

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Request by LoJack Corporation for a Partial	)	WT Docket No. 06-142
Waiver of Section 90.20(e)(6) and Part 2	)	
of the Commission's Rules	)	

**DECLARATORY RULING AND ORDER**

**Adopted: September 14, 2011**

**Released: September 14, 2011**

By the Chief, Public Safety and Homeland Security Bureau:

**I. INTRODUCTION**

1. The LoJack Corporation (LoJack) filed a request for partial waiver<sup>1</sup> of Sections 90.20(e)(6) and 2.106 of the Commission's rules,<sup>2</sup> which provide for operation of Stolen Vehicle Recovery Systems (SVRS) on frequency 173.075 MHz. In 2008, the Commission amended Section 90.20(e)(6) to permit, *inter alia*, the tracking of missing persons and individuals at risk using SVRS technology.<sup>3</sup> To enhance the ability of the law enforcement and the public safety community to perform their duties in this context, LoJack seeks a partial waiver: (i) for "the ability to activate the frequency [*i.e.*, transmit activation signals on the frequency] using a portable device as opposed to a base station," and (ii) "to allow any Public Safety Pool eligible, not just police entities, to activate the frequency using a portable device."<sup>4</sup> LoJack also seeks to employ a duty cycle of 1000 milliseconds every 8 seconds for activation signals.<sup>5</sup> By this Declaratory Ruling and Order, we grant the request for partial waiver as conditioned herein.

**II. BACKGROUND**

2. In 1989, the Commission designated frequency 173.075 MHz for use by SVRS licensees<sup>6</sup> on a shared basis with the Federal Government.<sup>7</sup> LoJack has developed and operates a stolen vehicle

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<sup>1</sup> See Request for Partial Waiver filed by the LoJack Corporation on June 30, 2010 (Waiver Request).

<sup>2</sup> 47 C.F.R. §§ 90.20(e)(6), 2.106.

<sup>3</sup> See Amendment of Section 90.20(e)(6) of the Commission's Rules, WT Docket No. 06-142, RM-11135, *Report and Order*, 23 FCC Rcd 12601 (2008) (*New Services Report and Order*).

<sup>4</sup> See Waiver Request at 1.

<sup>5</sup> See Amendment to Request for Partial Waiver filed by the LoJack Corporation on July 28, 2010 (Amendment).

<sup>6</sup> See Amendment of Parts 2 and 90 of the Commission's Rules to Provide for Stolen Vehicle Recovery Systems, Gen. Docket No. 88-566, *Report and Order*, 4 FCC Rcd 7558, 7558 ¶ 1 (1989).

<sup>7</sup> The 162.0125-173.2 MHz band is allocated on a primary basis to the Federal Government for fixed and mobile operations. Non-Federal Government SVRS operations may also be authorized on frequency 173.075 MHz on a primary basis. See 47 C.F.R. § 2.106 n. US312.

recovery network in cooperation with state and local police departments across the nation.<sup>8</sup> The Commission authorizes SVRS operations on frequency 173.075 MHz on a shared, non-exclusive basis.<sup>9</sup>

3. Under the traditional stolen vehicle recovery procedure, LoJack's network operates as follows: LoJack and the licensed law enforcement agency install in each LoJack-registered vehicle a vehicle location unit (VLU) that remains dormant until the owner reports a vehicle theft.<sup>10</sup> Once police receive a stolen vehicle report, the officials send an electronic message to a central law enforcement computer, which causes a network of radio base stations to broadcast an activation message on frequency 173.075 MHz that instructs the particular VLU to begin transmitting a brief "tracking" message, also on frequency 173.075 MHz.<sup>11</sup> Vehicle tracking units located in law enforcement vehicles receive the VLU tracking message, which contains a unique reply code.<sup>12</sup> Police identify the vehicle make, model, and registration from the reply code and then track the stolen vehicle by homing in on the VLU, which continues to send tracking messages, using vehicle tracking units.<sup>13</sup> In 2008, the Commission extended the uplink mobile duty cycle to permit enhanced tracking capability.<sup>14</sup> Specifically, the longer uplink duty cycle allows newer VLUs with global positioning system (GPS) technology to transmit GPS coordinates in the tracking message, which provides police the exact latitude and longitude coordinates of the stolen vehicle.<sup>15</sup>

4. In 2008, the Commission also expanded the scope of the SVRS rules, which previously had allowed only for the tracking of stolen vehicles, to also allow for the tracking of missing persons and individuals at risk, as well as lost or stolen cargo and hazardous materials.<sup>16</sup> As we describe in more detail below, the purpose of the instant Waiver Request is to further facilitate SVRS operations, particularly regarding the tracking of missing persons and individuals at risk, through new technology and an expanded pool of eligible SVRS users. LoJack states that it "is developing a system to track persons at risk, such as Alzheimer's patients, nursing home residents with dementia, and children with disabilities, using in part the 173.075 MHz frequency."<sup>17</sup> According to LoJack, "persons at risk would wear wristwatch-like devices" that have a function similar to VLUs.<sup>18</sup> When authorized parties or entities activate these wearable devices, the wearers of the devices "could be tracked by the same tracker device currently installed in police vehicles that is now used to track stolen vehicles."<sup>19</sup>

5. In the first component of the request, LoJack asks the Commission to allow activation using portable or mobile devices. LoJack "is developing a Portable Activation Tracker (PAT), a handheld

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<sup>8</sup> See *New Services Report and Order*, 23 FCC Rcd at 12603 ¶ 3.

<sup>9</sup> See 47 C.F.R. § 90.20(e)(6).

<sup>10</sup> See *New Services Report and Order*, 23 FCC Rcd at 12603 ¶ 4. VLUs are mobile units.

<sup>11</sup> *Id.* at 12603 ¶ 4. Base stations and VLUs both transmit on frequency 173.075 MHz.

<sup>12</sup> See *New Services Report and Order*, 23 FCC Rcd at 12603 ¶ 4.

<sup>13</sup> See *id.*

<sup>14</sup> See *id.* at 12613-14 ¶¶ 29-30.

<sup>15</sup> See *id.*

<sup>16</sup> See *id.* at 12618-19 ¶¶ 46-47.

<sup>17</sup> Waiver Request at 2.

<sup>18</sup> *Id.*

<sup>19</sup> *Id.*

portable device that would be used to activate and track the wristwatch mobile devices over limited geographical areas.”<sup>20</sup> LoJack contends that “[t]racking persons at risk differs from tracking vehicles in several ways.”<sup>21</sup> LoJack argues that “[m]uch more is at stake if missing persons are not found quickly.”<sup>22</sup> For example, LoJack states that studies show that “missing Alzheimer’s patients not found within 24 hours have a 45% risk of death.”<sup>23</sup> LoJack also notes that “Alzheimer’s patients tend to move away from people.”<sup>24</sup> For example, LoJack contends that “missing persons can hide or get lost in the woods and other areas where police vehicles cannot go.”<sup>25</sup> Thus, LoJack argues that “it is important to have greater flexibility and accuracy in a tracking system designed to track missing persons.”<sup>26</sup> LoJack posits that “[t]he PAT could be used when a base station could not be used to activate the tracker worn by the missing person, whether because the base stations have been optimized to cover streets and highways, or there is simply no base station coverage, or tracking must be done on foot in wooded areas.”<sup>27</sup> The Commission noted in the *New Services Order* that LoJack has deployed its vehicle location system in 26 states and the District of Columbia,<sup>28</sup> which leaves nearly half of the states without base station coverage and provides an opportunity for PAT usage.

6. In the second component of the request, LoJack asks the Commission to allow any Public Safety Pool eligible, not just police entities, to transmit an activation message using a portable device. LoJack states that in many jurisdictions, entities “such as fire departments and search and rescue teams, are responsible for searching for missing individuals.”<sup>29</sup> LoJack argues that “even when a missing persons report is filed with the police, another public safety entity may be assigned to look for the individual.”<sup>30</sup> Section 90.20(e)(6)(vii) states in part that “[a]ny entity eligible to hold authorizations in the Public Safety Pool in accordance with §§ 90.20(a) and 90.111 of this chapter is authorized by this rule to operate mobile transmitters on this frequency.”<sup>31</sup> LoJack “interprets Section 90.20(e)(6)(vii) as allowing for this use, as it provides that any Public Safety Pool eligible can operate a mobile transmitter.”<sup>32</sup> However, Section 2.106, footnote US312 states that “[t]he frequency 173.075 MHz may also be authorized on a primary basis to non-Federal stations in the Public Safety Radio Pool, limited to police licensees, for stolen vehicle recovery systems (SVRS).”<sup>33</sup>

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<sup>20</sup> *Id.*

<sup>21</sup> *Id.*

<sup>22</sup> *Id.*

<sup>23</sup> *Id.*

<sup>24</sup> *Id.*

<sup>25</sup> *Id.*

<sup>26</sup> *Id.*

<sup>27</sup> *Id.* at 3.

<sup>28</sup> See *New Services Report and Order*, 23 FCC Rcd at 12603 ¶ 3.

<sup>29</sup> Waiver Request at 2.

<sup>30</sup> *Id.*

<sup>31</sup> 47 C.F.R. § 90.20(e)(6)(vii).

<sup>32</sup> Waiver Request at 3.

<sup>33</sup> 47 C.F.R. § 2.106 footnote US312.

7. In the third and final component of the request, LoJack asks the Commission to provide for an activation command duty cycle of 1000 milliseconds every 8 seconds. On July 28, 2010, LoJack filed an Amendment to Request for Partial Waiver on the duty cycle issue (Amendment).<sup>34</sup> In the Amendment, LoJack clarified that it “requires a duty cycle of up to 1000 milliseconds over every 8 seconds for the purpose of activating mobile units.”<sup>35</sup> LoJack states that the “new generation of mobile units being introduced required changes to LoJack’s network that result in the use of an indexing system different from what was used previously.”<sup>36</sup> LoJack provides that “[t]his indexing process assigns each device a specific ‘frame’ within a tower transmission, reducing the amount of time that the mobile unit consumes power listening for its activation code.”<sup>37</sup> LoJack argues that as a result, mobile units (VLUs in vehicles, or in the case of missing persons, wristwatch-type units) “will use substantially less power, allowing for a battery-powered unit and for a lower power draw from the vehicle electrical system in a vehicle-powered unit.”<sup>38</sup>

8. LoJack contends that the new indexing process will require longer transmission times to effectively activate the system.<sup>39</sup> Specifically, LoJack argues that “the interplay of the indexing process and the duty cycle limitations in the present rules (which were established before the development of indexing) could introduce delays of up to 20 minutes in the activation and tracking process.”<sup>40</sup> The proposed duty cycle “would allow for activation of the lower powered mobile units and materially improve efficiency in life-threatening circumstances” and “will improve the efficiency of police tracking of out-of-network stolen vehicles.”<sup>41</sup> Because base stations transmit activation messages under the traditional SVRS model,<sup>42</sup> and LoJack now seeks to use PATs to transmit activation messages, the new duty cycle would be applicable to both base stations and PATs. Section 90.20(e)(6)(v) of the Commission’s rules permits mobile units to transmit at a rate of 400 milliseconds every 10 seconds, except when authorized persons or entities are tracking a vehicle actively, in which case mobile units can transmit at a rate of 400 milliseconds every second. This rule also allows mobile units to transmit at a rate of 7200 milliseconds every 300 seconds with a maximum of 6 messages in any 30 minute period.<sup>43</sup> Section 90.20(e)(6)(vi) permits base stations to transmit at a total rate of five seconds every minute.<sup>44</sup> Because a plain language reading of our rules does not permit a duty cycle of 1000 milliseconds every 8 seconds, we treat LoJack’s request in its Amendment to use this new duty cycle as a request for waiver of Sections 90.20(e)(6)(v) and (vi)<sup>45</sup> on our own motion.

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<sup>34</sup> See Amendment.

<sup>35</sup> *Id.* at 1.

<sup>36</sup> *Id.*

<sup>37</sup> *Id.*

<sup>38</sup> *Id.*

<sup>39</sup> See *id.*

<sup>40</sup> *Id.* at 1-2.

<sup>41</sup> *Id.* at 2.

<sup>42</sup> See *supra* para. 3.

<sup>43</sup> See 47 C.F.R. § 90.20(e)(6)(v)

<sup>44</sup> See 47 C.F.R. § 90.20(e)(6)(vi).

<sup>45</sup> 47 C.F.R. § 90.20(e)(6)(vi).

9. On January 24, 2011, the Public Safety and Homeland Security Bureau (Bureau) placed LoJack's request for partial waiver, as amended, on public notice and sought comment.<sup>46</sup> In particular, the Bureau sought comment on whether a waiver of the duty cycle as proposed would significantly impact TV Channel 7 reception in the adjacent 174-180 MHz band or on Federal use of frequency 173.075 MHz. The Commission received supporting comments and reply comments from LoJack<sup>47</sup> and opposing comments and reply comments from Hammett & Edison, Inc., Consulting Engineers (H&E), regarding the potential impact on TV Channel 7.<sup>48</sup> No comments were filed or objections raised regarding the potential impact on Federal use of 173.075 MHz.

10. LoJack's comments reiterate both its initial Waiver Request and subsequent Amendment.<sup>49</sup> LoJack clarifies that, besides tracking missing persons, "portable activation could be used for other SVRS services," such as the activation and tracking of stolen vehicles.<sup>50</sup> LoJack asserts that "activation messages would only occur for a short duration until there is a response."<sup>51</sup> Regarding the eligibility request, LoJack argues that waiver of Part 2 "would assure that all public safety entities responsible for searching for missing persons could have access to devices such as PAT" and "would not cause harm, as public safety pool entities would use the frequency only upon the filing of a missing persons report with a law enforcement agency."<sup>52</sup> Regarding the duty cycle, LoJack argues that "[u]se of the requested duty cycle will prevent delays in activation, and reduce latency, making the search and recovery process more efficient."<sup>53</sup> In support, LoJack states that "[w]hile the activation command duty cycle will be longer, the total time over which the activation commands will be sent will be less than under the present duty cycle."<sup>54</sup> LoJack contends that "[s]ending the signal every 8 seconds rather than every 64 seconds will allow mobile devices to be found more quickly, which means the activation signal will be turned off more quickly."<sup>55</sup> As a result, LoJack argues that "the amount of RF energy in the band would not increase" and therefore that "[g]rant of the waiver will not cause harmful interference to either Federal or Channel 7 operations."<sup>56</sup>

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<sup>46</sup> See Public Safety and Homeland Security Bureau Seeks Comment on Partial Request for Waiver Filed by the LoJack Corporation, WT Docket No. 06-142, *Public Notice*, 26 FCC Rcd 522 (PSHSB 2011).

<sup>47</sup> See Comments of LoJack Corporation, WT Docket No. 06-142, filed February 8, 2011 (LoJack Comments); Reply Comments of LoJack Corporation, WT Docket No. 06-142, filed February 18, 2011 (LoJack Reply Comments).

<sup>48</sup> See Comments of Hammett & Edison, Inc., Consulting Engineers, WT Docket No. 06-142, filed February 8, 2011 (H&E Comments); Reply Comments of Hammett & Edison, Inc., Consulting Engineers, WT Docket No. 06-142, filed February 18, 2011 (H&E Reply Comments).

<sup>49</sup> See LoJack Comments; *see also* Waiver Request, Amendment.

<sup>50</sup> LoJack Comments at 3 n. 9.

<sup>51</sup> *Id.* at 3. In support, LoJack argues that "searches for missing persons are limited in time, both because missing persons are often found quickly and because searches are called off if missing persons are not found with a few days." *Id.* at 3 n. 11.

<sup>52</sup> LoJack Comments at 4-5.

<sup>53</sup> *Id.* at 5.

<sup>54</sup> *Id.* at 6.

<sup>55</sup> *Id.*

<sup>56</sup> *Id.*

11. H&E filed brief comments stating that it attempted unsuccessfully to determine how expanding the eligibility pool for 173.075 MHz stations beyond police entities “might increase the number of such stations, and their interference potential to TV Channel 7.”<sup>57</sup> H&E stated that it was unable to search the Universal Licensing System (ULS) to compare the number of police radio licensees to Public Safety Pool licensees.<sup>58</sup> H&E argues that “[g]iven the inability of the ULS to provide such basic information at the present time, it would appear premature for the FCC to allow any expansion of the LoJack eligibility pool [sic].”<sup>59</sup>

12. LoJack responds that the unavailability of information on ULS is irrelevant, because in every state in which LoJack currently operates, “the SVRS license or licenses covering all base stations and mobile use for LoJack’s network is held by one police entity.”<sup>60</sup> Moreover, ULS does not identify the number or location of mobile units associated with a particular SVRS license. Thus, LoJack argues, allowing any Public Safety Pool member to activate the frequency via a mobile device would not increase the number of SVRS licensees. LoJack also contends that “being able to determine from the ULS which licensees are police entities would serve no purpose in determining the effects of the waiver.”<sup>61</sup>

13. In reply comments, H&E states that in the *New Services Report and Order*, when the Commission concluded that “the error correction capabilities of DTV receivers should be more than adequate to compensate for an adjacent channel narrowband signal,”<sup>62</sup> “the Commission ignored the fact that the protected contour of a DTV Channel 7 would be at least 17 dB weaker than the analog contour, that is, the F(50,90) 36 dBu contour instead of the F(50,50) 56 dBu contour.”<sup>63</sup> H&E argues that “it would not be in the public interest to grant LoJack the requested rule waivers until laboratory tests on a representative group of consumer-grade DTV tuners has been conducted, to see if current SVRS-into-analog Channel 7 protection requirements are adequate to also protect against SVRS-into-digital Channel 7 service.”<sup>64</sup> H&E also asserts that “grant of any SVRS rule waivers at this time would be premature and not in the public interest” because ET Docket No. 10-235 is pending.<sup>65</sup> The *Notice of Proposed Rulemaking* in that proceeding seeks comment on improving digital TV reception in the VHF band, which includes Channel 7.<sup>66</sup>

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<sup>57</sup> H&E Comments at 1.

<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

<sup>60</sup> LoJack Reply Comments at 2.

<sup>61</sup> *Id.*

<sup>62</sup> *New Services Report and Order*, 23 FCC Rcd at 12608 ¶ 14.

<sup>63</sup> H&E Reply Comments at 1. The analog TV service area contour is provided in 47 C.F.R. § 73.683(a). The DTV service area contour is provided in 47 C.F.R. § 73.622(e).

<sup>64</sup> H&E Reply Comments at 1.

<sup>65</sup> *Id.* at 2.

<sup>66</sup> See *Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to VHF*, ET Docket No. 10-235, *Notice of Proposed Rulemaking*, 25 FCC Rcd 16498 (2010). Comments in this proceeding were filed on March 18, 2011, and reply comments were filed on April 18, 2011.

### III. DISCUSSION

14. First, we address LoJack's request to allow activation on frequency 173.075 MHz using a portable device. Section 90.20(e)(6)(i) states, "Mobile units may also transmit automatic collision notifications, vehicle fire notifications, and carjacking alerts."<sup>67</sup> LoJack argues that "[t]ransmissions from mobiles to activate the frequency would be in line with these activities."<sup>68</sup> Notwithstanding the roles that mobile devices have in the traditional SVRS model, we note that Section 90.20(e)(6) as written does not differentiate between activation signals and response signals, nor does it say that mobiles may transmit only one type of signal. Although the mobile duty cycle portion of rule Section 90.20(e)(6) appears to associate mobiles with "tracked" vehicles,<sup>69</sup> the rule does not limit mobiles to units in vehicles or units worn by people being tracked. Therefore, on our own motion, we clarify by declaratory ruling that Section 90.20(e)(6) permits mobile or portable units to transmit any type of signal, including activation signals, on frequency 173.075 MHz.<sup>70</sup> We limit activation signals on portable devices to 5 watts power output, as is the case with any mobile transmission.<sup>71</sup> Given that the Commission does not issue licenses for mobile transmitters, but rather authorizes mobile transmitters by rule,<sup>72</sup> we note that the SVRS rules would not restrict PAT use to the geographic areas or states covered by existing SVRS licenses.<sup>73</sup>

15. Second, we address LoJack's request to allow any Public Safety Pool eligible entity, not just police entities, to activate a mobile or portable device on frequency 173.075 MHz. Section 90.20(e)(6)(vii) states that "[a]ny entity eligible to hold authorizations in the Public Safety Pool in accordance with §§ 90.20(a) and 90.111 of this chapter is authorized by this rule to operate mobile transmitters on this frequency."<sup>74</sup> LoJack initially contends that this section allows mobile use of 173.075 MHz by any Public Safety Pool eligible entity without a waiver, as the rule "provides that any Public Safety Pool eligible can operate a mobile transmitter."<sup>75</sup> We disagree with LoJack's interpretation of the rule. Section 2.106, footnote US312 states: "[t]he frequency 173.075 MHz may also be authorized on a primary basis to non-Federal stations in the Public Safety Radio Pool, limited to police licensees, for stolen vehicle recovery systems (SVRS)."<sup>76</sup> Furthermore, the *New Services Report and Order* provided that SVRS operations, including those for missing persons and persons at risk, were only to be undertaken

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<sup>67</sup> 47 C.F.R. § 90.20(e)(6)(i).

<sup>68</sup> Waiver Request at 3.

<sup>69</sup> See 47 C.F.R. § 90.20(e)(6)(v), which states, "Transmissions from mobiles shall be limited to 400 milliseconds for every 10 seconds, except when a vehicle is being *tracked* actively transmissions are limited to 400 milliseconds for every second" (emphasis added).

<sup>70</sup> 47 C.F.R. § 1.2.

<sup>71</sup> See 47 C.F.R. § 90.20(e)(6)(iii).

<sup>72</sup> See 47 C.F.R. § 90.20(e)(6)(vii).

<sup>73</sup> To the extent that any parties are concerned that PAT use may increase SVRS transmissions in DTV Channel 7 service areas, we note that in some markets, full power SVRS base stations and digital Channel 7 stations already coexist without any reported issues. For example, in Washington, DC, Station WJLA-TV coexists with SVRS Station WPED308. In New York, New York, Station WABC-TV coexists with SVRS Stations WPFS619 and WPUX388. In Los Angeles, California, Station KABC-TV coexists with SVRS Station WNSZ607. Any SVRS transmissions from PAT and VLU unit use in new DTV Channel 7 service areas would be significantly lower in power than the SVRS transmissions from the full power base stations in the markets mentioned herein.

<sup>74</sup> 47 C.F.R. § 90.20(e)(6)(vii).

<sup>75</sup> Waiver Request at 3.

<sup>76</sup> 47 C.F.R. § 2.106 footnote US312.

by law enforcement officials.<sup>77</sup> Specifically, the Commission stated that “we will permit the tracking of missing or wanted persons by law enforcement.”<sup>78</sup> The Commission also noted that it would “allow tracking and locating people at risk or of interest to law enforcement consistent with the purpose of the rule – that is, under the control of law enforcement, and only when such individuals are reported missing, lost, or when established boundaries are violated.”<sup>79</sup> Thus, we conclude that a waiver of Section 2.106 is necessary to permit operation of PATs by non-law enforcement public safety entities. As set forth below, we also conclude that grant of a partial waiver is warranted.

16. Section 1.925 of the Commission’s rules provides that to obtain a waiver of the Commission’s rules, a petitioner must demonstrate either that “(i) [t]he underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that a grant of the waiver would be in the public interest; or (ii) [i]n view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.”<sup>80</sup> Applicants seeking a waiver face a high hurdle and must plead with particularity the facts and circumstances that warrant a waiver.<sup>81</sup> We now apply this standard to LoJack’s request.

17. In connection with the eligibility issue, we address H&E’s concern that an eligibility waiver could increase the number of users and therefore the potential for harmful interference to TV Channel 7.<sup>82</sup> Contrary to H&E’s argument, we believe that permitting non-police public safety eligibles to use PATs under the limited conditions allowed by this waiver will not increase the potential for interference. As LoJack notes, expanding eligibility is unlikely to increase the number of PATs in operation at any given time but will simply allow public safety agencies other than police departments (e.g., a municipality’s fire department or rescue squad) to activate the frequency on a mobile device to search for missing persons, without “increas[ing] the number of users on the frequency.”<sup>83</sup> Moreover, mobile activation units will only operate on a highly localized basis when a public safety agency is carrying out a missing persons search, which is not a frequent occurrence in any given area.<sup>84</sup> Our finding is consistent with the Commission’s earlier finding in the *New Services Report and Order* that harmful interference to TV Channel 7 viewers is unlikely because very few devices would be active within the United States at any given time.<sup>85</sup> SVRS systems have been operating since DTV stations started operation on channel 7, and the Commission has not received any interference complaints to date attributed to SVRS. Because most new use of frequency 173.075 MHz pursuant to this waiver would be mobile in nature, any interference that did occur would be local and of brief duration for any given TV viewer. Consistent with Section 90.20(e)(6)(ix), new mobile and portable users of frequency 173.075

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<sup>77</sup> *New Services Report and Order*, 23 FCC Rcd at 12619 ¶ 47.

<sup>78</sup> *Id.*

<sup>79</sup> See LoJack Reply Comments at 2.

<sup>80</sup> 47 C.F.R. § 1.925(b)(3).

<sup>81</sup> *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969), *aff’d*, 459 F.2d 1203 (1973), *cert. denied*, 409 U.S. 1027 (1972) (citing *Rio Grande Family Radio Fellowship, Inc. v. FCC*, 406 F.2d 664 (D.C. Cir. 1968)); *Birach Broad. Corp., Memorandum Opinion and Order*, 18 FCC Rcd 1414, 1415 (2003).

<sup>82</sup> See H&E Comments and H&E Reply Comments.

<sup>83</sup> LoJack Reply Comments at 2.

<sup>84</sup> *Id.*

<sup>85</sup> See *New Services Report and Order*, 23 FCC Rcd at 12609 ¶ 15.



MHz pursuant to this waiver must eliminate any interference to TV Channel 7 reception within 30 days after notification in writing by the Commission.<sup>86</sup>

18. We also decline to delay action on LoJack's request pending new laboratory tests on consumer-grade DTV tuners and the outcome in ET Docket No. 10-235. In 2007, the Office of Engineering and Technology (OET) released a report on tests of 2005 and 2006 consumer DTV receivers.<sup>87</sup> From the results, we find that DTV receiver interference rejection already compensates for the difference noted by H&E between the DTV service contour and the analog service contour. OET measured the desired-to-undesired (D/U) threshold ratio for lower adjacent DTV signals into a DTV receiver to be about -33 dB.<sup>88</sup> The D/U threshold ratio for lower adjacent DTV signals into an analog receiver is -14 dB.<sup>89</sup> When we calculate the difference between these figures, we find that existing DTV receivers have about 19 dB better interference rejection performance than analog receivers, which compensates for a 17 dB loss in desired signal at the service area edge. Given these findings, we conclude that there is no compelling need to wait for the results of additional DTV receiver testing or the resolution of ET Docket No. 10-235.

19. Given the potential for persons at risk to wander into woods and other areas where police vehicles cannot go, and the inverse relationship between the time such persons remain missing and their chances of survival,<sup>90</sup> we believe that law enforcement would benefit by our granting eligibility to other public safety entities to use SVRS to track and locate missing persons. Allowing other public safety eligibles to directly operate PATs to locate missing persons would reduce burdens on police resources and allow for quicker initiation of searches in instances when police are addressing other law enforcement priorities. Conversely, strict application of the rule to the instant case could delay or impede the successful location and recovery of missing persons. Accordingly, we waive Section 2.106 note US312 to allow any Public Safety Pool eligible entity,<sup>91</sup> not just police entities, to transmit activation signals on frequency 173.075 MHz using a mobile or portable device.<sup>92</sup>

20. We next address LoJack's proposed duty cycle. In 2002, the Commission retained duty cycle limitations based primarily on a concern about potential interference to TV Channel 7 reception and a need to keep frequency 173.075 MHz accessible to Federal Government users.<sup>93</sup> However, the

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<sup>86</sup> 47 C.F.R. § 90.20(e)(6)(ix). If necessary, the Bureau expects LoJack and/or any future SVRS providers to assist in identifying SVRS users that cause interference to TV Channel 7, especially since such users may not hold SVRS base station licenses.

<sup>87</sup> See Interference Rejection Thresholds of Consumer Digital Television Receivers Available in 2005 and 2006, OET Report FCC/OET 07-TR-1003, Technical Research Branch, Laboratory Division, Office of Engineering and Technology, Federal Communications Commission (Mar. 30, 2007).

<sup>88</sup> See *id.* at A-2. Although OET's testing was performed in the UHF TV band, we do not expect integrated VHF/UHF digital receivers to have a marked difference in interference rejection performance between the two bands. See *id.* at ix.

<sup>89</sup> See OET Bulletin No. 69, Longley-Rice Methodology for Evaluating TV Coverage and Interference (Feb. 6, 2004) at 8; 47 C.F.R. § 73.623.

<sup>90</sup> See Waiver Request at 2.

<sup>91</sup> See 47 C.F.R. § 90.20(a) for Public Safety Pool eligibility rules.

<sup>92</sup> We remind potential users that SVRS systems are not authorized for general purpose tracking or monitoring. See 47 C.F.R. § 90.20(e)(6)(i).

<sup>93</sup> See Amendment of Section 90.20(e)(6) of the Commission's Rules to Revise the Authorized Duty Cycle on 173.075 MHz, WT Docket No. 01-97, *Report and Order*, 17 FCC Rcd 16938, 16944-46 ¶¶ 14-16 (2005).

Commission and the Wireless Telecommunications Bureau (WTB) have increased the duty cycles for SVRS as needs arise. In 2005, WTB's former Public Safety and Critical Infrastructure Division granted in part a waiver request from LoJack by, *inter alia*, relaxing the base station duty cycle limit from one second per minute to three seconds per minute.<sup>94</sup> In the 2008 *New Services Report and Order*, in response to a petition for rulemaking by LoJack, the Commission increased both the base and mobile unit duty cycles.<sup>95</sup> The Commission stated that it had "no reason to conclude that a mobile unit tracking duty cycle increase would cause any significant increase in the potential interference to TV Channel 7 reception" because "nearly all VLUs are dormant and not transmitting."<sup>96</sup> The Commission increased the base station duty cycle to "provide ample flexibility to accommodate operation of both narrowband and wideband SVRS systems."<sup>97</sup>

21. In the interest of promoting technological innovation, we believe that the requested waiver of SVRS duty cycles is warranted. In the case of the base station transmissions, the new duty cycle, with a shorter period of 8 seconds as opposed to one minute, will enable base stations to send activation signals to mobile units within range of the base station over a shorter total elapsed time, on average. LoJack notes that transmission of the activation signal stops "once a mobile unit is activated and acknowledges the activation signal."<sup>98</sup> Thus, the new duty cycle will tend to shorten the total time during which the transmitter is active.<sup>99</sup> In the case of mobile units, the new duty cycle is on the same order of magnitude as existing mobile duty cycles with regard to both pulse duration and period.<sup>100</sup> After the 2005 and 2008 changes to duty cycles, the Commission has received no interference complaints with respect to either TV Channel 7 reception or Federal users of frequency 173.075 MHz. Therefore, we believe that the new duty cycle likewise will not pose a threat of increased interference potential. Based on the foregoing, we conclude that the underlying purpose of Section 90.20(e)(6)(v) would not be served by strict application to the instant case.

22. *Public Interest.* In the *New Services Report and Order*, the Commission recognized a "public interest in affording caregivers an ability, through the aid of law enforcement equipped with SVRS technology, to recover individuals in their care who may become lost, such as Alzheimer's patients and individuals with autism"<sup>101</sup> LoJack argues that "[a] waiver would effectuate this policy by enabling public safety entities to use a portable device that provides for more reliable tracking of missing persons, and by enabling the public safety entities charged in a particular jurisdiction with searching for missing persons to use such a device."<sup>102</sup> LoJack also argues that "[a] waiver will facilitate more efficient and enhanced public safety performance."<sup>103</sup> We find LoJack's arguments in this regard to be persuasive. We

<sup>94</sup> See LoJack Corporation, Request for Partial Waiver of Section 90.20(e)(6) of the Commission's Rules, *Order*, 20 FCC Rcd 20497, 20500 ¶ 11 (WTB PSCID 2005).

<sup>95</sup> *New Services Report and Order*, 23 FCC Rcd at 12614-12617 ¶¶ 27-33.

<sup>96</sup> *Id.* at 12615 ¶ 28.

<sup>97</sup> *Id.* at 12616 ¶ 32.

<sup>98</sup> Amendment at 2.

<sup>99</sup> *Id.*

<sup>100</sup> In common usage, two quantities that are on the "same order of magnitude" have roughly the same scale, or differ by less than a factor of ten. The pulse durations differ by much less than a factor of ten (1000 milliseconds vs. 400 milliseconds, *see* 47 C.F.R. § 90.20(e)(6)(v)), and the same is true for the periods (8 seconds vs. 10 seconds).

<sup>101</sup> *New Services Report and Order*, 23 FCC Rcd at 12619 ¶ 47.

<sup>102</sup> Waiver Request at 4-5.

<sup>103</sup> *Id.* at 5.

also find persuasive the prospect that the proposed operation could conserve and better utilize law enforcement resources by expanding the pool of entities that may use portable activation tracker units, as well as increase the chances of finding missing persons alive. Accordingly, we conclude that grant of the request is consistent with the public interest.

#### **IV. CONCLUSION**

23. Based on the foregoing, we conclude that LoJack has made a sufficient showing to warrant a grant of its requested waiver pursuant to Section 1.925 of the Commission's rules. Accordingly, we issue, on our own motion, a declaratory ruling that mobile and portable SVRS devices may transmit activation signals on frequency 173.075 MHz; we grant a waiver of Section 2.106 footnote US312 to permit any non-law enforcement, Public Safety Pool eligible entity to transmit activation signals using mobile and portable SVRS devices; and we grant a waiver of Section 90.20(e)(6)(v) and (vi) to permit base, mobile, and portable SVRS devices to transmit activation signals with a duty cycle of up to 1000 milliseconds every 8 seconds. New mobile and portable users of frequency 173.075 MHz must eliminate any interference caused by their operation to TV Channel 7 reception within 30 days after notification in writing by the Commission.

#### **V. ORDERING CLAUSES**

24. Accordingly, WE ORDER, pursuant to Section 4(i) of the Communications Act of 1934, as amended, 47 U.S.C. § 154(i), and Sections 1.2 and 1.925(b)(3) of the Commission's rules, 47 C.F.R. §§ 1.2, 1.925(b)(3), that the Request for Partial Waiver, as amended, filed by the LoJack Corporation, IS GRANTED to the extent described herein.

25. We take this action under delegated authority, pursuant to Sections 0.191 and 0.392 of the Commission's rules, 47 C.F.R. §§ 0.191, 0.392.

FEDERAL COMMUNICATIONS COMMISSION

James Arden Barnett, Jr., Rear Admiral (Ret.)  
Chief  
Public Safety and Homeland Security Bureau