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FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 15

[ET Docket No. 13-49; FCC 16-68]

Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: This document invites interested parties to update and refresh the record on the status of potential sharing solutions between proposed Unlicensed National Information Infrastructure (U-NII) devices and Dedicated Short Range Communications (DSRC) operations in the 5.850-5.925 GHz (U-NII-4) band. The Commission also solicits the submittal of prototype unlicensed interference-avoiding devices for testing, and seeks comment on a proposed FCC test plan to evaluate electromagnetic compatibility of unlicensed devices and DSRC. The collection of relevant empirical data will assist the FCC, the Department of Transportation, and the National Telecommunications and Information Administration in their ongoing collaboration to analyze and quantify the interference potential introduced to DSRC receivers from unlicensed transmitters operating simultaneously in the 5.850-5.925 GHz band.

DATES: Comments are due on or before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER], and reply comments are due on or before [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]

FOR FURTHER INFORMATION CONTACT: Howard Griboff, Office of Engineering and Technology, (202) 418-0657, e-mail: Howard.Griboff@fcc.gov, or Aole Wilkins, Office of Engineering and Technology, (202) 418-2406, e-mail: Aole.Wilkins@fcc.gov; TTY (202) 418-2989.

SUPPLEMENTARY INFORMATION: This is a summary of a document in, ET Docket No. 13-49, FCC 16-68, adopted May 25, 2016, and released June 1, 2016. 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: www.fcc.gov. People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at (202) 418-0530 (voice), (202) 418-0432 (tty).

Synopsis

The non-Federal Mobile Service operating on a primary basis in the 5.850-5.925 GHz band is limited to DSRC systems, a component of the Intelligent Transportation System (ITS) radio service.

In a Notice of Proposed Rulemaking in February 2013, the Commission explored the potential for future unlicensed operations in the 5.850-5.925 GHz band, and sought comment on technical requirements and sharing technologies and techniques that could be used by unlicensed users to protect incumbent operations, and specifically DSRC. See Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band, ET Docket No. 13-49,

Notice of Proposed Rulemaking, 28 FCC Rcd 1769 (2013) (NPRM); 78 FR 21320, April 10, 2013.

In comments on the Commission's proposal, the automobile industry and the National Telecommunications and Information Administration (NTIA) on behalf the Department of Transportation (DoT) raised potential interference concerns with respect to protecting DSRC from unlicensed users. Subsequently, in August 2013, the Regulatory Standing Committee of IEEE 802.11 formed "the DSRC Coexistence Tiger Team" to investigate potential mitigation techniques that might enable sharing between the proposed unlicensed devices and DSRC equipment. The IEEE Tiger Team completed its work in March 2015, stating that it was unable to reach a consensus, but instead submitted that further analyses and testing could follow.

The IEEE Tiger Team examined two proposed sharing techniques. The "detect and avoid" approach involves detecting the presence of DSRC signals, and avoiding using the spectrum in this band when DSRC signals are present. Under this sharing proposal, unlicensed devices would monitor the existing 10 megahertz-wide DSRC channels. If an unlicensed device detects any transmitted DSRC signal, it would avoid using the entire DSRC band to assure no interference occurs to DSRC communications. After waiting a certain amount of time the unlicensed device would again sense the DSRC spectrum to determine if any DSRC channels are in use or whether it could safely transmit.

The "re-channelization" approach involves splitting the DSRC spectrum into two contiguous blocks: the upper part of the band exclusively for safety-related communications, and permitting unlicensed devices to share the lower part of the band

with non-safety DSRC communications. This would be accomplished by moving the control channel and the two public safety channels to the top portion of the band, and reconfiguring the remaining four DSRC service channels in the lower end of the band as two 20 megahertz channels rather than maintaining four 10 megahertz channels. Under this approach, sharing between unlicensed devices and non-safety DSRC would occur according to the sharing protocols used by standard 802.11 devices, i.e., the device would listen for an "open" channel in the 5.850-5.895 GHz band and transmit if available. Otherwise the device would wait a very short period of time, and then try again.

The Commission now seeks comment on the merits of these two approaches. What are the benefits and drawbacks of each approach? Would one approach be better than the other (e.g., minimize the risks of interference to DSRC more effectively while providing a comparable degree of meaningful access to spectrum for unlicensed devices)? For either approach, is it necessary for the Commission to specify all the details of the interference avoidance mechanism in the FCC rules or can this be addressed by relying primarily on industry standards bodies to develop the specific sharing methods? If the former, what specific technical details need to be specified in the FCC rules (e.g., out of bound emissions, noise tolerance, detection threshold, channel vacate time, etc.)? Has industry agreed upon performance indicators for DSRC, and if so, what are these metrics and is there a process to hold products to these performance levels?

The Commission also seeks comment on how the choice of avoidance protocol affects the deployment and performance of DSRC. Would "re-channelization" require any change in the design of the DSRC electronic components contained in DSRC prototypes or just require a change in the processing of the data? The Commission seeks

comment on whether changing the channel plan would require re-testing of DSRC and, if so, precisely what would need to be done, why, and in what timeframe? Commenters responding to this question should provide specific information about why the completed tests are not applicable to re-channelization, how any new tests will differ from those already performed, and the relevant timeframes for completing these specific tasks.

Further, any testing, studies or analyses that have been performed regarding DSRC capabilities, Wi-Fi performance, interference studies or the potential benefits or drawbacks of sharing, which are relied upon by stakeholders in this proceeding, either in the past or going forward, need to be filed in the record to be considered. Additionally, has any testing been done regarding DSRC self-interference or potential harmful interference with satellite and government co-channel or adjacent users? Any such information filed should include the test plans, results, and underlying data needed to fully evaluate the submission. If there are data or reports that are not public, parties should describe the data and reports and explain why it is necessary to submit this information confidentially.

The Commission also seeks comment on what DSRC-related use cases should be expected and permitted in this band. Commenters should provide specific information regarding what DSRC applications are anticipated, what are the projected spectrum needs for each application, and how would the commenter classify each (i.e., safety, non-safety, time critical or not)? Should the DSRC offerings provided on a priority or exclusive basis be restricted to safety-of-life or crash avoidance purposes? What are the technical or policy reasons for differentiating between safety-of-life and non-safety-of-life applications? Are there meaningful distinctions between DSRC applications that are

safety-related and those that are not, such as applications that are time critical? For parties that advocate for re-channelization, is there a natural bifurcation point if the Commission decides to separate safety-related and non-safety-related DSRC? For instance, while entertainment, social media, maps, and parking applications are not safety-related, what is a good definition for a feature or service to be considered truly a safety-of-life use? How does our current band plan and these sharing approaches match up with international efforts for safety-related DSRC systems?

To fully evaluate the potential effects of re-channelization, the Commission requests information on the projected timeframe for introduction of DSRC deployments under the current channel plan. What market penetration (e.g., percentage of cars on the road) is needed for DSRC to reliably provide safety-of-life functions or prevent vehicle-to-vehicle collisions? What are the projected timeframes for achieving the penetration levels needed for each safety-of-life or crash avoidance function to be effective? Will these penetration levels be met by equipment that is native to the automobile or through standalone or retrofit devices? Would these timeframes change if re-channelization occurs and by how much? In the meantime, what other spectrum bands, driver-assist technologies, and commercial offerings are providing similar services to those envisioned using DSRC? Is it possible that autonomous car and other technologies could bypass DSRC safety-of-life capabilities prior to reaching a sufficient technology penetration to make this service effective?

Does the 5.850-5.895 MHz portion of the band potentially offer the most value for unlicensed operations? What are the advantages and disadvantages of combining the non-safety-related channels into larger channels? How should portions of the band not

required for safety-of-life applications be shared among DSRC and unlicensed operations? For instance, should non-safety of life DSRC applications share the lower re-channelized band on an equal basis with unlicensed operators or have some priority? If commercial or other non-safety DSRC applications have priority access to the band, is a detect-and-vacate protocol necessary or does the IEEE 802.11 standard or other protocols allow for prioritization of DSRC traffic without the need to vacate non-safety channels for a pre-determined time period?

In addition, the Commission invites interested parties to suggest other approaches that would facilitate unlicensed use of the 5.850-5.925 GHz band without causing harmful interference to DSRC operations. Would a hybrid approach taking elements from both the "detect and avoid" and the "re-channelization" proposals create benefits for both DSRC and U-NII users? Are there advantages to an approach where unlicensed operators would use technologies such as the standard Wi-Fi protocol to share access to the non-safety-of-life DSRC operations in the lower 45 megahertz of spectrum, while unlicensed devices would use a "detect and avoid" approach to avoid, and thus protect, co-channel safety-of-life DSRC operations in the upper 30 megahertz of spectrum? Is it feasible to develop a "hybrid chip" that would implement a DSRC standard receiver for detection purposes to allow unlicensed use, if the spectrum is clear? Would it be viable to employ an approach based on use of a database to control access to the spectrum similar to that used for the Citizens Broadband Band Radio Service at 3.5 GHz or for White Space devices in the TV and 600 MHz Service bands? The Commission asks parties to propose mitigation techniques with adequate specificity and detail so that the Commission can compare and contrast them with the proposals already being considered.

In that regard, the Commission seeks comment on the viability of any new proposal, and benefits and costs of the suggested technique, and on any trade-offs related to the proposal.

The Commission invites comment on the ramifications of any of the sharing techniques relative to indoor as well as outdoor use. For instance, is re-channelization, detect and avoid, or a hybrid approach more or less likely to allow for unlicensed indoor and outdoor deployments? Do certain sharing techniques permit more or less indoor or outdoor unlicensed use in certain geographic areas? Are there technical parameters that could be put into place to obviate interference concerns and facilitate deployment of unlicensed networks in either indoor or outdoor environments? For example, would it be feasible to tie the use of lower power levels for indoor-only devices to a less rigorous DSRC detection method in those devices, leaving the more sensitive DSRC detection methods to higher power outdoor-only units? Is it reasonable to assume that indoor-only devices are less likely to cause interference to DSRC outdoors, thus allowing for less aggressive detection sensitivity? If so, what technical characteristics would be required? The Commission seeks a full record on this technique and its specification to assess whether it is possible to share the DSRC band in this manner.

The Commission invites parties to submit 5.9 GHz prototype unlicensed, interference-avoiding devices to the Commission for testing. The Commission also request that parties provide 5.9 GHz DSRC equipment, against which to test the prototype unlicensed, interference avoiding devices. In addition, the Commission requests comment on what date is reasonable for prototype submission, and what constitutes an acceptable prototype (e.g., does the device need to be able to communicate

with another device, or is it sufficient for the device to only demonstrate the sharing technique?). The deadline for submission of prototypes shall be July 30, 2016; however, the Office of Engineering and Technology (OET) is delegated the authority to establish the submission requirements and grant waivers or extensions of the submission deadline or requirements, as necessary. Given the importance of this item, parties should explain in detail in any waiver or extension request why such request should be granted. Parties that would like to submit devices for testing should advise OET as soon as possible and should deliver their device at their earliest opportunity. To arrange delivery of a device, please contact Reza Biazaran at (301) 362- 3052 or reza.biazaran@fcc.gov.

The Commission, in coordination with the DoT and NTIA, will test the prototype equipment as follows:

Phase I: testing at the FCC Laboratory in Columbia, Maryland to determine the prototypes' technical characteristics and how they are designed to avoid causing harmful interference to DSRC.

Phase II: basic field tests with a few vehicles at a DoT facility. The Phase II tests will determine whether the techniques to avoid interference that were evaluated in Phase I's lab tests are effective in the field.

Phase III: tests in "real-world" scenarios, with many vehicles, more test devices, and at a suitable facility.

The Commission seeks comment on the proposed Phase I test plan as set forth below. The Phase I test plan describes an approach and methodology to empirically determine interference tolerance and thresholds associated with the DSRC receive components of the Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I)

communication links relative to the introduction of U-NII emissions into the 5.850-5.925 GHz band, and to evaluate the effectiveness and reliability of any U-NII device interference mitigation capabilities. Since U-NII represents an unlicensed application for which any interference received from the operation of an authorized radio service must be accepted, the test plan does not assess the interference potential from DSRC transmissions to projected U-NII receivers.

The data resulting from the Commission's tests are intended to inform the Phase II and Phase III analyses in which other relevant factors can be given further consideration, and the analytical results can be validated through limited field tests.

The three phases of the test plan are interdependent. The Commission anticipates that all three phases of the test plan will be completed before reaching any conclusions as to how unlicensed devices can safely operate in the 5.850-5.925 GHz band. The Commission, however, expects that testing will be concluded and submitted into the record no later than January 15, 2017. Given the importance of this item, parties should explain in detail why any additional time should be allocated. Engineers from the FCC will carefully examine the options and mechanisms for sharing in the 5.850-5.925 GHz band and closely scrutinize the myriad interference prevention approaches.

The following section describes the Phase I technical characterization effort for evaluating the potential for electromagnetic compatibility (EMC) between U-NII Devices and DSRC operations associated with the ITS under the proposal to share the 5.850-5.925 GHz band.

Proposed Phase I Test Plan

1.0 Introduction

1.1 Objective

The objective of this test effort is to collect the data necessary to establish interference thresholds associated with key performance parameters that can then be used in subsequent scenario-based analyses to better assess the interference potential to DSRC operations that might be introduced from sharing the frequency band with unlicensed (U-NII) devices. In addition, any interference mitigation capabilities provided by the U-NII prototype test samples will be evaluated for viability, efficiency, and reliability.

1.2 Approach

It is recognized that the EMC concerns introduced by the proposal to share the DSRC frequency band with unlicensed operations are complex, primarily due to the dynamic variabilities associated with each system under consideration. For example, U-NII applications are predominately utilized to establish local area networks (LANs), typically in support of Wi-Fi access and usage, although fixed point-to-point communication links for supporting Internet backhaul applications are also likely. While the access points associated with LAN applications are typically relatively fixed in terms of location, the client devices that communicate with them can be quite mobile. Similarly, the DSRC roadside units (RSUs) are typically sited at fixed locations along roadways, but the on-board units (OBU's) that communicate with the RSU's and with other OBU's are vehicle-mounted and thus can involve high-velocity dynamic mobility. As such, it will be impractical to examine each and every potential interaction involving U-NII transmissions relative to DSRC receivers in either an empirical or analytical effort. Therefore, the approach proposed in this test plan represents an attempt to contain the myriad of variable conditions within a space bounded between "best case" (no

interference) and "worst case" (maximum interference) conditions. Subsequent analytical efforts can then introduce appropriate scenario-based considerations, and examine associated subtleties such as the probability of occurrence and the maximum duration of potential interference interactions.

In an effort to deal with these complexities, the examination of compatibility between proposed U-NII transmitters and DSRC receivers sharing the same frequency band will employ a phased approach, with the various interested agencies (i.e., FCC, NTIA, and DoT) collaborating in each distinct test phase. Each successive phase of the study will progressively consider additional interference interaction variabilities. The first phase of this effort will be performed at the FCC Laboratory in Columbia, Maryland and will involve bench tests in a laboratory environment assuming static conditions (i.e., vehicle dynamics not considered). It is envisioned that the Phase II effort will utilize the Phase I data to support analytical efforts to assess compatibility under scenario-specific conditions and will also include some result verification through limited scenario-based field tests. The final phase (Phase III) of the study is envisioned to utilize the Phase II results, adjusted accordingly based on the verification test observations, to expand the field testing under "real world" conditions such as those proposed in Section 6.0 of the DoT Test Plan.

This test plan primarily describes the proposed Phase I effort of this study, to be performed by FCC engineers at its laboratory facility in Columbia, MD, with the support of DoT engineers.

2.0 Phase I Test Proposals

2.1 Potential Interference Mechanisms

It is anticipated that the likely interference mechanisms associated with sharing the DSRC frequency band are: 1) a potential for degrading the DSRC receiver noise floor, and thus, the link signal-to-noise ratio (SNR) due to additive noise-like interference introduced by proposed U-NII devices; 2) a potential for corruption of received data packets due to introduced interference, resulting in an increased packet error rate (PER) and/or reduced data throughput; 3) a potential for channel access contention, resulting in an increase in the time required for DSRC channel access; and 4) a potential for receiver saturation or overload due to short-range, co-tuned interactions. These represent the potential interference mechanisms and associated metrics that will be examined as a part of this proposed Phase I test effort.

2.2 Potential Interference Mitigation Techniques

Several possible techniques and strategies have been proposed for mitigating interference interactions between projected U-NII transmitters and DSRC receivers. The IEEE Tiger Team explored two possible options: 1) the use of the existing DSRC channel plan with a clear channel assessment (CCA) capability specified for U-NII transmissions in the 10-MHz DSRC channels, and 2) the adoption of a modified DSRC channel plan (i.e., bi-furcation of the DSRC frequency band) with a CCA capability specified in 20-MHz channels. The NTIA 5 GHz Report proposed more general mitigation strategies, such as several possible detection methodologies for use in implementing a CCA capability (e.g., energy, matched filter, and signal detection), and a geo-location/database mitigation approach. The NTIA 5 GHz Report also identifies some of the potential inadequacies associated with each of these potential interference mitigation approaches.

The 802.11 standard under which U-NII operates currently provides for two methods of implementing a CCA capability. The first method, known as Carrier Sensing (CS), involves a determination of channel availability through the detection (reception) and decoding of the preamble of a data packet transmitted by the current channel occupant. Most 802.11 U-NII devices utilize the same basic CS technique, known as Carrier Sense Multiple Access with Collision Avoidance (CSMA/ CA). The FCC does not specify nor regulate CS requirements for U-NII devices. The second CCA method specified in the 802.11 standard is known as Dynamic Frequency Selection (DFS) where a U-NII device must identify an occupied channel through the detection of the channel occupants radio-frequency (RF) energy levels relative to an established threshold value (i.e., Energy Detection (ED)), without regard to signal structure specifics. This technique is required for U-NII devices that share other portions of the 5 GHz spectrum in order to preclude interference to critical Government Radar operations. DFS requirements and compliance tests were developed cooperatively between FCC, NTIA and DoD, and are enforced by the FCC.

Since U-NII device access to the spectrum is on a non-interference basis (NIB), DSRC must be accorded primacy in any channel access protocol. Such access prioritization will also likely be required for all of the seven 10-MHz channels that are assigned to DSRC. Thus, to ensure DSRC preferential access, a U-NII device must be capable of detecting an access-contending DSRC signal at energy levels that are equal to, or below, the DSRC receiver sensitivity level on each of the seven DSRC channels.

As a primary element of this Phase I effort, the FCC will perform benchtop measurements of those prototype U-NII devices submitted for testing that implement

these, or other not yet proposed, interference mitigation capabilities. The actual tests to be performed will be tailored to the particular mitigation strategy employed, and will be designed to ensure the effectiveness and reliability associated with the detection and recognition of DSRC-occupied channels.

2.3 General Test Approach

It is not possible to design a detailed comprehensive plan for testing all of the components identified for examination in the Phase I test program until we have access to U-NII devices designed for operation in the 5.9 GHz frequency band and DSRC RSU and OBU equipment to test against. Therefore, what is proposed below represents a general plan for achieving the identified objectives. This plan will be adapted as necessary once more details of the devices to be tested are made available.

The first step in the Phase I effort is to solicit the devices necessary to implement the test plan, as the Commission does in this document. The FCC requests that industry provide prototype U-NII devices projected for operation in the 5.9 GHz frequency band, to include interference mitigation capabilities, for test and evaluation. The FCC, working cooperatively with NTIA and DoT, also request that the DSRC equipment necessary to exercise this test plan be provided. In addition, technical support must be made available to assist in configuring the devices for testing and in accessing the requisite device control and resulting data. All of the devices will be required to have appropriate software controls to perform the tests under a controlled environment.

As devices are submitted to the FCC laboratory as test samples, they will first be technically characterized through the measurement of standard RF parameters such as the occupied bandwidth (OBW), fundamental power, and unwanted emission levels

associated with the transmitted signals, and the sensitivity and noise floor levels associated with the receivers. The measured parameters will be compared with appropriate specifications (e.g., IEEE 802.11ac, IEEE 802.11p, ASTM E2213, FCC regulations, and other applicable rules and standards).

Once the characterization measurements are complete, DSRC links will be established to simulate simple RSU-to-OBU and OBU-to-OBU two-way wireless communication. Upon successful establishment of such communication links, and before any interference signals are introduced, measurements will be performed to establish base-line values for parameters such as SNR (signal-to-noise ratio), PER (packet error rate), network delay and the variance in network delay (also known as jitter).

After the completion of baseline testing, a single U-NII signal, or simulation thereof (e.g., band-limited additive white Gaussian noise (AWGN)), will be introduced on a co-tuned basis (i.e., with coincident center frequencies) initially at a very low power level. The U-NII power level will then be incremented (1-3 dB steps) while the designated performance parameters are monitored and recorded. The results of this test will provide the data necessary to determine the DSRC tolerance to U-NII interference in a "worst-case" interference interaction (i.e., co-tuned operation). It is recognized that U-NII transmitters, particularly those used to provide Wi-Fi services, can utilize variable OBW's (occupied bandwidths) and are capable of implementing several combinations of data modulation and coding rate (Modulation-Coding Scheme or MCS) on a variable basis, depending on the transmission channel conditions. FCC experience gained from developing and instituting compliance measurement of U-NII transmissions suggest that there are only subtle differences in the relevant signal parameters among these

combinations; however, measurements will be performed using different combinations of these variable parameters in an effort to identify a "worst-case" mode and to quantify the differential magnitude of the effect on a DSRC receiver.

The procedure described above will then be repeated with the U-NII transmit signal re-tuned to the center frequency of each of the two adjacent DSRC channels relative to the DSRC-occupied channel (i.e., upper and lower first adjacent channels). This measurement will produce data that can be used to determine the adjacent-channel rejection capability of a DSRC receiver which in turn can be used to inform an assessment of EMC assuming adjacent-channel operation. Dependent upon the results of this test and time constraints, this process may be repeated with the U-NII device tuned to DSRC channels further removed (in frequency) from the DSRC-occupied channel (i.e., second adjacent channel interaction).

Once these tests are complete, the potential effects of network loading (LAN and DSRC) and interference aggregation will be examined by the addition of supplementary DSCR links and U-NII devices to the test configuration as the availability of devices permit.

Similar procedures, with modifications based on the protocols implemented by the prototype U-NII sample devices, will be used to evaluate the effectiveness and reliability of any interference mitigation capabilities (e.g., DSRC signal detection methods, Clear Channel Assessment capability of U-NII devices, and other mitigation methods not yet defined).

3.0 Summary

The plan presented herein represents a "high-level" approach to the Phase I testing intended to acquire the empirical data necessary to further an examination of the potential for achieving EMC between U-NII devices and DSRC operations under the FCC proposal to share the 5.9 GHz frequency band. The proposed test procedures and methodologies will be further refined as more information becomes available with respect to the U-NII and DSRC devices anticipated to share this spectrum. The FCC requests relevant technical input in the form of comments from other concerned parties in the interest of enhancing and/or improving this test plan proposal.

Conclusion

The FCC, in consultation with the DoT and NTIA, will continue to collaborate, as well as engage with other stakeholders, and may make adjustments to the plan as it evolves. Our goal is to collect the relevant empirical data for use in analyzing and quantifying the interference potential introduced to DSRC receivers from unlicensed transmitters operating simultaneously in the 5.850-5.925 GHz band. The Commission anticipates that the tests conducted to date, combined with the results of the three-phase test plan described above, will provide reliable, real-world data on the performance of unlicensed devices designed to avoid interfering with DSRC operations in the 5.850-5.925 GHz band.

Procedural Matters

Ex Parte Rules

This proceeding has been designated 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.

Filing Requirements

Comments are due on or before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER], and reply comments are due on or

before [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. All filings must refer to ET Docket No. 13-49.

Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR sections 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 9300 East Hampton Drive, Capitol Heights, MD 20743.

U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington DC 20554.

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Initial Regulatory Flexibility Analysis

The NPRM included an Initial Regulatory Flexibility Analysis (IRFA). That IRFA invited comment "on making available an additional 195 megahertz of spectrum in the 5.35-5.47 GHz and 5.85-5.925 GHz bands for U-NII use." This document seeks further comment on some of the proposals initially raised in the NPRM and alternative proposals submitted into the record of this proceeding. We request supplemental comments on the IRFA in light of the details and issues raised in this document. These comments must be filed in accordance with the same filing deadlines as comments filed in response to this document as set forth on the first page of this document and have a separate and distinct heading designating them as responses to the IRFA.

Paperwork Reduction Act Analysis

The NPRM included a separate request for comment from the general public and the Office of Management and Budget on the information collection requirements contained therein, as required by the Paperwork Reduction Act of 1995, Public Law 104-13, and the Small Business Paperwork Relief Act of 2002, Public Law 107-198. As

noted above, this document seeks further comment on some proposals and alternatives initially raised in the NPRM. We invite supplemental comment on these requirements in light of the details and issues raised in this document.

FEDERAL COMMUNICATIONS COMMISSION

Gloria J. Miles,
Federal Register Liaison Officer.
Office of the Secretary
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