

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

_____)	
In the Matter of)	
Rules Governing the Use of Distributed)	MB Docket No. 20-74
Transmission System Technologies)	
Authorizing Permissive Use of the “Next)	GN Docket No. 16-142
Generation” Broadcast Television Standard)	
_____)	

PETITION FOR RECONSIDERATION

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INTRODUCTION AND SUMMARY

Pursuant to Section 1.429 of the Commission’s rules, Microsoft requests that the Federal Communications Commission (“FCC” or “Commission”) reconsider its decision to permit signals from distributed transmission system (“DTS”) transmitters to “spill[] over beyond a full-service station’s authorized service area” by significantly more than the ““minimal amount”” allowed under the Commission’s current rules.¹ The Order adopting this new policy fails to address essential issues and includes significant factual errors, and contradictions.

Instead, the Commission should adopt a “more measured solution that would . . . streamline[] the current approach under which a licensee would need to seek a waiver for signal spillover that exceeds a ‘minimal amount.’”² An expedited-waiver approach would increase predictability and flexibility for licensees without undermining the ability of “broadband devices using [television] white spaces” to deliver important services for consumers in rural areas.³

The Commission has worked, over many years, to build a television white spaces (“TVWS”) framework that allows this technology to provide meaningful rural coverage. Recognizing the ability of white space devices to provide connectivity for “rural and underserved areas, including broadband data for schools and libraries,”⁴ the Commission authorized TVWS operations in 2008, adopted further rules to promote opportunities for TVWS devices in 2010

¹ *Rules Governing the Use of Distributed Transmission System Technologies, Authorizing Permissive Use of the “Next Generation” Broadcast Television Standard*, Report and Order, 36 FCC Rcd. 1,227, ¶ 2 (2021) (“DTS Order” or “Order”); 47 C.F.R. § 73.626(f)(2).

² DTS Order at Statement of Commissioner Geoffrey Starks, Approving in Part, Dissenting in Part.

³ *Id.* at Statement of Commissioner Jessica Rosenworcel, Approving in Part, Dissenting in Part.

⁴ *Unlicensed White Space Device Operations in the Television Bands*, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd. 12,603, ¶ 3 (2020).

and 2012, and revised the rules to promote TVWS usage following the 600 MHz Incentive Auction.⁵ And just last year, the Commission adopted important changes to the TVWS rules to “provide improved broadband coverage that will benefit American consumers in rural and underserved areas,” such as by permitting higher radiated power and antenna height in “less congested” areas.⁶ The TVWS rules facilitate these important uses while still protecting licensees from harmful interference. In the case of broadcasters, they do so by prohibiting TVWS devices from operating within a defined “separation distance” from a designated broadcast signal contour.⁷

The Commission has separately adopted and revised rules governing the use of DTS by broadcast television licensees. Unlike traditional single-site broadcast stations, DTS networks use “two or more transmission sites located within a station’s service area,” allowing licensees “to reach more viewers in their coverage areas” and “to distribute more uniform and higher-level signals near the edges of their coverage areas.”⁸ Under the previous rules, a DTS transmitter’s noise-limited service contour must remain within *either* the central station’s “authorized service area” *or* a specified—usually much larger—distance from the central station’s reference point listed in the Table of Distances.⁹ More generous still, these limits contain an exception where an “extension of coverage beyond the station’s authorized service area is of a minimal amount and necessary” to cover the entirety of that authorized service area.¹⁰

⁵ See *id.* ¶ 4 (describing Commission orders).

⁶ *Id.* ¶¶ 7, 9.

⁷ See 47 C.F.R. §§ 15.712(a)(1)-(2).

⁸ DTS Order ¶¶ 4, 5.

⁹ 47 C.F.R. § 73.626(f)(2); see *id.* § 73.626(c) (Table of Distances); DTS Order ¶ 6.

¹⁰ 47 C.F.R. § 73.626(f)(2).

America's Public Television Stations ("APTS") and the National Association of Broadcasters ("NAB") petitioned the Commission in 2019 to revise those DTS rules to allow signals from DTS transmitters to spill out much farther than the existing Table of Distances lengths or the central station's authorized service area. They proposed that the DTS transmitter's interference contour (36 dBu F(50,10) contour) could extend to the reference facility interference contour (36 dBu F(50,10) contour).¹¹ Correspondingly, the Table of Separations distance for a DTS transmitter operating in the UHF band would increase from 103 kilometers to 235 kilometers or more. The Commission issued a Notice of Proposed Rulemaking seeking comment on the request.

As Microsoft explained in opposing the broadcasters' petition, allowing significantly more spillover by DTS transmitters outside of a broadcaster's service area would greatly increase interference to TVWS operations and undermine the ability of TVWS deployments to address the digital divide.¹² Although DTS deployments have been very limited in the past, the new single-frequency-network capabilities of ATSC 3.0 will likely accelerate DTS deployments, making this increase in interference a significant threat to existing and future TVWS deployments. Moreover, allowing significantly more spillover, on top of the very generous rules that already exist, is unnecessary to facilitate the successful deployment of ATSC 3.0 DTS systems to provide over-the-air coverage to broadcast television consumers.¹³ Accordingly,

¹¹ See DTS Order ¶ 9 & n.36; Joint Petition for Rulemaking of America's Public Television Stations and the National Association of Broadcasters, GN Docket No. 16-142 (filed Oct. 3, 2019).

¹² See Comments of Microsoft Corporation at 7-10, MB Docket No. 20-74, GN Docket No. 16-142 (filed June 12, 2020) (Microsoft Comments); Reply Comments of Microsoft Corporation at 11-12, MB Docket No. 20-74 (filed July 13, 2020) (Microsoft Reply Comments).

¹³ See, e.g., Microsoft Reply Comments at 3-4.

Microsoft urged the Commission to retain a version of its existing DTS rules that allows broadcasters to use a waiver process for DTS deployments that require more than de minimis spillover.¹⁴ When the Commission adopted the DTS Order, then-Commissioner Rosenworcel and Commissioner Starks dissented in part and supported an expedited-waiver approach more tailored to the actual needs of broadcasters.¹⁵

The Commission majority, under its previous leadership, however, rejected the expedited-waiver approach and instead adopted a version of the APTS/NAB request. The Order is fatally unclear, as discussed below. But portions of it appear to permit DTS coverage to spill far beyond what the current rules allow, out to the boundary of the “41 dBu F(50,50) contour for the overall reference facility.”¹⁶ The Commission clarified that “DTS transmissions will not be entitled to interference protection beyond the station’s authorized service area.”¹⁷ But it impermissibly overlooked the substantial impacts to TVWS from the significantly increased range of DTS signals even without interference protection, stating only that this new interference will not have a “significant impact,” with literally no supporting explanation or discussion of Microsoft’s specific concerns. Unfortunately, this unsupported assertion is demonstrably incorrect. The resulting Order worsens an already-unfavorable environment for TVWS deployment, is internally inconsistent, and fails to address significant issues. The Commission should reconsider this matter and adopt an expedited-waiver approach.

¹⁴ See, e.g., Microsoft Comments at 2-3; Letter from Paula Boyd, Senior Director, Government and Regulatory Affairs, Microsoft Corporation, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 20-74, at 1 (filed Jan. 7, 2021) (“Microsoft 1/7/21 Letter”).

¹⁵ See DTS Order at Statement of Commissioner Jessica Rosenworcel; *id.* at Statement of Commissioner Geoffrey Starks.

¹⁶ *Id.* ¶ 11. 41 dBu F(50,50) is the contour for this purpose for full-service stations operating on UHF channels; the field strength is 28 dBu F(50,50) or 36 dBu F(50,50) for other DTV channels.

¹⁷ *Id.* ¶ 2.

I. THE DTS ORDER NEEDLESSLY WORSENS AN ALREADY-DIFFICULT ENVIRONMENT FOR TVWS DEPLOYMENT.

The Commission’s current rules regarding DTS spillover are already extremely generous for broadcasters. This is particularly true for the many broadcasters whose central stations operate at less than the one-megawatt maximum power and thus have noise-limited service contours¹⁸ significantly smaller than the existing Table of Distances ranges. That generosity for DTS transmitters, however, limits the areas where TVWS operations are either permitted from a regulatory perspective or feasible from a practical one. The DTS Order needlessly gives more space to DTS transmissions at the even greater expense of TVWS services for rural and underserved communities.

The current rules already provide a bright-line boundary within which DTS transmissions must remain: either the “DTV station’s Table of Distances area” or “its authorized service area.”¹⁹ The radius of the Table of Distances area is 64 miles for UHF DTV stations, which reflects the area a station would have covered if it were broadcasting at the maximum allowed power and height (1 megawatt effective radiated power (“ERP”) with an antenna height above averaged terrain (“HAAT”) of 365 meters), irrespective of its actual power and height, which are almost always lower.²⁰ Thus, the Table of Distances area is significantly larger than the actual service areas of most stations. It is only DTV stations operating at or near the maximum combination of ERP and HAAT values for which the DTV authorized service area will approximate or potentially exceed the maximum service area specified in the Table of Distances.

¹⁸ The noise-limited contour for a full-service station is given by its 41 dBu F(50,90) contour.

¹⁹ 47 C.F.R. § 73.626(f)(2).

²⁰ See Letter from Michael Daum, Director, Technology Policy, CELA – Privacy & Regulatory Affairs, Microsoft Corporation, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 20-74, at 2-3 (filed Dec. 23, 2020) (“Microsoft 12/23/20 Letter”).

The fact that most DTV stations do not operate at maximum power and height has two relevant implications. First, those licensees typically have no need for even the existing exception for transmissions that exceed the authorized service area by a minimum amount, as signals that go beyond the authorized service area should easily stay within the Table of Distances locations.²¹ If the purpose of the relevant DTS rules is to ensure DTV operators can place DTS transmitters so that they can “cover[] all of the applicant’s authorized service area,”²² then no change is needed for those licensees. And the “minimum amount” exception already accommodates the subset of maximum-height, maximum-power DTV stations, with a waiver as an additional safety valve. Broadcasters *may* need to significantly expand their “spillover” coverage if their true objective is to monetize their spectrum through provision of “Broadcast Internet.” But the Commission cannot permissibly claim that its rule changes are motivated by the need to allow broadcasters to adequately cover their authorized service areas if the true reason is, instead, to allow this new revenue stream. Such misdirection could explain some of the Order’s inconsistencies, explained below, but it would plainly violate the Administrative Procedure Act. Moreover, increasing the DTS spillover area considerably beyond the parent broadcaster’s interference contour, for the purposes of allowing it to offer a new service over an expanded area, would effect a dramatic, automatic, and free increase in the licensee’s spectrum holdings.²³

Second, and to the detriment of TVWS services, even those licensees with lower-power, lower-height stations can place DTS transmitters such that their signals extend beyond the authorized service area so long as the signals remain within the Table of Distances boundary.

²¹ See 47 C.F.R. § 73.626(f)(2).

²² *Id.* § 73.626(f)(1).

²³ See Microsoft Reply Comments at 3.

Regardless of the height and power of the DTV station and the characteristics of the surrounding terrain, therefore, a DTS deployment could undermine TVWS deployments either co-channel or on adjacent channels anywhere within the Table of Distances boundary. As DTS deployments become more common due to adoption of ATSC 3.0, this may make any TVWS deployments impractical within these areas on several of the already very limited number of channels available for TVWS.

Microsoft and other parties raised these concerns before the Commission, arguing that extending the spillover area for DTS transmissions even farther would needlessly make even less area available for TVWS operations than under the current rules. We explained that the change would benefit not broadcasters struggling with the “minimum amount” exception (as it is not relevant for many of them), but rather broadcasters interested in expanding DTS range to create a service footprint far beyond their authorized service areas.²⁴

But the DTS Order suggests that the Commission never seriously considered these issues. Instead, the Order simply states, without explanation or justification, that the Commission “do[es] not anticipate a significant impact on the availability of spectrum for white space operations or other unlicensed uses.” The Commission’s only elaboration on this point was that “interference impact will be far less than it would have been with the initial proposal.”²⁵ Likewise, the DTS Order asserts that “concerns expressed regarding the NPRM proposal” and the rationale for broadcasters’ extending the range of DTS spillover are “mitigated by our approach.”²⁶ But the fact that the Commission’s decision would harm TVWS operations less than the petitioners’ original proposal falls far short of explaining why its new rules are in the

²⁴ See, e.g., Microsoft Comments at 2-7; Microsoft Reply Comments at 1-4, 7-10.

²⁵ DTS Order ¶ 24.

²⁶ *Id.* ¶ 22.

public interest and suggests that the rules may not have been the product of reasoned decision making. Plainly, and as Microsoft pointed out, even the less extreme approach in the Order significantly extends DTS spillover for little reason other than a spectrum giveaway for broadcast internet and limits providers' ability to offer TVWS connectivity by exposing them to interference from DTS transmitters.²⁷

It is also important to consider the Commission's *2017 Next Gen TV Order*, in which it concluded that the existing rules authorizing DTS stations "generally are adequate to authorize an ATSC 3.0 SFN station" and that the record did not support changes to its DTS rules.²⁸ In particular, the Commission "determined that a DTS station's maximum authorized service area should be comparable to that which the DTV station could be authorized to serve with a single

²⁷ See *id.* ¶ 12 n.47 (noting, but not disagreeing with, this argument regarding broadcasters' intent for seeking a change in the rules).

²⁸ *Authorizing Permissive Use of the "Next Generation" Broadcast Television Standard*, Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd. 9,930, ¶ 118 (2017) (*2017 Next Gen TV Order*). The Commission's explanation in full was:

"We adopt our tentative conclusion in *the Next Gen TV NPRM* that the rules the Commission already has established to authorize a DTS station generally are adequate to authorize an ATSC 3.0 SFN station. Several commenters request that we amend the service area rules applicable to DTS to enable Next Gen TV stations to expand the area that an ATSC 3.0 SFN license could cover. Other commenters oppose changes to the current service area rules without further public comment. The record generally does not address the technical complexities that could be raised if we adopt this proposal or the effect that changes to authorized DTS service areas could have on any of our other rules that depend on station service areas. While we recognize that the changes suggested by commenters could potentially facilitate Next Gen TV deployment, no commenters state that the proposed changes are necessary for broadcasters to begin using SFNs with the ATSC 3.0 standard. As such, we find that the record does not support changes to the authorized service areas for Next Gen TV SFNs, and we decline to make any such changes at this time. The Commission will monitor the deployment of ATSC 3.0 in the marketplace and will reconsider this issue in the future if appropriate."

Id. (footnotes omitted).

transmitter (the Comparable Area Approach)” and “rejected requests to expand the area that a DTS network could cover.”²⁹ The *2017 Next Gen TV Order* identified the impact on “our other rules that depend on station service areas” as a reason for careful deliberation of the “technical complexities” involved, and provided a bright-line test for the Commission to reconsider its decision in time: The “Commission will monitor the deployment of ATSC 3.0 in the marketplace and will reconsider this issue in the future if appropriate.”³⁰ Yet the DTS Order impermissibly reverses this decision *sub silentio*, adopting a rule change that expands the real-world coverage at the expense of services like TVWS without explanation, with no significant discussion regarding ATSC 3.0 deployment and without reconsidering the *2017 Next Gen TV Order*’s Comparable Area Approach. This hasty change, with inadequate consideration of the impact on other services, was arbitrary and inconsistent with Commission precedent.

II. THE COMMISSION SHOULD RECONSIDER ITS DECISION TO PERMIT DTS SIGNALS TO SPILL BEYOND THE STATION’S AUTHORIZED SERVICE AREA BY MORE THAN A MINIMAL AMOUNT.

A. The Order Includes Incorrect and Inconsistent Assertions Regarding the Range of DTS Spillover.

The Order includes significant inconsistencies that make it amenable to two alternate readings regarding the distance the DTS signals can extend beyond the station’s authorized service contour. Both possibilities reduce the availability of spectrum for TVWS operations—one more severely than the other. The inconsistency in the Order and accompanying rules reflects, however, that adopting this approach does not “provid[e] additional clarity” as the Commission hoped it would.³¹ Rather, it “create[s] ambiguities,”³² undermines “investment in

²⁹ DTS Order ¶ 21 & n.87.

³⁰ *2017 Next Gen TV Order* ¶ 118.

³¹ DTS Order ¶ 1.

³² *Id.* at Statement of Commissioner Jessica Rosenworcel.

new services going forward,”³³ and alters the use of this spectrum “before it is known whether [the additional DTS spillover] will be compatible with other operations in the TV band.”³⁴ Moreover, these internal inconsistencies mean that, whatever the right interpretation of the Order, significant portions of the Order fail to support it.

First, the DTS Order and revised Rule 73.626(f)(2) refer to a “reference facility” and “reference station.” However, although these terms are essential to interpreting the Order, the Commission does not define them in either the C.F.R. or the Order. A “reference facility” could refer either to a hypothetical maximum-power, maximum-height tower, as in the DTS Table of Distances, or to the actual facilities constructed by a particular licensee. Because the Order permits “each DTS transmitter’s coverage” to go beyond the DTV station’s authorized service area so long as it remains within the “F(50,50) contour . . . of its reference facility,”³⁵ the meaning of “reference facility” is critical to determining how extreme the expansion of the DTS spillover range is.

The Commission’s usage of “reference facility” unfortunately sheds little helpful light on this question. Section 73.626(f)(2) as amended by the DTS Order states: “Each DTS transmitter’s coverage is contained within either the DTV station’s Table of Distances area (pursuant to paragraph (c) of this section) or its authorized service area, except where such

³³ *Id.*

³⁴ *Id.* at Statement of Commissioner Geoffrey Starks; *see also id.* at Statement of Commissioner Jessica Rosenworcel (arguing for a “more fine-tuned approach that would have allowed us to better gauge the effects of these systems on other services that use these airwaves, including . . . broadband devices using white spaces”). *See generally* Microsoft 12/23/20 Letter at 1-4 (describing these and related concerns regarding the range of DTS spillover under the NPRM proposal); Microsoft 1/7/21 Letter at 1; Letter from Paula Boyd, Senior Director, Government and Regulatory Affairs, Microsoft Corporation, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 20-74, at 1 (filed Jan. 14, 2021).

³⁵ DTS Order at App’x A, § 73.626(f)(2)(i).

extension of coverage beyond the station’s authorized service area meets the following criteria:

(i) In no event shall the F(50,50) service contour of any DTS transmitter extend beyond *that of its reference facility* [.]”³⁶ Footnote 20 of the Order purports to explain the meaning of “reference facility,” but instead compounds the uncertainty: “[T]he Table of Distances reflects a predicted noise-limited service contour (NLSC) for a given station’s non-DTS, single-transmitter facility (*i.e., the reference facility*).”³⁷ “Reference facility” as a term meaning the “non-DTS, single-transmitter facility” likely means that actual “given station’s” facility, but since the Table of Distances contains generic maximum values, the term could also mean a generic maximum-power, maximum-height facility.³⁸

Other aspects of the Order—in particular those discussing the nature of the F(50,50) boundary added to the Commission’s rules as the limit for DTS spillover—raise even more questions. Some indicate that the 41 dBu F(50,50) service contour of the DTS transmitters need only stay within the 41 dBu F(50,50) service contour of a hypothetical maximum-service-area tower as described in the Table of Distances:

- Paragraph 18: “We therefore update the Table of Distances in section 73.626(c) with an *additional set of reference distances calculated using the 41 dBu F(50,50) contours*. *These reference distances will establish the limit of permissible spillover*, and section 73.626(f)(2) will be modified to state that the 41 dBu F(50,50) service contour for each individual DTS transmitter must be contained *fully within that reference distance*.”³⁹

³⁶ *Id.* (emphasis added).

³⁷ *Id.* ¶ 6 n.20 (emphasis added).

³⁸ Other uses of the term “reference facility” suffer the same amenability to both potential definitions. *See id.* ¶ 16 (“Our revised rule replaces the ‘minimal amount’ test in section 73.626(f)(2) with an approach that utilizes a contour based on the service field threshold. Specifically, we will permit television stations additional flexibility to deploy DTS transmitters so long as the transmitters continue to be sited within the station’s authorized service contour and, for UHF stations, *the 41 dBu F(50,50) contour for each individual DTS transmitter is fully contained within the reference station’s 41 dBu F(50,50) contour*.” (emphasis added)).

³⁹ *Id.* ¶ 18 (emphasis added).

- Footnote 77: “*Under the current rule, which focuses on replicating a station’s hypothetically maximized single-transmitter service area, a minimal amount of spillover has been permitted, with the understanding that such outward spillover is necessary and incidental to improving service within the station’s authorized service area. . . . In contrast to the NPRM proposal, the rule we adopt today, by providing flexibility to improve service within a station’s authorized area, but providing a bright-line boundary on outward spillover, and one based on a station’s service contour, is more closely aligned with the objective of our current rule to improve service to those viewers a station is already authorized to serve.*”⁴⁰

But other aspects of the DTS Order indicate the opposite: that the 41 dBu F(50,50) service contour of the DTS stations must remain within the 41 dBu F(50,50) service contour calculated using the licensee’s actual facilities:

- Paragraph 17: “*The F(50,50) curves, in combination with the signal level thresholds in 73.622(e), can be considered as representative of an area in which most of the people could view a DTV signal a substantial amount of the time. Accordingly, we find that it makes sense to limit spillover service to this area, an area that likely already experiences some level of reception from the existing non-DTS facility and thus may already have viewership of the station.*”⁴¹
- Paragraph 19: “*Therefore, we find that our service-based approach—focusing on the provision of service to those viewers a station is already authorized to serve—is more consistent with the intent underlying section 73.626(f)(2) that spillover allowances meet the requirement in section 73.626(f)(1) to cover the entire reference service area.*”⁴²

These statements are core to the Commission’s justification, but they flatly contradict the interpretation above. These statements are only plausibly true if the F(50,50) curve referred to is the curve of the *actual* station, and not the theoretical stations characterized in the Table of Distances. If “reference facility” means a generic maximum-height, maximum-power tower, the F(50,50) curves defined in the revised Table of Distances do *not* reflect either the area in which most people could view a DTV signal a substantial amount of the time or the area defining viewers a station is already authorized to serve, particularly for the many DTV stations operating

⁴⁰ *Id.* ¶ 19 n.77 (emphasis added).

⁴¹ *Id.* ¶ 17 (emphasis added).

⁴² *Id.* ¶ 19 (emphasis added).

at much less than a megawatt. Rather, they reflect the far-larger area that a station would only *hypothetically* cover if it transmitted at the maximum power and maximum height allowed in the rules—which most stations do not.

The Order purports to “replac[e] the ‘minimal amount’ exception with a bright-line rule” based on a “defined contour” in the interest of enabling “better planning” by “broadcasters implementing DTS” as well as “all other licensed and unlicensed spectrum users operating in or interested in operating in spillover areas,” but this ambiguity has the opposite effect.⁴³ The shifting explanations and justifications in the Order also disguise the Order’s fundamental error: it effectively authorizes a broad expansion of the area over which all broadcasters can provide service, undermining TVWS service across large areas, for the very limited purpose of eliminating broadcasters’ need to seek waivers in highly unusual cases where the flexibility and exceptions already built into the DTS rules are not enough. Given this imbalance between the costs and benefits of this decision, it is no surprise that the Order struggles to justify it.

B. Under Either Approach, the Order’s Extension of the Range for DTS Spillover Will Significantly Impact Available Spectrum for TVWS.

The Commission acknowledged in the DTS Order that it was “increasing the amount by which DTS transmissions are permitted to spill over beyond a station’s authorized service contour,”⁴⁴ but asserted that its approach would not have a “significant impact on the availability of spectrum for white space operations or other unlicensed uses.”⁴⁵ That is simply not true, particularly on the more expansive reading of the rules and Order.

⁴³ *Id.* ¶ 20.

⁴⁴ *Id.* ¶ 11.

⁴⁵ *Id.* ¶ 24; *see also, e.g., id.* ¶ 15 (“Thus, as compared to the NPRM proposal, the rule change we adopt today poses less of an interference risk to licensed and unlicensed operations in areas beyond a full power station’s authorized service.”).

Even for a maximum-power, maximum-height station, DTS signals strong enough to disrupt TVWS—both co-channel and on adjacent channels—will be permitted under the DTS Order to extend *at least* 39 kilometers beyond the area already listed in the Table of Distances—nearly a doubling of the affected area and an increase of 30,000 square kilometers. (The Table of Distances in the current rules notes that the maximum service area for a 41 dBu service field strength is 103 kilometers;⁴⁶ the column added in the revised Table of Distances under the DTS Order notes that the maximum distance for a 41 dBu F(50,50) contour is 142 kilometers.⁴⁷) These 30,000 square kilometers represent new territory in which TVWS operations must anticipate interference from DTS transmitters associated with a single broadcast station. For a *lower-power, lower-height* antenna, permitting DTS signals to reach 41 dBu F(50,50) at the distances specified in the Table of Distances will extend their reach and potential for harmful interference even farther beyond the actual facility's range.

This change will create significant disruption for fixed WSD operations on the first-adjacent channel, based on Microsoft's experience. Depending on the placement of a DTS transmitter within the DTV station's protected contour (and ERP and HAAT limits), a DTS transmitter that satisfies the new rules by having its 41 dBu F(50,50) contour not exceeding the reference station's 41 dBu F(50,50) contour could have adjacent channel emissions that would cause harmful interference to a WSD receiver over a very large geographic area. Table 5 to 47 C.F.R. § (a)(2)(v), reproduced in Appendix A, shows that a WSD operating in a less-congested area at its EIRP limit and HAAT limit can operate with a 3 km separation distance beyond a DTV station's noise-limited protected contour. DTS transmitters located in

⁴⁶ 47 C.F.R. § 73.626(c).

⁴⁷ DTS Order at App'x A, § 73.626(c).

that permitted range, near the edge of the reference station’s noise limited protected contour, would clearly have a significant negative impact on WSD operating on the first adjacent channel (which for most broadcast stations would be the first adjacent channel both above and below the DTV station’s channel of operation).

As a result, the Order would allow interference from DTS systems to TVWS in very large areas beyond where DTS systems are allowed to transmit today. Even though the DTS spillover signals are not entitled to protection from interference from TVWS operations in those new areas,⁴⁸ those signals are still powerful enough to disrupt TVWS service across several TVWS channels. Compounding the impact of this actual interference, the possibility that a nearby broadcaster could deploy DTS in the future is likely to chill TVWS deployments in any area that could possibly be affected by a future DTS system given the anticipated acceleration in DTS deployments as broadcasters adopt ATSC 3.0.

Thus, there is absolutely no basis for the Order’s unexplained assertion that this will not have a “significant” effect. On the contrary, this expansion of DTS spillover interference can and will degrade or force off the air real TVWS systems, specifically on the first adjacent channels to a broadcaster where a WSD otherwise would be able to operate under the Commission’s Part 15 rules.

⁴⁸ *See, e.g., id.* ¶ 11 (“Although its permitted area for DTS spillover will increase, a station’s area of interference protection will increase, a station’s area of interference protection will not expand under our rule change.”); *id.* ¶ 25 (“Notably, the NPRM did not propose to afford interference protection to DTS signals in the spillover area, and we see no reason to grant any today. . . . We therefore decline suggestions by commenters to provide interference protection to DTS signals in areas beyond the authorized service area.”).

III. THE COMMISSION SHOULD INSTEAD ADOPT AN EXPEDITED-WAIVER APPROACH FOR DTS SPILLOVERS THAT EXCEED THE DISTANCES DESCRIBED IN § 73.626(F) BY MORE THAN A MINIMAL AMOUNT.

On reconsideration, the Commission should instead adopt an expedited-waiver approach for the subset of DTV stations that may need to spill over beyond the existing Table of Distances range and their authorized service area by more than the minimal amount already contemplated by the rules. Then-Commissioner Rosenworcel and Commissioner Starks proposed such an alternative approach before the Commission adopted the DTS Order.⁴⁹

This approach provides “predictability and flexibility” for broadcasters while ensuring that “DTS operations extending more than a minimal amount beyond their authorized service areas are in the public interest.”⁵⁰ As discussed above, the current rules already provide a predictable, bright-line boundary for DTS spillover that addresses most DTV stations looking to use DTS transmitters, including for ATSC 3.0. A 300 kW DTV station, for example, has tens of kilometers between its authorized service area and the existing Table of Distances range, making it perfectly feasible to add DTS transmitters to fill in coverage near the edges of this authorized service area without spilling over beyond the distance set in the Table of Distances and without resorting to the “minimal amount” exception, much less any waiver. Appendix B provides information on the ERP level of DTV transmitters in select states that demonstrates that the burden on the Commission and licensees for an expedited waiver process would be relatively low.

Finally, the rules already permit necessary extension of coverage “of a minimal amount” for the minority of situations where the authorized service area is approximately the same as the

⁴⁹ See *id.* at Statement of Commissioner Jessica Rosenworcel; *id.* at Statement of Commissioner Geoffrey Starks.

⁵⁰ *Id.* at Statement of Commissioner Geoffrey Starks.

Table of Distances area and covering the full DTV service area may require some spillover, such as potentially for maximum-height, maximum-power DTV stations.⁵¹ A streamlined waiver process should be sufficient when even more spillover is required.

This approach also avoids the problems identified above regarding the Order’s approach—namely, the “needless[] restrict[ion of] new broadband services even where there are no broadcast signals to protect” from harmful interference.⁵² As discussed in Section I, even the current rules limit the territory in which TVWS service is permitted and feasible; the unnecessary extension of DTS spillover range comes at the expense of useful broadband services for rural and underserved communities using TVWS.

CONCLUSION

Microsoft appreciates the Commission’s work in this proceeding and others to make wireless broadband services available to consumers. TVWS is a powerful tool to help rural and underserved areas receive affordable broadband access, and the DTS Order was an unfortunate misstep. We encourage the Commission to instead adopt a streamlined waiver approach like that proposed by Acting Chairwoman Rosenworcel and Commissioner Starks to provide broadcasters any increased efficiency and flexibility they need for legitimate DTS spillover, avoiding the DTS Order’s significant and unnecessary restriction on the availability of TVWS services.

⁵¹ 47 C.F.R. §73.626(f)(2).

⁵² DTS Order at Statement of Commissioner Jessica Rosenworcel.

Respectfully submitted,



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APPENDIX A

Table 5 to 47 C.F.R. § 15.712(a)(2)(v)

Fixed white space devices							
Antenna height above average terrain of unlicensed devices (meters)	Required separation in kilometers from adjacent channel digital or analog TV (full service or low power) protected contour¹						
	20 dBm (100 mW)	24 dBm (250 mW)	28 dBm (625 mW)	32 dBm (1,600 mW)	36 dBm (4 W)	40 dBm (10 W)	42 dBm (16 W)
Less than 3	0.1	0.1	0.1	0.1	0.2	0.2	0.3
3-10	0.1	0.2	0.2	0.2	0.3	0.4	0.5
10-30	0.2	0.3	0.3	0.4	0.5	0.6	0.7
30-50	0.3	0.3	0.4	0.5	0.7	0.8	1.0
50-75	0.3	0.4	0.5	0.7	0.8	0.9	1.0
75-100	0.4	0.5	0.6	0.8	1.0	1.1	1.3
100-150	0.5	0.6	0.8	0.9	1.2	1.3	1.5
150-200	0.5	0.7	0.9	1.1	1.4	1.5	1.7
200-250	0.6	0.8	1.0	1.2	1.5	1.7	1.9
250-300	0.7	0.8	1.0	1.3	1.6	2.1	2.3
300-350	0.7	0.9	1.1	1.4	1.8	2.2	2.4
350-400	0.8	1.0	1.2	1.5	1.9	2.4	2.7
400-450	0.8	1.0	1.3	1.6	2.1	2.6	2.9
450-500	0.8	1.1	1.4	1.7	2.1	2.7	2.9
500-550	0.9	1.2	1.5	1.8	2.2	2.8	3.0

APPENDIX B

BREAKDOWN OF LICENSED DTV STATIONS ERP LEVELS IN SELECT STATES⁵³

STATE	Number of DTV Stations	1-250 kW ERP	250-500 kW ERP	500-750 kW ERP	750-999 kW ERP	1 MW
MS	31	8	4	10	5	4
NJ	18	12	2	3	0	1
NM	23	17	4	0	0	2
OH	51	21	7	7	7	9
PA	46	23	1	6	9	7
SD	25	21	2	1	0	1
WA	35	22	2	1	2	3

⁵³ These figures are based on review of FCC Media Bureau's TV Query Web Site on May 14, 2021.