **electromagnetic compatibility** tests as required by the European Electromagnetic Compatibility Directive and the European Radio Directive for the **CE marking of products**

Electromagnetic compatibility tests allow compliance assessment with national and international CEI, EN, IEC and FCC standards and MIL standards, specific for the military sector:

- Radiated disturbance measurement
- Conducted disturbance measurement
- Harmonic current emissions
- Voltage variations, fluctuations and flicker
- Electrostatic Discharge Immunity Test (ESD)
- Radiated, radio-frequency, electromagnetic field immunity tests
- Electrical fast transient / burst immunity test
- Surge immunity test
- Immunity to conducted distrubances, induced by radiofrequency fields
- Power frequency magnetic field immunity test
- Voltage dips, short interruptions and voltage variations immunity test



CURRENT EMISSION MEASUREMENTS



IMMUNITY AGAINST IMPULSIVE DISTURBANCES

LIMIT CHARACTERISTICS OF THE MEASURABLE SAMPLE

DIMENSIONS (LxWxH):	2 m x 2 m x 2.5 m
WEIGHT:	1000 kg
ELECTRICITY SUPPLY:	1~ 230 V 50 Hz 16 A 3~ 400 V 50 Hz 32 A
WATER SUPPLY:	20 I/min
AIR SUPPLY:	0.75 Mpa

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Electromagnetic field measurements and calculations for human exposure

LACE performs **electromagnetic field** measurements and **calculations of induced dosimetric quantities for the evaluation of human exposure** in accordance with the European Low Voltage, Machinery and Radio Directives for the **CE marking of products**

- The electromagnetic field measurements, which can be performed both internally and externally, allow to assess human exposure to electromagnetic fields of the population and workers in accordance with current regulations on health and safety protection.
- The Laboratory operates according to UNI, CEI, EN, IEC, ISO, IEEE, ACGIH national and international standards.
- The measurements carried out by the laboratory allow the evaluation of exposure to electromagnetic fields for **persons wearing active implants** (e.g. pacemakers, defibrillators, cochlear implants) **and passive implants** (e.g. prostheses).

- Magnetic flux density measurement
- Magnetic field strength measurement
- Electric field strength measurement
- Power density measurement



EVALUATION OF THE MAGNETIC FIELD EMITTED BY AN ANTI-THEFT ELECTRONIC SYSTEM AND CALCULATION OF THE ELECTRIC FIELD INDUCED IN THE HUMAN BODY

Tests on radio equipment and inductive systems

LACE also performs **spectral efficiency tests** (not covered by accreditation) required by the European Directive on **radio equipment and short-range inductive systems** for the **CE marking of products**

- Operating frequency range
- H-FIELD/E-FIELD transmitter requirements
- Transmitter spurious emission measurement
- Transmitter frequency stability

- Modulation bandwidth
- Adjacent channel selectivity
- Receiver blocking or desensitisation





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LACE - UNI CEI EN ISO/IEC 17025 accredited test laboratory

The LACE laboratory (LAB no. 1714L) is accredited in accordance with the requirements of UNI CEI EN ISO/IEC 17025 as test laboratory

by Accredia, Italian Accreditation Body.

- The laboratory employs qualified personnel and instrumentation referable to national or international samples, whose calibration status is periodically checked.
- LACE rigorously evaluates the measurement uncertainty and the critical factors influencing the accuracy of test results.
- The validity of the results is ensured by periodic checks on the accuracy and repeatability of the test methods and by interlaboratory comparisons.
- On the basis of the tests carried out, the Laboratory issues a **detailed test report**, containing the description of the equipment under test, the list of standards applied, the results in graphical or tabular form and the limits of acceptability.





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The UNI CEI EN ISO/IEC 17025 standard specifies the general requirements for the competence, impartiality and consistent operation of laboratories.

- Accredia is a non-profit association, under the supervision of the Italian Ministry of Economic Development, which is the reference authority for accreditation at national level.
- As an independent third party, Accredia subjects accredited laboratories to periodic checks and ensures the compliance with the standards and the reliability of the certificates of conformity issued by them on the market, carrying out a service of public interest, to protect the health and safety of individuals and the environment.
- The use of accredited laboratories by institutions, businesses and consumers contributes to increase the confidence in the safe and good quality of the goods and services circulating on the market.

- The accreditation is internationally recognised thanks to the Mutual Recognition Agreement (MRA) within the ILAC (International Laboratory Accreditation Cooperation).
- The Mutual Recognition Agreements ensure the equivalence in the market of the tests carried out by the accredited laboratories.
- The accreditation mark of a signatory to the mutual recognition agreements affixed on the test report acts as a passport on international markets.
- The accreditation certificate of the LACE Laboratory and the list of accredited tests are available on the website www.accredia.it









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