FCC Equipment Authorization Program – Encouraging Wireless Innovation

USTTI Course 19-311

Federal Communications Commission
Office of Engineering and Technology
Laboratory Division

Topics

- Background
- FCC Rules – Code of Federal Regulations (CFR 47)
- Technical Standards
- Equipment Authorization Program
- Testing Laboratory Requirements
- Telecommunication Certification Body Program
- Mutual Recognition Agreements
- Market Surveillance

FCC Regulations for Spectrum Management (CFR 47)

- Federal Communications Commission (FCC) manages use of the radio spectrum by the private sector:
  - First, the Commission establishes technical regulations (frequency allocation, emission, etc.) for transmitters and other equipment to minimize their potential for causing interference to radio services.
  - Second, the Commission administers an authorization program to ensure that equipment reaching the market complies with the technical requirements.

Spectrum Use Approaches

- License with primary use – Highest interference protection
  - e.g., cellular networks services, broadcast
- Shared license with multiple registered users
  - Multiple users share spectrum, but at any given site users register
    - e.g., 3650 MHz license in U.S. (CBRS, Wireless Broadband-GF)
- Licensed by rule
  - No individual license but restrictions on usage
    - e.g., CB radios (27 MHZ), Medical devices (WMTS-608-614 MHZ)
- Unlicensed with registration
  - Generally exempt from license, but certain users require registration
    - e.g., TV Band Devices,
  - No license required, require authorized devices
    - e.g., Wi-Fi and Bluetooth devices

Equipment Authorization and Marketing Rules

- Communications Act authorizes Commission to establish Marketing and Importation Rules
  - Marketing Rules specified in CFR 47 Part 2 I
  - Importation Rules specified in CFR 47 Part 2 K
- FCC have developed technical standards for radio frequency equipment and parts or components.
  - Equipment Authorization Rules specified in CFR 47 Part 2 J
  - Depending on the requirements of the technical standards, devices may not be marketed or imported without proper authorization

Equipment Authorization Program

Commission establishes basic technical rules to control Radio interference

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Use industry developed standards to facilitate economies of scale and interoperability

Equipment authorized to ensure compliance

New products for businesses and consumers

Typical Technical Standards in Rules

- Primarily focus on interference control
  - Frequency
  - Power Output
  - Bandwidth/Channels
  - Spurious Emissions
- Other:
  - RF Exposure
  - Hearing aid compatibility
  - E-911
- The above factors determine
  - Equipment Authorization Procedures to be used

- Rules strive to be technology neutral
- FCC generally has not regulated:
  - Protocols (i.e., LTE, WiMAX)
  - Performance
  - Reliability
  - Compatibility
  - Applications on devices

FCC Technical Standards - Example

- For Low-power devices:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

- Unwanted emission limits
- No specification of signal types

Role of Voluntary Standards

- Encourage various stakeholders to develop consensus standards
- Provide for greater flexibility compared to specification in regulation
- Encourage innovations
- FCC rules incorporate standards by reference, e.g.,
  - ATSC Standards
  - ANSI Standards
  - CISPR and ETSI Standards

Equipment Authorization Scope

Three general categories of equipment requiring authorization:

- **Radio Transmitters**
  - Licensed radio service equipment
- **Unlicensed Equipment (Part 15)**
  - Incidental Radiators
  - Unintentional Radiators
  - Intentional Radiators
- **Telephone Terminal Equipment (Part 68)**
  - Administrative Council for Terminal Attachments (ACTA)

Equipment Authorization Steps

Determine FCC rules that apply to your product

Determine which equipment authorization procedure(s) applies to your product

Perform compliance testing at an authorized testing laboratory

Obtain required approval

Label product
User manual regulatory information
Maintain compliance information and records

Ready to manufacture, import, and market your product

Equipment Authorization Program

- The product approval requirement is specified in the rule part under which equipment operates
  - Not all equipment requires FCC approval or FCC authorization; products are still required to meet specified standards

- The FCC currently has two equipment approval programs:
  - Supplier Declaration of Conformity (SDoC)
  - Certification

Self – Approval Procedures

Old Approval Procedures being replaced by new SDoC procedure:

- Verification (*)
  - Simplest form of approval with manufacturer evaluating the compliance and keeping records
- Declaration of Conformity (*)
  - Most commonly used for Part 15 and 18 digital devices
  - Require use of accredited test laboratory
  - Manufacturer maintain records

New Self-Approval Procedure

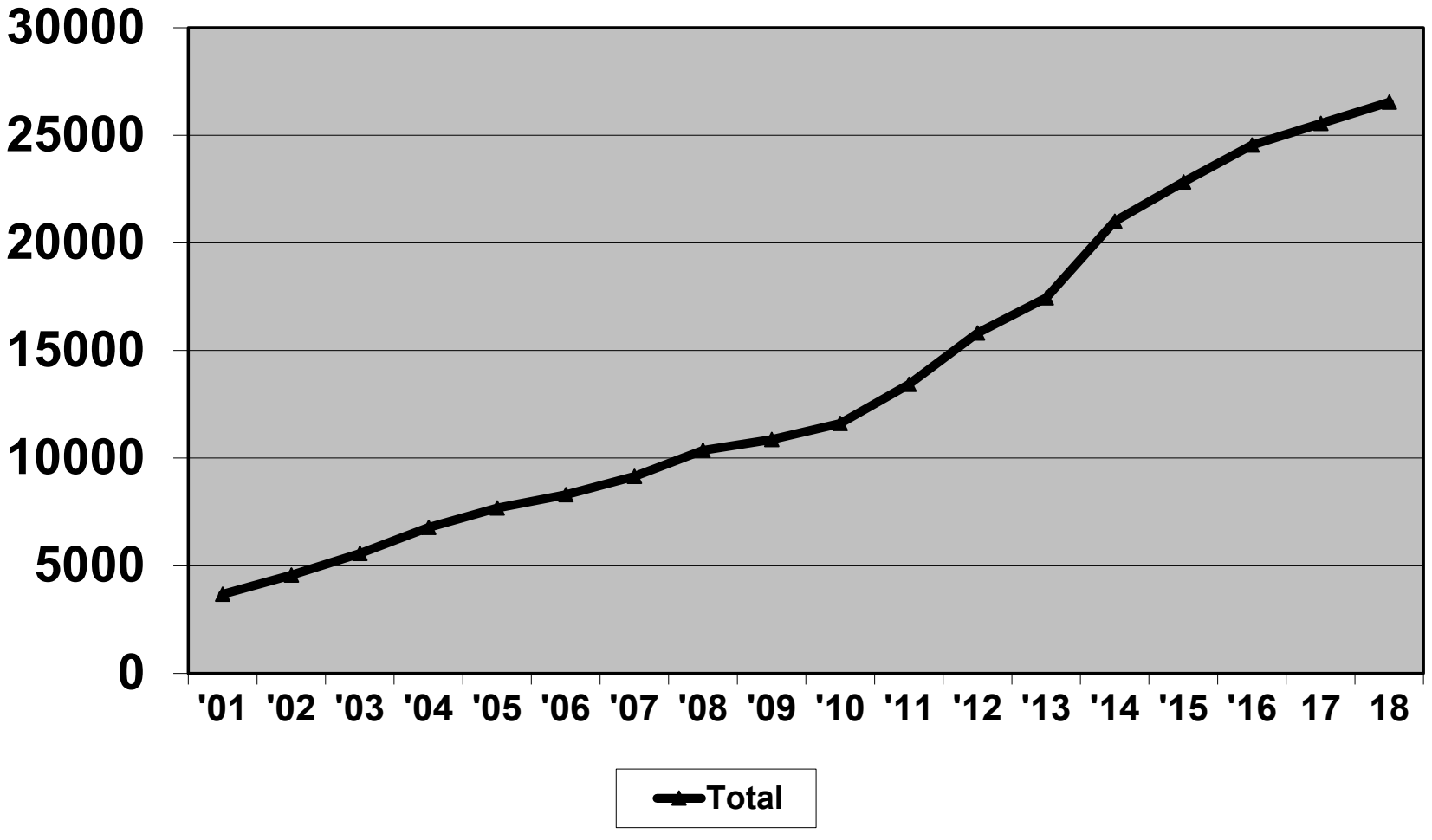
- Supplier's Declaration of Conformity
  - Manufacturer maintains records of the tests and that of test facility used
  - Include a declaration in the information to the user
  - Provide contact information

Equipment Authorization Types

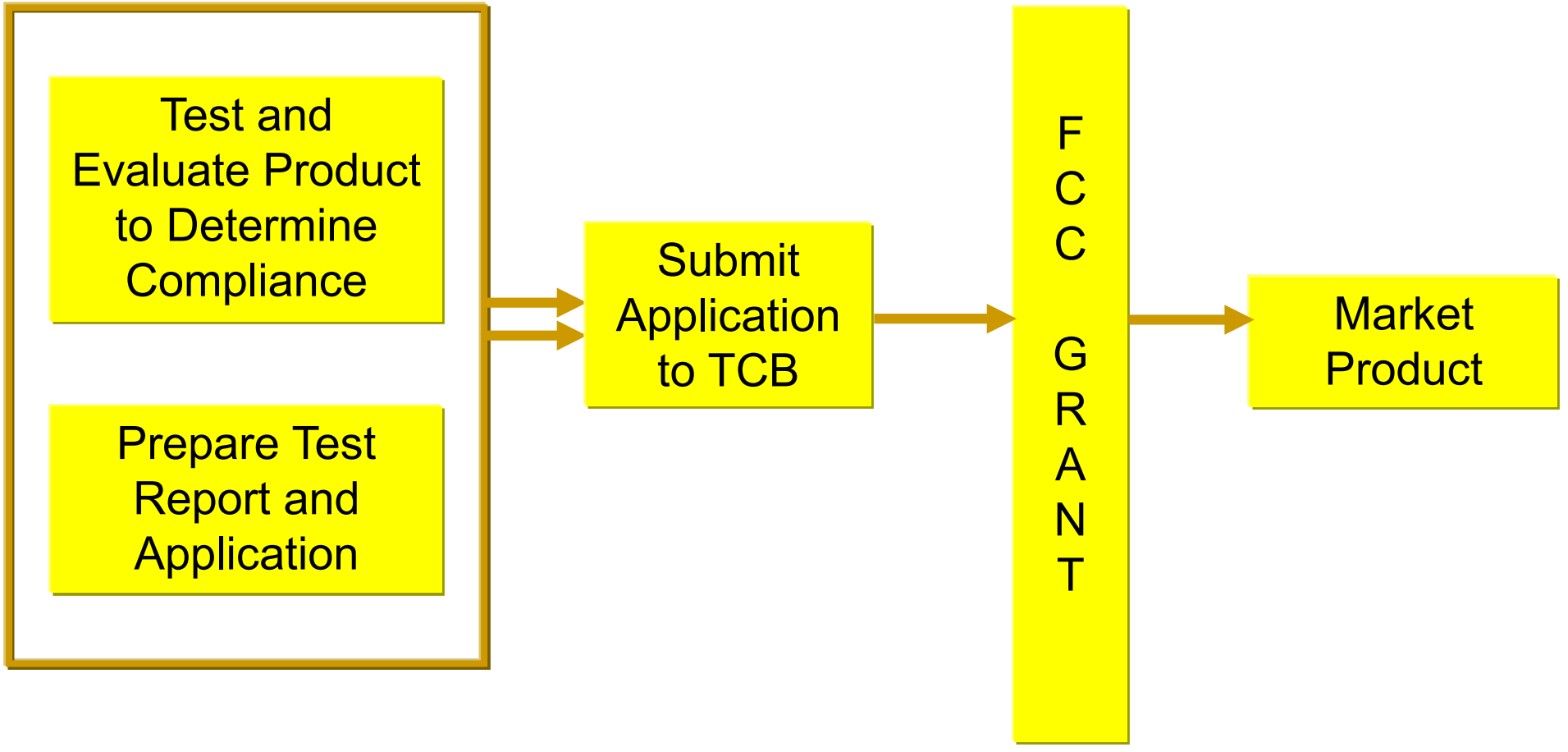
Supplier's Declaration of Conformity		Certification
Most ISM Equipment	PC's & Peripherals	*PC's & Peripherals*
TV & FM Receivers	Most Receivers	*Most Receivers*
All Other Digital Devices	TV Interface Devices	*TV Interface Devices*
Pt-to-Pt Microwave	Consumer ISM Equipment	*Consumer ISM Equipment*
Broadcast Transmitters		*Telephone Equipment*
Aux. Broadcast Transmitters		**Most intentional transmitters**
INMARSAT Equipment		Scanning Receivers
406 MHz ELT		Access BPL
CATV Relay Transmitters		

(1) For several products the manufacturer is given the option to use either SDoC or Certification.

Equipment Authorization Certification Trends (1999 – 2018)



Certification Procedure



Equipment Authorization and Private Sector

- Authorization program relies on using private sector for testing and certification
- Potential advantages
  - Speed at which technology is changing
  - Technical expertise
  - Increase the resources performing conformity assessment
  - Shorter product life cycles
  - Designed and approved in the same geographic location
  - Reduce uncertainty and delay in obtaining certification

Accredited Testing Laboratories

- All testing of Certified devices must be done by accredited/FCC recognized testing laboratories
- Laboratories outside the United States may be recognized by the FCC if:
  - The laboratory has been designated by a foreign authority and recognized by the Commission under the terms of a government-to-government Mutual Recognition Agreement or Arrangement.
  - The laboratory has been designated by a specially recognized Accreditation Body to perform accreditation in the specific country.

Telecommunications Certification Body (TCB)

- A TCB is an independent third-party certification body accredited to international standards
  - Manufacturers are not permitted to become a TCB

- Roles and Responsibilities
  - TCB Scope of Accreditation
  - Evaluation and Decision on Certification
  - Impartiality
  - Testing Capability
  - Follow FCC Guidance and Training Requirements
  - TCB Post-Market Surveillance

- Foreign entities may become a TCB in accordance with the terms of a government-to-government Mutual Recognition Agreement/Arrangement.
  - A total of 41 Telecommunication Certification Bodies (TCBs) have been recognized by the FCC.
    - 22 domestic TCBs; 19 foreign TCBs (EU-13, Canada-3, Singapore-1, Japan-1, Hong Kong-1)

Mutual Recognition Agreements (MRAs)

- Purpose of MRA -- To facilitate trade by allowing Conformity Assessment Bodies (CAB) in one economy to test (Phase I) and/or certify (Phase II) products to the Technical Regulations of another economy.

- Participation in a MRA is voluntary -- however, if a economy agrees to participate in either Phase I and/or Phase II certain rights and obligations in accordance with the terms of the MRA apply.

Stake Holders and Functions

- Regulatory Authority (Technical Requirements and Recognition)
- Designating Authority (Designation)
- Accreditation Body (CAB competence)
- Conformity Assessment Bodies (CABs)
  - Testing Laboratory (Testing)
  - Certification Body (Approval)
- Suppliers (producer)
- Consumers (buyer/user)

Agreements

- US-EU and EEA EFTA Mutual Recognition Agreement
- Asia Pacific Economic Co-operation (APEC) Mutual Recognition Arrangement
- Inter-American Telecommunication Commission (CITEL) Mutual Recognition Agreement
- US-Japan MRA
- US-Mexico MRA
- US-Israel MRA

Market Surveillance

- The market surveillance program investigates
  - Complaints about non-compliant equipment from the public
  - Referrals from Enforcement Bureau
  - Random samples of a group of equipment to determine compliance for select product areas

TCB Surveillance of grants

- TCBs must also perform surveillance auditing and testing
  - TCB guidance to audit and test at least 5% of grants issued by them during each calendar year
  - Any device non compliance issue must be reported to OET
    - Corrective actions are required working with grantee
    - FCC staff will work with parties or determine if enforcement action is necessary
    - Record has been good and, to-date, issues have been resolved without enforcement
    - Corrective Action if resulting in grant withdrawal are made public
    - Dismiss or withdrawal of the Grant by the applicant
- TCBs are held accountable for their actions; failure may lead to possible loss of recognition

Possible FCC Sanctions for non-compliant devices

- Dismissals
- Fines and Forfeitures
- Revocation of FCC ID
  - < 30 days by staff
  - > 30 days by Commission
- Letter ordering grantee to cease marketing and/or importing improperly approved equipment
- Letter of Admonishment
- Public Notice of violation
- Negotiated Agreement – Consent Decree

TCB Program – A success story!

- Allows very fast approval of equipment authorization while allowing OET staff to focus on more challenging issues
  - For new technologies where there are developing issues, a “pre-approval grant” process allows OET closer oversight of approval for new technologies
  - Allows for ongoing training and consultation with TCBs and industry
  - Market competition ensures flexibility for industry

Information Sharing

- Equipment Authorization Approval Guide (www.fcc.gov/oet/ea)
  - Approval Procedures
  - Measurement Procedures
  - Grantee Code
  - Importation
  - Knowledge Database
  - FCC ID Search
  - Equipment Authorization System
  - Testing Laboratory Search
  - Telecommunications Certification Body Search
  - Mutual Recognition Agreements
  - RF Device
  - FCC Rules (Title 47)

- Submit Inquiries about technical rules and equipment authorization procedures (www.fcc.gov/labhelp)

Questions and Answers

Thanks!