IEEE P802.11

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| Proposed Cover Letter to Cities Regarding Liaison Response to 3GPP on LAA Coexistence with 802.11 |
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Abstract

This document contains draft text for a possible cover letter to cities that have copied IEEE 802.11 in their letters to 3GPP, in which they expressed their concern regarding the impact LAA could have on their broadband deployments.

To: Mayor Paul Soglin

City of Madison

City-County Building, Room 403

210 Martin Luther King, Jr. Boulevard

Madison, WI 53703

Subject: Update on Unlicensed LTE coexistence with Wi-Fi

Date: 2016-07-21

Dear Mayor Soglin,

The Institute of Electrical and Electronics Engineers (IEEE) 802 LAN/MAN Standards Committee (LMSC) thanks you for your recent letter to The Third Generation Partnership Project (3GPP) on the importance of 802.11 (Wi-Fi) to the City of Madison’s wireless infrastructure investments. As you know, IEEE is the world’s largest technical professional organization dedicated to advancing technology for humanity. IEEE 802 has deep expertise in the development of a variety of technology standards, including 802.11, which is designed to use and share unlicensed spectrum. Your interest in Unlicensed LTE coexistence with Wi-Fi is both important and timely.

During any standards setting process, it is vitally important to understand and incorporate the perspective of existing technology users who will be impacted by standards under development. Your initiative to share those views, along with specific use cases important to your city, offers us, and 3GPP, with a valuable resource that we hope will inform and improve the technologies we both are standardizing, which will be deployed in your city.

As you rightly point out in your letter, your city is a significant and unique user of wireless technology, having made substantial investments to harness the speed, convenience and accessibility of Wi-Fi to benefit residents in a whole host of areas, from personal Internet connectivity to enhanced municipal services and public safety. As your letter stated, those benefits could be impaired by 3GPP standardized Unlicensed LTE known as License Assisted Access or LAA (and the non-standard LTE-U), if these technologies are not carefully developed to effectively coexist with current Wi-Fi networks and devices.

In being a recipient of your letter to 3GPP, we take seriously your charge to work together constructively towards an LAA standard that does not create harm or disrupt existing Wi-Fi networks and devices, including those vital to your city and its residents. To that end, IEEE 802 has engaged in a series of communications, formally termed Liaison Statements, with 3GPP to highlight areas of specific concern and provide technical advice on how to best establish an LAA coexistence protocol to allay the concerns expressed by your city and others like it around the world, as well as a wide range of other wireless technology stakeholders. Because of the importance of these issues and their impact on Wi-Fi for your city, IEEE 802 wants to provide you with our most recent Liaison Statement to 3GPP,[[1]](#footnote-1) and describe to you in lay terms those areas where we believe progress has been made. As outlined in our Liaison, IEEE 802 believes that mutual understanding has been achieved on a number of issues, and consensus has been reached on others. However, there remain a number of significant areas of concern where consensus has not yet been reached, which will have a significant impact on the Wi-Fi deployments described in your letter to 3GPP.

First, IEEE 802 believes that LAA development has generally been positive and constructive. 3GPP is an experienced technical specification development forum with broad expertise and a well-established process for soliciting feedback and collaboration. This stands in contrast to, for example, the proprietary LTE-U, which is being developed outside the standards setting process, which as you point out in your letter, raises similar concerns over its ability to coexist without harming existing Wi-Fi networks and devices.

This collaborative and more open development process has benefitted from the views of diverse stakeholders and has led to a technology which we believe will coexist better with other technologies than LTE-U, because among other reasons it adopts the “listen before talk” protocol that has helped Wi-Fi coexist effectively with other technologies in the unlicensed spectrum. However, we believe that the LAA specification continues to fall short in several areas, and 3GPP’s recent response Liaison Statement fails to adequately appreciate and address the concerns that we’ve posed in previous letters.

For example, both your city and IEEE 802 highlighted to 3GPP LAA’s lack of protection for Wi-Fi at lower signal levels, which would impact Wi-Fi access points by shrinking their coverage area, throughput and reliability. As many Wi-Fi users have pointed out, with billions of Wi-Fi devices in use around the world, and massive public and private investments in current and critical Wi-Fi networks and devices, newly deployed technologies must consider the ecosystem in which they are being deployed. 3GPP declined requests to protect lower level Wi-Fi signals, saying that: (1) the simulations they conducted demonstrated that their detection threshold was sufficient to protect the majority of Wi-Fi traffic; (2) lower level signal detection would constitute an additional and unnecessary burden on LAA, and (3) some proposals presented within 3GPP were not technology neutral.[[2]](#footnote-2) IEEE 802.11 does not believe that the 3GPP assumptions represented real world local area network deployments, and conflict with the data provided by CableLabs, Boingo, and others to the Wi-Fi Alliance.[[3]](#footnote-3)

3GPP’s decision has led not only to concern about the impact of LAA on existing Wi-Fi deployments, but also may lead to Wi-Fi devices interrupting and impairing future LAA communications as well. The appropriate detection threshold is one of but several remaining concerns, which are all outlined in our Liaison statement back to 3GPP.

We are pleased with the level of collaboration and cooperation with 3GPP thus far, and we are hopeful that 3GPP will work to incorporate our feedback, and yours, into their specification.

Thank you again for your efforts to add your voice to this important process. Please let us know if you have any questions regarding the contents of this letter, or the more technical Liaison Statement that we provided to 3GPP

1. IEEE 802.19-16/0109r0; Add link for recent Liaison Statement [↑](#footnote-ref-1)
2. Raw energy detection is limited in its ability to feasibly and reliably detect and protect lower level signals. Because of these limits, technologies such as Wi-Fi, will often look for known wave forms, or symbols, which can be detected at much lower levels. However, incorporating the ability to transmit and receive these known wave forms was deemed by 3GPP as not being “technology neutral.” [↑](#footnote-ref-2)
3. See presentations presented at the April 26, 2016 Wi-Fi Alliance Coexistence Workshop, which are located at: [https://](https://www.wi-fi.org/downloads-public/Wi-Fi_LTE-U_Test_Workshop_Presentations_201604.zip/30328)[www.wi-fi.org/downloads-public/Wi-Fi\_LTE-U\_Test\_Workshop\_Presentations\_201604.zip/30328](http://www.wi-fi.org/downloads-public/Wi-Fi_LTE-U_Test_Workshop_Presentations_201604.zip/30328) [↑](#footnote-ref-3)