



6712-01

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 2, 25 and 30

[GN Docket No. 14-177; WT Docket No. 10-112; FCC 18-73]

Use of Spectrum Bands Above 24 GHz For Mobile Radio Services

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: In this document, the Federal Communications Commission (Commission or FCC) adopts rules for specific millimeter wave bands above 24 GHz. A proposed rule document for the Third Further Notice of Proposed Rulemaking (3rd FNPRM) related to the Final rule document for the Third Report and Order and Memorandum Opinion and Order (3rd R&O) is published elsewhere in this issue of the **Federal Register**.

DATES: Effective [**INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**], except for the amendments to § 25.136, which contain information collection requirements that are not effective until approved by the Office of Management and Budget. The Commission will publish a document in the **Federal Register** announcing the effective date for those amendments.

FOR FURTHER INFORMATION CONTACT: John Schauble of the Wireless Telecommunications Bureau, Broadband Division, at (202) 418-0797 or John.Schauble@fcc.gov, Michael Ha of the Office of Engineering and Technology, Policy and Rules Division, at 202-418-2099 or Michael.Ha@fcc.gov, or Jose Albuquerque of the International Bureau, Satellite Division, at 202-418-2288 or Jose.Albuquerque@fcc.gov. For

information regarding the PRA information collection requirements contained in this PRA, contact Cathy Williams, Office of Managing Director, at (202) 418-2918 or Cathy.Williams@fcc.gov.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Third Report and Order and Memorandum Opinion and Order (3rd R&O), GN Docket No. 14-177, FCC 18-73, adopted on June 7, 2018 and released on June 8, 2018. The complete text of this document is available for public inspection and copying from 8 a.m. to 4:30 p.m. Eastern Time (ET) Monday through Thursday or from 8 a.m. to 11:30 a.m. ET on Fridays in the FCC Reference Information Center, 445 12th Street S.W., Room CY-A257, Washington, DC 20554. The complete text is available on the Commission's Web site at <http://wireless.fcc.gov>, or by using the search function on the ECFS Web page at <http://www.fcc.gov/cgb/ecfs/>. Alternative formats are available to persons with disabilities by sending an e-mail to fcc504@fcc.gov or by calling the Consumer & Governmental Affairs Bureau at (202) 418-0530 (voice), (202) 418-0432 (tty).

Supplemental Final Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act of 1980 (RFA), the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) of the possible significant economic impact on small entities of the policies and rules adopted in the Third Report and Order.

Congressional Review Act

The Commission will send a copy of this Report and Order in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act (CRA), see 5 U.S.C. 801(a)(1)(A).

Synopsis

I. INTRODUCTION

1. The Commission continues its effort to make available millimeter wave (mmW) spectrum, at or above 24 GHz, for fifth-generation (5G) wireless, Internet of Things, and other advanced spectrum-based services. In the 3rd R&O, the Commission addresses pending issues regarding FSS sharing and operability in the 24 GHz band, as well as pending issues regarding performance requirements and mobile spectrum holdings policies for the mmW bands authorized for flexible use. With respect to the 37-37.6 GHz band (Lower 37 GHz band), the Commission resolves pending petitions for reconsideration, establish a band plan, and in the 3rd FNPRM, the Commission seeks comment on a more detailed framework to facilitate Federal and non-Federal use. In addition, the Commission proposes to make additional spectrum in the 42-42.5 GHz (42 GHz band) and 25.25-27.5 GHz band (26 GHz band) available for flexible wireless use, while recognizing the need to protect and provide continued opportunities for Federal use of this band. The Commission notes that it will consider other bands and issues raised in this proceeding in future Commission items.

2. The Commission's efforts in this proceeding to make mmW spectrum available for wireless uses is vital to ensuring continued American leadership in wireless broadband. That leadership represents a critical component of economic growth, job creation, public safety, and global competitiveness. The Commission will continue to take steps to facilitate access to additional low-band, mid-band, and high-band spectrum for the benefit of American consumers, including holding an auction of the 28 GHz band starting in November followed by an auction of the 24 GHz band.

II. BACKGROUND

3. On November 22, 2017, the Commission released the 2nd R&O, 2nd FNPRM, Order on Recon, and MO&O in this proceeding. See 83 FR 37. In relevant parts, the 2nd R&O authorized the 24 GHz band and the 47.2-48.2 GHz band (47 GHz band) for flexible wireless use; it declined to set pre-auction limits on the amount of spectrum an entity may acquire at auction in the 24 GHz and 47 GHz bands; and it revised the mmW spectrum threshold for reviewing proposed secondary market transactions to 1850 megahertz by including the 24 GHz and 47 GHz bands. The 2nd FNPRM sought comment on five issues. First, the Commission proposed to license Fixed-Satellite Service (FSS) earth stations in the 24.75-25.25 GHz band on a co-primary basis under the provisions in Section 25.136(d) applicable to the 47 GHz band. Second, the Commission sought comment on adopting additional performance metrics tailored to Internet of Things (IoT)-type deployments. Third, the Commission proposed to eliminate the pre-auction limit of 1250 megahertz that the R&O had adopted for the 28 GHz, 37 GHz and 39 GHz bands. Fourth, the Commission proposed to require that any equipment capable of operating anywhere within the 24 GHz band must be capable of operating across the entire 24 GHz band, on all frequencies in both band segments. Finally, the Commission invited commenters to submit new studies or data on bands under consideration by the Commission, as well as comments on additional bands the Commission should consider.

4. The Commission received 15 comments and 12 reply comments. A list of commenters, reply commenters, and ex parte filings is contained in the List of Commenters to the 2nd FNPRM. No petitions for reconsideration of the 2nd R&O were filed. SOM1101, LLC filed a comment addressing the issue of allowing satellite user equipment in the 37.5-40 GHz band.

Comment of SOM1101 LLC (filed Jan. 23, 2018). In the MO&O, the Commission declined to authorize satellite user equipment in the 37.5-40 GHz band. Because SOM1101's comment neither acknowledges nor seeks reconsideration of the MO&O's decision, the Commission will not give further consideration to this issue.

III. THIRD REPORT AND ORDER

A. Performance Requirements –Geographic Area Metric

5. Background. In the R&O, the Commission moved away from a substantial service regime in the mmW bands by adopting a defined set of metrics for performance requirements for Upper Microwave Flexible Use Service (UMFUS). UMFUS licensees relying on mobile or point-to-multipoint service must show that they are providing reliable signal coverage and service to at least 40 percent of the population within the service area of the licensee, and that they are using facilities to provide service in that area either to customers or for internal use. Licensees relying on point-to-point service must demonstrate that they have four links operating and providing service, either to customers or for internal use, if the population within the license area is equal to or less than 268,000. If the population within the license area is greater than 268,000, a licensee relying on point-to-point service must demonstrate it has at least one link in operation and is providing service for each 67,000 population within the license area. Showings that rely on a combination of multiple types of service will be evaluated on a case-by-case basis. This reliance on fixed metrics was a change from the buildout rules formerly applicable to 28 GHz and 39 GHz licensees, which used a substantial service standard. In the FNPRM, the Commission sought comment on expanding this list of metrics by adopting a performance metric designed to accommodate IoT-type

deployments. In the 2nd FNPRM, the Commission sought comment more specifically on a geographic area metric that might accommodate IoT or other services deployed along non-traditional lines, while still measuring a meaningful level of service in a proven way.

6. Discussion. The Commission adopts a geographic area metric for UMFUS licenses, to be included in the existing list of performance metrics from which licensees may choose, as an additional alternative to meeting the Commission's performance requirements. Consistent with the option on which the Commission sought comment in the 2nd FNPRM, licensees may fulfill the requirements of this metric either by demonstrating mobile or point-to-multipoint coverage of at least 25% of their license's geographic area, or by showing the presence of equipment transmitting or receiving on the licensed spectrum in at least 25% of census tracts within the license area. The Commission believes the 25% level would maintain parity with the 40% population coverage metric. As with the Commission's previously-adopted metrics, equipment must be in use and actually providing service, either for private, internal use or to unaffiliated customers, in order to be counted. This metric, like the Commission's previously-adopted metrics, may be used by any UMFUS licensee, regardless of the type of service deployed.

7. The Commission emphasizes that this geographic area metric is an additional alternative for licensees, not a supplemental requirement. If a licensee deploying IoT systems finds that the Commission's existing mobile or fixed metrics better fit their needs, it is welcome to use either of those metrics instead. As the Commission has emphasized since the R&O, all licensees may choose the particular metric they wish to satisfy, and the adoption of this metric merely expands their list of choices. Without the adoption of this additional choice of metric,

licensees would have only the mobile or fixed options through which to demonstrate their compliance with the Commission's performance requirements. While the Commission continues to support its previous conclusion that it is too soon to design a usage-based metric that will be technology- and use case-neutral, it believes it is important to provide some additional option for UMFUS licensees whose deployments may not track residential population, or that may not involve traditional higher-power fixed links, as will likely be the case for some IoT-type services. The Commission's adoption of a geographic area metric is responsive to the calls from commenters for greater flexibility. In the interest of providing licensees with as much flexibility and certainty as possible in advance of the Commission's contemplated auctions of UMFUS spectrum, the Commission does not believe it is appropriate to delay the adoption of an additional choice of metric to future rounds of this proceeding.

8. The objections raised by, and alternative suggestions offered by commenters, are not persuasive. With respect to calls for entirely different regimes, such as substantial service or site-based licensing, the Commission has already determined that geographic area licensing with the performance requirements that the Commission adopted in the Report and Order strikes the best balance between flexibility for licensees and accountability in ensuring efficient use of mmW spectrum. The Commission notes that it has also designated a total of fourteen gigahertz of unlicensed spectrum in the mmW bands, and that it seeks further comment on the sharing regime it has adopted for the lower 37 GHz band.

B. Operability in the 24 GHz Band

9. Background. The 24 GHz band consists of two band segments: the lower segment, from 24.25-24.45 GHz, and the upper segment, from 24.75-25.25 GHz. In the 2nd R&O, the Commission adopted UMFUS licensing and technical rules for the 24 GHz band. The

Commission also proposed to adopt an operability requirement for the 24 GHz band. Under this requirement, any mobile or transportable equipment capable of operating in any portion of the 24 GHz band must be capable of operating at all frequencies within the 24 GHz band, in both band segments.

10. Discussion. The Commission adopts its proposal to require operability throughout the 24 GHz band. 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. This requirement will support competition by ensuring a robust device ecosystem throughout the band. Given the separation of the 24 GHz band into two different segments, the Commission believes an operability requirement is important to supporting development of the lower portion of the band.

11. The Commission reiterates that this operability requirement in no way dictates the use of any particular technology or air interface. The Commission also emphasizes that this operability requirement is specific to the 24 GHz band, and does not extend to other UMFUS bands. The 28 GHz band and the 37 and 39 GHz bands also have operability requirements, but those are separate and independent from the one the Commission adopts for the 24 GHz band. Devices are not required to operate across all UMFUS bands. While one commenter expresses concern about the ability to filter signals from the 24.45-24.75 GHz band, it ultimately supports the operability requirement, and it does not provide any technical analysis in support of its concern.

12. In addition, as the Commission noted in the 2nd R&O, ongoing international studies include analyses to determine IMT-2020 out-of-band emission limits necessary to

protect passive sensors onboard weather satellites in the 23.6-24.0 GHz band. The Commission recognizes the need to protect these passive satellite operations that provide important data necessary for weather predictions and warnings. Given that this is a matter of interest to multiple stakeholders internationally and that the Commission cannot predict the outcome, it finds it inappropriate to adopt U.S.-only limits that may need to be modified at a later time. Once interference protection standards are agreed upon internationally the Commission will, if necessary, consider through notice and comment whether any modification of its current out-of-band limits may be needed. The Commission encourages non-Federal operators in the 24 GHz band to monitor these studies and to plan their systems, to the extent possible, to take into account the potential for additional future protection of passive sensors in the 23.6-24.0 GHz band.

C. 24 GHz FSS Sharing

13. Background. The U.S. Table of Frequency Allocations (U.S. Table) currently includes primary, non-Federal, Fixed, Mobile and Fixed-Satellite Service (FSS) (Earth-to-space) allocations in the 24.75-25.25 GHz band. Footnote NG535 to the U.S. Table provides feeder links in the Broadcasting-Satellite Service (BSS) priority over other FSS uses in the 24.75-25.05 GHz band segment, and restricts FSS use of the 25.05-25.25 GHz band segment to feeder links for the BSS. In the 2nd R&O the Commission adopted a primary Fixed Service allocation in the 24.75-25.05 GHz band segment, added a primary Mobile Service allocation in the 24.75-25.25 GHz band segment, and authorized both mobile and fixed operations in those bands under the part 30 UMFUS rules. The Commission did not make changes to its current rules at that time, but decided instead to seek comment in the 2nd FNPRM in conjunction with a proposal to allow more flexible use of the band for FSS earth stations.

14. In the 2nd FNPRM, the Commission proposed to license FSS earth stations in 24.75-25.25 GHz band on a co-primary basis under the provisions contained in Section 25.136(d), which currently applies to the 47 GHz band, by adding the 24.75-25.25 GHz band to this rule section. This change would limit availability of the 24.75-25.25 GHz band for FSS to individually-licensed FSS earth stations that meet the same specific licensing requirements applicable to earth stations in the 47 GHz band. The Commission also sought comment on adding a U.S. Table footnote specifying the relative interference protection obligations of FSS and UMFUS stations in this band. In addition, the Commission proposed various conforming modifications to certain earth station application requirements. The Commission sought comment on these proposals and on possible actions needed to address the potential for aggregate interference from terrestrial users into satellite systems in the band.

15. To provide for more flexible FSS use of the 24.75-25.25 GHz band, the Commission proposed to eliminate footnote NG535, thereby making this band available for general FSS uplink operations without restricting these operations to, or affording priority for, the provision of feeder links for 17/24 GHz BSS space stations. To further increase flexibility for all FSS uses in this new sharing regime, the Commission also proposed to eliminate the Petitions for Reconsideration of Spectrum Frontiers Report and Order addressed herein orbital-location restrictions for 17/24 GHz BSS space stations specified in Section 25.262(a), thus providing more flexibility to these BSS operations. Consistent with these proposals, the Commission proposed several other rule changes to part 25 of its rules to harmonize the treatment of BSS feeder links with other FSS transmissions. Specifically, the Commission proposed the following rule changes: (1) modify Section 25.138 to extend applicability of the Ka-band off-axis EIRP

density limits in paragraph (a) to the 24.75-25.25 GHz band, and then to eliminate the nearly identical BSS feeder link-specific earth station off-axis EIRP density limits for the 24.75-25.25 GHz band in Section 25.223(b); (2) add the 24.75-25.25 GHz band to the list of frequency bands in our general FSS earth station coordination rules in Section 25.220(a), thereby permitting us to eliminate the coordination provisions contained in Sections 25.223(c) and (d); (3) remove and reserve Section 25.223, because there would be no need for these provisions, which provide an alternative means of licensing BSS feeder links, and also eliminate cross references to Section 25.223 contained in Section 25.209(f); (4) eliminate Section 25.204(e)(4), which contains rain fade specifications specific to 17/24 GHz BSS feeder link transmissions, and instead include the 24.75-25.25 GHz band in paragraph (e)(3), which contains nearly identical Ka-band FSS rain fade specifications; (5) modify the interference-showing requirements for FSS applicants in Section 25.140(a) to make clear its applicability to FSS (Earth-to-space) transmissions to 17/24 GHz BSS space stations; (6) add a new subparagraph (iv) to Section 25.140(a) requiring applicants for space stations receiving uplinks in the 24.75-25.25 GHz band to certify, among other things, that the earth stations transmitting to such space stations will not exceed the off-axis EIRP density limits in Section 25.138(a); (7) modify the definitions of “routine processing or licensing” and “two-degree compliant space station” contained in Section 25.103; (8) eliminate the operational requirements associated with the Appendix F orbital-location constraints in Section 25.262 by deleting paragraphs (a) and (d), and modifying paragraphs (b) and (e); (9) modify Sections 25.140(b), (c) and (d) to reflect changes in the interference showing required by 17/24 GHz BSS applicants, which is currently defined in part by the applicant’s orbital position relative to Appendix F locations; (10) delete Section 25.262(b)

to eliminate an operational requirement made moot; (11) delete Appendix F specific requirements contained in Section 25.114(d)(17); (12) eliminate a reference in Section 25.114(d)(7) to a deleted subparagraph in Section 25.140(b); and (13) modify the cross-polarization isolation requirement in Section 25.210(i) to making clear that it applies only to 17/24 GHz BSS space-to-Earth transmissions, to provide for consistent treatment of 17/24 GHz feeder uplinks with other FSS transmissions in the 24.75-25.25 GHz band.

16. Discussion. After review of the record, the Commission modifies the FSS earth station licensing proposal set out in the 2nd FNPRM so as to better provide FSS with additional capacity for satellite services while permitting substantial terrestrial use of the band. As with the 28 GHz and 47 GHz bands, the Commission finds generally that allowing a limited number of FSS earth stations in the 24.75-25.25 GHz band would further the public interest, and therefore provide for sharing of the 24.75-25.25 GHz band by UMFUS and FSS earth stations, including BSS feeder link earth stations. Based on the record, the Commission adopts rules that incorporate certain sharing criteria applicable in the 27.5-28.35 GHz and 47.2-48.2 GHz bands. Specifically, the Commission applies the permitted aggregate population limits within the specified earth station PFD contour on a per-county basis, similar to the requirement in the 27.5-28.35 GHz band, rather than the per-PEA limits applicable to the 47.2-48.2 GHz band. Additionally, as in the 47.2-48.2 GHz band, the Commission adopts constraints on the number of permitted earth stations not only in the county but also in the UMFUS licensing area (PEA) in which the earth station is located. To reflect these requirements, the Commission adopts a new rule section 25.136(g), which its find includes sufficient defined restrictions on earth station operations consistent with CCA's request.

17. The Commission will not adopt any operational requirements addressing limits on aggregate interference into satellite receivers at this time, as it does not believe such limits are justified by the current record, and the Commission received no specific proposals for such a rule. The Commission retains the authority to monitor developments and intervene to prevent unacceptable interference to satellites if that becomes necessary, but there is no evidence to date that suggests that any such intervention will be necessary. The Commission will amend footnote NG65 to the U.S. Table to include the 24.75-25.25 GHz band to make clear the relative interference protection obligations between the co-primary services. The Commission rejects CTIA's argument that it should adopt a new footnote stating that certain shared frequency bands are identified predominantly for terrestrial mobile and fixed services on a primary basis. The Commission does not believe that this proposed footnote fulfills its intent to specify accurately the relative interference protection obligations of FSS and UMFUS stations in this band, and further, it would go beyond the scope of this rulemaking by including frequency bands apart from the 24.75-25.25 GHz band (i.e., the 28 GHz, 37 GHz, 39 GHz, and 47 GHz bands). The Commission also adopts the proposed conforming modifications to Sections 25.115(e) and 25.130(b), and delete the obsolete licensing requirements for the 25.05-25.25 GHz band specified in Section 25.203(l).

18. The Commission adopts its proposals to remove footnote NG535. In doing so, the Commission removes the restriction on FSS operations apart from BSS feeder links, in the 25.05-25.25 GHz band segment, and eliminate the priority of BSS feeder links relative to other FSS operations in the 24.75-25.05 GHz band. The Commission also eliminates the Appendix F orbital-location restrictions contained in Section 25.262(a), which should give 17/24 GHz BSS

feeder link operators the same flexibility as other FSS operators in the band. FSS use beyond the provision of BSS feeder links is already permitted in the lower portion of the band, and the Commission believes that it will further spectrum efficiency to extend this same flexibility to other types of individually licensed FSS earth stations in the upper band segment. The Commission rejects T-Mobile's argument that the Commission should constrain satellite operators' use of the 24.75-25.25 GHz band beyond limits placed on satellite operators in comparable UMFUS bands. Such a position is at variance with the Commission's stated objectives in the Spectrum Frontiers proceeding to make available millimeter wave (mmW) bands for flexible wireless deployment while simultaneously adopting rules that will allow the mmW bands to be shared with other uses, including satellite, in bands where there are existing FSS allocations. The Commission also disagrees with AT&T that retention of subsection (a) in footnote NG535 is warranted, as it believes it would only serve to undermine its goals of increasing flexibility of use and spectrum efficiency. AT&T acknowledges that the Commission's two-degree spacing requirements are sufficient to protect BSS feeder links from other FSS operations, and it provides no justification for retaining BSS feeder link priority in the 24.75-25.05 GHz portion of the band.

19. The Commission received no opposition to its proposed rule changes to harmonize the treatment of FSS and BSS feeder link transmissions under its rules, nor any opposition on the associated conforming amendments. Accordingly, the Commission adopts these rule changes as elaborated above, for the reasons set forth in the 2nd FNPRM. The Commission will not however, include in the amended definition of "routine processing or licensing" in § 25.103 an exclusion for earth stations in the 24.75-25.25 GHz band as originally

proposed in the 2nd FNPRM. Upon further consideration, this change is not necessary to accurately reflect our licensing procedures. In addition, as a consequence of eliminating the Appendix F orbital-location requirement in § 25.262(a), the Commission also deletes § 25.262(c)(2). This provision, which addresses cancelled or surrendered licenses relative specifically to Appendix F orbital locations, is moot. Once the rules become effective, these rule changes will ensure that all FSS transmissions in the 24.75-25.25 GHz band, including BSS feeder link transmissions, are subject to the Commission's two-degree spacing requirements. The four-degree spacing regimen applicable to 17/24 GHz BSS downlink transmissions however, will be unaltered, which SIA notes is an important predicate for its support of proposed changes to the Commission's rules governing uplink band operations.

D. Lower 37 GHz Band Plan

20. Background. In the R&O, the Commission adopted rules to permit fixed and mobile terrestrial operation in the 37 GHz band. The Commission also adopted a licensing regime for the 37.6-38.6 GHz portion of the band (Upper 37 GHz Band), which would be licensed in five 200 megahertz blocks on a geographic area basis. Rather than adopting a particular licensing regime for the Lower 37 GHz Band, the Commission made it available for coordinated co-primary sharing between Federal and non-Federal users. The Commission explained that Federal and non-Federal users would access the Lower 37 GHz Band through a coordination mechanism, which it would more fully develop through government/industry collaboration.

21. In the FNPRM, the Commission sought comment, among other things, on the appropriate band plan for the Lower 37 GHz. The Commission proposed to establish a 100 megahertz minimum channel size. It also proposed to allow users to aggregate 100 megahertz

channels into larger channel sizes up to the maximum of 600 megahertz where available. Starry and T-Mobile support the proposal to license 100 megahertz channels in the Lower 37 GHz band. No party opposed the proposal.

22. Discussion. The Commission affirms the Commission's decision to adopt a co-primary sharing approach for the Lower 37 GHz band and the Commission seeks additional comment on the details of that approach. Here, the Commission adopts the Commission's proposal to license the Lower 37 GHz Band as six 100 megahertz channels. This channelization will allow for a sufficient acquisition of spectrum by smaller users while still allowing for aggregation by larger entities. The Commission believes that 100 megahertz channels will be sufficient for a licensee to provide the type of high rate data services, and other innovative uses and applications, contemplated for this spectrum. These smaller channels offer an opportunity to provide low-barrier access to spectrum for new technologies and providers while also enhancing shared access methods and technologies between commercial and Federal users.

E. Mobile Spectrum Holdings

23. Background. The R&O established a pre-auction, bright-line limit of 1250 megahertz on the amount of mmW spectrum in the 28 GHz, 37 GHz, and 39 GHz bands (R&O bands) that an entity could acquire at auction. In the 2nd R&O, the Commission declined to adopt a similar pre-auction limit on the 24 GHz and 47 GHz bands, primarily because preemptive limits on the amount of spectrum an entity might acquire could unnecessarily inhibit participation at auction and discourage the development of spectrum-intensive services. Moreover, the Commission found that mmW technology currently is at a nascent stage of development and that there was insufficient information to predict the amount of spectrum needed for future still-to-be-developed services. No petitions for reconsideration were filed in

response to the Commission's decisions in the 2nd R&O. In the 2nd FNPRM, the Commission proposed to eliminate the pre-auction limit of 1250 megahertz that the R&O had adopted for the R&O bands. Further, in the absence of any pre-auction limits, the Commission sought comment regarding whether it should apply a post-auction case-by-case review on all mmW spectrum available at auction.

24. Discussion. The Commission adopts its proposal in the 2nd FNPRM to eliminate the pre-auction limit of 1250 megahertz for the 28 GHz, 37 GHz, and 39 GHz bands. In the R&O, the Commission indicated that its consideration of whether to adopt a mobile spectrum holdings limit for the licensing of spectrum through competitive bidding – and, if so, what type of limit – would take into account several objectives, including: the promotion of competition in relevant markets; the acceleration of private sector deployment of advanced services; and generally managing the spectrum in the public interest. In reaching its decision to adopt a pre-auction spectrum aggregation limit for the 28 GHz, 37 GHz, and 39 GHz bands, the Commission observed, among other things, that mmW spectrum is likely to be a critical component in the development of 5G and that pre-auction limits could encourage the development of innovative services to the benefit of the American consumer. The Commission continues to recognize that mmW spectrum is an important resource for the deployment of 5G and other advanced wireless services, as evidenced by the steps it takes in this 3rd R&O, MO&O, and 3rd FNPRM to further promote this deployment. The Commission also notes that in addition to mmW spectrum, various providers have announced plans to develop 5G in other bands, such as 600 MHz and 2.5 GHz, and have indicated an interest in using 3.5 GHz and 3.7-4.2 GHz for 5G. Overall, the Commission observes that there are a variety of spectral paths to 5G deployment in

the United States, and that accelerating this deployment, including through the use of mmW spectrum, is an increasingly important objective given the potential economic benefits.

25. Thus, while technological development in the mmW bands remains in a nascent stage, the Commission's balancing of objectives shifts towards facilitating rapid 5G deployment in the United States. In that context, and given the Commission's balancing of various statutory objectives, the Commission weighs more heavily the risk that bright-line, pre-auction limits may restrict unnecessarily the ability of entities to participate and acquire spectrum in a mmW band auction. This could, in turn, unnecessarily constrain providers in their paths towards 5G deployment on mmW bands, limit their incentives to invest in these new services, and delay the realization of related economic benefits. The Commission is not inclined to adopt such limits on auction participation absent a clear indication that they are necessary to address a specific competitive concern. In the case of the 28 GHz, 37 GHz, and 39 GHz bands, the Commission is not persuaded by commenters' generalized assertions that a bright-line, pre-auction limit in these bands is necessary to protect competition in the provision of wireless services, particularly in light of its decision below to adopt a post-auction case-by-case review of spectrum in the UMFUS bands. The Commission emphasizes that the Commission has adopted rules to facilitate flexible terrestrial wireless use of 4950 megahertz of mmW spectrum across five bands, which will be licensed in multiple blocks of different sizes and geographic areas, providing many spectrum opportunities for various types of auction bidders. In addition, given the similar technical characteristics and potential uses of the mmW spectrum for the R&O bands – relative to the 24 GHz and 47 GHz bands – the Commission sees no reason to reach a different conclusion regarding a pre-auction limit for the R&O bands than it reached for the 24

GHz and 47 GHz bands. Moreover, treating certain UMFUS bands differently from others for purposes of a pre-auction limit would be inconsistent with the Commission's policy of treating all five UMFUS bands the same for purposes of secondary market transactions. The Commission therefore concludes that entities bidding for licenses in the 24 GHz, 28 GHz, 37 GHz, 39 GHz, and 47 GHz bands should not be subject to bright-line, pre-auction limits on the amount of spectrum they may acquire at an auction of these bands. Consistent with the Commission's rationale in the 2nd R&O, the Commission concludes that this approach will maximize the opportunities in these bands for putting this mmW spectrum to efficient use.

26. Although the Commission will not apply an ex ante bright-line limit to the acquisition of spectrum in the five UMFUS bands through auction, the Commission will conduct an ex post case-by-case review to the acquisition through auction of spectrum in the UMFUS bands. In particular, the Commission finds that it is in the public interest to review applications for initial licenses filed post-auction on a case-by-case basis using the same 1850 megahertz threshold the Commission uses for reviewing applications for secondary market transactions. As noted above, the Commission continues to recognize that mmW spectrum is an important resource for the deployment of 5G and other advanced wireless services, as the Commission acknowledged in retaining the mmW spectrum threshold for secondary markets. Applying a post-auction case-by-case review will provide an opportunity to evaluate whether an applicant's post-auction spectrum holdings would result in excessive concertation of licenses, in a manner consistent with the Commission's obligations under Section 309(j)(3)(B). Moreover, the Commission finds that applying a case-by-case review to initial applications for spectrum won at auction is necessary to ensure that the public interest benefits of having a mmW

spectrum threshold for reviewing proposed secondary market transactions are not rendered ineffective. In addition, unlike a bright-line pre-auction limit, a post-auction case-by-case review will provide flexibility to bidders and facilitate the assignment of licenses to those who value them the most. As is the case for the mmW spectrum threshold applied to secondary market transactions, the threshold the Commission will apply to review initial applications for spectrum won at auction merely identifies those markets that may warrant further competitive analysis.

27. The Commission intends to conduct the same type of case-by-case review that the Commission anticipated in 2001 when it eliminated the CMRS spectrum cap, and that it articulated in 2008 in the context of the 700 MHz auction (Auction 73), but which it discontinued in the 2014 Mobile Spectrum Holdings Order. Case-by-case review permits bidders to participate fully in a mmW spectrum auction, while still allowing the Commission to assess the impact on competition from the assignment of initial mmW spectrum licenses, and to take appropriate action to preserve or protect competition only where necessary. Thus, for example, the Commission may allow a winning auction bidder to exceed the threshold if it finds that this would not foreclose other competitors from acquiring similar mmW spectrum. Further, as was the case under the Commission's post-auction case-by-case review that previously was applied, in the event that a divestiture is required before issuing any new licenses, the winning bidder likely would have greater flexibility to choose which spectrum to divest among its existing mmW spectrum holdings or winning bids, in a manner that nevertheless would address competitive concerns.

28. In supporting such a case-by-case review, U.S. Cellular proposed a two-tiered public interest framework that relied on band-specific spectrum concentration limits. The Commission rejects their proposal for specific in-band limits for similar reasons as it articulated in the R&O and 2nd R&O, where it stated that, either at auction or in the secondary market, separate band-specific limits are not necessary. Further, the Commission disagrees with commenters that allege that a post-auction case-by-case review creates uncertainty that is inconsistent with Section 309(j). The post-auction case-by-case review will be based on the standard articulated in the 2008 Union Telephone Order, and the Commission will apply this review to auctions of mmW bands going forward. Spectrum auctions were subject to this kind of review for a number of years before 2014, and the Commission finds that it is similarly appropriate with respect to the mmW spectrum. The Commission finds that such a case-by-case review provides parties with a clear and familiar standard that the Commission and Bureau have used, and continue to use, in reviewing proposed secondary market transactions currently. In that regard, the Commission finds that post-auction case-by-case review is likely to create sufficient bidder certainty consistent with Section 309(j)(3)(E) of the Communications Act, which emphasizes the need for clear bidding rules “to ensure that interested parties have a sufficient time to develop business plans, assess marketplace conditions, and evaluate the availability of equipment for the relevant services.” In addition, for the reasons discussed above, the Commission finds that the adoption of a post-auction case-by-case review for mmW spectrum is the best way to satisfy its obligation under another part of Section 309 to guard against the excessive concentration of licenses.

IV. MEMORANDUM OPINION AND ORDER

A. Licensing Lower 37 GHz

29. Petitions for Reconsideration. CTIA, CCA, 5G Americas, TIA, and T-Mobile (Petitioners) filed Petitions for Reconsideration (Petitions) of the R&O asking the Commission to reconsider decisions it made regarding the 37 GHz band. First, CTIA, CCA, 5G Americas, and T-Mobile ask the Commission to reconsider its decision to adopt a Shared Access Licensing scheme for the lower band segment in which non-Federal users would be licensed by rule. CTIA, 5G Americas, CCA, and T-Mobile recommend that the Commission instead adopt exclusive area licensing in the 37-37.6 GHz band. Second, 5G Americas and TIA ask the Commission to reconsider its decision that Federal operations should have expansion rights in the Lower 37 GHz band.

30. Discussion. The Commission denies the petitions of CTIA, CCA, 5G Americas, TIA, and T-Mobile under Section 1.429(b) of the Commission's rules because the Commission has already considered and rejected the arguments raised by the petitioners in favor of exclusive area licensing. In their comments and reply comments to the NPRM, the petitioners urged the Commission to adopt an exclusive area licensing scheme for the 37-37.6 GHz band. In their petitions for reconsideration, they raise no new facts or arguments here. In the R&O, the Commission concluded that "[a]lthough there is support in the record to license the entire 37 GHz band by geographic area, the Commission finds that it is in the public interest to license a portion of this band on a non-exclusive shared basis, and to license the remainder of the band by geographic area to give potential licensees additional opportunity to access large blocks of spectrum or to use 37 GHz spectrum in combination with, and similarly to, 39 GHz spectrum."

The Commission explained that “[a]llowing part of the band to be made available on a non-exclusive, shared basis will promote access to spectrum by a wide variety of entities, support innovative uses of the band, and help ensure that spectrum is widely utilized.” The Commission further explained that “[a]dopting geographic area licensing for the other portion of the band will expeditiously make spectrum available and allow common development of the 37 GHz and 39 GHz bands.” Thus, the Commission will not reconsider its decision to adopt a co-primary sharing scheme for the 37-37.6 GHz band and the Commission reaffirms its decision in the Report and Order.

31. The Commission rejects CTIA’s argument that the Commission’s action was arbitrary and capricious because the Commission did not “provide reasoning for adopting an untested sharing model that requires licensees to coordinate with Federal parties, the latter of which has proven to be highly successful for the AWS-1 and AWS-3 bands.” In the R&O, the Commission explained that the sharing approach it adopted best enables “the band to be used for new commercial uses while simultaneously allowing fixed and mobile Federal use to expand.” The Commission added that “[a]llowing part of the band to be made available on a non-exclusive, shared basis will promote access to spectrum by a wide variety of entities, support innovative uses of the band, and help ensure that spectrum is widely utilized.” The Commission further stated that the approach it adopted provided “satellite operators the certainty they need to be able to expand their operations into the 37 GHz band in the future. Nothing in the petitions supports the change in direction suggested by petitioners.

32. In the R&O, the Commission directed the Wireless Bureau and Office of Engineering and Technology to collaborate with NTIA and Federal stakeholders, as well as

industry stakeholders and other interested parties to further define the sharing framework.”

Initial collaboration has identified the issues raised in the 3rd FNPRM adopted June 7, 2018. The 3rd FNPRM presents another opportunity to open a dialogue about how sharing can best be implemented and achieved in the Lower 37 GHz band prior to the adoption of final sharing rules. The Commission looks forward to continuing to work with NTIA, Federal stakeholders, and industry to complete development of the sharing mechanism.

B. FSS Allocation in 42-42.5 GHz

33. Background. In the R&O, the Commission declined to allocate the 42 GHz band for fixed satellite service (FSS) downlink operations. It concluded there was less reason to expand FSS operations into the 42 GHz band given that it was already granting FSS enhanced access to the 37.5-40 GHz band and because FSS has exclusive access to the 40.5-42 GHz band. Rather, the Commission saw greater value in making the band available exclusively for terrestrial use.

34. Various satellite interests sought reconsideration of that decision. ViaSat asserts that “the 42-42.5 GHz band segment could be used in connection with the downlink spectrum that currently is available for satellite use in the adjacent 37.5-42 GHz band segment to achieve increased satellite broadband network capabilities that will be needed to meet this exponentially expanding consumer demand.” ViaSat, SES, and O3b argue that providing satellite access to the 42 GHz band also comes with an established public interest benefit - helping to bridge the digital divide in rural America.

35. Discussion. The Commission declines to reconsider its decisions to not allocate the 42 GHz band for FSS use. The Commission’s decision was part of an overall goal to have a balanced strategy for sharing between terrestrial and satellite services in V-band. Given the

Commission's prior decisions to provide FSS with exclusive access to the 40-42 GHz and 48.2-50.2 GHz bands -- plus shared access to the 37.5-40 GHz and 28 GHz bands, the Commission see nothing arbitrary in reserving 500 megahertz of spectrum for exclusive terrestrial use. Moreover, the Commission notes that in the 3rd R&O above, the Commission provides for shared FSS use of the 24 GHz band. Satellite interests raise no new facts and merely reassert arguments they made previously regarding the need for the 42 GHz band to deploy broadband. They also have not demonstrated that the Commission has committed any error.

36. The MOBILE NOW Act does not require us to give further consideration to adding an FSS allocation in the 42 GHz band. While the Act asks that the Commission considers how this band may be used to provide "commercial wireless broadband service," including licensed and/or unlicensed service, it also asks that the Commission include technical characteristics under which the band may be employed for "mobile or fixed terrestrial wireless operations, including any appropriate coexistence requirements." By its express language limiting any proposed licensed or unlicensed services in the band to "mobile and fixed terrestrial operations," the Commission finds that Congress excluded the alternative of permitting licensed satellite service in the band. Legislative history also indicates that Congress intended such mmW spectrum for "mobile or fixed terrestrial wireless operations, including for broadband" without any concomitant discussion of satellite service. Accordingly, the Commission does not believe the MOBILE NOW Act requires that it reconsider permitting satellite service in the 42 GHz band or to consider how this non-terrestrial service could share with any possible licensed and unlicensed terrestrial services on whose coexistence the Commission now seeks comment.

V. FINAL REGULATORY FLEXIBILITY ANALYSIS

37. As required by the Regulatory Flexibility Act of 1980, as amended (RFA), an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the 2nd FNPRM released in November 2017 in this proceeding. The Commission sought written public comment on the proposals in the 2nd FNPRM, including comments on the IRFA. No comments were filed addressing the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.

A. Need for, and Objectives of, the Third Report and Order

38. In the 3rd R&O, the Commission authorizes Fixed-Satellite Service (FSS) use of the 24.75-25.25 GHz band for individually licensed earth stations. Under the current rules, Broadcasting Satellite Service (BSS) feeder links have priority over other FSS uses in the 24.75-25.25 GHz band. Given the very light use of the 24.75-25.25 GHz band for BSS feeder links, the existence of the Commission's earth station two-degree spacing rules that can protect BSS feeder links from other FSS earth stations in the band, and the power limits placed on BSS feeder link earth stations, there is no need to give BSS feeder link earth stations priority over other uses of the FSS for earth stations located within the United States, or to preclude other FSS earth stations from claiming protection from feeder link earth stations located within the United States.

39. The 3rd R&O also creates a buildout standard for UMFUS licensees based on geographic area coverage that would be an alternative to the current population coverage standard in the current rules. A performance metric based on geographic area coverage (or presence) would allow for networks that provide meaningful service but deploy along other lines than residential population. Such a metric could be useful for sensor-based networks,

particularly for uses in rural areas. The Commission adopts the following metric as an option for UMFUS licensees to fulfill their buildout requirements: geographic area coverage of 25% of the license area. The latter standard could accommodate deployments, such as sensor networks, that are not designed to provide mobile or point-to-multipoint area coverage, and for whom calculating “coverage of 25% of the area” would therefore not be a meaningful standard.

40. The 3rd R&O also adopts an operability requirement such that any device designed to operate within the 24 GHz bands must be capable of operating on all frequencies within those bands. This operability requirement will ensure that devices developed for the 24 GHz band operate throughout the band, making it easier for smaller businesses with fewer resources to find equipment that can operate across the entire band.

B. Summary of Significant Issues raised by Public Comments in Response to the IRFA

41. There were no comments filed that specifically addressed the proposed rules and policies presented in the IRFA.

C. Response to Comments by the Chief Counsel for Advocacy of the Small Business Administration

42. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA), and to provide a detailed statement of any change made to the proposed rules as a result of those comments.

D. Description and Estimate of the Number of Small Entities To Which the Proposed Rules Will Apply

43. Wireless Telecommunications Carriers (except Satellite). This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to

provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless internet access, and wireless video services. The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees. For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year. Of this total, 955 firms had employment of 999 or fewer employees and 12 had employment of 1,000 employees or more. Thus, under this category and the associated size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities.

44. Fixed Microwave Services. Microwave services include common carrier, private-operational fixed, and broadcast auxiliary radio services. They also include the UMFUS and the Millimeter Wave Service where licensees can choose between common carrier and non-common carrier status. At present, there are approximately 66,680 common carrier fixed licensees, 69,360 private and public safety operational-fixed licensees, 20,150 broadcast auxiliary radio licensees, 411 LMDS licenses, 33 24 GHz DEMS licenses, 777 39 GHz licenses, and five 24 GHz licenses, and 467 Millimeter Wave licenses in the microwave services. The Commission has not yet defined a small business with respect to microwave services. The closest applicable SBA category is Wireless Telecommunications Carriers (except Satellite) and the appropriate size standard for this category under SBA rules is that such a business is small if it has 1,500 or fewer employees. For this industry, U.S. Census Bureau data for 2012 shows that there were 967 firms that operated for the entire year. Of this total, 955 had employment of 999 or fewer, and 12 firms had employment of 1,000 employees or more. Thus, under this

SBA category and the associated standard, the Commission estimates that the majority of fixed microwave service licensees can be considered small.

45. The Commission does not have data specifying the number of these licensees that have more than 1,500 employees, and thus is unable at this time to estimate with greater precision the number of fixed microwave service licensees that would qualify as small business concerns under the SBA's small business size standard. Consequently, the Commission estimates that there are up to 36,708 common carrier fixed licensees and up to 59,291 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services that may be small and may be affected by the rules and policies adopted herein. The Commission notes, however, that both the common carrier microwave fixed and the private operational microwave fixed licensee categories includes some large entities.

46. Satellite Telecommunications and All Other Telecommunications. This category comprises firms "primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications." The category has a small business size standard of \$32.5 million or less in average annual receipts, under SBA rules. For this category, U.S. Census Bureau data for 2012 shows that there were a total of 333 firms that operated for the entire year. Of this total, 299 firms had annual receipts of less than \$25 million. Consequently, the Commission estimates that the majority of satellite telecommunications providers are small entities.

47. All Other Telecommunications. The "All Other Telecommunications" category is comprised of establishments primarily engaged in providing specialized telecommunications

services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.” The SBA has developed a small business size standard for “All Other Telecommunications,” which consists of all such firms with gross annual receipts of \$32.5 million or less. For this category, U.S. Census Bureau data for 2012 shows that there were a total of 1442 firms that operated for the entire year. Of these firms, a total of 1400 firms had gross annual receipts of under \$25 million and 42 firms had gross annual receipts of \$25 million to \$49,999,999. Thus, the Commission estimates that a majority of “All Other Telecommunications” firms potentially affected by its actions can be considered small.

48. Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing. This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment. Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.” The SBA has established a size standard for this industry of 1,250 employees or less. U.S. Census Bureau data for 2012 shows that 841 establishments operated in this industry in that year. Of that number, 828 establishments operated with fewer than 1,000 employees, 7 establishments operated with

between 1,000 and 2,499 employees and 6 establishments operated with 2,500 or more employees. Based on this data, the Commission concludes that a majority of manufacturers in this industry is small.

E. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

49. The Commission expects the rules adopted in the 3rd R&O will impose new or additional reporting or recordkeeping and/or other compliance obligations on small entities as well as other applicants and licensees. The projected reporting, recordkeeping, and other compliance requirements in the 3rd R&O will apply to all entities in the same manner. The revisions the Commission adopts should benefit small entities by giving them more information, more flexibility, and more options for gaining access to wireless spectrum.

50. Small entities and other applicants for UMFUS licenses will be required to file license applications using the Commission's automated Universal Licensing System (ULS). ULS is an online electronic filing system that also serves as a powerful information tool, one that enables potential licensees to research applications, licenses, and antenna structures. It also keeps the public informed with weekly public notices, FCC rulemakings, processing utilities, and a telecommunications glossary. Small entities, like all other entities who are UMFUS applicants, must submit long-form license applications must do so through ULS using Form 601, FCC Ownership Disclosure Information for the Wireless Telecommunications Services using FCC Form 602, and other appropriate forms.

51. The Commission expects that the filing, recordkeeping and reporting requirements associated with the demands described above will require small businesses as well as other entities that intend to utilize these new UMFUS licenses to use professional,

accounting, engineering or survey services in order to meet these requirements. As described below, several steps have been taken that will alleviate the burdens of the requirements on small businesses.

F. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

52. The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.

53. The Commission does not believe that its adopted changes will have a significant economic impact on small entities. As noted above, the various construction and performance requirements and their associated showings will be the same for small and large businesses that license the UMFUS bands. To the extent applying the rules equally to all entities results in the cost of complying with these burdens being relatively greater for smaller businesses than for large ones, these costs are necessary to effectuate the purpose of the Communications Act, namely to further the efficient use of spectrum and to prevent spectrum warehousing. Likewise compliance with the Commission's service and technical rules and coordination requirements are necessary for the furtherance of its goals of protecting the public while also providing interference free services. Moreover, while small and large businesses must equally

comply with these rules and requirements, the Commission has taken the steps described below to help alleviate the burden on small businesses that seek to comply with these requirements.

54. The proposals to facilitate satellite service in the 24 GHz band should also assist small satellite businesses by providing them with additional flexibility to locate their earth stations without causing interference to or receiving interference from UMFUS licensees.

G. Report to Congress

55. The Commission will send a copy of the 3rd R&O, including this FRFA, in a report to Congress pursuant to the Congressional Review Act. In addition, the Commission will send a copy of the 3rd R&O, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of the 3rd R&O, and FRFA (or summaries thereof) will also be published in the **Federal Register**.

VI. ORDERING CLAUSES

56. IT IS ORDERED, pursuant to the authority found in sections 1, 2, 3, 4, 5, 7, 301, 302, 302a, 303, 304, 307, 309, and 310 of the Communications Act of 1934, 47 U.S.C. 151, 152, 153, 154, 155, 157, 301, 302, 302a, 303, 304, 307, 309, and 310, section 706 of the Telecommunications Act of 1996, as amended, 47 U.S.C. 1302, and § 1.411 of the Commission's rules, 47 CFR 1.411, that the Third Report and Order, Third Further Notice of Proposed Rulemaking, and Memorandum Opinion and Order IS HEREBY ADOPTED.

57. IT IS FURTHER ORDERED that the Commission's rules ARE HEREBY AMENDED as set forth in the Final Rules.

58. IT IS FURTHER ORDERED that the provisions and requirements of this Third Report and Order and the rules adopted herein WILL BECOME EFFECTIVE **[INSERT DATE 30**

DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER], except for rules and requirements which contain new or modified information collection requirements that require approval by the Office of Management and Budget under the Paperwork Reduction Act and WILL BECOME EFFECTIVE after the Commission publishes a document in the **Federal Register** announcing such approval and the relevant effective date.

59. IT IS FURTHER ORDERED that the petitions for reconsideration listed in the Petitions for Reconsideration of Spectrum Frontiers Report and Order ARE GRANTED to the extent indicated and are otherwise DENIED.

60. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Third Report and Order, Third Further Notice of Proposed Rulemaking, and Memorandum Opinion and Order, including the Final, Supplemental Final, and Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

61. IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of this Report and Order to Congress and the Government Accountability Office pursuant to the Congressional Review Act, see 5 U.S.C. 801(a)(1)(A).

List of Subjects in 47 CFR Parts 2, 25 and 30

Communications common carriers, Communications equipment, Reporting and recordkeeping requirements, Satellites.

FEDERAL COMMUNICATIONS COMMISSION

Marlene Dortch,

Secretary,

Office of the Secretary

Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 2, 25, and 30 as follows:

PART 2 – FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for part 2 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

2. In § 2.106, the Table of Frequency Allocations is amended as follows:
 - a. Page 54 is revised.
 - b. In the list of non-Federal Government (NG) Footnotes, footnote NG65 is revised and footnote NG535 is removed.

The revisions read as follows:

§ 2.106 Table of Frequency Allocations.

* * * * *

24-24.05 AMATEUR AMATEUR-SATELLITE			24-24.05	24-24.05 AMATEUR AMATEUR-SATELLITE	SM Equipment (18) Amateur Radio (97)
5.150 24.05-24.25 RADIOLOCATION Amateur Earth exploration-satellite (active)			5.150 US211 24.05-24.25 RADIOLOCATION G59 Earth exploration-satellite (active)	5.150 US211 24.05-24.25 Amateur Earth exploration-satellite (active) Radiolocation	RF Devices (15) SM Equipment (18) Private Land Mobile (90) Amateur Radio (97)
5.150 24.25-24.45 FIXED	24.25-24.45 RADIONAVIGATION	24.25-24.45 FIXED MOBILE RADIONAVIGATION	5.150 24.25-24.45	5.150 24.25-24.45 FIXED MOBILE	RF Devices (15) Upper Microwave Flexible Use (30)
24.45-24.65 FIXED INTER-SATELLITE	24.45-24.65 INTER-SATELLITE RADIONAVIGATION	24.45-24.65 FIXED INTER-SATELLITE MOBILE RADIONAVIGATION	24.45-24.65	24.45-24.65 INTER-SATELLITE RADIONAVIGATION	RF Devices (15) Satellite Communications (25)
24.65-24.75 FIXED FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE	5.533 24.65-24.75 INTER-SATELLITE RADIOLOCATION-SATELLITE (Earth-to-space)	5.533 24.65-24.75 FIXED FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE 5.533	5.533 24.65-24.75	5.533 24.65-24.75 INTER-SATELLITE RADIOLOCATION-SATELLITE (Earth-to-space)	
24.75-25.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.532B	24.75-25.25 FIXED-SATELLITE (Earth-to-space) 5.535	24.75-25.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.535 MOBILE	24.75-25.25	24.75-25.25 FIXED FIXED-SATELLITE (Earth-to-space) NG65 MOBILE	RF Devices (15) Satellite Communications (25) Upper Microwave Flexible Use (30)
25.25-25.5 FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal-satellite (Earth-to-space)			25.25-25.5 FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal-satellite (Earth-to-space)	25.25-25.5 Inter-satellite 5.536 Standard frequency and time signal-satellite (Earth-to-space)	RF Devices (15)

* * * * *

NON-FEDERAL GOVERNMENT (NG) FOOTNOTES

* * * * *

NG65 In the bands 24.75-25.25 GHz and 47.2-48.2 GHz, stations in the fixed and mobile services may not claim protection from individually licensed earth stations authorized pursuant to 47 CFR 25.136. However, nothing in this footnote shall limit the right of UMFUS licensees to operate in conformance with the technical rules contained in 47 CFR part 30. The Commission reserves the right to monitor developments and to undertake further action concerning interference between UMFUS and FSS, including aggregate interference to satellite receivers, if appropriate.

* * * * *

PART 25 – SATELLITE COMMUNICATIONS

3. The authority citation for part 25 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302, 303, 307, 309, 310, 319, 332, 605, and 721, unless otherwise noted.

4. Amend § 25.103 by revising the definitions of “Routine processing or licensing” and “Two-degree-compliant space station” to read as follows:

§ 25.103 Definitions.

* * * * *

Routine processing or licensing. Expedited processing of unopposed applications for earth stations in the FSS communicating with GSO space stations, that satisfy the criteria in §§ 25.138(a), 25.211(d), 25.212(c), 25.212(d), 25.212(e), 25.212(f), or 25.218, include all required information, are consistent with all Commission rules, and do not raise any policy issues. Some, but not all, routine earth station applications are eligible for an autogrant procedure under § 25.115(a)(3).

* * * * *

Two-degree-compliant space station. A GSO FSS space station operating in the conventional or extended C-bands, the conventional or extended Ku-bands, the 24.75-25.25 GHz band, or the conventional Ka-band within the limits on downlink EIRP density or PFD specified in §25.140(a)(3) and communicating only with earth stations operating in conformance with routine uplink parameters specified in §§ 25.138(a), 25.211(d), 25.212(c), (d),

or (f), §§ 25.218, 25.221(a)(1) or (a)(3), or § 25.222(a)(1) or (a)(3), § 25.226(a)(1) or (a)(3), or § 25.227(a)(1) or (a)(3).

* * * * *

5. Amend § 25.114 by revising paragraph (d)(7) and removing and reserving paragraph (d)(17) to read as follows:

§ 25.114 Applications for space station authorizations.

* * * * *

(d) * * *

(7) Applicants for authorizations for space stations in the Fixed-Satellite Service, including applicants proposing feeder links for space stations operating in the 17/24 GHz Broadcasting-Satellite Service, must also include the information specified in § 25.140(a). Applicants for authorizations for space stations in the 17/24 GHz Broadcasting-Satellite Service must also include the information specified in § 25.140(b);

* * * * *

(17) [Reserved]

* * * * *

6. Amend § 25.115 by revising paragraphs (e)(1) and (g)(1)(vii) to read as follows:

§ 25.115 Applications for earth station authorizations.

* * * * *

(e) * * *

(1) An application for a GSO FSS earth station license in the 17.8-19.4 GHz, 19.6-20.2 GHz, 24.75-25.25 GHz, 27.5-29.1 GHz, or 29.25-30 GHz bands not filed on FCC Form 312EZ pursuant to paragraph (a)(2) of this section must be filed on FCC Form 312, Main Form and Schedule B, and must include any information required by paragraph (g) or (j) of this section or by §25.130.

* * * * *

(g) * * *

(1) * * *

(vii) The relevant off-axis EIRP density envelopes in §§ 25.138, 25.218, 25.221, 25.222, 25.226, or § 25.227 must be superimposed on plots submitted pursuant to paragraphs (g)(1)(i) through (vi) of this section.

* * * * *

7. Amend § 25.136 by adding new paragraph (g) to read as follows:

§ 25.136 Earth Stations in the 24.75-25.25 GHz, 27.5-28.35 GHz, 37.5-40 GHz and 47.2-48.2

GHz bands.

* * * * *

(g) Notwithstanding that FSS is co-primary with the Upper Microwave Flexible Use Service in the 24.75-25.25 GHz band, earth stations in that bands shall be limited to individually licensed earth stations. An applicant for a license for a transmitting earth station in the 24.75-25.25 GHz band must meet one of the following criteria to be authorized to operate without

providing any additional interference protection to stations in the Upper Microwave Flexible Use Service:

(1) The FSS licensee also holds the relevant Upper Microwave Flexible Use Service 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 $-77.6 \text{ dBm/m}^2/\text{MHz}$;

(2) The earth station in the 24.75-25.25 GHz band was authorized prior to **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**; or

(3) The application for the earth station in the 24.75-25.25 GHz band was filed prior to **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**; or

(4) The applicant demonstrates compliance with all of the following criteria in its application:

(i) There are no more than two other authorized earth stations operating in the 24.75-25.25 GHz band within the county where the proposed earth station is located that meet the criteria contained in either paragraphs (g)(1) (g)(2), (g)(3) or (g)(4) of this section, and there are no more than 14 other authorized earth stations operating in the 24.75-25.25 GHz band within the Partial Economic Area where the proposed earth station is located that meet the criteria contained in paragraphs (g)(1) (g)(2), (g)(3) or (g)(4) of this section. For purposes of this requirement, multiple earth stations that are collocated with or at a location contiguous to each other shall be considered as one earth station;

(ii) 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 $-77.6 \text{ dBm/m}^2/\text{MHz}$, together with the similar area of any other earth station operating in the 24.75-25.25 GHz band authorized pursuant to paragraph (g) of this section, does not cover, in the aggregate, more than the amount of population of the county within which the earth station is located as noted below:

Table 1 to Paragraph (g)(4)(ii)

Population within the County where earth station is located	Maximum permitted aggregate population within $-77.6 \text{ dBm/m}^2/\text{MHz}$ PFD contour of earth stations
Greater than 450,000	0.1 percent of population in county.
Between 6,000 and 450,000	450 people.
Fewer than 6,000	7.5 percent of population in county.

(iii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to $-77.6 \text{ dBm/m}^2/\text{MHz}$ does not contain any major event venue, urban mass transit route, passenger railroad, or cruise ship port. In addition, the area mentioned in paragraph (a)(4)(ii) of this section shall not cross any of the following types of roads, as defined in functional classification guidelines issued by the Federal Highway Administration pursuant to 23 CFR 470.105(b): Interstate, Other Freeways and Expressways, or

Other Principal Arterial. The Federal Highway Administration Office of Planning, Environment, and Realty Executive Geographic Information System (HEPGIS) map contains information on the classification of roads. For purposes of this rule, an urban area shall be an Adjusted Urban Area as defined in section 101(a)(37) of Title 21 of the United States Code.

(iv) The applicant has successfully completed frequency coordination with the UMFUS licensees within the area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to $-77.6 \text{ dBm/m}^2/\text{MHz}$ with respect to existing facilities constructed and in operation by the UMFUS licensee. In coordinating with UMFUS licensees, the applicant shall use the applicable processes contained in §101.103(d) of this chapter. (f) If an earth station applicant or licensee in the 24.75-25.25 GHz, 27.5-28.35 GHz, 37.5-40 GHz and/or 47.2-48.2 GHz bands enters into an agreement with an UMFUS licensee, their operations shall be governed by that agreement, except to the extent that the agreement is inconsistent with the Commission's rules or the Communications Act.

* * * * *

8. Amend § 25.138 by revising the section heading and paragraph (a) introductory text, and paragraph (a)(6) to read as follows:

§ 25.138 Licensing requirements for GSO FSS earth stations in the conventional Ka-band and the 24.75-25.25 GHz band.

(a) Applications for earth station licenses in the GSO FSS in the conventional Ka-band or the 24.75-25.25 GHz band that indicate that the following requirements will be met and include

the information required by relevant provisions in §§ 25.115 and 25.130 may be routinely processed:

* * * * *

(6) The pfd at the Earth's surface produced by emissions from a space station operating in the conventional Ka-band, for all conditions including clear sky, and for all methods of modulation, shall not exceed a level of -118 dBW/m²/MHz, in addition to the limits specified in § 25.208(d).

* * * * *

9. Amend § 25.140 by:

- a. Revising paragraphs (a)(2), (a)(3) introductory text, and (a)(3)(iv) through (v);
- b. Adding paragraph (a)(3)(vi);
- c. Revising paragraphs (b) introductory text, and (b)(3) through (5);
- d. Removing paragraph (b)(6);
- e. Removing and reserving paragraph (c); and
- f. Revising paragraph (d) introductory text.

The revisions and addition read as follows:

§ 25.140 Further requirements for license applications for GSO space station operation in the FSS and the 17/24 GHz BSS.

(a) * * *

(2) In addition to the information required by § 25.114, an applicant for GSO FSS space station operation, including applicants proposing feeder links for space stations operating in the 17/24 GHz BSS, that will be located at an orbital location less than two degrees from the assigned location of an authorized co-frequency GSO space station, must either certify that the proposed operation has been coordinated with the operator of the co-frequency space station or submit an interference analysis demonstrating the compatibility of the proposed system with the co-frequency space station. Such an analysis must include, for each type of radio frequency carrier, the link noise budget, modulation parameters, and overall link performance analysis. (See Appendices B and C to Licensing of Space Stations in the Domestic Fixed-Satellite Service, FCC 83-184, and the following public notices, copies of which are available in the Commission's EDOCS database, available at <https://www.fcc.gov/edocs>: DA 03-3863 and DA 04-1708.) The provisions in this paragraph do not apply to proposed analog video operation, which is subject to the requirement in paragraph (a)(1) of this section.

(3) In addition to the information required by § 25.114, an applicant for a GSO FSS space station, including applicants proposing feeder links for space stations operating in the 17/24 GHz BSS, must provide the following for operation other than analog video operation:

* * * * *

(iv) With respect to proposed operation in the 24.75-25.25 GHz band (Earth-to-space), a certification that the proposed uplink operation will not exceed the applicable EIRP density envelopes in §25.138(a) and that the associated space station will not generate a power flux

density at the Earth's surface in excess of the applicable limits in this part, unless the non-routine uplink and/or downlink FSS operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the orbital location and except as provided in paragraph (d) of this section.

(v) With respect to proposed operation in the 4500-4800 MHz (space-to-Earth), 6725-7025 MHz (Earth-to-space), 10.70-10.95 GHz (space-to-Earth), 11.20-11.45 GHz (space-to-Earth), and/or 12.75-13.25 GHz (Earth-to-space) bands, a statement that the proposed operation will take into account the applicable requirements of Appendix 30B of the ITU Radio Regulations (incorporated by reference, see § 25.108) and a demonstration that it is compatible with other U.S. ITU filings under Appendix 30B.

(vi) With respect to proposed operation in other FSS bands, an interference analysis demonstrating compatibility with any previously authorized co-frequency space station at a location two degrees away or a certification that the proposed operation has been coordinated with the operator(s) of the previously authorized space station(s). If there is no previously authorized space station at a location two degrees away, the applicant must submit an interference analysis demonstrating compatibility with a hypothetical co-frequency space station two degrees away with the same receiving and transmitting characteristics as the proposed space station.

(b) Each applicant for a license to operate a space station transmitting in the 17.3-17.8 GHz band must provide the following information, in addition to that required by § 25.114:

* * * * *

(3) An applicant for a license to operate a space station transmitting in the 17.3-17.8 GHz band must certify that the downlink power flux density on the Earth's surface will not exceed the values specified in §25.208(c) and/or (w), or must provide the certification specified in § 25.114(d)(15)(ii).

(4) An applicant for a license to operate a space station transmitting in the 17.3-17.8 GHz band to be located less than four degrees from a previously licensed or proposed space station transmitting in the 17.3-17.8 GHz band, must either certify that the proposed operation has been coordinated with the operator of the co-frequency space station or provide an interference analysis of the kind described in paragraph (a) of this section, except that the applicant must demonstrate that its proposed network will not cause more interference to the adjacent space station transmitting in the 17.3-17.8 GHz band operating in compliance with the technical requirements of this part, than if the applicant were located at an orbital separation of four degrees from the previously licensed or proposed space station.

(5) In addition to the requirements of paragraphs (b)(3) and (4) of this section, the link budget for any satellite in the 17.3-17.8 GHz band (space-to-Earth) must take into account longitudinal stationkeeping tolerances. Any applicant for a space station transmitting in the 17.3-17.8 GHz band that has reached a coordination agreement with an operator of another space station to allow that operator to exceed the pfd levels specified in § 25.208(c) or § 25.208(w), must use those higher pfd levels for the purpose of this showing.

(c) [Reserved]

(d) An operator of a GSO FSS space station in the conventional or extended C-bands, conventional or extended Ku-bands, 24.75-25.25 GHz band (Earth-to-space), or conventional Ka-band may notify the Commission of its non-routine transmission levels and be relieved of the obligation to coordinate such levels with later applicants and petitioners.

* * * * *

§25.203 [Amended]

10. Amend § 25.203 by removing and reserving paragraph (l).

11. Amend § 25.204 by removing paragraph (e)(4) and revising paragraphs (e) introductory text, (e)(1) and (3) to read as follows:

§25.204 Power limits for earth stations.

* * * * *

(e) To the extent specified in paragraphs (e)(1) through (e)(3) of this section, earth stations in the Fixed-Satellite Service may employ uplink adaptive power control or other methods of fade compensation to facilitate transmission of uplinks at power levels required for desired link performance while minimizing interference between networks.

(1) Except when paragraphs (e)(2) through (e)(3) of this section apply, transmissions from FSS earth stations in frequencies above 10 GHz may exceed the uplink EIRP and EIRP density limits specified in the station authorization under conditions of uplink fading due to precipitation by an amount not to exceed 1 dB above the actual amount of monitored excess

attenuation over clear sky propagation conditions. EIRP levels must be returned to normal as soon as the attenuating weather pattern subsides.

* * * * *

(3) FSS earth stations transmitting to geostationary space stations in the 24.75-25.25 GHz, 28.35-28.6 GHz, and/or 29.25-30.0 GHz bands may employ uplink adaptive power control or other methods of fade compensation. For stations employing uplink power control, the values in paragraphs (a)(1), (2), and (4) of §25.138 may be exceeded by up to 20 dB under conditions of uplink fading due to precipitation. The amount of such increase in excess of the actual amount of monitored excess attenuation over clear sky propagation conditions must not exceed 1.5 dB or 15 percent of the actual amount of monitored excess attenuation in dB, whichever is larger, with a confidence level of 90 percent except over transient periods accounting for no more than 0.5 percent of the time during which the excess is no more than 4.0 dB.

* * * * *

12. Amend § 25.209 by revising paragraph (f) to read as follows:

§ 25.209 Earth station antenna performance standards.

* * * * *

(f) A GSO FSS earth station with an antenna that does not conform to the applicable standards in paragraphs (a) and (b) of this section will be authorized only if the applicant demonstrates that the antenna will not cause unacceptable interference. This demonstration

must comply with the requirements in §§ 25.138, 25.218, 25.220, 25.221, 25.222, 25.226, or § 25.227, as appropriate.

* * * * *

13. Amend § 25.210 by revising paragraph (i) to read as follows:

§ 25.210 Technical requirements for space stations.

* * * * *

(i) 17/24 GHz BSS space station antennas transmitting in the 17.3-17.8 GHz band must be designed to provide a cross-polarization isolation such that the ratio of the on axis co-polar gain to the cross-polar gain of the antenna in the assigned frequency band is at least 25 dB within its primary coverage area.

* * * * *

14. Amend § 25.220 by revising paragraph (a) to read as follows:

§25.220 Non-routine transmit/receive earth station operations.

(a) The requirements in this section apply to applications for, and operation of, earth stations transmitting in the conventional or extended C-bands, the conventional or extended Ku-bands, the 24.75-25.25 GHz band, or the conventional Ka-band that do not qualify for routine licensing under relevant criteria in §§ 25.138, 25.211, 25.212, 25.218, 25.221(a)(1) or (a)(3), § 25.222(a)(1) or (a)(3), § 25.226(a)(1) or (a)(3), or § 25.227(a)(1) or (a)(3).

* * * * *

§ 25.223 [Removed and Reserved]

15. Remove and reserve § 25.223.

16. Revise § 25.262 to read as follows:

§ 25.262 Licensing and domestic coordination requirements for 17/24 GHz BSS space stations.

(a) An applicant may be authorized to operate a space station transmitting in the 17.3-17.8 GHz band at levels up to the maximum power flux density limits defined in § 25.208(c) and/or § 25.208(w), without coordinating its power flux density levels with adjacent licensed or permitted operators, only if there is no licensed space station, or prior-filed application for a space station transmitting in the 17.3-17.8 GHz band at a location less than four degrees from the orbital location at which the applicant proposes to operate.

(b) Any U.S. licensee or permittee authorized to transmit in the 17.3-17.8 GHz band that does not comply with the power flux-density limits set forth in § 25.208(c) and/or § 25.208(w) shall bear the burden of coordinating with any future co-frequency licensees and permittees of a space station transmitting in the 17.3-17.8 GHz band under the following circumstances:

(1) If the operator's space-to-Earth power flux-density levels exceed the power flux-density limits set forth in § 25.208(c) and/or § 25.208(w) by 3 dB or less, the operator shall bear the burden of coordinating with any future operators proposing a space station transmitting in the 17.3-17.8 GHz band in compliance with power flux-density limits set forth in § 25.208(c)

and/or §25.208(w) and located within ± 6 degrees of the operator's 17/24 GHz BSS space station.

(2) If the operator's space-to-Earth power flux-density levels exceed the power flux-density limits set forth in § 25.208(c) and/or § 25.208(w) by more than 3 dB, the operator shall bear the burden of coordinating with any future operators proposing a space station transmitting in the 17.3-17.8 GHz band in compliance with power flux-density limits set forth in § 25.208(c) and/or § 25.208(w) and located within ± 10 degrees of the operator's space station.

(3) If no good faith agreement can be reached, the operator of the space station transmitting in the 17.3-17.8 GHz band that does not comply with § 25.208(c) and/or § 25.208(w) shall reduce its space-to-Earth power flux-density levels to be compliant with those specified in § 25.208(c) and/or § 25.208(w).

(c) Any U.S. licensee or permittee using a space station transmitting in the 17.3-17.8 GHz band that is required to provide information in its application pursuant to § 25.140(b)(4) must accept any increased interference that may result from adjacent space stations transmitting in the 17.3-17.8 GHz band that are operating in compliance with the rules for such space stations specified in §§ 25.140(b), 25.202(a)(9) and (e)-(g), 25.208(c) and (w), 25.210(i)-(j), 25.224, 25.262, 25.264(h), and 25.273(a)(3)..

(d) Notwithstanding the provisions of this, licensees and permittees will be allowed to apply for a license or authorization for a replacement satellite that will be operated at the same power level and interference protection as the satellite to be replaced.

PART 30 – UPPER MICROWAVE FLEXIBLE USE SERVICE

17. The authority citation for part 30 continues to read as follows:

AUTHORITY: 47 U.S.C. 151, 152, 153, 154, 301, 303, 304, 307, 309, 310, 316, 332, 1302.

18. Amend § 30.104 by revising the section heading, redesignating paragraphs (b) through (e) as paragraphs (c) through (f), adding new paragraph (b), and revising newly redesignated paragraphs (c), (e), and (f) to read as follows:

§ 30.104 Performance requirements.

* * * * *

(b) In the alternative, a licensee may make its buildout showing on the basis of geographic area coverage. To satisfy the requirements of using this metric, licensees relying on mobile or point-to-multipoint service must show that they are providing reliable signal coverage and service to at least 25% of the geographic area of the license. The geographic area of the license shall be determined by the total land area of the county or counties covered by the license. Licensees relying on fixed point-to-point links or other, low-power point-to-point connections must show that they have deployed at least one transmitter or receiver in at least 25% of the census tracts within the license area. All equipment relied upon in the showing, whatever type of service or connection it provides, must be operational and providing service, either to customers or for internal use, as of the date of the filing.

(c) Showings that rely on a combination of multiple types of service will be evaluated on a case-by-case basis. Licensees may not combine population-based showings with geographic area-based showings.

* * * * *

(e) Failure to meet this requirement will result in automatic cancellation of the license.

In bands licensed on a Partial Economic Area basis, licensees will have the option of partitioning a license on a county basis in order to reduce the population or land area within the license area to a level where the licensee's buildout would meet one of the applicable performance metrics.

(f) Existing 24 GHz, 28 GHz and 39 GHz licensees shall be required to make a showing pursuant to this section by June 1, 2024.

19. Revise § 30.208 to read as follows:

§ 30.208 Operability.

Mobile and transportable stations that operate on any portion of frequencies within the 27.5-28.35 GHz or the 37-40 GHz bands must be capable of operating on all frequencies within those particular bands. Mobile and transportable stations that operate on any portion of either the 24.25-24.45 GHz or 24.75-25.25 GHz bands must be capable of operating on all frequencies within both of those bands.

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