PITTSFIELD, MA

Pittsfield SE MA

877 South Street
Pittsfield, Massachusetts

RF EMISSION STUDY

June 15, 2021

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Introduction

V-COMM, L.L.C. has been commissioned by Pittsfield, Massachusetts to perform an Electro Magnetic Energy (EME) field measurements survey to ensure that the existing radio facility complies with Federal Communications Commission (FCC) regulations as required by the Telecommunications Act of 1996. The evaluation of this site has been completed through on-site survey. This report will show, through the use of FCC prediction methods and field strength measurements that the radio facility in question will be in compliance with all appropriate Federal regulations in regards to Radio Frequency (RF) Emissions.

Case Summary

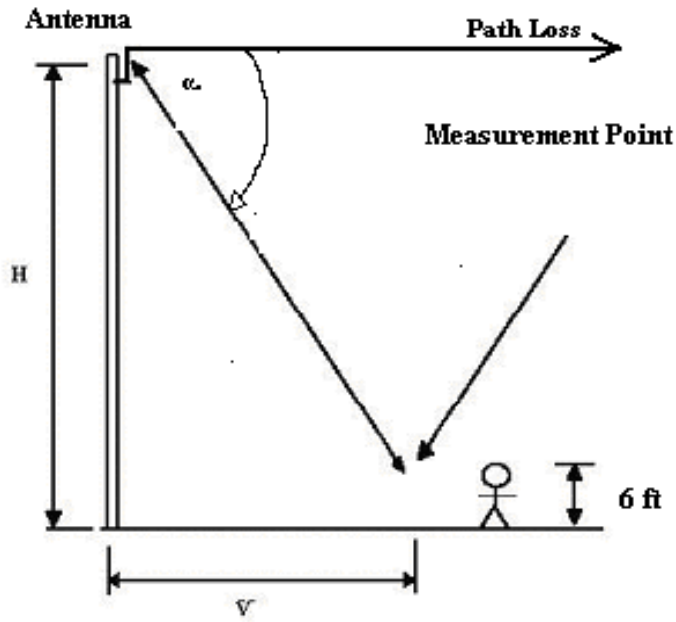
The radio antennas are located on a 115 foot tower at 877 South Street, Pittsfield, Massachusetts.

The on-site survey was performed in publicly accessible areas including streets and parking lots at locations approved by the town surrounding the tower at 877 South Street in Pittsfield, MA on June 10, 2021. The measurement survey equipment is the Narda EA5091 E-field probe that is calibrated to the FCC emission standard, and measures power density in percentage of the FCC standard. The tower location was verified during the physical survey to enable any recommendations to ensure site compliance with FCC rules.

The maximum Field Strength value (% of FCC Standard) measured around the Pittsfield SE tower located at 877 South Street is provided below:

Measured Maximum % of FCC Standard for Public-Uncontrolled Environment in vicinity of site Pittsfield SE	**1.66%**

The measured maximum level of RF emissions in the vicinity of the Pittsfield, MA facility at Point 10 (Stanton Ave) is **1.66%.** All field measurement results are provided in **Table 2** in the section below.



Federal Regulations

The licensee operating on the existing tower falls under the jurisdiction of the FCC. Under the authority granted by the Telecommunications Act of 1996 (and stated in Title 47 CFR, Part 1, Section 1307 b), the FCC has mandated that all FCC licensees must be in compliance with RF Emissions guidelines, as defined in OET Bulletin 65, no later than September 1, 2000.

Additionally, as of 1997, the FCC had already made compliance with OET Bulletin 65, a prerequisite for new Common Carrier station authorization. Applicable standards for this analysis will be discussed below.

State & Local Regulations

The Telecommunications Act of 1996 is the applicable Federal statute in regards to the consideration of environmental effects of RF Emissions during the siting process for wireless facilities. In regards to Common Carrier radio service, the Telecommunications Act of 1996 states the following:

> "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 Commission's regulations concerning such emissions."

Applicable Standards

"The FCC adopted limits for Maximum Permissible Exposure (MPE) are generally based on recommended exposure guidelines published by the National Council on Radiation Protection and Measurements (NCRP) in 'Biological Effects and exposure Criteria for Radiofrequency Electromagnetic Fields,' NCRP Report No. 86, Sections 17.4.1, 17.4.1.1, 17.4.2 and 17.4.3. Copyright NCRP, 1986, Bethesda, MD 20814.

In the frequency range from 100 MHz to 1500 MHz, exposure limits for power density are also generally based on the MPE limits found in Section 4.1 of, 'IEEE Standard for Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,' ANSI/IEEE C95.1-1992, Copyright 1992 by the IEEE, Inc., NY, NY 10017, and approved for use as an American National Standard by the American National Standards Institute (ANSI)." (Paraphrased from FCC OET Bulletin 65)

The FCC has adopted 2 different sets of emission standards, which are the uncontrolled environment for public areas, and the controlled environment for occupational areas. The application of each standard is generally based upon the awareness and training of those people exposed to the RF emissions.

An uncontrolled environment applies to public areas or occupational work areas where people exposed to the RF emissions either have no knowledge that active transmitters are present, or that they have not been properly trained to work safely around active transmitters.

A controlled environment by FCC definition is an environment where only occupational workers exposed to RF emissions from a site (above those background levels that occur naturally) are aware that they are working near active transmitters, and have been fully trained in working safely around RF emissions. The uncontrolled emission standard is stricter than the controlled emission standard, as can be seen below in **Tables 1a** and **1b**.

Table 1a – Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Power Density (mw/cm^2)	Averaging Time (minutes)
0.3 – 3	100 *	6
3 – 30	$(900/f^2)$ *	6
30 – 300	1	6
300 – 1500	f/300	6
1500 – 100000	5	6

Where: f = Frequency in MHz
* Indicates Plane-wave equivalent power density

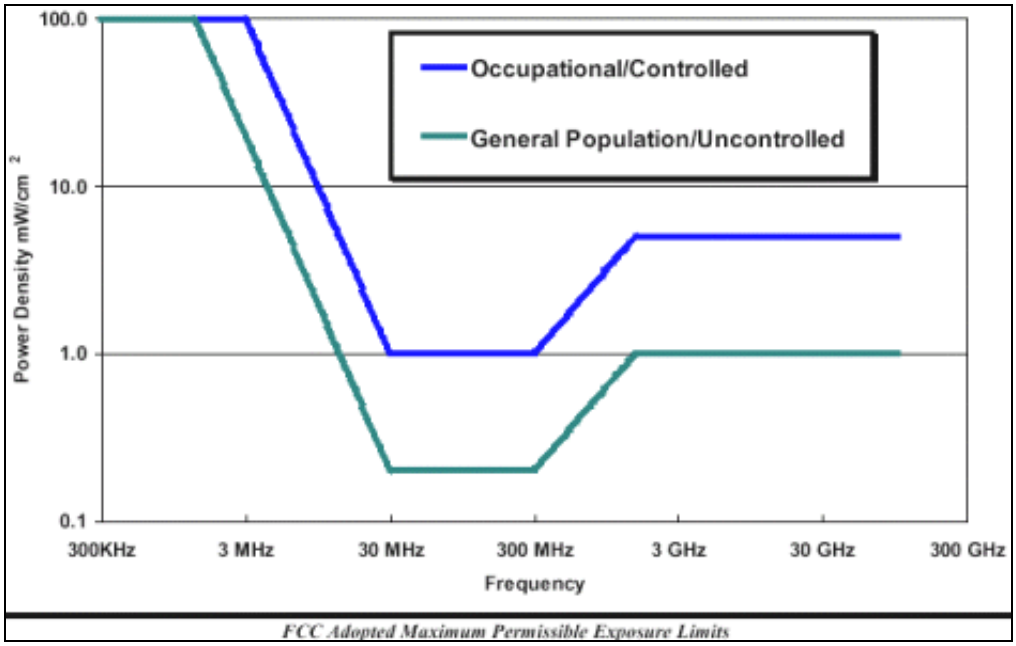
Table 1b – Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Power Density (mw/cm^2)	Averaging Time (minutes)
0.3 - 1.34	100 *	30
1.34 – 30	$(180/f^2)$ *	30
30 – 300	0.2	30
300 – 1500	f/1500	30
1500 – 100000	1	30

Where: f = Frequency in MHz
* Indicates Plane-wave equivalent power density

In general, as specified in 47 C.F.R. 1.1307(b), as amended, if the FCC's emission limits are exceeded in an accessible area due to the emissions from multiple fixed transmitters, the following policy applies. Actions necessary to bring the area into compliance with the FCC guidelines are the shared responsibility of all licensees whose transmitter's contribution to the RF environment at the non-complying area exceeds 5% of the exposure limit that applies to their particular transmitter.

The figure below provides a graphical illustration of both the FCC's Occupational and General Population MPE limits.



FCC Adopted Maximum Permissible Exposure Limits

EME Field Measurements

An EME field measurement survey was performed in areas surrounding the site. Field measurements were performed and recorded at 17 locations (labeled Points 1 through 17) around the existing tower site at 877 South Street in Pittsfield, Massachusetts.

A Narda EA5091 E-field probe field intensity probe was used to collect all the field measurements. The probe used is a broadband electric field isotopic shaped probe calibrated to the FCC standard.

The instrumentation and the measurement procedures used are based on the references published by the IEEE document (ANSI/IEEE C95.3-1992) and by the NCRP document (NCRP Report No. 1996), all approved references by the FCC. Also, the equipment used confirms to FCC 1997 Regulation, NCRP Report 86, Occupational Environments, and ANSI C95.1 – 1982.

A walk around survey was performed in the surrounding area of 877 South Street to measure and capture the strongest field strengths for the public environment. All measurements were well below the FCC's public standard, and there were negligible differences observed in the measured exposure levels at various locations while performing the survey.

All field measurements performed for this survey utilize the spatial averaging technique. This is performed by the measurement instrument averaging a series of points either in a straight line or over a two-dimensional area that is representative of the human form, as required by FCC regulations. Spatially average RF field levels most accurately relate to estimating the whole body averaged specific absorption rate that will result from the exposure. FCC requirements, and all the major worldwide standards, have human exposure to radio frequency exposure limits based on field levels averaged over the whole body.

EME Field Measurements Results

The results of the EME field measurements are provided in **Table 2** below. The Test Locations at the Pittsfield SE site are depicted with numbers in **Table 2** that correspond to the locations shown on the aerial photo map provided below.

Table 2 – Field Measurements at the Pittsfield, MA Site

Test Location #	Public/Uncontrolled MPE % Whole Body Average (for FCC Compliance)
1	0.01
2	0.11
3	0.05
4	0.04
5	0.07
6	0.47
7	0.96
8	0.07
9	0.71
10	1.66
11	0.15
12	0.04
13	0.17
14	0.18
15	0.08
16	0.42
17	0.02

Field Strength Measurement Locations for Pittsfield, MA

The field measurement results indicate that the maximum level of RF energy emitted from the Pittsfield SE site located at 877 South Street, to which the general public ("general population/uncontrolled") may be exposed to, is below all applicable federal health and safety limits. Specifically, the field measurements show that the maximum level of RF emissions measured near the Pittsfield SE site is **1.66 %** of the FCC Standard for the public environment.

Certification

V-COMM, L.L.C. hereby certifies that the site studied in this analysis complies with FCC mandated RF Emission MPE regulations. V-COMM, L.L.C. also certifies the above results are based on measurements performed utilizing FCC recommended methods, the study complies with standard industry practices. All results shown in this report have been reviewed and are accurate within reasonable levels of engineering accuracy. The instrumentation and the measurement procedures used are based on the reference published by the OET Bulleting 65 (Edition 97-01), IEEE document (ANIS/IEEE C95.3-1992) and by the NCRP document (NCRP Report No. 86), all approved references by the FCC.

V-COMM, L.L.C. shall not be held responsible for any inaccuracies in the data supplied by Pittsfield, MA, and assumes that all transmitting equipment is operating within FCC type accepted specifications.

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