Automotive connectivity testing

Radio equipment testing for component and vehicle approval

Connected vehicles offer a new range of vehicle applications, from infotainment to automatic emergency call (eCall). However, developments in on-board connected equipment bring with them new regulatory requirements for component and vehicle manufacturers in order to ensure vehicle safety and performance. Applus+ Laboratories provides the automotive industry with testing and engineering services to help them ensure compliance and is the ideal partner for the development, pre-conformance and approval process.

Regulatory approval tests for vehicles and their components

Automotive radio equipment must comply with the mandatory requirements set out in national and international regulations to ensure a safe and efficient use of the radio spectrum, according to Radio Equipment Directive 2014/53/EU. These conformity requirements are divided into four testing areas:

Radio-spectrum protection testing

- EN 303 413 (GNSS receivers)
- EN 300 220, EN 300 330, EN 300 440 (RFID / RKE / NFC / SRD)
- EN 300 328 (Bluetooth / WLAN)
- EN 301 893 (5 GHz RLAN)
- EN 303 345, EN 303 340 (broadcast receivers)

Electromagnetic compatibility testing (EMC/EMI)
• EN 301 489-1
• EN 301 489-3 (RFID / RKE / NFC / SRD)
• EN 301 489-19 (GNSS)
• EN 301 489-7/24/52 (broadband cellular 2G/3G/4G)
• EN 301 489-17 (Bluetooth / WLAN / RLAN)
• EN 55032, EN 55013, EN 55020 (broadcast receivers)

**Electrical safety testing**

• EN 60950-1, EN 60065

**Maximum permissible exposure testing (MPE)**

• EN 62311

**Regulatory approval and marks for vehicles and their components**

Applus+ is a Radio Equipment Directive (RED) Notified Body, performing conformity assessments based on B and H modules. Applus+ is recognised for E-Mark approval for vehicle components and whole vehicles.

**Automotive OEM approval**

Applus+ Laboratories specialises in [design-validation and product-validation tests for automotive components](#). We support component manufacturers in defining their design-validation and product-validation test plans and conduct most of the required tests. Our multi-technological laboratories are ISO 17025 accredited and our EMC laboratories are approved by Jaguar Land Rover (JLR) and General Motors (GM).

• [Automotive EMC and electrical testing](#)
• Automotive environmental testing
• Automotive vibration and acoustics testing
• Automotive materials testing (metals, composites and surface treatments)

**eCall testing**

Applus+ Laboratories offers pan-European eCall pre-conformance and functional testing (at IVS and whole-vehicle levels) and, once the legislative framework has been set, will also provide eCall system approval. We conduct tests according to the following standards:

• EN 16072:2015 “Intelligent transport systems – eSafety – Pan-European eCall operating requirements”
EN 16062:2015 “Intelligent transport systems – eSafety – eCall high level application requirements (HLAR)”

EN 16454:2015 “Intelligent transport systems – eSafety – eCall end to end conformance testing”

EN 15722:2015 “Intelligent transport systems – eSafety – eCall minimum set of data (MSD)”

**ERA-GLONASS testing**

Thanks to our knowledge, expertise and cutting-edge equipment, Applus+ is the ideal partner to carry out efficient ERA-GLONASS pre-conformance and functional testing before final approval (at IVS and whole-vehicle levels), thereby decreasing the device’s time to market. We conduct testing according to the following standards:

- GOST R 55530: “Functional test methods of in-vehicle emergency call systems and data transfer protocols”
- GOST R 55532: “Test methods of in-vehicle emergency call system crash detection features” (for crash-test simulation)
- GOST R 55531: “Test methods for verification of in-vehicle emergency call system conformity to quality requirements for loudspeaker communication in vehicle cabin”
- GOST R 55533: “Test methods for the conformity assurance of in-vehicle emergency call system to the requirements for GSM, UMTS”
- GOST R 55534: “Test methods for the conformity assurance of in-vehicle emergency call system to the requirements for navigation performance and properties”

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