



STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

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

March 26, 2003

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

RE: **TS-AT&T-077-030310** –AT&T Wireless PCS LLC request for an order to approve tower sharing at a proposed telecommunications facility located at 239 Middle Turnpike East, Manchester, Connecticut.

Dear Attorney Fisher:

At a public meeting held March 25, 2003, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures with the conditions: 1) that AT&T provide plantings of a size and nature similar to those shown on its Drawing No. 907-007-448B-SC1 to the eastern-most point of the northerly fence line of the facility compound, and 2) that AT&T paint its equipment to match the colors approved for the existing equipment in the compound. 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.

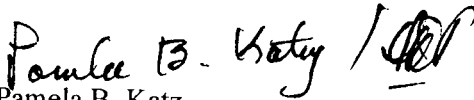
This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point 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.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letter dated March 6, 2003.

Thank you for your attention and cooperation.

Very truly yours,

  
Pamela B. Katz  
Chairman

PBK/laf

c: Honorable Stephen T. Cassano, Mayor, Town of Manchester  
Thomas R. O'Marra, Zoning Enforcement Officer, Town of Manchester



# Town of Manchester

41 Center Street • P.O. Box 191  
Manchester, Connecticut 06045-0191  
www.ci.manchester.ct.us

STEPHEN T. CASSANO, MAYOR  
JOSH M. HOWROYD, DEPUTY MAYOR  
CHRISTY SCOTT, SECRETARY

DIRECTORS  
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KEVIN L. ZINGLER

STEVEN R. WERBNER, GENERAL MANAGER

March 13, 2003

S. Derek Phelps, Executive Director  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, Connecticut 06051

RECEIVED

MAR 17 2003

CONNECTICUT  
SITING COUNCIL

Re: TS-AT&T-077-030310 – AT&T Wireless PCS Request

Dear Mr. Phelps:

Thank you for the opportunity to comment with regard to the subject request for tower sharing on a Town of Manchester owned facility at 239 Middle Turnpike East.

Please be advised that as of March 10, 2003 the tower had not yet been erected although it is under construction.

The landscaping shown as existing is being modified in accordance with the request of the Town of Manchester and a final "existing landscaping plan" is not available at this time. However, it is noted that the placement of the AT&T equipment is beyond the easterly most plantings provided for screening. We would, therefore, request that the Council require that additional evergreens be planted extended easterly of those shown on the "compound plan" so as to provide the beginnings of a landscaped screen between the compound and properties to the north and east. As depicted, the new landscaping should extend from the easterly most evergreen to the "existing utility pole" located north and west of the "existing transformer".

We would also request that the colors of the AT&T equipment be required to match the colors approved for the existing equipment within the compound.

We appreciate the opportunity to express to the Council the requirements of Manchester's Zoning Regulations which would otherwise apply to the facility.

References made to Article IV Section 19.06 subparagraph 10 and subparagraph 16. Copy attached for your convenience.

Very truly yours,

Thomas R. O'Marra  
Zoning Enforcement Officer

TRO'M:ka

Att.

cc: Mark Pellegrini, Director of Neighborhood Services  
and Economic Development  
Alan Desmarais, Director of Finance  
Timothy P. O'Neil, Assistant Town Attorney  
Lt. Marc Montminy, Manchester Police Dept.

R:\KATHY09VTROM239 MTE Tower 2.doc



form of an affidavit, caveat, declaration of covenants, etc. on the land records once approved by the Commission.

19.06

General Requirements

1. Applications for any commercial telecommunications service facility shall be made by a licensed carrier only.
2. No wireless telecommunication tower site shall be located within 200 feet of a residence.
3. No tower exceeding 60 feet in height shall be located within 1,000 feet of the boundary of an approved historic district.
4. No lights shall be mounted on proposed towers unless otherwise required by the Federal Aviation Administration (FAA). Strobe lighting shall be permitted only where required by applicable regulations.
5. Towers not requiring special FAA painting or markings shall be painted a non-contrasting blue, grey or black.
6. Towers, antennas and equipment boxes may not be used to exhibit advertising or any signage other than a public warning sign.
7. All towers shall be monopole design unless otherwise approved by the Commission.
8. Any proposed tower shall be designed in all respects to accommodate both the applicant's antennas and comparable antennas for at least two additional users if the tower is over 150 feet in height or for at least one additional comparable antenna if the tower is 150 feet in height or under. The Commission may require the tower to be of such design as to allow for future rearrangement of antennas upon the tower and to accommodate antennas mounted at varying heights.
9. The Commission may require that towers, antennas, antenna mounts, equipment buildings/boxes and telecommunication structures be of such design and material so that they are camouflaged.
10. Antennas or equipment buildings/boxes mounted to or on buildings or structures shall to the greatest degree possible blend with the color and design of such building.
11. Each telecommunications facility site shall be provided with a paved driveway and parking space for at least one vehicle in accordance with Article IV, Section 9.



12. No proposed wireless telecommunication site shall be designed, located or operated as to interfere with existing or proposed public safety communications.
13. The design of all wireless telecommunication sites shall comply with the standards promulgated by the Federal Communications Commission (FCC) for non-ionizing electromagnetic emissions. In the absence of such standards sites shall comply with standards set by the Institute of Electrical and Electronics Engineers for safe human exposure to radio frequency electromagnetic fields. Approved tower owners shall submit an annual report detailing the maximum current measurement and future projection of the measurement of radio frequency emissions.
14. All utilities proposed to serve a wireless telecommunication site shall be installed underground unless otherwise approved by the Commission.
15. All generators installed in conjunction with any wireless telecommunication site shall comply with all State and local noise regulations.
16. All towers shall be fenced and all accompanying equipment buildings or boxes shall be screened and fenced to minimize visual intrusion as approved by the Manchester Planning and Zoning Commission as part of the site plan review.

19.07

#### Height and Area Requirements

1. Lot Size. Wireless telecommunication sites containing a freestanding tower shall not be located on any lot less than 20,000 square feet in area. Where it is proposed that such a wireless telecommunication site occupy a lot as a principal use the minimum lot size shall be equal to that required for the underlying zone or 20,000 square feet, whichever is greater.
2. Height. The maximum height of a tower proposed under this regulation shall be 175 feet including the antenna and all other appurtenances.

The maximum height of any roof top mounted equipment building or box shall be 15 feet.

3. Setbacks
  - a. All freestanding monopole or other towers shall comply with the minimum property line setbacks except that in no cases shall a monopole or tower be constructed so that it is set back from the property line less than a distance equal to the height of the tower.

**CUDDY & FEDER & WORE**

90 MAPLE AVENUE  
WHITE PLAINS, NEW YORK 10601-5196

(914) 761-1300

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300 SOUTH LAKE DRIVE  
FISHKILL, NEW YORK 12524  
(845) 896-2229  
TELECOPIER (845) 896-3672

STAMFORD, CONNECTICUT  
NORWALK, CONNECTICUT

**CUDDY & FEDER**  
1971-1995

WILLIAM S. NULL  
DAWN M. PORTNEY  
ELISABETH N. RADOW  
NEIL T. RIMSKY  
RUTH E. ROTH  
JENNIFER L. VAN TUYL  
CHAUNCEY L. WALKER (also CA)  
ROBERT L. WOLFE  
DAVID E. WORBY

Of Counsel  
MICHAEL R. EDELMAN  
ANDREW A. GLICKSON (also CT)  
ROBERT L. OSAR (also TX)  
MARYANN M. PALERMO  
ROBERT C. SCHNEIDER  
LOUIS R. TAFFERA

NEIL J. ALEXANDER (also CT)  
CHARLES T. BAZYDLO (also NJ)  
THOMAS R. BEIRNE (also DC)  
THOMAS M. BLOOMER  
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WAYNE E. HELLER (also CT)  
KENNETH F. JURIST  
MICHAEL L. KATZ (also NJ)  
JOSHUA E. KIMERLING (also CT)  
DANIEL F. LEARY (also CT)  
BARRY E. LONG

March 6, 2003

**VIA FEDERAL EXPRESS**

Hon. Pamela B. Katz, Chairman and Members  
of the Siting Council  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

**RECEIVED**

MAR 10 2003

**CONNECTICUT  
SITING COUNCIL**

Re: Tower Sharing Request by AT&T Wireless  
Municipal Tower Facility at  
239 Middle Turnpike East, Manchester, Connecticut

Hon. Mortimer Gelston, Chairman and Members of the Siting Council:

Pursuant to Connecticut General Statutes (C.G.S.) § 16-50aa, AT&T Wireless PCS LLC, by and through its agent AT&T Wireless Services, Inc., ("AT&T") hereby requests an order from the Connecticut Siting Council (the "Council") to approve the proposed shared use of municipal communications tower, currently under construction, located at 239 Middle Turnpike East in the Town of Manchester (the "Middle Turnpike East Facility"). It is our understanding that the tower is in the final phases of construction and will be owned by the Town of Manchester (the "Tower Owner"). See lease signature page annexed hereto as Exhibit A.

The Middle Turnpike East Facility

The Middle Turnpike East Facility consists of an approximately one hundred eighty-three (183) foot monopole (the "Tower") and associated equipment, which is currently under construction and will be used for wireless communications by Sprint, the municipality and others. The facility is located on town owned property and is part of the Manchester Municipal complex including the Police and Fire Department.

March 6, 2003

Page 2

AT&T Wireless' Facility

As shown on the enclosed plans prepared by Natcomm, LLC, including a site plan and tower elevation of the Middle Turnpike East Facility, AT&T Wireless proposes shared use of the Facility by placing antennas on the Tower and equipment cabinets at grade needed to provide personal communications services ("PCS"). AT&T Wireless will install 6 panel antennas at approximately the 143 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 the fenced compound.

Connecticut General Statutes § 16-50aa provides that, upon written request for shared use approval, an order approving such use shall be issued, "if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns." (C.G.S. § 16-50aa(c)(1).) Further, upon approval of such shared use, it is exclusive and no local zoning or land use approvals are required C.G.S. § 16-50x. Shared use of the Middle Turnpike East Facility satisfies the approval criteria set forth in C.G.S. § 16-50aa as follows:

- A. Technical Feasibility As evidenced in the letter of structural integrity prepared by Natcomm, LLC, annexed hereto as Exhibit B, AT&T has confirmed that the Tower is structurally capable of supporting the addition of AT&T Wireless' antennas. The proposed shared use of this tower is therefore technically feasible.
- B. Legal Feasibility Pursuant to C.G.S. § 16-50aa, the Council has been authorized to issue an order approving shared use of the existing Middle Turnpike East Facility. (C.G.S. § 16-50aa(c)(1)). Under the authority vested in the Council by C.G.S. § 16-50aa, an order by the Council approving the shared use of a tower would permit the Applicant to obtain a building permit for the proposed installation.
- C. Environmental Feasibility The proposed shared use would have a minimal environmental effect, for the following reasons:
  1. The proposed installation would have a *de minimis* visual impact, and would not cause any significant change or alteration in the physical or environmental characteristics of the existing facility;
  2. The proposed installation by AT&T Wireless would not increase the height of the tower nor extend the site boundaries;

March 6, 2003

Page 3

3. The proposed installation would not increase the noise levels at the existing facility boundaries by six decibels or more;
  4. Operation of AT&T Wireless' antennas at this site would not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. The "worst case" exposure calculated for the operation of this facility for all carriers, would be approximately 4.35% of the standard. See Cumulative Emissions Compliance Report dated January 17, 2003, prepared By Nader Soliman, RF Engineer, annexed hereto as Exhibit C;
  5. The proposed shared use of the Middle Turnpike East Facility would not require any water or sanitary facilities, or generate air emissions or discharges to water bodies. Further, the installation will not generate any traffic other than for periodic maintenance visits.
- D. Economic Feasibility As evidenced in Exhibit A annexed hereto, the Applicant and the Tower Owner have entered into a mutual agreement to share use of the Middle Turnpike East Facility on terms agreeable to both parties. The proposed tower sharing is therefore economically feasible.
- E. Public Safety As stated above and evidenced in the Cumulative Emissions Compliance Report annexed hereto as Exhibit C, the operation of AT&T Wireless' antennas at this site would not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. Further, the addition of AT&T Wireless' telecommunications service in the Manchester area through shared use of the Middle Turnpike East Facility is expected to enhance the safety and welfare of local residents and travelers through the area resulting in an improvement to public safety in this area of Manchester.

### Conclusion

As delineated above, the proposed shared use of the Middle Turnpike East Facility satisfies the criteria set forth in C.G.S. § 16-50aa, and advances the General Assembly's and the Siting Council's goal of preventing the proliferation of towers in the State of Connecticut.

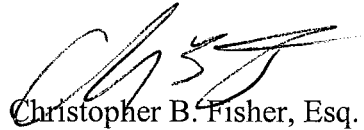
CUDDY & FEDER & WORBY LLP

March 6, 2003

Page 4

AT&T Wireless therefore requests the Siting Council issue an order approving the proposed shared use of the Middle Turnpike East Facility.

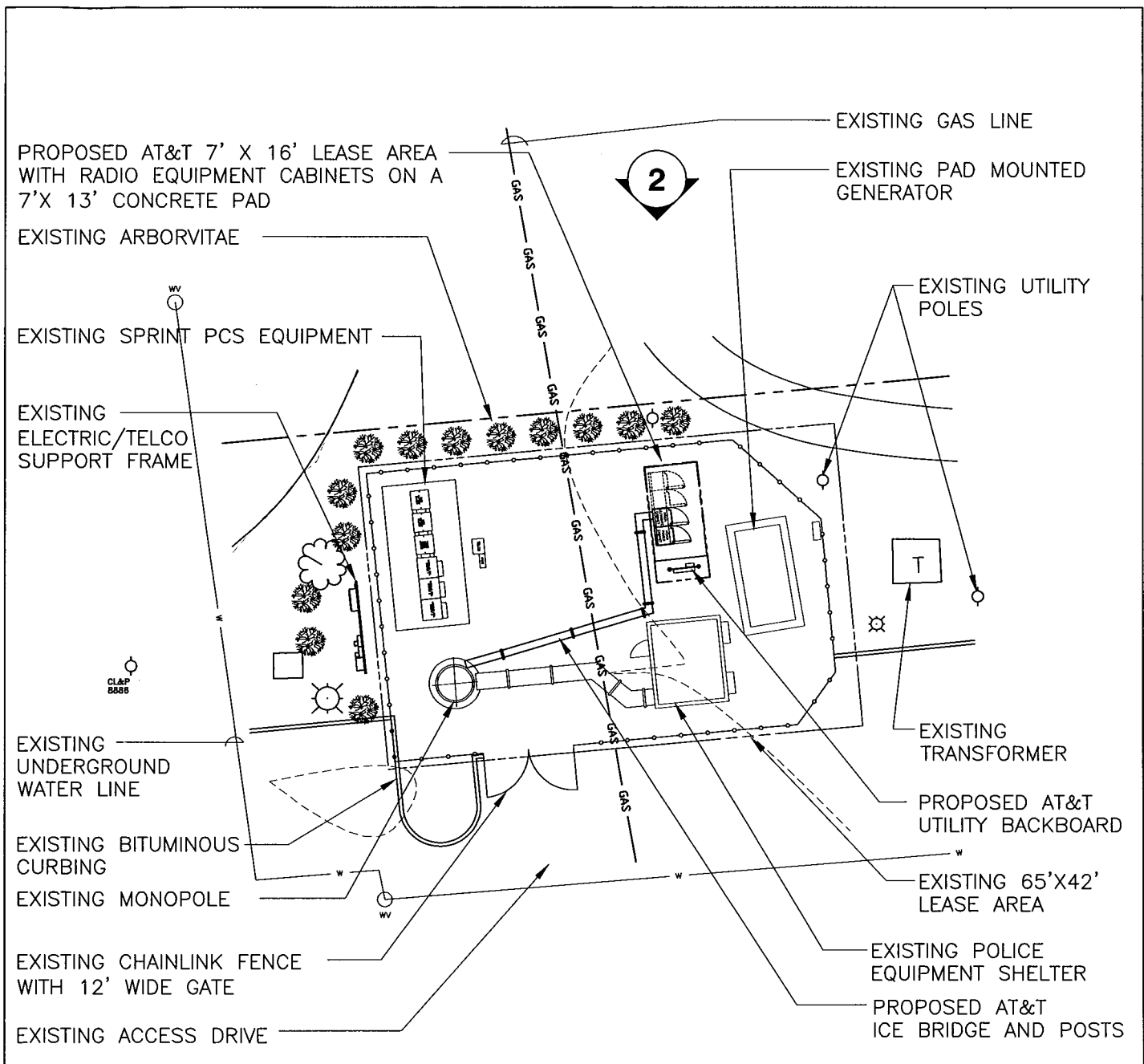
Respectfully submitted,

A handwritten signature in black ink, appearing to read "CB Fisher", is written over the typed name.

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

cc: Town Manager, Town of Manchester  
Sue Silva, Bechtel





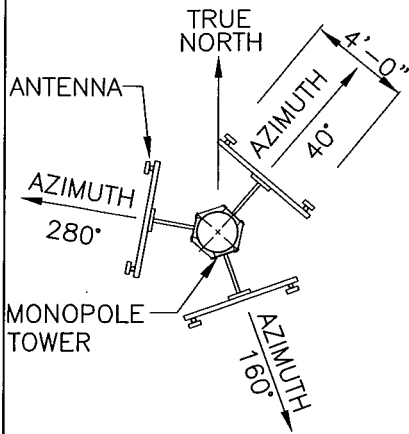


**1** **COMPOUND PLAN**  
SCALE: 1" = 20'-0"

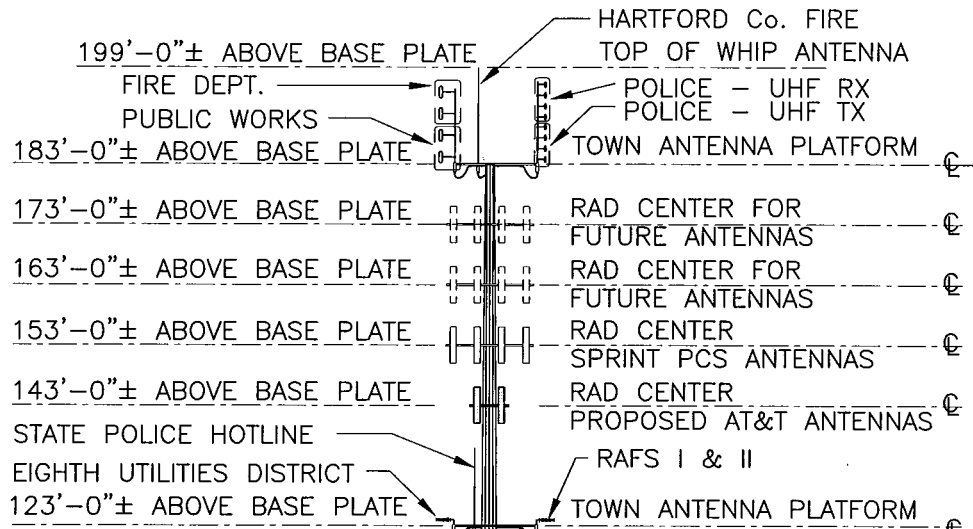
NOTE:  
LATITUDE: 41.7845°  
LONGITUDE: 72.5117°  
COORDINATES WHERE TAKEN BY  
MARTINEZ COUCH & ASSOC.

**"ISSUED FOR SITING COUNCIL"**

 <p><b>Natcomm, LLC</b> 63-2 North Branford Road Branford, Connecticut 06405 Tel. (203) 488-0580 Fax (203) 488-8587 Consulting Engineers - Project Management Civil - Structural - Mechanical - Electrical</p>	 <p><b>AT&amp;T</b> AT&amp;T WIRELESS PCS LLC 12 OMEGA DRIVE STAMFORD, CONNECTICUT 06907</p>	<p><b>DRAWING TITLE:</b> SITING COUNCIL</p>	<p><b>DRAWING NO.</b> <b>907-007-448B-SC1</b></p>	
		<p><b>PROJECT INFORMATION:</b> MANCHESTER DOWNTOWN CT-448B 239 MIDDLE TURNPIKE EAST MANCHESTER, CT 06045</p>	<p>REVISION NO. 3</p>	<p>DRAWN BY: P.A.M.</p>
<p><b>LESSOR:</b> TOWN OF MANCHESTER 239 MIDDLE TURNPIKE EAST MANCHESTER, CT 06045</p>	<p>DATE ISSUED: 03/06/03</p>	<p>CHECKED BY: JJP</p>		
	<p>SCALE: AS NOTED</p>	<p>APPROVED BY: CFC</p>		
		<p>SHEET NO. 1 OF 2</p>		
		<p>A/E PROJECT NO: 02616</p>		



## ANTENNA CONFIGURATION



183'-0" MONOPOLE AS MANUFACTURED BY ENGINEERED ENDEAVERS, INC. REFERENCE EEI JOB# 09892-E03.

- PROPOSED AT&T ICE BRIDGE AND POSTS
- PROPOSED AT&T RADIO EQUIPMENT ON A 7'X13' CONCRETE PAD
- EXISTING 10' X 12' POLICE EQUIPMENT SHELTER
- EXISTING PAD MOUNTED GENERATOR
- EXISTING 8' CHAINLINK FENCE WITH PRIVACY SLATS

SPRINT GPS, 75' ABOVE GROUND LEVEL

EXISTING UTILITY BACKBOARD

EXISTING ARBORVITAE

**2**

## TOWER ELEVATION

SCALE: 1" = 30'-0"

TOP OF MONOPOLE BASE PLATE

**"ISSUED FOR SITING COUNCIL"**

03/06/03 10:48 am EST



**Natcomm, LLC**

63-2 North Branford Road  
Branford, Connecticut 06405

Tel. (203) 488-0580  
Fax (203) 488-8587

Consulting Engineers - Project Management  
Civil - Structural - Mechanical - Electrical



**AT&T**

AT&T WIRELESS PCS LLC  
12 OMEGA DRIVE  
STAMFORD, CONNECTICUT 06907

DRAWING TITLE:

SITING COUNCIL

PROJECT INFORMATION:

MANCHESTER DOWNTOWN  
CT-448B  
239 MIDDLE TURNPIKE EAST  
MANCHESTER, CT 06045

LESSOR:

TOWN OF MANCHESTER  
239 MIDDLE TURNPIKE EAST  
MANCHESTER, CT 06045

DRAWING NO.

**907-007-448B-SC2**

REVISION NO. 3

DRAWN BY: P.A.M.

DATE ISSUED: 03/06/03

CHECKED BY: JJP

SCALE: AS NOTED

APPROVED BY: CFC

SHEET NO. 2 OF 2

A/E PROJECT NO:

02616

LEASE AGREEMENT  
(Monopole Tower)

THIS LEASE entered into as of this 28 day of February, 2003, by and between the Town of Manchester, a municipal corporation having its territorial limits within the County of Hartford and State of Connecticut, acting by and through its General Manager, Steven R. Werbner, ("Landlord") and AT&T Wireless PCS, LLC, a Delaware limited liability company, by and through its member, AT&T Wireless Services, Inc., d/b/a AT&T Wireless, with its principal office at 2729 Prospect Park Drive, Rancho Cordova, California 95670 ("Tenant").

Background

A. Landlord is the owner in fee simple of a parcel of land located in the Town of Manchester, County of Hartford and State of Connecticut, legally described on the attached Exhibit A (the "Property"), on which a Tower, commonly known as the Manchester Police Tower (the "Tower") is located. The street address of the property is 239 Middle Turnpike East, Manchester, Connecticut 06040, behind this address.

B. Tenant desires to lease space on the Tower described below for the installation and operation of certain antennae facilities, which include directional antennae, connecting cables and appurtenances (collectively, "Antennae Facilities") for use in connection with its communications business.

C. Accordingly, the parties are entering into this Lease on the terms and conditions set forth below.

Agreement

In consideration of their mutual covenants, the parties agree as follows:

1. Leased Premises. Landlord leases to Tenant and Tenant leases from Landlord a portion of the Property, consisting of space on the Tower, for up to six (6) panel antennas, up to twelve (12) coax cables, GPS unit and LMU antenna and coax for the E911 system and additional space on the property for Antennae Facilities as described more fully on the attached Exhibit B ("the Premises"). Landlord further agrees to grant Tenant access to the Tower and the ability to install utilities service on Property. Tenant may not add additional equipment and/or antennae from that shown on Exhibit B without the prior written approval of the Landlord, which consent shall not be unreasonably withheld. Any increase in equipment outside of Tenant's Premises and/or a greater number of antennas or coax, stated

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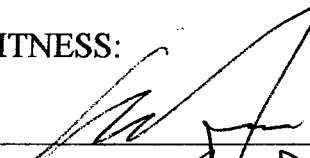
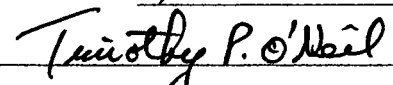
Agreement

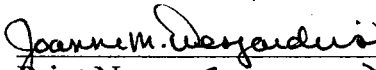
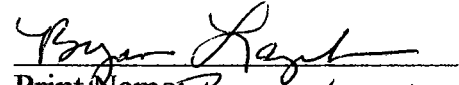
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This Lease was executed as of the date first set forth above.

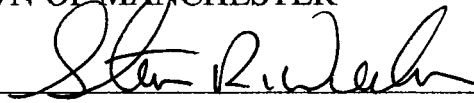
WITNESS:

  
Print Name: Alan Desjardins  
  
Print Name: TIMOTHY P. O'NEIL

  
Print Name: Joannem Desjardins  
  
Print Name: Bryan Lopez

**LANDLORD:**

TOWN OF MANCHESTER

By: 

Steven R. Werbner

Its: General Manager

Date: 2/28/2003

APPROVED AS TO FORM

  
TOWN ATTORNEY

**TENANT:**

AT&T Wireless PCS, LLC, a Delaware limited liability company, by and through its member, AT&T Wireless Services, Inc., d/b/a AT&T Wireless



By: Carmen Chapman

Title: System Development Manager

Date: 2/28/03

1/29/03

CT-448-B, Manchester Police Tower



**NATCOMM, LLC**

**Consulting Engineers**

October 29, 2002

Mr. Don Huntley, P.E.  
**Bechtel Telecommunications**  
210 Pomeroy Avenue, Suite 201  
Meriden, CT 06450

Re: *AT&T CT-448-B*  
*239 Middle Turnpike East,*  
*Manchester, CT 06040*

*Natcomm Project No. 02616*

Dear Don,

We have reviewed the proposed AT&T antenna installation at the above referenced site. The purpose of the review is to determine the adequacy of an existing 183ft monopole to support the proposed antennas. The review considered the effects of wind load, dead load, ice load and seismic forces in accordance with TIA/EIA-222-F and Connecticut State Building Code. Structural design documents prepared by Engineered Endeavors Inc. (EEI) dated September 16, 2002 job #9892 were used as reference material.

The proposed additional antenna loading is as follows:

- AT&T: Six (6) Allgon 7250.03 mounted on EEI standard low profile platform at an elevation of 143ft.

The existing antenna loading is as follow:

- Fire Dept./Police: One (1) Omni Whip, two (2) Dipole antenna; all mounted to EEI standard low profile platform at an elevation of 183ft.
- Sprint: Twelve (12) DB980F65 mounted to EEI standard low profile platform at an elevation of 153ft.
- City/Police: One (1) Omni Whip, two (2) Dipole antenna; all mounted to EEI standard low profile platform at an elevation of 123ft.

The future antenna loading is as follows:

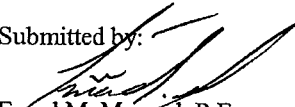
- Future: Twelve (12) DAPA 48000 mounted to EEI standard low profile platform at an elevation of 173ft.
- Future: Twelve (12) DAPA 48000 mounted to EEI standard low profile platform at an elevation of 163ft.

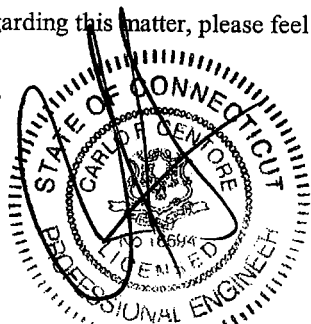
Based on the information provided, the existing structure meets all the requirements of the TIA/EIA-222-F standards for a basic wind speed of 85mph.

In conclusion, the existing 183ft is adequate to support the proposed AT&T antennas.

If there are any questions regarding this matter, please feel free to call.

Submitted by:

  
Emad M. Mourad, P.E.  
Structural Engineer



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

SITE ID: 907-007-448

January 17, 2003

**Prepared by AT&T Wireless Services, Inc.  
Nader Soliman RF Engineer**

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### 1. Introduction

This report constitutes an RF exposure analysis for the proposed AT&T Wireless antenna facility to be located at 239 Middle Turnpike East; Manchester, CT 06045. 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>Manchester Downtown</b>	
Number of simultaneously operating channels	<b>12</b>
Type of antenna	<b>Allgon 7250.03</b>
Power per channel (Watts ERP)	<b>250.0 Watts</b>
Height of antenna (feet AGL)	<b>143.00 feet</b>
Antenna Aperture Length	<b>5 feet</b>

### 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>:

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

Where, *N*= Number of channels, *R*= distance in cm from the antenna centerline, and *EIRP(θ)* = 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.

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

Where *P<sub>in</sub>/ch* = Input power to antenna terminals in watts/ch, *R* = distance from the antenna centerline, *h* = aperture height in meters, *α* = 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 (μW), 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 0.010196 mW/cm<sup>2</sup> which occurs at 2 feet from the antenna facility. The chart in exhibit A also shows that the power density is only 0.010194 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>	0.010196 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 4.35% of the public MPE limit for all frequencies in use.

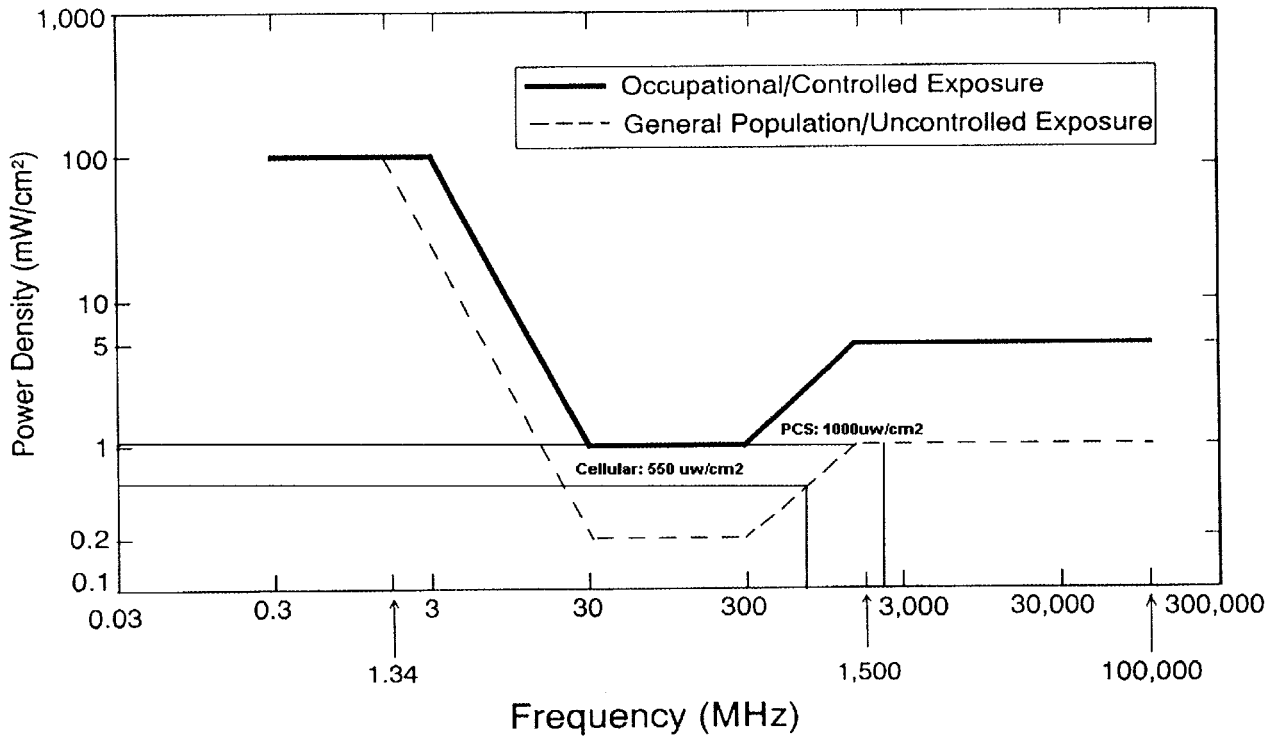
#### 6. Conclusion

This analysis show that the maximum power density in accessible areas at this location is 0.010196 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.”

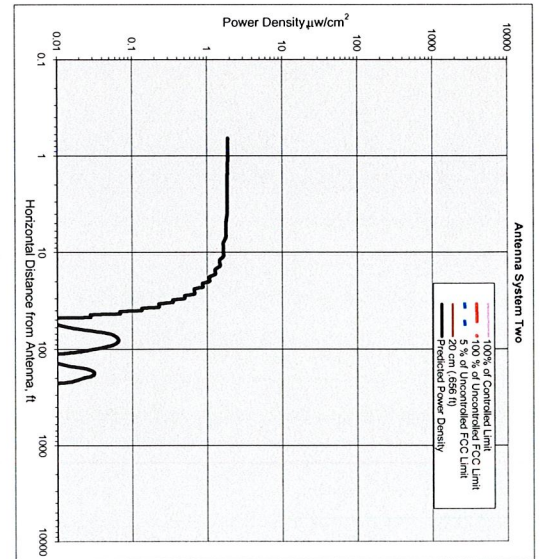
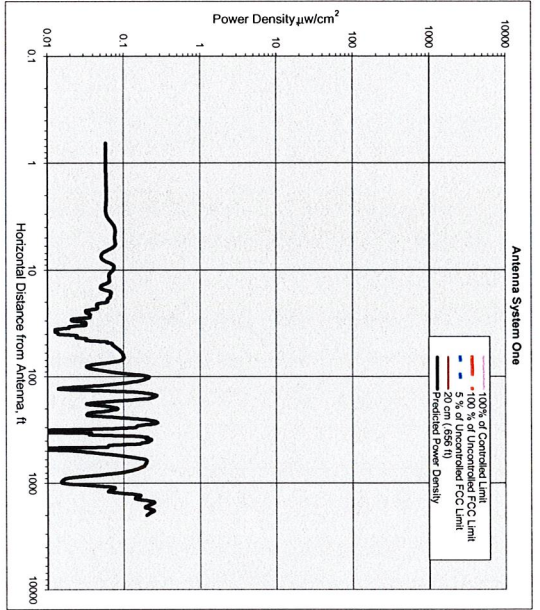
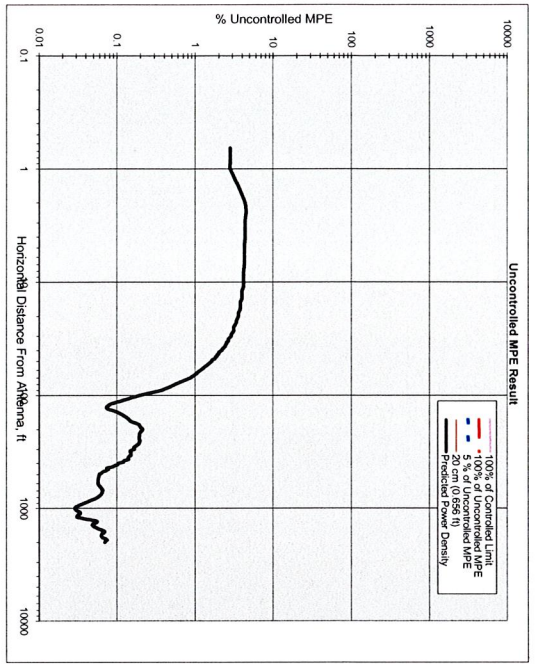
### 7. FCC Limits for Maximum Permissible Exposure

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



**8. Exhibit A**





Number of Antenna Systems: 12

Meets FCC Controlled Limits for The Antenna 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/cm <sup>2</sup>	% of limit	@Horz. Dist. feet
Maximum Power Density =	0.010196	4.35	2.00
22.98 times lower than the MPE limit for uncontrolled environment			
Composite Power (ERP) =	10.834,04 Watts		

	units	Value
Frequency	MHz	1945.00
# of Channels	#	12
Max ERP/Ch	Watts	250.00
Max Pwr/Ch Into Ant.	Watts	5.86
Antenna Centerline	feet	143.00
Calculation Point (above ground or roof surface)	feet	5.00
Antenna Model No.		0.00
Max Ant Gain	dBd	16.30
Down tilt	degrees	0.00
Miscellaneous Att.	dB	0.00
Height of aperture	feet	5.11
Ant HBW	degrees	65.00
Distance to Ant location	feet	135.45
WOST	Y/N?	n

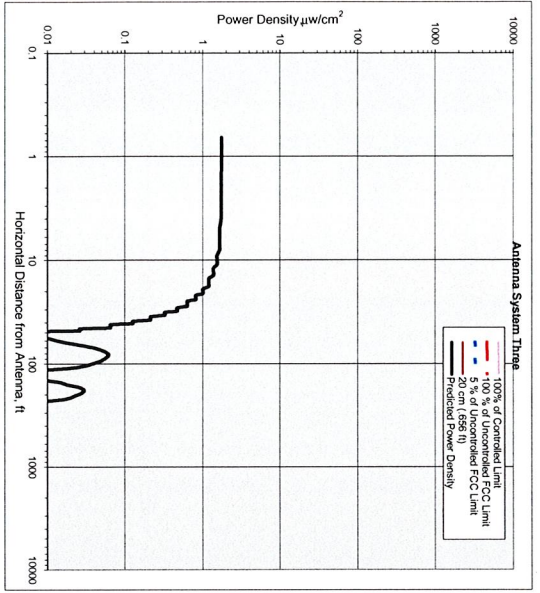
	units	Value
Frequency	MHz	465.13
# of Channels	#	2
Max ERP/Ch	Watts	85.93
Max Pwr/Ch Into Ant.	Watts	39.73
Antenna Centerline	feet	187.00
Calculation Point (above ground or roof surface)	feet	5.00
Antenna Model No.		0.00
Max Ant Gain	dBd	3.35
Down tilt	degrees	0.00
Miscellaneous Att.	dB	0.00
Height of aperture	feet	6.50
Ant HBW	degrees	33.00
Distance to Ant location	feet	178.75
WOST	Y/N?	n

Site ID: 907-007-448  
 Site Name: Manchester Downtown  
 Site Location: 239 Middle Turnpike East  
 Manchester, CT 06045

Performed By: Nader Soliman  
 Date: January 17, 2003

Ant System ONE Owner: AT&T  
 Sector: 3  
 Azimuth: 80/200/320

Ant System TWO Owner: PDI-TX  
 Sector: 1  
 Azimuth: 360

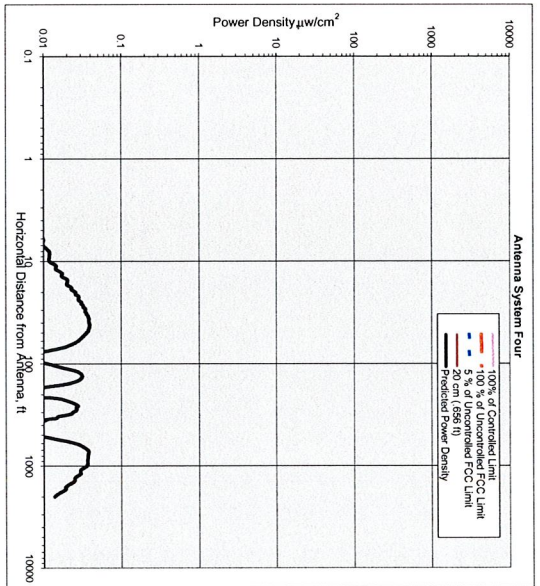


Antenna System Three

Parameter	Units	Value
Frequency	MHz	465.40
# of Channels	#	2
Max ERP/Ch	Watts	85.93
Max Pwr/Ch into Ant.	Watts	39.73
Antenna Centerline	feet	193.25
Calculation Point (above ground or roof surface)	feet	5.00
Antenna Model No.		0.00
Max Ant Gain	dbd	ANT450DE-9
Down tilt	degrees	3.35
Miscellaneous Att.	dB	0.00
Height of aperture	feet	6.50
Ant HBW	degrees	33.00
Distance to Ant <sub>horizon</sub>	feet	185.00
WOST?	Y/N?	n

Ant System Three Owner: PD2-TX

Sector: 1  
Azimuth: 360

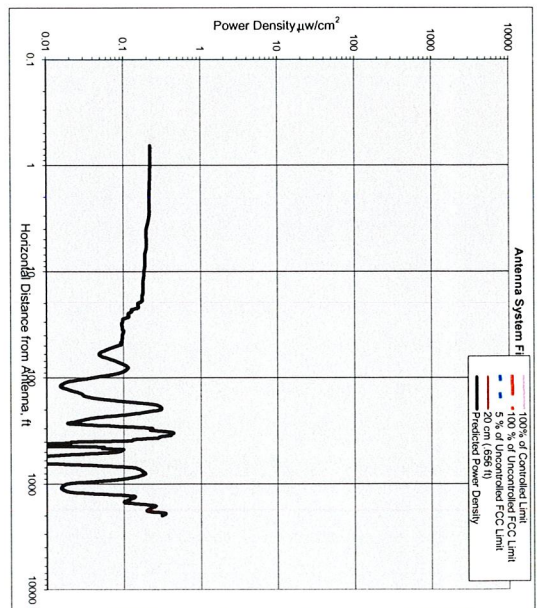


Antenna System Four

Parameter	Units	Value
Frequency	MHz	464.00
# of Channels	#	2
Max ERP/Ch	Watts	92.07
Max Pwr/Ch into Ant.	Watts	23.13
Antenna Centerline	feet	134.50
Calculation Point (above ground or roof surface)	feet	5.00
Antenna Model No.		0.00
Max Ant Gain	dbd	90201
Down tilt	degrees	6.00
Miscellaneous Att.	dB	0.00
Height of aperture	feet	9.00
Ant HBW	degrees	360.00
Distance to Ant <sub>horizon</sub>	feet	125.00
WOST?	Y/N?	n

Ant System Four Owner: Manchester BOE

Sector: 1  
Azimuth: 360



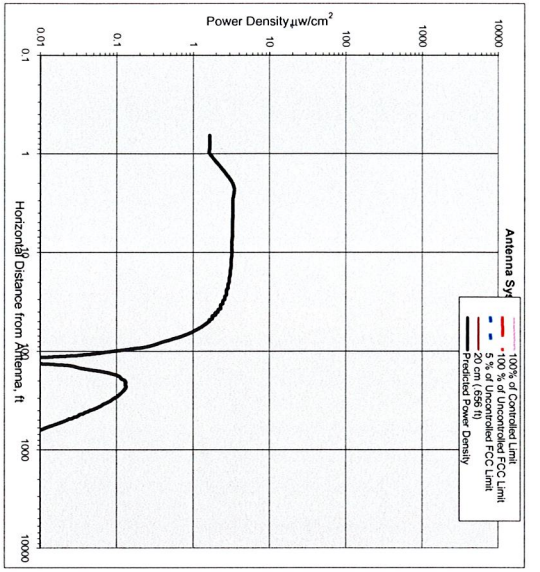
Antenna System Five

Parameter	Units	Value
Frequency	MHz	1950.00
# of Channels	#	12
Max ERP/Ch	Watts	500.00
Max Pwr/Ch into Ant.	Watts	15.45
Antenna Centerline	feet	153.00
Calculation Point (above ground or roof surface)	feet	5.00
Antenna Model No.		0.00
Max Ant Gain	dbd	DB980690E-M
Down tilt	degrees	15.10
Miscellaneous Att.	dB	2.00
Height of aperture	feet	5.00
Ant HBW	degrees	90.00
Distance to Ant <sub>horizon</sub>	feet	145.50
WOST?	Y/N?	n

Ant System Five Owner: Sprint PCS

Sector: 3  
Azimuth: 0/120/240



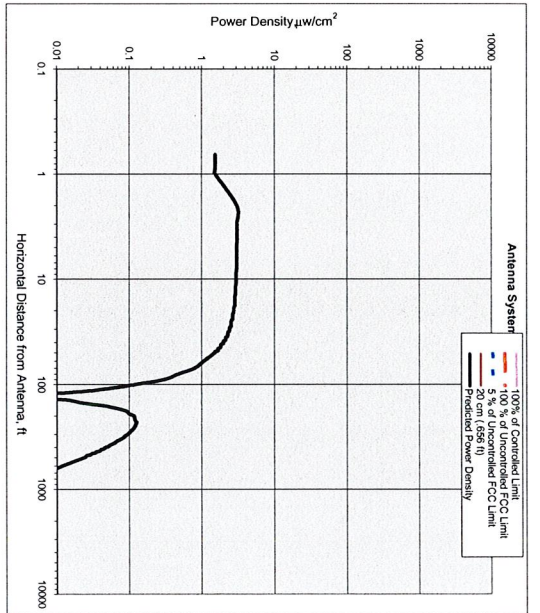


Antenna System Six

	units	Value
Frequency	MHz	151.07
# of Channels	#	2
Max ERP/Ch	Watts	151.56
Max Pwr/Ch into Ant.	Watts	75.96
Antenna Centerline	feet	187.00
Calculation Point	feet	5.00
(above ground or roof surface)		0.00
Antenna Model No.		ANT1500-3
Max Ant Gain	dBd	3.00
Down tilt	degrees	0.00
Miscellaneous Att.	dB	0.00
Height of aperture	feet	3.00
Ant HBW	degrees	360.00
Distance to Ant <sub>horizon</sub>	feet	180.50
WOS? Y/N?		n

Ant System SIX Owner: Pub Works

Sector: 1  
Azimuth: 360

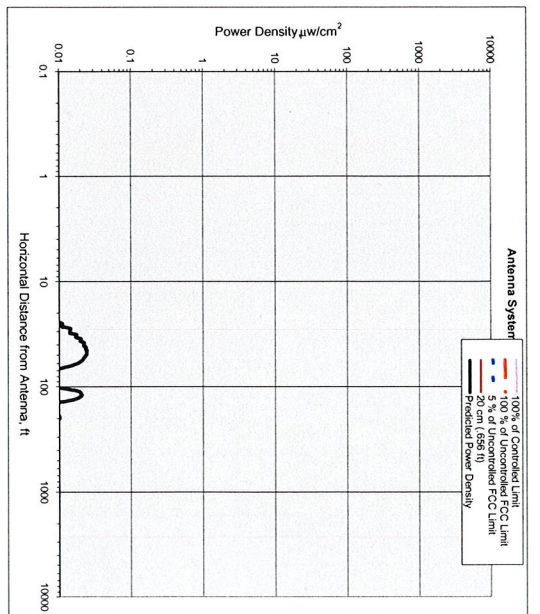


Antenna System Seven

	units	Value
Frequency	MHz	154.36
# of Channels	#	2
Max ERP/Ch	Watts	151.56
Max Pwr/Ch into Ant.	Watts	75.96
Antenna Centerline	feet	194.00
Calculation Point	feet	5.00
(above ground or roof surface)		0.00
Antenna Model No.		ANT1500-3
Max Ant Gain	dBd	3.00
Down tilt	degrees	0.00
Miscellaneous Att.	dB	0.00
Height of aperture	feet	3.00
Ant HBW	degrees	360.00
Distance to Ant <sub>horizon</sub>	feet	187.50
WOS? Y/N?		n

Ant System SEVEN Owner: Town FD

Sector: 1  
Azimuth: 360

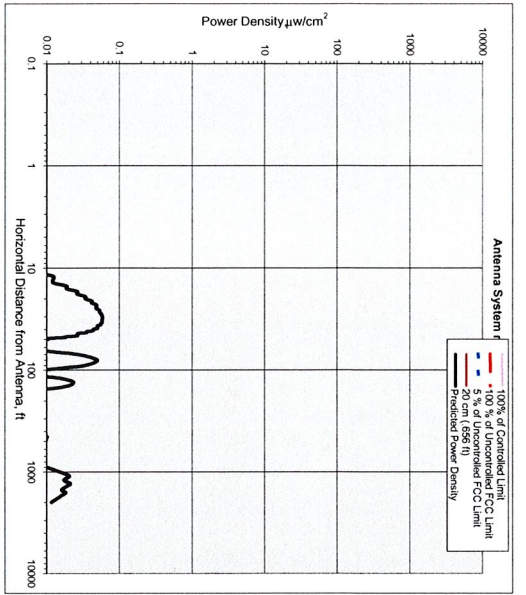


Antenna System Eight

	units	Value
Frequency	MHz	33.94
# of Channels	#	2
Max ERP/Ch	Watts	79.62
Max Pwr/Ch into Ant.	Watts	11.40
Antenna Centerline	feet	191.00
Calculation Point	feet	5.00
(above ground or roof surface)		0.00
Antenna Model No.		PD1142
Max Ant Gain	dBd	8.44
Down tilt	degrees	0.00
Miscellaneous Att.	dB	0.00
Height of aperture	feet	16.00
Ant HBW	degrees	360.00
Distance to Ant <sub>horizon</sub>	feet	178.00
WOS? Y/N?		n

Ant System Eight Owner: Hartford City FD

Sector: 1  
Azimuth: 360

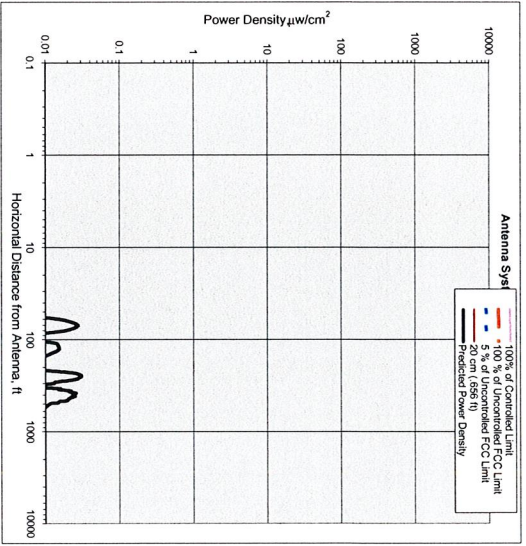


Antenna System Nine

Parameter	units	Value
Frequency	MHz	45.86
# of Channels	#	2
Max ERP/Ch	Watts	84.46
Max Pwr/Ch into Ant.	Watts	12.10
Antenna Centerline	feet	129.00
Calculation Point (above ground or roof surface)	feet	5.00
Antenna Model No.		PD1142
Max Ant Gain	dBd	8.44
Down tilt	degrees	0.00
Miscellaneous Att.	dB	0.00
Height of aperture	feet	16.00
Ant HBW	degrees	360.00
Distance to Ant <sub>system</sub>	feet	116.00
WOST	Y/N?	n

Ant System NINE Owner: SP Hotline

Sector: 1  
Azimuth: 360

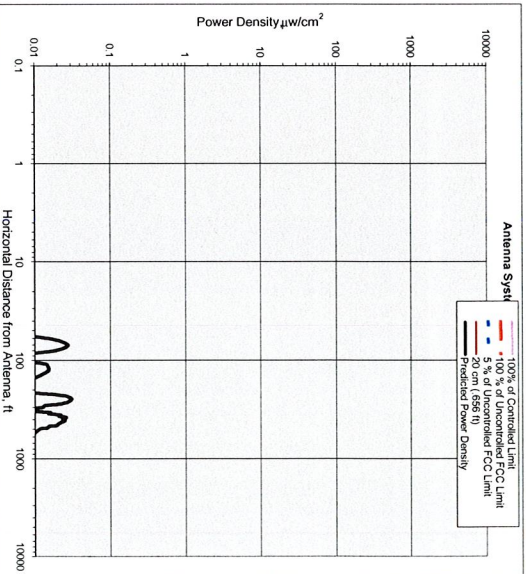


Antenna System Ten

Parameter	units	Value
Frequency	MHz	465.08
# of Channels	#	2
Max ERP/Ch	Watts	82.77
Max Pwr/Ch into Ant.	Watts	8.28
Antenna Centerline	feet	124.00
Calculation Point (above ground or roof surface)	feet	5.00
Antenna Model No.		DB636C
Max Ant Gain	dBd	10.00
Down tilt	degrees	0.00
Miscellaneous Att.	dB	0.00
Height of aperture	feet	8.30
Ant HBW	degrees	360.00
Distance to Ant <sub>system</sub>	feet	114.85
WOST	Y/N?	n

Ant System TEN Owner: RAFS1-TX

Sector: 1  
Azimuth: 360

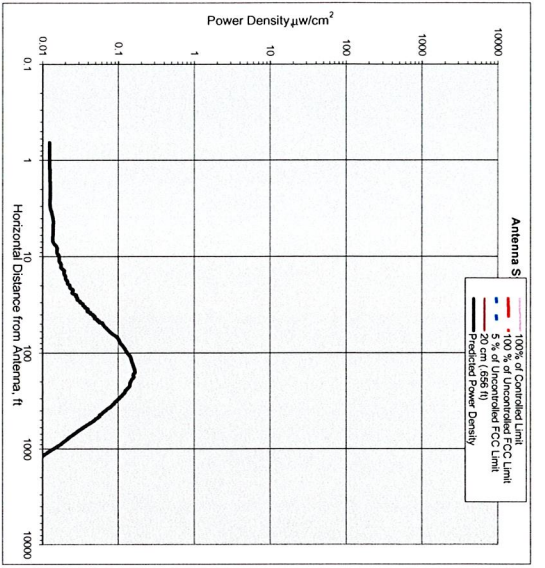


Antenna System Eleven

Parameter	units	Value
Frequency	MHz	465.18
# of Channels	#	2
Max ERP/Ch	Watts	82.77
Max Pwr/Ch into Ant.	Watts	8.28
Antenna Centerline	feet	124.00
Calculation Point (above ground or roof surface)	feet	5.00
Antenna Model No.		DB636C
Max Ant Gain	dBd	10.00
Down tilt	degrees	0.00
Miscellaneous Att.	dB	0.00
Height of aperture	feet	8.30
Ant HBW	degrees	360.00
Distance to Ant <sub>system</sub>	feet	114.85
WOST	Y/N?	n

Ant System ELEVEN Owner: BAS2-TX

Sector: 1  
Azimuth: 360



Antenna System Twelve

	units	Value
Frequency	MHz	856.71
# of Channels	#	2
Max ERP/Ch	Watts	20.35
Max Pwr/Ch into Ant.	Watts	3.79
Antenna Centerline	feet	123.00
Calculation Point (above ground or roof surface)	feet	5.00
		0.00
Antenna Model No.		Yagi
Max Ant Gain	dBd	7.30
Down tilt	degrees	0.00
Miscellaneous Att.	dB	0.00
Height of aperture	feet	10.00
Ant HBW	degrees	60.00
Distance to Ant <sub>system</sub>	feet	113.00
WOS7	Y/N?	n

Ant System TWELVE Owner: Eight Utilities District

Sector: 1

Azimuth: 360

## 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.