ITU Asia-Pacific Centres of Excellence Training
on
Conformity and Interoperability
Session 4: Telecommunications Equipment Approval in the EU, USA and some other examples

12-16 October 2015
Beijing, China

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ITU Expert
• Mandatory telecommunications equipment conformity assessment in:
  – USA
  – Bahamas
  – Canada
  – European Union
  – United Arab Emirates

• Some limitations of mandatory conformity assessment
USA

- The FCC oversees the authorization of equipment using the radio frequency spectrum in the USA [http://transition.fcc.gov/oet/ea/].

- Such equipment may not be imported or marketed unless it meets the technical standards specified by the FCC. Depending upon its capabilities equipment may be subject to:
  - **verification** (in which manufacturers test the device),
  - **declaration of conformity** (which requires testing by an accredited test laboratory) or
  - **certification** (which is issued by the FCC or a designated Telecommunications Certification Body based on test results submitted by the supplier).

- FCC provides a database on equipment authorisations
  - [https://apps.fcc.gov/oetcf/eas/reports/GenericSearch.cfm]
FCC Codes of Regulation

- FCC PART 22, 24 & 27 for GSM/WCDMA devices
- FCC PART 15.247 for Bluetooth devices and WLAN (2.4 GHz)
- FCC PART 15.407 for WLAN 802.11a (5GHz)
- FCC PART 15.245 (902-928 MHz band, ISM bands)
- FCC PART 15.225 for RFID (13.56 MHz)
- FCC PART 25 for Satellite communications devices
- FCC PART 90 for Private land mobile devices
- FCC PART 95 for Personal radio devices
Bahamas

- URCA (the Utilities Regulation and Competition Authority of the Bahamas) will issue a type approval certificate when it is satisfied that:
  - the device is designed for efficient use of the radio frequency spectrum and avoids harmful interference with no degradation of service to other users of the spectrum;
  - the device conforms to health and safety standards and does not cause harm to the user or other individuals; and
  - the electromagnetic emissions does not disrupt the operation of equipment operating nearby.
- An application for type approval must contain:
  - a completed application form for each make and model;
  - a signed and dated test report for each device, issued by an accredited test laboratory;
  - a copy of the FCC’s Grant of Equipment Authorization Certification for the device;
  - a detailed technical specifications of the device;
  - a letter of authorization, if the application is made by anyone other than the manufacturer; and,
  - the type approval application fee in accordance with URCA’s Fee Schedule in force at the time of the application, currently US$100.
Canada


• It is based on supplier declaration of conformity to basic requirements intended to ensure that the equipment is safe to use and does not cause interference with other equipment.

• The Croatian Post and Electronic Communications Agency provides a database of equipment approved in accordance with the EU R&TTE directive [http://www.hakom.hr/default.aspx?id=561]

• Key articles:
  – Essential requirements (Article 3)
  – Notification and publication of interface specifications (Article 4)
  – Harmonised standards (Article 5)
  – Conformity assessment procedures (Article 10)
  – Notified bodies and surveillance authorities (Article 11)
  – CE marking (Article 12)
  – Transposition (Article 19)
R&TTE Essential Requirements

• All apparatus
• Radio equipment shall be constructed to avoid harmful interference
• Requirements according to equipment class
• (a) it interworks via networks with other apparatus and that it can be connected to interfaces of the appropriate type throughout the Community; and/or that
• (b) it does not harm the network or its functioning nor misuse network resources, thereby causing an unacceptable degradation of service; and/or that
• (c) it incorporates safeguards to ensure that the personal data and privacy of the user and of the subscriber are protected; and/or that
• (d) it supports certain features ensuring avoidance of fraud; and/or that
• (e) it supports certain features ensuring access to emergency services; and/or that
• (f) it supports certain features in order to facilitate its use by users with a disability.
Requirements according to equipment class

• Exceptional – any decision about additional requirements is published in the Official Journal of the European Union (OJEU) together with the date from which these additional requirements need to be applied.

• “Additional essential requirements are currently only in place for equipment accessing emergency services (maritime, inland waterway and avalanche beacons).” Guide to the R&TTE Directive 1999/5/EC (April 2009)
EMC Standards

• EN 55022 / EN 55011 (emission)
• EN 61000-4-(2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 16 et 17) (immunity)
• EN 61000-3-2 (Harmonics) / EN 61000-3-3 (Flickers)
• EN 61000-6-(1 à 4) (generic standards)
• EN 55013 (Audio-video)
• EN 55024 (Information technology equipments ITE)
• EN 60945 (maritime equipments)
• RADIO-EMC standards
• EN 301 489-(01, 03, 05, 07, 09, 12, 13, 15 et 22) et associated ETSI stanbdards
• EN 300 339 / EN 300 385 / EN 300 386-2
Harmonised Standards

• List published at:
Equipment Classes

• Class 1
  • Equipment without restrictions or requirements for authorisation of use
    • e.g. TTE, radio receivers, radio transmitters which can only transmit under control of a public network and thus do not need any technical adjustment by the user (e.g. simple GSM handsets, simple UMTS handsets, non-DMO TETRA terminals)

• Class 2
  • Equipment whose placing on the market or putting into service is subject to restrictions, for example:
    • frequency available and allowed for that application in certain Member States only;
    • individual licence needed to use the specific radio equipment;
    • indoor use only.
Class 2 equipment

“information sign” or “alert sign”
Conformity Assessment Procedures

• Manufacturer may choose:
  – Internal production control
  – Internal production control plus specific apparatus tests
  – Technical construction file
  – Full quality assurance
Internal production control

• Can be used for telecommunications terminal equipment (TTE) and radio receivers
• Manufacturer must:
  – Ensure all applicable essential requirements are met:
    • by applying in full applicable harmonised standards and performing all test suites described in the harmonised standards themselves; or
    • by using other means of his own choice (for example by means of any existing technical specifications, by using partly an applicable harmonised standard, etc.). The manufacturer has to describe and explain the solutions adopted to meet the essential requirements
  – Document how the essential requirements have been met (including test results)
  – Take all measures necessary in order that the manufacturing process ensures compliance of the manufactured apparatus with the essential requirements
• Can only be used for radio equipment and if the manufacturer has used fully harmonised standards
• As for Internal production control plus:
• Perform all essential radio test suites described in the applicable harmonised standard and, if the applicable harmonised standard does not describe all essential radio tests suites, consult a notified body that will define them.
Technical construction file

• Can be used for both TTE and radio equipment.
• The manufacturer submits a technical construction file consisting of the results of test suites for all applicable essential requirements to a Notified Body that will issue an opinion within 4 weeks on whether conformity with the requirements of the Directive has been demonstrated.
Full quality assurance

- Can be used for both TTE and radio equipment.
- The manufacturer must operate an approved quality system for design, manufacture, final product inspection and testing which has been assessed by a Notified Body.
Declaration of Conformity

• Whichever conformity assessment route is chosen, the manufacturer must:
  • Prepare a declaration of conformity; and
  • Affix the CE mark (including notified body number and alert sign, where appropriate) on the apparatus, packaging and accompanying documents.
Testing

• Tests may be performed by the manufacturer or by a third party. No formal accreditation is required to carry out the tests. The manufacturer remains responsible in all cases for the compliance of his apparatus.
Conformity Assessment Procedures - Summary

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Applicable to equipment:</th>
<th>Role of the notified body NBnr (if applicable)</th>
<th>Marking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>without radio part</td>
<td>with radio part</td>
<td>TTE Class 1</td>
</tr>
<tr>
<td>II</td>
<td>Internal production control</td>
<td>Terminal equipment</td>
<td>Receivers</td>
</tr>
<tr>
<td>III</td>
<td>Internal production control plus specific apparatus tests</td>
<td>Radio equipment including a transmitter complying with harmonised standards</td>
<td>Identification of the series of essential radio test suites</td>
</tr>
<tr>
<td>IV</td>
<td>Technical construction file</td>
<td>Terminal equipment</td>
<td>Radio equipment including a transmitter not complying or only partially complying with harmonised standards</td>
</tr>
<tr>
<td>V</td>
<td>Full quality assurance</td>
<td>All equipment covered by the R&amp;TTE directive</td>
<td>Certification of the manufacturer’s quality system</td>
</tr>
</tbody>
</table>

Source: “Obligations associated with the placing on the market of radio equipment and telecommunications terminal equipment (R&TTE directive)” EC
Notified Bodies

• Designated by Member States
• Member States verify that they demonstrate the required level of resources, competence, independence, impartiality and integrity. This is subject to surveillance at regular intervals.
• They identify essential radio test suites, review and give opinions on technical construction files, and assess manufacturers quality assurance systems
• They do not perform testing, prepare test reports, design equipment, or sign or issue a manufacturer’s declaration of conformity.
Surveillance Authorities

• Appointed by Member States.
• May check and test products sampled in the market or distribution chain under their jurisdiction in accordance with national laws.
• Surveillance activities may be performed as a result of a complaint, random check or as part of a systematic programme.
Transposition

• Examples:
  – UK
  – Sweden
UK

- Regulations
- UK Frequency Allocation [http://stakeholders.ofcom.org.uk/spectrum/information/uk-fat/]
- Public network interfaces
  - OFCOM Guidelines for Interface Publication
  - ETSI EG 201 838 Guidelines for describing radio access interfaces
  - ETSI TR 101 730 Guidelines for describing analogue line interfaces
  - ETSI TR 101 731 Guidelines for describing digital line interfaces
  - ETSI TR 101 845 RF Interfaces applied by Fixed Service Systems including Fixed Wireless Access (FWA)
  - ETSI TR 101 857 Guidelines for describing CATV network interfaces used to provide telecommunications services
- Documentation.
- Notified Bodies
- Radio Communications Agency (for notifications of use of spectrum that is not harmonised)
- Prohibiting equipment
- Surveillance - OFCOM
• Notification of Radio Equipment Whose Use is Not Harmonised Throughout the European Community
[http://www.ofcom.org.uk/static/archive/ra/publication/ra_info/ra368.htm]
Sweden

- Laws and Regulations
- Interface Specifications
- Market Surveillance
Sweden – Laws and Regulations

- Lag om radio- och teleterminalutrustning (2000:121)
- Förordning om radio- och teleterminalutrustning (2000:124)
- PTSFS 2004:7 - Föreskrifter om radio- och teleterminalutrustning
- PTSFS 2004:9 - Föreskrifter om ändring i PTS föreskrifter (PTSFS 2004:7) om krav m.m. på radio- och teleterminalutrustning
- PTSFS 2011:3 - Föreskrifter om ändring i PTS föreskrifter (PTSFS 2004:7) om krav m.m. på radio- och teleterminalutrustning
- PTSFS 2004:2 - Föreskrifter om offentliggörande av tekniska specifikationer för gränssnitt
- PTSFS 2014:5 PTS föreskrifter om undantag från tillståndsplikten för vissa radiosändare
- PTSFS föreskrifter om avgifter
Sweden – Interface Specifications

- PTSFS 2011:2 - PTS allmänna råd om den svenska frekvensplanen
- PTS föreskrifter om offentliggörande av tekniska specifikationer för gränssnitt - PTSFS 2004:2
- PTS föreskrifter om undantag från tillståndsplikten för vissa radiosändare - PTSFS 2014:5
- PTS rekommenderar att varje operatör offentliggör relevant teknisk information om gränssnitten på sin egen webbplats under rubriken "Technical specifications of interfaces in public telecommunications networks"
Sweden – Market Surveillance

- PM on market surveillance
**United Arab Emirates**

- Telecommunications type approval scheme based on the adoption of European standards.
- The Telecommunications Regulatory Authority (TRA) of the United Arab Emirates operates a type approval scheme for radio and telecommunications terminal equipment [http://www.tra.gov.ae/type_approval.php]. Manufacturers or their representatives need to be registered with the TRA before submitting any applications for product type approval. Type approval applications consist of a Supplier Declaration of Conformity with supporting documentation.
- The TRA publishes technical specifications for type approval. The requirements are intended to ensure that the equipment:
  - does not cause harm to the general public or staff working on public telecommunications networks;
  - does not generate electromagnetic disturbance exceeding the level above which the device or other equipment cannot operate as intended;
  - has a level of immunity to the electromagnetic disturbance to be expected in the environment in which it is to be used;
  - makes efficient use of the radio spectrum; and
  - does not cause damage to or interfere with the correct working of a public telecommunications network.
- The technical specifications consist entirely of references to European Standards.
Limitations of mandatory conformity assessment

- No guarantee that the device will work properly or interoperate with other devices
- Does not help identify counterfeit equipment
Anatel observation

Phenomenon of Tropicalização

Production line A

Product’s origin (?)

Production line B
(same “product” lower quality)

Typical Scenarios
• Regulations and Standards
• Conformity Assessment
• Enforcement

Typical Scenarios
• Lack of Regulations and Standards
• Lack Conformity Assessment
• Enforcement uneffective

Source: Anatel, Brazil
Proposed by Anatel

Conformity Assessment ecosystem
Standards, Certification Bodies, Accreditation Bodies, Labs, MRA, technical requirements, certificates, monitoring, calibration, etc..

Source: Anatel, Brazil
IMEI = *#06#
### Information on IMEI 449176082616688

<table>
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<tr>
<th>Type Allocation Holder</th>
<th>Motorola</th>
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<tbody>
<tr>
<td>Mobile Equipment Type</td>
<td>Motorola P7389</td>
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<td>GSM Implementation Phase</td>
<td>2/2+</td>
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<td>IMEI Validity Assessment</td>
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#### Information on range assignment

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<th>Est. Date of Range Issuance</th>
<th>Unavailable for this IMEI</th>
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<tbody>
<tr>
<td>Reporting Body</td>
<td>British Approvals Board of Telecommunications (BAST)</td>
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<tr>
<td>Primary Market</td>
<td>United Kingdom</td>
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<tr>
<td>Legal Basis for Allocation</td>
<td>EU TTE Directive</td>
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#### Information on number format

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<tr>
<th>Full IMEI Presentation</th>
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<tr>
<td>Check Digit</td>
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</table>

Add this as an IE8 Accelerator
Source: Ukrainian State Centre of Radio Frequencies
Putting equipment onto the market

• Technical Requirements
  – Conformity assessment
  – Certification and MRAs
    • Registration & Authentication of Certificates
  – Supplier declaration
    • Registration & Authentication of Suppliers

• Ensure genuine product is put on sale
  – Registration and Authentication of Devices
Conclusion

• Integrate systems for equipment:
  – Approval (testing, certification etc.);
  – Importation; and
  – Authenticity (i.e. checking that it is the genuine article).

• Requires secure databases with access to all appropriate parties
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