ORIGINAL

**CONNECTICUT SITING COUNCIL**



In re: **EM-SPRINT-NEXTEL-018-071119**

Sprint Nextel Corporation's Notice to Make an Exempt Modification to an Existing Facility at 39 Carmen Hill Road, Brookfield, Connecticut. : **EXEMPT MODIFICATION NO. _____**

: November 19, 2007

## NOTICE OF EXEMPT MODIFICATION

Pursuant to Conn. Agencies Regs. §§ 16-50j-73 and 16-50j-72(b), Sprint Nextel Corporation ("Sprint") hereby gives notice to the Connecticut Siting Council ("Council") and the Town of Brookfield of Sprint's intent to make an exempt modification to an existing guyed wire tower (the "Tower") located at 39 Carmen Hill Road in Brookfield, Connecticut. Specifically, Sprint plans to remove two of its six existing iDEN antennas and replace only one of the antennas with a CDMA antenna (thereby decreasing the total number of Sprint antennas on the Tower). Under the Council's regulations (Conn. Agencies Regs. § 16-50j-72(b)), Sprint's plans do not constitute a modification subject to Council review because Sprint will not change the height of the tower, will not extend the boundaries of the compound, will not increase the noise level at the site, and will not increase the total radio frequency electromagnetic radiation power density at the site to levels above applicable standards.

The Tower is a 460-foot guyed wire tower located at 39 Carmen Hill Road in Brookfield, Connecticut (latitude 41° 29' 36.18", longitude 73° 25' 43.63"). The property is owned by Aurora of Danbury, LLC and the Tower is owned by Danbury Broadcasting. There are multiple antennas and carriers located on the Tower. Currently, Sprint has six iDEN panel antennas spread over three sectors with an antenna centerline at 256 feet. Sprint's base station equipment

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is located in an existing 21-foot by 30-foot equipment shelter at the base of the Tower. A site plan with the specifications of the Tower is attached.

Sprint plans to remove two existing iDEN DB844H90-XY panel antennas at the 256-foot level on the Tower, one antenna in the Alpha sector and one antenna in the Gamma sector. The Gamma sector antenna will be replaced with one CDMA RR65-18-02DPL2 panel antenna. No coaxial cable will need to be removed or added. Based on the proposed loading, there will be a net reduction in the wind area and overall weight at that level of the Tower, thereby reducing the overall load on the Tower. The antenna removal and replacement will be accomplished using a crane, no tower climbing will be allowed. Excluding brief, minor construction-related noise during the removal and replacement of the antennas, Sprint's changes to the Tower will not increase noise levels at the site. The antennas changes do not precipitate any changes to the equipment shelter.

To ensure the addition of the CDMA antenna to the Gamma sector will not adversely impact the health and safety of the surrounding community or the people working on the Tower, Sprint commissioned CSquared Systems to undertake an evaluation of the radio frequency emission measurements (attached). The evaluation confirms that the total radio frequency exposure measured around the Tower will be well below the National Council on Radiation Protection and Measurements' ("NCRP") standard adopted by the Federal Communications Commission ("FCC").

In conclusion, Sprint's plan to remove two antennas and replace one antenna on this Tower does not constitute a modification subject to the Council's jurisdiction because Sprint will not increase the height of the Tower, will not extend the boundaries of the site, will not increase

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the noise levels at the site, and the total radio frequency electromagnetic radiation power density will stay within all applicable standards. *See* Conn. Agencies Regs. § 16-50j-72.

Sprint Nextel Corporation

By: _____

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PROJECT DESCRIPTION:

SWAP OF (1) EXISTING ANTENNA, AND REMOVAL OF (1) ANTENNA ON AN EXISTING TOWER. NO WATER OR SEWER IS REQUIRED.

CODE COMPLIANCE:

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING:

1. CT BUILDING CODE
2. UNIFORM BUILDING CODE
3. BUILDING OFFICIALS AND CODE ADMINISTRATORS (BOCA)
4. UNIFORM MECHANICAL CODE
5. ANSI/TIA/EIA-222-F
6. UNIFORM PLUMBING CODE
7. NATIONAL ELECTRIC CODE
8. LOCAL BUILDING CODE
9. CITY/COUNTY ORDINANCES

Sprint

Together with Nextel.

# BROOKFIELD

PROPOSED UNMANNED WIRELESS TELECOMMUNICATION SITE

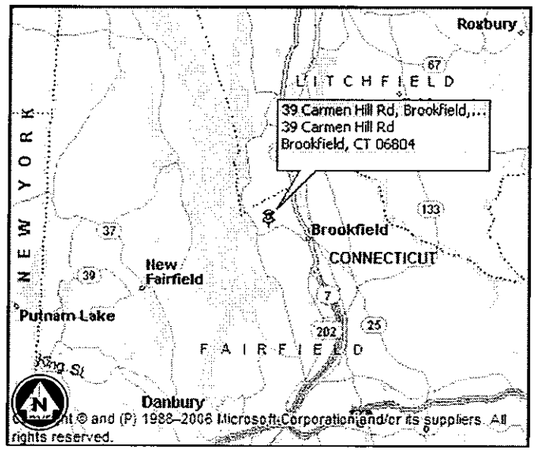
## SITE NUMBER: CT0668 / CT72XC033

## 39 CARMEN HILL ROAD
## BROOKFIELD, CT 06804

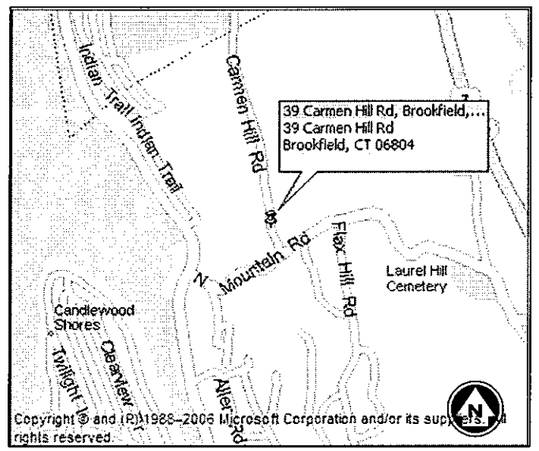
## EXISTING GUYED TOWER

*DIRECTIONS:*

FROM I-84, TAKE EXIT FOR US-202 (US-7). STAY ON US-202 (US-7). JUST BEFORE BROOKFIELD, TAKE LEFT ONTO LAUREL HILL ROAD, THEN LEFT ONTO N. MOUNTAIN ROAD. TURN RIGHT ONTO CARMEN HILL ROAD, AND FOLLOW TO SITE.




*VICINITY MAP*
*N.T.S.*




*LOCATION MAP*
*N.T.S.*


infinigy
ENGINEERING
300 GREAT OAKS BLVD., SUITE 312
ALBANY, NY 12203
OFFICE #: (518) 690-0790
FAX #: (518) 690-0793
CONTACT: JOHN STEVENS, P.E.


DIG ALERT:

CALL FOR UNDERGROUND UTILITIES PRIOR TO DIGGING:
1-800-922-4455

EMERGENCY:

CALL 911

RAD CENTER: ±256' AGL
LATITUDE: 41° 29' 36.18"
LONGITUDE: 73° 25' 43.63"

## FAIRFIELD COUNTY, CONNECTICUT

## PROJECT INFORMATION

| | |
|---|---|
| SITE NAME: | BROOKFIELD |
| SITE ADDRESS: | 39 CARMEN HILL ROAD<br>BROOKFIELD, CT 06804 |
| CONSTRUCTION AREA: | N/A |
| LATITUDE: | 41° 29' 36.18" |
| LONGITUDE: | 73° 25' 43.63" |

## PROJECT DIRECTORY

LAND OWNER: XXXXX
XXXXX
XXXXX

## APPLICANT

SPRINT
CROSSROADS CORPORATE CENTER
INTERNATIONAL BOULEVARD
SUITE 800
MAHWAH, NJ 07495
CONTACT: CAROLE KNARICH
PHONE: (201) 684-4113

POWER COMPANY:

TELCO COMPANY:

## DRAWING INDEX

| DRWG. # | TITLE | REV.# | DATE |
|---|---|---|---|
| T1 | TITLE SHEET | 0 | 10/31/07 |
| C1 | GENERAL NOTES & LEGEND | 0 | 10/31/07 |
| C2 | SITE LAYOUT & TOWER ELEVATION | 0 | 10/31/07 |

## GENERAL NOTES

1. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
2. DO NOT CHANGE SIZE NOR SPACING OF STRUCTURAL ELEMENTS.
3. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
4. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
5. BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
6. DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
7. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE OWNER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE APPROVAL.
8. EACH CONTRACTOR SHALL COOPERATE WITH THE OWNER'S REPRESENTATIVE, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLAN SHEETS AND SPECIFICATIONS AND COORDINATE HIS WORK WITH THE WORK OF ALL OTHER CONTRACTORS TO ENSURE THAT WORK PROGRESSION IS NOT INTERRUPTED.
10. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A NEAT AND ORDERLY SITE, YARD AND GROUNDS. REMOVE AND DISPOSE OFF SITE ALL RUBBISH, WASTE MATERIALS, LITTER, AND ALL FOREIGN SUBSTANCES. REMOVE PETRO-CHEMICAL SPILLS, STAINS AND OTHER FOREIGN DEPOSITS. RAKE GROUNDS TO A SMOOTH EVEN-TEXTURED SURFACE.
11. THE PLANS SHOW SOME KNOWN SUBSURFACE STRUCTURES, ABOVE-GROUND STRUCTURES AND/OR UTILITIES BELIEVED TO EXIST IN THE WORKING AREA, EXACT LOCATION OF WHICH MAY VARY FROM THE LOCATIONS INDICATED. IN PARTICULAR, THE CONTRACTOR IS WARNED THAT THE EXACT OR EVEN APPROXIMATE LOCATION OF SUCH PIPELINES, SUBSURFACE STRUCTURES AND/OR UTILITIES IN THE AREA MAY BE SHOWN OR MAY NOT BE SHOWN; AND IT SHALL BE HIS RESPONSIBILITY TO PROCEED WITH GREAT CARE IN EXECUTING ANY WORK. 48 HOURS BEFORE YOU DIG, DRILL OR BLAST, CALL 1-800-922-4455
12. THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IN WRITING OF ANY CONDITIONS THAT VARY FROM THOSE SHOWN ON THE PLANS. THE CONTRACTOR'S WORK SHALL NOT VARY FROM THE PLANS WITHOUT THE EXPRESSED APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE.
13. THE CONTRACTOR IS INSTRUCTED TO COOPERATE WITH ANY AND ALL OTHER CONTRACTORS PERFORMING WORK ON THIS JOB SITE DURING THE PERFORMANCE OF THIS CONTRACT.
14. THE CONTRACTOR SHALL RESTORE ALL PUBLIC OR PRIVATE PROPERTY DAMAGED OR REMOVED TO AT LEAST AS GOOD OF CONDITION AS BEFORE DISTURBED AS DETERMINED BY THE OWNER OR OWNER'S REPRESENTATIVE.
15. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIRED PERMITS.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING, AND INCURRING THE COST OF ALL REQUIRED PERMITS, INCLUDING, BUT NOT LIMITED TO, THE BUILDING PERMIT, INSPECTIONS, CERTIFICATES, ETC.
17. THE CONTRACTOR SHALL PROTECT EXISTING PROPERTY LINE MONUMENTATION. ANY MONUMENTATION DISTURBED OR DESTROYED, AS JUDGED BY THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE UNDER THE SUPERVISION OF A LICENSED LAND SURVEYOR.
18. ALL TRENCH EXCAVATION AND ANY REQUIRED SHEETING AND SHORING SHALL BE DONE IN ACCORDANCE OSHA REGULATIONS FOR CONSTRUCTION.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING AND THE MAINTENANCE OF SURFACE DRAINAGE DURING THE COURSE OF WORK.
20. ALL UTILITY WORK INVOLVING CONNECTIONS TO EXISTING SYSTEMS SHALL BE COORDINATED WITH THE OWNER OR OWNER'S REPRESENTATIVE AND THE UTILITY OWNER. NOTIFY THE OWNER OR OWNER'S REPRESENTATIVE AND THE UTILITY OWNER BEFORE EACH AND EVERY CONNECTION TO EXISTING SYSTEMS IS MADE.
21. MAINTAIN FLOW FOR ALL EXISTING UTILITIES.
22. ALL SITE FILL SHALL MEET SELECTED FILL STANDARDS AS DEFINED BY THE OWNER OR OWNER'S REPRESENTATIVE ON THE DRAWINGS.
23. CONTRACTOR SHALL GRADE ALL AREAS ON THE SITE TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE EQUIPMENT PAD AND THE TOWER.
24. ALL IMPROVEMENTS TO CONFORM WITH LOCAL JURISDICTION CONSTRUCTION STANDARDS AND SPECIFICATIONS, LATEST EDITION.

## STRUCTURAL STEEL NOTES

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
2. ALL INTERIOR STRUCTURAL STEEL USED SHALL BE, WHEN DELIVERED, FINISHED WITH ONE COAT FABRICATOR'S NON-LEAD, RED OXIDE PRIMER. PRIMING SHALL BE PERFORMED AFTER SHOP FABRICATION TO THE GREATEST EXTENT POSSIBLE. ALL DINGS, SCRAPES, MARS, AND WELDS IN THE PRIMED AREAS SHALL BE REPAIRED BY FIELD TOUCH-UP PRIOR TO COMPLETION OF THE WORK.
3. ALL EXTERIOR STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH SPECIFICATION ASTM A36 UNLESS OTHERWISE NOTED. GALVANIZING SHALL BE PERFORMED AFTER SHOP FABRICATION TO THE GREATEST EXTENT POSSIBLE. ALL DINGS, SCRAPES, MARS, AND WELDS IN THE GALVANIZED AREAS SHALL BE REPAIRED BY FIELD TOUCH-UP PRIOR TO COMPLETION OF THE WORK.
4. DO NOT PLACE HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
5. CONNECTIONS:
   A. ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION ", 9TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.
   B. BOLTED CONNECTIONS SHALL USE BEARING TYPE GALVANIZED ASTM A325 BOLTS (3/4" DIA) AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
   C. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. GALVANIZED ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
   D. CONNECTION DESIGN BY FABRICATOR WILL BE SUBJECT TO REVIEW AND APPROVAL BY ENGINEER.

## DESIGN DATA

1. WIND LOADS: PER EIA/TIA F-222
   ICE LOADS: 1/2" RADIAL ON ALL COMPONENTS & CABLE
   SNOW LOAD: PER CT STATE BLDG. CODE.
   SEISMIC LOADS: PER CT STATE BLDG CODE.

2. DEAD LOADS

| | |
|---|---|
| BATTERY CABINET | 2825# |
| FUTURE BATTERY CABINET | 2825# |
| MODCELL 4.0 PRIMARY CABINET | 1210# |
| MODCELL 4.0 GROWTH CABINET | 1210# |
| PPC FRAME | 270# |
| WIREWAY | 40# |

## CONCRETE NOTES

1. DESIGN AND CONSTRUCTION OF ALL CONCRETE ELEMENTS SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING APPLICABLE CODES: ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS"; ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE";
2. MIX DESIGN SHALL BE APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO PLACING CONCRETE.
3. CONCRETE SHALL BE NORMAL WEIGHT, 6% AIR ENTRAINED (±1.5%) WITH A MAXIMUM 4" SLUMP, AND HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI UNLESS OTHERWISE NOTED.
4. MAXIMUM AGGREGATE SIZE SHALL BE 1".
5. THE FOLLOWING MATERIALS SHALL BE USED:

| | |
|---|---|
| PORTLAND CEMENT: | ASTM C 150, TYPE I |
| REINFORCEMENT: | ASTM A 185 |
| NORMAL WEIGHT AGGREGATE: | ASTM C 33 |
| WATER: | DRINKABLE |
| ADMIXTURES: | NON-CHLORIDE CONTAINING |

6. REINFORCING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ACI 315.
7. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
8. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.

   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER .....2 IN.
   #5 AND SMALLER & WWF .....1 1/2 IN.

   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALL .....3/4 IN.
   BEAMS AND COLUMNS .....1 1/2 IN.

9. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
10. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURES WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING HOLES IN CONCRETE.
11. CURING COMPOUNDS SHALL CONFORM TO ASTM C-309.
12. ADMIXTURES SHALL CONFORM TO THE APPROPRIATE ASTM STANDARD AS REFERENCED IN ACI-301.
13. DO NOT WELD OR TACKWELD REINFORCING STEEL.
14. ALL DOWELS, ANCHOR BOLTS, EMBEDDED STEEL, ELECTRICAL CONDUITS, PIPE SLEEVES, GROUNDS AND ALL OTHER EMBEDDED ITEMS AND FORMED DETAILS SHALL BE IN PLACE BEFORE START OF CONCRETE PLACEMENT.
15. LOCATE ADDITIONAL CONSTRUCTION JOINTS REQUIRED TO FACILITATE CONSTRUCTION AS ACCEPTABLE TO ENGINEER. PLACE REINFORCEMENT CONTINUOUSLY THROUGH JOINT.
16. REINFORCEMENT SHALL BE COLD BENT WHENEVER BENDING IS REQUIRED.
17. PLACE CONCRETE IN A UNIFORM MANNER TO PREVENT THE FORMATION OF COLD JOINTS AND OTHER PLANES OF WEAKNESS. VIBRATE THE CONCRETE TO FULLY EMBED REINFORCING. DO NOT USE VIBRATORS TO TRANSPORT CONCRETE THROUGH CHUTES OR FORMWORK.
18. DO NOT PLACE CONCRETE IN WATER, ICE, OR ON FROZEN GROUND.
19. DO NOT ALLOW CONCRETE SUBBASE TO FREEZE DURING CONCRETE CURING AND SETTING PERIOD, OR FOR A MINIMUM OF 14 DAYS AFTER PLACEMENT.
20. FOR COLD-WEATHER AND HOT-WEATHER CONCRETE PLACEMENT, CONFORM TO APPLICABLE ACI CODES AND RECOMMENDATIONS. IN EITHER CASE, MATERIALS CONTAINING CHLORIDE, CALCIUM, SALTS, ETC. SHALL NOT BE USED. PROTECT FRESH CONCRETE FROM WEATHER FOR 7 DAYS MINIMUM.

## CIVIL LEGEND

| EXISTING | | PROPOSED |
|---|---|---|
| | FENCE | -x-x-x- |
| UNDERGROUND ELECTRIC | UNDERGROUND ELECTRIC | — — — — |
| UNDERGROUND TELEPHONE | UNDERGROUND TELEPHONE | — — — — |
| OVERHEAD WIRES | OVERHEAD TELEPHONE / OVERHEAD ELECTRIC | ——— |
| 250 | 5' OR 10' CONTOUR LINE | 250 |
| 202 | 1' OR 2' CONTOUR LINE | 202 |
| 120.5 | SPOT ELEVATION | 120.5 OR x 120.5 |
| | PRIMARY PROPERTY OR R.O.W. | |
| | LEASE LINE | |
| | EASEMENT | |
| | UTILITY POLE | |
| | TELEPHONE PEDESTAL | |
| | CURB | |
| | ASPHALT PAVEMENT | |
| | BUILDING | |
| | TREES, SHRUBS, BUSHES | |
| X / X | REPRESENTS DETAIL NUMBER / REF. DRAWING NUMBER | |

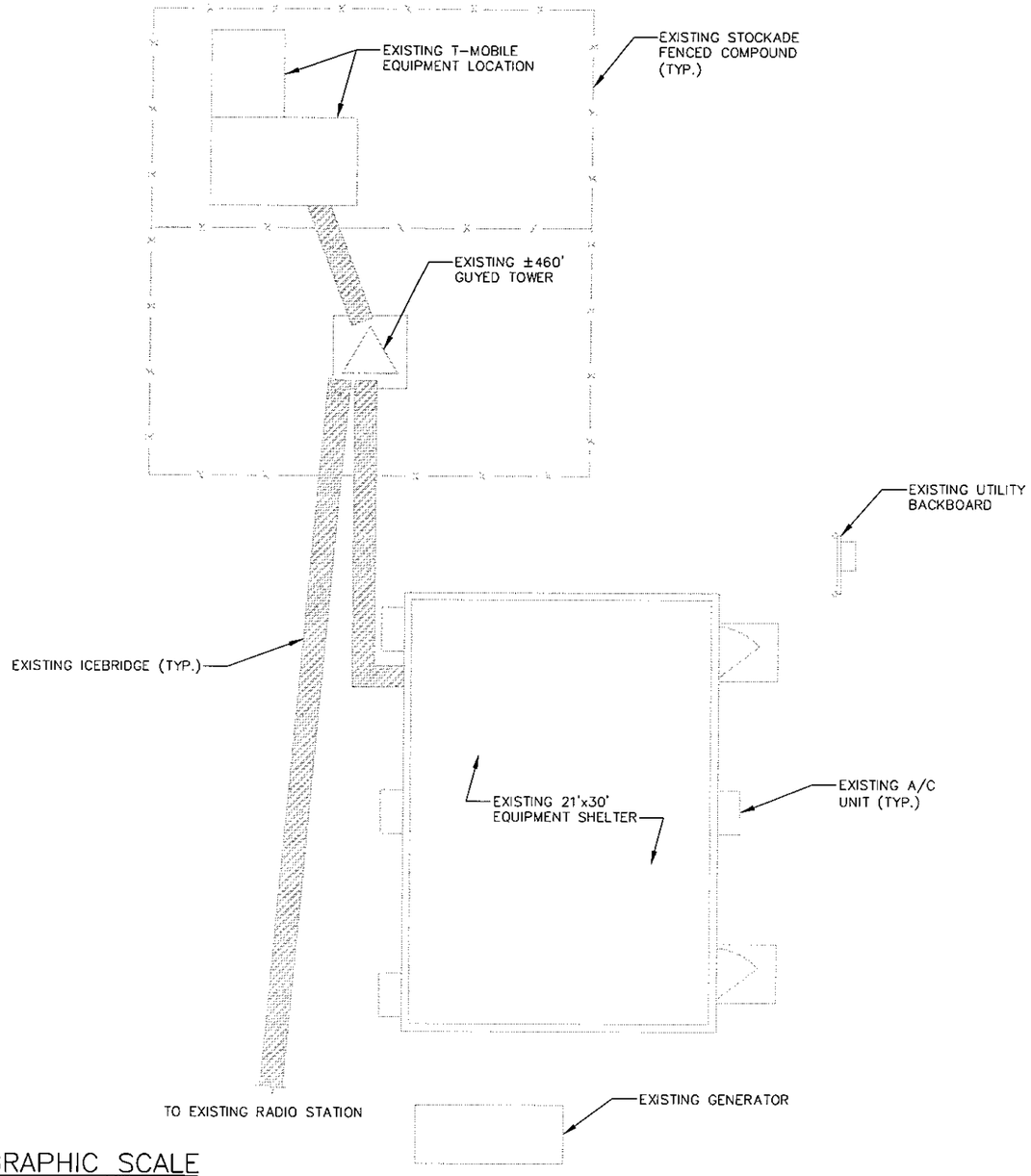
| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| 0 | 10/31/07 | ISSUED FOR REVIEW | CJW | SJB | CJW |

infinigy engineering
300 GREAT OAKS BLVD.
SUITE 312
ALBANY, NY 12203
158-72

Sprint
Together with Nextel.
1 INTERNATIONAL BLVD ⁞ SUITE 800 ⁞ MAHWAH, NJ 07495

BROOKFIELD
39 CARMEN HILL ROAD
BROOKFIELD, CT 06804

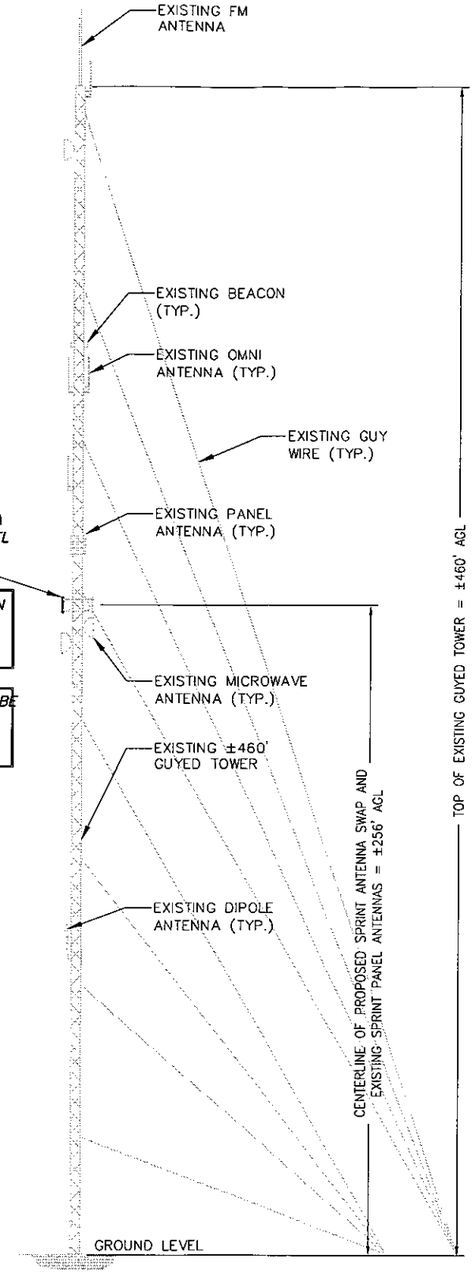
GENERAL NOTES & LEGEND
CT0068 / CT72XC033
C1
DATE: 10/31/07
REV 0




GRAPHIC SCALE

10' 0 10'

1 SITE LAYOUT
SCALE:




*PROPOSED PANEL ANTENNA TO REPLACE (1) EXISTING ANTENNA IN GAMMA SECTOR ONLY (MODEL RR65-18-02DPL2)*

*NOTE: (1) EXISTING ANTENNA IN THE ALPHA SECTOR TO BE REMOVED AS WELL, BUT NOT REPLACED*

*PROPOSED ANTENNA SWAP TO BE ACCOMPLISHED WITH USE OF A CRANE. NO TOWER CLIMBING SHALL BE ALLOWED.*

2 TOWER ELEVATION
NOT TO SCALE

BASEMAPPING PREPARED FROM A SITE WALK BY INFINIGY ENGINEERING ON 10/26/07, AND DOES NOT REPRESENT AN ACTUAL FIELD SURVEY.

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| 0 | 10/31/07 | ISSUED FOR REVIEW | DJW | SJB | CJW |

infinigy engineering
300 GREAT OAKS BLVD.
SUITE 312
ALBANY, NY 12203
158-72

Sprint
Together with Nextel.
1 INTERNATIONAL BLVD ⁞ SUITE 800 ⁞ MAHWAH, NJ 07495

BROOKFIELD

39 CARMEN HILL ROAD
BROOKFIELD, CT 06804

SITE LAYOUT & TOWER ELEVATION

CT0068 / CT72XC033

C2

DATE: 10/31/07

REV 0

# Radio Frequency Field Survey

**Site ID:** CT0068-CT72XC033
**Site Name:** Brookfield
**Site Address:** 39 Carmen Hill Road
Brookfield, CT 06804

C2Systems

136 Harvey Road
Londonderry, NH 03053
(603) 758 1013
support@csquaredsystems.com

# Table of Contents



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## Introduction

Radio Frequency Emission measurements were made in the vicinity of the guyed tower located at 39 Carmen Hill Road, Brookfield, CT on Nov 12, 2007 between the hours of 1:00 PM and 4:00 PM. The coordinates of the guyed tower are N 41° 29' 36.18", W 73° 25' 43.63". The results of the measurements are presented in this report. Sprint-Nextel is proposing to replace one of the existing iDen panel antennas of the gamma sector with a CDMA panel antenna.

## FCC Guidelines for Evaluating RF Radiation Exposure Limits

The FCC describes exposure to radio frequency (RF) energy in terms of percentage of maximum permissible exposure (MPE) with 100% being the maximum allowed. Rather than the FCC presenting the user specification in terms of complex power density figures over a specified surface area, this MPE measure is particularly useful, and even more so when considering that power density limits actually vary by frequency because of the different absorptive properties of the human body at different frequencies.

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 OET Bulletin 65 Edition 97-01. These new rules include limits for Maximum Permissible Exposure (MPE) for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP), the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

Survey measurements are expressed as a percentage of the Maximum Permissible Exposure (MPE) limits as listed in the FCC OET Bulletin 65. OET Bulletin 65 was prepared to provide assistance in determining whether proposed or existing transmitting facilities, operations or devices comply with limits for human exposure to radio frequency fields adopted by the Federal Communications Commission. Measurement results expressed in this report are for uncontrolled public access. The FCC's guidelines establish separate exposure limits for "general population/uncontrolled exposure," and for "occupational/controlled exposure."

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the cellular band is 567 $\mu W/cm^2$, and the general population exposure limit for the PCS band is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals." Attachments A and B contain excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

## Measurement Procedures

Frequencies from 300 KHz to 50 GHz were measured using the Narda A8722D probe in conjunction with the 8718B survey meter. The A8722D probe is "shaped" such that in a mixed signal environment (i.e.: more than one frequency band is used in a particular location) it accurately measures the percent of MPE.

From FCC OET Bulletin No. 65 - Edition 97-01 – "A useful characteristic of broadband probes used in multiple-frequency RF environments is a frequency-dependent response that corresponds to the variation in MPE limits with frequency. Broadband probes having such a "shaped" response permit direct assessment of compliance at sites where RF fields result from antennas transmitting over a wide range of frequencies. Such probes can express the composite RF field as a percentage of the applicable MPEs".

Probe Description – As suggested in FCC OET Bulletin No. 65 - Edition 97-01, the response of the measurement instrument should be essentially isotropic, (i.e., independent of orientation or rotation angle of the probe). For this reason, the Narda A8722 and 8731 Isotropic probes were used for these measurements. The A8722 probe is used to measure the E Field and where this is also an AM facility, the 8731 Probe was used to measure the H Field in the immediate vicinity of the tower.

Sampling Description: At each measurement location, a spatially averaged measurement is collected over the height of an average human body. The 8718B survey meter performs a time average measurement while the user slowly moves the probe over a distance range of 0 cm to 200 cm (about 6 feet) above ground level. The results recorded at each measurement location include both average and peak values over the spatial distance.

Instrumentation Information: A summary of specifications for the equipment used is provided in the table below.

| | | | | |
|---|---|---|---|---|
| **Manufacturer** | Narda Microwave | | | |
| **Probe (Field E)** | A8722D, Serial Number 07030 | | | |
| **Calibration Date** | 2/26/2007 | | | |
| **Probe (Field H)** | 8731, Serial Number 05016 | | | |
| **Calibration Interval** | 12 Months | | | |
| **Meter** | 8718B, Serial Number 06028 | | | |
| **Calibration Date** | 2/10/2006 | | | |
| **Calibration Interval** | 24 Months | | | |
| **Probe Specifications** | **Freq Range** | **Field Measured** | **Standard** | **Measurement Range** |
| | 300 KHz-50 GHz | E | FCC 1997 | 0.3 – 300 % of Controlled |
| | 10-300 MHz | H | FCC 1997 | 0.3 – 300 % of Controlled |

**Table 1: Instrumentation Information**

Instrument Measurement Uncertainty: The total measurement uncertainty of the NARDA measurement probe and meter is no greater than ±3 dB. The factors which contribute to this include the probe's frequency response deviation, calibration uncertainty, ellipse ratio, and isotropic response. Every effort is taken to reduce the overall uncertainty during measurement collection including rotating the probe about the axis of the handle and pointing the probe directly at the likely highest source of emissions.

## Results

Calculations were performed based on the information shown in Line Item 8 of Table 2 below. The information contained in Line Items 1 through 7 was provided by outside sources and are shown here for reference only. They were not used in the calculation since they inherently incorporated into the measured data.

| Item | Carrier | Technology | Frequency (MHz) | Antenna* | No. of Channels per Sector | Antenna Height (Ft.) | ERP per Channel (Watts) |
|---|---|---|---|---|---|---|---|
| 1 | WRKI | FM Radio | 95.10 | FML-2E-SP | 1 | 486.5/481.5 | 34000 |
| 2 | WINE | AM Radio | 0.94 | Tower | 1 | 461.5 | 1000 |
| 3 | Town Fire | Public Safety | 450.00 | DB222 | 4 | 146 | 95 |
| 4 | Town Police | Public Safety | 450.00 | DB223 | 4 | 132 | 68 |
| 5 | Town Public Works | Public Safety | 150.00 | DB224 | 4 | 118 | 100 |
| 6 | T-Mobile | GSM | 1950-1963 | RR90-18-00DP | 8 | 280.5 | 1192 |
| 7 | Sprint-Nextel | iDEN | 851-866 | DB844H90(E)-XY | 3 | 256.5 | 1192 |
| **8** | **Sprint-Nextel** | **CDMA** | **1960.00** | **EMS RR65-18-02DPL2** | **11** | **256.5** | **194.4** |

**Table 2: Antenna Specifications (Final Configuration)**

Table 3 below shows the measured, calculated and composite predicted %MPE of the measurement points surveyed. Each measurement location and its associated GPS coordinates are listed in Table 3. All measurements were taken on Nov 12, 2007 between the hours of 1:00 PM and 4:00 PM.

| Measurement Point | Latitude | Longitude | Distance from Tower (ft) | Measured %MPE | Predicted %MPE | Total %MPE |
|---|---|---|---|---|---|---|
| 1 | N41-29-34.7 | W73-25-43.5 | 150 | 6.40% | 0.14% | 6.54% |
| 2 | N41-29-35 | W73-25-44 | 123 | 6.30% | 0.15% | 6.45% |
| 3 | N41-29-35.4 | W73-25-44.5 | 103 | 3.65% | 0.16% | 3.81% |
| 4 | N41-29-35.5 | W73-25-45.6 | 165 | 2.85% | 0.13% | 2.98% |
| 5 | N41-29-35.9 | W73-25-46.5 | 220 | 1.95% | 0.11% | 2.06% |
| 6 | N41-29-35.5 | W73-25-45.1 | 131 | 5.70% | 0.14% | 5.84% |
| 7 | N41-29-36.9 | W73-25-45.5 | 160 | 5.45% | 0.13% | 5.58% |
| 8 | N41-29-37.6 | W73-25-45.2 | 187 | 3.40% | 0.12% | 3.52% |
| 9 | N41-29-36.9 | W73-25-42.2 | 131 | 2.10% | 0.14% | 2.24% |
| 10 | N41-29-36.5 | W73-25-41.5 | 165 | 4.90% | 0.13% | 5.03% |
| 11 | N41-29-35.3 | W73-25-41.3 | 198 | 8.65% | 0.11% | 8.76% |
| 12 | N41-29-34.9 | W73-25-41.4 | 213 | 6.60% | 0.11% | 6.71% |
| 13 | N41-29-33.5 | W73-25-47.7 | 412 | 1.25% | 0.05% | 1.30% |
| 14 | N41-29-32.1 | W73-25-46.4 | 464 | 0.40% | 0.04% | 0.44% |
| 15 | N41-29-31.2 | W73-25-46.2 | 542 | 1.05% | 0.03% | 1.08% |
| 16 | N41-29-37 | W73-25-48.8 | 402 | 1.80% | 0.05% | 1.85% |
| 17 | N41-29-40.1 | W73-25-49.6 | 603 | 1.70% | 0.03% | 1.73% |
| 18 | N41-29-42.9 | W73-25-50.7 | 868 | 1.55% | 0.01% | 1.56% |
| 19 | N41-29-46 | W73-25-50.7 | 1132 | 1.80% | 0.01% | 1.81% |
| 20 | N41-29-27.4 | W73-25-44.9 | 896 | 2.15% | 0.01% | 2.16% |
| 21 | N41-29-34.8 | W73-25-44.3 | 149 | 7.45% | 0.14% | 7.59% |
| 22 | N41-29-34.9 | W73-25-45.3 | 182 | 7.50% | 0.12% | 7.62% |
| 23 | N41-29-35.2 | W73-25-45.8 | 193 | 7.60% | 0.12% | 7.72% |
| 24 | N41-29-35.8 | W73-25-46.3 | 207 | 7.70% | 0.11% | 7.81% |
| 25 | N41-29-36.3 | W73-25-46.2 | 196 | 7.50% | 0.12% | 7.62% |
| 26 | N41-29-37 | W73-25-44.3 | 98 | 7.45% | 0.16% | 7.61% |
| 27 | N41-29-37.2 | W73-25-43 | 114 | 6.30% | 0.15% | 6.45% |
| 28 | N41-29-36.7 | W73-25-41.5 | 170 | 7.15% | 0.13% | 7.28% |
| 29 | N41-29-36 | W73-25-41.7 | 148 | 7.15% | 0.14% | 7.29% |
| 30 | N41-29-34.8 | W73-25-41.9 | 192 | 7.25% | 0.12% | 7.37% |
| 31 | N41-29-35 | W73-25-43.9 | 121 | 7.10% | 0.15% | 7.25% |

**Table 3: Results**

Predicted results were estimated by calculating the %MPE of the additional Sprint-Nextel CDMA antenna at each measurement location given the mounting height of the antennas, the number of transmitters, and the maximum ERP for each sector. This predicted %MPE was then added to each measured value to estimate a total %MPE value following the planned activation of the Sprint-Nextel CDMA antenna.

Given that power specifications for the existing iDEN antennas will not change, only the addition of CDMA antenna will affect the total %MPE after activation. A nominal 10 dB attenuation was applied to the predicted %MPE of each point found to be out of the main beam of the transmitting Sprint- Nextel CDMA antennas.

## Survey Photos

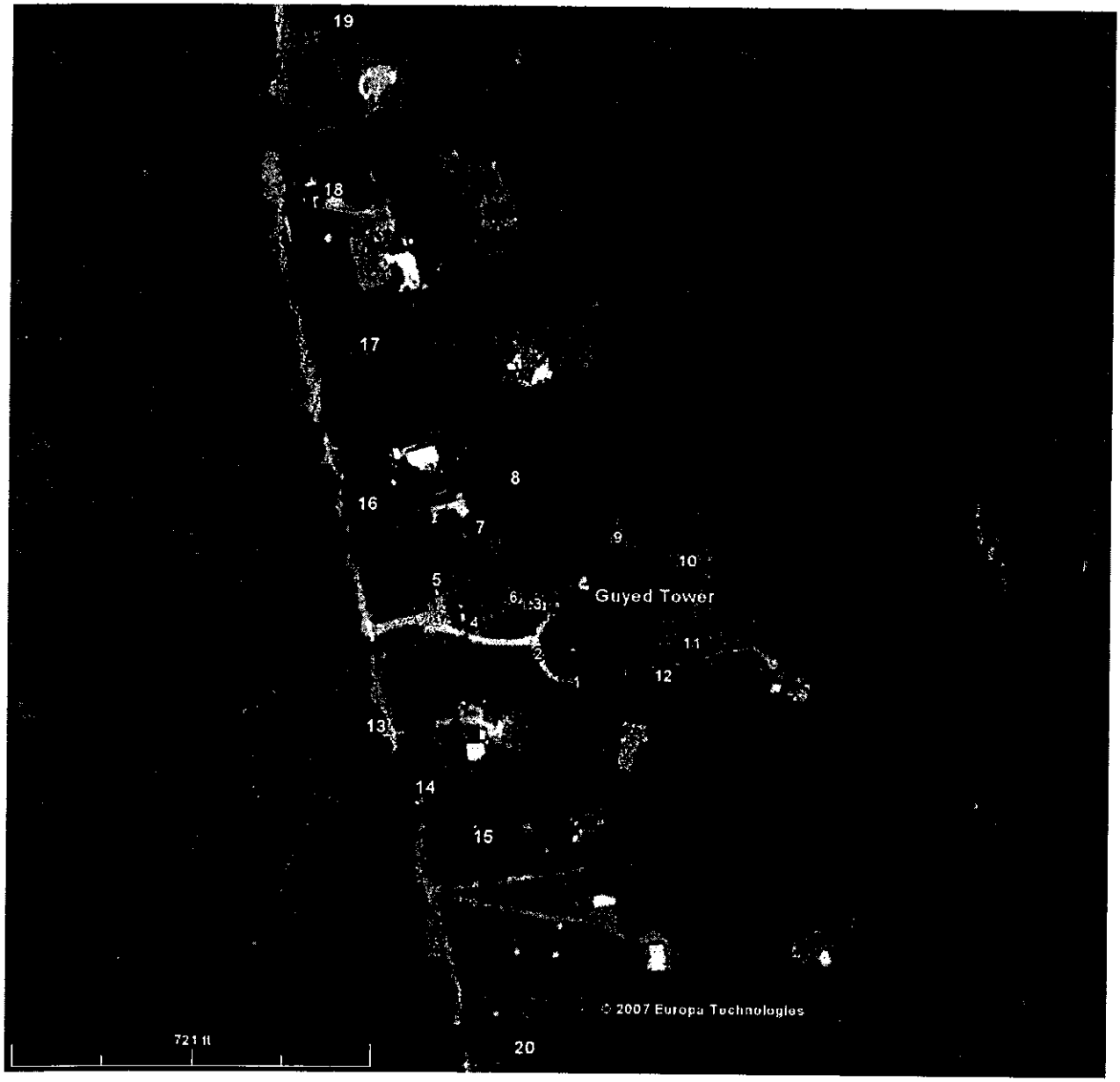



**Figure 1: Aerial View with Measurement Locations (Field E Probe)**

The measurement locations shown in Figure 1 above represent those locations surveyed with the A8722D E-Field probe. Please note that Measurement Points 1 thru 12 are all within the 39 Carmen Hill Road property, surrounding the tower facility. Measurement Points 13 thru 20 were taken along Carmen Hill Road, in front of the entrances to residential properties.

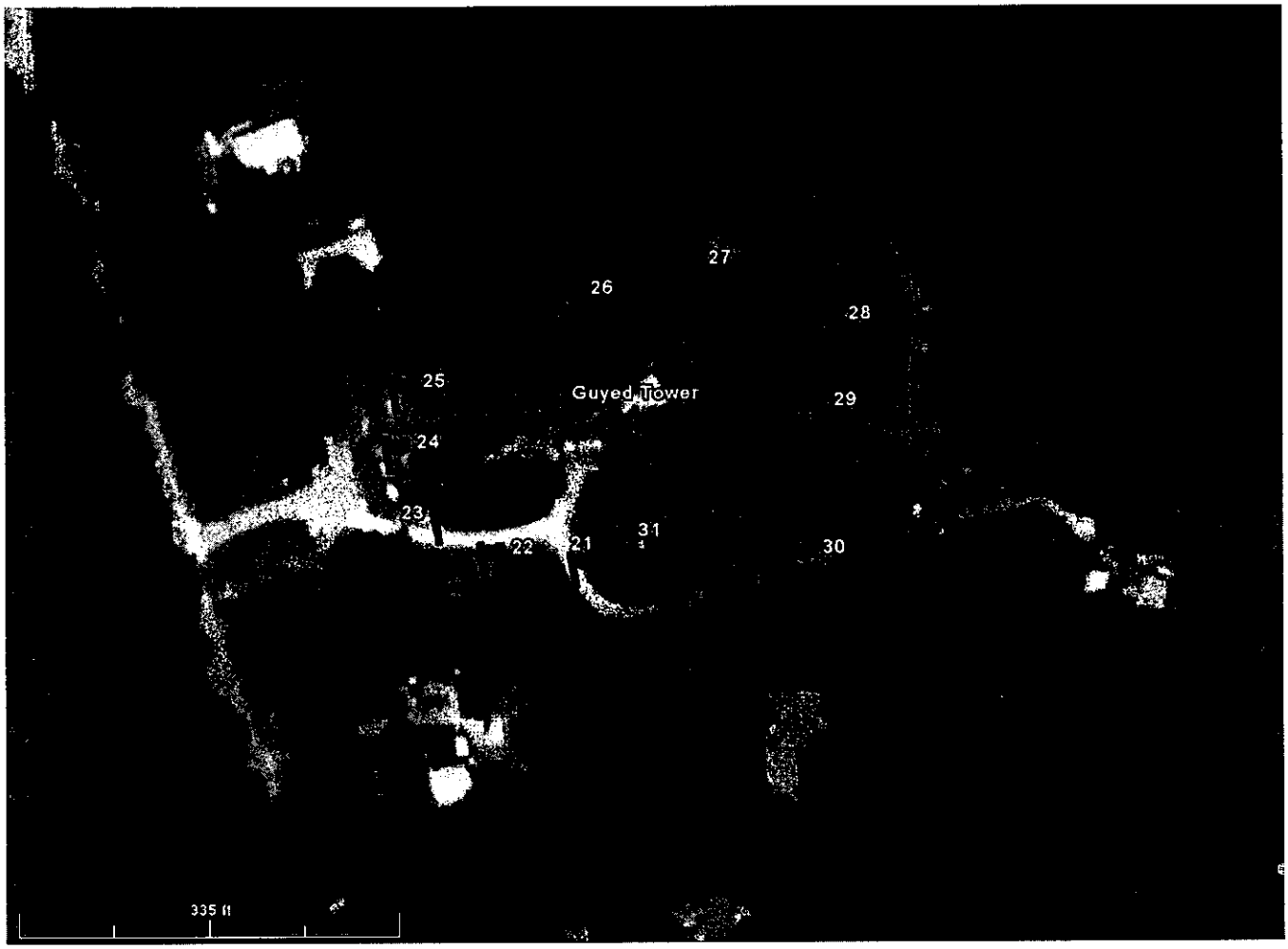



**Figure 2: Aerial View with Measurement Locations of H Field**

The measurement locations shown in Figure 2 above represent those locations surveyed with the 8731 H-Field probe. Please note that Measurement Points 21 thru 31 were all taken within the 39 Carmen Hill Road property, surrounding the tower facility. Location photos shown in Figures 3 thru 10 depict only the GPS and the Survey Meter since this was an open field with no distinguishing landmarks at the survey locations.

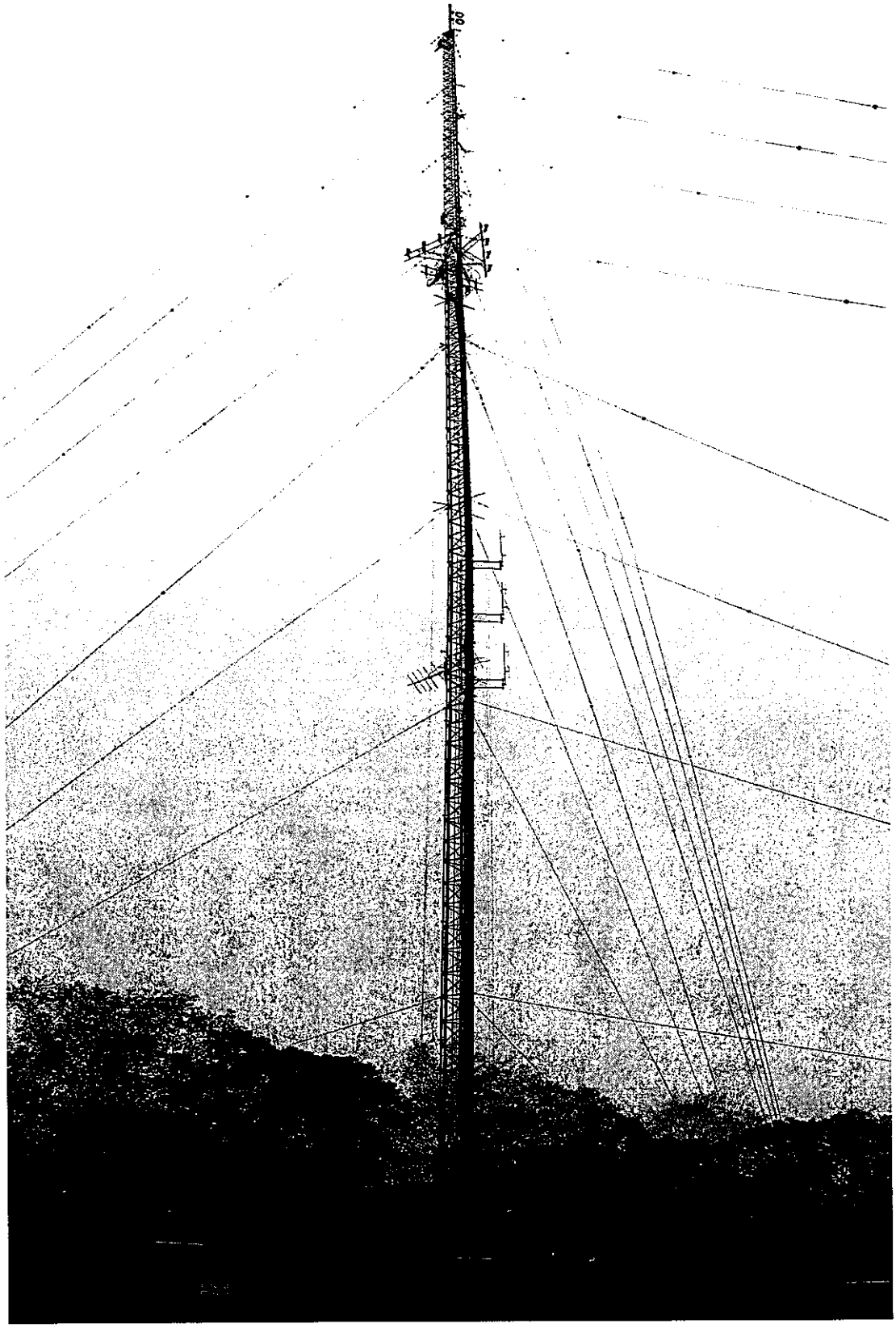


**Figure 3: Tower View**


**Figure 4: Antenna Arrays**

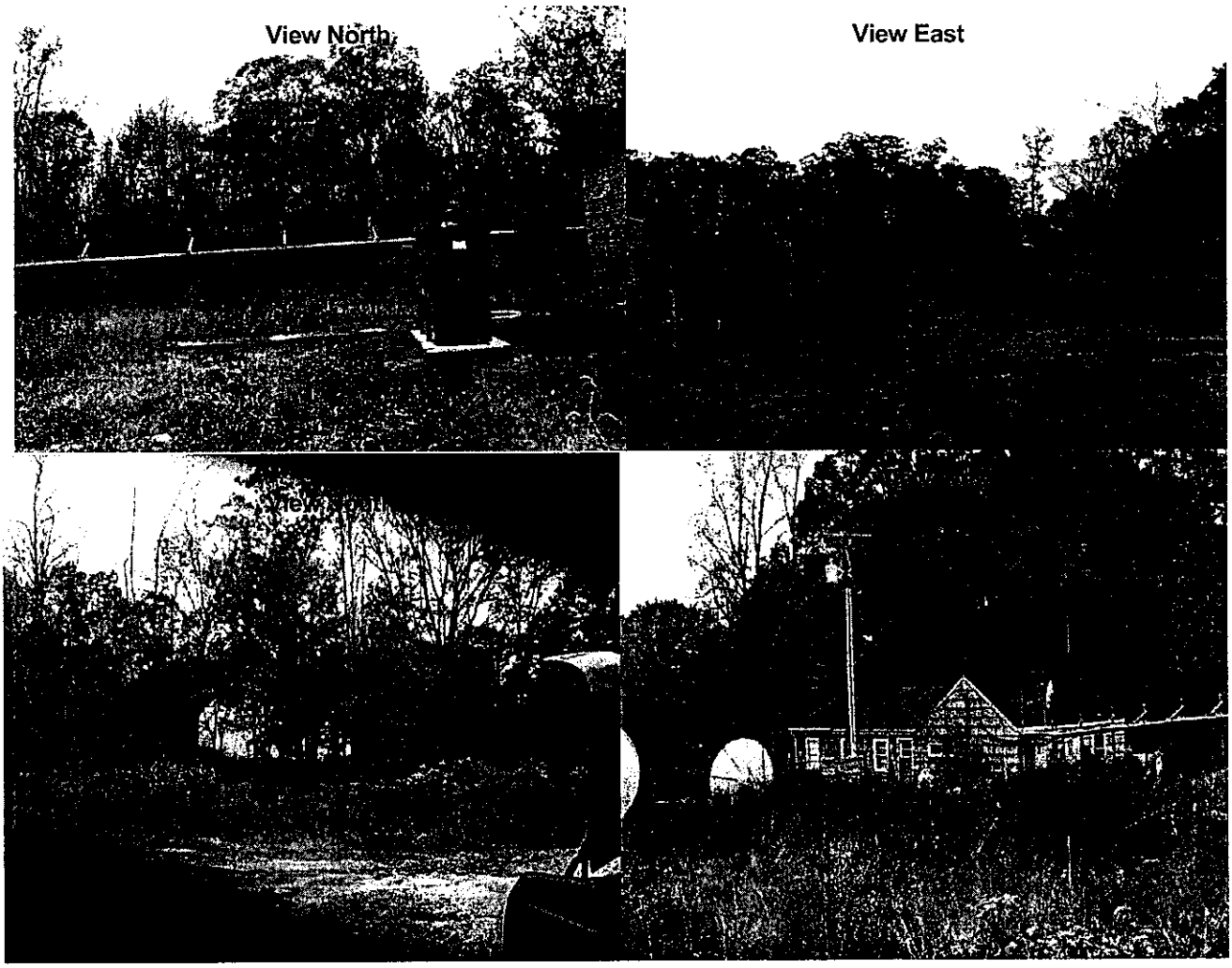



**Figure 5: Directional Views from Site**

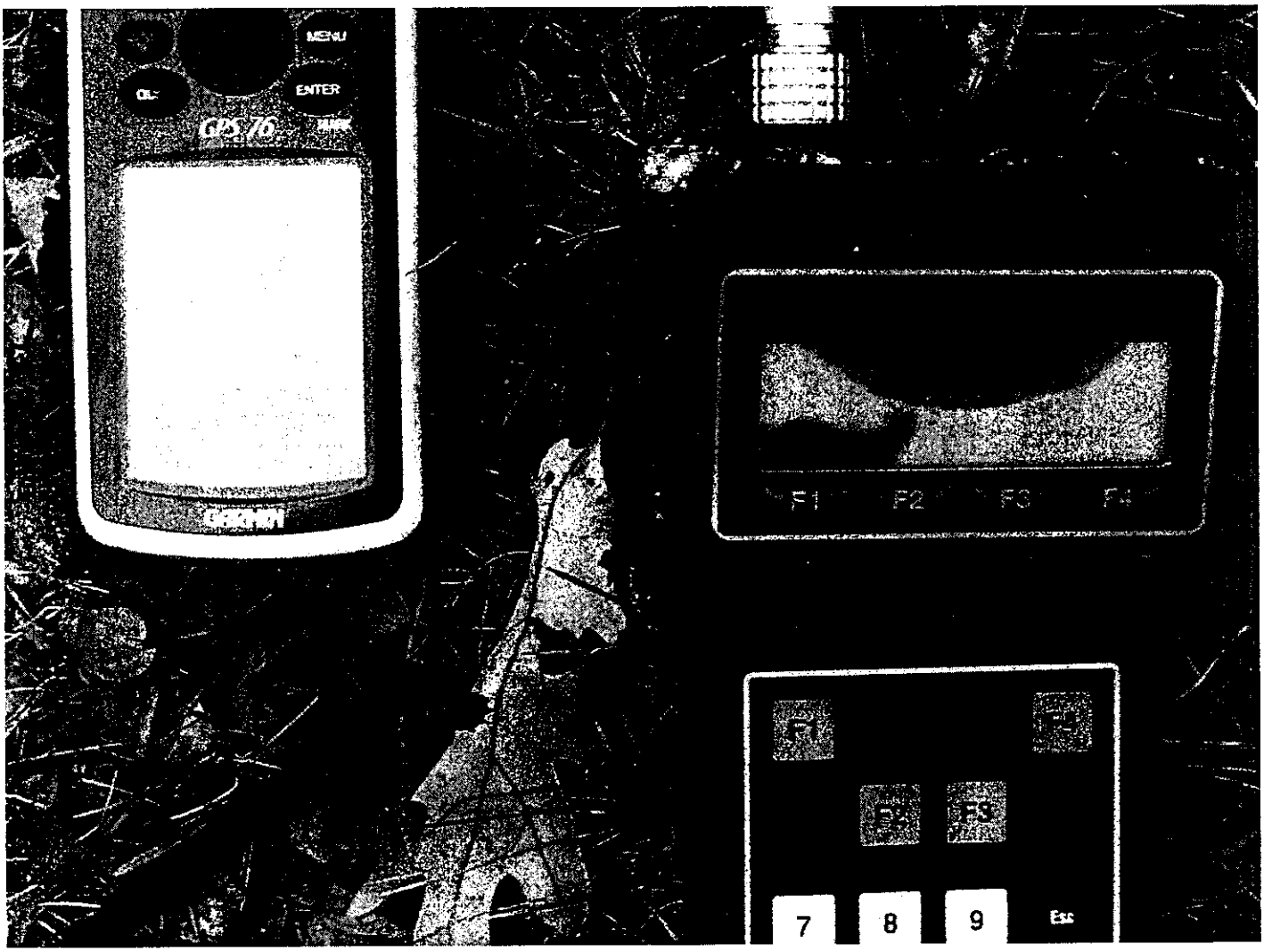



**Figure 6: Measurement Location 1**

Please note that many of the measurement points were taken within the 39 Carmen Hill Road property, surrounding the tower facility. Location photos may only show the actual GPS location of the measurement point unaccompanied by a photo of a residence or other structure. This is because there may not have been any distinguishing landmark in the survey location or the residence was not visible from the survey location or the public road.


**Figure 7: Measurement Location 2**


**Figure 8: Measurement Location 3**


**Figure 9: Measurement Location 4**


**Figure 10: Measurement Location 5**

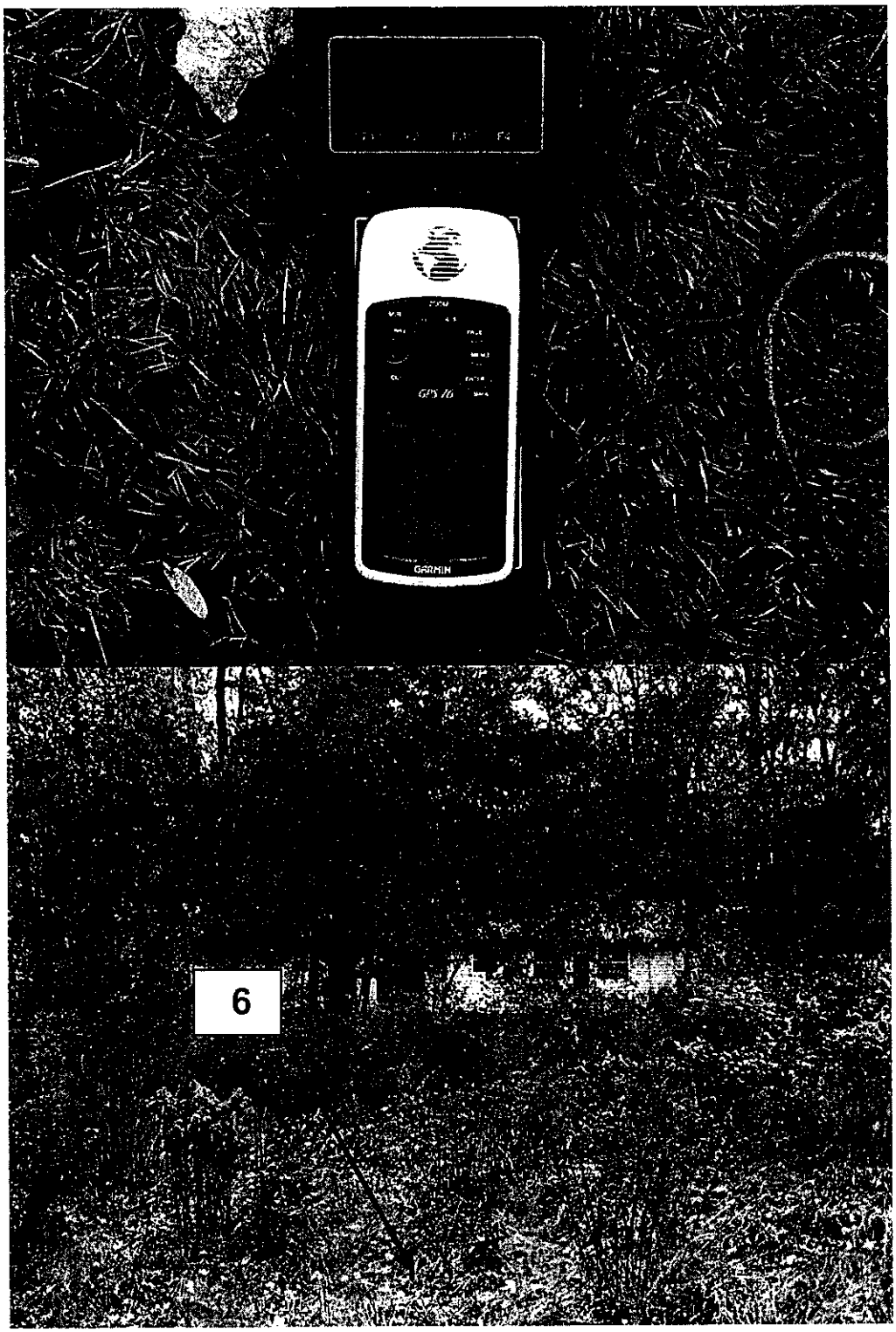



**Figure 11: Measurement Location 6**


**Figure 12: Measurement Location 7**


**Figure 13: Measurement Location 8**


**Figure 14: Measurement Location 9**

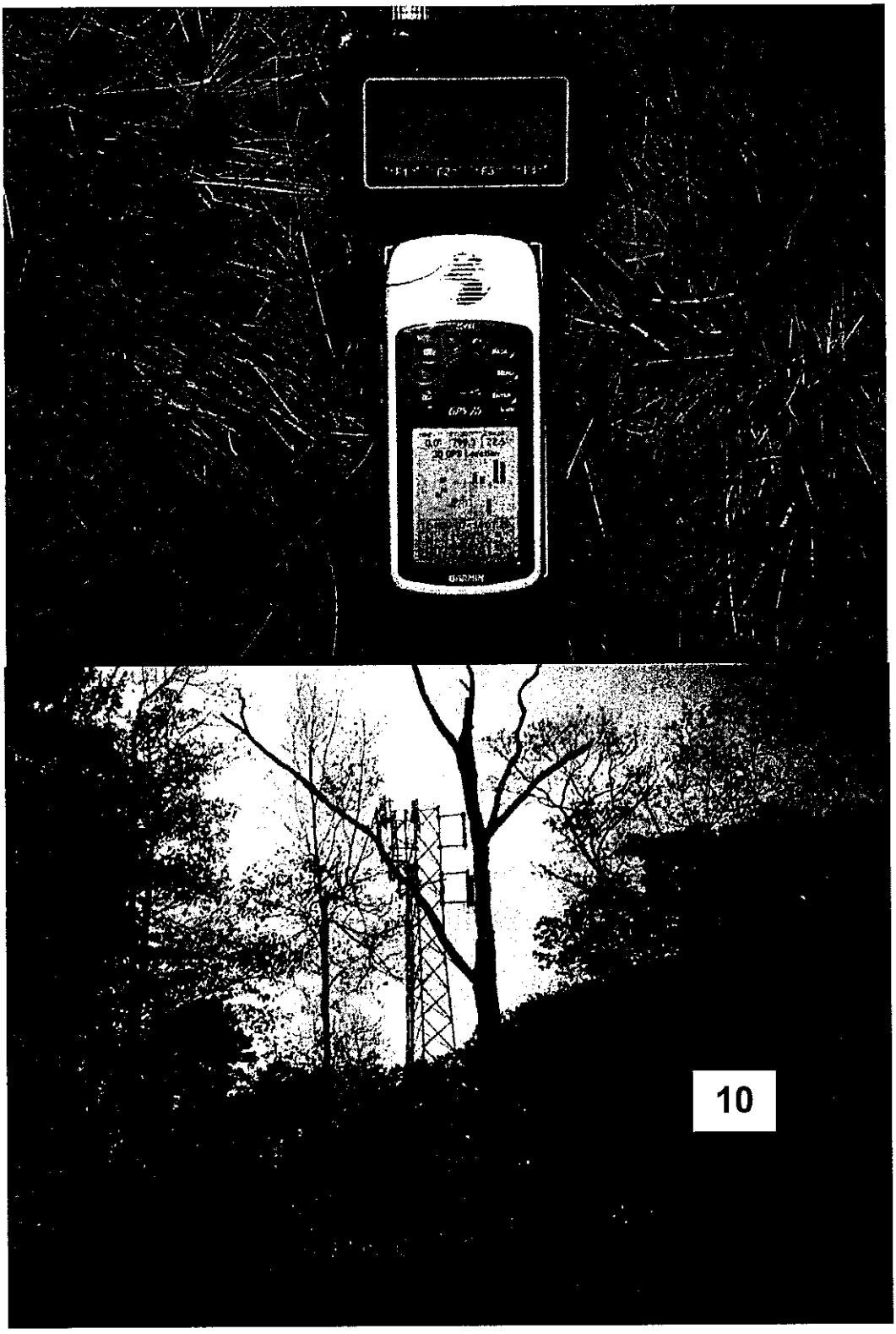



**Figure 15: Measurement Location 10**


**Figure 16: Measurement Location 11**

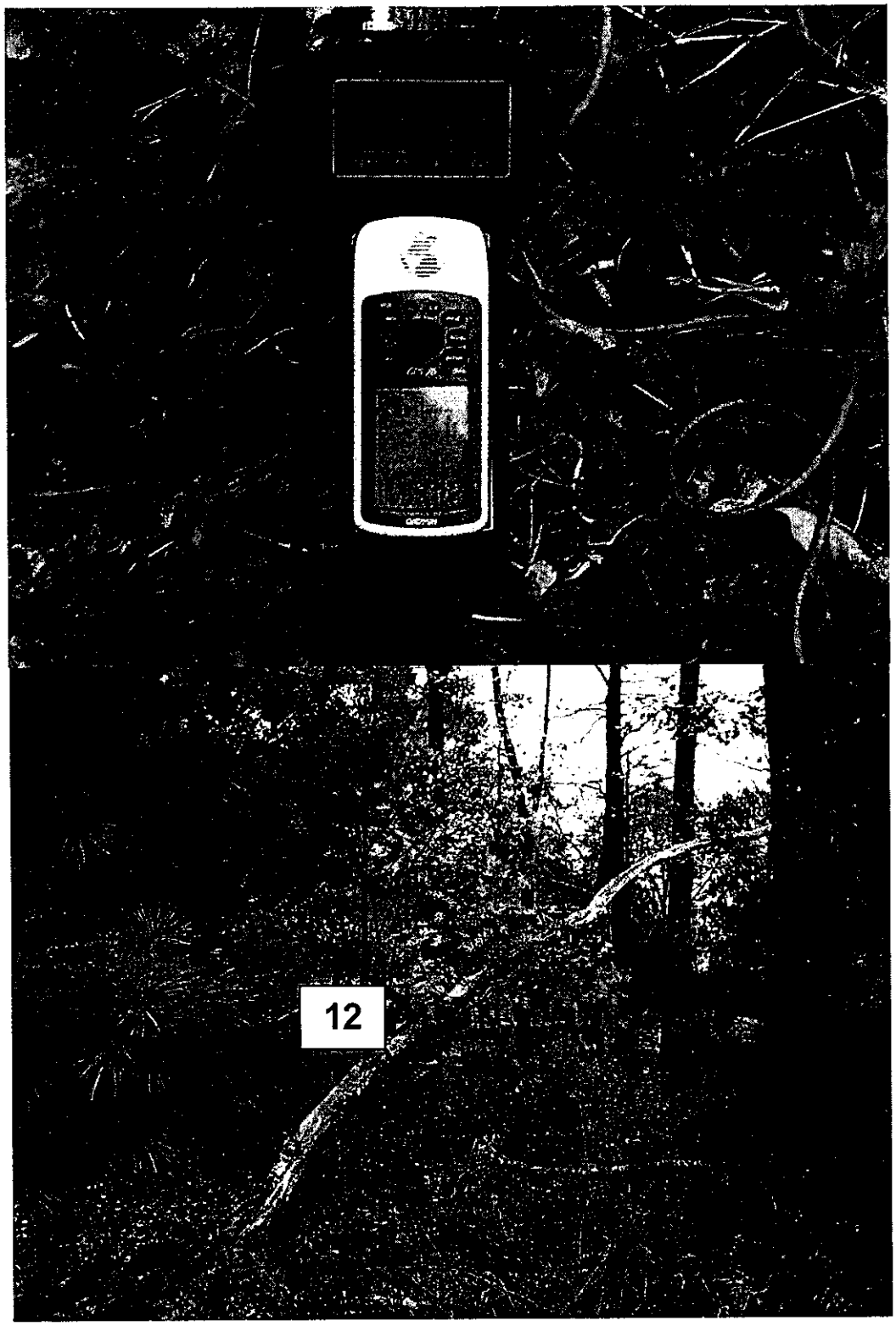



**Figure 17: Measurement Location 12**

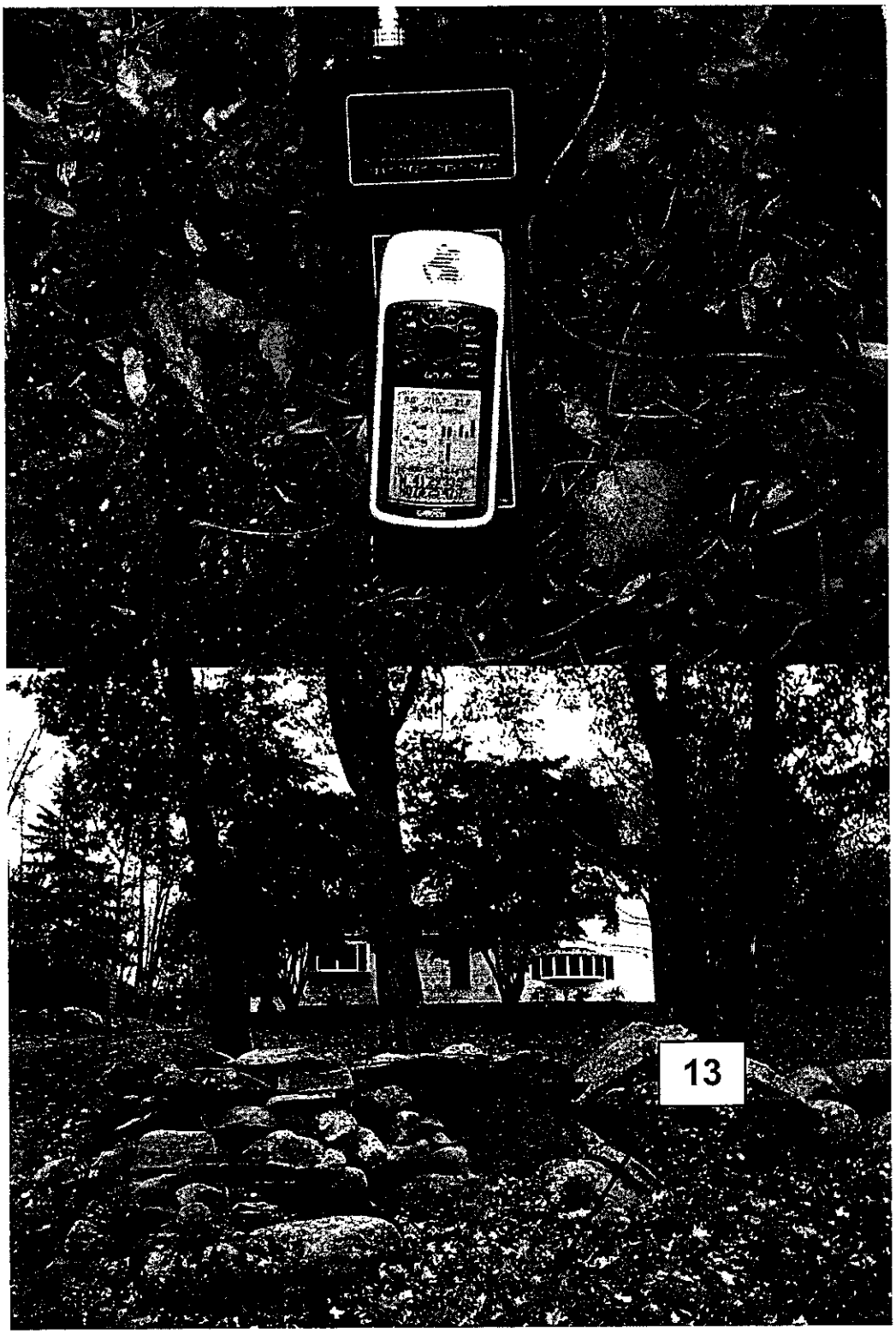



**Figure 18: Measurement Location 13**

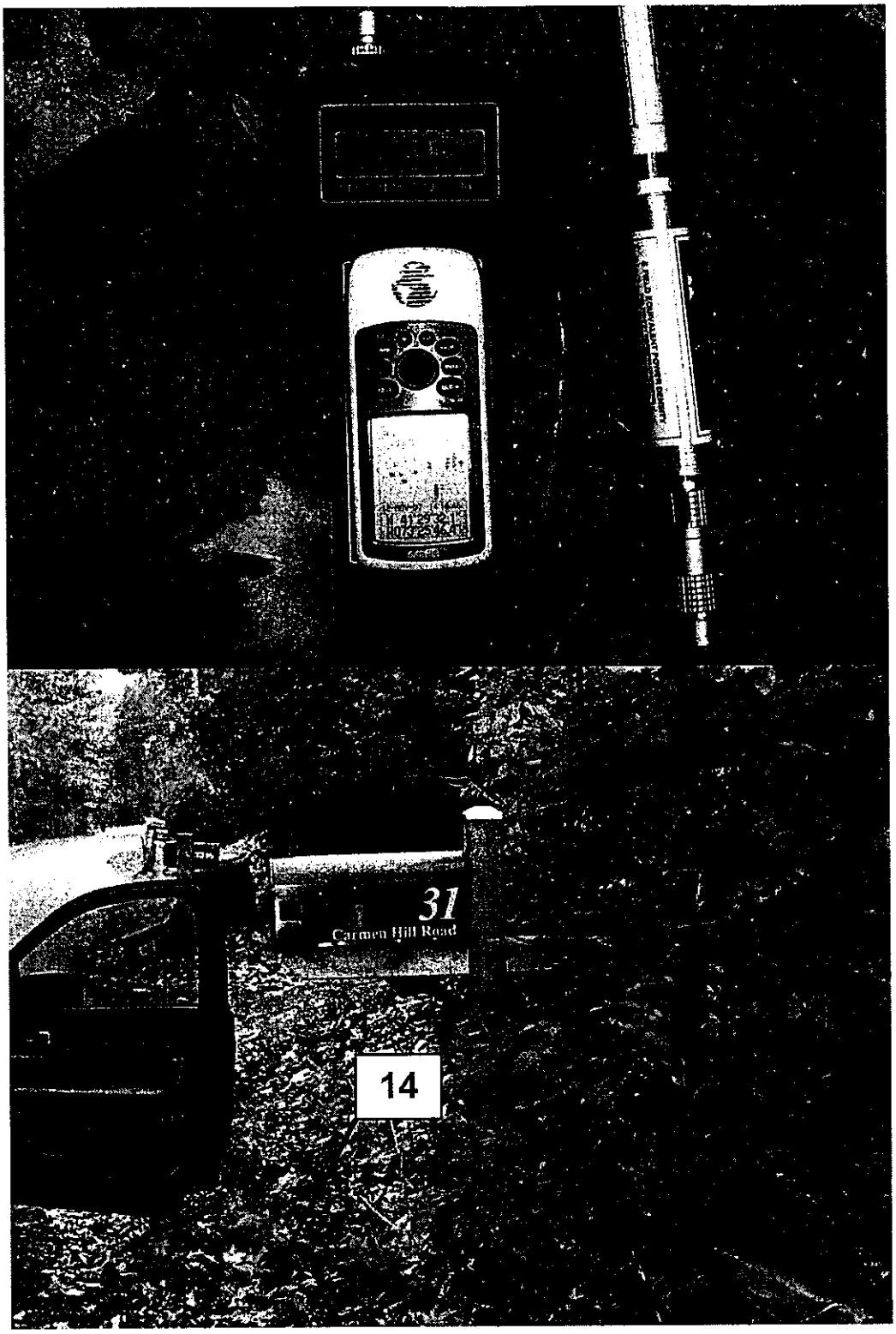



**Figure 19: Measurement Location 14**

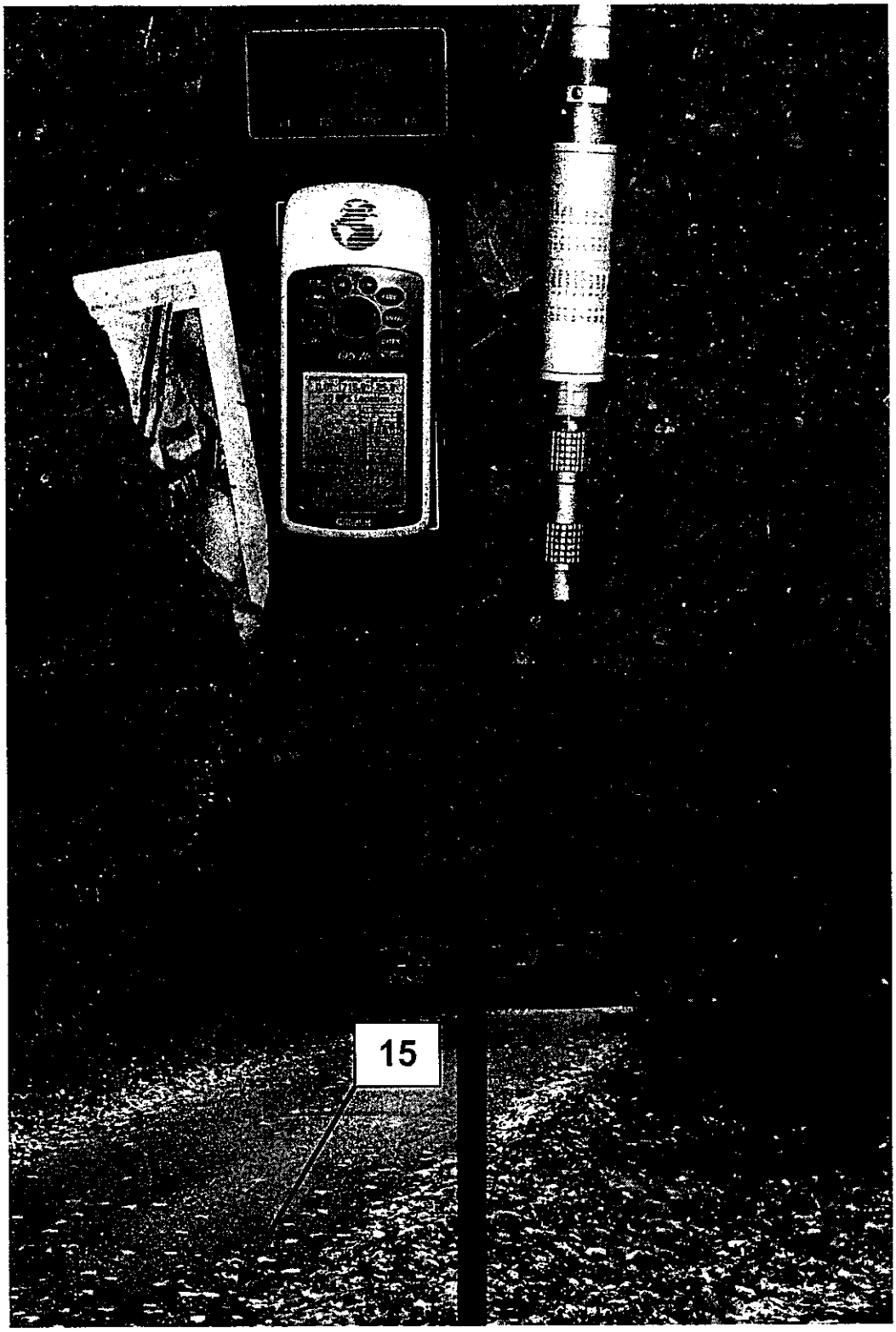



**Figure 20: Measurement Location 15**

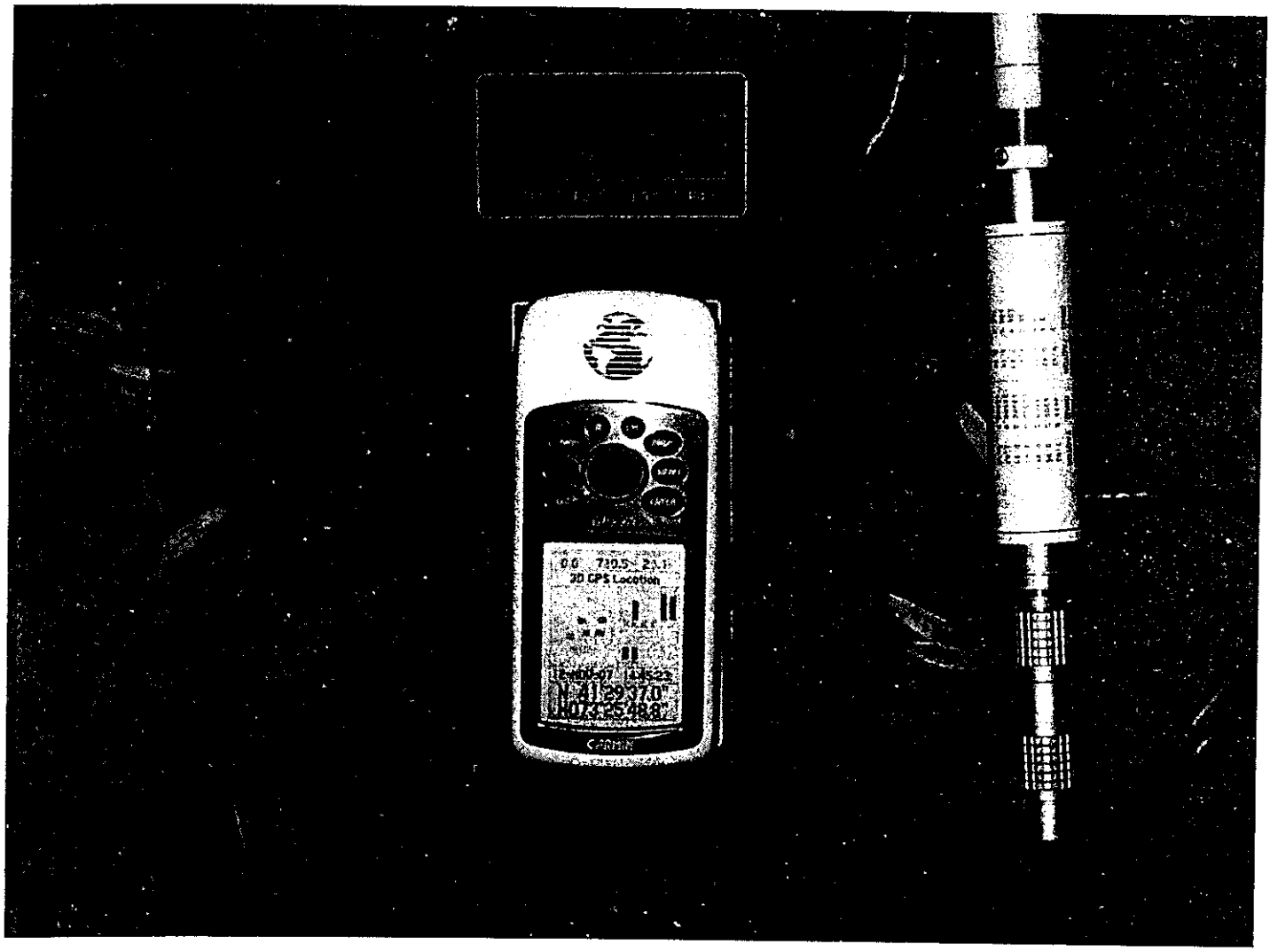



**Figure 21: Measurement Location 16**


**Figure 22: Measurement Location 17**

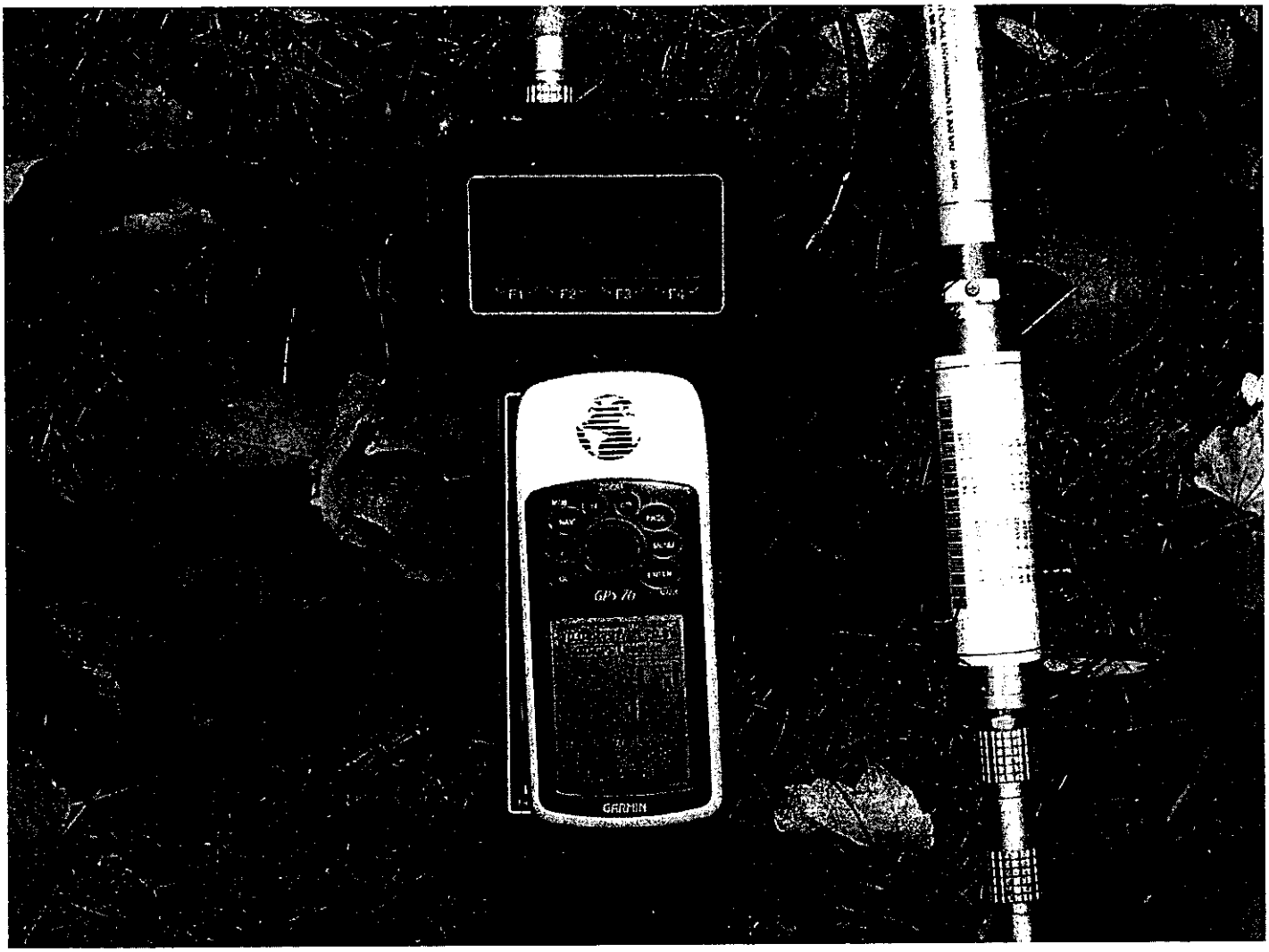



**Figure 23: Measurement Location 18**


**Figure 24: Measurement Location 19**

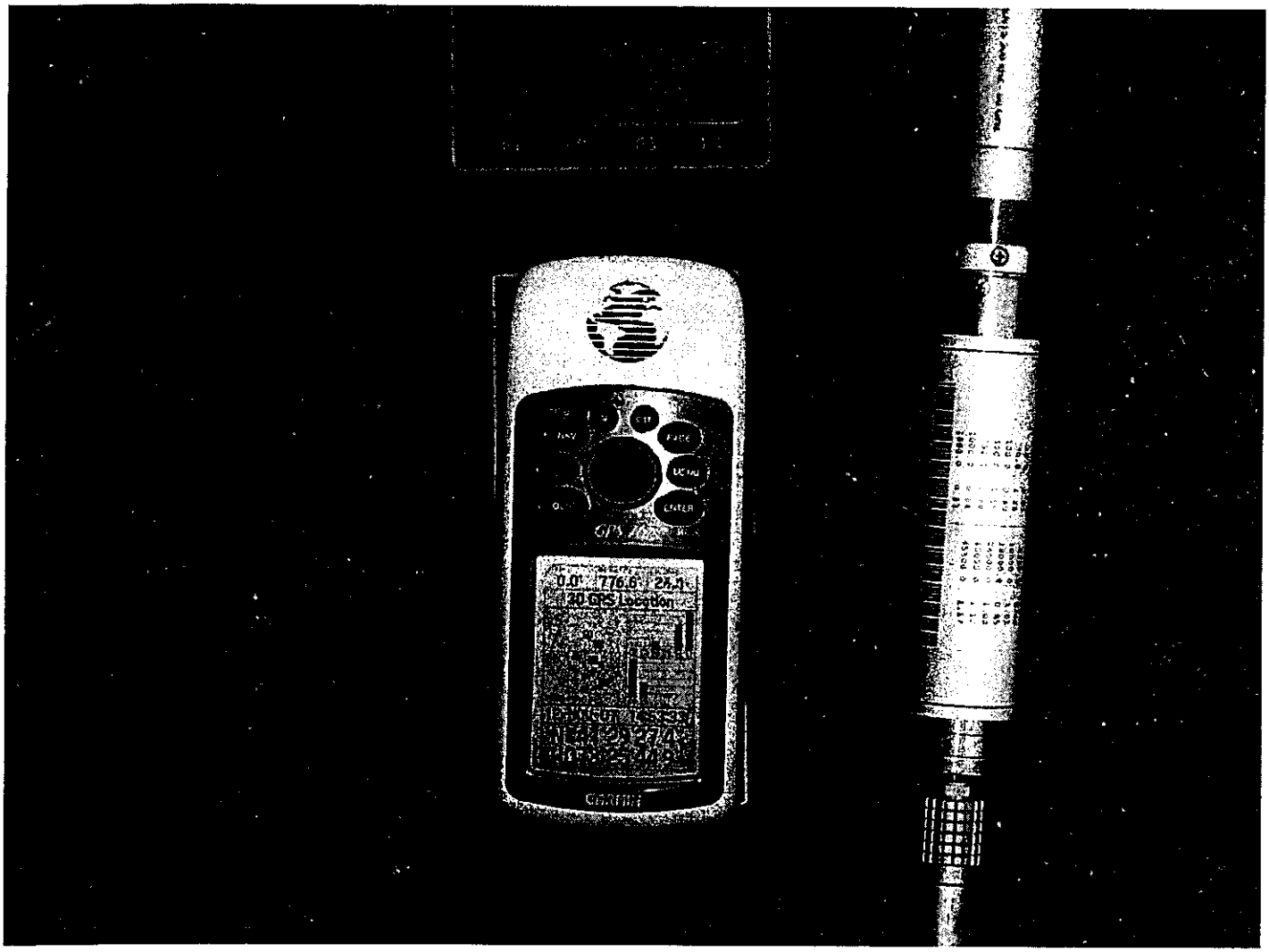



**Figure 25: Measurement Location 20**


**Figure 26: Measurement Location 21**

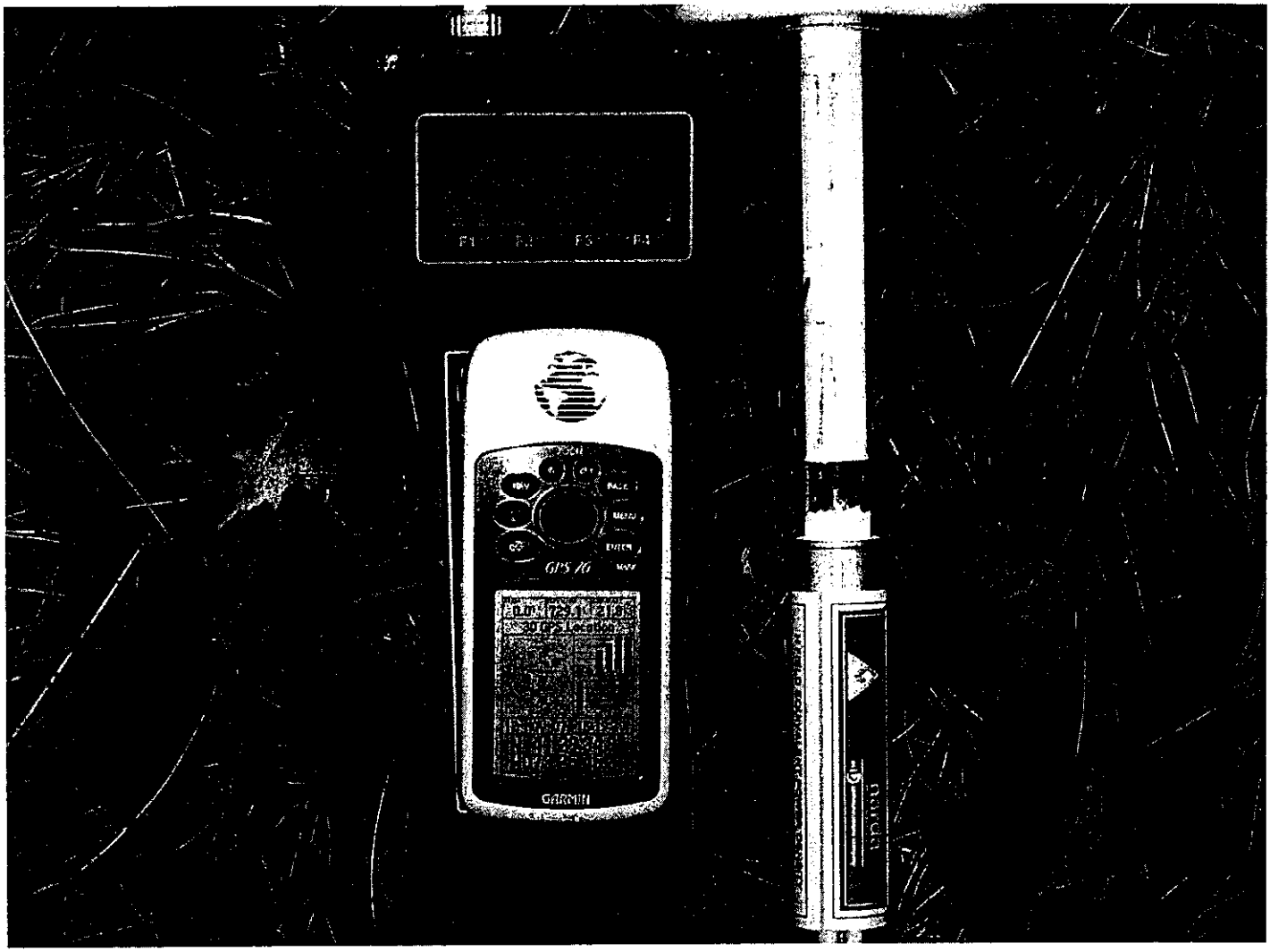



**Figure 27: Measurement Location 22**

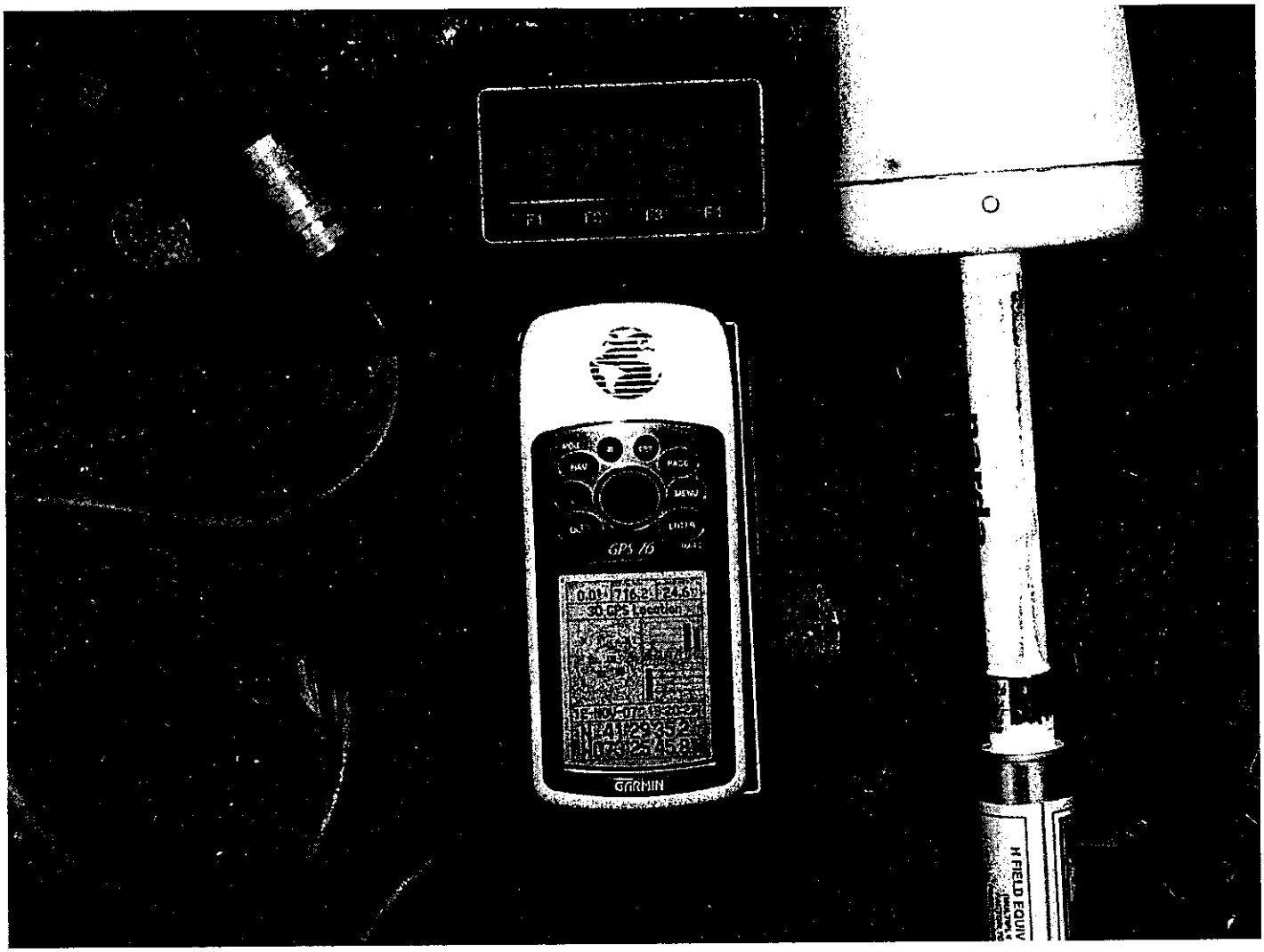



**Figure 28: Measurement Location 23**


**Figure 29: Measurement Location 24**


**Figure 30: Measurement Location 25**

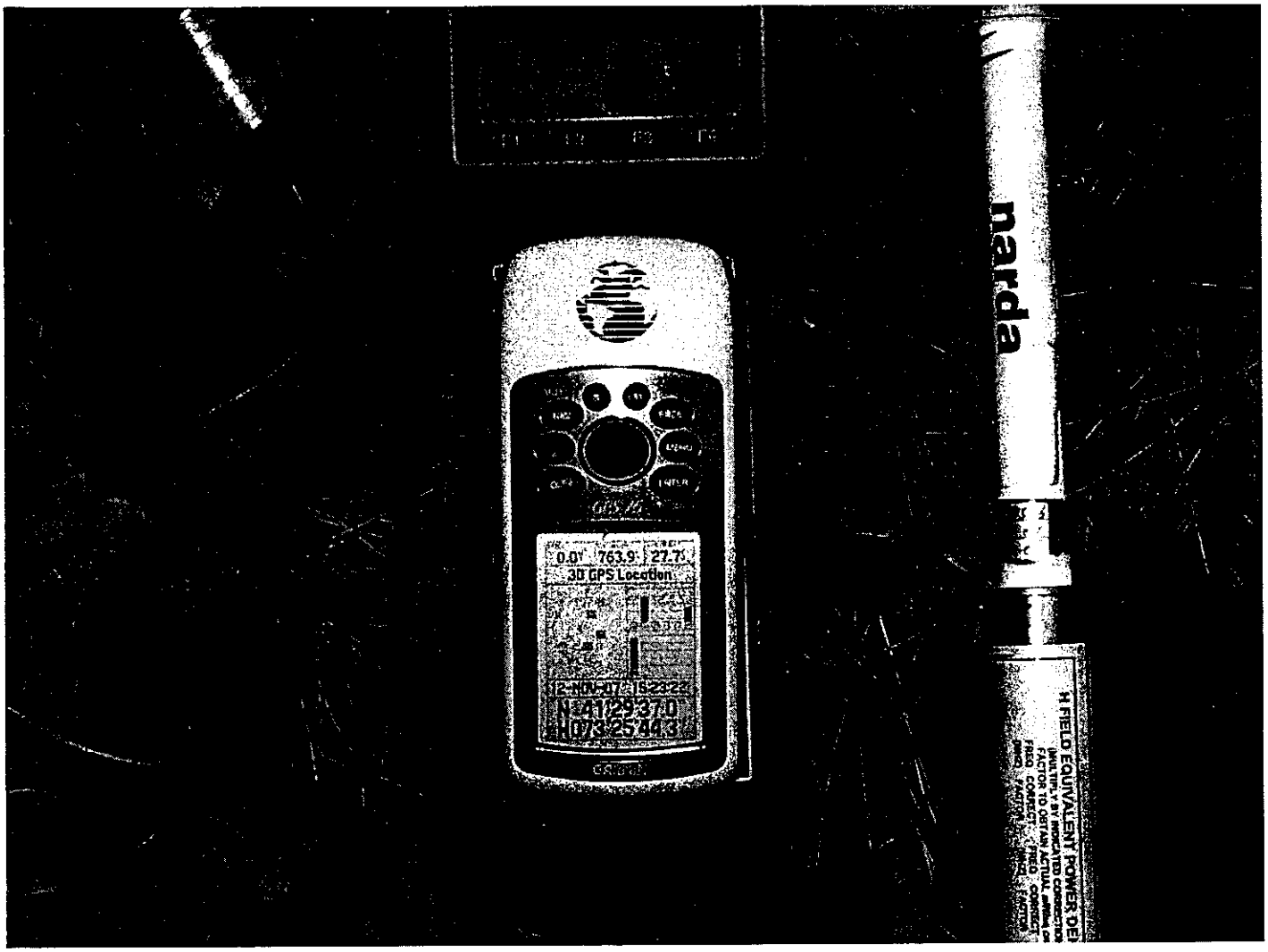



**Figure 31: Measurement Location 26**


**Figure 32: Measurement Location 27**


**Figure 33: Measurement Location 28**


**Figure 34: Measurement Location 29**


**Figure 35: Measurement Location 30**

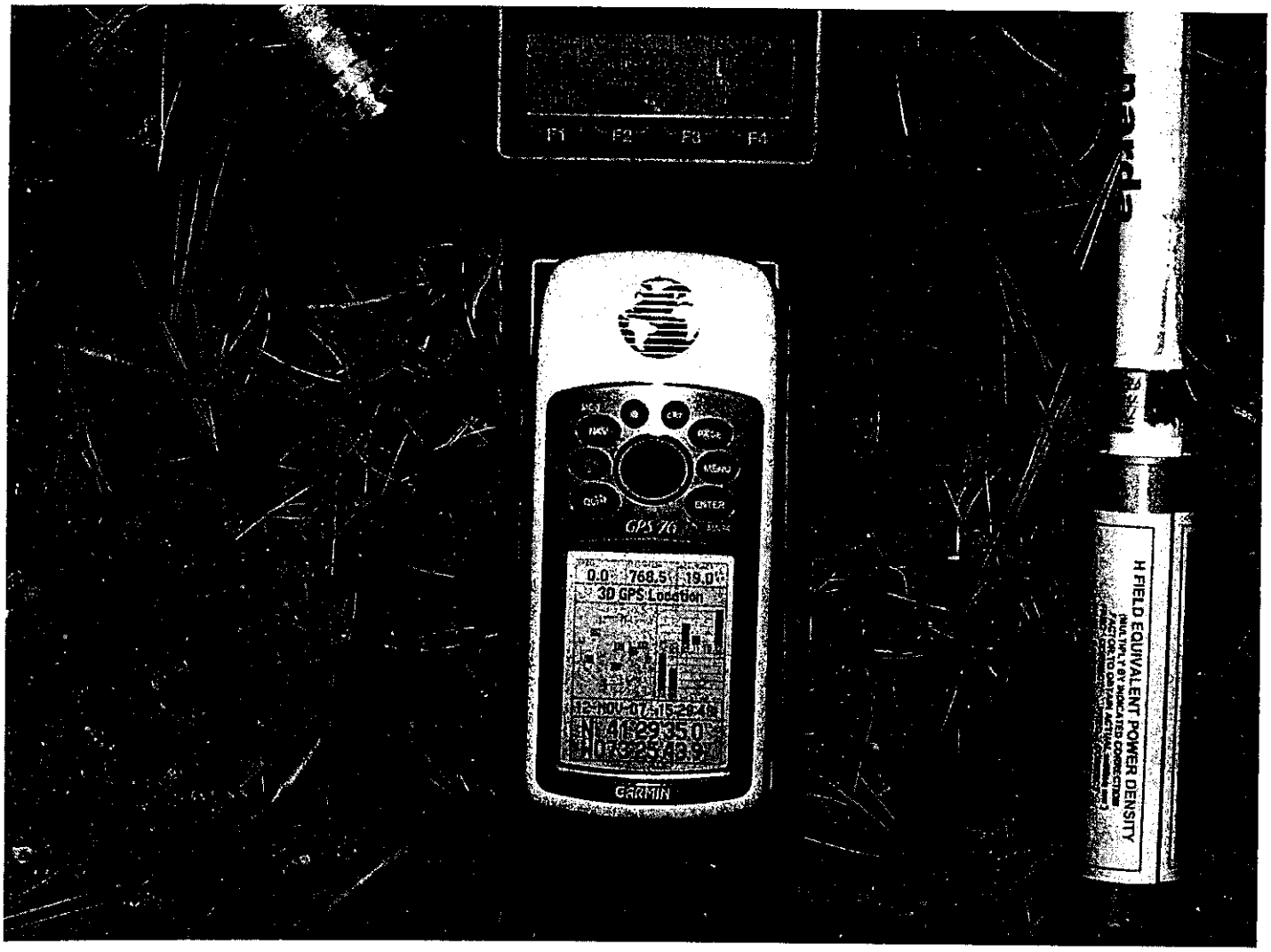



**Figure 36: Measurement Location 31**

## Conclusion

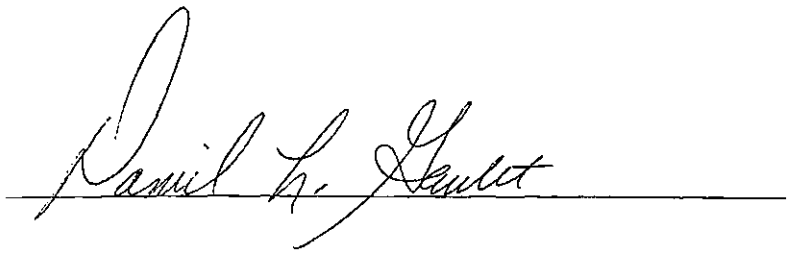
Public accessible areas in the vicinity of the guyed tower located at 39 Carmen Hill Road, Brookfield, CT were surveyed and found to be within the mandated General Population/Uncontrolled limits for Maximum Permissible Exposure, as delineated in the Federal Communications Commission's Radio Frequency exposure rules published in 47 CFR 1.1307(b)(1)-(b)(3) and will remain in compliance after the addition of Sprint Nextel CDMA antennas.

The combined maximum power density, inclusive of the additional antenna, was calculated to be 8.76% of the MPE.

The above analysis verifies that this proposed configuration does not approach power density levels that would be considered harmful to the general public at ground level as outlined by the FCC in the OET Bulletin 65 Ed. 97-01.

## Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The measurements were obtained with properly calibrated equipment using techniques in compliance with ANSI/IEEE Std. C95.3, ANSI/IEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Nov 13, 007
Date

## References


OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

## Attachment A: FCC Limits for Maximum Permissible Exposure (MPE)

**(A) Limits for Occupational/Controlled Exposure**

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) ($mW/cm^2$) | Averaging Time $|E|^2$, $|H|^2$ or S (minutes) |
|---|---|---|---|---|
| 0.3-3.0 | 614 | 1.63 | (100)* | 6 |
| 3.0-30 | 1842/f | 4.89/f | ($900/f^2$)* | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | -- | -- | f/300 | 6 |
| 1500-100,000 | -- | -- | 5 | 6 |

**(B) Limits for General Population/Uncontrolled Exposure**

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) ($mW/cm^2$) | Averaging Time $|E|^2$, $|H|^2$ or S (minutes) |
|---|---|---|---|---|
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | ($180/f^2$)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | -- | -- | f/1500 | 30 |
| 1500-100,000 | -- | -- | 1.0 | 30 |

f = frequency in MHz *Plane-wave equivalent power density

NOTE 1: ***Occupational/controlled*** limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2: ***General population/uncontrolled*** exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

## Attachment B: Plane-wave Equivalent Power Density