

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

RE: APPLICATION BY T-MOBILE
NORTHEAST LLC FOR A
CERTIFICATE OF ENVIRONMENTAL
COMPATIBILITY AND PUBLIC NEED
FOR A TELECOMMUNICATIONS FACILITY
AT 208 VALLEY ROAD IN THE TOWN
OF NEW CANAAN, CONNECTICUT

DOCKET NO. 401

Date: January 4, 2011

**INTERROGATORY RESPONSES TO CONNECTICUT SITING
COUNCIL FROM APPLICANT T-MOBILE NORTHEAST LLC**

The Applicant, T-Mobile Northeast LLC ("T-Mobile"), submits the following responses to the Pre-Hearing Interrogatories in the Reopening of Evidentiary Hearing propounded by the Connecticut Siting Council in connection with the above-captioned Application.

22. Would T-Mobile's coverage from the proposed facility be reduced since T-Mobile is reducing the proposed number of antennas from six to three?
- A22 Anytime T-Mobile is required to utilize only antenna per sector capacity becomes a concern. Typically T-Mobile will be able to have 2 GSM channels and 2 UMTS channels transmit from each antenna per sector. If additional antennas are not available T-Mobile will be forced to combine additional channels per sector with the existing 2 channels per technology that exist. The downside to combining is that the power at the antenna is effectively cut in half, or reduced by 3 dB. This reduction in power will ultimately reduce the footprints established at the T-Mobile thresholds of -84 dBm for in vehicle coverage and -76 dBm for in building residential coverage. The reduction in footprint is the price to pay for increased capacity from a facility. This is typically a bigger concern in rural areas where there is not a significant amount of overlap with adjacent sites as would typically be seen in urban settings.**

23. Provide a coverage map showing existing and proposed coverage from T-Mobile's antennas using the new configuration using the same parameters as shown in the application.
- A23 Attached are composite and stand alone plots of T-Mobile's proposed CT11098B facility at 117 feet AGL showing the anticipated reduced footprint should additional channels be necessary above the initial two GSM and two UMTS channels per sector.**
24. What is the total area (in square miles) that T-Mobile would cover from the proposed site using the new configuration at a signal strength of -84dBm?
- A24 The total area (in square miles) that T-Mobile would cover from the proposed CT11098B facility at 117 feet AGL with the 3 dB reduction in output power is 1.511 square miles.**
25. What is the length of the existing coverage gap along Valley Road and Silvermine Road with the new configuration and a signal strength of -84 dBm?
- A25 The length of the existing coverage gap along Valley Road / Silvermine Road which travels in a Northwest to Southeast direction is 2.04 miles. The length of the existing coverage gap along Silvermine Road/New Canaan Road which travels in a Southwest to Northeast direction is 1.74 miles.**
26. What is the length of coverage the proposed site would provide along Valley Road and Silvermine Road at using the new configuration and a signal strength of -84dBm?
- A26 With this reduced footprint, the length of coverage the proposed site would provide along Valley Road / Silvermine Road which travels in a Northwest to Southeast direction is 1.60 miles total with 1.16 miles of new -84 dBm coverage. The length of coverage the proposed site would provide along Silvermine Road/New Canaan Road which travels in a Southwest to Northeast direction is 1.53 miles total with 1.12 miles of new -84 dBm coverage.**
27. Provide a revised site plan for compound showing the location of the equipment for all three carriers.
- A27 The revised plans are not yet available for submission. We expect them to be finalized imminently and will submit them as soon as possible.**
28. Provide a revised power density analysis for T-Mobile that accounts for the new antenna configuration.
- A28 Attached.**

29. How would the cost of the proposed facility change from the original proposal?

A29

ORIGINAL FACILITY

The construction costs are estimated at \$200,000, including
Tower and foundation costs of approximately \$85,000;
Site development costs of approximately \$70,000; and
Utility installation costs of approximately \$45,000.

T-Mobile antennas and ground equipment approximately \$55,000 – 65,000.

REVISED FACILITY

The construction costs are estimated at \$187,000, including:
Tower and foundation costs of approximately \$72,000;
Site development costs of approximately \$70,000; and
Utility installation costs remain approximately \$45,000.

T-Mobile antennas and ground equipment remain approximately \$55,000 – 65,000.

Respectfully submitted,

T-MOBILE NORTHEAST LLC


By: 
Julie D. Kohler, Esq.
Jesse A. Langer, Esq.
Cohen and Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604
Tel. (203) 368-0211
Fax (203) 394-9901
jkohler@cohenandwolf.com
jlanger@cohenandwolf.com

CERTIFICATE OF SERVICE

I hereby certify that on this day a copy of the foregoing was delivered by Electronic Mail and First Class U.S. Mail, postage prepaid, to all parties and interveners of record, as follows:

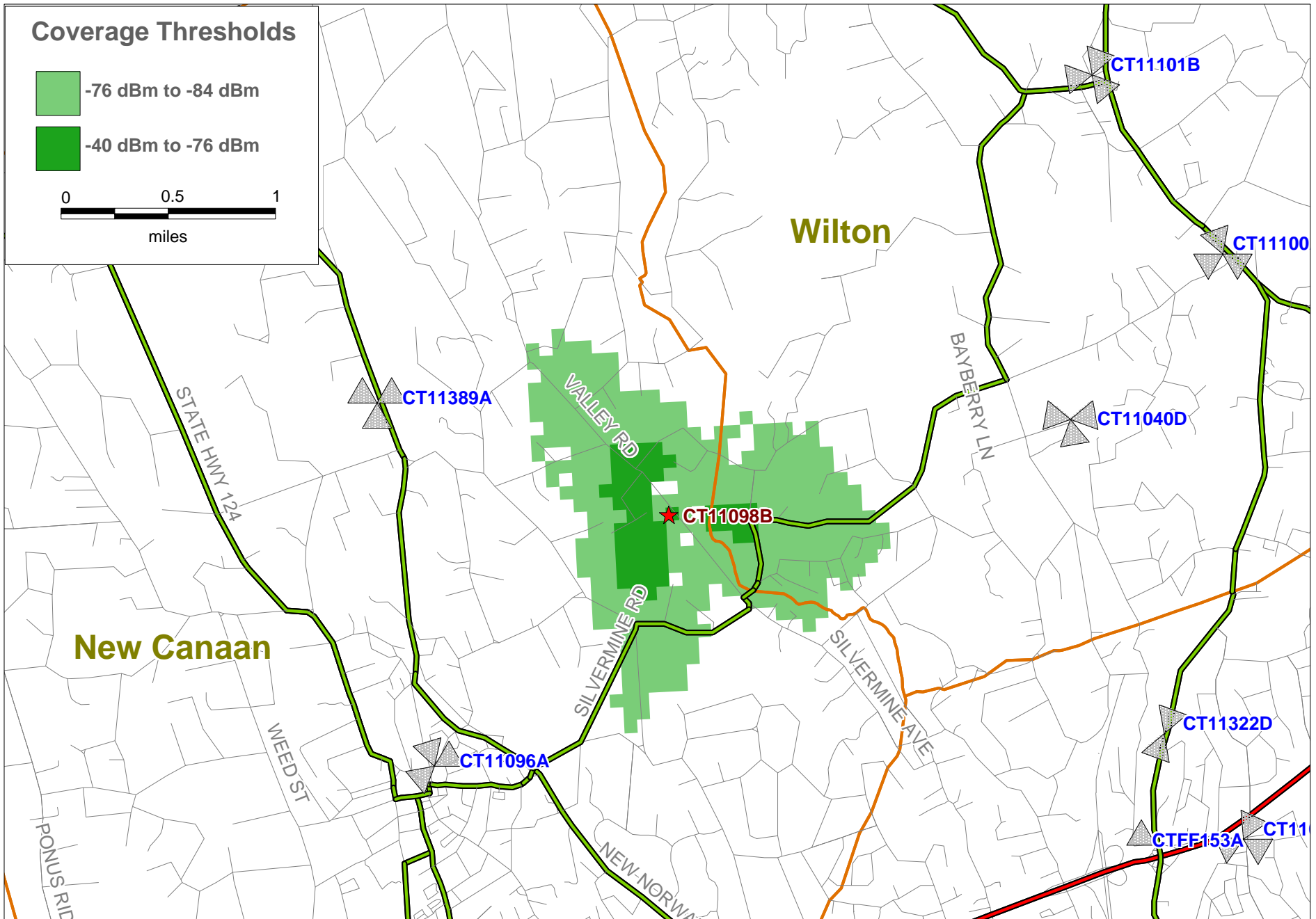
Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597
(Via Email: kbaldwin@rc.com)

Christopher B. Fisher, Esq.
Cuddy & Feder LLP
445 Hamilton Avenue, 14th Floor
White Plains, NY 10601
(Via Email: cfisher@cuddyfeder.com)



Julie D. Kohler

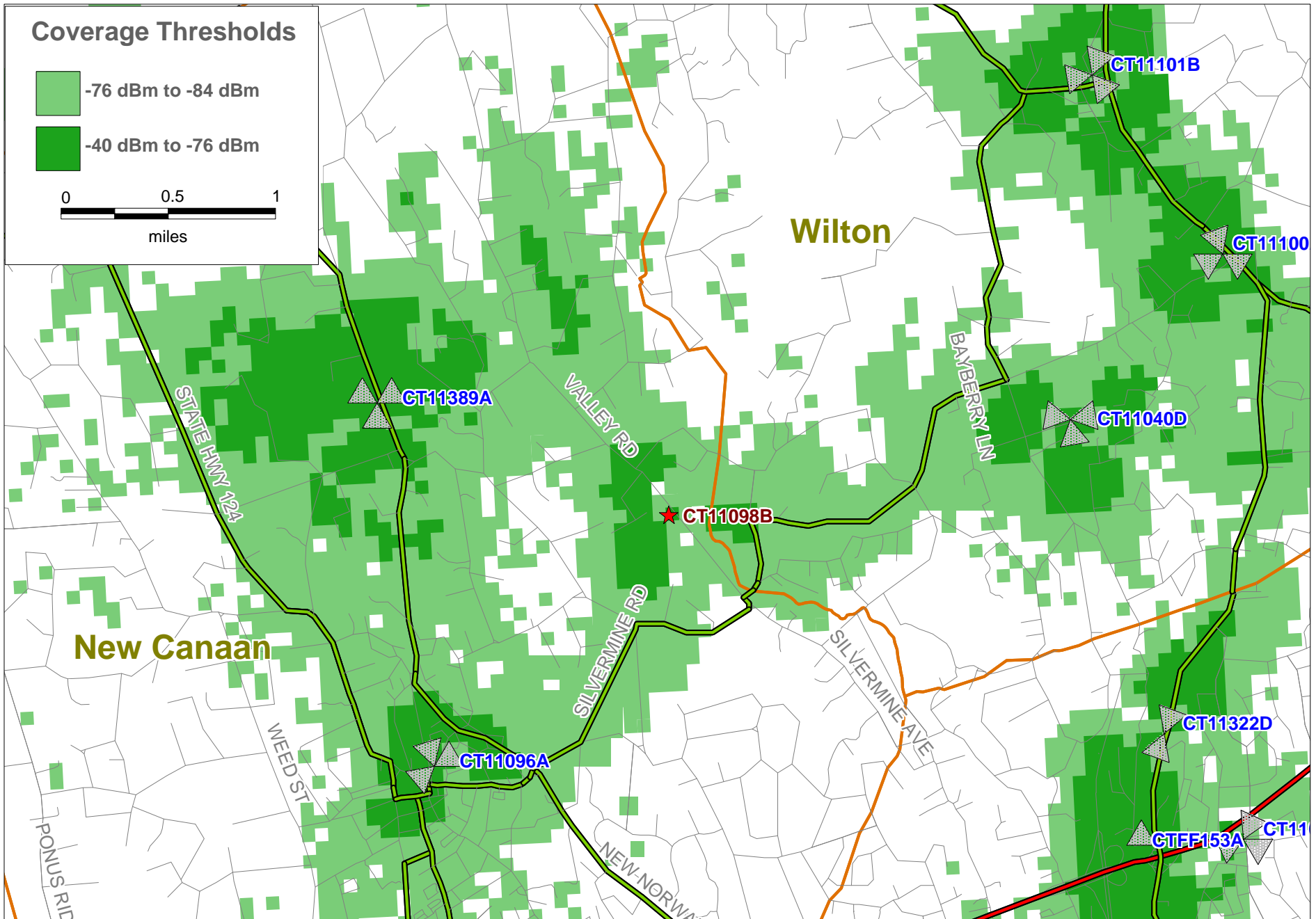
ATTACHMENT A



- T-Mobile -

CT11098B @ 117 ft (3dB reduction)

Coverage Threshold Descriptions
 Dark Green: In-Building Coverage (Residential)
 Light Green: In-Vehicle Coverage



- T-Mobile -

Existing T-Mobile On Air Coverage
With CT11098B @ 117 ft (3dB reduction)

Coverage Threshold Descriptions
Dark Green: In-Building Coverage (Residential)
Light Green: In-Vehicle Coverage

ATTACHMENT B

Connecticut Market



Worst Case Power Density With 3dB attenuation for combiners

Site: CT11098B
Site Address: 208 Valley Road
Town: New Canaan
Tower Height: 120 ft.
Facility Style: Unipole

GSM Data		UMTS Data	
Base Station TX output	20 W	Base Station TX output	40 W
Number of channels	8	Number of channels	2
Antenna Model	APX16DWV-16DWV	Antenna Model	APX16DWV-16DWV
Cable Size	7/8 in.	Cable Size	7/8 in.
Cable Length	135 ft.	Cable Length	125 ft.
Antenna Height	117.0 ft.	Antenna Height	117.0 ft.
Ground Reflection	1.6	Ground Reflection	1.6
Frequency	1945.0 MHz	Frequency	2.1 GHz
Jumper & Connector loss	4.50 dB	Jumper & Connector loss	1.50 dB
Antenna Gain	18.0 dBi	Antenna Gain	18.0 dBi
Cable Loss per foot	0.0186 dB	Cable Loss per foot	0.0116 dB
Total Cable Loss	2.5110 dB	Total Cable Loss	1.4500 dB
Total Attenuation WITH COMBINERS	10.0110 dB	Total Attenuation WITH COMBINERS	5.9500 dB
Total EIRP per Channel (In Watts)	51.00 dBm 125.87 W	Total EIRP per Channel (In Watts)	58.07 dBm 641.30 W
Total EIRP per Sector (In Watts)	60.03 dBm 1006.98 W	Total EIRP per Sector (In Watts)	61.08 dBm 1282.60 W
nsg	7.9890	nsg	12.0500

Power Density (S) = 0.017931 mW/cm²

Power Density (S) = 0.022838 mW/cm²

8

4.0769%

Equation Used :

$$S = \frac{(1000)(grf)^2 (Power)^{nsg}}{4\pi(R)^2}$$

Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997

Technical Memo

To: Ray Vergati
From: Scott Heffernan - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CT11098B
Date: December 17, 2010

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile PCS/UMTS antenna installation on a Unipole at 208 Valley Road, New Canaan, 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 (1940-1950),(2140-2145) & (2110-2120) MHz frequency Bands.
- 2) The antenna array consists of three sectors, with 2 antennas per sector.
- 3) The model number for GSM antenna is APX16DWV-16DWV.
- 3) The model number for UMTS antenna is APX16DWV-16DWV.
- 4) GSM antenna center line height is 117 ft.
- 4) UMTS antenna center line height is 117 ft.
- 5) The maximum transmit power from any GSM sector is 1006.98 Watts Effective Radiated Power (EIRP) assuming 8 channels per sector.
- 5) The maximum transmit power from any UMTS sector is 1282.6 Watts Effective Radiated Power (EIRP) assuming 2 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 Unipole at 208 Valley Road, New Canaan, CT, is 0.04077 mW/cm². This value represents 4.077% 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.

Worst Case Assumptions: is defined as assuming that the main lobe of the transmitting antenna is always focused at the sample point of interest. This assumes that the maximum gain is realized at this point and will yield the highest possible MPE% value possible for that given point / distance. In reality, due to the highly focused nature of the proposed antennas, most of the available energy transmitting from the proposed facility will be directed toward the horizon to best enhance the desired coverage footprint area. The net result is that a very small percentage of the available energy is directed toward the ground area in close proximity to the facility. Values seen in the immediate area of the Facility will be on the order of 10 to 20 dB lower in actual value than the worst case assumption since the gain of the antenna pattern is dramatically reduced at these angles. A 10 to 20 dB reduction in power output potential equates to a value that is between 10 and 100 times lower than expected calculated values. This can be seen in the attached antenna specification sheet with associated vertical and horizontal antenna patterns.