

brownrudnick

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January 27, 2023

VIA E-MAIL & 1st CLASS MAIL

Attorney Melanie Bachman
Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: SUBPETITION NO. 1133-CING-20221107 – New Cingular Wireless PCS, LLC d/b/a AT&T eligible facility request for modifications to an existing telecommunications facility located at 160 Wampus Lane, Milford, Connecticut – Transmission of Emissions Report and Request for Additional Extension of Time

Dear Attorney Bachman:

In response to your letter dated November 17, 2022 and the extension granted in your letter dated December 7, 2022, on behalf of New Cingular Wireless PCS, LLC d/b/a AT&T enclosed please find the revised Maximum Permissible Exposure report as requested.

We hereby request an additional extension of time to March 31, 2023 in order to complete and submit the revised structural analysis and report.

Thank you.

Sincerely,

/s/ Thomas J. Regan
Thomas J. Regan

cc: via 1st Class Mail:

Mayor Benjamin G. Blake
City of Milford
110 River Street
Milford, CT 06460

David B. Sulkis, City Planner
City of Milford
Parsons Government Center
70 West River Street
Milford, CT 06460

Karen Fortunati, City Clerk
City of Milford
Parsons Government Center
70 West River Street
Milford, CT 06460

64958744 v1-WorkSiteUS-024519/1671



Radio Frequency Exposure Theoretical Study

Prepared For:

AT&T Mobility



Site Name: Milford Wampus Lane
FA#: 12712096
Site ID: CT1231
Address: 160 Wampus Lane, Milford, CT 06460

Prepared by: **SAI Group**
12 Industrial Way
Salem, NH 03079
(603) 421-0470

Date of Report: January 11, 2023

Statement of Compliance

AT&T's proposed antenna installation along with other existing antennas is calculated to be within 0.59% of FCC Standard for General Public/Uncontrolled Maximum Permissible Exposure (MPE).



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1 General Summary

SAI Group was contracted by AT&T Mobility to conduct a Radio Frequency (RF) Analysis for a wireless facility located at 160 Wampus Lane, Milford, CT to determine whether the radio facility is in compliance with Federal Communications Commission (FCC) regulations and standards regarding RF exposure.

RF exposure is calculated in accordance with FCC's suggested prediction methods.

2 Site Compliance Summary

Compliance Summary (General Public Limit)	
Site Compliance	Yes
Maximum Calculated %MPE at 0-6' Ground Level (Cumulative)	0.59% at about 971ft North-West from Site.

3 RF Design Specifications

Table below shows the technical data used for the calculation of cumulative %MPE results.

Ant ID	Operator	Antenna Make	Antenna Model	Type	TX Freq (MHz)	Az (Deg)	Ant Gain (dBd)	Total ERP (Watts)	Z Rad Center (ft)
1	AT&T	CCI	TPA65R-BU8DA	Panel	700	110	13.05	3229	136.00
1	AT&T	CCI	TPA65R-BU8DA	Panel	2100	110	15.65	5877	136.00
1	AT&T	CCI	TPA65R-BU8DA	Panel	2300	110	14.45	2786	136.00
2	AT&T	ERICSSON	AIR6419	Panel	3500	110	23.45	23990	136.00
3	AT&T	ERICSSON	AIR6449	Panel	3700	110	23.5	24268	136.00
4	AT&T	CCI	DMP65R-BU8DA	Panel	700	110	12.25	1343	136.00
4	AT&T	CCI	DMP65R-BU8DA	Panel	850	110	12.55	1000	136.00
4	AT&T	CCI	DMP65R-BU8DA	Panel	1900	110	14.55	2281	136.00
4	AT&T	CCI	DMP65R-BU8DA	Panel	1900	110	14.55	2281	136.00
5	AT&T	CCI	TPA65R-BU8DA	Panel	700	220	13.05	3229	136.00
5	AT&T	CCI	TPA65R-BU8DA	Panel	2100	220	15.65	5877	136.00
5	AT&T	CCI	TPA65R-BU8DA	Panel	2300	220	14.45	2786	136.00
6	AT&T	ERICSSON	AIR6419	Panel	3500	220	23.45	23990	136.00
7	AT&T	ERICSSON	AIR6449	Panel	3700	220	23.5	24268	136.00
8	AT&T	CCI	DMP65R-BU8DA	Panel	700	220	12.25	1343	136.00
8	AT&T	CCI	DMP65R-BU8DA	Panel	850	220	12.55	1000	136.00
8	AT&T	CCI	DMP65R-BU8DA	Panel	1900	220	14.55	2281	136.00
8	AT&T	CCI	DMP65R-BU8DA	Panel	1900	220	14.55	2281	136.00
9	AT&T	CCI	TPA45R-KU8A	Panel	700	310	12.95	3156	136.00
9	AT&T	CCI	TPA45R-KU8A	Panel	2100	310	15.05	5118	136.00
9	AT&T	CCI	TPA45R-KU8A	Panel	2300	310	15.25	3350	136.00
10	AT&T	ERICSSON	AIR6419	Panel	3500	310	23.45	23990	136.00
11	AT&T	ERICSSON	AIR6449	Panel	3700	310	23.5	24268	136.00
12	AT&T	CCI	TPA45R-KU8A	Panel	700	310	12.95	1578	136.00
12	AT&T	CCI	TPA45R-KU8A	Panel	850	310	13.45	1000	136.00
12	AT&T	CCI	TPA45R-KU8A	Panel	1900	310	14.75	2388	136.00
12	AT&T	CCI	TPA45R-KU8A	Panel	1900	310	14.75	2388	136.00
13	T-Mobile	ERICSSON	AIR 21	Panel	1900	40	15.72	2240	105.00
13	T-Mobile	ERICSSON	AIR 21	Panel	1900	40	15.72	4479	105.00
13	T-Mobile	ERICSSON	AIR 21	Panel	2100	40	15.45	2105	105.00
14	T-Mobile	ERICSSON	AIR6449	Panel	2500	40	22.35	13743	105.00
14	T-Mobile	ERICSSON	AIR6449	Panel	2500	40	22.35	13743	105.00
15	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	700	40	13.2	1671	105.00
15	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	600	40	13.14	824	105.00
15	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	600	40	13.14	824	105.00
15	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	1900	40	15.29	2705	105.00
16	T-Mobile	ERICSSON	AIR 32	Panel	2100	40	15.45	4209	105.00
16	T-Mobile	ERICSSON	AIR 32	Panel	1900	40	15.75	4510	105.00
17	T-Mobile	ERICSSON	AIR 21	Panel	1900	150	15.72	2240	105.00



17	T-Mobile	ERICSSON	AIR 21	Panel	1900	150	15.72	4479	105.00
17	T-Mobile	ERICSSON	AIR 21	Panel	2100	150	15.45	2105	105.00
18	T-Mobile	ERICSSON	AIR6449	Panel	2500	150	22.35	13743	105.00
18	T-Mobile	ERICSSON	AIR6449	Panel	2500	150	22.35	13743	105.00
19	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	700	150	13.2	1671	105.00
19	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	600	150	13.14	824	105.00
19	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	600	150	13.14	824	105.00
19	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	1900	150	15.29	2705	105.00
20	T-Mobile	ERICSSON	AIR 32	Panel	2100	150	15.45	4209	105.00
20	T-Mobile	ERICSSON	AIR 32	Panel	1900	150	15.75	4510	105.00
21	T-Mobile	ERICSSON	AIR 21	Panel	1900	250	15.72	2240	105.00
21	T-Mobile	ERICSSON	AIR 21	Panel	1900	250	15.72	4479	105.00
21	T-Mobile	ERICSSON	AIR 21	Panel	2100	250	15.45	2105	105.00
22	T-Mobile	ERICSSON	AIR6449	Panel	2500	250	22.35	13743	105.00
22	T-Mobile	ERICSSON	AIR6449	Panel	2500	250	22.35	13743	105.00
23	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	700	250	13.2	1671	105.00
23	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	600	250	13.14	824	105.00
23	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	600	250	13.14	824	105.00

NOTE: The Z value indicates the distance of radiation center of the antenna height above the ground site level unless otherwise indicated. Effective Radiated Power (ERP) is provided by the operator or calculated based on SAI Group experience. SAI Group has assumed transmission parameters for “Unknown” RF emitters based on either similar installations found at other radio communications sites or from the latest data available for the site. “Generic” antenna models have been used where existing antenna part numbers or radiation patterns are not available. The frequencies presented in this table may have been assumed in order to represent the approximate band of operation and to support a worst-case calculation of power density

4 Conclusion

I certify to the best of my knowledge that the statements contained in this report are true and accurate. The theoretical computations contained are based on FCC recommended methods, with industry standard assumptions & formulas, and complies with FCC mandated Maximum Permissible RF Exposure requirements.

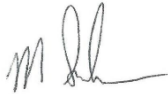
A comprehensive field survey was not performed prior to the generation of this report. If questions arise regarding the calculations herein, SAI Group recommends that a comprehensive field survey be performed to resolve any disputes.



Sanket Joshi
RF Engineer
SAI Group

January 11, 2023

Date



Matthew Smelcer
RF Engineering Manager

January 11, 2023

Date

Appendix A – FCC Rules and Regulations

In 1996, the Federal Communication Commission (FCC) adopted procedures and guidelines for evaluating of the effects of RF exposure. This guideline from the FCC Office of Engineering and Technology is Bulletin 65 (“OET Bulletin 65”), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996 the FCC periodically reviews these rules and regulations as per their congressional mandate.

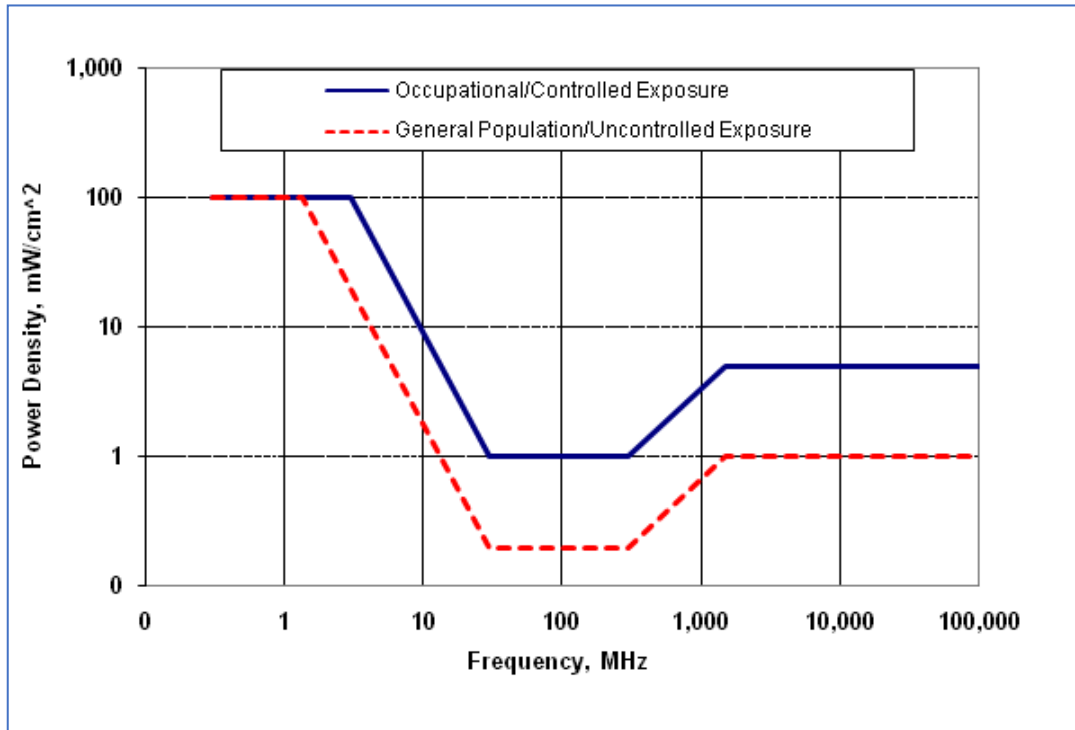
Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following Tables and diagram:

Table 1. MPE Limits for General Population/ Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time for E ² , H ² , or S (Minutes)
0.3 – 1.34	614	1.63	(100)*	30
1.34 -30	824/f	2.19/f	(180/f ²)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	--	--	f/1500	30
1500– 100,000	--	--	1.0	30
f = frequency in MHz		* = Plane wave equivalent power density		

General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can’t exercise control over their exposure. A site is evaluated with General Public limits if there is no access controls or no RF warning signage present.

Table 2. MPE Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time for E ² , H ² , or S (Minutes)
0.3 – 3.0	614	1.63	(100)*	6
3.0 – 30	1842/f	4.89/f	(900/f ²)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	--	--	f/300	6
1500– 100,000	--	--	5.0	6
f = frequency in MHz		* = Plane wave equivalent power density		

Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where such occupational/controlled limits apply provided he or she is made aware of the potential for exposure. Typical criteria to remediate controlled environment are restricted access to the areas where antennas are located along with appropriate RF warning signage. A site with Controlled environment is evaluated with Occupational limits.



Maximum Permissible Exposures. Occupational/Controlled and General Population/Uncontrolled MPE's are functions of frequency.

Appendix B – Calculations Methodology and Assumptions

SAI Group has performed theoretical analysis using Waterford Consultants' RoofMaster™ 2020 Version 30.5.26.2022 which uses a cylindrical model for very conservative power density calculations within the near field of the antenna where the antenna pattern has not truly formed yet. The Cylindrical Model is used to determine the spatially averaged power density in the near field directly in front of an antenna. In order to implement this model in all directions, the calculations utilize the antenna manufacturer horizontal pattern data. Additionally, the model also incorporates factors that reduce the power density by inverse square of horizontal and vertical distances beyond the near field region.

RoofMaster™ uses far field model to calculate the spatial peak power density. The RoofMaster™ implementation of this model incorporated manufacturer's horizontal and vertical pattern data to determine the power density in all directions.

The calculations are based on worst-case assumptions that, all antennas are always operating at full power.

The site has been modeled with these assumptions to show the maximum RF energy density. Areas modeled with exposure greater than 100% of the General Public MPE level may not actually occur, but are shown as a prediction that could be realized.

Appendix C – Informative References

The following references can be followed for further information about RF Health and Safety.

FCC Radio Frequency Safety

<http://www.fcc.gov/encyclopedia/radio-frequency-safety>

FCC OET Bulletin 56

https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf

FCC OET Bulletin 65

https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65.pdf

National Council on Radiation Protection and Measurements (NCRP)

<http://www.ncrponline.org>

American National Standards Institute (ANSI)

<http://www.ansi.org>

Environmental Protection Agency (EPA)

<https://www3.epa.gov/radtown/wireless-technology.html>

National Institutes of Health (NIH)

<http://www.niehs.nih.gov/health/topics/agents/emf/>

Occupational Safety and Health Agency (OSHA)

<http://www.osha.gov/SLTC/radiofrequencyradiation/>

International Commission on Non-Ionizing Radiation Protection (ICNIRP)

<http://www.icnirp.org/>