Before the

Federal Communications Commission

Washington, D.C. 20554

In the Matter of	)	
Use of Spectrum Bands Above 24 GHz	)	GN Docket No. 14-177
For Mobile Radio Services	)	
	)	

Dynamic Spectrum Alliance Comments

September 10, 2018

The Dynamic Spectrum Alliance ("DSA") is a global organization advocating for laws and regulations that will lead to more efficient and effective spectrum utilization.[1] The DSA's three goals are closing the digital divide globally, enabling the Internet of Things and alleviating the "spectrum crunch". DSA submits the following comments in response to the "Spectrum Frontiers" Third Further Notice of Proposed Rulemaking ("3rd FNPRM")[2].

Our comments focus on the framework to facilitate Federal and non-Federal use in the 37.0-37.6 GHz frequency band ("Lower 37 GHz Band"). Specifically, we propose adding an enterprise-based, indoor-only general authorized access (GAA) as an additional non-Federal deployment model. In addition, among the three coordination proposals under consideration for outdoor or higher-power operation (traditional Part 101, Starry, and Intel), DSA views the Starry proposal for site registration and, ultimately, automated third-party coordination as having the greatest potential for successful sharing between Federal and non-Federal Shared Access Licensees (SAL) across all the anticipated SAL deployment types. DSA recognizes the potential benefits of applying the Part 101 framework to the Lower 37 GHz band for fixed SAL deployments, but we are not convinced that it is sufficiently flexible to cover all anticipated deployment types. The Starry approach lends itself to equally effective but ultimately much faster and lower-cost coordination through an automated database solution.

In previous filings, the DSA has supported the Commission's proposal for authorizing non-exclusive sharing among Federal and non-Federal users in the Lower 37 GHz Band. We applaud the Commission decision to affirm its decision to identify non-Federal users in the band as Shared Access Licensees and provide access through a license-by-rule mechanism. DSA continues to see this 600 megahertz of coordinated shared spectrum as a great opportunity for the private sector and Federal users to work together to continue to develop robust and effective sharing models and techniques.

I The Commission Should Authorize Enterprise-Based Indoor-Only General Authorized Access Deployments in the Lower 37 GHz Band

The Commission anticipates that there will be at least the following four types of non-Federal deployments in the Lower 37 Gigahertz Band.[3]

- Point-point links;
- Fixed wireless broadband systems (presumably point-to-multipoint);
- Single-base stations IoT-type systems; and
- Carrier-based deployments of mobile systems using the Lower 37 GHz band as supplemental capacity tied to other bands that are licensed on a geographic area basis.

[1] Our membership spans multinationals, small-and medium-sized enterprises, and academic, research, and other organizations from around the world, all working to create innovative solutions that will increase the amount of available spectrum to the benefit of consumers and businesses alike. A full list of Dynamic Spectrum Alliance members is available on the Dynamic Spectrum Alliance's website at www.dynamicspectrumalliance.org/members.

[2] In the Matter of Use of Spectrum Bands Above 24 GHz For Mobile Radio Services (GN Docket No. 14-177) and 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), *"Third Report and Order, Memorandum Opinion and Order, and Third Further Notice of Proposed Rulemaking"*, approved June 7, 2018 ("3rd FNPRM").

[3] 3rd FNPRM at 63.

With the possible exception of single-base station IoT systems, these deployments would generally operate outdoors and at a power level sufficient to cover a substantial distance. The DSA proposes a fifth category of non-Federal deployment in the Lower 37 GHz band – Enterprise-based indoor-only general authorized access (GAA). To the extent that such systems (including for IoT) are certified as operating indoor-only and at a power level unlikely – using mmW spectrum at 37 GHz – to causes harmful interference to outdoor deployments, DSA believes these systems can operate at any location on a GAA basis.

This new proposed category shares commonality with the 'single-base station IoT-type systems' listed above, in that this type of deployment is envisioned for factories, warehouses, and similar types of indoor facilities located on private property; but it is intended to provide additional broadband capacity under the control of the enterprise, which may or may not be associated with a carrier-based deployments in another band. Operating indoor-only at low-power and given the propagation characteristics of the 37 GHz band, these IoT and other networks would be inherently limited to line-of-sight operation, although in many instances (e.g., a factory, an air plane hanger, a big box retail store) these spaces and the corresponding utility could be substantial.

Such additional broadband capacity in the Lower 37 GHz band within a factory or warehouse or other facility can provide frequency diversity for such applications as augmented reality/virtual reality (AR/VR) and for streaming real time video from autonomous mobile (and other) robots in operation. Real time video combined with IoT data (from the single base station IoT type systems also envisioned in the Lower 37 GHz band) in these indoor environments can be transmitted to the cloud, where it can be analyzed, and when appropriate, recommendations are made for actions the work force (or machines) to take. Some of these recommendations will be best implemented by the individual worker or the team of workers visualizing the solutions in real time over AR/VR devices.

Like other SALs, we anticipate that these enterprise-based indoor-only deployments would be licensed by rule under general authorized access. If the Commission determines that an indoor-only device certification requirement is sufficient to avoid undue risk of harmful interference to outdoor SAL deployments, then DSA recommends the Commission minimize transaction costs and encourage use by at least initially waiving any site-based coordination or registration requirement.

However, if the Commission determines there is a need to register the location of indoor-only operations, it would be most efficient if the enterprise could register its site (or cluster of sites) with a third-party coordinator. DSA recommends that if the Commission requires site-based registration for indoor-only use, the agency or the third-party coordinator (as directed by the Commission) could develop and provide training materials (e.g. on-line tutorial) for these enterprises to understand the regulations in the Lower 37 GHz band and their obligations. The Commission could even require a responsible party at each enterprise to complete the training prior to the enterprise receiving approval to operate in the Lower 37 GHz band and would have to renew the training annually. The third-party coordinator could also operate a help desk if enterprises had any questions about SAL operations in the Lower 37 GHz band.

II Coordination Models

In the abstract, the DSA prefers the Starry model in which a proposed site is registered with a third-party coordinator. In particular, urban deployments in the Lower 37 GHz band may require more complex interference calculations and a neutral third party to facilitate resolution of the inevitable disagreements. Additionally, DSA believes that Starry's proposal lends itself to an automated coordination mechanism that would be far faster and efficient, promoting more intensive use of the band at far lower costs while still protecting established users on a consistent basis.

Site specific third-party coordination is applicable to all of the anticipated deployment types, which are ultimately fixed in nature: point-to-point backhaul; adding and subtracting customer premise equipment as necessary for point-to-multipoint broadband; registering sites where there is a single (or multiple) base stations for IoT; and for DSA's proposed enterprise-based indoor-only general authorized access. With the cooperation of the carriers, such an approach can also work for those interested in using the Lower 37 GHz band as supplemental capacity tied to other bands that are licensed on a geographic area basis. The main difference between coordinating a site-specific deployment of access points used for PtMP and mobile use is the nature of calculated protection contour (PtMP can be sectorized). Both can be calculated quite easily given accurate and up-to-date inputs from other users.

Third-party coordination is the most efficient means of coordinating SALs with Federal operations. Conceivably, the third-party coordinator will have operator information about proposed and actual Lower 37 GHz Band use at each individual site, and having performed the interference analysis, will have a unique understanding of local interference conditions.

The DSA believes although the Commission's proposal to apply some form of Part 101 coordination has merit for the outdoor fixed non-Federal use cases, such rules would pose a significant barrier to adoption for factory and enterprise operators interested in using a single base station for IoT, as well as for DSA's proposed enterprise-based indoor-only general authorized access (described above). If the Commission goes this route, it should offer site cluster licenses to these SALs and, ideally, exempt uses that deploy certified indoor-only equipment.

The DSA does sees one advantage in the Intel proposal to, "…use a database similar to the database used for the 70 GHz and 80 GHz bands, except that the database would also play a role in frequency coordination."[4] Federal users are familiar with the coordination process used for outdoor point-to-point links operating in the 70 GHz and 80 GHz bands. And even though there is a new wrinkle, the role of the database in frequency coordination, maybe Federal users will be more willing to accept it. As evidenced in the CBRS band, Federal users can grind the process down to a crawl if they are uncomfortable with the direction things are taking. It is not clear, though, how well the Intel proposal works for the other the anticipated SAL deployment types.

III Conclusion

The DSA applauds the Commission for continuing its efforts to facilitate a viable coordination scheme for Federal and non-Federal users to share the Lower 37 GHz Band that meets the needs of all stakeholders.

[4] FNPRM at 61.

In addition to the four deployment types the Commission anticipates, the DSA put forward a fifth deployment type – enterprise-based inside-only general authorized access -- which we believe can provide these enterprises with supplemental indoor broadband spectrum under the control of the enterprise for AR/VR, machine vision, and streaming video on the factory floor, the warehouse, or similarly indoor or shielded facility.

DSA believes that while the Commission's Part 101 coordination proposal has merit, Starry's proposal for third-party coordination may have greater flexibility allowing it to coordinate more readily across more types of anticipated deployments in the Lower 37 GHz Band.

Respectfully submitted,

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