Veoneer Testing Labs

France capabilities

Veoneer Global Footprint

We Design, Manufacture and Sell the World's Best Automotive Safety Electronics

Lab address

21 Rue du Petit Albi

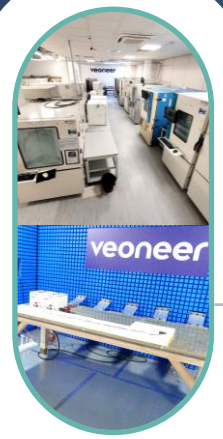
95800 Cergy, FRANCE

2,550 ASSOCIATES | **11 COUNTRIES** | **3 PRODUCTION SITES**

France Labs History

2 first EMC chambers

2 new EMC chambers



1 new EMC chamber
ENV lab creation

Inspection lab creation

IP test

new reverberation chamber

Pentest lab creation

2005

2010

2015

2020

2022

2024

PSA GROUPE
Renault Group
NISSAN

cofrac ESSAIS
ilac-MRA

JLR

FCA
GEELY

Ford

gm

STELLANTIS

AUDI · Mercedes-Benz · BMW · VW · VOLVO

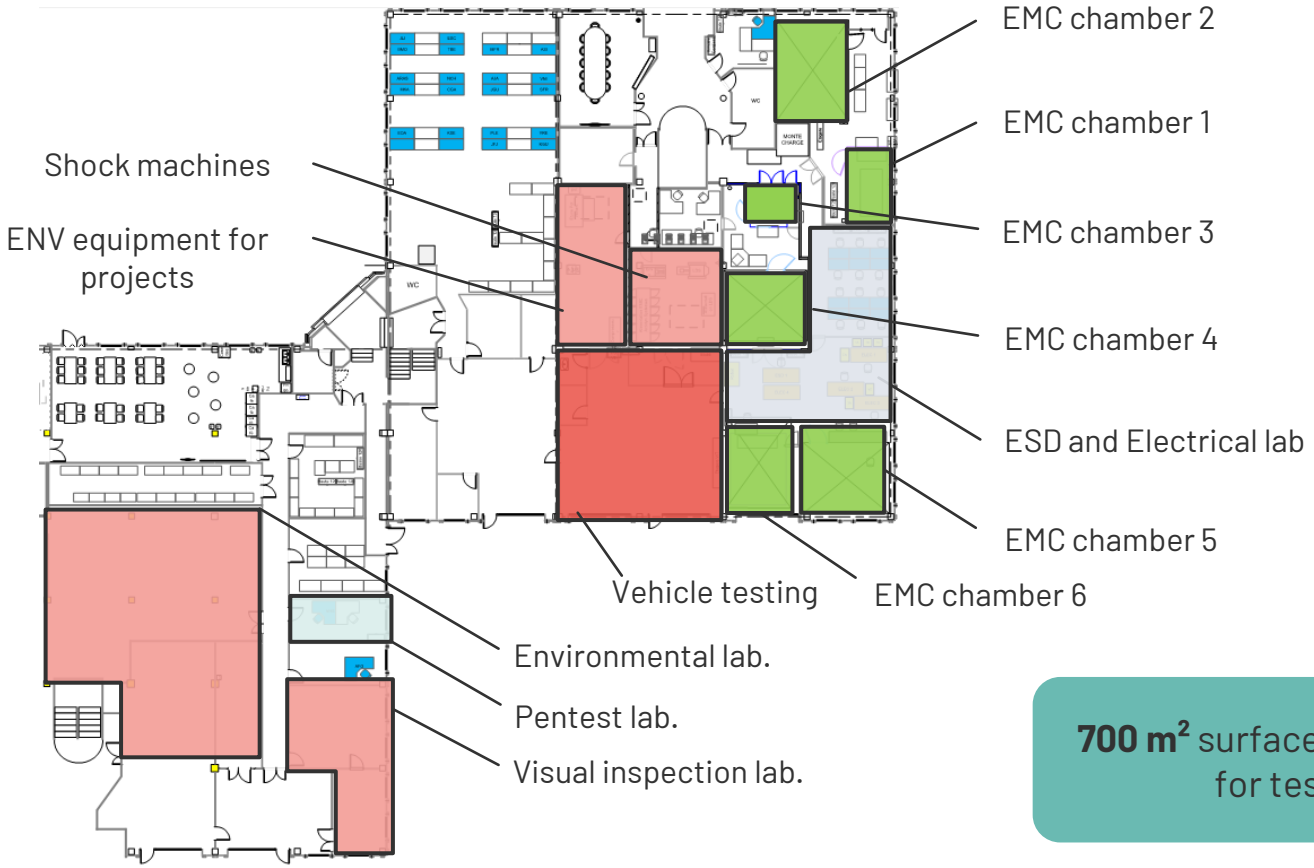
New lab equipment or capability

Accreditation or OEM recognitions

Laboratory layout and organization

Strong expertise team with 15 people in several domains:

- EMC/Electrical tests
- Environmental tests
- Metrology
- Penetration test
- Vehicle testing
- Hardware and mechanical design



700 m² surface dedicated for tests

Accreditations and certifications

ISO committee
EMC/Electric standards — member of working group WG3
Environment standards — member of working group WG2

AFNOR committee
CISPR standards — member of working group

EUROLAB (ENV) — member of working group

IPC-A-610 — certified for visual inspections

ISO 17 025 (EMC/ENV) — Labs accredited since 2009 (ref 1-7289)

Special OEM recognitions
ask to know our other recognitions

Laboratory activity

Test done per year :

EMC domain :

- Number of test : 400 tests
- Total test days : 800 days

ENV/Inspection domain :

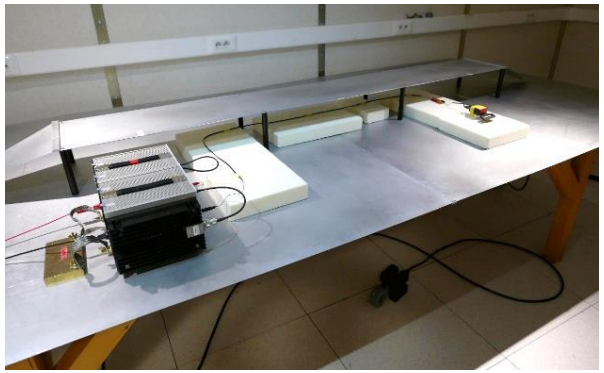
- Number of test: 460 tests
- Total test days : 3500 days

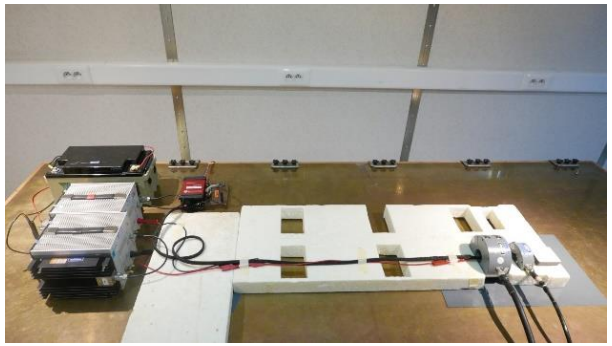
Faraday chamber n°1

Conducted Immunity (BCI)
90kHz to 400MHz – 400mA
ISO 11 452-4

Stripline Immunity
100kHz to 1GHz – Up to 300V/m
ISO 11 452-5

Size: 5000x2900x2520mm
Material: No absorber





Faraday chamber n°2

Conducted Emission
Current: 20Hz to 500MHz
CISPR25

Stripline Emission
9kHz to 1GHz
CISPR25

Coupling Clamp Emission
100kHz to 30MHz
CISPR25

Radiated RF Emission
9k to 6GHz
CISPR25

Size: 6020x4710x3190mm
Material: APM 66 Absorbers
Automatic antenna positioning system

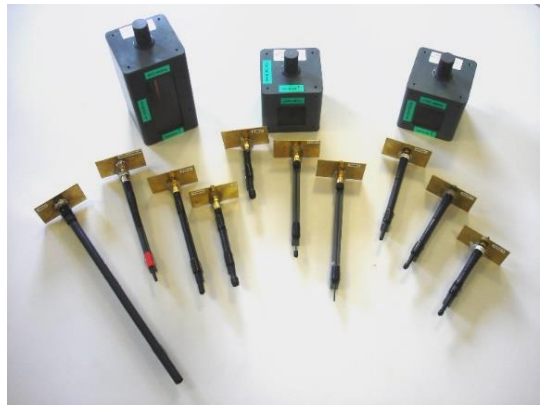
Faraday chamber n°3

Immunity to handy transmitters

24MHz to 3.2GHz
Patch or monopole antennas
ISO 11 452-9

(Not for 17025 accredited testing)

Size: 2520x1910x2520mm
Material: APM 20 Absorbers
Robot to move the antenna during the tests



Faraday chamber n°4

Radiated RF Immunity (with antenna)
200MHz to 6GHz: 200V/m
radar band : 600V/m
ISO 11 452-2

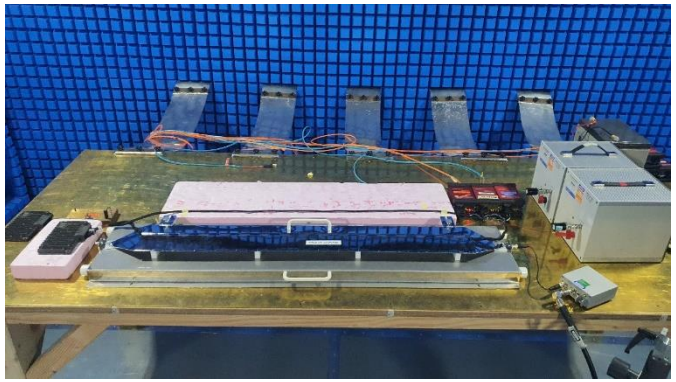
Immunity to handy transmitters
24MHz to 3.2GHz
Patch or monopole antennas
ISO 11 452-9

Size: 5630x4440x3300mm
Material: APM 45 absorbers
Automatic antenna positioning system

Faraday chamber n°5

Conducted Emission
Current: 20Hz to 500MHz
CISPR25

Radiated RF Emission
9k to 6GHz
CISPR25



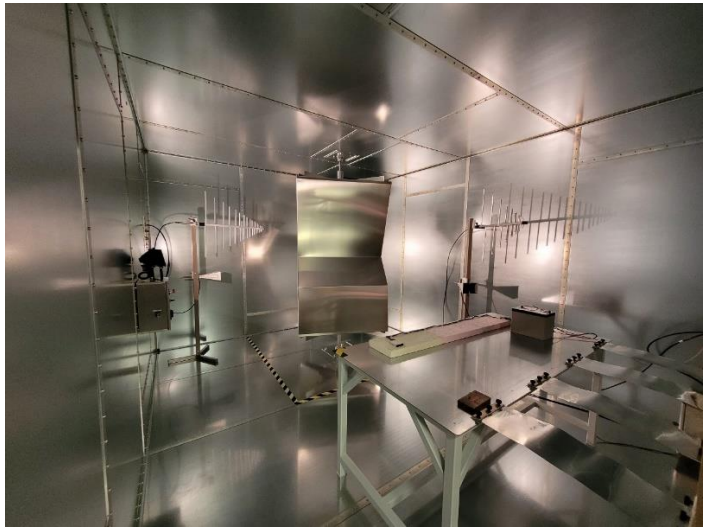
Magnetic Field Emission
1Hz to 400MHz (5cm, 7cm, 1m)
MIL STD 461, DEF STAND 59-411, ICNIRP

Size: 6020x4710x3190mm
Material: HY20T hybrid absorbers + ferrite

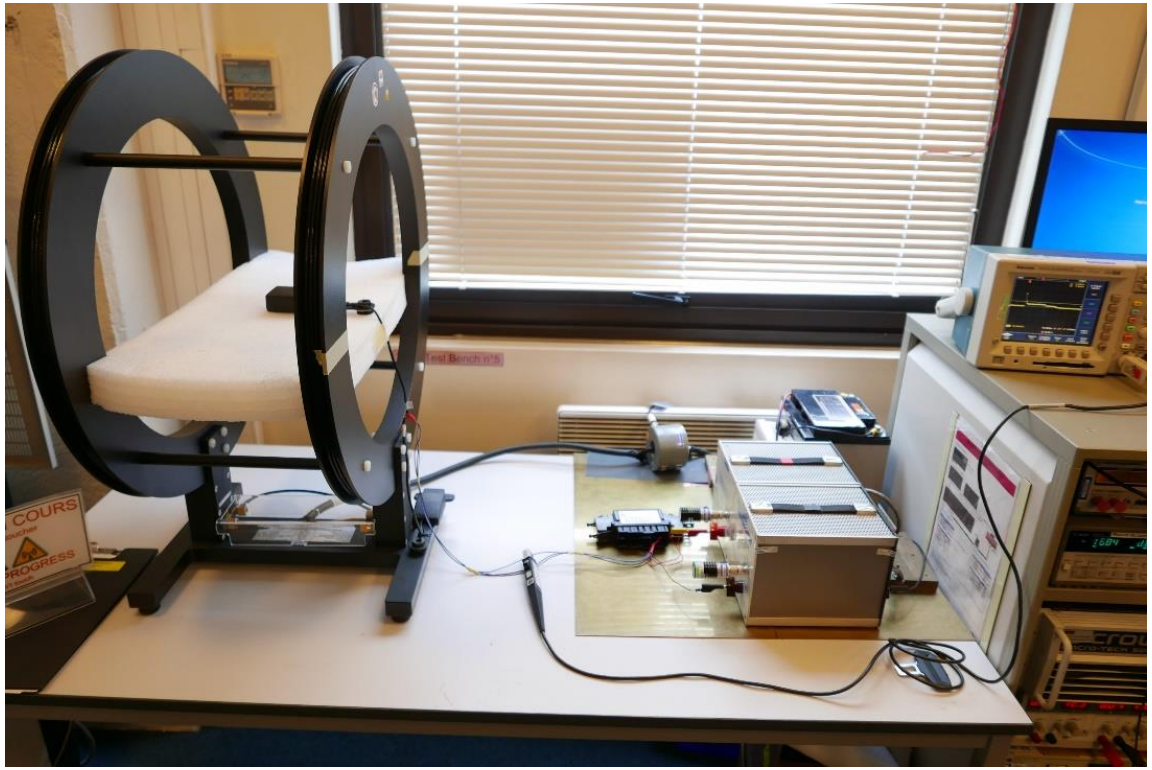
Faraday chamber n°6

Radiated RF Immunity in reverberation chamber
200MHz to 6GHz: 200V/m
radar band : 600V/m
ISO 11 452-11

Size: 4880x3760x2900mm
Full automatic system



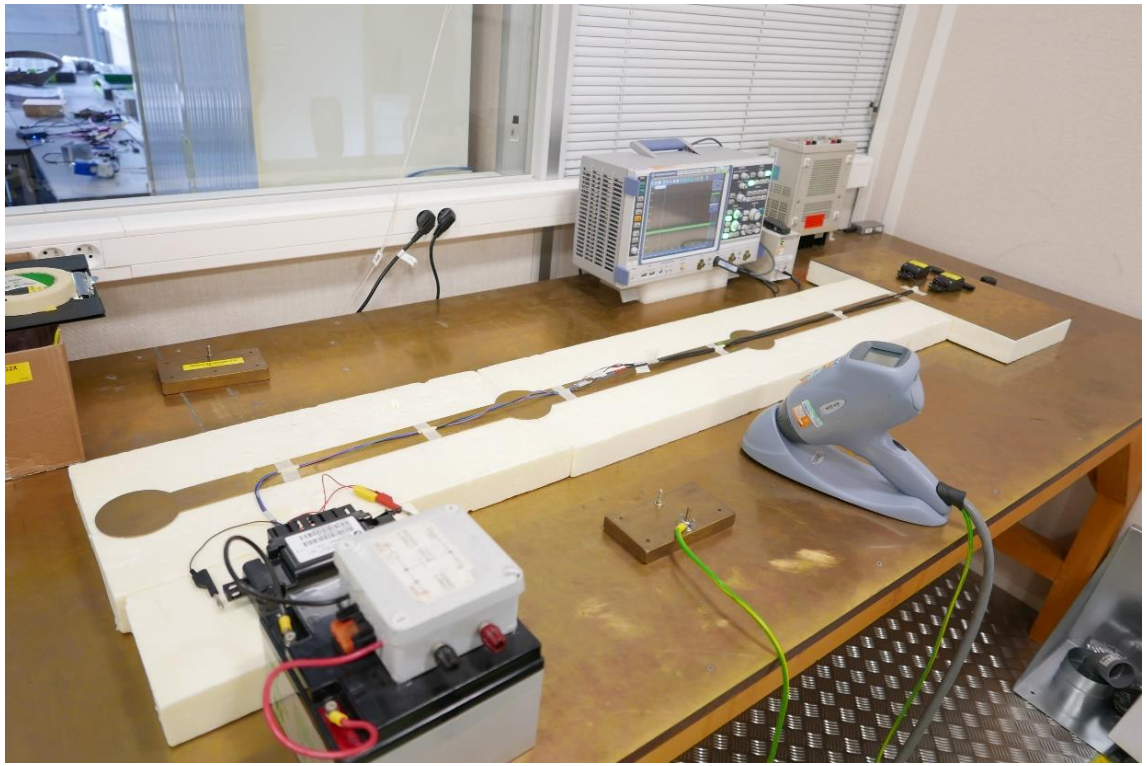
Magnetic Field Test bench



Magnetic Field Immunity

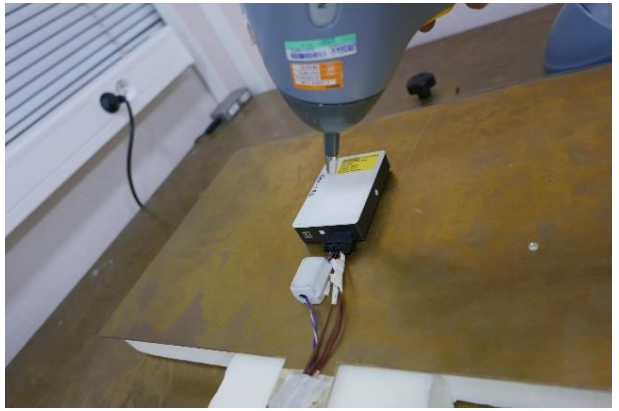
DC and 5Hz to 1MHz
12cm coil or Helmholtz coil
ISO 11 452-8, MIL STD 461, DEF STAND 59-411

Electrostatic Discharge (manual test)

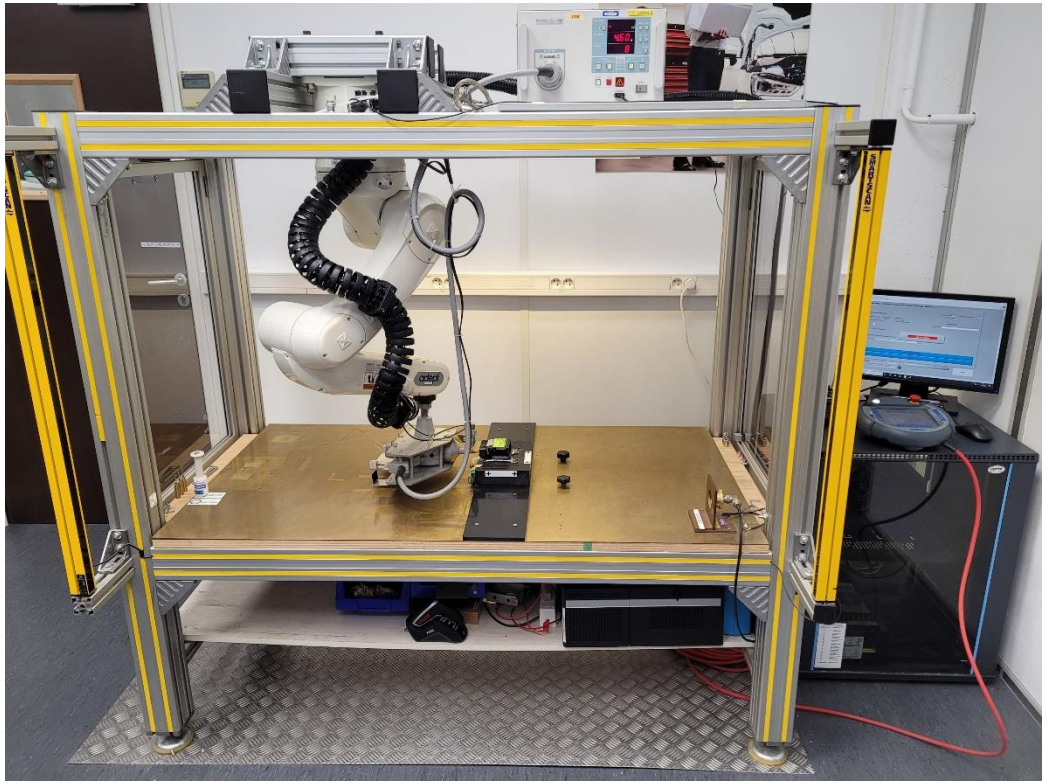


Immunity to ESD

Direct, indirect
ESD with product powered or not
Up to 30kV
ISO 10 605

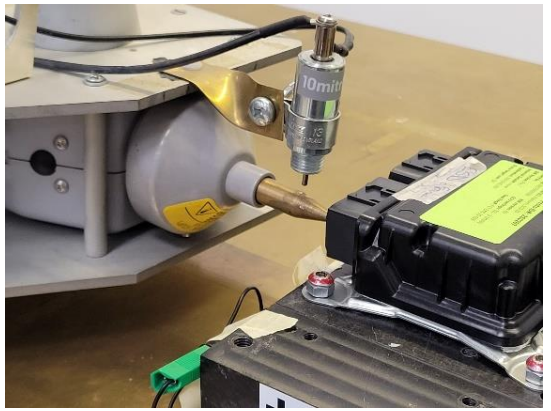


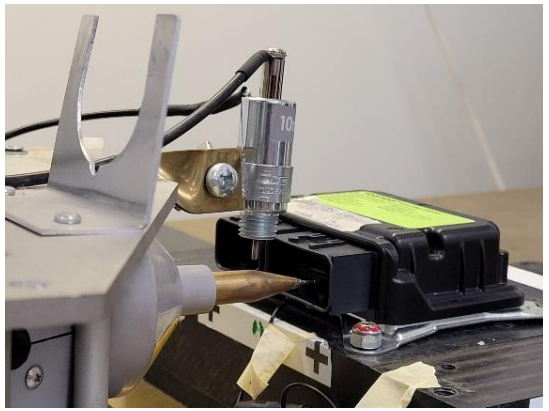
Electrostatic Discharge (Automatic test)



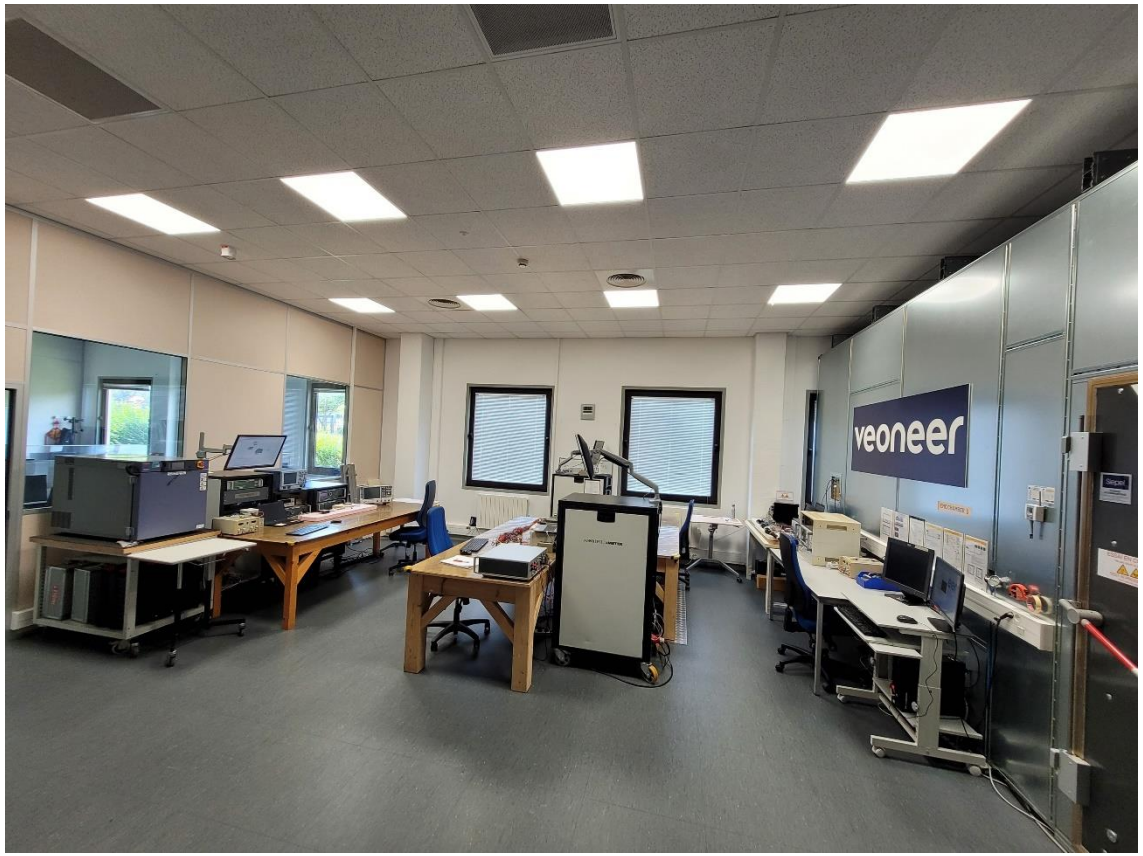
Immunity to ESD

Direct, indirect
ESD on pin with product not powered
Up to 30kV
ISO 10 605





Electrical Test benches n°1 to n°4

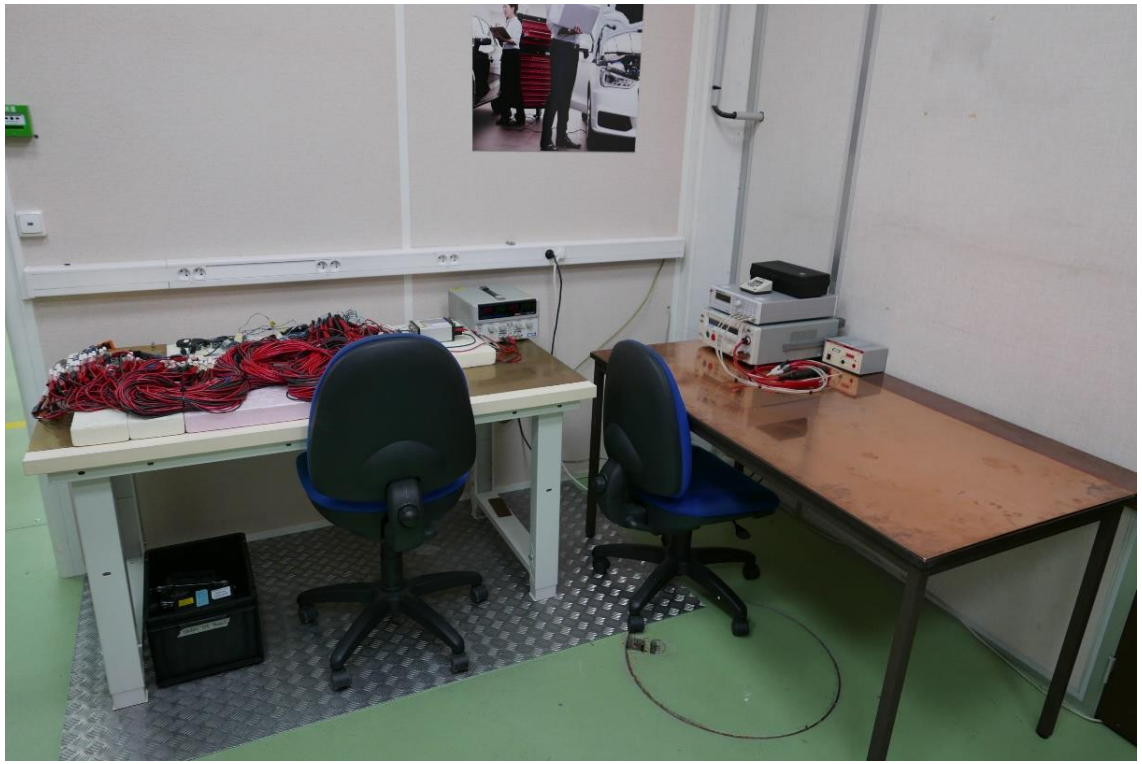


Immunity to transient on Power Supply
ISO 7637-2

Immunity to transient on Signal lines
ISO 7637-3

Transient Emission Measurement
ISO 7637-2

Electrical Test benches n°5 and n°6



Electrical tests

- Short circuit, open circuit
- Test wire by wire
- Sur-imposed alternating voltage
- Voltage variations, reverse voltage
- Micro cuts
- Start-up voltage profiles
- Withstand voltage and insulation resistance
- ISO 16 750-2

Climatic Tests

21 Climatic chambers for High (up to +180°C) **or Low** (up to -70°C) **temperature**
EN 60068-2-1, EN 60068-2-2, ISO 16 750-4

7 Climatic chamber for temperature and humidity (up to 10°C/min)
EN 60068-2-78, EN 60068-2-30, EN 60068-2-38, ISO 16 750-4

3 Climatic chamber for fast temperature variation (12°C/min)
EN 60068-2-14 Nb, ISO 16 750-4

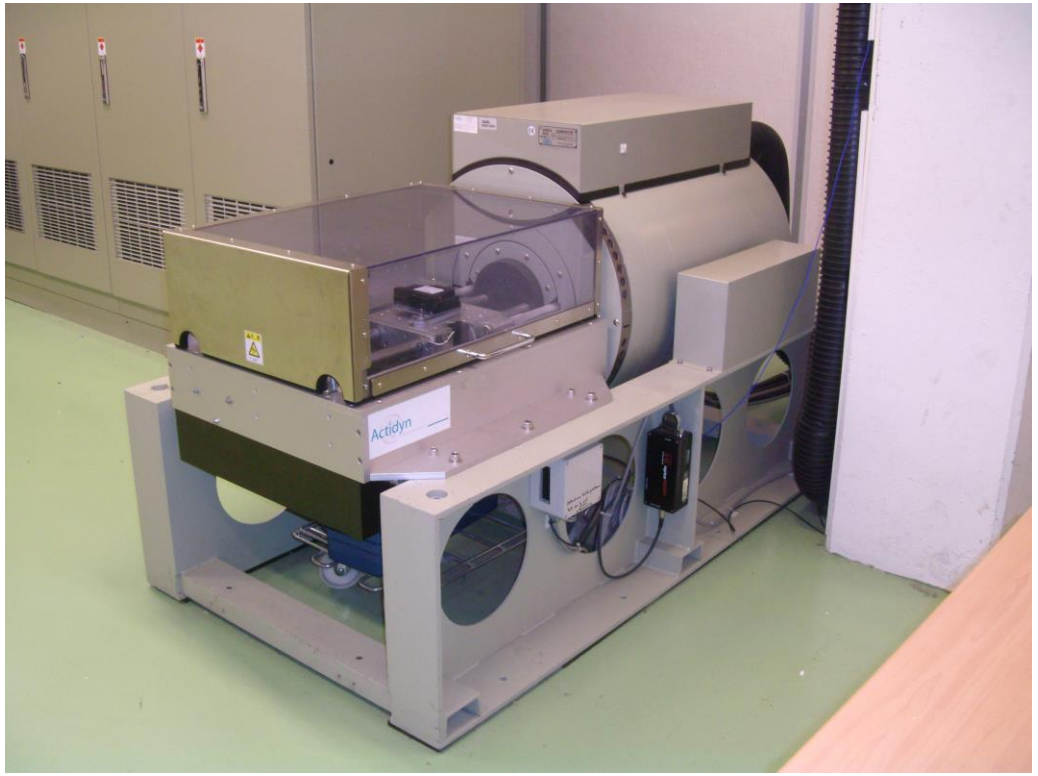
3 Climatic chamber for thermal shock tests (-40°C/+85°C)
EN 60068-2-14 Na, ISO 16 750-4

Dynamic Tests

3 shakers machines (up to 13kN)
IEC 60068-2-6, IEC 60068-2- 64, ISO 16750-3

1 rate table for IMU characterization

Dynamic Tests



2 thruster machines (up to 250g)
IEC 60068-2-27 (resistance to mechanical shock)
Simulate the crash events
EDR validation debug (EDR China, Europe,...)

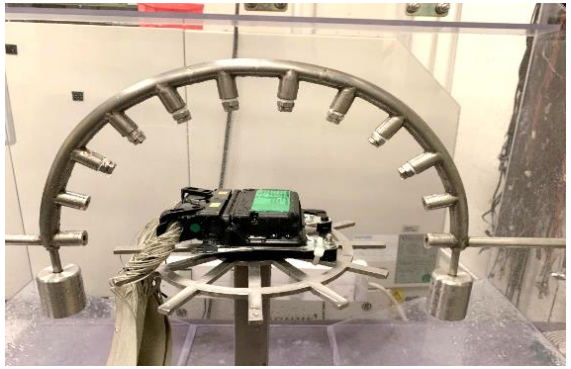
1 free fall bench
IEC 60068-2-32

Resistance to water

Assessment waterproof level of product

- Liquid tightness
- Water test (IPx1, 2, 3, 4)
- Immersion test (IPx7)
- Leak test/Bubble test

IEC 60529, ISO 20 653, ISO 16 750-4



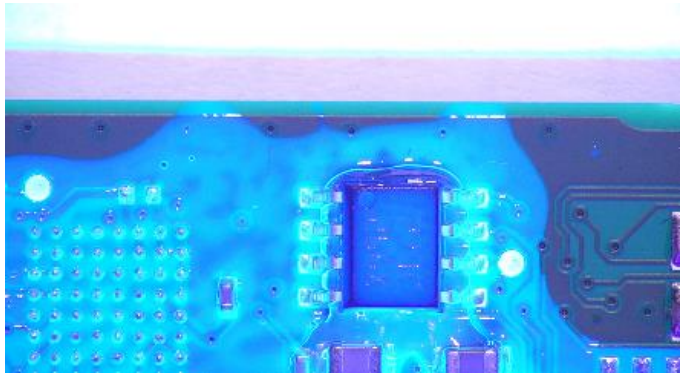
Chemical tests

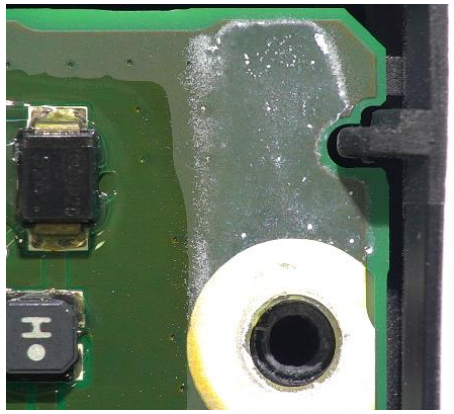
Resistance to Fluid corrosion

Visual inspections

Physical analysis by visual inspection

IPC-A-610 certification

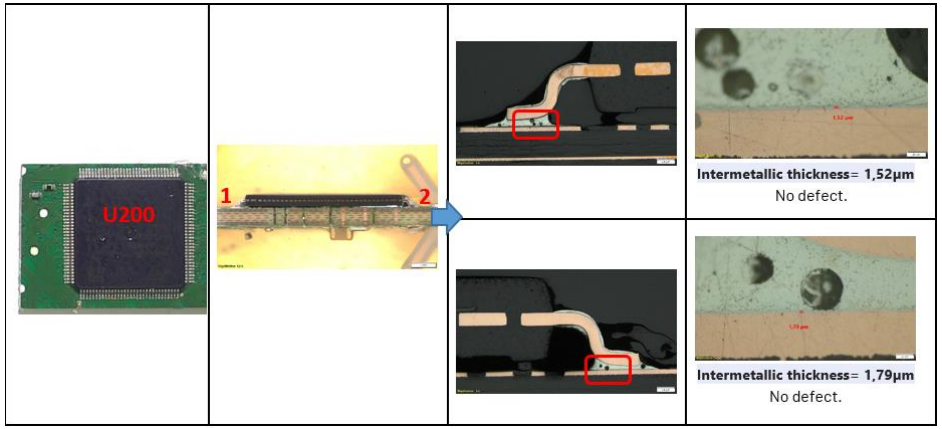




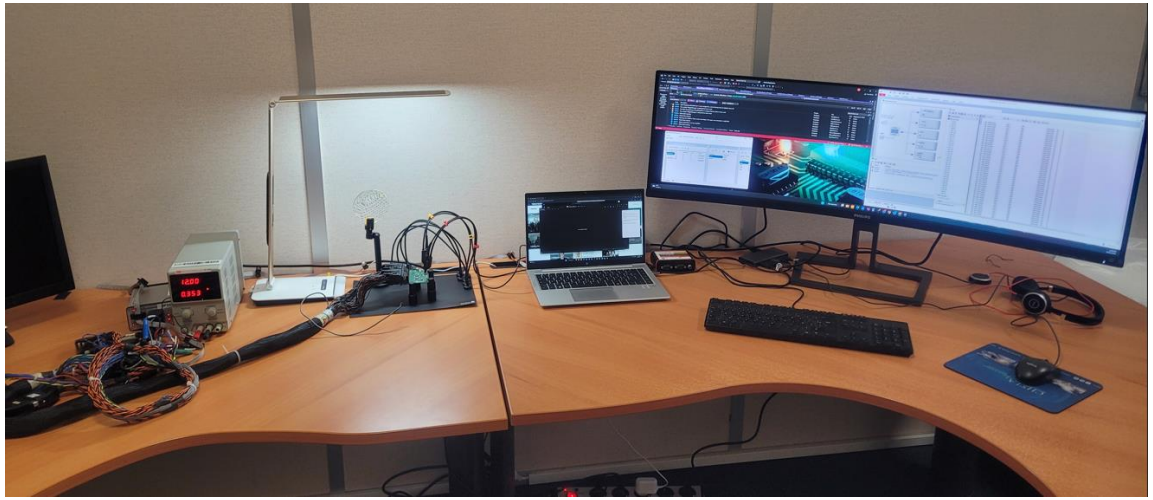
Cross section

- Cross sectioning of solder joints and internal components may be needed. Microscope with at least 40 x magnifications shall be used.
- Detect : crack on component, soldering, delamination of PCB or another anomaly.

IPC-A-610 certification



Cybersecurity : Penetration tests



Hardware and software test benches to ensure compliance with standards and find weaknesses of system:

- Access to restricted data (security access)
- Modify data (modify software, reset or changer counter …)
- Change functions (able or disable)
- ISO 21 434

Test Cost

Domain	Test daily cost	Comment
EMC	Ask for quotation	BCI, Radiated emission or immunity, Stripline, magnetic field E. or I.
Electrical tests		Pulses, voltage profiles, micro cuts, …
Long duration tests		Test with automatic test bench (µcut, voltage profiles)
ESD		-
Environment tests		Depend on test, duration and number of samples

Included:

- Reporting (by email, Teams)
- Monitoring of your product (after training by customer)
- Test report (with conformity statement)
- Support for investigation :
  - Electronic expert available
  - Prototype lab available for HW modification
- Lunch (if customer is present in the lab)

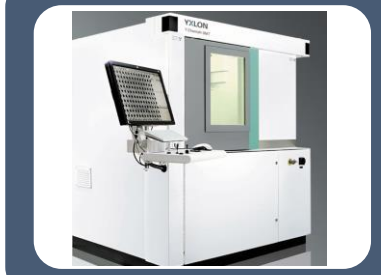
Not Included:

- Reshipment of equipment after tests (depending on country)
- Specific monitoring equipment (to be confirm with VEONEER for optical interfaces)

Other services

Prototype lab

For investigation, modification, repairing and instrumentation.
Hot air soldering stations (CMS, BGA capability)
Binoculars
CMS Component store



X-Ray scanner

For investigation or after test analyze, Yxlon Cheetah scanner is available.
Equipment not at Cergy.

Garage

For test or investigation on vehicle

Laboratory and company references

Veoneer is compliant with standards IATF 16949 & ISO 14001
For more information, visit Sustainability | Veoneer

ISO 17 025 laboratory reference: 1-7289
Refer to https://tools.cofrac.fr/annexes/sect1/1-7289.pdf

JLR recognizing, see on website:
http://emc.jaguarlandrover.com.edgesuite.net/docs/Approved_Labs.htm

Ford recognizing, see on website:
https://fordemc.com/recognized-laboratories/

Contact: labs@veoneer.com

Website: Test Laboratory | Veoneer

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