

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

In the Matter of)
SafeView, Inc.)
Request for Waiver of Sections 15.31 and 15.35 of) ET Docket No. 04-373
the Commission's Rules to Permit the Deployment)
of Security Screening Portal Devices that Operate)
in the 24.25-30 GHz Range)

ORDER

Adopted: August 3, 2006

Released: August 4, 2006

By the Acting Chief, Office of Engineering and Technology:

I. INTRODUCTION

1. By this action, we are granting the Request for Waiver filed on August 18, 2004, by SafeView Inc. (SafeView) to permit the certification and subsequent marketing and operation of its SafeScout imaging device under Part 15 of the Commission's rules. Specifically, we are granting SafeView a waiver of Section 15.31(c) of the rules in order to permit the measurement of the SafeScout device's average radiated emissions with the frequency sweep active (rather than with the sweep stopped, as the rule requires). Under this condition, the average radiated emissions of the SafeScout device shall not exceed the emissions limits specified in Section 15.209(a) when measured according to the procedures specified herein. Additionally, we are waiving 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. Under this condition, the radiated peak power shall not exceed a level that is 41 dB above the average emissions limit when measured with the transmitter frequency sweep stopped and in accordance with the procedures specified herein. Furthermore, in recognition of the regulatory limitations associated with certification under Part 15, we are also imposing specific operational conditions applicable to the SafeScout device to ensure that licensed users currently operating in the 24.25-30 GHz and adjacent frequency bands are not subject to harmful interference. We find that a grant of this waiver is in the public interest in that it will permit the operation of devices capable of furthering homeland security objectives by providing a means for detecting both metallic and

1 The SafeView SafeScout line of products currently includes two models, the SafeScout 360 (with doors) and the SafeScout 100 (without doors). Both products use the same imaging circuit in the 24.25 to 30 GHz frequency band but differ in the chamber's mechanical configurations. The differences do not affect the radio frequency (RF) radiated emission characteristics of the products. All SafeScout models will use the same imaging circuit in the same frequency range with the same RF emission characteristics.

2 See SafeView, Inc. Request for Waiver of Sections 15.31(c) and 15.35(b) (filed August 18, 2004); see also, 47 C.F.R. §§ 15.31(c) and 15.35(b).

non-metallic objects, such as weapons, explosives and other contraband that might be missed when using conventional methods.

II. BACKGROUND

2. The SafeView SafeScout imaging device is a security portal that uses imaging technology to detect weapons or contraband carried on an individual's person, including non-metallic objects or explosives, which might otherwise require intrusive manual searches or be missed entirely by existing metal detectors. A person to be scanned by the SafeView device steps briefly into a transparent, upright cylinder seven feet high by four feet in diameter. Two vertical antenna masts rotate around the person over a 2-second interval. Each antenna element in turn sweeps from 24.25 to 30 GHz, operating for approximately six microseconds per sweep. The device measures reflections of the radio signals from the subject and calculates an image that shows hidden objects.³

3. The unlicensed operation of a transmitter in the 24.25 to 30 GHz band is subject to the general emissions limits of Section 15.209 of the rules. In addition, Section 15.31(c) requires that the emissions from a swept frequency device be measured with the frequency sweep stopped.⁴ Also, Section 15.35(b) specifies a limit on peak emissions from unlicensed devices of 20 dB above the corresponding maximum average emission limit specified in Section 15.209. The purpose of these rules is to avoid potential harmful interference from a Part 15 device to licensed receivers, particularly those with a rapid transient response times which may render them more susceptible to high levels of peak emissions.

4. SafeView explains that because the received levels reflected from the RF sweeps are already very low, operating the SafeScout device at lower levels to meet the limits in the rules would prevent the equipment from resolving the target adequately for reliable detection.⁵ SafeView states that when tested with the frequency sweep stopped, as required by Section 15.31(c), the device's total peak power exceeds the limit by 21 dB.⁶ As a result, the device also fails to meet the required 20 dB peak-to-average ratio of Section 15.35(b), necessitating a waiver of this rule as well.

5. In support of its request, SafeView submits that the SafeView SafeScout imaging device will serve the public interest by providing a fast and reliable security method to enable the detection of non-metallic threats, such as weapons made of plastic or ceramics, that are often missed by existing metal detectors; and that the equipment would also reduce long security lines at major airports and passenger frustration. It also states that due to the devices low operating power level and indoor-only installation, there will be no potential for harmful interference to licensed services in the same frequency band which operate only outdoors and use no indoor receivers.⁷ To further support its request, SafeView proposes to adhere to two conditions: 1) it will develop and maintain an installation database, accessible by the

³ SafeView Request for Waiver at 9.

⁴ 47 C.F.R. § 15.31(c).

⁵ SafeView Request for Waiver at 10.

⁶ Section 15.209(a) limits transmitted average power above 960 MHz to 500 μ V/m at 3-meters (equivalent to an EIRP of -41 dBm/MHz). Section 15.35(b) additionally restricts total peak power to 20 dB above the corresponding maximum average emission limit. To resolve its targets adequately, the SafeView system must transmit 100 μ W peak into an antenna with 10 dBi gain, for a total peak power that is 21 dB higher than the limit.

⁷ SafeView Request for Waiver at 3.

Commission and by the National Telecommunications and Information Administration (NTIA), to help identify the source of any interference, should it occur; and 2) it will limit installations of the SafeScout device to one hundred during the first year of the waiver, and to an additional two hundred during the second year.⁸

6. A Public Notice soliciting comments on SafeView's petition was issued on September 22, 2004.⁹ Ten parties filed comments, replies and *ex parte* statements.¹⁰ Seven parties representing LMDS/24 GHz interests oppose the waiver request. The Transportation Security Administration (TSA), the United States Department of State and the Department of Corrections of the State of Rhode Island filed in support.

III. DISCUSSION

7. In analyzing SafeView's Request, we consider established legal standards for waiver of the Commission's rules. Under these standards, the Commission will adhere strictly to its rules unless a party can demonstrate that "in the public interest, the rule should be waived."¹¹ Waivers allow an agency to "take into account considerations of hardship, equity, or more effective implementation of overall policy" and permit "a more rigorous adherence to an effective regulation," without eviscerating the general rule.¹² Furthermore, the Commission may only waive a provision of its rules for "good cause shown."¹³

8. We find here that a waiver of the requested provisions of 47 C.F.R. §§ 15.31(c) and 15.35(b) is consistent with the above principles. The SafeScout device will serve the public interest because it will help improve security procedures at entry checkpoints by ensuring that any concealed dangerous objects are identified, thereby enhancing national security objectives. The second test is whether or not the waiver undermines the policy which the rule in question is intended to serve, *i.e.*, to protect authorized users of the spectrum from harmful interference. In this regard, we address two issues: 1) potential interference to other radio operations; and 2) restrictions on the installation and use of the SafeScout equipment. We conclude that, with appropriate operational and technical restrictions, granting SafeView's request for waiver does not undermine the policy underlying our rules and that a waiver of the requirements in Sections 15.31(c) and 15.35(b) is in the public interest.

⁸ SafeView Request for Waiver at 3.

⁹ See Public Notice, DA 04-3038, released September 22, 2004.

¹⁰ Fixed Wireless Communications Coalition (FWCC), Hughes Network Systems, Inc. (HNS), Transportation Security Administration (TSA), Winstar Communications, LLC (Winstar), Wireless Communications Association International, Inc. (WCA) and XO Communications, Inc. (XO). First Avenue Networks, Inc. (FAN) filed *ex parte* comments on Jan. 9, 2006. RF Development, LLC (RFD) filed *ex parte* comments on Dec 15, 2005 and Jan 2, 2006. The U.S. State Department provided a support letter, dated December 23, 2005. SafeView also provided in *ex parte* a letter of support dated Jan 10, 2006 from the Department of Corrections, State of Rhode Island.

¹¹ *FPC v. Texaco Inc.*, 377 U.S. 33, 39 (1964).

¹² *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969). See also, 47 C.F.R. §1.925.

¹³ 47 C.F.R. §1.3.

9. *Comments.* Oppositions filed by commenters generally express concerns about the potential for harmful interference from the SafeView device into the Local Multipoint Distribution Service (“LMDS”) and Fixed Service (“FS”) (“LMDS/24 GHz”) in the bands 24.25-24.45, 25.05-25.25, and 27.5-31.225 GHz.¹⁴

10. Hughes Network Systems, Inc. (HNS), a manufacturer of microwave communications equipment used by licensees operating in the 24 and 28 GHz bands, states that a grant of SafeView’s waiver request would significantly increase the likelihood of interference to licensed point-to-multipoint services operating in these bands. In its analyses, HNS calculates that the disruption caused by SafeView equipment to its LMDS equipment would result in a few degraded bits every few seconds without otherwise impacting the link. HNS asserts that its customers would not be able to associate the on-going reduction in bit error rates to interference from SafeView equipment, but would nonetheless be dissatisfied with HNS equipment, thereby causing economic harm to HNS by the loss of sales and the return of products. HNS further argues that SafeView wrongly assumes that only one transmitter would be at a given location, and asserts that aggregated signals from multiple SafeView transmitters could increase the potential for harmful interference. In addition, HNS states that SafeView fails to demonstrate how building attenuation would provide the necessary protection. HNS argues that SafeView understates the level and duration of interference by using an erroneous factor, 20 log, in the duty cycle calculations for its device, contrary to standard engineering practice of using a factor of 10 log.¹⁵ Finally, HNS states that SafeView has failed to demonstrate why it cannot reduce emissions by shielding its devices. It asserts that microwave absorbers are available and would not be cost-prohibitive. It calculates the cost for shielding each device to be approximately \$300, which it claims is insignificant when added to the \$100,000 cost of each SafeView device. HNS also suggests that the SafeView device could be built with a smaller shield assembly that would rotate with the antenna assembly.¹⁶

11. XO Communications, Inc. (XO), a licensee with multiple LMDS authorizations across the United States that cover segments of the band 27.5 to 31.225 GHz, agrees with HNS that SafeView has not provided evidence regarding the characteristics of its devices in protecting licensed users from harmful interference. Like HNS, XO also believes that SafeView will need multiple transmitters to accommodate traffic through security checkpoints, which would alter SafeView’s estimation of interference that is based only on one transmitter. XO also points out that SafeView did not provide any evidence to demonstrate that its devices will not impact outdoors users, such as in open airports in Hawaii or similar locations. XO also states that it is planning to operate its LMDS equipment indoors and that indoor equipment might be adversely affected by SafeView’s devices. Finally, XO agrees with HNS that SafeView erred in its calculations of the duty cycle using a 20 log factor.¹⁷

12. The Wireless Communications Association International (WCA) and the Fixed Wireless Communications Coalition (FWCC) similarly oppose this waiver request and agree with HNS’ and XO’s

¹⁴ Other licensed services (*e.g.*, Fixed Satellite Services (FSS), Earth Exploration Satellite (ESS), etc.) also operate in the 24.75–30 GHz band, however, we did not receive comment from these licensees. We also note, as discussed, *infra*, that the SafeScout device operates as an unlicensed device under Part 15 of the rules, and as such, it must accept interference from licensed services and may not cause harmful interference, notwithstanding the fact that the SafeScout performs a safety or homeland security related function.

¹⁵ See Opposition of HNS at 1-3.

¹⁶ Opposition of HNS at 12.

¹⁷ See Response of XO, and Reply Comments of XO (pages unnumbered).

concerns and arguments. WCA further argues that SafeView has not provided any analysis or evidence in support of its claims that its devices will not cause interference. It also disagrees with SafeView's claims that there are no indoor receivers in the 28 GHz band.¹⁸

13. FAN operates wide-area and point-to-point communications systems in the 24 GHz band, among other network operations. FAN operates these systems in airports and in close proximity to airports to support the Federal Aviation Administration. FAN asserts that it should be given the opportunity to devise test procedures to determine whether operation of the SafeView device above the limits allowed by the rules would cause harmful interference to FAN's network. It argues that granting SafeView's waiver request would impair licensee's ability to use their authorized spectrum, including developing new services, and increase their operational costs (*e.g.*, additional coordination expenses).¹⁹

14. Similarly, Winstar Communications, LLC (Winstar), an LMDS licensee operating in the 29 GHz and 31 GHz bands, argues that while the duration of transmissions by the SafeView devices may be short, with a succession of emissions a victim receiver could receive excessive interference for periods long enough to degrade its performance. It argues that its FS systems must operate with a low rate of bit errors and the operation of the SafeView device would cause these systems to operate at higher rate of errors. Winstar provides calculations to show that its FS receivers with typical pass band of 50 MHz would receive harmful interference from SafeView devices at distances of 5 km without blockage and at distances of 1 km assuming a 10 dB blockage.²⁰ Winstar supports HNS' proposal to make mandatory the use of absorbing material with the operation of the SafeView devices.²¹

15. HNS believes that SafeView's proposed conditions are insufficient to reduce interference to licensed services. It first argued that because the proposed database would only be available to NTIA or the FCC, the database would not be of any use to private licensed users who experience interference. It also is concerned that the waiver request did not mention any limitations on the number of installations beyond the first and second years.²² Further, HNS argues that no conclusions could be drawn from the operation of SafeView devices in the first two years because many wireless service providers have just started to deploy licensed systems in the 24.25-30 GHz bands.²³ In addition, HNS questions SafeView's commitment to comply with the waiver conditions, stating that SafeView has no control over where its

¹⁸ See Letter of FWCC and Reply Comments of WCA.

¹⁹ Similarly, in its *ex parte* filings, RFD asserts the right of LMDS licensees to "permit" use of LMDS spectrum by non-license users such as SafeView, through negotiations between the parties. RFD *ex parte* comments, filed Dec 15, 2005 and Jan 2, 2006. See also, SafeView's response filed Dec 20, 2005. We note that under our Part 15 rules, unlicensed devices are allowed to operate in any frequency band that is not a restricted band, provided they comply with our requirements to avoid interference to authorized users, thus prior "permission" from licensees is not required. 47 C.F.R. §§ 15.5 & 15.209.

²⁰ See Reply Comments of Winstar at 3-4, Annexes.

²¹ Reply of Winstar at 5.

²² Opposition of HNS at 11.

²³ See *Amendments to Parts 1, 2, 87 and 101 of the Commission's Rules to License Fixed Services at 24 GHz, Report and Order*, 15 FCC Rcd 16934 (2000); and *Amendments to Parts 1, 2, 87 and 101 of the Commission's Rules to License Fixed Services at 24 GHz, Order on Reconsideration*, 16 FCC Rcd 11156 (2001).

customers install the product.²⁴

16. SafeView argues in its reply and *ex parte* filings that HNS and other commenters overestimate the SafeScout's interference potential to licensed receivers because they use worst case assumptions for scenarios that are unlikely to occur.²⁵ SafeView states that at the current state of its technology, lowering the peak power of the SafeScout device by 21 dB to comply with the existing rules of Section 15.35(b) would render the device inoperative, because the higher peak power limit is needed for the unit to adequately resolve very low levels of reflections from the scanned subject. It states that although operation at reduced peak power may prove feasible over the long term, regulatory relief is necessary in order to bring the overwhelming safety benefits of the device to the public without delay.²⁶ SafeView argues that although the SafeScout needs to operate at a high peak power, because the device scans at very fast sweep speeds and with a very short duty cycle, the peak power of its signals would not cause interference even if the signals were to reach a victim receiver operating in the LMDS/24 GHz bands. SafeView submits that the signal time duration of 100 nanoseconds of HNS equipment in particular, according to HNS' calculations, greatly exceeds the SafeScout's signal of 13.8 nanoseconds per sweep, hence interference would be unlikely to occur.²⁷ Further, SafeView argues that the high antenna gain and directivity of LMDS/24 GHz equipment reduces any interference potential from signals outside of the main beam of the antennas of the equipment.²⁸ SafeView states that according to Part 101 of the Commission's rules, a Category B antenna as used by LMDS equipment is required to provide 20 dB of attenuation just 5 degrees off the main axis, with increase to 45 dB of attenuation in the region behind the antenna, and that the requirements for a Category A antenna are even more stringent.²⁹ Thus, SafeView argues that the commenters' calculations greatly underestimate LMDS antenna performance.³⁰ It argues that the high antenna gains of the LMDS receivers significantly reduce the probability of an LMDS/24 GHz unit ever receiving measurable signals from a SafeView device.³¹ SafeView also states that it is committed to installing all equipment under the waiver indoors and that it would bind its customers by contract to the waiver conditions and any obligations under the rules.³²

17. SafeView further asserts that the only plausible interference scenario would be in the case of an airport that installed a SafeScout in the same room as a LMDS/24 GHz device and the geometry of the

²⁴ See letter from John P. Janka to Marlene Dortch, Secretary, Federal Communications Commission, filed on Jan. 28, 2005, at 2.

²⁵ See SafeView Reply to Oppositions (Nov. 8, 2004); *ex parte* filings (Jan. 28, 2005; Feb. 2, 2005; Mar. 11, 2005; Jun. 20, 2005; and Aug. 18, 2005.)

²⁶ SafeView Request for waiver at 10.

²⁷ Opposition of HNS, Exhibit 1, at 3.

²⁸ See *id.* HNS link budgets specify LMDS/24 GHz antenna gains of 43 dBi for remote units and 16 dBi for hub units.

²⁹ See 47 C.F.R. §101.115(b)(table).

³⁰ Reply of SafeView at 10.

³¹ *Id.*, at 11.

³² SafeView reply at 10.

room placed the SafeView device close to the LMDS receiver's boresight.³³ Although SafeView recognizes that the potential for interference exists if an LMDS/24 GHz antenna is installed indoors, *e.g.*, in the same airport terminal and oriented toward the SafeView device with minimal obstructions, it contends that the potential for interference could be avoided by re-orienting the LMDS/24 GHz antenna, putting a shielded partition between the two devices, or choosing to use one device over the other in a specific location.³⁴

18. Likewise, SafeView argues that because of the high antenna gain and directivity of the LMDS/24 GHz equipment, if the latter is installed in the same room as two or more SafeView devices, the SafeView devices would have to be lined up in or near the boresight of the LMDS/24 GHz antenna to cause SafeView's aggregated signals to increase by only 3 dB. SafeView contends that the interference potential arising under these circumstances, while extremely unlikely to occur, could be minimized.³⁵

19. SafeView states that although it has no specific data on building attenuation of signals in the 24-30 GHz frequency band, the Commission has assumed signal loss due to building attenuation at "considerably higher than 10 dB" for the 12.75-13.25 GHz band.³⁶ SafeView therefore argues that, as attenuation increases with frequency, this number would be significantly higher in the 24-30 GHz band. Thus, SafeView expresses the belief that building attenuation, combined with free space loss both inside and outside any installation building, will more than account for the 21 dB factor by which the SafeView peak emissions exceed the limits in the rules.³⁷

20. SafeView argues that its SafeScout device cannot be completely shielded because the chamber in which the subject to be scanned stands has to be transparent to accommodate claustrophobic adults and small children, and to support safety purposes, so that guards can see inside. To refute HNS' recommendation that the SafeScout use a smaller shield that rotates with the antenna assembly, SafeView asserts that the need to maintain full visibility in the chamber would limit the shield's horizontal size. It states that since the SafeScout's antennas are not highly directional, a rotating shield would only provide 1 to 2 dB protection overall, limiting the corresponding benefit of such a design.³⁸ In *ex parte* comments, SafeView states that adding shielding to all installations, whether needed or not, would add cost and reduce performance without providing any benefit in the vast majority of cases.³⁹

21. On March 11, 2005, SafeView submitted an *ex parte* filing in which it revised its assumptions and calculations to use most of the key assumptions and methods advocated by the opponents to the waiver. This includes using the 10 log formula in its duty cycle calculations with respect to effective isotropic radiated power (EIRP), rather than 20 log as originally proposed in the waiver request for field strength measurements. The SafeView's revised methods and assumptions for calculating the duty cycle

³³ This condition occurs when a high-gain antenna and its main lobe pattern point at a specific object.

³⁴ Reply of SafeView at 6-7.

³⁵ *Id.*

³⁶ See *Interference Temperature Metric, Notice of Inquiry and Notice of Proposed Rulemaking*, 18 FCC Rcd 25309 at Appendix B, n.73 (2003).

³⁷ Reply comments of SafeView at 10.

³⁸ Reply of SafeView at 13.

³⁹ SafeView *ex parte communication* filed on November 29, 2005 at 4.

are now in agreement with the opposing parties.⁴⁰

22. *Decision.* Based on our analysis of the record, we conclude that the SafeScout poses very little potential of harmful interference to authorized operations. To ensure that harmful interference to authorized operations will not occur, we are imposing several conditions on operations under this waiver and are therefore granting SafeView a waiver of Sections 15.31(c) and 15.35(b) of the rules for its SafeScout device, as discussed below.

23. The claims of harmful interference from the LMDS/24 GHz licensees and supporters all rely upon the results of the HNS analyses.⁴¹ Based on our review of these analyses and each of the underlying link budget assumptions, we find that HNS overestimates the interference potential, mainly due to overly conservative assumptions used in the link budget. These overly conservative link budget assumptions include: a) the utilization of an average power interference threshold to assess peak power interactions; b) the assumption of an unobstructed propagation path between a ground-based SafeView security booth contained within a building and an elevated remote terminal LMDS antenna; c) the basic line-of-sight free space propagation attenuation model will apply over a propagation path extending to 9 km without regard to additional losses associated with diffraction, scattering and/or reflection of the signal at 24-28 GHz; d) the use of maximum (mainbeam) receiver antenna gain; and e) significant under-representation of building attenuation at these frequencies. In addition to these overly conservative assumptions, the HNS analyses also ignore a significant operational factor associated with the SafeView system. In normal operation, the emissions from a SafeView antenna array are intentionally directed at a human subject who is located approximately 1.5 meters distance from the transmitting antenna. As a result, any stray emissions will likely suffer additional attenuation from either absorption (*i.e.*, passing through the subject) or reflection from the subject's skin. If less conservative values are used in the link budget analysis, degradation to licensed LMDS receivers located outdoors or in the same room as a SafeScout device would be unlikely.⁴²

24. We therefore find that the SafeView 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. We base this conclusion on several factors. At frequencies in the 24-30 GHz range, free space loss is significant, and we concur with SafeView that this factor, added to building attenuation of one or more walls, would prevent harmful interference to licensed devices operating outdoors. We are persuaded that the SafeView 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. We further agree that the high gain and directivity of the LMDS/24 GHz antennas would attenuate any interference potential from one or multiple SafeView units in the same area, and that aggregation of signals from multiple SafeView transmitters is unlikely because they would not all be oriented the same way or pointing at an LDMS/24 GHz antenna in the same

⁴⁰ SafeView *ex parte statement* filed on March 11, 2005. All parties agree that using a 10 log factor is appropriate for calculations related to power, whereas calculations related to voltage would require using a 20 log factor. Regardless of the calculation factor used, SafeView still needs a waiver of the peak power limit of Section 15.35(b) for its SafeScout device.

⁴¹ Opposition of HNS, Exhibit 1.

⁴² We note here that SafeView has operated this imaging device in ten different locations throughout the United States, including airports, under experimental authorizations since August 2004. *See* File Nos. 0158-EX-PL-2004, 0073-EX-ML-2004, 0094-EX-ML-2004, 0024-EX-ML-2005, 0330-EX-ST-2005, 0683-EX-ST-2005. We have received no complaints of interference as a result of these operations.

direction. We also agree that if a SafeView device is collocated or in close proximity with an indoors LMDS/24 GHz device, the potential for interference could be avoided by re-orienting the LMDS/24 GHz antenna, putting a shielded partition between the two devices, or using one device over the other one in a specific location.

25. Nonetheless, we are cognizant of the radio licensees' concerns about potential harmful interference in the worst-case scenarios, and we are adopting a cautious approach to this technology. We will require SafeView to install its equipment indoors only, thereby ensuring that building attenuation (e.g., at least one wall) and free space loss will prevent any measurable power from the SafeView device reaching licensed receivers in the vicinity. We are also limiting the allowable radiated peak power levels of the SafeScout device to no more than 41 dB above the average emissions limit. We also will require adherence to several conditions, as discussed below. Together, these conditions will significantly limit the potential for harmful interference from the SafeScout imaging device, while allowing controlled 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.

26. We also find convincing SafeView's arguments as to its need to leave the device's rotating chamber unshielded. We concur that maintaining full visibility in the chamber while the subject is inside the chamber is desirable to public safety personnel, and requiring SafeView to redesign its device to use shielded material would restrict and further delay the introduction of the device to the public, cause discomfort to the individual to be scanned, and have no significant corresponding benefit. Accordingly, we decline to require that the SafeView device incorporate shielding of the assembly, but we note that shielding outside the device could be used as a means to remediate interference should it occur.

27. We believe the additional two conditions offered by SafeView will further serve to limit the potential for harmful interference while experience is gained in use of its SafeScout device. We will limit the number of installations allowed under this waiver to one hundred in the first year following the effective date of this Order and to an additional two hundred in the second year, for a total of three hundred devices at the end of the second year. Our decision to limit the number of devices and to allow for their gradual deployment is a cautious approach, so that harmful interference issues can easily be addressed should they occur. Devices deployed under the terms of this waiver may continue to operate after the two-year deployment period ends, provided there is no harmful interference to authorized operations.⁴³ SafeView may request that this waiver be extended to allow the marketing of additional systems at the end of the two-year waiver period. We also will require SafeView 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 (e.g., airport or government building), and street address and/or geographical coordinates. The information maintained by SafeView will assist it, as well as the Commission and NTIA, in determining whether a SafeView device is operating within close proximity to an authorized operation should the latter experience harmful interference, thus facilitating investigation of an interference complaint. We are also requiring SafeView to inform purchasers that SafeScout 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 SafeView data base even if it is resold. Finally, we will require SafeView to obligate parties who purchase this device to operate them consistent with the terms of this Order. The provisions of 47 C.F.R. §2.939(a) allow the Commission to revoke the certification grant, if SafeView or any operator of these devices fails to comply with the obligations placed on them in

⁴³ SafeView will have to seek permission to deploy more than 300 devices or to extend the deployment period beyond two years.

accordance with the equipment authorization program.⁴⁴ We believe that the high capital expense for the SafeView equipment, coupled with the Commission's requirements for approving and operating unlicensed devices and with the specific conditions placed on the waiver grant, constitute strong incentives for SafeView to ensure that its customers operate according to the requirements and cooperate with licensees in solving interference complaints.

28. We reiterate that as an unlicensed device, the SafeScout must be operated under the general non-interference requirements of Section 15.5 of our rules. Under these rules, operators of the SafeView device are responsible for eliminating any harmful interference that may occur or must cease operation upon notification by a Commission representative that the device is causing harmful interference.⁴⁵

Summary of Waiver Conditions

29. Summarizing the above, the following conditions shall apply to the waiver being granted to SafeView, Inc. for its SafeScout imaging device.

- 1). The SafeScout 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. 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 when measured as specified herein.
- 2). The intentional emissions generated by the SafeScout imaging device must be completely contained within the 24.25 to 30 GHz frequency range.
- 3). SafeView shall limit the number of systems installed under this waiver to one hundred (100) installations during the first twelve months following the grant of this waiver and to an additional two hundred (200) during the second twelve months, for a total of no more than three hundred (300) systems at the end of two years.
- 4). All installations of SafeScout imaging devices operated under this waiver shall be restricted to indoor use.
- 5). SafeView 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.
- 6). SafeView shall inform purchasers that SafeScout 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.
- 7). This waiver shall apply to the SafeScout imaging device produced by SafeView as described herein and provided no major changes are made to the transmitter circuitry or to the housing and

⁴⁴ See 47 C.F.R. §2.939(a), which states “[t]he Commission may revoke any equipment authorization:...(2) if upon subsequent inspection or operation, it is determined that the equipment does not conform... to the representations made in the original application.”

⁴⁵ 47 C.F.R. §15.5.

position of the antenna masts that would increase the devices radiated power or bandwidth.

8). Compliance measurements of the SafeScout imaging devices should incorporate the following procedures:

a) *Measurement procedures for determining the average radiated power.* With the SafeScout imaging device transmitter frequency sweep active and the antenna array rotation and element scan suspended, measure the radiated average power from a specific antenna array element using a measurement system consisting of a spectrum analyzer with a root mean squared (rms) power averaging detector, and appropriately rated receive antenna, pre-amplifier and coaxial cable and connectors. Select the power average (rms) detector and set the resolution bandwidth (RBW) to 1-MHz and the video bandwidth (VBW) to 3-MHz or greater. Perform the measurement with the analyzer in zero-span mode at three discrete frequencies associated with the lower, middle and upper regions of the occupied band over a 1-second sweep time with the maximum hold function enabled. Allow the trace to build until there is no longer any observable increase in the amplitude level. The maximum amplitude associated with this data should then be adjusted for antenna/pre-amplifier gain and cable/connector loss to determine the actual received average power level, which can then be used to calculate the maximum average field strength at the specified distance, or alternatively, the equivalent isotropic radiated power (EIRP) assuming a propagation path equivalent to the appropriate measurement distance. The resultant average radiated field strength shall be less than or equal to a field strength level of 500 $\mu\text{V/m}$ at a distance of 3-meters.

b) *Measurement procedures for determining the peak radiated power.* The total peak radiated power is to be measured with the same measurement set-up as specified for the average measurement, but with the transmitter frequency sweep disabled. For this measurement, the peak detector of the analyzer is to be used with a RBW of 100-kHz and a VBW of 1-MHz or greater, and with the maximum-hold function enabled. This measurement is to be performed with the frequency sweep stopped at each of the same three discrete frequencies where the average measurements were made, using the analyzer's default sweep time and a span of 1000 MHz. Allow the measurement trace to build until there is no longer any detectable increase. The maximum amplitude associated with the fundamental (highest level) spectral line should then be adjusted for antenna/pre-amplifier gain and cable/connector loss to determine the actual received power level, which can then be used to calculate the maximum field strength at the specified distance, or alternatively, the EIRP assuming a propagation path equivalent to the appropriate measurement distance. The level associated with the fundamental spectral line shall not exceed the average level, as measured on the same frequency, by more than 41 dB.

c) The peak and average power are to be measured for three elements (low, mid, and high) of the array at each of the three discrete frequencies identified in a).

d) Since the dimensions associated with a complete SafeScout imaging device may preclude the performance of compliance measurements on the entire system within a laboratory setting, we are permitting these measurements to be performed on a single isolated antenna array.

e) When compliance measurements are performed at a distance less than what is stipulated in § 15.209, the data shall be extrapolated to a measurement distance consistent with § 15.31(f) when assessing conformance to the applicable emissions limit.

9). The measurement procedures defined herein are specific to the SafeScout imaging device as described in the subject waiver request and are not generally applicable to all swept-frequency transmitting systems.

IV. CONCLUSION AND ORDERING CLAUSE

30. 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 SafeView, Inc. IS GRANTED consistent with the terms of this Order. This action is taken pursuant to Sections 4(i), 302, 303(e), and 303® 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.

FEDERAL COMMUNICATIONS COMMISSION

Julius P. Knapp
Acting Chief, Office of Engineering and Technology