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SMALL ENTITY COMPLIANCE GUIDE

Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.

**FCC 17-152
WT Docket No. 10-112
GN Docket No. 14-177
IB Docket Nos. 97-95 and 15-256**

Released: November 22, 2017

This Guide is prepared in accordance with the requirements of Section 212 of the Small Business Regulatory Enforcement Fairness Act of 1996. It is intended to help small entities—small businesses, small organizations (non-profits), and small governmental jurisdictions—comply with the revised rules adopted in the above-referenced Federal Communications Commission (FCC or Commission) rulemaking dockets. This Guide is not intended to replace or supersede these rules, but to facilitate compliance with the rules. Although we have attempted to cover all parts of the rules that might be especially important to small entities, the coverage may not be exhaustive. This Guide cannot anticipate all situations in which the rules apply. Furthermore, the Commission retains the discretion to adopt case-by-case approaches, where appropriate, that may differ from this Guide. Any decision regarding a particular small entity will be based on the statute and any relevant rules.

In any civil or administrative action against a small entity for a violation of rules, the content of the Small Entity Compliance Guide may be considered as evidence of the reasonableness or appropriateness of proposed fines, penalties or damages. Interested parties are free to file comments regarding this Guide and the appropriateness of its application to a particular situation. The FCC will then consider whether the recommendations or interpretations in the Guide are appropriate in that situation. The FCC may decide to revise this Guide without public notice to reflect changes in the FCC's approach to implementing a rule, or it may clarify or update the text of the Guide. Direct your comments and recommendations, or calls for further assistance, to the FCC's Consumer Center:

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I. OBJECTIVES OF THE PROCEEDING

In the *Second Report and Order* in FCC 17-152, GN Docket No. 14-177, IB Docket Nos. 15-256, 97-95, and WT Docket No. 10-112, released November 22, 2017, the Commission (1) designated the 24 GHz and 47 GHz bands as Part 30 Upper Microwave Flexible Use (UMFUS); (2) amended rules for performance requirements for fixed point-to-point links; (3) increased the spectrum holding threshold, which triggers secondary market transaction review, from 1250 megahertz to 1850 megahertz; and (4) adopted rules allowing Part 15 operation on-board aircraft in the 57 – 71 GHz bands. The *Second Report and Order* takes further actions to make available millimeter wave (mmW) spectrum, at or above 24 GHz, for fifth-generation (5G) wireless, Internet of Things (IoT), and other advanced spectrum-based services. In doing so, the Commission helps to ensure continued American leadership in wireless broadband, which represents a critical component of economic growth, job creation, public safety, and global competitiveness.

II. COMPLIANCE REQUIREMENTS

A. Additional Bands (47 CFR § 30.4)

1. 24.25 – 24.45 GHz and 24.75 – 25.25 GHz (24 GHz Band)¹

- *Suitability for Mobile Use.* The *Second Report and Order* allocates the 24 GHz band for fixed and mobile use allowing entities to obtain flexible use licenses that authorize both fixed and mobile use.
 - 24.25 – 24.45 GHz will be allocated for non-Federal Fixed and Mobile services on a co-primary basis.
 - 24.75 – 25.25 GHz will be allocated for non-Federal Fixed, Mobile, and Fixed-Satellite services on a co-primary basis.
- *Geographic Area Licensing.* The *Second Report and Order* adopts geographic licensing throughout the 24 GHz band, by adding both parts of the 24 GHz band (upper and lower segments) to Part 30 UMFUS.
 - Licenses shall be divided into Partial Economic Areas (PEAs) as the license area size, consistent with rules for the 39 GHz band. Partitioning remains available for licensees who desire smaller areas.
- *Band Plan.* The 24 GHz band shall be licensed in seven (7) 100 megahertz channels.
 - The lower segment (24.25 – 24.45 GHz) will be comprised of two (2) 100 megahertz channels, while the upper segment (24.75 – 25.25 GHz) will be comprised of five (5) 100 megahertz channels.
 - This arrangement will provide licensees with the flexibility to use the technology of their choice.
- *Satellite Sharing in the Upper Segment of the 24 GHz Band.* The *Second Report and Order* makes no major changes to earth station siting. Satellite operators may

¹ See *2nd R&O*, 32 FCC Rcd at 10994-11002, paras. 15-42.

continue to apply for, and deploy, any earth station satellites consistent with current Commission rules.

- New Broadcast Satellite Service (BSS) feeder link earth stations may be authorized across the entire upper segment (24.75-25.25 GHz), while non-BSS Fixed Satellite Service (FSS) earth stations may be authorized in the 24.75-25.05 GHz portion.
- All earth stations either authorized or for which applications have been filed as of the release date of the *Second Report and Order* will be grandfathered into the eventual sharing regime on a co-primary basis.
- Earth stations whose applications are filed after release of the *Second Report and Order* may be processed subject to compliance with any rules the Commission adopts as a result of the proposals in subsequent orders in this proceeding.
- *Mobile Rights for Incumbents.* Existing licenses will be automatically converted to UMFUS, and licensees will consequently have rights to operate mobile wireless service in this band. This will allow already-licensed spectrum to be developed for mobile or flexible use as soon as possible.
 - Incumbent licensees will be subject to performance requirements in Section 30.104 of the rules. Buildout requirements will be applied at the next license renewal.
 - Licensees whose license terms end between January 2, 2018 (the date of the publication of the *Second Report and Order* in the Federal Register) and June 1, 2024, will have until June 1, 2024 to meet the buildout requirement.

2. 47.2 – 48.2 GHz Band (47 GHz band)²

- *Suitability for Mobile Service.* The *Second Report and Order* establishes UMFUS service rules in the 47.2-48.2 GHz band.
 - Part 30 UMFUS rules will be applied to the 47 GHz band.
 - UMFUS licenses in the 47 GHz band will be issued with both fixed and mobile rights.
- *Geographic Area Licensing.* Licenses shall be divided into Partial Economic Areas (PEAs) as the license area size, consistent with rules for the 39 GHz band. Partitioning remains available for licensees who desire smaller areas.
- *Non-Federal Satellite Terrestrial Sharing - Licensing of Gateway Earth Stations.* The *Second Report and Order* added the 47 GHz band to Section 25.136(d) of the Commission's rules which allows for sharing between terrestrial operations and FSS earth stations in uplink bands. A footnote to the U.S. Table of Allocations was also adopted specifying the relative interference protection obligations of FSS and UMFUS stations in this band. The intention of the Commission is that this band will remain predominantly a terrestrial band.

² See 2nd R&O, 32 FCC Rcd at 11002-06, paras. 43-59.

- Three FSS earth stations per county (maximum of 15 in each PEA) are permitted to deploy under conditions similar to those in the 28 GHz bands³ without having to protect UMFUS stations.
- UMFUS licensees are permitted to operate in conformance with Part 30 technical rules (Part 30, Subpart C) and FSS licensees can operate simultaneously with terrestrial operations.
- FSS licensees and terrestrial operations are encouraged to work cooperatively on coexistence in this band.
- FSS licensees in the 47 GHz band who request earth station authorizations pursuant to the provisions noted above must coordinate their proposed operations with co-channel UMFUS licensees and must provide sufficient information in their applications to demonstrate compliance with the siting criteria contained in Section 25.136 of the Commission's rules.
- *Band Plan.* The *Second Report and Order* licenses the 47 GHz band as five (5) 200 megahertz blocks.
 - Licensees are allowed to acquire all five licenses in the band, subject to compliance with the Commission's spectrum aggregation policies (*see* Section C. below).

B. Performance Requirements – Additional Metrics (47 CFR § 30.104)⁴

- *Buildout-Based Metrics for IoT-type Services.* As a supplement to previously adopted performance requirements for fixed services,⁵ the Commission adopted a specific definition of “fixed point-to-point link,” which includes the use of point-to-point stations as already defined in Part 30 and is based on power level. This definition is meant to separate traditional point-to-point links from sensor and device connections anticipated in IoT deployment.⁶ The definition does not apply to a network of fixed sensors or smart devices operating at low power over short distances.
 - The new definition of “fixed point-to-point link” is “a radio transmission between point-to-point stations (as already defined in Part 30), where the transmit power exceeds +43 dBm.”

³ See 47 CFR § 25.136(a) for the list of applicable conditions.

⁴ See *2nd R&O*, 32 FCC Rcd at 11006-09, paras. 60-69.

⁵ 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.

⁶ This change is designed to ensure that licensees must engage in reasonable efforts to meet our buildout requirements. Without this change, our buildout requirements could be met with minimal effort. For example, suppose a licensee wants to equip an office building with environmental sensors to increase the efficiency of its HVAC system. A building with ten floors, and one sensor on each corner of each floor, would have forty sensors. If each sensor were connected to its four neighbors (those in adjacent corners, and in the same corner on adjacent floors) over UMFUS spectrum, this sensor network would have 152 connections ($32 \times 4 + 8 \times 3$; the sensors on the first and tenth floor would have only 3 connections each). Under the performance metric we adopted for fixed point-to-point services, which requires one link per 67,000 population, this sensor network would fulfill buildout requirements for a license area of up to 10.1 million people. According to 2010 Census data, that limit encompasses every county, and thus every 28 GHz license area, in the United States.

- Under the new definition, stations or devices transmitting using power levels +43 dBm or lower will not count towards the number of fixed links required for that performance metric.
- Licensees whose networks include low-power connections that fall below the new threshold must rely on another part of their network to demonstrate buildout (e.g., mobile area coverage, or higher-power fixed backhaul links).

C. Mobile Spectrum Holdings Policies⁷

- The *Second Report and Order* declined to adopt pre-auction bidding limits on the amount of spectrum an entity may acquire at auction in 24 GHz and 47 GHz.
- The *Second Report and Order* increases the spectrum threshold for secondary markets review from 1250 megahertz of mmW spectrum to 1850 megahertz. This threshold will apply to the 24 and 47 GHz bands, as well as the 28, 37, and 39 GHz bands. The spectrum threshold is not a fixed limit but identifies those markets that may warrant further competitive analysis for purposes of the Commission's case-by-case review of proposed secondary market transactions.

D. Operation on Aircraft in 57 – 71 GHz Band (47 CFR § 15.255)⁸

- The *Second Report and Order* adopts a rule that allows unlicensed operation while airborne on most aircraft in the 57-71 GHz band under the Part 15 rules. This allows for up to six (6) non-overlapping WiGig channels of 2160 megahertz each.
- The use of 60 GHz unlicensed transmitters is excluded on board aircraft where there is little attenuation of RF signals by the body/fuselage of the aircraft. These aircraft include, for example, toy/model aircraft, unmanned aerial vehicles (UAV) such as drones, small/light crop spraying aircraft and aerostats.

⁷ See *2nd R&O*, 32 FCC Rcd at 11009-11, paras. 70-74.

⁸ See *2nd R&O*, 32 FCC Rcd at 11012-17, paras. 75-89.

E. Amendments to Part 1 Rules (47 CFR §§ 1.901 & 1.902)⁹

- As a change to rules of practice and procedure, the *Second Report and Order* amends Sections 1.901 and 1.902 of the Commission's rules to include Part 30 (UMFUS) in the list of sections to which the Part 1, Subpart F rules apply. This modification clarifies and codifies that operation under Part 30 of the rules is also governed by those Part 1, Subpart F rules.

III. RECORDKEEPING AND REPORTING REQUIREMENTS

The Commission's actions in the *Second Report and Order* did not create any new recordkeeping or reporting requirements, although it did increase the number of bands and licensees included within the scope of Section 25.136 of the Commission's rules (outlining criteria under which earth stations may operate in the UMFUS bands).

IV. IMPLEMENTATION DATE

The rules in the *Second Report and Order* became effective on February 1, 2018, except for the changes to the secondary market threshold for millimeter wave spectrum which were effective January 2, 2018, and the rules in Section 25.136, which contain information collection requirements which require approval by the Office of Management and Budget (OMB) under the Paperwork Reduction Act. These rules shall become effective after the Commission publishes a notice in the *Federal Register* announcing OMB approval and the relevant effective date.

V. INTERNET LINKS

A copy of the *Second Report and Order* is available at:
https://apps.fcc.gov/edocs_public/attachmatch/FCC-17-152A1.pdf

A copy of the Federal Register Summary of the *Second Report and Order* is available at:
<https://www.gpo.gov/fdsys/pkg/FR-2018-01-02/pdf/2017-27437.pdf>

⁹ 2nd R&O, 32 FCC Rcd at 11017, paras. 88-89.