Radio Frequency Safety Survey Report Prediction (RFSSRP)

AT&T Utility Pole Facility

Site Name	SCOTTSDALE RELO TEMP
Site ID	AZL05902
Site Address	28914 NORTH SCOTTSDALE ROAD, SCOTTSDALE, AZ 85251
Latitude: 33.741069 **Longitude:** -111.926142 **USID:** 27263 **FA**: 16178969 **Centerline PN:** Internal **Pace ID:** MRANM035419, MRANM035463, MRANM035459, MRANM035447, MRANM035632, MRANM035455	**Prepared for:** Centerline on behalf of AT&T **Report Date:** February 12, 2024 **Report Writer:** Devin Lotter **Report Reviewer:** Yasir Alqadhili

Statement of Compliance

AT&T is compliant with FCC regulations.

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1.0 GENERAL SUMMARY

Centerline has been contracted to provide a Radio Frequency (RF) Analysis for the following AT&T utility pole facility to determine whether the facility is in compliance with federal standards and regulations regarding RF emissions. This analysis includes theoretical emissions calculations for all equipment for AT&T.

1.1 SITE SUMMARY

Analysis Site Data	
Site USID:	27263
Site FA#:	16178969
Site Name:	SCOTTSDALE RELO TEMP
Site Address:	28914 NORTH SCOTTSDALE ROAD, SCOTTSDALE, AZ 85251
Site Latitude:	33.741069
Site Longitude:	-111.926142
Facility Type:	Utility Pole
Compliance Summary	
Compliance Status:	Compliant
Maximum Calculated AT&T MPE Level on Site (General Population Limit):	15.11%
Maximum Calculated AT&T MPE Level at Ground (General Population Limit):	11.83%
Site Data Information	
CD:	AT&T AZ_AZL05904_SCOTTSDALE RELO_TEMP ZD REV B_2024-01-31
RFDS:	AZ-NM_ARIZONA_AZL00362_2021-LTE-Next-Carrier_LTE-6C_sn752w_3901A0V1FY_10094477_27263_03-02-2020_As-Built-Construction-Complete_v (2)

1.2 SITE MITIGATION

Signage and barriers are the primary means of mitigating accessible areas of exposure. Below is a summary of existing and recommended signage at this AT&T facility.

Existing Signage and Barriers (AT&T Sectors)										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Tower Access	0	0	0	0	0	0	0	0	0	0
Alpha	0	0	0	0	0	1	0	0	0	0
Beta	0	0	0	0	0	1	0	0	0	0
Gamma	0	0	0	0	0	1	0	0	0	0

Recommended Signage and Barriers (AT&T Sectors) – Actions that MUST be Taken						
Location	Notice 2	Caution 2	Caution 2B	Caution 2C	Warning 2	Barriers
Tower Access	0	0	0	0	0	0
Alpha	0	0	0	0	0	0
Beta	0	0	0	0	0	0
Gamma	0	0	0	0	0	0

Final Compliant Configuration (AT&T Sectors) – All Mitigation Items that MUST be in Place										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Tower Access	0	0	0	0	0	0	0	0	0	0
Alpha	0	0	0	0	0	1	0	0	0	0
Beta	0	0	0	0	0	1	0	0	0	0
Gamma	0	0	0	0	0	1	0	0	0	0

Tower Access:

- No action required.

Alpha:

- No action required.

Beta:

- No action required.

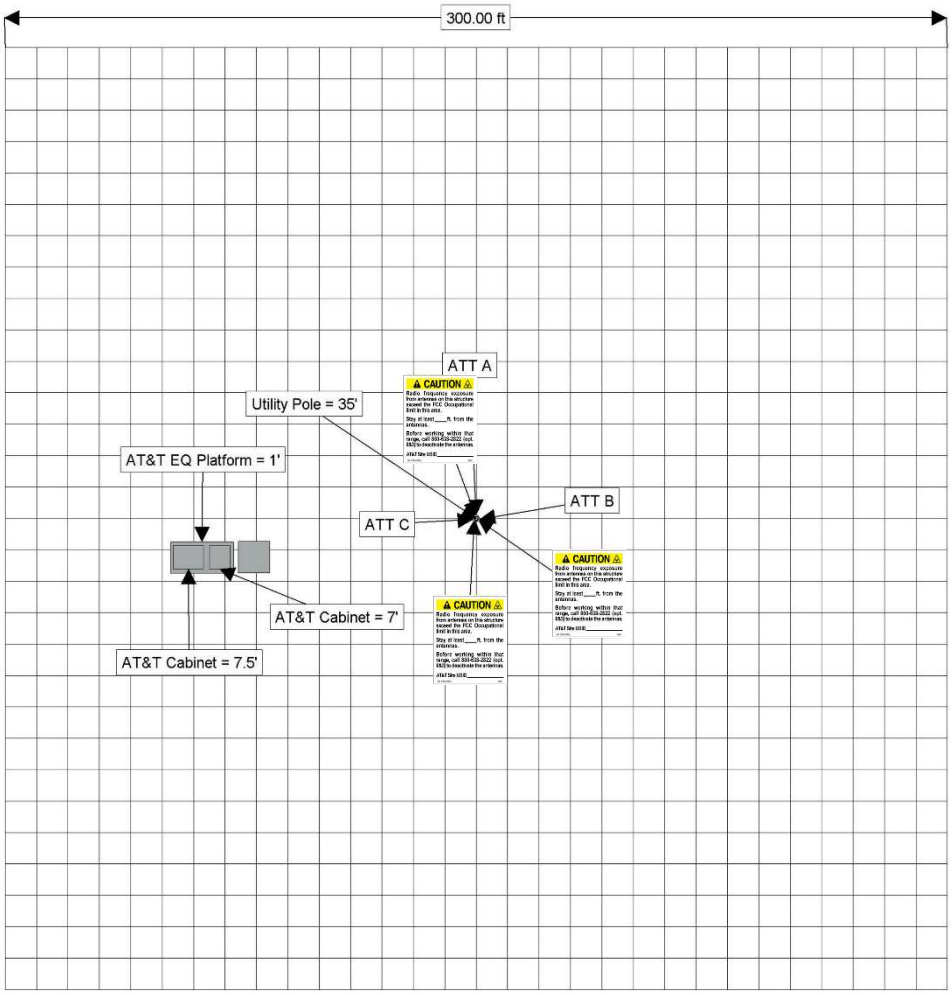
Gamma:

- No action required.

Notes:

- Ensure signs in front of the antennas are 12’ below the bottom tips of the antennas. The upper edge of each sign must be positioned at the bottom distance.

2.0 SITE SCALE MAP



Site Scale
Grid size: 10'

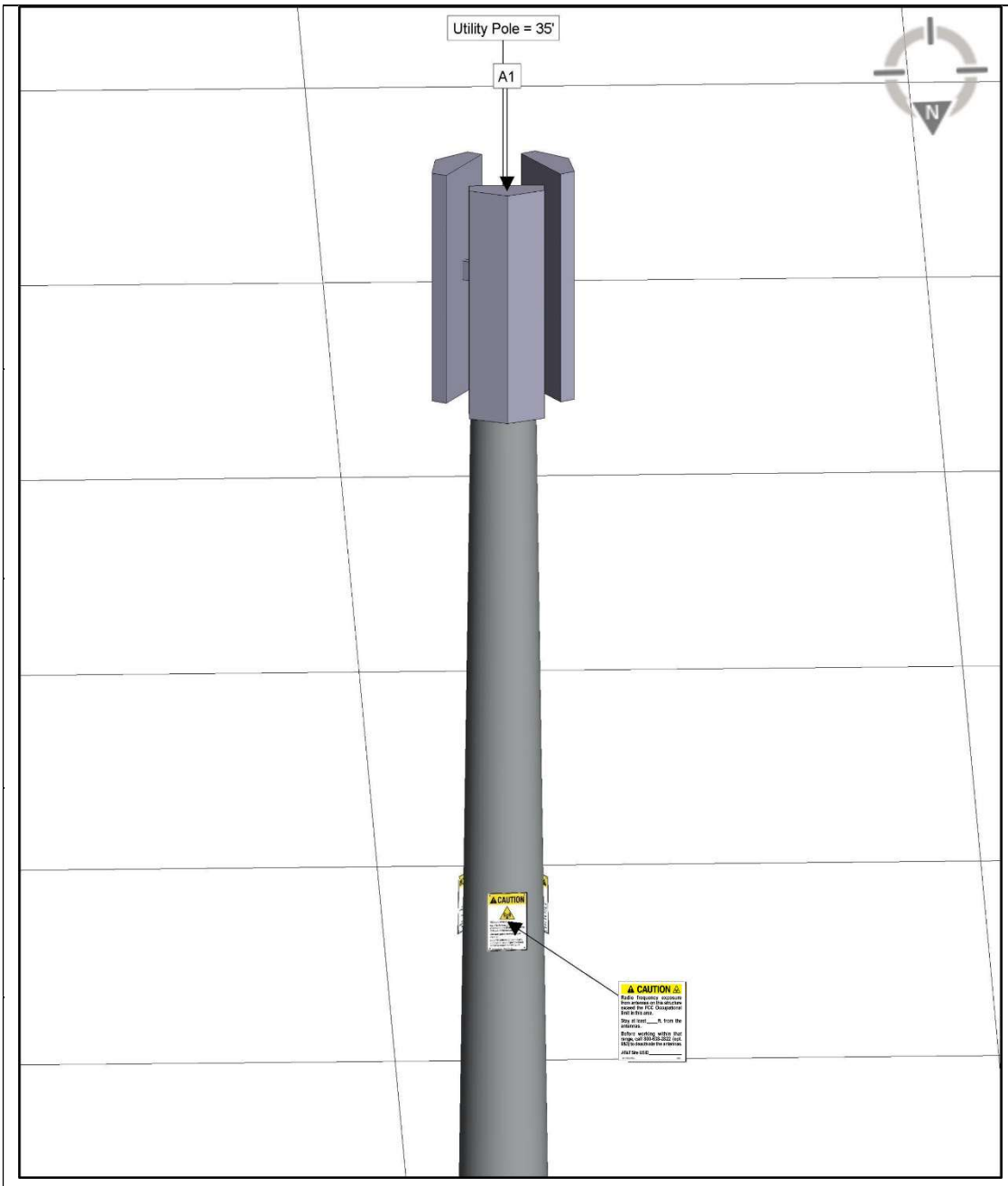
INFO 1 Sign	Caution 1 Sign
INFO 2 Sign	Caution 2B Sign
Notice 1 Sign	Caution 2 Sign
Notice 2 Sign	Warning 2 Sign
Existing Barrier	Proposed Barrier

Items to be removed

Existing Sign

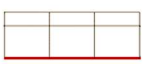
Proposed Sign

Signage / Mitigation Plan
SCOTTSDALE RELO TEMP / 16178969



Alpha Sector

Grid size: 10’

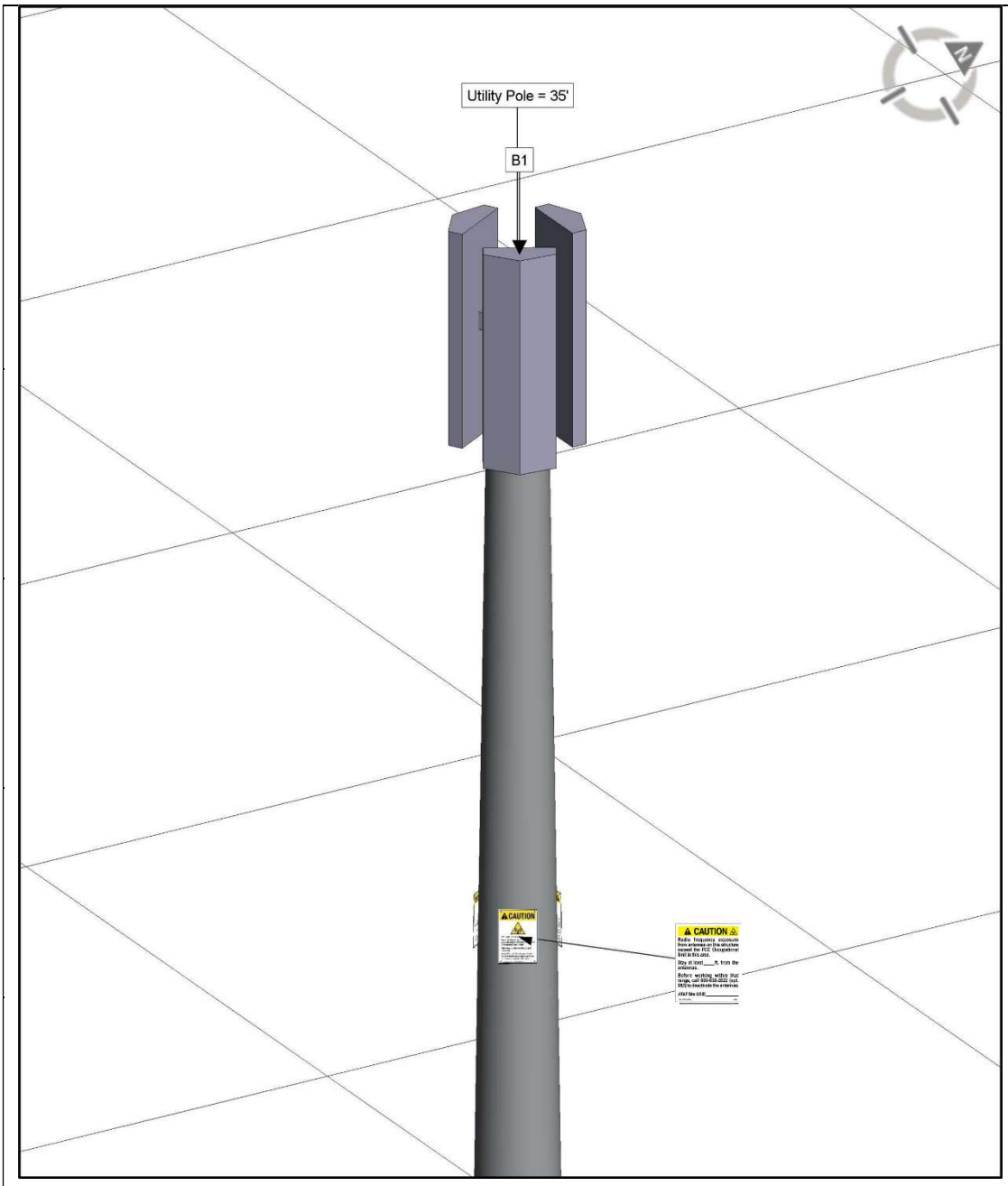
 INFO 1 Sign	 Caution 1 Sign
 INFO 2 Sign	 Caution 2B Sign
 Notice 1 Sign	 Caution 2 Sign
 Notice 2 Sign	 Warning 2 Sign
 Existing Barrier	 Proposed Barrier

 Items to be removed

 Existing Sign

 Proposed Sign

Signage / Mitigation Plan
SCOTTSDALE RELO TEMP / 16178969



Beta Sector

Grid size: 10’

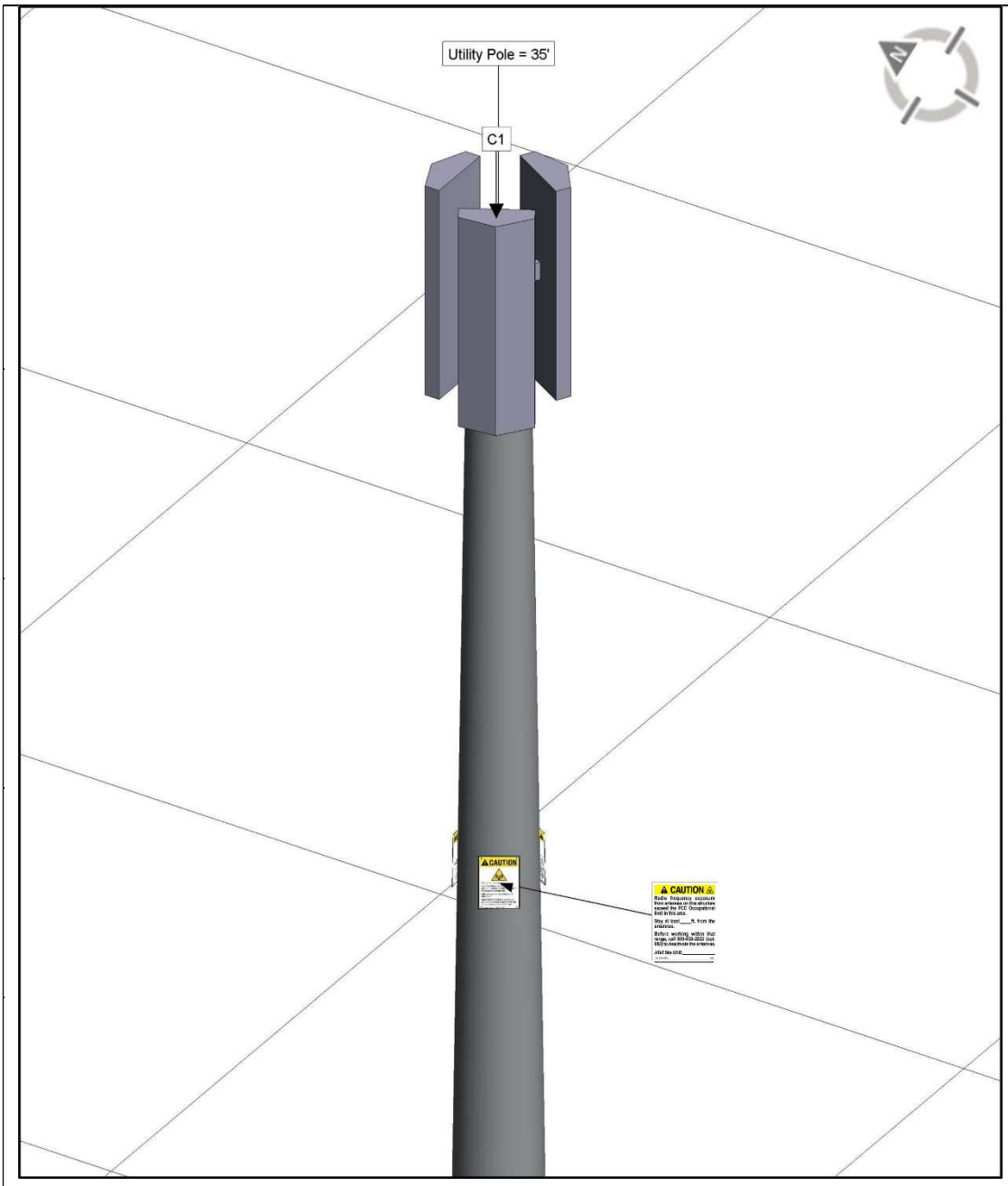
 INFO 1 Sign	 Caution 1 Sign
 INFO 2 Sign	 Caution 2B Sign
 Notice 1 Sign	 Caution 2 Sign
 Notice 2 Sign	 Warning 2 Sign
 Existing Barrier	 Proposed Barrier

 Items to be removed

 Existing Sign

 Proposed Sign

Signage / Mitigation Plan
SCOTTSDALE RELO TEMP / 16178969



Gamma Sector

Grid size: 10’

 INFO 1 Sign	 Caution 1 Sign
 INFO 2 Sign	 Caution 2B Sign
 Notice 1 Sign	 Caution 2 Sign
 Notice 2 Sign	 Warning 2 Sign
 Existing Barrier	 Proposed Barrier

Items to be removed

Existing Sign

Proposed Sign

Signage / Mitigation Plan
SCOTTSDALE RELO TEMP / 16178969

3.0 ANTENNA INVENTORY

ANT ID	Operator	Antenna Manufacturer	Antenna Model	System / Freq (MHz)	TPO (Watts)	Azimuth (°)	Mech. Tilt (°)	Elec. Tilt (°)	Gain (dBd)	Total ERP (Watts)	Antenna Length (ft.)	Antenna Z Value (ft.) AGL*
A1	AT&T	Kathrein	840370964	700	277.50	0	0	4 to 18	10.15	2872.52	3.98	34
A1	AT&T	Kathrein	840370964	1900	240	0	0	2 to 12	15.05	7677.35	3.98	34
A1	AT&T	Kathrein	840370964	2300	75	0	0	2 to 12	14.95	2344.56	3.98	34
B1	AT&T	Kathrein	840370964	700	277.50	120	0	4 to 18	10.15	2872.52	3.98	34
B1	AT&T	Kathrein	840370964	1900	240	120	0	2 to 12	15.05	7677.35	3.98	34
B1	AT&T	Kathrein	840370964	2300	75	120	0	2 to 12	14.95	2344.56	3.98	34
C1	AT&T	Kathrein	840370964	700	277.50	240	0	4 to 18	10.15	2872.52	3.98	34
C1	AT&T	Kathrein	840370964	1900	240	240	0	2 to 12	15.05	7677.35	3.98	34
C1	AT&T	Kathrein	840370964	2300	75	240	0	2 to 12	14.95	2344.56	3.98	34

**AGL = Above Ground Level*

Note: Z Value represents the centerline height of the antenna above ground

75% duty cycle is assumed for all AT&T antennas

4.0 CALCULATED RF EXPOSURE LEVELS

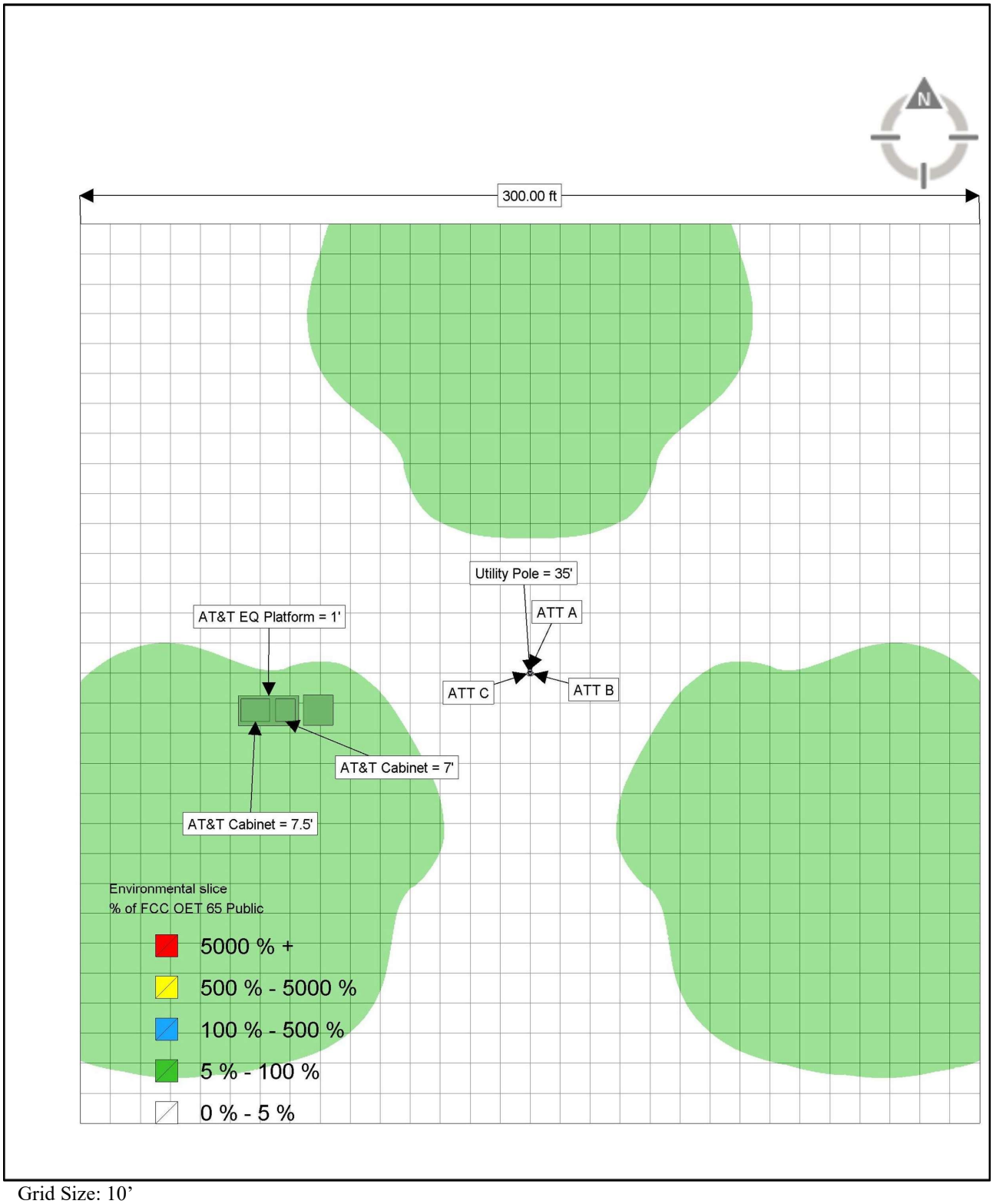
Calculations performed based upon the data listed for this facility have produced the results that are shown below:

Maximum Calculated AT&T MPE Level on Site:	% of MPE Limit:
Accessible **General Population** MPE Limits:	**15.11%**
Accessible **Occupational** MPE Limits:	**3.02%**

Maximum Calculated AT&T Ground Level MPE:	% of MPE Limit:
Accessible **General Population** MPE Limits:	**11.83%**
Accessible **Occupational** MPE Limits:	**2.37%**

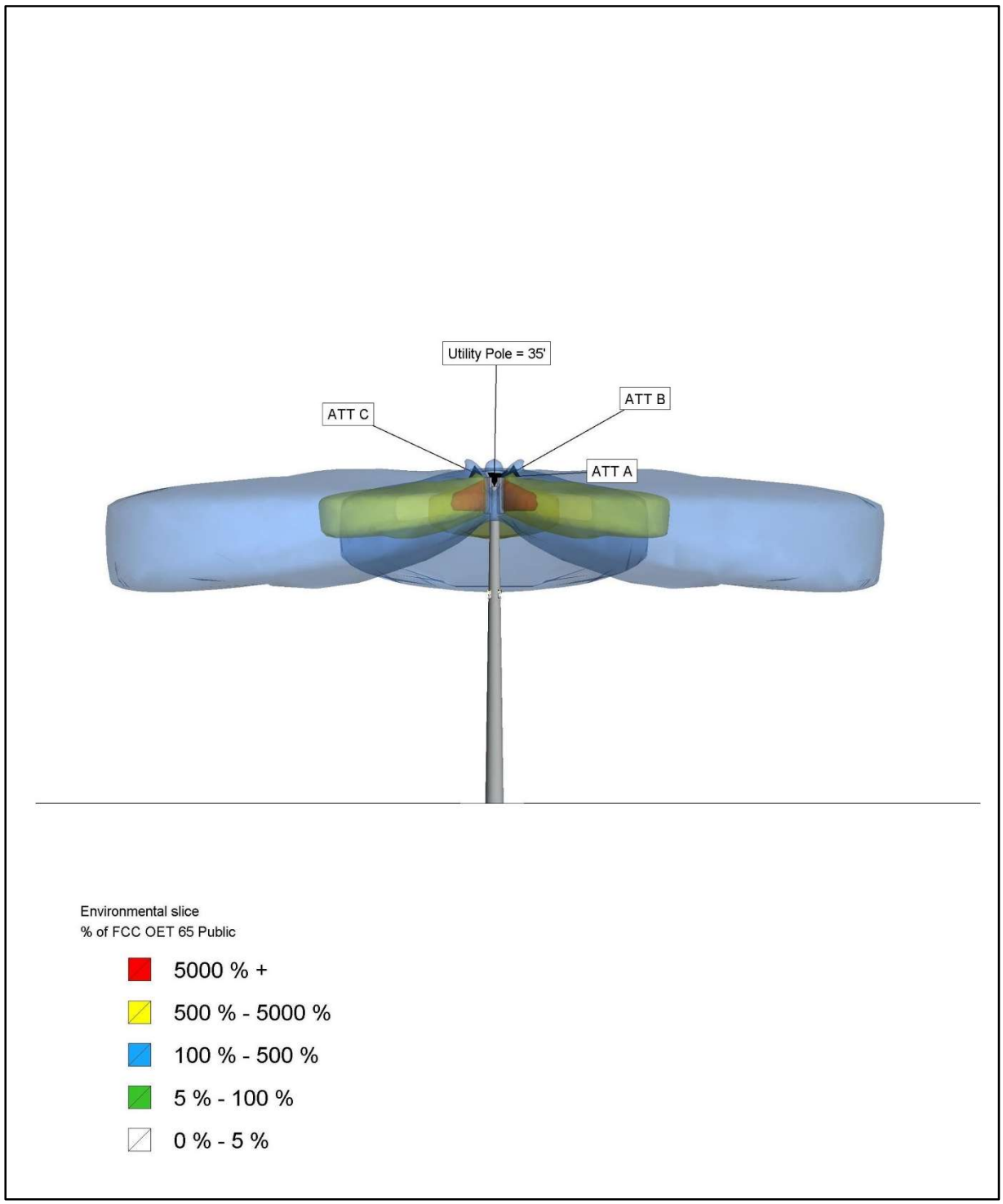
5.0 RF EXPOSURE DIAGRAMS

AT&T Only



Grid Size: 10'

Elevation View



Grid Size: 10’

6.0 STATEMENT OF COMPLIANCE

Centerline conducted worst case modeling to determine whether the subject facility is in compliance with FCC regulations.

Based on the information analyzed, AT&T is in compliance with FCC regulations. No additional action is required by AT&T.

6.1 RECOMMENDATIONS

Existing Signage and Barriers (AT&T Sectors)										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Tower Access	0	0	0	0	0	0	0	0	0	0
Alpha	0	0	0	0	0	1	0	0	0	0
Beta	0	0	0	0	0	1	0	0	0	0
Gamma	0	0	0	0	0	1	0	0	0	0

Recommended Signage and Barriers (AT&T Sectors) – Actions that MUST be Taken						
Location	Notice 2	Caution 2	Caution 2B	Caution 2C	Warning 2	Barriers
Tower Access	0	0	0	0	0	0
Alpha	0	0	0	0	0	0
Beta	0	0	0	0	0	0
Gamma	0	0	0	0	0	0

Final Compliant Configuration (AT&T Sectors) – All Mitigation Items that MUST be in Place										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Tower Access	0	0	0	0	0	0	0	0	0	0
Alpha	0	0	0	0	0	1	0	0	0	0
Beta	0	0	0	0	0	1	0	0	0	0
Gamma	0	0	0	0	0	1	0	0	0	0

Tower Access:

- No action required.

Alpha:

- No action required.

Beta:

- No action required.

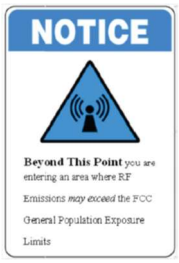
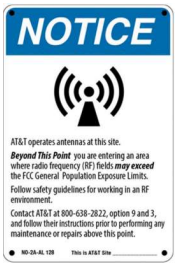
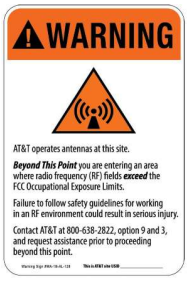
Gamma:

- No action required.

Notes:

- Ensure signs in front of the antennas are 12’ below the bottom tips of the antennas. The upper edge of each sign must be positioned at the bottom distance.

APPENDIX A: AT&T RF SIGNAGE

Sign	Description	Sign	Description
	**Information 1 Sign** Gives guidelines on how to proceed and who to contact regarding areas that may exceed either the FCC's General Population or Occupational emissions limits.		**Caution 2C Sign** Gives specific information on how to proceed and who to contact regarding antennas that are façade mounted, concealed or on stand-alone structures.
	**Blue Notice 1 Sign** Used to alert individuals that they are entering an area that may exceed the FCC's General Population emissions limit. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.		**Blue Notice 2 Sign** Used to alert individuals that they are entering an area that may exceed the FCC's General Population emissions limits. To be used on barriers or antenna sectors as a hybrid of the Information 1 and Blue Notice 1 signs.
	**Yellow Caution 1 Sign-Rooftop** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limit. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.		**Yellow Caution 2 Sign-Rooftop** Used to alert individuals that they are entering an area that may exceed the FCC's Occupational emissions limit. To be used on barriers or antenna sectors as a hybrid of the Information 1 and Yellow Caution 1 signs.
	**Yellow Caution 2B Sign-Tower** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limits. Must be placed at the base of the tower to warn tower climbers of potential for exposure.		**Warning 2 Sign** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limit by a factor of 10 or greater. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.

APPENDIX B: FCC GUIDELINES AND EMISSIONS THRESHOLD LIMITS

All information used in this report was analyzed as a percentage of the Maximum Permissible Exposure (% MPE) limits as detailed in 47 CFR § 1.1310 as well as Federal Communications Commission (FCC) OET Bulletin 65 Edition 97-01. The FCC MPE limits are typically expressed in units of milliwatts per square centimeter (mW/cm^2) or microwatts per square centimeter ($\mu W/cm^2$). The exposure limits vary depending upon the frequencies being utilized. The General Population/Uncontrolled MPE limit (in mW/cm^2) for frequencies between 300 and 1500 is defined as frequency (in MHz) divided by 1500 ($f_{MHz}/1500$). Frequencies between 1500 and 100,000 MHz have a General Population/Uncontrolled MPE limit of 1 mW/cm^2 (1000 $\mu W/cm^2$). The calculated power density at each sample point divided by the limit at each calculated frequency provides a result in % MPE. Summing the calculated % MPE from all contributors provides a cumulative % MPE at a particular sample point. Because exposure limits may vary for each frequency band, it is necessary to report % MPE rather than power density.

All results were compared to the FCC radio frequency exposure rules as detailed in 47 CFR § 1.1307(b) to determine compliance with the 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.

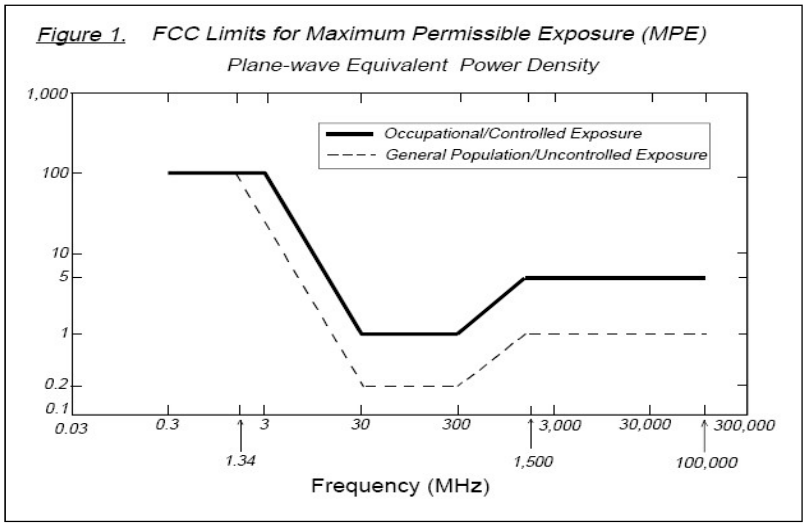
Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/ controlled exposure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

The FCC Mandates that if a site is found to be out of compliance with regard to exposure that any system operator contributing 5% or more to areas exceeding the FCC's allowable limits will be responsible for bringing the site into compliance.

Additional details can be found in FCC OET 65.

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
(B) Limits for General Population/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



APPENDIX C: CALCULATION METHODOLOGY

IXUS electromagnetic energy (EME) calculation software was used to assess all RF field levels presented in this study. IXUS software uses a fast and accurate EME calculation tool that allows for the determination of RF field strength in the vicinity of radio communication base stations and transmitters. At its core, the IXUS EME calculation module implements evaluation techniques detailed in the ITU-T K.61, CENELEC EN 50383, and IEC 62232 specifications and referenced in *C95.3 IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz to 300 GHz*. The EME calculation result at any point in 3D space is achieved via a synthetic ray tracing technique, a conservative cylindrical envelope method, or through full-wave electromagnetic simulation. The ray tracing method is an advanced computation method described in IEC 622322 where the power is summed from elemental sources representing the individual components of the antenna which are selected by an analysis of published manufacturer datasheets and antenna pattern information. The selection of the solution method is determined by the particular antenna being considered.

APPENDIX D: CERTIFICATIONS

I, Devin Lotter, preparer of this report certify that I am fully trained and aware of the rules and regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document.

Devin Lotter

2/12/2024

I, Yasir Alqadhili, reviewer and approver of this report certify that I am fully trained and aware of the rules and regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document.

Yasir Alqadhili

2/12/2024

APPENDIX E: PROPRIETARY STATEMENT

This report was prepared for the use of AT&T to meet all applicable FCC requirements. 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 Centerline are based solely on the information provided by AT&T and all 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 Centerline 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.