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

In the Matter of	)	
	)	
L-3 Communications Security and Detection Systems, Inc.	)	
	)	
	)	ET Docket No. 16-45
Request for Waiver of Sections 15.31(c), 15.35(b) and 15.205(a) of the Commission's Rules to Permit the Deployment of Security Screening Portal Devices that Operate in the 20-40 GHz Range	)	

ORDER

Adopted: November 22, 2016 **Released: November 22, 2016**

By the Chief, Office of Engineering and Technology:

I. INTRODUCTION

1. By this Order, we grant the request for waiver filed by L-3 Communications Security and Detection Systems, Inc. (L-3) on January 28, 2016 so it can obtain FCC certification to market a new generation of its ProVision screening device that is used at locations such as airports to identify metallic and non-metallic weapons or contraband on a person. L-3 seeks the same rule waivers, under the same conditions, that the Office of Engineering and Technology (OET) granted in 2006 for the first generation ProVision device, with one exception. The new scanning device would have a wider operating bandwidth, increasing the swept frequency signal range from 24.25-30 GHz to 20-40 GHz. For the reasons discussed below, we find that there is good cause to grant L-3's request for waiver.

II. BACKGROUND

2. The ProVision is a security portal that uses imaging technology to detect weapons or contraband carried on a person, including non-metallic objects or explosives, which might otherwise require intrusive manual searches or be missed entirely by existing metal detectors. A person is scanned by stepping briefly into a transparent, upright cylinder seven feet high by four feet in diameter. Two vertical antenna masts rotate around the person over a two-second interval. Each antenna element in turn sweeps from 24.25-30 GHz, operating for approximately six microseconds per sweep. The device measures reflections of the radio signals from the subject and produces an image that shows hidden objects, if any exist.

3. On August 3, 2006, OET adopted an Order that waived the provisions of Section 15.31(c) and Section 15.35(b) of the Commission's rules to permit the marketing and unlicensed operation of the SafeScout (now the ProVision 100) device.[1] Specifically, OET granted SafeView (now L-3) a waiver of

[1] *SafeView, Inc. Request for Waiver of Section 15.31 and 15.35 of the Commission's Rules to Permit the Deployment of Security Screening Portal Devices that Operate in the 24.25-30 GHz Range,* Order, 21 FCC Rcd 8814 (OET 2006) (*2006 Waiver Order*), *aff'd*, Memorandum Opinion and Order, FCC 10-13, 25 FCC Rcd 592 (2010).

the rules to permit the measurement of the device's average radiated emissions with the frequency sweep active, rather than stopped as Section 15.31(c) of the rules requires. In addition, OET waived the requirement of Section 15.35(b) which specifies a limit on peak emissions from unlicensed devices of 20 dB above the corresponding maximum average emission limit specified in Section 15.209.[2] It placed specific operational and marketing conditions on the ProVision 100 device to ensure that licensed users operating in the 24.25-30.00 GHz and adjacent frequency bands are not subject to harmful interference.[3]

4. On January 28, 2016, L-3 filed a request for waiver of three Commission rules so it can obtain FCC certification to market a new generation of its ProVision screening device ("Next Gen ProVision device").[4] It seeks the same rule waivers, under the same conditions, that OET granted for the first generation ProVision device, with one exception. Specifically, the new scanning device would have a wider operating bandwidth, increasing the swept frequency signal range from 24.25-30 GHz to 20-40 GHz. L-3 requests that OET once again waive Section 15.31(c) of the rules as it did in 2006 to allow radiated measurements to be performed with the device's frequency sweep active, and that it waive Section 15.35(b) to allow the peak level of radiated emissions to exceed the average emission limit by 41 dB.[5] L-3 also requests a waiver of Section 15.205(a) to allow transmissions in five "restricted bands" where only spurious emissions are permitted: 22.01-23.12 GHz, 23.6-24 GHz, 31.2-31.8 GHz, 36.43-36.5 GHz, and 38.6-40 GHz.[6]

5. L-3 argues that a waiver of the rules is necessary to allow marketing of an improved version of the ProVision device that is better able to detect threats.[7] It states that increasing the bandwidth over which the device sweeps from 5.75 GHz to 20 GHz will increase its resolution and improve its depth resolution by a factor of more than three.[8] L-3 argues that the frequency band of 20-40 GHz is ideal for this device's operation, because frequencies above the 20-40 GHz band produce a stronger clothing signature that distorts the data, while lower frequency bands with longer wavelengths will have poorer resolution.[9] Because operation in the 20-40 GHz band would result in transmissions within five restricted bands, a waiver of Section 15.205(a) would be necessary to allow this operation.[10]

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[2] 47 C.F.R. § 15.209.

[3] OET initially placed a time limit on the waiver and limited the number of units that could be installed, but subsequently removed these restrictions. *See SafeView, Inc. Request for Waiver of Section 15.31 and 15.35 of the Commission's Rules to Permit the Deployment of Security Screening Portal Devices that Operate in the 24.25-30 GHz Range*, Letter Order, 26 FCC Rcd 10250 (OET 2011).

[4] Request by L-3 Communications Security and Detection Systems, Inc. for Waiver of Sections 15.31, 15.35, and 15.205 of the Commission's Rules (filed Jan. 28, 2016) (L-3 Waiver Request).

[5] 47 C.F.R. § 15.31(c) and 47 C.F.R. § 15.35(b). Section 15.31(c) requires that when average radiated emissions limits are specified for a device, the peak radiated emission level may not exceed the average emission limit by more than 20 dB. Section 15.35(b) requires that swept frequency devices be tested with the frequency sweep stopped at the frequencies chosen for measurement.

[6] 47 C.F.R. § 15.205(a). Spurious emissions are emissions on a frequency or frequencies which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. 47 C.F.R. § 2.1.

[7] L-3 Waiver Request at 6.

[8] *Id.* at 6-7.

[9] *Id.* at 4.

[10] *Id.* at 9-10.

6. L-3 argues that waivers of Sections 15.31(c) and 15.35(b) continue to be necessary because measuring emissions with the frequency sweep stopped overstates the interference potential of the device.[11] L-3 further argues that the maximum power of the device cannot be reduced without impairing its functionality, so a waiver of the peak power limit is necessary.[12]

7. On February 19, 2016, OET issued a public notice seeking comment on L-3's request for a waiver.[13] No parties filed comments in response to this notice.

III. DISCUSSION

8. 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.[14] Good cause, in turn, may be found and a waiver granted "where particular facts would make strict compliance inconsistent with the public interest."[15] To make this public interest determination, the waiver cannot undermine the purposes of the rule, and there must be a stronger public interest benefit in granting the waiver than in applying the rule.[16]

9. We find that the requested waiver of 47 C.F.R. §§ 15.31(c), 15.35(b) and 15.205(a) is consistent with these principles. The Next Gen ProVision device will serve the public interest because its enhanced resolution and scanning depth will help improve security procedures at entry checkpoints by facilitating the identification of concealed dangerous objects, thereby promoting national security objectives. We also conclude that, with appropriate operational and technical restrictions to prevent harmful interference to authorized services, granting L-3's request for waiver does not undermine the policy underlying our rules, *i.e.,* to prevent harmful interference to authorized services. Weighing the strong public interest benefits associated with promoting improved security against the limited utility of the application of the rule to this case, we find the criteria has been met for granting a waiver of our rules to L-3 for its Next Gen ProVision device.

10. Based on the information submitted with the waiver request, and the lack of any reported interference from the current generation of ProVision equipment, we conclude that the Next Gen ProVision device poses very little potential for causing harmful interference to authorized operations. We find that the L-3 device when operated in fixed indoor locations would pose very little, if any, potential for harmful interference to licensed operations that are located either outdoors or indoors. Many of the

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[11] *Id.* at 8.

[12] *Id.* at 9.

[13] *Office of Engineering and Technology Declares L-3 Communications Security and Detection Systems, Inc. Request for Waiver of Part 15 Measurement and Restricted Band Rules to be a "Permit-but-Disclose" Proceeding for Ex Parte Purposes and Requests Comment*, Public Notice, 31 FCC Rcd 1167 (2016).

[14] 47 C.F.R. § 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).

[15] *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.

[16] *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).

factors that supported our prior waiver for L-3's first-generation device continue to be relevant and favor L-3's present application. At frequencies in the ProVision's operating range, free space loss is significant. We concur with L-3 that this factor, added to building attenuation, can prevent harmful interference to licensed devices operating outdoors.[17] Also, the L-3 device's very low duty cycle signals and fast sweep speeds would further mitigate any potential interference to licensed receivers that operate at much longer transmission time periods in the affected frequency bands. Moreover, the Next Gen ProVision device would have a faster sweep than the current device. This characteristic will reduce the time that a signal occupies any given frequency band, and will further reduce the likelihood of harmful interference.[18]

11. The wider sweep range of the Next Gen ProVision device will cause it to transmit in additional frequency bands where the current device does not. The services potentially impacted by the increased sweep range include the Amateur Radio Service at 24 GHz[19], as well as those in five restricted bands: 22.01-23.12 GHz, 23.6-24 GHz, 31.2-31.8 GHz, 36.43-36.5 GHz, and 38.6-40 GHz.[20] The first four bands are restricted to protect radio astronomy and satellite services, while the fifth is part of a blanket restriction on operations at frequencies above 38.6 GHz.[21] We find that the factors described above (high path loss, building attenuation, low duty cycle and sweep speeds that are faster than those of the existing ProVision device) will make interference to services in those bands, as well as other services in the 20-40 GHz band, highly unlikely. However, we will take additional measures to protect radio astronomy operations in the 20-40 GHz band.

12. With regard to radio astronomy, L-3 states that it will agree as a condition of the waiver to coordinate installations for any location closer than 50 kilometers to a radio astronomy facility that observes in the 20-40 GHz frequency range, and to coordinate any installation which is line-of-sight to the observatory at Kitt Peak.[22] L-3 argues that the limited number of radio astronomy sites observing at these frequencies, the non-consumer nature of the L-3 device, and L-3's commitment to maintain a list of locations where the devices are installed make distance separation a reliable means of preventing harmful interference.[23] We agree, and will therefore condition the waiver accordingly.

13. Consistent with L-3's request, we will impose the same operational and marketing conditions on operation of the Next Gen ProVision device as we imposed on the ProVision 100 device in the *2006*

[17] L-3 Waiver Request at 13-14.

[18] *Id.* at 14.

[19] The band 24.0-24.05 GHz is allocated on a primary basis for the Amateur Radio Service, and the Amateur Radio Service may use the 24.05-25 GHz on a secondary basis to Federal radiolocation operations. As previously noted, L-3's first generation device has successfully operated in the 24.25-30 GHz band without reports of harmful interference.

[20] 47 CFR § 15.205(a).

[21] The increased sweep range of the NexGen ProVision device will encompass frequency bands (37-38.6 GHz and 38.6-40 GHz) for which the Commission recently adopted new and modified wireless service rules. *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, 81 FCC Rcd 58269 (2016). Under the general conditions of operation for unlicensed devices, in the event the NextGen ProVision causes harmful interference to authorized services in these bands, it must cease operation until the harmful interference has been corrected. 47 CFR § 15.5.

[22] L-3 Waiver Request at 10-11.

[23] *Id.* at 10.

Waiver Order, except that we are specifying that operation will be permitted over the wider frequency range of 20-40 GHz.[24] These conditions will significantly limit the potential for harmful interference from the Next Gen ProVision imaging device, while allowing deployments in airports, prisons and other similar locations, and providing transportation, law enforcement and security entities with a reliable and innovative means of protecting the American public. Specifically, we will require L-3 to install its equipment indoors only, thereby ensuring that building attenuation and free space loss will prevent any measurable power from the L-3 device reaching licensed receivers in the vicinity. We are also limiting the allowable radiated peak power levels to no more than 41 dB above the average emissions limit in Section 15.209(a).[25]

14. We will require compliance with certain notification and recordkeeping requirements as we did previously. Specifically, we will require L-3 to create and maintain a record of installations of all devices operating under this waiver, including the identity of the customer, the type of installation, and street address and/or geographical coordinates. The information will assist L-3, the Commission and NTIA in determining whether an L-3 device is operating within close proximity to an authorized operation should harmful interference occur, thus facilitating investigation of an interference complaint. We are also requiring L-3 to inform purchasers that Next Gen ProVision imaging devices may not be resold to third parties for use at another installation in the United States unless appropriate arrangements are made to meet all of the conditions of this waiver. This condition will ensure that equipment will continue to be listed in the L-3 database even if it is resold. Finally, we will require L-3 to obligate parties who purchase this device to operate them consistent with the terms of this Order.[26]

15. Accordingly, pursuant to the delegated authority in Sections 0.31 and 0.241 of the Commission's rules, we waive the requirements of Sections 15.31(c), 15.35(b) and Section 15.205(a) of our rules to permit the certification and marketing of the Next Gen ProVision device. This waiver is subject to the following conditions:

1) The Next Gen ProVision imaging device shall be certified by the Commission and must comply with the technical specifications applicable to operation under Part 15 of 47 C.F.R.[27] However, for this particular swept frequency device, compliance with the average power level need not be demonstrated under the requirement of 47 C.F.R. § 15.31(c) and the requirement of §15.35(b) is relaxed to allow a total radiated peak power level up to 41 dB above the maximum permitted average power in Section 15.209(a) when measured as specified herein.

2) The intentional emissions generated by the Next Gen ProVision imaging device must be completely contained within the 20 to 40 GHz frequency range.

3) All installations of the Next Gen ProVision imaging devices operated under this waiver shall be restricted to indoor use.

[24] *2006 Waiver Order*, 21 FCC Rcd at 8823, para. 29.

[25] For frequencies above 960 MHz, the limit in this section is 500 microvolts per meter, measured at a distance of three meters.

[26] The provisions of 47 CFR §2.939(a) allow the Commission to revoke the certification grant if L-3 or any operator of these devices fails to comply with the obligations placed on them in accordance with the equipment authorization program.

[27] L-3 shall include a copy of this waiver order with its application for certification of the Next Gen ProVision imaging device.

4) L-3 shall create and maintain a record of installations of all devices operating under this waiver, including the identity of the customer, type of location (*e.g.*, airport or government building), and street address and/or coordinates. This list shall be made available to the Commission and to NTIA upon request.

5) L-3 shall inform purchasers that Next Gen ProVision imaging devices may not be resold to third parties for use at another installation in the United States unless appropriate arrangements are made to meet all of the conditions of this waiver.

6) This waiver shall apply to the Next Gen ProVision imaging device produced by L-3 as described herein and provided no major changes are made to the transmitter circuitry or to the housing and position of the antenna masts that would increase the devices radiated power or bandwidth.

7) L-3 shall follow the same measurement procedures for determining the average radiated power and the peak radiated power as specified in the initial waiver grant.[28] These measurement procedures are specific to the Next Gen ProVision imaging device and are not generally applicable to all swept-frequency transmitting systems.

8) L-3 shall coordinate operation of its Next Gen Provision imaging system with any radio astronomy facilities within 50 kilometers that receive signals in the 20-40 GHz band, and shall coordinate any installation which is within line of sight of the observatory at Kitt Peak.

IV. ORDERING CLAUSE

16. Accordingly, pursuant to authority delegated in sections 0.31 and 0.241 of the Commission's rules, 47 C.F.R. sections 0.31, 0.241, and section 1.3 of the Commission's rules, 47 C.F.R. section 1.3, IT IS ORDERED that the Request for Waiver filed by L-3 Communications Security and Detection Systems, Inc. on January 28, 2016 IS GRANTED consistent with the terms of this Order. This action is taken pursuant to Sections 4(i), 302, 303(e), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 302, 303(e), and 303(r). This action is effective upon release of this Order.

17. IT IS FURTHER ORDERED that, if no applications for review are timely filed, this proceeding SHALL BE TERMINATED and the docket CLOSED.

FEDERAL COMMUNICATIONS COMMISSION

Julius P. Knapp
Chief, Office of Engineering and Technology

[28] *2006 Waiver Order*, 21 FCC Rcd at 8823, para. 29.