STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

August 1, 2011

Jennifer A. Herz, Esq.
Brown Rudnick LLP
CityPlace I, 185 Asylum Street
Hartford, CT 06103

RE: **EM-T-MOBILE-137-110714** - Omnipoint Communications, as subsidiary of T-Mobile USA, Inc., notice of intent to modify an existing telecommunications facility located at 86 Voluntown Road, Stonington, Connecticut.

Dear Attorney Herz:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- The proposed coax and tower mounted amplifiers be installed in accordance with recommendations made in the Structural Analysis prepared by FDH Engineering dated June 28, 2011 and stamped by Christopher Murphy; and
- Following the installation of the proposed equipment, T-Mobile shall provide documentation certifying that the installation complied with the engineer's recommendations.
- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated July 14, 2011. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio

frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Ed Haberek Jr., First Selectman, Town of Stonington
Jason Vincent, Town Planner, Town of Stonington
SBA

JENNIFER A. HERZ
Direct Dial: (860) 509-6527
jherz@brownrudnick.com

EM-T-MOBILE-137-110714

CityPlace I
185 Asylum
Street
Hartford
Connecticut
06103
tel 860.509.6500
fax 860.509.6501

Via Hand Delivery

July 14, 2011

Robert Stein, Chairman
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: **Notice of Exempt Modification / Stonington @ 86 Voluntown Road**

Dear Chairman Stein:

On behalf of T-Mobile Northeast, LLC ("T-Mobile"), enclosed for filing is an original and 5 copies of T-Mobile's Notice of Exempt Modification for the Facility located at 86 Voluntown Road in Stonington.

I also enclose herewith a check in the amount of $625.00 representing the filing fee.

I would appreciate it if you would date-stamp the enclosed copy of this transmittal letter and return it to the courier delivering this package.

If you have any questions, please feel free to contact me.

Very truly yours,

BROWN RUDNICK LLP

Jennifer A. Herz

JH/bh
Enclosures

cc/encl: First Selectman Edward Haberek, Jr.

40285116 v1 - HERZJA - 029431/0001

CONNECTICUT SITING COUNCIL

In re:		
T-Mobile Northeast, LLC's Notice to Make an	:	**EXEMPT MODIFICATION NO. _____**
Exempt Modification to an Existing Facility at	:	
86 Voluntown Road, Stonington, Connecticut.	:	July 14, 2011

NOTICE OF EXEMPT MODIFICATION

Pursuant to Conn. Agencies Regs. §§ 16-50j-73 and 16-50j-72(b), T-Mobile Northeast, LLC ("T-Mobile") hereby gives notice to the Connecticut Siting Council ("Council") and the Town of Stonington of T-Mobile's intent to make an exempt modification to the existing monopole tower (the "Tower") located at 86 Voluntown Road in Stonington, Connecticut. Specifically, T-Mobile plans to upgrade its wireless system in Connecticut by implementing its Universal Mobile Telecommunications System ("UMTS"). UMTS is a third-generation ("3G") technology that utilizes a code division multiple access ("CDMA") base to allow for fast and large data transfers. To accomplish this upgrade, T-Mobile must modify its antenna and equipment configurations at many of its existing sites.

Once the UMTS upgrade is complete, T-Mobile will operate on a more unified communication system, allowing international wireless telephones to function world-wide. Furthermore, UMTS will enhance global positioning system ("GPS") navigation capabilities and provide emergency responders with more advanced tracking capabilities. The proposed UMTS technology is compatible with the existing second-generation ("2G") Global System for Mobile Communication ("GSM") currently on the Tower and the proposed upgrade is expected to enhance the existing 2G system. In order to accomplish the upgrade at this site, T-Mobile plans to add UMTS technology and install associated equipment at the base of the Tower.

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(860) 509-6500

Under the Council's regulations (Conn. Agencies Regs. § 16-50j-72(b)), T-Mobile's plans do not constitute a modification subject to the Council's review because T-Mobile will not change the height of the Tower, will not extend the boundaries of the site, will not increase the noise levels at the site, and will not increase the total radio frequency electromagnetic radiation power density at the site to levels above applicable standards.

The Tower is a 196-foot monopole tower located at 86 Voluntown Road in Stonington, Connecticut (latitude N 41° 24' 20", longitude W -13° 50' 43"). The Tower is owned by SBA. Multiple carriers are currently located on the Tower. Currently, T-Mobile has 6 panel antennas and 6 Tower Mounted Amplifiers ("TMA") with a centerline of 167 feet mounted on the Tower. A site plan with Tower specifications is attached.

T-Mobile plans to remove and replace 3 of its existing antennas with 3 UMTS (Model No.APX16DWV) antennas on the Tower. Additionally, T-Mobile plans to remove and replace 3 of its existing TMA with 3 Twin AWS TMA. The centerline of the new antenna and TMAs will remain at 167 feet.

To confirm the Tower can support these changes, T-Mobile commissioned Tower FDH Engineering, Inc. to perform a Structural Analysis of the Tower (attached). According to the Structural Analysis Report, dated June 28, 2011, the Tower "...should have the necessary capacity to support the existing and proposed loading" (Structural Analysis Report, page 3).

Within the existing compound T-Mobile plans to locate its proposed UMTS equipment cabinet on its proposed 4-foot by 5.5-foot (approximately) concrete pad extension. T-Mobile also plans to relocate one of its existing ice bridge posts in order to accommodate the location of the new equipment. The concrete pad extension will be located within the existing fenced compound and therefore, no increase in the size of the boundaries of the site is necessary.

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Excluding brief, minor, construction-related noise during the addition of the antennas, TMAs and the installation of the equipment cabinet, the proposed changes to the Tower will not increase noise levels at the site.

The proposed antennas will not adversely impact the health and safety of the surrounding community or the people working on the Tower. The total radio frequency exposure measured around the Tower will be well below the National Council on Radiation Protection and Measurements' ("NCRP") standard adopted by the Federal Communications Commission ("FCC"). The worst-case power density analysis measured at the base of the Tower indicates that T-Mobile's antennas will emit 3.2% of the NCRP's standard for maximum permissible exposure. Collectively, the antennas on the Tower will emit 24.62% of the NCRP's standard for maximum permissible exposure. Therefore, the power density levels will be below the FCC mandated radio frequency exposure limits in all locations around the Tower, even with extremely conservative assumptions. The power density analysis is attached.

In conclusion, T-Mobile's proposed plan install an antenna, TMAs and ground equipment at this site does not constitute a modification subject to the Council's jurisdiction because T-Mobile will not increase the height of the Tower, will not extend the boundaries of the site, will not increase the noise levels at the site, and the total radio frequency electromagnetic radiation power density will stay within all applicable standards. *See* Conn. Agencies Regs. § 16-50j-72.

T-MOBILE NORTHEAST, LLC

By: _____

Jennifer A. Herz
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Hartford, CT 06103-3402
Email - jherz@brownrudnick.com
Phone - 860.509.6527 /Fax - 860.509.6501

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Certificate of Service

This is to certify that on this 14th day of July, 2011, the foregoing Notice of Exempt Modification was sent, via first class mail, to the following:

First Selectman Edward Haberek, Jr.
Town Hall
152 Elm Street
Stonington, CT 06378

By: _____
Jennifer A. Herz

40285092 v1 - 029431/0001

BROWN RUDNICK LLP
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185 ASYLUM STREET
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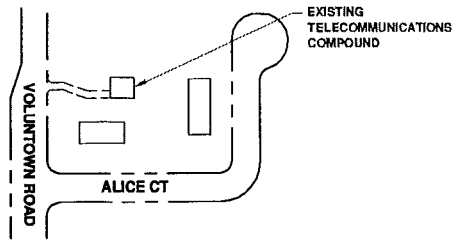
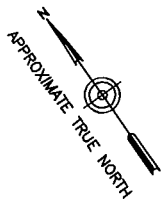
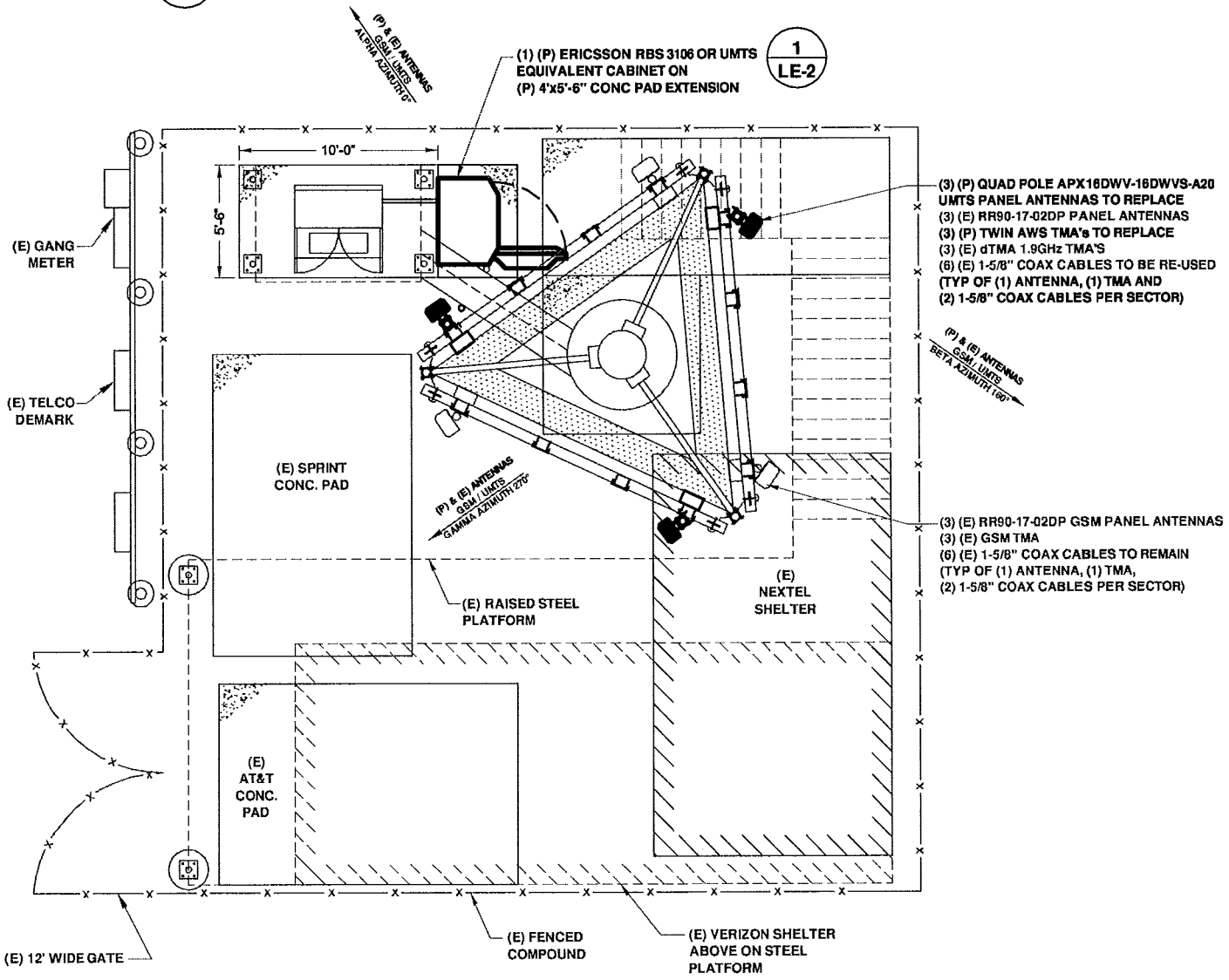
(860) 509-6500





KEY PLAN 1/LE1
SCALE: NOT TO SCALE



COMPOUND PLAN 2/LE1
SCALE: 1"=8'-0"

SUBMITTALS	
LE REV A	06-03-11
LE REV 0	06-06-11

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER: CT11343A
SITE NAME: SBA-STONINGTON EAST MONOPOLE

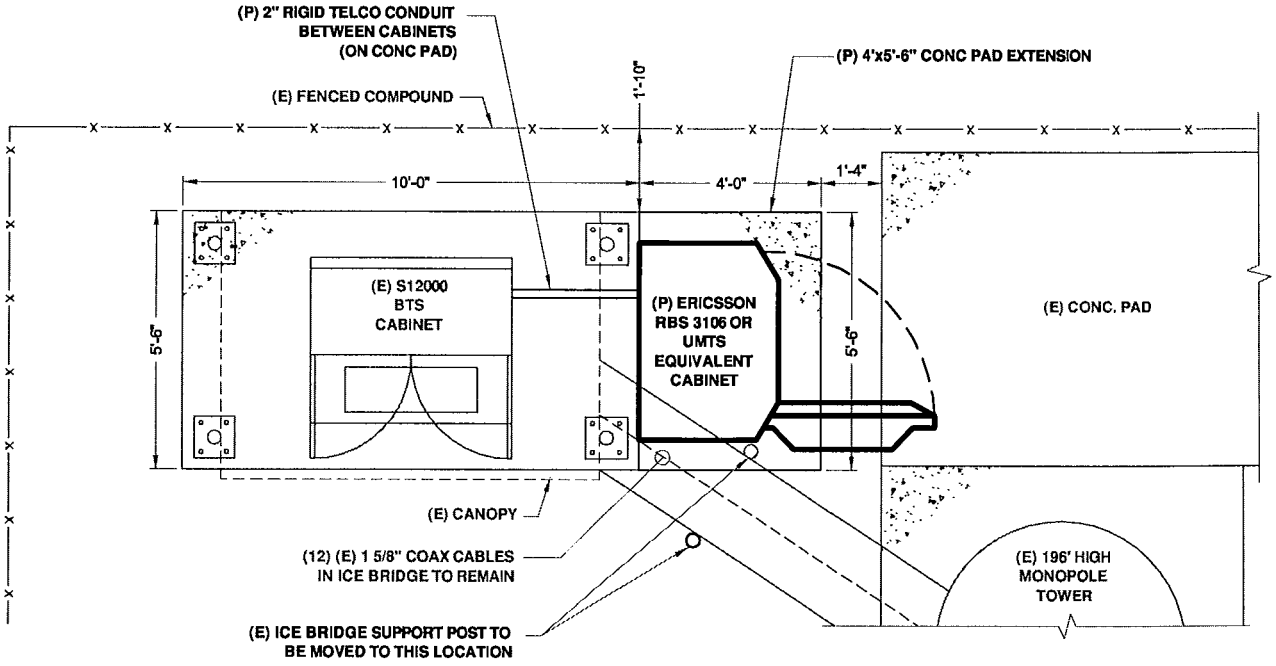
86 VOLUNTOWN ROAD
STONINGTON, CT 06379

DRAWN BY: GC | CHECKED BY: SM

NORTHEAST TOWERS
199 BRICKYARD ROAD
FARMINGTON, CT 06032
OFFICE: (860) 677-1999

FOR

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159



EQUIPMENT PLAN

SCALE: 1/4"=1'-0"

1 / LE2

SUBMITTALS	
LE REV A	06-03-11
LE REV 0	06-08-11

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1340 Centre Street
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Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER: CT11343A
SITE NAME: SBA-STONINGTON EAST MONOPOLE

86 VOLUNTOWN ROAD
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NORTHEAST TOWERS
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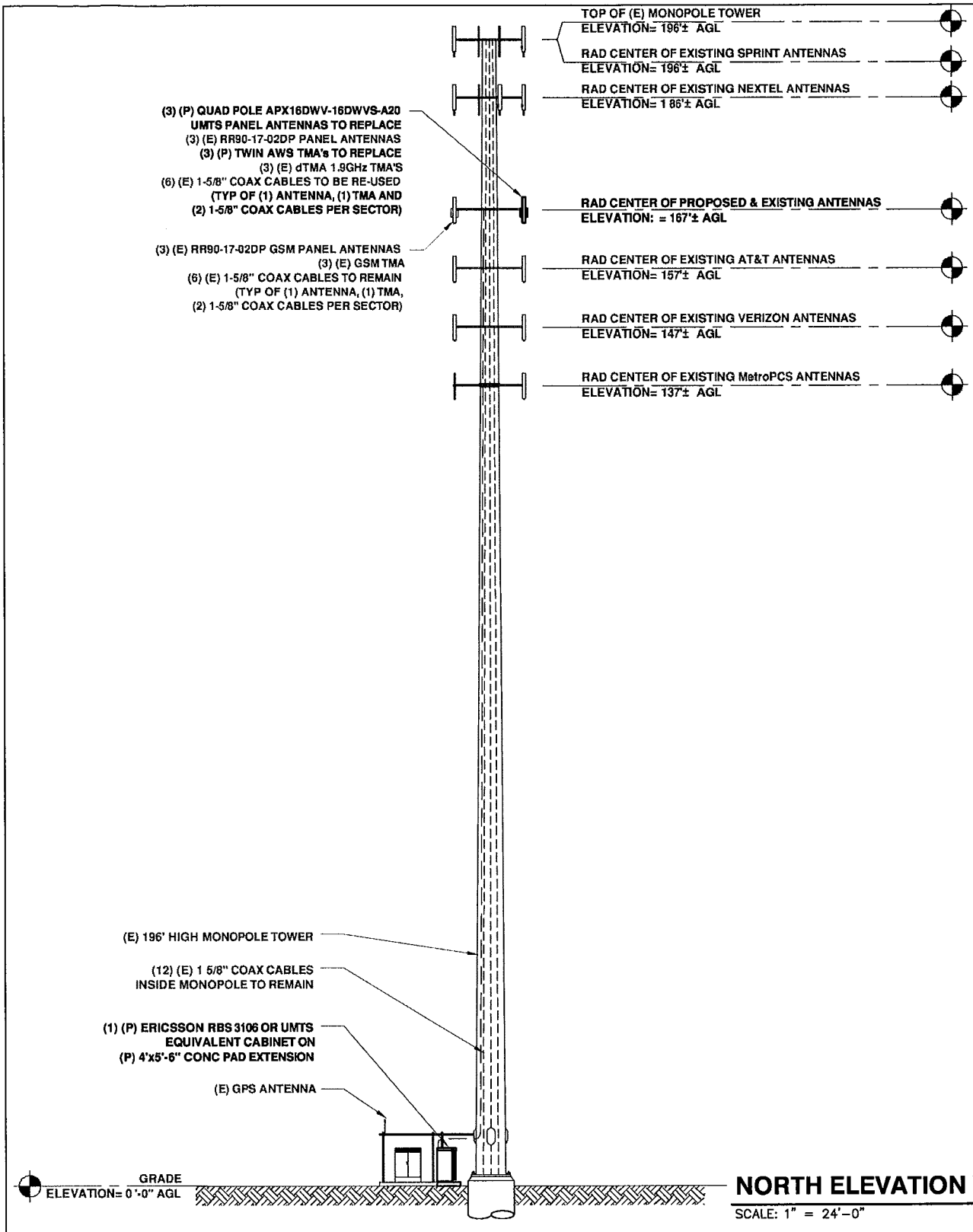
DRAWN BY: GC | CHECKED BY: SM



NORTH ELEVATION VIEW 1

SCALE: 1" = 24'-0"

LE3

SUBMITTALS	
LE REV A	06-03-11
LE REV 0	06-06-11

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LEASE EXHIBIT

SITE NUMBER: CT11343A
SITE NAME: SBA-STONINGTON EAST MONOPOLE

86 VOLUNTOWN ROAD
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FOR

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DRAWN BY: GC | CHECKED BY: SM

FDH Engineering, Inc., 2730 Rowland Rd. Raleigh, NC 27615, Ph. 919.755.1012, Fax 919.755.1031

Structural Analysis for SBA Network Services, Inc.

196 ft Monopole

SBA Site Name: Stonington East
SBA Site ID: CT00595-S

FDH Project Number 11-01355E S2

Prepared By:

Joseph T. Barker, EI
Project Engineer

Reviewed By:

Christopher M. Murphy, PE
President
CT PE License No. 25842

FDH Engineering, Inc.
2730 Rowland Rd.
Raleigh, NC 27615
(919) 755-1012
info@fdh-inc.com

June 28, 2011

Prepared pursuant to TIA/EIA-222-F June 1996 Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

TABLE OF CONTENTS

EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in Stonington, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads, pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F.* Information pertaining to the existing/proposed antenna loading, current tower geometry geotechnical data, and member sizes was obtained from Valmont Industries, Inc. (Order No. 17507-98) Communication Pole Record Drawings dated June 23, 1998, SAGE Environmental, Inc. (Project No. G004) dated June 10, 1998, and SBA Network Services, Inc.

The *basic design wind speed* per *TIA/EIA-222-F* standards is 85 mph without ice and 38 mph with 3/4" of radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the current and proposed antennas from T-Mobile at 167 ft., the tower meets the requirements of the TIA/EIA-222-F standards provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was constructed per the original design drawings (Valmont Order No. 17507-98) and given the existing soil parameters (see SAGE Project No. G004), the foundation should have the necessary capacity to support both the proposed and existing loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Engineering, Inc. is accurate (i.e. the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the *TIA/EIA-222-F* standards are met with the existing and proposed loading in place, we have the following recommendations:

1. The proposed coax should be installed inside the pole's shaft.
2. The proposed TMAs should be installed directly behind the proposed panel antennas.

APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1**. *If the actual layout determined in the field deviates from this layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

Table 1 – Appurtenance Loading

Existing Loading:

Antenna No.	Antenna Elevation (ft)	Description	Coax and Lines [1]	Carrier	Mount Elevation (ft)	Mount Type
1-6	193	(6) Decibel DB980H90E-M	(6) 1-5/8"	Sprint	193	(1) LP Platform
7-15	180	(9) Swedcom ALP9212	(9) 1-5/8"	Nextel	180	(3) T-Arms w/ Walking Platform
16-21	165[2]	(6) EMS RV65-18-XXDPL2 (6) TMAs	(12) 1-5/8"	T-Mobile	165	(1) LP Platform
22-33	150[3]	(6) Allgon 7184 (6) Powerwave 7770 (6) Powerwave LGP 21401 TMAs (6) Powerwave LGP 13519 Diplexers	(12) 1-5/8"	AT&T	150	(1) LP Platform (CaAa = 14.66 ft^3)
34-45	140[4]	(6) Antel RWA-80014 (3) Antel BXA-70063/CF (3) Rymsa MG D5-800T2 (6) RFS FD9R6004/2C-3L Diplexers	(12) 1-5/8"	Verizon	140	(1) LP Platform
46-51	130[5]	(6) Kathrein 742 351	(12) 1-5/8"	Metro PCS	130	(1) LP Platform (CaAa = 14.66 ft^3)
---	30	(1) GPS	---	Sprint	30	(1) Standoff

1. Coax installed inside the pole's shaft unless otherwise noted.
2. T-Mobile's loading will be altered at 167'. See the proposed loading below.
3. Currently, AT&T has (6) antennas, (6) TMAs, (6) Diplexers, and (12) coax installed at 150'. According to the information provided by SBA, AT&T may install up to (12) antennas, (6) TMAs, (6) Diplexers, and (12) coax at 150'. Analysis performed with total leased loading in place.
4. Verizon's coax are installed outside the pole's shaft in a single row.
5. Metro PCS's coax are installed outside the pole's shaft in a single row.

Proposed Loading:

Antenna No.	Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
1-6	167[1]	(3) EMS RR90-17-02DP (3) RFS APX16DWV-16DWV-A20 (3) TMA – RFS Twin PCS (3) TMA – RFS Twin AWS	(12) 1-5/8"	T-Mobile	165	(1) LP Platform

1. This represents the final configuration for T-Mobile at 167'. According to the information provided by SBA, T-Mobile will remove (6) EMS RV65-18-XXDPL2 antennas and (6) TMAs and install (3) EMS RR90-17-02DP antennas, (3) RFS APX16DWV-16DWV-A20 antennas, (3) TMA – RFS Twin PCS, (3) TMA – RFS Twin AWS, and (12) 1 5/8" coax at 167'.

RESULTS

Based on information obtained from the original design drawings, the yield strength of steel for individual members was as follows:

Table 2 - Material Strength

Member Type	Yield Strength
Tower Shaft Sections	65 ksi
Base Plate	60 ksi
Anchor Bolts	75 ksi (assumed)

Table 3 displays the summary of the ratio (as a percentage) of actual force in the member to their allowable capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its allowable capacity. *Note: Capacities up to 105% are considered acceptable.* **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH Engineering, Inc. should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information.

Table 3 – Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
L1	196 - 154.75	Pole	TP27.76x17.39x0.1875	75.6	Pass
L2	154.75 - 118.75	Pole	TP36.42x26.3166x0.3125	85.0	Pass
L3	118.75 - 74.5	Pole	TP46.91x34.4772x0.375	96.4	Pass
L4	74.5 - 35.5	Pole	TP55.97x44.5274x0.4375	93.4	Pass
L5	35.5 - 0	Pole	TP64x53.2089x0.4688	97.6	Pass
		Anchor Bolts	(24) 2.25" Ø w/ BC = 72.76" Ø	79.5	Pass
		Base Plate	78.75" Ø PL x 2.5" thk.	81.6	Pass

*Capacities include 1/3 allowable increase for wind.

Table 4 – Maximum Base Reactions

Base Reactions	Current Analysis* *(TIA/EIA-222-F)*	Original Design *(TIA/EIA-222-F)*
Axial	57 k	50 k
Shear	48 k	45 k
Moment	5,722k-ft	5,768 k-ft

*The foundation was determined to be adequate based on an independent analysis.

GENERAL COMMENTS

This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Engineering, Inc. should be notified immediately to perform a revised analysis.

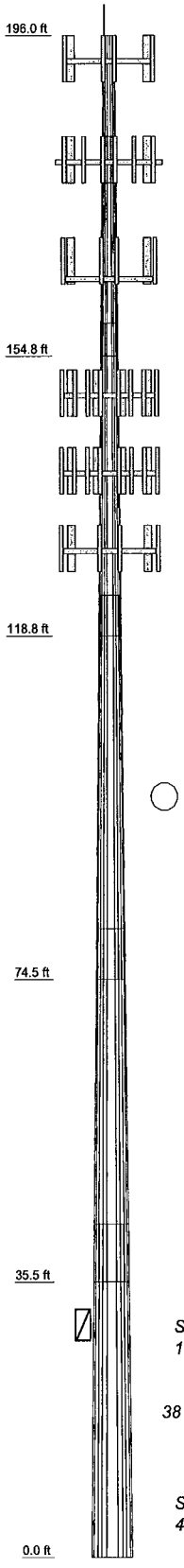
LIMITATIONS

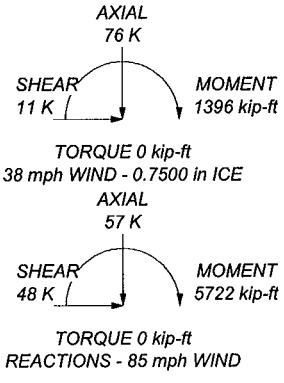
All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Engineering, Inc.

APPENDIX

Section	1	2	3	4	5
Length (ft)	41.25	40.25	49.50	45.50	43.00
Number of Sides	12	12	12	12	12
Thickness (in)	0.1875	0.3125	0.3750	0.4375	0.4688
Socket Length (ft)	4.25	5.25	6.50	7.50	
Top Dia (in)	17.3900	26.3166	34.4772	44.5274	53.2089
Bot Dia (in)	27.7600	36.4200	46.9100	55.9700	64.0000
Grade			A572-65		
Weight (K)	1.9	4.3	8.2	10.9	12.8

38.1





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	196	(2) 7770 W/Mount Pipe	150
(2) DB980H90E-M w/Mount Pipe	193	(2) 7770 W/Mount Pipe	150
(2) DB980H90E-M w/Mount Pipe	193	(2) LGP 21401 TMA	150
(2) DB980H90E-M w/Mount Pipe	193	(2) LGP 21401 TMA	150
LP Platform	193	(2) LGP 21401 TMA	150
(3) ALP 9212 w/Mount Pipe	180	(2) LGP 13519 Diplexor	150
(3) ALP 9212 w/Mount Pipe	180	(2) LGP 13519 Diplexor	150
(3) ALP 9212 w/Mount Pipe	180	(2) LGP 13519 Diplexor	150
T-Arms w/ Working Platform	180	Low Profile Platform	150
RR90-17-02DP w/Mount Pipe	167	(2) RWA-80014 w/Mount Pipe	140
RR90-17-02DP w/Mount Pipe	167	(2) RWA-80014 w/Mount Pipe	140
RR90-17-02DP w/Mount Pipe	167	(2) RWA-80014 w/Mount Pipe	140
RFS APX16DWV-16DWV-A20 w/ Mount Pipe	167	BXA-70063/6CF W/Mount Pipe	140
		BXA-70063/6CF W/Mount Pipe	140
RFS APX16DWV-16DWV-A20 w/ Mount Pipe	167	BXA-70063/6CF W/Mount Pipe	140
		MG D5-800T2 w/Mount Pipe	140
RFS APX16DWV-16DWV-A20 w/ Mount Pipe	167	MG D5-800T2 w/Mount Pipe	140
		MG D5-800T2 w/Mount Pipe	140
TMA - TMA 1.8 GHZ Ericsson Twin	167	(2) FD9R6004/2C-3L Diplexer	140
TMA - TMA 1.8 GHZ Ericsson Twin	167	(2) FD9R6004/2C-3L Diplexer	140
TMA - TMA 1.8 GHZ Ericsson Twin	167	(2) FD9R6004/2C-3L Diplexer	140
TMA - RFS Twin AWS	167	Low Profile Platform	140
TMA - RFS Twin AWS	167	(2) 742 351 W/Mount Pipe	130
TMA - RFS Twin AWS	167	(2) 742 351 W/Mount Pipe	130
Low Profile Platform	165	(2) 742 351 W/Mount Pipe	130
(2) 7184 w/Mount Pipe	150	Low Profile Platform	130
(2) 7184 w/Mount Pipe	150	GPS	30
(2) 7184 w/Mount Pipe	150	Standoff	30
(2) 7770 W/Mount Pipe	150		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 97.6%

FDH Engineering, Inc.
2730 Rowland Road, Suite 100
Raleigh, NC 27615
Phone: (919) 755-1012
FAX: (919) 755-1031
Tower Analysis

Job:	STONINGTON EAST, CT - CT00595-S
Project:	11-01355E S2
Client: SBA Network Services, Inc.	Drawn by: JTB / App'd:
Code: TIA/EIA-222-F	Date: 06/28/11 / Scale: NTS
Path:	Dwg No. E-1

T-Mobile

T-Mobile USA Inc.
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Technical Memo

To: Northeast Tower Inc
From: Amir Uzzaman - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CT11343A
Date: July 8, 2011

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile antenna installation on a Monopole at 86 Voluntown Road, Stonington, 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 (1935-1944.8), (1983-1984), (2140-2145)MHz frequency Band.
2) The antenna array consists of three sectors, with 2 antennas per sector.
3) The model number for GSM antenna is RR90-17-02DP.
3) The model number for UMTS antenna is APX16DWV-16DWV.
4) GSM antenna center line height is 167 ft.
4) UMTS antenna center line height is 167 ft.
5) The maximum transmit power from any GSM sector is 1567.91 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
5) The maximum transmit power from any UMTS sector is 2209.48 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 antenna installation on a Monopole at 86 Voluntown Road, Stonington, CT, is 0.03197 mW/cm^2. This value represents 3.197% 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.
The combined Power Density from other carriers is 21.4254%. The combined Power Density for the site is 24.623% of the M.P.E. standard.

Connecticut Market

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Worst Case Power Density

Site:	**CT11343A**
Site Address:	**86 Voluntown Road**
Town:	**Stonington**
Tower Height:	**196 ft.**
Tower Style:	**Monopole**

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	RR90-17-02DP	**Antenna Model**	APX16DWV-16DWV
Cable Size	1 5/8 in.	**Cable Size**	1 5/8 in.
Cable Length	180 ft.	**Cable Length**	180 ft.
Antenna Height	167.0 ft.	**Antenna Height**	167.0 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	16.5 dBi	**Antenna Gain**	18.0 dBi
Cable Loss per foot	0.0116 dB	**Cable Loss per foot**	0.0116 dB
Total Cable Loss	2.0880 dB	**Total Cable Loss**	2.0880 dB
Total Attenuation	6.5880 dB	**Total Attenuation**	3.5880 dB
Total EIRP per Channel	52.92 dBm	**Total EIRP per Channel**	60.43 dBm
(In Watts)	195.99 W	**(In Watts)**	1104.74 W
Total EIRP per Sector	61.95 dBm	**Total EIRP per Sector**	63.44 dBm
(In Watts)	1567.91 W	**(In Watts)**	2209.48 W
nsg	9.9120	**nsg**	14.4120
Power Density (S) =	**0.013271 mW/cm^2**	**Power Density (S) =**	**0.018701 mW/cm^2**

T-Mobile Worst Case % MPE = 3.1971%

Equation Used :

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

Co-Location Total

Carrier	**% of Standard**
Sprint	1.2797 %
Nextel	1.7605 %
MetroPCS	4.6403 %
Cingular GSM	2.1606 %
Cingular UMTS	1.3620 %
Verizon	8.0208 %
Verizon PCS	2.2014 %
Other Antenna Systems	
Total Excluding T-Mobile	**21.4254 %**
T-Mobile	3.1971
Total % MPE for Site	**24.6225%**