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 Operations	)	IB Docket No. 97-95

PETITION FOR RECONSIDERATION
OF THE
TELECOMMUNICATIONS INDUSTRY ASSOCIATION

The Telecommunications Industry Association ("TIA")[1] hereby files this Petition for Reconsideration of the *Report and Order*[2] in the above-captioned proceeding. In this Petition,

[1] TIA is the leading trade association for the information and communications technology ("ICT") industry, representing companies that manufacture or supply the products and services used in global communications across all technology platforms. TIA represents its members on the full range of policy issues affecting the ICT industry and forges consensus on industry

TIA urges the Commission to reconsider or clarify 37 GHz federal sharing issues, the 37-40 GHz operability requirement, and the imposition of a security certification requirement.

TIA greatly appreciates the work the Commission has already done in this proceeding. For the most part, the rules adopted in the Spectrum Frontiers *Report and Order* will help maintain U.S. technological leadership in emerging 5G and Internet-of-Things applications. The Commission made efforts to balance the interests of different stakeholders, and it has moved forward in an expeditious manner. TIA remains broadly supportive of the Commission's efforts to make additional bands of millimeter-wave spectrum available for mobile broadband use, and we look forward to continued progress on the issues that were raised in the *Further Notice of Proposed Rulemaking*[3] in this proceeding. Addressing the specific issues raised below will also help the Commission achieve its objective of enabling robust use of the millimeter-wave bands.

I. The 37 GHz Rules Should Provide Licensees With Greater Certainty.

TIA appreciates the Commission's desire to accommodate Federal and non-Federal operations in the "greenfield" that is the 37 GHz band (37-38.6 GHz). However, the approach adopted in the *Report and Order* creates significant uncertainty that will impede both development and deployment efforts in the band.

At the outset, we understand NTIA's request – appropriately granted in the *Report and Order* – to protect three Space Research Service ("SRS") sites and 14 military sites in the 37-38.6 GHz band. The three SRS sites are geographically bounded, and we appreciate the

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standards. Its hundreds of member companies can be expected to be active participants in the evolving marketplace for telecommunications services using spectrum above 24 GHz.

[2] Report and Order and Further Notice of Proposed Rulemaking, *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, GN Docket No. 14-177, *et al.*, FCC 16-89, 31 FCC Rcd 8014 (2016) ("Report and Order").

[3] *Id.* at ¶¶ 369 *et seq.*, 31 FCC Rcd at 8144 ("Further Notice" or "FNPRM").

willingness of the Commission and NTIA to work with NASA and the NSF to potentially further reduce the scope of those coordination zones.[4] Likewise, NTIA has confirmed that the 14 military sites "still accurately represent locations where the military *plans to* operate systems consistent with the current allocation,"[5] and the Commission has duly imposed coordination zones with a 30-kilometer radius.[6] We also appreciate that NTIA faces "a challenge [in] the inability to precisely define the extent and location of future federal operations at this time,"[7] and that it wishes to preserve some flexibility to expand operations.

But its proposal to create such flexibility – subsequently adopted in the *Report and Order* – by sharing the 37-37.6 GHz band segment on an ostensibly "co-equal" basis raises many questions. For example, will future military operations also be geographically bounded, similar to the 14 known military installations where NTIA states that "terrestrial fixed operations are likely to be deployed"?[8] Will those uses be frequency-bound in any way, as NTIA's proposal to seek expansion rights in a 600 MHz sub-segment of the full 37 GHz band, rather than the full band, seems to imply? Alternatively, if terrestrial mobile use is contemplated that might entail *nationwide* federal use of the spectrum, how intensive would such use be? We urge the

[4] Report and Order ¶ 148 n. 382, 31 FCC Rcd at 8070; *see also* Letter from Paige R. Atkins, Associate Administrator, Office of Spectrum Management, NTIA, dated July 12, 2016, to Mr. Julius Knapp, Chief, Office of Engineering and Technology, FCC, filed in GN Docket No. 14-177, *et al.*, at 4 ("NTIA, in coordination with NASA, NSF, and the Commission, may conduct additional analysis and testing to determine the extent to which the recommended coordination areas in Enclosure 2 can be reduced.") ("2016 NTIA Letter").

[5] 2016 NTIA Letter at 4 (emphasis added).

[6] 47 C.F.R. § 30.205(b), as added by *Report and Order*, 31 FCC Rcd at 8212-13.

[7] 2016 NTIA Letter at 4.

[8] *Id.* (emphasis added).

Commission to work with NTIA and its agency stakeholders to provide as much additional characterization of potential federal use in this band as possible.

As things stand, there are no bounds upon federal use, despite both Federal and non-Federal stakeholders ostensibly being "co-equal" in this band.[9] Therefore, it is unclear whether non-Federal users could eventually be forced out if government use increases, whether first-in-time rights or other principles of priority would apply, or simply how much spectrum will be left for commercial operations if Federal and non-Federal users must race against each other to put markers into the green field. Moreover, TIA supports the use of the simplest possible means to facilitate spectrum sharing,[10] so the Commission's desire to simultaneously use the lower 37 GHz band segment as both "a proving ground for Federal and non-Federal sharing" *and* "a way to facilitate expanded Federal use in the band"[11] does not provide much confidence, let alone certainty.

In addition, the lack of bounds in the lower 37 GHz band is compounded by the Commission envisioning that the upper 37 GHz segment may also eventually be subject to expanded federal use. Indeed, the *Report and Order* apparently went further than NTIA's request by not merely requiring coordination with the 14 requested sites, but ensuring the "ability for Federal agencies to add future sites"[12] and more explicitly seeking comment in the *Further*

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[9] Report and Order ¶ 113, 31 FCC Rcd at 8060.

[10] *See* Comments of the Telecommunications Industry Association, filed Sep. 30, 2016 in GN Docket No. 14-177, *et al.*, at 15-17 (explaining why frequency coordination should use the simplest possible methods) ("TIA FNPRM Comments"); Reply Comments of the Telecommunications Industry Association, filed Oct. 31, 2016 in GN Docket No. 14-177, *et al.*, at 2-3 (if sharing is implemented, the well-functioning 70/80 GHz sharing framework could be applied to 37 GHz) ("TIA FNPRM Reply Comments").

[11] Report and Order ¶ 113, 31 FCC Rcd at 8060.

[12] *Id.* ¶ 149, 31 FCC Rcd at 8070-71.

Notice about "additional circumstances and methods" to open the upper segment to increased Federal use.[13] This approach should not be pursued.

Instead, the Commission should work with NTIA to obtain additional clarity regarding the potential scale and scope of intended Federal uses. It should then re-work its approach in a manner that ensures commercial licensees will be able to build out networks without fear of unbounded federal expansion under the guise of spectrum sharing or "co-equal" status.

II. The 37-40 GHz Operability Requirement Should Be Clarified or Modified To Avoid Delaying Deployments Outside of Shared Bands.

The *Report and Order* imposes an operability requirement across the entire 37-40 GHz band.[14] While we understand the Commission's intention, this requirement will have particular negative effects on equipment development and deployment when coupled with uncertainty regarding potential sharing mechanisms in the 37-37.6 GHz lower band segment. Or for that matter, with potential uncertainty about the upper 37 GHz segment as well if the Commission moves forward with its vision for expanded federal operations in the upper segment as contemplated by the *Further Notice*.[15]

Device and equipment manufacturers cannot comply with a true operability requirement tied to sharing rules that do not exist yet, particularly if dynamic sharing mechanisms are under consideration. Of course, it may eventually turn out that there is no impact, depending upon the specific sharing mechanism adopted, but this cannot be claimed with any certainty at this time. As such, the Commission's current operability rule would likely prevent any development or

[13] FNPRM ¶ 464, 31 FCC Rcd at 8173.

[14] Report and Order ¶¶ 322-323, 31 FCC Rcd at 8127; 47 C.F.R. § 30.208, as added by *Report and Order*, 31 FCC Rcd at 8213.

[15] FNPRM ¶ 464, 31 FCC Rcd at 8173-74.

deployment of devices in the 39 GHz band unless and until the sharing parameters in the 37 GHz band are fully established. This could needlessly delay the rollout of mmWave services and devices in non-shared bands.

For now, the timeline and nature of the sharing rules is still uncertain, and since the Commission seeks to use the lower 37 GHz band as a "proving ground,"[16] there may be an element of uncertainty even after the rules are established. To address this, the 37-40 GHz operability requirement should be clarified now to explicitly state that any mobile or transportable device will meet the requirement if it is tunable across this band on each air interface it uses to operate in the band. This satisfies the spirit of the Commission's intention that devices must operate across the entirety of the band, but does not delay the development and subsequent deployment of equipment operating outside the shared portions even as any sharing requirements are eventually developed by the Commission and assessed by manufacturers.

In addition, the Commission should clarify that mobile and transportable devices will be granted approval despite not necessarily complying with any future rules that will be specific to only the 37-37.6 GHz band segment. In particular, the Commission is considering a minimum channel bandwidth for operation in the 37-37.6 GHz band of 100 MHz.[17] If a mobile or transportable device is designed to operate over a range of channel bandwidths including a channel bandwidth smaller than the (proposed) 100 MHz minimum for the 37-37.6 range, the FCC should still grant equipment approval for the device as long as it remains tunable across 37-40 GHz.

[16] Report and Order ¶ 113, 31 FCC Rcd at 8060.

[17] FNPRM ¶ 454, 31 FCC Rcd at 8171.

It bears mentioning that the problems highlighted above may provide additional reasons for the Commission to adopt simpler sharing mechanisms. Moreover, there may be other as-yet-unidentified complications involved in the interaction between an operability requirement and as-yet-undefined sharing mechanisms. For these reasons, and in addition to making the changes above, the impact on the operability requirement should be an area where the Commission seeks further comment as it develops any sharing framework for bands covered by that requirement.

III. Network Security Requirements Specific to Millimeter-Wave Bands Will Distort the Marketplace.

The Commission should reconsider its decision to adopt any millimeter-wave-specific network security requirement – including the requirement of a Statement from a senior executive[18] – in this proceeding. As the Commission itself has acknowledged, the millimeter-wave bands are most likely to be used in conjunction with a range of other wired and wireless solutions, rather than as stand-alone networks.[19] Given this, the Commission's decision to adopt a new band-specific security requirement in the *Report and Order* was ill-advised, as two Commissioners recognized.[20]

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[18] Report and Order ¶ 263, 31 FCC Rcd at 8104-05.

[19] *See* Notice of Proposed Rulemaking, *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, GN Docket No. 14-177, *et al.*, 30 FCC Rcd 11878, 11883 ¶ 8 (2015) (envisioning "the development of new system architectures that, unlike current technologies, would necessarily include heterogeneous networks capable of delivering service through multiple, widely-space frequency bands and diverse types of radio access technologies," with bands above 24 GHz envisioned "as one component of service packages that will likely include continued use of lower bands to ensure ubiquitous coverage and continuous system-wide coordination").

[20] *See* Statement of Commissioner Ajit Pai, 31 FCC Rcd at 8279 ("I don't think any agency should take a band-by-band approach to cyber"); Statement of Commissioner Michael O'Rielly, 31 FCC Rcd at 8282 (the security requirement is "a means for the Commission to interfere in the design and operations of networks"); *see also* Comments of the Telecommunications Industry Association, filed Jan. 27, 2016 in GN Docket No. 14-177, *et al.*, at 36 (explaining that a band-specific requirement could preclude better solutions when networks as a whole are evaluated, and create investment-chilling regulatory uncertainty) ("TIA NPRM Comments").

Even a simple requirement to provide a Statement from a high-level executive will potentially create a legal duty of care for licensees – a duty that would, in turn, be pushed down to device manufacturers via contractual requirements. As TIA has previously explained, this would result in a different standard of potential liability for operators and device manufacturers for millimeter-wave operations vs. operations in other bands.[21]

Yet 5G networks are ultimately anticipated to operate seamlessly across different bands and technologies – including lower-band spectrum. In this expected scenario, different standards of security for higher bands would be very difficult to administer in practical terms as devices hop seamlessly across different bands. Even worse, different standards of liability could result in distortions in network topology, since network architects could be forced to depart from technology-optimal designs in order to account for different risks of liability as data travels across different bands.

As TIA has stated, marketplace forces and existing private sector and government efforts will lead service providers and device manufacturers to incorporate the security features that customers demand.[22] Indeed, industry is already engaged in security work through various standards-setting bodies such as 3GPP.[23] Security discussions also occur under the auspices of the Commission's own Technological Advisory Council ("TAC"), its Communications Security, Reliability, and Interoperability Council ("CSRIC"), and through other agencies like the Federal

[21] Letter from the Telecommunications Industry Association to Marlene H. Dortch, dated July 7, 2016, filed in GN Docket No. 14-177, *et al*.

[22] TIA NPRM Comments at 36.

[23] *See, e.g.*, Letter from Patricia Paoletta, Counsel to 5G Americas, to Marlene H. Dortch, dated June 17, 2016, filed in GN Docket No. 14-177, *et al.*

Trade Commission ("FTC").[24] The Commission can and should encourage such efforts without imposing a band-specific mandate that will result in inadvertent negative consequences.

IV. Conclusion

Once again, TIA appreciates the Commission's important work in this proceeding – work that will help the U.S. maintain its leadership in the transition to 5G. We urge the Commission to make the adjustments described above to ensure that the millimeter-wave bands ultimately reach their full potential.

Respectfully submitted,

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[24] *Id.* at 4-5.