



PUBLIC NOTICE

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WIRELESS TELECOMMUNICATIONS BUREAU AND OFFICE OF ENGINEERING AND TECHNOLOGY ESTABLISH PROCEDURE AND DEADLINE FOR FILING SPECTRUM ACCESS SYSTEM INITIAL COMMERCIAL DEPLOYMENT PROPOSALS

GN Docket No. 15-319

Proposals will be accepted beginning on July 27, 2018
Proposals due: September 10, 2018

I. INTRODUCTION

1. The Wireless Telecommunications Bureau (WTB) and the Office of Engineering and Technology (OET) (collectively, WTB/OET) of the Federal Communications Commission (Commission or FCC) seek proposals for short-term, limited geographic commercial deployment (Initial Commercial Deployment or ICD) by conditionally approved Spectrum Access System (SAS) Administrator(s) in the 3550-3700 MHz band (3.5 GHz Band), as directed by the *3.5 GHz First Report & Order*.¹ This *Public Notice* summarizes the requirements for SAS Administrators and describes the process for submitting proposals for ICD (ICD Proposals). It also explains the objectives of ICD and describes the timeline for demonstrating SAS compliance with the Commission's rules during a short-term, limited geographic deployment. Finally, this *Public Notice* outlines the review process that WTB/OET will use to evaluate SAS Administrators' ICD proposals, the results of those short-term, geographically limited deployments, and ultimately to provide final certification to SASs.

II. BACKGROUND

2. In the *3.5 GHz First Report & Order*, the Commission delegated authority to WTB/OET to oversee the SAS approval process and facilitate the testing and development of multiple SASs.² As required in the *3.5 GHz First Report & Order* and established in the *SAS/ESC Proposal Public Notice*, all SAS Administrators must complete a two-stage review process prior to final certification. In the first stage, applicants to be SAS Administrators must submit a proposal describing how their system will comply with all Commission rules governing the construction, operation, and approval of SASs and all core functions described in the *3.5 GHz First Report & Order*.³ Following FCC review of these

¹ See *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959, 4067, para. 372 (2015) (*3.5 GHz First Report & Order*); 47 CFR §§ 96.1 *et seq.* In the *3.5 GHz First Report & Order*, the Commission established the Citizens Broadband Radio Service, which will share the band with federal and non-federal Incumbent Access tier users, as part of a broader three-tiered sharing framework enabled by one or more SASs. See *3.5 GHz First Report & Order*, 30 FCC Rcd 3959. SASs will serve as advanced, highly automated frequency coordination systems that will assign spectrum within the band and coordinate access between and among the three tiers of users.

² See *3.5 GHz First Report & Order*, 30 FCC Rcd at 4067, paras. 369-373; see also 47 CFR §§ 0.241(j), 0.331(f).

³ See *3.5 GHz First Report & Order*, 30 FCC Rcd at 4054-55, para. 320 (listing SAS core functions); see also *Wireless Telecommunications Bureau and Office of Engineering and Technology Establish Procedure and Deadline*

proposals, SAS applicants would be conditionally certified by the Commission. The second stage involves actual system testing both in a controlled lab environment and in a real-world setting.⁴ ICD is meant to fulfill the Commission's requirement that applicants conduct a public testing period and field trials prior to final certification.⁵ Final certification for nationwide commercial operation may take place after the second stage of the review process, including lab testing and ICD, has been successfully completed.

3. Consistent with the Commission's instructions, WTB/OET released a Public Notice on December 16, 2015, describing the application submission process and path to final certification of a SAS.⁶ WTB/OET conditionally approved the first wave of SAS Administrators on December 21, 2016,⁷ and are currently reviewing a second round of SAS Administrator proposals.⁸ WTB/OET, in conjunction with the Department of Defense (DoD) and the National Telecommunications and Information Administration (NTIA), have worked throughout the review process with the industry, including members of the Wireless Innovation Forum (WinnForum), the multi-stakeholder group developing industry standards for SAS operation in the 3.5 GHz Band, to facilitate the certification and deployment of SASs.⁹ Recently, WinnForum announced the releases of the first SAS software test harness to aid in testing SASs for conformance to the Commission's rules and a Citizens Broadband Radio Service Devices (CBSD) software test harness.¹⁰ On May 29, 2018, the Institute for Telecommunication Sciences (ITS), NTIA's research and development arm, began verification and validation of the SAS software test harness using the current iteration of several SAS operational models provided by individual SAS Administrators. Conditionally approved first wave SAS Administrators may choose to collaborate with

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for Filing Spectrum Access System (SAS) Administrator(s) and Environmental Sensing Capability (ESC) Operator(s) Applications, Public Notice, 30 FCC Rcd 14170 (WTB/OET 2015) (*SAS/ESC Proposal Public Notice*).

⁴ See *3.5 GHz First Report & Order*, 30 FCC Rcd at 4067, para. 372 (noting that final compliance testing phase can include a public testing period, testing of protections for incumbent systems, and field trials).

⁵ See, e.g., *3.5 GHz First Report & Order*, 30 FCC Rcd 3959, 4067, para. 372; *SAS/ESC Proposal Public Notice*, 30 FCC Rcd 14170; *Wireless Telecommunications Bureau and Office of Engineering and Technology Conditionally Approve Seven Spectrum Access System Administrators for the 3.5 GHz Band*, Public Notice, 31 FCC Rcd 13355 (WTB/OET 2016) (*SAS Conditional Approval Public Notice*) (conditionally approving the following seven SAS Administrators: Amdocs, Inc.; Commscope; CTIA; Federated Wireless; Google; iPosi; Key Bridge; and Sony, Inc. on Dec. 21, 2016).

⁶ See *SAS/ESC Proposal Public Notice*, 30 FCC Rcd 14170.

⁷ *SAS Conditional Approval Public Notice*, 31 FCC Rcd 13355. CTIA later withdrew its proposal. See Letter from Paul Anuszkiewicz et al., Vice President, Spectrum Planning, CTIA, to Marlene H. Dortch, Secretary, FCC (Nov. 20, 2017) (on file in GN Docket No. 15-319).

⁸ 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)*, Public Notice, 32 FCC Rcd 2973 (WTB/OET 2017) (*SAS/ESC Second Wave Proposal Public Notice*).

⁹ See, e.g., Letter from Julius P. Knapp, Chief, OET, FCC, and Donald K. Stockdale, Jr., Chief, WTB, FCC, to Paige R. Atkins, Associate Administrator, Office of Spectrum Management, NTIA (filed Apr. 20, 2018) (on file in GN Docket Nos. 15-319 and 17-258) (requiring SASs to effectively coordinate operations around the Table Mountain Radio Receiving Zone consistent with Section 1.924 of the Commission's rules).

¹⁰ See Letter from Lee Pucker, CEO, WinnForum, to Marlene H. Dortch, Secretary, FCC (filed May 29, 2018) (on file in GN Docket No. 15-319) (announcing release of SAS software test harness); Letter from Lee Pucker, CEO, WinnForum, to Marlene H. Dortch, Secretary, FCC (filed May 24, 2018) (on file in GN Docket No. 15-319) (announcing release of CBSD software test harness). WTB/OET has also acted to support commercial deployment by permitting SASs to implement a protection methodology based on Dynamic Protection Areas (DPAs). *Promoting Investment in the 3550-3700 MHz Band*, Order, DA 18-538 (WTB/OET May 22, 2018), 2018 WL 2387489 (*DPA Waiver Order*).

ITS in the verification and validation of the SAS software test harness and subsequent lab testing of their individual SASs.

4. Lab testing of SASs prior to commercial deployment is part of the testing requirement described in the *3.5 GHz First Report & Order*¹¹ and will help the Commission determine how SASs will perform in a variety of operational scenarios. Once ITS has sufficiently verified and validated the SAS software test harness, it will conduct lab tests of those individual SASs that choose to collaborate with ITS against the test harness. Each SAS Administrator that chooses to collaborate with ITS in the verification and validation and subsequent lab testing process may also choose to submit the report generated during the lab testing of its individual system for WTB/OET's review. Both portions of this collaborative process will help further the Commission's ongoing efforts to ensure rapid deployment of new commercial wireless services in the band. 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 necessary prerequisite to submitting an ICD Proposal or to obtaining final certification.

5. After an individual SAS Administrator completes its lab tests, it may submit the report generated during the testing process to WTB/OET. WTB/OET will review this report, in close consultation with NTIA and DoD, and determine whether it demonstrates that the SAS was able to operate in compliance with the Commission's rules in a controlled lab setting. WTB/OET will then issue one or more Public Notice(s) announcing the SAS Administrators that have successfully met the lab testing requirements.¹² SAS Administrators that have received approval of their ICD Proposals, as described below, may then begin their initial commercial deployments.

III. DISCUSSION

6. *Purpose of ICD.* As stated in the *SAS/ESC Proposal Public Notice*, WTB/OET will assess and test each conditionally approved SAS prior to final certification.¹³ This is intended to ensure that, through robust, rapid testing in a variety of real-world scenarios, the SAS is operating in compliance with Commission rules.¹⁴ ICD will complement the testing done in a controlled laboratory setting by providing a real-world environment to assess certain aspects of compliance with the Commission's rules that cannot be effectively verified under laboratory testing, as described below.

7. *Requirements.* An ICD proposal must describe, in detail, how the SAS Administrator will demonstrate that its system complies with the Commission's rules, particularly those requirements and core functions described in Part 96, subpart F.¹⁵ All proposals must, at a minimum, describe how the SAS will demonstrate the following required functions:

- *User Registration Process.* A description of the process by which users can register with the

¹¹ See *3.5 GHz First Report & Order*, 30 FCC Rcd at 4067, para. 372.

¹² ICD Proposals, as well as the related reports generated during Initial Commercial Deployment from individual SAS Administrators, need not be addressed simultaneously. WTB/OET will address each SAS Administrator's proposal on its individual merits. However, consistent with the earlier instructions in previous Public Notices, no First Wave SAS Administrator will be given priority over another due to early submission of an ICD Proposal. See, e.g., *SAS/ESC Proposal Public Notice*, 30 FCC Rcd at 14171 (proposals to be reviewed concurrently and with equal priority); *SAS/ESC Second Wave Proposal Public Notice*, 32 FCC Rcd at 2974 (same).

¹³ *SAS/ESC Proposal Public Notice*, 30 FCC Rcd at 14171.

¹⁴ See 47 CFR §§ 96.1 *et seq.* and all other applicable rules.

¹⁵ 47 CFR §§ 96.53-96.65. Previously, the Commission and WTB/OET have listed short versions of the core functions of a SAS, such as the maintenance of secure and reliable communication between SASs and CBSDs and the protection of incumbent operations from harmful interference of SAS operations. See, e.g., *3.5 GHz First Report & Order*, 30 FCC Rcd at 4054-55, para. 320; *SAS/ESC Proposal Public Notice*, 30 FCC Rcd at 14173.

- SAS, receive authentication, and obtain user IDs during ICD.¹⁶
- *SAS-CBSD Communications.* The processes that the SAS will follow to communicate with and manage multiple CBSD and/or Domain Proxy (DP) products, including the protocols for SAS-CBSD communications for registration, channel grant, and channel release.¹⁷ Proposals should identify all commercial partners of the SAS Administrator.
 - *Professional Installation.* The process that a certified professional installer (CPI) would follow to register CBSDs/DPs during ICD and an explanation regarding how that professional installation will ensure the SAS can accurately locate devices in compliance with Part 96.¹⁸
 - *SAS-SAS Interoperability.* An explanation regarding how the SAS Administrator will demonstrate its ability to correctly synchronize and exchange information with other SASs and correctly apply information security procedures and incumbent protection methods during ICD.¹⁹ For any SAS Administrator that does not plan to perform ICD with other SASs, it may describe how it will make a similar demonstration by simulating the presence of a separate SAS.
 - *SAS Utilization of Commission Databases.* The processes that a SAS will follow to access, read, and use data directly from FCC databases during ICD, pending database availability.²⁰
 - *DPA Protection.* If a SAS Administrator intends to operate its SAS pursuant to the conditional waiver granted in the *DPA Waiver Order*,²¹ it must provide a declaration that its system will be DPA-enabled and a description of how it will demonstrate its ability to implement notification-based DPA protection using a portal.
 - *Incumbent Protection Implementation.* The processes that a SAS Administrator will use to ensure the correct implementation of all relevant interference protection criteria, including how the SAS's over the air propagation testing will address the protection of Fixed Satellite Service (FSS) earth station sites, federal inland radar test sites, and area-based protections (e.g., Grandfathered Wireless Protection Zones).²² If the SAS Administrator does not expect the operation of one of these types of incumbents within the area it intends to serve during ICD, it should explain how it will make a similar demonstration by simulating the presence of that type of incumbent.
 - *Interference Reports and Mitigation.* A description of the SAS Administrator's proposed real-world interference mitigation demonstration and the performance of its reporting

¹⁶ See, e.g., 47 CFR §§ 96.25(c), 96.33, 96.39, 96.57.

¹⁷ See, e.g., 47 CFR §§ 96.39, 96.55-59. ICD Proposals will not need to cover all test cases performed in ITS lab testing.

¹⁸ See *3.5 GHz First Report & Order*, 30 FCC Rcd at 4028, para. 220 (stressing the importance of accurate CBSD geo-location for coordinating interactions between and among users in the band and for protecting Incumbent Users from harmful interference in compliance with Part 96). WinnForum has developed standards and a program to approve CPIs that successfully complete their training in the relevant Part 96 rules and the associated technical best practices, per the Commission's strong encouragement to multi-stakeholder groups and industry associations in the *3.5 GHz First Report & Order*. See *id.* at 4028-29, paras. 221-222.

¹⁹ See 47 CFR §§ 96.55(a)(2), 96.57, 96.59, 96.63(i).

²⁰ See 47 CFR § 96.55(d), 96.63.

²¹ *DPA Waiver Order*, 2018 WL at 2387492-95 (conditionally waiving 47 CFR §§ 96.7(a); 96.15(a)(2)-(3); 96.15(b)(2)-(3); 96.45(b); 96.53(g); and 96.57(d) to: (1) allow DPA-enabled SASs to authorize both Category A and Category B CBSDs in the 3.5 GHz Band prior to ESC deployment and certification; and (2) allow DPA-enabled SASs to be certified without being tested for compliance with phase one Exclusion Zone requirements in areas where NTIA has published DPAs).

²² See 47 CFR §§ 96.15, 96.17, 96.21, 96.57, 96.59.

requirement.²³ SAS Administrators should include details regarding whether its real-world testing will or will not include incumbents such as FSS licensees or federal inland radar test sites.

8. Each ICD Proposal must include detailed descriptions of the specific testing scenarios that the SAS Administrator intends to run during ICD, which may include operational parameters (e.g., the number, locations, and configuration of CBSDs),²⁴ as well as descriptions of the type of data it intends to generate during ICD, and a discussion of how this data will be provided in its final report. ICD Proposals must also describe the method by which staff involved with the review of ICD Proposals will be provided with access to the SAS and data generated by the SAS during ICD. Each ICD Proposal must also describe the technical data that the SAS Administrator will provide to verify the proper operation of its SAS and discuss how it will provide a means of verifying the technical data generated during this real-world deployment and the subsequent test results. Finally, each ICD Proposal must also include a detailed description of the report that the SAS Administrator plans to produce at the conclusion of its ICD period to demonstrate compliance with the Commission's rules and the requirements set forth in this *Public Notice*.

9. *ICD Proposal Review Process and Timeline.* A complete proposal must include the information requested by this *Public Notice*. ICD Proposals may be submitted on or after July 27, 2018. WTB/OET will review all ICD Proposals submitted on or before September 10, 2018, concurrently and with equal priority. Consistent with our previously established process, WTB/OET will continue to consider proposals submitted after this date, but they may not be considered concurrently with timely filed ICD Proposals. All applicants may amend and make supplemental filings after the initial submission of their proposal, as new information becomes available. WTB/OET will oversee the review of all proposals and any amendments in close consultation with NTIA and DoD, and will request additional information if needed.²⁵ SAS Administrators must comply with all instructions from WTB/OET and must provide any requested information in a timely manner.

10. *ICD Period and Final Review.* As described above, a SAS Administrator may begin ICD only after it has successfully completed lab testing and received approval of its ICD proposal.²⁶ To ensure that ICDs generate sufficient data for testing and assessment, ICDs must take place for a minimum of 30 consecutive days and involve a variety of testing scenarios featuring multiple CBSDs that result in the generation of data upon which the Commission can reasonably predict that the SAS can reliably operate in compliance with the Commission's rules. Once a SAS Administrator completes its ICD, it must submit a report to the Commission, according to its approved proposal format. WTB/OET, in close coordination with NTIA and DoD, will review these reports and will publicly announce any SAS Administrators that successfully complete ICD and receive final certification to operate a SAS on a rolling basis.²⁷

IV. PROCEDURAL REQUIREMENTS

11. SAS Administrators must file proposals, and any supplements with the Commission

²³ See, e.g., 47 CFR §§ 96.53, 96.55.

²⁴ There is no need to provide any complex test scenarios that have been covered during the lab testing process.

²⁵ SAS Administrators may be required to meet additional requirements necessary to address the security concerns of federal agencies.

²⁶ SAS Administrators should note that at some point prior to Initial Commercial Deployment, they may be required to obtain an experimental license via a separate process pursuant to Part 5 of the Commission's rules.

²⁷ *SAS/ESC Proposal Public Notice*, 30 FCC Rcd at 14171.

using the Commission's Electronic Comment Filing System.²⁸ *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998). In order to be considered for ICD at the earliest opportunity, ICD Proposals must be filed on or before September 10, 2018. SAS Administrators may request confidential treatment of information contained in their proposals consistent with Section 0.459 of the Commission's rules.²⁹ All such filings should refer to **GN Docket 15-319**.

12. Questions regarding this *Public Notice* may be directed to Paul Powell, Assistant Division Chief, Wireless Telecommunications Bureau, Mobility Division at (202) 418-1613 or paul.powell@fcc.gov, or Navid Golshahi, Electronics Engineer, Office of Engineering and Technology, Policy and Rules Division at (202) 418-2422 or navid.golshahi@fcc.gov.

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

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²⁸ While we will accept proposals electronically, we are not requesting public comment on the proposals at this time.

²⁹ *See* 47 CFR § 0.459.