T-Mobile

EM-T-MOBILE-065-081113

VIA OVERNIGHT DELIVERY

November 12, 2008

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Mr. S. Derek Phelps, Executive Director

ORIGINAL

Re: Omnipoint Communications, Inc. (T-Mobile) – exempt modification
22 Welsh Road, East Hartland, Connecticut

Dear Mr. Phelps:

This letter and attachments are submitted on behalf of Omnipoint Communications, Inc. (also referred to herein as "T-Mobile"). T-Mobile plans to install antennas and related equipment at the Town of Hartland site at 22 Welsh Road in the East Hartland section of Hartland (coordinates 41°59'51.09" N, -72°53'15.84" W). Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the First Selectman of Hartland.

T-Mobile will install nine antennas at the 150' level of the tower. The antennas will be installed, three per sector, on mounts attached to the lattice tower; one TMA will be mounted behind two of the antennas in each sector. T-Mobile's equipment cabinets will be placed on a concrete pad in the center of the existing compound. Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the tower to accommodate T-Mobile's antennas.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will be unaffected. The top of the tower extends to 180'; T-Mobile's proposed antennas will be located with a center line of 150' AGL.

T-Mobile USA, Inc.
Office: (860) 692-7100
Fax: (860) 692-7159
35 Griffin Rd S
Bloomfield, CT 06002

2. The addition of T-Mobile's equipment will not require any extension of the site boundaries. All equipment will be located within the existing fenced compound.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the additional cabinets will be negligible.

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached power density calculation, T-Mobile's operations at the site will result in a power density of 2.1015%; the combined site operations will result in a total power density of 15.751%.

Please feel free to call me at (860) 798-7454 with questions concerning this matter. Thank you for your consideration.

Respectfully yours,

Jennifer Young Gaudet

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cc: Wade E. Cole, First Selectman, Town of Hartland (also underlying property owner)
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3 SADDLEBROOK DRIVE KILLINGWORTH, CT. 06419 PHONE: (860)-663-1697 FAX: (860)-663-0935 www.allpointstech.com	LE-1	35 GRIFFIN ROAD BLOOMFIELD, CT 06002 OFFICE: (860)-692-7100	CTHA164A
	SCALE: AS NOTED / DRAWN BY: AAJ		EAST HARTLAND RT20 22 WELSH ROAD EAST HARTLAND, CT 06027-1520
	DATE: 10/08/08 / CHECKED BY: SMC		

NOTE:
PER FCC MANDATE, ENHANCED EMERGENCY (E911) SERVICE IS REQUIRED TO MEET NATIONWIDE STANDARDS FOR WIRELESS COMMUNICATIONS SYSTEMS. OMNIPOINT COMMUNICATIONS INC. IMPLEMENTATION REQUIRES DEPLOYMENT OF EQUIPMENT AND ANTENNAS GENERALLY DEPICTED ON THIS PLAN, ATTACHED TO OR MOUNTED IN CLOSE PROXIMITY TO THE BTS RADIO CABINETS. OMNIPOINT COMMUNICATIONS INC. RESERVES THE RIGHT TO MAKE REASONABLE MODIFICATIONS TO E911 EQUIPMENT AND LOCATION AS TECHNOLOGY EVOLVES TO MEET REQUIRED SPECIFICATIONS.
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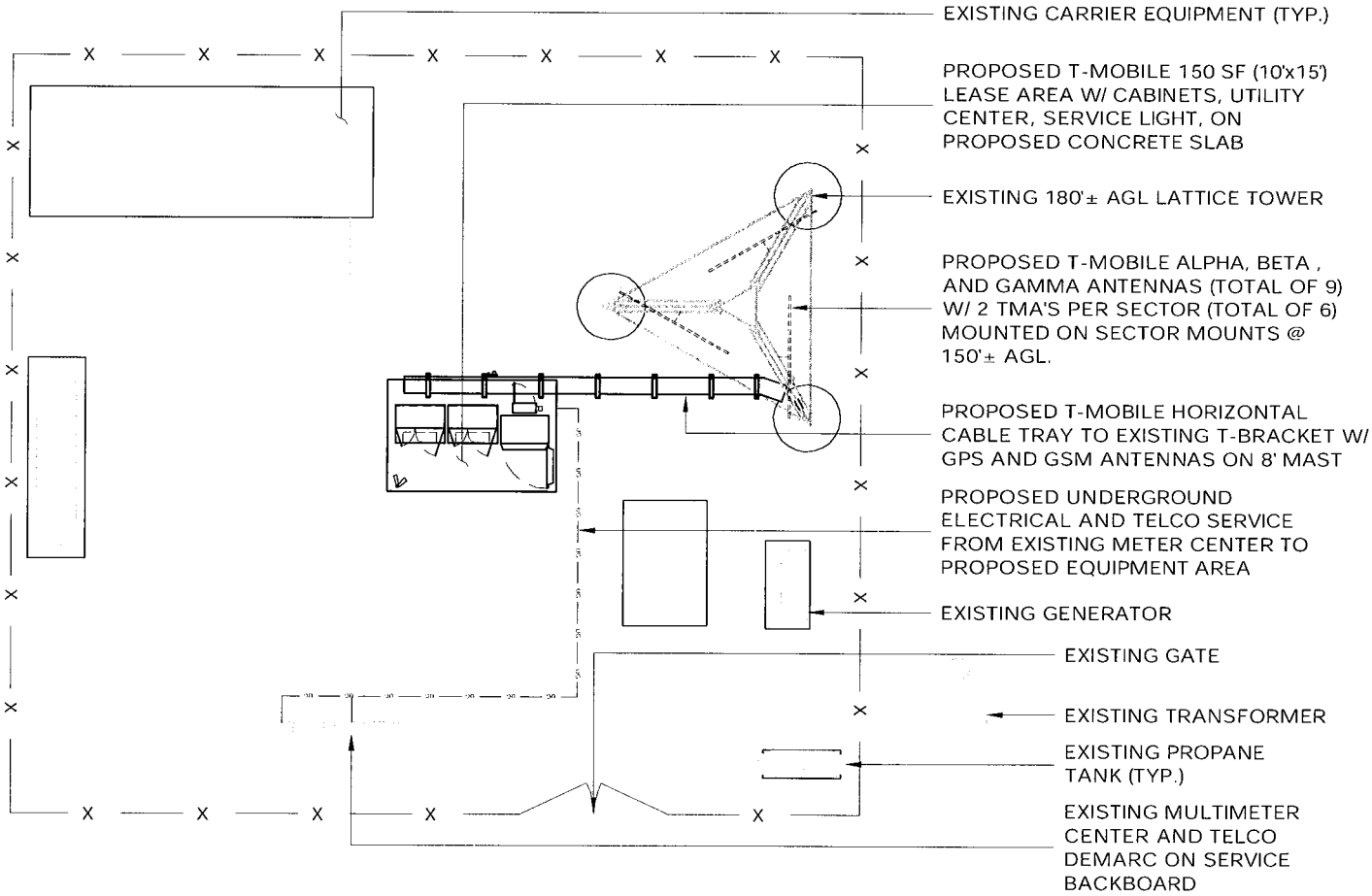

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COMPOUND PLAN

SCALE : 1/16" = 1'-0"

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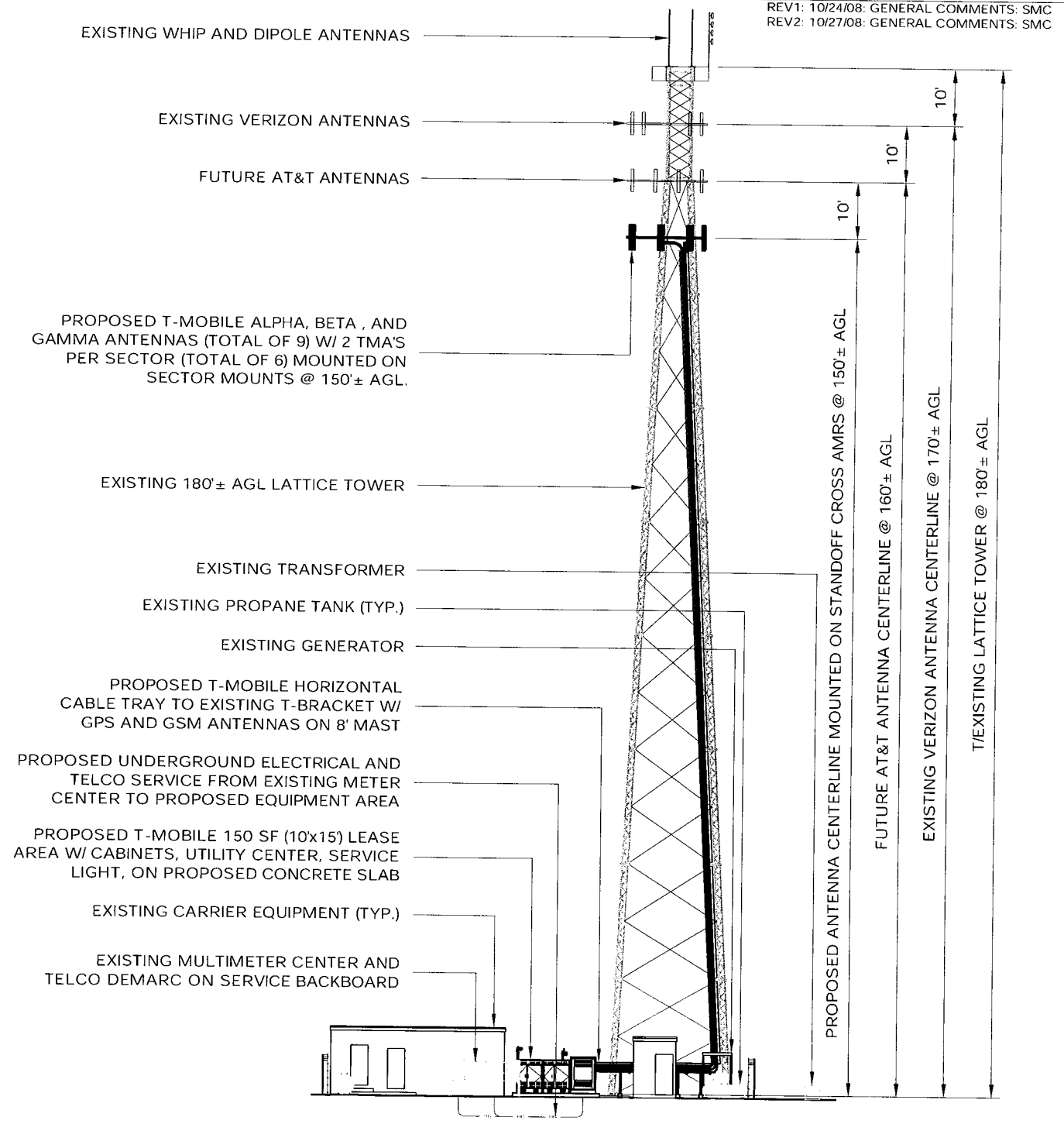


WESTERN ELEVATION

SCALE : 1" = 25'-0"

NATCOMM INC.
CONSULTING ENGINEERS

Structural Analysis Report

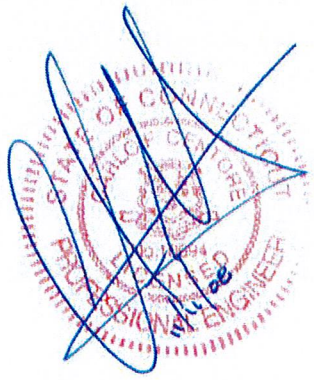
180' Existing Lattice Tower

T-Mobile: CTHA164A East Hartland RT20

22 Welsh Road
East Hartland, CT

Natcomm Project No. 08161-CO-01

Date: November 11, 2008



All-Point Technology Corporation, P.C
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Branford, CT 06405

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Structural Lattice Analysis
180' Existing Lattice Tower
East Hartland, CT
November 11, 2008

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna installation proposed by T-Mobile on the existing lattice (tower) located in East Hartland, Connecticut.

The host tower is a 180-ft three-legged, tapered steel self-support lattice tower, type U20.0x180', originally designed and manufactured by Valmont Structures; eng file no: A121935 dated April 12, 2006. The tower geometry, structure member sizes and foundation system information were taken from the aforementioned Valmont Structures design documents. Antenna and appurtenance information were obtained from a comparison of the Valmont design documents and a previous structural analysis report prepared by URS Corporation on behalf of AT&T, project no. 36924704.00000, signed and sealed June 10, 2008.

The tower is made up of nine (9) steel sections consisting of A572-50 solid round legs. Diagonal lateral support bracing consists of A36 steel angle construction. The vertical tower sections are connected by bolted flange plates while the solid legs and bracing are connected by bolted and welded gusset connections. The tower face width is 4.00-ft at the top and 20.00-ft at the bottom.

The aforementioned design documentation prepared by Valmont Structures is available for reference in Section 4 of this report.

T-Mobile is proposing the installation of nine (9) Cellular panel antennas and six (6) TMA's mounted to the existing lattice tower. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

Antenna and Appurtenance Summary

The existing tower was designed to support several communication antennas. The existing, proposed and future loads considered in this analysis consist of the following:

- MUNICIPAL (Existing):
  Antennas: Two (2) 20-ft x 3" ∅ Omni-directional antennas and one (1) 20-ft 4-Bay Dipole mounted to 6 Arm Halo with a RAD center elevation of 190-ft above the existing tower base.
  Coax Cables: Three (3) 1-5/8" ∅ coax cables.

- VERIZON WIRELESS (Existing):
  Antennas: Six (6) Antel LPA-80080/6CF and six (6) Antel LPA 185080/12CF panel antennas mounted on three (3) PiROD 12-ft lightweight T-Frames with a RAD center elevation of 170-ft above the existing tower base.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables.

- AT&T (Existing):
  Antennas: Six (6) Powerwave 7770.00 panel antennas and twelve (12) Powerwave LPG21401 TMA's mounted on three (3) PiROD 12-ft lightweight T-Frames with a RAD center elevation of 160-ft above the existing tower base.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables.

- *FUTURE CARRIER*:
  Antennas: Twelve (12) RR90-17-00DP panel antennas mounted on (3) PiROD 12-ft lightweight T-Frames with a RAD center elevation of 140-ft above the existing tower base.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables.

- **T-Mobile (Proposed):**
  Antennas: Nine (9) RFS APX16DWV-16DWV-S-E-ACU panel antennas and six (6) CCI DTMA 1819-DD TMA's mounted on three (3) PiROD 12-ft lightweight T-Frames with a RAD center elevation of 150-ft above the existing tower base.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents or reinforcement drawings.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables to be installed within tower.

Analysis

The existing tower was analyzed using a comprehensive computer program entitled RISATower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower shaft, and the model assumes that the shaft members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for 80 mph basic wind speed (fastest mile) with no ice and 69mph with ½ inch accumulative ice to determine stresses in members as per guidelines of TIA/EIA-222-F-96 entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Allowable Stress Design (ASD).

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA/EIA-222-F, gravity loads of the tower structure and its components, and the application of ½" radial ice tower structure and its components.

Basic Wind Speed:	Hartford; v = 80 mph (fastest mile)	*[Section 16 of TIA/EIA-222-F-96]*
	Hartland; v = 95 mph (3 second gust) equivalent to v = 75 mph (fastest mile)	*[Appendix K of the 2005 CT Building Code Supplement]*
	TIA/EIA wind speed controls	
Load Cases:	Load Case 1; 80 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation. This load case typically controls the design of monopole towers.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 2; 69 mph wind speed w/ ½" radial ice plus gravity load – used in calculation of tower stresses. The 74mph wind speed velocity represents 75% of the wind pressure generated by the 85mph wind speed. This load case typically controls the design of lattice towers.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 3; Seismic – not checked	*[Section 1610.1.3 of State Bldg. Code 2005] does not control in the design of this structure type*

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Tower Capacity

Tower stresses were calculated utilizing the structural analysis software RISATower. Allowable stresses were determined based on Table 5 of the TIA/EIA code with a 1/3 increase per Section 3.1.1.1 of the same code.

Calculated stresses were found to be within allowable limits. In Load Case 1, per RISATower "Section Capacity Table", this tower was found to be at **85.3%** of its total capacity.

Foundation and Anchors

The existing foundation consists of three 5-ft ∅ reinforced concrete piers with a 28.5-ft square reinforced concrete pad bearing directly on existing sub grade. The sub-grade conditions used in the analysis of the existing foundation were obtained from the aforementioned manufacturer's original design documents; Valmont Structures eng file no: A121935, dated April 12, 2006. Tower legs are connected to the foundation by means of (6) 1-1/4"∅, ASTM A687 anchor bolts per leg, embedded into the concrete foundation structure.

Review of the foundation and anchor design consisted of verification of applied loads obtained from the tower design calculations and code checks of allowable stresses:

- The tower base maximum corner reactions developed from the governing Load Case 2 were used in the verification of the foundation and its anchors:
  - Uplift @ base of leg = **224** kips
  - Shear @ base of leg= **30** kips
  - Compression @ base of leg= **293** kips
  - Overturning Moment= **4640** kip-ft
- Tower anchor bolts were found to be within allowable limits.
- Foundation resists two times the calculated wind load per the requirements of Section 3108.4.2 of the 2005 CT State Building Code Supplement to the 2003 International Building Code (IBC).

Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by T-Mobile. If the existing conditions are different than the information in this report, Natcomm, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

11/11/08

Carlo F. Centore, PE
Principal ~ Structural Engineer

STATE OF CONNECTICUT CARLO F. CENTORE No 16694 LICENSED PROFESSIONAL ENGINEER

T-Mobile

T-Mobile USA Inc.
100 Filley St, Bloomfield, CT 06002-1853
Phone: (860) 692-7100
Fax: (860) 692-7159

Technical Memo

To: Jennifer Gaudet
From: Scott Heffernan - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CTHA164A
Date: October 7, 2008

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 SST at 22 Welsh Road, Hartland, 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 1935-1985 MHz frequency band.
2) The antenna array consists of three sectors, with 3 antennas per sector.
3) The model number for each antenna is RR90-17-02DP.
4) The antenna center line height is 150 ft.
5) The maximum transmit power from any sector is 1986.23 Watts Effective Radiated Power (EiRP) assuming 8 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 SST at 22 Welsh Road, Hartland, CT, is 0.02101 mW/cm^2. This value represents 2.101% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm^2) 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:	**CTHA164A**
Site Address:	**22 Welsh Road**
Town:	**Hartland**
Tower Height:	**180 ft.**
Tower Style:	**SST**
Base Station TX output	25 W
Number of channels	8
Antenna Model	RR90-17-02DP
Cable Size	1 5/8
Cable Length	175 ft.
Antenna Height	150.0 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	2.0300 dB
Total Attenuation	6.5300 dB
Total EIRP per Channel	53.95 dBm
(In Watts)	248.28 W
Total EIRP per Sector	62.98 dBm
(In Watts)	1986.23 W
nsg	9.9700
Power Density (S) =	**0.021015 mW/cm^2**
T-Mobile Worst Case % MPE =	**2.1015%**

Equation Used :

$$S = \frac{(1000)(grf)^2 (Power) * 10^{(nsg/10)}}{4\pi (R)^2}$$

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

Additional Carrier Information (% MPE)	
AT&T (PCS)	1.20%
AT&T (Cellular)	4.03%
Verizon Wireless (PCS)	1.81%
Verizon Wireless (Cellular)	5.76%
Town of Hartland	0.85%
Total % MPE for Site	**15.751%**

T-Mobile®

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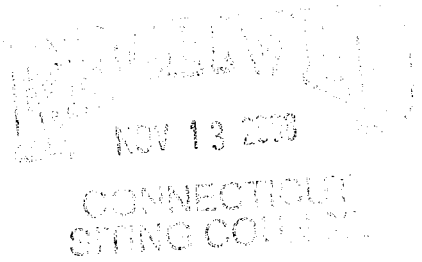

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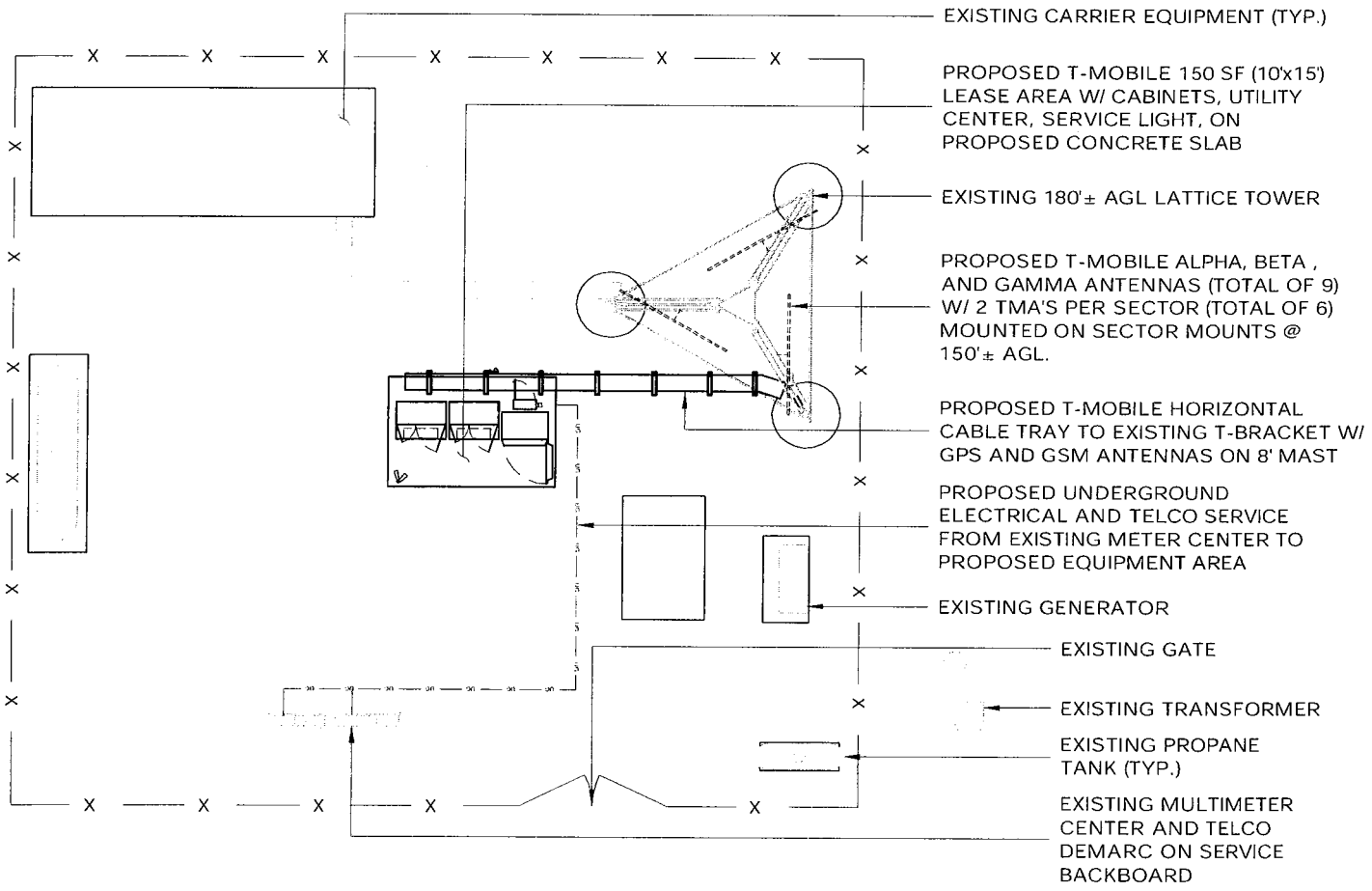

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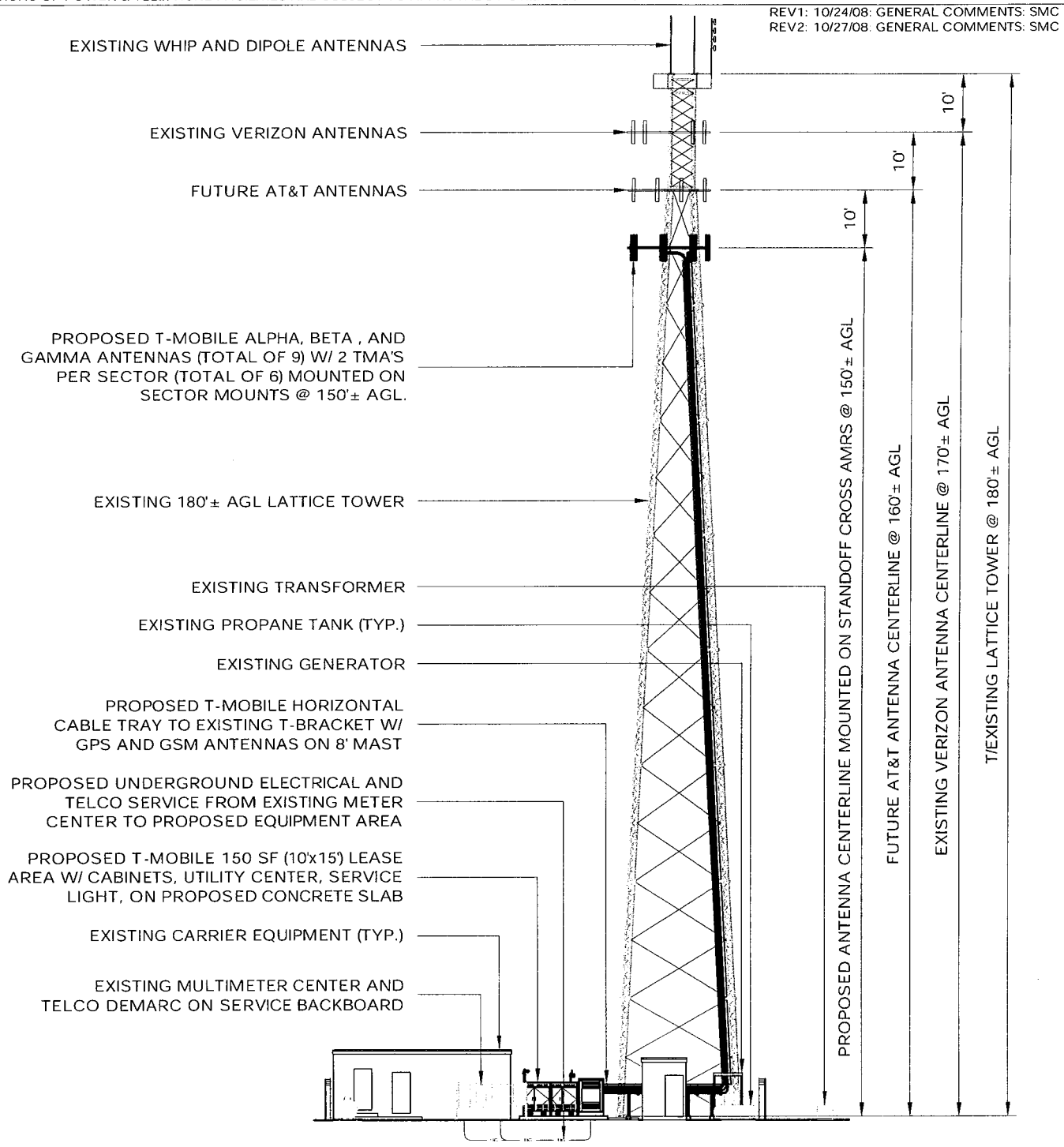

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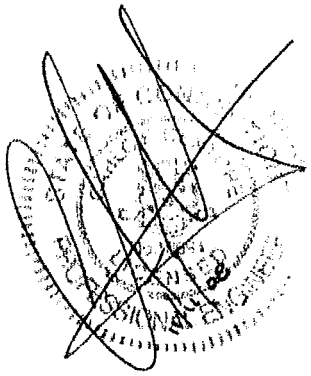

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Natcomm, Inc.
Structural Lattice Analysis
180' Existing Lattice Tower
East Hartland, CT
November 11, 2008

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Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna installation proposed by T-Mobile on the existing lattice (tower) located in East Hartland, Connecticut.

The host tower is a 180-ft three-legged, tapered steel self-support lattice tower, type U20.0x180', originally designed and manufactured by Valmont Structures; eng file no: A121935 dated April 12, 2006. The tower geometry, structure member sizes and foundation system information were taken from the aforementioned Valmont Structures design documents. Antenna and appurtenance information were obtained from a comparison of the Valmont design documents and a previous structural analysis report prepared by URS Corporation on behalf of AT&T, project no. 36924704.00000, signed and sealed June 10, 2008.

The tower is made up of nine (9) steel sections consisting of A572-50 solid round legs. Diagonal lateral support bracing consists of A36 steel angle construction. The vertical tower sections are connected by bolted flange plates while the solid legs and bracing are connected by bolted and welded gusset connections. The tower face width is 4.00-ft at the top and 20.00-ft at the bottom.

The aforementioned design documentation prepared by Valmont Structures is available for reference in Section 4 of this report.

T-Mobile is proposing the installation of nine (9) Cellular panel antennas and six (6) TMA's mounted to the existing lattice tower. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

Antenna and Appurtenance Summary

The existing tower was designed to support several communication antennas. The existing, proposed and future loads considered in this analysis consist of the following:

- MUNICIPAL (Existing):
  Antennas: Two (2) 20-ft x 3" ∅ Omni-directional antennas and one (1) 20-ft 4-Bay Dipole mounted to 6 Arm Halo with a RAD center elevation of 190-ft above the existing tower base.
  Coax Cables: Three (3) 1-5/8" ∅ coax cables.

- VERIZON WIRELESS (Existing):
  Antennas: Six (6) Antel LPA-80080/6CF and six (6) Antel LPA 185080/12CF panel antennas mounted on three (3) PiROD 12-ft lightweight T-Frames with a RAD center elevation of 170-ft above the existing tower base.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables.

- AT&T (Existing):
  Antennas: Six (6) Powerwave 7770.00 panel antennas and twelve (12) Powerwave LPG21401 TMA's mounted on three (3) PiROD 12-ft lightweight T-Frames with a RAD center elevation of 160-ft above the existing tower base.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables.

- *FUTURE CARRIER*:
  Antennas: Twelve (12) RR90-17-00DP panel antennas mounted on (3) PiROD 12-ft lightweight T-Frames with a RAD center elevation of 140-ft above the existing tower base.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables.

- **T-Mobile (Proposed):**
  Antennas: Nine (9) RFS APX16DWV-16DWV-S-E-ACU panel antennas and six (6) CCI DTMA 1819-DD TMA's mounted on three (3) PiROD 12-ft lightweight T-Frames with a RAD center elevation of 150-ft above the existing tower base.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents or reinforcement drawings.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables to be installed within tower.

Analysis

The existing tower was analyzed using a comprehensive computer program entitled RISATower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower shaft, and the model assumes that the shaft members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for 80 mph basic wind speed (fastest mile) with no ice and 69mph with ½ inch accumulative ice to determine stresses in members as per guidelines of TIA/EIA-222-F-96 entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Allowable Stress Design (ASD).

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA/EIA-222-F, gravity loads of the tower structure and its components, and the application of ½" radial ice tower structure and its components.

Basic Wind Speed:	Hartford; v = 80 mph (fastest mile)	*[Section 16 of TIA/EIA-222-F-96]*
	Hartland; v = 95 mph (3 second gust) equivalent to v = 75 mph (fastest mile)	*[Appendix K of the 2005 CT Building Code Supplement]*
	TIA/EIA wind speed controls	
Load Cases:	Load Case 1; 80 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation. This load case typically controls the design of monopole towers.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 2; 69 mph wind speed w/ ½" radial ice plus gravity load – used in calculation of tower stresses. The 74mph wind speed velocity represents 75% of the wind pressure generated by the 85mph wind speed. This load case typically controls the design of lattice towers.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 3; Seismic – not checked	*[Section 1610.1.3 of State Bldg. Code 2005] does not control in the design of this structure type*

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Tower Capacity

Tower stresses were calculated utilizing the structural analysis software RISATower. Allowable stresses were determined based on Table 5 of the TIA/EIA code with a 1/3 increase per Section 3.1.1.1 of the same code.

Calculated stresses were found to be within allowable limits. In Load Case 1, per RISATower "Section Capacity Table", this tower was found to be at **85.3%** of its total capacity.

Foundation and Anchors

The existing foundation consists of three 5-ft ∅ reinforced concrete piers with a 28.5-ft square reinforced concrete pad bearing directly on existing sub grade. The sub-grade conditions used in the analysis of the existing foundation were obtained from the aforementioned manufacturer's original design documents; Valmont Structures eng file no: A121935, dated April 12, 2006. Tower legs are connected to the foundation by means of (6) 1-1/4"∅, ASTM A687 anchor bolts per leg, embedded into the concrete foundation structure.

Review of the foundation and anchor design consisted of verification of applied loads obtained from the tower design calculations and code checks of allowable stresses:

- The tower base maximum corner reactions developed from the governing Load Case 2 were used in the verification of the foundation and its anchors:
  - Uplift @ base of leg = **224** kips
  - Shear @ base of leg= **30** kips
  - Compression @ base of leg= **293** kips
  - Overturning Moment= **4640** kip-ft
- Tower anchor bolts were found to be within allowable limits.
- Foundation resists two times the calculated wind load per the requirements of Section 3108.4.2 of the 2005 CT State Building Code Supplement to the 2003 International Building Code (IBC).

Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by T-Mobile. If the existing conditions are different than the information in this report, Natcomm, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

11/11/08

Carlo F. Centore, PE
Principal ~ Structural Engineer

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Technical Memo

To: Jennifer Gaudet
From: Scott Heffernan - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CTHA164A
Date: October 7, 2008

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 SST at 22 Welsh Road, Hartland, 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 1935-1985 MHz frequency band.
2) The antenna array consists of three sectors, with 3 antennas per sector.
3) The model number for each antenna is RR90-17-02DP.
4) The antenna center line height is 150 ft.
5) The maximum transmit power from any sector is 1986.23 Watts Effective Radiated Power (EiRP) assuming 8 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 SST at 22 Welsh Road, Hartland, CT, is 0.02101 mW/cm^2. This value represents 2.101% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm^2) 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:	**CTHA164A**
Site Address:	**22 Welsh Road**
Town:	**Hartland**
Tower Height:	**180 ft.**
Tower Style:	**SST**
Base Station TX output	25 W
Number of channels	8
Antenna Model	RR90-17-02DP
Cable Size	1 5/8
Cable Length	175 ft.
Antenna Height	150.0 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	2.0300 dB
Total Attenuation	6.5300 dB
Total EIRP per Channel	53.95 dBm
(In Watts)	248.28 W
Total EIRP per Sector	62.98 dBm
(In Watts)	1986.23 W
nsg	9.9700
Power Density (S) =	**0.021015 mW/cm^2**
T-Mobile Worst Case % MPE =	**2.1015%**

Equation Used :

$$S = \frac{(1000)(grf)^2 (Power) * 10^{(nsg/10)}}{4\pi (R)^2}$$

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

Additional Carrier Information (% MPE)	
AT&T (PCS)	1.20%
AT&T (Cellular)	4.03%
Verizon Wireless (PCS)	1.81%
Verizon Wireless (Cellular)	5.76%
Town of Hartland	0.85%
Total % MPE for Site	**15.751%**