
Technical Memo

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile PCS antenna installation on a Monopole at 1027 Middle Turnpike East, Manchester, CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from locations surrounding the transmitting location.

2. Discussion:

The following assumptions were used in the calculations:

- 1) The emissions from T-Mobile transmitters are in the 1935-1945 MHz frequency band.
- 2) The antenna array consists of three sectors, with 3 antennas per sector.
- 3) The model number for each antenna is APX16PV-16PVL.
- 4) The antenna center line height is 127 ft.
- 5) The maximum transmit power from any sector is 3185.09 Watts Effective Radiated Power (EIRP) assuming 12 channels per sector.
- 6) All the antennas are simultaneously transmitting and receiving, 24 hours a day.
- 7) Power levels emitting from the antennas are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) The average ground level of the studied area does not change significantly with respect to the transmitting location.

Equations given in "FCC OET Bulletin 65, Edition 97-01" were then used with the above information to perform the calculations.

3. Conclusion:

Based on the above worst case assumptions, the power density calculation from the T-Mobile PCS antenna installation on a Monopole at 1027 Middle Turnpike East, Manchester, CT, is 0.04773 mW/cm². This value represents 4.773% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm²) set forth in the FCC/ANSI/IEEE C95.1-1991. Furthermore, the proposed antenna location for T-Mobile will not interfere with existing public safety communications, AM or FM radio broadcasts, TV, Police Communications, HAM Radio communications or any other signals in the area.

New England Market



Worst Case Power Density

Site:	CTHA075C
Site Address:	1027 Middle Turnpike East
Town:	Manchester
Tower Height:	130 ft.
Tower Style:	Monopole
Base Station TX output	25 W
Number of channels	12
Antenna Model	APX16PV-16PVL
Cable Size	1 5/8
Cable Length	150 ft.
Antenna Height	127.0 ft.
Ground Reflection	1.6
Frequency	1945.0 MHz
Jumper & Connector loss	4.50 dB
Antenna Gain	16.5 dBi
Cable Loss per foot	0.0116 dB
Total Cable Loss	1.7400 dB
Total Attenuation	6.2400 dB
Total EIRP per Channel (In Watts)	54.24 dBm 265.42 W
Total EIRP per Sector (In Watts)	65.03 dBm 3185.09 W
nsg	10.2600
Power Density (S) =	0.047728 mW/cm ²
T-Mobile Worst Case % MPE =	4.7728%
Equation Used :	$S = \frac{(1000)(grf)^2 (Power) 10^{(m/10)}}{4\pi (R)^2}$
	<i>Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997</i>

Co-Location Total

Carrier	% of Standard
Verizon	NA
Cingular	NA
Sprint PCS	NA
AT&T Wireless	NA
Nextel	NA
Total Excluding T-Mobile	0.0000 %
T-Mobile	4.7728
Total % MPE for Site	4.7728%

Relative Gain Power Density

Antenna Relative Gain Factor	0.0 dBi
Total Attenuation	6.2400 dB
Total EIRP per Channel (In Watts)	54.24 dBm 265.42 W
Total EIRP per Sector (In Watts)	65.03 dBm 3185.09 W
nsg	10.2600
Power Density (S) =	0.047728 mW/cm ²
T-Mobile Relative Gain % MPE =	4.7728%