



EM-CING-024-090213

raising the bar

New Cingular Wireless PCS, LLC  
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Rocky Hill, Connecticut 06067-3900  
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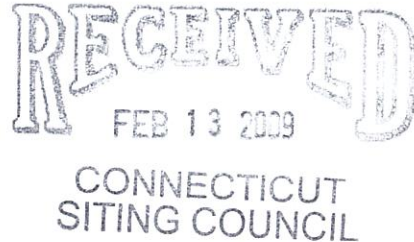
Steven L. Levine  
Real Estate Consultant

HAND DELIVERED

ORIGINAL

February 11, 2009

Honorable Daniel F. Caruso, Chairman,  
and Members of the Connecticut Siting Council  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051



Re: New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 123 Palmer Road, Chaplin (owner, Verizon Wireless)

Dear Chairman Caruso and Members of the Council:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") capability, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which 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 chief elected official of the municipality in which the affected cell site is located.

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile (GSM) communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in AT&T's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

The changes to the facility do not constitute modifications 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 or altered. 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. The height of the overall structure will be unaffected.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than some enlarged equipment pads as may be noted in the attachments.
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.
4. Radio frequency power density may increase due to use of one or more GSM channel for UMTS transmissions. However, the changes 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.

For the foregoing reasons, New Cingular Wireless respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (860) 513-7636 with questions concerning this matter. Thank you for your consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read 'SL Levine', is positioned above the printed name.

Steven L. Levine  
Real Estate Consultant

Attachments

**NEW CINGULAR WIRELESS  
Equipment Modification**

123 (a/k/a Lot 54) Palmer Road, Chaplin  
Site Number 1153  
Docket No. 211 and Exempt Modification approved 1/04

**Tower Owner/Manager:** Verizon Wireless

**Equipment Configuration:** Monopole

**Current and/or Approved:** Nine CSS DUO-1417-8686 panel antennas @ 127ft AGL  
Six TMA's and three diplexers @ 127 ft  
Nine runs 1 5/8 inch coax cable  
Equipment Shelter

**Planned Modifications:** Remove all existing antennas, TMA's, and diplexers  
Install six Powerwave 7770 antennas (or equivalent) @ 127 ft  
Install six TMA's and six diplexers @ 127 ft  
Install three additional runs 1 5/8 inch coax

**Power Density:**

Worst-case calculations for existing wireless operations at the site indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the tower, of approximately 19.5 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 23.6 % of the standard.

**Existing**

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm <sup>2</sup> )	Standard Limits (mW/cm <sup>2</sup> )	Percent of Limit
Other Users *							15.31
Cingular GSM *	127	1900 Band	2	427	0.0190	1.0000	1.90
Cingular GSM *	127	880 - 894	2	296	0.0132	0.5867	2.25
<b>Total</b>							<b>19.5%</b>

\* Per CSC records

## Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm <sup>2</sup> )	Standard Limits (mW/cm <sup>2</sup> )	Percent of Limit
Other Users *							15.31
Cingular UITS	127	880 - 894	1	500	0.0111	0.5867	1.90
Cingular GSM *	127	1900 Band	2	427	0.0190	1.0000	1.90
Cingular GSM *	127	880 - 894	4	296	0.0264	0.5867	4.50
<b>Total</b>							<b>23.6%</b>

\* Per CSC records

### Structural information:

The attached structural analysis demonstrates that the tower and foundation have sufficient structural capacity to accommodate the proposed equipment modifications. (Natcomm Consulting Engineers, 2/10/09)



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Rocky Hill, Connecticut 06067-3900  
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**Steven L. Levine**  
Real Estate Consultant

February 11, 2009

Robert E. Dubos, 1<sup>st</sup> Selectman  
Town of Chaplin  
Town Hall 495 Phoenixville Rd.  
Chaplin, CT 06235

Re: Telecommunications Facility – 123 Palmer Road

Dear Mr. Dubos:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") capability, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("Cingular") will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies ("R.C.S.A.") Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review Cingular's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes Cingular's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at (860) 513-7636 or Mr. Derek Phelps, Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Steven L. Levine  
Real Estate Consultant

Enclosure





## *Structural Analysis Report*

*147' Existing Monopole*

*Cingular Wireless/AT&T Site Ref: 1153*

*123 Palmer Road  
Chaplin, CT*

*Natcomm Project No. 08136-CO.13*

*~~Date: January 20, 2009~~*

*Rev. 1 ~ February 10, 2009*



**Prepared for:**

**Verizon Wireless  
99 East River Road, 9<sup>th</sup> Floor  
East Hartford, CT 06108**

p: 203.488.0580  
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63-2 N. Branford Rd.  
Branford, CT 06405

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### **SECTION 4 – REFERENCE MATERIAL**

- EEI DESIGN REPORT, dated September 8, 2003.
- VERIZON WIRELESS RF SHEET.
- T-MOBILE STRUCTURAL LETTER, dated February, 12, 2004.
- AT&T TOWER SITE LEASING FORM.
- SPRINT TOWER SITE LEASING FORM, dated May 21, 2003.

## Introduction

The purpose of this report is to summarize the results of the non-linear, P- $\Delta$  structural analysis of the antenna installation proposed by AT&T on the existing monopole (tower) located in Chaplin, Connecticut.

The host tower is a 147-ft, three-section, eighteen sided, tapered monopole, originally designed and manufactured by Engineered Endeavors Inc (EEI)—job no: 11855, dated September 8, 2003. The tower geometry, structure member sizes and foundation system information were obtained from the aforementioned EEI design report. Antenna and appurtenance information were obtained from AT&T's tower site leasing application form and an RF data sheet provided by Verizon.

The tower is made up of three (3) tapered vertical sections consisting of A572-65 pole sections. The vertical tower sections are slip joint connected. The diameter of the pole (flat-flat) is 21.00-in at the top and 50.50-in at the base.

The aforementioned EEI design report, RF data information sheet, and tower site leasing form are available for reference in Section 4 of this report.

AT&T is proposing the removal of nine (9) panel antennas and six (6) TMA's and the installation of six (6) panel antennas and six (6) TMA's mounted on the existing 12' low profile platform. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

## Antenna and Appurtenance Summary

The existing tower was designed to support several communication antennas. The existing, proposed and future loads considered in this analysis consist of the following:

- **CARRIER VERIZON (Existing):**  
Antennas: Six (6) Decibel DB844F90A-SX and six (6) Decibel DB948F85T2E-M panel antennas mounted to one (1) low profile platform with a RAD center elevation of 146-ft above the existing tower base plate.  
Coax Cables: Twelve (12) 1 5/8"  $\varnothing$  coax cables (interior of monopole).
- **Sprint (Existing):**  
Antennas: Four (6) 60"x3.5"x6.9" and two (2) 60"x3.5"x10.5" panel antennas mounted to one (1) low profile platform with a RAD center elevation of 136-ft above the existing tower base plate.  
GPS: One (1) GPS antenna mounted to existing tower with an estimated RAD center elevation of 79-ft above existing tower base plate.  
Coax Cables: Six (6) 1 5/8"  $\varnothing$  and one (1) 7/8"  $\varnothing$  coax cables (interior of monopole).
- **Sprint (Reserved):**  
Antennas: Four (4) 60"x3.5"x6.9" and two (2) 60"x3.5"x10.5" panel antennas with a RAD center elevation of 136-ft above the existing tower base plate.  
Coax Cables: Six (6) 1 5/8"  $\varnothing$  coax cables (interior of monopole).



- **T-Mobile (Existing):**  
Antennas: Nine (9) EMS DR65-19-00DPQ panel antennas and six (6) TMA's mounted to one (1) low profile platform with a RAD center elevation of 116-ft above the existing tower base plate.  
GPS: One (1) GPS antenna mounted to existing tower with an estimated RAD center elevation of 69-ft above existing tower base plate.  
Coax Cables: Twenty-Four (24) 1 5/8" Ø and one (1) 7/8" Ø coax cables (interior of monopole).
- **AT&T (Existing to Remain):**  
Coax Cables: Nine (9) 1 5/8" Ø coax cables (interior of monopole).
- **AT&T (Remove):**  
Antennas: Nine (9) DUO1417-8686 antennas and six (6) ADC/CG-1900/850 TMA's mounted on a low profile platform at a RAD center elevation of 126-ft above the existing tower base plate.
- **AT&T (Proposed):**  
Antennas: Six (6) Powerwave 7770 panel antennas and six (6) Powerwave LGP21401 TMA's mounted on an existing low profile platform at a RAD center elevation of 126-ft above the existing tower base plate.  
Coax Cables: Three (3) 1 5/8" Ø coax cables (interior of monopole).

Note: All elevations are taken above tower base plate. Tower base plate approximately 1'-0" above grade.

### Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents or reinforcement drawings.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All existing coax cables to be installed within tower through engineered port holes.

## A n a l y s i s

The existing tower was analyzed using a comprehensive computer program entitled RISATower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower shaft, and the model assumes that the shaft members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for 85 mph basic wind speed (fastest mile) with no ice and 75% reduction of wind force with ½ inch accumulative ice to determine stresses in members as per guidelines of TIA/EIA-222-F-96 entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Allowable Stress Design (ASD).

## T o w e r   L o a d i n g

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA/EIA-222-F, gravity loads of the tower structure and its components, and the application of ½" radial ice tower structure and its components.

Basic Wind Speed:	Windham; v = 80 mph (fastest mile)	[Section 16 of TIA/EIA-222-F-96]
	Chaplin; v = 105 mph (3 second gust) equivalent to v = 85 mph (fastest mile)	[Appendix K of the 2005 CT Building Code Supplement]
	<i>Appendix K wind speed criteria controls.</i>	
Load Cases:	<u>Load Case 1</u> ; 85 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation. This load case typically controls the design. This load case typically controls the design of monopole towers.	[Section 2.3.16 of TIA/EIA-222-F-96]
	<u>Load Case 2</u> ; 74 mph wind speed w/ ½" radial ice plus gravity load – used in calculation of tower stresses. The 74 mph wind speed velocity represents 75% of the wind pressure generated by the 85 mph wind speed. This load case typically controls the design of lattice towers.	[Section 2.3.16 of TIA/EIA-222-F-96]
	<u>Load Case 3</u> ; Seismic – not checked	[Section 1610.1.3 of State Bldg. Code 2005] does not control in the design of this structure type

## Tower Capacity

Tower stresses were calculated utilizing the structural analysis software RISATower. Allowable stresses were determined based on Table 5 of the TIA/EIA code with a 1/3 increase per Section 3.1.1.1 of the same code.

Calculated stresses were found to be within allowable limits. In Load Case 1, per RISATower "Section Capacity Table", this tower was found to be at **93.1%** of its total capacity.

Tower Section	Component	Stress Ratio (percentage of capacity)	Result
Pole Shaft (L2)	48.17'-94.75'	93.1%	<b>PASS</b>

## Foundation and Anchors

The existing foundation consists of an 7-ft Ø x 1.0-ft long reinforced concrete pier on a 24.0-ft x 4.5-ft thick reinforce concrete pad. The sub-grade conditions used in the analysis of the existing foundation were obtained from the aforementioned EEI design report; job no: 11855, dated September 8, 2003. The base of the tower is connected to the foundation by means of (12) 2.25"Ø, ASTM A615-75 anchor bolts embedded approximately 5-ft into the concrete foundation structure.

Review of the foundation and anchor design consisted of verification of applied loads obtained from the tower design calculations and code checks of allowable stresses:

- The tower base reactions developed from the governing Load Case 1 were used in the verification of the foundation and its anchors:

Base Reactions	Vector	Proposed Load
Base	Shear	<b>22 kips</b>
	Axial	<b>30 kips</b>
	Moment	<b>2264 kips</b>

- The foundation was found to be within allowable limits.

Foundation	Design Limit	IBC 2003/2005 CT State Building Code Section 3108.4.2	Proposed Loading	Result
Reinf. Conc. Pad and Pier	OTM	2.0	2.47	<b>PASS</b>

Note: OTM denotes Overturning Moment

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Structural Monopole Analysis  
147' Existing EEI Monopole  
Chaplin, CT  
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- The anchor bolts and base plate were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Compression	80.1%	PASS
Base Plate	Bending	88.5%	PASS

### Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by AT&T. If the existing conditions are different than the information in this report, Natcomm, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

  
Carlo F. Centore, PE  
Principal ~ Structural Engineer



Natcomm, Inc.  
Structural Monopole Analysis  
147' Existing EEI Monopole  
Chaplin, CT  
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Standard Conditions for Furnishing of  
Professional Engineering Services on  
Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Natcomm, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provide to Natcomm, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Natcomm, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

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## GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

RISATower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, RISATower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

### RISATower Features:

- RISATower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- RISATower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.

TYPE	ELEVATION	TYPE	ELEVATION
(2) DB844F90A-SX	147	(2) 7770.00	127
(2) DB844F90A-SX	147	(2) 7770.00	127
(2) DB844F90A-SX	147	(2) LPG21401 TMA	127
(2) DB948F85T2E-M	147	(2) LPG21401 TMA	127
(2) DB948F85T2E-M	147	(2) LPG21401 TMA	127
(2) DB948F85T2E-M	147	Valmont 15' Low Profile Platform	127
Valmont 15' Low Profile Platform	147	(3) DR65-19-00DPQ	117
(2) 60"x3.5"x6.9" Panel Antenna	137	(3) DR65-19-00DPQ	117
(2) 60"x3.5"x6.9" Panel Antenna	137	(3) DR65-19-00DPQ	117
(2) 60"x3.5"x10.5" Panel Antenna	137	(2) TMA 10"x8"x3"	117
(2) 60"x3.5"x6.9" Panel Antenna	137	(2) TMA 10"x8"x3"	117
(2) 60"x3.5"x6.9" Panel Antenna	137	(2) TMA 10"x8"x3"	117
(2) 60"x3.5"x10.5" Panel Antenna	137	Andrew 12'-6" Low Profile Platform	117
Valmont 15' Low Profile Platform	137	GPS	80
(2) 7770.00	127	GPS	70

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

1. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. Weld together tower sections have flange connections.
5. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
6. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
7. Welds are fabricated with ER-70S-6 electrodes.
8. TOWER RATING: 93.2%

