STRATEGIC BUSINESS PLAN (SBP)

IEC/TC OR SC:	SECRETARIAT:	DATE:
TC46	**US**	**2020-11-03**

Please ensure this form is annexed to the Report to the Standardization Management Board if it has been prepared during a meeting, or sent to the Central Office promptly after its contents have been agreed by the committee.

A. STATE TITLE AND SCOPE OF TC

Are there any new or emerging trends in technology that will impact the scope and work activities of the TC? Please describe briefly.

Do you need to update your scope to reflect new and emerging technologies? If yes, will these changes impact another TC's scope or work activities?

If yes, describe how these will impact another TC(s) and list the TC(s) it would impact

Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories

To establish and maintain standards for the terminology, design, characteristics, related test methods and requirements for quality assessment of metallic conductors, wires, waveguide, RF connectors, RF and microwave passive components and accessories for analogue and digital transmission systems and equipment for communication networks and cabling.

Note: Magnetic components and ferrite devices covered by the scope of TC 51 will not be dealt with by this technical committee.

B. MANAGEMENT STRUCTURE OF THE TC

Describe the management structure of the TC (use of an organizational chart is acceptable) (should be integrated by CO automatically) and, if relevant (for example an unusual structure is used), provide the rationale as to why this structure is used.

Note: Check if the information on the IEC website is complete.

When was the last time the TC reviewed its management structure? Describe any changes made. When does the TC intend to review its current management structure? In the future, will the TC change the current structure, for example due to new and emerging technologies, product withdrawal, change in regulations etc. Please describe.

Make sure the overview includes:

- any joint working groups with other committees,
- any special groups like advisory groups, editing groups, etc.

The standardization projects in TC 46 are carried out by several working groups and three subcommittees with their respective working groups.

The TC 46 working groups are:

WG5	Test methods and limits for the electromagnetic compatibility (EMC) of metallic cables and other passive components, by the measurement of their electromagnetic coupling with the environment
WG6	Passive Intermodulation Measurement (PIM)
WG9	Metallic Cable Assemblies for ICT

JWG1	Raw materials and environmental issues (linked to SC86A)
MT IEV-726	IEV 726 (Maintenance Team for the Revision of International Electrotechnical Vocabulary - Transmission lines and waveguides; IEV 726. (IEC 60050-726))
ahG 10	Coupling attenuation of cable assemblies absorbing clamp method (Ad-Hoc Group to investigate the practical use of IEC 62153-4-14 and the applicability for 2000MHz)
ahG 12	ahG12 (Ad-Hoc Group to develop specifications and test procedures for development of leaky wave guide)
AG 11	Requirements and Test Methods (Advisory Group to harmonize general requirements and test methods among all subcommittees of TC46)

Sub-committees and their respective working groups:

SC 46A, “Coaxial Cables” is responsible for standardisation activities related to coaxial cables used primarily in ICT (Information and Communications Technology), microwave, multimedia distribution networks and systems, and telecommunications systems.

The SC 46A working group is:

WG 3	Coaxial cables for ICT (Information and Communications Technology), multimedia distribution networks and systems, and telecommunications systems.

SC 46C, “Wires and Symmetric Cables” is responsible for standardization activities related to symmetric cables used primarily in ICT (Information and Communications Technology) and analogue and digital transmission systems and equipment for communication and signalling.

The SC 46C working groups is are:

WG 7	Premises cables for digital communication
JWG8	Hybrid communication cables – linked to SC86A
WG10	Twinax Cables
MT1	Maintenance Team 1 (To maintain the standard IEC 62255 and the series of standards with IEC IDs below 61000)
MT62222	Fire performance of communication cables installed in buildings. - Update new methods of fire retardancy.
JPT1	Joint modelling task group Managed by ISO/IEC JTC 1/SC 25

SC46F, “RF and Microwave Passive Components” is responsible for standardization activities related to r.f. & microwave connectors, waveguide and its assemblies, Waveguide coaxial adapter, Directional coupler, Power divider and combiner, Dummy load, RF Rotary joint, Filters and other Microwave Passive Components which used in telecommunications, multimedia distribution networks and systems. Magnetic components and ferrite devices are covered by TC51.

The SC 46Fworking groups is are:

WG1	RF connectors, include RF coaxial connectors, multi-RF channel connectors, standard test connectors and their test methods.
WG2	Microwave Passive Components, include waveguide and its assemblies, Waveguide coaxial adapter, Directional coupler, Power divider and combiner, Dummy load, RF Rotary joint, Filters and other Microwave Passive Components.

C. BUSINESS ENVIRONMENT

Provide the rationale for the market relevance of the future standards being produced in the TC.

If readily available, provide an indication of global or regional sales of products or services related to the TC/SC work and state the source of the data.

Specify if standards will be significantly effective for assessing regulatory compliance.

The demand continues to grow for wired internet LAN communications in new offices and industrial equipment. The demand for increased bandwidth drives long term development and respective change in cable and related component design.

The rapid development of 5G wireless communication, Internet of Things, intelligent manufacturing, artificial intelligence, cloud computing and storage, intelligent vehicles and high-speed rail transit are driving development of communication cables, radio frequency connectors, and microwave passive components. Higher frequency, higher speed, integration, miniaturisation and modularisation are essential technologies. IEC must continue developing corresponding product standards to meet the rapid development for the market.

D. MARKET DEMAND

Provide a list of likely customers of the standards (suppliers, specifiers, testing bodies, regulators, installers, other TC/SC's etc.). Do not specify company names, only categories of customers.

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

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

The automotive industry needs more bandwidth and improved cable performance for intelligent vehicles.

The telecom industry needs more bandwidth and improved cable performance for 5G wireless communication technology.

In some regions such as Europe, the IEC standards are adopted as national standards with little or no change.

In China there is new and growing interest and participation in IEC standards developments for RF connectors, RF cables, hybrid cables and cable assemblies for the growing microwave industry, communication radar and military market, and high-speed rail transit.

E. SUSTAINABILITY DEVELOPMENT GOALS

INDICATE THE SUSTAINABLE DEVELOPMENT GOALS (SDGS) THAT ARE ADDRESSED BY WORK WITHIN THE TC/SC. INDICATE EACH SDG INDICATOR AFFECTED (REFERENCE SPREADSHEET AVAILABLE AT HTTPS://WWW.IEC.CH/SDG/) , AND PROVIDE SPECIFIC INFORMATION ABOUT HOW THE TC/SC IS ADDRESSING THE SDG. CONSIDER BOTH DIRECT AND INDIRECT IMPACTS OF THE WORK OF THE TC/SC.

- ☐ **GOAL 1:** No Poverty
- ☐ **GOAL 2:** Zero Hunger
- ☐ **GOAL 3:** Good Health and Well-being
- ☒ **GOAL 4:** Quality Education
- ☐ **GOAL 5:** Gender Equality
- ☐ **GOAL 6:** Clean Water and Sanitation
- ☒ **GOAL 7:** Affordable and Clean Energy
- ☐ **GOAL 8:** Decent Work & Economic Growth
- ☒ **GOAL 9:** Industry, Innovation & Infrastructure
- ☐ **GOAL 10:** Reduced Inequality
- ☒ **GOAL 11:** Sustainable Cities and Communities
- ☐ **GOAL 12:** Responsible Consumption & Production
- ☐ **GOAL 13:** Climate Action
- ☐ **GOAL 14:** Life Below Water
- ☐ **GOAL 15:** Life on Land
- ☐ **GOAL 16:** Peace & Justice Strong Institutions
- ☐ **GOAL 17:** Partnerships to achieve the Goal

Access to knowledge and education play a major role in the development of solutions for several significant problems influencing every day's life. Remote learning and collaboration based on tele-conferencing gain more importance as necessary reduction of CO2 emission will lead to reduced chances for face-to-face meetings. Additionally, restrictions originating from pandemic countermeasure enforce this need. Powerful and reliable telecommunications networks are therefore indispensable and can furthermore lead to – in terms of geography – more equally distributed potential for participation in education programs.

Resilient infrastructure and sustainable industrialisation need better alignment of industrial production and generation of energy in order to be able to cope with climate change and expected energy shortage of the post carbon age. Furthermore, factories, offices and employees more and more need to be connected remotely to enhance responsiveness while decreasing the need for travelling at the same time which also indicates the need for powerful and reliable telecommunications networks.

The increasing number of inhabitants of cities lead to a growing energy consumption in these cities which – under the constrains of a necessarily growing share of renewable energy sources – leads to the necessity to a better alignment of citizen's energy consumption and the generation of energy. This can be supported by so-called smart grids which combine all information about demand and generation of energy in real time.

All three before described global trends indicate a strong need for improved telecommunications networks. Direct access for the users of telecommunication in offices, homes and agencies is mainly based on copper communications cables. This will remain extremely important due to the unique capability of copper communications cable to transfer both electrical power and information. Standards for these cables are developed by TC46 and its sub-committees and contribute to the achievement of the SDG's.

F. TRENDS IN TECHNOLOGY AND IN THE MARKET

If any, indicate the current or expected trends in the technology or in the market covered by the products of your TC/SC.

Key trends in technology important to TC/SC 46:

- Continued development of higher frequency/data rate applications for balanced copper cables. After focusing on 40 Gb/s and the publication of standards defining a new cable category for this application, the transmission of high data rates over a single pair gains focus. This will play a key role for the connection of numerous small devices (Internet of Things). First Single Pair Ethernet applications are already used in Industrial and Automotive environment.
- Continued and growing utilization of premises cabling infrastructure as a DC power supply network. A revision of a respective test method has been started in order to provide consistent means of quantifying the related temperature rise effects.
- Green Data Centre cabling to reduce energy consumption.

- Smart Grid. Upgrades to the communications capability of power utility networks are anticipated to create new demand, applications and requirements for telecommunications cables.
- Wireless LAN. Continued growth in wireless applications continues to provide demand, opportunities for copper cable products. Further applications for existing balanced cabling can be expected.
- 5G telecom communication. 5 G communication requires more base stations, which requires more coaxial cables, hybrid cables, RF connectors, and their assemblies with higher performance.
- Cloud computing and storage. Requires more high-speed big data centres, which results in the need for more high-speed RF multi-channel RF connectors and communication cables.
- Intelligent vehicles and high-speed rail transit use special cable technology such as leaky waveguides, other passive microwave components for sensors, and hybrids technology.
- Internet of Things, intelligent manufacturing and artificial intelligence are using new high-performance single pair balance cable and connector technology.

G. SYSTEMS APPROACH ASPECTS (SEE DIRECTIVES PART 1 ANNEX SP)

Does your TC/SC have a need for a systems approach?

If so:

- Will the Systems work be in a single TC or in multiple TCs?
- Will a Standardization Evaluation Group (SEG), Systems Committee (SyC), or Systems Resource Group be required?
- Is your TC/SC work of relevance to ISO?
- Is or are there fora or consortia working in parallel to IEC? Is there a chance to integrate this work in your TC/SC?

This should not only be restricted to the customer/supplier relationships with other TC/SCs indicating types of co-operation (e.g. liaisons, joint working groups) but be of a more generic nature.

TC 46 has no need for a system approach. Nevertheless, it utilizes and establishes, as needed, liaisons with other committees.

TC 46 as a supplier of standards:

JTC1/SC 25	Interconnection of information technology equipment
SC 65C	Industrial networks
TC 100	Audio, video and multimedia systems and equipment
TC 103	Transmitting equipment for radiocommunication

TC 46 as a customer of standards:

TC 20	Electric cables

Other committees that produce standards used by TC 46:

TC 104	Environmental conditions, classification and methods of test
TC 89	Fire Hazard Testing
TC 111	Environmental standardization for electrical and electronic products and systems

ITU	International Telecommunication Union
ITU-R	Radio communications Sector
ITU-T	Telecommunication Standardization Sector

Other that produce standards similar to TC46 to be in liaison with for technical consistency:

TC 48	Electrical connectors and mechanical structures for electrical and electronic equipment
SC48B	Electrical connectors
TC 51	Magnetic components, ferrite and magnetic powder materials
SC 86A	Fibres and cables

H. CONFORMITY ASSESSMENT

With reference to Clause 33 of Part 2 of the ISO/IEC directives, are all you publications in line with the requirements related to conformity assessment aspects?

Will the TC/SC publications be used for IEC Conformity Assessment Systems (IECEE, IECEx, IECQ, IECRE)?

Will any of your standards include test specifications, reproducible test requirements, and test methods?

Are there likely to be special conformity assessment requirements generated by any standards projects? If yes, list which projects.

n./a.

I. 3-5 YEAR PROJECTED STRATEGIC OBJECTIVES, ACTIONS, TARGET DATES

STRATEGIC OBJECTIVES 3-5 YEARS	ACTIONS TO SUPPORT THE STRATEGIC OBJECTIVES	TARGET DATE(S) TO COMPLETE THE ACTIONS
TC46: To continue development and revision of the IEC 62037 PIM test procedures	Limitation of PIM improves bandwidth and reduces the energy consumption of wireless telecommunication networks	2022
TC46: To continue development of combined electromagnetic screening effectiveness tests for coaxial and symmetrical cables.	To perform comparative measurements between the triaxial and absorbing clamp method for coaxial and symmetrical cables. To investigate coupling attenu-ation for electromagnetic per-formance of screened and un-screened symmetrical cables from 0.1 MHz up to 2 GHz with the triaxial set-up.	On-going
TC46: To continue development of cables assemblies (jumpers) standards used in wireless communications.		2022

SC46A: To establish and revise procedures for electrical, mechanical and environmental tests on coaxial RF cables of IEC 61196-m-n series.		On-going
SC46A: To establish and revise generic, sectional and detail specification standards for coaxial cables for ICT and multimedia distribution networks and systems.		On-going
SC46A: To develop and revise generic, sectional and detail specification standards for RF and microwave coaxial cables.		On-going
SC46C: To develop standards for single pair cables e.g. for up to 50 Gb/s single pair Ethernet	Close cooperation with ISO/IEC JTC1/SC25/WG3 is needed that is developing new standards single pair cabling. (WG7)	On-going
SC46C: To continue develop-ment of hybrid cables used in communications.	Close cooperation with SC86A is established (JWG8). First projects started.	On-going
SC46C: To develop standards for IEC 62783 series twinax cables.		On-going
SC46F: To continue to develop new sectional specifications of the IEC 61169 series for newly developed connectors with high market potential.		On-going
SC46F: To develop a series of standards for multi-RF-channel connectors		On-going
SC46F: To continue the development of test methods for transmission performance and materials properties		On-going
SC46F: To continue the developments of standards for waveguides and other microwave passive components.		On-going
Note: The progress on the actions should be reported in the RSMB.		