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## Part 15 Subpart E U-NII 6 GHz General Guidance Bands 5, 6, 7, 8

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### **Notes for publication 987594:**

Phase 1 of this publication provides guidance for certification of devices for [Subpart E—UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE DEVICES](#) in U-NII bands 5-8 (5.925-7.125 GHz) for equipment authorization applications<sup>1</sup> in equipment classes 6ID (low-power indoor access point), 6PP (subordinate device), 6XD (indoor client) and 6CD (dual client). Applications for 6SD (standard access points), 6FX (Standard client), and 6FC (fixed clients) are not accepted at this time.

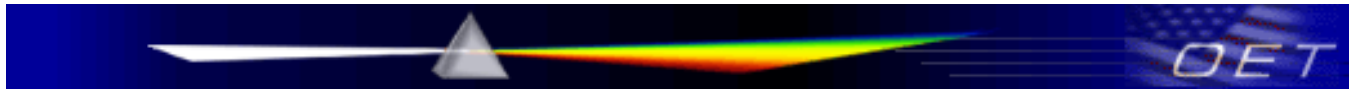
Phase 2 will allow applications for 6SD (standard access points), 6FX (standard client), and 6FC (fixed clients) after the Automated Frequency Coordination (AFC) system is finalized and approved. The FCC will permit any device<sup>2</sup> certified in Phase 1 that also qualifies under Phase 2 to add equipment classes and file applications under the same FCC ID (see section V below). Phase 2 devices are noted \* red.

### **I. Introduction**

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<sup>1</sup> The current Equipment Authorization System requires Form 731 applications for each equipment class. This may be under one FCC ID but requires filing separate Form 731 applications to cover each equipment class.

<sup>2</sup> Dual client devices, when approved under phase 1 are certified to operate under control of both low-power indoor access points and standard access points and do not need to file any application or Class II change when phase 2 applications are permitted.



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 Part 15 Subpart E within the U-NII 6 GHz Bands (U-NII Bands 5-8). This publication assumes that the reader is familiar with Equipment Authorization (EA) procedures and FCC regulations.<sup>3</sup>

CFR Title 47, Part 15, Subpart E—UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE DEVICES<sup>4</sup> and Part 2, Subpart J regulate 6 GHz U-NII radio band operation and the equipment authorization procedures respectively.

**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 <sup>5</sup>
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)				

<sup>3</sup> Equipment Authorizations under the certification procedures require an FCC-recognized Telecommunication Certification Body (TCB) approval. Parties not familiar 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 full understanding of the process and steps necessary to obtain FCC equipment approval.

<sup>4</sup> The 6 GHz rules were effective as of July 27, 2020. See Electronic Code of Federal Regulations (e-CFR) at: <https://www.ecfr.gov/cgi-bin/text-idx?SID=030ead6f70c7478807b86d3c5697ac3c&mc=true&node=sp47.1.15.e&rgn=div6>.

<sup>5</sup> 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, are not in effect, and not addressed in this publication.

There are seven equipment classes<sup>6</sup> that are applicable to a Form-731 for Part 15 Subpart E for 6 GHz U-NII device certifications, as illustrated in Figure 1:

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

\* Applications only accepted in Phase 2.

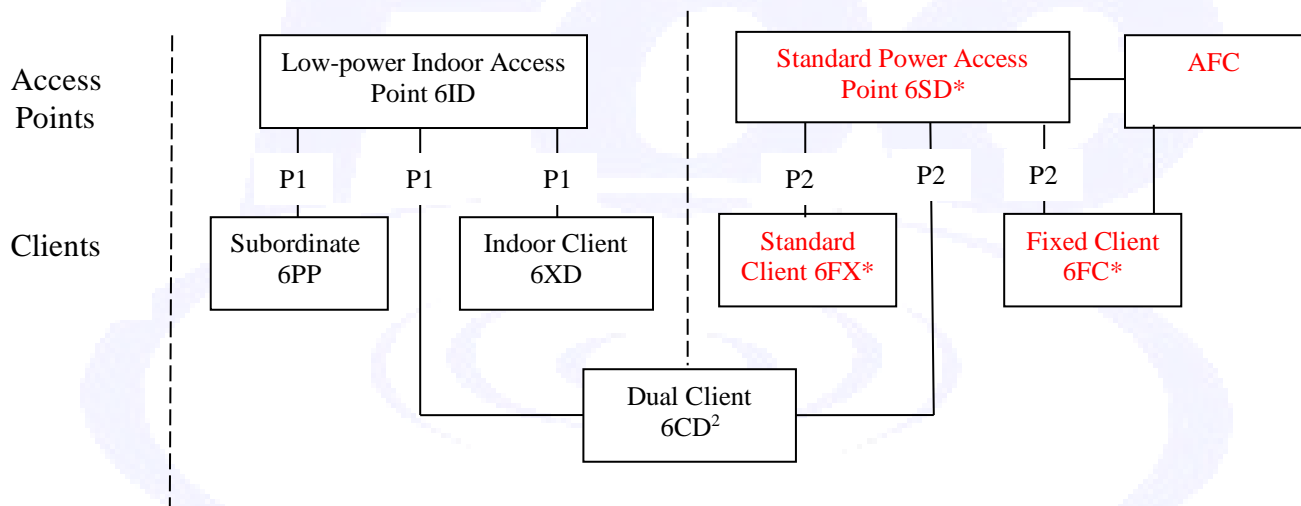


Figure 1 – Part 15 Subpart E Equipment Classes

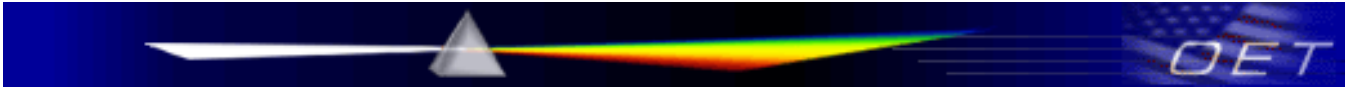
## II. Indoor Devices (6ID, 6PP, 6XD) operating in the 5.925-7.125 GHz band

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 [8<sup>8</sup>].

<sup>6</sup>Multiple equipment classes can apply to one FCC ID. Equipment classes categorize the certification record by the different technical rules that apply. See Section V for discussion on adding equipment classes to already authorized devices when phase 2 becomes available

<sup>7</sup> P1,P2 note the type of Access Point that the client must be associated with.

<sup>8</sup> [N] that is [1],[2]...[15] identifies requirements for a Form-731 Application, exhibits and information – also indicated in sections E and Appendix A.



Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems [5].

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 [15]<sup>9</sup> (see KDB Pub. 789033).

#### **A. 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 [6] to enable clients or subordinates to operate indoors<sup>10</sup> at a power level and power spectral density in accordance with the rules for indoor access points (6ID) and no greater than as granted.<sup>11</sup>

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.

Low-power indoor access points must be powered by a wired connection and not by battery power [7]. Low-power indoor access points may use battery backup only during power outages.

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

FCC ID

Indoor Use only [13]

E-labelling is permitted on devices qualifying for e-labelling.

The device user manual must contain the following information. The user manual must be filed as an exhibit in the application filing [14].

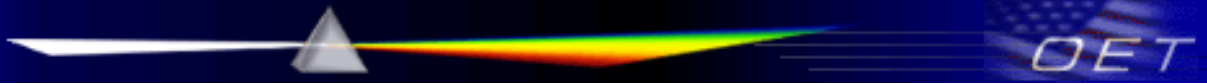
- FCC regulations restrict the operation of this device to indoor use only.
- The operation of this device is prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in large aircraft while flying above 10,000 feet.
- Operation of transmitters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

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<sup>9</sup> 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.

<sup>10</sup> 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.

<sup>11</sup> A client or subordinate shall never operate above the maximum output power allowed by the rule: 24 dBm & -1dBm/MHz when under the control of a low-power indoor access point and 30 dBm & -5dBm/MHz when under the control of a standard power access point.



## **B. 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.

A 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 [2]. These devices are prohibited on oil platforms, cars, trains, boats, and aircraft, except large aircraft while flying above 10,000 feet. Exhibits are required to be filed for both the label information ID Label/Location and in the user manual, demonstrating the following:

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

FCC ID

Indoor Use only [13]

E-labelling is permitted on devices qualifying for e-labelling.

The device user manual must contain the following information. The user manual must be filed as an exhibit in the application filing [14].

- 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.
- 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 [7]. Subordinate devices may use battery backup only during power outages.

Subordinate devices cannot have a direct connection to the internet<sup>12</sup>.

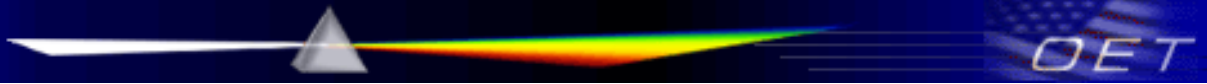
## **C. Indoor Clients (6XD) operating in the 5.925-7.125 GHz band**

An indoor client device, where a client device is defined in Sec. 15.202, is limited to indoor locations<sup>13</sup>[1] and is under control of a low-power indoor access point (6ID) or subordinate(6PP).

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<sup>12</sup> A client/subordinate device cannot provide a direct connection to source the internet from a wired or direct connection to other devices over a 6 GHz air interface.

<sup>13</sup> Indoor client (6XD) devices are limited to indoor locations by 15.407(b)(3), stating that a client under control of an indoor access point or subordinate must be indoors and is limited to a maximum EIRP of 24 dBm power spectral density and must not exceed -1 dBm e.i.r.p. in any 1-megahertz band-15.407(a)(8).



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 and subordinate.

An indoor client device cannot have a direct connection to the internet<sup>12</sup>.

#### **D. Dual Client 6CD**

6CD<sup>14</sup> 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.

Operates in the 5.925-7.125 GHz band when under control of a low power indoor access point.

Operates in the 5.925-6.425 GHz and 6.525-6.875 GHz bands when under control of a standard power access point.

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 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<sup>15</sup>[8].

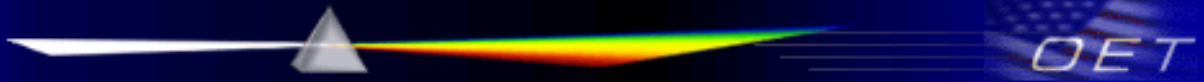
Applications for a dual client device must demonstrate via an attestation (see Appendix B for example) that the device operate under control of a low-power indoor access point, subordinate and standard access point.

A dual client device cannot have a direct connection to the internet<sup>12</sup>.

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<sup>14</sup> A dual client (6CD) differs from a standard client (6FX) and an indoor client (6XD) in that it must demonstrate that it automatically adapts its power when under control of a standard power access point 15.407(a)(7) and limits its maximum power when under the control of a low-power indoor access point-15.407(a)(8).

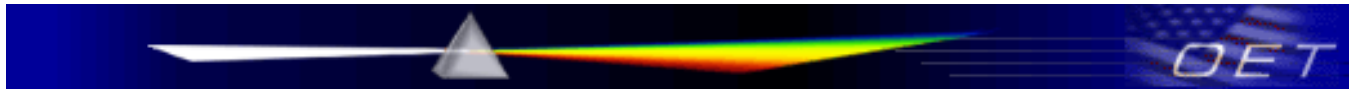
<sup>15</sup> The contention-based protocol is applicable when a dual client is associated with an indoor access point or standard access point. 15.407 (d)(6). Indoor access points, subordinate devices, and client devices operating in the 5.925-7.125 GHz band must also employ a contention-based protocol.



**E. Summary of Application Requirements for indoor and dual client exhibits.**

		6ID	6PP	6XD	6CD	
					Indoor AP	Standard AP
Operation Attestation See Exhibit B						
[1] <sup>8</sup>	Indoor Access Point. wired connection, an integrated antenna, not battery powered, does not have a weatherized enclosure.	X	X			
[2] <sup>8</sup>	Not 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.	X	X			
[3] <sup>8</sup>	No direct connection to the internet.		X	X	X	X
[4] <sup>8</sup>	Restriction in unmanned aircraft.	X	X	X	X	X
[5] <sup>8</sup>	AP & Subordinate method of identification.	X	X			
[6] <sup>8</sup>	Under control of low-power indoor access point.		X	X	X	
[7] <sup>8</sup>	Under control of standard access point.					X
Demonstrate in Test report See D02						
[8] <sup>8</sup>	Contention-based protocol.	X	X	X	X	X
[9] <sup>8</sup>	Fundamental Maximum EIRP (dBm)	30	30	24	24	30 max & 6dB below Std. AP
[10] <sup>8</sup>	Fundamental power spectral density in any 1-megahertz band. (dBm/MHz)	5	5	-1	-1	17 max & 6dB below AP
[11] <sup>8</sup>	Fundamental bandwidth	<= 320 MHz				
[11] <sup>8</sup>	Emissions outside of 6 GHz Band within any 1-megahertz band (EIRP).	-27 dBm				
[12] <sup>8</sup>	Channel Mask	Compliance to DO2 Channel Mask				
Labelling and Descriptions						
[13] <sup>8</sup>	Label Indoor Only Info & restrictions:	X	X			
[14] <sup>8</sup>	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			
[15] <sup>8</sup>	UNII Security	X	X	X	X	X

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



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

Grants of certification for equipment classes (6SD, 6FX, 6FC) will be in Phase 2 when the AFC specifications are finalized. The following information is introductory and is subject to change and further clarification.

The operation of these devices (i.e., 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).

#### A. Standard Power Access Points (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 6 dB lower.

#### B. Standard Client Device (6FX\*)<sup>16</sup>

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

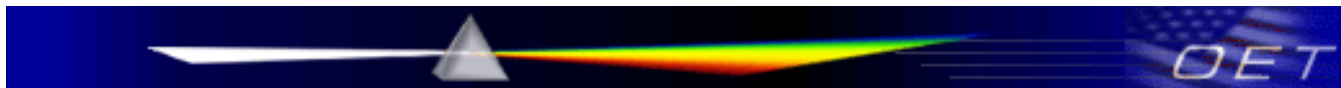
#### C. Fixed Client (6FC\*)

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.

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<sup>16</sup> A standard client device (6FX) differs from a dual client device (6CD) and an indoor client device (6XD) in that it only needs to demonstrate that it auto adapts its power under control from a standard power access point. *See* 15.407(a)(7).





**E. Summary of Application Requirements for (6SD, 6FX, 6FC)**

DO2 EMC Test Report Requirements	Standard Power Access Point	Standard Client	Fixed Client
	Limits dBm <=		
	6SD*	6FX*	6FC*
Fundamental Maximum EIRP	36	30 max & 6dB below AP	36
Fundamental power spectral density in any 1-MHz EIRP	23	17 max & 6dB below AP	23
EIRP above 30-degree antenna elevation angle	21		21
Fundamental bandwidth	<= 320 MHz	<= 320 MHz	<= 320 MHz
Emissions outside of 6 GHz Band within any 1-megahertz band (EIRP) (non-restricted bands)	-27 dBm	-27 dBm	-27 dBm
Channel Mask	Compliance to DO2 Channel Mask	Compliance to DO2 Channel Mask	Compliance to DO2 Channel Mask
Declaration stating under control of standard power access point		X	X

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

**Multiple Rule Parts (Composite devices)**

We expect 6 GHz devices to include transmitters that require Certification under multiple rule sections, rule parts, and equipment classes.<sup>17</sup> These devices are considered composite devices and are required to demonstrate compliance to all rule parts.

For example, if a product that includes a low-power indoor access point (6ID), a subordinate device (6PP) and indoor client or dual client equipment classes has Product Form Factor (PFF) restrictions (i.e., wired power, no batteries, no weatherized enclosure), then the entire product must meet the PFF restrictions.

There are two points to consider for composite devices with 6 GHz U-NII equipment classes:

1. A product can have end users/configuration selections (options).

<sup>17</sup> It is common for today's wireless products to be under multiple rule parts incorporate transmitters and unintentional radiators under part 15B. As a rule, transmitters require certification, and unintentional radiators can use the SDoC or certification procedures. These devices are referred to as a composite and can 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 paragraph (f) of §2.947 Measurement procedure refers to the compliance responsibilities under multiple rules, including both SDoC and Certification.

2. PFF restrictions apply to the entire product, such as those required for low-power indoor access points (6ID) and subordinate devices (6PP).

When the FCC allows Phase II devices to file applications, it will be permitted to add a new equipment class or classes under the same FCC ID to already-approved devices as a new original grant.<sup>18</sup> If the approved device is already a Form 731 composite device, then the TCB can directly submit the new application. If the approved device is not a Form 731 composite device and was granted more than 30 days prior, the TCB will need to submit a KDB inquiry to request the original grant be changed to a Form 731 composite.

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

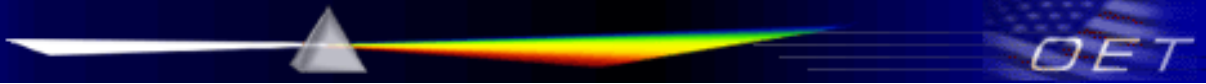
The table below is an example of various options for a composite device under one FCC ID.

Composite		Low-power indoor AP	Subordinate device	Client Indoor Only	Dual Client	Standard AP	Standard Client	Fixed Client
Equipment Class		6ID	6PP	6XD	6CD	6SD*	6FX*	6FC*
Product 1	Indoor with Restrictions	PFF option	PFF option	PFF option				
Product 2	Indoor/outdoor				option	option	option	option
Product 3	Indoor Only With AFC With Restrictions	PFF option	PFF option	PFF option	PFF option	PFF option	PFF option	PFF option
Entire product restricted to PFF;						* Phase 2		

Table 4 Composites

- Product 1: is restricted to indoor properties with selections for being a low-power indoor access point, subordinate device or client device.
- Product 2: is not limited to indoor properties but limited to the requirement that it be managed by the AFC or controlled by a standard power access point managed by the AFC.
- Product 3: is limited to indoor properties and can be selected to operate under all equipment classes.

<sup>18</sup> This procedure is not a Class II permissive change under section 2.1043 and will allow grants at higher power than what was filed in phase 1.



VI. 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.

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 <sup>19</sup>	Yes	Yes	Yes	Yes	Yes
Phase 1	X		X				
Phase 2	X		X	X	X	X	X

**Table 5 Modules**

**\*Equipment classes (6SD, 6CD, 6FX, 6FC) to be addressed in Phase 2.**

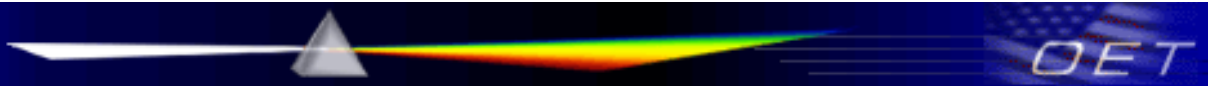
No host controls, configuration settings (selections, scripts interface protocol) can be used in setting, configuring, or adjusting the air interface RF emission parameters to meet the grant conditions. The module must demonstrate in the filing that the full compliance as a stand-alone module independent 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<sup>20</sup> 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.

<sup>19</sup> A subordinate device may not be certified as a module (15.403).

<sup>20</sup> Depending proposed method for shared host responsibility, a filing may require a C2PC for each specific host or host type.



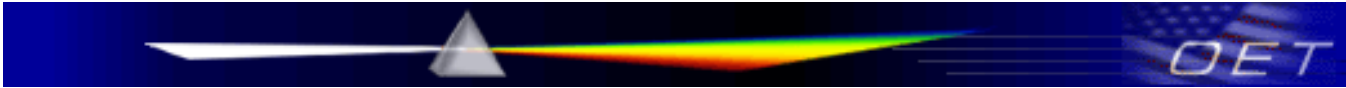
VII. General Summary Table 6

Type	Eq Class		U-NII Bands				Contention Based Protocol	Under control of	Antenna Restriction	Max EIRP (dBm)	APC 6 dB Below AP	Module	Restrictions
			5	6	7	8							
Low-power indoor access point	6ID	Indoor	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
Indoor Client	6XD		X	X	X	X	X	Indoor AP 6ID By Attestation	15.203	24	NA	X	a e g i
Dual Client	6CD		X	X	X	X	X	Indoor AP 6ID By Attestation	15.203	24	NA	X	a e g i
			X		X		NA	Standard AP 6SD By Attestation					30
Standard power Access Point	6SD *		X		X		NA	AFC	15.203	36	NA	X	a b
Standard Client	6FX *		X		X		NA	Standard AP 6SD	15.203	30	Yes	X	a e h
Fixed Client	6FC *	X		X		NA	Standard AP 6SD/AF C	15.203	36	NA	X	a b e f h	

Restrictions

- 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 for 6ID, 6PP, 6XD, 6CD

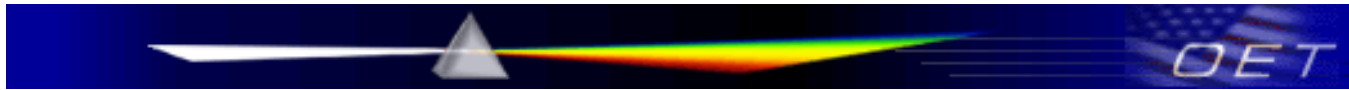
\* Phase 2 devices.



#### IV. 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.





## Appendix A Exhibits Reference Guide

The table “Exhibits Reference Guide” below provides a Reference Guide for uploading exhibits for U-NII 6 GHz applications. The “Y” Indicates exhibits that are required, and the notes number<sup>21</sup> [N] indicates specific type of compliance information related to the U-NII 6 GHz applications. A blank space indicates exhibits not related to U-NII 6 GHz applications but may be uploaded and required for other reasons.

The \* character indicates an equipment class for Phase 2 that requires managed connections to the Automatic Frequency Coordination (AFC) system or a client specifically under the control of an AFC (applications are not accepted at this time).

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

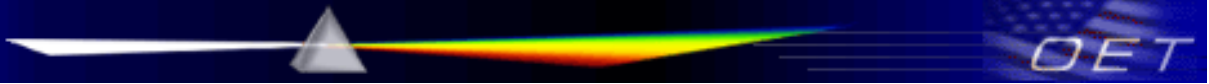
The frequency range for Form 731 and listed on the grant shall be the contiguous frequency span of operation as authorized for that equipment class from the channel center frequency of the lowest-frequency channel to the channel center frequency highest-frequency channel. 99% of the occupied bandwidth must be contained within all the U-NII sub-bands authorized for that equipment class.

Table Exhibits Reference Guide

Exhibit Type	Application Type	LPI AP	Subordinate device	LPI Client	Dual Client	Std pwr AP	Std pwr Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD*	6FX*	6FC*
ID Label/Location	Original Equipment	Y[13]	Y[13]	Y[13]	Y[13]			
	Change in ID	Y[13]	Y[13]	Y[13]	Y[13]			
	Class II PC							
	Class III PC							

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD*	6FX*	6FC*
Attestation	Original Equipment	Y [1][2][3][4] [5][6][7]	Y [1][2][3][4][ 5][6][7]	Y [1][2][ 3][4][ 5][6] [7]	Y [1][2][ 3][4][ 5][6] [7]			
	Change in ID							

<sup>21</sup> The “Y[N]” denotes information associated with this guidance. “Y” without a number indicate exhibits generally required but are not the subject of this publication. A blank space indicates an exhibit may or may not be required for other reasons, not the subject of this publication. For example, portable devices requiring RF exposure evaluation and or testing of handsets requiring Hearing Aid Compatibility are not the subject of this publication, but exhibits are required.



	Class II PC							
	Class III PC							

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

Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD*	6FX*	6FC*
Block Diagram	Original Equipment	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	Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD*	6FX*	6FC*
Schematics	Original Equipment	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	Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD*	6FX*	6FC*
Test Reports	Original Equipment	Y[8][9] [10][11] [12]	Y[8][9] [10][11] [12]	Y[8][9] [10][11] [12]	Y[8][9] [10] [11] [12]			
	Change in ID							
	Class II PC							
	Class III PC	Y	Y	Y	Y			

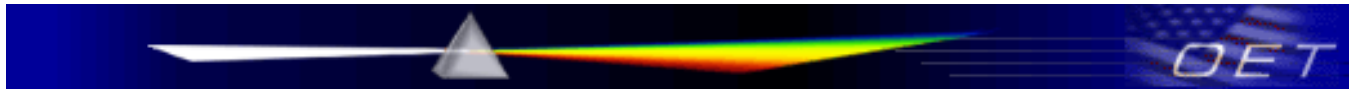


Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD*	6FX*	6FC*
Test Set UP Photos	Original Equipment	Y	Y	Y				
	Change in ID							
	Class II PC							
	Class III PC							

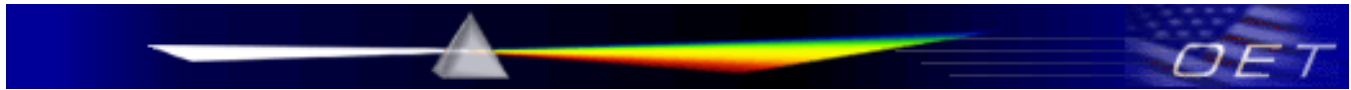
Exhibit Type	Application Type	LPI AP	Subordinate	Client indoor	Dual Client	Std AP	Client	Fixed Client
		6ID	6PP	6XD	6CD	6SD*	6FX*	6FC*
Internal Photos	Original Equipment	Y	Y	Y	Y			
	Change in ID							
	Class II PC							
	Class III PC							

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





	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*
Operational Description	Original Equipment	Y	Y	Y	Y			
	Change in ID							
	Class II PC							
	Class III PC	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*
Cover Letter	Original Equipment							
	Change in ID	Y	Y	Y	Y			
	Class II PC	Y	Y	Y	Y			
	Class III PC	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	Y[15]	Y[15]	Y[15]	Y[15]			
	Change in ID	Y[15]	Y[15]	Y[15]	Y[15]			
	Class II PC							
	Class III PC	Y	Y	Y	Y			

[1] Indoor Access Point. wired connection, an integrated antenna, not battery powered, does not have a weatherized enclosure or modules applications this requirement is extended to Host Integrator through integration instructions.

[2] Not 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. For modules this requirement is extended to Host Integrator through integration instructions.

[3] No direct connection to the internet. For modules the requirement is extended to Host Integrator through integration instructions.

[4] Restriction in unmanned aircraft for modules extended to Host Integrator through integration instructions.

[5] AP & Subordinate method of identification.

[6] Under control of low-power indoor access point.

[7] Under control of standard access point.

[8] Contention-based protocol.

[9] Fundamental Maximum EIRP (dBm).

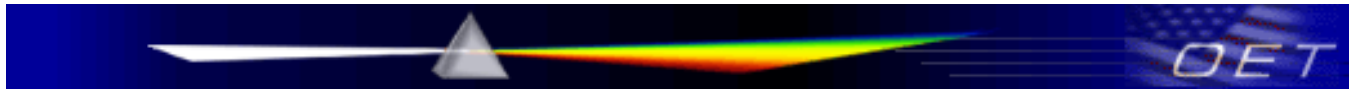
[10] Fundamental power spectral density in any 1-megahertz band. (dBm/MHz).

[11] Fundamental bandwidth

Emissions outside of 6 GHz Band any 1-megahertz band (EIRP).

[12] Channel Mask.

[13] Label Indoor Only Info & restrictions.



[14] 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.  
[15] UNII Security

## 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:

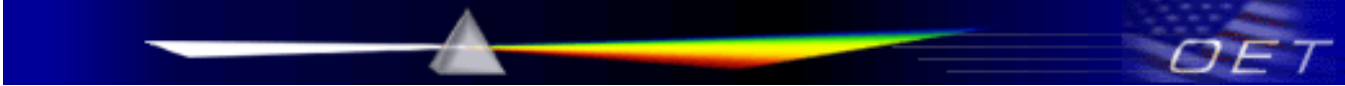
- Device protocol attestation and contention-based protocol apply to functions permanently embedded in the module and cannot be host-dependent. Otherwise, the module must be restricted and filed as a Software Defined Radio or with joint responsibility agreements.
- Device Restriction statements: We, 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. 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.
  - 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.

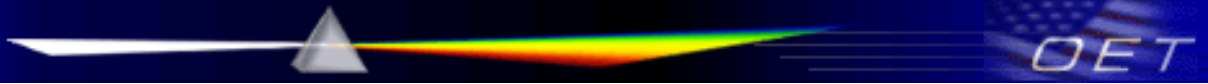
- 
- d. Statement that transmissions will be lower or equal to the power advertised by the indoor low-power access point or subordinate and never above the maximum output power allowed by the FCC grant for equipment class 6XD.
  - e. Statement for modules only: Contention-based protocol as demonstrated 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. Statement describing the method the subordinate uses to inform the associated client/subordinate of its permitted maximum power.
  - b. 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.
  - c. Statement that this device will always initiate transmission under the control of a low-power indoor AP or subordinate or standard client except access point 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.
- d. 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:
    - i. lower than 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.
  - 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 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 Points(6SD\*)**

To be provided in Phase 2

**Standard Client Device (6FX\*)**

To be provided in Phase 2

**Fixed Client (6FC\*)**

To be provided in Phase 2

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.