AT&T Radio Frequency Safety Survey Report Prediction (RFSSRP)

Site Name: Thomas
FA#: 10150468
USID: 269129
Site ID: CSL01304
Address: 1070 Ladera Lane
Paso Robles, California 93446
County: San Luis Obispo
Latitude: 35.599364
Longitude: -120.661347
EBI Project Number: 6219005348

M-RFSC Name: Essie Polard
Site Structure Type: Monotree
PACE#: MRLOS059694/ MRLOS059568/ MRLOS059909/ MRLOS059519/ MRLOS059952/ MRLOS052408
Prepared For: AT&T Mobility, LLC
12900 Park Plaza Drive, 3rd Floor
Cerritos, CA 90703

Report Information:

Report Writer: Erik Johnson
Report Date: October 22, 2019

CDs: 10150468.AE101.MRLOS052408.190826.CSL01304-100 ZDS_8.26.19
RFDS: LOS-ANGELES_L.A._CSL01304_2020-New-Site_LTE_ja628x_3551A0NHCZ_10150468_269129_09-10-2019_Final-Approved_v1.00

Compliance Statement:

AT&T Mobility Compliance Statement: Based on the information collected, AT&T Mobility will be Compliant with FCC Rules and Regulations at the nearest walking surface if recommendations in the Compliance Summary are implemented.

EBI Consulting
environmental | engineering | due diligence

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1.0 EXECUTIVE SUMMARY

EnviroBusiness Inc. (dba EBI Consulting) has been contracted by AT&T Mobility, LLC to conduct radio frequency electromagnetic (RF-EME) modeling for AT&T Site CSL01304 located at 1070 Ladera Lane in Paso Robles, California to determine RF-EME exposure levels from proposed AT&T wireless communications equipment at this site. As described in greater detail in Appendix A of this report, the Federal Communications Commission (FCC) has developed Maximum Permissible Exposure (MPE) Limits for general public exposures and occupational exposures. This report summarizes the results of RF-EME modeling in relation to relevant FCC RF-EME compliance standards for limiting human exposure to RF-EME fields.

This document addresses the compliance of AT&T's transmitting facilities independently and in relation to all collocated facilities at the site.

1.1 SITE SUMMARY

Recommended Mitigation at the Site:

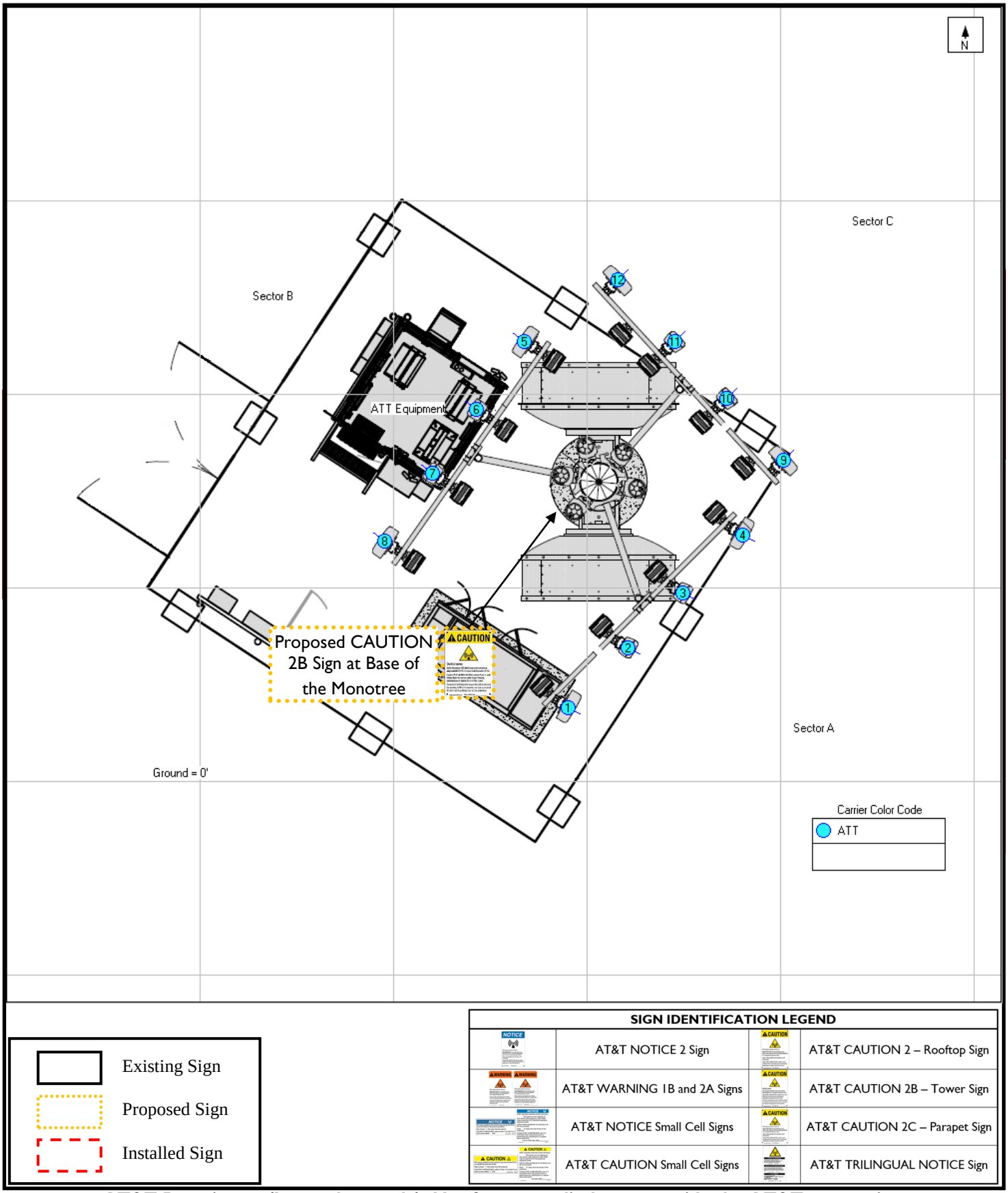
- Access Point(s):
    - To reduce the risk of exposure and/or injury, EBI recommends that access to the monotree or areas associated with the active antenna installation be restricted and secured where possible.
    - Yellow CAUTION 2B sign posted at the base of the monotree.
- Signage at AT&T Mobility Sectors:
    - A: No Action Required.
    - B: No Action Required.
    - C: No Action Required.
- Barriers at AT&T Mobility Sectors:
    - A: No Action Required.
    - B: No Action Required.
    - C: No Action Required.

Predictive Modeling Results:

The maximum predictive power density generated by the antennas is approximately 0.32 percent of the FCC's general public limit (0.06 percent of the FCC's occupational limit) at the ground.

At the antenna face level, the maximum predictive power density generated by the antennas is approximately 3093.92 percent of the FCC's general public limit (618.784 percent of the FCC's occupational limit).

2.0 SIGNAGE AND MITIGATION PLAN



3.0 ANTENNA INVENTORY

Ant #	Operator	Antenna Make	Antenna Model	Frequency (MHz)	Azimuth (deg.)	Mechanical Downtilt (deg.)	Horizontal Beamwidth (Degrees)	Aperture (feet)	Power Input (Watts)	Transmitter Count	Antenna Gain (dBd)	Total ERP (Watts)	Total EIRP (Watts)
1	ATT	KATHREIN	80010966 04DT 700	700	120	0	66.7	8.0	40	4	13.15	2832.17	4644.77
1	ATT	KATHREIN	80010966 04DT 850	850	120	0	65.2	8.0	40	4	13.95	3350.58	5494.95
1	ATT	KATHREIN	80010966 03DT 1900	1900	120	0	65.2	8.0	40	4	15.75	5071.31	8316.95
2	ATT	QUINTEL	QS8658-3E 04DT 700	700	120	0	64	8.0	40	2	11.85	1049.76	1721.61
2	ATT	QUINTEL	QS8658-3E 02DT 2100	2100	120	0	62	8.0	40	4	14.85	4122.11	6760.27
3	ATT	QUINTEL	QS8658-3E 04DT 700	700	120	0	64	8.0	40	2	11.85	1049.76	1721.61
4	ATT	QUINTEL	QS8658-3E 04DT 850	700	120	0	60	8.0	40	2	12.75	1291.49	2118.04
4	ATT	QUINTEL	QS8658-3E 02DT 2300	2300	120	0	59	8.0	25	4	14.55	2404.36	3943.15
5	ATT	KATHREIN	80010966 04DT 700	700	305	0	66.7	8.0	40	4	13.15	2832.17	4644.77
5	ATT	KATHREIN	80010966 04DT 850	850	305	0	65.2	8.0	40	4	13.95	3350.58	5494.95
5	ATT	KATHREIN	80010966 03DT 1900	1900	305	0	65.2	8.0	40	4	15.75	5071.31	8316.95
6	ATT	QUINTEL	QS8658-3E 04DT 700	700	305	0	64	8.0	40	2	11.85	1049.76	1721.61
6	ATT	QUINTEL	QS8658-3E 02DT 2100	2100	305	0	62	8.0	40	4	14.85	4122.11	6760.27
7	ATT	QUINTEL	QS8658-3E 04DT 700	700	305	0	64	8.0	40	2	11.85	1049.76	1721.61
8	ATT	QUINTEL	QS8658-3E 04DT 850	700	305	0	60	8.0	40	2	12.75	1291.49	2118.04
8	ATT	QUINTEL	QS8658-3E 02DT 2300	2300	305	0	59	8.0	25	4	14.55	2404.36	3943.15
9	ATT	KATHREIN	80010966 04DT 700	700	45	0	66.7	8.0	40	4	13.15	2832.17	4644.77
9	ATT	KATHREIN	80010966 04DT 850	850	45	0	65.2	8.0	40	4	13.95	3350.58	5494.95
9	ATT	KATHREIN	80010966 03DT 1900	1900	45	0	65.2	8.0	40	4	15.75	5071.31	8316.95
10	ATT	QUINTEL	QS8658-3E 04DT 700	700	45	0	64	8.0	40	2	11.85	1049.76	1721.61
10	ATT	QUINTEL	QS8658-3E 02DT 2100	2100	45	0	62	8.0	40	4	14.85	4122.11	6760.27
11	ATT	QUINTEL	QS8658-3E 04DT 700	700	45	0	64	8.0	40	2	11.85	1049.76	1721.61
12	ATT	QUINTEL	QS8658-3E 04DT 850	700	45	0	60	8.0	40	2	12.75	1291.49	2118.04
12	ATT	QUINTEL	QS8658-3E 02DT 2300	2300	45	0	59	8.0	25	4	14.55	2404.36	3943.15
13	ATT	Microwave	Unknown	Unk.	Unk.	Unk.	Unk.	3.0	Unk.	Unk.	Unk.	Unk.	Unk.
14	ATT	Microwave	Unknown	Unk.	Unk.	Unk.	Unk.	3.0	Unk.	Unk.	Unk.	Unk.	Unk.

• Note there are 4 AT&T antennas per sector at this site. For clarity, the different frequencies for each antenna are entered on separate lines.
• Note that the microwaves were not included in the predictive modeling analysis because microwaves onsite are considered compliant. RoofView is not suitable for modeling microwave dish antennas because these units are designed for point-to-point operations at the elevations of the installed equipment rather than ground-level coverage.

Ant #	NAME	X	Y	Antenna Radiation Centerline	Z-Height Ground
1	ATT	25.4	13.1	60.0	56.0
2	ATT	28.5	10.0	60.0	56.0
3	ATT	31.3	7.1	60.0	56.0
4	ATT	34.4	4.1	60.0	56.0
5	ATT	23.1	5.9	60.0	56.0
6	ATT	20.7	2.4	60.0	56.0
7	ATT	18.4	0.9	60.0	56.0
8	ATT	15.9	4.4	60.0	56.0
9	ATT	36.6	0.3	60.0	56.0
10	ATT	33.6	2.9	60.0	56.0
11	ATT	30.9	5.9	60.0	56.0
12	ATT	28.0	9.1	60.0	56.0

4.0 WORST-CASE PREDICTIVE MODELING

In accordance with AT&T's RF Exposure policy, EBI performed theoretical modeling using RoofMaster™ software to estimate the worst-case power density at the site ground-level resulting from operation of the antennas.

For this report, EBI utilized antenna and power data provided by AT&T and compared the resultant worst-case MPE levels to the FCC's occupational/controlled exposure limits outlined in OET Bulletin 65.

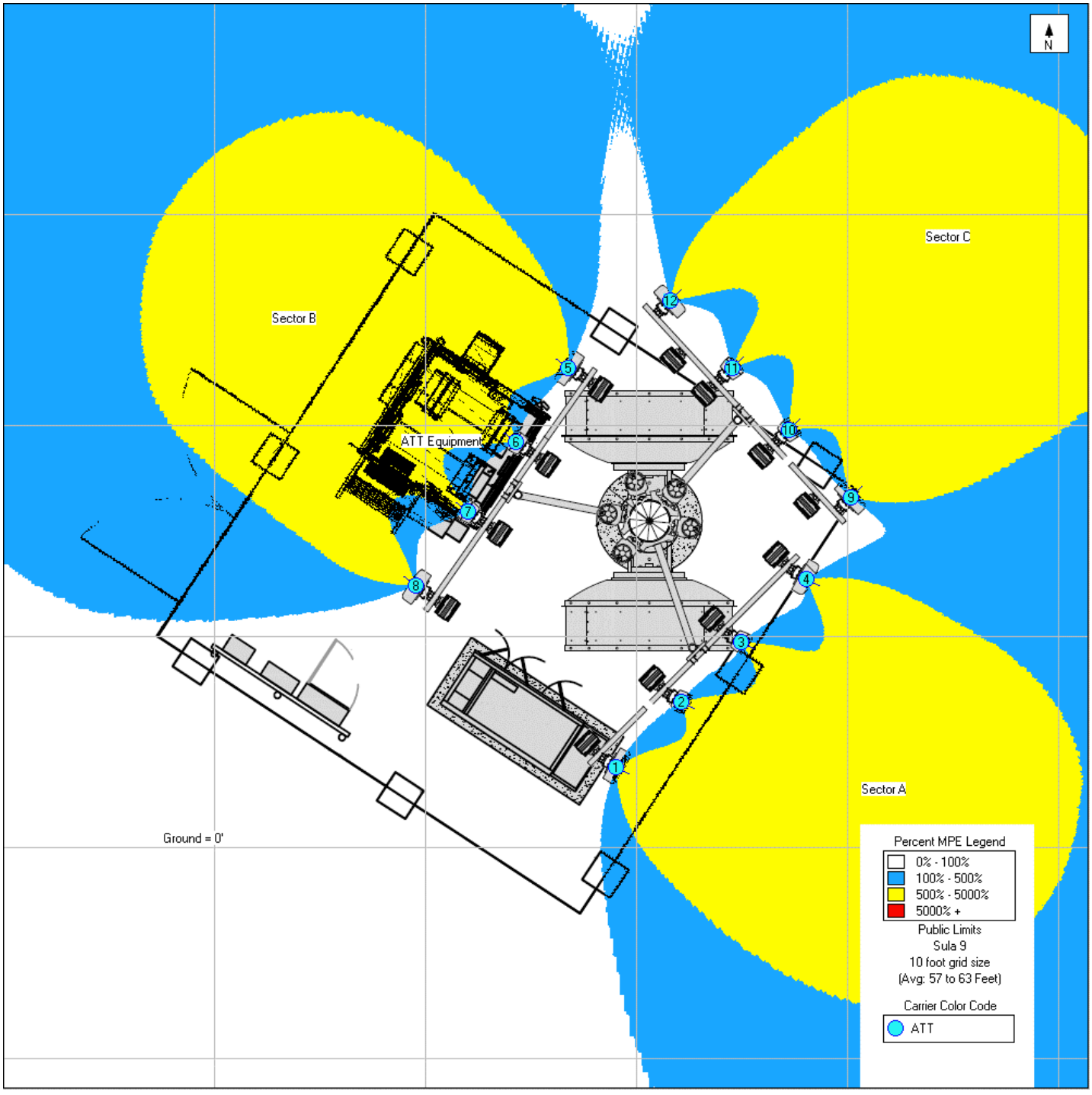
The assumptions used in the modeling are based upon information provided by AT&T and information gathered from other sources. There are no other wireless carriers with equipment installed at this site.

Based on worst-case predictive modeling, there are no modeled exposures on any accessible ground walking/working surface related to ATT's proposed antennas that exceed the FCC's occupational and/or general public exposure limits at this site.

At the nearest walking/working surfaces to the AT&T antennas on the ground, the maximum power density generated by the AT&T antennas is approximately 0.32 percent of the FCC's general public limit (0.06 percent of the FCC's occupational limit). The composite exposure level from all carriers on this site is approximately 0.32 percent of the FCC's general public limit (0.06 percent of the FCC's occupational limit) at the nearest walking/working surface to each antenna.

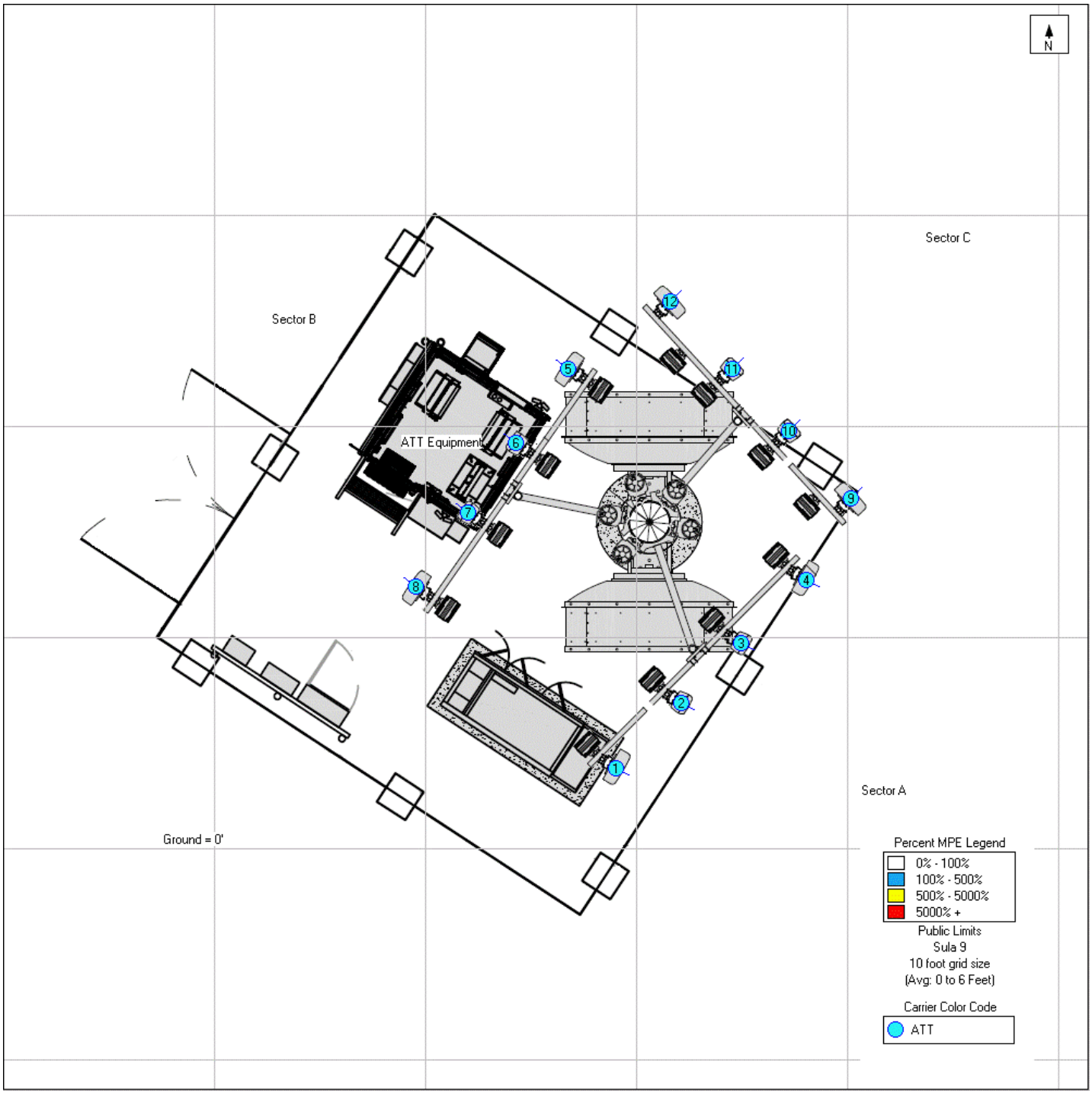
It should be noted that RoofMaster™ is not suitable for modeling microwave dish antennas; however, these units are designed for point-to-point operations at the elevations of the installed equipment rather than ground-level coverage. Based on AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document, dated October 28, 2014, microwave antennas are considered compliant if they are higher than 20 feet above any accessible walking/working surface. All microwaves on site are considered compliant with AT&T's guidance and were not included in the modeling analysis.

Antenna Face Level



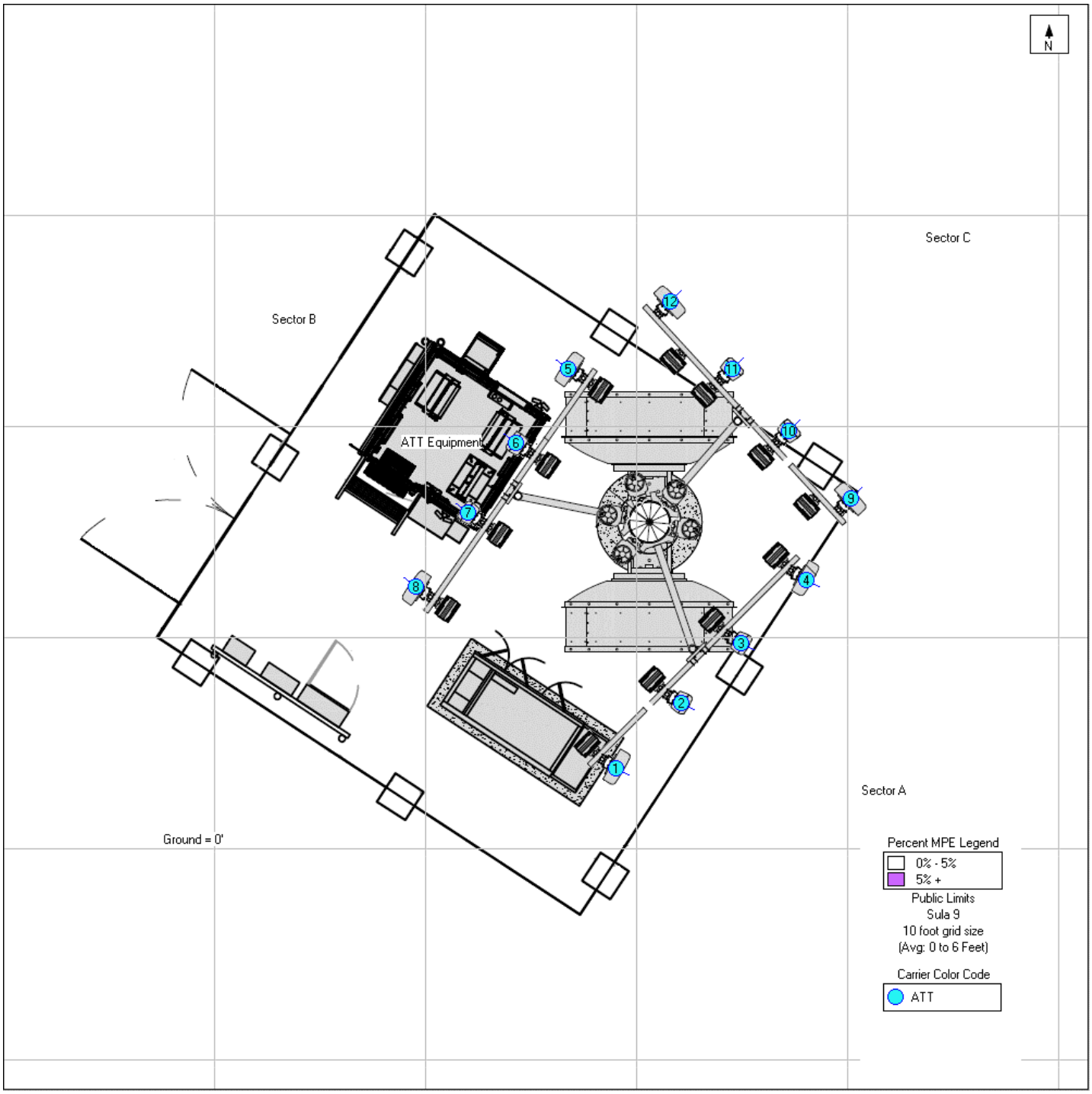
Max MPE: 3,093.92%
General Population
MPE at Antenna Face
Level

Ground Level (0 feet AGL)



Max MPE: 0.32%
General Population
MPE at Ground Level

AT&T Contribution of More Than 5% of the FCC's General Exposure RF Limit



Note that the areas shown in purple are where AT&T antennas contribute more than 5% of the FCC's general exposure RF limit. These do not overlap any areas in front of other carrier antennas exceeding the FCC's general exposure RF limit because there are no other carriers as shown in Figure 1. Under FCC regulations, AT&T is therefore not responsible for predicted exceedances of another carrier's antennas.

5.0 COMPLIANCE SUMMARY

Based on the information collected, AT&T Mobility will be Compliant with FCC Rules and Regulations at the nearest walking surface if recommendations in the Compliance Summary are implemented.

The following mitigation measures are recommended for this site.

- **Access Point(s):**
    - To reduce the risk of exposure and/or injury, EBI recommends that access to the monotree or areas associated with the active antenna installation be restricted and secured where possible.
    - Yellow CAUTION 2B sign posted at the base of the monotree.
- **AT&T Mobility Sectors:**
    - **Sector A:**
        - No Action Required.
    - **Sector B:**
        - No Action Required.
    - **Sector C:**
        - No Action Required.

6.0 APPENDICES

Appendix A: FEDERAL COMMUNICATIONS COMMISSION (FCC) REQUIREMENTS

The FCC has established Maximum Permissible Exposure (MPE) limits for human exposure to Radiofrequency Electromagnetic (RF-EME) energy fields, based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general public/uncontrolled exposure limits for members of the general public.

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 public/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.

General public/uncontrolled exposure limits apply to situations in which the general public 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 public 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.

Table 1 and Figure 1 (below), which are included within the FCC's OET Bulletin 65, summarize the MPE limits for RF emissions. These limits are designed to provide a substantial margin of safety. They vary by frequency to take into account the different types of equipment that may be in operation at a particular facility and are "time-averaged" limits to reflect different durations resulting from controlled and uncontrolled exposures.

The FCC's MPEs are measured in terms of power (mW) over a unit surface area (cm^2). Known as the power density, the FCC has established an occupational MPE of 5 milliwatts per square centimeter (mW/cm^2) and an uncontrolled MPE of 1 mW/cm2 for equipment operating in the 1900 MHz frequency range. For the AT&T equipment operating at 700 MHz, the FCC's occupational MPE limit is 2.33 mW/cm^2 and an uncontrolled MPE limit of 0.47 mW/cm^2. For the AT&T equipment operating at 1900 MHz, the FCC's occupational MPE is 5.0 mW/cm^2 and an uncontrolled MPE limit of 1.0 mW/cm^2. These limits are considered protective of these populations.

Table 1: Limits for Maximum Permissible Exposure (MPE)

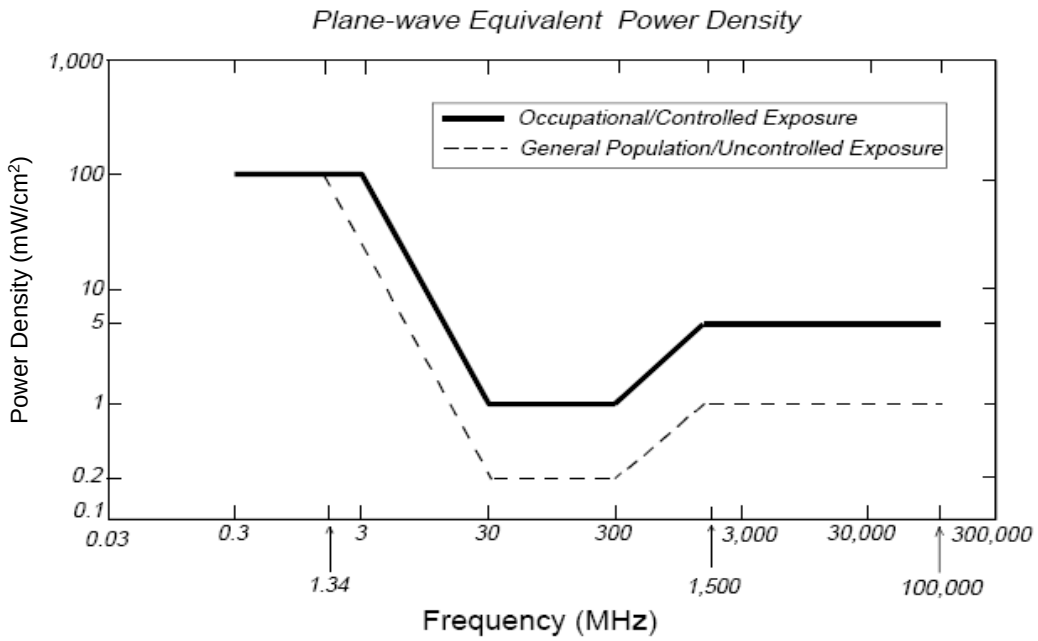
(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $[E]^2$, $[H]^2$, 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
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, 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
300-1,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)
* Plane-wave equivalent power density

Figure 1. *FCC Limits for Maximum Permissible Exposure (MPE)*



Based on the above, the most restrictive thresholds for exposures of unlimited duration to RF energy for several personal wireless services are summarized below:

Personal Wireless Service	Approximate Frequency	Occupational MPE	Public MPE
Microwave (Point-to-Point)	5,000 - 80,000 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Broadband Radio (BRS)	2,600 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Wireless Communication (WCS)	2,300 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Advanced Wireless (AWS)	2,100 MHz	5.00 mW/cm^2	1.00 mW/cm^2

Personal Wireless Service	Approximate Frequency	Occupational MPE	Public MPE
Personal Communication (PCS)	1,950 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Cellular Telephone	870 MHz	2.90 mW/cm^2	0.58 mW/cm^2
Specialized Mobile Radio (SMR)	855 MHz	2.85 mW/cm^2	0.57 mW/cm^2
Long Term Evolution (LTE)	700 MHz	2.33 mW/cm^2	0.47 mW/cm^2
Most Restrictive Frequency Range	30-300 MHz	1.00 mW/cm^2	0.20 mW/cm^2

MPE limits are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

Personal Communication (PCS) facilities used by AT&T in this area operate within a frequency range of 700-1900 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of areas directly in front of the antennas.

FCC Compliance Requirement

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

Appendix B: AT&T RF Exposure Policy Requirements

AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document, dated May 27, 2015, requires that:

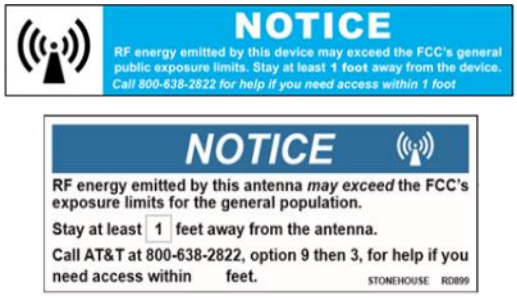
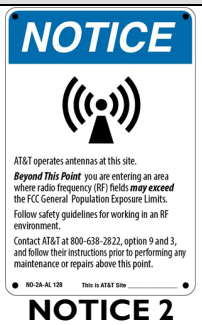
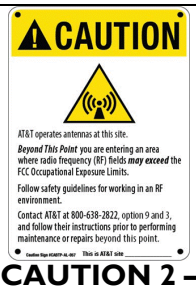
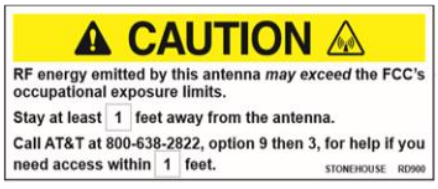
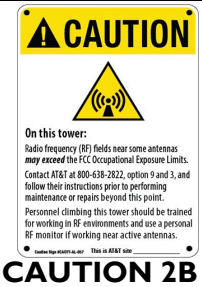
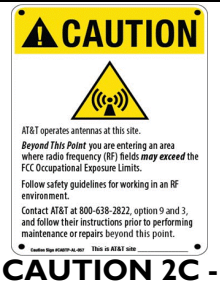
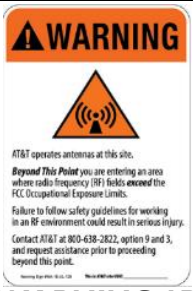
1. All sites must be analyzed for RF exposure compliance;
2. All sites must have that analysis documented; and
3. All sites must have any necessary signage and barriers installed.

Appendix C: AT&T Signage and Mitigation

Signs are the primary means for control of access to areas where RF exposure levels may potentially exceed the MPE. As presented in the AT&T guidance document, the signs must:

- Be posted at a conspicuous point;
- Be posted at the appropriate locations;
- Be readily visible; and
- Make the reader aware of the potential risks prior to entering the affected area.

The table below presents the signs that may be used for AT&T installations.

CRAN / HETNET Small Cell Decals / Signs		Alerting Signs	
	**NOTICE DECALS**	 **TRILINGUAL NOTICE**	 **NOTICE 2**
	**NOTICE SIGN**	 **CAUTION 2 – ROOFTOP**	 **CAUTION 2A**
	**CAUTION DECAL**	 **CAUTION 2B - TOWER**	 **CAUTION 2C - PARAPETS**
	**CAUTION SIGN**	 **WARNING 1B**	 **WARNING 2A**

Appendix D: LIMITATIONS

This report was prepared for the use of AT&T Mobility, LLC to meet requirements outlined in AT&T's corporate RF safety guidelines. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by EBI are based solely on the information provided by the client. The observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to EBI so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

Appendix E: RoofMaster™

RoofMaster™ is a widely-used predictive modeling program that has been developed by Waterford Consultants 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.

Appendix F: CERTIFICATIONS

Preparer Certification

I, Erik Johnson, state that:

- I am an employee of EnviroBusiness Inc. (d/b/a EBI Consulting), which provides RF-EME safety and compliance services to the wireless communications industry.
- I have successfully completed RF-EME safety training, and I am aware of the potential hazards from RF-EME and would be classified "occupational" under the FCC regulations.
- I am familiar with the FCC rules and regulations as well as OSHA regulations both in general and as they apply to RF-EME exposure.
- I have been trained in on the procedures outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document (dated October 28, 2014) and on RF-EME modeling using RoofMaster™ modeling software.
- I have reviewed the data provided by the client and incorporated it into this Site Compliance Report such that the information contained in this report is true and accurate to the best of my knowledge.