

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

In the Matter of

Reply to comments on Petitions for Rulemaking Regarding
the Citizens Broadband Radio Service

GN Docket No. 12-354
RM-11788
RM-11789

REPLY COMMENTS OF THE DYNAMIC SPECTRUM ALLIANCE

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I. Introduction

The Dynamic Spectrum Alliance (DSA)¹ is encouraged by the quantity and quality of comments to the FCC opposing the petitions by CTIA and T-MOBILE. The vast majority of these comments--over 89% of the 98 contributed comments to date--soundly reject the T-Mobile petition, and over 84% oppose the CTIA petition or aspects of that petition. In addition, there were no comments supporting T-MOBILE proposal to eliminate the GAA tier. These comments provide convincing arguments and build an extensive record on which the Commission can base a decision. And if the Commission is guided by Commissioner O’Rielly’s statement that “the ultimate direction of this proceeding will be based on the record,” the outcome can only be for the Commission to reject any significant changes to the CRBS framework.²

We reiterate our previously stated position that significant changes to the current CBRS rules would be disruptive to the goal of a balanced licensed and lightly licensed regulatory scheme, and ultimately deter investment and innovation in the band.³ In these comments, we feel we must address certain unsubstantiated statements and claims made by commenters in support of the petitions, most notably from the mobile industry and its interest groups.

¹ The DSA’s membership spans multinationals, small-and medium-sized enterprises, and academic, research, and other organizations from around the world, all working to create innovative solutions that will increase the amount of available spectrum to the benefit of consumers and businesses alike. A full list of DSA members is available on the DSA’s website at www.dynamicspectrumalliance.org/members/.

² https://apps.fcc.gov/edocs_public/attachmatch/DOC-345941A1.docx

³ [DSA CBRS Comments July 24 2017](https://www.fcc.gov/ecfs/filing/1072450166116), <https://www.fcc.gov/ecfs/filing/1072450166116>

II. The Purported Risk to 5G Leadership in the World

The claim that keeping the CBRS rules intact is a “risk to U.S. 5G leadership” is one that warrants scrutiny.⁴ 5G refers to “Fifth Generation Technology” and applies to unlicensed technology, including Wi-Fi, as well as next generation cellular technology. More broadly, 5G refers to a set of capabilities, including high throughput, low latency and the ability to connect tens of millions of devices through a wide variety of networks using new 5G technologies, not solely via wide-area mobile carrier networks. In fact, by the GSMA definition, 5G more specifically encompasses a broad collection of wireless technologies, including 2G, 3G, 4G, Wi-Fi, other unlicensed applications, as well as future innovative technology.⁵ Multi-technology collaboration is essential to achieving the high goals set for 5G deployment.

⁴ 5011, ¶ 4 (2016) (“3.5 GHz Second R&O”); Neville Ray, Maintaining US Leadership in 5G with Smart Spectrum Policy, T-MOBILE (Jun. 30, 2017), <https://newsroom.t-mobile.com/news-and-blogs/5g-mid-band-spectrum.htm>

⁵ <https://www.gsma.com/futurenetworks/wp-content/uploads/2015/01/Understanding-5G-Perspectives-on-future-technological-advancements-in-mobile.pdf>, “[A] service-led view which sees 5G as a consolidation of 2G, 3G, 4G, Wi-fi and other innovations providing far greater coverage and always-on reliability”

The fact that 60 to 80% of mobile device data traffic is offloaded by Wi-Fi over fixed networks demonstrates that developing this broad ecosystem of applications and technologies cannot be achieved by cellular providers alone, especially when those providers favor a single business model based on exclusively licensed spectrum.⁶ Therefore, 5G leadership cannot simply be reduced to measuring the amount of spectrum that is auctioned off to carriers to support their preferred business model. Rather, DSA recommends the Commission adopt a different definition for 5G leadership--one encouraging the most efficient use of spectrum through the use of different technologies, business models, and infrastructure providers.

Commenters supporting the petitions assume a future where mobile carriers are the only--or the only significant--infrastructure investment providers. Their argument is essentially that the only entities requiring guaranteed access to spectrum under a PAL structure are nationwide wireless operators; as the Partial Economic Area (PEA) size for PALs is designed for only such entities. They argue at the same time that GAA is both inadequate for themselves, but adequate and appropriate for all others. However, the large majority of filings in this proceeding – including Google, Ruckus, WISPA, etc. –

⁶ Cisco, *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2016–2021 White Paper*, Cisco VNI Mobile (updated March 28, 2017) available at <http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.html>. AT&T has acknowledged that in the U.S., Wi-Fi is already offloading roughly 80 percent of mobile data traffic. “About 80 percent of the wireless traffic today gets handled over Wi-Fi networks,” Bill Smith, president of AT&T Network Operations, stated at an investor conference last year. “We’re now carrying over 4 million calls a day on voice over Wi-Fi, and we just recently started turning up Android-based operating systems.” Diana Goovaerts, “AT&T: We’re Carrying 4M Calls Per Day Over Wi-Fi,” *Wireless Week* (June 21, 2016), available at <https://www.wirelessweek.com/news/2016/06/t-were-carrying-4m-calls-day-over-wi-fi>.

demonstrate a broad movement of investment and value creation at the edge of the network.⁷ These commenters, along with the work done by the CBRS Alliance and WInnForum, show that network investment will in the future come from a great variety of private entities and business models, not just a handful of national carriers. Therefore, it is critical that the CBRS structure enables a number of different investment paths to build the 5G infrastructure of the future, where all parties have access to both PALs and GAA. This framework will provide the 5G leadership that the rest of the world will follow.

The 5G ecosystem clearly encompasses more than cellular technologies. 5G Wi-Fi standards are a reality today, with the IEEE 802.11ac already in deployment and advanced technology (IEEE 802.11ax, .11ay) close to adoption⁸. Wi-Fi can already achieve the data speeds, bandwidth, latency goals of 5G with 802.11ac. Combining these achievement with advances in cellular infrastructure for coverage and connected devices will be the most successful path to achieving 5G leadership.

In short, it is the breadth of the solutions brought to bear that will achieve 5G goals and leadership, not the purposeful exclusion of some of them.

III. PEA is not the Optimal PAL Size

Some commenters reiterated the CTIA and T-Mobile petitions' claims that the

⁷ Google 3.5 GHz Comments; Ruckus Wireless 3.5 Comments; WISPA 3.5 Comments.

⁸ <http://5g.ieee.org/standards>

proposed rule changes were minor tweaks to the rules.⁹ We disagree. The proposed changes, particularly with respect to the PAL size and duration, are a major deviation from the CBRS structure that has stimulated interest and investment from across the industry. The proposed new structure would essentially make PALs available only for the nationwide wireless operators, at the expense of other parties. It would seek to make the CBRS band nothing more than a copy of other traditional licensed bands.

We agree with Ruckus' comments in this proceeding:

“If Priority Access is licensed at the PEA level with a virtually perpetual duration, it would rule out that access for all aside from those companies whose business models are based on selling services covering huge areas over very long periods.”¹⁰

If the Commission were to adopt the petitioners' recommendations, such action would work directly counter to the fundamental premise of 5G being a collaborative initiative of multiple technologies with a broad consortium of providers. Contrary to claims by some commenters that PEA-sized blocks are necessary to foster investment, wireless carriers have already recognized the value of CBRS under the current rules and have been playing a key role in the WinnForum standards creation process and the CBRS Alliance. Thus, even absent potential changes to the rules, the major operators have already indicated a desire and plan to invest in the CBRS band.

⁹ [AT&T 3.5 GHz Comments](https://www.fcc.gov/ecfs/filing/1072489502472), <https://www.fcc.gov/ecfs/filing/1072489502472>

¹⁰ Comments of Ruckus related to Public Notice DA 17-609 regarding petitions to further amend the Commission's rules with regard to commercial operations in the 3550-3650 MHz Band, GN Docket No. 12-354

A change of the rules to create PEA-sized PALs would only serve to diminish investment by non-nationwide wireless operators by eliminating their ability to gain the certainty of access to spectrum in the same way that the nationwide operators seek. These petitions are merely an attempt to obtain a “better deal” for large mobile carriers, not a “necessary deal” to enable investment.

Furthermore, it is worth reiterating that the low power levels allowed in the CBRS band are inherently best fit for census block PAL size scale. PEA size PALs would thus be an invitation to leave significant amounts of spectrum fallow by allowing purchase of rights for areas within a PAL that a winning bidder has no plans to serve.

We do acknowledge mobile carriers have concerns about gaps in wide-area deployments; and if the Commission is inclined to make any changes, it would be far better to consider treating a few PALs differently – in a manner such that the majority of PALs remain available for localized, new users and open to innovation. The DSA in its comments proposed one possibility for creating differing PALs, but we recognize that other alternative approaches to the PAL tier have been put forward, and should be considered by the Commission. The DSA position, however, remains that any changes to the PAL structure should not significantly change the CBRS structure and must maintain the ability of all parties to have reasonable opportunities to obtain PAL licenses.

We also wish to reiterate that regarding the license period of a PAL, any changes should be directly linked to the time necessary for a return on initial capital investment. For that reason, we do not support the creation of a renewal expectancy. Nothing in the record beyond broad assertions suggests that such an enormous giveaway is necessary to recover investment. The disincentives to stimulating future investment and deployment of the most advanced capabilities, however, is significant.

IV. The Problems of Secondary Spectrum Markets

Many commenters in support of the petitions have discussed the virtues of “secondary markets” and “partitioning and disaggregation” to justify a PEA big-block licensing spectrum model.¹¹ The limitations of secondary markets leading to beneficial outcomes have been well documented, and reliance on that strategy has in the past resulted in substantial idle spectrum and inflexible licensing models.¹²

¹¹ Verizon Comments, <https://www.fcc.gov/ecfs/filing/10725949202101>, “Verizon supports CTIA’s suggestion that, to further facilitate micro-targeting, the Commission should consider revising its rules to allow for PAL partitioning and disaggregation in secondary market transactions.”; CTIA Petition for Rulemaking, GN Docket No. 12-354 (Jun. 16, 2017) (“CTIA Petition”).

¹² See generally, <http://jolt.law.harvard.edu/articles/pdf/v26/26HarvJLTech69.pdf>.

For example, despite the efforts by Spectrum Bridge's SpecEx.com and Cantor Fitzgerald's Cantor Spectrum, a meaningful secondary market has remained largely absent¹³. In 2012, a Harvard research article on secondary spectrum markets stated:

*"Ironically, even AT&T, when faced with capacity constraints posed by the introduction of the iPhone, reverted to Wi-Fi as the more flexible response to data capacity constraints, rather than obtaining spectrum on secondary markets."*¹⁴

The record itself is clear that PEA-sized PAL spectrum auctions restrict participation in the auctions by smaller, more innovative industry participants, and secondary markets have largely failed to enable broader market access. Consequently, this would leave spectrum underutilized and in the hands of a few players with no incentive to develop a secondary market, leaving many customers with no broadband access options.¹⁵

V. The Need for a Viable GAA Market tier

¹³ *Id.* p. 126, "Secondary markets in spectrum have not exactly failed, but it is difficult to see them as a success story."

¹⁴ *Id.* p. 101, "...secondary markets in spectrum have been relatively inflexible and unable to meet the rapid increases in demand that smartphones and tablets have imposed. "

¹⁵ [Comments of Southern Linc on CTIA and T-Mobile Petitions for Rulemaking](https://www.fcc.gov/ecfs/filing/10724102316094), <https://www.fcc.gov/ecfs/filing/10724102316094>

We agree with the assessment by Federated Wireless:

“The cumulative effect of T-Mobile’s proposals would be to allow three PAL users to occupy the entire CBRS spectrum in a given license area, each with a fixed 50 MHz allocation, to the detriment—and quite possibly the exclusion—of opportunistic use by GAA users. In effect, notwithstanding required protection of Federal and satellite incumbents, the PAL tier would be converted to primary status under a traditional exclusive licensing scheme, with the GAA tier, at best, relegated to secondary status. This proposal would eviscerate the GAA tier, as the opportunistic use T-Mobile proposes would be insufficient to support the development of the GAA ecosystem envisioned by the Commission in the 3.5 GHz Order.”¹⁶

As we have seen in the past, without a clear allocation of spectrum in every market there is not sufficient business incentive for equipment vendors and service providers to develop new solutions for any band. Clearly, if all the CBRS band is offered for auction, there will be many markets where no GAA use will be possible. GAA solutions will be suppressed and perhaps never emerge.

VII. Conclusion:

¹⁶ Federated Wireless Comments; <https://ecfsapi.fcc.gov/file/10724288597371>

DSA Members are excited to be a part of this innovative new ecosystem, and to begin to witness the fruits of their investments in 3.5 GHz infrastructure. But the Commission should act quickly to reassure investors in this band that it will not strand their investments by making wholesale changes to the rules at this late date. The FCC has taken an enormous global leadership role in embracing the CBRS three-tier dynamic spectrum access regime that has the ability to allow the market to move beyond the limitations of spectrum scarcity and toward a new normal where the focus will be on wireless solutions rather than on wireless limitations. So close to the finish line, when the entire world is watching, this Commission must continue to define the future by looking forward.



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