



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

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VIA ELECTRONIC MAIL

April 28, 2023

Victoria Masse
Northeast Site Solutions
420 Main St Unit 1 Box 2
Sturbridge, MA 01566
victoria@norheastsitesolutions.com

RE: TS-DISH-078-230403 – Dish Wireless, LLC request for an order to approve tower sharing at an existing telecommunications facility located at 82 North Eagleville Road, Mansfield, Connecticut.

Dear Victoria Masse:

The Connecticut Siting Council (Council) is in receipt of your correspondence of April 28, 2023 submitted in response to the Council's April 24, 2023 notification of an incomplete request for tower sharing with regard to the above-referenced matter.

The submission renders the request for tower sharing complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/ANM/laf

From: Victoria Masse <victoria@northeastsitesolutions.com>
Sent: Friday, April 28, 2023 8:34 AM
To: Fontaine, Lisa <Lisa.Fontaine@ct.gov>; CSC-DL Siting Council <Siting.Council@ct.gov>
Cc: Chuck Regulbuto <chuck@northeastsitesolutions.com>; Jason Berry <jberry@northeastsitesolutions.com>
Subject: Re: Council Incomplete Letter TS-DISH-078-230403 –(North Eagleville Road)- Mansfield

Good Morning Council,

Please see attached updated Emissions Analysis Report for this Tower Share.

Thank you

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL
TO NON-IONIZING EMISSIONS

Dish Existing Facility

Site ID: BOBDL00003B

BOBDL00003B
82 North Eagleville Road
Mansfield, Connecticut 06268

April 27, 2023

EBI Project Number: 6222005172

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	1.36%

April 27, 2023

Dish

Emissions Analysis for Site: BOBDL00003B - BOBDL00003B

EBI Consulting was directed to analyze the proposed Dish facility located at **82 North Eagleville Road in Mansfield, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless antenna facility located at 82 North Eagleville Road in Mansfield, Connecticut using the equipment information listed below. Modeling of the antennas and associated equipment was completed using RoofMaster™ software, which is a widely-used predictive modeling program that has been developed to predict RF power density values for rooftop and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. Using the computational methods set forth in Federal Communications (FCC) Office of Engineering & Technology (OET) Bulletin 65, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields” (OET-65), RoofMaster™ calculates predicted power density in a scalable grid based on the contributions of all RF sources characterized in the study scenario. At each grid location, the cumulative power density is expressed as a percentage of the FCC limits. Manufacturer antenna pattern data is utilized in these calculations. RoofMaster™ models consist of the Far Field model as specified in OET-65 and an implementation of the OET-65 Cylindrical Model (Sula9). The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

Since Dish is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer’s supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, telecommunications equipment was modeled using the following assumptions:

- 1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation 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.
- 5) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 6) The antennas used in this modeling are the JMA MX08FRO665-21 08DT 600 for the 600 MHz / 600 MHz / 1900 MHz channel(s) in Sector A, the JMA MX08FRO665-21 08DT 600 for the 600 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the JMA MX08FRO665-21 08DT 600 for the 600 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antenna mounting height centerline of the proposed antennas is 180 feet above ground level (AGL).
- 8) Emissions values for additional carriers were calculated in Far Field utilizing the antenna models provided in the structural analysis.



EBI Consulting

environmental | engineering | due diligence

- 9) All calculations were done with respect to uncontrolled / general population threshold limits.

Dish Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	I	Antenna #:	I	Antenna #:	I
Make / Model:	JMA MX08FRO665-2I 08DT 600	Make / Model:	JMA MX08FRO665-2I 08DT 600	Make / Model:	JMA MX08FRO665-2I 08DT 600
Frequency Bands:	600 MHz / 600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2100 MHz
Gain:	11.25 dBd / 15.95 dBd / 16.75 dBd	Gain:	11.25 dBd / 15.95 dBd / 16.75 dBd	Gain:	11.25 dBd / 15.95 dBd / 16.75 dBd
Height (AGL):	180 feet	Height (AGL):	180 feet	Height (AGL):	180 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440.00 Watts	Total TX Power (W):	440.00 Watts	Total TX Power (W):	440.00 Watts
ERP (W):	13,785.38	ERP (W):	13,785.38	ERP (W):	13,785.38
Antenna AI MPE %:	1.89%	Antenna BI MPE %:	1.89%	Antenna CI MPE %:	1.89%

Site Composite MPE %	
Carrier	MPE %
Dish (Combined Sectors):	0.01%
Sprint	0.0022%
T-Mobile	0.27%
Various Other Carrier Omni & Whip Antennas	1.08%
Site Total MPE % :	1.36%

Dish MPE % Per Sector	
Dish Sector A Total:	0.01%
Dish Sector B Total:	0.01%
Dish Sector C Total:	0.01%
Dish Total MPE % :	0.01%

Dish Maximum MPE Power Values (Sector A)							
Dish Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Dish 600 MHz n71	4	356.5506682	180	1.693554944	600 MHz n71	400.0	0.42%
Dish 1900 MHz n70	4	1403.007496	180	6.664046634	1900 MHz n70	1000.0	0.67%
Dish 2100 MHz n66	4	1686.786014	180	8.011946259	2100 MHz n66	1000.0	0.80%
						Dish Total:	0.01%

- NOTE: Total Dish MPE values reflect all Dish antennas as reported by RoofMaster™ combined modeling.
- NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the Dish facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

Dish Sector	Power Density Value (%)
Sector A:	0.01%
Sector B:	0.01%
Sector C:	0.01%
Dish Maximum MPE % (Sector A):	0.01%
Dish Combined Sectors MPE %:	0.01%
Site Total:	1.36%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **1.36%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions or documents available on the Connecticut Siting Council website.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.