Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of Office of Engineering and Technology Announces Technological Advisory Council ("TAC") Technical Inquiry into Reforming Technical Regulations	))))	ET Docket No. 17-215

COMMENTS OF THE
TELECOMMUNICATIONS INDUSTRY ASSOCIATION

The Telecommunications Industry Association ("TIA") hereby submits its comments in response to the Commission's Public Notice ("PN") in the above docket.[1] As both the leading trade association for the information and communications technology ("ICT") industry and an ANSI-accredited standards development organization ("SDO"),[2] TIA is uniquely positioned to address the questions posed by the TAC.

TIA appreciates the Commission's focus and attention to the issues in the PN, particularly the identification of certain outdated regulations that burden our member companies. Additionally, we believe that open, industry-driven standards processes provide a more agile and adaptive method for building consensus on technical matters and fostering the innovation economy and worldwide technological leadership the U.S. has enjoyed for decades.

I. MODIFYING EXISTING REGULATIONS

[1] TIA represents companies that manufacture or supply the products and services used in global communications across all technology platforms. TIA represents its members on policy issues affecting the ICT industry and forgets consensus on industry standards. *See* www.tiaonline.org

[2] ANSI facilitates the development of American National Standards (ANS) by accrediting the procedures of standards developing organizations (SDOs). These groups work cooperatively to develop voluntary national consensus standards. Accreditation by ANSI signifies that the procedures used by the standards body in connection with the development of American National Standards meet the Institute's essential requirements for openness, balance, consensus and due process. *See* www.ansi.org

The Commission requests comment on "[r]egulations that should be modified because technical reporting requirements are too burdensome, data contained in the reports are no longer used, or existing regulation does not fully apply to new technology."[3] TIA and its member companies believe that the incredible pace of innovation—especially in the marketplace for wireless devices—has rendered a number of FCC rules either obsolete or too burdensome for the massive volume of devices expected to be entering the U.S. market over the coming years. TIA respectfully suggests the Commission address the following issues; doing so will streamline existing processes and help pave the way for the next generation of connected devices in the United States.

A. The Commission Should Streamline Equipment Authorization for Next-Generation Wireless Technology, Both Licensed and Unlicensed.

1. Wi-Fi Devices Generally

The Commission's methods for testing advanced technology like next-generation Wi-Fi devices must be reformed to keep pace with advancements in technology. For instance, when the 802.11b Wi-Fi standard was first introduced in 1999, it made use of a single antenna, occupied a single frequency band, and allowed for data rates up to 11 megabits per second. Modern Wi-Fi devices, such as those conforming to the 802.11ac standard, make use of up to *eight* transceivers, and implement a high number of advanced modulations and multiple input, multiple output ("MIMO") modes to achieve speeds as high as several gigabits per second.[4] Other technologies such as Long Term Evolution ("LTE") also make use of multiple antennae, modulations, and modes, and thus risk similarly significant delays in testing and rollout should current testing procedures remain unchanged. Put shortly, the increase in the number of advanced technologies incorporated into newer devices must not be accompanied by an unnecessary and burdensome increase in paperwork for manufacturers and regulators.

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[3] Office of Engineering and Technology Announces Technological Advisory Council (TAC) Technical Inquiry into Reforming Technical Regulations, ET Docket No. 17-215, Public Notice (2017).

The Commission currently permits the identification of "worst-case modes," which allow applicants in formal conformance testing to avoid assessing every possible operating permutation for peak power, power spectral density ("PSD"), and spurious emissions tests. However, Part 15 test reports still involve hundreds of pages of test data. Even in cases when the formal report summarizes the data in a more compact form, the lab's collection of data remains very burdensome, requiring significant test time and, in many cases, unnecessary expense.

TIA suggests the Commission consider reducing the burdens that come with testing and reporting by making the following changes to its procedures:

a) Significantly expand engineering justification and calculation of compliant in-band transmit power target values in lieu of conformance testing of each mode, and
b) Accept chip algorithms that configure compliant transmit power targets (on a product-specific basis) with formal conformance testing of boundary operating modes only.

We believe these techniques can ensure compliance with Part 15 rules without increasing risk of harmful interference.

2. Dynamic Frequency Selection ("DFS") Devices

The Commission should also consider streamlining the costly and time-consuming equipment approval procedures for devices that make use of DFS in the 5 GHz U-NII-2 bands.[5] Using its Knowledge Database ("KDB") process, the FCC Office of Engineering and Technology ("OET") Laboratory should seek input on how best to improve these procedures. DFS technology is a well-established protocol and streamlining approval processes can increase unlicensed use of the U-NII-2 bands and spur further wireless access and innovation.

[5] The Unlicensed National Information Infrastructure (U-NII) 2 bands are divided into two segments: the U-NII 2A band is located at 5250-5350 MHz, and the U-NII 2C band is located at 5470-5725 MHz.

B. The Commission Should Expand the Modular Device Approval Process and Establish a Supplier's Declaration of Conformity ("SDoC") for Low Power Radio Frequency ("RF") Devices.

TIA also requests that the Commission expand its approval processes for split modular approval for licensed devices. This will enable flexibility in baseband and RF architectures, including current technologies and future devices operating in the millimeter wave bands, for example. For millimeter wave devices, which have complex antenna array structures that often require extensive testing, the FCC should allow the certification process to leverage antenna module test results in end products. This will reduce the time and cost associated with testing and certification and allow new equipment to be brought to market more quickly. Additionally, we propose the FCC update the split module definition to include an analog interface between the split sections. The current approach in the rules requires additional analog to digital converters, which imposes losses and increases device cost.

TIA asks the FCC to consider establishing an SDoC process for low power transmitters such as Bluetooth devices, as well. This will reduce regulatory burden and speed time to market for new types of low power RF technologies. IDC predicts 30 billion connected IoT devices by 2020, providing a revenue opportunity of $1.7 trillion for the ecosystem.[6] This onrush of devices is likely to flood the current approval system, impacting not only the approval and deployment of IoT devices, but growth of all new RF technologies. In creating this SDoC process, the Commission should work with industry to establish baseline criteria for specific low-power radios.

C. The Commission Should Issue Test Procedures for Millimeter Wavelength Devices.

[6] IDC, "Connecting the IoT: The Road to Success, https://www.idc.com/infographics/IoT (last accessed October 30, 2017).

TIA requests that the FCC OET Laboratory complete test procedures for devices that make use of the millimeter wave bands.[7] Despite the continuing development of requirements for electromagnetic compatibility ("EMC") and millimeter wave test procedures in KDB 200443, ANSI C63.10, and ANSI C63.26,[8] these guidelines do not address radio frequency ("RF") exposure compliance. The Commission should adopt the ANSI test procedures once they have been completed and establish RF exposure test guidance in alignment with international test standards.

Procedures are needed as soon as possible, as TIA member companies began developing 5G radios in 2016 and are already beginning to test 5G applications.[9,10] Recognizing this reality, the Commission promised in its July 2016 *Spectrum Frontiers Report and Order* that "specific guidance on evaluating devices operating in this service will be issued by OET."[11] Despite the steady march of progress toward a 5G future, however, test procedures to approve millimeter wave devices continue to lag.

When OET moves forward with development of a test procedure, TIA suggests that it account for the intermittent nature of millimeter wave operations by incorporating time as well as spatial averaging.

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[7] *See also* Comments of the Telecommunications Industry Association, *in the Matter of Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, GN Docket No. 14-177, IB Docket No. 15-256, WT Docket No. 10-112, IB Docket No. 97-95, https://ecfsapi.fcc.gov/file/10930622009381/TIA%20Spectrum%20Frontiers%20FNPRM%20Comments%209-30-16.pdf.

[8] FCC OET Knowledge Base Publication No. 200443, https://apps.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?switch=P&id=20677 .

[9] *Verizon, Qualcomm and Novatel collaborate on 5G NR Trials*, FierceWireless, http://www.fiercewireless.com/wireless/verizon-qualcomm-and-novatel-collaborate-5g-nr-trials, Oct 17, 2017.

[10] *See e.g.* Reply Comments of Qualcomm, In the Matter of Use of Spectrum Bands Above 24 GHz for Mobile Radio Services, GN Docket No. 14-177, IB Docket No. 15-256, WT Docket No. 10-112, IB Docket No. 97-95,https://ecfsapi.fcc.gov/file/1031502405541/Qualcomm%20Reply%20Comments%20mmW%20FNPRM.pdf, at 2 ("Qualcomm recently announced the world's first ever 5G modem … that will operate in the 28 GHz band…"); *Samsung Announces Complete Portfolio of Commercial 5G Products and Solutions*, Samsung Newsroom, https://news.samsung.com/global/samsung-announces-complete-portfolio-of-commercial-5g-products-and-solutions, Feb 27, 2017.

[11] *In the Matter of Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, GN Docket No. 14-177, IB Docket No. 15-256, WT Docket No. 10-112, IB Docket No. 97-95, Report and Order and Further Notice of Proposed Rulemaking, para. 363, (2016), https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-89A1_Rcd.pdf.

TIA also urges the OET Laboratory to seek harmonization with international standards and test configurations, e.g. IEC body dielectrics, to support testing for multiple markets.

D. The Commission Should Complete the Radio Frequency ("RF") Exposure Proceeding[12] to Harmonize It with International Guidelines.

In 2014 the FCC explained the need to review and update the RF exposure limits, given the availability of more recent guidelines from both the International Commission on Non-Ionizing Radiation Protection ("ICNIRP") and the Institute of Electrical and Electronics Engineers ("IEEE").[13] We recommend the Commission move forward with a Report and Order in this proceeding as quickly as possible and that the Commission harmonize its limits with international limits

II. PARTICIPATION IN VOLUNTARY, CONSENSUS-BASED STANDARDS

Our comments above underscore the need for the Commission to accelerate its integration of ANSI-accredited standard developers ("ASD"s).[14] While standards-setting processes vary among different ASDs, they all offer the same significant advantages over more centralized models of technical regulation: they allow for safety, quality, and interoperability standards to keep pace with a rapidly diversifying marketplace.

A. ASDs Allow for Effective Public Participation

Concern regarding lack of openness in ASDs is unfounded. Not only do the ANSI *Essential Requirements* stipulate that "[p]articipation shall be open to all persons who are directly and materially

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[12] *In the Matter of Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies and Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, ET Dkt Nos. 13-84, 03-137, First Report & Order, Further Notice of Proposed Rulemaking, and Notice of Inquiry (adopted Mar. 27. 2013), https://apps.fcc.gov/edocs_public/attachmatch/FCC-13-39A1.pdf.

[13] *Id.*

[14] In this submission, we define ANSI-Accredited Standards Developers ("ASD"s) as those organizations that create and publish standards using a set of procedures that conform to the American National Standards Institute ("ANSI") *Essential Requirements for Due Process* (http://bit.ly/2z2XjXJ). These requirements include openness, lack of dominance, balance, coordination and harmonization, notification of standards development, consideration of views and objections, consensus vote, appeals, written procedures, and compliance with normative American National

affected by the activity in question," that "[t]here shall be no undue financial barriers to participation," and that those voting and participating need not be a member of any organization or have any special technical qualifications.[15] In addition to ANSI's baseline requirements for openness, examples of public participation in ASD processes abound. Finally, ANSI's plans involve increasing public involvement and "improv[ing] the responsiveness of the standards system to the views and needs of consumers."[16]

ANSI's *Essential Requirements* establish openness as a foundational value of the standards development process, and mandate corresponding characteristics in all ASDs' procedures. Openness begins with notice, and ANSI mandates that "[t]imely and adequate notice of any action to create, revise, reaffirm, or withdraw a standard, and the establishment of a new consensus body" be provided to "all known directly and materially affected interests."[17] Once the standards development process has begun, ANSI rules further require notification of activity and "the opportunity for participation by all directly and materially affected persons."[18] Finally, proposals for standards activity must all be listed in *Standards Action*, in order to provide the public an opportunity to comment.[19]

Within the community of ASDs, instances abound of standards developed as a result of public interest. For example, the 2017 update to International Code Council ("ICC") standard A117.1 increased the dimensions for clear floor space and turning space in doorways and accessible routes. This update occurred at the behest of the disability community, which sought to ensure accommodations for those who require wider powered wheelchairs and electric vehicles.[20]

Standards policies and administrative procedures. A list of ANSI-Accredited Standards Developers can be found at http://bit.ly/2yWTn8N.

[15] ANSI *Essential Requirements for Due Process*, Published January 2017, p. 4, http://bit.ly/2z2XjXJ.

[16] ANSI 2017 United States Standards Strategy, January 2017, p. 11, http://bit.ly/2gWSXum.

[17] *ANSI Essential Requirements* at 4.

[18] *Id.* at 6.

[19] *Id.* at 8.

[20] "ICC releases update to building accessibility standard," PR Newswire, https://www.prnewswire.com/news-releases/icc-releases-update-to-building-accessibility-standard-300482262.html.

Finally, ANSI and its associated standards developers have been working to improve public inclusion in their development work. ANSI's 2017 *United States Standards Strategy* recognized that the "representation of consumer interests in the U.S. standards system is essential to ensure that the individual's needs are being considered and addressed."[21] ANSI further recognizes that "more is needed to make consumers aware of these opportunities [to participate] and to encourage and facilitate their participation."[22] ANSI the lists tactical initiatives, encouraging and supporting consumer representation on committees, expanding the availability of virtual meetings, and encouraging consumer comments during public reviews of standards.[23]

III. CONCLUSION

TIA applauds the Commission for its leadership in pursuing flexible, innovation-friendly regulations in response to emerging use cases and technological innovations. It is because of this hard work that the U.S. remains at the forefront of efforts to put next-generation technologies into the hands of the consumer. But in order for our nation to remain an innovation leader, the Commission must address the issues set out in these comments.

TIA thanks the Commission for this opportunity to comment in this docket, and looks forward to working with Commission staff to ensure industry and government collaboration and success.

Respectfully submitted,

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[21] ANSI U.S. Standards Strategy at 11.
[22] *Id.*
[23] *Id.*