

Community, Faculty, and Staff of Ten Brock Academy/Franklinville Central School:

It has come to my attention that some of you may have received misinformation regarding Proposition II, the proposed micro cell collocation. I would like to share factual information with you in the event that you were unable to attend the public hearing that took place on Tuesday, May 12, 2015. At that meeting, experts in the field presented the information and results of an emission audit that I have included with this message. Please read the report in its entirety and if you have questions, do not hesitate to contact me, or stop by to talk. I would be happy to help alleviate your concerns and/or answer your questions.

With respect, Michelle A. Spasiano, Superintendent

MILLENNIUM ENGINEERING, P.C.
132 Jaffrey Road
Malvern, Pennsylvania 19355

Cell: 610-220-3820
www.millenniumengineering.net

Fax: 610-644-4355
Email: pauldugan@comcast.net

May 12, 2015

Attn: Franklinville Central School District Board
31 North Main Street
Franklinville, NY 14737

Re: RF Safety FCC Compliance of Proposed Communications Facility
Site Name: Franklinville High School Micro, Proposed Micro Cell Collocation on Existing Building
31 North Main Street, Franklinville, NY 14737 (Village of Franklinville, Cattaraugus County)

Dear Members of the School Board,

I have performed an analysis to provide an independent determination and certification that the proposed Verizon Wireless communications facility at the above referenced property will comply with Federal Communications Commission (FCC) exposure limits and guidelines for human exposure to radiofrequency electromagnetic fields (Code of Federal Regulation 47 CFR 1.1307 and 1.1310). As a registered professional engineer I am under the jurisdiction of the State Registration Boards in which I am licensed to hold paramount the safety, health, and welfare of the public and to issue all public statements in an objective and truthful manner.

The proposed communications facility consists of collocation on the above referenced building. The proposed Verizon Wireless antenna configuration from the information furnished to me consists of (1) 4' long 700 MHz (LTE) antenna (JMA X7C-465 or equivalent) with an azimuth of approximately 200 degrees on the horizontal plane and a centerline of approximately 50' above ground level. Transmitting from this antenna will be (1) 700 MHz LTE wideband channel. The proposed Verizon Wireless antenna will be tripod-mounted on top of the north penthouse.

The following assumptions are made for reasonable upper limit radiofrequency operating parameters for the proposed facility due to Verizon Wireless antenna alone:

- (1) 700 MHz (LTE) transmit antenna at 0-10 degrees mechanical downtilt
- (1) 700 MHz LTE wideband channel at 2x40W max power before cable loss/antenna gain
- The facility would be at or near full capacity during busy hour

Using the far-field power density equations from FCC Bulletin OET 65, the power density at any given distance from the antenna is equal to $0.360(ERP)/R^2$ where R is the distance to the point at which the exposure is being calculated. The given equation is a conversion of the OET 65 power density equation for calculating power density given the distance in feet and the result in metric units (mW/cm^2). This calculated power density assumes the location is in the main beam of the vertical pattern of the antenna. The calculated ground level power density is at or below $1 \mu W/cm^2$ at any distance from the antenna system of Verizon Wireless.

The "Upper C Block" 700 MHz transmit frequencies (746-757 MHz), which Verizon Wireless is licensed by the FCC to operate, have an uncontrolled/general population maximum permissible exposure (MPE) FCC limit of

497 $\mu\text{W}/\text{cm}^2$. Therefore, the calculated exposure at ground level at any distance from the structure would be below 1 % of the FCC exposure limits due to Verizon Wireless antenna alone. The extremely low ground exposure levels are due to the elevated positions of the antenna on the structure and the low power which these systems operate.

The actual exposure for occupational workers, the general public that occupy the building, and pedestrians on the street is hundreds of times below the levels directly in front of the transmit antenna, due to the directional characteristic of the proposed wireless antenna. As one moves away from a transmit antenna, exposure is reduced substantially due to path loss of the radiofrequency signal, reduction due to moving away from the main beam, and the shielding effects of building materials. With the proposed new antenna in service, the actual exposure levels for the general public that occupy the building and pedestrians on the street will be below 1 % of the FCC exposure limits under any circumstances with the facility in place.

I have performed a near-field analysis to determine the exposure levels directly in front of the proposed Verizon Wireless antenna for the safety of occupational workers. I have performed upper limit calculations to determine the maximum possible exposure for occupational workers at a distance of 3 feet directly in front of the antenna. The calculated exposure is well below the FCC occupational exposure limits at 3 feet directly in front of the antenna.

The International Commission on Non-Ionizing Radiation Protection (ICNIRP), which is an association under the International Radiation Protection Association (IRPA), established exposure limits or guidelines in 1998 similar to the FCC limits. The ICNIRP is a formally recognized non-government organization in non-ionizing radiation for the World Health Organization and the International Labour Office. While the ICNIRP has no jurisdiction over FCC licensees, the composite exposure of the proposed communications facility will be below 1 % of the ICNIRP exposure limits in all publicly accessible areas.

In summary, the proposed communications facility will comply with all applicable exposure limits and guidelines adopted by the FCC governing human exposure to radiofrequency electromagnetic fields (FCC Bulletin OET 65). Federal law (FCC Rule Title 47 CFR 1.1307 and 1.1310) sets the national standard for compliance with electromagnetic field safety. The FCC exposure limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI). Thus, there is full compliance with the standards of the IRPA, FCC, IEEE, ANSI, and NCRP.

General Information on Electromagnetic Field Safety

Verizon Wireless facilities transmit and receive low power electromagnetic fields between base station antennas and handheld portable cell phones. The radiofrequency energy from these facilities and devices is non-ionizing electromagnetic energy. Non-ionizing, unlike X-Rays or other forms of potentially harmful energy in the microwave region, is not cumulative over time nor can the energy change the chemical makeup of atoms (e.g. strip electrons from ions). "Non-ionizing" simply means that the energy is not strong enough to break ionic bonds.

Safe levels of electromagnetic fields were determined by numerous worldwide organizations, such the International Committee for Non-Ionizing Radiation Protection, a worldwide multi-disciplinary team of researchers and scientists studying the effects of non-ionizing radiofrequency energy such as that emitted by base stations or cell phones. The FCC did not arbitrarily establish their own standards, but adopted the recommendations of all leading organizations that set standards and research the subject such as the Institute of Electrical and Electronics Engineers (IEEE), American National Standards Institute (ANSI), and National Council on Radiation Protection and Measurements (NCRP).

When Verizon Wireless is located on an antenna structure such as a self-supporting lattice type tower, monopole, guyed tower, watertank, etc. the antennas are typically 10 meters or more above ground level (10 meters = 32.81 feet). With the relatively low power and elevated positions of the antennas on the structure with respect to ground level, the maximum ground level exposure can rarely approach 1 % of the applicable FCC exposure limit regardless of how many sets of antennas are collocated on the structure. For this reason, the FCC considers the facilities "categorically excluded" from routine evaluation at antenna heights above 10 meters (or above 32.81 feet). Categorical exclusion exempts a site from routine on-site evaluation. However, the facility is not excluded from compliance with the federal exposure limits and guidelines. The types of facilities used by Verizon Wireless typically elevated on antenna structures (away from access to close proximity, i.e. greater than 10 meters or 32.81 feet) simply cannot generate ground level exposure levels that approach the limits under any circumstances.

From a regulatory perspective, the FCC has sole jurisdiction over the regulation of electromagnetic fields from all facilities and devices. The FCC has established guidelines and limits over emissions and exposure to protect the general public. The FCC also has certain criteria that trigger when an environmental evaluation must be performed. The criteria are based on distance from the antenna (accessibility) and transmit power levels.

CONCLUSIONS:

- 1) **The proposed communications facility will comply with electromagnetic field safety standards by a substantial margin (below 1 %) in all publicly accessible areas. This includes the interior of the existing building, the base of the existing building and any areas in proximity to the existing building.**
- 2) **Verizon Wireless takes appropriate measures to ensure that all telecommunications facilities (including this proposed facility) comply with applicable exposure limits and guidelines adopted by the FCC governing human exposure to radiofrequency electromagnetic fields (FCC Bulletin OET 65).**
- 3) **In cases where such compliance exists, the subject of electromagnetic field safety is preempted. The Telecommunications Act of 1996 states that: "No state or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the [FCC's] regulations concerning such emissions." Telecommunications Act of 1996, § 332[c][7][B][iv].**

Respectfully,



Paul Dugan, P.E.
Registered Professional Engineer
New York License Number 79144



DECLARATION OF ENGINEER

Paul Dugan, P.E., declares and states that he is a graduate telecommunications consulting engineer (BSE/ME Widener University 1984/1988), whose qualifications are a matter of record with the Federal Communications Commission (FCC). His firm, Millennium Engineering, P.C., has been retained by Verizon Wireless to perform power density measurements or calculations for an existing or proposed communications facility and analyze the data for compliance with FCC exposure limits and guidelines for human exposure to radiofrequency electromagnetic fields.

Mr. Dugan also states that the calculations or measurements made in the evaluation were made by himself or his technical associates under his direct supervision, and the summary letter certification of FCC compliance associated with the foregoing document was made or prepared by him personally. Mr. Dugan is a registered professional engineer in the Jurisdictions of Pennsylvania, New Jersey, Delaware, Maryland, Virginia, New York, Connecticut, District of Columbia, West Virginia and Puerto Rico with 30 years of engineering experience. Mr. Dugan is also an active member of the Association of Federal Communications Consulting Engineers, the National Council of Examiners for Engineering, the National Society of Professionals Engineers, the Pennsylvania Society of Professional Engineers, and the Radio Club of America. Mr. Dugan further states that all facts and statements contained herein are true and accurate to the best of his own knowledge, except where stated to be in information or belief, and, as to those facts, he believes them to be true. He believes under penalty of perjury the foregoing is true and correct.



Paul Dugan, P.E.

Executed this the 12th day of May, 2015.