STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

Internet: ct.gov/csc

Daniel F. Caruso
Chairman

February 17, 2009

Mark R. Richard
UMTS Project Manager
T-Mobile USA, Inc.
35 Griffin Road South
Bloomfield, CT 06002

RE: **EM-T-MOBILE-034-090112** - Omnipoint Communications, as subsidiary of T-Mobile USA, Inc., notice of intent to modify an existing telecommunications facility located at 24 Hospital Avenue, Danbury, Connecticut.

Dear Mr. Richard:

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

The proposed modifications are to be implemented as specified here and in your notice dated January 9, 2009, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

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

Thank you for your attention and cooperation.

Very truly yours,

S. Derek Phelps

S. Derek Phelps
Executive Director

SDP/MP/laf

c: The Honorable Mark D. Boughton, Mayor, City of Danbury
Dennis Elpern, City Planner, City of Danbury
Hans Fiedler, T-Mobile USA, Inc.
Carrie L. Larson, Esq., Pullman & Comley, LLC

T-Mobile®

January 9, 2009

Via Federal Express

EM-T-MOBILE-034-090112

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

ORIGINAL

Re: Notice of Exempt Modification
T-Mobile, USA Telecommunications Facility
24 Hospital Avenue, Danbury, Connecticut
T-Mobile Site CT11108A

Dear Mr. Phelps:

Omnipoint Communications, a subsidiary of T-Mobile USA, Inc. ("T-Mobile"), intends to replace existing antennas, install additional antennas and replace existing ground equipment at the existing rooftop antenna facility owned by T-Mobile, USA and located at 24 Hospital Avenue, Danbury, Connecticut ("Facility"). T-Mobile is licensed by the Federal Communications Commission (FCC) to provide PCS wireless telecommunications service in the State of Connecticut, which includes the area to be served by the proposed installation. This installation constitutes an exempt modification pursuant to the Public Utility Environmental Standards Act, Connecticut General Statutes Section 16-50g *et. seq.* (PUESA), and Section 16-50j-72(b)(2) of the Regulations of the Connecticut State Agencies adopted pursuant to PUESA. This site was previously approved by the Siting Council in Docket 79. In accordance with R.C.S.A. Section 16-50j-73, a copy of this notice has been sent to, Mark D. Boughton, Mayor, Mayor, Town of Danbury.

The existing Facility consists of a rooftop tower and antenna installation on the roof of Danbury Hospital with an upper roof level elevation of one hundred thirty four feet seven inches (140'-7"). As stated, this facility was previously approved by the Siting Council in Docket 79. The coordinates for the Facility are approximately **Lat: 41°-24'-18" and Long: 73°-26-46".** The tower is located in the central portion of Danbury, approximately 400 feet south of Hospital Avenue, roughly 2,700 feet south of Interstate 84 (see Site Map, attached as Exhibit A). T-Mobile currently has antennas on the roof of the hospital at the one hundred twenty seven foot (127') level centerline AGL (above ground level) and at the one hundred fifty four foot level (154') AGL. The current T-Mobile antenna configuration is two antennas on one sector and three on the other two sectors, for a total of eight antennas. T-Mobile proposes to add one antenna to the gamma sector and swap the two existing antennas. On the alpha and beta sectors one antenna of the three will be swapped and the other two will remain (three per sector), for a total of nine antennas at the two current elevations on the tower and rooftop. T-Mobile proposes to use RFS APX16PV-16PVL and APX16DWV-16DWV antennas on existing pipe mounts, designed to each hold three antennas per sector. T-Mobile also intends to add one RFB 3518 equipment cabinet to supplement it's existing three S12000 equipment cabinets on the roof. Existing utility sources, already in place at the Facility will be used (See Design Drawings and Equipment Specifications, attached as Exhibits B and C respectively).

T-Mobile USA, Inc.
Office: (860) 692-7100
Fax: (860) 692-7159
35 Griffin Rd S
Bloomfield, CT 06002

For the following reasons, the proposed modifications to the Hospital Avenue Facility meet the exempt modification criteria set forth in R.C.S.A. Section 16-50j-72(b)(2):

1. The proposed modification will not increase the height of the tower as T-Mobile seeks to add to its existing antenna configuration and install additional antennas at the existing center line heights of approximately 127 and 154 feet.

2. The installation and replacement of T-Mobile's antennas and ground equipment will not require an extension of the site boundaries.

3. The proposed modifications will not increase the noise levels at the existing Facility by six decibels or more.

4. The operation of the additional antennas will not increase the total radio frequency (RF) power density, measured at the site boundary, to a level at or above the standard adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes and MPE limits established by the Federal Communications Commission. The worst-case RF power density calculations for the proposed Pocket antennas would be 18.82% of the FCC standard (see general power density calculations table, attached as Exhibit D).

Also attached, Exhibit E, is a structural assessment confirming that the tower can support the existing and proposed antennas and associated equipment. Of note, because all antennas are internally mounted in the flagpole, the additional three antennas will not increase the ice and winding loading for the tower.

For the foregoing reasons, T-Mobile respectfully submits that the proposed antenna installation and equipment at the Danbury Facility constitutes an exempt modification under R.C.S.A. Section 16-50j-72(b)(2).

Respectfully Submitted,

Mark R. Richard
UMTS Project Manager
Agent for T-Mobile

cc: Mark D. Boughton, Mayor
Danbury Hospital, underlying property owner
Carrie L. Larson

Hartford/72800.9/JTP/345056v1

T-Mobile USA, Inc.
Office: (860) 692-7100
Fax: (860) 692-7159
35 Griffin Rd S
Bloomfield, CT 06002

Exhibit A

Site Map

T-Mobile Site CT11108A

24 Hospital Avenue

Danbury, Connecticut

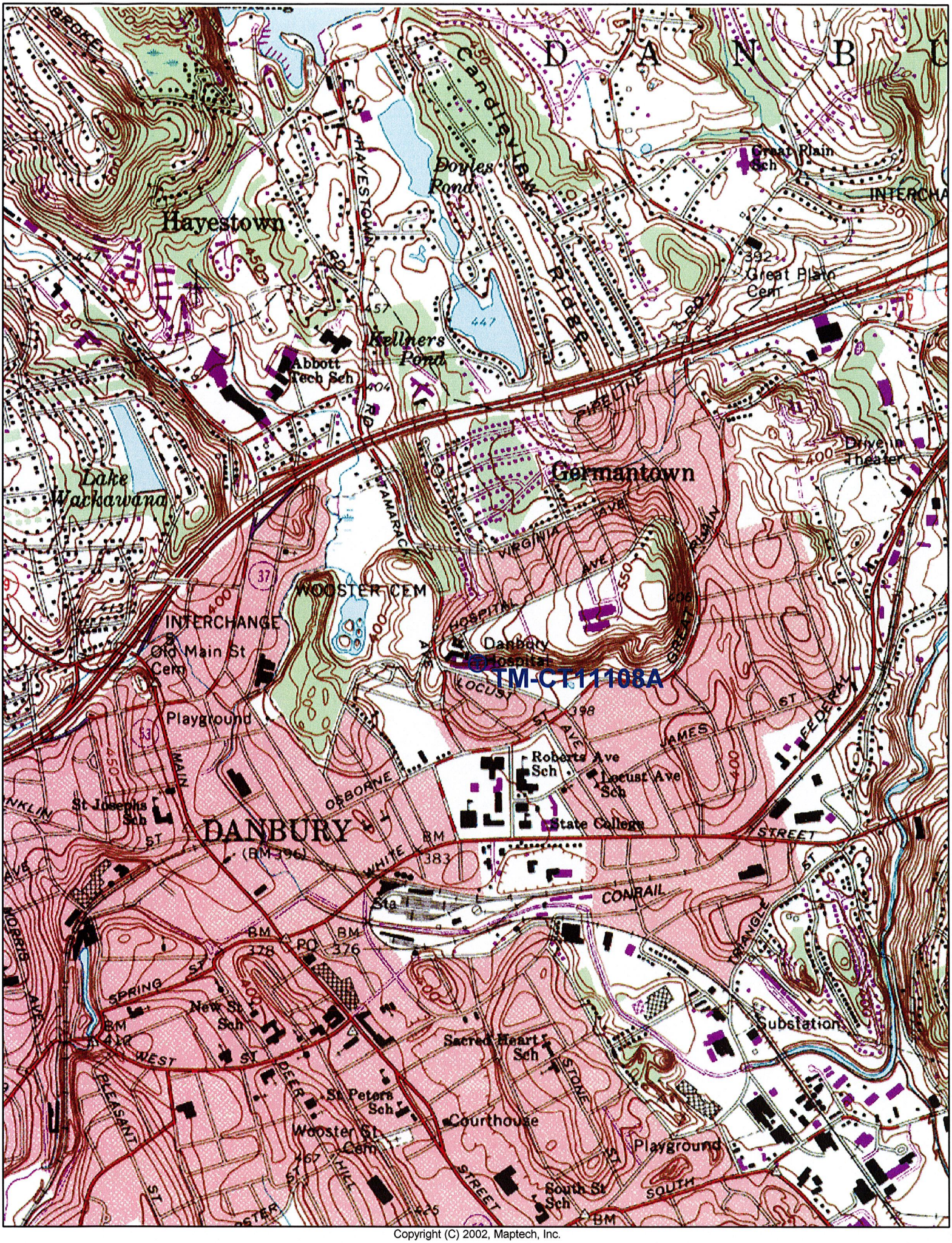


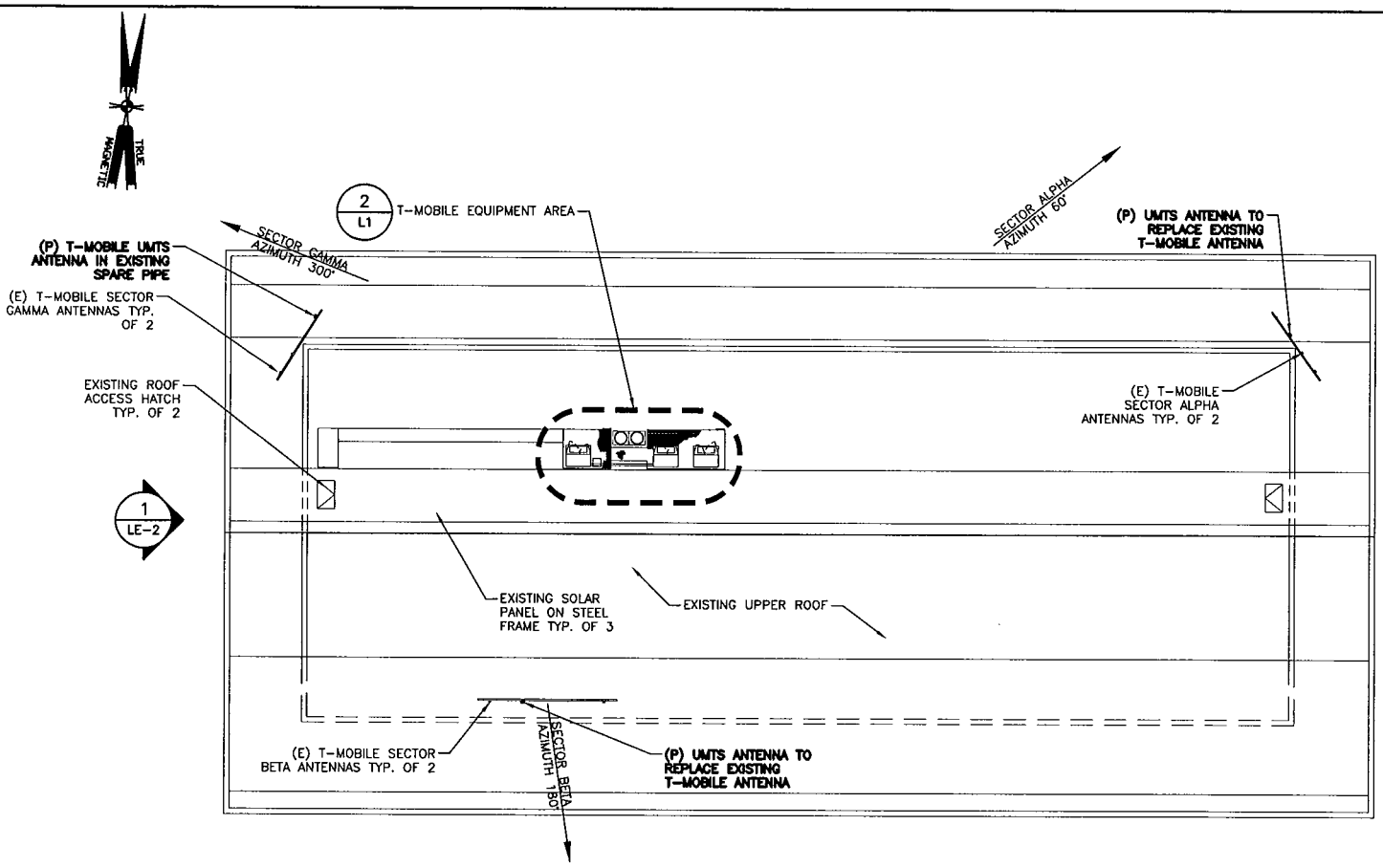
Exhibit B

Design Drawings

T-Mobile Site CT11108A

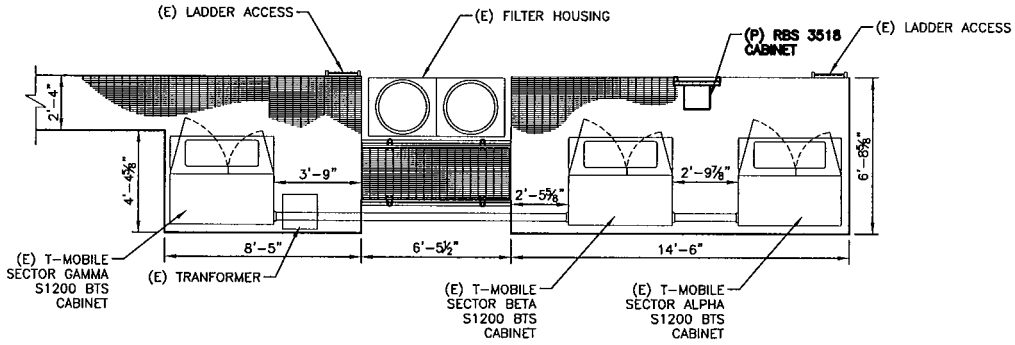
24 Hospital Avenue

Danbury, Connecticut



ROOF TOP PLAN 1

SCALE: NTS



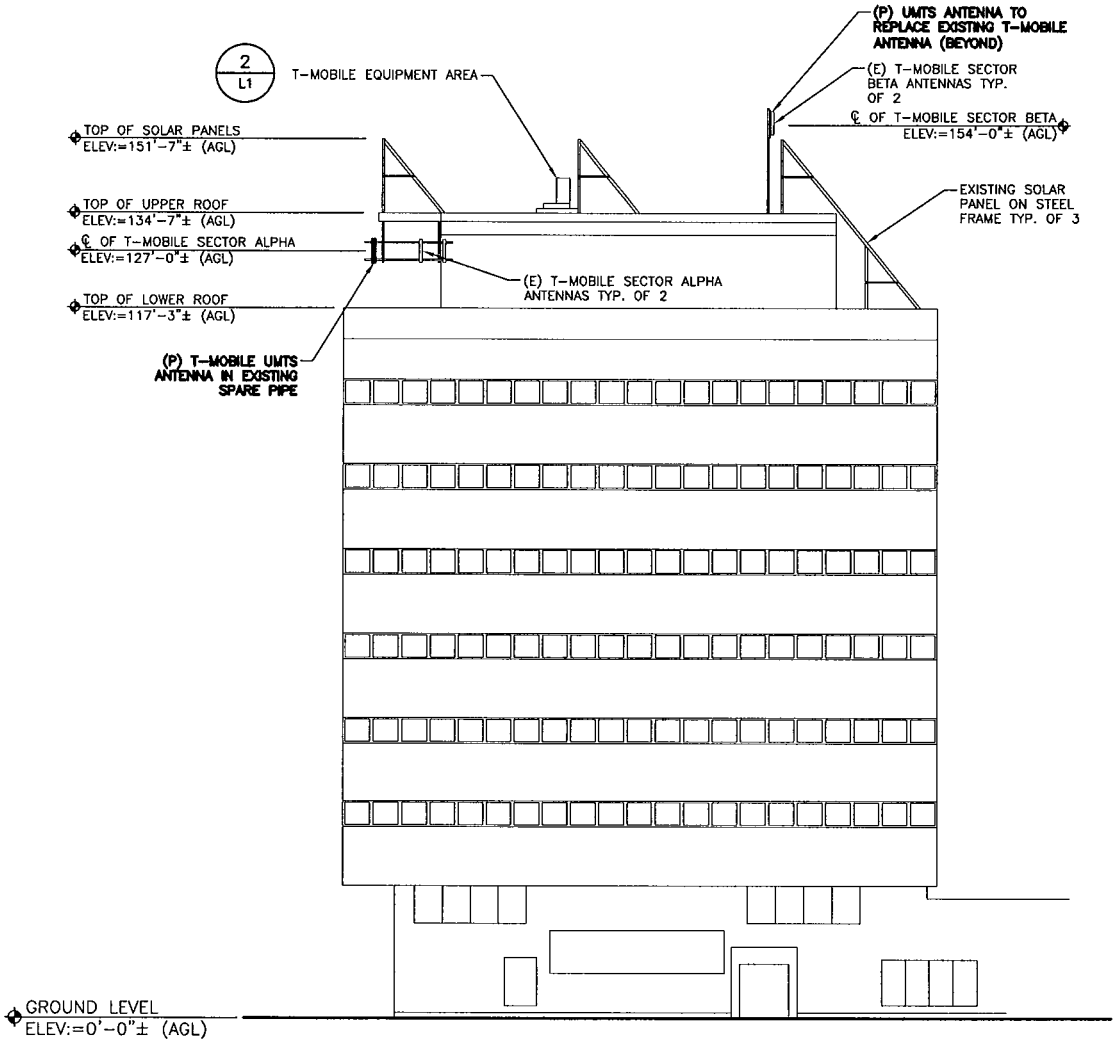
EQUIPMENT LAYOUT PLAN 2

SCALE: NTS

T··Mobile·
15 COMMERCE WAY
NORTON, MA 02766

MAXTON
50 Eastman St.
South Easton, MA 02375
Phone: (508) 936-6393
Fax: (508) 936-6395

PROJECT LOCATION: DANBURY HOSPITAL CT11108A 24 HOSPITAL AVENUE DANBURY, CT 06810	PROJECT MANAGER: KB	DRAWN BY: DM	BSDA PROJ. #: 2889.067
APPROVED BY:	11/05/08 10/11/08	ROOF LAYOUT PLAN	SHEET: L1



ELEVATION 1

SCALE: N.T.S.

T-Mobile
15 COMMERCE WAY
NORTON, MA 02766

MAXTON
50 Eastman St.
South Easton, MA 02375
Phone: (508) 936-6393
Fax: (508) 936-6395

PROJECT LOCATION: DANBURY HOSPITAL CT11108A 24 HOSPITAL AVENUE DANBURY, CT 06810	PROJECT MANAGER: KB	DRAWN BY: DM	BSDA PROJ. #: 2889.067
		ELEVATION	SHEET: L2
APPROVED BY:	11/05/08 10/11/08		

Exhibit C

Equipment Specifications

T-Mobile Site CT11108A

24 Hospital Avenue

Danbury, Connecticut

Technical Product Description

RBS 3518

DESCRIPTION

ERICSSON

Contents

1 Document Introduction

RBS 3518 is the main unit in a main-remote RBS for outdoor use. It can connect up to six Remote Radio Units (RRU). The RBS 3518 and RRUs form the RBS, which is a member of the RBS 3000 family.

This document describes the general information of the RBS 3518. The configurations currently available for RBS 3518 are described in Section 6 Current Configurations on page 15.

For more information about the RRUs, see Technical Product Description, RRU.

1.1 Revision Information

This section briefly describes the changes made to this document.

1.1.1 Rev D to E

Editorial changes only.

1.1.2 Rev E to F

Editorial changes only.

1.1.3 Rev F to G

Other than editorial changes, this document has been revised as follows:

- Added information about AC powered unit.
- Added new Climate System chapter

2 Product Overview

The RBS 3518, as an outdoor main unit in the RBS, can be connected up to six Remote Radio Units (RRU) designed to be located near the antenna. An optical fiber cable, Optical Interface Link (OIL), is used to connect the RRUs with the RBS 3518. The RBS 3518 can be configured to connect to up to six

sectors with one carrier for each sector, or to up to three sectors with two carriers for each sector.

RRUs are connected to the RBS 3518 in a star configuration, as shown in Figure 1 on page 2.

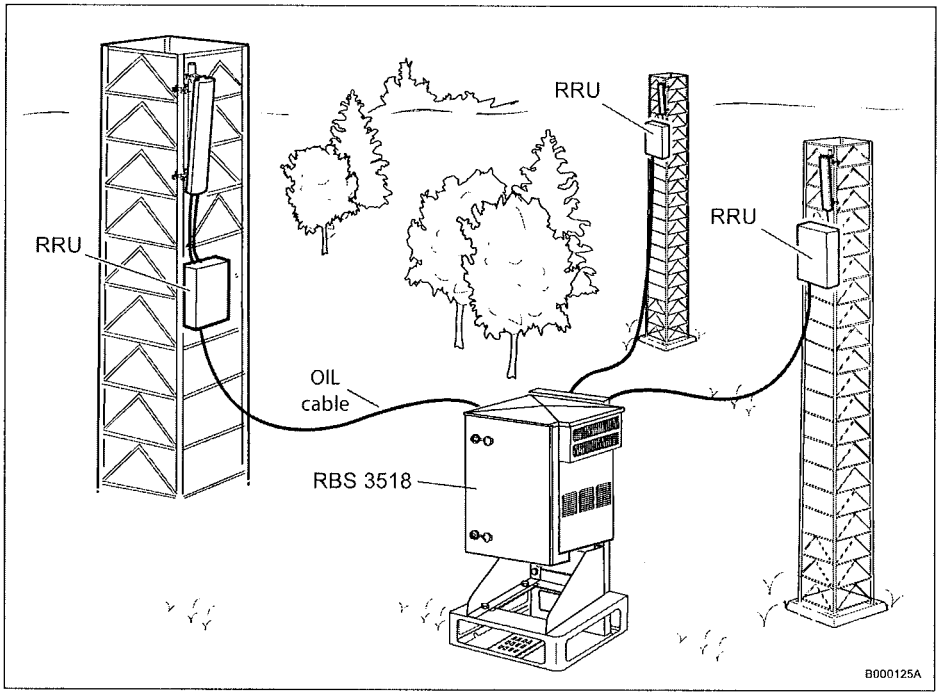


Figure 1 RBS 3518 in Star Configuration

2.1 Main Features

The main features of the RBS 3518 are as follows:

Mounting Types

The RBS 3518 can be mounted:

- On the floor
- On a wall
- On a pole or mast

Note: The equipment for the above mounting alternatives is optional and can be ordered separately.

Power Supply

The RBS 3518 can be adopted to the following power sources:

- −48 V DC
- 100-250 V AC, 45-65 Hz

Configurations

The RBS supports the following configurations:

- 6x1 (for both RRU11 and RRU22): RBS 3518 connected with six RRUs in single-carrier mode
- 3x2 (only for RRU22): RBS 3518 connected with three RRU22s in two-carrier mode

Transmission Types

The RBS 3518 is equipped with a transport network interface board, supporting:

- E1/J1/T1
- Unchannelized STM-1

Frequency Bands

The RBS 3518 can be operated in the following frequency bands:

- 2100 MHz
- 1700/1800 MHz
- 1700/2100 MHz

Others

- Supports eight external alarms
- Variable baseband capacity of up to 512 Channel Elements (CE), downlink and uplink.
- Receiver (RX) diversity
- Support Global Positioning System (GPS) providing timing synchronization
- Ethernet site Local Area Network (LAN)

3 Dimensions

This section describes the size, weight and color of the RBS 3518.

The RBS 3518 cabinet dimensions are shown in Table 1 on page 4and Figure 2 on page 4.

Table 1 Cabinet Dimensions of RBS 3518

Overall Dimension	**Main Unit**
Height	477 mm
Width	342 mm (out of which the external fan is 51 mm)
Depth	312 mm

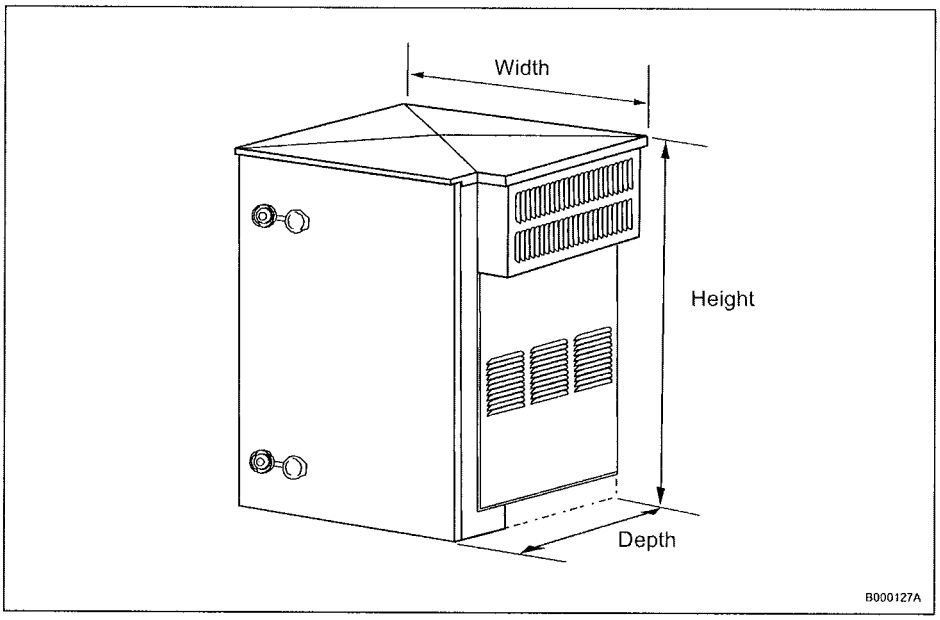


Figure 2 RBS 3518 Dimensions

When the RBS 3518 is installed on a pole, the overall dimensions should imply the dimensions together with the pole-mounting brackets, as shown in Figure 3 on page 5. Refer to Table 1 on page 4 for the width and height of the RBS 3518.

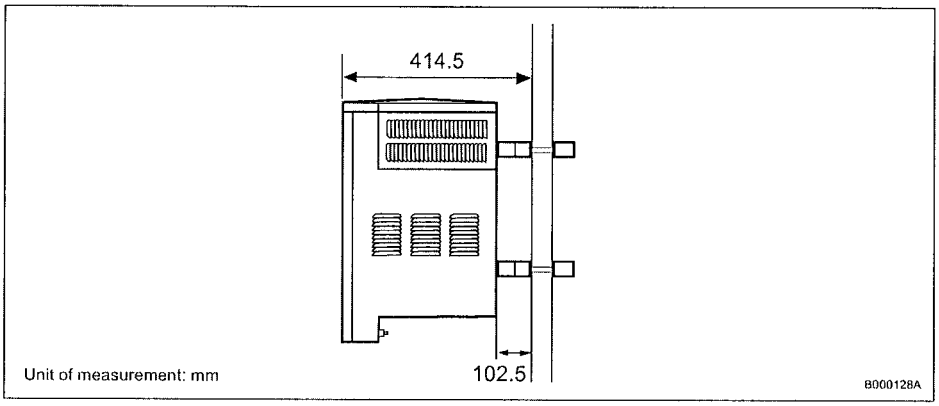


Figure 3 RBS 3518 with the Pole-Mounting Bracket

When the RBS 3518 is installed on a wall, the overall dimension values should imply the dimensions together with the wall-mounting brackets, as shown in Figure 4 on page 5. Refer to Table 1 on page 4 for the width and height of the RBS 3518.

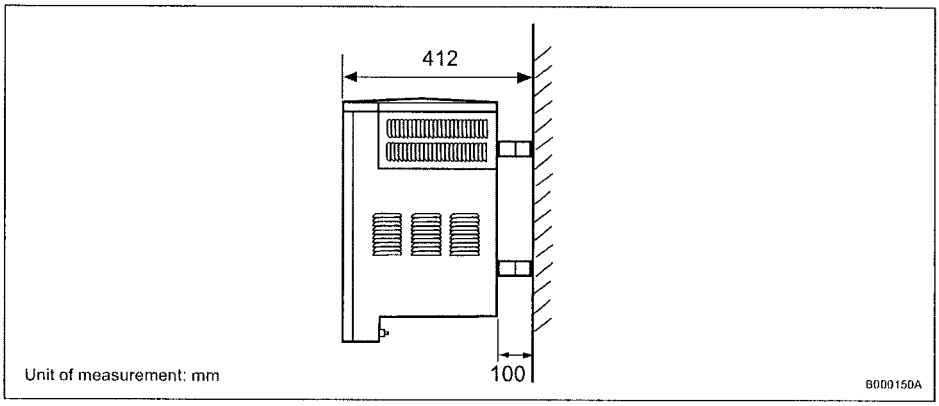


Figure 4 RBS 3518 with the Wall-Mounting Bracket

When the RBS 3518 is installed on the floor, the overall dimension values should imply the dimensions of the stand as well. See Table 2 on page 5 and Figure 5 on page 6 for more detail.

Table 2 Overall Dimensions of RBS 3518 with the Stand

Overall Dimension	**Main Unit with the Stand**
Height	817 mm
Width	430 mm
Depth	452.5 mm

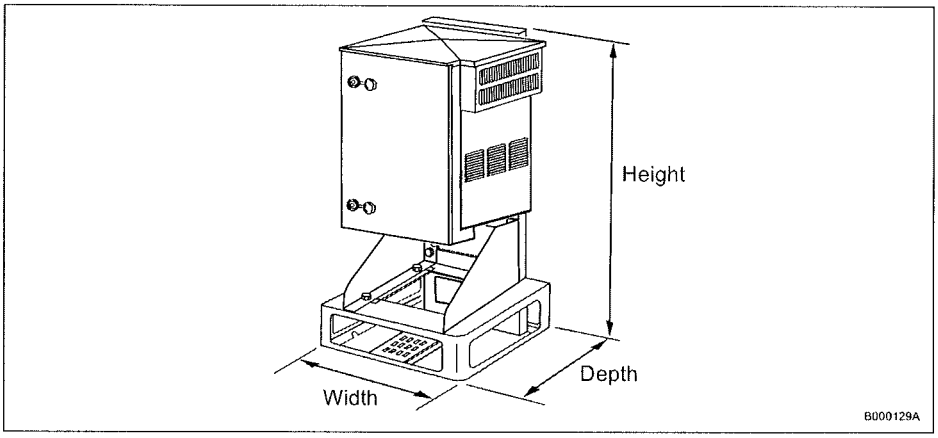


Figure 5 Overall Dimensions of RBS 3518 with the Stand

The RBS 3518 weight is shown in Table 3 on page 6.

Table 3 RBS 3518 Weight

Unit	Weight
Fully equipped	33 kg

The RBS 3518 color is shown in Table 4 on page 6.

Table 4 RBS 3518 Color

Color	Reference Number
Grey	LMY 904 8153/38320

Surface quality is according to Ericsson standard class A3.

4 Space Requirements

This section describes the space requirements for the various ways of installing the RBS 3518, as follows:

- On the floor
- On a wall
- On a pole

The distance between an RBS 3518 and an RRU is limited by the maximum length of the optical fiber connecting the units, which is 15 km.

4.1 Floor-Mounted RBS 3518

This section describes the installation requirements, hole measurements, site layout, and earthquake requirements for an RBS 3518 mounted on the ground.

4.1.1 Installation Requirements

Access to the RBS 3518 is necessary for maintenance purposes. Recommended minimum distances to the nearest obstacles on the sides and about the RBS 3518 are shown in Figure 6 on page 7.

The floor or ground must be as level as possible, with a slope of no more than 20 mm/m.

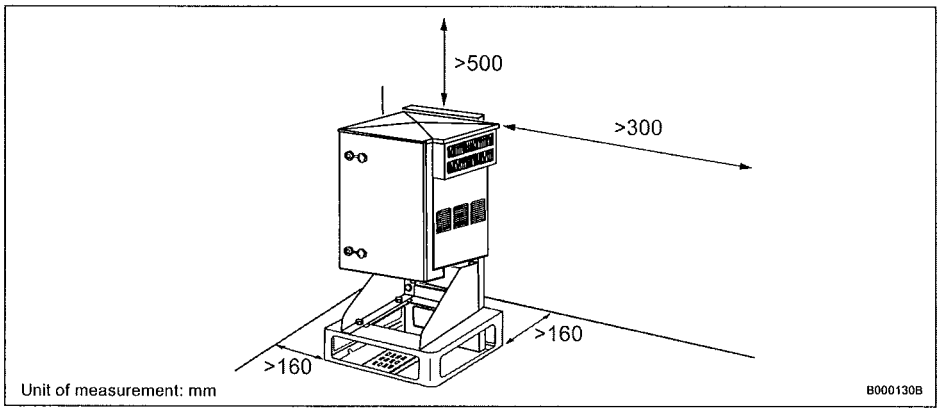


Figure 6 Floor-Mounted RBS 3518 Installation Requirements

For more information about site layout, see Section 4.1.2 on page 8.

The hole-drilling measurements are shown inFigure 7 on page 8.

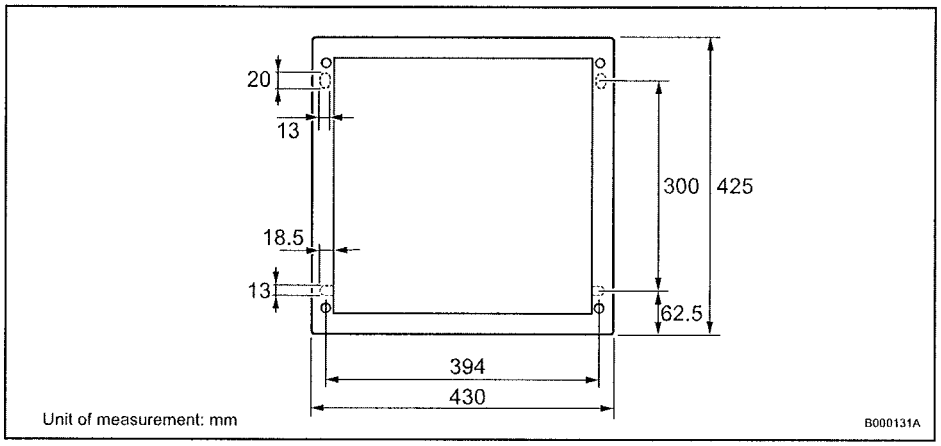


Figure 7 Drilling Measurement for Floor-Mounted RBS 3518

4.1.2 Site Layout

The RBS 3518 with the stand can be positioned against a wall, back-to-back, or standing alone without contact with other cabinets. The external fan of the RBS 3518 is located on the upper part of the right side of the cabinet, while the air inlet is located on the lower part of the right side of the cabinet.

Distance between the obstacle and the non-external fan side of the RBS 3518 is at least 160 mm, at least 300 mm between the obstacle and the external fan side of the RBS 3518, at least 450 mm between fan-to-fan sides of the RBS 3518s. The door protrudes 290 mm in front of the RBS 3518 when open. A minimum space of 1,000 mm is required in front of the RBS 3518 to avoid obstructing the door and to provide adequate working space.

Note: Space for future expansion must be considered, as indicated by the dotted lines in Figure 8 on page 9.

An example site layout is shown in Figure 8 on page 9.

Product/Service Bulletin

Nortel Networks

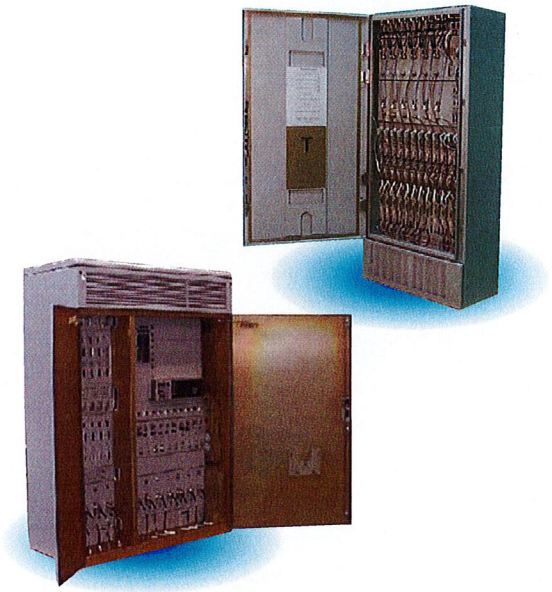
Univity GSM S12000 BTS

Indoor & Outdoor versions

As the GSM industry moves into the world of data, pressure has increased on capacity and so network enhancement and development costs are rising. The Univity GSM S12000 BTS – Indoor and Outdoor versions – is a product that meets the needs of a mature GSM market by increasing site capacity and at the same time lowering the risks and the costs of introduction.

The Univity GSM S12000 BTS – Indoor and Outdoor versions – is built on an existing field proven platform, the Univity GSM S8000 BTS, which is known for its quality and robustness. The reuse of a considerable amount of technology lowers the risk and cost for the operators when introducing this new product into their network.

The Univity GSM S12000 BTS – Indoor version is designed for protected sites while the Outdoor version is a fully integrated BTS site with AC power supply and extended temperature range.



In this document the term "the S12000 BTS" stands for "the Univity GSM S12000 BTS - Indoor and Outdoor version" except where mentioned.

The high capacity cell site

Nortel Networks addresses the growing needs of GSM capacity by introducing the S12000 BTS, which is an innovative development of the S8000 BTS. This innovative approach to network expansion and development is aimed at providing high capacity sites installed with low risk, reduced network impact and a lower cost of ownership.

The S12000 BTS is a key component to the delivery of more capacity within a GSM/GPRS network while driving down network costs. The S12000 BTS offers nearly double the capacity of the S8000 BTS, thereby offering a more compact site and improved operational efficiency.

Finally the S12000 BTS supports more users and offers higher speed data access and quality then increasing opportunities of revenues.

Lowering the cost of ownership and network introduction

It is not just the introduction of the evolution of a field proven and reliable technology that reduces the cost of ownership but also the reduced spares holding and training requirements. By the design of the S12000 BTS, Nortel Networks has aimed to reduce the cost of introducing the S12000 BTS into a GSM network. The S12000 BTS brings considerable savings in CAPEX and OPEX to the operator since main modules and skills are usable within both the S8000 BTS and S12000 BTS. The operator does not have to change the network Engineering and Operational procedures on the existing S8000 BTS. Moreover, via the high capacity and the high RF performance of the S12000 BTS, fewer sites are required. Low introduction costs are invaluable when facing the financial pressures of network enhancements such as GPRS or new services such as UMTS. The use of the S12000 BTS puts the operator in a position to make efficient use of all resources and reduce network complexity relieving pressure on investment.

NORTEL NETWORKS™

Modular and flexible

The S12000 BTS supports twelve TRX per cabinet and offers cost effective configurations from 1 to 16 TRX per cell in a tri-sector configuration. A dual band configuration of 6 + 6 TRX can be supported in a single cabinet for all coupling configurations.

The modular design of the S12000 BTS and the possibility to choose between multiple RF-combining options allows the operator to deploy the S12000 BTS solution in a number of different scenarios such as high-capacity solution in cities or alternatively enabling to provide wide coverage with a minimum number of sites in rural area.

High Performance

The Nortel Networks family of BTS holds a high market position for reliability, operability and service quality. The S12000 BTS provides high data services and voice quality, high coverage and building penetration and smooth call handovers. It possesses many advanced RF features to improve spectral usage and optimisation and so increase available capacity. The AMR and EDGE solutions will further enhance spectrum efficiency. These high performance qualities are extremely important with the introduction of GPRS services.

In addition, as for the S8000 BTS, the S12000 BTS supports UMTS co-sitting thanks to specific combiners, allowing a smooth UMTS introduction.

The high radio performance and advanced digital processing of the S12000 BTS provide one of the highest receive sensitivity in the market today, offering –115 dBm guaranteed and without the need for masthead amplifiers (-117dBm typical). The high radio performance enhances the resistance to interference, improving voice quality, data throughput, cell coverage and service availability.

Nortel Networks experience in frequency hopping, fractional re-use, cell tiering and multi-layer management algorithms provide high spectrum efficiency which releases more capacity for a fixed allocation of spectrum.

Growing the business and ensuring success

The Univity GSM S12000 BTS is future ready. The high capacity and flexibility of the S12000 BTS, the introduction of AMR and EDGE, put the operator in a best position to meet the challenges and opportunities of GSM/GPRS. These advantages enable the operator to capture new revenues, improve profitability and gain a better return on investment as the network develops and moves forward.

Technical Specifications:		Indoor	Outdoor
Frequency range		900 MHz GSM / 900 MHZ Extended GSM 1800 MHz GSM and Dual Band GSM 900 / 1800 850 MHZ GSM 1900 MHz GSM and Dual Band GSM 850 / 1900	
Receive sensitivity	w/o diversity with diversity	-110 dBm garanteed (w/o TMA) -115 dBm garanteed (w/o TMA)	
Dimensions	Height Width Depth	1950 mm 910 mm 450 mm	1910 mm 1350 mm 650 mm
Weight	Empty cabinet Fully equipped	170 kg 415 kg	200 kg 570 kg
Capacity	Standard Future option	12 TRX per radio cabinet Up to 3 radio cabinets Up to 4 radio cabinets	
Configuration	Monoband Trisectorial Dual Band Trisectorial Cell Splitting	Up to S16-16-16 (4 radio cabinets) S222_222 (1 radio cabinet) Mono-BCCH dual band cells Cell splitting across radio cabinets	
Amplifier output power	Standard Optional	30W (+/- 0.5 dB) GMSK 30W (+/- 0.5 dB) 8-PSK EDGE 60W (+/- 0.5 dB) GMSK* 45W (+/- 0.5 dB) 8-PSK	
Transmission coupling		All coupling configurations From Duplexers to 4 Ways Hybrid Coupling (H4D)	
Power control	Static Dynamic	6 steps of 2 dB 15 steps of 2 dB	
Space for customer Equipment		NA	6U
Frequency Hopping		RF Synthetised	
Supported vocoders		Full Rate (FR) Enhanced Full Rate (EFR) Adaptive Multi-Rate - Full Rate (AMR FR) Adaptive Multi-Rate - Half Rate (AMR HR)	
Encryption algorithms		A5/1 & A5/2	
Power supply	Nominal	DC -48 V Integrated battery backup Optional ancillary battery cabinet	Single, single-split or tri-phase 230V (50/60Hz) AC
Operational temperature range		-5°C to +45°C	-40°C to +50°C
Max acoustic noise		65 dB(A)	
Backhaul	Standard Future option	6 E1 / T1 links 8 E1 / T1 links	

** Frequency dependant*

In North america, the Caribbean, and Latin America :
Tel : 1-800-4-Nortel
or 1-506-674-5470

In Europe, Middle East, and Africa :
Tel : 00-800-8008-9009*
or +44 (0)20 8920 4618

In Asia :
Tel : 65-287-2877

for more information contact your Nortel Networks account representative, or visit :
www.nortelnetworks.com/contact

* call are not from all European Countries.

www.nortelnetworks.com

NN101082-0702

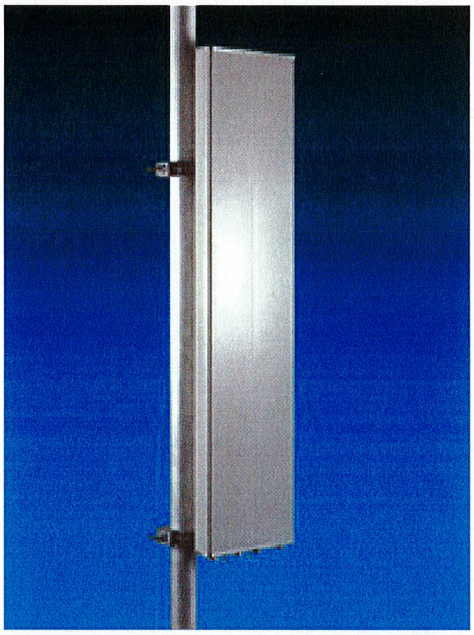
NORTEL NETWORKS™

Technical Data Sheet **APX16PV-16PVL-C**

Optimizer® Panel Dual Polarized Antenna

Product Description

Gathering two X-Polarised antennas in a sigle radome this pair of variable tilt antenna provides exceptional suppression of all upper sidelobes at all downtilt angles. It also features a wide downtilt range with optional remote tilt.



Features/Benefits

- **Variable electrical downtilt - provides enhanced precision in controlling intercell interference. The tilt is infield adjustable 0-10 deg.**
- **High Suppression of all Upper Sidelobes (Typically <-20dB).**
- **Optional remote tilt - can be retrofitted.**
- **Two X-Polarised panels in a single radome.**
- **Dual polarization.**
- **Low profile for low visual impact.**
- **Broadband design.**

Technical Features

Frequency Band	PCS 1900 (1850-1990 MHz)
Horizontal Pattern	Directional
Antenna Type	Panel Dual Polarized
Electrical Down Tilt Option	Variable
Gain, dBi (dBd)	17.8 (15.8) , 17.8 (15.8)
Frequency Range, MHz	1850-1990 , 1850-1990

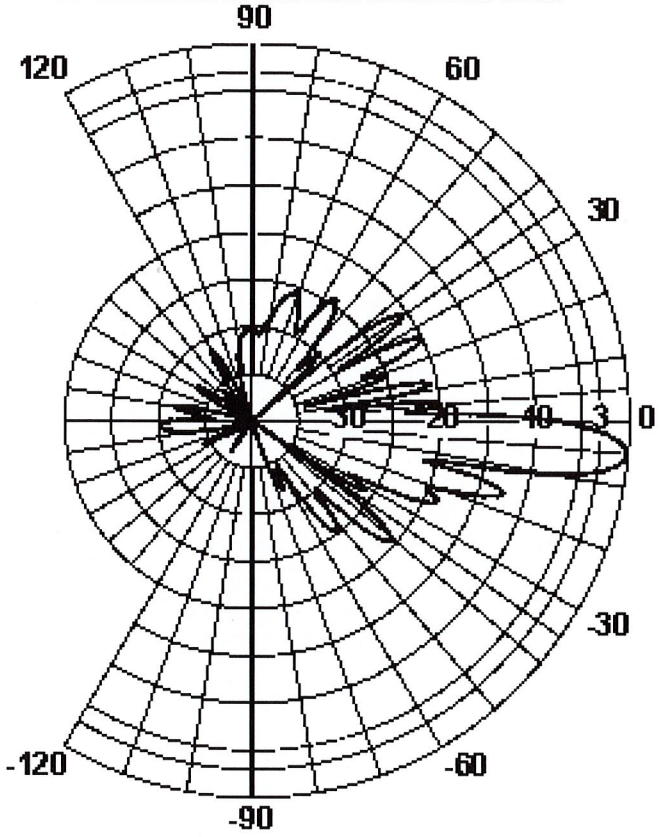
Optimizer® Panel Dual Polarized Antenna

Connector Type	(4) 7-16 DIN Female
Connector Location	Bottom
Mount Type	Downtilt
Electrical Downtilt, deg	0-10 , 0-10
Horizontal Beamwidth, deg	66 , 66
Mounting Hardware	APM40-2
Rated Wind Speed, km/h (mph)	160 (100)
VSWR	< 1.5:1
Vertical Beamwidth, deg	6.6
1st Upper Sidelobe Suppression, dB	> 17 (typically > 20)
Upper Sidelobe Suppression, dB	> 18 all (typically > 20)
Polarization	Dual pol +/-45°
Front-To-Back Ratio, dB	> 25
Maximum Power Input, W	300
Isolation between Ports, dB	> 30
Lightning protection	Direct Ground
3rd Order IMP @ 2 x 38 dBm, dBc	> 160
Overall Length, m (ft)	1.35 (4.42)
Dimensions - HxWxD, mm (in)	1349 x 330 x 80 (53 x 12.9 x 3.1)
Weight w/o Mtg. Hardware, kg (lb)	18.0 (39.6)
Radiating Element Material	Brass
Radome Material	Fiberglass
Reflector Material	Aluminum
Max Wind Loading Area, m² (ft²)	0.64 (6.6)
Maximum Thrust @ Rated Wind, N (lbf)	787 (177)
Shipping Weight, kg (lb)	23.8 (52)
Packing Dimensions, HxWxD, mm (in)	1550 x 420 x 210 (61 x 16.5 x 8.3)
Survival Wind Speed, km/h (mph)	200 (125)

Optimizer® Panel Dual Polarized Antenna

Vertical Pattern

(This is a general representation of the antenna family pattern. For the latest detailed pattern contact Applications Engineering. You may also download the CELplot(TM) pattern reader and antenna pattern data fields from our website.)



Optimizer® Panel Dual Polarized Antenna

Horizontal Pattern

(This is a general representation of the antenna family pattern. For the latest detailed pattern contact Applications Engineering. You may also download the CELplot(TM) pattern reader and antenna pattern data fields from our website.)

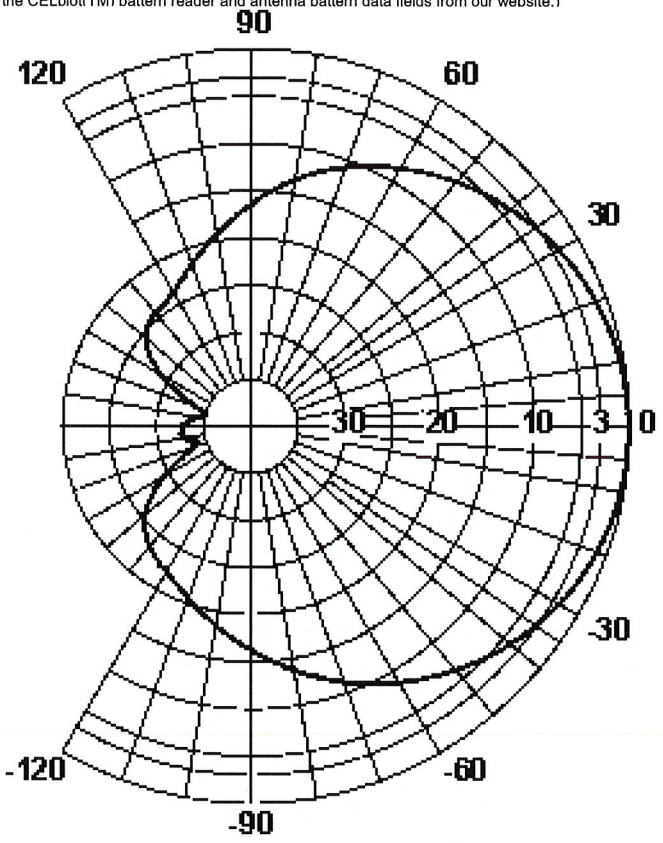


Exhibit D

Power Density Calculations

T-Mobile Site CT11108A

24 Hospital Avenue

Danbury, Connecticut

T-Mobile

T-Mobile USA Inc.
35 Griffin Rd South, Bloomfield, CT 06002-1853
Phone: (860) 692-7100
Fax: (860) 692-7159

Technical Memo

To: Maxton
From: Farid Marbouh - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CT11108A
Date: November 24, 2008

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile PCS antenna installation on a Rooftop at 94 Hospital Ave (Danbury Hospital), Danbury, CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from locations surrounding the transmitting location.

2. Discussion:

The following assumptions were used in the calculations:

1) The emissions from T-Mobile transmitters are in the (1940-1949.8), (2140-2145), (2110-2120)MHz frequency Band.
2) The antenna array consists of three sectors, with 3 antennas per sector.
3) The model number for GSM antenna is APX16PV-16PVL.
3) The model number for UMTS antenna is APX16DWV-16DWV.
4) GSM antenna center line height is 127 ft.
4) UMTS antenna center line height is 127 ft.
5) The maximum transmit power from any GSM sector is 2654.12 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
5) The maximum transmit power from any UMTS sector is 2772.62 Watts Effective Radiated Power (EiRP) assuming 2 channels per sector.
6) All the antennas are simultaneously transmitting and receiving, 24 hours a day.
7) Power levels emitting from the antennas are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
8) The average ground level of the studied area does not change significantly with respect to the transmitting location

Equations given in "FCC OET Bulletin 65, Edition 97-01" were then used with the above information to perform the calculations.

3. Conclusion:

Based on the above worst case assumptions, the power density calculation from the T-Mobile PCS antenna installation on a Rooftop at 94 Hospital Ave (Danbury Hospital), Danbury, CT, is 0.08132 mW/cm^2. This value represents 8.132% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm^2) set forth in the FCC/ANSI/IEEE C95.1-1991. Furthermore, the proposed antenna location for T-Mobile will not interfere with existing public safety communications, AM or FM radio broadcasts, TV, Police Communications, HAM Radio communications or any other signals in the area.
The combined Power Density from other carriers is 18.82%. The combined Power Density for the site is 26.952% of the M.P.E. standard.

Connecticut Market

T-Mobile

Worst Case Power Density

Site:	**CT11108A**
Site Address:	**94 Hospital Ave (Danbury Hospital)**
Town:	**Danbury**
Tower Height:	**140 ft.**
Tower Style:	**Rooftop**

GSM Data		UMTS Data	
Base Station TX output	20 W	Base Station TX output	40 W
Number of channels	8	Number of channels	2
Antenna Model	APX16PV-16PVL	Antenna Model	APX16DWV-16DWV
Cable Size	1 5/8 in.	Cable Size	1 5/8 in.
Cable Length	95 ft.	Cable Length	95 ft.
Antenna Height	127.0 ft.	Antenna Height	127.0 ft.
Ground Reflection	1.6	Ground Reflection	1.6
Frequency	1945.0 MHz	Frequency	2.1 GHz
Jumper & Connector loss	4.50 dB	Jumper & Connector loss	1.50 dB
Antenna Gain	17.8 dBi	Antenna Gain	18.0 dBi
Cable Loss per foot	0.0116 dB	Cable Loss per foot	0.0116 dB
Total Cable Loss	1.1020 dB	Total Cable Loss	1.1020 dB
Total Attenuation	5.6020 dB	Total Attenuation	2.6020 dB
Total EIRP per Channel	55.21 dBm	Total EIRP per Channel	61.42 dBm
(In Watts)	331.76 W	(In Watts)	1386.31 W
Total EIRP per Sector	64.24 dBm	Total EIRP per Sector	64.43 dBm
(In Watts)	2654.12 W	(In Watts)	2772.62 W
nsg	12.1980	nsg	15.3980
Power Density (S) =	**0.039771 mW/cm^2**	**Power Density (S) =**	**0.041547 mW/cm^2**

T-Mobile Worst Case % MPE = 8.1318%

Equation Used :

$$S = \frac{(1000)(grf)^2(Power)*10^{(nsg/10)}}{4\pi(R)^2}$$

Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997

Co-Location Total

Carrier	% of Standard
Verizon	18.8200 %
Cingular	
Sprint	
AT&T Wireless	
Nextel	
Other Antenna Systems	
Total Excluding T-Mobile	**18.8200 %**
T-Mobile	8.1318
Total % MPE for Site	**26.9518%**

Exhibit E

Structural Analysis

T-Mobile Site CT11108A

24 Hospital Avenue

Danbury, Connecticut

BAY STATE
DESIGN

December 23, 2008

Mr. Hans Fiedler
UMTS Development Project Manager
·T···Mobile·, USA
35 Griffin Rd South
Bloomfield, CT 06002

Ref: T-Mobile Site CT11108A
Danbury Hospital
24 Hospital Avenue
Danbury, CT 06810

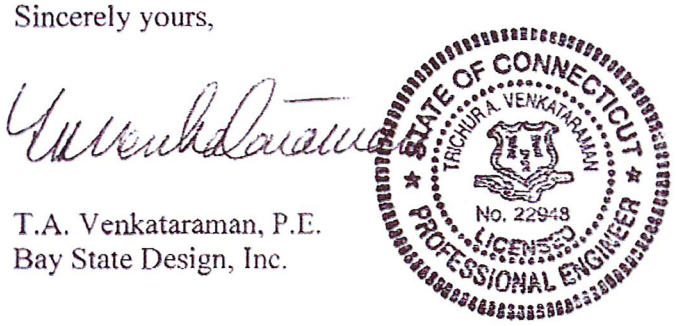
Dear Mr. Fiedler:

As requested, Bay State Design, Inc. performed the structural analysis for adding one (1) UMTS antenna on gamma sector and swapping (2) existing antennas with two (2) UTMS antennas on alpha and beta sectors. The existing antenna mounts are designed for three antennas. On alpha and beta sectors with three existing antennas, one antenna is being swapped. Since the loads are the same the antenna mount is adequate. On the gamma sector with two antennas, one is added. The antenna mount is adequate since the original design calls for three antennas.
Based on the field survey report and calculations performed for this project, it is concluded that the structure is adequate to support the additional loads imposed by the proposed changes.

This analysis is based on T-Mobile's RF data sheet V2.0 dated 11-03-2008. BSD shall be notified if there any changes.

Please feel free to contact this office if you have any questions.

Sincerely yours,

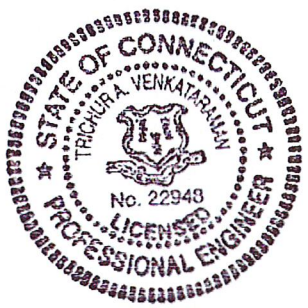


T.A. Venkataraman, P.E.
Bay State Design, Inc.

Design Calculations

SITE NAME:	T-Mobile Danbury Hospital
PROJECT NUMBER:	CT11108A
SITE ADDRESS:	24 Hospital Avenue, Danbury, CT 06810
DESCRIPTION:	Antenna Mount Analysis

CALCULATED BY:	Manuel L Colque
CHECKED BY:	Ram Satyaprasad, P.E
DATE:	December 23, 2008



BAY STATE DESIGN

Bay State Design, Inc.
Architects - Engineers

70 Tower Office Park
Woburn, MA 01801
TEL (781) 932-2467
FAX (781) 932-9771

Project Danbury Hospital - CT 11108A
24 Hospital Avenue, Danbury, CT 06810

Job No. 2889.067

Computed by MC

Date 12/23/08

Page 1 of

Checked by

Date

Detail

- Ref Used
  - ASCE 7-02
  - TIA/EIA-222-F
  - Steel Manual 13th Edi
- Loads
  - Dead Load (APx16 = 45 lbs, DB65 = 25 lbs)
  - Wind Load (calculated below, Exp C, Cat III)
- Wind Load Calculation

$q_z = .00256\ K_{zt}\ K_z\ K_d\ V^2\ I$ $\qquad K_{zt} = 1$ $\qquad V = 95$ mph

$= 31.2 \approx 31.5$ psf $\qquad K_z = 1.38$ $\qquad I = 1.15$

$K_d = 0.85$

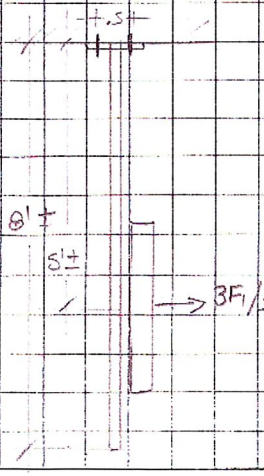
$F = q_z\ G\ A_f\ C_f$

$F_1 = 350$ lbs (APx16) $\qquad F_2 = 326$ lbs (DB65)

- Beta Sector Antenna mount
  - Existing configuration. $\qquad F = 2F_1 + F_2 = 1026$ lbs
  - Proposed configuration $\qquad F = 3F_1 = 1050$ lbs

$\Rightarrow \quad \frac{1050 - 1026}{1050} \approx 2.3\%$ increase in wind load

- Gamma Sector Antenna mount



Assuming L5x3x1/4 angles & 3½ STD pipe

Wt = (7 lb/ft) 30ft + (9.12 lb/ft) 40 + 10% = 635 lbs

- Tension $= \frac{525\,(5')\left(\frac{1}{2}\right)}{.5} + \frac{WJ}{16} = 2665$ lbs / bolt
- Shear $= \frac{3F_1}{16} = 70$ lbs / bolt
- Assuming 5/8" ø A325 bolt connection

Tension = 13.8 kips	>>	2.7 kips	✓	ok
Shear = 7.36 kips	>>	.070 kips	✓	ok