# 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
Internet: ct.gov/csc

*Daniel F. Caruso*
*Chairman*


June 23, 2009

Thomas J. Regan, Esq.
Brown Rudnick LLP
City Place I, 185 Asylum Street
Hartford, CT 06103

RE: **EM-T-MOBILE-080-090515** - T-Mobile USA, Inc. notice of intent to modify an existing telecommunications facility located at 651 Paddock Avenue, Meriden, Connecticut.

Dear Attorney Regan:

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 tower mounted amplifiers shall be installed behind the antennas; and
- The Council shall be notified in writing that the tower mounted amplifiers were installed as specified.

The proposed modifications are to be implemented as specified here and in your notice dated May 15, 2009, including the placement of all necessary equipment and shelters within the tower compound. 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. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Daniel F. Caruso
Chairman

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

May 27, 2009

The Honorable Michael S. Rohde
Mayor
City of Meriden
City Hall
142 East Main Street
Room 124
Meriden, CT 06450

RE: **EM-T-MOBILE-080-090515** - Omnipoint Communications, as subsidiary of T-Mobile USA, Inc., notice of intent to modify an existing telecommunications facility located at 651 Paddock Avenue, Meriden, Connecticut.

Dear Mayor Rohde:

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 June 10, 2009.

Thank you for your cooperation and consideration.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/jb

Enclosure: Notice of Intent

c: Dominick Caruso, City Planner, City of Meriden
Lawrence Kendzior, City Manager, City of Meriden

G:\EM\T-MOBILE\MERIDEN\Rohde.DOC

CONNECTICUT SITING COUNCIL

ORIGINAL

**EM-T-MOBILE-080-090515**

In re:

| | | |
|---|---|---|
| T-Mobile USA, Inc. Notice to Make an Exempt Modification to an Existing Facility, 651 Paddock Avenue, Meriden, Connecticut. | : | **EXEMPT MODIFICATION NO. _____** |
| | : | |
| | : | May 15, 2009 |

RECEIVED
MAY 15 2009
CONNECTICUT SITING COUNCIL

**NOTICE OF EXEMPT MODIFICATION**

Pursuant to Conn. Agencies Regs. §§ 16-50j-73 and 16-50j-72(b), T-Mobile USA, Inc. ("T-Mobile") hereby gives notice to the Connecticut Siting Council ("Council") and the City of Meriden of T-Mobile's intent to make an exempt modification to an existing monopole tower (the "Tower") located at 651 Paddock Avenue in Meriden, 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 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, update GSM 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

ROWN RUDNICK LLP
TYPLACE I
15 ASYLUM STREET
ARTFORD, CT 06103
60) 509-6500

the height of the Tower, will not extend the boundaries of the compound, 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 120-foot monopole tower located at 651 Paddock Avenue in Meriden, Connecticut (41.5125, -72.7792). The Tower is owned by the SBA Telecommunications, Inc. There are multiple carriers located on the Tower. Currently, T-Mobile has 3 antennas[1] and 3 Tower Mounted Amplifiers ("TMA") located on the Tower with a centerline of 117 feet. A site plan with Tower specifications is attached.

T-Mobile proposes to utilize its 3 existing antennas for UMTS and GSM technology. T-Mobile also plans to remove and replace its 3 existing TMA with 3 new GSM Twin TMA and add 3 UMTS Twin TMA to the Tower. The proposed TMA will have the same centerline as the existing antennas and TMA - 117 feet. To confirm the Tower can support these changes, T-Mobile commissioned FDH Engineering, Inc. to perform a structural analysis of the Tower (attached). According to the structural analysis, dated May 4, 2009, "...the foundation should be adequate to support both the proposed and existing loading" (Page 3, Structural Analysis Report).

In addition, T-Mobile plans to utilize its 12 existing 1-5/8 inch coax cables. T-Mobile proposes to install the UMTS equipment cabinet on its existing 10-foot by 20-foot (approximately) concrete pad. Hence, no increase in the size of the concrete pad is necessary.

Therefore, excluding brief, minor, construction-related noise during the installation of the new technology and the installation of the equipment cabinet, T-Mobile's changes to the Tower will not increase noise levels at the site.

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60) 509-6500

[1] Although the site plan states that 3 UMTS antennas exist on the Tower, currently 3 GSM antennas are located on the Tower. T-Mobile proposes to use the existing antennas for both GSM and UMTS technology.

The proposed antenna configuration and proposed TMA 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 7.94% of the NCRP's standard for maximum permissible exposure. A cumulative power density analysis indicates that together, all of the antennas on the Tower will emit only 22.95% of the NCRP's standard for maximum permissible exposure. Therefore, the power density levels will be well 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 to utilize its existing antennas for GSM and UMTS technology, remove and replace TMA and add TMA 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 USA, Inc.

By: _____

Thomas J. Regan
Brown Rudnick LLP
185 Asylum Street, CityPlace I
Hartford, CT 06103-3402
Email - tregan@brownrudnick.com
Phone - 860.509.6522
Fax - 860.509.6622

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5 ASYLUM STREET
ARTFORD, CT 06103
60) 509-6500

**Certificate of Service**

This is to certify that on this 15th day of May, 2009, the foregoing Notice of Exempt Modification was sent, via first class mail, to the following:

City of Meriden
Mayor Michael S. Rhode
City Hall
142 East Main Street
Meriden, CT 06450

By: _____
Thomas J. Regan

# 40259779 v1 - 025064/0016

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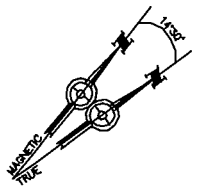
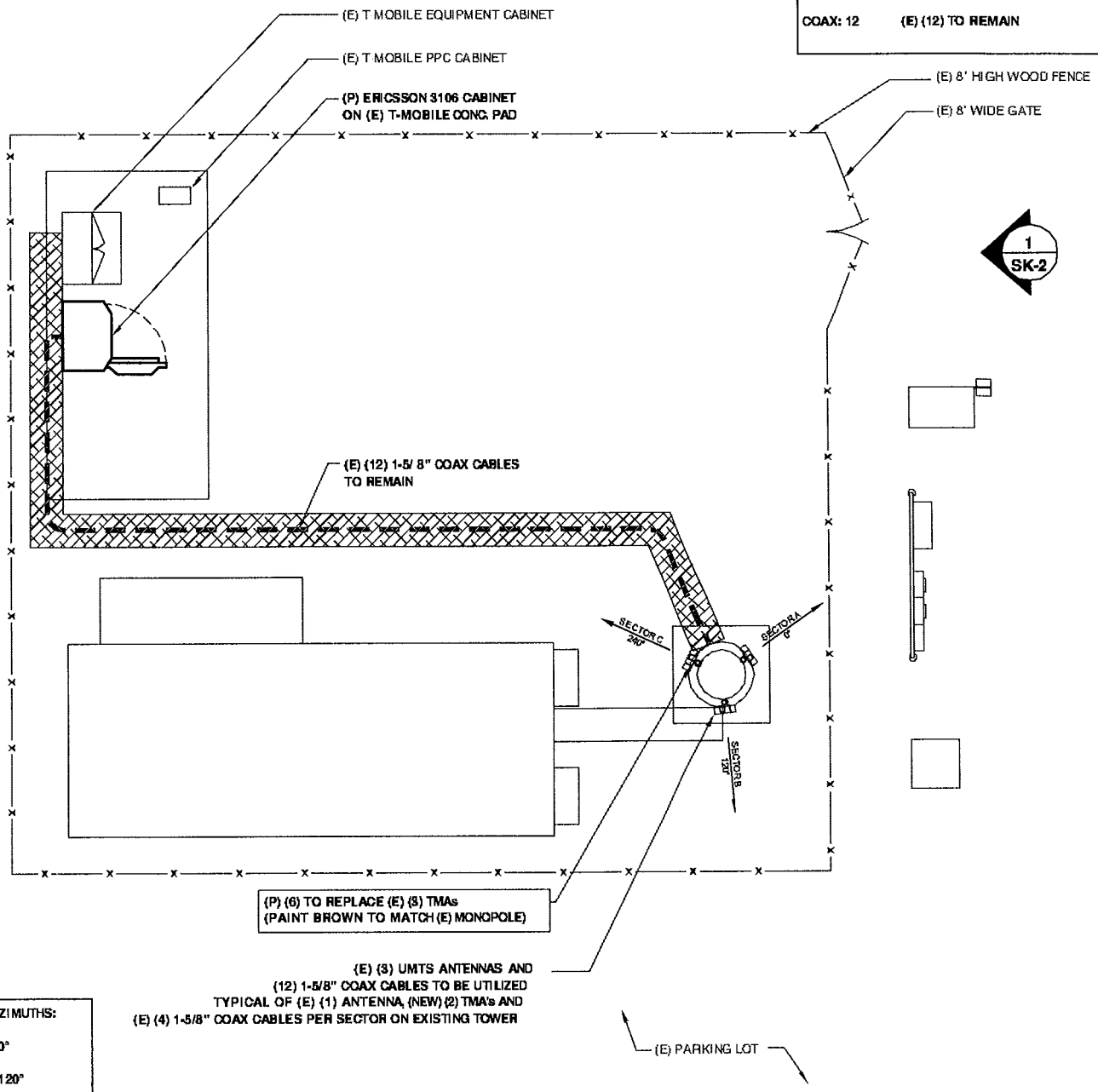



| FINAL CONFIGURATION | |
|---|---|
| CABINETS: 2 | (E) (1) CABINET TO REMAIN<br>(P) (1) CABINET TO BE ADDED |
| ANTENNAS: 3 | (E) (3) ANTENNAS TO REMAIN |
| TMA: 6 | (P) (6) TO REPLACE (E) (3) TMAs |
| COAX: 12 | (E) (12) TO REMAIN |




| ANTENNA AZIMUTHS: |
|---|
| SECTOR A= 0° |
| SECTOR B= 120° |
| SECTOR C= 240° |

ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

## PLAN

SCALE: 1" = 10'-0"

5 0 5 10 15

**TRANSCEND WIRELESS**
10 INDUSTRIAL AVE.
MAHWAH, NJ 0740
OFFICE: (210) 316-2085
FAX:(210) 684-0066

FOR

**OMNIPOINT COMMUNICATIONS, INC.**
**DBA T-MOBILE USA, INC**
35 GRIFFIN ROAD SOUTH
BLOOMFIEL, CT 06002
OFFICE: (860) 692-7100
FAX:(860) 692-7159

ATLANTIS GROUP
15 Cypress St., Suite 300
Newton Centre, MA 02459
Office: 617-965-0789
Fax: 617-663-6032

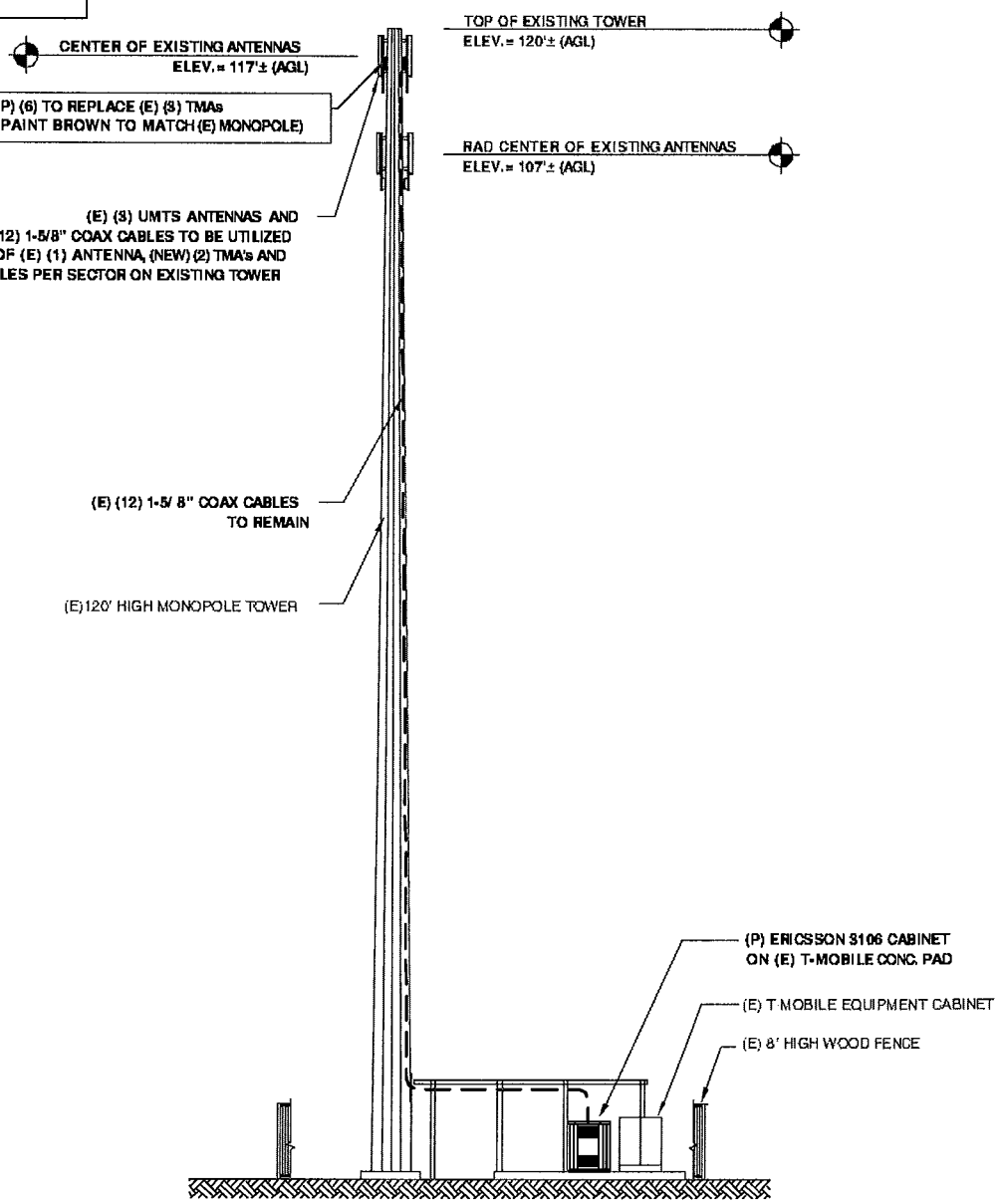
| SITE NUMBER: | |
|---|---|
| CT11493A | |
| SITE NAME: | |
| SBA: MERIDEN/CT-13069-A | |
| ADDRESS: | |
| 651 PADDOCK AVE<br>MERIDEN, CT 06450 | |
| DRAWN BY | |
| G.C. | |
| 0: FINAL | 03-26-09 |
| A: REVIEW | 02-05-09 |
| REVISION | DATE |

APPROVALS

| | |
|---|---|
| Site Owner | Date |
| Construction Manager | Date |
| RF Engineer | Date |
| Site Acquisition | Date |

The above parties hereby approve and accept these documents and authorize the contractor to proceed with the construction described herein, all construction documents are subject to review by the local building department and any changes or modifications they may impose.

| FINAL CONFIGURATION | |
|---|---|
| CABINETS: 2 | (E) (1) CABINET TO REMAIN<br>(P) (1) CABINET TO BE ADDED |
| ANTENNAS: 3 | (E) (3) ANTENNAS TO REMAIN |
| TMA: 6 | (P) (6) TO REPLACE (E) (3) TMAs |
| COAX: 12 | (E) (12) TO REMAIN |




ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

## ELEVATION

SCALE: 1" = 20'-0"

10 0 10 20 30


**TRANSCEND WIRELESS**
10 INDUSTRIAL AVE.
MAHWAH, NJ 0740
OFFICE: (210) 316-2085
FAX: (210) 684-0066

FOR

**OMNIPOINT COMMUNICATIONS, INC.**
**DBA T-MOBILE USA, INC**
35 GRIFFIN ROAD SOUTH
BLOOMFIEL, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

ATLANTIS GROUP
15 Cypress St., Suite 300
Newton Centre, MA 02459
Office: 617-965-0789
Fax: 617-663-6032


| SITE NUMBER: | |
|---|---|
| CT11493A | |
| SITE NAME: | |
| SBA: MERIDEN/CT-13069-A | |
| ADDRESS: | |
| 651 PADDOCK AVE<br>MERIDEN, CT 06450 | |
| DRAWN BY<br>G.C. | |
| | |
| | |
| | |
| | |
| 0: FINAL | 03-26-09 |
| A: REVIEW | 02-05-09 |
| REVISION | DATE |

APPROVALS

| | |
|---|---|
| Site Owner | Date |
| Construction Manager | Date |
| RF Engineer | Date |
| Site Acquisition | Date |

The above parties hereby approve and accept these documents and authorize the contractor to proceed with the construction described herein, all construction documents are subject to review by the local building department and any changes or modifications they may impose.

FDH

# Structural Analysis for SBA Network Services, Inc.

**119 ft Monopole**

**Site Name: Meriden**
**Site ID: CT13069-A**

FDH Project Number 09-03252E S1 (Revised)


Prepared By:

Jeremy D. Piner
Senior Project Engineer

Reviewed By:

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

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



May 4, 2009

*Prepared pursuant to ANSI/TIA-222-G Structural Standards for Antenna Supporting Structures and Antennas*

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2730 Rowland Road, Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

## EXECUTIVE SUMMARY

At the request of SBA, FDH Engineering, Inc. performed a structural analysis of the monopole located in Meriden, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads, pursuant to the *Structural Standards for Antenna Supporting Structures and Antennas, ANSI/TIA-222-G.* Information pertaining to the existing/proposed antenna loading, current tower geometry, and member sizes was obtained from the Sabre Communications (Job No. 08-10201) design drawings dated November 9, 2007, FDH, Inc. (Job No. 08-07134T) TIA inspection report dated October 7, 2008, and SBA Network Services, Inc.

The *basic design wind speed* per *ANSI/TIA-222-G* standards is 115 MPH without ice and 50 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 in place at 117 ft., the tower meets the requirements of the *ANSI/TIA-222-G* standards. Furthermore, provided the foundation was constructed per the original foundation drawings (See Sabre Drawing No. 08-10201-F1), the foundation should be adequate 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 is accurate (i.e. the steel data, tower layout, current antenna loading, and proposed antenna loading) and that the tower will be properly erected and maintained per the original design drawings.

### Recommendations

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

1. The proposed TMAs should be installed behind the existing panel antennas.



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## 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 should be contacted to perform a revised analysis*

### Table 1 – Appurtenance Loading

### Existing Loading:

| Antenna No. | Centerline Elevation (ft) | Coax and Lines[1] | Carrier | Mount Type | Description |
|---|---|---|---|---|---|
| 1-3 | 117[2] | (12) 1-5/8" (1) 1/4" | T-Mobile | (3) 7' x 2.39" Pipe Mounts | (3) RFS APX16DWV-16DWVS (3) RFS TMAs |
| 4-6 | 107 | (12) 1-5/8" | Verizon | (3) 7' x 2.39" Pipe Mounts | (3) Jaybeam X65-13-04 |

1 Coax installed inside the pole's shaft unless otherwise noted.
2 The loading for T-Mobile at 117' will be altered. See the proposed loading below.

### Proposed Loading:

| Antenna No. | Centerline Elevation (ft) | Coax and Lines | Carrier | Mount Type | Description |
|---|---|---|---|---|---|
| 1-3 | 117[1] | (12) 1-5/8" (1) 1/4" | T-Mobile | (3) 7' x 2.39" Pipe Mounts | (3) RFS APX16PV-16PVL-E (6) OneBase Twin TMAs |

1 This represents the total loading for T-Mobile at 117'. According to information provided by SBA, T-Mobile will remove their (3) existing antennas and TMAs and will install (3) APX16PV-16PVL-E antennas and (6) OneBase Twin TMAs at 117'.



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## 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 |

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

If the assumptions outlined in this report differ from actual field conditions, FDH 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 | 119 - 98.75 | Pole | TP28.1x24.86x0.1875 | 6.9 | Pass |
| L2 | 98.75 - 48.75 | Pole | TP35.67x27.165x0.25 | 30.2 | Pass |
| L3 | 48.75 - 0 | Pole | TP43.26x34.4546x0.25 | 60.3 | Pass |
| | | Anchor Bolts | (8) 2.25" ø | 53.2 | Pass |
| | | Base Plate | 2.25" thick x 47" square | 35.0 | Pass |

### Table 4 – Maximum Base Reactions

| Base Reactions | Current Analysis Reactions (*ANSI/TIA-222-G*) | Original Design Reactions (*ANSI/TIA-222-G*) |
|---|---|---|
| Axial | 18 k | 19 k |
| Shear | 16 k | 27 k |
| Moment | 1,093 k-ft | 1,627 k-ft |



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## 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 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.



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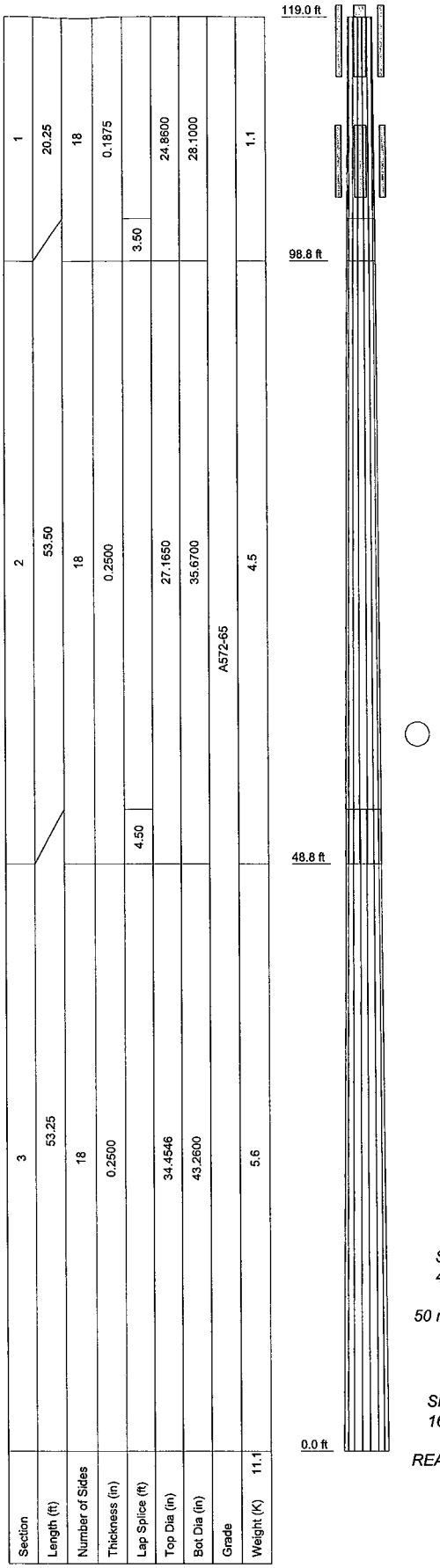
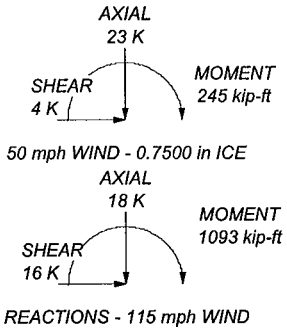



| Section | 1 | 2 | 3 |
|---|---|---|---|
| Length (ft) | 20.25 | 53.50 | 53.25 |
| Number of Sides | 18 | 18 | 18 |
| Thickness (in) | 0.1875 | 0.2500 | 0.2500 |
| Lap Splice (ft) | 3.50 | 4.50 | |
| Top Dia (in) | 24.8600 | 27.1650 | 34.4546 |
| Bot Dia (in) | 28.1000 | 35.6700 | 43.2600 |
| Grade | A572-65 | | |
| Weight (K) | 1.1 | 4.5 | 5.6 |

11.1




## DESIGNED APPURTENANCE LOADING

| TYPE | ELEVATION | TYPE | ELEVATION |
|---|---|---|---|
| APX16PV-16PVL-E w/Mount Pipe (T-Mobile) | 117 | (2) OneBase Twin TMA (T-Mobile) | 117 |
| | | (2) OneBase Twin TMA (T-Mobile) | 117 |
| APX16PV-16PVL-E w/Mount Pipe (T-Mobile) | 117 | (2) OneBase Twin TMA (T-Mobile) | 117 |
| | | X65-13-04 w/Mount Pipe (Verizon) | 107 |
| APX16PV-16PVL-E w/Mount Pipe (T-Mobile) | 117 | X65-13-04 w/Mount Pipe (Verizon) | 107 |
| | | X65-13-04 w/Mount Pipe (Verizon) | 107 |

## MATERIAL STRENGTH

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

## TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Analysis utilizes TIA-222-G Addendum 2 Table 4-8.
7. Anchor Botls: (8) 2.25" diam. on a 49.125" bolt circle
8. Base Plate: 2.25" thick x 47" square
9. TOWER RATING: 60.3%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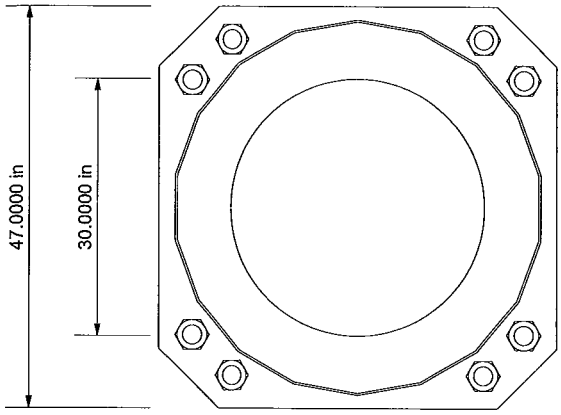
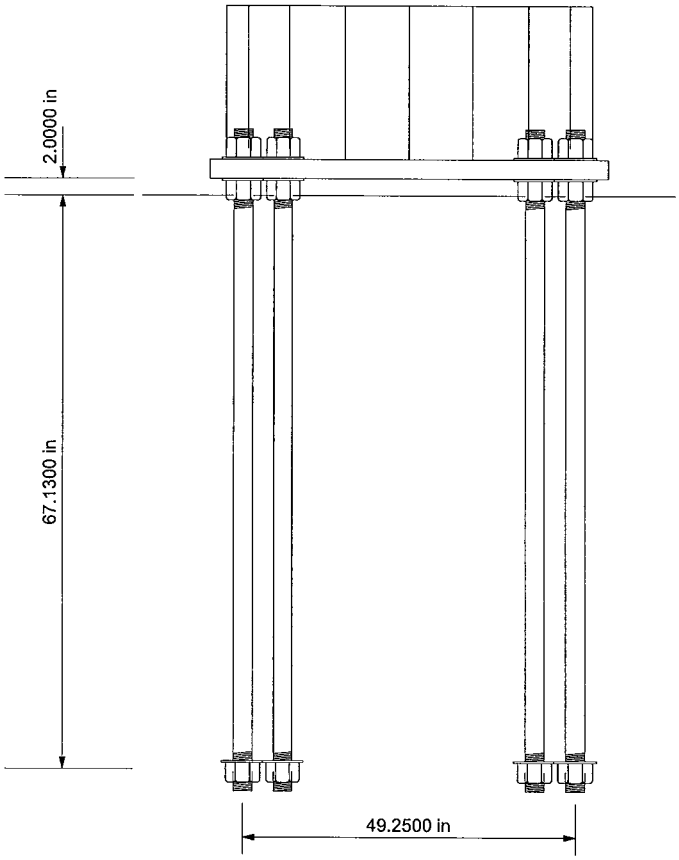
2730 Rowland Rd.
Raleigh, NC 27615
Phone: (919) 755-1012
FAX: (919) 755-1031


| | | |
|---|---|---|
| Job: ***Meriden S#CT13069-A*** | | |
| Project: ***09-03252E S1*** | | |
| Client: SBA | Drawn by: Jeremy Piner | App'd: |
| Code: TIA-222-G | Date: 05/04/09 | Scale: NTS |
| Path: | | Dwg No. E-1 |




## FOUNDATION NOTES

1. Plate thickness is 2.2500 in.
2. Plate grade is A572-60.
3. Anchor bolt grade is A615-75.
4. f'c is 4 ksi.

*FDH Engineering, Inc.*
2730 Rowland Rd.
Raleigh, NC 27615
Phone: (919) 755-1012
FAX: (919) 755-1031

| | | |
|---|---|---|
| Job: *Meriden S#CT13069-A* | | |
| Project: *09-03252E S1* | | |
| Client: SBA | Drawn by: Jeremy Piner | App'd: |
| Code: TIA-222-G | Date: 05/04/09 | Scale: NTS |
| Path: | | Dwg No. F-1 |

T-Mobile

T-Mobile USA Inc.
35 Griffin Rd South, Bloomfield, CT 06002-1853
Phone: (860) 692-7100
Fax: (860) 692-7159

# Technical Memo

To: Transcend
From: Farid Marbouh - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CT11493A
Date: May 8, 2009

**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 651 Paddock Ave, Meriden, 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), (1980.2-1984.8), (2140-2145), (2110-2120)MHz frequency Band.
2) The antenna array consists of three sectors, with 1 antenna per sector.
3) The model number for GSM antenna is APX16PV-16PVL.
3) The model number for UMTS antenna is APX16PV-16PVL.
4) GSM antenna center line height is 117 ft.
4) UMTS antenna center line height is 117 ft.
5) The maximum transmit power from any GSM sector is 2231.1 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
5) The maximum transmit power from any UMTS sector is 2225.82 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 651 Paddock Ave, Meriden, CT, is 0.07936 mW/cm^2. This value represents 7.936% 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 15.01%. The combined Power Density for the site is 22.946% of the M.P.E. standard.

## Connecticut Market

T-Mobile

### Worst Case Power Density

| | |
|---|---|
| **Site:** | **CT11493A** |
| **Site Address:** | **651 Paddock Ave** |
| **Town:** | **Meriden** |
| **Tower Height:** | **120 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** | APX16PV-16PVL | **Antenna Model** | APX16PV-16PVL |
| **Cable Size** | 1 5/8 in. | **Cable Size** | 1 5/8 in. |
| **Cable Length** | 160 ft. | **Cable Length** | 160 ft. |
| **Antenna Height** | 117.0 ft. | **Antenna Height** | 117.0 ft. |
| **Ground Reflection** | 1.6 | **Ground Reflection** | 1.6 |
| **Frequency** | 1945.0 MHz | **Frequency** | 2.1 GHz |
| **Jumper & Connector loss** | 4.50 dB | **Jumper & Connector loss** | 1.50 dB |
| **Antenna Gain** | 17.8 dBi | **Antenna Gain** | 17.8 dBi |
| **Cable Loss per foot** | 0.0116 dB | **Cable Loss per foot** | 0.0116 dB |
| **Total Cable Loss** | 1.8560 dB | **Total Cable Loss** | 1.8560 dB |
| **Total Attenuation** | 6.3560 dB | **Total Attenuation** | 3.3560 dB |
| **Total EIRP per Channel** | 54.45 dBm | **Total EIRP per Channel** | 60.46 dBm |
| **(In Watts)** | 278.89 W | **(In Watts)** | 1112.91 W |
| **Total EIRP per Sector** | 63.49 dBm | **Total EIRP per Sector** | 63.47 dBm |
| **(In Watts)** | 2231.10 W | **(In Watts)** | 2225.82 W |
| **nsg** | 11.4440 | **nsg** | 14.4440 |
| **Power Density (S) =** | **0.039728 mW/cm^2** | **Power Density (S) =** | **0.039634 mW/cm^2** |
| **T-Mobile Worst Case % MPE =** | | **7.9361%** | |

*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*

## Co-Location Total

| **Carrier** | **% of Standard** |
|---|---|
| Verizon | 15.0100 % |
| Cingular | |
| Sprint | |
| AT&T Wireless | |
| Nextel | |
| MetroPCS | |
| Other Antenna Systems | |
| **Total Excluding T-Mobile** | **15.0100 %** |
| T-Mobile | 7.9361 |
| **Total % MPE for Site** | **22.9461%** |