



March 16, 2015

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: Notice of Oral *Ex Parte* Presentation

Policies Regarding Mobile Spectrum Holdings, WT Docket No. 12-269
Expanding the Economic and Innovation Opportunities of Spectrum through Incentive Auctions, Docket No. 12-268
Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, GN Docket No. 12-354

Dear Ms. Dortch:

On March 12, 2015, Michael Calabrese of the New America's Open Technology Institute (OTI) and Harold Feld and Charles Duan of Public Knowledge (PK) met separately with Renee Gregory, Legal Advisor to Chairman Tom Wheeler, and Louis Peraertz, Senior Legal Advisor to Commissioner Mignon Clyburn, with reference to the proceedings referenced above.

The OTI and PK representatives initially reprised the recent public interest group letter to Chairman Wheeler stating that the record-setting AWS-3 auctions hold three valuable lessons for spectrum policy:¹ The first lesson is that high prices in the AWS-3 auction suggest that the FCC should re-double its efforts to rapidly adopt the proposed three-tier, small-cell approach to shared use of the underutilized 3.5 GHz band (the Citizens' Broadband Radio Service) and to ensure the upcoming 600 MHz incentive auction occurs in early 2016 as planned.

The second public interest lesson is that auction policy should focus first and foremost on the public interest, not the public fisc – just as the Communications Act requires the Commission to do.² Competition policy and consumer welfare should drive spectrum policy, not arbitrary revenue goals.

¹ Letter from Open Technology Institute, Public Knowledge, Engine Advocacy, Center for Media Justice, Common Cause, Writers Guild of America West, Institute for Local Self Reliance, Benton Foundation to FCC Chairman Tom Wheeler, Docket Nos. 12-268, 12-269 (Feb. 24, 2015).

² See 47 U.S.C. § 309(j)(3) (requiring the FCC to adopt competitive bidding rules that, among other things, “avoid[] excessive concentration of licenses” and “disseminat[e] licenses among a wide variety of Applicants”).

A Spectrum Reserve of 40 MHz for Carriers with Little Low-Band Spectrum in a Market May be the Best Chance to Sustain Mobile Market Competition

The third lesson is that because the AWS-3 auction incorporated no competitive safeguards, it further entrenched AT&T's and Verizon's dominance of the wireless broadband industry.³ The upcoming 600 MHz incentive auction provides what may be the FCC's final opportunity to prevent the two dominant carriers from monopolizing the low-band spectrum needed to compete in a broadband data world. Because AT&T and Verizon already control nearly three-quarters of the nation's uniquely valuable low-band spectrum, ***only a spectrum reserve of 40 megahertz or more*** can prevent the two dominant carriers from using the 600 MHz auction to extinguish the handful of wireless broadband competitors that continue to offer consumers an alternative for wireless voice and data services.⁴

OTI and PK asserted that it is difficult to see how the non-dominant carriers can effectively compete in a 4G marketplace without sufficient access to low-band spectrum that enables in-building penetration and economic wide-area coverage. The Commission has more than satisfied its obligation to finance FirstNet and should now focus on its obligation to design its auction policy to promote competition and the public interest, irrespective of total auction revenue.

With respect to DE credits, OTI and PK stated that the Commission is obligated to continue to support the DE program for its critical purpose of ensuring that small carriers and businesses owned by women and people of color are able to win licenses. In addition to DISH, numerous small carriers used the DE credits to win licenses. At the same time, it is important to resolve the DE credit issue so that larger entities cannot benefit from them. If the Commission fails to modify the existing rules, it is likely that not only DISH, but other entities will use DEs and joint bidding agreements in a way that will foreclose the intended beneficiaries from using DEs while distorting the auction outcomes as a whole.

The Proposed Citizens' Broadband Radio Service at 3.5 GHz Must Ensure Open and Fair Sharing

Concerning the pending proceeding to create a Citizens' Broadband Radio Service (CBRS) at 3.5 GHz, the advocates reiterated their support for an Order ensuring that a majority of the 3550-3700 MHz band is reserved for General Authorized Access and that also permits opportunistic access to Priority Access License spectrum until such time as the licensee reports to the Spectrum Access System (SAS) that it is commencing actual service.

The OTI and PK representatives next inquired into the status of exclusion and/or coordination zones that might be needed to protect Navy and C-Band satellite incumbents on the band. OTI and PK stated their belief that substantial exclusion zones should unnecessary if in fact the Navy's primary interference concern is a cumulative rise in the noise floor, within sight of the coastline, resulting from widespread use of very low-power CBRS devices in the future. The advocates stated that because this will take years,

³ Excluding DISH, which is not a mobile broadband provider, the two dominant carriers acquired more than 90 percent of the AWS-3 spectrum, virtually shutting out competitive carriers.

⁴ See 17th Mobile Competition Report ¶ 92 ("For robust competition to exist and persist, multiple competing service providers must have access to a sufficient mix of low-and high-band spectrum to be able to enter a marketplace or expand output rapidly in response to any price increase or reduction in quality, or other change that would harm consumer welfare.").

because the SAS can at any point limit the number of devices authorized to transmit within sight of the coastline, and because it's likely that passive sensing can augment the SAS long before the noise floor endangers naval radar, exclusion zones are unnecessary and unduly restrictive. Implementing coordination zones from the start should be sufficient to protect naval operations and thereby ensure markets of national scope and scale for CBRS devices.

In addition, OTI and PK expressed their concern about reports that companies, including Qualcomm and Verizon, may be testing pre-certification versions of LTE-U technology that could be used by licensed operators on the 3.5 GHz CBRS band to dominate General Authorized Access (GAA) and/or other unlicensed spectrum in an anti-competitive manner. OTI and PK raised particular concerns with regard to Qualcomm's reported effort to anchor the control channel for LTE use of unlicensed spectrum – including, potentially, the GAA portion of the 3.5 GHz band – in a licensed frequency. Aptly, Qualcomm has renamed its proposed technology standard “Licensed Assisted Access” (LAA) to emphasize the limitation of this technology to traditional wireless carriers using licensed technology.⁵ OTI and PK suggested there is a strong need for preemptive “rules of the road” concerning the shared nature of the GAA bands in order to avoid another Section 333 Wi-Fi blocking controversy down the road.

Qualcomm's actions and proposed standard do not simply raise interoperability and competition problems. As several stakeholders have pointed out, Qualcomm's proposed standard also creates the danger of significant interference with non-LAA operations.⁶ Given the rise of competing mobile voice and data providers using a “Wi-Fi first” or “Wi-Fi only” strategy,⁷ the adoption of LAA for use in 3.5 GHz as proposed by Qualcomm could potentially foreclose competitors from using the spectrum and reinforcing their current dominance.

Worse, as noted by other stakeholders, Qualcomm's LAA could potentially crowd-out, or create consistent interference with, other standards such as Wi-Fi that use contention-based protocols such as “listen before talk” to fairly share the unlicensed spectrum commons. Qualcomm's LAA technology reportedly uses a command-and-control protocol, permitting carriers to coordinate the aggregation of unlicensed with licensed spectrum using a control channel anchored in a licensed band. Although Qualcomm has indicated this technology is most likely to be deployed by carriers in the 5 GHz unlicensed bands, it could readily be used by licensed carriers in the 3.5 GHz band.

Incentives of Qualcomm and Carriers to Foreclose Use of GAA Spectrum to Rival Chip Manufacturers and Competing “Wi-Fi First” Carriers

Generally, in the unlicensed space, no party has incentive to occupy a channel when not actively sending a signal and parties have a general interest in cooperating with each other to enhance the overall efficiency of devices and available spectrum. The IEEE's 802.11 family of contention-based coexistence

⁵ See Joey Padden, Lead Architect, CableLabs “Wi-Fi v. EU LBT: Houston, We Have a Problem,” CableLabs blog. Available at: <http://www.cablelabs.com/wi-fi-vs-eu-lbt-houston-we-have-a-problem/>.

⁶ See *Id.*; See also “Wi-Fi Alliance Statement on LAA,” released February 9, 2015 (available at: <http://www.wi-fi.org/news-events/newsroom/wi-fi-alliance-statement-on-license-assisted-access-laa>); Joey Padden, “Wi-Fi v. Duty Cycled LTE, A Balancing Act,” CableLabs Blog (available at: <http://www.cablelabs.com/wi-fi-vs-duty-cycled-lte/>).

⁷ See Brian X. Chen, “Cell Phone Start Ups Use Wi-Fi First To Handle Calls, Take On Rivals,” New York Times, February 15, 2015. Available at: http://www.nytimes.com/2015/02/16/technology/small-phone-companies-use-wi-fi-to-punch-above-their-weight.html?ref=technology&_r=2.

standards give unlicensed chip and device makers, as well as Wi-Fi operators, strong reasons to cooperate with one another, since degradation of performance in the unlicensed band harms everyone equally. Wireless carriers (and their equipment manufactures) have a very different set of economic incentives.

As the Commission well knows from its experience with 700 MHz interoperability, carriers and manufacturers will adopt 3GPP standards in order to achieve economies of scale. It therefore appears certain that, once 3GPP adopts a standard for Licensed Assisted Access using Qualcomm patented technology, it will be adopted globally and deployed broadly in the U.S. Further, as the competitive threat from “Wi-Fi First” and “Wi-Fi Only” mobile providers intensifies, licensed carriers will have increasing incentive to control or contaminate the unlicensed or GAA space.

The advocates further explained that the company driving development of LTE-U and LAA, Qualcomm, has strong patent licensing incentives to promote licensed carrier-based unlicensed technologies in a manner that crowds out or disadvantages Wi-Fi deployments.⁸ Qualcomm holds patents on both Wi-Fi and LAA,⁹ but the restrictions on licensing for each of those technologies is different, with LAA being much more favorable to Qualcomm. Both technologies are standardized by standard-setting organizations, IEEE and 3GPP respectively, and each organization requires participants in the standard-setting process to declare to the organization any patents essential to implementing the standard and then to license those patents on reasonable and non-discriminatory (RAND) terms to anyone wishing to implement the standard. But each standard-setting organization determines what constitutes RAND licensing terms, and 3GPP would give Qualcomm much more freedom than IEEE to engage in licensing practices for Qualcomm’s sole benefit.

IEEE maintains a strong, specific RAND licensing policy. Based on its goal of “widespread adoption” of its standards,¹⁰ the IEEE places clear requirements on holders of standard-essential patents, for example preventing them from pursuing a “Prohibitive Order” against potential infringers and specifying conditions on what constitutes a “Reasonable Rate” for patent royalties.¹¹ Indeed, the IEEE continues to review its patent licensing policy in view of changes in the law and stakeholder concerns, and earlier this year amended its policy in that regard.¹²

In contrast, 3GPP maintains no patent policy of its own, instead deferring to the policies of its member organizations, primarily the European Telecommunications Standards Institute (ETSI), whose patent policy is substantially less rigorous. The ETSI policy only obligates holders of standard-essential patents to license on RAND terms, without giving particular definitions or conditions as the IEEE policy

⁸ By all accounts, Qualcomm is heavily invested in patent licensing. The U.S. Patent and Trademark Office reports over 20,000 patents and patent applications owned by Qualcomm, while in 2014 Qualcomm reported its patent licensing arm made over \$7.5 billion in revenue. Qualcomm, 2014 Annual Report on Form 10-K, *available at* <http://investor.qualcomm.com/secfiling.cfm?filingID=1234452-14-320&CIK=804328>.

⁹ Qualcomm 10-K, *supra* note 1, at 7-8.

¹⁰ Brief of *Amicus Curiae* IEEE in Support of No Party at note 14, *Ericsson, Inc. v. D-Link Sys., Inc.*, Nos. 13-1625, -1632, -1532, -1633 (Dec. 20, 2013), *available at* <http://essentialpatentblog.wp.lexblogs.com/wp-content/uploads/sites/234/2014/01/2013.12.20-67-Brief-of-Amicus-Curiae-of-IEEE.pdf>.

¹¹ Approved Clause 6 of the IEEE-SA Standards Board Bylaws (2015), <http://standards.ieee.org/develop/policies/bylaws/approved-changes.pdf>.

¹² Press Release, *Public Knowledge Applauds IEEE Vote to Rein In Standards-Essential Patent Abuse* (Feb. 10, 2015), <https://www.publicknowledge.org/press-release/public-knowledge-applauds-ieee-vote-to-rein-in-standards-essential-patent-a>.

does.¹³ Furthermore, the ETSI policy allows companies like Qualcomm to deny patent licenses to chipmakers and only offer licenses to users of those chips, despite the “non-discriminatory” component of the licensing requirement.¹⁴

Consequently, a major patent-holding company like Qualcomm would stand to make more licensing revenues, block more competitors, and monopolize more strongly a field based on a standard promulgated by 3GPP than based on one by IEEE. Patent licensing thus creates an incentive for pushing for greater adoption of LAA, the 3GPP standard, and inhibiting use of Wi-Fi, the IEEE standard. Indeed, Qualcomm has already declared that it is pulling itself out of the Wi-Fi standard-setting process in view of IEEE’s amended patent policy, saying that it “will not make licensing commitments under the new policy.”¹⁵

Given Qualcomm’s opportunity and incentive to shape the degree to which the LAA standard coexists with Wi-Fi and other protocols, or instead gives licensed carriers a competitive advantage in using unlicensed spectrum, the Commission should adopt rules that ensure equal access to and fair sharing of GAA spectrum *in advance* of spectrum assignment and any substantial investments in devices and deployments.

The 3.5 GHz Rules Should Prohibit This Potential Anticompetitive Conduct

The 3.5 GHz should encourage innovation in wireless technology and promote competition to the benefit of consumers, not permit Qualcomm to lock in a particular technology to the exclusion of rival chipmakers, or permit licensees to undermine entry by Wi-Fi First or Wi-Fi Only mobile carriers. Much of the public interest benefit of interoperable devices and common technical rules across both PAL and GAA spectrum could be lost if one set of companies is able to dominate access to GAA bandwidth with technology not available to many competitors or the general public.

Accordingly, PK and OTI have urged the Commission to get out ahead of this potential problem and adopt the following precautions:

1. Pursuant to its power under Section 303(b) and 303(r), the Commission should mandate that all equipment in the 3.5 GHz band be capable of operating on a standalone basis, and that no standard incorporating 3.5 GHz should require access to exclusively licensed frequencies to function.
2. Pursuant to its power under Section 302(a), the Commission should require that any standard adopted for use in 3.5 GHz be licensed on FRAND terms identical to those adopted by the IEEE.
3. The Commission should adopt a “spectrum etiquette” similar to that adopted in 3.65 GHz rules requiring a type of “contention based protocol” to ensure that no single equipment manufacturer or provider can dominant the band.

¹³ ETSI Rules of Procedure, Annex 6: ETSI Intellectual Property Rights Policy (Nov. 19, 2014), <http://www.etsi.org/images/files/IPR/etsi-ipr-policy.pdf>.

¹⁴ *Id.* at 42 (applying RAND requirements only to devices “fully conforming” to a standard).

¹⁵ See Susan Decker and Ian King, “Qualcomm Says It Won’t Follow New Wi-Fi Rules on Patents,” Bloomberg News, February 11, 2015, *available at* <http://www.bloomberg.com/news/articles/2015-02-11/qualcomm-says-new-wi-fi-standard-rules-unfair-may-not-take-part>.

Respectfully submitted,

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