



FCC Wireless Regulatory Framework with Updates

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Chairman of the TCB Council

March 2021

A brief history lesson from 1936

THE FUTURE OF RADIO AND PUBLIC INTEREST, CONVENIENCE AND NECESSITY

BY

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*Statement—Presented before Federal Communications Commission,
Washington, D. C., June 15, 1936.*

THE Radio Corporation of America welcomes the opportunity to testify at this informal hearing. We are deeply aware of the importance and urgency of the tasks before the Federal Communications Commission. We are pleased to place at your disposal the information and experience of RCA, gained from its operations in radio research, communications, broadcasting, manufacture and sales. These interrelated enterprises have enabled us to study and develop radio in ever widening fields of public usefulness.

In such a fast moving art as radio, government regulation must have wide powers of discretion. A strait-jacket of rigid rules would cripple its energies. In the Radio Act of 1927 and in the Communications Act of 1934, Congress recognized this fact and wisely refrained from prescribing hard-and-fast formulas. Instead it set up a high standard for flexible regulation, the standard of “public interest, convenience and necessity.” That standard gives your Commission the power, and therefore the responsibility, of judging issues on the basis of past accomplishments, of present activities, and particularly on the capacity for future progress.

- FCC Rules continue to follow the concept of ‘public interest, convenience and necessity’
- FCC Rules are based upon the idea of minimizing interference through frequency and emissions separation
- FCC Rules are blind to technology.

USA Frequency Allocation

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.¹

Engineering & Technology

Office of Engineering and Technology

Mission:

- ✓ Manage the spectrum and create new opportunities for competitive technologies
- ✓ Maintain the U.S. Table of Frequency Allocations,
- ✓ Manages the Experimental Licensing and **Equipment Authorization** programs,
- ✓ Regulates the operation of unlicensed devices, and
- ✓ Conducts engineering and technical studies.

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
- ✓ Develop technical standards and recommend appropriate action.
- ✓ Support rulemaking proceedings and conducts technical studies of competing technologies to assist the Commission in reviewing options.
- ✓ Designs test procedures for compliance to the Rules
- ✓ Supports national and international standards activities to develop measurement procedures used to determine compliance.
- ✓ Manages the Equipment Authorization program, and participates in international efforts to harmonize conformity assessment procedures for equipment authorization via Mutual Recognition Agreements.

Equipment Authorization

How do I get an equipment authorization?

- Electronic and electrical products that are marketed and used in the United States are required to be tested, documented, and managed for continued compliance.
- If a device is subject to FCC rules, determine the specific type of equipment authorization that applies to the device. Become familiar with all the basic marketing, equipment authorization, and importation rules.
- Determine all applicable technical and administrative Rules that apply to the device requiring an equipment authorization.
 - The technical requirements are generally specified in the applicable FCC rule parts
 - Administrative rules are specified in Part 2, Subpart J.

Current Approval Procedure

- **Suppliers Declaration of Conformity**
 - Equipment approved using the SDoC procedure is required to be tested at a qualified 17025 laboratory.
- **Certification**
 - Equipment approved under the Certification procedure is required to be tested by an FCC Testing Laboratory as follows

Equipment Authorization

SDoC Procedures (Rule 2.906)

- (a) Supplier's Declaration of Conformity (SDoC) is a procedure where the responsible party makes measurements or completes other procedures found acceptable to the Commission to ensure that the equipment complies with the appropriate technical standards. Submittal to the Commission of a sample unit or representative data demonstrating compliance is not required unless specifically requested.
 - (b) Supplier's Declaration of Conformity is applicable to all items subsequently marketed by the responsible party that are identical, as defined in § 2.908, to the sample tested and found acceptable by the manufacturer.
 - (c) The responsible party may, if it desires, apply for Certification of a device subject to the Supplier's Declaration of Conformity. In such cases, all rules governing certification will apply to that device
- ✓ *Only Part 15B Unintentional Radiators and Part 18 devices can utilize the SDoC process. All Part 15 Intentional Radiators and all Licensed transmitters must use the Certification process.*

Equipment Authorization

- **§ 15.101 Equipment authorization of Unintentional Radiators.**

- (a) Devices subject only to **SDoC** shall be uniquely identified by the party responsible for marketing or importing the equipment within the United States... The responsible party shall maintain adequate identification records to facilitate positive identification for each device.
- (b) Devices subject to authorization under SDoC **may be labelled** with the FCC logo on a **voluntary basis** as a visual indication that the product complies with the applicable FCC requirements. The use of the logo on the device does not alleviate the requirement to provide the compliance information required by § 2.1077 of this subpart.

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

SDoC Labeling

- **§2.1074 Identification**

- (a) Devices subject only to Supplier's Declaration of Conformity shall be uniquely identified by the party responsible for marketing or importing the equipment within the United States. However, the identification shall not be of a format which could be confused with the FCC Identifier required on certified equipment. The responsible party shall maintain adequate identification records to facilitate positive identification for each device.
- (b) Devices subject to authorization under Supplier's Declaration of Conformity may be labelled with the following logo on a voluntary basis as a visual indication that the product complies with the applicable FCC requirements. The use of the logo on the device does not alleviate the requirement to provide the compliance information required by § 2.1077 of this subpart.



✓ *FCC Logo not required, but is OK to use Voluntarily*

Equipment Authorization

What is the responsible party?

- **§2.909 Responsibility Party.**

- ✓ (a) In the case of equipment that requires the issuance of a **Grant of Certification**, the party to whom that grant of certification is issued is responsible for the compliance of the equipment with the applicable standards. If the radio frequency equipment is modified by any party other than the Grantee and that party is not working under the authorization of the Grantee pursuant to § 2.929(b), the party performing the modification is responsible for compliance of the product with the applicable administrative and technical provisions in this chapter.
- ✓ (b) For equipment subject to **Supplier's Declaration of Conformity** the party responsible for the compliance of the equipment with the applicable standards, who must be located in the United States (see § 2.1077), is set forth as follows
 - 1) The **Manufacturer** or, if the equipment is assembled from individual component parts and the resulting system is subject to authorization under Supplier's Declaration of Conformity, the **Assembler**.
 - 2) If the equipment by itself, or, a system is assembled from individual parts and the resulting system is subject to Supplier's Declaration of Conformity and that equipment or system is imported, the **Importer**.
 - 3) **Retailers** or original equipment manufacturers may enter into an agreement with the responsible party designated in paragraph (b)(1) or (b)(2) of this section to assume the responsibilities to ensure compliance of equipment and become the new responsible party.
 - 4) If the radio frequency equipment is modified by any party not working under the authority of the responsible party, **the party performing the modifications**, if located within the U.S., **or the importer** becomes the new responsible party.

Equipment Authorization

Certification Procédures (Part 2, Subpart J)

- **Most rigorous approval process for RF Devices with the greatest potential to cause harmful interference.**
 - ✓ It is an equipment authorization issued by a recognized TCB (Telecommunication Certification Body) based on an application and test data submitted by the responsible party
 - ✓ The testing is done by an **accredited testing laboratory recognized by the Commission** as approved for testing
 - ✓ 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.

Equipment Authorization

Certification Labeling

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">• Grantee Code if (X is Numeric) Grantee code is XZZYY else XZZ• Equipment Product Code NNNNN
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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.

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.

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**.

Equipment Authorization

Electronic Labeling

- **Information to be displayed**
 - 1) The FCC ID and/or the Declaration of Conformity (DoC) logo (if applicable).
 - 2) 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.
- **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, in all cases the information must be accessible in no more than three steps in a device's 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. Alternately, the access information may be available on the product related website with instructions on how to access the website provided in the packaging material.
 - 4) The equipment authorization application for the device must clearly include the instructions for accessing information as part of the exhibit showing the label information.

Equipment Authorization

(Modular Transmitters)

Modular Transmitter Requirements

- A host product manufacturer is responsible for ensuring compliance with the module(s) installed. The module Grantee shall provide guidance to the host manufacturer for ensuring compliance.
- Modules must be a separate physical assembly that can be installed into a host as a separate subassembly. The method used for input and output electrical connections to the host may be soldered, cabled, wired, or use plug-in connectors.
- A module cannot solely be the implementation of a design specification (including antenna).
 - 1) *The radio elements must have the radio frequency circuitry shielded.*
 - 2) *The module must have buffered modulation/data inputs;*
 - 3) *The module must contain power supply regulation on the module;*
 - 4) *The module must contain a permanently attached antenna; or a unique antenna connector, and operated only with specific antenna(s)*
 - 5) *The module must demonstrate compliance in a stand-alone configuration;*
 - 6) *The module must be labeled with its permanently affixed FCC ID label, or use an electronic display*
 - 7) *The module must comply with all specific rules applicable to the transmitter, including all the conditions provided in the integration instructions by the grantee;*
 - 8) *The module must comply with RF exposure requirements*

[See KDB 996369](#)

<https://apps.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?switch=P&id=44637>

Equipment Authorization

(Modular Transmitters)

Limited Modular Approvals

- A limited modular transmitter is a transmitter that does not meet all eight requirements listed in KDB 996369. However, compliance might be demonstrated for specific hosts or specific operating conditions.
- The responsible party must demonstrate how it will retain control over the final installation such that compliance is ensured.
- A limited modular approval is based on conditions established in the application such as:
 - the host device(s) into which the module can be installed;
 - professional installation;
 - antenna separation distance from persons;
 - physical locations where a device may be used (e.g., outdoor only).

Modular Approvals

- A host product manufacturer is responsible for ensuring compliance with the module(s) installed. The module Grantee shall provide guidance to the host manufacturer for ensuring compliance.
- Single or limited-single modules, **must be a separate physical assembly** that can be installed into (or attached to) a host as a separate subassembly (e.g., **daughter-board subassembly**). The method used for input and output electrical connections to the host may be soldered, cabled, wired, or use plug-in connectors.
- *A module cannot solely be the implementation of a design specification (including antenna).*

Required Documentation (All Devices)

Professional Installation

- **Filings intended for “Professional Installation” must address the following** supporting information
 - Describe how/why hardware is not readily available to average consumers
 - Marketing controls
 - Device not sold via retail to the general public or by mail order
 - Sold to authorized dealers or installers only
- Describe what is unique, sophisticated, complex, or specialized about the equipment that **REQUIRES** it to be installed by a professional installer **PRIOR TO** operation
- Does installation require special training and/or actions. Examples: special programming, restricted access to keypad, field strength measurements needed when installed
 - **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

Required Documentation (All Devices)

Confidentiality Rules for Exhibits can be found in KDB 726920

<https://apps.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?switch=P&id=41731>

- Cover Letter(s)
 - Block Diagram
 - External Photos Internal Photos
 - Label and Location
 - Operational Description
 - Parts List
 - Tune-Up Information
 - RF Exposure Information
 - Software Security Information
 - Schematics
 - Test reports
 - Test Setup Photos
 - Manuals
- ***Test Reports, RF Exposure information, Labels and Location can never be held Confidential. Manuals and Photos may be held confidential for only a limited period of time. Other documents might still be eligible for permanent or short term confidentiality.***

Permissive Changes

KDB 178919 D01 Permissive Change Policy v06

- 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. The grantee shall provide change descriptions and test results
 - ✓ 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

- **Class I Permissive Changes**
 - ✓ Changes in color.
 - ✓ Minor changes to an enclosure which do not affect the basic functionality or intended usage.
 - ✓ Software changes which do not change the basic parameters listed on the Grant
 - ✓ 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
 - ✓ Adding new modulation technique, assuming no other changes in device parameters take place.
- **If, after testing, no changes have occurred to basic operating parameters, then a Class I PC may be considered.**
- Basic guidance documents for permissive changes:
 - ***KDB 178919 D01 Permissive Change Policy v06*** provides guidance for permissive changes.
 - ***KDB 178919 D02 Permissive Change FAQ v01*** provides answers to several frequently asked questions.

<https://apps.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?id=33013&switch=P>

Permissive Changes

KDB 178919

- **Class II Permissive Change Examples.**

- *Note: Changes that result in a non-electrically equivalent device 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.
 - ✓ Additional frequencies may be added by a Class II permissive change to an approved device, provided no hardware changes and the equipment code (DTS, DSS, PCE, TNB, etc.) remains the same.
 - ✓ New RF Exposure (SAR or MPE) values.
 - ✓ Software upgrades to devices deployed in the field. *This may be subject to Pre-Approval Guidance*
 - ✓ A change to a transmitter from non-modular to modular, or the reverse, is permissible.
 - ✓ Placing a separately certified module into a new host

- **Change in FCC ID filings (§ 2.933) in conjunction with a Permissive Change filing (§ 2.1043):**

- *If both a PCII and a change in FCC ID are required by the Grantee, the a **change in FCC 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

Antennas Changes for Part 15 transmitters

- 1) Any antenna with a **higher gain** than the antenna(s) with which the device was originally approved requires a Class II permissive change filing.
- 2) 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.
- 3) 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.
- 4) 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.
- 5) 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.

Cautions:

- *Omni-directional antennas are not an antenna type. Omni-directional is a reference antenna pattern*
- *Not all panel antennas are the same. Panel antennas contain multiple elements t 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 TDWR reception.*
- *Any change in antenna pattern, antenna type or installation that results in an increase in the reported level requires a Class II permissive change.*

Pre-Approval Guidance

KDB 388624 D01 Pre-Approval Guidance Procedure

- All Grants or Equipment Authorizations are issued exclusively by TCBs. FCC does not issue Grants directly. However, some Equipment Authorizations require oversight by the Commission. Section 2.964 specifies Pre-Approval Guidance (PAG) procedures for continuing the Commission oversight where compliance review procedures are not fully developed.
 - ✓ *Devices subject to special authorization procedures must be approved by the FCC.*
 - ✓ *Devices for which a sample must be submitted to FCC for pre-approval testing.*
 - ✓ *Devices for which there are new or unique operation or installation issues subject to FCC review*
- **See KDB 388624** <https://apps.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?id=28319&switch=P>
- In many circumstances it is not required for manufacturers or test laboratories to submit KDB inquires prior to submitting an application. As long as testing or submission guidance has been published for the devices subject to PAG, it is not necessary to contact the FCC for further guidance. The applicant should be prepared 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.

WiFi 5.925-7.125 GHz

KDB 987594 **NEW!**

Table 1 Overviews of U-NII Rules

Band	Band GHz	Rules	Notes	KDB Pub
U-NII 1	5.15-5.25	15.407(a)(1)	Indoor Use/Outdoor Restrictions	789033 (U-NII)
U-NII 2A	5.25-5.35	15.407(a)(2)	Indoor/Outdoor/DFS	789033 (U-NII) 905462 (DFS)
U-NII 2B	5.35-5.47	Not Available		
U-NII 2C	5.47-5.725	15.407(a)(2)	Indoor/Outdoor/DFS	789033 (U-NII) 905462 (DFS)
U-NII 3	5.725-5.85	14.407(a)(3)	Indoor/Outdoor	789033 (U-NII) 926956 (&)
U-NII-4	5.85-5.925	95 Subpart L and 90 Subpart M	On-Board Units (OBU) must transmit signals to other OBUs and Roadside Units (RSU).	FCC 20-164 ⁵
U-NII 5	5.925-6.425	15.407(a)(4) – (8)	Low-power Indoor AP, Subordinates, Indoor Clients Standard Power AP, Fixed & Standard Clients	789033 (U-NII) 987594 (6 GHz Band)
U-NII 6	6.425-6.525	15.407(a)(5), (6), (8)	Low-power Indoor AP, Subordinates, Indoor Clients	
U-NII 7	6.525-6.875	15.407(a)(4) – (8)	Low-power Indoor AP, Subordinates, Indoor Clients Standard Power AP, Fixed & Standard Clients	
U-NII 8	6.875 -7.125	15.407(a)(5), (6), (8)	Low-power Indoor AP, Subordinates, Indoor Clients	
& Transition period ended March 2, 2020 for marketing DTS in the 5 GHz Band, as stated in 15.407(b)(4)(ii)				

WiFi 5.925-7.125 GHz

KDB 987594 **NEW!**

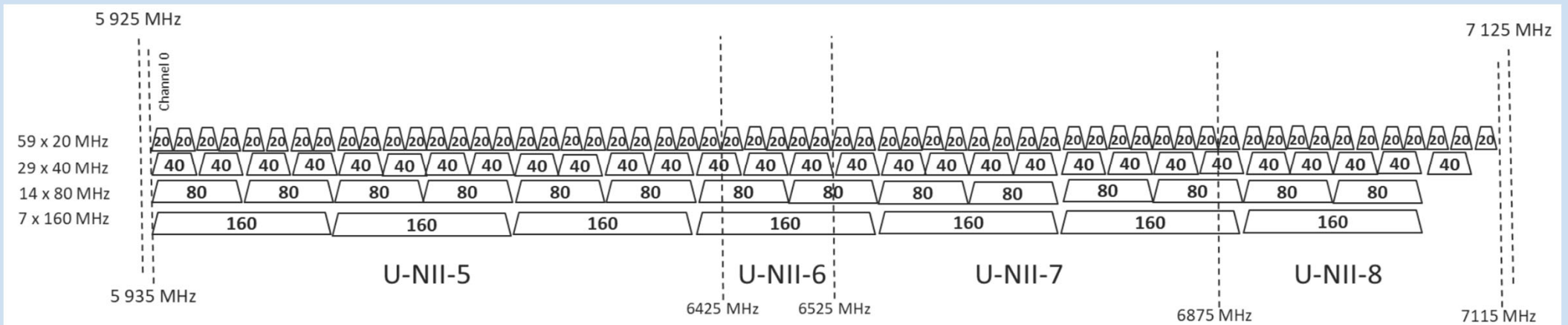
There are seven equipment classes that are applicable for 6 GHz UNII device

- **6ID:** 15E 6 GHz Low-power indoor access point.
- **6PP:** 15E 6 GHz Subordinate indoor device under control of a Low-power indoor access point
- **6XD:** 15E 6 GHz Low-power Indoor client under control of a low-power indoor access point
- **6CD:** 15E 6 GHz Dual client under control of either a low-power indoor or standard power access point
- **6SD*:** 15E 6 GHz Standard power access point managed by the AFC system.
- **6FX*:** 15E 6 GHz Standard client under control of a Standard power access point
- **6FC*:** 15E 6 GHz Fixed client associated with a standard power access point

* Certification for equipment classes (6SD, 6FX, 6FC) will be in Phase 2 when the AFC specifications are finalized

WiFi 5.925-7.125 GHz

KDB 987594 **NEW!**



Part 95 ITS

5.895-5.925 GHz **NEW!**

FCC 20-164 November 20, 2020

- Adopt C-V2X as the new technological standard for Intelligent Transportation Service (ITS) operations
- FCC considers DSRC a failed technology.
- DSRC must transition to the upper 30-megahertz segment within one year
- FCC repurpose the lower 45 megahertz of the 5.9 GHz band for unlicensed Part 15 operations.
- Will immediately allow indoor unlicensed use of the 5.850-5.895 GHz band under 15.407 while seeking comment on rules for outdoor unlicensed operations
- FCC still seeks comment on the appropriate rules and timeline for transitioning from DSRC to C-V2X-based operations

Part 96 CBSD

3550 - 3700 MHz **NEW!**

TCBC Conference Call Feb 16, 2021

- Test labs only need to be recognized by WInnForum when the device is going to be certified as a CBSD. When a device is going to a test lab for EUD certification then the test lab does not need to be recognized by WInnForum. When doing testing for an EUD we do ask that the CBSD that is used during testing of the End User Device is FCC certified
- It is possible to add the new equipment code under a C2PC even when a device is not approved as a Software Defined Radio. In short, an existing device can add equipment class CBE for Part 96 via C2PC.
- To avoid a new Certification, the Part 96 device should be tested at the maximum output power so that a C2PC would be allowed to add 5G NR operation when a Certified 5G CBSD is available [i.e. when adding new air interfaces to an existing Part 96 grant the output power for those new air interfaces must be at the same or lower power than the originally certified air interfaces expect in cases where the device has been approved as a Software Defined radio and power increase requires no hardware change].

FCC Plans for 5G

- **High-band:** Concluded 5G spectrum auction for the 28 GHz & 24 GHz bands. Auction for the upper 37/39/47 GHz bands is complete and we are in the process of issuing the licenses.
- **Mid-band:** Repurposing activities to make a large contiguous block of mid-band spectrum available for commercial use, 3.45-3.55 GHz band and neighboring 3.5 GHz and 3.7 GHz bands could offer 530 megahertz of mid- band spectrum for flexible use.
- **Low-band:** The FCC is acting to improve use of low-band spectrum with targeted changes to the 600 MHz, 800 MHz, and 900 MHz bands.
- **Unlicensed:** Recognizing that unlicensed spectrum will be important for 5G, the agency is creating new opportunities for the next generation of Wi-Fi in the 5.9 GHz and 6 GHz and above 95 GHz band.

FCC Plans for 5G

- **3.45-3.55 GHz band** - currently allocated for Radio Location Services. Propose technical, licensing, and competitive bidding rules are in process.
- **3.7-4.2 GHz band** - currently allocated for satellite services. Adopt service and technical rules for flexible-use licensees in the 280 megahertz of spectrum
- **Part 30 Licensed Bands:**(Total 3.85 GHz) Available now
 - *24.25-24.45 GHz*
 - *24.75- 25.25 GHz;*
 - *27.5-28.35 GHz;*
 - *37-38.6 GHz;*
 - *38.6-40 GHz;*
 - *47.2-48.2 GHz;*
- **Part 15 Unlicensed Bands:**
 - *64-71 GHz*
 - *above 95 GHz band.*

Additional Changes:

- **New ANSI C63.10 (2020)** – Unlicensed Transmitter test procedures; most likely within a year
- **New RF Exposure Interpretations** – KDB 447498 (Needs a refresh – it hasn't changed since 2015) It will include new WiFi 6 test methodologies
- **New ANSI C63.4** – passed the standards IEEE committees April 2020. Adoption this year very possible
- **New ANSI C63.26 (2015) for testing Licensed transmitters** being refreshed – Most likely to include mmWave
- **New C63.29** under development for lighting devices
- **New C63.30 for wireless power transfer** – in process of being formalized
- **New C63.31 for 'in-situ' industrial equipment testing**
- **New C63.19 (2019) for HAC** – revisions to be adopted very soon

Questions?

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