Federal Communications Commission
Office of Engineering and Technology
Laboratory Division

Part 15 Subpart E U-NII 6 GHz

General Guidance Bands 5, 6, 7, 8

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1. Introduction

This Knowledge Data Base (KDB) Publication, 987594, provides guidance for obtaining an equipment authorization under the certification procedures for products and modules that operate under CFR Title 47, Part 15 Subpart E—UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE DEVICES[1] U-NII Bands 5-8. This publication requires that the reader be familiar with Equipment Authorization[2] (EA) procedures and FCC regulations. This KDB publication consist of 5 attachments:

1. **987594 D01 U-NII 6GHz General Requirements**. Provides a general overview for filling a certification.
2. **987594 D02 U-NII 6GHz EMC Measurement Procedures**. Test Lab guidance for EMC testing required for certification.
3. **987594 D03 U-NII 6GHz Q&A**. A set of additional guidance based on questions and answers.
4. **987594 D04 UN6GHZ Pre-Approval Guidance Checklist**. Guidance for TCBs submitting a PAG when required for 6 GHz.
5. **987594 D05 AFC DUT Test Harness Testing**. Guidance for testing devices required to be authorized operation through the Automated Frequency Coordination (AFC) database System.

2. U-NII Bands Overviewable 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	15.407(a)(3)(i)	Indoor/Outdoor	789033 (U-NII) 926956 (&)
U-NII-4	5.850-5.895	15.407(a)(3)(ii) –(v)	Indoor	789033 291074
U-NII-4[3]	5.895-5.925	95 Subpart L and 90 Subpart M	On-Board Units (OBU) must transmit signals to other OBUs and Roadside Units (RSU).	FCC 20-164[4]

[1] The 6 GHz rules were effective as of July 27, 2020. See Electronic Code of Federal Regulations (e-CFR) at: https://www.ecfr.gov/current/title-47#block-menu-block-4#block-menu-block-4 Part 15 Radio Frequency Devices,. Subpart E - Unlicensed National Information Infrastructure Devices.

[2] Equipment Authorizations under the certification procedures require FCC-recognized Telecommunication Certification Body (TCB) approval. Parties unfamiliar with FCC Equipment Authorization procedures and FCC Rules should consult with Telecommunications Certification Bodies listed in the Equipment Authorization general guidance page http://www.fcc.gov/oet/ea to ensure a complete understanding of the process and steps necessary to obtain FCC equipment approval.

[3] Not applicable to this Publication.

[4] At the time of this publication, the rules adopting FCC 20-164 FIRST REPORT AND ORDER November 2020, splitting the U-NII-4 band into Unlicensed operations in the 5.850-5.895 GHz and Intelligent Transportation Systems (ITS) operation in the 5.895-5.925 GHz.

Band	Band GHz	Rules	Notes	KDB Pub
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)[5]
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)				

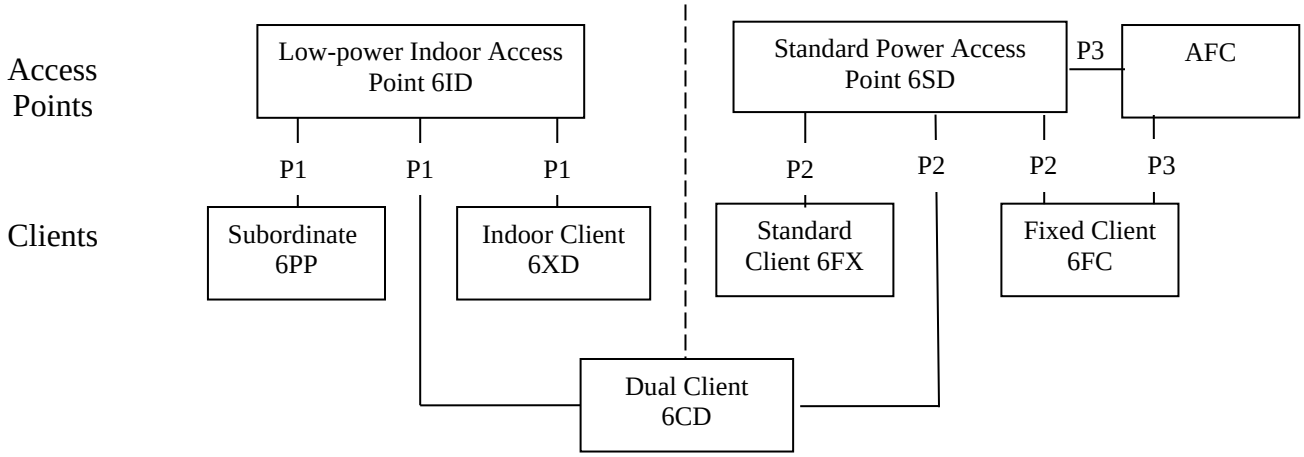
2.1. Equipment classes for U-NII bands 5 - 8 Overview.

There are seven equipment classes that are required when applying for certification und Part 15 Subpart E for U-NII bands 5 - 8 as illustrated in Figure 1[6].

1. **6ID:** 15E 6 GHz Low-power indoor access point. Operating in U-NII bands 5-8.
2. **6PP:** 15E 6 GHz Subordinate indoor device. These devices are under control of a Low-power indoor access point (P1). Operating in U-NII bands 5-8.
3. **6XD**: 15E 6 GHz Low-power Indoor client. These devices are under control of a low-power indoor access point (P1). Operating in U-NII bands 5-8.
4. **6CD**: 15E 6 GHz Dual client. These devices are under control of either a low-power indoor access point or standard power access (P1 &P2). Operating in U-NII bands 5-8.
5. **6SD:** 15E 6 GHz Standard power access point. These devices are managed by the Automatic Frequency Coordination (AFC) system (P3). Operating in U-NII bands 5 & 7.
6. **6FX**: 15E 6 GHz Standard client. These devices are under control of a Standard power access point managed by the AFC system (P2). Operating in U-NII bands 5& 7.
7. **6FC**: 15E 6 GHz Fixed client. These devices are associated with a standard power access point (P3). Operating in U-NII bands 5&7.

[5] This KDB publication 987594 D01-D05 provides guidance for U-NII 5-8 bands.

[6] P1, P2 notes the type of Access Point that the client and subordinate must be associated with. P3 notes that standard Access Points and Fixed Client devices are managed by the AFC.



P1 Client and subordinate devices under control of low-power indoor access point.
P2 Client devices under control of standard access point.
P3 Standard Power Access Point and Fixed Client devices managed by the AFC.

Figure 1 – Part 15 Subpart E Equipment Classes

3. Indoor Devices (6ID, 6PP, 6XD) operating in the 5.925-7.125 GHz band

These devices must use a contention-based protocol (CBP) such as "listen before talk" that provides interference protection for incumbent services. The contention-based protocol can allow multiple users to share the same spectrum among low-power indoor access points, subordinates, and clients. The contention-based protocol "listen before talk" must be demonstrated in the test report based on the requirements of attachment D02 of this publication.

Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

A Security description is required (15.407(i), Device Security) for all U-NII devices to demonstrate protection of unauthorized software modification by third parties[7] (see KDB Pub. 789033).

3.1. Low-power indoor access points (6ID) operating in the 5.925-7.125 GHz band

A low-power indoor access point (6ID) is a device that operates in a master mode as defined in Section 15.202, which can transmit without receiving an enabling signal. This mode can select a channel and initiate a network by sending enabling signals to client devices. A low-power indoor- access point shall provide an indoor identification or method to enable clients or subordinates to operate indoors[8] at a power level and power spectral density in accordance with the rules for indoor access points (6ID). It's the client's or subordinates' responsibility to operate at a power level no greater than granted.

These devices may operate as a bridge, peer-to-peer connection, connector between the wired and wireless segments of the network, or a relay between wireless network segments.

These devices are limited to indoor locations, have an integrated antenna, and cannot use a weatherized enclosure.

Low-power indoor access points devices are prohibited on oil platforms, cars, trains, boats, and aircraft, except large aircraft while flying above 10,000 feet in the 5.925-6.425 GHz band.

[7] Third parties include end-users, professional installers, and authorized distributors. Non-third parties are only the Grantee or Contactors working on behalf of the Grantee. The Grantee remains the responsible party.
[8] 15.407 (d)(3) Transmitters operating under the provisions of paragraphs 15.407 (a)(5) indoor access point, (a)(6) subordinate device and (a)(8) client devices operating under the control of an indoor access point of this section are limited to indoor locations.

Low-power indoor access points must be powered by a wired connection and not by battery power. Low-power indoor access points may use battery backup only during power outages.

FCC ID: E-labelling is permitted on devices qualifying for e-labelling.

Label information required in the exhibit types ID Label/Location Info:

- FCC ID
- Indoor Use only

The device user manual must contain the following information. The user manual must be filed as an exhibit in the application filing.

- FCC regulations restrict the operation of this device to indoor use only.
- The operation of this device is prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in large aircraft while flying above 10,000 feet in the 5.925-6.425 GHz band.
- Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

3.2. Subordinate device (6PP) operating in the 5.925-7.125 GHz band

A Subordinate device includes equipment such as Wi-Fi extenders and mesh networks with the additional requirement that it must be under the control of a low-power indoor access point (6ID) to share the same propagation channel path.

Being under the control of a low-power indoor access point is an association process where the subordinate passively scans or listens in the 6 GHz band for a low-power indoor access point (6ID) available channel. The subordinate may initiate a brief probe message requesting to join a low-power indoor access point network and request to be associated with a specific access point.

Subordinate device may wirelessly connect to other access points, subordinate devices, and client devices when associated with a low-power indoor access point (6ID).

These devices are limited to indoor locations, must have an integrated antenna, and cannot have or use a weatherized enclosure. These devices are prohibited on oil platforms, cars, trains, boats, and aircraft, except large aircraft while flying above 10,000 feet. Subordinate devices must not be used to connect devices between separate buildings or structures.

FCC ID: E-labelling is permitted on devices qualifying for e-labelling.

Label information required in the exhibit types ID Label/Location Info:

- FCC ID
- Indoor Use only

The device user manual must contain the following information. The user manual must be filed as an exhibit in the application filing.

- FCC regulations restrict the operation of this device to indoor use only.
- The operation of this device is prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in the 5.925–6.425 GHz bands in large aircraft while flying above 10,000 feet..
- Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

Applications for a subordinate device must demonstrate via an attestation (see Appendix B for example) that the device can only operate under control of a low-power indoor access point.

Subordinate devices must be powered by a wired connection and not by battery power, may use battery backup only during power outages., cannot have a direct connection to the internet [9].

3.3 Indoor Clients (6XD) operating in the 5.925-7.125 GHz band

An indoor client device, where a client device is defined in Sec. 15.202, is limited to indoor locations and is under control of a low-power indoor access point (6ID) or subordinate(6PP).

A client may initiate brief messages to associate with a low-power indoor access point or subordinate and establish a connection only after receiving a confirmation signal confirming that an AP is present and operating on a particular channel. After being associated, the indoor client can only initiate transmission with that access point. Indoor client devices (6XD) are prohibited from making a direct air interface connection to other clients.

An indoor client device must demonstrate via an attestation (see Appendix B, for example) that the device can only operate under the control of a low-power indoor access point or subordinate.

An indoor client device with a direct connection to the internet[9] cannot source the internet to other access points, clients or subordinate devices (see 3.5 below).

Indoor client devices are prohibited from connecting directly to any another client device. See section 3.5 below for networking restrictions.

FCC ID: E-labelling is permitted on devices qualifying for e-labelling.

Label information required in the exhibit types ID Label/Location Info:

- FCC ID

The device user manual must contain the following information. The user manual must be filed as an exhibit in the application filing.

- Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

3.4 Dual Client 6CD

6CD is an equipment class for a client device under the control of either a low power indoor access point or a standard power access point. Dual client devices must demonstrate operation under the respective requirements for low-power indoor and standard power access points.

A dual client device must demonstrate:

- When under control of a low power indoor access point or subordinate the device is restricted to the 5.925-7.125 GHz band and is limited to a maximum power of +24 dBm EIRP and a power spectral density limit of −1 dBm EIRP in any 1-megahertz band.
- When under control of a standard power access point, the device is restricted to the 5.925-6.425 GHz and 6.525-6.875 GHz bands and its transmit power is limited to 6 dB below the standard power access point's transmit power authorized by the AFC not to exceed a limit of 30 dBm EIRP and a power spectral density limit of 17 dBm EIRP in any 1-megahertz band.

When under control of a low power indoor access point or subordinate device, these devices must use a contention-based protocol (CBP) such as "listen before talk" that provides interference protection for incumbent services. The contention-based protocol can also allow multiple users to share the same spectrum among low-power indoor access

[9] A client/subordinate device may have a direct connection to the internet via a wired connection or other means such as cellular. However, it may not source the internet to other access points, clients or subordinate devices.

points, subordinates, and clients. The contention-based protocol "listen before talk" must be demonstrated in the test report exhibits to the requirements of attachment D02 of this publication[10].

Applications for a dual client device must demonstrate via an attestation (see Appendix B for example) that the device operates under control of a low-power indoor access point, subordinate and standard access point. A dual client device with a direct connection to the internet[9] cannot source the internet to other access points, clients or subordinate devices (see 3.5 below).

Dual client devices are prohibited from connecting directly to another any other client device. See section 3.5 below for networking restrictions.

FCC ID: E-labelling is permitted on devices qualifying for e-labelling.

Label information required in the exhibit types ID Label/Location Info:

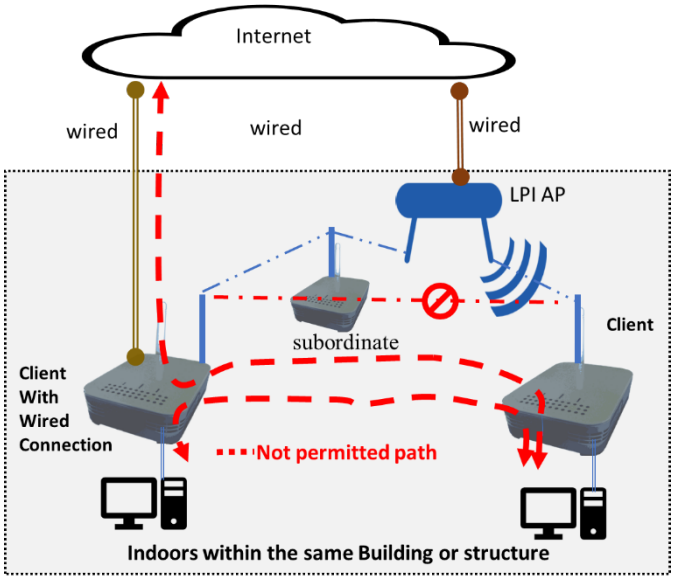
- FCC ID

The device user manual must contain the following information. The user manual must be filed as an exhibit in the application filing.

- Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

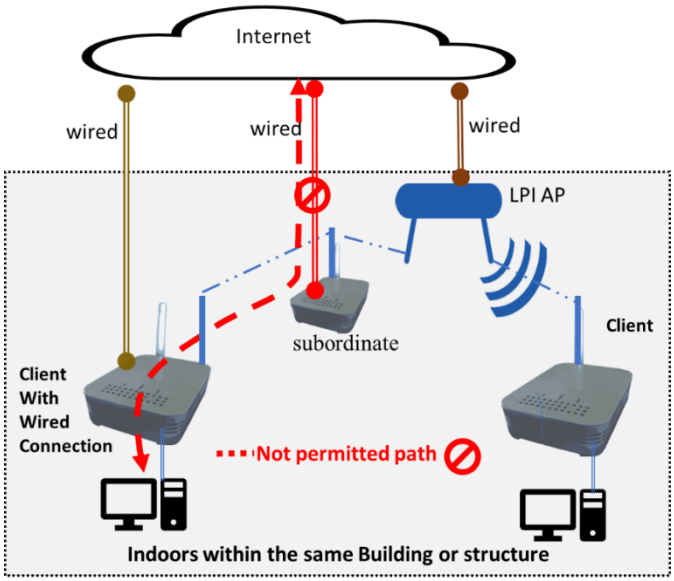
3.5 Networking restrictions for Clients and Subordinates

Client devices are prohibited from connecting directly to another client device. A client device (6XD and 6CD) may connect to the internet or to a network via a wired connection or other means such as cellular. It may not source the internet/network to other clients or subordinate devices or provide any direct peer to peer connections to other clients or subordinates[11].

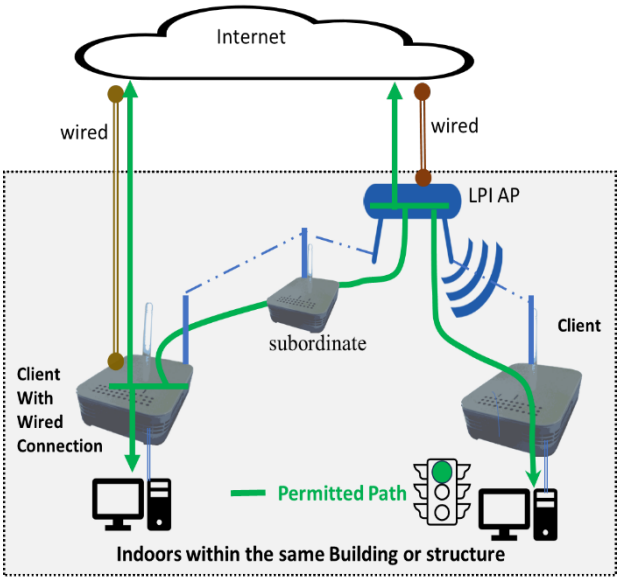


Client devices are prohibited from connecting directly to another client device

[10] The contention-based protocol applies to a dual client independent of whether it is associated with an indoor or standard access point. 15.407 (d)(6)- Indoor access points, subordinate devices, and client devices operating in the 5.925-7.125 GHz band must also employ a contention-based protocol.
[11] 47 CFR 15.407(d)(5)



Subordinate devices (6PP) cannot have a direct connection to the internet.[12]



Permitted Operation of Indoor Access Points (6ID), Subordinates (6PP) and Clients (6XD,6CD)

[12] 47 CFR 15.403 “Subordinate Device”

3.6 Summary of Application Requirements for indoor and dual client exhibits.

Table 2 - Summary of Application Requirements for Indoor and Dual Client Exhibits

[N] .. [1],[2]…[15] identifies a note code in Table 8 for requirements for Form-731 Application, exhibits and information.		6ID	6PP	6XD	6CD	
					Indoor AP	Standard AP
Labelling and Manual						
[11]	Labelling: Indoor Only	X	X			
[12]	Manual: FCC regulations restrict the operation of this device to indoor use only. Operation prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in large aircraft while flying above 10,000 feet	X	X			
[14]	Manual: Prohibited for control of or communications with unmanned aircraft systems	X	X	X	X	X
	Restrictions, Operation & Attestation					
[1]	Attestation: Indoor Access Point 6ID (Appendix B)	X				
[2]	Attestation: Indoor Client 6XD (Appendix B)			X		
[3]	Attestation: Indoor Subordinate 6PP (Appendix B)		X			
[4]	Attestation: Dual Client 6CD (Appendix B)				X	X
[15]	UNII Security	X	X	X	X	X
Demonstrate in Test report See D02						
[5]	Contention-Based Protocol.	X	X	X	X	
[6]	Fundamental Maximum EIRP (dBm)	30	30	24	24	30 max & 6dB below Std. AP
[7]	Fundamental power spectral density in any 1-megahertz band. (dBm/MHz EIRP)	5	5	-1	-1	17 max & 6dB below AP
[8]	Fundamental bandwidth	<= 320 MHz				
[9]	Emissions outside of 6 GHz Band within any 1-megahertz band (EIRP).	-27 dBm				
[10]	Channel Mask	Compliance to DO2 Channel Mask				

4. Standard Power Access Points and Associated Clients (6SD, 6FX, 6FC)

The operation standard power APs and Fixed clients are prohibited on oil platforms, cars, trains, boats, and aircraft.

Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

A Security description is required (15.407(i), Device Security) for all U-NII devices to protect against software modification by unauthorized parties (see KDB 789033).

Label information required in the exhibit types ID Label/Location Info FCC ID E-labelling is permitted on devices qualifying for e-labelling.

4.1 Standard Power Access Point (6SD)

Operates in the 5.925-6.425 GHz and 6.525-6.875 GHz bands.

Is managed by an Automated Frequency Coordination System.

A standard power access point must provide relevant information to an associated client so that the client can adjust its EIRP to a minimum 6 dB lower than what is authorized by the AFC for the standard-power access point.

These devices may operate as a bridge, peer-to-peer connection, connector between the wired and wireless segments of the network, or a relay between wireless network segments.

FCC ID: E-labelling is permitted on devices qualifying for e-labelling.

Label information required in the exhibit types ID Label/Location Info:

- FCC ID

The device user manual must contain the following information. The user manual must be filed as an exhibit in the application filing.

- The operation of this device is prohibited on oil platforms, cars, trains, boats, and aircraft.
- Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

Geolocation exhibits required see section 10 below.

EMC test reports guidance provided in 987594 D02 U-NII 6 GHz EMC Measurement

AFC DUT test harness guidance, provided in 987594 D05 Standard AP and Fixed Client Testing.

4.2 Standard Client Device (6FX)[13]

A device that only associates with a standard power access point.

FCC ID: E-labelling is permitted on devices qualifying for e-labelling.

[13] A standard client device (6FX) and a dual client device (6CD) differ from an indoor client device (6XD). The standard client device (6FX) and dual client device (6CD) needs to demonstrate in the filing that they can auto-adapt their power under the control of a standard power access point (6SD). The indoor client device (6XD) can only associate with an indoor access point (6ID) or subordinate (6PP). A dual client device (6CD) can associate with either an indoor access point (6ID), subordinate (6PP), or standard power access point (6SD), and when associated with a standard power access point (6SD), must adapt its power. See 15.407(a)(7). Any client device that is also an AP just for configuring Wi-Fi network credentials is also an indoor access points (6ID) and filed with separate 731 applications as a composite.

Label information required in the exhibit types ID Label/Location Info:

- FCC ID

The device user manual must contain the following information. The user manual must be filed as an exhibit in the application filing.

- Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

A Standard client device with a direct connection to the internet[9] cannot source the internet to other access points, clients or subordinate devices (see 3.5 below).

4.3. Fixed Client (6FC)

A device intended as customer premise equipment that is permanently attached to a structure, operates only on channels provided by an AFC, has a geolocation capability, complies with antenna pointing angle requirements, and can only connect with a standard power access point.

Operates in the 5.925-6.425 GHz and 6.525-6.875 GHz bands.

Is managed by an AFC and can connect with standard power access points.

A Fixed Client (6FC) client device cannot have a direct connection to the internet in order to source it to other clients associated with the Fixed Client.

FCC ID: E-labelling is permitted on devices qualifying for e-labelling.

Label information required in the exhibit types ID Label/Location Info:

- FCC ID

The device user manual must contain the following information. The user manual must be filed as an exhibit in the application filing.

- The operation of this device is prohibited on oil platforms, cars, trains, boats, and aircraft.
- Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

Geolocation exhibits required see section 10 below.

EMC test reports guidance provided in 987594 D02 U-NII 6 GHz EMC Measurement

AFC DUT test harness guidance provided in 987594 D05 Standard AP and Fixed Client Testing

4.4 Summary of 6 GHz Application Requirements for (6SD, 6FC, 6FX)

Table 3 - Summary of Application Requirements for (6SD, 6FC, 6FX)

[N] .. [6],[7]…[29] identifies a note code in Table 8 sections E for requirements for Form-731 Application, exhibits and information		6SD Standard Power Access Point	6FC Fixed Client	6FX Standard Client
	Labelling and Manual			
[13]	Manual: FCC regulations restrict the operation of this device on oil platforms, cars, trains, boats, and aircraft	X	X	
[14]	Manual: Prohibited for control of or communications with unmanned aircraft systems	X	X	X
	Operation Descriptions and Attestations			
[15]	UNII Security – 15.407(i)	X	X	X
[25]	AFC Security – 15.407(k)(8)(v)	X	X	
[17]	Geolocation General Description	X	X	
[18]	Geolocation Justification Report	X	X	
[19]	Geolocation Accuracy After a power cycle (If applicable)	X	X	
[21]	Power cycle Re-authorization	X	X	
[23]	Daily contact with AFC & Grace Period	X	X	
[24]	Security of Connection to External Geolocation Source	X	X	
[22]	Network Element/ Proxy Ops Description if required (see D05)	X		
[27]	Attestation: Standard Power Access Point (Appendix B)	X		
[28]	Attestation: Fixed Client (Appendix B)		X	
[29]	Attestation: Standard Client (Appendix B)			X
	Demonstrate in Test report See D02 & D05			
[16]	AFC DUT test Harness Report D05	X	X	
[26]	Operates 6B below Standard Power AP D02			X
[6]	Fundamental Maximum EIRP (dBm)	36 dBm	36 dBm	30 max & 6dB below Std. AP
[7]	Fundamental power spectral density in any 1-megahertz band. (dBm/MHz EIRP) D02	23		17 max & 6dB below AP
[20]	Maximum EIRP above 30 degrees D02	125 mW (21 dBm) - when installed outdoors		
[8]	Fundamental bandwidth	<= 320 MHz		
[9]	Emissions outside of 6 GHz Band within any 1-megahertz band (EIRP). D02	-27 dBm		
[10]	Channel Mask	Compliance to D02 Channel Mask		

5. Multiple Rule Parts (Composite devices)

6 GHz devices can be authorized under multiple rule parts. Either as an initial application or after an initial application. 6 GHz equipment classes can only be added after an initial application under the same FCC ID[14] using only software changes. This is not done as a C2PC[15], but as an initial application under the same FCC ID.

If the original application was approved as a Software Defined Radio (SDR) the new equipment class should be submitted as Class III permissive change.

6. Application Restrictions.

Products that are certified in the 6 GHz U-NII bands as Low-power indoor access points (6ID) and subordinate (6PP) devices have restrictions that apply to the entire Product's Form Factor (PFF), i.e., cannot have an outdoor weatherized enclosure, must have an integrated antenna, cannot operate on battery power, include a product label "indoor use only" and instruct the users the product cannot be used outdoors and restricted operation. For example, a product that contains certifications for equipment classes 6ID and/or 6PP and DTS and NII in 2.4 bands and U-NII bands 1, 2A, 2C, 3, and 4 is restricted to an indoor PFF.

The grantee shall clearly describe how each restriction is ensured and indexed by the rule part in the operational description and user manual.

7. Modules

Except for subordinate devices, all equipment classes are permitted to be a module under Sec. 15.212. Furthermore, different modules can be a composite under one FCC ID as indicated above.

Table 5 – Modules

Composite device	Low-power indoor AP	Subordinate device	Client Indoor Only	Dual Client	Standard power AP	Standard Client	Fixed Client
	6ID	6PP	6XD	6CD	6SD	6FX	6FC
Module permitted	Yes	No[16]	Yes	Yes	Yes	Yes	Yes

No host controls, configuration settings (selections, scripts interface protocol) can be used in setting, configuring, or adjusting the air interface RF emission parameters to meet the grant conditions. The module must demonstrate in the filing that the full compliance as a stand-alone module independent of any host. The restrictions for modifying or controlling these parameters include the host manufacturer or any third party under the U-NII security restrictions.

The manufacturer may demonstrate an alternative method[17] specific to a host, host agreement, or contract and qualify as a limited module.

For requirements such as labeling, indoor use, power, restrictions, etc., a module grantee must extend these requirements to the host manufacturer through the integration instructions (see Publication KBB 996369 D03). Integration instructions shall be in sufficient detail so that the host manufacturer is obligated to adhere to these requirements and restrictions as a condition for using the module's certification.

[14] Many 6 GHz devices will be composite devices. Composite devices have two meanings: (1) A Form 731 composite refers to a filing for multiple equipment classes certified under one FCC ID. (2) The second meaning, under §2.947(f) Measurement procedure, refers to the compliance responsibilities under multiple rules, including transmitters and unintentional radiators under part 15B under SDoC and Certification.

[15] A TCB may do this without FCC intervention if the approved device is already a Form 731 composite device. If the approved device is not a Form 731 composite device and the initial grant is more than 30 days old the TCB must submit a KDB inquiry for staff to determine the appropriate procedure.

[16] A subordinate device may not be certified as a module (15.403).

[17] Depending on the proposed method, when a module cannot demonstrate compliance in a standalone mode independent of a host, this will require shared host responsibility between the host responsible party and the module Grantee, with a C2PC for each host or host type.

8. Overall Summary

Table 6 - Overall Summary

Type	Eq Class		U-NII Bands				Contention Based Protocol	Under control of	Antenna Restriction	Max EIRP (dBm)	APC 6 dB Below AP	Module	Re-strictions Notes
			5	6	7	8							
Low-power indoor access point	6ID	In-door	X	X	X	X	X	NA	Integral	30	NA	X	a c d i
Subordinate	6PP		X	X	X	X	X	Indoor AP 6ID By Attestation	Integral	30	NA	Not Permitted	a c d e g i k
Indoor Client	6XD		X	X	X	X	X	Indoor AP 6ID By Attestation	15.203	24	NA	X	a e g i j
Dual Client	6CD		X	X	X	X	X	Indoor AP 6ID By Attestation	15.203	24	NA	X	a e g i j
		In-door Outdoor	X		X		NA	Standard AP 6SD By Attestation		30	Yes		a e h i j
Standard Power Access Point	6SD		X		X		NA	AFC	15.203	36	NA	X	a b i
Standard Client	6FX		X		X		NA	Standard AP 6SD	15.203	30	Yes	X	a e h j
Fixed Client	6FC		X		X		NA	Standard AP 6SD/AFC	15.203	36	NA	X	a b e f h j i

Restriction Notes:

a. Prohibited for control of or communications with unmanned aircraft systems.
b. Prohibited on oil platforms, cars, trains, boats, and aircraft,
c. Prohibited on oil platforms, cars, trains, boats, and small aircraft, and large aircraft under 10,000 feet.
d. Indoor only, powered by wired connection, has an integrated antenna, is not battery powered, and does not have a weatherized enclosure.
e. No direct internet connection permitted.
f. Limited for installation on fixed infrastructures.
g. limited to indoor use by low-power indoor access point association.
h. limited to operation through association with standard power access point.
i. Attestation Required.
j. Under the control of an access point and is not capable of initiating a network.
k. Modules not permitted.

9. RF Exposure

Per Sec. 15.407(f), application filings for all U-NII devices must address RF exposure compliance in accordance with KDB Pub. 447498 and other KDB publications referenced therein. For U-NII 6-7 GHz band portable devices (subject to MPE power density limits, not SAR limits), until specific additional exposure evaluation guidance is published by FCC, applicants and test labs must submit a KDB inquiry for review of the RF exposure evaluation plan before completing testing and submitting to a TCB, consistent with KDB Pub. 388624 PAG requirements.

10. Geolocation approval procedure for Standard power access points (6SD) and fixed client (6FC)

10.1 Automated Frequency Coordination (AFC) Database.

Standard power access point (6SD) and fixed client (6FC**)** devices need to connect to an FCC-approved[18] Automated Frequency Coordination (AFC) Database for authorization to transmit on any frequency in the 5.925-6.425 GHz and 6.525-6.875 GHz bands and at a power level based on geolocation coordinates and area provided to the AFC by that device. Authorization is required whenever the device is initially activated, relocated, and, at a minimum, at least once a day. The authentication protocol [19] includes the devices credentials, granted FCC ID, geographic coordinates and location uncertainty (in meters), with a confidence level of 95%[20]. The AFC responds back with available frequencies and permitted power for the requested operation for that geolocation area requested. In addition, 6SD and 6FC devices shall seek re-authorization with the AFC to re-obtain operating parameters after a power on-off-on cycle with an exception for devices that use Geolocation Accuracy after Power Cycle (see section 10.2.3) that shall be approved through a Persistent Inquiry Approval (PIA) Procedure (see section 10.3).

Standard power access point (6SD) and fixed client (6FC) must confirm their operating frequency and power with the AFC at least one time per day. In case of failure to contact the AFC or no response from the AFC[21], the standard power access point (6SD) and fixed client (6FC) devices shall cease operation[22] by 11:59 p.m. the following day. The devices may resume transmissions only after reestablishing contact with the AFC system and receiving information for permitted frequencies and power levels.

10.2 Exhibits for 731 filing

6SD and 6FC devices require the following 731 exhibits: a Geolocation General Description, a Geolocation Justification Report, and, if applicable, a Geolocation Accuracy after Power Cycle description. See sections 10.2.1, 10.2.2, and 10.2.3 below. These 731 exhibits can be pre-approved by the commission using a one-time procedure described in section 10.3 below and referred to as a Persistent Inquiry Approval (PIA) procedure.

10.2.1 Geolocation General Description

A general description shall provide an overview of the geolocation system. This document shall be written for a general public knowledge level without referring to the technical details of geo-location technologies such as GPS communications and the details that justified the 95% confidence level claim. The document shall provide:

- A general overview of the method used by the 6SD and 6FC for either an internal geolocation capability or a secured connection to an external geolocation device or service, to automatically[23] determine the standard power access point's geographic coordinates and location uncertainty with a confidence level of 95%.

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[18] AFC Approval is not an equipment authorization certification procedure under Part 2 Subpart J of CFR Title 47 of the rules and is not the subject of this publication. See DA/FCC #: DA-22-1146, Docket/RM: 21-352. Available at https://www.fcc.gov/edocs.

[19] Protocol between the AFC and a device is specified in "AFC System to AFC Device Interface Specification," available from Wi-Fi Alliance.

[20] Uncertainty of the requested coverage area with a 95% confidence level is provided by 6SD and 6FX devices in the device to AFC spectrum inquiry request message as specified in "AFC System to AFC Device Interface Specification," available from Wi-Fi Alliance.

[21] Failure to contact the AFC or no response does not include a power cycle event. After a power cycle see 10.2.3 Geolocation Accuracy After a Power Cycle.

[22] 47 CFR 15.407(k)(8)(iv)`

[23] 47 CFR 15.407(k)(9)(i) geolocation capability must be automatic. Manual keying geolocation as an entry is not permitted.

- Attestation confirming the location uncertainty with a 95% confidence level.
- State that daily AFC confirmation will be performed, and after a power cycle operation (either AFC re-authorization or if applicable the approved "Geolocation Accuracy after a Power Cycle" operation).

This description shall be filed as a 731 exhibit in the attestation folder. Short-term or long-term confidentiality is not permitted.

10.2.2 Geolocation Justification Report

A justification report is required to support that devices meet the location uncertainty with a confidence level of 95%. This document is filed in the operational description folder and when the Grantee manages this information as confidential the Geolocation Justification Report may be held as a long-term confidential 731 exhibit, as permitted by CFR 47 §§ 0.457(d) and 0.459 of the FCC Rules (see KDB 726920).

This document must demonstrate the testing method and calculations used to justify the location uncertainty with 95% confidence level claim, e.g., via testing and statistical data. This report is expected to contain the following:

- An overview of the geolocation system identifying all significant sections and components with block diagrams. The information shall identify any independent geo-location technology not part of the device certification (such as handsets, tablets, etc.). Details are required about geo-location technology chip manufacturers and antenna information (including gain) for geo-location technology reception.
- A description is required to explain how the 95% confidence level claim is justified. Since each manufacturer may have different methods, this description has no hard and fast set of requirements. We expect the narrative to include sample sizes, different installation environments, locations, variations when different or independent subsystems are used, test setup, accuracy of survey markers or bench systems, and other relevant factors that affect the accuracy.
- A list or graph of the data utilized to determine the confidence interval.
- Explain how the confidence interval area is established for any particular device.
- For independent geo-location technologies such as GPS devices,[24] describe how many different manufacturers, models, and types of devices were used and what factors were used to determine the geolocation being reported to the AFC.
- A description of the security features (i.e., how end users are prevented from bypassing the AFC protocol).
- Describe how height is determined and entered[25].

10.2.3 Geolocation Accuracy After a Power Cycle

A power cycle[26] occurs when a device is moved, or a temporary power failure. Some devices can automatically determine their location and re-authenticate with the AFC to reestablish operations. These devices do not require a Power cycle re-authorization test in the test report when geolocation is automatically acquired after power failure.

There may be other devices that do not automatically obtain geolocation information and rely upon operator intervention. If these devices have built-in mechanisms that can detect that it has not moved during a temporary power failure, then a Geolocation Accuracy After a Power Cycle description exhibit shall be submitted as a PIA.[27]

[24] Independent systems are devices such as handsets and tablets with separate geolocation technologies such as GPS that are not part of the certified equipment but are required for the 6SD and 6FC devices to automatically determine their geolocation.
[25] Elevation/height objects provided by 6SD and 6FC devices, in the spectrum inquiry request message as specified in "AFC System to AFC Device Interface Specification," available from Wi-Fi Alliance.
[26] Power cycle is when the power source cycles from on to off to on.
[27] A Power cycle re-authorization test [21] is different from Geolocation Accuracy after a Power Cycle [19], see Table 8 – Note Code References.

The Geolocation Accuracy after a Power Cycle exhibit shall describe the method used to determine that the device has not been moved.

If approved, then that device could continue to operate based on the AFC authorization provided before the temporary power failure. The device is limited to a temporary power failure event by the once-a-day confirmation schedule established with the AFC before the power failure. The device shall maintain its daily schedule and accuracy through any temporary power failure. The Geolocation Accuracy After a Power Cycle description shall state that the method does not affect the 95% confidence requirement.

10.3 Persistent Inquiry Approval (PIA) Procedure

Persistent Inquiry Approval (PIA)[28] is an equipment authorization inquiry procedure. It is used to allow the commission to review the Geolocation General Description, a Geolocation Justification Report, and, if applicable, a Geolocation Accuracy after Power Cycle description. This inquiry will require the first category to be " Equipment Authorization" and the second category "Geolocation".

Once reviewed under this procedure, 731 applications for (6SD) and (6FC) devices can be permitted to submit the same PIA descriptions[29] as 731 exhibits[30] for Certification to demonstrate compliance which will be considered reviewed and permitted under the original PIA procedure.

- The inquiry is used for reviewing a manufacturer's claim for geolocation. It is recommended to be submitted by the Grantee[31] seeking approval. As a practical matter the inquiry may also be submitted by the geo-location solution provider as long as the solution is self-contained and the grantee embeds the self-contained solution as-is without any modification.
- As a practical matter the inquiry may also be submitted by the geo-location solution provider as long as the solution is self-contained and the grantee embeds the self-contained solution as-is without any modification. The Grantee shall be responsible for the operation and submit the third party API with their application a third party geo-location solution as described in API Geolocation General Description and Geolocation Justification Report submitted by the third party.
- Although not recommended, if a Grantee choses to have a test laboratory or TCB submit a PIA, it shall also include a signed letter from the Grantee giving that laboratory or TCB authority to seek approval on their behalf.
- The PIA is not a Commission approval of the accuracy of the data presented. It is a technical testament by the Grantee to meet the geographic coordinates and location uncertainty (in meters), with a confidence level of 95%, or the geolocation accuracy after a power cycle.
- The PIA itself (copy of actual KDB inquiry), shall be included in the Grantee's application to the certification to allow the TCB/Commission to confirm the original PIA approval. This also includes a third party PIA.
- The PIA is not public, and the 731 exhibits Geolocation Justification Report and Geolocation Accuracy after Power Cycle description may be submitted as long term confidential exhibits.
- The TCB submitting the 731 application shall ensure that the exhibits are supplied and that the Geolocation Justification Report contains the PIA inquiry tracking number.

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[28] PIA is not a Pre-Approval Guidance (KDB Publication Number: 388624). A PIA does not mean a PAG is or is not still required. It is an inquiry and is recommended that the Grantee submits the PIA. It is recommended since the Grantee is responsible for its geolocation accuracy and power cycle operation. Any misunderstandings between a third party and the commission will not alleviate the Grantee's responsibility for its accuracy.

[29] The term "PIA descriptions" refers to the Geolocation General Description, a Geolocation Justification Report, and, if applicable, a Geolocation Accuracy after Power Cycle description submitted in the inquiry for the initial Inquiry and reviewed by the Commission.

[30] "731 exhibits" when referenced in this Section, refers to the 731 exhibits submitted to the Equipment Authorization System for Certification. The "731 exhibits" shall be the same information as the "PIA descriptions."

[31] Submit a KDB inquiry at http://www.fcc.gov/labhelp

- If the TCB chooses or suspects that the tracking number is not correct or legitimate, they should submit a separate inquiry to confirm the PIA tracking number.
- Changes to the geolocation or power cycle methods require a new PIA exhibits. These can be submitted as Class II or III permissive changes for any device initially approved under an initial PIA filing. The new PIA when approved shall provide a description to clearly explain how the different PIA approaches are managed for the same FCC ID.
- Filing the required documents with each application for certification for a standard power access point (6SD) or a fixed client (6FX) provides the affirmation that the device complies with the geolocation confidence required by 47 CFR 15.407(k)(9)(i).

Appendix A
Exhibits Reference Guide

The tables "Exhibits Reference Guide" below provides a reference Guide for uploading exhibits for U-NII 6 GHz applications. The "Y" Indicates that an exhibit must be uploaded or an application error will result. The note number [N] provides additional guidance for U-NII 6 GHz applications. A blank means an exhibit may or may not be required depending on the application and indicates that an error will not occur when an exhibit is not uploaded. However, an exhibit may be required for other reasons. For example, Class III applications adding an equipment class requires many exhibits to be uploaded, similar to an original application, such as test reports, operational descriptions, security, etc. absence of a "Y" does not mean an exhibit is not required.

The test laboratory and TCB Scope are A4- U-NII Devices & low-power transmitters using spread spectrum techniques for all equipment classes.

The frequency range for Form 731 listed on the grant shall be the contiguous frequency span of operation as authorized for that equipment class from the channel center frequency of the lowest-frequency channel for any bandwidth to the channel center frequency highest-frequency channel for any bandwidth.

Table 7 - Exhibits Reference Guide

Exhibit Type	Application Type	LPI AP	Subordinate device	LPI Client	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
ID Label/Location	Original Equipment	Y[11]	Y[11]	Y	Y	Y	Y	Y
	Change in ID	Y[11]	Y[11]	Y	Y	Y	Y	Y
	Class II PC							
	Class III PC							

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
Attestation	Original Equipment	Y [1] Y[30]	Y[3]\ Y[30]	Y [2] Y[30]	Y [4] Y[30]	Y [21] [23] [24] [27] [30]	Y[29] Y[30]	Y [21] [23] [24] [28] [30]
	Change in ID	Y[30]	Y[30]	Y[30]	Y[30]	Y[30]	Y[30]	Y[30]
	Class II PC	Y[30]	Y[30]	Y[30]	Y[30]	Y[30]	Y[30]	Y[30]
	Class III PC	Y[30]	Y[30]	Y[30]	Y[30]	Y[30]	Y[30]	Y[30]

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
External Photos	Original Equipment	Y	Y	Y	Y	Y	Y	Y
	Change in ID	Y	Y	Y	Y	Y	Y	Y
	Class II PC							
	Class III PC							

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
Block Diagram	Original Equipment	Y	Y	Y	Y	Y	Y	Y
	Change in ID							
	Class II PC							
	Class III PC							

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
Schematics	Original Equipment	Y	Y	Y	Y	Y	Y	Y
	Change in ID							
	Class II PC							
	Class III PC							

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
Test Reports	Original Equipment	Y[5] to [10]	Y[5] to [10]	Y[5] to [10]	Y[5] to [10]	Y[6] to [10] [16] [20] [25]	Y[6] to [10] [26]	Y[6] to [10] [16] [20] [25]
	Change in ID							
	Class II PC							
	Class III PC							

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
Test Set UP Photos	Original Equipment	Y	Y	Y	Y	Y	Y	Y
	Change in ID							
	Class II PC							
	Class III PC							

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
Internal Photos	Original Equipment	Y	Y	Y	Y	Y	Y	Y
	Change in ID							
	Class II PC							
	Class III PC							

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
Parts List/Tune Up Info	Original Equipment							
	Change in ID							
	Class II PC							
	Class III PC							

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
User Manual	Original Equipment	Y[12] [14]	Y[12] [14]	Y [14]	Y [14]	Y[13] [14]	Y[14]	Y[13][14]
	Change in ID							
	Class II PC							
	Class III PC							

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
RF Exposure	Original Equipment	Y [31]	Y [31]	Y [31]	Y [31]	Y [31]	Y [31]	Y [31]
	Change in ID							
	Class II PC	Y [31]	Y [31]	Y [31]	Y [31]	Y [31]	Y [31]	Y [31]
	Class III PC	Y [31]	Y [31]	Y [31]	Y [31]	Y [31]	Y [31]	Y [31]

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
Operational Description	Original Equipment	Y	Y	Y	Y	Y[17] [18] [19] [22]	Y	Y [17] [18] [19] [22]
	Change in ID							
	Class II PC							
	Class III PC							

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
Cover Letter	Original Equipment							
	Change in ID	Y	Y	Y	Y	Y	Y	Y
	Class II PC	Y	Y	Y	Y	Y	Y	Y
	Class III PC	Y	Y	Y	Y	Y	Y	Y

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
SDR Software/ Security Info	Original Equipment	*	*	*	*	*	*	*
	Change in ID	*	*	*	*	*	*	*
	Class II PC							
	Class III PC							
	* required for SDR devices.							

Table 8 – Note Code References

Notes		LPI AP	Sub ordi nate	Client indoor	Dual Client	Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD	6FX	6FC
[1]	Attestations: Indoor Access Point 6ID Appendix B	X						
[2]	Attestations: Indoor Client 6XD (Appendix B)			X				
[3]	Attestations: Indoor Subordinate 6PP (Appendix B)		X					
[4]	Attestations: Dual Client 6CD (Appendix B)				X			
[5]	Contention-based protocol.	X	X	X	X			
[6]	Fundamental Maximum EIRP (dBm).	X	X	X	X	X	X	X
[7]	Fundamental power spectral density in any 1-megahertz band. (dBm/MHz EIRP).	X	X	X	X	X	X	X
[8]	Fundamental bandwidth	X	X	X	X	X	X	X
[9]	Emissions outside of 6 GHz Band any 1-megahertz band (EIRP).	X	X	X	X	X	X	X
[10]	Channel Mask.	X	X	X	X	X	X	X
[11]	Labelling: Indoor Only	X	X					
[12]	Manual: FCC regulations restrict the operation of this device to indoor use only. Operation prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in the 5.925–6.425 GHz bands in large aircraft while flying above 10,000 feet.	X	X					
[13]	Manual: FCC regulations restrict the operation of this device on oil platforms, cars, trains, boats and aircraft.					X		X
[14]	Manual: Prohibited for control of or communications with unmanned aircraft systems	X	X	X	X	X	X	X
[15]	UNII Security	X	X	X	X	X	X	X
[16]	DUT Test harness Report					X		X

Notes		LPI AP	Subordinate	Client indoor	Dual Client		Std AP	Std Client	Fixed Client
		6ID	6PP	6XD	6CD		6SD	6FX	6FC
[17]	Geolocation General Description						X		X
[18]	Geolocation Justification Report						X		X
[19]	Geolocation Accuracy After a power cycle: If applicable						X		X
[20]	Measurement of emission at elevation angles higher than 30° from horizon						X		X
[21]	Power cycle re-authorization test when geolocation is automatically acquired after power failure						X		X
[22]	Network Element/ Proxy Ops Description if required see D05. If applicable						X		X
[23]	Daily contact with AFC & Grace Period						X		X
[24]	Security of Connection to External Geolocation Source						X		X
[25]	AFC Security * part of test report						X		X
[26]	Operates 6dB below Standard Power AP				X			X	
[27]	Attestations: Standard Power AP 6SD (Appendix B)						X		
[28]	Attestations: Fixed Client 6FC (Appendix B)								X
[29]	Attestation: Standard Client 6FX (Appendix B)							X	
[30]	Attestation: FCC 22-84 covered equipment per 986446 D01 Covered Equipment Guidance	X	X	X	X		X	X	X
[31]	RF Exposure exhibit per KDB publication 447498	X	X	X	X		X	X	X

Appendix B
Attestation Example

We, Grantees Name, attest that this device under FCC ID XXX complies with device protocol requirements and operational restrictions: for (all that apply - indoor client 6XD, subordinate 6PP, Dual Client 6CD).

Note for Modules:

- Device protocol attestation and contention-based protocol apply to functions permanently embedded in the module and cannot be host-dependent. Otherwise, the module must be restricted and filed as a Software Defined Radio or with joint responsibility agreements.
- Device Restriction statements: We, the grantee, will document the physical restrictions associated with the equipment classes for host products (wired power, integral antenna, non-weatherized enclosure) as conditions-of-use through the host manufacture's integration instructions.

Indoor Access Point 6ID:

1. Device Protocol Attestation Statement:
    a. Statement for modules only: Contention-Based Protocol, as demonstrated in the test report, is permanently embedded in the module and is not host-dependent.
    b. Statement describing the method the indoor access point uses to control the associated client/subordinate power control.
2. Statement acknowledging device restrictions:
    a. Low-power indoor Access Point. Access Point operating in the 5.925-7.125 GHz band shall be supplied power from a wired connection, has an integrated antenna, is not battery-powered, and does not have a weatherized enclosure.
    b. This device's operation will not be allowed on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in large aircraft while flying above 10,000 feet only in the 5.925-6.425 GHz band.
    c. Indoor access points are prohibited for control of or communications with unmanned aircraft systems, including drones.

Indoor Client 6XD:

1. Device Protocol Attestation Statement:
    a. Statement for modules only: Contention-Based Protocol, as demonstrated in the test report, is permanently embedded in the module and is not host-dependent.
    b. Statement that the device will only associate and connect with a low-power indoor access point or subordinate device and never directly connect to other client devices.
    c. Statement that this device will always initiate transmission under the control of a low-power indoor AP or subordinate except for brief transmissions before joining a network. These short messages will only occur if the client has detected an indoor AP or subordinate operating on a channel. These brief messages will have a time-out mechanism such that if it does not receive a response from an AP it will not continually repeat the request.
    d. Statement that transmissions will be lower or equal to the power advertised by the indoor low-power access point or subordinate and never above the maximum output power allowed by the FCC grant for equipment class 6XD.
    e. Statement for modules only: Contention-based protocol as demonstrated in the test report is permanently embedded in the module and is not host-dependent.
2. Understanding of Statement acknowledging device restrictions:
    a. Prohibited for control of or communications with unmanned aircraft systems, including drones.

Indoor Subordinate 6PP:

1. Device Protocol Attestation Statement:
    a. Statement for modules only: Contention-Based Protocol, as demonstrated in the test report, is permanently embedded in the module and is not host-dependent.
    b. Statement that this device will always be under the control of a low-power indoor AP and will only initiate brief messages to be under the control of an indoor low-power AP. These brief messages will only occur if the subordinate has detected a low-power indoor AP operating on a channel. These brief messages will have a time-out mechanism such that if it does not receive a response from an AP it will not continually repeat the request.
    c. Statement that once under control of an indoor access point, a subordinate will initiate connections with clients, other access points, or other subordinate devices at a lower power or equal to the power advertised by the access point controlling the subordinate and never above the maximum output power allowed by the FCC grant for equipment class 6PP.
    d. Statement describing the method the subordinate uses to inform the associated client/subordinate of its permitted maximum power.
    e. Statement for modules only: Contention-based protocol demonstrated in the test report is permanently embedded in the module and is not a host-dependent.
2. Statement acknowledging device restrictions:
    a. Indoor Access Point. This Access Point operates in the 5.925-7.125 GHz band. It is supplied power from a wired connection, has an integrated antenna, is not battery-powered, and does not have a weatherized enclosure.
    b. The operation of this device will not be allowed on oil platforms, cars, trains, boats, and aircraft, except that this device's operation is permitted in large aircraft while flying above 10,000 feet.
    c. Prohibited for control of or communications with unmanned aircraft systems, including drones.
    d. Has no direct connection to the internet.

Dual Client 6CD:

1. Device Protocol Attestation Statement:
    a. That this device will only associate and connect with a low-power indoor Access Point, subordinate device, or standard access point and never directly link to any other client devices.
    b. Statement that this device will always initiate transmission under the control of a low-power indoor AP, subordinate or standard AP except for brief communications before joining a network. These quick messages will only occur if the client has detected an indoor AP, subordinate, or standard access point operating on a channel. These brief messages will have a time-out mechanism such that if it does not receive a response from an AP it will not continually repeat the request.
    c. Statement that this device, when associated and connected with a low-power indoor access point, subordinate or standard access point device, will operate at a power lower as advertised by the indoor access point, subordinate, or standard access point (at some point in time testing will be required but FCC will provide advance notice before the requirement takes affect):
        i. lower or equal to the power advertised by the low-power indoor access point or subordinate and never above the maximum output power allowed by the FCC grant for clients associated with indoor clients or subordinates.
        ii. lower than or 6 dB below the power advertised by the standard access point.
    d. Statement for modules only: Contention-based protocol as demonstrated in the test report is permanently embedded in the module and is not host-dependent based protocol demonstrated in the test report.
2. Statement acknowledging device restrictions:
    a. Prohibited for control of or communications with unmanned aircraft systems, including drones.

Standard Power Access Point 6SD:

1. Device Protocol Attestation Statement:
    a. Statement this device will contact an AFC system at least once per day to obtain the latest list of available frequencies and the maximum permissible power the standard power device may operate with on each frequency at the standard power device's location. If the device fails to successfully contact the AFC system during any given day, the standard device may continue to operate until 11:59 p.m. of the following day at which time it will cease operations until it re-establishes contact with the AFC system and re-verifies its list of available frequencies and associated power levels - 15.407(k)(8)(iv)

    b. Statement this device will automatically acquire geolocation and re-register with AFC to obtain frequency and power values after a power cycle.

    c. Statement this device if using an external geolocation source will be connected to the standard power device using a secure connection that ensures that only an external geolocation source approved for use with a standard power device provides geographic coordinates to that standard power device. Alternatively, an extender cable may be used to connect a remote receive antenna to a geolocation receiver within a standard power device.

2. Statement Acknowledging device restrictions:

    a. Prohibited for control of or communications with unmanned aircraft systems, including drones.

Fixed Client 6FC:

1. Device Protocol Attestation Statement:
    a. Statement this device will contact an AFC system at least once per day to obtain the latest list of available frequencies and the maximum permissible power the standard power device may operate with on each frequency at the standard power device's location. If the device fails to successfully contact the AFC system during any given day, the standard device may continue to operate until 11:59 p.m. of the following day at which time it will cease operations until it re-establishes contact with the AFC system and re-verifies its list of available frequencies and associated power levels - 15.407(k)(8)(iv)

    b. Statement this device will automatically acquire geolocation and re-register with AFC to obtain frequency and power values after a power cycle.

    c. Statement this device if using an external geolocation source will be connected to the standard power device using a secure connection that ensures that only an external geolocation source approved for use with a standard power device provides geographic coordinates to that standard power device. Alternatively, an extender cable may be used to connect a remote receive antenna to a geolocation receiver within a standard power device.

2. Statement acknowledging device restrictions:

    b. Prohibited for control of or communications with unmanned aircraft systems, including drones.

Standard Client 6FX:

1. Device Protocol Attestation Statement:
    a. Statement that this device will only associate and connect with a Standard Power Access Point and never directly link to any other client devices.
    b. Statement that this device will always initiate transmission under the control of a Standard Power Access Point except for brief communications before joining a network. These quick messages will only occur if the client has detected a Standard Power Access Point operating on a channel. These brief messages will

have a time-out mechanism such that if it does not receive a response from an AP it will not continually repeat the request.

c. Statement that this device, when associated and connected with a Standard Power Access Point, will operate at a power level as described:
    i. lower or equal to the maximum output power allowed by the FCC.
    ii. At least 6 dB below the power of the Standard Power Access Point.

2. Statement acknowledging device restrictions:
    a. Prohibited for control of or communications with unmanned aircraft systems, including drones.

Change Notice:

12/16/2020: 987594 D01 U-NII 6GHz General Requirements v01r01 replaces 987594 D01 U-NII 6GHz General Requirements v01 to correct Table 6. The previous version v01 erroneously indicated that indoor and dual clients required an integral Antenna. It was updated to display, along with other devices, that 15.203 applies.

2/04/2021: 987594 D01 U-NII 6GHz General Requirements v01r02 replaces 987594 D01 U-NII 6GHz General Requirements v01r01 to update Appendix A Exhibits Reference Guide.

05/20/2021: 987594 D01 U-NII 6GHz General Requirements v01r03 replaces 987594 D01 U-NII 6GHz General Requirements v01r02 to update Appendix A Exhibits Reference Guide. Note 13 for Dual Client 6CD was removed because it was noted in error.

05/24/2021: 987594 D01 U-NII 6GHz General Requirements v01r04 replaces 987594 D01 U-NII 6GHz General Requirements v01r03. Table 1 typo correction, 14.407 (a) (3) was corrected to 15.407(a)(3) for U-NII 3 band 5.725-5.85.

08/07/2023: D01 U-NII 6GHz General Requirements v02 replaces 987594 D01 U-NII 6GHz General Requirements v01r03. Phase 2 restriction removed Table 5 removed and Table 6 is now table 5.

08/09/2023: D01 U-NII 6GHz General Requirements v02r01 replaces 987594 D01 U-NII 6GHz General Requirements v02. Corrected errors in sections 3.3 Indoor Clients (6XD) and 3.4 Dual Client 6CD, table 3, and Table 7 notes–[12] and [13] removed requirements for user manual stating restriction on oil platforms, cars, trains, boats, and aircraft for client devices. Clarified section 3.1. Low-power indoor access points (6ID) and in note [12] that under 47 CFR 15.407(d)(1) indoor access points in the 5.925–7.125 are permitted in large aircraft while flying above 10,000 feet. Appendix B attestation Dual Client 6CD: corrected error under the control of a low-power indoor AP, subordinate or ~~from client~~ to standard AP.

08/22/2023: 987594 D01 U-NII 6GHz General Requirements v02r02 replaces 987594 D01 U-NII 6GHz General Requirements v02r01. v02r02 clarifies the previous change notice of 08/09/2023: change for clarification: "indoor access points in the 5.925–7.125 are permitted in large aircraft while flying above 10,000 feet to "indoor access points in the 5.925-6.425 are permitted in large aircraft while flying above 10,000 feet **".** No other changes were made in the body of the publication.