

**JULIE D. KOHLER**

Please Reply To: Bridgeport  
Writer's Direct Dial: (203) 337-4157  
E-Mail: jkohler@cohenandwolf.com

November 6, 2014

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

**Re: Notice of Exempt Modification  
Northeast Utilities (CL&P)/T-Mobile co-location  
Site ID CT11135J  
40 Maple Ridge Drive, Farmington 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, Northeast Utilities/Connecticut Light and Power ("CL&P") owns the existing transmission tower (Structure # 8011) and related facility at 40 Maple Ridge Drive Farmington Connecticut (latitude 41.718091/longitude 72.767934). T-Mobile intends to replace three (3) existing antennas with three (3) new antennas and related equipment at this existing telecommunications facility in Farmington ("Farmington 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 Farmington Town Manager Kathleen A. Eagen and the property owner, Northeast Utilities. Please also see the letter of authorization from Northeast Utilities attached hereto as **Exhibit A**.

The existing Farmington Facility consists of an 84-foot transmission tower.<sup>1</sup> T-Mobile plans to replace three (3) existing antennas and with three (3) new antennas and add three (3) smart bias Ts mounted behind the antennas at a centerline of 73 feet.<sup>2</sup> T-Mobile will also install coax cable, reuse existing coax cable, and add three (3) RRUs (remote radio units) mounted to a proposed H-frame unit. (See the plans revised to October 27, 2014 attached hereto as **Exhibit B**). With modifications, the Farmington Facility is structurally capable of supporting T-Mobile's proposed installation, as indicated in the structural analysis dated October 22, 2014, and attached hereto as **Exhibit C**.<sup>3</sup>

<sup>1</sup> T-Mobile last sought to modify this facility in the notice of intent captioned EM-T-MOBILE-052-090825.

<sup>2</sup> The T-Mobile array at 81.5 feet will remain unchanged.

<sup>3</sup> The structural analysis indicates that tower reinforcement is required. T-Mobile will complete the recommended structural reinforcements prior to its installation.

The planned modifications to the Farmington 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 existing antennas are at 75 feet; the replacement antennas will be installed two feet lower at a centerline of 73 feet. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. The proposed modifications will not require an extension on the site boundaries or lease area, as depicted on Sheet LE-1 of Exhibit B. T-Mobile's 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 and equipment 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 Consulting dated September 25, 2014, T-Mobile's operations would add 23.82% 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 23.82% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as **Exhibit D**.

For the foregoing reasons, T-Mobile respectfully submits that the replacement antennas and equipment at the Farmington Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement of this exempt modification, T-Mobile shall commence construction approximately sixty days from the receipt of the Council's decision.

Sincerely,



Julie D. Kohler

cc: Farmington Town Manager Kathleen A. Eagen  
Northeast Utilities  
Jamie Ford, EBI Consulting

# **EXHIBIT A**



**Northeast  
Utilities System**

56 Prospect Street, Hartford, CT 06103

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

October 31, 2014

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

RE: T-Mobile Antenna Site, CT-11 135J, Maple Ave, Farmington CT, structure 8011.

Dear Mr. Richard:

Based on our reviews of the site drawings, the structural analysis and base reaction review provided by Matt Young with Laminated Wood Systems Engineering, we have reviewed for acceptance this modification.

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

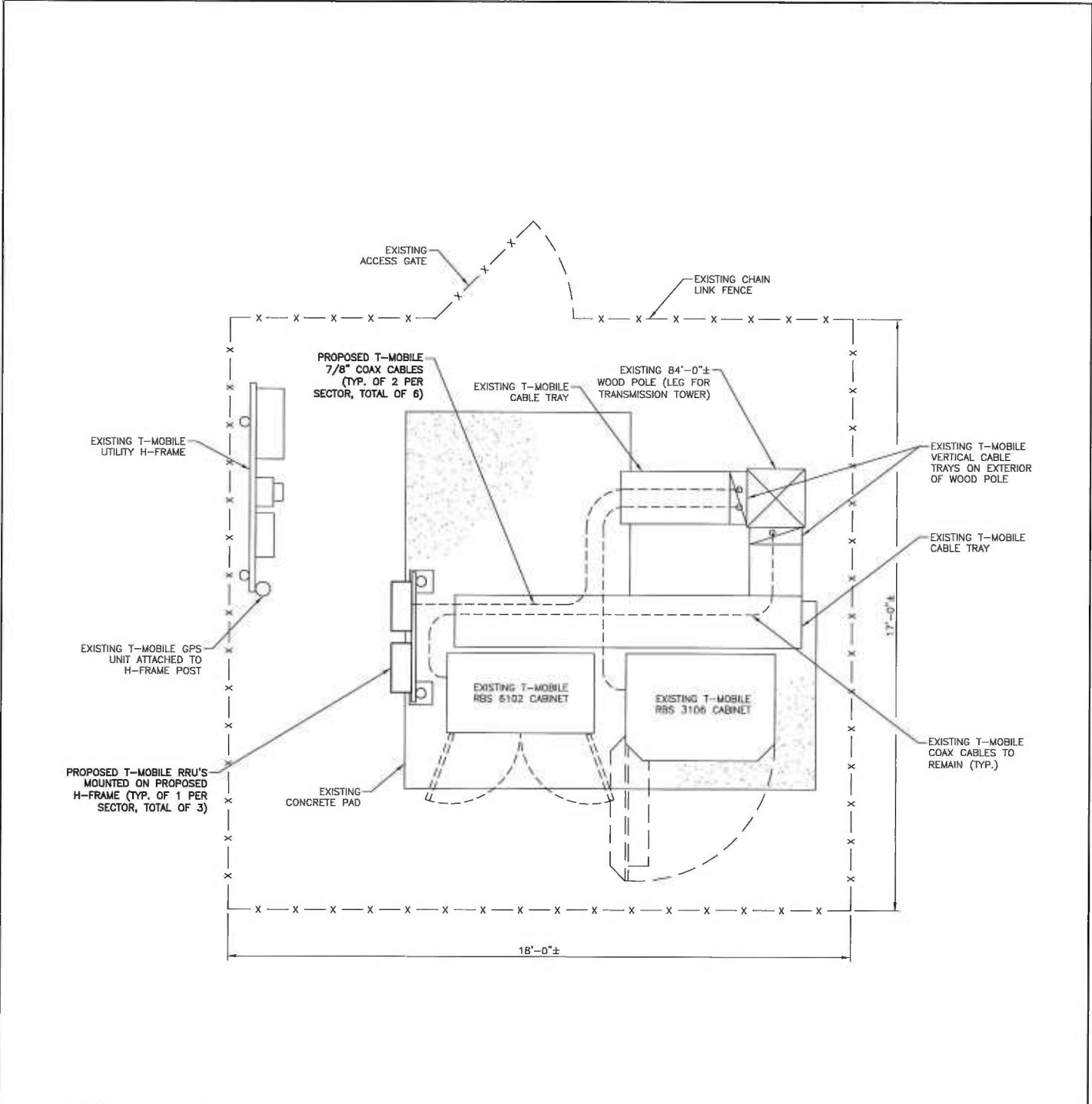
Sincerely,

Robert Gray  
Transmission Line Engineering

Ref: CT\_11\_135J\_Ltr.pdf

Ref: CT11135J-L700-CD-V2.pdf

# **EXHIBIT B**



CONFIGURATION  
**704BU**



APPROX. NORTH

NOTE:  
 ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE STRUCTURAL AND RF ENGINEERS.

**SITE PLAN**

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

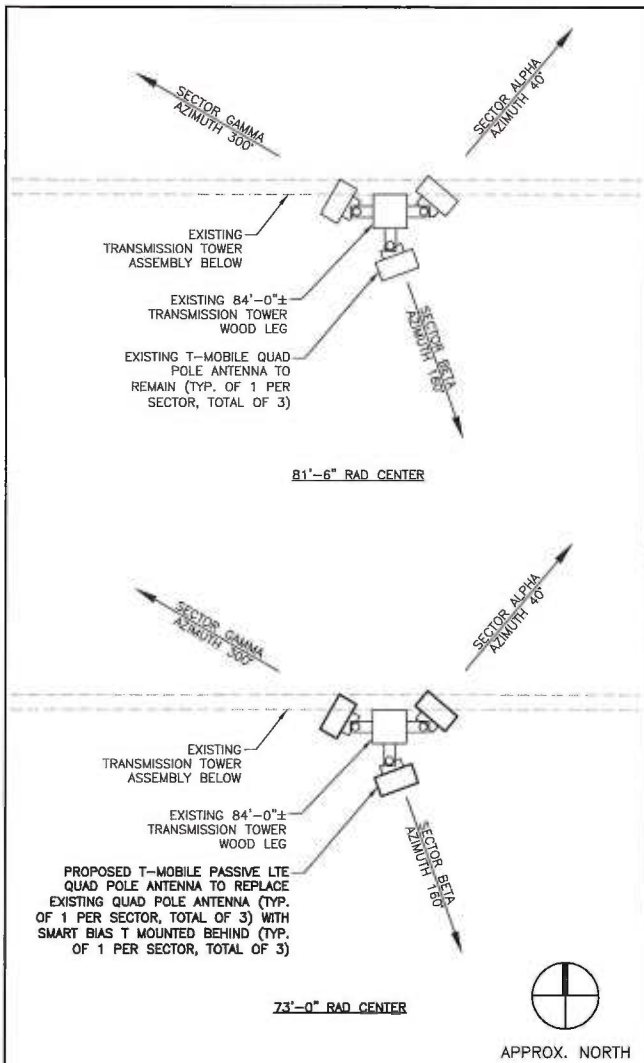
PREPARED BY:  
**EBC Consulting**  
 environmental | engineering | due diligence  
 21 B Street | Burlington, MA 01803  
 Tel: (781) 273-2500 | Fax: (781) 273-3311  
 www.ebcconsulting.com  
 EBI JOB NO.: 81140790

CLIENT:  
**T-Mobile Northeast, LLC**  
 35 GRIFFIN ROAD SOUTH  
 BLOOMFIELD, CT 06002  
 860.692.7100

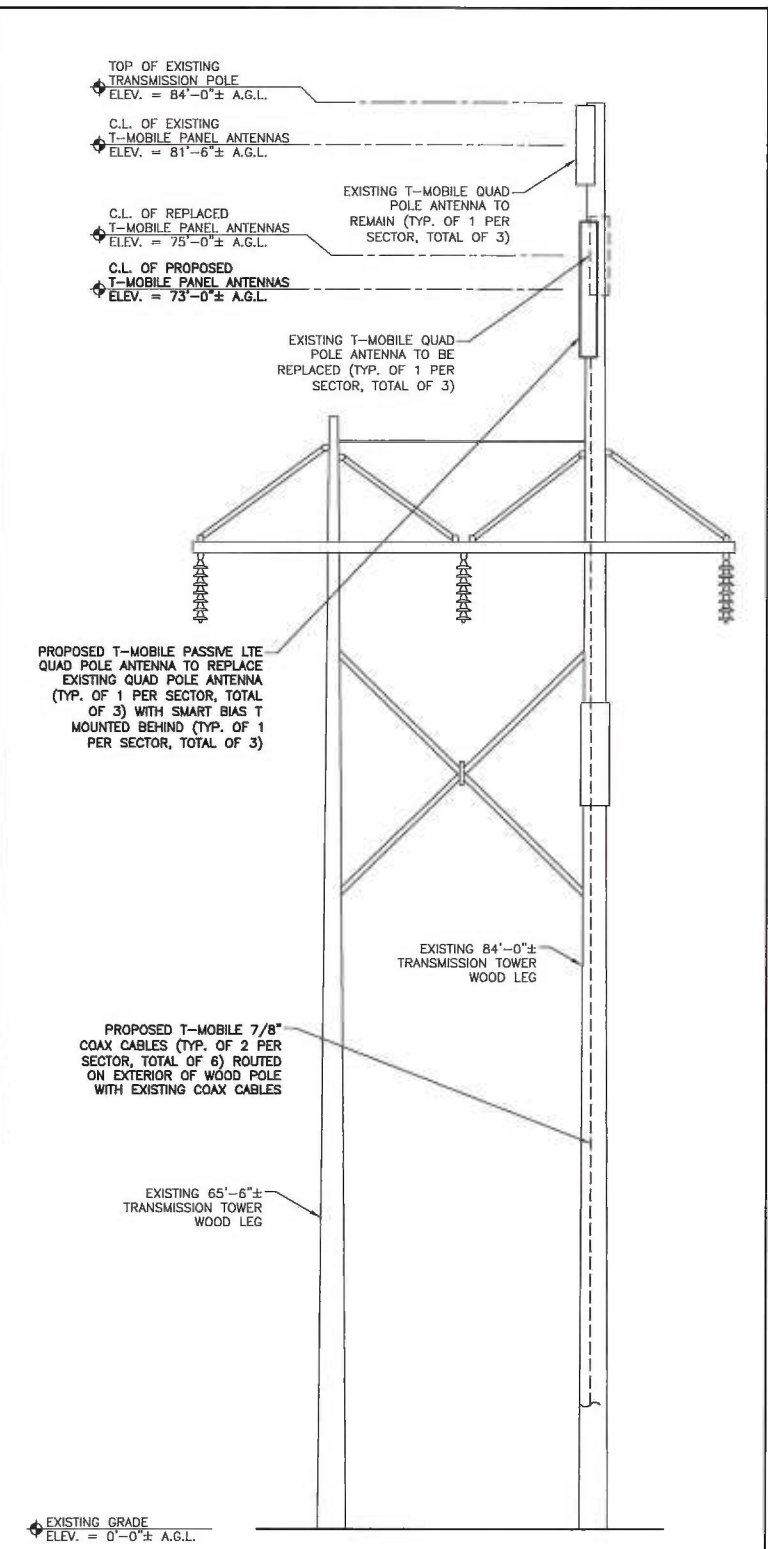
SITE INFO:  
**CT11135J**  
**WEST HARTFORD/**  
**I-84 X42/M**  
 40 MAPLE RIDGE DRIVE  
 FARMINGTON, CT 06032

SUBMITTALS				DRAWN BY:	SHEET NO:
NO.	DATE	DESCRIPTION	BY	AC	LE-1
A	07/31/14	FOR REVIEW	AC	CHECKED BY:	
0	08/04/14	FINAL	SH	PM	
1	10/27/14	FINAL	MK	DATE:	
				07/31/14	





ANTENNA CONFIGURATION NTS



TOWER ELEVATION SCALE: 3/32" = 1'-0"

CONFIGURATION  
**704BU**

NOTE:  
ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE STRUCTURAL AND RF ENGINEERS.

PREPARED BY: <b>Ebi Consulting</b> environmental   engineering   data intelligence 21 B Street   Burlington, MA 01803 Tel: (781) 273-2500   Fax: (781) 273-3311 www.eblconsulting.com	CLIENT: T-Mobile Northeast, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 860.692.7100	SITE INFO: CT11135J WEST HARTFORD/ I-84 X42/M 40 MAPLE RIDGE DRIVE FARMINGTON, CT 06032	SUBMITTALS	DRAWN BY: AC	SHEET NO: <b>LE-2</b>
			NO. DATE DESCRIPTION BY	AC	DATE: 07/31/14
			A 07/31/14 FOR REVIEW AC	CHECKED BY: PM	
			0 08/04/14 FINAL SH		
			1 10/27/14 FINAL MK		

Ebi JOB NO.: 81140790

# **EXHIBIT C**



**Matthew J. Young – Professional Engineer**

P.O. Box 277 – Story, WY 82842

Telephone: 402-643-4708

e-mail: myoung@lwsinc.com

October 22, 2014

RE: Northeast Utilities – Farmington Site # CT-11-135J - Str. # 8011

EBI Consulting

ATTN: Jamie Ford

I have reviewed the laminated wood pole that is located at the Farmington, CT site (Site # CT-11-135J – Str. # 8011). I understand that the proposed modification involves replacing the lower of the two existing antenna arrays, centered at approximately 73' AGL, with (3) panel antennas while adding (6) 7/8" coax to the same pole face as the existing coax. The total projected width of the coax is not to exceed 2" from the existing pole face.

The upper antenna array, which is centered at approximately 82' AGL will remain unchanged from the 2008 installation. Northeast Utilities' conductor loading is also unchanged and is consistent with the values that were provided for the original 2001 design.

**Results:**

Based on this information, the existing laminated wood structure does not have adequate capacity to support the proposed loads. The limiting component is the x-brace, which would have a usage of approximately 110%.

**Potential Reinforcement:**

The x-brace could be reinforced by adding a second set of Hughes Brothers 2094-15-6 x-braces (or equal) approximately 2' below the existing x-brace. If the x-brace is reinforced in this manner, the structure will have adequate capacity to support the proposed loads.

**The analysis was based on the following parameters:**

**Load Conditions Checked:**

- 1) NESC Extreme Wind = 110 MPH with no ice (30.7 psf) – transverse and longitudinal
- 2) NESC "Heavy" – combined wind and ice

Minimum existing pole groundline dimensions = 10 ¼" x 16.9" (left pole)  
18 ¼" x 20 5/8" (right pole)

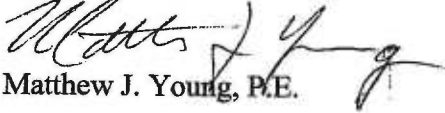
Maximum Element Usage = 95%\* (right pole - Extreme Wind (L))

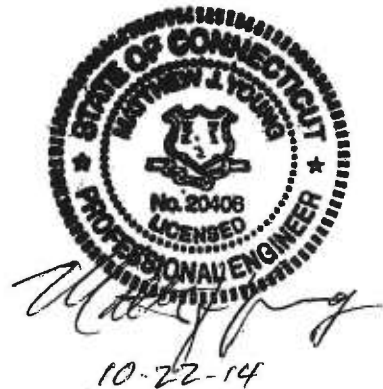
\* - if x-brace is added as described above

This analysis considers that the pole, its foundation, and all attachments were constructed and remain as originally specified.

If you have any questions, please call or e-mail.

Sincerely,

  
Matthew J. Young, P.E.



# **EXHIBIT D**

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

T-Mobile Existing Facility

Site ID: CT11135J

West Hartford / I-81 / X42  
40 Maple Ridge Drive  
Farmington, CT 06032

**September 25, 2014**

**EBI Project Number: 62145202**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>23.82 %</b>

September 25, 2014

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

Emissions Analysis for Site: **CT11135J – West Hartford / I-81 / X42**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **40 Maple Ridge Drive, Farmington, 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  $467 \mu\text{W}/\text{cm}^2$ , 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 **40 Maple Ridge Drive, Farmington, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel
- 2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 5) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.



- 6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antennas used in this modeling are the **RFS APX16DWV-16DWVS-E-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APX16DWV-16DWVS-E-A20** has a maximum gain of **16.3 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antenna mounting height centerlines of the proposed antennas are **81.5 feet and 73 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.



**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):	81.5	Height (AGL):	81.5	Height (AGL):	81.5
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	# PCS Channels:	6
Total TX Power:	240	Total TX Power:	240	# AWS Channels:	240
ERP (W):	3,833.82	ERP (W):	3,833.82	ERP (W):	3,833.82
Antenna A1 MPE%	6.46	Antenna B1 MPE%	6.46	Antenna C1 MPE%	6.46
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):	73	Height (AGL):	73	Height (AGL):	73
Frequency Bands	700 Mhz	Frequency Bands	700 Mhz	Frequency Bands	700 Mhz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	445.37	ERP (W):	445.37	ERP (W):	445.37
Antenna A2 MPE%	1.48	Antenna B2 MPE%	1.48	Antenna C2 MPE%	1.48

Site Composite MPE%	
Carrier	MPE%
T-Mobile	23.82
<b>Site Total MPE %:</b>	<b>23.82 %</b>

T-Mobile Sector 1 Total:	7.94 %
T-Mobile Sector 2 Total:	7.94 %
T-Mobile Sector 3 Total:	7.94 %
<b>Site Total:</b>	<b>23.82 %</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:	7.94 %
Sector 2:	7.94 %
Sector 3 :	7.94 %
T-Mobile Total:	23.82 %
Site Total:	23.82 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **23.82%** 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

### EBI Consulting

21 B Street  
Burlington, MA 01803`