

September 13, 2016

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification for T-Mobile / L700 Crown Site BU: 845993
T-Mobile Site ID: CTHA509A
Located at: 12 Nepaug Road, Burlington, CT 06013
Latitude: 41° 46' 56.86" / Longitude: -72° 59' 22.68"

Dear Ms. Bachman,

T-Mobile currently maintains six (6) antennas at the 90-foot level of the existing 119-foot monopole tower located at 12 Nepaug Road, Burlington, CT. The tower is owned by Crown Castle. The property is owned by AT&T Mobility. T-Mobile now proposes to add three (3) new antennas. The antennas would be installed at the same 90-foot level of the tower.

This facility was approved by the Connecticut Siting Council on February 18, 2004, Docket No. 268. This approval included the condition(s) that:

1. The tower shall be constructed no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T Wireless and other entities, both public and private, but such tower shall not exceed a height of 120 feet above ground level.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:

- a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and
 - b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
 4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
 5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
 6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.
 7. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
9. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

This modification complies with the aforementioned condition(s).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Mr. Theodore Shafer, First Selectman for the Town of Burlington, as well as the property owner and the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modification will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

Melanie A. Bachman

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For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Amanda Goodall.

Sincerely,

Amanda Goodall

Real Estate Specialist

12 Gill Street, Suite 5800, Woburn, MA 01801

339-205-7017

Amanda.Goodall@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 4: Exhibit-3: General Power Density Table report (RF Emissions Analysis Report)

cc: First Selectman Theodore Shafer

Town of Burlington

200 Spielman Highway

Burlington, CT 06013

Crown Castle (Tower Owner)

12 Gill Street, Suite 5800

Woburn, Ma 01801

AT&T Mobility c/o Crown Castle

12 Gill Street, Suite 5800

Woburn, Ma 01801

DOCKET NO. 268 - AT&T Wireless PCS, LLC d/b/a AT&T Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility located near Lyon and Nepaug Roads in Burlington, Connecticut.	} } } }	Connecticut Siting Council February 18, 2004
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**Decision and Order:
Burlington Site CT-828**

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the proposed site, located at the intersection of Lyon and Nepaug Roads, Burlington, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T Wireless and other entities, both public and private, but such tower shall not exceed a height of 120 feet above ground level.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:
 - a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and
 - b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.
7. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
9. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant

AT&T Wireless PCS, LLC
d/b/a AT&T Wireless

Intervenor

Sprint Spectrum, L.P.
d/b/a Sprint PCS

Its Representative

Christopher B. Fisher, Esq.
Cuddy & Feder LLP
90 Maple Avenue
White Plains, New York 10601

Its Representative

Thomas J. Regan, Esq.
Brown Rudnick Berlack Israels
CityPlace 1
185 Asylum Street
Hartford, CT 06103



Property Information

Property Location	12 NEPAUG RD
Owner	AT&T MOBILITY
Co-Owner	
Mailing Address	575 MOROSGO DRIVE SUITE 13-F ATLANTA GA 30324
Land Use	402V Ind Bldg Mdl-00
Land Class	I
Zoning Code	
Census Tract	4101

Neighborhood	
Acreage	0
Utilities	
Lot Setting/Desc	
Additional Info	

Photo



Sketch

Primary Construction Details

Year Built	
Stories	
Building Style	
Building Use	
Building Condition	
Floors	
Total Rooms	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	

Exterior Walls	
Interior Walls	
Heating Type	
Heating Fuel	
AC Type	
Gross Bldg Area	
Total Living Area	



Town of Burlington, CT

Property Listing Report

Map Block Lot

5-11-17-A-CELL

Account

30303111

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Extras	0	0
Improvements	715100	500570
Outbuildings	715100	500570
Land	0	0
Total	715100	500570

Outbuilding and Extra Items

Type	Description
Paving-Concret	36.00 S.F.
PerCastConcCel	240.00 S.F.
PerCastConcCel	360.00 S.F.
Fence 8' Chain	260.00 L.F.
CELL SITES	

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area		0

Sales History

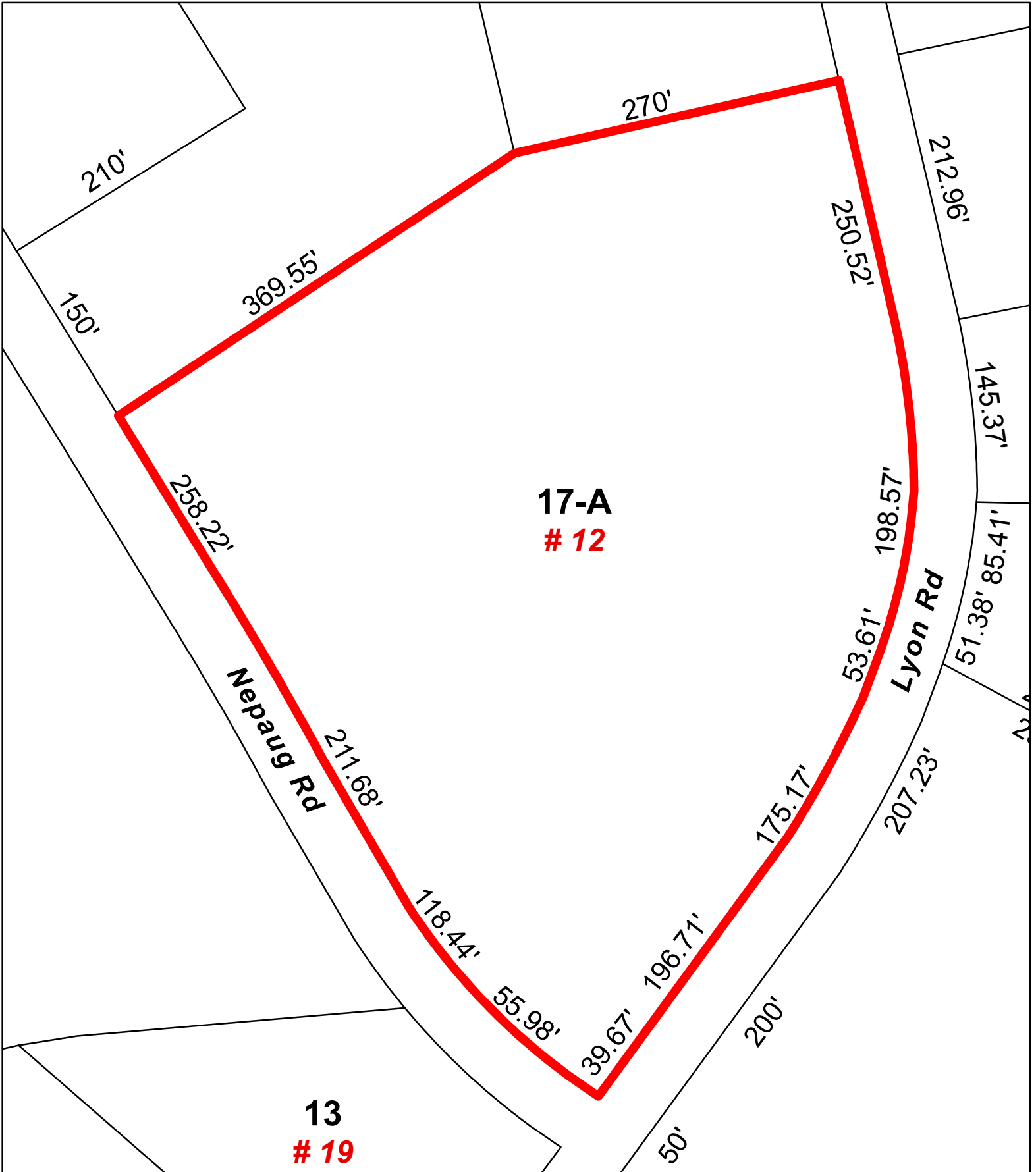
Owner of Record	Book/ Page	Sale Date	Sale Price
AT&T MOBILITY	000/ 000	10/1/2008	0



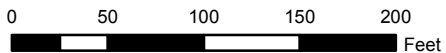
Town of Burlington, Connecticut. Assessment Parcel Map

Map-Block-Lot 5-11-17-A

Address: 12 NEPAUG RD



1 inch = 100 feet



Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Burlington and its mapping contractors assume no legal responsibility for the information contained herein.

Map Produced: July 2016

Date: August 28, 2016

Sean Dempsey
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject: Structural Analysis Report

Carrier Designation: Metro PCS Co-Locate
Carrier Site Number: CTHA509A
Carrier Site Name: AT&T Burlington Monopole

Crown Castle Designation: Crown Castle BU Number: 845993
Crown Castle Site Name: BURLINGTON-NEPAUG ROAD
Crown Castle JDE Job Number: 392501
Crown Castle Work Order Number: 1288438
Crown Castle Application Number: 358447 Rev. 0

Engineering Firm Designation: Crown Castle Project Number: 1288438

Site Data: 12 NEPAUG ROAD, BURLINGTON, Hartford County, CT
Latitude 41° 46' 56.86", Longitude -72° 59' 22.68"
120 Foot - Monopole Tower

Dear Sean Dempsey,

Crown Castle is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1288438, in accordance with application 358447, revision 0.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Existing + Proposed Equipment

Sufficient Capacity

Note: See Table I and Table II for the proposed and existing loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 80 mph fastest mile.

All equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

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

Structural analysis prepared by: Matthew Hussak / MBC

Respectfully submitted by:

Terry P. Styran, P.E.
Senior Project Engineer
tnxTower Report - version
7.0.5.1

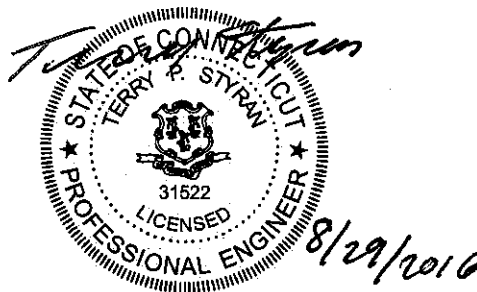


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1) INTRODUCTION

This tower is a 120ft Monopole tower designed by ENGINEERED ENDEAVORS, INC and mapped by FDH in February of 2016. The original design standard and wind speed are unknown.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
88.0	90.0	3	commscope	LNx-6515DS-A1M w/ Mount Pipe	-	-	-

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
119.0	119.0	3	ericsson	RRUS-11	2 2 12	1/2 7/8 1-5/8	1
		1	gps	GPS_A			
		3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP13519			
		6	powerwave technologies	LGP21401			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 1201-1]			
109.0	109.0	6	andrew	950F85T2E-M w/ Mount Pipe	6	1-1/4	1
		1	tower mounts	Platform Mount [LP 1201-1]			
99.0	99.0	3	antel	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	12	1-5/8	1
		3	antel	BXA-70063-6CF-2 w/ Mount Pipe			
		6	antel	LPA-80080/4CF w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		1	tower mounts	Platform Mount [LP 1201-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
88.0	90.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	7	1-5/8	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
	88.0	1	tower mounts	T-Arm Mount [TA 602-3]			

Notes:

- Existing Equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
Information Not Available						

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Jaworski Geotech, Inc.	4551029	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	URS	5072131	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	FDH Velocitel (Foundation Mapping)	6171674	CCISITES
4-TOWER MANUFACTURER DRAWINGS	FDH Velocitel (Tower Mapping)	6172249	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- Tower and structures were built in accordance with the manufacturer's specifications.
- The tower and structures have been maintained in accordance with the manufacturer's specification.
- The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	120 - 97	Pole	TP28.93x22.69x0.1875	1	-6.24	858.87	22.2	Pass
L2	97 - 48	Pole	TP39.7x27.5729x0.25	2	-16.10	1565.92	65.6	Pass
L3	48 - 0	Pole	TP51.04x38.0569x0.3125	3	-26.38	2523.73	68.1	Pass
							Summary	
						Pole (L3)	68.1	Pass
						Rating =	68.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	59.4	Pass
1	Base Plate	0	83.8	Pass
1	Base Foundation Structural	0	62.4	Pass
1	Base Foundation Soil Interaction	0	56.8	Pass

Structure Rating (max from all components) =	83.8%
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Notes:

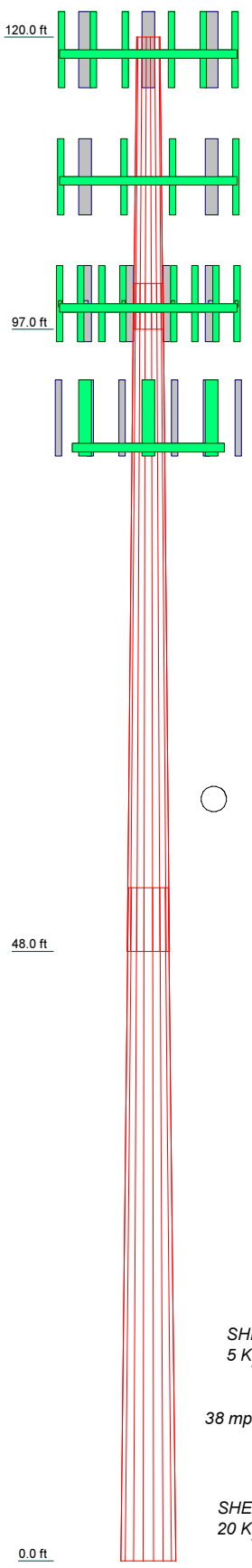
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3
Length (ft)	23.00	52.62	52.96
Number of Sides	18	18	18
Thickness (in)	0.1875	0.2500	0.3125
Socket Length (ft)	3.62	4.96	
Top Dia (in)	22.6900	27.5729	38.0569
Bot Dia (in)	28.9300	39.7000	51.0400
Grade		A572-65	
Weight (K)	1.2	4.7	7.9



DESIGNED APPURTENANCE LOADING

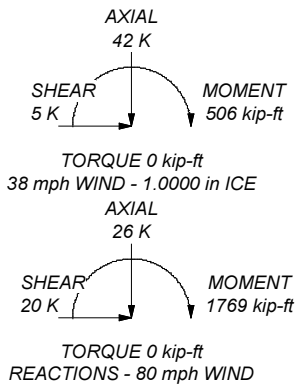
TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 1201-1]	119	6' x 2" Mount Pipe	109
AM-X-CD-16-65-00T-RET w/ Mount Pipe	119	Platform Mount [LP 1201-1]	99
AM-X-CD-16-65-00T-RET w/ Mount Pipe	119	(2) LPA-80080/4CF w/ Mount Pipe	99
AM-X-CD-16-65-00T-RET w/ Mount Pipe	119	(2) LPA-80080/4CF w/ Mount Pipe	99
AM-X-CD-16-65-00T-RET w/ Mount Pipe	119	(2) LPA-80080/4CF w/ Mount Pipe	99
(2) 7770.00 w/ Mount Pipe	119	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	99
(2) 7770.00 w/ Mount Pipe	119	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	99
(2) 7770.00 w/ Mount Pipe	119	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	99
GPS_A	119	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	99
(2) LGP21401	119	BXA-70063-6CF-2 w/ Mount Pipe	99
(2) LGP21401	119	BXA-70063-6CF-2 w/ Mount Pipe	99
(2) LGP21401	119	BXA-70063-6CF-2 w/ Mount Pipe	99
DC6-48-60-18-8F	119	(2) FD9R6004/2C-3L	99
(2) LGP13519	119	(2) FD9R6004/2C-3L	99
(2) LGP13519	119	(2) FD9R6004/2C-3L	99
(2) LGP13519	119	(2) FD9R6004/2C-3L	99
RRUS-11	119	T-Arm Mount [TA 602-3]	88
RRUS-11	119	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	88
RRUS-11	119	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	88
6' x 2" Mount Pipe	119	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	88
6' x 2" Mount Pipe	119	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	88
6' x 2" Mount Pipe	119	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	88
6' x 2" Mount Pipe	119	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	88
6' x 2" Mount Pipe	119	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	88
Platform Mount [LP 1201-1]	109	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	88
(2) 950F85T2E-M w/ Mount Pipe	109	LNX-6515DS-A1M w/ Mount Pipe	88
(2) 950F85T2E-M w/ Mount Pipe	109	LNX-6515DS-A1M w/ Mount Pipe	88
(2) 950F85T2E-M w/ Mount Pipe	109	LNX-6515DS-A1M w/ Mount Pipe	88
6' x 2" Mount Pipe	109	LNX-6515DS-A1M w/ Mount Pipe	88
6' x 2" Mount Pipe	109		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 68.1%



<p>CROWN CASTLE The Foundation for a Wireless World</p>	<p>Crown Castle 2000 Corporate Drive Canonsburg, PA 15317</p>		<p>Job: BU# 845993</p>	
	<p>Phone: (724) 416-2000 FAX: (724) 416-12254</p>		<p>Project: Client: Crown Castle</p>	<p>Drawn by: MCarll Date: 08/28/16</p>
	<p>Code: TIA/EIA-222-F</p>		<p>App'd: Scale: NTS</p>	<p>Dwg No. E-1</p>
	<p>Path: C:\Users\mcarll\Desktop\845993 WO1288439\QA-MBC\845993 WO1288438.er</p>			

Tower Input Data

There is a pole section.
 This tower is designed using the TIA/EIA-222-F standard.
 The following design criteria apply:

- 1) Tower is located in Hartford County, Connecticut.
- 2) Basic wind speed of 80 mph.
- 3) Nominal ice thickness of 1.0000 in.
- 4) Ice thickness is considered to increase with height.
- 5) Ice density of 56 pcf.
- 6) A wind speed of 38 mph is used in combination with ice.
- 7) Temperature drop of 50 °F.
- 8) Deflections calculated using a wind speed of 50 mph.
- 9) A non-linear (P-delta) analysis was used.
- 10) Pressures are calculated at each section.
- 11) Stress ratio used in pole design is 1.333.
- 12) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys ✓ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
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Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	120.00-97.00	23.00	3.62	18	22.6900	28.9300	0.1875	0.7500	A572-65 (65 ksi)
L2	97.00-48.00	52.62	4.96	18	27.5729	39.7000	0.2500	1.0000	A572-65 (65 ksi)
L3	48.00-0.00	52.96		18	38.0569	51.0400	0.3125	1.2500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
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Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	23.0400	13.3918	856.7181	7.9884	11.5265	74.3258	1714.5635	6.6972	3.6634	19.538
	29.3763	17.1054	1785.3331	10.2036	14.6964	121.4807	3573.0155	8.5543	4.7617	25.396
L2	28.8454	21.6807	2044.8607	9.6996	14.0070	145.9883	4092.4120	10.8424	4.4128	17.651
	40.3124	31.3036	6154.9624	14.0048	20.1676	305.1906	12318.023	15.6548	6.5472	26.189
L3	39.8787	37.4377	6738.3192	13.3993	19.3329	348.5416	13485.504	18.7224	6.1480	19.674
	51.8274	50.3153	16357.795	18.0083	25.9283	630.8853	32737.114	25.1625	8.4330	26.986

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _t	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 120.00-97.00				1	1	1			
L2 97.00-48.00				1	1	1			
L3 48.00-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	Number Per Row	Clear Spacing	Width or Diameter	Perimeter	Weight
				ft			in	r in	r in	plf

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	C _A A _A	Weight
				ft		ft ² /ft	plf
LDF4-50A(1/2")	A	No	Inside Pole	119.00 - 8.00	2	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00
LDF5-50A(7/8")	A	No	Inside Pole	119.00 - 8.00	2	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00
LDF7-50A(1-5/8")	A	No	Inside Pole	119.00 - 8.00	12	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00

LDF6-50A(1-1/4")	C	No	Inside Pole	109.00 - 8.00	6	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00

LDF7-50A(1-5/8")	C	No	Inside Pole	99.00 - 8.00	12	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf

LDF7-50A(1-5/8")	B	No	Inside Pole	88.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	B	No	Inside Pole	88.00 - 8.00	1	No Ice	0.00	1.07
						1/2" Ice	0.00	1.07
						1" Ice	0.00	1.07
						2" Ice	0.00	1.07
						4" Ice	0.00	1.07

Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	120.00-97.00	A	0.000	0.000	0.000	0.000	0.24
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07
L2	97.00-48.00	A	0.000	0.000	0.000	0.000	0.53
		B	0.000	0.000	0.000	0.000	0.24
		C	0.000	0.000	0.000	0.000	0.68
L3	48.00-0.00	A	0.000	0.000	0.000	0.000	0.43
		B	0.000	0.000	0.000	0.000	0.24
		C	0.000	0.000	0.000	0.000	0.55

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	120.00-97.00	A	1.153	0.000	0.000	0.000	0.000	0.24
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.07
L2	97.00-48.00	A	1.098	0.000	0.000	0.000	0.000	0.53
		B		0.000	0.000	0.000	0.000	0.24
		C		0.000	0.000	0.000	0.000	0.68
L3	48.00-0.00	A	1.000	0.000	0.000	0.000	0.000	0.43
		B		0.000	0.000	0.000	0.000	0.24
		C		0.000	0.000	0.000	0.000	0.55

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	120.00-97.00	0.0000	0.0000	0.0000	0.0000
L2	97.00-48.00	0.0000	0.0000	0.0000	0.0000
L3	48.00-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						ft

Platform Mount [LP 1201-1]	B	None			0.0000	119.00	No Ice	23.10	23.10	2.10
							1/2" Ice	26.80	26.80	2.50
							1" Ice	30.50	30.50	2.90
							2" Ice	37.90	37.90	3.70
							4" Ice	52.70	52.70	5.30
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00		0.0000	119.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
			0.00				1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00		0.0000	119.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
			0.00				1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00		0.0000	119.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
			0.00				1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00		0.0000	119.00	No Ice	6.12	4.25	0.06
			0.00				1/2" Ice	6.63	5.01	0.10
			0.00				1" Ice	7.13	5.71	0.16
							2" Ice	8.16	7.16	0.29
							4" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00		0.0000	119.00	No Ice	6.12	4.25	0.06
			0.00				1/2" Ice	6.63	5.01	0.10
			0.00				1" Ice	7.13	5.71	0.16
							2" Ice	8.16	7.16	0.29
							4" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00		0.0000	119.00	No Ice	6.12	4.25	0.06
			0.00				1/2" Ice	6.63	5.01	0.10
			0.00				1" Ice	7.13	5.71	0.16
							2" Ice	8.16	7.16	0.29
							4" Ice	10.36	10.41	0.66
GPS_A	A	From Leg	4.00		0.0000	119.00	No Ice	0.30	0.30	0.00
			0.00				1/2" Ice	0.37	0.37	0.00
			0.00				1" Ice	0.46	0.46	0.01
							2" Ice	0.65	0.65	0.02
							4" Ice	1.15	1.15	0.08
(2) LGP21401	C	From Leg	4.00		0.0000	119.00	No Ice	1.29	0.23	0.01
			0.00				1/2" Ice	1.45	0.31	0.02
			0.00				1" Ice	1.61	0.40	0.03
							2" Ice	1.97	0.61	0.05
							4" Ice	2.79	1.12	0.14
(2) LGP21401	A	From Leg	4.00		0.0000	119.00	No Ice	1.29	0.23	0.01
			0.00				1/2" Ice	1.45	0.31	0.02
			0.00				1" Ice	1.61	0.40	0.03
							2" Ice	1.97	0.61	0.05
							4" Ice	2.79	1.12	0.14
(2) LGP21401	B	From Leg	4.00		0.0000	119.00	No Ice	1.29	0.23	0.01
			0.00				1/2" Ice	1.45	0.31	0.02
			0.00				1" Ice	1.61	0.40	0.03

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	CAAA	CAAA	Weight K
			Horz Lateral ft	Vert ft			Front ft ²	Side ft ²	
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	119.00	1" Ice	1.97	0.61	0.05
						2" Ice	2.79	1.12	0.14
						4" Ice			
						No Ice	1.27	1.27	0.02
						1/2" Ice	1.46	1.46	0.04
						1" Ice	1.66	1.66	0.05
						2" Ice	2.09	2.09	0.10
(2) LGP13519	C	From Leg	4.00	0.0000	119.00	2" Ice	3.10	3.10	0.21
						4" Ice			
						No Ice	0.34	0.21	0.01
						1/2" Ice	0.42	0.28	0.01
						Ice	0.51	0.36	0.01
						1" Ice	0.73	0.55	0.02
						2" Ice	1.25	1.03	0.07
(2) LGP13519	A	From Leg	4.00	0.0000	119.00	4" Ice			
						No Ice	0.34	0.21	0.01
						1/2" Ice	0.42	0.28	0.01
						Ice	0.51	0.36	0.01
						1" Ice	0.73	0.55	0.02
						2" Ice	1.25	1.03	0.07
						4" Ice			
(2) LGP13519	B	From Leg	4.00	0.0000	119.00	4" Ice			
						No Ice	0.34	0.21	0.01
						1/2" Ice	0.42	0.28	0.01
						Ice	0.51	0.36	0.01
						1" Ice	0.73	0.55	0.02
						2" Ice	1.25	1.03	0.07
						4" Ice			
RRUS-11	C	From Leg	4.00	0.0000	119.00	4" Ice			
						No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						Ice	3.74	1.74	0.09
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
RRUS-11	A	From Leg	4.00	0.0000	119.00	4" Ice			
						No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						Ice	3.74	1.74	0.09
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
RRUS-11	B	From Leg	4.00	0.0000	119.00	4" Ice			
						No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						Ice	3.74	1.74	0.09
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	119.00	4" Ice			
						No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice	4.70	4.70	0.23
						4" Ice			
6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	119.00	4" Ice			
						No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice	4.70	4.70	0.23
						4" Ice			
6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	119.00	4" Ice			
						No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice	4.70	4.70	0.23
						4" Ice			
6' x 2" Mount Pipe	C	From Leg	2.00	0.0000	119.00	4" Ice			
						No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	CAAA Front ft ²	CAAA Side ft ²	Weight K
			0.00			Ice 2.29	2.29	0.05
						1" Ice 3.06	3.06	0.09
						2" Ice 4.70	4.70	0.23
						4" Ice		
6' x 2" Mount Pipe	A	From Leg	2.00	0.0000	119.00	No Ice 1.43	1.43	0.02
			0.00			1/2" 1.92	1.92	0.03
			0.00			Ice 2.29	2.29	0.05
						1" Ice 3.06	3.06	0.09
						2" Ice 4.70	4.70	0.23
						4" Ice		
6' x 2" Mount Pipe	B	From Leg	2.00	0.0000	119.00	No Ice 1.43	1.43	0.02
			0.00			1/2" 1.92	1.92	0.03
			0.00			Ice 2.29	2.29	0.05
						1" Ice 3.06	3.06	0.09
						2" Ice 4.70	4.70	0.23
						4" Ice		

Platform Mount [LP 1201-1]	B	None		0.0000	109.00	No Ice 23.10	23.10	2.10
						1/2" 26.80	26.80	2.50
						Ice 30.50	30.50	2.90
						1" Ice 37.90	37.90	3.70
						2" Ice 52.70	52.70	5.30
						4" Ice		
(2) 950F85T2E-M w/ Mount Pipe	C	From Leg	4.00	0.0000	109.00	No Ice 3.02	5.66	0.03
			0.00			1/2" 3.47	6.55	0.07
			0.00			Ice 3.90	7.31	0.12
						1" Ice 4.80	8.95	0.24
						2" Ice 6.71	12.54	0.59
						4" Ice		
(2) 950F85T2E-M w/ Mount Pipe	A	From Leg	4.00	0.0000	109.00	No Ice 3.02	5.66	0.03
			0.00			1/2" 3.47	6.55	0.07
			0.00			Ice 3.90	7.31	0.12
						1" Ice 4.80	8.95	0.24
						2" Ice 6.71	12.54	0.59
						4" Ice		
(2) 950F85T2E-M w/ Mount Pipe	B	From Leg	4.00	0.0000	109.00	No Ice 3.02	5.66	0.03
			0.00			1/2" 3.47	6.55	0.07
			0.00			Ice 3.90	7.31	0.12
						1" Ice 4.80	8.95	0.24
						2" Ice 6.71	12.54	0.59
						4" Ice		
6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	109.00	No Ice 1.43	1.43	0.02
			0.00			1/2" 1.92	1.92	0.03
			0.00			Ice 2.29	2.29	0.05
						1" Ice 3.06	3.06	0.09
						2" Ice 4.70	4.70	0.23
						4" Ice		
6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	109.00	No Ice 1.43	1.43	0.02
			0.00			1/2" 1.92	1.92	0.03
			0.00			Ice 2.29	2.29	0.05
						1" Ice 3.06	3.06	0.09
						2" Ice 4.70	4.70	0.23
						4" Ice		
6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	109.00	No Ice 1.43	1.43	0.02
			0.00			1/2" 1.92	1.92	0.03
			0.00			Ice 2.29	2.29	0.05
						1" Ice 3.06	3.06	0.09
						2" Ice 4.70	4.70	0.23
						4" Ice		

Platform Mount [LP 1201-1]	B	None		0.0000	99.00	No Ice 23.10	23.10	2.10
						1/2" 26.80	26.80	2.50
						Ice 30.50	30.50	2.90
						1" Ice 37.90	37.90	3.70
						2" Ice 52.70	52.70	5.30

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral					
(2) LPA-80080/4CF w/ Mount Pipe	C	From Leg	4.00	0.0000	99.00	4" Ice			
						No Ice	2.86	7.23	0.03
						1/2"	3.22	7.92	0.08
						Ice	3.59	8.63	0.13
						1" Ice	4.45	10.11	0.25
(2) LPA-80080/4CF w/ Mount Pipe	A	From Leg	4.00	0.0000	99.00	2" Ice	6.32	13.34	0.61
						4" Ice			
						No Ice	2.86	7.23	0.03
						1/2"	3.22	7.92	0.08
						Ice	3.59	8.63	0.13
(2) LPA-80080/4CF w/ Mount Pipe	B	From Leg	4.00	0.0000	99.00	1" Ice	4.45	10.11	0.25
						2" Ice	6.32	13.34	0.61
						4" Ice			
						No Ice	2.86	7.23	0.03
						1/2"	3.22	7.92	0.08
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	C	From Leg	4.00	0.0000	99.00	Ice	3.59	8.63	0.13
						1" Ice	4.45	10.11	0.25
						2" Ice	6.32	13.34	0.61
						4" Ice			
						No Ice	3.18	3.35	0.03
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	A	From Leg	4.00	0.0000	99.00	1/2"	3.56	3.97	0.06
						Ice	3.96	4.60	0.10
						1" Ice	4.85	5.89	0.19
						2" Ice	6.77	8.89	0.49
						4" Ice			
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	B	From Leg	4.00	0.0000	99.00	No Ice	3.18	3.35	0.03
						1/2"	3.56	3.97	0.06
						Ice	3.96	4.60	0.10
						1" Ice	4.85	5.89	0.19
						2" Ice	6.77	8.89	0.49
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.00	0.0000	99.00	4" Ice			
						No Ice	7.97	5.80	0.04
						1/2"	8.61	6.95	0.10
						Ice	9.22	7.82	0.17
						1" Ice	10.46	9.60	0.34
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.00	0.0000	99.00	2" Ice	13.07	13.37	0.80
						4" Ice			
						No Ice	7.97	5.80	0.04
						1/2"	8.61	6.95	0.10
						Ice	9.22	7.82	0.17
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.00	0.0000	99.00	1" Ice	10.46	9.60	0.34
						2" Ice	13.07	13.37	0.80
						4" Ice			
						No Ice	7.97	5.80	0.04
						1/2"	8.61	6.95	0.10
(2) FD9R6004/2C-3L	C	From Leg	4.00	0.0000	99.00	Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
						No Ice	0.37	0.08	0.00
(2) FD9R6004/2C-3L	A	From Leg	4.00	0.0000	99.00	1/2"	0.45	0.14	0.01
						Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						4" Ice			
						No Ice	0.37	0.08	0.00

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA}		Weight K
			Horz Lateral ft ft ft	Vert ft ft ft			Front ft ²	Side ft ²	
(2) FD9R6004/2C-3L	B	From Leg	4.00 0.00 0.00	0.0000	99.00	2" Ice	1.28	0.74	0.06
						4" Ice			
						No Ice	0.37	0.08	0.00
						1/2" Ice	0.45	0.14	0.01
						1" Ice	0.54	0.20	0.01
						2" Ice	0.75	0.34	0.02
*** T-Arm Mount [TA 602-3]	B	None		0.0000	88.00	4" Ice	1.28	0.74	0.06
						No Ice	11.59	11.59	0.77
						1/2" Ice	15.44	15.44	0.99
						1" Ice	19.29	19.29	1.21
						2" Ice	26.99	26.99	1.64
						4" Ice	42.39	42.39	2.50
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	4.00 0.00 2.00	0.0000	88.00	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
						ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	4.00 0.00 2.00
1/2" Ice	7.35	6.48	0.17						
1" Ice	7.86	7.26	0.23						
2" Ice	8.93	8.86	0.38						
4" Ice	11.18	12.29	0.81						
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	4.00 0.00 2.00	0.0000	88.00				
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
						ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Face	4.00 0.00 2.00
1/2" Ice	7.35	6.48	0.17						
1" Ice	7.86	7.26	0.23						
2" Ice	8.93	8.86	0.38						
4" Ice	11.18	12.29	0.81						
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Face	4.00 0.00 2.00	0.0000	88.00				
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
						ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Face	4.00 0.00 2.00
1/2" Ice	7.35	6.48	0.17						
1" Ice	7.86	7.26	0.23						
2" Ice	8.93	8.86	0.38						
4" Ice	11.18	12.29	0.81						
LNX-6515DS-A1M w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	88.00				
						1/2" Ice	12.40	11.37	0.17
						1" Ice	13.14	12.91	0.27
						2" Ice	14.60	15.27	0.51
						4" Ice	17.87	20.14	1.15
						LNX-6515DS-A1M w/ Mount Pipe	B	From Leg	4.00 0.00 2.00
1/2" Ice	12.40	11.37	0.17						
1" Ice	13.14	12.91	0.27						
2" Ice	14.60	15.27	0.51						
4" Ice	17.87	20.14	1.15						
LNX-6515DS-A1M w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	88.00				
						1/2" Ice	12.40	11.37	0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			2.00			Ice	13.14	12.91	0.27
						1" Ice	14.60	15.27	0.51
						2" Ice	17.87	20.14	1.15
						4" Ice			

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	120 - 97	Pole	Max Tension	8	0.00	0.00	0.00
			Max. Compression	14	-11.83	0.00	0.36

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L2	97 - 48	Pole	Max. Mx	5	-6.24	-105.02	0.09
			Max. My	2	-6.24	0.00	105.12
			Max. Vy	5	7.45	-105.02	0.09
			Max. Vx	2	-7.45	0.00	105.12
			Max. Torque	5			0.31
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-28.56	0.00	0.36
			Max. Mx	5	-16.10	-796.83	0.11
			Max. My	2	-16.10	0.00	796.94
			Max. Vy	5	16.79	-796.83	0.11
L3	48 - 0	Pole	Max. Vx	2	-16.79	0.00	796.94
			Max. Torque	5			0.31
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-41.61	0.00	0.36
			Max. Mx	5	-26.38	-1768.74	0.11
			Max. My	2	-26.38	0.00	1768.84
			Max. Vy	5	19.94	-1768.74	0.11
			Max. Vx	2	-19.94	0.00	1768.84
			Max. Torque	5			0.31

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	15	41.61	0.00	5.41
	Max. H _x	11	26.39	19.93	0.00
	Max. H _z	2	26.39	0.00	19.93
	Max. M _x	2	1768.84	0.00	19.93
	Max. M _z	5	1768.74	-19.93	0.00
	Max. Torsion	5	0.31	-19.93	0.00
	Min. Vert	1	26.39	0.00	0.00
	Min. H _x	5	26.39	-19.93	0.00
	Min. H _z	8	26.39	0.00	-19.93
	Min. M _x	8	-1768.63	0.00	-19.93
	Min. M _z	11	-1768.74	19.93	0.00
	Min. Torsion	11	-0.31	19.93	0.00

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	26.39	0.00	0.00	-0.10	0.00	0.00
Dead+Wind 0 deg - No Ice	26.39	0.00	-19.93	-1768.84	0.00	0.00
Dead+Wind 30 deg - No Ice	26.39	9.96	-17.26	-1531.88	-884.37	-0.16
Dead+Wind 60 deg - No Ice	26.39	17.26	-9.96	-884.48	-1531.77	-0.27
Dead+Wind 90 deg - No Ice	26.39	19.93	-0.00	-0.11	-1768.74	-0.31
Dead+Wind 120 deg - No Ice	26.39	17.26	9.96	884.26	-1531.77	-0.27
Dead+Wind 150 deg - No Ice	26.39	9.96	17.26	1531.66	-884.37	-0.16
Dead+Wind 180 deg - No Ice	26.39	0.00	19.93	1768.63	0.00	0.00
Dead+Wind 210 deg - No Ice	26.39	-9.96	17.26	1531.66	884.37	0.16
Dead+Wind 240 deg - No Ice	26.39	-17.26	9.96	884.26	1531.77	0.27
Dead+Wind 270 deg - No Ice	26.39	-19.93	-0.00	-0.11	1768.74	0.31
Dead+Wind 300 deg - No Ice	26.39	-17.26	-9.96	-884.48	1531.77	0.27
Dead+Wind 330 deg - No Ice	26.39	-9.96	-17.26	-1531.88	884.37	0.16
Dead+Ice+Temp	41.61	0.00	0.00	-0.36	0.00	0.00
Dead+Wind 0 deg+Ice+Temp	41.61	0.00	-5.41	-506.29	0.00	0.00
Dead+Wind 30 deg+Ice+Temp	41.61	2.70	-4.68	-438.51	-252.95	-0.05

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 60 deg+Ice+Temp	41.61	4.68	-2.70	-253.34	-438.12	-0.09
Dead+Wind 90 deg+Ice+Temp	41.61	5.41	0.00	-0.39	-505.90	-0.10
Dead+Wind 120 deg+Ice+Temp	41.61	4.68	2.70	252.56	-438.12	-0.09
Dead+Wind 150 deg+Ice+Temp	41.61	2.70	4.68	437.73	-252.95	-0.05
Dead+Wind 180 deg+Ice+Temp	41.61	0.00	5.41	505.50	0.00	0.00
Dead+Wind 210 deg+Ice+Temp	41.61	-2.70	4.68	437.73	252.95	0.05
Dead+Wind 240 deg+Ice+Temp	41.61	-4.68	2.70	252.56	438.12	0.09
Dead+Wind 270 deg+Ice+Temp	41.61	-5.41	0.00	-0.39	505.90	0.10
Dead+Wind 300 deg+Ice+Temp	41.61	-4.68	-2.70	-253.34	438.12	0.09
Dead+Wind 330 deg+Ice+Temp	41.61	-2.70	-4.68	-438.51	252.95	0.05
Dead+Wind 0 deg - Service	26.39	0.00	-7.78	-691.34	0.00	0.00
Dead+Wind 30 deg - Service	26.39	3.89	-6.74	-598.74	-345.62	-0.06
Dead+Wind 60 deg - Service	26.39	6.74	-3.89	-345.73	-598.63	-0.11
Dead+Wind 90 deg - Service	26.39	7.78	0.00	-0.11	-691.23	-0.12
Dead+Wind 120 deg - Service	26.39	6.74	3.89	345.51	-598.63	-0.11
Dead+Wind 150 deg - Service	26.39	3.89	6.74	598.52	-345.62	-0.06
Dead+Wind 180 deg - Service	26.39	0.00	7.78	691.12	0.00	0.00
Dead+Wind 210 deg - Service	26.39	-3.89	6.74	598.52	345.62	0.06
Dead+Wind 240 deg - Service	26.39	-6.74	3.89	345.51	598.63	0.11
Dead+Wind 270 deg - Service	26.39	-7.78	0.00	-0.11	691.23	0.12
Dead+Wind 300 deg - Service	26.39	-6.74	-3.89	-345.73	598.63	0.11
Dead+Wind 330 deg - Service	26.39	-3.89	-6.74	-598.74	345.62	0.06

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-26.39	0.00	0.00	26.39	0.00	0.000%
2	0.00	-26.39	-19.93	0.00	26.39	19.93	0.000%
3	9.96	-26.39	-17.26	-9.96	26.39	17.26	0.000%
4	17.26	-26.39	-9.96	-17.26	26.39	9.96	0.000%
5	19.93	-26.39	0.00	-19.93	26.39	0.00	0.000%
6	17.26	-26.39	9.96	-17.26	26.39	-9.96	0.000%
7	9.96	-26.39	17.26	-9.96	26.39	-17.26	0.000%
8	0.00	-26.39	19.93	0.00	26.39	-19.93	0.000%
9	-9.96	-26.39	17.26	9.96	26.39	-17.26	0.000%
10	-17.26	-26.39	9.96	17.26	26.39	-9.96	0.000%
11	-19.93	-26.39	0.00	19.93	26.39	0.00	0.000%
12	-17.26	-26.39	-9.96	17.26	26.39	9.96	0.000%
13	-9.96	-26.39	-17.26	9.96	26.39	17.26	0.000%
14	0.00	-41.61	0.00	0.00	41.61	0.00	0.000%
15	0.00	-41.61	-5.41	0.00	41.61	5.41	0.000%
16	2.70	-41.61	-4.68	-2.70	41.61	4.68	0.000%
17	4.68	-41.61	-2.70	-4.68	41.61	2.70	0.000%
18	5.41	-41.61	0.00	-5.41	41.61	0.00	0.000%
19	4.68	-41.61	2.70	-4.68	41.61	-2.70	0.000%
20	2.70	-41.61	4.68	-2.70	41.61	-4.68	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
21	0.00	-41.61	5.41	0.00	41.61	-5.41	0.000%
22	-2.70	-41.61	4.68	2.70	41.61	-4.68	0.000%
23	-4.68	-41.61	2.70	4.68	41.61	-2.70	0.000%
24	-5.41	-41.61	0.00	5.41	41.61	0.00	0.000%
25	-4.68	-41.61	-2.70	4.68	41.61	2.70	0.000%
26	-2.70	-41.61	-4.68	2.70	41.61	4.68	0.000%
27	0.00	-26.39	-7.78	0.00	26.39	7.78	0.000%
28	3.89	-26.39	-6.74	-3.89	26.39	6.74	0.000%
29	6.74	-26.39	-3.89	-6.74	26.39	3.89	0.000%
30	7.78	-26.39	0.00	-7.78	26.39	0.00	0.000%
31	6.74	-26.39	3.89	-6.74	26.39	-3.89	0.000%
32	3.89	-26.39	6.74	-3.89	26.39	-6.74	0.000%
33	0.00	-26.39	7.78	0.00	26.39	-7.78	0.000%
34	-3.89	-26.39	6.74	3.89	26.39	-6.74	0.000%
35	-6.74	-26.39	3.89	6.74	26.39	-3.89	0.000%
36	-7.78	-26.39	0.00	7.78	26.39	0.00	0.000%
37	-6.74	-26.39	-3.89	6.74	26.39	3.89	0.000%
38	-3.89	-26.39	-6.74	3.89	26.39	6.74	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00006110
3	Yes	5	0.00000001	0.00024790
4	Yes	5	0.00000001	0.00025473
5	Yes	4	0.00000001	0.00028533
6	Yes	5	0.00000001	0.00024597
7	Yes	5	0.00000001	0.00025265
8	Yes	4	0.00000001	0.00006108
9	Yes	5	0.00000001	0.00025265
10	Yes	5	0.00000001	0.00024597
11	Yes	4	0.00000001	0.00028533
12	Yes	5	0.00000001	0.00025473
13	Yes	5	0.00000001	0.00024790
14	Yes	4	0.00000001	0.00000001
15	Yes	5	0.00000001	0.00009638
16	Yes	5	0.00000001	0.00012322
17	Yes	5	0.00000001	0.00012399
18	Yes	5	0.00000001	0.00009631
19	Yes	5	0.00000001	0.00012254
20	Yes	5	0.00000001	0.00012324
21	Yes	5	0.00000001	0.00009605
22	Yes	5	0.00000001	0.00012324
23	Yes	5	0.00000001	0.00012254
24	Yes	5	0.00000001	0.00009631
25	Yes	5	0.00000001	0.00012399
26	Yes	5	0.00000001	0.00012322
27	Yes	4	0.00000001	0.00003104
28	Yes	4	0.00000001	0.00062131
29	Yes	4	0.00000001	0.00065893
30	Yes	4	0.00000001	0.00006473
31	Yes	4	0.00000001	0.00061114
32	Yes	4	0.00000001	0.00064682
33	Yes	4	0.00000001	0.00003102
34	Yes	4	0.00000001	0.00064682
35	Yes	4	0.00000001	0.00061114
36	Yes	4	0.00000001	0.00006473
37	Yes	4	0.00000001	0.00065893
38	Yes	4	0.00000001	0.00062131

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 97	18.604	27	1.2890	0.0015
L2	100.62 - 48	13.467	27	1.2183	0.0008
L3	52.96 - 0	3.693	27	0.6498	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
119.00	Platform Mount [LP 1201-1]	27	18.335	1.2866	0.0015	34072
109.00	Platform Mount [LP 1201-1]	27	15.655	1.2585	0.0011	15487
99.00	Platform Mount [LP 1201-1]	27	13.053	1.2077	0.0008	8337
88.00	T-Arm Mount [TA 602-3]	27	10.358	1.1111	0.0005	6042

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 97	47.566	2	3.2953	0.0039
L2	100.62 - 48	34.436	2	3.1153	0.0021
L3	52.96 - 0	9.446	2	1.6621	0.0006

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
119.00	Platform Mount [LP 1201-1]	2	46.877	3.2893	0.0038	13431
109.00	Platform Mount [LP 1201-1]	2	40.030	3.2178	0.0028	6104
99.00	Platform Mount [LP 1201-1]	2	33.379	3.0881	0.0020	3284
88.00	T-Arm Mount [TA 602-3]	2	26.489	2.8415	0.0014	2375

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
L1	120 - 97 (1)	TP28.93x22.69x0.1875	23.00	0.00	0.0	39.000	16.5209	-6.24	644.32	0.010
L2	97 - 48 (2)	TP39.7x27.5729x0.25	52.62	0.00	0.0	38.647	30.3965	-16.10	1174.73	0.014
L3	48 - 0 (3)	TP51.04x38.0569x0.3125	52.96	0.00	0.0	37.628	50.3153	-26.38	1893.27	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	120 - 97 (1)	TP28.93x22.69x0.1875	105.12	11.134	39.000	0.285	0.00	0.000	39.000	0.000
L2	97 - 48 (2)	TP39.7x27.5729x0.25	796.94	33.240	38.647	0.860	0.00	0.000	38.647	0.000
L3	48 - 0 (3)	TP51.04x38.0569x0.3125	1768.8	33.645	37.628	0.894	0.00	0.000	37.628	0.000

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Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	120 - 97 (1)	TP28.93x22.69x0.1875	7.45	0.451	26.000	0.035	0.00	0.000	26.000	0.000
L2	97 - 48 (2)	TP39.7x27.5729x0.25	16.79	0.552	26.000	0.042	0.00	0.000	26.000	0.000
L3	48 - 0 (3)	TP51.04x38.0569x0.3125	19.94	0.396	26.000	0.030	0.00	0.000	26.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P P_a	Ratio f_{bx} F_{bx}	Ratio f_{by} F_{by}	Ratio f_v F_v	Ratio f_{vt} F_{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	120 - 97 (1)	0.010	0.285	0.000	0.035	0.000	0.295	1.333	H1-3+VT ✓
L2	97 - 48 (2)	0.014	0.860	0.000	0.042	0.000	0.874	1.333	H1-3+VT ✓
L3	48 - 0 (3)	0.014	0.894	0.000	0.030	0.000	0.908	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF \cdot P_{allow}$ K	% Capacity	Pass Fail
L1	120 - 97	Pole	TP28.93x22.69x0.1875	1	-6.24	858.87	22.2	Pass
L2	97 - 48	Pole	TP39.7x27.5729x0.25	2	-16.10	1565.92	65.6	Pass
L3	48 - 0	Pole	TP51.04x38.0569x0.3125	3	-26.38	2523.73	68.1	Pass
Summary								
Pole (L3)							68.1	Pass
RATING =							68.1	Pass

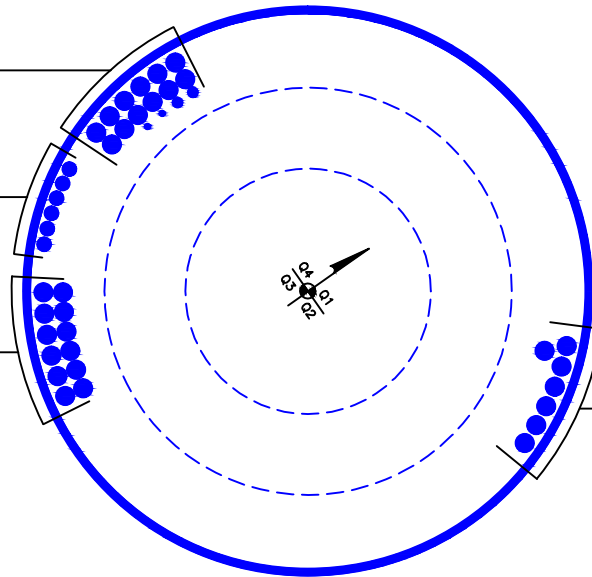
APPENDIX B
BASE LEVEL DRAWING



(INSTALLED)
(2) 1/2" TO 119 FT LEVEL
(2) 7/8" TO 119 FT LEVEL
(12) 1-5/8" TO 119 FT LEVEL

(INSTALLED)
(6) 1-1/4" TO 109 FT LEVEL

(INSTALLED)
(12) 1-5/8" TO 99 FT LEVEL



(INSTALLED)
(7) 1-5/8" TO 88 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, UngROUTed, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#: 845993	
Site Name: Burlington-Nepaug Road	
App #: 358447 Rev. 0	
Pole Manufacturer:	Other

Anchor Rod Data

Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	60	in

Plate Data

Diam:	74	in
Thick:	2.25	in
Grade:	36	ksi
Single-Rod B-eff:	13.50	in

Stiffener Data (Welding at both sides)

Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	51.04	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333
-------	-------

Reactions

Moment:	1769	ft-kips
Axial:	26	kips
Shear:	20	kips

If No stiffeners, Criteria: **AISC ASD** <-Only Applicable to Unstiffened Cases

Anchor Rod Results

Maximum Rod Tension: 115.7 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 59.4% **Pass**

Non-Rigid

Service ASD
Fty*ASIF

Base Plate Results

Base Plate Stress: 30.2 ksi
 Allowable Plate Stress: 36.0 ksi
 Base Plate Stress Ratio: 83.8% **Pass**

Flexural Check

Non-Rigid

Service ASD
0.75*Fy*ASIF
Y.L. Length:
31.54

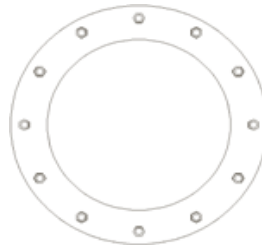
n/a

Stiffener Results

Horizontal Weld : n/a
 Vertical Weld: n/a
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: n/a
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: n/a
 Plate Comp. (AISC Bracket): n/a

Pole Results

Pole Punching Shear Check: n/a



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Monopole Pier and Pad Foundation

BU # : 845993

Site Name: Burlington-Nepaug Road

App. Number: 358447 Rev. 0

TIA-222 Revision: **F**



Design Reactions		
Shear, S:	20	kips
Moment, M:	1769	ft-kips
Tower Height, H:	120	ft
Tower Weight, Wt:	26	kips
Base Diameter, BD:	4.25	ft

Foundation Dimensions		
Depth, D:	5	ft
Pad Width, W:	23.8	ft
Neglected Depth, N:	3.33	ft
Thickness, T:	3.00	ft
Pier Diameter, Pd:	7.00	ft
Ext. Above Grade, E:	0.90	ft
BP Dist. Above Pier:	3	in.
Clear Cover, Cc:	3.0	in

Soil Properties		
Soil Unit Weight, γ :	0.120	kcf
Ult. Bearing Capacity, Bc:	12.0	ksf
Angle of Friction, Φ :	30	deg
Cohesion, Co:	0.000	ksf
Passive Pressure, Pp:	0.000	ksf
Base Friction, μ :	0.45	

Material Properties		
Rebar Yield Strength, Fy:	60000	psi
Concrete Strength, F'c:	3000	psi
Concrete Unit Weight, δ_c :	0.150	kcf
Seismic Zone, z:	1	

Rebar Properties		
Pier Rebar Size, Sp:	8	
Pier Rebar Quantity, mp:	29	36
Pad Rebar Size, Spad:	8	
Pad Rebar Quantity, mpad:	29	12
Pier Tie Size, St:	3	3
Tie Quantity, mt:	5	5

Design Checks			
	Capacity/Availability	Demand/Limits	Check
<i>Req'd Pier Diam.(ft)</i>	7	5.75	OK
<i>Overturning (ft-kips)</i>	3114.10	1769.00	56.8%
<i>Shear Capacity (kips)</i>	98.54	20.00	20.3%
<i>Bearing (ksf)</i>	9.00	1.80	20.0%
<i>Pad Shear - 1-way (kips)</i>	762.59	249.02	32.7%
<i>Pad Shear - 2-way (kips)</i>	1954.52	78.08	4.0%
<i>Pad Moment Capacity (k-ft)</i>	3253.29	753.23	23.2%
<i>Pier Moment Capacity (k-ft)</i>	2927.91	1827.00	62.4%

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

T-Mobile Existing Facility

Site ID: CTHA509A

AT&T Burlington Monopole
12 Nepaug Road
Burlington, CT 06013

September 2, 2016

EBI Project Number: 6216003937

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	11.95 %

September 2, 2016

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

Emissions Analysis for Site: **CTHA509A – AT&T Burlington Monopole**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **12 Nepaug Road, Burlington, 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 700 MHz Band is approximately 467 $\mu\text{W}/\text{cm}^2$, and the general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands 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 **12 Nepaug Road, Burlington, 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 UMTS 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 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
- 3) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 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 6-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.
- 6) The antennas used in this modeling are the **Ericsson AIR21 B4A/B2P & Ericsson AIR21 B2A/B4P** 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 **Ericsson AIR21 B4A/B2P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Ericsson AIR21 B2A/B4P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. 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.
- 7) The antenna mounting height centerline of the proposed antennas is **90 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.
- 9) All calculations were done with respect to uncontrolled / general public threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	90	Height (AGL):	90	Height (AGL):	90
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	2	Channel Count	2	Channel Count	2
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	2.38	Antenna B1 MPE%	2.38	Antenna C1 MPE%	2.38
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	90	Height (AGL):	90	Height (AGL):	90
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	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60
ERP (W):	2,334.27	ERP (W):	2,334.27	ERP (W):	2,334.27
Antenna A2 MPE%	1.19	Antenna B2 MPE%	1.19	Antenna C2 MPE%	1.19
Antenna #:	3	Antenna #:	3	Antenna #:	3
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):	90	Height (AGL):	90	Height (AGL):	90
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.94	Antenna B3 MPE%	0.94	Antenna C3 MPE%	0.94

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	4.51 %
Sprint	0.83 %
AT&T	2.52 %
Verizon Wireless	4.09 %
Site Total MPE %:	11.95 %

T-Mobile Sector A Total:	4.51 %
T-Mobile Sector B Total:	4.51 %
T-Mobile Sector C Total:	4.51 %
Site Total:	11.95 %

T-Mobile_per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	90	23.79	AWS - 2100 MHz	1000	2.38%
T-Mobile PCS - 1950 MHz UMTS	2	1,167.14	90	11.89	PCS - 1950 MHz	1000	1.19%
T-Mobile 700 MHz LTE	1	865.21	90	4.41	700 MHz	467	0.94%
						Total:	4.51%

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 A:	4.51 %
Sector B:	4.51 %
Sector C:	4.51 %
T-Mobile Per Sector Maximum:	4.51 %
Site Total:	11.95 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **11.95%** 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.