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# EC Cabling News

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## Newsletter on International Standardisation

By Erik Bech – September 2009

Since our last newsletter on International standardization, the work continues in finalizing the standards for the new Classes, E<sub>A</sub> and F<sub>A</sub>. In the American standard these classes refer to Category 6A (Class F<sub>A</sub> is not recognized in the American standard).

The American standard is now finalized and issued in September 2009. The standard is: ANSI/TIA/EIA-568-C.2, Transmission Performance Specifications for 4-pair 100 Ω Cabling and Components. This standard provides requirements for 100 Ω Category 3, Category 5e, Category 6, and Category 6A balanced twisted pair cabling and components and for field test procedures used to verify the performance of installed cabling.

The international standardization committees (ISO/IEC, IEC, and CENELEC) are still working to finalize their work. The aim is to harmonize the technical requirements of the standards, but this goal is not achieved totally. There will be some subtle differences that one has to be aware of when cabling is specified and tested.

In ISO/IEC, the 1. Amendment to ISO/IEC 11801 was issued in April 2008. This document specifies the channel requirements for all classes including Class E<sub>A</sub> and F<sub>A</sub>. Also requirements for optical cabling are listed. As mentioned there is not total harmonization between this standard and the American standard. The main issues are 1: A difference in allowed excess attenuation for cords. In the International standard the excess attenuation is 50% (compared with the attenuation of horizontal cable). In the American standard this is 20 %. 2: A difference in NEXT for connecting hardware, Category 6A above 250 MHz. In the international standard a slope of the curve above 250 MHz of 30 dB/decade is required, while this figure is 40 dB/decade in the American standard. These differences give slightly different limits. The information in EC Cabling's Technical Note: Transmission characteristics for the new Class E<sub>A</sub>, March 2007, is still valid.

The proposed amendment 2 to ISO/IEC 11801 is now approved. The approved draft is issued as a FDAM (Final Draft Amendment) to ISO/IEC 11801. During the recent meeting (September 7-10 in Beijing) there were still changes made, but as the document is approved, the final standard will be issued soon. The content of the document is performance parameters of components and links for categories and classes from Category 5, Class D and up to Category 6A, 7A, and Classes E<sub>A</sub> and F<sub>A</sub>. There is also information on performance parameters for optical connecting hardware and cords.

In IEC developments of standards for cables and connecting hardware are continued.

Cable standards are drafted in SC 48C/WG 7. The last meeting was in Canada, July 2009. The important standards for LAN cables, IEC 61156-5 (solid cables) and IEC 61156-6 (flexible cables) are now issued as edition 2. There is a new graph for the requirement of impedance. This graph is directly calculated from the return loss requirements.

Connecting hardware standards are drafted in SC 48B/WG 3. For Category 6, 6A, 7, and 7A connectors, there is a special project team, which is convened by Guy Perrot from NEXANS. The last meeting in this group was August 2009 in Paris. Development of standards for the new Category 6A connecting hardware is continued. The standards are IEC 60603-7-41 for unshielded and IEC 60603-7-51 for shielded connecting hardware. The status for these standards is that they still are under development. The associated test standard for Category 6A connecting hardware is IEC 60512-27-100 and this standard is also under development. The test standard for Category 6 connecting hardware is IEC 60512-26-100. This standard was issued in 2008. In this standard the method for NEXT measurements using the de-embedded technique comprising 12 test cases with 12 different test plugs is specified. For Category 6A testing a new technique is developed, where only one test plug is used and the NEXT performance for now 14 test cases is calculated, based on virtual (calculated) test plugs. It is approved to replace the old method with the new method also for Category 5e and 6 connecting hardware. This means that the standard IEC 60512-26-100 will be redundant when IEC 60512-100-27 is finalised.

For old designs it is still allowed to use the -26 standard for measurements. This is because it can never be guaranteed that one will have the same results for two different test methods, and a manufacturer should not be forced to change a design, which is already qualified.

For Category 7 and 7A, the product standards are IEC 60603-7-7 and IEC 60603-7-71. The test standard for transmission testing up to 1000 MHz will be 60512-28-100 (proposal). This draft is under development now. It is proposed to use a measuring technique where baluns are not needed for these tests. The method is called modal decomposition. All test signals are common mode signals, and the component's response for differential mode signals is calculated. Unfortunately this method requires a multiport network analyzer to be used. For this reason EC Cabling will propose a measurement technique where baluns or 180° power splitters are still allowed.

In CENELEC the cabling standards are renumbered so

EN 50173-1 Information technology-Generic cabling systems – Part 1: General requirements

EN 50173-2 Information technology-Generic cabling systems – Part 2: Office premises

EN 50173-3 Information technology-Generic cabling systems – Part 3: industrial premises

EN 50173-4 Information technology-Generic cabling systems – Part 4: Homes

EN 50173-5 Information technology-Generic cabling systems – Part 5: Data centres

All these standards were issued in 2007 and they do not cover the new Categories 6A and 7A and Classes E<sub>A</sub> and F<sub>A</sub>. The new categories and classes are covered in proposed amendments, which are issued and for vote this year.

The cable standards in CENELEC, EN 50288 series, were mainly issued in 2004. They cover the original Category 6 and 7 cables. Standards for the new augmented categories are under preparation.

The standardisation work continues and EC Cabling will also continue to keep you informed in our Newsletters, which will be issued whenever important developments are done.

