

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, D.C. 20554

**SENSIFREE, Inc. Request for Waiver of** )  
**Part 15 of the Commission’s Rules Applicable** ) **ET Docket No. 15-284**  
**to Ultra-Wideband Devices for a Pulsed,** )  
**Frequency-Hopped Body-Worn Medical Device** )

**To: The Chief, Office of Engineering and Technology**  
**Via: ECFS**

**REPLY COMMENTS OF SENSIFREE, INC.**

Sensifree, Inc. (Sensifree), by and through counsel and pursuant to the *Public Notice*, DA 16-41, released in the above-captioned docket proceeding January 13, 2016<sup>1</sup> hereby respectfully submits its Reply Comments relative to Sensifree’s requested waiver of the Commission’s rules and test procedures governing a particular ultra-wideband (UWB) device. The requested waiver (including but not necessarily limited to Section 15.503(d) of the Commission’s rules) is necessary in order to permit Sensifree to obtain certification for and to market in the United States a body-worn UWB heart rate monitoring device (the “Heart Rate Sensor” or “HRS”). A waiver is necessary in view of the Commission’s requirement that ultra-wideband (UWB) devices meet a fractional bandwidth minimum of 0.20 or 500 megahertz “at any point in time.” For its Reply Comments, Sensifree states as follows:

1. Sensifree is eager to begin the process of Commission certification of the HRS and to make available in the United States this high-quality, body-worn digital heart rate monitor. It has the public interest benefit of providing to users lightweight, comfortable,

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<sup>1</sup> See, *Office of Engineering and Technology Declares Sensifree, Inc. Request for Waiver of Part 15 Ultra-Wideband Rules for a Body-Worn Heart Rate Device to be a “Permit-but-Disclose” Proceeding for Ex Parte Purposes and Requests Comment, DA 16-41, Released January 13, 2016.*

accurate biometrics and it consumes very low power. It has virtually no interference potential to narrowband emissions in the same frequency range or otherwise. It permits heart patients free mobility, independence and safety while conducting normal activities. Marketing of this device in the United States is clearly in the public interest.

3. There are as of this writing, almost two weeks after the comment date established by the *Public Notice*, no comments opposing the requested waiver have been filed in this docket proceeding. There are but two submissions overall, aside from Sensifree's initial Request for Waiver and the Commission's *Public Notice* soliciting comment thereon; Both were filed by Mr. James E. Whedbee. Mr. Whedbee filed comments in *support* of the Sensifree waiver, noting that the "technical details (of the Request for Waiver) comport with the spirit, if not the intent of the existing Commission rules and regulations." Mr. Whedbee also notes that the Commission should revisit the UWB regulations, as was promised years ago, because the plethora of waiver requests relative to Section 15.503(d) and other portions of the UWB rules demonstrates the need for reform of the procedure for permitting the development of this and similar new technologies.

4. Mr. Whedbee separately filed a *Petition for Rule Making* in this proceeding, requesting rule changes that would obviate the need for manufacturers to seek waivers in these kinds of cases generally. However, in his comments, he states that it would be unfair to delay the adjudication of the Sensifree waiver while the Commission considers his *Petition for Rule Making* which is of course true. So, Mr. Whedbee states that he "strongly recommends (that) the Commission grant, without delay and without condition, Sensifree's waiver request" and to consider his process reform *Petition* separately. While

it would have been perhaps more appropriate for Mr. Whedbee to submit his Petition to the Commission independently of this proceeding, Sensifree is appreciative of the support shown by Mr. Whedbee and is in agreement that (as a matter wholly separate and apart from its consideration of the Sensifree waiver request) the Commission should do what it can to streamline the overly conservative and cumbersome UWB regulations and to make them more hospitable to innovative UWB products such as the Heart Rate Sensor.

5. Sensifree reiterates that Section 15.503(d) of the Commission’s Rules governing the operation of UWB devices, because it contains the requirement that UWB devices meet a fractional bandwidth minimum of 0.20 or 500 megahertz “at any point in time.”<sup>2</sup> makes compliance impossible using any practical emission mode. For an intentional radiator to meet the requirements of Section 15.503(d) of the Rules and to be considered a UWB device, the device must have an instantaneous bandwidth of at least 500 MHz.<sup>3</sup> The rules do not define what period of time constitutes an instantaneous measurement interval. However, the prevailing staff interpretation of the term “at any point in time” is that, for stepped or hopped frequency emissions, each step or hop is the instantaneous bandwidth of the device, and therefore, since each step or hop is less than 500 MHz, the device does not, strictly interpreted, meet the UWB definition.

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<sup>2</sup> Section 15.503(d) of the Commission’s Rules states as follows:

§ 15.503 Definitions.

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(d) Ultra-wideband (UWB) transmitter. An intentional radiator that, at any point in time, has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

<sup>3</sup> UWB devices in the European Union are not defined in terms of a minimum, “instantaneous” bandwidth as they are in the United States. Communications devices require a minimum operating bandwidth of only 50 MHz (at -23dB relative to the maximum spectral power density) (*see* ETSI EN 302 065 v1.1.1 (2008-02)).

6. The Commission has said that its standards for unlicensed devices must reflect emission limits that reduce the potential for causing harmful interference to authorized radio services. The emission limits applied to UWB ensure a low probability of causing harmful interference, *and the minimum bandwidth requirement could have the opposite effect than what is intended: it could cause a manufacturer to design transmitters that occupy more bandwidth than is operationally necessary or transmitters that inject noise in order to increase the occupied bandwidth simply to permit operation under the UWB regulations. This would place greater energy in frequency bands where operation is not necessary for the system to function and increase the interference potential.* So, strict application of the minimum bandwidth standard (and, obviously, the measurement procedure for determining the minimum bandwidth) could be counterproductive to reducing whatever minimal potential there might be for harmful interference. This fact amply justifies the waiver requested herein.

7. It is again urged that Sensifree is entitled to a waiver in this instance, as the Commission has repeatedly waived the UWB technical rules under similar circumstances. Since the adoption of the UWB rules in 2002, the Commission has shown a willingness to waive its technical restrictions for UWB devices when it believes the device presents little threat of harmful interference and the requested waiver would further important public interest goals.<sup>4</sup> In each of these waiver decisions, the

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<sup>4</sup> See, e.g. *Petition for Waiver of the Part 15 UWB Regulations Filed by the Multi-band OFDM Alliance Special Interest Group*, ET Docket No. 04-352, Order, 20 FCC Rcd 5528 (2005); *Curtiss-Wright Controls Inc. Embedded Computing Petition for Waiver of the Part 15 UWB Regulations*, DA 07-198, Order, 22 FCC Rcd 815 (2007); *Ultra Vision Security Systems, Inc. Request for Interpretation and Waiver of Section 15.511(a) & (b) of the Commission's Rules for Ultra-Wideband Devices*, ET Docket No. 06-195, Order, 23 FCC Rcd 17632 (2008); *Curtiss Wright Controls, Inc. for waiver of Sections 15.503(d) and 15.521(d) of the ultra-wideband rules for its ground penetrating radar system*, ET Docket 10-167, 27 Fed. Reg. 234 (2012)

Commission considered the public benefits of the UWB technologies and imposed reasonable conditions on use to assure there would be little likelihood of interference while it obtained additional data from their operations. The Sensifree body-worn biometrics device has a far lower interference potential<sup>5</sup> than do any of the other devices and an equally compelling public interest justification.

8. The Commission's waiver authority, per Section 1.925 of the Commission's Rules, 47 C.F.R. § 1.925, allows the Commission to grant a waiver if it is shown that (a) the underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and grant of the requested waiver would be in the public interest; or (b) if there are unique or unusual factual circumstances in a specific case where application of the rule would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative. In this case, the latter rationale is specifically applicable to the Sensifree HRS device, which has no interference potential to narrowband or wideband services operating within the UWB frequency range, and which in normal operation far exceeds the 500 MHz minimum bandwidth which should qualify it as an UWB device. This device has clear public interest benefits in terms of facilitating independent living and movement for heart patients consistent with ensuring their safety.

Therefore, the foregoing considered, Sensifree, Inc., again respectfully requests that the Commission grant the requested waiver, so that an application for equipment

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<sup>5</sup> The antenna is unidirectional facing the skin of the wearer and outward emissions are attenuated by the antenna design. This, coupled with the exceptionally low power and short range of the device makes interference to other radio services highly unlikely.

authorization can be obtained and the Sensifree Heart Rate Sensor can be made available to the public in the United States.

Respectfully submitted,

**SENSIFREE, INC.**

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