

**STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL**

RE: APPLICATION BY CELLCO  
PARTNERSHIP, d/b/a VERIZON WIRELESS,  
FOR A CERTIFICATE OF ENVIRONMENTAL  
COMPATIBILITY AND PUBLIC NEED  
FOR A TELECOMMUNICATIONS FACILITY  
AT 36 RITCH AVENUE, IN THE TOWN OF  
GREENWICH, CONNECTICUT

DOCKET NO. 414

Date: February 24, 2011

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

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

1. Discuss T-Mobile's need for the proposed facility. Specifically, what level of coverage does T-Mobile currently have in this area, and in what ways would the proposed facility improve the existing level of service?
  - A1 **T-Mobile experiences coverage below T-Mobile's minimum design threshold of -84 dBm in the area surrounding the proposed telecommunications facility that would be located at 36 Ritch Avenue, Greenwich, Connecticut ("Facility"). The coverage area includes Interstate 95, Hamilton Avenue, Byram Road and Delavan Avenue, as well as the surrounding areas. Currently, the coverage area is covered marginally from surrounding sites (edge of footprint coverage). The proposed Facility would enhance the marginal existing coverage as well as ameliorate existing gaps in coverage throughout the coverage objective.**
2. What is T-Mobile's operating frequency and the minimum signal level threshold for this area?
  - A2 **T-Mobile operates in the PCS and AWS frequency bands for its GSM and UMTS services in Greenwich, Connecticut, and surrounding areas. These frequency bands include the following frequencies:**

**GSM: TX: 1940.000 MHz to 1950.000 MHz  
RX: 1860.000 MHz to 1870.000 MHz**

**UMTS: TX1: 2140.000 MHz to 2145.000 MHz  
RX1: 1740.000 MHz to 1745.000 MHz**

**TX2: 2110.000 MHz to 2120.000 MHz  
RX2: 1710.000 MHz to 1720.000 MHz**

**T-Mobile's minimum design threshold is -84 dBm (In-Vehicle Coverage).**

3. Provide antenna specifications, including type, make, size, model, number of channels, and maximum power output. Indicate the proposed antenna height, number of antennas and antenna mounting configuration planned for each site.
- A3 T-Mobile would locate up to 3 antennas on the Facility with T-arms at 77 feet above grade level. Antenna specifications are included in the power density analysis referenced in the response to Interrogatory 8 below. Although responding to this Interrogatory, T-Mobile would respectfully note that any requirement that limits or dictates the type of technology deployed at a wireless communications facility is preempted by federal law.**
4. Provide a multi-signal level propagation plot at a scale of 1:40,000, depicting coverage from all existing and/or approved T-Mobile sites in the area. Provide a brief description of the existing sites including location, distance to the proposed facility, facility type, and antenna height. Depict and label major roads on the plot.
- A4 Please see the propagation plot depicting coverage from all existing and approved T-Mobile sites in the area appended hereto as Attachment A and the chart describing the existing sites appended hereto as Attachment B.**
5. Provide a multi-signal level propagation plot, at a scale of 1:40,000, depicting coverage from existing sites and the proposed site. Depict and label major roads on the plot.
- A5 Please see the propagation plot depicting coverage from existing sites and the proposed Facility appended hereto as Attachment C.**
6. Provide specifications of the radio and emergency power equipment to be installed at the proposed site.
- A6 T-Mobile would install a Nortel S12000 GSM cabinet with a maximum radio capacity of 12 radios (4 per sector) at 25 Watts output power per radio. T-Mobile would also install an Ericsson RBS3106 UMTS Cabinet with a maximum carrier count of 6 at 40 watts per carrier. T-Mobile would utilize battery back-up for emergency power.**

7. Did T-Mobile have a search ring in this area prior to the filing of this application? If so, provide a map depicting the search ring and describe the properties and/or structures identified for possible use prior to selecting the proposed site.
- A7 Please see map depicting T-Mobile's search ring appended hereto as Attachment D.

T-Mobile considered several other parcels prior to selecting the proposed Facility. T-Mobile had initiated a search in the area of the Facility and investigated possible locations for a telecommunications facility prior to the time the Facility became a viable option. Those parcels include:

1. 9 Tingué Street. This is a small parcel consisting of .115 acres. After consulting with the property owner, T-Mobile determined that the property did not offer enough space for a telecommunications facility.
2. 38 Gold Street. This parcel hosts a church rectory with an existing twenty-five foot flag pole. T-Mobile's RF engineers determined that this parcel would not meet the intended coverage objective because it was too far to the west.
3. 104 Ritch Avenue (Greenwich Terrace Condominiums). The owners did not respond to T-Mobile's inquiries regarding a possible telecommunications facility. T-Mobile's RF engineers determined that the existing structure was too low to add a telecommunications facility.
4. 124 Ritch Avenue (Greenwich Shore Condominiums). T-Mobile communicated with the landlord and ascertained that the landlord was not interested in hosting a telecommunications facility on the parcel. The roof top of the existing structure was too low and, accordingly, T-Mobile would have to construct a stand-alone facility.
5. 10 Hamilton Avenue (Bimbo Bakeries). T-Mobile's RF engineers determined that this parcel would not meet the intended coverage objective because it was too far to the south.
6. 44 Talbot Lane. This is a .363 acre residential parcel. T-Mobile considered this parcel as an alternative site to the Facility at the time the Facility was not available for co-location.

Prior to the availability of the Facility, the Town of Greenwich ("Town") also requested that T-Mobile considered several other parcels, which T-Mobile's RF engineers determined would not meet the intended coverage objective. Those parcels include:

1. Off of I-95/Field Point Road. This is a Town owned parcel behind a weigh station off of I-95/Field Point Road. This would require a stand-alone telecommunications facility. T-Mobile's RF engineers determined that this parcel would not meet the intended coverage objective.
  2. 50 Chestnut Street (Decorative Crafts). This parcel would require a stand-alone telecommunications facility. T-Mobile's RF engineers determined that this parcel would not meet the intended coverage objective.
  3. Life Savor Building (One Landmark Square). This parcel hosts a 5 story building. T-Mobile's RF engineers determined that this parcel would not meet the intended coverage objective.
  4. Smokestack (Fox Island Road). This structure is approximately 140 feet high and currently hosts 2 wireless telecommunications carriers. T-Mobile's RF engineers determined that this parcel would not meet the intended coverage objective.
  5. Hasco Building (84 Water Street). This parcel hosts a 5 story building. T-Mobile's RF engineers determined that this parcel would not meet the intended coverage objective.
  6. Westy Storage (351 North Main Street, Port Chester, NY). This parcel hosts a 4 story building. T-Mobile's RF engineers determined that this parcel would not meet the intended coverage objective.
  7. Clock Tower (451 North Main Street, Port Chester, NY). This structure is approximately 75 feet high. T-Mobile's RF engineers determined that this parcel would not meet the intended coverage objective.
  8. Provide a power density analysis according to the methodology prescribed in the FCC Office of Engineering and Technology Bulletin No. 65E, Edition 97-01 (August 1997) assuming all T-Mobile antennas are directed at the base of the tower and all channels are operating simultaneously.
- A8 Please see the power density analysis appended hereto as Attachment E.**

Respectfully Submitted,

T-MOBILE NORTHEAST LLC

By:



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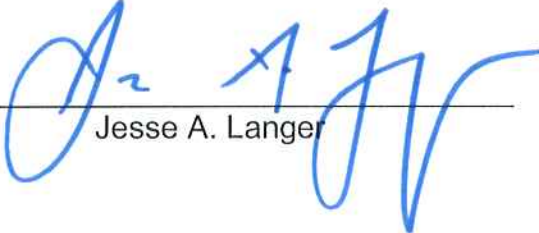
**CERTIFICATION**

I hereby certify that on this day a copy of the foregoing was delivered by Electronic Mail and regular mail, postage prepaid, to all parties and intervenors of record, as follows:

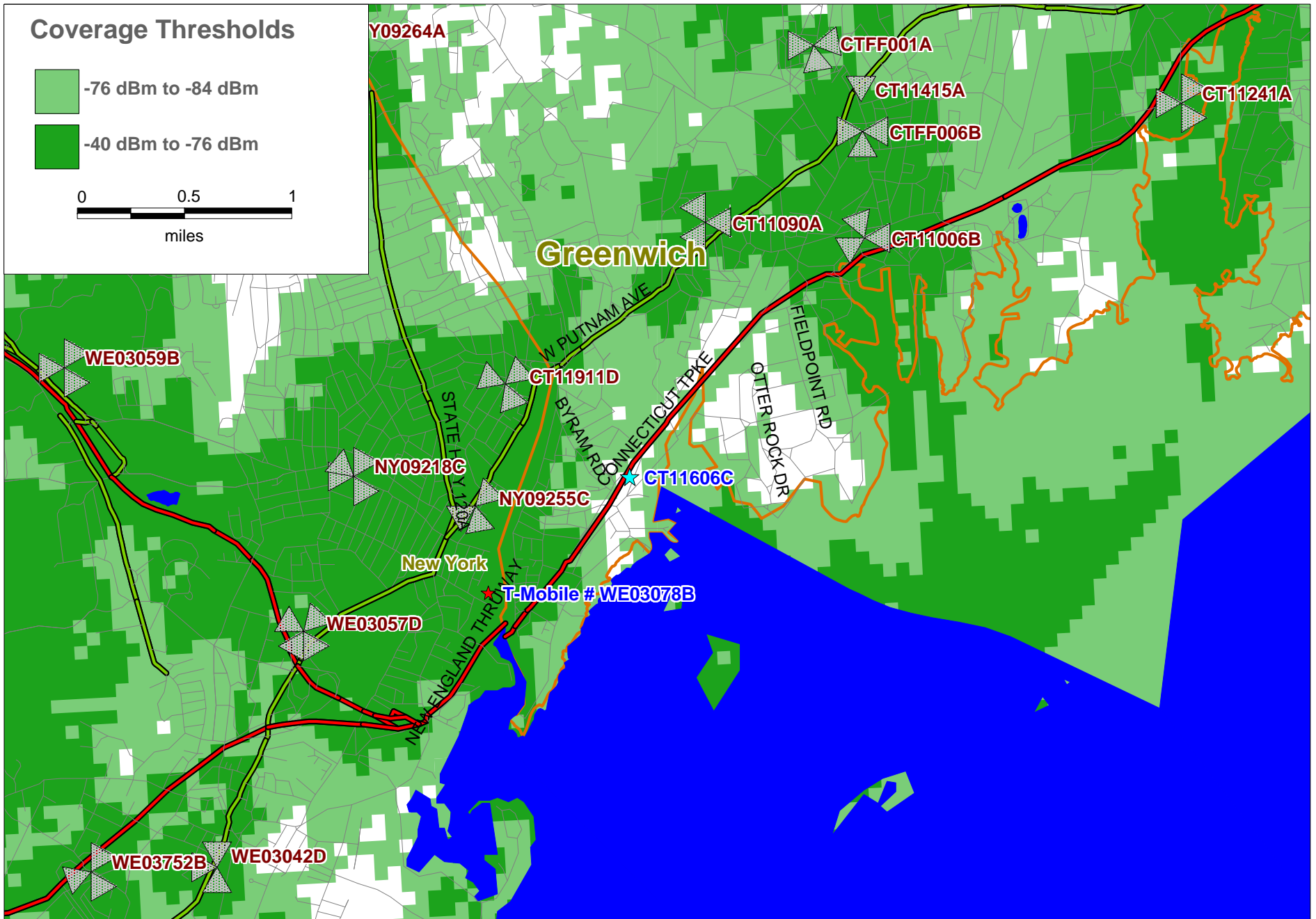
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Jesse A. Langer

# **ATTACHMENT A**



- T-Mobile -

Existing T-Mobile On Air Coverage  
(including Proposed NY Site WE03078B)

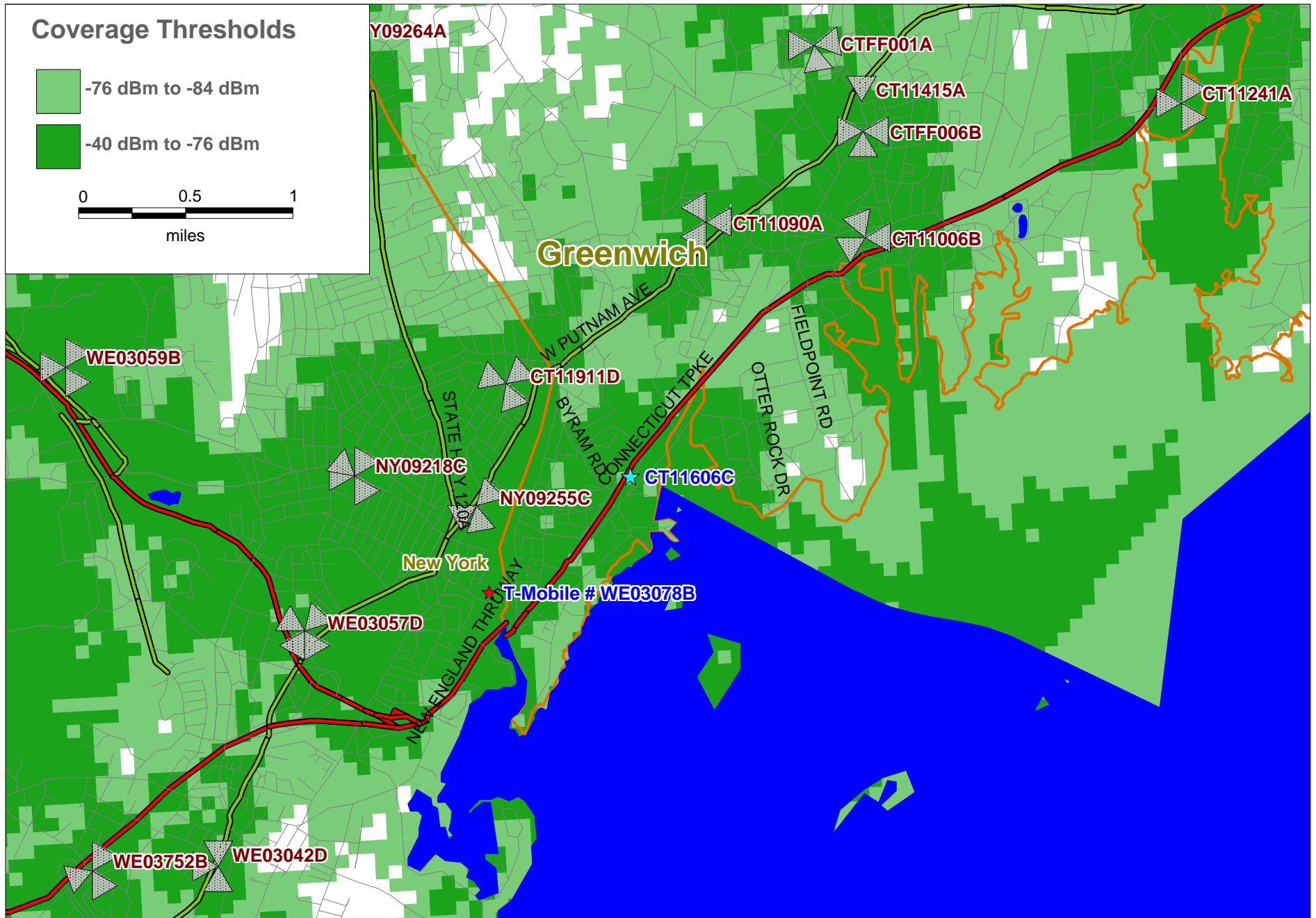
Coverage Threshold Descriptions  
Dark Green: In-Building Coverage ( Residential)  
Light Green: In-Vehicle Coverage



# **ATTACHMENT B**

SITE ID	SITE NAME	SITE ADDRESS	TOWN	STATE	STATUS	LATITUDE	LONGITUDE	STRUCTURE TYPE	STRUCTURE HEIGHT (ft)	ANTENNA HEIGHT (ft)	GE (ft)	DISTANCE FROM PROPOSED FACILITY (miles)
CT11006B	Greenwich Plaza	1 Greenwich Plaza	Greenwich	CT	ON AIR	41.0208	-73.6262	ROOFTOP	65	83	26	1.59
CT11090A	Wexford Plaza	411 Putnam avenue	Greenwich	CT	ON AIR	41.0218	-73.6406	ROOFTOP	43	66	128	1.26
CT11241A	Station Drive Utility	Station Drive - Line# 1750	Greenwich	CT	ON AIR	41.03	-73.5975	UTILITY POLE	145	161	33	3.15
CTFF006B	St. Mary's Steeple	178 Greenwich Avenue	Greenwich	CT	ON AIR	41.0281	-73.6264	CHURCH STEEPLE	69	56	102	1.97
CT11451A	Greenwich T-Mobile Sales Office	100 Greenwich Avenue	Greenwich	CT	ON AIR	41.0301	-73.6265	BUILDING	52	52	138	2.11
CTFF001A	Greenwich Hospital	5 Perryridge Road	Greenwich	CT	ON AIR	41.0339	-73.6308	MONOPOLE	164	154	148	2.21
CT11911D	Port Chester Housing Authority	167-169 Terrace avenue	Port Chester	NY	ON AIR	41.0108	-73.6588	ROOFTOP	56	67	49	0.74
NY09264A	Rye Brook town Hall	938 King Street	Rye brook	NY	ON AIR	41.0343	-73.6743	FLAG POLE	120	92	236	2.49
NY09255C	125 N.Main	125 N.Main street	Port Chester	NY	ON AIR	41.0024	-73.6614	ROOFTOP	65	76	10	0.73
NY09218C	370 Westchester	370 Westchester Avenue	Port Chester	NY	ON AIR	41.0044	-73.6725	ROOFTOP	72	84	131	1.29
WE03059B	Cross Westchester Expwy	2500 Westchester Avenue	Purchase	NY	ON AIR	41.0119	-73.6987	ROOFTOP	60	85	144	2.7
WE03057D	New England Thruway	999 High Street	Port Chester	NY	ON AIR	40.9938	-73.677	ROOFTOP	120	129	89	1.69
WE03042D	Boston Post Road	66 Milton Road	Rye	NY	ON AIR	40.9777	-73.6849	ROOFTOP	115	97	30	2.68
WE03752B	350 Theodore Fremd	350 Theodore Fremd Ave	Rye	NY	ON AIR	40.9774	-73.6963	ROOFTOP	32	36	56	3.16
WE03078B	Purdy ave Monopole	1 Purdy avenue	Port Chester	NY	PROPOSED	40.996489	-73.660528	MONOPOLE	100	99	10	0.86
CT11606C	Ritch ave Monopole	36 Ritch Avenue	Greenwich	NY	PROPOSED	41.004444	-73.647498	MONOPOLE	77	77	65	0

# **ATTACHMENT C**

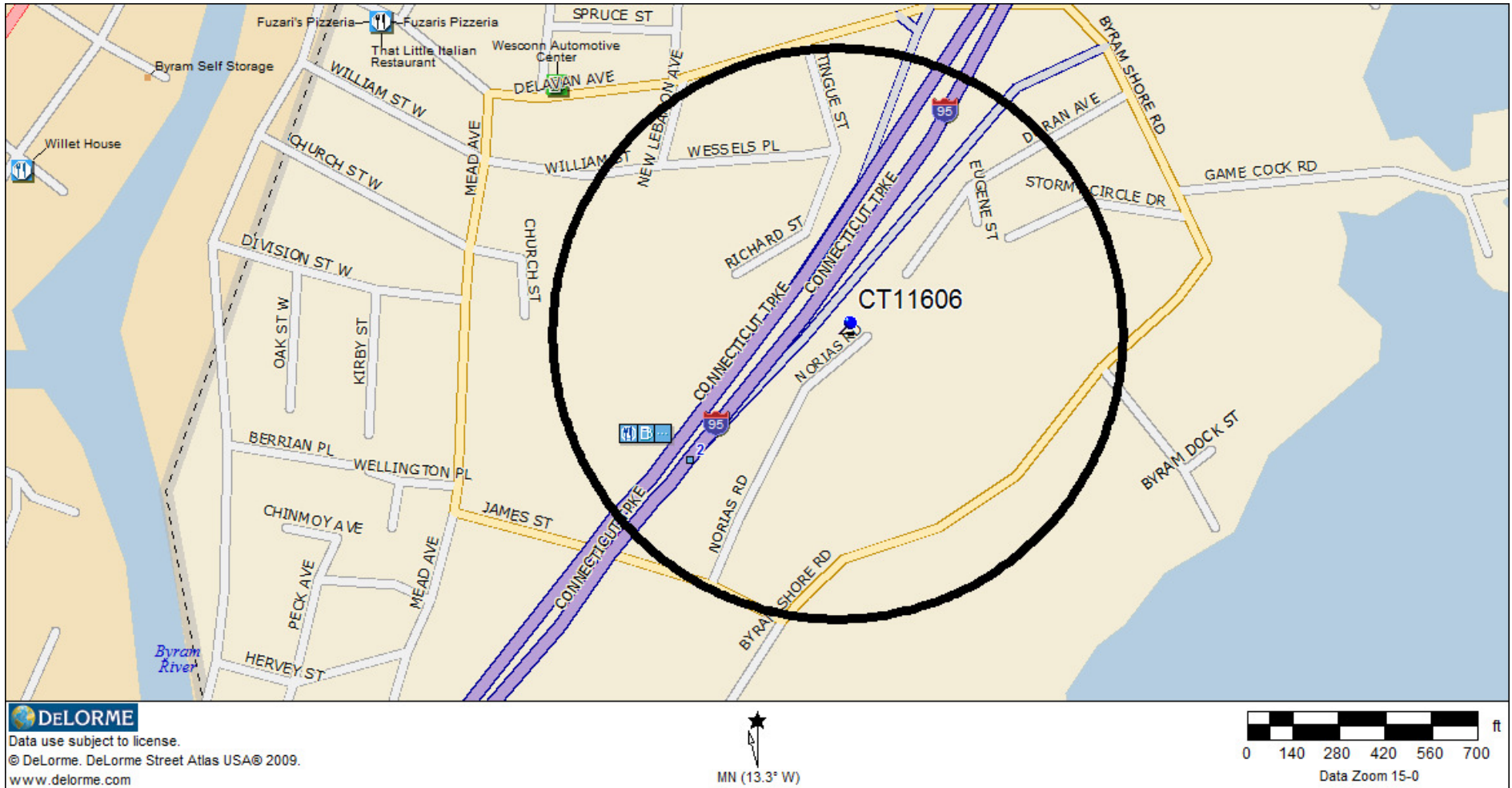


- T-Mobile -

Existing T-Mobile On Air Coverage With  
Proposed CT11606C @ 77'  
And Proposed NY Site WE03078

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

# **ATTACHMENT D**



CT11606  
Greenwich Byram Search Area  
T-Mobile

# **ATTACHMENT E**

## Technical Memo

To: Ray Vergati  
From: Scott Heffernan - Radio Frequency Engineer  
cc: Jason Overbey  
Subject: Power Density Report for CT11606C  
Date: February 22, 2011

### 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 Monopole at 36 Ritch Road, Greenwich, 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 1 antenna 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 77 ft.
- 4) UMTS antenna center line height is 77 ft.
- 5) The maximum transmit power from any GSM sector is 2570.94 Watts Effective Radiated Power (EiRP) assuming 6 channels per sector.
- 5) The maximum transmit power from any UMTS sector is 2735.84 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 & UMTS antenna installation on a Monopole at 36 Ritch Road, Greenwich, CT, is 0.23096 mW/cm<sup>2</sup>. This value represents 23.096% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm<sup>2</sup>) 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.

Total Site MPE %:	55.7959%
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## Connecticut Market



### Worst Case Power Density

**Site:** CT11606C  
**Site Address:** 36 Ritch Road  
**Town:** Greenwich  
**Tower Height:** 77 ft.  
**Facility Style:** Monopole

GSM Data		UMTS Data	
Base Station TX output	25 W	Base Station TX output	40 W
Number of channels	6	Number of channels	2
Antenna Model	APX16DWV-16DWV	Antenna Model	APX16DWV-16DWV
Cable Size	1 5/8 in.	Cable Size	1 5/8 in.
Cable Length	100 ft.	Cable Length	100 ft.
Antenna Height	77.0 ft.	Antenna Height	77.0 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	0.0116 dB	Cable Loss per foot	0.0116 dB
Total Cable Loss	1.1600 dB	Total Cable Loss	1.1600 dB
Total Attenuation	5.6600 dB	Total Attenuation	2.6600 dB
Total EIRP per Channel (In Watts)	56.32 dBm 428.49 W	Total EIRP per Channel (In Watts)	61.36 dBm 1367.92 W
Total EIRP per Sector (In Watts)	64.10 dBm 2570.94 W	Total EIRP per Sector (In Watts)	64.37 dBm 2735.84 W
nsg	12.3400	nsg	15.3400

Power Density (S) = 0.111891 mW/cm<sup>2</sup>

Power Density (S) = 0.119068 mW/cm<sup>2</sup>

T-Mobile Worst Case % MPE = 23.0959%

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

Existing Carrier Information	
Carrier	Existing MPE %
AT&T	32.70%

Site Total MPE %	55.7959%
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