

JULIE D. KOHLER

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September 29, 2014

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

Re: Notice of Exempt Modification

EMAC Communications LLC/T-Mobile co-location

Site ID CT11332C

2 Progress Avenue, Seymour CT

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, the EMAC Communications LLC owns the lattice telecommunications tower and related facility at 2 Progress Ave, Seymour Connecticut (latitude 41.391683/longitude -73.052853). T-Mobile intends to replace three antennas and related equipment at this existing telecommunications facility in Seymour ("Seymour Facility"). Please accept this letter as notification, pursuant to R.C.S.A. § 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor, Mark A. Lauretti and the property owner, Edward H MacConnie.

The existing Seymour Facility consists of a 280 foot tall lattice structure. T-Mobile plans to replace three antennas at a centerline of 247 feet. T-Mobile will also add an equipment cabinet, install three RRUs (remote radio units) on a proposed H-frame, and reuse existing coax cable all within the compound area. See the plans revised to August 15, 2014 attached hereto as Exhibit A. The existing Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated September 8, 2014 attached hereto as Exhibit B.

¹ The online CSC database does not include a Docket or Petition approval for this facility, it does however include a notice of intent captioned EM-SPRINT-124-121015A.



September 29, 2014 Site ID CT11332C Page 2

The planned modifications to the Seymour 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 replacement antennas will be installed at the 247 foot level of the 280 foot lattice tower. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.
- 2. The installation of the T-Mobile equipment in the existing compound, as reflected on page 2 of Exhibit B, will not require an extension of the site boundaries. T-Mobile's proposed equipment will be located entirely within the existing compound area.
- 3. The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.
- 4. The operation of the replacement antennas will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated September 29, 2014 T-Mobile's operations would add 1.57% 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 45.97% 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 antennas and equipment at the Seymour Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, T-Mobile shall commence construction approximately sixty days from the date of the Council's notice of acknowledgement.

Sincerely,

Julie D. Kohler, Esq.

cc: City of Seymour, Mayor Mark A. Lauretti Edward H MacConnie Sheldon Freincle, NSS

EXHIBIT A



KEY PLAN

PROJECT: L700

CONFIGURATION

LE REV A	08.15.14
	1

GROUP 1340 Centre Street

Suite 212 Newton, MA 02459 Office: 617-965-0789 Fax: 617-213-5056

LEASE EXHIBIT SITE NUMBER:

CT11332C

SITE NAME: DERBY/RT34

SITE ADDRESS: 2 PROGRESS AVE SEYMOUR, CT

DRAWN BY: MB CHECKED BY:SM

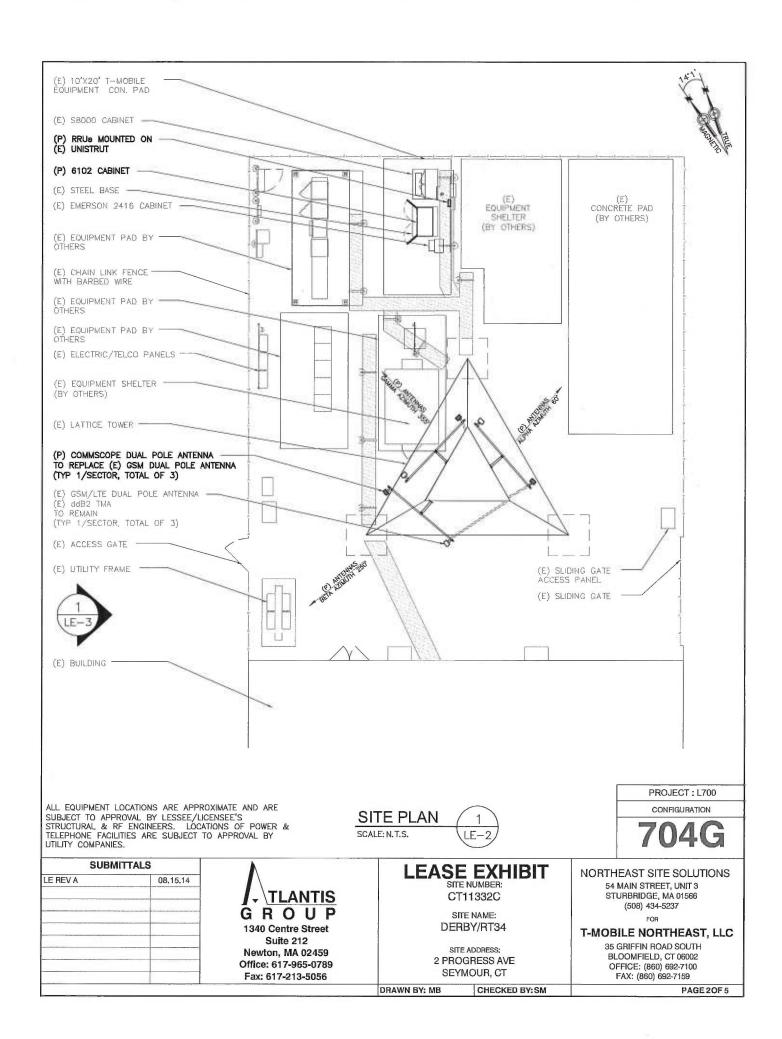
NORTHEAST SITE SOLUTIONS

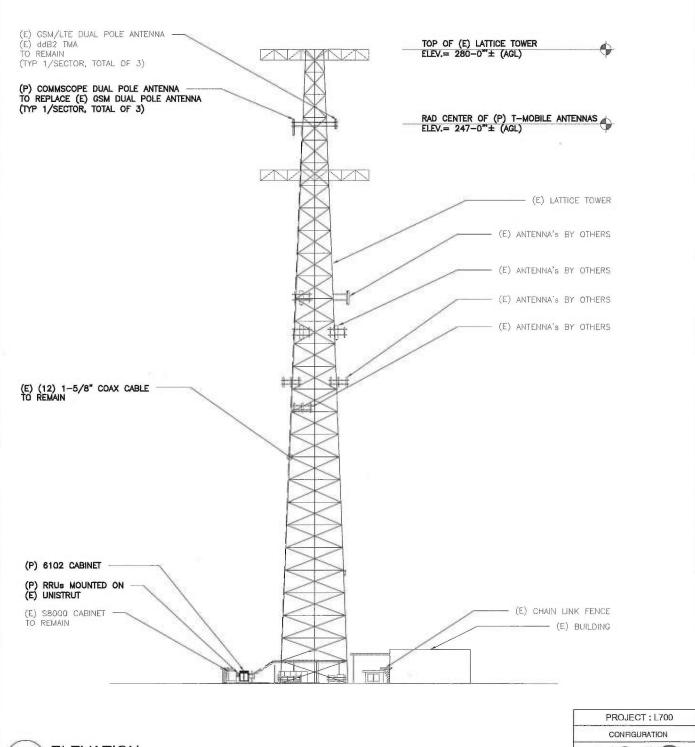
54 MAIN STREET, UNIT 3 STURBRIDGE, MA 01566 (508) 434-5237

T-MOBILE NORTHEAST, LLC

35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 OFFICE: (860) 692-7100 FAX: (860) 692-7159

PAGE 1 OF 5





ELEVATION N.T.S. SUBMITTALS

LEASE EXHIBIT

CT11332C

SITE NAME: DERBY/RT34

SEYMOUR, CT

SITE ADDRESS:

CHECKED BY: SM

2 PROGRESS AVE

DRAWN BY: MB

NORTHEAST SITE SOLUTIONS

54 MAIN STREET, UNIT 3 STURBRIDGE, MA 01566 (508) 434-5237

T-MOBILE NORTHEAST, LLC

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PAGE 3OF 5

LE REV A	08.15.14

TLANTIS GROUP 1340 Centre Street

Suite 212 Newton, MA 02459 Office: 617-965-0789 Fax: 617-213-5056

EXHIBIT B

STRUCTURAL ANALYSIS REPORT SELF SUPPORT TOWER



Prepared For:



35 Griffin Road South Bloomfield, CT 06002



Tower Rating

Tower: Pass (88.1%) Foundation: N/A

Sincerely, Atlantis Group, Inc. 9-8-2014



Ahmet Colakoglu, PE CT Professional Engineer License No: 27057

Site ID: CT11332C Site Name: Derby/RT34 2 Progress Ave, Seymour, CT 06483

September 8, 2014

Prepared By:

Atlantis Group, Inc. 1340 Centre Street, Suite 212 Newton, Massachusetts 02459

Phone: 617-965-0789, Fax: 617-213-5056

CT11332C-Structural Analysis

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- 2.0 EXISTING AND PROPOSED APPURTENANCES
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A - SOFTWARE OUTPUT

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CT11332C-Structural Analysis

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the existing 280 feet tall self-support tower, located at 2 Progress Ave, Seymour, CT 06483 for the additions and alterations proposed by T-Mobile.

The structural analysis of the site is based on the following documents provided to us:

- Structural Analysis Report prepared by KMB DESIGN GROUP, dated 02/28/2013.
- Existing and proposed antenna information provided by T-Mobile.

1.1 STRUCTURE

The structure is a 280 feet tall, triangular based self-support tower. Truss legs and solid rod legs are X-braced along its elevation. The tower is 5 feet wide at the top and 28 feet wide at the bottom. Please refer to the software output in Appendix A, for tower geometry, member sizes and other details.

2.0 EXISTING AND PROPOSED APPURTENANCES

Antennas and Appurtenances:

Existing Configuration of T-MOBILE Appurtenances:

SECTOR	RAD CENTER (FT)		ANTENNA & TMA		FEED LINES
ALPHA	247	GSM	(1)RR90_17_02DP	(1) T-Frame	
		GSM	(1)RR90_17_02DP	Mount	
		TMA	(2) dd B2		/12\ 1 5/"
BETA	247	GSM	(1)RR90_17_02DP	(1) T-Frame	(12) 1-5/8"
		GSM	(1)RR90_17_02DP	Mount	Coax
		TMA	(2) dd B2		
GAMMA	247	GSM	(1)RR90_17_02DP	(1) T-Frame	
		GSM	(1)RR90_17_02DP	Mount	
		TMA	(2) dd B2		

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CT11332C-Structural Analysis

Proposed and Final Configuration of T-MOBILE Appurtenances:

SECTOR	RAD CENTER (FT)	ANTENNA & TMA		MOUNT	FEED LINES
ALPHA	247	GSM/LTE	(1)RR90_17_02DP	(1) T-Frame	
		LTE	(1) LNX-6515DS-VTM	Mount	
		TMA	(1) dd B2		/12\ 1 5/"
BETA	247	GSM/LTE	(1) RR90_17_02DP	(1) T-Frame	(12) 1-¾" Coax
		LTE	(1) LNX-6515DS-VTM	Mount	Coax
		TMA	(1) dd B2		
GAMMA	247	GSM/LTE	(1) RR90_17_02DP	(1) T-Frame	
		LTE	(1) LNX-6515DS-VTM	Mount	
		TMA	(1) dd B2		

Existing and Remaining Appurtenances by Others:

RAD CENTER (FT)	ANTENNA & TMA	MOUNT	FEED LINES
280	(1) Beacon	9-Arm Halo	(1) 1"
	(1) Lightning Rod Ext.	Mount with	(2) 1 5/8"
	(1) DB420	pipe	
	(1) DB 586-XC	mounts	
	(1) Yagi		
245	(1) DB420		(1) 1 5/8"
235	(1) DB225-2-F	9-Arm Halo	(1) 1 5/8"
		Mount with	
		pipe	
		mounts	
200	(9) DB980H120A-M	(3)T-Frame	(9) 1 5/8"
		Mount	
190	(9) DB980H120A-M	(3)T-Frame	(9) 1 5/8"
		Mount	
180	(9) DB980H120A-M	(3)T-Frame	(9) 1 5/8"
		Mount	
173.5	(3) RRH 1900	Tower Leg	
	(3) RRH 1900		
170.5	(3) APXVSPP-18-C-A20	(1)T-Frame	(3) Hybriflex

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n g e		CT11332C-S	tructural Analys
		Mount	
160	(6) 7770	(1)T-Frame	(6) 1 5/8"
	(4) LGP 214 TMA	Mount	(1) Fiber
	(6) 7020 RET Unit		
	(3) 72" x 11.8" x 5.9" Panel Antenna		
	(6) Ericsson RRH700		
	(1) Racap DC6-48-60-18-8F		
150	(3) RFS APXV18-206517		(3) 1 5/8"
140	(6)	(3) 12' V	(12) 1 5/8"
	(3)	Frame	
	(3)		
50	(1) GPS		
	(1) Yagi		

3.0 CODES AND LOADING

The tower was analyzed per ANSI/TIA-222-F as referenced by the 2005 Connecticut Building Code with 2013 Supplement, which is the adopted building code in the county. The following wind loading was used in compliance with the standard for New Haven County, CT.

- Basic wind speed 85 mph (W) without ice.
- Basic wind speed 38 mph (W_i) with 3/4" radial and escalating ice.

The following load combinations were used with wind blowing at 0° , 60° and 90° measured from a line normal to the face of the tower.

- D+W
- D + W_i + I

D: Dead Load

W_i: Wind Load with ice W: Wind Load, without ice

I: Ice Gravity Load



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CT11332C-Structural Analysis

4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

The analysis is based on the information provided to Atlantis Group and is assumed to be current and correct. Unless otherwise noted, the structure and the foundation system are assumed to be in good condition, free of defects and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. Atlantis Group will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance. Contractor should inspect the condition of the existing structure, mounts and connections and notify Atlantis Group for any discrepancies and deficiencies before proceeding with the construction.

The analysis does not include a qualification of the mounts attached on the structure or their connections. The analysis is performed to verify the capacity of the main structural members, which is the current practice in the tower industry.

The evaluation results presented in this report are only applicable for the previously mentioned existing and proposed additions and alterations. Any deviation of the proposed equipment and placement, etc., will require Atlantis Group to generate an additional structural evaluation.

5.0 ANALYSIS and ASSUMPTIONS

The tower was analyzed by utilizing tnx Tower, a non-linear 3-Dimensional finite element software, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix-A of this report.

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CT11332C-Structural Analysis

6.0 RESULTS AND CONCLUSION

<u>Tower:</u> The existing tower is found to have **adequate** structural capacity for the proposed loading by T-Mobile. For the aforementioned load combinations and as a maximum, the tower leg between 0-20 feet will be stressed to 88.1% of its capacity. Maximum usage of tower diagonals is 84.9 %.

Information regarding the existing soils was not available at the time of this analysis, thus an analysis could not be completed. Based on a reactions comparison tower foundation system may be assumed to have **adequate** capacity.

Reactions:

Maximums	Atlantis Analysis	KMB Structural Analysis
Leg Compression (kips)	702	717
Leg Uplift (kip)	624	639
Leg Shear (kips)	78	80
Total Moment (kip*ft)	16223	16601

Therefore, the proposed additions and alterations by T-Mobile can be implemented as intended with the conditions outlined in this report.

Should you have any questions or need any clarifications about this report, please contact Ahmet Colakoglu at (617) 965-0789.

Sincerely,

Atlantis Group

Ahmet Colakoglu, PE

Connecticut Professional Engineer

License No: 27057

1340 Centre Street, Suite 212 Newton, Massachusetts 02459 Phone: 617-965-0789

Fax: 617-213-5056

EXHIBIT C



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

T-Mobile Existing Facility

Site ID: CT11332C

Derby / Rt 34

2 Progress Avenue Seymour, CT 06483

September 29, 2014

EBI Project Number: 62144664

Site Compliance	Summary
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	45.97 %



September 29, 2014

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

Emissions Analysis for Site: CT11332C - Derby / Rt 34

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **2 Progress Avenue**, **Seymour**, **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.

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 (μ W/cm²). The general population exposure limit for the 700 MHz Band is 467 μ W/cm², and the general population exposure limit for the PCS and AWS bands is 1000 μ W/cm². 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 **2 Progress Avenue, Seymour, 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 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.

21 B Street Burlington, MA 01803 Tel: (781) 273.2500 Fax: (781) 273.3311



- 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 **Andrew 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 **Andrew 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 **247 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:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Andrew RR90_17_02DP	Make / Model:	Andrew RR90_17_02DP	Make / Model:	Andrew RR90_17_02DP
Gain:	14.4 dBd	Gain:	14.4 dBd	Gain:	14.4 dBd
Height (AGL):	247	Height (AGL):	247	Height (AGL):	247
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):	3,505.81	ERP (W):	3,505.81	ERP (W):	3,505.81
Antenna A1 MPE%	0.41	Antenna B1 MPE%	0.41	Antenna C1 MPE%	0.41
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):	247	Height (AGL):	247	Height (AGL):	247
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%	0.11	Antenna B2 MPE%	0.11	Antenna C2 MPE%	0.11

Site Composite MPE%		
Carrier	MPE%	
T-Mobile	1.57	
Mike Gardella	0.63 %	
Town	3.13%	
Verizon Wireless	22.96%	
AT&T	13.81%	
Sprint	3.87%	
Site Total MPE %:	45.97 %	

T-Mobile Sector 1 Total:	0.52 %
1-Modic Sector 1 Total.	0.52 70
T-Mobile Sector 2 Total:	0.52 %
T-Mobile Sector 3 Total:	0.52 %

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Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	0.52 %
Sector 2:	0.52 %
Sector 3:	0.52 %
T-Mobile Total:	1.57 %
Site Total:	45.97 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **45.97**% 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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Scott Heffernan

RF Engineering Director

EBI Consulting

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