



**Lawrence Behr
Associates** INC
www.lbagroup.com

**EME AUDIT
REPORT**

SITE NAME:

853418 Rosemont

LOCATION:

370 Stevens Avenue
Portland, Maine

COMPANY:

U.S. Cellular

June 25, 2015



3400 Tupper Drive | Greenville, NC 27834
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GREENVILLE, NORTH CAROLINA



EME AUDIT REPORT

Site: 853418 Rosemont

*U.S. Cellular
370 Stevens Avenue
Portland, Maine*

INTRODUCTION

Lawrence Behr Associates, Inc. (LBA) has been retained by U.S. Cellular of Portland, Maine to audit compliance with Federal Communications Commission (FCC) guidelines for human exposure to radio frequency (RF) energy at this site. This audit provides a theoretical assessment of the maximum permissible exposure (MPE) limits for uncontrolled exposures around the U.S. Cellular antennas and includes photographs and annotated architectural drawings, where required. Our assessment included, where possible, an evaluation of non-U.S. Cellular transmitters that could contribute to the U.S. Cellular MPE limits in accessible areas.

Site mitigation options have been assessed and recommendations made where the MPE could be exceeded in accessible areas.

METHODOLOGY

Using information provided by U.S. Cellular, LBA developed a database of the antenna systems and operating parameters. We then evaluated these systems for electromagnetic environmental (EME) impact potential. This EME assessment was conducted in accordance with FCC guidelines as outlined in OET Bulletin-65¹ using an industry standard computer model².

LBA personnel conducted field verification of existing antenna locations and made site measurements of all existing RF contributions to the site on June 24th, 2015. Measurements were performed using a Narda 8718 radiation meter with an 8742D isotropic probe. This system is considered an “industry standard” for making EME measurements. Measurements were taken as a percent of MPE for the general population/uncontrolled standard.

The computer model was adjusted to reflect actual conditions at the site. An MPE limit of 1.0 milliwatt per square centimeter (mW/cm^2) was used for both the U.S. Cellular 1930MHz and 2130MHz facilities. MPE limits for nearby antennae used by other tenants for various

¹ Federal Communications Commission, Office of Engineering and Technology, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, OET Bulletin-65, Edition 97-01, August 1997.

² RoofView™ Version 4.15, (1-1-2011) Richard Tell Associates, Inc.

non-PCS services were used as prescribed in OET Bulletin-65. Areas requiring mitigation, if any, are documented.

The FCC guidelines define two separate tiers of exposure limits. As defined by the FCC, these limits are:

General population/uncontrolled exposure. For FCC purposes, applies to human exposure to RF fields when the general public is 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 public always fall under this category when exposure is not employment-related.

Occupational/controlled exposure. For FCC purposes, applies to human exposure to RF fields when 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.

ASSESSMENT OF SITE 853418 Rosemont

- This is an existing 70-foot tower on top of a 39-foot tall building at Deering High School. U.S. Cellular has existing antennas mounted on the tower.
- For this study, we considered the entire accessible area to be a general population/uncontrolled area as defined by the FCC.
- The exposure to non-ionizing radiation at ground level produced by the U.S. Cellular transmit antennae, as shown in Appendix 1.1, MPE Ground Level Analysis Map, will not exceed the FCC MPE general population/uncontrolled limit.
- The exposure to non-ionizing radiation at main roof top level produced by the U.S. Cellular transmit antennae, as shown in Appendix 1.2, MPE Main Roof Level Analysis Map, will not exceed the FCC MPE general population/uncontrolled limit.
- U.S. Cellular antenna facilities will not contribute non-ionizing radiation exceeding 5% MPE to any other carriers where their limits are exceeded.
- On site power density measurements were made June 24th, 2015, that demonstrate actual MPE levels taking into account all existing antennas. Measurements were taken at different locations as specified by U.S. Cellular. The locations are shown in Appendix 3.1, Measurement Locations Outside the Building and Appendix 3.2, Measurement Locations on the Roof. Measurement Locations Inside the Building are specified by room number and do not need a map.
- The resulting levels are shown in Appendix 4.1, Measurement Level Chart Inside the Building, Appendix 4.2, Measurement Levels Outside the Building, and Appendix 4.3, Measurement Levels On the Roof.

- Photographs are shown in Appendices 5.1 to 5.9, Photographs Inside Building, Appendices 6.1 to 6.15, Photographs Outside Building, and Appendices 7.1 to 7.26, Photographs on Roof.

CONCLUSION AND RECOMMENDATIONS

- This U.S. Cellular site is in compliance with the current FCC RF human exposure regulations.
- LBA recommends that any worker attempting to service this antenna facility have RF awareness training and wear a personal RF monitor.
- LBA recommends placement of RF signage in accordance with U.S. Cellular RF signage policy.
- Procedures described in OET Bulletin-65 should be followed during the performance of work on or near the antenna facilities.



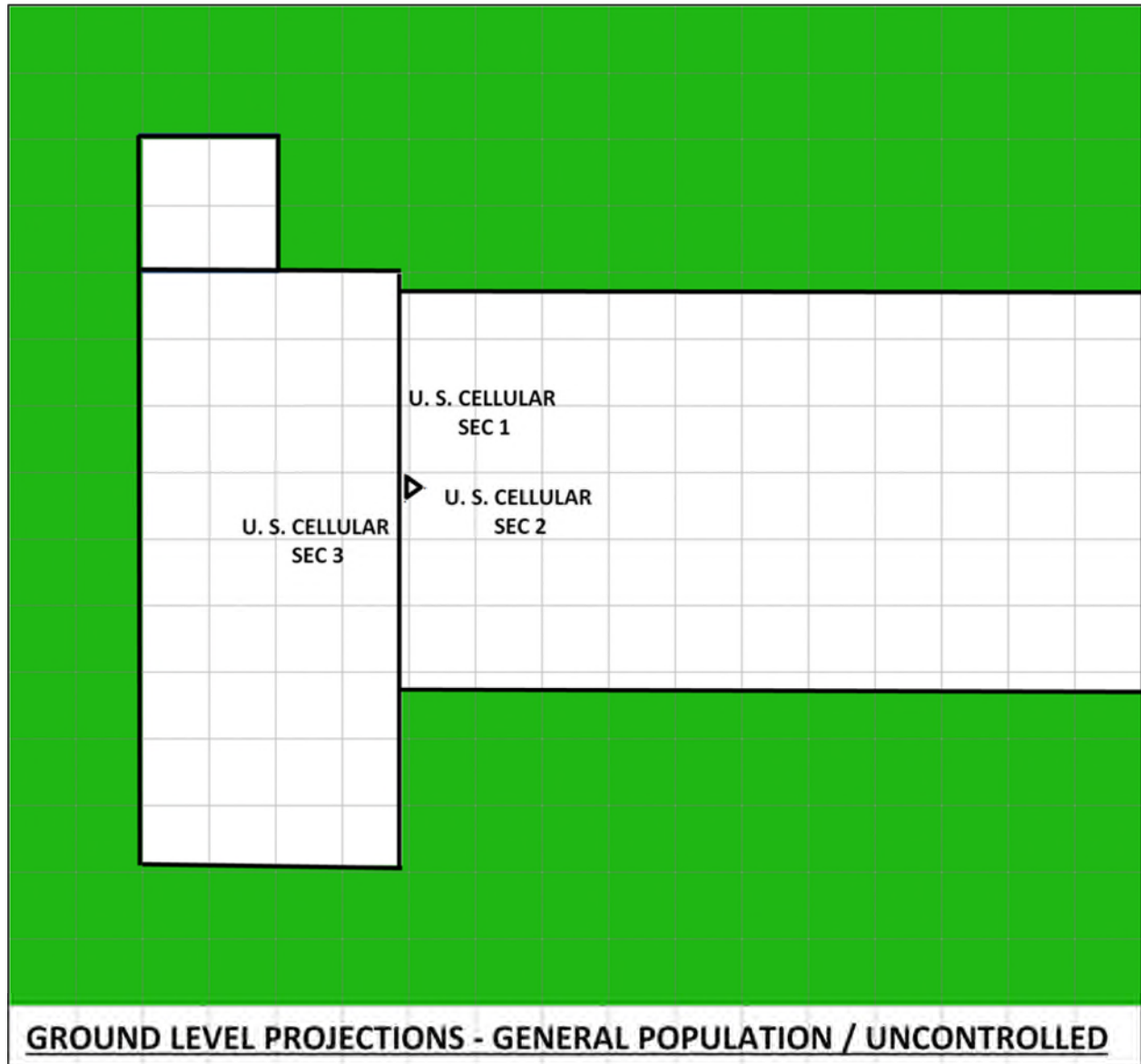
Michael W. Hayden
Director of Field Services

June 25, 2015

APPENDIX 1.1

MPE Analysis Map (Ground Level)

*U.S. Cellular
Portland, Maine*



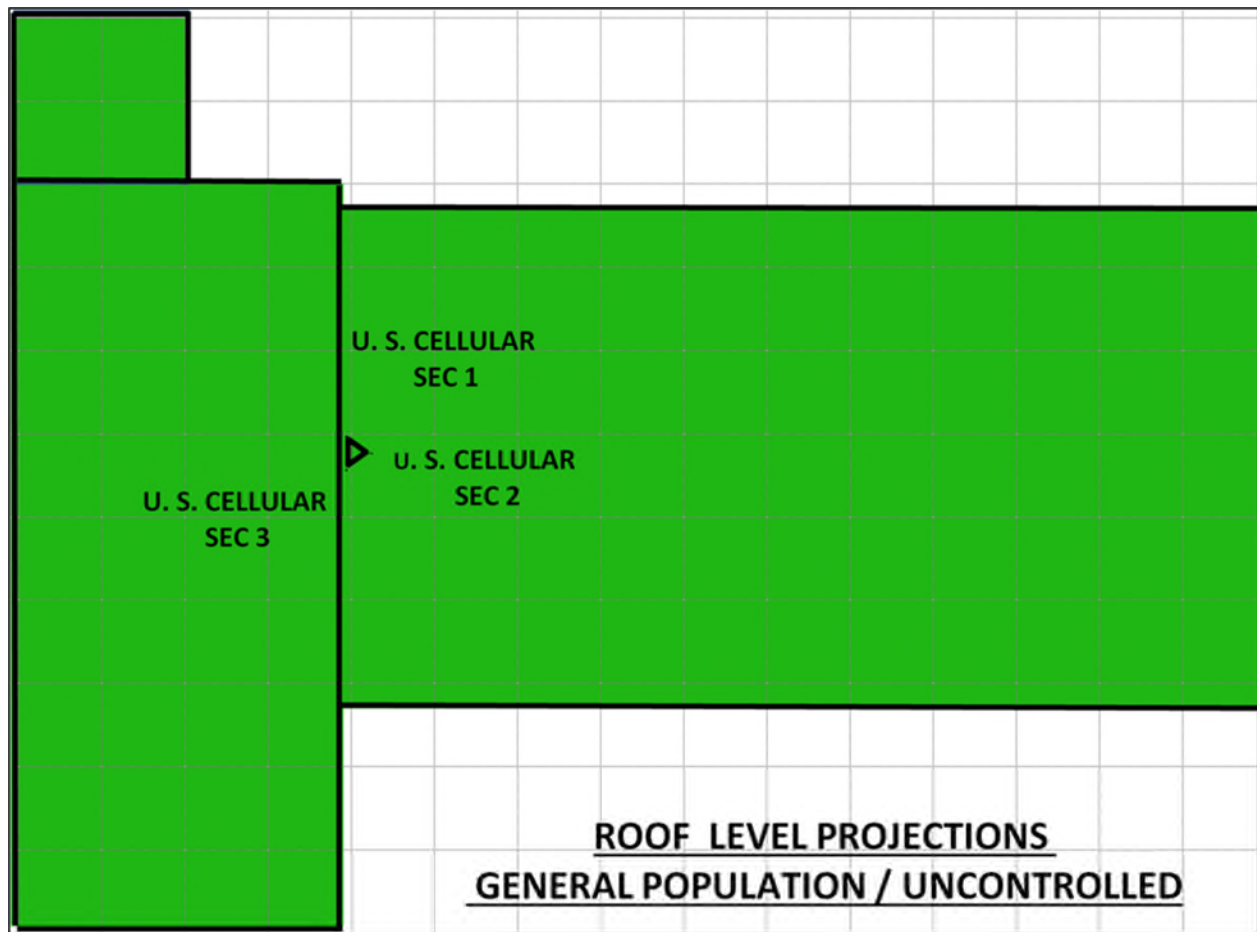
Based Upon FCC General Population/Uncontrolled MPE Limits

Green <= 5%, Blue <= 50%, Yellow <= 100%, Red above 100%

APPENDIX 1.2

MPE Analysis Map (Roof Level)

U.S. Cellular
Portland, Maine



Based Upon FCC General Population/Uncontrolled MPE Limits

Green <= 5%, Blue <= 50%, Yellow <= 100%, Red above 100%

APPENDIX 2.1

Parameters (Ground Level)

*U.S. Cellular
Portland, Maine*

Ant Num	ID	Name	(MHz) Freq	Trans Power	Trans Count	Calc Power	Mfg	Model	(ft) Z	Type	(ft) Aper	dBd Gain	BWdth Pt Dir
1	U. S. Cellular	Sec Alpha	1900.00000	30.0	2	60.0	EMS	RR65-18-00DPL2	104.7	PANEL	4.7	15.4	65;350
2	U. S. Cellular	Sec Beta	1900.00000	30.0	2	60.0	EMS	RR65-18-00DPL2	104.7	PANEL	4.7	15.4	65;120
3	U. S. Cellular	Sec Gama	1900.00000	30.0	2	60.0	EMS	RR65-18-00DPL2	104.7	PANEL	4.7	15.4	65;240

“BWdth PT Dir” is the horizontal bandwidth of the antenna and azimuth

Note: "Z" height is to the base of antenna

Site Operational Parameters



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APPENDIX 2.2

Parameters (Roof Level)

*U.S. Cellular
Portland, Maine*

Ant Num	ID	Name	(MHz) Freq	Trans Power	Trans Count	Calc Power	Mfg	Model	(ft) Z	(ft) Type	Aper	dBd Gain	BWdth Pt Dir
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“BWdth PT Dir” is the horizontal bandwidth of the antenna and azimuth

Note: "Z" height is to the base of antenna

Site Operational Parameters



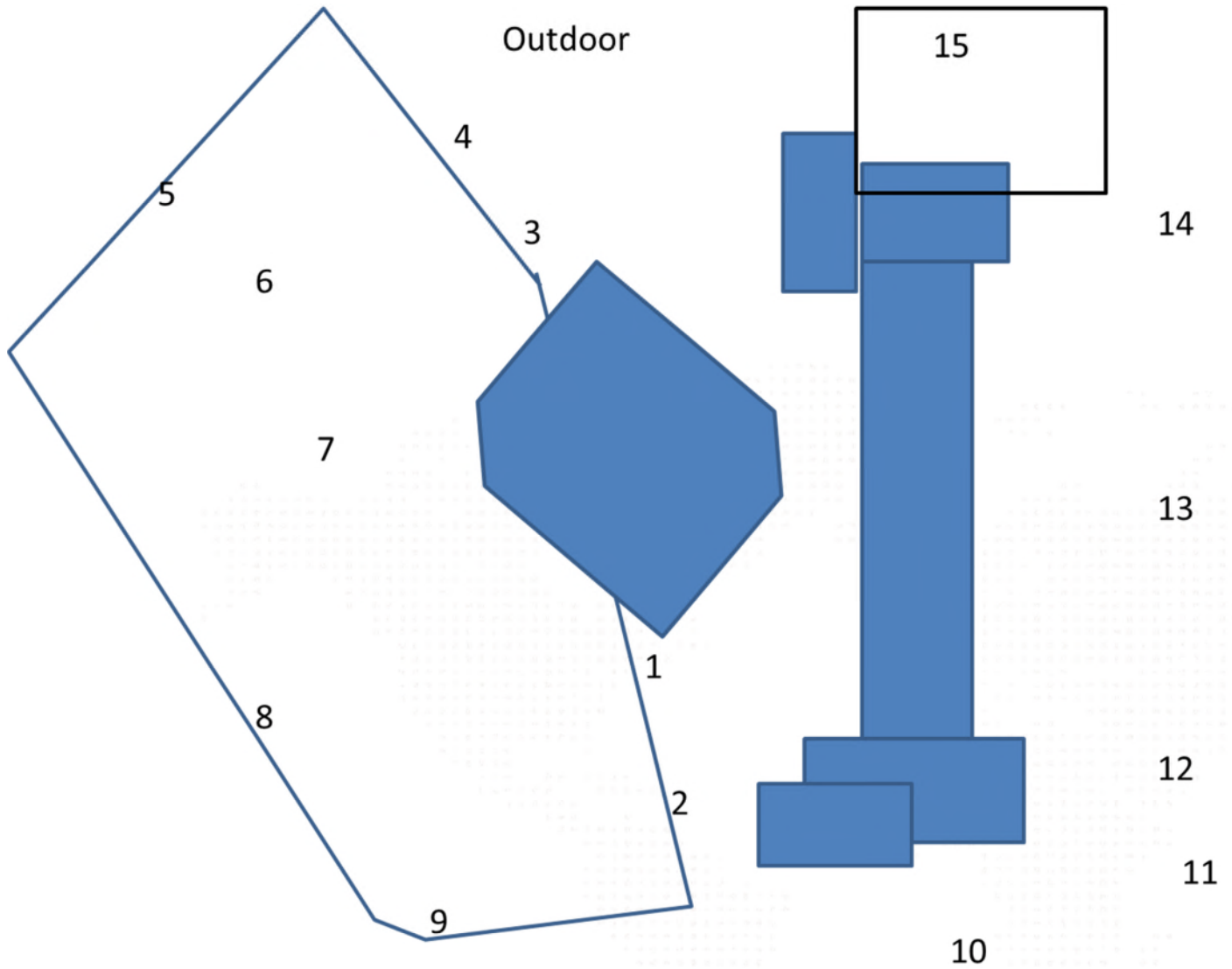
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APPENDIX 3.1

Measurement Locations Outside the Building

*U.S. Cellular
Portland, Maine*

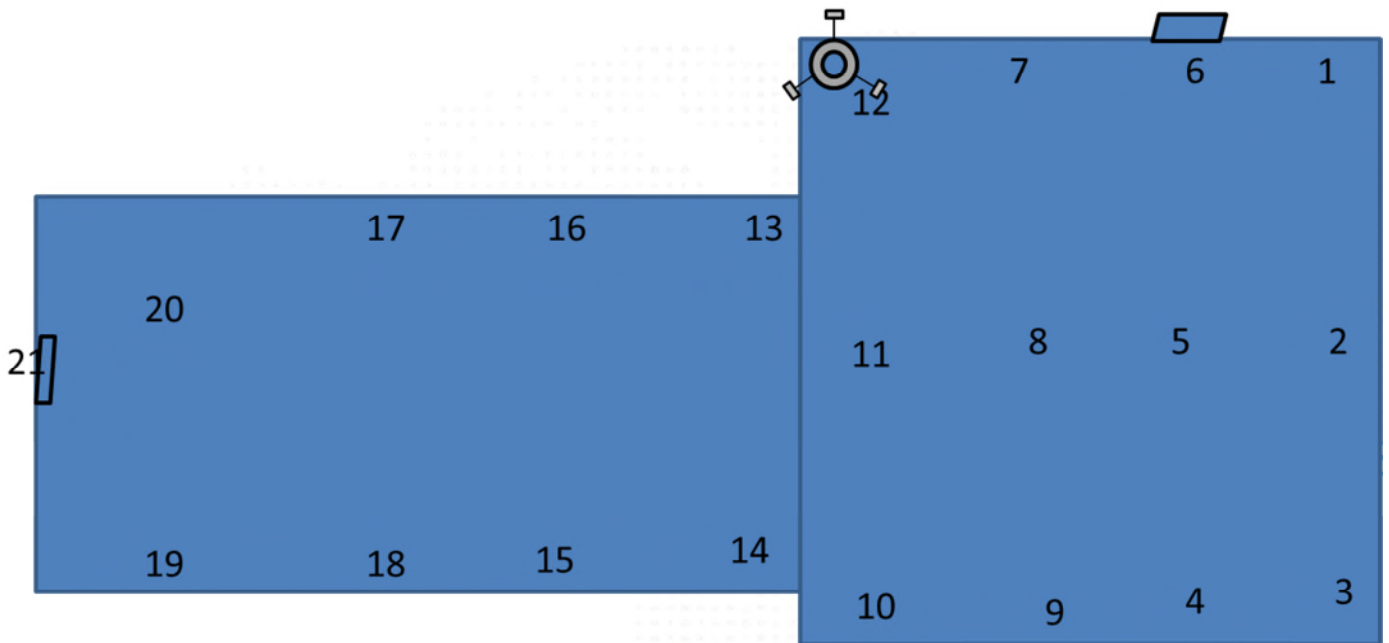


APPENDIX 3.2

Measurement Locations On the Roof

*U.S. Cellular
Portland, Maine*

ROOF



APPENDIX 4.1

Measurement Level Chart Inside the Building

*U.S. Cellular
Portland, Maine*

U. S. Cellular - Site Rosemont (Inside)		
Point Number	EXISTING LEVELS Readings taken 06-24-15	Point Location
PERCENTAGE OF MPE (General Population)		
1	0.03%	Room 305 point 1
2	1.07%	Room 305 point 2
3	1.81%	Room 306
4	1.92%	Teachers Workroom
5	1.38%	Room 308
6	10.00%	Walkway floor 3
7	4.55%	Room 312
8	10.40%	Walkway floor 2
9	10.10%	Cafataria



APPENDIX 4.2

Measurement Level Chart Outside the Building

*U.S. Cellular
Portland, Maine*

U. S. Cellular - Site Rosemont (Outside)	
Map Locations	EXISTING LEVELS Readings taken 06-24-15
PERCENTAGE OF MPE (General Population)	
1	0.70%
2	0.20%
3	4.30%
4	0.20%
5	0.10%
6	0.30%
7	0.30%
8	0.10%
9	0.20%
10	0.10%
11	0.30%
12	1.30%
13	1.10%
14	1.20%
15	0.90%



APPENDIX 4.3

Measurement Level Chart On the Roof

*U.S. Cellular
Portland, Maine*

U. S. Cellular - Site Rosemont (roof)	
Map Locations	EXISTING LEVELS Readings taken 06-24-15
PERCENTAGE OF MPE (General Population)	
1	11.30%
2	11.10%
3	11.10%
4	10.00%
5	11.30%
6	12.20%
7	13.30%
8	13.10%
9	13.20%
10	15.80%
11	16.60%
12	17.90%
13	15.20%
14	15.80%
15	15.20%
16	17.30%
17	15.50%
18	15.20%
19	15.80%
20	17.30%
21	16.10%

APPENDIX 5.1

Photographs Inside Building

*U.S. Cellular
Portland, Maine*



*Point 1
June 24, 2015*



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APPENDIX 5.2

Photographs Inside Building

*U.S. Cellular
Portland, Maine*



*Point 2
June 24, 2015*

APPENDIX 5.3

Photographs Inside Building

*U.S. Cellular
Portland, Maine*



*Point 3
June 24, 2015*

APPENDIX 5.4

Photographs Inside Building

*U.S. Cellular
Portland, Maine*



*Point 4
June 24, 2015*

APPENDIX 5.5

Photographs Inside Building

*U.S. Cellular
Portland, Maine*



*Point 5
June 24, 2015*

APPENDIX 5.6

Photographs Inside Building

*U.S. Cellular
Portland, Maine*



*Point 6
June 24, 2015*

APPENDIX 5.7

Photographs Inside Building

*U.S. Cellular
Portland, Maine*



*Point 7
June 24, 2015*

APPENDIX 5.8

Photographs Inside Building

U.S. Cellular
Portland, Maine



Point 8
June 24, 2015

APPENDIX 5.9

Photographs Inside Building

*U.S. Cellular
Portland, Maine*



*Point 9
June 24, 2015*



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APPENDIX 6.1

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 1
June 24, 2015*

APPENDIX 6.2

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 2
June 24, 2015*

APPENDIX 6.3

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 3
June 24, 2015*

APPENDIX 6.4

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 4
June 24, 2015*

APPENDIX 6.5

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 5
June 24, 2015*



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APPENDIX 6.6

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 6
June 24, 2015*



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APPENDIX 6.7

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 7
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APPENDIX 6.8

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 8
June 24, 2015*

APPENDIX 6.9

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 9
June 24, 2015*

APPENDIX 6.10

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 10
June 24, 2015*



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APPENDIX 6.11

Photographs Outside Building

U.S. Cellular
Portland, Maine



Point 11
June 24, 2015

APPENDIX 6.12

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 12
June 24, 2015*



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APPENDIX 6.13

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 13
June 24, 2015*

APPENDIX 6.14

Photographs Outside Building

*U.S. Cellular
Portland, Maine*



*Point 14
June 24, 2015*



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APPENDIX 6.15
Photographs Outside Building

U.S. Cellular
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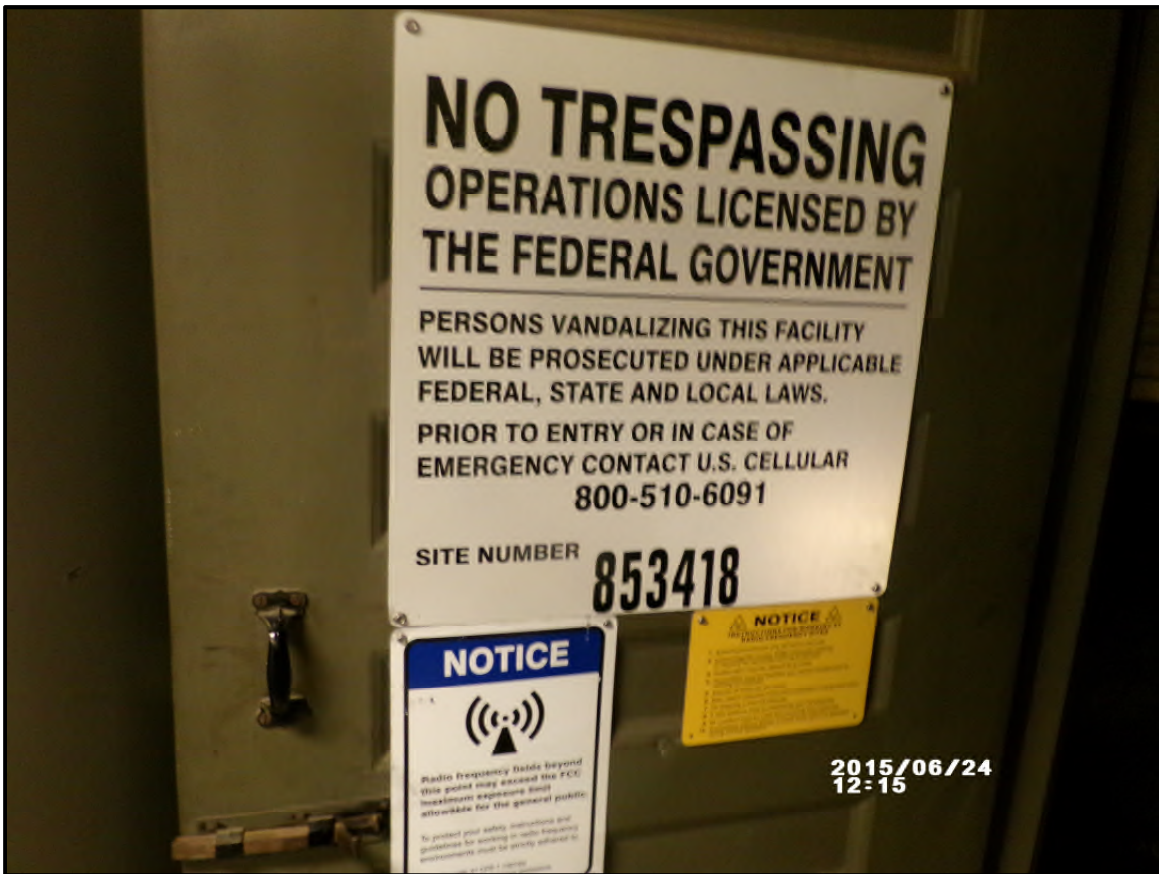


Point 15
June 24, 2015

APPENDIX 7.1

Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Equipment Room
June 24, 2015*

APPENDIX 7.2
Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Door From Outside
June 24, 2015*

APPENDIX 7.3

Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Roof Access
June 24, 2015*

APPENDIX 7.4

Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Tower
June 24, 2015*

APPENDIX 7.5

Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Signage
June 24, 2015*



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APPENDIX 7.6
Photographs On Roof

U.S. Cellular
Portland, Maine



Point 1
June 24, 2015

APPENDIX 7.7

Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Point 2
June 24, 2015*



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APPENDIX 7.8

Photographs On Roof

*U.S. Cellular
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*Point 3
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APPENDIX 7.9
Photographs On Roof

U.S. Cellular
Portland, Maine



Point 4
June 24, 2015

APPENDIX 7.10
Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Point 5
June 24, 2015*



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APPENDIX 7.11
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*Point 6
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APPENDIX 7.12
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*Point 7
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APPENDIX 7.13
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*Point 8
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APPENDIX 7.14
Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Point 9
June 24, 2015*

APPENDIX 7.15
Photographs On Roof

U.S. Cellular
Portland, Maine



Point 10
June 24, 2015

APPENDIX 7.16
Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Point 11
June 24, 2015*

APPENDIX 7.17
Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Point 12
June 24, 2015*

APPENDIX 7.18

Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Point 13
June 24, 2015*

APPENDIX 7.10
Photographs On Roof

U.S. Cellular
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Point 14
June 24, 2015



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APPENDIX 7.20
Photographs On Roof

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Portland, Maine*



*Point 15
June 24, 2015*

APPENDIX 7.21
Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Point 16
June 24, 2015*

APPENDIX 7.22
Photographs On Roof

U.S. Cellular
Portland, Maine



Point 17
June 24, 2015

APPENDIX 7.23
Photographs On Roof

U.S. Cellular
Portland, Maine



Point 18
June 24, 2015



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APPENDIX 7.24
Photographs On Roof

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Point 19
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APPENDIX 7.25
Photographs On Roof

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*Point 20
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APPENDIX 7.26

Photographs On Roof

*U.S. Cellular
Portland, Maine*



*Point 21
June 24, 2015*