COHEN and WOLF P.C.
ATTORNEYS AT LAW

JULIE D. KOHLER

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

September 18, 2014

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

**Re: Notice of Exempt Modification
Town of Stratford/T-Mobile co-location
T-Mobile Site ID CT11872D
900 Longbrook Road, Stratford CT**

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, the Town of Stratford owns the existing telecommunications tower and related facility on the Stratford Police Department building, 900 Longbrook Road, Stratford Connecticut (latitude 41.20177, longitude -73.12885). T-Mobile intends to add three antennas and related equipment at this existing rooftop facility in Stratford ("Stratford 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 Mayor, John A. Harkins. The City of Stratford also owns the property.

The existing Stratford Facility consists of a rooftop mounted 50 foot guyed tower and associated compound area on the top of the Police Department building. T-Mobile plans to add three antennas and three remote radio units (RRUS) mounted on the rooftop facility at a centerline of 47 feet (79 feet AGL). (See the plans revised to September 15, 2014 attached hereto as Exhibit A). The existing rooftop facility is structurally capable of supporting T-Mobile's proposed use, as indicated in the structural certification dated September 12, 2014 and attached hereto as Exhibit B.

COHEN and WOLF P.C. ATTORNEYS AT LAW

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

1. The proposed modification will not increase the height of the tower. T-Mobile's proposed antennas and equipment will be installed at the 47 foot level. The enclosed plans confirm that the proposed modification will not increase the height of the rooftop facility.

2. The installation of the T-Mobile replacement equipment in the existing rooftop compound area, as reflected on Sheet A-1 of the attached plans, will not require an extension of the site boundaries. T-Mobile's proposed equipment will be located entirely within the existing compound area.

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

4. The operation of the replacement antennas will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated September 16, 2014 T-Mobile's operations would add 22.65% 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 39.22% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the Stratford 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: Mayor John A. Harkins, Town of Stratford
Elizabeth Jamieson, Transcend Wireless

EXHIBIT A

SITE NAME: CT872/ STRATFORD PD_GT

900 LONGBROOK ROAD
STRATFORD, CT 06614
FAIRFIELD COUNTY

SITE NUMBER: CT11872D
L700 - 702CU CONFIGURATION

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE NORTHEAST, LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SPECIAL STRUCTURAL NOTES

1. STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS COMPLETED BY HUDSON DESIGN ON BEHALF OF T-MOBILE ARE INCLUSIVE OF THE ENTIRE ANTENNA SUPPORT STRUCTURE (GLOBAL STRUCTURAL STABILITY ANALYSIS BY OTHERS), EXISTING TOWER PLATFORM, EXISTING ANTENNA MOUNTS AND ALL OTHER ASPECTS OF THE STRUCTURE THAT WILL SUPPORT THE T-MOBILE MODERNIZATION EQUIPMENT DEPLOYMENT AS DEPICTED HEREIN.
2. HUDSON DESIGN ASSUMES THAT THE TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES

T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS
SECTOR A:	ACCESS NOT PERMITTED
SECTOR B:	ACCESS NOT PERMITTED
SECTOR C:	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

CALL
BEFORE YOU DIG
CALL TOLL FREE 800-922-4455
OR CALL 811
UNDERGROUND SERVICE ALERT

PROJECT INFORMATION

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT MODERNIZATION
ZONING JURISDICTION:	BASED ON INFORMATION PROVIDED BY T-MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).
SITE ADDRESS:	900 LONGBROOK ROAD STRATFORD, CT 06614
LATITUDE:	41° 12' 6.372" N
LONGITUDE:	73° 7' 43.8594" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116

Transcend Wireless
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH, NJ 07430
TEL: (201) 684-0055
FAX: (201) 684-0066

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
LICENSED
PROFESSIONAL ENGINEER

APPROVALS

CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING/SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE
PROJECT NO:	CT11872D
DRAWN BY:	AS
CHECKED BY:	DR

2	09/15/14	ISSUED FOR CONSTRUCTION
1	08/18/14	ISSUED FOR REVIEW
0	08/13/14	ISSUED FOR REVIEW

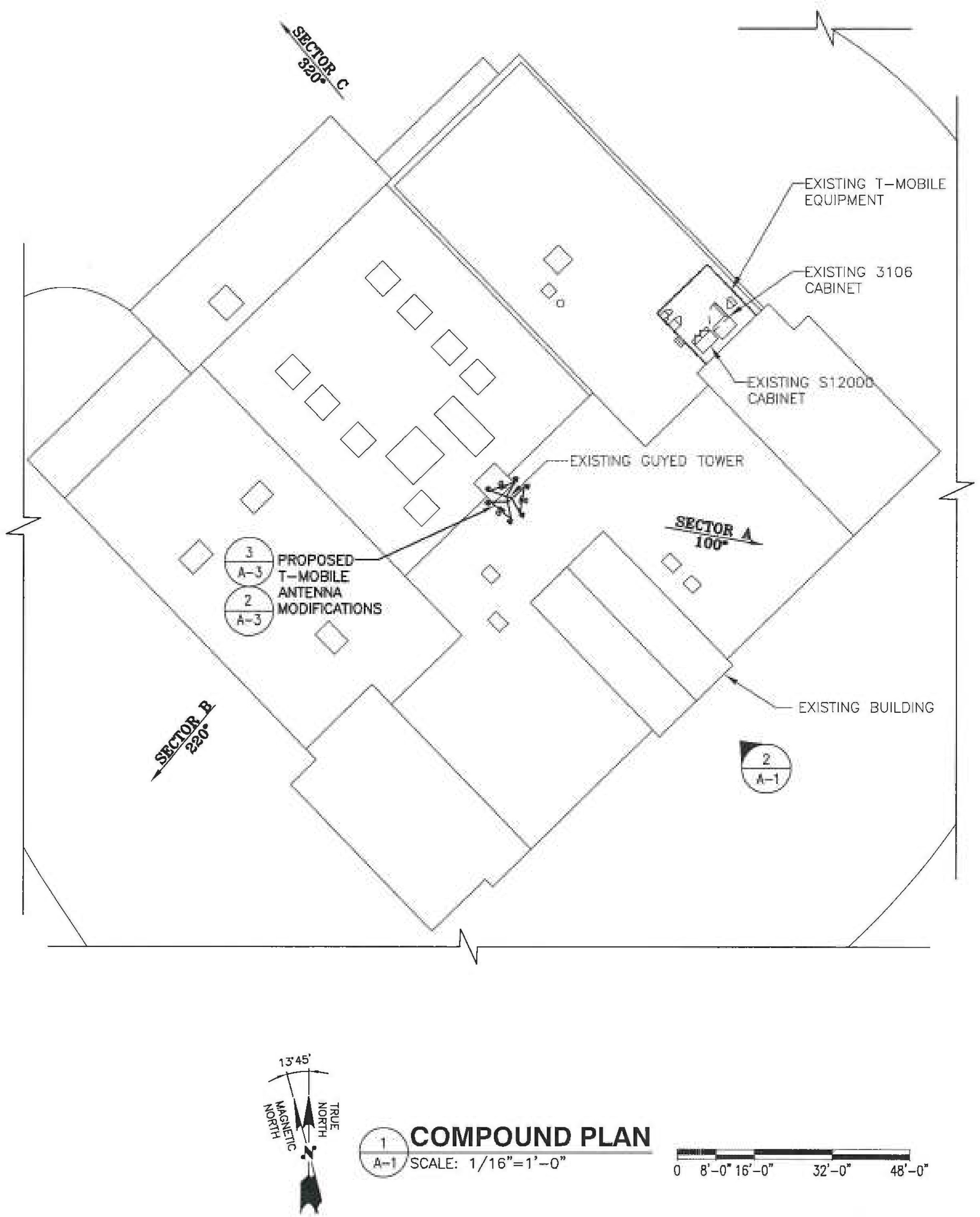
SITE NUMBER: CT11872D
SITE NAME:
CT827/ STRATFORD PD_GT
900 LONGBROOK ROAD
STRATFORD, CT 06614
FAIRFIELD COUNTY

SHEET TITLE

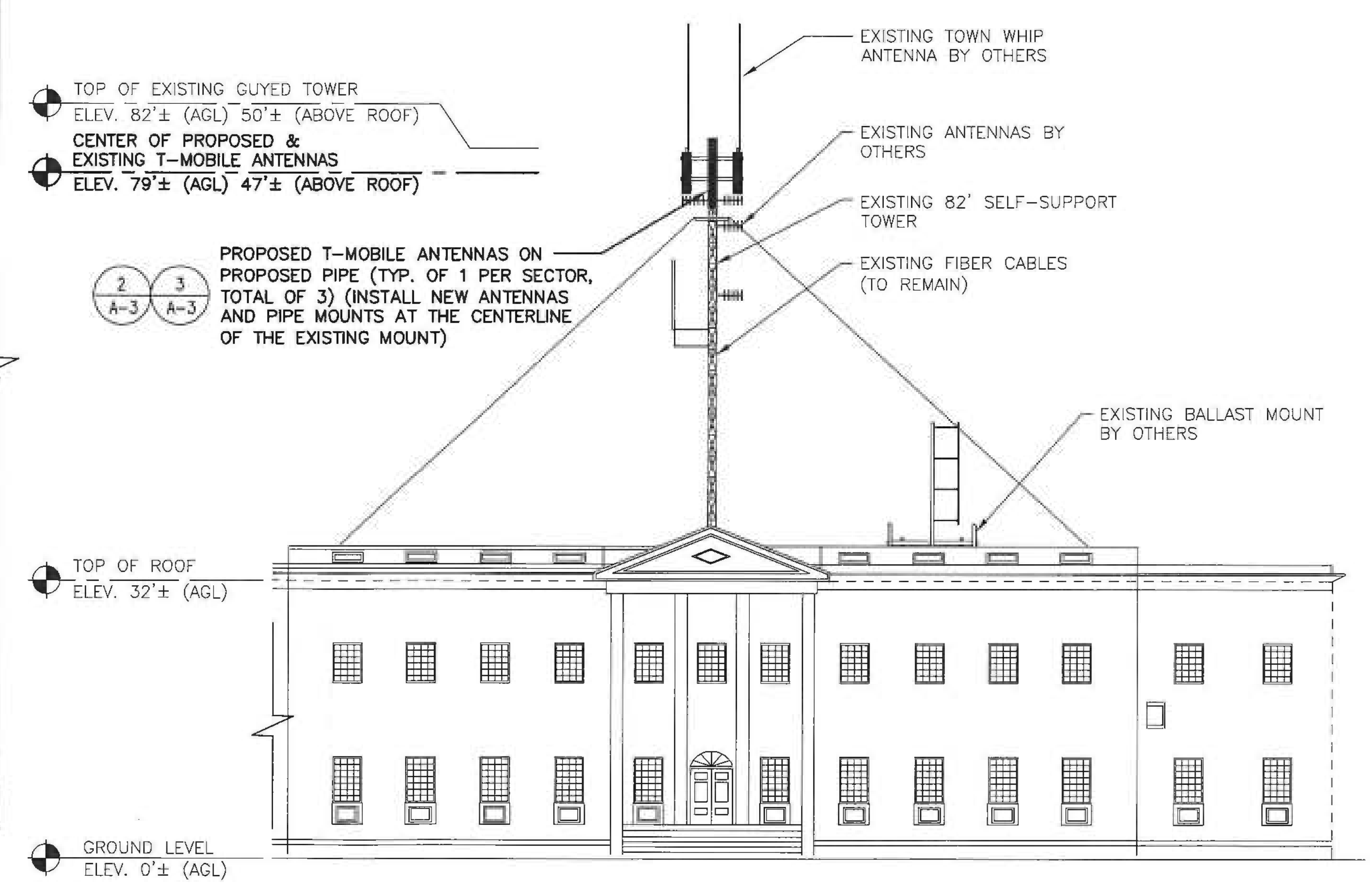
TITLE SHEET

SHEET NUMBER

T-1



1 A-1 **COMPOUND PLAN**
SCALE: 1/16"=1'-0"
0 8'-0" 16'-0" 32'-0" 48'-0"



2 A-1 **ELEVATION**
SCALE: 3/32"=1'-0"
0 5'-4" 10'-8" 21'-4" 32'-0"

STRUCTURAL NOTE:
REFER TO STRUCTURAL ANALYSIS PREFORMED BY HUDSON DESIGN GROUP, LLC. DATED 09/12/14

L700 - 702CU CONFIGURATION

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
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Hudson Design Group LLC
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FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 2[illegible]
LICENSED
PROFESSIONAL ENGINEER

APPROVALS

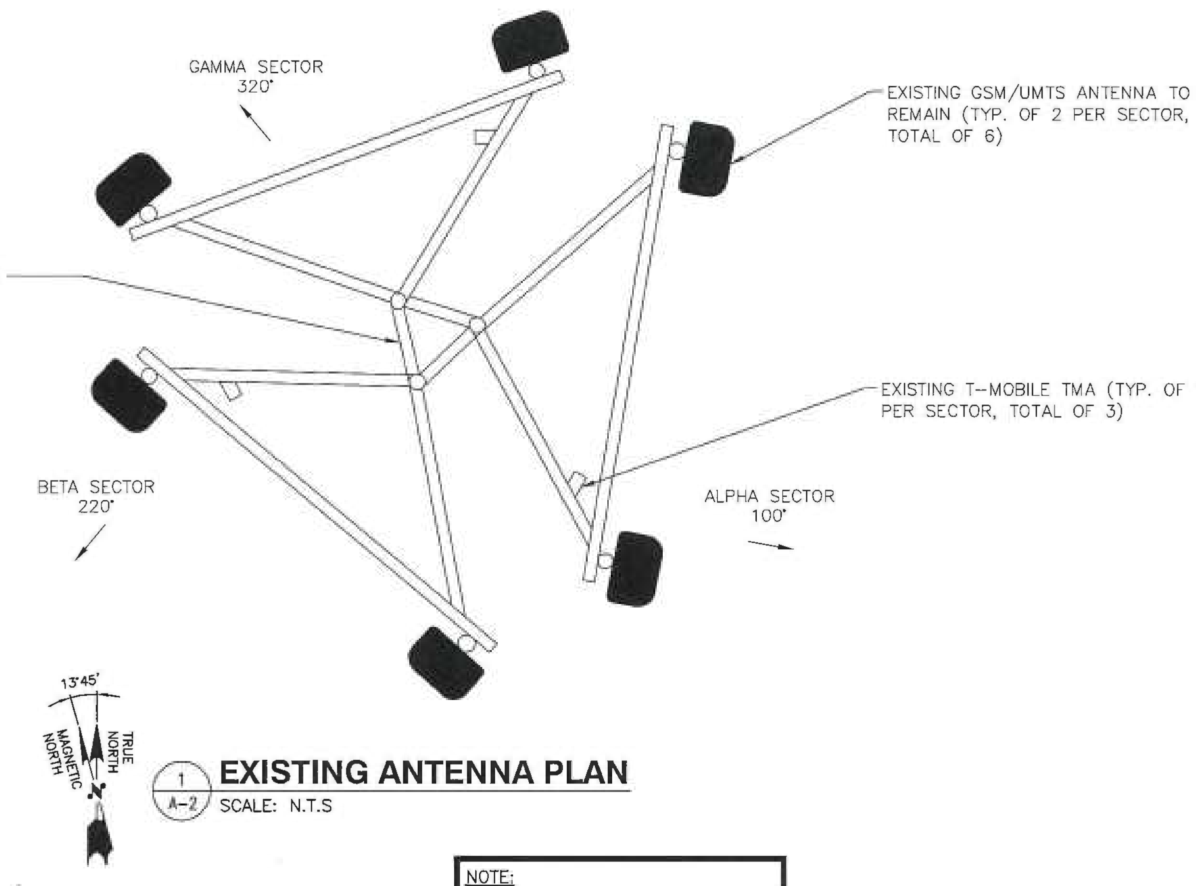
CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING/SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE
PROJECT NO:	CT11872D
DRAWN BY:	AS
CHECKED BY:	DR

2	09/15/14	ISSUED FOR CONSTRUCTION
1	08/18/14	ISSUED FOR REVIEW
0	08/13/14	ISSUED FOR REVIEW

SITE NUMBER: CT11872D
SITE NAME:
CT827/ STRATFORD PD_GT
900 LONGBROOK ROAD
STRATFORD, CT 06614
FAIRFIELD COUNTY

SHEET TITLE
COMPOUND PLAN & ELEVATION

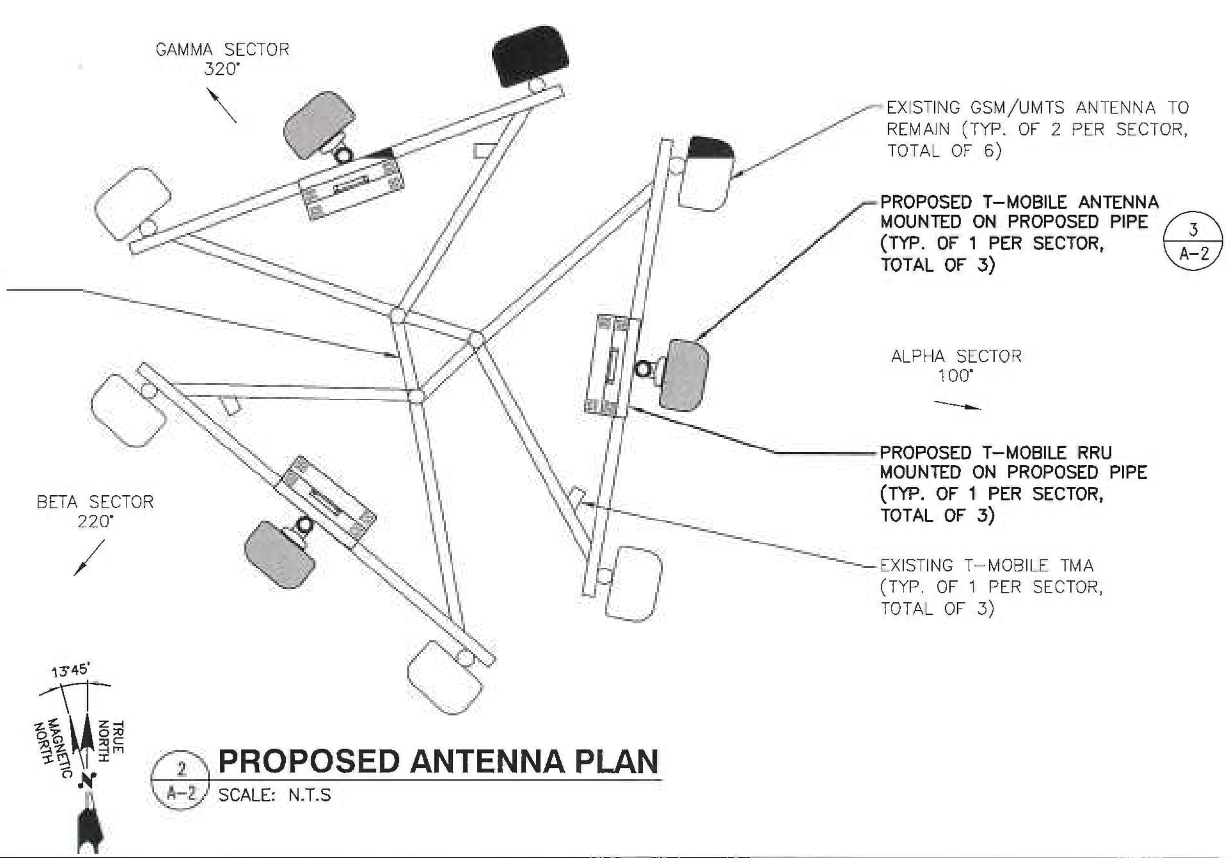
SHEET NUMBER
A-1



EXISTING ANTENNA PLAN

1 A-2 SCALE: N.T.S

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



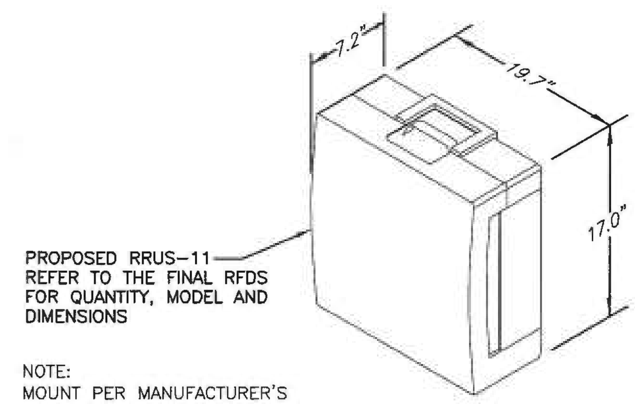
PROPOSED ANTENNA PLAN

2 A-2 SCALE: N.T.S

STRUCTURAL NOTE:
REFER TO STRUCTURAL ANALYSIS PREFORMED BY HUDSON DESIGN GROUP, LLC. DATED 09/12/14

PROPOSED ANTENNA SCHEDULE

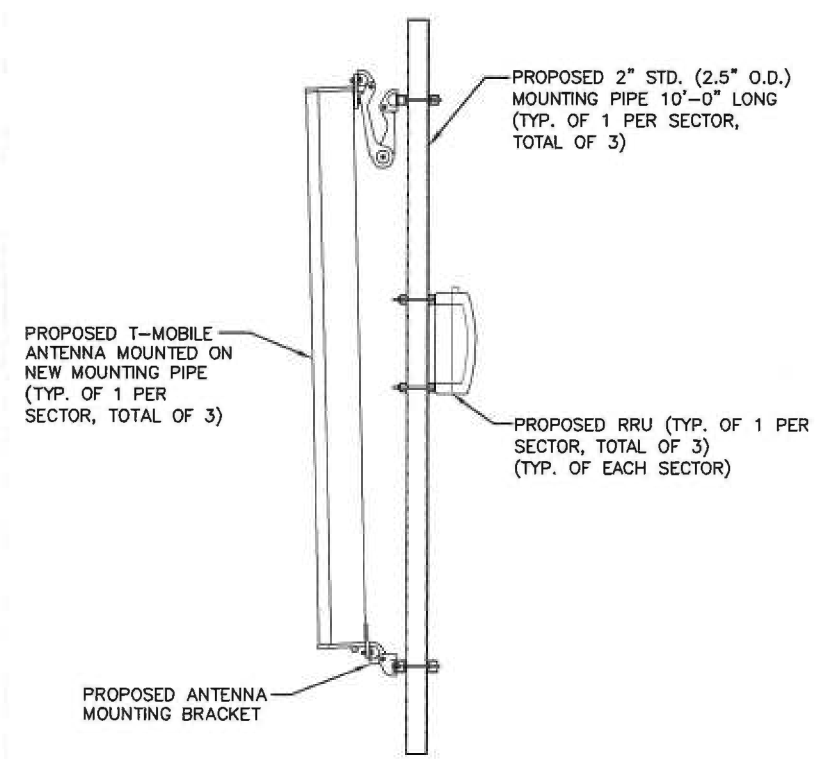
SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	COMMSCOPE	LNX-6515DS-VTM	96.4x11.9x7.1
BETA:	COMMSCOPE	LNX-6515DS-VTM	96.4X11.9X7.1
GAMMA:	COMMSCOPE	LNX-6515DS-VTM	96.4X11.9X7.1



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

RRU DETAIL

SCALE: N.T.S.



ANTENNA MOUNT (TYP.)

3 A-2 SCALE: N.T.S.

T-MOBILE NORTHEAST LLC
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STATE OF CONNECTICUT · DEREK J. CREASER · LICENSED PROFESSIONAL ENGINEER

APPROVALS

CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING/SITE ACQ.	DATE
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1	08/18/14	ISSUED FOR REVIEW
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SITE NUMBER: CT11872D
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900 LONGBROOK ROAD
STRATFORD, CT 06614
FAIRFIELD COUNTY

SHEET TITLE
ANTENNA PLAN & DETAILS

SHEET NUMBER
A-2

EXHIBIT B

STRUCTURAL ANALYSIS REPORT

For

CT11872D

CT872/STRATFORD PD_GT

900 LONGBROOK ROAD
STRATFORD, CT 06614

Antennas Mounted to the Tower

Prepared for:

Transcend Wireless · T · · Mobile ·

Dated: September 12, 2014

Prepared by:

Hudson Design Group LLC

1600 Osgood Street Bldg. 20N Suite 3090
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com

STATE OF CONNECTICUT · GI KAI WANG · No. 28220 · LICENSED · PROFESSIONAL ENGINEER

9/12/2014

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by T-Mobile to conduct a structural evaluation of the 50' guyed tower supporting the existing and proposed T-Mobile's antennas located at elevation 79' above ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of T-Mobile's existing and proposed antennas listed below.

Record drawings of the existing tower prepared by Radian Communication Services, dated June 21, 2005, were available for our use. The previous structural analysis report prepared by Tectonic Consultants, dated June 25, 2012, was also available and obtained for our use.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower **is in conformance** with the ANSI/TIA-222-F Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **87.6%** - (Guys at EL.69.8' Controlling).

APPURTANENCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	20' Omni	92'	T-Frame
	16' Omni	90'	T-Frame
	6' Dipole	80'	T-Frame
T-Mobile	(6) AIR 21 Antennas	***79'***	T-Frame
T-Mobile	(3) TMA	***79'***	T-Frame
T-Mobile	***(3) LNX-6515DS-VTM Antennas***	***79'***	T-Frame
T-Mobile	***(3) RRUS-11***	***79'***	T-Frame
	(2) 3' Yagi	74'	Tower Leg
	3' Yagi	68'	Tower Leg
	Ground Plane Omni	64'	Side Mount Standoff
	3' Yagi	62'	Tower Leg

Proposed T-Mobile Appurtenances shown in Bold.

T-MOBILE EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
T-Mobile	(24) 7/8" Cables	***79'***	Tower Face
T-Mobile	(1) 1 5/8" Cable	***79'***	Tower Face

Proposed T-Mobile Appurtenances shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Notes/Comments
Legs	26.2 %	67 – 82	PASS	
Diagonals	42.4 %	52 – 67	PASS	
Top Girts	16.2 %	52 – 67	PASS	
Bottom Girts	17.8 %	32 – 37	PASS	
Mid Girts	0.5 %	32 – 37	PASS	
Guy A	**87.6 %**	69.8	PASS	**Controlling**
Guy B	82.2 %	69.8	PASS	
Guy C	83.0 %	69.8	PASS	
Torque Arm	40.9 %	69.8	PASS	

Hudson Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

   County: Fairfield
   Wind Load: 90 mph (fastest mile)
   110 mph (3 second gust)
   Nominal Ice Thickness: 0.5 inch

2. Approximate height above grade to proposed antennas: 79'

Calculations and referenced documents are attached

ASSUMPTIONS:

1. The tower geometry, member sizes and material strength are as indicated in the record drawings of the existing tower prepared by Radian Communication Services, dated June 21, 2005.

2. The appurtenances configuration is as stated in the previous structural analysis report prepared by Tectonic Consultants, dated June 25, 2012. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.

3. The tower and supports are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

4. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas and RRHs be mounted on the existing T-frame supported by the tower.

Reference HDG's Latest Construction Drawings for all component and connection requirements (attached).

ONGOING AND PERIODIC INSPTECTION AND MAINTENANCE:

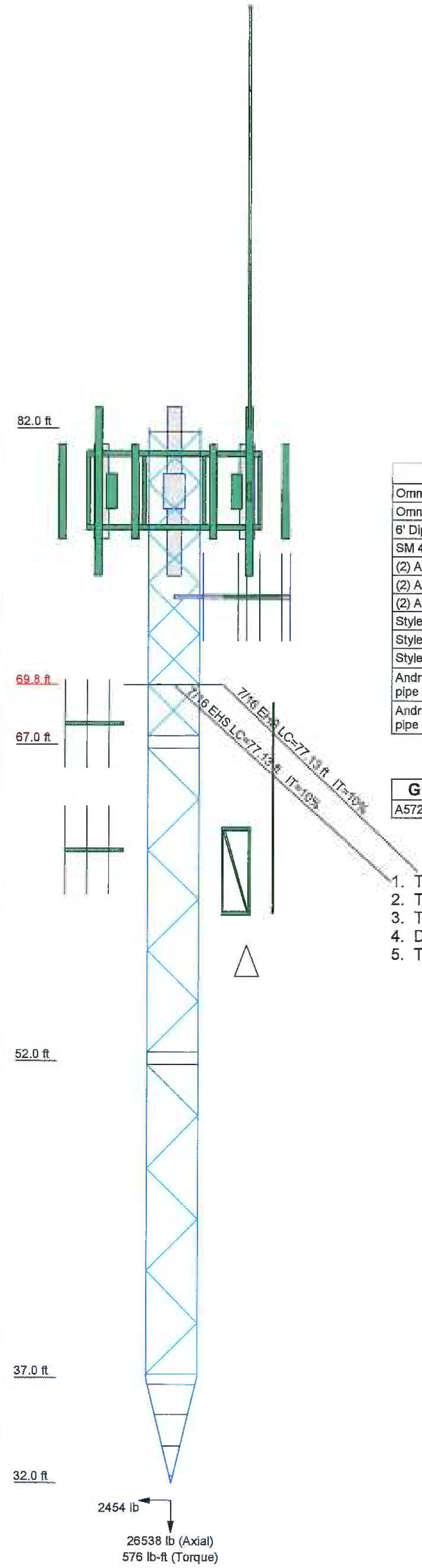
After the Contractor has successfully completed the installation and the work has been accepted, the Owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

The owner shall refer to TIA/EIA-222-F for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. According to TIA/EIA-222-F section 14.1, Note 1: It is recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading conditions.

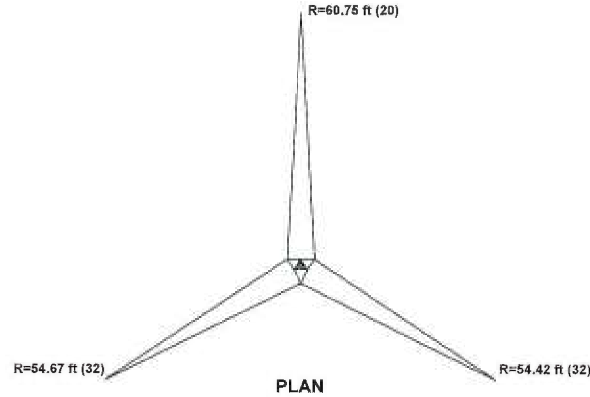
Photo 1: Photo illustrating the Tower with Appurtenances shown.

Hudson Design Group LLC

CALCULATIONS



Section	T1	T2	T3	T4
Legs	P2.5x.276			
Leg Grade	A572-42			
Diagonals	P1.5x.120			N.A.
Diagonal Grade	A36			N.A.
Top Girts	P1.5x.120			L3x3x3/16
Mid Girts	N.A.			L3x3x3/16
Bottom Girts	P1.5x.120			L3x3x3/16
Face Width (ft)	3.417			
# Panels @ (ft)	12 @ 2.40278		6 @ 2.44444	3 @ 1.44444
Weight (lb) 2378.4	1091.6	533.6	534.4	218.8



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Omni 2 1/2"x20'	82	Andrew LNX-6515DS-VTM w/mount pipe	79
Omni 2 1/2"x16'	82	Ericsson RRUS-11	79
6' Dipole	80	Ericsson RRUS-11	79
SM 409-3 (T-MOBILE - existing)	79	Ericsson RRUS-11	79
(2) Air 21 antenna w/mount pipe	79	3' Yagi antenna	74
(2) Air 21 antenna w/mount pipe	79	3' Yagi antenna	74
(2) Air 21 antenna w/mount pipe	79	3' Yagi antenna	68
Style 3 TMA	79	3' Yagi antenna	62
Style 3 TMA	79	Pirod 6' Side Mount Standoff (1)	61
Style 3 TMA	79	Ground Plane Omni	61
Andrew LNX-6515DS-VTM w/mount pipe (T-MOBILE - proposed)	79		
Andrew LNX-6515DS-VTM w/mount pipe	79		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-42	42 ksi	60 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 78 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 87.6%

Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 3090 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Job: **CT11872D Stratford, CT**		
	Project: **50 ft Guyed Tower**		
	Client: T-MOBILE	Drawn by: kw	App'd:
	Code: TIA/EIA-222-F	Date: 09/11/14	Scale: NTS
	Path: C:\Users\kwong\Documents\HUDSON DESIGN GROUP\AAA\CT11872D - CT /Transcend Wireless - T-Mobile\CT11872D\CT11872D.eri		Dwg No. E-1

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 82.00 ft above the ground line.
The base of the tower is set at an elevation of 32.00 ft above the ground line.
The face width of the tower is 3.42 ft at the top and tapered at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

- Tower is located in Fairfield County, Connecticut.
- Basic wind speed of 90 mph.
- Nominal ice thickness of 0.5000 in.
- Ice density of 56 pcf.
- A wind speed of 78 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 50 mph.
- Pressures are calculated at each section.
- Safety factor used in guy design is 2.
- Stress ratio used in tower member design is 1.333.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tower Section Geometry

Tower Section	*Tower Elevation* *ft*	*Assembly Database*	*Description*	*Section Width* *ft*	*Number of Sections*	*Section Length* *ft*
T1	82.00-67.00			3.42	1	15.00
T2	67.00-52.00			3.42	1	15.00
T3	52.00-37.00			3.42	1	15.00
T4	37.00-32.00			3.42	1	5.00

Tower Section Geometry *(cont'd)*

Tower Section	*Tower Elevation* *ft*	*Diagonal Spacing* *ft*	*Bracing Type*	*Has K Brace End Panels*	*Has Horizontals*	*Top Girt Offset* *in*	*Bottom Girt Offset* *in*
T1	82.00-67.00	2.40	X Brace	No	No	2.0000	5.0000
T2	67.00-52.00	2.40	K Brace Left	No	No	2.0000	5.0000
T3	52.00-37.00	2.44	K Brace Left	No	No	2.0000	2.0000
T4	37.00-32.00	1.44	X Brace	No	Yes	4.0000	4.0000

Tower Section Geometry *(cont'd)*

Tower Elevation *ft*	*Leg Type*	*Leg Size*	*Leg Grade*	*Diagonal Type*	*Diagonal Size*	*Diagonal Grade*
T1 82.00-67.00	Pipe	P2.5x.276	A572-42	Pipe	P1.5x.120	A36

Tower Elevation *ft*	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
			(42 ksi)			(36 ksi)
T2 67.00-52.00	Pipe	P2.5x.276	A572-42 (42 ksi)	Pipe	P1.5x.120	A36 (36 ksi)
T3 52.00-37.00	Pipe	P2.5x.276	A572-42 (42 ksi)	Pipe	P1.5x.120	A36 (36 ksi)
T4 37.00-32.00	Pipe	P2.5x.276	A572-42 (42 ksi)	Pipe		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation *ft*	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 82.00-67.00	Pipe	P1.5x.120	A36 (36 ksi)	Pipe	P1.5x.120	A36 (36 ksi)
T2 67.00-52.00	Pipe	P1.5x.120	A36 (36 ksi)	Pipe	P1.5x.120	A36 (36 ksi)
T3 52.00-37.00	Pipe	P1.5x.120	A36 (36 ksi)	Pipe	P1.5x.120	A36 (36 ksi)
T4 37.00-32.00	Equal Angle	L3x3x3/16	A36 (36 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation *ft*	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T4 37.00-32.00	2	Equal Angle	L3x3x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Guy Data

Guy Elevation *ft*	Guy Grade		Guy Size	Initial Tension *lb*	%	Guy Modulus *ksi*	Guy Weight *plf*	L_u *ft*	Anchor Radius *ft*	Anchor Azimuth Adj. *°*	Anchor Elevation *ft*	End Fitting Efficiency *%*
69.8194	EHS	A	7/16	2080.00	10%	21000	0.399	77.06	60.75	0.0000	20.00	100%
		B	7/16	2080.00	10%	21000	0.399	64.70	54.42	0.0000	32.00	100%
		C	7/16	2080.00	10%	21000	0.399	64.90	54.67	0.0000	32.00	100%

Guy Data *(cont'd)*

Guy Elevation *ft*	Mount Type	Torque-Arm Spread *ft*	Torque-Arm Leg Angle *°*	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
69.8194	Torque Arm	6.83	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
7/8	A	Yes	Ar (CfAe)	61.00 - 32.00	1	1	1.1100	1.1100		0.54
7/8	A	Yes	Ar (CfAe)	62.00 - 32.00	1	1	1.1100	1.1100		0.54
7/8	A	Yes	Ar (CfAe)	68.00 - 32.00	1	1	1.1100	1.1100		0.54
7/8	A	Yes	Ar (CfAe)	74.00 - 32.00	1	1	1.1100	1.1100		0.54
7/8	A	Yes	Ar (CfAe)	74.00 - 32.00	1	1	1.1100	1.1100		0.54
7/8 (T-MOBILE - existing)	A	Yes	Ar (CfAe)	79.00 - 32.00	24	12	1.1100	1.1100		0.54
1 5/8 Fiber Cable (T-MOBILE - existing)	A	Yes	Ar (CfAe)	79.00 - 32.00	1	1	1.9800	1.9800		1.04
7/8	A	Yes	Ar (CfAe)	82.00 - 32.00	2	2	1.1100	1.1100		0.54
Safety Line 3/8	A	Yes	Ar (CfAe)	82.00 - 32.00	1	1	0.3750	0.3750		0.22

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight lb
Omni 2 1/2"x20'	B	From Leg	4.00 0.00 10.00	0.0000	82.00	No Ice 1/2" Ice	5.00 7.03	5.00 7.03	40.00 76.96
Omni 2 1/2"x16'	B	From Leg	4.00 0.00 8.00	0.0000	82.00	No Ice 1/2" Ice	4.00 5.63	4.00 5.63	35.00 64.63
6' Dipole	A	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	0.90 1.52	0.90 1.52	15.00 22.49
************									
SM 409-3 (T-MOBILE - existing)	A	None		0.0000	79.00	No Ice 1/2" Ice	22.47 31.99	22.47 31.99	1035.00 1500.00
(2) Air 21 antenna w/mount pipe	A	From Leg	4.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	6.74 7.30	5.60 6.50	101.90 158.52
(2) Air 21 antenna w/mount pipe	B	From Leg	4.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	6.74 7.30	5.60 6.50	101.90 158.52
(2) Air 21 antenna w/mount pipe	C	From Leg	4.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	6.74 7.30	5.60 6.50	101.90 158.52
Style 3 TMA	A	From Leg	4.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	0.78 0.90	0.21 0.30	11.30 15.86

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Style 3 TMA	B	From Leg	4.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	0.78 0.90	0.21 0.30	11.30 15.86
Style 3 TMA	C	From Leg	4.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	0.78 0.90	0.21 0.30	11.30 15.86
************									
Andrew LNX-6515DS-VTM w/mount pipe (T-MOBILE - proposed)	A	From Leg	4.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	11.72 12.44	10.28 11.81	102.41 196.22
Andrew LNX-6515DS-VTM w/mount pipe	B	From Leg	4.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	11.72 12.44	10.28 11.81	102.41 196.22
Andrew LNX-6515DS-VTM w/mount pipe	C	From Leg	4.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	11.72 12.44	10.28 11.81	102.41 196.22
Ericsson RRUS-11	A	From Leg	3.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	3.26 3.50	1.38 1.56	50.70 71.57
Ericsson RRUS-11	B	From Leg	3.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	3.26 3.50	1.38 1.56	50.70 71.57
Ericsson RRUS-11	C	From Leg	3.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice	3.26 3.50	1.38 1.56	50.70 71.57
************									
3' Yagi antenna	A	From Leg	2.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice	0.70 0.95	0.35 0.48	10.00 36.35
3' Yagi antenna	B	From Leg	2.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice	0.70 0.95	0.35 0.48	10.00 36.35
3' Yagi antenna	C	From Leg	2.00 0.00 0.00	0.0000	68.00	No Ice 1/2" Ice	0.70 0.95	0.35 0.48	10.00 36.35
3' Yagi antenna	C	From Leg	2.00 0.00 0.00	0.0000	62.00	No Ice 1/2" Ice	0.70 0.95	0.35 0.48	10.00 36.35
Pirod 6' Side Mount Standoff (1)	B	From Leg	3.00 0.00 0.00	0.0000	61.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	70.00 130.00
Ground Plane Omni	B	From Leg	6.00 0.00 3.00	0.0000	61.00	No Ice 1/2" Ice	1.90 2.70	1.90 2.70	25.00 39.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice+Guy
3	Dead+Wind 30 deg - No Ice+Guy
4	Dead+Wind 60 deg - No Ice+Guy

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1600 Osgood Street, Building 20 North, Suite 3090
North Andover, MA 01845
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Comb. No.	Description
5	Dead+Wind 90 deg - No Ice+Guy
6	Dead+Wind 120 deg - No Ice+Guy
7	Dead+Wind 150 deg - No Ice+Guy
8	Dead+Wind 180 deg - No Ice+Guy
9	Dead+Wind 210 deg - No Ice+Guy
10	Dead+Wind 240 deg - No Ice+Guy
11	Dead+Wind 270 deg - No Ice+Guy
12	Dead+Wind 300 deg - No Ice+Guy
13	Dead+Wind 330 deg - No Ice+Guy
14	Dead+Ice+Temp+Guy
15	Dead+Wind 0 deg+Ice+Temp+Guy
16	Dead+Wind 30 deg+Ice+Temp+Guy
17	Dead+Wind 60 deg+Ice+Temp+Guy
18	Dead+Wind 90 deg+Ice+Temp+Guy
19	Dead+Wind 120 deg+Ice+Temp+Guy
20	Dead+Wind 150 deg+Ice+Temp+Guy
21	Dead+Wind 180 deg+Ice+Temp+Guy
22	Dead+Wind 210 deg+Ice+Temp+Guy
23	Dead+Wind 240 deg+Ice+Temp+Guy
24	Dead+Wind 270 deg+Ice+Temp+Guy
25	Dead+Wind 300 deg+Ice+Temp+Guy
26	Dead+Wind 330 deg+Ice+Temp+Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	19	26538.47	-1357.78	-834.79
	Max. H_x	11	21326.39	2367.36	26.08
	Max. H_z	2	22525.53	42.47	2307.29
	Max. M_x	1	0.00	21.63	-9.23
	Max. M_z	1	0.00	21.63	-9.23
	Max. Torsion	8	576.25	53.05	-2453.72
	Min. Vert	33	13023.81	21.24	-770.33
	Min. H_x	5	21336.11	-2322.25	24.76
	Min. H_z	8	17038.46	53.05	-2453.72
	Min. M_x	1	0.00	21.63	-9.23
	Min. M_z	1	0.00	21.63	-9.23
	Min. Torsion	16	-448.62	-786.63	1436.02
Guy C @ 54.67 ft Elev 32 ft Azimuth 240 deg	Max. Vert	10	-23.35	-19.27	11.11
	Max. H_x	10	-23.35	-19.27	11.11
	Max. H_z	3	-9734.04	-11835.68	6900.91
	Min. Vert	3	-9734.04	-11835.68	6900.91

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. H_x	5	-9697.72	-11868.68	6742.47
	Min. H_z	10	-23.35	-19.27	11.11
Guy B @ 54.42 ft Elev 32 ft Azimuth 120 deg	Max. Vert	6	-24.06	19.75	11.36
	Max. H_x	11	-9707.92	11825.02	6717.14
	Max. H_z	13	-9762.06	11796.08	6918.59
	Min. Vert	13	-9762.06	11796.08	6918.59
	Min. H_x	6	-24.06	19.75	11.36
	Min. H_z	6	-24.06	19.75	11.36
Guy A @ 60.75 ft Elev 20 ft Azimuth 0 deg	Max. Vert	2	-80.23	0.07	-71.61
	Max. H_x	24	-5531.33	244.87	-6622.87
	Max. H_z	2	-80.23	0.07	-71.61
	Min. Vert	7	-11388.15	-95.81	-13594.19
	Min. H_x	18	-5562.82	-245.31	-6660.19
	Min. H_z	7	-11388.15	-95.81	-13594.19

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	13199.70	-21.63	9.23	0.00	0.00	9.26
Dead+Wind 0 deg - No Ice+Guy	22525.53	-42.47	-2307.29	0.00	0.00	358.77
Dead+Wind 30 deg - No Ice+Guy	20641.36	1159.23	-2018.79	0.00	0.00	410.06
Dead+Wind 60 deg - No Ice+Guy	16302.36	2059.94	-1220.50	0.00	0.00	422.84
Dead+Wind 90 deg - No Ice+Guy	21336.11	2322.25	-24.76	0.00	0.00	130.43
Dead+Wind 120 deg - No Ice+Guy	23910.15	1947.32	1178.09	0.00	0.00	-98.00
Dead+Wind 150 deg - No Ice+Guy	22175.96	1088.46	2092.29	0.00	0.00	-292.72
Dead+Wind 180 deg - No Ice+Guy	17038.46	-53.05	2453.72	0.00	0.00	-576.25
Dead+Wind 210 deg - No Ice+Guy	22131.64	-1148.26	2059.30	0.00	0.00	-333.72
Dead+Wind 240 deg - No Ice+Guy	23884.12	-2000.87	1157.88	0.00	0.00	-246.05
Dead+Wind 270 deg - No Ice+Guy	21326.39	-2367.36	-26.08	0.00	0.00	-101.65
Dead+Wind 300 deg - No Ice+Guy	16311.50	-2116.06	-1203.38	0.00	0.00	39.39
Dead+Wind 330 deg - No Ice+Guy	20664.76	-1238.01	-2018.53	0.00	0.00	214.72
Dead+Ice+Temp+Guy	19182.94	-37.25	3.72	0.00	0.00	12.95
Dead+Wind 0 deg+Ice+Temp+Guy	25504.33	-58.01	-1646.15	0.00	0.00	368.78
Dead+Wind 30 deg+Ice+Temp+Guy	24537.18	786.63	-1436.02	0.00	0.00	448.62
Dead+Wind 60 deg+Ice+Temp+Guy	22576.56	1422.99	-854.34	0.00	0.00	372.84

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead+Wind 90 deg+Ice+Temp+Guy	24840.92	1620.43	-16.07	0.00	0.00	120.21
Dead+Wind 120 deg+Ice+Temp+Guy	26538.47	1357.78	834.79	0.00	0.00	-81.26
Dead+Wind 150 deg+Ice+Temp+Guy	25516.42	746.00	1477.65	0.00	0.00	-256.64
Dead+Wind 180 deg+Ice+Temp+Guy	22698.14	-59.01	1721.24	0.00	0.00	-490.11
Dead+Wind 210 deg+Ice+Temp+Guy	25433.55	-839.60	1446.50	0.00	0.00	-400.10
Dead+Wind 240 deg+Ice+Temp+Guy	26465.02	-1443.06	814.54	0.00	0.00	-273.24
Dead+Wind 270 deg+Ice+Temp+Guy	24796.74	-1697.02	-17.11	0.00	0.00	-88.74
Dead+Wind 300 deg+Ice+Temp+Guy	22586.49	-1507.99	-842.51	0.00	0.00	55.39
Dead+Wind 330 deg+Ice+Temp+Guy	24560.19	-894.86	-1433.48	0.00	0.00	199.09
Dead+Wind 0 deg - Service+Guy	13459.72	-22.71	-753.02	0.00	0.00	96.86
Dead+Wind 30 deg - Service+Guy	13431.38	353.71	-650.77	0.00	0.00	107.29
Dead+Wind 60 deg - Service+Guy	13355.76	629.79	-371.78	0.00	0.00	87.75
Dead+Wind 90 deg - Service+Guy	13241.44	731.63	9.12	0.00	0.00	46.73
Dead+Wind 120 deg - Service+Guy	13144.97	631.22	390.21	0.00	0.00	-1.78
Dead+Wind 150 deg - Service+Guy	13053.43	355.62	668.87	0.00	0.00	-46.59
Dead+Wind 180 deg - Service+Guy	13023.81	-21.24	770.33	0.00	0.00	-80.46
Dead+Wind 210 deg - Service+Guy	13059.77	-398.33	667.85	0.00	0.00	-91.48
Dead+Wind 240 deg - Service+Guy	13155.33	-674.27	389.06	0.00	0.00	-71.08
Dead+Wind 270 deg - Service+Guy	13254.56	-775.05	8.67	0.00	0.00	-28.53
Dead+Wind 300 deg - Service+Guy	13367.38	-674.09	-371.98	0.00	0.00	18.69
Dead+Wind 330 deg - Service+Guy	13437.64	-398.82	-650.86	0.00	0.00	63.13

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-5727.63	0.00	0.03	5727.62	0.21	0.004%
2	-0.26	-5738.10	-14182.42	0.25	5738.07	14182.34	0.001%
3	7091.46	-5715.31	-12278.34	-7091.47	5715.25	12278.04	0.002%
4	12282.22	-5695.46	-7089.67	-12282.39	5695.45	7089.27	0.003%
5	14183.09	-5727.63	0.16	-14182.92	5727.57	-0.03	0.001%
6	12287.61	-5759.77	7093.07	-12287.33	5759.66	-7092.88	0.002%
7	7091.90	-5739.94	12278.78	-7091.68	5739.86	-12278.62	0.002%
8	0.26	-5717.16	14176.53	0.42	5717.15	-14176.49	0.004%
9	-7091.46	-5739.94	12278.34	7091.24	5739.86	-12278.19	0.002%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
10	-12287.32	-5759.79	7092.62	12287.05	5759.68	-7092.43	0.002%
11	-14183.09	-5727.62	-0.16	14182.92	5727.57	0.28	0.001%
12	-12282.50	-5695.48	-7090.13	12282.77	5695.46	7089.50	0.004%
13	-7091.90	-5715.31	-12278.78	7091.90	5715.24	12278.48	0.002%
14	0.00	-9845.02	0.00	0.01	9845.02	0.13	0.001%
15	-0.63	-9870.82	-12663.78	0.63	9870.76	12663.54	0.002%
16	6337.08	-9814.68	-10965.21	-6337.09	9814.65	10965.06	0.001%
17	10977.42	-9765.76	-6334.19	-10977.42	9765.74	6333.85	0.002%
18	12674.57	-9845.03	0.39	-12674.47	9845.00	-0.31	0.001%
19	10980.13	-9924.24	6336.48	-10979.95	9924.17	-6336.34	0.001%
20	6338.16	-9875.37	10966.30	-6338.02	9875.32	-10966.21	0.001%
21	0.63	-9819.23	12661.45	-0.30	9819.19	-12661.24	0.002%
22	-6337.08	-9875.36	10965.21	6336.94	9875.32	-10965.12	0.001%
23	-10979.44	-9924.29	6335.35	10979.25	9924.22	-6335.22	0.001%
24	-12674.57	-9845.02	-0.39	12674.47	9844.99	0.47	0.001%
25	-10978.11	-9765.81	-6335.31	10978.17	9765.79	6334.84	0.003%
26	-6338.16	-9814.68	-10966.30	6338.16	9814.65	10966.15	0.001%
27	-0.08	-5730.86	-4377.29	0.08	5730.85	4376.98	0.004%
28	2188.72	-5723.83	-3789.61	-2188.78	5723.82	3789.32	0.004%
29	3790.81	-5717.70	-2188.17	-3790.56	5717.69	2188.04	0.004%
30	4377.50	-5727.63	0.05	-4377.46	5727.63	0.01	0.001%
31	3792.47	-5737.55	2189.22	-3792.37	5737.54	-2189.12	0.002%
32	2188.86	-5731.43	3789.75	-2188.79	5731.42	-3789.69	0.001%
33	0.08	-5724.39	4375.47	-0.07	5724.39	-4375.25	0.003%
34	-2188.72	-5731.43	3789.61	2188.65	5731.42	-3789.56	0.001%
35	-3792.38	-5737.55	2189.08	3792.29	5737.55	-2188.99	0.002%
36	-4377.50	-5727.62	-0.05	4377.46	5727.62	0.10	0.001%
37	-3790.90	-5717.70	-2188.31	3790.65	5717.70	2188.18	0.004%
38	-2188.86	-5723.82	-3789.75	2188.91	5723.82	3789.47	0.004%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	82 - 67	0.998	33	0.1040	0.0385
T2	67 - 52	0.685	33	0.0881	0.0288
T3	52 - 37	0.428	33	0.0917	0.0321
T4	37 - 32	0.114	33	0.1053	0.0263

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
82.00	Omni 2 1/2"x20'	33	0.998	0.1040	0.0385	65624
80.00	6' Dipole	33	0.954	0.1013	0.0367	65624
79.00	SM 409-3	33	0.932	0.1000	0.0357	65624
74.00	3' Yagi antenna	33	0.824	0.0938	0.0317	41015
69.82	Guy	33	0.738	0.0898	0.0295	27380
68.00	3' Yagi antenna	33	0.703	0.0886	0.0290	25662
62.00	3' Yagi antenna	33	0.598	0.0872	0.0297	56823
61.00	Pirod 6' Side Mount Standoff (1)	33	0.581	0.0873	0.0300	83506

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	82 - 67	Leg	P2.5x.276	3	-18049.50	68948.49	26.2	Pass
T2	67 - 52	Leg	P2.5x.276	47	-14706.30	58516.83	25.1	Pass
T3	52 - 37	Leg	P2.5x.276	75	-13874.50	58098.14	23.9	Pass
T4	37 - 32	Leg	P2.5x.276	102	-11795.60	70683.79	16.7	Pass
T1	82 - 67	Diagonal	P1.5x.120	13	-4365.28	12871.63	33.9	Pass
T2	67 - 52	Diagonal	P1.5x.120	70	-3990.11	9417.08	42.4	Pass
T3	52 - 37	Diagonal	P1.5x.120	83	-1603.19	9370.23	17.1	Pass
T1	82 - 67	Top Girt	P1.5x.120	6	-250.71	10813.11	2.3	Pass
T2	67 - 52	Top Girt	P1.5x.120	50	-1752.39	10813.11	16.2	Pass
T3	52 - 37	Top Girt	P1.5x.120	78	-266.61	10813.11	2.5	Pass
T4	37 - 32	Top Girt	L3x3x3/16	104	1176.95	31384.15	3.8	Pass
T1	82 - 67	Bottom Girt	P1.5x.120	7	-1650.44	10813.11	15.3	Pass
T2	67 - 52	Bottom Girt	P1.5x.120	54	-401.20	10813.11	3.7	Pass
T3	52 - 37	Bottom Girt	P1.5x.120	80	1510.80	14979.45	10.1	Pass
T4	37 - 32	Bottom Girt	L3x3x3/16	107	-764.77	30321.75	17.8	Pass
T4	37 - 32	Mid Girt	L3x3x3/16	113	-118.91	21804.95	0.5	Pass
T1	82 - 67	Guy A@69.8194	7/16	123	9108.11	10400.00	87.6	Pass
T1	82 - 67	Guy B@69.8194	7/16	120	8549.42	10400.00	82.2	Pass
T1	82 - 67	Guy C@69.8194	7/16	116	8627.04	10400.00	83.0	Pass
T1	82 - 67	Torque Arm Top@69.8194	C12x20.7	126	-4221.81	102657.52	40.9	Pass
							Summary	
						Leg (T1)	26.2	Pass
						Diagonal (T2)	42.4	Pass
						Top Girt (T2)	16.2	Pass
						Bottom Girt (T4)	17.8	Pass
						Mid Girt (T4)	0.5	Pass
						Guy A (T1)	87.6	Pass
						Guy B (T1)	82.2	Pass
						Guy C (T1)	83.0	Pass
						Torque Arm Top (T1)	40.9	Pass
						RATING =	**87.6**	**Pass**

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: CT11872D

Stratford PD Guyed Tower

900 Longbrook Road
Stratford, CT 06614

September 16, 2014

EBI Project Number: 62144962

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general public allowable limit:	**39.22 %**

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September 16, 2014

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

Emissions Analysis for Site: **CT11872D – Stratford PD Guyed Tower**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **900 Longbrook Road, Stratford, 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 **900 Longbrook Road, Stratford, 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 **Ericsson AIR21 B4A/B2P** 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. 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 **79 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:	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):	79	Height (AGL):	79	Height (AGL):	79
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	# PCS Channels:	2
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	1,906.06	ERP (W):	1,906.06	ERP (W):	1,906.06
Antenna A1 MPE%	3.15	Antenna B1 MPE%	3.15	Antenna C1 MPE%	3.15
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
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):	79	Height (AGL):	79	Height (AGL):	79
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	4	Channel Count	4	Channel Count	4
Total TX Power:	120	Total TX Power:	120	Total TX Power:	120
ERP (W):	1,906.06	ERP (W):	1,906.06	ERP (W):	1,906.06
Antenna A2 MPE%	3.15	Antenna B2 MPE%	3.15	Antenna C2 MPE%	3.15
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):	79	Height (AGL):	79	Height (AGL):	79
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 A3 MPE%	1.25	Antenna B3 MPE%	1.25	Antenna C3 MPE%	1.25

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**22.65**
SPD - Omni	1.70 %
SPD - Yagi	1.36 %
SPD - Yagi	1.36 %
SPD - 63fta	2.88 %
SPD - 63ftb	6.40 %
SPD - 53ft	2.88 %
Site Total MPE %:	**39.22 %**

T-Mobile Sector 1 Total:	7.55 %
T-Mobile Sector 2 Total:	7.55 %
T-Mobile Sector 3 Total:	7.55 %
Site Total:	39.22 %

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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:	7.55 %
Sector 2:	7.55 %
Sector 3 :	7.55 %
T-Mobile Total:	22.65 %
Site Total:	39.22 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **39.22%** 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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