

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of

Unlicensed Operation in the TV Broadcast Bands)	ET Docket No. 04-186
)	
Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band)	ET Docket No. 02-380

To: The Secretary

COMMENTS

Entravision Holdings, LLC (“Entravision”), the licensee of full-service television stations, by its attorneys and pursuant to Sections 1.415 and 1.419 of the Commission’s Rules, hereby submits its Comments in the above-referenced proceeding¹ wherein the Commission has requested comments dealing with proposed changes to Part 15 of the Commission’s rules allowing unlicensed devices to operate in the broadcast television spectrum at locations where that spectrum is not being used.² Entravision is not averse to forward thinking that leads to more efficient and effective uses of TV Spectrum, however, implementation of the proposed changes is premature. As discussed below, Entravision contends that without the Commission first performing adequate field-testing of the experimental methodologies and strategies proposed, and modifying the Proposed

¹ The comment period has been extended to November 30, 2004. *Order Granting Extension of Time*, DA 04-2655, released August 24, 2004.

² On May 25, 2004, the Federal Communications Commission released its *Notice of Proposed Rulemaking* (“NPRM”) dealing with the subject of the operation of unlicensed devices in the licensed broadcast spectrum.

Rules³ to establish absolute protection from new harmful interference, such innovation will have the unintended result of interfering with TV channel transmission and ultimately, hamper the public's TV reception.

Protection of TV Reception

Entravision believes that a major deficiency in the Proposed Rules is the lack of protection necessary to protect TV reception out to the limits of practical use and reception.⁴ The Proposed § 5.244(g) sets forth the tabulation criteria to establish protected contour values. *Id.* Protection will be accorded to the various classes of TV stations on the basis of their protected contours that are calculated according to their height above the average terrain from 2 to 10 miles and the appropriate F50/50 statistical propagation curve. *Id.* However, the Commission's Rules recognize that protected contours are merely "approximates" which enable the calculation of "estimates."⁵

In addition, in its Proposed Rules describing protected contour values, the Commission has presumed that only locations with signal strengths at least equal to the protected contour value for the several classes of stations will need protection.⁶ This presumption completely disqualifies the rural areas where outside antennas are commonplace because the public utilizes fringe area antennas to create a watchable

³ See Appendix B, Proposed Rules, appended to *Notice of Proposed Rulemaking* in ET Docket Nos. 02-380 and 04-186, 19 FCC Rcd 10018 (2004) .

⁴ *Id.* See § 15.244(g) at Pages 28-29.

⁵ § 73.683 of the Commission's Rules. Field strength contours and presumptive determination of field strength at individual locations. (a) In the authorization of TV stations, two field strength contours are considered. These are specified as Grade A and Grade B and indicate the approximate extent of coverage over average terrain in the absence of interference from other television stations. Under actual conditions, the true coverage may vary greatly from these estimates because the terrain over any specific path is expected to be different from the average terrain on which the field strength charts were based.

⁶ See § 15.244(g) at Pages 28-29

picture from field strengths that are considerably below the Grade B value for full service stations.

Further, in developing the Table of Allotments for Digital Television Stations, the Commission recognized the inadequacy of the protected contours and created a sophisticated and accurate method of interference analysis which is known as "Longley-Rice Terrain Dependent Analysis" and is described in the Office of Engineering and Technology Bulletin 69. The software which deploys this methodology (also referred to as the "OET Bulletin 69 Procedure") calculates the signal strength of a protected station in individual cells and subsequently determines which cells have useable signal strength. From that point, software is designed to calculate the interference to these cells before a new station is added and eliminates from consideration those cells which encounter interference. In the final analysis, a new facility must not cause a protected station to lose more than a certain percentage of its covered population; the allowable percentage is dependent upon the type of station that enjoys the protection. The attached coverage plots show the variation between the F50/50 protected contours and the Longley-Rice predicted coverage for a Low Band VHF station, a High Band VHF station and a UHF station. The maps clearly illustrate that the protected contour method is not an accurate predictor of interference and the viewing public's need for protection.

As such, should the Commission decide to proceed with proposed changes to Part 15 of the Commission's rules allowing unlicensed devices to operate in the broadcast television spectrum at locations where that spectrum is not being used, Entravision urges the Commission to pursue the identification of vacant channels and their usable areas by utilizing established OET Bulletin 69 Procedure described above and refrain from using

the imprecise calculations offered by the protected contour value technique . The OET Bulletin 69 Procedure methodology for determining the field strength in cells is a well-developed method. Only minor augmentations to the current OET's Bulletin 69 Procedure will be required to provide for a determination of interference free signal strength in each cell. In turn, data can be used to build the database of unused channels cell by cell.

With respect to the fringe areas noted above, Entravision recommends that in order to be certain that the public using the fringe areas loses no service, cells should be protected from new interference if their field strength is at least:

Low band VHF - 37 dB μ
High band VHF - 46 dB μ
UHF band - 54 dB μ (with dipole adjustment)⁷

Equipment and Installation – Fixed Operation

Location By Use Of GPS Signals

The Proposed Rules, §15.244 (e) address the use of fixed intentional radiators and requires this fixed equipment to have the capability of receiving GPS signals with a high degree of precision. Entravision points out that such radiators operating on TV channels 22-24 and 32-38 will need stringent suppression of second and/or third harmonics to avoid self-interference to the reception of GPS signals.⁸

Further, in its Proposed Rules, specifically §15.244(e)(1) & (2) the Commission requires the fixed intentional radiator to comply with one of the following criteria:

⁷ See Office of Engineering and Technology Bulletin 69 for an explanation of “dipole adjustment factor.”

⁸ See MB Docket 03-185, FCC 04-220 at ¶¶ 220-221, *Report and Order*; Discussing the need to protect GPS receivers from harmonics and TV transmitters operating on channels where the second or third harmonics fall in the GPS bands.

(1) “...The intentional radiator shall have capability of accessing a database and computational software to determine the TV channels that are vacant at its location” or (2) “...The unlicensed device or its operator must periodically access a channel availability database and computational software to ensure that the channels on which the device operates remain unused.”

While these requirements are appropriate, in order to ensure that protection of the public’s TV reception remains of paramount importance in all cases, the Commission must enact strict control and enforcement procedures in order to ensure that the intentional radiators are well maintained and updated. By way of recommendation, Entravision suggests either an automatic or manual update process. For example, if the Commission authorizes an automatic process as relying on a transmitted database, then the updating standard should be a continuous one. The maintenance routine for the equipment should include a documented procedure, approved as part of the initial certification, which allows a current accuracy check. Entravision recommends that the Commission require a maintenance check at intervals no longer than 30 days and recordation of the results must be maintained in a maintenance log. However, if the updating process is performed manually by the operator, the Commission should consider imposing a daily maintenance requirement.

With respect to device identification, §15.244(k) of the Proposed Rules include a requirement that “Devices operating under the provisions of this section shall be equipped with a means to automatically and periodically transmit a unique identification signal.” By way of analogy, since their inception, TV and FM translators have been required to transmit an identification in Morse code at 30-minute intervals. Generally

such an identification transmission is done by frequency shift keying for TV translators and AM modulation of the carrier for FM translators. Unfortunately, the transmitted identification has proven to be virtually useless since it takes special equipment to hear the code and trained personnel capable of reading code. In practice, translators in need of locating are typically found by other means. Usually their location is a matter of local knowledge. In exceptional cases, however, the location might be accomplished by means of triangulation i.e. taking bearings with a receiving antenna oriented to the source from two or more locations.

With respect to identification of the devices operating under the Proposed Rules, it seems unlikely that a transmitted identification would be any more useful in this environment. In all likelihood, a device's location would be found by triangulation. Another obstacle to overcome is finding the organization or person to implement the identification operation. To avoid these identification challenges and learn from past practice, Entravision recommends the following identification measures:

1) The device operator should be required to file a simple application with the Commission specifying the location, responsible organization or person, and contact person with address and telephone number. Information to determine whether the supporting structure is registered and if not how it meets the requirements of Part 17⁹ also seems appropriate. While the challenge of keeping contact records updated is well established, it is nevertheless an important function. Requiring that the device operator annually confirm or update the contact information on file with the FCC may serve to reduce the number of outdated information.

⁹ See Part 17 of the Commission's Rules which address Construction, Marking and Lighting of Antenna Structures.

2) In addition, the Commission should consider a posting requirement so that the contact information is posted at the site at in a manner accessible to the public.

Security of Equipment:

A measure of equipment security is addressed in §15.244(k) of the Proposed Rules. For example, device installation must be performed by a professional installer who has access to the controls and/or the software that governs the channel selection and power output. Also, the device must cease operations if tampering is detected.

Consider the Citizen's Band ("CB") radios experience. At the peak of CB radio popularity, it was not uncommon to discover stations with output powers 10 to 100 times the authorized limit. Even today equipment to defeat the billing mechanism for pay-per-view cable channels is commonly offered on the Internet. The point being, it is unrealistic to think that a variety of aftermarket accessories will be introduced allowing unscrupulous operators, both fixed and portable, to exceed the power limit and to defeat the channel protection mechanisms. As such, the Commission should give serious consideration to require device operators obtain an FCC license prior to operation. One would think that a holder of a valuable license authorized by the Commission would be reluctant to operate at variance with the rules and the terms of that license. However, a party having no nexus with the FCC is much less likely to voluntarily honor the rules.

Impact On The Transition To Digital Television

Entravision submits that it is premature for the Commission to consider permitting unlicensed operation in the TV bands until the DTV transition is complete. Consistent with the concerns expressed in ¶ 11 of the NPRM, by permitting unlicensed, untested devices to detect vacant spectrum and change frequencies while in the midst of

the DTV transition is simply unnecessary. However, the Commission could agree to participate in a pilot program allowing the Commission and participants to evaluate this use of vacant spectrum.

Unlike analog TV a digital TV set which receives interference above the “cliff” value does not display the interference but simply ceases to perform (freezes, pixelates or goes blank). Any new source of interference will cause confusion. The NPRM acknowledges the “Cliff Effect” which is a characteristic of digital television.¹⁰

While the DTV signal is quite robust when above the background noise, the DTV signal is more vulnerable at fringe area locations where the signal is marginal it is much less able to resist interference. This is illustrated by the downward progression of the allowed ratio of an analog interfering signal as the digital signal becomes weaker. If the digital signal has a signal to noise ratio of 25 dB or better it can withstand an interfering analog signal only 2 dB weaker, but if the digital signal to noise ratio is 16 dB (just above the limit for reception) then the threshold for destructive interference from an analog signal is 21 dB below the digital signal. Thus a DTV signal in a fringe area is very vulnerable to interference. Likely, the source of the interference will be hard to identify by service technicians who are still in the learning phase and will likely come to the conclusion that digital TV does not work reliably.

To circumvent such avoidable circumstances, the more prudent course is to get digital television fully accepted by the public and the service and installation organizations up to speed before introducing this complication.

Problems Associated with TV Translator and LPTV Station Protected Areas

The NPRM proposes to protect TV Translator and LPTV stations only out to their

¹⁰ NPRM at ¶ 15, Page 8.

designated protected contour¹¹ and leaving those viewers who regularly view signals from outside the protected contour without recourse. Again, it bears mention that the use of contours derived from FCC F50/50 curves is not a reliable method of determining where a useable signal is present and the Commission should refrain from accepting this method.

The next issue to consider is that class of viewers who view signals from outside the protected contour. By protecting only to the high field strength value in the tabulation would disenfranchise a large percentage of the viewers of these stations. Particularly in the case of TV translators these signals are often the only available free over-the-air TV. It is not in the public interest to disenfranchise viewers of these stations.

Further, the majority of translators serve rural areas and more often than not viewers have to do what is necessary to receive then or do without. External antennas are the norm and as a result signal strengths even below the full service Grade B values provide useful reception. In these circumstances useful reception can be obtained with UHF field strengths as low as 54 dB μ . If rural America is not to be disenfranchised it is essential that locations with field strengths at or above the following values be protected: Low Band VHF: 37 dB μ , High Band VHF: 46 dB μ , UHF: 54 dB μ

In addition translators are frequently located outside the protected area of their primary station but the input signal must be protected or all those dependent on the translator will loose reception. The input signals for translators are derived in several ways:

- 1) Direct off-the-air reception from the primary station, in which case the primary stations signal must be protected at the translator site.

¹¹ § 15.244(g), NPRM, Pages 28-29.

2) From another translator closer to the primary station, in which case the output frequency of the first translator must be protected at the second location where it is used as the input.

3) Microwave or satellite delivered, in which case protection from intentional radiators is not an issue.

It is imperative that the final rules provide that intentional radiators not operate on a TV channel used as a translator input in the vicinity of the translator receiving antenna or in a corridor stretching back towards the signal source without coordination between the fixed intentional radiator operator and the translator licensee. The Commission will need to add the actual input channels for translators to the CDBS records.

Conclusion

Entravision submits that the Commission's implementation of the plan to allow unlicensed radiators on vacant TV channels prior to the time Digital Television is fully integrated will inhibit the transition. The *NPRM* sets forth Proposed Rules and a plan that requires the use of untried strategies such as creating and maintaining a database of vacant channels area by area, transmitting this database or otherwise making it readily available and designing equipment that is truly tamperproof. The feasibility of meeting these requirements should be established first by field tests with actual hardware and software before authorizing the use of "intentional radiators" on vacant TV channels. It is critical that TV channel transmissions be protected. In the event the Commission decides to proceed with the implementation set forth in the *NPRM*, Entravision requests that the Commission revise the Proposed Rules to include the recommendations set forth herein.

Respectfully submitted,

**ENTRAVISION HOLDINGS,
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