

# 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](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

September 20, 2011

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

RE: **EM-T-MOBILE-137-110901** - Omnipoint Communications, as subsidiary of T-Mobile USA, Inc., notice of intent to modify an existing telecommunications facility located at 37-55 Taugwonk Spur 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:

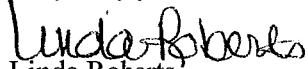
- T-Mobile's equipment installation shall be in accordance with recommendations made in the Structural Analysis prepared by FDH Engineering dated July 26, 2011 and stamped by Christopher Murphy; and
- Following the installation of the proposed equipment, T-Mobile shall provide documentation certifying 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 September 1, 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

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

ORIGINAL

Via Hand Delivery

September 1, 2011

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

RECEIVED  
SEP - 1 2011  
CONNECTICUT  
SITING COUNCIL

RE: Notice of Exempt Modifications / Stonington @ 37-55 Taugwonk Spur 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 37-55 Taugwonk Spur 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.

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## CONNECTICUT SITING COUNCIL

In re:

T-Mobile Northeast, LLC's Notice to Make an Exempt Modification to an Existing Facility at 37-55 Taugwonk Spur Road, Stonington, Connecticut. : **EXEMPT MODIFICATION NO.** \_\_\_\_\_  
: \_\_\_\_\_  
: \_\_\_\_\_  
: September 1, 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 37-55 Taugwonk Spur 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.

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 190-foot monopole tower located at 37-55 Taugwonk Spur Road in Stonington, Connecticut (latitude N 41° 22' 56.1", longitude W -71° 54' 12.4"). 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 172.5 feet mounted on the Tower. A site plan with Tower specifications is attached.

T-Mobile plans to install 3 UMTS (Model No. APX16DWV) antennas on the Tower. T-Mobile also plans to install 3 Twin AWS TMA. The centerline of the new antenna and TMAs will remain at 172.5 feet. Additionally, T-Mobile plans to install 6, 1-5/8 inch coax cables to run to its new antennas.

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 July 26, 2011, "...the foundation 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 6.5' by 4' (approximately) concrete pad extension. T-Mobile also plans to extend its existing canopy over the new equipment area and install associated steel columns. 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.

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 2.82% of the NCRP's standard for maximum permissible exposure. Collectively, the antennas on the Tower will emit 31.37% of the NCRP's standard for maximum permissible exposure.<sup>1</sup> 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 antennas, 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

Brown Rudnick LLP

185 Asylum Street

Hartford, CT 06103-3402

Email - [jherz@brownrudnick.com](mailto:jherz@brownrudnick.com)

Phone - 860.509.6527 /Fax - 860.509.6501

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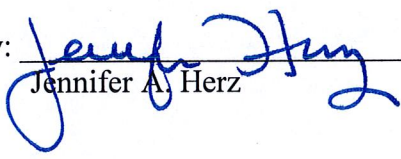
<sup>1</sup> Please note AT&T is not included in the Power Density Report. Although AT&T's antennas are currently located on the Tower they are not transmitting from the Tower.

**Certificate of Service**

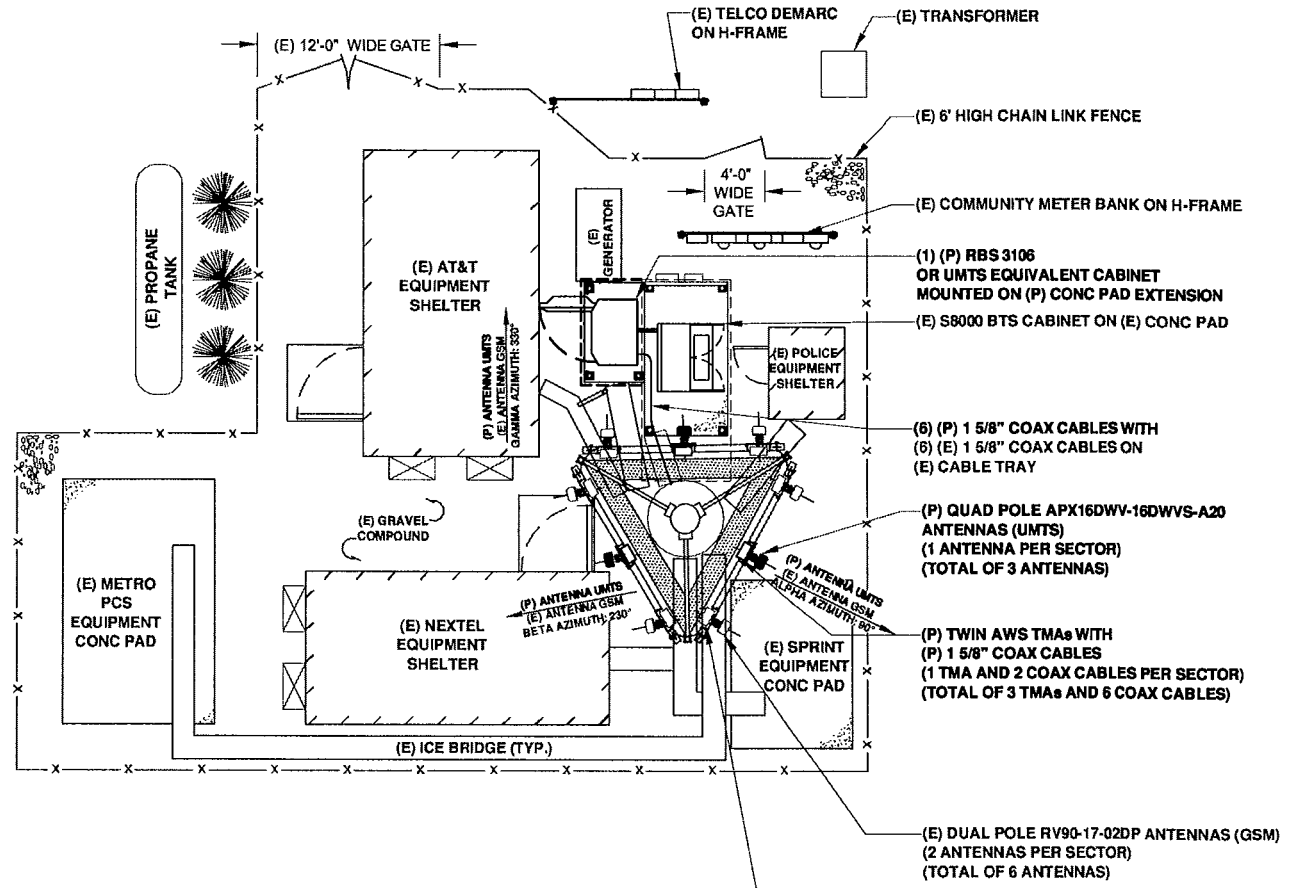
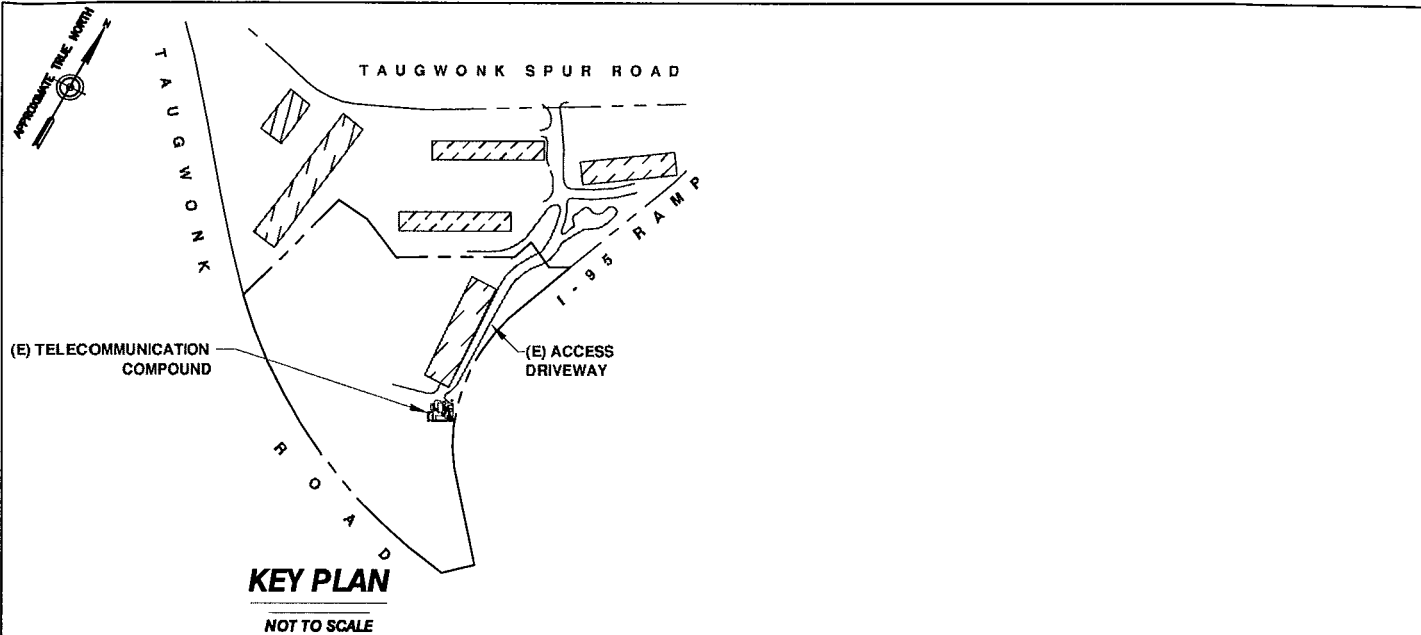
This is to certify that on this 1<sup>st</sup> day of September, 2011, the foregoing Notice of Exempt Modification was sent, via first class mail, to the following:

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

By: \_\_\_\_\_

  
Jennifer A. Herz

# 40285733 v1 - 029431/0001



- (E) TELCO DEMARC ON H-FRAME
- (E) TRANSFORMER
- (E) 6' HIGH CHAIN LINK FENCE
- (E) COMMUNITY METER BANK ON H-FRAME
- (1) (P) RBS 3106 OR UMTS EQUIVALENT CABINET MOUNTED ON (P) CONC PAD EXTENSION
- (E) S8000 BTS CABINET ON (E) CONC PAD
- (6) (P) 1 5/8" COAX CABLES WITH (6) (E) 1 5/8" COAX CABLES ON (E) CABLE TRAY
- (P) QUAD POLE APX16DWV-16DWVS-A20 ANTENNAS (UMTS) (1 ANTENNA PER SECTOR) (TOTAL OF 3 ANTENNAS)
- (P) TWIN AWS TMA<sub>s</sub> WITH (P) 1 5/8" COAX CABLES (1 TMA AND 2 COAX CABLES PER SECTOR) (TOTAL OF 3 TMA<sub>s</sub> AND 6 COAX CABLES)
- (E) DUAL POLE RV90-17-02DP ANTENNAS (GSM) (2 ANTENNAS PER SECTOR) (TOTAL OF 6 ANTENNAS)
- (E) TMA<sub>s</sub> (GSM) WITH (E) 1 5/8" COAX CABLES (2 TMA<sub>s</sub> AND 2 COAX CABLES PER SECTOR) (TOTAL OF 6 TMA<sub>s</sub> AND 6 CABLES)

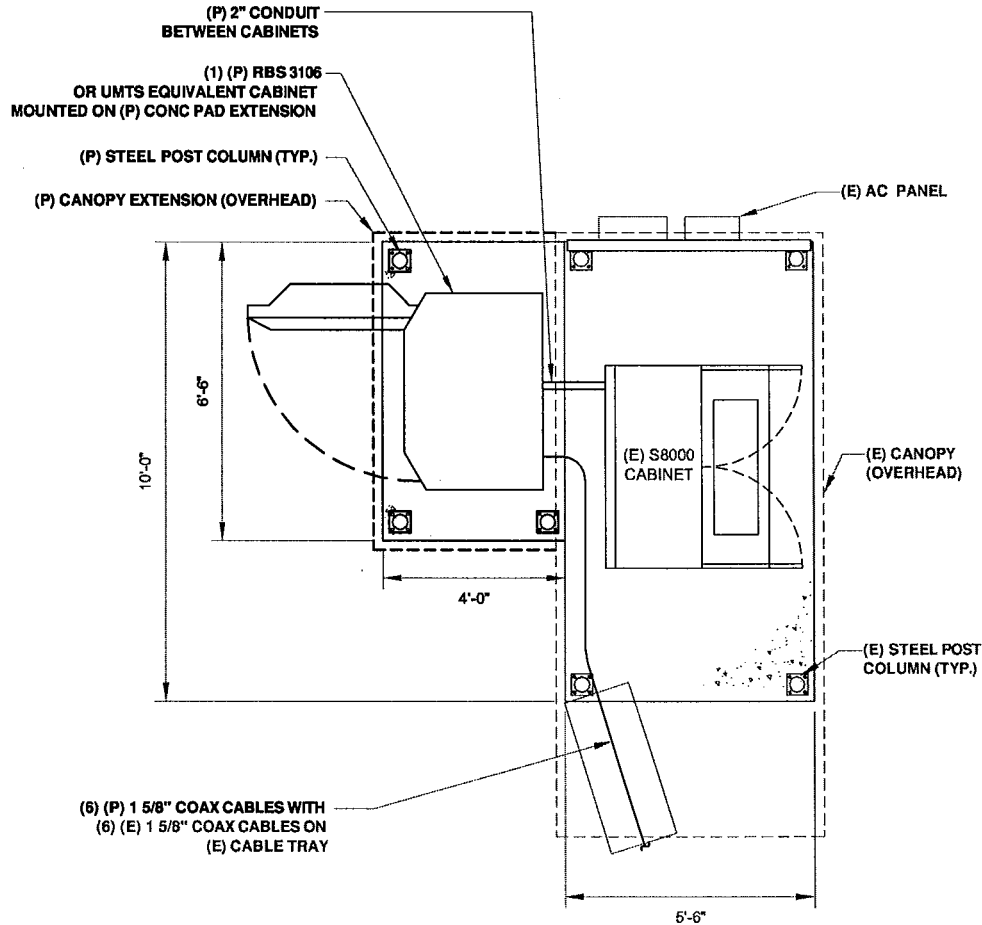
SUBMITTALS	
LE REV A	08-02-11
LE REV 0	07-28-11
LE REV 1	08-25-11

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

**LEASE EXHIBIT**  
SITE NUMBER: CT11046D  
SITE NAME: SBA-MONOPOLE  
  
37-55 TAUGWONK SPUR ROAD  
STONINGTON, CT 06378

**NORTHEAST TOWERS**  
199 BRICKYARD ROAD  
FARMINGTON, CT 06032  
OFFICE: (860) 677-5999  
FOL  
  
**T-MOBILE NORTHEAST, LLC**  
35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
OFFICE: (860) 692-7100  
FAX: (860) 692-7159





**EQUIPMENT LAYOUT PLAN**

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

**SUBMITTALS**

LE REV A	06-02-11
LE REV 0	07-28-11
LE REV 1	08-25-11



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SITE NAME: SBA-MONOPOLE

37-55 TAUGWONK SPUR ROAD  
STONINGTON, CT 06378

**NORTHEAST TOWERS**

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

FOR

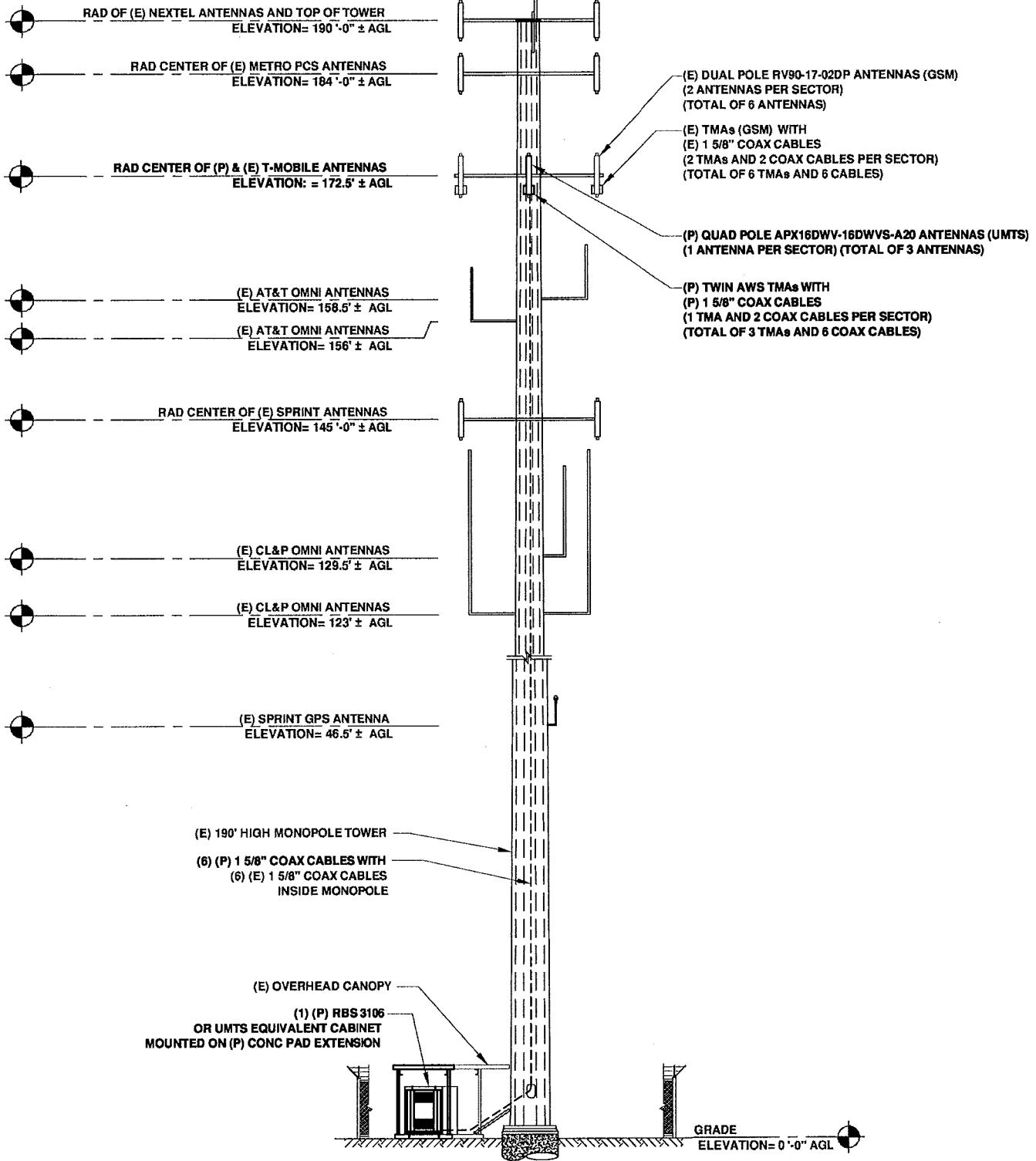
**T-MOBILE NORTHEAST, LLC**

35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
OFFICE: (860) 692-7100  
FAX: (860) 692-7199

DRAWN BY: SB

CHECKED BY: SM

PAGE 2 OF 3



**ELEVATION**

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

SUBMITTALS	
LE REV A	06-02-11
LE REV 0	07-28-11
LE REV 1	08-25-11

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

**LEASE EXHIBIT**

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 STONINGTON, CT 06378

**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

DRAWN BY: SB

CHECKED BY: SM

PAGE 3 OF 3



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

**Structural Analysis for  
SBA Network Services, Inc.**

**190ft Monopole Tower**

**SBA Site Name: Stony Brook-CT  
SBA Site ID: CT00235-B  
T-Mobile Site ID: CT11046D**

**FDH Project Number 11-07260E S1**

**Analysis Results**

Tower Components	70.6%	Sufficient
Foundation	79.1%	Sufficient
Anchor Bolts	84.1%	Sufficient
Base Plate	40.1%	Sufficient

Prepared By:

Taylor LaForge  
Engineering Intern

Reviewed By:

Christopher M Murphy, PE  
President

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

July 26, 2011



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

**TABLE OF CONTENTS**

EXECUTIVE SUMMARY ..... 3  
    Conclusions ..... 3  
    Recommendations ..... 3  
  
APPURTENANCE LISTING ..... 4  
  
RESULTS ..... 5  
  
GENERAL COMMENTS ..... 6  
  
LIMITATIONS ..... 6  
  
APPENDIX ..... 7

## 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, foundation dimensions, geotechnical data, and member sizes was obtained from:

- Paul J. Ford and Company (Job No. 29298-318) original design drawings dated May 6, 1998
- SAGE Environmental, Inc. (Project No. S598) Geotechnical Report dated April 22, 1998
- FDH, Inc. (Job No. 08-10050T) Steel Data Monopole Tower Report dated December 29, 2008
- FDH, Inc. (Job No. 08-10050T) TIA Inspection Report dated December 29, 2008
- SBA Network Services, Inc.

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

## Conclusions

With the existing and proposed antennas from T-Mobile in place at 172.5 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 designed and constructed to support the original design reactions (see Paul J. Ford and Company Job No. 29298-318), the foundation should have the necessary capacity to support the existing and proposed 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* standard 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 existing and 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 the layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

**Table 1 - Appurtenance Loading**

**Existing Loading:**

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
194	(1) Telwave ANT150D3 Dipole	(1) 7/8"	SPD	190	Direct Mount
191	(9) Decibel DB844H90E-XY w/ Mount Pipes	(9) 1-5/8"	Nextel	190	(1) 14.5' Low Profile Platform
184	(6) Kathrein 742 351 w/ Mount Pipes	(12) 1-5/8"	Metro PCS	184	(1) 13' Low Profile Platform (assumed, EPA = 14.66 ft <sup>2</sup> )
172.5	(6) EMS RV90-17-02DP w/ Mount Pipes (6) RemeC S20057A1 TMAs	(6) 1-5/8"	T-Mobile	172.5	(1) 13' Low Profile Platform
158.5	(1) RFS PD458-2N Omni	(2) 7/8"	AT&T	150	(2) Standoffs (assumed, EPA = 1.67 ft <sup>2</sup> each)
156	(1) RFS 114202C Omni				
145	(4) Decibel DB980F65E-M w/ Mount Pipes (2) Decibel 980F65T2E-MS w/ Mount Pipes	(6) 1-5/8"	Sprint	145	(1) 14.5' Low Profile Platform
123	(2) Telewave ANT450D6 Omnis	(4) 7/8"	CL&P	120	(3) Standoffs (assumed, EPA = 1.67 ft <sup>2</sup> each)
129.5	(1) RFS 220-7N Omni				
46.5	(1) GPS	(1) 1/2"	Sprint	46.5	(1) 4' Standoff

**Proposed Loading:**

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
172.5	(6) ESM RR90-17-02DP w/ Mount Pipes (3) RFS APX16DWV-16DWVS-A20 w/ Mount Pipes (6) Ericsson Twin PCS dtma 1900 TMAs (3) RFS Twin AWS TMAs	(18) 1 5/8"	T-Mobile	172.5	(1) 13' Low Profile Platform

## RESULTS

The following yield strength of steel for individual members was used for analysis:

**Table 2 - Material Strength**

Member Type	Yield Strength
Tower Shaft Sections	60 & 65 ksi
Base Plate	50 ksi
Anchor Bolts	75 ksi

**Table 3** displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. **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	190 - 140	Pole	TP35.001x24x0.25	60.7	Pass
L2	140 - 94.5	Pole	TP44.513x33.5109x0.375	66.8	Pass
L3	94.5 - 50	Pole	TP53.554x42.5528x0.4375	70.1	Pass
L4	50 - 25.25	Pole	TP58.124x51.1938x0.5	66.3	Pass
L5	25.25 - 0	Pole	TP62.68x55.529x0.5	70.6	Pass
		Anchor Bolts	(24) 2.18" $\phi$ bolts on 70.75" BC	84.1	Pass
		Base Plate	SQ PL 71.25" x 3.56" thk	40.1	Pass

**Table 4 - Maximum Base Reactions**

Base Reactions	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Axial	61 k	60 k
Shear	34 k	43 k
Moment	4,550 k-ft	5,800 k-ft

## **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.

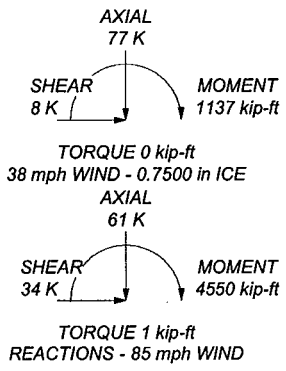
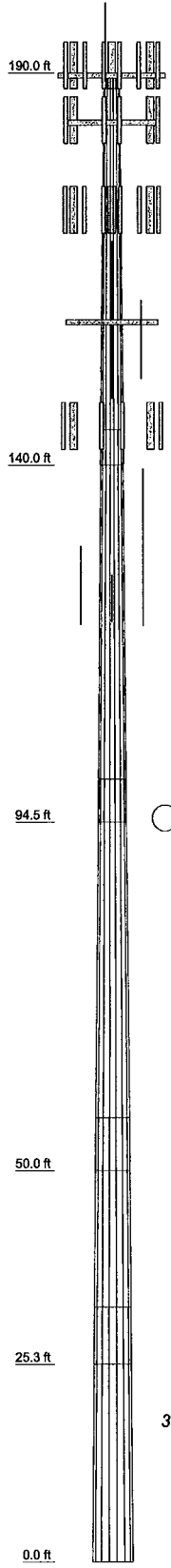
## **LIMITATIONS**

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	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	50.00	18	0.2500	4.50	24.0000	35.0010	A572-60	3.9
2	50.00	18	0.3750	5.50	33.5109	44.5130	A572-60	7.8
3	50.00	18	0.4375	6.75	42.5528	53.5540	A572-65	11.2
4	31.50	18	0.5000	7.25	51.1938	58.1240	A572-65	9.2
5	32.50	18	0.5000	55.5290	62.6800		A572-65	10.3
								42.5



**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 1"x10"	190	(2) Ericsson Twin PCS dlma 1900 TMA's	172.5
Telewave ANT150D3 Dipole	190	(2) Ericsson Twin PCS dlma 1900 TMA's	172.5
(3) Decibel DB844H90E-XY w/ Mount Pipes	190	RFS Twin AWS TMA's	172.5
(3) Decibel DB844H90E-XY w/ Mount Pipes	190	RFS Twin AWS TMA's	172.5
(3) Decibel DB844H90E-XY w/ Mount Pipes	190	RFS Twin AWS TMA's	172.5
(2) Pipe Mount 5' x 2.5" ø	190	13' Low Profile Platform mnt	172.5
(2) Pipe Mount 5' x 2.5" ø	190	(3) Pipe Mount 5' x 2.5" ø	158.5
(2) Pipe Mount 5' x 2.5" ø	190	(3) Pipe Mount 5' x 2.5" ø	158.5
(2) Pipe Mount 5' x 2.5" ø	190	(3) Pipe Mount 5' x 2.5" ø	158.5
14.5' Low Profile Platform mnt	190	13' Low Profile Platform	158.5
(2) Kathrein 742 351 w/ Mount Pipes	184	Standoffs mnt (Assumed)	150
(2) Kathrein 742 351 w/ Mount Pipes	184	Standoffs mnt (Assumed)	150
(2) Kathrein 742 351 w/ Mount Pipes	184	RFS PD458-2N Omni	150
13' Low Profile Platform	184	RFS 114202C Omni	150
(2) ESM RR90-17-02DP w/ Mount Pipes	172.5	(2) Decibel DB980F65E-M w/ Mount Pipes	145
(2) ESM RR90-17-02DP w/ Mount Pipes	172.5	(2) Decibel DB980F65E-M w/ Mount Pipes	145
(2) ESM RR90-17-02DP w/ Mount Pipes	172.5	(2) Decibel 980F65T2E-MS w/ Mount Pipes	145
RFS APX16DWV-16DWVS-A20 w/ Mount pipe	172.5	14.5' Low Profile Platform mnt	145
RFS APX16DWV-16DWVS-A20 w/ Mount pipe	172.5	(3) Standoffs (Assumed) mnt	120
RFS APX16DWV-16DWVS-A20 w/ Mount pipe	172.5	(2) Telewave ANT450D6 Omnis	120
RFS APX16DWV-16DWVS-A20 w/ Mount pipe	172.5	RFS 220-7N Omni	120
(2) Ericsson Twin PCS dlma 1900 TMA's	172.5	RFS 220-3AN Omni	120
		4' Standoff mnt	46.5
		GPS	46.5

**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-60	60 ksi	75 ksi	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: 70.6%

<p><b>FDH Engineering, PC.</b> 2730 Rowland Road, Suite 100 Raleigh, NC 27615 Phone: (919) 755-1012 FAX: (919) 755-1031</p>	<p>Job: <b>Stony Brook - CT00235-B</b></p>
	<p>Project: <b>11-07260E S1</b></p>
	<p>Client: <b>SBA Network Systems, Inc.</b>      Drawn by: <b>Taylor LaForge</b>      App'd:</p>
	<p>Code: <b>TIA/EIA-222-F</b>      Date: <b>07/27/11</b>      Scale: <b>NTS</b></p>
<p>Tower Analysis</p>	<p>Path: _____      Dwg No. <b>E-1</b></p>

## Technical Memo

To: Northeast Tower Inc  
From: Amir Uzzaman - Radio Frequency Engineer  
cc: Jason Overbey  
Subject: Power Density Report for CT11046D  
Date: August 25, 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 37-55 Taugwonk Spur Rd, 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 173 ft.
- 4) UMTS antenna center line height is 173 ft.
- 5) The maximum transmit power from any GSM sector is 1486.35 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
- 5) The maximum transmit power from any UMTS sector is 2094.55 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 37-55 Taugwonk Spur Rd, Stonington, CT, is 0.02817 mW/cm<sup>2</sup>. This value represents 2.817% 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. The combined Power Density from other carriers is 28.5486%. The combined Power Density for the site is 31.366% of the M.P.E. standard.

# Connecticut Market



## Worst Case Power Density

**Site:** CT11046D  
**Site Address:** 37-55 Taugwonk Spur Rd  
**Town:** Stonington  
**Tower Height:** 190 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-16DWV3
Cable Size	1 5/8 in.	Cable Size	1 5/8 in.
Cable Length	200 ft.	Cable Length	200 ft.
Antenna Height	173.0 ft.	Antenna Height	173.0 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	2.3200 dB	Total Cable Loss	2.3200 dB
Total Attenuation	6.8200 dB	Total Attenuation	3.8200 dB
Total EIRP per Channel (In Watts)	52.69 dBm 185.79 W	Total EIRP per Channel (In Watts)	60.20 dBm 1047.27 W
Total EIRP per Sector (In Watts)	61.72 dBm 1486.35 W	Total EIRP per Sector (In Watts)	63.21 dBm 2094.55 W
nsg	9.6800	nsg	14.1800
Power Density (S) = 0.011693 mW/cm <sup>2</sup>		Power Density (S) = 0.016477 mW/cm <sup>2</sup>	
T-Mobile Worst Case % MPE =		2.8169%	
Equation Used : <input type="text"/>			
Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997			

Co-Location Total		
Carrier	% of Standard	
Sprint	2.3144 %	
Nextel	1.5801 %	
Public Safety	0.3782 %	
CL&P	1.3340 %	
CL&P	0.7990 %	
CL&P	1.2485 %	
CL&P	4.7443 %	
CL&P	13.8337 %	
MetroPCS	2.3163 %	
Other Antenna Systems		
<b>Total Excluding T-Mobile</b>	<b>28.5486 %</b>	
T-Mobile	2.8169	
<b>Total % MPE for Site</b>	<b>31.3655%</b>	



# 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](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

September 6, 2011

The Honorable Ed Haberek Jr.  
First Selectman  
Town of Stonington  
Town Hall  
152 Elm Street  
Stonington, CT 06378

RE: **EM-T-MOBILE-137-110901** - Omnipoint Communications, as subsidiary of T-Mobile USA, Inc., notice of intent to modify an existing telecommunications facility located at 37-55 Taugwonk Spur Road, Stonington, Connecticut.

Dear First Selectman Haberek:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by September 20, 2011.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts  
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Jason Vincent, Town Planner, Town of Stonington