



Daniel F. Caruso
Chairman

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

Internet: ct.gov/csc

September 26, 2008

Steven L. Levine
Real Estate Consultant
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **EM-CING-038-080520** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 143R Old Blue Hills Road, Durham, Connecticut.

Dear Mr. Levine:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies, with the following conditions:

- The applicant shall take steps to reduce the post-construction tower rating to not more than 100 percent; and
- A signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be provided to the Council to certify that a post-construction tower rating of not more than 100 percent has been achieved.

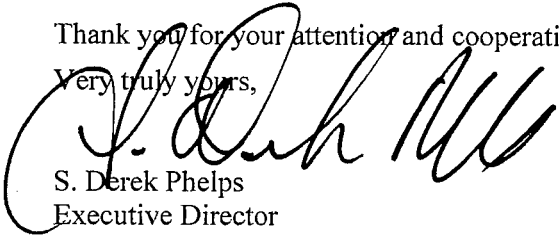
The proposed modifications are to be implemented as specified here and in your notice dated May 20, 2008, including the placement of all necessary equipment and shelters within the tower compound. This acknowledgement also includes the Town of Durham's (Town) antenna swap as indicated in its comments dated June 4, 2008. New Cingular Wireless PCS, LLC is encouraged to coordinate its construction efforts with the Town.

The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

A handwritten signature in black ink, appearing to read "S. Derek Phelps". The signature is fluid and cursive, with a large initial "S" and "D".

S. Derek Phelps
Executive Director

SDP/MP

- c: Honorable Laura L Francis, First Selectman, Town of Durham
- Geoffrey Colegrove, Town Planner, Town of Durham
- Scott Wright, Town of Durham
- Crown Castle

EM-CING-038-080520



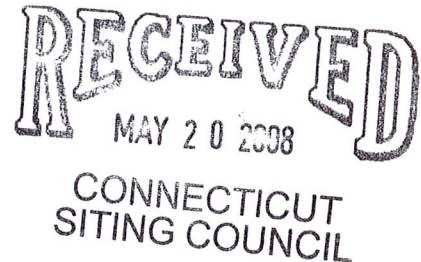
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 513-7636
Fax: (860) 513-7190

Steven L. Levine
Real Estate Consultant

ORIGINAL

HAND DELIVERED

May 20, 2008



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 tele-communications facility located at 143R Old Blue Hills Road, Durham Road (owner Crown Castle)

Dear Chairman Caruso and Members of the Council:

To enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("Cingular") plans to "dual band" the referenced site. This involves installing new antennas and associated equipment at the cell site to enable transmissions in the 850 MHz band as well as the 1900 MHz band.

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.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in Cingular'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 not be affected. Modifications to the existing site include all or some of the following as necessary to bring the site into conformance with the plan:

- Replacement of existing panel antennas with new antennas of similar size, shape, and weight, or, installation of additional antennas of similar size, shape, and weight.
- Installation of small tower mount amplifiers (“TMA’s”) and/or diplexers to the platform on which the panel antennas are mounted to enhance signal reception.
- Installation of additional or larger coaxial cables as required.
- Installation of an additional equipment cabinet in existing shelters, or on existing or enlarged concrete pads.

None of these modifications will extend the height of the tower.

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 the addition of the 850 MHz 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, 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,



Steven L. Levine
Real Estate Consultant

Attachments

**CINGULAR WIRELESS
Dual Banding Equipment Modification**

143R Old Blue Hills Road, Durham
Site Number 5841
Former AT&T Site
Exempt Modification approved 6/3/03

Tower Owner/Manager: Crown Castle

Equipment Configuration: Monopole

Current and/or Approved: Three AWS90162 Panel Antennas @ 73 ft c.l.
Six 7/8 inch coax cables

Planned Modifications: Remove existing antennas
Install 6 Powerwave 7770 antennas (or equivalent) @ 73 ft
Install 6 TMA's and 6 diplexers @ 73 ft
Install six additional runs 7/8 inch coax cable
Install one new outdoor cabinet on existing concrete slab

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 85.6 % 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 77.9 % of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm ²)	Standard Limits (mW/cm ²)	Percent of Limit
Other Users *							65.32
Cingular GSM *	73	1900 Band	12	250	0.2024	1.0000	20.24
Total							85.6%

* Per CSC records (except correct AT&T antenna height = 73 ft AGL)

Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm ²)	Standard Limits (mW/cm ²)	Percent of Limit
Other Users *							65.32
Cingular GSM	73	1900 Band	2	427	0.0576	1.0000	5.76
Cingular GSM	73	880 - 894	2	296	0.0399	0.5867	6.81
Total							77.9%

* Per CSC records

Structural information:

The attached structural analysis demonstrates that the tower and foundation have sufficient structural capacity to accommodate the proposed modifications. (Vertical Structures, Inc., 5/15/08)



New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 513-7636
Fax: (860) 513-7190

Steven L. Levine
Real Estate Consultant

May 20, 2008

Honorable Laura L. Francis
1st Selectman, Town of Durham
Town Hall 30 Town House Road
Durham, CT 06422

Re: Telecommunications Facility – 143 R Old Blue Hills Road, Durham

Dear Ms. Francis:

To enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC (“Cingular”) plans to “dual band” the referenced site to enable transmissions in the 850 Mhz band as well as the 1900 MHz band. This involves changing Cingular’s equipment configuration at the site.

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



May 15, 2008

LaShay Holmes
Crown Castle USA
9105 Monroe Road, Suite 150
Charlotte, NC 28270
(704) 814-8311

Vertical Structures, Inc
309 Spangler Drive, Suite E
Richmond, KY 40475
(859) 624-8360
acronin@verticalstructures.com

Subject: Structural Analysis Report

Carrier Designation AT&T Mobility Change-Out
Carrier Site Number: 5841
Carrier Site Name: Durham

Crown Castle Designation Crown Castle BU Number: 806364
Crown Castle Site Name: HRT 106(B)
Crown Castle JDE Job Number: 104660

Engineering Firm Designation Vertical Structures Project Number: 2008-004-082

Site Data 101 R Old Blue Hill Road, Durham, CT, Middlesex County
Latitude 41°-27'-33.67", Longitude -72°-39'-45.83"
120' Valmont Monopole Tower

Dear Ms. Holmes,

Vertical Structures is pleased to submit this structural analysis report to determine the structural integrity of the aforementioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 287043, and Application Number 62805, Revision 2. The purpose of the analysis is to determine the suitability of the tower for the following load case:

Load Case 1 (LC1): Proposed Equipment (Table 1) + Existing/Reserved Equipment (Table 2)

Based on our analysis we have determined the tower superstructure and foundation are sufficient for LC1. This analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon an 85 MPH basic "fastest mile" wind speed, equivalent to a 105 MPH basic "3-second gust" wind speed per IBC Table 1609.3.1.

Vertical Structures appreciates the opportunity of providing our continuing professional services to you and Crown Castle USA. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted,


Andy Cronin
Project Engineer

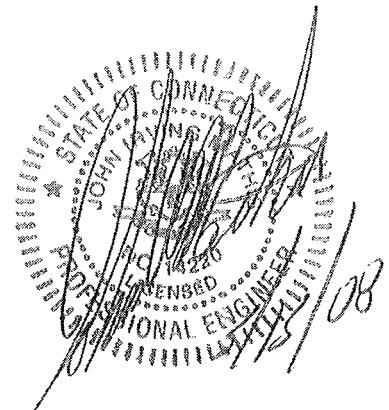


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1.) INTRODUCTION

The original 100' tall monopole tower was designed and manufactured by Valmont in 1994 for Bell Atlantic Mobile. The tower has since been extended 20' up to 120'. The structure consists of three (3) 12-sided tapered polygonal sections joined via a slip joint connection and a bolted flange connection. The tower is founded on a 27' square by 6' thick mat bearing 6' below grade.

2.) ANALYSIS CRITERIA

The HRT 106(B) monopole tower was analyzed in accordance with the current EIA-222-F publication, "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures." The proposed, existing and reserved antennas, cables and mounts considered in this analysis are listed in Tables 1 and 2. Applied forces in this study were derived from an 85 MPH basic "fastest mile" wind speed with no ice and a reduced 74 MPH basic "fastest mile" wind speed with a 1/2" of radial ice accumulation. The tower was originally designed for a 90 MPH basic "fastest mile" wind speed with no ice and a reduced 78 MPH basic "fastest mile" wind speed with a 1/2" of radial ice accumulation. The original design loads are listed in Table 3. All cables are assumed to be routed in accordance with the drawing in Appendix B.

Table 1 – Proposed Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
73	6	Powerwave Technologies	7770.00			6	7/8
	6		LGP21401 TMA				
	6		LGP21903 Diplexer				

Table 2 – Existing and Reserved Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
118	1	Decibel	DB809MT3-XT		(2) 6' Sidearms	2	7/8
	1	Decibel	DB201-A				
115	12	Decibel	DB844H90		13' L.P. Platform	12	1 1/4
107	1	Andrew	KP6-17B		(1) Pipe Mount	1	1/2
98	3	Swedcom	ALP 9212-N	Valmont	13'-5" Platform	15*	1 5/8
	6	Decibel	DB950F85T2E-M				
	6*	Antel	LPA-80080/6CF				
87	6 + 3*	Decibel	DB980H90E-M	Valmont	13'-5" Platform	6 + 3*	1 1/4
73	3**	Allgon	7250.02	Valmont	13'-5" L.P. Platform	6	7/8
	2	Decibel	DB809K-YP			2	7/8
50	1	Celwave	PD1142-1		(2) 6' Sidearms	3	7/8
	1	Celwave	PD1121-6				
	1	Decibel	ASP-655				
	1	Decibel	DB492A			1	1/2

*Indicates reserved equipment.

**Indicates equipment to be removed.

Table 3 – Design Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
97	12	Sinclair	SRL410C4R105	Valmont	Cellular Platform		
87	9	Sinclair	SRL410C4R105	Valmont	Cellular Platform		
75	1	Telewave	450F6				
	1	Decibel	ASP-710				
50	1	Decibel	ASP-710				
	1	Decibel	ASP-701				

3.) ANALYSIS PROCEDURE

Table 4 – Documents Provided

Document	Remarks	Reference	Source
Online Application	AT&T Mobility Change-Out Revision #2	62805	CCI iSite
Tower Drawing	Valmont Drawing No. DC1723Z	262153	CCI iSite
Foundation Drawing	SAC Engineering Project No. 1994-8A	297341	CCI iSite
Geotechnical Information	Dr. Clarence Welti Report Dated 3/18/93	262150	CCI iSite
Extension Information	Vertical Structures Site Visit	N/A	Field Notes

3.1) Analysis Methods

RISA Tower (Version 5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various dead, live, wind, and ice load cases. All loads were computed in accordance with the ANSI/TIA/EIA-222-F or the local building code requirements. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1. Tower and structures were built in accordance with the manufacturer's specifications.
2. The tower and structures have been maintained in accordance with manufacturer's specifications.
3. The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and any referenced drawings.
4. When applicable, transmission cables are considered to be structural components for calculating wind loads, as allowed by TIA/EIA-222-F.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and Vertical Structures should be allowed to review any new information to determine its effect on the structural integrity of the tower.

4.) ANALYSIS RESULTS

Table 5 – Tower Component Stresses vs. Capacity (LC1)

Section Capacity Table										
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass	Fail	
L1	120 - 100	Pole	TP20.263x15.677x0.1875	1	-4348.79	630113.07	34.6	Pass		
L2	100 - 47.0833	Pole	TP33.13x20.263x0.281	2	-13351.20	1488947.61	103.1	Fail	(1)	
L3	47.0833 - 0	Pole	TP44x31.3725x0.375	3	-24778.20	2738528.42	97.2	Pass		
							Summary			
							Pole (L2)	103.1	Fail	(1)
							RATING =	103.1	Fail	(1)

Notes	Component	Elevation (feet)	% Capacity	Pass/Fail
Additional Component Analysis Summary:				
2	Flange Bolts (Tension)	100	21.2	Pass
2	Flange Plate (Bending)	100	22.1	Pass
1, 2	Anchor Bolts (Tension)	0	101.7	Pass
2	Base Plate (Bending)	0	55.6	Pass
	Foundation (Compared to Design Loads)	0	96.8	Pass
Structure Rating =			103.1	Pass

- 1) Indicates overstress of less than 5% and is considered acceptable based on the analysis procedure used.
- 2) Indicates calculations supporting % capacity are included in Appendix C.

APPENDIX A

Section	1	2	3
Length (ft)	20.00	52.92	52.00
Number of Sides	12	12	12
Thickness (in)	0.1875	0.2810	0.3750
Lap Splice (ft)			4.92
Top Dia (in)	15.6770	20.2630	31.3725
Bot Dia (in)	20.2630	33.1300	44.0000
Grade	730.7	4303.8	7972.0
Weight (lb)			13006.4



DESIGNED APPURTENANCE LOADING

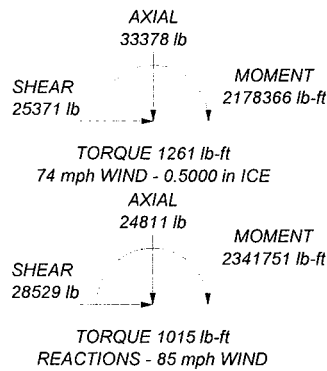
TYPE	ELEVATION	TYPE	ELEVATION
6' Sidearm (4" single tube) (VSI)	118	(2) 7770.00 w/ mount pipe (ATT Mobility)	73
6' Sidearm (4" single tube) (VSI)	118	(2) LGP21401 TMA (VSI) (ATT Mobility)	73
DB809MT3-XT	118	(2) LGP21401 TMA (VSI) (ATT Mobility)	73
DB201-A	118	(2) LGP21401 TMA (VSI) (ATT Mobility)	73
13 L.P. Platform (VSI)	115	(2) LGP21903 TMA (ATT Mobility)	73
(4) DB844H90 w/Mount Pipe	115	(2) LGP21903 TMA (ATT Mobility)	73
(4) DB844H90 w/Mount Pipe	115	(2) LGP21903 TMA (ATT Mobility)	73
(4) DB844H90 w/Mount Pipe	115	(2) LGP21903 TMA (ATT Mobility)	73
6'x4" Pipe Mount	107	(2) LGP21903 TMA (ATT Mobility)	73
KP6-17B	107	(2) LGP21903 TMA (ATT Mobility)	73
Valmont 13'-5" Platform w/ Rails (VSI)	98	DB809K-YP	73
(2) LPA-80080/6CF w/ Mount Pipe	98	Valmont 13'-5" L.P. Platform (VSI) (ATT Mobility)	73
(2) LPA-80080/6CF w/ Mount Pipe	98	(2) 6' x 2" Antenna Mount Pipe (VSI) (ATT Mobility)	73
(2) LPA-80080/6CF w/ Mount Pipe	98	(2) 6' x 2" Antenna Mount Pipe (VSI) (ATT Mobility)	73
ALP 9212-N w/Mount Pipe	98	(2) 6' x 2" Antenna Mount Pipe (VSI) (ATT Mobility)	73
ALP 9212-N w/Mount Pipe	98	(2) 6' x 2" Antenna Mount Pipe (VSI) (ATT Mobility)	73
ALP 9212-N w/Mount Pipe	98	(2) 6' x 2" Antenna Mount Pipe (VSI) (ATT Mobility)	73
(2) DB950F85T2E-M w/Mount Pipe	98	(2) 6' x 2" Antenna Mount Pipe (VSI) (ATT Mobility)	73
(2) DB950F85T2E-M w/Mount Pipe	98	6' Sidearm (4" single tube) (VSI)	50
(2) DB950F85T2E-M w/Mount Pipe	98	6' Sidearm (4" single tube) (VSI)	50
Valmont 13'-5" Platform w/ Rails (VSI)	87	PD1142-1	50
(3) DB980H90E-M w/Mount Pipe	87	DB492A	50
(3) DB980H90E-M w/Mount Pipe	87	ASP-655	50
(3) DB980H90E-M w/Mount Pipe	87	PD1121-6	50
DB809K-YP	73		
(2) 7770.00 w/ mount pipe (ATT Mobility)	73		
(2) 7770.00 w/ mount pipe (ATT Mobility)	73		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 103.1%



Vertical Structures, Inc. 309 Spangler Drive, Suite E Richmond, Kentucky 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	Job: HRT106(B), CT BU#806364
	Project: Vertical Structures Job No. 2008-004-082
	Client: Crown Castle Drawn by: Andy Cronin App'd:
	Code: TIA/EIA-222-F Date: 05/15/08 Scale: NTS
	Path: W:\s1\acronin\2008-004-082-HRT 106(B) CTR\ISA806364.dwg Dwg No. E-1

TOWN OF DURHAM
MEMORANDUM

TO: S. DEREK PHELPS, EXECUTIVE DIRECTOR, CONNECTICUT SITING COUNCIL
FROM: LAURA FRANCIS
SUBJECT: EM-CING-038-080520 (FOLLOW UP TO EMAIL 6-4-08)
DATE: JUNE 4, 2008

RECEIVED
JUN 10 2008

CONNECTICUT
SITING COUNCIL

ORIGINAL

Dear Mr. Phelps,

In response to your letter dated May 22, 2008 in reference to EM-CING-038-080520 New Cingular Wireless PCS, LLC notice of intent to modify existing telecommunications located at 143R Old Blue Hill Road, Durham; please find attached response from the Town of Durham's Chief of Services, Scott Wright.

If you have any questions or comments please contact me at 860-349-3625 or lfrancis@townofdurhamct.org.

Thank you.

Laura L. Francis
First Selectman

LLF/sbm

Enclosure

RECEIVED
JUN 1 1958
COMMERCIAL
DIVISION

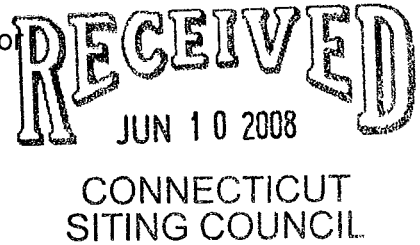
ORIGINAL

TO: Laura Francis, First Selectman
Town of Durham

FROM: Scott Wright, Communications Coordinator

DATE: June 3, 2008

SUBJECT: Proposed Exempt Modifications
Old Blue Hill Tower Site



BACKGROUND

The Town recently received notification of two requests for an "exempt" modification to the existing tower site on Old Blue Hill Road. An "exempt" modification is one that has minimal, if any, impact on the existing tower site.

HISTORY

The Old Blue Hill tower site is located on Old Blue Hill Road in Durham, CT on land owned by Francis (Frank) and Marie Behrens. The tower was originally constructed by Bell Atlantic Mobile (now Verizon) under Siting Council Docket 161. During the construction of this tower, a road was constructed. This road has since been lengthened and now connects to Pine Ledge Trail.

Through the generosity of Bell Atlantic Mobile, the Town utilizes a significant amount of space on this tower. The tower site has become a key location for local public safety communications for the local area. The tower site was subsequently sold to Crown Castle International.

The Town has realized a significant benefit through an excellent relationship with both Verizon and Crown Castle International.

Verizon, Sprint, Nextel, and AT&T Wireless (now New Cingular Wireless) are all located at this tower site.

Several years ago, the tower was extended from one-hundred feet to one-hundred and twenty feet to accommodate the needs of Nextel.

VERIZON REQUEST

Verizon Wireless requests to simply change out antennas at the ninety-eight (98) foot level. This request includes a significant analysis of the existing structure which indicates that this request will have no predicted effect on the stability of the structure. Unless one is very familiar with the various antennas used in the industry, it will be very difficult to discern any changes due to this requested modification.

NEW CINGULAR REQUEST

Several years ago, AT&T Wireless sought to locate at this tower site. The Town, in the spirit of significant cooperation, made several significant modifications to its systems - funded by AT&T Wireless – in order for AT&T Wireless to occupy space formerly used exclusively by the Town. This had the effect of encouraging tower sharing and avoiding the proliferation of extra towers. At the time of installation, AT&T Wireless offered service in the “PCS” band, approximately 1900 MHz. Since the installation of this equipment, AT&T Wireless merged with Cingular Wireless to form a new company, New Cingular. Cingular Wireless, prior to the merger, offered service only in the 800 MHz band. This proposed modification would add this frequency band to this site, thus improving service to New Cingular customers in the greater Durham area. Prior to this requested modification, the closest 800 MHz New Cingular sites were Totoket Ridge in North Guilford and Beseck Mountain in Middlefield.

New Cingular proposes to add 3 additional antennas with associated feedlines and tower mounted amplifiers at the seventy-three foot level and a cabinet on the concrete pad at the base of the tower. It is anticipated that these modifications will be relatively minor and barely noticeable.

The only concern regarding this proposal is our experience during the initial AT&T Wireless installation. Despite a prior notification requirement to the Town at anytime that Town equipment was going to be moved, modified, or otherwise disturbed, a prior contractor moved a primary Town antenna without prior notification. Further investigation showed that damage was done to the cable jumper for this antenna. This damage necessitated an emergency repair in order to ensure full operation of Town equipment.

IMPACT ON TOWN EQUIPMENT

There is no anticipated impact with Town equipment, provided that .

Concurrently with this activity, the Town, in conjunction with Valley Shore Emergency Communications, would like to replace our existing UHF antenna at fifty feet with a much smaller antenna having significantly less impact on the tower. While the current antenna weighs twenty-two pounds and has a significant “equivalent flat plate area” (2.78ft²), the proposed replacement is only one foot square and weighs approximately 1.1 pounds. See attached specification sheets. This antenna needs to be replaced to improve overall system reliability. The antenna functions as a link with a remote site. Any assistance with this project would be appreciated.

RECOMMENDATION(S)

Both applications are examples of “exempt” modifications. It is anticipated that the proposed modifications will be barely noticeable to anyone viewing the tower. All equipment will be mounted within the existing site footprint. The proposal by New Cingular is an example of maximizing existing tower space.

The only recommendation applicable in this case is prior notification to the Town for any activity that will possibly involve any Town equipment.

As noted, the Town, in conjunction with Valley Shore Emergency Communications, seeks to change an existing antenna to one with significantly less impact on the tower. This change would help improve reliability of existing radio communications systems in the area by replacing an unreliable link to a remote site.

KATHREIN SCALA DIVISION

RA5-400B Radome Protected Yagi Antenna 406–512 MHz

The Kathrein Scala Division RA5-400B broadband dipole antenna is intended for use in professional fixed-station applications in the 406–512 MHz band. It features:

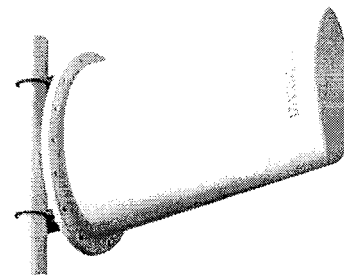
- Heavy-duty fiberglass radome to protect antenna.
- Balanced driven element for superior performance in icing conditions.
- Internal balun and dipole feedpoint sealed within the boom assembly.
- Anodized 6061-T6 aluminum tubing.
- Heavy-duty aluminum castings and stainless steel hardware.
- Entire antenna at DC ground potential.
- Dual and quad arrays available.

Specifications:

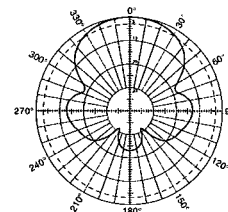
Frequency range	406–512 MHz in 6 MHz segments
Gain	12 dBi
Impedance	50 ohms
VSWR	< 1.3:1
Polarization	Horizontal or vertical
Front-to-back ratio	>23 dB
Maximum input power	250 watts (at 50°C)
H-plane beamwidth	66 degrees (half-power)
E-plane beamwidth	50 degrees (half-power)
Connector	N female
Weight	22 lb (10 kg)
Dimensions	29 x 17 x 12 inches (737 x 432 x 305 mm)
Equivalent flat plate area	2.78 ft ² (0.258 m ²)
Wind survival rating*	120 mph (200 kph)
Shipping dimensions	31 x 20 x 14.5 inches (787 x 508 x 368 mm)
Shipping weight	28.0 lb (12.7 kg)
Mounting	Mounting kits available for masts of 2.375 to 4.5 inch (60 to 114 mm) OD.

* Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

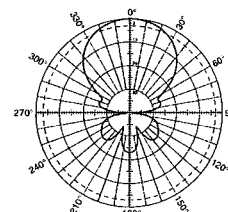
Contact Kathrein Kathrein Scala Division Division Customer Service for detailed order information.



(Shown vertically polarized)



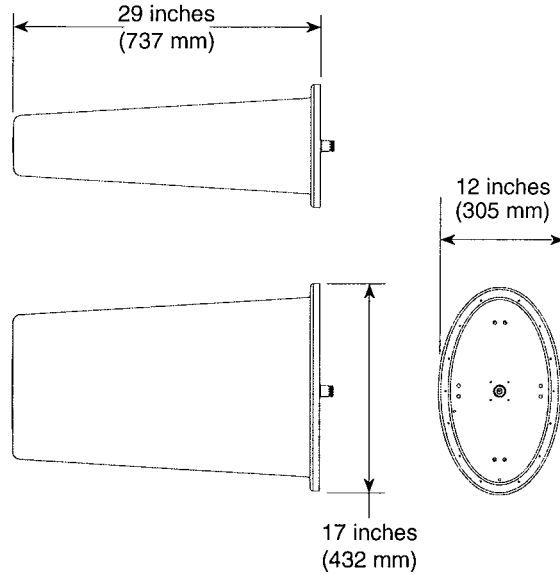
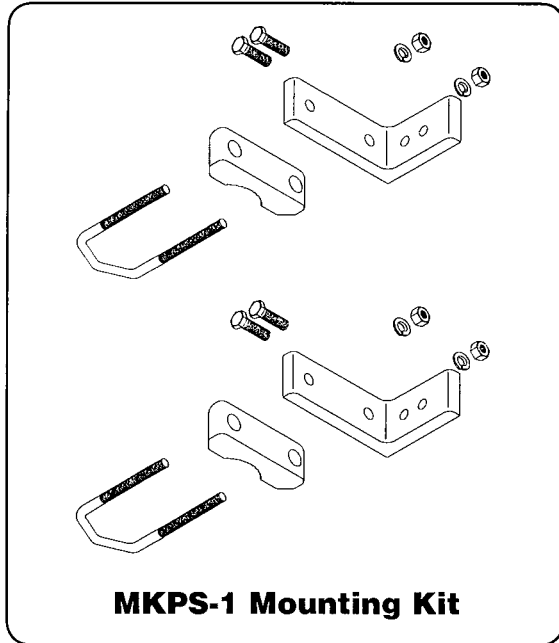
H-plane
Horizontal pattern – V-polarization
Vertical pattern – H-polarization



E-plane
Horizontal pattern – H-polarization
Vertical pattern – V-polarization



10105-D



Mounting Options:

Model	Description
MKPS-1(shown)	Mounting Kit for 2.375 inch (60 mm) OD mast.
MKPS-2	Mounting Kit for 2.875 inch (73 mm) OD mast.
MKPS-3	Mounting Kit for 3.5 inch (89 mm) OD mast.
MKPS-4	Mounting Kit for 4 inch (102 mm) OD mast.
MKPS-5	Mounting Kit for 4.5 inch (114 mm) OD mast.

Order Information:

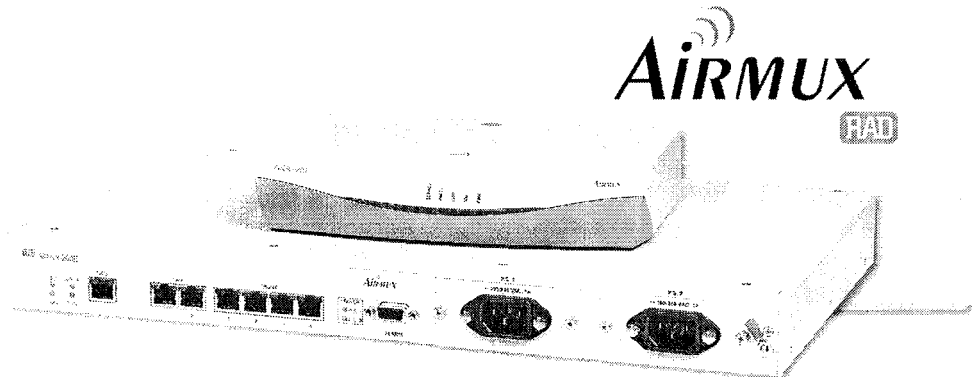
Contact Kathrein Scala Division Customer Service for detailed order information.

All specifications are subject to change without notice. The latest specifications are available at www.kathrein-scala.com.

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com

Airmux-200

Broadband Wireless Multiplexer



AIRMUX

FEATURES

- Cost effective point-to-point broadband wireless multiplexer
- Operates at 5.x GHz, 4.9 GHz, and 2.4 GHz unlicensed and licensed bands
- Air data rate of up to 48 Mbps
- Transmission range of up to 80 km (50 miles)
- High reliability and availability based on robust air interface
- Air interface encryption
- Integrated solution for E1/T1 and Ethernet interfaces
- Redundant power supply and 4 E1/T1 interfaces available in extended IDU-E version
- Automatic channel selection
- Dry-contact alarm relay

DESCRIPTION

- Airmux-200 is a carrier-class, 48 Mbps capacity, cost effective point-to-point broadband wireless transmission system. It combines legacy TDM and Ethernet services for transmission over 5.x GHz, 4.9 GHz, and 2.4 GHz licensed and unlicensed bands, and is suitable for deployment in FCC regulated countries.
- Short time to service:
 - Wireless connectivity instead of private line leasing from service providers
 - License-exempt spectrum removes regulatory delays
 - Compact integrated system, easy to install and operate.
- Airmux-200 provides high performance and reliability. The interface ensures low BER, as well as low latency, and full compliance with E1/T1 interface jitter and wander requirements.
- Transmission range of up to 80 km (50 miles) is available with an external antenna.

- Air interface data is encrypted using Advanced Encryption System (AES) with a 128-bit encryption key.
- When the link quality is out of limits, Airmux-200 automatically searches for a clear channel within a pre-selected list of frequencies.
- External events trigger alarms via the dry-contact alarm inputs.
- Airmux multiplexers consist of an outdoor unit (ODU) and an indoor unit (IDU or IDU-E).
- The outdoor unit is suitable for mast or wall installation. Mounting brackets are supplied with the unit.

APPLICATIONS

- Cellular Backhauling
Airmux-200 connects between cellular base stations and controllers. This solution meets the requirements of cellular backhauling applications by providing four E1/T1 interfaces and Ethernet traffic for maintenance and control.



Airmux-200

Broadband Wireless Multiplexer

- **Broadband Access**
Airmux-200 provides broadband Ethernet and leased line services, to Small and Medium Enterprises (SME).
- **Hot-Spot Backhauling**
Airmux-200 provides a robust alternative to the last mile connection between the WLAN access point and the data network, compared with the often used expensive E1/T1 leased lines.
- **Wireless ISP Backhaul**
Wireless Internet Service Providers (WISP) backhaul their Point of Presence (POP) traffic to the network operation center.
With Airmux-200, WISPs achieve higher capacity, and can offer bundled connectivity, with a range of up to 80 km (50 miles).
- **Remote Sites Connectivity**
Airmux-200 is offered to enterprises with multiple sites that require a transparent connection of LAN and PBX systems across their various campuses.

SPECIFICATIONS

RADIO

- **Frequency Bands**
5.8 GHz (5.725–5.850 GHz)
5.4 GHz (5.470–5.725 GHz)
5.3 GHz (5.250–5.350 GHz)
4.9 GHz (4.940–4.990 GHz)
2.4 GHz (2.400–2.4835 GHz)
2.3 GHz (2.300–2.400 GHz)
- **Data Rate**
Up to 48 Mbps, user-configurable
- **Channel Bandwidth**
20 MHz
- **Duplex Technique**
TDD
- **Modulation**
OFDM - BPSK, QPSK,
16 QAM, 64 QAM
- **Transmit Power**
See Table 1
- **RF Dynamic Range**
More than 50 dB

LAN INTERFACE

- **Number of Ports**
IDU: 1
IDU-E: 2
- **Type**
10/100BaseT, autonegotiation
- **Framing/Coding**
IEEE 802.3u
- **Bridging**
Self-learning, up to 2048 MAC addresses
- **Traffic Handling**
MAC layer bridging, self-learning
- **Latency**
3 msec (typical)
- **Line Impedance**
100Ω
- **VLAN Support**
Transparent
- **Connector**
RJ-45

Table 1. Radio Regulatory Compliance and Maximum Transmit Power

Frequency [GHz]	USA and Canada		Europe (ETSI)	
	Regulation	Max. Tx Power [dBm]	Regulation	Max. Tx Power [dBm]
5.725 – 5.850	47CFR Part 15 Subpart C, RSS-210	17	N/A	N/A
5.470 – 5.725	N/A	N/A	EN 300 216 V1.2.1, EN 301 893 V1.2.2	8 EIRP ≤ 30
5.250 – 5.350	47CFR Part 15 Subpart E, RSS-210	8	N/A	N/A
4.940 – 4.990	47CFR Part 15 Subpart B	15	N/A	N/A
2.400 – 2.4835	47CFR Part 15 Subpart C, RSS-210	11	EN 300 328	-4 EIRP ≤ 20

APPLICATION

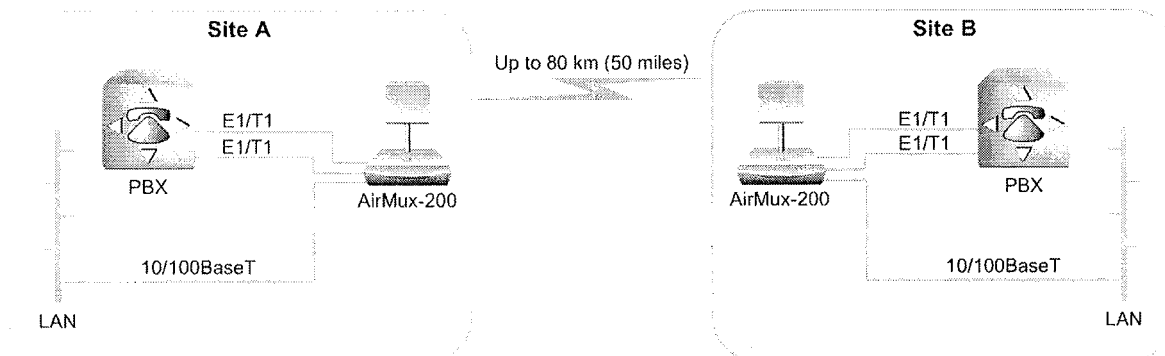


Figure 1. Airmux-200 in a Point-to Point Application

Airmux-200

Broadband Wireless Multiplexer

E1/T1 INTERFACE

- **Number of Ports**
IDU: 1 or 2
IDU-E: 4
- **Framing**
Unframed
- **Timing**
Plesynchronous (independent Tx and Rx timing)
- **Line Code**
E1: HDB3
T1: B8ZS, AMI
- **Latency**
8 msec
- **Line Impedance**
E1: 120Ω, balanced
T1: 100Ω, balanced
- **Connector**
RJ-45
- **Jitter and Wander Compliance**
As per G.823, G.824 requirements

MANAGEMENT

- **Protocol**
SNMP-based
- **Network Management**
SNMPc-based
- **Management Interface**
10/100BaseT

- **Connector**
RJ-45
- **Upgrade Capabilities**
Local and over-the-air software download

GENERAL

- **Diagnostics**
Local and remote loopbacks
- **IDU-to-ODU Connection**
Outdoor Cat.5e cable,
100m (328 ft) maximum length
- **Power**
DC: -48, 24 VDC
AC: 100–240 VAC
Two AC power supply options are available for IDU-E:
 - Single fixed power supply
 - Two modular power supplies
- **Power Consumption**
ODU with IDU: 10W max
ODU with IDU-E: 14W max
- **Indicators**
PWR (green) – Power status
IDU (green) – IDU status
ODU (green/red) – ODU-to-IDU link status
AIR I/F (green/red) – Air Interface status
SERVICE (green/red) – E1/T1 signal status

Environment

Outdoor unit and external antenna:
Enclosure: all-weather case, IP67
Temperature: -35 to 60°C
(-31 to 140°F)

Indoor units:

Temperature: 0 to 50°C
(32 to 122°F)

Humidity: Up to 90%,
non-condensing

Physical

ODU (with integrated antenna):
Height: 305 mm (12.0 in)
Width: 305 mm (12.0 in)
Depth: 58 mm (2.3 in)
Weight 1.5 kg (3.3 lb)

IDU:
Height: 44 mm (1.7 in)
Width: 237 mm (9.3 in)
Depth: 165 mm (6.5 in)
Weight 0.5 kg (1.1 lb)

IDU-E:
Height: 44 mm (1.7 in)
Width: 430 mm (17.0 in)
Depth: 290 mm (11.4 in)
Weight: 1.5 kg (3.3 lb)

ANTENNA

- **Characteristics**
See Table 2

Table 2. Airmux-200 Antenna Options

	Type	Gain [dBi]	Typical Range [km] [miles]		Beam [degrees]	Dimensions [mm] [in]		Weight [kg] [lb]		Connector	Lightning Protection	
5.8, 5.4, 5.3 GHz												
	Integrated	Flat panel	22	40	25	9.0	305×305×58	12×12×2.3	0.5	1.1	NR	Yes
	External	Flat panel	28	80	50	4.5	600×600×51	23.6×23.6×2	5.0	11.0	N-type	No
5.8 GHz												
	External	Dish	32.5	80	50	4.5	Dia 900	Dia 35.4	10	22	N-type	No
4.9 GHz												
	External	Flat panel	21	24	15	9.0	305×305×58	12×12×2.3	0.5	1.1	N-type	Yes
	External	Dish	27	80	50	5	Dia 600	Dia 23.6	5.0	11.0	N-type	Yes
2.3, 2.4 GHz												
	Integrated	Flat panel	17	40	25	20	305×305×58	12×12×2.3	0.5	1.1	NR	Yes
	External	Grid	24	80	50	7.5	600×997×380	23.5×39.2×15	2.0	4.6	N-type	No

Note: The range of the system depends on the system configuration, for further information, please contact the RAD distributor nearest you or one of RAD's offices worldwide.



Airmux-200

Broadband Wireless Multiplexer



ORDERING

Airmux-200/IDU/~-/UTP/*

Indoor unit

Airmux-200/IDUE/~-/2UTP/*

Extended indoor unit with optional redundant power supply

Airmux-200/ODU/#/ ^

Outdoor unit

Airmux-200/#/ ^/~-/UTP*/KIT

A system comprising two indoor units and two outdoor units

Airmux-200E/#/ ^/~-/2UTP*/KIT

A system comprising two extended indoor units and two outdoor units

Note: Kits are supplied without the cable.

~ Specify power supply type:

Notes: The Airmux-200 IDU-E may be ordered with two AC modular removable power supplies.

The power supply of the single power supply option is not removable.

For IDU operation via -48 VDC, order either AC version.

115 for 115 VAC power supply

230 for 230 VAC power supply

IDU-E only:

48 for -48 VDC power supply

24 for 24 VDC power supply

Specify the frequency band and regulation:

F23 for 2.300–2.400 GHz

F24E for 2.400–2.4835 GHz, ETSI

F24F for 2.400–2.4835 GHz, FCC

F49F for 4.940–4.990 GHz, FCC

F53F for 5.250–5.350 GHz, FCC

F53HP for high-power F53

F54E for 5.470–5.725 GHz, ETSI

F54E-HG for high-gain F54E

F54HP for high-power F54

F58 for 5.725–5.850 GHz

Note: F24E, F49F, and F54E-HG are available with external antenna only.

* Specify interface type:

IDU:

E1 for E1 interface

T1 for T1 interface

2E1 for two E1 interfaces

2T1 for two T1 interfaces

ETH for Ethernet interface only

IDU-E:

4E1 for four E1 interfaces

4T1 for four T1 interfaces

ETH for Ethernet interface only

^ Specify **EXT** for outdoor unit with dedicated connector for external antenna connection

Note: If EXT is not specified, Airmux-200/ODU is supplied with an integrated antenna.

OPTIONAL ACCESSORIES

CBL-Airmux-UTP/@

Assembled cable for permanent connection between indoor and outdoor units

@ Specify cable length:

25 for 25m (82 ft) cable

50 for 50m (164 ft) cable

75 for 75m (246 ft) cable

100 for 100m (328 ft) cable

Airmux-ANT/\$

External antenna supplied with 1m (3.3 ft) cable

\$ Specify external antenna type, where **grid** is a grid antenna, **fp** is a flat panel antenna, and **dish** is a dish antenna:

21/4.9/db/fp for 21 dBi, 4.9 GHz

22/5.3/db/fp for 22 dBi, 5.3 GHz

22/5.4/db/fp for 22 dBi, 5.4 GHz

22/5.8/db/fp for 22 dBi, 5.8 GHz

24/2.4/db/grid for 24 dBi, 2.4 GHz

27/4.9/db/dish for 27 dBi, 4.9 GHz

27/4.9/db/fp for 27 dBi, 4.9 GHz

28/5.3/db/fp for 28 dBi, 5.3 GHz

28/5.4/db/fp for 28 dBi, 5.4 GHz

28/5.8/db/fp for 28 dBi, 5.8 GHz

32/5.3/db/dish for 32.5 dBi, 5.3 GHz

32/5.4/db/dish for 32.5 dBi, 5.4 GHz

32/5.8/db/dish for 32.5 dBi, 5.8 GHz

RM-33

Hardware kit for mounting one IDU in a 19" rack



1

2