CLC/TC 46X Sec 548

BUSINESS PLAN

CLC/TC 46X	Secretariat: France	2012-01-03

CLC/TC 46X - Communication Cables

A Background

In 1990, CLC/TC 46X was set up upon a request of the French National Committee to issue European standards for Coaxial Cables to be used in CATV networks.
Very soon it was agreed to split the CLC/TC 46X in two sub-committees instead of having WGs.
CLC/SC 46XC was set up to cover twisted pair cables while CLC/SC 46XA was said the relevant sub-committee for coaxial cables.
On 1995-10-03 CLC/TC 46X received a European mandate (M/212) to issue standards for communication cables.

This mandate covers:

- metallic communication cables (twisted pairs and coaxial);
- optical fibre cables;
- passive components for these cables (e.g. connectors, branching devices etc.);
- active components for these cables (e.g. lasers, amplifiers, repeaters etc.);
- ISDN cabling system for customer premises.

This resulted in the issuing of

- EN 50290 series "Communication cables"
- EN 50289 series "Communication cables - Specifications for test methods"
- EN 50117 series "Coaxial cables used in cabled distribution networks"
- EN 50288 series "Multi-element metallic cables used in analogue and digital communication and control"

During the meeting held on 1997-12-10, at the request of CLC/TC 86A, it was agreed to support the creation of a JWG on fire characteristics of communication cables. Considering that TC 46X WG 2 is already responsible for materials regarding both optical and copper cables, it has been decided that the best solution is to enlarge the scope of TC 46X WG 2 as well as its membership (including experts from CLC/TC 86 A) to prepare test methods and requirements for communication cables under fire conditions.

During the meeting held on 1997-04-24, CLC/TC 46X agreed to set up the WG3.
Following terms of reference have been agreed:

"To establish tests methods and related values to determine the electromagnetic behaviour of cables and cables assemblies used in communication networks either installed or not installed. To formally liaise with COST 243, SOBITS and the related IEC and CLC TCs SCs (IEC/TC 46 WG5, CLC/TC 215, CLC/TC 209, CLC/SC 48B, CLC/TC 210, CISPR G., JTC1 SC25 WG3)".

Once the set of specification for test methods related to the EMC behvior of cables has been completed it has been agreed to disband the CLC/TC 46/WG3

B Business Environment

B.1 General

While it has been feared that the demand for wire and cable would follow the overall drop in business activity due to the global recession the reality was more contrasted and when twisted pair telecom cables and coaxial market effectively decreased mainly due to the Optical Fibre deployment (FTTh) the Data/LAN market progressed thanks to both higher demand for LAN and Data Centre and new products exhibiting better performance for supporting new High Bit rate applications.

B.2 Market demand

The customers of the publications developed by CLC/TC/SC 46X include the manufacturers of the specific cable, connector and assembly products as well as those companies providing materials used in the make-up of the products.

The publications are also of interest to companies engaged in the product distribution/training aspects of the market and to universities. Building infrastructure systems designers, planners, installers, conformance certification organizations as well as local, regional and national government bodies are also users of the publications.

CLC/TC 46X publications are in competition worldwide with the IEC standards but they are adopted as national standards in some countries outside Europe that prefer them for competing standards from TIA, EIA, ICEA, ASTM, Mil Specs and UL for example.

B.3 Trends in technology

Copper cable technology is successfully adapting to meet changing requirements for cable materials, higher performance requirements of new applications and a crowded regulatory environment. The field of nanotechnology shows promise to provide solutions to improve the performance of cable insulating and jacketing materials.

Whilst balanced pair cables are currently being deployed in new IEEE Ethernet 10GBASET networks and especially Data Centres, there is already some discussion to launch cable specifications supporting 40 GBits over 100 m.

Use of balanced pair cables to distribute low current DC (Power Over Ethernet) is now a common practice. Work is ongoing to study the impact of increasing the level of DC current carried. The higher DC current levels could lead to requirements for higher temperature rated cables. Such changes could also affect the technology of related components such as connectors, couplers, dividers, and waveguides that might need to have similar characteristics.

The above-referenced developments are taking place in a global marketplace where customers and manufacturers are spread throughout the world with many facilities manufacturing identical products.

Cables and related passive components are the main part of the cabling infrastructure. To favour the implementation of communication infrastructure, we need a certain stability and consensus reached between a large number of manufacturers and customers, many of which are from small or medium companies that are only able to participate in the global consensus development process through their National Committees of CENELEC.

Some key trends in technology that are important to TC/SC 46X are

- continued development of higher frequency/data rate applications for balanced copper cables. Recent work in the IEEE is focusing on 40 GBS and may extend to 100 GBS Interest has been expressed to extend EN 50288 frequency range to 2.5 GHz;

- green. Data center cabling;

- smart grid. Upgrades to the communications capability of power utility networks are anticipated to create new demand, applications and requirements for telecommunications cables;

- wireless. Continued growth in wireless applications continues to provide demand, opportunities for copper cable products;

- these trends are requiring the development of new test procedures for signal transmission performance and shielding performance;

- service providers worldwide are moving to next-generation networks (NGNs). Built on IP transport, SIP signalling, and a strictly layered architecture, NGNs promise to increase operational efficiency, reduce capital expense, accelerate the rollout of new services, and deliver any service over any network.

B.4 Market trends

We are currently facing a move for Optical Cables in the telecommunication sector.

However, there is felt to be an opportunity for metallic cables since, in order to respond to today's urgent market demand for high bit rate transmission, there is now a need to upgrade the access loop with adequate solutions. (This is the case when the Fibre ends to a DSLAM and xDSL is deployed up to the end users). Enhanced twisted pair copper cables will have to replace existing ones in a very near future. This access, of course, could be provided by using CATV networks. However, the coaxial cables that are used in CATV networks are not always able to adequately support the necessary low frequency signals (1 - 5 MHz), due to immunity considerations.

In the area of customer premises cabling (CLC/TC 215), as well as in those of other TC/SC 46 "customer" system committees such as CLC/TC 209, electrical (e.g. EMC, frequency and transmission) and environmental (e.g. climatic, materials compatibility) requirements are becoming more and more demanding. Metallic cables can provide both effective and inexpensive solutions to these more stringent system requirements now demanded by the market.

The components included in the CLC/TC 46X family of products are mainly intended to be used in the infrastructure of communication networks including Data Centres. They are used either as the backbone of the trunk or in the distribution or access networks. Only a few of the CLC/TC/SC 46X products have other specific uses that are, nonetheless, closely related to the communication area. The standardization of communication networks has, up to now, always been accomplished while considering two levels: the "System level" dealing with overall system transmission aspects and the "Physical layer level" based on the standardization of the different components of the networks. The standards that have been produced have allowed the growth of the CLC/TC 46X - related industries to

take place with the assurance that products would be available on a worldwide basis and have the capability of interoperability. CLC/TC 46X and its sub-committees have contributed over 100 standards in this major undertaking.

It is known that the characteristics of the CLC/TC/SC 46X components are dependent on both the requirements of system committees as well as on the state of the technologies. Furthermore, environmental aspects such as electromagnetic behaviour, lightning protection, green cables, waste and disposal problems cannot satisfactorily be dealt with from only the component point of view as there are “system” aspects that need to be taken into account such as installation conditions, network configuration, combination of products. Considering the tendency towards hybrid networks in which coaxial, symmetric and fibre optic technologies converge, it would appear that there is a large number of characteristics that should be harmonised or synchronised for each of the components of communication networks. This means that there is a need for a common understanding of modelling and simulation, including terms and definitions of cascaded two-ports, in order to be able to optimally specify the characteristics of cables, waveguides and associated passive components. For this and other reasons, CLC/TC/SC 46X has developed and continues to pursue active and productive liaison activities with its sister CENELEC fibre optic component committees such as CLC/TC 86A.

B.5 Ecological environment

CLC/TC/SC 46X actively supports the consideration of the ecological environment in its standards. A key area is fire reaction and fire resistance of cables in which the CLC/TC 46X is heavily involved in supporting European Mandates and Directives such as CPR.

Electromagnetic compatibility (EMC) of cable networks and installations is a second key area. Development of test methods and performance requirements applicable to both screened and unscreened cable products continues to be a vital CLC/TC 46X activity.

Material conservation, recycling and elimination of hazardous substances (such as heavy metal compounds) are all taken into account as CLC/TC 46X develops standards for cables, connectors and waveguides.

The usage of hazardous substances, in cables is governed by ROHS and REACH directives. It is essential that CLC/TC 46X monitor emerging regulations under consideration that would further restrict cable substances or compounds commonly used in its products.

Other regulations and laws are either in force or under consideration which impact the handling, recycling and removal of packing/packaging material and electronic scrap (especially electronic equipment such as computers, television sets, populated printed circuit boards, electronic components and electromechanical components.)

CLC/TC 46X relies on its CLC/TC 46X / CLC/TC 86A JWG as well as the IEC/TC 46/SC 86A relevant JWG to bring information related to the above regulations and the work in progress within IEC/TC 111 to the TC/SC plenary meetings and working group meetings respectively, so that TC 46 members/experts can be properly informed. Then revisions to the standards that are under preparation and published can be considered.

B.6 Involvement of societal stakeholders

Societal stakeholders are usually found as end users or our products. As such they use our standards but are not very often involved in their preparation. However, they are involved in the CLC/TC 46X work as soon as, certification, quality assessment, reliability, and sustainability are dealt with.

B.7 Involvement of SMEs

Many CLC/TC 46X experts are coming from the cable industry and also through national and European Trade Association (e.g. Europacable) that gather a number of SMEs. Also test houses representatives belong to SMEs.

C System approach aspects

CLC/TC/SC 46X utilizes and establishes, as needed, liaisons with other committees.

System Committees (TC 46X as a supplier of standards)	TC 215	Interconnection of information technology equipment
	TC 209	Audio, visual, multimedia systems and equipment
	TC 205	
	TC65X	
	ISO-IEC JTC1 SC25	
	IEC SC48B	
	IEC SC46F	
	IEC TC 46/ SCs	
Sister Committees (TC 46 as a customer of standards)	TC 20 TC 86A	Electric cables Optical Cable
Other Committees (horizontal committees that produce standards used by TC 46)	IEC/TC 111*	Environmental standardization for electrical and electronic products and systems
	ETSI ATTM ITU-R ITU-T	
	TC 48 TC 48B TC 51 SC 86B	Electromechanical components and mechanical structures for electronic equipment Connectors Magnetic components and ferrite materials Fibre optic interconnecting devices and passive components
Other Committees (committees that produce standards similar to TC 46 to be in liaison with for technical consistency)	TC 20 TC 86A	

D Objectives and strategies (3 to 5 years)

Objectives of CLC/TC 46X and its sub-committees are:

a) To provide our customers (CLC/TC 215, CLC/TC 205, CLC/TC 209) with Cables Specifications to be used in the next generation of communication networks and cabling.

b) To provide our customers (CLC/TC 215, CLC/TC 205, CLC/TC 209) with Cables Specifications ensuring cables to be “environment friendly “.complying with the most demanding standards and regulations in environmental area. but also allowing the systems that used them to improve their resources efficiency.

E Action plan

TC 46X

- Revision and maintenance of the set of raw material specifications as requested by new environmental constraints as well as enhanced cable performances.
- Revision of Basic Specification to be in line with European Regulation (i.e. European Directives covering the cables such as CPR).
- Detail Specification for Cords to be used by CLC/TC 215 or CLC/TC 209.

SC 46XA

- Revision and maintenance of the set of coaxial cable specifications to be referred to into CLC/TC 209 and CLC/TC 215 cabling specification.
- Preparation of new test methods for coaxial cables

SC 46XC

- Revision and maintenance of the set of twisted pair cable specifications to be referred to into CLC/TC 215 cabling specification.
- Preparation of new twisted pair cable specifications to be referred to into CLC/TC 215 cabling specification as well as other committees such as CLC/TC 65 or CLC/TC 205.
- Preparation of new twisted pair cable specifications to be used in industry automation.
- Preparation of new test methods for twisted pair cables.

F Useful links to CENELEC web site

http://www.cenelec.eu/dyn/www/f?p=104:7:495659194216447::::FSP_ORG_ID,FSP_LANG_ID:112,25

Guy PERROT