China’s Certification System for ICT Equipment

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China Academy of Information and Communication Technology (CAICT)
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Course Objectives

1. Introduce China’s certification system for ICT equipment
2. Provide reference for implementation of ITU C&I project
Agenda

1. Overview of China’s ICT product regulation pattern
2. Introduction of product certification system
3. Effects of product certification system
4. TLC Product Certification
Several Concepts

**Conformity assessment**, also known as compliance assessment, is any activity to determine, directly or indirectly, that a process, product, or service meets relevant technical standards and fulfills relevant requirements [1].

**Certification** is defined as a third-party attestation related to products, processes, systems or persons.[2]

**Accreditation** is defined as a third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks. [2]

Overview of ICT Product Regulation Patterns

<table>
<thead>
<tr>
<th>Regulation Pattern</th>
<th>Regulation Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>China Compulsory Certification (CCC)</td>
<td>Telecommunications terminal equipment, Audio-video equipment, Information technology equipment</td>
</tr>
<tr>
<td>Voluntary Product Certification (e.g. TLC, CQC)</td>
<td>Cable, optical cable, power supply, air conditioner, storage battery, distributing frame, etc.</td>
</tr>
<tr>
<td>Network Access License (NAL)</td>
<td>Telecommunications terminal equipment, wireless communication equipment and equipment used in network interconnection</td>
</tr>
<tr>
<td>China Type Approval (CTA)</td>
<td>Radio Equipment</td>
</tr>
<tr>
<td>Others</td>
<td>China RoHS; China Environmental Labeling; Network security; Green Labeling, etc.</td>
</tr>
</tbody>
</table>
Focus of Different Regulation Patterns

Network Access License (NAL)
- InfoSec and function
- RF receiver performance
- Antenna Performance
- RE & CE
- Authentication Encryption Compatibility
- Call Link
- Multiple System Compatibility
- Network Adaptability
- CS, RF Common Mode RS, Radiated Susceptibility
- ESD
- Electromagnetic radiation
- NAL Test

Frequency Spectrum
- China Type Approval
- RF Emission Performance
- China Compulsory Certification
- EMC/Safety
- Function
- Performance
- Other special aspects
- Voluntary Product Certification

Interconnection
- IWF between card and terminal
- RXD performance
- RF Performance
- Information Security Protocol and Interconnection Protocol
Focus of Different Regulation Patterns

<table>
<thead>
<tr>
<th>Network Access License (NAL)</th>
<th>Interconnection</th>
</tr>
</thead>
<tbody>
<tr>
<td>InfoSec and function</td>
<td>RE &amp; CE</td>
</tr>
<tr>
<td>RF receiver performance</td>
<td>Authentication</td>
</tr>
<tr>
<td></td>
<td>Encryption</td>
</tr>
<tr>
<td>Antenna Performance</td>
<td>Compatibility</td>
</tr>
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<td>IWF between card and terminal</td>
<td>Call Link</td>
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<tr>
<td>RXD performance</td>
<td>Multiple System</td>
</tr>
<tr>
<td></td>
<td>Compatibility</td>
</tr>
<tr>
<td>CS, RF Common Mode</td>
<td>Network</td>
</tr>
<tr>
<td>RS, Radiated Susceptibility</td>
<td>Adaptability</td>
</tr>
<tr>
<td>Information Security Protocol</td>
<td></td>
</tr>
<tr>
<td>and Interconnection Protocol</td>
<td></td>
</tr>
<tr>
<td>RF Performance</td>
<td></td>
</tr>
<tr>
<td>Information Security</td>
<td></td>
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<tr>
<td>Protocol and Interconnection</td>
<td></td>
</tr>
<tr>
<td>Protocol</td>
<td></td>
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<tr>
<td>ESD</td>
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<td>SAR</td>
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<td>RF Emission Performance</td>
<td></td>
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<td>China Compulsory Certification</td>
<td></td>
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<td>EMC/Safety</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td></td>
</tr>
<tr>
<td>Voluntary Product</td>
<td></td>
</tr>
<tr>
<td>Certification</td>
<td></td>
</tr>
</tbody>
</table>
Category and Field of Certification

China Certification System

- China Compulsory Certification (CCC)
- Voluntary Certification
  - Management System Certification (11)
  - Service Certification (22)
  - Voluntary Product Certification (22)

State-sponsored Certification

Pie chart showing the number of certification bodies in different areas:
- Management System: 310
- Voluntary Product Certification: 165
- Compulsory Product Certification: 103
- Service Certification: 25
Agenda

1. Overview of China’s ICT product regulation pattern
2. Introduction of product certification system
3. Effects of product certification system
4. TLC Product Certification
History of Product Certification System in China

**Development of CCC**

- CCIB Mark
- CCEE Mark
- Untill Apr. 30, 2003

**From May 1, 2002, CCC established**

**Development of Voluntary Product Certification**

- Voluntary product certification system initially established
- Gradually improved

**Reasons for Implementing Product Certification System:**

- Carry out commitment of accession of China to WTO;
- Improve market economy and trade, so as to adapt to market economy requirements;
- Regularize interior management, and optimize China’s product certification system;
- Similar to product certification systems in other countries, provide convenience for mutual recognition;

**Regulations of the P.R. China on Certification and Accreditation,** issued in 2003, 9
Development of Product Certification System

**Number of product CBs in the past six years**

- Product certification body
- Voluntary industrial product certification body

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
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<tbody>
<tr>
<td>Value</td>
<td>108</td>
<td>113</td>
<td>119</td>
<td>135</td>
<td>159</td>
<td>165</td>
</tr>
</tbody>
</table>

**Distribution of product certificates of different areas**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of certificates</th>
<th>Number of enterprises</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCC</td>
<td>66813</td>
<td>532068</td>
</tr>
<tr>
<td>Voluntary certification for industrial products</td>
<td>36165</td>
<td>365350</td>
</tr>
<tr>
<td>Voluntary certification for agricultural products and food</td>
<td>96990</td>
<td>44585</td>
</tr>
</tbody>
</table>

**Number of Product CBs**

- CCC: 119
- Voluntary certification for industrial products: 56
- Voluntary certification for agricultural products and food: 24

**Data Source**: CNCA
Regulatory Framework of Compulsory Product Certification

General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) is the supervising body for Direct affiliates of AQSIQ and Associations attached to AQSIQ.

State Administration for Market Regulation (SAMR) supervises Certification and Accreditation Administration of China (CNCA) and Standardization Administration of China (SAC).

CNCA supervises Certification and Accreditation Administration of China.

CNAS accredits Designated Certification Bodies (DCBs) and Designated Inspection Bodies and Labs.

<Institutional Reform Plan of the State Council>, 2018,3
Regulatory Framework of Voluntary Product Certification

**General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ)**
- Supervises Direct affiliates of AQSIQ
- Supervises CIQs directly under AQSIQ
- Authorizes CNAS
- Approves Product Certification Bodies (CBs)
- Subcontracted by Inspection Bodies and Labs

**State Administration for Market Regulation (SAMR)**
- Supervises Certification and Accreditation Administration of China (CNCA)
- Supervises Standardization Administration of China (SAC)

**Associations attached to AQSIQ**
- Provincial bureaus Of Quality and Technical Supervision
- CIQs directly under AQSIQ

**China National Accreditation Service for Conformity Assessment (CNAS)**
- Accredits Inspection Bodies and Labs

*Institutional Reform Plan of the State Council, 2018,3*
Normative Documents are mainly issued by CNCA and CNAS. These documents cover nearly all the implementation procedures.

National stipulations;
- national technical rules;
- national standards.

Detailed rules for the implementation of CCC;
- Implementation rule of voluntary product certification;
- Program files;
- Instructions and operation guide;
- Regulations of CBs; etc.

The laws are approved and announced by National People’s Congress; the administrative regulations are approved and announced by the State Council; the rules are approved and announced by the ministries and commissions under the State Council.
General:

- **Standardization Law of P. R. China**
  
  Including the classification, nature and implementation methods of standards.

- **Product Quality Law of P. R. China**
  
  Certification system, supervision system; responsibility and penalties of CBs, local organizations, producers and distributors.

- **Law of P. R. China on Import and Export Commodity Inspection**
  
  Import safety quality licensing system.

- **Regulations for The Implementation of the Standardization Law of P. R. China**

- **Regulations of the P.R. China on Certification and Accreditation etc.**

**For CCC:**


- **Administrative Measures on Entry Verification of Civil Commodities subject to Import Licensing System, AQSIQ Decree (2001) No.6 etc.**
Documentation System

CNCA: (mainly for CCC)
- Regulations for Compulsory Product Certification Mark, Notice No.1 (2001) of CNCA
- Catalogue description and definition of Compulsory Product Certification, Notice No.45 (2014) of CNCA
- Regulations on Designation of Certification Bodies, Inspection Bodies and Testing Laboratories for Compulsory Product Certification
- Implementation Rules for Compulsory Product Certification
- etc.

CNAS:
- Accreditation criteria for CB/Inspection Bodies and Labs;
- Rules for the Accreditation of CB/Inspection Bodies and Labs;
- Guidelines for the Accreditation of CB/Inspection Bodies and Labs;
- Illustration for the Accreditation of CB/Inspection Bodies and Labs.
For CCC:
- Mandatory requirements set in national mandatory standards or national technical rules;

For Voluntary Product Certification
- National standard;
- Industry standard;
- Technical specification for product certification;
- International standard;
- Group standard.
Documentation System

- **General:**
  - Program files set by CBs for product certification;
  - Public document;
  - Forms;
  - Regulations of CBs; etc.

- **For CCC:**
  - Detailed rules for the implementation of CCC based on normative documents issued by CNCA;

- **For Voluntary Product Certification:**
  - Implementation rules issued by CBs;
  - Certification scheme; etc.
Supervision of CCC System

Access Condition
- Legitimate basis: <Regulations on compulsory Product Certification Administration>, etc.
- Designated certification body, designated testing body
- Unified catalogue, unified implementation rules

Special Supervision
- Frequency: once a year
- Object: designated certification body and designated testing body or labs
- Mode: office inspection, inspection of certified enterprise, spot check of certification file or inspection report, professional ability examination of approved persons

Market Spot Check
- Frequency: multiple batches
- Object: certified enterprises of CCC
- Mode: State spot check supervision, local special law enforcement spot check for CCC certification
Supervision of Voluntary Certification

✓ In August 2015, General Office of State Council issued the notice about promotion of random spot check and standardization of in-incident supervision and after-incident supervision.
✓ “Double random-one disclosure” regulatory mode: random selection of inspected objects, random selection of law enforcement inspectors, and timely disclosure of supervision information.

CNCA randomly selects inspected objects, and makes the check plan

Local market supervision and management department randomly selects law enforcement inspectors for spot check

CNCA announces the inspection results

CNCA will make the bodies with serious problems as key supervision objects, and investigate and punish illegal organizations

Quality Management System

Energy Management System

Only for these two currently
Key Factors for Implementation

- Certification Scope
- Certification Process
- Certification Mode
- Certification Basis
Key Factors for Implementation

The first catalogue of products subject to CCC (2001)

- 19 categories, 132 items

Catalogue description and definition (up to 2017.12)

- 21 categories, 164 items

Total 21 categories, 164 items:
- Cover more than 10 sectors related to human life and health that may affect national economy
- ICT area:
  - Telecommunications terminal equipment, Audio-video equipment, Information technology equipment

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable</td>
<td>78</td>
</tr>
<tr>
<td>Distribution</td>
<td>44</td>
</tr>
<tr>
<td>Power Supply</td>
<td>30</td>
</tr>
<tr>
<td>Battery</td>
<td>8</td>
</tr>
<tr>
<td>Air conditioner</td>
<td>6</td>
</tr>
<tr>
<td>Surge Protection</td>
<td>5</td>
</tr>
<tr>
<td>Wireless/Optical Module/RFID, etc.</td>
<td>27</td>
</tr>
</tbody>
</table>

e.g.
# Guidelines for Product Certification Schemes

## Conformity assessment functions and activities within product certification schemes

<table>
<thead>
<tr>
<th>I</th>
<th>Selection, including planning and preparation activities, specification requirements</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>Review</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

### Attestation, licensing

<table>
<thead>
<tr>
<th>V</th>
<th>b) Granting the right to use certificates or other statements of conformity</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>d) Granting the right to use marks of conformity is based on surveillance or certification of a batch</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>a) Testing or inspection of samples from the open market</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>c) Assessment of the production, the delivery of the service or the operation of the process</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Key Factors for Implementation

For Compulsory Product Certification:
- Based on implementation rule “classification management of producers, selection and determination of Certification Mode”
- Certification Elements mainly include: Type testing; Testing or inspection of samples taken from the factories; Assessment of manufacturers’ quality assurance system and consistency of products; Testing or inspection of samples taken from the market; Follow-up inspection on certified products; Design verification
- Selection of certification mode: Determine the Basic Certification Mode based on risk grade, operability and economy; CBs implement classified management for manufacturing enterprises; CBs choose the suitable certification mode based on the classification through adding one or more Certification Elements.
- e.g. Type Testing + Follow-up inspection; or Initial factory inspection + Type Testing + Follow-up inspection (Surveillance)

For Voluntary product certification, mainly (it depends on CBs):
- Type Testing + Initial factory inspection + Follow-up inspection
Tips: Self Declaration of Conformity in CCC

In June 2018, State Administration for Market Regulation and CNCA jointly issued the notice about adjustment and reformation of CCC certification catalogue and specific implementation rules.

- Some products removed from the CCC certification catalogue;
- Some products could adopt self declaration of conformity, such as Audio-video equipment, Information technology equipment.

1. Implement internal quality control
2. Type testing
3. Create technical documents
4. Sign of self-declaration and Information delivery
5. Use of CCC Mark
6. Self-inspection of factory quality assurance capacity
7. Follow up supervision
Key Factors for Implementation

- **Scope**
  - Compulsory Product Certification
    - National mandatory standards
    - National technical rules
  - Voluntary Product Certification
    - National standard
    - Industry standard
    - International standard
    - Technical specification
    - Group standard

- **Mode**
  - Process
  - Basis
Key Factors for Implementation

- **Scope**
  - Application and Acceptance
  - Sampling and Testing
  - Initial Factory Inspection
  - Evaluation and Approval
  - Follow-up Inspection

- **Mode**
  - Application and Acceptance
  - Sampling and Testing
  - Evaluation and Approval
  - Follow-up Inspection

- **Basis**
  - Based on classification of manufacturing enterprises

**Compulsory Product Certification**
Key Factors for Implementation

Application and Acceptance

Arrange Inspect Task

Initial Factory Inspection

Sampling and Testing

Evaluation and Approval

Follow-up Inspection

Scope

Mode

Basis

Voluntary Product Certification
Agenda

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Initiatives of Product Certification

- An internationally adopted measure to regulate economy and promote development
- A reliable method of organizations to enhance management level, guarantee product quality and improve competitiveness
- A strategic choice of the nation to guarantee product safety, regulate market, guide consumers, protect environment, protect human life and health, and to promote international trade
- China implements Compulsory Product Certification in accordance with relevant laws and regulations for the purpose of protection of state security, prevention of deceptive practices, and protection of human life or safety, animal or plant life or health, and the environment.
- China promotes voluntary certification to guide consumers, improve enterprises’ competitiveness, their products’ performance and their capability to maintain compliance.
Effects and Advantages

- Certification results are widely recognized and adopted by various social sectors
  - Many laws and regulations have stipulations related to certification and accreditation.
  - The government agencies are adopting more and more certification and results in their efforts of transforming government functions.
  - Products passing energy-saving and environmental protection certification are given priority in government procurement.
  - More enterprises and consumers purchase goods according to conformity assessment results or quality, safety marks.
  - Compulsory product certification could protect safety of human being as well as national security.
Effects and Advantages

- **Product, service quality and management level have been enhanced through certification**
  
  ✓ The average rate of product quality above standard in certified enterprises is more than 92%, and in un-certified ones is less than 80%.
  
  ✓ More than 95% of surveyed enterprises believe that certification could improve the customer satisfaction and enhance product quality, while nearly 90% think certification could enhance the brand.

- **To certain extent, certification have been promoting the national economic and social development.**
  
  ✓ According to the statistics, certification and accreditation have contributed to Chinese economic growth with certain pulling rate.
Agenda

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Introduction of TLC

TL Certification Center (TLC for short), is a department under CAICT, and it’s a professional certification body with product certification and management system certification ability. TLC mainly focus on quality management, promotion of ICT industry, and try to promote harmonious development of government, communication operators, manufactures, third-party inspection bodies and consumers.
Four Development Stages

Start up

System design

Extension and acceptance

Future directions

Policy oriented + market demands + technology development

In 2000, opportunities arising from policy changes.

2001-2003, develop product certification system, and set up pilot project.

In 2004, 29 telecommunication basic products under NAL convert to product certification.

More than 200 products have carried out product certification.
Show diversity in unity, and seek unity in diversity.
Extension and Acceptance

TLC product certification scope

- fiber and cable
- battery
- Optical module
- distributing frame/box
- Energy saving products
- power supply
- wireless equipments
Extension and Acceptance


2010-2015 Rapid growth period

2015-2017 stationary phase

Valid Certificates (2017)
Extension and Acceptance

Set up communication industry platform, jointly planning to improve the quality of communication products.

Transfer trust, serve the industry, and promote to rise the quality entry threshold.

Support the government, promote the popularization of standards, and promote the conservation of social resources.

In 2012, TLC established certification technical committee.

Serve as part of administrative supervision, with results accepted by competent departments.

TLC certificates regarded as one basic condition of major telecom operators’ bidding.

Cooperate research on supplier quality management with communication operators.

Others accepted by hospitals, finance, transportation, radio & TV, and government’s bidding.

Training for certification technical leaders from excellent enterprises.

Carry out NAL-to-Product Certification sessions at Wu Jiang, Shanghai and etc.

Promotion meeting of the new version standard for mobile phone charger.

Support the government, promote the popularization of standards, and promote the conservation of social resources.

Transfer trust, serve the industry, and promote to rise the quality entry threshold.

Set up communication industry platform, jointly planning to improve the quality of communication products.
Future Directions

Reform Directions

- Changes of certification technology
- Deeply ploughing industry to meet needs of enterprises
- Deep mining of certification industry chain
- Adhere to professional, develop certification for characteristics
Abbreviation Index

CB: Certification Body
CCC: China Compulsory Certification
CCEE: China Commission for Conformity Certification of Electrical Equipment
CCIB: China Import and Export Commodity Inspection Bureau
CIQ: China Inspection and Quarantine
CNCA: Certification and Accreditation Administration of the People’s Republic of China
CNAS: China National Accreditation Service for Conformity Assessment
CPC: Compulsory Product Certification
CS: Conducted Susceptibility
CTA: China Type Approval
C&I: Conformity and Interoperability
DCB: Designated Certification Body
EMC: Electro Magnetic Compatibility
ESD: Electro-Static Discharge
Abbreviation Index

**ICT:** Information and Communication Technology

**IEC:** International Electro-technical Commission

**IECEE:** The IEC System for Conformity Testing and Certification of Electrical Equipment

**ISO:** International Organization for Standards

**IWF:** Inter-Working Function

**NAL:** Network Access License

**RE & CE:** Radiated Emission & Conducted Emission

**RF:** Radio Frequency

**RS:** Radiated Susceptibility

**RXD:** Receive Data

**SAC:** Standardization Administration of China

**SAR:** Specific Absorption Ratio

**WTO:** World Trade Organization
Trainer information

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Thank You for Your Attention!

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