

January 25, 2016

VIA EMAIL AND OVERNIGHT DELIVERY

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

RE: T-Mobile Northeast LLC - CT11196  
Notice of Exempt Modification  
37 Carmen Hill Road, Brookfield, CT  
LAT: 41.49343  
LNG: -72.42873

Dear Ms. Bachman:

T-Mobile Northeast LLC ("T-Mobile") currently maintains six (6) antennas at the 280' level on the existing 454' tall self-support tower located at 37 Carmen Hill Road in Brookfield, CT. The tower is owned by Town Square Media Group. T-Mobile now intends to replace three (3) existing antennas with three (3) new 1900 and 2100 MHz antennas. These antennas would be installed at the 280' level of the tower. T-Mobile also intends to install six (6) new 1-5/8" coax cables and replace six (6) existing TMA's.

The tower was originally approved by the Town of Brookfield Zoning Commission on February 24, 1994 pursuant to Special Permit #SP94-1. The approval was granted for the replacement of an existing radio tower as an existing/non-conforming use on Lot No. B05013, 39 Carmen Hill Road (a/k/a 37 Carmen Hill Road), Brookfield, CT. There were no conditions of approval attached to the original decision.

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.C.S.A. 16-50j-73, a copy of this letter is being sent to Stephen C. Dunn, First Selectman, as well as the property owner and the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure. T-Mobile proposes to replace three (3) existing antennas at a centerline height of 280' on the existing 454' self-support tower.
2. The installation of the T-Mobile equipment in the existing compound, as reflected on the attached site plan, will not require an extension of the site boundaries. T-

Mobile's proposed equipment will be located entirely within the existing compound area.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria. The incremental effect of the proposed changes will be negligible.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, T-Mobile's operations at the site will result in a power density of 0.29%; the combined site operations will result in a total power density of 10.28%.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site. T-Mobile will replace existing antennas on the tower.
6. The existing structure and its foundation can support the proposed loading. As indicated in the attached structural analysis the subject tower is adequate to support the proposed T-Mobile equipment upgrade.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitute an exempt modification under R.C.S.A. 16-50j-72(b)(2).

Respectfully submitted,

By: 

Eric Dahl, Agent for T-Mobile

860-227-1975

[edahl@comcast.net](mailto:edahl@comcast.net)

#### Attachments

cc: Stephen C. Dunn, First Selectman - as elected official  
Town Square Media Group - as tower owner  
Florida Tower Partners LLC - as property owner

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



HUDSON DESIGN GROUP  
 1000 WASHINGTON STREET  
 SUITE 200  
 WASHINGTON, CT 06097  
 TEL: 860.341.8800  
 FAX: 860.341.8800

**APPROVALS**

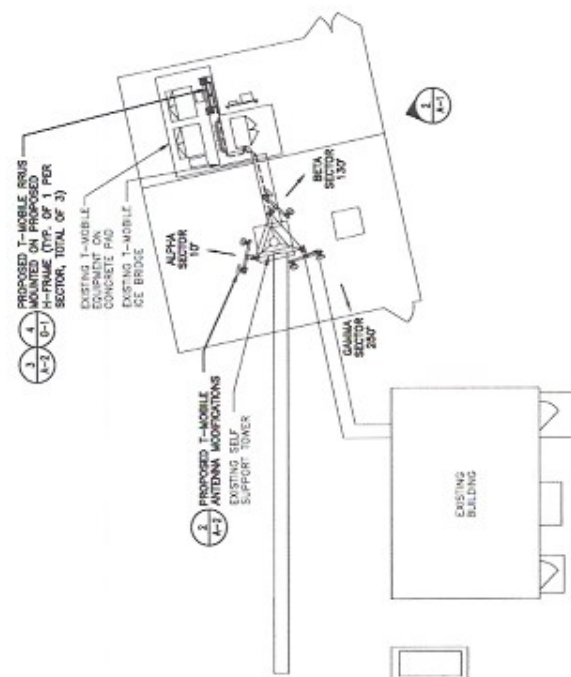
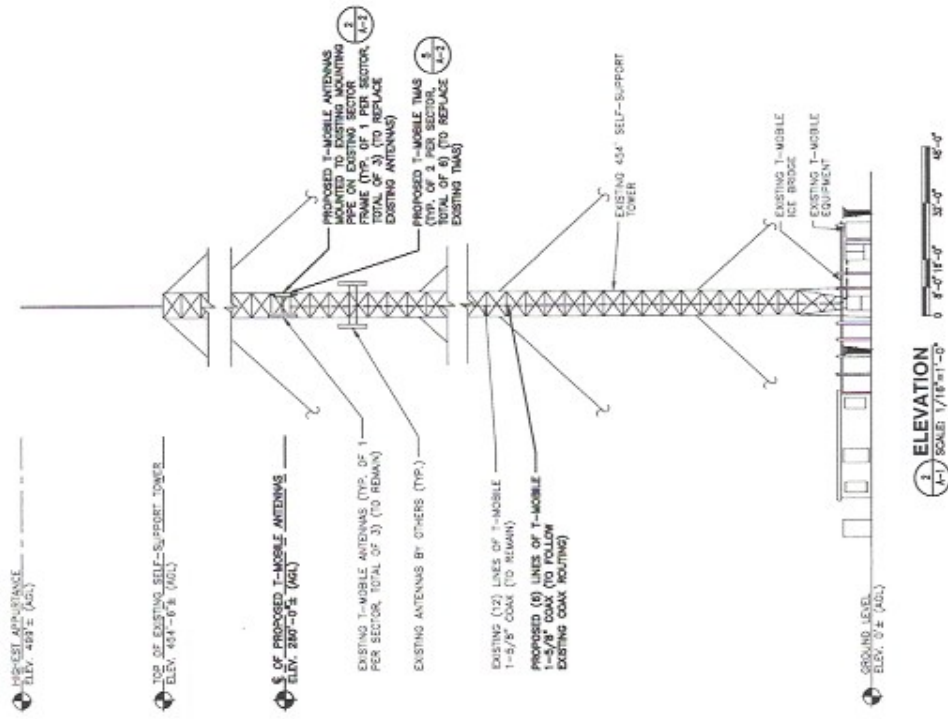
CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING/SITE NO.	DATE
OPERATIONS	DATE
TOWER TOWER	DATE
PROJECT NO:	CT11196A
DRAWN BY:	VP
CHECKED BY:	AT

SITE NUMBER: CT11196A  
 SITE NAME:  
 BROOKFIELD/JUNCTION RD.  
 37 CUREN HILL ROAD  
 BROOKFIELD, CT 06804  
 FAIRFIELD COUNTY

SHEET TITLE  
 COMPOUND PLAN &  
 ELEVATION

SHEET NUMBER  
 A-1

**NOTE:**  
 STRUCTURAL INFORMATION TAKEN  
 FROM STRUCTURAL ANALYSIS  
 PERFORMED BY STAINLESS LLC  
 DATED: MARCH 6, 2015



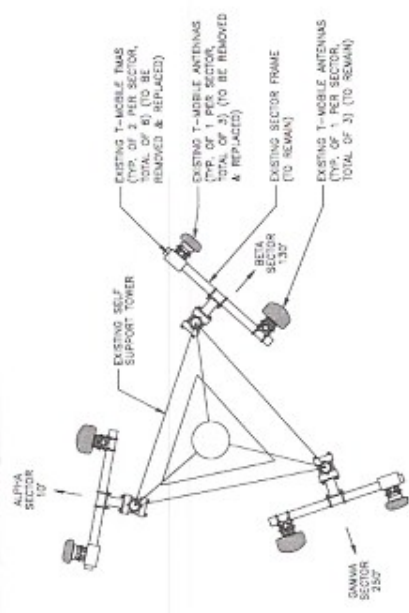
**COMPOUND PLAN**  
 SCALE: 1/8"=1'-0"

**ELEVATION**  
 SCALE: 1/16"=1'-0"

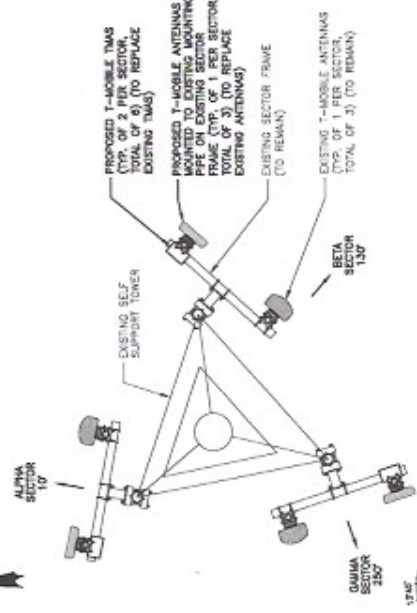


**STRUCTURAL NOTE:**  
 ALL TOWER AND ANTENNA FABRICATION TAKEN FROM STRUCTURAL ANALYSIS LOG PERFORMED BY STAINLESS LLC DATED: MARCH 6, 2015

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



**EXISTING ANTENNA PLAN**  
 (1-1) SCALE: N.T.S.



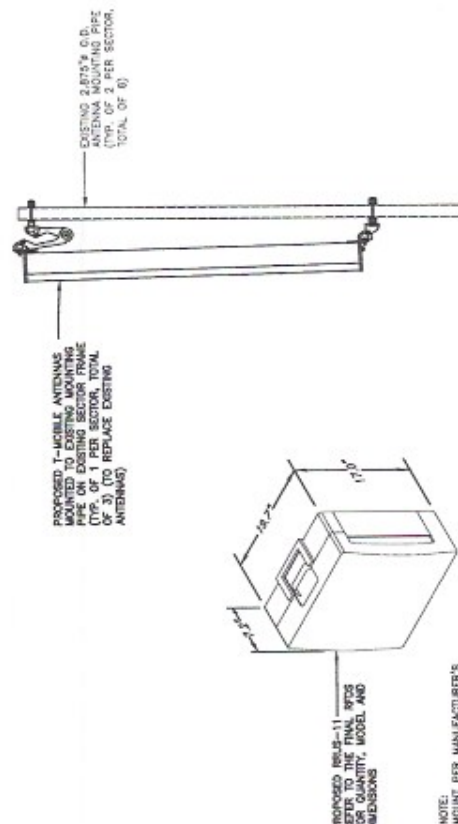
**PROPOSED ANTENNA PLAN**  
 (2-1) SCALE: N.T.S.

**EXISTING ANTENNA SCHEDULE**

SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA	EMS	RR9-18-020P	22X24X2.6
	COMSCOPE	LXN-011505-YTM	56.4X11.8X7.1
BETA	EMS	RR9-18-020P	22X24X2.6
	COMSCOPE	LXN-011505-YTM	56.4X11.8X7.1
GAMMA	EMS	RR9-18-020P	22X24X2.6
	COMSCOPE	LXN-011505-YTM	56.4X11.8X7.1

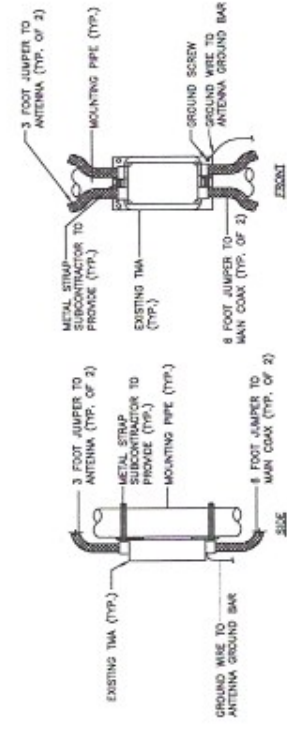
**PROPOSED ANTENNA SCHEDULE**

SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA	RFS	APX1609A-160WS	56.8X13.3X3.15
	COMSCOPE	LXN-011505-YTM	56.4X11.8X7.1
BETA	RFS	APX1609A-160WS	56.8X13.3X3.15
	COMSCOPE	LXN-011505-YTM	56.4X11.8X7.1
GAMMA	RFS	APX1609A-160WS	56.8X13.3X3.15
	COMSCOPE	LXN-011505-YTM	56.4X11.8X7.1



**RRU DETAIL**  
 (3-1) SCALE: N.T.S.

**PROPOSED ANTENNA MOUNT (TYP.)**  
 (4-1) SCALE: N.T.S.



**TMA MOUNTING DETAIL (TYP.)**  
 (5-1) SCALE: N.T.S.

**T-MOBILE NORTHEAST LLC**  
 35 GORTON ROAD SOUTH  
 BRIDGEFIELD, CT 06002  
 OFFICE: (860) 948-1116



2000 HAWTHORNE BLVD  
 SUITE 200  
 BRIDGEFIELD, CT 06002  
 TEL: 978.888.8888  
 FAX: 978.888.8888

**APPROVALS**

CONSTRUCTION	DATE
RF ENGINEERING	DATE
TOWER/RITE AID	DATE
OPERATIONS	DATE
TOWER OWNERS	DATE

PROJECT NO:	CT11196A
DRAWN BY:	VP
CHECKED BY:	AT

1	06/27/15	ISSUED FOR UPDATES 4/15
2	06/17/15	ISSUED FOR REVIEW

**SITE NUMBER: CT11196A**  
**SITE NAME:**  
 BROOKFIELD/JUNCTION RD.  
 37 CARMEL HILL ROAD  
 BROOKFIELD, CT 06004  
 FAIRFIELD COUNTY

**SHEET TITLE**  
 ANTENNA PLAN & DETAILS

**SHEET NUMBER**  
 A-2



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## REPORT 361116

SITE ID: CT11196A

SITE NAME: BROOKFIELD/JUNCTION RD

ADDRESS: 37 CARMEN HILL ROAD, BROOKFIELD, CT 06804

DATE: 12/17/2015

STRUCTURAL ANALYSIS  
FOR A 499' G-48 GUYED TOWER  
BROOKFIELD, CONNECTICUT

PREPARED BY: MDV APPROVED: DDA  
CHECKED BY: BDM



Date	Pages	Remarks
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Rev.	Date	Description
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B. TOWER HISTORY .....	1
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D. LOADS AND STRESSES .....	2
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F. RESULTS .....	3
G. CONCLUSIONS AND RECOMMENDATIONS .....	4
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LINEAR APPURTENANCES .....	A-2



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A. AUTHORIZATION/PURPOSE

As authorized by Sam Simons of T-Mobile, a structural analysis was performed to investigate the adequacy of a 499' G-48 guyed tower located at 37 Carmen Hill Road, Brookfield, Connecticut to support specified equipment.

B. TOWER HISTORY

The tower was originally designed and furnished in 1995 by Stainless, Inc. It was designed in accordance with ANSI/EIA/TIA Standard 222-E for a basic wind speed of 85 mph with no ice and 73.6 mph with 1/2" radial ice thickness while supporting the following equipment:

1. One (1) ERI FML half-wave 4-bay antenna with radome side mounted on a pole at the top of the tower, and fed by one (1) 3" line.
2. One (1) 1-bay FM antenna at the 245' level, fed by one (1) 3" line.
3. Thirty (30) whip antennas on 6-position mounts, six (6) each at the 430', 390', 350', 310', and 270' levels, fed by either thirty (30) 7/8" or 1-5/8" lines.
4. Three (3) 10' diameter grid dishes at the 220' level, each fed by one (1) 1-5/8" line.
5. One (1) three-wire detuning skirt from the ground to the 250' level.
6. One (1) inside climbing ladder with cable type safety device for the full height of the tower.
7. One (1) FAA red lighting system with circuits contained within one (1) 3/4" conduit for the full height of the tower.

Stainless LLC does not have any records of any structural modifications performed on the tower or its foundations since its original installation.

C. CONDITIONS INVESTIGATED

The analysis was performed for the tower supporting specified equipment based upon the following sources:

- Stainless Proposal P15\_3611\_004 dated 10/20/2015.
  - Stainless Report 361113 Rev A dated 3/18/2015.
  - T-Mobile construction drawings for Site: CT11196A Rev 1 dated 8/28/2015.
  - RFDS\_CT11196A\_L700\_V2\_PI\_20150831
1. One (1) 2-bay FM antenna side mounted on a pole at the top of the tower, and fed by one (1) 3" line.
  2. One (1) small Yagi antenna mounted to the top support mast at the 460' level, fed by one (1) 7/8" line.



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3. One (1) outside transfer platform at the 446' level.
4. One (1) Andrew 4' diameter dish at the 353' level, fed by one (1) 5/8" line.
5. One (1) 2' x 4' Scala paraflector on a 5' side arm at the 340' level, fed by one (1) 7/8" line.
6. One (1) 10' whip antenna on a 5' side arm at the 305' level, fed by one (1) 1-1/4" line.
7. One (1) 6' whip antenna on a 5' side arm at the 293' level, fed by one (1) 1/2" Alumaflex line.
8. Three (3) RFS APX16DWV-16DWVS-A20 **proposed** and three (3) Commscope LNX-6515DS-VTM existing panel antennas; six (6) **proposed** TMAs and three (3) Ericsson RRUS11\_B12 existing RRUs on three (3) existing sector mounts at the 280' level, fed by six (6) **proposed** and twelve (12) existing 1-5/8" lines.
9. One (1) RFS APXVSP18-C-A20 and one (1) EMS RR65-18-02DPL2 panel antennas; two (2) ALU 800 and 1900 MHz RRHs on three (3) sector mounts at the 258' level, fed by one (1) 1-1/4" fiber cable.
10. One (1) 10' diameter grid dish at the 254' level, fed by one (1) 7/8" line.
11. One (1) 10' diameter grid dish at the 250' level, fed by one (1) 7/8" line.
12. One (1) 2-bay dipole antenna on a 6' side arm at the 140' level, fed by one (1) 7/8" line.
13. One (1) 2-bay dipole antenna on a 6' side arm at the 125' level, fed by one (1) 7/8" line.
14. One (1) 2-bay dipole antenna on a 6' side arm at the 108' level, fed by one (1) 7/8" line.
15. Three (3) detuning skirts from the ground to the 220' level.
16. One (1) #6 tinned ground wire for the full height of the tower.
17. One (1) 1-1/2" support conduit for the full height of the tower.
18. One (1) inside climbing ladder with cable type safety device for the full height of the tower.
19. One (1) FAA red lighting system with circuits contained within one (1) 3/4" conduit for the full height of the tower.

The locations of the existing transmission lines were based upon Stainless Report 361113 Rev A dated 3/18/2015. Proposed transmission lines were located to minimize wind load on the tower. The locations of all transmission lines are shown on page A-2 of this Report. Deviating from these appurtenance arrangements may invalidate the results presented in this Report.

#### D. LOADS AND STRESSES

The analysis was performed using a basic design wind speed rating of 85 mph with no ice and 28 mph with 3/4" ice thickness, escalated over the height of the tower.

The basic design wind speed (fastest-mile) for the tower per ANSI/TIA/EIA Standard 222-F, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, effective March 29, 1996 is 85 mph with no ice. However the Standard does not provide specific ice thicknesses for the ice loading case, but recommends a minimum of 1/2" uniform radial ice concurrent with 75% of the no ice design wind loading.



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Research however has shown that icing is associated with lower wind speeds, and the thickness increases with height of the tower. These findings are reflected in the latest Revision G of the ANSI/TIA 222 Standard which also now provides specific design ice thicknesses to be used depending on the tower location. Therefore for this analysis, Revision G has been used to determine the ice loading condition for the tower, which is 40 mph 3-sec gust wind speed with 3/4" of design ice thickness. The 40 mph 3-sec gust wind speed is converted to a 28 mph fastest mile wind speed to be used in this analysis.

Allowable unit stresses and minimum safety factors used to evaluate the adequacy of the structure were in accordance with this TIA/EIA 222-F Standard.

**E. METHOD OF ANALYSIS**

The analysis was performed using tnxTower, a computerized program which idealizes the tower as a structure consisting of finite elements, and subjected to simultaneous transverse (wind) and axial (dead and ice) loads.

**F. RESULTS**

The results of the analysis show the following ratings:

COMPONENT	SPAN	RATING %
Tower top	--	90.0
Leg Compression	8	43.0
	7	61.1
	6	49.1
	5	56.4
	4	51.4
	3	49.7
	2	53.7
	1	55.2
Diagonals	8	56.8
	7	62.6
	6	67.2
	5	64.7
	4	59.4
	3	82.0
	2	98.7
	1	93.2
Guys	8	57.4
	7	57.7

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	6		58.6
	5		62.2
	4		59.3
	3		68.7
	2		71.1
	1		58.9
Foundations	Base		60
	Inner anchors		86
	Outer anchors		55

Ratings of up to 105% are considered acceptable due to tolerances in calculating the applied loads on the tower as well as member design capacities.

**G. CONCLUSIONS AND RECOMMENDATIONS**

Based on the preceding results, the following conclusion may be drawn:

1. The tower, supporting the equipment as specified in Section C above, is adequate to achieve a basic wind speed of 85 mph with no ice and 28 mph with 3/4" ice (ice thickness escalated with tower elevation) in accordance with the provisions of ANSI/TIA/EIA Standard 222-F and the analysis parameters in Section D.

**H. PROVISIONS OF ANALYSIS**

The analysis performed and the conclusions contained herein are based on the assumption that the tower has been properly installed and maintained, including, but not limited to the following:

1. Proper alignment and plumbness.
2. Correct guy tensions.
3. Correct bolt tightness.
4. No significant deterioration or damage to any component.

Furthermore, the information and conclusions contained in this Report were determined by application of the current "state-of-the-arts" engineering and analysis procedures and formulae, and Stainless LLC assumes no obligations to revise any of the information or conclusions contained in this Report in the event that such engineering and analysis procedures and formulae are hereafter modified or revised. In addition, under no circumstances will Stainless LLC have any obligation or responsibility whatsoever for or on account of consequential or incidental damages sustained by any person, firm or organization as a result of any information or conclusions contained in the Report, and the maximum liability of Stainless LLC, if any, pursuant to this Report shall be limited to the total funds actually received by Stainless LLC for preparation of this Report.

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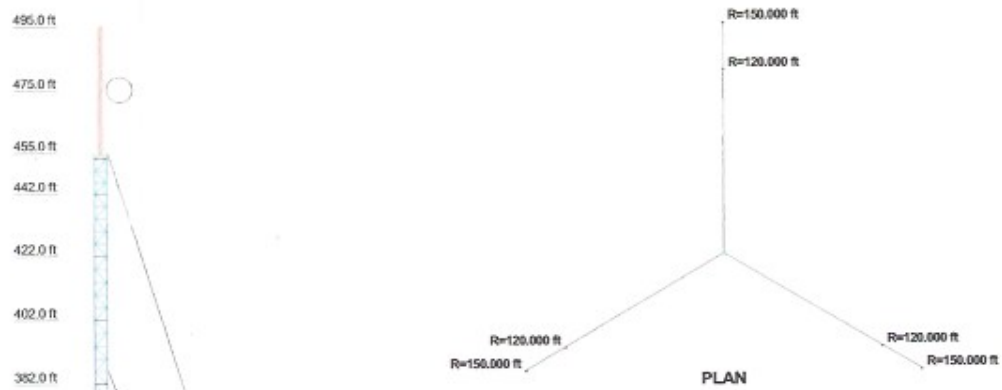
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Customer has requested Stainless LLC to prepare and submit to Customer an engineering analysis with respect to the Subject Tower and has further requested Stainless LLC to make appropriate recommendations regarding suggested structural modifications and changes to the Subject Tower. In making such request of Stainless LLC, Customer has informed Stainless LLC that Customer will make a determination as to whether or not to implement any of the changes or modifications which may be suggested by Stainless LLC and that Customer will have any such changes or modifications made by riggers, erectors and other subcontractors of Customer's choice.

Customer hereby agrees and acknowledges that Stainless LLC shall have no liability whatsoever to Customer or to others for any work or services performed by any persons other than Stainless LLC in connection with the implementation of any structural changes or modifications recommended by Stainless LLC including but not limited to any services rendered for Customer or for others by riggers, erectors or other subcontractors. Customer acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by Customer shall be solely responsible to Customer and to others for the quality of work performed by them and that Stainless LLC shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by any such rigger, erector or subcontractor.





**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
Beacon	495.5	RRUS 11 B12	280
ERI 2-Bay FM Antenna	484	(2) TMA	280
Small Yagi	460	(2) TMA	280
Antenna Pole Platform	455	(2) TMA	280
Transfer Platform	446	(3) Sector Frames	280
(3) OBSTRN Lights	357	APXVSP18-C-A20 w/Mount Pipe	258
4' MW Dish	353	RR6S-18-02DPL2 w/Mount Pipe	258
2'x4' Paraflector MT	340	800 MHz RR6H	258
10' Whip MT	305	1800MHz RR6H	258
6' Whip MT	293	(3) Sector Frames	258
APX16DWV-16DWVS w/ Mount Pipe	280	10' Grd Dish (2700 MHz)	254
APX16DWV-16DWVS w/ Mount Pipe	280	10' Grd Dish (2700 MHz)	250
APX16DWV-16DWVS w/ Mount Pipe	280	(2) Beacon	238
LNX-6515DS-VTM w/ Mount Pipe	280	2-Bay Dipole	140
LNX-6515DS-VTM w/ Mount Pipe	280	2-Bay Dipole	125
LNX-6515DS-VTM w/ Mount Pipe	280	(3) OBSTRN Lights	118
RRUS 11 B12	280	2-Bay Dipole	108
RRUS 11 B12	280		

**TOWER DESIGN NOTES**

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.



<p><b>FDH Velocitel</b> ENGINEERING INNOVATION Tower Analysis</p>	<p><b>FDH Velocitel</b> 6521 Meridian Drive Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031</p>		<p>Job: <b>361116 - Brookfield - E-1</b></p>	
	<p>Project: <b>15TGJ1400</b></p>	<p>Client: <b>Stainless LLC</b></p>	<p>Drawn by: <b>MDV</b></p>	<p>Date: <b>12/17/15</b></p>
	<p>Code: <b>TIA/EIA-222-F</b></p>			<p>Scale: <b>NTS</b></p>
				<p>Dwg No. <b>E-1</b></p>



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

**T-Mobile Existing Facility**

**Site ID: CT11196A**

**Brookfield/ Junction Rd.  
37 Carmen Hill Road  
Brookfield, CT 06804**

**January 18, 2016**

**EBI Project Number: 6216000309**

<b>Site Compliance Summary</b>	
<b>Compliance Status:</b>	<b>COMPLIANT</b>
<b>Site total MPE% of FCC general public allowable limit:</b>	<b>10.28 %</b>



January 18, 2016

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

Emissions Analysis for Site: **CT11196A – Brookfield/ Junction Rd.**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **37 Carmen Hill Road, Brookfield, 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 PCS and 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 **37 Carmen Hill Road, Brookfield, 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 / 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 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) Since the radios are ground mounted there are additional cabling losses accounted for. For each RF path the following losses were calculated. 1.74 dB of additional cable loss for all 700 MHz Channels, 3.19 dB of additional cable loss for all 1900 MHz channels and 3.29 dB of additional cable loss for all 2100 MHz channels. This is based on manufacturers Specifications for 310 feet of 1-5/8" coax cable on each path.



- 6) 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.
- 7) 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.
- 8) The antennas used in this modeling are the **RFS APX16DWV-16DWVS-E-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APX16DWV-16DWVS-E-A20** have a maximum gain of **16.3 dBd** at their 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.
- 9) The antenna mounting height centerline of the proposed antennas is **280 feet** above ground level (AGL).
- 10) 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.





**T-Mobile Site Inventory and Power Data**

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	280	Height (AGL):	280	Height (AGL):	280
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	4,827.62	ERP (W):	4,827.62	ERP (W):	4,827.62
Antenna A1 MPE%	0.23	Antenna B1 MPE%	0.23	Antenna C1 MPE%	0.23
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	280	Height (AGL):	280	Height (AGL):	280
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):	579.59	ERP (W):	579.59	ERP (W):	579.59
Antenna A2 MPE%	0.06	Antenna B2 MPE%	0.06	Antenna C2 MPE%	0.06

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	0.29 %
On Site Measurements per CSC database	9.99 %
<b>Site Total MPE %:</b>	<b>10.28 %</b>

T-Mobile Sector 1 Total:	0.29 %
T-Mobile Sector 2 Total:	0.29 %
T-Mobile Sector 3 Total:	0.29 %
<b>Site Total:</b>	<b>10.28 %</b>

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 2100 MHz (AWS) LTE	2	2399.83	280	1.15	2100	1000	0.11 %
T-Mobile 1900 MHz (PCS) GSM/UMTS	2	1227.87	280	0.59	1900	1000	0.06 %
T-Mobile 2100 MHz (AWS) UMTS	2	1199.92	280	0.57	2100	1000	0.06 %
T-Mobile 700 MHz LTE	1	579.59	280	0.28	700	467	0.06 %
						<b>Total:</b>	<b>0.29%</b>

## 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:	0.29 %
Sector 2:	0.29 %
Sector 3 :	0.29 %
T-Mobile Per Sector Maximum:	0.29 %
Site Total:	10.28 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **10.28%** 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.



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