§ 39.13 [Amended]

■ 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

Airbus: Docket No. FAA–2018–0168; Product Identifier 2017–NM–135–AD.

(a) Comments Due Date

We must receive comments by May 17, 2018.

(b) Affected ADs

This AD affects AD 2017–19–24, Amendment 39–19054 (82 FR 44900, September 27, 2017) (''AD 2017–19–24'').

(c) Applicability

This AD applies to the Airbus airplanes identified in paragraphs (c)(1) through (c)(4) of this AD, certificated in any category, with an original certificate of airworthiness or original export certificate of airworthiness issued on or before April 6, 2017.

(1) Model A318–111, –112, –121, and –122 airplanes.

(2) Model A319–111, –112, –113, –114, –115, –131, –132, and –133 airplanes.

(3) Model A320–211, –212, –214, –216, –231, –232, –233, –251N, and –271N airplanes.

(4) Model A321–111, –112, –131, –211, –212, –213, –231, –232, –251N, –253N, and –271N airplanes.

(d) Subject

Air Transport Association (ATA) of America Code 05, Time Limits/Maintenance Checks.

(e) Reason

This AD was prompted by a revision of an airworthiness limitations document that specifies more restrictive maintenance requirements and airworthiness limitations. We are issuing this AD to mitigate the risks associated with the effects of aging on airplane systems. Such effects could change system characteristics, leading to an increased potential for failure of certain life-limited parts, and reduced structural integrity or controllability of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Revision of Maintenance or Inspection Program

Within 90 days after the effective date of this AD, revise the maintenance or inspection program, as applicable, to incorporate Airbus A318/A319/A320/A321 Airworthiness Limitations Section (ALS) Part 4, ''System Equipment Maintenance Requirements (SEMR),'' Revision 05, dated April 6, 2017. The initial compliance time for doing the revised actions is at the applicable time specified in Airbus A318/A319/A320/A321 Airworthiness Limitations Section (ALS) Part 4, ''System Equipment Maintenance Requirements (SEMR),'' Revision 05, dated April 6, 2017.

(h) No Alternative Actions or Intervals

After the maintenance or inspection program has been revised as required by paragraph (g) of this AD, no alternative actions (*e.g.,* inspections) or intervals may be used unless the actions and intervals are approved as an alternative method of compliance (AMOC) in accordance with the procedures specified in paragraph (j)(1) of this AD.

(i) Terminating Action for AD 2017–19–24

Accomplishing the actions required by this AD terminates all requirements of AD 2017–19–24.

(j) Other FAA AD Provisions

The following provisions also apply to this AD:

(1) *Alternative Methods of Compliance (AMOCs):* The Manager, International Section, Transport Standards Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the International Section, send it to the attention of the person identified in paragraph (k)(2) of this AD. Information may be emailed to: *9-ANM-116-AMOC-REQUESTS@faa.gov.* Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(2) *Contacting the Manufacturer:* For any requirement in this AD to obtain corrective actions from a manufacturer, the action must be accomplished using a method approved by the Manager, International Section, Transport Standards Branch, FAA; or the European Aviation Safety Agency (EASA); or Airbus's EASA Design Organization Approval (DOA). If approved by the DOA, the approval must include the DOA-authorized signature.

(k) Related Information

(1) Refer to Mandatory Continuing Airworthiness Information (MCAI) EASA Airworthiness Directive 2017–0170, dated September 7, 2017, for related information. This MCAI may be found in the AD docket on the internet at *http://www.regulations.gov* by searching for and locating Docket No. FAA–2018–0168.

(2) For more information about this AD, contact Sanjay Ralhan, Aerospace Engineer, International Section, Transport Standards Branch, FAA, 2200 South 216th St., Des Moines, WA 98198; telephone and fax 206–231–3223.

(3) For service information identified in this AD, contact Airbus, Airworthiness Office—EIAS, 1 Rond Point Maurice Bellonte, 31707 Blagnac Cedex, France; telephone +33 5 61 93 36 96; fax +33 5 61 93 44 51; email *account.airworth-eas@airbus.com;* internet *http://www.airbus.com.* You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206–231–3195.

Issued in Des Moines, Washington, on March 22, 2018.

Michael Kaszycki,

Acting Director, System Oversight Division, Aircraft Certification Service.

[FR Doc. 2018–06590 Filed 3–30–18; 8:45 am]

BILLING CODE 4910–13–P

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 1, 2, 5, 15, and 101

[GN Docket No. 18–21, RM–11795; FCC 18–17]

Spectrum Horizons

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: In this document, the Federal Communications Commission (Commission) seeks comment on proposed rules to permit licensed fixed point-to-point operations in a total of 102.2 gigahertz of spectrum; on making 15.2 gigahertz of spectrum available for unlicensed use; and on creating a new category of experimental licenses to increase opportunities for entities to develop new services and technologies from 95 GHz to 3 THz with no limits on geography or technology. The Commission also granted, in part, two petitions for rulemaking and denied two requests for waiver.

DATES: Comments are due May 2, 2018. Reply comments are due May 17, 2018.

FOR FURTHER INFORMATION CONTACT: Michael Ha, Office of Engineering and Technology, 202–418–2099, *Michael.Ha@fcc.gov.*

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Notice of Proposed Rulemaking, ET Docket No. 18–21, RM–11795, FCC 18–17, adopted February 22, 2018, and released February 28, 2018. The full text of this document is available for inspection and copying during normal business hours in the FCC Reference Center (Room CY–A257), 445 12th Street SW, Washington, DC 20554. The full text may also be downloaded at: *https://transition.fcc.gov/Daily_Releases/Daily_Business/2018/db0228/FCC-18-17A1.pdf.* People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an email to *fcc504@fcc.gov* or call the Consumer & Governmental Affairs Bureau at 202–418–0530 (voice), 202–418–0432 (tty).

Synopsis

1. *Background.* The Commission focuses the *Notice* on providing licensed and unlicensed spectrum use opportunities in the 95 GHz to 275 GHz range, with additional provisions for experimental licensing up to 3000 GHz in a manner that would not foreclose future federal and non-federal access to opportunities and technologies. The frequencies in the 95 GHz to 275 GHz range are allocated for federal government and non-federal government use across multiple services on a co-primary basis, while the frequencies above 275 GHz are not allocated. Because the Commission presently has no licensed service rules in these bands, and these bands are currently ''restricted'' under the part 15 rules for unlicensed devices, there is limited Commission-authorized use above 95 GHz, other than for experimental and amateur radio operations. In developing our proposals, the Commission therefore draws from many inputs, including the present use of the band, our prior inquiries seeking information on potential use of this spectrum (including adjacent and nearby frequencies that can serve as useful comparisons), recent technical and international developments, our analysis of the engineering issues and propagation characteristics associated with the use of these frequencies, and applications for experimental licenses and rulemaking petitions that the Commission has received. Our proposed approach is intended to provide incentives and opportunities for investment in the development of innovative new technologies and services while remaining cognizant of the flexible international, federal and non-federal allocations, and the already extensive and planned passive uses of these bands. Developing rules in these bands serves the public interest; not only can it lead to new and novel communications opportunities in an uncrowded frequency range, it could also pay dividends by reducing pressures in lower parts of the spectrum. The Commission also recognizes that all the potential services and devices that might be developed in this spectrum are not yet known. Thus, while the Commission proposes a wide range of expanded licensed, unlicensed and experimental use opportunities now, the Commission also leaves room to enable future federal and non-federal access opportunities and technologies.

2. Several parties filed comments in the Spectrum Frontiers docket regarding the spectrum above 95 GHz. Commenters nevertheless offered little in the way of specific proposed rules or technical analyses, likely due to the general nature of the questions about these bands posed by the Further Notice. While parties are welcome to reprise their observations and recommendations to the extent that they remain relevant, the Commission also encourages commenters to react to the specific objectives, proposals, and draft rules that the Commission describes in greater detail herein.

3. *Experimental licenses, petitions and other requests.* A review of our licensing database indicates that there are currently eleven active experimental licenses for spectrum above 95 GHz. The Commission has also received petitions and waiver requests to enable spectrum use above 95 GHz on a non-experimental basis. Battelle Memorial Institute, Inc. (Battelle) filed a petition for rulemaking in February 2014 asking the Commission to adopt service rules for non-federal fixed use of the 102–109.5 GHz band. McKay Brothers, LLC, which holds a nationwide, non-exclusive license in the 70/80/90 GHz bands, seeks a waiver to enable its Geneva Communications subsidiary to operate in the band. Additionally, ZenFi Networks, Inc. (ZenFi), which also holds a 70/80/90 GHz license, seeks a waiver of our part 101 rules to permit use of the 102–109.5 GHz band in a number of cities under the 70/80/90 GHz band rules.

4. IEEE–USA submitted a request for the Commission to make a declaratory ruling that any application for use of technology above 95 GHz is presumed to be a ''new technology'' under section 7 of the Communications Act of 1934, and is thus subject to the one-year timeframe for determining whether the proposal is in the public interest. IEEE–USA also requests that the Commission declare that, if it finds a proposal to use above 95 GHz spectrum is in the public interest, it will adopt rules that enable provisioning of that new technology or service within a one-year period. James Whedbee, in a petition for rulemaking, asks us to create a rule for operation of unlicensed intentional radiator devices in the 95–1,000 GHz band. Whedbee states that his proposed rule is identical in most respects to those used for other Extremely High Frequency (30–300 GHz) bands regulated under part 15. The Commission has yet to take action on these various petitions or waiver requests.

5. *Discussion.* Given the growth in interest in millimeter wave spectrum, the Commission believes it is now appropriate to make spectrum above 95 GHz more readily available for the deployment of fixed and mobile wireless technologies. The Commission tentatively concludes that finding new ways to promote the development of bands above 95 GHz will also serve the public interest. Moreover, a review of academic publications indicates that the demand for wireless data will continue to expand.

6. *Licensed service.* The Commission seeks comment on whether to adopt rules for fixed point-to-point operations in the 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands based on the rules currently in place for the 70/80/90 GHz band. In addition, the Commission also seeks comment on applying these rules to several other frequency bands above 95 GHz that may be suitable for licensed fixed operations, including 158.5–164 GHz, 167–174.5 GHz, 191.8–200 GHz, 209–226 GHz, 232–235 GHz, 238–240 GHz, and 252–275 GHz. The Commission also inquires into whether mobile operations may be appropriate for any bands above 95 GHz with mobile allocations.

7. *Fixed Point-to-Point Services:* Based on the propagation properties of the spectrum the Commission believes that large portions of the spectrum in the 95–275 GHz range are potentially suitable for deploying fixed point-to-point links. While the Commission has no intention of changing the current allocations of any of this spectrum, the Commission notes that there are numerous bands below 275 GHz that are already allocated for the fixed service. Consequently, the Commission seeks comment on proposed rules for fixed point-to-point operations in 36 gigahertz of spectrum in the 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands based on the 70/80/90 GHz rules. These ''proposed fixed bands'' are all the bands below 275 GHz with a fixed service allocation that are not shared with either the FSS or MSS. Below, the Commission seeks comment on whether it should also include the bands shared with the FSS or MSS in our proposal. The Commission also believes that the 70/80/90 GHz rules in place since 2003, which have proven effective in efficiently providing access to spectrum in that frequency range, provide a useful model for the rules contemplated here. The propagation characteristics and technical rules associated with the 70/80/90 GHz frequencies allow for the sharing of spectrum by multiple users in close geographic proximity, as the Commission contemplates would be the

case with the above 95 GHz frequencies proposed here. The 70/80/90 GHz rules also allow for sharing with federal users and the protection of radio astronomy that shares many of these bands, which the Commission anticipates would also be important for the use of the bands contemplated in this proceeding.

8. The Commission seeks comment on draft rules for the proposed fixed bands, which would be mostly identical to the rules for the 70/80/90 GHz bands contained in part 101. Briefly summarizing, both sets of rules provide that:

- The Commission will issue non-exclusive nationwide licenses for ten-year terms.
- Each fixed point-to-point link must be registered through a link registration system maintained by a database manager. An interference analysis for the link must be submitted to the database manager when registering the link.
- The licensee must apply to the Commission for coordination of a link if: (1) The link receives a ''yellow light'' from NTIA's automated mechanism as part of the registration process; (2) it requires an environmental assessment; (3) it requires international coordination; or (4) it operates in a quiet zone.
- An applicant may request a license for any portion of any band.
- Interference protection is granted to the first-in-time registered non-federal link. Existing digital links are protected to a threshold-to-interference ratio (T/I) level of 1.0 dB of degradation to the static threshold. Existing analog links shall not experience more than a 1.0 dB degradation of the baseband signal-to-noise ratio required to produce an acceptable signal in the receiver.
- Construction of links must be completed within 12 months of link registration.
- Transmitters may operate at a maximum Equivalent Isotropically Radiated Power (EIRP) of 25 decibel watts per megahertz (dBW/MHz).
- Transmitters must have a minimum antenna gain of 43 decibels (isotropic) (dBi) with a half-power beamwidth of 1.2 degrees, but the maximum EIRP is reduced by 2 decibels for each decibel the antenna gain is less than 50 dBi.
- Out-of-band emissions are limited as specified in § 101.111 of our rules for signals above 24 GHz with the value of B (bandwidth) set for 500 megahertz.
- Systems using digital modulation must have a minimum bit rate of 0.125 bits/second/Hz.
- Licensees may provide service on either a common carrier or non-common carrier basis and are subject to the eligibility requirements of § 101.7 (foreign ownership).
- Coordination with Mexico or Canada is required for certain stations located near the borders.

The Commission seeks comment generally on adopting these rules for the identified fixed bands and discusses in more detail below some aspects of these proposed rules. Should identical rules be adopted for each of the individual bands or should the rules be adjusted for the characteristics of each band?

9. Certain rules for the 70/80/90 GHz band contained in part 101 are different for the 70/80 GHz bands as opposed to the 90 GHz band. For example, transmitters in the 90 GHz band are required to have an antenna gain of 50 dBi while in the 70/80 GHz band the limit is only 43 dBi. The 90 GHz band also has an additional interference protection requirement that a new link must not decrease an existing link's desired to undesired signal ratio below 36 dB. Digital systems in the 90 GHz band are required to have a bit rate of 1 bit/second/Hz instead of 0.125 bits/second/Hz in the 70/80 GHz bands. In these instances where the current rules vary, the Commission seeks comment on whether to adopt the 70/80 GHz rules

10. Under the 70/80/90 GHz rules, the transmitted power is limited to 55 dBW irrespective of the bandwidth of the signal. Under the Commission's proposal, licensees will be limited to a maximum EIRP of 25 dBW/MHz, which is equivalent to the 75 decibel milliwatts per 100 megahertz (75 dBm/100 MHz) EIRP limit the Commission recently adopted for base stations in our part 30 rules. The Commission seeks comment on this proposal; would another EIRP be more appropriate?

11. Can and should the Commission require or invite the current 70/80/90 GHz database managers to extend their duties to additional bands above 95 GHz or should WTB identify one or more database managers for these bands through an independent process? Is the requirement that licensees submit an interference analysis to the database manager when registering a link necessary to prevent interference given the propagation characteristics above 95 GHz?

12. The Commission seeks comment generally on extending the 70/80/90 GHz service and technical rules to the proposed fixed bands. Should any of the proposed rules be modified for bands above 95 GHz based on licensees' experiences with the 70/80/90 GHz rules or for other reasons? Are modifications to the rules needed to encourage more efficient use of spectrum or to avoid harmful interference? Should a higher EIRP be permitted to compensate for the atmospheric attenuation at these higher frequencies? The Commission notes that Battelle has suggested an EIRP of 70 dBW in their rulemaking petition, which would be 31.25 dBW/MHz if spread evenly across the 102–109.5 GHz band, claiming that the 70/80/90 GHz bands suffers from limited range and operating availability during severe weather and that there will be additional atmospheric attenuation in the 102–109.5 GHz band. Should the Commission segment any of the proposed bands as the Commission did for the 90 GHz band? What segmentation would be appropriate? Would a specific channel plan be appropriate in any of the bands? Do the rules provide a workable framework for protecting radio astronomy facilities and federal operations in the band? Are there any modifications to the proposed rules that would be necessary to address any of the characteristics of the proposed fixed bands?

13. Do the antenna gain requirements for the 70/80/90 GHz bands strike an appropriate balance between facilitating sharing of the spectrum and providing flexibility? Do the proposed rules need to be modified to allow for the use of small planar or phased array antennas?

14. Should the Commission make provisions in the rules for fixed point-to-multipoint systems in addition to point-to-point links? For example, could the Commission allow licensees to register operations in an area around a fixed location instead of requiring registration of individual links as required by the 70/80/90 GHz rules? This would enable a licensee to establish an access point/base station that serves a number of fixed customer locations in the surrounding area. The access point/base station would be permitted to operate with multiple beams where each beam must abide by the power limits the Commission is adopting, but the sum of the power of all the beams could be higher. What are the advantages or disadvantages of such a proposal? The Commission envisions that the area served by an access/point base station would be small. What size area could an access point/base station serve given the propagation properties of these bands? Would allowing such point-to-multipoint systems require a higher degree of coordination with other licensees or Federal operations to prevent harmful interference from occurring? Should the area that is reserved around a particular access point/base station depend on the technical parameters of the access point

such its transmit power and antenna height and characteristics of the surrounding environment such as terrain and structures? Because the access point/base station may use dynamically steerable antenna arrays to point at particular customer locations as needed, would it make sense to allow licensees to specify their coverage areas as a probability density function that describes the relative likelihood of pointing in a particular direction? By specifying coverage areas in terms of probably density functions, the coverage areas of different licensees could overlap to allow a means of sharing the spectrum on a statistical basis. Do commenters agree with this assessment?

15. While the Commission did not include the above 95 GHz bands that are allocated for the FSS or MSS in the above discussion, the Commission notes that satellite services successfully share spectrum with terrestrial services in many bands. Therefore, the Commission seeks comment on extending our above proposal based on the 70/80/90 GHz rules to permit fixed operations in one or more of the following additional bands that are allocated for either the FSS or the MSS in addition to the fixed and mobile services: 158.5–164 GHz, 167–174.5 GHz, 191.8–200 GHz, 209–226 GHz, 232–235 GHz, 238–240 GHz, and 252–275 GHz. What changes, if any, to our proposed rules would be necessary to permit fixed operations in these bands?

16. Alternatively, should the Commission instead adopt the licensing and prior coordination requirement used in many bands subject to our part 101 rules. Under such an approach, links would be individually licensed and the Commission would require that the links be coordinated with the licensee of other potentially affected links prior to application for a license? Are there any other models for licensing that the Commission should consider for these bands?

17. *Mobile Services:* The Commission seeks comment generally on the deployment of mobile services in this spectrum. Would there be significant interest in implementing mobile services here? Given the propagation characteristics of these bands, what type of systems could feasibly be deployed? What type of licensing and technical rules should the Commission consider adopting for mobile services in this spectrum?

18. *Sharing Considerations:* With the exception of passive services (EESS, RAS, and SRS) that collectively have exclusive primary allocations in some of the bands between 95 GHz and 275 GHz, all other services in the 95–275 GHz bands have shared allocations. Sometimes, without specific guidance, such allocations convey a perception that when two or more primary services are listed in the U.S. Table, later-licensed or authorized federal or non-federal operations would be expected to protect the earlier-licensed or authorized operations. However, to avoid any mistaken perceptions and in light of the unique physical characteristics in these bands, the Commission seeks comment below on adopting a new U.S. footnote in the table of allocations that would clarify that, among co-primary federal and non-federal services, first-in-time does not necessarily mean priority relative to other current or future licensed or unlicensed uses.

19. *Sharing with the RAS.* RAS operations in this region of the spectrum are limited to certain locations. For this reason, the Commission believes that excluding fixed and mobile stations from these localities would provide adequate protection for incumbent operations. U.S. footnote 161 includes a list of RAS locations operating in the bands 81–86 GHz, 92–94 GHz, and 94.1–95 GHz that are protected from fixed stations by the use of coordination distances. The Commission seeks comment as to whether a similar approach would adequately protect RAS operations in the bands above 95 GHz. Does this list reflect RAS operations that currently exist or are anticipated above 95 GHz, or should the Commission modify it to add or eliminate certain locations? Given that the propagation losses in the bands above 95 GHz are higher than the bands identified in US161, should the coordination distances be adjusted accordingly?

20. The Commission notes that footnote US246 prohibits all transmissions in a number of bands above 95 GHz to protect passive services such as the RAS and EESS (passive). Footnote US74 specifies that radio astronomy observatories operating in most of the frequency bands listed in US246 will be protected from unwanted emissions from other stations only to the extent the emissions exceed what would be permitted under the technical standards or criteria applicable to the service in which the station operates. However, US74 omits the 182–185 GHz and 226–231.5 GHz bands even though they are included in US246 and have RAS allocations. The Commission seeks comment on whether these two bands should be added to US74.

21. *Sharing services with the EESS and SRS.* The Commission seeks comments on the appropriate methodology for modelling potential interference to the EESS and SRS. Limitations on power or the number and locations of devices may be appropriate mitigation techniques that would not necessarily restrict the transmission ranges of services such as terahertz WLANs or fixed backhaul links to the point they are unworkable. Are there specific environmental propagation models the Commission should consider when contemplating allowing shared services with EESS and SRS? Should additional environmental characteristics, for example via building or other forms of clutter model, be considered? The Commission seeks comment on the harmful interference criteria for satellite passive remote sensing, as well as any published studies or recommendations that may be relevant in assessing sharing with satellite passive remote sensors. Are there methodologies the Commission should adopt into its rules that could mitigate interference to EESS and SRS services caused by new users of above 95 GHz spectrum? What is the best way of predicting atmospheric attenuation (including losses from rain, etc.), particularly in the bands beyond the 1 THz limit of the International Telecommunication Union (ITU) recommendation on attenuation by atmospheric gases, ITU–R P676–11? Are there other assumptions that must be considered in ensuring interference protected operation for passive sensors in the EESS and SRS?

22. *Sharing with the FSS, MSS, and ISS.* The 158.5–164 GHz, 167–174.5 GHz, 209–226 GHz, 232–235 GHz, 238–240 GHz, and 265–275 GHz bands have shared allocations with the FSS. The Commission expects that sharing between the MS service and the FSS service would be similar to the lower frequency bands under the new part 30 rules. The Commission seeks comment on how the Upper Microwave Flexible Use Service (UMFUS) rules could be used to facilitate sharing between the MS and FSS in the above 95 GHz bands. How can interference be avoided between mobile stations and satellite operations? Could exclusion zones or coordination be used to prevent interference? Would designating portions of the shared spectrum where satellite or terrestrial services have priority be an appropriate means for sharing the spectrum?

23. The Commission also seeks comment on how sharing could be accomplished between the FS and FSS in the bands under discussion. Would the use of a narrow-beam antenna requirement in our proposed rules for FS operations avoid harmful interference to the FSS? Sharing

between the FS and the FSS in the lower frequency bands under our part 101 of our rules uses first-in-time coordination. Would this be an appropriate method for sharing between the FS and FSS? Could the registration of fixed links with the database manager required under our proposed rules be extended to also apply to satellite earth stations?

24. The 158.5–164 GHz, 191.8–200 GHz, 232–235 GHz, and 252–265 GHz bands have shared allocations with the MSS. The Commission believes sharing between FS and MSS is technically feasible, and seeks comment on possible sharing mechanisms between these services. The Commission seeks comment on possible sharing mechanisms between the MS and MSS services. Would geographical partitioning between services, for example between urban/rural markets, serve as a possible sharing mechanism? If so, how should such markets be defined? Could dual MS/MSS user equipment, if available, resolve possible interference conditions by switching to terrestrial service when a terrestrial network is detected? Could requiring operators of terrestrial MS networks to adopt a method of registration and tracking of MSS user equipment reduce the possibility of interference by limiting emissions in the direction of MSS user equipment?

25. The 122.25–123 GHz, 130–134 GHz, 167–174.8 GHz, and 191.8–200 GHz bands have a shared allocation with the inter-satellite service (ISS). Is there a need to make provisions in the Commission's rules to prevent harmful interference to and from the ISS? Should there be specific antenna performance requirements for FS and MS stations to limit potential interference to the ISS? If so, should there be separate requirements for each of the shared bands? Commenters who support antenna performance requirements for FS and MS stations should provide specific technical information and proposals showing the need for such requirements. Similarly, should there be specific antenna performance requirements for aeronautical use of MS stations or should such use be prohibited entirely to protect the ISS? The Commission seeks comment on whether NGSO satellites can be accommodated in the 116–122.25 GHz band.

26. *Other shared services.* The 95–100 GHz, 141–148.5 GHz, 151.5–155.5 GHz, 191–200 GHz, 238–241 GHz, and 252–265 GHz bands have shared allocations for radar use (radionavigation service or radiolocation service). The 95–100 GHz, 238–240 GHz, and 252–265 GHz bands are also allocated for the radio navigation satellite service. How likely is it that these allocations will be used in the future by non-federal users? The Commission seeks comment generally on how stations in the fixed and/or mobile service could share the bands with the radar allocated services. Can the sharing mechanism be based on geographical separation? Could a database of locations where radar operations occur or the locations of transmitters or receivers of other licensed services be used to facilitate sharing in these bands? Such a database could be a relatively simple record of the locations of fixed facilities or the geographic areas where mobile operations may occur or it could be more sophisticated. Could the use of sensing technologies to determine when radars are in operation be used to share the bands between radars and other licensed services?

27. *Federal/non-federal sharing:* As the Commission notes above, the 95–275 GHz spectrum is allocated on a co-primary basis for federal and non-federal use. In developing rules for this spectrum, the Commission will work closely with the NTIA with the objective of developing a framework that both encourages private sector investment in new technologies and services and preserves the ability of federal users to research, develop, test, and deploy new technologies and services to meet their needs. While this notice considers the possibility of granting nationwide licenses, access to the band by both federal and non-federal users would be on a shared basis where access by users would not preclude federal and non-federal users from deploying systems where no authorized facilities have been registered or deployed. Specific sharing and coordination terms to ensure federal and non-federal co-primary access will be addressed through a future framework to be jointly developed by NTIA and FCC as part of follow-on proceedings. The Commission seeks comment on adding the following footnote to the Table of Frequency Allocations that reflects this approach:

> USxxx: Federal and non-federal users shall have equal rights to access the spectrum in the 95–275 GHz band. Use of the band by non-federal users on a licensed or unlicensed basis shall not preclude or impair co-primary use of the bands by federal users and shall not establish non-federal priority in bands allocated for shared federal and non-federal use.

28. *Unlicensed operations under parts 15.* Part 15 of the Commission's rules permits the operation of RF devices without issuing individual licenses to operators of these devices. The Commission's part 15 rules are designed to ensure that there is a low probability that these devices will cause harmful interference to authorized users of the same or nearby spectrum. Should harmful interference occur, the operator is required to immediately correct the interference problem or cease operation.

29. Apart from a few specified frequency bands, spectrum above 38.6 GHz is designated as ''restricted'' in § 15.205 of the rules. Unless expressly permitted by rule or waiver, unlicensed devices are not allowed to intentionally radiate energy into a restricted band. The Commission proposes to allow unlicensed operation in additional frequency bands where the Commission believes it will not cause harmful interference to authorized services, and to remove those specific bands from the list of restricted bands.

30. The Commission seeks comment on whether to make 15.2 gigahertz of spectrum above 95 GHz available for unlicensed use in four frequency bands. First, the Commission seeks comment on allowing unlicensed operation in the 122–123 GHz and the 244–246 GHz bands, which are already designated industrial, scientific, and medical (ISM) bands. The Commission would remove these bands from the list of restricted bands in § 15.205. The Commission seeks comment on these proposals.

31. The Commission also seeks comment on whether to allow unlicensed operation in two frequency bands near 183 GHz. The Commission believes that the frequency bands located around a sharp peak in the atmospheric attenuation curve at 183 GHz may be appropriate for unlicensed use. However, no transmissions are permitted in the frequency band at the peak due to Allocations Table footnote US246 stating that no station shall be authorized to transmit in a number of bands including the 182–185 GHz band. The Commission would make spectrum available for unlicensed use on both sides of the attenuation peak, specifically, the 174.8–182 GHz and 185–190 GHz bands. The Commission would remove these bands from the list of restricted bands in § 15.205. The Commission seeks comment on this approach.

32. The Commission also seeks comment on what technical rules should apply to unlicensed operation within the 122–123 GHz, 174.8–182 GHz, 185–190 GHz and 244–246 GHz frequency bands. In particular, the Commission seeks comment on whether the requirements that apply to the operation of unlicensed devices in the 57–71 GHz band under § 15.255 of the rules are appropriate in these bands. Would the power levels provided in that

rule section be high enough for unlicensed equipment to function as intended in the bands under consideration here? If not, what would be a reasonable power level that provides for a practical operational range that would also provide adequate protection to authorized services in the same and nearby spectrum? Could the Commission permit higher power levels in the 174.8–182 GHz and 185–190 GHz bands since they are close to a peak in atmospheric attenuation that is greater than the peak at 60 GHz? The Commission recognizes that the primary allocations for the 174.8–182 GHz and 185–190 GHz bands are for the ISS and for the EESS and the SRS (passive) and that footnote 5.562H limits ISS emissions to levels below the EESS (passive) protection criteria. The Commission also notes that the rules applying to unlicensed use of the 57–71 GHz band do not allow the use of devices on satellites or allow for the use of field disturbance sensors unless the sensors are part of fixed equipment. In addition, these rules permit the use of devices on aircraft only under certain specific circumstances. Therefore, the Commission seeks comment on whether any of these restrictions should apply to unlicensed devices in any or all of the four proposed bands to protect the existing authorized services in these bands, and if so, why? Is there a need to prohibit all operation of devices on aircraft in any of the proposed bands? Would any other modifications to the requirements of § 15.255 be needed to permit unlicensed operation in these bands?

33. The Commission further seeks comment on whether there are any other bands above 95 GHz that would be suitable for unlicensed use in addition to the 15.2 gigahertz of spectrum identified above. In particular, the Commission seeks comment on allowing unlicensed use of the 116–122 GHz band. The 116–122.25 GHz band is allocated to passive services such as the EESS and SRS (passive) as well as the ISS which is used for communications between satellites with footnote 5.562C limiting ISS emission levels below the EESS (passive) protection criteria. The passive services would likely be compatible only with low density deployments and low power unlicensed uses because of the high sensitivity of these types of passive receivers. Because devices operating under our part 15 rules are limited to transmission at low power levels, and given the increased propagation attenuation from high atmospheric absorption, the Commission believes that part 15 devices may be able to share spectrum with these passive services without causing interference. However, the Commission notes that while this band is close to a peak in the atmospheric attenuation curve, this peak is smaller than the peaks at 60 GHz and 183 GHz. Also, the Commission notes that RAS observations at 115.27 GHz may necessitate geographic restrictions to protect RAS facilities. Accordingly, the Commission seeks comment on whether unlicensed operation should be permitted in the 116–122 GHz band. If so, what technical and other requirements should apply to prevent interference to authorized services in the band? The Commission also seeks comment on any other bands above 95 GHz that may be suitable for unlicensed use and the technical requirements that would be necessary to allow operation in them while protecting authorized services. In particular, the Commission seeks comment on how such use would relate to current and planned passive services.

34. Potential future applications in these bands includes ultra-high definition video, and high-speed data transmission, such as temporary fiber optic line replacement, chip-to-chip communication within computer equipment, and replacement of computer data cables in data centers with wireless links. Would the rules proposed above for unlicensed devices allow for applications such as these? With respect to non-federal users, the Commission seeks comment on whether the unlicensed spectrum access model is most appropriate for the types of devices that could be operated in the proposed frequency bands, or whether some other spectrum access model would be more appropriate, *e.g.,* licensed or licensed by rule.

35. As mentioned above, James Whedbee has filed a rulemaking petition requesting that the Commission adopt rules to permit unlicensed device operation in the 95–1000 GHz range. Whedbee advocates that the Commission apply the same technical rules to these unlicensed operations as currently apply in the 57–71 GHz band with a few differences. Whedbee proposes unlicensed devices in 95–1000 GHz be limited to a bandwidth of 500 megahertz. Whedbee also specifies that unlicensed operations be limited to indoors only and that transmitters not be deliberately pointed at windows in a number of bands used by the RAS, EESS (passive), and SRS (passive). According to Whedbee, licensing of transmissions over the range 95–1000 GHz may hinder the technological developments that his proposed rule would permit without licensing. The Commission is reluctant to open such a wide swath of spectrum for unlicensed use because the Commission believes it represents an inefficient use of the spectrum, provides no focus for development of technologies in specific bands and the Commission's proposals would already provide considerable opportunities for unlicensed devices. Nevertheless, in seeking comment on making 15.2 gigahertz of spectrum above 95 GHz available for unlicensed use the Commission grants his petition in part. The Commission also seeks comment broadly on Whedbee's rulemaking petition to the extent his proposal goes beyond what the Commission is seeking comment on and on any costs or benefits that could arise from making the 95–1000 GHz band available for unlicensed use in accordance with his proposal.

36. The Commission also seeks comment on what rules might be most appropriate for ISM operations in the above 95 GHz band. Part 18 of the rules contains the regulations for ISM equipment.

37. The Commission has historically treated RF devices that transmit a radio signal for purposes such as measuring the level of a fluid in a container or for measuring some quantifiable property of a material as part 15 devices. The Commission is aware of interest in using the spectrum above 95 GHz for devices that use terahertz spectroscopy to analyze material properties and for imaging applications, which could possibly be considered ISM applications. The Commission seeks comment on whether it should establish a more certain regulatory approach for devices that use the frequencies above 95 GHz. Is the lack of provisions under part 15 for equipment that operates in these higher frequency bands hampering the ability of these new technologies to be approved and, if so should the Commission modify the part 15 rules to allow them? Or would it be more appropriate to routinely treat these terahertz applications as part 18 ISM equipment for which there are already power and field strength limits specified in the rules?

38. The Commission recognizes that the radiated emission limits in part 18 were originally developed for devices operating at significantly lower frequencies than the Commission is considering here, and seeks comment on how that should affect its analysis. Accordingly, the Commission seeks comment on whether changes to these limits are necessary for operation above 95 GHz. Are the limits in § 18.305 appropriate for these devices? If not,

what are the appropriate limits, and in what terms should they be expressed, *e.g.,* field strength, power density, EIRP or some other power-related terms? In addition, the Commission notes that the rules currently specify that radiated emissions from most ISM equipment must be measured at a distance of 300 meters from the equipment. Due to the rapid attenuation of signals and the limitations in measurement devices at frequencies above 95 GHz, measurements at this distance are likely not practical. The Commission therefore seeks comment on the appropriate measurement distance and procedures for determining compliance with the rules. The Commission also seeks comment on whether any other changes to the rules may be required to prevent harmful interference to authorized services. For example, should the Commission restrict operation in certain frequency bands to indoor locations only, and if so, in which frequency bands should such a restriction apply and how could it be enforced?

39. *Experimental Radio service.* In this section, the Commission seeks comment on whether to create a new subpart of our part 5 Experimental Radio Service (ERS) rules to better encourage experiments in the spectrum range between 95 GHz and 3 THz. The Commission's part 5 ERS rules prescribe the requirements for authorizing a variety of entities to experiment with new radio technologies, equipment designs, characteristics of radio wave propagation, or service concepts related to the use of the radio spectrum. Experimental operations are not entitled to exclusive use protected from harmful interference from allocated services, and ERS licensees must not cause harmful interference to stations of authorized services, including secondary services.

40. *Proposal for* ''*Spectrum Horizons Experimental Radio Licenses.*'' Because of the potential for innovation above 95 GHz, and the unique nature of this spectrum (*e.g.,* limited propagation and virtually no existing operations), the Commission believes that certain experimental requirements can be relaxed or modified without creating an unacceptable risk of interference or undermining our longstanding general policies related to the marketing and authorization of equipment. Accordingly, the Commission seeks comment on a proposal to create an experimental radio license for authorizing operation on frequencies from 95 GHz to 3 THz. In keeping with the current structure of part 5, the Commission proposes to add a new subpart I that would provide specific requirements for ''Spectrum Horizons Experimental Radio Licenses'' and amend subparts A, B, and C, which are generally applicable to all part 5 ERS licenses, as necessary. Since these Spectrum Horizons licensees would be subject to unique requirements that, in many cases, reflect existing or modified versions of the requirements associated with other ERS licensees, the Commission believes this would be the best option for providing prospective licensees with clear requirements, while at the same time maintaining existing rules for the various other forms of ERS authorization. The Commission seeks comment on the assumptions made above and whether a unique subpart of the ERS rules is warranted.

41. The Commission believes that Spectrum Horizons licenses should have a number of characteristics that differ from existing ERS authorizations, although they would also have a number of characteristics in common. Specifically, the Commission seeks comment on the following proposed rules for these Spectrum Horizon licenses.

42. *Marketing.* Marketing of experimental devices or provision of services for hire under product development trial is currently prohibited. While our rules permit market trials under certain circumstances, ERS licensees may sell equipment only to each other under such trials, rather than to market trial participants, and must also ensure that the number of marketed devices is the minimum necessary to conduct the market trial.

43. In the spectrum range above 95 GHz, the Commission believes that marketing of innovative devices at a relatively early stage of experimentation may be particularly important to permit entrepreneurs to gauge consumer acceptance and to determine whether to proceed to the next stage of the experiment. As operations extend further into the spectrum above 95 GHz, the unique technical issues associated with such operations make capable devices more expensive to produce. Further, these same issues also make it less likely that such devices could be easily adapted for use in the lower spectrum. Thus, entrepreneurs will be reluctant to proceed without a clear signal from consumers that they are interested in purchasing such devices.

44. The Commission proposes to allow experimental devices used in market trials in these bands to be sold directly to participants to encourage experimentation, as well as to help innovators share device manufacturing costs with potential early adopters who are willing to bear the risks associated with experimental licensing in this range. As a safeguard against such devices causing harmful interference, the Commission will maintain a requirement that the Spectrum Horizons licensee must adhere to the conditions specified in § 5.602(e) of our rules, which states that ''trial devices are either rendered inoperable or retrieved . . . at the conclusion of the trial.'' The Commission also proposes that the Spectrum Horizons licensee must provide market trial participants with a written disclosure clearly stating that the equipment being purchased is part of an experiment that may be terminated at any time by the licensee or the Commission. Thus, only those individuals who are willing to accept the risk that their devices could be rendered unusable on short notice would be candidates for participating in such market trials. The Commission seeks comment on these proposals.

45. In this connection, the Commission proposes to require that Spectrum Horizons licensees who choose to market equipment must label any such equipment as ''Experimental—Not Authorized for Permanent Use'' and carry with it an equipment ID number registered as part of the experimental license process. The Commission notes that a Spectrum Horizons license should have no expectation that an experiment will always lead to the establishment of a permanent service. Thus, a Spectrum Horizons licensee who chooses to market a substantial—rather than a limited—amount of equipment would be increasing its financial risk. The Commission seeks comment on these marketing proposals, and on any alternatives to them.

46. *Eligibility and filing requirements.* The Commission seeks comment on whether Spectrum Horizons licenses should be broadly available to qualified persons as generally defined under existing ERS rules. However, to obtain a Spectrum Horizons license, the Commission proposes that a qualified applicant be required to include a narrative statement that sufficiently explains the proposed new technology/potential new service and that incorporates an interference analysis that explains why the proposed experiment would not cause harmful interference to any other spectrum user. The statement should include technical details, including the requested frequency band(s), maximum power, emission designators, area(s) of operation, type(s) of device(s) to be used, and the maximum number of each type of device to be used. The Commission seeks comment on these and any other issues that it should

require a Spectrum Horizons service applicant to address in its narrative statement.

47. *Available frequencies.* Because all ERS licenses are authorized on a non-interfering basis, and such applications must be coordinated with federal users via NTIA, the Commission proposes that subpart I specify that Spectrum Horizons licenses be permitted on any frequency in the range of 95 GHz-3 THz, provided there are no objections raised in the coordination process. Applicants would be expected to address any allocation footnotes and any known use(s) of the requested frequency or frequencies in the spectrum analysis that they would be required to provide in their narrative statements discussed above. Additionally, applicants must ensure that the significant number of passive services that use spectrum above 95 GHz are protected from harmful interference and, if proposing to use spectrum that is exclusively allocated for passive use(s), they must explain why nearby bands that have non-passive allocations are not adequate for the experiment. The Commission seeks comment on this proposal. Commenters who propose limitations on available frequencies should identify specific bands where they believe that Spectrum Horizons experiments should be prohibited or restricted, including references to pertinent footnotes listed in the Table of Frequency Allocations. The Commission proposes to list in subpart I all bands that the Commission concludes should be prohibited or restricted for Spectrum Horizons experimental use.

48. *Scope of license grant.* The Commission proposes to provide Spectrum Horizons licensees with substantial flexibility to conduct long-term experiments over a wide geographic area and frequency range, market equipment if necessary, and adapt their program of experimentation as needed. In making these proposals, the Commission emphasizes the overriding considerations that Spectrum Horizons licensees—like all ERS licensees—would have to accept to operate: (1) Licensees would be prohibited from causing harmful interference to any established radio service, and would be solely responsible for promptly remedying any such interference; (2) licenses would be non-exclusive; and (3) there would be no assurance that experimentation would lead to the establishment of an authorized service. Otherwise, the Commission asks for comment on what specific technical rules in subpart C should or should not be applicable to Spectrum Horizons stations.

49. *License term and interim reporting requirement.* The Commission seeks comment on whether to extend the experimental license term for Spectrum Horizons licenses and, if so, for how long. Would a longer license term, such as 10 years, encourage entrepreneurs to make investments in this portion of the spectrum where there has been relatively minimal experimentation and, thus, limited ''real world'' experiences to guide the experimental planning process? If the Commission provides longer license terms, the Commission proposes to require an interim report be submitted to the Commission at the half-way point of the license term to provide the public with information about the progress of the experiment. The Commission also seeks comment on whether a longer Spectrum Horizons license would be eligible for renewal.

50. *Other aspects.* The Commission seeks comment on how best to handle geographic, frequency, or technical limits on experiments, and limits on the number of devices or their type, including whether these limits should be decided on a case-by-case basis. The Commission also seeks comment on how applicants should be required to justify their proposed parameters in their narrative statements. In order to avoid the filing of subsequent requests to modify those parameters during the license term, the Commission proposes that applicants request the maximum parameters that they may ultimately use, even if their initial plans do not require those maximums. The Commission acknowledges that circumstances may change, however, and would still consider granting applications to modify Spectrum Horizons licenses.

51. To better ensure that Spectrum Horizons experiments do not cause harmful interference, the Commission proposes to adopt rules for such experiments similar to our existing ''station identification,'' ''responsible party,'' and ''stop buzzer'' rules. However, consistent with our rules for conventional experimental licenses, the Commission proposes to permit Spectrum Horizons licenses to be transferred, if the Commission finds that to be in the public interest and gives its consent in writing. Comments are requested on each of these proposals.

52. *RF Exposure Limits.* RF devices must comply with the Commission's RF exposure limits that are currently specified up to 100 GHz. The power density limits specified for general population and occupational exposure at 100 GHz are 1 mW/cm^2 and 5 mW/cm^2 respectively for whole-body continuous exposure. The Commission notes that these limits could in principle be applied up to infrared wavelengths, although the Commission does not suggest that there should be any particular changes to our rules at this time. The Commission also notes that the issues of averaging area and averaging time for localized and time varying exposure are the subject of ongoing consideration at lower frequencies in the context of developing laboratory test procedures for specific devices. However, the Commission has an open proceeding in which it is broadly examining its RF exposure rules and policies, which could potentially influence how such devices are authorized in the future. In the *RF Inquiry* of that separate open proceeding, the Commission specifically asks whether it should expand the frequency scope of its exposure rules above the present maximum of 100 GHz. The Commission proposes that it make no changes to its present rules limiting human exposure to RF energy until it considers the broader issues brought forth in its *RF Inquiry.*

53. *Equipment Authorization Matters.* As the Commission has noted previously in the Spectrum Frontiers proceeding, there are unique technical challenges specific to demonstrating compliance with our rules for the purpose of equipment authorization of millimeter-wave devices. As technology evolves to address the technical challenges related to perform compliance measurements above 95 GHz (with respect to propagation, interference protection, modulation techniques, transmission security, etc.), the Commission expects that OET, in its capacity as the technical administrator of the Commission's part 2, 5, 15, and 18 rules, will provide guidance on appropriate measurement techniques through its knowledge database publications as products are developed, seeking notice and comment as appropriate. To inform this guidance, the Commission generally requests information on relevant research as it addresses measurement techniques to verify that devices meet the electromagnetic compatibility (EMC) technical rules; the Commission discusses specific concerns in more detail below.

54. *EMC measurements.* In this Notice, the Commission seeks comment on what technical rules should apply to operation in spectrum above 95 GHz. At this time, the FCC laboratory has offered generally limited guidance related to the technical procedures that could be used to demonstrate the compliance of millimeter-wave devices with such rules. The Commission recognizes that

radiated field strength measurements at frequencies above 1 GHz present challenges due to the relatively high values of cable loss and antenna factor. Similarly, a conducted method of measurement would only be effective if the device and other mixer waveguides are both accessible. The Commission seeks information on fundamental aspects of measurements of radiated and conducted emissions at these frequencies. What are ways to demonstrate compliance with procedures which are practical, repeatable, and do not have large margins of error? Specifically, §§ 15.255 and 15.257 of our rules apply to the use of an RF detector that has been specified to make millimeter-wave measurements. Is the use of an RF detector an appropriate method for measuring the frequencies above 95 GHz? Are there industry measurement standards available for RF devices operating above 95 GHz? The Commission seeks further comment on whether and how present procedures can be adapted or modified to appropriately address the specific technical challenges presented by millimeter-wave devices.

55. *Out-of-band and spurious emissions measurement.* At the present time, the FCC laboratory guidance does offer a procedure to measure the out-of-band and spurious emissions from devices with multiple antennas. The measurement challenges discussed above are often accentuated in the case of out-of-band and spurious emissions due to the low levels of these emissions relative to the fundamental emissions. The Commission seeks comment on what other measurement procedures, such as those in ANSI C63.10–2013, may be used and whether the Commission needs to provide additional guidance (*e.g.,* appropriate measurement bandwidth, cut-off frequency, etc.) to determine compliance with the out-of-band and spurious emission limits for millimeter-wave devices considering the technical challenges of such measurements.

56. *Equipment authorization procedures.* The Commission proposes to parallel the existing 70/80/90 GHz service rules for the bands the Commission proposes for fixed services and similarly adapt our UMFUS rules for the bands the Commission proposes for mobile services. Transmitters used for operation in accordance with the Commission's part 101 Fixed Microwave Services rules are generally authorized via our Suppliers Declaration of Conformity (SDoC) procedure. Transmitters used for part 30 UMFUS mobile operations are required to be authorized via the certification procedure. The Commission seeks comment on which equipment authorization procedure would be most appropriate for any fixed or mobile service adopted under the proposals set forth herein, or whether some other authorization procedure would be more appropriate.

57. *Rulemaking and Waiver Petitions. Battelle Petition.* Battelle Memorial Institute, Inc. (Battelle) filed a petition for rulemaking in February 2014 asking the Commission to commence a rulemaking to propose service rules for fixed use of the 102–109.5 GHz band. Battelle's proposed rules draw extensively from the 70/80/90 GHz rules. Because the rules the Commission is proposing for the 102–109.5 GHz band are similar to what Battelle has proposed, the Commission considers their rulemaking petition granted in part. Battelle and other interested parties are able to participate in this rulemaking and will have ample opportunity to comment on the rules the Commission is proposing and therefore the Commission dismisses Battelle's petition from further consideration.

58. *ZenFi Waiver.* ZenFi Networks, Inc. (ZenFi), which holds a nationwide, non-exclusive license under call sign WQUN758 in the 71–76 GHz, 81–86 GHz, and 92–95 GHz bands, seeks a waiver of the applicable part 1 and subpart Q of part 101 rules to permit use of the 102–109.5 GHz band under its existing license and to register individual point-to-point links at locations within the New York City, Chicago, Washington, DC, and San Francisco metropolitan markets using the regulatory framework established for registering links in the 70/80/90 GHz bands. ZenFi states that it understands that grant of its waiver request will serve as a pre-requisite for coordinating and registering individual point-to-point links in the 102–109.5 GHz band in the four identified markets and that its use of the 102–109.5 GHz band would continue pending resolution of the Battelle rulemaking proceeding.

59. On October 13, 2015, the Commission's Wireless Telecommunications Bureau released a public notice seeking comment on the ZenFi Waiver Request. Battelle and SMG Holdings, LLC (SMG) support grant of the ZenFi Waiver Request, and SMG asks that the Commission extend to it any relief granted to ZenFi.

60. The Commission denies the ZenFi Waiver Request and SMG's informal request seeking waiver to use the 102–109.5 GHz band because ZenFi and SMG have not met the standard for a waiver and grant of a waiver would improperly judge the outcome of the rulemaking proceeding the Commission has begun with this NPRM. First, ZenFi has failed to justify a waiver based on special circumstances because there is nothing unique or unusual about its situation. It is no different than any other operator who has potential interest in using the above 95 GHz bands, and has not demonstrated a need to use this band that cannot be met by deployment in another band. Second, ZenFi has not shown that a deviation from the general rule would be in the public interest. Although ZenFi generally discusses its intent to address the growing demand for wireless links capable of delivering 10GE, it fails to reference a specific proposed deployment that would require a waiver, or discuss the extent to which its proposed deployments could not be reasonably achieved on other spectrum. ZenFi has also failed to distinguish itself from any other party who would potentially be interested in using the 102–109.5 GHz band. ZenFi also fails to satisfy the third prong, because a waiver grant here would essentially replace the current rulemaking process, undermining the validity of that final rule. This is particularly true in this band where the Commission lacks any actual service, licensing, or technical rules. What ZenFi is requesting is not a waiver of the existing rules, but the authority to operate absent any established rules governing the operations. As noted above, there are a series of issues that the Commission must decide before it authorizes service in the 102–109.5 GHz band and develops service rules for that band, including whether to adopt the existing 70/80/90 GHz licensing regime for this band. The Commission does not believe that it would be a prudent policy to subject licensees and their customers to this potential disruption, particularly in the absence of any specific, demonstrated need for interim operation in the band. While the Commission may ultimately adopt rules similar to what Battelle has proposed, ZenFi (and SMG) have not justified the need for a waiver prior to our developing a full record on the proposed changes.

61. *McKay Brothers Waiver.* McKay Brothers has requested that if the Commission were not to issue a notice of proposed rulemaking regarding Battelle's petition, the Commission should consider granting a waiver of the Commission's rules to permit operations similar to ZenFi's waiver request. Because the Commission has deemed Battelle's rulemaking petition granted-in-part, the Commission shall likewise consider McKay Brothers request

granted-in-part and dismiss it from further considerations.

62. *Procedural Matters. Ex Parte Rules—Permit-but-disclose.* Pursuant to § 1.1200(a) of the Commission's rules, this NPRM shall be treated as a ''permit-but-disclose'' proceeding in accordance with the Commission's *ex parte* rules. Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (*e.g.,* .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

63. *Comment period and procedures.* Pursuant to §§ 1.415 and 1.419 of the Commission's rules, 47 CFR 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). *See Electronic Filing of Documents in Rulemaking Proceedings,* 63 FR 24121 (1998).

- *Electronic Filers:* Comments may be filed electronically using the internet by accessing the ECFS: *http://fjallfoss.fcc.gov/ecfs2/.*
- *Paper Filers:* Parties who choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12th St. SW, Room TW–A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of *before* entering the building.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street SW, Washington DC 20554.

64. *People with Disabilities:* To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an email to *fcc504@fcc.gov* or call the Consumer & Governmental Affairs Bureau at 202–418–0530 (voice), 202–418–0432 (tty).

65. Availability of Documents. Comments, reply comments, and *ex parte* submissions will be publicly available online via ECFS. These documents will also be available for public inspection during regular business hours in the FCC Reference Center, Federal Communications Commission, 445 12th Street SW, CY–A257, Washington, DC, 20554. The Reference Information Center is open to the public Monday through Thursday from 8:00 a.m. to 4:30 p.m. and Friday from 8:00 a.m. to 11:30 a.m.

66. *Initial Regulatory Flexibility Analysis.* As required by the Regulatory Flexibility Act of 1980 (RFA), as amended, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) regarding the possible significant economic impact on small entities of the policies and rules adopted in the *NPRM,* which is found below. The Commission request written public comment on the IRFA. Comments must be filed in accordance with the same deadlines as comments filed in response to the *NRPM* and must have a separate and distinct heading designating them as responses to the IRFA. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of the *Notice,* including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.

67. *Paperwork Reduction Analysis.* This document contains proposed new information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget (OMB) to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104–13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107–198, *see* 44 U.S.C. 3506(c)(4), the Commission sought specific comment on how they might further reduce the information collection burden for small business concerns with fewer than 25 employees.

I. ORDERING CLAUSES

68. *It is ordered,* pursuant to the authority found in sections 1, 2, 4, 7, 201, 301, 302a, 303, 307, 310, and 332 of the Communications Act of 1934, 47 U.S.C. 151, 152, 154, 157, 201, 301, 302a, 303, 307, 310, 332, 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 this *NPRM is hereby adopted.*

69. *It is further ordered*, pursuant to section 4(i) of the Communications Act of 1934, 47 U.S.C. 154(i), and § 1.925 of the Commission's rules, that the Requests for Waivers filed by ZenFi Networks, Inc. on July 22, 2015, McKay Brothers, LLC on August 10, 2015, and SMG Holdings, LLC on November 12, 2015 *are denied.*

70. *It is ordered,* pursuant to section 4(i) of the Communications Act of 1934, 47 U.S.C. 154(i), and § 1.407 of the Commission's rules, that the Petition for Rulemaking of Battelle Memorial Institute, Inc. filed on February 6, 2014 is *granted-in-part* as described herein and *is otherwise denied.*

71. *It is ordered,* pursuant to section 4(i) of the Communications Act of 1934, 47 U.S.C. 154(i), and § 1.407 of the Commission's rules, that the Petition for Rulemaking of James Edwin Whedbee

filed on November 5, 2013 is *granted-in-part* as described herein.

72. *It is ordered* that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, *shall send* a copy of this *NPRM,* including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

List of Subjects

47 CFR Part 1

Environmental impact statements.

47 CFR Part 2

Radio.

47 CFR Part 5

Reporting and recordkeeping requirements and Radio.

47 CFR Part 15

Communications equipment and Radio.

47 CFR Part 101

Communications equipment and Radio.

Federal Communications Commission.

Marlene H. Dortch,

Secretary.

Proposed Rules

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR parts 1, 2, 5, 15, and 101 as follows:

PART 1—PRACTICE AND PROCEDURE

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

Authority: 47 U.S.C. 34–39, 151, 154(i), 154(j), 155, 157, 160, 201, 225, 227, 303, 309, 310, 332, 1403, 1404, 1451, 1452, 1455; 28 U.S.C. 2461 note.

■ 2. Amend § 1.1307 by revising the last entry of Table 1 in paragraph (b)(1) to read as follows:

§ 1.1307 Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.

* * * * *

(b) * * *

(1) * * *

Service (title 47 CFR rule part)	Evaluation required if:
*	*
70/80/90 GHz and above 95 GHz Bands (subpart Q of part 101).	Non-building–mounted antennas: height above ground level to lowest point of antenna < 10 m and power > 1640 W EIRP. Building-mounted antennas: power > 1640 W EIRP, licensees are required to attach a label to transceiver antennas that: (1) provides adequate notice regarding potential radiofrequency safety hazards, e. g., information regarding the safe minimum separation distance required between users and transceiver antennas; and (2) references the applicable FCC-adopted limits for radio-frequency exposure specified in § 1.1310.

* * * * *

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

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

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

■ 4. Amend § 2.803 by revising paragraph (c)(1) to read as follows:

§ 2.803 Marketing of radio frequency devices prior to equipment authorization.

* * * * *

(c) * * *

(1) Activities conducted under market trials pursuant to subpart H of part 5 or in accordance with a Spectrum Horizons experimental radio license issued pursuant to subpart I of part 5.

* * * * *

PART 5—EXPERIMENTAL RADIO SERVICE

■ 5. The authority citation for part 5 continues to read as follows:

Authority: Secs. 4, 302, 303, 307, 336 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 302, 303, 307, 336. Interpret or apply sec. 301, 48 Stat. 1081, as amended; 47 U.S.C. 301.

■ 6. Amend § 5.1 by revising paragraph (b) to read as follows:

§ 5.1 Basis and purpose.

* * * * *

(b) *Purpose.* The rules in this part provide the conditions by which portions of the radio frequency spectrum may be used for the purposes of experimentation and innovation, product development, and market trials.

■ 7. Amend § 5.3 by revising paragraph (l) and adding paragraph (m) to read as follows:

§ 5.3 Scope of service.

* * * * *

(l) Experimentation in innovative new devices and services that operate on frequencies above 95 GHz.

(m) Types of experiments that are not specifically covered under paragraphs (a) through (l) of this section will be considered upon demonstration of need for such additional types of experiments.

■ 8. Amend § 5.54 by redesignating paragraph (f) as paragraph (g) and adding a new paragraph (f) to read as follows:

§ 5.54 Types of authorizations available.

* * * * *

(f) *Spectrum Horizons experimental radio license.* This type of license is issued for the purpose of testing potentially innovative devices and services on frequencies above 95 GHz, where there are no existing service rules.

* * * * *

■ 9. Amend § 5.55 by revising paragraphs (c) and (d) to read as follows:

§ 5.55 Filing of applications.

* * * * *

(c) Each application for station authorization shall be specific and complete with regard to the information required by the application form and this part.

(1) Conventional and Spectrum Horizons license and STA applications shall be specific as to station location, proposed equipment, power, antenna height, and operating frequencies.

(2) Broadcast license applicants shall comply with the requirements in subpart D of this part; Program license applicants shall comply with the requirements in subpart E of this part; Medical Testing license applicants shall comply with the requirements in subpart F of this part; Compliance Testing license applicants shall comply with the requirements in subpart G of this part; and Spectrum Horizons license applicants shall comply with the requirements in subpart I of this part.

(d) Filing conventional, program, medical, compliance testing, and Spectrum Horizons experimental radio license applications:

(1) Applications for radio station authorization shall be submitted electronically through the Office of Engineering and Technology website *http://www.fcc.gov/els.*

(2) Applications for special temporary authorization shall be filed in accordance with the procedures of § 5.61.

(3) Any correspondence relating thereto that cannot be submitted electronically shall instead be submitted to the Commission's Office of Engineering and Technology, Washington, DC 20554.

* * * * *

■ 10. Amend § 5.59 by revising the paragraph (a) subject heading and paragraph (a)(1) to read as follows:

§ 5.59 Forms to be used.

(a) *Application for conventional, program, medical, compliance testing, and Spectrum Horizons experimental radio licenses—(1) Application for new authorization or modification of existing authorization.* Entities must submit FCC Form 442.

* * * * *

■ 12. Amend § 5.71 by adding paragraph (d) to read as follows:

§ 5.71 License period.

* * * * *

(d) *Spectrum Horizons experimental radio license.* Licenses are issued for a term of 10 years.

■ 13. Amend § 5.79 by revising the section heading and adding paragraph (c) to read as follows:

§ 5.79 Transfer and assignment of station authorization for conventional, program, medical testing, Spectrum Horizons, and compliance testing experimental radio licenses.

* * * * *

(c) A station authorization for a Spectrum Horizons experimental radio license, the frequencies authorized to be used by the grantee of such authorization, and the rights therein granted by such authorization shall be transferred, assigned, or in any manner either voluntarily or involuntarily disposed of, if the Commission decides that such a transfer is in the public interest and gives its consent in writing.

■ 14. Amend § 5.107 by adding paragraph (f) to read as follows:

§ 5.107 Transmitter control requirements.

* * * * *

(f) *Spectrum Horizons experimental radio licenses.* The licensee shall ensure that transmissions are in conformance with the requirements in subpart I of this part and that the station is operated only by persons duly authorized by the licensee.

■ 15. Amend § 5.115 by adding paragraph (d) to read as follows:

§ 5.115 Station identification.

* * * * *

(d) *Spectrum Horizons experimental radio licenses.* Spectrum Horizons experimental radio licenses shall transmit identifying information sufficient to identify the license holder and the geographic coordinates of the station. This information shall be transmitted at the end of each complete transmission except that: this information is not required at the end of each transmission for projects requiring continuous, frequent, or extended use of the transmitting apparatus, if, during such periods and in connection with such use, the information is transmitted at least once every thirty minutes. The station identification shall be transmitted in clear voice or Morse code. All digital encoding and digital modulation shall be disabled during station identification.

■ 16. Amend § 5.121 by revising paragraph (a) to read as follows:

§ 5.121 Station record requirements.

(a) For conventional, program, medical testing, compliance testing, and Spectrum Horizons experimental radio stations, the current original authorization or a clearly legible photocopy for each station shall be retained as a permanent part of the station records, but need not be posted. Station records are required to be kept for a period of at least one year after license expiration.

* * * * *

■ 17. Add subpart I, consisting of §§ 5.701 through 5.705, to read as follows:

Subpart I—Spectrum Horizons Experimental Radio Licenses

Sec.

Subpart I—Spectrum Horizons Experimental Radio Licenses

§ 5.701 Applicable rules.

In addition to the rules in this subpart, Spectrum Horizons experimental radio station applicants and licensees shall follow the rules in subparts B and C of this part. In case of any conflict between the rules set forth in this subpart and the rules set forth in subparts B and C of this part, the rules in this subpart shall govern.

§ 5.702 Licensing requirement—necessary showing.

Each application must include a narrative statement describing in detail how its experiment could lead to the development of innovative devices and/or services on frequencies above 95 GHz. This statement must sufficiently explain the proposed new technology/potential new service and incorporate an interference analysis that explains why the proposed experiment would not cause harmful interference to any other spectrum user. The statement should include technical details, including the requested frequency band(s), maximum power, emission designators, area(s) of operation, type(s) of device(s) to be used, and the maximum number of each type of device to be used.

§ 5.703 Responsible party.

(a) Each program experimental radio applicant must identify a single point of contact responsible for all experiments conducted under the license and ensuring compliance with all applicable FCC rules.

(b) The responsible individual will serve as the initial point of contact for all matters involving interference resolution and must have the authority to discontinue any and all experiments being conducted under the license, if necessary.

(c) The license application must include the name of the responsible individual and contact information at which the person can be reached at any time of the day; this information will be listed on the license. Licensees are required to keep this information current.

§ 5.704 Marketing of devices under Spectrum Horizons experimental radio licenses.

Unless otherwise stated in the instrument of authorization, devices operating in accordance with a Spectrum Horizons experimental radio license may be marketed subject to the following conditions:

(a) Marketing of devices (as defined in § 2.803 of this chapter) and provision of services for hire is permitted before the radio frequency device has been authorized by the Commission, provided that the number of devices to be marketed shall be the minimum quantity of devices necessary to conduct the experiment as approved by the Commission.

(b) Licensees are required to ensure that trial devices are either rendered inoperable or retrieved by them from trial participants at the conclusion of the trial. Licensees are required to notify

trial participants in advance that operation of the trial device is subject to this condition.

(c) The size and scope of the experiment are subject to limitations as the Commission shall establish on a case-by-case basis. If the Commission subsequently determines that the experiment is not so limited, authorization shall be immediately terminated.

§ 5.705 Interim report.

Licensee must submit to the Commission an interim progress report 5 years after grant of its license.

PART 15—RADIO FREQUENCY DEVICES

■ 18. The authority citation for part 15 continues to read as follows:

Authority: 47 U.S.C. 154, 302a, 303, 304, 307, 336, 544a, and 549.

■ 19. Amend § 15.205 by revising paragraph (d)(4) to read as follows:

§ 15.205 Restricted bands of operation.

* * * * *

(d) * * *

(4) Any equipment operated under the provisions of § 15.255, § 15.256 in the frequency band 75–85 GHz, § 15.257, or § 15.258 of this part.

* * * * *

■ 20. Add § 15.258 to subpart C to read as follows:

§ 15.258 Operation in the bands 122–123 GHz, 174.8–182 GHz, 185–190 GHz and 244–246 GHz.

(a)(1) Operation under the provisions of this section is not permitted for equipment used on satellites.

(2) Operation on aircraft is permitted under the following conditions:

(i) When the aircraft is on the ground.

(ii) While airborne, only in closed exclusive on-board communication networks within the aircraft, with the following exceptions:

(A) Equipment shall not be used in wireless avionics intra-communication (WAIC) applications where external structural sensors or external cameras are mounted on the outside of the aircraft structure.

(B) Equipment shall not be used on aircraft where there is little attenuation of RF signals by the body/fuselage of the aircraft. These aircraft include, but are not limited to, toy/model aircraft, unmanned aircraft, crop-spraying aircraft, aerostats, etc.

(b) Emission levels within the 122–123 GHz, 174.8–182 GHz, 185–190 GHz and 244–246 GHz bands shall not exceed the following equivalent isotropically radiated power (EIRP) as measured during the transmit interval:

(1) The average power of any emission shall not exceed 40 dBm and the peak power of any emission shall not exceed 43 dBm; or

(2) For fixed point-to-point transmitters located outdoors, the average power of any emission shall not exceed 82 dBm, and shall be reduced by 2 dB for every dB that the antenna gain is less than 51 dBi. The peak power of any emission shall not exceed 85 dBm, and shall be reduced by 2 dB for every dB that the antenna gain is less than 51 dBi.

(i) The provisions in this paragraph for reducing transmit power based on antenna gain shall not require that the power levels be reduced below the limits specified in paragraph (b)(1) of this section.

(ii) The provisions of § 15.204(c)(2) and (4) that permit the use of different antennas of the same type and of equal or less directional gain do not apply to intentional radiator systems operating under this provision. In lieu thereof, intentional radiator systems shall be certified using the specific antenna(s) with which the system will be marketed and operated. Compliance testing shall be performed using the highest gain and the lowest gain antennas for which certification is sought and with the intentional radiator operated at its maximum available output power level. The responsible party, as defined in § 2.909 of this chapter, shall supply a list of acceptable antennas with the application for certification.

(3) The peak power shall be measured with an RF detector that has a detection bandwidth that encompasses the band of operation, *e.g.,* 122–123 GHz, 174.8–182 GHz, 185–190 GHz or 244–246 GHz, and that has a video bandwidth of at least 10 MHz. The average emission levels shall be measured over the actual time period during which transmission occurs.

(c) Limits on spurious emissions:

(1) The power density of any emissions outside the band of operation, *e.g.,* 122–123 GHz, 174.8–182 GHz, 185–190 GHz or 244–246 GHz, shall consist solely of spurious emissions.

(2) Radiated emissions below 40 GHz shall not exceed the general limits in § 15.209.

(3) Between 40 GHz and 200 GHz, the level of these emissions shall not exceed 90 pW/cm^2 at a distance of 3 meters.

(4) The levels of the spurious emissions shall not exceed the level of the fundamental emission.

(d) Except as specified paragraph (d)(1) of this section, the peak transmitter conducted output power shall not exceed 500 mW. Depending on the gain of the antenna, it may be necessary to operate the intentional radiator using a lower peak transmitter output power in order to comply with the EIRP limits specified in paragraph (b) of this section.

(1) Transmitters with an emission bandwidth of less than 100 MHz must limit their peak transmitter conducted output power to the product of 500 mW times their emission bandwidth divided by 100 MHz. For the purposes of this paragraph, emission bandwidth is defined as the instantaneous frequency range occupied by a steady state radiated signal with modulation, outside which the radiated power spectral density never exceeds 6 dB below the maximum radiated power spectral density in the band, as measured with a 100 kHz resolution bandwidth spectrum analyzer. The center frequency must be stationary during the measurement interval, even if not stationary during normal operation (*e.g.,* for frequency hopping devices).

(2) Peak transmitter conducted output power shall be measured with an RF detector that has a detection bandwidth that encompasses the band of operation, *e.g.,* 122–123 GHz, 174.8–182 GHz, 185–190 GHz or 244–246 GHz, and that has a video bandwidth of at least 10 MHz.

(3) For purposes of demonstrating compliance with this paragraph, corrections to the transmitter conducted output power may be made due to the antenna and circuit loss.

(e) Frequency stability: Fundamental emissions must be contained within the frequency bands specified in this section during all conditions of operation. Equipment is presumed to operate over the temperature range −20 to + 50 degrees Celsius with an input voltage variation of 85% to 115% of rated input voltage, unless justification is presented to demonstrate otherwise.

(f) Regardless of the power density levels permitted under this section, devices operating under the provisions of this section are subject to the radiofrequency radiation exposure requirements specified in §§ 1.1307(b), 2.1091 and 2.1093 of this chapter, as appropriate. Applications for equipment authorization of devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for this statement must be submitted to the Commission upon request.

(g) Any transmitter that has received the necessary FCC equipment authorization under the rules of this chapter may be mounted in a group

installation for simultaneous operation with one or more other transmitter(s) that have received the necessary FCC equipment authorization, without any additional equipment authorization. However, no transmitter operating under the provisions of this section may be equipped with external phase-locking inputs that permit beam-forming arrays to be realized.

(h) Measurement procedures that have been found to be acceptable to the Commission in accordance with § 2.947 of this chapter may be used to demonstrate compliance.

PART 101—FIXED MICROWAVE SERVICES

■ 21. The authority citation for part 101 continues to read as follows:

Authority: 47 U.S.C. 154 and 303.

■ 22. Amend § 101.63 by revising paragraph (b) to read as follows:

§ 101.63 Period of construction; certification of completion of construction.

* * * * *

(b) For the 71–76 GHz, 81–86 GHz, 92–95 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands, the 12-month construction period will commence on the date of each registration of each individual link; adding links will not change the overall renewal period of the license.

* * * * *

■ 23. § 101.101 is amended by adding ten entries in numerical order to read as follows:

§ 101.101 Frequency availability.

Frequency band (MHz)	Radio service					
	Common carrier (part 101)	Private radio (part 101)	Broadcast auxiliary (part 74)	Other (parts 15, 21, 22, 24, 25, 74, 78 & 100)		Notes
*	*	*	*	*	*	*
95,000–100,000	CC	OFS		25	F/M/TF.	
102,000–109,500	CC	OFS		25	F/M/TF.	
111,800–114,250	CC	OFS		25	F/M/TF.	
122,250–123,000	CC	OFS		25	F/M/TF.	
130,000–134,000	CC	OFS		25	F/M/TF.	
141,000–148,500	CC	OFS		25	F/M/TF.	
151,500–158,500	CC	OFS		25	F/M/TF.	
174,500–174,800	CC	OFS		25	F/M/TF.	
231,500–232,000	CC	OFS		25	F/M/TF.	
240,000–241,000	CC	OFS		25	F/M/TF.	

* * * * *

■ 24. § 101.105 is amended by revising paragraphs (a)(5) introductory text and (c)(2)(i) and (ii) to read as follows:

§ 101.105 Interference protection criteria.

(a) * * *

(5) *71,000–76,000 MHz, 81,000–86,000 MHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands.* In these bands the following interference criteria shall apply:

* * * * *

(c) * * *

(2) * * *

(i) *Co-Channel Interference.* Both side band and carrier-beat, applicable to all bands; the existing or previously authorized system must be afforded a carrier to interfering signal protection ratio of at least 90 dB, except in the 952–960 MHz band where it must be 75 dB, and in the 71–76 GHz, 81–86 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands where the criteria in paragraph (a)(5) of this section applies, and in the 92,000–94,000 MHz and 94,100–95,000 MHz bands, where the criteria in paragraph (a)(6) of this section applies; or

(ii) *Adjacent Channel Interference.* Applicable to all bands; the existing or previously authorized system must be afforded a carrier to interfering signal protection ratio of at least 56 dB, except in the 71–76 GHz, 81–86 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands where the criteria in paragraph (a)(5) of this section applies, and in the 92–94 GHz and 94–95 GHz bands, where the criteria in paragraph (a)(6) of this section applies.

* * * * *

■ 25. Amend § 101.107 by adding ten entries to the table in paragraph (a) in numerical order and revising footnote 8 to read as follows:

§ 101.107 Frequency tolerance.

(a) * * *

Frequency (MHz)	Frequency tolerance (percent)
* * * * *	
95,000–100,000 [8]	
102,000–109,500 [8]	
111,800–114,250 [8]	
122,250–123,000 [8]	
130,000–134,000 [8]	
141,000–148,500 [8]	
151,500–158,500 [8]	
174,500–174,800 [8]	
231,500–232,000 [8]	
240,000–241,000 [8]	

* * * * *

[8] Equipment authorized to be operated in the 71–76 GHz, 81–86 GHz, 92–95 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands is exempt from the frequency tolerance requirement noted in the table of paragraph (a) of this section.

* * * * *

■ 26. Amend § 101.109 by adding ten entries to the table in paragraph (c) in numerical order to read as follows:

§ 101.109 Bandwidth.

* * * * *

(c) * * *

Frequency band (MHz)	Maximum authorized bandwidth
* * * * *	
95,000 to 100,000	5 GHz

Frequency band (MHz)	Maximum authorized bandwidth
102,000 to 109,500	7.5 GHz
111,800 to 114,250	2.45 GHz
122,250 to 123,000	750 MHz
130,000 to 134,000	4 GHz
141,000 to 148,500	7.5 GHz
151,500 to 158,500	7.5 GHz
174,500 to 174,800	300 MHz
231,500 to 232,000	500 MHz
240,000 to 241,000	1 GHz

* * * * *

■ 27. Amend § 101.111 by revising paragraph (a)(2)(v) to read as follows:

§ 101.111 Emission limitations.

(a) * * *

(2) * * *

(v) The emission mask for the 71–76 GHz, 81–86 GHz, 92–95 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands used in the equation in paragraph (a)(2)(ii) of this section applies only to the edge of each channel, but not to sub-channels established by licensees. The value of P in the equation is for the percentage removed from the carrier frequency and assumes that the carrier frequency is the center of the actual bandwidth used. The value of B will always be 500 MHz. In the case where a narrower sub-channel is used within the assigned bandwidth, such sub-carrier will be located sufficiently far from the channel edges to satisfy the emission levels of the mask. The mean output power used in the calculation is the sum of the output power of a fully populated channel.

* * * * *

■ 28. Amend § 101.113 by adding ten entries to the table in paragraph (a) in numerical order to read as follows:

§ 101.113 Transmitter power limitations.

(a) * * *

Frequency band (MHz)	Maximum allowable EIRP [1 2]	
	Fixed [1 2] (dBW)	Mobile (dBW)
* * *	* *	* *
95,000–100,000	25 dBW/MHz	25 dBW/MHz.
102,000–109,500	25 dBW/MHz	25 dBW/MHz.
111,800–114,250	25 dBW/MHz	25 dBW/MHz.
122,250–123,000	25 dBW/MHz	25 dBW/MHz.
130,000–134,000	25 dBW/MHz	25 dBW/MHz.
141,000–148,500	25 dBW/MHz	25 dBW/MHz.
151,500–158,500	25 dBW/MHz	25 dBW/MHz.
174,500–174,800	25 dBW/MHz	25 dBW/MHz.
231,500–232,000	25 dBW/MHz	25 dBW/MHz.
240,000–241,000	25 dBW/MHz	25 dBW/MHz.

* * * * *

■ 29. Amend § 101.115 by adding twenty entries to the table in paragraph (b) in numerical order and revising footnote 15 to read as follows:

§ 101.115 Directional antennas.

* * * * *

(b) * * *

Frequency (MHz)	Category	Maximum beam width to 3 dB points [1] (included angle in degrees)	Minimum antenna gain (dBi)	Minimum radiation suppression to angle in degrees from centerline of main beam in decibels						
				5° to 10°	10° to 15°	15° to 20°	20° to 30°	30° to 100°	100° to 140°	140° to 180°
* * *		*	*		*			*		
95,000 to 100,000 (co-polar) [15]	N/A	1.2	43	35	40	45	50	50	55	55
95,000 to 100,000 (cross-polar) [15]	N/A	1.2	43	45	50	50	55	55	55	55
102,000 to 109,500 (co-polar) [15]	N/A	1.2	43	35	40	45	50	50	55	55
102,000 to 109,500 (cross-polar) [15]	N/A	1.2	43	45	50	50	55	55	55	55
111,800 to 114,250 (co-polar) [15]	N/A	1.2	43	35	40	45	50	50	55	55
111,800 to 114,250 (cross-polar) [15]	N/A	1.2	43	45	50	50	55	55	55	55
122,250 to 123,000 (co-polar) [15]	N/A	1.2	43	35	40	45	50	50	55	55
122,250 to 123,000 (cross-polar) [15]	N/A	1.2	43	45	50	50	55	55	55	55
130,000 to 134,000 (co-polar) [15]	N/A	1.2	43	35	40	45	50	50	55	55
130,000 to 134,000 (cross-polar) [15]	N/A	1.2	43	45	50	50	55	55	55	55
141,000 to 148,500 (co-polar) [15]	N/A	1.2	43	35	40	45	50	50	55	55
141,000 to 148,500 (cross-polar) [15]	N/A	1.2	43	45	50	50	55	55	55	55
151,500 to 158,500 (co-polar) [15]	N/A	1.2	43	35	40	45	50	50	55	55
151,500 to 158,500 (cross-polar) [15]	N/A	1.2	43	45	50	50	55	55	55	55
174,500 to 174,800 (co-polar) [15]	N/A	1.2	43	35	40	45	50	50	55	55
174,500 to 174,800 (cross-polar) [15]	N/A	1.2	43	45	50	50	55	55	55	55
231,500 to 232,000 (co-polar) [15]	N/A	1.2	43	35	40	45	50	50	55	55
231,500 to 232,000 (cross-polar) [15]	N/A	1.2	43	45	50	50	55	55	55	55
240,000 to 241,000 (co-polar) [15]	N/A	1.2	43	35	40	45	50	50	55	55
240,000 to 241,000 (cross-polar) [15]	N/A	1.2	43	45	50	50	55	55	55	55

* * * * * * *

[15] Antenna gain less than 50 dBi (but greater than or equal to 43 dBi) is permitted only with a proportional reduction in maximum authorized EIRP in a ratio of 2 dB of power per 1 dB of gain, so that the maximum allowable EIRP (in dBW/MHz) for antennas of less than 50 dBi gain becomes 25 − 2(50–G), where G is the antenna gain in dBi. In addition, antennas in these bands must meet two additional standards for minimum radiation suppression: At angles between 1.2 and 5 degrees from the centerline of the main beam, co-polar discrimination must be G − 28, where G is the antenna gain in dBi; and at angles of less than 5 degrees from the centerline of main beam, cross-polar discrimination must be at least 25 dB.

* * * * * * *

■ 30. Amend § 101.139 by revising paragraph (h) to read as follows:

§ 101.139 Authorization of transmitters.

* * * * *

(h) *71–76 GHz; 81–86 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz.* For equipment employing digital modulation techniques, the minimum bit rate requirement is 0.125 bit per second per Hz.

* * * * *

■ 31. Amend § 101.147 by adding ten entries to the list of frequency bands in paragraph (a) and revising the paragraph (z) subject heading and paragraph (z)(2) to read as follows:

§ 101.147 Frequency assignments.

(a) * * *

95,000,100,000 MHz
102,000–109,500 MHz
111,800–114,250 MHz
122,250–123,000 MHz
130,000–134,000 MHz
141,000–148,500 MHz
151,500–158,500 MHz
174,500–174,800 MHz
231,500–232,000 MHz
240,000–241,000 MHz

* * * * *

(z) *71–76 GHz, 81–86 GHz, 92–94 GHz, 94.1–95 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz.*

* * * * *

(2) Prior links shall be protected using the interference protection criteria set forth in § 101.105. For transmitters employing digital modulation techniques and operating in the 71–76 GHz, 81–86 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands, the licensee must construct a system that meets a minimum bit rate of 0.125 bits per second per Hertz of bandwidth. For transmitters that operate in the 92,000–94,000 MHz or 94,100–95,000 MHz bands, licensees must construct a system that meets a minimum bit rate of 1.0 bit per second per Hertz of bandwidth. If it is determined that a licensee has not met these loading requirements, then the database will be modified to limit coordination rights to the spectrum that is loaded and the licensee will lose protection rights on spectrum that has not been loaded.

Subpart Q—Service and technical rules for the 70/80/90 GHz and above 95 GHz Bands

■ 32. Amend subpart Q by revising the subpart heading to read as set forth above.

■ 33. Revise § 101.1501 to read as follows:

§ 101.1501 Service areas.

The 71–76 GHz, 81–86 GHz, 92–95 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands are licensed on the basis of non-exclusive nationwide licenses. There is no limit to the number of non-exclusive nationwide licenses that may be granted for these bands, and these licenses will serve as a prerequisite for registering individual links.

■ 34. Amend § 101.1505 by adding paragraph (c) to read as follows:

§ 101.1505 Segmentation plan.

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(c) An entity may request any portion of the 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands.

■ 35. Revise § 101.1507 to read as follows:

§ 101.1507 Permissible operations.

Licensees may use the 71–76 GHz, 81–86 GHz, 92–95 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands for any point-to-point, non-broadcast service. The segments may be unpaired or paired, but pairing will be permitted only in a standardized manner (*e.g.,* 71–72.25 GHz may be paired only with 81–82.25 GHz, and so on). The segments may be aggregated without limit.

■ 36. Amend § 101.1523 by revising paragraph (a) to read as follows:

§ 101.1523 Sharing and coordination among non-Government licensees and between non-Government and Government services.

(a) Registration of each link in the 71–76 GHz, 81–86 GHz, 92–95 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands will be in the Universal Licensing System until the Wireless Telecommunications Bureau announces by public notice the implementation of a third-party database.

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■ 37. Revise § 101.1525 to read as follows:

§ 101.1525 RF safety.

Licensees in the 71–76 GHz, 81–86 GHz, 92–95 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz bands are subject to the exposure requirements found in §§ 1.1307(b), 2.1091 and 2.1093 of this chapter, and will use the parameters found therein.

■ 38. Amend § 101.1527 by revising paragraph (a) and paragraph (b) introductory text to read as follows:

§ 101.1527 Canadian and Mexican coordination.

(a) A licensee of bands 71–76 GHz, 81–86 GHz, 92–95 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz must comply with § 1.928(f) of this chapter, which pertains to coordination with Canada.

(b) A licensee of bands 71–76 GHz, 81–86 GHz, 92–95 GHz, 95–100 GHz, 102–109.5 GHz, 111.8–114.25 GHz, 122.25–123 GHz, 130–134 GHz, 141–148.5 GHz, 151.5–158.5 GHz, 174.5–174.8 GHz, 231.5–232 GHz, and 240–241 GHz must coordinate with Mexico in the following situations:

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FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 73

[MB Docket No. 18–23; FCC 18–20]

Elimination of Obligation To File Broadcast Mid-Term Report (Form 397) Under Section 73.2080(f)(2)

AGENCY: Federal Communications Commission.

ACTION: Propose rule; correction.

SUMMARY: This document corrects the preamble to a proposed rule published in the **Federal Register** on March 21, 2018 regarding the EEO Broadcast Mid-Term Report. The comment periods in