



# EMC LABORATORY

↘ EMC TEST FACILITIES FOR QUALIFICATION DURING DESIGN DEVELOPMENT AND PRODUCTION PHASES

## MAIN CUSTOMER (Original Equipment Manufacturer)

OEMs with LAB RECOGNITION	Standards
FORD	FMC1278 Rev 4
Stellantis FCA (Fiat – Chrysler)	CS.00054 (2018)
JLR (Jaguar - Land Rover)	JLR-EMC-CS v1.0 Amendment 4
GM	GMW3097 (2019) GMW3172 (Electrical / 2019)
HMC (Hyundai Motors Compagnie)	ES96200-00 (2017)

OEMs	Standards
Stellantis PSA (Peugeot)	B21 7110 ind F
Renault / Nissan /Mitsubishi	RNDS-C-00517 (rev3.1 2022) Renault 36-00-808 ind N Nissan 28401NDS02 rev8
Volkswagen – Audi – Porsche	TL 81000 (2018-03) VW 80000 (Electrical 2017-10)
Mercedes Benz	MBN_10284
Volvo	REQ-19615v5 EMC –Component Requirements

## RADIATED IMMUNITY ALSE (RI ALSE)



### ➤ E FIELD / ALSE : ISO 11452-2



- Frequency range: 200MHz to 6GHz
- Electric field: 200V/m
- Radar bands: Electric field: 300V/m
- Pyramidal foam absorbers
- Size: 7.4m, 4.7m, 4m

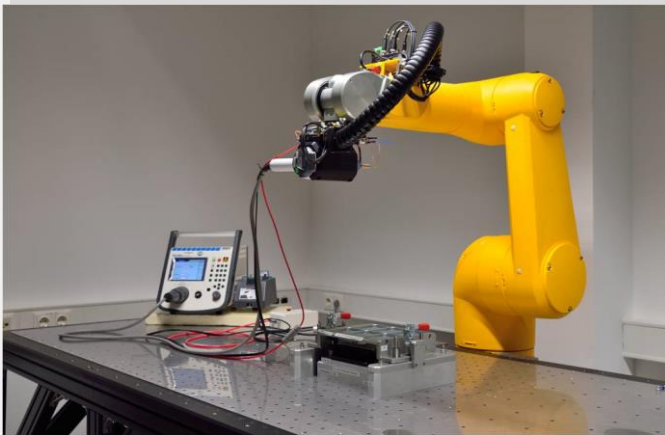
## REVERBERANT CHAMBER IMMUNITY (RI CRBM)



### ➤ E FIELD / CRBM : ISO 11452-11

- Frequency range: 200MHz to 6GHz
- Tuned or Stirred modes
- Electric field: 200V/m
- Radar bands: Electric field: 300V/m
- Size: 4m, 3.5m, 3.5m

## ELECTROSTATIC DISCHARGES (ESD)



### ➤ ESD : ISO 10605



- Manual AND robotized test stands
- Contact, air discharges, HCP
- Voltage up to 30kV
- Humidity & temperature controlled

## MAGNETIC FIELD IMMUNITY (H FIELD)



### ➤ H FIELD : ISO 11452-8



- Frequency range DC to 200kHz
- H field: 180dB $\mu$ A/m at 1kHz
- Audio amplifier DC to 250kHz
- Helmholtz Bobbin & 12cm coil
- Size: 5m, 3.8m, 2.8m

## CONDUCTED IMMUNITY (BCI)



### ➤ BCI : ISO 11452-4



- Frequency range 100kHz to 400MHz
- Current level: up to 300mA
- RF amplifier: 150W
- Ferrite tile absorber
- Size: 3.7m, 2.5m, 2.5m

## EMISSIONS: CISPR 25 & DO160



### ➤ EMISSIONS: CISPR 25 & DO160

- E field: 100kHz to 6GHz
- H field: 20Hz to 200kHz
- Voltage: 100kHz to 108MHz
- Current: 20Hz to 1GHz
- Receivers: ESW 8 (FFT / 5Hz – 8GHz)
- Hybrid absorbers (ferrite tiles + Pyramidal foam)
- Size: 7.5m, 4.7m, 4.1m





## ELECTRICAL & TRANSIENTS



### ➤ TRANSIENTS: ISO 7637

- Transient on Power Supply
- Transient on Signal Lines
- ISO7637-2 & 3



### ➤ ELECTRICAL: ISO 16750

- Overvoltage
- Superimposed alternating voltage
- Slow decrease and increase supply voltage
- Discontinuity in supply voltage
- Reverse voltage
- Ground and supply offset
- Open circuit
- Insulation resistance