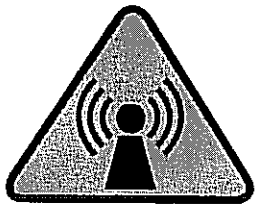
Radiofrequency Safety International Corporation

RF Hazard Assessment (2/12/2009)

Bayville Schools

Bayville, NY



Prepared for

Locust Valley Central School Dist.

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Radiofrequency Safety International Corporation

March 2, 2009

Electromagnetic Energy Emissions Hazard Assessment Report And FCC Compliance/Safety Recommendations for the Bayville Schools

Site Location:
50 Godfrey Ave.
Bayville, NY

Prepared For:
Locust Valley Central School Dist.
22 Horse Hollow Rd.
Locust Valley, NY 11560

ABSTRACT

At the time of the assessment, RF emission readings in all assessed areas were well below the FCC Uncontrolled/General Population and the FCC Controlled/Occupational limit for human exposure to radiofrequency energy per 47 CFR §1.1301 through §1.1319.

INTRODUCTION

RSI is a University based safety service organization. Our reports have been reviewed by and are on record with the FCC and other government agencies. This report is a safety and NEPA compliance report as required by the agencies, and is not intended to be an engineering document. RSI uses competent and qualified safety professionals and OSHA authorized trainers to review and develop programs. This document reflects this expertise.

The electromagnetic energy emissions (EME) assessment for the communications site was completed following recommendations of the Federal Communications Commission (FCC) Office of Engineering and Technology and the Occupational Safety and Health Administration (OSHA). The purpose of the EME hazard assessment at the communications site was to determine the ambient levels of electromagnetic energy (EME) in areas of concern. In addition, the assessment was conducted in order to detect and document whether EME fields present at the site are above FCC standards for human exposure to radio frequency (RF) emissions. The assessment also determines what areas should be defined as "hot" zones, or areas that contain RF levels above occupational/controlled limits.

EXECUTIVE SUMMARY

The report is divided into five sections:

- The first section explains why the assessment was performed, describes the site's and the vicinity's overall characteristics, clarifies the methods of data collection, the instrumentation used, and provides a description of what the collected data means in terms of compliance to RF and other safety issues.
- The second section contains photographs of the site, equipment and associated rooms or structures. They show what areas were assessed and document what was found at the site in terms of hazards at the time of the assessment.
- The third section contains computer-aided renderings of the layout of the site.
- The fourth section shows the readings at the site expressed in computer-assisted rendering format.
- The fifth and final section includes all report exhibits; certificates of calibration of the RF measuring equipment used at the site, and a color-coded map indicating levels of RF emissions.

Measurement Values
The measurements were taken at ground level in designated areas around and throughout the schools. The measurements were taken on the grounds as indicated in the readings rendering of this report. The readings were taken directly from the data the RF measurement instrumentation displayed at the given measurement point. Readings were taken by extending the probe to arm's length, pointing it in the direction of the RF source and moving the probe up and down while oscillating the wrist and sampling RF emissions. The rotation of the probe and the action of pointing the probe at the RF source eliminates the isotropic response and ellipse ratio that could increase the shaped electric probe's deviation factors. Due to the fact that the field instrument's probe is a shaped field probe, it has the ability to take into account a wide range of frequencies at the site and express their RF emission in percent of controlled standard for the electromagnetic field.

The field RF emission assessment instrumentation used shows the readings on an LCD display in percent of FCC controlled standard. The Federal limit for occupational/controlled workers is 100% of the controlled standard. The FCC uncontrolled standard is one-fifth (1/5th) of the Controlled standard. This would be displayed as 20%. "Uncontrolled" persons, or the general population, cannot be exposed to RF emissions at 20% of the FCC controlled standard or above for more than thirty minutes. Therefore, if the instrumentation measures an area where the RF emissions are reading 27.0%, the FCC Uncontrolled standard has been exceeded by 35 percent. A readings of 1.0% FCC Controlled/Occupational would equate to 5.0% of the FCC Uncontrolled/General Population limit.

Peak readings were recorded during the assessment. For most safety programs, OSHA requires that the most conservative action be taken when determining hazards. This is what is indicated on the color-coded site map in this report. The use of peak readings documentation provides the most conservative approach to RF emissions safety compliance. The use of peak reading documentation provides an additional safety margin for factors which may otherwise be overlooked using averaging techniques (i.e. microwave signals, duty cycle changes, re-radiation, etc.) Where peak readings exceeded or approached the Uncontrolled/General Population limit, spatial average readings are taken.

Due to changes in weather conditions such as temperature and humidity, the RF emissions that were sampled on the day of the assessment may not represent the RF emissions on days of differing weather conditions. However, any variation would be minimal due to the methodology of data collection at the time of the assessment.

All significant contributors (as defined by the FCC) are responsible for insuring the applicable standards are adhered to. When performing an evaluation for compliance with the FCC's RF guidelines *all* significant contributors (5%) to the ambient RF environment should be consider, including those otherwise excluded from performing routine RF evaluations, and applicants are expected to make a good-faith effort to consider these other transmitters. The FCC states "we can see no easy way to define a "site" or to specify some arbitrary radius around antennas at which compliance must be evaluated."

ACCESS & SIGNAGE

Access
The site is accessible by driving up to the school grounds. The school and the grounds would be considered public access under the FCC guidelines.

Signage/ Other
There are no RF signs posted on this site as would be expected. The antennas are mounted on a water tank, well above ground level across the street from the school.

METHODOLOGY AND INSTRUMENTATION

The EME assessment was conducted following sound scientific principles as outlined in the RSI Superior Survey Techniques™ manual. See the measurement values section above for data collection techniques. Instrumentation used in the collection of data is calibrated to factory specifications and maintained in good working condition in order to provide the best data collection available.

Mr. Adam Grant performed the assessment on 2/12/2009. The assessment began promptly at 12:30 PM and conlcuded at 3:30 PM. The weather conditions during the assessment were cloudy and windy with a temperature of 40° Fahrenheit.

The following instrumentation was used:

Narda Microwave – East (W&G)
Electromagnetic Radiation Survey Meter
Model Number: 8715
Serial Number: 1027

Narda Microwave – East (W&G)
Electric Field Probe
Model Number: A8742D
Serial Number: 2115

Wandel & Goltermann ESM-20 Shaped RF/EME Safety Monitor for E and H fields. Frequency range 3MHz-1GHz H field, 3 MHz-18 GHz E field.

RESULTS & CONCLUSION

RF emission readings taken at the site in accessible areas were all below the applicable limits for FCC Uncontrolled/General Population and FCC Controlled/Occupational environments as outlined in 47 CFR §1.1301 through §1.1319.

The following information is taken from the FCC website:

ARE CELLULAR AND PCS TOWERS AND ANTENNAS SAFE?

Cellular radio services transmit using frequencies between 800 and 900 megahertz (MHz). Transmitters in the Personal Communications Service (PCS) use frequencies in the range of 1850-1990 MHz. Antennas used for cellular and PCS transmissions are typically located on towers, water tanks or other elevated structures including rooftops and the sides of buildings. The combination of antennas and associated electronic equipment is referred to as a cellular or PCS "base station" or "cell site." Typical heights for free-standing base station towers or structures are 50-200 feet. A cellular base station may utilize several "omni-directional" antennas that look like poles, 10 to 15 feet in length, although these types of antennas are becoming less common in urban areas.

In urban and suburban areas, cellular and PCS service providers now more commonly use "sector" antennas for their base stations. These antennas are rectangular panels, e.g., about 1 by 4 feet in dimension, typically mounted on a rooftop or other structure, but they are also mounted on towers or poles. The antennas are usually arranged in three groups of three each. One antenna in each group is used to transmit signals to mobile units (car phones or hand-held phones), and the other two antennas in each group are used to receive signals from mobile units.

At a given cell or PCS site, the total RF power that could be transmitted from each transmitting antenna at a cell site depends on the number of radio channels (transmitters) that have been authorized and the power of each transmitter. Typically, for a cellular base station, a maximum

ambient exposures to nearby persons from such stations are typically well below FCC safety limits.

See the following website for additional information:

http://www.fcc.gov/oet/rfsafety

The RSI corporate safety staff reviewed this report. For additional information regarding RF safety & compliance visit www.rsicorp.com. Should questions arise concerning any portion of this report, or further information is requested, inquiries should be forwarded to the following:

RSI Corporation
543 Main
Kiowa, KS 67070
Phone (888) 830-5648
Fax (866) 825-4324

CERTIFICATION

The data and information in this report is certified to be true and correct to the best of my knowledge. I have thoroughly reviewed this site compliance report and believe it to be accurate.

Respectfully,

Greg Kechter, CUSA
Chief Operations Officer

of 21 channels per sector (depending on the system) could be used. Thus, for a typical cell site utilizing sector antennas, each of the three transmitting antennas could be connected to up to 21 transmitters for a total of 63 transmitters per site. When omni-directional antennas are used, up to 96 transmitters could be implemented at a cell site, but this would be very unusual. Furthermore, while a typical base station could have as many as 63 transmitters, not all of the transmitters would be expected to operate simultaneously thus reducing overall emission levels. For the case of PCS base stations, fewer transmitters are normally required due to the relatively greater number of base stations.

The signals from a cellular or PCS base station antenna are essentially directed toward the horizon in a relatively narrow pattern in the vertical plane. The radiation pattern for an omni-directional antenna might be compared to a thin doughnut or pancake centered around the antenna while the pattern for a sector antenna is fan-shaped, like a wedge cut from a pie. As with all forms of electromagnetic energy, the power density from a cellular or PCS transmitter decreases rapidly as one moves away from the antenna. Consequently, normal ground-level exposure is much less than exposures that might be encountered if one were very close to the antenna and in its main transmitted beam.

Measurements made near typical cellular and PCS installations, especially those with tower-mounted antennas, have shown that ground-level power densities are thousands of times less than the FCC's limits for safe exposure. In fact, in order to be exposed to levels at or near the FCC limits for cellular or PCS frequencies an individual would essentially have to remain in the main transmitting beam (at the height of the antenna) and within a few feet from the antenna. This makes it extremely unlikely that a member of the general public could be exposed to RF levels in excess of these guidelines due to cellular or PCS base station transmitters.

When cellular and PCS antennas are mounted at rooftop locations it is possible that ambient RF levels could be greater than those typically encountered on the ground. However, once again, exposures approaching or exceeding the safety guidelines are only likely to be encountered very close to or directly in front of the antennas. For sector-type antennas RF levels to the side and in back of these antennas are insignificant.

ARE CELLULAR AND OTHER RADIO TOWERS LOCATED NEAR HOMES OR SCHOOLS SAFE FOR RESIDENTS AND STUDENTS?

As discussed above, radiofrequency emissions from antennas used for wireless transmissions such as cellular and PCS signals result in exposure levels on the ground that are typically thousands of times less than safety limits. These safety limits were adopted by the FCC based on the recommendations of expert organizations and endorsed by agencies of the Federal Government responsible for health and safety. Therefore, there is no reason to believe that such towers could constitute a potential health hazard to nearby residents or students.

Other antennas, such as those used for radio and television broadcast transmissions, use power levels that are generally higher than those used for cellular and PCS antennas. Therefore, in some cases there could be a potential for higher levels of exposure on the ground. However, all broadcast stations are required to demonstrate compliance with FCC safety guidelines, and

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RSI Corp. will not be responsible for any matters of legal nature that affect the property or area being assessed on the basis of it being under the responsible ownership or that our client has the legal right to conduct business at this site.

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This is a technical document and may contain minor grammatical and/or spelling errors.