



# PUBLIC NOTICE

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## WIRELESS TELECOMMUNICATIONS BUREAU AND OFFICE OF ENGINEERING AND TECHNOLOGY ANNOUNCE THE APPROVAL OF AN ADDITIONAL ENVIRONMENTAL SENSING CAPABILITY FOR THE 3.5 GHZ BAND

### GN Docket No. 15-319

#### I. INTRODUCTION

1. With this *Public Notice*, the Wireless Telecommunications Bureau (WTB) and the Office of Engineering and Technology (OET) (collectively, WTB/OET) of the Federal Communications Commission (Commission or FCC) approves the Environmental Sensing Capability (ESC) of Key Bridge Wireless LLC (Key Bridge) for use in the 3550-3650 MHz portion of the 3550-3700 MHz band (3.5 GHz band).<sup>1</sup> Consistent with the Commission's rules and WTB/OET's earlier instructions, ESCs may only be used in conjunction with a fully certified SAS and within the geographic areas covered by their approved ESC sensor registrations.<sup>2</sup> Once those approvals are in place, ESCs may be used to detect the presence of federal incumbent radar transmissions in the 3550-3650 MHz portion of the 3.5 GHz band within the geographic areas covered by their approved sensor deployments and to communicate that information to one or more certified SASs in accordance with the Commission's rules.<sup>3</sup>

#### II. BACKGROUND

2. In the *2015 Report and Order*, the Commission established that WTB/OET, in close consultation with the Department of Defense (DoD) and the National Telecommunications and Information Administration (NTIA), would oversee the review, certification, and approval of multiple ESCs.<sup>4</sup> As required in the *2015 Report and Order* and as established in the *First Wave Proposal Public Notice*, all ESC operators must complete a two-stage review process prior to final certification.<sup>5</sup> In the

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<sup>1</sup> Key Bridge was among the "first wave" of conditionally approved ESC operators. *Wireless Telecommunications Bureau and Office of Engineering and Technology Conditionally Approve Four Environmental Sensing Capability Operators for the 3.5 GHz Band*, GN Docket No. 15-319, Public Notice, 33 FCC Rcd 1942 (WTB/OET 2018) (*First Wave ESC Conditional Approval Public Notice*).

<sup>2</sup> *Wireless Telecommunications Bureau and Office of Engineering and Technology Establish Procedure for Registering Environmental Sensing Capability Sensors*, GN Docket No. 15-319, Public Notice, 33 FCC Rcd 10016 (WTB/OET 2018) (*ESC Sensor Registration Public Notice*).

<sup>3</sup> See 47 CFR § 96.67.

<sup>4</sup> See generally *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 at 4064-66, paras. 359-366 and at 4070-71, para. 386 (*2015 Report and Order* and *2015 FNPRM*, respectively); see also 47 CFR §§ 0.241(j), 0.331(f).

<sup>5</sup> 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)*

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first stage, prospective ESC operators must submit a proposal describing their SAS and/or ESC. Once the Commission has reviewed and conditionally approved these proposals, prospective ESC operators may submit their ESCs for the second stage of the certification process, which involves laboratory testing and sensor registration.<sup>6</sup> Laboratory testing is intended to ensure that all aspects of the ESC operate properly and in compliance with the Commission's rules. The second stage of the review process also includes sensor registration and evaluation of an ESC operator's coverage plan for each geographic area of operation. An ESC operator must submit proposed coverage plans describing the given geographic regions and information pertaining to any dynamic protection areas (DPAs) covered by its sensor deployment, and it must secure approval of these coverage plans prior to operating an ESC within the covered geographic area.<sup>7</sup>

3. Consistent with the process described above, WTB/OET, on December 16, 2015, released a Public Notice that invited proposals from prospective ESC operators and described the path to final certification of an ESC.<sup>8</sup> The "first wave" of proposals were due May 16, 2016, and as of that date, six parties submitted proposals to act as an ESC operator.<sup>9</sup> WTB/OET conditionally approved four of the first wave of ESC operator proposals, including Key Bridge, on February 21, 2018.<sup>10</sup> In November 2017 and June 2018, NTIA released technical memoranda that describe the procedures for laboratory testing of ESC sensors.<sup>11</sup>

4. The Institute for Telecommunication Sciences (ITS), NTIA's research and development arm, began testing Key Bridge's ESC in November 2019.<sup>12</sup> After ITS completed its laboratory testing, it prepared a final ESC laboratory test report, which Key Bridge submitted for the Commission's review on January 27, 2020.<sup>13</sup> In addition, Key Bridge submitted a number of documents supplementing its ESC

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*Operator(s) Applications*, GN Docket No. 15-319, Public Notice, 30 FCC Rcd 14170, 14174-77 (WTB/OET 2015) (*First Wave Proposal Public Notice*).

<sup>6</sup> See *2015 Report and 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); see also *First Wave Proposal Public Notice*, 30 FCC Rcd at 14171.

<sup>7</sup> *ESC Sensor Registration Public Notice*. DPAs are pre-defined protection areas that extend beyond the coastline or that enclose a protected terrestrial radar facility, which may be activated or deactivated as necessary to protect DoD radar systems. *Promoting Investment in the 3550-3700 MHz Band*, GN Docket No. 17-258, Order, 33 FCC Rcd 4987 (WTB/OET 2018).

<sup>8</sup> See *First Wave Proposal Public Notice*. The Public Notice also sets forth the procedure to submit SAS Administrator proposals.

<sup>9</sup> *First Wave ESC Conditional Approval Public Notice*, 33 FCC Rcd at 1943, para. 5.

<sup>10</sup> *Id.*

<sup>11</sup> Sanders, F.H., J.E. Carroll, G.A. Sanders, J.S. Devereux and E.F. Drocella, NTIA Technical Memorandum TR-18-527 Procedures for Laboratory Testing of Environmental Sensing Capability Sensor Devices (2017), <https://www.its.bldrdoc.gov/publications/3184.aspx> (NTIA ESC Testing Procedures); Sanders, F.H., R.L. Sole, G.A. Sanders and J.E. Carroll, NTIA Technical Memorandum TR-18-534 Further Procedures for Laboratory Testing of Environmental Sensing Capability Sensor Devices (2018), <https://www.its.bldrdoc.gov/publications/3207.aspx>. While these documents are not comprehensive of all publicly available guidance addressing ESC design and testing issues, they provide an accurate description of the testing procedures that were used to test ESCs prior to final certification. See also Frank H. Sanders, NTIA Technical Memorandum TR-18-526 Distinction Between Radar Declaration and Pulse Burst Detection in 3.5 GHz Spectrum Sharing Systems (2017), <https://www.its.bldrdoc.gov/publications/3182.aspx>.

<sup>12</sup> Letter from Timothy L. Bransford, Counsel to Key Bridge Wireless LLC, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 15-319 (filed Jan. 27, 2020) at 1.

<sup>13</sup> See Performance Certification Results for a 3.5 GHz Environmental Sensing Capability (ESC) Sensor Provided for Testing by Key Bridge Wireless LLC, GN Docket No. 15-319 (filed Jan. 27, 2020) (confidential treatment

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proposal.<sup>14</sup> In its Fourth Supplement, filed on May 18, 2020, Key Bridge explained that ITS laboratory testing had been conducted on version 1.0.0 of the company's ESC sensor software.<sup>15</sup> Subsequently, Key Bridge integrated and tested a new version of its sensor software, version 1.1.0, which "produces a material improvement in the sensor's ability to discriminate and tolerate background noise."<sup>16</sup> Key Bridge stated, however, that it has been unable to submit its ESC running software version 1.1.0 for retesting due to access restrictions extant at the ITS laboratory on the Department of Commerce campus in Boulder, Colorado since mid-March 2020.<sup>17</sup> In the interim, Key Bridge stated that it had "established a near exact replica of the ITS testing capability in [its] own laboratory" and under this testing capability its sensor "received a perfect 100% incumbent detection score."<sup>18</sup> WTB/OET, in coordination with NTIA and DoD, have reviewed the Key Bridge test report and supplemental documentation in detail. Based on the information contained therein, we approve Key Bridge's ESC for commercial operation subject to the ongoing compliance obligations in our rules and set forth herein.

### III. DISCUSSION

5. Based on our review of the Key Bridge ESC proposal, laboratory test report, and supplemental documentation, WTB/OET certifies Key Bridge's ESC for commercial operation subject to the ongoing compliance obligations in our rules and as set forth below. As required by the *First Wave Proposal Public Notice*, Key Bridge has demonstrated the technical capability to operate its ESC properly and in compliance with the Commission's rules. Key Bridge may operate its ESC in areas covered by registered and approved ESC sensors<sup>19</sup> subject to the following compliance obligations, which remain generally consistent with those described in the *First Wave ESC Conditional Approval Public Notice*:<sup>20</sup>

- As early as practicable, but no later than December 31, 2020, Key Bridge must resubmit its ESC running software version 1.1.0 to ITS for retesting. Following completion of its ESC retesting, Key Bridge must submit a report to the Commission in GN Docket No. 15-319 detailing the results of such retesting. If Key Bridge's ESC does not pass the required tests, it must immediately cease operation of its ESC and all associated sensors.
- Key Bridge must continue to comply with all current and future Commission rules, as well as all instructions issued by WTB/OET consistent with Sections 0.241(j) and 0.331(f) of the Commission's rules<sup>21</sup> and procedures applicable to ESCs.<sup>22</sup> Key Bridge also must comply

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requested). Key Bridge filed a preliminary test report summary on October 30, 2018. Supplement to the Key Bridge Proposals to Administer a [sic] Environmental Sensing Capability, GN Docket No. 15-319 (filed Oct. 30, 2018).

<sup>14</sup> Second Supplement to the Key Bridge Proposal to Administer an Environmental Sensing Capability, GN Docket No. 15-319 (filed Feb. 4, 2020); Third Supplement to the Key Bridge Proposal to Administer an Environmental Sensing Capability, GN Docket No. 15-319 (filed April 15, 2020); Fourth Supplement to the Key Bridge Proposal to Administer an Environmental Sensing Capability, GN Docket No. 15-319 (filed May 18, 2020) (Fourth Supplement).

<sup>15</sup> Fourth Supplement at 4.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*

<sup>18</sup> *Id.* at 4-5.

<sup>19</sup> *ESC Sensor Registration Public Notice*.

<sup>20</sup> See *First Wave ESC Conditional Approval Public Notice*, 33 FCC Rcd at 1944, para. 6.

<sup>21</sup> See 47 CFR §§ 0.241(j), 0.1331(f) (delegating authority to WTB/OET to oversee the ESC approval process and facilitate the testing and development of multiple ESC operators).

<sup>22</sup> See, e.g., 47 CFR § 96.67.

- with requests for additional information from the Commission or WTB/OET.
- If Key Bridge relies on third party or proprietary specifications or standards for its proposed ESC, it must update its filings to identify clearly any new or altered standards relied upon after the ESC is approved for commercial operation. All such specifications and standards will be reviewed by WTB/OET to ensure consistency with the Commission's rules.<sup>23</sup>
  - If Key Bridge makes substantive changes to its system (for example, if Key Bridge proposes to use a new RF sensor or sensor configuration that differs from that previously certified or makes alterations to cover a new or modified DPA), Key Bridge must supplement or amend its filings in GN Docket No. 15-319 to reflect these changes. If WTB/OET determine that additional testing is needed to verify that the modified ESC complies with applicable Commission rules and guidance, Key Bridge must submit its system for testing before using the new or modified system features. Upon request, Key Bridge must provide external testing interfaces to enable WTB/OET, in collaboration with NTIA and DoD, to verify that the proposed modifications comply with the relevant rules as specified by the Commission.

6. Key Bridge may provide commercial service provided that: (1) it is able to communicate with at least one SAS that has been approved for commercial deployment by the Commission; and (2) it operates only in geographic areas covered by the specific sensors described in an approved coverage plan.<sup>24</sup> Operation of any ESC in a given geographic area is authorized only if the precise technical specifications of that site's deployment are identical to that submitted in the ESC sensor registration plan submitted to and approved by WTB/OET.

7. The failure of Key Bridge to meet any of the compliance obligations on an ongoing basis may result in revocation or suspension of its certification. ESC operators are permitted to update their filings at any time in GN Docket No. 15-319 and must provide updates on an ongoing basis if any substantive changes are made to their ESC. Questions regarding this Public Notice may be directed to Paul Powell, Assistant Division Chief, Mobility Division, Wireless Telecommunications Bureau at (202) 418-1613 or paul.powell@fcc.gov, or Navid Golshahi, Electronics Engineer, Policy and Rules Division, Office of Engineering and Technology, at (202) 418-2422 or navid.golshahi@fcc.gov.

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

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<sup>23</sup> To the extent that the ESC operator later incorporates any future WinnForum standards or any revisions to existing WinnForum standards into its system, such standards and revisions must also be consistent with Commission rules.

<sup>24</sup> WTB/OET will provide approval of ESC sensor registration plans, including the coverage plan, via notice filed to in GN Docket No. 15-319; this enables commercial deployment for an ESC operator with a certified ESC system, like Key Bridge. The sensor deployment plans will also be filed in the docket upon approval by WTB/OET. *ESC Sensor Registration Public Notice*, 33 FCC Rcd at 10016.