Understanding the IECEE CB Scheme
The Definitive Q&A Guide to Achieving International Approvals for Lighting Products
Introduction

Obtaining product certification through the IECEE CB scheme will help to achieve acceptance and recognition by the authorities of over 53 countries worldwide. Organized by an international group of certification bodies known as the International Electrotechnical Commission for Electrical Equipment Safety (IECEE), the CB Scheme enables a mutual recognition of test reports and certificates for EMC and the safety of electrical products and components between member bodies and, at times, other countries that are not members. A manufacturer holding a CB Certificate from one member country can obtain the Certification Marks of another.

The scheme is based on the use of harmonized IEC Standards with declared national differences. While some authorities accept a CB Certificate as evidence of compliance without the need to apply for a specific national certification, others do not. In this case, manufacturers can use their CB Certificate to apply for the nationally recognized certification of their target markets, without the need to retest their products so long as the original evaluation and testing address all national deviations of the target markets.

CB Certificates, national Certification Marks and other schemes are used by many manufacturers to support their declarations of conformity in Europe and beyond. They provide access to local markets by demonstrating to trade and port authorities that recognized compliance activities have been applied to the product.

Utilizing the IECEE CB Scheme reduces the amount of testing required for demonstrate worldwide conformity assessment of products and speeds a manufacturer’s time to the global marketplace. Working with Intertek to identify the requirements of target countries will allow manufacturers to determine what testing regiment affords the most access. More specifically, Intertek is experienced in global market requirements and will build a test program to meet the requirements of all target markets and beyond – unlocking new markets that a manufacturer may not have known were accessible.

This guide contains the most frequently asked questions manufacturers have about CB Scheme product testing and certification. It also provides some useful hints for optimizing the process to speed time to market.

Q: What is the CB Scheme?
A: The CB Scheme is an international program for exchange and recognition of EMC and product safety test results among participating laboratories and certification bodies around the world. The CB Scheme offers manufacturers a simplified way of obtaining multiple national safety certifications for their products.

Q: What does "CB Scheme" stand for?
A: The "CB" in CB Scheme stands for Certification Body. The official name of the CB Scheme is actually the "Scheme of the IECEE for Mutual Recognition of Test Certificates for Electrical Equipment."
Q: How does the CB Scheme work?
A: A manufacturer applies to a participating National Certification Bodies operating in the IECEE CB Scheme (NCB) for a CB Test Certificate. The NCB works with one of their associated CB Testing Laboratories (CBTLs) to conduct complete testing and evaluation of the manufacturer's product to determine conformity with the appropriate IEC standard and national deviations of the manufacturer's target markets. If the product is found to be in compliance, the CBTL issues a CB Test Report, which is the basis for the NCB issuing a CB Test Certificate. In many cases, per a manufacturer's request, the NCB will also issue its own national approval or certification for the product. In the case of Intertek, we can issue a range of Marks, such as the ETL Listed Mark for USA and Canada, the S Mark for Europe, and the GS Mark for Germany. The manufacturer can then present the CB Test Report and CB Test Certificate to other participating NCBs in order to obtain additional certifications for its product.

Q: How can I apply for CB Scheme Certification?
A: A manufacturer can apply to any National Certification Body for either a CB Test Certificate or for certification based on an existing CB Test Certificate. The NCB will provide details on fees, samples, documents, and certification procedures applicable to the country of the NCB.

CB Scheme for Lighting

Q: What lighting products and components are covered?
A: The following standards relating to the testing of lighting products and/or components are covered by the CB Scheme:

- IEC 60064 - Tungsten filament lamps
- IEC 60081 - Double-capped fluorescent lamps
- IEC 60155 - Glow-starters for fluorescent lamps
- IEC 60238 - Edison screw lampholders
- IEC 60357 - Tungsten halogen lamps (non-vehicle)
- IEC 60360 - Method of Measurement of Lamp Cap Temperature Rise
- IEC 60400 - Lampholders for tubular fluorescent lamps and starterholders
- IEC 60432-1 - Incandescent lamps - Tungsten filament lamps
- IEC 60432-2, -3 - Incandescent lamps - Tungsten-halogen lamps
- IEC 60570 - Electrical supply track systems
- IEC 60570-2-1 - Electrical supply track systems for luminaires
• IEC 60598-1 – Luminaires (general requirements)
• IEC 60598-2 – Luminaires (particular requirements)
  - Part 2-1 Fixed general purpose luminaires
  - Part 2-2 Recessed luminaires
  - Part 2-3 Luminaires for road and street lighting
  - Part 2-4 Portable general purpose luminaires
  - Part 2-5 Floodlights
  - Part 2-6 Luminaires with built-in transformers for tungsten filament lamps
  - Part 2-7 Portable luminaires for garden use
  - Part 2-8 Handlamps
  - Part 2-9 Photo and film luminaires (non-professional)
  - Part 2-10 Portable luminaires for children
  - Part 2-11 Aquarium luminaires
  - Part 2-12 Mains socket-outlet mounted nightlights
  - Part 2-13 Ground recessed luminaires
  - Part 2-14 Luminaires for cold cathode tubular discharge lamp
  - Part 2-17 Luminaires for stage lighting, television, film studios (outdoor and indoor)
  - Part 2-18 Luminaires for swimming-pools and similar applications
  - Part 2-19 Air-handling luminaires (safety requirements)
  - Part 2-20 Lighting chains
  - Part 2-22 Luminaires for emergency lighting
  - Part 2-23 Extra-low voltage lighting systems for filament lamps
  - Part 2-24 Luminaires with limited surface temperatures
  - Part 2-25 Luminaires for use in clinical areas of hospitals and health care buildings
• IEC 60838-1 - Miscellaneous lampholders
• IEC 60838-2-1 - Miscellaneous lampholders: Particular requirements - Lampholders S14
• IEC 60838-2-2 - Miscellaneous lampholders: Particular requirements - Connectors for LED-modules
• IEC 60901 - Single-capped fluorescent lamps
• IEC 60921 - Ballasts for tubular fluorescent lamps - Performance requirements
• IEC 60923 - Ballasts for discharge lamps (excluding tubular fluorescent lamps) - Performance requirements
• IEC 60925 - DC supplied electronic ballasts for tubular fluorescent lamps
• IEC 60927 - Starting Devices (Other Than Glow Starters)
• IEC 60929 - AC and/or DC-supplied electronic control gear for tubular fluorescent lamps - Performance requirements
• IEC 60968 - Self-Ballasted Lamps for General Lighting Services
• IEC 60969 - Self-Ballasted Lamps for General Lighting Services
• IEC 61047 - D.C. or A.C. Supplied Electronic Step-Down Convertors for Filament Lamps
• IEC 61048 - Auxiliaries for lamps. Capacitors for use in tubular fluorescent and other discharge lamp circuits
• IEC 61049 - Capacitors for use in tubular fluorescent and other discharge lamp circuits
• IEC 61050 - Transformers for tubular discharge lamps having a no-load output voltage exceeding 1000 V (neon-transformers)
• IEC 61084 - Cable trunking and ducting systems for electrical installations.
• IEC 61195 - Double-capped fluorescent lamps
• IEC 61199 - Single capped fluorescent lamps
• IEC 61228 - Fluorescent ultraviolet lamps used for tanning
• IEC 61347-1 - Lamp Control Gear (general requirements)
• IEC 61347-2 - Lamp Control Gear (particular requirements)
  - Part 2-1 - Starting devices (other than glow starters)
  - Part 2-2 - Protection against electric shock - common aspects for installation and equipment
  - Part 2-3 - A.C. Supplied electronic ballasts for fluorescent lamps
  - Part 2-4 - D.C. Supplied electronic ballasts for general lighting
  - Part 2-5 - D.C. Supplied electronic ballasts for public transport lighting
  - Part 2-7 - D.C. Supplied electronic ballasts for emergency lighting
  - Part 2-8 - Ballasts for fluorescent lamps
  - Part 2-9 - Electromagnetic control gear for discharge lamps (excluding fluorescent lamps)
  - Part 2-10 - Electronic invertors and convertors for neon tubes
  - Part 2-11 - Miscellaneous Electronic Circuits Used with Luminaries
  - Part 2-12 - D.C. or A.C. Supplied electronic ballasts for discharge lamps (excluding fluorescent lamps)
  - Part 2-13 - D.C. or A.C. Supplied electronic controlgear for LED modules
• IEC 61549 - Miscellaneous lamps
• IEC 62031 - LED modules for general lighting
• IEC 62035 - Discharge lamps (excluding fluorescent lamps)
• IEC 62047 - Semiconductor devices - Microelectromechanical devices
• IEC 62257-12-1 - Recommendations for small renewable energy and hybrid systems for rural electrification – Part 12-1: Selection of self-ballasted lamps (CFL) for rural electrification systems and recommendations for household lighting equipment
• IEC 62384 - DC or AC supplied electronic control gear for LED modules
• IEC 62471 - Photobiological safety of lamps and lamp systems
• IEC 62471-2 - Photobiological safety of lamps and lamp systems - Part 2: Guidance on manufacturing requirements relating to non-laser optical radiation safety
• IEC 62560 - Self-ballasted LED-lamps for general lighting services by voltage > 50 V

Q: Which countries participate in the CB Scheme?
A: Argentina, Australia, Austria, Belarus, Belgium, Brazil, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Republic of Korea, Kenya, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Serbia and Montenegro, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, Ukraine, United Kingdom and USA.
While the above countries are all member bodies within the CB Scheme, not all participate in the CB Scheme for Lighting standards. When evaluating your lighting product or component to corresponding IEC standards, be mindful that national differences to these IEC standards exist for many of the participating countries.

Although the U.S. does not participate in the CB Scheme for lighting products, Intertek has labs based in North America that are fully equipped to support your CB testing needs. It is advised that you notify your NCB (National Certification Body operating in the IECEE CB Scheme) of which countries this product will be evaluated, so the applicable national deviations are taken into consideration.

To ensure adherence to all proper standards, consult your certification partner for guidance on which countries participate in the CB Scheme for your specific lighting product.

**Testing and Evaluation for the CB Scheme**

Once applicable standard(s) for your product or component have been identified by the NCB/CBTL, the testing and evaluation phase can begin. Testing and evaluation can be conducted at the NCB’s and/or CBTL’s facility, or at the manufacturer’s facility through participation in a Data Acceptance Program. To meet the needs of lighting manufacturers around the world, Intertek offers many global solutions for testing and evaluating lighting products, including our status as an NCB, our numerous CBTLs, and the industry’s most comprehensive four-tier Data Acceptance Program, SATELLITE.

**Q: What voltage and frequency is used for CB Scheme testing?**

**A:** Testing is generally conducted at 50Hz. The voltage varies but is typically between 0.9 and 1.1 times rated voltage. Keep in mind also that multiple voltages may be required to be used for testing due to the voltage fluctuations among CB Scheme countries.

**Q: Where can I test and evaluate my products and components?**

**A:** The majority of CB Scheme evaluations are conducted at one of Intertek’s NCB and CBTL facilities. We have a growing network of state-of-the-art facilities located around the world, and our Lighting Centers of Excellence specialize in evaluating lighting products to meet all of your safety and performance testing needs with fast project turnaround time.

Additionally, testing can be done at the manufacturer’s facility through Intertek’s SATELLITE Data Acceptance Program, giving you control over your product’s certification program. The SATELLITE Program features 4 Levels, each maintaining separate specifications for conducting testing at your facility.

If you are participating in Level 1 or 2, the testing at your facility must be conducted or witnessed by an Intertek representative. Alternatively a manufacturer that has been audited and participates in Intertek’s SATELLITE Level 3 or 4 can perform the testing at their facility and submit test results to the Intertek CBTL. Conducting testing in your own labs and on your own
schedule through SATELLITE provides speed and flexibility in obtaining our market-leading certifications for your products.

Before conducting testing outside of a NCB/CBTL site, you must ensure that the power supply stability (voltage stability, frequency stability and harmonic distortion) at your selected testing site is qualified. Additionally, IECEE registration must be completed by the NCB prior to the start of your testing outside of the NCB or CBTL site. Testing can also be split between the manufacturer and NCB/CBTL sites. However, no testing can be done at a facility not owned by the manufacturer or at non NCB/CBTL sites.

**Q: What types of testing are involved?**

A: The types of tests involved vary from standard to standard and depend on the type of product being evaluated. However, certain test conditions must be maintained such as ambient (typically the ambient temperature of between 10°C and 30°C) and voltage (typically between 0.9 and 1.1 times rated voltage). There are normal and abnormal temperatures testing, endurance testing and IP (ingress protection) against opening/wet/damp location use testing. Some tests last for 10 days or more. In general, testing for a lighting fixture may last up to 2 weeks. Please note that the order in which tests are completed may be enforced by the order appearing within the standard.

**Q: Are there guidelines to ensure compliant equipment is used for testing?**

A: Equipment used to perform CB Scheme testing must meet certain requirements to insure accurate results. Test equipment owned by the manufacturer may be used, but it must be calibrated and must meet accuracy requirements. The minimum accuracy requirements are published in CTL Decision Sheet 251B – *Measurement Accuracy*, and may be superseded by more stringent requirements in the standards. The calibration provider must be accredited by an Accreditation Body that is recognized as a full member and signatory of the International Mutual Recognition Arrangements (MRAs) for IAAC, ILAC, APLAC, and EA, from National Metrology Institutes' (NMI's) recognized through the International Committee for Weights and Measures (CIPM) MRA.

**Q: How are national differences handled?**

A: Compliance with national differences may be evaluated either by the NCB issuing the CB Test Certificate and CB Test Report, or by the NCB to whom the CB Test Certificate and CB Test Report are presented for recognition and acceptance. However, you can reduce further costs and project complexities, including delays and sample requirements, by having all appropriate national differences evaluated by the NCB which issues the CB Test Certificate and CB Test Report.

Currently, the U.S. does not participate in the CB scheme for lighting products, so there are no U.S. deviations to the IEC standard.
Approval

Each country posts acceptance criteria for Safety and EMC reports, as well as their acceptance of critical components. Choosing the correct components to construct the product being tested is one of the most difficult aspects of CB Scheme approval as there are strict requirements and regulations that must be followed. The value of partnering with Intertek is seen in the guidance that we provide our clients – we offer insight regarding the best paths for testing and component selection based on your specific market entry needs.

Q: How do I choose components to build my products?

A: Components, other than integral components, must comply with the requirements of the relevant IEC standards, if any such standard exists. These components that are in compliance and are marked with individual ratings are then checked during the product’s evaluation to establish whether they are suitable for the conditions used within the product. Aspects of use not covered by the respective standard must also be evaluated to additional relevant requirements of the end product standard. Components for which no appropriate IEC standard exists must satisfy the relevant requirements of the end product standard.

Please note that a CE marked component cannot be used for CB Scheme approval without full evaluation by the NCB or CBTL to the applicable component standard. Only components that have CB scheme certificates or have been additionally evaluated by the CB Scheme evaluator can be used to construct the end product.

Intertek can offer faster and easier turnaround to qualify a product for global acceptance through our ability to work with international certification body (CB) schemes. We can greatly increase the efficiency of your product’s certification around the world.

About Intertek

Intertek is a leading provider of quality and safety solutions serving a wide range of industries around the world. From auditing and inspection, to testing, quality assurance and certification, Intertek people are dedicated to adding value to customers’ products and processes, supporting their success in the global marketplace. Intertek has the expertise, resources and global reach to support its customers through its network of more than 1,000 laboratories and offices and over 30,000 people in more than 100 countries around the world. Intertek Group plc (ITRK) is listed on the London Stock Exchange in the FTSE 100 index.

Please contact your local office with questions or for starting the CB Scheme process.

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