Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of Parts 0, 1, 2, 15 and 18 of the Commission's Rules regarding Authorization of Radiofrequency Equipment	)	ET Docket No. 15-170
	)	
Request for the Allowance of Optional Electronic Labeling for Wireless Devices	)	RM-11673

COMMENTS OF WI-FI ALLIANCE

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SUMMARY

When the Commission last comprehensively reviewed its radiofrequency ("RF") equipment authorization procedures over fifteen years ago, the world was vastly different. There were no iPhones or Android smartphones, and of those Americans who regularly accessed the Internet, only a small percentage did so using broadband Internet services. Today, devices using RF technologies are ubiquitous. Wi-Fi Alliance therefore applauds the Commission's efforts to update and modernize the rules for authorizing those devices.

First, Wi-Fi Alliance supports the Commission's efforts to streamline regulations in this proceeding, but urges the Commission to retain its online Knowledge Database ("KDB") guidance. FCC rules and KDB publications each play an important role in the equipment authorization process; the rules should remain "high level" where possible, and KDBs should fill in the details.

Second, Wi-Fi Alliance supports the Commission's proposed self-approval procedure, which will reduce confusion and help streamline device approval.

Third, the modular transmitter requirements should reflect current views of technology. The rule for modular transmitter approval should be moved from Part 15 to Part 2 of the FCC's rules as the Commission proposes; there is no reason to treat unlicensed devices differently from other RF devices. The Commission should also replace the requirements for "full" certification of a modular transmitter with more generic requirements, to improve flexibility and allow detailed requirements to be covered through the KDB process. Wi-Fi Alliance also supports the approval of limited modular transmitters – modules that do not fully meet the modular transmitter requirements, or are not tested as standalone modular transmitters.

Fourth, Wi-Fi Alliance generally supports the Commission's proposal for a new standard – promoting greater flexibility – for permissive changes to certified equipment. Under this approach, a "family of products," consisting of devices that are not strictly "electrically identical" but share fundamental characteristics, could exist under a single FCC ID. Responsibility for any changes to certified equipment need not necessarily rest with a certification's grantee, as specified by the current rules, but could be contractually based.

Fifth, Wi-Fi Alliance supports permitting electronic labeling for devices too small to be legibly labeled with an FCC ID; streamlining and simplifying the importation of RF devices, including by retiring Form 740; allowing greater flexibility for storing imported devices not yet authorized by the Commission; and increasing the limit on importing devices for demonstration purposes at a trade show or for personal use. The current importation rules did not contemplate a world in which it is unsurprising for an average American to carry multiple RF devices.

Finally, Wi-Fi Alliance continues to support industry-developed test standards, which generally represent a consensus approach incorporating the latest and most expert technical thinking. But the Commission should retain rules specifying frequency ranges to be tested, instead of only referencing particular standards.

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COMMENTS OF WI-FI ALLIANCE

Wi-Fi Alliance submits these comments in response to the Notice of Proposed Rulemaking ("NPRM") in which the Commission proposes to amend its rules governing the radiofrequency ("RF") equipment authorization process.[1/] Wi-Fi Alliance applauds and supports the Commission's continued efforts to update and streamline that process to reflect current technology. As the Commission considers changes to its rules, Wi-Fi Alliance recommends that (i) the Commission retain and continue to use its online Knowledge Database ("KDB"); (ii) the Commission adopt the proposed unification of self-approval procedures; (iii) modular transmitter approval requirements reflect the current state of technology; (iv) the Commission streamline the authorization process by adopting the proposed certified equipment rules; (v) the Commission adopt its electronic labeling and importation rule proposals; and (vi) the Commission adopt industry-developed measurement standards.

1/ *See Amendment of Parts 0, 1, 2, 15 and 18 of the Commission's Rules Regarding Authorization of Radiofrequency Equipment; Request for the Allowance of Optional Electronic Labeling for Wireless Devices*, Notice of Proposed Rulemaking, ET Docket No. 15-170 and RM-11673, FCC 15-92 (rel. July 21, 2015) ("NPRM").

I. BACKGROUND AND INTRODUCTION

Wi-Fi Alliance is a global, non-profit industry association of more than 600 leading companies from dozens of countries, including 213 from the United States, who are devoted to a vision of "Connecting everyone and everything, everywhere." With technology development, market building, and regulatory programs, Wi-Fi Alliance has enabled widespread adoption of Wi-Fi worldwide, certifying thousands of Wi-Fi products each year. The Wi-Fi Alliance mission is to provide a highly effective collaboration forum for stakeholders, deliver excellent connectivity experiences through interoperability, embrace technology innovation, promote the adoption of our technologies worldwide, advocate for fair worldwide spectrum rules, and to lead, develop, and embrace industry-agreed standards.

As the NPRM notes, the Commission last comprehensively reviewed its equipment authorization procedures more than fifteen years ago,[2/] in a vastly different world from today's ubiquitous smartphones, tablets, and the various "smart" devices comprising the Internet of Things. Wi-Fi Alliance membership includes many manufacturers that will be directly affected by the proposed new regulations designed to update and streamline the equipment approval process. Wi-Fi Alliance therefore has a strong interest in this proceeding, generally supports the Commission's proposals for modernizing its certification rules and is pleased to have this opportunity to submit the following comments.

II. KDB PUBLICATIONS SHOULD CONTINUE TO HAVE AN IMPORTANT ROLE

The FCC's online KDB guidance has been part of the "core" of the equipment authorization process.[3/] As the Commission explained, a "substantial body of supplemental

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2/ *See* NPRM ¶ 2.

3/ *See id.* ¶ 12.

guidance" is available in the KDB, which provides particular guidance for new, authorized services and devices that the Commission's rules do not specifically contemplate.[4/] Nevertheless, the Commission proposes to codify or replace a variety of guidelines that are today set forth in KDB publications with rules.[5/]

While Wi-Fi Alliance supports the Commission's efforts to streamline regulations, it should retain KDB guidance. KDB guidance can mature into rules – as the Commission has proposed in this proceeding – and rules and KDBs each play an important role in the equipment authorization process. For example, KDBs can allow equipment authorization rules to be "high level" where appropriate, with details filled in through the KDB process. KDB publications can provide details that rules may not be able to anticipate and can be easily updated outside the rulemaking process, while still maintaining the rule-based framework.

KDB publications are also important because they allow for Commission staff to provide guidance on issues for which rules may not be appropriate. *First*, KDB publications have provided guidance on specific test or configuration requirements that themselves will not be covered by rules but which are necessary for staff to implement rules, and allow manufacturers and test labs to develop and test products using those guidelines. *Second*, KDBs are particularly useful in cases where test standards are still being drafted, like RF exposure and electronic labeling, but for which the manufacturers require guidance in order to secure product approvals. Without the KDB process, manufacturers would be unable to develop and certify products such as 802.11ac, Voice-over-LTE ("VoLTE"), and other new technologies. Introduction of those and other new technologies may be in the public interest and

4/ *See id.*

5/ *See, e.g., id.* ¶¶ 40, 63.

should be supported through KDB guidance that will facilitate manufacturers' securing equipment approval.

III. THE PROPOSED UNIFICATION OF SELF-APPROVAL PROCEDURES IS IN THE PUBLIC INTEREST

The Commission proposes a new self-approval procedure, combining elements of the Declaration of Conformity and Verification processes that "would simplify the equipment authorization requirements and reduce confusion as to which process may apply to any given device."[6/] Wi-Fi Alliance supports this deregulatory approach. Replacing the current Verification and Declaration of Conformity processes with a single Supplier Declaration of Conformity will streamline approval for devices currently subject to those procedures. A simpler, easier-to-understand process will benefit manufacturers, bring products to the market more quickly, and, ultimately, benefit the public. However, the Commission should ensure that any new self-approval procedures apply only to new equipment; existing equipment should be grandfathered without subjecting those products to the new procedure.

IV. MODULAR TRANSMITTER REQUIREMENTS SHOULD REFLECT CURRENT VIEWS OF TECHNOLOGY

The Commission proposes moving the rule governing modular transmitter certification from Part 15, which only applies to unlicensed devices, to Part 2, which broadly applies to all FCC-regulated RF devices.[7/] Currently, under Section 15.212 of the rules, devices may obtain single modular transmitter approval by meeting eight requirements (*e.g.*, the radio elements of the transmitter must have their own shielding, must have buffered modulation/data inputs, etc.).[8/] The Commission proposes to retain the process under which a modular transmitter may be

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6/ *See id.* ¶ 25.

7/ *Id.* ¶ 39. *See* 47 C.F.R. § 15.212.

8/ 47 C.F.R. § 15.212.

granted a "limited modular approval" if the transmitter does not comply with all of these eight requirements.[9/] Anticipating the development of physical platforms (*i.e.*, form factors) into which modular transmitter components can be inserted, the Commission further proposes that an applicant for certification provide a reference specification that would guarantee that a module can operate on the form factor.[10/]

Wi-Fi Alliance supports the proposal to move the rule for modular transmitter approval from Part 15 to Part 2. As the Commission notes, Part 2 covers all RF devices regulated by the Commission, and there is no reason to treat unlicensed devices separately. Wi-Fi Alliance also agrees that it is important for the Commission to develop rules governing modular transmitters, particularly with the rapid development of Internet of Things devices, which will house RF transmitters. Devices may no longer be principally used to house RF transmitters, and RF transmitters will not come in only a single form factor. Transmitters using Wi-Fi technology are a good example of both concepts.

The Commission's proposal to continue to allow limited modular approval is unnecessarily premised on its retention of the eight-part test for "full" modular transmitter approval. Instead of perpetuating the current regime, the Commission should evolve and amend the modular transmitter certification rules to better reflect current technology and to anticipate and invite further enhancements in radio design. Specifically, Wi-Fi Alliance recommends that Section 15.212's eight existing requirements for modular transmitter approval be replaced with the following five more generic requirements so as to improve flexibility, thus allowing more detailed requirements to be covered through the KDB process over time:

9/ NPRM ¶ 40. *See* 47 C.F.R. § 15.212.

10/ *See* NPRM ¶ 42.

1. Manufacturers developing radio modules must use good engineering practices, and the module must be capable of meeting all regulatory requirements applicable to the modules themselves and to devices in which they are installed.
2. The manufacturer must provide all necessary information regarding how a module is intended to be installed and operated in a host device.
3. Radio modules should be tested to the recommended requirements for radio modules in ANSI C63.10 and ANSI C63.26. This includes the use of testing the module outside a host device using control cables with a minimum length of 10 centimeters or longer, to reduce the effect of shielding or interaction from the host device.
4. Radio modules should also be (i) properly shielded as necessary to prevent or reduce out-of-band emissions ("OOBE") when testing in standalone mode; and (ii) capable of meeting the RF exposure requirements of their intended market.
5. Additionally, for Part 15 radio modules, (i) the device must meet the antenna requirements specified in Sections 15.203 and 15.205 governing antenna design and spurious emissions, and use of an antenna etched on the board must meet the intent of Section 15.203 (*i.e.*, "that no antenna other than that furnished by the responsible party shall be used with the device"); and (ii) information on the minimum antenna gain needed to comply with the radar detection level for devices operating in the bands where detection is required must be included.

These more generic requirements would facilitate the development of minor technology enhancements that could otherwise be unintentionally impeded under technical rules which may not take into account such changes to the technology.

Even if the Commission modifies the requirements for modular transmitter approval as suggested above, Wi-Fi Alliance supports a separate process for approving limited modular transmitters using the current definition – *i.e.*, a module not fully meeting the modular transmitter requirements, or not tested as a standalone modular transmitter. If a manufacturer chooses to classify its module as a limited modular transmitter with respect to the hosts that can use it, or confines the use to its own internal products, that device can be classified as a limited modular transmitter. A manufacturer must provide the installer or original equipment manufacturer ("OEM") information on the additional testing, if any, that must be performed to incorporate the module. Finally, reference specifications for modular transmitters, as the Commission proposes, are helpful, but must be treated as limited modular transmitters requiring additional testing to ensure compliance. The rules should provide basic guidelines, and KDB publications should provide further details regarding approval of these devices. This would allow equipment modifications as modular transmitter technology matures and updates to the compliance requirements become necessary.

Finally, the Commission should retain, and not eliminate, the rules for split modules, which will provide manufacturers potential additional flexibility. Those rules should be moved to Part 2 as well. Wi-Fi Alliance also recommends that the requirement be expanded to allow for a digital connection between the radio front end and the transmitter control elements, which could expand industry use of split modules.

V. THE PROPOSED CERTIFIED EQUIPMENT RULES WILL STREAMLINE THE AUTHORIZATION PROCESS

The Commission proposes to revise filing requirements for applications that propose changes to certified equipment to better "reflect the way in which RF devices are designed,

manufactured, and marketed."[11/] Currently, Section 2.1043 of the rules permits a grantee to market devices with different model/type numbers or trade names without additional FCC authorization, as long as the devices are "electrically identical" and the equipment bears a valid FCC ID. The Commission proposes to replace this "electrically identical" benchmark for changes to a certified device with "a new standard that considers how the device differs from what was evaluated at the time of equipment certification and whether those differences could affect how the modified device complies with [the] rules."[12/]

Section 2.1043 categorizes three classes of these permissive changes to certified equipment.[13/] Class I changes are characterized by modifications that do not degrade the characteristics reported by the manufacturer upon which initial certification was granted. The Commission proposes to continue permitting Class I changes for those changes that do not degrade the device parameters normally reported in an equipment authorization application to demonstrate compliance with FCC rules. This standard would permit a decrease in fundamental emissions that does not increase spurious emissions, improved spurious emission performance, minor variations in the enclosure or components, and software changes that do not affect RF parameters.[14/] Class II changes are modifications that degrade performance characteristics as reported in the initial certification application. In the future, the Commission proposes to permit as Class II changes those that would increase fundamental emissions or degrade spurious emissions or other parameters reported to the Commission from what was evaluated at the time of certification, as long as rules compliance is maintained and overall layout and certain major

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11/ *Id.* ¶ 47.

12/ *Id.* ¶ 51.

13/ *See id.* ¶ 48; 47 C.F.R. § 2.1043(b).

14/ *See* NPRM ¶ 53.

characteristics (*e.g.*, the device's function) have not changed.[15/] Finally, Class III changes are software changes to software-defined radio ("SDR") grants of certification.[16/] The Commission proposes removing the SDR designation from grants of certification and incorporating software control-related requirements in its general certification rules, which would make the Class III category unnecessary.[17/]

Wi-Fi Alliance supports the overall proposed changes to permissive changes because they would permit greater flexibility, especially as devices become more likely to use multiple spectrum bands. Wi-Fi Alliance agrees that elimination of SDR certification would moot Class III changes (*i.e.*, software changes to SDR grants of certification) and that such changes can be collapsed into Class II. The Commission should also permit the addition of antennas of different family types (*i.e.*, antennas without any key characteristics changed) to Part 15 devices as a Class I change, as long as the manufacturer provides updated information to the device user and to the Commission. The Commission already allows testing, including for OOBE, to be conducted using a "dummy load," and often various antennas are not actually used for radiated testing for final certification (except for the antenna to be used with the Part 15 unintentional transmitter test for electromagnetic compatibility ("EMC")).

However, the Commission should not permit a Class I change for an antenna for a Part 15 radio if the radio operates in the frequency bands that require the use of dynamic frequency selection ("DFS") and the antenna gain is lower than the minimum antenna gain needed to comply with the DFS detection requirements. That antenna change should instead be considered

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15/ *See id.* ¶ 54.

16/ *Id.* ¶ 48.

17/ *See id.* ¶¶ 44-45, 48.

Class II. Categorization as a Class I change should also not be permitted if the antenna gain is higher than previously approved in the relevant application.

The Commission explains that under its proposed approach, a "family of products" could exist under a single FCC ID.[18/] Wi-Fi Alliance supports recognizing this "family of products" concept. Devices that are not "strictly electrically identical but have fundamental functional similarities" should not require multiple IDs, and should instead be considered variations of the same device. KDB publications should provide guidance similar to Industry Canada's guidance for family approvals.[19/]

Finally, the Commission asks for comment on where responsibility should lie for certified equipment in a number of cases (*e.g.*, when a third party modifies certified equipment).[20/] The current rules designate a certification's grantee as the responsible party for the certified equipment's compliance. The Commission should not specify the parties who will be responsible; instead, responsibility should be contractually based. In other words, the Commission should permit manufacturers to allow end users to make changes to certified devices, but manufacturers can provide notice that the end user or buyer of the product is responsible for any changes to the device that may affect the device's compliance with FCC rules. In any case, whenever changes are made to a certified device, whoever the responsible party is should report any changes made to a certified device, the corresponding FCC ID, and the party's contact information to the FCC. The FCC should make this information publicly

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18/ *Id.* ¶ 55.

19/ *See* RSP-100 – Certification of Radio Apparatus, Issue 10, Industry Canada, at 6-7 (rel. Nov. 13, 2014), *available at* http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01130.html.

20/ *See* NPRM ¶¶ 58-74.

available, and hold the party reporting this information accountable in the event any enforcement action related to the change is required.

VI. THE COMMISSION SHOULD ADOPT ITS ELECTRONIC LABELING AND IMPORTATION RULE PROPOSALS

The Commission proposes to amend its rules to comply with the Enhance Labeling, Accessing, and Branding of Electronic Licenses Act ("E-LABEL Act"), and to address devices that are too small to be legibly labeled with an FCC ID.[21/] Wi-Fi Alliance supports codifying the electronic labeling process as proposed in the NPRM. The Commission also proposes to modify its rules governing importation of RF devices and, in particular, remove the Form 740 filing requirements.[22/] Wi-Fi Alliance supports retiring Form 740 to simplify the importation process in light of changes to the customs process, as the NPRM notes. Detailed information regarding equipment to be sold can typically be found online, and much of the information required by Form 740 is currently collected by U.S. Customs and Border Protection ("CBP"). Additionally, the Commission adopted the Form 740 in the 1970s, in a time before mass importation of RF devices and before Wi-Fi or Bluetooth existed. At that time, the Commission explains, "fewer than 100 forms per month were submitted," whereas now there are about 2 million such records annually.[23/] Wi-Fi Alliance agrees that the burdens of Form 740 compliance are no longer justified.[24/]

The Commission should go further by not requiring importers to produce information regarding imported devices. The Commission's proposed rules regarding importation of RF devices into the United States removes the Form 740 filing requirement but retains the

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21/ *Id.* ¶ 93.

22/ *See id.* ¶¶ 117-121; 47 C.F.R. §§ 2.1203(b), 2.1205.

23/ *See* NPRM ¶ 118.

24/ *See id.* ¶ 119.

requirement that an importer or ultimate cosignee, or their designated customs broker, "must provide, upon request made within one year of the date of entry, documentation on how an imported radio frequency device was determined to be in compliance with Commission requirements."[25/] CBP rules impose less burdensome requirements for items of low value,[26/] but the Commission has thus far applied equally burdensome requirements to devices regardless of value.[27/] To the extent that the Commission must continue collecting information from importers, in order to reduce the burden on importers, the Commission should, as it suggests,[28/] permit importers to maintain their own records and generate documents on a semi-annual basis, or by request.

The Commission also currently permits importation of unauthorized devices awaiting certification as long as they are stored in a Customs-bonded warehouse.[29/] The Commission should retain this option and additionally give importers the option to store such devices in their own corporate facilities – providing cost savings ultimately passed onto the consumer. As a further option, the Commission should grant provisional certifications for otherwise unauthorized devices, and allow such devices to be imported prior to a issuing a standard grant of certification.[30/] These provisional certifications would allow manufacturers to sell devices to

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25/ *See* 47 C.F.R. § 2.1203(d); NPRM Appendix A § 2.1203(c).

26/ *See* 19 C.F.R. § 143.23(j) (providing limited requirements for merchandise not exceeding $200 in value and qualifying for "informal entry").

27/ *See* 47 C.F.R. § 2.1203 (stating broadly that "[n]o radio frequency device may be imported into the Customs territory of the United States unless . . . the device meets one of the conditions for entry set out in this section").

28/ *See* NPRM Appendix A § 2.1203(c) (An importer or ultimate cosignee, or their designated customs broker, "must provide, upon request made within one year of the date of entry, documentation on how an imported radio frequency device was determined to be in compliance with Commission requirements.").

29/ *See id.* ¶ 122.

30/ *See id.* ¶¶ 92, 122.

OEMs and Original Design Manufacturers ("ODMs") without marketing devices to consumers until the FCC issues a full authorization. As with permitting storage of uncertified devices in Customs-bonded warehouses, permitting such provisional certifications would bring RF devices to market more quickly, ensuring that American consumers have access to cutting edge technologies.

Like imported certified devices, the Commission should permit the full array of labeling options for provisionally certified devices, including existing options and the proposed electronic labeling alternative. A consistent labeling approach would further facilitate bringing certified devices to end users more quickly, particularly if a provisional certification is "used for legal importation and distribution through the supply chain of devices prior to sale."[31/]

The Commission additionally proposes increasing the limit on importing devices for demonstration purposes at a trade show from 200 to 400 for devices used in licensed services and from 10 to 400 for other products. [32/] While Wi-Fi Alliance agrees that the Commission should permit additional devices to be imported for trade show demonstrations, the Commission should not impose a limit on the two categories (*i.e.* devices used in licensed services and devices for other products). The Commission should instead permit the importation of up to 800 devices for demonstration at a trade show in total. This change would be administratively simpler for both the Commission and importers.

Likewise, the Commission should increase the limit on personal-use devices from three devices to ten devices for both licensed and unlicensed uses.[33/] More than ever, RF components are an integral part of devices that ordinary Americans use every day, from watches to

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31/ *See id.* ¶ 92.

32/ *See id.* ¶ 123.

33/ *See id.* ¶ 125.

thermostats. Continuing to limit personal-use importation to three devices is therefore increasingly constraining. The Commission should further recognize and clarify that individuals may hand-carry such devices into the country for their personal use in the course of business – within the personal-use importation limit – as long as the device is not intended for transfer or sale.

VII. THE COMMISSION SHOULD ADOPT INDUSTRY-DEVELOPED MEASUREMENT STANDARDS

The Commission proposes a number of changes to its rules governing measurement procedures, including by codifying references to industry standards, rather than specifying frequency ranges.[34/] Consistent with past advocacy, Wi-Fi Alliance continues to support the Commission's adoption of industry-developed test standards.[35/] As Wi-Fi Alliance noted in the RF exposure limits proceeding, appropriately developed standards generally represent a consensus approach and wide industry input. They are generally realistic and represent the latest and most expert technical thinking.[36/] Further, congressional and executive branch policies favor reliance on standards developed through voluntary, consensus-building organizations.[37/] Wi-Fi Alliance also agrees that changes are needed for Sections 15.31 through 15.35. However, the Commission should retain rules specifying frequency ranges to be tested, instead of referencing the frequency range in ANSI C63.10-2013. A lab testing to an alternate procedure or even a KDB publication may not have access to the information in ANSI C63.10-2013.

34/ *See id.* ¶¶ 107-112.

35/ *See* Comments of Wi-Fi Alliance, ET Docket No. 13-84 and ET Docket No. 03-137, at 7 (filed Sept. 3, 2013) ("[T]he FCC should adopt measurement techniques that are developed by international standards groups and harmonized among industries.").

36/ *See id.* at 4-6 (noting that the latest standards reflect current science and technology, as well as the latest evidence).

37/ *See* Reply Comments of Wi-Fi Alliance, ET Docket No. 13-84 and ET Docket No. 03-137, at 7 (filed Nov. 18, 2013).

Specifying the frequency range in the rule ensures that there will be no ambiguity. A future revision of ANSI C63.10 could also remove the frequency range section – making incorporation of the frequency range in the rules important.

Wi-Fi Alliance supports adopting ANSI C63.26, developed alongside ANSI C63.10, as a standard for measurement procedure for transmitters operating in the licensed services. However, ANSI C63.26 does not cover all licensed transmitters, such as LMS, fixed services, satellite systems, TV Broadcast, and others. Thus, the Commission should not adopt a blanket change to Part 2 test procedures or remove other test standards such as TIA/EIA 603 or TSB-10. The Commission should follow the recommendation of ANSI C63 with respect to whether Section 2.1053 should provide for the direct measurement method, as described in ANSI C63.10-2013, as an alternative to the use of the substitution test method, as described in TIA-603-D and TIA-102.CAAA-D.[38/]

[38/] *See* NPRM ¶ 111 n.202.

VIII. CONCLUSION

Wi-Fi Alliance supports the Commission's continued efforts to modernize its RF equipment authorization rules. As the RF equipment ecosystem continues to expand and evolve, it is critical that the Commission likewise adapt its rules to both today's and developing RF equipment technologies.

Respectfully submitted,

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