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**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of )  
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Amendment of the Commission’s Rules with ) GN Docket No. 12-354  
Regard to Commercial Operations in the 3550- )  
3650 MHz Band )

**COMMENTS OF IEEE 802.11**

The IEEE 802.11 (Wireless Local Area Networks) Working Group hereby submits these comments in the above-referenced proceeding in which the Federal Communications Commission (“FCC” or “Commission”) finalizes the rules that would govern a new Citizens Broadband Radio Service (“CBRS”) in the 3550-3650 MHz band (“3.5 GHz Band”) in the Report & Order.<sup>1/</sup> The record in this proceeding indicates that the Commission has modified certain of its rules in order to encourage small cell deployments, including reducing the size of Exclusion Zones, eliminating the reservation for Contained Access Facilities (“CAFs”), extending the CBRS rules to the 3650-3700 MHz band, and limiting protections for fixed satellite service (“FSS”) earth stations. IEEE 802.11 believes that exclusion zone restrictions, as amended, are too restrictive in key markets where IEEE 802.11 products are in need of additional spectrum, and do not appear to warrant the development of a standard to support IEEE 802.11 Wireless LANs (“WLANs”) in this band.

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<sup>1/</sup> See *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Further Notice of Proposed Rulemaking, 29 FCC Rcd. 4273 (2014) (“*FNPRM*”).

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## **I. INTRODUCTION**

The IEEE 802.11/15 Regulatory Standing Committee (SC) has as its prime directives, monitoring and informing its members of the changing global regulatory environment to gauge impact on standards development for WLANs (IEEE 802.11 family) and Wireless Personal Area Networks (WPANs – the 802.15 family), reacting to proposed changes in rules affecting these standards, and working to ensure that sufficient spectrum is available to support deployment of IEEE 802-compliant products. In its May 2015 meeting in Vancouver, the group conducted a straw poll indicating overwhelming opposition to the development of a new amendment to its IEEE 802.11 standard to support operations in the 3.5 GHz band. The success of products based on this standard, depends heavily on the industry's ability to produce low-cost devices which in turn depends on the mass production of silicon; a time consuming and very expensive process. The current rules restrict the size of the potential market for products in the 3550-3700 MHz band to the point where development of such products is not economically viable.

## **II. THE PROBLEMS WITH THE 3.5 GHZ BAND**

In FCC 05-56, the FCC offered a portion of the 3650-3700 MHz band for opportunistic sharing utilizing a contention-based protocol, and in response, IEEE 802.11 created a project (P802.11y) which resulted in the IEEE 802.11y-2008 amendment providing specifications for 802.11 devices using this band. Unfortunately, as a consequence of the severe limits imposed by substantial exclusion zones for federal radars and Fixed Satellite Service (FSS) Earth stations, the percentage of the US population that could be served by 802.11 technology in this band was significantly below that which would be required to make a successful market. Because of the limitations on geographic availability of usable spectrum, there would be little use for the technology in mobile devices which represent the majority of WLAN deployments.

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Following the release of FCC 08-260, IEEE 802.11 embarked on a new amendment (TGaf) for operation in the TV White Spaces, based on the expectation of spectrum availability with the switchover to Digital TV. The amendment was completed in November of 2012. In the intervening years, spectrum availability for this technology has been plagued with uncertainty and delay, leading the WLAN industry to once again step back from silicon and product development. It now appears that there will be too little spectrum for a serious commitment to build and deploy devices. Efforts are still underway to develop a Wi-Fi interoperability program for TV White Space, and some silicon providers have begun work on 802.11af silicon, but with the continued pushback of the Incentive Auctions, there is increasing concern about continuing such development work.

With the publication of FCC 15-47, and the Commissioners' supportive statements, the Regulatory SC initially considered that it would have another opportunity to modify the IEEE 802.11-2012 standard to enable WLANs to have additional unlicensed spectrum to help ease the congestion created by the explosive growth of WLAN technology and the addition of LAA-LTE in the 5 GHz unlicensed bands. However, upon further consideration of the Report & Order it now is apparent that it, too, is overly burdened by Federal exclusion zones and FSS protection requirements and the spectrum is of little value to WLAN users and the WLAN industry. This opinion was confirmed as the Regulatory SC conducted a straw poll indicating overwhelming opposition to the development of an amendment to the IEEE 802.11 standard to support it. It should be noted that the uncertainty in regards to how LAA-LTE/LTE-U will operate in this band has provided an additional concern for potential development.

One of the major benefits of WLAN technology is that it is or can be available everywhere. It has global acceptance, and the two main frequency bands it uses have no exclusion zones. While sharing with radars and satellites in 5 GHz was a challenge, the challenge

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could be and was addressed by technology development, leading to successful global deployment of WLAN products. Unfortunately, the policy of creating exclusion zones covering all coastal densely populated areas in the US does not justify costly and time consuming standard and silicon development for inclusion in mobile devices, as they would be unusable in many areas where these devices are most valuable. When asked by the FCC several years ago why the 3650-3700 MHz amendment (IEEE Std 802.11y) failed to develop commercial traction, we explained this issue in great detail. The point is that the IEEE 802.11 community is quite willing to invest in technological solutions to meet regulatory restrictions when such restrictions can be overcome with technical solutions. Where regulatory restrictions, such as exclusion zones, lead to problems that have no possible technical solution, the size of the potential market is the only decision factor the community can use to assess the viability of an opportunity.

### **III. CONCLUSION**

IEEE 802.11 appreciates the Commission's efforts to provide additional spectrum useful to IEEE 802.11 devices and applications. However, under the current restrictions, the additional spectrum cannot be used by the WLAN community to provide the hundreds of millions of WLAN users with a viable solution to congestion in existing unlicensed spectrum. IEEE 802.11 will continue to monitor progress towards resolving the exclusion zone and FSS protection limitations, and will re-evaluate our position as conditions dictate.

Respectfully submitted,

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July 13, 2015