



IEC/TC OR SC: <b>TC47</b>	SECRETARIAT: <b>Korea</b>	DATE: <b>2019-10</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

IEC TC 47 (Semiconductor devices) was proposed in 1959 and established by the "Committee of Action" in 1960 to cope with the needs of industry in this area. The scopes of TC 47 and subcommittees are described in below.

TC 47 (Semiconductor devices) is preparing international standards for the design, manufacture, use, reuse, and testing of discrete semiconductor devices, integrated circuits, sensors, electronic component assemblies, interface requirements, and micro-electromechanical devices, using environmentally sound practices. The activities include wafer level reliability, package outlines, terms and definitions, quality issues, physical environmental testing, device specific test methods, device specifications and minimum content, pinouts, interface requirements, and applications.

Excluded from the scope are:

- Passive integrated circuits or networking containing resistors and capacitors or their combination (TC 40)
- Systems of photovoltaic conversion and all the elements in the entire photovoltaic energy system (TC 82)
- Devices covered by the scope of TC 22, TC 86 and JTC1
- Discrete/integrated optoelectronic semiconductor devices for fiber optic telecommunications including hybrid modules (TC86).

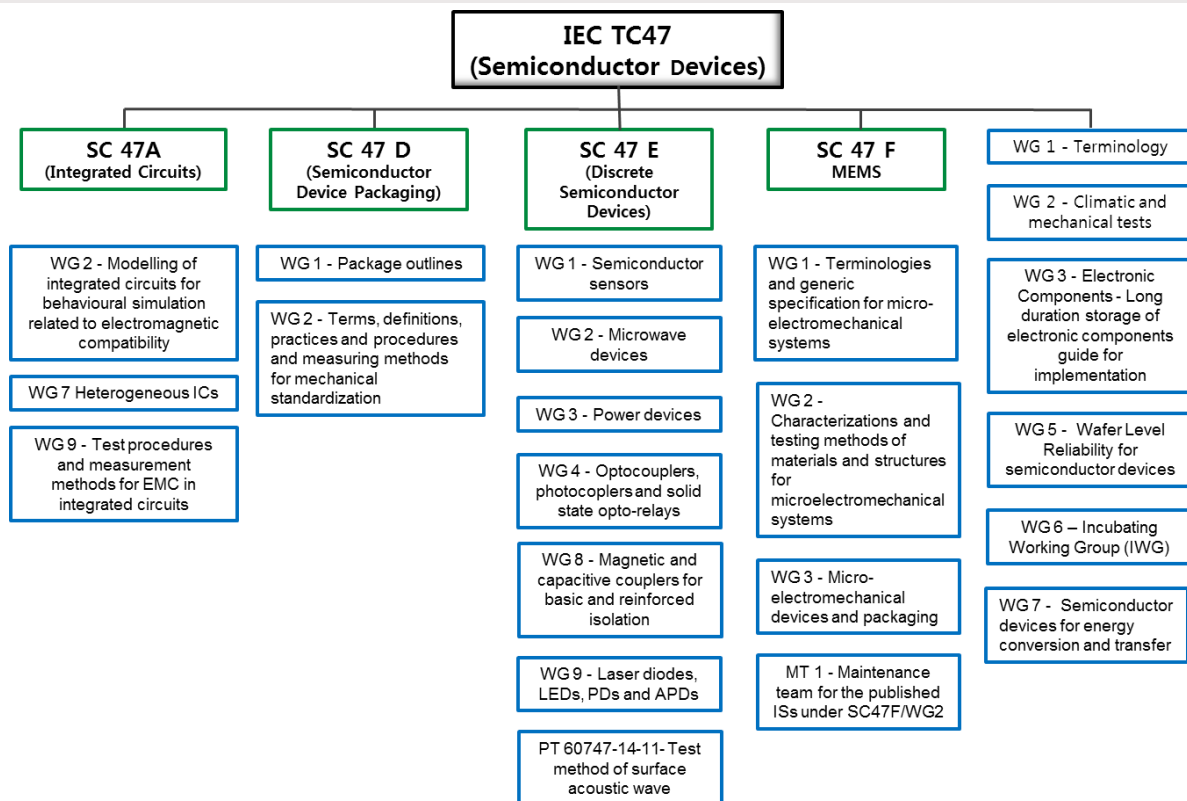
SC 47A (Integrated Circuits) is responsible for international standards for both semiconductor and hybrid integrated circuits, for electronic equipment and systems.

SC 47D (Semiconductor Devices Packaging) is responsible for international standards for the mechanical and thermal aspects of semiconductor packages, package assembly technologies and measuring methods, including wafer level packaging.

SC 47E (Discrete Semiconductor Devices) is responsible for international standards for environmentally sound practice in the design, manufacture, use and reuse of discrete semiconductor devices. This includes terms and definitions, letter symbols, essential ratings and characteristics, measuring methods, and specifications.

SC 47F (Micro-electromechanical systems) is responsible for international standards for environmentally sound practice in the design, manufacture, use and reuse of micro-electromechanical systems. This includes terms and definitions, letter symbols, essential ratings and characteristics, measuring methods, reliability testing methods, and material testing method.

## B. MANAGEMENT STRUCTURE OF THE TC



## C. BUSINESS ENVIRONMENT

TC 47 operates in a fast-moving competitive environment characterized by rapid technology changes and fierce competition. The market for semiconductors is rapidly expanding on a global basis with new market applications emerging daily. These new applications and markets may experience total product life cycles of less than one year in length.

## D. MARKET DEMAND

The market for semiconductors is universal and affects all sectors and aspects of industry. This diversity requires standards for all aspects of semiconductors, their use and applications from toys to satellites.

## E. TRENDS IN TECHNOLOGY AND IN THE MARKET

The trend of technology shows rapid growth in core technologies and short product life cycles. This speedy technology trend requires that semiconductor related industries should adjust themselves to these technology trends. The market trend of semiconductor devices depends on market demand. Recently, market of personal mobile electronic devices and flat panel display is growing, so the trends of semiconductor devices are mainly related to those areas. And also, the markets demand high performance, small size, low power, high reliability and highly integrated semiconductor devices.

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

ISO(IEC TC 47 as a supplier)	ISO/TC 8 ISO/TC 20 ISO/TC 22 ISO/TC 85 ISO/TC108 ISO/TC 172 ISO/TC 180 ISO/TC 229 ISO/TC 266 ISO/TC 269 ISO/TC 276 ISO/IEC JTC 1	Ships and marine technology Aircraft and space vehicles Road vehicles Nuclear energy, nuclear technologies, and radiological protection Mechanical vibration, shock and condition monitoring Optics and photonics Solar energy Nanotechnologies Biomimetics Railway applications Biotechnology Information technology
Liaisons(TC 47)	TC56 TC 91 TC 101 TC107 TC 110 TC 111  TC 113  TC119 TC 124 ISO TC 22/SC 31 C Liaison	Dependability Electronic assembly technology Electrostatic Process management for avionics Electronic display devices Environmental standardization for electrical and electronic products and systems Nanotechnology standardization for electrical and electronic products and systems Printed electronics Wearable Electronic Devices and Technologies Road vehicles / Data communication  C liaison with EIA
Liaisons(SC 47A)	TC 91 TC 40 SC47D	Electronic assembly technology Capacitors and resistors for electronic equipment Semiconductor Devices Packaging
Liaisons(SC 47D)	SC 3D TC 40 SC 65E TC 91	Product properties and classes and their identification Capacitors and resistors for electronic equipment Devices and integration in enterprise systems Electronics assembly technology
Liaisons(SC 47E)	TC 49  TC 91 TC 108  ISOTC172/SC9	Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection Electronics assembly technology Safety of electronic equipment within the field of audio/video, information technology and communication technology Optics and photonics / Electro-optical systems
Liaisons(SC 47F)	TC49  TC119	Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection Printed electronics

**G. CONFORMITY ASSESSMENT**

SC 47A has had developed several international standards for use in the IEC Quality Assessment System for Electronic Components (IECQ) in the 1980's to 2000 which can be seen in some parts of the IEC 60748 series, IEC 61739 and IEC 61943. These publications will be aligned to clause 6.7 of Part 2 of the ISO/IEC directives in accordance with the "neutrality principle" when these publications should be revised.

**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

**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
<p><b>TC 47 (Semiconductor devices)</b></p> <p>1. Watch the needs of market and technology trends of semiconductor devices to reflect the needs to the standards.</p>	<p><b>TC 47 (Semiconductor devices)</b></p> <p>1. Blazing a trail in the field of semiconductors to follow up the market and technology trends.</p> <p>2. Finding unexploited areas to apply the standards of TC 47 and reorganize the existing system (Title and scope) of TC 47 and SCs.</p> <ul style="list-style-type: none"> <li>- Flexible and stretchable semiconductor devices</li> <li>- Next generation semiconductor interface such as Human Body Communication(HBC) and Internet of Things (IoT)</li> <li>- Energy transfer and conversion semiconductor devices for wireless power transmission and energy harvesting</li> <li>- Semiconductor devices for automotive vehicles</li> </ul>	<p><b>TC 47 (Semiconductor devices)</b></p> <p>1. As needed</p> <p>2. As needed</p>
<p><b>SC 47A (Integrated Circuits)</b></p> <p>1. EMC of IC: Continue to develop series of standard for transceiver evaluation, IC modeling for system simulation (EMC).</p> <p>2. Expand the scope to explore the standard for multi-chip integration not only for 3D-IC.</p> <p>3. Seek the standard for design of IC at system level. Need to harmonize with other TC/SC. WG2 scope to be expanded not to be exclusively EMC related</p>	<p><b>SC 47A (Integrated Circuits)</b></p> <p>1.1. WG9 : to develop the standard for transceiver evaluation series (Part 1 to Part 7).</p> <p>1.2. WG2: to continue to develop IC model standard for EM simulation.</p> <p>1.3 to renew published standard to match to recent specifications</p> <p>2.1. WG7: to expand standards of 3D-IC documents.</p> <p>2.2 to continue to explore-the standard for multi-chip integration, and to establish the road map of standardization</p> <p>3.1 To explore the new series of standard of IC modeling.</p> <p>3.2. The liaison with other TCs may bring up the new items which would be related to system board.</p>	<p><b>SC 47A (Integrated Circuits)</b></p> <p>1.1 By2022.</p> <p>1.2 By 2020.</p> <p>1.3 Annually</p> <p>2.1 By 2022</p> <p>2.2 By 2020</p> <p>3.1 By 2020</p> <p>3.2 As needed</p>
<p><b>SC 47D (Semiconductor Devices)</b></p>	<p><b>SC 47D (Semiconductor Devices)</b></p>	<p><b>SC 47D (Semiconductor Devices)</b></p>

<p><b>Packaging)</b></p> <p>1. Progress of standardization efficiency and market compatibility by reorganizing and updating of actual standards.</p> <p>2. Search of standardization which are currently outside the scope of SC47D and currently within the scope but ungenerated yet.</p>	<p><b>Packaging)</b></p> <p>1. Research of non-standardized items at inside of SC47D scope, and investigation of their standardization.</p> <p>2. Research around the border of related TC/SC and SC 47D.</p>	<p><b>Packaging)</b></p> <p>1. By 2022</p> <p>2. By 2022</p>
<p><b>SC 47E (Discrete Semiconductor Devices)</b></p> <p>1. Developing new fields of discrete semiconductors which is emerging and needed international standards.</p> <p>2. Expanding liaisons with internal IEC or ISO for the fusion technology of various semiconductor devices</p>	<p><b>SC 47E (Discrete Semiconductor Devices)</b></p> <p>1. Developing more close liaisons with TC113, TC119, TC124,ISO/IEC JTC1/SC6 for the future convergence technologies.</p> <p>2. Making new liaisons with ISO/TC22/SC31 for improving the project of data communication of automotive and sensor interfaces.</p> <p>3. Making new liaison with SC 34A for effective collaboration in the field of LED devices.</p>	<p><b>SC 47E (Discrete Semiconductor Devices)</b></p> <p>1. Blazing a trail in the field of discrete semiconductors to follow up the market and technology trends. (by 2025)</p> <p>2. Finding unexploited areas to apply the standards of SC 47E. (by 2025)</p> <p>3. Establish liaison with SC 34A and start working collaboratively. (by 2020)</p>
<p><b>SC 47F (Micro-electromechanical systems)</b></p> <p>1. Effective works to develop and update standards by newly established WGs (WG 1, WG2 , WG 3) and MT 1</p>	<p><b>SC 47F (Micro-electromechanical systems)</b></p> <p>1-1. Works of WG 1, WG 2, WG 3 and MT 1 started from 2014 to realize effective standardization works.</p> <p>Since all WGs and MT1 have been related each other concretely, meetings of the WGs and MT 1 will hold continually by keeping joint style part for meeting of common items.</p> <p>1-2. To satisfy manufacturer and users of following products, SC 47F will aim to develop standards that are applicable to following state products.</p> <ul style="list-style-type: none"> <li>- wafer -level -materials for uses of the following chip level components (in the task of WG 2);</li> <li>- chip level components produced from the wafer level materials that are processed to MEMS structures (in the task of WG 2);</li> <li>- devices as finished products consisted from the components and other functional components (in the task of WG 3).</li> </ul> <p>2. Workshop Technical and standardization</p>	<p><b>SC 47F (Micro-electromechanical systems)</b></p> <p>1-1. Taking appropriate actions year by year until 2020</p> <p>1-2. By 2020</p>

<p>2. Cooperate more closely with manufacturers and users for current technology</p>	<p>workshop on MEMS and new interesting topics will be held every year. On 2020-06, the workshop will be held at Kumamoto, Japan. Topics of the workshop is discussed in WGs/MT1 and plenary meeting at Shanghai on 2019-10.</p>	<p>2. Taking appropriate actions year by year until 2020</p>
<p>Note: The progress on the actions should be reported in the RSMB.</p>		