

**ALERT**

# Summary of Third R&O, MOO, and Third FNPRM: Use of Spectrum Bands Above 24 GHz For Mobile Radio Services (GN Docket No. 14-177)

June 11, 2018

On June 8, 2018, the Federal Communications Commission (FCC or Commission) released a Third Report and Order (Third R&O), Memorandum Opinion and Order (MOO), and Third Further Notice of Proposed Rulemaking (Third FNPRM) on expanding flexible use in millimeter wave (mmW) spectrum at or above 24 GHz. Comments responding to the *Third FNPRM* are due September 10, 2018, and reply comments are due September 28, 2018.

The FCC's decisions in the *Third R&O* resolve open issues that needed to be addressed prior to the upcoming 28 GHz and 24 GHz auctions, scheduled to begin in November. In this proceeding, the FCC has been taking steps to open several mmW spectrum bands for new and advanced commercial terrestrial services (such as fifth-general (5G) wireless and Internet of Things) that need broad bandwidth and can also operate with the short-range networks that are feasible for these high frequency bands.

The *Third R&O* (i) adopts a geographic area metric option for demonstrating compliance with the Upper Microwave Flexible Use Service (UMFUS) license performance requirements; (ii) requires UMFUS equipment operating in the 24 GHz band to be capable of operating on any frequency in the 24.24-24.45 GHz and 24.75-25.25 GHz range; (iii) conditionally expands Fixed Satellite Service (FSS) use in the 24.75-25.25 GHz band; (iv) adopts a co-primary sharing approach for the 37-37.6 GHz band, which will be licensed as six 100 megahertz channels; and (v) eliminates the pre-auction spectrum

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holdings limit for the 28 GHz, 37 GHz, and 39 GHz bands.

The *MOO* denies Petitions for Reconsideration of the First Report and Order (First R&O) seeking reconsideration of the FCC's co-primary sharing scheme and decision to expand Federal operations in the 37-37.6 GHz band. It further denies Petitions for Reconsideration seeking reconsideration of the agency's decision not to allocate the 42 GHz band for FSS use.

The *Third FNPRM* seeks comment on (i) how the 42 GHz band could be used to provide commercial wireless broadband service, including opportunities for unlicensed and/or shared use; (ii) licensing frameworks for the 37-37.6 GHz band; (iii) how to accommodate coordination zones for future Federal operations in the 37-38.6 GHz band; (iv) expanding mobile use in the 25.25-27.5 GHz band; (v) conditionally expands FSS use in the 50.4-52.6 GHz band; and (vi) its proposal not to apply bright-line, pre-auction spectrum limits on UMFUS licensees in the 26 GHz or 42 GHz bands.

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## **Third Report and Order**

### **A. Performance Requirements—Geographic Area Metric**

The FCC adopts a geographic area metric, which will be included in the list of performance metrics from which an Upper Microwave Flexible Use Service (UMFUS) licensee may select to demonstrate compliance with the agency's performance requirements. A licensee may satisfy the geographic area metric by demonstrating either (i) mobile or point-to-multipoint coverage of at least 25% of the geographic area of the license, or (ii) presence of transmitting or receiving equipment on the licensed spectrum in at least 25% of census tracts within the license area. The equipment must be in use and providing service. This metric may be used by any UMFUS licensee to demonstrate compliance, regardless of the type of service deployed. (¶ 8).

The Commission emphasizes that the geographic area metric is an alternative to the existing performance metrics and not a supplemental requirement. The agency seeks to provide UMFUS licensees additional flexibility, including licensees deploying IoT systems that find the current mobile or fixed metrics are ill-suited. (¶ 9).

### **B. Operability in the 24 GHz Band**

The FCC adopts its proposal to require operability throughout the 24 GHz band. Accordingly, any mobile or transportable equipment capable of operating on any frequency between 24.24-24.45 GHz or 24.75-25.25 GHz must be capable of operating on all frequencies in those ranges. The agency maintains that an operability requirement will increase competition and encourage development of the lower portion of the band. (¶ 13). The Commission declines to adopt U.S.-only out-of-band emission (OOBE) limits to protect passive satellite services in the 23.6-24.0 GHz band. The FCC notes that this is a matter of interest to stakeholders internationally and suggests that it would be premature to adopt U.S. OOBE limits. (¶ 15).

### C. 24 GHz FSS Sharing

The Commission authorizes Fixed Satellite Service (FSS) earth station operations in the 24.75-25.25 GHz band on a co-primary basis under new rule section 25.136(e). (§ 22). To operate without providing added interference protection for UMFUS stations, the FSS applicant must meet one of the following four criteria:

- The FSS licensee also holds the relevant UMFUS license(s) for the area in which the earth station generates a power flux density (PFD), at 10 meters above ground level, of greater than or equal to  $-77.6$  dBm/m<sup>2</sup>/MHz;
- The earth station in the 24.75-25.25 GHz band was authorized prior to the effective date of this rule;
- The application for the earth station in the 24.75-25.25 GHz band was filed prior to the effective date of this rule; or
- The applicant demonstrates compliance with certain sharing criteria applicable in the 27.5-28.35 GHz and 47.2-48.2 GHz band, including (i) the permitted aggregate population limits within the specified earth station PFD contour on a per-county basis, and (ii) constraints on the number of permitted earth stations in the county and in the UMFUS licensing area (PEA) in which the earth station is located. (§ 22; Appendix A, Final Rules, Section 25.136(e)).

The FCC declines to adopt limits on aggregate interference into satellite receivers. Rather, it amends footnote NG65 of the U.S. Table of Frequency Allocations to clarify relative interference protection obligations between co-primary services in the 24.75-25.25 GHz band. (§ 23).

The Commission eliminates U.S. Table of Frequency Allocations footnote NG535, which restricts FSS operations in the 25.02-25.25 GHz band. The agency also eliminates priority of Broadcasting Satellite Service (BSS) feeder links relative to other FSS operations in the 24.75-25.05 GHz band, as well as the orbital-location restrictions on 17/24 GHz BSS feeder link operators in Section 25.262(a). Accordingly, once the rules become effective, all FSS transmissions in the 24.75-25.25 GHz band—including BSS feeder link transmissions—will be subject to the FCC's two-degree spacing rules. (§§ 24-25).

### D. Lower 37 GHz Band Plan

The FCC adopts a co-primary sharing approach for the 37-37.6 GHz band (Lower 37 GHz band), and determines to license the spectrum as six 100 megahertz channels. (§ 28). The Commission seeks comment on the details of its Lower 37 GHz Band sharing approach in the *MOO* and *Third FNPRM*.

### E. Mobile Spectrum Holdings

The Commission eliminates the 1250 megahertz pre-auction spectrum holdings limit for the 28 GHz, 37 GHz, and 39 GHz bands. Although it will not apply an ex ante bright-line limit, the agency will conduct an ex post case-by-case review to the acquisition of spectrum through UMFUS band auctions. Specifically, the FCC will review, on a case-by-case basis, applications for initial licenses filed post-auction using the same 1850 megahertz threshold used to review secondary market transactions. (§§ 32-35).

## Memorandum Opinion and Order

### A. Licensing Lower 37 GHz

The FCC denies Petitions for Reconsideration of the First Report and Order (*First R&O*) filed by CTIA, CCA, 5G Americas, TIA, and T-Mobile seeking reconsideration of certain decisions made regarding the Lower 37 GHz band. CTIA, CCA, 5G Americas, and T-Mobile sought reconsideration of the FCC's decision to adopt a co-primary sharing scheme for the 37-37.6 GHz band, and 5G Americas and TIA sought reconsideration of the FCC's decision to expand Federal operations in the band. The Commission maintains that it is in public interest to license a portion of the spectrum on a non-exclusive, shared basis to support innovative uses of the band and promote access to spectrum by a variety of entities. (¶¶ 37-38).

### B. FSS Allocation 42-42.5 GHz

The Commission denies Petitions for Reconsideration of the *First R&O* filed by Boeing, ViaSat, SES, O3b, and other satellite interests seeking reconsideration of the FCC's decision not to allocate the 42 GHz band for FSS use. The agency finds it is appropriate to reserve the 42-42.5 GHz band for exclusive terrestrial use, given its prior decisions to provide FSS with exclusive access to the 40-42 GHz and 48.2-50.2 GHz bands, and shared access to the 37.5-40 GHz and 28 GHz bands. (¶¶ 45-46).

## Third Further Notice of Proposed Rulemaking

### A. 42-42.5 GHz Band

The FCC seeks further comment on how the 42 GHz band could be used to provide commercial wireless broadband services. The *Third FNPRM* is intended to supplement the agency's related request for comment in the First Further Notice of Proposed Rulemaking (*First FNPRM*). The FCC issued the *First FNPRM* prior to passage of the MOBILE NOW Act and thus seeks further comment consistent with the statute's directives.

#### 1. Suitability for Mobile and Fixed Use

The Commission finds that the 42 GHz band is suitable for flexible use, and tentatively concludes that its Part 30 UMFUS Rules provide the best opportunity to provide commercial wireless broadband service to the public. The FCC seeks comment on its proposal to permit fixed and mobile licensed operations in the 42-42.5 GHz band under Part 30 of the agency's rules. The FCC further seeks comment on whether unlicensed services should be permitted in the band, and whether there are opportunities for further spectrum sharing. (¶¶ 52-53).

#### 2. Licensing, Technical and Service Rules

*Protecting RAS Services at 42.5-43.5 GHz.* The FCC seeks comment on how to protect radio astronomy services (RAS) in the 42.5-43.5 GHz band from UMFUS operations in the adjacent 42-42.5 GHz band. Although the FCC agrees that RAS operations can be protected by limiting UMFUS operations, the Commission finds it lacks sufficient technical information to propose specific rules to protect RAS facilities. The agency asks whether it

should base rules on the ITUR RA.769 parameters or other criteria. It further asks whether it should establish coordination zones around the relevant RAS facilities. (§§ 55-56).

*Band Plan.* The FCC seeks comment on its proposal to license 42-42.5 GHz band as five 100 megahertz channels. The Commission tentatively concludes that its proposal is consistent with developing industry standards and would maximize spectral efficiency. (§ 57).

## **B. 37-37.6 GHz (Lower 37 GHz Band) – Licensing Frameworks**

In designing a licensing mechanism for the Lower 37 GHz band, the Commission seeks to accommodate a variety of use cases and anticipates that there will be at least four types of non-Federal deployments in the band: point-to-point links, fixed wireless broadband systems, single base station IoT-type systems, and carrier-based mobile system deployments for supplemental capacity. The Commission seeks comment on whether there may be additional uses of the band, and if so, what those uses may be. (§§ 58-63).

The Commission seeks comment on different coordination models for the Lower 37 GHz band. Under one model, proposed facilities would be registered with a third-party coordinator. Under another, the Commission would issue licenses authorizing operation with coordination done pursuant to the procedures outline in Part 101 of the Commission's rules. The Commission broadly seeks comment on these different models and asks what criteria should be used to determine whether predicted interference would be harmful. (§ 64).

The Commission requests comment on implementing a first-come, first-served licensing or registration scheme in the Lower 37 GHz band, in which actual users would have a right to interference protection, but no right to exclude others. Subsequent users would be required to coordinate with previously registered sites through Part 101 notice and response rules or, alternatively, to register facilities with a third-party coordinator. (§ 65).

The FCC proposes to require non-Federal users to work with Federal users in good faith to coordinate any new system Federal users may seek to deploy, but seeks comment on the best means of coordinating with Federal operations. To the extent the solution is reserving part of the band for Federal priority use, the FCC seeks comment on how to define such priority rights and whether there are geographic areas where such rights would have little or no impact on non-Federal operations. (§§ 66, 68).

Commenters are asked to address how to prevent spectrum "warehousing," whereby a licensee preserves its rights without providing actual service. The FCC seeks comment on how "operation" should be defined and how the agency may monitor compliance issues such as whether operations have been discontinued. (§ 67).

The Commission also seeks comment on whether offering three different kinds of licenses—point-to-point licenses, base station licenses, and site-cluster licenses—would facilitate deployment in the 37 GHz band. The Commission poses various questions about how each of these types of licenses may be coordinated and administered. (§§ 69-73).

### **C. 37.0-38.6 GHz (37 GHz band)**

The FCC seeks comment on how best to accommodate coordination zones for future Federal operations at a limited number of sites in the 37 GHz band. Should the Commission supplement Section 30.205 of the rules to add more specific sites for Federal operations or should it establish a process that would permit Federal entities to identify a limited number of additional sites as-needed? (§ 74).

### **D. 25.25-27.5 (26 GHz Band)**

*Suitability for Mobile Use.* The Commission believes that the 26 GHz band could be suitable for flexible fixed and mobile use. Thus, it seeks comment on whether the band could be made available for non-Federal fixed and mobile use. (§§ 75-78).

*Spectrum Sharing and Compatibility.* The existing allocations for the 26 GHz band are mostly Federal. While Federal use of the band has been fairly limited, the FCC recognizes that Federal entities may aspire to make heavier use of the band in the future. Thus, the Commission seeks comment several sharing issues, including:

- The best ways to protect existing incumbent operations and systems that Federal agencies might choose to deploy in the future, including identifying appropriate separation distances; (§§ 80-82, 84)
- The best means of protecting existing fixed links in the band; (§ 83)
- Coordination issues with airborne platform services, including whether the FCC should prohibit such systems in the 26 GHz band altogether or whether such systems should only be authorized if affiliated with UMFUS licensees; and (§§ 86-87)
- Any other new or proposed services that should be given priority over UMFUS in the band or, alternatively, that would be compatible with UMFUS and incumbent services. (§ 87).

*Licensing in the 26 GHz Band.* The FCC seeks comment on its proposal to use geographic area licensing and adopting PEAs as the geographic license area size for licenses in the 26 GHz band. Commenters favoring site-based licensing or other licensing methods are directed to set forth specific proposals for licensing the band. (§§ 88-89).

*Band Plan.* The Commission invites comment on adopting channel bandwidths of 100 MHz, or, in the alternative, 200 MHz for the 26 GHz band. (§§ 90-91).

### **E. 50.4-51.4 GHz Band**

The Commission believes that in the 50.4-51.4 GHz band, where an FSS allocation already exists, a limited number of individually licensed FSS earth stations can share the 50.4-51.4 GHz band with “minimal impact” on terrestrial operations. Thus, the agency proposes to permit licensing individual FSS earth stations in the band using the same criteria as is applicable in the 24.75-25.25 GHz band. The FCC also proposes to amend footnote NG65 to the U.S. Table of Allocations to include the 50.4-51.4 GHz band, to make clear the relative interference protection obligations between the co-primary services. The agency seeks comment on these

proposals. (¶¶ 93-94).

#### **F. Mobile Spectrum Holdings Policies in the 26 GHz and 42 GHz Bands**

The FCC seeks comment on its proposal to have no pre-auction limit on the amount of spectrum in the 26 and 42 GHz bands that an entity may acquire through competitive bidding. It also seeks feedback on its proposal to include the bands in the mmW spectrum threshold for reviewing proposed secondary market transactions. (¶¶ 95-96).