

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)
)
Office of Engineering and Technology and) ET Docket No. 15-105
Wireless Telecommunications Bureau)
Seek Information on Current Trends in)
LTE-U and LAA Technology)

To: Chief, Office of Engineering and Technology
Chief, Wireless Telecommunications Bureau

**COMMENTS OF
THE WIRELESS INTERNET SERVICE PROVIDERS ASSOCIATION**

The Wireless Internet Service Providers Association (“WISPA”) hereby submits its Comments in response to the *Public Notice* that the Office of Engineering and Technology and the Wireless Telecommunications Bureau (collectively, the “Bureaus”) released seeking information on current trends in LTE-U and LAA technology.¹

WISPA does not oppose the development of new technologies and standards in the abstract, but is concerned about the potential that devices using licensed LTE-U and LAA technology may not co-exist harmoniously with existing Wi-Fi and other unlicensed IEEE 802.11 technologies such as those used by wireless Internet service providers (“WISPs”) to deliver fixed broadband services to residents, businesses and first responders. WISPA commends the Commission for its interest in learning about LTE-U and LAA and its potential effects on billions of existing Wi-Fi enabled devices.

¹ *Public Notice*, “Office of Engineering and Technology and Wireless Telecommunications Bureau Seek Information on Current Trends in LTE-U and LAA Technology,” DA 15-516, ET Docket No. 15-105 (rel. May 5, 2015) (“*Public Notice*”).

Discussion

The Commission's primary focus should be the protection of consumers from interference that will disrupt the communications capabilities of millions of unlicensed devices. Unlicensed Wi-Fi spectrum is used in virtually every home and business, which generates large, recurring economic benefits and improves social welfare. In addition to fixed broadband service, other unlicensed spectrum uses include Wi-Fi access points (residential and commercial), Bluetooth devices, long-range point-to-point data links, utility company SCADA systems, cordless phones, baby monitors, video surveillance systems, personal medical alert alarms, in-home power management, RFID and more. In a recent speech, Commissioner Rosenworcel summarized the consumer and economic benefits of Wi-Fi:

Wi-Fi is how we get online. More than half of us have used public Wi-Fi – and more than 60 percent of us rely on Wi-Fi at home.

Wi-Fi is how our wireless carriers help manage their networks. In fact, today nearly one half of all wireless data connections are offloaded onto unlicensed spectrum. So it may not be intuitive, but unlicensed spectrum helps manage the flow of traffic on licensed airwaves.

Wi-Fi is how we foster innovation. That's because the low barriers to entry for unlicensed airwaves make them perfect sandboxes for experimentation. This is where we tinker. It is where we can explore new ideas for Internet-enabled connectivity—at low cost.

Wi-Fi is also a boon to the economy. The economic impact of unlicensed spectrum has been estimated at more than \$140 billion annually—and it's only going to grow.

This is good stuff. We need to keep it coming. We need to make Wi-Fi a priority in spectrum policy. It needs to move from the back bench to policy prime time.²

² Remarks of Commissioner Jessica Rosenworcel, SXSW Interactive, Austin, Texas (March 16, 2015).

Wi-Fi also promotes broadband access and adoption by enabling WISPs to provide fixed wireless broadband services to millions of people in areas of the country where wireline broadband service is not available. Even where wireline broadband is available, WISPs offer competitive choices that keep broadband service affordable.

The Commission must acknowledge that the success of Wi-Fi has been predicated on “listen-before-talk” standards that enable devices to share spectrum cooperatively. This sharing process has fostered billions of dollars in investment and created mutual incentives for innovation. Most homes have Wi-Fi access points. Virtually every cell phone includes both Wi-Fi and Bluetooth capabilities. If “politeness” standards had not been incorporated into the Wi-Fi standards, Wi-Fi would not be such a resounding success story and consumers would not be enjoying the everyday benefits that Wi-Fi-enabled devices deliver.

Licensed mobile wireless carriers are expected to use LTE-U/LAA on unlicensed spectrum as supplemental downlink spectrum where uplinking and control are both performed on a separate, licensed frequency. The problem of harmonious co-existence in unlicensed spectrum or, in the case of the emerging 3550-3700 MHz band, shared spectrum, arises because licensed spectrum-holder use of unlicensed LTE-U/LAA supplemental downlink has no in-band uplink. Therefore it is a one-way transmission – basically the equivalent of a broadcast technology. Television broadcasters, for example, do not have to listen on their assigned transmitting channel before broadcasting their television signal. Similarly, LTE-U/LAA without adequate co-existence requirements does not have to listen in the 5 GHz U-NII band before broadcasting (i.e., transmitting a supplemental downlink signal) in 5 GHz. The problem with the mobile broadband “split-band” scenario is that one-way broadcast technologies have no place in a two-way

unlicensed band unless the LTE-U/LAA supplemental downlink observes the unlicensed band “rules of the road” – in other words, unless it listens before transmitting. Even worse, one-way supplemental downlink service in the unlicensed 5 GHz U-NII band is not limited to a single frequency. In fact, there is no limit to the number of one-way supplemental downlink signals. A licensed mobile wireless carrier could use a licensed frequency to simultaneously control multiple LTE-U/LAA unlicensed transmitters and thereby “blanket” an entire unlicensed U-NII band (or bands), effectively hijacking them and making them useless for existing and future unlicensed users. Absent any requirement to “listen-before-talk” or to use any other co-existence features, successful LTE-U/LAA deployment in unlicensed or shared spectrum will eventually seriously degrade or destroy the existing unlicensed Wi-Fi global ecosystem. As an alternative to “listen-before-talk,” the Commission should require that every Part 15 device certified to transmit in unlicensed spectrum also must be certified to receive in unlicensed spectrum and operate in stand-alone mode in unlicensed spectrum.

The most basic Wi-Fi “rule of the road” is the use of a carrier-sense-multiple-access with collision avoidance (CSMA/CA) protocol. Wi-Fi CSMA/CA requires listening to be sure a channel is clear before transmitting on that channel. Unless newly-certified equipment possesses the ability to operate in stand-alone mode under Part 15 as described above, the Commission must act to ensure that LTE-U/LAA use of unlicensed downlink spectrum adheres to the “listen-before-talk” principle.

The Commission also must ensure that LTE-U/LAA standards for deployment in unlicensed or shared spectrum possess co-existence options sufficiently robust to actually support fair co-existence with existing Wi-Fi users, and that these co-existence options are

actually configured, deployed and in use by the mobile wireless carriers. An effective enforcement process must be in place to assure compliance with Commission rules.

Finally, the Commission must be certain that the testing of LTE-U/LAA co-existence options is carried out based upon a public process that is open, verifiable and inclusive. For example, FCC “demonstration room” testing followed by a public relations campaign is not a sufficiently rigorous process upon which to base regulatory policy, especially given the potential impact on millions of consumer and broadband devices. There is too much at risk both in the current unlicensed bands and in the new shared 3550-3700 MHz band to attempt to shortcut a complete public testing process.

Conclusion

WISPA approaches this proceeding with an open mind, but is concerned that the lack of an adequate co-existence requirement will damage consumers, innovation, broadband deployment and competition. The Commission should continue to elicit public input and ensure that there is adequate testing to determine whether and to what extent LTE-U/LAA can co-exist with Wi-Fi and other unlicensed technologies. The Commission must act now to ensure that LTE-U/LAA deployments cause no detrimental impact to current and future unlicensed spectrum users.

Respectfully submitted,

WIRELESS INTERNET SERVICE PROVIDERS ASSOCIATION

June 11, 2015

By: */s/ Chuck Hogg, President*
/s/ Alex Phillips, FCC Committee Chair
/s/ Jack Unger, Technical Consultant

Stephen E. Coran
Lerman Senter PLLC
2000 K Street, NW, Suite 600
Washington, DC 20006-1809
(202) 416-6744
Counsel to the Wireless Internet Service Providers Association