

May 18, 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 - CT11014B
Notice of Exempt Modification
623 Pine Street, Bridgeport, CT 06605
LAT: 41-09-57.81" N
LNG: 73-13-0.11" W

Dear Ms. Bachman:

T-Mobile Northeast LLC ("T-Mobile") currently maintains nine (9) antennas at the 180' level on the existing 250' tall self-support tower located at 623 Pine Street in Bridgeport, CT. The property is owned by Radio Communications Corporation. T-Mobile now intends to add three (3) RRH's and one (1) hybrid cable.

The Council originally approved T-Mobile's tower share application on August 31, 2000 (TS-VOICESTREAM-015-001023) to install six (6) antennas at 180' on the existing 250' tower. This modification complies with the aforementioned conditions.

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 Joseph P. Ganim, Mayor for the City of Bridgeport, 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 add three (3) RRH's at a centerline height of 180' on the existing 250' self-support tower.
2. The proposed modifications will not require the extension of the site boundary. T-Mobile will connect one (1) hybrid cable to an existing fiber cabinet in the equipment room. Thus, there will be no effect on the site compound or T-Mobile's leased 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 additional equipment 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 2.16%; the combined site operations will result in a total power density of 8.94%.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site. T-Mobile will install the RRH's behind existing antennas and install a hybrid cable to an existing fiber cabinet in the equipment room.
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

Attachments

cc: Joseph P. Ganim, Mayor for the City of Bridgeport - as elected official
Bob Knapp/Radio Communications Corporation - as tower and property owner

T-MOBILE LABELS	REGION	DATE
CONTRACTOR	PROJECT NUMBER	DESIGNED BY
ISSUED FOR PERMIT	ISSUED BY	DATE
REV. DATE	REVISION	ISSUED BY
1	1/17/14 FOR COMMENT	AW
2	1/22/14 FOR CLIENT COMMENTS	AW
3	1/29/14 FOR CLIENT COMMENTS	AW

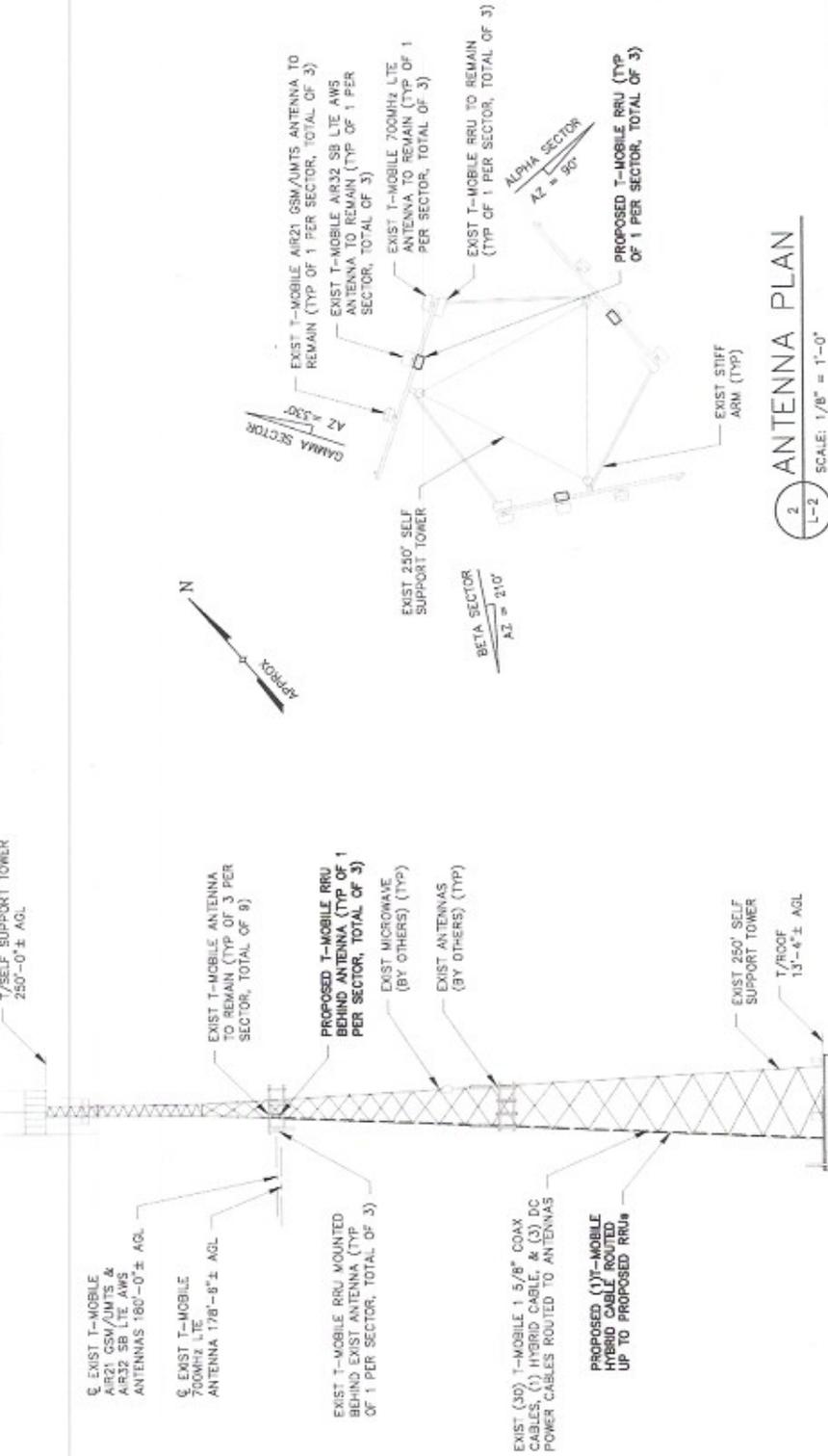
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CT11014B
 CT014/-95/X24/BLA
 623 PINE STREET
 BRIDGEPORT, CT 06516

SHEET TITLE
ELEVATION & ANTENNA PLAN

SHEET NUMBER
L-2

STRUCTURAL NOTE:
 THE PROPOSED DESIGN IS NOT FINAL AND MUST BE STRUCTURALLY ANALYZED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT.



RF CONFIGURATION
792D



2 ANTENNA PLAN
 SCALE: 1/8" = 1'-0"

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

STRUCTURAL ANALYSIS REPORT

T-MOBILE L1900 UPGRADE
RF CONFIGURATION: 792D

EXISTING 250' SELF-SUPPORT TOWER

T-MOBILE SITE: CT11014B
CT014/ I-95/ X24/ BLA

623 PINE STREET
BRIDGEPORT, CT 06516

REVISION 1

MAY 09, 2016
TEC W.O. 8250.CT11014B

TECTONIC

Practical Solutions, Exceptional Service

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Project Information

W.O. Number:	8250.CT11014B	Report Date:	5/9/2016
Client:	T-Mobile	Revision:	1
Site Name:	CT014/ I-95/ X24/BLA		
Owner:	Radio Communications Corp.	FCC Regulation Number:	-
Site Address:	623 Pine Street	County:	Fairfield
City, State:	Bridgeport, CT 06516		

Structure Information

Structure Type:	Self-Support	Manufacturer:	Rohn
Structure Height:	250 ft.	Year Built:	Unknown
Original Drawings:	Structure: No	Foundation:	No
Previous Analysis:	Yes		
Documents provided:			
	<u>Item</u>	<u>By</u>	<u>No.</u>
			<u>Date</u>
	Structural Analysis Report (16 pages)	KM Consulting Engineers	040306.02
	Structural Analysis Report (31 pages)	KM Consulting Engineers	121101.03
	RFDS (10 pages)	T-Mobile	CT11014B
	Construction Drawings (2 sheets)	TECTONIC	8250.CT11014B

Inspection

Type:	Visual Inspection from Ground	Date:	4/13/2016
General Condition:			
	Tower:	Good	
	Foundation:	Good	
Finish:	Galvanized	Condition:	Intact
Observations:	None		

Proposed Installation

T-Mobile is proposing to add three (3) RRHs as a part of this upgrade. The final T-Mobile configuration upon this upgrade will be as follows:

Antennas:						
Height (ft.)	Carrier	Qty	Manuf.	Model	Mount	Leg (s)
180	T-Mobile	3	Ericsson	AIR 21 B2A/B4P	(3) 14' Sector Frames	A,B,C
		3	Ericsson	AIR 32 B4A/B2P		
		3	Commscope	LNX-6515DS-VTM		
		3	Generic	Twin AWS TMA		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 11 B12		

Cables:				
Height (ft.)	Qty	Nom. Size	Location	Comments
180	30	1-5/8" dia	Face AB	Existing to remain
180	1	Hybriflex	Face AB	Existing to remain
180	3	4AWG DC cable	Face AB	Existing to remain
180	1	6x12 Hybriflex	Face AB	To be stacked on existing

W.O. Number: 8250.CT11014B
 Client: T-Mobile
 Site Name: CT014/ I-95/ X24/BLA

Report Date: 5/9/2016
 Revision: 1

Analysis Criteria

Design Standard: TIA/EIA-222-F
 Building Code: 2005 Connecticut State Building Code w/ 2013 CT Supplemental Code

	<u>Capacity (no ice)</u>	<u>Capacity w/ ice</u>	<u>Service</u>
Wind Speed:	85 mph	74 mph	50 mph
Basic Ice Thickness:	0 inch	0.5 inch	0 inch

Assumptions:

1. The tower was designed, manufactured, and constructed in accordance with the approved tower drawings
2. The foundation was designed and constructed based on site-specific geotechnical information.
3. Tower member and appurtenance sizes are solely based on the analysis reports provided by the client and site visit photos.
4. All tower bolted connections have been designed such that the member capacity governs.
5. Anchor rods conform to ASTM F1554 Gr. 36.

Analysis Results

Element	% Usage
Legs	80%
Diagonals	60%
Horizontals	38%
Anchor Rods	70%

Foundation Reactions (Envelope):

Total Weight (w/ ice)	273	kips
Total Shear	64	kips
Overtopping Moment	7714	kips
Compression (per leg)	400	kips
Uplift (per leg)	222	kips
Max Shear (per leg)	43	kips

W.O. Number: 8250.CT11014B
 Client: T-Mobile
 Site Name: CT014/ I-95/ X24/BLA

Report Date: 5/9/2016
 Revision: 1

Conclusions

Based on our analysis, the existing self-support tower has adequate capacity to support the proposed T-Mobile upgrade as described herein in accordance with current code requirements.

No information with regards to the foundation was made available at the time of this report. As such, the foundation has not been evaluated.

Furthermore, based on our analysis, the existing antenna support mounts have sufficient capacity to support the proposed upgrade as referenced in this report. Due to the limited information on the mount support connection to the tower, the existing connections have not been evaluated in detail. However, based on reviewing the end reactions, we believe that the connections are adequate to support the additional load due to the proposed T-Mobile installations.

This analysis is solely based on the documents referenced in this report and information provided by T-Mobile. This analysis may be affected if any assumptions are not valid or have been made in error. TECTONIC should be notified to determine the effect on the structural integrity of the tower.

Any further changes to the antenna configuration or other appurtenances should be reviewed with respect to their effect on structural loads prior to implementation.

Prepared by: Garrett Miller
 Structural Engineer

Reviewed by: Ian Marinaccio
 Structural Engineer

Approved by: 
 Edward N. Iamiceli, P.E.
 Senior Project Manager



Date: 5/9/16

TNX TOWER SUMMARY REPORT



EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11014B

CT014/I-95/X24/BLA
623 Pine Street
Bridgeport, CT 06516

May 17, 2016

EBI Project Number: 6216002399

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	8.94 %



May 17, 2016

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

Emissions Analysis for Site: CT11014B – CT014/I-95/X24/BLA

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **623 Pine Street, Bridgeport, 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 **623 Pine Street, Bridgeport, 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 (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 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.
- 4) 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.
- 5) 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.
- 6) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.



- 7) 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.
- 8) 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.
- 9) The antennas used in this modeling are the **Ericsson AIR32 B4A/B2P & 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 AIR32 B4A/B2P & AIR21 B4A/B2P** have a maximum gain of **15.9 dBd** at their main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe at 700 MHz. 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.
- 10) The antenna mounting height centerline of the proposed antennas is **180 feet** above ground level (AGL).
- 11) 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:	Ericsson AIR32 B4A/B2P	Make / Model:	Ericsson AIR32 B4A/B2P	Make / Model:	Ericsson AIR32 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	180	Height (AGL):	180	Height (AGL):	180
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(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	1.11	Antenna B1 MPE%	1.11	Antenna C1 MPE%	1.11
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):	180	Height (AGL):	180	Height (AGL):	180
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):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A2 MPE%	0.83	Antenna B2 MPE%	0.83	Antenna C2 MPE%	0.83
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):	180	Height (AGL):	180	Height (AGL):	180
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.22	Antenna B3 MPE%	0.22	Antenna C3 MPE%	0.22

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	2.16 %
Sprint	2.19 %
Clearwire	0.14 %
Sprint MW	0.14 %
Verizon	1.45 %
Unknown	1.58 %
MetroPCS	1.28 %
Site Total MPE %:	8.94 %

T-Mobile Sector 1 Total:	2.16 %
T-Mobile Sector 2 Total:	2.16 %
T-Mobile Sector 3 Total:	2.16 %
Site Total:	8.94 %

T-Mobile _ Max 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	2334.27	180	5.54	2100	1000	0.55 %
T-Mobile 1900 MHz (PCS) LTE	2	2334.27	180	5.54	1900	1000	0.55 %
T-Mobile 1900 MHz (PCS) GSM	2	1167.14	180	2.77	1900	1000	0.28 %
T-Mobile 1900 MHz (PCS) UMTS	2	1167.14	180	2.77	1900	1000	0.28 %
T-Mobile 2100 MHz (AWS) UMTS	1	1167.14	180	2.77	2100	1000	0.28 %
T-Mobile 700 MHz LTE	1	865.21	180	2.06	700	467	0.22 %
						Total:	2.16 %

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:	2.16 %
Sector 2:	2.16 %
Sector 3 :	2.16 %
T-Mobile Per Sector Maximum:	2.16 %
Site Total:	8.94 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **8.94%** 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.