

1.0 INTRODUCTION

SENES Consultants Limited (SENES) was retained by Manitoba Hydro to measure background noise levels at receptor locations in the vicinity of their Brandon Generating Station in Brandon, Manitoba.

Attachment A presents the results of the noise monitoring conducted by SENES at the boundary of Brandon Generating Station (BGS) and at the closest receptor and provides an assessment of noise contribution from the nearby roads, using computer modelling. Also, the measured noise levels are compared against Manitoba's regulatory requirements, noise level limits for similar facilities, set by other provincial regulatory agencies such as Ontario Ministry of Environment (MOE), and the World Bank. A comparison of daytime and nighttime background noise levels at nearby sensitive receptors as well as at the boundary, during Station shutdown, start-up and normal operation is also provided.

2.0 EXISTING CONDITIONS

2.1 STATION LOCATION

The BGS location is described in Section 2.1 of this Noise Assessment Study.

2.2 STATION OPERATIONS AND PROCESS DESCRIPTION

The description of the BGS operations is provided in Section 2.2 of this Noise Assessment Study.

2.3 RECEPTORS

A receptor or point of reception may be defined as *"any point on the premises of a person where sound or vibration originating from other than those premises is received"* (Ontario Model Municipal Noise Control By-Law). The point of reception may be located on any of the following existing, or zoned for future use premises: permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residence, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship.

The zoning map (City of Brandon) provided in Appendix A indicates that the closest residential area to Brandon Generating Station are located along 17th Street which is about 1.6 km to the east of 33rd Street. In addition, there are a few single family dwellings on the farmlands to the north of the facility (not shown in the zoning map). Initial observations in the vicinity of these properties indicated that highway traffic along Highway 457 was the dominant noise source (i.e. under normal operation of the Station, that is not during the start-up, the major on-site noise sources are located on the south side of the facility, and thus are less audible at receptors to the north).

The closest major onsite noise source, with respect to receptor locations along 17th Street is the natural gas conditioner and combustion turbine stacks (~1.6 km away; see Figure 4.2 of the this Noise Assessment Study) During the start-up of Unit #5, the dominant noise source is the blow-down tank steam vent (rooftop), which due to its elevation can be heard at receptor locations to the north as well as to the east (along 17th Street). For the purpose of this study, two receptor locations closest to the plant were selected along 17th Street for long-term monitoring:

- Location 1: The 2nd house north of Victoria Street, on 17th Street The noise environment at this receptor location is characterized by local traffic and off-site transformer station noise at the southwest corner of Victoria St. and 17th Street; and

Location 2: 11th house north of Victoria Street, on 17th Street. The noise environment at this receptor location is less impacted by the noises from traffic along 17th Street. Although, still audible, the noise levels from the transformer stations were less prominent at this location

2.4 ON-SITE NOISE SOURCES

The general noise sources at the Brandon Generating Station are described in Section 2.3 of this Noise Assessment Study.

2.5 OFF-SITE NOISE SOURCES

The Brandon Generating Station is located in an industrial setting with industries such as fertilizer manufacturing, landfill, sand and gravel crushing/screening, meat packing, and pharmaceutical Station located in close vicinity to the Station. These industrial sources may contribute to the noise levels in the area.

In addition, there are two switchyards, one located adjacent to Cornwallis building (to the northeast) with four transformers (usually energized) and a second one located at the southwest corner of Victoria Street and 17th Street. The noise associated with the transformers at these switchyards contributes significantly to the noise environment at the residential receptors along 17th Street

Farm activities to the north of the Brandon Generating Station, traffic noise along Victoria St. (17th Street is a minor road serving only local traffic) and recreational activities such as dirt-biking in fields to the west of 17th Street are some of the other contributors to the noise environment in the area.

3.0 REGULATORY REQUIREMENTS

3.1 PROVINCE OF MANITOBA GUIDELINE/BY-LAW

Under the current regulation, there are no noise level limits set for industrial sources in the province of Manitoba. In conversations with personnel at Manitoba Conservation, SENES was informed that the current regulation is based on a qualitative assessment of noise impact, which states that if there are five or more complaints of nuisance noise during a period of 90 consecutive days, the facility is considered to be non-compliant, at which point an investigation may be undertaken.

For the purpose of this report, the measured noise levels are compared against limits defined by Ontario's Ministry of the Environment (MOE) and World Bank guidelines.

3.2 ONTARIO MOE GUIDELINES

In Ontario, to obtain a Certificate of Approval (air), a noise source must comply with the noise guidelines stipulated in the Ministry of the Environment (MOE) Model Municipal Noise Control By-law. The Brandon Generating Station is a stationary noise source as defined in the By-law. In keeping with the requirements of the By-law, the Station must comply with the exclusion sound level limits set in publication Noise Pollution Control (NPC) document 205 (NPC-205). Publication NPC-205 of the Model By-Law sets Sound Level Limits for Stationary Sources in Class 1 and 2 Areas (Urban).

NPC 205 defines a "Class 1 Area" as:

an area with an acoustical environment typical of a major population centre, where the background sound level is dominated by the urban hum.

A "Class 2 Area" is defined as:

an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 Areas, and in which a low background sound level, normally occurring only between 23:00 and 07:00 hours in Class 1 Areas, will typically be realized as early as 19:00 hours.

Other characteristics, which may indicate the presence of a Class 2 Areas, include:

- *absence of urban hum between 19:00 and 23:00 hours;*

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- *evening background sound level defined by natural environment and infrequent human activity; and*
- *no clearly audible sound from stationary sources other than from those under assessment.*

A “Class 3 Area” is defined as:

- *a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as the following:*
 - *a small community with less than 1000 population;*
 - *agricultural area;*
 - *a rural recreational area such as a cottage or a resort area; or*
 - *a wilderness area.*

Based on the existing sound environment at the receptors and at the Brandon Generating Station, this area is best defined as a “Class 1 Area”.

NPC-205 states that the sound level limit must be established based on the principle of "predictable worst case" noise impact. Generally, the limit is based on the background sound level at the receptors and must represent the minimum background sound level that occurs or is likely to occur during the operation of the stationary source under assessment. Background sound level is defined as:

The sound level that is present in the environment produced by noise sources other than the source under impact assessment. Highly intrusive short duration noise caused by a source such as an aircraft fly-over or a train pass-by is excluded from the determination of the background sound level.

Sound levels from steady stationary noise sources (such as the Brandon Generating Station) are quantified using the energy equivalent sound level, L_{eq} , in dBA. During daytime hours, the limit at a critical receptor for steady noise from a stationary source is the higher of either the one-hour L_{eq} resulting from existing volumes of road traffic and any industry which is not under investigation for noise excess, or 50 dBA. During night-time hours, the limit is the higher of either the ambient (road traffic plus industry) L_{eq} noise level or 45 dBA. If the stationary source contains any noticeable features such as tonal components or buzzing, a 5 dB tonal penalty must be added to the noise level of the source.

No restrictions apply to a stationary source resulting in a one hour L_{eq} lower than the minimum values for the time periods specified in Table 3.1.

**TABLE 3.1
MINIMUM VALUES OF ONE-HOUR L_{eq} OR L_{LM} BY TIME OF DAY**

TIME OF DAY	ONE HOUR L_{eq} (dBA)	
	CLASS 1 AREA	CLASS 2 AREA
07:00 - 19:00	50	50
19:00 - 23:00	47	45
23:00 - 07:00	45	45

3.3 WORLD BANK GUIDELINES

The World Bank Group occasionally finances commercial and industrial projects for which no specific environmental guideline has been written. To ensure environmental protection in such cases, the Bank has developed general environmental guidelines, including guidelines for environmental noise. These guidelines are often applied to projects independent of World Bank financing, since they are largely consistent with the environmental standards of industrialized nations, as well as with the latest technical information on the effects of noise on human health from the World Health Organization.

The World Bank noise guidelines specify that noise abatement measures should achieve either the levels as indicated in Table 3.2, or a maximum increase in background levels of 3 dB(A), with measurements to be taken at noise receptors located outside the property boundary of a source.

**TABLE 3.2
MAXIMUM LIMIT FOR EQUIVALENT SOUND LEVELS
(WORLD BANK GUIDELINES)**

Area	dBA	
	Daytime (07:00 – 22:00)	Nighttime (22:00 – 07:00)
Residential areas in cities	55	45
Residential areas in suburbs	55	45
Residential areas in villages	55	45
Industrial areas (heavy industrial)	70	70
Institution, worshipping and treatment places and hospitals	55	45

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Based on the guideline's description of cities, suburbs, villages and industrial areas, the areas surrounding the Brandon Generating Stations can be classified as "Industrial area". However, the residential area along 17th Street can be classified as "city".

The World Bank guidelines for nighttime limit for cities is the same as that for the Ontario MOE "class 1 area", however, World Bank's daytime limit is slightly less stringent (55 dBA versus 50 dBA).

4.0 SOUND LEVEL MONITORING

4.1 SOUND LEVEL SURVEY METHODOLOGY

The monitoring program consisted of continuous noise level measurements at two locations: (1) Noise Monitor 1: at residential receptor location 1 (2nd house along 17th Street N.) and (2) Noise Monitor 2: at residential receptor location 2 (11th house along 17th Street N.) (see Figure 4.2 of this Noise Assessment Study). The purpose of the second monitoring location along 17th Street was to assess the noise impact of road traffic along Victoria Street and also that of the transformers located at a switchyard southwest of the 17th Street and Victoria Street.

All continuous background sound level measurements were made using two Rion Model NL-22 integrating sound level meters. The calibration of the Units were checked before and after each monitoring period, using a RION NC-73, 1 kHz, 94.0 dB acoustic calibrator.

The continuous sound level measurements were made with the meter set on the “A” weighting scale. This scale simulates the response of the human ear. The meter was calibrated at the beginning and end of the monitoring period. A windscreen was placed on the microphone of the noise meter while monitoring to reduce the effects of wind-induced noise.

Overall, a total of 111 continuous hours of monitoring were recorded at receptor monitoring locations 1 and 2, between September 8th and 13th, 2004. The continuous monitoring was scheduled to coincide with Station start-up and operation. Monitoring data at the two locations are provided in Appendix B.

4.2 RESULTS OF SOUND LEVEL MONITORING

The monitoring results, summarized in Tables 4.1 to 4.4 represent continuous noise level monitoring at Receptor Locations 1 and 2, taken during four operational scenarios of the Brandon Generating Station:

- 1) when the Station is not operating;
- 2) during the start-up of coal-fired Unit #5;
- 3) during typical operation of Unit #5; and
- 4) during typical operation of Unit #5 together with typical operation of one of the two gas-turbine Units (Unit #6 or Unit #7).

4.2.1 Station Not Operating

The results indicate that the minimum hourly L_{eq} sound level measured during daytime (7:00 – 19:00) at the monitoring Receptor Locations 1 and 2, during the time that the Station was not operating were 50.3 dBA and 49.1 dBA, and averages of 51.4 dBA and 50.3 dBA, respectively. The minimum measured nighttime sound levels (23:00 – 7:00) for the two receptor monitoring locations (1 and 2) were at 44.6 dBA and 41.4 dBA, with averages of 48.2 dBA and 47.1 dBA, respectively (see Tables 4.1 to 4.4). As per the definition of the background noise levels discussed in Section 3 of this report, since the potential noise source under assessment (i.e., Brandon Generating Station) was not operating during these measurements, the minimum values are representative of background noise conditions and can be used as the appropriate sound level limits for the operations of the Brandon Generating Station.

4.2.2 Station Start-Up

The sound levels associated with the BGS is different during the start-up than during its normal steady operation. The noise levels are expected to be slightly higher, mainly due to venting of high-pressure steam from the blow-down tank for Unit #5. Therefore, noise levels during the start-up were also measured at both locations 1 and 2 (receptors). The results are summarized in Tables 4.1 to 4.4. The results indicate that there was little or no increase in the minimum daytime and nighttime background noise levels. The daytime average was higher by 2 dB at location 1 but almost unchanged at location 2. The average measured noise levels during nighttime 1 (19:00 – 23:00) were slightly higher (~1 dB) at receptor 1 but was lower at receptor 2 (by ~ 1 dB). The maximum values indicate insignificant changes when compared to the background noise levels discussed in Section 4.2.1.

4.2.3 Typical Station Operation Mode 1

As indicated in the footnote of Tables 4.1 to 4.4, the “Mode 1” operation describes the condition refers to when only the coal-fired Unit 5 is operational. The minimum daytime and nighttime sound levels measured at Receptor Locations 1 and 2 during Mode 1 operation, were lower than those measured when the Station was not operating, with the lowest nighttime value (37.4 dBA) measured at Receptor Location 2. Average sound levels were the same or slightly higher during nighttime at Receptor Locations 1 and 2. Also, the maximum daytime and nighttime values were slightly higher at both locations.

4.2.4 Typical Station Operation Mode 2

As indicated in the footnote of Tables 4.1 to 4.4, the “Mode 2” operation describes the condition when Unit #5 and one of the combustion turbine Units (i.e., Unit #6 or Unit #7) are operating. The minimum daytime and nighttime sound levels associated with this operational mode at the facility indicate values that are higher than those measured during operational Mode 1, but are lower than those measured when the Station was not operating. The average values are lowest in the four scenarios for both locations and for all the three time periods (i.e. daytime, nighttime 1 and nighttime 2). The maximum measured sound levels for this operational mode are lower than those measured during the other operational scenarios.

**TABLE 4.1
A-WEIGHTED SOUND LEVELS FROM LONG-TERM MEASUREMENTS AT
MONITORING LOCATION 1**

	Measured 1-hour Leq at Closest Receptor Location 1							
	Station Not Operating		Station Start-up (Unit 5)		Station Operating Mode 1 *		Station Operating Mode 2 **	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Daytime (7:00 - 19:00)	50.3	52.1	50.7	51.5	45.6	53.8	47.2	52.8
Nighttime 1 (19:00 - 23:00)	47.6	51.4	51.2	51.2	44.9	53.5	47.1	48.9
Nighttime 2 (23:00 - 7:00)	44.6	51.7	n/a	n/a	40.9	57.2	42.8	49.2

Note:

* Station operation mode 1: Only the coal fired thermal Unit #5 operating

** Station operation mode 2: coal-fired Unit #5 and one of the two combustion turbines (either Unit #6 or Unit #7 operating)

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TABLE 4.2
A-WEIGHTED SOUND LEVELS FROM LONG-TERM MEASUREMENTS AT
MONITORING LOCATION 2

	Measured 1-hour Leq at Closest Receptor Location 2							
	Station Not Operating		Station Start-up (Unit 5)		Station Operating Mode 1 *		Station Operating Mode 2 **	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Daytime (7:00 - 19:00)	49.1	52.6	46.4	50.5	42.7	54.3	45	50.9
Nighttime 1 (19:00 - 23:00)	46.9	50.9	47.5	48	42	58.4	44.9	47.8
Nighttime 2 (23:00 - 7:00)	41.4	50.1	n/a	n/a	37.4	53.7	39	49.6

Note:

* Station operation mode 1: Only the coal fired thermal Unit #5 operating

** Station operation mode 2: coal-fired Unit #5 and one of the two combustion turbines (either Unit #6 or Unit #7 operating)

TABLE 4.3
CALCULATED AVERAGES OF A-WEIGHTED SOUND LEVELS FROM
LONG-TERM MEASUREMENTS AT MONITORING LOCATION 1

	Plant Not Operating	Plant Start-up (unit 5)	Plant Operating Mode 1*	Plant Operating Mode 2 **
12-hour Daytime LAeq (7:00 - 19:00)	51.4	53.4	50.0	49.8
4-hour Nighttime-1 LAeq (19:00 - 23:00)	50.2	51.2	50.2	48.4
8-hour Nighttime-2 LAeq (23:00 - 7:00)	48.2	n/a	49.9	46.3

Note:

* Plant operation mode 1: Only the coal fired thermal Unit #5 operating

** Plant operation mode 2: coal-fired unit #5 and one of the two combustion turbines (either Unit #6 or Unit #7 operating)

TABLE 4.4
CALCULATED AVERAGES OF A-WEIGHTED SOUND LEVELS FROM
LONG-TERM MEASUREMENTS AT MONITORING LOCATION 2

	Plant Not Operating	Plant Start-up (unit 5)	Plant Operating Mode 1*	Plant Operating Mode 2 **
12-hour Daytime LAeq (7:00 - 19:00)	50.3	50.7	49.7	48.4
4-hour Nighttime-1 LAeq (19:00 - 23:00)	48.9	47.8	51.6	46.6
8-hour Nighttime-2 LAeq (23:00 - 7:00)	47.1	n/a	47.3	46.9

Note:

* Plant operation mode 1: Only the coal fired thermal Unit #5 operating

** Plant operation mode 2: coal-fired Unit #5 and one of the two combustion turbines (either Unit #6 or Unit #7 operating)

Based on the sound level measurements discussed above, the following general conclusions may be drawn from these results:

- As expected daytime sound levels are generally higher than nighttime sound levels, indicating influence of urban hum.
- The lowest daytime and nighttime sound levels were measured when both Unit #5 and one of the Units #6 or #7 were operating. Noting that these measurements were made on a weekend, where less traffic is expected on Victoria Street, it can be concluded that the dominant noise source at the closest receptors along 17th Street is the traffic noise.
- As reflected by the averages of the measured sound levels presented in Table 4.4, during its typical operation, although the Station may be a contributor to the local noise environment, in areas *close to* the facility boundaries, it is not the dominant noise source in those areas. Further, the measured data indicates that the facility is not a contributing source to the noise levels at the residential receptors along 17th Street.
- At start-up, although the noise from the Station may be audible at receptor locations, the contribution of the Station to the local noise environment is insignificant.

As per spot measurements and interviews with local residences to the north of the Station, the same can be said about noise environment and the impact from the Brandon Generating Station, with only one difference: due to higher speed limit along Highway 457 (which runs behind and

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in-front of the residences to the north), noise levels associated with traffic are more prominent than for the residences along 17th Street (see Section 4.3 for traffic noise estimate).

4.3 TRAFFIC NOISE MODELLING

Ontario MOE’s STAMSON computer model was used to assess the noise contribution from roads that are closest to the receptor. The traffic data was obtained from the University of Manitoba’s online traffic data (<http://umtig.mgmt.umanitoba.ca/maps/1-CWBrandon.htm>).

STAMSON model estimates traffic noise levels for roads that are less than or equal to 500 m away from the receptor. As presented in Figure A-1(a) (Appendix A), the monitoring locations 1 and 2 are about 50m and 250m away from Victoria Street, respectively. Similarly, the closest farmhouse to the Brandon Generating Station, to the north of the Station is about 30m away from highway 457.

The assumptions and values used in the model and the model output are summarized in Table 4.5. The model runs are presented in Appendix C. Note that higher nighttime levels are due to higher default receiver height assumed by the model (daytime receiver height is at 1.5 m and nighttime receiver height is at 4.5 m, based on the assumption that normally bedrooms are located on the second floor of a house). Based on the STAMSON results the traffic noise is the dominating background noise at all the receptor location.

TABLE 4.5
MODEL ESTIMATES OF TRAFFIC NOISE FROM NEARBY ROADS & HIGHWAYS

Receptor ID	Noise Source	AADT *	Heavy Truck (%)	Medium Truck (%)	Daytime Traffic (%)	Nighttime Traffic (%)	Daytime LA _{eq} (dBA)	Nighttime LA _{eq} (dBA)
Receptor 1 on 17th St.	Victoria St.	13040	10	10	66.67%	33.33%	54.7	63.6
Receptor 2 on 17th St.	Victoria St.	13040	10	10	66.67%	33.33%	43.3	63.6
Receptor 3 on Highway 457	HWY 457	2970	10	10	66.67%	33.33%	61.3	56.1

Note:

AADT: Annual Average Daily Traffic

The percentage breakdown of heavy and medium truck traffic is conservatively estimated at 3.3% each.

The daytime and nighttime traffic count is chosen to be model default values.

5.0 CONCLUSIONS

The background noise environment at the receptors closest to the Brandon Generating Station is generally characterized by traffic noise. For the receptors along 17th Street, the continuous humming of energized transformers at nearby switchyards (which are independent of Brandon Generating Station) also contributes to the background noise levels.

The data presented in Section 4.0 indicate that the sound environment at receptor locations along 17th Street, as well as at the farmhouses to the north of the Station may be influenced by the Brandon Generating Station, during the start-up of the coal-fired Unit #5.

No significant differences were observed in the minimum and maximum daytime and nighttime noise levels measured at the closest receptors at times when the station was under typical steady operation and when it was not operating. The lower minimum nighttime noise level measured when the Station was operating versus when it was not operating indicates traffic noise as the dominant noise source, with lower values attributed to lower traffic flow during weekends. This was further verified using Ontario Ministry of Environment's STAMSON noise model.

Based on the information gathered, there has not been a formal noise complaint filed against the Brandon Generating Station. This, and the results for the measurement campaign, indicate that *during its typical operation*, although the Brandon Generating Station may contribute to the local noise environment in areas closer to the facility (with no sensitive receptors), it is not the dominant noise source at the closest receptor locations.

REFERENCES

Cowan, J.P. 1994. Handbook of Environmental Acoustics. Van Nostrand Reinhold, New York.

Ontario Ministry of the Environment (MOE) 1978. *Model Municipal Noise Control By-Law*. Final Report. August.

Work Bank Group 1998. *Pollution Prevention and Abatement Handbook: General Environmental Guidelines*. July.

APPENDIX A

BRANDON ZONING MAP

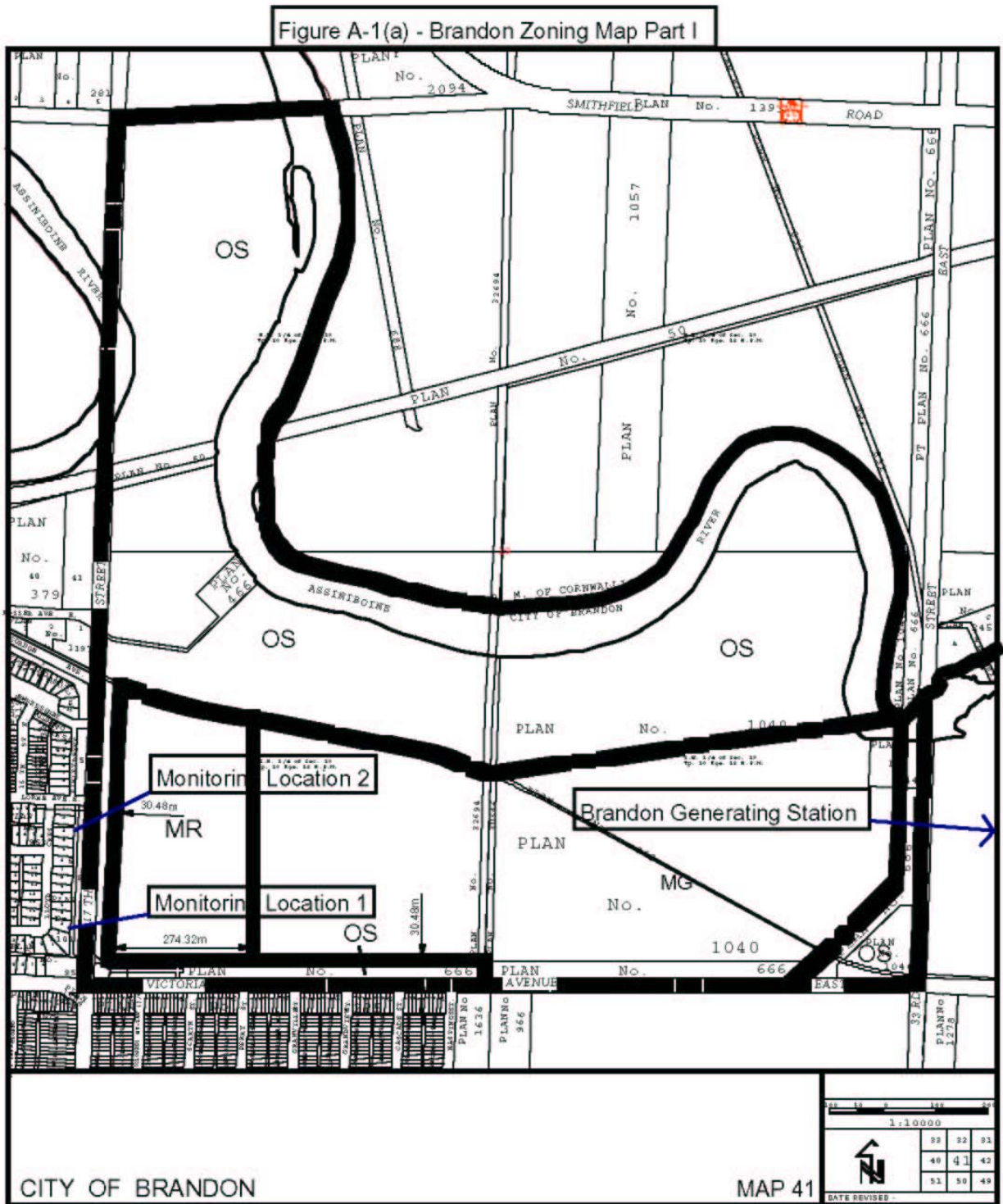
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Zoning Map Acronym Identifier

Whenever the terms **R** Zone, **C** Zone or **M** Zone are used, they shall be deemed to refer only to residential, commercial or industrial zones respectively

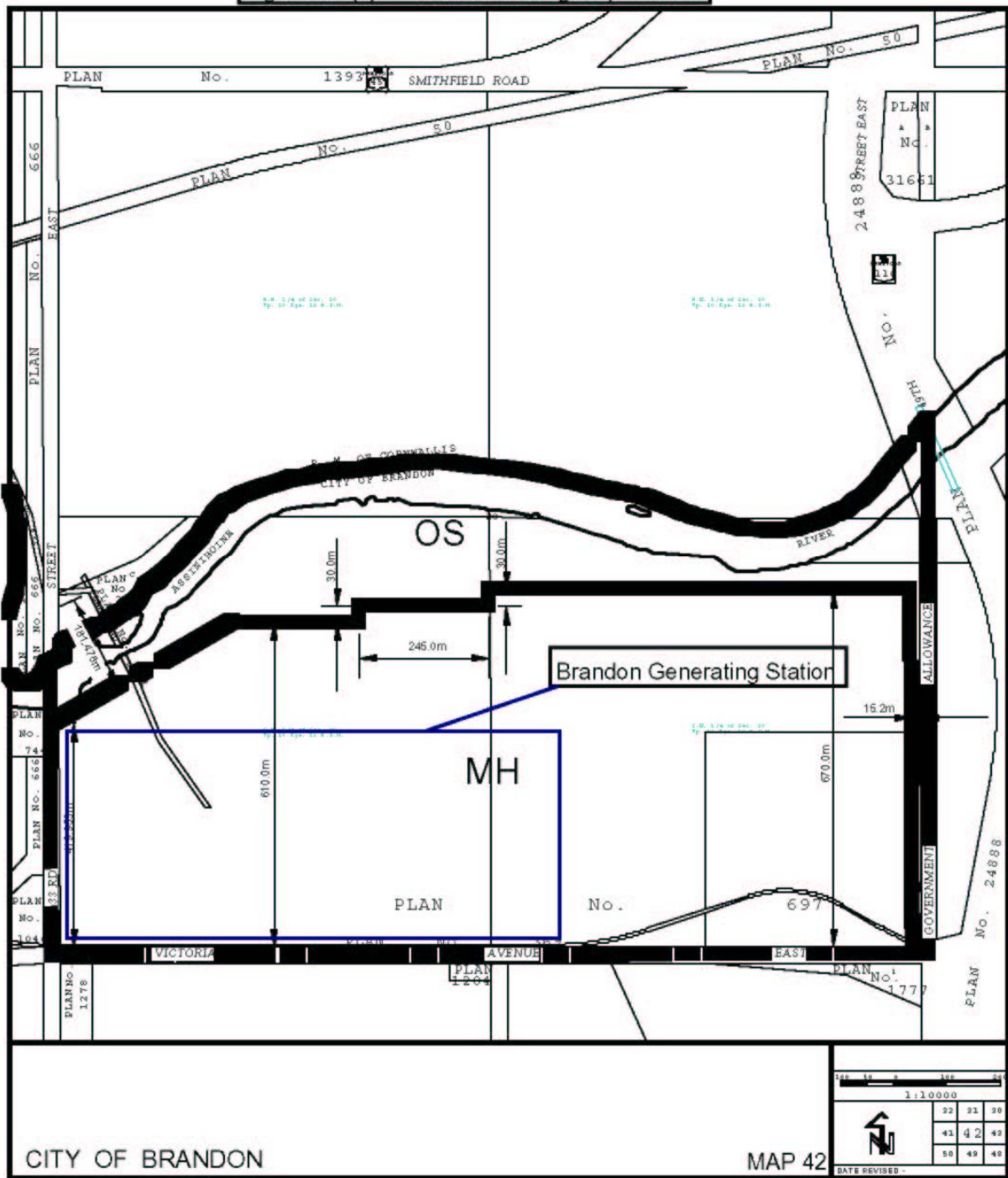
- (1) **RLL** Residential Large Lot Zone
- (2) **RSF** Residential Single Family Zone
- (3) **RLD** Residential Low Density Multiple Family Zone
- (4) **RMD** Residential Moderate Density Multiple Family Zone
- (5) **RHD** Residential High Density Multiple Family Zone
- (6) **RMH** Residential Mobile/Modular Home Zone
- (7) **CN** Commercial Neighbourhood Zone
- (8) **CG** Commercial General Zone
- (9) **CR** Commercial Restricted Zone
- (10) **CAR** Commercial Arterial Zone
- (11) **CHW** Commercial Highway Zone
- (12) **CCC** Commercial Central Core Zone
- (13) **MR** Industrial Restricted Zone
- (14) **MG** Industrial General Zone
- (15) **MH** Industrial Heavy Zone
- (16) **EI** Educational and Institutional Zone
- (17) **A** Agricultural Zone
- (18) **PR** Parks and Recreation Zone
- (19) **OS** Open Space Zone
- (20) **DR** Development Reserve Zone
- (21) **FP** Floodplain Overlay Zone

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Figure A-1(b) - Brandon Zoning Map - Part II



APPENDIX B

CONTINUOUS NOISE MEASUREMENT RESULTS

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TABLE B.1
CONTINUOUS MONITORING RESULTS AT RECEPTOR LOCATION 1

Station Status	other onsite activities	Interval	Time	Measurement Time	LAeq	LA10	LA33	LA50	LA90	LA95	Sound Pressure (Antilog)	
Station not operating	All transformers energized	1	9/8/2004 19:09	1:00:00	50.6	53.1	50.1	49.1	46.7	46.2	1.15E+05	
		2	9/8/2004 20:09	1:00:00	50.2	53.1	49.4	48.1	46	45.6	1.05E+05	
		3	9/8/2004 21:09	1:00:00	51.4	51.8	48.1	47.1	45.1	44.7	1.38E+05	
		4	9/8/2004 22:09	1:00:00	47.6	49.6	45.9	45	43.5	43.1	5.75E+04	
		5	9/8/2004 23:09	1:00:00	46.4	47.8	44.9	44.2	42.5	42	4.37E+04	
		6	9/9/2004 0:09	1:00:00	45.8	46.2	44.7	44.2	43.1	42.8	3.80E+04	
		7	9/9/2004 1:09	1:00:00	44.7	45.4	44	43.5	41.6	41.3	2.95E+04	
		8	9/9/2004 2:09	1:00:00	44.6	46	42.8	41.8	40.4	40.1	2.88E+04	
		9	9/9/2004 3:09	1:00:00	48.6	49.2	44.8	43.4	41	40.6	7.24E+04	
		10	9/9/2004 4:09	1:00:00	46.3	48.8	45.3	44.3	41.8	41.2	4.27E+04	
		11	9/9/2004 5:09	1:00:00	50.8	53.9	50.5	48.8	44.3	43.1	1.20E+05	
		12	9/9/2004 6:09	1:00:00	51.7	54.5	51.4	49.9	46.5	45.5	1.48E+05	
		13	9/9/2004 7:09	1:00:00	52.1	55.2	51.9	50.2	45.4	44.2	1.62E+05	
		14	9/9/2004 8:09	1:00:00	50.4	53.8	49.5	47.8	43.3	42.1	1.10E+05	
	All transformers energized	15	9/9/2004 9:09	1:00:00	51.3	54	49.5	47.3	41.8	41	1.35E+05	
		16	9/9/2004 10:09	1:00:00	50.3	53.8	48.7	46.8	42	41	1.07E+05	
		17	9/9/2004 11:09	1:00:00	51.8	55.1	51	49	44.4	42.9	1.51E+05	
		18	9/9/2004 12:09	1:00:00	52.1	55.4	52	50.2	46.1	45.2	1.62E+05	
Boiler Light-off (Unit 5) followed by Turbine roll-off	Coal crushing and transfer to in-Station silos	19	9/9/2004 13:09	1:00:00	50.7	54.1	50.2	48.3	44.6	43.7	1.17E+05	
		20	9/9/2004 14:09	1:00:00	53.1	56	52.7	51.2	47.2	46.3	2.04E+05	
		21	9/9/2004 15:09	1:00:00	55.1	57.7	54.4	53	49.7	49	3.24E+05	
		22	9/9/2004 16:09	1:00:00	54.2	56.9	54	52.6	49.5	48.7	2.63E+05	
	23	9/9/2004 17:09	1:00:00	52.1	54.9	51.8	50.6	47.3	46.6	1.62E+05		
	Ramping up	24	9/9/2004 18:09	1:00:00	53.6	56.5	52.7	51.3	47.8	47	2.29E+05	
25	9/9/2004 19:09	1:00:00	51.2	53.9	50	48.6	46	45.4	1.32E+05			
Unit 5 Operating	Unit 5 ramping up Operating ~ 10 pm (Sept 9th) @ ~65 MW Second increase ~ 3 am (Sept. 10th) to ~108 MW	26	9/9/2004 20:09	1:00:00	51.2	54.2	49.7	48.5	45.6	45	1.32E+05	
		27	9/9/2004 21:09	1:00:00	49.5	52	49.1	47.7	45.1	44.7	8.91E+04	
		28	9/9/2004 22:09	1:00:00	47.3	49.9	46.9	45.6	42.2	41.5	5.37E+04	
		29	9/9/2004 23:09	1:00:00	53.1	57.7	49.6	46.4	42.3	41.4	2.04E+05	
		30	9/10/2004 0:09	1:00:00	52.3	55.2	51	49.7	45.9	45.3	1.70E+05	
		31	9/10/2004 1:09	1:00:00	50	54.1	47.7	46.1	41.3	40.6	1.00E+05	
		32	9/10/2004 2:09	1:00:00	44.7	45.8	42.6	41.9	40.4	40	2.95E+04	
		33	9/10/2004 3:09	1:00:00	46.6	50.4	43.9	42.3	40.1	39.6	4.57E+04	
		34	9/10/2004 4:09	1:00:00	46.7	49.9	44.4	42.5	41	40.7	4.68E+04	
		35	9/10/2004 5:09	1:00:00	48.1	51.4	46.9	45.1	40.9	40.2	6.46E+04	
		36	9/10/2004 6:09	1:00:00	51.3	54.7	51.4	49.6	44.6	43.3	1.35E+05	
		37	9/10/2004 7:09	1:00:00	50	53.9	49.2	46.9	41.4	40.1	1.00E+05	
		38	9/10/2004 8:09	1:00:00	47.4	50.9	45.8	43.8	40.1	39.3	5.50E+04	
		39	9/10/2004 9:09	1:00:00	48.2	51.2	46.5	45	41.4	40.7	6.61E+04	
		Unit 6 coming online	40	9/10/2004 10:09	1:00:00	51.4	54.2	50.2	48.2	44.5	43.6	1.38E+05
			41	9/10/2004 11:09	1:00:00	52.6	55.5	51.7	50.2	46.1	45.1	1.82E+05

Attachment A:
Background Noise Assessment for Brandon Thermal Generating Station

**TABLE B.1
CONTINUOUS MONITORING RESULTS AT RECEPTOR LOCATION 1**

Station Status	other onsite activities	Interval	Time	Measurement Time	LAeq	LA10	LA33	LA50	LA90	LA95	Sound Pressure (Antilog)	
Both Unit 5 and Unit 6 operating		42	9/10/2004 12:09	1:00:00	52.5	55.4	51	49.2	45.4	44.3	1.78E+05	
		43	9/10/2004 13:09	1:00:00	51.6	54.7	51.1	49.4	45.3	44.3	1.45E+05	
		44	9/10/2004 14:09	1:00:00	51.8	55.3	50.5	48.6	44.8	44.1	1.51E+05	
		45	9/10/2004 15:09	1:00:00	52.8	55.5	51.8	50.1	46	44.9	1.91E+05	
		46	9/10/2004 16:09	1:00:00	50.9	54.6	49.8	48	44.3	43.2	1.23E+05	
		47	9/10/2004 17:09	1:00:00	49.5	52.4	47.8	46.1	42.9	42	8.91E+04	
		48	9/10/2004 18:09	1:00:00	47.7	49.9	45.6	44.4	41.5	40.7	5.89E+04	
		49	9/10/2004 19:09	1:00:00	48.9	52.2	47.1	44.9	40.3	39.5	7.76E+04	
		50	9/10/2004 20:09	1:00:00	48.5	51.1	46.5	44.9	41.8	41.4	7.08E+04	
		51	9/10/2004 21:09	1:00:00	48.7	51.9	47.4	45.8	42.4	41.7	7.41E+04	
		52	9/10/2004 22:09	1:00:00	47.1	49.3	43.8	42.2	39.6	38.9	5.13E+04	
Unit 5 operating Unit 7 preparing for start-up		53	9/10/2004 23:09	1:00:00	47.1	50.9	43.8	42.3	39.3	38.7	5.13E+04	
		54	9/11/2004 0:09	1:00:00	42.8	44.7	41.3	40	38	37.6	1.91E+04	
		55	9/11/2004 1:09	1:00:00	45.3	44.9	40.2	39.5	37.9	37.4	3.39E+04	
Unit 5 and combustion turbine Unit 7 operating		56	9/11/2004 2:09	1:00:00	43.7	45	40.3	39.7	38.1	37.9	2.34E+04	
		57	9/11/2004 3:09	1:00:00	44.6	46.3	42.8	41.5	38.7	38.2	2.88E+04	
		58	9/11/2004 4:09	1:00:00	49.2	52.3	43.8	42.8	40.4	40	8.32E+04	
		59	9/11/2004 5:09	1:00:00	45.4	47.2	44.8	43.8	41.1	40.7	3.47E+04	
		60	9/11/2004 6:09	1:00:00	48.5	50.3	44.5	43	40.7	40.2	7.08E+04	
		61	9/11/2004 7:09	1:00:00	47.2	50.2	45	43.3	40.6	40.2	5.25E+04	
		62	9/11/2004 8:09	1:00:00	48	51.9	46.3	43.7	39.9	39.2	6.31E+04	
		63	9/11/2004 9:09	1:00:00	48.5	51.4	44.6	42.6	39.6	38.9	7.08E+04	
		Coal car unloading in operation for noise test (~20 minutes)	64	9/11/2004 10:09	1:00:00	48.3	51.5	45.3	43.5	39.9	39.1	6.76E+04
		Coal Crusher in operation for noise testing (~10 min)	65	9/11/2004 11:09	1:00:00	47.7	50.6	45.1	43.4	40.3	39.8	5.89E+04
			66	9/11/2004 12:09	1:00:00	48.1	52.1	46	44	39.7	38.9	6.46E+04
			67	9/11/2004 13:09	1:00:00	48.2	50.8	45.1	43	39	38.4	6.61E+04
			68	9/11/2004 14:09	1:00:00	48.4	52.4	46.4	44.3	39.7	38.7	6.92E+04
			69	9/11/2004 15:09	1:00:00	49.9	52.5	48.8	46.9	42.7	42	9.77E+04
		70	9/11/2004 16:09	1:00:00	49.4	52.3	48.8	47.4	44.3	43.7	8.71E+04	
		71	9/11/2004 17:09	1:00:00	49.4	52	48.8	47.5	44.7	44.2	8.71E+04	
Unit 5 operating		72	9/11/2004 18:09	1:00:00	51.2	54	50	48	44.8	44.2	1.32E+05	
		73	9/11/2004 19:09	1:00:00	50	52.7	49.3	48.1	45	44.3	1.00E+05	
		74	9/11/2004 20:09	1:00:00	50.7	53	50.6	49.6	46.8	46.2	1.17E+05	
		75	9/11/2004 21:09	1:00:00	50.7	53.3	50.4	49.3	46.4	45.8	1.17E+05	
		76	9/11/2004 22:09	1:00:00	50.6	53.2	50.2	49.1	46.4	45.7	1.15E+05	
		77	9/11/2004 23:09	1:00:00	49.8	52.2	49.8	48.8	46.3	45.9	9.55E+04	
		78	9/12/2004 0:09	1:00:00	48.2	50.5	48.2	47.1	44.6	44.1	6.61E+04	
		79	9/12/2004 1:09	1:00:00	48.7	50.6	47.5	46.3	43.8	43.3	7.41E+04	
		80	9/12/2004 2:09	1:00:00	47	50.2	46.7	45.2	42	41.4	5.01E+04	
		81	9/12/2004 3:09	1:00:00	46.7	48.6	45.8	44.4	42.1	41.7	4.68E+04	
		82	9/12/2004 4:09	1:00:00	47.8	46.9	43.6	42.7	40.9	40.4	6.03E+04	
		83	9/12/2004 5:09	1:00:00	45.3	47.7	45	43.7	40.9	40.4	3.39E+04	
		84	9/12/2004 6:09	1:00:00	48.8	51.1	47.3	46	43.3	42.1	7.59E+04	

Attachment A:
Background Noise Assessment for Brandon Thermal Generating Station

TABLE B.1 (Cont'd)
CONTINUOUS MONITORING RESULTS AT RECEPTOR LOCATION 1

Unit 5 operating	85	9/12/2004 7:09	1:00:00	47	48.8	45.9	44.9	42.8	42.3	5.01E+04
	86	9/12/2004 8:09	1:00:00	48.2	50.4	47.1	45.2	42.8	42.3	6.61E+04
	87	9/12/2004 9:09	1:00:00	45.6	48.3	44.3	42.6	40.1	39.7	3.63E+04
	88	9/12/2004 10:09	1:00:00	47.8	51.6	45.9	43.8	40.6	40	6.03E+04
	89	9/12/2004 11:09	1:00:00	53.8	55	49.2	46.3	42.1	41.6	2.40E+05
	90	9/12/2004 12:09	1:00:00	49.5	51.6	46.4	44.6	41.2	40.7	8.91E+04
	91	9/12/2004 13:09	1:00:00	50	53.1	46.9	44.7	41.4	40.9	1.00E+05
	92	9/12/2004 14:09	1:00:00	50	52.8	46.9	44.8	41.4	40.9	1.00E+05
	93	9/12/2004 15:09	1:00:00	49.8	51.4	46.2	44.4	41.5	41	9.55E+04
	94	9/12/2004 16:09	1:00:00	49.3	52.6	47.6	45.9	42.4	41.9	8.51E+04
	95	9/12/2004 17:09	1:00:00	52	54.2	50.1	48.4	44.1	43.6	1.58E+05
	96	9/12/2004 18:09	1:00:00	49.5	52.3	47.4	45.8	42.5	42.1	8.91E+04
	97	9/12/2004 19:09	1:00:00	53.5	53.1	46.9	45.1	42.1	41.7	2.24E+05
	98	9/12/2004 20:09	1:00:00	51.6	53.2	48.1	46.1	42.5	41.7	1.45E+05
	99	9/12/2004 21:09	1:00:00	46.5	47.9	45.1	43.9	41.4	40.8	4.47E+04
	100	9/12/2004 22:09	1:00:00	44.9	46.5	44.1	43.2	40.9	40.4	3.09E+04
	101	9/12/2004 23:09	1:00:00	42.6	45	42.4	41.4	39.2	38.8	1.82E+04
	102	9/13/2004 0:09	1:00:00	48.4	45.6	42.6	41.7	39.7	39.2	6.92E+04
	103	9/13/2004 1:09	1:00:00	46.4	48.2	43.3	42	39.9	39.5	4.37E+04
	104	9/13/2004 2:09	1:00:00	42.8	43.9	42	41.2	39.1	38.5	1.91E+04
	105	9/13/2004 3:09	1:00:00	40.9	43.9	38.3	37.1	35.4	35	1.23E+04
106	9/13/2004 4:09	1:00:00	46	50.5	43.2	41.2	36.2	35.8	3.98E+04	
107	9/13/2004 5:09	1:00:00	55.2	57.8	54.8	53.7	50.8	50.2	3.31E+05	
108	9/13/2004 6:09	1:00:00	57.2	59.9	57.5	56.2	52.8	52.1	5.25E+05	
109	9/13/2004 7:09	1:00:00	52.4	55.6	52.1	49.8	43.8	42.9	1.74E+05	
110	9/13/2004 8:09	1:00:00	50.4	53.2	47.6	44.5	39.6	38.8	1.10E+05	
111	9/13/2004 9:30	1:00:00	50	51.7	43.6	41	37.9	37.3	1.00E+05	

Attachment A:
Background Noise Assessment for Brandon Thermal Generating Station

TABLE B.2
CONTINUOUS MONITORING RESULTS AT RECEPTOR LOCATION 2

Station Status	other onsite activities	Interval	Time	Measurement Time	LAeq	LA10	LA33	LA50	LA90	LA95	Sound Pressure (Antilog)		
Station not operating	All transformers energized	1	9/8/2004 19:30	1:00:00	50.9	53.2	50.1	48.9	45.6	44.7	1.23E+05		
		2	9/8/2004 20:30	1:00:00	48.1	51.3	47.2	45.9	43.4	43	6.46E+04		
		3	9/8/2004 21:30	1:00:00	48.8	50.1	46.2	45.1	43.1	42.7	7.59E+04		
		4	9/8/2004 22:30	1:00:00	46.9	47.9	43.9	43	40.9	40.4	4.90E+04		
		5	9/8/2004 23:30	1:00:00	45.1	46.5	43.9	42.8	41.4	41.1	3.24E+04		
		6	9/9/2004 0:30	1:00:00	43.7	45.1	42.6	42	40.6	40.2	2.34E+04		
		7	9/9/2004 1:30	1:00:00	43.7	44.4	43.4	42.9	41.4	41.1	2.34E+04		
		8	9/9/2004 2:30	1:00:00	41.4	42.7	40.7	40.1	39	38.6	1.38E+04		
		9	9/9/2004 3:30	1:00:00	50	45.5	41	40.2	38.4	38	1.00E+05		
		10	9/9/2004 4:30	1:00:00	50.1	49	44.1	42.3	40.2	39.7	1.02E+05		
		11	9/9/2004 5:30	1:00:00	44.8	46.8	43.3	41.3	38.3	37.9	3.02E+04		
		12	9/9/2004 6:30	1:00:00	49.1	51.7	46.6	45	41.4	40.5	8.13E+04		
		13	9/9/2004 7:30	1:00:00	49.2	51.5	46.5	44.9	41.3	40	8.32E+04		
		14	9/9/2004 8:30	1:00:00	49.1	52.2	47.6	45.4	39.6	37.7	8.13E+04		
Boiler Light-off (Unit 5) followed by Turbine roll-off	Coal crushing and transfer to in-Station silos	15	9/9/2004 9:30	1:00:00	51	55.8	51	45.9	38.2	37.4	1.26E+05		
		16	9/9/2004 10:30	1:00:00	52.6	56.3	51.3	48.5	38.9	37.1	1.82E+05		
		17	9/9/2004 11:30	1:00:00	49.1	51.2	45.9	43.8	38.3	37.5	8.13E+04		
		18	9/9/2004 12:30	1:00:00	49.5	51.7	46.7	44.6	40.5	39.2	8.91E+04		
		19	9/9/2004 13:30	1:00:00	49	50.6	45.2	43.5	40.4	39.7	7.94E+04		
		20	9/9/2004 14:30	1:00:00	46.4	49.6	44.8	43.1	39.8	39.2	4.37E+04		
Ramping up		21	9/9/2004 15:30	1:00:00	49.3	52.4	49	47	43.3	42.4	8.51E+04		
		22	9/9/2004 16:30	1:00:00	53.2	55	50.8	49.2	45.9	45.2	2.09E+05		
		23	9/9/2004 17:30	1:00:00	49.4	52.1	49	47.7	44.6	43.9	8.71E+04		
		24	9/9/2004 18:30	1:00:00	53.1	54.8	48.8	46.2	41.5	40.4	2.04E+05		
		25	9/9/2004 19:30	1:00:00	48	51.4	46.1	44.8	42	41.4	6.31E+04		
Unit 5 Operating	Unit 5 ramping up Operating ~ 10 pm (Sept 9th) @ ~65 MW Second increase ~ 3 am (Sept. 10th) to ~108 MW	26	9/9/2004 20:30	1:00:00	47.5	50.6	45.8	44.5	42.2	41.7	5.62E+04		
		27	9/9/2004 21:30	1:00:00	48.5	50.5	47.2	45.5	41.5	40.8	7.08E+04		
		28	9/9/2004 22:30	1:00:00	45.4	47.9	45	43.8	40.2	39.6	3.47E+04		
		29	9/9/2004 23:30	1:00:00	44.2	46.3	39.6	38.2	36.4	36.1	2.63E+04		
		30	9/10/2004 0:30	1:00:00	52.8	55.5	50.9	48	42.2	40.9	1.91E+05		
		31	9/10/2004 1:30	1:00:00	50	51.5	47.8	46.7	44.9	44.3	1.00E+05		
		32	9/10/2004 2:30	1:00:00	49.7	47.5	43	41.5	39.2	38.6	9.33E+04		
		33	9/10/2004 3:30	1:00:00	39.2	40.7	38.3	37.2	35.1	34.5	8.32E+03		
		34	9/10/2004 4:30	1:00:00	47.6	50.2	42.2	37.4	34.5	34	5.75E+04		
		35	9/10/2004 5:30	1:00:00	44.7	46.4	39.4	38.1	34.5	34	2.95E+04		
		36	9/10/2004 6:30	1:00:00	48.5	50.5	42	39.6	35.5	34.6	7.08E+04		
		37	9/10/2004 7:30	1:00:00	47.7	51.1	46.3	43.6	38.7	37.7	5.89E+04		
		38	9/10/2004 8:30	1:00:00	48	48.7	40.2	37.7	33.9	33.4	6.31E+04		
		39	9/10/2004 9:30	1:00:00	42.7	44.5	39	37.7	35.5	35	1.86E+04		
		Unit 6 coming online		40	9/10/2004 10:30	1:00:00	44.6	46.8	40.6	38.9	36.5	36.1	2.88E+04
				41	9/10/2004 11:30	1:00:00	51.4	52.5	47.5	44.2	39.3	38.7	1.38E+05

Attachment A:
Background Noise Assessment for Brandon Thermal Generating Station

TABLE B.2 (Cont'd)
CONTINUOUS MONITORING RESULTS AT RECEPTOR LOCATION 2

Station Status	other onsite activities	Interval	Time	Measurement Time	LAeq	LA10	LA33	LA50	LA90	LA95	Sound Pressure (Antilog)	
Both Unit 5 and Unit 6 operating		42	9/10/2004 12:30	1:00:00	49	51	46	44.1	39.9	39.2	7.94E+04	
		43	9/10/2004 13:30	1:00:00	48.9	49.7	43.3	41.6	38.6	38.1	7.76E+04	
		44	9/10/2004 14:30	1:00:00	50.6	51.8	45.4	43.3	39.7	39	1.15E+05	
		45	9/10/2004 15:30	1:00:00	48.2	51.2	46.1	43.5	39	38	6.61E+04	
		46	9/10/2004 16:30	1:00:00	50.7	52.4	47.5	44.2	39.4	38.9	1.17E+05	
		47	9/10/2004 17:30	1:00:00	49.9	51.5	46	43.4	38.2	37.2	9.77E+04	
		48	9/10/2004 18:30	1:00:00	45.3	49.6	43	40.4	36.9	36.4	3.39E+04	
		49	9/10/2004 19:30	1:00:00	44.9	47.6	41	38.6	35.7	35.3	3.09E+04	
		50	9/10/2004 20:30	1:00:00	47.2	48.5	43	41.3	36.4	35.5	5.25E+04	
		51	9/10/2004 21:30	1:00:00	47.8	49.4	45.9	44.1	40.1	39.5	6.03E+04	
		52	9/10/2004 22:30	1:00:00	45.8	48.5	44.8	43.4	40.5	40.1	3.80E+04	
		53	9/10/2004 23:30	1:00:00	45	46.7	41	40	38.1	37.8	3.16E+04	
	Unit 5 operating Unit 7 preparing for start-up		54	9/11/2004 0:30	1:00:00	47.3	49.9	41.1	39.8	37.9	37.4	5.37E+04
		55	9/11/2004 1:30	1:00:00	39.5	39.8	38.1	37.5	36.3	36.1	8.91E+03	
		56	9/11/2004 2:30	1:00:00	48.4	49.7	40.2	39.1	36.8	36.3	6.92E+04	
Unit 5 and combustion turbine Unit 7 operating		57	9/11/2004 3:30	1:00:00	39	39.6	38.7	38.3	37.3	37	7.94E+03	
		58	9/11/2004 4:30	1:00:00	46.1	46.7	41.1	40.2	38.4	37.8	4.07E+04	
		59	9/11/2004 5:30	1:00:00	49.6	51.5	43.7	42.2	39.4	38.7	9.12E+04	
		60	9/11/2004 6:30	1:00:00	49.4	52.1	42.8	41.4	38.9	38.4	8.71E+04	
		61	9/11/2004 7:30	1:00:00	46.3	46.8	42.8	41.7	39.2	38.7	4.27E+04	
		62	9/11/2004 8:30	1:00:00	47	51.2	43	41.2	38.7	38.3	5.01E+04	
		63	9/11/2004 9:30	1:00:00	50.2	50.5	43.5	41.2	38.2	37.5	1.05E+05	
		Coal car unloading in operation for noise test (~20 minutes)	64	9/11/2004 10:30	1:00:00	45	47.5	40.2	38.7	36.8	36.4	3.16E+04
		Coal Crusher in operation for noise testing (~10 min)	65	9/11/2004 11:30	1:00:00	47.2	46.9	41.6	40.2	38	37.4	5.25E+04
			66	9/11/2004 12:30	1:00:00	45.1	48.3	42.7	40.2	37.8	37.3	3.24E+04
			67	9/11/2004 13:30	1:00:00	46.8	49.5	42.7	40.8	36.2	35.6	4.79E+04
			68	9/11/2004 14:30	1:00:00	50.9	47.6	40.2	37.9	35	34.4	1.23E+05
			69	9/11/2004 15:30	1:00:00	47.3	50	44.3	42.4	39.2	38.2	5.37E+04
			70	9/11/2004 16:30	1:00:00	48.5	50.6	44.9	43.3	40.1	39.4	7.08E+04
		71	9/11/2004 17:30	1:00:00	46	49.5	44.5	42.9	39.5	38.7	3.98E+04	
Unit 5 operating		72	9/11/2004 18:30	1:00:00	49.7	52.4	46.7	44.5	41.3	40.6	9.33E+04	
		73	9/11/2004 19:30	1:00:00	52.4	51.7	46.2	44	40.2	39.5	1.74E+05	
		74	9/11/2004 20:30	1:00:00	47.1	49.6	45.7	44.3	41.7	41.2	5.13E+04	
		75	9/11/2004 21:30	1:00:00	46.2	48	45	44.1	42	41.6	4.17E+04	
		76	9/11/2004 22:30	1:00:00	48.4	51.7	45.6	44.5	42.3	42	6.92E+04	
		77	9/11/2004 23:30	1:00:00	46.2	47.3	44.8	43.7	41.3	40.7	4.17E+04	
		78	9/12/2004 0:30	1:00:00	47.1	50.4	44.7	43.7	41.6	41.2	5.13E+04	
		79	9/12/2004 1:30	1:00:00	42.4	43.7	41.9	41.2	39.5	39	1.74E+04	
		80	9/12/2004 2:30	1:00:00	46.2	49.6	41.1	39.8	37.3	36.9	4.17E+04	
		81	9/12/2004 3:30	1:00:00	44.6	48	41.9	40.8	38.4	37.9	2.88E+04	
		82	9/12/2004 4:30	1:00:00	39.6	41.3	39.4	38.5	36.8	36.3	9.12E+03	
		83	9/12/2004 5:30	1:00:00	48.1	46.4	38.9	37.9	36	35.6	6.46E+04	
		84	9/12/2004 6:30	1:00:00	43.4	43.3	40.8	39.8	37.7	37.1	2.19E+04	

Attachment A:
Background Noise Assessment for Brandon Thermal Generating Station

TABLE B.2 (Cont'd)
CONTINUOUS MONITORING RESULTS AT RECEPTOR LOCATION 2

	85	9/12/2004 7:30	1:00:00	49.4	50.1	45.6	44.3	41.6	41	8.71E+04
	86	9/12/2004 8:30	1:00:00	45.5	48.5	43.4	42.2	39.9	39.4	3.55E+04
	87	9/12/2004 9:30	1:00:00	46.1	48.6	41	39.7	37.7	37.1	4.07E+04
	88	9/12/2004 10:30	1:00:00	47	47.9	41.9	40.2	37.3	36.5	5.01E+04
	89	9/12/2004 11:30	1:00:00	49.6	53	45.5	42.8	38	37.3	9.12E+04
	90	9/12/2004 12:30	1:00:00	50.5	51.4	44.6	41.4	37.1	36.6	1.12E+05
	91	9/12/2004 13:30	1:00:00	50.1	49.9	41.7	40	37.1	36.6	1.02E+05
	92	9/12/2004 14:30	1:00:00	48.4	49.9	42.8	40.2	36	35	6.92E+04
	93	9/12/2004 15:30	1:00:00	51.5	50.4	44.2	41.3	36.5	35.8	1.41E+05
	94	9/12/2004 16:30	1:00:00	46.5	49.9	43.1	40.4	36	35.3	4.47E+04
	95	9/12/2004 17:30	1:00:00	46.8	49.8	44.7	41.7	37.7	36.8	4.79E+04
	96	9/12/2004 18:30	1:00:00	54.3	54.9	47.8	43.8	39	38.1	2.69E+05
	97	9/12/2004 19:30	1:00:00	50.2	50.2	44	40.9	37	36.2	1.05E+05
	98	9/12/2004 20:30	1:00:00	58.4	51.5	46.2	41.8	37.9	37.1	6.92E+05
	99	9/12/2004 21:30	1:00:00	52.5	51.7	43.4	41.7	39.6	39.2	1.78E+05
	100	9/12/2004 22:30	1:00:00	42	43.2	41.1	40.1	37.8	37.2	1.58E+04
	101	9/12/2004 23:30	1:00:00	40.6	41.7	39.6	38.7	36.5	36.1	1.15E+04
	102	9/13/2004 0:30	1:00:00	38.5	39.8	38	37.4	35.8	35.4	7.08E+03
	103	9/13/2004 1:30	1:00:00	47.7	47.7	38.5	35.7	32.5	31.9	5.89E+04
	104	9/13/2004 2:30	1:00:00	43.9	46.6	36.5	34.8	32.3	31.9	2.45E+04
	105	9/13/2004 3:30	1:00:00	41.6	45.5	38.7	35.8	32.1	29.3	1.45E+04
	106	9/13/2004 4:30	1:00:00	37.4	35.1	30.1	29.3	27.8	27.6	5.50E+03
	107	9/13/2004 5:30	1:00:00	48.5	54.1	47.1	41.7	32.2	30	7.08E+04
	108	9/13/2004 6:30	1:00:00	53.7	54.4	51.2	50	47.2	46.7	2.34E+05
	109	9/13/2004 7:30	1:00:00	51.9	54.6	52.4	50.4	46	45	1.55E+05
	110	9/13/2004 8:30	1:00:00	52.9	52.7	45.2	42.9	38.9	38.2	1.95E+05
	111	9/13/2004 9:30	1:00:00	50	51.7	43.6	41	37.9	37.3	1.00E+05

Note: Nighttime 1 (19:00 – 23:00) indicated with light shade; Daytime (7:00 – 19:00) indicated with no shading, and nighttime 2 (23:00 – 7:00) indicated with dark shading.

APPENDIX C
STAMSON MODEL RESULTS

Attachment A:
Background Noise Assessment for Brandon Thermal Generating Station

STAMSON 5.0 NORMAL REPORT Date: 12-11-2004 18:05:36
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: Time Period: Day/Night 16/8 hours
 Description: **Traffic noise impact estimate at Receptor location 1 on 17th St.**
 (Victoria St.)

Road data, segment # 1: (day/night)

```

-----
Car traffic volume   : 8120/4059   veh/TimePeriod  *
Medium truck volume  : 287/143    veh/TimePeriod  *
Heavy truck volume   : 287/143    veh/TimePeriod  *
Posted speed limit   : 50 km/h
Road gradient        : 0 %
Road pavement        : 1 (Typical asphalt or concrete)
  
```

* Refers to calculated road volumes based on the following input:

```

24 hr Traffic Volume (AADT or SADT): 13040
Percentage of Annual Growth         : 0.00
Number of Years of Growth           : 0.00
Medium Truck % of Total Volume      : 3.30
Heavy Truck % of Total Volume       : 3.30
Day (16 hrs) % of Total Volume      : 66.67
  
```

Data for Segment # 1: (day/night)

```

-----
Angle1 Angle2      : -90.00 deg   90.00 deg
Wood depth          : 0           (No woods.)
No of house rows    : 0 / 0
Surface             : 1           (Absorptive ground surface)
Receiver source distance : 50.00 / 15.00 m
Receiver height     : 1.50 / 4.50 m
Topography          : 1           (Flat/gentle slope; no barrier)
Reference angle     : 0.00
  
```

Results segment # 1: (day)

Source height = 1.35 m

ROAD (0.00 + 54.74 + 0.00) = 54.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	64.87	0.00	-8.68	-1.46	0.00	0.00	0.00	54.74

Segment Leq : 54.74 dBA

Total Leq All Segments: 54.74 dBA

Results segment # 1: (night)

Source height = 1.35 m

ROAD (0.00 + 63.55 + 0.00) = 63.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.86	0.00	0.00	-1.31	0.00	0.00	0.00	63.55

Segment Leq : 63.55 dBA

Total Leq All Segments: 63.55 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.74
(NIGHT): 63.55

**Attachment A:
Background Noise Assessment for Brandon Thermal Generating Station**

(NIGHT): 63.55

STAMSON 5.0 NORMAL REPORT Date: 12-11-2004 18:11:47
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: Time Period: Day/Night 16/8 hours
 Description: **Traffic noise impact estimate at Receptor location 3 on Highway 457
 (Highway 457)**

Road data, segment # 1: (day/night)

```
-----
Car traffic volume   : 1849/925   veh/TimePeriod  *
Medium truck volume :    65/33    veh/TimePeriod  *
Heavy truck volume  :    65/33    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement      :     1 (Typical asphalt or concrete)
```

* Refers to calculated road volumes based on the following input:

```
24 hr Traffic Volume (AADT or SADT): 2970
Percentage of Annual Growth       : 0.00
Number of Years of Growth         : 0.00
Medium Truck % of Total Volume    : 3.30
Heavy Truck % of Total Volume     : 3.30
Day (16 hrs) % of Total Volume    : 66.67
```

Data for Segment # 1: (day/night)

```
-----
Angle1  Angle2      : -90.00 deg  90.00 deg
Wood depth          : 0 (No woods.)
No of house rows   : 0 / 0
Surface            : 1 (Absorptive ground surface)
Receiver source distance : 30.00 / 15.00 m
Receiver height    : 1.50 / 4.50 m
Topography         : 1 (Flat/gentle slope; no barrier)
Reference angle    : 0.00
```

Results segment # 1: (day)

Source height = 1.35 m

ROAD (0.00 + 56.14 + 0.00) = 56.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	62.60	0.00	-5.00	-1.46	0.00	0.00	0.00	56.14

Segment Leq : 56.14 dBA

Total Leq All Segments: 56.14 dBA

Results segment # 1: (night)

Source height = 1.35 m

ROAD (0.00 + 61.33 + 0.00) = 61.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	62.64	0.00	0.00	-1.31	0.00	0.00	0.00	61.33

Segment Leq : 61.33 dBA

Total Leq All Segments: 61.33 dBA

**TOTAL Leq FROM ALL SOURCES (DAY): 56.14
 (NIGHT): 61.33**

ATTACHMENT B

TABLE B-1: SPOT NOISE MEASUREMENT DATA

**TABLE B-1:
SPOT NOISE MEASUREMENT DATA**

Location	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
Time	15:07	15:07	15:09	15:13	15:14	15:17	15:17	15:20	15:23	15:24	18:16	18:16	19:36	22:36	22:36	23:09	23:09	23:25	23:26	23:27	23:28	23:32	23:33	23:34	23:35	0:04	0:05	0:06	0:09	0:10
Corrected Time	13:58	13:58	14:00	14:04	14:05	14:08	14:08	14:11	14:14	14:15	17:07	17:07	18:27	21:27	21:27	22:00	22:00	22:16	22:17	22:18	22:19	22:23	22:24	22:25	22:26	22:55	22:56	22:57	23:00	23:01
AP	104.2	105.3	96.1	87.9	85.9	76.5	76.5	72.1	75.7	76.5	67.3	67.3	84.7	87.8	79.2	91	83.3	106	108.3	103.5	110.1	92.3	84.3	82.1	79.6	110.3	109	105.6	106.4	94.9
AP (Sub)	97.4	98.4	89.7	83.7	78.1	67.6	67.6	61.6	66.8	64.8	50.6	50.6	64.2	85.7	76.4	89.8	81.7	105.1	107.9	103.3	111	91.6	80.3	76	64.9	111.2	107.1	104.9	107	93.1
25 Hz	84	86	79.7	69	72.3	48.9	48.9	51	48.9	49.2	55.9	55.9	69.8	62	54.3	64.6	55	79.5	80.6	72.8	72.7	73.1	68.6	67.2	65.5	72.9	83.1	78.4	77.9	74.4
31.5 Hz	84.8	86.1	76.5	70.5	75.3	50.5	50.5	53.9	50.9	50.4	64.8	64.8	72.6	64.3	57.5	73	63.6	86.9	87.6	79.7	72.1	76.6	69.3	66.5	66.4	71.2	86.1	80.2	77.9	74.8
40 Hz	85.9	88.6	81.3	73.1	75.7	53.6	53.6	56.7	53.7	53.7	51.6	51.6	71.9	66.2	58.6	69.5	63.1	88.4	89.7	81.9	68.3	72.1	66.7	67.1	66.5	68.7	90	83.8	76.8	71.8
50 Hz	86	87.3	80.7	69.8	72.9	51	51	54.8	50.7	54.6	46.7	46.7	68	63.2	56.1	66.2	59.8	87.2	88.6	82	67.9	67.2	61.7	59.4	59.3	70.5	92	85.3	78	75.4
63 Hz	84.3	84.8	79.5	68.3	71.9	50.7	50.7	53.6	49.9	52.9	43.4	43.4	65.1	70.4	63.1	72.5	66.8	83.7	83.2	79.4	68.7	71.9	67.6	60.9	61.4	70.2	88.1	84.1	90	89
80 Hz	83.8	84.6	79.3	70.7	75	50	50	50.3	47.7	51.7	39.2	39.2	65	68.8	60.5	70	63.2	82.9	83.5	80.2	71.3	72.8	66.5	67.5	62.9	70.4	85	83.3	85.7	74.2
100 Hz	81.4	84.5	74	71.4	75.3	58.6	58.6	53.8	59.3	60.9	42.9	42.9	64.4	64.5	58.9	67.1	60.7	86.1	88.9	84.2	70.4	66.6	61.7	56.6	56.7	70.9	88.8	86.9	74.8	68.3
125 Hz	85.7	89.1	75.2	77.2	70	72.8	72.8	66.7	73.5	75	43.6	43.6	69.2	73.5	67.9	72.4	68.6	87.6	93.1	84.9	79.2	70.8	65.4	60	62.1	81.4	96.7	89.8	80.3	76.5
160 Hz	89.1	90.2	74.6	80.3	69.4	50.9	50.9	49	51	52.8	46.9	46.9	71.4	75.5	70	78.7	73.6	91	91.7	86.3	74.1	73.8	66.1	61.2	56.7	74.4	96	88.4	81	74.1
200 Hz	101.6	102.1	84.6	71.4	70.7	59.1	59.1	51.1	51.8	54.9	45.1	45.1	64.6	75.6	65.7	75.2	64.8	94.1	91	81.9	74.2	68.5	60.2	58.7	56	76.3	99	83.3	77.7	70.6
250 Hz	88.3	89.1	93.7	74.1	69.3	72.9	72.9	57.2	63.1	65.4	48.9	48.9	58.2	76.7	67.8	76.6	69.2	82.6	76.6	70.2	74.5	66.3	57.3	55.5	53.3	76.6	90.2	75.4	77.8	73.5
315 Hz	87.5	88	76.8	75.3	75.6	53.7	53.7	55	58.6	51.2	40	40	51.5	73.4	61.8	74.6	65	82.5	83.1	72.2	77.2	66.6	56.9	55.7	54.3	79.5	80.6	77.2	77.8	69.1
400 Hz	95.1	97.9	80.4	72.6	70.5	56.1	56.1	59.4	63.1	55.2	36.2	36.2	52.1	74.6	65.7	77.2	69.7	78.6	78	73.6	80.9	72	63.6	55.9	55.7	82.7	77.6	79.4	81.3	73.3
500 Hz	91.2	91.9	76.9	72.8	73.7	54.7	54.7	55.3	60.7	55.3	34.9	34.9	57.9	78.2	68.8	80.4	71.2	77.7	78	72.7	82.2	72.7	63.4	56.7	50.8	85.7	76.6	77	83.8	75.2
630 Hz	87.6	89.9	78.1	78.3	67.5	59.8	59.8	57.3	64.1	61.8	38	38	59	76.2	68.5	79.5	73.3	78.7	80.4	73.6	89.7	72.6	62.3	56.8	54.8	89.9	79.5	74	86.5	74.9
800 Hz	87.4	85.9	81.4	77	65.6	58.8	58.8	53	55.3	54.9	38.3	38.3	53.4	74.9	66.7	79	72.1	86.7	88.1	78	97.5	80.2	68.1	64.7	51.5	96.5	87.9	79.4	94.5	82.2
1 kHz	85.4	86.8	83	73.3	69.9	57.1	57.1	48.1	53.1	52.9	39.7	39.7	50.9	78.8	67.4	82.6	72.2	75.7	81.2	74	92.8	73.8	63.1	59.1	47.6	96.8	83.4	76.8	92.1	79.3
1.25 kHz	84.6	83.6	77.9	71.1	67.9	54	54	49.1	55.7	48.3	37.9	37.9	47.9	76.2	66.6	80.2	71.9	82.9	84.7	80	100.9	80.7	69.4	64.9	54.9	99.6	81.4	79.5	93.7	80.4
1.6 kHz	83.5	83.8	74.9	72.3	66.8	53.1	53.1	45.1	49.5	48.7	35.1	35.1	45.3	74.4	66.3	79.2	72.4	89	91.3	85.9	102.2	82.2	71.9	69.4	58.4	102.4	88.8	86.1	97.4	83.8
2 kHz	83.2	83.7	73.5	72.6	62.1	47.4	47.4	43.5	47.7	42	39.4	39.4	45	71.8	62.8	76.8	68.9	93.7	95.6	90.5	98.5	81.7	70.6	67.5	54.7	101.3	92.9	91	97.1	83.6
2.5 kHz	79.5	78.8	72.3	70.5	61.6	47.1	47.1	41.8	42.9	41.1	38	38	43.8	72	62.6	76.2	67.8	92.9	97.2	92.7	102.9	82.3	70.3	66.2	52.7	100.3	95.9	93.2	97.2	83.5
3.15 kHz	77.4	76.9	70.8	67.6	61.1	46	46	40.2	41.6	39.5	41	41	42.6	71.9	62.3	77	68.8	93.6	97.9	93	102.1	82.8	71.2	65.3	52.2	101.2	95.3	94.4	97.2	83.2
4 kHz	75.4	74.9	67.4	65.1	59.3	45.1	45.1	37.7	41.4	37.7	41.8	41.8	40.9	70.8	60.8	76.3	68.2	95.1	98.6	93.3	100.8	81.1	69.4	61.8	49.9	102.4	95.4	94.1	97.7	82.9
5 kHz	73.1	72.8	65.6	63.1	58.5	42.7	42.7	35.4	37.7	34.7	37.6	37.6	39.9	68.9	59.6	74.7	66.7	97.1	99.7	95.4	98.1	77.5	65.8	56.6	45.9	99	97.7	96	95.2	79.3
6.3 kHz	71.5	71.2	62.9	60.8	57.4	41.5	41.5	34.3	37.2	32.7	33.4	33.4	38.7	67.1	57.5	74.2	66.2	97.4	99.5	95.2	93.4	73.2	61.5	51.8	41.5	95.7	99.8	97.5	92.4	75.4
8 kHz	69.5	69.5	59.8	57.9	56.5	42	42	34.6	34.1	28.7	31.9	31.9	36.5	64.1	54.4	71.6	63.4	95.4	97.5	93.6	88.7	67.7	56.1	46	36.2	89.9	99.4	97.3	88.3	69.4
10 kHz	67.2	67.5	57.2	55.4	53.7	39.3	39.3	33.2	31.3	30.2	29.4	29.4	34.7	65.2	56	69.5	61.4	94.1	96.4	92.2	83.6	61.2	49.7	38.2	32.4	86.2	98	95.6	84.1	63.4

**TABLE B-1:
SPOT NOISE MEASUREMENT DATA Continued ...**

Location	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126
Time	0:11	0:11	0:12	0:13	0:14	0:15	0:16	0:21	0:22	2:26	2:27	2:28	2:29	2:29	4:30	4:31	6:22	6:23	20:17	20:17	20:18	20:19	20:31	20:31	20:34	20:36	20:38	20:39	20:44	20:55
Corrected Time	23:02	23:02	23:03	23:04	23:05	23:06	23:07	23:12	23:13	1:17	1:18	1:19	1:20	1:20	3:21	3:22	5:13	5:14	19:08	19:08	19:09	19:10	19:22	19:22	19:25	19:27	19:29	19:30	19:35	19:46
AP	85.8	84.2	83.3	95.5	87.9	90.3	83.7	84	78.5	101.2	98.6	88.9	88.5	86	70.4	69	90.7	84	101.8	99.5	101.8	97.2	109.1	103.6	103.1	104.3	111	111.7	111.5	100.9
AP (Sub)	79.3	77.5	66.2	93.3	85.4	88.8	82.4	76.2	71.6	94.7	89.4	76.9	72.6	63.7	59.1	53	84.4	74.5	92.1	81.8	89.9	74.2	79.2	76.8	79.7	78.7	75.5	75.8	76.5	93.1
25 Hz	67.1	67.6	66	65.1	55.6	59.6	52.8	60.7	52.4	85.4	84.6	76.1	76.6	73	55.9	55.9	79.8	73.6	96	92.6	94.1	89.5	104.8	98.5	90	96.6	103.5	104.3	104.3	82.1
31.5 Hz	67.6	66.3	65.9	65.6	58.5	59.9	53.6	60.9	52.3	89.9	88.7	79.1	78.8	74.8	56.1	55.2	71.3	64.9	94.5	91	91.1	88.8	102.2	96.6	94.7	92.3	102.9	102.9	103.2	87.7
40 Hz	65.3	65.7	63.5	69.2	60.6	61.7	56.8	62.6	58.2	88.8	90.3	80.1	79.2	74.5	56.1	56.8	74.6	68.6	81.1	89.5	90.3	85	91.7	85.3	92.5	95.5	100.3	99.6	102	89.3
50 Hz	68.7	66.1	66	74.6	66.2	65.3	57.1	64.9	56.9	86.7	87.1	78.5	76.8	74.8	50.4	53.4	77.5	71.7	79	82	89.2	81.2	83.1	80.5	86.9	88.6	92.5	92.9	94.4	89.3
63 Hz	82.4	78.9	79	88.1	78.7	78.1	69.5	77.5	69.3	90.3	92.6	83.1	82.5	82.6	54.9	54.5	82.5	78.5	78.1	78.8	86.7	80.3	86.1	85.5	86	87.7	87.8	91.4	93.8	95.2
80 Hz	66.9	66.6	62.2	73.3	65.5	63.7	55.5	64	55	85.9	83	73.5	72.1	66.9	49.4	51.7	75.5	72.7	71.3	75.7	79.1	75.2	82.3	79.7	83.7	85.5	86.4	90.6	93.4	84.4
100 Hz	62	61.1	58.6	71.6	67.7	69.4	56.2	67.5	58.6	84.5	80.3	71.9	66.8	63.5	54.4	53.3	75.5	73	72.1	73.8	78.9	70.5	85.4	84	79.7	81.4	80	85.8	84.7	81.9
125 Hz	71.3	73	68.1	81.8	80.4	83.2	68.1	80.9	72	90.4	83.2	76.7	71.1	71.9	67.4	58.2	78.1	72.5	70.8	70.6	76.6	72.2	85.9	83.2	82	79.7	80.2	79.9	82.3	85.9
160 Hz	64.1	62.9	57.4	78	71.7	69.7	57.2	67.9	55.8	87.6	82.2	73.5	68.2	60.4	50.5	50.9	80.4	68.9	66.3	66.6	76.5	66.7	83.1	74.8	74.8	70.8	74.9	74.5	73	84.5
200 Hz	59.6	59.1	56.2	79	68	67.9	61.2	63.5	57.9	87.6	81.4	71.7	66.9	58.5	45.4	47.4	79.8	67.9	66.8	61.5	75.6	67.3	71.7	66	68	64.4	70.2	71.5	68.2	87.9
250 Hz	59.1	58.9	56.2	85.9	73.4	68.2	74.1	64.5	70.3	86.9	81.8	68.3	67.1	56.5	46.9	53.4	76.7	68.5	72.1	66.5	70	61.8	64.7	62.5	67.3	61.1	69.2	68.2	64.2	86.6
315 Hz	58.3	57	53.3	78.1	72.2	71.7	66.5	65.9	67.8	87.2	80.5	66.9	66.7	54.4	46.7	49.1	76.3	70	69.1	62.1	71.1	56.8	63.6	62.5	66	60.3	67.6	64	60.7	85.7
400 Hz	63.8	57.7	55.2	80.6	76.3	75	70.9	69.4	72.4	87.1	82.6	71.4	65.7	56.7	52	52.8	79.3	71.9	74	67.4	75	58.5	66.6	66.3	66	62.6	64.6	64.4	63.2	87
500 Hz	63.2	58.1	54	83.5	75.4	74.9	64.3	65.2	61.9	88.7	84.9	74	67.7	55.2	60.4	44.2	78.4	69	77.5	67.7	77.8	63.9	63.9	64.2	67.4	63	64.4	64	58.2	87
630 Hz	62.1	59.4	57.1	82.3	75.1	78.5	73.1	63.7	59.5	85.8	79.9	66.1	64.8	58.1	51.6	43.6	79.4	68	79.1	68.2	78.1	64.6	64.9	65.1	67.6	64.5	66	63.2	58.4	86.8
800 Hz	69.2	66.1	52.9	83.2	77.9	81.9	77.9	65.8	60.6	81.3	76.5	63.6	60.5	49.1	43.6	40.8	79.2	66.5	80.8	70.6	76.4	61.1	64.6	64.7	68.9	65.8	64.1	61.4	58.9	81.7
1 kHz	66.6	65.5	52.3	84.6	75	82.8	72.2	67.3	56.6	87.5	79.9	67.6	63.1	51.6	42.5	38.2	74.9	65.9	84.7	74.5	79.6	63.5	65.7	67.8	72	67.6	63.6	61.5	59.7	84.9
1.25 kHz	66.7	64.7	54.7	85.7	76.2	79.6	72.4	66.7	56	86.2	78.5	66.9	61.7	51.1	35.8	37.9	70.1	59.4	84.4	73.3	79.9	64.4	65.3	65.6	70.1	67.1	62.7	60.2	59.9	83.2
1.6 kHz	70.1	69.1	58.6	83.2	75.2	78.3	70.7	66.9	57.7	80	75.5	62.3	59.5	50.5	34.6	35.8	67.7	57.4	83.3	72.7	80.9	64.5	64.8	64.6	68	66.7	60.5	60	58.4	79.9
2 kHz	69.7	69.4	56.2	81.2	73	76.3	70.8	64.9	58.6	79.3	75	60.8	58.9	46.1	33.4	34.8	62.6	53.7	82.9	71.6	75.9	60.8	65	63.6	67.8	66.2	60.2	59.3	57.7	77.6
2.5 kHz	69.3	68.4	53.9	79.1	71.8	74.8	69.3	61.8	53	78.7	74.9	60.2	57	44	32.9	34.8	60.7	51.3	81	71.2	76.9	61.3	64	62.2	66.6	71	57.2	55.5	56.9	76.2
3.15 kHz	68.6	65.9	52.6	78.7	71.4	73.2	69.2	60	49.5	78.6	74.9	59.5	55.7	42.3	31.2	32.3	57.5	49.1	75.3	66.7	77.4	61.5	69	64.2	67.2	66	55.2	52.8	56.5	75.1
4 kHz	68.4	64.4	51.7	78.5	71.2	71.2	65.9	62.2	53.7	77.5	74.4	58.9	53.9	42.2	28.3	30.6	52.3	45.6	72.7	64	77.3	60.4	70.1	65.2	67.6	64.5	54.8	51.3	57.1	73.5
5 kHz	65	60.3	47.7	76.8	69.5	68.5	63.7	55.3	49.3	77.2	74.2	58.6	51.9	41.6	27.7	28.2	53	43.9	69.6	62.2	79.2	61.8	55.3	55.4	58	66.1	49.8	48.3	49.4	72.6
6.3 kHz	61.2	55.7	43.6	75.9	68	62.1	58	52.4	42.6	76.5	73.8	57.7	50.3	38.6	27.7	27.7	53	41.7	63.3	58.7	78.3	60.5	52.6	50.7	53.1	60.9	44.6	44	45.1	71.1
8 kHz	55.5	48.7	38.2	73.3	65.6	56.6	52.4	47.9	37.2	74.8	72	55.9	48.7	35.7	27.8	27.7	49.3	40.4	59	54.6	76.4	58.9	50.8	47.4	53.6	61.4	42.3	40.4	43.3	69.1
10 kHz	49.8	40.3	33.3	71.1	63.3	51.4	43.7	43.6	32.3	72.3	69.9	53.7	45.6	33.8	27.9	30.7	47	36.3	54.3	50.7	75.2	57	43.9	42.6	53	58.7	38.8	35.3	40.1	66.6

**TABLE B-1:
SPOT NOISE MEASUREMENT DATA Continued ...**

Location	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184
Time	12:07	13:09	13:09	13:21	13:22	13:22	13:28	13:29	13:31	13:31	14:08	14:09	14:34	14:35	14:36	14:36	14:37	14:38	16:19	16:20	16:22	16:35	13:07	13:08	13:08	13:17	13:18	13:32
Corrected Time	10:58	12:00	12:00	12:12	12:13	12:13	12:19	12:20	12:22	12:22	12:59	13:00	13:25	13:26	13:27	13:27	13:28	13:29	15:10	15:11	15:13	15:26	11:58	11:59	11:59	12:08	12:09	12:23
AP	117.4	112.7	103.8	113.3	113.7	113.8	107.7	108.2	112.5	104.3	92.5	89.9	94.6	101.4	101.8	90.8	95	93.3	102.4	91.5	86.1	84.1	63.5	57.2	59	57.3	57.6	57.5
AP (Sub)	95.9	81.7	77.3	78.8	79.1	77.8	76.9	85.3	83.3	78.6	71.8	74.5	83.4	88.3	87.8	71.9	72.3	66.6	96.3	83.7	75.5	67.5	59.2	46.3	40	34.5	42.3	37.6
25 Hz	102.2	109.1	96.8	104.1	105.5	106	97.5	96.2	108.8	96.8	81.8	78.9	83.5	81.1	83.8	79.1	85.7	80.2	85.2	78.7	70.2	51.6	47.6	47.7	51	45.5	44.5	42.9
31.5 Hz	114.7	105.6	92.9	103.2	103.5	103.5	94.5	99.8	105.1	94.2	81.7	78.6	78.4	88.1	89.8	77.3	84.9	81.5	85.4	78.8	70	51.2	44.3	44	45.4	45.4	47.5	45.5
40 Hz	107.9	94	91.1	102.2	104.1	104.1	100.3	95.4	96.2	91	77.3	78.5	78.2	99.2	100.4	82.8	90.5	91.5	88.4	79	80.1	54.5	44.1	44.6	44	45.4	45.8	47.1
50 Hz	97.6	86	86.1	96	97.4	97.1	93.5	91.7	87.6	88.1	72.6	70.1	74.4	86.9	85.8	79.9	76.8	76.3	86.9	79.5	71.3	51.3	48	43.1	47	42.9	41.7	43.5
63 Hz	95.5	89	87.4	93.5	97	94.4	89.6	88.7	90.1	87.4	67.8	65	68.5	85.8	80	76.1	76.7	72.7	84.2	81.4	69.5	54.9	48.4	42.5	45.8	45	42.6	44.3
80 Hz	102.5	86.5	83.9	93.3	96.4	92.2	88.3	87.1	86.9	84.5	62.9	62.7	75.5	93.7	88.8	82.3	82.3	78	83.5	82.2	70.7	52.4	51.9	39.2	38.2	40.5	43.9	35.9
100 Hz	101	87.2	86.4	89.2	86.6	86.6	84.4	83	88.5	87.1	61.5	60.4	75.8	83.3	84.3	79.6	73.3	70.2	85.2	81.2	69.3	69.7	54	41.6	38.4	39.6	42.9	38.9
125 Hz	95	86.3	83.8	85.3	86.1	83.6	82.5	84.5	87.3	84.2	63.2	63	76.6	79.7	83.6	78.1	72.5	68	85.8	79.4	68.6	84.1	50.4	34.8	33.7	40.3	43	28.1
160 Hz	95.2	86.4	78.8	81.1	78.3	80	74.5	78.2	88	78.2	53.8	52.8	75	79.6	81.4	70.2	73.4	65.6	84.7	77.6	70.2	60.4	47.5	32.1	28.3	30.1	32	27.5
200 Hz	92.6	71.9	66.1	78.2	72.9	76.4	67	72.2	72.6	67	49.6	51.2	86.7	84.6	82.6	71.6	75	69	96.7	77.9	79.3	54.1	47.7	28.9	27.8	29.4	29.7	27.8
250 Hz	93.2	66.9	62.5	77.3	69.7	77.8	64.5	68.8	67.7	63.1	48.8	50.4	89.7	81	79.5	65.9	71.1	64.8	88.2	77.5	74.7	53	45.2	27.8	26.9	30.9	27.7	27.6
315 Hz	92.7	67.4	62.7	74.9	66.8	77.6	64	68.1	67.2	63.9	46.3	44.1	78.6	76.1	80.2	62.5	66.5	59.1	89.7	73.8	69.7	42.4	38.3	28.2	28.1	29.6	27.9	27.9
400 Hz	90.7	69.3	66.7	72.4	65.9	75.6	63	70.1	71.5	67.3	47.5	44.2	72	77.1	77.3	62.4	61.2	57.6	96.1	79.7	72.4	46.3	39.7	30.4	29.6	30.9	28.4	28.2
500 Hz	90.3	66.9	62.9	70.8	64.9	73.6	64.6	71.1	70.3	65.5	47.5	44.6	69.5	78.3	77.5	61.7	60.6	56.5	89.2	77.6	67	46.6	43.8	31.7	29.7	30.2	28	28.3
630 Hz	88.3	66.6	62.3	71.5	61.6	67.6	64.3	71	67.7	63.2	50.8	46.9	66.6	77.3	77.4	60.8	59.5	57.6	87	75.3	65.1	48.3	46.6	35.8	34	29.5	29.3	28.4
800 Hz	86.2	66.7	62.2	69.6	60.3	62.2	63.2	70.8	69.5	64.8	54.3	49.2	67.3	77.1	77.5	60.4	58	54.2	87.5	73.6	63	42.9	51.2	42	36.4	28.5	32.2	31.6
1 kHz	84	66	62.3	67.4	58.7	62.6	63.3	71.1	69.1	64.4	55.6	51.6	67.5	77.7	77.7	60.3	58.9	54.1	84.7	75.8	62.5	42	53.9	42.1	35.1	28	33.5	30.4
1.25 kHz	82.6	67.4	62.1	66.3	58	60.6	62.9	73.1	68.8	64.4	62	54.6	66.9	77.9	77.2	59.1	60	53.3	83	73.1	62.3	41.7	52.3	37.4	30.9	28.1	36	28.3
1.6 kHz	82.3	65.9	61.2	63.3	57.3	59.7	63.2	72.7	69.1	63.8	60.9	52.9	64.1	77.6	77.1	58.8	59.8	51.4	82.3	71.2	61.8	35.1	49.7	31.7	27.8	27.9	36.7	28.3
2 kHz	83.9	67	60.5	61.7	56.7	59	63.8	72.6	69.4	62.8	64.8	55.2	65.9	78.7	77.4	59.5	59.5	51.7	80.1	70.1	60.5	35.4	45.5	28	27.6	27.8	31.8	27.9
2.5 kHz	83.6	66	60	58.7	55.4	57	62.6	71.9	67.6	61.6	61.5	53	64	77.5	76.4	58.6	58.7	51.7	77.6	67.8	59	33.8	41.9	27.5	27.7	29.2	28.9	27.8
3.15 kHz	83.3	72.1	66.7	57	60.9	60.5	63.9	74.1	73.9	68.2	60.4	60	63.3	75.6	74.5	56.4	57.7	47.2	75.3	66	57	31.1	37.5	27.7	27.7	27.8	28.2	27.7
4 kHz	82.3	73	68	56	60.8	60.7	63.6	75.6	74.6	69.7	59	67.1	62.7	73	71.9	53.2	54.1	44.8	73.1	62.9	55.4	30.3	34.5	27.7	27.7	27.8	27.9	27.7
5 kHz	77.7	62	59.5	51.8	51.1	54.4	59.6	73	61.5	61	59.5	66.4	60.4	69.8	68.7	50	50.5	41.4	71.3	60.3	52.5	27.7	31.2	28.5	27.9	27.7	27.9	27.1
6.3 kHz	71.7	66.4	66	51	51.1	55.1	59.7	76.8	65.9	67.2	58.1	60.9	57	66.2	65.1	46.4	44.3	37.6	69.7	58	49.6	27.7	29.6	27.7	27.7	27.7	28	27.7
8 kHz	67.9	64	61.9	49.5	45.4	49.2	55.4	73	63.4	63.4	54	67.9	53	61.6	60.6	42.3	41	35.5	67.7	55.6	46.5	27.7	28.6	27.7	27.7	27.7	28	27.7
10 kHz	62.2	57.5	55.1	44.7	40	42.9	51.8	69.3	56.4	57.5	53.1	69.1	49.3	56.4	55.4	37.9	39.2	32.5	65.2	52.2	42.5	27.7	28.1	27.7	27.7	27.7	27.8	33.6