

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
Use of Spectrum Bands Above 24 GHz For Mobile Radio Services)	GN Docket No. 14-177
)	
Establishing a More Flexible Framework to Facilitate Satellite Operations in the 27.5-28.35 GHz and 37.5-40 GHz Bands)	IB Docket No. 15-256
)	
Petition for Rulemaking of the Fixed Wireless Communications Coalition to Create Service Rules for the 42-43.5 GHz Band)	RM-11664
)	
Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services)	WT Docket No. 10-112
)	
Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0- 38.0 GHz and 40.0-40.5 GHz for Government Operation)	IB Docket No. 97-95

T-MOBILE USA, INC. REPLY TO OPPOSITIONS

T-Mobile USA, Inc. (“T-Mobile”),^{1/} pursuant to Section 1.429 of the rules,^{2/} submits this reply to the oppositions and comments filed in response the Petitions for Reconsideration of the *Report and Order* released in the above-referenced proceedings.^{3/} The pleadings:

- Fail to justify further use of the millimeter wave (“mmW”) bands by Fixed Satellite Service (“FSS”) licensees.

^{1/} T-Mobile USA, Inc. is a wholly-owned subsidiary of T-Mobile US, Inc., a publicly traded company.

^{2/} See 47 C.F.R. § 1.429; *Office of Engineering and Technology and Wireless Telecommunications Bureau Extend Period to File Replies to Oppositions and Replies in Response to Petitions for Reconsideration of Report and Order in Use of Spectrum Bands Above 24 GHz for Mobile Radio Services Proceeding*, Public Notice, DA 17-149 (rel. Feb. 8, 2017) (extending the deadline for replies to oppositions to February 24, 2017).

^{3/} *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.*, Report and Order and Further Notice of Proposed Rulemaking, FCC 16-89, 31 FCC Rcd. 8014 (2016) (subparts referred to respectively as the “*Report and Order*” and the “*FNPRM*”).

- Support clarification or reconsideration of the operability requirement at 37-40 GHz.
- Demonstrate the need for additional licensed spectrum in the mmW bands.
- Confirm the need to repeal the Cybersecurity Statement requirement.

I. THE RECORD SUPPORTS THE EXISTING LIMITATIONS ON SATELLITE USE OF THE MILLIMETER WAVE BANDS

Increased FSS Access Is Contrary to the Purpose of This Proceeding. Commenters agree with T-Mobile that increasing FSS access to the mmW bands is contrary to the public interest and the purpose of this proceeding. As 5G Americas correctly states, “[t]he decisions the Commission took [in the *Report and Order*] to allocate the bands to mobile services – terrestrial services – were intended to ‘help ensure continued American leadership in wireless broadband.’”^{4/} Therefore, petitions requesting that the Commission reconsider its decision to limit FSS access to the 28 GHz, 37 GHz, and 39 GHz bands “appear to misconstrue the basic motivation of the Commission in its *Report and Order*.”^{5/} And, as Straight Path noted, “while the Commission stated its wish to provide shared access for other services, it never contemplated that such shared access would be at the expense of mobile terrestrial wireless services.”^{6/}

Moreover, the satellite industry has no demonstrable need for additional capacity.^{7/} In fact, Straight Path correctly states that “[t]he industry’s inefficient use—or lack of use—of spectrum that is already allocated for satellite services shows that no such requirement [for

^{4/} 5G Americas Opposition to Petitions for Reconsideration, GN Dkt. No. 14-177 *et al.*, at 3-4 (filed Jan. 31, 2017) (“5G Americas Opposition”) (quoting *Report and Order*, ¶ 3).

^{5/} 5G Americas Opposition at 3-4; *see also* Opposition and Comments of Skyriver Communications Inc., GN Dkt. No. 14-177 *et al.*, at 3 (filed Jan. 31, 2017) (“Skyriver Opposition”) (“The *R&O* reflects a carefully crafted attempt by the Commission to promote the use of the UMFUS bands for terrestrial 5G mobile and fixed services, while at the same time providing a reasonable opportunity for satellite interests to utilize the spectrum notwithstanding their historical secondary or quasi-secondary status in the bands.”); Opposition of CTIA, GN Dkt. No. 14-177 *et al.*, at 9 (filed Jan. 31, 2017) (“CTIA Opposition”) (“CTIA notes that Boeing’s proposals, if adopted, would artificially limit the flexibility needed to provide mobile broadband services. . . . The Commission should therefore reject this argument as counterproductive to the agency’s expressly stated purpose in this proceeding.”).

^{6/} Opposition of Straight Path Communications Inc. to Petitions for Reconsideration, GN Dkt. No. 14-177 *et al.*, at 3 (filed Jan. 31, 2017) (“Straight Path Opposition”).

^{7/} Opposition of T-Mobile USA Inc., GN Dkt. No. 14-177 *et al.*, at 15-17 (filed Jan. 31, 2017) (“T-Mobile Opposition”).

capacity] exists.”^{8/} T-Mobile agrees with others that it would not be “good public policy to allocate such a substantial amount of spectrum on a co-primary basis to providers that can only deliver services at speeds that are two generations behind.”^{9/}

FSS Siting Limitations Must Be Retained. As the oppositions make clear, the FSS proponents’ requests that the Commission reconsider the geographic limitations on future authorization of FSS earth stations are “nothing more than a rehash of previous recommendations made by these proponents throughout this proceeding.”^{10/} As T-Mobile, CTIA, and 5G Americas detailed at length, the Commission fully considered and rejected each of the arguments presented, and the licensing requirements adopted “were supported by the record and consistent with rules adopted in past rulemaking proceedings.”^{11/} In fact, ViaSat – a member of the satellite industry – highlights that the sharing framework adopted “respond[s] to advocacy from the satellite industry for greater flexibility to deploy earth stations than the *NPRM* otherwise would have provided.”^{12/}

ViaSat, on whose data the Commission relied to evaluate the typical interference zone for terrestrial operations around a gateway earth station, states that the other FSS proponents’ arguments are “based on theoretical models that do not take into account either (i) the actual technical parameters of the earth station in question, or (ii) real-world factors like terrain that determine how much of the local area the operation of the earth station actually would affect.”^{13/} Moreover, as ViaSat correctly notes, “[i]t is possible to design, site, and operate an earth station that satisfies the [0.1% population standard] and thus has a limited impact on the nearby area[.]”

^{8/} Straight Path Opposition at 2.

^{9/} 5G Americas Opposition at 5.

^{10/} Straight Path Opposition at 6.

^{11/} See CTIA Opposition at 6; T-Mobile Opposition at 5-8; 5G Americas Opposition at 5-7.

^{12/} Opposition of ViaSat Inc., GN Dkt. No. 14-177 *et al.*, at 13 (filed Jan. 31, 2017) (“ViaSat Opposition”).

^{13/} ViaSat Opposition at 3-4.

and “[e]ven where that may not be the case, the Commission has provided a number of ways to authorize earth stations without satisfying” the 0.1% standard.^{14/}

The Commission Should Not Adopt Aggregate Interference Limits. The record demonstrates that the FSS proponents’ requests that the Commission reconsider its decision not to impose aggregate emissions limits on UMFUS operations are unfounded. For instance, CTIA agrees with T-Mobile that SES’s, O3b’s and the SIA’s arguments for aggregate emissions limits are “duplicative and ignore the factual record”^{15/} and that the Commission “already determined that the threat from aggregate interference was overstated and devised its rules accordingly.”^{16/} In addition, the SIA’s arguments regarding international treaty obligations should be rejected – not only are the rules adopted “more rigorous than ITU requirements”^{17/} once the Equivalent Isotropically Radiated Power (“EIRP”) limit is factored in, but as 5G Americas rightly notes, the “[ITU] Radio Regulations do not require Members such as the United States to reduce the power of its own licensees in the face of unsubstantiated claims of *potential interference* to systems outside the U.S.”^{18/}

Each of Boeing’s Requests for Technical Modifications Should Be Denied. The record also supports rejection of Boeing’s requests for lower base station power limits, beamforming and power control requirements, a prohibition on the use of omni-directional antennas, and a Total Radiated Power density specification applicable to UMFUS in-band emissions. CTIA correctly states that “Boeing’s proposals, if adopted, would artificially limit the flexibility needed

^{14/} ViaSat Opposition at 20.

^{15/} CTIA Opposition at 6; *see also* 5G Americas Opposition at 9 (“Contrary to the standard for successful Petitions for Reconsideration, the satellite Petitioners fail to advance any changed circumstances or new information or facts unknown at the time of the development of this robust public record that merit reconsidering the Commission’s decision [on aggregate interference].”).

^{16/} CTIA Opposition at 7.

^{17/} CTIA Opposition at 8.

^{18/} 5G Americas Opposition at 10-11 (emphasis in original).

to provide mobile broadband services[.]” undermining the Commission’s goals.^{19/} Moreover, commenters highlight that Boeing’s arguments “fail[] to address the analysis and simulation results provided by commenters” prior to the issuance of the *Report and Order*, and its proposals for technical mandates are “antithetical to the regulatory flexibility consistently granted by the Commission to parties that purchased spectrum licenses in auctions over the past twenty years . . . allowing parties to innovate via technical standards without regulatory mandates.”^{20/}

FSS Downlink Operations in the 42 GHz Band Should Not Be Permitted. The *Report and Order* reasonably declined to allocate the 42 GHz band for FSS downlink. Requests to reconsider FSS in the 42 GHz band are premature and based on flawed logic. As 5G Americas points out, while FSS proponents “claim a lack of interest by the mobile industry for this spectrum in the record for the *Report and Order* . . . the full band was not open for comment until the *Further Notice*, in response to which the mobile industry commented in favor of making this spectrum available for mobile use.”^{21/} Thus, the Commission should deny requests that it reconsider its decision on the 42-42.5 GHz band and proceed with this band in the *FNPRM*.

A UMFUS Database Is Unnecessary. Last, the record demonstrates that the Commission should reject proposals that it establish a database containing information on UMFUS deployments. 5G Americas, for examples, agrees with T-Mobile that “existing coordination procedures are sufficient for informing satellite operators of relevant details on

^{19/} CTIA Opposition at 9.

^{20/} CTIA Opposition at 10-11; *see also id.* at 10 (“There is simply no need to adopt a more complex regulatory scheme as suggested by Boeing since EIRP already factors in antenna characteristics and will, as determined by the Commission, adequately protect against harmful interference effects.”); 5G Americas Opposition at 9 (“[T]he end goal of protecting Fixed satellite Earth stations will be achieved without specifying the precise UMFUS network configuration. The Commission generally eschews such prescriptive technology mandates, and should avoid that approach in this instance.”); Skyriver Opposition at 6 (stating that “[t]he record before the Commission is replete with evidence that higher powered terrestrial operations will serve the public interest”; that omni-directional antennas “present the best approach to providing a fixed service”; and that “micromanag[ing] how beamforming and power control are implemented at this early stage of UMFUS would unduly limit manufacturer, and thus licensee, flexibility to the potential detriment of consumers”).

^{21/} 5G Americas Opposition at 7.

terrestrial deployments to protect any satellite operations[.]”^{22/} As the Fixed Wireless Communications Coalition notes, proponents of a UMFUS database are “unduly pessimistic about the coordination process[.]” which has historically worked well, and “UMFUS operators will have every incentive to work with FSS operators because cooperatively sited earth stations will cause the least disruption to UMFUS.”^{23/}

II. THE 37-40 GHZ BAND OPERABILITY REQUIREMENT SHOULD BE CLARIFIED

Numerous parties asked that the Commission reconsider the rule requiring devices operating in the 37 or 39 GHz bands to be capable of operating at all frequencies within the entirety of both of those bands (*i.e.*, 37 GHz-40 GHz), in order to account for the as-of-yet determined sharing regime for the Lower 37 GHz Band Segment.^{24/} Only three commenters – Public Knowledge and New America’s Open Technology Institute (“PK/OTI,” filing jointly), and Starry Inc. – opposed any changes to the operability requirement. Their oppositions, however, focus on the benefits of operability across the band in general.^{25/} As T-Mobile stated in its Petition for Reconsideration, T-Mobile favors operability requirements and has supported those requirements in the past. However, it is not clear today how the 37-37.6 GHz band will be used in the future – *e.g.*, whether licensed or unlicensed and, if unlicensed, under what parameters – and therefore it is inappropriate to require devices to incorporate the 37-37.6 GHz

^{22/} 5G Americas Opposition at 8; T-Mobile Opposition at 17-18.

^{23/} Comments of the Fixed Wireless Communications Coalition, GN Dkt. No. 14-177 *et al.*, at 6 (filed Jan. 31, 2017) (“FWCC Comments”).

^{24/} See Petition for Reconsideration of T-Mobile USA Inc., GN Docket No. 14-177 *et al.*, at 10-11 (filed Dec. 14, 2016) (“T-Mobile Petition”); Petition for Reconsideration Competitive Carriers Association, GN Docket No. 14-177 *et al.*, at 14 (filed Dec. 14, 2016) (“CCA Petition”); 5G Americas Petition for Reconsideration, GN Docket No. 14-177 *et al.*, at 9-11 (filed Dec. 14, 2016) (“5G Americas Petition”); Petition for Reconsideration of Telecommunications Industry Association, GN Docket No. 14-177 *et al.*, at 5-7 (filed Dec. 14, 2016) (“TIA Petition”).

^{25/} See Opposition of Starry, Inc., GN Dkt. No. 14-177 *et al.*, at 5-6 (filed Jan. 31, 2017) (“Starry Opposition”); Public Knowledge and New America’s Open Technology Institute Opposition to Petitions for Reconsideration, GN Dkt. No. 14-177 *et al.*, at 12 (filed Jan. 31, 2017) (“PK/OTI Opposition”).

band. Once these issues are resolved, the Commission can potentially require, on a going forward basis, operability in that segment of the band as well. Other commenters agree. Intel, for instance, states that clarification of the requirement “is important so that the development of products for the non-shared portions of the band [is] not held up while awaiting the completion of the lengthy future process to develop the sharing rules, and the unpredictable operability impact thereof.”^{26/} Similarly, Nokia notes that clarification is needed “to ensure that [the] requirement does not impede deployment of 5G services in the [37-40 GHz] band.”^{27/}

III. THE COMMISSION SHOULD DEDICATE ADDITIONAL SPECTRUM FOR LICENSED USE

As T-Mobile has detailed extensively, licensed spectrum is a critical driver of the Nation’s economy and the foundation of today’s robust mobile wireless ecosystem.^{28/} Despite this, and without sufficient justification, the *Report and Order* made only 3.25 gigahertz of the 10.85 gigahertz at issue available for licensed use on an exclusive basis. The record demonstrates that the Commission should remedy this disparity.

Licensed Use of the 37-37.6 GHz Band Will Best Facilitate the Transition to 5G.

PK/OTI, Starry, and the Dynamic Spectrum Alliance (“DSA”) each argue that shared, licensed-by-rule use of the 37-37.6 band will result in greater investment in and deployment of 5G technologies in the mmW bands.^{29/} While T-Mobile, as it noted in its Petition for

^{26/} Intel Corporation Opposition to Petitions for Reconsideration, GN Dkt. No. 14-177 *et al.*, at 2 (filed Jan. 31, 2017).

^{27/} Comments of Nokia, GN Dkt. No. 14-177 *et al.*, at 12 (filed Jan. 31, 2017) (“Nokia Comments”); *see also* Dynamic Spectrum Alliance Opposition to Petitions for Reconsideration, GN Dkt. No. 14-177 *et al.*, at 10 (filed Jan. 31, 2017).

(“DSA Opposition”) (“TIA’s proposal that devices should be certified if they are ‘tunable’ across the entire band seems reasonable for certifications granted during the time period prior to the Commission finalizing any technical mechanism related to dynamic sharing in the 37 – 37.6 GHz band that would impact operability.”); FWCC Comments at 11 (“We agree with the petitioners that that the operability requirement must be postponed, at least until the sharing regime is fully specified.”).

^{28/} *See, e.g.*, T-Mobile Petition at 4-5.

^{29/} *See* PK/OTI Opposition at 6; DSA Opposition at 8; Starry Opposition at 4.

Reconsideration, agrees that unlicensed spectrum has an important role to play in the future of 5G technologies, PK/OTI, Starry, and the DSA fail to recognize that today’s healthy wireless ecosystem was enabled by a significant, predictable supply of licensed spectrum, which facilitated the technology and infrastructure development that helped ensure a marketplace for unlicensed technology. Robust development of 5G depends similarly on wireless carrier access to licensed spectrum. PK/OTI’s attempts to minimize the impact of unlicensed sharing in the 37-37.6 GHz band by characterizing the segment as a “mere 600 megahertz of mmW spectrum”^{30/} ignores the importance of the band for promoting competition. Most of the mmW spectrum designated for licensed use is already authorized,^{31/} and a licensed-by-rule approach to the 37-37.6 GHz band will further limit new entrants. Therefore, the Commission should reconsider its approach and make this spectrum available on a licensed basis.

Licensed Use in the 64-71 GHz Band Will Encourage Investment in New

Technologies. Contrary to PK/OTI’s argument that licensed use in the 64-71 GHz band would “lock [] up substantial amounts of valuable spectrum” and prevent full deployment of 5G services,^{32/} licensed spectrum in the 64-71 GHz band would not only enable licensed services, but it would “enrich the market for unlicensed services because technology and infrastructure development will be facilitated by the introduction of licensed wireless systems to this band[.]”^{33/} Also, as CTIA noted in its Petition for Reconsideration, the upper portion of the band is “being considered as part of the licensed 5G wireless standards,” meaning that licensed use of this

^{30/} PK/OTI Opposition at 6.

^{31/} See T-Mobile Petition at 7.

^{32/} PK/OTI Opposition at 20.

^{33/} CCA Petition at 8 (citing Letter from Steve B. Sharkey, Vice President Government Affairs, Technology and Engineering Policy, T-Mobile USA, Inc., to Marlene H. Dortch, Secretary, FCC, at 4 (filed June 30, 2016)).

portion of the band would occur quickly and spectrum would be swiftly utilized.^{34/} Nokia, agreeing with T-Mobile and others, recognized that at minimum a portion of the 64-71 GHz band should be available for licensed use in order to “facilitate a diversity of services and business models [t]hat could lead to greater investment in 5G networks.”^{35/}

IV. COMMENTERS STRONGLY SUPPORT REPEAL OF THE CYBERSECURITY STATEMENT REQUIREMENT

Nearly all parties that addressed the Cybersecurity Statement requirement agree with T-Mobile that the requirement is not useful, premature, and ill-advised.^{36/} Nonetheless, PK/OTI argue that the Cybersecurity Statement requirement helps the Commission ensure that communications networks and infrastructure are secure,^{37/} claiming incorrectly and without basis that T-Mobile and other network operators “desire . . . to be free from any responsibility” and “seek to avoid any accountability” for the security of their own networks.^{38/} To the contrary, the security of T-Mobile’s networks is central to its ability to provide service to its customers, and as such T-Mobile takes great care to ensure that its networks are protected. Nor is the obligation to file a Cybersecurity Statement, even a high level one, “merely administrative”^{39/} and harmless as PK/OTI contend. Rather, as Mobile Future states, “[f]orcing licensees to describe their cybersecurity plans puts them at perpetual risk of exposing consumers and their networks to

^{34/} CTIA Petition at 21 (citing 3GPP TR 38.913 v14.0 (2016-10), 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Study on Scenarios and Requirements for Next Generation Access Technologies; (Release 14)).

^{35/} Nokia Comments at 10.

^{36/} See, e.g., Opposition and Comments of Mobile Future, GN 14-177 *et al.* at 5 (filed Jan. 31, 2017) (Mobile Future Opposition) (“Forcing licensees to describe their cybersecurity plans puts them at perpetual risk of exposing consumers and their networks to cyber threats and putting the entire ecosystem in peril.”); 5G Americas Petition at 13 (“[P]ublic policy requires rejection of [the Commission’s] vague justification. In any case, providers have ample motivation to adopt security measures without a Commission reporting obligation. Moreover, the rule is not necessary to facilitate multi-stakeholder peer review nor commercially viable markets for secure services and devices.”); TIA Petition at 7 (“[T]he Commission’s decision to adopt a new band-specific security requirement in the *Report & Order* was ill advised.”).

^{37/} PK/OTI Opposition at 15.

^{38/} PK/OTI Opposition at 15.

^{39/} PK/OTI Opposition at 15.

cyber threats[.]”^{40/} As T-Mobile and other commenters recognize, the most effective security solutions are those that are market-driven, allow for flexibility, and encourage innovation, instead of rigid mandates based on speculative security needs.^{41/}

V. CONCLUSION

To strengthen the wireless ecosystem and provide for the greatest amount of investment and innovation in 5G technologies, the Commission should, in response to the Petitions for Reconsideration submitted in this proceeding:

- Deny further FSS use of the mmW bands.
- Clarify or reconsider the operability requirement at 37-40 GHz.
- Make available additional licensed spectrum in the mmW bands.
- Repeal the Cybersecurity Statement requirement.

Respectfully submitted,

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^{40/} Mobile Future Opposition at 5.

^{41/} Mobile Future Opposition at 4 (citing Communications Security, Reliability and Interoperability Council IV, Cybersecurity Risk Management and Best Practices, Working Group 4: Final Report, Mar. 2015, *available at* http://transition.fcc.gov/pshs/advisory/csric4/CSRIC_WG4_Report_Final_March_18_2015.pdf) (“The NIST Framework is effective because it identifies functional categories of processes that industry members can self-tailor according to their particular needs and capabilities. Rigid, prescriptive approaches will not best serve the goals of increasing security and better managing risk.”).

CERTIFICATE OF SERVICE

I, Radhika U. Bhat, hereby certify that on February 24, 2017 a copy of the foregoing T-Mobile USA, Inc. Reply to Oppositions was served by first-class mail, postage paid, on each of the following:

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