



Federal Communications Commission  
Washington, D.C. 20554

December 13, 2006

DA 06-2501

Terry Mahn, Esq.  
Fish & Richardson P.C.  
225 Franklin Street  
Washington, DC 20037

Dear Mr. Mahn:

This is in response to your letter of December 6, 2005, filed on behalf of Radianse, Inc. (Radianse). Radianse requested a staff interpretation of the Commission's Rules or, in the alternative, a waiver that would allow Radianse to operate a low power radiolocation system, for which Radianse has received equipment certification<sup>1</sup> under Part 15 of the Commission's Rules, on frequency 433.92 MHz pursuant to a license under Part 90 of the Commission's Rules.<sup>2</sup> Specifically, Radianse's radiolocation indoor positioning system (IPS) is designed to "provide accurate, timely identification and location information concerning personnel, patients and medical equipment."<sup>3</sup> It consists of individual tag transmitters that are placed on equipment or worn by patients and staff, and multiple fixed receivers located throughout a medical facility that are used for triangulating the location of the specific tags.<sup>4</sup> Radianse seeks to operate pursuant to Part 90 rather than Part 15 because the Part 90 rules permit more frequent transmissions, resulting in more accurate location information,<sup>5</sup> but the IPS is not designed to meet the Part 90 technical standards for radiolocation devices operating in the 421-512 MHz band. For the reasons set forth below, we deny Radianse's request.

Radianse states that it selected frequency 433.92 MHz for its IPS because it is harmonized for unlicensed operation in the European Union,<sup>6</sup> and that in order for the IPS to receive equipment certification on that frequency in the United States it was designed to comply with Section 15.231(e) of the Commission's Rules, which requires a minimum transmitter off time of ten seconds between transmissions.<sup>7</sup> Radianse asserts that its customers have performed time and motion studies in medical environments and determined that a two-second sampling rate is required to achieve the level of accuracy needed to track typical movements in a hospital environment.<sup>8</sup> Consequently, Radianse seeks to operate

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<sup>1</sup> See Equipment Authorization Q9V-100-A.

<sup>2</sup> See Letter dated December 6, 2005 from Terry G. Mahn, Fish & Richardson P.C., to Michael J. Wilhelm, Chief, Public Safety and Critical Infrastructure Division, Wireless Telecommunications Bureau (Request). Pursuant to a Commission reorganization effective September 25, 2006, certain duties of the Public Safety and Critical Infrastructure Division were assumed by the Mobility Division. See Establishment of the Public Safety and Homeland Security Bureau, *Order*, 21 FCC Rcd 10867 (2006).

<sup>3</sup> See Request at 1.

<sup>4</sup> *Id.*

<sup>5</sup> *Id.* at 2.

<sup>6</sup> *Id.* at 2 n.2.

<sup>7</sup> *Id.* at 2. See also 47 C.F.R. § 15.231(e).

<sup>8</sup> See Request at 2.

the IPS pursuant to Part 90, which does not require any minimum transmitter off time between transmissions.<sup>9</sup> Section 90.213(a) provides, however, that Part 90 radiolocation mobile stations in the 421-512 MHz band must meet a frequency stability requirement of 5 parts per million (ppm),<sup>10</sup> while the IPS tags meet a looser standard of 30 ppm.<sup>11</sup> Radianse argues that the frequency stability standards for its IPS should be determined on a case-by-case basis, as is the procedure with respect to other technical parameters for similar equipment in the radiolocation service.<sup>12</sup> On that basis, Radianse requests a staff interpretation to the effect that the frequency stability requirements of Section 90.213 do not apply to its low power IPS radiolocation system.<sup>13</sup>

We have reviewed the Part 90 Radiolocation Service rules, and find no basis for Radianse's belief that the frequency stability requirements of Section 90.213 are somehow linked to the power level of its system and should not apply.<sup>14</sup> Moreover, we note that Radianse has not cited a specific Part 90 rule that would support its assertion that the frequency stability requirements of Section 90.213 do not apply to its proposed system. Additionally, we find that the Part 90 radiolocation frequency stability requirements in the Commission's Rules are solely a function of frequency, in this case 433.92 MHz. We find no support for Radianse's contention that frequency stability should be determined on a case-by-case basis. In sum, there is no Commission rule that supports the novel interpretation urged by Radianse. Consequently, we decline the Radianse request for a staff interpretation that its IPS meets the Part 90 frequency stability standard.

As an alternative to its requested rule interpretation, Radianse seeks a waiver of the frequency stability requirements of Section 90.213. To obtain a waiver of the Commission's Rules, a petitioner must demonstrate either that the underlying purpose of the rule(s) would not be served or would be frustrated by application to the present case and that grant of the waiver would be in the public interest,<sup>15</sup> or that, in 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>16</sup> Based on the record before us, we believe that Radianse has not made the requisite showing for grant of a waiver.

In support of the waiver request, it asserts that its tags would not interfere with any licensed service because they operate with extremely low power<sup>17</sup> and short duty cycle, making it unreasonable to

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<sup>9</sup> *Id.* at 2.

<sup>10</sup> *See* 47 C.F.R. § 90.213(a).

<sup>11</sup> Request at 2.

<sup>12</sup> *Id.* at 3. *See also* 47 C.F.R. §§ 90.205(q), 90.209(b)(5) (providing that permissible transmitter power and occupied bandwidth for Part 90 radiolocation equipment operating at 433 MHz will be determined case by case).

<sup>13</sup> Request at 4.

<sup>14</sup> *Id.* at 3-4.

<sup>15</sup> 47 C.F.R. § 1.925(b)(3)(i).

<sup>16</sup> 47 C.F.R. § 1.925(b)(3)(ii).

<sup>17</sup> The exact power level is unclear, because the Request recites both -58 dBm and -35 dBm as the effective isotropically radiated power. *See* Request at 2, 4.

require 5 ppm frequency stability for the devices.<sup>18</sup> It also claims that a tag meeting the 5 ppm stability requirement would be so costly as to be economically impractical and, therefore, that it should be permitted to use tags with 30 ppm frequency stability.<sup>19</sup> In effect, then, Radianse argues that application of the 5 ppm stability requirement to the instant case would not serve the underlying purpose of the rule, and would leave it with no reasonable alternative.

The purpose of the frequency stability requirement is to reduce adjacent channel interference.<sup>20</sup> In this case, moreover, our concerns about potential interference are magnified because the IPS operates in the 420-450 MHz frequency band that is used for military radiolocation operations.<sup>21</sup> In addition, the IPS, as currently authorized under Part 15 of the Commission's Rules, is subject to the condition that it not cause harmful interference to, and that it accept interference from, primary operations in the band.<sup>22</sup> Grant of the requested waiver relief would elevate operation of the IPS from this secondary status to primary status, as a Part 90-licensed operation, and thus would accord the IPS interference protection that it does not currently have. We note, moreover, that Radianse has not provided any information to support its claim that waiving the frequency stability requirements would have no interference consequences. Under Commission precedent, waiver proponents "must plead with particularity the facts and circumstances which warrant such action."<sup>23</sup> We conclude that Radianse has not met this threshold requirement. We are required to take a "hard look" at waiver requests,<sup>24</sup> but when, as here, the requisite hard look does not reveal a factual predicate for the requested relief, our inquiry need go no further.

Nor has Radianse established that a two-second sampling rate is essential to the device's requisite accuracy,<sup>25</sup> or that there is no alternative to the requested waiver. For example, Radianse has not shown why it cannot use frequencies with less stringent stability requirements.<sup>26</sup> We do not believe that the public interest requires grant of a waiver merely to accommodate a manufacturer's choice of a specific frequency when others are available.

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

<sup>19</sup> *Id.* at 3.

<sup>20</sup> See Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them, *Memorandum Opinion and Order*, PR Docket No. 92-235, 11 FCC Rcd 17676, 17698 ¶ 48 (1996).

<sup>21</sup> See 47 C.F.R. § 2.106 n.G2.

<sup>22</sup> See 47 C.F.R. § 15.5(b).

<sup>23</sup> *Rio Grande Family Radio Fellowship, Inc. v. FCC*, 406 F.2d 664 (D.C. Cir. 1968).

<sup>24</sup> See *WAIT Radio v. FCC*, 418 F.2d 1153, 1158 (D.C. Cir. 1969), *cert. denied*, 409 U.S. 1027 (1972); see also *Family Stations, Inc. v. DirecTV, Inc.*, *Order on Reconsideration*, 19 FCC Rcd 14777, 14780 (MB 2004).

<sup>25</sup> For example, Radianse refers to but does not further identify "[t]ime and motion studies in medical environments," and states only that unspecified customers have asked it to provide an IPS solution with a two-second sampling rate. See Request at 2.

<sup>26</sup> See 47 C.F.R. § 90.213(a) (frequency stability of 30 ppm would satisfy the requirement for Part 90 radiolocation equipment in the following bands: below 25 MHz, 25-50 MHz, 72-76 MHz, 150-174 MHz (except 154-45-154.49 MHz and 173.2-173.4 MHz), and 1427-1435 MHz).

Finally, Radianse argues that the requested waiver would be consistent with a decision of the former Commercial Wireless Division that deemed a 1 dB difference in output power to be *de minimis*.<sup>27</sup> We conclude that the cited decision is distinguishable from the instant case because, first, it permitted a twenty-five percent variation in output power, whereas Radianse seeks a 600 percent variation in frequency stability, and second, Radianse has not established, and we cannot discern, any direct relationship between EIRP and frequency stability, *i.e.*, Radianse has failed to show that, from an interference standpoint, a given deviation in frequency stability relates to an equivalent deviation in EIRP.<sup>28</sup> We therefore find that Radianse's reliance on this precedent is misplaced.

Accordingly, IT IS ORDERED, pursuant to Section 4(i) of the Communications Act of 1934, as amended, 47 U.S.C. § 154(i), and Section 1.2 of the Commission's Rules, 47 C.F.R. § 1.2, that the request for a staff interpretation of Section 90.213 of the Commission's Rules filed by Radianse, Inc., on December 6, 2005 IS DENIED. IT IS FURTHER ORDERED, pursuant to Section 4(i) of the Communications Act of 1934, as amended, 47 U.S.C. § 154(i), and Section 1.925 of the Commission's Rules, 47 C.F.R. § 1.925, that the waiver request filed by Radianse, Inc., on December 6, 2005 IS DENIED.

This action is taken under delegated authority pursuant to Sections 0.131 and 0.331 of the Commission's Rules, 47 C.F.R. §§ 0.131, 0.331.

FEDERAL COMMUNICATIONS COMMISSION

Scot Stone  
Deputy Chief, Mobility Division  
Wireless Telecommunications Bureau

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<sup>27</sup> Request at 4, *citing* Letter dated September 4, 2002 from Michael A. Ferrante, Chief, Licensing & Technical Analysis Branch, Commercial Wireless Division, Wireless Telecommunications Bureau to Terry G. Mahn and Robert J. Ungar, Fish & Richardson P.C., Counsel to Powerwave, Inc.

<sup>28</sup> We also note that Radianse apparently believes, but has not documented, that a 5 ppm battery voltage fluctuation in a temperature controlled crystal oscillator circuit would somehow result in an identical change in the oscillator's frequency stability. *See* Request at 3. We fail to see such a direct relationship, particularly in the circuit described by Radianse, which includes a voltage regulator. *Id.*

Terry Mahn, Esq.

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