

100 Filley Street, Bloomfield, CT 06002

(860) 692-7154 phone (860) 692-7159 fax

8 September, 2000

Mortimer A. Gelston, Chairman Connecticut Siting Council 10 Franklin Square New Britain, CT 06051

Re: Request by VoiceStream Wireless for an Order

to Approve the Shared Use of a Tower Facility

115 Birch Mountain Road, Glastonbury, Connecticut

RECEIVED

SEP 13 2000

CONNECTICUT SITING COUNCIL

Dear Chairman Gelston and Members of the Council:

Pursuant to Connecticut General Statutes §16-50aa, VoiceStream Wireless, Inc. ("VoiceStream") hereby requests an order from the Connecticut Siting Council ("Council") to approve the proposed shared of an existing tower located at 115 Birch Mountain Road in Glastonbury, Connecticut. The tower is owned and operated by Pinnacle Towers, Inc. ("Pinnacle"). VoiceStream proposes to relocate its antennas from an adjacent tower to the Pinnacle tower and to install related equipment near the base of the tower within the existing compound (see "Exhibit A"). VoiceStream requests that the Council find that the proposed shared use of the tower satisfies the criteria stated in §16-50aa and issue an order approving the proposed use.

#### **Background**

VoiceStream 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.

The Pinnacle tower on Birch Mountain Road in Glastonbury is a 180-foot lattice tower located on an existing compound. The coordinates for this location are 41-42-42 N and 72-28-13 W. Sprint Spectrum ("Sprint") currently has antennas mounted on the tower with tops at 170 feet above ground level ("AGL"). VoiceStream and Pinnacle have agreed to mutually acceptable terms and conditions for the proposed shared use of this tower, and Pinnacle has authorized VoiceStream to act on its behalf to apply for all necessary local, state and federal permits, approvals, and authorizations which may be required for the proposed shared use of this facility.

As shown on the site plan drawings and tower elevations attached as Exhibit A, VoiceStream proposes to install a total of four antennas on stand-offs at the top of the tower. Two antennas will be EMS Dual-Pol Model RR90-17-02DP mounted at the 140 degree sector. The other two antennas will be EMS Dual Pol Model FR65-17-04DP mounted at the 260 degree sector. The radio transmission equipment associated with these antennas, Nortel S8000 cabinets, would be installed inside an existing equipment shelter located at the base of the tower.



### 115 Birch Mountain Road, Glastonbury Page 2

\_ 1

C.G.S. §16-50aa (c) (1) provides that, upon written request for approval of a proposed shared use, "if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such shared use." The shared use of the tower satisfies those criteria as follows:

- A. <u>Technical Feasibility</u> The existing tower was designed to accommodate multiple carriers, and VoiceStream is the second carrier to propose co-location. As the structural analysis attached as Exhibit C indicates, the tower is structurally sound and capable of supporting the proposed antennas. The proposed shared use of this tower therefore is technically feasible.
- B. Legal Feasibility Under C.G.S. § 16-50aa, the Council has been authorized to issue orders approving the proposed shared use of an existing tower facility such as the facility on Birch Mountain Road in Glastonbury. (Public Acts 93-268, Section 2; and 94-242, Section 6 (c)). This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. C.G.S. § 16-50x (a) vests exclusive jurisdiction over these facilities in the Council, which shall "give such consideration to other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing towers facilities. Under this statutory authority vested in the Council, an order by the Council approving the shared use would permit the applicant to obtain a building permit for the proposed installations.
- **C.** Environmental Feasibility The proposed shared use would have a minimal environmental effect, for the following reasons:
  - 1. The proposed installations would have an insignificant incremental visual impact, and would not cause any significant change or alteration in the physical or environmental characteristics of the existing site. In particular, the proposed installations would not increase the height of the existing tower, and would not extend the boundaries of the existing Pinnacle compound area.
  - 2. The proposed installations would not increase the noise levels at the existing facility by six decibels or more.
  - Operation of antennas at this site would not exceed the total radio frequency electromagnetic radiation power density level adopted by the American National Standards Institute ("ANSI"). The "worst-case" exposure calculated for operation of this facility (i.e., calculated at the base of the tower, which represents the closest publicly accessible point within the broadcast field of the antennas), with the Sprint and VoiceStream antennas, would be 2.69% of the ANSI standard. These calculations are attached as Exhibit D.<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> VoiceStream's power density calculation includes a VoiceStream's estimate of Sprint's MPE percentage. There are no actual calculations of Sprint's power densities on public record for this site, and efforts to obtain this information directly from Sprint have been unsuccessful as of the date of this filing. A copy of this application has been forwarded to Sprint for their review prior to action by the Council.



### 115 Birch Mountain Road, Glastonbury Page 3

4. The proposed installations would not require any water or sanitary facilities, or generate air emissions or discharges to water or sanitary facilities, or generate air emissions or discharges to water bodies. After construction is complete (approximately two weeks), the proposed installations would not generate any traffic other than for periodic maintenance visits.

The proposed use of this facility would therefore have a minimal environmental effect, and is environmentally feasible.

- **E.** <u>Economic Feasibility</u> As previously mentioned, VoiceStream has entered into an agreement with Pinnacle to share the use of the existing tower on terms agreeable to the parties. The proposed tower sharing is therefore economically feasible.
- F. Public Safety Concerns As stated above, the existing tower is structurally capable of supporting the proposed VoiceStream antennas. The tower stands on a tower compound off Birch Mountain Road. The size and location of the tower have been approved by the Town of Glastonbury which considered public health and safety in its review. VoiceStream is not aware of any other public safety concerns relative to the proposed sharing of the existing tower. In fact, the provision of new or improved phone service through shared use of the existing tower is expected to enhance the safety and welfare of area residents and travelers.

#### Conclusion

For the reasons discussed above, the proposed shared use of the existing tower facility on Birch Mountain Road in Glastonbury, Connecticut satisfies the criteria stated in C.G.S. §16-50aa, and advances the General Assembly's and the Siting Council's goal of preventing the proliferation of towers in Connecticut. VoiceStream therefore request that the Siting Council issue an order approving the proposed shared use.

Thank you for your consideration of this matter.

Sincerely,

J. Brendan Sharkey, Esq. for VoiceStream Wireless

Attachments

cc: Richard J. Johnson, Town Manager

Julie Cashin, Esq.



# Exhibit A

# Design Drawings Birch Mountain Road Glastonbury, CT

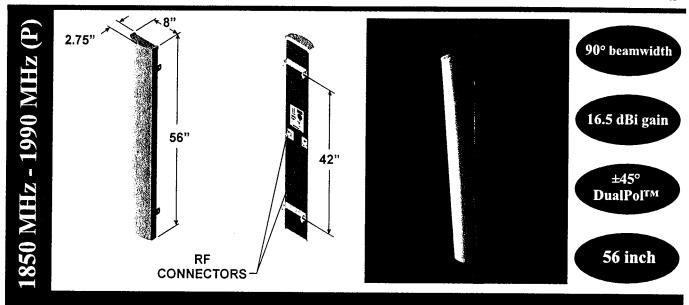


# **Exhibit B**

# Equipment Specifications Birch Mountain Road Glastonbury, CT

#### OptiRange™

# **RR90-17-XXXP**



### **SPECIFICATIONS**

Electrical		Mechanical		
Azimuth Beamwidth Elevation Beamwidth Gain Polarization Port-to-Port Isolation Front-to-Back Ratio Electrical Downtilt Options VSWR	90° 6° 16.5 dBi (14.4 dBd) Slant, ±45° ≥ 30 dB ≥ 25 dB (≥ 30 dB Typ.) 0°, 2°, 4°, 6° 1.35:1 Max	Dimensions (L x W x D)  Rated Wind Velocity Equivalent Flat Plate Area Front Wind Load @ 100 mph (161 kph) Side Wind Load @ 100 mph (161 kph) Weight	56in x 8in x 2.75in (142 cm x 20.3 cm x 7.0 cm) 150 mph (241 km/hr) 3.1ft (.29 m) 90 lbs (400 N) 31 lbs (139 N) 18 lbs (8.2 kg)	
Connectors Power Handling Passive Intermodulation	2;Type N or 7-16 DIN (female) 250 Watts CW <-147 dBc (2 tone	Note: Patent Pending and US Patent n Values and patterns are representative and val	riations may occur. Specifications ma	

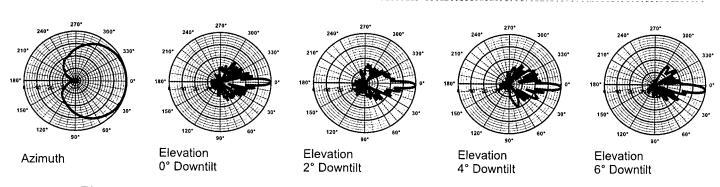
alues and patterns are representative and variations may occur. Specifications may change without notice due to continuous product enhancements. Digitized pattern data is available from the factory or via the web site www.emswireless.com and reflect all updates.

### **MOUNTING OPTIONS**

@ +43 dBm {20W} ea.)

Chassis Ground

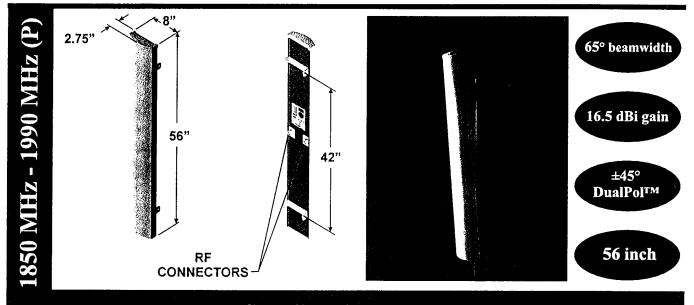
Model Number	Description	Comments
MTG-P00-10	Standard Mount_(Supplied with antenna)	Mounts to Wall or 1.5 inch to 5.0 inch O.D. Pole (3.8 cm to 12.7 cm)
MTG-S02-10	Swivel Mount	Mounting kit providing azimuth adjustment.
MTG-DXX-20*	Mechanical Downtilt Kits	0° - 10° or 0° - 15° Mechanical Downtilt
MTG-CXX-10*	Cluster Mount Kits	3 antennas 120° apart or 2 antennas 180° apart
MTG-C02-10	U-Bolt Cluster Mount Kit	3 antennas 120° apart , 4.5" O.D. pole.
MTG-TXX-10*	Steel Band Mount	Pole diameters 7.5" - 45"
* Model number shown re	epresents a series of products. See mounting op	tions section for specific model number.



Lightning Protection



# FR65-17-XXXP



#### **SPECIFICATIONS**

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Azimuth Beamwidth Elevation Beamwidth Gain Polarization Port-to-Port Isolation

Front-to-Back Ratio

**Electrical Downtilt Options VSWR** 

Connectors Power Handling Passive Intermodulation

Lightning Protection

65°

16.5 dBi (14.4 dBd) Slant, ±45°

≥ 30 dB

≥ 25 dB (≥ 30 dB Typ.)

0°, 2°, 4° 1.35:1 Max

2; Type N or 7-16 DIN (female)

250 Watts CW <-147 dBc (2 tone @ +43 dBm {20W} ea.)

Chassis Ground

#### Mechanical

Dimensions (L x W x D) 56in x 8in x 2.75in (142 cm x 20.3 cm x 7.0 cm)

Rated Wind Velocity 150 mph (241 km/hr) Equivalent Flat Plate Area 3.1ft (.29 m) Front Wind Load @ 100 mph (161 kph) 90 lbs (400 N)

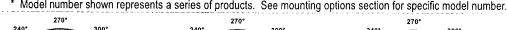
Side Wind Load @ 100 mph (161 kph) 31 lbs (139 N) Weight 18 lbs (8.2 kg)

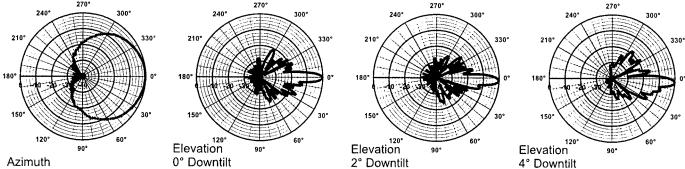
Patent Pending and US Patent number 5, 757, 246.

Values and patterns are representative and variations may occur. Specifications may change without notice due to continuous product enhancements. Digitized pattern data is available from the factory or via the web site www.emswireless.com and reflect all updates.

#### **MOUNTING OPTIONS**

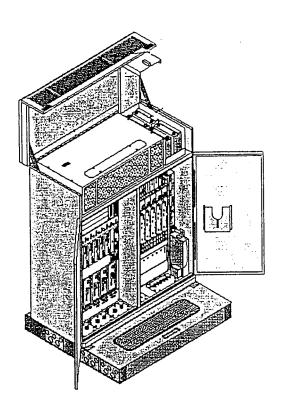
Model Number	Description	Comments		
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MTG-TXX-10*	Steel Band Mount	Pole diameters 7.5" - 45"		
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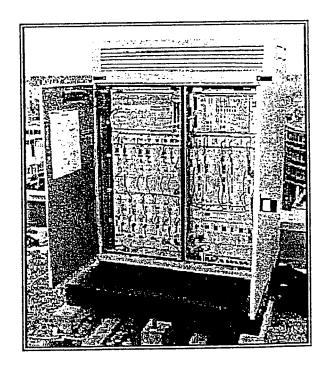


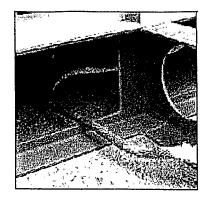


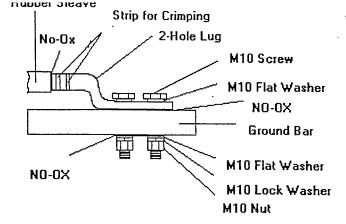
# NETWORKS

# S8000 BTS Site Specifications









Apply a light coating of No Oxidation (NO-OX) to the ground bar area.

#### Dimensions, Weights & Clearances

#### **BTS**

Weight: 915 pounds

Dimensions: 53.2"W x 26"D x 63"H

Clearances while transporting in building:

Door Access:

Height: 6.6 feet Width 3 feet

Corridor Access:

Height: 6.6 feet

Width: 3.6 feet (straight), 6.6 feet (right angle)

Clearances when installed:

Above: 28 inches for opening of hood Rear: 8 inches for installation of outer skin Sides: 8 inches for adjustment of door hinges

Front: 54 inches to open door and technician access

#### Plinth

Weight: 87 pounds

Dimensions:

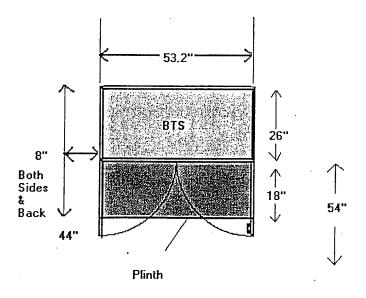
53.2"W x 44"D x 10.2"H

#### Floor Characteristics

Minimum Floor Resistance: 123 pounds/foot<sup>2</sup>

Flatness:

1/4 inch over 78 inches



#### **Electrical Specifications**

#### Split Single-Phase

3 wires plus ground

L1: Black 6 gauge L2: Red 6 gauge

Neutral: White 6 gauge

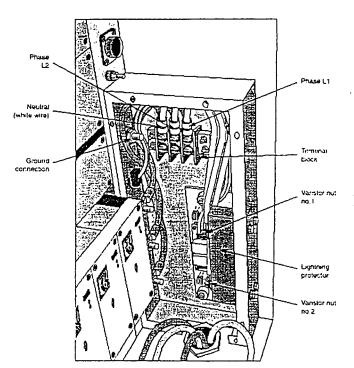
Ground: Yellow/Green 6 gauge

Maximum distance between AC box and BTS: 105 feet

187 ~ 254 VAC between L1 and L2

99 ~ 127 VAC between Neutral and L1 or L2

45 ~ 65 Hertz



AC connection to BTS located at the front, lower, right-hand side of BTS

#### Circuit Breaker in AC Box

Up to 4 transmitters

30 A, bipolar, C curve

5 or more transmitters

40A, bipolar, C curve

#### BTS to Ground connection

Minimum 2 AWG, run in most direct route as possible towards true earth, minimizing bends. No bend shall be less than 90 degrees.



# **Exhibit C**

# Structural Analysis Birch Mountain Road Glastonbury, CT



August 28, 2000

Carter-Burgess 481 Buckland Rd Suite 20-1 SOUTH Windsor, CT 06074

Attn: Mr. Kemp Morhardt

Re: Existing 180 ft self-support tower (extendable to 200 ft) Located in Glastonbury, Connecticut (CT-11-189D) (PJF #36500-17-R1)

Dear Mr. Morhardt:

In 1999, Sabre Tower designed and constructed the existing 180 ft self-supporting tower in Glastonbury, Connecticut. The original structural analysis indicated that the tower was designed for a basic design wind velocity of 85 mph without ice and 73.6 mph with ½' simultaneous radial ice accumulation. Sabre designed the tower to support 59 antenna with a total area exposed to the wind of 580 square ft.

We have reviewed the existing and proposed antenna loading listed on the document #SC400-389 by Pinnacle Towers. This document lists 31 smaller antenna with 31 smaller runs of coax to the antenna. Of the 31 antenna, VoiceStream is proposing to place six EMS RR90-17 and MHA's at the 180 ft elevation along with twelve 1 5/8" coax. It is obvious that the proposed antenna load is less than the original design antenna load. Therefore, if Sabre tower correctly designed the tower in 1999, then it is adequate to safely support the proposed antenna loading.

If you have any questions or require additional information, please call.

Sincerely,

PAULI-FORD AND COMPANY

Paul S. Patterson Engineering Technician

E-mail: ppatterson@pjfweb.com

NO. 17861 CENSES



# Exhibit D

# Power Density Calculations Birch Mountain Road Glastonbury, CT



#### VOICESTREAM WIRELESS CORPORATION

100 Filley St, Bloomfield, CT 06002-1853

Phone: 860-692-7131 Fax: (860) 692-7159

#### **Technical Memo**

To: Brendan Sharkey From: Haider Syed cc: Mike Fulton

Subject: Power Density Report for CT-11-189D

Date: 13-Sep-00

#### 1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the Voicestream Wireless Corporation PCS antenna installation on a Existing Lattice Tower at 115 Birch Mountain Rd , Glastonbury, CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from several locations surrounding the transmitting location.

#### 2. Discussion:

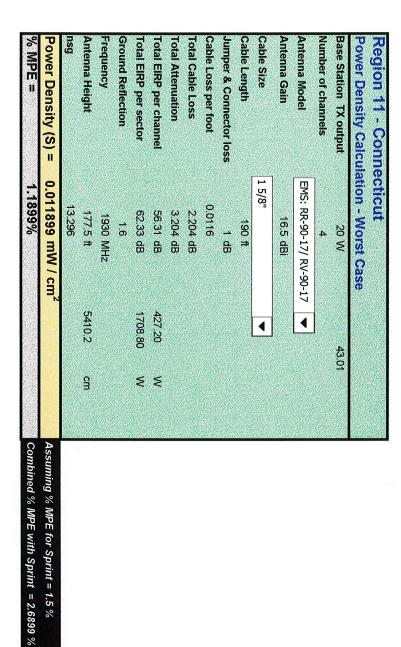
The following assumptions were used in the calculations:

- 1) The emissions from Voicestream Wireless transmitters are in the 1930-1950 MHz frequency band.
- 2) The antenna cluster consists of three sectors, with 4 antennas per sector. The model number for beta sector is EMS RR901702DP and the for the gamma sector is EMS FR651704DP.
- 3) The antenna height is 177.5 ft center line.
- 4) The maximum transmit power from each sector is 1708.8 W EiRP assuming four channel per sector.
- 5) All the antennas are simultaneously transmitting and receiving, 24 hours a day.
- 6) 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.
- 7) The average ground level of the studied area does not significantly change 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 worse case assumptions, the power density calculations from the VoiceStream Wireless Corporation, PCS antenna installation are on the order of 1,000 to 10,000 times less then the FCC/ANSI/IEEE C95.1-1991 standard of 1000 microwatts per square centimeter (uw/cm2). Details are shown in the attachment. Furthermore, the proposed antenna location for VoiceStream Wireless Corporation on the Existing Lattice Tower at 115 Birch Mountain Rd , Glastonbury, CT will not interfere with existing public safety telecommunications, AM band, and FM band radio broadcast, TV, Police Communication, HAM radio communications and other signals in the area.



Equation Used :

$$S = \frac{(1000)(grf)^2(Powe)*10^{(nsg10)}}{4\pi (R)^2}$$

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

<sup>\*</sup> See attached spread sheet for numbers.



#### **Fax Cover Sheet**

VOICESTREAM WIRELESS 100 Filley Street Bloomfield, CT 06002 Fax (860)692-7159

To:	Company:	Phone #'s:	Fax #'s:
Tool Rubid			827-2950
•			

Date: 9/8/00 Pages: 4 (including cover sheet)

SEP 0 8 2000

CONNECTICUT
SITING COUNCIL

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DRAKT

TS- VoiceStream -054-000908

100 Filley Street, Bloomfield, CT 06002

(860) 692-7154 phone (860) 692-7159 fax

8 September, 2000

Mortimer A. Gelston, Chairman Connecticut Siting Council 10 Franklin Square New Britain, CT 06051

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### 115 Birch Mountain Road, Glastonbury Page 2

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the Sprint and VoiceStream antennas, would be XXXXX% of the ANSI standard. These calculations are attached as Exhibit D.

115 Birch Mountain Road, Glastonbury Page 3

4. The proposed installations would not require any water or sanitary facilities, or generate air emissions or discharges to water or sanitary facilities, or generate air emissions or discharges to water bodies. After construction is complete (approximately two weeks), the proposed installations would not generate any traffic other than for periodic maintenance visits.

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#### Conclusion

For the reasons discussed above, the proposed shared use of the existing tower facility on Birch Mountain Road in Glastonbury, Connecticut satisfies the criteria stated in C.G.S. §16-50aa, and advances the General Assembly's and the Siting Council's goal of preventing the proliferation of towers in Connecticut. VoiceStream therefore request that the Siting Council issue an order approving the proposed shared use.

Thank you for your consideration of this matter.

Sincerely,

J. Brendan Sharkey, Esq. for VoiceStream Wireless