Attachment 3

RADIO FREQUENCY CERTIFICATION

My name is Keith Vellante. I hold a Bachelor of Science degree in Electrical Engineering from the University of New Hampshire, and I am the Director of Radio Frequency (RF) Services with C Squared Systems, LLC. C Squared Systems has been contracted by Cellco Partnership d/b/a Verizon Wireless ("Cellco") to provide RF consulting services on its behalf.

PURPOSE AND PROJECT DESCRIPTION

This report is submitted by Cellco in support of its Application for Approval of Construction of Small Cell Wireless Facilities in the Public Right-of-Way – COS COB SC1 CT (the "Application") for a proposed small cell wireless telecommunications facility on utility pole number 73261 located in the public right-of-way adjacent to 312 Valley Road in Greenwich (the "Facility").

Antenna(s) will be mounted to the side of the utility pole as indicated in the Lease Exhibit provided as Attachment 1 to the Application. Electrical service equipment associated with the Facility will be located on the lower portion of the pole.

COMPLIANCE WITH FEDERAL AND STATE EMISSION STANDARDS

The Federal Communications Commission ("FCC") has adopted a standard (the "FCC Standard") for exposure of radio frequency ("RF") emissions from telecommunications facilities like the Facility. *See* 47 CFR § 1.1310. To ensure compliance with the FCC Standard, C Squared has performed a RF emissions calculation for the proposed Facility according to the methodology prescribed by the FCC Office of Engineering and Technology Bulletin No. 65 ("OET Bulletin 65") (August 1997). The Far Field Radio Frequency Emissions Analysis ("Far Field Analysis") is a calculation of emissions that takes into consideration the specific RF transmission patterns from the antenna that Cellco intends to use at this site. *See* OET Bulletin 65, at pp. 22-23. The Far Field Analysis calculation provided as Attachment 3a to the Application indicates that the Maximum Permissible Exposure level for the Facility would be 9.08% of the FCC Standard at a distance of 43.66 ft away from the base of the proposed Facility, and 2.98% of the FCC Standard at the base of the proposed Facility. These calculations demonstrate compliance with the FCC Standard for exposure to RF emissions. Actual emissions would be below these calculations.

C Squared has also performed an RF emissions calculation for the proposed Facility according to the above-referenced methodology at a distance of 21 feet, which is the distance to the closest habitable building. The Far Field Analysis calculation indicates that the Maximum Permissible Exposure level for the Facility would be 62.22% of the FCC Standard at this distance.

The enclosed RF Emissions Report for Avon SC13 CT [1] ("Avon SC13 CT Report") provides an example of field measurements taken from an operating small cell facility similar to the facility proposed in this Application. The Avon SC13 CT Report indicates that actual RF emissions values in the field are well below the Far Field Analysis calculations attached.

/s/ Keith Vellante
Keith Vellante
Director of Radio Frequency (RF) Services

[1] Docket No. 23-01-25, *Application of Cellco Partnership d/b/a Verizon Wireless for Approval of a Construction Plan to Install Wireless Facilities Within Certain Public Rights-of-Way (*Avon SC13 CT*)*, Compliance Filing – RF Emissions Site Compliance Report (Jul. 16, 2024).

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Verizon Wireless
Site ID – 16687097-706608
Site Name – AVON SC 13 CT
Site Compliance Report

550 Lovely St Pole No. 363
Avon, CT 06001

Site visit date: July 11, 2024
Site visit time: 9:00 AM
Site survey by: Oliver Smith

Latitude: N41-46-42.88
Longitude: W72-53-25.18
Structure Type: Utility Pole

Report generated date: July 11, 2024
Report by: Benjamin Schnable
Customer Contact: Mark Brauer

Verizon Wireless is compliant with the FCC Rules and Regulations.

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Verizon Wireless
16687097-706608 - AVON SC 13 CT
Radio Frequency (RF) Site Compliance Report



550 Lovely St Pole No. 363, Avon, CT 06001

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1 Executive Summary

1.1 General

Upon evaluation of the cumulative RF exposure levels from all operators at this site, Verizon Wireless has contracted with Site Safe, LLC. (Sitesafe), an independent Radio Frequency (RF) regulatory and engineering consulting firm, to determine whether the communications site, 16687097-706608 - AVON SC 13 CT, located at 550 Lovely St Pole No. 363, Avon, CT, is in compliance with the Federal Communication Commission (FCC) Rules and Regulations for RF emissions.

This report contains a detailed summary of the RF environment at the site including:

- Site compliance determination
- Diagram of the site
- Inventory of the make / model of all antennas
- Theoretical MPE based on predictive modeling
-

1.2 Site Classification & FCC MPE Limits

This report addresses exposure to radio frequency electromagnetic fields in accordance with the FCC Rules and Regulations for all individuals. The FCC defines General Public limits as accessible areas where workers or the general public may be exposed and have not undergone RF awareness training, may not be aware of the potential for exposure, and may not be able to exercise control over their exposure.

1.3 Site Compliance Statement

Upon evaluation of the cumulative RF exposure levels from all operators at this site, Sitesafe has determined that:

Verizon Wireless is compliant with the FCC Rules and Regulations, as described in OET Bulletin 65.

Note: Ensure all existing signage documented in this report still exists on site.

Note: For overall compliance, access to the site (i.e., climbing point(s), etc.) must be locked/restricted.

This document and the conclusions herein are based on the information provided by Verizon Wireless and field measurements performed on site.

Note: The Verizon Wireless antenna measured on site was powered to 100% of its operating capacity during the time the measurements were taken.

If you have any questions regarding RF safety and regulatory compliance, please do not hesitate to contact Sitesafe's Customer Support Department at (703) 276-1100.

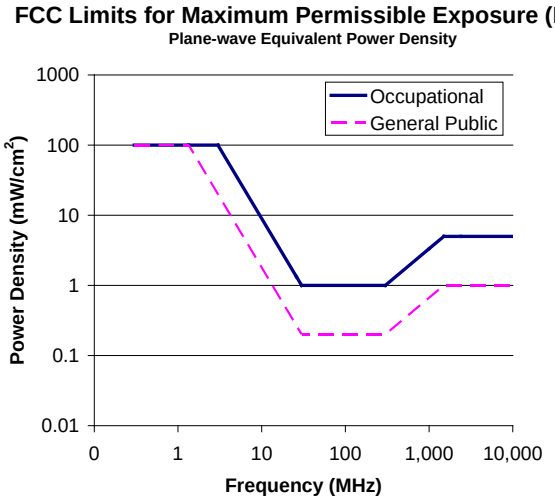
2 Technical Framework

2.1 FCC Rules and Regulations

In 1996, the Federal Communications Commission (FCC) adopted regulations for the evaluating of the effects of RF emissions in 47 CFR § 1.1307 and 1.1310. The guideline from the FCC Office of Engineering and Technology is Bulletin 65 ("OET Bulletin 65"), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996 the FCC periodically reviews these rules and regulations as per their congressional mandate. The FCC has reviewed these rules and regulations beginning in 2019 and have finalized their review in May 2021 with the US Court of Appeals.

Areas are considered controlled when the environment is restricted or "controlled" in order to prevent access from members of the general public or untrained workers. Conversely, areas are considered uncontrolled when access is unrestricted or "uncontrolled" which allows access from members of the general public or untrained workers. An uncontrolled environment should always be evaluated with General Public MPE limits.

The MPE limits utilized in this analysis are outlined in the following diagram and table:



Limits for Occupational/Controlled Exposure (MPE)

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
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

Limits for General Population/Uncontrolled Exposure (MPE)

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
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

3 Safety Plan and Procedures

The following are general recommendations appropriate for a wireless site mounted on a utility pole where access to the antennas is restricted. These are safety recommendations appropriate for maintenance personnel performing work in front of the antennas (elevated on utility pole).

1) Any maintenance personnel required to work immediately in front of antennas (elevated on utility pole) should wear a Personal Protective Monitor (PPM), successfully complete proper RF Safety Awareness training, and have and be trained in the use of appropriate personal protective equipment. Awareness training increases a worker's understanding of potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet-based courses). Sitesafe strongly recommends the use of a PPM. Wearing a PPM will properly forewarn the individual prior to entering an RF exposure area that may approach or exceed the exposure limits. All individuals needing access in front of the antennas should be instructed to obey all posted signs at all times. RF signage plays an important role in properly warning a worker prior to entering into a potential RF exposure area.

2) Any maintenance personnel required to work immediately in front of antennas (elevated on utility pole) should coordinate with the wireless operators to disable transmitters during their work activities.

3) Individuals should always assume all antennas are active. Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting and never stop in front of an antenna. If someone must pass by an antenna, they should move through in a transient manner as quickly and safely as possible, thereby reducing any exposure to a minimum.

4) Individuals should try to maintain a 3-foot clearance from all antennas. There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.

4 Verizon Wireless Antenna Inventory

The Antenna Inventory below displays all transmitting antennas at the site. This inventory was provided by the customer and was utilized by Sitesafe to perform theoretical modeling of RF exposure. The inventory coincides with the site diagram(s) in this report, identifying each antenna's location. The antenna information collected includes the following information:

- Sector
- Technology
- Antenna manufacturers make & model
- Azimuth
- Antenna Height

The following antenna inventory was provided by the customer and was utilized to create the site model diagrams:

Sector	Antenna Number	Technology	Antenna Make and Model	Azimuth (Degrees)	Centerline Height Above Main/Reference Level (ft)
Alpha	1	LTE PCS	Commscope V4SSPP-360S-F	0	26.5
Alpha	1	LTE AWS	Commscope V4SSPP-360S-F	0	26.5
Alpha	1	LTE CBRS	Commscope V4SSPP-360S-F	0	26.5

Note: The centerline height indicates antenna height above the **ground level** unless otherwise indicated.

Note: Each row with the same number in the Ant Number column references the same physical antenna as an antenna may operate in multiple frequency bands.

5 Site Measurements

This section provides a summary of the measurements collected at the site. The spatial average measurement consists of a collection of measurements within a ten (10) second time interval taken at varying heights. The purpose of this measurement technique is to identify the average power density over the dimensions of a typical human body.

See the RF Exposure diagram(s) in Section 6 for the location of each measurement. The measurement points on the diagrams (M1, M2, etc.) correspond with the table below.

Highest General Public Level: 0.094%.

Spatial Average Measurements for FCC General Public MPE Limits	
Measurement Point	**General Public**
M1	0.094 %
M2	0.093 %
M3	0.060 %
M4	0.044 %
M5	0.026 %

Measurements Location:
M1: at the base of the pole.
M2: On embankment behind pole (15 feet from pole)
M3: End of driveway closest to the pole (21 feet from pole)
M4: On embankment in between pole and corner of the garage (35 feet from pole)
M5: Corner of garage closest to the pole (73 feet from pole)

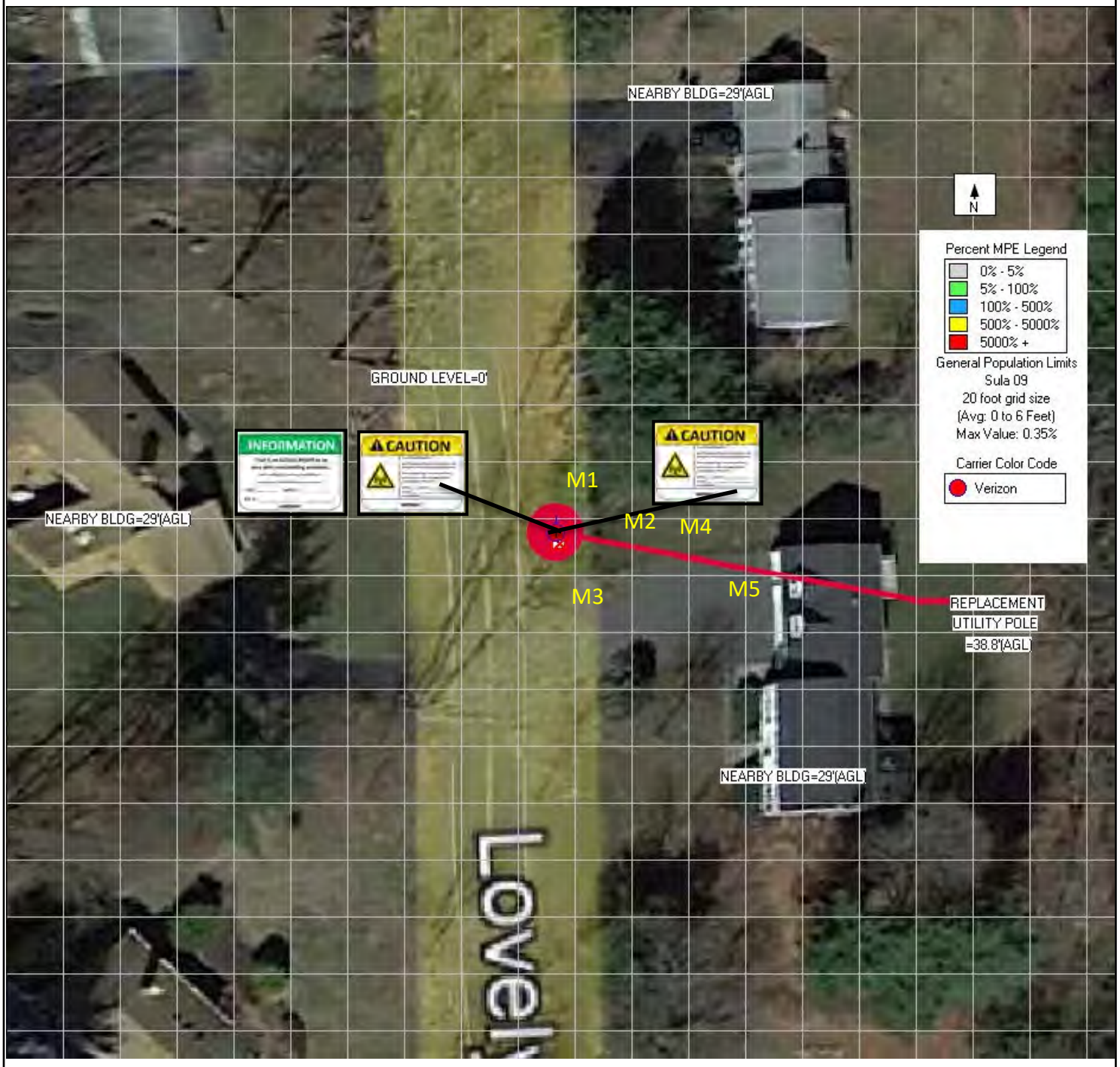
RF meter (WAVECONTROL SMP2) and probe (WPF60 1 MHz - 60 GHz) have been calibrated and used according to the manufacturer's specifications.

Measurements provide a view of the MPE percentage levels at the site at the time of Sitesafe's site visit and are used to validate modeling results. Theoretical modeling is used for determining compliance and the percentage of MPE contributions.

6 Measurements & Mitigation Diagram(s)

The following diagrams display the ground level electromagnetic field measurements performed at the facility as well as the existing and/or proposed mitigation required for site compliance. If applicable, measurement locations are also displayed.

Measurements Diagram with RF Signage



7 Site Pictures



Figure 1: Verizon Wireless Alpha Sector, Antenna 1



Figure 2: Verizon Wireless Alpha Sector, Antenna 1 – Overview



Figure 3: Verizon Wireless Alpha Sector, Antenna 1 – Sign 1



Figure 4: Verizon Wireless Alpha Sector, Antenna 1 – Sign 2



Figure 5: Sign at Base of Utility Pole

8 Summary

The Verizon Wireless facility was evaluated for compliance with the FCC Rules and Regulations using the data provided to Sitesafe. No accessible areas in proximity to the site have the potential to reach or exceed the FCC General Public MPE limits. Therefore, no further RF alert signage or mitigation is required at this time. The existing mitigation and locations of measurements performed is detailed in the diagram(s) in Section 5.

Verizon Wireless is compliant with the FCC Rules and Regulations, as described in OET Bulletin 65.

To reduce the risk of exposure and/or injury, Sitesafe recommends that access to the elevated levels on the utility pole or areas associated with the Verizon Wireless antenna installation be restricted to authorized personnel who have undergone proper RF awareness safety training. Additionally, all signs should be obeyed at all times and any work that must be performed in close proximity to the Verizon Wireless antennas should be coordinated in advance with Verizon Wireless to ensure safe working conditions. Workers can call the Verizon Wireless NOC Number at 1-800-821-5825 for guidance.

8 Reviewer Certification

The reviewer whose signature appears below hereby certifies and affirms:

That I am an employee of Sitesafe, LLC., in Blue Bell, PA, at which place the staff and I provide RF compliance services to clients in the wireless communications industry; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission (FCC) as well as the regulations of the Occupational Safety and Health Administration (OSHA), both in general and specifically as they apply to the FCC Guidelines for Human Exposure to Radio-frequency Radiation; and

That survey measurements of the site environment of the site identified as 16687097-706608 - AVON SC 13 CT have been performed in order to determine where there might be electromagnetic energy that is in excess of both the Controlled Environment and Uncontrolled Environment levels; and

That I have thoroughly reviewed this Site Compliance Report and believe it to be true and accurate to the best of my knowledge as assembled by and attested to by Benjamin Schnable.

July 11, 2024

Mahmoud Eid

Appendix A – Definitions

5% Rule – The rules adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring the area into compliance with the guidelines are the shared responsibility of all licensees whose transmitters produce field strengths or power density levels at the area in question in excess of 5% of the exposure limits. In other words, any wireless operator that contributes 5% or greater of the MPE limits in an area that is identified to be greater than 100% of the MPE limits is responsible for taking corrective actions to bring the site into compliance.

Compliance – The determination of whether a site complies with FCC standards with regards to Human Exposure to Radio Frequency Electromagnetic Fields from transmitting antennas.

Decibel (dB) – A unit for measuring power or strength of a signal.

Duty Cycle – The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 100% corresponds to continuous operation.

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

Effective Radiated Power (ERP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to a half-wave dipole antenna.

Gain (of an antenna) – The ratio, usually expressed in decibels, of the power required at the input of a loss-free reference antenna to the power supplied to the input of the given antenna to produce, in a given direction, the same field strength or the same power density at the same distance. When not specified otherwise, the gain refers to the direction of maximum radiation. Gain may be considered for a specified polarization. Gain may be referenced to an isotropic antenna (dBi) or a half-wave dipole (dBd) antenna.

General Public/Uncontrolled Environment – Defined by the FCC as an area where RF exposure may occur to persons who are **unaware** of the potential for exposure and who have no control over their exposure. General Public is also referenced as General Population.

Generic Antenna – For the purposes of this report, the use of "Generic" as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use its industry specific knowledge of antenna models to select a worst-case scenario antenna to model the site.

Isotropic Antenna – An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.

Maximum Permissible Exposure (MPE) – The rms and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with

these fields to which a person may be exposed without harmful effect and with acceptable safety factor.

Occupational/Controlled Environment – Defined by the FCC as an area where RF exposure may occur to persons who are **aware** of the potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.

OET Bulletin 65 – Technical guideline developed by the FCC's Office of Engineering and Technology to determine the impact of RF exposure on humans. The guideline was published in August 1997.

OSHA (Occupational Safety and Health Administration) – Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual process improvement in workplace safety and health. For more information, visit www.osha.gov.

Radio Frequency Exposure or Electromagnetic Fields – Electromagnetic waves that are propagated from antennas through space.

Spatial Average Measurement – A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average energy a 6-foot-tall human body will absorb while present in an electromagnetic field of energy.

Transmitter Power Output (TPO) – The RF output power of a transmitter's final RF stage as measured at the output terminal while connected to a load.

Appendix B – Statement of Limiting Conditions

Sitesafe will not be responsible for matters of a legal nature that affect the site or property.

Due to the complexity of some wireless sites, Sitesafe performed an analysis and created this report utilizing best industry practices and due diligence. Sitesafe cannot be held accountable or responsible for anomalies or discrepancies due to actual site conditions (e.g., mislabeling of antennas or equipment, inaccessible cable runs, inaccessible antennas or equipment, etc.) or information or data supplied by T-Mobile, the site manager, or their affiliates, subcontractors or assigns.

Sitesafe may note in the Site Compliance Report any adverse physical conditions, such as needed repairs, observed during the survey of the subject property or that Sitesafe became aware of during the normal research involved in performing this survey. Sitesafe will not be responsible for any such conditions that do exist or for any engineering or testing that might be required to discover whether such conditions exist. Because Sitesafe does not provide expertise in the field of mechanical engineering or building maintenance, the Site Compliance Report must not be considered a structural or physical engineering report.

Sitesafe obtained information used in this Site Compliance Report from sources that Sitesafe considers reliable and believes them to be true and correct. Sitesafe does not assume any responsibility for the accuracy of such items that were furnished by other parties. When conflicts in information occur between data provided by a second party and physical data collected by Sitesafe, the physical data will be used.