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## Radio Frequency Emissions Compliance Report For AT&T Mobility

<b>Site Name:</b>	<b>1-280_Crooked Creek</b>	<b>Site Structure Type:</b>	<b>Monopine</b>
<b>Address:</b>	<b>23005 Via Esplendor</b>	<b>Latitude:</b>	<b>37.337589</b>
	<b>Cupertino, CA 95014</b>	<b>Longitude:</b>	<b>-122.085325</b>
<b>Report Date:</b>	<b>October 27, 2021</b>	<b>Project:</b>	<b>Modification</b>

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### Compliance Statement

Based on information provided by AT&T Mobility and predictive modeling, the 1-280\_Crooked Creek installation proposed by AT&T Mobility will be compliant with Radiofrequency Radiation Exposure Limits of 47 C.F.R. §§ 1.1307(b)(3) and 1.1310. The proposed operation will not expose members of the General Public to hazardous levels of RF energy at ground level or in adjacent buildings.

### Certification

I, David C. Cotton, Jr., am the reviewer and approver of this report and am fully aware of and familiar with 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, specifically in accordance with FCC's OET Bulletin 65. I have reviewed this Radio Frequency Exposure Assessment report and believe it to be both true and accurate to the best of my knowledge.

### General Summary

The compliance framework is derived from the Federal Communications Commission (FCC) Rules and Regulations for preventing human exposure in excess of the applicable Maximum Permissible Exposure ("MPE") limits. At any location at this site, the power density resulting from each transmitter may be expressed as a percentage of the frequency-specific limits and added to determine if 100% of the exposure limit has been exceeded. The FCC Rules define two tiers of permissible exposure differentiated by the situation in which the exposure takes place and/or the status of the individuals who are subject to exposure. General Population / Uncontrolled exposure limits apply to those situations in which persons may not be aware of the presence of electromagnetic energy, where exposure is not employment-related, or where persons cannot exercise control over their exposure. Occupational / Controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment, have been made fully aware of the potential for exposure, and can exercise control over their exposure. Based on the criteria for these classifications, the FCC General Population limit is considered to be a level that is safe for continuous exposure time. The FCC General Population limit is 5 times more restrictive than the Occupational limits.

In situations where the predicted MPE exceeds the General Population threshold in an accessible area as a result of emissions from multiple transmitters, FCC licensees that contribute greater than 5% of the aggregate MPE share responsibility for mitigation.

Table 1: FCC Limits

Frequency (MHz)	<i>Limits for General Population/ Uncontrolled Exposure</i>		<i>Limits for Occupational/ Controlled Exposure</i>	
	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
30-300	0.2	30	1	6
300-1500	f/1500	30	f/300	6
1500-100,000	1.0	30	5.0	6

f=Frequency (MHz)

Based on the computational guidelines set forth in FCC OET Bulletin 65, Waterford Consultants, LLC has developed software to predict the overall Maximum Permissible Exposure possible at any location given the spatial orientation and operating parameters of multiple RF sources. The power density in the Far Field of an RF source is specified by OET-65 Equation 5 as follows:

$$S = \frac{EIRP}{4 \cdot \pi \cdot R^2} \text{ (mW/cm}^2\text{)}$$

where EIRP is the Effective Radiated Power relative to an isotropic antenna and R is the distance between the antenna and point of study. Additionally, consideration is given to the manufacturers' horizontal and vertical antenna patterns as well as radiation reflection. At any location, the predicted power density in the Far Field is the spatial average of points within a 0 to 6-foot vertical profile that a person would occupy. Near field power density is based on OET-65 Equation 20 stated as

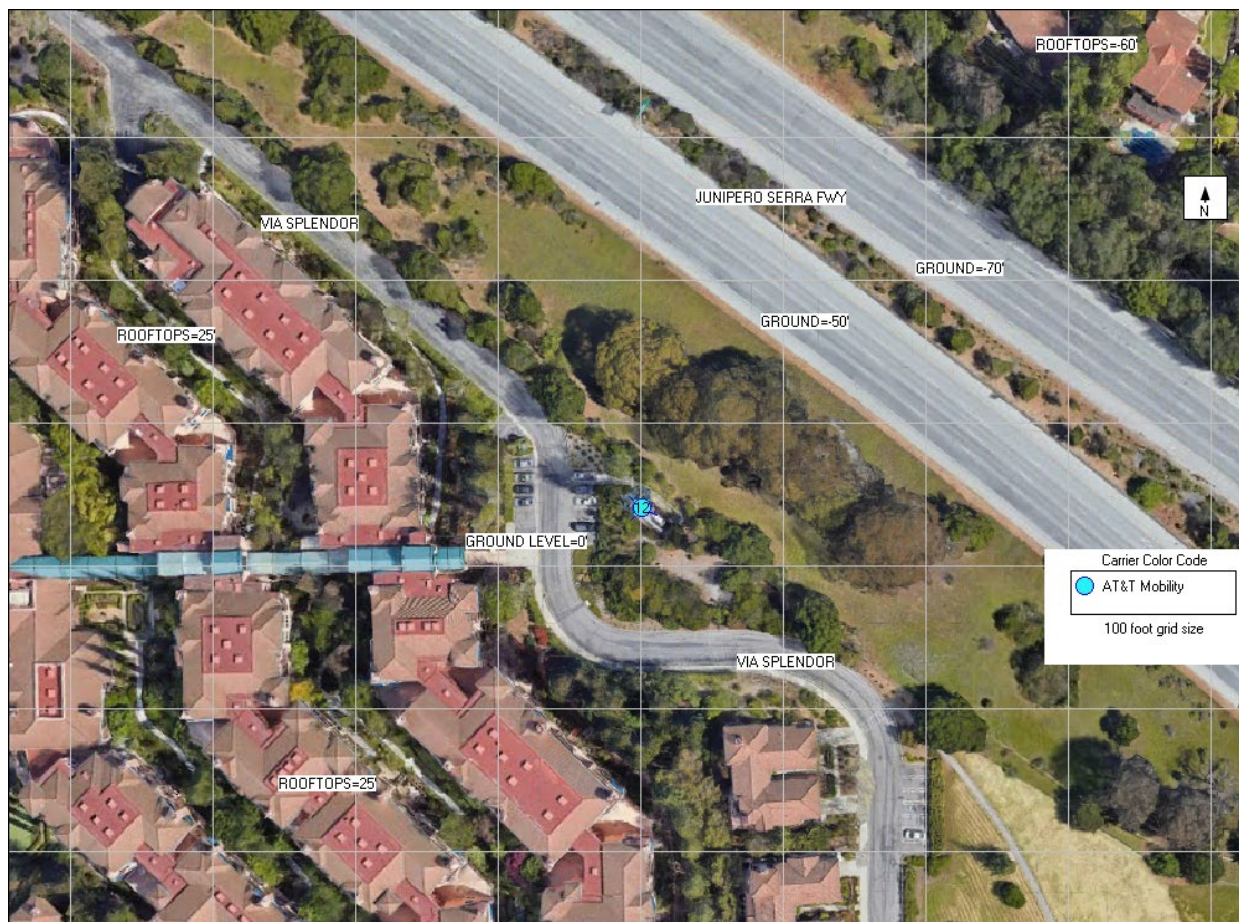
$$S = \left( \frac{180}{\theta_{BW}} \right) \cdot \frac{100 \cdot P_{in}}{\pi \cdot R \cdot h} \text{ (mW/cm}^2\text{)}$$

where  $P_{in}$  is the power input to the antenna,  $\theta_{BW}$  is the horizontal pattern beamwidth and h is the aperture length.

Some antennas employ beamforming technology where RF energy allocated to each customer device is dynamically directed toward their location. This analysis includes a statistical factor reducing the actual power of the antenna system to 32% of maximum theoretical power to account for spatial distribution of users, network utilization, time division duplexing, and scheduling time. AT&T recommends the use of this factor based on a combination of guidance from its antenna system manufacturers, supporting international industry standards, industry publications, and its extensive experience.

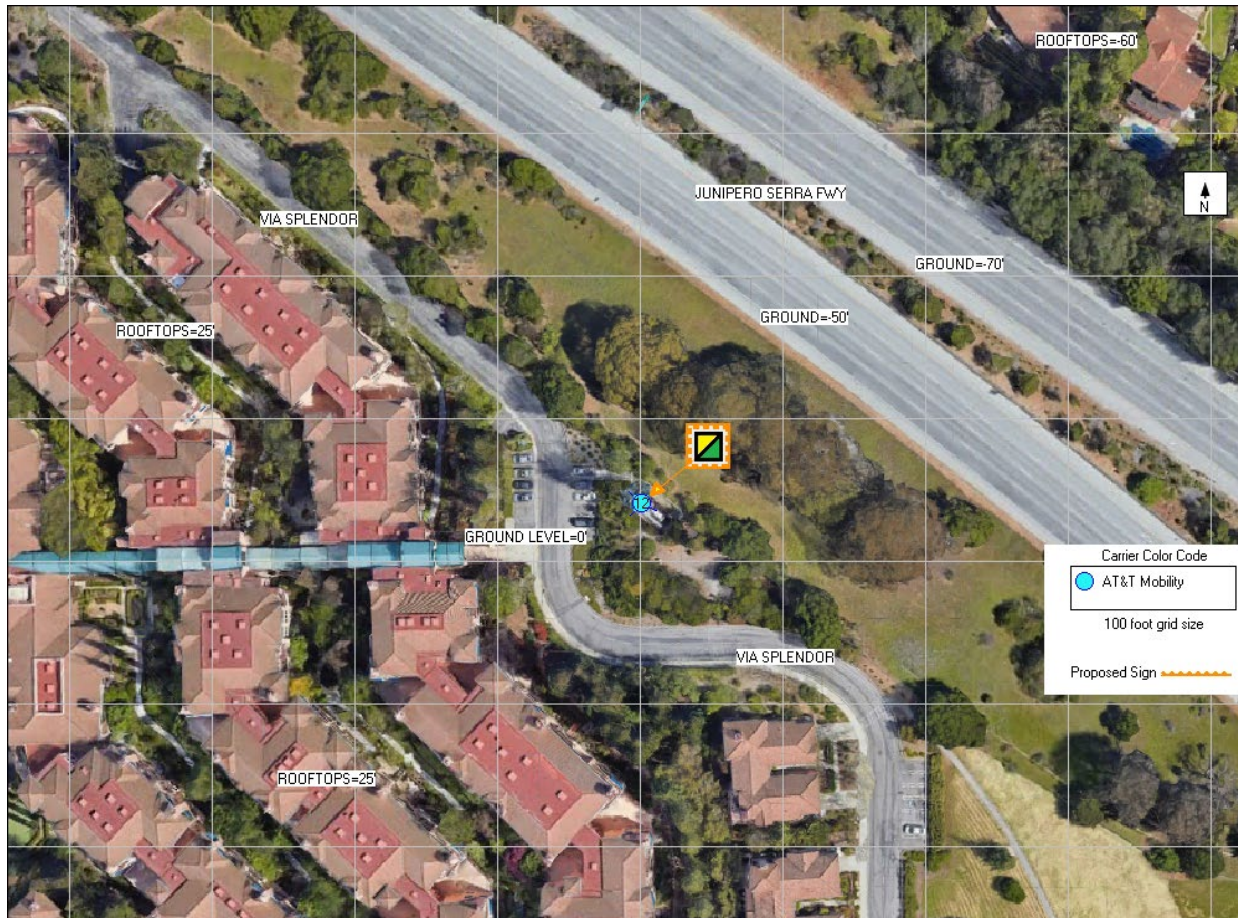
## Analysis

The antennas will be mounted on a 65 – foot Monopine with centerlines 52 feet above ground level. Proposed antenna operating parameters are listed in Appendix A. Other appurtenances such as GPS antennas, RRUs and hybrid cable below the antennas are not sources of RF emissions. No other antennas are known to be operating in the vicinity of this site.



Power density decreases significantly with distance from any antenna. The panel-type antennas to be employed at this site are highly directional by design and the orientation in azimuth and mounting elevation, as documented, serves to reduce the potential to exceed MPE limits at any location other than directly in front of the antennas. For accessible areas at ground level, the maximum predicted power density level resulting from all AT&T Mobility operations is 22.62% of the FCC General Population limits. Incident at adjacent buildings depicted in Figure 1, the maximum predicted power density level resulting from all AT&T Mobility operations is 40.5957% of the FCC General Population limits. The proposed operation will not expose members of the General Public to hazardous levels of RF energy at ground level or in adjacent buildings.





 Caution 2B

**Appendix A: Operating Parameters Considered in this Analysis**

Antenna #:	Carrier:	Manufacturer	Pattern:	Band (MHz):	Mech Az (deg):	Mech DT (deg):	H BW (deg):	Length (ft):	TPO (W):	Channels:	Loss (dB):	Gain (dBd):	ERP (W):	EIRP (W):	Rad Center (ft):
1	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	700	310	0	66	6	40	4	0	11.5	2260	3708	52
1	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	850	310	0	64	6	40	4	0	12.59	2905	4766	52
1	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	1900	310	0	61	6	40	4	0	14.48	4489	7364	52
2	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	700	310	0	66	6	40	4	0	11.5	2260	3708	52
2	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	2100	310	0	63	6	60	4	0	14.5	6764	11097	52
3	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	700	310	0	66	6	40	2	0	11.5	1130	1854	52
3	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	850	310	0	64	6	40	2	0	12.59	1452	2383	52
3	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	2300	310	0	59	6	25	4	0	15.08	3221	5284	52
4	AT&T	ERICSSON	SON_AIR6449 NR TB 3700 AT&T	3700	310	0	11	2.8	108.4	1	0	23.55	24549	40274	52
5	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	700	220	0	66	6	40	4	0	11.5	2260	3708	52
5	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	850	220	0	64	6	40	4	0	12.59	2905	4766	52
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6	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	2100	220	0	63	6	60	4	0	14.5	6764	11097	52
7	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	700	220	0	66	6	40	2	0	11.5	1130	1854	52
7	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	850	220	0	64	6	40	2	0	12.59	1452	2383	52
7	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	2300	220	0	59	6	25	4	0	15.08	3221	5284	52
8	AT&T	ERICSSON	SON_AIR6449 NR TB 3700 AT&T	3700	220	0	11	2.8	108.4	1	0	23.55	24549	40274	52
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10	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	700	120	0	66	6	40	4	0	11.5	2260	3708	52
10	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	2100	120	0	63	6	60	4	0	14.5	6764	11097	52
11	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	700	120	0	66	6	40	2	0	11.5	1130	1854	52
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11	AT&T	COMMSCOPE	NNHH-65B-R4 02DT	2300	120	0	59	6	25	4	0	15.08	3221	5284	52
12	AT&T	ERICSSON	SON_AIR6449 NR TB 3700 AT&T	3700	120	0	11	2.8	108.4	1	0	23.55	24549	40274	52

Notes: Table depicts recommended operating parameters for AT&T Mobility proposed operations.