

**RACHEL A. SCHWARTZMAN**

Please Reply To: Bridgeport  
Writer's Direct Dial: (203) 337-4110  
E-Mail: [rschwartzman@cohenandwolf.com](mailto:rschwartzman@cohenandwolf.com)

October 7, 2014

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

ORIGINAL

**RECEIVED**  
OCT 08 2014  
CONNECTICUT  
SITING COUNCIL

**Re: EM-T-MOBILE-051-130325**  
**T-Mobile Site ID CT11317B**  
**280 Morehouse Drive, Fairfield, 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 May 1, 2013.

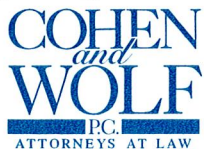
The Council imposed the following condition in its acknowledgment:

- The proposed coax shall be installed in accordance with the recommendation in the Structural Analysis Report prepared by American Tower Corporation, dated November 30, 2012 and stamped by Raphael Mohamed; and
- Not more than 45 days following completion of the antenna installation, T-Mobile shall provide documentation certified by a professional engineer that its installation complied with the recommendation of the structural analysis.

T-Mobile has complied with each of these conditions as evidenced by the PE Close Out Letter, dated September 12, 2014, and the Tower Modification Certification, dated September 11, 2014, attached hereto.

In addition, T-Mobile hereby notifies the Council that construction of the acknowledged modifications were complete as of August 11, 2014.

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



October 7, 2014  
CT11317B  
Page 2

Sincerely,

A handwritten signature in blue ink, appearing to read "Rachel Schit".

Rachel A. Schwartzman, Esq.

cc: Samuel Simons, T-Mobile  
Mark Richard, T-Mobile  
Alex Giannaras, HPC Wireless  
Julie Kohler, Esq.

September 11, 2014

**Mr. Bill Abbott**  
HPC Wireless  
22 Shelter Rock Lane  
Danbury, CT 06810

**Re: Tower Modification Certification**

**Project:** T-Mobile CT11317B  
280 Morehouse Road, Fairfield, CT

**Tower Owner:** Northeast Utilities  
107 Selden Street, Berlin, CT 06037

**Engineer:** Centek Engineering  
63-2 North Branford Road, Branford, CT

**Centek Project No.:** 13344.000

Dear Mr. Abbott,

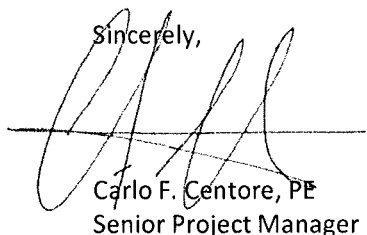
We are providing this "Tower Modification Certification" with regard to the structural components at the above referenced project.

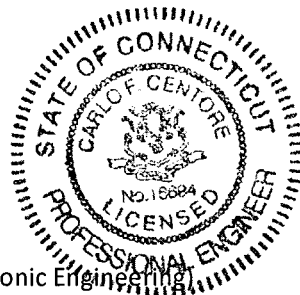
The following are the basis for substantiating compliance with the tower modification documents prepared by this office (Centek Project Number: 12066.CO1):

- ☐ Review of the Centek Engineering Structural Analysis dated 10/19/2012 Rev-2.
- ☐ Review of the Centek Engineering Reinforcement Drawings S-1 and S-2 dated 02/20/2013.
- ☐ Review of the Centek Engineering Letter of Professional Opinion dated 08/28/2014.
- ☐ Field observations by Centek Engineering personnel on 03/13/2014 of the completed modifications.

The modification design prepared by this office demonstrates the tower will not exceed 100 percent of the post construction structural rating. The work under this Contract has been reviewed and found, to the Engineer's best knowledge, information and belief, to be completed in general compliance with the documents referenced above.

Sincerely,

  
Carlo F. Centore, PE  
Senior Project Manager



Cc: James Quicksell (Tectonic Engineering)



Practical Solutions, Exceptional Service

CORPORATE OFFICE:  
Mountainville, NY (800) 829-6531

1279 Route 300  
Newburgh, NY 12550

(845) 567-6656 FAX: (845) 567-8703  
www.tectonicengineering.com

Sam Simons  
Engineering Development - Connecticut  
T-Mobile  
35 Griffin Road South  
Bloomfield, CT 06002  
[sam.simons@t-mobile.com](mailto:sam.simons@t-mobile.com)

September 12, 2014

RE: PE Close Out Letter  
EM-T-MOBILE # 051-130325 /T-Mobile Site ID # CT11317B

Dear Mr. Simons:

Tectonic Engineering & Surveying Consultants, P.C. ("Tectonic") has completed its post-construction review of the above-referenced site to determine whether T-Mobile complied with conditions imposed by the Connecticut Siting Council's (the "Council") acknowledgment letter, dated May 1, 2013 ("the Acknowledgment Letter"). Our compliance review included the following: the Acknowledgment Letter, the approved tower structural analysis report by Centek Engineering dated October 19, 2012 (the "Structural Analysis"), the approved design plans by Tectonic dated May 10, 2013, and the tower modification certification letter by Centek Engineering dated September 11, 2014 (the "Certification Letter").

On behalf of Tectonic, based on my review of the information, I, Manojkumar B. Patel, licensed professional engineer number 22038, certify that to the best of my knowledge, T-Mobile work complied with the recommendations of the approved Structural Analysis.

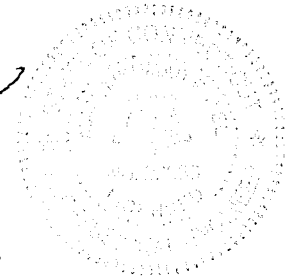
Specifically, as required by the Acknowledgment Letter, T-Mobile work complied with the following structural conditions imposed by the Council as detailed in the Certification Letter:

- A signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the recommended modifications have been completed and the structural and foundation do not exceed 100 percent of the post-construction structural rating.

Should you have any questions regarding the foregoing review, please contact me directly at 845-567-6656 ext. 2808.

Very truly yours,

Manojkumar B. Patel, P.E.  
Sr. Project Manager



Cc: Alex Giannaras (HPC Wireless)





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)

May 1, 2013

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

RE: **EM-T-MOBILE-051-130325** – T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located at 280 Morehouse Drive, Fairfield, 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:

- Prior to antenna installation, the foundation reinforcements depicted Section 4 of the Structural Analysis prepared Centek Engineering dated October 19, 2012, and stamped by Carlo Centore shall be implemented;
- Within 45 days following completion of the antenna installation, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the recommended modifications have been completed and the structure and foundation do not exceed 100 percent of the post-construction structural rating;
- 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;
- 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 March 22, 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.

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 Michael C. Tetreau, First Selectman, Town of Fairfield  
Joseph E. Devonshuk, Town Planner, Town of Fairfield  
Robert D. Gray, Program Administrator, Third Party Attachments Transmission Projects, Northeast  
Utilities Service Company



**Northeast  
Utilities System**

107 Selden Street, Berlin, CT 06037

Northeast Utilities Service Company  
P.O. Box 270  
Hartford, CT 06141-0270  
(203) 665-5000

April 3, 2013

Mr. Mark Richard  
T-Mobile  
35 Griffin Rd.  
Bloomfield, CT 06002

RE: T-Mobile Antenna Site, CT-11 317, Moorehouse Rd., Fairfield CT, structure 876.

Dear Mr. Richard:

Based on our reviews of the site drawings, the structural analysis provided by Centek Engineering and, and the foundation modification and analyses performed by Centek Engineering, we have reviewed for acceptance this modification

Since there are no outstanding structural or site related issues to resolve at this time, construction at these locations may begin as soon as scheduling allows. You may contact Mr. O'Brien (860-665-6987); once the lease issues are secured you may then contact Mr. John Landry directly (860-665-5425) to begin the construction arrangements

Sincerely,

Robert Gray  
Transmission Line Engineering

ref: CT11317B-MDRN-CD-V2.pdf  
12066.CO1 - CT11317B - Rev2 10.19.12.pdf

**JULIE D. KOHLER**

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

**EM-T-MOBILE-051-130325**

March 22, 2013

Ms. Linda Roberts,  
Executive Director  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051

**Re: Notice of Exempt Modification  
CL&P/T-Mobile co-location  
Site ID CT11317B  
280 Morehouse Drive, Fairfield CT**



Dear Ms. Roberts:

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, CL&P owns the existing electric transmission tower and related facility at 280 Morehouse Drive, Fairfield Connecticut (latitude 41° 12' 32.4" / longitude -73° 15' 39.5994"). T-Mobile intends to replace six antennas and related equipment at this existing telecommunications facility in Fairfield ("Fairfield 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, Michael C. Tetreau and the property owners, Chijian Zhang and Yuzhi Hu.

The existing Fairfield Facility consists of an 84 foot tall transmission line structure with a power mount that extends to 106' 6". The facility currently supports the antennas of AT&T, Sprint and T-Mobile.

T-Mobile plans to replace six antenna and the platform mounted on the powermount at a centerline of 95 feet. (See the plans revised to March 15, 2013 attached hereto as Exhibit A). T-Mobile will also install 3 equipment cabinets and remove one equipment cabinet within the existing compound area near the base of the tower, as well as install coax cables along existing coax routing. The existing Facility, with foundation modifications, is structurally capable of supporting T-Mobile' proposed use, as indicated in the structural analysis dated October 19, 2012 and attached hereto as Exhibit B. (Section 1-1 of the structural analysis also

March 22, 2013  
Site ID CT11317B  
Page 2

gives provides detail about the proposed equipment revisions and platform replacement.) As referenced by the structural analysis, foundation modification plans dated October 19, 2012 are attached hereto as Exhibit C.

The planned modifications to the Fairfield 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 replacement antennas will be installed at the 95 foot level. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2 . The installation of the T-Mobile replacement 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 March 7, 2013 T-Mobile's operations would add 0.915% 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 10.955% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit D.

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

Sincerely,

*Julie D. Kohler / mab*

Julie D. Kohler, Esq.

cc: Town of Fairfield, Michael C. Tetreau  
Chijan Zhang and Yuzhi Hu  
Jamie Ford, HPC Wireless

# EXHIBIT A

# TECTONIC

• PLANNING  
• SURVEYING  
• ENGINEERING  
• CONSTRUCTION  
• MANAGEMENT  
• MAINTENANCE

**TECTONIC Engineering & Surveying**  
Consultants P.C.  
1279 Route 300  
Fairfield, CT 06424  
Phone: (845) 387-8858  
Fax: (845) 387-8703

**T-Mobile**  
NORTHEAST LLC.  
1-T-Mobile Northeast, LLC.  
PHONE: (973) 881-8000  
FAIRFIELD, NJ 07004

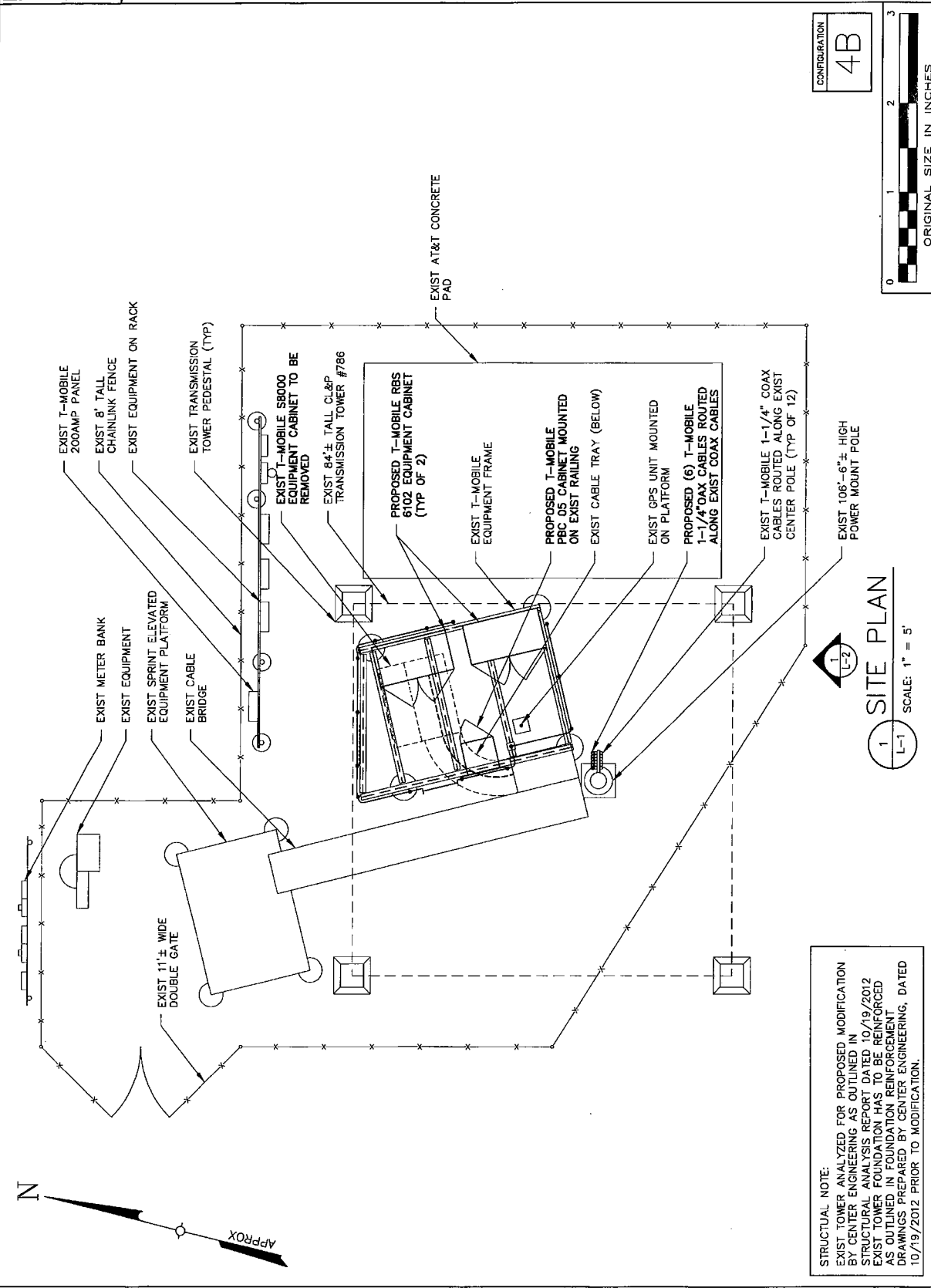
APPROVALS			
T-MOBILE LANDLORD RF CONSTRUCTION		PROJECT NUMBER 6903-071317B	DESIGNED BY GC
REV	DATE	REVISION	DRAWN BY
1	04/03/13	FOR COMMENT	TMR
2	04/15/13	CHANGED EQUIPMENT	SS
3	03/15/13	PER COMMENTS	DAC

ISSUED BY	DATE

**SITE INFORMATION**  
CT11317B  
FAIRFIELD MP X44 & X42  
280 MOREHOUSE DRIVE  
FAIRFIELD, CT 06825

**SHEET TITLE**  
SITE PLAN

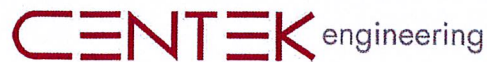
**SHEET NUMBER**  
L-1







# EXHIBIT B



Centered on Solutions<sup>SM</sup>

**Structural Analysis of**  
**Powermount and CL&P Tower**

*T-Mobile Site Ref: CT11317B*

*CL&P Structure No. 876*  
*86' Electric Transmission Lattice Tower*

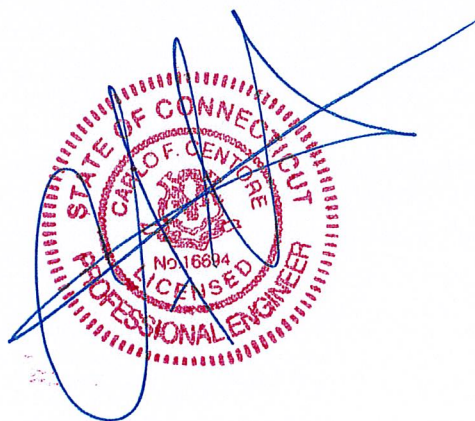
*280 Morehouse Drive*  
*Fairfield, CT*

*CENTEK Project No. 12066.CO1*

*~~Date: July 13, 2012~~*

*~~Rev 1: July 31, 2012~~*

*Rev 2: October 19, 2012*



**Prepared for:**  
*T-Mobile Towers*  
*4 Sylvan Way*  
*Parsippany, NJ 07054*

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## Introduction

The purpose of this report is to analyze the existing powermount and 86' CL&P tower located at 280 Morehouse Dr., in Fairfield, CT for the proposed antenna and equipment upgrade by T-Mobile.

The proposed loads consist of the following:

- **SPRINT (Existing to Remain):**  
**Antennas:** Six (6) Decibel DB980H90 panel antennas mounted on a 14-ft low profile platform to the existing powermount with a RAD center elevation of 104-ft above grade.  
**Coax Cables:** Six (6) 1-5/8" Ø coax cables running on the inside of the existing FWT Powermount.
- **AT&T (Existing to Remain):**  
**Antennas:** Three (3) EMS RR90-17-02DP panel antennas leg mounted to the existing utility tower with a RAD center elevation of 84-ft above grade.  
**Coax Cables:** Six (6) 1-5/8" Ø coax cables running on a leg of the existing utility tower.
- **T-MOBILE (Existing to Remain):**  
**Coax Cables:** Twelve (12) 1-1/4" Ø coax cables running on the exterior of the existing FWT Powermount.
- **T-MOBILE (Existing to Remove):**  
**Antennas:** Six (6) panel antennas and one (1) 12-ft low profile platform with a RAD center elevation of 95-ft above grade.
- **T-MOBILE (Proposed):**  
**Antennas:** Six (6) RFS APX16DWV-16DWVS panel antennas mounted on a Site Pro WiMAX Monopole T-Arm p/n UDS-NP to the existing powermount with a RAD center elevation of 95-ft above grade.  
**Coax Cables:** Six (6) 1-1/4" Ø coax cables running on the exterior of the existing FWT Powermount.

## Primary assumptions used in the analysis

- Allowable steel stresses are defined by AISC-ASD 9<sup>th</sup> edition for design of the Powermount and antenna supporting elements.
- ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", defines allowable steel stresses for evaluation of the CL&P utility tower.
- All utility tower members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- All coaxial cable will be installed within the powermount unless specified otherwise.
- Powermount will be properly installed and maintained.
- No residual stresses exist due to incorrect tower erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- Powermount and utility tower will be in plumb condition.
- Utility tower was properly installed and maintained and all members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
- Any deviation from the analyzed loading will require a new analysis for verification of structural adequacy.

## A n a l y s i s

Structural analysis of the existing *Powermount* was independently completed using the current version of RISA-3D computer program licensed to CEN~~TEK~~ Engineering, Inc.

The existing FWT powermount consisting of a 12" Std. pipe conforming to ASTM A500 Grade C ( $F_y = 50\text{ksi}$ ) connected at five points to the existing tower was analyzed for its ability to resist loads prescribed by the TIA/EIA standard. Section 5 of this report details these gravity and lateral wind loads. NESC prescribed loads were also applied to the powermount in order to obtain analyze the CL&P tower structure. These loads are developed in Section 7 of this report.

An envelope solution was first made to determine maximum and minimum forces, stresses, and deflections to confirm the selected section as adequate. Additional analyses were then made to determine the NESC forces to be applied to the CL&P tower structure.

The RISA-3D program contains a library of all AISC shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized. The forces calculated in RISA-3D using NESC guidelines were then applied to the CL&P tower using PLS-Tower. Maximum usage for the tower was calculated considering the additional forces from the mast and associated appurtenances.

## D e s i g n   B a s i s

Our analysis was performed in accordance with EIA-222-F-1996, ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", NESC C2-2007 and Northeast Utilities Design Criteria.

The CL&P tower structure, considering existing and future conductor and shield wire loading, with the existing powermount was analyzed under two conditions:

### ▪ UTILITY TOWER ANALYSIS

The purpose of this analysis is to determine the adequacy of the existing utility structure to support the proposed antenna loads. The loading and design requirements were analyzed in accordance with the NU Design Criteria Table, NESC C2-2007 ~ Construction Grade B, and ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures".

Load cases considered:

#### Load Case 1: NESC Heavy

Wind Pressure.....	4.0 psf
Radial Ice Thickness.....	0.5"
Vertical Overload Capacity Factor.....	1.50
Wind Overload Capacity Factor.....	2.50
Wire Tension Overload Capacity Factor.....	1.65

#### Load Case 2: NESC Extreme

Wind Speed.....	110 mph <sup>(1)</sup>
Radial Ice Thickness.....	0"

Note 1: NESC C2-2007, Section 25, Rule 250C: Extreme Wind Loading,  $1.25 \times$  Gust Response Factor (wind speed: 3-second gust)



#### POWERMOUNT ANALYSIS

Powermount, appurtenances and connections to the utility tower were analyzed and designed in accordance with the NU Design Criteria Table, TIA/EIA-222-F, and AISC-ASD standards.

Load cases considered:

##### Load Case 1:

Wind Speed..... 85 mph <sup>(2)</sup>  
 Radial Ice Thickness..... 0"

##### Load Case 2:

Wind Pressure..... 75% of 85 mph wind pressure  
 Radial Ice Thickness..... 0.5"

| Note 2: Per NU Mast Design Criteria Exception 1.

### Results

#### POWERMOUNT

The existing powermount was determined to be structurally **adequate**.

FWT Powermount	Stress Ratio (% of capacity)	Result
12" Std. Pipe	79.2%	PASS

#### UTILITY TOWER

This analysis finds that the subject utility structure is adequate to support the existing powermount and related appurtenances. The tower stresses meet the requirements set forth by the ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 9 of this report. The analysis results are summarized as follows:

A maximum usage of **98.73%** occurs in the utility tower under the **NESC Extreme Wind** loading condition.

##### TOWER SECTION:

The utility tower was found to be within allowable limits.

Tower Member	Stress Ratio (% of capacity)	Result
Angle g11x	98.73%	PASS

#### FOUNDATION AND ANCHORS

The existing foundation consists of four (4) 1-ft 8-in square tapering to 2-ft 4-in square x 5.25-ft long reinforced concrete piers and four (4) 5-ft square x 2-ft thick reinforced concrete pads. The base of the tower is connected to the foundation by one (1) anchor stub angle per leg. Foundation information was obtained from Northeast Utilities drawing 01064-60003.

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

### BASE REACTIONS:

From PLS-Tower analysis of CL&P tower based on NESC/NU prescribed loads.

Foundation	Load Case	Shear	Uplift	Compression
Single Conc. Pad & Pier	NESC Heavy Wind	8.46 kips	19.97 kips	37.33 kips
	NESC Extreme Wind	14.68 kips	50.80 kips	60.20 kips
Conc. Pad & Pier (2) w/ Mat	NESC Heavy Wind	11.88 kips	37.90 kips	61.81 kips
	NESC Extreme Wind	28.43 kips	99.67 kips	118.12 kips

Note 1 – 10% increase to be applied to the above tower base reactions for foundation verification per OTRM 051

Note 2 – Reactions used to analysis the reinforced foundation are the combination of the two adjacent tower legs.

### FOUNDATION:

The foundation with the proposed reinforcements detailed in section 4 of this report was found to be within allowable limits.

Foundation	Design Limit	Allowable Limit	Proposed Loading <sup>(2)</sup>	Result
Single Conc. Pad & Pier	Uplift	1.0 FS <sup>(1)</sup>	1.15 FS <sup>(1)</sup>	<b>PASS</b>
Conc. Pad & Pier (2) w/ Mat	Uplift	1.0 FS <sup>(1)</sup>	1.30 FS <sup>(1)</sup>	<b>PASS</b>

Note 1: FS denotes Factor of Safety

Note 2: 10% increase to PLS base reactions used in foundation analysis per OTRM 051.

## Conclusions and Recommendations

This analysis shows that the subject utility tower **with the proposed foundation reinforcements detailed in section 4 of this report is adequate** to support the proposed T-Mobile equipment upgrade.

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

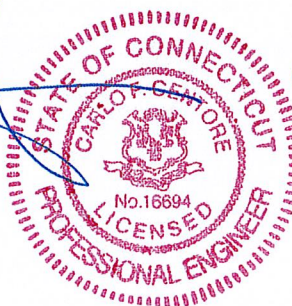
Please feel free to call with any questions or comments.

Respectfully Submitted by:

Carlo F. Centore, PE  
 Principal ~ Structural Engineer

Prepared by:

Timothy J. Lynn, EIT  
 Structural Engineer



# EXHIBIT C





PHOTO #1: LOOKING AT  
NORTHWEST TOWER LEG

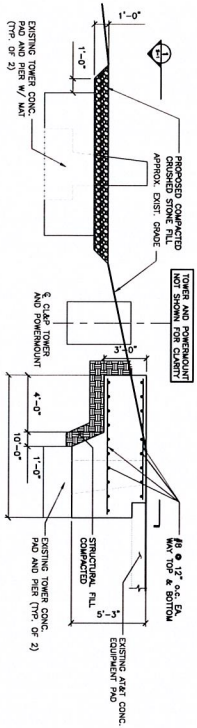
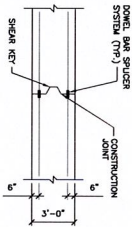


PHOTO #2: LOOKING  
WEST TOWARDS  
SOUTHWEST TOWER LEG

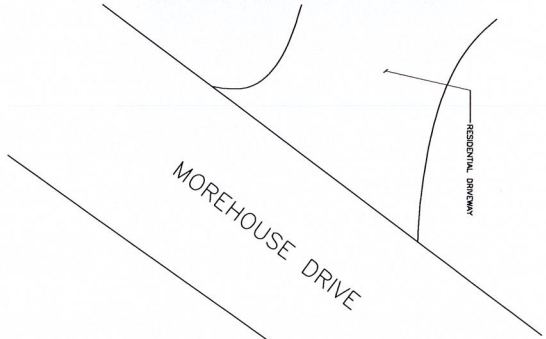


PHOTO #3: LOOKING  
NORTH TOWARDS  
SOUTHEAST TOWER LEG

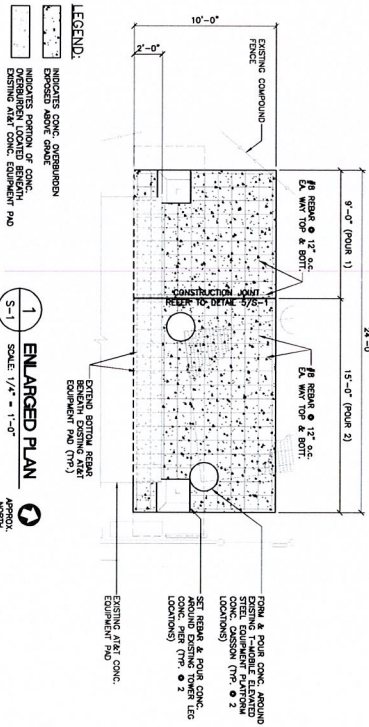
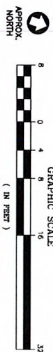
4 CONSTRUCTION JOINT DETAIL  
SCALE: 1/4" = 1'-0"



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

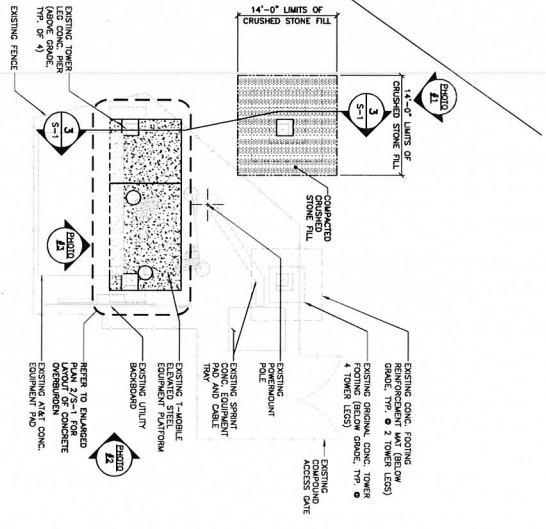
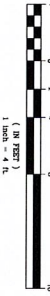


1 SITE KEY PLAN  
SCALE: 1/8" = 1'-0"



LEGEND:  
INDICATES CONC. OVERLAP  
INDICATES SYMBOLOGY OF CONC.  
OVERLAP/REINFORCEMENT LOCATED  
EXISTING AIRT. CONC. EQUIPMENT PAD

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



T-Mobile  
CLAP TRANSMISSION TOWER FOUNDATION REINFORCEMENTS  
CT11317B  
CL&P STRUCT. NO. 876  
280 MOREHOUSE DRIVE  
FAIRFIELD, CT 06425

PROFESSIONAL ENGINEER SEAL  
CENTEK engineering  
Centralized Solutions  
208 488-0280  
203 488-0607 fax  
65-2 North Branford Road, Branford, CT 06465

REV.	DATE	DESIGNED BY	CHECKED BY	DESCRIPTION
0	10/19/12	DOB	CFC	ISSUED FOR CONSTRUCTION

Sheet No. 1 of 2  
S-1  
FOUNDATION REINFORCEMENT DETAILS



## DESIGN BASICS

## DESIGN BASICS

1. GOVERNING CODE: 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CITY OF ST. LOUIS CODE AND 2009 AMENDMENTS.
2. 1A/D-222.5'-198.4' SEE PLAN, NO. 72 - "DESIGN OF STEEL TRANSDUCER DESIGN CRITERIA."
3. DESIGN CRITERIA  
 MIN. LOAD: (SEE AISC) BASED AND STRESS  $F_y$  = 50 KSI (FASTEST W/L); BASED ON 1A/D-222.5' AND 1A/D-222.5' DESIGN CRITERIA, DECEPTION I;  
 MIN. LOAD: (LIMIT STATE & FOUNDATION) BASED AND STRESS  $F_y$  = 10 KSI (1/2 SECOND GUST) BASED ON NSIC 25, SECTION 25.107. SEE 250C.

**GENERAL NOTES:**

- [illegible]

## **SITE NOTES:**

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES SHALL BE PROTECTED IN THE WORK. SHALL BE PROTECTED AT ALL TIMES. THE EXISTING SHALL BE IDENTIFIED IMMEDIATELY PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF UTILITIES.
3. ALL RUBBER STAMPS, DEBRIS, STOPS, STRIPS AND OTHER REUSE SHALL BE REMOVED OFF SITE AND BE LEGALLY DISPOSABLED. IF NO ADDITIONAL COST.
4. THE SITE SHALL BE CLOSURE TO DRIVE SPACES WITHIN 15 FEET AROUND THE EXISTING UTILITIES.
5. ALL MATERIALS AND EQUIPMENT SHALL BE STORED WITHIN 15 FEET FROM THE EXISTING UTILITIES. ALL MATERIALS SHALL NOT BE PLACED IN ANY FILL OR DRAINAGE.
6. THE EXISTENCE SHALL BE PROTECTED AND BROADCAST TO A SMOOTH UNIFORM DRAINAGE.
7. THE PROTECT OF THE EXISTENCE DISCLOSED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
8. CONTRACTORS SHALL MAINTAIN RESPONSIBILITY TO DESIGNING SITE DRAINAGE DRAINAGE CONTROL, LOGISTICS SHALL BE IN CONFORMANCE WITH THE LOCAL, STATE AND FEDERAL REQUIREMENTS.
9. IF ANY OF THE CONTRACTOR'S EQUIPMENT OR MATERIALS ARE PLACED WITHIN 15 FEET OF THE EXISTING UTILITIES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UNDERSIGNED AND SHALL PROCEED WITH AFFECTED WORK WITH CONTACT IS SATISFACTORILY RESOLVED.

## EARTHWORK NOTES

- [illegible]

## FOUNDATION CONSTRUCTION NOTES

- [illegible]

## CONCRETE CONSTRUCTION NOTES

- [illegible]

# EXHIBIT D



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

T-Mobile Existing Facility

Site ID: CT11317B

Fairfield / MP / X44 & X42  
280 Morehouse Road  
Fairfield, CT 06825

**March 07, 2013**



March 07, 2013

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

Re: Emissions Values for Site: **CT11317B - Fairfield / MP / X44 & X42**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 280 Morehouse Road, Fairfield, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  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 ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limit for the cellular band is  $567 \mu\text{W}/\text{cm}^2$ , and the general population exposure limit for the PCS band is  $1000 \mu\text{W}/\text{cm}^2$ . 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.



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 280 Morehouse Road, Fairfield, 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 (1940.000 MHz—to 1950.000 MHz) were considered for each sector of the proposed installation.
- 2) 2 UMTS channels (2110.000 MHz to 2120.000 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 RFS APX16DWV-16DWVS for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 16.3 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications





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- 7) The antenna mounting height centerline of the proposed antennas is **95 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	CT11317B - Fairfield / MP / X44 & X42
Site Address	280 Morehouse Road, Fairfield, CT 06825
Site Type	Transmission Tower

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	RFS	APX16DWV-16DWVS	Passive	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	95	89	7/8"	1.2	0	18.329527	0.831912	0.08319%
1B	RFS	APX16DWV-16DWVS	Passive	AWS - 2100 MHz	UMTS/LTE	40	4	160	-3.95	95	89	7/8"	1.2	0	48.878738	2.218431	0.22184%
Sector total Power Density Value:															0.305%		
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	RFS	APX16DWV-16DWVS	Passive	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	95	89	7/8"	1.2	0	18.329527	0.831912	0.08319%
1B	RFS	APX16DWV-16DWVS	Passive	AWS - 2100 MHz	UMTS/LTE	40	4	160	-3.95	95	89	1.5/8"	1.2	0	48.878738	2.218431	0.22184%
Sector total Power Density Value:															0.305%		
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	RFS	APX16DWV-16DWVS	Passive	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	95	89	7/8"	1.2	0	18.329527	0.831912	0.08319%
1B	RFS	APX16DWV-16DWVS	Passive	AWS - 2100 MHz	UMTS/LTE	40	4	160	-3.95	95	89	1.5/8"	1.2	0	48.878738	2.218431	0.22184%
Sector total Power Density Value:															0.305%		

Site Composite MPE %	
Carrier	MPE %
T-Mobile	0.915%
AT&T	5.350%
Sprint	4.730%
Total Site MPE %	10.995%

## 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 **0.915% (0.305% 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 **10.955%** 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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Burlington, MA 01803