RF Exposure Determination

Patterson Office Tower

University of Kentucky
Lexington, Kentucky

November 2001

Executive Summary

The purpose of this survey is to meet the compliance requirements of the Federal Communications Commission (FCC), Environmental Protection Agency (EPA), and the Occupational Safety and Health Administration (OSHA). This survey is limited to the radio transmitters located on the roof of Patterson Office Tower, University of Kentucky, Lexington, Kentucky.

The building roof area is divided into two sections for this evaluation--the lower roof and the upper roof. On the lower roof the RF exposure level for the general public on the south side of the building extended approximately 19 feet from the base of the 800 MHz antenna. On the north side there is a tower with three antennas. The general public RF exposure for this tower extended approximately 21 feet. The general public should not enter this area. At these points the areas would be considered as occupationally controlled without time restrictions.

On the upper roof the combined RF from all the antennas would not allow any general public entry. The entire roof should be considered as an occupationally controlled area without time restrictions.

Recommendations

The following recommendations are made to limit employee exposure to RF on the roof of the Patterson Office Tower, University of Kentucky, Lexington, Kentucky.

1. Since sections of the lower roof and the entire upper roof have occupationally controlled areas without time restrictions, locks located on the roof hatches and the door from the Elevator Mechanical Room should be on the same key system. This key should still be limited in distribution but could be given out based on the discretion of the Manager of Electrical Services and the Building Operator for the building.

2. A signage program should be established. The following minimum signs are recommended.

    a. On both entrance doors into the 19th floor Mechanical Room and the roof hatches there should be a sign indicating -- "NOTICE RF SAFETY PROGRAM IN EFFECT AT THIS SITE".
    b. On the lower roof at the distances from the towers where the RF exposure exceeds the General Public/Uncontrolled MPE limits a one floor wide yellow line should be painted. On the inside of this area a sign should be placed which indicates there is potential RF exposure. The sign should be placed on the door leading from the Elevator Mechanical Room and behind the ladder leading to the upper roof.

c. In the transmitter rooms there is the potential of RF exposure from various sources including the transmitters if the covers are not replaced. Therefore a sign should be placed in the area warning of potential RF exposure.

3. Programs for RF exposure to PPD employees located in the Electronic/ Electric Shops and the Building Operators Group 5 should be written within 60 days. This program should explain: 1) the hazards of RF exposure, 2) periodic surveillance, 3) identification and control of RF Hazard Areas, 4) employee training, and 5) personnel monitoring.

4. Employees for whom an RF Exposure Program is written should receive training on RF exposure within 70 days.

5. At the discretion of the Manager of Electrical Services employee working on the lower and upper roofs should wear personal monitoring equipment. It is recommended if a shop is going to have employees work in this area, the shop should purchase the required personal monitoring equipment. The shop should be responsible for the care and calibration of this equipment.

Introduction

The purpose of this survey is to meet the compliance requirements of the Federal Communications Commission (FCC), Environmental Protection Agency (EPA), and the Occupational Safety and Health Administration (OSHA). This survey is limited to the radio transmitters located on the roof of Patterson Office Tower, University of Kentucky, Lexington, Kentucky. Information about the transmitters is obtained from the FCC license database and from the Superintendent of the Electronic Shop, University of Kentucky, Physical Plant Division.

The FCC Policy on Human Exposure to Radiofrequency Electromagnetic Fields states:

"The FCC is required by the National Environmental Policy Act of 1969 to evaluate the effect of emissions from FCC regulated transmitters on the quality of human environment…."

"On August 1, 1996, the Commission adopted the NCRP's recommended Maximum Permissible Exposure limits for field strength and power density for the transmitters operating at frequencies of 300kHz to 100GHz…"

On the FCC license application (FCC 5748) under "Certifications" it states "7. Applicant certifies that grant of this request would not have a significant environmental effect as defined by 47CFR 1.1307, including compliance with applicable standards for human exposure to radiofrequency radiation." It further states on the application "Willful false statements made on this form are punishable by fine and/or imprisonment (U.S.C. Title 18, Sec. 1001), and/or revocation of any station license or construction permit (U.S.C., Title 47, Sec. 312(a)(1)) and/or forfeiture (U.S.C., Title 47, Sec. 503)."

The Occupational Safety and Health Administration (OSHA) standard in 29 CFR 1910.97 indicate the exposure to RF is a power density of $10mW/cm^2$ as averaged over a 0.1 hour period. The general requirements for personal protective equipment requires in 29CFR1910.132 "The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE)."

Description of Site

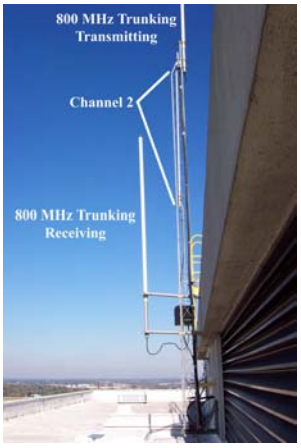
The RF assessment is conducted on the roof area of the Patterson Office Tower located on the University of Kentucky campus. There are two roofs. The first is the roof of the 19^{th} Mechanical Room floor. This is 228'-8" above the ground level. The second is the roof of the fan rooms and elevator room. This is 9'-4" above the lower roof or 238' above the ground level. These are referred to as the lower roof and the upper roof. Entrance to the lower roof is via roof hatches located in the stairwells adjacent to the entrance doors to the Mechanical Rooms. There are padlocks on these roof hatches. The west lock is the standard mechanical room key (ME-1). The east entrance hatch has a different key. There

is a second entrance way to the lower roof from a door located on the south wall of the Elevator Room. This door is on a special key (ME-57). There are three towers located on the lower roof. Two towers are located on the south side of the building and one on the north side. There are two signs posted at the Patterson Office Tower. One sign is at the entrance to the roof from the Elevator Mechanical Room and the other is behind the ladder leading to the upper roof. There are no signs posted at the roof hatch entrances to the lower roof. The sign behind the ladder to the upper roof is in a very deteriorated state. The image and wording is barely readable.

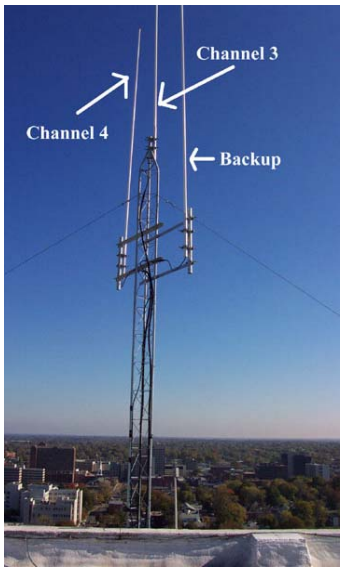
RF Sign Behind Ladder To Upper Roof

On the first tower (south side) is a single antenna used by the University of Kentucky Physical Plant Division (PPD) for transmitting on channel 2. This antenna is located 25.5 feet above the lower roof or 16.5 feet above the upper roof. It has a power output of 400 E.R.P. watts.

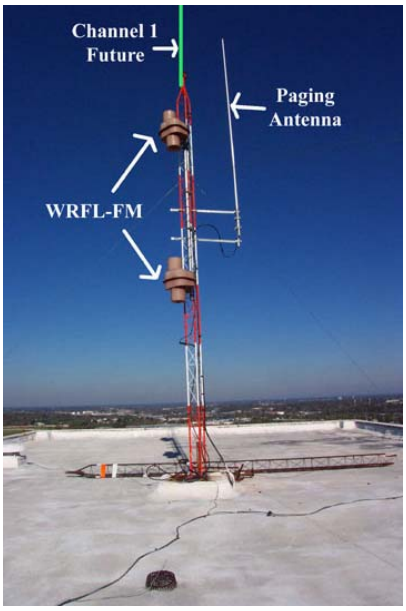
The second tower on the lower roof on the south side is a receiving antenna and a transmitting antenna approximately 27 feet from the lower roof or 18 feet from the upper roof. This is used for a trunking system by the Lexington Fayette County Government. If all the transmitters for this trunking system are utilized at the same time, the power from the antenna would be approximately 5,000 E.R.P. watts.



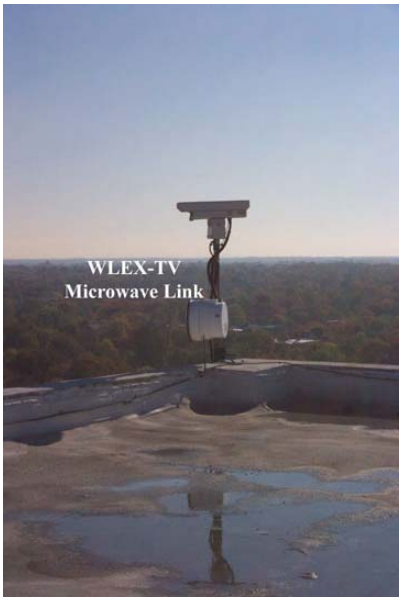
The third tower is located on the north side of the building. There are three antennas located on this tower. Two antennas are approximately 23.5 feet above the lower roof and 14.5 feet above the upper roof. They are located on side connections approximately 3 feet from the main tower. The third antenna is located approximately 27 feet from the lower roof level and 18 feet from the upper roof level. On the two side connections are antennas used for PPD's channel 4 and a backup antenna, which could be used if one of the other PPD communication antenna failed. The upper antenna is used for PPD's channel 3. The E.R.P power from channel 4 is 390 watts and the power from channel 3 is 400 E.R.P. watts.



In the center of the upper roof is a single tower approximately 29 feet high. On the top of this tower an antenna will be installed in the near future for use by PPD channel 1. This will have a power output of 390 E.R.P. watts. On the side of this tower at approximately 18 feet is a connection is the PPD paging antenna. This antenna had an output of 500 E.R.P. watts. On the opposite side from the PPD paging antenna is the FM antenna for the University of Kentucky radio station WRFL-FM. This station is licensed for a power output of 250 E.R.P. watts.



On the Northeast side of the upper roof is a microwave link from a video camera to WLEX-TV. This antenna is not included in the assessment because the power would be less than 5 percent and therefore excluded by the FCC from consideration and the beam would be very directional.



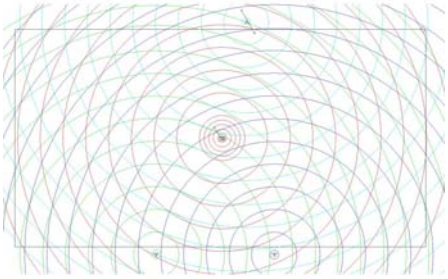
Determining Human RF Exposure

In making an evaluation of the Human Exposure to Radiofrequency Electromagnetic Fields the roof of the Patterson Office Tower is divided into two separate areas since the construction of the building is such that radiofrequency electromagnetic fields from the upper room would not reach areas near the mechanical room's exterior walls on the lower roof (line of sight theory). The first area is the lower roof. This roof would only have RF from towers containing PPD channels 2,3,4 and backup antennas, and the 800 MHz trunking antennas. The second area is the upper roof. This area would have RF exposures from PPD channels 1,2,3,4, paging and backup antennas, the 800 MHz trunking antenna, and the FM radio station (Appendix C).

Using the information obtained from the FCC database and the superintendent of the Electronic Shop, PPD, the worst-case scenario for each antenna is calculated using the procedures outlined in the FCC publication Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, OET Bulletin 65, Edition 97-01, August 1997 and Supplement A. The power density ($\mu W/cm^2$) for each antenna is calculated at one-foot increments from the antennas. The individual height is assumed to be 6 feet. Using the tables (Table 1[A] and Table 1[B]) in the document the limits for Maximum Permissible Exposure (MPE) for the general public/uncontrolled exposure and the occupational/controlled exposure are calculated. Using the Maximum Permissible Exposure level and the power density of the antennas the percentage of the human exposure is calculated.

The above calculations are based on each antenna not influencing each other. However, this is not the case since individuals could obtain RF from multiple antennas and the exposure would be cumulative. Therefore, when more than one antenna is located on the same tower, the combined human exposure percentage was calculated.

Since the worst-case scenario is being determined on the upper roof there are multiple towers whereby the RF could interact. To determine the points where exposure could exceed 100 percent of the allowable limit, concentric circles at 5-foot intervals from the towers are drawn. At selected points the combined percentage of Maximum Permissible Exposure (MPE) resulting from the RF from each tower is calculated.



Concentric Circles From Each Tower Affecting Upper Roof

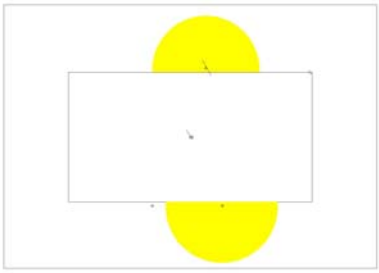
Results

Since the backup antenna located on the tower on the north side of the building could be used for any PPD transmitter, the worst-case scenario is based upon this antenna being used with the transmitter having the highest potential power. This is identified as the PPD paging transmitter.

Lower Roof

On the lower roof there are no areas where the calculated RF exceeded the Maximum Permissible Exposure for occupational/controlled space. On the south side of the building the MPE for general public/uncontrolled is 19 feet concentric around the 800 MHz antenna. Outside this area the RF exposure for the general public is not exceeded.

On the north side of the building there is no occupational/controlled MPE for the tower containing PPD channels 3, 4 and backup antennas. The general public exposure would not exceed the standards at a distance greater than 21 feet from the base of the tower (Appendix E).



Yellow Areas Above General/Uncontrolled MPE
Calculated RF Exposure – Lower Roof

Upper Roof

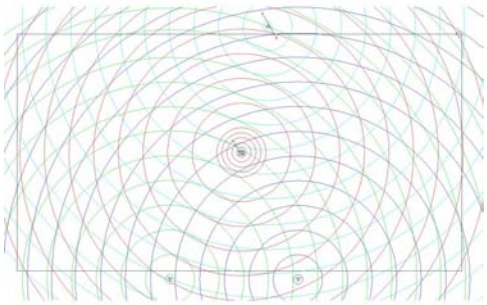
On the upper roof the general public/uncontrolled RF exposure is located 29 feet from the antenna. For PPD's channel 2 there is no general/uncontrolled RF area.

The tower in the center of the building containing the PPD paging antenna, radio station WRFL-FM, and the future PPD's channel 1 calculation is based upon the combined RF from these antennas. There is no occupational/controlled area around this antenna and the general public/uncontrolled area is located 28 feet from this tower.

On the north side of the building is the tower used for PPD's channels 3 and 4 and a backup antenna for any PPD transmitter. The backup antenna is presently being used for PPD's channel 1 but this antenna will be moved to the central tower in the future. The

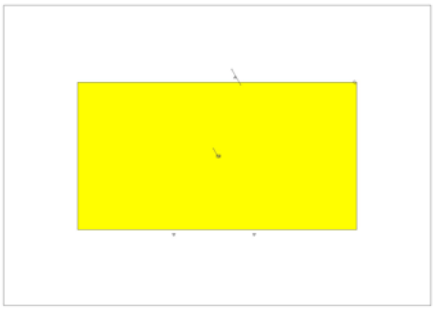
calculations for this tower are based upon the worst-case, which would have involved the backup being used by the PPD paging antenna. Under these conditions there is no occupational/controlled RF exposure. The general public/uncontrolled area for this tower is located 31 feet from the tower.

However, since the RF from each antenna or tower does not influence an individual independently the RF from each antenna is considered at selected points.



Concentric Circles From Each Tower Affecting Upper Roof

Using this information the area of occupational/controlled RF exposure is determined. Since the general public/uncontrolled RF exposure extended 29 feet from the 800 MHZ antenna, the general public/uncontrolled RF exposure area is considered to extend beyond the edges of the roof (Attachment E).



Yellow Areas Above General/Uncontrolled MPE
Calculated RF Exposure – Upper Roof

Recommendations

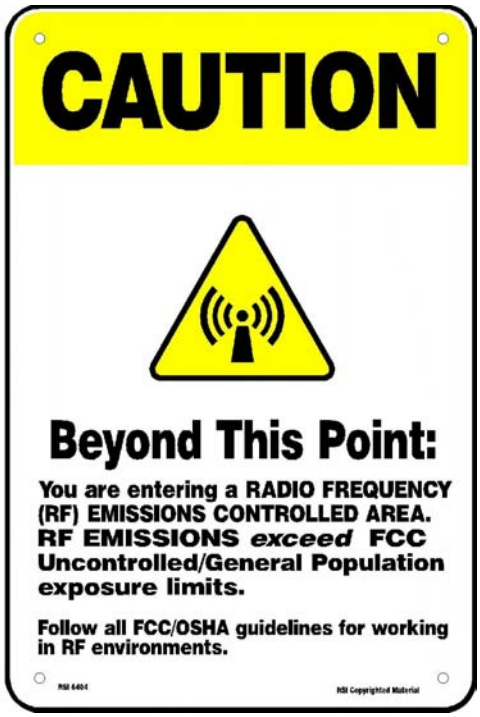
The following recommendations are made to limit employee exposure to RF on the roof of the Patterson Office Tower, University of Kentucky, Lexington, Kentucky.

1. Since sections of the lower roof and the entire upper roof have occupationally controlled areas without time restrictions, locks located on the roof hatches and the door from the Elevator Mechanical Room should be on the same key system. This key should still be limited in distribution but could be given out based on the discretion of the Manager of Electrical Services and the Building Operator for the building.

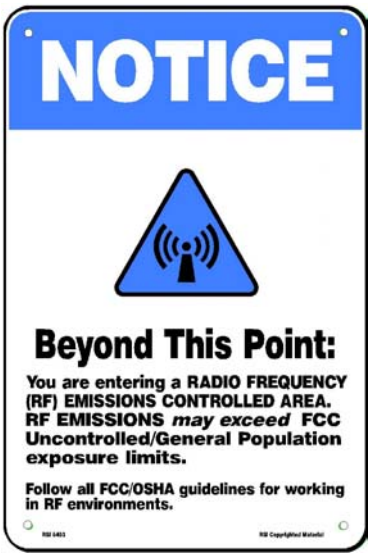
2. A signage program should be established. The following minimum signs are recommended.

    a. On both entrance doors into the 19th floor Mechanical Room and the roof hatches there should be a sign indicating -- "NOTICE RF SAFETY PROGRAM IN EFFECT AT THIS SITE".

b. On the lower roof at the distances from the towers where the RF exposure exceeds the General Public/Uncontrolled MPE limits a one floor wide yellow line should be painted. On the inside of this area the following sign should be placed which indicates there is potential RF exposure. The sign should be placed on the door leading from the Elevator Mechanical Room.



c. In the transmitter rooms there is the potential of RF exposure from various sources including the transmitters if the covers are not replaced. Therefore a sign should be placed in the area warning of potential RF exposure.



3. Programs for RF exposure to PPD employees located in the Electronic, Electric Shops and Building Operators Group 5 should be written within 60 days. This program should explain 1) the hazards of RF exposure, 2) periodic surveillance, 3) identification and control of RF Hazard Areas, 4) employee training and 5) personnel monitoring.

4. Employees for whom an RF Exposure Program is written should receive training on RF exposure within 70 days.

5. At the discretion of the Manager of Electrical Services employee working on the lower and upper roofs should wear personal monitoring equipment. It is recommended if a shop is going to have employees work in this area, the shop should purchase the required personal monitoring equipment. The shop should be responsible for the care and calibration of this equipment.

Appendices

A. Regulations
B. Photographs
C. Information about each tower/antenna
D. UK Transmitter Inventory – FCC Database
E. RF Exposure Charts – Lower and Upper Roofs
F. Calculation Data – Lower Roof
G. Calculation Data – Upper Roof

Appendix A

Regulations

Background

FCC Policy on Human Exposure to Radiofrequency Electromagnetic Fields

The FCC is required by the National Environmental Policy Act of 1969 to evaluate the effect of emissions from FCC-regulated transmitters on the quality of the human environment. At the present time there is no federally-mandated radio frequency (RF) exposure standard. However, several non-government organizations, such as the American National Standards Institute (ANSI), the Institute of Electrical and Electronics Engineers, Inc. (IEEE), and the National Council on Radiation Protection and Measurements (NCRP) have issued recommendations for human exposure to RF electromagnetic fields. The potential hazards associated with RF electromagnetic fields are discussed in OET Bulletin No. 56, *"Questions and Answers About the Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields."*

On August 1, 1996, the Commission adopted the NCRP's recommended Maximum Permissible Exposure limits for field strength and power density for the transmitters operating at frequencies of 300 kHz to 100 GHz. In addition, the Commission adopted the specific absorption rate (SAR) limits for devices operating within close proximity to the body as specified within the ANSI/IEEE C95.1-1992 guidelines.(See Report and Order, FCC 96-326) The Commission's requirements are detailed in Parts 1 and 2 of the FCC's Rules and Regulations [47 C.F.R. 1.1307(b), 1.1310, 2.1091, 2.1093].

Certain applicants are required to routinely perform an environmental evaluation with respect to determining compliance with the Commission's exposure limits. In the event that an applicant determines the site is not within compliance, the submission of an Environmental Analysis is required. The SAR limits for portable and mobile devices became effective August 7, 1996. The Commission's limits for field strength and power density became effective October 15, 1997 (see 2nd MO&O) for all services except the Amateur Radio Service. The new limits became effective for the Amateur Radio Service on January 1, 1998 (see *First Memorandum Opinion and Order*). As of September 1, 2000 all FCC licensees are expected to be in compliance with the FCC's RF exposure limits (See 47 C.F.R. 1.1307(b)(5)).

The following services and devices are generally required to routinely perform an environmental evaluation.However many transmitters licensed under these service categories may be excluded from routine evaluation if they meet certain height and power thresholds (see OET Bulletin 65 for exclusion criteria).

- Experimental Radio Service - Part 5
- Radio Frequency Devices - Part 15
- Multipoint Distribution Service - Part 21, subpart K
- Paging and Radiotelephone Service - Part 22, subpart E
- Cellular Radiotelephone Service - Part 22, subpart H
- Personal Communications Services - Part 24
- Satellite Communications - Part 25
- General Wireless Communications Service - Part 26
- Wireless Communications Service - Part 27
- Radio Broadcast Services - Part 73
- Experimental, auxiliary, and special broadcast and other program distributional services - Part 74
- Stations in the Maritime Service - Part 80
- Private Land Mobile, Paging Operations - Part 90
- Private Land Mobile, "covered" Specialized Mobile Radio - Part 90
- Amateur Radio Service - Part 97
- Local Multipoint Distribution service - Part 101, subpart L

Mobile and portable devices used as follows:

- Cellular Radio Service
- Personal Communications Service
- Satellite Communications Branch
- General Wireless Communications Service
- Wireless Communications Service
- Maritime Service
- "Covered" Specialized Mobile Radio Service
- Unlicensed PCS and millimeter wave devices

The Commission issued a *Second Memorandum Opinion and Order* on August 25, 1997 to address petitions regarding the adoption of new exposure limits. OET has revised OST Bulletin No. 65, to provide guidance on acceptable methods of determining compliance with the Commission's new exposure limits. The revised bulletin, OET Bulletin 65, *Evaluating Compliance With FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields* was issued simultaneously with the release of the *Second MO&O*.

Regulations (Standards - 29 CFR)

Nonionizing radiation. - 1910.97

OSHA Regulations (Standards - 29 CFR) - Table of Contents

- **Standard Number:** 1910.97
- **Standard Title:** Nonionizing radiation.
- **SubPart Number:** G
- **SubPart Title:** Occupational Health and Environment Control

Interpretation(s)

(a)

"Electromagnetic radiation" -

(a)(1)

"Definitions applicable to this paragraph."

(a)(1)(i)

The term "electromagnetic radiation" is restricted to that portion of the spectrum commonly defined as the radio frequency region, which for the purpose of this specification shall include the microwave frequency region.

(a)(1)(ii)

"Partial body irradiation." Pertains to the case in which part of the body is exposed to the incident electromagnetic energy.

(a)(1)(iii)

"Radiation protection guide." Radiation level which should not be exceeded without careful consideration of the reasons for doing so.

(a)(1)(iv)

The word "symbol" as used in this specification refers to the overall design, shape, and

coloring of the rf radiation sign shown in figure G-11.

..1910.97(a)(1)(v)

(a)(1)(v)

"Whole body irradiation." Pertains to the case in which the entire body is exposed to the incident electromagnetic energy or in which the cross section of the body is smaller than the cross section of the incident radiation beam.

(a)(2)

"Radiation protection guide."

(a)(2)(i)

For normal environmental conditions and for incident electromagnetic energy of frequencies from 10 MHz to 100 GHz, the radiation protection guide is 10 mW/cm.(2) (milliwatt per square centimeter) as averaged over any possible 0.1-hour period. This means the following:

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Power density: 10 mW./cm.(2) for periods of 0.1-hour or more.
Energy density: 1 mW.-hr./cm.(2) (milliwatt hour per square
centimeter) during any 0.1-hour period.
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This guide applies whether the radiation is continuous or intermittent.

(a)(2)(ii)

These formulated recommendations pertain to both whole body irradiation and partial body irradiation. Partial body irradiation must be included since it has been shown that some parts of the human body (e.g., eyes, testicles) may be harmed if exposed to incident radiation levels significantly in excess of the recommended levels.

(a)(3)

"Warning symbol."

(a)(3)(i)

The warning symbol for radio frequency radiation hazards shall consist of a red isosceles triangle above an inverted black isosceles triangle, separated and outlined by an aluminum color border. The words "Warning - Radio-Frequency Radiation Hazard" shall appear in the upper triangle. See figure G-11.

..1910.97(a)(3)(ii)

(a)(3)(ii)

American National Standard Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment, Z53.1-1953 which is incorporated by reference as specified in Sec. 1910.6, shall be used for color specification. All lettering and the border shall be of aluminum color.

(a)(3)(iii)

The inclusion and choice of warning information or precautionary instructions is at the discretion of the user. If such information is included it shall appear in the lower triangle of the warning symbol.

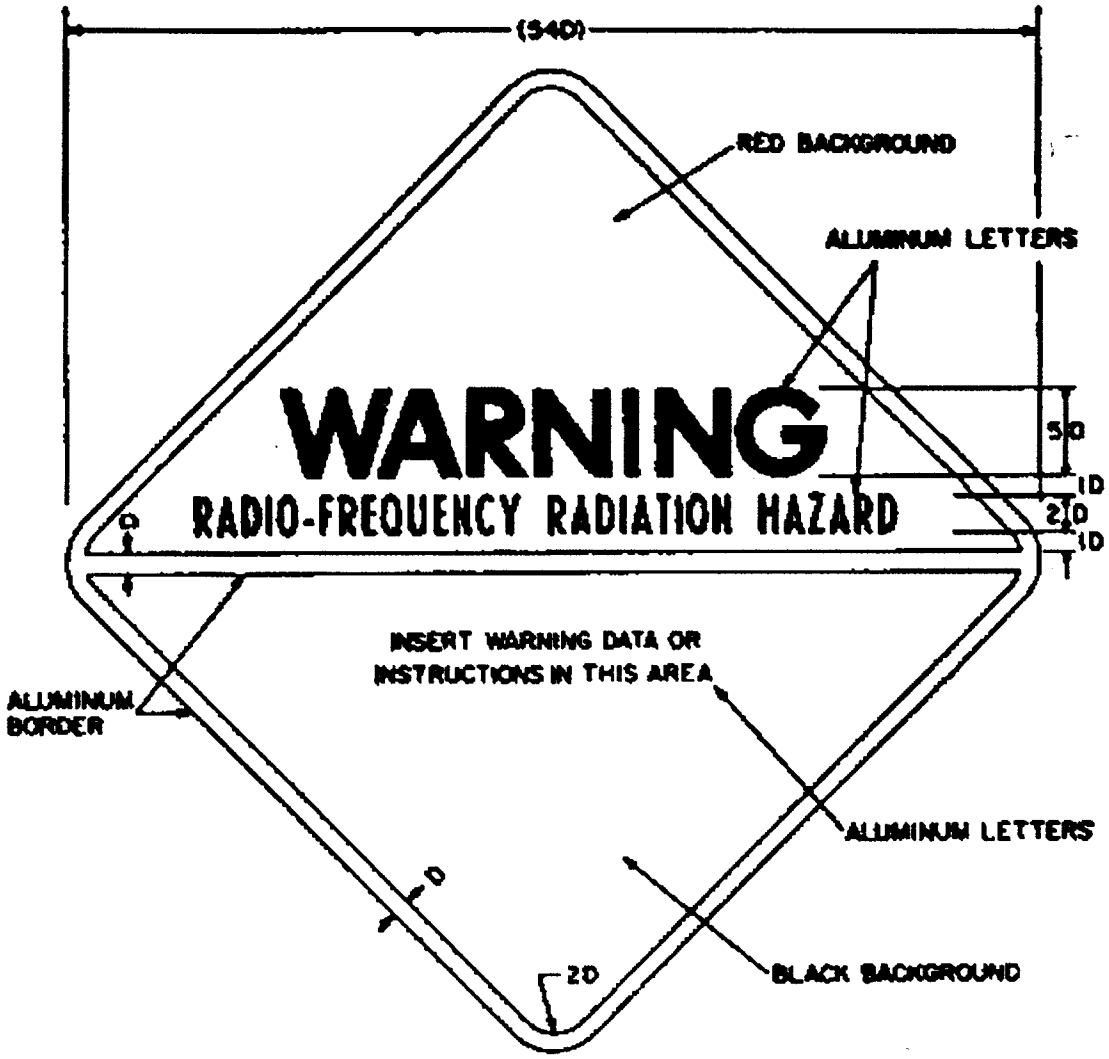
FIGURE G-11
RADIO-FREQUENCY RADIATION HAZARD WARNING SYMBOL
(For Figure G-11, Click Here)

(a)(4)

"Scope." This section applies to all radiations originating from radio stations, radar equipment, and other possible sources of electromagnetic radiation such as used for communication, radio navigation, and industrial and scientific purposes. This section does not apply to the deliberate exposure of patients by, or under the direction of, practitioners of the healing arts.

[61 FR 9227, March 7, 1996]

◀ OSHA Regulations (Standards - 29 CFR) - Table of Contents



1. Place handling and mounting instructions on reverse side.
2. D = Scaling unit.
3. Lettering: Ratio of letter height to thickness of letter lines.

Upper triangle :	5 to 1	Large
	6 to 1	Medium
Lower triangle	4 to 1	Small
	6 to 1	Medium

4. Symbol is square, triangles are right-angle isoseles.

Figure G-11

Radio-Frequency Radiation Hazard Warning Symbol

Regulations (Standards - 29 CFR)

General requirements. - 1910.132

OSHA Regulations (Standards - 29 CFR) - Table of Contents

- **Standard Number:** 1910.132
- **Standard Title:** General requirements.
- **SubPart Number:** I
- **SubPart Title:** Personal Protective Equipment

Interpretation(s)

(a)

Application. Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

(b)

Employee-owned equipment. Where employees provide their own protective equipment, the employer shall be responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

(c)

Design. All personal protective equipment shall be of safe design and construction for the work to be performed.

..1910.132(d)

(d)

Hazard assessment and equipment selection.

(d)(1)

The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:

(d)(1)(i)

Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;

(d)(1)(ii)

Communicate selection decisions to each affected employee; and,

(d)(1)(iii)

Select PPE that properly fits each affected employee. Note: Non-mandatory Appendix B contains an example of procedures that would comply with the requirement for a hazard assessment.

(d)(2)

The employer shall verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and, which identifies the document as a certification of hazard assessment.

(e)

Defective and damaged equipment. Defective or damaged personal protective equipment shall not be used.

..1910.132(f)

(f)

Training.

(f)(1)

The employer shall provide training to each employee who is required by this section to use PPE. Each such employee shall be trained to know at least the following:

(f)(1)(i)

When PPE is necessary;

(f)(1)(ii)

What PPE is necessary;

(f)(1)(iii)

How to properly don, doff, adjust, and wear PPE;

(f)(1)(iv)

The limitations of the PPE; and,

(f)(1)(v)

The proper care, maintenance, useful life and disposal of the PPE.

(f)(2)

Each affected employee shall demonstrate an understanding of the training specified in paragraph (f)(1) of this section, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

(f)(3)

When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (f)(2) of this section, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

(f)(3)(i)

Changes in the workplace render previous training obsolete; or

..1910.132(f)(3)(ii)

(f)(3)(ii)

Changes in the types of PPE to be used render previous training obsolete; or

(f)(3)(iii)

Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

(f)(4)

The employer shall verify that each affected employee has received and understood the required training through a written certification that contains the name of each

employee trained, the date(s) of training, and that identifies the subject of the certification.

(g)

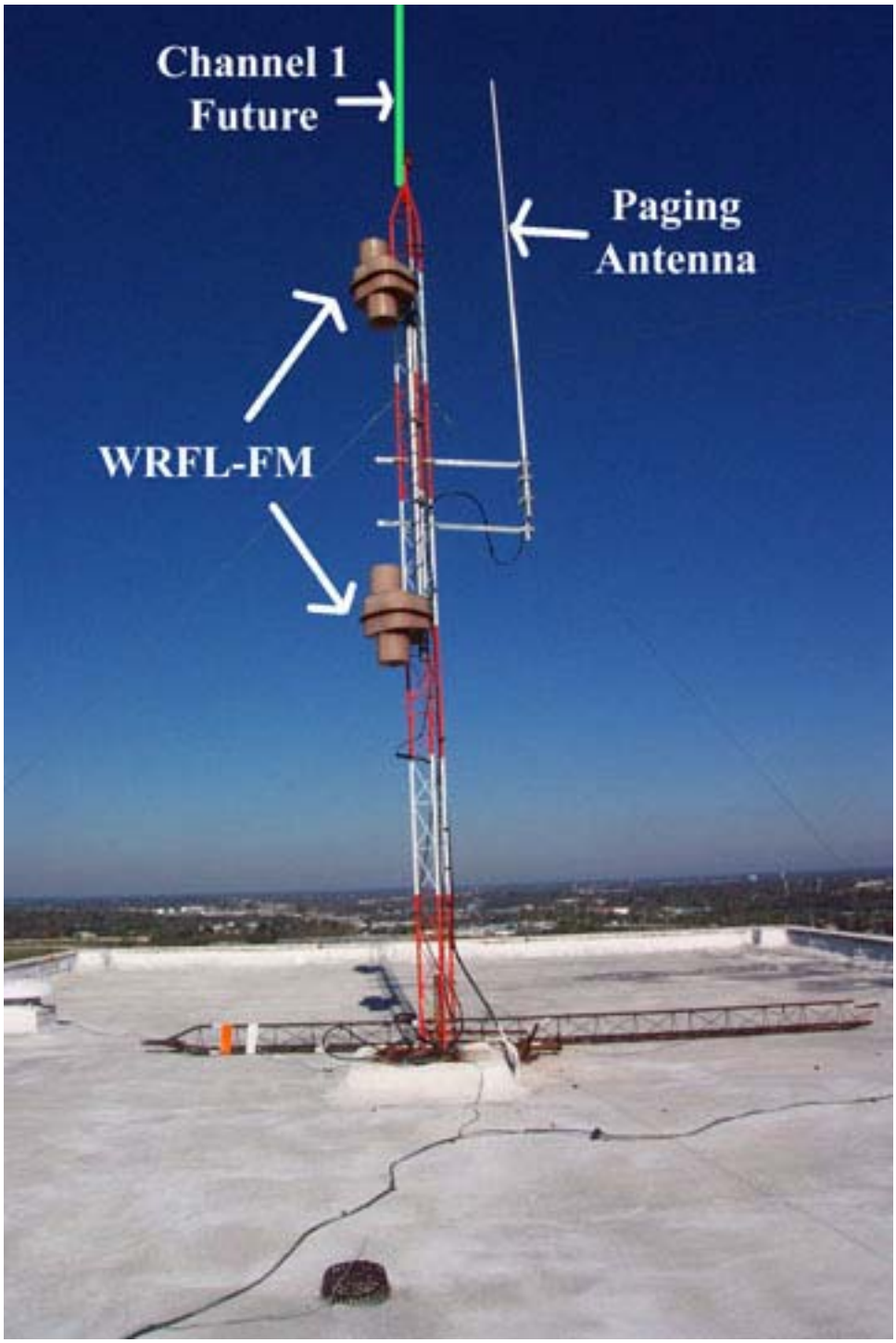
Paragraphs (d) and (f) of this section apply only to 1910.133, 1910.135, 1910.136, and 1910.138. Paragraphs (d) and (f) of this section do not apply to 1910.134 and 1910.137.

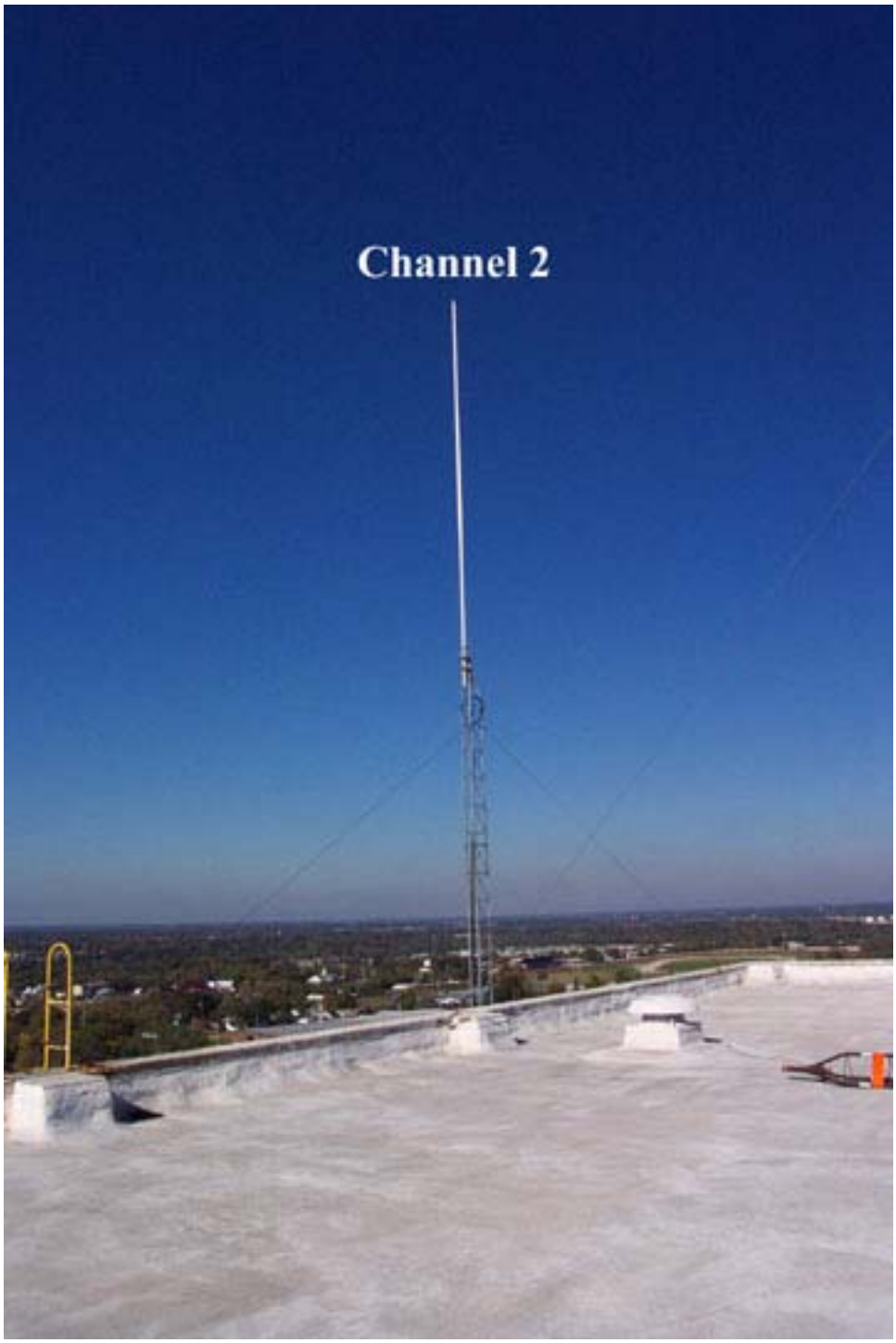
[39 FR 23502, June 27, 1974, as amended at 59 FR 16334, April 6, 1994; 59 FR 33910, July 1, 1994; 59 FR 34580, July 6, 1994]

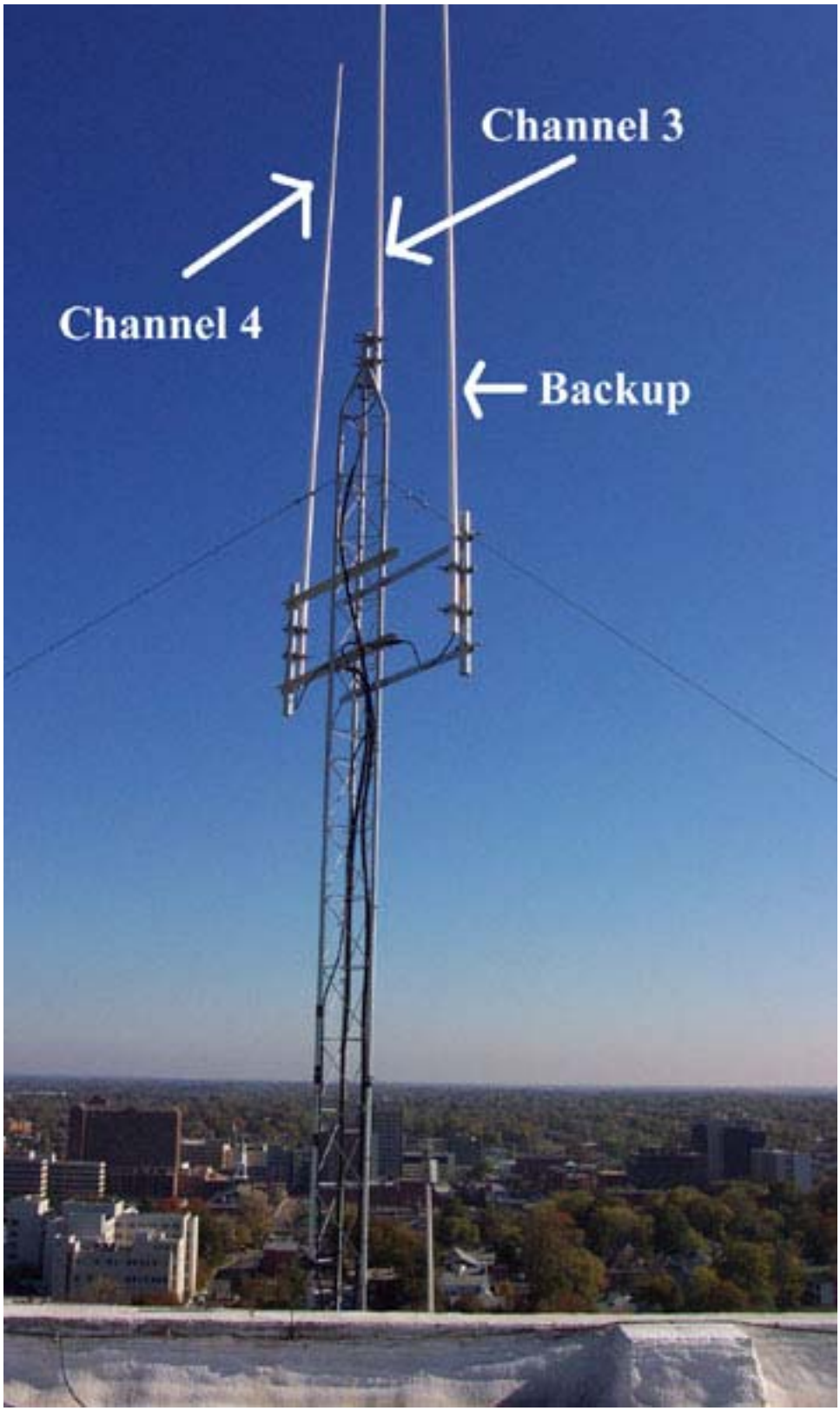
◀ OSHA Regulations (Standards - 29 CFR) - Table of Contents

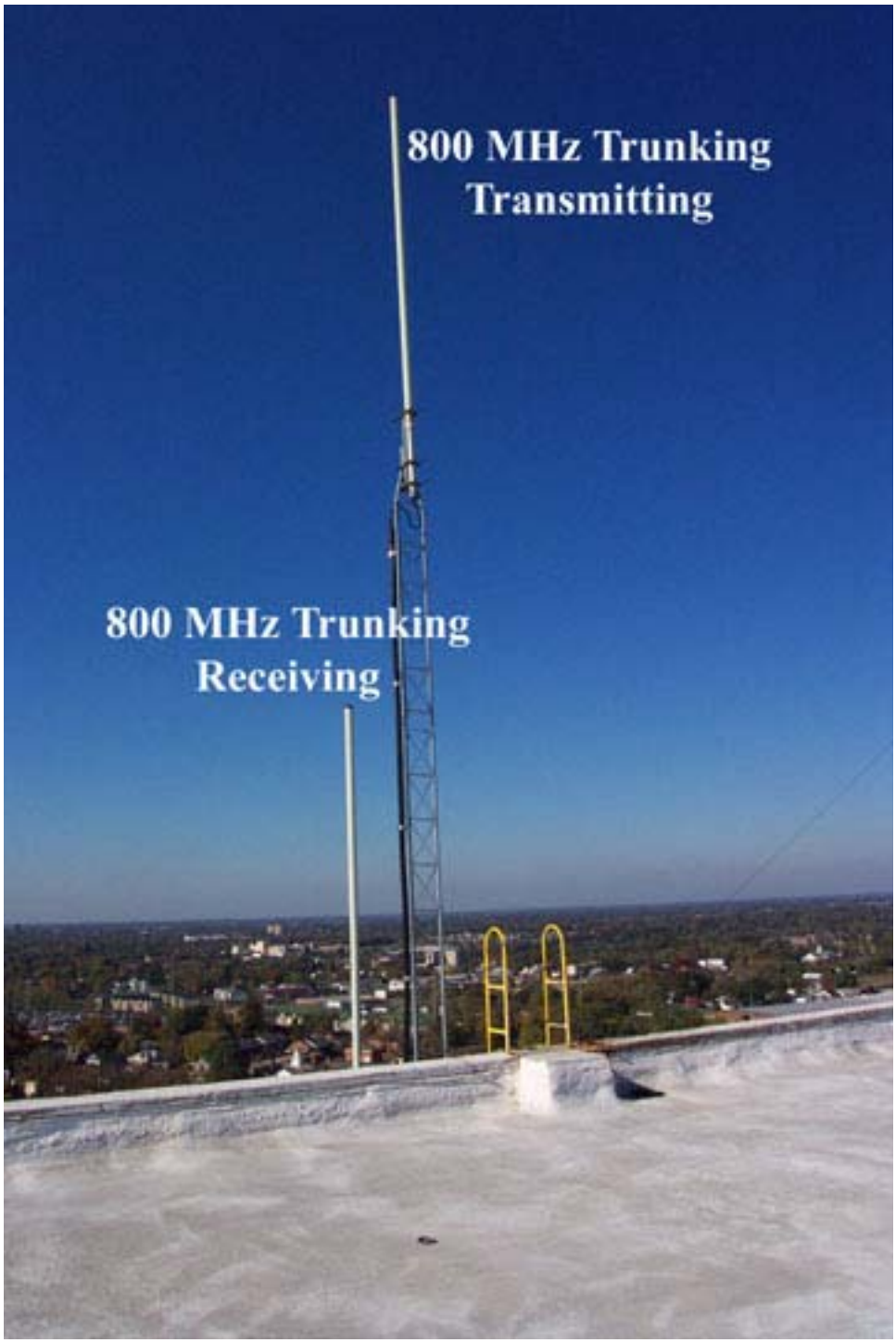
Appendix B

Photographs

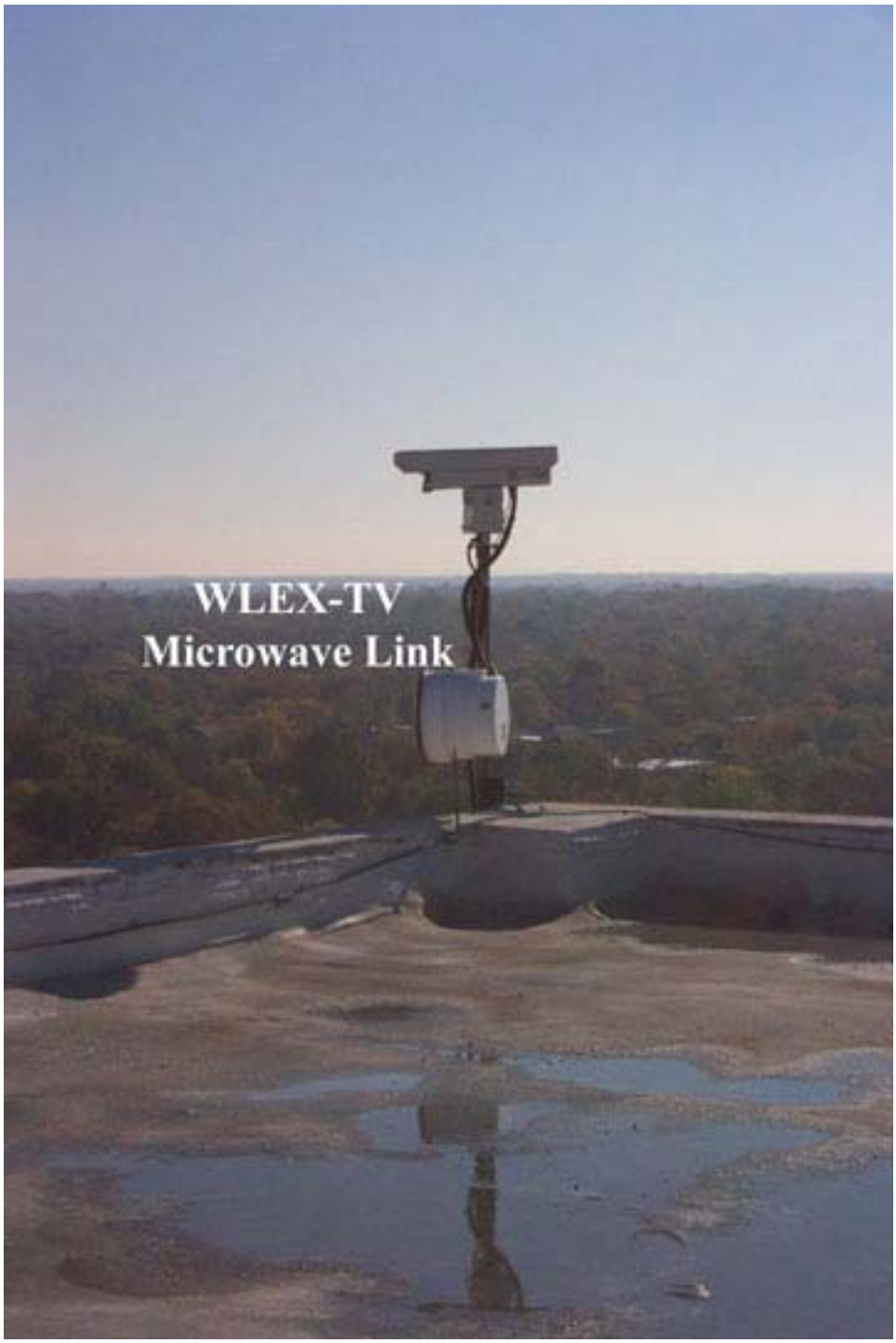

Channel 1
Future
Paging
Antenna
WRFL-FM


Channel 2


Channel 3
Channel 4
Backup


800 MHz Trunking
Transmitting
800 MHz Trunking
Receiving


800 MHz Trunking
Transmitting
Channel 2
800 MHz Trunking
Receiving

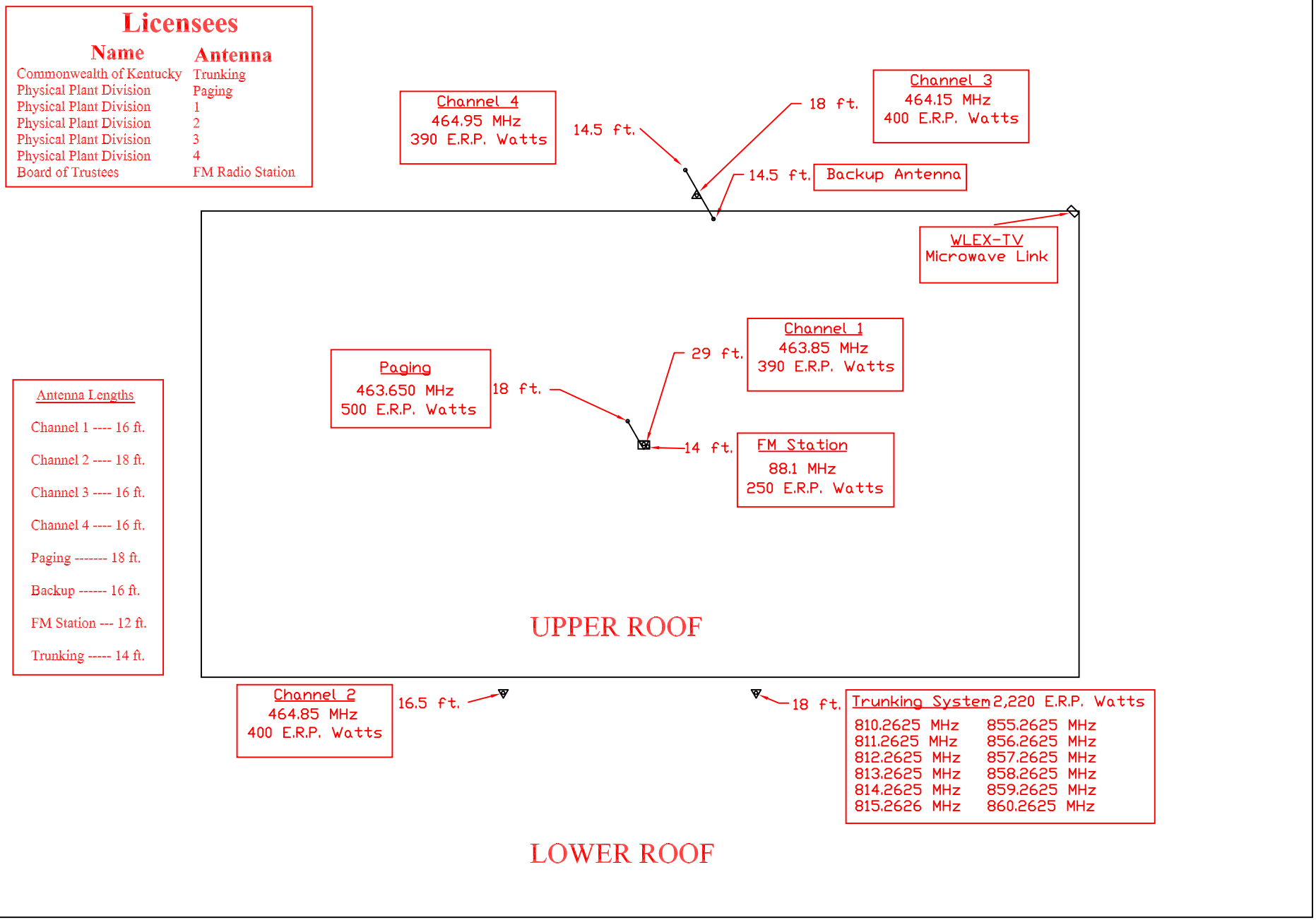

WLEX-TV
Microwave Link

Appendix C

Information about each tower/antenna

Licensees

Name	Antenna
Commonwealth of Kentucky	Trunking
Physical Plant Division	Paging
Physical Plant Division	1
Physical Plant Division	2
Physical Plant Division	3
Physical Plant Division	4
Board of Trustees	FM Radio Station



Antennas On Patterson Office Tower

Approximate Tower Heights
Above Upper Roof Level

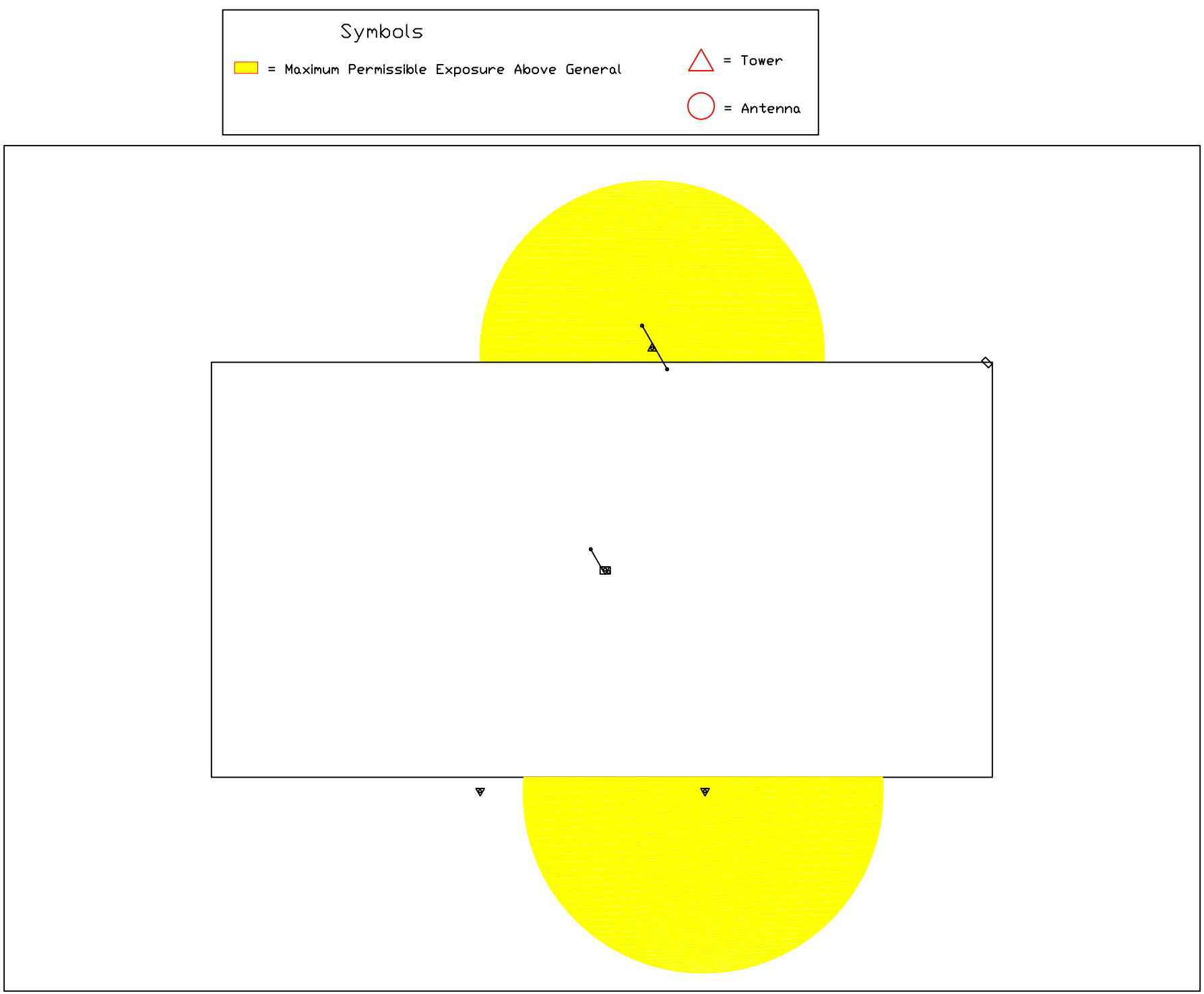
Appendix D

UK Transmitter Inventory – FCC Database

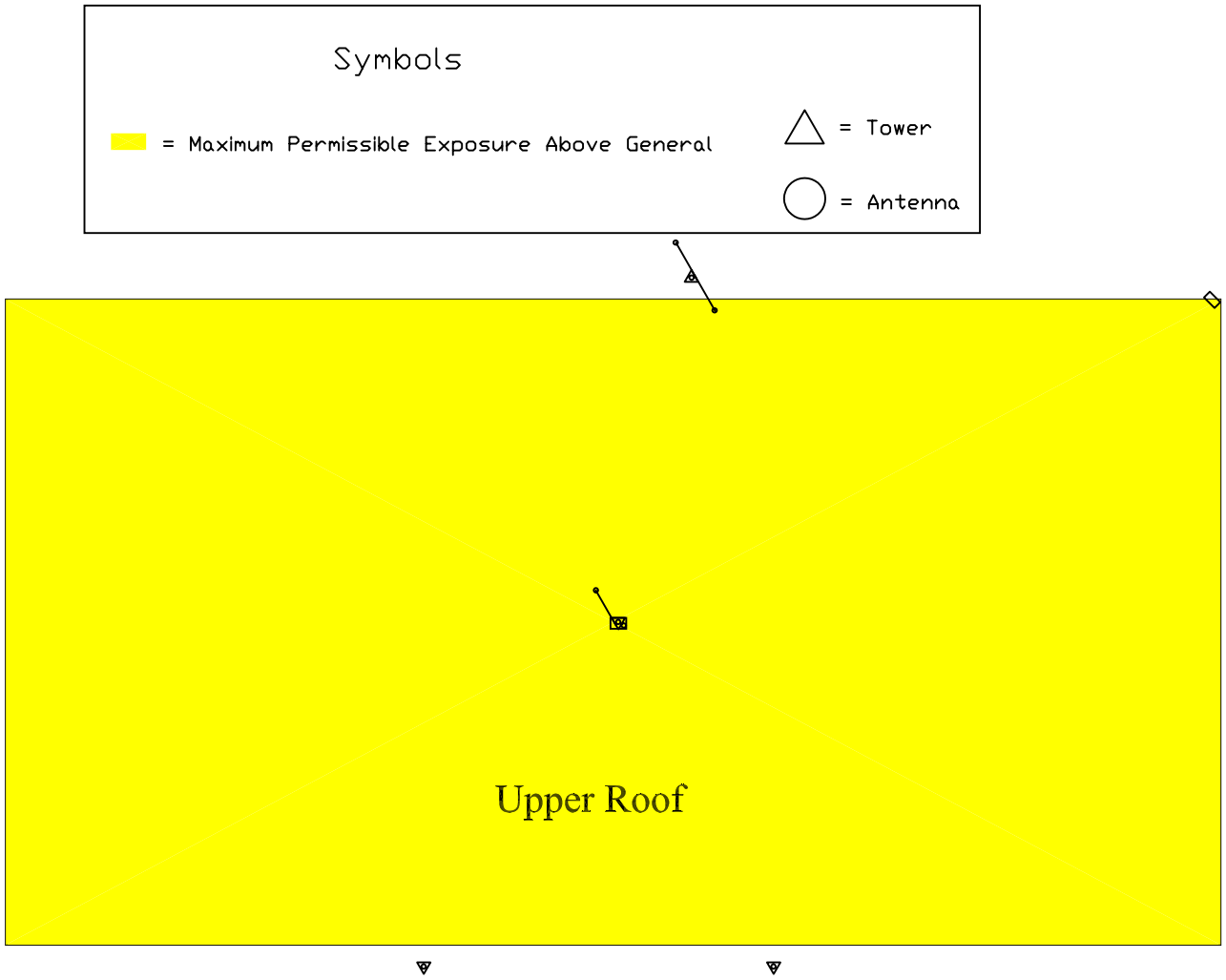
Call Sign	Frequency	Elevation	Power Out	ERP	Height to Tip	Class	# Units	Expiration Date
WNAA945	463.65	298	100	500	89			August 13, 2005
WNAA945	463.65		5			Mobile	200	
WNAA945	463.65	298	100	500	89			
WNAA945	463.65		5			Mobile	200	
WNAA945	463.85		110	390	99			
WNAA945	463.85		110	110		Mobile	250	
WNBX322	463.85		110	390				
WNBX322	463.85		110	110			250	
WNBX322	463.925		110	110		Mobile	250	
WNBX322	463.925		110	110			250	
WNBX322	464.15	296	110	400	93			August 4, 2011
WNBX322	464.15		25	100			80	
WNBX322	464.15		110	400	93			
WNBX322	464.15		25	100			80	
WNBX322	464.85	296	75	400	99	Mobile		February 12, 2005
WNBX322	464.85		25			Mobile	174	February 12, 2005
WNBX322	464.85	296	25	400		Mobile Relay		February 12, 2005
WNBX322	464.95		110	390	99	Mobile		February 12, 2005
WNBX322	464.95		110	110		Mobile	250	
WNBX322	464.95		110	390	99	Mobile		February 12, 2005
WNGG572	464.95		110	110			250	
WNGG572	468.85		110	110		Mobile	250	
WNGG572	468.85		110	110			250	
WNGG572	469.15		25	100			80	
WNGG572	469.15		25	100			80	
WNGG572	469.85		25			Mobile	174	February 12, 2005
WPPT456	469.85		25			Mobile	174	
WPPT456	469.95		110	110		Mobile	250	
WPPT456	469.95		110	110			250	
WPPT456	484.85		25			Mobile	174	
WRFL	88.1					FM	1	
WPEE674	810.2125		70	35		MO	611	February 16, 2004
WPEE674	811.2625		70	35		MO	611	
WPEE674	812.2625		70	35		MO	611	
WPEE674	813.2625		70	35		MO	611	
WPEE674	814.2625		70	35		MO	611	
WPEE674	815.2625		70	35		MO	611	
WPEE674	855.2125		70	35		MO	611	
WPEE674	856.2625		70	35		MO	611	
WPEE674	857.2625		70	35		MO	611	
WPEE674	858.2625		70	35		MO	611	
WPEE674	859.2625		70	35		MO	611	
WPEE674	860.2625		70	35		MO	611	
WPEE674	810.2125		30	15		FX1	4	
WPEE674	811.2625		30	15		FX1	4	
WPEE674	812.2625		30	15		FX1	4	
WPEE674	813.2625		30	15		FX1	4	
WPEE674	814.2625		30	15		FX1	4	
WPEE674	815.2625		30	15		FX1	4	
WPEE674	855.2125		250	100		FB2C	1	
WPEE674	856.2625		250	100		FB2C	1	
WPEE674	857.2625		250	100		FB2C	1	
WPEE674	858.2625		250	100		FB2C	1	
WPEE674	859.2625		250	100		FB2C	1	
WPEE674	860.2625		250	100		FB2C	1	

Appendix E

RF Exposure Charts – Lower and Upper Roofs



Calculated RF Exposure -- Lower Penthouse Roof



Calculated RF Exposure -- Upper Penthouse Roof

Appendix F

Calculation Data – Lower Roof

800MHz Tower Height (ft)	Antenna Height (ft)	Lower Human Height (ft)	Roof Distance Base (ft)	Slope Distance (ft)	Power Density ($\mu W/cm^{2)}$	(ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
27	14	6	1	33.5	712	2220	810	540	2700	132	26
27	14	6	2	33.5	710	2220	810	540	2700	131	26
27	14	6	3	33.6	707	2220	810	540	2700	131	26
27	14	6	4	33.7	703	2220	810	540	2700	130	26
27	14	6	5	33.8	697	2220	810	540	2700	129	26
27	14	6	6	34.0	690	2220	810	540	2700	128	26
27	14	6	7	34.2	683	2220	810	540	2700	126	25
27	14	6	8	34.4	674	2220	810	540	2700	125	25
27	14	6	9	34.7	665	2220	810	540	2700	123	25
27	14	6	10	34.9	654	2220	810	540	2700	121	24
27	14	6	11	35.2	643	2220	810	540	2700	119	24
27	14	6	12	35.6	631	2220	810	540	2700	117	23
27	14	6	13	35.9	619	2220	810	540	2700	115	23
27	14	6	14	36.3	606	2220	810	540	2700	112	22
27	14	6	15	36.7	593	2220	810	540	2700	110	22
27	14	6	16	37.1	580	2220	810	540	2700	107	21
27	14	6	17	37.5	566	2220	810	540	2700	105	21
27	14	6	18	38.0	553	2220	810	540	2700	102	20
27	14	6	19	38.5	539	2220	810	540	2700	100	20
27	14	6	20	39.0	525	2220	810	540	2700	97	19
27	14	6	21	39.5	511	2220	810	540	2700	95	19
27	14	6	22	40.0	498	2220	810	540	2700	92	18
27	14	6	23	40.6	484	2220	810	540	2700	90	18
27	14	6	24	41.2	471	2220	810	540	2700	87	17
27	14	6	25	41.8	457	2220	810	540	2700	85	17
27	14	6	26	42.4	444	2220	810	540	2700	82	16
27	14	6	27	43.0	432	2220	810	540	2700	80	16
27	14	6	28	43.6	419	2220	810	540	2700	78	16
27	14	6	29	44.3	407	2220	810	540	2700	75	15
27	14	6	30	44.9	395	2220	810	540	2700	73	15
27	14	6	31	45.6	384	2220	810	540	2700	71	14
27	14	6	32	46.3	372	2220	810	540	2700	69	14
27	14	6	33	47.0	361	2220	810	540	2700	67	13
27	14	6	34	47.7	351	2220	810	540	2700	65	13
27	14	6	35	48.4	340	2220	810	540	2700	63	13
27	14	6	36	49.2	330	2220	810	540	2700	61	12

800MHz Tower Height (ft)	Antenna Height (ft)	Lower Human Height (ft)	Roof Distance Base (ft)	Slope Distance (ft)	Power Density ($\mu W/cm^{2)}$	(ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
27	14	6	37	49.9	321	2220	810	540	2700	59	12
27	14	6	38	50.6	311	2220	810	540	2700	58	12
27	14	6	39	51.4	302	2220	810	540	2700	56	11
27	14	6	40	52.2	293	2220	810	540	2700	54	11
27	14	6	41	52.9	285	2220	810	540	2700	53	11
27	14	6	42	53.7	277	2220	810	540	2700	51	10
27	14	6	43	54.5	269	2220	810	540	2700	50	10
27	14	6	44	55.3	261	2220	810	540	2700	48	10
27	14	6	45	56.1	254	2220	810	540	2700	47	9
27	14	6	46	56.9	247	2220	810	540	2700	46	9
27	14	6	47	57.7	240	2220	810	540	2700	44	9
27	14	6	48	58.5	233	2220	810	540	2700	43	9
27	14	6	49	59.3	227	2220	810	540	2700	42	8
27	14	6	50	60.2	220	2220	810	540	2700	41	8
27	14	6	51	61.3	212	2220	810	540	2700	39	8
27	14	6	52	62.1	207	2220	810	540	2700	38	8
27	14	6	53	63.0	201	2220	810	540	2700	37	7
27	14	6	54	63.8	196	2220	810	540	2700	36	7
27	14	6	55	64.7	191	2220	810	540	2700	35	7
27	14	6	56	65.5	186	2220	810	540	2700	34	7
27	14	6	57	66.4	181	2220	810	540	2700	34	7
27	14	6	58	67.2	177	2220	810	540	2700	33	7
27	14	6	59	68.1	172	2220	810	540	2700	32	6
27	14	6	60	69.0	168	2220	810	540	2700	31	6
27	14	6	61	69.8	164	2220	810	540	2700	30	6
27	14	6	62	70.7	160	2220	810	540	2700	30	6
27	14	6	63	71.6	156	2220	810	540	2700	29	6
27	14	6	64	72.5	152	2220	810	540	2700	28	6
27	14	6	65	73.4	148	2220	810	540	2700	27	5
27	14	6	66	74.2	145	2220	810	540	2700	27	5
27	14	6	67	75.1	141	2220	810	540	2700	26	5
27	14	6	68	76.0	138	2220	810	540	2700	26	5
27	14	6	69	76.9	135	2220	810	540	2700	25	5
27	14	6	70	77.8	132	2220	810	540	2700	24	5
27	14	6	71	78.7	129	2220	810	540	2700	24	5
27	14	6	72	79.6	126	2220	810	540	2700	23	5

PPD Channel 2	(464.85)	Lower	Roof								
Tower Height	**Antenna Height**	**Human Height**	**Distance Base**	**Slope Distance**	**Power Density**	**(ERP)**	**Frequency**	**MPE**	**MPE**	**% MPE**	**% MPE**
(ft)	**(ft)**	**(ft)**	**(ft)**	**(ft)**	**(μW/cm$^{2)}$**	**(Watts)**	**(MHz)**	**General**	**Occ.**	**General**	**Occ.**
25.5	18	6	1	34.0	124	400	464	309	1547	40	8
25.5	18	6	2	34.0	124	400	464	309	1547	40	8
25.5	18	6	3	34.1	124	400	464	309	1547	40	8
25.5	18	6	4	34.2	123	400	464	309	1547	40	8
25.5	18	6	5	34.3	122	400	464	309	1547	39	8
25.5	18	6	6	34.5	121	400	464	309	1547	39	8
25.5	18	6	7	34.7	120	400	464	309	1547	39	8
25.5	18	6	8	34.9	118	400	464	309	1547	38	8
25.5	18	6	9	35.1	116	400	464	309	1547	38	8
25.5	18	6	10	35.4	115	400	464	309	1547	37	7
25.5	18	6	11	35.7	113	400	464	309	1547	36	7
25.5	18	6	12	36.0	111	400	464	309	1547	36	7
25.5	18	6	13	36.4	109	400	464	309	1547	35	7
25.5	18	6	14	36.7	107	400	464	309	1547	34	7
25.5	18	6	15	37.1	104	400	464	309	1547	34	7
25.5	18	6	16	37.6	102	400	464	309	1547	33	7
25.5	18	6	17	38.0	100	400	464	309	1547	32	6
25.5	18	6	18	38.4	97	400	464	309	1547	31	6
25.5	18	6	19	38.9	95	400	464	309	1547	31	6
25.5	18	6	20	39.4	93	400	464	309	1547	30	6
25.5	18	6	21	39.9	90	400	464	309	1547	29	6
25.5	18	6	22	40.5	88	400	464	309	1547	28	6
25.5	18	6	23	41.0	85	400	464	309	1547	28	6
25.5	18	6	24	41.6	83	400	464	309	1547	27	5
25.5	18	6	25	42.2	81	400	464	309	1547	26	5
25.5	18	6	26	42.8	79	400	464	309	1547	25	5
25.5	18	6	27	43.4	76	400	464	309	1547	25	5
25.5	18	6	28	44.0	74	400	464	309	1547	24	5
25.5	18	6	29	44.7	72	400	464	309	1547	23	5
25.5	18	6	30	45.3	70	400	464	309	1547	23	5
25.5	18	6	31	46.0	68	400	464	309	1547	22	4
25.5	18	6	32	46.7	66	400	464	309	1547	21	4
25.5	18	6	33	47.4	64	400	464	309	1547	21	4
25.5	18	6	34	48.1	62	400	464	309	1547	20	4
25.5	18	6	35	48.8	60	400	464	309	1547	20	4
25.5	18	6	36	49.5	59	400	464	309	1547	19	4

PPD Channel 2	(464.85)	Lower									
Height	**Antenna Height**	**Human Height**	**Distance Base**	**Slope Distance**	**Power Density**	**(ERP)**	**Frequency**	**MPE**	**MPE**	**% MPE**	**% MPE**
(ft)	**(ft)**	**(ft)**	**(ft)**	**(ft)**	**(μW/cm$^{2)}$**	**(Watts)**	**(MHz)**	**General**	**Occ.**	**General**	**Occ.**
25.5	18	6	37	50.2	57	400	464	309	1547	18	4
25.5	18	6	38	51.0	55	400	464	309	1547	18	4
25.5	18	6	39	51.7	54	400	464	309	1547	17	3
25.5	18	6	40	52.5	52	400	464	309	1547	17	3
25.5	18	6	41	53.2	51	400	464	309	1547	16	3
25.5	18	6	42	54.0	49	400	464	309	1547	16	3
25.5	18	6	43	54.8	48	400	464	309	1547	15	3
25.5	18	6	44	55.6	47	400	464	309	1547	15	3
25.5	18	6	45	56.4	45	400	464	309	1547	15	3
25.5	18	6	46	57.2	44	400	464	309	1547	14	3
25.5	18	6	47	58.0	43	400	464	309	1547	14	3
25.5	18	6	48	58.8	42	400	464	309	1547	13	3
25.5	18	6	49	59.6	40	400	464	309	1547	13	3
25.5	18	6	50	60.5	39	400	464	309	1547	13	3

PPD Channel 3	(464.15)	Lower	Roof								
Tower Height (ft)	**Antenna Height (ft)**	**Human Height (ft)**	**Distance Base (ft)**	**Slope Distance (ft)**	**Power Density ($\mu W/cm^{2)}$**	**(ERP) (Watts)**	**Frequency (MHz)**	**MPE General**	**MPE Occupational**	**% MPE General**	**% MPE Occupational**
29	16	6	1	36.5	108	400	464	309	1547	35	7
29	16	6	2	36.6	108	400	464	309	1547	35	7
29	16	6	3	36.6	107	400	464	309	1547	35	7
29	16	6	4	36.7	107	400	464	309	1547	34	7
29	16	6	5	36.9	106	400	464	309	1547	34	7
29	16	6	6	37.0	105	400	464	309	1547	34	7
29	16	6	7	37.2	104	400	464	309	1547	34	7
29	16	6	8	37.4	103	400	464	309	1547	33	7
29	16	6	9	37.6	102	400	464	309	1547	33	7
29	16	6	10	37.9	100	400	464	309	1547	32	6
29	16	6	11	38.1	99	400	464	309	1547	32	6
29	16	6	12	38.4	97	400	464	309	1547	31	6
29	16	6	13	38.8	96	400	464	309	1547	31	6
29	16	6	14	39.1	94	400	464	309	1547	30	6
29	16	6	15	39.5	92	400	464	309	1547	30	6
29	16	6	16	39.9	91	400	464	309	1547	29	6
29	16	6	17	40.3	89	400	464	309	1547	29	6
29	16	6	18	40.7	87	400	464	309	1547	28	6
29	16	6	19	41.2	85	400	464	309	1547	27	5
29	16	6	20	41.6	83	400	464	309	1547	27	5
29	16	6	21	42.1	81	400	464	309	1547	26	5
29	16	6	22	42.6	79	400	464	309	1547	26	5
29	16	6	23	43.2	77	400	464	309	1547	25	5
29	16	6	24	43.7	75	400	464	309	1547	24	5
29	16	6	25	44.2	73	400	464	309	1547	24	5
29	16	6	26	44.8	72	400	464	309	1547	23	5
29	16	6	27	45.4	70	400	464	309	1547	23	5
29	16	6	28	46.0	68	400	464	309	1547	22	4
29	16	6	29	46.6	66	400	464	309	1547	21	4
29	16	6	30	47.3	64	400	464	309	1547	21	4
29	16	6	31	47.9	63	400	464	309	1547	20	4
29	16	6	32	48.5	61	400	464	309	1547	20	4
29	16	6	33	49.2	59	400	464	309	1547	19	4
29	16	6	34	49.9	58	400	464	309	1547	19	4
29	16	6	35	50.6	56	400	464	309	1547	18	4
29	16	6	36	51.3	55	400	464	309	1547	18	4

PPD Channel 3	(464.15)	Lower	Roof								
Tower Height (ft)	**Antenna Height (ft)**	**Human Height (ft)**	**Distance Base (ft)**	**Slope Distance (ft)**	**Power Density ($\mu W/cm^{2)}$**	**(ERP) (Watts)**	**Frequency (MHz)**	**MPE General**	**MPE Occupational**	**% MPE General**	**% MPE Occupational**
29	16	6	37	52.0	53	400	464	309	1547	17	3
29	16	6	38	52.7	52	400	464	309	1547	17	3
29	16	6	39	53.4	50	400	464	309	1547	16	3
29	16	6	40	54.2	49	400	464	309	1547	16	3
29	16	6	41	54.9	48	400	464	309	1547	15	3
29	16	6	42	55.7	46	400	464	309	1547	15	3
29	16	6	43	56.4	45	400	464	309	1547	15	3
29	16	6	44	57.2	44	400	464	309	1547	14	3
29	16	6	45	57.9	43	400	464	309	1547	14	3
29	16	6	46	58.7	42	400	464	309	1547	13	3
29	16	6	47	59.5	41	400	464	309	1547	13	3
29	16	6	48	60.3	40	400	464	309	1547	13	3
29	16	6	49	61.1	39	400	464	309	1547	12	2
29	16	6	50	61.9	38	400	464	309	1547	12	2
29	16	6	51	63.0	36	400	464	309	1547	12	2
29	16	6	52	63.8	35	400	464	309	1547	11	2
29	16	6	53	64.6	34	400	464	309	1547	11	2
29	16	6	54	65.5	34	400	464	309	1547	11	2
29	16	6	55	66.3	33	400	464	309	1547	11	2
29	16	6	56	67.1	32	400	464	309	1547	10	2
29	16	6	57	68.0	31	400	464	309	1547	10	2
29	16	6	58	68.8	30	400	464	309	1547	10	2
29	16	6	59	69.6	30	400	464	309	1547	10	2
29	16	6	60	70.5	29	400	464	309	1547	9	2
29	16	6	661	662.0	0	400	464	309	1547	0	0
29	16	6	62	72.2	28	400	464	309	1547	9	2
29	16	6	63	73.1	27	400	464	309	1547	9	2
29	16	6	64	73.9	26	400	464	309	1547	9	2
29	16	6	65	74.8	26	400	464	309	1547	8	2
29	16	6	66	75.7	25	400	464	309	1547	8	2
29	16	6	67	76.5	25	400	464	309	1547	8	2
29	16	6	68	77.4	24	400	464	309	1547	8	2
29	16	6	69	78.3	23	400	464	309	1547	8	2
29	16	6	70	79.2	23	400	464	309	1547	7	1
29	16	6	71	80.1	22	400	464	309	1547	7	1
29	16	6	72	81.0	22	400	464	309	1547	7	1

PPD Channel 4	(464.95)	Lower	Roof								
Tower Height (ft)	**Antenna Height (ft)**	**Human Height (ft)**	**Distance Base (ft)**	**Slope Distance (ft)**	**Power Density ($\mu W/cm^{2)}$**	**(ERP) (Watts)**	**Frequency (MHz)**	**MPE General**	**MPE Occupational**	**% MPE General**	**% MPE Occupational**
23.5	16	6	1	30.9	146	390	464	309	1547	47	9
23.5	16	6	2	31.0	146	390	464	309	1547	47	9
23.5	16	6	3	31.1	145	390	464	309	1547	47	9
23.5	16	6	4	31.2	144	390	464	309	1547	47	9
23.5	16	6	5	31.3	143	390	464	309	1547	46	9
23.5	16	6	6	31.5	141	390	464	309	1547	46	9
23.5	16	6	7	31.7	139	390	464	309	1547	45	9
23.5	16	6	8	31.9	137	390	464	309	1547	44	9
23.5	16	6	9	32.2	135	390	464	309	1547	44	9
23.5	16	6	10	32.5	133	390	464	309	1547	43	9
23.5	16	6	11	32.8	130	390	464	309	1547	42	8
23.5	16	6	12	33.2	127	390	464	309	1547	41	8
23.5	16	6	13	33.5	125	390	464	309	1547	40	8
23.5	16	6	14	33.9	122	390	464	309	1547	39	8
23.5	16	6	15	34.4	119	390	464	309	1547	38	8
23.5	16	6	16	34.8	116	390	464	309	1547	37	7
23.5	16	6	17	35.3	113	390	464	309	1547	36	7
23.5	16	6	18	35.8	110	390	464	309	1547	35	7
23.5	16	6	19	36.3	106	390	464	309	1547	34	7
23.5	16	6	20	36.8	103	390	464	309	1547	33	7
23.5	16	6	21	37.4	100	390	464	309	1547	32	6
23.5	16	6	22	38.0	97	390	464	309	1547	31	6
23.5	16	6	23	38.5	94	390	464	309	1547	31	6
23.5	16	6	24	39.1	92	390	464	309	1547	30	6
23.5	16	6	25	39.8	89	390	464	309	1547	29	6
23.5	16	6	26	40.4	86	390	464	309	1547	28	6
23.5	16	6	27	41.1	83	390	464	309	1547	27	5
23.5	16	6	28	41.7	81	390	464	309	1547	26	5
23.5	16	6	29	42.4	78	390	464	309	1547	25	5
23.5	16	6	30	43.1	76	390	464	309	1547	24	5
23.5	16	6	31	43.8	73	390	464	309	1547	24	5
23.5	16	6	32	44.5	71	390	464	309	1547	23	5
23.5	16	6	33	45.2	69	390	464	309	1547	22	4
23.5	16	6	34	46.0	66	390	464	309	1547	21	4
23.5	16	6	35	46.7	64	390	464	309	1547	21	4
23.5	16	6	36	47.5	62	390	464	309	1547	20	4

PPD Channel 4	(464.95)	Lower	Roof								
Tower Height (ft)	**Antenna Height (ft)**	**Human Height (ft)**	**Distance Base (ft)**	**Slope Distance (ft)**	**Power Density ($\mu W/cm^{2}$)**	**(ERP) (Watts)**	**Frequency (MHz)**	**MPE General**	**MPE Occupational**	**% MPE General**	**% MPE Occupational**
23.5	16	6	37	48.2	60	390	464	309	1547	19	4
23.5	16	6	38	49.0	58	390	464	309	1547	19	4
23.5	16	6	39	49.8	57	390	464	309	1547	18	4
23.5	16	6	40	50.6	55	390	464	309	1547	18	4
23.5	16	6	41	51.4	53	390	464	309	1547	17	3
23.5	16	6	42	52.2	52	390	464	309	1547	17	3
23.5	16	6	43	53.0	50	390	464	309	1547	16	3
23.5	16	6	44	53.8	48	390	464	309	1547	16	3
23.5	16	6	45	54.6	47	390	464	309	1547	15	3
23.5	16	6	46	55.4	46	390	464	309	1547	15	3
23.5	16	6	47	56.3	44	390	464	309	1547	14	3
23.5	16	6	48	57.1	43	390	464	309	1547	14	3
23.5	16	6	49	57.9	42	390	464	309	1547	14	3
23.5	16	6	50	58.8	41	390	464	309	1547	13	3
23.5	16	6	51	59.9	39	390	464	309	1547	13	3
23.5	16	6	52	60.8	38	390	464	309	1547	12	2
23.5	16	6	53	61.7	37	390	464	309	1547	12	2
23.5	16	6	54	62.5	36	390	464	309	1547	12	2
23.5	16	6	55	63.4	35	390	464	309	1547	11	2
23.5	16	6	56	64.3	34	390	464	309	1547	11	2
23.5	16	6	57	65.1	33	390	464	309	1547	11	2
23.5	16	6	58	66.0	32	390	464	309	1547	10	2
23.5	16	6	59	66.9	31	390	464	309	1547	10	2
23.5	16	6	60	67.8	31	390	464	309	1547	10	2
23.5	16	6	61	68.7	30	390	464	309	1547	10	2
23.5	16	6	62	69.5	29	390	464	309	1547	9	2
23.5	16	6	63	70.4	28	390	464	309	1547	9	2
23.5	16	6	64	71.3	28	390	464	309	1547	9	2
23.5	16	6	65	72.2	27	390	464	309	1547	9	2
23.5	16	6	66	73.1	26	390	464	309	1547	8	2
23.5	16	6	67	74.0	26	390	464	309	1547	8	2
23.5	16	6	68	74.9	25	390	464	309	1547	8	2
23.5	16	6	69	75.9	24	390	464	309	1547	8	2
23.5	16	6	70	76.8	24	390	464	309	1547	8	2
23.5	16	6	71	77.7	23	390	464	309	1547	8	2
23.5	16	6	72	78.6	23	390	464	309	1547	7	1

Backup Tower Height (ft)	Antenna Height (ft)	Penthouse Human Height (ft)	Lower Distance Base (ft)	Slope Distance (ft)	Power Density ($\mu W/cm^{2}$)	(ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
23.5	16	6	1	30.9	188	500	463	309	1543	61	12
23.5	16	6	2	31.0	187	500	463	309	1543	61	12
23.5	16	6	3	31.1	186	500	463	309	1543	60	12
23.5	16	6	4	31.2	185	500	463	309	1543	60	12
23.5	16	6	5	31.3	183	500	463	309	1543	59	12
23.5	16	6	6	31.5	181	500	463	309	1543	59	12
23.5	16	6	7	31.7	179	500	463	309	1543	58	12
23.5	16	6	8	31.9	176	500	463	309	1543	57	11
23.5	16	6	9	32.2	173	500	463	309	1543	56	11
23.5	16	6	10	32.5	170	500	463	309	1543	55	11
23.5	16	6	11	32.8	167	500	463	309	1543	54	11
23.5	16	6	12	33.2	163	500	463	309	1543	53	11
23.5	16	6	13	33.5	160	500	463	309	1543	52	10
23.5	16	6	14	33.9	156	500	463	309	1543	51	10
23.5	16	6	15	34.4	152	500	463	309	1543	49	10
23.5	16	6	16	34.8	148	500	463	309	1543	48	10
23.5	16	6	17	35.3	144	500	463	309	1543	47	9
23.5	16	6	18	35.8	140	500	463	309	1543	45	9
23.5	16	6	19	36.3	136	500	463	309	1543	44	9
23.5	16	6	20	36.8	133	500	463	309	1543	43	9
23.5	16	6	21	37.4	129	500	463	309	1543	42	8
23.5	16	6	22	38.0	125	500	463	309	1543	40	8
23.5	16	6	23	38.5	121	500	463	309	1543	39	8
23.5	16	6	24	39.1	117	500	463	309	1543	38	8
23.5	16	6	25	39.8	114	500	463	309	1543	37	7
23.5	16	6	26	40.4	110	500	463	309	1543	36	7
23.5	16	6	27	41.1	107	500	463	309	1543	35	7
23.5	16	6	28	41.7	103	500	463	309	1543	33	7
23.5	16	6	29	42.4	100	500	463	309	1543	32	6
23.5	16	6	30	43.1	97	500	463	309	1543	31	6
23.5	16	6	31	43.8	94	500	463	309	1543	30	6
23.5	16	6	32	44.5	91	500	463	309	1543	29	6
23.5	16	6	33	45.2	88	500	463	309	1543	28	6
23.5	16	6	34	46.0	85	500	463	309	1543	28	6
23.5	16	6	35	46.7	82	500	463	309	1543	27	5

Backup Tower Height (ft)	Antenna Height (ft)	Penthouse Human Height (ft)	Lower Distance Base (ft)	Slope Distance (ft)	Power Density ($\mu W/cm^{2}$)	(ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
23.5	16	6	36	47.5	80	500	463	309	1543	26	5
23.5	16	6	37	48.2	77	500	463	309	1543	25	5
23.5	16	6	38	49.0	75	500	463	309	1543	24	5
23.5	16	6	39	49.8	73	500	463	309	1543	24	5
23.5	16	6	40	50.6	70	500	463	309	1543	23	5
23.5	16	6	41	51.4	68	500	463	309	1543	22	4
23.5	16	6	42	52.2	66	500	463	309	1543	21	4
23.5	16	6	43	53.0	64	500	463	309	1543	21	4
23.5	16	6	44	53.8	62	500	463	309	1543	20	4
23.5	16	6	45	54.6	60	500	463	309	1543	20	4
23.5	16	6	46	55.4	59	500	463	309	1543	19	4
23.5	16	6	47	56.3	57	500	463	309	1543	18	4
23.5	16	6	48	57.1	55	500	463	309	1543	18	4
23.5	16	6	49	57.9	54	500	463	309	1543	17	3
23.5	16	6	50	58.8	52	500	463	309	1543	17	3
23.5	16	6	51	59.9	50	500	463	309	1543	16	3
23.5	16	6	52	60.8	49	500	463	309	1543	16	3
23.5	16	6	53	61.7	47	500	463	309	1543	15	3
23.5	16	6	54	62.5	46	500	463	309	1543	15	3
23.5	16	6	55	63.4	45	500	463	309	1543	14	3
23.5	16	6	56	64.3	44	500	463	309	1543	14	3
23.5	16	6	57	65.1	42	500	463	309	1543	14	3
23.5	16	6	58	66.0	41	500	463	309	1543	13	3
23.5	16	6	59	66.9	40	500	463	309	1543	13	3
23.5	16	6	60	67.8	39	500	463	309	1543	13	3
23.5	16	6	61	68.7	38	500	463	309	1543	12	2
23.5	16	6	62	69.5	37	500	463	309	1543	12	2
23.5	16	6	63	70.4	36	500	463	309	1543	12	2
23.5	16	6	64	71.3	35	500	463	309	1543	11	2
23.5	16	6	65	72.2	34	500	463	309	1543	11	2
23.5	16	6	66	73.1	34	500	463	309	1543	11	2
23.5	16	6	67	74.0	33	500	463	309	1543	11	2
23.5	16	6	68	74.9	32	500	463	309	1543	10	2
23.5	16	6	69	75.9	31	500	463	309	1543	10	2
23.5	16	6	70	76.8	31	500	463	309	1543	10	2
23.5	16	6	71	77.7	30	500	463	309	1543	10	2

Combined Lower Roof

Distance Base (ft)	Channel 3 % MPE General	Channel 3 % MPE Occupational	Channel 4 % MPE General	Channel 4 % MPE Occupational	Backup % MPE General	Backup % MPE Occupational	Combined % MPE General	Combined % MPE Occupational
1	35	7	47	9	61	12	143	29
2	35	7	47	9	61	12	143	29
3	35	7	47	9	60	12	142	28
4	34	7	47	9	60	12	141	28
5	34	7	46	9	59	12	140	28
6	34	7	46	9	59	12	138	28
7	34	7	45	9	58	12	137	27
8	33	7	44	9	57	11	135	27
9	33	7	44	9	56	11	133	27
10	32	6	43	9	55	11	130	26
11	32	6	42	8	54	11	128	26
12	31	6	41	8	53	11	126	25
13	31	6	40	8	52	10	123	25
14	30	6	39	8	51	10	120	24
15	30	6	38	8	49	10	118	24
16	29	6	37	7	48	10	115	23
17	29	6	36	7	47	9	112	22
18	28	6	35	7	45	9	109	22
19	27	5	34	7	44	9	106	21
20	27	5	33	7	43	9	103	21
21	26	5	32	6	42	8	100	20
22	26	5	31	6	40	8	97	19
23	25	5	31	6	39	8	95	19
24	24	5	30	6	38	8	92	18
25	24	5	29	6	37	7	89	18
26	23	5	28	6	36	7	87	17
27	23	5	27	5	35	7	84	17
28	22	4	26	5	33	7	81	16
29	21	4	25	5	32	6	79	16
30	21	4	24	5	31	6	77	15
31	20	4	24	5	30	6	74	15
32	20	4	23	5	29	6	72	14
33	19	4	22	4	28	6	70	14
34	19	4	21	4	28	6	68	14
35	18	4	21	4	27	5	66	13
36	18	4	20	4	26	5	64	13

Combined Lower Roof

Distance Base (ft)	Channel 3 % MPE General	Channel 3 % MPE Occupational	Channel 4 % MPE General	Channel 4 % MPE Occupational	Backup % MPE General	Backup % MPE Occupational	Combined % MPE General	Combined % MPE Occupational
37	17	3	19	4	25	5	62	12
38	17	3	19	4	24	5	60	27
39	16	3	18	4	24	5	58	26
40	16	3	18	4	23	5	56	25
41	15	3	17	3	22	4	55	25
42	15	3	17	3	21	4	53	24
43	15	3	16	3	21	4	52	23
44	14	3	16	3	20	4	50	23
45	14	3	15	3	20	4	49	22
46	13	3	15	3	19	4	47	21
47	13	3	14	3	18	4	46	21
48	13	3	14	3	18	4	45	20
49	12	2	14	3	17	3	43	19
50	12	2	13	3	17	3	42	19
51	12	2	13	3	16	3	41	18
52	11	2	12	2	16	3	39	18
53	11	2	12	2	15	3	38	17
54	11	2	12	2	15	3	37	17
55	11	2	11	2	14	3	36	16
56	10	2	11	2	14	3	35	16
57	10	2	11	2	14	3	34	15
58	10	2	10	2	13	3	34	15
59	10	2	10	2	13	3	33	15
60	9	2	10	2	13	3	32	14
61	0	0	10	2	12	2	22	12
62	9	2	9	2	12	2	30	14
63	9	2	9	2	12	2	30	13
64	9	2	9	2	11	2	29	13
65	8	2	9	2	11	2	28	13
66	8	2	8	2	11	2	27	12
67	8	2	8	2	11	2	27	12
68	8	2	8	2	10	2	26	12
69	8	2	8	2	10	2	26	11
70	7	1	8	2	10	2	25	11
71	7	1	8	2	10	2	24	11
72	7	1	7	1	9	2	24	11
73	7	1	7	1	9	2	23	10

Appendix G

Calculation Data – Upper Roof

PPD Channel 1 463.85

Tower Height (ft)	Antenna Height (ft)	Human Height (ft)	Distance Base (ft)	Slope Distance (ft)	Power Density ($\mu W/cm^{2)}$	(ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
29	16	6	1	36.5	105	390	468	312	1560	34	7
29	16	6	2	36.6	105	390	468	312	1560	34	7
29	16	6	3	36.6	104	390	468	312	1560	33	7
29	16	6	4	36.7	104	390	468	312	1560	33	7
29	16	6	5	36.9	103	390	468	312	1560	33	7
29	16	6	6	37.0	102	390	468	312	1560	33	7
29	16	6	7	37.2	101	390	468	312	1560	33	7
29	16	6	8	37.4	100	390	468	312	1560	32	6
29	16	6	9	37.6	99	390	468	312	1560	32	6
29	16	6	10	37.9	98	390	468	312	1560	31	6
29	16	6	11	38.1	96	390	468	312	1560	31	6
29	16	6	12	38.4	95	390	468	312	1560	30	6
29	16	6	13	38.8	93	390	468	312	1560	30	6
29	16	6	14	39.1	92	390	468	312	1560	29	6
29	16	6	15	39.5	90	390	468	312	1560	29	6
29	16	6	16	39.9	88	390	468	312	1560	28	6
29	16	6	17	40.3	86	390	468	312	1560	28	6
29	16	6	18	40.7	85	390	468	312	1560	27	5
29	16	6	19	41.2	83	390	468	312	1560	27	5
29	16	6	20	41.6	81	390	468	312	1560	26	5
29	16	6	21	42.1	79	390	468	312	1560	25	5
29	16	6	22	42.6	77	390	468	312	1560	25	5
29	16	6	23	43.2	75	390	468	312	1560	24	5
29	16	6	24	43.7	73	390	468	312	1560	24	5
29	16	6	25	44.2	72	390	468	312	1560	23	5
29	16	6	26	44.8	70	390	468	312	1560	22	4
29	16	6	27	45.4	68	390	468	312	1560	22	4
29	16	6	28	46.0	66	390	468	312	1560	21	4
29	16	6	29	46.6	64	390	468	312	1560	21	4
29	16	6	30	47.3	63	390	468	312	1560	20	4
29	16	6	31	47.9	61	390	468	312	1560	20	4
29	16	6	32	48.5	59	390	468	312	1560	19	4
29	16	6	33	49.2	58	390	468	312	1560	19	4
29	16	6	34	49.9	56	390	468	312	1560	18	4
29	16	6	35	50.6	55	390	468	312	1560	18	4
29	16	6	36	51.3	53	390	468	312	1560	17	3

PPD Channel 1 463.85

Tower Height (ft)	Antenna Height (ft)	Human Height (ft)	Distance Base (ft)	Slope Distance (ft)	Power Density ($\mu W/cm^{2)}$	(ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
29	16	6	37	52.0	52	390	468	312	1560	17	3
29	16	6	38	52.7	50	390	468	312	1560	16	3
29	16	6	39	53.4	49	390	468	312	1560	16	3
29	16	6	40	54.2	48	390	468	312	1560	15	3
29	16	6	41	54.9	47	390	468	312	1560	15	3
29	16	6	42	55.7	45	390	468	312	1560	15	3
29	16	6	43	56.4	44	390	468	312	1560	14	3
29	16	6	44	57.2	43	390	468	312	1560	14	3
29	16	6	45	57.9	42	390	468	312	1560	13	3
29	16	6	46	58.7	41	390	468	312	1560	13	3
29	16	6	47	59.5	40	390	468	312	1560	13	3
29	16	6	48	60.3	39	390	468	312	1560	12	2
29	16	6	49	61.1	38	390	468	312	1560	12	2
29	16	6	50	61.9	37	390	468	312	1560	12	2
29	16	6	51	63.0	35	390	468	312	1560	11	2

PPD Channel 2	(464.85)	Penthouse									
Tower Height	**Antenna Height**	**Human Height**	**Distance Base**	**Slope Distance**	**Power Density**	**(ERP)**	**Frequency**	**MPE**	**MPE**	**% MPE**	**% MPE**
(ft)	**(ft)**	**(ft)**	**(ft)**	**(ft)**	**(μW/cm$^{2)}$**	**(Watts)**	**(MHz)**	**General**	**Occupation**	**General**	**Occupational**
16.5	18	6	1	24.8	234	400	464	309	1547	76	15
16.5	18	6	2	24.9	233	400	464	309	1547	75	15
16.5	18	6	3	25.0	231	400	464	309	1547	75	15
16.5	18	6	4	25.1	228	400	464	309	1547	74	15
16.5	18	6	5	25.3	225	400	464	309	1547	73	15
16.5	18	6	6	25.5	221	400	464	309	1547	71	14
16.5	18	6	7	25.8	217	400	464	309	1547	70	14
16.5	18	6	8	26.0	212	400	464	309	1547	69	14
16.5	18	6	9	26.4	207	400	464	309	1547	67	13
16.5	18	6	10	26.7	201	400	464	309	1547	65	13
16.5	18	6	11	27.1	196	400	464	309	1547	63	13
16.5	18	6	12	27.5	190	400	464	309	1547	61	12
16.5	18	6	13	28.0	184	400	464	309	1547	59	12
16.5	18	6	14	28.5	177	400	464	309	1547	57	11
16.5	18	6	15	29.0	171	400	464	309	1547	55	11
16.5	18	6	16	29.5	165	400	464	309	1547	53	11
16.5	18	6	17	30.1	159	400	464	309	1547	51	10
16.5	18	6	18	30.6	153	400	464	309	1547	50	10
16.5	18	6	19	31.2	147	400	464	309	1547	48	10
16.5	18	6	20	31.8	142	400	464	309	1547	46	9
16.5	18	6	21	32.5	136	400	464	309	1547	44	9
16.5	18	6	22	33.1	131	400	464	309	1547	42	8
16.5	18	6	23	33.8	126	400	464	309	1547	41	8
16.5	18	6	24	34.5	121	400	464	309	1547	39	8
16.5	18	6	25	35.2	116	400	464	309	1547	38	8
16.5	18	6	26	35.9	111	400	464	309	1547	36	7
16.5	18	6	27	36.7	107	400	464	309	1547	35	7
16.5	18	6	28	37.4	103	400	464	309	1547	33	7
16.5	18	6	29	38.1	99	400	464	309	1547	32	6
16.5	18	6	30	38.9	95	400	464	309	1547	31	6
16.5	18	6	31	39.7	91	400	464	309	1547	30	6
16.5	18	6	32	40.5	88	400	464	309	1547	28	6
16.5	18	6	33	41.3	84	400	464	309	1547	27	5
16.5	18	6	34	42.1	81	400	464	309	1547	26	5
16.5	18	6	35	42.9	78	400	464	309	1547	25	5
16.5	18	6	36	43.7	75	400	464	309	1547	24	5

PPD Channel 2	(464.85)	Penthouse									
Tower Height	**Antenna Height**	**Human Height**	**Distance Base**	**Slope Distance**	**Power Density**	**(ERP)**	**Frequency**	**MPE**	**MPE**	**% MPE**	**% MPE**
(ft)	**(ft)**	**(ft)**	**(ft)**	**(ft)**	**(μW/cm$^{2)}$**	**(Watts)**	**(MHz)**	**General**	**Occupation**	**General**	**Occupational**
16.5	18	6	37	44.5	73	400	464	309	1547	23	5
16.5	18	6	38	45.4	70	400	464	309	1547	23	5
16.5	18	6	39	46.2	67	400	464	309	1547	22	4
16.5	18	6	40	47.1	65	400	464	309	1547	21	4
16.5	18	6	41	47.9	63	400	464	309	1547	20	4
16.5	18	6	42	48.8	60	400	464	309	1547	20	4
16.5	18	6	43	49.6	58	400	464	309	1547	19	4
16.5	18	6	44	50.5	56	400	464	309	1547	18	4
16.5	18	6	45	51.4	54	400	464	309	1547	18	4
16.5	18	6	46	52.3	53	400	464	309	1547	17	3
16.5	18	6	47	53.1	51	400	464	309	1547	16	3
16.5	18	6	48	54.0	49	400	464	309	1547	16	3
16.5	18	6	49	54.9	48	400	464	309	1547	15	3
16.5	18	6	50	55.8	46	400	464	309	1547	15	3
16.5	18	6	51	57.0	44	400	464	309	1547	14	3
16.5	18	6	52	57.9	43	400	464	309	1547	14	3
16.5	18	6	53	58.8	42	400	464	309	1547	13	3
16.5	18	6	54	59.7	40	400	464	309	1547	13	3
16.5	18	6	55	60.6	39	400	464	309	1547	13	3
16.5	18	6	56	61.5	38	400	464	309	1547	12	2
16.5	18	6	57	62.4	37	400	464	309	1547	12	2
16.5	18	6	58	63.4	36	400	464	309	1547	12	2
16.5	18	6	59	64.3	35	400	464	309	1547	11	2
16.5	18	6	60	65.2	34	400	464	309	1547	11	2
16.5	18	6	61	66.1	33	400	464	309	1547	11	2
16.5	18	6	62	67.0	32	400	464	309	1547	10	2
16.5	18	6	63	68.0	31	400	464	309	1547	10	2
16.5	18	6	64	68.9	30	400	464	309	1547	10	2
16.5	18	6	65	69.8	29	400	464	309	1547	10	2
16.5	18	6	66	70.8	29	400	464	309	1547	9	2
16.5	18	6	67	71.7	28	400	464	309	1547	9	2
16.5	18	6	68	72.6	27	400	464	309	1547	9	2
16.5	18	6	69	73.6	27	400	464	309	1547	9	2
16.5	18	6	70	74.5	26	400	464	309	1547	8	2
16.5	18	6	71	75.4	25	400	464	309	1547	8	2
16.5	18	6	72	76.4	25	400	464	309	1547	8	2

PPD Channel 3	(464.15)	Penthouse	Roof								
Tower Height (ft)	**Antenna Height (ft)**	**Human Height (ft)**	**Distance Base (ft)**	**Slope Distance (ft)**	**Power Density ($\mu W/cm^{2}$)**	**(ERP) (Watts)**	**Frequency (MHz)**	**MPE General**	**MPE Occ.**	**% MPE General**	**% MPE Occ.**
18	16	6	1	25.3	224	400	464	309	1547	73	15
18	16	6	2	25.4	223	400	464	309	1547	72	14
18	16	6	3	25.5	222	400	464	309	1547	72	14
18	16	6	4	25.6	219	400	464	309	1547	71	14
18	16	6	5	25.8	216	400	464	309	1547	70	14
18	16	6	6	26.0	213	400	464	309	1547	69	14
18	16	6	7	26.2	209	400	464	309	1547	67	13
18	16	6	8	26.5	204	400	464	309	1547	66	13
18	16	6	9	26.9	199	400	464	309	1547	64	13
18	16	6	10	27.2	194	400	464	309	1547	63	13
18	16	6	11	27.6	189	400	464	309	1547	61	12
18	16	6	12	28.0	183	400	464	309	1547	59	12
18	16	6	13	28.4	178	400	464	309	1547	57	11
18	16	6	14	28.9	172	400	464	309	1547	56	11
18	16	6	15	29.4	166	400	464	309	1547	54	11
18	16	6	16	29.9	160	400	464	309	1547	52	10
18	16	6	17	30.5	155	400	464	309	1547	50	10
18	16	6	18	31.0	149	400	464	309	1547	48	10
18	16	6	19	31.6	144	400	464	309	1547	46	9
18	16	6	20	32.2	138	400	464	309	1547	45	9
18	16	6	21	32.9	133	400	464	309	1547	43	9
18	16	6	22	33.5	128	400	464	309	1547	41	8
18	16	6	23	34.2	123	400	464	309	1547	40	8
18	16	6	24	34.9	118	400	464	309	1547	38	8
18	16	6	25	35.6	114	400	464	309	1547	37	7
18	16	6	26	36.3	109	400	464	309	1547	35	7
18	16	6	27	37.0	105	400	464	309	1547	34	7
18	16	6	28	37.7	101	400	464	309	1547	33	7
18	16	6	29	38.5	97	400	464	309	1547	31	6
18	16	6	30	39.2	93	400	464	309	1547	30	6
18	16	6	31	40.0	90	400	464	309	1547	29	6
18	16	6	32	40.8	86	400	464	309	1547	28	6
18	16	6	33	41.6	83	400	464	309	1547	27	5
18	16	6	34	42.4	80	400	464	309	1547	26	5
18	16	6	35	43.2	77	400	464	309	1547	25	5
18	16	6	36	44.0	74	400	464	309	1547	24	5

PPD Channel 3	(464.15)	Penthouse	Roof								
Tower Height	**Antenna Height**	**Human Height**	**Distance Base**	**Slope Distance**	**Power Density**	**(ERP)**	**Frequency**	**MPE**	**MPE**	**% MPE**	**% MPE**
(ft)	**(ft)**	**(ft)**	**(ft)**	**(ft)**	**(μW/cm$^{2)}$**	**(Watts)**	**(MHz)**	**General**	**Occ.**	**General**	**Occ.**
18	16	6	37	44.8	72	400	464	309	1547	23	5
18	16	6	38	45.7	69	400	464	309	1547	22	4
18	16	6	39	46.5	67	400	464	309	1547	22	4
18	16	6	40	47.3	64	400	464	309	1547	21	4
18	16	6	41	48.2	62	400	464	309	1547	20	4
18	16	6	42	49.0	60	400	464	309	1547	19	4
18	16	6	43	49.9	58	400	464	309	1547	19	4
18	16	6	44	50.8	56	400	464	309	1547	18	4
18	16	6	45	51.6	54	400	464	309	1547	17	3
18	16	6	46	52.5	52	400	464	309	1547	17	3
18	16	6	47	53.4	50	400	464	309	1547	16	3
18	16	6	48	54.3	49	400	464	309	1547	16	3
18	16	6	49	55.1	47	400	464	309	1547	15	3
18	16	6	50	56.0	46	400	464	309	1547	15	3
	16	6	51	51.6	54	400	464	309	1547	17	3
	16	6	52	52.6	52	400	464	309	1547	17	3
	16	6	53	53.6	50	400	464	309	1547	16	3
	16	6	54	54.6	48	400	464	309	1547	16	3
	16	6	55	55.6	47	400	464	309	1547	15	3
	16	6	56	56.6	45	400	464	309	1547	15	3
	16	6	57	57.6	43	400	464	309	1547	14	3
	16	6	58	58.5	42	400	464	309	1547	14	3
	16	6	59	59.5	41	400	464	309	1547	13	3
	16	6	60	60.5	39	400	464	309	1547	13	3
	16	6	61	61.5	38	400	464	309	1547	12	2
	16	6	62	62.5	37	400	464	309	1547	12	2
	16	6	63	63.5	36	400	464	309	1547	12	2
	16	6	64	64.5	35	400	464	309	1547	11	2
	16	6	65	65.5	34	400	464	309	1547	11	2
	16	6	66	66.5	33	400	464	309	1547	11	2
	16	6	67	67.5	32	400	464	309	1547	10	2
	16	6	68	68.5	31	400	464	309	1547	10	2
	16	6	69	69.5	30	400	464	309	1547	10	2
	16	6	70	70.5	29	400	464	309	1547	9	2
	16	6	71	71.4	28	400	464	309	1547	9	2
	16	6	72	72.4	27	400	464	309	1547	9	2

PPD Channel 4	(464.95)	Penthouse	Roof								
Tower Height (ft)	**Antenna Height (ft)**	**Human Height (ft)**	**Distance Base (ft)**	**Slope Distance (ft)**	**Power Density ($\mu W/cm^{2}$)**	**(ERP) (Watts)**	**Frequency (MHz)**	**MPE General**	**MPE Occupational**	**% MPE General**	**% MPE Occupational**
14.5	16	6	1	21.7	298	390	464	309	1547	96	19
14.5	16	6	2	21.8	296	390	464	309	1547	96	19
14.5	16	6	3	21.9	293	390	464	309	1547	95	19
14.5	16	6	4	22.1	288	390	464	309	1547	93	19
14.5	16	6	5	22.3	283	390	464	309	1547	92	18
14.5	16	6	6	22.5	277	390	464	309	1547	90	18
14.5	16	6	7	22.8	270	390	464	309	1547	87	17
14.5	16	6	8	23.1	262	390	464	309	1547	85	17
14.5	16	6	9	23.5	254	390	464	309	1547	82	16
14.5	16	6	10	23.9	246	390	464	309	1547	79	16
14.5	16	6	11	24.3	237	390	464	309	1547	77	15
14.5	16	6	12	24.8	228	390	464	309	1547	74	15
14.5	16	6	13	25.3	219	390	464	309	1547	71	14
14.5	16	6	14	25.8	210	390	464	309	1547	68	14
14.5	16	6	15	26.4	202	390	464	309	1547	65	13
14.5	16	6	16	26.9	193	390	464	309	1547	62	12
14.5	16	6	17	27.6	185	390	464	309	1547	60	12
14.5	16	6	18	28.2	177	390	464	309	1547	57	11
14.5	16	6	19	28.8	169	390	464	309	1547	55	11
14.5	16	6	20	29.5	161	390	464	309	1547	52	10
14.5	16	6	21	30.2	154	390	464	309	1547	50	10
14.5	16	6	22	30.9	147	390	464	309	1547	47	9
14.5	16	6	23	31.6	140	390	464	309	1547	45	9
14.5	16	6	24	32.3	134	390	464	309	1547	43	9
14.5	16	6	25	33.1	128	390	464	309	1547	41	8
14.5	16	6	26	33.9	122	390	464	309	1547	40	8
14.5	16	6	27	34.6	117	390	464	309	1547	38	8
14.5	16	6	28	35.4	112	390	464	309	1547	36	7
14.5	16	6	29	36.2	107	390	464	309	1547	35	7
14.5	16	6	30	37.0	102	390	464	309	1547	33	7
14.5	16	6	31	37.8	98	390	464	309	1547	32	6
14.5	16	6	32	38.7	94	390	464	309	1547	30	6
14.5	16	6	33	39.5	90	390	464	309	1547	29	6
14.5	16	6	34	40.3	86	390	464	309	1547	28	6
14.5	16	6	35	41.2	83	390	464	309	1547	27	5
14.5	16	6	36	42.0	79	390	464	309	1547	26	5

PPD Channel 4	(464.95)	Penthouse	Roof								
Tower Height (ft)	**Antenna Height (ft)**	**Human Height (ft)**	**Distance Base (ft)**	**Slope Distance (ft)**	**Power Density ($\mu W/cm^{2)}$**	**(ERP) (Watts)**	**Frequency (MHz)**	**MPE General**	**MPE Occupational**	**% MPE General**	**% MPE Occupational**
14.5	16	6	37	42.9	76	390	464	309	1547	25	5
14.5	16	6	38	43.8	73	390	464	309	1547	24	5
14.5	16	6	39	44.6	70	390	464	309	1547	23	5
14.5	16	6	40	45.5	68	390	464	309	1547	22	4
14.5	16	6	41	46.4	65	390	464	309	1547	21	4
14.5	16	6	42	47.3	63	390	464	309	1547	20	4
14.5	16	6	43	48.2	60	390	464	309	1547	20	4
14.5	16	6	44	49.1	58	390	464	309	1547	19	4
14.5	16	6	45	50.0	56	390	464	309	1547	18	4
14.5	16	6	46	50.9	54	390	464	309	1547	18	4
14.5	16	6	47	51.8	52	390	464	309	1547	17	3
14.5	16	6	48	52.7	51	390	464	309	1547	16	3
14.5	16	6	49	53.6	49	390	464	309	1547	16	3
14.5	16	6	50	54.5	47	390	464	309	1547	15	3
14.5	16	6	51	55.7	45	390	464	309	1547	15	3
14.5	16	6	52	56.7	44	390	464	309	1547	14	3
14.5	16	6	53	57.6	42	390	464	309	1547	14	3
14.5	16	6	54	58.5	41	390	464	309	1547	13	3
14.5	16	6	55	59.4	40	390	464	309	1547	13	3
14.5	16	6	56	60.4	38	390	464	309	1547	12	2
14.5	16	6	57	61.3	37	390	464	309	1547	12	2
14.5	16	6	58	62.2	36	390	464	309	1547	12	2
14.5	16	6	59	63.1	35	390	464	309	1547	11	2
14.5	16	6	60	64.1	34	390	464	309	1547	11	2
14.5	16	6	61	65.0	33	390	464	309	1547	11	2
14.5	16	6	62	66.0	32	390	464	309	1547	10	2
14.5	16	6	63	66.9	31	390	464	309	1547	10	2
14.5	16	6	64	67.8	30	390	464	309	1547	10	2
14.5	16	6	65	68.8	30	390	464	309	1547	10	2
14.5	16	6	66	69.7	29	390	464	309	1547	9	2
14.5	16	6	67	70.7	28	390	464	309	1547	9	2
14.5	16	6	68	71.6	27	390	464	309	1547	9	2
14.5	16	6	69	72.6	27	390	464	309	1547	9	2
14.5	16	6	70	73.5	26	390	464	309	1547	8	2
14.5	16	6	71	74.5	25	390	464	309	1547	8	2
14.5	16	6	72	75.4	25	390	464	309	1547	8	2

Backup Tower Height (ft)	Antenna Height (ft)	Penthouse Human Height (ft)	Roof Distance Base (ft)	Slope Distance (ft)	Power Density ($\mu W/cm^{2)}$	(ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
14.5	16	6	1	21.7	381	500	463	309	1543	124	25
14.5	16	6	2	21.8	379	500	463	309	1543	123	25
14.5	16	6	3	21.9	375	500	463	309	1543	122	24
14.5	16	6	4	22.1	370	500	463	309	1543	120	24
14.5	16	6	5	22.3	363	500	463	309	1543	118	24
14.5	16	6	6	22.5	355	500	463	309	1543	115	23
14.5	16	6	7	22.8	346	500	463	309	1543	112	22
14.5	16	6	8	23.1	336	500	463	309	1543	109	22
14.5	16	6	9	23.5	326	500	463	309	1543	106	21
14.5	16	6	10	23.9	315	500	463	309	1543	102	20
14.5	16	6	11	24.3	304	500	463	309	1543	98	20
14.5	16	6	12	24.8	293	500	463	309	1543	95	19
14.5	16	6	13	25.3	281	500	463	309	1543	91	18
14.5	16	6	14	25.8	270	500	463	309	1543	87	17
14.5	16	6	15	26.4	259	500	463	309	1543	84	17
14.5	16	6	16	26.9	248	500	463	309	1543	80	16
14.5	16	6	17	27.6	237	500	463	309	1543	77	15
14.5	16	6	18	28.2	226	500	463	309	1543	73	15
14.5	16	6	19	28.8	216	500	463	309	1543	70	14
14.5	16	6	20	29.5	207	500	463	309	1543	67	13
14.5	16	6	21	30.2	197	500	463	309	1543	64	13
14.5	16	6	22	30.9	188	500	463	309	1543	61	12
14.5	16	6	23	31.6	180	500	463	309	1543	58	12
14.5	16	6	24	32.3	172	500	463	309	1543	56	11
14.5	16	6	25	33.1	164	500	463	309	1543	53	11
14.5	16	6	26	33.9	157	500	463	309	1543	51	10
14.5	16	6	27	34.6	150	500	463	309	1543	49	10
14.5	16	6	28	35.4	143	500	463	309	1543	46	9
14.5	16	6	29	36.2	137	500	463	309	1543	44	9
14.5	16	6	30	37.0	131	500	463	309	1543	43	9
14.5	16	6	31	37.8	126	500	463	309	1543	41	8
14.5	16	6	32	38.7	120	500	463	309	1543	39	8
14.5	16	6	33	39.5	115	500	463	309	1543	37	7
14.5	16	6	34	40.3	111	500	463	309	1543	36	7
14.5	16	6	35	41.2	106	500	463	309	1543	34	7
14.5	16	6	36	42.0	102	500	463	309	1543	33	7

Backup Tower Height (ft)	Antenna Height (ft)	Penthouse Human Height (ft)	Roof Distance Base (ft)	Slope Distance (ft)	Power Density ($\mu W/cm^{2)}$	(ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
14.5	16	6	37	42.9	98	500	463	309	1543	32	6
14.5	16	6	38	43.8	94	500	463	309	1543	30	6
14.5	16	6	39	44.6	90	500	463	309	1543	29	6
14.5	16	6	40	45.5	87	500	463	309	1543	28	6
14.5	16	6	41	46.4	84	500	463	309	1543	27	5
14.5	16	6	42	47.3	80	500	463	309	1543	26	5
14.5	16	6	43	48.2	78	500	463	309	1543	25	5
14.5	16	6	44	49.1	75	500	463	309	1543	24	5
14.5	16	6	45	50.0	72	500	463	309	1543	23	5
14.5	16	6	46	50.9	70	500	463	309	1543	23	5
14.5	16	6	47	51.8	67	500	463	309	1543	22	4
14.5	16	6	48	52.7	65	500	463	309	1543	21	4
14.5	16	6	49	53.6	63	500	463	309	1543	20	4
14.5	16	6	50	54.5	61	500	463	309	1543	20	4
14.5	16	6	51	55.7	58	500	463	309	1543	19	4
14.5	16	6	52	56.7	56	500	463	309	1543	18	4
14.5	16	6	53	57.6	54	500	463	309	1543	18	4
14.5	16	6	54	58.5	53	500	463	309	1543	17	3
14.5	16	6	55	59.4	51	500	463	309	1543	16	3
14.5	16	6	56	60.4	49	500	463	309	1543	16	3
14.5	16	6	57	61.3	48	500	463	309	1543	16	3
14.5	16	6	58	62.2	46	500	463	309	1543	15	3
14.5	16	6	59	63.1	45	500	463	309	1543	15	3
14.5	16	6	60	64.1	44	500	463	309	1543	14	3
14.5	16	6	61	65.0	43	500	463	309	1543	14	3
14.5	16	6	62	66.0	41	500	463	309	1543	13	3
14.5	16	6	63	66.9	40	500	463	309	1543	13	3
14.5	16	6	64	67.8	39	500	463	309	1543	13	3
14.5	16	6	65	68.8	38	500	463	309	1543	12	2
14.5	16	6	66	69.7	37	500	463	309	1543	12	2
14.5	16	6	67	70.7	36	500	463	309	1543	12	2
14.5	16	6	68	71.6	35	500	463	309	1543	11	2
14.5	16	6	69	72.6	34	500	463	309	1543	11	2
14.5	16	6	70	73.5	33	500	463	309	1543	11	2
14.5	16	6	71	74.5	32	500	463	309	1543	10	2
14.5	16	6	72	75.4	32	500	463	309	1543	10	2

PPD Pager (463.650 MHZ)

Tower Height (ft)	Antenna Height (ft)	Human Height (ft)	Distance Base (ft)	Slope (R) Distance (ft)	Power Density (s) ($\mu W/cm^{2)}$	Power (ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
18	18	6	1	26.3	259	500	463	309	1543	84	17
18	18	6	2	26.4	258	500	463	309	1543	84	17
18	18	6	3	26.5	256	500	463	309	1543	83	17
18	18	6	4	26.6	254	500	463	309	1543	82	16
18	18	6	5	26.8	250	500	463	309	1543	81	16
18	18	6	6	27.0	247	500	463	309	1543	80	16
18	18	6	7	27.2	242	500	463	309	1543	78	16
18	18	6	8	27.5	237	500	463	309	1543	77	15
18	18	6	9	27.8	232	500	463	309	1543	75	15
18	18	6	10	28.2	227	500	463	309	1543	73	15
18	18	6	11	28.5	221	500	463	309	1543	72	14
18	18	6	12	28.9	215	500	463	309	1543	70	14
18	18	6	13	29.4	209	500	463	309	1543	68	14
18	18	6	14	29.8	202	500	463	309	1543	66	13
18	18	6	15	30.3	196	500	463	309	1543	63	13
18	18	6	16	30.8	189	500	463	309	1543	61	12
18	18	6	17	31.3	183	500	463	309	1543	59	12
18	18	6	18	31.9	177	500	463	309	1543	57	11
18	18	6	19	32.5	171	500	463	309	1543	55	11
18	18	6	20	33.1	164	500	463	309	1543	53	11
18	18	6	21	33.7	159	500	463	309	1543	51	10
18	18	6	22	34.3	153	500	463	309	1543	49	10
18	18	6	23	35.0	147	500	463	309	1543	48	10
18	18	6	24	35.6	142	500	463	309	1543	46	9
18	18	6	25	36.3	136	500	463	309	1543	44	9
18	18	6	26	37.0	131	500	463	309	1543	43	9
18	18	6	27	37.7	126	500	463	309	1543	41	8
18	18	6	28	38.4	122	500	463	309	1543	39	8
18	18	6	29	39.2	117	500	463	309	1543	38	8
18	18	6	30	39.9	113	500	463	309	1543	37	7
18	18	6	31	40.7	109	500	463	309	1543	35	7
18	18	6	32	41.4	105	500	463	309	1543	34	7
18	18	6	33	42.2	101	500	463	309	1543	33	7
18	18	6	34	43.0	97	500	463	309	1543	31	6
18	18	6	35	43.8	94	500	463	309	1543	30	6
18	18	6	36	44.6	90	500	463	309	1543	29	6
18	18	6	37	45.4	87	500	463	309	1543	28	6
18	18	6	38	46.2	84	500	463	309	1543	27	5
18	18	6	39	47.1	81	500	463	309	1543	26	5

PPD Pager (463.650 MHZ)

Tower (ft)	Antenna (ft)	Human (ft)	Distance (ft)	Slope (R) (ft)	Power Density (S) ($\mu W/cm^{2)}$	Power (ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
29	18	6	40	54.8	60	500	463	309	1543	19	4
29	18	6	41	55.6	58	500	463	309	1543	19	4
29	18	6	42	56.3	57	500	463	309	1543	18	4
29	18	6	43	57.1	55	500	463	309	1543	18	4
29	18	6	44	57.8	54	500	463	309	1543	17	3
29	18	6	45	58.6	52	500	463	309	1543	17	3
29	18	6	46	59.4	51	500	463	309	1543	17	3
29	18	6	47	60.1	50	500	463	309	1543	16	3
29	18	6	48	60.9	48	500	463	309	1543	16	3
29	18	6	49	61.7	47	500	463	309	1543	15	3
29	18	6	50	62.5	46	500	463	309	1543	15	3
29	18	6	51	63.6	44	500	463	309	1543	14	3

800MHz Tower Height (ft)	Antenna Height (ft)	Penthouse Human Height (ft)	Roof Distance Base (ft)	Slope Distance (ft)	Power Density ($\mu W/cm^{2)}$	(ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
18	14	6	1	24.3	1353	2220	810	540	2700	251	50
18	14	6	2	24.4	1346	2220	810	540	2700	249	50
18	14	6	3	24.5	1335	2220	810	540	2700	247	49
18	14	6	4	24.6	1319	2220	810	540	2700	244	49
18	14	6	5	24.8	1300	2220	810	540	2700	241	48
18	14	6	6	25.0	1277	2220	810	540	2700	236	47
18	14	6	7	25.3	1251	2220	810	540	2700	232	46
18	14	6	8	25.6	1222	2220	810	540	2700	226	45
18	14	6	9	25.9	1191	2220	810	540	2700	221	44
18	14	6	10	26.2	1158	2220	810	540	2700	215	43
18	14	6	11	26.6	1124	2220	810	540	2700	208	42
18	14	6	12	27.1	1089	2220	810	540	2700	202	40
18	14	6	13	27.5	1053	2220	810	540	2700	195	39
18	14	6	14	28.0	1017	2220	810	540	2700	188	38
18	14	6	15	28.5	980	2220	810	540	2700	182	36
18	14	6	16	29.1	945	2220	810	540	2700	175	35
18	14	6	17	29.6	909	2220	810	540	2700	168	34
18	14	6	18	30.2	874	2220	810	540	2700	162	32
18	14	6	19	30.8	840	2220	810	540	2700	156	31
18	14	6	20	31.4	807	2220	810	540	2700	149	30
18	14	6	21	32.1	775	2220	810	540	2700	143	29
18	14	6	22	32.8	744	2220	810	540	2700	138	28
18	14	6	23	33.4	714	2220	810	540	2700	132	26
18	14	6	24	34.1	685	2220	810	540	2700	127	25
18	14	6	25	34.8	657	2220	810	540	2700	122	24
18	14	6	26	35.6	631	2220	810	540	2700	117	23
18	14	6	27	36.3	606	2220	810	540	2700	112	22
18	14	6	28	37.1	581	2220	810	540	2700	108	22
18	14	6	29	37.8	558	2220	810	540	2700	103	21
18	14	6	30	38.6	536	2220	810	540	2700	99	20
18	14	6	31	39.4	515	2220	810	540	2700	95	19
18	14	6	32	40.2	495	2220	810	540	2700	92	18
18	14	6	33	41.0	476	2220	810	540	2700	88	18
18	14	6	34	41.8	457	2220	810	540	2700	85	17
18	14	6	35	42.6	440	2220	810	540	2700	81	16
18	14	6	36	43.4	423	2220	810	540	2700	78	16

800MHz Tower Height (ft)	Antenna Height (ft)	Penthouse Human Height (ft)	Roof Distance Base (ft)	Slope Distance (ft)	Power Density ($\mu W/cm^{2)}$	(ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
18	14	6	37	44.2	408	2220	810	540	2700	75	15
18	14	6	38	45.1	393	2220	810	540	2700	73	15
18	14	6	39	45.9	378	2220	810	540	2700	70	14
18	14	6	40	46.8	365	2220	810	540	2700	68	14
18	14	6	41	47.6	352	2220	810	540	2700	65	13
18	14	6	42	48.5	339	2220	810	540	2700	63	13
18	14	6	43	49.4	327	2220	810	540	2700	61	12
18	14	6	44	50.2	316	2220	810	540	2700	59	12
18	14	6	45	51.1	305	2220	810	540	2700	57	11
18	14	6	46	52.0	295	2220	810	540	2700	55	11
18	14	6	47	52.9	285	2220	810	540	2700	53	11
18	14	6	48	53.8	276	2220	810	540	2700	51	10
18	14	6	49	54.7	267	2220	810	540	2700	49	10
18	14	6	50	55.6	258	2220	810	540	2700	48	10
18	14	6	51	56.8	247	2220	810	540	2700	46	9
18	14	6	52	57.7	240	2220	810	540	2700	44	9
18	14	6	53	58.6	232	2220	810	540	2700	43	9
18	14	6	54	59.5	225	2220	810	540	2700	42	8
18	14	6	55	60.4	219	2220	810	540	2700	40	8
18	14	6	56	61.3	212	2220	810	540	2700	39	8
18	14	6	57	62.2	206	2220	810	540	2700	38	8
18	14	6	58	63.2	200	2220	810	540	2700	37	7
18	14	6	59	64.1	194	2220	810	540	2700	36	7
18	14	6	60	65.0	189	2220	810	540	2700	35	7
18	14	6	61	65.9	184	2220	810	540	2700	34	7
18	14	6	62	66.9	179	2220	810	540	2700	33	7
18	14	6	63	67.8	174	2220	810	540	2700	32	6
18	14	6	64	68.7	169	2220	810	540	2700	31	6
18	14	6	65	69.6	165	2220	810	540	2700	30	6
18	14	6	66	70.6	160	2220	810	540	2700	30	6
18	14	6	67	71.5	156	2220	810	540	2700	29	6
18	14	6	68	72.4	152	2220	810	540	2700	28	6
18	14	6	69	73.4	148	2220	810	540	2700	27	5
18	14	6	70	74.3	144	2220	810	540	2700	27	5
18	14	6	71	75.3	141	2220	810	540	2700	26	5
18	14	6	72	76.2	137	2220	810	540	2700	25	5

WRFL Tower Height (ft)	(88.1) Antenna Height (ft)	Human Height (ft)	Distance Base (ft)	Slope Distance (ft)	Power Density ($\mu W/cm^{2)}$	(ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
14	12	6	1	19.1	246	250	88.1	200	1000	123	25
14	12	6	2	19.2	244	250	88.1	200	1000	122	24
14	12	6	3	19.3	241	250	88.1	200	1000	120	24
14	12	6	4	19.5	237	250	88.1	200	1000	118	24
14	12	6	5	19.7	231	250	88.1	200	1000	116	23
14	12	6	6	20.0	225	250	88.1	200	1000	112	22
14	12	6	7	20.3	218	250	88.1	200	1000	109	22
14	12	6	8	20.7	210	250	88.1	200	1000	105	21
14	12	6	9	21.1	202	250	88.1	200	1000	101	20
14	12	6	10	21.5	194	250	88.1	200	1000	97	19
14	12	6	11	22.0	185	250	88.1	200	1000	93	19
14	12	6	12	22.5	177	250	88.1	200	1000	88	18
14	12	6	13	23.1	169	250	88.1	200	1000	84	17
14	12	6	14	23.7	160	250	88.1	200	1000	80	16
14	12	6	15	24.3	153	250	88.1	200	1000	76	15
14	12	6	16	24.9	145	250	88.1	200	1000	72	14
14	12	6	17	25.6	138	250	88.1	200	1000	69	14
14	12	6	18	26.2	131	250	88.1	200	1000	65	13
14	12	6	19	26.9	124	250	88.1	200	1000	62	12
14	12	6	20	27.6	118	250	88.1	200	1000	59	12
14	12	6	21	28.4	112	250	88.1	200	1000	56	11
14	12	6	22	29.1	106	250	88.1	200	1000	53	11
14	12	6	23	29.9	101	250	88.1	200	1000	50	10
14	12	6	24	30.7	96	250	88.1	200	1000	48	10
14	12	6	25	31.4	91	250	88.1	200	1000	45	9
14	12	6	26	32.2	86	250	88.1	200	1000	43	9
14	12	6	27	33.1	82	250	88.1	200	1000	41	8
14	12	6	28	33.9	78	250	88.1	200	1000	39	8
14	12	6	29	34.7	75	250	88.1	200	1000	37	7
14	12	6	30	35.6	71	250	88.1	200	1000	36	7
14	12	6	31	36.4	68	250	88.1	200	1000	34	7
14	12	6	32	37.3	65	250	88.1	200	1000	32	6
14	12	6	33	38.1	62	250	88.1	200	1000	31	6
14	12	6	34	39.0	59	250	88.1	200	1000	30	6
14	12	6	35	39.9	57	250	88.1	200	1000	28	6

WRFL Tower Height (ft)	(88.1) Antenna Height (ft)	Human Height (ft)	Distance Base (ft)	Slope Distance (ft)	Power Density ($\mu W/cm^{2)}$	(ERP) (Watts)	Frequency (MHz)	MPE General	MPE Occupational	% MPE General	% MPE Occupational
14	12	6	36	40.7	54	250	88.1	200	1000	27	5
14	12	6	37	41.6	52	250	88.1	200	1000	26	5
14	12	6	38	42.5	50	250	88.1	200	1000	25	5
14	12	6	39	43.4	48	250	88.1	200	1000	24	5
14	12	6	40	44.3	46	250	88.1	200	1000	23	5
14	12	6	41	45.2	44	250	88.1	200	1000	22	4
14	12	6	42	46.1	42	250	88.1	200	1000	21	4
14	12	6	43	47.0	41	250	88.1	200	1000	20	4
14	12	6	44	48.0	39	250	88.1	200	1000	20	4
14	12	6	45	48.9	38	250	88.1	200	1000	19	4
14	12	6	46	49.8	36	250	88.1	200	1000	18	4
14	12	6	47	50.7	35	250	88.1	200	1000	17	3
14	12	6	48	51.7	34	250	88.1	200	1000	17	3
14	12	6	49	52.6	33	250	88.1	200	1000	16	3
14	12	6	50	53.5	31	250	88.1	200	1000	16	3
14	12	6	51	54.8	30	250	88.1	200	1000	15	3

Combined MPE Central Tower

Patterson Office Tower

Distance Base (ft)	Pager % MPE General	Pager % MPE Occupational	Antenna 1 % MPE General	Antenna 1 % MPE Occupational	WRFL -FM % MPE General	WRFL-FM % MPE Occupational	Combined % MPE General	Combined % MPE Occupational
1	84	17	34	7	123	25	241	48
2	84	17	34	7	122	24	239	48
3	83	17	33	7	120	24	237	47
4	82	16	33	7	118	24	234	47
5	81	16	33	7	116	23	230	46
6	80	16	33	7	112	22	225	45
7	78	16	33	7	109	22	220	44
8	77	15	32	6	105	21	214	43
9	75	15	32	6	101	20	208	42
10	73	15	31	6	97	19	202	40
11	72	14	31	6	93	19	195	39
12	70	14	30	6	88	18	188	38
13	68	14	30	6	84	17	182	36
14	66	13	29	6	80	16	175	35
15	63	13	29	6	76	15	169	34
16	61	12	28	6	72	14	162	32
17	59	12	28	6	69	14	156	31
18	57	11	27	5	65	13	150	30
19	55	11	27	5	62	12	144	29
20	53	11	26	5	59	12	138	28
21	51	10	25	5	56	11	133	27
22	49	10	25	5	53	11	127	25
23	48	10	24	5	50	10	122	24
24	46	9	24	5	48	10	117	23
25	44	9	23	5	45	9	113	23
26	43	9	22	4	43	9	108	22
27	41	8	22	4	41	8	104	21
28	39	8	21	4	39	8	100	20
29	38	8	21	4	37	7	96	19
30	37	7	20	4	36	7	92	18
31	35	7	20	4	34	7	89	18
32	34	7	19	4	32	6	85	17
33	33	7	19	4	31	6	82	16
34	31	6	18	4	30	6	79	16
35	30	6	18	4	28	6	76	15
36	29	6	17	3	27	5	73	15

Combined MPE Central Tower

Patterson Office Tower

37	28	6	17	3	26	5	71	14

Distance Base (ft)	Pager % MPE General	Pager % MPE Occupational	Antenna 1 % MPE General	Antenna 1 % MPE Occupational	WRFL -FM % MPE General	WRFL-FM % MPE Occupational	Combined % MPE General	Combined % MPE Occupational
38	27	5	16	3	25	5	68	14
39	26	5	16	3	24	5	66	13
40	19	4	15	3	23	5	58	12
41	19	4	15	3	22	4	56	11
42	18	4	15	3	21	4	54	11
43	18	4	14	3	20	4	52	11
44	17	3	14	3	20	4	51	10
45	17	3	13	3	19	4	49	10
46	17	3	13	3	18	4	48	10
47	16	3	13	3	17	3	46	9
48	16	3	12	2	17	3	45	9
49	15	3	12	2	16	3	44	9
50	15	3	12	2	16	3	42	8

Upper Distance Base (ft)	Channel 3 % MPE General	Channel 3 % MPE Occupational	Channel 4 % MPE General	Channel 4 % MPE Occupational	Backup % MPE General	Backup % MPE Occupational	Combined % MPE General	Combined % MPE Occupational
1	73	15	96	19	124	25	292	58
2	72	14	96	19	123	25	291	58
3	72	14	95	19	122	24	288	58
4	71	14	93	19	120	24	284	57
5	70	14	92	18	118	24	279	56
6	69	14	90	18	115	23	273	55
7	67	13	87	17	112	22	267	53
8	66	13	85	17	109	22	260	52
9	64	13	82	16	106	21	252	50
10	63	13	79	16	102	20	244	49
11	61	12	77	15	98	20	236	47
12	59	12	74	15	95	19	228	46
13	57	11	71	14	91	18	219	44
14	56	11	68	14	87	17	211	42
15	54	11	65	13	84	17	203	41
16	52	10	62	12	80	16	194	39
17	50	10	60	12	77	15	186	37
18	48	10	57	11	73	15	179	36
19	46	9	55	11	70	14	171	34
20	45	9	52	10	67	13	164	33
21	43	9	50	10	64	13	157	31
22	41	8	47	9	61	12	150	30
23	40	8	45	9	58	12	143	29
24	38	8	43	9	56	11	137	27
25	37	7	41	8	53	11	131	26
26	35	7	40	8	51	10	126	25
27	34	7	38	8	49	10	120	24
28	33	7	36	7	46	9	115	23
29	31	6	35	7	44	9	110	22
30	30	6	33	7	43	9	106	21
31	29	6	32	6	41	8	101	20
32	28	6	30	6	39	8	97	19
33	27	5	29	6	37	7	93	19
34	26	5	28	6	36	7	90	18
35	25	5	27	5	34	7	86	17
36	24	5	26	5	33	7	83	17

37	23	5	25	5	32	6	79	16

Distance Base (ft)	Channel 3 % MPE General	Channel 3 % MPE Occupational	Channel 4 % MPE General	Channel 4 % MPE Occupational	Backup % MPE General	Backup % MPE Occupational	Combined % MPE General	Combined % MPE Occupational
38	22	4	24	5	30	6	76	15
39	22	4	23	5	29	6	74	15
40	21	4	22	4	28	6	71	14
41	20	4	21	4	27	5	68	14
42	19	4	20	4	26	5	66	13
43	19	4	20	4	25	5	63	13
44	18	4	19	4	24	5	61	12
45	17	3	18	4	23	5	59	12
46	17	3	18	4	23	5	57	11
47	16	3	17	3	22	4	55	11
48	16	3	16	3	21	4	53	11
49	15	3	16	3	20	4	51	10
50	15	3	15	3	20	4	50	10
51	17	3	15	3	19	4	51	10
52	17	3	14	3	18	4	49	10
53	16	3	14	3	18	4	47	9
54	16	3	13	3	17	3	46	9
55	15	3	13	3	16	3	44	9
56	15	3	12	2	16	3	43	9
57	14	3	12	2	16	3	42	8
58	14	3	12	2	15	3	40	8
59	13	3	11	2	15	3	39	8
60	13	3	11	2	14	3	38	8
61	12	2	11	2	14	3	37	7
62	12	2	10	2	13	3	36	7
63	12	2	10	2	13	3	35	7
64	11	2	10	2	13	3	34	7
65	11	2	10	2	12	2	33	7
66	11	2	9	2	12	2	32	6
67	10	2	9	2	12	2	31	6
68	10	2	9	2	11	2	30	6
69	10	2	9	2	11	2	29	6
70	9	2	8	2	11	2	29	6
71	9	2	8	2	10	2	28	6
72	9	2	8	2	10	2	27	5
73	9	2	8	2	10	2	26	5