



March 5, 2021

EX PARTE NOTICE

Marlene H. Dortch, Secretary
Federal Communications Commission
45 L Street NE
Washington, DC 20554

Re: *Ex Parte Presentation in Facilitating Shared Use in the 3100-3550 MHz Band, WT Docket No. 19-348*

Dear Ms. Dortch:

DISH Network Corporation (“DISH”) respectfully submits this *ex parte* in support of the Commission’s *Draft 3.45 GHz Order* and to provide additional proposals to maximize investment in and efficient use of the 3.45-3.55 GHz band (the “3.45 GHz Band”).¹ DISH urges the FCC to auction the 3.45 GHz Band without delay, and with safeguards to encourage diverse auction participation, consistent with its Congressional mandate.²

At the same time, the Commission should issue a Public Notice to seek comment on targeted rule changes to rationalize the Citizens Broadband Radio Service (“CBRS”) band rules with those that are being considered for new services below 3.55 GHz. Such an effort could provide the Commission with a win-win outcome that raises revenue for the U.S. Treasury in Auction 110, while preserving the investment-backed plans of the many entities that successfully participated in the CBRS auction. These outcomes further the nation’s efforts to compete in the global race to 5G, and therefore serve the public interest.

The equitable and efficient allocation of mid-band spectrum is critical to consumers, competition, and U.S. leadership in 5G. In recognition of the importance of mid-band spectrum, the top three wireless incumbents won \$78 billion (about 96 percent) of licenses in the 3.7-4.2 GHz band (the “3.7 GHz Band”) in Auction 107 out of the total \$81.2 billion in winning bids.³ In contrast, the CBRS auction was a triumph for diversity of spectrum ownership. More than 228 different entities won Priority Access Licenses (“PALs”), including rural broadband providers,

¹ See *Facilitating Shared Use in the 3100-3550 MHz Band, Report and Order and Further Notice of Proposed Rulemaking*, 35 FCC Rcd. 11078 (2020) (“*Further Notice*”); Public Draft, *Facilitating Shared Use in the 3100-3550 MHz Band, Second Report and Order, Order on Reconsideration, and Order of Proposed Modification*, FCC-CIRC2103-03, WT Docket No. 19-348 (“*Draft 3.45 GHz Order*”).

² Congress has mandated that a system of competitive bidding to grant flexible-use licenses in the 3.45-3.55 GHz Band begin no later than December 31, 2021. See Consolidated Appropriations Act, 2021, H.R. 133, 116th Cong., Div. FF, Title IX § 905(d)(1) (2020).

³ See “FCC says Verizon, AT&T, T-Mobile won \$78 billion in C-Band spectrum auction,” Reuters, Feb. 24, 2021, available at <https://cn.reuters.com/article/us-fcc-wireless/fcc-says-verizon-att-t-mobile-won-78-billion-in-c-band-spectrum-auction-idUSKBN2AO2SI>.

local municipalities, small and midsize telecommunications carriers, technology startups, universities and research firms, cable companies, and new entrants.⁴

Now that the FCC has launched Auction 110, it has a prime opportunity to encourage robust and diverse competition for 3.45 GHz licenses, while maximizing the productive use of the CBRS band. Like other stakeholders, DISH agrees that Auction 110 is an opportunity to build on the Commission's success in bringing 5G spectrum to market. DISH appreciates the Commission's plan to begin the auction in October 2021, ahead of the statutory deadline. This accelerated schedule recognizes the urgent need for more mid-band spectrum, and any calls to delay the auction should be rejected. DISH also generally supports the Commission's proposed regulatory approach for the 3.45 GHz Band. Now that it is making another swath of mid-band spectrum available, DISH urges the Commission to think holistically about mid-band spectrum in order to maximize the efficient use of these valuable airwaves. The Commission can accomplish this goal by aligning certain key service rules in the neighboring CBRS band and further evaluating spectrum aggregation limits in Auction 110 by taking into account the concentration of all mid-band spectrum, as described below.

I. Power Levels Should Be Rationalized Across 3.45 GHz and CBRS

U.S. leadership in 5G depends on, among other things, making smart, future-proofed decisions to rationalize service rules for mid-band spectrum and enable U.S. operators to participate in a globally-scaled equipment ecosystem. China has a first-mover advantage with respect to 5G services in the mid-band frequencies, having focused its early 5G efforts on 3 GHz and 4 GHz.⁵ In contrast, the U.S. focused first on identifying high-band frequencies to support 5G.

Other countries are already planning their 5G strategies around 3GPP Band n77 (3.3-4.2 GHz). According to the Global Mobile Suppliers Association, "[t]here are nearly 140 operators currently investing in 5G networks in the 3300–4200 MHz range globally: 43 of them are deploying, have deployed, or have launched 5G networks using this spectrum."⁶ With the global picture becoming clearer, the Commission has a key opportunity to safeguard the 5G potential of CBRS as it rolls out the 3.45 GHz Band. Failing to take action risks the United States falling behind its global competitors.

As explained below, the current CBRS rules limit the band's use for macro-cell 5G deployments, due to PALs having to protect incumbent users and operate at lower transmit power, among other reasons. The FCC now plans to adopt technical rules for the 3.45 GHz Band that align with other commercial mobile bands, including AWS-1, AWS-3, and AWS-4, PCS,

⁴ See FCC Public Notice, Auction of Priority Access Licenses in the 3550-3650 MHz Band Closes; Winning Bidders Announced for Auction 105, DA 20-1009, AU Docket No. 19-244, Attachment B: Bidder Summary (Sept. 2, 2020). See also "Verizon, Dish & cable top list of CBRS auction winners," *Fierce Wireless*, Sept. 2, 2020, available at <https://www.fiercewireless.com/operators/verizon-dish-cable-top-list-cbrs-auction-winners>.

⁵ See, e.g., Jeremy Hsu, "How the U.S. Can Prepare to Live in China's 5G World," *IEEE SPECTRUM*, April 23, 2019, available at <https://spectrum.ieee.org/tech-talk/telecom/standards/how-america-can-prepare-to-live-in-chinas-5g-world>.

⁶ Global mobile Suppliers Association White Paper, *3300-4200 MHz: A Key Frequency Band for 5G*, at 5 (2020), available at <https://gsacom.com/paper/3300-4200-mhz-a-key-frequency-band-for-5g/> (registration required).

and 3.7 GHz.⁷ DISH generally supports this approach. By auctioning the 3.45 GHz Band this year, the United States can offer operators more Band n77 spectrum for full-power commercial wireless services. The proposed 3.45 GHz services rules will reduce capital and operating costs to deploy, because fewer towers will be needed to cover a market.

But to adopt this approach for the 3.45 GHz Band without implementing corresponding changes to the CBRS rules would result in inefficient use of this valuable spectrum. This would leave a relatively encumbered CBRS band sandwiched between the 3.45 GHz Band and the 3.7 GHz Band, both of which would have services rules optimized for large-scale, wide-channel 5G service offerings. This is akin to connecting two cities with a new 8-lane high-speed roadway, but constructing a stretch of single lane road in the middle. The current U.S. approach undermines the overall usefulness of the entire 3 GHz band, and places the United States at odds with our major global competitors, especially China. As Ericsson has noted, “U.S. 5G prospects would be well served if the FCC were to take advantage of the n77 ecosystem and adopt rules as consistent as possible with the n77 standards, as it did for the 3.7 GHz Service.”⁸ As explained below, the Commission has the opportunity to right the ship by creating 530 MHz of contiguous mid-band spectrum (3450-3980 MHz) with compatible power levels. These changes would ensure the United States has mid-band spectrum allocations that are comparable to the large 5G frequency bands that are available in most of Europe and the rest of the world.

A. Higher Power and Cross-Band Rationalization Will Maximize Efficient Use of 3.45-3.55 GHz and CBRS

Without further action, allowing full power in the 3.45 GHz Band could undermine robust use of the recently auctioned CBRS spectrum. In addition to upsetting auction winners’ investment-backed expectations, this will likely undermine the quality and availability of service available to consumers, as described below.

First, CBRS operators may experience blocking interference from higher power operations in adjacent bands. Since both the 3.45 GHz Band and CBRS are Time Division Duplex (“TDD”) bands, it is possible that downlink operations in one band will occur at the same time as uplink operations in the adjacent band. If a 3.45 GHz base station is in transmit mode while a nearby CBRS base station is trying to receive, the CBRS base station could suffer blocking interference, which would degrade the speed and reliability of the CBRS service. Second, if CBRS services are deployed at existing macro-cell locations, the lower power limit will cause a coverage gap between CBRS compared to a 3.45 GHz Band service at higher power.

The FCC can correct these potential challenges by: (i) increasing the allowed power level for certain classes of CBRS devices so that the power levels are rationalized with the 3.45 GHz Band; and (ii) requiring TDD synchronization across the two bands.

⁷ See *Draft 3.45 GHz Order* ¶ 69.

⁸ Comments of Ericsson, *Facilitating Shared Use in the 3100-3550 MHz Band, Report and Order and Further Notice of Proposed Rulemaking*, WT Docket No. 19-348, at 2, 4 (Nov. 20, 2020).

i. Increased CBRS Power Levels Promote Efficient Spectrum Use Across the 3 GHz Band

The *3.45 GHz Draft Order* predicts that several protection mechanisms, such as out-of-band emission (“OOBE”) limits,⁹ will protect CBRS. But these are uncertain safeguards. While “careful network planning and coordination among spectrum users”¹⁰ may limit the harms to CBRS, the most efficient and logical solution is to increase the ceiling for CBRS power limits to place it in parity with its neighbor.

The FCC’s rules currently define the maximum EIRP for Category B Citizens Broadband Radio Service Devices (“CBSDs”) as 47 dBm/10 MHz.¹¹ By contrast, commercial deployments on either side of CBRS are, or will be, authorized to operate at 62 dBm/MHz (or 72 dBm/10 MHz) in non-rural areas and 65 dBm/MHz (75 dBm/10 MHz) in rural areas.¹² DISH’s technical analysis, included as Attachment 1,¹³ proposes that the FCC create two CBSD categories. Either PAL or General Authorized Access (“GAA”) users could pursue these additional device categories, subject to the current hierarchy of priority for CBRS users:

- **New CBSD Category C:** Spectrum Access System (“SAS”) could authorize at power levels up to 62 dBm/10 MHz.
- **New CBSD Category D:** SAS could authorize devices at power levels up to 72 dBm/10 MHz.¹⁴

DISH is not the first to suggest authorizing higher power devices in the CBRS band – in 2019 AT&T advocated creating a Category C authorized to transmit at up to 62 dBm/10 MHz.¹⁵ And, at various stages of the Commission’s efforts to write the CBRS rules, parties such as CTIA, Federated Wireless, Google, Nokia, Qualcomm, T-Mobile and Verizon have argued the benefits of higher power for CBRS.¹⁶ Nonetheless, the FCC believed that lower power levels for CBRS would serve the public interest at the time it adopted the service rules.¹⁷

But, the facts have changed substantially since the CBRS rules were adopted. In 2020, Chairman Pai decided to auction the neighboring 3.45 GHz Band with higher power levels

⁹ *Draft 3.45 GHz Order* ¶ 72.

¹⁰ *Id.*

¹¹ 47 C.F.R. § 96.41(b).

¹² *Draft 3.45 GHz Order* ¶¶ 69-74; 47 C.F.R. 27.50(j) (setting power limits for the 3.7 GHz Band).

¹³ DISH Wireless, *CBRS Power Levels*, March 2021, Attachment 1 (“DISH CBRS Study”).

¹⁴ *Id.* at 3.

¹⁵ See Letter from Stacey Black, AT&T, to Marlene H. Dortch, FCC, GN Docket Nos. 17-258 and 12-354 (May 16, 2019).

¹⁶ See Petition for Reconsideration of CTIA, GN Docket No. 12-354, at 7-8 (July 24, 2015); Petition for Reconsideration of Nokia Solutions, GN Docket No. 12-354, at 9-10 (July 23, 2015); Petition for Reconsideration of Verizon, GN Docket No. 12-354, at 3-4 (July 23, 2015); Reply to Oppositions to Petitions for Reconsideration of Federated Wireless, GN Docket No. 12-354, at 1-3 (Oct. 29, 2015); Response of Google, Inc., GN Docket No. 12-354, at 5-6 (Oct. 19, 2015); Qualcomm Inc. Comments to Petition for Reconsideration, GN Docket No. 12-354, at 3-6, (Oct. 19, 2015); Response of T-Mobile USA, Inc., GN Docket No. 12-354, at 2-8 (Oct. 19, 2015).

¹⁷ See Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, *Order on Reconsideration and Second Report and Order*, FCC 16-55, GN Docket No. 12-354, ¶¶ 75-84 (2016).

typical for large-scale macro-cell commercial wireless deployments. The current CBRS EIRP limit of 47 dBm/10 MHz, on the other hand, is likely to thwart a wide variety of desirable use cases, effectively limiting CBRS users to small-cell deployments.¹⁸ Now that the rules for the spectrum immediately adjacent to CBRS are being finalized, it is appropriate and in the public interest for the FCC to consider adjusting the CBRS rules to prevent unintended harm to PAL licensees, GAA users, and consumers. Higher CBRS power limits will provide more technical and operational flexibility for operators, increase coverage, reduce deployment costs, and maximize spectrum utilization.¹⁹

Rationalizing power levels across the two bands could also benefit the 3.45 GHz Band, which will otherwise be subject to heightened OOB restrictions to protect CBRS. In addition to the typical single -13 dBm/MHz OOB limit found in other bands, 3.45 GHz operators will also have to meet equal to or less than -25 dBm/MHz beyond the 10 megahertz offset from the band edge between 3560 and 3570 megahertz; and equal to or less than -40 dBm/MHz above 3570 megahertz.²⁰ Raising CBRS power levels could thus reduce encumbrances and increase the value of the 3.45 GHz Band.

ii. Higher CBRS Power Levels Will Not Harm Incumbent Users

In addition, DISH's technical analysis found that no party is likely to be harmed by higher power use cases in the CBRS band. Incumbent users will continue to be protected by the dynamic sharing process overseen by the SAS.²¹ With Category C and D CBSDs operating at their maximum authorized power under DISH's proposal, the analysis predicts no increase in the interference risk to adjacent 3.45 GHz Band and 3.7 GHz Band services:

- **OOBE:** CBRS devices operating at 72 dBm/10 MHz will continue to meet the OOB emission limits specified in 47 C.F.R. § 96.41(e).
- **In-Band Blocking:** The adjacent channel in-band blocking tolerance requirement specified in 47 C.F.R. §96.41(f) will not change (-40 dBm/10 MHz). But, the 3GPP in-band blocking specifications are more stringent than the regulatory requirement. As a result, the probability of in-band blocking due to higher power in the CBRS band will be no greater than in other common bands.
- **PAL Protection Areas (PPAs):** CBSDs operating at up to 72 dBm/10 MHz will continue to meet the aggregated power limits of -80 dBm/10 MHz specified in Section 96.41(d) within the area of co-channel PPAs, so geographic interference to PAL licensees should not increase.
- **Other Protected Users:** DISH also found that other protected users will not experience greater impacts, including Dynamic Protection Areas (DPAs), Inland DPAs, Incumbent Fixed-Satellite Services (FSS), Grandfathered Wireless Protection Zones (GWPZs), Electronic Sensing Capability (ESC) Sites, and

¹⁸ DISH CBRS Study at 2.

¹⁹ *Id.* at 4, 7.

²⁰ *Draft 3.45 GHz Order* ¶ 82.

²¹ DISH CBRS Study at 4-6.

radiofrequency Quiet Zones.²² In some instances, the Commission may need to reevaluate the size of protection and exclusion zones for full power operations, but such an effort would be limited in scope and the increased efficiency of CBRS spectrum usage outweighs any downside.

B. TDD Synchronization

In addition, regardless of whether the Commission increases CBRS power levels, synchronization across the 3 GHz bands will be needed, such as through TDD. Increasing CBRS power levels does not change this need. If the FCC were both to require TDD synchronization *and* increase CBRS power levels, the U.S. could create 530 MHz of contiguous mid-band spectrum (3450-3980 MHz) with compatible power levels, which as explained above would position the U.S. to compete at global scale for 5G technology and services.

DISH also agrees that guard bands are not the solution and would sacrifice important mid-band spectrum.²³ We therefore propose that the final 3.45 GHz service rules include a mandate for operators to use TDD synchronization. While the *Draft 3.45 GHz Order* “encourages” operators to use TDD synchronization, and “require[s] that 3.45 GHz Service licensees negotiate in good faith” with requesting CBRS operators, such an approach may not be strong enough to ensure TDD synchronization.²⁴

In sum, DISH urges the FCC to issue a Public Notice to seek comment on increasing CBRS power levels as soon as possible. This will help potential bidders plan their participation in Auction 110, especially those that also hold CBRS PAL licenses.

II. Spectrum Aggregation

DISH supports the proposed pre-auction spectrum aggregation limit of 40 megahertz for the 3.45 GHz Band.²⁵ However, this alone will not safeguard competition or encourage diversity of ownership -- two goals articulated in the *Draft 3.45 GHz Order*.²⁶ Merely limiting all bidders from acquiring more than 40 MHz of spectrum in Auction 110 does not address the fact that the three incumbent carriers have acquired a chokehold on high mid-band spectrum (between 2.3-3.98 GHz) (“High Mid-Band Spectrum”) in previous auctions and transactions. Any spectrum aggregation limits adopted for Auction 110 must ensure equitable access to spectrum by limiting new 3.45 GHz Band licenses going to entities that already dominate the High Mid-Band Spectrum range. In the same vein, a limit that applies equally to all Auction 110 bidders would not provide the flexibility necessary for new entrants to obtain enough High Mid-Band Spectrum to compete with the incumbents.

²² *Id.* at 5-6.

²³ *Draft 3.45 GHz Order* ¶ 67 (“we find that adoption of the technical rules we proposed in the *FNPRM* as modified herein will sufficiently protect adjacent operations at both edges of the band. No commenters support the use of guard bands in this band and we decline to create guard bands here.”)

²⁴ *Id.* ¶ 62.

²⁵ *Id.* ¶ 100.

²⁶ *Id.* (explaining that a 40 MHz limit “will effectively balance the statutory objectives informing the Commission’s design and implementation of competitive bidding systems” because it will “help to promote spectrum access and encourage competition in the provision of 5G services, while still supporting the efficient and intensive use of spectrum.”).

A nuanced and flexible approach is needed so that carriers who lack High Mid-Band Spectrum can acquire it at sufficient scale in Auction 110, while also preventing spectrum rich incumbents from increasing their oligarchic hold on these valuable frequencies. For example, Verizon and AT&T dominated the recent 3.7 GHz Band auction, winning a combined total of **90 percent** of the available licenses. Just **552** of the **5,684** licenses were won by **all** of the remaining bidders. And, T-Mobile already has substantial High Mid-Band Spectrum holdings, thanks to its acquisition of Sprint. This landscape leaves new entrants, as well as small and regional carriers, at a significant competitive disadvantage, ultimately harming American consumers.

A uniform 40 MHz aggregation limit within Auction 110 is therefore not enough to foster meaningful competition for critical Band n77 spectrum. This construct would still permit the top three incumbent carriers to capture all 100 MHz of 3.45 GHz spectrum within a given market, essentially nullifying the pro-competitive goals of the cap. For example, in the important New York City market, AT&T, T-Mobile and Verizon could each win 40 MHz, 40 MHz, and 20 MHz of 3.45 GHz spectrum respectively, leaving none for any remaining competitors.

To guard against this outcome, in addition to the 40 MHz limit, the Commission should adopt a screening review specific to carriers that already hold, on average nationwide, more than 100 MHz of High Mid-Band Spectrum. Any such entity should be precluded from acquiring new 3.45 GHz licenses *unless* the FCC (under the enhanced review standard of the spectrum screen)²⁷ conducts a pre-auction review and concludes that it is in the public interest for *that specific carrier* to participate in the auction. At the same time, the Commission should relax its proposed bright-line cap for bidders with less than 60 MHz, on average nationwide, of High Mid-Band Spectrum so that such bidders are allowed to acquire more than 40 MHz of 3.45 GHz spectrum in Auction 110. Another option would be to divide the 3.45 GHz Band into reserve and non-reserve segments, similar to the construct used in the Incentive Auction for the 600 MHz band. As with the 600 MHz auction, the Commission can build in triggers to release reserve spectrum to all bidders if demand falls short.

Regardless of the mechanism used, DISH urges the Commission to build upon the aggregation limits within Auction 110 in order to promote new wireless competitors. Allowing the incumbents to dominate another mid-band spectrum auction would worsen the digital divide and the public interest harms Congress sought to avoid in charging the Commission with “promoting economic opportunity and competition and ensuring that new and innovative technologies are readily accessible to the American people by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants.”²⁸

III. 3.45 GHz Band Performance Requirements Should Align with CBRS

DISH respectfully disagrees with the proposal to impose an accelerated buildout obligation on future 3.45 GHz licensees.²⁹ The performance requirements laid out in the *Draft*

²⁷ See Policies Regarding Mobile Spectrum Holdings Expanding the Economic and Innovation Opportunities of Spectrum through Incentive Auctions, WT Docket No. 12-269, *Report and Order*, 29 FCC Rcd at 6133, 6190, para. 135 (2014).

²⁸ 47 U.S.C. § 309(j).

²⁹ See *Draft 3.45 GHz Order* ¶ 119 (3.45 GHz licensees will be required to meet benchmarks at 4 and 8 years).

3.45 GHz Order are more aggressive than both the CBRS and 3.7 GHz Band rules. If the draft order is voted without any changes, 3.45 GHz licensees will have to meet signal coverage and service benchmarks at four and eight years, compared to (i) similar milestones for the 3.7 GHz Band at eight and 12 years;³⁰ and (ii) a substantial service requirement for CBRS at the end of 10 years.³¹ Rather than adopt this incongruous approach, DISH agrees with several other stakeholders that 3.45 GHz licensees should be required to meet the same buildout timeline as CBRS licensees.³² Even with this change, 3.45 GHz and CBRS would still be on a tighter timeline than the 3.7 GHz Band.

The Commission’s reasoning for the accelerated buildout for 3.45 GHz is based on certain assumptions about U.S. access to Band n77 spectrum that may or may not be true, depending on Commission action in this proceeding. The *Draft 3.45 GHz Order* argues that 3.45 GHz licensees can move faster because they are not deploying true “greenfield” spectrum and “much of the 3 GHz band—including the 3.45 GHz band—has already been allocated for 5G use globally, with standard setting and global harmonization well underway.”³³ This statement, however, is at odds with the Commission’s decision to impose lower power limits on CBRS. As explained above, if the United States persists with CBRS power levels that are not rationalized with the rest of the world, then American operators will not be able to acquire 3 GHz equipment at scale based on global standards. Instead, the U.S. may have to develop a specific equipment ecosystem, which will require substantial time, threatening efficient deployments. Thus, this accelerated buildout is especially unwarranted if the Commission declines to rationalize power levels across CBRS and 3.45 GHz.

Even without these potential equipment availability issues, there is no justification for requiring 3.45 GHz licensees to build out faster than other 3 GHz band users. Nor is it logical to impose three different buildout schedules across services that are all ideal for 5G services. Among other outcomes, such differing schedules may raise deployment costs, ultimately harming consumers.

IV. PEA-Based Licensing and License Size

DISH supports the Commission’s draft plan to adopt five unpaired 20 MHz blocks to auction the 100 MHz of spectrum in the 3.45 GHz Band.³⁴ As the *Draft 3.45 GHz Order* explains, “U.S. 5G prospects would be well served by this configuration” and notes that 20 MHz blocks are included in 3GPP’s 5G deployment options.³⁵

DISH also supports the FCC’s decision to use Partial Economic Area (“PEA”) licenses for Auction 110.³⁶ This approach will strike the balance necessary to support diverse auction

³⁰ See *id.*; see also 47 C.F.R. § 27.14(v).

³¹ 47 C.F.R. § 96.25(b)(3).

³² See, e.g., Charter and Cox Comments at 1-2; Federated Wireless Reply at 2-6; WISPA Comments at 2-5.

³³ *Draft 3.45 GHz Order* ¶ 120.

³⁴ *Id.* ¶¶ 58-59.

³⁵ *Id.* ¶ 59.

³⁶ *Id.* ¶ 108.

participation, increase buildout opportunities in rural communities, and enable operators to reach sufficient scale to support the 5G services that consumers demand.

V. Federal Relocation Costs

The National Telecommunications and Information Administration (“NTIA”) has estimated approximately \$13 billion in transition costs for Federal incumbents to clear out of the 3.45 GHz Band.³⁷ The FCC should request that NTIA provide further support for the \$13 billion figure and allow public input to verify the number.

* * *

As the Commission moves forward with Auction 110, DISH urges it to think holistically about all currently-licensed mid-band spectrum in order to maximize the efficient use of these important frequencies. Aligning certain key service rules in the CBRS band and further evaluating spectrum aggregation limits for Auction 110, will help further this goal, facilitating robust competition and American leadership in 5G.

Please contact me with any questions regarding this submission.

Sincerely,

_____/s/_____

Jeffrey H. Blum
DISH Network Corporation

Attachment 1: DISH Wireless, *CBRS Power Levels*, March 2021

³⁷ See Letter from Carolyn Roddy, Deputy Assistant Secretary for Communications and Information, to Hon. Ajit Pai, Chairman, FCC, Attachment (Jan. 14, 2021), https://www.ntia.doc.gov/files/ntia/publications/ntia_letter_to_fcc_chairman_re_estimated_costs_for_3450-3550_mhz_1-14-21.pdf (estimating that federal relocation costs may total over \$13 billion).



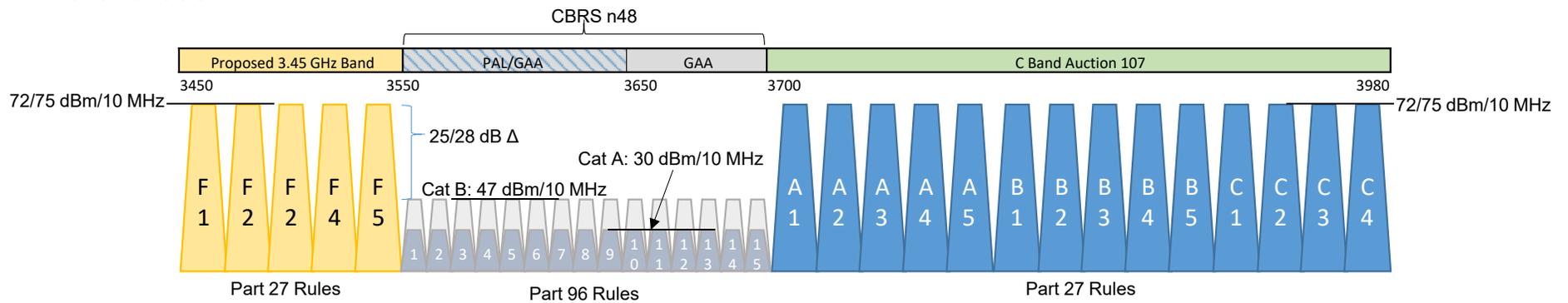
CBRS Power Levels

March 2021



Current Rules

- CBRS (3550-3700 MHz) is governed by Part 96 rules that limit the maximum EIRP for Category B CBSDs to **47 dBm/10 MHz**
- Current EIRP levels limit the use of CBRS spectrum to small cell deployments
- With the release of the 3.45 GHz rules, low power CBRS will be sandwiched between two high power bands that are suitable for macro deployments. This is inconsistent with how other countries and standard-setting bodies have treated the 3 GHz band
- A typical 5G base station operates at significantly higher power levels. C-Band and 3.45 GHz are licensed at 62 dBm/MHz (or **72 dBm/10 MHz**) in non-rural areas and 65 dBm/MHz (**75 dBm/10 MHz**) in rural areas





Improved Power Categories

- At current power levels (47 dBm/10 MHz), CBRS 5G radio coverage is less than 20% of a standard 2 GHz 5G radio
- In order to increase operational flexibility and maximize spectrum usage, we propose to add two new CBSD categories in the Part 96 rules:
 - Category C CBSDs with maximum allowable EIRP of **62 dBm/10 MHz** (10 dB lower than allowed in the adjacent bands)
 - Category D CBSDs with maximum allowable EIRP of **72 dBm/10 MHz**
- Also, we propose to increase CBRS UE power to operate at 26 dBm – in line with the 3GPP High Power UEs (HPUEs) definition
- These new power limits should be applicable to both PAL and GAA users, improving the overall utility of the band
- The new CBSD categories and the UE Power will significantly reduce operator CAPEX and OPEX



No Change to Other Rules

- Incumbent users are fully protected by the SAS and the ESC, and are not affected by higher power CBSD operations
- SAS operations continue to synchronize transmissions and limit the power levels to meet protection thresholds. The SAS will continue to have control on the maximum power that can be transmitted by any CBSD
- Given that the proposed power levels are the same as the 3.7-4.2 GHz band, there is no added burden to the infrastructure vendors to provide equipment at these power levels and to meet the out-of-band emission limits specified in 96.41(e)
- Users in adjacent channels will remain protected – whether adjacent channel operations are GAA, PAL, or protected incumbent users



Incumbent Users Will Be Protected by Category C and D Devices

- **PAL Protection Areas (PPAs)** – The proposed Category C and D CBSDs and UE will continue to meet the aggregated power limits of -80 dBm/10 MHz specified in 96.41(d) within the area of co-channel PPAs, so geographic interference to PAL licensees will not increase
 - Default PPAs will continue to be defined as described in 96.25(c) as a -96 dBm/10 MHz contour around each CBSD
- **Dynamic Protection Areas (DPAs)** - Protection limits for incumbent radars (-144 dBm/10 MHz aggregate interference) will also not change
 - The SAS currently protects active DPAs by ensuring that the aggregate interference from all CBSDs within a “DPA Neighborhood” does not exceed the protection limit
 - The SAS currently defines DPA Neighborhoods as a buffer distance from the edge of the DPA, and defines different distances for Category A and Category B CBSDs
 - The SAS could easily define new appropriate distances for the additional Category C and D CBSDs that extends beyond the Category B distance if needed
 - Thus, adding Category C and D CBSDs to the SAS does not require new SAS functionality, but rather adds another layer to the SAS’s existing functionality
- **Inland DPAs** – Temporal and frequency-agile inland DPAs will continue to be protected at current protection levels, although the DPA neighborhood size may need to be recalculated
- **Exclusion Zones** – The 80 km radius of the three remaining exclusion zones in St. Inigoes, MD; Pascagoula, MS; and Pensacola, FL may be reevaluated to determine if Category C and D CBSDs will require a larger protection area



Incumbent Users Will Be Protected by Category C and D Devices (continued)

- **Quiet Zones** – Category C and D CBSDs will meet the protection criteria specified for the single point DPA at the Table Mountain Radio Receiving Zone in Colorado; will either operate outside the National Radio Quiet Zone in West Virginia or will coordinate operations inside the NRQZ; and, to the extent necessary, will coordinate with the Arecibo Observatory in Puerto Rico.
- **FSS incumbents** – Section 96.17(a) requires that the SAS consider co-frequency emissions from all CBSDs within 150 km of an FSS earth station for calculation of co-channel protection levels and adjacent emissions from all CBSDs within 40 km for calculation of blocking interference.
 - The long term median aggregate co-channel protection limit of -129 dBm/MHz (based on I/N of -12 dB) and the requirements for OOB and blocking protection to FSS earth stations will continue to be met
 - However, larger radii for co-channel interference and adjacent channel blocking may be necessary to account for the higher power category CBSDs
- **Grandfathered Wireless Protection Zones (GWPZs)** – Most grandfathered wireless systems are no longer protected as of April 17, 2020; however, a small number are entitled to protection until their expiration date. Category C and D CBSDs will continue to protect grandfathered wireless systems until such licenses expire on January 8, 2023.
- **Electronic Sensing Capability (ESC) Sites** – ESC sites require protection from CBSDs so that they can reliably sense radar signals at sea. Higher power category CBSDs will be considered by the SAS in the calculation of interference to ESC sites and will meet the specified protection criteria



Conclusion

- Higher power CBSDs and UEs will increase the overall utility and spectral efficiency of 5G services in CBRS band without increasing the overall risk of interference to other services.
- Adding Category C and Category D CBSDs to the SAS requires minimal additional functionality.
- New CBSDs will add flexibility and deployment options for operators.
- Internationally harmonized spectrum in the 3 GHz band is critical to decrease operator CAPEX and OPEX. This will ultimately benefit consumers and foster U.S. 5G leadership in mid-band spectrum.