DATE: 15 January 2016
TO: Paul Nikolich, Chairman, IEEE 802
FROM:Edgar Figueroa, CEO and President, Wi-Fi Alliance
RE: Wi-Fi Alliance coexistence testing for LTE in unlicensed spectrum

Dear Mr. Nikolich,

Wi-Fi Alliance would like to inform IEEE of recent activities related to coexistence testing for LTE in unlicensed spectrum. Please distribute this communication among the IEEE 802.11 and IEEE 802.19 working groups. Please advise if IEEE 802 is interested in receiving similar updates from Wi-Fi Alliance in the future.

Wi-Fi Alliance is providing a forum for development of industry agreed test regimen to promote fair sharing in unlicensed spectrum. Through test plan development, workshop conferences and industry discussions, Wi-Fi Alliance hopes to continue industry collaboration on this topic.

On 4 November 2015, Wi-Fi Alliance hosted the first in a series of Coexistence Test Workshops to discuss this topic. Materials from the workshop are available at http://www.wi-fi.org/discover-wi-fi/unlicensed-spectrum. The second Coexistence Test Workshop is scheduled for 10 February 2016. At the second workshop, Wi-Fi Alliance will share progress made defining above Energy Detect (ED) test cases and engage in discussions to gather feedback. The workshop discussions will also include work areas to be addressed next, including below ED test cases. Attached to this memo is also a Wi-Fi and LTE-U document recently released by Wi-Fi Alliance.

As a result of Wi-Fi Alliance work in coexistence testing, a test plan draft with subsequent test plan versions may be published.

Wi-Fi Alliance understands that IEEE 802 is discussing a coexistence test effort, and would request that IEEE 802 provide a description of that test effort and how it would relate to the Wi-Fi Alliance coexistence test effort.

Best Regards,

Edgar Figueroa
CEO and President
Wi-Fi Alliance

Wi-Fi Alliance brings progress to Wi-Fi and LTE-U coexistence

Wi-Fi Alliance is facilitating a series of industry activities to promote and enable fair coexistence between Wi-Fi and LTE-U in unlicensed spectrum, and to assist industry in resolving concerns without regulatory intervention.

Wi-Fi Alliance is encouraged by the broad participation at its Coexistence Test Workshop, held in November 2015, which brought together more than 100 attendees from 54 companies including AT&T, Dell, Google, LG, Microsoft, Qualcomm, Sony, Toyota, Verizon, and ZTE to engage in dialogue around concerns related to fair LTE-U and Wi-Fi coexistence.

There is still significant work to be done, but the industry has come to recognize Wi-Fi Alliance as an excellent forum for making progress in addressing concerns related to LTE-U coexistence with Wi-Fi, and the Wi-Fi Alliance's Coexistence Test Workshop delivered consensus on key points:

- The LTE-U specification can be further refined to provide greater clarity, and recent updates to the specification are a good step forward
- A broader set of test scenarios than currently exists is likely necessary to test LTE-U's fairness to Wi-Fi
- Stakeholders are committed to collaborating within Wi-Fi Alliance to develop an industry agreed test regimen for LTE-U devices

Collaboration facilitated by Wi-Fi Alliance provides a path forward

With much work still to be done, Wi-Fi Alliance will be instrumental in guiding industry to collaborate and reach consensus on a solution. Companies that engage with Wi-Fi Alliance will have an opportunity to steer and contribute to activities, which include:

- **Test Plan Development:** Wi-Fi Alliance is providing the forum for development of an industry agreed test regimen to promote fair sharing, and LTE-U Forum companies have committed to supporting that work in Wi-Fi Alliance
- **Coexistence Test Workshops:** Wi-Fi Alliance will host follow-up workshops to continue to advance dialogue around LTE-U coexistence, with the next workshop scheduled for the week of February 8th, 2016
- **Coexistence Guidelines:** Wi-Fi Alliance is building on its initial set of Coexistence Guidelines for LTE in Unlicensed Spectrum Studies, which will inform the testing of actual devices and provide a consistent method for measuring fairness to Wi-Fi.

Industry and regulators both have a role in protecting the future of unlicensed spectrum

An industry-led solution serves the public's best interest by avoiding unnecessary regulatory intervention that could have unintended consequences. Wi-Fi Alliance asks that regulators continue to monitor industry progress and encourage the industry to come to a solution on its own.

Wi-Fi Alliance is committed to providing the forum for all industry stakeholders to make meaningful progress on LTE-U and Wi-Fi coexistence.

Fairness is critical to the future of unlicensed spectrum

Wi-Fi Alliance is concerned about the variances allowed by the LTE-U specification in defining how LTE-U devices will operate, and more specifically, how this could impact fair unlicensed spectrum sharing with Wi-Fi. Without an industry-agreed upon test methodology for each LTE-U device that operates in unlicensed spectrum, LTE-U devices may not share the spectrum fairly with Wi-Fi, and billions of Wi-Fi users will be affected. Recent research demonstrates Wi-Fi's integral role in users' lives:

68%	72%	75%
would be annoyed if they did not have access to Wi-Fi in their daily lives	say work productivity would be significantly impacted if Wi-Fi were impacted	are concerned about another technology impacting their Wi-Fi

Wi-Fi is too important today to put at risk

DEVICES IN USE:	U.S. WI-FI HOUSEHOLDS:	U.S. ECONOMIC VALUE
6.8 BILLION	72 MILLION	$222 BILLION

Wi-Fi uses <u>less</u> spectrum than what is available to cellular, yet Wi-Fi delivers 11x <u>more</u> traffic than cellular

Innovation over the last 16 years has advanced Wi-Fi data rates from 11 Mbps to more than 1,100 Mbps – and continued innovation in unlicensed spectrum will deliver data rates exceeding 5,000 Mbps within a few years

Learn more: www.wi-fi.org/unlicensed