

JULIE D. KOHLER

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March 19, 2015

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

Re: Notice of Exempt Modification

DMP Palmer Associates/T-Mobile equipment upgrade

Site ID CT1157A

50 Tiffany Street, Brooklyn Connecticut

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, DMP Palmer Associates owns the existing water tank telecommunications facility located at 50 Tiffany Street, Brooklyn, Connecticut (Latitude: 41.797384, Longitude: -71.886692). T-Mobile intends to add three (3) antennas and related equipment at this existing telecommunications facility in Brooklyn ("Brooklyn 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 also being sent to First Selectman Richard Ives, and the property owner, which is also DMP Palmer Associates.

The existing Brooklyn Facility consists of a 144 foot tall water tank. T-Mobile plans to add three (3) antennas and three (3) smart bias-Ts mounted behind the antennas at a centerline of 130 feet. T-Mobile will also add coax cable attached to water tank leg on existing cable banding with six (6) proposed snap-in hangers. T-Mobile will add a batter backup unit cabinet on an existing concrete pad, Finally, T-Mobile proposes to relocate fiber cable, AC panel and disconnect onto proposed unistrut attached to existing ice canopy support posts. (See the plans revised to March 13, 2015 attached hereto as Exhibit A). The existing Brooklyn Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated February 13, 2015 attached hereto as Exhibit B.

¹ While the online docket for the Connecticut Siting Council does not provide a docket or petition number for the approval of this structure, it does reference this structure in connection with notices of intent captioned EM-CING-019-121025 and EM-CING-019-090403.



March 19, 2015 Site ID CT11157A Page 2

The planned modifications to the Brooklyn 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 water tank. T-Mobile's additional antennas and equipment will be installed at a centerline of 130 feet, merely modifying the array located at the same 130 foot elevation. The enclosed drawing confirms that the proposed modification will not increase the height of the water tank.
- 2. The proposed modifications will not require an extension of the site boundaries. T-Mobile's modifications will be completely within the existing equipment compound, as shown on Sheet LE-1 of Exhibit A.
- 3. The proposed modification to the Brooklyn Facility will not increase the noise levels at the existing facility by six decibels or more.
- 4. The operation of the additional antennas will not increase the total radio frequency (RF) power density, measured at the base of the water tank, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated March 16, 2015, T-Mobile's operations would add 5.94% 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 31.83% 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 additional antennas and equipment at the Brooklyn 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.

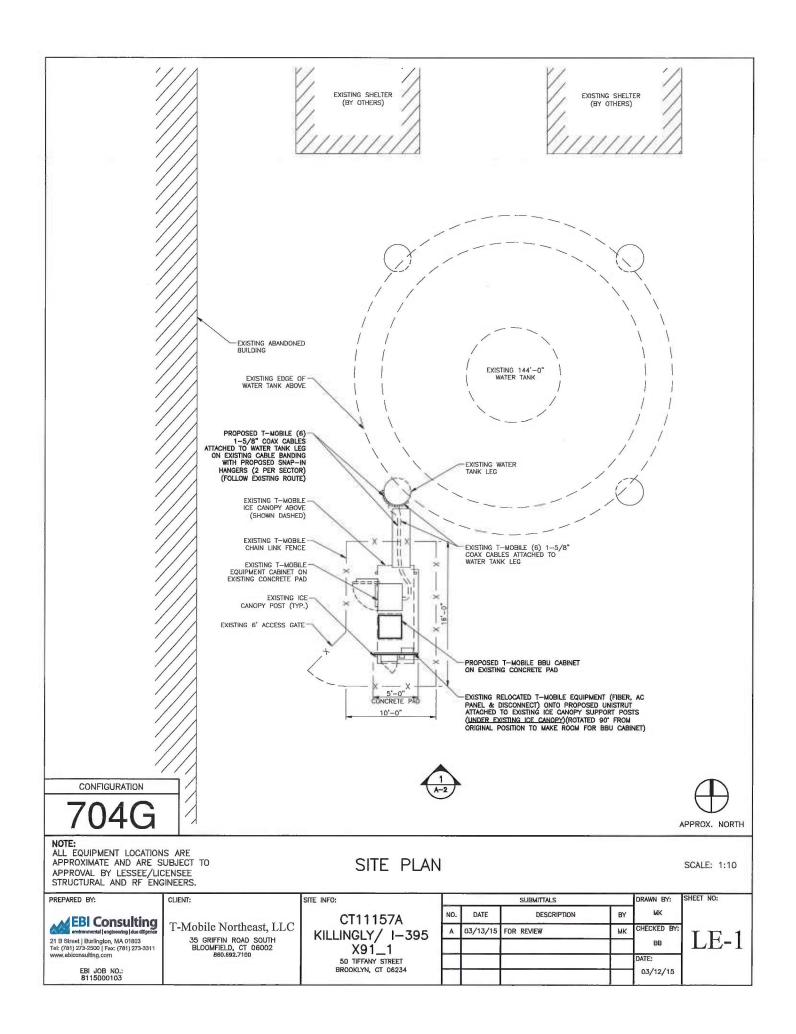
Sincerely.

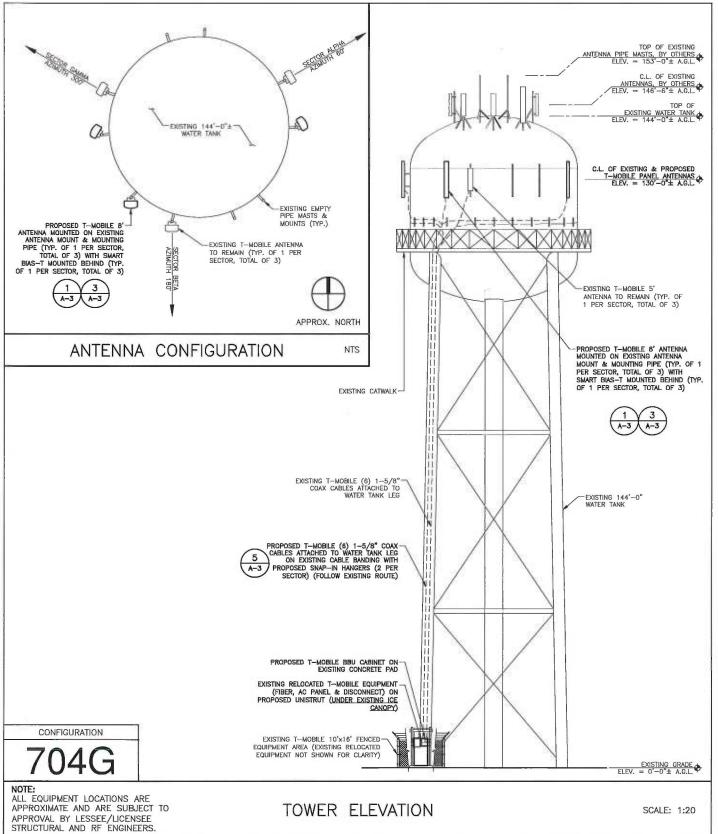
Julie D. Kohler, Esa

cc: Town of Brooklyn, First Selectman Richard Ives, DMP Palmer Associates.

Jamie Ford, EBI Consulting

EXHIBIT A





PREPARED BY:

∠EBI Consulting

21 B Street | Burlington, MA 01803 Tel: (781) 273-2500 | Fax: (781) 273-3311 w.ebiconsulting.com

EBI JOB NO.: 8115000103

T-Mobile Northeast, LLC

35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 860.692.7100

CT11157A KILLINGLY/ I-395 X91_1

SITE INFO:

50 TIFFANY STREET BROOKLYN, CT 06234

		SUBMITTALS		DRAWN BY:	SHEET NO:
NO.	DATE	DESCRIPTION	BY	MK	
A	03/13/15	FOR REVIEW	мк	CHECKED BY:	TT
				BB	LE
				DATE:	
				03/12/15	

LE-2

EXHIBIT B



STRUCTURAL ANALYSIS REPORT

February 13, 2015

T-Mobile, USA 35 Griffin Road South Bloomfield, CT 06002 Attention: Mark Richard

Subject:

700 MHz Upgrade Project

Site #: CT11157A

EBI Reference #: 81150103 Site Name: Killingly/ I-395 X91

Address: 50 Tiffany Street, Brooklyn, CT 06234

Dear Mr. Richard:

In accordance with your request, EBI Consulting's structural engineers have reviewed the available documentation for the above site in order to determine its capability for supporting the structural loads from the proposed antennas, remote radio units and coaxial cables. This analysis is in accordance with the following design codes governing this project:

- State Building Code 2005 CT Supplement (with 2009, 2011, and 2013 Amendments)
- International Building Code, 2003
- AISC Steel Construction Manual, 13th Edition
- ANSI/TIA-222-F
- AWWA D100-05

EBI Consulting has reviewed the following information sources in preparing this analysis:

- Site visit photos dated February 9, 2015
- AT&T Structural Analysis Report by Hudson Design Group, dated August 22, 2012
- Construction Drawings by Arcnet Architects, Inc, dated September 27, 1997.

At a centerline elevation of approximately 130"-0" above ground level, three (one per sector) proposed Commscope antennas (96.0"T x 11.85"W x 7.1"D) are to be installed on existing unoccupied antenna mounts. At this same elevation, there are three (one per sector) existing RR90-17-02DPL2 (56"H x 8"W x 2.8"D) to remain. Six 1-5/8" coaxial cables are to be installed and will follow the existing coaxial cable route. At the ground level, three (one per sector) proposed remote radio units RRUS11 (20"H, x 17"W x 7"D) are proposed to be installed. Please refer to EBI Consulting's Construction Drawings for additional information.

Based on the information available to us, **the existing water tank and antenna mounts have adequate capacity** to support the structural loads imposed by the proposed antennas, coaxial cables, and related equipment listed herein. The additional lateral loading to the tank superstructure from the proposed installation is negligible.

Our analysis relies upon the condition that the structures were properly designed, analyzed, and constructed to building code requirements, that the structures have not been adversely modified, and that



the structures remain in sound structural condition. EBI Consulting shall be notified immediately should any of these conditions be found not to exist. All proposed equipment shall be installed in accordance with the manufacturer's requirements. No structural qualification is made or implied by this report for existing structural members not supporting the proposed installation.

Please feel free to contact our office should you have any questions.

Sincerely yours, EBI Consulting February 13, 2015

Rita Apted, P.E.

Professional Engineer

Richard L. Peterman, P.E.

Professional Engineer

Attachments: Photograph log, analysis calculations



PHOTOGRAPH LOG

Photo I:

Existing Water Tank

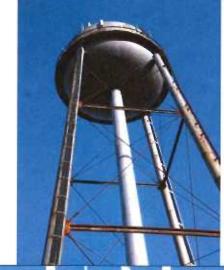


Photo 2:

Existing antennas at EL=130 ft. Elevation of proposed antennas.

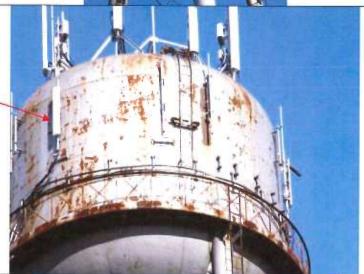


Photo 3:

Existing antenna.





STRUCTURAL DESIGN PARAMETERS

BUILDING CODE/S:

OCCUPANCY CATEGORY: IV (water tank)

II (telecom equipment)

see letter

LIVE LOADS:

Roofs: 20 PSF

SNOW LOADS:

Ground Snow Load, Pg: 35 PSF
Equation 7-1 Flat Roof Conversion Factor: 0.7
Snow Exposure Factor, Ce: 0.9
Thermal Factor, Ct: 1.2
Snow Load Importance Factor: 1.2
Flat Roof Snow Load, Pf: 32 PSF

WIND LOADS:

Basic Wind Speed (3-Sec Gust), V (per state code): 105 MPH

Basic Wind Speed (fastest mile), V (per TIA-F): 85 MPH (for local appurtenance checks only)

Importance Factor, I: 1.15
Exposure Category: C

Internal Pressure Coefficient: ±0.18



EnviroBusiness, Inc. 21 B Street Burlington, MA 01803 800.786.2346

This spreadsheet calculates the wind and ice forces on proposed equipment. Shaded fields indicated user data

Determine the wind loads on new equipment using TIA222 - Rev F design code: 12

sustained V= 85 mph (see structural criteria page)

Height above grade = 130 ft, center of antennas

Kz= 1.48

Wind importance factor, I = 1.15

31.5 psf, formula is $I*0.00256*Kz*V^2$

Gh for lattice structure formula 1.14 see table below for occurrence - use value only when not at a cantil

Wind with ice / Wind ratio 0.75 Ice thickness 0.75 Ice density 56 pcf

Calculate wind at face of proposed equipment using the TIA-222-F code revision:

Description	Weight (lbs)	Height (in)	Width (in)	Depth (in)	Front Aspect ratio	Front C _a (TIA222F Table 3)	Side Aspect ratio	Side C _a (TIA222F Table 3)	Cant- ilever or mono- pole?	Gh
Flat Appurtenances			•							
Pr. Antenna	67	96	11.85	7.1	8.10	1.44	13.52	1.62	Υ	1.69
		J								
Round Appurtenances										
P. 2-7/8" O.D. pipe	45	96.0	2.9	2.9	9.6	1.20	33.39	1.20	Υ	1.69

Check anchorage of antenna mount to tank:

Existing connection has estimated (6) 5/16" diameter low-carbon, copper-flashed steel stud welds per connection, analyze at (4) to be conservative

Side Load is worst case, consider full wind load concurrent with full ice

Total wind force at sector frame & antennas = 529 lb, calculated above, does not include RRH

Total dead load with ice 254 lb, calculated above

Number of support points = 2 connections

Shear force per support point = 264.7 lb shear per connection

Stud welds per connection = 4 studs conservative

Shear force per stud weld = 66.2 lb per stud

Maximum shear load per stud weld = 2200 lb (ultimate)

Factor of safety for shear = 2.5

Percent of stud welds assumed fully engaged = 50% (arbitrary, conservative) Allowable shear load per stud weld = 440.0 lbs

Unity check, shear = 0.15 < 1, okay

STUD MATERIAL	STUD SIZE	MA: FASTER TORQ (INCH L
76 -	6-32	6
	8-32	12
Low-Carbon, Copper-flashed	10-24	14
Steel	1/4-20	43
	5/16-18	72
	3/8-16	106

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This spreadsheet calculates the wind area of an existing elevated tank, and current and proposed antennas, and check existing. Tank design per AWWA D100-05, Antennas per TIA222 Rev F only for local considerations in manual calc's

Wind Calc

3 sec gust wind speed	105	mph
Importance Factor for Tank	1.15	per AWWA
Wind Exposure Category	C	use C or D per AWWA
Gust effect factor G	1.00	per AWWA page 12

Area of tank

THE OF THE PROPERTY OF THE PRO				
bottom elevation	96	ft, exst A dwg	Intermediate calcs:	
top elevation	133	ft, exst A dwg	C=	9
height of straight sides	19	ft, estimated	OT	16.75
tank diameter (plan)	33.5	ft, from old CD's	z bar=	114.5
Misc area to add to tank (catwalk)	4	ft ²	tank wind area=	1110
z har of misc area	105	centroid for OTM calc		

Area of tank supports

Note: where actual tank dimensions were unavailable, conservative estimates of tank dims were made using minimum provide an upper bound limit for comparison purposes (maximum percentage added)

# of outer legs	4	legs, A dwgs	height to 1st x-brace conn
outer leg diameter	2.75	ft, estimated	overflow pipe dia.
outer leg height	110	ft, estimated	overflow pipe height
central leg diameter	4.25	ft. estimated	

Overturning Moment Calc's.

description	area	z bar	C _f factor	Kz	G*qz	F	orce (k)
tank	111	0 11	4.5	0.5	1.30	42.3	
misc (catwalk/corral)		4	105	1	1.28	41.5	0.
outer legs	106	9 6	51.4	0.6	1.14	37.1	
central leg	35	4 5	54.4	0.6	1.11	36.1	
overflow pipe		4 7	1.4	0.6	1.18	38.3	

Total:

Calculate the wind area on existing and proposed antennas. Antenna sizes and elevations have been approximated from values were unavailable. Antenna rad centers may be higher than what is shown on construction drawings to account fexisting equipment, to remain:

			factor		(min G*qz=30)	shieldec
description	area	z bar	C_{f}	Kz	Cf*G*qz	factor
(6) panel antennas (10 s.f. ±)	60	138	1	1.35	44.0	1
(3) empty pipe (2 s.f. ±)	6	138	0.6	1.35	26.4	1
(6) RRH (2.5 s.f. ±)	15	134	1	1.35	43.7	0.2
(3) T-Mobile panel antennas (3.3 s.f. ±)	10	130	1	1.34	43.4	0.7
(6) empty pipe (1.2 s.f. ±)	7	69	0.6	1.17	22.8	0.7
Coax to antennas	100	69	0.6	1.17	22.8	0.2

Proposed equipment:

EXHIBIT C



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

T-Mobile Existing Facility

Site ID: CT11157A

Killingly / I-395 / X91-1 50 Tiffany Street Brooklyn, CT 06234

March 16, 2015

EBI Project Number: 6215001667

Site Compliance	Summary
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	31.83 %



March 16, 2015

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

Emissions Analysis for Site: CT11157A - Killingly / I-395 / X91-1

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **50 Tiffany Street**, **Brooklyn**, **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 (μ W/cm2). The number of μ W/cm² 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.

<u>General population/uncontrolled exposure</u> 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 band 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.

Fax: (781) 273.3311



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 **50 Tiffany Street**, **Brooklyn**, **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 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.
- 3) 2 LTE channels (PCS Band 1900 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 EMS RR90_17_02DP for 1900 MHz (PCS) 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 EMS RR90_17_02DP has a maximum gain of 14.4 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 **130 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:	В	Sector:	С
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	EMS RR90_17_02DP	Make / Model;	EMS RR90_17_02DP	Make / Model:	EMS RR90_17_02DP
Gain:	14.4 dBd	Gain:	14.4 dBd	Gain:	14.4 dBd
Height (AGL):	130	Height (AGL):	130	Height (AGL):	130
Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)
Channel Count	6	Channel Count	6	# PCS Channels:	6
Total TX Power:	240	Total TX Power:	240	# AWS Channels;	240
ERP (W):	6,610.15	ERP (W):	6,610.15	ERP (W):	6,610.15
Antenna A1 MPE%	1.55	Antenna B1 MPE%	1.55	Antenna C1 MPE%	1.55
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):	130	Height (AGL):	130	Height (AGL):	130
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):	865.21	ERP (W):	865,21	ERP (W):	865.21
Antenna A2 MPE%	0.43	Antenna B2 MPE%	0.43	Antenna C2 MPE%	0.43

Site Composite MPE%	
Carrier	MPE%
T-Mobile	5.94
Sprint	4.87 %
AT&T	21.02 %
Site Total MPE %:	31.83 %

T-Mobile Sector 1 Total:	1.98 %
A THOUSE DOCTOR I TOTAL	1.90 70
T-Mobile Sector 2 Total:	1.98 %
T-Mobile Sector 3 Total:	1.98 %



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:	1.98 %
Sector 2:	1.98 %
Sector 3:	1.98 %
T-Mobile Total:	5.94 %
Site Total:	31.83 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **31.83%** 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.

Tel: (781) 273.2500 Fax: (781) 273.3311

Scott Heffernan

RF Engineering Director

EBI Consulting

21 B Street

Burlington, MA 01803