Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Waiver Request by Ultra Vision Security	)	ET Docket No. 06-195
Systems, Inc. of Section 15.511	)	

To: The Commission

COMMENTS OF THE ASSOCIATION FOR MAXIMUM SERVICE TELEVISION, INC.

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EXECUTIVE SUMMARY

If this waiver petition is granted, UltraVision's unlicensed, ultra-wide band ("UWB") devices will create significant and harmful interference to existing licensed television services in the band; thus, the Commission must deny the petition. The UltraSensor devices will create out-of-band emissions at levels as high as the Part 15.209 limits. The Association for Maximum Service Television ("MSTV") has submitted concrete evidence, in a rulemaking currently pending before the Commission, regarding the inadequacies of the Part 15.209 limits when applied to devices actually operating within the broadcast band itself. As satisfaction of the controversial Part 15.209 limits is UltraVision's only justification for its waiver application, the Commission should not grant such a waiver while these emission limits are being examined in an ongoing rulemaking procedure.

Furthermore, a waiver is not warranted in this case because UltraVision has failed to satisfy the Commission's legal standard for granting a waiver. In order to qualify for a waiver, UltraVision must demonstrate that the underlying purpose of the Commission's rules would be frustrated if the current rules were applied, or that there are unique circumstances necessitating waiver. UltraVision has failed to satisfy either prong. In fact, it is denying UltraVision's waiver request that will further the public interest because this is an untested device that has been shown to cause substantial interference to television services in the band. In addition, the Commission implemented the rules governing UWB devices with the utmost caution in mind, specifically noting the constantly developing technologies and the interference risks these new devices might pose. Consequently, the fact that the UltraSensor device was not contemplated during the original development of the rules does nothing to qualify UltraVision for a waiver under the "unique circumstances" prong of the waiver standard.

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COMMENTS OF THE ASSOCIATION FOR MAXIMUM SERVICE TELEVISION, INC.

To protect the public's free, over-the-air television service, the Association for Maximum Service Television, Inc. ("MSTV") respectfully requests that the Commission dismiss the UltraVision Security Systems Inc. ("UltraVision") waiver petition, which asks that the Commission certify its UltraSensor device as a surveillance system under Section 15.511 and waive the marketing rules under the same section.[1] As shown in the attached engineering affidavit, the proposed UltraVision device will generate severe out-of-band emissions that would harmfully interfere with television reception to the detriment of the viewing public.

In another proceeding, MSTV has already demonstrated that devices, such as UltraVision's UltraSensor, that operate in the broadcast spectrum at the Section 15.209 out-of-band emission limits will cause harmful interference to the public's over-the-air television service. Accordingly, UltraVision's principal justification for its waiver – its compliance with the Section 15.209 out-of-band emission limits – should be accorded no weight. Indeed, as

[1] *See* Petition for Interpretation and Waiver of UltraVision, ET Docket No. 06-195 (filed Oct. 6, 2006) ("UltraVision Waiver Petition").UltraVision claims it is seeking a rule interpretation and a waiver of the marketing rules. UltraVision has asked that the Commission certify UltraSensor as a surveillance system under §15.511, and has characterized this request as a rule interpretation. This portion of the petition, however, is also a waiver request as evidenced by UltraVision's own acknowledgment that the device does not comply with the requirements of §15.511(a) and the Commission's reference to it as a "request for waiver" in its Public Notice.

described in the attached Declaration of Bruce A. Franca, MSTV has witnessed firsthand the harm that results when the UltraSensor is allowed to operate in the television broadcast spectrum.[2]

The public interest harms from the UltraVision system would be particularly acute at this time, as broadcasters and the American public are in the midst of an expensive transition to digital television ("DTV"). In the span of the next two years, consumers will purchase billions of dollars of new DTV equipment to continue to receive their local television services.[3] The Commission must not do anything, including in response to *ad hoc* waiver requests, that will jeopardize this transition.

I. IF ALLOWED TO OPERATE BELOW 900 MHz, ULTRASENSOR DEVICES WILL CREATE HARMFUL INTERFERENCE TO LICENSED TELEVISION SERVICES.

The UltraSensor device, if allowed to operate in the television spectrum,[4] will severely interfere with broadcast television in violation of the Commission's rules. UltraVision appears to have assumed that because UltraSensor has lower emissions than some comparable devices, and satisfies the Part 15.209 out-of-band emission limits, it will be fully compliant with Part 15 regulations.[5] This conjecture, however, is far from true. Under Part 15 of the Commission's rules, all unlicensed devices are required to "operate free of harmful interference and to cease

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[2] Given these concerns regarding real-world interference, MSTV also opposes the experimental license UltraVision recently received from the Commission. *See Public Notice Report No. 38: Experimental Actions*, 0105-EX-PL-2006 (rel. Feb. 16, 2007). MSTV's opposition to the experimental license will be discussed fully in a separate filing.

[3] In addition, the Commission must keep in mind the billions of dollars that broadcasters have and will have invested to build out their stations and infrastructure to bring DTV service to the public.

[4] The television spectrum is comprised of the following frequencies: 54-72 MHz, 76-88 MHz, 174-216 MHz, and 470-806 MHz. *See* 47 CFR 73.603(a).

[5] *See* UltraVision Waiver Petition ("UltraSensor fails to satisfy the rule only because it is quieter and less interfering than a compliant Section 15.511 device).

operation if any interference is caused."[6] UltraVision will not be able to satisfy this requirement if it is allowed to operate in the band under 900 MHz, as requested in its waiver petition.

Contrary to UltraVision's self-serving assertions that its device will not harm the viewing public,[7] MSTV has seen the potential for interference with television reception first-hand.[8] During a demonstration conducted at MSTV's offices using one of UltraVision's devices, significant interference was observed on both analog and digital channels. The operation of the device resulted in "snow" across the picture on the analog channels and a frozen or blank picture on digital channels. This harmful interference occurred despite the fact that the MSTV offices, located within close proximity to a number of television transmission towers for Washington, D.C., receive a strong television signal on the channels effected. These results will only worsen when UltraSensor is operated in other areas where viewers receive considerably weaker television signals.[9] Thus, despite UltraVision's apparent belief that the short pulses and relatively low duty cycle of the UltraSensor devices would prevent such interference, the experiment highlighted the fallacy of this assumption .[10]

Not only will UltraSensor be unable to operate without interfering with licensed television services, but UltraVision will not be able to control any interference that does occur. Although as a legal matter the Part 15 rules would privilege licensed broadcast uses over

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[6] 47 CFR §15.5(b) & (c).

[7] *Id*.

[8] *See* Appendix at ¶2 (detailing the President of UltraVision's November 9, 2006 visit to MSTV's offices).

[9] As explained in the Appendix, interference may worsen with the use of outdoor antennas and greater distances from the transmitting facility.

[10] *See* Appendix at ¶5. While further testing is necessary to determine the exact cause of the interference, MSTV believes the short pulses did not alleviate interference because just as the signal recovers from the interfering pulse, subsequent pulses occur which eliminate the television signal once again.

unlicensed transmissions in the event of a dispute, as a practical matter, this will be of little value. Rarely will broadcasters, the Commission, or the public even be aware of the cause of the harmful interference from unlicensed devices. If unable to receive a station's signal, viewers may simply assume that the interference is caused by a problem with the broadcaster's transmission or their television sets. This is especially true in the instant case as out-of-band interference may accept reception on multiple channels. Viewers are more likely to change the channel, or return the television to the stores, than they are to call the broadcaster. As a result, the waiver conditions UltraVision suggests, such as keeping records and ceasing operation if harmful interference is caused, will be insufficient to protect television services. A dismissal of this petition is the only effective means of preventing the interference that UltraSensor will cause to broadcasting services.

UltraVision has also requested that the Commission waive the marketing requirements under §15.511 to allow the company to sell the UltraSensor device to a broader range of parties.[11] If the Commission grants this portion of the waiver this will only exacerbate the interference that will be associated with these devices and make it more difficult to eliminate such problems. Considering the serious interference concerns discussed above, the Commission should also deny the marketing portion of UltraVision's request.

II. ULTRAVISION'S ALLEGED SATISFACTION OF THE PART 15.209 EMISSION LIMITS, EVEN IF TRUE, IS INSUFFICIENT TO WARRANT A WAIVER.

While UltraVision alleges that mere satisfaction of the Part 15.209 emission standards should be sufficient justification for its request to operate below 900 MHz, the use of those emission standards in the broadcast spectrum is inadequate to protect over-the-air television

[11] *See* UltraVision Waiver Petition at 10-11.

services. Accordingly, UltraVision's contention that its device would satisfy the Part 15.209 emission limits cannot serve as a basis for waiver of the Commission's rules.

As MSTV and others have argued to the Commission in the "white spaces" proceeding, it was never anticipated that Part 15 limits would apply to devices actually operating in the TV bands, and they are therefore ineffective at preventing interference under these circumstances.[12] This is due to two main technical factors. First and foremost, the highest out-of-band emissions generally occur closest to the operating frequency of an unlicensed device. The television band is currently a "restricted band" and unlicensed devices are, and have been, prohibited from operating on any television channel. Therefore, the out-of-band emissions in the broadcast band have been far from the device's operating frequency, and generally well below the Part 15.209 limits. Secondly, until recently, most unlicensed devices operated with narrow bandwidths. Consequently, the out-of-band emissions from these devices were generally narrowband "spikes" that presented low interference risks.

The technical situation is quite different, however, in the context of unlicensed devices actually operating within the television band itself, particularly UWB devices. Such UWB devices would result in emissions actually on or close to the television operating frequency of one or more TV stations and such emissions may be right at the Part 15.209 levels. These technical factors drastically diminish the effectiveness of the Part 15.209 limits as applied to unlicensed devices operating *within* the television spectrum.

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[12] *See* Joint Comments of MSTV and NAB, ET Docket No. 04-186 (filed Jan. 31, 2007) (2007 MSTV/NAB White Spaces Comments) at 21-24; Comments of Motorola, ET Docket No. 04-186 (filed Nov. 30, 2004) ("Motorola Comments") at 12 (Motorola performed technical analyses on interference from out-of-band emissions and found that "Part 15.209(a) emission levels do not provide adequate protection to TV receivers within the protected contour"); Comments of IEEE 802.22, ET Docket No. 04-186 (filed Jan. 31, 2007) at 26-27 ("Section 15.209 emission limits are not restrictive enough to adequately protect incumbent services"); Comments of GE Healthcare, ET Docket No. 04-186 (filed Jan. 31, 2007) at 6-7.

Concerns regarding the sufficiency of the less stringent Part 15.209 limits is not only theoretical; Canadian Research Centre Canada ("CRC") and MSTV have conducted laboratory testing and field studies showing that operation of TV band devices at the Part 15.209 out-of-band limits will cause significant interference.[13] These tests, [which are attached], have demonstrated that unlicensed devices, complying with the out-of-band emission limits, could cause interference to DTV sets at distances up to 78 feet and interference to analog TV sets up to 452 feet.[14]

Furthermore, as the Commission is currently in the process of evaluating the extent to which the Part 15.209 emission limits must be modified before any new Part 15 device could be operated in broadcast spectrum, it should not grant a waiver request based on these unproven limits. Indeed, as a result of the aforementioned concerns expressed by parties in the "white spaces" proceeding, the Commission, in that rulemaking, has specifically sought comment on this issue.[15] This proceeding is ongoing and parties are in the midst of submitting comments and reply comments. It would, accordingly, be inappropriate to grant UltraVision a waiver based on "compliance" with standards that have never been used in the television band and that many parties are currently demonstrating are insufficient to protect the public's over-the-air television services from interference.

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[13] *See* 2007 MSTV/NAB White Spaces Comments at Exhibits C & D.

[14] *See Id.* at 23.

[15] *See Unlicensed Operation in the TV Broadcast Bands,* First Report and Order and Further Notice of Proposed Rulemaking, ET Docket No. 04-186, FCC 06-156 (rel. Oct. 18, 2006) ("First R&O and FNPRM") at ¶60.

III. ULTRAVISION HAS FAILED TO SATISFY THE COMMISSION'S WAIVER STANDARD.

UltraVision has failed to satisfy the Commission's waiver standard, which sets a "high hurdle"[16] requiring the applicant to show that either (a) the underlying purpose of the UWB rules would be frustrated by an application of the rules to UltraVision *and* waiver would service the public interest, or (b) that there are "unique circumstances" which would make application of the rules "inequitable, unduly burdensome, or contrary to the public interest."[17] UltraVision has not met this burden, as it fails to satisfy either prong of the standard: (1) the purpose of §15.511 will actually be protected by a dismissal of the waiver petition, rather than frustrated; and (2) the requisite "unique circumstances" do not exist. Furthermore, a denial of the petition in this case is consistent with prior decisions wherein the Commission has faced significant interference concerns.

A. The Purpose Of The Commission's UWB Device Rules Will Be Served, Not Frustrated, By Dismissal Of The Waiver Request.

The underlying purpose of the Commission's rules governing UWB devices will be protected, not frustrated, by a dismissal of UltraVision's waiver petition. In creating the UWB device rules, the Commission balanced its desire to promote the development of new technology with its responsibility to protect licensed services.[18] While the Commission continues to recognize the many benefits of UWB technology, it has been particularly cognizant of the risks these devices pose.[19] The Commission has made clear that the rules applicable to UWB devices

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[16] *See WAIT Radio v. FCC*, 418 F. 2d 1153, 1159 (D.C. Cir. 1969).

[17] *See* 47 C.F.R. §1.925(b)(3)(i)-(ii).

[18] *See Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, First Report and Order, 17 FCC Rcd. 7435 ¶4 (2002) ("Ultra-Wideband First Report and Order").

[19] *Id.* at ¶17-18.

are intended to be stringent, and the "combination of technical standards and operation restrictions is designed to ensure that UWB devices can coexist with the authorized radio services without the risk of harmful interference while [the Commission] gain[s] experience with this technology."[20] In fact, in an effort to address specific interference concerns, the Commission divided UWB devices into categories and implemented different rules for these varying groups of devices "based on their potential to cause interference"[21]

Given the Commission's concerns about UWB device interference, and the clear intent to prevent this type of interference when promulgating the standards governing UWB devices, refusing to grant this waiver would not "frustrate" the purpose of the Part 15 rules. On the contrary, denying this waiver request would advance the Commission's goals in enacting the Part 15 UWB device rules by ensuring that Ultra Vision goes through the rulemaking process if it seeks to operate in a bandwidth not sanctioned by the current rules. The Commission has clearly expressed a hesitation at altering the rules governing UWB devices until they "have more experience with UWB devices. [The Commission] continue[s] to believe that any major changes to the rules for existing UWB product categories at this early stage would be disruptive to current industry product development efforts."[22] Accordingly, granting a waiver would hinder the FCC's rulemaking efforts in this area and contradict the rationale of the Part 15 rules.

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[20] *See Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, Order and Further Notice of Proposed Rule Making, ET Docket No. 98-153, FCC 03-33 (rel. Mar. 12, 2003) ("Ultra-Wideband Order and FNPRM") at ¶5.

[21] *See* Ultra-Wideband First Report and Order at ¶¶18, 21, 56.

[22] *See Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, Second Report and Order and Second Memorandum Opinion and Order, 19 FCC Rcd. 24558 ¶1 (2004) ("Ultra-Wideband Second Report and Order").

B. UltraVision's Petition Fails To Satisfy The "Unique Circumstances" Requirement.

While Ultra Vision argues it should also qualify for a waiver because UltraSensor technology was not in existence at the time the FCC promulgated its rules on UWB devices,[23] this does not create a unique situation necessitating waiver. As previously discussed, the Commission is fully aware that new UWB technologies are constantly being developed; in fact, this has shaped the Commission's UWB rulemaking.[24] Consequently, UltraVision's acknowledgment that its technology is novel, in reality bolsters the position that the Commission should dismiss this petition. It is true that the Commission is not able to contemplate every potential technology and unexpected developments may justify a waiver in certain cases. With regard to the UWB rules, however, this does nothing to qualify the petitioner as "unique."

UltraVision's further contention that waiver is justified because UltraSensor satisfies out-of-band emission standards under §15.209, and actually causes fewer emissions in its noncompliance because it does not have any in the 1990 MHz to 10,600 MHz band, should also fail. The Commission adopted its rules and amendments on UWB devices with technological advancement and interference concerns expressly guiding its decisions. As demonstrated, regardless of UltraSensor's lack of emissions in its designated band, its operation in the television spectrum has the potential to cause severe interference. UltraVision's mere desire to operate in a band not allowed by the rules governing surveillance systems does not create a unique circumstance.

In the absence of unique circumstances necessitating waiver, the Commission's rules should be applied. The waiver standard requires "unique circumstances" which would make

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[23] *See* UltraVision Waiver Petition at 6.

[24] *See* Ultra-Wideband First Report and Order at ¶¶17-18.

application of the rules "inequitable, unduly burdensome, or contrary to the public interest."[25] Under the waiver standard, any potential benefits, or alleged injustices, are insufficient to satisfy the requirements for waiver of the Commission's rules absent the prerequisite unique circumstances. Therefore, even if one accepts the company's description of the many public benefits of the UltraSensor device,[26] UltraVision does not qualify for a waiver given the clear lack of exceptional circumstances in this case.

C. The Commission's Prior Actions Support A Dismissal Of UltraVision's Petition.

The Commission's historical approach to dealing with noncompliant systems, as well as prior waiver applications, confirms that a denial is necessary in this case. The required precautions, taken in a rulemaking to ensure that unlicensed devices will be not create interference, are not performed to the same extent when evaluating a waiver petition. Thus, when evaluating requests to waive the Commission's rules, great caution is necessary. In fact, the Commission has previously stated that in examining petitions for non-conforming spectrum uses, it "would generally grant such waivers when there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the non-conforming operator accepts any interference from authorized users."[27] As discussed above, UltraSensor devices are extremely likely to cause harmful interference to licensed services in the band. Furthermore, if these systems are allowed to operate, UltraVision will have no way of

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[25] *See* 47 C.F.R. §1.925(b)(3)(i)-(ii).

[26] *See* UltraVision Waiver Petition at 11-12.

[27] *See EchoStar Satellite Applications to Construct Satellites*, Memorandum Opinion and Order, 20 FCC Rcd. 930, 934 ¶¶19-20 (2004) (internal citations omitted) (the Commission did not grant EchoStar's waiver petition when it found that the purpose of the underlying rule was to prevent harmful interference and allowing the petitioner to operate would undermine this policy).

determining which devices are causing interference; thus, it will be impossible to accept such interference.

UltraVision incorrectly points to the amendment of the rules governing ground penetrating radar ("GPR") systems as further support for its waiver petition,[28] and asserts that the GPR example is an instance where the Commission allowed UWB devices to operate in other bandwidths because emissions were sufficiently low.[29] Despite UltraVision's characterization of the Commission's GPR ruling, these situations are not analogous for several reasons. First and foremost, the requests for GPR bandwidth alterations were petitions for reconsideration of the rule, rather than waiver requests.[30] This is a key distinction considering the Commission's hesitations about lessening restrictions on UWB devices without full examination. Further, the UltraSensor device is new technology. The Commission explicitly stated in its discussion concerning modifications of who could operate GPRs that this change would not extend to other UWB imaging systems, including surveillance systems, because they are new products and "their operation should be limited until more experience has been obtained."[31] Finally, before allowing GPRs to operate in an expanded area of the spectrum, the Commission examined various studies and determined that harmful interference would *not* occur.[32] Such a finding clearly has not transpired with regard to the proposed operation of UltraSensor systems in the television band.

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[28] *See* UltraVision Waiver Petition at 9.

[29] *See Id.*

[30] *See* Ultra-Wideband Order and FNPRM at ¶21.

[31] *Id.* at ¶29.

[32] *See Id.* at ¶34.

The Commission's cautious treatment of waiver applications, as well as its expressed hesitancy about UWB devices, clearly support MSTV's position that UltraVision's petition for a waiver should be denied.

CONCLUSION

In order to uphold the Commission's rules and prevent harmful interference to existing services within the television spectrum, MSTV respectfully requests that the Commission deny UltraVision's waiver petition.

Respectfully submitted,

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February 20, 2007

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APPENDIX: DECLARATION OF BRUCE FRANCA

1. My name is Bruce Franca. I am Vice President for Policy and Technology of The Association For Maximum Service Television ("MSTV"). I have been an officer of MSTV since February 10, 2006. I am authorized to execute this declaration on behalf of MSTV.

2. On November 9, 2006, Mr. Dennis J. Johnson, President of UltraVision Security Systems, Inc., and Mr. Mitchell Lazarus, counsel to UltraVision, met with Victor Tawil, Bruce Franca and David Donovan of MSTV.

3. Mr. Johnson and Mr. Lazarus briefly discussed the UltraVision device, its applications and the current waiver pending before the FCC. Mr. Johnson explained that the device operated with a very short duty cycle. That is, a 2 to 3 nanosecond pulse every 10,000 to 15,000 nanoseconds. He indicated that the detection range of each device was about a 60 foot diameter so that devices would be placed about every 100 feet around a perimeter to be protected. He also stated that the bandwidth or half-power (or 3 dB) points of the device's signal was from 200 MHz to 600 MHz and that the device operated and complied with the 15.209 limits over that frequency range.

4. Mr. Johnson then briefly demonstrated the UltraVision device at MSTV facilities to determine its impact on TV reception. MSTV had set up several TV sets with indoor antennas. The UltraVision device was operated about twenty-five feet from two TV sets. One TV set used a simple loop antenna and the second TV set used a Silver Sensor antenna. Significant interference was observed on the TV sets to both analog (TV channel 20) and digital TV (TV channel 34 & 35) reception over a distance of about 25 feet. On the analog channel, the interference appeared as "snow" across the entire

picture and on the digital channels, the TV picture broke up, repeatedly froze and occasionally went blank. TV sets using digital set top boxes tuned to DTV channel 51 (692-698 MHz), which is outside the UltraVision's device operating range, did not exhibit any interference. Due to the short duration of the demonstration, the exact interference distances and the signal strengths of the TV signals were not determined. MSTV staff did explain to Mr. Johnson and Mr. Lazarus that the received digital TV signals were generally strong since MSTV's facilities are very close to the transmitting facilities and that interference would be worse in a weak signal condition. It was further discussed with UltraVision that this distance would also increase with the use of higher gain outdoor TV antennas.

5. Although further testing would be desirable, it appears that the relatively short pulse and low duty cycle of the UltraVision device does not prevent interference to TV reception. In fact, there does not appear to be a significant difference in interference between the UltraVision signal and a continuous signal of similar signal strength. It is speculated that as the equalizer recovers from the first interfering pulse, subsequent additional pulses interfere with the corrections being made by the equalizer, thereby creating a continuous interference situation.

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