·T· · ·Mobile·

Please Reply To:
Sam Simons
35 Griffin Road South
Bloomfield, CT 06002
203-482-5156
Sam.Simons@T-Mobile.com

July 27, 2015

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council Ten
Franklin Square
New Britain, CT 06501

EM-T-MOBILE-045-130924
T-Mobile Site ID CTNL805B
49 Brainerd Road, East Lyme CT
Notice of Compliance with Conditions and Construction Completion

Dear Attorney Bachman:

The Connecticut Siting Council ("Council") acknowledged the above referenced T- Mobile Northeast LLC ("T-Mobile") notice of exempt modification on October 11, 2013. The Council imposed the following condition in its acknowledgment:

- The coax and TMAs must be installed in accordance with the Structural Analysis Report prepared by FDH Engineering, dated September 9, 2013;
- Within 45 days following completion of the antenna installation, T-Mobile shall provide documentation certified by a professional engineer that its installation complied with the requirements of the structural analysis;
- Any deviation from the proposed modification as specified in this notice and supporting materials with the 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;
- Within 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 attached PE Closeout Letter, dated July 24, 2015, provides evidence of compliance with the conditions outlined by the Council.

In addition, T-Mobile hereby notifies the Council that construction of the acknowledged modifications were complete as of March 20, 2015.

Please don't hesitate to contact me with any questions.

Sincerely,

Sam Simons

Samuel Simons, T-Mobile

CC: Mark Richard, T-Mobile

6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012 P
(919) 755-1031 F

July 24, 2015

Sam Simons
Engineering Development - Connecticut
T-Mobile
35 Griffin Road South
Bloomfield, CT 06002
sam.simons@t-mobile.com

RE: PE Close Out Letter
EM-T-MOBILE 045-130924/T-Mobile Site
SBA Site ID # **CT11794-S-01**
SBA Site Name: East Lyme 1
T-Mobile Site ID #: CTNL805

Dear Mr. Simons,

Velocitel, Inc., d.b.a. FDH Velocitel has completed a post-construction review of the above-referenced site to determine whether T-Mobile complied with conditions imposed by the Connecticut Siting Council's acknowledgment letter, dated October 11, 2013. Our compliance review included the Connecticut Siting Council's acknowledgment letter and the approved tower Structural Analysis Report by FDH Engineering, project number 13SB0O1400, dated September 9, 2013.

On behalf of FDH Velocitel, based on my review of the information, I, Dennis D. Abel, certify that to the best of my knowledge, the T-Mobile work complies with the recommendations of the approved Structural Analysis.

All observations were performed after the construction was complete and FDH Velocitel was not present during the construction phase. This review is not to determine the adequacy or effectiveness of the modification solution.

We at FDH Velocitel appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted,

Dennis D. Abel, PE
Connecticut License #23247

CC: Mark Appleby, Northeast Site Solutions

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

October 11, 2013

Julie D. Kohler, Esq.
Cohen and Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604

RE: **EM-T-MOBILE-045-130924** – T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located at 49 East Brainerd Road, Niantic (East Lyme), Connecticut.

Dear Attorney Kohler:

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 feedlines and accessory equipment shall be installed as recommended in the Structural Analysis Report prepared by FDH Engineering dated September 9, 2013 and stamped by Bradley Newman;
- Within 45 days following completion of the antenna installation, T-Mobile shall provide documentation certified by a professional engineer that its installation complied with the recommendations of the structural analysis;
- Any deviation from the proposed modification as specified in this notice and supporting materials with the 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;
- Within 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 23, 2013. 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.

CONNECTICUT SITING COUNCIL

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,

Melanie A. Bachman
Acting Executive Director

MAB/CDM/jb

c: The Honorable Paul M. Formica, First Selectman, Town of East Lyme
Gary Goeschel, Director of Planning, Town of East Lyme
Sean Gormley, SBA

COHEN and WOLF P.C.
ATTORNEYS AT LAW

JULIE D. KOHLER

PLEASE REPLY TO: Bridgeport
WRITER'S DIRECT DIAL: (203) 337-4157
E-Mail Address: jkohler@cohenandwolf.com

September 23, 2013

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Notice of Exempt Modification
SBA Towers II, LLC/T-Mobile co-location
Site ID CTNL805B
49 East Brainerd Road, Niantic (East Lyme)

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, SBA Towers II, LLC ("SBA") owns the existing monopole telecommunications tower and related facility at 49 Brainerd Road, East Lyme Connecticut (longitude -72.2257/ latitude 41.30259). T-Mobile intends to add six antennas and related equipment at this existing telecommunications facility in East Lyme ("East Lyme Facility"). Please accept this letter as notification, pursuant to R.C.S.A. § 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the First Selectman, Paul Formica, and the property owner Christopher Samulson.

The existing East Lyme Facility consists of a 170 foot tall monopole structure. T-Mobile plans to add six antennas on new mounting platforms and 3 TMAs (tower mounted amplifiers) at a centerline of 160 feet. (See the plans revised to September 12, 2013 attached hereto as Exhibit A). T-Mobile will also add coax and fiber cabling inside the monopole structure, an 8 foot high ice bridge with a GPS mounted to the ice bridge support, and a 10 foot x 16 foot concrete pad on which an Ericsson RBS 3106 UMTS cabinet will be located. The existing Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated September 9, 2013 and attached hereto as Exhibit B.

The planned modifications to the East Lyme Facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modification will not increase the height of the tower. T-Mobile's antennas and TMAs will be installed at the 160 foot level of the 170 foot monopole tower. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. The installation of the T-Mobile equipment in the existing compound, as reflected on the attached site plan, will not require an extension of the site boundaries. T-Mobile's proposed equipment will be located entirely within the existing compound area.

3. The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.

4. The operation of the replacement antennas will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated September 19, 2013 T-Mobile's operations would add .440% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would be 41.140% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

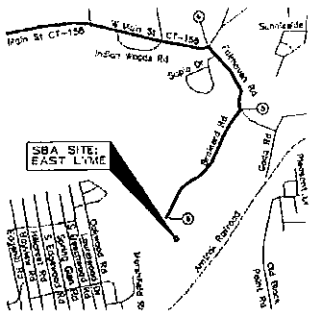
For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the East Lyme Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Julie D. Kohler, Esq.

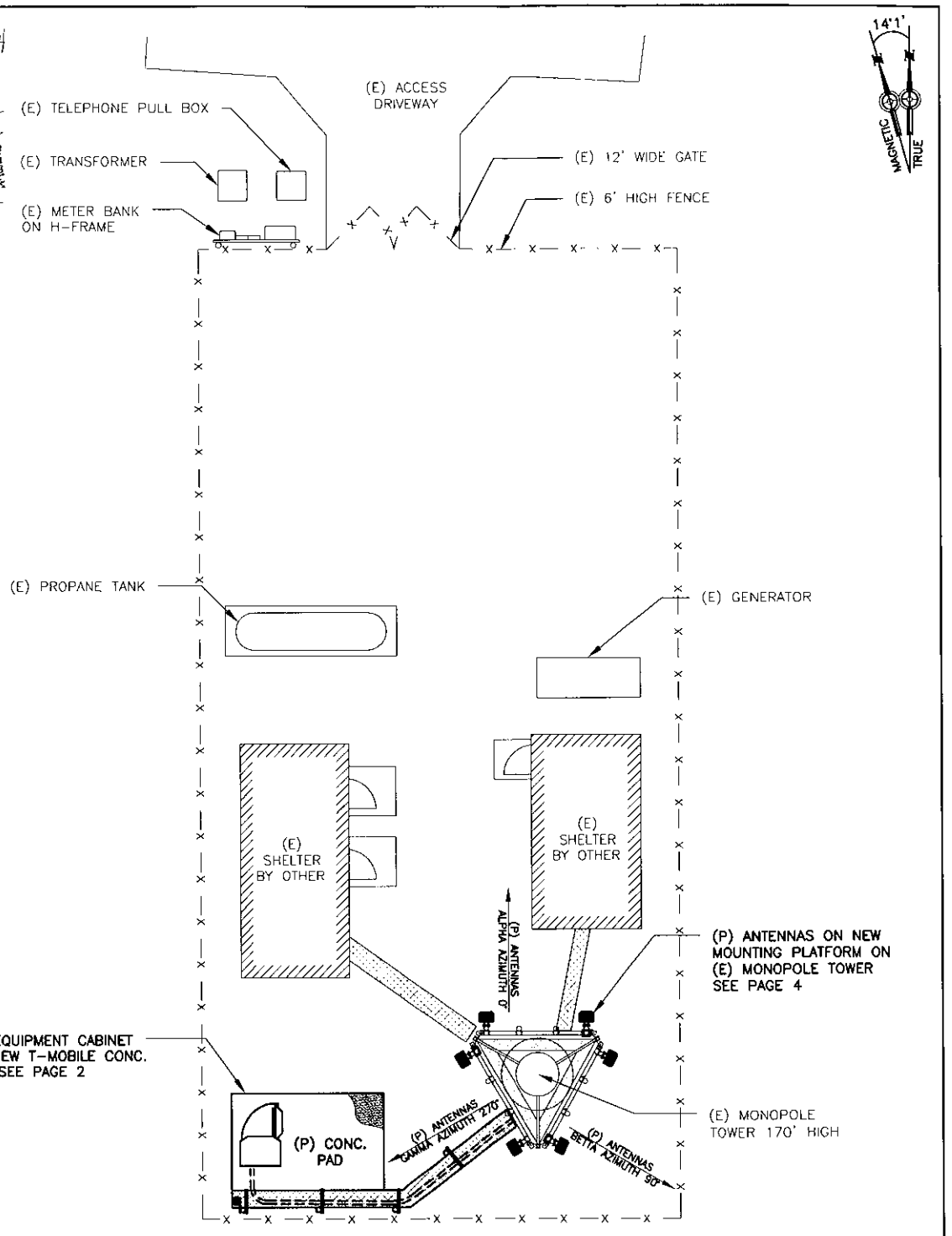
cc: Town of East Lyme, First Selectman Paul Formica
SBA Towers II, LLC
Christopher Samulsen
Scott Chase, NSS

EXHIBIT A



KEY PLAN

N.T.S.



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.

SITE PLAN

N.T.S.

1 LE-1

1 LE-3

CONFIGURATION

2C

SUBMITTALS	
LE REV A	09.11.13
LE REV 0	09.12.13

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

LEASE EXHIBIT

SITE NUMBER:
CTNL805B

SITE NAME:
AMTRAK EAST LYME

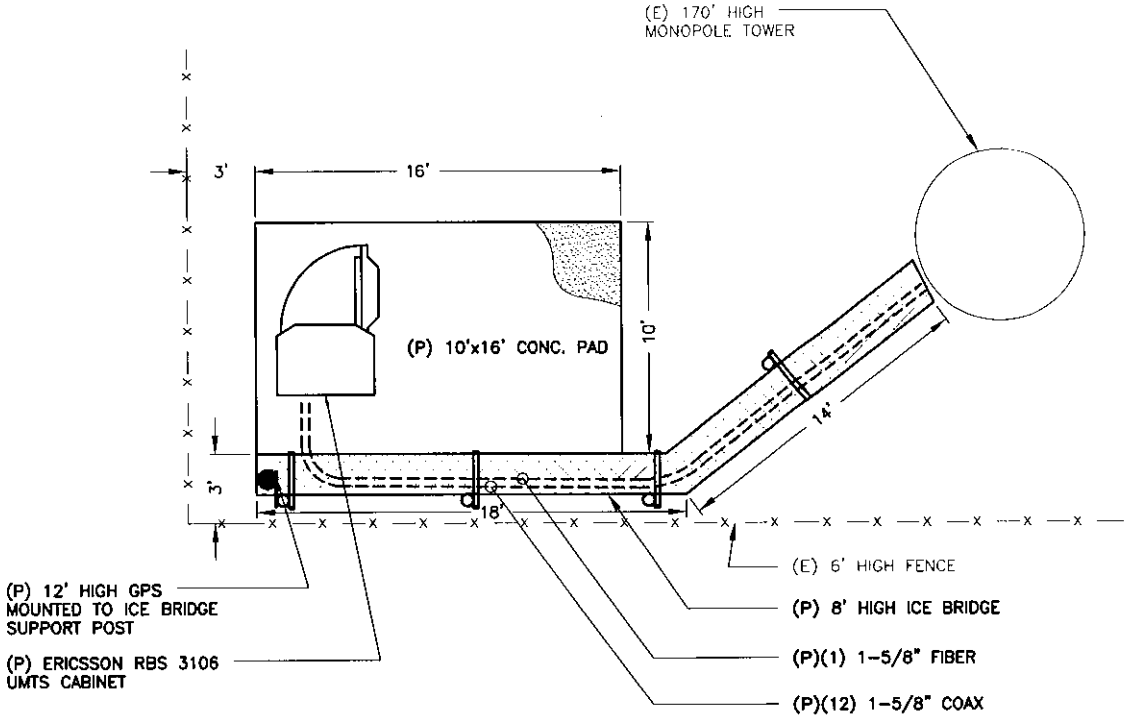
SITE ADDRESS:
49 BRAINERD RD
NIANTIC, CT 06357

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
STURBRIDGE, MA 01566
(508) 434-5237

FOR

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

DRAWN BY: E.B | CHECKED BY: S.M



EQUIPMENT LAYOUT

N.T.S.

1
LE-2

CONFIGURATION
2C

SUBMITTALS	
LE REV A	09.11.13
LE REV 0	09.12.13

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

LEASE EXHIBIT

SITE NUMBER:
CTNL805B

SITE NAME:
AMTRAK EAST LYME

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49 BRAINERD RD
NIANTIC, CT 06357

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
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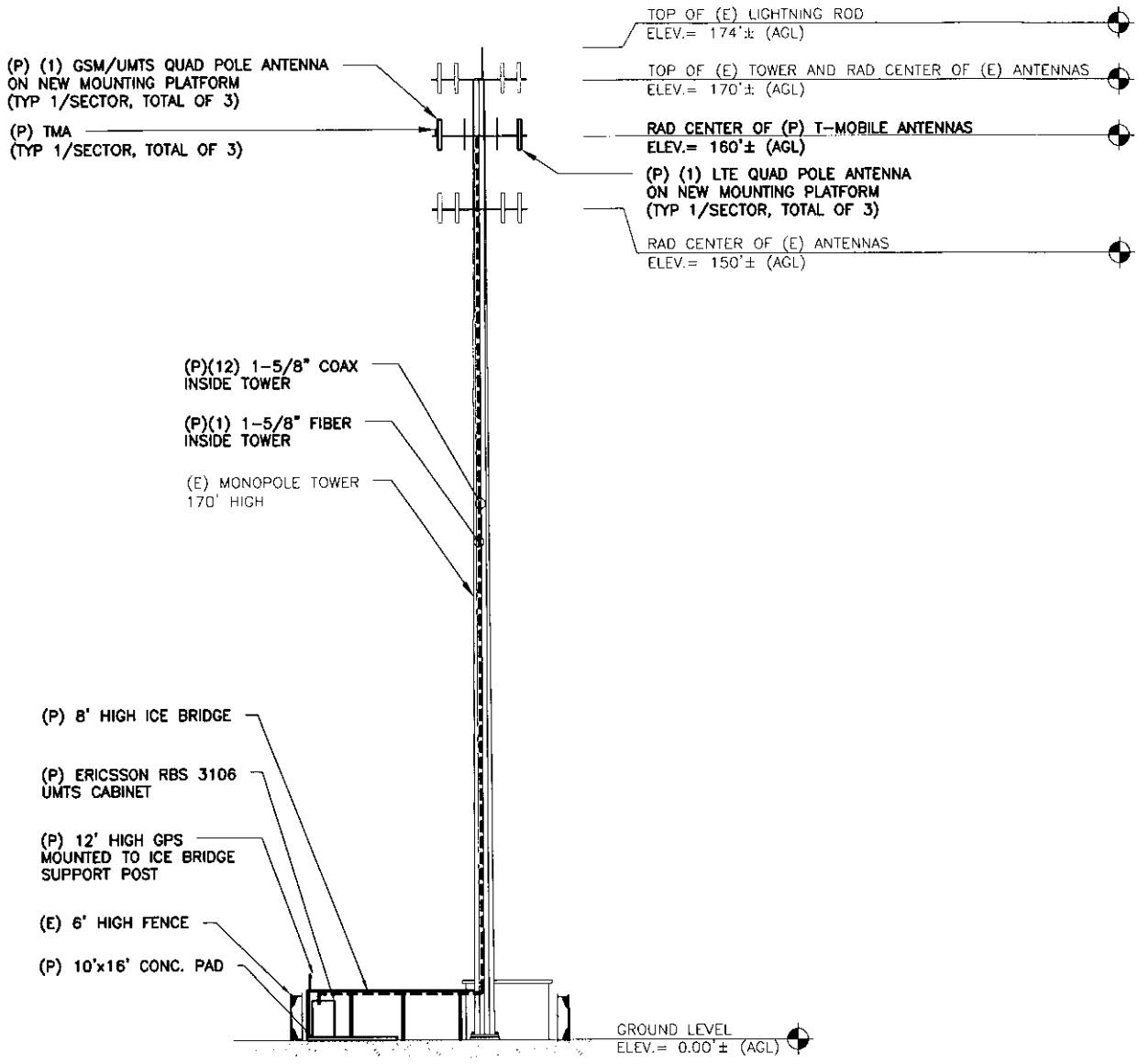
(508) 434-5237

FOR

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

DRAWN BY: E.B | CHECKED BY: S.M



EAST ELEVATION (1 / LE-3)

N.T.S.

CONFIGURATION
2C

SUBMITTALS	
LE REV A	09.11.13
LE REV 0	09.12.13

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

LEASE EXHIBIT

SITE NUMBER:
CTNL805B

SITE NAME:
AMTRAK EAST LYME

SITE ADDRESS:
49 BRAINERD RD
NIANTIC, CT 06357

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
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BLOOMFIELD, CT 06002
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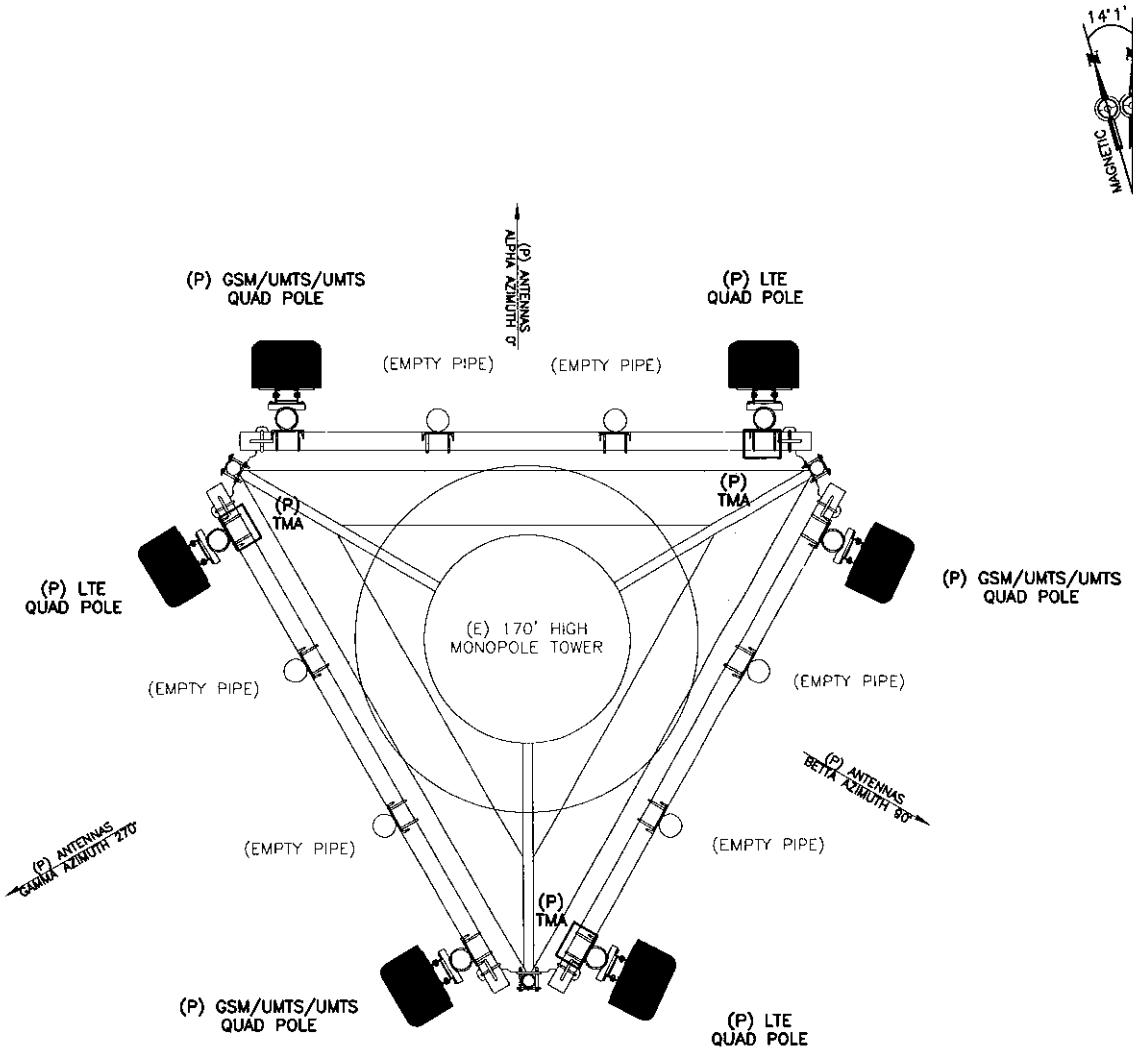
FAX: (860) 692-7159

DRAWN BY: E.B | CHECKED BY: S.M



CONFIGURATION

2C

PROPOSED ANTENNA CONFIGURATION

SUBMITTALS	
LE REV A	09.11.13
LE REV 0	09.12.13

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

LEASE EXHIBIT

SITE NUMBER:
CTNL805B

SITE NAME:
AMTRAK EAST LYME

SITE ADDRESS:
49 BRAINERD RD
NIANTIC, CT 06357

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
STURBRIDGE, MA 01566
(508) 434-5237

FOR

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

DRAWN BY: E.B | CHECKED BY:S.M

EXHIBIT B

Structural Analysis for SBA Network Services, Inc.

169' Monopole Tower

SBA Site Name: East Lyme 1
SBA Site ID: CT11794-S-01
T-Mobile Site ID: CTNL805C

FDH Project Number 13SB0O1400

Analysis Results

Tower Components	55.8 %	Sufficient
Foundation	56.5 %	Sufficient

Prepared By:

Chad Barham
Project Engineer

Reviewed By:

Bradley R. Newman, PE
Senior Project Engineer
CT License No 29630

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012
info@fdh-inc.com

September 9, 2013

Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and 2005 CT State Building Code

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 Niantic, 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-Fand the 2005 CT State Building Code*. Information pertaining to the existing/proposed antenna loading, current tower geometry, geotechnical data, foundation dimensions, and member sizes was obtained from:

- ❑ Sabre Towers and Poles (Job No. 42498) original tower and foundation drawings dated April 6 2011
- ❑ Sabre Towers and Poles (Job No. 42498) Structural Design Report dated April 4, 2011
- ❑ SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 CT State Building Code* is 85 mph without ice and 19 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 160 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and the *2005 CT State Building Code* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundations were designed and constructed to support the original design reactions (see Sabre Towers and Poles Job No. 42498), the foundations 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* standards and the *2005 CT State Building Code* are met with the existing and proposed loading in place, we have the following recommendations:

1. Proposed feedlines must be installed on the inside of the monopole'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 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[1]	Carrier	Mount Elevation (ft)	Mount Type
167	(3) KMW AM-X-CD-14-65-00T w/ Mount Pipe (3) Andrew SBNH-1D6565C w/Mount Pipe (3) KMW AM-X-CD-16-65-00T w/ Mount Pipe (6) CCI DTMABP7819VG TMAs (6) Ericsson RRUS 11 RRUs (1) Raycap DC6-48-60-18-8F Surge Arrestors	(12) 1-5/8" (2) 5/8" DC Cables (1) 3/8" Fiber	AT&T	167	(3) T-Arms
147	(4) Swedcom SC-E 6014 rev2 w/Mount Pipe (2) Antel LPA-80080/4CF W/Mount Pipe (3) Antel BXA-171063-8BF-2 w/ Mount Pipe (3) Antel BXA-70063/6CFx2 w/ Mount Pipe (6) RFS FD9R6004/2C-3L Diplexers	(12) 1-5/8"	Verizon	147	(1) LP Platform

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
160	(6) Ericsson AIR 21 w/ Mount Pipe (3) Ericsson KRY 112-114/1 TMAs	(12) 1-5/8" (1) 1-5/8" Fiber	T-Mobile	160	(3) T-Arms (Valmont P/N RMV 12-472)

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	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. *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	169 - 145.25	Pole	TP22.48x16x0.1875	47.1	Pass
L2	145.25 - 95	Pole	TP35.83x21.2183x0.375	55.8	Pass
L3	95 - 46.5	Pole	TP48.32x33.7144x0.4375	53.4	Pass
L4	46.5 - 0	Pole	TP60.14x45.6022x0.4375	55.5	Pass
	0	Anchor Bolts	(20) 2.25" Ø x 66.75" BC	51.2	Pass
	0	Base Plate	72.75" Ø x 2.75" thk. PL	37.0	Pass

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis* *(TIA/EIA-222-F)*	Original Design *(ANSI/TIA-222-G)*
Axial	42 k	63 k
Shear	24 k	56 k
Moment	2,835 k-ft	6,777 k-ft

* Design reactions are within an allowable factor of 1.35 per the *ANSI/TIA-222-G* standard when the current analysis reactions are based on an allowable stress design.

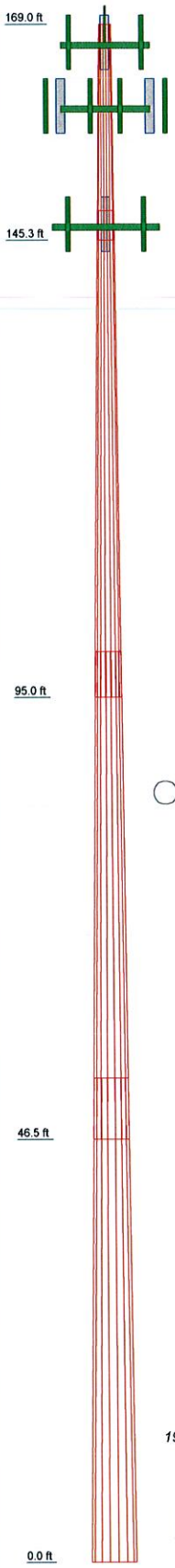
GENERAL COMMENTS

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
Length (ft)	23.75	53.50	53.50	53.25
Number of Sides	18	18	18	18
Thickness (in)	0.1875	0.3750	0.4375	0.4375
Socket Length (ft)	3.25	5.00	6.75	
Top Dia (in)	16.0000	21.2183	33.7144	45.6022
Bot Dia (in)	22.4800	35.8300	48.3200	60.1400
Grade	A572-65			
Weight (K)	0.9	6.1	10.3	13.2

30.5

AXIAL 53 K
SHEAR 2 K
MOMENT 192 kip-ft
TORQUE 0 kip-ft
19 mph WIND - 0.7500 in ICE

AXIAL 42 K
SHEAR 24 K
MOMENT 2835 kip-ft
TORQUE 1 kip-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	169	(2) AIR 21 w/ Mount Pipe	160
(3) T-Arms	167	(2) AIR 21 w/ Mount Pipe	160
AM-X-CD-14-65-00T w/ Mount Pipe	167	(2) AIR 21 w/ Mount Pipe	160
AM-X-CD-14-65-00T w/ Mount Pipe	167	Ericsson KRY 112-114/1	160
AM-X-CD-14-65-00T w/ Mount Pipe	167	Ericsson KRY 112-114/1	160
SBNH-1D6565C w/Mount Pipe	167	Ericsson KRY 112-114/1	160
SBNH-1D6565C w/Mount Pipe	167	BXA-171063-8BF-2 w/ Mount Pipe	147
SBNH-1D6565C w/Mount Pipe	167	BXA-171063-8BF-2 w/ Mount Pipe	147
AM-X-CD-16-65-00T-RET w/ Mount Pipe	167	BXA-171063-8BF-2 w/ Mount Pipe	147
		BXA-70063/6CFx2 w/ Mount Pipe	147
AM-X-CD-16-65-00T-RET w/ Mount Pipe	167	BXA-70063/6CFx2 w/ Mount Pipe	147
		BXA-70063/6CFx2 w/ Mount Pipe	147
AM-X-CD-16-65-00T-RET w/ Mount Pipe	167	(2) FD9R6004/2C-3L Diplexer	147
		(2) FD9R6004/2C-3L Diplexer	147
(2) CCI DTMABP7819VG TMA	167	(2) FD9R6004/2C-3L Diplexer	147
(2) CCI DTMABP7819VG TMA	167	LP Platform	147
(2) CCI DTMABP7819VG TMA	167	SC-E 6014 rev2 w/Mount Pipe	147
(2) RRUS 11	167	SC-E 6014 rev2 w/Mount Pipe	147
(2) RRUS 11	167	SC-E 6014 rev2 w/Mount Pipe	147
(2) RRUS 11	167	SC-E 6014 rev2 w/Mount Pipe	147
DC6-48-60-18-8F Surge Arrestor	167	LPA-80080/4CF W/Mount Pipe	147
(3) T-Arms	160	LPA-80080/4CF W/Mount Pipe	147

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 a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 19 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: 55.8%

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh NC 27616
Phone: (919) 755-1012
FAX: (919) 755-1031

Job: East Lyme 1 CT11794-S-01			
Project: 13SB0O1400			
Client: SBA	Drawn by: Chad Barham	App'd:	
Code: TIA/EIA-222-F	Date: 09/09/13	Scale: NTS	
Path: C:\Users\FDH-User\Desktop\CT11794-S_East Lyme - CT13SB0O1400\Antenna\East Lyme 1 CT11794-S-01.eri		Dwg No. E-1	

EXHIBIT C

EBI CONSULTING
www.ebiconsulting.com

21 B Street
Burlington, MA 01803
Tel: (781) 273.2500

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CTNL805B

Amtrak East Lyme
1 Chestnut Street
49 Brainerd Road
Niantic, CT 06357

September 19, 2013

EBI Project Number: 62130457

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T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Re: Emissions Values for Site: **CTNL805B – Amtrak East Lyme**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 49 Brainerd Road, Niantic, CT, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of μW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (μW/cm2). The general population exposure limit for the cellular band is 567 μW/cm2, and the general population exposure limit for the PCS band is 1000 μW/cm2. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 49 Brainerd Road, Niantic, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is a 6 foot person standing at the base of the tower

For all calculations, all equipment was calculated using the following assumptions:

1) 2 GSM channels (1935.000 MHz to 1945.000 MHz / 1983.000 MHz to 1984.000 MHz) were considered for each sector of the proposed installation.
2) 2 UMTS channels (1935.000 MHz to 1945.000 MHz / 1983.000 MHz to 1984.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation.
3) 2 LTE channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation.
4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation 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.
5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
6) The antenna used in this modeling is the Ericsson AIR21 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.6 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturer's specifications.

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7) The antenna mounting height centerline of the proposed antennas is **160 feet** above ground level (AGL)
8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CTNL805B
Site Addresss	49 Brainerd Road, Niantic, CT 06357
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	160	154	None	0	0	48.326044	0.732564	0.07326%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	160	154	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	160	154	1-5/8"	0	0	24.163022	0.366282	0.03663%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	160	154	1-5/8"	0	0	24.163022	0.366282	0.03663%
														Sector total Power Density Value:		0.147%	

Sector 2

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	160	154	None	0	0	48.326044	0.732564	0.07326%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	160	154	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	160	154	1-5/8"	0	0	24.163022	0.366282	0.03663%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	160	154	1-5/8"	0	0	24.163022	0.366282	0.03663%
														Sector total Power Density Value:		0.147%	

Sector 3

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	160	154	None	0	0	48.326044	0.732564	0.07326%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	160	154	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	160	154	1-5/8"	0	0	24.163022	0.366282	0.03663%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	160	154	1-5/8"	0	0	24.163022	0.366282	0.03663%
														Sector total Power Density Value:		0.147%	

Site Composite MPE %

Carrier	MPE %
T-Mobile	0.440%
AT&T	6.550%
Verizon Wireless	34.150%
Total Site MPE %	**41.140%**

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Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public exposure to RF Emissions.

The anticipated Maximum Composite contributions from the T-Mobile facility are **0.440% (0.147% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously.

The anticipated composite MPE value for this site assuming all carriers present is **41.140%** of the allowable FCC established general public limit. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were within the allowable 100% threshold standard per the federal government.

Scott Heffernan
RF Engineering Director

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