ROBINSON & COLE LLP

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

October 2, 2002

***Via Hand Delivery***

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



Re: **Notice of Exempt Modification**
**107 Buck Road**
**Hebron, Connecticut**

Dear Mr. Phelps:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") intends to install antennas on the existing monopole tower, disguised as a tree, at 107 Buck Road, Hebron, Connecticut. The tower is owned and operated by Sprint Sites USA and supports Sprint PCS antennas at the 117-foot level. The Siting Council approved the shared use of this facility by Nextel at the 107-foot level (EM-NEXTEL-067-020122) and AT&T at the 87-foot level (EM-AT&T-067-020619). Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Hebron Town Manager, Robert E. Lee.

The facility consists of a 120-foot self-supporting tree tower, capable of supporting multiple carriers, within an approximately 65' x 65' site compound. Cellco proposes to install twelve (12) panel-type antennas at the 97-foot level on the tower and a 12' x 30' single-story equipment shelter near the base of the tower. (See attached Project Plans).

The planned modifications to the Hebron facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modification will not increase the overall height of the existing tower. Cellco's antennas will be mounted with their centerline at the 97-foot level on the 120-foot tower.

2. The proposed installation of twelve (12) panel-type antennas and a 12' x 30' equipment shelter will not require an extension of the site boundaries.

3. The proposed antenna modification will not increase the noise levels at the facility by six decibels or more.

4. The operation of the antennas will not increase radio frequency (RF) power density levels at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. Pursuant to the RF Exposure Analysis prepared for AT&T and included in EM-AT&T-067-020619, the cumulative worst-case RF power density calculations for Sprint, Nextel, AT&T and Cellco antennas would be 1.30% of the applicable FCC standard. A copy of the AT&T Report is attached.

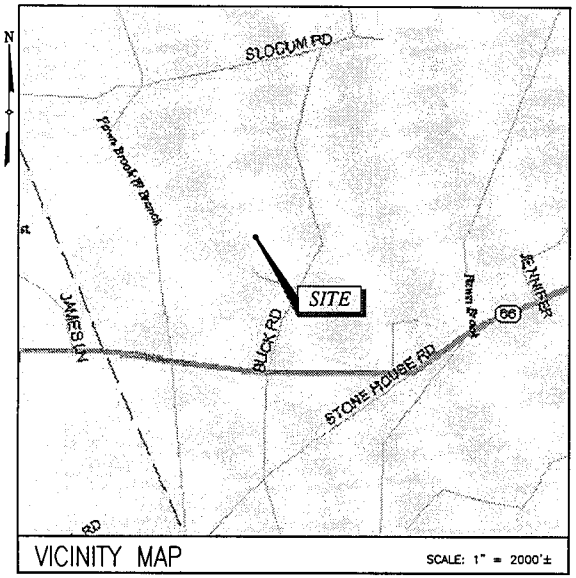
Also attached is an engineer's certification stating that the tower can support the antennas and associated equipment of Sprint, Nextel, Cellco and AT&T.

For the foregoing reasons, Cellco respectfully submits that the proposed antenna installation at the Hebron facility tower constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kenneth C. Baldwin

KCB/kmd
Attachments
cc: Robert E. Lee, Town Manager
Sandy M. Carter




VICINITY MAP SCALE: 1" = 2000'±

verizonwireless

# SITE NAME:

# HEBRON WEST

**107 BUCK ROAD**
**HEBRON, CT 06248**
**TOLLAND COUNTY**

## PROJECT INDEX

| | |
|---|---|
| SITE NAME: | HEBRON WEST |
| PROJECT #: | 00011050468 |
| LOCATION CODE: | 1700322183 |
| SITE ADDRESS: | 107 BUCK ROAD<br>HEBRON, CT 06248<br>TOLLAND COUNTY |
| SITE OWNER: | SPRINT SITES USA |
| APPLICANT: | VERIZON WIRELESS<br>99 EAST RIVER DRIVE<br>EAST HARTFORD, CT |
| JURISDICTION: | TOWN OF HEBRON |
| CURRENT ZONING: | R-1 RESIDENTIAL ZONE |
| TAX IDENTIFICATION: | MAP 42, BLOCK 3, LOT A |
| SITE COORDINATES: | CENTER OF TOWER<br>LATITUDE: 41° 39' 16" N<br>LONGITUDE: 72° 24' 39" W<br>ELEVATION: 160' ± |

0 1 2 3 4
ORIGINAL SIZE IN INCHES

HEBRON WEST
PROJECT #: 00011050468
LOCATION CODE: 1700322183
107 BUCK ROAD
HEBRON, CT 06248

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| A | 9/25/02 | ISSUED FOR COMMENT | KBF | | |

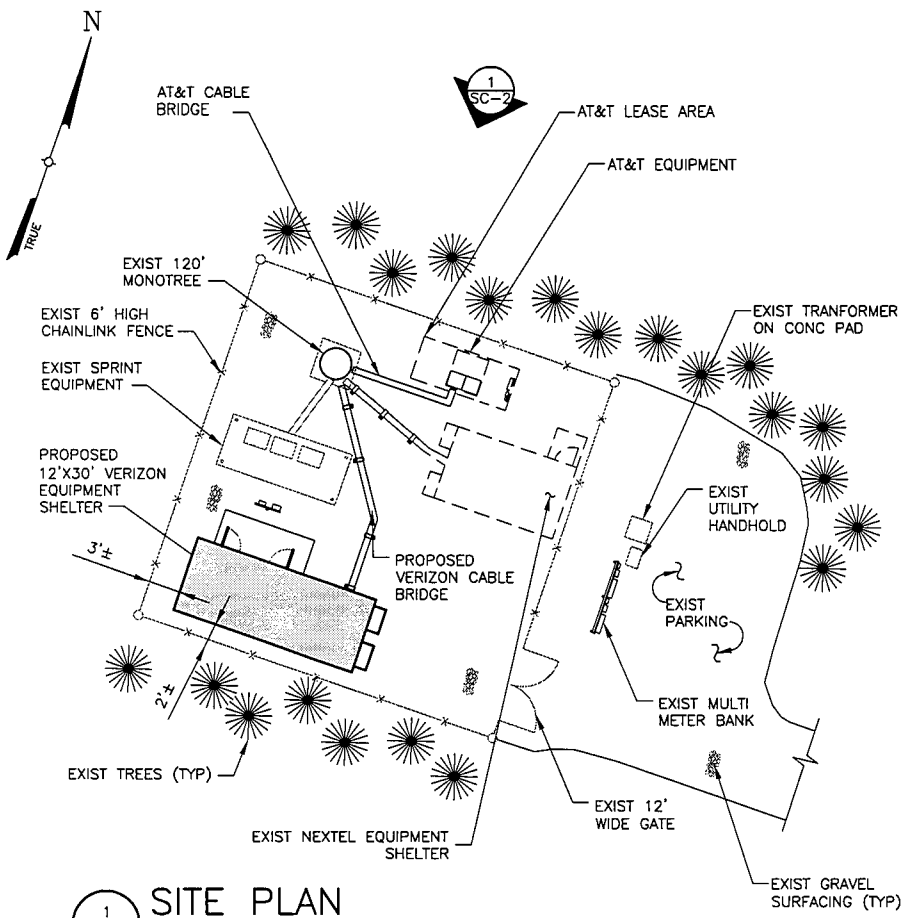
SCALE: NONE | DESIGNED BY: JDF | DRAWN BY: KBF

verizonwireless
VERIZON WIRELESS
99 EAST RIVER DRIVE
EAST HARTFORD, CT


TECTONIC /KEYES ASSOCIATES
1344 SILAS DEANE HIGHWAY, SUITE 500
ROCKY HILL, CT 06067-1349
OFFICE: (860)563-2341
FAX: (860)257-4882

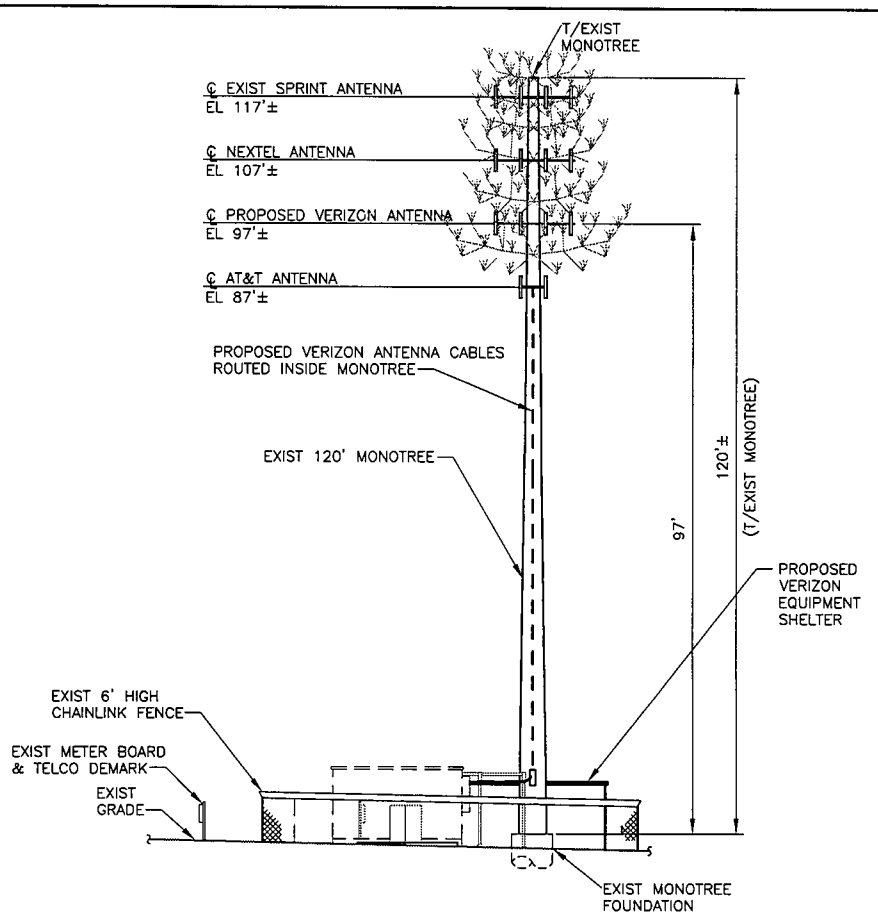

TITLE SHEET

| DATE | WORK ORDER NO. | DRAWING NUMBER | REV |
|---|---|---|---|
| 9/25/02 | 2994.HEBRONW | SC-1 | A |




1 SC-2 SITE PLAN

SCALE: 1"=20'




2 SC-2 ELEVATION

SCALE: 1"=20'

0 1 2 3 4

ORIGINAL SIZE IN INCHES

HEBRON WEST

PROJECT #: 00011050468

LOCATION CODE: 1700322183

BUCK ROAD

HEBRON, CT 06248

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| A | 9/25/02 | ISSUED FOR COMMENT | KBF | | |

SCALE: NONE | DESIGNED BY: JDF | DRAWN BY: KBF

verizon wireless

VERIZON WIRELESS
99 EAST RIVER DRIVE
EAST HARTFORD, CT


TECTONIC /KEYES ASSOCIATES

1344 SILAS DEANE HIGHWAY, SUITE 300
ROCKY HILL, CT 06067-1349

OFFICE: (860)563-2341
FAX: (860)257-4882


# SITE PLAN & ELEVATION

| DATE | WORK ORDER NO. | DRAWING NUMBER | REV |
|---|---|---|---|
| 9/25/02 | 2994.HEBRONW | SC-2 | A |

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

SITE ID: 907-007-867

June 12, 2002

**Prepared by AT&T Wireless Services, Inc.**
Galen Belen **RF Engineer**

# Table of Contents

## 1. Introduction

This report constitutes an RF exposure analysis for the proposed AT&T Wireless antenna facility to be located at *107 Buck Rd, Hebron CT 06248.* 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: ***Hebron Central*** | |
|---|---|
| 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) | 87.00 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[1]:

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

Where, ***N***= Number of channels, ***R***= distance in cm from the RC (Radiation Center) of antenna, 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.

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

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

[1] 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 ($cm^2$ ). 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 Radiation

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. [2] 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 0.007629 mW/cm$^2$ which occurs at 90 feet from the antenna facility. The chart in exhibit A also shows that the power density is only 0.000400 mW/cm$^2$ 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 radiation***

| *Frequency* | *Public/Uncontrolled* | *Occupational/controlled* | *Maximum power density at Accessible location* |
|---|---|---|---|
| Cellular | .580 mW/cm$^2$ | 2.9 mW/cm$^2$ | 0.007629 mW/cm$^2$ |
| PCS | 1 mW/cm$^2$ | 5 mW/cm$^2$ | |

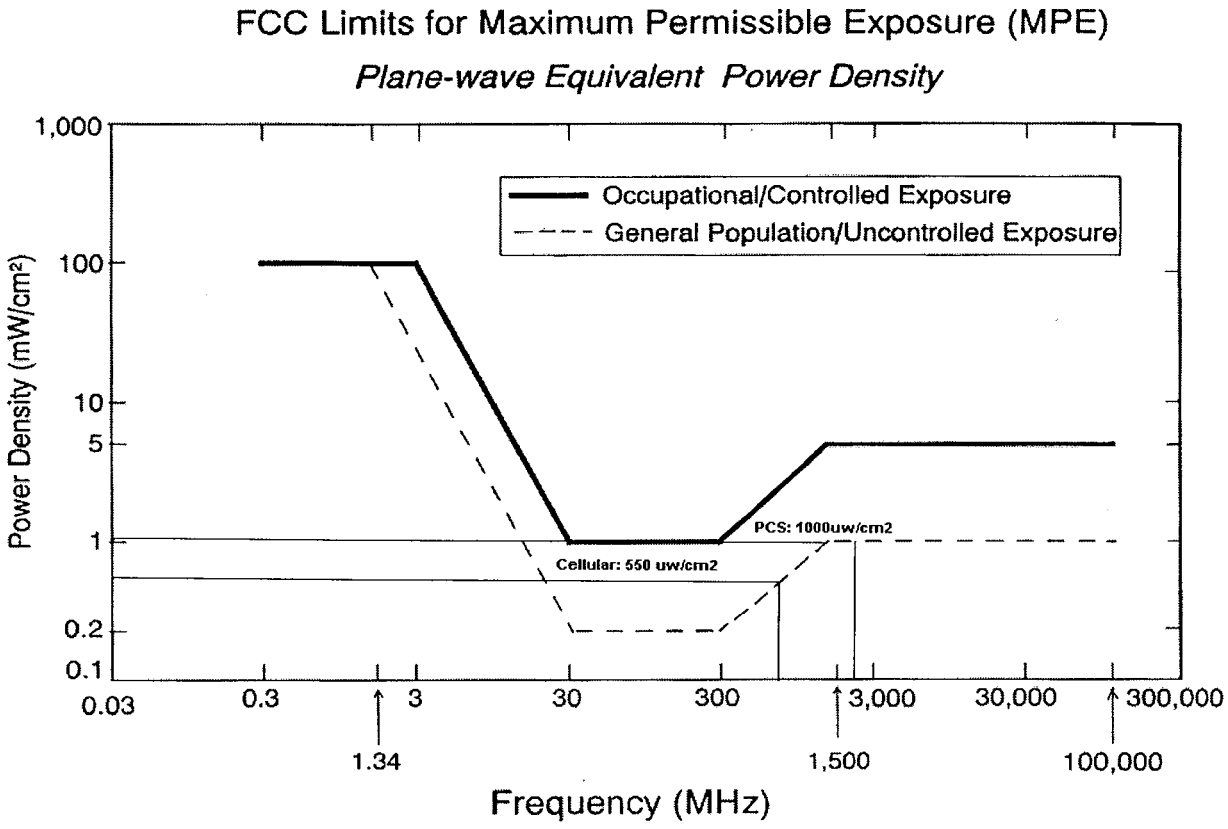
The maximum power density at the proposed facility represents only 1.30% of the public MPE limit for PCS frequencies.

## 6. Conclusion

This analysis show that the maximum power density in accessible areas at this location is 0.007629 mW/cm$^2$, a level of RF energy that is well below the Maximum Permissible Exposure limit established by the FCC.

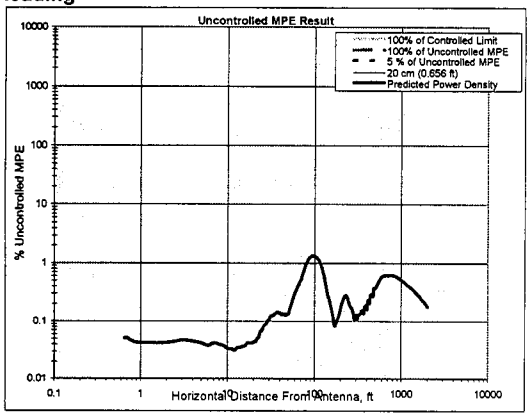
[2] 47 U.S. C. Section 332 ( c ) (7)(B)(iv) states that "[n]o State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that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

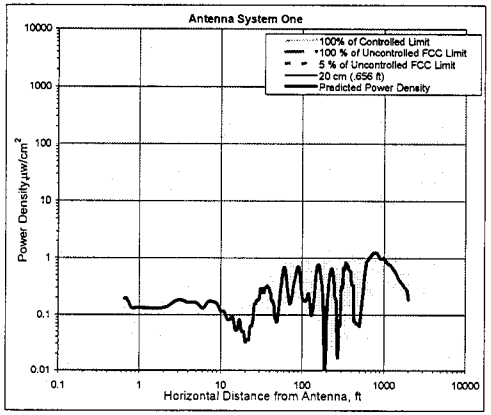
## 7. FCC Limits for Maximum Permissible Exposure

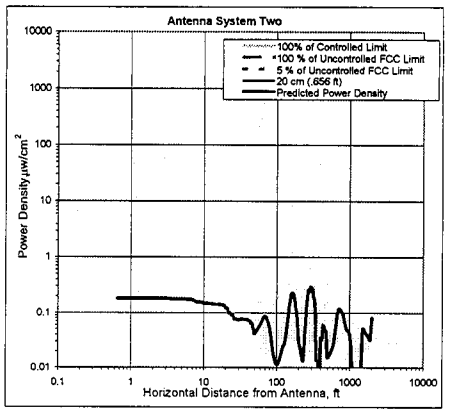


## 8. Exhibit A

## Heading




**Number of Antenna Systems:** 4

**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 Maximum Permissible Exposure (MPE) Analysis Required.**

| | Power Density | | @Horiz. Dist. |
|---|---|---|---|
| | $mW/cm^2$ | % of limit | feet |
| Maximum Power Density = | 0.007629 | 1.30 | 90.00 |
| 76.68 times lower than the MPE limit for uncontrolled environment | | | |
| Composite Power (ERP) = | 17,500.00 Watts | | |

**Site ID:** 907-007-867
**Site Name:** Hebron Central
**Site Location:** 107 Buck Rd.
Hebron, CT 06248

**Performed By:** Galen Belen

**Date:** 6/12/02

**Antenna System One**

| | units | Value |
|---|---|---|
| Frequency | MHz | 1945.00 |
| # of Channels | # | 12 |
| Max ERP/Ch | Watts | 250.00 |
| Max Pwr/Ch Into Ant. | Watts | 5.86 |
| (Center of Radiator) | feet | 87.00 |
| Calculation Point | feet | 0.00 |
| (above ground or | | 0.00 |
| roof surface) | | 0.00 |
| Antenna Model No. | | Allgon 7250.03 |
| Max Ant Gain | dBd | 16.30 |
| Down tilt | degrees | 2.00 |
| Miscellaneous Att | dB | 0.00 |
| Height of aperture | feet | 5.11 |
| Ant HBW | degrees | 65.00 |
| Distance to $Ant_{bottom}$ | feet | 84.45 |
| WOS? | Y/N? | n |

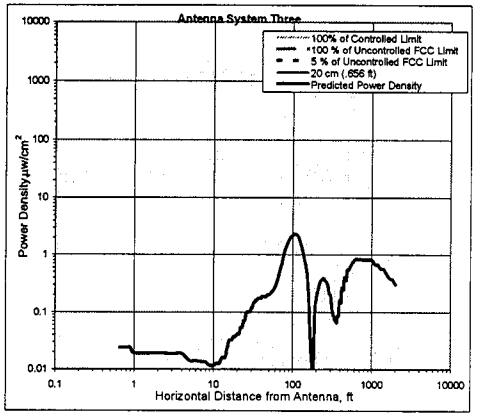
**Ant System ONE Owner:** AT&T
**Sector:** 3
**Azimuth:** 0/120/240

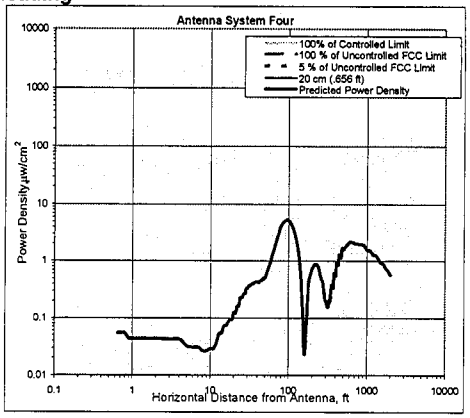
**Antenna System Two**

| | units | Value |
|---|---|---|
| Frequency | MHz | 1962.50 |
| # of Channels | # | 12 |
| Max ERP/Ch | Watts | 250.00 |
| Max Pwr/Ch Into Ant. | Watts | 7.73 |
| (Center of Radiator) | feet | 117.00 |
| Calculation Point | feet | 0.00 |
| (above ground or | | 0.00 |
| roof surface) | | 0.00 |
| Antenna Model No. | | DB980H90 |
| Max Ant Gain | dBd | 15.10 |
| Down tilt | degrees | 0.00 |
| Miscellaneous Att | dB | 0.00 |
| Height of aperture | feet | 5.00 |
| Ant HBW | degrees | 90.00 |
| Distance to $Ant_{bottom}$ | feet | 114.50 |
| WOS? | Y/N? | n |

**Ant System TWO Owner:** Sprint
**Sector:** 3
**Azimuth** 0/120/240

## Heading




**Antenna System Three**

| | units | Value |
|---|---|---|
| Frequency | MHz | 850.00 |
| # of Channels | # | 16 |
| Max ERP/Ch | Watts | 250.00 |
| Max Pwr/Ch Into Ant. | Watts | 15.77 |
| (Center of Radiator) | feet | 107.00 |
| Calculation Point (above ground or roof surface) | feet | 0.00 |
| | | 0.00 |
| | | 0.00 |
| Antenna Model No. | | DB844-90-EE |
| Max Ant Gain | dBd | 12.00 |
| Down tilt | degrees | 0.00 |
| Miscellaneous Att. | dB | 0.00 |
| Height of aperture | feet | 4.00 |
| Ant HBW | degrees | 90.00 |
| Distance to $Ant_{bottom}$ | feet | 105.00 |
| WOS? | Y/N? | n |

**Ant System Three Owner:** Nextel
**Sector:** 3
**Azimuth** 30/150/270

**Antenna System Four**

| | units | Value |
|---|---|---|
| Frequency | MHz | 869.00 |
| # of Channels | # | 30 |
| Max ERP/Ch | Watts | 250.00 |
| Max Pwr/Ch Into Ant. | Watts | 15.77 |
| (Center of Radiator) | feet | 97.00 |
| Calculation Point (above ground or roof surface) | feet | 0.00 |
| | | 0.00 |
| | | 0.00 |
| Antenna Model No. | | DB844H90-XY |
| Max Ant Gain | dBd | 12.00 |
| Down tilt | degrees | 0.00 |
| Miscellaneous Att. | dB | 0.00 |
| Height of aperture | feet | 4.00 |
| Ant HBW | degrees | 90.00 |
| Distance to $Ant_{bottom}$ | feet | 95.00 |
| WOS? | Y/N? | n |

**Ant System Four Owner:** Verizon
**Sector:** 3
**Azimuth:** 40/180/285

## 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
RF Safety Web Site: 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.

**TECTONIC** / *KEYES ASSOCIATES*
*Division of TECTONIC Engineering Consultants P.C.*

CORPORATE OFFICE:
Mountainville, NY (800)-829-6531

1344 Silas Deane Highway, Suite 500
Rocky Hill, Connecticut 06067

(860) 563-2341 Fax: (860) 257-4882
www.tectonicengineering.com

Mr. Wayne Lukachek
Verizon Wireless
99 East River Drive
East Hartford, CT 06108

September 30, 2002

**RE: W.O. 2994.HEBRONW**
**VERIZON SITE "HEBRON WEST"**
**BUCK ROAD**
**HEBRON, CT**
**STRUCTURAL CAPACITY**

Dear Mr. Lukachek:

Tectonic Engineering has performed a structural analysis of the existing "Tree" monopole at the above referenced Verizon site. Our analysis was completed on behalf of AT&T Wireless and issued under the following report:

- "Structural Analysis Report", Existing 120' Pine Tree Monopole, dated June 4, 2002. The report was signed and sealed by Mr. Jeffrey B. Kirby of Tectonic Engineering, Connecticut PE #21291.

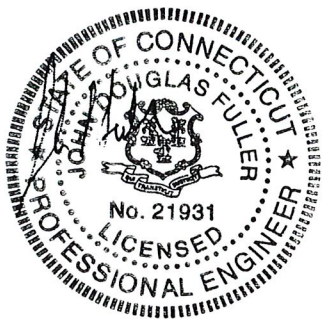
The structural analysis considered the following existing and proposed antenna installations:

- Sprint PCS at 117' with 9-DB980H90 antennas on T-Frame mounts.
- Nextel Communications at 107' with 12-DB84490EE antennas on T-Frame mounts.
- Verizon Wireless at 97' with 12-DB844H90 antennas on T-Frame mounts.
- AT&T Wireless at 87' with 6-Allgon 7250 antennas on 6' Cobra arm mounts.

The results of this analysis indicate that the existing monopole has sufficient capacity to permit the installation of all carriers described above. Should you require any additional information, please contact my office.

Sincerely,
TECTONIC/KEYES ASSOCIATES

John D. Fuller, P.E.
Telecommunications Manager




Cc: Rachel Mayo – Robinson & Cole
Sandy Carter – Verizon Wireless
file


EM-VER-067-021002
107 Buck Road
Hebron 10/15/02


EM-VER-067-021002
107 Buck Road
Hebron 10/15/02