



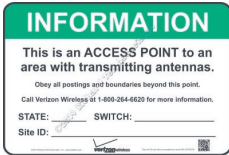





# Radio Frequency Exposure Pre-Installation with Visit FCC Compliance Assessment Per Verizon Policy

Site Specific Information			
Site Name	Florin Industrial	Categorically Excluded?	NO
Peoplesoft ID#	281990		
Street Address	7325 Reese Road	5% Contributor To Areas Requiring Mitigation?	NO
City, State, Zip	Sacramento, CA , 95828		
Multi-Licensee Facility	NO	Max % MPE Predicted (Verizon Only)	0.68% Occupational
Structure Type	Pole	Max % MPE Measured (Cumulative)	N/A
Broadcast Equipment	NO	Assessment Date	February 5, 2015
# of Access Points	N/A	Assessment Purpose	New Cell Site
Compliance Status		Mitigation Required	

<input checked="" type="checkbox"/>	Verizon's worst-case RF power density levels are BELOW the MPE for General Population/Uncontrolled Environments in accessible areas.
<input type="checkbox"/>	Verizon's worst-case RF power density levels are ABOVE the MPE for General Population/Uncontrolled Environments but BELOW the MPE for Occupational/Controlled environments.
<input type="checkbox"/>	Verizon's worst-case RF power density levels are ABOVE the MPE for Occupational/Controlled Environments but BELOW 10x the MPE for Occupational/Controlled environments.
<input type="checkbox"/>	Verizon's worst-case RF power density levels are ABOVE 10x the MPE for Occupational/Controlled Environments.

Compliance Requirements						
	Guidelines	Notice	Caution	Warning	NOC Information	Barrier/Marker
Access Points	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input checked="" type="checkbox"/> [1]	<input type="checkbox"/>
Alpha	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/>
Beta	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/>
Gamma	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/>

Additional Compliance Requirements:			
Training required for authorized personnel needing close approach to antennas. Lockout/tagout procedure recommended. See Section 4.b.			
Consultant Legal Name	Hammett & Edison, Inc.	Phone/Fax	707/996-5200 phone 707/996-5280 fax
Address	Consulting Engineers 470 Third Street West Sonoma, CA 95476	Regulatory Compliance Services for the Wireless Industry RF Exposure, Noise, Interference & Coverage Studies www.h-e.com	

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## 1. Executive Summary

Verizon Wireless has contracted with Hammett & Edison, Inc., an independent Radio Frequency consulting firm, to conduct a Radio Frequency Exposure (RFE) Compliance **Pre-Installation Assessment** of the “Florin Industrial” cell site. The following report contains a detailed summary of the Radio Frequency environment as it relates to Federal Communications Commission (FCC) and Occupational Safety & Health Administration (OSHA) Rules and Regulations for all individuals.

The **Verizon Wireless antenna data** was provided by:

<b>Name</b>	Brie Houlihan
<b>Title</b>	Construction Coordinator, Epic Wireless Group, Inc.
<b>Date</b>	January 21, 2015
<b>Region</b>	Northern California/Nevada

This **pre-installation** compliance assessment and report has been **prepared** and **reviewed** by:

	<b>Preparer</b>	<b>Reviewer</b>
<b>Name</b>	Amber Myers	Andrea L. Bright, P.E.
<b>Title</b>	Staff Engineer	Senior Engineer
<b>Date</b>	February 5, 2015	February 5, 2015

This report utilizes the following **for predictive modeling of the ambient RF environment**:

**MPE Modeling Program:** RFR.Ground 1.24.1

**Required Modeling Assumptions:** 100% Duty Cycle and Maximum Total Power Output.

### **Additional Modeling Assumptions:**

- OET-65 formulas used including 1.6 field reflection
- Manufacturer’s antenna patterns assumed
- 2-meter person height assumed
- Spatial averaging assumed
- Assumes operating power reported by Verizon and, as required, typical conditions for collocated carriers (see Section 2.d.)

2. Proposed Site Characteristics

a. Structure

Physical Description	65-foot pole to be located at 7325 Reese Road in Sacramento, CA	
Site Latitude (NAD 83)	38-29-23.90 N	Data provided by Verizon
Site Longitude (NAD 83)	121-23-41.95 W	
Site Elevation (AMSL)	39 ft	
Structure Height (AGL)	65 ft	
Overall Structure Height		



b. Accessibility

The antennas are to be mounted high on a tall pole and would require specialized equipment to access.		
	All access points locked at time of assessment?	N/A
	All access points alarmed at time of assessment?	N/A

### c. Verizon Wireless Signage

<b>Existing Signage</b>						
	<b>Guidelines</b>	<b>Notice</b>	<b>Caution</b>	<b>Warning</b>	<b>NOC Information</b>	<b>Barrier/Marker</b>
<b>Access Points</b>	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/>
<b>Alpha</b>	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/>
<b>Beta</b>	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/>
<b>Gamma</b>	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/> [#]	<input type="checkbox"/>
<b>Existing Signage Adheres to VZW Signage &amp; Demarcation Policy?</b>						N/A

Proposed site, no existing signage.

### d. Antenna Inventory

(Verizon antenna inventory information provided by Verizon, as noted in Section 1.)

281990 - FLORIN INDUSTRIAL															EME DATA SHEET 4.06										
County: Sacramento										Site (VzW) Contact: #N/A					#N/A					GeoPlan: OKSR		Actual/Max ERP: Actual			
Address: 7325 Reese Rd										RF (VzW) Contact: #N/A					#N/A							ERP Variation: Spectrum: Current			
City: Sacramento, CA 95828										Date: 9/24/14					NOC Label: 15(CA)-5(ROCK)-5596-FLORIN INDUSTRIAL										
Pre-construction															Jurisdiction: No										
ID			Block			Physical Antenna Configuration								Power Calculations					Channels and ERP						
Sector ID	Band	Technology	Channel	Block Owned	LTE Bandwidth Used	LTE Bandwidth Owned	#	Tx Antenna Make & Model	Centerline	Length	Face Orientation	Beam Orientation	Horizontal Beamwidth	Mechanical Tilt	Electrical Tilt	Antenna Gain (dBd)	Line Loss (dB)	Transmitter Make & Model	Voice Trans Max Output Pwr	Data Trans Max Output Pwr	Data Simultaneous Trans	Voice Channels	Data Channels	ERP (W)	ERP Method
ALPHA	850	1x	B				1	ANDREW SBNHH-1D65B_PORT 1 - +45_05DT_0850	62 ft	72 in	45°	45°	65	0	5	13.4	1.3	Motorola basestation	20.0 W	20.0 W	1	4	4	2595 W	Max
	PCS	1x					2	ANDREW SBNHH-1D65B_PORT 1 - +45_05DT_0725	62 ft	72 in	45°	45°	69	0	5	12.6	1.3	Ericsson eNB		60.0 W	2		2	1619 W	Max
	700	LTE	Upr C	10	10		1	ANDREW SBNHH-1D65B_PORT 2 - +45_02DT_1900	62 ft	72 in	45°	45°	55	0	2	15.8	0.3	Ericsson eNB		60.0 W	2		2	4307 W	Max
	PCS	LTE	E	5	5		2	ANDREW SBNHH-1D65B_PORT 2 - +45_02DT_2130	62 ft	72 in	45°	45°	62	0	2	16.1	0.3	Ericsson eNB		60.0 W	2		2	4615 W	Max
BETA	850	1x	A,B	20	20		3	ANDREW SBNHH-1D65B_PORT 1 - +45_05DT_0850	62 ft	72 in	135°	135°	65	0	5	13.4	1.3	Motorola basestation	20.0 W	20.0 W	1	4	4	2595 W	Max
	PCS	1x					4	ANDREW SBNHH-1D65B_PORT 1 - +45_05DT_0725	62 ft	72 in	135°	135°	69	0	5	12.6	1.3	Ericsson eNB		60.0 W	2		2	1619 W	Max
	700	LTE	Upr C	10	10		3	ANDREW SBNHH-1D65B_PORT 2 - +45_02DT_1900	62 ft	72 in	135°	135°	55	0	2	15.8	0.3	Ericsson eNB		60.0 W	2		2	4307 W	Max
	PCS	LTE	E	5	5		4	ANDREW SBNHH-1D65B_PORT 2 - +45_02DT_2130	62 ft	72 in	135°	135°	62	0	2	16.1	0.3	Ericsson eNB		60.0 W	2		2	4615 W	Max
GAMMA	850	1x					5	ANDREW SBNHH-1D65B_PORT 1 - +45_05DT_0850	62 ft	72 in	225°	225°	65	0	5	13.4	1.3	Motorola basestation	20.0 W	20.0 W	1	4	4	2595 W	Max
	PCS	1x					6	ANDREW SBNHH-1D65B_PORT 1 - +45_05DT_0725	62 ft	72 in	225°	225°	69	0	5	12.6	1.3	Ericsson eNB		60.0 W	2		2	1619 W	Max
	700	LTE	Upr C	10	10		5	ANDREW SBNHH-1D65B_PORT 2 - +45_02DT_1900	62 ft	72 in	225°	225°	55	0	2	15.8	0.3	Ericsson eNB		60.0 W	2		2	4307 W	Max
	PCS	LTE	E	5	5		6	ANDREW SBNHH-1D65B_PORT 2 - +45_02DT_2130	62 ft	72 in	225°	225°	62	0	2	16.1	0.3	Ericsson eNB		60.0 W	2		2	4615 W	Max

Note: The datasheet above, provided by Verizon, does not include the Delta sector (315°T orientation); however, that sector was included in the analysis, based on the drawings provided by Peek Site-Com, dated July 30, 2014.

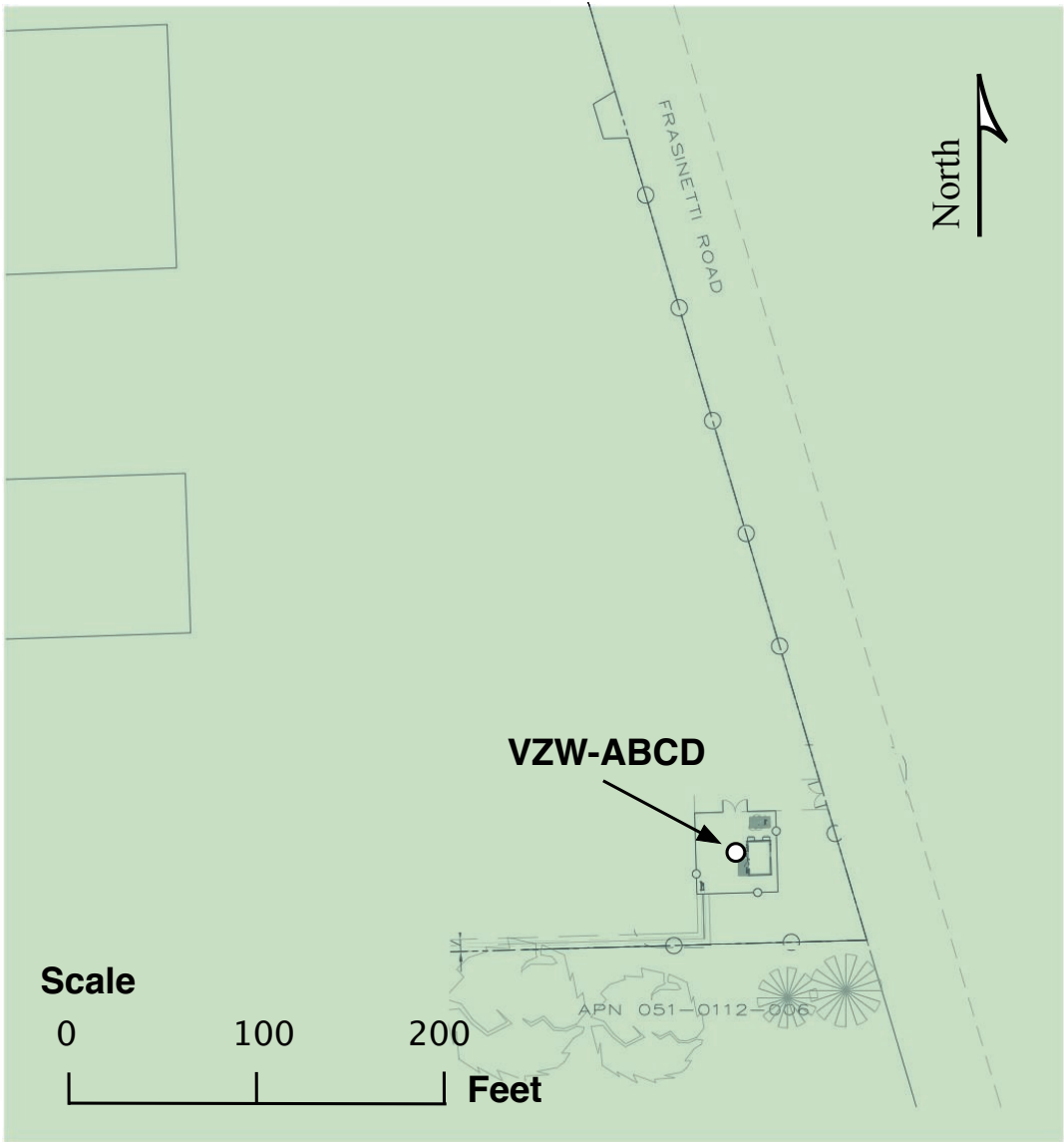
3. Analysis  
a. Field Measurements



Access Point Legend:	
H	Hatch
D	Door
L	Ladder
F	Fire Escape

- 3. Analysis
- b. Predictive Model: All Transmitters

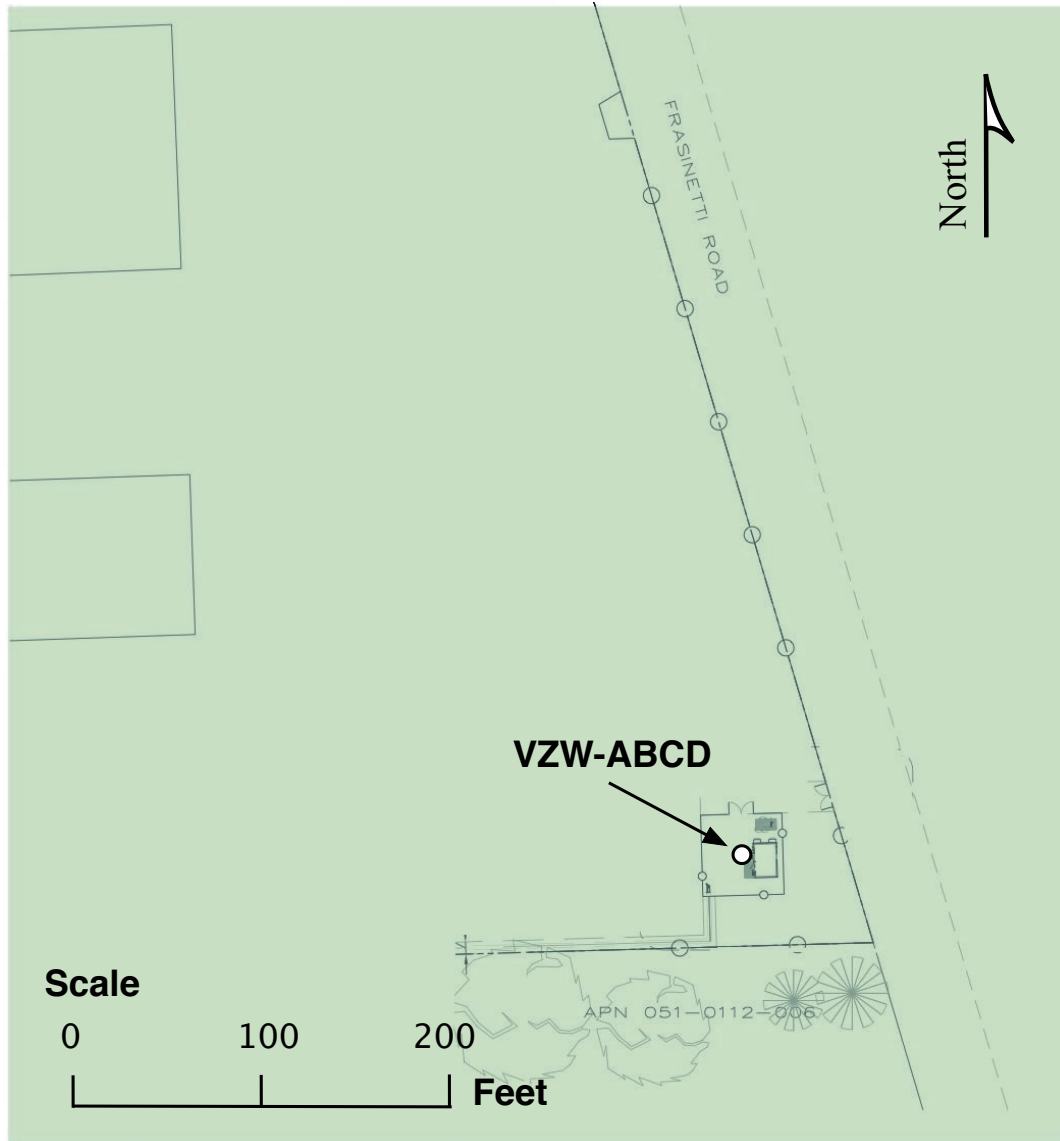
Ground and Roofs of Nearby Buildings



Access Point Legend:		Color	Occupational MPE
H	Hatch	Green	< 20%
D	Door	Blue	20 – 100%
L	Ladder	Yellow	100 – 1000%
F	Fire Escape	Red	> 1000%

3. Analysis
  - c. Predictive Model: Significant Contribution of Verizon Wireless

### Ground and Roofs of Nearby Buildings



Access Point Legend:	
<b>H</b>	Hatch
<b>D</b>	Door
<b>L</b>	Ladder
<b>F</b>	Fire Escape

Color	Occupational MPE
<span style="display: inline-block; width: 15px; height: 10px; background-color: green; border: 1px solid black;"></span>	< 1%
<span style="display: inline-block; width: 15px; height: 10px; background-color: purple; border: 1px solid black;"></span>	≥ 1%

#### 4. Conclusion

##### a. Conclusion Narrative

##### Description of MPE-Limit Exceeding Areas

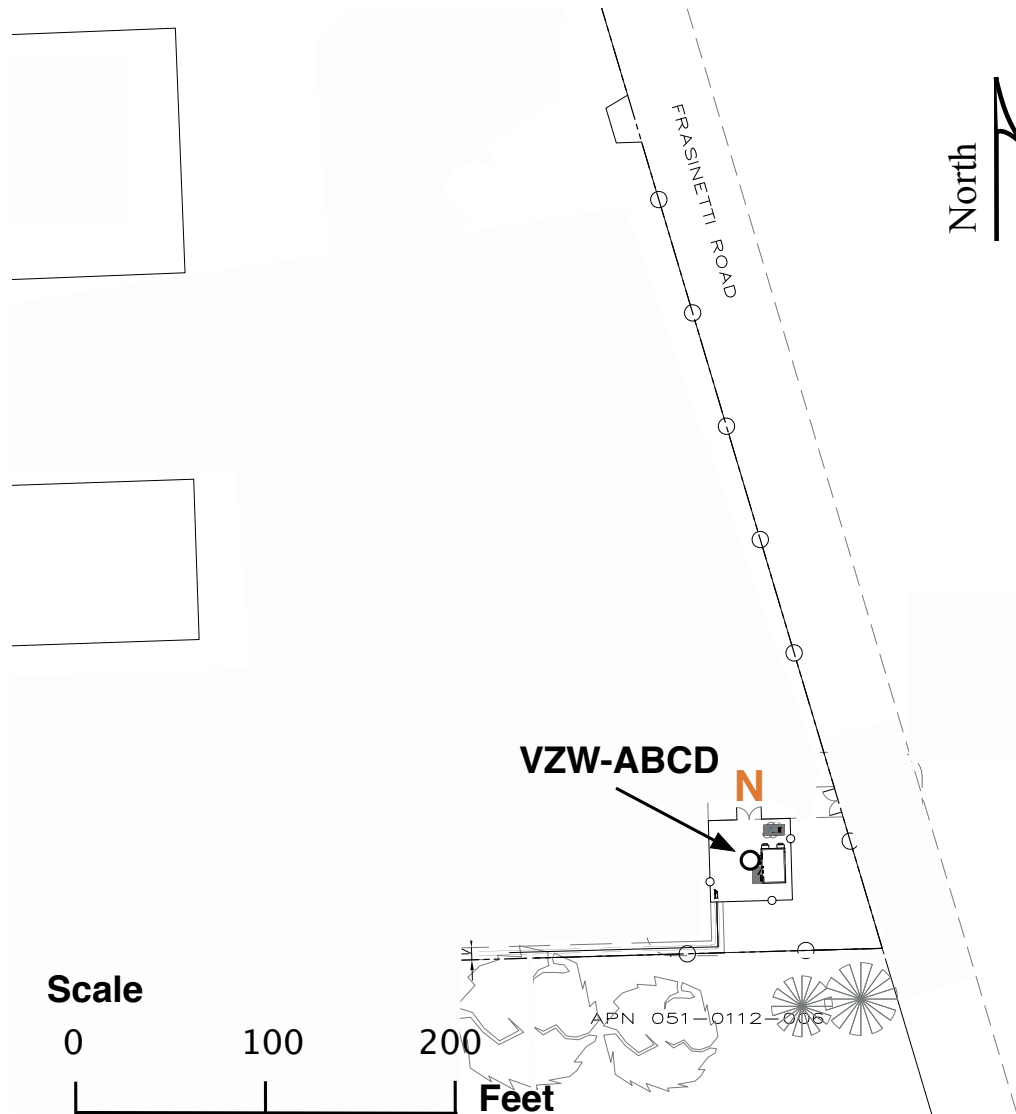
None

##### Collocator Significant Contribution Areas

N/A

4. Conclusion
- b. Compliance Requirements

### Signage/Barrier Diagram



Access Point Legend:	
<b>H</b>	Hatch
<b>D</b>	Door
<b>L</b>	Ladder
<b>F</b>	Fire Escape

Signage Legend:	
<b>N</b>	NOC
<b>G</b>	Guidelines
<b>B</b>	Blue NOTICE
<b>Y</b>	Yellow CAUTION
<b>R</b>	Red WARNING

#### **4. Conclusion**

##### **b. Compliance Requirements (continued)**

###### **Signage/Barrier Installation Detail**

A NOC sign should be installed on the outside of the fenced enclosure surrounding the proposed pole, as shown in the above diagram.

It is recommended that close approach to the antennas themselves be limited to personnel who have been adequately trained in RF Safety and Awareness, including OSHA lockout/tagout procedures to be followed whenever an antenna is shut down to allow for close access.

## 5. Appendix A: Site Photos

### a. Structure

Pole is not currently built. Proposed site location is shown in photos below.



### b. Access Point (N/A)

## 5. Appendix A: Site Photos (continued)

### c. Individual Sector Locations (antenna locations on left, view from antennas on right)

Site is not currently built. Views at ground level in various directions shown in photos below.

45°T



135°T



225°T



315°T



## 5. Appendix A: Site Photos (continued)

### d. Miscellaneous

N/A

## **6. Appendix B: Survey Methodology**

### **a. Survey Procedures**

The site survey was conducted by Mr. David DeSmet, a qualified engineer employed by Hammett & Edison, Inc., during normal business hours on January 29, 2015, a non-holiday weekday. No RF measurements were taken, as there are no Verizon antennas currently installed.

### **b. Survey Equipment Certification**

N/A

## 7. Appendix C: RF Consultant Certifications


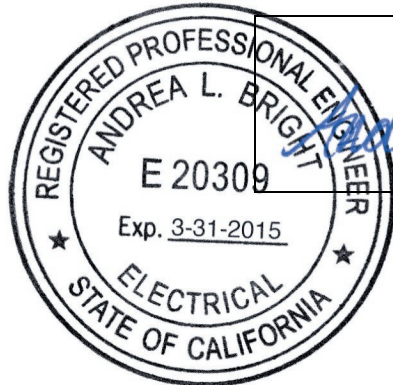
### a. Preparer Certification

I, Amber Myers, the preparer of this report, 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. I am also fully aware of and familiar with the Verizon Wireless Signage & Demarcation Policy. I have reviewed this Radio Frequency Exposure Assessment report and believe it to be both true and accurate to the best of my knowledge.



### b. Reviewer Certification

I, Andrea L. Bright, P.E., the reviewer and approver of this report, 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. I am also fully aware of and familiar with the Verizon Wireless Signage & Demarcation Policy. I have reviewed this Radio Frequency Exposure Assessment report and believe it to be both true and accurate to the best of my knowledge.



## 8. Appendix D: Reference Information (from Verizon)

### a. FCC Rules & Regulations

The Federal Communications Commission (FCC) has established safety guidelines relating to RF exposure from cell sites. The FCC developed those standards, known as Maximum Permissible Exposure (MPE) limits, in consultation with numerous other federal agencies, including the Environmental Protection Agency, the Food and Drug Administration, and the Occupational Safety and Health Administration. The standards were developed by expert scientists and engineers after extensive reviews of the scientific literature related to RF biological effects. The FCC explains that its standards “incorporate prudent margins of safety.” The following represents explanations of the most applicable information:

#### Two Classifications for Exposure Limits

Occupational – Applies to situations in which persons are “exposed as a consequence of their <i>employment</i> ” and are “ <i>fully aware</i> of the potential for exposure and can <i>exercise control</i> over their exposure”.	General Population – Applies to situations in which persons are “exposed as a consequence of their employment <i>may not be made fully aware</i> of the potential for exposure or <i>cannot exercise control</i> over their exposure”. Generally speaking, those without significant and documented RF Safety & Awareness training would be in the General Population classification.
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#### Environment Classification

Controlled – Applies to environments that are restricted or “controlled” in order to prevent access from members of the General Population classification.	Uncontrolled – Applies to environments that are unrestricted or “uncontrolled” that allow access from members of the General Population classification.
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<i>Limits for Occupational/Controlled Exposure</i>		
Frequency	Power Density	Averaging Time
Range	(S)	$ E ^2$ , $ H ^2$ , or S
(MHz)	(mW/cm <sup>2</sup> )	(minutes)
300-1500	$f/300$	6
1500-100,000	5	6
<i>Limits for General Population/Uncontrolled Exposure</i>		
Frequency	Power Density	Averaging Time
Range	(S)	$ E ^2$ , $ H ^2$ , or S
(MHz)	(mW/cm <sup>2</sup> )	(minutes)
300-1500	$f/1500$	30
1500-100,000	1	30
$f = \text{frequency in MHz}$		

#### Significant Contribution to the RF Environment

Any carrier contributing an aggregate MPE percentage of 5 or more (to the applicable RF Environment Classification) is defined as a significant contributor. This means that if any area is determined to be out of compliance with FCC rules, all significant contributors are jointly responsible for correcting any deficiencies.

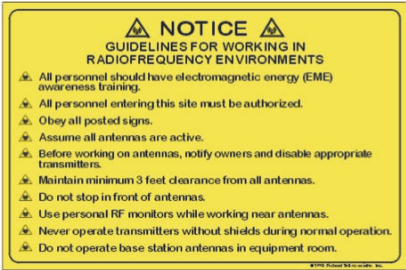

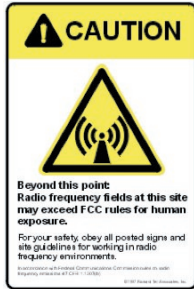

### b. Occupational Safety and Health Administration (OSHA) Requirements


A formal adopter of FCC Standards, OSHA stipulates that those in the Occupational classification must complete training in the following: RF Safety, RF Awareness, and Utilization of Personal Protective Equipment. OSHA also provides options for Hazard Prevention and Control:

Hazard Prevention	Control
<ul style="list-style-type: none"> <li>Utilization of good equipment</li> <li>Enact control of hazard areas</li> <li>Limit exposures</li> <li>Employ medical surveillance and accident response</li> </ul>	<ul style="list-style-type: none"> <li>Employ Lockout/Tag out</li> <li>Utilize personal alarms &amp; protective clothing</li> <li>Prevent access to hazardous locations</li> <li>Develop or operate an administrative control program</li> </ul>

### c. RF Signage

Areas or portions of any transmitter site may be susceptible to high power densities that could cause personnel exposures in excess of the FCC guidelines. These areas must be demarcated by conspicuously posted signage that identifies the potential exposure. Signage MUST be viewable regardless of the viewer's position.

GUIDELINES	NOTICE	CAUTION	WARNING
This sign will inform anyone of the basic precautions to follow when entering an area with transmitting radiofrequency equipment.	This sign indicates that RF emissions may exceed the FCC General Population MPE limit.	This sign indicates that RF emissions may exceed the FCC Occupational MPE limit.	This sign indicates that RF emissions may exceed at least 10x the FCC Occupational MPE limit.
			

INFORMATION SIGN
Information signs are used as a means to provide contact information for any questions or concerns. They will include specific cell site identification information and the Verizon Wireless Network Operations Center phone number.


### d. Physical Barriers

Physical barriers are control measures that require awareness and participation of personnel. Physical barriers are employed as an additional administration control to complement RF signage and physically demarcate an area in which RF exposure levels may exceed the FCC General Population limit.

### e. Indicative Markers

Indicative markers are visible control measures that require awareness and participation of personnel, as they cannot physically prevent someone from entering an area of potential concern. Indicative markers are employed as an additional administration control to complement RF signage and visually demarcate an area in which RF exposure levels may exceed the FCC General Population limit.