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ENGINEERING REPORT

ON

RADIOFREQUENCY EXPOSURE LEVELS

WIQH(FM) – 202A – CONCORD, MA

BPED-20141212AAN

December 2015

PURPOSE AND SCOPE

The measurements described in this report were conducted to determine if the operation of the newly constructed WIQH(FM) transmitter facility complies with Federal Guidelines regarding human exposure to Non-ionizing Radio Frequency Radiation. This report is in response to Special Operating Conditions 4 and 5 contained in the WIQH(FM) Construction Permit (F.C.C. File No. BPED-20141212AAN) and demonstrates compliance with the maximum exposure Guidelines contained in OET Bulletin No. 65, Edition 97-01.

SITE DESCRIPTION

The WIQH(FM) antenna is located on a tower located on the roof of the new Concord-Carlisle Regional High School building (ASRN 1296755) with the center of radiation at 29 meters above ground level. The roof access is locked to prevent unauthorized access. Although the roof access is restricted, for the purpose of this report it is considered as a “general public” area.

F.C.C. LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE

The Federal Communications Commission has adopted exposure guidelines (contained in OET Bulletin 65 Edition 97-01) based upon the standards put forth by the American National Standards Institute ("ANSI") in their document ANSI/IEEE C95.1-1992. ANSI establishes two tiers of recommended limits, one for the general population and another for occupational exposure. General population limits apply in uncontrolled areas and occupational limits apply in controlled areas. Both limits are frequency dependent and are based upon time averaging. The limits are:

Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (S) (A/m)	Power Density (mW/cm ²)	Averaging Time (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

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (S) (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3-3.0	614	1.63	100	30
3.0-30	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

NOTE 1: *Occupational/controlled* limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations where an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2: *General population/uncontrolled* exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

NOTE 3: At the frequencies of interest, the exposure limit of 0.2 mW/cm² equals a measured electric field of 756 V²/m² as indicated by the test instrument.

PROCEDURE

Measurements of the radio frequency fields in the vicinity of the WIQH(FM) supporting tower and building were conducted by Mark Bisbee, an associate in the firm of R.M. Smith Associates, on December 15, 2015 while WIQH(FM) was operated at authorized ERP under Equipment Test Authority.

Measurements were made using a Holaday Instruments HI-3001 Field Intensity Meter and omni-directional GRE electric field probe. This instrument has a flat frequency response over the frequency band of interest and presents a measurement of field strength in V²/m² for the sum of the entire spectrum. The minimum field necessary to cause a deflection of the instrument meter is 1 V²/m². This minimum field is equivalent to 0.00027 mW/cm² or 0.135% of general population exposure limit of 0.200 mW/cm² at the frequencies of interest.

MEASUREMENT RESULTS

Measurements were conducted throughout the building and on the rooftop. In most locations the measured field was below the instrument's minimum sensitivity. At each location where a minimum field was noted, the field was measured over an area sufficient to result in a whole body exposure. At no location were peak values observed that exceeded the average value by more than 20%.

<u>Measurement Location</u>	<u>Field (V²/m²)</u>	<u>% of Limit*</u>
On the roof at the base of the tower	120-170	<23%
On the roof adjacent to ventilator	250-300	<40%
Along the east edge of the roof	30-60	<8%
Along north edge of roof near tower	250-300	<40%
Along south edge of roof	60-120	<16%
On roof west of air handler	<50	<7%
On roof between vent and lightning rod	250-300	<40%
In building in robotics shop	<50	<7%
In building along railings next to atrium	60-90	<12%
In building in seating area beneath atrium	<50	<7%
In building in seating area of auditorium	<25	<4%

% of MPE for General population/uncontrolled exposure for whole body average

CONCLUSIONS

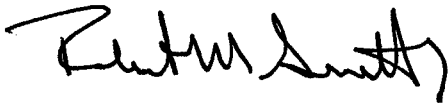
The data in this study shows that at all locations, on the roof, in the vicinity of the WIQH(FM) antenna the RF field density generated by the operation WIQH(FM) is less than 40% of the General Public/Uncontrolled MPE. At all locations, in the building, the RF field density generated by the operation WIQH(FM) is less than 12% of the General Public/Uncontrolled MPE.

The operation of the WIQH(FM) facility is in compliance with the F.C.C. Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields.

CERTIFICATION

Mark Bisbee, of Brookline, New Hampshire, conducted the measurements covered by this report. Mark is an experienced and qualified technical consultant, is an associate in this firm, and has conducted measurements of this type for the firm on numerous occasions.

I, Robert M. Smith Jr., of Port St. Lucie, Florida, do hereby certify that all of the data and calculations, contained in this report, are true and correct to the best of my knowledge and belief. I further state that I am an experienced and qualified technical consultant and that my qualifications are a matter of record with the Federal Communications Commission

A handwritten signature in black ink, appearing to read "Robert M. Smith Jr.", with a stylized, cursive script.

Robert M. Smith Jr.

December 22, 2015