

Conducted RF Application Note 05

Test System Calibration (Levelling) for IEC61000-4-6

Levelling is the process used to establish the correct test level at the input to an EUT, taking into account variations in amplifier gain, CDN and cable losses etc. When a system is assembled of instruments from different manufacturers, it is essential that system characteristics are established to ensure that an EUT is tested with the correct signal level.

Levelling is a process that must be repeated for each test amplitude and each coupling device used. The levelling setup requires the EUT be removed from the CDN and replaced by 150/50Ω termination units at the EUT and auxiliary equipment terminals. The termination unit connected to the EUT port of the coupler, is connected to a 50Ω measuring unit, this can be an oscilloscope, power meter or RF voltmeter. Recorded values of the RMS voltage for each frequency step can then be used to adjust the signal drive level to compensate for fluctuations across the frequency range.

Frequency sweep can be continuous at a rate of 0.0015 decades, in discrete steps with a fixed dwell time or manually. System levelling is performed without any amplitude modulation.

The ability to perform these measurements and adjustments automatically is of great importance, as a levelling test according to the IEC standard would take several hours.

WinPAMP system software can control signal generators and measuring units, automatically creating a data base or calibration file for the system configuration. Data bases can be created for all system configurations and simply recalled when product testing commences. A levelling data base selected by the user automatically sets the test limits for minimum and maximum frequency to those used in the levelling process. The user can still adjust the frequency to anywhere within these defined limits. In addition, the **PAMP 250** amplifier, contain a power metering facility to verify output power. This can be particularly useful if large resonances occur or mismatch and high return power.

The **WinPAMP system software** is programmed with default values for a system comprising the integrated **PAMP generator** and amplifier together with an M3 network and an EM clamp. Provided these components are used in your system, the values can be used for testing with no further levelling necessary.

The levelling report is available as an ASCII text file. It contains :

- a header
- current date and time
- the levelling set-up parameters
- levelling data recorded at each of the frequency steps selected.