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EM-SPRINT-052-041004

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September 30, 2004

Hon. Pamela B. Katz,
Chairperson
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051



RE: **NOTICE OF INTENT TO MODIFY AN EXISTING
TELECOMMUNICATIONS FACILITY AT
Rattlesnake Mountain, Farmington, Connecticut**

The Honorable Pamela B. Katz:

Sprint Spectrum LP ("Sprint") by and through its agent SBA Network Services, Inc. hereby respectfully requests acknowledgment that the proposed co-location of Sprint on an existing telecommunications tower owned by Communications Site Management, LLC and located off of Colt Highway on Rattlesnake Mountain, Farmington, Connecticut (the "Rattlesnake Mountain Facility") constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72. In accordance with R.C.S.A. Section 16-50j-73, a copy of this letter has been sent to Bruce A. Chudwick, Chair of the Farmington Town Council.

The Rattlesnake Mountain Facility

The Rattlesnake Mountain Facility consists of a 1339 foot monopole adjacent to an existing building which will house the proposed equipment. The facility currently supports the antenna arrays and related equipment of several carriers/entities already approved by the Connecticut Siting Council, including Verizon and XM Satellite Radio.

Sprint's Facility

Sprint will install 9 panel antennas at an antenna center line height of approximately 160 feet and a donor antenna at approximately 75'. A structural integrity report, attached, or to be attached upon receipt, as Exhibit A confirms that the tower is structurally capable of supporting Sprint's proposed antennas. Sprint will also install its equipment (2 equipment cabinets and 1 Battery Cabinet) in a 9'6" x 25' area in the adjacent existing building.

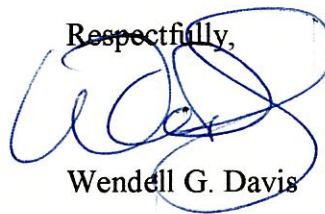
Sprints' Facility Constitutes An Exempt Modification

For the following reasons, the proposed modifications to the Rattlesnake Mountain Facility meet the exempt modification criteria set forth in R.C.S.A. Section 16-50j-72(b)(2):

1. As evidenced by the attached Tower Elevation Drawing (Exhibit B), the proposed modification will not increase the height of the tower as Sprint's antennas will be installed at a center line height of approximately 160 and 75 feet on an existing 1339' tower.
2. As evidenced by the attached Site Plan Drawing (Exhibit B), the installation of Sprint's equipment will not require an extension of the existing site boundaries.
3. The proposed modifications will not increase the noise levels at the existing facility by six decibels or more.
4. As set forth in the Power Density Report prepared by C-Squared Systems, LLC attached as Exhibit C, the operation of the additional antennas will not increase the total radio frequency (RF) electromagnetic radiation power density to a level at or above the standards adopted by the Connecticut Department of Environmental Protection and/or the Federal Communications Commission.

For the foregoing reasons, Sprint respectfully submits that the proposed addition of Sprints' antenna and equipment at the Rattlesnake Mountain Facility constitutes an exempt modification under R.C.S.A. Section 16-50j-72.

Respectfully,

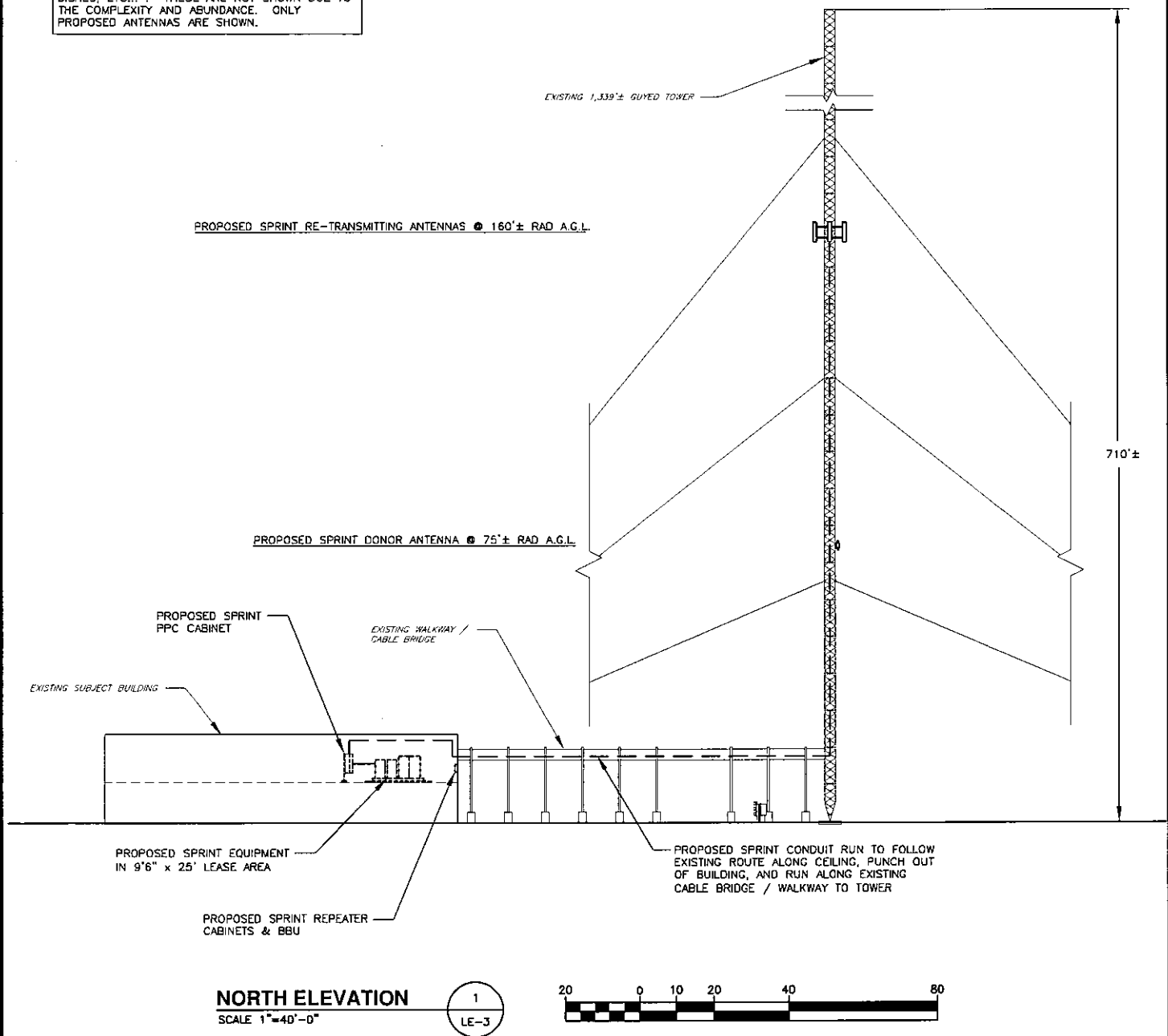


Wendell G. Davis

cc: The Honorable Bruce A. Chudwick, Chair - Farmington Town Council
Aaron Cowher, SBA, Agent for Sprint

EXHIBIT B

NOTE:
 THE EXISTING TOWER CONTAINS MULTIPLE ANTENNAS, DISHES, ETC... THESE ARE NOT SHOWN DUE TO THE COMPLEXITY AND ABUNDANCE. ONLY PROPOSED ANTENNAS ARE SHOWN.



SHEET 3 OF 3



341 North Avenue
 Wakefield, MA 01880
 tel. (781) 245 6388
 fax (781) 245 4010
 e-mail eamon@aerialspectrum.com

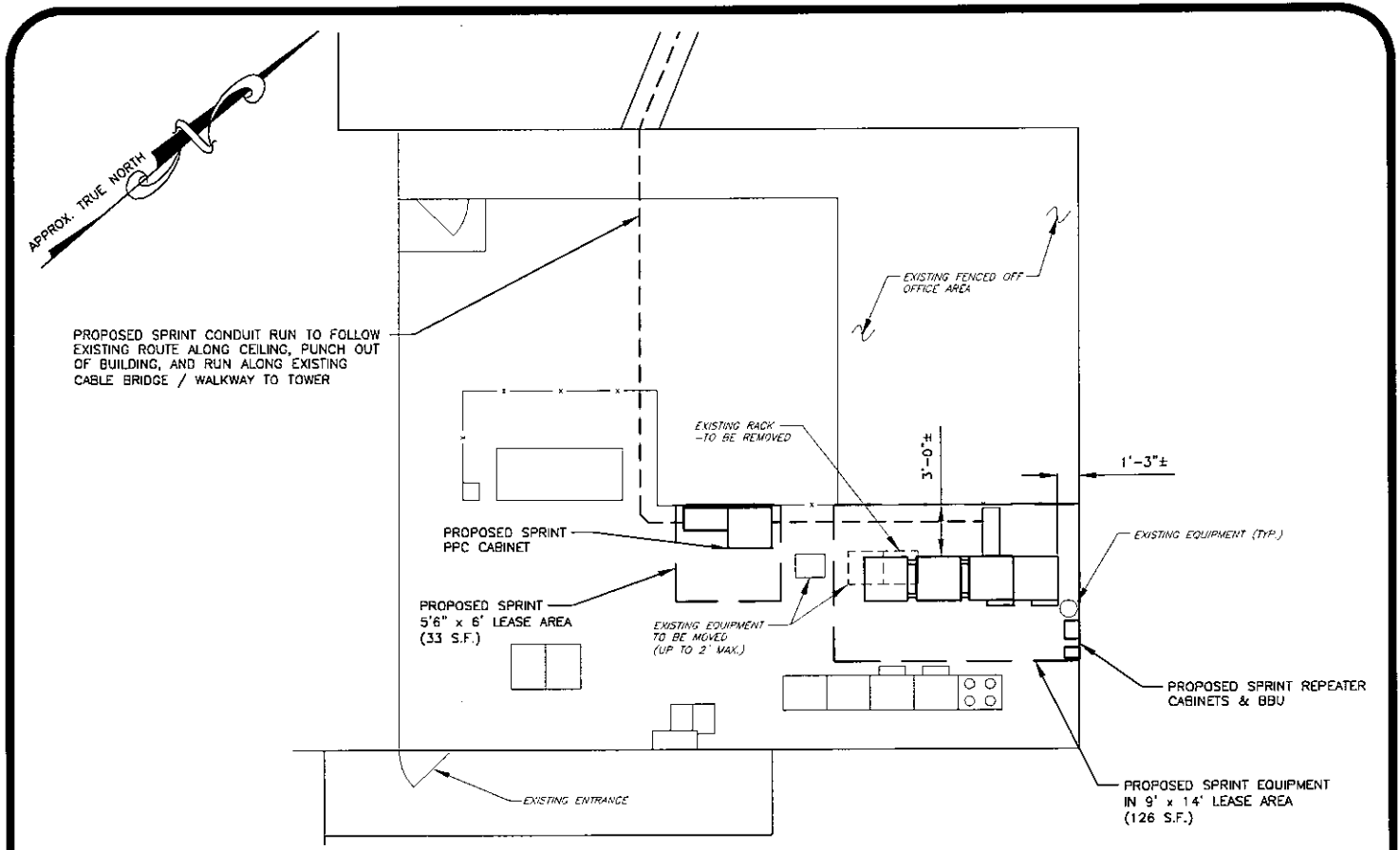
SITE NAME: COMMUNICATIONS SITE MANAGEMENT
CASCADE NO: CT03XR100-A
LEASE EXHIBIT REV: 0 **DATE:** 08-12-04



6580 SPRINT PARKWAY
 OVERLAND PARK, KS 66251

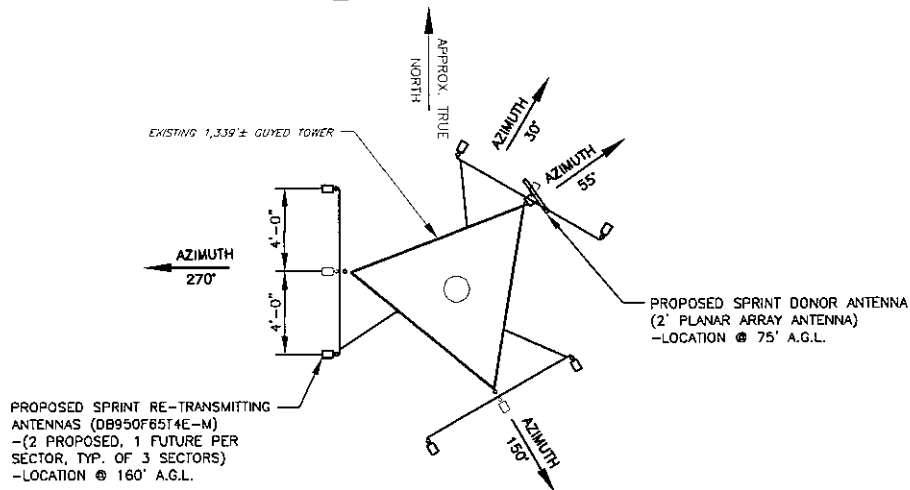
190 COLT HIGHWAY
 FARMINGTON, CT 06032

EXHIBIT B



EQUIPMENT LAYOUT
SCALE 1"=10'-0"

1
LE-2



ANTENNA LAYOUT
SCALE = NTS

2
LE-2

SHEET 2 OF 3



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SITE NAME: COMMUNICATIONS SITE MANAGEMENT
CASCADE NO: CT03XR100-A
LEASE EXHIBIT REV: 0 DATE: 08-12-04



6580 SPRINT PARKWAY
OVERLAND PARK, KS 66251

190 COLT HIGHWAY
FARMINGTON, CT 06032



C Squared Systems, LLC
13 Forest Drive
East Kingston, NH 03827
Phone 603-758-1013
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Calculated Radio Frequency Emissions

190 Colt Highway, Farmington, CT

Sprint PCS



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1. Introduction

The purpose of this report is to investigate compliance with applicable federal, state and local EMF regulations for the 1339-foot wireless telecommunications facility at 190 Colt Highway in Farmington, CT.

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are much more conservative (higher) than the actual signal levels will be from the finished installation.

The results will be listed as a percentage of current Maximum Permissible Exposure (% MPE) limits as listed in the FCC OET Bulletin 65 Edition 97-01. Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ emitted is called the power density. The general population exposure limit for the cellular band is about $580 \mu\text{W}/\text{cm}^2$, and the general population exposure limit for the PCS band and above is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

2. Wireless Phone Service Provider Site Data

Carrier	Freq (MHz)	# of Channels per Sector	# of Sectors	Height of Antenna
Verizon*	875	9	3	235'
Verizon*	1900	3	3	235'
Sprint PCS	1965	11	1	160'

* Parameters for these carriers were not needed as power density values were obtained from a previous Verizon Wireless filing.

3. RF Exposure Prediction Methods

The FCC has established the following equation to estimate the power density in the far-field region.

$$\text{Power Density} = \left(\frac{4 \times \text{EIRP}}{4 \times \pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial distance = $\sqrt{H^2 + V^2}$

H = Horizontal distance from antenna

V = Vertical distance from bottom of antenna

Maximum Off beam loss is limited to 10 dB to insure conservative results

4. FCC Guidelines for Evaluating RF Radiation Exposure Limits

The Federal Communications Commission (FCC) OET Bulletin 65, Edition 97-01 dated August 1997 outlines requirements for radio frequency exposure and provides guidelines for determining whether proposed or existing transmitting facilities, operations or devices comply with limits for radio frequency exposure. These requirements include limits for Maximum Permissible Exposure (MPE) for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP), the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

Radiation can be broadly broken into two groupings; ionizing and non-ionizing. Ionizing means that there is enough energy to cause electrons to be stripped from atoms "ionizing" the atom and changing its characteristics. Non-ionizing radiation means that there is not enough energy to create ions. It only causes vibrations or oscillations of the atoms, which results in heat but does not strip electrons from atoms. Non-ionizing radiation is usually absorbed as heat in the human body and its parts. Ionizing radiation occurs at frequencies exceeding 1,000,000,000 MHz. All PCS and Cellular providers operate within a much lower frequency band than those associated with ionizing.

Based on thorough scientific review of the studies and papers, various groups have developed exposure limits below which no health effects are known to occur. Two of the primary groups in the United States are the Institute of Electrical and Electronic Engineers (IEEE) and the National Council on Radiation Protection and Measurement (NCRP). As mentioned previously, the FCC limits are based on exposure limits recommended by these groups. The limits incorporate a safety factor of 50 for the general public populations. This means that the exposure limit set is at least 50 times below the level where any changes are noticeable. The impact of human exposure to levels equivalent to the limit set by the FCC is practically indistinguishable from the impact of normal ambient temperature variation, exposure to the sun, exercise, etc.

The attachments labeled Table 1 and Figure 1 are excerpts from OET Bulletin 65 and define the Maximum Exposure Limit. As shown in these excerpts, each frequency band has different exposure limits, requiring power density to be reported as a percent of Maximum Permissible Exposure (MPE) when dealing with carriers transmitting in different frequency bands.

5. Calculation Results

The calculated results indicate that radio frequency emissions expected from the wireless phone service providers at this installation are significantly less than the regulatory emission limits for public exposure. Specific maximum power densities and their percentage of the limits are listed below for each individual carrier.

Carrier Maximum Power Densities

Carrier	Calculated Maximum Power Density ($\mu\text{W}/\text{cm}^2$)**	MPE Limit ($\mu\text{W}/\text{cm}^2$)	Max % Limits
Verizon*	11.70	583.3	2.01
Verizon*	3.9	1000	0.39
Sprint PCS	66.86	1000	6.69

* Power density values were obtained from a previous Verizon Wireless filing.

** Results do not include attenuation due to antenna pattern and assume transmitters are at full power and pointed directly at the ground (unless otherwise specified).

Cumulative Percent of Maximum Permissible Exposure

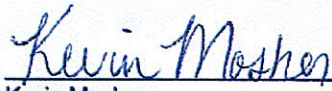
	Max % Limits
Cumulative	9.09

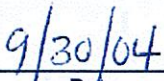
6. Conclusion

All of the calculations in this report were computed for the 1339-foot wireless facility in Farmington, CT. As can be seen from the above tables and attachments, the expected aggregate radio frequency emissions from the wireless phone service providers at the proposed installation are well below the regulatory emission limits for general public exposure, even under very conservative assumptions. The highest aggregate percent Maximum Permissible Exposure is 9.09% of the FCC limits for the general public as outlined in FCC OET Bulletin 65 Edition 97-01.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations were computed in accordance with and using techniques in compliance with ANSI/IEEE Std. C95.3, ANSI/IEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.


Kevin Mosher
C Squared Systems, LLC


Date

References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Table 1. LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)**(A) Limits for Occupational/Controlled Exposure**

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz

*Plane-wave equivalent power density

NOTE 1: *Occupational/controlled* 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. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2: *General population/uncontrolled* exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)

Plane-wave Equivalent Power Density

