Exhibit 7

“Radio Frequency Compliance Study”

DONALD L. HAES, JR., PH.D., CHP

Radiation Safety Specialist

MA Radiation Control Program Health Physics Services Provider Registration #65-0017

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February 8, 2019

RE: Proposed installation of a radio base station antenna and associated equipment for the Verizon Wireless Small Cell Personal Wireless Services facility to be located on an existing utility pole located at 6 Fort Street, Fairhaven, MA.

PURPOSE

I have reviewed the information pertinent to the Verizon Wireless proposed installation of a small cell (SC) personal wireless services (PWS) facility within Fairhaven, MA. To determine regulatory compliance, theoretical calculations of maximal radio-frequency (RF) fields have been prepared. The physical conditions are that Verizon Wireless proposes to install an omni-directional canister type PWS antenna on an existing utility pole at **6 Fort Street, Fairhaven, MA**. The antenna arrangement will include a single canister antenna and two remote radio head (RRH) units. The mounting centerline height of the antenna is proposed to be 24.2' above ground level (AGL). This report provides written proof that the proposed facility would comply with the Federal Communications Commission (FCC) RF exposure guidelines,[i,ii] including residential areas and in the surrounding neighborhood.

This report considers the contributions of the Verizon Wireless PWS transmitters operating at their proposed capacity. The calculated values of RF fields are presented as a percent of current Maximum Permissible Exposure (%MPE) values as adopted by the FCC, and those established by the Massachusetts Department of Public Health (MDPH).[iii]

SUMMARY

Theoretical RF field calculations data indicate the summation of the proposed Verizon Wireless RF contributions would be well within the established RF exposure guidelines at the proposed site; see Figure 3. These results indicate there could be many more similar installations at this location, and still be within Federal and State guidelines for RF exposure. This report provides written proof that the proposed facility would comply with the FCC RF exposure guidelines, including residential areas and in the surrounding neighborhoods.

Based on the theoretical RF fields I have calculated, it is my expert opinion that this facility would comply with all regulatory guidelines for RF exposure to members of the public. The antenna installations proposed by Verizon Wireless would not produce significant changes to the ambient RF environment.

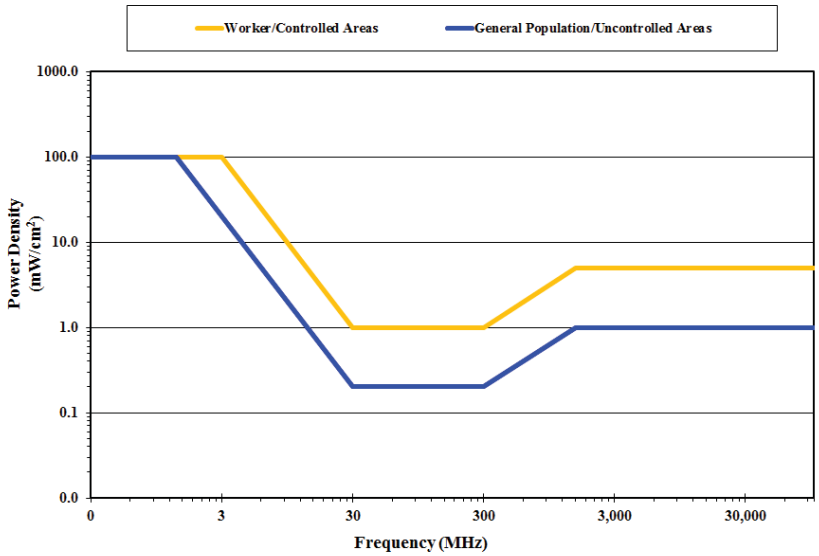


Figure 1: FCC Limits for Maximum Permissible Exposure (MPE)

EXPOSURE LIMITS AND GUIDELINES

The RF exposure guidelines adopted by the FCC are a combination of the standards published by the American National Standards Institute (ANSI) [iv] and the National Council on Radiation Protection and Measurement (NCRP). [v] Also applicable are those published by the MDPH. The RF exposure guidelines are divided into two categories: "Controlled/Occupational areas" (those areas restricted to access by RF workers only) and "Uncontrolled/Public Areas" (those areas unrestricted for public access). Listed in Table 1 below and shown in Figure 1 above are the applicable RF exposure guidelines for uncontrolled areas as they pertain to the operating frequency band of the PWS facility.

Table 1: Maximum Permissible Exposure Values for Uncontrolled/Public Areas

Frequency Band:	Maximum Permissible Exposure:
300 - 1500 MHz	f / 1.5 in $\mu W/cm^2$
1500 - 100,000 MHz	1000 $\mu W/cm^2$ *

Note: 1 µW = 0.000001 Watt

* For equivalent plane-wave power density, where f is the frequency in MHz (10^6 Hz).

NOTE: FCC 5% Rule – At multiple transmitter sites, actions necessary to bring the area into compliance with the RF exposure guidelines are the shared responsibility of all licensees whose transmitters produce RF field levels in excess of 5% of the applicable FCC MPEs.

THEORETICAL RF FIELD CALCULATIONS - GROUND LEVELS

METHODOLOGY

These calculations are based on what are called "worst-case" estimates. That is, the estimates assume 100% use of all transmitters simultaneously. Additionally, the calculations make the assumption that the surrounding area is a flat plane. The resultant values are thus conservative in that they over predict actual resultant power densities. The calculations are based on the following information for VERIZON WIRELESS:

1. Effective Radiated Power (ERP): See Table 2 inventory.
2. Antenna height (centerline, above ground level (AGL) See Table 2 inventory.
3. Antenna vertical radiation patterns; the source of the negative gain (G) values. "Omni directional" antennas are designed to focus the RF signal, resulting in "patterns" of signal loss and gain. These patterns (see **APPENDIX A**) display the loss of signal strength relative to the direction of propagation due to elevation angle changes.
   Note: G is a unitless factor usually expressed in decibels (dB); where $G = 10^{(dB/10)}$.
   For example: for an antenna *gain* of 3 dB, the net factor $(G) = 10^{(3/10)} = 2$.
   For an antenna *loss* of -3 dB, the net factor $(G) = 10^{(-3/10)} = 0.5$.

To determine the magnitude of the RF field, the power density (S) from an isotropic RF source is calculated, making use of the power density formula as outlined in FCC's OET Bulletin 65, Edition 97-01: [vi]

$$S = \frac{P \cdot G}{4 \cdot \pi \cdot R^2}$$

Where:
- $P \rightarrow$ Power to antenna (watts)
- $G \rightarrow$ Gain of antenna
- $R \rightarrow$ Distance (range) from antenna source to point of intersection with the ground (feet)
  $R^2 = (\text{Height})^2 + (\text{Horizontal distance})^2$

Since: $P \cdot G = EIRP$ (Effective Isotropic Radiated Power) for broadcast antennas, the equation can be presented in the following form:

$$S = \frac{EIRP}{4 \cdot \pi \cdot R^2}$$

In the situation of off-axis power density calculations, apply the negative elevation gain (G^E) value from the vertical radiation patterns with the following formula:

$$S = \frac{EIRP \cdot G^E}{4 \cdot \pi \cdot R^2}$$

Ground reflections may add in-phase with the direct wave, and essentially double the electric field intensity. Because power density is proportional to the *square* of the electric field, the power density may quadruple, that is, increase by a factor of four (4). Since ERP is routinely used, it is necessary to convert ERP into EIRP; this is readily done by multiplying the ERP by the factor of 1.64, which is the gain of a half-wave dipole relative to an isotropic radiator. Therefore, downrange power density estimates can be calculated by using the formula:

$$S = \frac{4 \cdot (ERP \cdot 1.64) \cdot G^E}{4 \cdot \pi \cdot R^2} = \frac{ERP \cdot 1.64 \cdot G^E}{\pi \cdot R^2} = \frac{0.522 \cdot ERP \cdot G^E}{R^2}$$

To calculate the % MPE, use the formula:

$$\% \text{ MPE} = \frac{S}{MPE} \cdot 100$$

ANTENNA INSTALLATION LOCATION

The existing utility pole which would be replaced with another pole which would host a Verizon Wireless SC antenna is shown below in Figure 2.

Figure 2: Existing Utility Pole at 6 Fort Street, Fairhaven, MA Which Would Host a Verizon Wireless SC Antenna

The results of the percent Maximum Permissible Exposure (%MPE) calculations for the summation of the proposed Verizon Wireless contributions are depicted in Figure 3 as plotted against linear distance from the base of the utility pole. The values have been calculated for a height of six feet above ground level in accordance with regulatory rationale. In addition to the six-foot height, and depicted on the graph for reference only, values have been plotted for a height of 16 feet above ground level for comparison with a typical two-story structure. A logarithmic scale was used to plot the calculated theoretical %MPE values in order to compare with the MPE of 100%, which is so much larger that it would be off the page in a linear plot. The curves in the figure resemble a straight-line on the log-linear plots at distances beyond about one thousand feet. Within that distance, the curves are variable due to the application of the vertical radiation patterns.

OBSERVATIONS IN CONSIDERATION WITH FCC RULES §1.1307(B) & §1.1310

Is it physically possible to stand next to or touch any omni-directional antenna? **NO**, access to the utility pole is restricted, and the utility companies will adhere to RF safety guidelines regarding potential access to the proposed PWS antennas mounted on the pole.

ANTENNA INVENTORY

Table 2: Proposed Verizon Wireless Antenna Inventory
Utility Pole at 6 Fort Street, Fairhaven, MA

Parameters: 536 watts ERP* of AWS @ 2150 MHz
407 watts ERP* of PCS @ 1950 MHz

Site Name	Antenna Centerline (AGL)	Antenna Model
Fairhaven SC07 MA	24.2’	NH360QM-DG
Information relevant to the antenna proposed by Verizon Wireless Appendix A.		

Table Notes:

AWS: **A**dvanced **W**ireless **S**ervices

PCS: **P**ersonal **C**ommunication **S**ervices

* ERP = Power out per channel (CH) X # channels per remote radio head (RRH) X #RRHs X gain the antenna provides within that frequency band.

The results of the RF field calculations for the summation of the proposed Verizon Wireless AWS and PCS technologies are depicted in Figure 3.

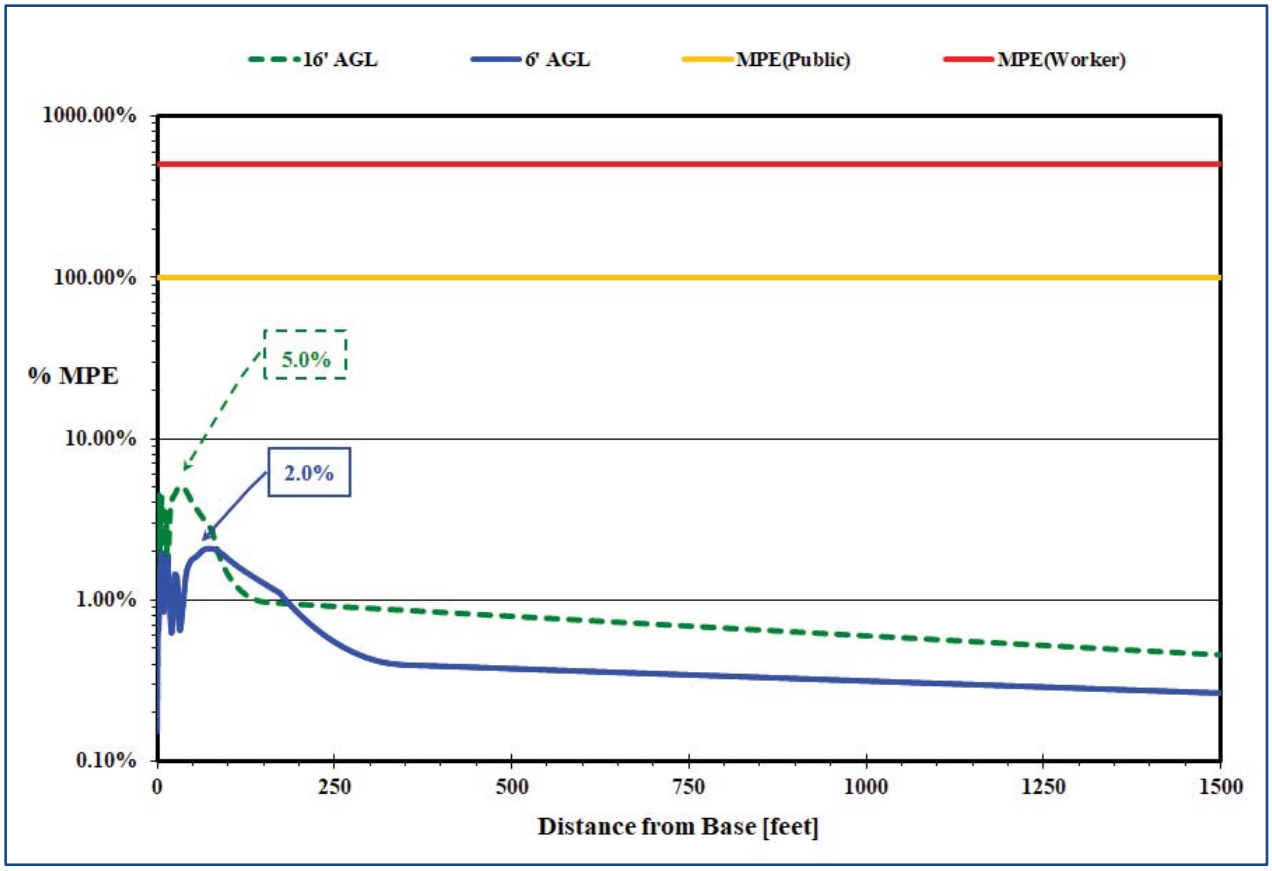


Figure 3: Theoretical RF Field Calculations for the Summation of the Proposed Verizon Wireless Small Cell Antenna Site "Fairhaven SC07 MA" 6 Fort Street, Fairhaven, MA

CONCLUSION

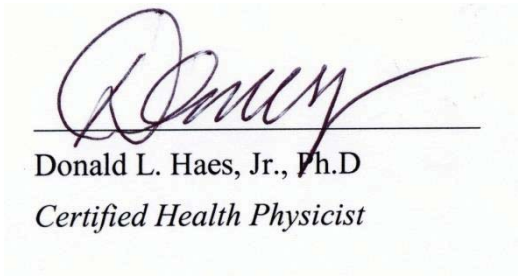
Theoretical RF field calculations data indicate the summation of the proposed Verizon Wireless RF contributions would be well within the established RF exposure guidelines at the proposed site; see Figure 3. These results indicate there could be many more similar installations at this location, and still be within Federal and State guidelines for RF exposure. This report provides written proof that the proposed facility would comply with the FCC RF exposure guidelines, including residential areas and in the surrounding neighborhoods.

The number and duration of calls passing through PWS facilities cannot be accurately predicted. Thus, in order to estimate the highest RF fields possible from operation of these installations, the maximal amount of usage was considered. Even in this so-called "worst-case", the resultant increase in RF field levels are far below established levels considered safe.

Based on the theoretical RF fields I have calculated, it is my expert opinion that this facility would comply with all regulatory guidelines for RF exposure to members of the public. The antenna installations proposed by Verizon Wireless would not produce significant changes to the ambient RF environment.

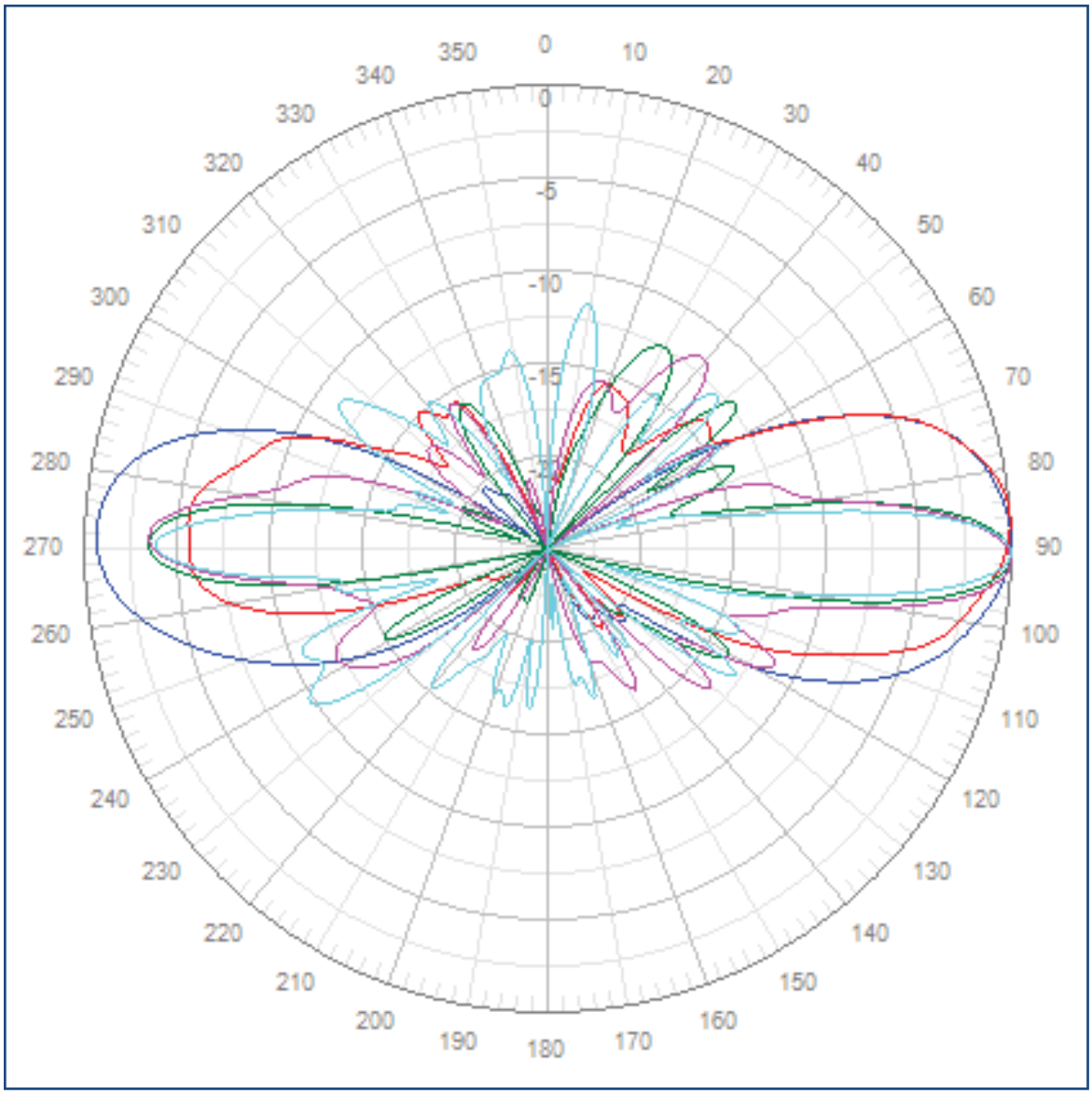
Feel free to contact me if you have any questions.

Sincerely,



Donald L. Haes, Jr., Ph.D
Certified Health Physicist

APPENDIX A



Composite Vertical Radiation Patterns for Proposed Small Cell Omni Antenna For Specific Verizon Wireless Proposed AWS & PCS Frequencies

DONALD L. HAES, JR., PH.D., CHP

Radiation Safety Specialist

MA Radiation Control Program Health Physics Services Provider Registration #65-0017

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STATEMENT OF CERTIFICATION

1. I certify to the best of my knowledge and belief, the statements of fact contained in this report are true and correct.

2. The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are personal, unbiased professional analyses, opinions and conclusions.

3. I have no present or prospective interest in the property that is the subject of this report and I have no personal interest or bias with respect to the parties involved.

4. My compensation is not contingent upon the reporting of a predetermined energy level or direction in energy level that favors the cause of the client, the amount of energy level estimate, the attainment of a stipulated result, or the occurrence of a subsequent event.

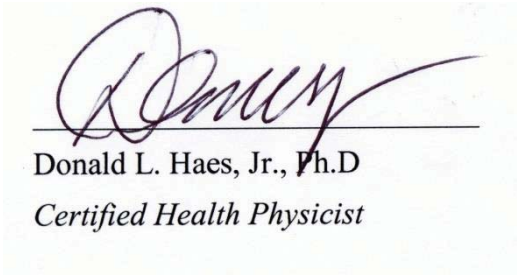
5. This assignment was not based on a requested minimum environmental energy level or specific power density.

6. My compensation is not contingent on an action or event resulting from the analyses, opinions, or conclusions in, or the use of, this report.

7. The consultant has accepted this assessment assignment having the knowledge and experience necessary to complete the assignment competently.

8. My analyses, opinions, and conclusions were developed and this report has been prepared, in conformity with the *American Board of Health Physics* (ABHP) statements of standards of professional responsibility for Certified Health Physicists.

Date: February 8, 2019



Donald L. Haes, Jr., Ph.D

Certified Health Physicist

ENDNOTES

[i]. Federal Register, Federal Communications Commission Rules; *Radiofrequency radiation; environmental effects evaluation guidelines* Volume 1, No. 153, 41006-41199, August 7, 1996. (47 CFR Part 1; Federal Communications Commission).

[ii]. Telecommunications Act of 1996, 47 USC; Second Session of the 104th Congress of the United States of America, January 3, 1996.

[iii]. 105 CMR 122.000: Massachusetts Department of Public Health, *Non-Ionizing Radiation Limits for: The General Public from Non-Occupational Exposure to Electromagnetic Fields, Employees from Occupational Exposure to Electromagnetic Fields, and Exposure from Microwave Ovens*.

[iv]. ANSI/IEEE C95.1-1999: American National Standard, *Safety levels with respect to human exposure to radio frequency electromagnetic fields, from 3 kHz to 300 GHz* **(Updated to ANSI/IEEE C95.1-2019: American National Standard, *Safety levels with respect to human exposure to radio frequency electromagnetic fields, from 0 Hz to 300 GHz* in 2019)**.

[v]. National Council on Radiation Protection and Measurements (NCRP); *Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields*, NCRP Report 86, 1986.

[vi]. OET Bulletin 65: Federal Communications Commission Office of Engineering and Technology, *Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields*; Edition 97-01, August 1999.

Exhibit 8

“Addendum to Radio Frequency Compliance Study”

DONALD L. HAES, JR., CHP, CLSO

Radiation Safety Specialist

PO Box 198, Hampstead, NH 03841 617-680-6262 Email: donald_haes_chp@comcast.net

September 2, 2019

RE: Proposed installation of a radio base station antenna and associated equipment for the Verizon Wireless Small Cell Personal Wireless Services facility to be located on an existing utility pole located at 6 Fort Street, Fairhaven, MA.

PURPOSE

I write in addendum to my report dated February 8, 2019 regarding the Verizon Wireless proposed installation of a small cell (SC) personal wireless services (PWS) facility within Fairhaven, MA. In my original report, I concluded:

> *Based on the theoretical RF fields I have calculated, it is my expert opinion that this facility would comply with all regulatory guidelines for RF exposure to members of the public. The antenna installations proposed by Verizon Wireless would not produce significant changes to the ambient RF environment.*

To further bolster the conclusion of my calculations, I have prepared additional information through two avenues:

1. 3D graphics which explain the directional nature of the resulting low-intensity electromagnetic energy; and
2. Additional calculations employing different methodologies.

CONCLUSION

The 3D graphics clearly depicts the directional nature of the resulting low-intensity electromagnetic energy. The supplemental calculations employing different methodologies demonstrated a conservative value of 2.47% MPE (Public). This agrees with the previous value calculated in my report dated February 8, 2019 which listed a maximum value of 2.0 % MPE (Public).

The additional information provided in this addendum further demonstrates the proposed Verizon Wireless RF contributions would be well within the established RF exposure guidelines at the proposed site. This addendum provides supplementary written proof that the proposed facility would comply with the FCC RF exposure guidelines, including residential areas and in the surrounding neighborhoods.

ANTENNA INSTALLATION LOCATION

The existing utility pole which would host a Verizon Wireless SC antenna is shown below in Figure 1.

Figure 1: Existing Utility Pole at 6 Fort Street, Fairhaven, MA
Which Would Host a Verizon Wireless SC Antenna

ANTENNA INVENTORY

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* ERP = Power out per channel (CH) X # channels per remote radio head (RRH) X #RRHs X gain the antenna provides within that frequency band.

1. 3D GRAPHICS WHICH EXPLAIN THE DIRECTIONAL NATURE OF THE RESULTING LOW-INTENSITY ELECTROMAGNETIC ENERGY;

The energy transmitted by the Remote Radio Head (RRH) units is sent to the antenna and distributed outward with distinct patterns based on the design of the antenna. Antennas referenced as "omni-directional" are never truly "isotropic" (the physical property in which has the same value of intensity is observed when measured in different directions). The resultant intensities of energy in both the horizontal and vertical directions vary from a true isotropic source (see antenna patterns Figure 2).

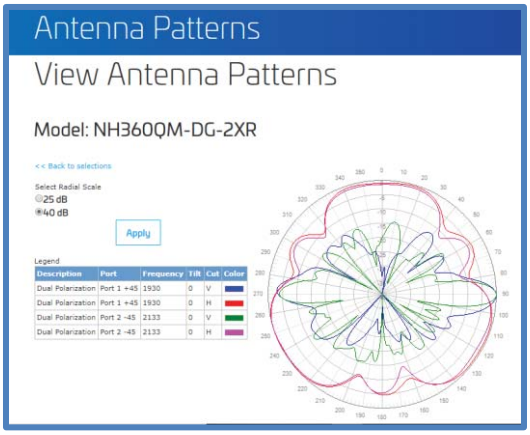
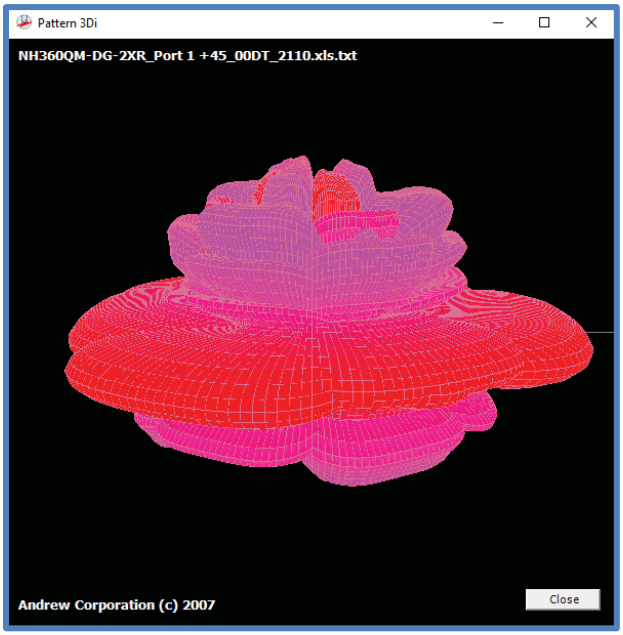


Figure 2: Horizontal and Vertical Patterns of Energy
CommScope Model NH360QM-2XR *(Courtesy CommScope©2019)*

The energy distribution can also be shown in 3 dimensions, as shown in in both the horizontal and vertical directions vary from a true isotropic source (see antenna patterns Figures 3a and 3b).



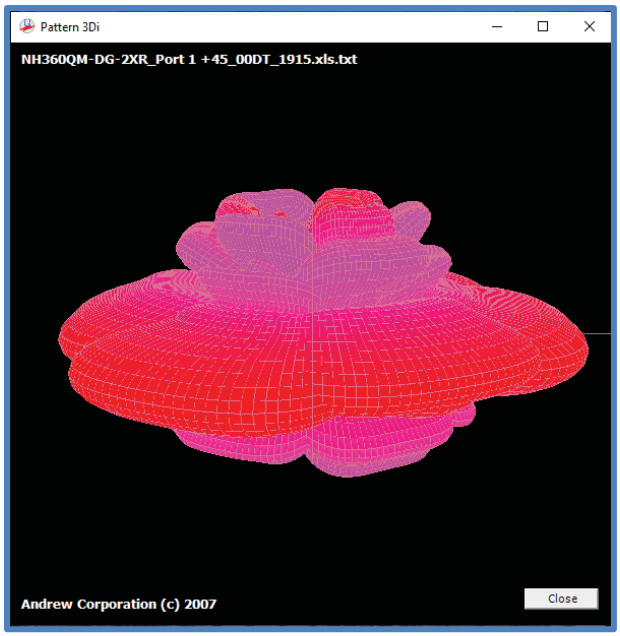


Figure 3a & 3b: 3D Patterns of Energy for AWS & PCS Frequencies, Respectively.
CommScope Model NH360QM-2XR *(Courtesy CommScope©2019)*

2. ADDITIONAL CALCULATIONS EMPLOYING DIFFERENT METHODOLOGIES;

METHODOLOGY

For these theoretical calculations, a cylindrical model was used, where "spatially averaged plane-wave equivalent power densities parallel to the antenna" were estimated by dividing the net antenna input power by the surface area of an imaginary cylinder surrounding the length of the radiating antenna. The calculations performed for this analysis represent the "worst case" and assume 100% usage of all the antennas. See Table 1 data.

The power density estimates can be calculated by using the formula:

$$S = \frac{P_{net}}{2 \cdot \Pi \cdot R \cdot h}$$

Where: P_{net} = net power to antenna (watts)
R = Distance (range) from antenna
h = aperture height of the antenna

The following assumptions have been made for these near proximity calculations:

- 100% use of all transmitters simultaneously.
- The surrounding area is a flat plane at the referenced height AGL.
- Resultant values are near/far field spatially averaged; that is, predicting the average field over the cross section of the body.

RESULTS

The resultant values are thus conservative in that they over predict actual resultant power densities. The results of the theoretical RF field calculations making use of the cylindrical model formula are shown in pictorial format in Figure 4 for locations on the ground.

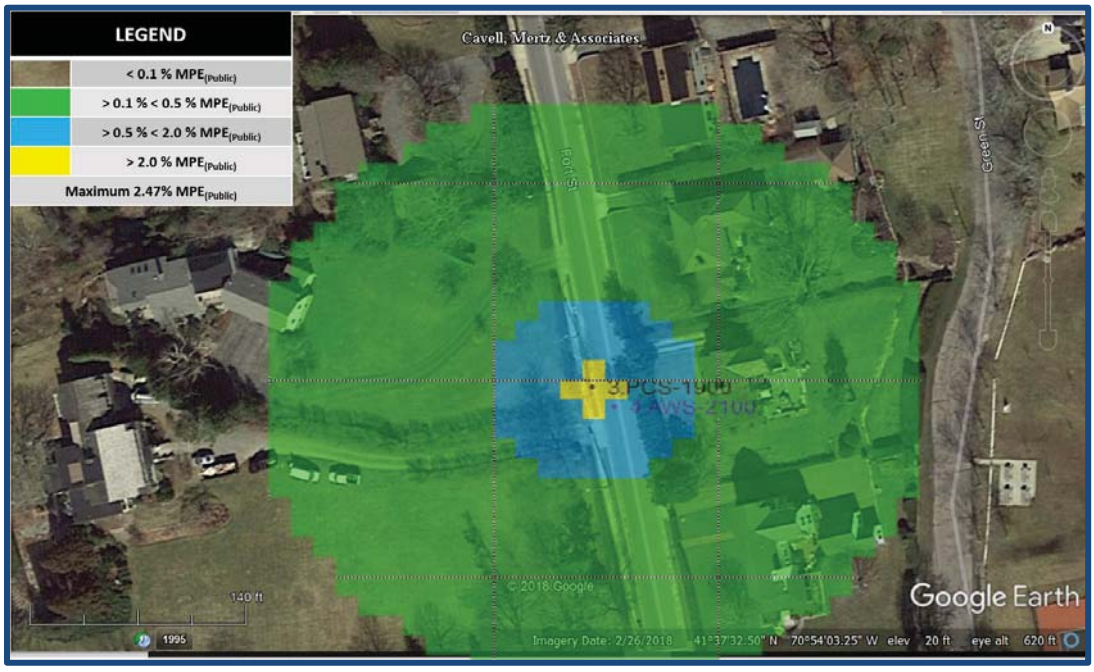


Figure 4: Theoretical Cumulative %MPE(Public) for Ground Locations
Utility Pole at 6 Fort Street, Fairhaven, MA
(Calculations superimposed over picture courtesy Google Earth©2019)

CONCLUSION

The 3D graphics clearly depicts the directional nature of the resulting low-intensity electromagnetic energy. The supplemental calculations employing different methodologies demonstrated a conservative value of 2.47% MPE (Public). This agrees with the previous value calculated in my report dated February 8, 2019 which listed a maximum value of 2.0 % MPE (Public).

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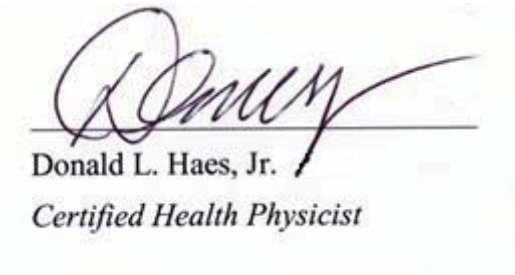
Feel free to contact me if you have any questions.

Sincerely,



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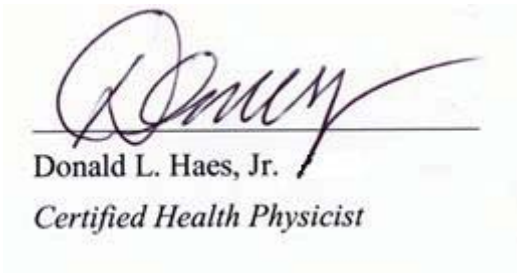
Date: September 2,, 2019



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DONALD L. HAES, JR., CHP, CLSO

Radiation Safety Specialist

PO Box 198, Hampstead, NH 03841 617-680-6262 Email: donald_haes_chp@comcast.net

SUMMARY OF QUALIFICATIONS

- **Academic Training -**
  - Graduated from Chelmsford High School, Chelmsford, MA; June 1973.
  - Completed Naval Nuclear Naval Nuclear Power School, 6-12/1976.
  - Completed Naval Nuclear Reactor Plant Mechanical Operator and Engineering Laboratory Technician (ELT) schools and qualifications, Prototype Training Unit, Knolls Atomic Power Laboratory, Windsor, Connecticut, 1-9/1977.
  - Graduated Magna Cum Laude from University of Lowell with a Bachelor of Science Degree in *Radiological Health Physics*; 5/1987.
  - Graduated from University of Lowell with a Master of Science Degree in *Radiological Sciences and Protection*; 5/1988.

- **Certification -**
  - Board Certified by the American Board of Health Physics 1994; renewed 1998, 2002, 2006, 2010, 2014, and 2018. Expiration 12/31/2022.
  - Board Certified by the Board of Laser Safety 2008; renewed 2011, 2014, 2017. Expiration 12/31/2020.

- **Employment History -**
  - Consulting Health Physicist; Ionizing/Nonionizing Radiation, 1988 - present.
  - Radiation, RF and Laser Safety Officer; BAE Systems, 2005–2018 (retired).
  - Assistant Radiation Safety Officer; MIT, 1988 – 2005 (retired).
  - Radiopharmaceutical Production Supervisor - DuPont/NEN, 1981 – 1988 (retired).
  - United States Navy; Nuclear Power Qualifications, 1975 – 1981 (Honorably Discharged).

- **Professional Societies -**
  - Health Physics Society [HPS].
  - American Academy of Health Physics [AAHP]
  - Institute of Electrical and Electronics Engineers [IEEE];
  - International Committee on Electromagnetic Safety [ICES] (ANSI C95 series).
  - Laser Institute of America [LIA].
  - Board of Laser Safety [BLS].
  - American National Standards Institute Accredited Standards Committee [ASC Z136].
  - Committee on Man and Radiation [COMAR].