



Brooks Acoustics Corporation

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27 July 2022
PJ2022-1388-02

Subject: Acoustical engineering study – Sound analysis for Conditional Use Permit
Oro & Elixir – 818 Lincoln Road, Miami Beach
Response to Peer Review – PB 22-0518 – Prepared by Arpeggio, July 21, 2022

Dear Ms. Torres-Toledo:

As requested, Brooks Acoustics Corporation (BAC) is responding to the Peer Review, which was prepared for by Arpeggio for the Miami Beach Planning Board concerning CUP application PB 22-0518.

A copy of the Peer Review report is attached.

The original sound analysis conducted by BAC was for a proposed venue to be located at 818 Lincoln Road. The proposed venue is to be operated as a restaurant and nightclub known as “Oro & Elixir”.

The Peer Reviewer suggested that BAC revise its sound analysis to include:

1. Window sound attenuation - as the Operations Plan indicates that the outdoor terrace on the third floor would be closed when there are live musical performances within that exceed ambient levels.
2. Calculation of C-weighted sound levels (decibels) at the receivers.

The original sound study was revised to address the Peer Reviewer's comments.

Findings Summary

The sound study confirmed that the music played over the indoor loudspeakers in the proposed restaurant and nightclub will be reduced due to the presence of the closed windows on the third floor. The reduced A-weighted sound level (dBA) is expected to be *below normal conversation sound levels*, and so will not interfere with normal conversation at the sidewalk location adjacent to the venue. The A-weighted sound level (dBA) is also expected to be lower at the apartments to the south of the venue.

The C-weighted (dBC) sound levels will also be reduced due to the presence of the closed windows. The reduced C-weighted sound level (dBC) is expected to be *below typical ambient sound levels*, and so will not intrude upon the sidewalk location adjacent to the venue. The C-weighted sound level (dBC) is also expected to be lower at the apartments to the south of the venue.

These sound study results for the audio system equipment and loudspeakers on site indicate that the proposed venue at 818 Lincoln Road would be ***in compliance*** with typical Conditional Use Permit requirements.

Conditional Use Permit

The Applicant intends to file an application with the Planning Board of the City of Miami Beach for a Conditional Use Permit (CUP) File Number PB-22-0518 for the Property located at 818 Lincoln Road, for entertainment at a proposed restaurant and nightclub venue, pursuant to Chapter 188, Article IV, and Chapter 142, Article V, Division 6 of the City code.

A sound study (also known as a “noise attenuation plan”) was submitted to satisfy the CUP application requirements.

In response to the Peer Reviewer’s comments, the sound analysis was revised to incorporate the Reviewer’s recommendations, as noted above.

Venue sound study

The sound study for the proposed venue, which was submitted on July 5, 2022, was revised to incorporate the Peer Reviewer’s recommendations:

1. Include window sound attenuation
2. Calculate C-weighted sound levels (decibels) at the receivers.

All other conditions addressed in the study remained the same.

Copies of the calculation sheets for the revised sound analysis are attached.

Calculation Results

The sound level calculated at Position 1, the Mall sidewalk to the north, with the venue third floor windows closed is about **42 dBA** (42 A-weighted decibels), the level of a *whisper*. The C-weighted level is **68 dBC**. This is expected to be consistent with or below the ambient sound level in the area.

The sound level calculated at Position 2, outside the apartments to the south is about **37 dBA**. This is the level of a *quiet whisper*. The C-weighted level is **63 dBC**. This is expected to be consistent with or below the ambient sound level in the area.

Further, exterior walls and windows typically provide at least 25 dBA sound reduction from the outside to the inside. This would reduce the dance music sound inside the apartments to 12 dBA or lower, a very low level. There will also be a significant reduction in C-weighted sound level inside the apartments. So, it is *unlikely* that any sound from the venue will be audible indoors at the apartments. It is expected that the operation of the venue with dance music will **not disturb the comfort and repose** of any person in the vicinity.

Calculation results which include the *sound attenuation of the venue third floor windows* at positions outside the receiver locations are given in the Table below:

Operating Condition	Receiver Distance	Sound level Outside (A-weighted)	Sound level Outside (C-weighted)
Dance music in proposed venue	Pos 1 – Sidewalk to N – 5 feet	42 dBA (whisper)	68 dBC
Dance music in proposed venue	Pos 2- Apartments to S – 76 feet	37 dBA (quiet whisper)	63 dBC

Sound level criteria

For the purposes of this CUP study, the criteria for maximum A-weighted sound level limits were set at the level of a normal conversation (70 dBA) at an outdoors receiver position, such as the sidewalk and apartment locations. This recognizes the typical CUP requirement that the music at the venue not exceed the sound level of a normal conversation, and not be disturbing to persons in the vicinity. Further, in response to the Peer Reviewer's comments, the maximum C-weighted sound level limits were set at 80 dBC.

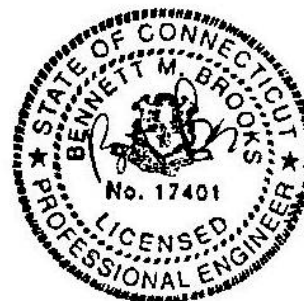
Discussion

Based on the revised sound study results for the proposed venue at 818 Lincoln Road, the designed audio system in the dance music mode is expected to operate such that it produces a sound level that is at or below the ambient sound levels for both the A-weighted and C-weighted decibel scales. The venue music system is *not expected* to produce a sound level that would interfere with normal conversation, nor will it intrude on the ambient conditions.

Please contact me if you have any questions concerning these findings.

Very truly yours,
BROOKS ACOUSTICS CORPORATION

Bennett M. Brooks, PE, FASA, INCE
President



APPENDIX

818 Lincoln Road CUP Revised Sound Study

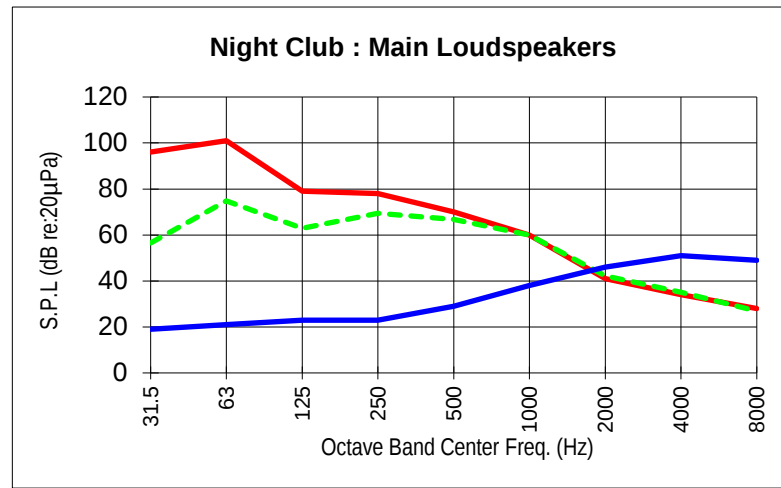
1. Sound propagation calculation sheets
2. Peer Reviewer's report – Arpeggio, July 21, 2022

Source Sheet

Source Group: Night Club
Source Name: Main Loudspeakers

Source Data: BAC Unweighted
Source Level: 77 dB(A)
record distance: 5

Source Type: point
Coordinates: East North Elev.
0 0 36



Frequency	Data	Window Atten	Signature	A-weighted Signature	A-weighting Curve	freq.
31.5 Hz	115	19	<u>96</u>	57	-39.4	31.5
63 Hz	122	21	<u>101</u>	75	-26.2	63
125 Hz	102	23	<u>79</u>	63	-16.1	125
250 Hz	101	23	<u>78</u>	69	-8.6	250
500 Hz	99	29	<u>70</u>	67	-3.2	500
1000 Hz	98	38	<u>60</u>	60	0.0	1000
2000 Hz	87	46	<u>41</u>	42	1.2	2000
4000 Hz	85	51	<u>34</u>	35	1.0	4000
8000 Hz	77	49	<u>28</u>	27	-1.1	8000

Theater test
EDM show
LA01
107 dBA
@ FOH

Adjusted to
102 dBA
on dance floor

Transmission Loss
Impact Windows
1/8 - 1/8 inch
Laminated
1/2 inch air space

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Based on BAC sound data and proposed site plan

Oro & Elixir CUP Sound Study

Sidewalk to North (baseline elev. 5) - **Impact windows**

Sound Projection: Miami Beach, FL

Dance Floor on venue 3rd floor

PROJECTED FROM: Dance Floor
PROJECTED TO: Pos 1 - Sidewalk to North

Coordinates:		
East	North	Elevation
0.0	87.0	5.0

RELATIVE HUMIDITY: 50%
TEMPERATURE: 72 deg. F
ATMOS. PRESS: 760 mm Hg

Criteria Level **70 dBA**
80 dBC
Total Sound Level **42 dBA**
68 dBA
Compliance? **YES**

			CONTRIBUTIONS	
FREQ.	AWT SPL	CWT SPL	SOURCE	AWT SPL
31.5 Hz	24.4	60.8	#	
63 Hz	41.2	66.6	1	Night Club Main Loudspeakers 42.0 dBA
125 Hz	27.4	43.3	2	reserved -- -51.0 dBA
250 Hz	31.4	40.0	3	reserved -- -32.4 dBA
500 Hz	26.2	29.4	4	reserved -- -32.4 dBA
1000 Hz	16.5	16.5	5	reserved -- -32.4 dBA
2000 Hz	-3.4	-4.8	6	reserved -- -32.4 dBA
4000 Hz	-11.0	-12.8	7	reserved -- -32.4 dBA
8000 Hz	-20.8	-22.7	8	reserved -- -32.4 dBA
RMS: 42.0 dBA 67.6 dBC				

Atmospheric attenuation: yes
Excess ground attenuation: no
Source region hard, soft, mixed (h,s,m%): h
Receiver region hard, soft, mixed (h,s,m%): h
Middle region hard, soft, mixed (h,s,m%): h
Barrier shadowing: yes
Vegetation: no

PATH SHEET

	<u>COORDINATES</u>	
SOURCE 1: Night Club	East 0.0	<u>Record Distance</u>
Main Loudspeakers	North 0.0	5.0
TYPE: point	Elevation 36.0	<u>Projection Dist.</u>
		92.4

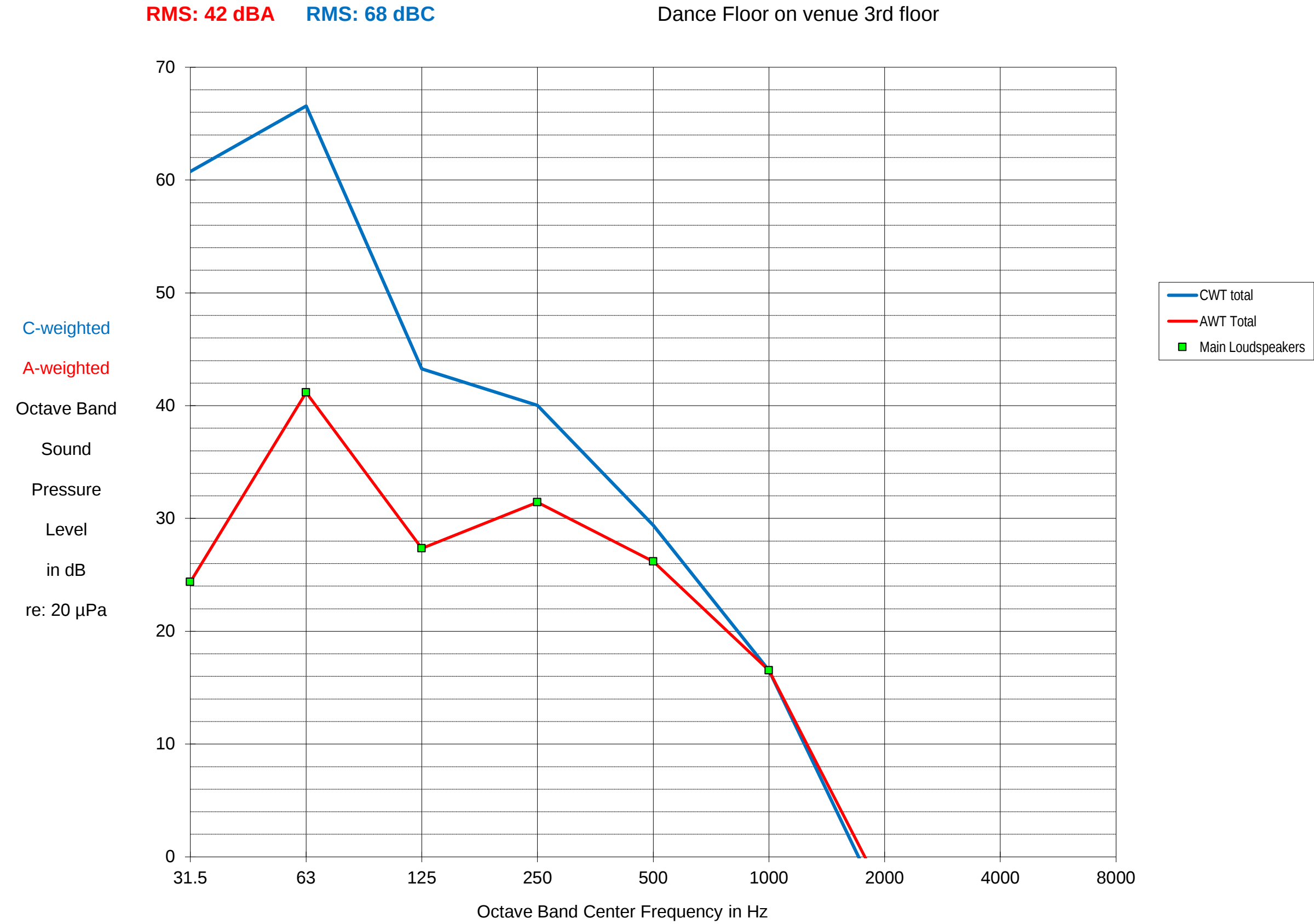
Freq.	Source	Vegetation	Shadowing	Ground Atten	Net Barrier Atten	Atmospheric	Distance Atten	Contribution	Awt Contrib.
31.5 Hz	96.0	0.0	6.9	0.0	6.9	0.0	25.3	63.8	24.4
63 Hz	101.0	0.0	8.3	0.0	8.3	0.0	25.3	67.4	41.2
125 Hz	79.0	0.0	10.2	0.0	10.2	0.0	25.3	43.5	27.4
250 Hz	78.0	0.0	12.6	0.0	12.6	0.0	25.3	40.0	31.4
500 Hz	70.0	0.0	15.2	0.0	15.2	0.1	25.3	29.4	26.2
1000 Hz	60.0	0.0	18.0	0.0	18.0	0.1	25.3	16.5	16.5
2000 Hz	41.0	0.0	20.0	0.0	20.0	0.3	25.3	-4.6	-3.4
4000 Hz	34.0	0.0	20.0	0.0	20.0	0.8	25.3	-12.1	-11.1
8000 Hz	28.0	0.0	20.0	0.0	20.0	2.7	25.3	-20.0	-21.1
								69.0	42.0

PATH SHEET

	<u>COORDINATES</u>	
SOURCE 2: reserved	East 0.0	<u>Record Distance</u>
--	North 0.0	1.0
TYPE: point	Elevation 1.0	<u>Projection Dist.</u>
		87.1

Freq.	Source	Vegetation	Shadowing	Ground Atten	Net Barrier Atten	Atmospheric	Distance Atten	Contribution	Awt Contrib.
31.5 Hz	0.0	0.0	7.3	0.0	7.3	0.0	38.8	-46.1	-85.5
63 Hz	0.0	0.0	8.8	0.0	8.8	0.0	38.8	-47.6	-73.8
125 Hz	0.0	0.0	10.9	0.0	10.9	0.0	38.8	-49.7	-65.8
250 Hz	0.0	0.0	13.3	0.0	13.3	0.0	38.8	-52.1	-60.7
500 Hz	0.0	0.0	16.0	0.0	16.0	0.1	38.8	-54.9	-58.1
1000 Hz	0.0	0.0	18.9	0.0	18.9	0.1	38.8	-57.8	-57.8
2000 Hz	0.0	0.0	20.0	0.0	20.0	0.3	38.8	-59.1	-57.9
4000 Hz	0.0	0.0	20.0	0.0	20.0	0.7	38.8	-59.5	-58.5
8000 Hz	0.0	0.0	20.0	0.0	20.0	2.6	38.8	-61.4	-62.5
								-41.8	-51.0

Sound Source Contribution Plot
Pos 1 - Sidewalk to North
Based on BAC sound data and proposed site plan
Sidewalk to North (baseline elev. 5) - Impact windows
Dance Floor on venue 3rd floor



Akerman

Based on BAC sound data and proposed site plan

Oro & Elixir CUP Sound Study

Apts to South (baseline elev. 5) - **Impact windows**

Sound Projection: Miami Beach, FL

Dance Floor on venue 3rd floor

PROJECTED FROM: Dance Floor
PROJECTED TO: Pos 2 - Apartments to S

Coordinates:		
East	North	Elevation
-5.0	-153.0	5.0

RELATIVE HUMIDITY: 50%
TEMPERATURE: 72 deg. F
ATMOS. PRESS: 760 mm Hg

Criteria Level **70 dBA**
80 dBC
Total Sound Level **37 dBA**
63 dBA
Compliance? **YES**

			CONTRIBUTIONS	
FREQ.	AWT SPL	CWT SPL	SOURCE	AWT SPL
31.5 Hz	19.8	56.2	#	
63 Hz	36.6	62.0	1	Night Club Main Loudspeakers 37.4 dBA
125 Hz	22.8	38.7	2	reserved -- -56.2 dBA
250 Hz	26.8	35.4	3	reserved -- -37.7 dBA
500 Hz	21.6	24.8	4	reserved -- -37.7 dBA
1000 Hz	11.9	11.9	5	reserved -- -37.7 dBA
2000 Hz	-8.1	-9.5	6	reserved -- -37.7 dBA
4000 Hz	-16.1	-17.9	7	reserved -- -37.7 dBA
8000 Hz	-27.3	-29.2	8	reserved -- -37.7 dBA
RMS: 37.4 dBA 63.0 dBC				

Atmospheric attenuation:	yes
Excess ground attenuation:	no
Source region hard, soft, mixed (h,s,m%):	h
Receiver region hard, soft, mixed (h,s,m%):	h
Middle region hard, soft, mixed (h,s,m%):	h
Barrier shadowing:	yes
Vegetation	no

PATH SHEET

SOURCE 1: Night Club Main Loudspeakers TYPE: point	<u>COORDINATES</u> East 0.0 North 0.0 Elevation 36.0	<u>Record Distance</u> 5.0 <u>Projection Dist.</u> 156.2
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Freq.	Source	Vegetation	Shadowing	Ground Atten	Net Barrier Atten	Atmospheric	Distance Atten	Contribution	Awt Contrib.
31.5 Hz	96.0	0.0	6.9	0.0	6.9	0.0	29.9	59.2	19.8
63 Hz	101.0	0.0	8.3	0.0	8.3	0.0	29.9	62.8	36.6
125 Hz	79.0	0.0	10.2	0.0	10.2	0.0	29.9	38.9	22.8
250 Hz	78.0	0.0	12.6	0.0	12.6	0.1	29.9	35.4	26.8
500 Hz	70.0	0.0	15.2	0.0	15.2	0.1	29.9	24.8	21.6
1000 Hz	60.0	0.0	18.0	0.0	18.0	0.2	29.9	11.9	11.9
2000 Hz	41.0	0.0	20.0	0.0	20.0	0.5	29.9	-9.4	-8.2
4000 Hz	34.0	0.0	20.0	0.0	20.0	1.3	29.9	-17.2	-16.2
8000 Hz	28.0	0.0	20.0	0.0	20.0	4.6	29.9	-26.5	-27.6
								64.4	37.4

PATH SHEET

SOURCE 2: reserved -- TYPE: point	<u>COORDINATES</u> East 0.0 North 0.0 Elevation 1.0	<u>Record Distance</u> 1.0 <u>Projection Dist.</u> 153.1
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Freq.	Source	Vegetation	Shadowing	Ground Atten	Net Barrier Atten	Atmospheric	Distance Atten	Contribution	Awt Contrib.
31.5 Hz	0.0	0.0	7.3	0.0	7.3	0.0	43.7	-51.0	-90.4
63 Hz	0.0	0.0	8.8	0.0	8.8	0.0	43.7	-52.5	-78.7
125 Hz	0.0	0.0	10.9	0.0	10.9	0.0	43.7	-54.6	-70.7
250 Hz	0.0	0.0	13.3	0.0	13.3	0.1	43.7	-57.1	-65.7
500 Hz	0.0	0.0	16.0	0.0	16.0	0.1	43.7	-59.8	-63.0
1000 Hz	0.0	0.0	18.9	0.0	18.9	0.2	43.7	-62.8	-62.8
2000 Hz	0.0	0.0	20.0	0.0	20.0	0.5	43.7	-64.2	-63.0
4000 Hz	0.0	0.0	20.0	0.0	20.0	1.3	43.7	-65.0	-64.0
8000 Hz	0.0	0.0	20.0	0.0	20.0	4.5	43.7	-68.2	-69.3
								-46.7	-56.2

Akerman
Oro & Elixir CUP Sound Study
Miami Beach, FL

Sound Source Contribution Plot
Pos 2 - Apartments to S
Based on BAC sound data and proposed site plan
Apts to South (baseline elev. 5) - Impact windows
Dance Floor on venue 3rd floor

