



PUBLIC NOTICE

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WIRELESS TELECOMMUNICATIONS BUREAU AND OFFICE OF ENGINEERING AND TECHNOLOGY CONDITIONALLY APPROVE THREE SPECTRUM ACCESS SYSTEM ADMINISTRATORS FOR THE 3.5 GHZ BAND

GN Docket Nos. 17-258, 15-319

I. INTRODUCTION

1. With this Public Notice, the Wireless Telecommunications Bureau (WTB) and Office of Engineering and Technology (OET) conditionally approve three entities: Fairspectrum LLC (Fairspectrum), Nokia, and RED Technologies (RED) as Spectrum Access System (SAS) administrators in the 3550-3700 MHz band (3.5 GHz band). All three entities submitted applications during the Second Wave SAS application window.¹ This conditional approval represents the completion of the first phase of the SAS application review process established by the Commission and does not, in itself, confer authority to provide commercial SAS services in the 3.5 GHz band.

II. BACKGROUND

2. In the *2015 Report and Order*, the Commission directed WTB/OET, in close consultation with the Department of Defense (DoD) and the National Telecommunications and Information Administration (NTIA), to oversee the review, certification, and approval of SAS administrators in the 3.5 GHz band.² The *2015 Report and Order* required all prospective SAS administrators to complete a two-stage review process before final certification.³ Consistent with the *Report and Order*, on December 16, 2015, WTB and OET released a Public Notice describing the SAS application submission process and provided detailed guidance as to how applicants can demonstrate their ability to perform the functions of

¹ Application of Fairspectrum LLC to be Designated as a Spectrum Access System Administrator, GN Docket No. 15-319 (filed May 25, 2017) (Fairspectrum Application); Proposal of Nokia to Operate as Spectrum Access Server Administrator and Environmental Sensing Capability Operator, GN Docket 15-319 (filed Mar. 28, 2017) (Nokia Application); Proposal by RED Technologies for Spectrum Access System Administrator, GN Docket 15-319 (filed May 5, 2017) (RED Application); *see also* Application of Rivada Networks LLC for Approval as a Spectrum Access System Administrator and an Environmental Sensing Capability Operator, GN Docket 15-319 (filed May 30, 2017) (Rivada Application). Rivada later withdrew its application. *See* Letter from Declan Ganley, Chairman and CEO, Rivada Networks LLC, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 15-319 (filed Feb. 25, 2021).

² *See Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, GN Docket No. 12-354, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959, 4067, paras. 369-373 (2015) (*2015 Report and Order* and *2015 FNPRM*, respectively); *see also* 47 CFR §§ 0.241(j), 0.331(f).

³ *See 2015 Report and Order*, 30 FCC Rcd at 4067, paras. 371-72.

a SAS administrator.⁴ In the first stage, a prospective SAS administrator must submit a proposal describing how its system will comply with all Commission rules governing the construction, operation, and approval of SASs and will perform all core functions described in the *2015 Report and Order*.⁵ The second stage involves SAS testing both in a controlled lab environment and in a real-world setting.⁶

3. The Public Notice requested that the proposals include a description of the scope of the functions the SAS would perform; a demonstration of the SAS administrator's technical and financial capabilities, including whether other entities would perform any SAS functions; a demonstration that the prospective SAS administrator possesses sufficient technical expertise to operate such a system, including the qualifications of key personnel responsible for operating and maintaining that system; a description of how data will be securely communicated, including software and firmware updates; technical diagrams showing the SAS architecture; proposed propagation models; a detailed description of how the SAS will retain, secure, and verify device information; a description of interference protection and coordination procedures; a description of the SAS communication procedures; dynamic use case scenarios that demonstrate frequency assignment; a description of how the SAS will retain information; and an affirmation that the SAS will comply with all of the Commission's rules.⁷ SAS applicants that satisfy these criteria will be conditionally approved and authorized to begin lab testing of their SASs.⁸

4. On December 21, 2016, WTB and OET conditionally approved the first wave of SAS administrators, thus concluding the first stage of the review process during the first wave.⁹ Six SAS administrators were later approved for full commercial operations in the band, also during the first wave.¹⁰

⁴ See *Wireless Telecommunications Bureau and Office of Engineering and Technology Establish Procedure and Deadline for Filing Spectrum Access System (SAS) administrators(s) and Environmental Sensing Capability (ESC) Operator(s) Applications*, GN Docket No. 15-319, Public Notice, 30 FCC Rcd 14170, 14174-77 (WTB / OET 2015) (*SAS / ESC Proposal Public Notice*). (The Public Notice also sets forth the procedure to submit Environmental Sensing Capability operator proposals.)

⁵ See *2015 Report and Order*, 30 FCC Rcd at 4054-55, para. 320 (listing SAS core functions); see also *SAS/ESC Proposal Public Notice*, 30 FCC Rcd at 14174-76.

⁶ See *2015 Report and Order*, 30 FCC Rcd at 4067, para. 372 (noting that the final compliance testing phase can include a public testing period, testing of protections for incumbent systems, and field trials). On July 27, 2018, WTB/OET released a Public Notice that described the procedure and deadline for filing Initial Commercial Deployment (ICD) proposals. See *Wireless Telecommunications Bureau and Office of Engineering and Technology Establish Procedure and Deadline for Filing Spectrum Access System Initial Commercial Deployment Proposals*, Public Notice, 33 FCC Rcd 7390 (WTB/OET 2018) (*ICD Proposals Public Notice*). The ICD requirement is meant to fulfill the Commission's requirement that applicants conduct a public testing period and field trials prior to final certification.

⁷ See *SAS / ESC Proposal Public Notice*, 30 FCC Rcd at 14174-14176.

⁸ *Id.* at 14176.

⁹ See *Wireless Telecommunications Bureau and Office of Engineering and Technology Conditionally Approve Seven Spectrum Access System Administrators for the 3.5 GHz Band*, GN Docket No. 15-319, Public Notice, 31 FCC Rcd 13355 (WTB/OET 2016) (conditionally approving the following seven SAS administrators: Amdocs, Inc.; CommScope; CTIA; Federated Wireless, Inc.; Google; iPosi; Key Bridge; and Sony Corporation). CTIA later withdrew its proposal. See Letter from Paul Anuszkiewicz et al., Vice President, Spectrum Planning, CTIA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 15-319 (filed Nov. 20, 2017).

¹⁰ See *FCC Authorizes Full Commercial Deployment in 3.5 GHz Band*, GN Docket No. 15-319, Public Notice, 35 FCC Rcd 117 (WTB/OET 2020) (approving CommScope; Federated Wireless, Inc; Google; and Sony, Inc. for commercial use as SAS administrators); *Wireless Telecommunications Bureau and Office of Engineering and Technology Approve Amdocs SAS for Full Commercial Deployment*, GN Docket No. 15-319, Public Notice, 35 FCC Rcd 3687 (2020); *Wireless Telecommunications Bureau and Office of Engineering and Technology Approve Key* (continued....)

5. WTB/OET established a “second wave” deadline of May 31, 2017 for proposals from prospective SAS administrators.¹¹ Fairspectrum, Nokia, and RED submitted proposals before the second wave deadline and subsequently amended and supplemented their proposals, consistent with the processes and requirements established for first wave applicants.¹²

III. DISCUSSION

6. Based on our review of the proposals, including subsequent amendments and supplemental materials, WTB and OET conditionally approve the applicants’ proposals to act as SAS administrators, subject to the conditions and processes described below. Through their proposals, these three entities each sufficiently demonstrate the technical and financial capability, as required by the *SAS / ESC Proposal Public Notice*, to move on to the next phase of the approval process prior to final approval. Specifically, we conditionally approve each of the three applicants as SAS administrators in the 3.5 GHz band subject to the following:

- Each conditionally approved SAS administrator must comply with all current and future Commission rules, instructions, and procedures.
- Each conditionally approved SAS administrator must comply with all instructions issued by WTB and OET pursuant to sections 0.241(j) and 0.331(f) of the Commission’s rules.¹³
- All conditionally approved SAS administrators must attend workshops and meetings convened by the Commission or WTB and OET. Workshop or meeting topics may include: (1) SAS development and operations; (2) SAS testing and certification procedures; and (3) other topics relevant to the ongoing development of the SAS.
- If a conditionally approved SAS administrator relies on third party or proprietary specifications or standards for its proposed SAS, these specifications or standards must be consistent with the relevant Commission rules.¹⁴ All such specifications and standards will be reviewed by WTB and OET to ensure consistency with the Commission’s rules.
- Each conditionally approved SAS administrator must demonstrate that it is able to protect Incumbent Access tier users, i.e., federal incumbent users and Fixed Satellite Services (FSS) licensees, and Grandfathered Wireless Broadband Licensees (GWBL), in compliance with the parameters established by Commission rules.¹⁵

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Bridge SAS for Full Commercial Deployment, GN Docket No. 15-319, Public Notice, DA 21-289 (WTB / OET 2021).

¹¹ See *Wireless Telecommunications Bureau and Office of Engineering and Technology Establish “Second Wave” Deadline for Proposals from Prospective Spectrum Access System (SAS) Administrator(s) and Environmental Sensing Capability (ESC) Operator(s)*, GN Docket No. 15-319, Public Notice, 32 FCC Rcd 2973 (2017).

¹² See note 1; Letter from Heikki Kokkinen, CEO, Fairspectrum LLC to Joel Taubenblatt, Deputy Bureau Chief, Wireless Telecommunications Bureau, FCC, GN Docket No. 15-319 (filed March 15, 2018) (includes revised SAS application); Letter from Heikki Kokkinen, CEO, Fairspectrum LLC to Marlene H. Dortch, Secretary, FCC, GN Docket No. 15-319 (filed January 23, 2021); Letter from Jeffrey A. Marks, Nokia to Marlene H. Dortch, Secretary, FCC, GN Docket No. 15-319 (filed March 14, 2018) (includes attachment); Letter from Jeffrey A. Marks, Vice President, Regulatory Affairs, Nokia to Marlene H. Dortch, Secretary, FCC, GN Docket No. 15-319 (filed December 18, 2020); Letter from Pierre-Jean Muller, CEO, RED Technologies to Marlene H. Dortch, Secretary, FCC, GN Docket No. 15-319 (filed March 9, 2018); Letter from Pierre-Jean Muller, CEO, RED Technologies to Marlene H. Dortch, Secretary, FCC, GN Docket No. 15-319 (filed November 20, 2020).

¹³ See 47 CFR §§ 0.241(j), 0.331(f).

¹⁴ Each conditionally approved SAS administrator states that it relies on current or future WinnForum standards as part of its proposal. To the extent that the SAS administrator incorporates any revisions to existing WinnForum standards into its system, such revisions must also be consistent with Commission rules.

¹⁵ See 47 CFR §§ 96.15; 96.17(a)-(d), 96.21, 96.53(e)-(i) and (m).

- With respect to federal Incumbent tier users, each conditionally approved SAS administrator must comply with coordination and protection procedures to protect federal operations, including protection of Dynamic Protection Areas (DPAs).¹⁶ The conditionally approved SAS administrators must be attentive to changes in protection criteria, such as those NTIA identified in January 2020 for Category B Citizens Broadband Radio Service Devices (CBSDs), and to modifications to the list of sites identified by NTIA.¹⁷
- Each conditionally approved SAS administrator must be able to receive and address reports of interference from federal Incumbent Access tier users. In addition, each conditionally approved SAS administrator must work with the FCC, NTIA, and DoD to address interference issues expeditiously and to implement any new reporting processes as they are developed.¹⁸
- Each conditionally approved SAS administrator must be able to receive reports of interference from non-federal incumbents, i.e., FSS licensees and GWBL, and develop a mechanism to address and remedy, as necessary, such reports of interference.
- Each conditionally approved SAS administrator must employ a propagation model, or set of propagation modeling methods acceptable to the Commission, to determine interference protection for: 1) federal Incumbent Access tier users; 2) FSS licensees; 3) GWBL;¹⁹ and 4) Priority Access Licenses. The SASs may use the same propagation model to protect all four categories of users or may use multiple models but must utilize the same model, or set of models, for all users within each discrete category. These models must be consistent for all SASs authorized to operate in the 3.5 GHz band.
- Each conditionally approved SAS administrator must demonstrate the capability to comply with the frequency assignment functions required in section 96.59 of the Commission's rules.²⁰ WTB and OET encourage industry to develop a common methodology to implement this requirement.
- Consistent with section 96.55 of the Commission's rules, "SAS administrators must make all information necessary to effectively coordinate operations between CBSDs available to other SAS administrators."²¹ A record of any information sharing agreement entered into between or among SAS administrators must, in whole or in summary, be submitted to GN Docket No. 15-319.²²

¹⁶ See *Promoting Investment in the 3550-3700 MHz Band*, GN Docket No. 17-258, Order, 33 FCC Rcd 4987 (WTB/OET 2018) (Granting a conditional waiver to allow SAS administrators to implement an alternative protection methodology based on DPAs that will permit DPA-enabled SASs to authorize Category B CBSDs prior to the deployment of an ESC).

¹⁷ See Letter from Charles Cooper, Assoc. Admin., Office of Spectrum Mgt., NTIA, to Ronald T. Repasi, Chief (Acting) OET, and Donald Stockdale, Jr., Chief, WTB, FCC, GN Docket No. 17-258 (filed Jan. 22, 2020).

¹⁸ See, e.g., 47 CFR §§ 96.53, 96.55.

¹⁹ See 47 CFR §§ 96.17 (a) and (b), 96.25(c), 96.53 (g)-(i). See *Wireless Telecommunications Bureau and Office of Engineering and Technology Announce Methodology for Determining the Protected Contours for Grandfathered 3650-3700 MHz Band Licensees*, GN Docket No. 12-354, Public Notice, 31 FCC Rcd 9037, 9037, para. 1 (WTB / OET 2016).

²⁰ See 47 CFR § 96.59.

²¹ See 46 CFR § 96.55(a)(2).

²² Applicants may seek confidential treatment of information filed in amendments to their proposals, pursuant to section 0.459 of the Commission's rules and such information may be shared with other federal agencies, including NTIA and DoD. Any party that opposes the sharing of this information with other agencies has ten days from the date of the confidential filing to oppose such sharing. See 47 CFR § 0.459; *Wireless Telecommunications Bureau and Office of Engineering and Technology Announce Ex Parte Status and Inter-Agency Confidentiality Procedures for Submissions in GN Docket No. 15-319*, GN Docket No. 15-319, Public Notice, 31 FCC Rcd 5312, 5313 (WTB / OET 2016). However, if the party consents to the sharing of such information, we request that applicants explicitly
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- SAS administrators must “must make available to the general public aggregated spectrum usage data for any geographic area. Such information must include the total available spectrum and the maximum available contiguous spectrum in the requested area. SAS administrators shall not disclose specific CBSD registration information to the general public except where such disclosure is authorized by the registrant.”²³
- As specified by the Commission, all conditionally approved SAS administrators must provide external testing interfaces to enable WTB, OET, NTIA, and DOD to utilize that interface and verify that the SAS complies with the relevant rules.

7. The failure of applicants to meet any of the above conditions on an ongoing basis or to comply with future further guidance from WTB and OET or the Commission could result in revocation of its conditional approval.

IV. NEXT STEPS

8. We will continue to exercise oversight of the approval process and provide detailed guidance regarding the next steps of the approval process. We may ask the conditionally approved entities for additional information at any time and all conditionally approved SAS administrators must attend related workshops, as detailed in the above conditions. Parties are permitted to amend their proposals in GN Docket 15-319.

9. As set forth above, and consistent with the process used to review the first wave SAS administrators, all conditionally approved SAS administrators must submit their systems for compliance testing—in the lab and in the field—before final approval. The conditionally approved SAS administrators will be given the opportunity to collaborate with the Institute for Telecommunication Sciences (ITS), NTIA’s research and development arm, to complete the laboratory testing requirement.²⁴ After the laboratory testing period is completed, each SAS will be required to successfully complete an Initial Commercial Deployment (ICD) period before receiving its final certification. The ICD process will satisfy the field testing requirements and is intended to ensure that each SAS is operating properly and in compliance with Commission rules.

10. SAS administrators that successfully satisfy all of the conditions herein and those systems that are deemed compliant through testing will be allowed to make their databases available for actual use for the five-year term specified in our rules.²⁵ We will publicly announce the availability of each SAS, at which time the five-year term will commence.

By the Acting Chief, Wireless Telecommunications Bureau, and the Acting Chief, Office of Engineering and Technology.

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state this in their filing. This will waive the ten day period and allow us to share the confidential filings with NTIA and DoD immediately, expediting the review process, a goal shared by the Commission and applicants.

²³ See 47 C.F.R. § 96.55 (a)(3)

²⁴ While lab testing of individual SASs is required before final certification, participation in either the process of verifying and validating the test harness or the subsequent lab testing of an individual SAS with ITS is optional and is not a prerequisite to submitting an ICD proposal or to obtaining final certification. See *ICD Proposals Public Notice*, 33 FCC Rcd at 7392, para. 4. All of the approved first wave SAS administrators elected to work with ITS to complete the laboratory testing process.

²⁵ See 47 CFR § 96.63(e).