

Know Your Standards

We are coming to the end of the survey of the huge IEC 61000-4 series of Basic EMC standards (those defining the methods of measurement of (mostly) immunity characteristics and, in some cases, specifying the test equipment). However, because the survey began with the March 2012 issue of the Journal, we need to look for updates to the earlier Sections as well.

As for all of the IEC 61000-4 series standards, these standards and Technical Reports apply only if normatively referenced in product or product-family EMC standards.

IEC 61000-4-31

Immunity to conducted disturbances, induced by intentional and/or unintentional broadband signals)

This project was started only this year. Symptomatic of the times is that 24 National Committees approved the project but only six nominated experts to do the work - only one more than the minimum required for the project to proceed! A first draft document circulation (ICD) is expected toward the end of the year.

IEC TR 61000-4-32

High-altitude electromagnetic pulse (HEMP) simulator compendium

This appears not to have been adopted by CENELEC or BSI. It gives information on HEMP simulators and their applicability for immunity test requirements. It includes datasheets describing 42 EMP simulators that could be available for use by the international community.

IEC 61000-4-33

Measurement methods for high-power transient parameters

This standard provides a basic description of the methods for measuring responses arising from high-power transient electromagnetic parameters, such as: the electric (E) and/or magnetic (H) fields; the current and voltage induced by a transient field or within a system under test; and the charge Q induced on a cable or other conductor. These are generally complicated time-dependent waveforms, which can be described approximately by several "observables". It does not provide information on specific level requirements for testing.

IEC 61000-4-34

Voltage dips, short interruptions and voltage variations immunity tests for equipment with rated input current of more than 16 A per phase

The standard applies for single and 3-phase connections at 50 Hz or 60 Hz (but it's not adopted in the Americas yet). An important Normative Reference is that to IEC 61000-2-8, a not very well-known Technical Report on the statistics of occurrence of these disturbances. Apart from the statistic data, it contains a lot of information about electricity supply networks that may be difficult to obtain elsewhere.

IEC TR 61000-4-35

HPEM simulator compendium

This comprehensive Report (88 pages) gives details of High-Power Electromagnetic (HPEM) simulators and their use for immunity testing. It includes numerous definitions of terms and a survey of the increasing use of high-power electronic systems and its implications for the prevention of interference with other, safety-critical electronic systems.

IEC 61000-4-36

IEMI immunity test methods for equipment and systems. This is a new standard, which is expected to be published in 2014.

It provides methods for the assessment of equipment and systems to IEMI (Intentional ElectroMagnetic Interference) environments. These environments are defined in IEC 61000-2-13 (see below). It explains the differences between natural and intentional high power electromagnetic environments and plugs a gap in the IEC series of publications defining HEMP and HPEM environments and HEMP test methods. It provide test methods for those HPEM environments that can be generated by criminals or terrorists for malicious purposes, namely IEMI. 14 National Committees supported the project but only six nominated an expert.

IEC TR 61000-4-37

Calibration and verification protocol for harmonic emission compliance test systems

This hasn't been released on the unsuspecting public yet. A second CD will be circulated, but a controversy over the exact purpose of the Report, and over terminology, may not have fully subsided yet. It provides a means for a test house to make sure that a complete test suite (maybe a newly-formed one) gives correct results.

IEC TR 61000-4-38

Calibration and verification protocol for flicker compliance test systems

This one is VERY new; the first working draft has just been sent to the responsible Working Group. Some of the issues already settled for IEC TR 61000-4-37 apply to this TR as well, so its progress may be rather swifter.

Cross-reference

IEC 61000-2-13:2005 defines a set of typical radiated and conducted HPEM environment waveforms that may be encountered in civil facilities. For the purposes of this standard, high-power conditions are achieved when the peak electric field exceeds 100 V/m. This limits the application of this standard to EM radiated and conducted environments that are substantially higher than those considered for "normal" EMC applications, which are covered by other standards. As such, it may be of significance in the context of functional safety.

UPDATES

This information is accessible only to a very limited extent from the public part of the IEC web site for TC77/SC77B 'Projects/Publications' 'Work programme'. The actual documents are available only to committee members, including members of the BSI Committee. Some members may not be very familiar with parts of the BSI committee web site, which has more dark recesses than the Cheddar Gorge.

The way, or at least *a* way, is to go to the BSI committee front page and select 'Projects' from the 'Library Containers' menu. Scroll down to the IEC 61000 series folder and click on it, then scroll down to the IEC 61000-4 series folder and click on it. (I don't know why IEC 61000-4-37 has its own folder.) The 'Modified' column on the far right indicates the last change date, and can be used to select (by clicking on) those folders that **may** include new documents, but some do not. Even so, new documents associated with each Section can be found this way.

IEC 61000-4-4

The final voting document (FDIS) for Edition 3 was issued in January 2012. Voting closed in March, and the UK committee alone voted negative, with numerous comments. To what extent these have been taken into account in the published standard is uncertain.

IEC 61000-4-5

The first committee draft (CD) for the third edition attracted a very large number of comments, many of the editorial. IEC committees really should set up editing committees to eliminate most of these time-consuming and avoidable comments. A second CD was issued in May 2012, with closing date for comments in August 2012. The UK committee submitted two technical and three editorial comments, one of which probably could not have been forestalled by an editing committee.

IEC 61000-4-6

The first voting stage (CDV) document for the fourth edition was circulated in June 2012, with voting closing in November 2012. Forty-three pages of comments were received from National Committees. This is at least partly due to National Committees not nominating experts to participate in the work.

IEC 61000-4-19

The first CD was circulated in January 2012, with a closing date for comments in April 2012.

IEC 61000-4-24

A second edition is being prepared, with the 1CD scheduled for May 2013. A Call for Experts has also been circulated.

IEC 61000-4-30

A 1CD for the third edition was circulated in February 2012, with a closing date for comments in May 2012. The compilation of comments document is overdue for circulation.

IEC 61000-4-31

This project was started in January 2012 and, again, only six experts were appointed by National Committees. Small committees generally work more quickly than large ones, but often do not represent all interests, so many comments are

received from National Committees on draft documents. It's really up to committee secretaries to address this issue.

IEC TR 61000-4-37

National Committee comments on the 1CD were circulated in June 2012. Most of the comments appear to be acceptable and a 2 CD should follow the committee meeting in September 2012.

J. M. Woodgate B.Sc.(Eng.), C.Eng. MIET MIEEE FAES FInstSCE

Email: desk@nutwooduk.co.uk

Web: www.jmwa.demon.co.uk

© J.M.Woodgate 2012
