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GOODWIN SQUARE
225 ASYLUM STREET
HARTFORD, CT 06103

(860) 293-3500

FACSIMILE: (860) 293-3555

WRITER'S DIRECT DIAL:
(860) 293-3744

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CONNECTICUT
SITING COUNCIL

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

Re: Amtrak/Omnipoint Old Saybrook Tower Facility
Petition No. 551

Dear Chairman Gelston and Members of the Council:

Enclosed please find a revised power density report, submitted on behalf of Omnipoint for the above referenced facility, which includes calculations for Amtrak's proposed antennas and considers the proximity of the nearby bridge.

This report is being submitted by Omnipoint to replace the power density report submitted with its original petition, filed on March 18, 2002. I have included twenty additional copies for other members of the Council and Staff. Please free to contact me should you have any questions.

Sincerely,


Stephen J. Humes



VOICESTREAM WIRELESS CORPORATION

100 Filley St, Bloomfield, CT 06002-1853

Phone: 860-692-7131

Fax: 860-692-7159

Technical Memo

To: **Steve Humes**
From: **Haider Syed**
cc: **Mike Fulton**
Subject: Power Density Report for CT-11-327A
Date: 15-Apr-02

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 Monopole at Route 1 @ River St / Ford Drive, Old Saybrook, 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 2 antennas per sector. The model number for each antenna is EMS-RR90-17-02DP.
- 3) The antenna height is 70 Feet center line.
- 4) The maximum transmit power from each sector is 1274.94 W Effective Isotropic Radiated Power (EiRP) assuming 4 channels 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 PCS antenna installation are on the order of 1,000 to 10,000 times less than 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 Monopole at Route 1 @ River St / Ford Drive, Old Saybrook, 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.

The Power Density for Voicestream antenna installation is 5.7084% of the MPE.

The Amtrak power Densities are 17.45% @ 40 ft, 5.7 % @ 70 ft, 2.8% @ 100 ft and 1.88% & 0.75 % @ 150 ft.

The combined Power Density is 34.29 % of the MPE. See attachment for calculations and Amtrak info.

Power Density (Worst Case)

Region 11 - Connecticut Power Density Calculation Site: CT-11-327A Site Address: Route 1 @ River St / Ford Drive Town: Old Saybrook Pole Height: 150FT Tower Style: Monopole	
Base Station TX output	20 W
Number of channels	4
Antenna Model	EMS-RR90-17-02DP
Cable Size	1-5/8 "
Cable Length	160.0 ft
Antenna Height	70.0 ft
Ground Reflection	1.6
Frequency	1930.00 MHz
Jumper & Connector loss	2.62 dB
Antenna Gain	16.5 dBi
Cable Loss per foot	0.0116 dB (loss per ft)
Total Cable Loss	1.856 dB
Total Attenuation	4.476 dB
Total EIRP per channel (In Watts)	55.03 dB
Total EIRP per sector (In Watts)	318.74 W
nsg	61.05 dB
	1274.94 W
	12.024
Power Density (S) =	0.057084 mW / cm ²
% MPE =	5.7084%
Equation Used : $S = \frac{(1000)(grf)^2(Power)^{10} \text{ (nsg/10)}}{4\pi(R)^2}$	
Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997	

no loss (due to off angle)

COF

OLD SAYBROOK TOWER - AMTRAK ANTENNAS AND EMISSIONS

<u>HEIGHT</u>	<u>QTY</u>	<u>MFR</u>	<u>MODEL</u>	<u>GAIN</u>	<u>PWR(dbm)</u>	<u>FREQ RANGE (MHZ)</u>	<u>CALCULATED POWER DENSITY IN mw/cm²</u>
40	1	DB Products	DB-616	5.3	75	161	0.0349
70	1	DB Products	DB-617	5.3	75	161	0.0114
100	1	DB Products	DB-618	5.3	75	161	0.0056
150	2	DB Products	DB-874G45-XY	13	80	935	0.0117
150	1	DB Products	ASP-880	2	75	161	0.0015

All antennas are assumed for this calculation to be radiating 100% of the time.
Ground reflection is included in the calculation.