CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF SEPTEMBER 25, 2012

Item 35, Report No. 33, of the Committee of the Whole, which was adopted without amendment by the Council of the City of Vaughan on September 25, 2012.

35 RADIOFREQUENCY ELECTROMAGNETIC FIELDS TESTING AT AL PALLADINI COMMUNITY CENTRE WARD 2 - VICINITY OF RUTHERFORD ROAD AND ISLINGTON AVENUE

The Committee of the Whole recommends approval of the recommendation contained in the following report of the Commissioner of Planning, dated September 4, 2012:

Recommendation

The Commissioner of Planning recommends:

1. THAT this report be received as information; and,

2. THAT the City Clerk forward a copy of this report to the Vaughan Telecommunications Facility Siting Task Force for their information.

Contribution to Sustainability

N/A

Economic Impact

There are no requirements for new funding associated with this report.

Communications Plan

N/A

Purpose

This report summarizes the findings report prepared by Public Health Ontario (Attachment #1) respecting the radiofrequency electromagnetic fields testing conducted at the Al Palladini Community Centre and Pierre Berton Library in May 2012, in order to address concerns regarding an existing radio communication tower located approximately 150 metres from the back entrance of the Al Palladini Community Centre.

Background

On February 21, 2012, Vaughan Council directed (in part):

> "That representatives from York Region Health Services and Public Health Ontario be requested to conduct radiofrequency electromagnetic fields (EMFs) testing at the Al Palladini Community Centre in the Spring; and,
>
> That the information requested of York Region Health Services and Public Health Ontario be accompanied by additional data on electromagnetic fields as measured from other sources, both short term and long term, and their known impacts on human health, in order that the public may make an informed judgement on these matters."

…/2

Through the York Region Community and Health Services Department, the Development Planning Department organized the Public Health Ontario radiofrequency EMFs testing which occurred on May 23, 24 and 25, 2012, at the Al Palladini Community Centre and the Pierre Berton Library. Development Planning Department Staff were present for the first 2 testing days, as well as, representatives from York Region Community and Health Services Department. The Local Councillor, and certain members of Vaughan Council and Chair of the Vaughan Telecommunications Facility Siting Task Force also attended on the first day of testing.

Measurement of the radiofrequency electromagnetic fields intensity levels were taken at six different locations around the site; five measurements were taken outside where the public has general access and one was taken inside (Meeting Room 1, Al Palladini Community Centre).

York Region Public Health

On July 6, 2012, York Region Public Health provided the Development Planning Department with a copy of the final Public Health Ontario findings report (Attachment #1) and advised they are in agreement with Public Health Ontario's conclusion that "levels of Radiofrequency Electromagnetic Fields at this location comply with standards set by Health Canada."

The report outlines that the measurements were taken in accordance with Health Canada's Radiofrequency (RF) exposure guidelines "Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHZ to 300 GHz", known as Safety Code 6 (SC6). The report explains that the Safety Code 6 standard specifies limits of human exposure to radiofrequency (RF) fields (in the range of 3 kHz to 300 GFz) to prevent adverse health effects. The standard is applicable whenever any member of the general public may be exposed to RF fields. The limits given are for exposure averaged over a 6 minute period. The findings report includes a map showing the locations where the testing occurred on the site.

Specifics in the report indicate the following data was collected:

> "For the locations surveyed, the highest cumulative time-averaging SC6 levels of all measurable signals (9 kHZ to 6 GHz) was 0.0789%, or about 1267 times below the recommended SC6 limit (cumulative maximum value was 0.13544%, or about 738 times below the recommended SC6 limit). This level was recorded in front of the Pierre Berton Library, about 100 metres from the communication tower (Site 3).
>
> The second highest cumulative time-averaging SC6 level was recorded in the back parking lot of the Al Palladini Community Centre, about 80 metres from the communication tower (Site 2). Its' level was 0.07779%, or about 1286 times below the recommended SC6 limit (cumulative maximum value was 0.17512%, or about 571 times below the recommended SC6 limit)."
>
> "To put the Radiofrequency exposure levels found here in context, levels measured by Industry Canada in the City of Toronto are compared (Industry Canada, 2007) below:
>
> - The highest cumulative 6 minute average found by Industry Canada in the City of Toronto was at the Metro Hall grounds. The level was 2.11%, or 47 times less than the SC6 limit.
> - The second highest average level found was at the Spadina Avenue Parkette. The level was 0.44%, or 227 times less than the SC6 limit."

Industry Canada has noted that when the above noted sites are removed from the total average calculation for the City of Toronto (due to their close proximity to the clustered broadcast facilities in the Toronto Core), the average SC6 percentage is 0.0556%, or 1798 times less than the SC6 limit. In comparison, Table 1 of the Public Health Ontario report (Attachment #1, page 4) provides the overall average taken at Sites 1 through 5 (Note: Site 6, being the inside measurement taken in Meeting Room 1 of the Al Palladini Community Centre, was not included in calculating the overall average). The average SC6 percentage in this survey was 0.056158%, or 1,781 times less than the SC6 limit. It should be noted that the 2 averages are almost exactly the same.

Relationship to Vaughan Vision 2020/Strategic Plan

This staff report is consistent with the priorities set forth in Vaughan Vision 2020, particularly "Manage Growth & Economic Well-being".

Regional Implications

On July 6, 2012, York Region Community and Health Services Department advised they reviewed the findings of the report titled “Measurements of Radiofrequency Exposure at Al Palladini Community Centre and the Pierre Berton Library in the City of Vaughan” (Attachment #1) prepared by Public Health Ontario and they are in agreement with the conclusions that levels of Radiofrequency EMFs at this location comply with standards set by Health Canada.

Conclusion

Public Health Ontario has advised that “the recorded data indicated that the cumulative 6 minute time-averaging SC6 levels for all sites are only a small fraction of the SC6 requirements for the general public and therefore comply by a wide margin.”

Attachments

1. Report Prepared by Public Health Ontario – Measurements of Radiofreqency (9 KHz to 6 GGz) Exposure at the Al Palladini Centre and the Pierre Berton Library in the City of Vaughan

Report prepared by:

Carmela Marrelli, Senior Planner, ext. 8791

/LG

(A copy of the attachments referred to in the foregoing have been forwarded to each Member of Council and a copy thereof is also on file in the office of the City Clerk.)

RADIOFREQUENCY ELECTROMAGNETIC FIELDS TESTING AT AL PALLADINI COMMUNITY CENTRE
WARD 2 - VICINITY OF RUTHERFORD ROAD AND ISLINGTON AVENUE

Recommendation

The Commissioner of Planning recommends:

1. THAT this report be received as information; and,
2. THAT the City Clerk forward a copy of this report to the Vaughan Telecommunications Facility Siting Task Force for their information.

Contribution to Sustainability

N/A

Economic Impact

There are no requirements for new funding associated with this report.

Communications Plan

N/A

Purpose

This report summarizes the findings report prepared by Public Health Ontario (Attachment #1) respecting the radiofrequency electromagnetic fields testing conducted at the Al Palladini Community Centre and Pierre Berton Library in May 2012, in order to address concerns regarding an existing radio communication tower located approximately 150 metres from the back entrance of the Al Palladini Community Centre.

Background

On February 21, 2012, Vaughan Council directed (in part):

> "That representatives from York Region Health Services and Public Health Ontario be requested to conduct radiofrequency electromagnetic fields (EMFs) testing at the Al Palladini Community Centre in the Spring; and,
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> That the information requested of York Region Health Services and Public Health Ontario be accompanied by additional data on electromagnetic fields as measured from other sources, both short term and long term, and their known impacts on human health, in order that the public may make an informed judgement on these matters."

Through the York Region Community and Health Services Department, the Development Planning Department organized the Public Health Ontario radiofrequency EMFs testing which occurred on May 23, 24 and 25, 2012, at the Al Palladini Community Centre and the Pierre Berton Library. Development Planning Department Staff were present for the first 2 testing days, as well as, representatives from York Region Community and Health Services Department. The Local Councillor, and certain members of Vaughan Council and Chair of the Vaughan Telecommunications Facility Siting Task Force also attended on the first day of testing.

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On July 6, 2012, York Region Public Health provided the Development Planning Department with a copy of the final Public Health Ontario findings report (Attachment #1) and advised they are in agreement with Public Health Ontario's conclusion that "levels of Radiofrequency Electromagnetic Fields at this location comply with standards set by Health Canada."

The report outlines that the measurements were taken in accordance with Health Canada's Radiofrequency (RF) exposure guidelines "Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHZ to 300 GHz", known as Safety Code 6 (SC6). The report explains that the Safety Code 6 standard specifies limits of human exposure to radiofrequency (RF) fields (in the range of 3 kHz to 300 GFz) to prevent adverse health effects. The standard is applicable whenever any member of the general public may be exposed to RF fields. The limits given are for exposure averaged over a 6 minute period. The findings report includes a map showing the locations where the testing occurred on the site.

Specifics in the report indicate the following data was collected:

> "For the locations surveyed, the highest cumulative time-averaging SC6 levels of all measurable signals (9 kHZ to 6 GHz) was 0.0789%, or about 1267 times below the recommended SC6 limit (cumulative maximum value was 0.13544%, or about 738 times below the recommended SC6 limit). This level was recorded in front of the Pierre Berton Library, about 100 metres from the communication tower (Site 3).
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> The second highest cumulative time-averaging SC6 level was recorded in the back parking lot of the Al Palladini Community Centre, about 80 metres from the communication tower (Site 2). Its' level was 0.07779%, or about 1286 times below the recommended SC6 limit (cumulative maximum value was 0.17512%, or about 571 times below the recommended SC6 limit)."
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> "To put the Radiofrequency exposure levels found here in context, levels measured by Industry Canada in the City of Toronto are compared (Industry Canada, 2007) below:
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> - The highest cumulative 6 minute average found by Industry Canada in the City of Toronto was at the Metro Hall grounds. The level was 2.11%, or 47 times less than the SC6 limit.
> - The second highest average level found was at the Spadina Avenue Parkette. The level was 0.44%, or 227 times less than the SC6 limit."

Industry Canada has noted that when the above noted sites are removed from the total average calculation for the City of Toronto (due to their close proximity to the clustered broadcast facilities in the Toronto Core), the average SC6 percentage is 0.0556%, or 1798 times less than the SC6 limit. In comparison, Table 1 of the Public Health Ontario report (Attachment #1, page 4) provides the overall average taken at Sites 1 through 5 (Note: Site 6, being the inside measurement taken in Meeting Room 1 of the Al Palladini Community Centre, was not included in calculating the overall average). The average SC6 percentage in this survey was 0.056158%, or 1,781 times less than the SC6 limit. It should be noted that the 2 averages are almost exactly the same.

Relationship to Vaughan Vision 2020/Strategic Plan

This staff report is consistent with the priorities set forth in Vaughan Vision 2020, particularly "Manage Growth & Economic Well-being".

Regional Implications

On July 6, 2012, York Region Community and Health Services Department advised they reviewed the findings of the report titled "Measurements of Radiofrequency Exposure at Al Palladini Community Centre and the Pierre Berton Library in the City of Vaughan" (Attachment #1) prepared by Public Health Ontario and they are in agreement with the conclusions that levels of Radiofrequency EMFs at this location comply with standards set by Health Canada.

Conclusion

Public Health Ontario has advised that "the recorded data indicated that the cumulative 6 minute time-averaging SC6 levels for all sites are only a small fraction of the SC6 requirements for the general public and therefore comply by a wide margin."

Attachments

1. Report Prepared by Public Health Ontario – Measurements of Radiofreqency (9 KHz to 6 GGz) Exposure at the Al Palladini Centre and the Pierre Berton Library in the City of Vaughan

Report prepared by:

Carmela Marrelli, Senior Planner, ext. 8791

Respectfully submitted,

JOHN MACKENZIE
Commissioner of Planning

GRANT UYEYAMA
Director of Development Planning

/LG

Public Health Ontario
PARTNERS FOR HEALTH

Santé publique Ontario
PARTENAIRES POUR LA SANTÉ

Measurements of Radiofrequency (9 KHz to 6GHz) Exposure at the Al Palladini Centre and the Pierre Berton Library in the City of Vaughan

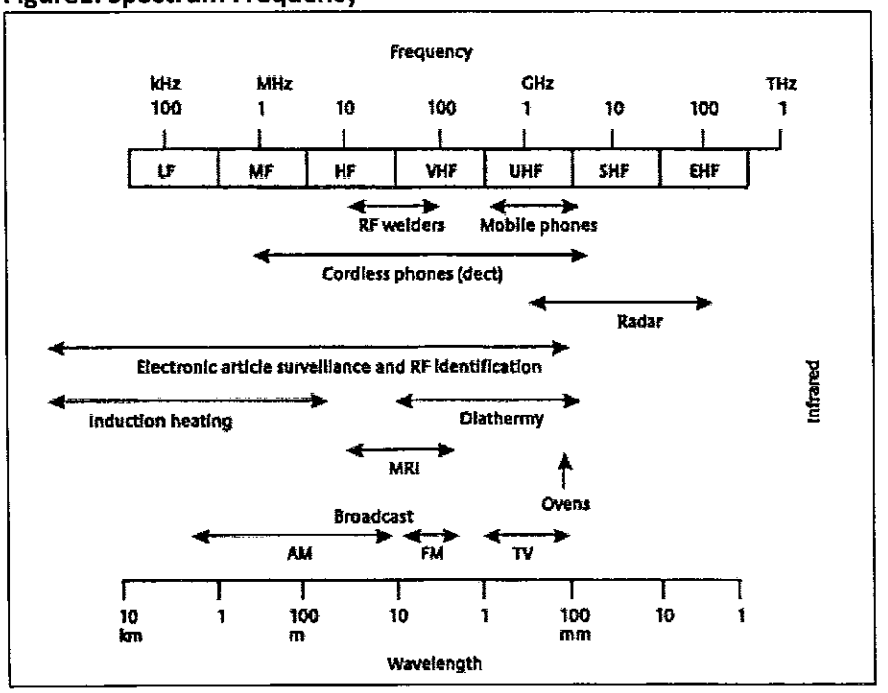
Introduction

A radiofrequency (RF) survey was conducted in response to a request from Helen Doyle, Manager, Health Protection Division, York Region Community and Health Services Department, at the Al Palladini Community Centre and the Pierre Berton Library on May 23, 24 and 25, 2012. The reason for the survey was to address concerns regarding a radio communication tower which is located approximately 150 metres from the back entrance of the Al Palladini Community Centre.

The measurements were done in accordance with Health Canada's RF exposure guidelines, *"Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz"*, known as Safety Code 6 (SC6) (Health Canada, 2009a).

The term RF (radiofrequency) refers to part of the electromagnetic spectrum that is used for radio communications purposes. Figure 1 below shows the RF bands, together with the ranges of frequencies commonly used for various other applications, including those used for telecommunications, industry and in medicine.

Figure1: Spectrum Frequency



Frequencies

LF: low
MF: medium
HF: high
VHF: very high
UHF: ultra high
SHF: super high
EHF: extremely high

Source: Health Protection Agency (2012)

Safety Code 6
The Safety Code 6 (SC6) standard specifies limits of human exposure to RF fields (in the range 3 kHz to 300 GHz) to prevent adverse health effects. The standard is applicable whenever any member of the general public may be exposed to RF fields. The limits given are for exposure averaged over a 6 minute period.

Frequency range measured
In this survey, the electromagnetic field within the frequency range of 9 KHz – 6 GHz was sampled and recorded.

Probes used
Because the frequency range covered was so large, three RF probes were used:

- Three axis Isotropic Response Magnetic-field antenna 3581/02 (9 KHz to 27 MHz)
- Three axis Isotropic Response Electrical-field antenna 3501/03 (27 MHz to 450MHz)
- Three axis Isotropic Response Electrical-field antenna 3502/01 (450 MHz to 6 GHz)

RF instrument used

- Narda Selective Radiation Meter (SRM 3006)
- Calibration: Last calibrated on March 6, 2012
- A non-conducting wooden support pole was used to mount the probe and a wooden pedestal was used to mount the RF survey meter (see Appendix A). The measurements were taken above the ground, at eye level (1.75 metres).

Locations Measured
Measurement of the radiofrequency electromagnetic field intensity levels were taken at six different locations around the site (see Appendix B). Five measurements (Site 1-4, 6) were taken outside where the public has general access, and one was taken inside (Site 5).

Site 1: In front of Al Palladini Community Centre, in the handicap parking lot, about 240 metres from the communication tower

Site 2: In the back parking lot, about 80 metres from the communication tower

Site 3: Pierre Berton Library, 10 metres from front, 105 metres from the communication tower

Site 4: Hill between Emily Carr Secondary School and the Al Palladini Community Centre, about 100 metres from the communication tower

Site 5: Al Palladini Community Centre, Meeting Room 1

Site 6: Path to rear entrance of Al Palladini Community Centre, about 100 metres from the communication tower

Method

- All readings taken were as a percentage of SC6 for the general population limit measured over a six minute period.
- Both the cumulative total maximum value and the six minute time-averaging RF intensity values were logged for each RF probe.
- For each Site, total combined values for the RF spectrum measured (9 kHz to 6GHz) were calculated by adding results from the 3 RF probes (Health Canada, 2009b).
- The following locations were measured on May 23 (Day 1), 24 (Day 2) or May 25 (Day 3):

  Site 1: Day 1 and Day 2

  Site 2: Day 1 and Day 2

  Site 3: Day 1 and Day 2

  Site 4: Day 2

  Site 5: Day 1 and Day 2 (420MHz to 6GHz only).

  Site 6: Day 3

Results

Both the highest cumulative maximum and 6 minute time-averaging RF levels, relative to SC6 limits, for each site measured are listed in Table 1 (detailed results can be found in Appendix C). The cumulative 6 minute time-averaging value represents a more realistic sample of actual exposure as opposed to the cumulative maximum values, which represent a less realistic but higher exposure scenario.

- Almost all (98% on average) of the RF energy levels found at each location lay between 420 MHz and 6 GHz. For a visual representation of the frequency spectrum [9 kHz to 27 MHz; 27 MHz to 420MHz to 6 GHz] please see Appendix D.

- For the locations surveyed, the highest cumulative time-averaging SC6 levels of all measurable signals (9 kHz to 6 GHz) was 0.0789%, or about 1267 times below the recommended SC6 limit (cumulative maximum value was 0.13544%, or about 738 times below the recommended SC6 limit). This level was recorded in front of the Pierre Berton Library, about 100 metres from the communication tower (Site 3).

- The second highest cumulative time-averaging SC6 level was recorded in the back parking lot of the Al Palladini Community Centre, about 80 metres from the communication tower (Site 2). Its level was 0.07779%, or about 1286 times below the recommended SC6 limit (cumulative maximum value was 0.17512%, or about 571 times below the recommended SC6 limit).

Table 1: SC6 levels at measured locations (where more than one measurement was performed, the highest value was used for comparison and analysis purposes).

LOCATION	MAXIMUM		TIME AVERAGING	
	% OF SC6 GENERAL PUBLIC LIMIT	NUMBER OF TIMES BELOW SC6	6 MINUTE TIME-AVERAGED (% OF SC6 GENERAL PUBLIC LIMIT)	NUMBER OF TIMES BELOW SC6
Site 1: In Front of Al Palladini Community Centre, front parking lot, about 240 metres from the communication tower	0.04543	2,201	0.02680	**3,731**
Site 2: In the back parking lot of Al Palladini Community Centre, about 80 metres from the communication tower	0.17512	571	0.07779	**1,286**
Site 3: Pierre Berton Library, 10 metres from front entrance, 105 metres from the communication tower	0.13544	738	0.07890	**1,267**
Site 4: Hill between Emily Carr Secondary School and the Al Palladini Community Centre, about 100 metres from the communication tower	0.05531	1,808	0.03492	**2,864**
Site 5: Al Palladini Community Centre, Meeting Room 1 (this measurement was performed for interest and is not included in the average)	0.02000	5,000	0.01200	**8,333**
Site 6: Path to rear entrance of Al Palladini Community Centre, about 100 metres from the cellular tower	0.10755	930	0.06238	**1,603**
AVERAGE	**0.10377**	**964**	**0.056158**	**1,781**

- The cumulative time-averaging SC6 level at the path to the rear entrance of the Al Palladini Community Centre, about 100 metres from the cellular tower (Site 6), was 0.06238%, or about 1600 times below the recommended limit (cumulative maximum value was 0.10755%, or about 929 times below the recommended SC6 limit).

- The cumulative time-averaging SC6 level on the hill between Emily Carr Secondary School and the Al Palladini Community Centre, about 100 metres from the cellular tower (Site 4), was 0.03492%, or about 2864 times below the recommended limit (cumulative maximum value was 0.05531%, or about 1807 times below the recommended SC6 limit).

- The highest cumulative time-averaging SC6 level in front of the Al Palladini Community Centre, about 240 metres from the cellular tower (Site 1) was 0.02680%, or about 3731 times below the recommended limit (cumulative maximum value was 0.04543%, or about 2201 times below the recommended SC6 limit).

- The major contributor in the back parking lot, on the hill, in front of the library and at the rear entrance path was dominated by an older mobile cellular phone frequency (806 MHz 890MHz). In the front parking lot, the dominant contributor was also a cell phone frequency, but in the range of 1850 MHz to 2000 MHz (see Appendix E for greater details).

- To put the RF exposure levels found here in context, levels measured by Industry Canada in the City of Toronto are compared (Industry Canada, 2007) below.
    - The highest cumulative 6 minute average level found by Industry Canada was at the Metro Hall grounds. The level was 2.11%, or 47 times less than the SC6 limit.
    - The second highest average level found was at the Spadina Avenue Parkette. The level was 0.44%, or 227 times less than the SC6 limit.
    - Industry Canada noted that if both the Metro Hall and Spadina Parkette measurements were to be removed from the calculation, because of their proximity to the clustered broadcast facilities in the core of Toronto, the average SC6 percentage for commercial areas would be 0.0556%, or 1798 times less than the SC6 limit. The average SC6 percentage in our survey was almost exactly the same – 0.056158%, or 1,781 times less than the SC6 limit. Please note the inside measurement in Meeting Room 1 was not included in the calculating the overall average.

- As a matter of interest, measurements were performed in Meeting Room 1, Al Palladini Community Centre (Site 5) using Probe 1 (420 to 6 GHz). The use of only Probe 1 is justified because almost all (98% on average) of the RF energy for the 6 minute time-averaging radiofrequency levels found at each location lay between 420 MHz and 6 GHz. The highest cumulative 6 minute time-averaging SC6 level recorded was 0.01200%, or 8333 times below the recommended SC6 limit (cumulative maximum value was 0.02000%, or about 5000 below the recommended SC6 limit).

Conclusion

The recorded data indicated that the cumulative 6 minute time-averaging SC6 levels for all sites are only a small fraction of the SC6 requirements for the general public and therefore comply by a wide margin.

REFERENCES

- Health Canada (2009a). Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz, Safety Code 6 (2009)

- Health Canada (2009b). Technical Guide for Interpretation and Compliance Assessment of Health Canada's Radiofrequency Exposure Guidelines

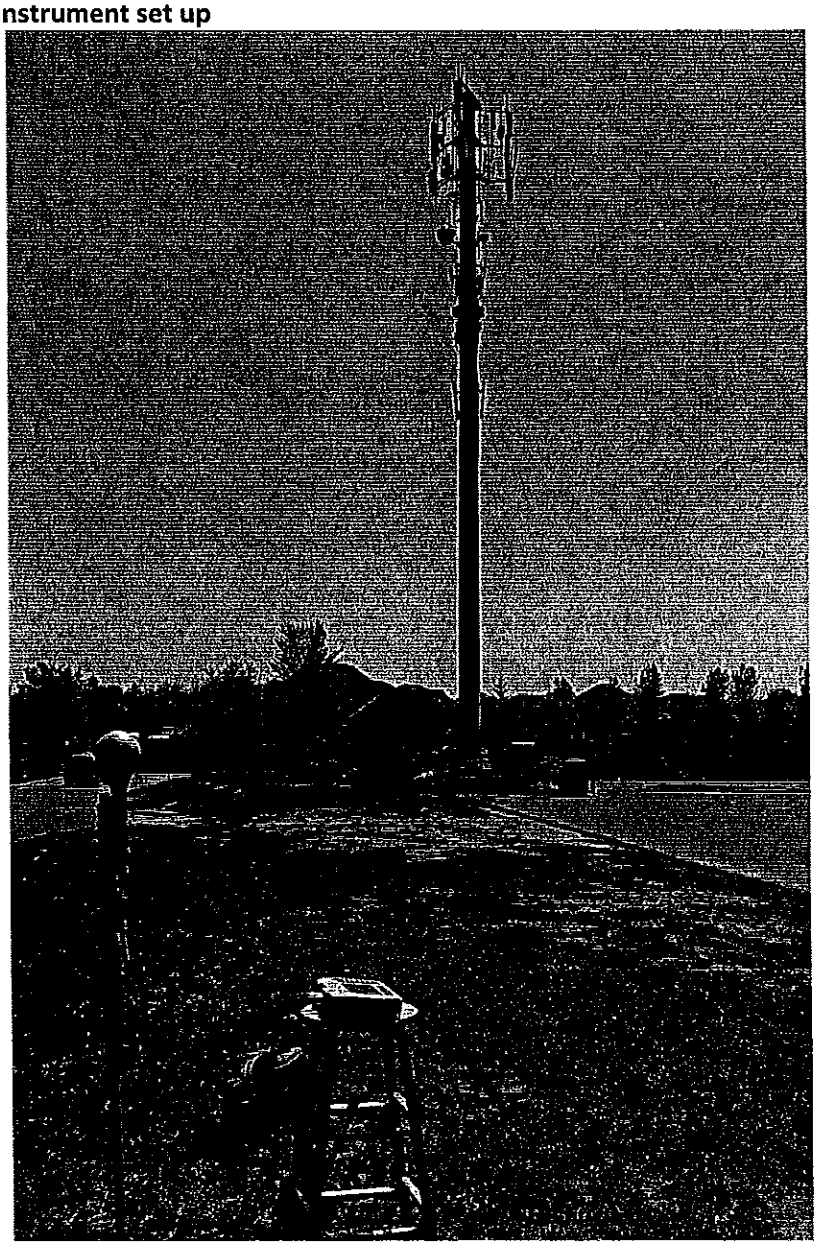
- Nguyen B., Mohabeer S., Lai V. and Lander E (2000). Evaluation of Electromagnetic Field Intensity in the City of Toronto, Report for Industry Canada, Spectrum Management, Ontario Regional Engineering, Canada, June 2002.

- Lai V (2007). Measurement and Analysis of Radiofrequency Electromagnetic Field. Intensity in the Vicinity of the Union Street Water Tower, Simcoe, Report for Industry Canada, Spectrum Management, Ontario Regional Engineering, Canada, September 2007

- Health Protection Agency (April 2012). Health Effects from Radio Frequency Electromagnetic Fields.

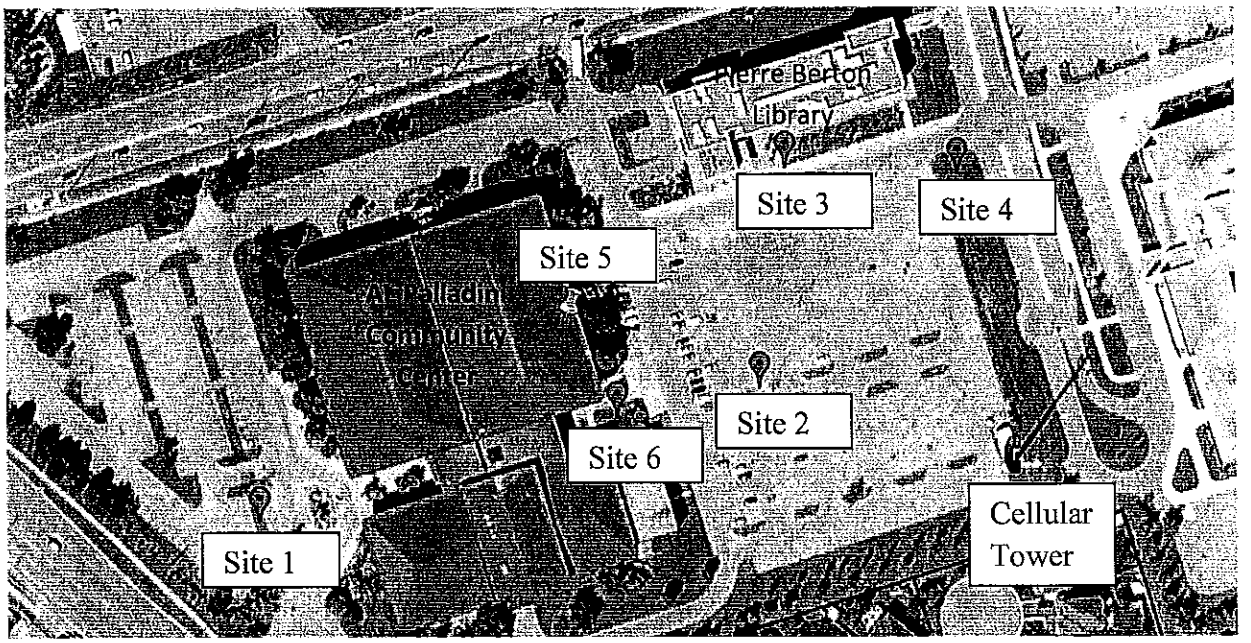
Appendix A

Instrument set up



Appendix B

Sites



- **Site 1:** In Front of Al Palladini Community Centre in the handicap parking lot, about 240 metres from the communication tower
- **Site 2:** In the back parking lot of Al Palladini Community Centre, about 80 metres from the communication tower
- **Site 3:** Pierre Berton Library, 10 metres from the front, 105 metres from the communication tower
- **Site 4:** Hill between Emily Carr Secondary School and the Al Palladini Community Centre, about 100 metres from the communication tower
- **Site 5:** Al Palladini Community Centre, Meeting Room 1
- **Site 6:** Path to rear entrance of Al Palladini Community Centre, about 100 metres from the communication tower

Appendix C

Detailed Results

Site 1: In Front of Al Palladine Community Centre in the handicap parking, about 240 metres from the cellular tower										
	23-May-12					24-May-12				
Frequency	Time	Maxium (% of SC6)	Number of times below SC6	6 minute Time averaged (% of SC6)	Number of times below SC6	Time	Maxium (% of SC6)	Number of times below SC6	6 minute Time averaged (% of SC6)	Number of times below SC6
9 KHz to 27 MHz	11:37:00 AM	0.00036	277,778	0.00021	476,190	11:20:00 AM	0.00039	256,410	0.00021	476,190
27 MHz to 420 MHz	11:27:00 AM	0.00700	14,286	0.00060	166,667	11:30:00 AM	0.00304	32,895	0.00059	169,492
450 MHz to 6 GHz	11:48:00 AM	0.02700	3,704	0.01800	5,556	11:10:00 AM	0.04200	2,381	0.02600	3,846
COMBINED TOTAL (9 kHz to 6 GHz)		0.03436	2,910	0.01881	5,316	COMBINED TOTAL	0.04543	2,201	0.02680	3,731

Site 2: In the back parking lot, about 80 meters from the cellular tower										
	23-May-12					24-May-12				
Frequency	Time	Maxium (% of SC6)	Number of times below SC6	6 minute Time-averaged (% of SC6)	Number of times below SC6	Time	Maxium (% of SC6)	Number of times below SC6	6 minute Time-averaged (% of SC6)	Number of times below SC6
9 KHz to 27 MHz	12:22:00 PM	0.00039	256,410	0.00020	500,000	11:59:00 AM	0.00035	285,714	0.00019	526,316
27 MHz to 420 MHz	12:11:00 PM	0.00073	136,986	0.00059	169,492	11:49:00 AM	0.00810	12,346	0.00064	156,250
450 MHz to 6 GHz	12:33:00 PM	0.17400	575	0.07700	1,299	12:13:00 PM	0.13400	746	0.06700	1,493
COMBINED TOTAL (9 kHz to 6 GHz)		0.17512	571	0.07779	1,286	COMBINED TOTAL	0.14245	702	0.06783	1,474

Site 3: : Pierre Berton Library, 10 meters from front, 105 meters from the cellular tower										
	23-May-12					24-May-12				
Frequency	Time	Maxium (% of SC6)	Number of times below SC6	6 minute Time-averaged (% of SC6)	Number of times below SC6	Time	Maxium (% of SC6)	Number of times below SC6	6 minute Time-averaged (% of SC6)	Number of times below SC6
9 KHz to 27 MHz	1:26:00 PM	0.00042	238,095	0.00019	526,316	12:39:00 PM	0.00034	294,118	0.00019	526,316
27 MHz to 420 MHz	1:14:00 PM	0.00086	116,279	0.00069	144,928	12:48:00 PM	0.00090	111,111	0.00071	140,845
450 MHz to 6 GHz	1:00:00 PM	0.10600	943	0.06000	1,667	12:29:00 PM	0.13420	745	0.07800	1,282
COMBINED TOTAL (9 kHz to 6 GHz)		0.10728	932	0.06088	1,643	COMBINED TOTAL	0.13544	738	0.07890	1,267

Site 4: Hill between Emily Carr Secondary School and the Al Palladine Community Centre, about 100 meters from the cellular tower					
	24-May-12				
Frequency	Time	Maxium (% of SC6)	Number of times below SC6	6 minute Time-averaged (% of SC6)	Number of times below SC6
9 KHz to 27 MHz	2:18:00 PM	0.00038	263,158	0.00020	500,000
27 MHz to 420 MHz	2:27:00 PM	0.00093	107,527	0.00072	138,889
450 MHz to 6 GHz	2:06:00 PM	0.05400	1,852	0.03400	2,941
COMBINED TOTAL (9 kHz to 6 GHz)		0.05531	1,808	0.03492	2,864

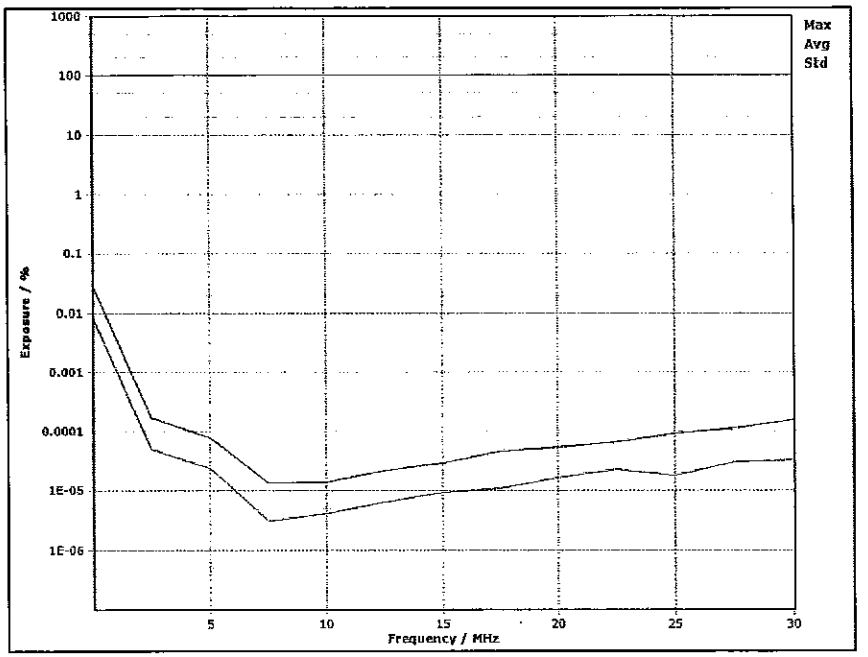
Site 5: Al Palladine Community centre, Meeting Room 1										
	23-May-12					24-May-12				
Frequency	Time	Maxium (% of SC6)	Number of times below SC6	6 minute Time-averaged (% of SC6)	Number of times below SC6	Time	Maxium (% of SC6)	Number of times below SC6	6 minute Time-averaged (% of SC6)	Number of times below SC6
450 MHz to 6 GHz	2:54:00 PM	0.02000	5,000	0.01200	8,333	2:55:00 PM	0.01400	7,143	0.00888	11,261

Site 6: Path to rear entrance, about 100 meters from the cellular tower					
	25-May-12				
Frequency	Time	Maxium (% of SC6)	Number of times below SC6	6 minute Time-averaged (% of SC6)	Number of times below SC6
9 KHz to 27 MHz	11:32:00 AM	0.00014	714,286	0.00019	526,316
27 MHz to 420 MHz	11:47:00 AM	0.00041	243,902	0.00019	526,316
450 MHz to 6 GHz	11:06:00 AM	0.10700	935	0.06200	1,613
COMBINED TOTAL (9 kHz to 6 GHz)		0.10755	930	0.06238	1,603

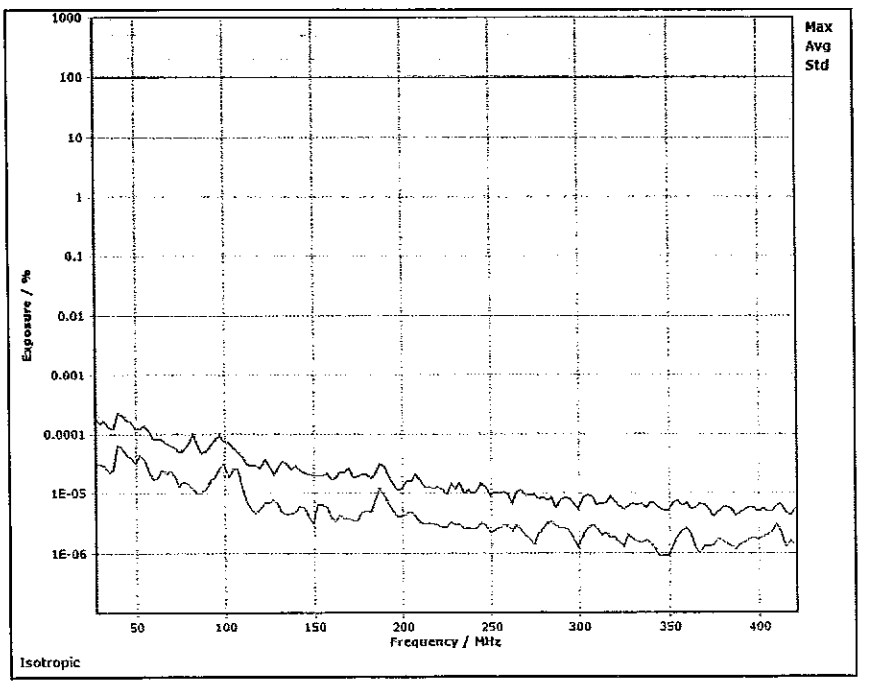
Highest values for each site

Appendix D

Spectrum 9 kHz to 27 MHz

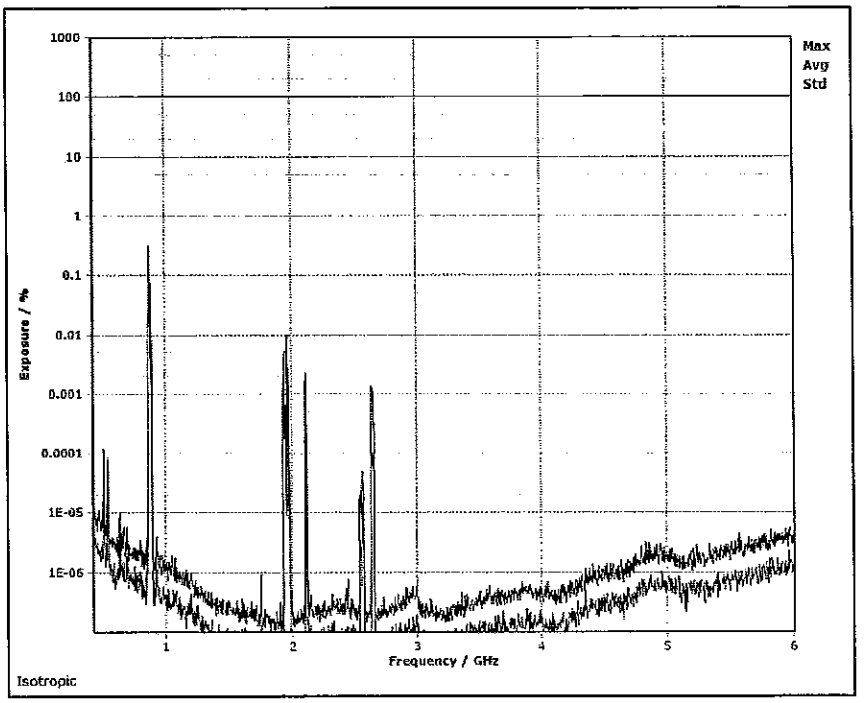


Spectrum 27 MHz to 420 MHz

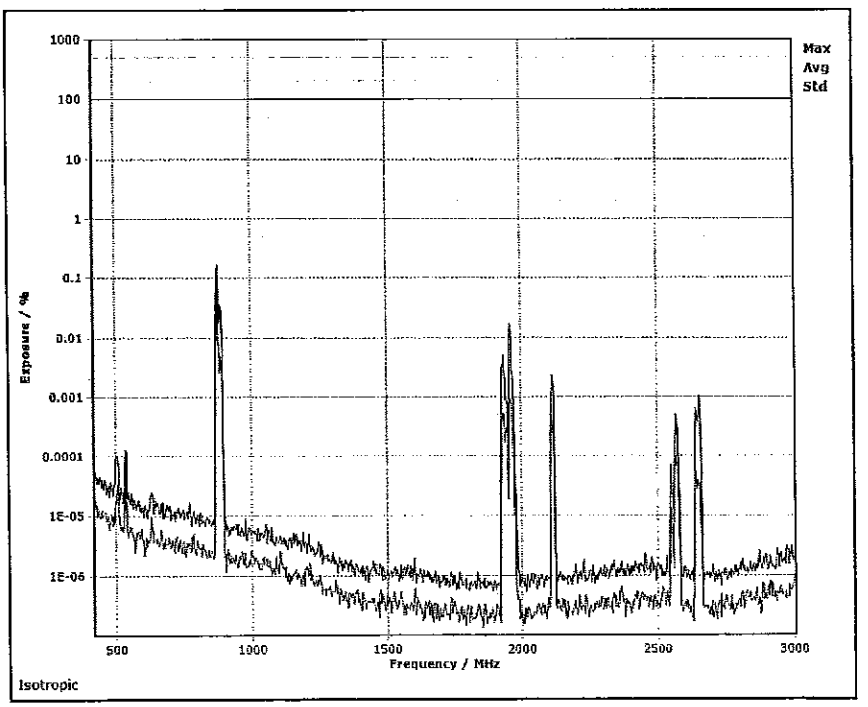


Appendix D (cont.)

Spectrum 420 MHz to 6 GHz



Enlargement 420 MHz to 3 GHz



Appendix E

Major Contribution Source

Contribution Table					
Location	**Source**	**Fmin (MHz)**	**Fmax (MHz)**	**6 minute Average %**	**Contribution %**
Back parking lot	Cellular Phone	806.0000	890.0000	0.0700	91.2400
Hill	Cellular Phone	806.0000	890.0000	0.0500	93.7000
Front of the library	Cellular Phone	806.0000	890.0000	0.0530	87.1100
Rear entrance path	Cellular Phone	806.0000	890.0000	0.0500	79.5300
Front parking lot	Cellular Phone	1850.0000	2000.0000	0.0200	72.4200
Meeting Room 1	Cellular Phone	1850.0000	2000.0000	0.0057	63.9900