

# Vehicle EMC Testing

Applus+ Laboratories works with leading automotive OEMs to test the electromagnetic compatibility of their latest developments. Our full-vehicle EMC chambers in the UK and Spain are equipped to test EV/PHEV in all charging modes (AC/DC) and can support a wide range of vehicles, from sport cars to heavy-duty vehicles.



Vehicles are becoming more and more reliant on electronics and the shift towards EVs and autonomous driving will only increase this trend. Safety-critical systems and advanced vehicle functionality depend on control systems powered by ECUs, both wired and wirelessly connected. EMC testing is essential for ensuring the safety and reliability of electronic systems. While EMC validation at component level is necessary, it is insufficient. Interactions between electronic systems must also be checked at vehicle level.

## Specialized facilities for testing all kinds of vehicles

Applus+ Laboratories is a European leader in EMC testing for both component and full vehicles. We team up with leading OEMs to test their latest developments and the extent to which their vehicles [comply with regulatory requirements \(UNECE R10\)](#). We have versatile, large EMC chambers dedicated to vehicle testing, fully equipped to tackle the specific requirements of each kind of vehicle:

- Advanced auxiliary equipment for electric and hybrid vehicles
- Low clearance dyno for sport cars
- Reinforced strong floor for trucks, buses and off-highway vehicles
- 2-wheel dyno for motorbikes.
- On site testing for all kinds of vehicles

## Ready to test all types of EV and PHEV in REESS modes

Our experts have been collaborating with pioneering OEMs on battery-powered vehicles for nearly 10 years. Our facilities for EV testing include:

- 4WD integrated chassis dynamometer
- Low EMI noise dyno for dynamic tests
- Dedicated charging system for CHAdeMO, CCS and GBT (AC and DC)
- Modes: 2, 3 and 4 capabilities
- Dedicated driving robot for advanced tests
- Wireless system for signaling and regulatory testing on connected vehicle platforms (WLAN, Mobile Cellular, GNSS, etc.)

## International EMC testing standards for full vehicle testing

Our labs have all the required capabilities to conduct homologation and validation tests:

- ECE R10 rev.6 including REESS charging modes
- ISO 11451-2: Antenna and TLS immunity tests up to 140V/m from 10kHz-6GHz
- ISO 11452-3: Vehicle onboard immunity
- ISO 10605: Electrostatic Discharge tests
- CISPR 12: Vehicle off board emissions
- CISPR 25: Vehicle onboard emissions
- CISPR 36 / GBT 18387 / SAE J551-5: Electric and magnetic field emissions
- ICNIRP / IEC TS 62764-1: Human exposure tests
- Radio reception quality (FM/DAB, GNSS...)

## Experienced engineers and operators, and remote testing tools:

The **expertise of our teams** goes far beyond EMC testing, into vehicle electronics and mechanics. Our vehicle know-how allows us to help manufacturers in many technical aspects surrounding EMC testing, such as:

- Supporting ECU and harness retrofit during validations
- Use of vehicle diagnostics tools
- Electrical tests as per customer requirements:
  - Voltage fluctuations
  - Dark current
  - Terminal voltage
  - CAN / LIN signal integrity
  - Other tailored tests...

**Remote Testing:** Our teams' knowledge is supported by the latest technology in online communication to make remote testing not only technically possible, but a real, functional alternative. With our remote solutions, multiple client engineers can monitor and participate in the whole testing process from their own place of work.

- Remote set-up for hardware and software configuration
- Detailed vision for debug sessions
- Immersive interaction for real-time troubleshooting

## **UNECE R10 for E- Mark certification**

Applus+ Laboratories performs all the necessary EMC tests to comply with UNECE R10 for E-Mark certification. The Applus+ group is also accredited as Technical Service for vehicle homologation by Spanish, UK and Irish authorities and can handle international homologations.

## **Radio Type Approval**

Applus+ Laboratories provides global market access services to virtually every country for all types of automotive components using wireless connectivity - from TCU using the latest 5G technologies to V2X Wi-Fi or emergency call systems using satellite communication. We team up with OEMs and component manufacturers to prepare the best strategies for a cost-effective, timely, type approval project that covers all the target markets. [More info](#)