

**Fletcher, Heald & Hildreth, P.L.C.**  
**1300 North 17<sup>th</sup> Street 11<sup>th</sup> floor**  
**Arlington VA 22209**  
**703-812-0400 (voice)**  
**703-812-0486 (fax)**

MITCHELL LAZARUS  
703-812-0440  
LAZARUS@FHHLAW.COM

January 28, 2005

Ms. Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street SW  
Washington DC 20554

**Re: ET Docket No. 04-373**  
**SafeView, Inc., Request for Waiver of Sections 15.31 and 15.35 of the**  
**Commission's Rules**  
***Ex Parte Communication***

On behalf of SafeView, Inc., pursuant to Section 1.1206(b)(1) of the Commission's Rules, I am electronically filing this written *ex parte* communication to summarize the pleadings in above-referenced docket and to address issues they raise.

**CONTENTS**

A.	Safeview Request .....	2
B.	Opposition and Response .....	4
1.	Opponents overstate the interference potential .....	4
	<i>SafeView Response</i> .....	5
2.	Opponents miscalculate the SafeView duty cycle .....	6
	<i>SafeView Response</i> .....	6
3.	Opponents misrepresent SafeView's average emissions ..	7
	<i>SafeView Response</i> .....	7
4.	Opponents say SafeView should redesign to avoid the need for a waiver .....	8
	<i>SafeView Response</i> .....	8
5.	Opponents question SafeView's right to use the spectrum	9
	<i>SafeView Response</i> .....	9

6.	Opponents challenge the adequacy of proposed limits on numbers of devices . . . . .	9
	<i>SafeView Response</i> . . . . .	10
7.	Opponents doubt SafeView's ability to tolerate received interference . . . . .	10
	<i>SafeView Response</i> . . . . .	10
C.	Conclusion . . . . .	10

**A. SAFEVIEW REQUEST**

SafeView's Request for Waiver described a technology that will greatly improve security at airports, stadiums, government buildings, and prisons: a method of reliably detecting weapons or contraband carried on an individual's person, including non-metallic objects hidden under the clothing.<sup>1</sup> Current security methods, primarily metal detection and hand searches, do not work well. Not only are they slow and intrusive, but they fail to detect weapons almost a quarter of the time.<sup>2</sup>

The SafeView device briefly illuminates the subject with near-millimeter radio waves at very low levels and measures the reflections.<sup>3</sup> It contains two vertical masts, each carrying 192 transmit antenna elements arranged vertically. While the masts rotate around the subject over a 2 second interval, each antenna element in turn sweeps quickly from 24.25 through 30 GHz, taking 6 microseconds per sweep.

Despite its best efforts, SafeView cannot presently build the device in full compliance with the Commission's Rules. SafeView had no choice but to request a waiver of two provisions: Section 15.31(c), which requires emissions measurements to be taken with the frequency sweep stopped; and Section 15.35(b), which limits peak emissions to no more than 20 dB above maximum average emissions.

Both rules limit interference to receivers having a fast transient response. The SafeView device limits such interference by other means:

---

<sup>1</sup> SafeView, Inc., Request for Waiver at 5-8 (filed Aug. 18, 2004).

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

<sup>3</sup> The device meets the Commission's limits for human RF exposure by several orders of magnitude. *See id.* at 15.

- The duty cycle of the SafeView device with respect to average field strength is extremely low:  $-83$  dB relative to a 10 MHz receiver bandwidth.<sup>4</sup>
- The received signal duration for a 10 MHz receiver is only 9.1 nanoseconds (and only 45 nanoseconds for a 50 MHz receiver).<sup>5</sup>
- All devices manufactured under the waiver will be installed indoors, so that building attenuation protects outdoor victim receivers.
- Devices manufactured under the waiver will be permanently installed at a small number of fixed, known locations.
- The size and expense of SafeView units -- 1,500 pounds and \$100,000 per unit -- will drastically limit the number deployed.
- SafeView will limit installations to 100 units during the first year under the waiver, and to 200 units during the second year. (As discussed below, SafeView is prepared to discuss limits for subsequent years, if interference concerns remain at that time.)
- SafeView will maintain a database of installations to help identify the source of any interference (or, more likely, to rule out SafeView equipment as the cause), and will share this information with the Commission and NTIA.

---

<sup>4</sup> *Details:* The scan rate of 1.1 MHz/ns places an output signal within the passband of a nominal 10 MHz bandwidth receiver for only 9.1 ns at a time. The scan is then absent from the receiver passband for fully 8.08  $\mu$ s. Thus, it is present in the passband only 0.1% of the time. Moreover, each antenna element has a gain of 10 dB and operates only while rotating at 57 degrees/second. During rotation, the antenna masts transmit at discrete angles for 3.1 ms at a time, and are turned off for 5.5 ms while the mast repositions to the next angle. A victim receiver is within the 3 dB beamwidth of an antenna element only for a short time, and during the vast majority of that time the emissions are out-of-band to any given receiver. Finally, the device transmits for a total of 2 seconds while scanning a subject, and is then silent for at least 8 seconds while the subject leaves the device and another enters. Even at maximum throughput, the device is active only 20% of the time. *See id.* at 11-12 & Appendix A.

<sup>5</sup> See preceding footnote.

The Transportation Security Administration, part of the U.S. Department of Homeland Security, filed in the docket to inform the Commission that it is evaluating the SafeView device for possible deployment as a security device in the transportation infrastructure.<sup>6</sup>

## **B. OPPOSITION AND RESPONSE**

Three parties filed substantive oppositions to SafeView's waiver request.<sup>7</sup> All raise a single concern: that the SafeView device may interfere with 24 GHz or LMDS (28 GHz) operations.

We summarize the opponents' contentions, together with SafeView's responses to each.

*1. Opponents overstate the interference potential.* HNS adopts the familiar tactic of piling on multiple worst-case conditions, ignoring the improbability of all occurring at once.<sup>8</sup> In particular, HNS--

- assumes incorrectly that the SafeView device operates continuously at its peak power levels (rather than average levels);<sup>9</sup>

---

<sup>6</sup> Letter from Kenneth J. Hacker, Director of Administration, TSL-1, Transportation Security Administration (dated Nov. 17, 2004; filed Nov. 24, 2004).

<sup>7</sup> Hughes Network Systems, Inc. (HNS) (Opposition Oct. 22, 2004); XO Communications, Inc. (XO) (Letter refiled Oct. 21, 2004; Reply Comments Nov. 8, 2004); Winstar Communications, LLC (Winstar) (Reply Comments Nov. 8, 2004). Statements in support of these oppositions were filed by the Wireless Communications Ass'n International, Inc. (Nov. 8, 2004) and the Fixed Wireless Communications Coalition (Nov. 8, 2004).

<sup>8</sup> For details, *see* SafeView Reply at 11-13. The Commission said about similar objections to a different technology: "Based on the low probability that all worst case conditions would apply at the same time, it is likely that considerably shorter separation distances would apply in actual practice." *Ultra-Wideband Transmission Systems*, 18 FCC Rcd 3857 at para. 14 (2003).

<sup>9</sup> We address this issue in paragraph 3 below.

- claims a receiver bandwidth of 100 MHz to "almost 1 GHz"<sup>10</sup> although the only equipment cited (HNS's AB9000 series) has a bandwidth of only 12.5 MHz;<sup>11</sup>
- ignores SafeView's commitment to indoor-only operation and the protective effects of building attenuation;<sup>12</sup>
- assumes worst-case 24 GHz/LMDS antenna gain, but ignores the beneficial effect of antenna gain in lowering the probability of interference;<sup>13</sup> and
- postulates improbable aggregations of SafeView units.<sup>14</sup>

**SAFEVIEW RESPONSE:** Because all SafeView installations will be indoors, building attenuation alone will all but eliminate any realistic chance of interference to outdoor 24 GHz/LMDS receivers. The Commission has found building attenuation to be "considerably higher than 10 dB" at 13 GHz,<sup>15</sup> and attenuation goes up with frequency; at 24-30 GHz it will almost certainly compensate for the requested 21 dB waiver on peak emissions. An outdoor LMDS/24 GHz receiver should be at no significant risk of interference from an indoor SafeView unit, even in the unlikely case that its axis happens to line up with the unit.

The only remotely plausible interference scenario is one in which the SafeView device and the 24 GHz/LMDS receiver are both installed indoors, both in the same room, with the receiver antenna aimed at or close to the SafeView device.<sup>16</sup> But this necessarily puts both the SafeView device and the 24 GHz/LMDS system under control of the same entity, such as the

---

<sup>10</sup> HNS at 9.

<sup>11</sup> HNS at 9. Winstar (at Annex 2) states its passbands "are typically in the order of 50 MHz carrying 45 Mb/s traffic," but provides no other information.

<sup>12</sup> HNS at 13 & Exh. 1 p. 3; SafeView Request for Waiver at 11.

<sup>13</sup> HNS at Annex 1; *see* SafeView Reply at 11.

<sup>14</sup> HNS at 9; *see* SafeView Reply at 11.

<sup>15</sup> *Interference Temperature Metric*, 18 FCC Rcd 25309 at Appendix B, n.73 (2003).

<sup>16</sup> HNS (at Exh. 1 p. 3) mentions the Dulles Airport main terminal as one example of a place where that could happen.

airport. In other words, a facility using the SafeView device could cause interference only to itself. A grant of the waiver will allow such a facility to decide for itself whether to install the SafeView device, install a 24 GHz/LMDS system, or take the appropriate measures so both can operate successfully.

**2. *Opponents miscalculate the SafeView duty cycle.*** SafeView shows that its duty cycle into a nominal 10 MHz receiver is  $-83$  dB.<sup>17</sup> Opponents challenge this calculation in the following respects:

- Winstar insists the rules require the duty cycle to be averaged over only 0.1 second.<sup>18</sup>
- HNS says its receiver passband is 12.5 MHz, not 10 MHz; Winstar claims 50 MHz.<sup>19</sup>
- HNS argues the decibel conversion should use  $10 \cdot \log(\text{time ratio})$ , not the  $20 \cdot \log$  SafeView used.<sup>20</sup>

***SAFEVIEW RESPONSE:*** SafeView spelled out its signal characteristics in detail.<sup>21</sup> Whether or not that signal causes interference is independent of how the parties characterize its duty cycle. For example, HNS's link budgets assume a duty cycle of only  $-9.43$  dB,<sup>22</sup> which greatly exaggerates predicted interference, even though the SafeView signal is actually present in the receiver passband (if detectable at all) at a ratio that is smaller by several orders of magnitude.

---

<sup>17</sup> See SafeView, Inc., Request for Waiver at 11-12 & Appendix A.

<sup>18</sup> Winstar Reply at Annex 2.

<sup>19</sup> HNS at 9-10; Winstar Reply at Annex 2.

<sup>20</sup> HNS at 8.

<sup>21</sup> See SafeView, Inc., Request for Waiver at 6-7, 11-12 & Appendix A.

<sup>22</sup> HNS at Annex 1 (six tables).

Winstar's analysis depends on averaging over 0.1 second, in purported reliance on Section 15.35(c). But that provision on its face applies only to "pulsed operation."<sup>23</sup> The Commission has not defined that term, but any reasonable definition must exclude the SafeView device. Section 15.35(c) appears to contemplate a pulsed modulation. The SafeView device does not employ any modulation, and its emissions are not "pulsed." There is no basis in the rules for applying the 0.1 second limitation.

For purposes of calculating average emissions (see below), we maintain the appropriate dB conversion is  $20 \cdot \log$ , because the quantity being assessed -- field strength per Section 15.209 -- is measured in microvolts/meter, not power. Others in the industry agree.<sup>24</sup>

**3. Opponents misrepresent SafeView's average emissions.** HNS and XO state that a waiver would allow SafeView's device to exceed the limit for average radiated emissions by a factor of 12,600.<sup>25</sup> Winstar makes a different error. It computes the SafeView duty cycle to be only -27 dB. Given peak emissions of 0 dBm, Winstar then says the average emissions are -27 dBm, which exceeds the limit of -41 dBm.

**SAFEVIEW RESPONSE:** The notion that SafeView exceeds any limit by a factor of 12,600 is preposterous. SafeView's *peak* signal exceeds the *average* limits by 41 dB, which is approximately 12,600. That is why SafeView requested a waiver of Section 15.35(b), which

---

<sup>23</sup> The rule states: "Unless otherwise specified, e.g. Sec. 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, *and pulsed operation is employed*, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification." 47 C.F.R. Sec. 15.35(c) (emphasis added).

<sup>24</sup> See, e.g., Washington Laboratories, Ltd., *Regulations for Global Compliance Workshop* at slide 43 (Sept. 24, 2004), <http://www.wll.com/downloads/Wireless%20Compliance%209.04.pdf>

<sup>25</sup> HNS at 2, 4-5; XO (Reply at 3 n.13).

allows only 20 dB. But SafeView's *average* signal complies with the average limits in Section 15.209(a) by a wide margin.<sup>26</sup>

Winstar's recalculation of the duty cycle proposes two new two assumptions. One is a supposed integration time of 0.1 seconds, which we showed above to be inapplicable. The other is Winstar's use of a 50 MHz receiver passband. But the receiver passband is irrelevant in assessing average emissions. Above 1 GHz, average emissions are measured using a resolution bandwidth of 1 MHz.<sup>27</sup> For this purpose the SafeView duty cycle is -103 dB,<sup>28</sup> and the average emissions are -103 dBm. Even if the Commission adopted a  $10 \cdot \log(\text{time ratio})$  conversion to dB, the duty cycle relative to a 1 MHz resolution bandwidth would be -51.5 dB and the average emissions would be -51.5 dBm, fully 10 dB below the limit.

**4. *Opponents say SafeView should redesign to avoid the need for a waiver.***

One opponent asks why SafeView does not reduce its power to comply with the Commission's Rules,<sup>29</sup> and two ask why it does not shield the device.<sup>30</sup>

***SAFEVIEW RESPONSE:*** The SafeView device works by measuring radio waves reflected from the subject. The received levels are very low, on the order of -80 to -60 dBm. To comply with peak emissions limits, power would have to come down by 21 dB; and complying with average levels when measured with the sweep stopped would entail reduction by yet another 20 dB. These reductions would make it impossible to resolve the target adequately for reliable detection.

SafeView has carefully investigated the use of shielding. Our Request for Waiver noted that shielding either would produce levels of coherent reflections and multi-path energy that degrade the device's ability to detect objects, or else would require an anechoic chamber whose

---

<sup>26</sup> See Reply to Oppositions of SafeView at 7-8 (filed Nov. 8, 2004).

<sup>27</sup> 47 C.F.R. Sec. 15.35(b).

<sup>28</sup> Our waiver request showed the interference duty cycle into a 10 MHz receiver is -83 dB. SafeView, Inc., Request for Waiver at Appendix A. Cutting the resolution bandwidth by a factor of 10 pulls down the duty cycle by 20 dB.

<sup>29</sup> HNS at 10.

<sup>30</sup> HNS at 11-13, Winstar Reply at 5.

size and cost would be unworkable.<sup>31</sup> But SafeView has since learned that the agencies interested in installing the device insist that the subject stand in a transparent chamber. At airports, small children and claustrophobic adults must be able to see out; at prisons, guards must be able to see in. The need for optical transparency rules out shielding.

**5. *Opponents question SafeView's right to use the spectrum.*** XO argues that its \$997 million investment in spectrum must not be compromised by the SafeView device.<sup>32</sup> Winstar questions SafeView's right to operate without a secondary spectrum lease.<sup>33</sup>

***SAFEVIEW RESPONSE:*** SafeView acknowledges its obligation to avoid causing harmful interference to licensed users.<sup>34</sup> With that obligation satisfied, however, SafeView has every right to share the spectrum with licensees. The U.S. Court of Appeals has confirmed the Commission's authority to permit non-interfering uses of licensed spectrum by persons other than the licensee.<sup>35</sup> And the Commission recently reasserted its authority to permit the operation of non-interfering unlicensed transmitters, such as the SafeView device.<sup>36</sup> There is no legal barrier to the grant of a waiver.

**6. *Opponents challenge the adequacy of proposed limits on numbers of devices.*** HNS questions SafeView's offer to limit installations to 100 units during the first year under the waiver, and to 200 units during the second year. It argues that SafeView is silent as to succeeding years, and that no conclusions can be drawn during the first two years because many 24 GHz/LMDS providers have just begun to build out.<sup>37</sup>

---

<sup>31</sup> SafeView Request for Waiver at 10-11.

<sup>32</sup> XO Reply at 6.

<sup>33</sup> Winstar Reply at 3.

<sup>34</sup> 47 C.F.R. Sec. 15.5.

<sup>35</sup> *AT&T Wireless Services, Inc. v. FCC*, 270 F.3d 959 (D.C. Cir. 2001) ("*Aircell*") (subsequent history omitted).

<sup>36</sup> *Ultra-Wideband Transmission Systems*, ET Docket No. 98-153, Second Report and Order and Second Memorandum Opinion and Order, FCC 04-285 at paras. 64-78 (released Dec. 16, 2004).

<sup>37</sup> HNS at 11.

**SAFEVIEW RESPONSE:** We expect that experience during the first two years under the waiver will relieve concerns about interference. If not, SafeView is prepared to discuss appropriate limits for subsequent years.

7. ***Opponents doubt SafeView's ability to tolerate received interference.***  
XO objects that SafeView has not shown how its own operations will account for interference received.<sup>38</sup>

**SAFEVIEW RESPONSE:** Incoming interference, whether from 24 GHz/LMDS or any other source, is wholly SafeView's problem. The Commission's Rules require SafeView to accept any interference received.<sup>39</sup> SafeView acknowledges that it will have no recourse against any party for interference.

### C. CONCLUSION

The United States needs SafeView technology. The device will offer new levels of confidence and security to air travelers, government workers, and prison personnel, among others. Additional advantages will include shorter airport security lines and the elimination of intrusive hand searches.

No other technology we know of can deliver these benefits.

Despite extensive efforts, SafeView is unable to implement its novel approach in full compliance with the Commission's Rules. As we explained above, the two provisions that require waivers -- Sections 15.31(c), on measurements with the frequency sweep stopped; and Section 15.35(b), limiting peak emissions -- both protect receivers having a fast transient response. Acknowledging its responsibility to protect licensed spectrum users, SafeView proposed waiver conditions that will prevent interference under all realistic conditions, with one possible exception. A 24 GHz or LMDS receiver may experience interference *if installed in the same room* as a SafeView device (as in an airport terminal) and oriented toward the SafeView device. This is the only plausible interference scenario.

If the Commission denies the waiver, the only resulting benefit will be to protect same-room 24 GHz/LMDS systems. But an airport (for example) may prefer to install the SafeView device and forgo 24 GHz/LMDS, or alternatively, to locate and orient the 24 GHz/LMDS

---

<sup>38</sup> XO Letter at 3.

<sup>39</sup> 47 C.F.R. Sec. 15.5(b).

Ms. Marlene H. Dortch  
January 28, 2005  
Page 11

equipment to render it compatible with the SafeView device. Denying the waiver would serve only to deny users these choices. We see no sound policy reason to do so.

In short, a grant of the waiver is very much in the public interest.

Please do not hesitate to call with any questions.

Respectfully submitted

Mitchell Lazarus  
Counsel for SafeView, Inc.

cc: Courtesy service list

## COURTESY SERVICE LIST

Ed Thomas, Chief  
Office of Engineering  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

Julius P. Knapp, Deputy Chief  
Office of Engineering  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

Bruce A. Romano, Deputy Chief  
Office of Engineering  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

Jim Schlichting, Deputy Chief  
Office of Engineering  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

Alan Scrimme, Chief  
Policy and Rules Division  
Office of Engineering  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

Karen Rackley, Chief  
Technical Rules Branch  
Office of Engineering  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

John Reed  
Office of Engineering  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

Russell H Fox, Esq.  
Susan F. Duarte, Esq.  
Mintz Levin Cohn Ferris Glowsky  
and Popeo, PC  
701 Pennsylvania Avenue, NW  
Washington, DC 20004  
*Counsel for XO Communications, Inc.*

John P. Janka, Esq.  
Tonya Rutherford, Esq.  
Latham & Watkins, LLP  
555 11<sup>th</sup> Street, NW, Suite 1000  
Washington, DC 20004  
*Counsel for Hughes Network Systems, Inc.*

Joseph M. Sandri, Jr., Esq.  
Gene Rappoport, Esq.  
Vishnu Sahay, Esq.  
Lynne Hewitt Engledow, Esq.  
Winstar Communications, LLC  
1850 M Street, NW, Suite 300  
Washington, DC 20036

Andrew Kreig, President  
Wireless Communications Association  
International, Inc.  
1333 H Street, NW  
Washington, DC 20005

Andrew Kreig, Co-Chairman  
Fixed Wireless Communications Coalition  
1333 H Street, NW  
Washington, DC 20005

Kenneth J. Hacker  
Director of Administration, TSL-1  
Transportation Security Administration  
U.S. Department of Homeland Security  
Transportation Security Laboratory  
Building 315  
William J. Hughes Technical Center  
Atlantic City, NJ 08405