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August 19, 2014

VIA HAND DELIVERY
Mr. Robert Yamuder
Village Administrator
Village of Pelham
Village Hall
195 Sparks Avenue
Pelham, NY 10803

Re: Village Board of Trustees
ExteNet's Pending Chapter 87 Permit Application & SEQRA

Dear Mr. Yamuder:

We are writing to you on behalf of our client ExteNet Systems, Inc. ("ExteNet") with respect to the above referenced matter and in furtherance of Judge Zambelli's final decision and order in Kaplan v. Village of Pelham, et. al., Index No. 3827/13, dated June 20, 2014. Without prejudice to ExteNet's appeal of Judge Zambelli's decision and order and/or its legal rights and remedies all of which are expressly reserved, please be advised that our client does respectfully request that the Village Board process its pending Chapter 87 special permit application filed in 2013 and render a SEQRA determination related to the action before it which includes consent and entry into a right-of-way agreement. Please note that our client expects to supplement its pending Chapter 87 special permit application shortly and we would respectfully request the Village process the application in accordance with Judge Zambelli's order including the scheduling and holding of a public hearing sometime in the fall of 2014. In the interim, enclosed please find a Radio Frequency Emissions report, prepared by Isotrope Wireless, which includes field measurements and confirms that the ExteNet DAS nodes in operation fully comply with FCC requirements for public safety. We would appreciate your forwarding a copy of the enclosed to the Trustees for their meeting this evening and we look forward to working with you and Village officials in furtherance of Judge Zambelli's order.

Very truly yours,

Christopher B. Fisher
Cc: Robert Spolzino, Esq.
Enclosure

C&F: 2520890.1

Isotrope WIRELESS

Thinking outside the sphere

Routine Evaluation of Radio Frequency Emissions from the 3 Extenet Systems DAS Nodes in Pelham, New York

July 23, 2014

Isotrope WIRELESS

Thinking outside the sphere

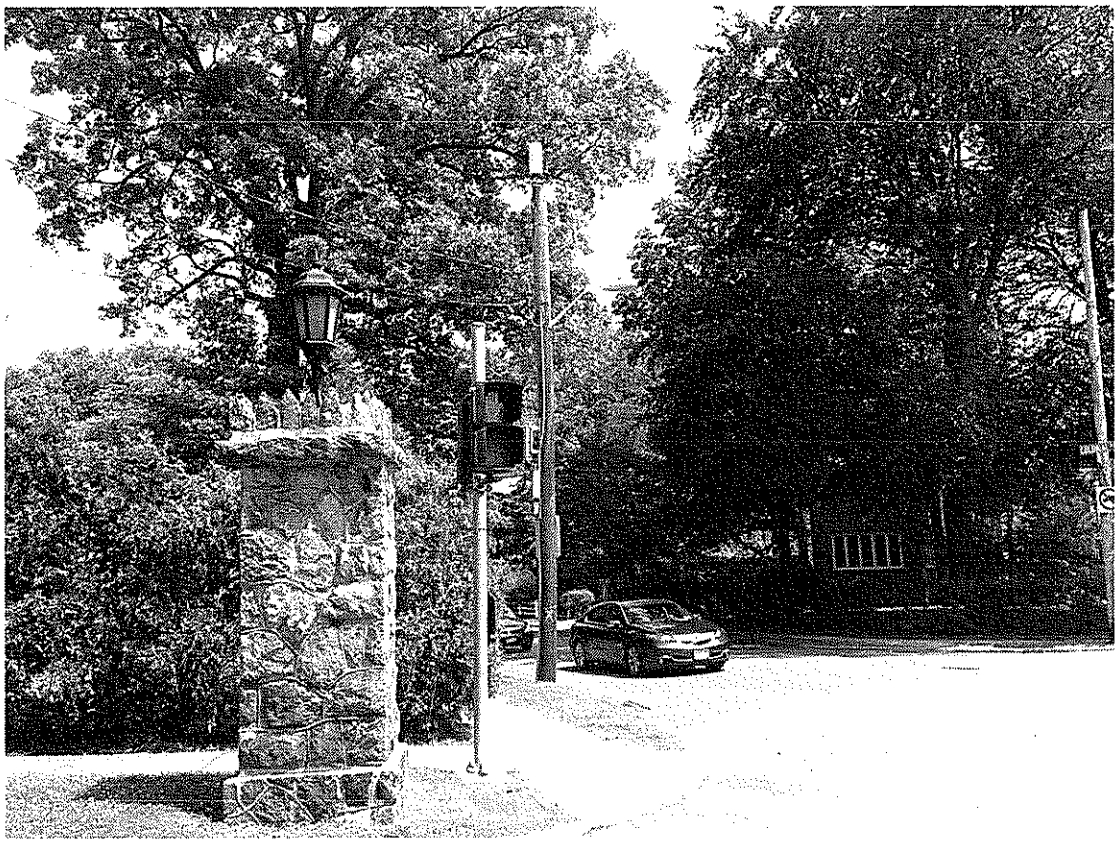
Routine Evaluation of Radio Frequency Emissions from the 3 Extenet Systems DAS Nodes in Pelham, New York

Executive Summary

This report finds that the radio frequency emissions of the Distributed Antenna System nodes owned and operated by Extenet Systems, Inc at three locations in Pelham, New York are within the allowed limits specified by the Federal Communications Commission. The facilities are exempt from routine evaluation under 47 CFR 1.1307(b) Table 1. Notwithstanding the apparent exemption, a routine evaluation was performed by calculation and field survey, which are the basis for this determination of compliance.

Introduction

Isotrope, LLC was engaged by Extenet Systems, Inc to evaluate the emissions of three Distributed Antenna System ("DAS") nodes in Pelham, New York. These nodes are constructed according to customary practices. They are placed on utility poles installed for the purpose. The operator of the DAS is a "neutral host provider" who is a registered utility with the state and offers transmission capacity to licensed carriers of personal wireless services. The radio frequency ("RF") emissions emanate from the antenna canister mounted on the top of each pole. Electronic equipment, telecommunications links, and power sources are attached to the pole. The electronic equipment is connected to the pole-top antenna by a vertical run of coaxial cable. The photo below shows a typical node located at Colonial Ave.



The nodes are presently configured to emit[1] the wireless signals of one certain personal wireless service carrier licensed by the FCC to operate on two wireless bands in the region. These two bands are the Personal Communications Service ("PCS") band and the Advanced Wireless Service ("AWS") band. These two bands are nearly adjacent in the radio spectrum. The emitted signals fall in the 1930-1990 MHz and 2110-2155 MHz frequency spectra, respectively.

The design specification places the antenna at 35 feet (10.7 m) above ground at each location. Assuming this is the nominal antenna centerline, and referring to the antenna specifications

[1] Wireless communications are two-way, so the node both emits and receives RF signals. For the purposes of RF safety compliance assessment, only the RF emissions from the node are relevant.

indicating the antenna is 1.9 feet (0.6 m) tall, the bottom of the antenna would be 10.1 m above ground.

Exemption from Routine Evaluation

According to 47 CFR 1.1307, Table 1, PCS (Part 24) and AWS (Part 27) emissions are subject to *routine evaluation* only if the antenna is less than ten meters above ground and power is greater than 1640 W EIRP (PCS) or 3280 W EIRP[2] (AWS). The design antenna height is ten meters above ground. The RF amplifiers at the node are capable of a total of 40 W, which, if combined losslessly and emitted on the 10 dBi gain antenna[3], would run a total of about 400 W EIRP.

Based on the system design specifications, the power threshold and the height threshold satisfy the exemption from routine evaluation and no further analysis would normally be required.

Nodes Described

A question has been raised by concerned parties about the compliance of the nodes' emissions with 47 CFR 1.307(b). To verify field conditions, Isotrope obtained the operating parameters of the individual nodes in question and made a site survey of each of the three nodes. The three node locations are listed in the table below. The coordinates are based on field evaluation to identify the general location and are not survey grade coordinates.

The elevation of the bottom of each antenna canister was measured from the ground using a laser tape measure. The values are shown in the second-to-last column of the table below. To evaluate against the FCC Table 1 criteria, the last column has the measurements converted and rounded to the nearest whole meter.

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[2] "W" is the initialism for watts, which is a unit of power. "EIRP" is the initialism for effective isotropic radiated power, which establishes a reference to which any antenna can be compared.

[3] Antennas, like the lens of a lighthouse, tend to focus energy horizontally for best efficiency. The gain of an antenna indicates how much the horizontal focusing effect the antenna has.

Node	Latitude	Longitude	Streets	Position	Measured Height	Height Rounded to Whole Meters
PLH001	40.913356	-73.804067	Harmon Ave near Young Ave	NW corner	31'10"	10
PLH002	40.902209	-73.810003	Colonial Ave at Pelhamdale Ave	NE corner	31'10"	10
PLH003	40.906494	-73.806026	E 2nd St at Cliff Ave	NE corner	37' 1"	11

Table A – Pelham Node Information

Routine Evaluation:

Field Measurement of Exposure At Ground Level

Field measurements with a broadband instrument were made to evaluate the ambient RF power density fields in the vicinity of each node. The instrument is a Narda 8718 meter with 8722D conformal probe. The instrument displays the combined power density of all radio frequency energy from 300 kHz to 40 GHz, and compensates for the varying exposure thresholds at each frequency. The instrument readout is in percent of the occupational exposure threshold. To simplify interpretation of this report, all reported readings have been adjusted by a factor of five to indicate the percentage of the applicable general population exposure limit in this case.

Measurements were taken at the base of each node, and in a general area sweep of the sidewalk and street within 50 to 100 feet of the node. The instrument has a reported dynamic range of 30 dB, extending from 1500% to 1.5% of the general population threshold. In practice, there is mild variation in the instrument noise floor such that, in our experience, any measurements below about 5% of the general population threshold are likely instrument noise or affected by instrument noise. Readings taken on the sweeps around all three nodes never exceeded 4%, and were typically less than 2.5%. Since these are at the bottom of the instrument's sensitivity, it is likely these figures do not represent actual power density results. To verify this, separate measurements of the actual emitted signals were performed.

When such an instrument does not indicate the presence of RF power density above its noise floor, the instrument is confirming that the ambient RF power density from all sources is compliant with the safety limits. By analogy, a camera might not be able to distinguish dark objects at night, while the human eye may still be able to. The camera cannot tell how much light there is, but it certainly confirms there is not enough light to take a picture. In this situation, while the instrument does not provide an actual measurement of the ambient RF environment, the lack of a measurement is still a positive indication of compliance.

Routine Evaluation:

Signal-specific Measurements

The operation of the nodes was confirmed through the use of a spectrum analyzer tuned to scan the relevant frequency spectrum. Active signals were observed at each node location. As is typical of wireless facilities, during quiescent times, only a single signal per service may be active, and as user traffic increases, additional signals may turn on. The nodes are equipped to handle a total of six separate RF signals at one time (four at PCS and two at AWS).

The actual ground level power density of one RF signal was measured with a reference antenna and the spectrum analyzer. These measurements were conducted at all three node locations and included area from the base of the pole to a radius of up to 50 feet.

Using appropriate conversion factors, the highest spectrum analyzer reading among the three sites represented a power density of less than 0.01% of the general population threshold. This is substantially lower than the sensitivity of the broadband instrument described above, confirming that the ambient levels are well below the sensitivity of the broadband instrument described in the previous section.

The power assigned to the wireless signal selected for measurement is $1/8^{th}$ of the total available transmission power of the nodes. Therefore, based on the maximum reading found among the three sites, and multiplying by 8 to account for times when all signals are on simultaneously, each node may be capable of reaching 0.08% of the general population

threshold on the ground in the vicinity of that node. Note we are employing the highest single spot-reading obtained. For the most part, the readings on the spectrum analyzer were 10 to 20 dB lower, or, in other words, showing typical values ranging from 0.008% to 0.0008% of the general population limit when all six channels are active on a node.

Routine Evaluation:

Exposure Estimated by Calculation

Finally, calculations following the predictive methods employed in FCC Office of Engineering and Technology Bulletin 65 ("OET Bulletin 65") were performed. Each node has two 20 watt amplifiers. The 20 watts of one amplifier are divided among four PCS channels. The 20 watts of the other amplifier are divided between two AWS channels. The maximum output power of the node electronics is therefore 40 watts with all six channels activated.

Assuming there are no line losses, resulting in a 40 watt antenna input power, the antenna has a maximum gain of 9.7 dBi (on the horizontal plane). The antenna is quasi omnidirectional, meaning that it emits energy in all directions of the compass with minor variations due to the design of the antenna. As with any high gain antenna in such situations, the node antenna focuses energy horizontally, and with much less energy emitted toward the nearby ground.

The practice in performing a first approximation of potential exposure is to employ the maximum EIRP on the main lobe. In the frequency band of interest, the general population exposure limit contained in 47 CFR 1.1310 is 1 mW/cm^2 (milliwatt per square centimeter). Employing equation (7) of OET Bulletin 65, which includes a conservative surface reflection factor, one can solve for the distance at which the node antenna is capable of reaching the general population threshold.

Applying the power, gain and threshold values described above to FCC equation (7), the minimum approach distance to the node antenna for a member of the general population would be 9.0 feet. This is an extreme case calculation that errs on the side of overstating the

distance because it assumes reinforcement of the ambient field with surface reflections, assumes there are no additional inefficiencies between the amplifiers and the antenna inputs, assumes all six signals are operating continuously for 30 minutes or more, and assumes a member of the general population is able to approach the antenna on the horizontal plane[4].

Residences Are Significantly Removed from the Nodes

Below is a table showing the distance to the nearest house from each node. In most cases it appears that the antennas are above the height of the residences (e.g. a 2 story building might be about 25 feet high to its roof peak). In one case, described in the table note below, a house appears to have its second floor in the horizontal plane of the antenna. This house is nearly ten times the minimum-required 9-foot distance from the antenna, resulting in an expected maximum-case field of approximately 1% of the general population threshold on the outside surface of the residence.

Node	Nearest House Distance	Antenna above habitable Space?	Streets	Position	Antenna Height
PLH001	30 ft	Yes*	Harmon Ave near Young Ave	NW corner	10 m
PLH002	45 ft	Yes	Colonial Ave at Pelhamdale Ave	NE corner	10 m
PLH003	57 ft	Yes	E 2nd St at Cliff Avenue	NE corner	11 m

*Note: Across the street is a residence uphill from the node. It appears the antenna is horizontal to the second floor of the residence. Its distance from the antenna is about 80 feet.

Table B - Distances to Nearest Houses to Nodes

[4] Using the antenna pattern to calculate a more refined second approximation, a member of the general population can be a foot below the base of the antenna without exceeding the threshold. Of course, this is as improbable as that same individual approaching the antenna horizontally within 9 feet.

Conclusion

According to the calculations and the field survey of the three Pelham DAS nodes, the nodes are fully compliant with FCC requirements regarding exposure of the general population to radio frequency energy. The system design criteria place the antennas clearly within the exemption from routine evaluation codified in Table 1 of 47 CFR 1.1307(b).

This report was prepared by, and the field survey conducted by, David Maxson, WCP.

David P. Maxson, WCP

FCC General Radiotelephone Operator License No. PG-1-12726