



Systems & Projects

Automotive Immunity Test System acc. ISO 11452,
Pioneer Electronics Manufacturing NV, Erpe-Mere, Belgium

Covered immunity standards

The EMC Test system allows testing according to the following automotive standards:

- ISO11452-2 : Radiated immunity in anechoic chamber (10V/m @ 3m from 80-1000MHz; 100V/m @ 1m from 200-1000MHz)
- ISO11452-3 : Radiated immunity in TEM Cell (200V/m, 10kHz-200MHz)
- ISO11452-4 : BCI Tests (100mA, 1-400MHz)

Radiated immunity tests in the Anechoic Chamber with control room

The Anechoic Chamber with dimensions of 9.7x6.4x6.3m is specified up to 18GHz, by using appropriate filters, honeycombs and hybrid absorbers. For radiated immunity tests, the reflective floor is covered by movable absorber panels (ferrites and pyramidal). Adjacent to the anechoic chamber, a shielded control room houses the test system for radiated immunity tests.

The test system consists of :

- an **RF signal generator SMY**
- a **400W power amplifier** from 80...1000MHz
- a **Directional Coupler Unit DCU** with **dual channel power meter NRV**
- a **log.periodic transmitting antenna** from 80...1000 MHz
- an **isotropic field probe FP4000**.

TEM and BCI Tests in the Shielded Test Room

The tests with the TEM Cell, BCI and CDN's are performed in the shielded room. The shielding up to 1GHz reduces possible interference from the ambient noise, and prevents the immunity test systems to disturb the environment.

The test system includes :

- **RF signal generator SMY**
- **Two power amplifiers** (0.01...250MHz/250W, and 80...1000MHz/100W)
- **Directional Coupler Unit DCU** with two directional couplers for the measurement of forward and reflected output power
- a **dual channel power meter NRV**
- a special **System Control Interface Unit SCIU** for automatic switching of the signal paths and power heads, remote control of the amplifiers

The following **transducers** are available :

- the **TEM cell** with height of approx. 90cm, with **an isotropic field probe** for fieldstrength measurement.
- the **BCI probe**, with **a calibration jig** and **monitoring probes** for feedback and calibration. The monitoring probes for BCI tests are connected to **the spectrum analyzer FSEA30**.
- the **CDNs** with **a calibration adapter**. There are different CDNs available, depending on the type of cable into which the interference has to be coupled. For injection into multi-wire cables, the BCI probe can be used (instead of the clamp which is described in the standard).

All above mentioned tests are automated by two process controllers PSM and the special **EMS software for immunity tests EMS-K1**.

