



April 17, 2009

EM-T-MOBILE-062-090417

Via Federal Express

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

RECEIVED
APR 17 2009

CONNECTICUT
SITING COUNCIL

Re: **Notice of Exempt Modification**
Crown Castle USA, Inc. Telecommunications Facility
890 Evergreen Avenue, Hamden, Connecticut
T-Mobile Site CT11686I

ORIGINAL

Dear Mr. Phelps:

Omnipoint Communications, a subsidiary of T-Mobile USA, Inc. ("T-Mobile"), intends to replace existing antennas with new model antennas and supplement existing ground equipment at an existing 108-foot silo facility owned by Crown Castle USA, Inc. and located at 890 Evergreen Avenue, Hamden, 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. In accordance with R.C.S.A. Section 16-50j-73, a copy of this notice has been sent to Craig Henrici, Mayor, Town of Hamden..

The existing Facility consists of a 108-foot self-supporting stealth silo tower capable of supporting multiple carriers within a fenced compound. The coordinates for the Facility are **Lat: 41°-24'-24"** and **Long: 72°-54'-15"**. The silo is located on the eastern side of Hamden, approximately 400 feet west of Evergreen Avenue on the Connecticut Agricultural Experiment Station property in Hamden. The Facility is roughly 1,100 feet west of Whitney Avenue (Route 10), roughly 2,000 feet north of it's intersection with the Route 40 connector (see Site Map, attached as Exhibit A). The Facility currently supports Nextel antennas at seventy five foot (75') level centerline AGL ("above ground level"), AT&T antennas at the eighty five foot level (85') AGL, Verizon antennas at the ninety five foot level (95'). The current T-Mobile antenna configuration is one antenna per sector, for a total of three antennas. T-Mobile proposes to replace the three existing antennas with three new antennas. The current configuration of three total antennas will remain the same. T-Mobile proposes to install three new TMZXX-6516-R2M antennas on existing mounts (one per sector) replacing the existing antennas at the same elevation (100') level centerline AGL. T-Mobile also intends to add a RBS 3518 equipment cabinet, to be mounted to an existing wall on the building structure connecting the equipment shelter and the silo. This cabinet will supplement one existing S12000 BTS equipment cabinet mounted on an existing pad. T-Mobile's equipment will be contained within it's existing lease area, within the described area. T-Mobile intends to run new coaxial cable on the existing cable

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

path from its current equipment pad to the antennas inside the silo. Utilities will be run from existing utility sources at the Facility (See Design Drawings and Equipment Specifications, attached as Exhibits B and C respectively).

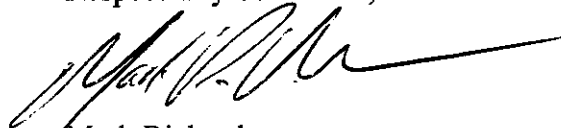
For the following reasons, the proposed modifications to the Evergreen Avenue Facility meet the exempt modification criteria set forth in R.C.S.A. Section 16-50j-72(b)(2):

1. The proposed modification will not increase the height of the tower as T-Mobile seeks to install 3 new antennas to replace three existing ones, at a center line height of approximately 100 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 T-Mobile antennas would be 88.205% of the FCC standard (see general power density calculations table, attached as Exhibit D).

Also attached, Exhibit E, is a structural analysis opinion letter confirming that the tower can support the existing and proposed antennas and associated equipment.

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

Respectfully Submitted,



Mark Richard
UMTS Project Manager
Agent for T-Mobile

cc: Craig Henrici, Mayor
CT Agricultural Experiment Station Trustee Under Will of William Lockwood
(underlying property owner)

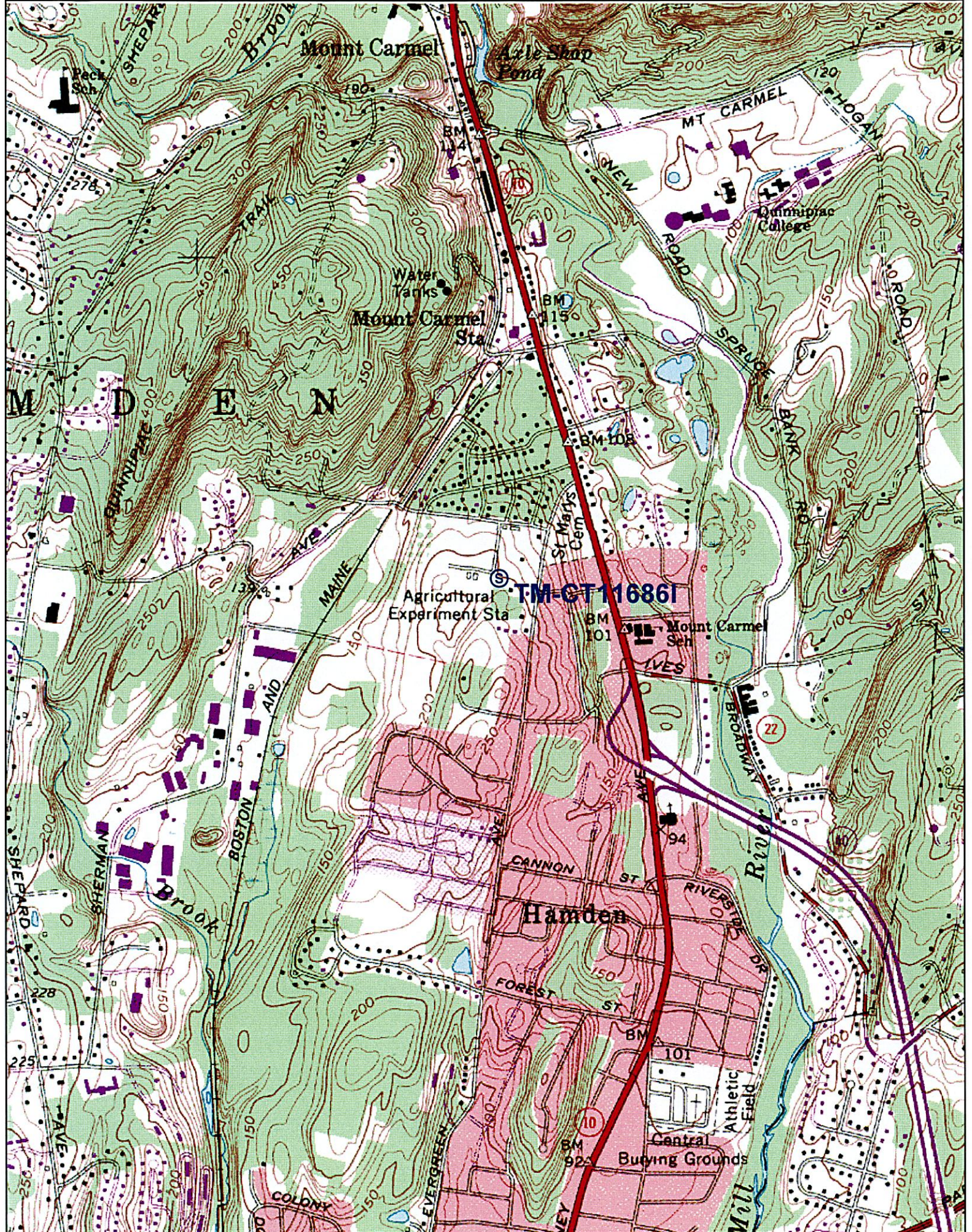
Exhibit A

Site Map

T-Mobile Site CT11686I

890 Evergreen Avenue

Hamden, Connecticut



TM-CT-116861

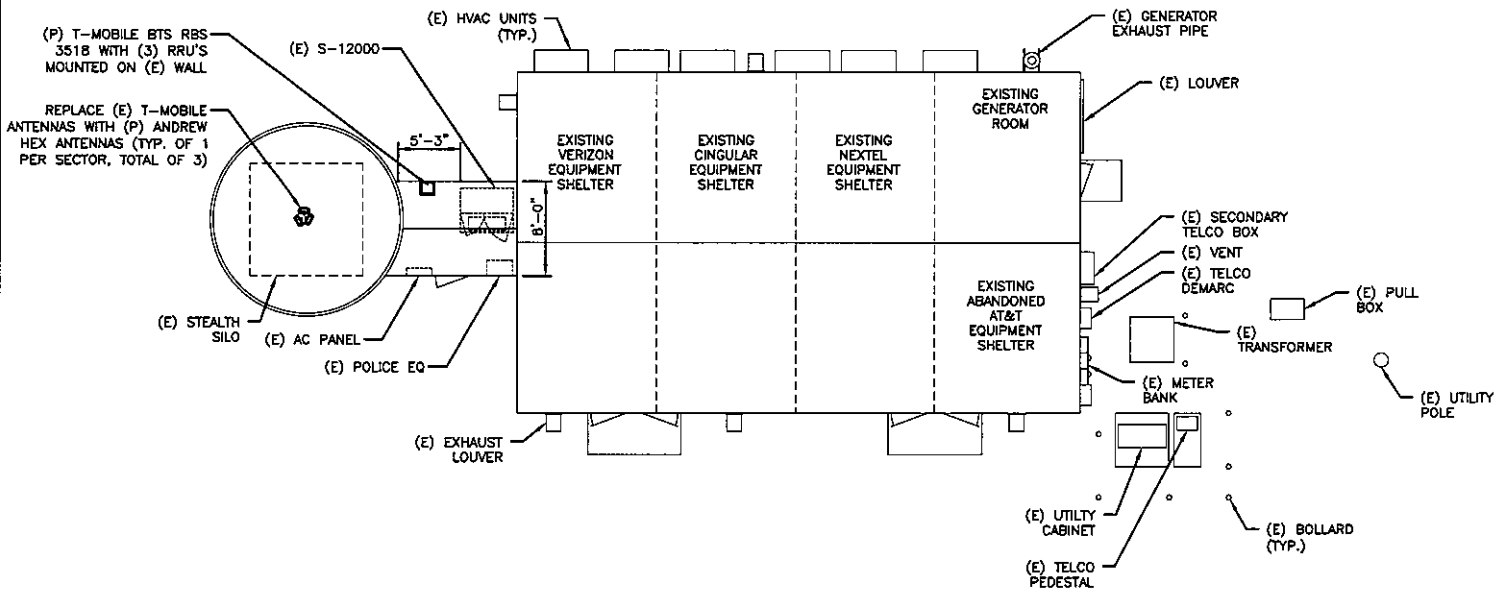
Exhibit B

Design Drawings

T-Mobile Site CT11686I

890 Evergreen Avenue

Hamden, Connecticut



SILO LAYOUT PLAN

SCALE: NTS

1

T-Mobile
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002



50 Eastman St.
South Easton, MA 02575
Phone: (508) 936-6393
Fax: (508) 936-6366

PROJECT LOCATION:
CROWN HAMDEN
CT11686I
890 EVERGREEN AVENUE
HAMDEN, CT

APPROVED BY:

PROJECT MANAGER:
KB

DRAWN BY:
JRK

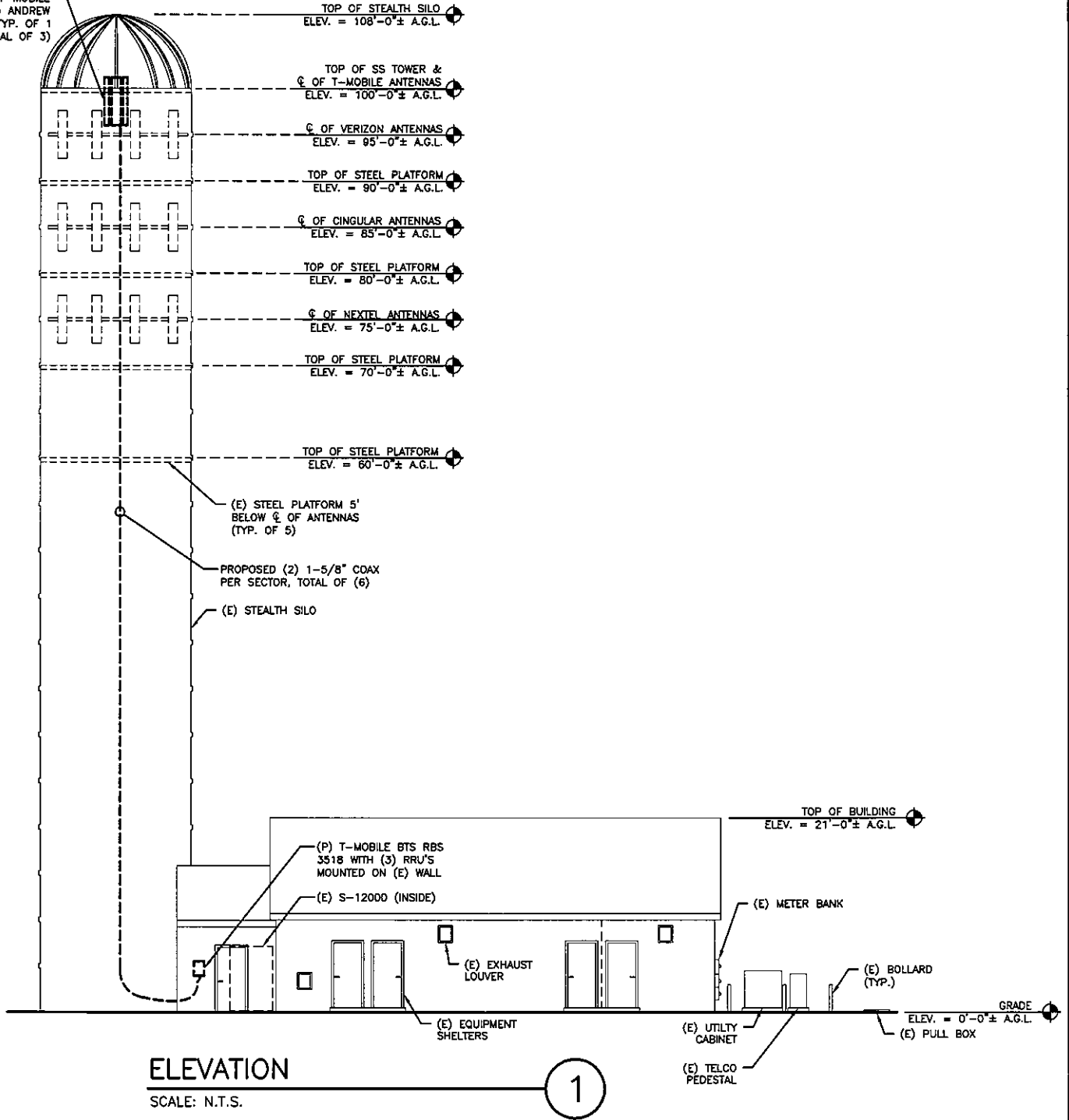
BSDA PROJ. #:
2898.281

REV. 3
REV. 2
REV. 1
01/09/09

**SILO
LAYOUT
PLAN**

SHEET:
L1

REPLACE (E) T-MOBILE ANTENNAS WITH (P) ANDREW HEX ANTENNAS (TYP. OF 1 PER SECTOR, TOTAL OF 3)



T-Mobile
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002



50 Eastman St.
 South Easton, MA 02375
 Phone: (508) 936-8363
 Fax: (508) 936-8366

PROJECT LOCATION:
 CROWN HANDEN
CT11686I
 890 EVERGREEN AVENUE
 HAMDEN, CT

APPROVED BY:

PROJECT MANAGER:
 KB

DRAWN BY:
 JRK

BSDA PROJ. #:
 2898.281

REV. 3
 REV. 2
 REV. 1
 01/09/09

ELEVATION

SHEET:
L2

Exhibit C

Equipment Specifications

T-Mobile Site CT11686I

890 Evergreen Avenue

Hamden, Connecticut



TMZXXX-6516-R2M

DualPol®, Hex Port Panel Antenna

DualPol®
Teletilt®

- Patented cross dipole and feed system
- Rugged, reliable design with excellent PIM suppression
- Includes factory installed AISG RET actuator
- Fully compatible with Andrew Teletilt® remote control antenna system

ELECTRICAL

Frequency Range (MHz):	1710–2155
Characteristic Impedance (Ohms):	50
Azimuth BW (Deg):	63 ± 8
Elevation BW (Deg):	7.3 ± 1.0
Gain (dBi) :	17.4 ± 0.8
Polarization:	±45°
Front-to-Back Ratio (dB)	2° 4° 6° 8°
Copol, 180° ± 30°:	>30 >30 >30 >30
Upper Sidelobe (dB)	2° 4° 6° 8°
Main Beam to +30°:	>16 >18 >18 >18
VSWR / Return Loss (dB):	1.35:1 / 16.5
Port-to-Port Isolation (dB):	>30
Electrical Tilt Range (Deg):	2–8*
Electrical Downtilt Accuracy (Deg):	± 0.3
Cross-pol (dB)	2° 4° 6° 8°
3 dB Beamwidth:	>13 >13 >12 >12
Intermodulation Products (dBc)	
3rd Order, 2 x 20 Watts:	155
Max. Input Power (Watts):	250
Lightning Protection:	DC Ground

*Antenna full tilt range includes 0–10°, specs reduced at 0°, 1°, 9°, and 10°.

PERFORMANCE TRACKING

Gain Variation (dB) (between UL and DL frequency pair):	1.6
Electrical Tilt Accuracy (Deg) (between UL and DL frequency pair within 0.5°):	<0.5
Azimuth HPBW (Deg) (between UL and DL frequency pair):	16

MECHANICAL

Net Weight (kg / lbs):	16 / 35.2
Dimensions–LxWxD:	1523 x 500 x 90 mm
(with actuator)	60 x 19.7 x 3.5 inch
Max. Wind Area (m² / ft²):	0.65 / 7.0
Max. Wind Load (N / lbf):	990 / 223
Max. Wind Speed (km/h / mph):	241 / 150
Hardware Material:	Hot Dip Galvanized
Connector Type:	7-16 DIN, Female (4)
Color:	Off White
Standard Mounting Hardware:	DB5083



Note: Actuators and protective shrouds included with this antenna are not shown.

Andrew Corporation
2601 Telecom Parkway
Richardson, Texas U.S.A. 755082-3521
Tel: 214.631.0310

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Toll Free Tel: 1.800.676.5342
Fax: 1.800.229.4706
www.andrew.com

10/18/2007
Page 1 of 3
bsatech@andrew.com



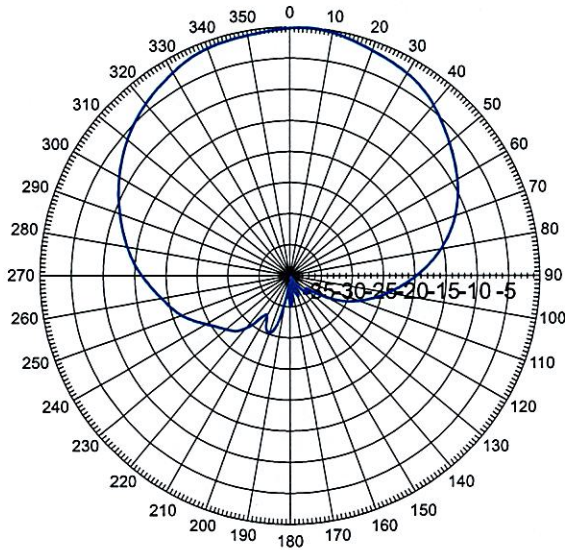
TMZXXX-6516-R2M

DualPol®, Hex Port Panel Antenna

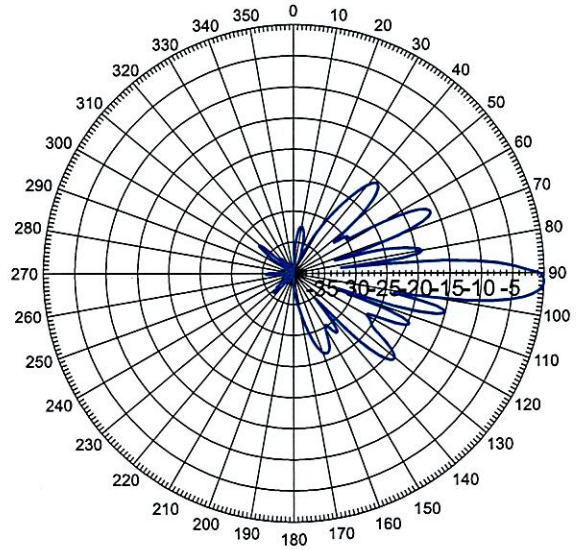
DualPol®
Teletilt®

AZIMUTH PATTERN

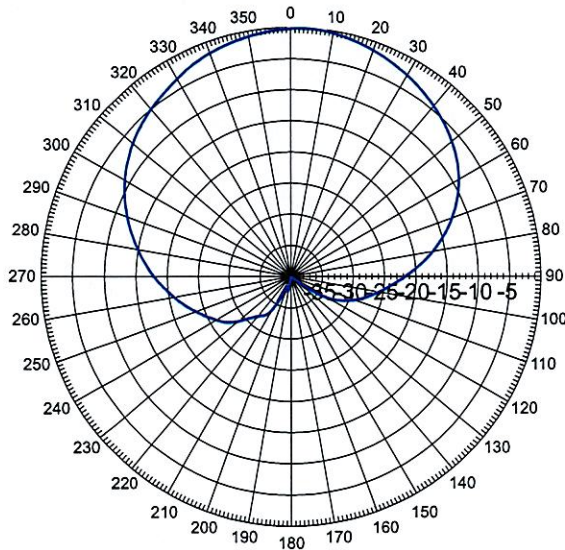
ELEVATION PATTERN



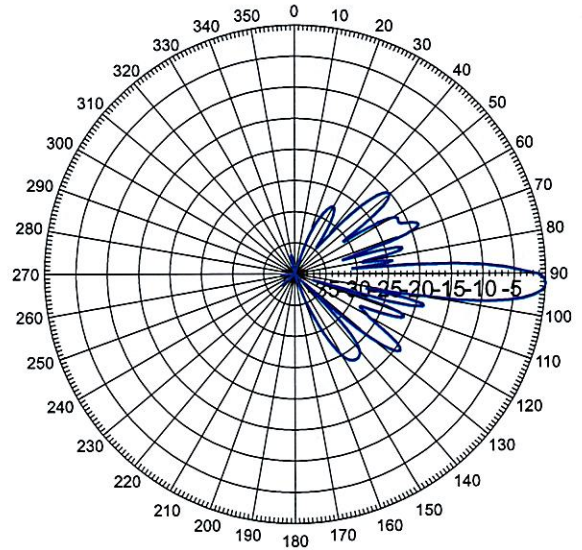
1732 MHz, Tilt: 2°



1732 MHz, Tilt: 2°



1880 MHz, Tilt: 2°



1880 MHz, Tilt: 2°

Note: Scale 5 dB per division.

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Page 2 of 3
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Information correct at date of issue but may be subject to change without notice.



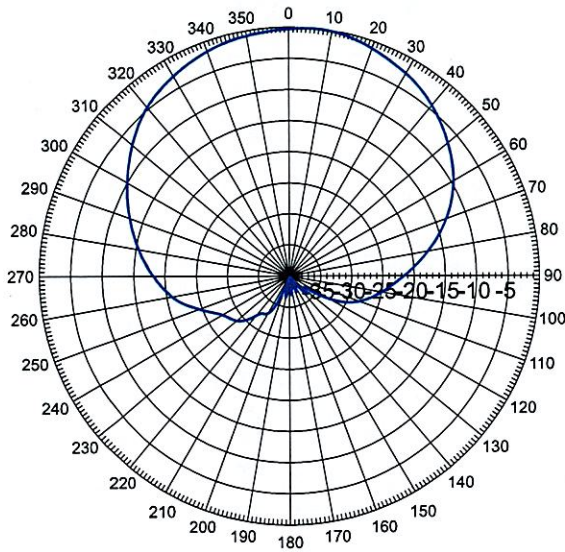
TMZXXX-6516-R2M

DualPol®, Hex Port Panel Antenna

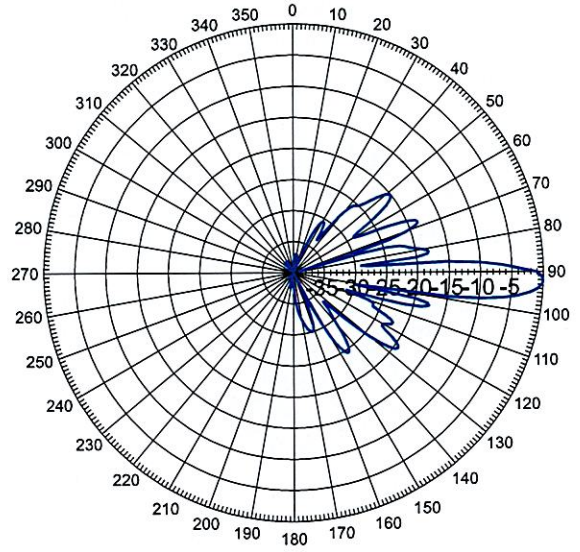
DualPol®
Teletilt®

AZIMUTH PATTERN

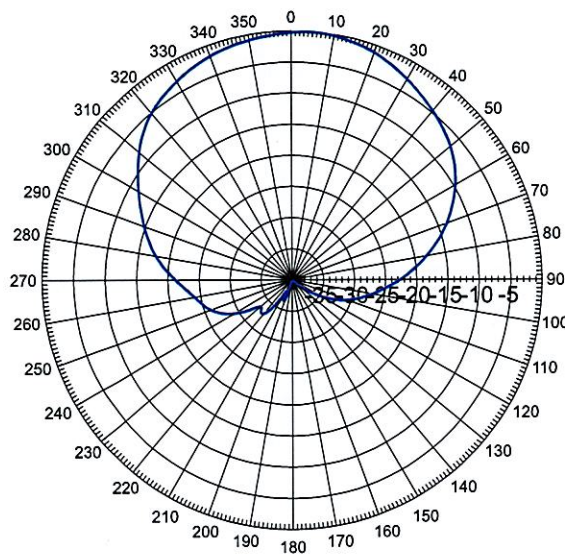
ELEVATION PATTERN



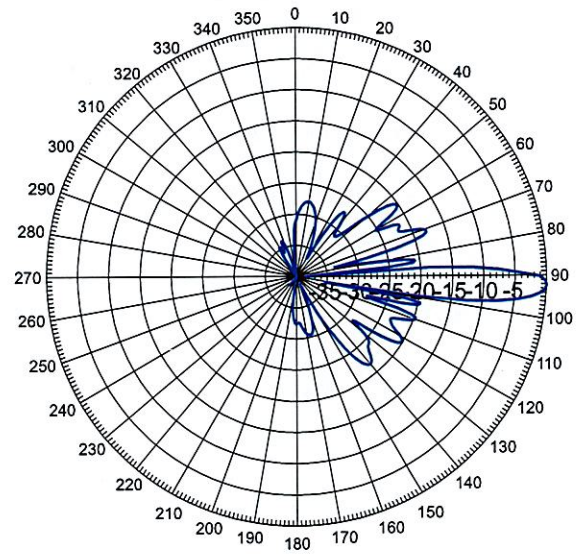
1960 MHz, Tilt: 2°



1960 MHz, Tilt: 2°



2132 MHz, Tilt: 2°



2132 MHz, Tilt: 2°

Note: Scale 5 dB per division.

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10/18/2007
Page 3 of 3
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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.

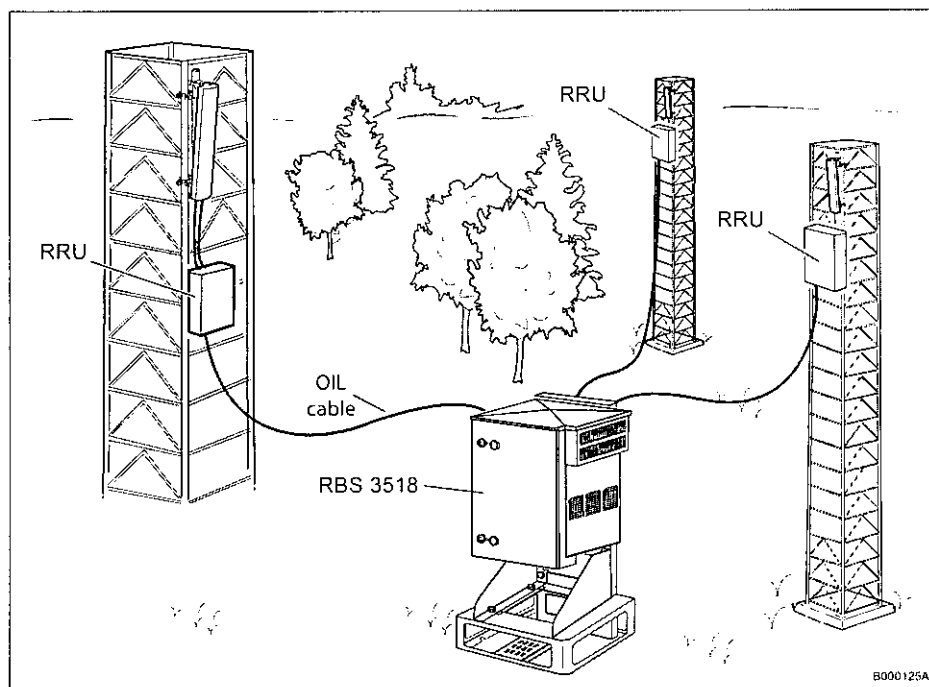


Figure 1 RBS 3518 in Star Configuration

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 4 and 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

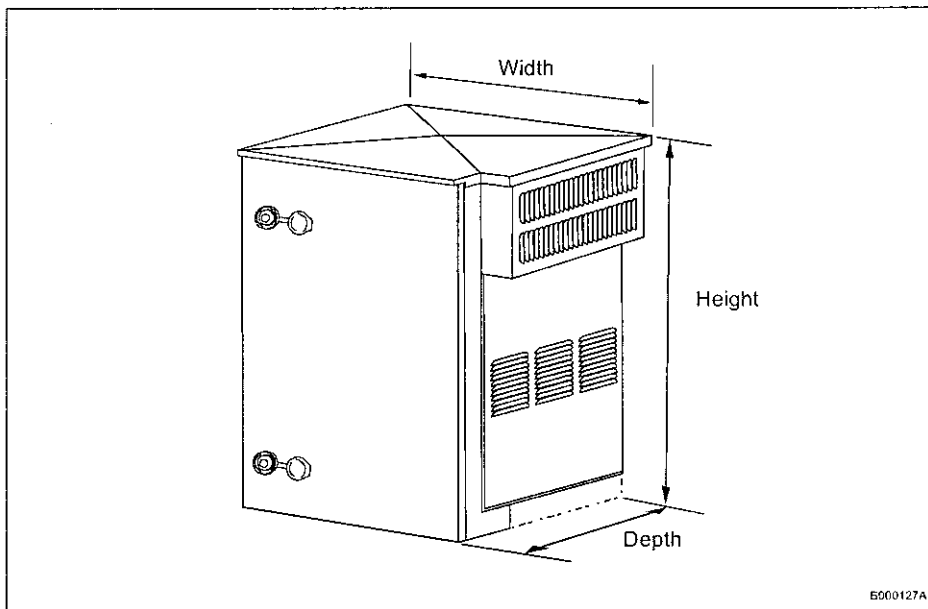


Figure 2 RBS 3518 Dimensions

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.

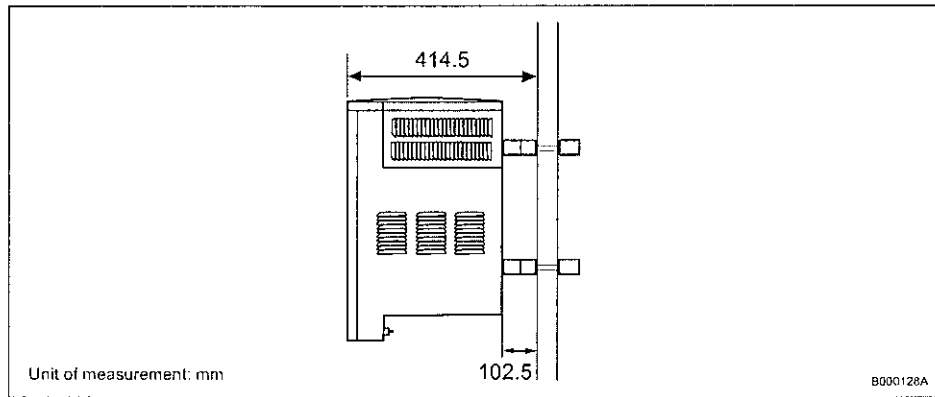


Figure 3 RBS 3518 with the Pole-Mounting Bracket

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.

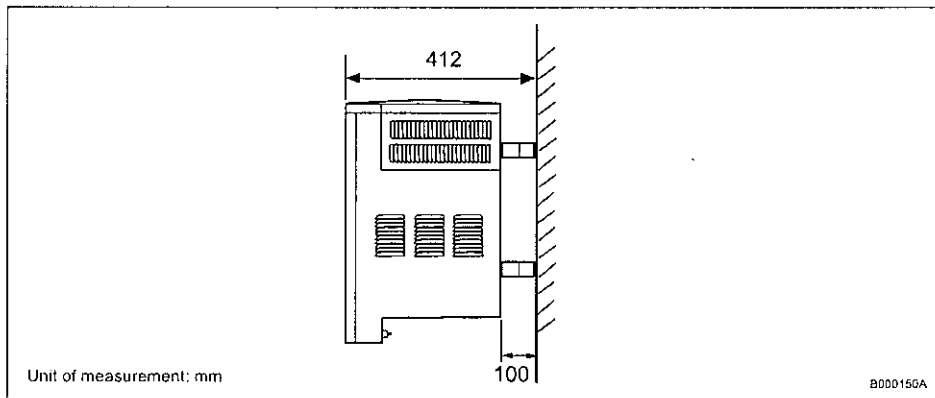


Figure 4 RBS 3518 with the Wall-Mounting Bracket

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

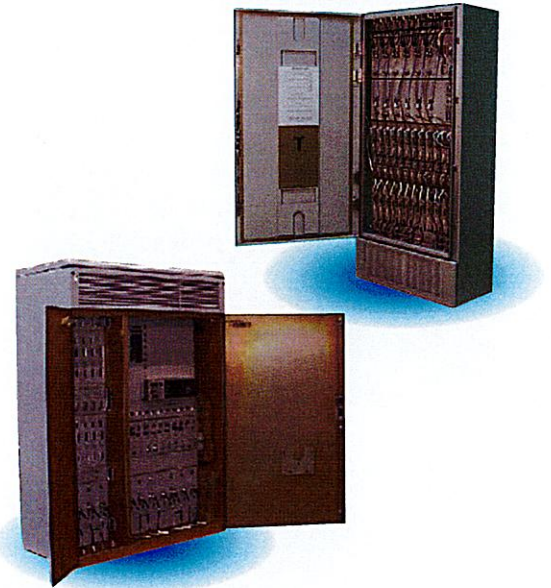
Nortel Networks

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 guaranteed (w/o TMA) -115 dBm guaranteed (w/o TMA)	
Dimensions	Height	1950 mm	1910 mm
	Width	910 mm	1350 mm
	Depth	450 mm	650 mm
Weight	Empty cabinet	170 kg	200 kg
	Fully equipped	415 kg	570 kg
Capacity	Standard	12 TRX per radio cabinet Up to 3 radio cabinets	
	Future option	Up to 4 radio cabinets	
Configuration	Monoband Trisectorial	Up to S16-16-16 (4 radio cabinets)	
	Dual Band Trisectorial	S222_222 (1 radio cabinet) Mono-BCCH dual band cells	
	Cell Splitting	Cell splitting across radio cabinets	
Amplifier output power	Standard	30W (+/- 0.5 dB) GMSK	
		30W (+/- 0.5 dB) 8-PSK EDGE	
	Optional	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	6 steps of 2 dB	
	Dynamic	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 Single, single-split or tri-phase 230V (50/60Hz) AC	
		Integrated battery backup	
		Optional ancillary battery cabinet	
Operational temperature range		-5°C to +45°C	-40°C to +50°C
Max acoustic noise		65 dB(A)	
Backhaul	Standard	6 E1 / T1 links	
	Future option	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.

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NN101082-0702

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Exhibit D

Power Density Calculations

T-Mobile Site CT11686I

890 Evergreen Avenue

Hamden, Connecticut

Technical Memo

To: Maxton
From: Farid Marbough - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CT11686I
Date: April 10, 2009

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile antenna installation on a Monopole at 890 Evergreen Ave, Hamden, 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 (1935-1944.8), (1980.2-1984.8), (2140-2145), (2110-2120)MHz frequency Band.
- 2) The antenna array consists of three sectors, with 1 antenna per sector.
- 3) The model number for GSM antenna is TMZXX-6516-R2M.
- 3) The model number for UMTS antenna is TMZXX-6516-R2M.
- 4) GSM antenna center line height is 100 ft.
- 4) UMTS antenna center line height is 100 ft.
- 5) The maximum transmit power from any GSM sector is 2204.55 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
- 5) The maximum transmit power from any UMTS sector is 2199.33 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 antenna installation on a Monopole at 890 Evergreen Ave, Hamden, CT, is 0.10935 mW/cm². This value represents 10.935% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm²) 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 77.27%. The combined Power Density for the site is 88.205% of the M.P.E. standard.

Connecticut Market



Worst Case Power Density

Site: CT116861
Site Address: 890 Evergreen Ave
Town: Hamden
Tower Height: 110 ft.
Tower Style: Monopole

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	TMZXX-6516-R2M	Antenna Model	TMZXX-6516-R2M
Cable Size	1 5/8 in.	Cable Size	1 5/8 in.
Cable Length	130 ft.	Cable Length	130 ft.
Antenna Height	100.0 ft.	Antenna Height	100.0 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	17.4 dBi	Antenna Gain	17.4 dBi
Cable Loss per foot	0.0116 dB	Cable Loss per foot	0.0116 dB
Total Cable Loss	1.5080 dB	Total Cable Loss	1.5080 dB
Total Attenuation	6.0080 dB	Total Attenuation	3.0080 dB
Total EIRP per Channel (In Watts)	54.40 dBm 275.57 W	Total EIRP per Channel (In Watts)	60.41 dBm 1099.66 W
Total EIRP per Sector (In Watts)	63.43 dBm 2204.55 W	Total EIRP per Sector (In Watts)	63.42 dBm 2199.33 W
nsg	11.3920	nsg	14.3920
Power Density (S) = 0.054737 mW/cm ²		Power Density (S) = 0.054608 mW/cm ²	
T-Mobile Worst Case % MPE =		10.9345%	

Equation Used :

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

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

Co-Location Total

(From CSC power density data base)

Carrier	% of Standard
Verizon	15.6300 %
Cingular	11.8200 %
Sprint	49.8200 %
AT&T Wireless	
Nextel	
MetroPCS	
Other Antenna Systems	
Total Excluding T-Mobile	77.2700 %
T-Mobile	10.9345
Total % MPE for Site	88.2045%

Exhibit E

Structural Analysis

T-Mobile Site CT11686I

890 Evergreen Avenue

Hamden, Connecticut

PSG Engineering, Ltd.
1006 Thompson Highway
Richmond, TX 77469
Phone: (281) 239-8490
E-Mail: OPedraza@PSGENG.com



Date: **April 1, 2009**

Veronica Harris
Crown Castle USA Inc.
1200 McArthur Blvd.
Mahwah, NJ 07430

Subject: Structural Opinion Letter of 100 Foot – Silo Tower

Carrier Designation: **T-Mobile Co-Locate**
Carrier Site Number: "CT116861"
Carrier Site Name: "N/A"

Crown Castle Designation: **Crown Castle BU Number:** 800529
Crown Castle Site Name: CT HAMDEN NORTH CAC
Crown Castle JDE Job Number: 114603
Crown Castle WO Number: 253533

Site Data: **890 Evergreen Ave., Hamden, CT, New Haven County**
Latitude 41° 24' 24.24", Longitude -72° 54' 15.2"

Dear Ms. Harris,

Crown Castle USA Inc. is pleased to submit this "**Structural Opinion Letter**" for the structural integrity of the aforementioned tower. This evaluation has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 323478. The purpose of the opinion letter is to determine the suitability of the tower with the proposed, existing, and reserved loading as specified in Tables 1 & 2 on the next page. This opinion is consistent with the guidelines as stated in the TIA/EIA 222-F standard based upon wind speed condition of 85 mph fastest mile (105 mph 3-second gust).

Based on a comparison of the original design loads (including wind speeds), the current loads, and the proposed loads, we have determined the tower structure and foundation **ARE** sufficient for the proposed loading.

We at the *PSG Engineering* appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Oscar Pedraza, P.E.
President

PSG Engineering, Ltd.
1006 Thompson Highway
Richmond, TX 77469
Phone: (281) 239-8490
E-Mail: OPedraza@PSGENG.com



Date: **April 1, 2009**

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Oscar Pedraza, P.E.
President



APR 03 2009

Table Legend
Proposed = (P)
Reserved = (R)

Table 1 – Proposed (P) Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount	Number Of Feed Lines	Feed Line Size (inches)
100	3(P)	Andrew	TMZXXX-6516-R2M	-	12(P)	1 5/8
	3(P)	RFS/Celwave	ATMPP1412D-1CWA			
	3(P)		ATMAA1412D-1A20			

Table 2 – Installed and Reserved (R) Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount	Number Of Feed Lines	Feed Line Size (inches)
104	1	Decibel	DB806-XC	Silo Internal Mount (1)	1	7/8
*100	3	EMS Wireless	DR65-18-02DPL2Q		12	1 5/8
	6	REMEC	S20057A1			
95	12	Swedcom	ALP 9212-N	Silo Internal Mount (1)	12	1 5/8
	CASE B					
	12(R)	MLA	52"x9"x3"	Silo Internal Mount (1)	12(R)	1 5/8
	CASE C (Controlling Load Case)					
	6(R)	Decibel	DB844H80-XY	Silo Internal Mount (1)	24(R)	1 5/8
6(R)	DB948F85T2E-M					
90	1	Decibel	DB411-A	Silo Internal Mount (1)	2	1/2
85	6	CSS	DU01417-8686		9	7/8
	3	Powerwave	7770.00			
	6	Technologies	LGP13519			
75	6	ADC	DB 800/1900 FB MSTHD	Silo Internal Mount (1)	11	1 5/8
	10	Decibel	DB844H90E-XY		2	1 1/4
65	2	CSA Wireless	A-18A24N-U	Silo Internal Mount (1)	6	1 5/8
	3	Kathrein	742 213			

*Note: Installed antennas, TMAs and coax lines will be removed and replaced with proposed loading. Installed mounts will remain to support proposed loads.

Table 3 – Original Tower Manufacturer Design Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount	Number Of Feed Lines	Feed Line Size (inches)
95	12	Allgon	7129.16.33	Silo Internal Mount	Not Available	
85	12	Allgon	7120.16	Silo Internal Mount	Not Available	
75	12	Decibel	844H90EXY	Silo Internal Mount	Not Available	