



Federal Communications Commission  
Washington, D.C. 20554

July 9, 2021

DA 21-815

Terry G. Mahn  
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Washington, D.C. 20024

Subject: Request by Vayyar Imaging Ltd. for Waiver of 47 CFR § 15.255 rules  
ET Docket No. 20-15

Dear Mr. Mahn:

This is in regard to your Request for waiver of Section 15.255 of the Commission's rules filed on behalf of your client, Vayyar Imaging Ltd. (Vayyar).

In this Order, we grant the portion of Vayyar's waiver request that has remained pending following our April 14, 2021 Order.<sup>1</sup> Vayyar originally sought a waiver of Section 15.255 of the Commission's rules so that it could produce and market its V60G short-range interactive motion technology in a broad range of interactive products, including in devices that could be used onboard aircraft.<sup>2</sup> It subsequently filed a Modified Waiver Request to narrow the scope of radar applications to only include "in-home and medical imaging sensors" and "in-vehicle safety applications."<sup>3</sup> Vayyar has designed the V60G radar to operate under the same technical parameters as the Google Soli sensor for which the Commission has previously granted a waiver.<sup>4</sup> In granting a waiver for Vayyar to permit the use of its V60G radars in vehicles, we made no decision regarding Vayyar's request to operate its radars in home and medical settings.<sup>5</sup> We now address this portion of Vayyar's request.

We are authorized to grant a waiver under Section 1.3 of the Commission's rules if the petitioner demonstrates good cause for such action.<sup>6</sup> Good cause, in turn, may be found and a waiver granted "where particular facts would make strict compliance inconsistent with the public interest."<sup>7</sup> To satisfy this public interest requirement, the waiver cannot undermine the purposes of the rule, and there must be a

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<sup>1</sup> *Vayyar Imaging Ltd. Request for Waiver of Section 15.255(c)(3) of the Commission's Rules for Radars used for Interactive Motion Sensing in the frequency band 57-64 GHz*, Order, DA 21-407 (OET 2021) (2021 Waiver Order).

<sup>2</sup> *Vayyar Imaging Ltd. Request for Waiver of Section 15.255(c)(3) of the Commission's Rules for Radars used for Interactive Motion Sensing in the frequency band 57-64 GHz* (filed Nov. 13, 2019) (*Vayyar Request*).

<sup>3</sup> *Vayyar Imaging Ltd. Modification of Request for Limited Waiver*, filed May 5, 2020 in ET Docket No. 20-15 (*Vayyar Modified Request*).

<sup>4</sup> *Id.* at 1-2.

<sup>5</sup> See 2021 Waiver Order at paras. 52 and 54.

<sup>6</sup> 47 CFR § 1.3; see also *ICO Global Communications (Holdings) Limited v. FCC*, 428 F.3d 264 (D.C. Cir. 2005); *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990); *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969).

<sup>7</sup> *Northeast Cellular*, 897 F.2d at 1166; see also *ICO Global Communications*, 428 F.3d at 269 (quoting *Northeast Cellular*); *WAIT Radio*, 418 F.2d at 1157-59.

stronger public interest benefit in granting the waiver than in applying the rule.<sup>8</sup> We find that this standard has been met.

As we discussed in the 2021 Waiver Order, the operational policies and technical parameters associated with Section 15.255 were designed to ensure that users of devices operating under that rule part (including mobile users engaged in short-range interactive motion sensing) do not cause harmful interference.<sup>9</sup> For purposes of this analysis, we are evaluating the use of Vayyar's V60G radar in devices used indoors for medical and personal health purposes.<sup>10</sup> We had previously determined that the use cases we permitted in the 2018 waiver that we granted to Google<sup>11</sup> would not materially affect the 60 GHz operating environment so as to introduce the risk of harmful interference being caused to licensed and authorized users in the band, and Google recently informed us that it has received no reports of interference from the operation of products containing its Soli chipsets.<sup>12</sup> The V60G radar, when used for the specific types of applications that Vayyar has described, permits us to reach the same conclusion here. The power level under which Vayyar requests that its device be permitted to operate will be the same as those we previously permitted in the Google waiver. And, as with Google's devices, Vayyar's radars will be used in specific environments that are characterized by a short distance between the radar and what it is sensing. Finally, while we found that the Google device could be carried by a person and used indoors, outdoors, and on board commercial aircraft without being expected to cause harmful interference, the V60G radars subject to this waiver will be used in a much narrower setting: they will be deployed exclusively indoors and Vayyar must comply with rule's limits on airborne operation.<sup>13</sup> We conclude that, because it will not increase the potential for harmful interference to authorized users in the band, waiver of Section 15.255 will not undermine the purpose of the rule.

We previously found that the V60G radar can be configured to comply with the same technical conditions imposed in the Google Waiver, based on Vayyar's technical description, and that our existing equipment authorization procedures are sufficient to ensure that this happens.<sup>14</sup> As part of that analysis, we rejected as unnecessary the request that Joe Gytrock had filed in the docket asking us to impose specific technical conditions as part of the waiver.<sup>15</sup> Gytrock does not include any information that would give us reason to question this aspect of our prior analysis, and will not revisit our conclusion with respect to the Gytrock filing here.

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<sup>8</sup> See, e.g., *WAIT Radio*, 418 F.2d at 1157 (stating that even though the overall objectives of a general rule have been adjudged to be in the public interest, it is possible that application of the rule to a specific case may not serve the public interest if an applicant's proposal does not undermine the public interest policy served by the rule); *Northeast Cellular*, 897 F.2d at 1166 (stating that in granting a waiver, an agency must explain why deviation from the general rule better serves the public interest than would strict adherence to the rule.)

<sup>9</sup> 2021 Waiver Order at para. 39.

<sup>10</sup> *Vayyar Modified Request* at 4-6 (describing how Vayyar intends to deploy the V60G radar to provide in-home applications that measure physiological characteristics such as gait, breathing, heart rate, and sleep, to facilitate the detection of potentially life-threatening events, such as falls, which may benefit the elderly and infants in situations of distress; as well as in medical imaging applications). See also *Vayyar Request*.

<sup>11</sup> *Google LLC Request for Waiver of Section 15.255(c)(3) of the Commission's Rules Applicable to Radars used for Short-Range Interactive Motion Sensing in the 57-64 GHz Frequency Band*, ET Docket No. 18-70, Order, 33 FCC Rcd 12542 (2018) (Google Waiver).

<sup>12</sup> Letter from Megan Anne Stull, Google LLC to Marlene Dortch, FCC, ET Docket No. 20-15 at 3 (filed May 17, 2021).

<sup>13</sup> Google had sought and received a limited waiver of Section 15.255(b) that effectively permits its devices to be operated aboard commercial aircraft.

<sup>14</sup> 2021 Waiver Order at para. 44 (citing Vayyar Apr. 28, 2020 *ex parte* filing in ET Docket No. 20-15 at. at 5-7).

<sup>15</sup> *Id.* See filings by Joe Gytrock filed Mar. 10, Jun. 2, and Aug. 3, 2020; and responses of Vayyar filed Mar. 19 and Jun. 17, 2020 in ET Docket No. 20-15. See also, Vayyar's Apr. 28, 2020 *ex parte* filing in ET Docket No. 20-15 titled "Comparison of V60G and Soli Interference Footprints."

We also find that the second element of the waiver standard has been met; there is a stronger public interest benefit in granting the waiver than in applying the rule. Granting the waiver will provide substantial public benefit in improving personal safety and wellness in geriatric and other types of healthcare applications, which in turn will speed the deployment of potentially life-saving devices using the radar technology that Vayyar has developed. In the Google Waiver, we allowed Google to operate its device at a higher power level after finding that the power levels in the existing rules were too restrictive to adequately enable its device functions, resulting in missed motions and fewer effective interactions.<sup>16</sup> Absent a waiver, Google likely would not have been able to use interactive motion sensing in the 60 GHz band to successfully aid people with mobility, speech, or tactile impairments. Similar special circumstances exist here. The V60G promises to be a uniquely beneficial tool for monitoring elderly and immune-compromised individuals, residents of assisted living facilities, and those who need in-home monitoring.<sup>17</sup> We believe that, without the higher power levels associated with the waiver, it is highly likely that the devices Vayyar produces would be unable to transmit with large enough bandwidths to provide sufficient resolution to achieve the compelling health-related objectives it sets forth in its request.

Vayyar further expresses the desire to certify the V60G to be incorporated as a module in host equipment, which invokes the modular transmitter approval provisions of section 15.212.<sup>18</sup> The modular transmitter approval provision allows a grantee to certify a transmitter module to market it to any third-party host equipment integrator. Given that the instant waiver relies on an analysis of a specific use case and radar installation, we are not willing to allow an unidentifiable number of third parties to incorporate radars without any effective control on the circumstances and purposes for which they are installed. Instead, we will permit limited modular transmitter approval to Vayyar when operating its V60G under the provisions of this waiver, restricted to in-home personal safety monitoring and medical imaging host equipment under the following conditions: (a) the operator's manual shall provide clear and complete installation instructions that explain the applicable restrictions and a copy of these instructions shall be submitted along with the application for equipment authorization; (b) the certification grant conditions shall clearly state that the module is limited to this type of installation; and (c) the grantee shall provide an attestation letter adhering to the limited conditions under which the module will be marketed and sold to ensure that it is installed according to the grant conditions.

Developments over the course of our consideration of Vayyar's waiver request prompt us to include an additional waiver condition that was not part of the Google Waiver or the 2021 Waiver Order. This additional condition is intended to facilitate coexistence between different unlicensed device users operating in the 60 GHz band in the short term, while not precluding a more thorough consideration of this matter in the context of a rulemaking proceeding or other Commission process. As background, parties representing unlicensed communications device users have advised the Commission that they have been working with companies seeking to operate unlicensed radars to find ways to allow different unlicensed users to effectively share use of the spectrum resource. Although these parties continue their discussions, representatives for unlicensed communication device users have expressed concern that the duty cycle conditions that we have included in the waivers to date will unacceptably raise the risk of inhibiting communications applications if they continue to be applied to a wider set of radar devices by way of subsequent waivers.<sup>19</sup> To address this concern, these unlicensed communication device parties

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<sup>16</sup> Google Waiver at para. 3.

<sup>17</sup> *Vayyar Modified Request* at 8.

<sup>18</sup> *Vayyar Modified Request* at 2. See 47 CFR § 15.212.

<sup>19</sup> Letter from Alan Norman, Director, Public Policy, Facebook, *et. al.* to Marlene Dortch, Secretary, FCC, filed May 10, 2021 in ET Docket 20-15 at 2-3 (asserting that the duty cycle limitation that we included as a condition on previous waivers introduced a 'loophole' that we should close). The duty cycle language we have been using was based a record of extensive consultation between Google and Facebook and other stakeholders and a mutual

have suggested modifying the duty cycle restriction adopted in any future waivers to read that “any radar off-time period between two successive radar pulses that is less than 2 ms shall be considered ‘on time’ for purposes of computing the duty cycle.”<sup>20</sup> Moreover, a draft Notice of Proposed Rulemaking that considers unlicensed radar use under Section 15.255 and that has been circulated for the Commissioners’ consideration and potential adoption at the FCC’s July 2021 Open Meeting asks questions about how duty cycle should be regulated for 60 GHz radars.<sup>21</sup> Based on a recent filing from Google, we fully expect this issue will be of continuing interest.<sup>22</sup> For purposes of this waiver, we opt to limit Vayyar’s operations under the waiver to account for the concerns raised by the unlicensed communications device parties. Specifically, we will require, as part of this waiver, that any radar off-time between two successive radar pulses that is less than 2 ms shall be considered “on time” for purposes of computing the duty cycle. The condition is intended to prevent unlicensed radar devices from operating with such a small period of time between transmissions that they effectively preclude the ability of unlicensed communication device users to access the band. This could happen if the radars are perceived by these other unlicensed users as engaging in a singular continuous transmission. This waiver condition is not intended to predetermine the outcome of any ongoing or future rulemaking. On the contrary, by adopting these conservative operating conditions, this order is intended to enable Vayyar to enter the marketplace, increasing competition and innovation in 60 GHz radar, while preserving the question of a permanent framework for a future Commission action. By imposing this waiver condition, we recognize the recently expressed concerns and are able to promote a full and open discussion of these matters as part of any associated rulemaking proceeding that the Commission may conduct.

The draft Notice of Proposed Rulemaking discussed above addresses unlicensed radar use under Section 15.255. As with the prior waiver grants, we recognize that there are strong benefits in acting on the waiver request at this time regardless of any potential rulemaking activity. Here, the narrow relief we are providing will permit the deployment of innovative radar applications to provide potentially life-saving applications — in this case, radars used for medical and personal health purposes — without posing interference threats to authorized users in the band. We condition the grant of this waiver on the outcome of any changes to our rules that may be adopted in a future rulemaking proceeding. We intend to revisit this waiver, as well as other 60 GHz band waivers that have been granted to date, if and when the Commission might revise its rules. We further emphasize that grant of this waiver and the conditions we associate with it are not intended to predetermine the outcome of this or any potential future rulemaking.

Finally, operation pursuant to the waiver is expressly conditioned on compliance with the Commission’s rules except as waived, and where rules are modified as a result of any future Commission rulemaking these operations will be subject to those modified rules. To ensure that harmful interference to authorized operations and other spectrum users will not occur, we impose explicit conditions on the installation, operation, and certification of the V60G under this waiver, as follows:

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agreement as to what would be appropriate for the FCC to include in the waiver that was ultimately granted to Google in 2018. See Letter from Megan Anne Stull, Google LLC, and Pankaj Venugopal, Facebook, Inc., to Marlene Dortch, FCC, ET Docket No. 18-70 (filed Sept. 7, 2018).

<sup>20</sup> Letter from Alan Norman, Director, Public Policy, Facebook, *et. al.* to Marlene Dortch, Secretary, FCC, filed May 10, 2021 in ET Docket 20-15 at 3.

<sup>21</sup> *FCC Announces Tentative Agenda for July Open Meeting*, News Release, rel. June 22, 2021. Further information about the draft document, <https://www.fcc.gov/document/enabling-state-art-radar-sensing-technologies-60-ghz-band>, was posted on the Commission’s July Open Meeting webpage. OET opened a new docket, 21-264 to collect comments associated with this item.

<sup>22</sup> See Letter From Megan Anna Stull, Senior Counsel, Google, LLC to Marlene Dortch, Secretary, FCC, in ET Docket No. 20-15 (filed May 17, 2021).

- The V60G shall be certified for compliance with all the technical specifications applicable to operation under 47 CFR Part 15, with the exception of the following provisions in 47 CFR § 15.255(c)(3), which are waived to allow the device to operate as an in-home personal safety and medical imaging equipment in the 57-64 GHz band at a maximum +13 dBm EIRP, +10 dBm transmitter conducted output power, and +13 dBm/MHz power spectral density.<sup>23</sup>
- The V60G device shall operate with a maximum transmit duty cycle of 10% in any 33 milliseconds (ms) intervals (i.e., the device will not transmit longer than a total of 3.3 ms in any 33 ms time period).
- Any radar off-time between two successive radar pulses that is less than 2 ms shall be considered “on time” for purposes of computing the duty cycle.
- Operations under this waiver may not be used to transmit data.
- Limited modular transmitter approval of the V60G under 47 CFR § 15.212 shall also comply with the following conditions: (a) the operator’s manual shall provide clear and complete installation instructions that explain the applicable restrictions and a copy of these instructions shall be submitted along with the application for equipment authorization; (b) the certification grant conditions shall clearly state that the module is limited to in-home personal safety and medical imaging equipment; and (c) the grantee shall provide an attestation letter adhering to the limited conditions under which the module will be marketed and sold to ensure that host integrators install the device according to the specified grant conditions.
- The grantee of the V60G shall inform purchasers of the device that the radar may only be operated on a non-interference basis to other authorized services in the 57-64 GHz frequency band, and operators of the device will be required to mitigate any instances of harmful interference that may occur. This information shall be included in the device’s or host equipment’s Owner’s Manual.
- This waiver and its conditions shall apply only to V60G radars used indoors for in-home health-related monitoring and medical imaging applications as described herein and are not to be considered to apply generally to any other field disturbance sensors that will operate in different environments where further analysis would be necessary to assess the potential for impact to other authorized users.
- The waiver conditions granted herein are not transferable to any third party via §2.933 or any other means of technology transfer.
- The waiver is explicitly conditioned on any changes to our rules that may be adopted in a future rulemaking proceeding in accordance with the terms of this order.

Accordingly, pursuant to authority in Sections 0.31, 0.241, and 1.3 of the Commission’s rules, 47 CFR §§ 0.21, 0.241, and 1.3, and Sections 4(i), 302, 303(e), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 302, 303(e), and 303(r), IT IS ORDERED that the Request for Waiver filed by Vayyar Imaging Ltd. IS GRANTED IN PART, consistent with the terms set forth above. This action is effective immediately. IT IS FURTHER ORDERED that, if no petitions for

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<sup>23</sup> A copy of this letter shall be provided with the application for certification of the device.

reconsideration or applications for review are timely filed in ET Docket No 20-15, the docket SHALL BE TERMINATED and CLOSED.

FEDERAL COMMUNICATIONS COMMISSION

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