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

October 3, 2014

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

Re: Notice of Exempt Modification
CTI Tower Assets 1, LLC/T-Mobile co-location
Site ID CT11031B
21 East Main Street, Clinton

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, CTI Tower Assets 1, LLC owns the existing lattice telecommunications tower and related facility at 21 East Main Street Connecticut (latitude 41.27894874/longitude 72.5259641). T-Mobile intends to add three antennas and related equipment at this existing telecommunications facility in Clinton ("Clinton 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 William W. Fritz and the property owner, Storer Communications of Clinton.

The existing Clinton Facility consists of an approximately 67.5 foot tall lattice structure.[1] T-Mobile plans to add three antennas on T-Arms at a centerline of 60 feet. T-Mobile will also install three RRUs (remote radio units) on an existing stairwell wall, install coax cable and reuse existing coax cable all within the compound area. T-Mobile will also remove RRUs and a power backup cabinet. See the plans revised to July 29, 2014 attached hereto as Exhibit B. The existing Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated September 26, 2014 attached hereto as Exhibit C.

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

[1] The online CSC database does not include a Docket or Petition approval for this facility, it does however include a notice of intent captioned EM-T-MOBILE-027-110210.

1. The proposed modification will not increase the height of the tower. T-Mobile's replacement antennas will be installed at the 60 foot level of the approximately 67.5 foot lattice 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 page 2 of Exhibit B, 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 proposed 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 October 1, 2014 T-Mobile's operations would add 44.72% 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 44.72% 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 antennas and equipment at the Clinton Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, T-Mobile shall commence construction approximately sixty days from the date of the Council's notice of acknowledgement.

Sincerely,

Julie D. Kohler, Esq.

cc: Town of Clinton, First Selectman William W. Fritz
Storer Communications of Clinton
CTI Tower Assets 1, LLC
Sheldon Freincle, NSS

EXHIBIT A

OVERALL SITE PLAN (1 / LE1)
N.T.S.

CONFIGURATION
704BU

SUBMITTALS	
LE REV A	07.29.14

ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11031B

SITE NAME:
CLINTON/I-95/X63/AT_1

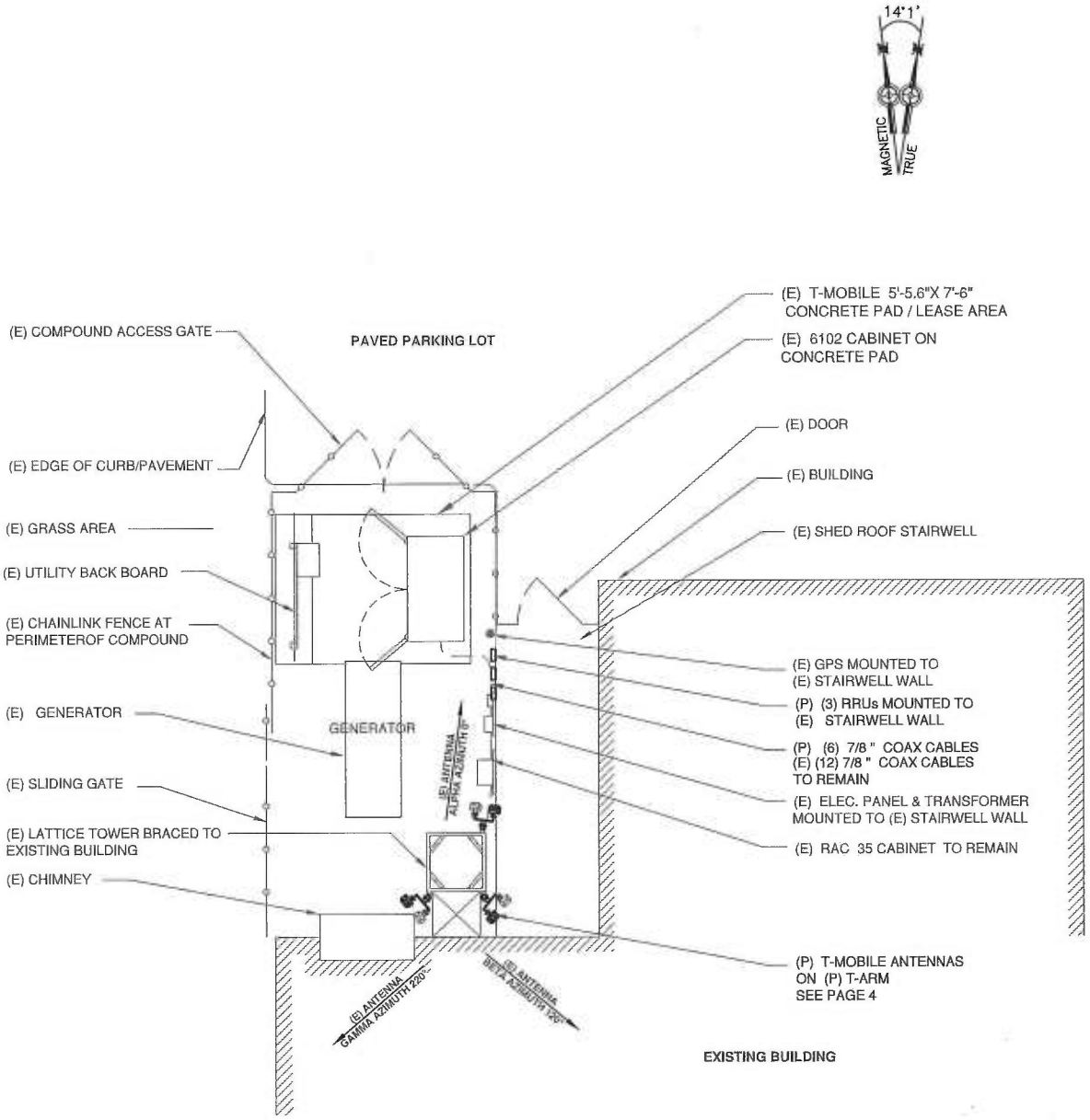
SITE ADDRESS:
21 EAST MAIN STREET
CLINTON, CT, 06413

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: FG | CHECKED BY:SM



SITE PLAN

N.T.S.

1
LE2

CONFIGURATION

704BU

SUBMITTALS	
LE REV A	07.29.14

ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
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SITE NAME:
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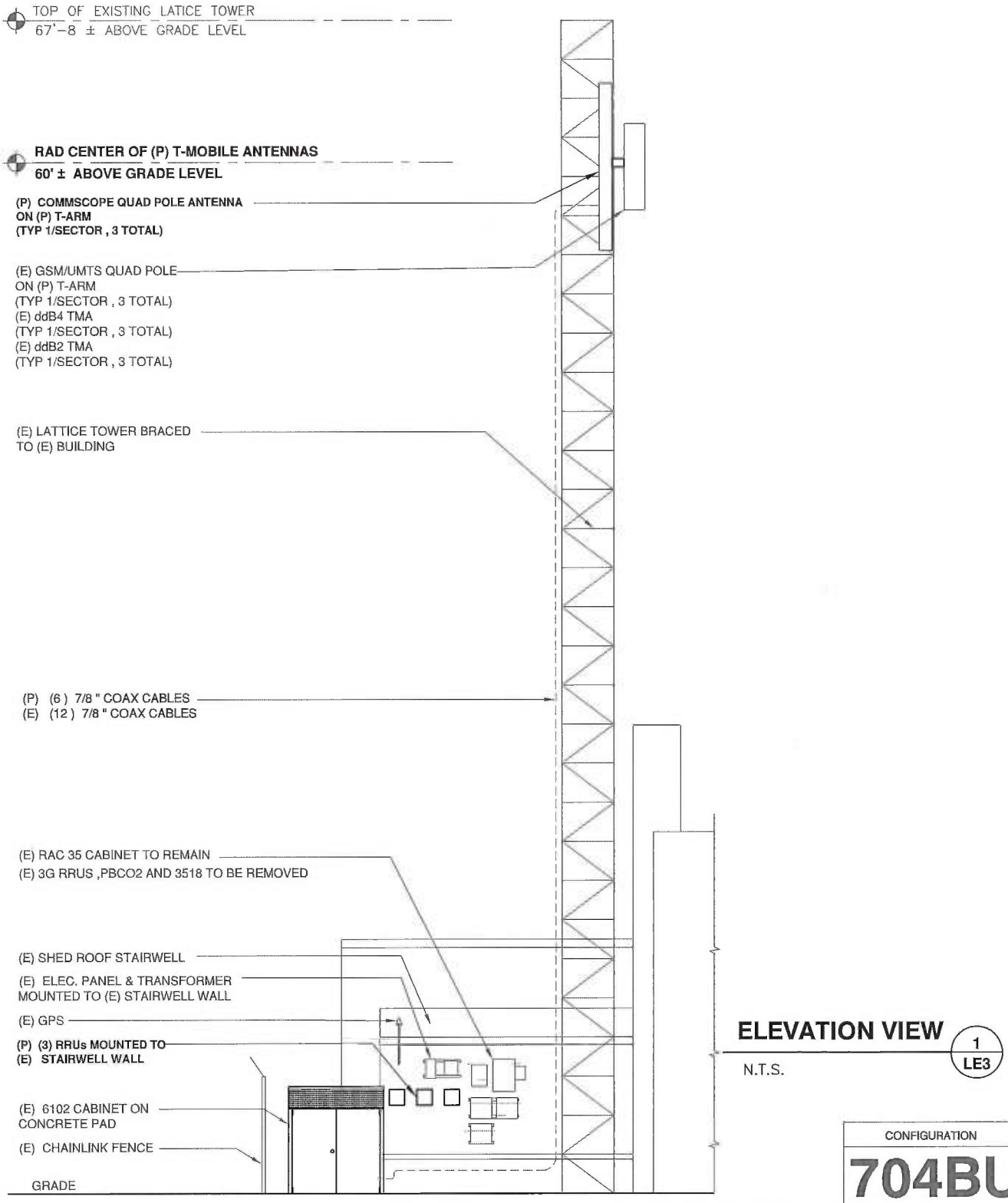
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: FG | CHECKED BY:SM



ELEVATION VIEW 1 LE3

N.T.S.

CONFIGURATION

704BU

SUBMITTALS	
LE REV A	07.29.14

ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

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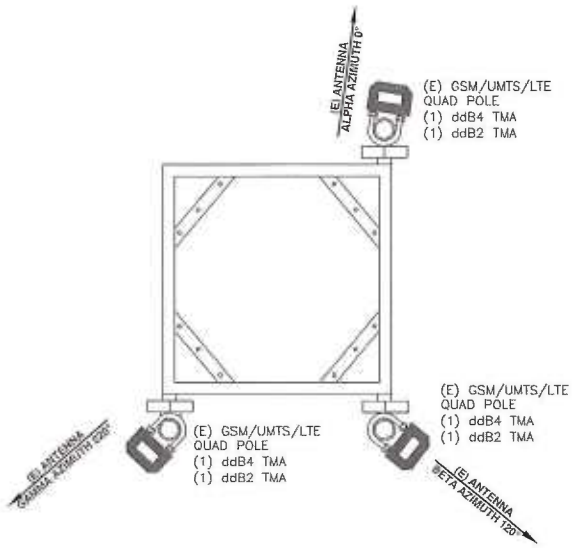
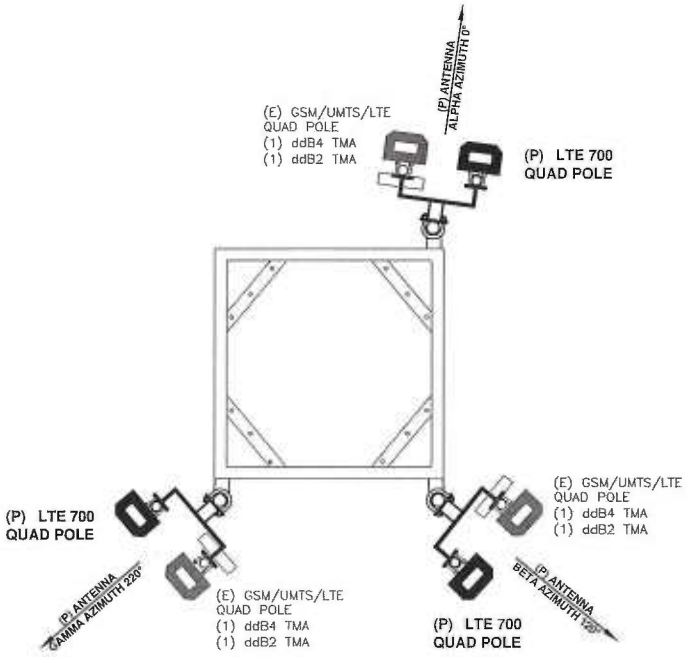


EXISTING ANTENNA CONFIGURATION 1 LE4



PROPOSED ANTENNA CONFIGURATION 2 LE4

CONFIGURATION

704BU

SUBMITTALS	
LE REV A	07.29.14

ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11031B

SITE NAME:
CLINTON/I-95/X63/AT_1

SITE ADDRESS:
21 EAST MAIN STREET
CLINTON, CT, 06413

NORTHEAST SITE SOLUTIONS
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FOR

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BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: FG | CHECKED BY:SM

EXHIBIT B

FDH Engineering, Inc., 6521 Meridien Drive Raleigh, NC 27616, Ph. 919.755.1012

Structural Analysis for CTI Towers

67.5' Lattice Tower

CTI Towers Site Name: E Main St Clinton
CTI Towers Site ID: 11021
T-Mobile Site ID: CT11031B
T-Mobile Site Name: Clinton/ I-95/ X63/ At_1

FDH Project Number 146DCX1400

Analysis Results

Tower Components	93.4%	Sufficient
Foundation	N/A	N/A

Prepared By:

Joshua A Shaw, EI
Project Engineer I

Reviewed By:

Dennis D. Abel, PE
Director – Structural Engineering
CT PE License No. 23247

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

09-26-2014

September 26, 2014

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

TABLE OF CONTENTS

EXECUTIVE SUMMARY

At the request of CTI Towers, FDH Engineering, Inc. performed a structural analysis of the monopole located in Clinton, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F* and the *2005 Connecticut State Building Code*. Information pertaining to the existing/proposed antenna loading, current tower geometry, and member sizes was obtained from:

- ❑ FDH Engineering, Inc. (Job No. 1424V21500) Self-Support Tower Mapping Report dated April 4, 2014
- ❑ Centek (Project No. 10116.CO6) Structural Analysis Report w/ Reinforcement Design dated January 10, 2011
- ❑ FDH Engineering, Inc. (Job No. 146DCX1400) Modification Drawings for a 67.5' Self-Support Tower dated September 26, 2014
- ❑ CTI Towers

The *basic design wind speed* per the *TIA/EIA-222-F* standards and the *2005 Connecticut State Building Code* is 85 mph without ice and 38 mph with 3/4" radial ice. Ice is considered to increase in thickness with height.

Assumptions

1. The building is adequate to resist the loads transferred from the tower.
2. The anchor rods are embedded to a sufficient depth to develop the tensile strength of the rod.

Conclusions

With the existing and proposed antennas from T-Mobile in place at 60 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and the *2005 Connecticut State Building Code* provided the **Recommendations** listed below are satisfied. Furthermore, since no foundation information was available at the time of the analysis, we cannot comment on the capacity of the foundation at this time. 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 Connecticut State Building Code* are met with the existing and proposed loading in place, we have the following recommendation:

1. The proposed feedlines should be installed as shown in the **Appendix**.
2. The modifications shown in the FDH Engineering, Inc. (Job No. 146DCX1400) Modification Drawings for a 67.5' Self-Support Tower dated September 26, 2014 must be installed as specified.

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	Feedlines	Carrier	Mount Elevation (ft)	Mount Type
60	(3) RFS APX16DWV-16DWVS (6) Ericsson KRY 112 71 TMAs (6) RFS ACU-A20-N RETs	(12) 7/8" (1) 1/4"	T-Mobile	60	(3) Pipe Mounts

Proposed Loading:

Antenna Elevation (ft)	Description	Feedlines	Carrier	Mount Elevation (ft)	Mount Type
60	(3) RFS APX16DWV-16DWVS (3) Commscope LNX-6515DS-VTM (6) Ericsson KRY 112 71 TMAs	(18) 7/8"	T-Mobile	60	(3) Standoff T-Arms (Assumed)

RESULTS

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

Table 2 - Material Strength

Member Type	Yield Strength
Legs	36 ksi (Assumed)
Bracing	36 ksi (Assumed)
Anchor Bolts	36 ksi (Assumed)
Base Plate	36 ksi (Assumed)

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
T1	67.5 - 47.5	Leg	L2 1/2x2 1/2x1/4	34.9	Pass
T2	47.5 - 35	Leg	L2 1/2x2 1/2x1/4	78.2	Pass
T3	35 - 32.5	Leg	L2 1/2x2 1/2x1/4	75.5	Pass
T4	32.5 - 30	Leg	L2 1/2x2 1/2x1/4	84.7	Pass
T5	30 - 27.5	Leg	L2 1/2x2 1/2x1/4	92.7	Pass
T6	27.5 - 25	Leg	(3) L2 1/2 x 2 1/2 x 1/4 (11201)	34.2	Pass
T7	25 - 22.5	Leg	L2 1/2x2 1/2x1/4	93.4	Pass
T8	22.5 - 20	Leg	L2 1/2x2 1/2x1/4	67.7	Pass
T9	20 - 17.5	Leg	L2 1/2x2 1/2x1/4	42.1	Pass
T10	17.5 - 15	Leg	L2 1/2x2 1/2x1/4	16.2	Pass
T11	15 - 12.5	Leg	L2 1/2x2 1/2x1/4	17.3	Pass
T12	12.5 - 10	Leg	L2 1/2x2 1/2x1/4	17.5	Pass
T13	10 - 7.5	Leg	L2 1/2x2 1/2x1/4	19.5	Pass
T14	7.5 - 5	Leg	L2 1/2x2 1/2x1/4	20.5	Pass
T15	5 - 2.5	Leg	L2 1/2x2 1/2x1/4	22.0	Pass
T16	2.5 - 0	Leg	L2 1/2x2 1/2x1/4	28.8	Pass
T1	67.5 - 47.5	Diagonal	L1 1/2x1 1/2x1/4	24.8	Pass
T2	47.5 - 35	Diagonal	L1 1/2x1 1/2x1/4	30.1	Pass
T3	35 - 32.5	Diagonal	L1 1/2x1 1/2x1/4	30.8	Pass
T4	32.5 - 30	Diagonal	L1 1/2x1 1/2x1/4	31.9	Pass
T5	30 - 27.5	Diagonal	L1 1/2x1 1/2x1/4	32.9	Pass
T6	27.5 - 25	Diagonal	L1 1/2x1 1/2x1/4	29.7	Pass
T7	25 - 22.5	Diagonal	L1 1/2x1 1/2x1/4	77.1	Pass
T8	22.5 - 20	Diagonal	L1 1/2x1 1/2x1/4	71.3	Pass
T9	20 - 17.5	Diagonal	L1 1/2x1 1/2x1/4	67.2	Pass
T10	17.5 - 15	Diagonal	L1 1/2x1 1/2x1/4	63.8	Pass

Section No.	Elevation ft	Component Type	Size	% Capacity*	Pass Fail
T11	15 - 12.5	Diagonal	L1 1/2x1 1/2x1/4	39.3	Pass
T12	12.5 - 10	Diagonal	L1 1/2x1 1/2x1/4	41.0	Pass
T13	10 - 7.5	Diagonal	L1 1/2x1 1/2x1/4	42.1	Pass
T14	7.5 - 5	Diagonal	L1 1/2x1 1/2x1/4	43.0	Pass
T15	5 - 2.5	Diagonal	L1 1/2x1 1/2x1/4	44.4	Pass
T16	2.5 - 0	Diagonal	L1 1/2x1 1/2x1/4	45.6	Pass
T1	67.5 - 47.5	Horizontal	L1 1/2x1 1/2x1/4	4.4	Pass
T2	47.5 - 35	Horizontal	L1 1/2x1 1/2x1/4	2.9	Pass
T3	35 - 32.5	Horizontal	L1 1/2x1 1/2x1/4	3.2	Pass
T4	32.5 - 30	Horizontal	L1 1/2x1 1/2x1/4	3.5	Pass
T5	30 - 27.5	Horizontal	L1 1/2x1 1/2x1/4	3.9	Pass
T6	27.5 - 25	Horizontal	L1 1/2x1 1/2x1/4	4.3	Pass
T7	25 - 22.5	Horizontal	L1 1/2x1 1/2x1/4	66.3	Pass
T8	22.5 - 20	Horizontal	L1 1/2x1 1/2x1/4	33.8	Pass
T9	20 - 17.5	Horizontal	L1 1/2x1 1/2x1/4	19.7	Pass
T10	17.5 - 15	Horizontal	L1 1/2x1 1/2x1/4	11.8	Pass
T11	15 - 12.5	Horizontal	L1 1/2x1 1/2x1/4	43.6	Pass
T12	12.5 - 10	Horizontal	L1 1/2x1 1/2x1/4	0.7	Pass
T13	10 - 7.5	Horizontal	L1 1/2x1 1/2x1/4	0.8	Pass
T14	7.5 - 5	Horizontal	L1 1/2x1 1/2x1/4	0.9	Pass
T15	5 - 2.5	Horizontal	L1 1/2x1 1/2x1/4	43.6	Pass
T16	2.5 - 0	Horizontal	L1 1/2x1 1/2x1/4	1.5	Pass
T3	35 - 32.5	Secondary Horizontal	L1 1/2x1 1/2x1/4	3.0 6.5 (b)	Pass
T4	32.5 - 30	Secondary Horizontal	L1 1/2x1 1/2x1/4	3.5	Pass
T5	30 - 27.5	Secondary Horizontal	L1 1/2x1 1/2x1/4	3.9	Pass
T11	15 - 12.5	Secondary Horizontal	L1 1/2x1 1/2x1/4	1.0	Pass
T12	12.5 - 10	Secondary Horizontal	L1 1/2x1 1/2x1/4	0.7 1.5 (b)	Pass
T13	10 - 7.5	Secondary Horizontal	L1 1/2x1 1/2x1/4	0.8 1.7 (b)	Pass
T14	7.5 - 5	Secondary Horizontal	L1 1/2x1 1/2x1/4	1.9 3.9 (b)	Pass
T15	5 - 2.5	Secondary Horizontal	L1 1/2x1 1/2x1/4	1.9 4.0 (b)	Pass
T16	2.5 - 0	Secondary Horizontal	L1 1/2x1 1/2x1/4	1.1 2.5 (b)	Pass
T1	67.5 - 47.5	Top Girt	L1 1/2x1 1/2x1/4	0.1	Pass
T16	2.5 - 0	Bottom Girt	L2 1/2x2 1/2x1/4	43.6	Pass
-	0	Anchor Rods	(4) 3/4"	71.1	Pass
-	0	Base Plate	(4) 3"x3/4" PL modified	94.3	Pass

*Capacities include 1/3 allowable increase for wind per *TIA/EIA-222-F* standards.

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis *(TIA/EIA-222-F)*
Axial	4 k
Shear	2 k
Moment	22 k-ft

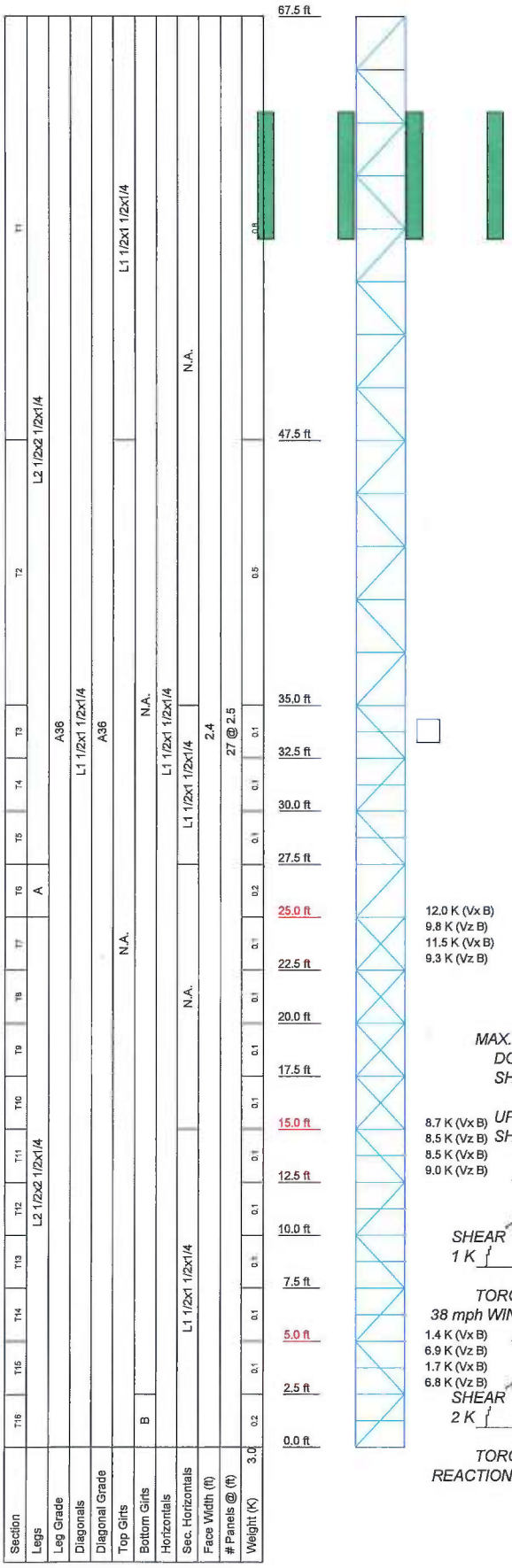
GENERAL COMMENTS

This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of CTI Towers 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

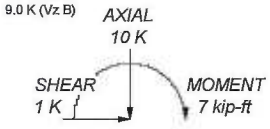


12.0 K (Vx B)
9.8 K (Vz B)
11.5 K (Vx B)
9.3 K (Vz B)

MAX. CORNER REACTIONS AT BASE:
DOWN: 9 K
SHEAR: 3 K

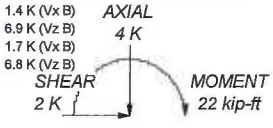
8.7 K (Vx B)
8.5 K (Vz B)
8.5 K (Vx B)
9.0 K (Vz B)

UPLIFT: -6 K
SHEAR: 3 K



TORQUE 2 kip-ft
38 mph WIND - 0.7500 in ICE

1.4 K (Vx B)
6.9 K (Vz B)
1.7 K (Vx B)
6.8 K (Vz B)



TORQUE 6 kip-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
4'x4.5" Pipe Mount	65	(2) KRY 112 71	60
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	60	(2) KRY 112 71	60
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	60	LNX-6515DS-VTM w/ Mount Pipe	60
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	60	LNX-6515DS-VTM w/ Mount Pipe	60
(2) KRY 112 71	60	LNX-6515DS-VTM w/ Mount Pipe	60
		(3) 5' Pipe Mounts	60
		(3) Standoff T-Arms	60

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	(3) L2 1/2 x 2 1/2 x 1/4 (11201)	B	L2 1/2x2 1/2x1/4

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

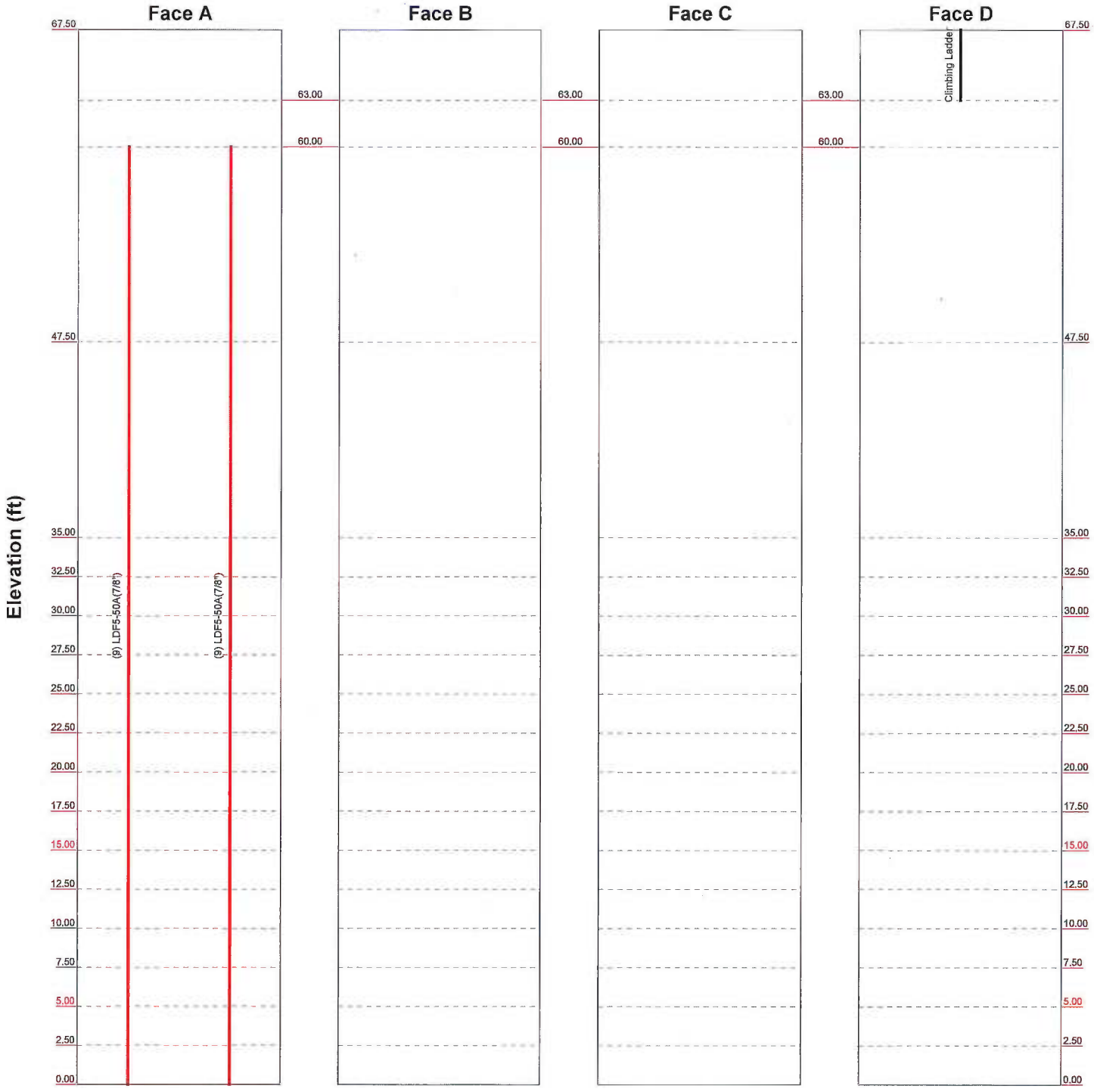
1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 93.4%

FDH Engineering, Inc.
6521 Meridien Dr.
Raleigh, NC
Phone: (919) 755-1012
FAX: (919) 755-1031
Tower Analysis

Job: E Main St Clinton, CT (11201)			
Project: 146DCX1400			
Client: CTI Towers	Drawn by: Joshua A Shaw	App'd:	
Code: TIA/EIA-222-F	Date: 09/26/14	Scale: NTS	
Path:		Dwg No. E-1	

Feed Line Distribution Chart
0' - 67'6"

Round | Flat | App In Face | App Out Face | Truss Leg

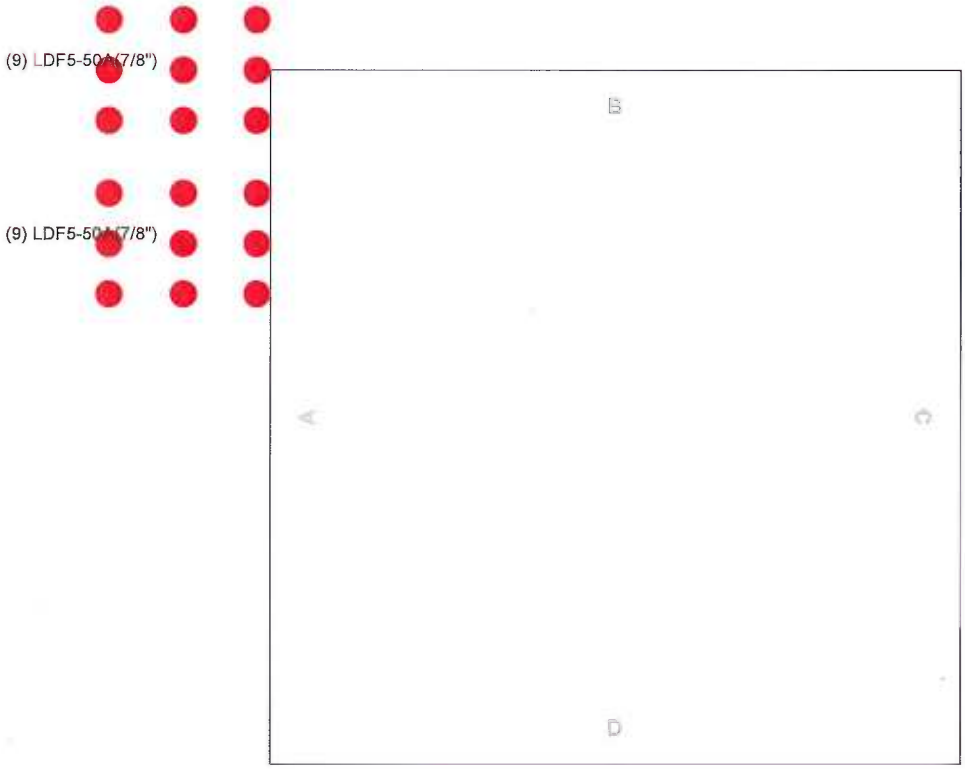


FDH Engineering, Inc.	Job: E Main St Clinton, CT (11201)		
6521 Meridien Dr.	Project: 146DCX1400		
Raleigh, NC	Client: CTI Towers	Drawn by: Joshua A Shaw	App'd:
Phone: (919) 755-1012	Code: TIA/EIA-222-F	Date: 09/26/14	Scale: NTS
FAX: (919) 755-1031	Path:		Dwg No. E-7

Tower Analysis

Feed Line Plan

Round Flat App In Face App Out Face



FDH Engineering, Inc.	Job: E Main St Clinton, CT (11201)		
6521 Meridien Dr.	Project: 146DCX1400		
Raleigh, NC	Client: CTI Towers	Drawn by: Joshua A Shaw	App'd:
Phone: (919) 755-1012	Code: TIA/EIA-222-F	Date: 09/26/14	Scale: NTS
FAX: (919) 755-1031	Path:		Dwg No. E-7

Tower Analysis

EXHIBIT C

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

T-Mobile Existing Facility

Site ID: CT11031B

Clinton / I-95 / X63 / AT_1
21 East Main Street
Clinton, CT 06413

October 1, 2014

EBI Project Number: 62145259

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	44.72 %

21 B Street Burlington, MA 01803 Tel: (781) 273.2500 Fax: (781) 273.3311

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October 1, 2014

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

Emissions Analysis for Site: **CT11031B – Clinton / I-95 / X63 / AT_1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **21 East Main Street, Clinton, 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 $\mu W/cm^2$ 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 ($\mu W/cm^2$). The general population exposure limit for the 700 MHz Band is 467 $\mu W/cm^2$, and the general population exposure limit for the PCS and AWS bands is 1000 $\mu W/cm^2$. 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 **21 East Main Street, Clinton, 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, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of 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 (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

5) 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.

6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antennas used in this modeling are the **RFS APX16DWV-16DWVS-E-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APX16DWV-16DWVS-E-A20** has a maximum gain of **16.3 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerline of the proposed antennas is **60 feet** above ground level (AGL).

9) 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 calculations were done with respect to uncontrolled / general public threshold limits.

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	60	Height (AGL):	60	Height (AGL):	60
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	# PCS Channels:	6
Total TX Power:	240	Total TX Power:	240	# AWS Channels:	240
ERP (W):	3,833.82	ERP (W):	3,833.82	ERP (W):	3,833.82
Antenna A1 MPE%	12.62	Antenna B1 MPE%	12.62	Antenna C1 MPE%	12.62
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	60	Height (AGL):	60	Height (AGL):	60
Frequency Bands	700 Mhz	Frequency Bands	700 Mhz	Frequency Bands	700 Mhz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	445.37	ERP (W):	445.37	ERP (W):	445.37
Antenna A2 MPE%	2.28	Antenna B2 MPE%	2.28	Antenna C2 MPE%	2.28

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**44.72**
No Additional Carriers On Site	
Site Total MPE %:	**44.72 %**

T-Mobile Sector 1 Total:	14.91 %
T-Mobile Sector 2 Total:	14.91 %
T-Mobile Sector 3 Total:	14.91 %
Site Total:	44.72 %

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Summary

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

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	14.91 %
Sector 2:	14.91 %
Sector 3 :	14.91 %
T-Mobile Total:	44.72 %
Site Total:	44.72 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **44.72%** of the allowable FCC established general public limit sampled at the ground level. 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 well within the allowable 100% threshold standard per the federal government.

Scott Heffernan
RF Engineering Director

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