



# North American Regulatory Framework

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# Equipment Authorization – RF Device Definition

## What is an RF Device?

- The FCC regulates radio frequency (RF) devices contained in electronic and electrical products that are capable of emitting radio frequency energy by radiation, conduction, or other means. These products have the potential to cause interference to radio services operating in the radio frequency range of 9 kHz to 3000 GHz.

## Legal Definition:

- A radiofrequency device is any device which in its operation is capable of emitting radiofrequency energy by radiation, conduction, or other means. Radiofrequency devices include, but are not limited to:
  - a. Radio Transmitting devices used for Communication (Licensed and Unlicensed).
  - b. Incidental, Unintentional and Intentional radiators defined in (Part 15).
  - c. Industrial, Scientific, and Medical equipment (Part 18).
  - d. Any part or component thereof which in use emits radiofrequency energy by radiation, conduction, or other means.

[35 FR 7898, May 22, 1970, as amended at 54 FR 17711, Apr. 25, 1989]

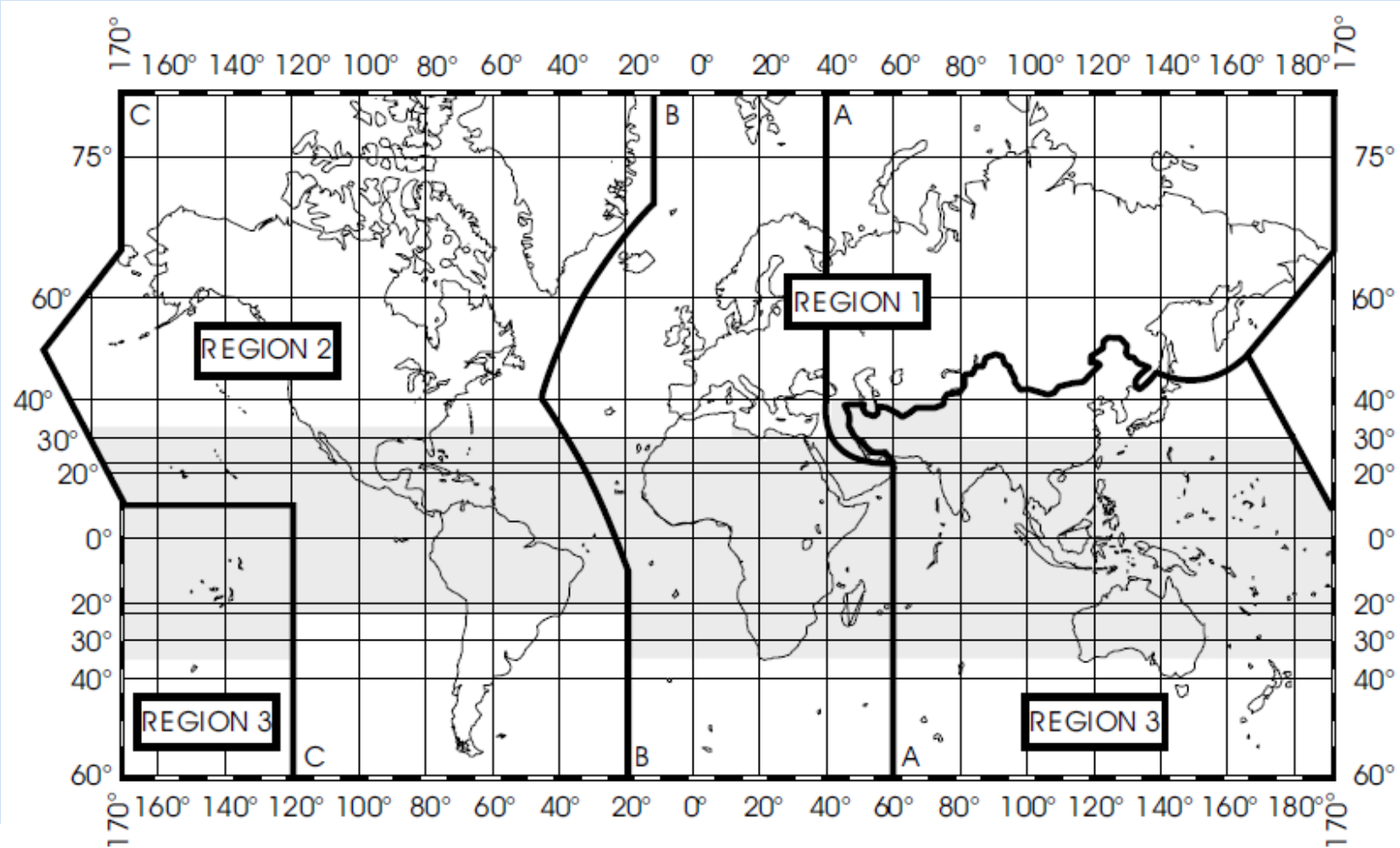
# Regulatory Players

## Frequency Allocation

- Radio spectrum allocation, regulatory responsibility for the radio spectrum is divided between the Federal Communications Commission (FCC) and the National Telecommunications and Information Administration (NTIA).
- Currently only frequency bands between 9 kHz and 275 GHz have been allocated (i.e., designated for use by one or more terrestrial or space radiocommunication services or the radio astronomy service under specified conditions).
  - OET maintains the FCC's Table of Frequency Allocations, which is a compilation of allocations.
- The FCC's Table of Frequency Allocations consists of the International Table of Frequency Allocations and the United States Table of Frequency Allocations.
  - The FCC's Table of Frequency Allocations is codified in Section 2.106 of the Commission's Rules.

# Frequency Regulation

## ITU Regions



# USA Frequency Allocation

Most recent version 06/12/2018

**47CFR §2.106 Table of Frequency Allocations** <https://transition.fcc.gov/oet/spectrum/table/fcctable.pdf>



**FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF ENGINEERING AND TECHNOLOGY  
POLICY AND RULES DIVISION**

## **FCC ONLINE TABLE OF FREQUENCY ALLOCATIONS**

**47 C.F.R. § 2.106**

**Revised on April 19, 2017**

**Disclaimer:** The Table of Frequency Allocations as published by the Federal Register and codified in the Code of Federal Regulations remains the legal source material. This Online Table of Frequency Allocations may display amendments that have been adopted by the FCC but that have not yet taken effect.

NOTE: If a Rule Part is listed in the last column of the Allocation Table, click here to find those [Rules](#).

Contact Tom Mooring at 202-418-2450 if you have any questions or comments.<sup>1</sup>

# Radio Frequency Devices: Emissions: (not communication)

## Incidental Radiators

- An incidental radiator is an electrical device that is **not designed to intentionally use, intentionally generate or intentionally emit** radio frequency energy over 9 kHz. However, it may produce byproducts of radio emissions above 9 kHz and cause radio interference. A product that is classified as an incidental radiator device is not required to obtain an equipment authorization. However, it is regulated under the general operating conditions of Section 15.5 and if there is harmful interference the user must stop operation and remedy the interference.

## Unintentional Radiators

- An unintentional radiator is a device by design that **uses digital logic**, electrical signals operating at radio frequencies for use **within the product**, or **sends radio frequency signals** by conduction to associated equipment **via connecting wiring**, but is not intended to emit RF energy wirelessly by radiation or induction. The majority of electronic-electrical products uses digital logic are regulated under Part 15 Subpart B. Some products are specifically exempted from an equipment authorization under Section 15.103.

## Industrial, Scientific and Medical

- RF energy used for providing energy **other than telecommunications** such as production of physical, biological, chemical effects, heating, ionization, mechanical vibrations, acceleration of charged particles, etc. Also a medical device designed to generate and use RF energy for medical purposes.

# Radio Frequency Device Transmitters:

## **Licensed Radio Services** (Parts 22, 24, 25, 27, 30, 74, 80, 87, 90, 101, etc)

- Products that use licensed radio spectrum, from fixed microwave links to cellular telephones to mobile broadband services, are considered RF Devices and are subject to equipment authorization.
- In general can operate at higher power than unlicensed Intentional Radiators
- Usually a purchased, protected spectrum allocation.
- Protection from interference through specific legal remedies

## **Unlicensed Intentional Radiators** (Part 15, Subpart C Through H)

- An intentional radiator (defined in Section 15.3 (o)) is a device that intentionally generates and emits radio frequency energy by radiation or induction that may be operated without an individual license.
- In general operate with powers less than one watt
- Must always operate with the understanding that interference cannot be created, and must also be tolerated.



# Engineering & Technology

## Office of Engineering and Technology

- OET **advises the Commission on frequency allocation and spectrum usage, maintains the Table of Frequency Allocations, and represents the agency on these issues with NTIA** and the Interdepartmental Radio Advisory Committee. OET advises and participates with other Commission bureaus and offices on proceedings regarding spectrum management, emerging technologies and technical standards by conducting engineering and technical analysis, testing equipment to determine its interference risks and technical operating parameters, and developing projects to gather theoretical and experimental data on new technologies.
- OET **promotes innovation** by managing the Experimental Licensing program and the Equipment Authorization program, by developing technical regulations for the operation of unlicensed devices, and by convening the Technological Advisory Council for experts' advice on technology developments.
- OET **contributes to the development of technical standards, regulations and general policies** by conducting and publishing the results of engineering and technical studies on spectrum, broadband measurements and radio frequency (RF) exposure, and by maintaining liaisons with Federal agencies and technical experts in national and international organizations.



# Engineering & Technology

## Technological Advisory Council

- The FCC's Technological Advisory Council (TAC) provides technical advice to the FCC. The TAC is organized under the authority of the Federal Advisory Committee Act. The TAC is comprised of a diverse array of leading experts that helps the FCC identify important areas of innovation and develop informed technology policies supporting America's competitiveness and job creation in the global economy.
- All meetings are held in the Commission Meeting Room at 445 12th Street SW, Washington, DC. The meetings are webcast and accessible from <https://www.fcc.gov/live>.
- **Example TAC Topics for 2018**
  - **5G and IoT**
  - **Mobile Device Theft Prevention**
  - **Antenna Technology**
  - **Communication Strategies for Drones:**
  - **Future of Power:**
  - **Computational Power and Stress on the Networks:**

# Engineering & Technology

## Laboratory Division

- The Laboratory Division is responsible for the **evaluation of radio frequency (RF) devices and related technologies to determine their interference risk potential and technical operating parameters** in order to apply appropriate technical standards for their compliance or, in the case of new RF technologies, develop technical standards and recommend appropriate action.
- The Laboratory Division supports rulemaking proceedings and **conducts laboratory-based technical studies** of competing technologies and arguments to assist the Commission in reviewing options.
- The Laboratory Division **designs test procedures for compliance** of equipment subject to the Commission regulations and conducts tests to determine if equipment complies with applicable technical rules, procedures and standards; and it supports national and international standards activities to develop measurement procedures used to determine compliance with Commission requirements.
- **The Laboratory Division manages the Equipment Authorization program**, which ensures that equipment marketed within the United States complies with Commission regulations designed to minimize the potential for harmful interference, and participates in international efforts to harmonize conformity assessment procedures for equipment authorization via Mutual Recognition Agreements.

# Marketing of RF devices

## 47 CFR 2.803

(a) **Marketing**, as used in this section, includes **sale or lease, or offering for sale or lease, including advertising for sale or lease, or importation, shipment, or distribution** for the purpose of selling or leasing or offering for sale or lease.

(b) General rule. **No person may market a radio frequency device unless:**

- (1) For devices subject to authorization under Certification, the device has been authorized in accordance with the rules in subpart J of this chapter and is properly identified and labeled as required by §2.925 and other relevant sections in this chapter; or
- (2) For devices subject to authorization under Supplier's Declaration of Conformity in accordance with the rules in subpart J of this part, the device complies with all applicable technical, labeling, identification and administrative requirements; or
- (3) For devices that do not require a Grant of Equipment Authorization under subpart J of this chapter but must comply with the specified technical standards prior to use, the device complies with all applicable, technical, labeling, identification and administrative requirements.

✓ *FCC has the authority to fine sellers or distributors of unauthorized RF devices of up to \$11,000 per occurrence.*

# Equipment Authorization

## What Type of equipment requires an FCC equipment authorization?

- Equipment that contains an RF device must be authorized in accordance with the appropriate procedures specified in 47 CFR part 2, subpart J. These requirements not only **minimize the potential for harmful interference**, but also ensure that the equipment **complies with the rules that address other policy objectives** – such as human **RF exposure limits and hearing aid compatibility (HAC)** with wireless handsets.
- The Commission has two different approval procedures for equipment authorization – **Certification** and **Supplier's Declaration of Conformity (SDoC)**. The required procedure depends on the type of equipment being authorized as specified in the applicable rule part. In some instances, a device may have different functions resulting in the device being subject to more than one type of approval procedure.
  - *In general, all Incidental Radiators (electric motors, mechanical switches, etc.) do not require a formal equipment authorization. However, manufacturers shall employ good engineering practices to minimize the risk of interference*

# Equipment Authorization

## Types of Authorizations

- **Supplier's Declaration of Conformity (SDoC)**
  - Only used for Part 15B Unintentional Radiators (receivers, computers, digital devices, etc.).
  - Equipment approved using SDoC is required to be tested, however, **it is not necessary to use an FCC recognized accredited testing laboratory.**
- **Certification**
  - Equipment approved under the Certification procedure is **required to be tested by an FCC Recognized 17025 Accredited Testing Laboratory.**

# Equipment Authorization

## Unintentional Radiators eligible for SDoC (15.101)

Type of Device	Equipment Authorization Required
TV Broadcast Receiver	SDoC or Certification
FM Broadcast Receiver	SDoC or Certification
CB Receiver	SDoC or Certification
Superregenerative Receiver	SDoC or Certification
Scanning Receiver	Certification
Radar Detector	Certification
All other receivers subject to Part 15	SDoC or Certification
TV Interface Device	SDoC or Certification
Cable System Terminal Device	SDoC or Certification
Stand-alone Cable input selector switch	SDoC or Certification
Class B personal computers and peripherals	SDoC or Certification
CPU boards and internal power supplies used with Class B personal computers	SDoC or Certification
Class B personal computers assembled using authorized CPU boards or power supplies	SDoC or Certification
Class B external switching power supplies	SDoC or Certification
Other Class B digital devices & peripherals	SDoC or Certification
Class A digital devices, peripherals & external switching power supplies	SDoC or Certification
Access Broadband over Power Line (Access BPL)	Certification
All other devices	SDoC or Certification

# Equipment Authorization

Compliance information which must be included with the product (KDB 896810, Annex 1)

**Supplier's Declaration of Conformity**  
**47 CFR § 2.1077 Compliance Information**

**Unique Identifier:** (*e.g.*, Trade Name, Model Number)

**Responsible Party – U.S. Contact Information**

ABC Corporation

Street Address

City, State

Zip Code

Telephone number or internet contact information

**FCC Compliance Statement** (*e.g.*, products subject to Part 15)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



# Equipment Authorization

## SDoC Summary (2.906, 2.909, 2.931)

- Supplier's Declaration of Conformity (SDoC) is a procedure where a **responsible party makes measurements to ensure that the equipment complies with the appropriate technical standards**. Submittal of test data demonstrating is not required unless specifically requested.
- The **responsible party must be located within the United States**, and is required to be able to provide any compliance information, such as test reports and equipment samples at no cost to the FCC if requested by the Commission
- The **responsible party warrants that each unit of equipment marketed under an SDoC will be identical to the unit tested** and found acceptable with the standards, and that the records maintained by the responsible party continue to reflect the equipment being produced under the SDoC.
- Devices subject only to Supplier's Declaration of Conformity shall be uniquely identified (no FCC ID). The responsible party shall maintain adequate identification records to facilitate positive identification for each device. Devices subject to authorization under Supplier's Declaration of Conformity **may be labeled with the FCC logo on a voluntary basis**.

# Equipment Authorization

## Certification (2.907)

- **Certification is the most rigorous approval process.** It is an equipment authorization issued by a 17065 recognized TCB based upon an application and test data submitted by the responsible party (e.g., the manufacturer or importer).
- The **testing is done by a 17025 accredited testing laboratory** recognized by the Commission
- A TCB examines the test data and supporting documentation to determine whether the testing followed appropriate protocols and the data demonstrates technical and operational compliance with all pertinent rules.
- **Technical parameters** and other descriptive information for all certified equipment submitted in an application for Certification **are published in a Commission-maintained public database.**
  - mobile phones
  - wireless local area networking equipment
  - remote control transmitters
  - land mobile radio transmitters
  - wireless medical telemetry transmitters
  - cordless telephones
  - walkie-talkies

# Equipment Authorization

## Certification process

- The **responsible party obtains an FCC Registration Number (FRN)**. The FRN is a 10-digit number used to identify the individual or organization doing business with the FCC. The same FRN will be used for all future approvals.
  - <https://apps.fcc.gov/coresWeb/publicHome.do> (Free!)
- After obtaining an FRN, the **responsible party purchases a Grantee Code** from the Commission by applying at the Grantee Registration website. A Grantee code is required the first time a party applies for certification, and can be used for all future approvals.
  - <https://apps.fcc.gov/tcb/TcbHome.do> (\$60)
- A **Form 731 application for a Grant of Equipment Authorization is filed with a TCB**. The application requires submission of technical information about the product.
- The **TCB reviews all information** and the test results to determine if the product complies with the FCC requirements.
- Once the TCB makes a decision to certify the product, **all supporting information is uploaded to the FCC EAS Database**.
- A **Grant of Equipment Authorization is issued by the TCB** on the FCC Equipment Authorization Electronic System (EAS) Database.

# Equipment Authorization

## Labeling – FCC Identifier

- The FCC ID consist of two parts: (1) a Grantee Code; and (2) a product code.
- The Grantee Code is a three or five character alphanumeric string representing the Grantee / Applicant for certified products.
  - Grantee codes that begin with an alpha character (A-Z) consist of three characters.
  - Grantee codes that begin with a number (2-9) consist of five characters.
- The **Grantee Code is assigned by the Commission permanently to a company** for authorization of all radio frequency equipment.
- The **product codes are chosen by the Grantee** to identify each product. They can be up to 14 alpha numeric characters..
- For information on how to obtain a grantee code, manage grantee code information (company name, address and contact information), recover a lost grantee code's registration number, see KDB Publication 204515.
  - <https://apps.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?switch=P&id=41677>

# Equipment Authorization

## Labeling – Certification

Part 15 Certification	15.19(a)(3) All devices	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	§2.925(a)(1) FCC ID XZZYYNNNNN <ul style="list-style-type: none"><li>• Grantee Code if (X is Numeric) Grantee code is XZZYY else XZZ</li><li>• Equipment Product Code NNNNN</li></ul>
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If the labelling area is considered too small and therefore it is impractical (smaller than the palm of the hand) to display the compliance statement, then the statement may be placed in the user manual or product packaging. However, the device must still be labelled with the FCC ID. If the device is unquestionably too small for the FCC ID to be readable (smaller than 4-6 points), the FCC ID may be placed in the user manual. However, it must be determined that the device itself is too small – the label area allocated to the FCC ID may not be reduced because of over crowded identification of other product and regulatory information.

Electronic display of the FCC ID may be used for Certification for devices that have an integrated display screen in lieu of a physical label or nameplate.

# Equipment Authorization

## Electronic Labeling

- **Information to be displayed**
  - 1) The FCC ID and/or the SDoC logo (if applicable).
  - 2) Any other information required by Rule unless such information is permitted to be included in the manual.
- **Access to the required information on the e-label**
  - 1) Users must be able to access the information without requiring special access codes or permissions and the information must be accessible in no more than three steps in a device menu.
  - 2) Devices must not require special accessories or supplemental plug-ins (e.g., the installation of a SIM/USIM card) to access the information.
  - 3) Users must be provided specific instructions on how to access the information. The instructions must be included in the User's manual, operating instructions, insert in the packaging materials, or other similar means.
  - 4) The application must clearly include the instructions for accessing information as part of the Label Exhibit.

# Equipment Authorization

## Electronic Labeling for Certified transmitter modules

- Devices approved as certified transmitter modules may have their FCC ID information displayed electronically, if the module has a display or the host in which it is integrated has a display screen.
  - If the certified transmitter module provides a secure electronic exchange interface with authentication between the host and the module to identify the correct FCC ID, then the host can display the FCC ID information on the host's built-in display. The module can be either user-installable or a factory-installed module. The application for equipment authorization for such modules must include a description of the secure electronic exchange protocol and the security of such arrangement.
  - If the certified transmitter module does not provide a secure electronic exchange interface with authentication, the host manufacturer can electronically display the FCC ID information on the host by factory-encoding the FCC ID of the module. Factory encoding must be secure and locked by the host manufacturer and not alterable by any third parties. The programmed information must display "Contains FCC ID XYZNNNNN".
  - Multiple modules in a host can be electronically displayed as "Contains FCC IDs XYZNNNN1, XYZNNNN2", etc.



# Equipment Authorization

## Labeling for Importation and Purchasing

- Products utilizing e-labels are required to have a physical label on the product at the time of importation, marketing and sales. For devices imported in bulk and not packaged individually, a removable adhesive label or, for devices in protective bags, a label on the bags is acceptable for this purpose. Any removable label shall be of a type intended to survive normal shipping and handling and must only be removed by the customer after purchase. For devices imported already in individual packages ready for sale, the information may alternatively be provided on the package. It shall contain:
  - The FCC ID and/or the FCC logo (if applicable);
  - Any other information required by specific rule to be provided on the surface of the product unless such information is permitted to be included in the User's manual or other packaging inserts.

# Equipment Authorization (Modular Transmitters)

## Modular Approvals - §15.212, KDB 996369 **NEW Publication 02.01.2019**

- ✓ **KDB 996369 D01 Module Certification Guide v02** provides a guide for equipment authorization applications under Section 15.212 modular transmitters;
- ✓ **KDB 996369 D02 Module Q and A v01** provides additional guidance in a question and answer format;
- ✓ **KDB 996369 D03 OEM Manual v01** provides guidance to grantees (applicants) seeking to certify a modular transmitter (module) and the key elements to be reviewed by a Telecommunication Certification Body (TCB) during the certification process;
- ✓ **KDB 996369 D04 Module Integration Guide v01** provides guidance to host product manufactures:
  - Modular approvals are for **tangible, clearly-delineated devices** that operate when installed within, or attached to, a host product.
  - A module **cannot solely be the implementation of a design specification**
  - A host product is required to comply with all applicable FCC regulations. To ensure compliance for all **non-transmitter** functions, a **host product manufacturer is responsible for compliance** when the module(s) are installed.
  - The module **Grantee shall provide guidance** to the host manufacturer for ensuring compliance with the Part 15B requirements

# Equipment Authorization (Modular Transmitters)

## Comprehensive Integration Instructions

- It is required that **detailed and comprehensive instructions must be provided** to the integrators, **so that any subsequent associated party** (grantee, host manufacturer, original equipment manufacturer (OEM), integrator, or end-user) **can clearly understand the conditions and limitations for authorized uses of the modular transmitter**. These instructions must be included as one of the Form 731 exhibits.
- While modules can provide great flexibility for third parties without requiring additional compliance demonstrations for the transmitter function, additional technical requirements may call for separate equipment authorization information for compliance demonstration. A host product incorporating a certified device cannot take advantage of the pre-existing certification of the component transmitter module without conformity with the specific requirements in the instructions.
- Also, **a transmitter module grantee is responsible for including the necessary details for ensuring compliance for RF exposure requirements** and the associated usage conditions for portable, mobile, and fixed-mount equipment configurations, as applicable.

# Equipment Authorization (Modular Transmitters)

## Special Requirements for Licensed Modular Transmitters

1. Use KDB 996369 as a guide.
2. The Grantee is required to provide clear documented installation instructions to other parties (e.g., host manufacturers, Original Equipment Manufacturers, and end users.)
3. The Grantee is responsible for full compliance.
4. Licensed modular grant conditions shall be listed on the grant:
  - ✓ *The maximum antenna gain to ensure compliance, (e.g., EIRP, PPSD limits),*
  - ✓ *RF exposure requirements*
  - ✓ *Host product limitations*
5. For labeling, see KDB Publication 784748.
6. Licensed modular devices must be compliant to all specific applicable licensed radio service rules.

# Equipment Authorization (Modular Transmitters)

## Limited Modular Approvals

- A Limited Modular Transmitter (LMA) is a transmitter that does not meet all eight requirements listed in KDB 996369 or 15.212(a)(1), and compliance can be demonstrated only for specific host(s). For example, manufacturers have flexibility with respect to module shielding, buffered modulation/data inputs, and power supply regulation. If one or more of these functions are provided by a specific host(s), then the module can be Granted as an LMA, and is limited to that specific host(s).
- The Responsible Party must demonstrate how it will retain control over the final installation of the device so that compliance of the product is ensured; for example, by limiting the installation to a specific host or hosts.
- Any LMA is based on conditions established in the application such as:
  - the host device(s) into which the module can be installed
  - documented requirements for professional installation
  - the antenna separation distance from persons
  - the locations where a device may be used (e.g., outdoor only).

# Required Documentation

## Professional Installation

- **Manuals** - For devices subject to Professional Installation, filing should include Installers manual.
  - Manual should have complete instructions of configuration requirements for ensuring device is in compliance.
  - For Example:
    - Guidelines for mixed indoor/outdoor usage
    - Conducted power settings and antenna selection for meeting output power requirements
    - Antenna installations requirements (tilt) for meeting EIRP elevation restrictions
  - No provisions should be provided for any personnel to set the equipment to any frequency or power settings not shown on the Grant.

# Required Documentation

## Rule §15.204 Special Notes

- Grants for any Part 15 transmitter must be for complete transmitter systems only. Therefore external photos exhibits in filings should ALWAYS show antenna(s), not just the radio portion of a transmitter system
- Part 15 transmitters must only be operated with antenna type(s) identified and tested in the application
- For Grantee controlled (Professionally Installed) Part 15 transmitters:
  - Professional installer may choose the proper antenna for the installation
  - Grantee must justify professional installation
  - Grantee must furnish proper instructions to professional installer for output power / cable / antenna configurations to meet rules
  - Instructions not given to the end user, and in no case can end users have controls to adjust power
- *Note also §2.929(b) second party “contractual agreement” concept, and §2.929(b)(2) continued grantee responsibility*



# Required Documentation

## Rule §15.203 Special Notes

- For Equipment authorization applications for Part 15 transmitters **must have supporting information showing that only antenna(s) furnished by the responsible party can be used**
  - Antenna characteristics directly affect field strength of RF radiated emissions. 15.203 is intended to prevent use of other antennas that increase transmit range by increasing radiated emissions
- Permanently attached antennas, or antennas using unique coupling/coupler, are sufficient
- Antennas using standard antenna jack or standard electrical connectors are prohibited
  - **Question:** “Is there a list of non-standard antenna connectors that comply with 15.203 available?”
  - **Answer:** “The FCC does not publish a list of “non-standard” or unique RF connectors. FCC does not identify or endorse example acceptable connector types and designs”
- Applicants and TCBs must ensure that filings contain adequate descriptions and supporting information on allowed antenna(s) for a device so that Part 15 limits are not exceeded
  - **Question:** May cable loss be considered when determining output power delivered to the antenna of a Part 15 intentional radiator?
  - **Answer:** Yes, where antenna is permanently attached to the cable, or if antenna is professionally installed

# Testing Laboratories—

## Mutual Recognition Agreements

### Definition

- Mutual Recognition Agreements/Arrangements (MRAs) are government-to-government trade facilitating measures aimed at a global approach to conformity assessment. The government-to-government agreements can be multi-sector, as in the US-EU MRA, covering more than one group of products. The agreements can also be multi-lateral, as in the APEC Tel MRA, providing a framework for all member economies (countries) to follow. In each of the agreements, participating countries agree to accept the test results and/or product approvals performed by the Conformity Assessment Bodies (CABs) of the other country.
- MRAs only address the issue of acceptance of conformity assessment results and do not attempt to harmonize regulatory requirements or technical standards. A primary objective of the MRAs is to ease the burden on manufacturers and reduce the cost and time to market for products by implementing transparent conformity assessment processes while ensuring that products that reach the market are compliant with the FCC rules.

# Testing Laboratories– Mutual Recognition Agreements

## Participation

- The Federal Communications Commission (FCC) participates in the following MRAs:
  - Asia-Pacific Economic Cooperation (APEC) Telecom MRA
  - European Free Trade Association (EFTA) MRA
  - European Union MRA
  - Inter-American Telecommunications Committee (CITEL) of the Organization of American States MRA
  - Israel MRA
  - Japan MRA
  - Mexico MRA
- <https://www.fcc.gov/general/equipment-authorization-mutual-recognition-agreements#block-menu-block-4>

# Testing Laboratories– Mutual Recognition Agreements

## Implementing an MRA

- A participating country must use an accrediting body that operates in accordance with ISO/IEC 17011
- The governments of the participating countries must exchange letters detailing the process. The exchange letters shall include:
  - List of Designating Authorities where designating authority information is available.
  - List of Accreditation Bodies where accreditation body information is available.
  - The regulator(s) and technical regulations for which test reports and/or equipment approvals from other Parties will be accepted.
  - The responsible contact person(s) for the agreement
- In addition, information is exchanged regarding their processes and procedures to ensure that all parties understand each other's conformity assessment program
  - Identify sources for obtaining technical regulations.
  - Identify any items to be addressed during the accreditation assessment. For example, the FCC assessment checklists.
  - Training for CABs and Accreditation Body assessors on the technical regulations.

# Permissive Changes

## KDB 178919 D01 Permissive Change Policy v06

- The permissive change rules in § 2.1043 describe modifications that may be made to an RF device without filing for a new equipment authorization.
  - A **Class I** permissive change includes those modifications in the equipment which do not degrade the characteristics reported by the manufacturer and accepted by the Commission when certification is granted. No filing is required.
  - A **Class II** permissive change includes those modifications which degrade the performance characteristics as reported to the Commission at the time of the initial certification. Such degraded performance must still meet the minimum requirements of the applicable rules. When a Class II permissive change is made by the grantee, the grantee shall provide complete information and the results of tests of the characteristics affected by such change.
- Changes to the **basic frequency determining and stabilizing circuitry, frequency multiplication stages, basic modulator or maximum power/field strength** will always require a new grant of certification (FCC ID) and a new equipment authorization application.

# Permissive Changes

## KDB 178919 D01 Permissive Change Policy v06

- **Class I Permissive Change Examples.**
  - Changes in color and enclosure material, as long as similar dielectric properties are maintained.
  - Minor changes to an enclosure which do not affect the basic functionality and intended usage.
  - Software changes which do not material change operational parameters or the basic parameters listed on the Grant (frequency, power, field strength, etc.).
  - For hosts which include a separately Certified transmitter, host variations to digital circuitry which cannot affect basic parameters.
  - Changes to different size displays of the same or similar type.
  - Frequency band capability of the device is decreased, assuming there are no other radio parameter changes to the radiated and conducted output power of the device due to the decreased frequency.
  - Adding new modulation technique, assuming no other changes in device parameters take place.
- **If, after testing, no changes have occurred to basic operating parameters as defined in KDB 178919, then a Class I PC may be considered.**

# Permissive Changes

## **KDB 178919 D01 Permissive Change Policy v06**

- **Class II Permissive Change Examples.**

- Changes described in § 2.1043(a) that result in a non-electrically equivalent device require a new Grant.
- Depopulated versions of a transmitter require a new Grant.
- Part substitution – electrically identical parts may be substituted. An evaluation of test results determine if a Class I or Class II is applicable. Parts must be pin-for-pin compatible.
- Adding or subtracting an on-board amplifier component requires a new grant, except when substituting an amplifier part.
- Additional frequencies may be added by a Class II permissive change to an approved device provided no hardware changes and equipment code (DTS, DSS, PCE, TNB, etc.) remains the same.
- New RF Exposure values.
- The Commission will allow the Grantee to permit certain parties to enable software upgrades to devices deployed in the field. The grantee may permit parties with whom it has contractual agreements. Specific third parties such as operating systems providers or service providers who exercise control over the software configuration of the transmitter or specific customers who have controlled access to its servers. The Grantee must provide the details of such arrangements in either the original filing or a Class II permissive change filing and is subject to Pre-Approval Guidance

# Permissive Changes

## KDB 178919 D01 Permissive Change Policy v06

- **Class II Permissive Change Examples.**

- Adding new line items on the Form 731 is allowed under a Class II PC. Similarly, it may be necessary to add new emission designators or equipment classes as a result of rule changes. All such changes must be performed by software only. Additional data rates (both higher and lower rates) under existing modulations that are consistent with a Form 731 line item / emission designator may be either a Class I or Class II permissive change, depending on emissions.
- A Class II permissive change for a device with a decrease in output power, or with a different field strength, is allowed assuming (1.) the maximum output power rating of the original authorization does not change, and (2) There is no design change that increases or decreases the output power. A decrease in the power setting configuration is acceptable.
- A change to a transmitter from non-modular to modular, or the reverse, is permissible.
- If a device has components on it that are disabled by software, the change to the device may be approved under the same FCC ID as the original. However, if the modulation function of a device is disabled by having the parts removed, approval under a new grant of certification (FCC ID) is required.
- Where both a permissive change and a change in FCC ID are required by the Grantee, the Change in ID application must be processed first, followed by the Permissive Change filing. Note that a filing for change in FCC ID requires that the applicant has written permission from the original Grantee to file the application



# Permissive Changes

## KDB 178919 D01 Permissive Change Policy v06 - Antennas

- Any antenna with a higher gain than the antenna(s) with which the device was originally approved requires a Class II permissive change filing.
- If an antenna is of the same type and has a lower gain than the antenna(s) originally approved and tests show that the emission levels or reported RF safety levels are not increased, a Class I permissive change is allowed. If either the emission levels or reported RF safety levels increase, a Class II permissive change is required.
- If an antenna is of the same type, same specifications, and same gain as an antenna originally approved but is made by a different manufacturer, a Class I permissive change is permitted.
- If an antenna is a different type, has a lower gain than an originally approved antenna and tests show that the spurious emission levels or reported RF safety levels are not increased, then a Class I permissive is permitted. Although a Class II permissive change filing is not required in this case, it is recommended that a Class II permissive change be filed in order to keep a complete list of approved antennas in the filing.
- If an antenna is a different type, has a lower gain than an originally approved antenna and tests show that the spurious emission levels or reported RF safety levels have increased, a Class II permissive change is required.

# Permissive Changes

## KDB 178919 D01 Permissive Change Policy v06 - Antennas

### CAUTIONS:

- Omni-directional antennas are not an antenna type. Omni-directional is a reference antenna pattern and does nothing do describe gain, impedance, etc.
- Not all panel antennas are the same. Panel antennas contain multiple elements which may be a single polarization, cross polarized, circular polarized, plus multiple element configurations.
- U-NII devices – the lowest gain antenna, in addition to the highest gain of each type, is needed because the lowest gain results in worst case radar reception. The addition of a lower gain antenna, of the type currently authorized or not, requires a Class II permissive change.
- Transmitters subject to a vertical fundamental frequency radiation limit above the horizon (e.g., EIRP above the horizon such as 15.407(a)(1)(i)). Any change in antenna pattern, antenna type or installation that results in an increase in the reported vertical radiation level requires a Class II permissive change.

# Permissive Changes

## **KDB 178919 D02 Permissive Change FAQ v01 – Common Questions**

- Except for minor cosmetic changes, most changes to Certified equipment require testing to determine whether a Class I, Class II permissive change applies. Class II PCs must be filed with the Commission.
- For devices not approved as modules, only minor changes to an enclosure are allowed to an enclosure (case)
- If the basic functionality and intended use are not the same, a new Grant is required
- No changes to RF power or field strength allowed
- No changes to frequency determining circuitry allowed
- Changes made to improve performance without changing power or bandwidth are allowed.
- Changes made to digital circuitry in non-transmitter portion are allowed
- Disabling a band by software only without removing hardware is permitted
- Adding a new equipment class to an existing FCC ID is permitted (but it can get complicated) See KDB 178919
- Antenna changes are allowed in Part 15 with testing as appropriate. See KDB 178919
- New parts are allowed to be substituted as long as they are pin-for-pin compatible

# Pre-Approval Guidance

## **KDB 388624 D01 Pre-Approval Guidance Procedure v11r01**

### **When published guidance is available for a device:**

- In most circumstances it is not required for manufacturers or test laboratories to submit KDB inquiries prior to submitting an equipment authorization application to a TCB. If testing or submission guidance has been published for the devices subject to PAG, it is not necessary to contact the FCC for further guidance. However, sufficient information must be provided to the TCB to ensure that the TCB can confirm that the grantee (or the test laboratory on their behalf) has followed the published guidance. In addition to the routine application information, the applicant needs to provide the following to the TCB:
  - The KDB publication number of the document that includes the guidance that was followed
  - Documentation of how the guidance applies to the circumstances. The TCB subsequently will upload this documentation as part of the application.

### **If additional guidance is needed:**

- The following procedure is to be used by the Applicant (or Laboratory) when additional FCC guidance is necessary, prior to submitting an equipment authorization application to a TCB for PAG processing.
  - Submit a KDB Inquiry requesting FCC guidance for the test methods and measurements to be used.
  - Continue dialogue with the FCC via the KDB Inquiry until all issues have been resolved

# Pre-Approval Guidance

## **KDB 388624 D01 Pre-Approval Guidance Procedure v11r01**

- **All Grants or Equipment Authorization are issued exclusively by TCBs.** However, certain equipment authorization functions continue to require oversight by the Commission. Pre-Approval Guidance (PAG) procedures are required for continuing the Commission oversight where compliance review procedures are not fully developed. Three classes of applications for equipment authorization subject to PAG review:
  - I. Devices subject to special authorization procedures.**
  - II. Devices for which a sample must be submitted to FCC for pre-approval testing.**
  - III. Devices for which there are new or unique operation or installation issues subject to FCC review**

# Pre-Approval Guidance

## KDB 388624 D02 Pre-Approval Guidance List v16r03

### I. Devices subject to special conditions where the authorization procedures to be used must be approved by the FCC prior to approval by a TCB

- RF exposure limits are not fully established
- Unusual configurations make it difficult to establish use conditions and SAR or MPE (above 6GHz) evaluation is required.
- RF exposure evaluations using numerical simulations or computational modelling techniques.
- Portable transmitters operating at frequencies below 100 MHz or above 6GHz where SAR/MPE evaluation is required.
- Portable transmitters operating with source-based, time-averaged maximum output power and separation distance requirements exceeding the “SAR Exclusion Threshold” in KDB Publication 447498 by either:
  - 8 times or more, for compliance with **General Population** exposure requirements
  - 20 times or more, for compliance with **Occupational** exposure requirements
- Devices incorporating mechanisms to actively control power, transmission intervals, durations, duty factors, etc. to mitigate the potential of RF exposure according to time-averaging considerations.

# Pre-Approval Guidance

## **KDB 388624 D02 Pre-Approval Guidance List v16r03**

### **II. Devices for which a sample must be submitted to the FCC for pre-approval testing prior to approval by a TCB:**

- Unlicensed National Information Infrastructure (U-NII) devices with Dynamic Frequency Selection (DFS) capability (Part 15 Subpart E), including client devices operating in the DFS bands that have radar detection capability.
- Television Band Devices (TVBD) operating under Part 15 Subpart H.
- Citizen Broadband Radio Service Devices (CBSD) operating under Part 96.

# Pre-Approval Guidance

## KDB 388624 D02 Pre-Approval Guidance List v16r03

### III. Devices for which there are new or unique operation or installation issues which are subject to FCC review prior to approval by a TCB:

- **RF Exposure**

- SAR measurement for Time-Division Duplex (TDD) [unless covered by KDB 447498]
- SAR measurement for Rel 6 HSPA, Rel 7 E-EDGE and HSPA+ or Rel 8 DC-HSDPA; or Rel 10 or higher.
- CDMA 2000 1x EV-DV, EV-DO Rev. B or higher.
- WiMax not fully compliant to IEEE 802.16e or KDB 615223
- IEEE 802.20 / iBurst / HC-SDMA.
- Simultaneous transmission SAR measurements, especially when transmitted signals are coherent.
- KDB procedures do not support form factor, design or implementation, or when non-standard phantoms are used for SAR testing.
- Unusual SAR test reduction for Occupational handheld PTT radios, or SAR is  $> 6.0$  W/kg.
- Uplink MIMO or transmit diversity configurations,
- Dynamic antenna tuning for wide range frequency operations
- Power reduction feature is used to reduce the transmit power
- Carrier Aggregation Techniques
- Wide channel bandwidths which SAR probe calibration or tissue-equivalent dielectric medium may not fully support
- Wireless power transfer applications



# Pre-Approval Guidance

## KDB 388624 D02 Pre-Approval Guidance List v16r03

### III. Devices for which there are new or unique operation or installation issues which are subject to FCC review prior to approval by a TCB:

- **Other Conditions**

- EMC/radio parameter evaluation for transmitting simultaneously in multiple bands. Massive MIMO.
- Requests for permanent confidentiality under exceptional circumstances for exhibits that are not typically held confidential.
- Part 90 Subpart Z supporting either restricted or unrestricted contention based protocol (KDB 552295).
- Part 30 CBRS
- Devices requesting approval or Class III permissive change for Software Defined Radio (SDR) (KDB 442812).
- Class II PC for devices not previously approved as SDR, but Grantee intends to authorize field upgrades (KDB 178919 / 594280).
- Case-by-case consideration of Part 90 spectral efficiency provisions (KDB 996369).
- Hearing Aid Compatible (HAC) handsets - for devices supporting Voice over IP for Wi-Fi (KDB 285076).
- Split modular transmitters (KDB Publication 996369).
- Implanted transmitters with maximum total available output power > 1.0 mW, except Part 95 MedRadio
- MedRadio 413-419 MHz, 426-432 MHz, 438-444 MHz, 451-457 MHz, 2360-2400 MHz band transmitters (Part 95 Subpart I)
- Devices restricted to use by only State, Local, or Federal law enforcement agencies
- Ultra-Wideband Devices (Part 15, Subpart F)

# RF Exposure Concerns

- **Mobile and Portable device RF exposure and equipment authorization requirements are in 1.1307, 2.1091, and 2.1093**
  - Applications must meet all the requirements in RF exposure KDB procedures, and applicable equipment approval policy and procedure documents. Unless specific guidance has been otherwise provided by the FCC, any applications for devices that are categorically excluded from routine evaluation for RF exposure must also apply the published RF exposure KDB procedures, according to the test exclusion provisions and measurement requirements.
- **Product related KDB publications:** Mobile and Portable Devices ([KDB 447498](#)), Handsets & Accessories (KDB 648474), Laptop/Notebook/Netbook & Tablet Devices (KDB 616217), USB Dongles (KDB 447498), UMPC Mini-Tablets (KDB 941225), Occupational PTT Two-Way Radios (KDB 643646).
- **Wireless technology related KDB publications:** 3GPP/3GPP2 Technologies (KDB 941225), 802.11 (KDB 248227), WiMax (KDB 615223), Wireless Routers (KDB 941225), Wireless Power Transfer Applications (KDB 680106).
- **Test methodology related KDB publications:** SAR Measurement and Reporting Requirements (KDB 865664).
- **Equipment approval policy related KDB publications:** Pre-Approval Guidance (PAG) Procedures and PAG List (KDB 388624), Permissive Change Policies (KDB 178919), Modular Approval Policies (KDB 996369), SAR Numbers Listing (KDB 690783), etc.

## 2.933 Change in ID Filing

- **The FCC rules permit a Certified product to have a second FCC ID with a new Responsible Party.**
  - This 'multiple listing' is an application where no change in design, circuitry or construction is involved. Resubmission of measurement test data is not required unless specifically requested.
  - Usually a paperwork only filing.
- **Change of ID filing required information:**
  - Original FCC ID used on the equipment prior to the Change in Identification.
  - The date of the Original Grant of the Equipment Authorization.
  - How the equipment bearing the modified identification differs from the original equipment.
  - Whether the original test results continue to be representative of and applicable to the equipment bearing the changed identification.
  - External Photographs including the operating controls available to the user
  - Label
  - Manual (if different from the Original filing)

# Reuse of Test Data

## **Draft KDB 484596 - Referencing Test Data** (Data Recycling)

- Applicable to separate FCC IDs that use identical printed circuit board layout, have a common design and parts list.
- Test data for the common transmitter bands may be eligible to be referenced in a new application.
- Compliance tests must be performed on a reference device that is fully populated or contains a majority of the components. The test results for the reference device must document all of tests under all applicable rule parts and supported air-interfaces.
- Applications that intend to reuse the reference test data *shall include spot check measurement data*
- The test report exhibits for the new device must contain a reuse explanation that clearly identifies the test report exhibit(s) being referenced as contained in the separate source FCC ID application(s).
- Test report exhibits in a new FCC ID filing must contain suitable explanations when referenced test data from a separate source FCC ID is also uploaded into the new FCC ID filing.
- A separate explanation summary is required in each application (each equipment class) under a single FCC ID.
- **Reuse data can only be cross-referenced within the same Grantee Code.**
- For RF exposure purposes, each combination of frequency band, wireless mode, and exposure test conditions shall be considered separately.

# Wireless Power Charging

## KDB 680106 D01 RF Exposure Wireless Charging Apps v03

- Wireless Power Transfer operating above 9 kHz are Intentional Radiators subject to Part 15 and/or Part 18
- Devices specifically intended for use for wireless power transfer, or inductive charging, require FCC guidance. Intentional radiators transmitting information (except for charge status of the target) must be certified under Part 15.
- A charger may operate in two different modes: charging and communications. It is possible for the device to be approved under Part 18 for the charging mode and Part 15 for the communications mode.
- When the following conditions are met, no FCC guidance is required
  - 1) Power transfer frequency is **less than 1 MHz**.
  - 2) Output power from each primary coil is less than or equal to **15 watts**.
  - 3) The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils that are able to detect and allow coupling only between individual pairs of coils.
  - 4) Client (target) device is placed directly in contact with the transmitter.
  - 5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
  - 6) The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

# Additional

## RFID, Samples and Models

- Specific requirements for intentional radiators (RFID) and non-intentional radiators (IC processors).

In general, RFID tags which do not contain a battery and are completely passive do not require any FCC or Canada certification. RFID tags which are battery operated must be assessed to see if they actually are enhancing the signal which they reflect. And RFID tags which perform a “frequency translation” must always be Certified. Finally, RFID readers which ‘illuminate’ a tag must always be certified under Part 15.
- Assessing a representative sample of a family of products

FCC does not care about model numbers (Canada does). For FCC there is an assumption that the sample presented is an appropriate representative.
- Using a wildcard scheme for identifying product family models.

FCC does not care about model numbers. Canada does and specifically prohibits the use of ALL wildcards.

# Testing Standard

**FCC is moving away from defining their own test methodology and content. It is relying more closely with common industry practice and the published methods from the ANSI C63 committee developed in association with the IEEE.**

## **Update Summary (March 2, 2018)**

- Removed old versions of ANSI C63.4 and C63.10
- Added ANSI C63.26;2015
- Added ANSI/TIA-603-E;2016
- Added ANSI/TIA-102.CAAA-E;2016
- Added ANSI C63.5;2017

# Testing Standards

FCC Scope	Test Method(s)	Additional Guidance
Unintentional Radiators (FCC Part 15B)	<ul style="list-style-type: none"> <li>ANSI C63.4-2014</li> </ul>	
Industrial, Scientific, and Medical Equipment (FCC Part 18)	<ul style="list-style-type: none"> <li>FCC MP-5 (February 1986)</li> </ul>	
Intentional Radiators (FCC Part 15C)	<ul style="list-style-type: none"> <li>ANSI C63.10-2013</li> </ul>	
UPCS (Part 15D)	<ul style="list-style-type: none"> <li>ANSI C63.17-2013</li> </ul>	
UNII without DFS Intentional Radiators (FCC Part 15E)	<ul style="list-style-type: none"> <li>ANSI C63.10-2013</li> </ul>	<ul style="list-style-type: none"> <li>KDB Publication 789033</li> </ul>
UNII with DFS Intentional Radiators (FCC Part 15E)	<ul style="list-style-type: none"> <li>KDB Publication 905462 D02 UNII DFS Compliance Procedures new rules v02r01</li> </ul>	
UWB Intentional Radiators (FCC Part 15F)	<ul style="list-style-type: none"> <li>ANSI C63.10-2013</li> </ul>	
BPL Intentional Radiators (FCC Part 15G)	<ul style="list-style-type: none"> <li>ANSI C63.10-2013</li> </ul>	
White Space Device Intentional Radiators (FCC Part 15H)	<ul style="list-style-type: none"> <li>ANSI C63.10-2013</li> </ul>	



# C63 Standards

## **The C63 Committee has approximately 20 active standards in the EMC area**

- Each Subcommittee has several working groups reporting to it
- Each working group has responsibility for one Standard.
- The standards that are developed are considered to be American National Standards.
- They imply a consensus of those parties concerned with its scope and provisions.
- An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public.
- The procedures of ANSI require that action be taken to reaffirm, revise, or withdraw standards no later than five years from their date of publication.
- One of our Main Committee's Goals is also to develop new standards as appropriate.

# C63 Standards

In 2017 and 2018 they published two **revised standards (C63.5, C63.15)**, published one new **standard (C63.27)**, and **amended one of our long-time standards (C63.4)**.

- **C63.4a – 2017 - Amendment 1: Test Site Validation – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz**
  - This was the first Amendment to a “C63 Standard” in the 80 plus year-history of Committee
  - United States consensus standard methods are specified in Annex D of this amendment for validating standard test sites and alternative test sites used for measurement of radiated radio-frequency (RF) signals and noise emitted from electrical and electronic devices in the frequency range of 30 MHz to 1 GHz.
  - In addition, various updates are made to equations in 4.5, Annex F, Annex G, and Annex N.
  - Also, a change to the value of the distance between the receiving antenna and the equipment-under- test was made which returned it to what it was in previous editions of C63.4:
    - *NOTE - The measurement distance criterion for electric field strength measurements (1 GHz to 40 GHz) with horn antennas in 4.5.5 (and in table footnotes in 4.5.1) of ANSI C63.4-2014 is modified to as it was in the 1992 edition of ANSI C63.4 and consistent with CISPR 16-1-4 and CISPR 16-2-3.*

# C63 Standards

## **C63.5 – 2017 – American National Standard for Electromagnetic Compatibility – Radiated Emission Measurements in Electromagnetic Interference (EMI) Control – Calibration and Qualification of Antennas (9 kHz to 40 GHz)** May 2017

- Methods for determining antenna factors of antennas used for radiated emission measurements in electromagnetic interference (EMI) control from 9 kHz to 40 GHz are provided.
- Antennas included are linearly polarized antennas such as loops, rods (monopoles), tuned dipoles, biconical dipoles, log-periodic dipole arrays, biconical and log-periodic dipole array hybrids, broadband horns, etc., that are used in measurements prescribed by **ANSI C63.4** and **ANSI C63.10**.
- The antenna calibration methods include standard site method (i.e., the three-antenna method), reference antenna method, equivalent capacitance substitution method, standard transmit-loop method, standard antenna method, and standard field method
  - New sub-clause to provide free-space correction terms for tuned dipole antennas,
  - New sub-clause for requirements of frequency spacing.
  - *These were added along with a sub-clause and an annex on the use of time-gating to determine Free Space Antenna Factors (FSAFs) above 1 GHz.*

# C63 Standards in Development

(DRAFT) **HOT TOPICS**

- **C63.30 – Compliance Testing of Wireless Power Transfer Products**

- This Standard is intended to include procedures for compliance testing of several different types of Wireless Power Transfer (WPT) products with applicable electromagnetic compatibility (EMC) and radio-frequency (RF) regulatory requirements.
- Test procedures will focus on radiated field and conducted measurements and may reference established standards. WPT RF exposure compliance procedures will not be included, although standards pertaining to laboratory Electromagnetic Field (EMF) safety may be referenced.
- WPT testing methods may consider, but are not limited to, large in-situ installations, charging systems for electric vehicles (including impact of host on electromagnetic fields), house-hold appliances, and desktop chargers.
- Consideration will also be given to appropriate testing distances and test locations (such as Semi-Anechoic Chambers, Open Area Test Sites, ground plane, and earth sites).
- Related national and international standards (e.g., CISPR, SAE, etc.) will be reviewed and used to the extent possible.

# C63 Standards in Development

(DRAFT) **HOT TOPICS**

- **C63.31 – Compliance Testing of Industrial, Scientific, and Medical (ISM) Equipment**
  - This standard is intended to include procedures for compliance testing of traditional ISM with applicable radio regulatory requirements.
  - Related national and international standards (e.g., CISPR, IEEE) will be reviewed and used to the extent possible.
  - It is anticipated that this standard would replace the current FCC/OET MP-5 - Methods of Measurements of Radio Noise Emissions from Industrial, Scientific and Medical equipment (February - 1986)

# Regulatory Differences

## FCC vs ISED

- In general there is very little differences in the test methodologies or spectrum assignments between FCC and Canada.
- Acceptable FCC KDB procedures
  - **KDB 865664 D01** (Section 3.5): SAR measurement 100 MHz to 6 GHz v01r04
  - **KDB 648474 D03**: Wireless chargers battery cover v01r04
  - **KDB 648474 D04**: Handset SAR v01r03 (see Notice 2016-DRS001 for exemptions)
  - **KDB 941225 D01**: SAR test for 3G Devices v03r01
  - **KDB 941225 D05**: SAR for LTE Devices v02r05
  - **KDB 941225 D06**: Hot spot SAR v02r01
  - **KDB 941225 D07**: UMPC mini tablet v01r02
  - **KDB 248227 D01**: 802.11 Wi-Fi SAR v02r02
  - **KDB 615223 D01**: 802.16e/WiMAX SAR measurement guidance v01r01
  - **KDB 616217 D04**: SAR for laptops and tablets v01r02
  - **KDB 447498 D01**: General RF exposure guidance v06 (see Notice-DRS0001 for exemptions)
  - **KDB 447498 D02**: SAR procedure for USB dongle transmitter v02r01
  - **KDB 643646 D01**: SAR test for PTT Radios v01r03

# Regulatory Differences

## FCC vs RED

- **Except for ‘traditional’ ISM band frequencies, there is no guarantee of overlap in any FCC vs EU regulations.**
  - In general FCC is not concerned with receiver parameters with the exception of receiver radiated emissions.
  - No intermodulation response, blocking, sensitivity, etc.
  - No voice or video quality reception tests
  - “Let the buyer beware” philosophy
- **FCC transmitter rules are blind to technology**
  - Only ‘interference potential’ is examined.
- **FCC Rules do not include any regulatory electrical safety**
  - Only RF Exposure – SAR, MPE, etc.
  - North American SAR limits are much stricter than EU
- ***In general, North American regulatory test programs can be completed faster than EU for the same given product.***

# Questions?

**Please feel free to write and ask any questions to my email address**

