

EM-CING-055-121205

HPC Wireless Services
100 Main Rd.

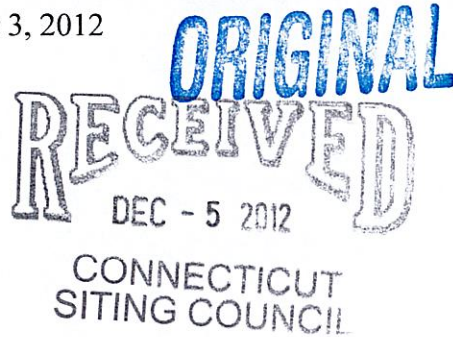
CT, 06811
97.1112



December 3, 2012

VIA OVERNIGHT COURIER

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Linda Roberts, Executive Director



Re: New Cingular Wireless PCS, LLC – Exempt Modification
113 Brush Hill Road, Goshen

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of New Cingular Wireless PCS, LLC ("AT&T"). AT&T is making modifications to certain existing sites in its Connecticut system in order to implement LTE technology. Please accept this letter and attachments as notification, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies ("R.S.C.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the First Selectman of the Town of Goshen.

AT&T plans to modify the existing wireless communications facility owned by SBA Communications, and located at 113 Brush Hill Road, Goshen (coordinates 41° -47'-49.81" N, 73°-13'-18.01" W). Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration. Also included is a power density report reflecting the modification to AT&T's operations at the site.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. AT&T will add three (3) LTE panel antennas and six (6) RRUs (remote radio units) on new mounts attached to the existing Platform, and a Surge Arrestor on a new mounting pipe attached to the Platform support arm, all at a centerline height of approximately 172.5'. AT&T will also place DC power and fiber runs along the existing

coaxial cable run. These changes will not extend the height of the approximately 193.5' structure.

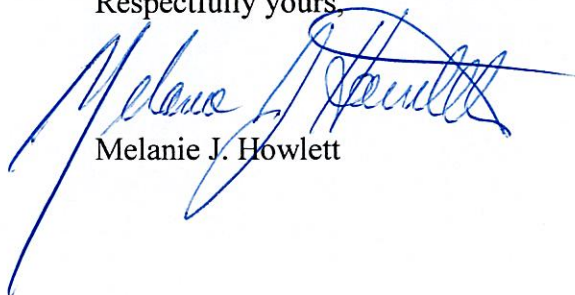
2. AT&T will place related equipment in an existing Equipment Shelter and mount a new GPS antenna on the existing Equipment Shelter. These changes will be within the existing compound and will have no effect on the site boundaries.

3. The proposed changes will not increase the noise level at the existing facility by six (6) decibels or more. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by C Squared Systems, LLC, AT&T's operations at the site will result in a power density of approximately 1.07%; the combined site operations will result in a total power density of approximately 12.71%.

Please contact me by phone at (203) 610-1071, or by e-mail at mjhowlett@optonline.net, if there are any questions concerning this matter. Thank you for your consideration.

Respectfully yours,



Melanie J. Howlett

Attachments

cc: Honorable Wilrose M. Duquette, First Selectman, Town of Goshen
Woodridge Sewer District (underlying property owner)

Technical drawing of the 1000 Series Pipe Mounting Bracket Assembly. The drawing includes three views: a front view, a side view, and a top view. The front view shows a bracket with a central mounting hole and two side holes. The side view shows the bracket's profile with a dimension of 23.5" indicated. The top view shows the bracket's footprint with a dimension of 9.7" indicated. Labels include "PIPE MOUNTING BRACKET ASSEMBLY" and "FRONT" for the front view, "SIDE" for the side view, and "TOP" for the top view.

Diagram illustrating a rack-mounted unit (RIDS 11 UNIT) connected to a DDU (Data Distribution Unit) and a POWER CABINET. The unit is labeled "RIDS 11 UNIT" and "TYPICAL (?) PER SECTOR". It is connected to the DDU and the POWER CABINET via a MAIN CABLE.

REQUIREMENTS LIST			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MADE: ERICSSON MODEL: RNS 11	17.9" L x 17.2" W x 7.7" D	BAND 4, 44 LBS. BAND 12, 50 LBS.	AIRBORNE: 18" MIN. 12" MIN. 0" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AIRFT
1. CONTRACTOR TO MANAGER PRIOR TO ORDERING.

NOTES:

1. PROVIDE MOUNTING PIPES, CROSSOVERS & ASSOCIATED HARDWARE TO COMPLETE THE PROPOSED UPGRADE.
2. REFER TO STRUCTURAL ANALYSIS AND FINAL AIAI RIDS PRIOR TO INSTALLATION OF ANTENNAS AND COAX.

AAT 11C SINGLE ANTENNA (PAPER 002-48-40-18-27) MOUNTED TO SUPPORT POLE

EXISTING MONOPOL TOWER

AAT 11C PANEL ANTENNA MOUNTED TO 30'-2 TOR

AAT ANTENNA/HR/V/2.5 TOR 31'-2 TOR

AAT 11C RUN (DESIGN 002-48-40-18-27) 100 WATT, 100 MHz, 2 SECTORS / 2 TOTAL, REFLECT TO MONITOR ORBIT 5/10-2

Diagram illustrating the antenna system layout for the R/V, showing various antenna types and their positions relative to the vessel's centerline.

Antenna types and positions shown:

- 21W LIT (LIT) (Top Left)
- 21W LIT (LIT) (Top Right)
- 21W LIT (LIT) (Bottom Left)
- 21W LIT (LIT) (Bottom Right)
- 21W LIT (LIT) (Left Side)
- 21W LIT (LIT) (Right Side)
- 21W LIT (LIT) (Center)
- 21W LIT (LIT) (Far Left)
- 21W LIT (LIT) (Far Right)

Scale: 0 to 150 feet.

Legend:

- 21W LIT (LIT) (Top Left)
- 21W LIT (LIT) (Top Right)
- 21W LIT (LIT) (Bottom Left)
- 21W LIT (LIT) (Bottom Right)
- 21W LIT (LIT) (Left Side)
- 21W LIT (LIT) (Right Side)
- 21W LIT (LIT) (Center)
- 21W LIT (LIT) (Far Left)
- 21W LIT (LIT) (Far Right)

[illegible]

DESIGNED BY:	DEB
DRAWN BY:	PLO
CHECKED BY:	CFC

[illegible]

(202) 462-8388 • Fax
15-3 North Bedford Road
Bedford, CT 06408
www.Castling.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY LITE UPGRADE
CT1238
GOSHEN CT BRUSH HILL

113 BRUSH HILL ROAD
GOSHEN, CT 06736

DATE:	11/26/12
SCALE:	AS NOTED
JOB NO.	12063.C036

Q-2



C Squared Systems, LLC
65 Dartmouth Drive, Unit A3
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions



at&t

CT1238

(Goshen CT Brush Hill)

113 Brush Hill Road, Goshen, CT 06756

September 28, 2012

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the monopole tower located at 113 Brush Hill Road in Goshen, CT. The coordinates of the tower are 41° 47' 49.79" N, 73° 13' 17.89" W.

AT&T is proposing the following modifications:

- 1) Install three multi-band (700/850/1900/2100 MHz) antennas for their LTE network (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{H^2 + V^2}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical patterns of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm ²)	Limit	%MPE
<i>Cingular GSM</i>	175	1930	2	427	0.0100	1.0000	1.00%
<i>Cingular GSM</i>	175	880	4	296	0.0139	0.5867	2.37%
<i>Cingular UMTS</i>	175	880	1	296	0.0035	0.5867	0.59%
Sprint	195	1962.5	11	213	0.0222	1.0000	2.22%
Verizon PCS	185	1970	12	485	0.0611	1.0000	6.11%
Verizon cellular	185	875	9	200	0.0189	0.5833	3.24%
Verizon Microwave	181	5400	1	53.95	0.0006	1.0000	0.06%
AT&T UMTS	172.5	880	2	565	0.0014	0.5867	0.23%
AT&T UMTS	172.5	1900	2	875	0.0021	1.0000	0.21%
AT&T LTE	172.5	734	1	1313	0.0016	0.4893	0.32%
AT&T GSM	172.5	880	1	283	0.0003	0.5867	0.06%
AT&T GSM	172.5	1900	4	525	0.0025	1.0000	0.25%
Total							12.71%

Table 1: Carrier Information^{1 2 3}

¹ The existing CSC filing for Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 7/26/2012. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

² In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

³ Antenna height listed for AT&T is in reference to the FDH Engineering, Inc. Structural Analysis dated September 26, 2012.

5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **12.71% of the FCC limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Daniel L. Goulet
C Squared Systems, LLC

September 28, 2012

Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure⁴

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure⁵

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

⁴ Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

⁵ General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

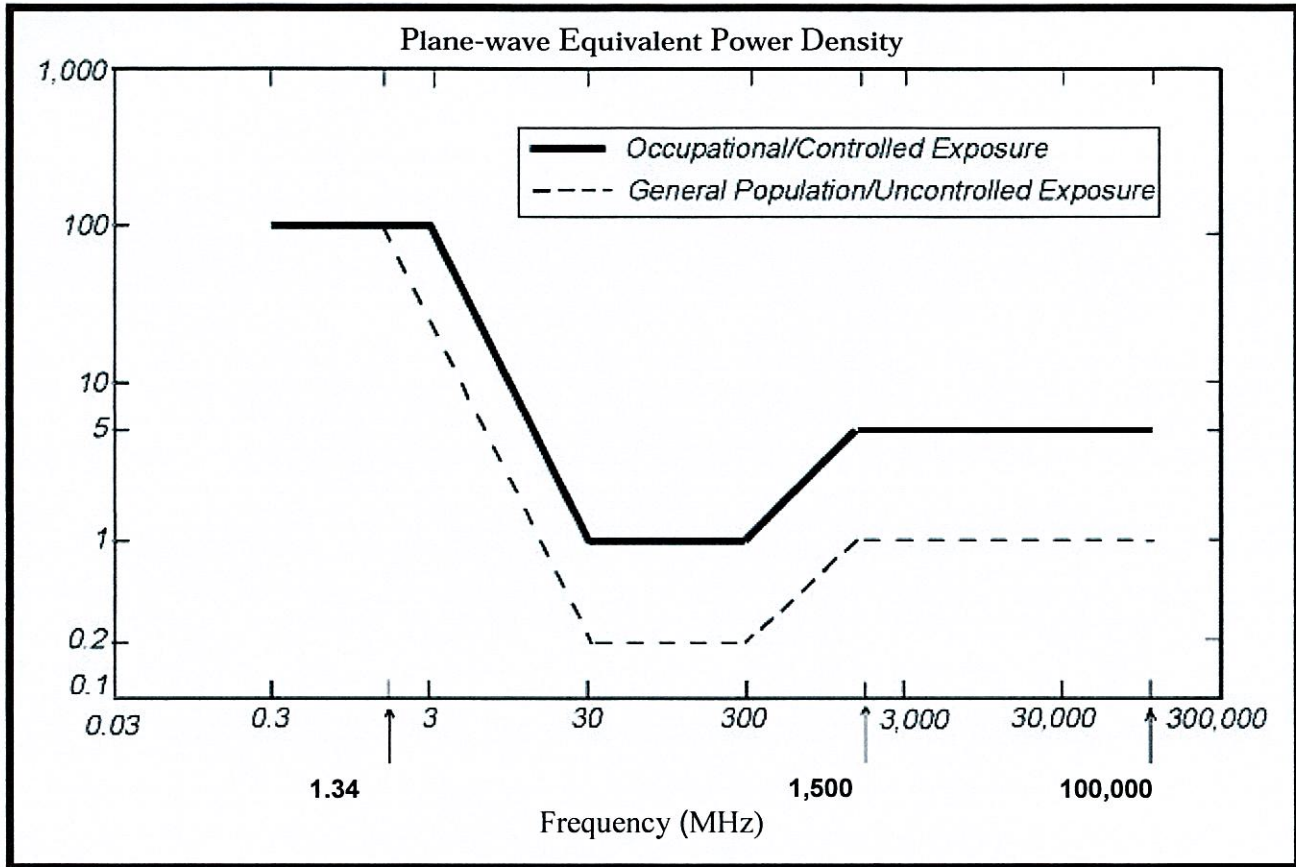
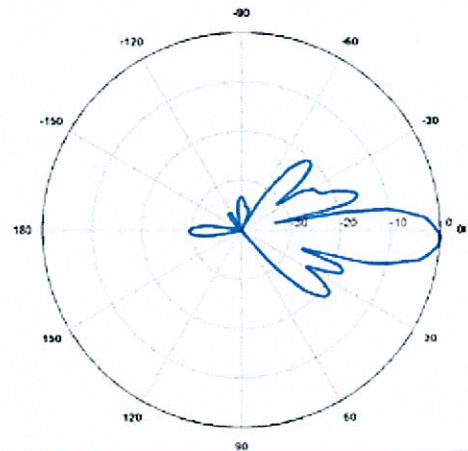


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

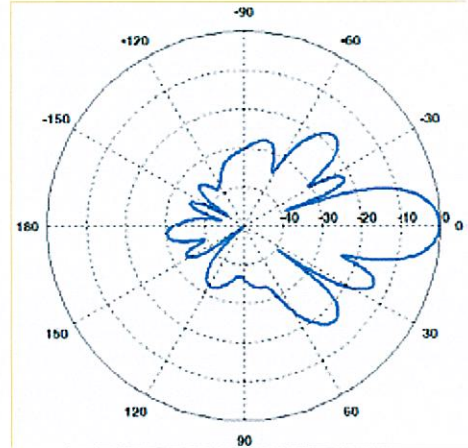
700 MHz

Manufacturer: KMW
 Model #: AM-X-CD-16-65-00T-RET
 Frequency Band: 698-894 MHz
 Gain: 13.4 dBd
 Vertical Beamwidth: 12.3°
 Horizontal Beamwidth: 65°
 Polarization: Dual Slant $\pm 45^\circ$
 Size L x W x D: 72.0" x 11.8" x 5.9"



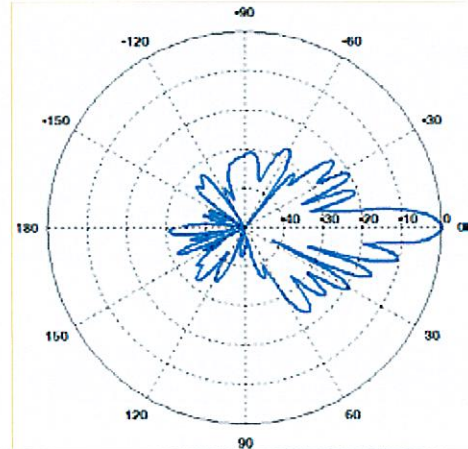
850 MHz

Manufacturer: Powerwave
 Model #: 7770.00
 Frequency Band: 824-896 MHz
 Gain: 11.5 dBd
 Vertical Beamwidth: 15°
 Horizontal Beamwidth: 82°
 Polarization: Dual Linear $\pm 45^\circ$
 Size L x W x D: 55.0" x 11.0" x 5.0"



1900 MHz

Manufacturer: Powerwave
 Model #: 7770.00
 Frequency Band: 1850-1990 MHz
 Gain: 13.4 dBd
 Vertical Beamwidth: 7°
 Horizontal Beamwidth: 86°
 Polarization: Dual Linear $\pm 45^\circ$
 Size L x W x D: 55.0" x 11.0" x 5.0"





FDH Engineering, Inc., 6521 Meridien Drive Raleigh, NC 27616, Ph. 919.755.1012

**Structural Analysis for
SBA Network Services, Inc.**

193.5' Monopole Tower

**SBA Site Name: Goshen 3
SBA Site ID: CT12210-A
AT&T Site ID: CT1238
AT&T Site Name: Goshen CT Brush Hill**

FDH Project Number 12-05182E S3

Analysis Results

Tower Components	84.2%	Sufficient
Foundation	80.8%	Sufficient

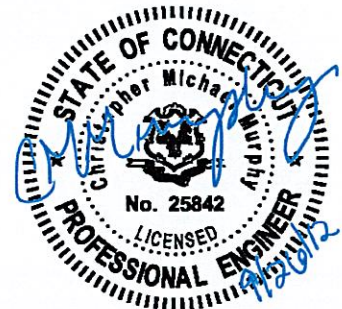
Prepared By:

Logan Poe, EI
Project Engineer

Reviewed By:

Christopher M Murphy, PE
President
CT PE License No. 25842

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012
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September 26, 2012

Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the 2005 Connecticut Building Code

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EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in Goshen, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F and the 2005 Connecticut Building Code (CBC)*. Information pertaining to the existing/proposed antenna loading, foundation dimensions, current tower geometry, geotechnical data, and member sizes was obtained from:

- ☐ Engineered Endeavors, Inc. (Project No. 12782 Rev.II) Design Calculations for a Spread Footing Foundation dated July 28, 2004
- ☐ Engineered Endeavors, Inc. (Project No. 12782 Rev. II) original design drawings dated July 28, 2004
- ☐ Dr. Clarence Welti, PE, PC Geotechnical Engineering (Project Name Sprint Site CT33XC108) Geotechnical Study dated December 18, 2003
- ☐ FDH, Inc. (Job No. 09-11016T T1) TIA Inspection Report dated December 1, 2009
- ☐ SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and the 2005 Connecticut Building Code is 80 mph without ice and 28 mph with 1" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from AT&T in place at 172.5 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and the *2005 Connecticut Building Code* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Engineered Endeavors, Inc. Project No. 12782 Rev. II), the foundation should have the necessary capacity to support both the proposed and existing loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Engineering, Inc. is accurate (i.e., the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the *TIA/EIA-222-F* standards and the *2005 Connecticut Building Code* are met with the existing and proposed loading in place, we have the following recommendations:

1. The proposed coax should be installed inside the pole's shaft.
2. RRU/RRH Stipulation: The equipment may be installed in any arrangement as determined by the client.
3. The existing TMAs should be installed directly behind the existing and proposed panel antennas

APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1**. *If the actual layout determined in the field deviates from the layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Coax and Lines ¹	Carrier	Mount Elevation (ft)	Mount Type
195	(3) RFS APXVSP18-C-A20 w/Mount Pipe (3) ALU 1900 MHz RRUs (3) ALU 800 MHz RRUs (3) ALU 800 MHz Filters (4) RFS ACU-A20-N RETs	(3) 1-1/4"	Sprint	195.25	(1) 13' LP Platform
186.25	(4) Antel LPA-80080/6CF w/Mount Pipe (1) Andrew FPA5250 Dish (1) GPS	(18) 1-5/8" (2) 1/2"	Verizon	185.25	(1) 12.5' LP Platform
185	(3) Antel BXA-70063-6CF-EDIN w/Mount Pipe (3) Antel BXA-171063-12BF w/Mount Pipe (2) Antel LPA-80063-6CF w/Mount Pipe				
172.5	(12) Powerwave 7770.00 w/Mount Pipe (12) Powerwave LGP13519 Diplexers (12) Powerwave LGP21401 TMAs	(12) 1-5/8"	AT&T	170	(1) 12.5' LP Platform

1. All coax are installed inside the tower shaft unless noted.

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines*	Carrier	Mount Elevation (ft)	Mount Type
172.5	(6) Powerwave 7770.00 w/Mount Pipe (3) KMW AM-X-CD-16-65-00T-RET w/Mount Pipe (6) Powerwave LGP13519 Diplexers (12) Powerwave LGP21401 TMAs (6) Ericsson RRUS11 RRUs (1) Andrew ABT-DF-DMADBH Surge Arrestor (1) Raycap DC6-48-60-18-8F Surge Arrestor	(12) 1-5/8" (1) 7/16" Fiber ¹ (2) 3/4" DC Power ¹	AT&T	170	(1) 12.5' LP Platform

1. The proposed (1) 7/16" fiber cable and (2) 3/4" DC Power cables will be inside (1) 3" conduit.

RESULTS

The following yield strength of steel for individual members was used for analysis:

Table 2 - Material Strength

Member Type	Yield Strength
Tower Shaft Sections	65 ksi
Base Plate	60 ksi
Anchor Bolts	75 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. *Note: Capacities up to 100% are considered acceptable.* **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH Engineering, Inc. should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information

Table 3 - Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
L1	193.5 - 142.74	Pole	TP38.2813x22.5x0.25	68.0	Pass
L2	142.74 - 94.2	Pole	TP40.875x36.3729x0.375	72.7	Pass
L3	94.2 - 46.68	Pole	TP49.0938x39.6499x0.4375	74.5	Pass
L4	46.68 - 0	Pole	TP57x47.0383x0.5	71.6	Pass
		Anchor Bolts	(24) 2.25" \varnothing w/66" BC	58.2	Pass
		Base Plate	PL 72" \varnothing x 2.25" Thk.	84.2	Pass

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Axial	50 k	51 k
Shear	27 k	34 k
Moment	3,815 k-ft	4,719 k-ft

GENERAL COMMENTS

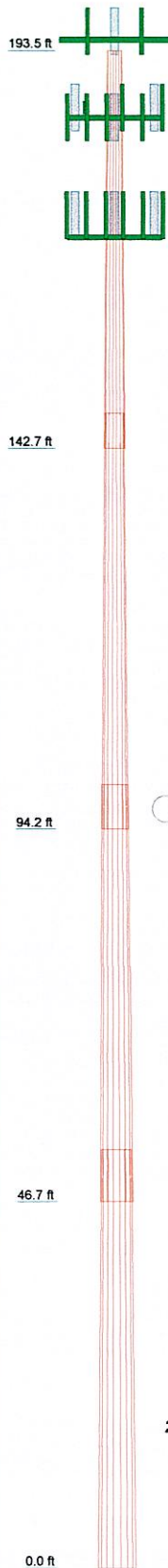
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Engineering, Inc. should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Engineering, Inc.

APPENDIX

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	50.79	18	0.2500	4.58	22.5000	32.2100		3.7
2	53.13	18	0.3750	5.67	30.8344	40.8700	A572-65	7.6
3	53.17	18	0.4375	6.67	39.0490	49.0800		11.0
4	53.33	18	0.5000	46.9466	57.0000			14.8
								37.1



DESIGNED APPURTENANCE LOADING

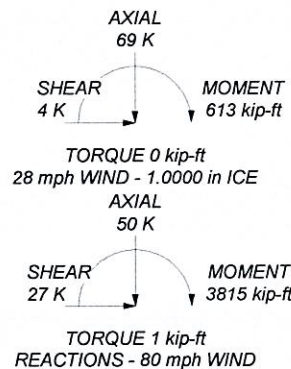
TYPE	ELEVATION	TYPE	ELEVATION
(1) 13' Platform Mount	195.25	BXA-171063-12BF w/Mount Pipe	185.25
APXVSP18-C-A20 w/Mount Pipe	195.25	BXA-171063-12BF w/Mount Pipe	185.25
APXVSP18-C-A20 w/Mount Pipe	195.25	(2) LPA-80063/6CF w/ Mount Pipe	185.25
APXVSP18-C-A20 w/Mount Pipe	195.25	GPS	185.25
1900 MHz RRU	195.25	FPA5250	185.25
1900 MHz RRU	195.25	(4) LGP21401 TMA	170
1900 MHz RRU	195.25	(4) LGP21401 TMA	170
800 MHz RRU	195.25	(4) LGP21401 TMA	170
800 MHz RRU	195.25	(2) RRUS 11	170
800 MHz RRU	195.25	(2) RRUS 11	170
800 MHz Filter	195.25	(2) RRUS 11	170
800 MHz Filter	195.25	ABT-DFDM-ADBH	170
800 MHz Filter	195.25	DC6-48-60-18-8F Surge Arrestor	170
ACU-A20-N RET	195.25	(1) 12.5 Platform Mount	170
ACU-A20-N RET	195.25	(2) 7770.00 w/Mount Pipe	170
(2) ACU-A20-N RET	195.25	(2) 7770.00 w/Mount Pipe	170
Empty Pipe Mount	195.25	(2) 7770.00 w/Mount Pipe	170
Empty Pipe Mount	195.25	AM-X-CD-16-65-00T-RET w/ Mount Pipe	170
Empty Pipe Mount	195.25	AM-X-CD-16-65-00T-RET w/ Mount Pipe	170
Lightning Rod	193.5	AM-X-CD-16-65-00T-RET w/ Mount Pipe	170
(1) 12.5 Platform Mount	185.25	AM-X-CD-16-65-00T-RET w/ Mount Pipe	170
(2) LPA-80080/6CF w/ Mount Pipe	185.25	(2) Powerwave LGP13519 Diplexers	170
(2) LPA-80080/6CF w/ Mount Pipe	185.25	(2) Powerwave LGP13519 Diplexers	170
BXA-70063-6CF-EDIN w/Mount Pipe	185.25	(2) Powerwave LGP13519 Diplexers	170
BXA-70063-6CF-EDIN w/Mount Pipe	185.25	(2) Powerwave LGP13519 Diplexers	170
BXA-70063-6CF-EDIN w/Mount Pipe	185.25		
BXA-171063-12BF w/Mount Pipe	185.25		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 74.5%



 FDH Engineering 6521 Meridian Drive Raleigh, NC 27616 Phone: (919)-755-1012 FAX: (919)-755-1031	Job: Goshen 3, CT12210-A		
	Project: 12-05182E S3		
	Client: SBA	Drawn by: Logan Poe	App'd:
	Code: TIA/EIA-222-F	Date: 09/27/12	Scale: NTS
	Path:		