

Exhibit E

E-mail Correspondence on Complaints EMR 012 and 044 Between FCC EB Northeast Regional Staff David Dombrowski and EMRPI President Janet Newton July, 2012

7/11/2012

Dear Mr. Dombrowski:

Please see attached document in response to our July 6, 2012 phone conversation regarding Complaints EMR012 and EMR044.

I am happy to make this available to building owners and managers upon request. Such a request should be sent to:

JNewton@emrpolicy.org

7/11/2012

Mr. Dombrowski -

Attached is the recording of the response The EMR Policy Institute was given when calling the phone number provided on AT&T safety signage at a rooftop antenna installation.

Best regards - Janet Newton

Mr. Dombrowski -

Attached is the recording of the response The EMR Policy Institute was given when calling the phone number provided on Metro PCS safety signage at a rooftop antenna installation.

Best regards - Janet Newton

Mr. Dombrowski -

Attached is the recording of the response The EMR Policy Institute was given when calling the phone number provided on Sprint safety signage at a rooftop antenna installation.

Best regards - Janet Newton

Mr. Dombrowski -

Attached is the recording of the response The EMR Policy Institute was given when calling the phone number provided on T-Mobile safety signage at a rooftop antenna installation.

Best regards - Janet Newton

Mr. Dombrowski -

Attached is the recording of the response The EMR Policy Institute was given when calling the phone number provided on Verizon safety signage at a rooftop antenna installation.

Best regards - Janet Newton

From: David Dombrowski <David.Dombrowski@fcc.gov>
To: 'Janet Newton' <JNewton@emrpolicy.org>
Subject: RE: recording of Verizon safety info

Date: Fri, 13 Jul 2012 15:40:13 +0000

Janet

The Commission is very interested in investigating your complaint about the cell phone companies not responding appropriately to inquires about safety when working in front of their antennas.

You forwarded us information about T-Mobile, Metro PCS, Verizon and Sprint.

Are these the only companies you contacted? Were there phone calls to cellular companies that provided an appropriate responses?

Dave



Advancing Sound Public Health Policy
on the Use of Electromagnetic Radiation (EMR)
P. O. Box 117 Marshfield VT 05658
Tel. and FAX : 802-426-3035 E-mail: info@emrpolicy.org

VIA E-Mail TRANSMISSION

11 July 2012

To: David Dombrowski
FCC Enforcement Bureau Northeast Region
Philadelphia PA

Re: Complaints EMR012 and EMR044

Dear Mr. Dombrowski:

This letter is in response to our July 6, 2012 phone conversation pertaining to Complaints EMR012 and EMR044. You stated that you personally inspected site EMR012 in March 2012 subsequent to The EMR Policy Institute's (EMRPI) February 27, 2012.

You requested that EMRPI provide you with a description of how our RF meter measurements were carried out. Attached is the excerpt from OET65 on spatial averaged measurements. Below is the brief description of the protocol EMRPI's RF consultants use to make RF emissions measurements at all sites:

We use the spatial average measurement technique described in OET65 for all of our measurements. We mark each antenna at the 6-foot level with painter's tape to determine the 6-foot level. Our NARDA 8715 meter is equipped to do spatial averages by pressing the "Start" button and slowly scanning the area in front of the accessible antenna at a distance of 20 cm (approximately 8 inches) and then pressing the "Stop" button at the end of the scan. The spatial average is then displayed on the screen. The operator always stands to the side of the antenna with an outstretched arm to minimize the operator's body perturbation of the RF field.

In our phone conversation we also discussed the health and safety implications of rooftop antenna exposures for workers who must access these rooftops to carry out the requirements of their employment, i.e. HVAC maintenance workers, roofers, painters, etc. Some rooftop sites that EMRPI has identified are on apartment buildings where residents who access the rooftop are also at risk. You told me that at the Complaint EMR012 site your RF measurements exceeded the public limit and that at another site the signage was not properly posted. I asked what enforcement actions have been taken since your March 2012 inspection and you said that so far no action has been taken because management is looking at what other such actions have been taken nationwide that may have already set a precedent.

The FCC has already set the precedent when it issued a Notice of Violation (NOV) and a Notice of Apparent Liability (NAL) for a site that has extremely restricted access for untrained workers who fit the classification of "General Population". Please see the attached NAL from Florida. Note especially the highlighted passages at pp. 3-5, 7 and 9.

You mentioned in our phone conversation that one of the sites you inspected has an alarmed and locked roof access door and you were satisfied with that as a safety precaution. It is EMRPI's opinion that you are confusing a site access restriction with a "Controlled" site. The attached IEEE C95.7 document defines an "Uncontrolled" environment. If a site is not under the control of an RF safety plan, while it may have access restrictions, it is still defined as an "Uncontrolled" environment. Please see the attached IEEE C95.7 document.

I have also attached p.4 of the FCC Local and State Government Advisory Committee's June 2, 2000, "A Local Government Official's Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance" wherein is found this definition of "occupational/controlled" exposure:

To qualify for the occupational/controlled exposure category, exposed persons **must** be made fully aware of the potential for exposure (**e.g., through training**), and **they must be able to exercise control over their exposure**. (Emphasis added.)

You also stated you do not call the phone number on any of the signs posted by the wireless licensees to document what safety advice, if any, can be obtained. It appears the FCC investigators have not been doing their due diligence in this matter. EMRPI's consultants have placed dozens of phone calls to FCC licensees to ascertain whether any helpful information can be obtained from the license holders when workers without RF Safety training (General Population) are required to work in close proximity to the licensee's antennas. One of the biggest problems that EMRPI has encountered is that the phone numbers posted at the sites direct calls to phone trees that are entirely too complex for any average person to navigate. The general runaround that callers must endure discourages workers or building residents from staying on the phone long enough to talk to anybody knowledgeable about the site.

EMRPI's phone calls to any carrier end without relevant safety information or instructions on needed precautions for working in front of antennas exceeding the FCC limits being given to anyone. Attached in several emails to follow are EMRPI's recorded conversations with the major wireless licensees that demonstrate the kind of information provided by the "Safety" phone numbers.

EMRPI is happy to provide this documentation to building owners and managers upon their request. Such requests should be directed via e-mail to: JNewton@emrpolicy.org.

Respectfully submitted by the Board of Directors of The EMR Policy Institute,



Janet Newton
President



Deborah Carney, JD
Vice President



Diana E. Warren
Director

When using a broadband survey instrument, spatially-averaged exposure levels may be determined by slowly moving the probe while scanning over an area approximately equivalent to the vertical cross-section (projected area) of the human body. An average can be estimated by observing the meter reading during this scanning process or be read directly on those meters that provide spatial averaging. Spatially averaging exposure is discussed in more detail in the ANSI/IEEE and NCRP documents referenced above. A maximum field reading may also be desirable, and, if the instrument has a "peak hold" feature, can be obtained by observing the peak reading according to the instrument instructions. Otherwise, the maximum reading can be determined by simply recording the peak during the scanning process.

The term "hot spots" has been used to describe locations where peak readings occur. Often such readings are found near conductive objects, and the question arises as to whether it is valid to consider such measurements for compliance purposes. According to the ANSI C95.3 guidelines (Reference [2]) measurements of field strength to determine compliance are to be made, "at distances 20 cm or greater from any object." Therefore, as long as the 20 cm criterion is satisfied, such peak readings should be considered as indicative of the field *at that point*. However, as far as *average* exposure is concerned such localized readings may not be relevant if accessibility to the location is restricted or time spent at the location is limited (see Section 4 of this bulletin on controlling exposure). It should be noted that most broadband survey instruments already have a 5 cm separation built into the probe.

In many situations there may be several RF sources. For example, a broadcast antenna farm or multiple-use tower could have several types of RF sources including AM, FM, and TV, as well as CMRS and microwave antennas. Also, at rooftop sites many different types of CMRS antennas are commonly present. In such situations it is generally useful to use both broadband and narrowband instrumentation to fully characterize the electromagnetic environment. Broadband instrumentation could be used to determine what the overall field levels appeared to be, while narrowband instrumentation would be required to determine the relative contributions of each signal to the total field if the broadband measurements exceed the most restrictive portion of the applicable MPEs. The "shaped" probes mentioned earlier will also provide quantification of the total field in terms of percentage of the MPE limits.

In cases where personnel may have close access to intermittently active antennas, for example at rooftop locations, measurement surveys should attempt to minimize the uncertainty associated with the duty cycle of the various communications transmitters at the site to arrive at a conservative estimate of maximum possible exposure levels.

At broadcast sites it is important to determine whether stations have auxiliary, or stand-by, antennas at a site in addition to their main antennas. In such cases, either the main antenna or the auxiliary antenna, which may be mounted lower to the ground, may result in the highest RF field levels in accessible areas, and contributions from both must be properly evaluated.

At frequencies above about 300 MHz it is usually sufficient to measure only the electric field (E) or the mean-squared electric field. For frequencies equal to or less than 30

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

In the Matter of)	
)	
Infinity Broadcasting Corporation of Florida)	File No. EB-04-TP-478
)	
Licensee of Station WQYK-FM)	NAL/Acct. No. 200532700005
Tampa, Florida)	
Facility ID # 28619)	FRN: 0004036711

ORDER ON REVIEW

Adopted: April 7, 2009

Released: April 7, 2009

By the Commission:

I. INTRODUCTION

1. In this Order on Review (“*Order*”), we deny the application for review filed by CBS Radio Inc. of Tampa, formerly Infinity Broadcasting Corporation of Florida (“Infinity”), licensee of station WQYK-FM, 99.5 MHz, serving St. Petersburg, Florida, pursuant to Section 1.115 of the Commission’s Rules (“Rules”).¹ Infinity seeks review of the *Forfeiture Order* issued February 6, 2007,² by the Enforcement Bureau South Central Region (“Region”) imposing a monetary forfeiture in the amount of \$10,000 on Infinity for the willful and repeated violation of Section 1.1310 of the Rules.³ The noted violation involved Infinity’s failure to comply with radio frequency radiation (“RFR”) maximum permissible exposure (“MPE”) limits applicable to facilities, operations, or transmitters. In this Order, we consider the various arguments raised by Infinity and for the reasons set forth below, we deny the application for review and affirm the Region’s finding of liability and the forfeiture amount assessed in the *Forfeiture Order*.

II. BACKGROUND

2. **The RFR Rules.**⁴ In 1996, the Commission amended its rules to adopt new guidelines and procedures for evaluating the environmental effects of RFR from FCC regulated transmitters.⁵ The

¹ 47 C.F.R. § 1.115.

² *Infinity Broadcasting Corporation of Florida*, 22 FCC Rcd 2288 (EB 2007) (“*Forfeiture Order*”).

³ 47 C.F.R. § 1.1310. See also Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Report and Order, ET Docket No. 93-62, 11 FCC Rcd 15123 (1996) (“*Guidelines Report and Order*”), recon. granted in part, First Memorandum Opinion and Order, 11 FCC Rcd 17512 (1996), recon. granted in part, Second Memorandum Opinion and Order and Notice of Proposed Rulemaking, 12 FCC Rcd 13494 (1997) (“*Second Guidelines*”).

⁴ The description of the history of the RFR rules here was originally set forth in *Radio One Licenses, LLC*, 21 FCC Rcd 14271 (2006).

⁵ Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Report and Order, ET Docket No. (continued . . .)

Commission adopted maximum permissible exposure (“MPE”) limits for electric and magnetic field strength and power density for transmitters operating at frequencies from 300 kHz to 100 GHz.⁶ These MPE limits, which are set forth in Section 1.1310 of the Rules, include limits for “occupational/controlled” exposure and limits for “general population/uncontrolled” exposure.⁷ The occupational exposure limits apply in situations in which persons are exposed as a consequence of their employment, provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.⁸ The limits of occupational exposure also apply in situations where an individual is transient through a location where the occupational limits apply, provided that he or she is made aware of the potential for exposure. The more stringent general population or public exposure limits apply in situations in which the general public may be exposed, or in which persons exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.⁹ Licensees can demonstrate compliance by restricting public access to areas where RFR exceeds the public MPE limits.¹⁰

3. The MPE limits specified in Table 1 of Section 1.1310 are used to evaluate the environmental impact of human exposure to RFR and apply to “...all facilities, operations and transmitters regulated by the Commission.”¹¹ Further, the FCC’s rules require that if the MPE limits are exceeded in an accessible area due to the emissions of multiple transmitters, actions necessary to bring the area into compliance “are the shared responsibility of all licensees whose transmitters produce, at the area in question, power density levels that exceed 5% of the power density exposure limit applicable to their particular transmitter.”¹² The 5% threshold applies to the power density limit or to the square of the electric or magnetic field strength limit.¹³ If the MPE limits are exceeded at an accessible area, all stations that produce a power density level exceeding 5% of the power density exposure limit applicable

(Continued from previous page)

93-62, 11 FCC Rcd 15123 (1996) (“*RF First Report and Order*”), recon. granted in part, First Memorandum Opinion and Order, 11 FCC Rcd 17512 (1996), recon. granted in part, Second Memorandum Opinion and Order and Notice of Proposed Rulemaking, 12 FCC Rcd 13494 (1997) (“*RF Second Memorandum Opinion and Order*”).

⁶ See 47 C.F.R. § 1.1310, Table 1. The MPE limits are generally based on recommended exposure guidelines published by the National Council on Radiation Protection and Measurements (“NCRP”) in “Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” NCRP Report No. 86, Sections 17.4.1, 17.4.1.1., 17.4.2, and 17.4.3 (1986). In the frequency range from 100 MHz to 1500 MHz, the MPE limits are also generally based on guidelines contained in the RF safety standard developed by the Institute of Electrical and Electronics Engineers, Inc. (“IEEE”) and adopted by the American National Standards Institute (“ANSI”) in Section 4.1 of “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” ANSI/IEEE C95.1-1992 (1992).

⁷ Table 1 in Section 1.1310 of the Rules provides that the general population RFR maximum permissible exposure limit for a station operating in the frequency range of 30 MHz to 300 MHz is 0.200 mW/cm.²

⁸ 47 C.F.R. § 1.1310, Note 1 to Table 1.

⁹ 47 C.F.R. § 1.1310, Note 2 to Table 1.

¹⁰ See, e.g., OET Bulletin 65: “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields” (August 1997) (“*OET Bulletin 65*”).

¹¹ See 47 C.F.R. §§ 1.1307(b), 1.1307(b)(1), 1.1310.

¹² *RF Second Memorandum Opinion and Order*, 12 FCC Rcd at 13520-21; 47 C.F.R. § 1.1307(b)(3).

¹³ *RF Second Memorandum Opinion and Order*, 12 FCC Rcd at 13524; 47 C.F.R. § 1.1307(b)(3).

to its particular transmitter at that accessible area share responsibility to correct the problem.¹⁴ While we have urged owners of transmitter sites to allow applicants and licensees to take reasonable steps to comply with the Commission's RF Rules, the Commission has determined that responsibilities pertaining to RF electromagnetic fields belong with licensees and applicants, rather than with site owners.¹⁵

4. Broadcast stations that filed applications after October 15, 1997, for an initial construction permit, license, renewal or modification of an existing license were required to demonstrate compliance with the new RFR MPE limits, or to file an Environmental Assessment and undergo environmental review by Commission staff.¹⁶ In addition, all existing licensees, including all licensees at multiple transmitter sites, were required to come into compliance with the new RFR MPE limits by September 1, 2000, or to file an Environmental Assessment.¹⁷

5. **The Park Tower rooftop inspection.** On May 25, 2004, Tampa Office agents, in response to a complaint, inspected the Park Tower rooftop. Access to the main rooftop was restricted to individuals with special keycards. Signs on the rooftop access doors stated that areas on the rooftop exceed the Commission's public RFR limits. However, the signs did not indicate which areas on the rooftop exceeded the public or general population RFR limits. The agents continued to the penthouse rooftop, which was restricted by an additional lock controlled by the front desk and accessed without passing by the warning signs on the main rooftop access doors. There were no RFR warning signs found on the penthouse rooftop, penthouse rooftop access door to the stairwell, inside the stairwell, or on the hatch itself. While surveying the penthouse rooftop, a Tampa agent, using a calibrated RFR meter, found that approximately 75% of the penthouse rooftop exceeded the general population/uncontrolled RFR MPE limit. The agent also found an unmarked and un-posted area within an 8-10 foot radius of a tower containing a UHF TV antenna, later identified as belonging to station WVEA-LP, exceeding the occupational/controlled RFR MPE limit which also greatly exceeded the general population/uncontrolled RFR MPE limit. The agent determined that there was a second UHF-TV and two FM radio stations, one of which belonged to station WQYK-FM, all on separate towers located on the penthouse rooftop at the time of inspection. Park Tower's chief engineer, who accompanied the agents on this inspection, stated he and his personnel were not aware of areas exceeding the general population and occupational limits on the penthouse rooftop pointed out to him by the agent. The building's chief engineer stated that he and his personnel access this rooftop on a fairly regular basis to inspect it for maintenance and to conduct roofing repairs. He also stated that neither he nor any of his maintenance crew or subcontractors had received any training with respect to RFR hazards.

6. On June 18, 2004, a Tampa Office agent returned to the penthouse rooftop of Park Tower, gathered more information, and made additional measurements. The agent found power density levels in excess of the RFR MPE general population and occupational limits, similar to those detected on May 25, 2004. There were no RFR warning signs posted in the stairwell that accessed the penthouse rooftop or on the penthouse rooftop itself.

¹⁴ *Id.* at 13520-21; 47 C.F.R. § 1.1307(b)(3).

¹⁵ *RF Second Memorandum Opinion and Order*, 12 FCC Rcd at 13522 – 13523; 47 C.F.R. § 1.1307(b)(3).

¹⁶ *RF Second Memorandum Opinion and Order*, 12 FCC Rcd at 13538; 47 C.F.R. § 1.1307(b).

¹⁷ *RF Second Memorandum Opinion and Order*, 12 FCC Rcd at 13540; 47 C.F.R. § 1.1307(b)(5). See also, *Public Notice*, Year 2000 Deadline for Compliance with Commission's Regulations Regarding Human Exposure to Radiofrequency Emissions (released Feb. 25, 2000); *Public Notice*, Erratum to February 25, 2000 Public Notice, 15 FCC Rcd 13600 (2000); *Public Notice*, Reminder of September 1, 2000, Deadline for Compliance with Regulations for Human Exposure to Radiofrequency Emissions, 15 FCC Rcd 18900 (2000).

7. On July 1, 2004, agents again took measurements on the penthouse rooftop of Park Tower. When all four stations were on the air, the RFR fields at the un-posted, unmarked area near the WVEA-LP antenna exceeded the occupational/controlled RFR MPE limit and also greatly exceeded the general population/uncontrolled RFR MPE limit, consistent with the agents' May 25, 2004, measurements.

8. On July 15, 2004, an agent spoke with the engineer for station WQYK-FM to set up a meeting to conduct an RFR inspection at the transmitter site. The station engineer stated he knew of areas on the penthouse rooftop that exceeded the occupational limits and that station WQYK-FM was contributing more than 5% to those fields.

9. On July 16, 2004, Tampa agents conducted another inspection of the penthouse rooftop. Entravision Holdings, LLC ("Entravision"), licensee of WVEA-LP, had placed a small, framed caution sign in the stairwell to the penthouse roof hatch that listed contact information for the WVEA-LP station engineer. Entravision had also marked with yellow paint the penthouse rooftop area exceeding the occupational/controlled RFR MPE limit, but had not placed warning signs on the penthouse rooftop itself. The Tampa agents conducted measurements similar to those conducted on July 1 with the four licensees located at the site. With all four stations on the air, the area near the WVEA-LP antenna exceeded the occupational/controlled RFR MPE limit and also greatly exceeded the general population/uncontrolled RFR MPE limit, consistent with the agents' May 25, 2004, and July 1, 2004, measurements. After station WVEA-LP was taken off the air, the agents determined that WVEA-LP was responsible for the majority contribution of both the general public/uncontrolled RFR MPE limit and the occupational/controlled RFR MPE limit. When WQYK-FM was taken off the air and measurements were made, it was determined that WQYK was responsible for more than 5% of the both occupational/controlled RFR MPE limit and the general population/uncontrolled RFR MPE limit. Before leaving, the agents told the station WQYK-FM engineer of his station's contribution. Although station WVEA-LP had marked the areas on the penthouse rooftop that exceeded the occupational limit with yellow paint and placed a framed warning sign in the stairwell, the engineers were warned that the area was still not properly marked. The agents also suggested that the station WQYK-FM engineer speak with the building's chief engineer to discuss other steps to give the workers knowledge and control over their exposure. The agents again explained to the station WQYK-FM engineer the RFR requirements.

10. On July 20, 2004, an agent contacted the station WQYK-FM engineer to discuss the July 16th inspection. The station engineer had not posted any warning signs on the penthouse rooftop and had not contacted the building's engineer. The agent reminded the station engineer of station WQYK's responsibility, as a contributor of more than 5% of the RFR in excess of the allowable limit, to comply with the Commission's RFR requirements. On August 17, 2004, an agent re-inspected the penthouse rooftop of Park Tower. There was no sign posted on the penthouse rooftop as requested on July 16 and 20.

11. On September 30, 2004, agents re-inspected the penthouse rooftop. The agents found power density levels in excess of the RFR MPE general population and occupational limits, similar to those previously detected. Station WVEA-LP had placed a sign on its tower that cautioned workers that the yellow striped area exceeds safe occupational levels. The sign, however, did not list any station contact information to enable workers to inquire as to the level of the RFR on the penthouse rooftop.¹⁸

¹⁸ Such information allows workers who are fully aware of the potential for their exposure to make informed decisions and exercise control over their exposures. See 47 C.F.R. § 1.1310, Note 1 to Table 1. See also *OET Bulletin 65* at pp. 55 – 59.

12. On November 5, 2004, the building's chief engineer contacted the Tampa Office and stated that station WVEA-LP told him that the transmitter power had been reduced and the penthouse rooftop was now well below the occupational limit. Agents made measurements the same day and confirmed there were no areas on the penthouse rooftop that exceeded the occupational/controlled RFR MPE limit. There were areas, however, that were still well above the general population/uncontrolled limit.

13. On January 5, 2005, the Tampa Office issued a *Notice of Apparent Liability for Forfeiture* to Infinity in the amount of twenty thousand dollars (\$20,000) for the apparent willful and repeated violation of Section 1.1310 of the Rules by failing to comply with RFR MPE limits on the penthouse rooftop of Park Tower.¹⁹ Infinity filed a response to the *NAL* on March 16, 2005,²⁰ requesting that the forfeiture be rescinded. While not disputing the RFR measurements, Infinity argued that the occupational/controlled RFR MPE limit should have been applied to the penthouse roof rather than the public/uncontrolled RFR MPE limits; that the alleged violation was not willful, as Infinity had no prior knowledge of the RFR violations at the Park Tower site; and that the Tampa Office incorrectly assessed an upward adjustment of the forfeiture amount against Infinity.

14. On February 6, 2007, the Region released a *Forfeiture Order* assessing a monetary forfeiture of \$10,000 against Infinity for willful and repeated violation of Section 1.1310 of the Commission's Rules by failing to comply with RFR MPE limits applicable to facilities, operations or transmitters. The Region determined that the public MPE limits applied because workers and employees accessing the penthouse rooftop were wholly unaware of the potential for high RFR on the penthouse rooftop because there were no RFR warning signs on the penthouse rooftop and no markings or delineations of the area of high RFR, and the one and only RFR sign leading to the penthouse rooftop was routinely hidden from view of those accessing the penthouse roof. Accordingly, with no knowledge of the existence of RFR on the penthouse rooftop and the potential for exposure and no means of controlling exposure to the RFR on the rooftop that exceeded the MPE limits, the public MPE limits apply to workers and employees accessing the rooftop and exposed to the RFR as a consequence of their employment. The Region also determined that Infinity, as a licensee contributing more than 5% of its transmitter's RFR MPE limit, was obligated under the Commission's Rules to ensure RFR awareness and control for the affected workers and employees, not the Park Tower building management. The Region also rejected Infinity's argument that the violation was not willful, finding that in its most recent application for renewal of the WQYK-FM broadcast license, Infinity certified that WQYK-FM "complies with the maximum permitted radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments."²¹ Consequently, the Region found that Infinity was aware of its responsibilities pursuant to the Commission's RFR Rules, and failed to comply with them. The Region did, however, eliminate the upward adjustment of the proposed forfeiture and assessed the base forfeiture amount of \$10,000.

III. DISCUSSION

15. In this *Order* we deny Infinity's Application for Review,²² and affirm the Region's

¹⁹ *Notice of Apparent Liability for Forfeiture*, NAL/Acct. No. 200532700005 (Enf. Bur., Tampa Office, January 5, 2005) ("*NAL*").

²⁰ See Letter from Meredith S. Senter, Jr., counsel for Infinity, to Federal Communications Commission (dated March 16, 2005). Infinity requested an extension to submit its response to the *NAL*, which was granted by the Bureau.

²¹ WQYK-FM 2003 Renewal Application, Section III, Question 6. Infinity also stated that "a plan is in effect and understood by all of the licensees at the antenna site to protect workers on the penthouse roof." We note that no copy of that plan has been produced in this proceeding.

²² The Bureau received Infinity's Application for Review on March 8, 2006. Pursuant to Section 1.115 of the (continued . . .)

finding of liability and the forfeiture amount assessed in the *Forfeiture Order*. We find that through the RFR rules, the various orders on reconsideration of the rules, *OET Bulletin 65* and the subsequent enforcement orders that the Commission has issued and published since 1996, a regulated party acting in good faith would be able to identify, with ascertainable certainty, the standards with which the Commission expects parties to conform in order to comply with the RFR rules. We further find that licensees and applicants must comply with the MPE limits for RFR found in Section 1.1310 of the rules; and that Section 1.1307(b)(3) of the rules places an affirmative duty on all licensees whose transmitters produce, at the area in question, power density levels that exceed 5% of the power density exposure limit applicable to their particular transmitter, to ensure compliance with the Section 1.1310 limits at the relevant sites.

16. Infinity raises three primary arguments in its Application for Review. First, Infinity argues that it and other similarly situated licensees lacked notice of the RFR standards applicable to rooftop antenna sites and that the Commission's RFR compliance standards to ensure workers are fully aware of their potential for RFR exposure fails the requirement that licensees should be able to identify, with ascertainable certainty, the standards for complying with the rules.²³ In support, Infinity cites to a pending rulemaking aimed at clarifying the definitions of the terms "fully aware" and "exercise control" contained in Section 1.1310 of the rules.²⁴ Second, Infinity argues that Section 1.1310 contains no substantive prohibitions and imposes requirements on the Commission, not on licensees. Third, Infinity asserts that strict liability for licensees contributing 5% to an RFR field in excess of the MPE is unreasonable when a licensee is unaware a violation exists. Infinity also disputes some of the facts detailed above.

17. Infinity first argues that it cannot be held liable for a forfeiture for violating the RFR MPE limits because it was unable to identify with ascertainable certainty the standards to which the Commission, through its field agents, expected it to comply on a restricted access rooftop antenna farm. We disagree. The ascertainable certainty standard that Infinity cites to stands for the proposition that an agency must provide fair notice of the obligation being imposed on a regulatee, i.e., that "by reviewing the regulations and other public statements issued by the agency a regulated party acting in good faith would be able to identify, with ascertainable certainty, the standards with which the agency expects parties to conform before imposing civil liability."²⁵

18. Infinity was found by the Region to have violated Section 1.1310 of the Commission's rules. Note 2 to Table 1 of Section 1.1310 states that the "general population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure."²⁶ Infinity bases its argument of lack of ascertainable certainty of the RFR requirements on the existence of an open rulemaking commenced by the Commission in 2003 that proposed, among other things, to clarify the terms "fully aware" and "exercise control" from Note 2 to

(Continued from previous page)

Commission's Rules, parties may file an application for review of an order issued under delegated authority directly with the Commission without first seeking reconsideration at the Bureau level.

²³ *Trinity Broadcasting of Florida, Inc., v. FCC*, 211 F 3rd 618, 628 (D.C. Cir. 2000).

²⁴ *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, 18 FCC Rcd 13187 (2003).

²⁵ *Trinity Broadcasting of Florida, Inc. v. FCC*, 211 F 3rd at 628.

²⁶ 47 C.F.R. § 1.1310, Note 2 to Table 1.

Table 1 of Section 1.1310, and on the alleged lack of a standard for compliance with these requirements. We first disagree that the existence of the open rulemaking cited by Infinity casts doubt on the basic and clearly articulated requirements of FCC licensees to comply with the important public safety RFR MPE limits applicable to facilities, operations and transmitters.²⁷ As noted, agency regulations, orders, rulemakings, and guidance documents have provided notice of the Commission's expectations related to compliance with the RFR rules, and in particular to restricting access to, marking and signing areas with high RFR exposure. In the 1996 Report and Order adopting the RFR rules, the Commission stated that "warning signs and labels can also be used to establish such awareness as long as they provide information, in a prominent manner, on risk of potential exposure and instructions on methods to minimize such exposure risk."²⁸ In *OET Bulletin 65*, the Commission provided explicit guidance on compliance expectations, stating:

Restricting access is usually the simplest means of controlling exposure to areas where high RF levels may be present. Methods of doing this include fencing and posting such areas or locking out unauthorized persons in areas, such as rooftop locations, where this is practical. There may be situations where RF levels may exceed the MPE limits for the general public in remote areas, such as mountain tops, that could conceivably be accessible but are not likely to be visited by the public. In such cases, common sense should dictate how compliance is to be achieved. If the area of concern is properly marked by appropriate warning signs, fencing or the erection of other permanent barriers may not be necessary.²⁹

...

Exposure to RF fields in the workplace or in other controlled environments usually presents different problems than does exposure of the general public. For example, with respect to a given RF transmitting facility, a worker at that facility would be more likely to be close to the radiating source than would a person who happens to live nearby. Although restricting access to high RF field areas is also a way to control exposures in such situations, this may not always be possible. . . .

In general, a locked rooftop or other appropriately restricted area that is only accessible to workers who are "aware of" and "exercise control over" their exposure would meet the

²⁷ As the Bureau recently noted, "[th]e RFR rules were adopted by the Commission in 1996, licensee responsibilities were reiterated and clarified by the Commission in 1997, compliance guidance was provided by the Commission's Office of Engineering and Technology ("OET") in 1997, public notice of the deadline for all licensees to be in compliance with the MPE standards was provided in 2000, and the first civil liability for violation of these rules was proposed in 2002." *Entravision Holdings, LLC*, Memorandum Opinion and Order, DA 07-5051, (Enf. Bur. December 21, 2007) at ¶ 17 n. 22. See also, 47 C.F.R. §§ 1.1307, 1.1310; *Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Report and Order*, ET Docket No. 93-62, 11 FCC Rcd 15123 (1996), recon. granted in part, *First Memorandum Opinion and Order*, 11 FCC Rcd 17512 (1996), recon. granted in part, *Second Memorandum Opinion and Order and Notice of Proposed Rulemaking*, 12 FCC Rcd 13494 (1997); *OET Bulletin 65*; *Public Notice, Year 2000 Deadline for Compliance with Commission's Regulations Regarding Human Exposure to Radiofrequency Emissions* (released Feb. 25, 2000); *Public Notice, Erratum to February 25, 2000 Public Notice*, 15 FCC Rcd 13600 (2000); *Public Notice, Reminder of September 1, 2000, Deadline for Compliance with Regulations with Regulations for Human Exposure to Radiofrequency Emissions*, 15 FCC Rcd 18900 (2000); *A-O Broadcasting, Inc.*, 17 FCC Rcd 24184 (2002) (subsequent history omitted); *Americom Las Vegas Limited Partnership*, 17 FCC Rcd 23689 (EB 2002) (subsequent history omitted); *AMFM Radio Licenses, LLC*, 18 FCC Rcd 22769 (2003) (subsequent history omitted).

²⁸ *Guidelines Report and Order*, 11 FCC Rcd at 15140 (1996).

²⁹ *OET Bulletin 65* at 53 (footnotes omitted).

criteria for occupational/controlled exposure, and protection would be required at the applicable occupational/controlled MPE limits for those individuals who have access to the rooftop. Persons who are only "transit" visitors to the rooftop, such as air conditioning technicians, etc., could also be considered to fall within the occupational/controlled criteria as long as they also are "made aware" of their exposure and exercise control over their exposure.³⁰

19. The Region found, in the *Forfeiture Order*, that the public MPE limits applied because Park Tower workers and employees accessing the penthouse rooftop were unaware of the potential for high RFR on the penthouse rooftop because there were no indications on the penthouse rooftop that the MPE limits exceeded applicable standards such as through the use of RFR warning signs on the rooftop or markings or delineations of the area on the rooftop of high RFR. Moreover, the Region found that, although there was one sign posted on a door leading to the rooftop that indicated that the MPE limits exceeded applicable standards, that one and only RFR sign was routinely hidden from view of those accessing the penthouse roof because the door was routinely open. Indeed, on each of six occasions that the Tampa agents inspected the site the door was propped open, and the agents did not see the sign.³¹ Consequently, while access to the area of concern was restricted, no visible signage or markings existed to make workers and employees entering the area of concern even aware of their exposure, let alone enable such workers or employees to exercise control over their exposure to high RFR fields in the area of concern. Infinity failed to sign and mark the area of concern on the penthouse rooftop, a minimal requirement necessary to ensure worker awareness of even the existence of high RFR fields and a standard articulated by the Commission when it adopted the RFR rules and in the guidance issued by the Commission in *OET Bulletin 65*.³² Contrary to Infinity's assertion, the Region did not hold Infinity to a "fully aware" standard that required training, as proposed by the open rulemaking.³³

20. We also note that Infinity submitted an RFR exhibit related to the Park Tower site in the renewal application for Station WQYK in which Infinity stated that areas on the penthouse rooftop where the station is located exceed the Commission's MPE limits for controlled environments and that the areas are clearly identified and marked.³⁴ Infinity also stated in the exhibit that a plan is in effect and understood by all licensees at the antenna site to protect workers accessing the penthouse roof. Finally, Infinity stated in the exhibit that access to the transmitting site is restricted and properly marked with warning signs and thereby classified as a controlled environment. We find that by Infinity's own submissions, it understood with ascertainable certainty what was required by the Commission, yet failed

³⁰ *OET Bulletin 65* at 55 (footnotes omitted).

³¹ *Forfeiture Order*, 22 FCC Rcd at 2292-2293, para. 18.

³² The Region also determined that Infinity inappropriately attempted to delegate responsibility for RFR compliance to the Park Tower building management. We concur. The Commission has clearly articulated that responsibility for RFR compliance lies with licensees and applicants, not landlords or site owners. *RF Second Memorandum Opinion and Order*, 12 FCC Rcd at 13522 (1997).

³³ In the rulemaking, the Commission proposes, among other things, to explain in a note to Section 1.1310 of the rules "that 'fully aware' means that an exposed individual has received written and verbal information concerning the potential for RF-exposure and has received training regarding appropriate work practices relating to controlling or mitigating his or her exposure." *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, 18 FCC Rcd at 13201.

³⁴ File No. BRH-20031001AGG ("WQYK-FM 2004 Renewal Application"), Exhibit 13. We note that this application was granted January 29, 2004.

to comply with the standards it certified were in place to ensure RFR compliance at the Park Tower penthouse rooftop antenna site.

21. We find that through the RFR rules, the various orders on reconsideration of the rules, *OET Bulletin 65* and the subsequent enforcement orders that the Commission has issued and published since 1996 and under the facts presented here, WQYK-FM would have been able to identify, with ascertainable certainty, the standards with which we expect parties to conform in order to comply with our RFR rules. We cannot accept Infinity's assertion that the mere existence of the open pending rulemaking from 2003 hamstrings our ability to enforce these important public safety rules.

22. Infinity disputes that the Park Tower's chief engineer and his personnel access the penthouse roof on a regular basis. Infinity asserts that there is no building-maintained equipment on the penthouse rooftop and suggests the building engineer was confusing the main rooftop, which does contain building-maintained equipment, with the penthouse rooftop which contains only television, radio and microwave equipment. We have reviewed the record of the statement made by the Park Tower chief engineer and we conclude that the engineer indicated to the Tampa agent that he and his personnel routinely access both the roof and the penthouse roof. While there may not be any building-maintained equipment on the penthouse roof, as Infinity asserts, it is indisputable that the engineer and his personnel are responsible for the maintenance of the penthouse roof itself. Therefore, we find no merit to Infinity's argument that the Park Tower Chief engineer and his personnel do not access the penthouse roof.

23. Infinity also disputes that on July 15, 2004, when a Tampa agent spoke with the engineer for station WQYK-FM to set up a meeting to conduct an RFR inspection at the transmitter site, the station engineer stated he knew of areas on the penthouse rooftop that exceeded the occupational limits and that station WQYK-FM was contributing more than 5% to those fields. Infinity argues that the engineer had no knowledge of "the overage" until July 20, 2004, at the earliest. The Tampa agent's notes indicate otherwise. However, if we accept Infinity's assertion from its response to the *NAL*, that the WQYK-FM engineer was actually talking about an RFR issue that occurred on the roof in 2003, we find that it further supports the Region's determination that Infinity was aware of the requirements concerning compliance with the RFR rules. Consequently, we find no merit in this argument.

24. Infinity also argues that Section 1.1310 of the rules contains "no substantive prohibitions at all" and simply identifies criteria which "applicants and the Commission are required to take into consideration in evaluating whether Commission actions are deemed to have a significant effect on the quality the environment [sic] for purposes of the National Environmental Policy Act of 1969."³⁵ While Infinity is correct that Section 1.1310 delineates the appropriate standard for that evaluation, Infinity ignores numerous Commission documents and decisions that clearly require licensees and applicants to comply with the MPE limits for RFR set forth in Section 1.1310 of the Rules. Specifically, the instructions for FCC Form 303-S, the renewal application form signed and submitted by Infinity in its 2004 WQYK-FM Renewal Application, remind applicants that "[i]n 1996, the Commission adopted guidelines and procedures for evaluating environmental effects of RF emissions. All applications subject to environmental processing . . . must demonstrate compliance with these requirements."³⁶ Those instructions detail the two tiers of exposure limits (general population/uncontrolled and occupational/controlled) contained in Section 1.1310 and repeatedly direct applicants to *OET Bulletin 65*,³⁷ which repeatedly cites to Section 1.1310 and gives guidance to licensees and applicants on

³⁵ Application for Review at 5.

³⁶ FCC Form 303-S Instructions at p. 10.

³⁷ FCC Form 303-S Instructions at pp. 10, 12, 13, 14, 15, 20 and 21.

compliance with the guidelines contained in Section 1.1310.³⁸ In addition, as reiterated by the Region in both the *NAL* and *Forfeiture Order*,³⁹ the Commission has held repeatedly that Section 1.1310 of the Rules requires licensees to comply with RFR exposure limits.⁴⁰ Consequently, we find that the Commission gave Infinity, and all similarly situated licensees, fair notice of the requirements and its interpretation of Section 1.1310 of the rules.

25. Infinity also asserts that the Commission may not hold Infinity liable for another licensee's violation, where Infinity had no knowledge of the violation. Specifically, Infinity argues that the Region is holding it liable for a violation actually committed by Entravision, and that Infinity did not willfully violate that RFR rules. We disagree. Contrary to Infinity's assertion that the Region's interpretation of Section 1.1307(b)(3) imposed a strict liability standard on Infinity, we find that Section 1.1307(b)(3), which clearly states that compliance with the RFR MPE requirements found in Section 1.1310 "are the shared responsibility of all licensees whose transmitters produce, at the area in question, power density levels that exceed 5% of the power density exposure limit applicable to their particular transmitter,"⁴¹ places an affirmative duty on these particular licensees to actively ensure compliance with the Section 1.1310 limits at the relevant sites. There is no dispute that Infinity's transmitter produces levels in excess of the 5% power density limit applicable to the transmitter at the rooftop site. Consequently, it follows that Infinity was obligated, under our Rules, to ensure compliance with the RFR rules at the multi-transmitter site in question here. Although Infinity argues that it reasonably relied upon the grant of an Entravision application in January 2004, in assuming that the area was in compliance with the RFR rules, we agree with the Region that Infinity's reliance on the Entravision application in perpetuity was misplaced. Tampa agents informed Infinity through its station engineer in mid-July 2004 that it was a 5% contributor and that the area was not in compliance with the RFR rules. As explained above, non-compliance continued well into September 2004, when agents found that Entravision, but not Infinity, placed additional signage on its antenna concerning occupational limits, but continued to fail to place signage concerning public limits. Thus, Infinity willfully failed to act to ensure compliance as a 5% contributor at the rooftop site with the Section 1.1310 RFR MPE requirements. Furthermore, we note that the Region not only determined that Infinity willfully violated Section 1.1310, it found that Infinity also repeatedly violated Section 1.1310, a finding Infinity does not dispute. Therefore, a finding of willfulness was not essential to imposition of the forfeiture.

26. Upon review of the Application for Review and the entire record herein, we conclude that Infinity has failed to demonstrate that the Region erred and we affirm the *Forfeiture Order*.

IV. ORDERING CLAUSES

27. Accordingly, **IT IS ORDERED** that, pursuant to Section 1.115(g) of the Commission's Rules,⁴² the Application for Review filed by CBS Radio Inc. of Tampa, formerly Infinity Broadcasting Corporation of Florida, **IS** hereby **DENIED**.

³⁸ See e.g., supra ¶ 18.

³⁹ *NAL* at ¶ 12; *Forfeiture Order*, 22 FCC Rcd at 2291.

⁴⁰ See e.g., *A-O Broadcasting, Inc.*, 17 FCC Rcd 24184 (2002) (subsequent history omitted); *AMFM Radio Licenses, LLC*, 18 FCC Rcd 22769 (2003) (subsequent history omitted); *Americom Las Vegas Limited Partnership*, 17 FCC Rcd 23689 (EB 2002), *forfeiture assessed*, 19 FCC Rcd 9643 (EB 2004), *application for review denied*, 21 FCC Rcd 14286 (2006).

⁴¹ 47 C.F.R. § 1.1307(b)(3).

⁴² 47 C.F.R. § 1.115(g).

28. **IT IS ALSO ORDERED** that, pursuant to Section 503(b) of the Act, and Section 1.80(f)(4) of the Rules,⁴³ CBS Radio Inc. of Tampa, formerly Infinity Broadcasting Corporation of Florida, **IS LIABLE FOR A MONETARY FORFEITURE** in the amount of ten thousand dollars (\$10,000) for willful and repeated violation of Section 1.1310 of the Rules.

29. Payment of the forfeiture shall be made in the manner provided for in Section 1.80 of the Rules within 30 days of the release of this *Order*. If the forfeiture is not paid within the period specified, the case may be referred to the Department of Justice for collection pursuant to Section 504(a) of the Act.⁴⁴ Payment of the forfeiture must be made by check or similar instrument, payable to the order of the Federal Communications Commission. The payment must include the NAL/Account Number and FRN Number referenced above. Payment by check or money order may be mailed to Federal Communications Commission, P.O. Box 979088, St. Louis, MO 63197-9000. Payment by overnight mail may be sent to U.S. Bank – Government Lockbox #979088, SL-MO-C2-GL, 1005 Convention Plaza, St. Louis, MO 63101. Payment by wire transfer may be made to ABA Number 021030004, receiving bank TREAS/NYC, and account number 27000001. For payment by credit card, an FCC Form 159 (Remittance Advice) must be submitted. When completing the FCC Form 159, enter the NAL/Account number in block number 23A (call sign/other ID), and enter the letters “FORF” in block number 24A (payment type code). Requests for full payment under an installment plan should be sent to: Chief Financial Officer -- Financial Operations, 445 12th Street, S.W., Room 1-A625, Washington, D.C. 20554. Please contact the Financial Operations Group Help Desk at 1-877-480-3201 or Email: ARINQUIRIES@fcc.gov with any questions regarding payment procedures.

30. **IT IS FURTHER ORDERED** that this *Order* shall be sent by regular mail and by certified mail, return receipt requested, to CBS Radio Inc. of Tampa, formerly Infinity Broadcasting Corporation of Florida, at its address of record and its counsel, Steven Lerman, Esquire, Leventhal, Senter & Lerman PLLC, 2000 K Street NW, Suite 600, Washington, DC 20006.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

⁴³ 47 C.F.R. § 1.80(f)(4).

⁴⁴ 47 U.S.C. § 504(a).

NOTE—The spatial average is measured by scanning (with a suitable measurement probe) a planar area equivalent to the area occupied by a standing adult human (projected area). In most instances, a simple vertical, scan of the fields along a 2 m high line, through the center of the projected area, will be sufficient for determining compliance with the maximum permissible exposures (MPE) values. For frequencies exceeding 3 GHz, the average should be in terms of incident power density over the appropriate area defined in exposure standards. See C95.3-2002. It should be noted that alternative spatial averaging schemes are specified in other standards, e.g., ARPANSA [B6] and Canada [B7], and these approaches may be used in assessing the spatially averaged value of exposure.

3.1.47 source equipment, RF: RF generating equipment that may emit RF fields into the environment either intentionally, such as a broadcast antenna, or unintentionally, such as a dielectric heat sealer or induction heater. *See also:* **intentional radiator; unintentional radiator.** *Syn:* **source; emitter.**

3.1.48 standard operating procedure (SOP): Formal written description of the safety and administrative procedures to be followed in performing a specific task. *See also:* **safe work practice.**

3.1.49 time averaging: The process of managing exposure by controlling the exposure duration such that the plane-wave equivalent power density S , electric field strength squared E^2 , magnetic field strength squared H^2 , limb currents squared, and SAR, when averaged over a specified averaging time, complies with the exposure limit. BRs and derived limits that protect against RF heating effects generally incorporate an averaging time of several minutes for the assessment of the exposure. Such limits include BRs for SAR and power density and derived limits for ambient E & H and limb currents. BRs and derived limits that protect against RF shocks and burns or high power pulse effects generally allow only very short (< 1 s) or no time averaging of exposure. Such limits include BRs for E_{int} (*in situ* electric field strength in the tissue), J (current density) and SA (specific absorption) and derived limits for peak ambient E & H and contact currents (I). Time averaging to control exposures is generally not feasible for such limits. *See also:* **averaging time (T_{avg}).**

3.1.50 touch contact: A contact of small area made between the human body and an energized conductor. In this standard, a contact area of one square centimeter is the assumed touch contact area.

3.1.51 uncontrolled environment: Any area other than a controlled environment. *See also:* **general public exposure.** *Contrast:* **controlled environment.**

NOTE 1—The preferred term is *general public exposure*.

NOTE 2—The uncontrolled environment includes locations where persons are non-occupationally exposed and are not made fully aware of the potential for exposure by the owner, operator or party responsible for the source or cannot, or do not understand how to, exercise control over their exposure. These exposures may occur in residential or work locations where there are no expectations that RF exposure levels may exceed the exposure limits for the lower tier of a two-tier standard, including those for induced currents.

3.2 Abbreviations

BR	basic restriction
CW	continuous wave
EMC	electromagnetic compatibility
ICES	International Committee on Electromagnetic Safety
ICNIRP	International Commission on Non-Ionizing Radiation Protection
MF	medium frequency (0.3 MHz–3 MHz)
MPE	maximum permissible exposure
RF	radio frequency
RFSP	radio frequency exposure safety program
SA	specific absorption
SAR	specific absorption rate
UHF	ultra high frequency (300 MHz–3 GHz)
VHF	very high frequency (30 MHz–300 MHz)

recommended in 1986 by the National Council on Radiation Protection and Measurements (NCRP) and on the 1991 standard developed by the Institute of Electrical and Electronics Engineers (IEEE) and later adopted as a standard by the American National Standards Institute (ANSI/IEEE C95.1-1992).

The FCC's guidelines establish separate MPE limits for "general population/uncontrolled exposure" and for "occupational/controlled exposure." The general population/uncontrolled limits set the maximum exposure to which most people may be subjected. **People in this group include the general public not associated with the installation and maintenance of the transmitting equipment.** Higher exposure limits are permitted under the "occupational/controlled exposure" category, **but only for persons who are exposed as a consequence of their employment (e.g., wireless radio engineers, technicians).** **To qualify for the occupational/controlled exposure category, exposed persons must be made fully aware of the potential for exposure (e.g., through training), and they must be able to exercise control over their exposure.** In addition, people passing through a location, who are made aware of the potential for exposure, may be exposed under the occupational/controlled criteria. The MPE limits adopted by the FCC for occupational/controlled and general population/uncontrolled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

Determining whether a potential health hazard could exist with respect to a given transmitting antenna is not always a simple matter. Several important factors must be considered in making that determination. They include the following: (1) What is the frequency of the RF signal being transmitted? (2) What is the operating power of the transmitting station and what is the actual power radiated from the antenna?⁶ (3) How long will someone be exposed to the RF signal at a given distance from the antenna? (4) What other antennas are located in the area, and what is the exposure from those antennas? We'll explore each of these issues in greater detail below.

For all frequency ranges at which FCC licensees operate, Section 1.1310 of the FCC's rules establishes maximum permissible exposure (MPE) limits to which people may be exposed. The MPE limits vary by frequency because of the different absorptive properties of the human body at different frequencies when exposed to whole-body RF fields. Section 1.1310 establishes MPE limits in terms of "electric field strength," "magnetic field strength," and "far-field equivalent power density" (power density). For most frequencies used by the wireless services, the most relevant measurement is power density. The MPE limits for power density are given in terms of "milliwatts per square centimeter" or mW/cm^2 . One milliwatt equals one thousandth of one watt (1/1000 of a watt).⁷ In terms of power density, for a given frequency the FCC MPE limits can be interpreted as specifying the maximum rate that energy can be transferred (*i.e.*, the power) to a square centimeter of a person's body over a period of time (either 6 or 30 minutes, as explained

⁶ Power travels from a transmitter through cable or other connecting device to the radiating antenna. "Operating power of the transmitting station" refers to the power that is fed from the transmitter (transmitter output power) into the cable or connecting device. "Actual power radiated from the antenna" is the transmitter output power minus the power lost (power losses) in the connecting device plus an apparent increase in power (if any) due to the design of the antenna. Radiated power is often specified in terms of "effective radiated power" or "ERP" or "effective isotropic radiated power" or "EIRP" (see footnote 14).

⁷ Thus, by way of illustration, it takes 100,000 milliwatts of power to fully illuminate a 100 watt light bulb.