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

In the Matter of	)	
	)	
Octatron, Inc. and Chang Industry, Inc.	)	
Request for Waiver of the Part 15 Regulations	)	ET Docket No. 05-356
	)	

ORDER

Adopted: March 17, 2010 **Released: March 22, 2010**

By the Chief, Office of Engineering and Technology:

1. By this Order, we dismiss without prejudice a request for waiver of Sections 15.249 and 15.247 of the rules filed by Octatron, Inc. and Chang Industry, Inc.[1] ("Octatron/Chang") to permit the certification and subsequent marketing of their analog video and audio surveillance systems known as the Dragon Egg System and the Pole Camera System (hereinafter, collectively, the "surveillance systems").[2] Octatron/Chang request that the Commission waive these rules to allow their surveillance systems to operate on an unlicensed basis in the 902-928 MHz (915 MHz) band at higher power and power spectral density (PSD) levels than allowed under the current rules.[3] We conclude that Octatron/Chang have not provided sufficient information to demonstrate that harmful interference would not be caused to licensed users of the 915 MHz band, and therefore we dismiss without prejudice their waiver request.

2. The unlicensed operation of transmitters employing analog modulation in the 915 MHz band is subject to the requirements of Section 15.249 of the Commission's rules.[4] Under Section 15.249, radiated emissions from such devices are limited to a quasi-peak field strength level of 50 mV/m at 3 meters, which corresponds to an equivalent isotropically radiated power (EIRP) level of 0.75 mW.[5] Section 15.247 permits the operation of unlicensed wide-band systems employing digital modulation within the 915 MHz band at a peak transmitter output power of 1 W, an EIRP of 4 W, and a peak radiated PSD of 14 dBm/3 kHz.[6]

3. The Octatron/Chang surveillance systems have been designed to operate in the 915 MHz band using analog modulation.[7] The 915 MHz band is allocated on a primary basis to the Federal Radiolocation service.[8] In addition, under international footnote 5.150, the 915 MHz band is designated

[1] Public Notice, December 29, 2005, DA 05-3339.

[2] *See* Octatron, Inc. and Chang Industry, Inc. Request for Waiver ("Waiver Request"), filed November 28, 2005; *see also* Octatron/Chang Amendment to Request for Waiver ("Amendment"), filed February 15, 2007.

[3] *Id.*

[4] *See* 47 C.F.R. § 15.249.

[5] *See* 47 C.F.R. §§ 15.249(a) and (c); *see also* 47 C.F.R. § 15.35(a).

[6] 47 C.F.R. § 15.247.

[7] *See* Octatron/Chang Waiver Request at 2. Octatron/Chang's surveillance systems are wide-band devices that have been designed to operate in the 915 MHz band with 3.5 megahertz-wide channels. *See* Octatron/Chang Reply Comments, filed February 14, 2006, at 6.

[8] *See* 47 C.F.R. § 2.106

for industrial, scientific, and medical (ISM) applications. Under US 218, the 915 MHz band is available for Location and Monitoring Service (LMS) systems subject to not causing harmful interference to the operation of all Federal stations authorized in this band.[9] Also, under US 275, the 915 MHz band is allocated on a secondary basis to the amateur service subject to not causing harmful interference to the operations of Federal stations authorized in this band or to LMS systems.[10] Finally, the 915 MHz band is available on a non-interference basis for unlicensed devices.[11] Octatron/Chang currently market in the United States 915 MHz-band versions of their surveillance systems that comply with Part 15 of our rules.[12] The Dragon Egg System is a small egg-shaped device which provides live color or black-and-white video of a 360-degree field of view. It can be thrown to a remote or confined and potentially hazardous location to obtain video images of, and sound from, the immediate area. This device is intended for counter-terrorism and law enforcement operations in urban, rural, and wilderness terrain, as well as for police activities requiring observation and surveillance. The Pole Camera System expands on the capabilities of the Dragon Egg System with extendable poles, a camera mount, and a camera with an integrated infrared illuminator to investigate attics, crawl spaces, around corners, under vehicles, or high places.[13]

4. Octatron/Chang seek a waiver of Section 15.249(a) to allow the operation of their surveillance systems at an EIRP that exceeds the limit that is normally applicable to an analog modulated transmitter in the 915 MHz band.[14] Octatron/Chang also seek a waiver of the digital modulation requirements and PSD limit of Section 15.247 to allow their wide-band analog surveillance systems to operate under the rules for digitally modulated transmitters in the 915 MHz band, at the higher power levels and with a higher PSD than allowed.[15] Specifically, Octatron/Chang request that we waive these rules as described to allow both of their surveillance systems to operate with an EIRP of 750 mW using analog modulation.[16] At this power level, Octatron/Chang's devices would produce an EIRP that is 1,000 times greater than the 0.75 mW limit allowed by Section 15.249(a) for analog transmissions.[17] Furthermore, at this EIRP, the surveillance systems would each produce a radiated PSD of approximately 24 dBm/3 kHz,[18] which is 10 times greater than the 14 dBm/3 kHz limit allowed under Section 15.247 for

[9] *See* 47 C.F.R. § 2.106, US218.

[10] *See* 47 C.F.R. § 2.106, US275.

[11] *See* 47 C.F.R. § 15.5(b)

[12] *See* FCC ID PO28188029988; *see also* FCC ID PO288CE-T010.

[13] *See* Octatron/Chang Waiver Request at 1-2.

[14] *See* Octatron/Chang Waiver Request at 2-3 and Octatron/Chang Amendment at 1. *See also* 47 C.F.R. § 15.249(a).

[15] *See* Octatron/Chang Waiver Request at 2. *See also* 47 C.F.R. § 15.247. Although Octatron/Chang request a waiver of both the analog rules in Section 15.249 and the digital rules in Section 15.247, we note that they would only need a waiver of one of these rule sections for their high-power analog surveillance systems, not both. Octatron/Chang would need either a waiver of the analog rules in Section 15.249 to permit operation of their devices at a higher power than allowed for analog transmitters, or a waiver to allow their analog devices to operate under the Section 15.247 digital modulation rules and to permit operation of these devices under the higher power limits of those rules, but with a higher PSD than allowed by Section 15.247.

[16] *See* Octatron/Chang Amendment at 1.

[17] 47 C.F.R. § 15.249(a).

[18] The radiated PSD stated here corresponds to the value measured by the FCC's laboratory from a sample transmitter provided by Octatron/Chang. *See* Octatron/Chang Amendment at Exhibit A.

digital transmissions.[19] The higher-powered devices for which Octatron/Chang are seeking a waiver are currently marketed outside of the United States and to United States Federal Government users.[20]

5. Octatron/Chang assert that there is precedent for granting their Waiver Request, citing the waiver granted to Remington Arms Company, Inc. ("Remington") to allow increased power for Remington's unlicensed analog surveillance device operating in the 2450 MHz band, and arguing that that device is intended for the same purpose as Octatron/Chang's higher power surveillance systems that would operate in the 915 MHz band.[21] Octatron/Chang also contend that they should be granted a waiver for analog operation of their surveillance systems with the increased transmitter output power, PSD, and EIRP for the same reasons that the Commission found sufficient in granting the *Remington Waiver*, *i.e.*, prolonged battery life, smaller physical package, and reduced costs to produce.[22] In this case, they argue, these same factors would support Octatron/Chang's use of analog modulation. They further indicate that they would accept a waiver condition limiting the marketing and sale of their surveillance systems to law enforcement organizations,[23] just as the *Remington Waiver* limited the entities to which Remington's device could be marketed and sold to law enforcement entities.[24]

6. Nineteen parties filed comments in response to Octatron/Chang's request for waiver.[25] Nearly all commenters, including Part 90 Location and Monitoring Service (LMS) licensees, licensed amateur radio operators, and entities using unlicensed equipment to provide essential services and/or safety related functions in the 915 MHz band, are opposed to Octatron/Chang's Waiver Request, citing increased potential for interference.[26] The Los Angeles County Sheriff's Dept. filed supporting comments.[27]

7. It is a well established principle that the Commission will waive its rules if it determines, after careful consideration, that such a grant would not undermine the policy which the rule in question is intended to serve.[28] As discussed below, in this case Octatron/Chang have not provided information to demonstrate that the policy which the rules in question are intended to serve, *i.e.*, to protect licensed users from harmful interference, would not be undermined by a grant of their waiver request. Specifically, Octatron/Chang have not provided information to demonstrate that operation of their surveillance systems

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[19] 47 C.F.R. § 15.247.

[20] *See* Octatron Dragon Egg System at <http://www.octatron.com/prodDragonEgg.html> and Octatron Pole Camera System at <http://www.octatron.com/prodPoleCamera.html>.

[21] *See* Octatron/Chang Reply Comments at 2. *See also* In the Matter of Remington Arms Company, Inc. Request for a Waiver of Part 15 Regulations, ET Docket No. 05-183, *Order*, 20 FCC Rcd 18724 (2005) ("*Remington Waiver*").

[22] *See* Octatron/Chang Reply Comments at 2. *See also Remington Waiver*, 20 FCC Rcd 18728 ¶¶ 16-17.

[23] *See* Octatron/Chang Amendment at 3.

[24] *See Remington Waiver*, 20 FCC Rcd 18727 ¶ 12.

[25] Opposing comments were submitted by the AARL, the National Association for Amateur Radio; American Petroleum Institute; Cellnet Technology, Inc.; CTIA – The Wireless Association; David M. Upton; IEEE 802.18 Radio Regulatory Technical Advisory Group; James Edwin Whedbee, M.Ed.; Kenneth J. Hendrickson; L. Joseph Dumas; Los Angeles County Sheriff's Department; Mark A. Tomany; Matthew P. Littleton; Motorola, Inc.; Sensus Metering Systems, Inc.; SpectraLink Corporation; Sprint Nextel Corporation; Stephen B. Brown; TriSquare Communications, Inc.; and Warren C. Havens and Telesaurus Holdings GB, LLC D.B.A., LMS Wireless. Supporting comments were submitted by the Los Angeles County Sheriff's Department.

[26] *See*, *e.g.*, Sprint Nextel Corporation Opposition, filed January 30, 2006; American Petroleum Institute Comments, filed January 30, 2006; and ARRL, the National Association for Amateur Radio Comments, filed January 30, 2006.

[27] *See* County of Los Angeles Sheriff's Department Headquarters Reply Comments, filed February 13, 2006.

[28] *See WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969).

at the requested power levels would not cause harmful interference to licensed users in the 915 MHz band. Octatron/Chang merely assert that the interference would be minimal because of the limited use of the devices as to time and place.[29] Also, Octatron/Chang have not provided any justification for the specific power level increase they have requested. Octatron/Chang merely claim that the increased power is needed so their surveillance systems are "effective for law enforcement purposes."[30]

8. Contrary to Octatron/Chang's position that their surveillance systems are similar to the Remington device with regard to the waiver issues, we find that there are significant differences between these two waiver requests. These differences involve the intended frequency bands of operation and the potential for causing harmful interference to authorized users in the two intended bands of operation. The interference considerations with respect to the 915 MHz band are considerably different than those of the 2450 MHz band. The range at which transmissions at 915 MHz can cause interference is generally greater than that of transmissions of similar power at 2450 MHz. For example, Remington demonstrated that under laboratory conditions the worst-case interference range for its device was 60-100 feet.[31] In addition, while Remington's device was approved to operate with an EIRP of 357 mW,[32] Octatron/Chang request that their devices be allowed to operate with an EIRP of 750 mW,[33] more than twice that of Remington's device. Significantly, assuming free-space loss,[34] and taking into account the higher power Octatron/Chang request, a 60-100 feet interference range in the 2450 MHz band for Remington's device is much less than the 230-370 feet interference range in the 915 MHz band that we calculated for Octatron/Chang's devices.[35] The greater interference potential of Octatron/Chang's devices would impact other devices over roughly 4 times the range and almost 16 times the area compared to Remington's device. Moreover, transmissions in the 915 MHz band exhibit different propagation characteristics than the 2450 MHz band, such as greater penetration of walls, foliage, and other obstacles in the propagation path with less attenuation. It is important to note that although these propagation phenomena would allow a greater operating range for Octatron/Chang's surveillance systems, at the same time they also would contribute to a significantly increased interference range for these devices, thereby substantially increasing their interference potential to licensed users in the 915 MHz band.

9. In support of its waiver request, Remington supplied test data which supported operation of its analog device with increased power in the 2450 MHz band.[36] However, Octatron/Chang have not provided any showing of compatible operation of their surveillance systems with licensed users in the 915 MHz band. As indicated above, the interference environment of the 915 MHz band is considerably different from the 2450 MHz band. The increase in power that Octatron/Chang seek for operation in the 915 MHz band is significant because, assuming the same power level, transmissions in the 915 MHz band have a greater interfering range, and, unlike the 2450 MHz band, there are a significant number of licensed services in the 915 MHz band that could receive harmful interference from Octatron/Chang's

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[29] *See* Octatron/Chang Waiver Request at 4.

[30] *See* Octatron/Chang Amendment at 2.

[31] *See* Remington *Ex Parte* Comments, ET Docket No. 05-183, filed October 21, 2005.

[32] *See* FCC ID TII-EBR1.

[33] *See* n.16, *supra*.

[34] Free-space loss is simply the power loss of a signal as a result of the signal spreading out as it travels through space. This is distinguished from other losses which occur when radio waves pass through various gasses or material. Free-space loss increases as a function of the inverse of the squared distance from the transmitter to the receiver.

[35] The interference range for Octatron/Chang's devices was calculated by using a standard formula for free space path loss.

[36] *See Remington Waiver*, 20 FCC Rcd 18726 ¶ 8.

surveillance systems.[37] Therefore, we are concerned that the interference potential from operating these surveillance systems at the requested higher power could be significant.

10. We therefore conclude that Octatron/Chang have not provided sufficient information to demonstrate that harmful interference would not be caused to licensed users of the 915 MHz band, and thus we dismiss without prejudice their request for waiver of Sections 15.247(b), 15.247(e), and 15.249(a) of the Commission's rules. The petitioner has the burden to demonstrate that granting its requested waiver would not undermine the underlying purpose of the rules. Our decision herein provides Octatron/Chang the opportunity to submit a new waiver request, if it so chooses, and to provide information in support of its request that addresses the deficiencies discussed above.

11. Accordingly, IT IS ORDERED that, pursuant to the authority granted in Sections 4(i), 302, and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 4(i), 302, and 303(r), and Sections 0.31 and 0.241 of the Commission's rules, 47 C.F.R. §§ 0.31, 0.241, the Petition for Waiver of Octatron, Inc. and Chang Industry, Inc. IS DISMISSED WITHOUT PREJUDICE.

12. For further information regarding this Order, contact Patrick E. Forster, Office of Engineering and Technology, (202) 418-7061, patrick.forster@fcc.gov.

FEDERAL COMMUNICATIONS COMMISSION

Julius P. Knapp
Chief, Office of Engineering and Technology

[37] *See* ¶ 4, ¶ 8, and ¶ 3, *supra*.