

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

In the Matter of:)
)
Expanding Flexible Use of the 3.7 to 4.2) GN Docket No. 18-122
GHz Band, *et al.*)
) RM-11791
) RM-11778
)

REPLY COMMENTS OF AT&T

AT&T Services, Inc., on behalf of the subsidiaries and affiliates of AT&T Inc. (collectively, “AT&T”), hereby submits the following reply to comments in response to public notice DA 19-385 in the above-captioned proceeding.¹ The *Public Notice* solicits focused additional comment in this proceeding regarding three *ex parte* filings: (i) an AT&T letter raising technical and band plan issues;² (ii) a proposal by ACA Connects – America’s Communications Association, Competitive Carriers Association, and Charter Communications, Inc. to create a national fiber network and free more spectrum for flexible terrestrial use;³ and (iii) a study by Dr. Jeffrey Reed filed by the Wireless Internet Service Providers Association, Google LLC, and Microsoft Corp. regarding point-to-multipoint (“P2MP”) use of the C-band (*i.e.*, 3.7-4.2 GHz).⁴ As discussed below, the record reflects: (i) strong support for the technical proposals in the *AT&T*

¹ Wireless Telecommunications Bureau, International Bureau, Office of Engineering and Technology, and Office of Economics and Analytics Seek Focused Additional Comment In 3.7-4.2 GHz Band Proceeding, *Public Notice*, GN Docket No. 18-122, RM-11791, RM-11778, DA 19-385 (rel. July 19, 2019) (“*Public Notice*”).

² Letter from Henry Hultquist, Vice President, Federal Regulatory, AT&T Services, Inc., to Marlene Dortch, Secretary, FCC, GN Docket No. 18-122 (filed May 23, 2019) (“*AT&T May 23 Ex Parte*” or “*Ex Parte*”).

³ Letter from Ross Lieberman, ACA, Alexi Maltas, CCA, and Elizabeth Andrion, Charter, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed July 2, 2019) (“*ACA Coalition Proposal*”).

⁴ Letter from Wireless Internet Service Providers Association, Google LLC, and Microsoft Corp. to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed July 15, 2019), Attachment (“*Reed Study*”).

May 23 Ex Parte; (ii) serious concern that fiber is not a viable alternative for all C-band use cases; and (iii) compelling opposition to mandatory fiber conversions and to the introduction of P2MP services anywhere in the C-band.

I. THE COMMENTS GENERALLY SUPPORT AT&T’S TECHNICAL RULE PROPOSALS

The *Public Notice* seeks comment on the *AT&T May 23 Ex Parte*, which urges further technical and engineering exploration on the record of issues concerning co-existence in the C-band of Fixed Satellite Service (“FSS”) use and mid-band flexible (“MBX”) use. Towards that end, the *Ex Parte* presents the results of an interference analysis conducted by Commscope on behalf of AT&T, proposes a partitioning of the C-band that uses the spectrum more intensively, and highlights ways to pursue even greater efficiency for re-purposed FSS spectrum. The comments in response to the *AT&T May 23 Ex Parte* generally offer constructive engagement on the technical co-existence issues and demonstrate a willingness by numerous parties to accommodate the various operational needs of multiple C-band stakeholders.⁵ AT&T is therefore optimistic that a consensus technical framework is achievable, despite the further work that is still needed.⁶

⁵ To be clear, AT&T has not sought to “weaken[.]” protections that are intended to “work in concert” to protect FSS, Comments of the Content Companies, GN Docket No. 18-122 (filed Aug. 7, 2019). AT&T’s *Ex Parte* provides an engineering analysis of harmful interference to satellite earth stations (“SEEs,” not to be confused with CBA member SES Americom, Inc.), holistically taking into consideration all relevant factors.

⁶ For example, PSSI has raised an important question regarding support for occasional use (“OU”) C-band applications post-transition. *See* Further Supplemental Comments of PSSI Global, GN Docket No. 18-122 (filed Aug. 7, 2019). In particular, PSSI has pointed out that OU C-band applications may raise unique technical considerations due to the *ad hoc* coordination of SEEs needed to provide OU services. Because of the importance of OU services to content companies, such as WarnerMedia, accommodation of OU C-band applications warrants further exploration on the record.

Although some parties have proposed that safeguarding FSS operations may best be accomplished through implementation of appropriate receiver protection standards, AT&T continues to believe that transmitter regulation likely will be necessary and, as a consequence, that the effort of defining a class of relatively unrestricted licenses blocks is warranted.⁷ There is an appealing minimalism to regulating the effect of MBX licensees on SESs with a simple receiver protection standard, but there is a threshold question of whether it is economically and technically viable for an SES owner to readily detect intermittent harmful interference and attribute that interference to MBX operations. Furthermore, even if an SES owner could detect when MBX-caused harmful interference occurs, AT&T questions how the interference resolution process would unfold even if SES owners had some form of a 24/7/365 contact point to reach MBX licensees.⁸ That said, the approach warrants continued consideration, particularly if the MBX spectrum is segregated into largely “Unrestricted Licenses” (as generally described in the *AT&T May 23 Ex Parte*) and other classes of use.

Because AT&T believes some technical regulation of base station emission limits will likely be required, the Commission should define a class of relatively “Unrestricted Licenses.” Specifically, AT&T supports adoption of the Part 27 technical rules on power and OOB limits, as well as Qualcomm’s suggestion to remove the OOB limits at the CBRS band edge if MBX spectrum is adjacent to CBRS.⁹ The assessment of whether an MBX licensee is interfering with an SES, however, should be governed by the actual base station filter OOB response beyond the

⁷ Comments of the C-Band Alliance, GN Docket No. 18-122 at 26-34 (filed Aug. 7, 2019) (“*CBA Comments*”); Comments of Verizon, GN Docket No. 18-122 at 5-12 (filed Aug. 7, 2019) (“*Verizon Comments*”).

⁸ See, e.g., *Verizon Comments* at 11-12.

⁹ Comments of Qualcomm Incorporated, GN Docket No 18-122 at 6 (filed Aug. 7, 2019) (“*Qualcomm Comments*”).

-13 dBm/MHz limit mandated by Part 27 at the band edge.¹⁰ As shown in the 5G base station mask provided by Nokia and the revised FSS filter mask provided by CBA, there will be attenuation of signals that generally reduces the risk of interference from terrestrial systems into FSS receivers as those networks become more spectrally distant from the FSS band.¹¹ Accordingly, AT&T expects that predicted interference can be isolated to MBX licensees within some defined offset of the FSS band edge. Although the Commission should have the flexibility to act if an MBX licensee that is further removed has deployed its facilities in a manner that creates a disproportionate interference impact to an SES,¹² a relatively “Unrestricted License” band benefits both MBX licensees, who can deploy their networks in a purely organic fashion, and SES owners, who would have a more limited subset of potential interferers with whom to coordinate.

The record also demonstrates a broad recognition that interference protection should be based on real world parameters rather than overbroad generalizations. The record shows emerging consensus, for example, that the Commission should:

- Accord protection only to elevation angles associated with satellites in operation, taking into consideration SES locations;¹³

¹⁰ Adopting the Part 27 limits would permit 3GPP to develop global standards that would benefit U.S. providers by allowing them to take advantage of international economies of scale. *See, e.g., Verizon Comments* at 10; *CBA Comments* at 34.

¹¹ *See* Comments of Nokia, GN Docket No. 18-122 at 2 (filed Aug. 7, 2019) (“*Nokia Comments*”) (noting 5G equipment would likely be able to provide -40, -50 and -60 dBm per MHz attenuation as offset from FSS band edge is increased); *CBA Comments* at 31 (discussing revised FSS filter performance with -30, -60 and -70 dB attenuation at offsets of 15, 20 and 100 MHz from the FSS band edge).

¹² *See, e.g.,* 47 C.F.R. §90.403(e) (requiring licensees to take “reasonable precautions” to avoid interference).

¹³ *CBA Comments* at 27-28; Comments of CTIA, GN Docket No. 18-122 at 9 (filed Aug. 7, 2019) (“*CTIA Comments*”); *Verizon Comments* at 10.

- Significantly reduce the original CBA-proposed 150m protection zone around SES earth stations to more specifically protect actual antennas;¹⁴
- Use recorded antenna parameters *in lieu* of a blanket assumption that antennas are 13m diameter;¹⁵
- Assume the deployment of improved FSS filters to further reduce the impact of out-of-band-emissions;¹⁶ and
- Limit the number of grandfathered TT&C/Gateway facilities that require protection, and relocate those facilities to non-metropolitan areas.¹⁷

The record engagement on these issues has been constructive, and has considerably narrowed the technical issues for resolution.

CBA continues to argue that a guard band is necessary, a segment of key spectrum that would remain fallow and unused. AT&T disagrees. MBX spectrum adjacent to the FSS portion of the C-band should be auctioned, which would permit the possibility of productive use of the spectrum as sharing technology improves or through market-based solutions, like the relocation of all SESs in a region.¹⁸ AT&T does not dispute CBA’s view that *unmanaged* deployment of MBX facilities in the “Adjacent License” band (as generally described in the *AT&T May 23 Ex Parte*)

¹⁴ *CBA Comments* at 28-29 (stating that CBA’s precondition for such a reduction would be the re-opening of the registration window for C-band SESs, which AT&T would support); *CTIA Comments* at 8; Comments of T-Mobile USA, Inc., GN Docket No. 18-122 at 18-19 (filed Aug. 7, 2019) (“*T-Mobile Comments*”); *Verizon Comments* at 9.

¹⁵ *CTIA Comments* at 8-9; *Verizon Comments* at 10.

¹⁶ *CBA Comments* at 30-32; *T-Mobile Comments* at 19.

¹⁷ *CBA Comments* at 29-30. Lockheed Martin asserts that the operations at its TT&C and LEOP facilities, which may support launches of satellites that do not ultimately illuminate the CONUS, must be protected. Comments of Lockheed Martin, GN Docket No. 18-122 (filed Aug. 7, 2019). Lockheed Martin provides insufficient data for reasoned analysis, however. Thus, AT&T suggests further research concerning how such protection could be achieved, including developing record information regarding the operating requirements of Lockheed Martin’s TT&C and LEOP facilities, the locations of those facilities, and the ability to relocate those facilities to non-metropolitan areas.

¹⁸ *AT&T May 23 Ex Parte* at 3, 5-6; *T-Mobile Comments* at 18.

might cause harmful interference to SESs. Specifically, MBX use of Adjacent Licenses should be permitted, but only under strict non-interference conditions, subject to whatever individualized, coordinated resolutions the market and technology would permit. Verizon has taken this a step further, suggesting that MBX overlay licenses be created in the FSS portion of the band and auctioned. This proposal warrants exploration as a mechanism that might allow future market-based solutions for broader MBX use to be more easily implemented, but AT&T remains concerned about the viability of co-channel FSS/MBX operation.

II. AT&T GENERALLY FAVORS A SATELLITE OPERATOR-LED TRANSITION OF C-BAND SPECTRUM AS THE MOST EXPEDIENT WAY OF REPURPOSING THE BAND

Although not discussed in the *Public Notice*, a number of parties have used the *ACA Coalition Proposal* as a springboard to re-argue a number of points relating to the overall structure of the spectrum transition. In particular, certain commenters have elected to express (or re-express) their view that specific portions of the C-band should be reallocated for MBX and that the Commission itself should auction the spectrum.¹⁹ As AT&T has stated in prior comments, it favors a satellite operator-led transition—potentially including a satellite-operator conducted auction, although an auction that would be subject to Commission-approved procedures substantially similar to prior Commission auctions.²⁰ A satellite operator-led spectrum transition appears to be the most expedient way to repurpose portions of the C-band for flexible use.

¹⁹ Comments of Frontier Communications Corporation and Windstream Services, LLC, GN Docket No 18-122 at 3-4 (filed Aug. 7, 2019); Comments of NTCA-The Rural Broadband Association, GN Docket No. 18-122 at 4 (filed Aug. 7, 2019); Comments of the Public Interest Spectrum Coalition, GN Docket No. 18-122 at 21 (filed Aug. 7, 2019) (“*PISC Comments*”); *T-Mobile Comments* at 13-14.

²⁰ Comments of AT&T, GN Docket No 18-122 at 2-3 (filed July 3, 2019).

AT&T also continues to believe that the reallocation should be a one-time event, with a specific and total spectrum clearing target declared at the beginning of any auction. Although all the spectrum to be reallocated may not be necessarily be made available for MBX deployment at the same time—for example, it may be beneficial to sequence urban availability before rural availability—the Commission should announce the ultimate reallocation amount at the outset. This would avoid spectrum fragmentation, minimize interference and coordination issues, and permit operators and manufacturers to get a head start on 3GPP equipment standardization and testing.²¹ Moreover, to evade the vagaries of delay and uncertainty, the Commission should set specific and hard deadlines for completion of any stages of spectrum availability for MBX use.

AT&T also opposes measures like spectrum caps or limits that would artificially limit the amount of spectrum that an operator could acquire at auction.²² At most, as AT&T has stated, the spectrum should be factored into the existing screen.²³

III. ALTHOUGH ACKNOWLEDGING THE POTENTIAL FOR VOLUNTARY FIBER REPLACEMENT, THE RECORD REFLECTS BROAD CONSENSUS THAT THE ACA COALITION PROPOSAL RAISES SUBSTANTIAL QUESTIONS

C-band users should be permitted to make their own decisions regarding potential replacement technologies for C-band FSS.²⁴ Indeed, video content companies and others disagree that fiber is an adequate substitute for C-Band services,²⁵ which WarnerMedia (for just one example) uses for both the distribution of video programming and mobile production of content on

²¹ See, e.g., Comments of AT&T, GN Docket No. 18-122 at 9-10 (filed Aug. 7, 2019) (“*AT&T Comments*”).

²² Comments of United States Cellular Corporation, GN Docket No. 18-122 at 19-21 (filed Aug. 7, 2019); *cmp. AT&T Comments* at 12.

²³ *AT&T Comments* at 12.

²⁴ *Id.* at 10-12

²⁵ See, e.g., *Content Companies Comments* at 4-5.

location. That said, if fiber can be built-out and deployed in a manner that meets the operational requirements for reliability and redundancy, as well as the financial requirements, of other C-band users, market forces would likely drive fiber solutions to become more widespread and potentially reduce the need for C-band FSS capacity. The record demonstrates, however, that the Commission should not attempt here to mandate the industry-wide adoption of a single technology.²⁶

IV. COMMENTERS BROADLY OPPOSE INTRODUCING P2MP OFFERINGS INTO ANY PART OF THE C-BAND

The record demonstrates broad, reasoned opposition to allowing unlicensed P2MP systems into the C-band.²⁷ Most critically, commenters have documented that the P2MP proponents have not made any case that existing spectrum resources are insufficient to meet demands.²⁸ The availability of alternatives is underscored by the fact that the manufacturer-proponents of P2MP services all demonstrate that they offer P2MP solutions that work in multiple bands, including the adjacent CBRS bands.²⁹ Instead, commenters have offered commentary on the “digital divide,”

²⁶ *CBA Comments* at 2, 5-19; *CTIA Comments* at 11-15; *Content Companies Comments* at 13-14; Comments of Cumulus Media and Westwood One, LLC, GN Docket No. 18-122 at 2-6 (filed Aug. 7, 2019); Comments of Globecast America Incorporated, GN Docket No. 18-122 at 2-7 (filed Aug. 7, 2019); Comments of the National Association of Broadcasters, GN Docket No. 18-122 at 3-8 (filed Aug. 7, 2019) (“*NAB Comments*”); Comments of the North American Broadcasters Association, GN Docket No. 18-122 at 1 (filed Aug. 7, 2019) (“*NABA Comments*”); *Verizon Comments* at 13-17.

²⁷ *CBA Comments* at 20; *Content Companies Comments* at 5-13; *NAB Comments* at 8-10; *NABA Comments* at 3-4; Comments of the Satellite Industry Association, GN Docket No. 18-122 at 2-4 (filed Aug. 7, 2019) (“*SIA Comments*”); *T-Mobile Comments* at 20-22.

²⁸ *CBA Comments* at 20; *SIA Comments* at 2-4 (noting P2MP access to 10 GHz of spectrum); *T-Mobile Comments* at 21-22.

²⁹ Comments of Airspan Networks Inc., GN Docket 18-122 at 2 (filed Aug. 7, 2019) (noting it is a “leading . . . Citizens Broadband Radio Service (CBRS) . . . Fixed Wireless Access solution supplier”); Comments of Cambium Network, Ltd, GN Docket 18-122 at 1 (filed Aug. 7, 2019) (noting it is a manufacturer of P2MP equipment in a variety of bands, including CBRS).

suggesting that C-band P2MP/FSS sharing could address that issue in some tangible way—but without ever explaining why any added C-band FSS spectrum could resolve a problem that gigahertz of spectrum in other bands (and hundreds of megahertz of mid-band spectrum specifically) have allegedly not been able to resolve.³⁰ Nor have P2MP proponents addressed why, as commercial services, the demand for P2MP offerings cannot be adequately handled by market forces in a flexible use environment.³¹

Moreover, a number of commenters have analyzed the *Reed Study* and concluded that it makes assumptions and uses propagation modeling that are not appropriate, therefore calling its conclusions into serious question.³² CTIA notes, for example, that the *Reed Study* “misapplies the [propagation] model, relies on invalid input parameters, and fails to consider the LOS portion of the model.”³³ Commenters also note that opening the remaining FSS band to P2MP offerings would limit the ability to retain crucial full-band, full-arc coordination, freeze existing FSS deployments, and complicate an already difficult transition.³⁴

It should also go without saying that the Commission should not permit unlicensed P2MP deployment in the auctioned flexible use portion of the band. Notwithstanding their failure to justify the need for any C-band spectrum at all, some P2MP proponents have doubled down and are now suggesting that they be permitted to engage in opportunistic deployment within auctioned

³⁰ Comments of the Broadband Connects America Coalition, GN Docket No. 18-122 at 5-10 (filed Aug. 7, 2019) (“*BCA Comments*,” notably comprising largely the same group of entities as the *PISC Comments*); *PISC Comments* at 17-20; *cmp. CBA Comments* at 20.

³¹ *T-Mobile Comments* at 20; *Verizon Comments* at 17-18.

³² *CBA Comments* at 20-21; *CTIA Comments* at 13-15.

³³ *CTIA Comments* at 15.

³⁴ *NAB Comments* at 8-10.

MBX license areas.³⁵ MBX licensees, having paid full market value for their authorizations, should not be required to engage in policing measures to remove or coordinate with opportunistic users prior to use. In any event, to the extent that opportunistic uses have any validity, the CBRS spectrum and rules offer authorizations specifically to meet those needs. Thus, if P2MP operators wish to deploy in the flexible use portion of the C-band, they should be allowed to do so only via participation in the auction of such portion.

V. CONCLUSION

Notwithstanding some disparate views, the record demonstrates an emerging path forward with respect to the three proposals targeted by the *Public Notice*. In particular, the *AT&T May 23 Ex Parte* has triggered meaningful technical dialog on the record regarding co-existence between MBX and FSS, even if those discussions are not yet complete. The record also demonstrates that, although fiber could be a voluntary option for some C-band users, regulatory mandates to adopt fiber would be inappropriate. Finally, the record overwhelmingly indicates that the introduction of P2MP services into any portion of the C-band would be reckless.

Respectfully Submitted,

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³⁵ *BCA Comments* at 14-17; *PISC Comments* at 6-16.