

RADIO FREQUENCY ELECTROMAGNETIC ENERGY EXPOSURE REPORT

PRE-Activation

Prepared for Verizon

Site Name: ANTELOPE CROSSING
Site Num: 780645_5000917465
Site Type: Ball-Field Light Standard

Located at:

5127 Heartland Dr
Antelope, CA 95843
Latitude: 38.71845 / Longitude: -121.345631

Report Date: 09/10/2024
Report By: Jamie Santos, RF Engineer

Based on FCC Rules and Regulations, Verizon will be compliant provided recommendation(s) are implemented.

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1.0 EXECUTIVE SUMMARY

Dtech Communications, LLC (“Dtech”) has been retained by Verizon, care of Sequoia, to determine whether its wireless communications facility complies with the Federal Communications Commission (FCC) Radio Frequency (RF) Safety Guidelines. This report contains a PRE-activation, computer-simulated analysis of the Electromagnetic Energy (EME) exposure resulting from the facility. The cumulative analysis includes contributions from existing wireless carriers on site, where applicable and information is provided. Results are compared to FCC’s General Population (GP) Maximum Permissible Exposure (MPE) Limits. The tables below summarize the results of our EME assessment at a glance:

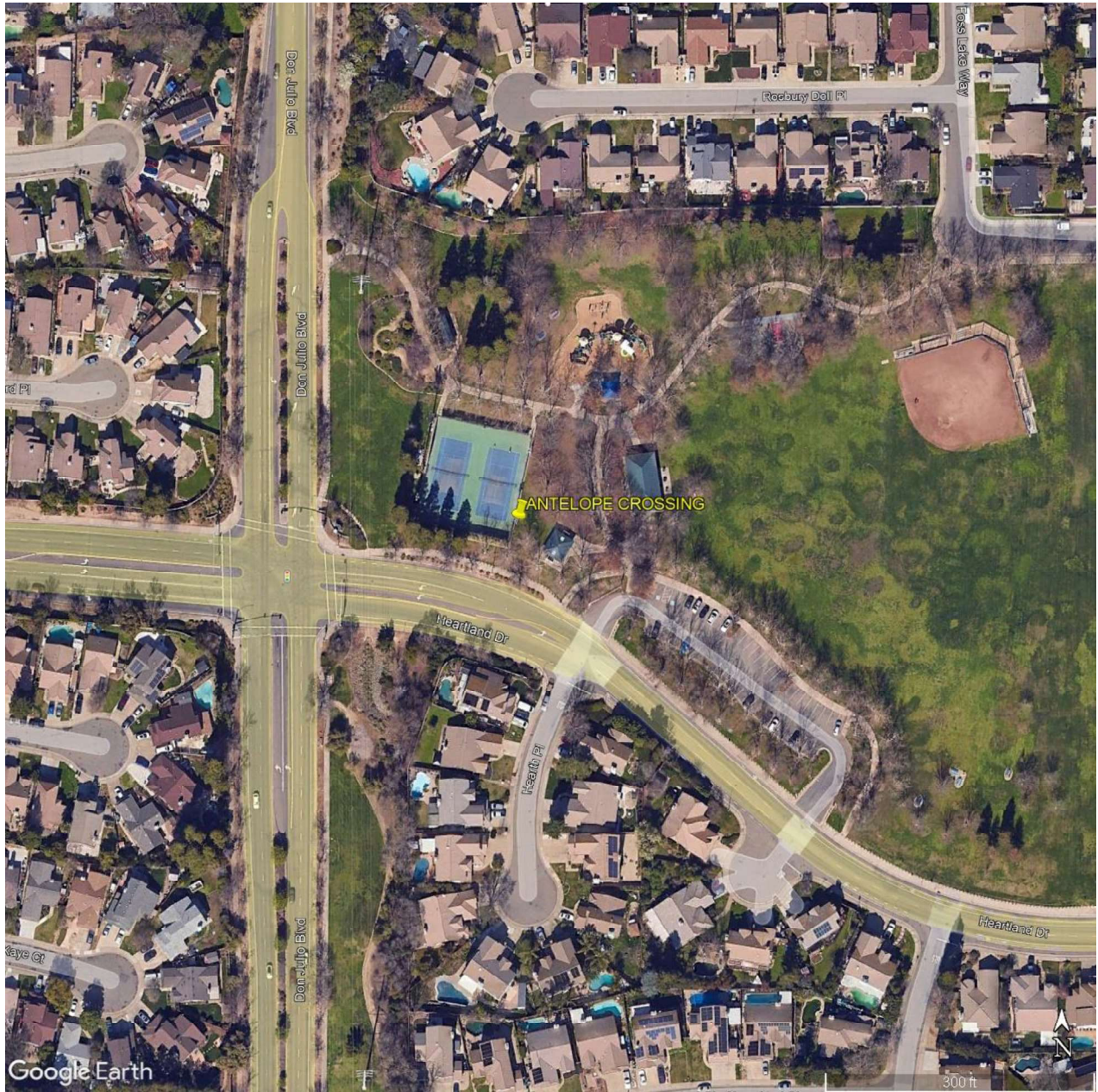
EME Summary

Analyzed Elevation(s)	Height Above Ground Level (ft AGL)	Results (% GP)	Status
Ground	0	38.0	Pass
Adjacent Bldg Roof	15	86.0	Pass
Adjacent Street Light	25	87.5	Pass
Adjacent Light Pole	44	116.0	Mitigation Required (see 4.2)

2.0 SITE DESCRIPTION

The wireless telecommunication facility is located on the ground. The facility consists of 2 wireless carrier(s) or operator(s): Verizon, T-Mobile. The antennas are typically grouped into sectors pointing in different directions to achieve the desired areas of coverage. Verizon’s antennas are mounted on a ballfield light tower.

2.1 Site Map



2.2 Antenna Inventory

The table below reflects the technical specifications provided by our clients and/or gathered from physical field surveys where applicable. This final configuration, including power settings and antenna orientations must be maintained to remain in compliance with FCC guidelines. For co-locators or nearby transmitters, conservative estimates are used for purposes of a cumulative study where information is not provided or available.

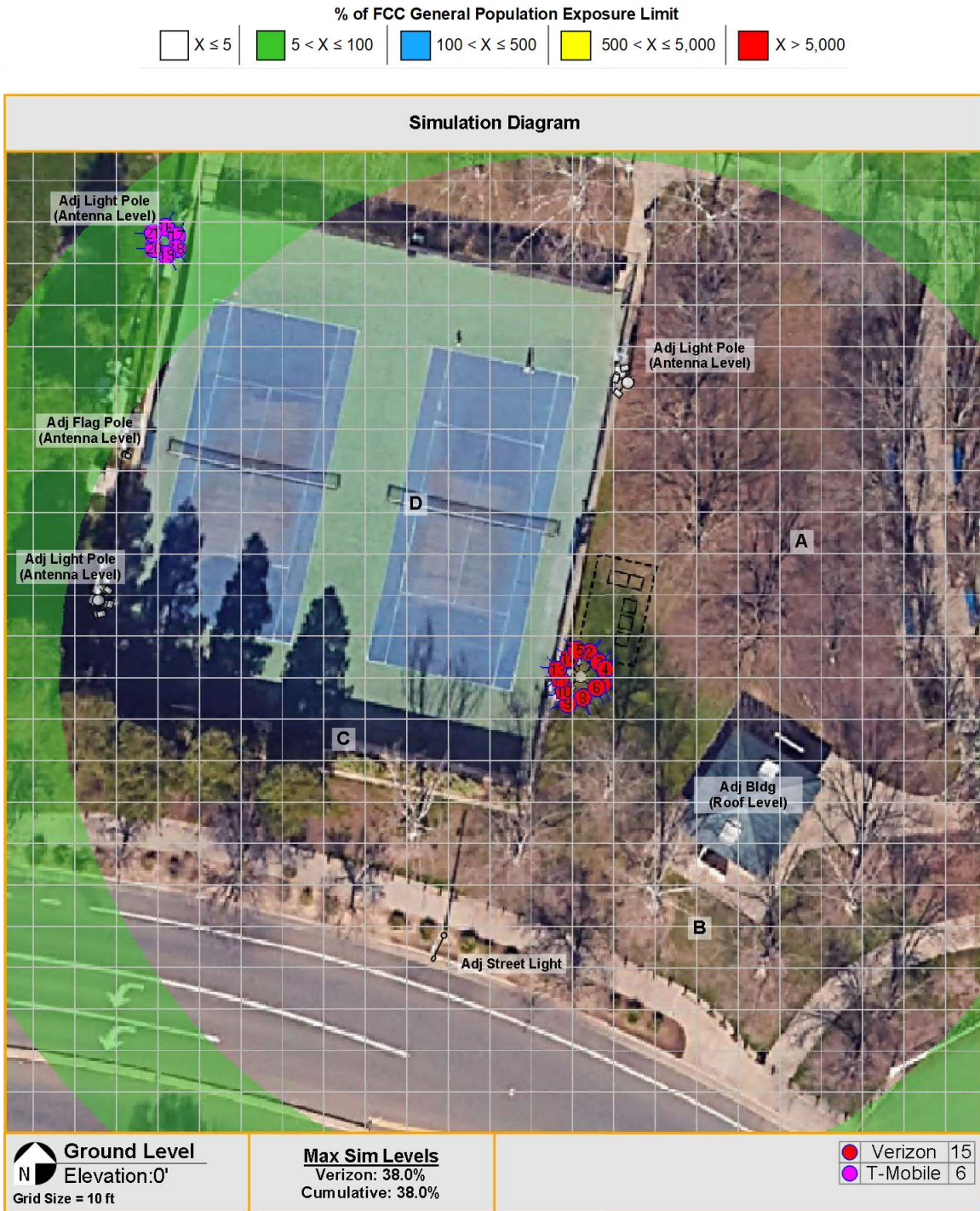
Site Technical Specifications

Antenna ID	Antenna Num	Operator	Antenna Mfg	Antenna Model	Type	Frequency (MHz)	Orientation (°T)	Horizontal BWidth (°)	Antenna Aperture (ft)	Antenna Gain (dBd)	Total Input Power (Watts)	Duty Cycle	Total ERP (Watts)	Rad Center Height Above Ground (Z) (ft)
A1	1	Verizon	Ericsson	AIR6449	Panel	3700	40	11	2.8	23.6	320	0.8	57989	48.7
A2	2	Verizon	Ericsson	KRE105281-1	Panel	3500	50	64	0.7	9.4	20	0.8	138	45.7
A3	3	Verizon	Commscope	NHH-65B-R2B	Panel	746	50	65	6.0	12.3	120	1.0	2043	47.0
A3	3	Verizon	Commscope	NHH-65B-R2B	Panel	880	50	60	6.0	12.6	120	1.0	2199	47.0
A3	3	Verizon	Commscope	NHH-65B-R2B	Panel	1965	50	69	6.0	15.6	240	1.0	8737	47.0
A4	4	Verizon	Commscope	NHH-65B-R2B	Panel	746	50	65	6.0	12.3	120	1.0	2043	47.0
A4	4	Verizon	Commscope	NHH-65B-R2B	Panel	880	50	60	6.0	12.6	120	1.0	2199	47.0
A4	4	Verizon	Commscope	NHH-65B-R2B	Panel	2120	50	64	6.0	16.4	240	1.0	10384	47.0
B1	5	Verizon	Commscope	NHH-65B-R2B	Panel	746	155	65	6.0	12.3	120	1.0	2043	47.0
B1	5	Verizon	Commscope	NHH-65B-R2B	Panel	880	155	60	6.0	12.6	120	1.0	2199	47.0
B1	5	Verizon	Commscope	NHH-65B-R2B	Panel	1965	155	69	6.0	15.6	240	1.0	8737	47.0
B2	6	Verizon	Commscope	NHH-65B-R2B	Panel	746	155	65	6.0	12.3	120	1.0	2043	47.0
B2	6	Verizon	Commscope	NHH-65B-R2B	Panel	880	155	60	6.0	12.6	120	1.0	2199	47.0
B2	6	Verizon	Commscope	NHH-65B-R2B	Panel	2120	155	64	6.0	16.4	240	1.0	10584	47.0
B3	7	Verizon	Ericsson	AIR6449	Panel	3700	160	11	2.8	23.6	320	0.8	57989	48.7
B4	8	Verizon	Ericsson	KRE105281-1	Panel	3500	155	64	0.7	9.4	20	0.8	138	45.7
C1	9	Verizon	Commscope	NHH-33B-R2B	Panel	746	255	39	6.0	14.6	120	1.0	3477	47.0
C1	9	Verizon	Commscope	NHH-33B-R2B	Panel	880	255	33	6.0	16.1	120	1.0	4900	47.0
C1	9	Verizon	Commscope	NHH-33B-R2B	Panel	1965	255	33	6.0	17.2	240	1.0	12658	47.0
C2	10	Verizon	Commscope	NHH-33B-R2B	Panel	746	255	39	6.0	14.6	120	1.0	3477	47.0
C2	10	Verizon	Commscope	NHH-33B-R2B	Panel	880	255	33	6.0	16.1	120	1.0	4900	47.0
C2	10	Verizon	Commscope	NHH-33B-R2B	Panel	2120	255	33	6.0	18.0	240	1.0	15218	47.0
C3	11	Verizon	Ericsson	KRE105281-1	Panel	3500	240	64	0.7	9.4	20	0.8	138	45.7
C4	12	Verizon	Ericsson	AIR6449	Panel	3700	280	11	2.8	23.6	320	0.8	57989	48.7
D1	13	Verizon	Ericsson	KRE105281-1	Panel	3500	325	64	0.7	9.4	20	0.8	138	45.7
D2	14	Verizon	Commscope	NHH-33B-R2B	Panel	746	310	39	6.0	14.6	120	1.0	3477	47.0
D2	14	Verizon	Commscope	NHH-33B-R2B	Panel	880	310	33	6.0	16.1	120	1.0	4900	47.0
D2	14	Verizon	Commscope	NHH-33B-R2B	Panel	1965	310	33	6.0	17.2	240	1.0	12658	47.0
D3	15	Verizon	Commscope	NHH-33B-R2B	Panel	746	310	39	6.0	14.6	120	1.0	3477	47.0
D3	15	Verizon	Commscope	NHH-33B-R2B	Panel	880	310	33	6.0	16.1	120	1.0	4900	47.0
D3	15	Verizon	Commscope	NHH-33B-R2B	Panel	2120	310	33	6.0	18.0	240	1.0	15218	47.0
A1	16	T-Mobile	Unknown	Unknown	Panel	2100	30	62	4.0	14.7	-	1.0	3502	47.0
A2	17	T-Mobile	Unknown	Unknown	Panel	600	30	68	6.0	12.3	-	1.0	2735	47.0
A2	17	T-Mobile	Unknown	Unknown	Panel	700	30	68	6.0	12.3	-	1.0	2735	47.0
A2	17	T-Mobile	Unknown	Unknown	Panel	1900	30	66	6.0	15.8	-	1.0	6140	47.0
B1	18	T-Mobile	Unknown	Unknown	Panel	2100	150	62	4.0	14.7	-	1.0	3502	47.0
B2	19	T-Mobile	Unknown	Unknown	Panel	600	150	68	6.0	12.3	-	1.0	2735	47.0
B2	19	T-Mobile	Unknown	Unknown	Panel	700	150	68	6.0	12.3	-	1.0	2735	47.0
B2	19	T-Mobile	Unknown	Unknown	Panel	1900	150	66	6.0	15.8	-	1.0	6140	47.0
C1	20	T-Mobile	Unknown	Unknown	Panel	2100	270	62	4.0	14.7	-	1.0	3502	47.0
C2	21	T-Mobile	Unknown	Unknown	Panel	600	270	68	6.0	12.3	-	1.0	2735	47.0
C2	21	T-Mobile	Unknown	Unknown	Panel	700	270	68	6.0	12.3	-	1.0	2735	47.0
C2	21	T-Mobile	Unknown	Unknown	Panel	1900	270	66	6.0	15.8	-	1.0	6140	47.0

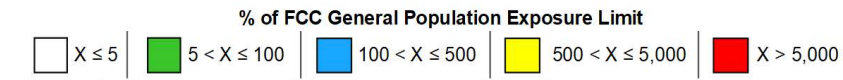
3.0 ANALYSIS

3.1 Emission Predictions

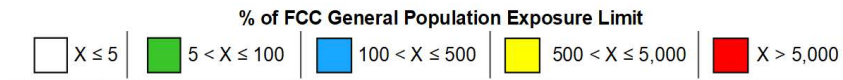
Plan (bird's eye) view map of results compared to FCC's General Population MPE (Maximum Permissible Exposure) Limits for a typical 6-foot person. White represents areas where exposure levels are calculated to be at or below 5%; Green- between 5% & 100% (below MPE limits); blue, yellow & red – greater than 100% (exceeds MPE limits). Individuals can safely occupy areas in white and green for indefinite amount of time; whereas areas in blue, yellow & red must be restricted to RF trained personnel who has been made fully aware of potential for exposure, has control and knows how to reduce their exposure with the use of personal protection equipment or has the ability to power down the transmitters.



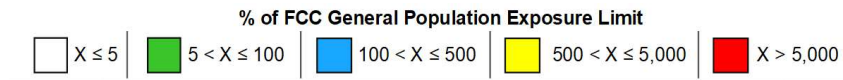
Plan (bird's eye) view map of results compared to FCC's General Population MPE (Maximum Permissible Exposure) Limits for a typical 6-foot person. White represents areas where exposure levels are calculated to be at or below 5%; Green- between 5% & 100% (below MPE limits); blue, yellow & red - greater than 100% (exceeds MPE limits). Individuals can safely occupy areas in white and green for indefinite amount of time; whereas areas in blue, yellow & red must be restricted to RF trained personnel who has been made fully aware of potential for exposure, has control and knows how to reduce their exposure with the use of personal protection equipment or has the ability to power down the transmitters.



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4.0 CONCLUSION

4.1 Results

For a typical 6-foot person standing in accessible areas on the Ground, Adjacent Bldg Roof and Adjacent Street Light, exposure levels for Verizon's site are calculated to be BELOW the FCC's most stringent General Population MPE Limits.

At antenna elevation, the highest calculated exposure level is above the FCC's General Population MPE Limits near the Verizon antenna(s). The maximum overexposed areas extend 75 feet from the front face of the Verizon antenna(s). There are other light poles at or higher than antenna height within the overexposed areas. Beyond this clearance distance, exposure levels are predicted to be below the FCC's General Population MPE Limits.

There may be situations where workers may find themselves directly in front of the antennas or in areas where RF exposure levels may exceed the MPE Limits. Such individuals entering the facility or working near the antennas must be made fully aware of areas of potential concern. Implement an RF safety program/plan. Proper notification including identification of restricted areas or RF exposure maps, antenna shutdown procedures and contact information must be provided to the facility's landlord or property owner. This will help ensure that a regional point of contact or the Network Operation Center (NOC) will be contacted in the event maintenance activities are required inside the RF restricted areas.

4.2 Recommendation(s)

The following compliance action(s) would be sufficient to meet the FCC's and Verizon's RF Safety Guidelines:

- 1) Install RF advisory signs according to the Recommendation diagram.

Recommendation(s)



4.3 Statement of Compliance

Based on the results, analysis and recommendation(s), it is the undersigned's professional opinion that Verizon's site will be compliant provided recommendation(s) are implemented.

4.4 Engineer Certification

This report has been prepared by or under the direction of the following Registered Professional Engineer: Darang Tech, holding California registration number 16000. I have reviewed this report and believe it to be both true and accurate to the best of my knowledge.



Appendix A: Background

Dtech uses the FCC’s guidelines described in detail in Office of Engineering & Technology, Bulletin No. 65 (“OET-65”) “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields”. The table below summarizes the current Maximum Permissible Exposure (“MPE”) safety limits classified into two groups: General population and Occupational.

FCC MPE Limits (from OET-65)

Frequency (Mhz)	General Population/ Uncontrolled MPE (mW/cm)	Averaging Time (minutes)	Occupational/ Controlled MPE (mW/cm)	Averaging Time (minutes)
30 - 300	0.2	30	1.0	6
300 - 1500	Frequency (Mhz)/1500 (0.2 – 1.0)	30	Frequency (Mhz)/300 (1.0 – 5.0)	6
1500 - 100,000	1.0	30	5.0	6

General population/uncontrolled limits apply in situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment, and may not be 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 limits apply in situations in which persons are exposed as a consequence of their employment, and those persons have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled 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.

It is important to understand that the FCC guidelines specify *exposure* limits not *emission* limits. For a transmitting facility to be out of compliance with the FCC's RF safety guidelines an area or areas where levels exceed the MPE limits must, first of all, be in some way *accessible* to the public or to workers. When accessibility to an area where excessive levels is appropriately restricted, the facility or operation can certify that it complies with the FCC requirements.

Appendix B: Measurement and/or Computer Simulation Methods

Spatial averaging measurement technique is used. An area between 2 and 6 feet, approximately the size of an average human, is scanned in single passes from top to bottom in multiple planes. When possible, measurements were made at very close proximity to the antennas and inside the main beam where most of the energy is emitted. The spatial averaged values were recorded. A result higher than 100% exceeds the FCC's General Population MPE Limits.

Dtech uses an industry standard power density prediction computer Model¹ to assess the worse-case, cumulative EMF impact of the surrounding areas of the subject site. In addition, the analysis is performed at 80% duty cycle for all (C-Band/CBRS/mmWave/AAH) TDD technologies. All other frequencies are operating at 100% duty cycle transmitting at maximum total power. Lower Interiors (if applicable), were analyzed 10-feet below roof level with a 10dB deck attenuation. For purposes of a cumulative study, nearby transmitters are included where possible. The result is a surrounding area map color-coded to percentages of the applicable FCC's MPE Limits.

Appendix C: Limitations

The conclusions in this document rendered by Dtech are based solely upon the information collected during the site survey and/or furnished by our Client which Dtech believes is accurate and correct. Dtech, however, has no responsibility should such Client provided information prove to be inaccurate or incorrect. Third party specification estimates used for cumulative computer simulation purposes, where applicable, are based on common industry practices and our best interpretation of available information. Data, results and conclusions in this document are valid as of its date. However, as mobile technologies continuously change, these data, results and conclusions may also be at variance with such future changes. Dtech has no responsibility to update its survey or report to account for such future technology changes. This document was prepared for the use of our Client only and cannot be utilized by any third party for any purpose without Dtech's written consent. Dtech shall have no liability for any unauthorized use of this document and any such unauthorized user shall defend, indemnify and hold Dtech and its owners, directors, officers and employees harmless from and against any liability, claim, demand, loss or expense (including reasonable attorney's fees) arising from such unauthorized use.

¹ Roofmaster(tm)

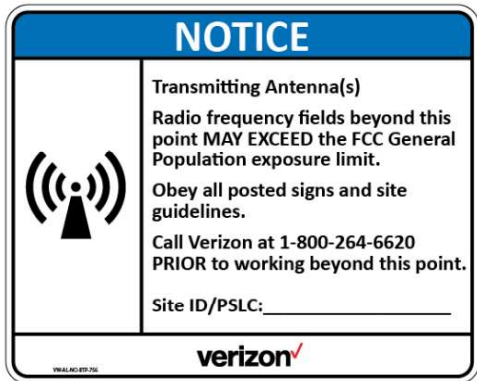
Appendix D: Sample RF Advisory Signs²



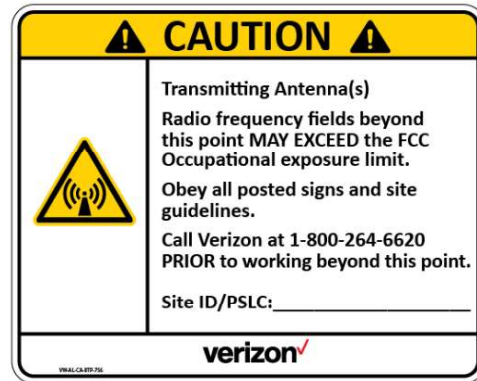
GUIDELINES



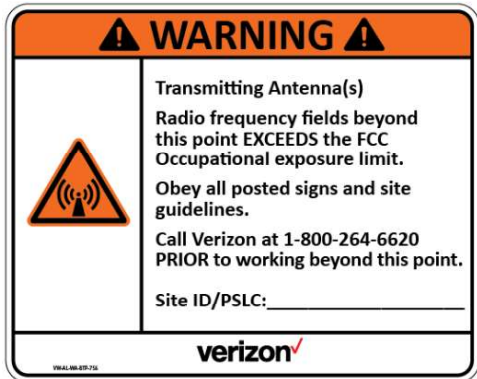
NOC INFORMATION



NOTICE



CAUTION



WARNING

² The above signage is for reference only. Actual signs may be updated in accordance to Verizon RF policy