Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

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Conformity Certification to Technical Standard in Japan

Tohru Koshima
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2011/09/21
Okinawa
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- About TELEC
- Technical standard and Certification
- Certification procedures
- Market Surveillance by MIC
About TELEC

- Technical regulations conformity certification services (Radio Certification)
  - TELEC is a **Registered Certification Body** (RCB) for Specified Radio Equipment
    - Dealing with ALL categories of Specified Radio Equipment
  - Development (establishment) of test method for Radio Certification
  - Technical consulting/ Support for making application document

- Testing of various RF devices
  - GCF Conformance Test* for Cellular phones, W-CDMA/ GSM
  - RFID/ ITE* / Inductive devices
  - SAR*
  - Extremely Low Power Radio equipment
  - Measurement of field strength near by the base station

- EMC testing
  - Emission & Immunity* for radio equipment and ITE and so on

- CE mark testing* and conformity assessment
  - TELEC is a **Notified Body** under the MRA of EU - Japan for R&TTE Directive

- Calibration of measuring instrument*
  - TELEC is a **Designated Calibration Laboratory** under the Radio Law

- ISO/ IEC17025 accredited* in some testing scopes

- Support for research and development

- International cooperation
About TELEC

Certification RF test

SAR test

RF immunity test

10m anechoic chamber
Technical standard and Certification
Scope of Certification System

Radio Law and Telecommunications Business Law

Specified Radio Equipment under Radio Law
- Land mobile radio
- Amateur radio etc.

Telecommunication Terminal Equipment under Telecommunications Business Law
- Telephone
- Facsimile
- Modem
- PBX etc.

Radio Certification

Terminal Approval

- Cellular phone
- Cordless phone
- PHS
- Wireless LAN etc.
## Legislation

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# Categories in Ordinances

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<td>IEEE 802.11 n</td>
<td>2.4GHz</td>
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<td>19</td>
<td>WW</td>
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<td>Bluetooth</td>
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<td>1</td>
<td>19</td>
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</table>

2-1-19: 2.4GHz sophisticated low power data transmission system
2-1-19-3: 5GHz low power data transmission system (I)
2-1-19-3-2: 5GHz low power data transmission system (II)
## Technical standard comparison

<table>
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<tr>
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<th>USA (FCC)</th>
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<td><strong>Cellular Mobile Phone</strong></td>
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<td>Ordinance Regulating Radio Equipment (無線設備規則) Article 49-6-2: TDMA</td>
<td>Part 22 H: Cellular Radiotelephone Service Part 24 E: Broadband PCS (GSM, PCS, cdma2000, etc.)</td>
<td>EN 301 511: GSM</td>
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<tr>
<td>3G</td>
<td>Article 49-6-4: W-CDMA/ cdma2000</td>
<td></td>
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<tr>
<td><strong>Wireless LAN/ Bluetooth</strong></td>
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<tr>
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<td>Article 49-20-1/ 2</td>
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<td>5GHz</td>
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<tr>
<td><strong>Short Range Devices</strong></td>
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<tr>
<td><strong>Private Mobile Radio</strong></td>
<td>F3E/ Digital Article 49-7: MCA (like Trunked System) Article 54-1-1: Convenience Radio</td>
<td>Part 90: Private Land Mobile Radio Part 95: General Mobile Radio Service (GMRS)</td>
<td>EN 300 086: Analogue EN 300 113: Data EN 303 035: TETRA</td>
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<tr>
<td><strong>ITE (Information Technology Equipment)</strong></td>
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<td>Part 15 subpart B</td>
<td>EN 55022</td>
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</table>
Certification test items

- Frequency accuracy
- Occupied bandwidth
- Spurious emissions, conducted
- Output power
- Spreading bandwidth
- Hopping dwell time
- Receiver spurious emission, conducted
- Interference prevention function
<table>
<thead>
<tr>
<th>Test</th>
<th>Japan (Radio Law)</th>
<th>USA (FCC Rules)</th>
<th>EU (R&amp;TTE Directive)</th>
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<tr>
<td>RF</td>
<td>Radio parameter</td>
<td>- Frequency hopping and Digital modulation requirement</td>
<td>- Frequency hopping and Direct Spread requirement</td>
</tr>
<tr>
<td></td>
<td>- Spreading bandwidth/ Hopping dwell time</td>
<td>- Maximum conducted RF power</td>
<td>- Equivalent isotropic radiated power</td>
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<td></td>
<td>- Output power</td>
<td>- Antenna gain requirement</td>
<td>- Maximum EIRP spectral density</td>
</tr>
<tr>
<td></td>
<td>- Occupied bandwidth</td>
<td>- Out of band emissions</td>
<td>- Frequency range</td>
</tr>
<tr>
<td></td>
<td>- Frequency accuracy</td>
<td>- Power spectral density</td>
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<tr>
<td></td>
<td>- Interference prevention function</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- (Antenna gain)</td>
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<tr>
<td>EMC</td>
<td>Emission</td>
<td>- Radiated Emissions</td>
<td>- Transmitter spurious emissions (ERP)</td>
</tr>
<tr>
<td></td>
<td>- Conducted Spurious Emissions</td>
<td></td>
<td>- Receiver spurious emissions (ERP)</td>
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<tr>
<td></td>
<td>- Conducted Receiver Spurious Emissions</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>- (Radiated Emission if permanent integral antenna)</td>
<td></td>
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<tr>
<td></td>
<td>- (if ITE then goto VCCI)</td>
<td></td>
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<tr>
<td>Immunity</td>
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<td>- RF Radiated/ Conducted Immunity</td>
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<td>- Fast Transient Burst</td>
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<tr>
<td>RF Exposure</td>
<td>SAR (Body SAR is coming soon)</td>
<td>SAR/ Exposure</td>
<td>SAR/ Exposure</td>
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</tbody>
</table>
Certification procedure
Categories of Specified Radio Equipment

- **Category 1**
  - Unlicensed station
    - *Wireless LAN, Bluetooth* & low power radio equipment etc.

- **Category 2**
  - Blanket Licensed station
    - Cellular mobile phone, etc.

- **Category 3**
  - Licensed station
  - subject to simplified licensing procedure or registration
    - Land Mobile Radio, Base station for Cellular mobile phone,
    - 5GHz-band radio access system base station etc.
Extremely low power radio equipment

- The radio station its transmission power is extremely low are not required license.
- Out of the scope of Specified Radio Equipment
  - Various types of equipment such as cordless telephones, wireless microphones and audio FM transmitters may be in this scheme.
Test certification and Type certification

Test certification

Application
e.g. application for 100 devices

Assessment and testing (of 100 units)

Serial no. 1 \rightarrow Serial no. 100

Certification

Different numbers

Each device is assigned different certification numbers

Type certification

Type certification aims at mass-production models

Application
1 random test sample/ type

Assessment and testing of 1 random device

Certification

Same number

Devices have the same certification number on a model
Type Certification flow

1. **Applicant**
   - Test
   - Test Report

2. **Application**
   - Pre-meeting
   - Examination
     - Select one of two application methods
       - Test by test Labo.
       - Test by **TELEC**
   - Test
   - Issue of Certification
     - Report

3. **MIC**
   - Confirmation of connectivity to measuring system and check of documents.
   - To **TELEC**
     - Examination of documents
     - Test (For one sample)
     - For each type

   **Report**
Test data acceptance

- The test result is accepted if the test conducted;
  - In accordance with the test method notified by MIC
  - Using calibrated measuring instruments
  - By qualified test engineer

- discretion of the Registered Certification Body
Labeling

- **R**: Radio
- **T**: Terminal equipment

**CAB ID**
- Equipment classification code, 1 or 2 letters

**MIC Certification mark**

**Sub category**

**Certification number**
Grantee’s obligation

- The manufacturer or the dealer of the certified radio equipment shall;
  - Make sure the certified equipment continues to comply with the requirement
  - Inspect the equipment according to their confirmation method declared in the Certification
  - Save the record of the inspection
Market Surveillance by MIC

- MIC purchases certified equipment from the market
  - Test their conformity to the technical standards
- If a non-compliant equipment is detected,
- MIC takes actions as follows;
  - Orders supplier to Improve business activities
  - Prohibits supplier from affixing the Certification mark
  - Takes any actions to prevent disturbance or harm caused by the non-compliant equipment
Thank you

Questions to; koshima@telec.or.jp