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

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Beijing, China*

*Keith Mainwaring  
ITU Expert*

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# Agenda

- Mandatory telecommunications equipment conformity assessment in:
  - USA
  - Bahamas
  - Canada
  - European Union
  - United Arab Emirates
- Some limitations of mandatory conformity assessment

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# 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>]

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# 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

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# Bahamas

- Adoption of Part 15 of the Code of Federal Regulation 4.
- 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.

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# Canada

- The Certification and Engineering Bureau of Industry Canada [<http://www.ic.gc.ca/eic/site/ceb-bhst.nsf/eng/Home>] provides a certification service for radio and terminal equipment in Canada.
- The Industry Canada Certification and Engineering Bureau maintain lists of terminal equipment [http://www.ic.gc.ca/eic/site/ceb-bhst.nsf/eng/h\\_tt00050.html](http://www.ic.gc.ca/eic/site/ceb-bhst.nsf/eng/h_tt00050.html) and radio equipment [http://www.ic.gc.ca/eic/site/ceb-bhst.nsf/eng/h\\_tt00020.html](http://www.ic.gc.ca/eic/site/ceb-bhst.nsf/eng/h_tt00020.html) that has been certified for use in Canada.

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# European Union

- The Radio and Telecommunications Terminal Equipment (R&TTE) Directive (199/5/EC) [[http://ec.europa.eu/enterprise/sectors/rtte/index\\_en.htm](http://ec.europa.eu/enterprise/sectors/rtte/index_en.htm)] defines a harmonised regulatory framework for the approval of terminal equipment in the European Union.
- 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>]

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# Radio and Telecommunications Terminal Equipment (R&TTE) Directive (1999/5/EC)

- 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*)



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## R&TTE Essential Requirements

- All apparatus
  - LVD - Low Voltage Directive - 73/23/EEC (2006/95/EC) but with no voltage limit
  - EMC – Electro-Magnetic Compatibility -Directive 89/336/EEC (2004/108/EC)
- Radio equipment shall be constructed to avoid harmful interference
- Requirements according to equipment class

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## Requirements according to equipment class Amended by Regulation (EC) No. 596/2009

- (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.

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## 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)**

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# 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 standards
- EN 300 339 / EN 300 385 / EN 300 386-2

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# Harmonised Standards

- List published at:
  - [http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/rtte/index\\_en.htm](http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/rtte/index_en.htm)

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# 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.

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## Class 2 equipment



“information sign” or “alert sign”

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# Conformity Assessment Procedures

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



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# 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.

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## 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.

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# 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.

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## 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.

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# 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

Procedure		Applicable to equipment:		Role of the notified body NBnr (if applicable)	Marking	
		without radio part	with radio part		TTE Class 1	Class 2
II	Internal production control	Terminal equipment	Receivers		CE	
III	Internal production control plus specific apparatus tests		Radio equipment including a transmitter complying with harmonised standards		CE	CE ⓘ
				Identification of the series of essential radio test suites	CE NBnr	CE NBnr ⓘ
IV	Technical construction file	Terminal equipment	Radio equipment including a transmitter not complying or only partially complying with harmonised standards	Opinion on the conformity of the equipment based on the review of the technical construction file established by the manufacturer	CE NBnr	CE NBnr ⓘ
V	Full quality assurance	All equipment covered by the R&TTE directive		Certification of the manufacturer's quality system	CE NBnr	CE NBnr ⓘ

*Source: "Obligations associated with the placing on the market of radio equipment and telecommunications terminal equipment (R&TTE directive)" EC*

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## 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.



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## 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.

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# Transposition

- Examples:
  - UK
  - Sweden



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# UK

- Regulations
- Radio Equipment and Telecommunications Terminal Equipment Regulations 2000 [SI 2000 No.730] and Amendments SI 2003 No.1903 and SI 2003 No.3144.
- Interface regulations - UK Radio Interface Requirements [<http://www.ofcom.org.uk/static/archive/ra/publication/interface/>]
- 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

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## UK

- 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](http://www.ofcom.org.uk/static/archive/ra/publication/ra_info/ra368.htm)]

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# Sweden

- Laws and Regulations
- Interface Specifications
- Market Surveillance



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# 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](#)

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# 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"

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# Sweden – Market Surveillance

- PM on market surveillance





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# 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](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.

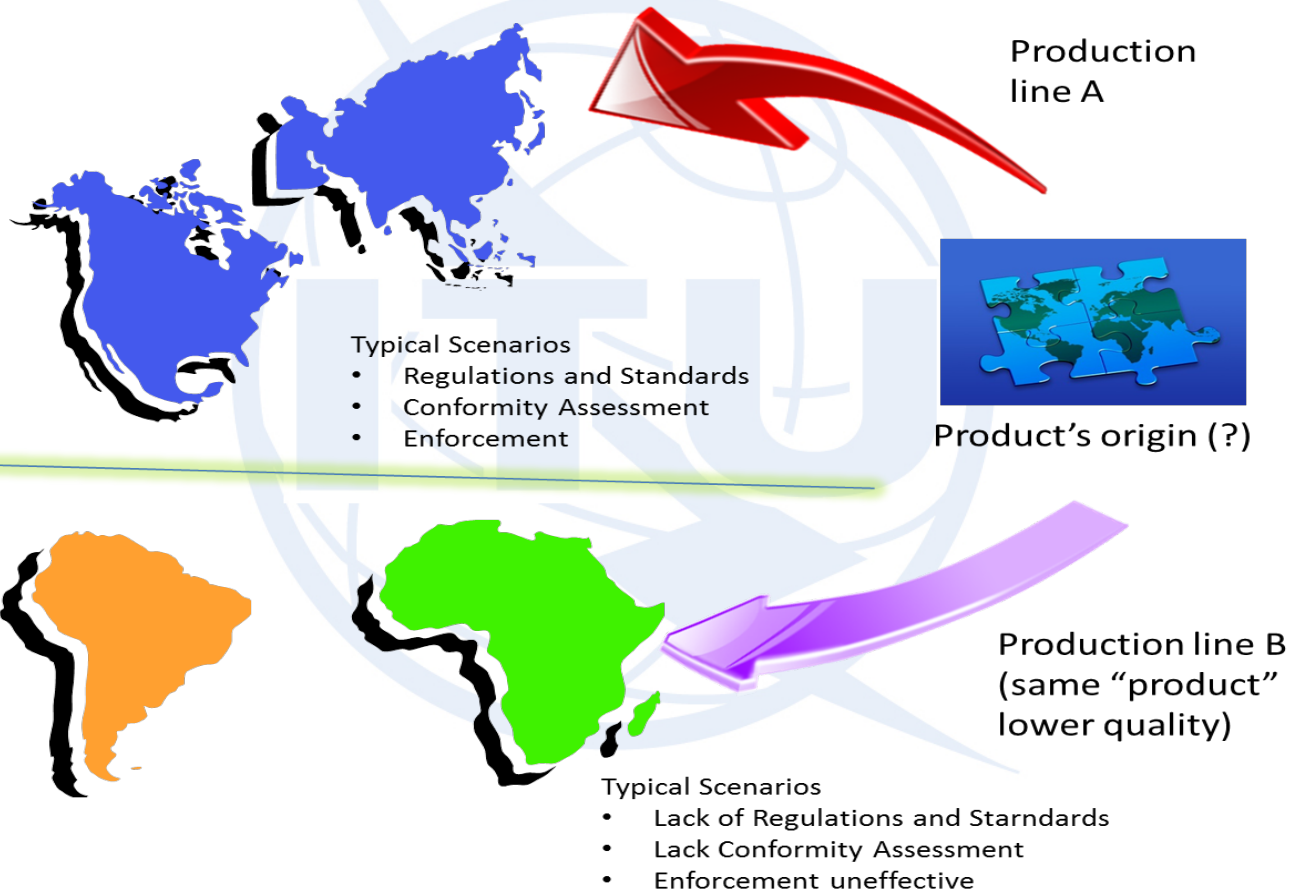
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## Limitations of mandatory conformity assessment

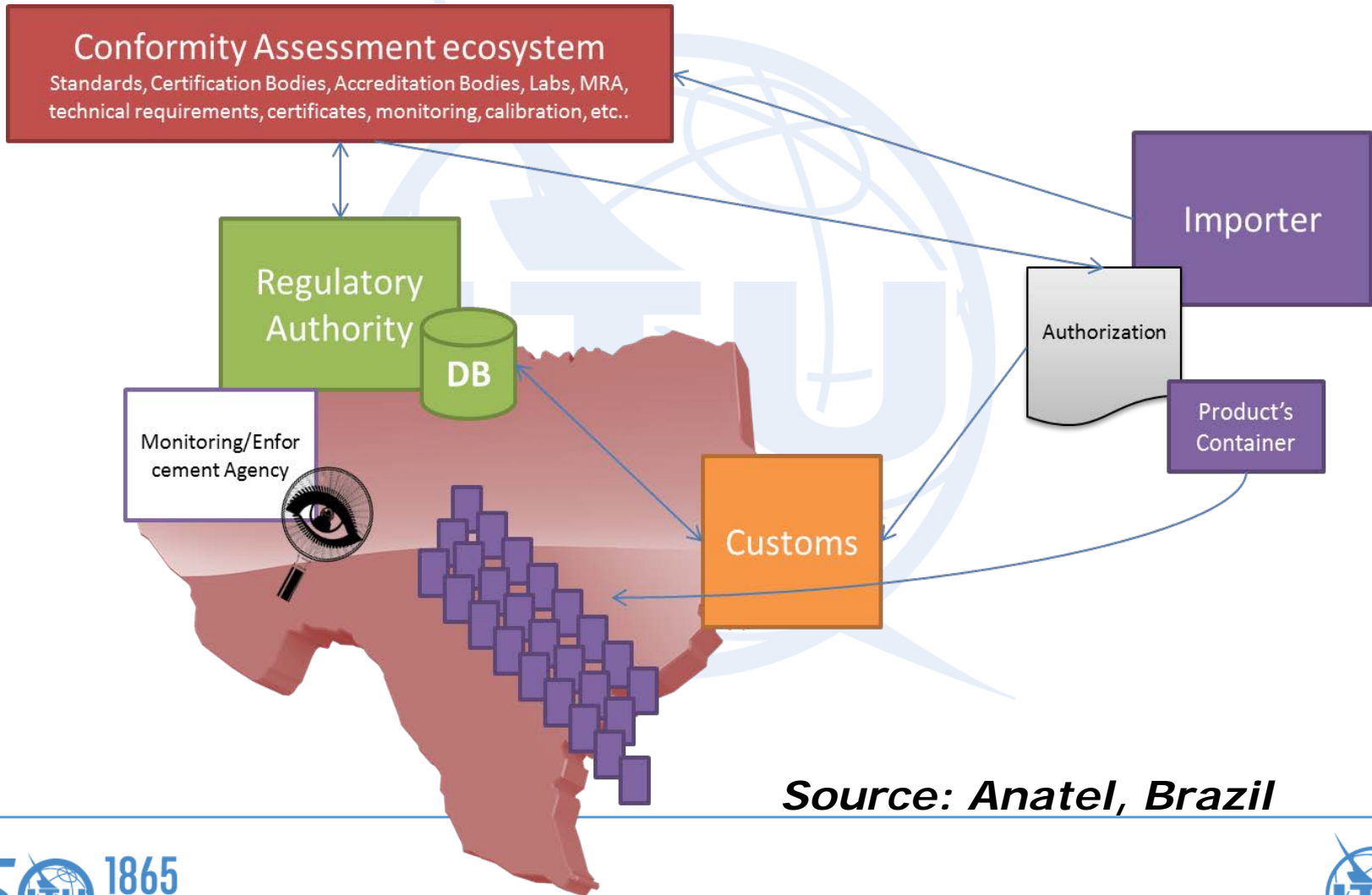
- No guarantee that the device will work properly or interoperate with other devices
- Does not help identify counterfeit equipment

# Anatel observation

Phenomenon of Tropicalização

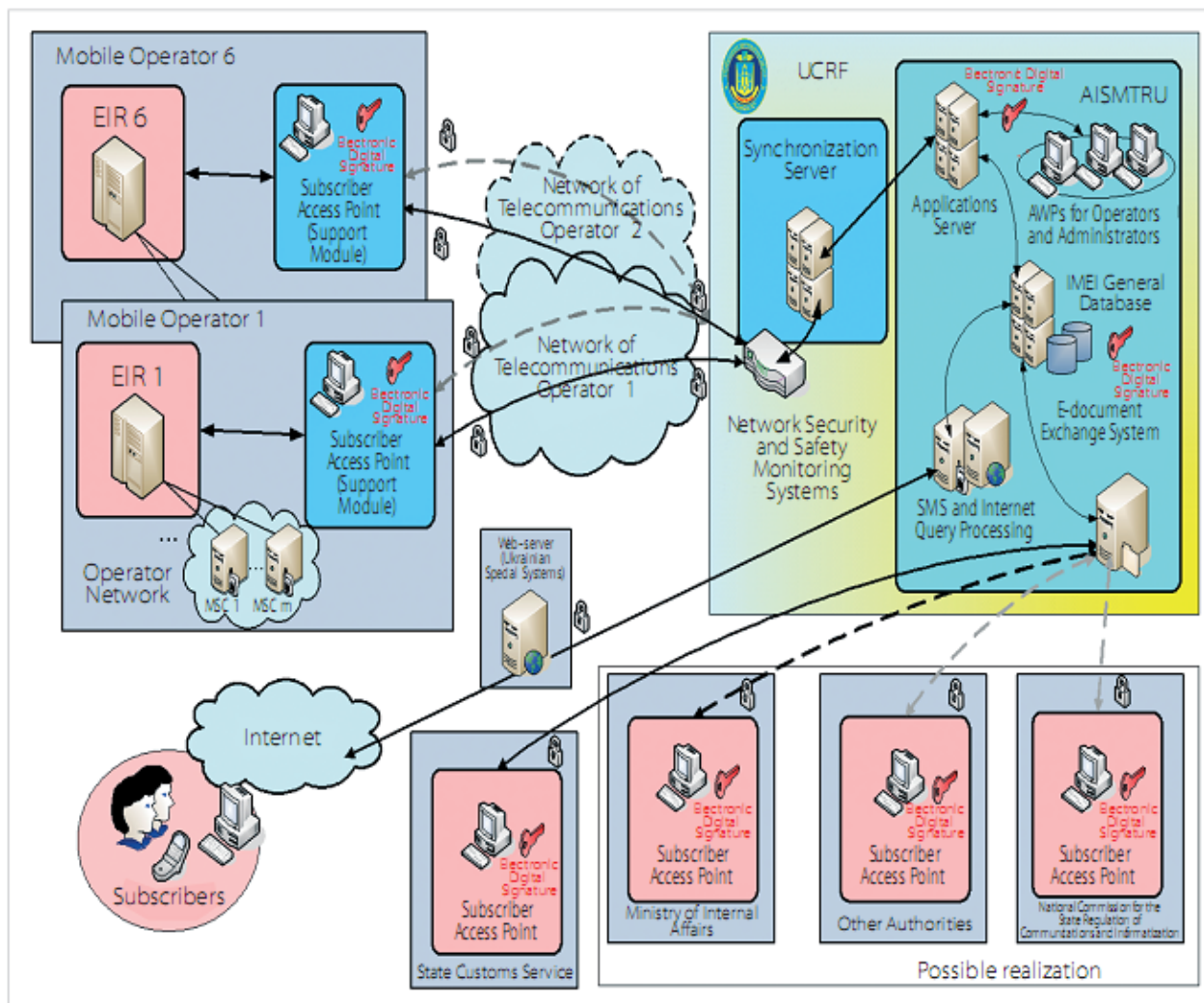


# Proposed by Anatel



*Source: Anatel, Brazil*

# Ukraine – Registration of Mobiles





**IMEI = \*#06#**



- Number analysis tools
- On-line dialling tools
- Databases
- Contact

**Reverse Engineer**  
 Static Reversing and Vulnerability Analysis. Your dream job?  
[secunia.com](http://secunia.com)

AdChoices

**Your account**

E-mail address

Password

Login

> Create free account

**Tip!** The IMEI can be displayed on most mobile handsets by dialling \*#06#. Otherwise check the compliance plate under the battery.




**Enter IMEI number below**

analyse

Example: 350077-52-323751-3

**Information on IMEI 449176082616688**

Type Allocation Holder	Motorola
Mobile Equipment Type	Motorola P7389
GSM Implementation Phase	2/2+
IMEI Validity Assessment	 > 1 < Very likely

**Information on range assignment**

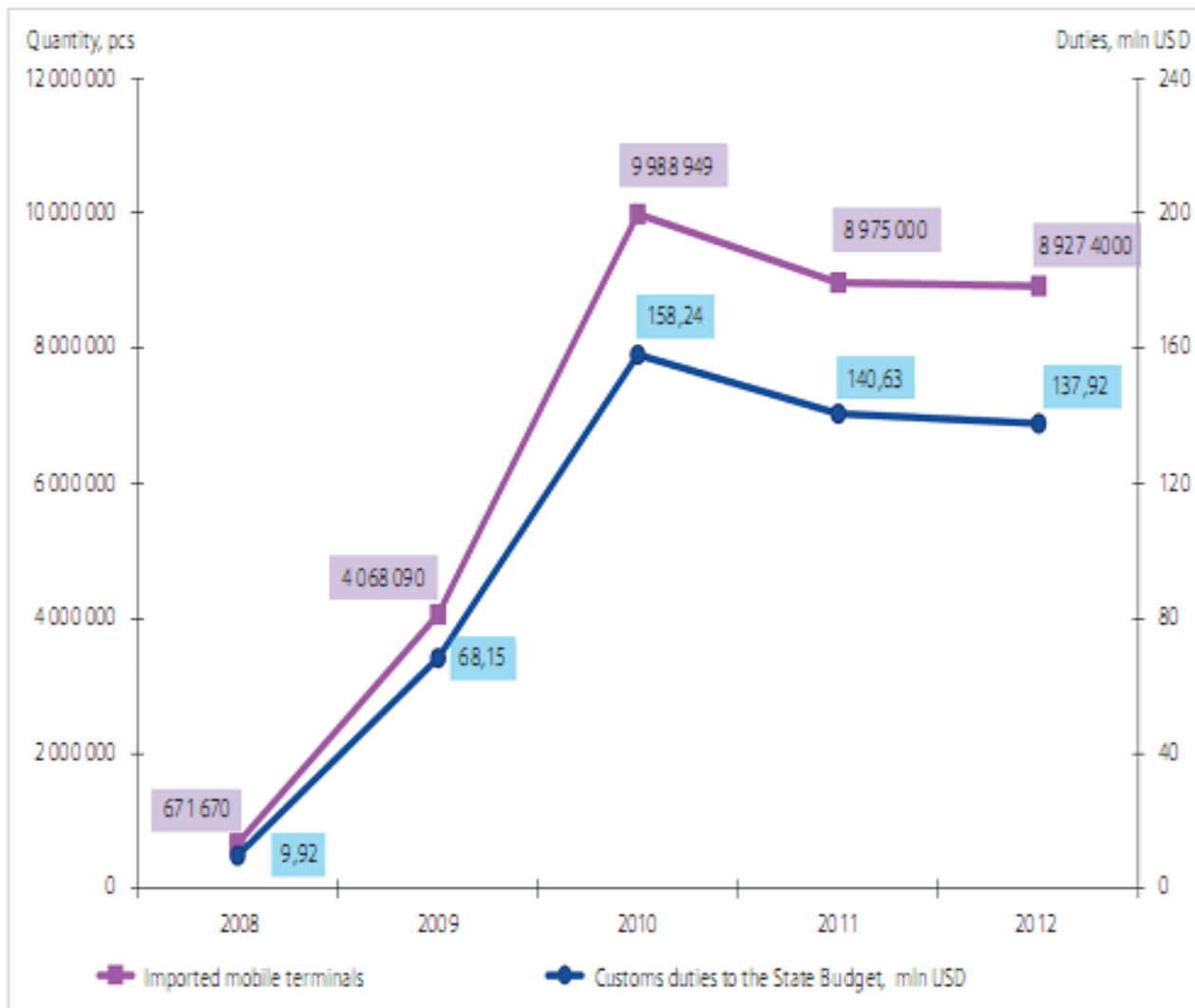
Est. Date of Range Issuance	Unavailable for this IMEI
Reporting Body	British Approvals Board of Telecommunications (BABT)
Primary Market	United Kingdom
Legal Basis for Allocation	EU TTE Directive

**Information on number format**

Full IMEI Presentation	449176-08-261668-8
Reporting Body Identifier	44
Type Approval Code	449176
Final Assembly Code	08
Serial Number	261668
Check Digit	8

Add this as an IE8 Accelerator

## Ukraine (2)





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# 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

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## 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

ITU : I Thank U

