



IEC/TC OR SC: <b>IEC/TC 51</b>	SECRETARIAT: <b>Japan</b>	DATE: <b>2017-11-03</b>
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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

Title of TC 51  
MAGNETIC COMPONENTS, FERRITE AND MAGNETIC POWDER MATERIALS

The scope of TC 51

To prepare standards relating to:

- parts and components displaying magnetic properties and intended for electronics in a wide range of application areas, including telecommunications, computers, automotive, audio, video, lighting, solar and wind power systems, welding, inductive heating, power conditioning (UPS) and RFID;
- part associated with such components;
- measuring methods and tests, and specifications for transformers and inductors using such components;
- ferrite and magnetic powder materials.

**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.

Working Groups

WG 1 Ferrite and Powder Cores

WG 9 Inductive components

WG 10 Magnetic materials and components for EMC applications

Maintenance Teams

MT 1 Magnetic oxide cores (E-cores) of rectangular cross-section and associated parts - Dimensions

MT 7 Measuring methods for properties of gyromagnetic frequencies materials intended for applications at microwave frequencies

Liaisons

TC 46/SC 46F	R.F. and microwave passive components
TC 68	Magnetic alloys and steels
TC 91	Electronics assembly technology
TC 96	Transformers, reactors, power supply units and combinations thereof

**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.

Magnetic components using ferrite and powder cores are the key components for electrical and electronic equipment. The pace of growth of the electronics industry continues to be sluggish since 2016 with Europe maintaining a slow extended basic tone and business in China remains in stable growth. The resurgence of growth in the electronics market is stagnant due to market saturation in its most recent growth economy (China) awaiting the next wave of electronic devices and systems that can stimulate growth in advance markets eventually spreading to larger follow on markets. Even with these circumstances, the business of magnetic components will be expected a progress due to rising demands and favorable developments of integrated service digital broadcasting; broadband mobile-phone with digital video broadcasting for handheld (DVB-H); high definition internet-TV; personal computers; computer game systems; broadband data communication; next generation DVD such as blue-ray disk; GPS; digital cameras; electrical equipment for the automotive industry, including growth in new energy vehicles and electric vehicle charging piles; power management (UPS); energy systems; welding systems; solar and wind power systems; sensors; RFID; wireless power transfer, static energy (watt-hour) meters; LED lighting; LED backlighting; and robotic systems. It is forecasted that the long-term business prospects look reasonable. Magnetic components are always required for EMI suppression, power supplies, and transformers for telecommunication. In addition, planar technology continues to be the most suitable for high power density DC/DC converters. The integration of magnetic cores into end application printed circuit boards to form magnetic components is becoming widespread.

**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.

Manufacturers of transformers, inductors and OEM manufacturers are the users of TC51 standards. TC51 recognizes the need for a stronger involvement of users of ferrite and inductive components. A proactive effort, which is standardization by foreseeing the future demand rather than documentation of the established industry standard (de facto standard), is desired. The purpose of standards for magnetic components is to provide a general platform for agreement between suppliers and users. Special requirements are not unusual, and consequently direct agreements between supplier and user on critical points are common. Standards function to set the baseline expectations for typical components. IEC standards are widely used at the international level.

**E. 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.

“High frequency”, “small physical size”, “low profile” and “low power loss” describe the key trends at present for magnetic components. Digital techniques are adopted in IT products such as mobile phones and personal computers, as well as in growth fields such as consumer electronics and automotive applications. Because the problem of high frequency noise occurs inevitably, the growth in demand for EMC components (and the related products of TC 51: ferrite cores of WG 1, inductors of WG 9 and noise suppression sheets of WG 10) is higher than the growth rate of electronic equipment generally.

The trend in power systems is to have distributed power architecture, usually one or more DC/DC converters on each board, often using a multiphase topology that requires multiple inductors.

With this trend, the magnetic components need to have a “low profile”, a “low loss with high

saturation magnetic flux density”, and wide temperature range performance at high frequencies. As the DC/DC converters are located physically closer to the load to reduce routing losses and routing inductance effects, larger values of current are required to drive devices at lower voltages coupled with multiple stages of voltage conversion allows for increased usage of magnetic powder cores.

The demand for active power factor correction (PFC) circuitry has become important, and exhibits strong growth. Demand for magnetic components for use in electrical vehicles (EV) and hybrid electrical vehicles (HEV) will be especially increased. Solar and wind power circuitry, inductive heating, welding and RFID also show strong growth. The technical requirements for magnetic components used in emerging technologies such as Smart grid, DC to the home and renewable energy should be monitored as these technologies near commercialization.

The environmental conditions in automotive applications require new materials and components to operate at temperatures in ranges from –55 °C to +155 °C, and wider. High frequency and high voltage circuits utilizing magnetics are increasingly used in automotive applications.

Markets of magnetic components are various, including industrial, commercial, consumer products, aerospace, medical, and utilities. Customers for magnetic components have forced increased competition among the suppliers. Lower prices and shorter delivery times are demanded, without any reduction in quality. Production of magnetic components has been shifting to Asia, because that is where very substantial proportions of the markets for magnetic components have moved, and to meet lower price requirements. Currently about 70 % to 80 % of the production is in Asia. The demand of magnetic components has increased in quantity. In response to these demands of low cost and high power density, integrated magnetic components are being designed into more applications. Even though low cost is still the primary driver, there is renewed interest in the methodology used by manufacturers to characterize reliability. Also consistent with physical integration to reduce physical size there is a growing interest in the near magnetic field characteristics of magnetic components.

At the same time, many components that are not designed in accordance with any standards may appear on the market, it should become increasingly important to produce and supply products based upon IEC standards.

#### **F. SYSTEM APPROACH ASPECTS (REFERENCE - AC/33/2013)**

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 Systems 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.

If there is no need for a systems approach as outlined in AC/33/2013, is it intended a TC would not be requested to report on general systems approach considerations such as customer/supplier relationships, liaisons, joint WGs, etc. as referenced in the system approach matrix illustrated in slide 14 of the presentation attached to AC/37/2006?

- Component committees (TC 51 – role of a customer)
  - IEC/TC 40: Dimensional standardization of multilayer chip parts, packaging, safety requirement
  - IEC/TC 68: Classification, measuring methods and properties of magnetic materials
- System committees (TC 51 – role of a supplier)
  - IEC/TC 1: Terminology
  - IEC/SC 46F: RF and Microwave components
  - IEC/TC 96: Transformers, reactors, power supply units, and combinations thereof
- Other committees
  - IEC/TC 77: EMC
  - IEC/TC 91: Electronics assembly technologies, soldering
  - IEC/TC 104: Environmental conditions, test methods
  - IEC/TC 111: Environmental aspects

**G. CONFORMITY ASSESSMENT**

With reference to clause 6.7 of Part 2 of the ISO/IEC directives, are all your 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.

None of the above

**H. HORIZONTAL ISSUES**

Indicate here how the TC/SC deals with horizontal issues such as energy efficiency, environmental aspects, safety, security...

Provide information on the interaction with SMB Advisory Committees, if applicable.

None of the above

**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
Guideline on the format of ferrites and magnetic components in manufacturers' catalogues and measuring method for each application.	Develop new IS series of powder cores.	2020-12
Maintenance the standards for suppliers and users to use easily and conveniently.	Integrate the IEC 62317 families (Dimensions) and IEC 60424 families (Surface irregularities) by each shape to improve user's convenience.	2020-12
Establish uniform benchmarks for suppliers and users for performance in new development.	Develop guidelines on the limits of surface irregularities for Pot cores, EP cores and EFD cores.	2020-12
Align magnetic component performance with environmental improvement.	Discuss NP for WG9 (inductive components), which are used for large signal and EMC at WG meeting and develop new IS.	2021-12
Align magnetic component performance with environmental improvement.	Discuss NP for WG10 (magnetic materials and components for EMC applications) for new measuring method of noise suppression ratio at WG meeting and develop new TR.	2019-12

Note: The progress on the actions should be reported in the RSMB.