



STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

Ten Franklin Square  
New Britain, Connecticut 06051  
Phone: (860) 827-2935  
Fax: (860) 827-2950

December 24, 2002

Christopher B. Fisher, Esq.  
Cuddy & Feder & Worby LLP  
90 Maple Avenue  
White Plains, NY 10601-5196

RE: **EM-AT&T-141-021122** - AT&T Wireless notice of intent to modify an existing telecommunications facility located at Lowell Davis Road, Thompson, Connecticut.

Dear Attorney Fisher:

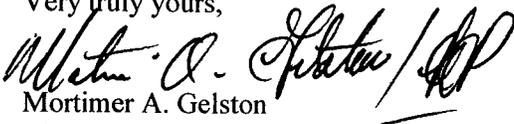
At a public meeting held on December 19, 2002, the Connecticut Siting Council (Council) acknowledged your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the condition that the recommendations contained in the structural analysis prepared by Tectonic Engineering Consultants be implemented in conjunction with the installation of the new antennas.

The proposed modifications are to be implemented as specified here and in your notice received in our office on November 22, 2002. 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. 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.

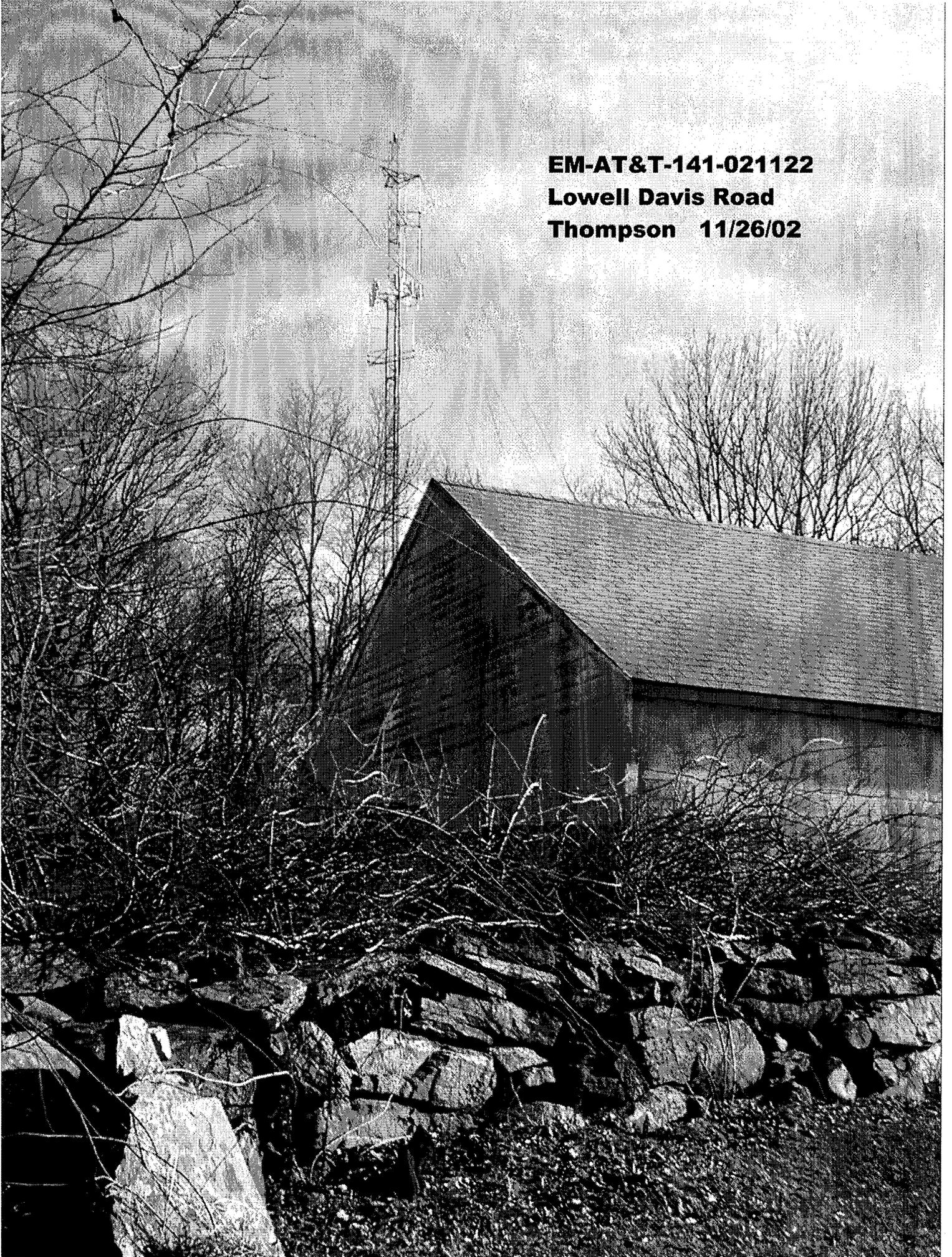
Very truly yours,

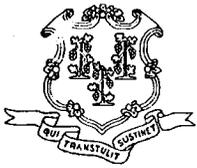
  
Mortimer A. Gelston  
Chairman

MAG/laf

- c: Honorable Douglas J. Williams, First Selectman, Town of Thompson
- John E. Mahon, Jr., Zoning Enforcement Officer, Town of Thompson
- Charter Cable Communications
- Michele G. Briggs, Southwestern Bell Mobile Systems
- Sandy M. Carter, Verizon Wireless
- Thomas F. Flynn III, Nextel Communications

**EM-AT&T-141-021122**  
**Lowell Davis Road**  
**Thompson 11/26/02**





# 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@po.state.ct.us](mailto:siting.council@po.state.ct.us)

Web Site: [www.state.ct.us/csc/index.htm](http://www.state.ct.us/csc/index.htm)

November 26, 2002

Honorable Douglas J. Williams  
First Selectman  
Town of Thompson  
Town Office Building  
815 Riverside Drive  
P. O. Box 899  
North Grosvenordale, CT 06255

RE: **EM-AT&T-141-021122** - AT&T Wireless notice of intent to modify an existing telecommunications facility located at Lowell Davis Road, Thompson, Connecticut.

Dear Mr. Williams:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

The Council will consider this item at the next meeting tentatively scheduled for December 19, 2002, at 1:30 p.m., in Hearing Room One, Ten Franklin Square, New Britain, Connecticut.

Please call me or inform the Council if you have any questions or comments regarding this proposal.

Thank you for your cooperation and consideration.

Very truly yours,

*SDP/ek2*

S. Derek Phelps  
Executive Director

SDP/slm

Enclosure: Notice of Intent

c: John E. Mahon, Jr., Zoning Enforcement Officer, Town of Thompson

**RECEIVED**

NOV 22 2007

**NOTICE OF INTENT TO MODIFY AN  
EXISTING TELECOMMUNICATIONS FACILITY  
LOWELL DAVIS ROAD, THOMPSON, CONNECTICUT**

**CONNECTICUT  
SITING COUNCIL**

Pursuant to the Public Utility Environmental Standards Act, Connecticut General Statutes § 16-50g et. seq. ("PUESA"), and Sections 16-50j-72(b) of the Regulations of Connecticut State Agencies adopted pursuant to the PUESA, AT&T Wireless PCS, LLC d/b/a AT&T Wireless ("AT&T Wireless") hereby notifies the Connecticut Siting Council of its intent to modify an existing facility located at Lowell Davis Road, Thompson, Connecticut (the "Lowell Davis Road Facility"), owned by Charter Communications Holding Company, LLC, ("Tower Owner"). AT&T Wireless and the Tower Owner have agreed to share the use of the Lowell Davis Road Facility, as detailed below.

**The Lowell Davis Road Facility**

The Lowell Davis Road Facility consists of an approximately two hundred fifty foot (250) guyed lattice tower (the "Tower") and associated equipment currently being used for wireless communications by Cingular, Verizon, Nextel, the municipality and others.<sup>1</sup>

**AT&T Wireless' Facility**

As shown on the enclosed plans prepared by Tectonic/Keyes Associates, including a site plan and tower elevation of the Lowell Davis Road Facility, AT&T Wireless proposes shared use of the Facility by placing antennas on the Tower and equipment cabinets needed to provide personal communications services ("PCS"). AT&T Wireless will install 6 panel antennas at approximately the 150 foot level of the Tower and associated equipment cabinets (2 proposed, 2 future, each 76" H x 30" W x 30" D) located on a concrete pad within an expanded fenced compound. The expansion of the fenced compound is within the Tower Owner's lease parcel and will not extend the existing Tower Facility site boundaries. As evidenced in the structural report prepared by Tectonic Engineering Consultants, PC, annexed hereto as Exhibit A, AT&T has determined that the tower is currently overstressed. As part of AT&T's installation, guy wires will be replaced to correct the current condition and make the tower structurally capable of supporting its existing and proposed AT&T loading.

**AT&T Wireless' Facility Constitutes An Exempt Modification**

The proposed addition of AT&T Wireless' antennas and equipment to the Lowell Davis Road Facility constitutes an exempt "modification" of an existing facility as defined in Connecticut General Statutes Section 16-50i(d) and Council regulations promulgated pursuant thereto. Addition of AT&T Wireless' antennas and equipment to the Tower will not result in an increase of the Tower's height nor extend the site boundaries. Further, there will be no increase in noise levels by six (6) decibels or

<sup>1</sup> See Emissions Report annexed hereto as Exhibit B.

more at the Tower site's boundary. As set forth in an Emissions Report prepared by Satish Bhandare, Radio Frequency Engineer, annexed hereto as Exhibit B, the total radio frequency electromagnetic radiation power density at the Tower site's boundary will not be increased to or above the standard adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes and MPE limits established by the Federal Communications Commission. For all the foregoing reasons, addition of AT&T Wireless' facility to the Tower constitutes an exempt modification which will not have a substantially adverse environmental effect.

**Conclusion**

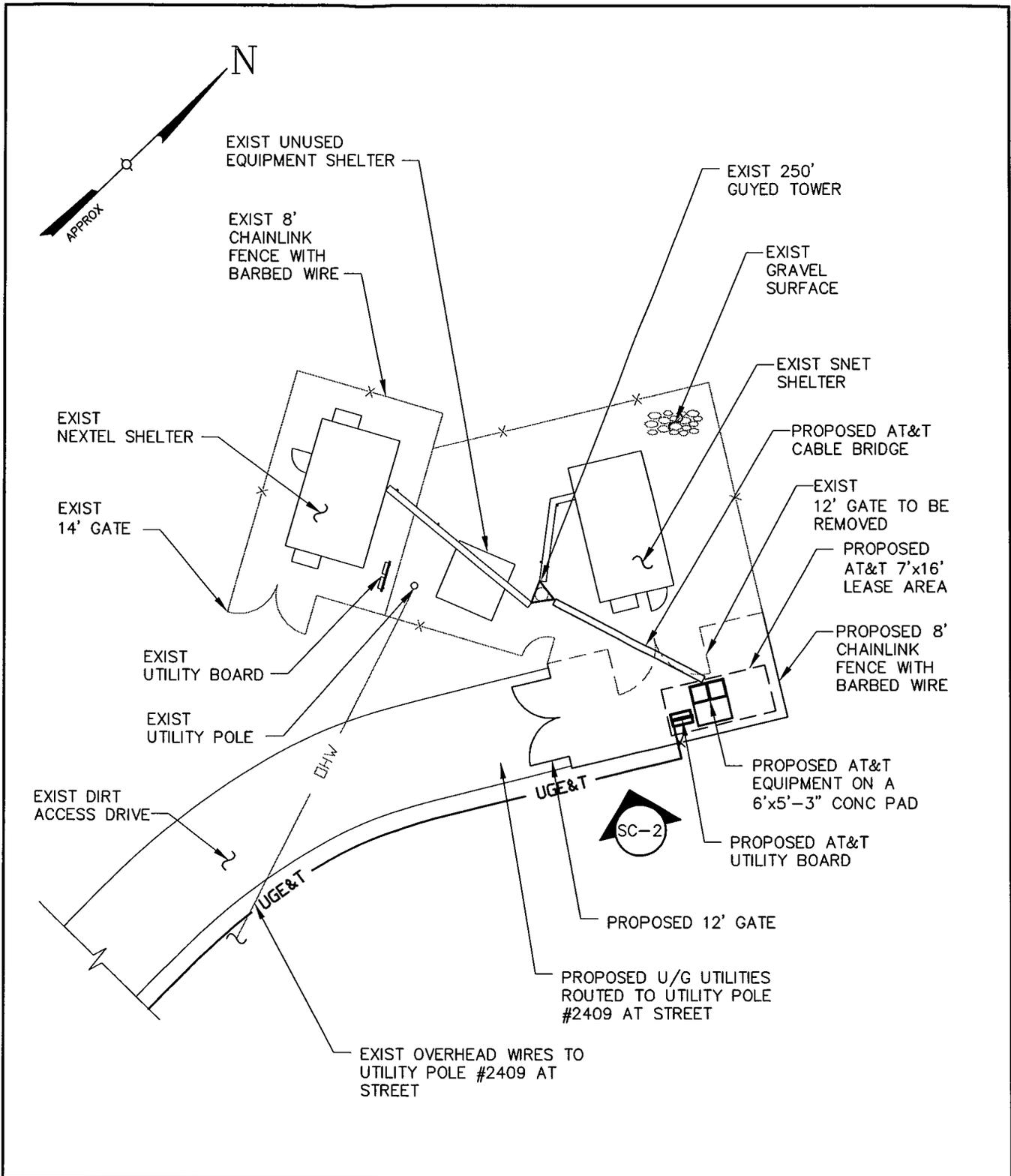
Accordingly, AT&T Wireless requests that the Connecticut Siting Council acknowledge that its proposed modification to the Lowell Davis Road Facility meets the Council's exemption criteria.

Respectfully Submitted,



Christopher B. Fisher, Esq.  
On behalf of AT&T Wireless

cc: First Selectman, Town of Thompson  
RJ Wetzels, Bechtel

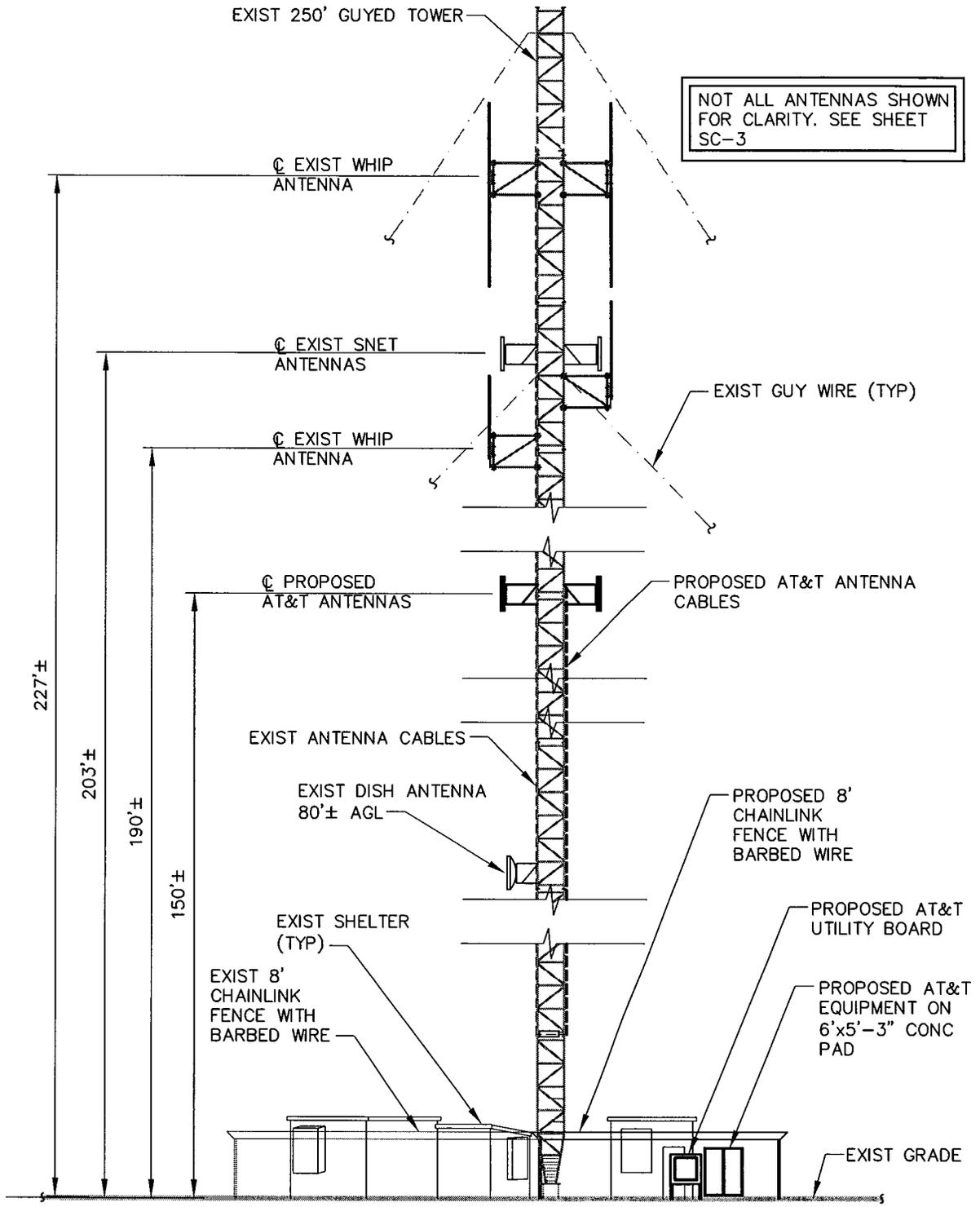


**TECTONIC/KEYES ASSOCIATES**  
 1244 BLAIR DEANE HIGHWAY, SUITE 800 OFFICE (860)583-3244  
 ROCKY HILL, CT 06067-1248 FAX (860)587-9882

 **AT&T**  
 AT&T WIRELESS SERVICES, INC.  
 12 Omega Drive, Second Floor  
 Stamford, Connecticut 06902

DRAWING TITLE:  
**SITE DETAIL PLAN**  
 PROJECT INFORMATION:  
**THOMPSON CENTRAL**  
 CT-465.2  
 LOWELL DAVIS RD  
 THOMPSON, CT 06277  
 PROPERTY OWNER:  
 KGI WIRELESS  
 8911 N CAPITAL TEXAS HWY  
 AUSTIN, TEXAS 78758

DRAWING NO. <b>SC-1</b>	
REVISION NO. 0	DRAWN BY: RPM
DATE: 8/22/02	CHECKED BY: MC
SCALE: 1"=20'	APPROVED BY: JDF
ISSUED FOR APPROVAL	SHEET NO. 1 of 3
WORK ORDER #: 2650.CT465	



**TECTONIC/KEYES ASSOCIATES**  
 1344 BELAR DEANE HIGHWAY, SUITE 800 OFFICE: (860)383-2244  
 ROCKY HILL, CT 06267-1548 FAX: (860)387-1885



**AT&T**

AT&T WIRELESS SERVICES, INC.  
 12 Omega Drive, Second Floor  
 Stamford, Connecticut 06902

DRAWING TITLE:  
**ELEVATION**  
 PROJECT INFORMATION:  
**THOMPSON CENTRAL**  
 CT-465.2  
 LOWELL DAVIS RD.  
 THOMPSON, CT 06277

PROPERTY OWNER:  
**KGI WIRELESS**  
 8911 N CAPITAL TEXAS HWY  
 AUSTIN, TEXAS 78758

DRAWING NO.  
**SC-2**

REVISION NO. 0	DRAWN BY: RPM
DATE: 8/22/02	CHECKED BY: MC
SCALE: 1"=20'	APPROVED BY: JDF
ISSUED FOR APPROVAL	SHEET NO. 2 of 3
WORK ORDER #: 2650.CT465	

**AT&T WIRELESS PCS: THOMPSON CENTRAL  
W.O. 2650.CT465  
EXISTING 250' GUYED TOWER  
THOMPSON, CT  
STRUCTURAL ANALYSIS REPORT  
MARCH 26, 2002**

## **1.0 INTRODUCTION**

The existing guyed tower located off Lowell Davis Road in Thompson, CT is owned by Charter Communications, and serves their communication needs, as well as various other carriers. AT&T Wireless PCS (AT&T) anticipates installing its antennas on this tower in the near future.

Tectonic Engineering & Surveying Consultants, P.C. has performed a structural inspection and analysis of the tower to verify its adequacy for supporting the proposed installation in accordance with current code requirements.

### **1.1 Information Provided**

For the purpose of analysis, Tectonic was provided with the following information:

- "Structural Analysis and Report for Charter Cable Television of the 250 Foot Guyed Tower at Thompson, Connecticut", by L&W Engineering, report dated 6/9/97, 6/10/98 and 6/11/98, W.O. 2188 & 2194, calculations dated 5/26/98 thru 6/7/98 (77 pages total).
- "Site Candidate Information Package", by WFI, Search Area/Site #: CT465B, Market: Connecticut, Search Area Name: Thomson Central, Site Name: KGI, dated 3/26/01 (6 pages).

## **2.0 STRUCTURE DESCRIPTION**

### **2.1 Tower Structure**

According to the L&W Engineering report, the tower was designed by Express Tower Co. The tower consists of twelve (12) 20' long sections and one (1) 10' long top section, for a total height of 250'. It has a uniform width of 3'-0" (center to center of legs) for its full height, except for the approximately 7' long tapered portion at the base of the bottom section.

All sections are constructed of steel pipe leg and solid rod bracing members. The tower is X-braced from the base to the 240' level, and Z-braced from the 240' level to the top. Horizontals divide each X-bracing/Z-bracing set. Additional horizontal members, located between the legs and diagonal bracing members, are present on one (1) face for climbing purposes. All bracing connections are welded, while the tower section splice connections are bolted.

The tower is supported by a total of fifteen (15) guys at four (4) levels. Single guys are attached to the tower at the 60', 120', and 180' levels. Double guys are attached to a torque arm mounted at the 240' level. The guys at the 60', 120', 180', and 240' levels are 3/8", 7/16", 1/2", 9/16" diameter, respectively. All guys are galvanized 7-wire strand at all levels.

A diagram of the tower is presented in Figure 1, attached.

## **2.2 Foundation and Guy Anchors**

The exposed portion of the tower foundation consists of a 2'-0" diameter concrete pier, extending approximately 2'-0" above grade.

The guys extend to a single common anchor point in each direction, averaging approximately 186' from the centerline of the tower. All anchors form angles between them of approximately 120°. The site is relatively level, with all anchors at approximately the same elevation as the base of the tower.

The lower three (3) guy levels are attached to a 3/4" equalizer plate with 3/4" eye-and-jaw turnbuckles, while the remaining guys are attached with 7/8" eye-and-jaw turnbuckles. An S4x7.7 anchor strut extends out of the soil to connect with the equalizer plate.

## **3.0 EXISTING CONDITION**

### **3.1 Field Inspection**

Tectonic Engineering & Surveying Consultants, P.C. performed a detailed inspection of the tower on March 8, 2002 to verify the existing configuration and conditions.

The inspection was limited in the following respects:

1. A detailed inspection of welds, bolts, and appurtenances was not performed.
2. The adequacy of the existing ground system was not assessed.
3. No investigation of the existing soil conditions or foundation system was performed.
4. Grade elevations at each guy anchor were visually estimated.
5. The orientation of the tower with respect to true north was not confirmed.
6. The tower was not measured for plumbness.

Based on our inspection, the tower legs and bracing all appear to be in generally good condition. The tower is painted in alternating bands of orange and white. No damage or significant deformation of the tower was observed. Therefore, we expect that the tower mast is capable of supporting its original design loads.

We note that the diagonal members at the 122', 182', and 238' levels have been reinforced by welding split pipe sections to them.

The exposed portion of the tower foundation is in good condition.

All guys were installed with dead end cable grips, and appear to be in good condition. All turnbuckles, equalizer plates and the exposed portion of the anchors were found to be in good condition, with the galvanizing intact. Safety wires are present on all turnbuckles. However, none of the safety wires are properly threaded in accordance with standard guyed tower construction.

Ground wires are clamped to all equalizer plates near the anchor points, as well as at the base of the tower. However, no ground wires were found to be connected to the guys near the anchor points.

Guy tensions were estimated in the field. Our measurements indicate all of the guys are adequately tensioned within the recommended pretension range of 8-15% of their breaking strength, as recommended by TIA/EIA.

### **3.2 Existing Antennas and Equipment**

For identification purposes, the leg nearest the entry road is designated as leg A, while legs B and C are designated respectively in a clockwise direction. The climbing face is A-C.

At the time of our inspection, the tower was found to be supporting the following items:

- 1 300 mm beacon at the 250' level (base of beacon), bolted to the top of the tower
- 1 3/4" diameter conduit to the 250' level on face A-B
- 4 Celwave AO9210 or similar omnidirectional antennas at the 226' level (base of antennas), mounted two (2) each (1 up, 1 inverted) to 6' sidearms on legs A and B
- 4 1-5/8" diameter coaxial cables to the 226' level on leg A
- 9 Allgon 7120.16.05.00 panel antennas at the 205' level (centerline), mounted three (3) per sector to three (3) 12' wide frames

- 9 1-1/4" diameter coaxial cables to the 205' level, attached three (3) cables per leg
- 3 1-5/8" diameter coaxial cables to the 205' level on leg A (all dead-ended at the 205' level, 2 dead-ended at the base of the tower)
- 1 Celwave PD1109 or similar omnidirectional antenna at the 200' level (base of antenna), mounted to a 6' sidearm on leg A
- 1 7/8" diameter coaxial cable to the 200' level on leg C (dead-ended at the base of the tower)
- 1 Celwave PCN9-2 or similar omnidirectional antenna at the 188' level (base of antenna), mounted to a 6' sidearm on leg C
- 1 1-1/4" diameter coaxial cable to the 188' level on leg C
- 2 Celwave PD1109 or similar omnidirectional antennas at the 185' level (base of antennas), mounted one (1) each to 6' sidearms on leg A and face A-C
- 2 7/8" diameter coaxial cables to the 185' level on leg B
- 1 Decibel DB254 or similar corner reflector antenna at the 172' level (centerline), directly mounted to leg B
- 1 1/2" diameter coaxial cable to the 172' level on leg A
- 1 Celwave PD320 side mount antenna at the 160' level (centerline), pipe mounted to leg B
- 1 1/2" diameter coaxial cable to the 160' level on leg A
- 2 Obstruction lights at the 128' level spanning across face A-B
- 1 Channel Master 0.75M solid dish antenna at the 75' level (centerline), pipe mounted to the tower on leg B

#### **4.0 PROPOSED INSTALLATION**

We understand that all existing antennas and equipment will remain on the structure. AT&T proposes to add the following items to the tower:

- 6 Allgon 7250.02 panel antennas at the 150' level (centerline), mounted two (2) per sector to three (3) 6' sidearms, one per leg
- 12 1-5/8" diameter coaxial cables to the 150' level, tightly bundled and attached to face A-B

#### **5.0 STRUCTURAL ANALYSIS**

##### **5.1 Loading Criteria**

In accordance with the provisions of ANSI/TIA/EIA-222-F-1996 "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", a basic wind speed of 85 mph applies to Windham County, where the tower is located. The 1999 Connecticut Supplement to the BOCA National Building

Code/1996 also requires a wind speed of 85 mph within the Town of Thompson. Therefore, this wind speed was used in our analysis.

Ice loads have been established based on a 0.5" radial ice thickness in accordance with industry standard practice. A reduced wind speed of 74 mph was used in conjunction with this ice load.

## 5.2 Procedure

The tower has been analyzed with PLS-Tower, a specialized three-dimensional structural analysis program. The guy tension forces produced by initial pretensioning and the wind and ice loading were incorporated. Three (3) directions of wind incidence were considered, namely parallel to a guy, parallel to a tower face, and perpendicular to a tower face.

The analysis included the following loading conditions:

1. The tower with the existing antennas and cables only, using current loading criteria with:
  - a) a wind speed of 85 mph and no ice
  - b) a wind speed of 74 mph in conjunction with 0.5" ice
2. The tower with the existing antennas and the proposed AT&T antennas and related cables, using current loading criteria with:
  - a) a wind speed of 85 mph and no ice
  - b) a wind speed of 74 mph in conjunction with 0.5" ice

We note that the existing cables are mounted on brackets that extend out beyond the tower face. This significantly increases the wind load, especially under the ice loading condition.

Results are reported for the worst case in each loading condition.

## 5.3 Assumptions

Several assumptions were made in order to perform the analysis. Each of these is considered by Tectonic to be both reasonable and consistent with current standards of practice.

1. Material yield stress for members are as used in the L&W Engineering report (50 ksi legs, 36 ksi bracing).
2. All guy wires are ASTM A475 type EHS.
3. Leg and bracing members are assumed to be concentrically loaded.

4. Guy pretension is assumed to be equal to 10% of the breaking strength.
5. The tower and guy anchor foundation capacities listed in the L&W Engineering report were computed from the original Express Tower design drawings.

**5.4 Results**

For each loading condition, the maximum tower member and guy forces have been calculated. All member capacities have been determined in accordance with current applicable codes. The percentages of capacity of the critical members for each of the load cases described in Section 5.2 are as follows:

Critical Member	LC1	LC2
Leg	91%	91%
Bracing	82%	82%
Guy (2 levels)	119%	124%

The L&W Engineering report states that they were provided with the original tower foundation design. From this, L&W has computed foundation capacities. The maximum foundation reactions at the tower base, as well as the L&W foundation capacities, are summarized as follows.

	L&W Capacity	LC1		LC2	
		Current Analysis	%	Current Analysis	%
Compression	104.3 k	88.2 k	85	93.4 k	90
Shear	Not given	0.7 k	N/A	0.7 k	N/A

The maximum reactions at the guy anchors are summarized as follows:

	L&W Capacity	LC1		LC2	
		Current Analysis	%	Current Analysis	%
Uplift	38.0 k	34.2 k	90	34.7 k	91
Shear	63.6 k	40.7 k	64	41.3 k	65

**6.0 CONCLUSIONS AND RECOMMENDATIONS**

As a result of our analysis, we find that the existing tower does not have sufficient capacity to support the proposed antenna and cable configurations in accordance with current applicable codes. The tower is overstressed in its present condition. This overstress will be made slightly worse by the proposed AT&T installation.

The existing guys at the 120' and 180' level will need to be replaced with larger diameter guys to support the existing and proposed installations. Although this replacement will increase the compression forces in the tower, and will increase the reactions on the existing tower base and guy anchor foundations, we expect that the tower and foundations will remain within their allowable capacities.

No specific information on the design or construction of the existing tower foundation or guy anchors was made available. Based on assumption #5 listed in Section 5.3, we expect the foundation and guy anchor reactions will be within their capacities.

Based on the magnitude and locations of the calculated overload, a reduction in the size of the proposed antenna configuration will not eliminate the need for tower reinforcement. We note that the overstress is not directly attributable to the proposed AT&T antennas and related cables.

Regardless of whether or not AT&T continues to pursue this site for their proposed installation, we recommend the following:

1. The existing guys at the 120' and 180' level should be replaced with larger diameter guys to support the existing installations in accordance with current applicable codes.
2. The safety wires should be properly rethreaded at each anchor point, in accordance with the manufacturer's specifications.
3. The grounding system should be checked and upgraded as necessary.
4. A safety climb device should be installed on the climbing face to the top of the tower.

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

Prepared by: Richard J. Dyer  
Richard J. Dyer, E.I.T.  
Staff Structural Engineer

Reviewed by: George Moxham  
George Moxham  
Senior Structural Engineer

Reviewed by: Dave F. Wisniewski  
Dave F. Wisniewski  
Senior Structural Engineer

Date: 3/26/02

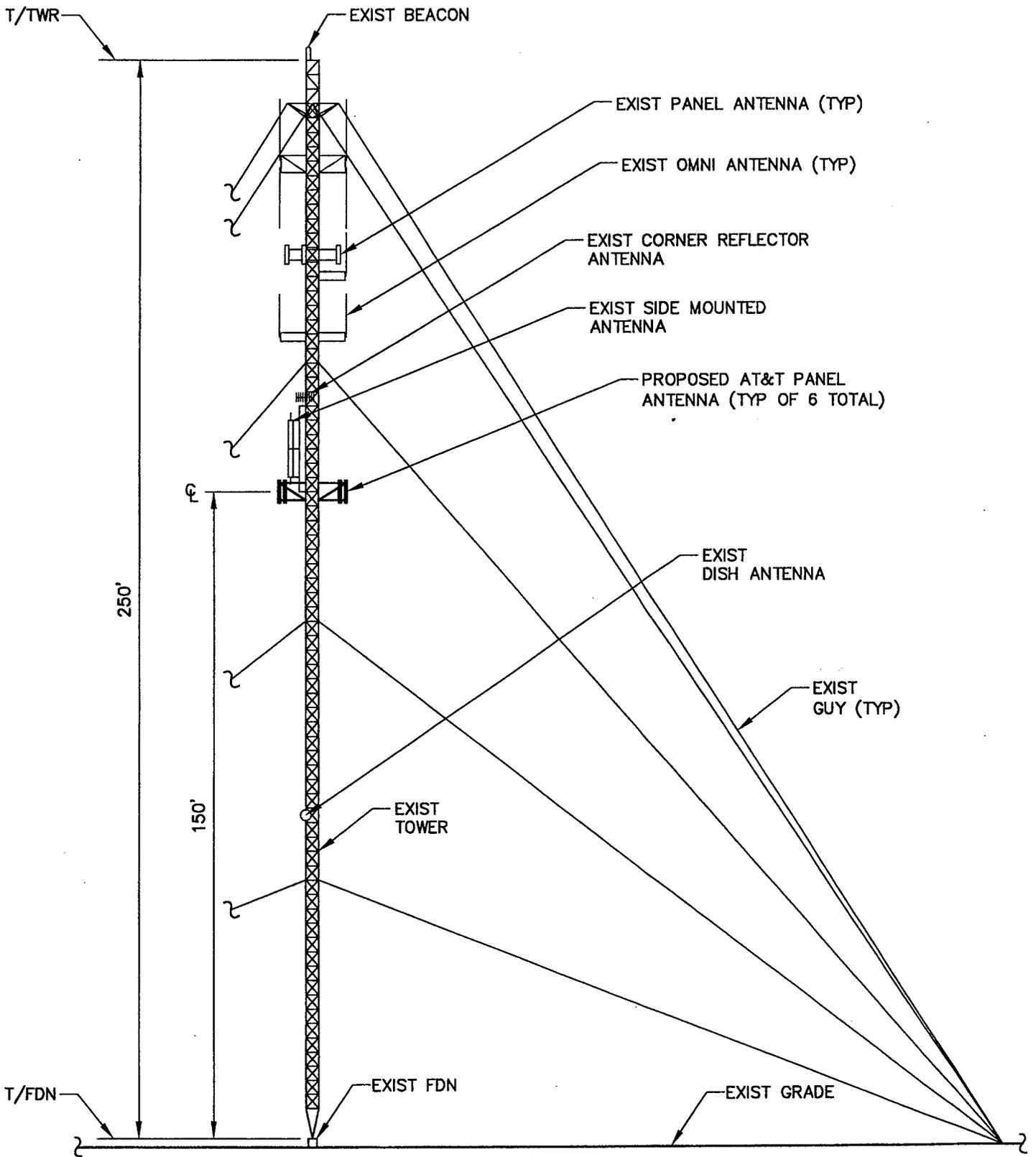


FIGURE 1



---

## **RF Exposure Analysis for Proposed AT&T Wireless Antenna Facility**

SITE ID: 907-009-465

November 06, 2002

**Prepared by AT&T Wireless Services, Inc.**  
Satish Bhandare, **RF Engineer**

## Table of Contents

1. INTRODUCTION.....	3
2. SITE DATA.....	3
3. RF EXPOSURE PREDICTION .....	3
4. FCC GUIDELINES FOR EVALUATING THE ENVIRONMENTAL EFFECTS OF RF EMISSIONS 4	
5. COMPARISON WITH STANDARDS .....	4
6. CONCLUSION.....	4
7. FCC LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE .....	5
8. EXHIBIT A.....	6
9. FOR FURTHER INFORMATION.....	7
10. REFERENCES.....	7

## 1. Introduction

This report constitutes an RF exposure analysis for the proposed AT&T Wireless antenna facility to be located at Lowell Davis Road, Thompson, CT. This analysis uses site-specific engineering data to determine the predicted levels of radio frequency (RF) electromagnetic energy in the vicinity of the proposed facility and compares those levels with the Maximum Permissible Exposure (MPE) limits established by the Federal Communications Commission.

## 2. Site Data

Site Name: <b>Thompson Central</b>	
Number of simultaneously operating channels	12
Type of antenna	Allgon 7250.03
Power per channel (Watts ERP)	250.0 Watts
Height of antenna (feet AGL)	150.00 feet
Antenna Aperture Length	5 feet

## 3. RF Exposure Prediction

The following equations established by the FCC, in conjunction with the site data, were used to determine the levels of RF electromagnetic energy present in the vicinity of the proposed facility<sup>1</sup>:

$$PowerDensity = \frac{0.64 * N * EIRP(\theta)}{\pi * R^2} (mW/cm^2) \quad Eq. 1-Far-field$$

Where,  $N$ = Number of channels,  $R$ = distance in cm from the antenna centerline, and  $EIRP(\theta)$  = The isotropic power expressed in milliwatts in the direction of prediction point. This is the correct equation for antennas which have their gain expressed in dBi, which is the usual case for the PCS bands.

$$PowerDensity = \frac{P_{in} / ch * N * 10^3}{2 * \pi * R * h * \alpha / 360} (mW/cm^2) \quad Eq. 2-Near-field$$

Where  $P_{in}/ch$  = Input power to antenna terminals in watts/ch,  $R$  = distance to antenna centerline,  $h$  = aperture height in meters,  $\alpha$  = 3 dB beam-width of horizontal pattern.

<sup>1</sup> RF exposure is measured and predicted in terms of power density in units of milliwatts (mW), a thousandth of a watt, or microwatts ( $\mu$ W), a millionth of a watt, per square centimeter (cm<sup>2</sup>). Data comparing predictive analysis with on site measurements has demonstrated that power density can be effectively predicted at given locations in the vicinity of a wireless antenna facility.

#### 4. FCC Guidelines for Evaluating the Environmental Effects of RF Emissions

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 a Second Memorandum Opinion and Order. These new rules represent a consensus of the federal agencies responsible for the protection of public health and the environment, including the Environmental Protection Agency (EPA), the Food and Drug Administration (FDA), the National Institute for Occupational Health and Safety (NIOSH), and the Occupational Safety and Health Administration (OSHA).

Under the laws that govern the delivery of wireless communications services in the United States, as amended by the Telecommunications Act of 1996, the FCC has exclusive jurisdiction over RF emissions from personal wireless antenna facilities, which include cellular, PCS, messaging and aviation sites.<sup>2</sup> Pursuant to its authority under federal law, the FCC has established rules to regulate the safety of emissions from these facilities.

#### 5. Comparison with Standards

Exhibit A shows the levels of RF electromagnetic energy as one moves away from the antenna facility. As shown in Exhibit A, the maximum power density is 0.010372 mW/cm<sup>2</sup> which occurs at 260 feet from the antenna facility. The chart in exhibit A also shows that the power density is only 0.000350 mW/cm<sup>2</sup> at a distance of 4 feet. Table 1 below shows the Maximum Permissible Exposure (MPE) limits established by the FCC. There are different MPE limits for public/uncontrolled and occupational/controlled environments.

*Table 1: Maximum Permissible Exposure limits for RF Emissions*

<i>Frequency</i>	<i>Public/Uncontrolled</i>	<i>Occupational/controlled</i>	<i>Maximum power density at Accessible location</i>
Cellular	.580 mW/cm <sup>2</sup>	2.9 mW/cm <sup>2</sup>	0.010372 mW/cm <sup>2</sup>
PCS	1 mW/cm <sup>2</sup>	5 mW/cm <sup>2</sup>	

The maximum power density at the proposed facility represents only 3.38% of the public MPE limit for all frequencies in use.

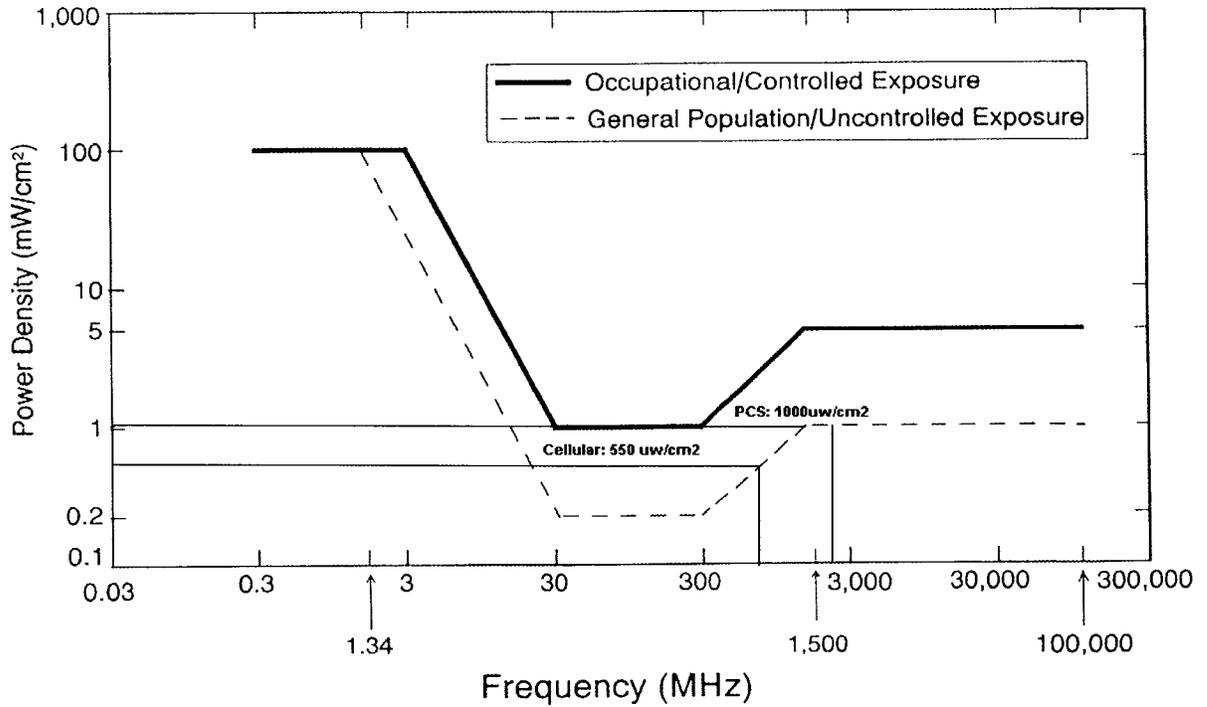
#### 6. Conclusion

This analysis show that the maximum power density in accessible areas at this location is 0.010372 mW/cm<sup>2</sup>, a level of RF energy that is well below the Maximum Permissible Exposure limit established by the FCC.

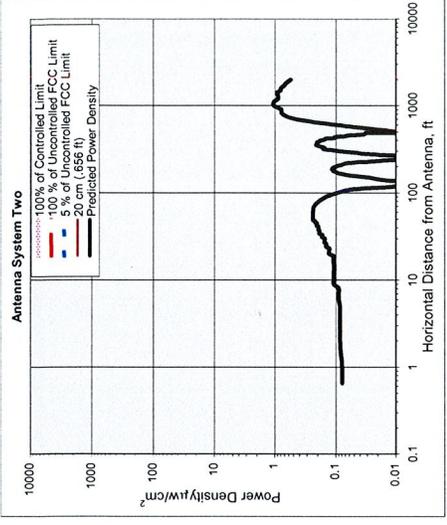
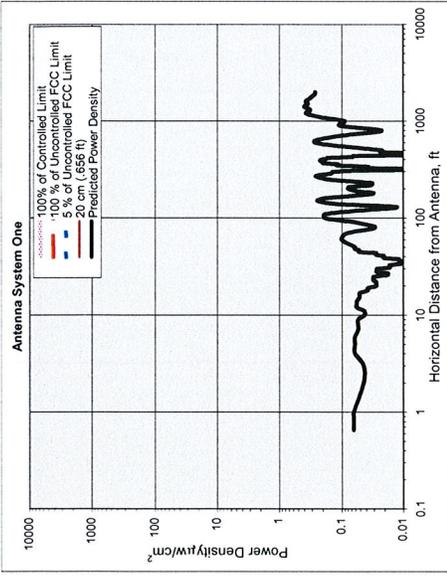
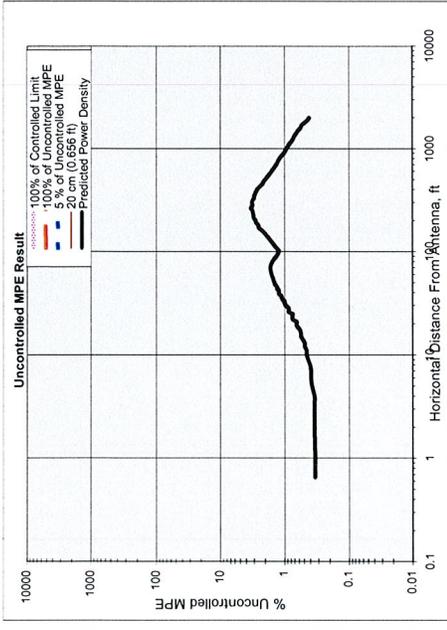
<sup>2</sup> 47 U.S. C. Section 332 ( c ) (7)(B)(iv) states that “[n]o State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission’s regulations concerning such emissions.”

### 7. FCC Limits for Maximum Permissible Exposure

FCC Limits for Maximum Permissible Exposure (MPE)  
*Plane-wave Equivalent Power Density*



**8. Exhibit A**



Number of Antenna Systems: 7  
 Meets FCC Controlled Limits for The Antennas Systems.

Meets FCC Uncontrolled Limits for The Antenna Systems.

Meets 5% of FCC Uncontrolled Limits for The Antenna Systems.

No Further Analysis Required.

Power Density mW/cm²	% of limit	Power Density @Horiz. Dist. feet
0.010372	3.38	260.00
29.57 times lower than the MPE limit for uncontrolled environment		
Composite Power (ERP) = 31,000.00 Watts		

Site ID: 907-009-465  
 Site Name: Thompson Central  
 Site Location: Lowell Davis Rd  
 Thomson, CT

Performed By: Satish Bhandare  
 Date: 11/6/02

Antenna System One

units	Value
Frequency	1945.00
MHz	
# of Channels	12
Max ERP/Ch	250.00
Watts	
Max Pwr/Ch into Ant.	5.86
Watts	
(Center of Radiator)	150.00
feet	
Calculation Point	0.00
(above ground or	
roof surface)	0.00
Antenna Model No.	Aligon 7250.03
Max Ant Gain	16.30
dBd	
Down tilt	2.00
degrees	
Miscellaneous Att.	0.00
dB	
Height of aperture	5.11
feet	
Ant HBW	65.00
degrees	
Distance to Ant <sub>Location</sub>	147.45
feet	
WOS?	n

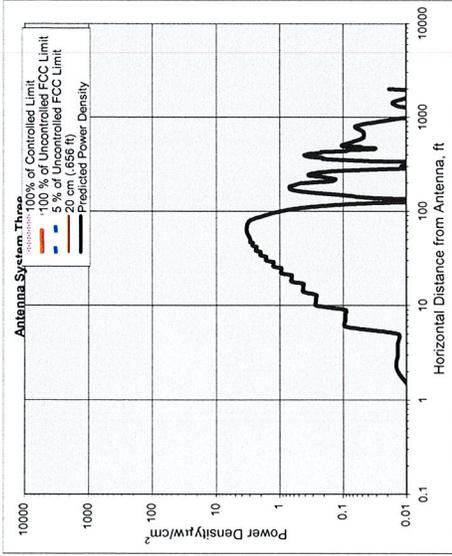
Ant System ONE Owner: AT&T  
 Sector: 3  
 Azimuth: 0/120/240

Antenna System Two

units	Value
Frequency	890.00
MHz	
# of Channels	30
Max ERP/Ch	250.00
Watts	
Max Pwr/Ch into Ant.	18.11
Watts	
(Center of Radiator)	203.00
feet	
Calculation Point	0.00
(above ground or	
roof surface)	0.00
Antenna Model No.	Aligon 7120.16.33
Max Ant Gain	11.40
dBd	
Down tilt	2.00
degrees	
Miscellaneous Att.	0.00
dB	
Height of aperture	4.00
feet	
Ant HBW	110.00
degrees	
Distance to Ant <sub>Location</sub>	201.00
feet	
WOS?	n

Ant System TWO Owner: Cingular (SNET)  
 Sector: 3  
 Azimuth: 0/120/240

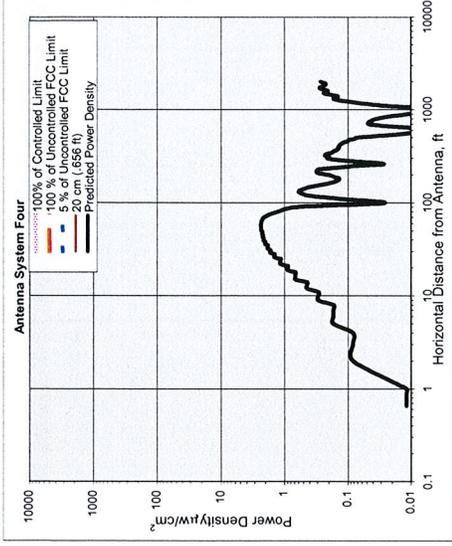
**NOTE: A CHANNEL MASTER 0.75 M SOLID DISH ANTENNA IS ALSO LOCATED AT 75 FT. THIS IS A RECEIVE-ONLY ANTENNA AND DOES NOT CONTRIBUTE TO EMISSIONS**



Antenna System Three

Parameter	Value
Frequency	890.00
# of Channels	30
Max ERP/Ch	250.00
Max Pwr/Ch Into Ant.	30.76
(Center of Radiator)	227.00
Calculation Point	0.00
(above ground or	0.00
roof surface)	0.00
Antenna Model No.	AO 9210
Max Ant Gain	9.10
Down tilt	0.00
degrees	0.00
Miscellaneous Att.	0.00
dB	0.00
Height of aperture	15.00
feet	15.00
Ant HBW	360.00
degrees	360.00
Distance to Ant <sub>Location</sub>	219.50
feet	219.50
WOS?	n

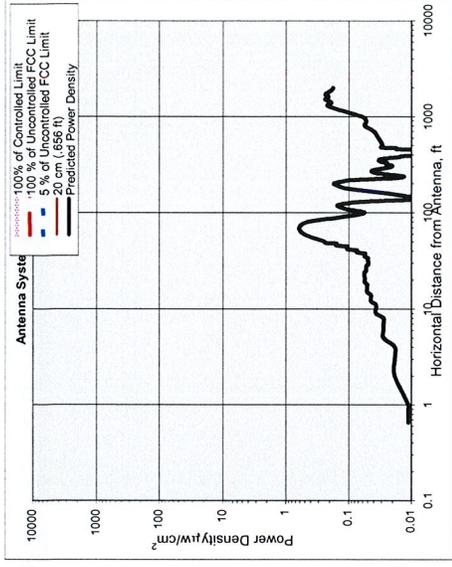
Ant System Three Owner: Verizon  
Sector: 1  
Azimuth: 0



Antenna System Four

Parameter	Value
Frequency	851.00
# of Channels	16
Max ERP/Ch	250.00
Max Pwr/Ch Into Ant.	39.53
(Center of Radiator)	190.00
Calculation Point	0.00
(above ground or	0.00
roof surface)	0.00
Antenna Model No.	PD 1109
Max Ant Gain	8.01
Down tilt	2.00
degrees	2.00
Miscellaneous Att.	0.00
dB	0.00
Height of aperture	10.30
feet	10.30
Ant HBW	360.00
degrees	360.00
Distance to Ant <sub>Location</sub>	184.85
feet	184.85
WOS?	n

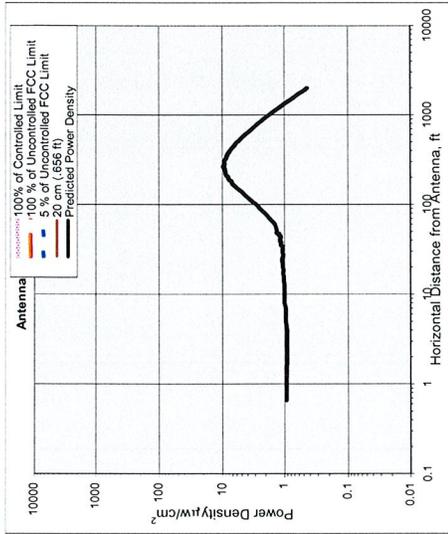
Ant System Four Owner: Nextel  
Sector: 1  
Azimuth: 0



Antenna System Five

Parameter	Value
Frequency	928.00
# of Channels	4
Max ERP/Ch	500.00
Max Pwr/Ch Into Ant.	54.82
(Center of Radiator)	188.00
Calculation Point	0.00
(above ground or	0.00
roof surface)	0.00
Antenna Model No.	PCN 9-2
Max Ant Gain	9.60
Down tilt	2.00
degrees	2.00
Miscellaneous Att.	0.00
dB	0.00
Height of aperture	12.00
feet	12.00
Ant HBW	360.00
degrees	360.00
Distance to Ant <sub>Location</sub>	182.00
feet	182.00
WOS?	n

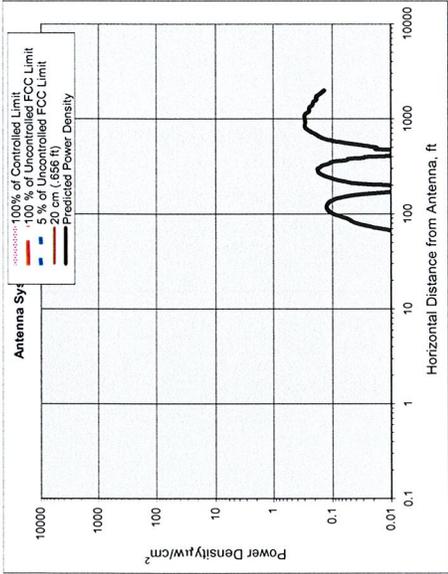
Ant System Five Owner: Paging  
Sector: 1  
Azimuth: 0



Antenna System Six

Parameter	units	Value
Frequency	MHz	450.00
# of Channels	#	10
Max ERP/Ch	Watts	500.00
Max Pwr/Ch into Ant.	Watts	50.00
Max Pwr/Ch into Ant. (Center of Radiator)	feet	172.00
Calculation Point (above ground or roof surface)	feet	0.00
Antenna Model No.		0.00
Max Ant Gain	dBd	DB 254
Down tilt	degrees	10.00
Miscellaneous Att.	dB	0.00
Height of aperture	feet	2.00
Ant HBW	degrees	38.00
Distance to Ant <sub>bottom</sub>	feet	171.00
WOS?	Y/N?	n

Ant System SIX Owner: EMS/TOWN  
Sector: 1  
Azimuth: 185



Antenna System Seven

Parameter	units	Value
Frequency	MHz	66.00
# of Channels	#	4
Max ERP/Ch	Watts	500.00
Max Pwr/Ch into Ant.	Watts	134.58
Max Pwr/Ch into Ant. (Center of Radiator)	feet	160.00
Calculation Point (above ground or roof surface)	feet	0.00
Antenna Model No.		0.00
Max Ant Gain	dBd	PD 320
Down tilt	degrees	5.70
Miscellaneous Att.	dB	0.00
Height of aperture	feet	0.00
Ant HBW	degrees	20.00
Distance to Ant <sub>bottom</sub>	feet	360.00
WOS?	Y/N?	n

Ant System SEVEN Owner: Town  
Sector: 1  
Azimuth: 0

## 9. For Further Information

Additional information about the environmental impact of RF energy from personal wireless antenna facilities can be obtained from the Federal Communications Commission:

Dr. Robert Cleveland  
Federal Communications Commission  
Office of Engineering and Technology  
Washington, DC 20554

RF Safety Program: 202-418-2464  
Internet address: [rfsafety@fcc.gov](mailto:rfsafety@fcc.gov)  
RF Safety Web Site: [www.fcc.gov/oet/rfsafety](http://www.fcc.gov/oet/rfsafety)

## 10. References

[1] The Communications Act of 1934, as amended by the Telecommunications Act of 1996, 47 U.S.C. Section 332 (c)(7)(B)(iv).

[2] *Guidelines for Evaluating the Environmental Effects of Radio frequency Radiation*, Notice of Proposed Rulemaking, ET Docket 93-62, 8 FCC Rcd 2849 (1993).

[3] *Guidelines for Evaluating the Environmental Effects of Radio frequency Radiation*, Report and Order, ET Docket 93-62, FCC 96-326, adopted August 1, 1996. 61 Federal Register 41006 (1996).

[4] *Guidelines for Evaluating the Environmental Effects of Radio frequency Radiation*, Second Memorandum Opinion and Order, ET Docket 93-62, adopted August 25, 1997.

[5] *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields*, OET Bulletin 65, August, 1997.