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Northbridge Noise Monitoring Report

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1 INTRODUCTION

Lloyd George Acoustics was engaged by the Department of Water and Environmental Regulation (DWER) to record the level of noise near venues and near noise sensitive premises in Northbridge. Specifically, the venues targeted are those within a 'core area' bound by Aberdeen Street, William Street, Roe Street, Melbourne Street, James Street West and Parker Street. The 'core area' is shown in *Figure 1-1*. The noise sensitive premises targeted were those located within the core or outside but close to the core.

This report describes the methodology and results of the noise monitoring survey undertaken on Friday 16 August 2019, Saturday 17 August 2019, Friday 23 August 2019 and Saturday 24 August 2019 between 10pm and 1am (the following day).

The noise levels measured are summarised in *Section 3* of this report, with *Appendix A* to *Appendix F* presenting more detailed results, such as spectral data (1/3 and 1/1, both tabulated and graphed).

Appendix G contains a description of some of the terminology used throughout this report.

Figure 1-1 Northbridge Core Area

2 METHODOLOGY

2.1 Venues and Noise Sensitive Premises Locations

The entertainment venues to be included in this study were identified based on mapping information provided by DWER and also following a visual inspection of the proposed entertainment precinct and core area.

The venues identified include bars, pubs and night clubs, one restaurant with an outdoor area and karaoke bars/clubs. Also included were some venues located just north of the core area, as these had the potential to impact on surrounding noise sensitive premises within or near the core area.

Figure 2-1 on the following page shows the venues (highlighted in pink) and noise sensitive premises (highlighted in blue) identified.

Figure 2-3 then shows the measurement locations for each night.

2.2 Site Measurements

Given the sensitivity of the study and of the area at night-time in general, noise levels could not be measured following standard practices e.g. sound level meter on tripod. Instead, the noise surveys were carried out as follows:

- Two people conducting roving measurements, each equipped with one sound level meter located in a backpack, but with the microphone located in an outside pocket. The microphones were covered with a standard windshield and facing up. An example of the setup is shown in *Figure 2-2*. As such, the noise levels recorded are considered similar to that of 'free-field' conditions. Potential sources of extraneous noise included people bumping into the backpack at times, however such events were clearly audible in the audio recordings. From the audio recordings, no instances of extraneous noise levels from the windshield and/or microphone rubbing against the side of the backpack were found.
- Each sound level meter was setup to log various parameters including overall A-weighted and C-weighted L_{eq} levels, and spectral Z-weighted L_{eq} levels every 1 second. Audio was also continuously recorded throughout the survey.
- For the venue noise level measurements, the location of the measurement was generally selected to be as close as possible to the venue boundary, and at a location representing highest noise levels e.g. at / in-line with open entry doors, beer garden area boundary, etc. Generally, this may have been 3 metres from the front of the venue.
- The measurement duration was generally 5 minutes.
- The sound level meters used were both Brüel and Kjaer type 2250 with serial numbers 3011946 and 3011275. Both sound level meters hold current certificates of calibration and were field calibrated before and after the measurement session and found to be within accepted tolerances.

Measurements were recorded between 10pm and 1am the next day on Friday 16 August (Night 1) and 23 August 2019 (Night 3), and Saturday 17 (Night 2) and 24 August 2019 (Night 4). Meteorological conditions at the time of the surveys were generally calm with the expcetion of the Friday 16 August 2019 when adverse weather occurred prior to the survey with light showers and moderate breeze (20-30 km/hr) recorded until 12am (midnight).


Legend
Venues
Residences
Core Area
N
Figure 2-1
R6
R10
R7
V22
V34
V33
Aberdeen Street
V35
V2
V1
R2
R13
R3
R12
V32
V31
V17
V3
V20
V21
R8 UF
V30
Francis Street
R11
V16
R1
V6
Parker Street
Lake Street
V4
V19
V18
V5
William Street
R5
V28
V26
V23
V24
V25
R4
V13
James Street West
V12
R8
V14
V15
V10
V7 GF
V8 UF
V37 UF
V27 UF
Vx1
Vx2
V29
R9
V9
V11
Melbourne Street
Roe Street

Figure 2-2 Typical Backpack Setup With Microphone In Side Pocket

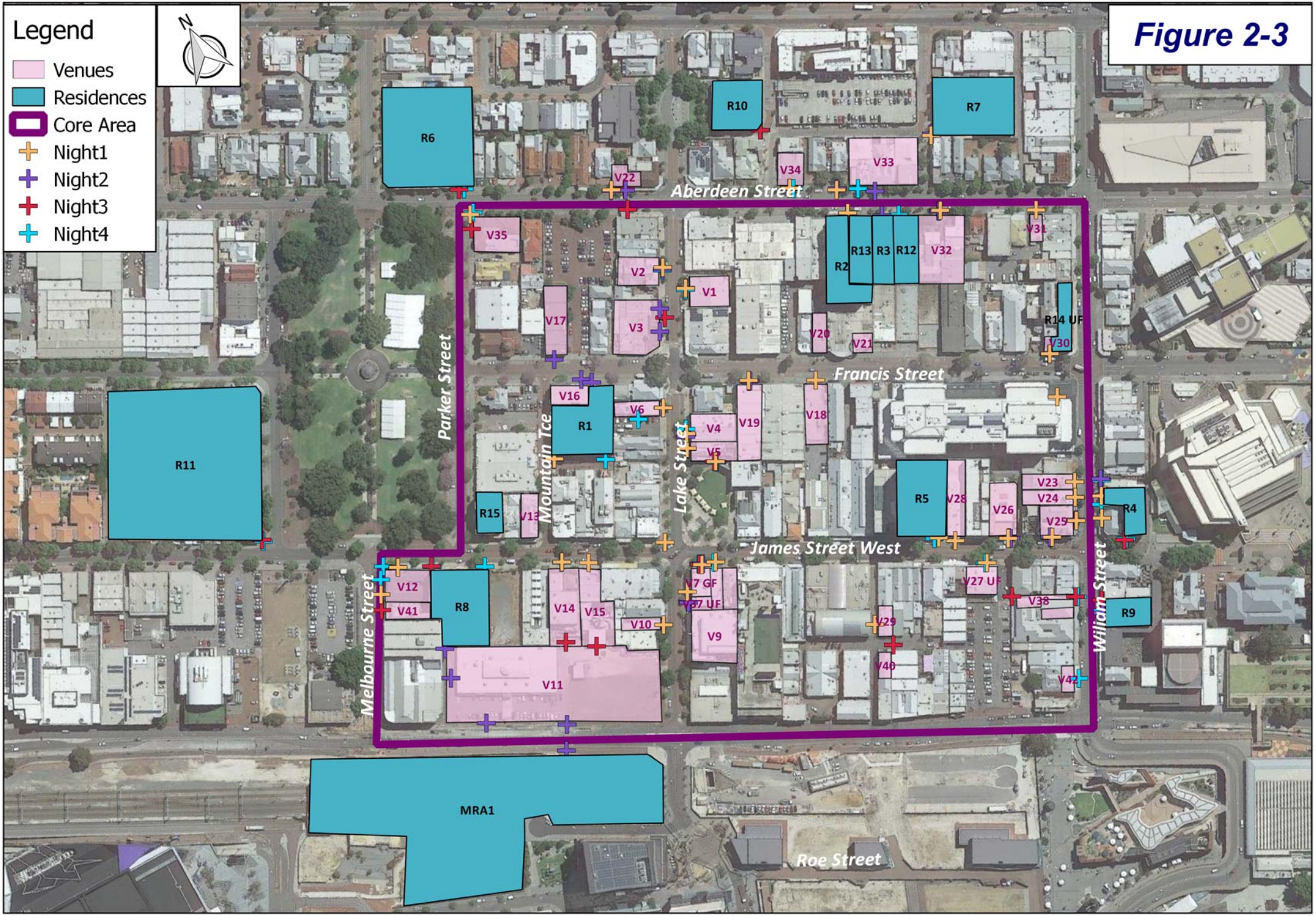


Figure 2-3
Legend
Venues
Residences
Core Area
Night1
Night2
Night3
Night4
N
R6
R10
R7
V22
V34
V33
Aberdeen Street
V35
V2
V1
R2
R13
R3
R12
V32
V31
V17
V3
V20
V21
R14 UF
V30
Parker Street
Francis Street
V16
R1
V6
V4
V19
V18
Mountain Tce
Lake Street
V5
R11
R5
V28
V26
V23
V24
V25
R4
R15
V13
James Street West
V12
R8
V14
V15
V7 GF
V7 UF
V27 UF
V38
R9
V41
V10
V9
V29
Melbourne Street
William Street
V11
V40
V42
MRA1
Roe Street

2.3 Data Analysis

The 1 second logged L_{eq} data was processed using Brüel and Kjaer proprietary software BZ 5503 Measurement Partner Suite to determine the following quantities:

- Overall A-weighted and C-weighted L_{eq} noise levels representative of the venue(s).
- Linear L_{eq} spectral levels in 1/3 and 1/1 octave bands.

The statistical L_{10} and L_{90} levels for the overall A- and C-weighted levels, and 1/3 and 1/1 octave bands were obtained based on the 1-second L_{eq} data with MS Excel. For the octave band spectral statistics, the 1-second data within the corresponding 1/3 octave bands was first logarithmically summed to obtain the 1-second L_{eq} level in each octave band. The statistical levels were then derived for each octave band individually.

In conjunction with notes taken on site during the survey, the audio was reviewed to determine whether any extraneous noise sources (e.g. loud car, people shouting) were present at the time which may have affected the noise levels measured. Where practicable extraneous noise sources were excluded from the analysis.

3 RESULTS

3.1 Venue Noise

Although the measurement duration was generally 5 minutes at each venue, extraneous noise sources and other factors resulted in the amount of available data fluctuating significantly between locations. Therefore, the data was processed to obtain the highest 1-mininute L_{eq} over the measurement period for each venue and with extraneous data excluded. This data is summarised in *Table 3-1.*

It is noted that using a 1-minute time period is considered to be conservative as in some instances the music type changed during the measurement. It also means that in some instances, the highest A-weighted level (when noise is dominated by vocals or patrons) has not occurred over the same time period as the highest C-weighted level (when music was dominated by bass).

The tabulated 1/3 and 1/1 octave band Z-weighted noise levels are shown in *Appendix A* and *Appendix B* respectively. *Appendix C* then also presents that data graphically. It is noted that all the spectral data presented relate to the 1-minute period over which the highest C-weighted level occurred.

Given the layout of some venues, noise levels were recorded at more than one location (e.g. V25 is on the corner of William Street and James Street West, and therefore noise levels were recorded on both the east and south sides, while other venues also have a beer garden as part of their premises). Throughout *Table 3-1* and in *Appendix A* to *Appendix C*, the following notes are made in relation to the venues and the measurement locations:

- ‘GF’ means the venue is located on the ground floor of a multi-storey building,
- ‘UF’ means the venue is located on the upper floor of a multi-storey building,
- ‘e’, ‘s’, ‘n’, and ‘w’ refer to the cardinal points east, south, north and west respectively,
- ‘bg’ refers to ‘beer garden’,

- ‘b’ refers to ‘boundary’,
- ‘f’ refers to ‘facade’, and
- ‘g’ refers to ‘gate’.

In addition to the above, it is noted that on both nights not all of the venues identified were open or emitting noticeable music at the time of the survey. Such venues were: V10, V13, V17, V18, V20, V21, V24, V28, V29 and V31.

From *Table 3-1*, it can be seen that the highest noise levels were recorded at:

- Within the Core Area, venue V25 on the south side with C-weighted levels up to 103.8 dB $L_{eq,1min}$ near the operable glazing, and
- Outside of the Core Area, venue V22 with C-weighted levels up to 107.3 dB $L_{eq,\ 1min}$ near the facade.

Table 3-1 Measured Venue Noise Level Summary, dB $L_{eq,1min}$

Venue ID	Measurement Location	A-Weighted Level	C-Weighted Level	Comments
Night 1 - Started 16th August 2019				
V1	4 m from entry doors	79.9	91.4	Doors open, not many people inside
V2	3 m from entrance	72.6	89.9	Music from venue audible. Low background level, occasional pedestrians.
V4	3 m from entrance	76.0	93.3	Music from within the venue audible. Street noise and voices from people queuing influenced A-weighted level.
V5s	1.5 m from outdoor area to south	85.9	92.0	Open outdoor area
V5w	3 m from entry doors	84.1	94.4	Doors open. C-weighted level affected by music from V4 at times.
V7 GF	4 m from entrance	77.3	85.8	No music within venue. Music from adjacent venue and upper floor audible.
V8 UF	3-4 m from entrance	74.6	87.4	Music from upstairs audible. A-weighted levels dominated by people/street noise.
V14	3 m from entrance	77.1	99.1	Music from inside audible and tends to dominate noise from queuing patrons. A-weighted levels influenced by street noise.
V15	3 m from entrance	79.4	89.8	Music from within venue. Not as much bass as others. Patron noise and street noise influenced overall A-weighted levels.
V19	3 m from entrance	75.1	100.2	Bass from venue audible. Some intermittent noise and voices from people queuing influenced A-weighted level.

Venue ID	Measurement Location	A-Weighted Level	C-Weighted Level	Comments
V22	By side entrance (3 m from entry)	76.5	100.0	Entry door suspected left open. Bass from venue audible. Intermittent street noise but A-weighted levels dominated by music.
V22f	1-2 m from external facade	83.5	107.3	Bass from venue audible. A and C-weighted levels dominated by music.
V23	3 m from facade, opposite band.	86.7	99.0	Band playing against east wall. All glazing closed including entry door.
V25e	3 m from east entrance	78.4	87.3	Entry door open. Street noise influenced A-weighted levels.
V25s	3 m from south operable wall	83.3	102.5	Operable wall to dance floor slightly open (20-30%).
V26	4 m from south facade	86.6	97.5	Music seem to come from side of building or ventilation grille next to entry door
V27	4 m from entrance	75.9	88.7	Music local fast food shop audible but music from venue not audible. Noise from patrons queuing.
V30	3 m from south door	67.8	79.4	Music in outdoor area via small wall mounted Pas. Break out via plastic blinds.
V32	1 m from outdoor beer garden wall	76.3	88.3	Music in outdoor beer garden, not many patrons.
V33	3 m from boundary	73.5	80.3	Outdoor beer garden empty. Music from upstairs.
V37 UF	3 m from facade near entrance	84.1	90.2	Wall mounted PA for queue
Night 2 – Started 17th August 2019				
V1	4m from entry doors	80.3	86.8	Doors open. Music audible above background.
V2	3 m from entrance	79.5	90.4	Music from within venue audible. Music generally dominates noise levels.
V3n	Edge of beer garden, northern end	75.5	85.3	Music and patrons in beer garden. Street noise influenced levels.
V3s	Edge of beer garden, southern end	75.2	83.6	
V4	3 m from entrance	83.5	95.0	Band playing inside. Music dominates. Intermittent extraneous street noise.
V5w	2 m from entrance	81.3	93.3	Band playing in V4 audible at times.
V5s	1.5m from outdoor area to south	89.2	97.9	Open outdoor area with PAs.

Venue ID	Measurement Location	A-Weighted Level	C-Weighted Level	Comments
V7 GF	4 m from entrance	82.4	92.0	Small band within venue audible at times. Crowd on street dominates overall levels.
V11b	1 m from Roe Street boundary	72.6	88.3	Music from within building audible. Occasional extraneous street noise (cars, pedestrians).
V11g	1 m from gate (mid-way along Roe Street)	81.6	94.6	Live band playing within marquee. A-weighted levels influenced by street noise and patrons.
V11w	3-4 m from roller door	78.4	94.1	Music from within building audible. Background noise otherwise low..
V16	In alfresco area 3 m from entrance	79.8	85.4	Patrons in alfresco and wall mounted PAs.
V19	3 m from entrance	84.1	100.9	Bass from venue audible. Crowd noise from people queuing influenced A-weighted level.
V22	By side entrance (3 m from entry)	78.2	95.7	Bass audible and dominating overall levels. Some noise from people queuing. Intermittent traffic on Aberdeen Street.
V22f	1-2 m from external facade	76.3	99.1	Bass from venue audible. A and C-weighted levels dominated by music. Vehicular and pedestrian traffic on Aberdeen Street.
V23	3m from facade, opposite band.	88.7	94.7	No band, DJ instead. Entry door and servery hatch open. Street noise influenced A-weighted levels.
V25e	3m from east entrance	84.8	90.9	Entry door open. Street noise influenced A-weighted levels.
V25s	3 m from south operable wall	89.5	103.8	Operable wall to dance floor slightly open (20-30%).
V26	2 m from open door/ventilation grille	85.6	98.3	Music from venue audible. Break out music from V25 also audible at times.
V30	3m from south door	69.6	81.7	Music in outdoor area via small wall mounted Pas. Break out via plastic blinds.
V32	1 m from outdoor beer garden wall	83.1	91.7	Music and people noise in beer garden.
V33bg	Beer Garden Boundary	82.0	87.2	Noise from crowd outside. Some music audible above background.
V33	3 m from entrance	81.2	87.3	Noise from crowd outside. Music audible above background dominates overall levels. Intermittent street noise.

Venue ID	Measurement Location	A-Weighted Level	C-Weighted Level	Comments
V37 UF	2 m from open door	79.6	90.3	Noise from crowd of patrons from other venue in street influenced A-weighted levels. Some music from venue audible background.
Night 3 – Started 23rd August 2019				
V1	4m from entry doors	79.9	92.2	Music audible through open doors. Some music (high freq.) from "Young Joes" across the road.
V2	3 m from entrance	81.5	93.2	Music from venue dominates but music from V1 somewhat audible at times
V3n	Edge of beer garden, northern end	70.2	83.9	Music and patrons in beer garden but music at relatively low level. Street noise and music from pizza bar nearby influenced overall levels.
V4	3 m from entrance	76.3	96.7	Music and queuing patrons noise.
V5w	2 m from entrance	82.5	98.2	Entry door open closed halfway during measurement. Noise levels drop by approximately 10 dB(A) and 4 dB(C).
V5s	1.5m from outdoor area to south	86.9	100.5	Outdoor DJ under marquee.
V7 GF	4 m from entrance	80.0	93.0	Music and patron noise but relatively high background from pedestrian traffic. Music from upstairs seems to dominate.
V12	Near north-west entrance	76.1	81.6	Doors open and band playing audible. Noise from patrons too.
V14s	3m from back wall	66.5	85.4	Music audible. Some from V15 but low frequency from V14.
V15	At south entrance	76.1	90.4	Music audible as well as patrons.
V19	3 m from facade	77.8	102.8	as patrons
V22	1 m from door in middle of facade	76.8	101.5	Music audible over traffic.
V24	3m from door	79.0	93.6	No music from venue audible. Music from V24 dominates.
V23	3m from facade	88.4	98.4	Music from venue dominates.
V25s	3-4m from door	88.1	98.8	Operable doors open and music clearly audible.
V25e	Under verandah	78.4	89.2	Music from venue not always audible. Music levels at this location dominated by V23.

Venue ID	Measurement Location	A-Weighted Level	C-Weighted Level	Comments
V26	4 m from south facade	88.1	97.4	Music clearly audible. Some traffic noise also contributing to A-weighted levels.
V32	1 m from outdoor beer garden wall	78.6	98.4	DJ music in beer garden. PA system outside.
V34	Near south entrance	< 70 (music only)	< 80	Operable walls closed. Patrons outside. Levels influenced by local traffic noise but music audible when entry door open.
V35w	1m from west facade	70.8	81.9	Small speaker playing music. Dominates over local background.
V38e	Laneway East End	73.9	86.3	Music from venue patrons in Alfresco audible. Low frequency music from other venue.
V38w	Laneway West End	78.2	84.9	Music and patron noise at venue audible. Low frequency music from other venue also audible.
V40	At entrance	< 70	< 80	Patrons waiting outside. Some music from within audible but not dominating. Distant pedestrian and vehicular traffic also present.
V41	2 m from outdoor area	82.2	85.1	Noise from patrons dominates. No other sources audible.
Night 4 – Started 24th August 2019				
V1	Entry doors	77.1	87.0	Music from venue dominates
V2	Entry doors	78.2	90.1	Doors and bi-folds open. Music from venue dominates.
V4	Near closed door further up entrance	81.0	97.1	Music and people queuing noise.
V5s	By fence	86.1	96.7	Music and patron noise from venue dominate.
V6	In car park, midway of facade, 2 m from facade	66.9	89.1	No music from venue audible. Bass from V4 audible.
V12nw	By entrance	79.2	86.8	Band inside audible. Doors closed most of the time.
V12w	By windows	82.1	89.7	Band inside audible.
V14	By entrance	75.0	91.9	Front door open. Music audible. Street noise influenced A-weighted levels.
V23	3m from facade, opposite band.	87.3	96.6	Band playing. Music from venue dominates.

Venue ID	Measurement Location	A-Weighted Level	C-Weighted Level	Comments
V24	3m from facade, opposite entrance.	81.5	98.7	No music from venue audible. Music from V23 dominates
V25e	3m from east entrance	81.7	92.1	Door open, music audible from venue but music from V23 also present.
V25s	3 m from south operable wall	82.3	101.9	Doors open. Music audible.
V27	Near entry	81.6	90.4	Music from venue breaking out through open doors. Patron noise in queue dominates A-weighted levels.
V32	Beer garden	77.4	92.0	DJ music clearly audible. Pedestrian traffic also contributed to A-weighted levels.
V33	Near south west entrance	75.4	89.8	Music from venue audible. Street noise also influenced A-weighted levels.
V34	By entry doors	75.5	88.8	Music audible through opened doors. A-weighted levels dominated by door personnel talking.
V35	By entrance (Aberdeen Street side)	74.4	84.1	Low frequency beat faintly audible above background. Local vehicular and pedestrian traffic otherwise dominates.
V36 UF	By entry	82.1	97.0	Music from upper balcony audible but not sure whether from V36UF or V7. Street noise influenced A-weighted levels.
V37 UF	Near speaker	78.5	90.8	Music from outdoor speaker at entry.
V38e	Alleyway east end	71.2	86.2	Music from venue audible.
V42	2 m from entrance	85.3	99.3	Music audible and dominating. Entry door open.
V7GF	4 m from entrance	80.8	91.2	Traffic and pedestrian noise. Music from within/above audible.
V19	3 m from entrance	77.7	95.0	Music from venue and patrons queuing.

3.2 Residential Locations Statistical Levels

As part of the data analysis significant extraneous noise sources such as loud vehicles or people shouting on the streets, were first excluded from the measurement data recorded at each location, where considered necessary. The remaining 1-second L_{eq} data was then post-processed to obtain the L_{10}, L_{90} adn L_{eq} levels. The overall A- and C-weighted statistical levels are summarised in *Table 3-2.*

The tabulated 1/3 and 1/1 octave band Z-weighted L_{10}, L_{90} and L_{eq} levels are shown in *Appendix D* and *Appendix E* respectively. *Appendix F* then also presents this data graphically.

From the data collected and observations on site, the following can be noted:

- Both A- and C- weighted noise levels can fluctuate from one night to the next. This is to be expected given noise levels will vary depending on the type of music on the night, patron numbers and whether any external glazing is kept closed or not.
- The most exposed sensitive premises are R4 and R7 with C-weighted noise levels up to 91-92 dB L_{eq}.
- Mechanical plant noise was also found to be present at relatively high levels near receivers R1 and R10, and that plant noise influenced the A-weighted noise levels.

It is also noted that all noise levels were recorded 1.5 metres above at ground level and therefore, elevated receivers such as R1 or R7 are potentially subjected to higher noise levels, in particular C-weighed levels, given that less shielding from adjacent buildings would occur.

Table 3-2 Residential Noise Levels, dB

Location	A-Weighted Level			C-Weighted Level			Comments
	L_{eq}	L_{10}	L_{90}	L_{eq}	L_{10}	L_{90}	
Night 1 - Started 16th August 2019							
R2	73.1	75.2	70.2	79.7	81.2	77.7	Music from V33 audible. Local and pedestrian traffic also influenced levels.
R4n	72.4	74.5	69.7	84.9	86.5	82.3	Music from V23 audible. Local traffic and pedestrian noise also contributed to A-weighted levels.
R4w	72.7	74.3	69.7	84.1	85.6	82.7	Music from V25 faintly audible. Music from V23 dominates.
R5	71.3	74.2	66.6	83.1	85.1	80.5	Low frequency beat audible, possibly from V26. Street noise also prominent
R7	56.4	59.1	53.4	73.4	76.2	68.7	Music from V32 audible. A-weighted levels influenced by traffic noise.
Night 2 - Started 17th August 2019							
R1n	71.4	74.3	65.8	78.4	80.2	75.9	Music from V16 audible. Patrons in alfresco dominate levels.

Location	A-Weighted Level			C-Weighted Level			Comments
	L_{eq}	L_{10}	L_{90}	L_{eq}	L_{10}	L_{90}	
R3	71.6	72.9	70.0	83.7	86.0	80.0	Music from V33 and patrons.
R7	76.2	78.0	72.4	88.7	91.4	83.7	Music and patrons from V33 audible and dominating. Music from V32 audible at times.
R8s (car park entry near V11)	65.0	66.1	63.7	78.2	80.9	75.6	Music from V11 building audible. Otherwise low background.
R9	76.0	78.1	73.4	85.9	87.5	83.4	Music from V38 audible. Local traffic and pedestrians dominate A-weighted levels.
MRA1 (by gate)	75.1	77.2	71.8	88.3	89.8	86.1	Music from band under marquee dominates
Night 3 - Started 23rd August 2019							
R4n	75.3	77.5	72.3	88.9	90.7	86.1	Music from V23 dominates. Local traffic and pedestrians.
R4s	68.5	70.8	65.1	81.7	83.2	79.8	Mostly traffic including pedestrians. No music from venues audible.
R4w	75.7	77.4	73.4	87.3	89.2	83.6	Music audible above background, with band at V23 dominating. Local pedestrian and vehicular traffic influenced levels.
R6	64.1	67.6	57.0	75.5	77.8	70.3	Patrons at entrance. Music not audible despite entry door open. Local pedestrian and vehicular traffic dominated.
R7	68.7	70.7	66.1	87.1	90.1	83.4	Music audible. Background reasonably low.
R8w	68.3	70.9	62.7	78.5	80.9	75.1	Some patron noise from beer garden. Local pedestrian and vehicular traffic significantly contributed.
R9	70.4	71.9	68.4	81.8	83.0	79.9	Noise from V25 dominates.
R10	61.0	64.1	56.9	74.3	76.8	71.3	Music barely audible. Mechanical plant from venue and local traffic dominate background.
R11	65.7	68.5	57.5	75.1	76.7	71.5	Band playing in V12 but not audible. Patron noise in beer garden audible at times but traffic noise dominant.

Location	A-Weighted Level			C-Weighted Level			Comments
	L_{eq}	L_{10}	L_{90}	L_{eq}	L_{10}	L_{90}	
Night 4 - Started 24th August 2019							
R1e (end of alleyway to south)	66.7	68.8	63.8	76.2	77.6	74.2	Mechanical plant noise nearby but music audible.
R1w (corner with Mountain Tce)	60.7	62.4	58.4	79.7	82.7	75.5	Local traffic and street noise. Music faintly audible, possibly V4 or V5.
R2	70.0	71.7	67.8	84.4	86.8	80.7	Low frequency music from venue still audible. Pedestrian and vehicular traffic also present.
R4n	76.1	77.5	73.9	91.2	93.3	84.8	Music from V25 dominates but music from V23 also audible at times.
R4s	69.3	71.5	66.2	84.6	86.1	82.2	Mostly traffic including pedestrians. No music from venues audible.
R4w	76.2	78.2	73.2	90.1	91.9	85.1	Music from V23 dominates. Local traffic and pedestrians.
R5	75.9	78.8	71.0	90.9	93.0	87.7	Mostly traffic and pedestrians. Some music faintly audible.
R6	65.7	68.0	60.7	80.7	83.0	76.1	Mostly traffic and pedestrian noise. Bass faintly audible.
R7	72.3	74.5	67.8	91.9	95.7	83.9	Music from V33 audible and dominates.
R8e	63.6	65.7	61.4	80.5	82.6	77.5	Mostly traffic and pedestrians. Some music faintly audible possibly from V14.
R8w	68.6	71.2	64.3	77.3	79.2	75.3	Mostly traffic and pedestrians. Some patron noise from V12.
R9	68.6	70.1	67.0	82.7	84.7	79.9	Mostly traffic and pedestrians. Some music faintly audible, possibly from V25.
R10	60.6	61.8	59.2	79.3	81.1	76.6	Mechanical plant at back of V34. Music from V33 faintly audible.
R11	60.1	62.5	57.2	75.1	77.4	72.7	Mostly traffic noise and people on street. Band at V12 faintly audible at times
R12	72.5	74.1	70.5	86.5	88.4	83.3	Music from V33 audible and dominates

Appendix A

Tabulated Venue Spectra (1/3 Octave Band)

Night 1 Tabulated Levels (1/3 Octave Bands)

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	25 31.5 40	50 63 80	100 125 160	200 250 315	400 500 630	800 1k 1.25k	1.6k 2k 2.5k	3.15k 4k 5k	6.3k 8k 10k		
V1	65.8	90.9	79.1	72.8	77.7	71.4	66.2	58.7	54.6	*79.9*	91.4
	66.5	79.9	72.6	67.9	75.0	67.9	60.3	59.6	54.0		
	75.7	78.3	72.0	76.5	74.0	65.8	55.7	61.0	50.0		
V2	61.0	88.2	80.3	66.9	65.4	66.0	56.1	45.3	40.0	*72.6*	89.9
	64.5	81.8	73.7	64.5	63.7	64.2	52.0	44.1	36.6		
	75.7	83.0	68.2	66.9	64.6	60.4	48.5	47.7	34.7		
V4	69.3	86.7	76.6	64.6	67.8	68.7	56.6	47.2	39.0	*76.0*	93.3
	76.3	91.9	67.1	62.9	71.9	67.1	51.0	45.0	36.1		
	75.8	85.7	67.7	62.4	70.4	64.1	49.0	46.0	33.6		
V5s	63.6	82.0	79.3	80.2	78.0	79.5	73.1	64.8	59.3	*85.9*	92.0
	69.3	80.7	77.6	75.8	79.0	78.0	67.6	63.7	57.1		
	82.8	85.5	81.4	75.6	79.4	77.0	61.8	60.0	54.1		
V5w	63.2	92.9	79.0	73.5	72.7	78.6	71.8	62.7	58.8	*84.1*	94.4
	70.6	89.3	76.5	69.7	74.9	79.0	66.1	60.7	56.2		
	80.8	79.6	75.9	70.0	76.6	73.8	60.4	59.3	51.6		
V7 GF	67.9	81.5	76.0	69.8	69.4	70.5	65.7	56.3	47.9	*77.3*	85.8
	68.0	77.2	73.8	69.1	71.8	68.2	60.8	55.6	43.6		
	75.0	76.3	72.6	66.4	70.7	67.7	56.3	55.5	40.8		
V8 UF	68.2	84.8	75.4	69.1	67.8	67.4	59.3	46.8	41.8	*74.6*	87.4
	68.0	78.3	75.4	69.8	68.4	66.6	53.3	47.1	39.4		
	79.3	78.1	73.7	65.0	68.4	62.9	50.8	49.0	36.6		
V14	71.1	98.2	78.4	66.2	69.9	70.7	59.8	48.6	41.1	*77.1*	99.1
	75.6	86.0	79.9	66.0	68.4	69.3	53.7	46.0	38.5		
	96.0	81.5	71.6	68.8	69.3	64.8	52.3	47.6	36.0		

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	25 31.5 40	50 63 80	100 125 160	200 250 315	400 500 630	800 1k 1.25k	1.6k 2k 2.5k	3.15k 4k 5k	6.3k 8k 10k		
V15	69.8	87.1	73.7	72.6	71.7	74.0	64.4	53.2	45.4	*79.4*	89.8
	76.7	81.4	72.7	71.2	72.2	72.6	59.0	51.3	43.2		
	84.4	78.2	70.7	72.0	73.1	68.1	57.2	51.2	39.7		
V19	63.7	99.3	82.5	65.4	63.9	66.7	55.9	46.7	37.8	*75.1*	100.2
	72.0	88.4	68.6	66.1	65.1	64.5	49.9	45.3	33.3		
	96.3	87.5	65.8	62.2	68.0	61.5	48.0	47.9	32.0		
V22	61.4	99.1	87.1	74.2	66.5	64.5	54.0	40.8	42.4	*76.5*	100.0
	67.1	95.2	83.0	67.5	63.9	62.8	50.6	44.0	43.1		
	77.1	86.5	77.7	65.7	62.4	58.8	44.4	45.2	39.7		
V22f	68.8	103.9	92.1	79.7	72.7	71.1	61.1	52.5	53.3	*83.5*	107.3
	72.6	105.3	84.6	76.9	70.8	67.4	58.1	52.9	50.3		
	88.9	95.7	83.4	75.0	71.4	63.2	54.6	57.2	48.8		
V23	71.9	95.4	80.9	82.3	82.8	74.3	73.9	67.7	60.9	*86.7*	99.0
	75.2	83.2	86.1	81.1	82.2	73.7	67.3	68.8	57.9		
	97.0	84.1	83.3	81.9	81.1	76.1	64.1	66.4	54.7		
V25e	69.0	84.3	75.3	71.6	69.2	70.4	69.5	60.8	52.7	*78.4*	87.3
	71.2	77.5	73.2	70.6	70.5	69.4	62.9	61.3	52.3		
	79.5	77.5	71.1	69.0	70.7	69.4	58.4	56.5	44.8		
V25s	69.8	103.3	84.3	74.2	76.1	76.0	70.1	63.8	53.7	*83.3*	102.5
	68.8	92.1	79.0	77.0	74.2	72.9	65.7	61.0	52.1		
	83.9	81.8	77.5	79.8	76.4	72.2	60.7	57.6	47.9		
V26	71.9	93.4	85.5	76.8	77.6	77.2	74.6	69.7	58.5	*86.6*	97.5
	70.2	90.9	81.8	75.6	77.5	76.6	69.5	70.3	51.9		
	80.5	92.8	79.1	80.4	82.3	77.6	67.9	65.4	46.8		

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	25 31.5 40	50 63 80	100 125 160	200 250 315	400 500 630	800 1k 1.25k	1.6k 2k 2.5k	3.15k 4k 5k	6.3k 8k 10k		
V27	72.0	83.4	73.6	67.9	67.2	68.6	65.4	56.8	45.8	*75.9*	88.7
	69.7	78.2	72.3	66.4	70.0	66.5	60.0	53.9	43.1		
	87.7	76.7	69.0	66.1	70.0	66.4	55.4	50.1	41.3		
V30	65.6	72.8	70.6	67.0	59.6	58.9	55.7	49.3	41.9	*67.8*	79.4
	64.9	71.6	68.9	63.5	60.1	57.9	50.6	50.3	39.5		
	66.3	71.8	69.1	60.2	60.1	57.5	45.4	48.3	34.1		
V32	53.6	84.4	76.3	69.4	68.9	66.8	59.6	51.1	51.7	*76.3*	88.3
	56.5	82.0	69.4	75.3	70.1	69.0	52.6	54.1	46.8		
	76.7	81.8	69.7	74.1	69.1	62.2	47.0	52.9	41.6		
V33	66.8	70.2	64.1	60.5	61.1	67.9	57.6	49.9	50.6	*73.5*	80.3
	65.3	70.3	72.0	60.8	65.6	66.7	52.5	53.5	46.9		
	70.0	72.7	70.9	59.8	68.5	63.0	50.9	55.1	44.4		
V37 UF	69.3	81.5	77.9	76.5	75.1	77.4	72.4	61.3	53.2	*84.1*	90.2
	74.0	82.7	80.3	71.9	79.2	74.1	67.3	60.3	50.4		
	78.9	79.0	79.9	70.1	79.7	73.8	62.7	56.2	45.0		

Notes: All levels presented above are Z-weighted

Night 2 Tabulated Levels (1/3 Octave Bands)

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	25	50	100	200	400	800	1.6k	3.15k	6.3k		
	31.5	63	125	250	500	1k	2k	4k	8k		
	40	80	160	315	630	1.25k	2.5k	5k	10k		
V1	69.8	83.3	74.1	69.6	72.8	73.9	68.0	56.9	48.3	*80.3*	86.8
	68.7	77.5	69.4	72.3	75.9	69.9	61.3	56.6	48.6		
	73.7	75.3	67.5	73.7	74.8	70.1	56.7	52.4	49.4		
V2	70.4	84.6	80.7	69.6	70.7	74.6	63.5	51.3	51.3	*79.5*	90.4
	69.4	86.1	75.5	66.6	72.4	72.7	59.0	55.0	50.5		
	76.6	83.2	75.4	74.1	71.6	68.6	53.6	56.9	48.6		
V3n	68.7	80.0	73.5	70.1	67.3	68.4	63.5	54.4	43.2	*75.5*	85.3
	68.8	78.3	76.7	67.1	71.0	64.9	58.1	52.9	40.9		
	72.8	76.1	73.4	65.3	70.1	63.2	54.6	48.7	36.2		
V3s	73.6	77.2	73.5	64.2	65.4	69.3	62.3	48.2	41.5	*75.2*	83.6
	70.9	77.0	68.4	64.4	69.0	67.2	56.0	47.3	36.2		
	73.4	76.5	65.2	64.0	68.9	67.1	49.6	46.7	36.6		
V4	75.4	88.3	86.3	80.6	75.9	76.8	67.2	58.5	53.5	*83.5*	95.0
	76.0	88.9	84.9	79.8	75.3	74.8	62.5	56.7	51.9		
	85.5	85.6	82.9	79.2	75.8	72.2	59.4	60.2	49.9		
V5e	76.9	90.6	83.5	77.5	73.1	73.6	69.3	59.6	48.5	*81.3*	93.3
	74.6	86.4	77.0	75.1	76.3	71.9	62.8	57.6	47.1		
	81.6	83.2	79.0	73.4	74.6	70.9	59.2	53.2	42.7		
V5s	68.0	95.6	89.7	76.5	74.3	81.4	76.6	67.4	61.6	*89.2*	97.9
	70.6	89.4	84.3	74.7	77.9	84.4	71.0	66.6	56.2		
	85.0	87.0	80.6	74.9	80.1	82.3	66.4	62.2	50.9		
V7 GF	71.9	88.9	74.8	71.8	72.6	75.7	71.6	61.5	49.1	*82.4*	92.0
	77.2	79.3	76.3	70.7	75.5	74.3	66.0	59.8	47.3		
	89.4	76.5	74.0	69.5	76.3	74.2	61.1	54.8	43.5		

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	25	50	100	200	400	800	1.6k	3.15k	6.3k		
	31.5	63	125	250	500	1k	2k	4k	8k		
	40	80	160	315	630	1.25k	2.5k	5k	10k		
V11b	72.1	80.3	77.9	71.9	63.1	63.1	55.7	43.5	35.9	*72.6*	88.3
	71.2	85.5	75.0	70.4	62.5	64.3	50.1	40.0	35.3		
	74.4	79.7	76.6	68.2	60.8	61.5	45.0	40.2	34.7		
V11g	71.7	86.3	86.1	80.6	73.8	74.9	64.4	54.6	46.5	*81.6*	94.6
	70.6	88.5	85.0	79.6	73.3	73.1	58.4	50.9	43.9		
	81.1	89.1	81.5	75.8	71.0	70.5	56.8	52.1	40.1		
V11w	65.1	87.7	88.8	79.5	65.2	67.5	64.6	53.7	43.6	*78.4*	94.1
	67.5	83.1	86.3	73.2	65.4	67.5	57.9	51.9	42.0		
	83.0	86.5	83.3	68.8	65.9	67.5	53.2	47.0	39.9		
V16	68.6	78.3	67.3	68.1	70.4	71.7	70.6	60.1	50.4	*79.8*	85.4
	67.3	70.8	68.1	69.9	72.2	72.1	65.0	59.6	48.2		
	81.8	76.4	68.8	70.0	72.6	71.8	60.8	55.5	45.3		
V19	72.3	99.5	81.8	72.4	73.6	75.4	71.3	64.7	51.4	*84.1*	100.9
	77.7	92.3	78.5	74.9	80.5	75.2	64.3	60.9	50.6		
	96.9	88.4	73.0	73.2	77.4	75.1	64.4	59.1	43.7		
V22	60.4	94.3	87.5	73.8	68.4	70.4	61.3	50.6	40.1	*78.2*	95.7
	64.8	89.3	81.8	64.4	70.2	70.3	56.6	48.3	36.2		
	73.7	83.7	78.8	66.1	69.9	67.3	51.9	49.3	35.5		
V22f	67.2	100.1	85.5	77.3	65.2	65.0	60.1	50.1	46.0	*76.3*	99.7
	70.4	91.3	75.6	66.0	66.0	63.0	54.3	48.9	48.5		
	80.4	85.4	76.5	64.8	67.4	62.4	50.4	47.0	40.2		
V23	71.0	78.2	87.0	75.6	77.7	81.2	78.4	67.7	57.4	*88.7*	94.7
	68.9	86.8	85.7	77.8	82.0	80.1	72.4	65.8	54.1		
	70.6	87.9	80.2	76.6	82.8	80.9	68.3	61.7	48.6		

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	25	50	100	200	400	800	1.6k	3.15k	6.3k		
	31.5	63	125	250	500	1k	2k	4k	8k		
	40	80	160	315	630	1.25k	2.5k	5k	10k		
V25e	69.3	83.2	81.1	75.6	76.5	77.2	73.6	65.3	58.5	*84.8*	90.9
	66.8	81.7	80.6	75.9	79.1	75.4	67.8	62.6	57.9		
	71.8	82.2	78.9	77.3	79.2	75.1	65.6	59.0	54.8		
V25s	72.6	103.2	92.6	82.6	82.8	81.2	76.8	69.2	62.0	*89.5*	103.8
	76.8	95.6	85.5	81.2	82.1	79.7	69.7	68.2	62.6		
	89.2	92.0	82.7	82.8	85.5	78.2	67.3	64.7	60.0		
V26	73.7	96.8	87.1	74.5	76.4	79.5	70.3	55.0	48.1	*85.6*	98.3
	78.4	91.1	83.4	76.5	77.9	79.8	65.6	54.4	44.6		
	87.1	87.7	78.3	75.0	78.7	75.6	59.1	55.4	41.9		
V30	73.4	74.8	67.9	69.2	62.2	61.5	57.4	49.3	38.4	*69.6*	81.7
	77.9	75.3	67.7	66.7	62.3	60.1	50.9	47.8	37.0		
	70.2	70.9	66.2	61.8	62.0	60.3	47.3	44.0	31.4		
V32	67.5	85.4	81.5	78.6	78.1	75.6	71.2	62.4	57.5	*83.1*	91.7
	65.7	82.7	80.4	75.8	76.7	75.0	65.9	62.6	53.6		
	73.5	85.4	81.5	73.2	75.0	72.3	59.7	61.2	48.0		
V33bg	74.9	77.6	74.2	71.3	72.1	77.2	66.1	52.8	43.3	*82.0*	87.2
	70.4	81.8	75.6	70.7	75.6	75.4	59.9	49.0	40.6		
	73.9	73.5	71.0	69.6	76.4	71.3	55.5	50.3	39.7		
V33	71.2	76.7	82.5	68.9	72.8	74.6	66.0	53.9	48.8	*81.2*	87.3
	71.1	79.0	74.4	68.5	75.2	74.6	66.2	53.5	46.6		
	71.9	75.4	71.1	67.8	73.8	72.7	62.2	54.9	44.8		
V37UF	66.3	85.0	72.8	70.1	71.7	73.7	64.9	51.0	42.4	*79.9*	90.3
	73.5	80.1	72.9	69.0	73.9	73.0	59.7	49.2	41.4		
	89.0	77.6	70.2	69.4	74.8	69.7	54.8	47.8	38.4		

Notes: All levels presented above are Z-weighted

Night 3 Tabulated Levels (1/3 Octave Bands)

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	25	50	100	200	400	800	1.6k	3.15k	6.3k		
	31.5	63	125	250	500	1k	2k	4k	8k		
	40	80	160	315	630	1.25k	2.5k	5k	10k		
V1	60.8	83.7	85.3	74.8	68.2	65.4	56.2	48.6	46.2	*75.7*	92.2
	64.9	84.4	77.9	69.3	66.4	65.1	50.4	49.4	45.1		
	76.3	88.9	76.3	69.5	68.6	62.8	47.0	47.8	39.6		
V2	62.1	85.3	83.2	76.7	73.6	74.5	60.5	54.9	57.8	*80.7*	93.2
	66.8	86.7	79.3	73.6	71.8	70.0	54.9	59.0	55.5		
	77.1	89.7	74.7	77.3	74.3	71.7	57.5	60.9	49.9		
V3n	67.3	81.4	71.9	66.2	60.1	62.0	47.5	40.0	45.3	*68.2*	83.9
	68.0	77.2	68.5	60.4	61.6	58.7	43.1	44.8	40.7		
	75.3	75.6	69.9	60.1	62.2	52.5	42.4	46.4	37.7		
V4	71.6	96.9	79.3	67.9	64.7	65.6	57.1	47.7	38.1	*74.0*	96.7
	73.2	89.1	71.6	65.7	65.6	64.3	52.9	46.8	38.5		
	84.3	82.5	66.8	63.6	67.4	61.1	49.7	43.3	43.8		
V5s	68.6	91.0	93.6	77.2	71.6	75.9	69.5	51.5	48.1	*85.8*	100.5
	74.7	93.2	90.6	79.5	75.2	78.3	62.6	50.2	47.0		
	84.3	95.5	91.5	79.7	78.3	73.9	55.9	49.5	43.8		
V5w	67.5	95.3	82.5	77.5	75.4	75.7	62.2	54.0	46.3	*81.9*	98.2
	82.2	93.4	80.3	74.3	75.9	73.2	58.4	54.5	43.4		
	91.0	89.6	76.6	72.5	76.7	67.8	56.9	53.5	41.4		
V7GF	74.8	88.8	82.7	72.7	67.2	72.3	61.1	51.9	46.1	*78.2*	93.0
	78.3	86.4	80.9	75.6	70.3	69.7	54.8	51.7	41.2		
	79.6	87.2	78.1	70.6	70.7	65.8	55.4	51.5	37.6		
V12	68.1	71.5	66.5	68.9	65.6	70.2	63.8	52.6	43.7	*76.1*	81.6
	67.5	70.1	66.9	66.8	67.3	68.9	59.8	50.7	43.1		
	77.1	69.4	69.8	67.5	69.5	67.3	55.4	47.0	38.8		

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	25	50	100	200	400	800	1.6k	3.15k	6.3k		
	31.5	63	125	250	500	1k	2k	4k	8k		
	40	80	160	315	630	1.25k	2.5k	5k	10k		
V14s	63.2	84.9	69.7	61.6	57.0	58.8	50.5	41.8	31.0	*66.0*	85.4
	64.6	78.2	65.7	60.7	58.5	56.6	46.5	40.8	33.3		
	77.7	69.2	64.6	58.7	59.1	55.0	42.8	36.1	25.4		
V15s	66.3	90.2	68.3	68.8	63.9	69.9	59.4	52.5	40.3	*75.0*	90.4
	74.4	78.3	68.8	68.6	68.9	66.6	55.4	47.1	41.3		
	84.4	69.0	67.8	64.8	69.6	63.0	56.0	44.2	38.1		
V19	64.2	102.8	81.1	68.0	64.8	69.3	55.7	47.6	40.6	*77.8*	102.8
	71.2	97.0	76.0	66.5	68.6	66.1	48.5	48.2	37.8		
	90.7	84.5	69.0	62.9	71.1	61.0	50.8	47.6	35.4		
V22	65.3	99.6	78.6	69.6	69.1	65.7	55.0	53.8	51.0	*76.8*	101.5
	69.4	99.3	73.4	65.4	69.3	61.5	55.9	55.4	53.1		
	83.6	85.3	72.9	66.2	63.9	56.2	49.3	52.4	49.6		
V23	71.1	94.4	84.7	83.3	82.4	78.6	71.9	62.5	60.8	*87.6*	98.4
	75.4	87.7	79.4	82.6	84.9	78.2	66.3	64.1	58.4		
	95.1	87.4	81.7	80.4	80.3	76.0	63.1	65.8	56.6		
V24	72.3	93.1	78.6	76.3	71.4	69.2	60.5	50.7	42.9	*78.0*	93.6
	73.5	83.4	74.8	75.8	72.4	68.7	55.1	51.4	41.3		
	84.9	80.6	73.2	73.4	71.8	65.7	51.1	50.3	36.5		
V25e	63.9	87.3	76.2	74.4	69.1	69.0	60.2	50.3	43.2	*76.5*	89.2
	66.7	81.1	75.9	70.6	70.9	68.1	54.9	49.6	41.6		
	80.9	78.2	74.3	70.6	70.2	65.6	51.3	48.1	37.6		
V25s	67.8	94.9	88.8	78.8	77.4	77.1	64.9	58.1	53.6	*83.8*	98.8
	74.2	92.8	87.9	78.2	76.2	74.6	59.8	56.5	53.9		
	85.2	92.0	79.8	77.6	77.7	70.0	56.6	55.7	47.5		

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	25	50	100	200	400	800	1.6k	3.15k	6.3k		
	31.5	63	125	250	500	1k	2k	4k	8k		
	40	80	160	315	630	1.25k	2.5k	5k	10k		
V26	73.2	93.4	89.2	79.6	77.1	78.3	66.5	58.6	54.2	*84.5*	97.4
	74.7	87.1	85.0	78.6	76.6	77.9	61.5	60.0	51.1		
	92.9	87.7	81.7	75.0	77.9	72.6	59.7	60.0	46.4		
V32	59.5	95.5	88.2	74.3	66.0	67.4	57.7	50.5	48.2	*78.2*	98.4
	63.6	93.3	79.3	75.5	66.4	67.5	53.2	54.3	44.2		
	72.7	92.1	79.8	73.7	68.3	62.4	48.9	53.4	41.2		
V35w	75.9	73.3	75.6	64.3	64.0	61.9	55.9	48.3	46.0	*70.5*	81.9
	69.7	72.7	72.4	59.5	60.5	63.8	52.5	48.8	44.7		
	69.3	74.4	68.4	64.0	63.8	59.3	53.1	46.8	42.1		
V38	70.9	82.1	77.6	70.4	65.4	68.3	55.4	46.0	38.6	*73.7*	86.3
	67.3	79.4	70.9	68.1	67.2	64.6	50.7	44.9	36.3		
	76.1	79.3	70.1	64.4	69.0	59.4	49.5	43.4	34.8		
V38e	64.5	79.2	73.9	69.5	67.1	69.8	60.9	51.0	43.3	*75.9*	84.9
	64.1	78.8	71.8	65.3	68.6	68.2	56.6	50.6	43.2		
	71.0	78.7	69.3	65.5	71.7	65.6	52.6	48.3	38.6		
V41	62.7	69.6	67.1	72.2	71.8	77.6	68.6	60.1	44.8	*82.2*	85.1
	66.7	72.1	67.9	72.7	74.8	73.6	64.9	57.6	44.1		
	67.7	73.7	69.4	71.5	76.7	72.4	62.2	50.8	40.3		

Night 4 Tabulated Levels (1/3 Octave Bands)

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	25	50	100	200	400	800	1.6k	3.15k	6.3k		
	31.5	63	125	250	500	1k	2k	4k	8k		
	40	80	160	315	630	1.25k	2.5k	5k	10k		
V1	67.3	77.8	75.5	71.8	75.3	67.3	57.7	51.1	46.7	*77.1*	87.0
	72.4	77.6	73.1	71.9	72.9	63.7	52.0	51.0	45.8		
	73.3	83.2	70.7	76.0	69.3	62.7	47.7	49.1	37.4		
V2	70.8	83.2	77.5	71.6	73.5	71.2	64.6	54.4	51.0	*78.1*	90.1
	68.9	85.1	80.1	69.2	69.6	69.6	59.0	56.6	48.9		
	78.7	83.3	78.7	69.5	70.7	67.5	54.7	58.0	44.9		
V4	75.3	90.4	76.6	69.3	69.1	73.8	63.5	54.2	43.5	*79.9*	97.1
	72.2	95.8	73.6	67.9	72.8	71.2	57.2	51.5	40.7		
	83.4	89.5	69.5	67.5	75.0	69.5	55.6	49.6	37.7		
V5s	65.1	95.1	84.9	79.3	70.3	77.7	65.5	54.7	49.7	*83.2*	96.7
	81.4	83.9	85.8	75.8	74.6	76.8	61.3	47.7	49.1		
	89.6	85.8	82.4	74.5	76.5	70.9	57.5	47.7	44.9		
V6	66.3	87.1	71.4	61.6	58.1	58.3	51.2	37.9	24.9	*66.8*	89.1
	66.9	84.1	67.7	58.7	59.0	56.2	43.7	36.6	21.2		
	83.1	77.7	63.5	57.1	59.3	55.0	39.2	32.7	14.9		
V7GF	70.4	86.4	79.1	69.8	67.0	71.0	56.6	45.2	36.8	*76.0*	91.2
	72.5	80.0	75.4	69.0	70.1	65.7	50.7	41.2	35.0		
	89.9	79.4	72.3	65.9	71.6	62.3	48.9	40.7	29.4		
V12nw	66.2	84.5	76.2	72.5	72.3	70.4	65.1	54.1	43.6	*77.8*	86.8
	70.2	75.7	71.9	72.5	71.2	68.6	58.8	51.1	42.3		
	75.0	75.5	71.4	71.2	72.0	67.4	55.2	46.9	41.6		
V12w	66.4	77.0	82.0	82.3	74.6	72.9	66.3	55.7	50.4	*81.4*	89.7
	66.1	77.8	77.1	81.7	73.8	71.5	60.4	55.0	48.5		
	72.0	80.4	77.4	75.7	74.7	69.6	56.7	55.0	45.3		

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	25	50	100	200	400	800	1.6k	3.15k	6.3k		
	31.5	63	125	250	500	1k	2k	4k	8k		
	40	80	160	315	630	1.25k	2.5k	5k	10k		
V14	72.4	88.0	78.7	69.9	65.4	67.4	60.1	49.7	40.5	*74.4*	91.9
	78.6	85.9	80.1	64.7	65.5	66.4	54.9	47.6	38.4		
	87.7	81.1	71.2	65.1	66.7	63.9	49.9	45.8	33.7		
V19	67.2	91.4	82.1	72.1	66.2	70.0	58.8	44.5	32.6	*76.8*	95.0
	76.0	91.4	76.7	68.5	71.5	67.7	52.6	40.1	30.6		
	87.5	84.7	76.1	62.4	70.4	64.4	49.4	38.4	25.6		
V23	71.6	92.3	87.2	83.0	77.8	76.1	70.3	60.0	56.9	*85.3*	96.6
	72.7	88.7	84.2	81.3	78.0	78.6	63.2	62.9	52.7		
	88.2	87.7	83.6	78.5	76.7	76.2	60.1	61.0	47.3		
V24	68.4	97.5	82.7	79.9	75.4	72.1	62.2	51.9	41.4	*80.3*	98.7
	70.5	90.3	77.0	77.1	72.9	69.1	57.7	49.8	38.7		
	93.0	87.3	79.2	76.9	72.7	66.9	52.6	46.5	35.5		
V25s	72.0	96.1	87.2	75.8	73.2	73.2	62.9	53.7	42.7	*81.3*	101.9
	71.2	100.6	84.8	72.7	70.6	70.8	58.9	51.1	40.4		
	82.7	93.3	80.0	74.3	72.5	67.7	54.0	48.5	39.3		
V25e	66.7	90.4	79.5	76.2	73.2	74.7	65.3	55.2	41.7	*80.7*	92.1
	66.9	84.0	75.9	74.1	74.3	72.4	61.1	51.5	39.8		
	82.1	82.0	75.6	74.2	74.7	69.6	57.0	48.7	37.2		
V27UF	70.5	87.7	75.3	70.1	72.5	75.9	67.6	58.0	46.3	*81.5*	90.4
	74.0	81.8	81.5	71.8	73.3	74.8	62.0	54.8	45.1		
	81.8	78.2	71.2	72.0	75.6	71.9	58.9	52.2	42.4		
V32	70.3	84.9	83.7	75.8	67.0	69.3	64.6	55.2	43.1	*77.3*	92.0
	73.4	86.0	81.3	71.2	68.5	68.3	59.8	53.1	39.5		
	83.2	85.9	78.7	67.5	68.7	66.0	58.2	47.3	35.7		

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	25	50	100	200	400	800	1.6k	3.15k	6.3k		
	31.5	63	125	250	500	1k	2k	4k	8k		
	40	80	160	315	630	1.25k	2.5k	5k	10k		
V33	69.8	87.4	72.4	67.7	67.4	68.5	59.8	49.7	43.5	*74.5*	89.8
	73.4	79.3	76.7	66.1	63.1	67.4	54.3	48.2	41.4		
	86.8	74.3	71.9	67.4	66.6	62.9	49.4	46.7	39.0		
V34	76.2	87.3	73.5	67.5	66.3	68.1	62.6	52.7	46.7	*75.2*	88.8
	74.3	81.5	75.4	64.5	68.6	66.9	56.4	49.5	45.3		
	78.1	78.8	72.8	64.3	69.2	65.7	55.6	48.3	40.9		
V35	66.7	79.6	69.0	64.2	64.6	66.9	59.3	49.9	48.0	*73.1*	84.1
	71.6	78.5	66.5	63.3	65.4	66.7	53.6	47.9	43.3		
	71.9	78.4	64.2	63.9	66.1	63.4	50.8	46.3	38.3		
V36UF	70.2	92.2	77.5	71.4	70.4	73.8	65.6	54.2	45.4	*79.7*	97.0
	85.4	81.4	77.7	72.9	72.4	71.8	60.6	53.5	43.4		
	96.7	76.8	73.7	69.7	73.5	70.1	55.7	50.4	38.4		
V37UF	68.0	81.4	74.2	69.1	68.3	70.7	63.7	65.5	61.7	*77.4*	90.8
	70.4	76.0	74.8	72.0	67.9	69.5	61.4	62.4	52.2		
	91.5	72.0	66.9	70.4	67.9	66.8	58.1	59.1	49.9		
V38e	66.7	81.3	79.4	66.6	61.3	62.5	56.4	46.3	39.7	*70.3*	86.2
	74.8	79.9	72.8	63.9	61.4	62.2	51.6	43.5	42.7		
	76.7	78.9	66.4	62.6	62.3	59.5	47.0	42.5	37.4		
V42	73.3	96.3	91.3	75.1	73.7	73.1	65.9	59.1	47.7	*82.1*	99.3
	70.2	92.4	88.4	77.1	72.0	74.0	62.0	56.0	43.7		
	90.3	90.0	77.2	74.8	70.7	71.9	57.8	50.7	38.8		

Appendix B

Tabulated Venue Spectra (1/1 Octave Band)

Venue	Octave Band Centre Frequency (Hz)									A	C
	31.5	63	125	250	500	1k	2k	4k	8k		
Night 1 – Started 16th August 2019											
V1	76.6	91.4	80.6	78.4	80.6	73.8	67.5	64.6	58.1	*79.9*	91.4
V2	76.2	90.0	81.4	71.0	69.4	68.9	58.0	50.7	42.4	*72.6*	89.9
V4	79.5	93.8	77.5	68.2	75.1	71.8	58.2	50.9	41.6	*76.0*	93.3
V5s	83.0	88.0	84.5	82.5	83.6	83.1	74.4	68.0	62.1	*85.9*	92.0
V5w	81.3	94.6	82.1	76.2	79.8	82.5	73.1	65.9	61.2	*84.1*	94.4
V7 GF	76.4	83.7	79.1	73.4	75.5	73.8	67.3	60.6	49.8	*77.3*	85.8
V8 UF	79.9	86.4	79.7	73.2	73.0	70.8	60.7	52.5	44.5	*74.6*	87.4
V14	96.1	98.5	82.6	72.0	74.0	73.7	61.3	52.3	43.8	*77.1*	99.1
V15	85.2	88.6	77.3	76.7	77.1	77.0	66.1	56.8	48.1	*79.4*	89.8
V19	96.3	99.9	82.8	69.6	70.8	69.5	57.4	51.5	39.9	*75.1*	100.2
V22	77.6	100.8	88.9	75.5	69.4	67.4	55.9	48.5	46.7	*76.5*	100.0
V22f	89.0	107.9	93.3	82.4	76.5	73.1	63.5	59.5	56.0	*83.5*	107.3
V23	97.0	95.9	88.7	86.6	86.9	79.6	75.1	72.5	63.3	*86.7*	99.0
V25e	80.4	85.8	78.3	75.3	75.0	74.5	70.6	64.8	55.9	*78.4*	87.3
V25s	84.2	103.6	86.1	82.4	80.4	78.8	71.8	66.3	56.6	*83.3*	102.5
V26	81.4	97.3	87.7	82.9	84.5	81.9	76.4	73.7	59.6	*86.6*	97.5
V27	87.9	85.2	76.8	71.6	74.0	72.1	66.8	59.2	48.6	*75.9*	88.7
V30	70.4	76.9	74.4	69.2	64.7	62.9	57.2	54.1	44.3	*67.8*	79.4
V32	76.8	87.7	77.8	78.3	74.2	71.6	60.6	57.6	53.2	*76.3*	88.3
V33	72.6	76.0	74.9	65.2	70.8	71.1	59.4	58.1	52.8	*73.5*	80.3
V37 UF	80.5	86.1	84.3	78.5	83.2	80.2	73.9	64.5	55.4	*84.1*	90.2

Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	31.5	63	125	250	500	1k	2k	4k	8k		
Night 2 – Started 17th August 2019											
V1	76.1	84.8	76.0	76.9	79.5	76.5	69.1	60.5	53.6	*80.3*	86.8
V2	78.2	89.6	82.7	76.0	76.4	77.4	65.1	59.7	55.0	*79.5*	90.4
V3n	75.3	83.2	79.6	72.7	74.5	70.8	65.0	57.4	45.7	*75.5*	85.3
V3s	77.6	81.7	75.1	69.0	72.8	72.8	63.4	52.2	43.6	*75.2*	83.6
V4	86.3	92.6	89.7	84.7	80.4	79.8	69.0	63.5	56.8	*83.5*	95.0
V5w	83.5	92.5	85.5	80.4	79.6	77.1	70.5	62.3	51.5	*81.3*	93.3
V5s	85.2	97.0	91.2	80.2	82.8	87.7	78.0	70.7	63.0	*89.2*	97.9
V7 GF	89.7	89.6	79.9	75.5	79.8	79.6	72.9	64.3	52.0	*0.0*	0.0
V11b	77.6	87.4	81.4	75.2	67.0	67.9	57.0	46.3	40.1	*72.6*	88.3
V11g	81.9	92.9	89.4	83.9	77.6	78.0	65.9	57.6	49.0	*81.6*	94.6
V11w	83.2	90.9	91.5	80.7	70.3	72.3	65.7	56.4	46.9	*78.4*	94.1
V16	82.1	80.9	72.9	74.2	76.6	76.6	72.0	63.6	53.2	*79.8*	85.4
V19	97.0	100.5	83.8	78.4	82.8	80.0	72.8	67.0	54.4	*84.1*	100.9
V22	74.4	95.8	89.0	74.9	74.3	74.3	62.9	54.3	42.5	*78.2*	95.7
V22f	81.0	100.8	86.4	77.8	71.1	68.4	61.5	53.6	50.8	*76.3*	99.7
V23	75.0	90.6	89.9	81.5	86.1	85.5	79.7	70.5	59.4	*88.7*	94.7
V25e	74.5	87.2	85.1	81.1	83.2	80.8	75.1	67.8	62.1	*84.8*	90.9
V25s	89.5	104.2	93.7	87.0	88.5	84.6	78.0	72.5	66.4	*89.5*	103.8
V26	87.8	98.2	89.0	80.2	82.5	83.4	71.8	59.7	50.4	*85.6*	98.3
V30	79.7	78.8	72.1	71.6	66.9	65.4	58.6	52.3	41.2	*69.6*	81.7
V32	75.0	89.4	85.9	81.2	81.6	79.3	72.6	66.9	59.3	*83.1*	91.7
V33bg	78.2	83.6	78.8	75.4	79.8	80.0	67.3	55.8	46.3	*82.0*	87.2
V33	76.2	82.1	83.4	73.2	78.8	78.8	69.9	58.9	51.8	*81.2*	87.3
V37 UF	89.1	86.8	76.9	74.3	78.4	77.2	66.4	54.3	45.8	*79.9*	90.3

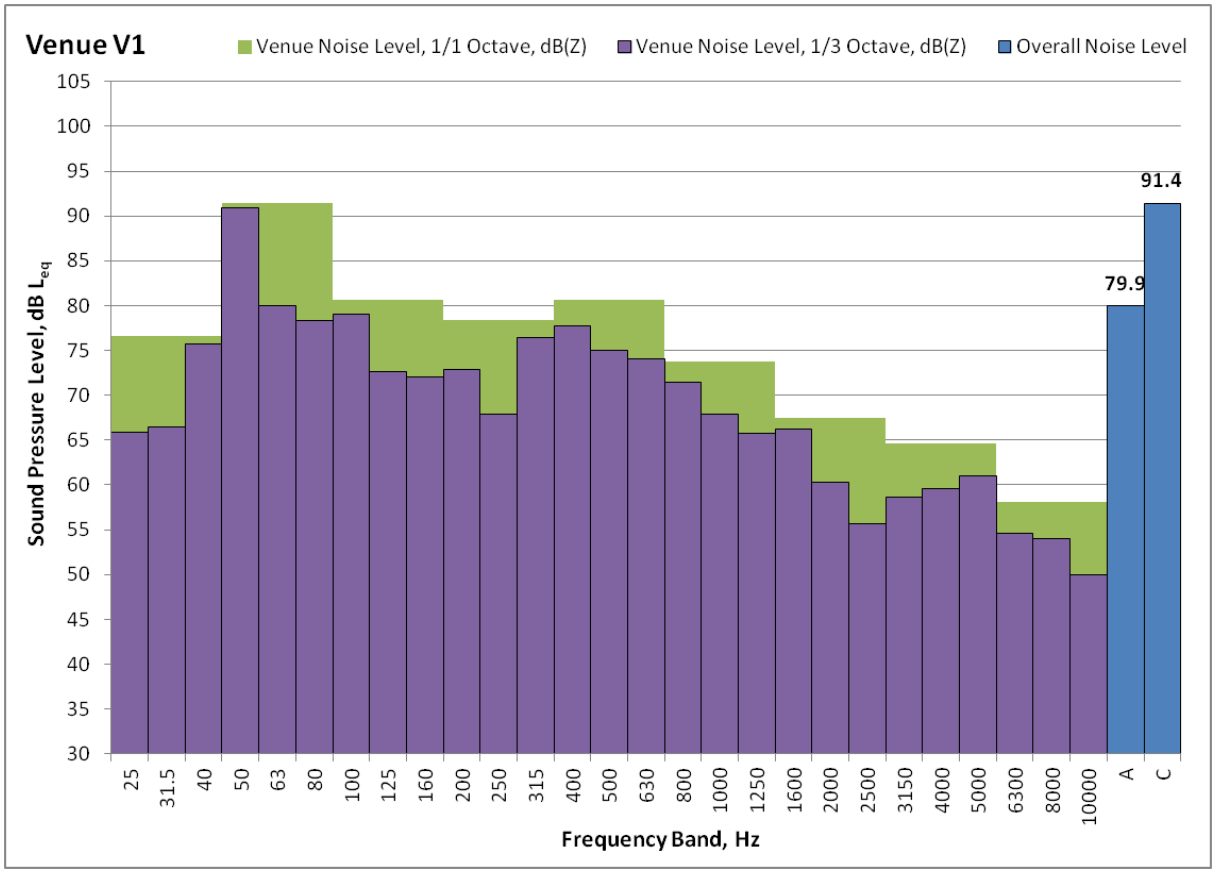
Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	31.5	63	125	250	500	1k	2k	4k	8k		
Night 3 – Started 23rd August 2019											
V1	76.7	91.1	86.5	76.8	72.6	69.3	57.6	53.4	49.2	*75.7*	92.2
V2	77.6	92.4	85.1	80.9	78.1	77.2	63.0	63.7	60.2	*80.7*	93.2
V3n	76.6	83.6	75.1	68.0	66.2	64.0	49.7	49.2	47.1	*68.2*	83.9
V4	84.8	97.7	80.2	70.9	70.8	68.8	59.0	51.1	45.7	*74.0*	96.7
V5s	84.9	98.4	96.9	83.7	80.6	81.2	70.5	55.3	51.4	*85.8*	100.5
V5w	91.6	98.1	85.2	80.0	80.8	78.1	64.5	58.8	48.9	*81.9*	98.2
V7GF	82.8	92.4	85.7	78.2	74.4	74.8	62.9	56.5	47.8	*78.2*	93.0
V12	78.0	75.2	72.8	72.6	72.5	73.7	65.7	55.4	47.1	*76.1*	81.6
V14s	78.1	85.8	72.0	65.3	63.1	61.9	52.5	44.9	35.7	*66.0*	85.4
V15s	84.9	90.5	73.1	72.5	72.9	72.1	62.1	54.1	44.9	*75.0*	90.4
V19	90.8	103.9	82.5	71.0	73.6	71.4	57.5	52.6	43.2	*77.8*	102.8
V22	83.8	102.5	80.6	72.2	72.8	67.4	59.0	58.8	56.2	*76.8*	101.5
V23	95.2	95.9	87.2	87.0	87.7	82.5	73.4	69.1	63.7	*87.6*	98.4
V24	85.4	93.8	80.9	80.1	76.7	72.9	62.0	55.6	45.7	*78.0*	93.6
V25s	85.6	98.2	91.7	83.0	81.9	79.5	66.5	61.7	57.2	*83.8*	98.8
V25e	81.1	88.6	80.3	77.0	74.9	72.6	61.7	54.2	46.1	*76.5*	89.2
V26	93.0	95.2	91.1	82.9	82.0	81.7	68.3	64.4	56.4	*84.5*	97.4
V32	73.4	98.6	89.2	79.3	71.8	71.1	59.4	57.8	50.2	*78.2*	98.4
V35w	77.5	78.3	77.8	67.8	67.8	66.8	58.9	52.8	49.3	*70.5*	81.9
V38	77.7	85.2	79.0	73.0	72.2	70.2	57.4	49.7	41.6	*73.7*	86.3
V38e	72.5	83.7	76.8	72.0	74.3	73.0	62.7	54.9	46.9	*75.9*	84.9
V41	70.9	76.9	73.0	76.9	79.6	79.9	70.8	62.4	48.2	*82.2*	85.1

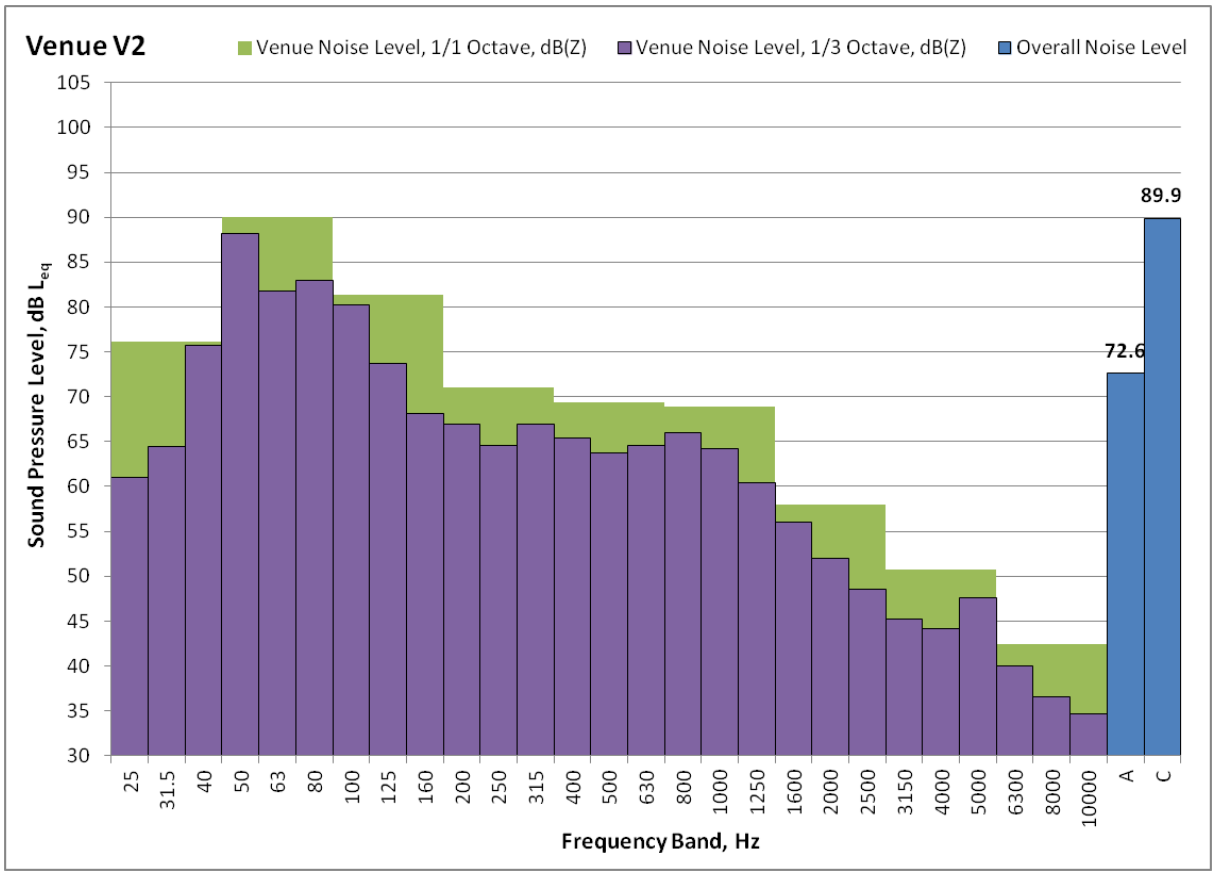
Venue	One-third Octave Band Centre Frequency (Hz)									A	C
	31.5	63	125	250	500	1k	2k	4k	8k		
Night 4 – Started 24th August 2019											
V1	76.4	85.1	78.3	78.5	77.9	69.8	59.1	55.3	49.6	*77.1*	87.0
V2	79.7	88.7	83.7	75.0	76.4	74.5	66.0	61.3	53.7	*78.1*	90.1
V4	84.3	97.6	78.9	73.1	77.7	76.6	65.0	57.0	46.0	*79.9*	97.1
V5s	90.2	95.9	89.4	81.8	79.3	80.8	67.4	56.2	53.1	*83.2*	96.7
V6	83.3	89.2	73.4	64.3	63.6	61.5	52.1	41.0	26.7	*66.8*	89.1
V7GF	90.0	87.9	81.2	73.3	74.7	72.6	58.1	47.6	39.5	*76.0*	91.2
V12nw	76.7	85.5	78.5	76.9	76.6	73.7	66.4	56.4	47.4	*77.8*	86.8
V12w	73.9	83.4	84.2	85.5	79.2	76.3	67.7	60.0	53.3	*81.4*	89.7
V14	88.3	90.6	82.8	72.0	70.7	70.9	61.6	52.8	43.1	*74.4*	91.9
V19	87.8	94.9	84.0	74.0	74.7	72.7	60.1	46.6	35.2	*76.8*	95.0
V23	88.4	94.8	90.1	86.1	82.3	81.9	71.4	66.2	58.6	*85.3*	96.6
V24	93.0	98.6	85.0	83.0	78.6	74.7	63.9	54.7	43.9	*80.3*	98.7
V25e	82.3	91.8	82.2	79.7	78.9	77.5	67.1	57.4	44.7	*80.7*	92.1
V25s	83.3	102.5	89.7	79.2	77.0	75.9	64.7	56.4	45.8	*81.3*	101.9
V27UF	82.7	89.1	82.7	76.2	78.8	79.3	69.1	60.4	49.7	*81.5*	90.4
V32	83.8	90.4	86.5	77.5	72.9	72.8	66.5	57.7	45.2	*77.3*	92.0
V33	87.1	88.2	79.0	71.9	70.8	71.6	61.2	53.1	46.4	*74.5*	89.8
V34	81.2	88.8	78.8	70.5	73.0	71.8	64.2	55.4	49.7	*75.2*	88.8
V35	75.4	83.6	71.8	68.6	70.2	70.7	60.8	53.1	49.6	*73.1*	84.1
V36UF	97.0	92.7	81.4	76.3	77.1	76.9	67.1	57.8	48.0	*79.7*	97.0
V37UF	91.6	82.9	77.9	75.4	72.8	74.1	66.4	67.9	62.4	*77.4*	90.8
V38e	79.1	84.9	80.4	69.5	66.5	66.4	58.0	49.2	45.2	*70.3*	86.2
V42	90.4	98.5	93.2	80.6	77.1	77.9	67.8	61.2	49.5	*82.1*	99.3

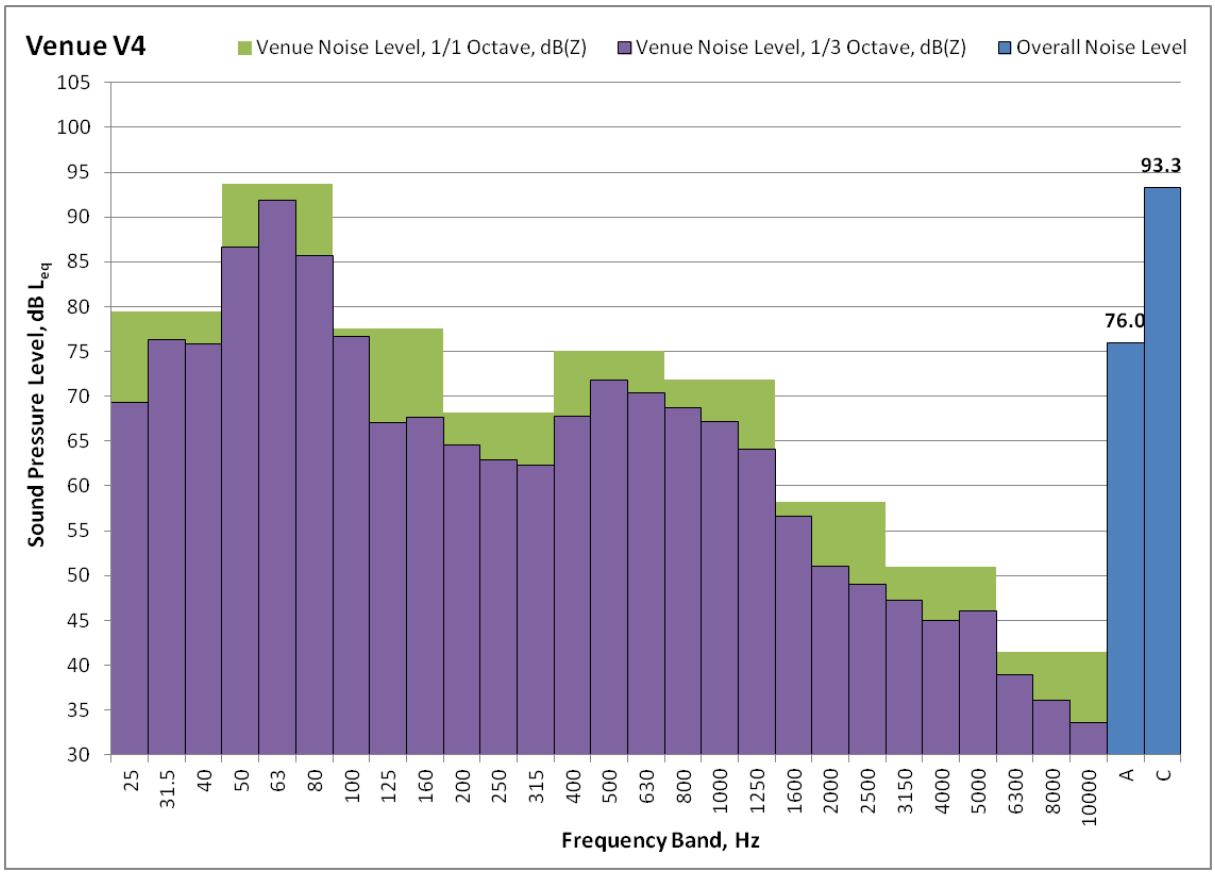
Appendix C

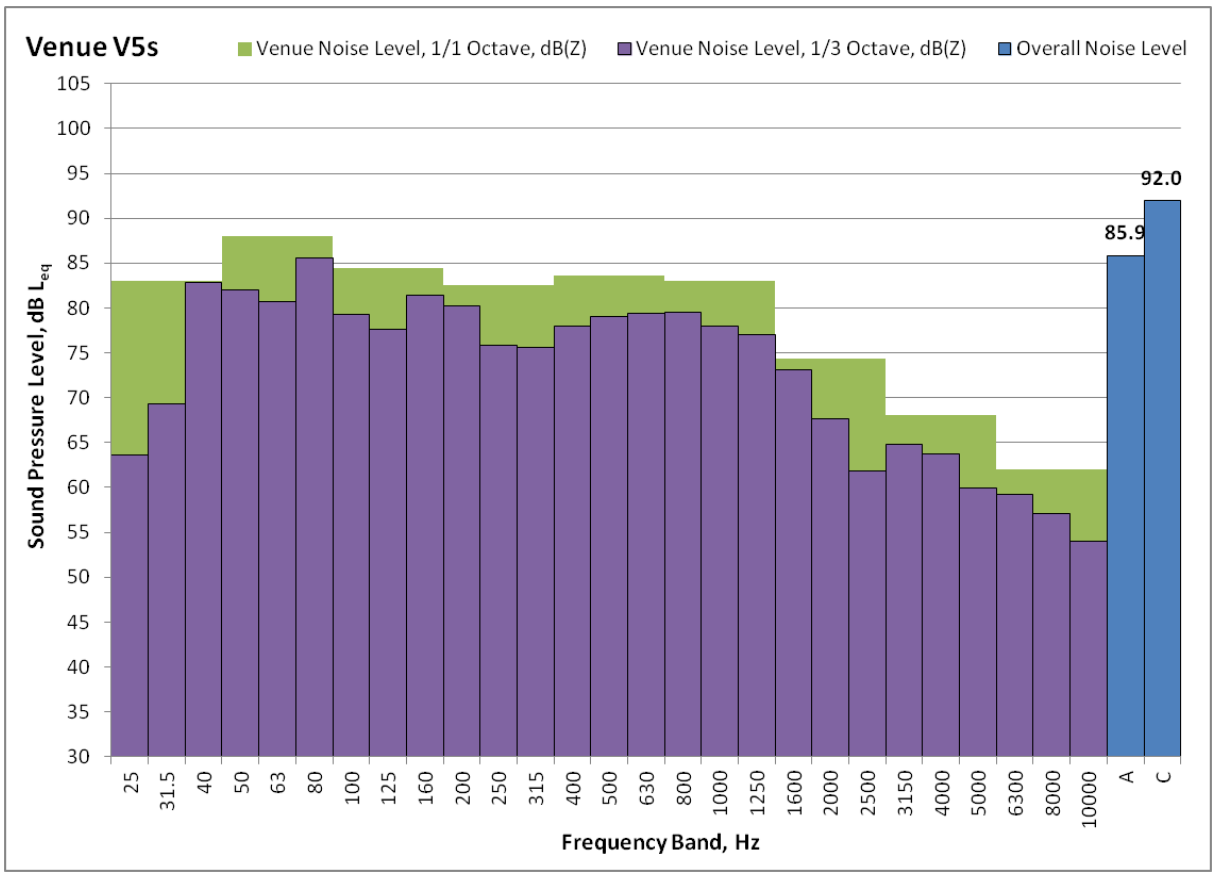
Plots of Venue Spectra

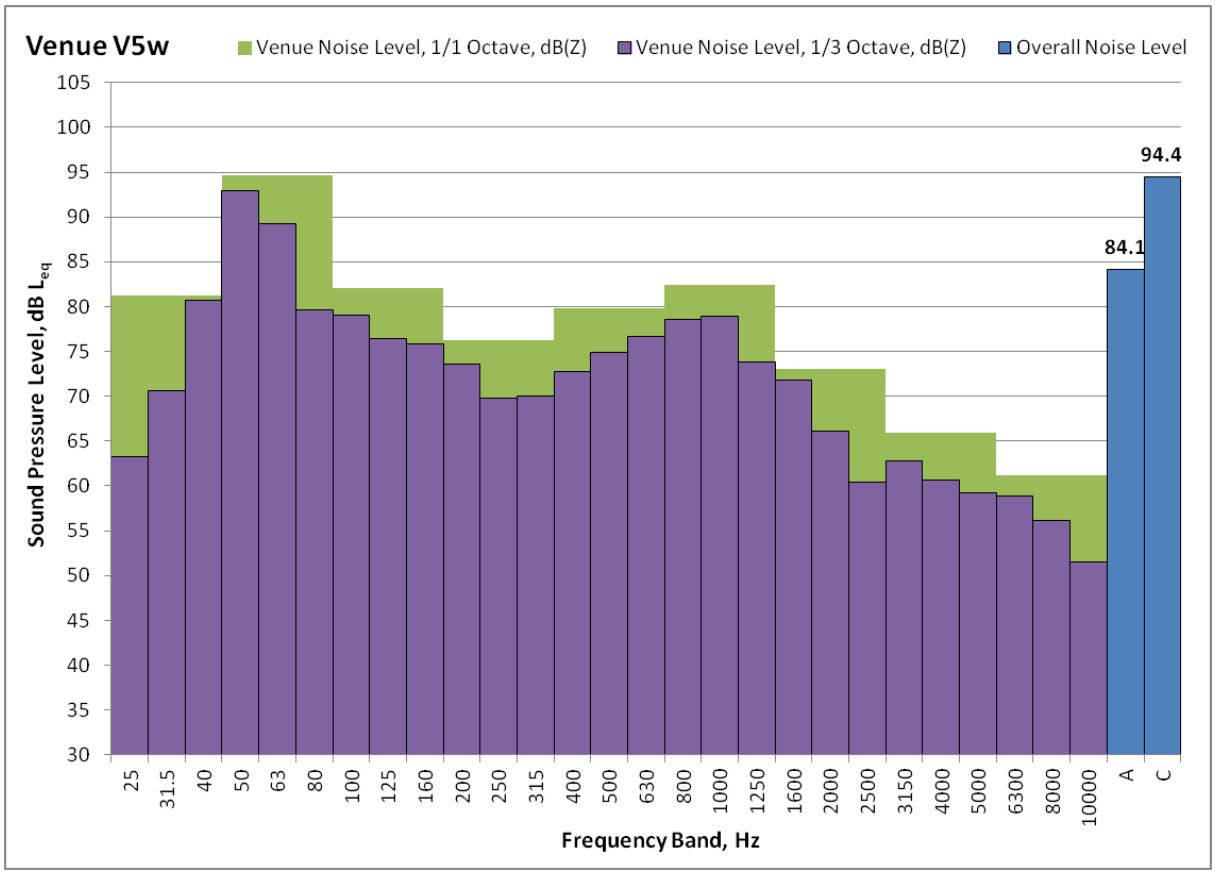
Night 1 Plots

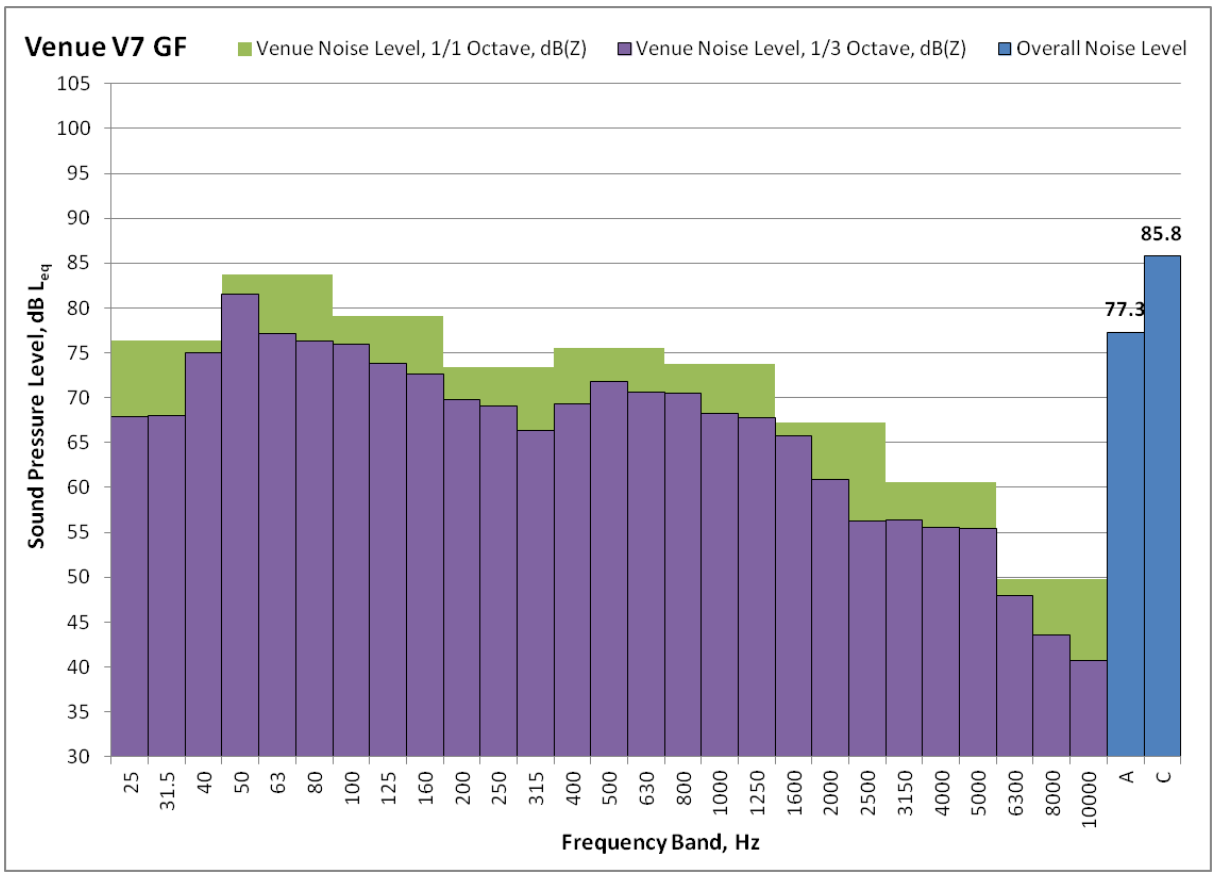


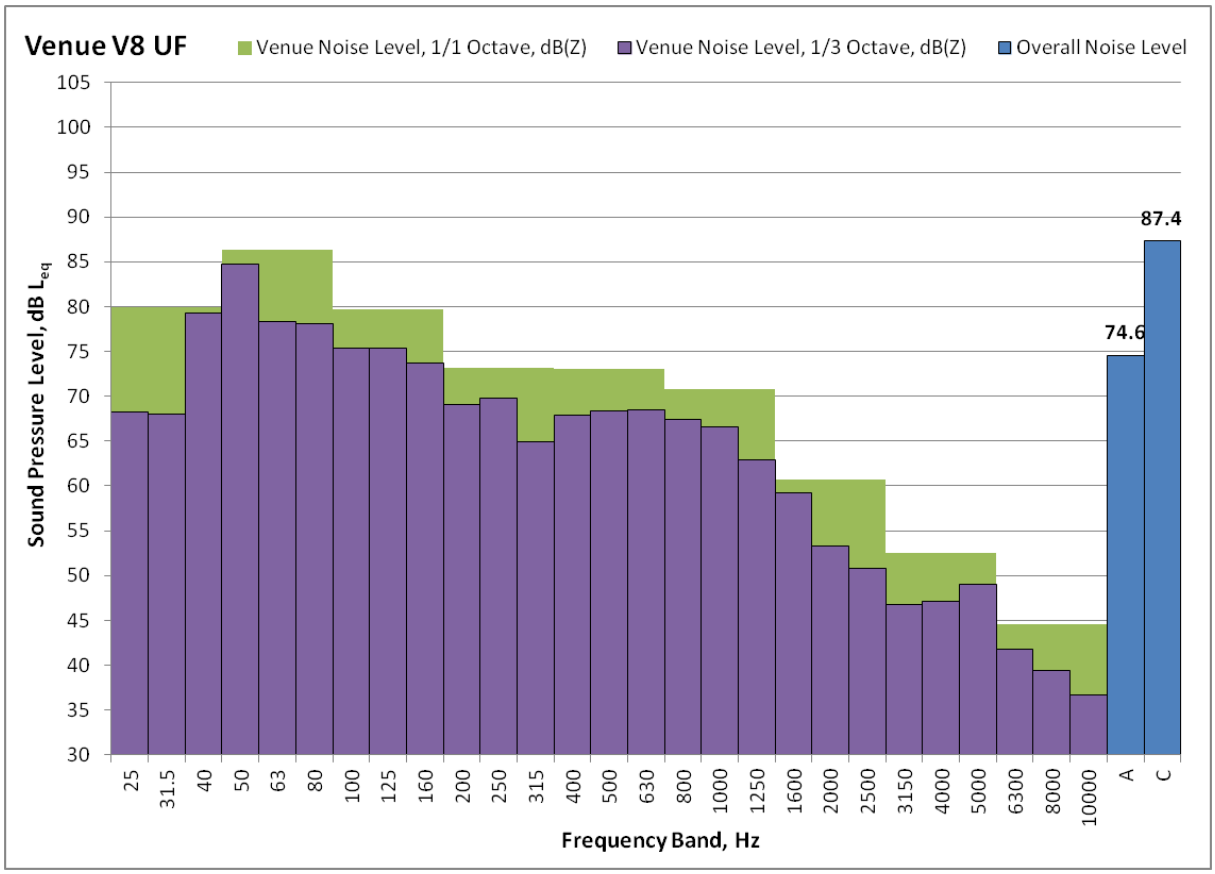


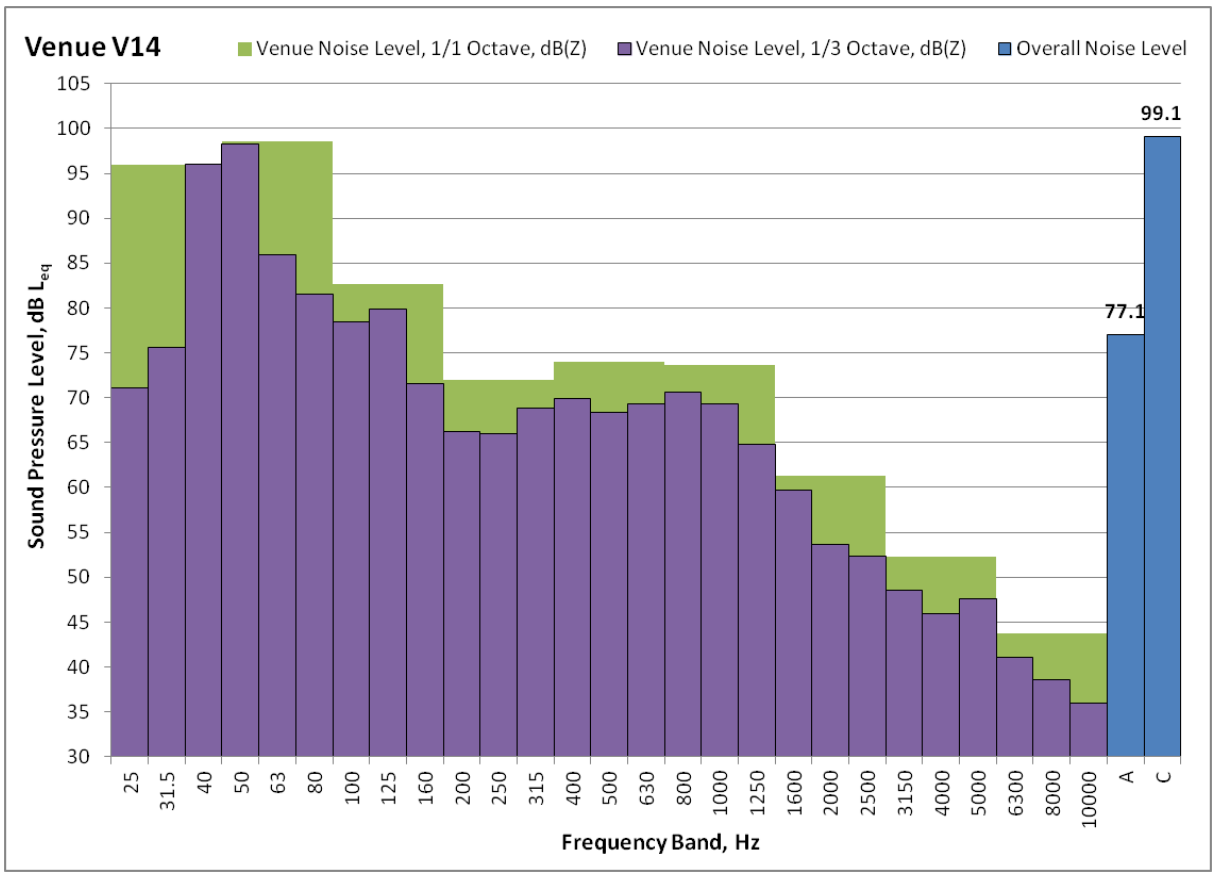

Venue V4
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
93.3
76.0
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

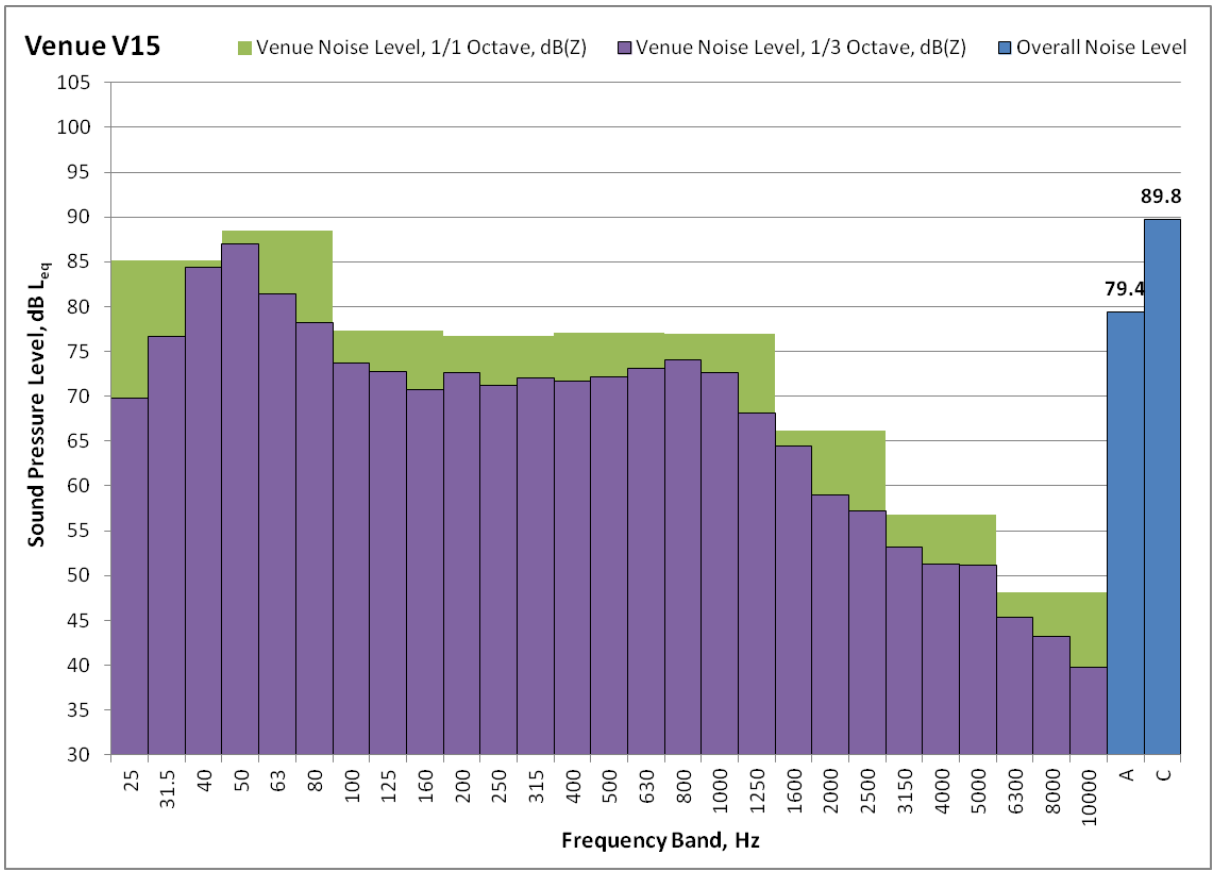

Venue V5s
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
92.0
85.9
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

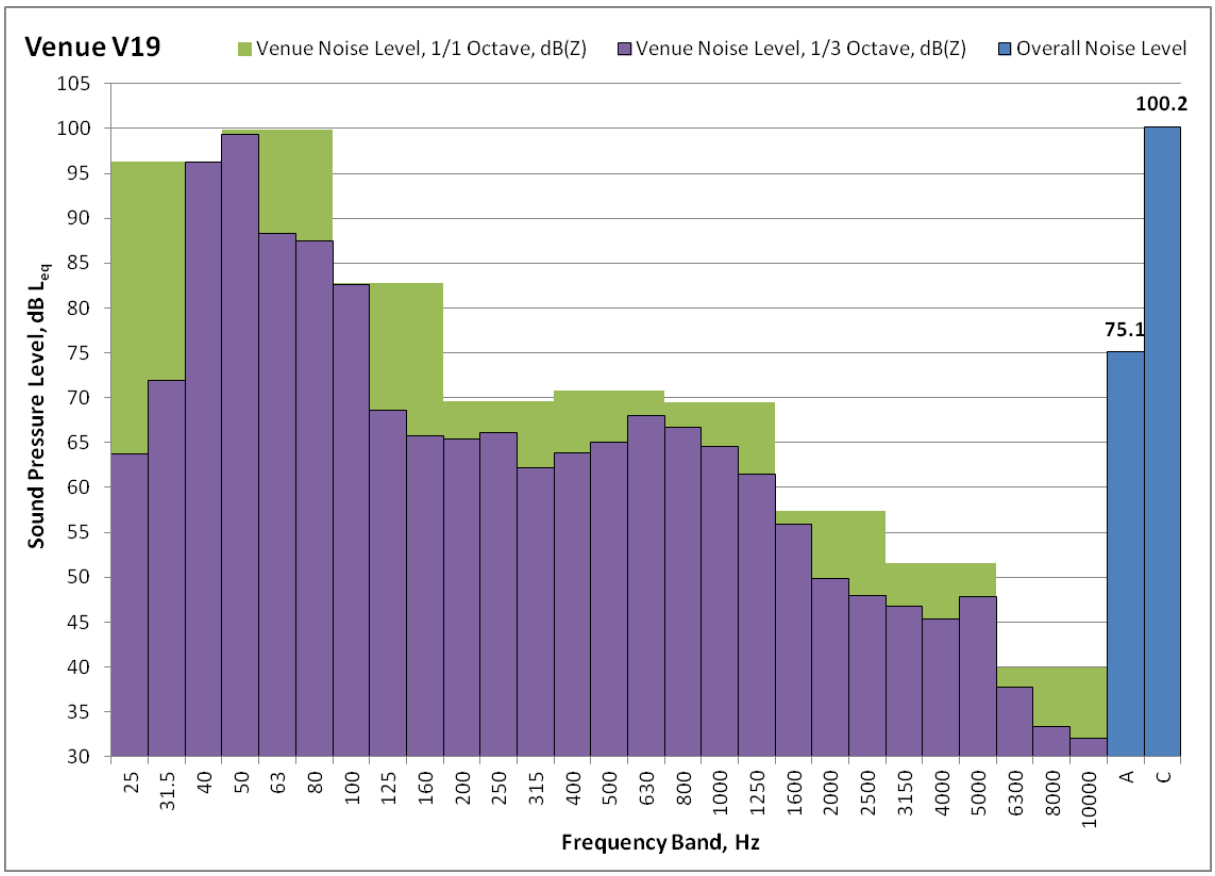

Venue V5w
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
84.1
94.4
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

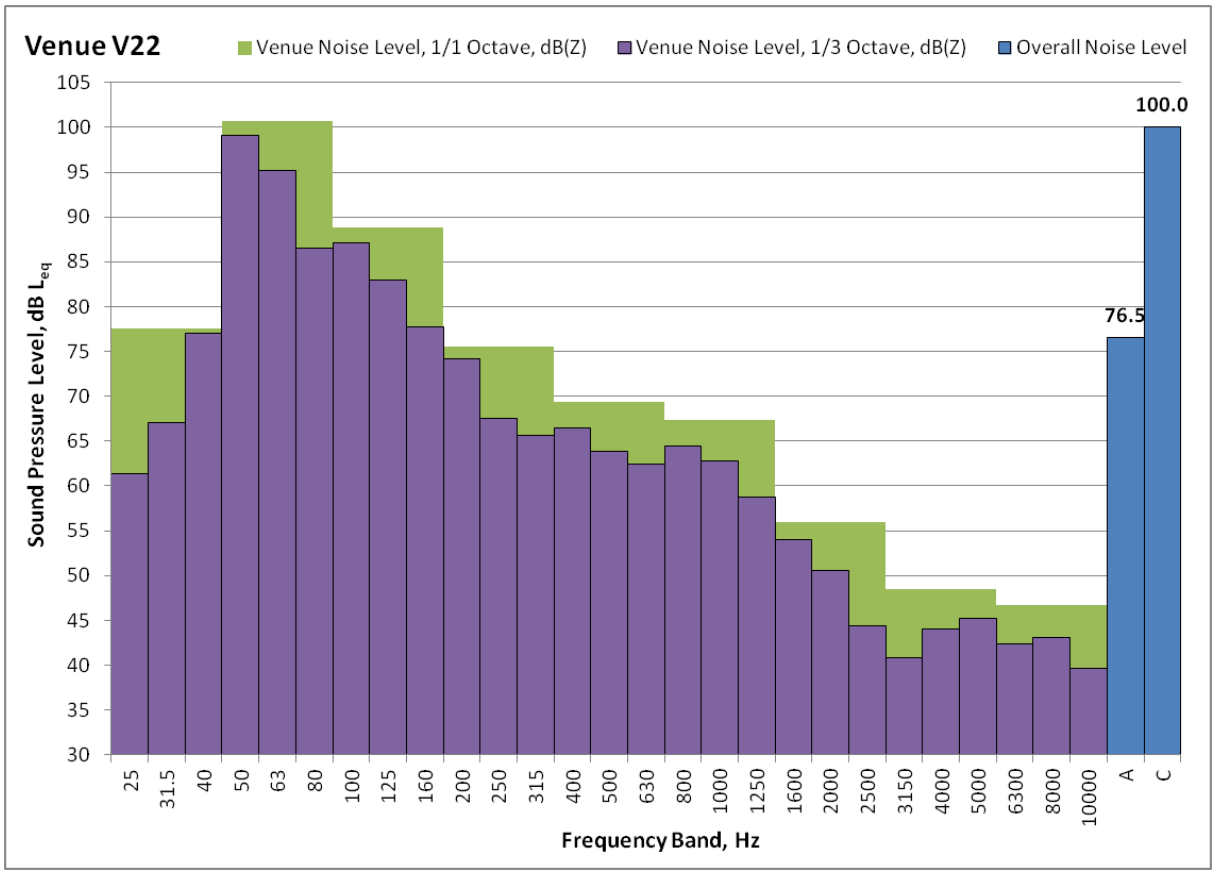

Venue V7 GF
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
77.3
85.8
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

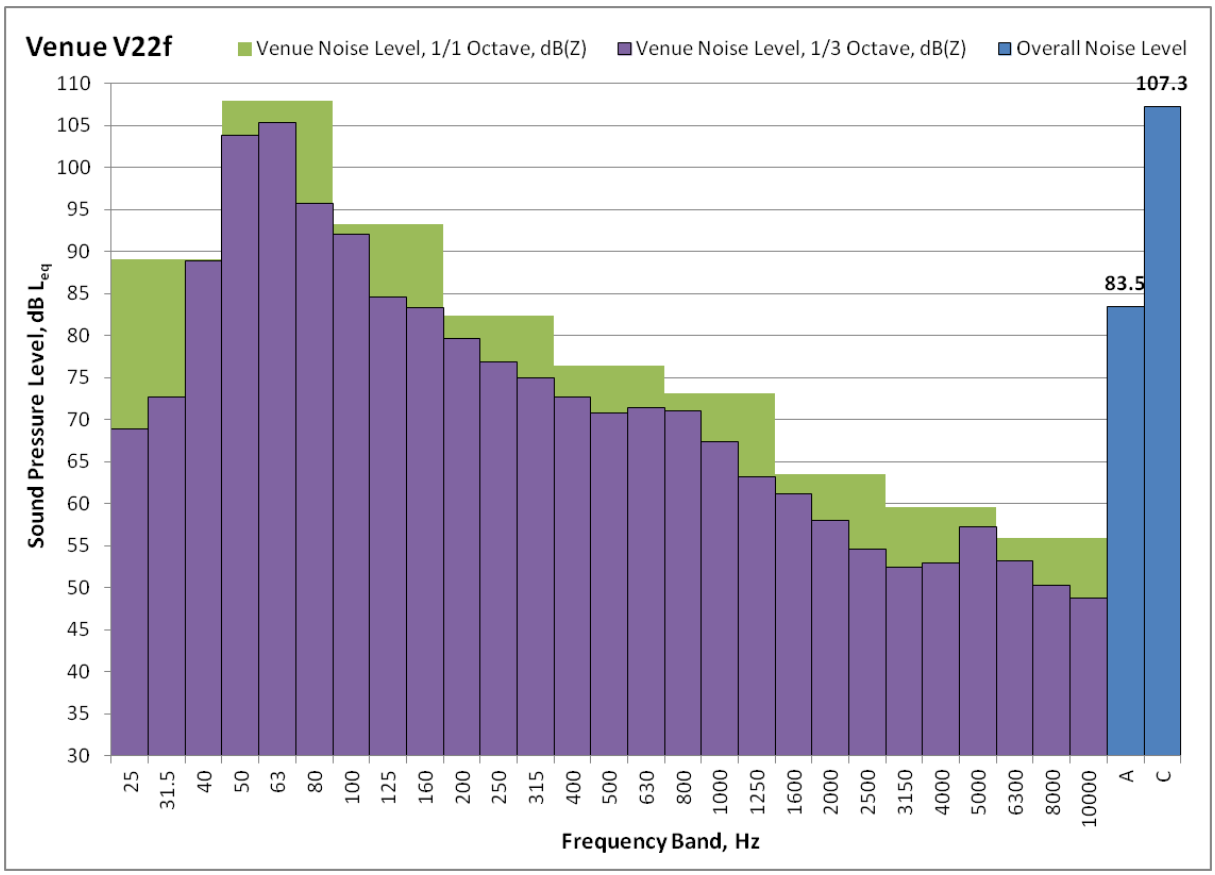

Venue V8 UF
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
87.4
74.6
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

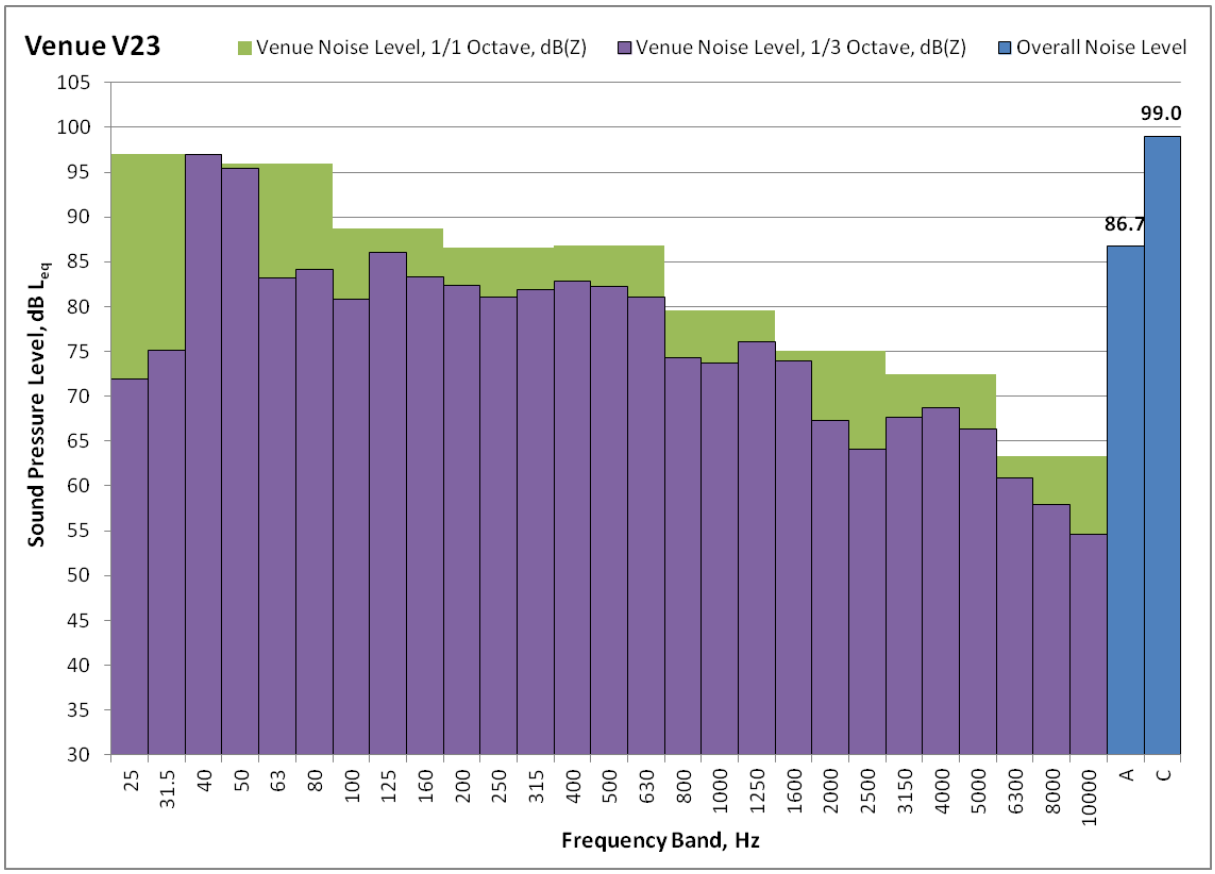

Venue V14
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
99.1
77.1
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

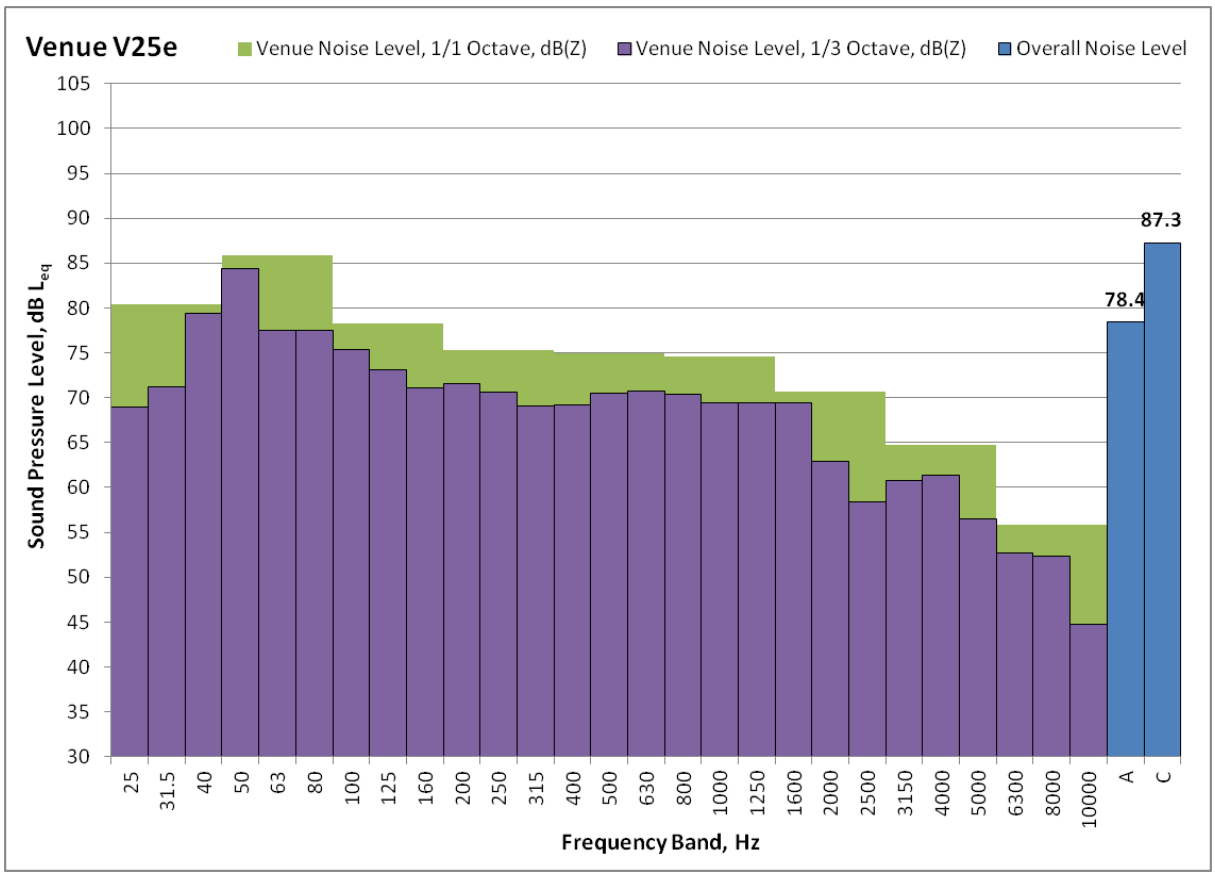

Venue V15
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
89.8
79.4
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

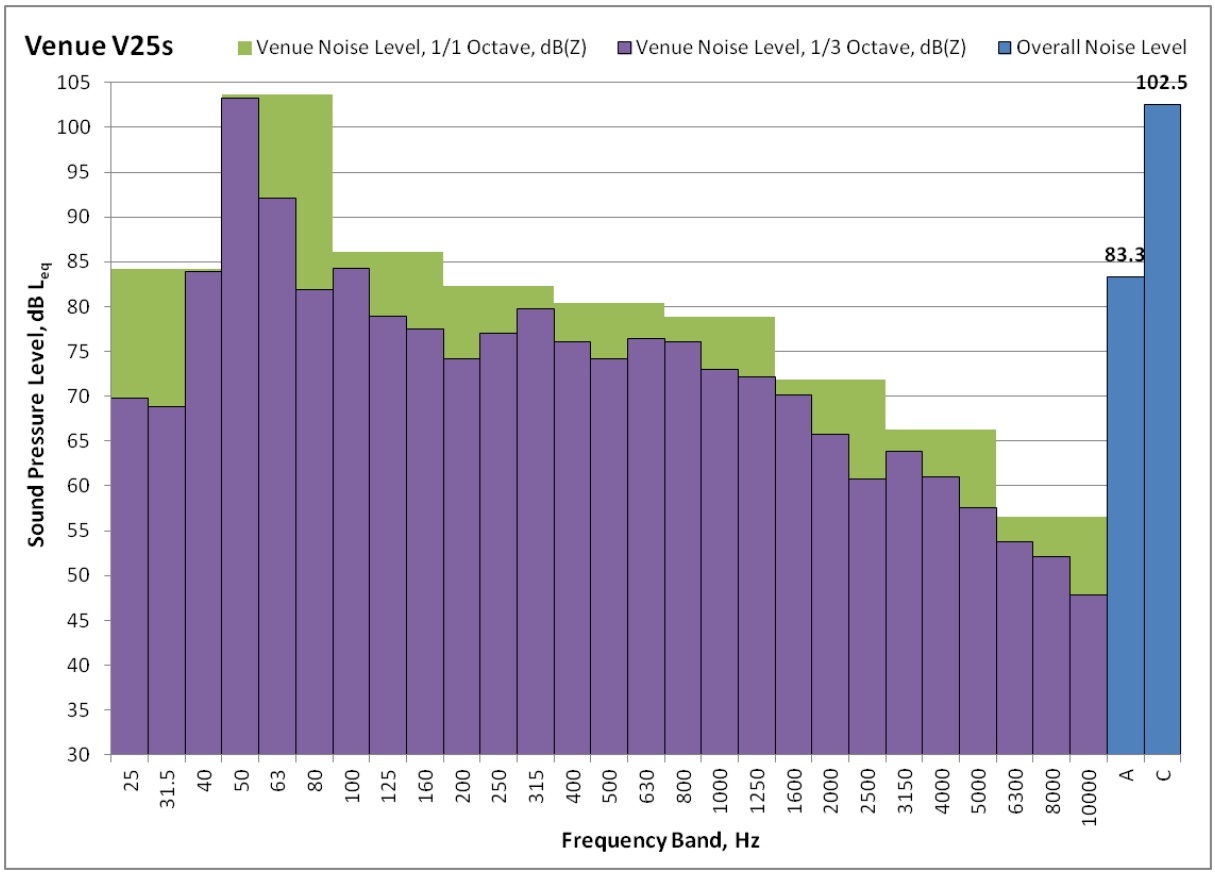

Venue V19
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
100.2
75.1
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

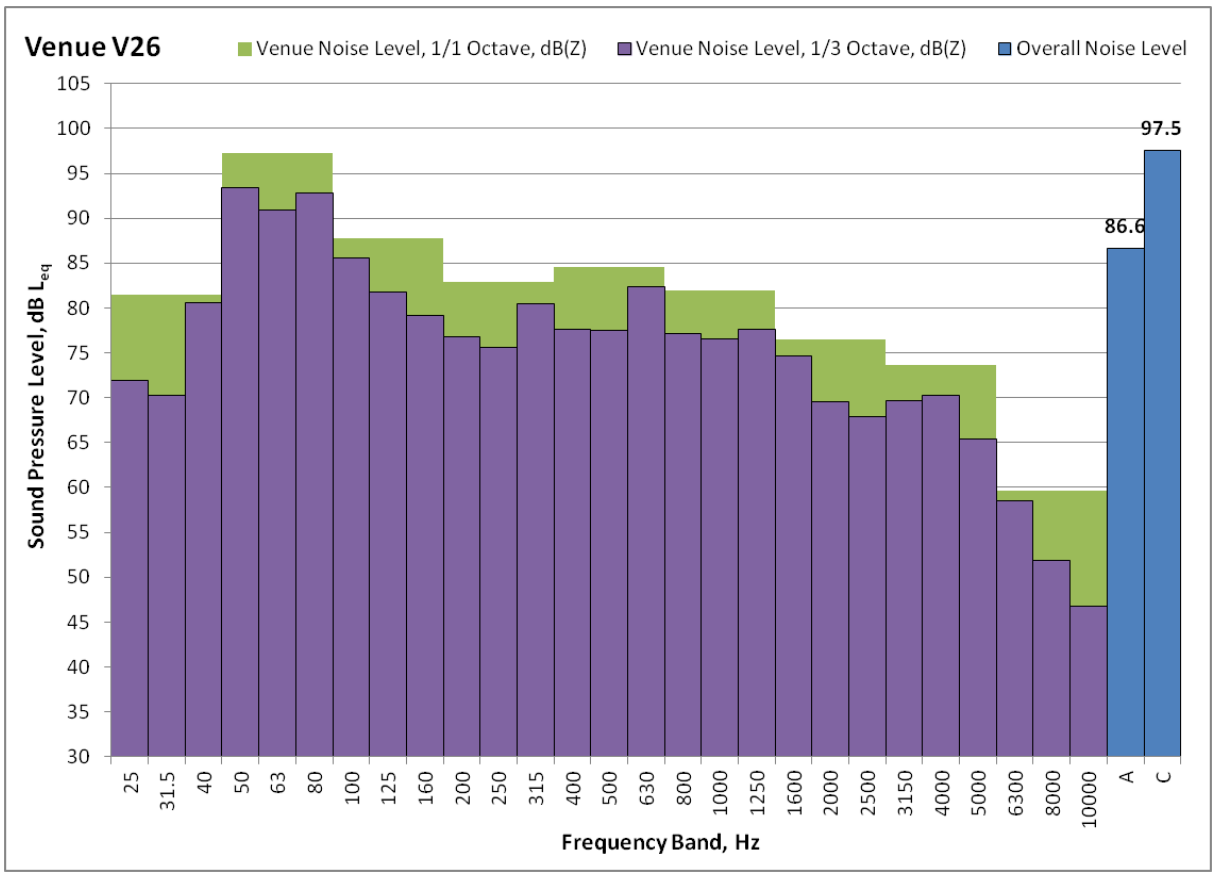

Venue V22
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
100.0
76.5
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

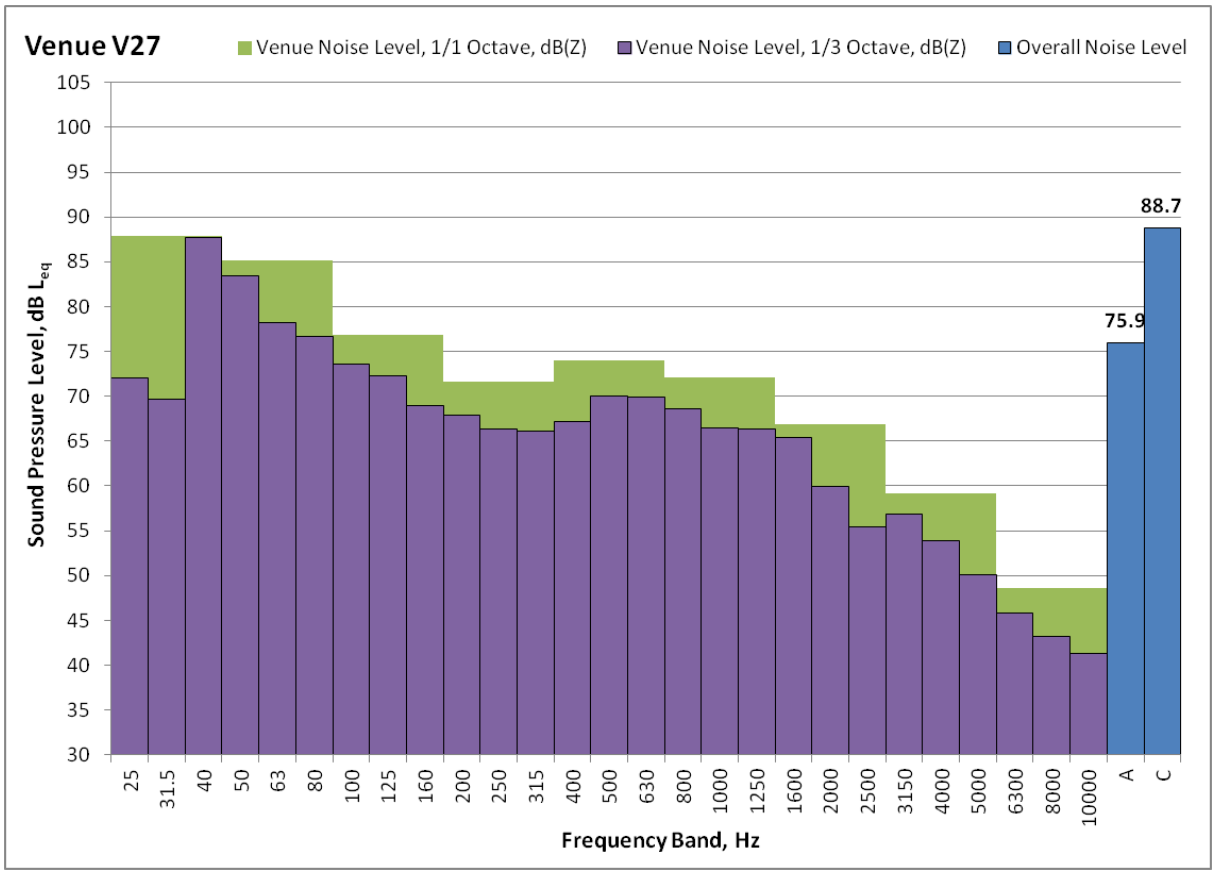

Venue V22f
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
107.3
83.5
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

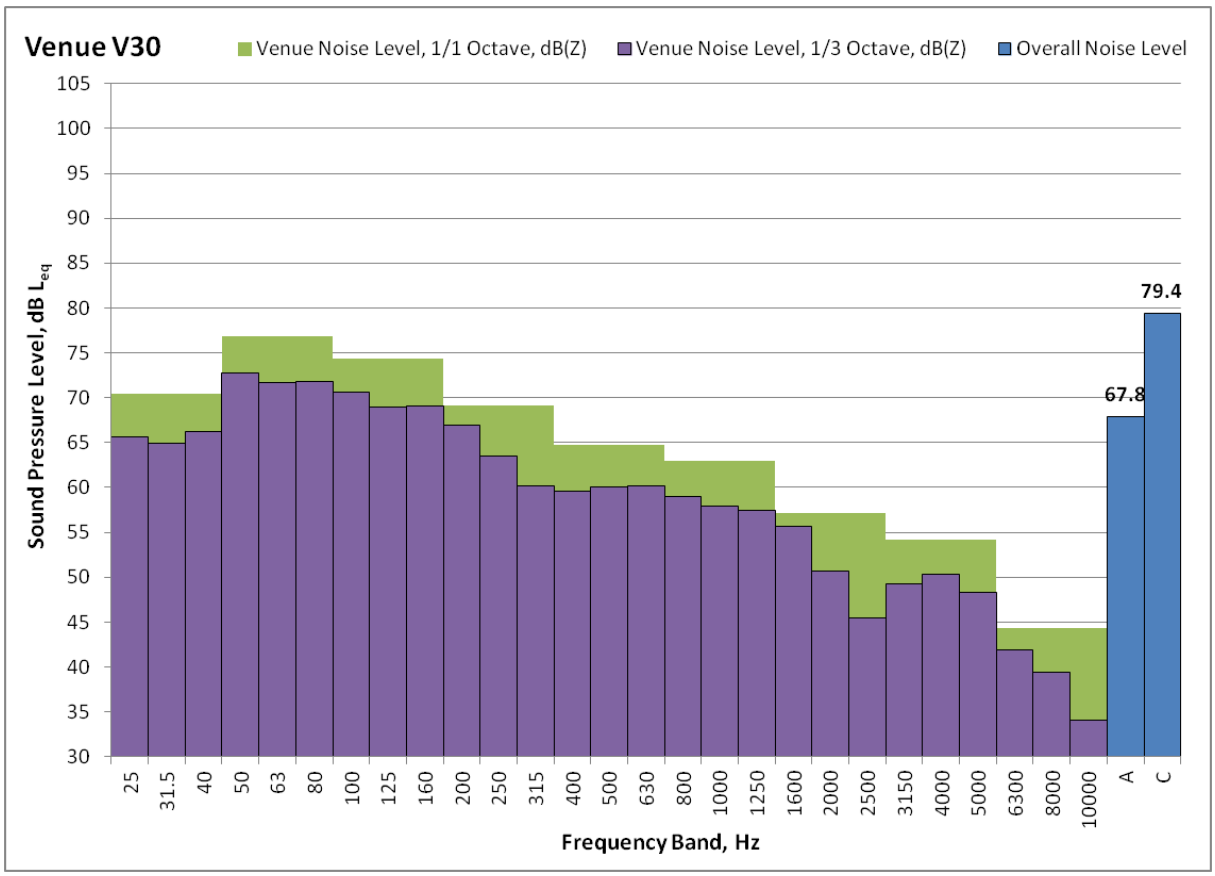

Venue V23
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
99.0
86.7
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

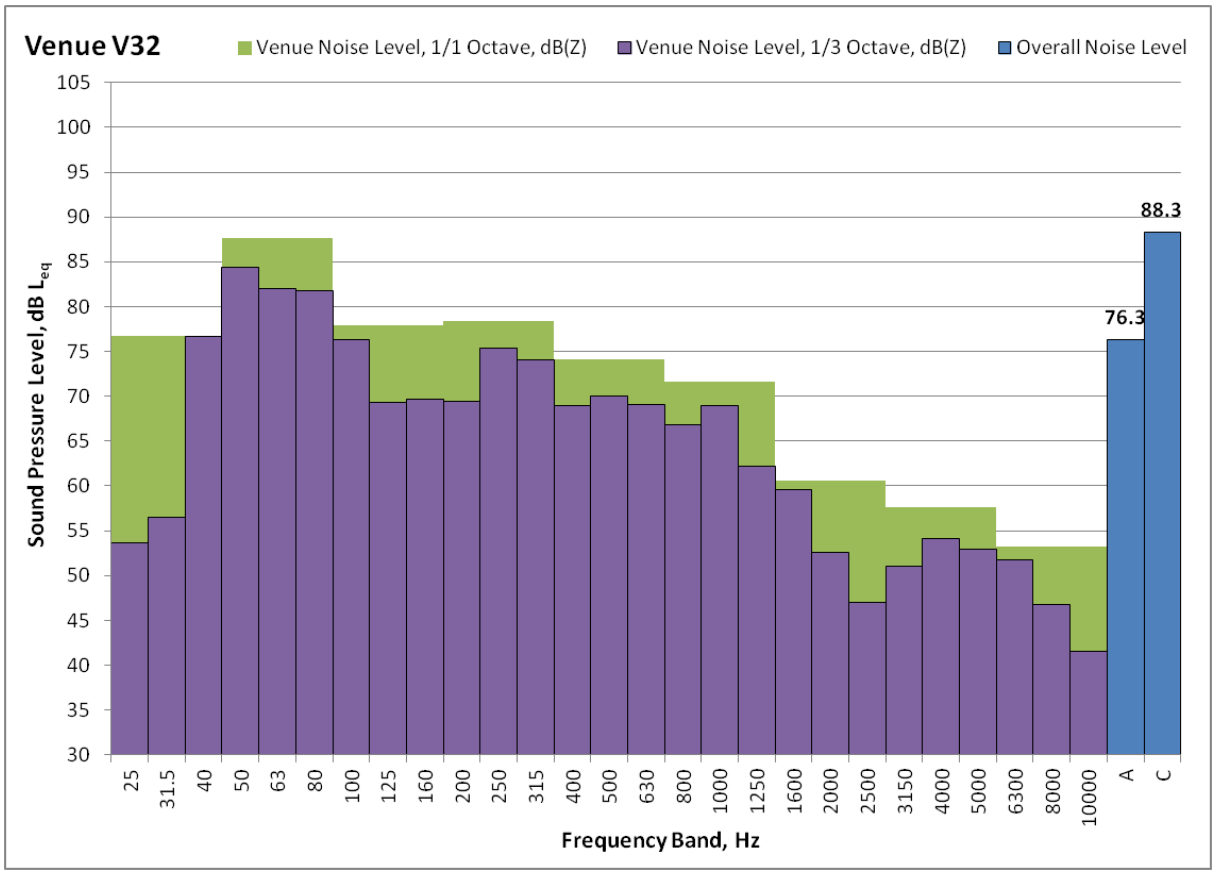

Venue V25e
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
87.3
78.4
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

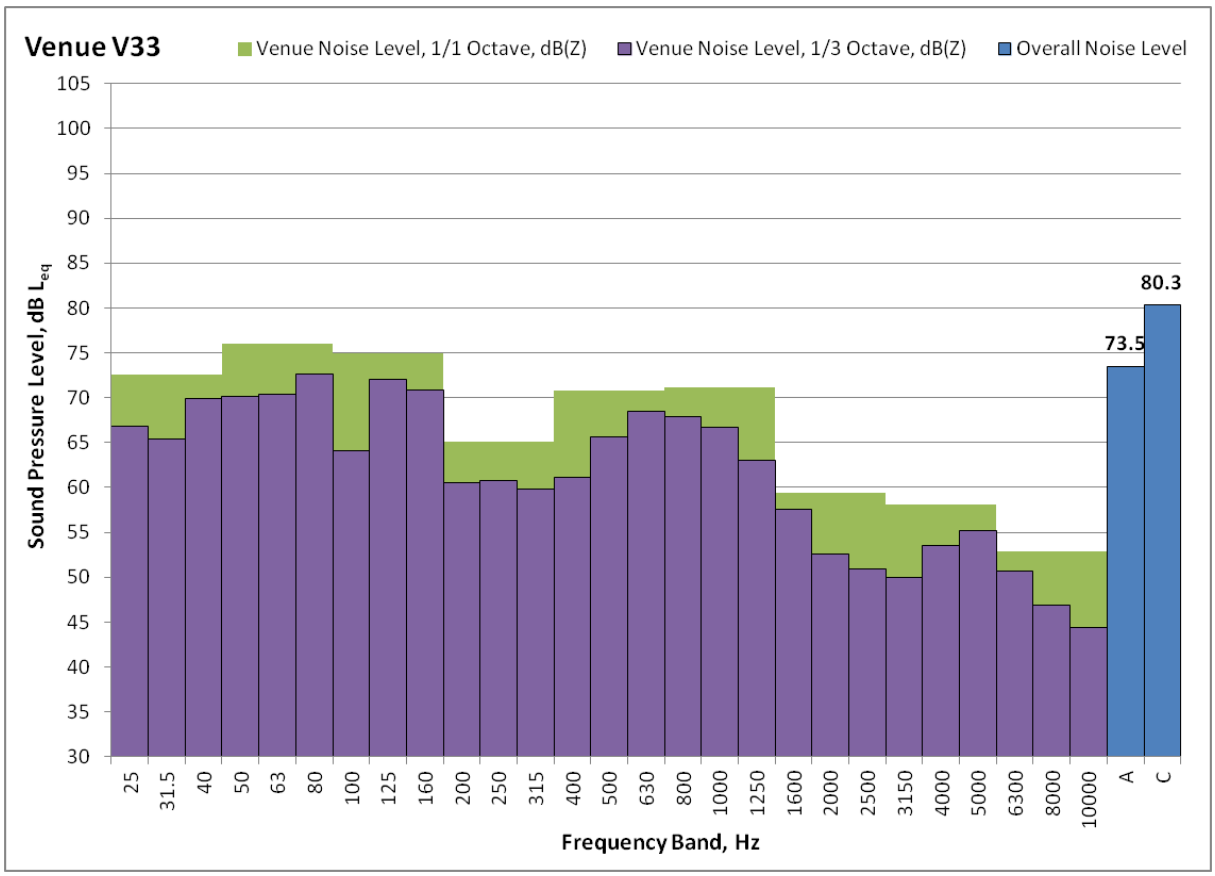

Venue V25s
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
102.5
83.3
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

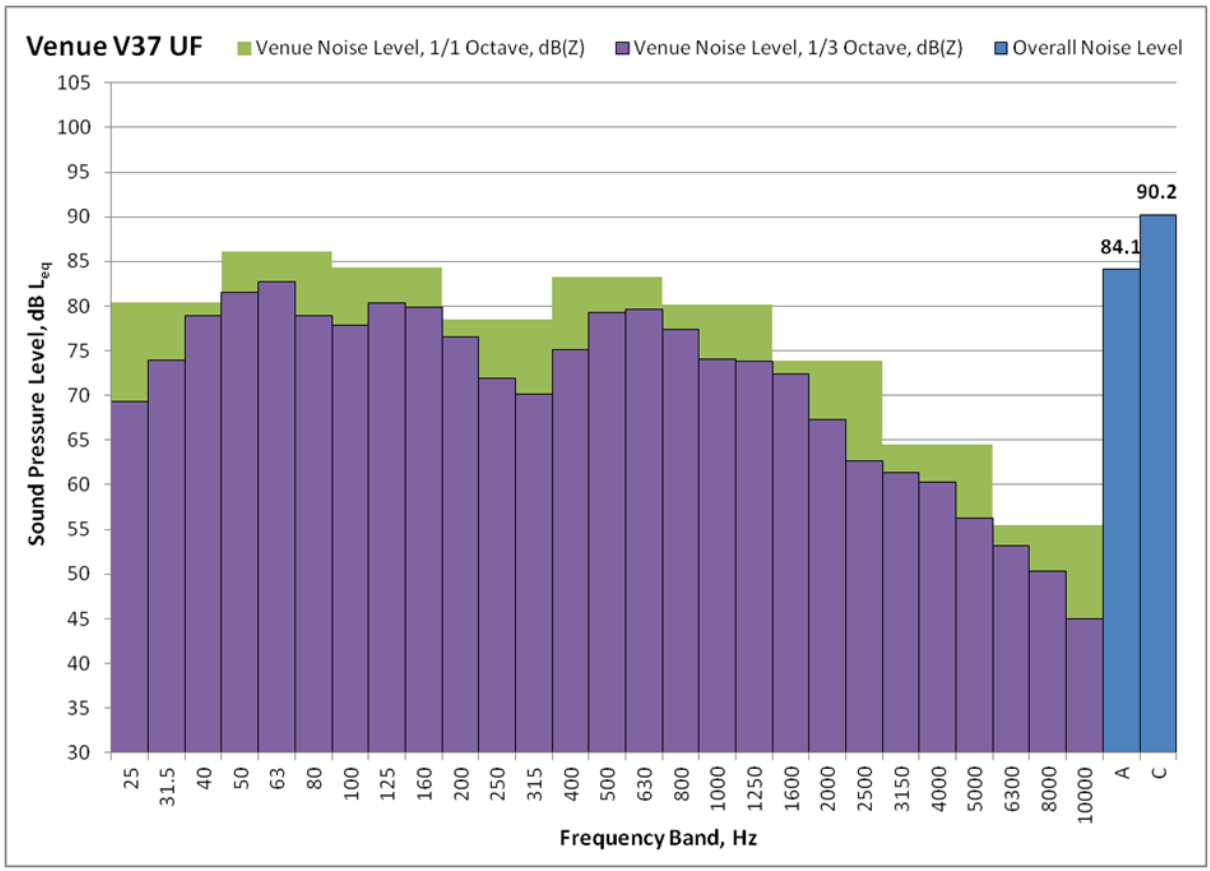

Venue V26
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
97.5
86.6
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V27
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
88.7
75.9
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

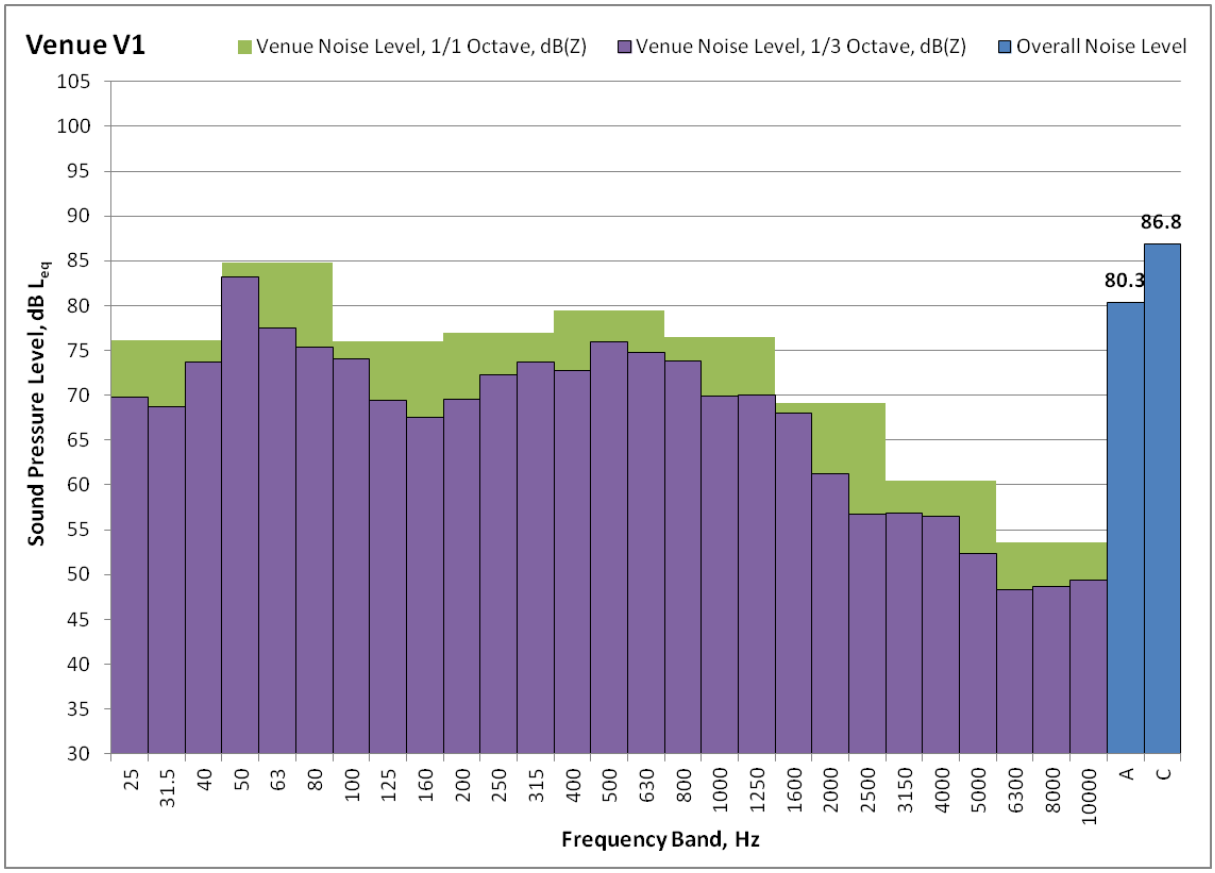

Venue V30
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
79.4
67.8
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

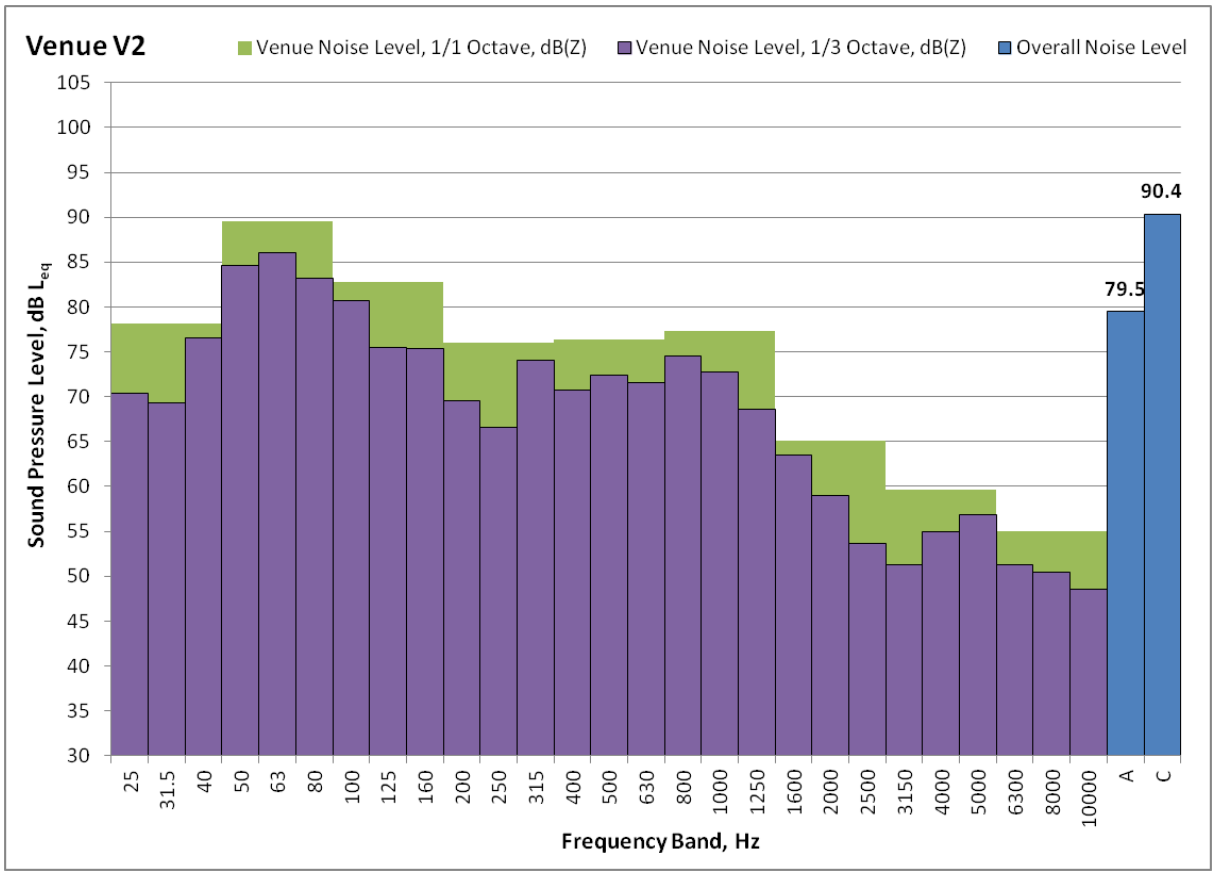

Venue V32
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
88.3
76.3
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

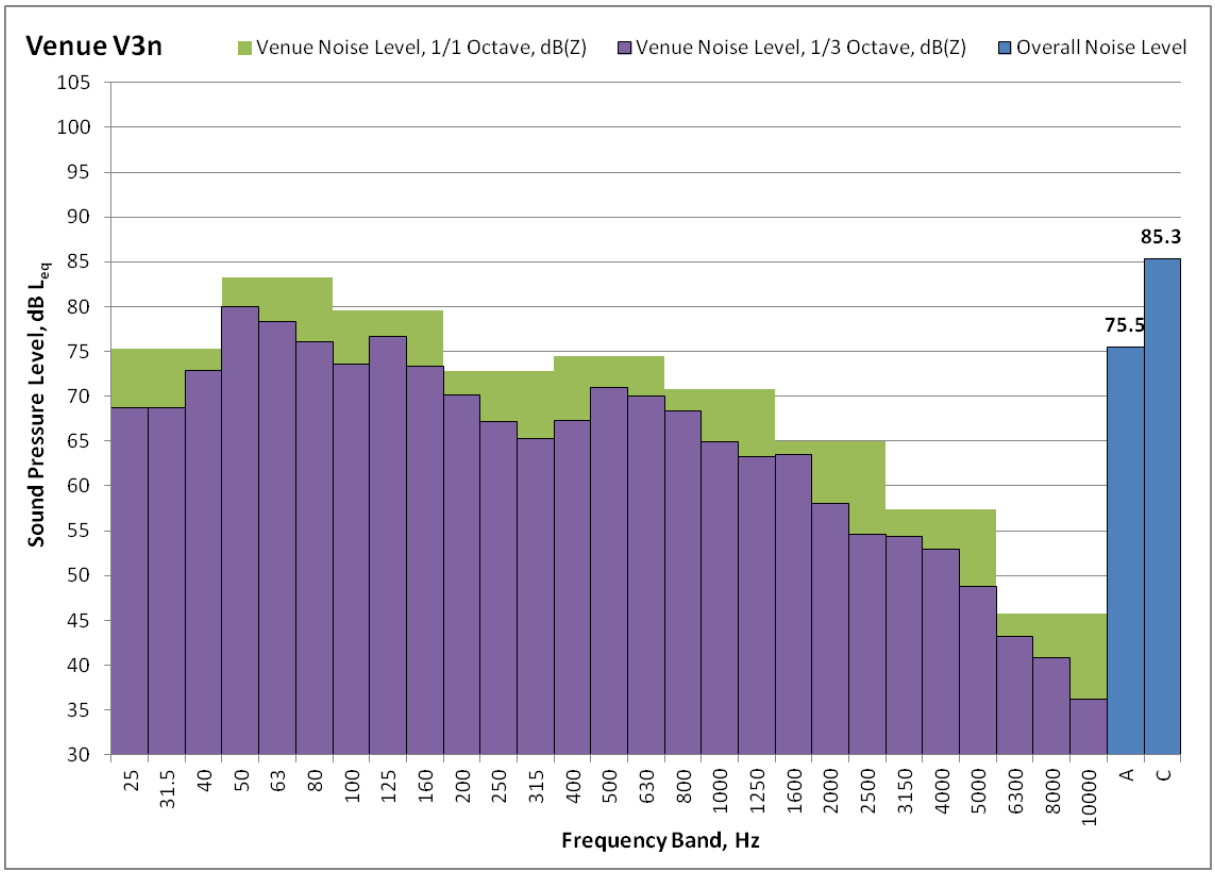

Venue V33
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
80.3
73.5
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

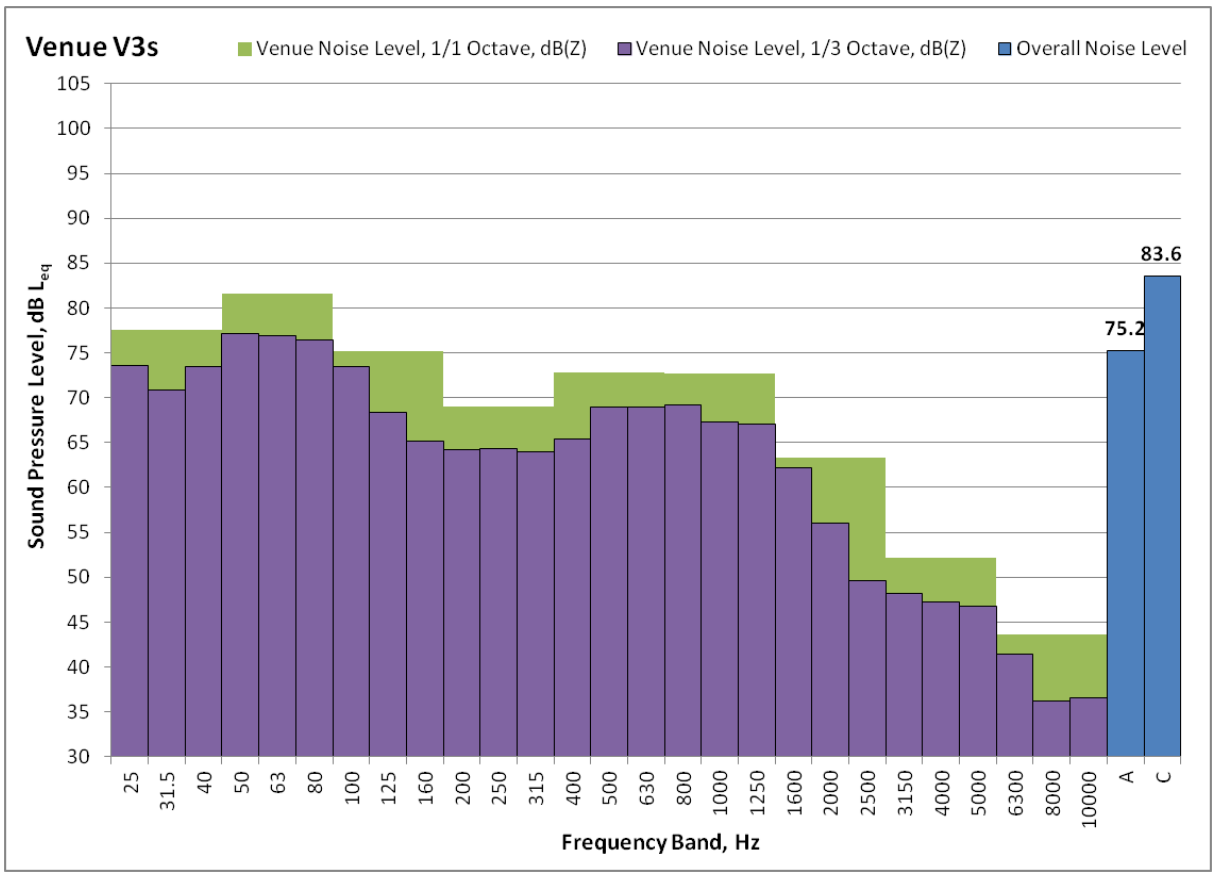

Venue V37 UF
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
90.2
84.1
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

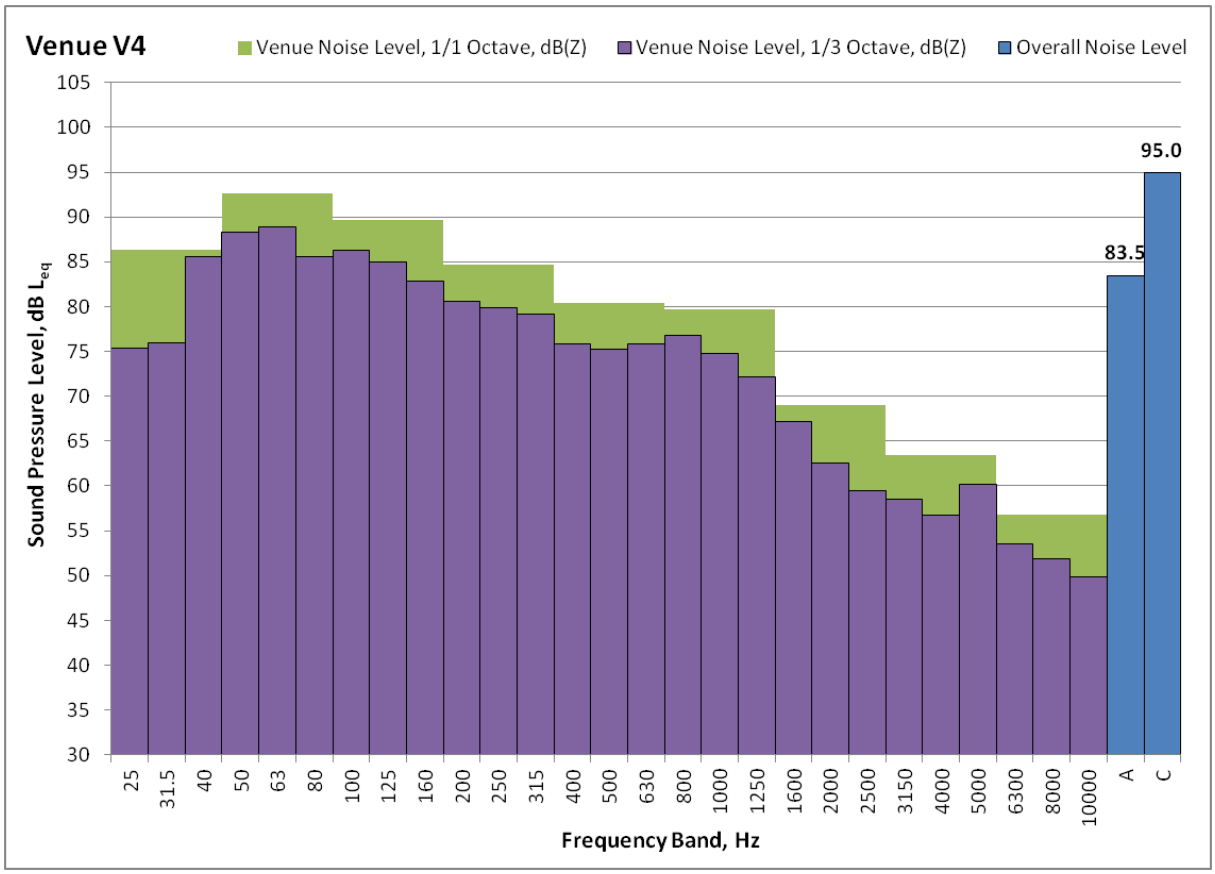
Night 2 Plots

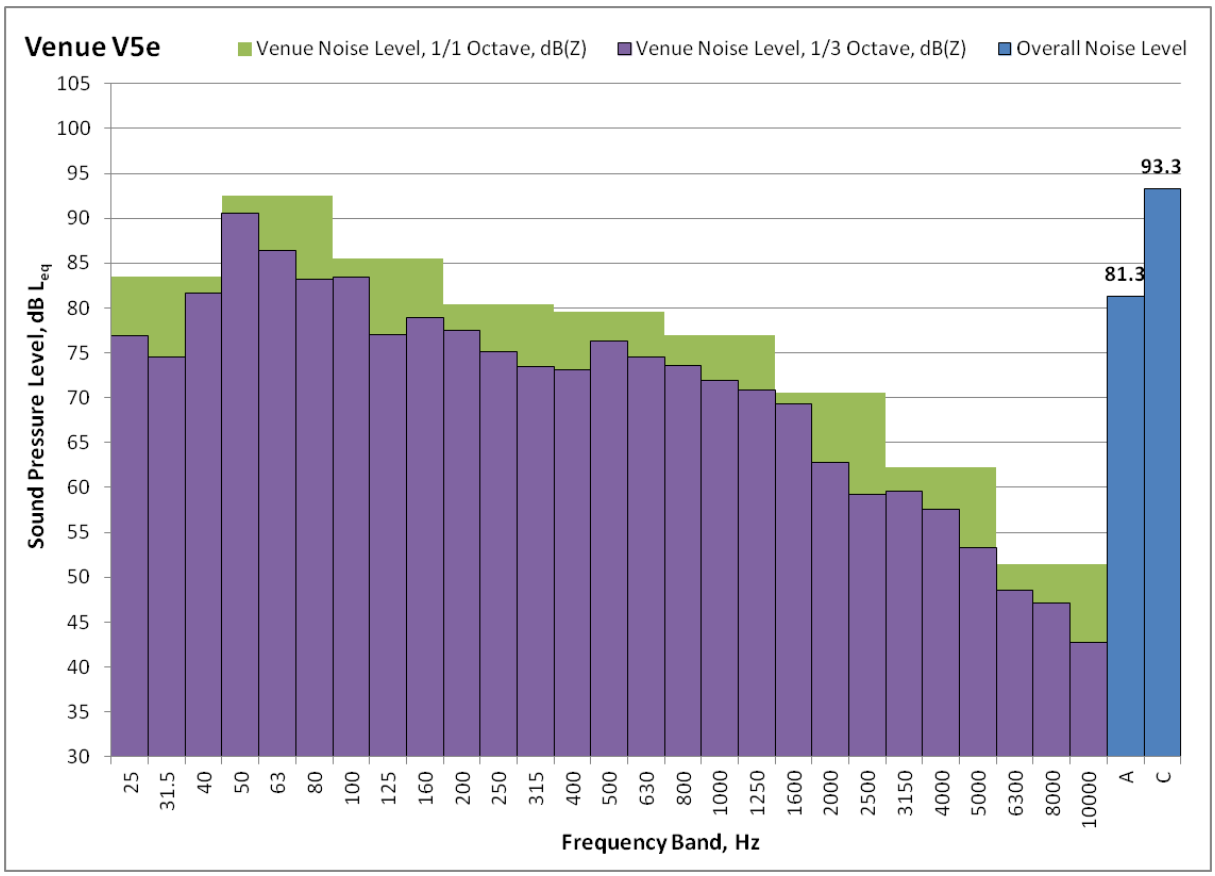


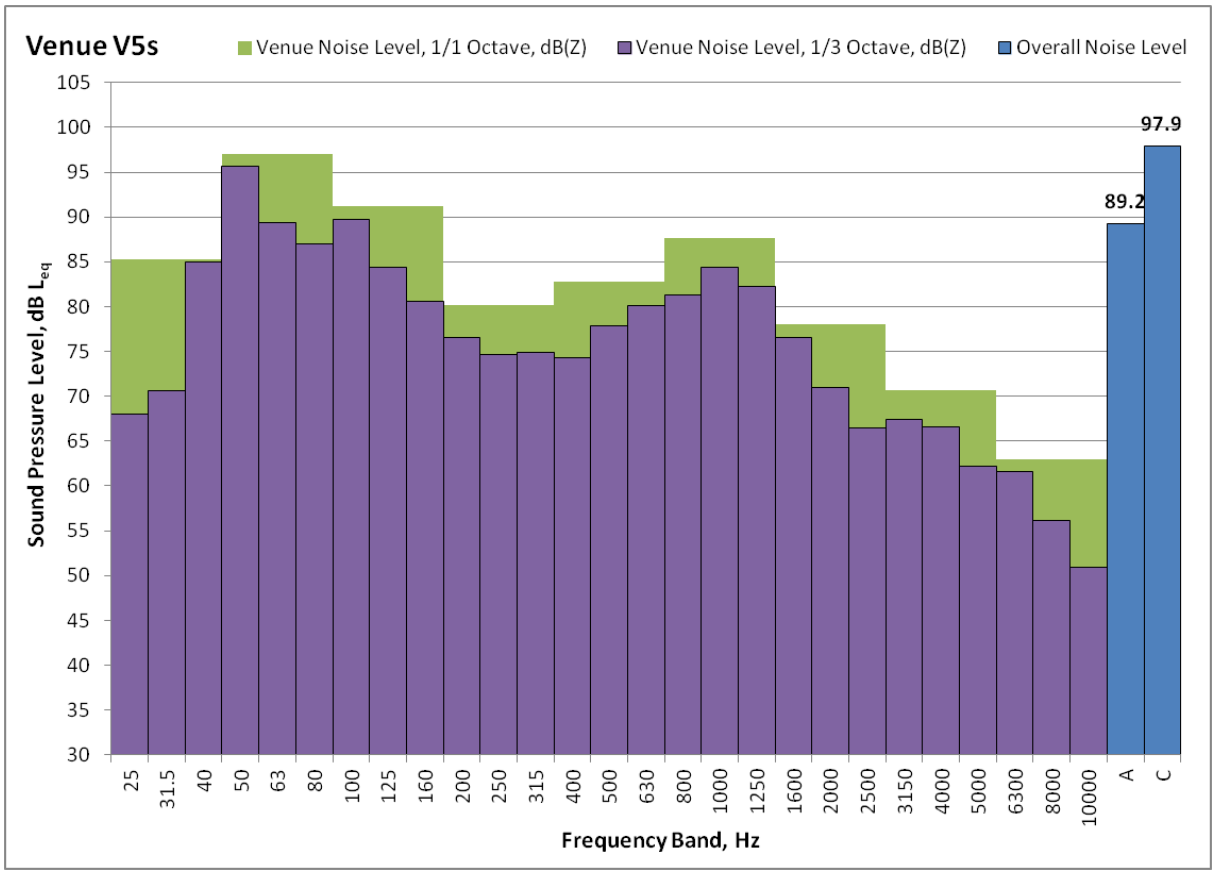


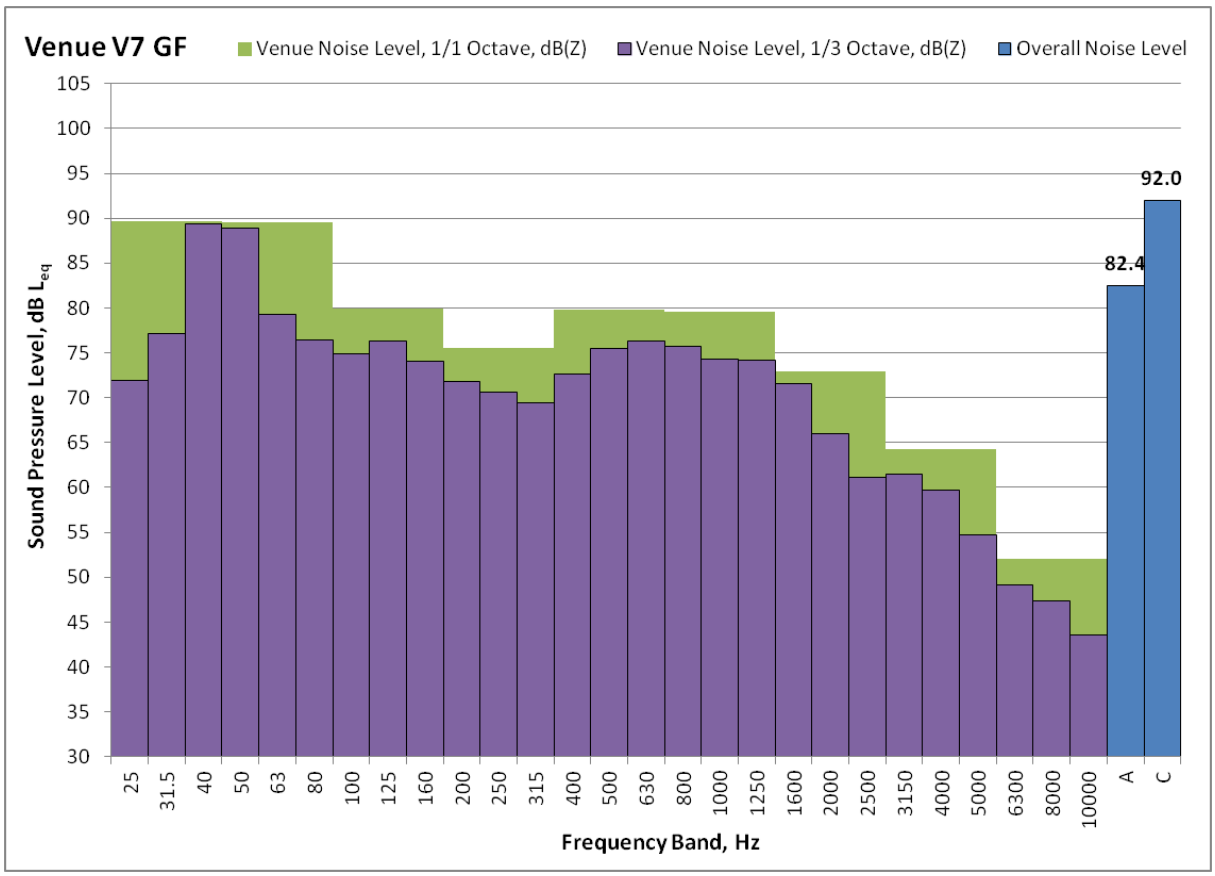

Venue V3n
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
85.3
75.5
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

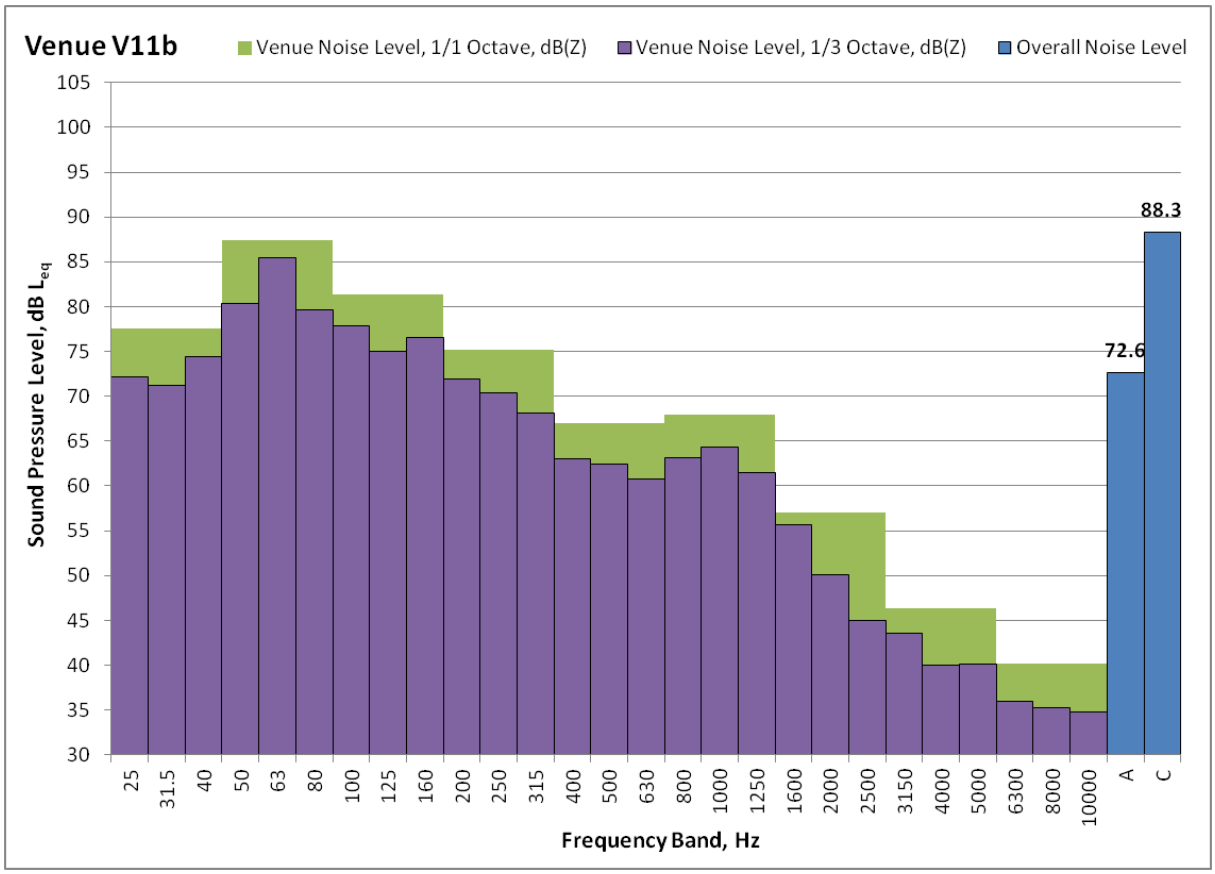

Venue V3s
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
83.6
75.2
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

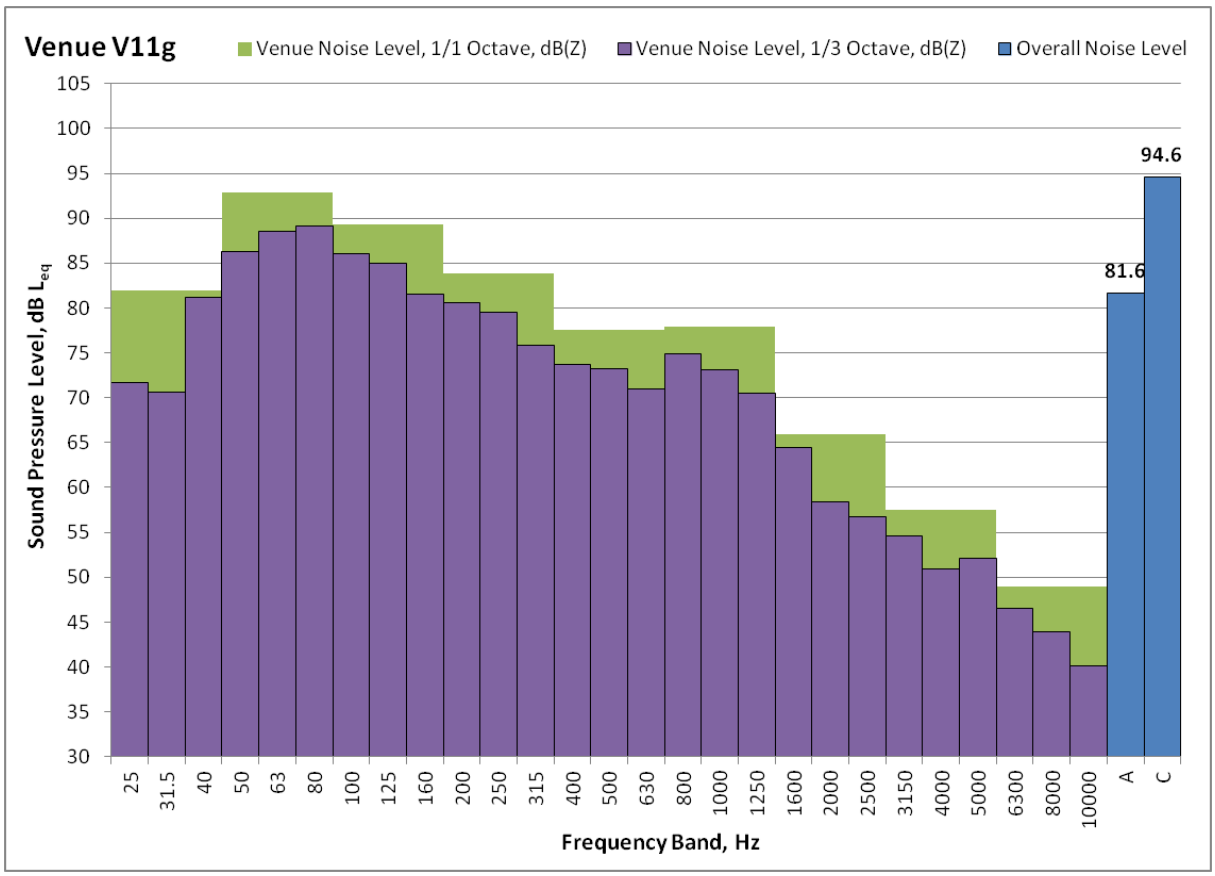

Venue V4
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
95.0
83.5
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

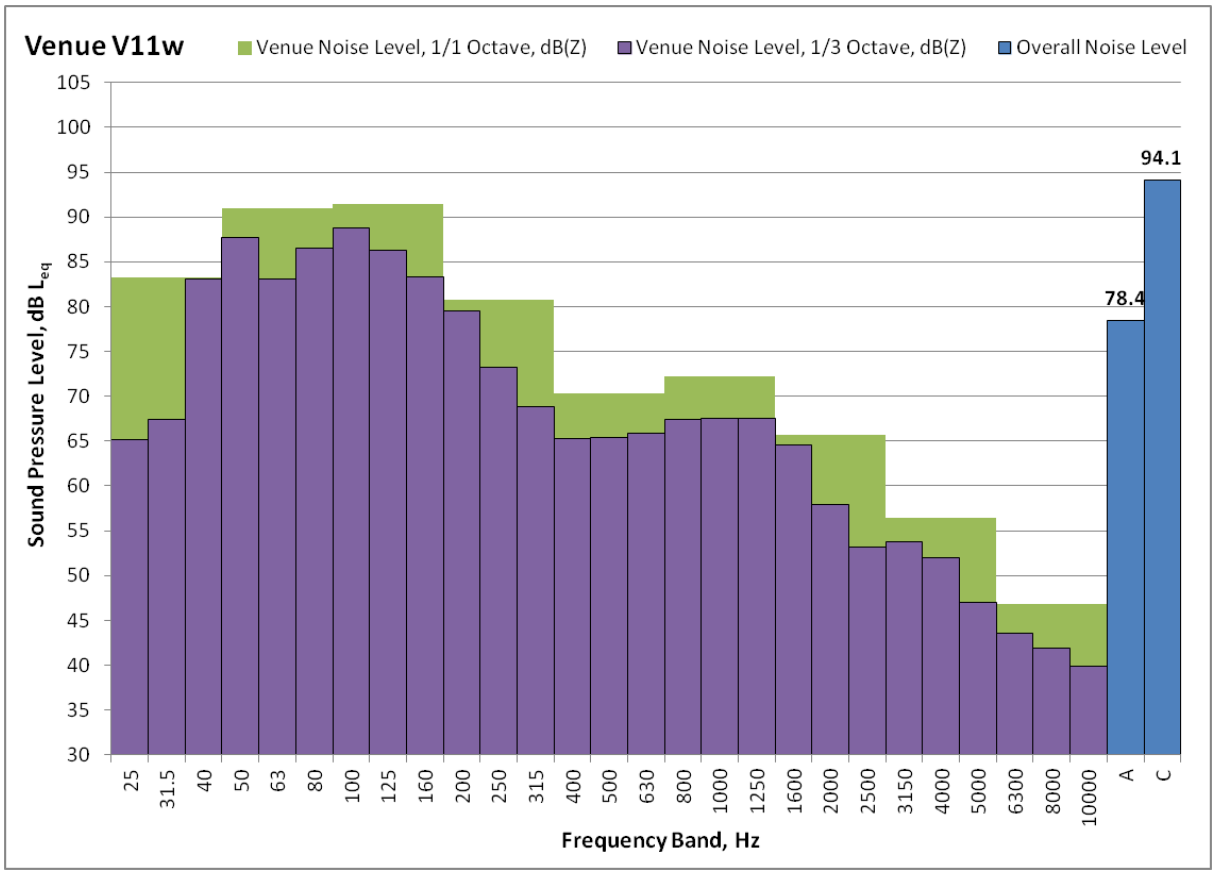

Venue V5e
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
93.3
81.3
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

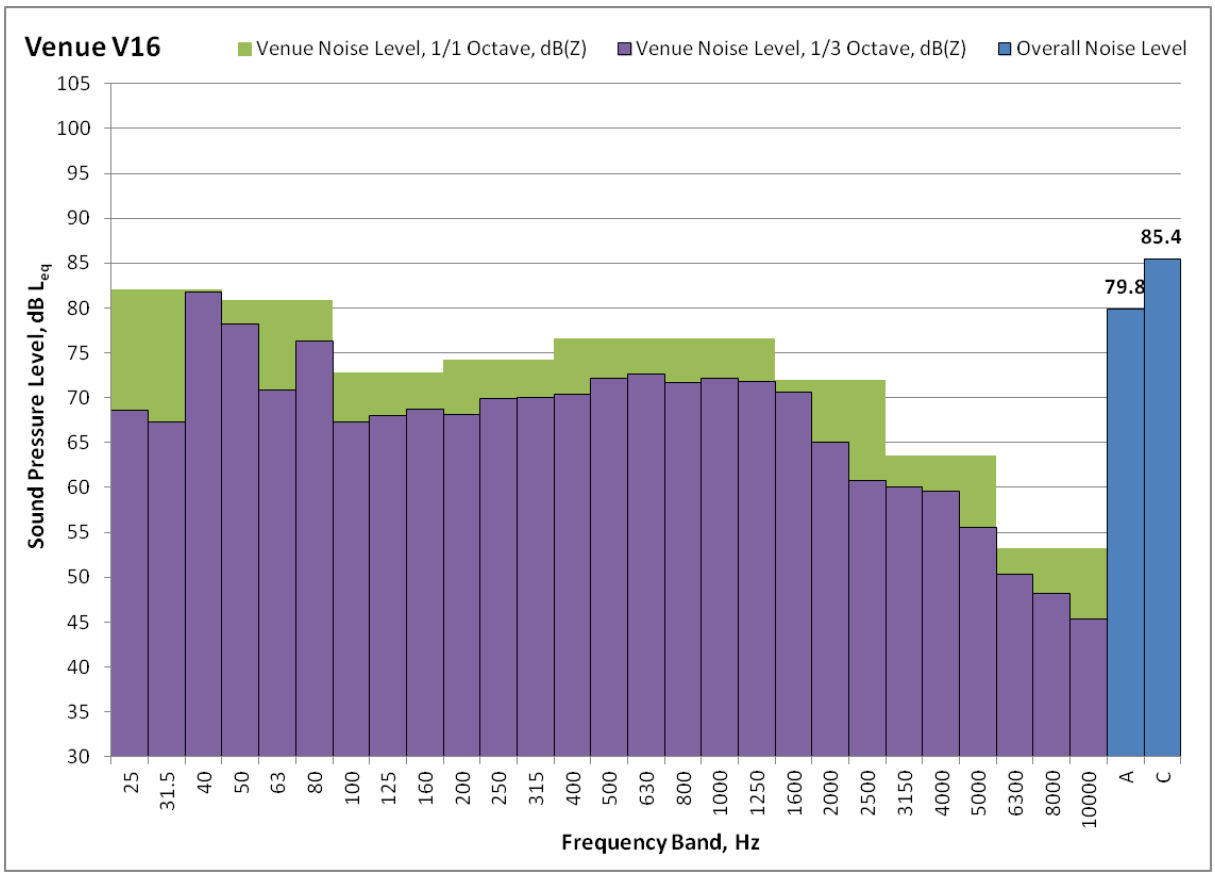

Venue V5s
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
97.9
89.2
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

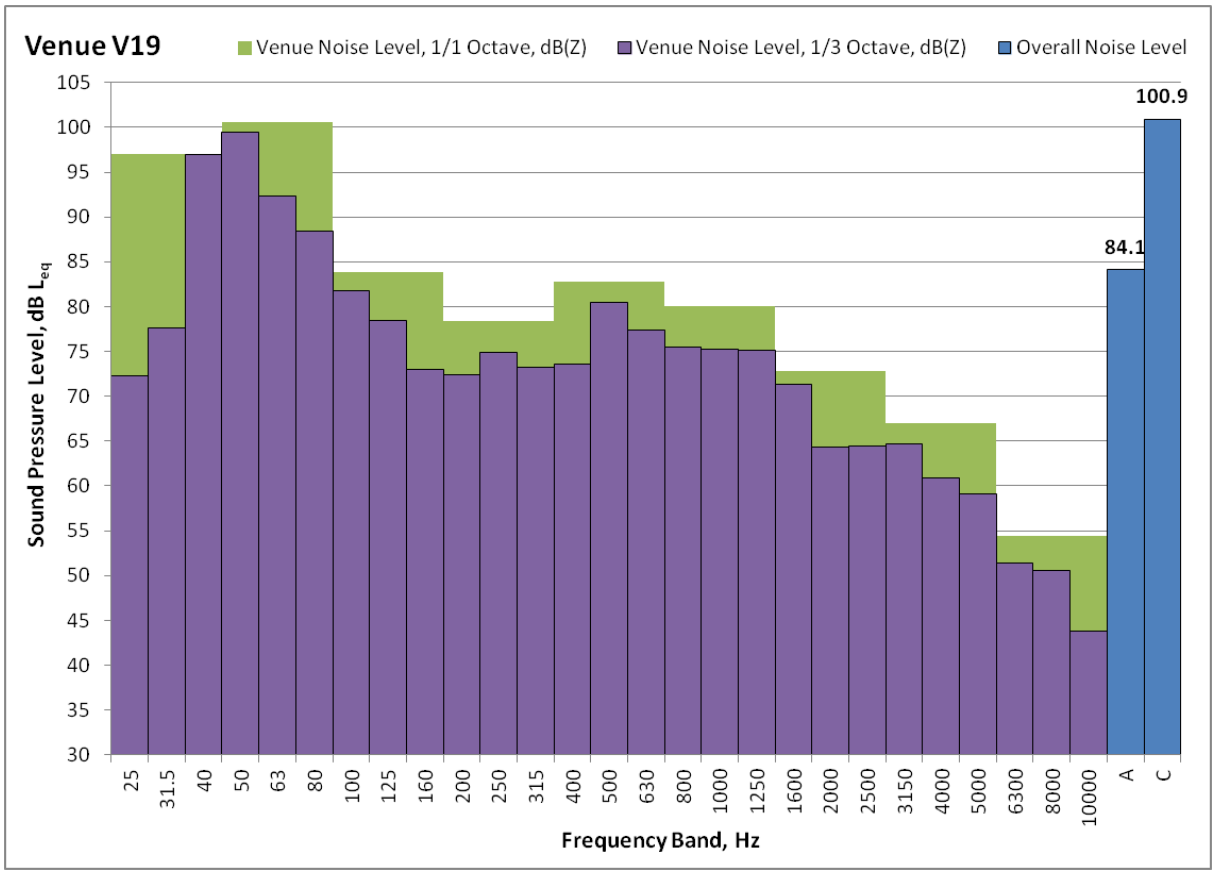

Venue V7 GF
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
92.0
82.4
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

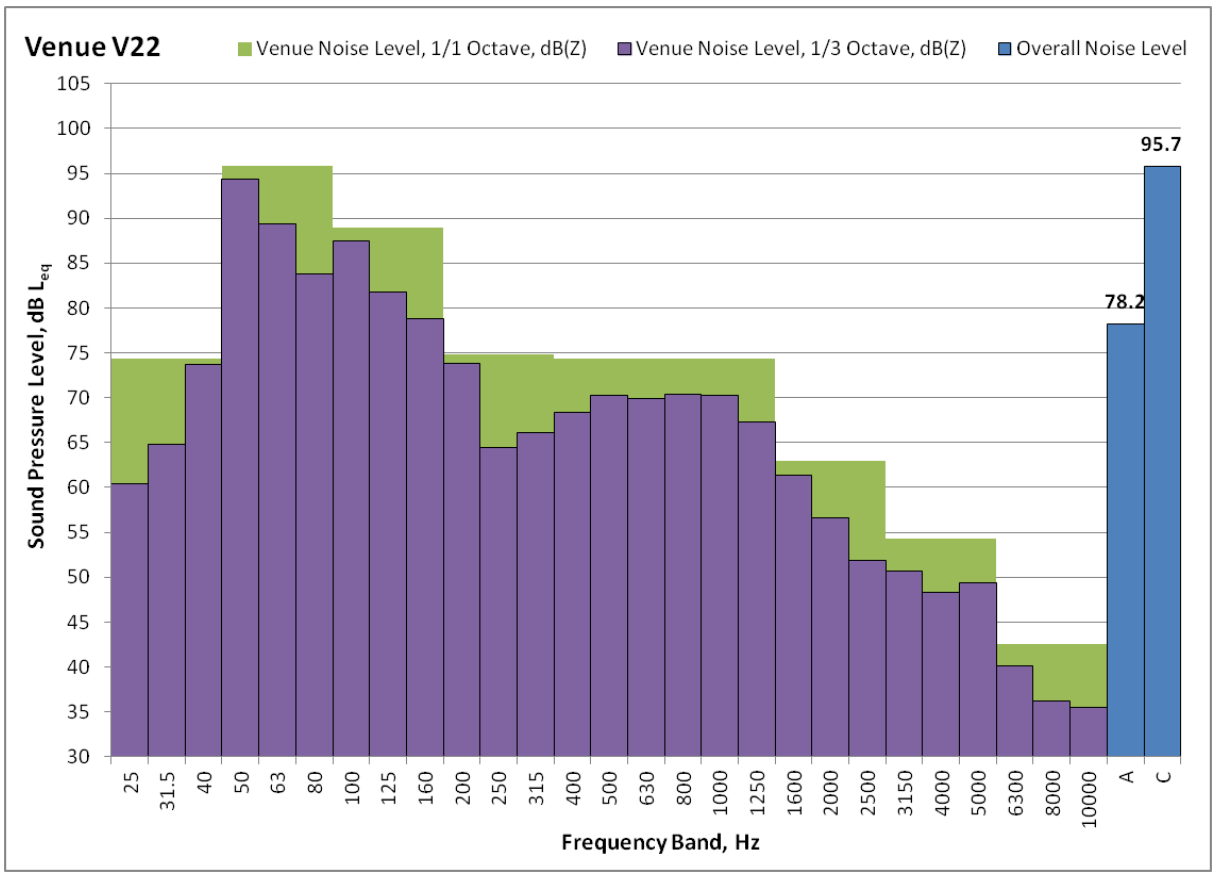

Venue V11b
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
88.3
72.6
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

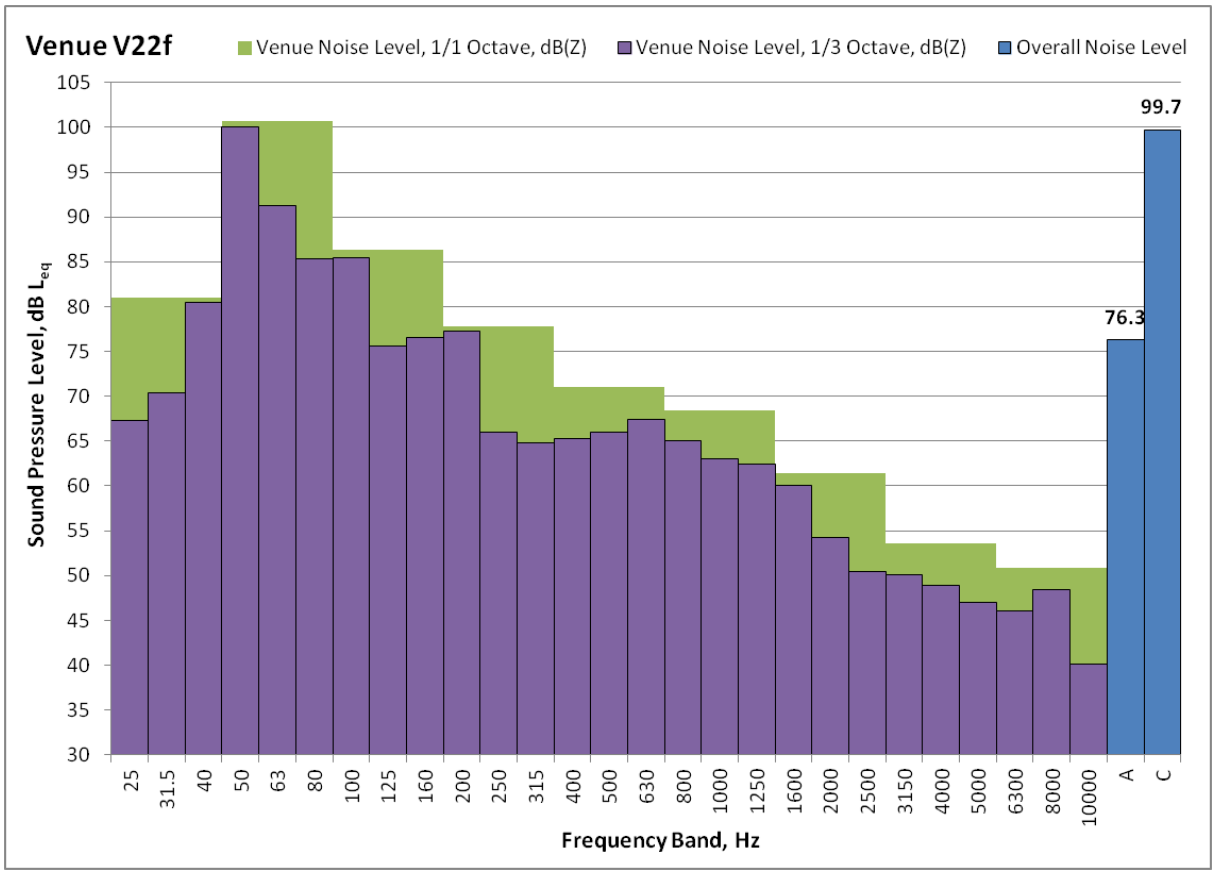

Venue V11g
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
94.6
81.6
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

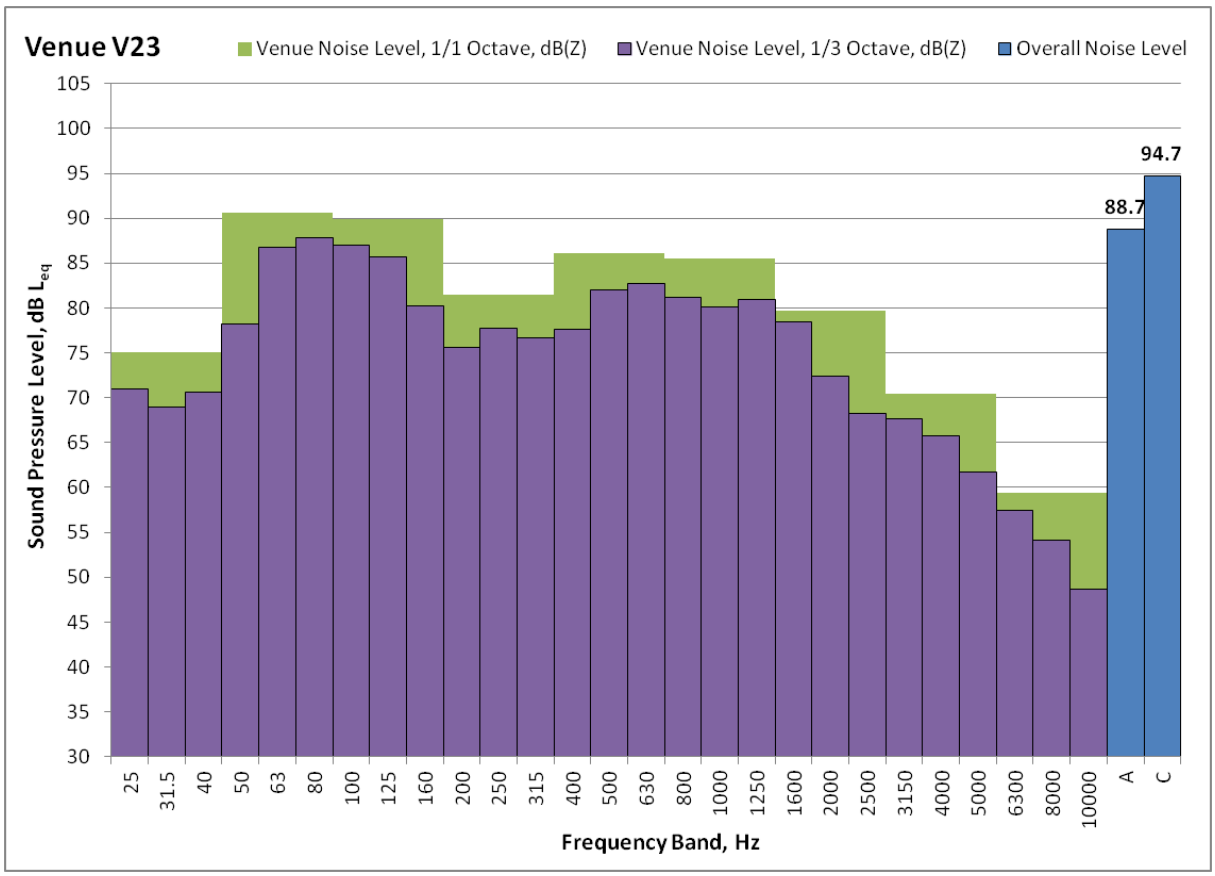

Venue V11w
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
94.1
78.4
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

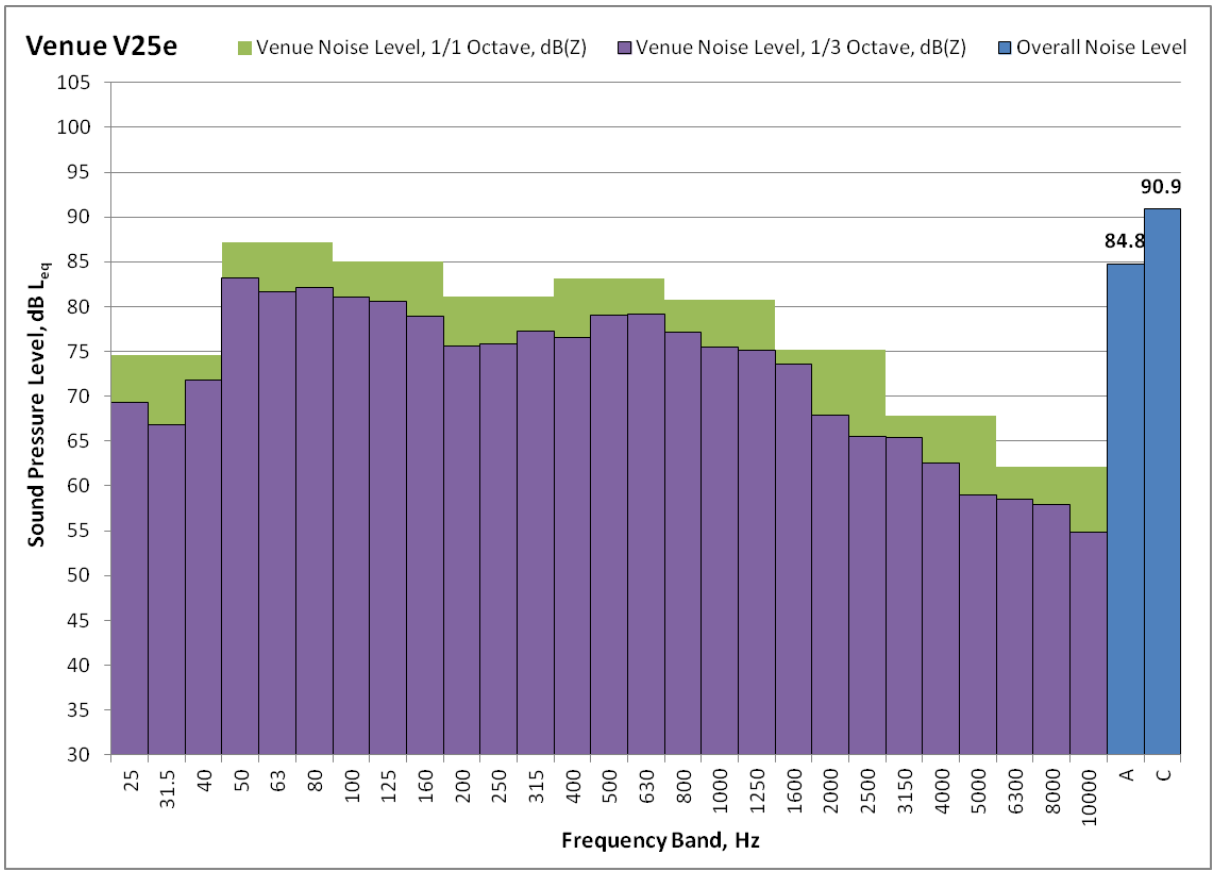

Venue V16
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
85.4
79.8
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

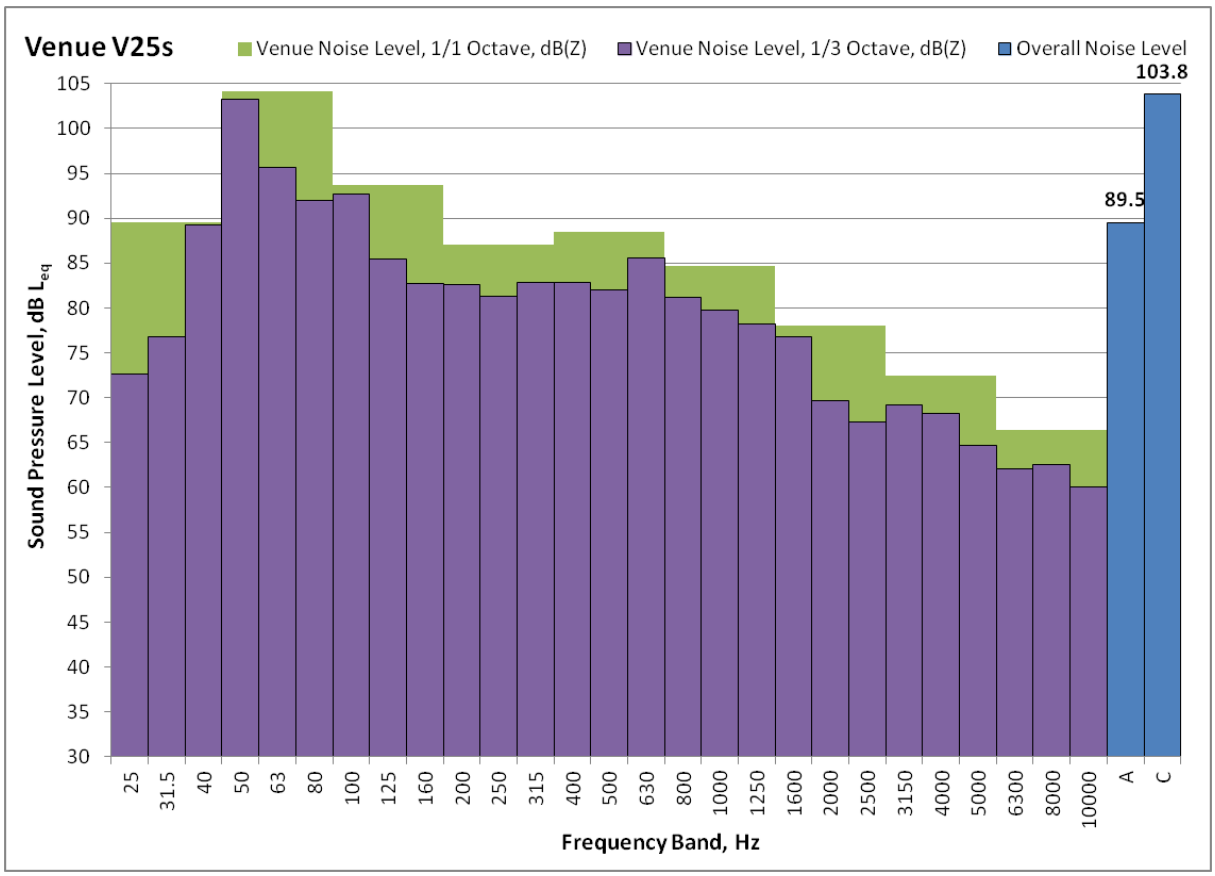

Venue V19
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
100.9
84.1
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

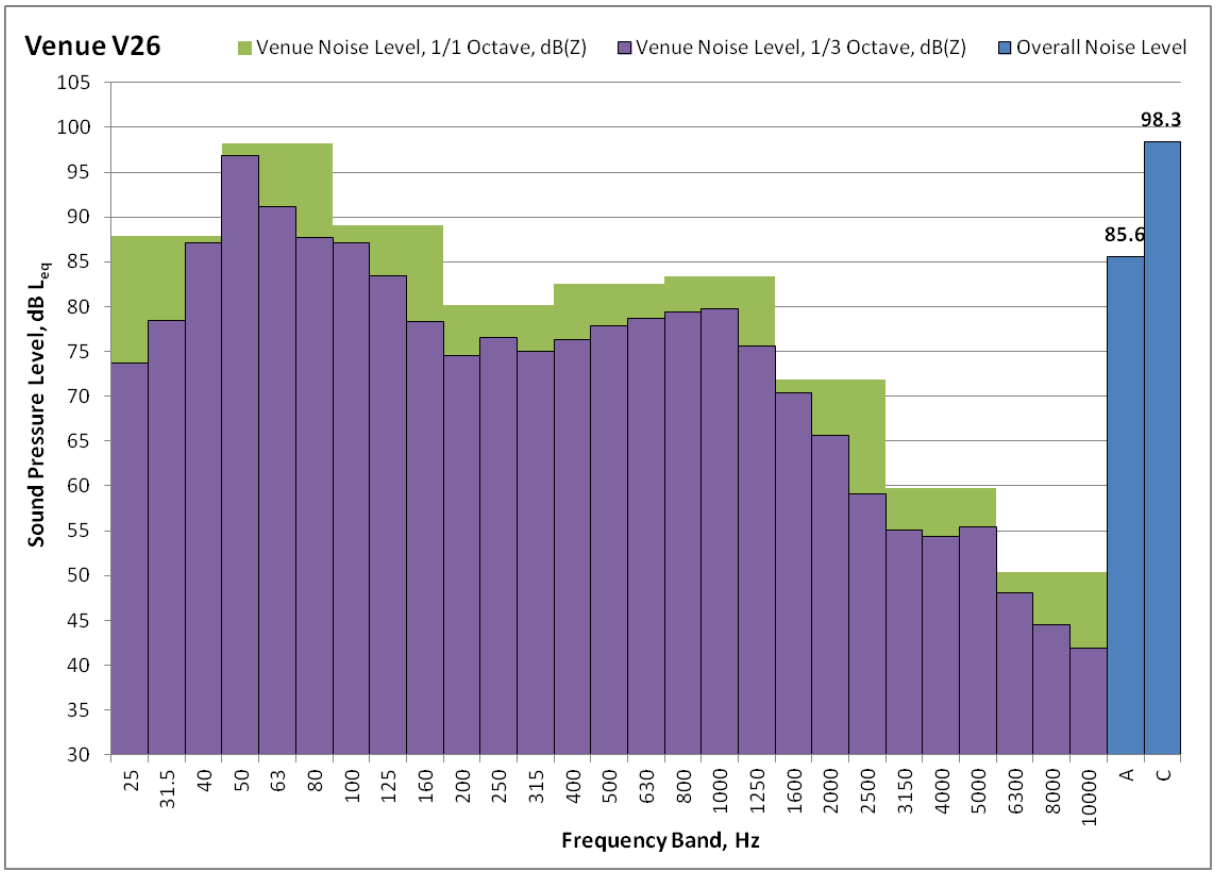

Venue V22
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
95.7
78.2
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

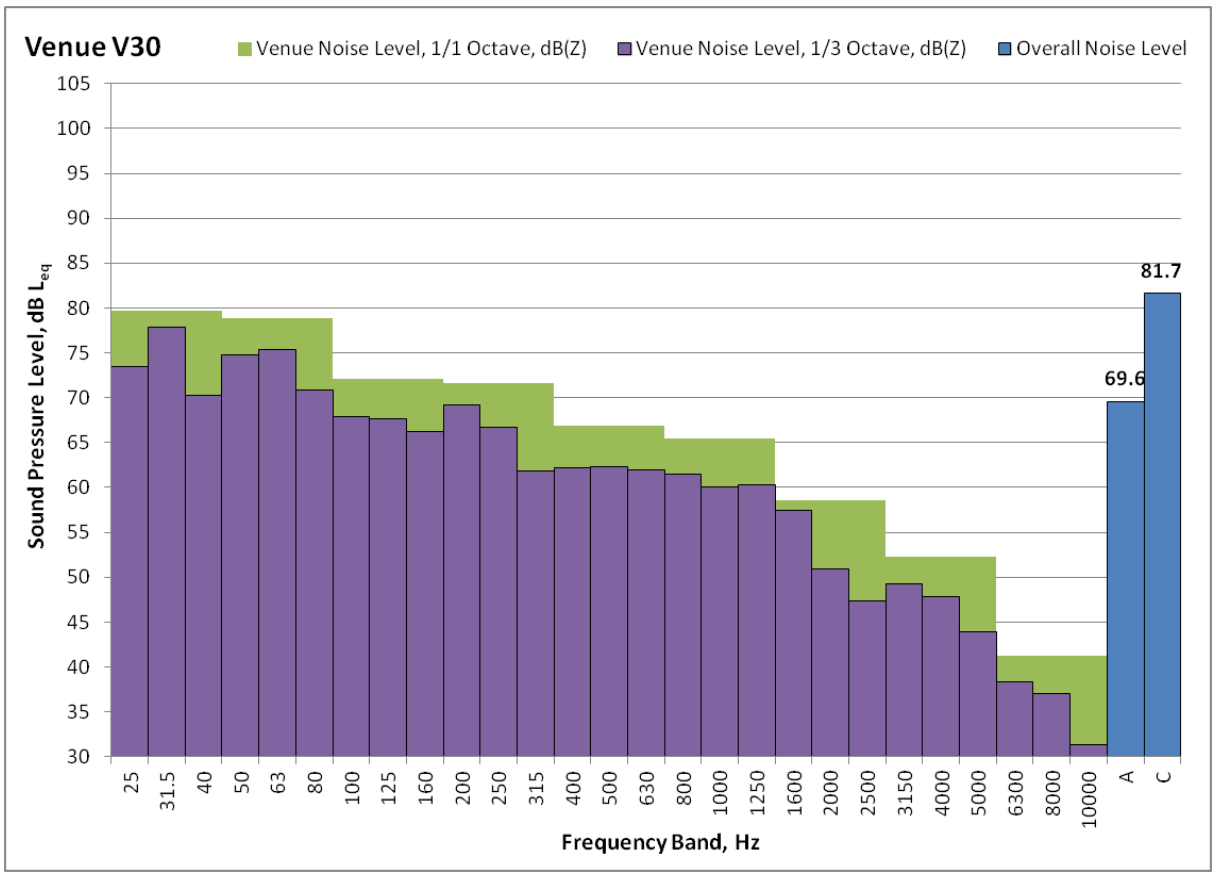

Venue V22f
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
99.7
76.3
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

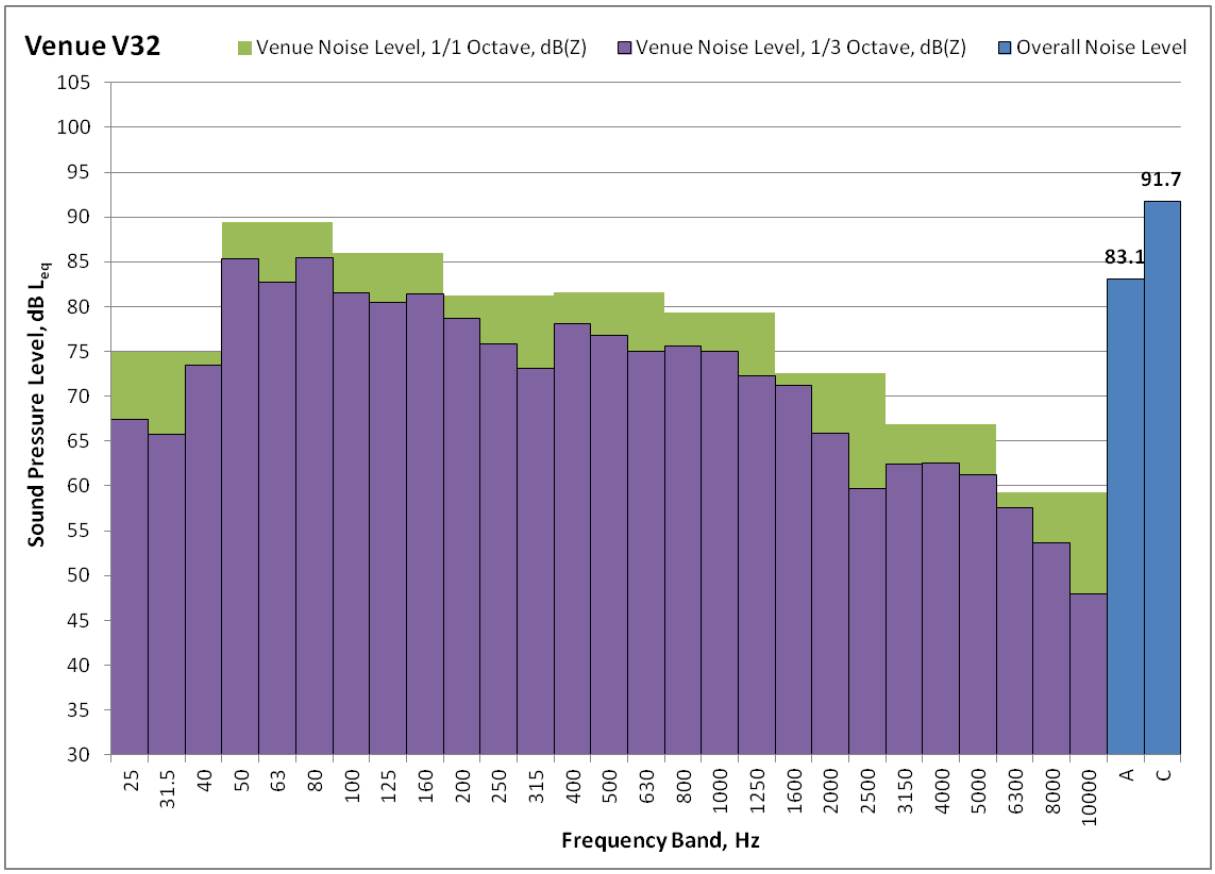

Venue V23
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
94.7
88.7
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

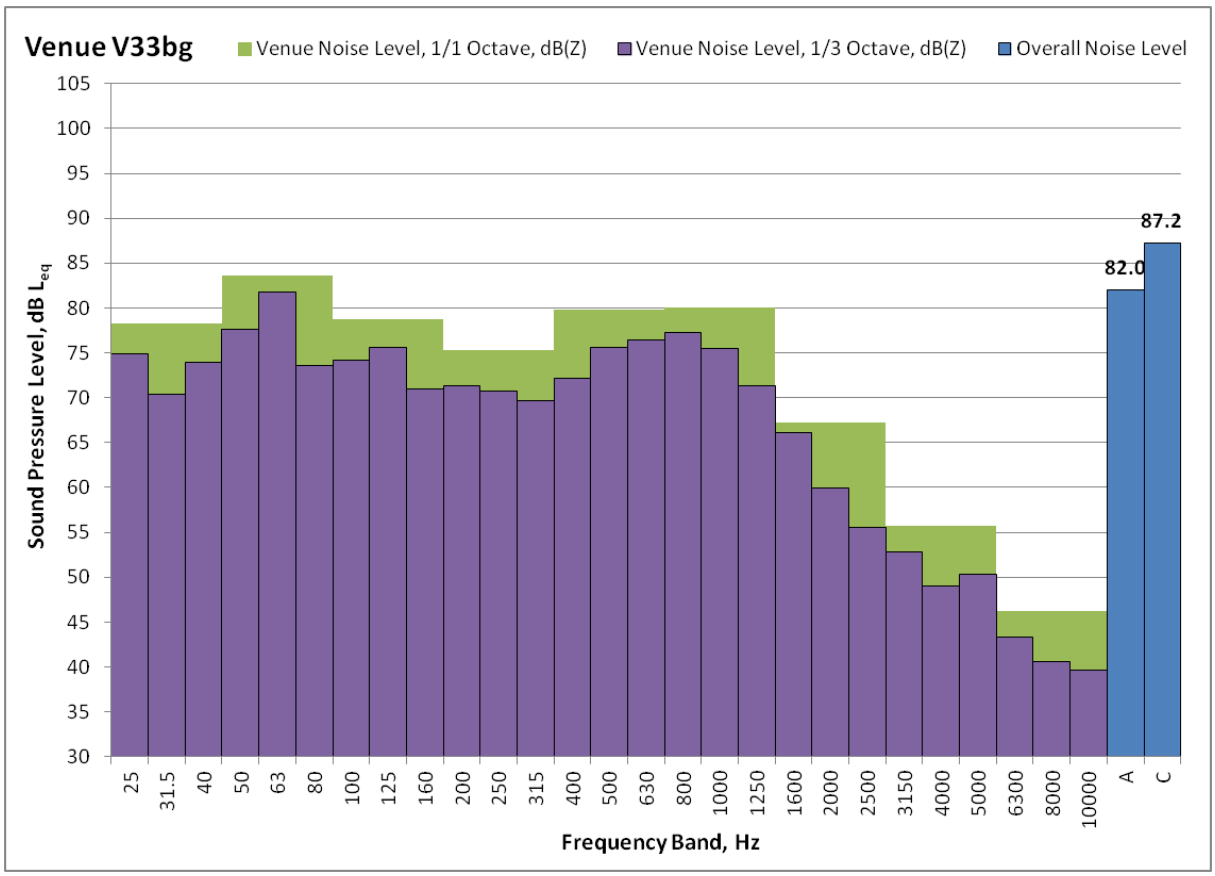

Venue V25e
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
90.9
84.8
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V25s
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
103.8
89.5
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V26
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
98.3
85.6
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V30
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
81.7
69.6
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V32
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
91.7
83.1
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V33bg
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
87.2
82.0
25
31.5
40
50
63
80
100
125
160
200
250
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1250
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2000
2500
3150
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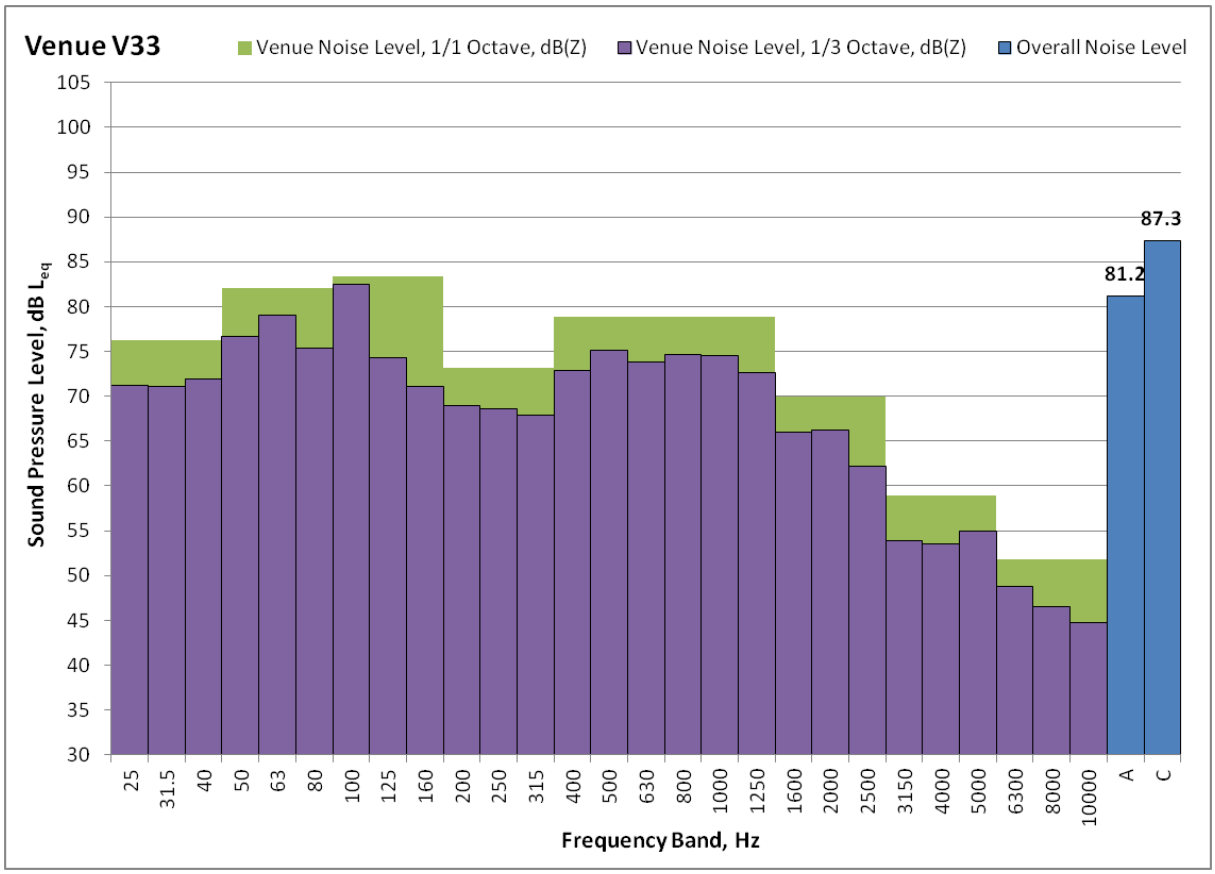
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V33
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
87.3
81.2
25
31.5
40
50
63
80
100
125
160
200
250
315
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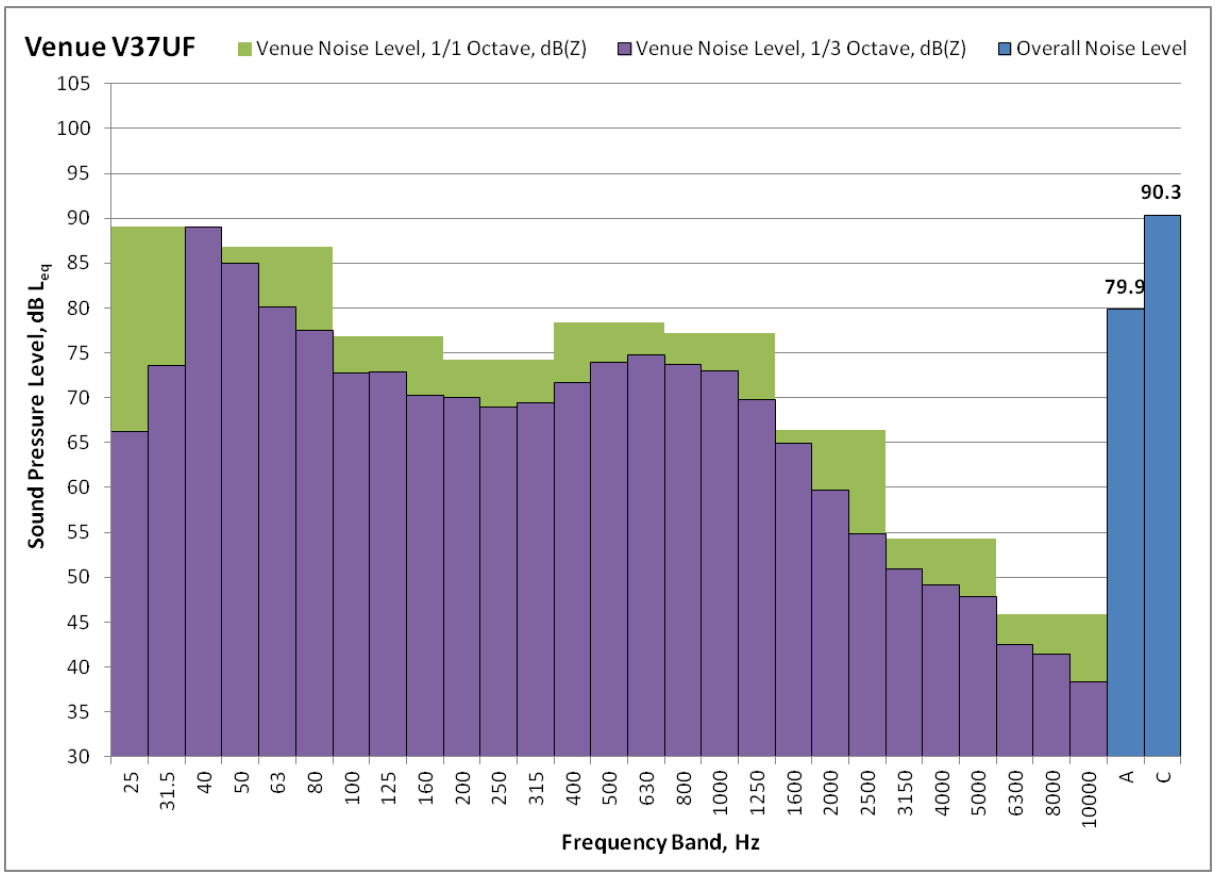
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V37UF
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
90.3
79.9
25
31.5
40
50
63
80
100
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160
200
250
315
400
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2000
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3150
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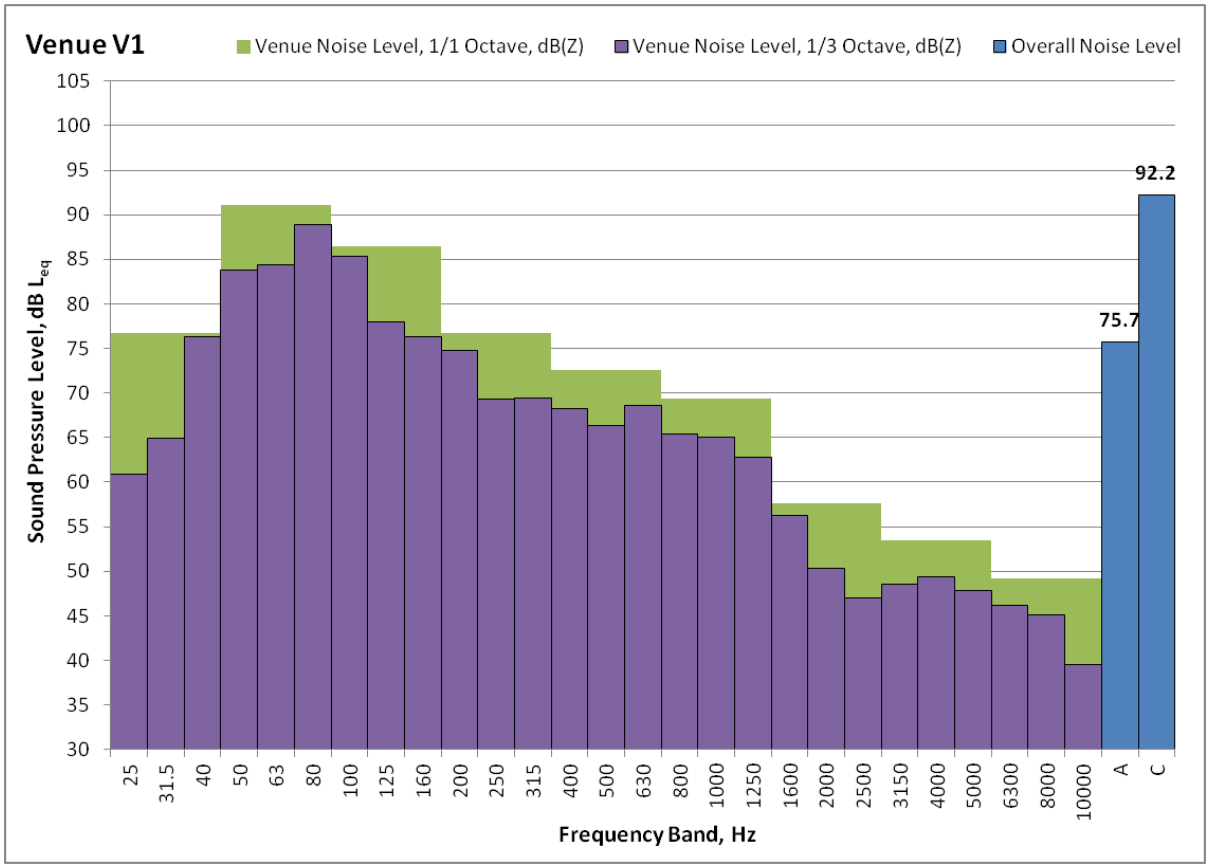
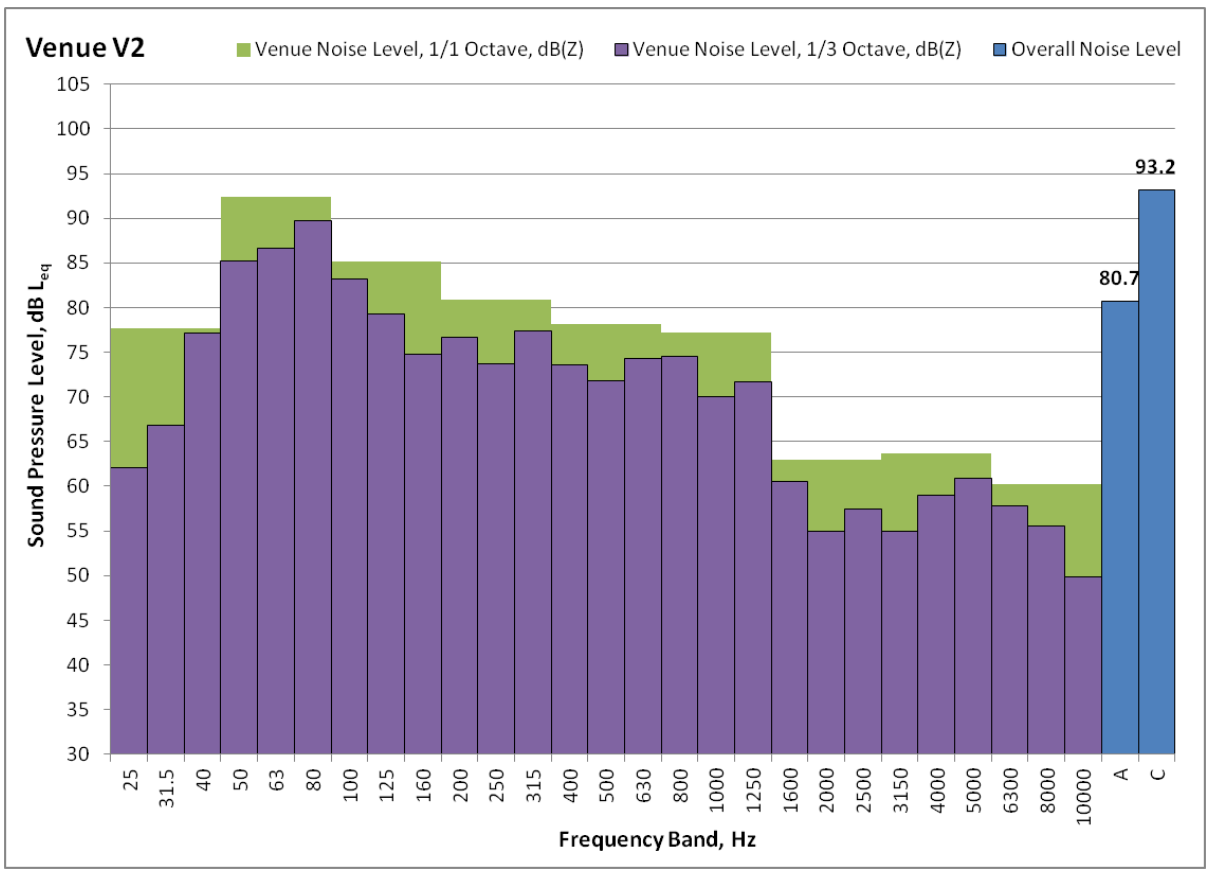
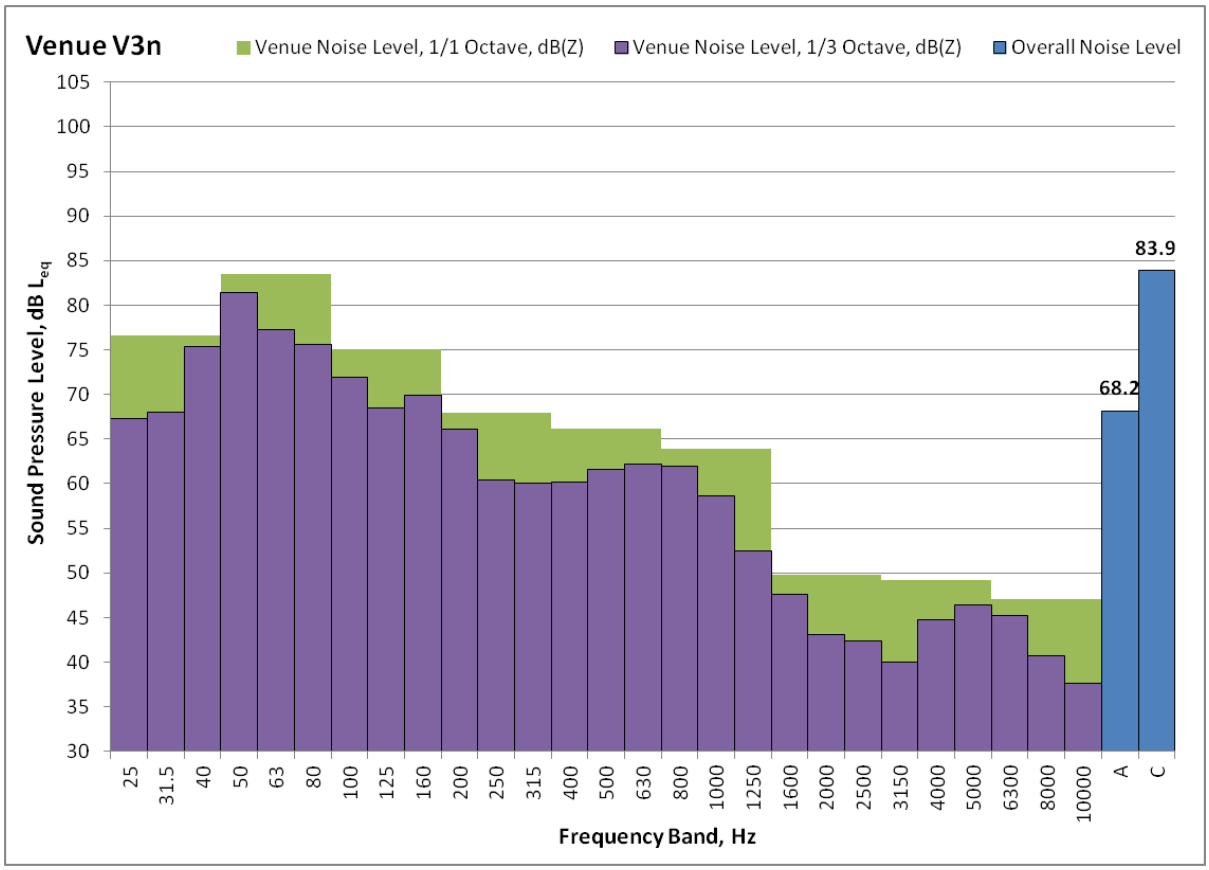
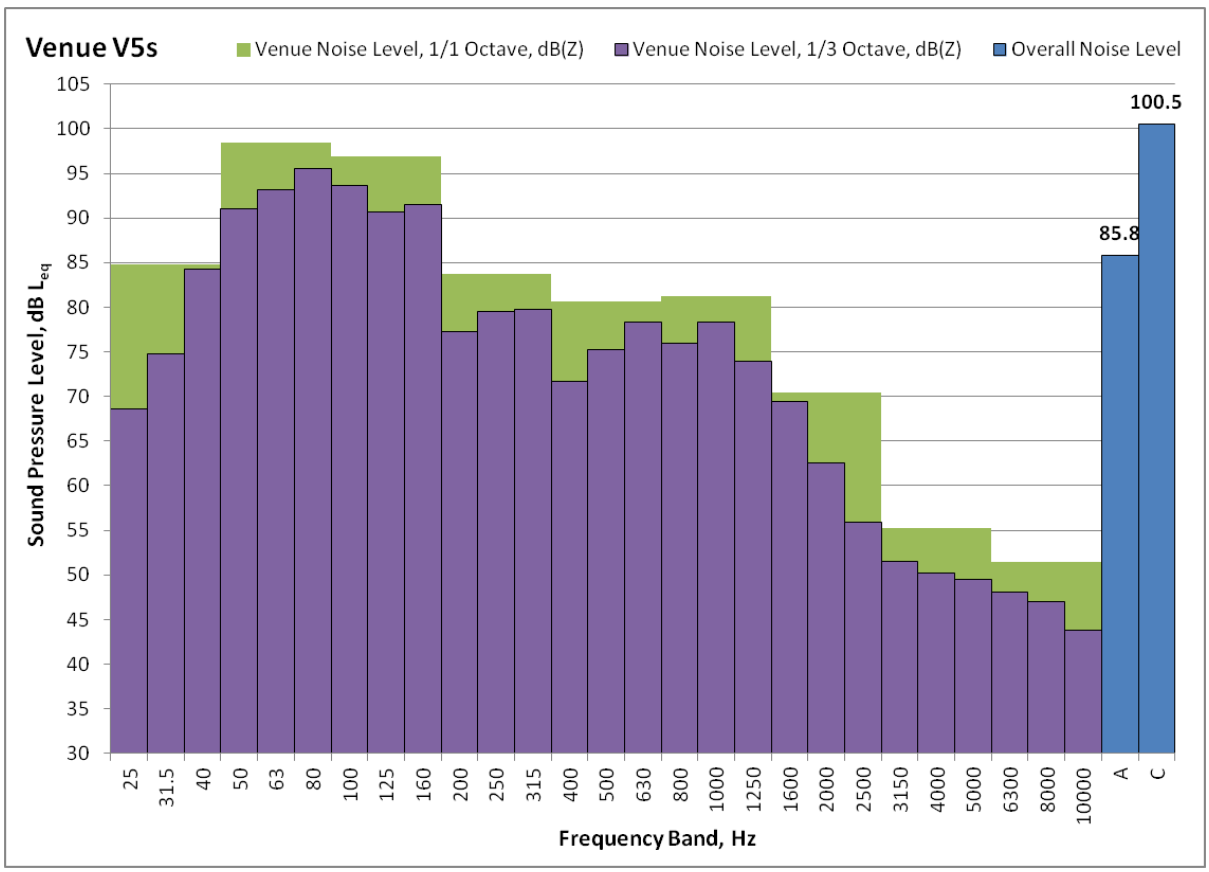
5000
6300
8000
10000
A
C
Frequency Band, Hz

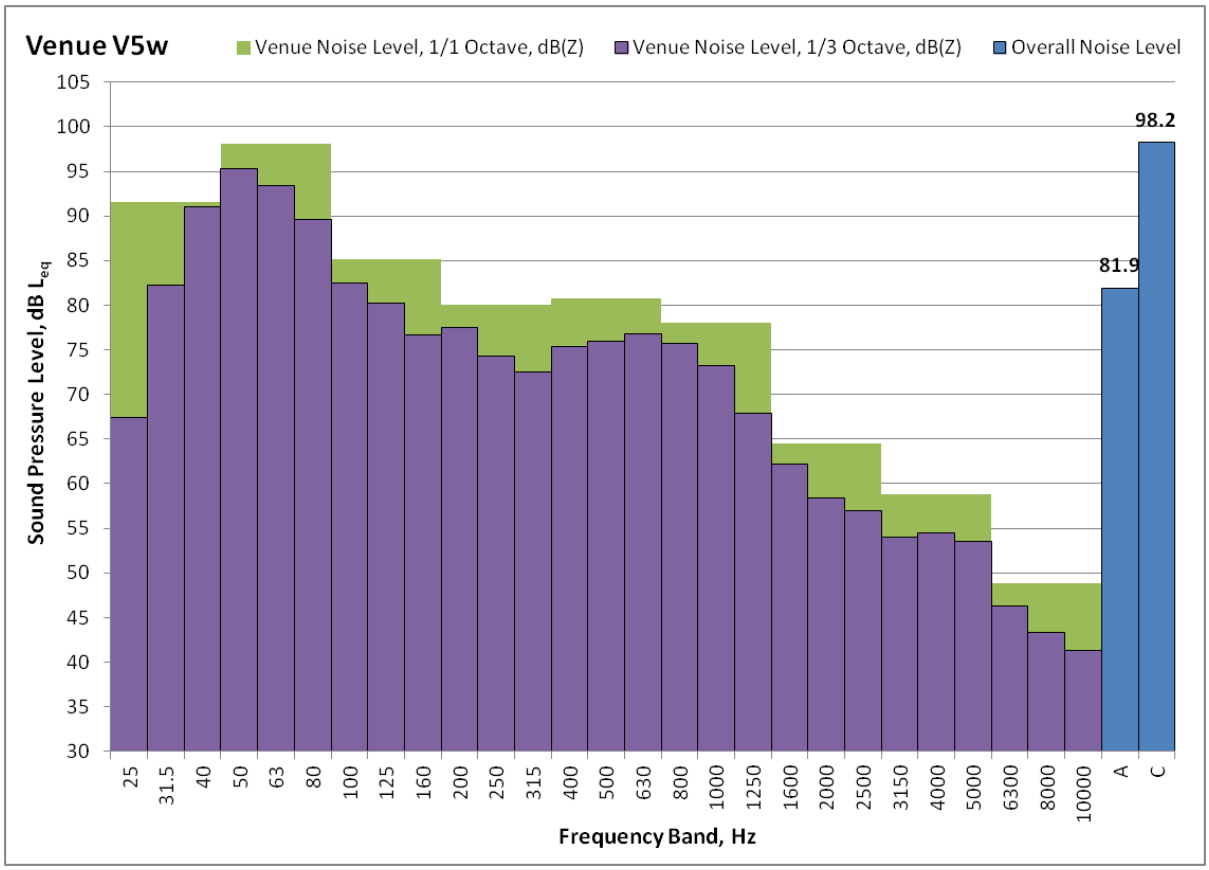
Night 3 Plots

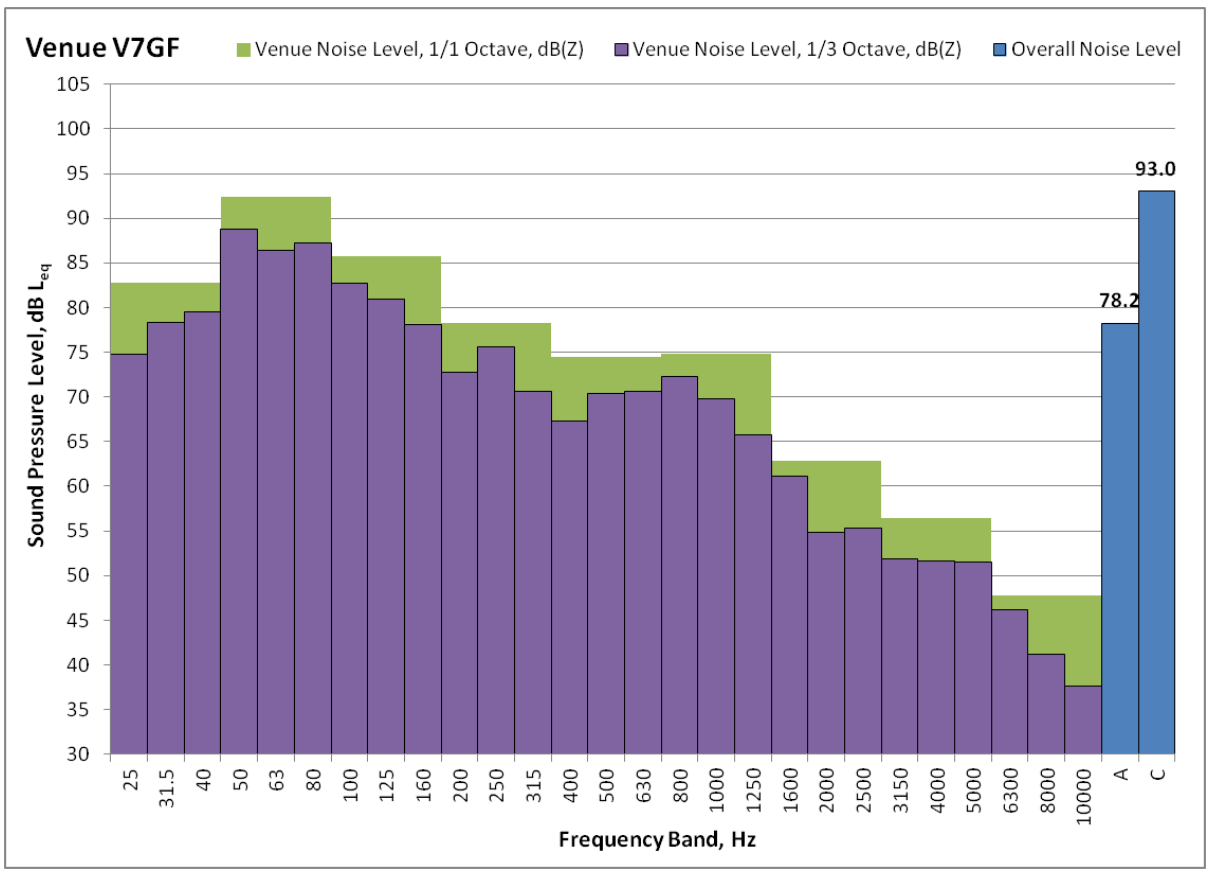


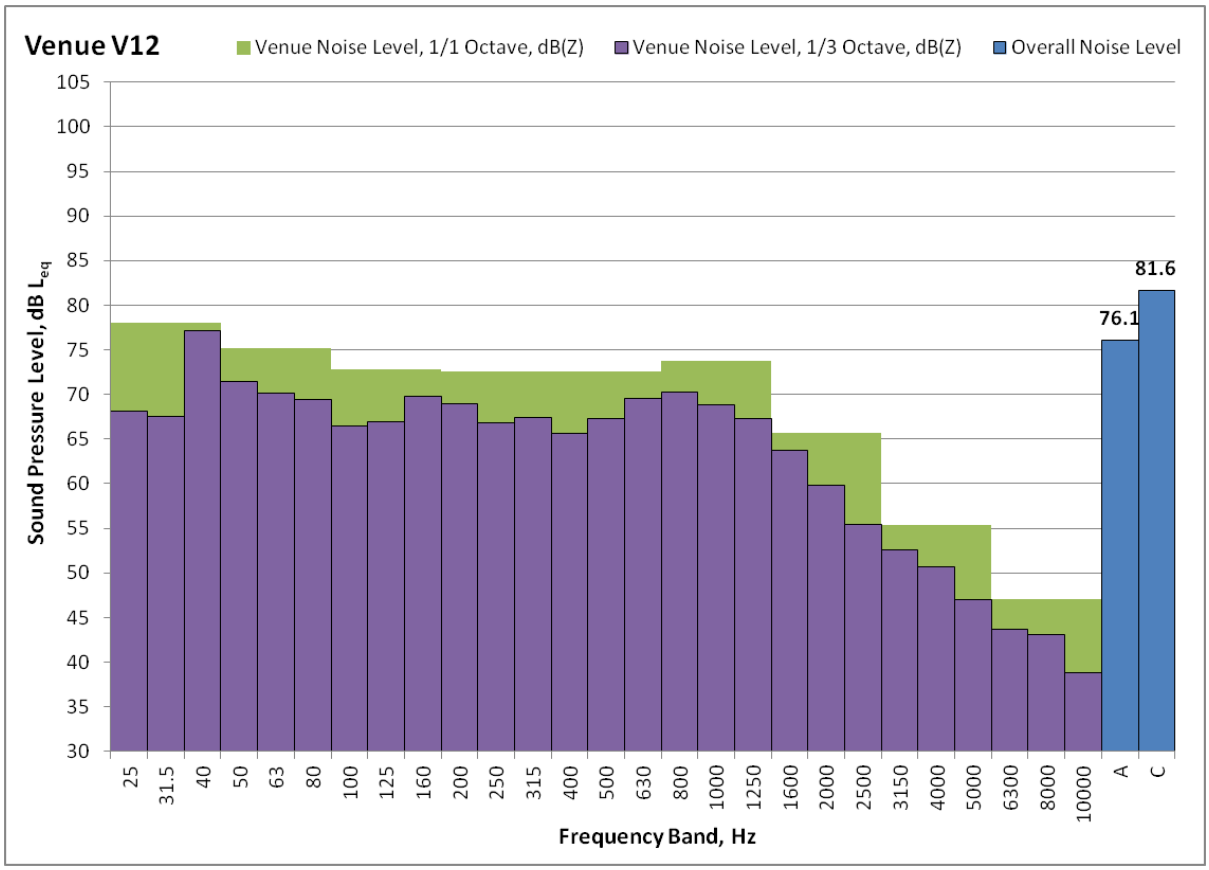


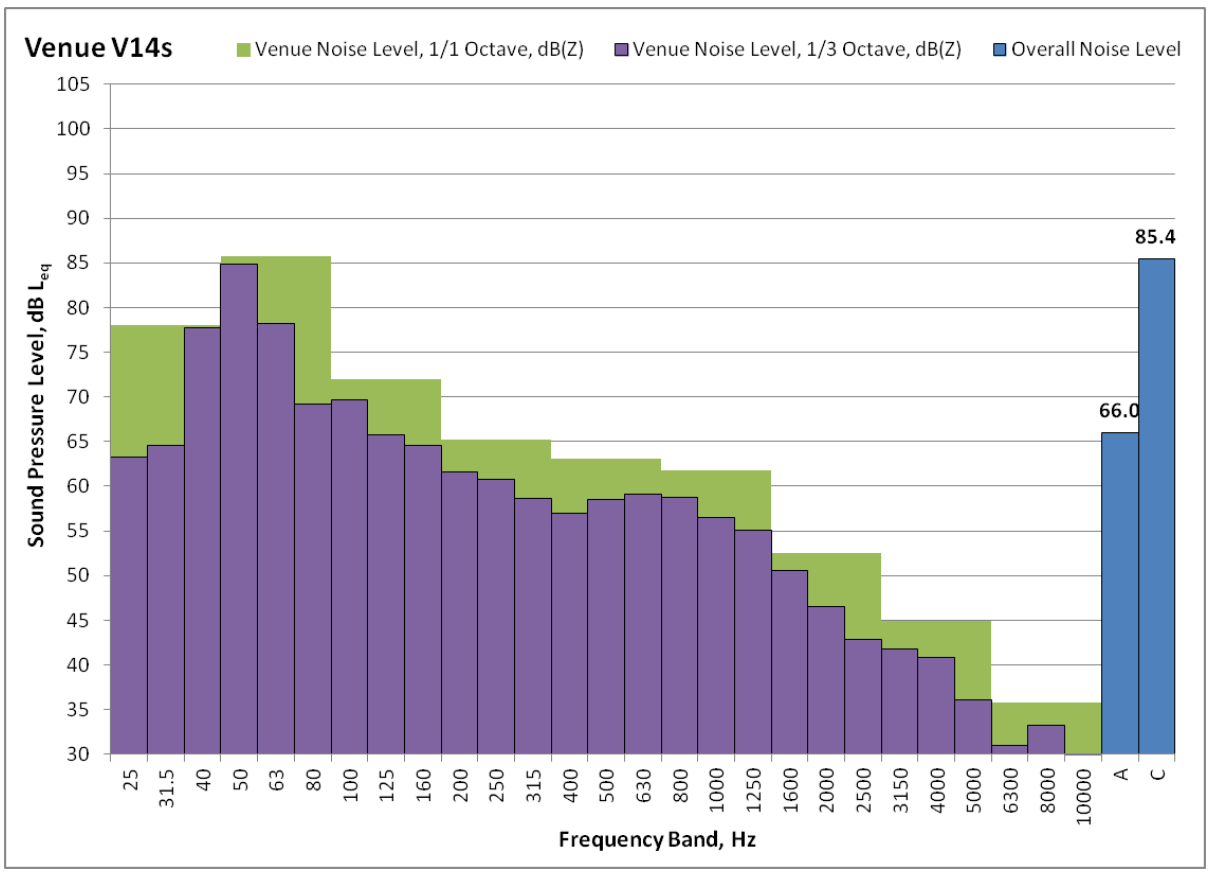

Venue V3n
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
83.9
68.2
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

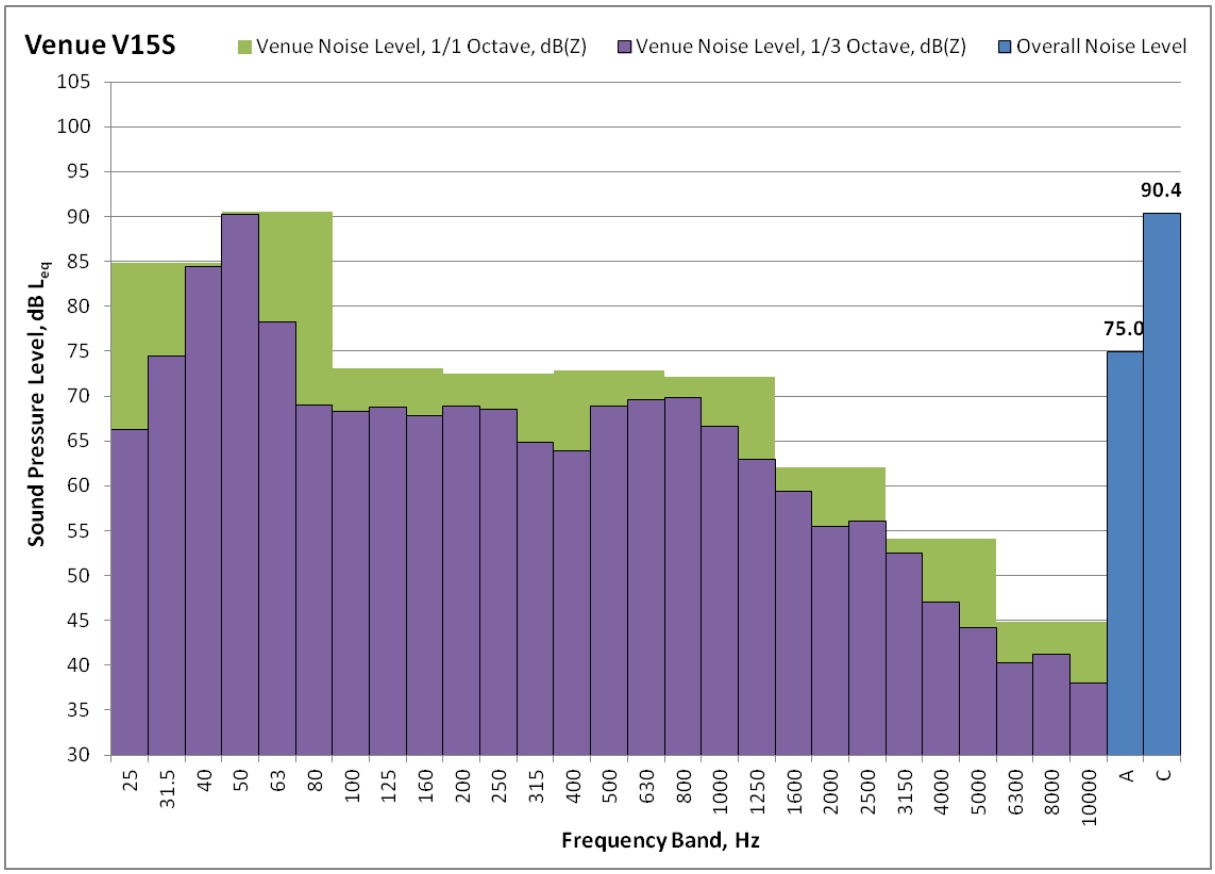

Venue V5s
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
100.5
85.8
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

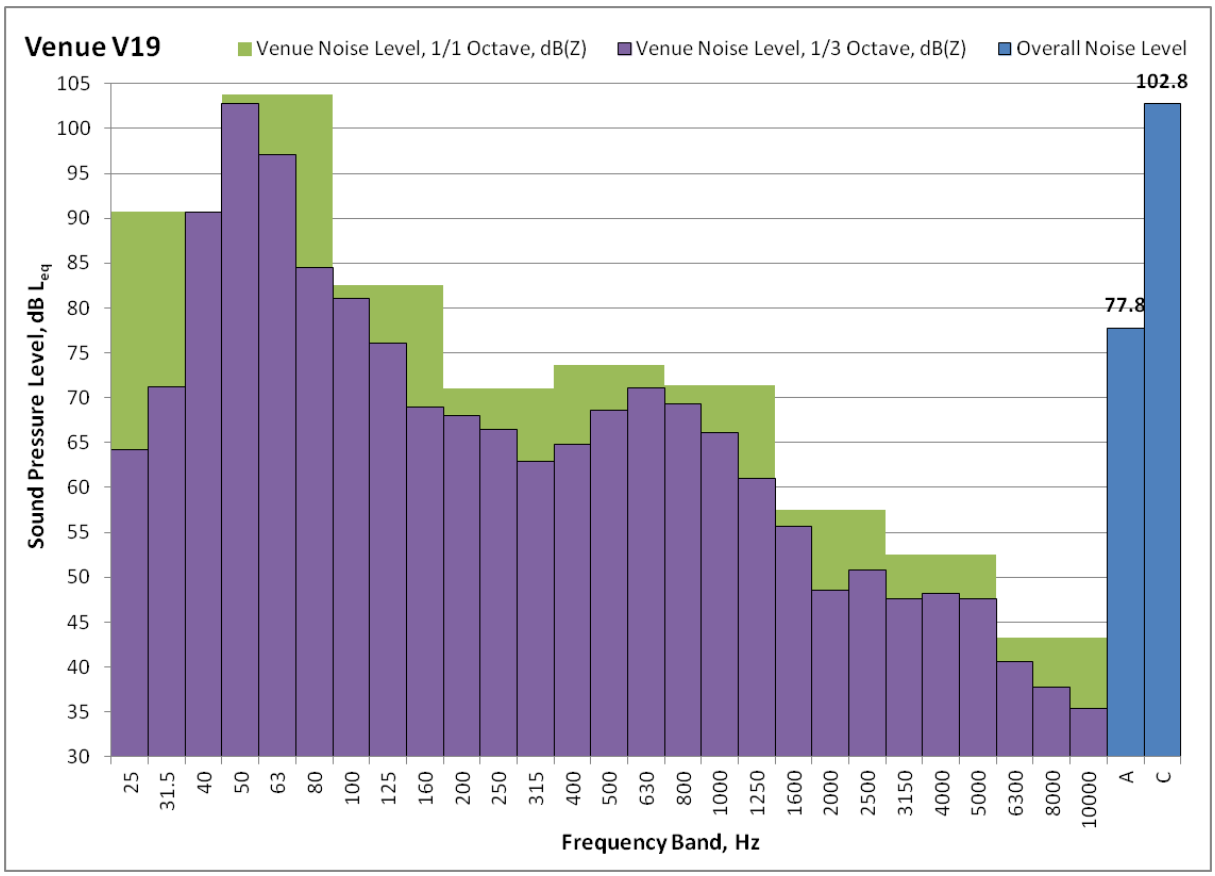

Venue V5w
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
98.2
81.9
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

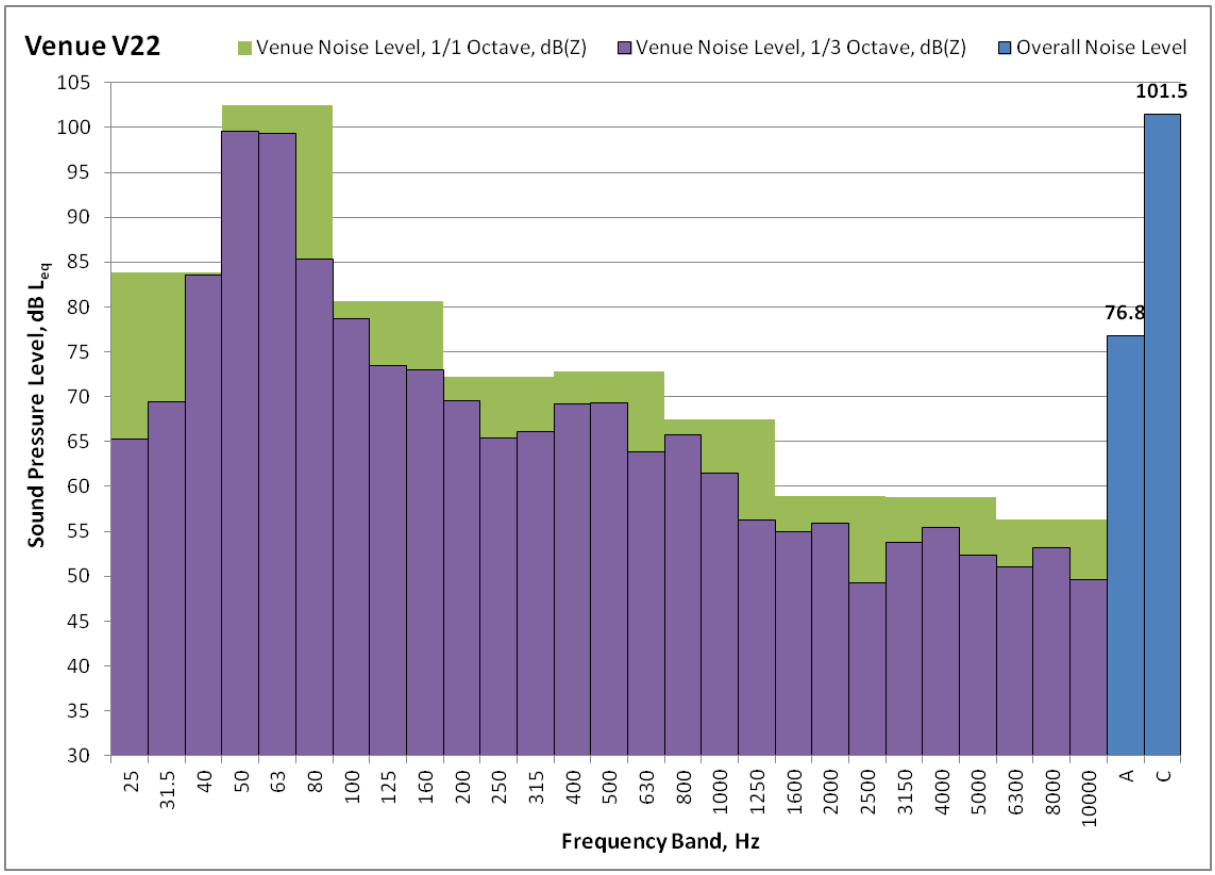

Venue V7GF
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
93.0
78.2
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

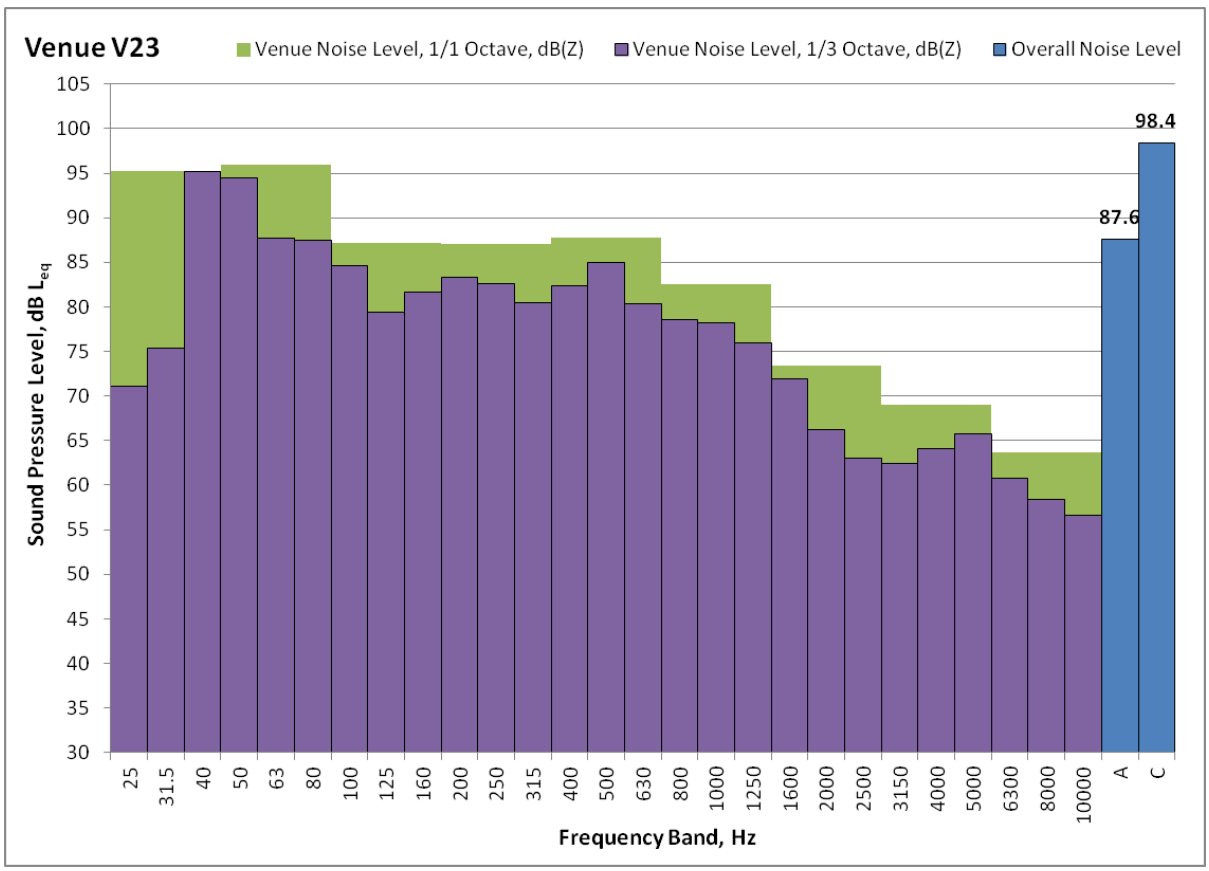

Venue V12
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
81.6
76.1
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

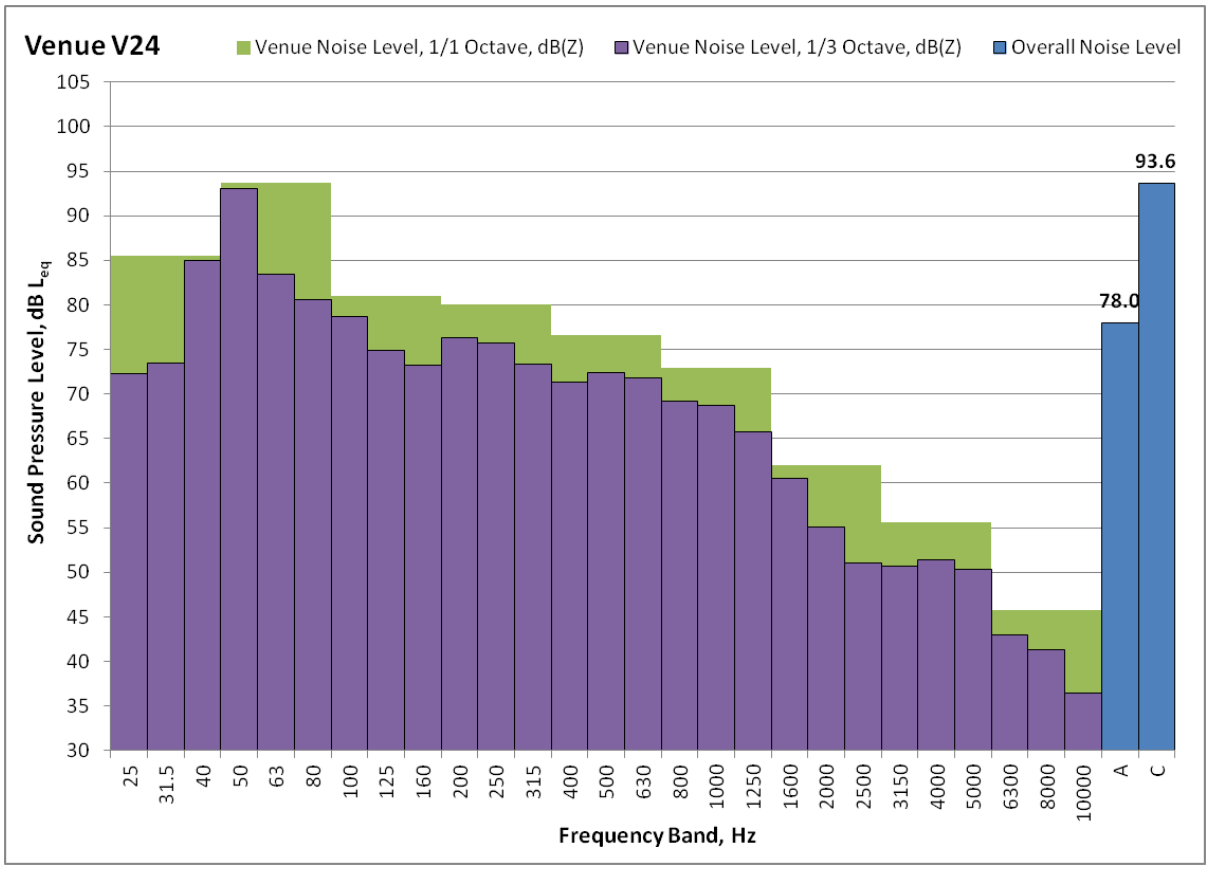

Venue V14s
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
85.4
66.0
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

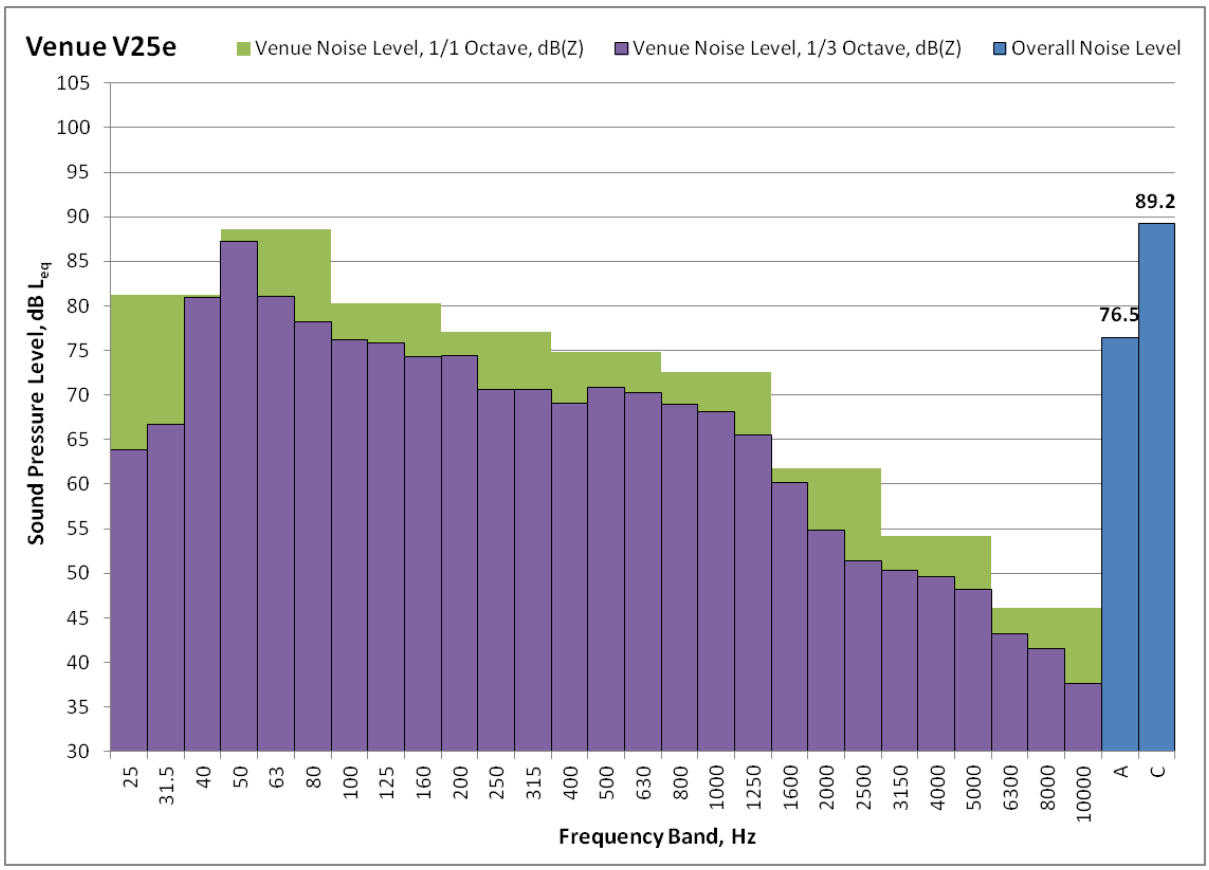

Venue V15S
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
90.4
75.0
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

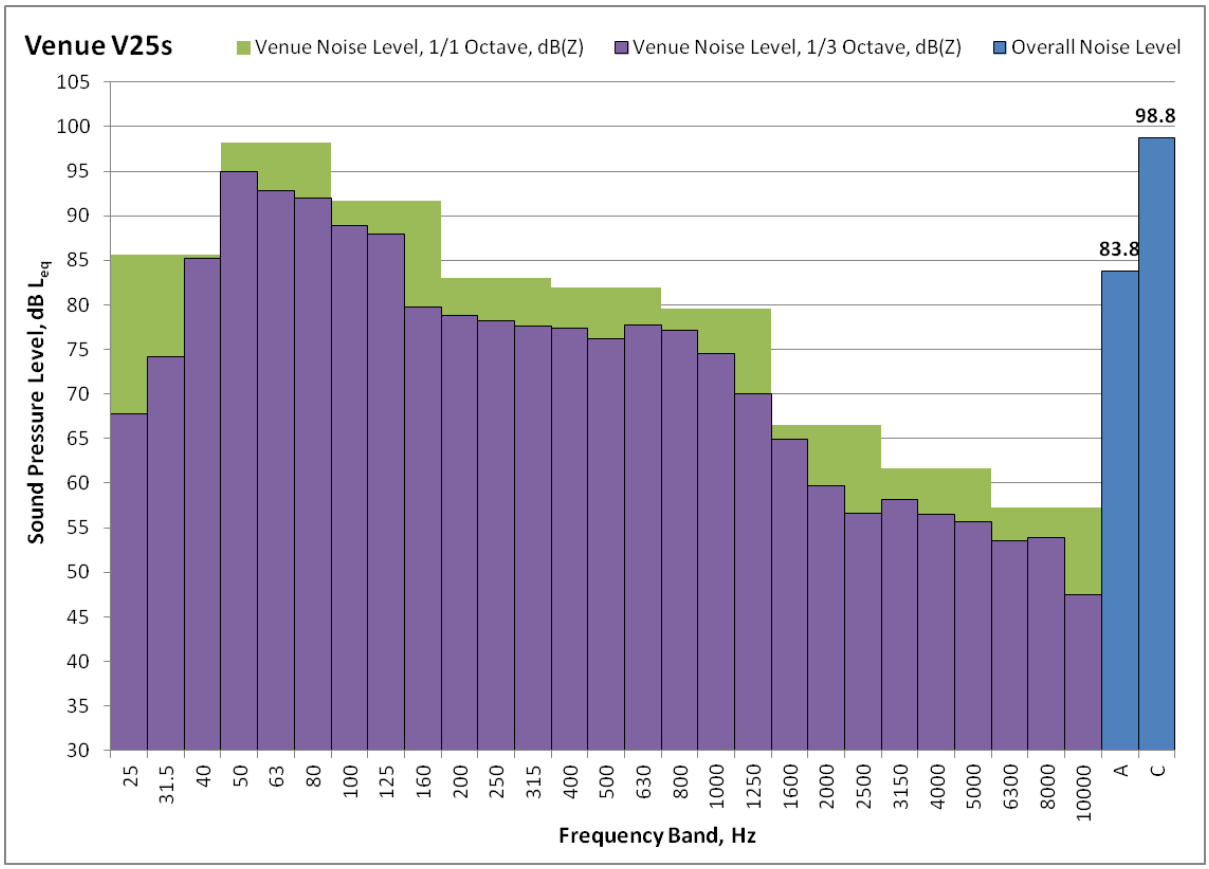

Venue V19
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
102.8
77.8
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V22
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
101.5
76.8
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V23
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
98.4
87.6
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V24
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
93.6
78.0
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V25e
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
89.2
76.5
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V25s
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
98.8
83.8
25
31.5
40
50
63
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125
160
200
250
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3150
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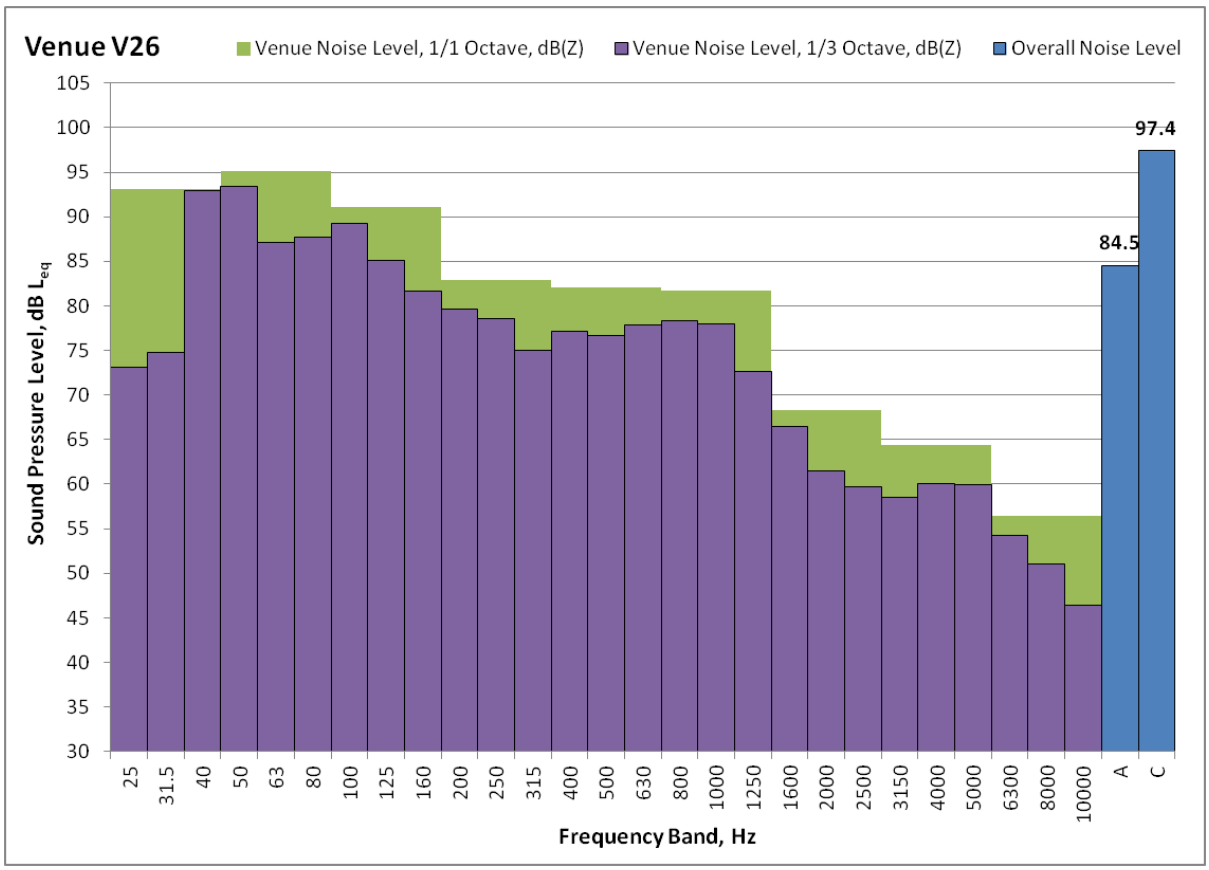
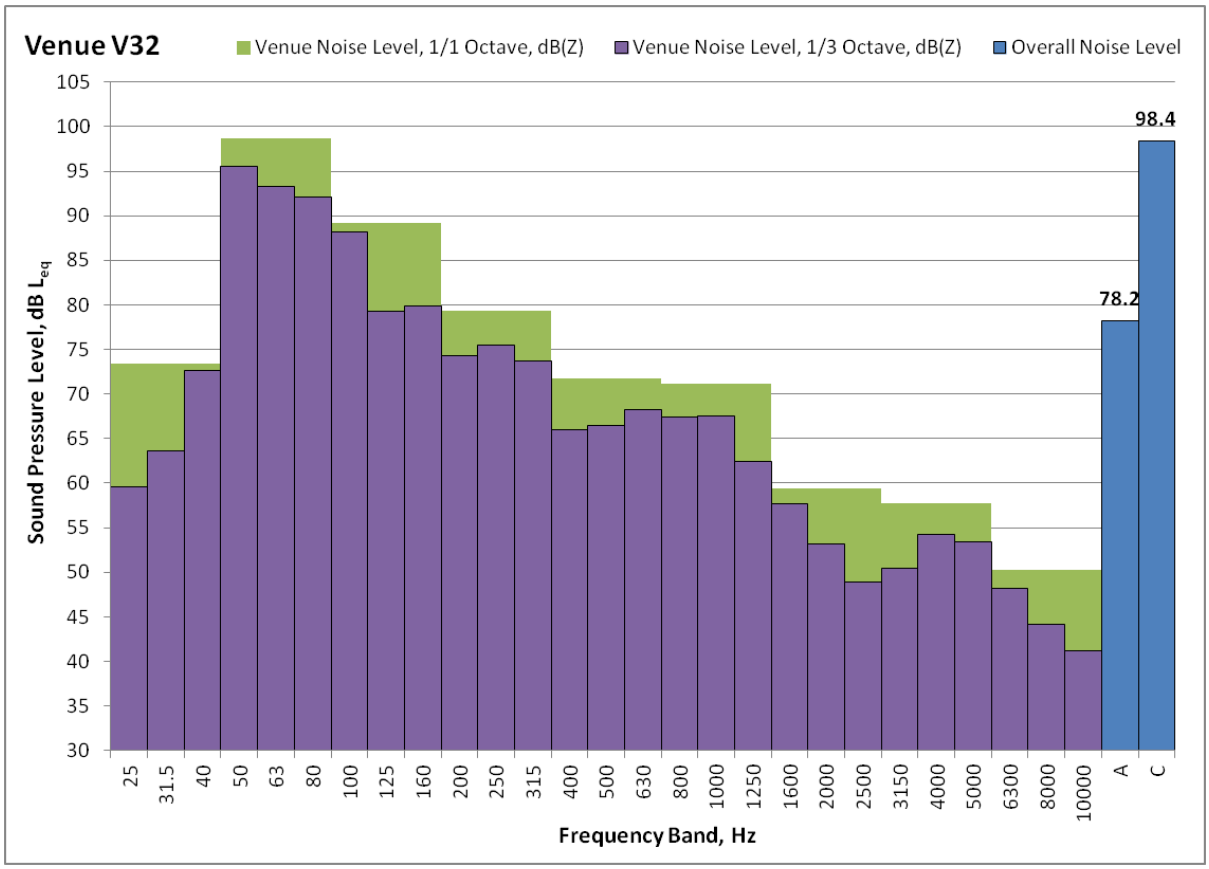
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V26
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
97.4
84.5
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V32
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
98.4
78.2
25
31.5
40
50
63
80
100
125
160
200
250
315
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500
630
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1000
1250
1600
2000
2500
3150
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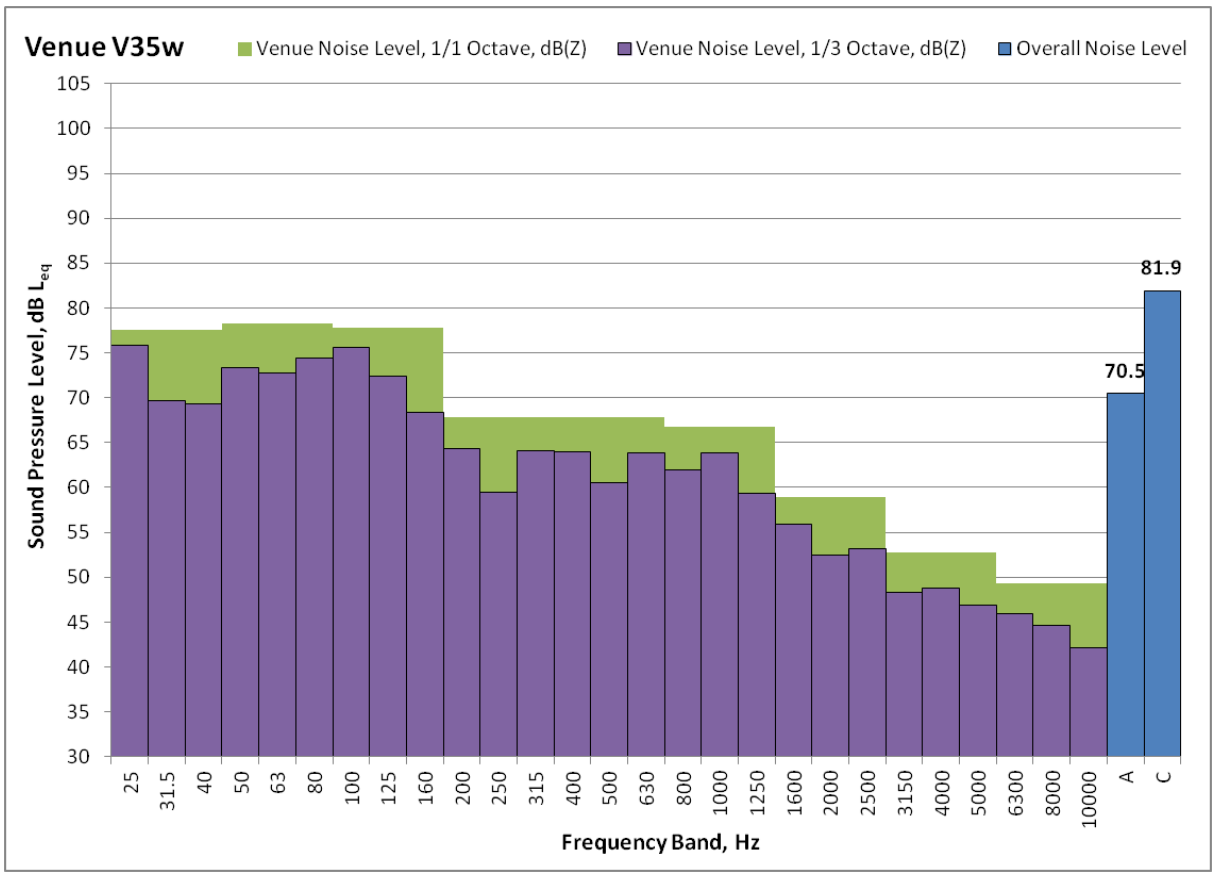
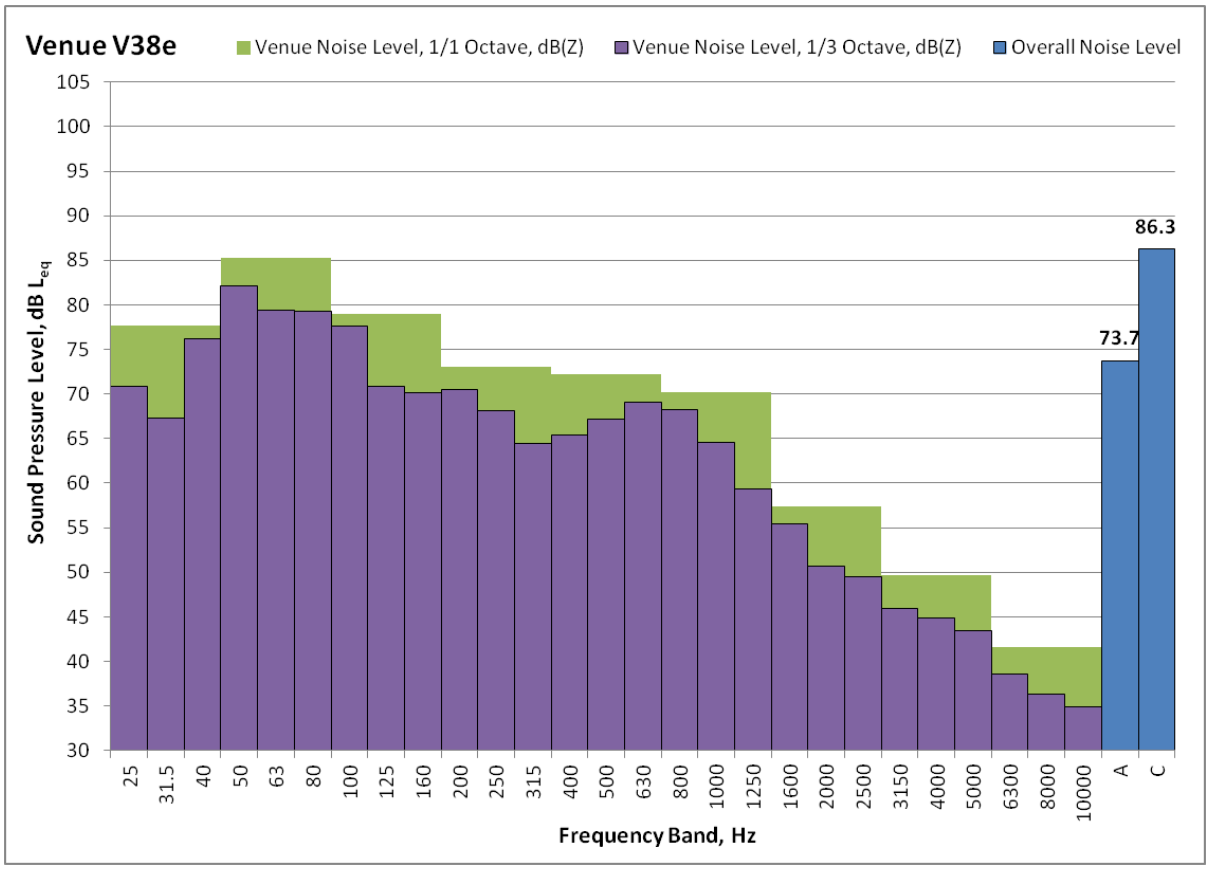
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V35w
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
81.9
70.5
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V38e
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
86.3
73.7
25
31.5
40
50
63
80
100
125
160
200
250
315
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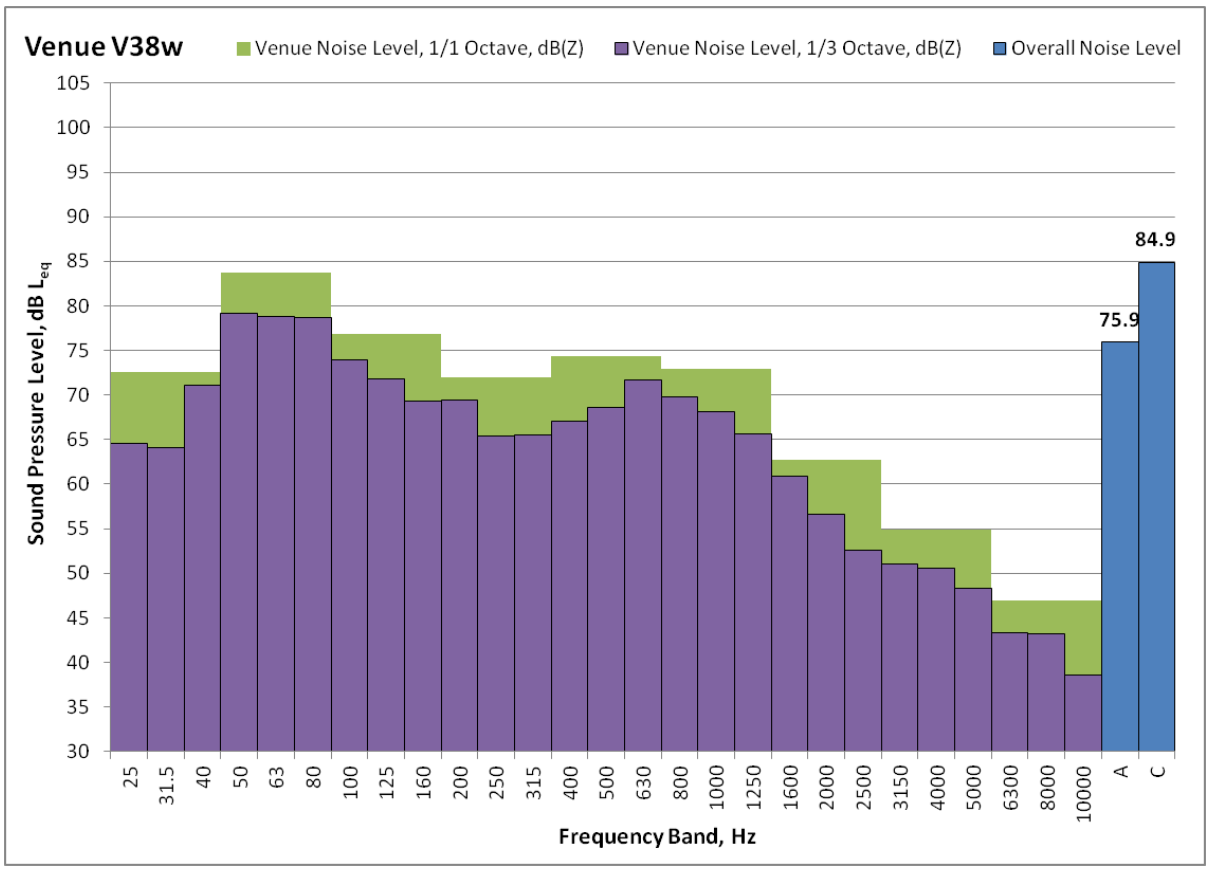
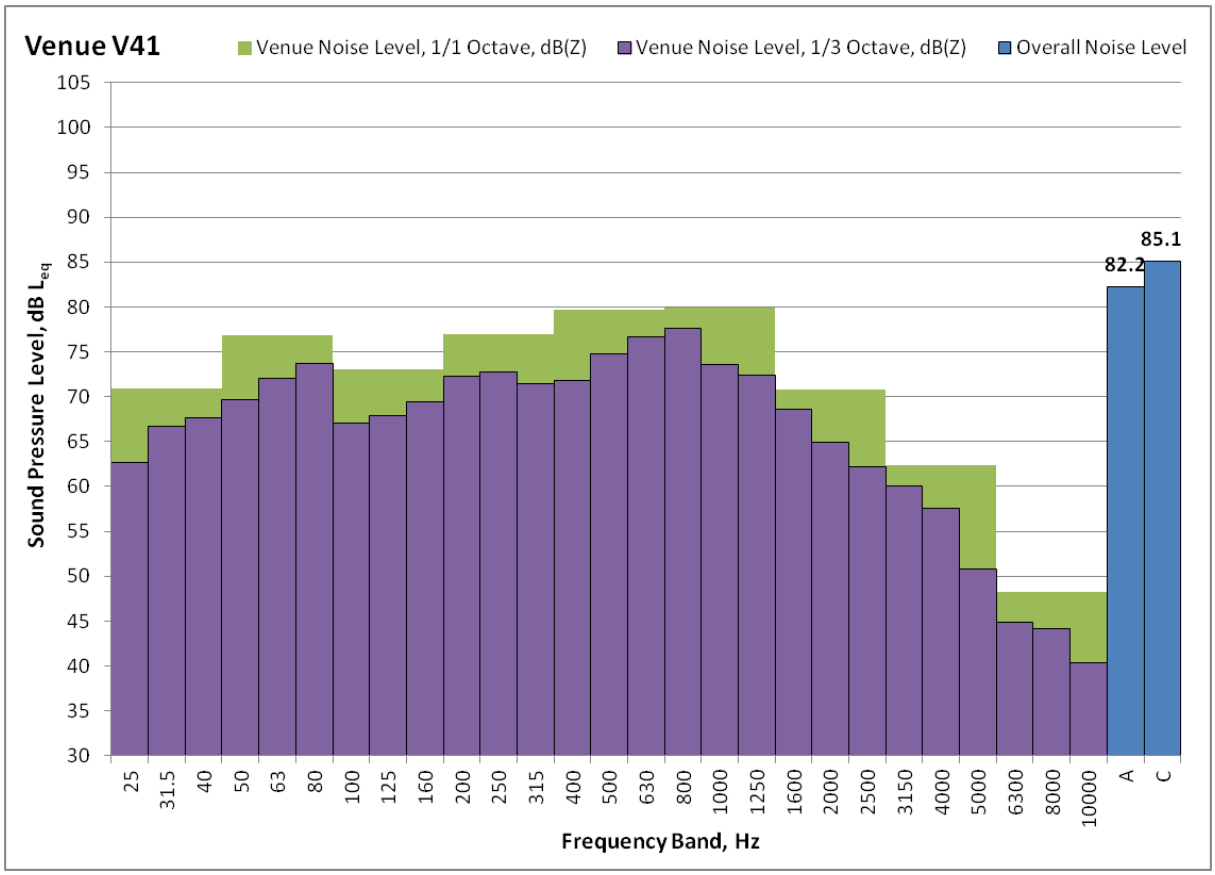
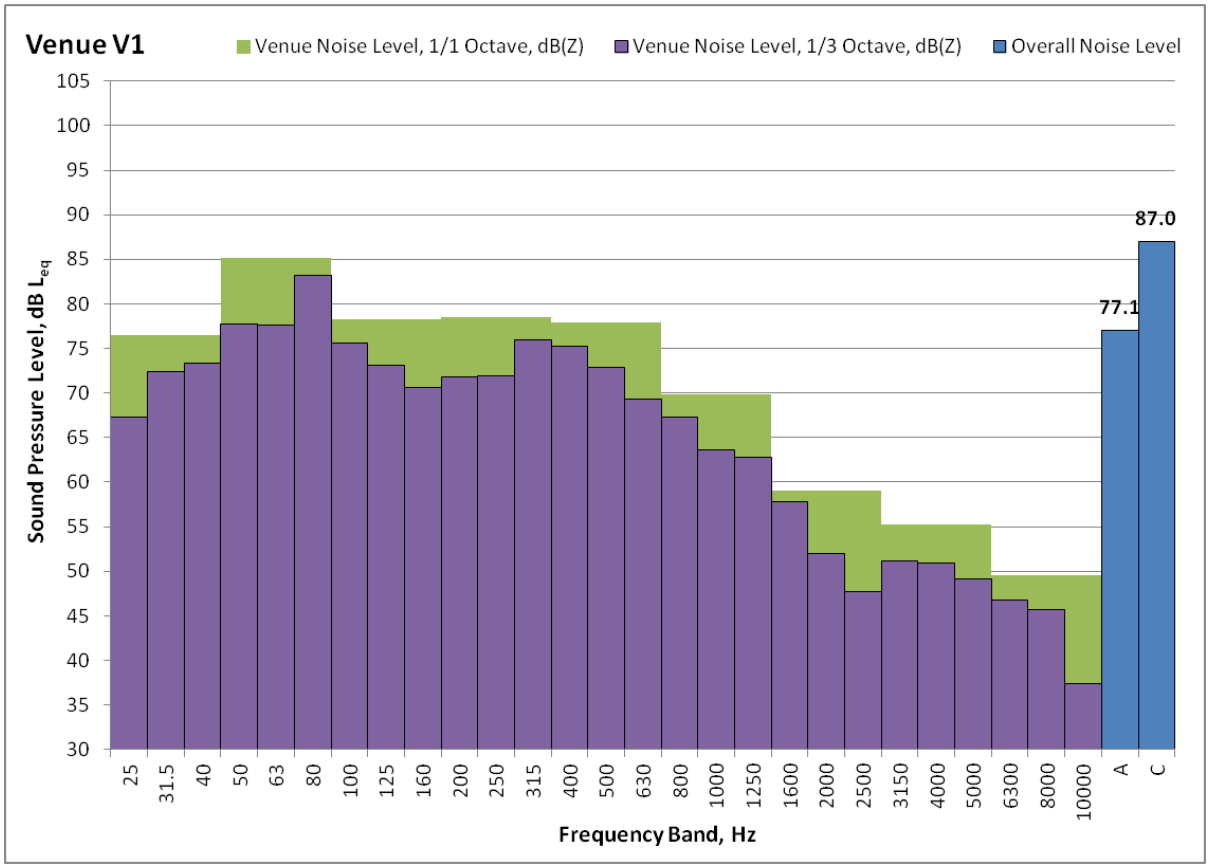
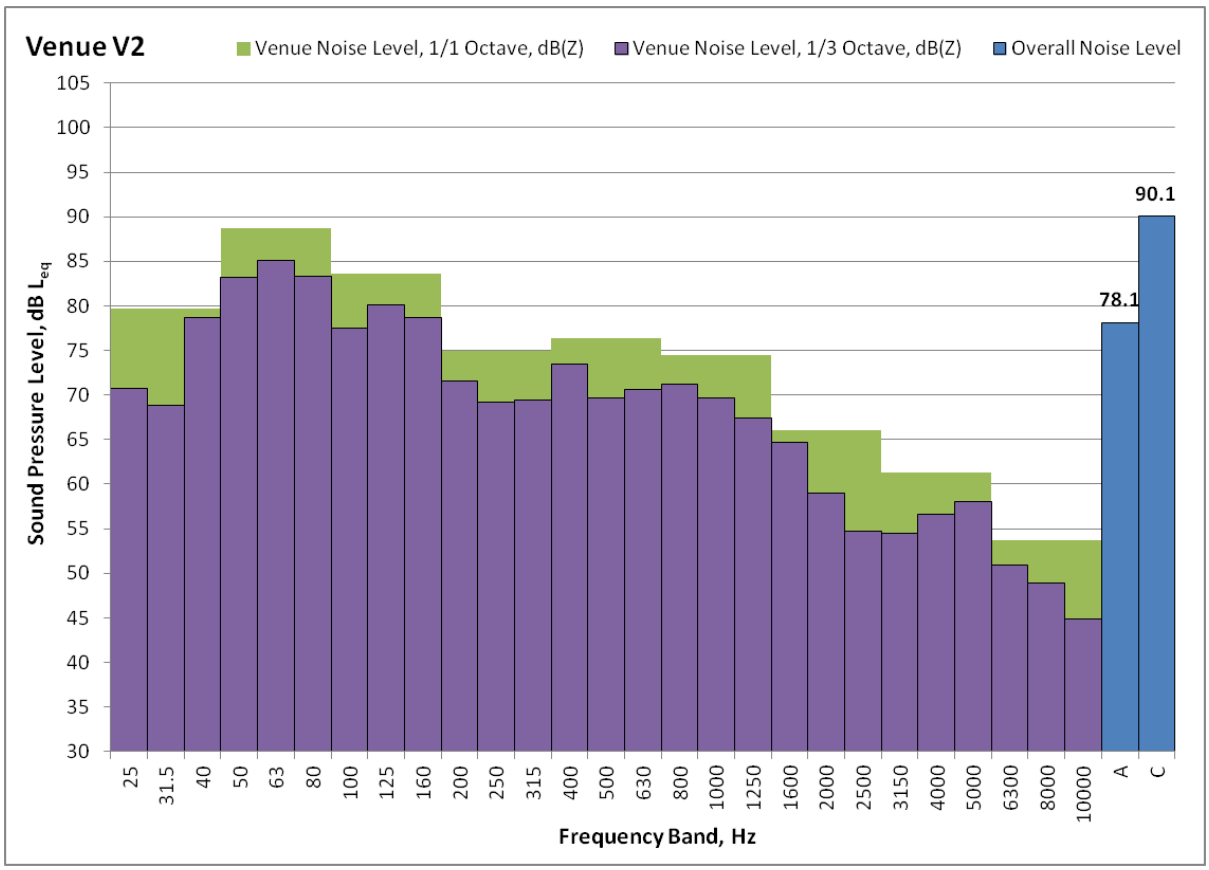
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

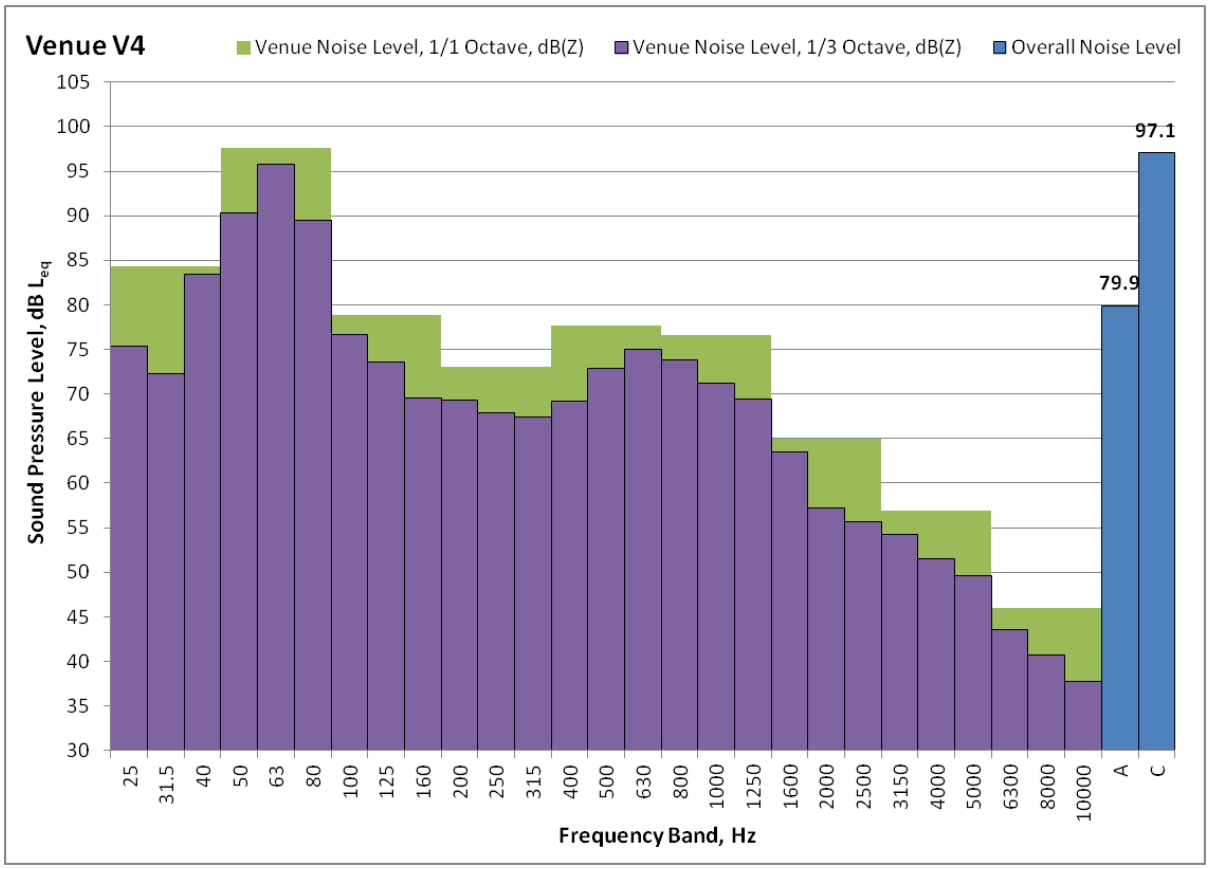

Venue V38w
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
84.9
75.9
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V41
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
85.1
82.2
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

Night 4 Plots






Venue V4
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
97.1
79.9
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
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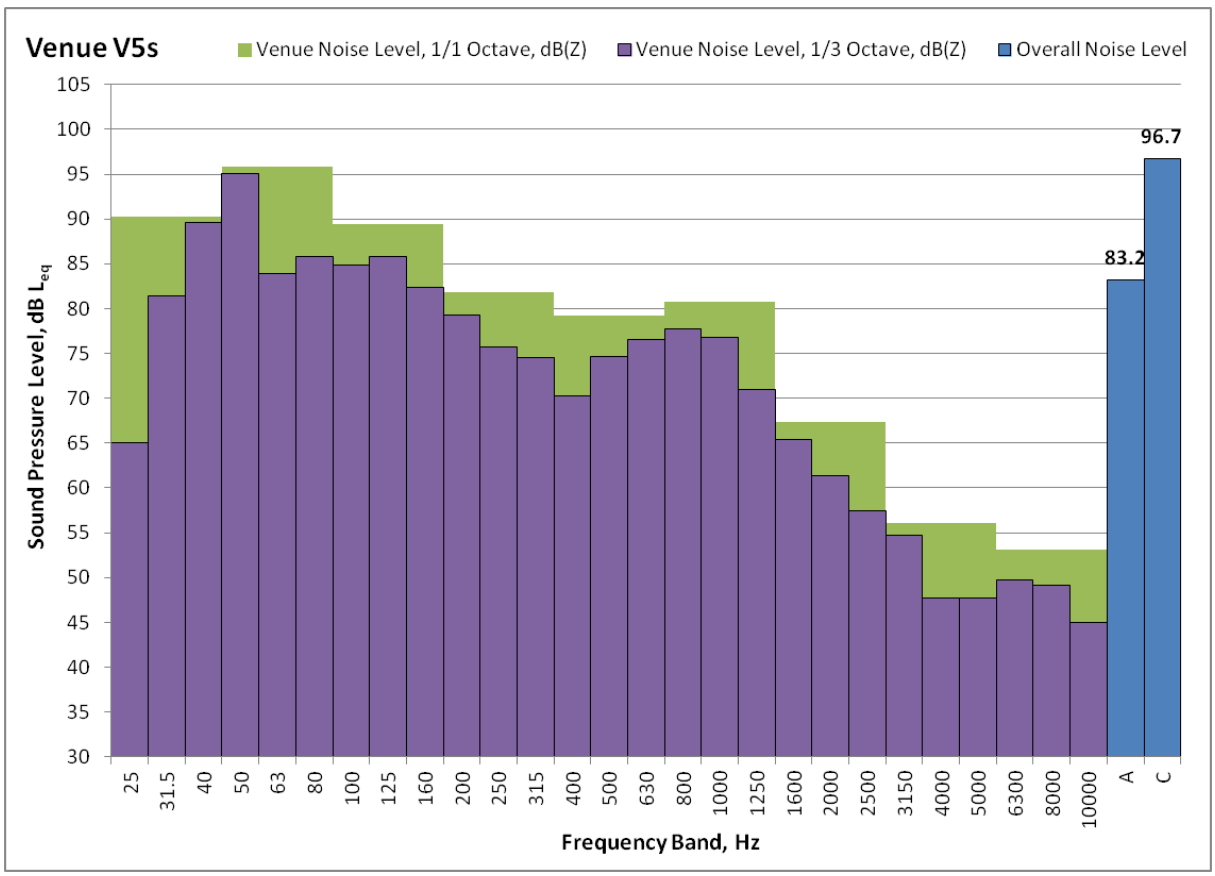
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V5s
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
96.7
83.2
25
31.5
40
50
63
80
100
125
160
200
250
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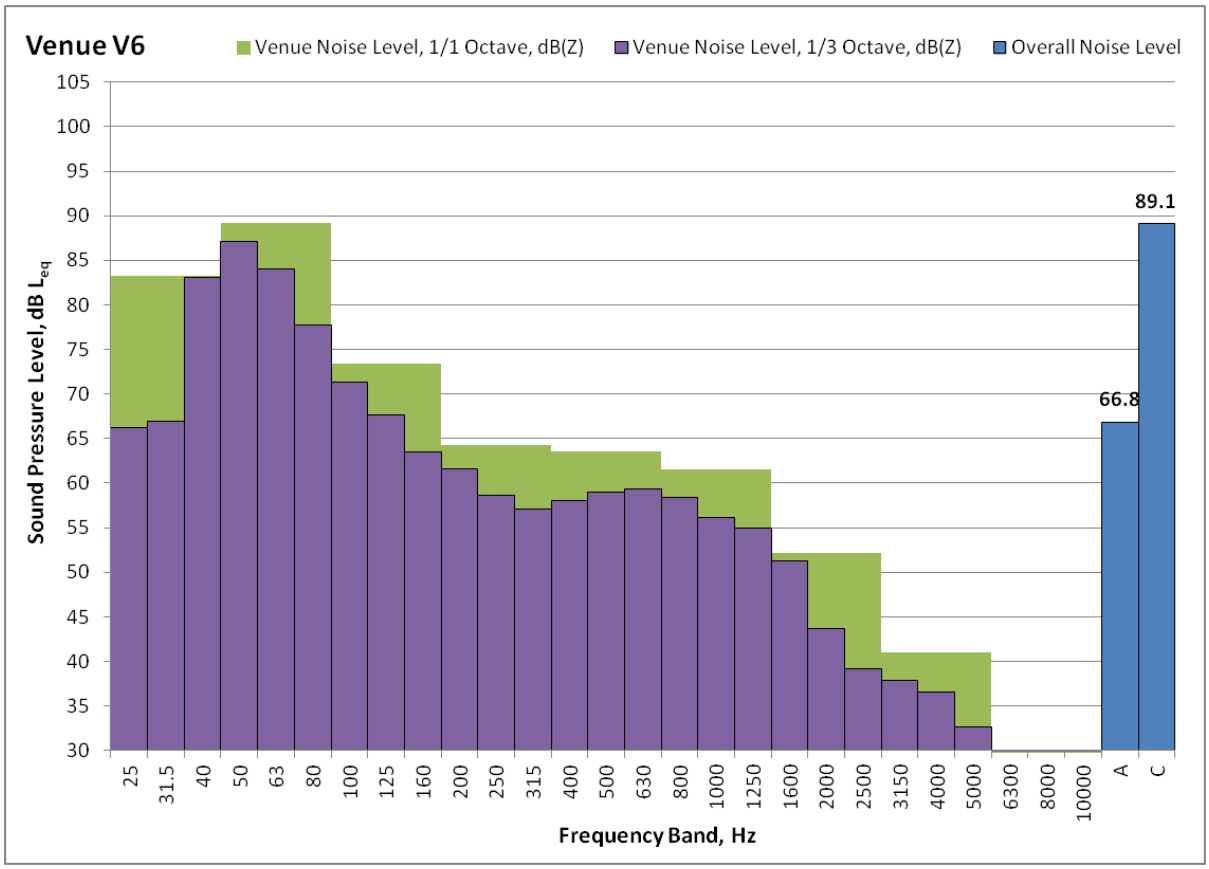
6300
8000
10000
A
C
Frequency Band, Hz


Venue V6
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
89.1
66.8
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
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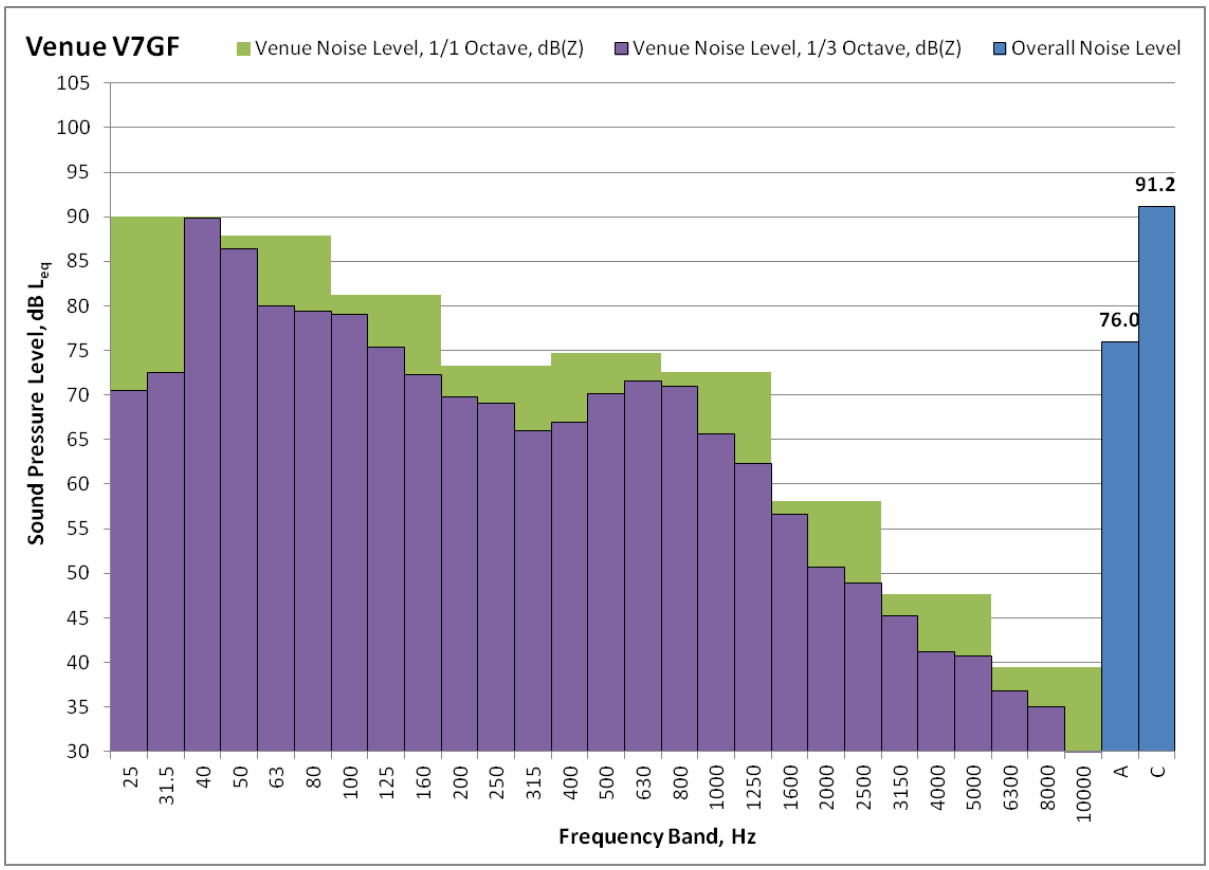
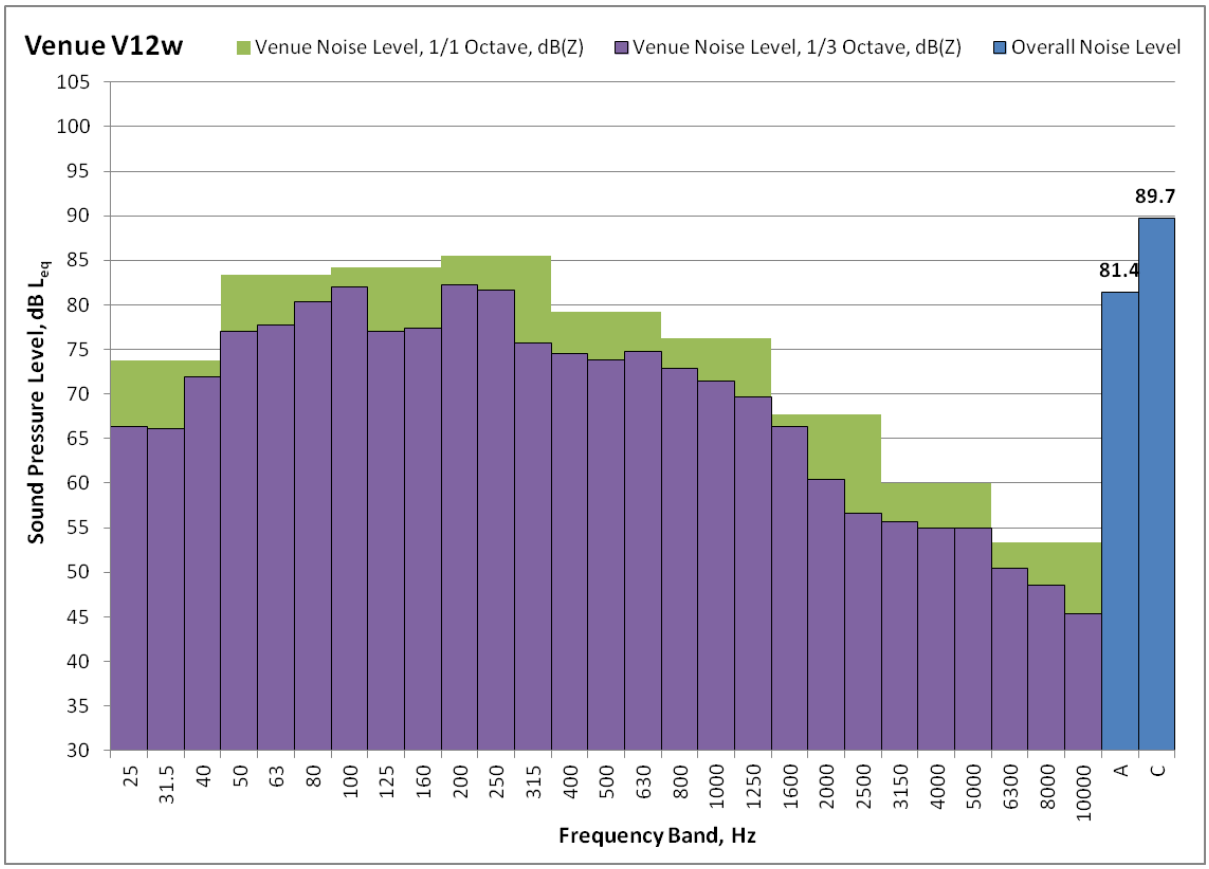
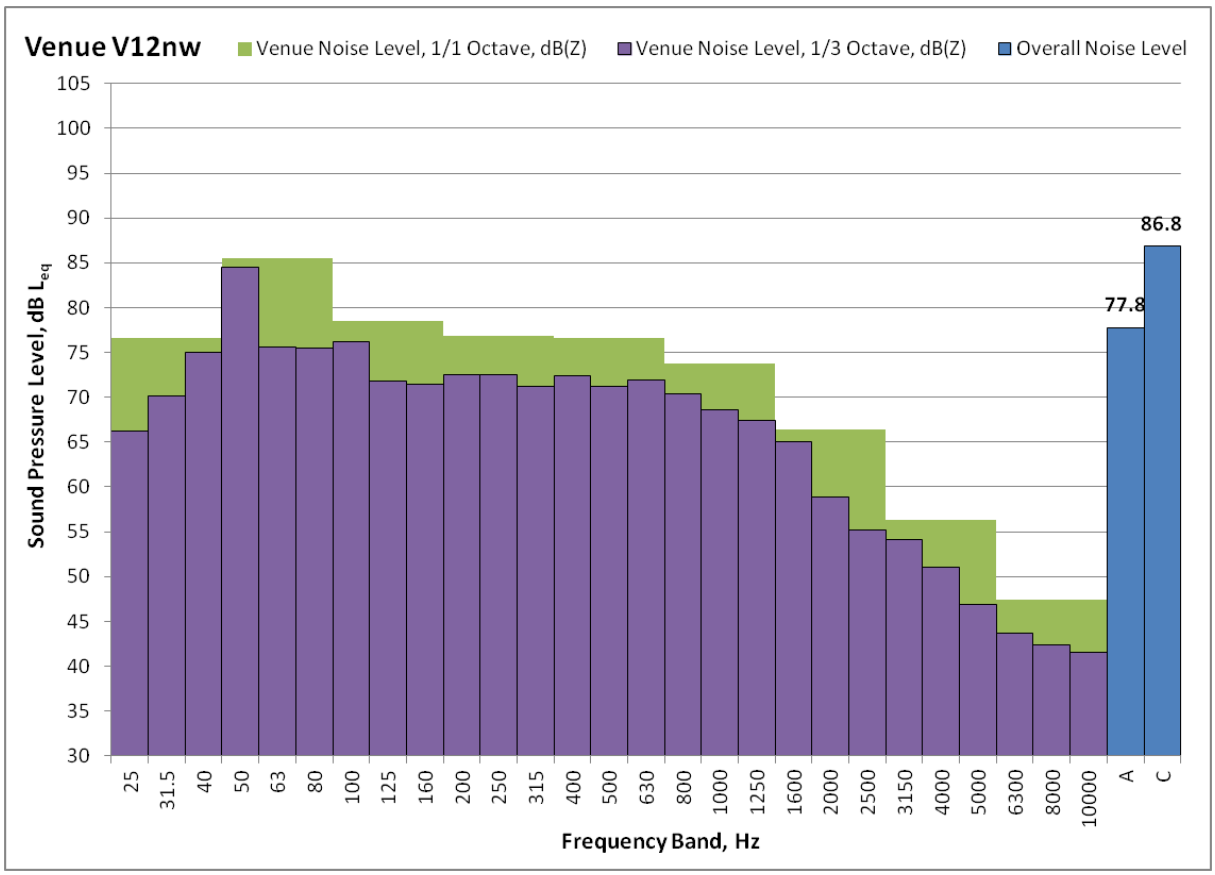
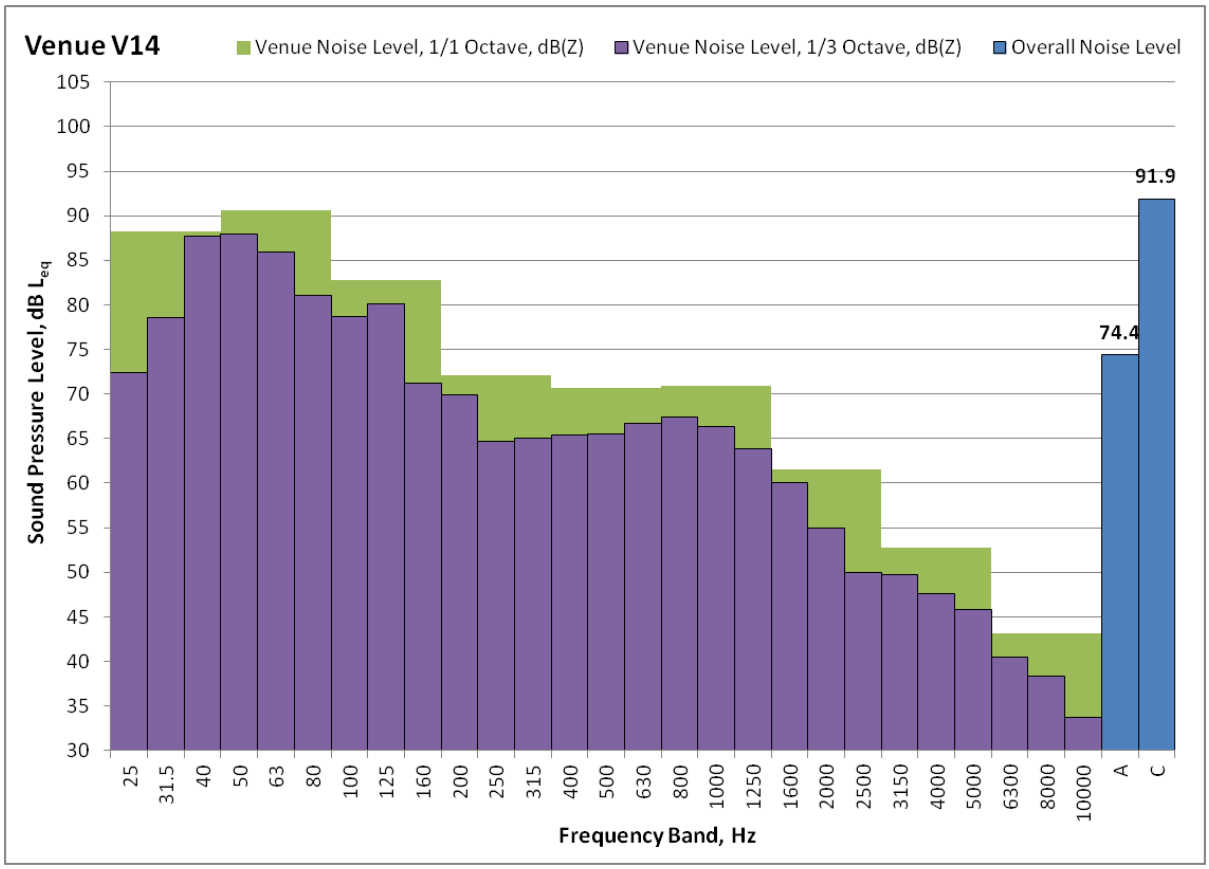
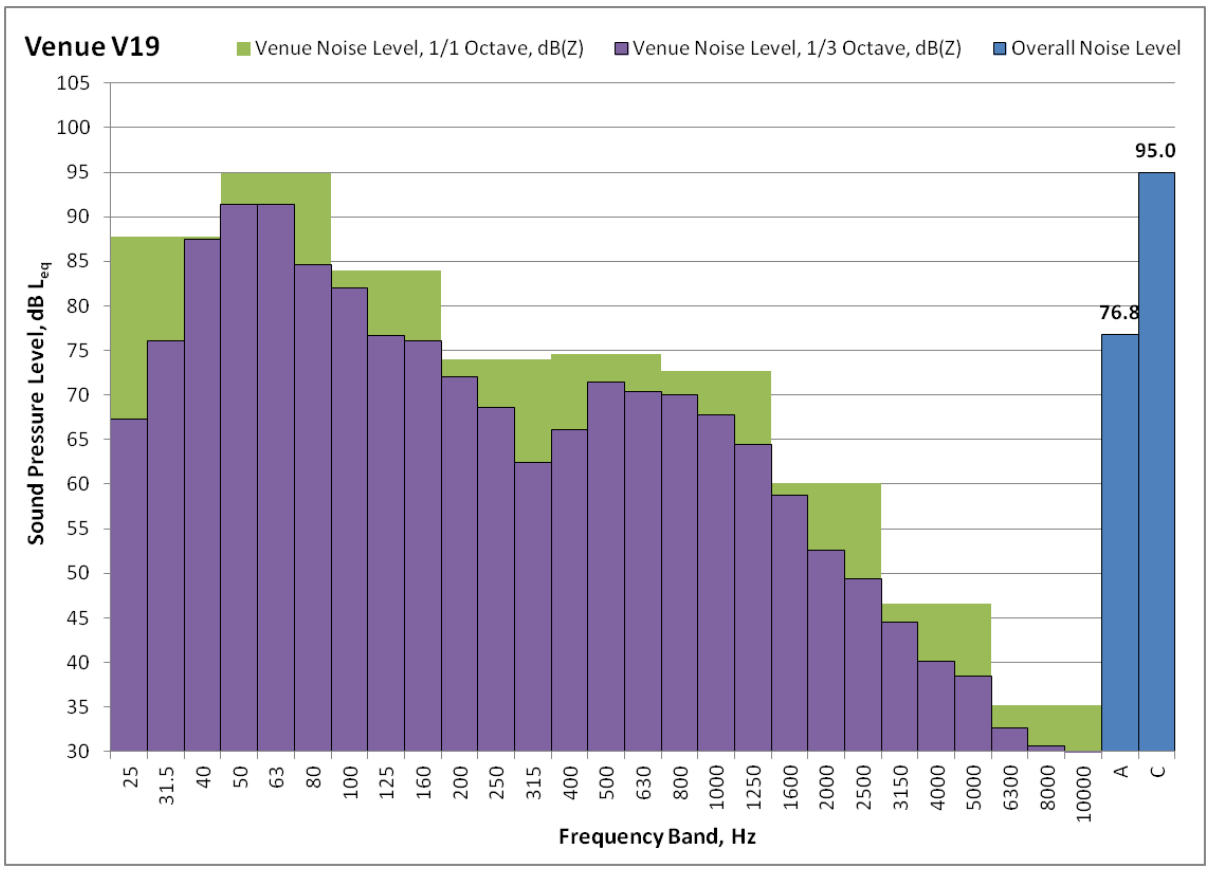
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

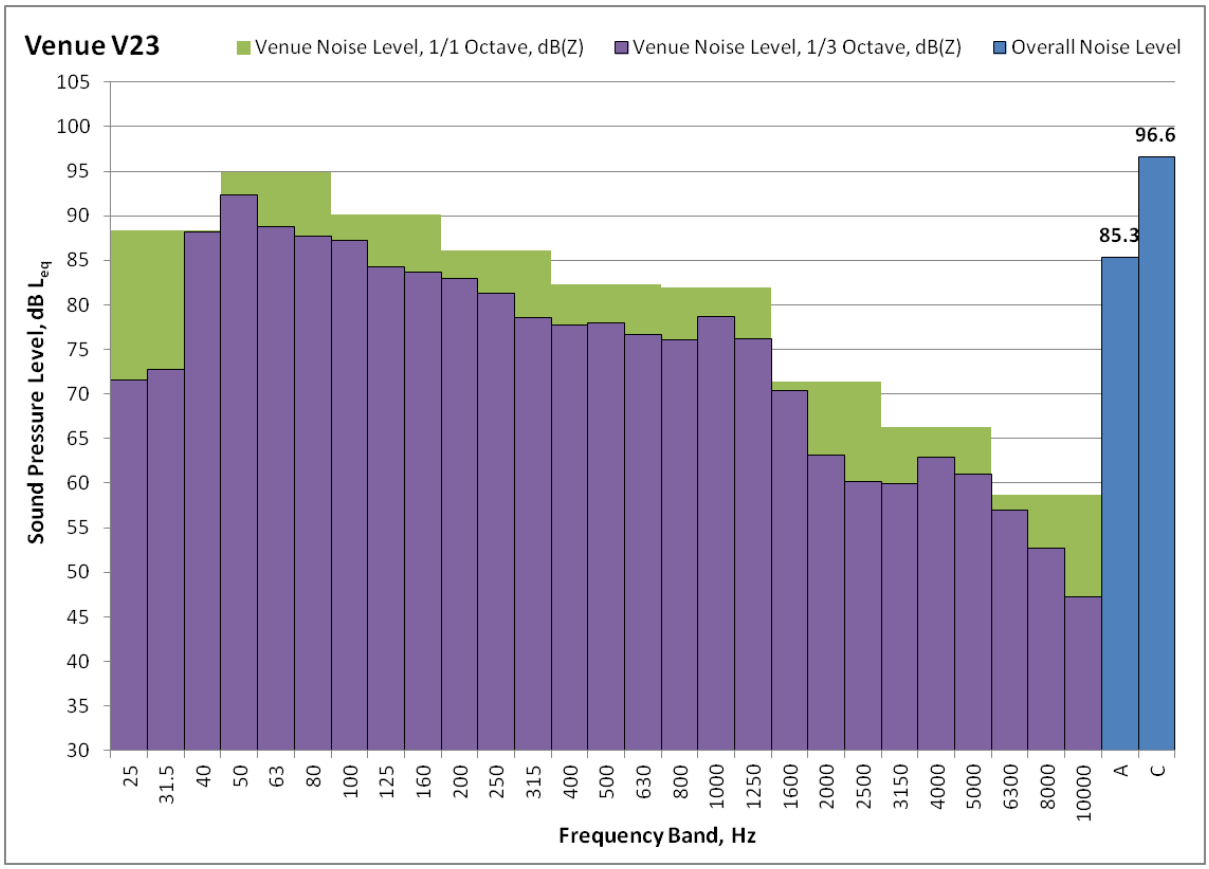

Venue V7GF
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
91.2
76.0
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

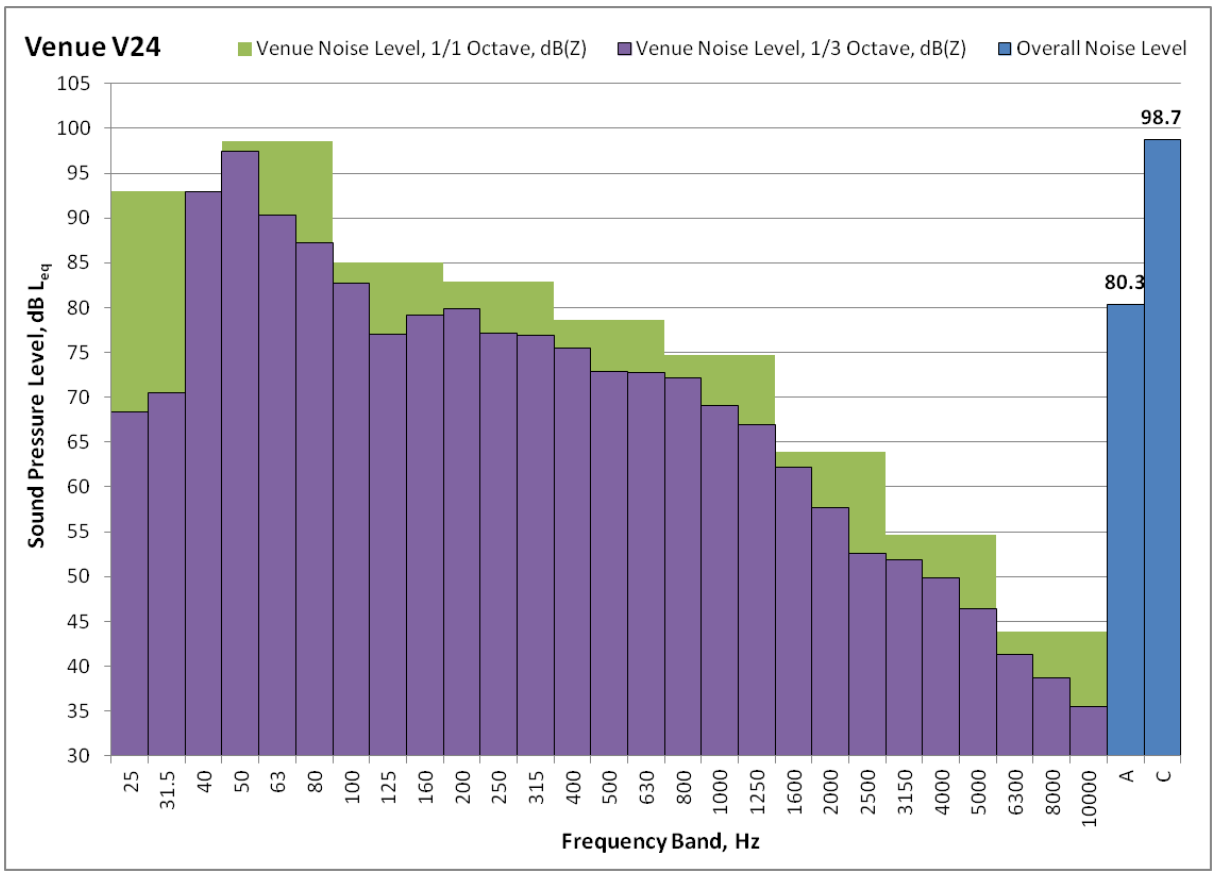

Venue V12w
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
89.7
81.4
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

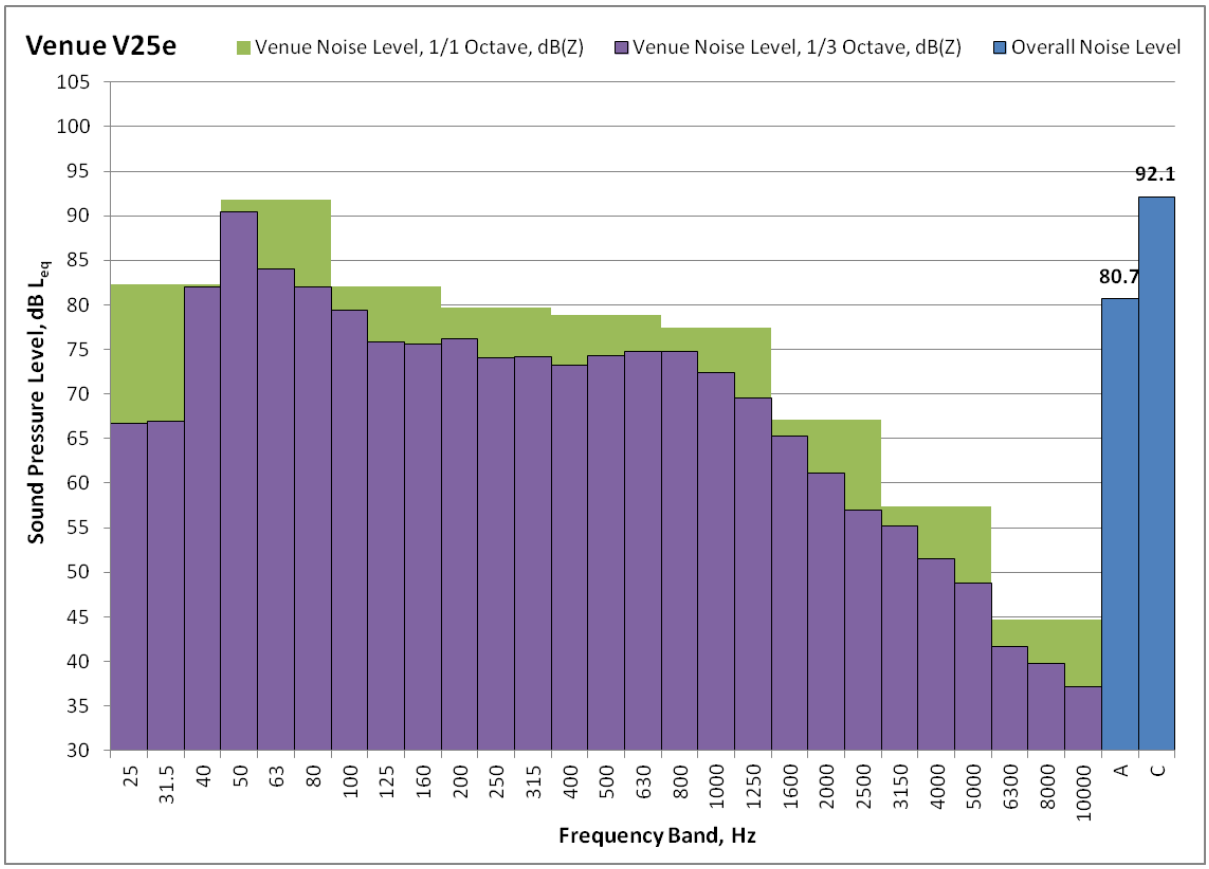

Venue V12nw
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
86.8
77.8
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

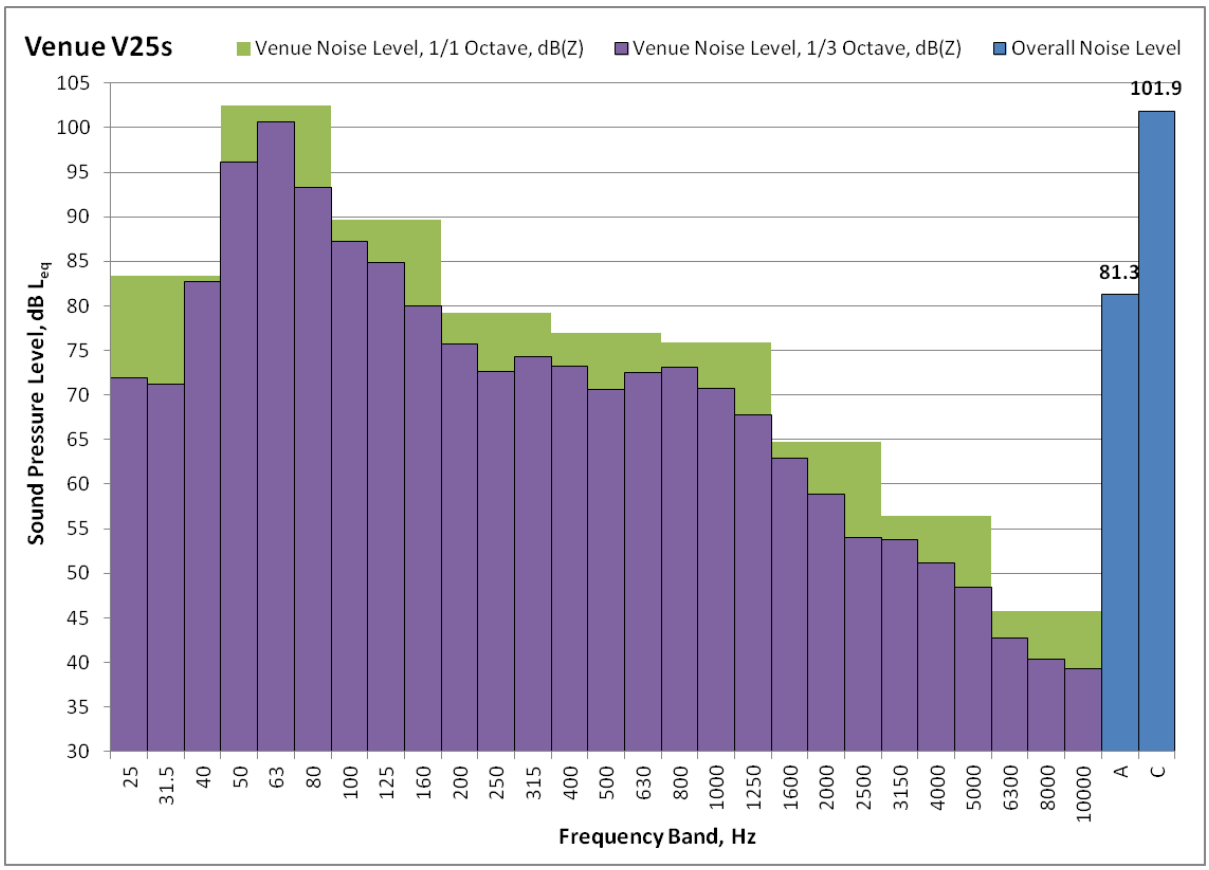

Venue V14
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
91.9
74.4
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

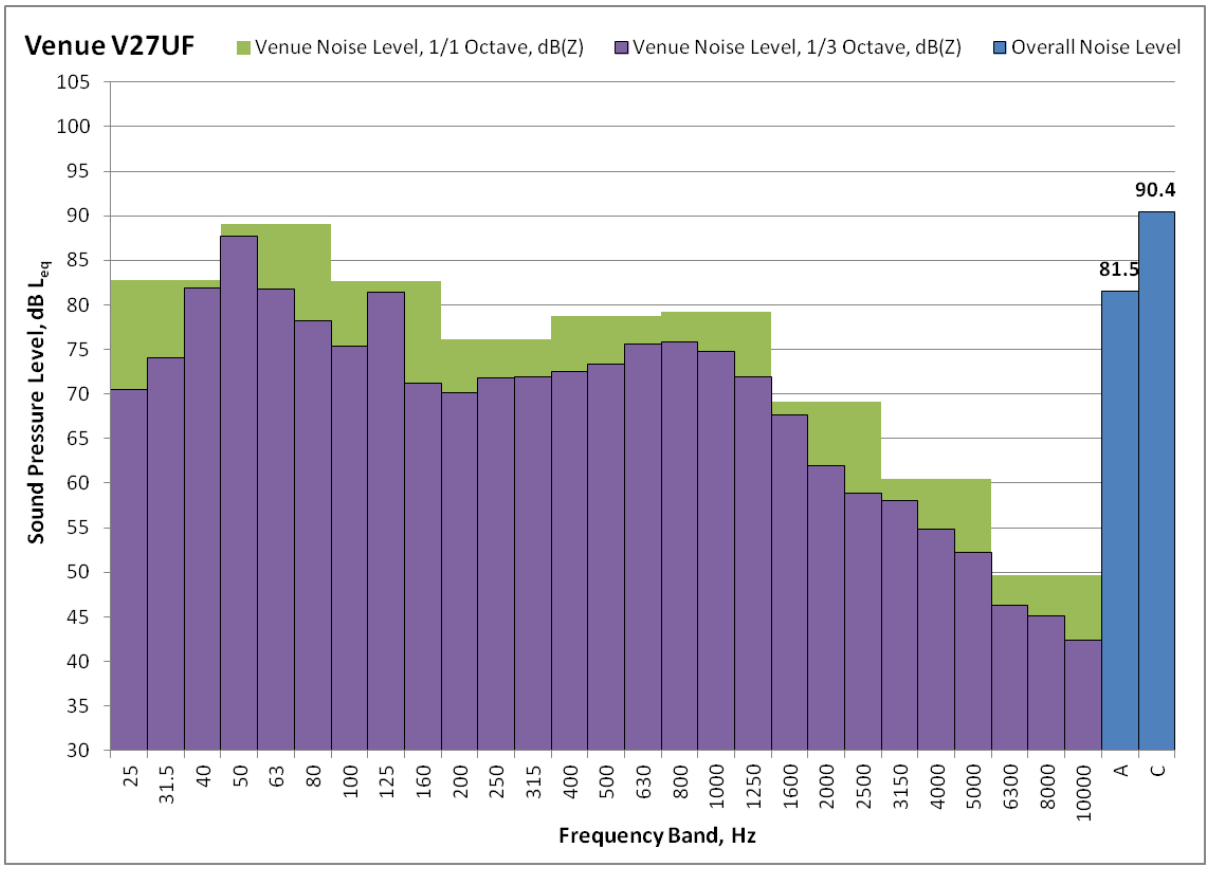

Venue V19
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
95.0
76.8
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

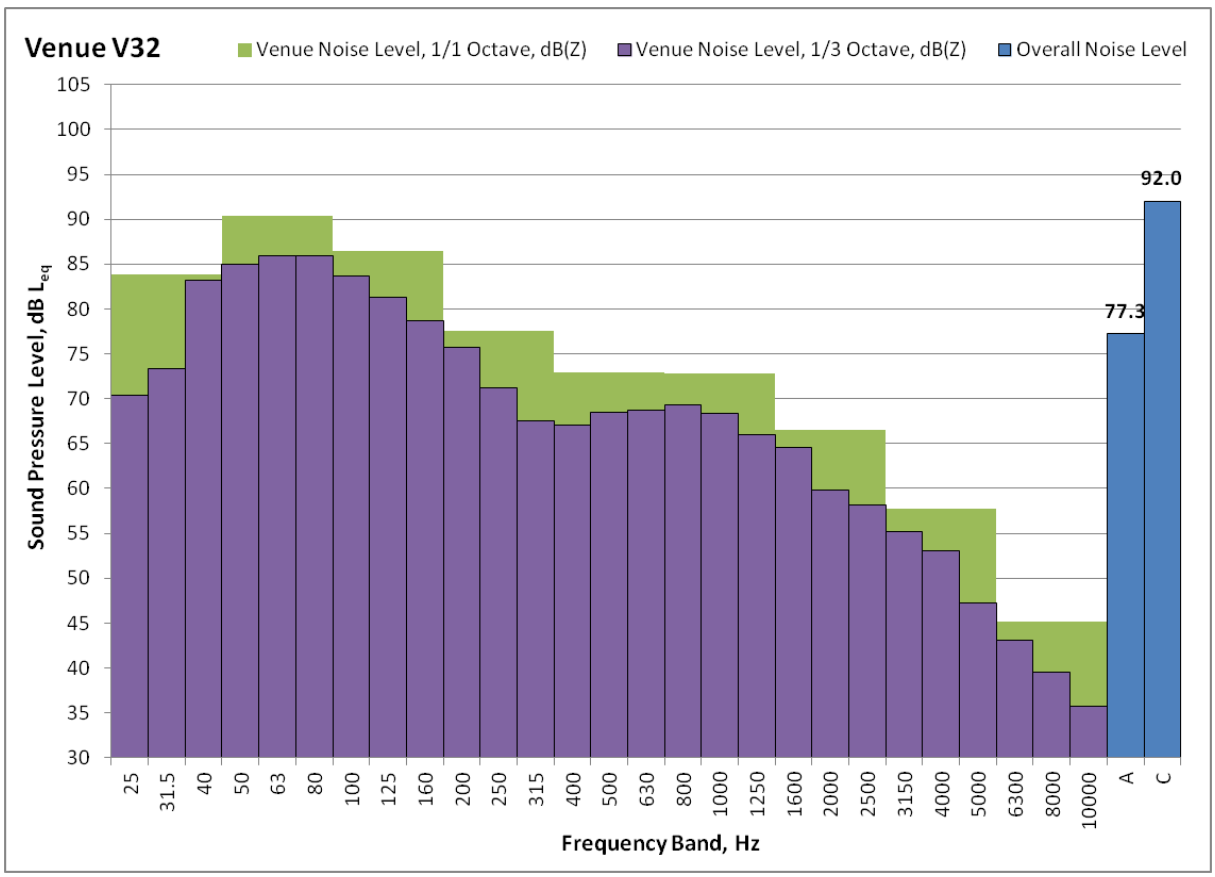

Venue V23
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
96.6
85.3
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

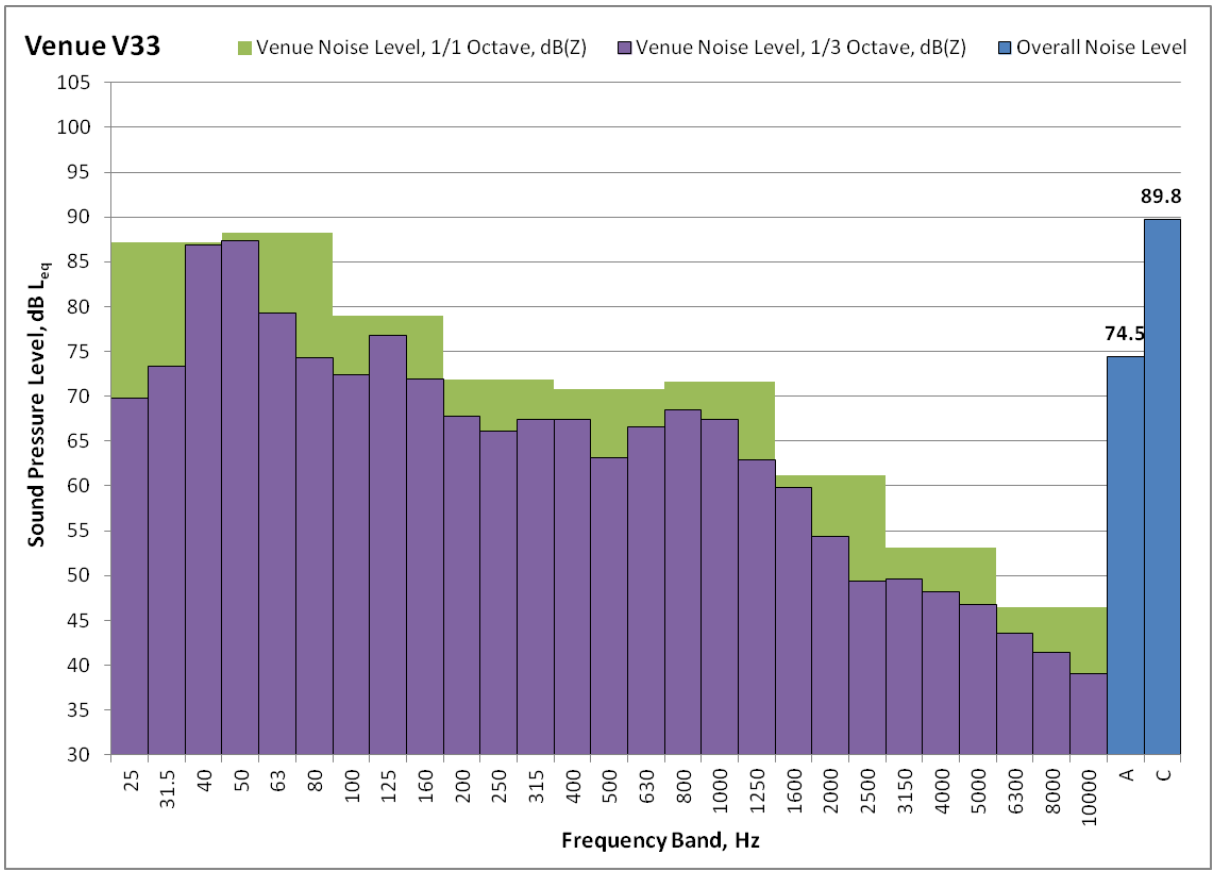

Venue V24
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
98.7
80.3
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

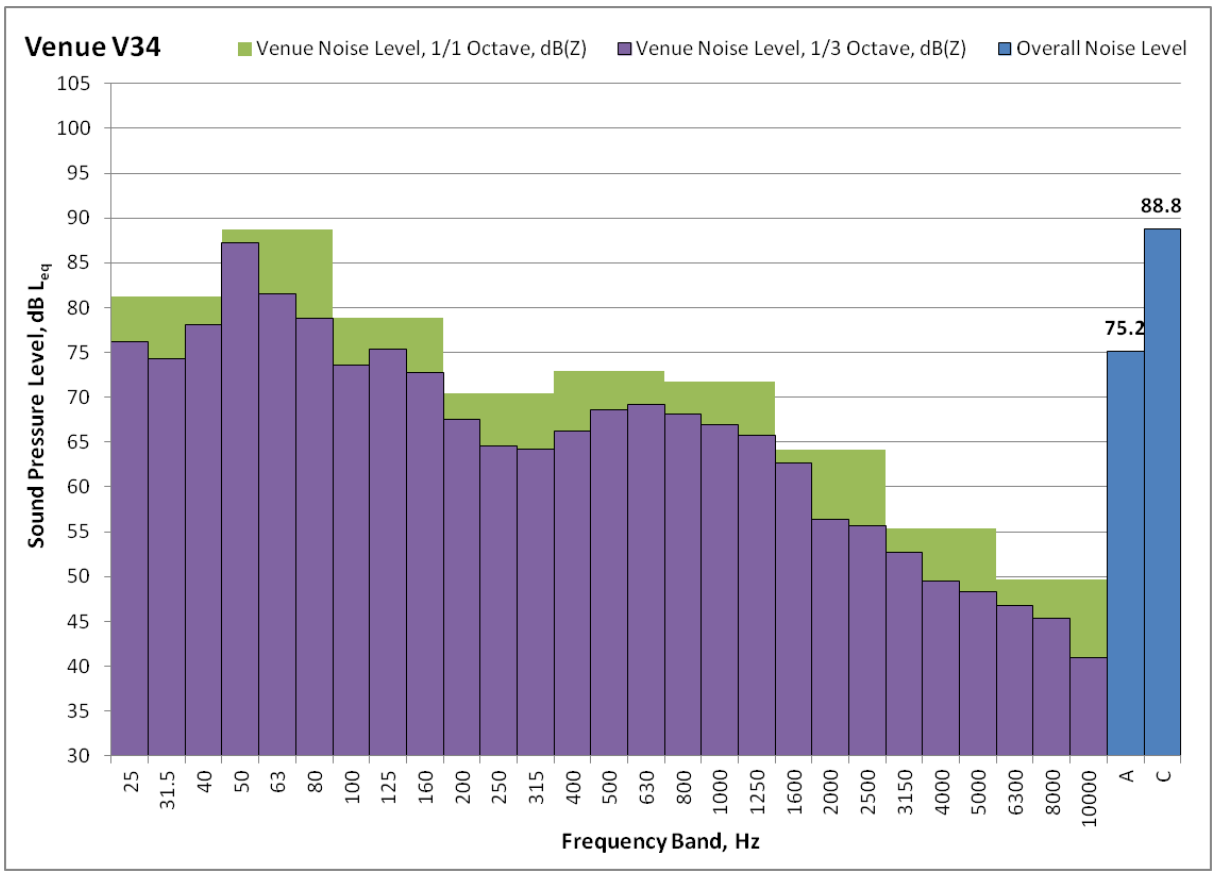

Venue V25e
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
92.1
80.7
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

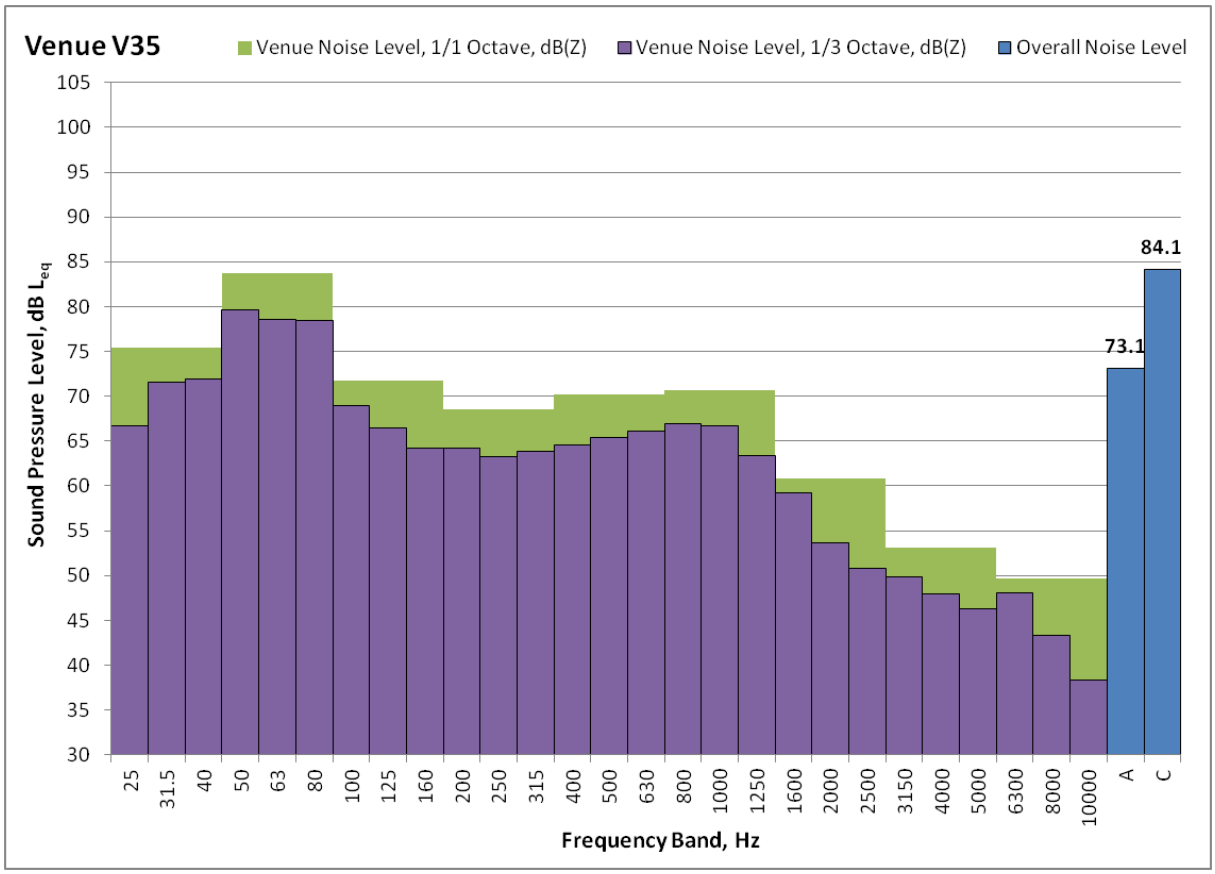

Venue V25s
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
101.9
81.3
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

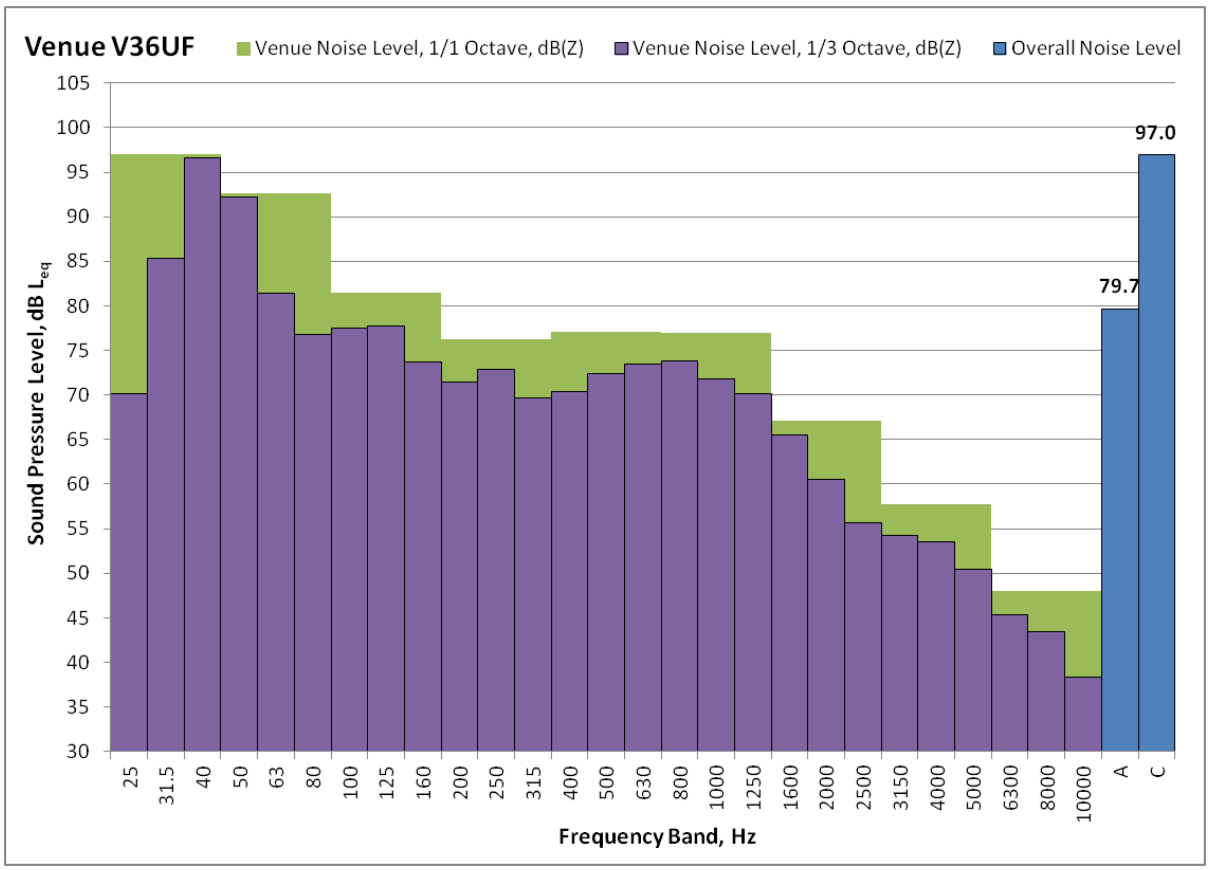

Venue V27UF
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
90.4
81.5
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

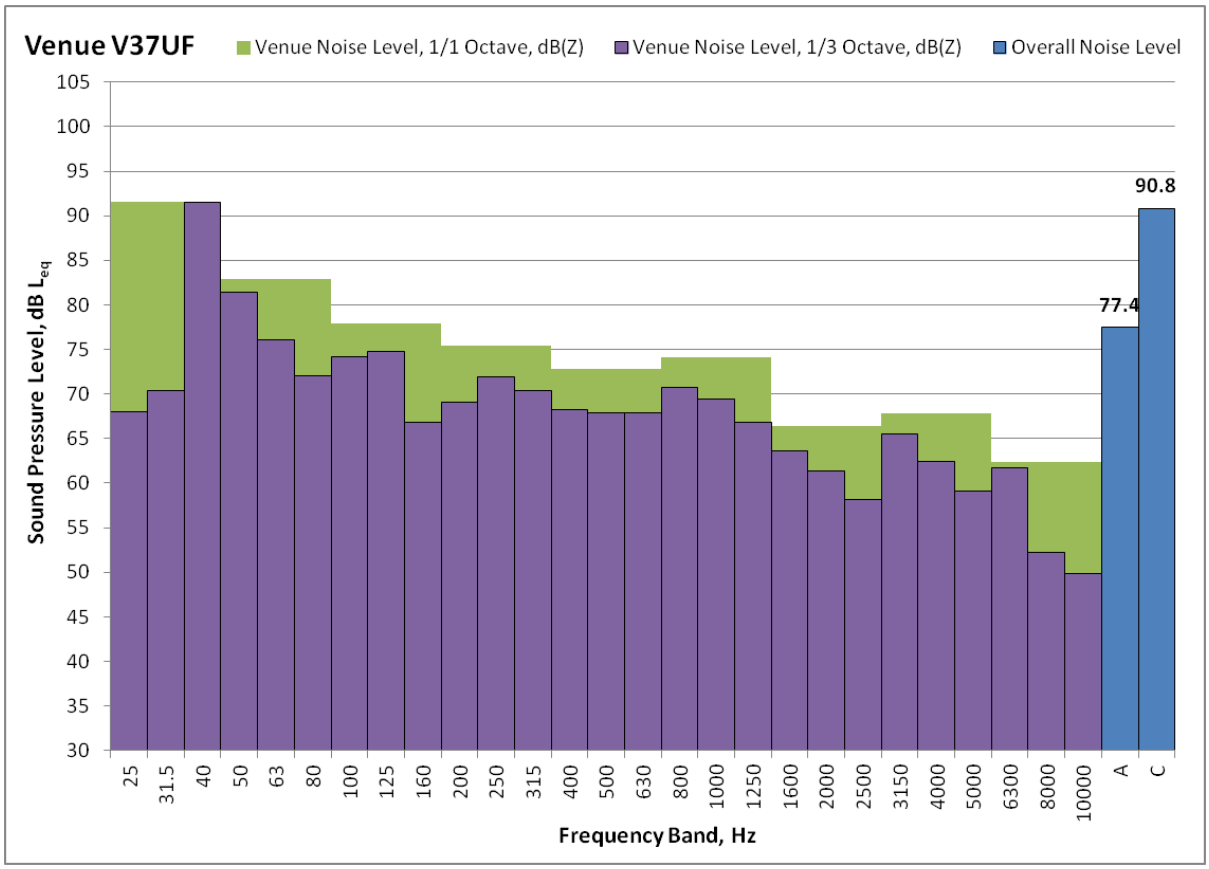

Venue V32
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
92.0
77.3
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

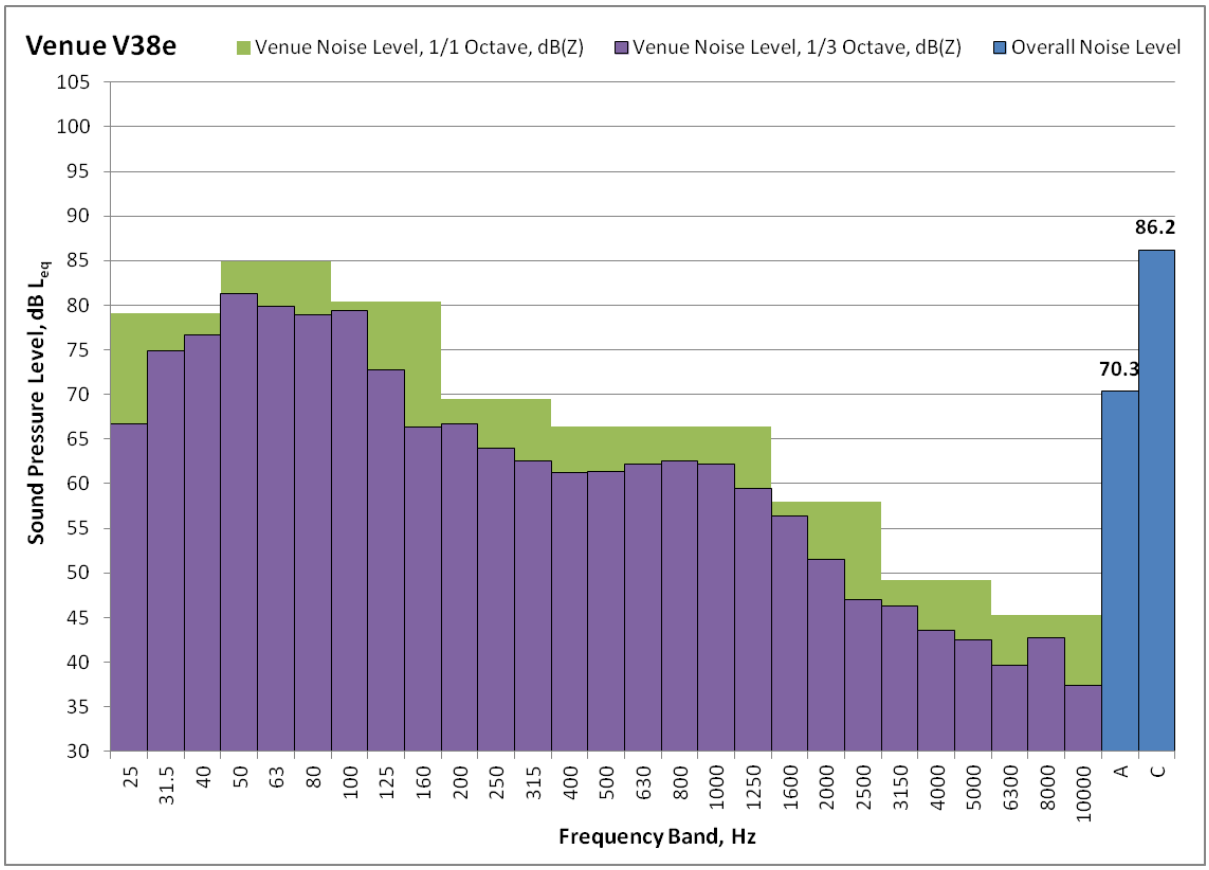

Venue V33
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
89.8
74.5
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

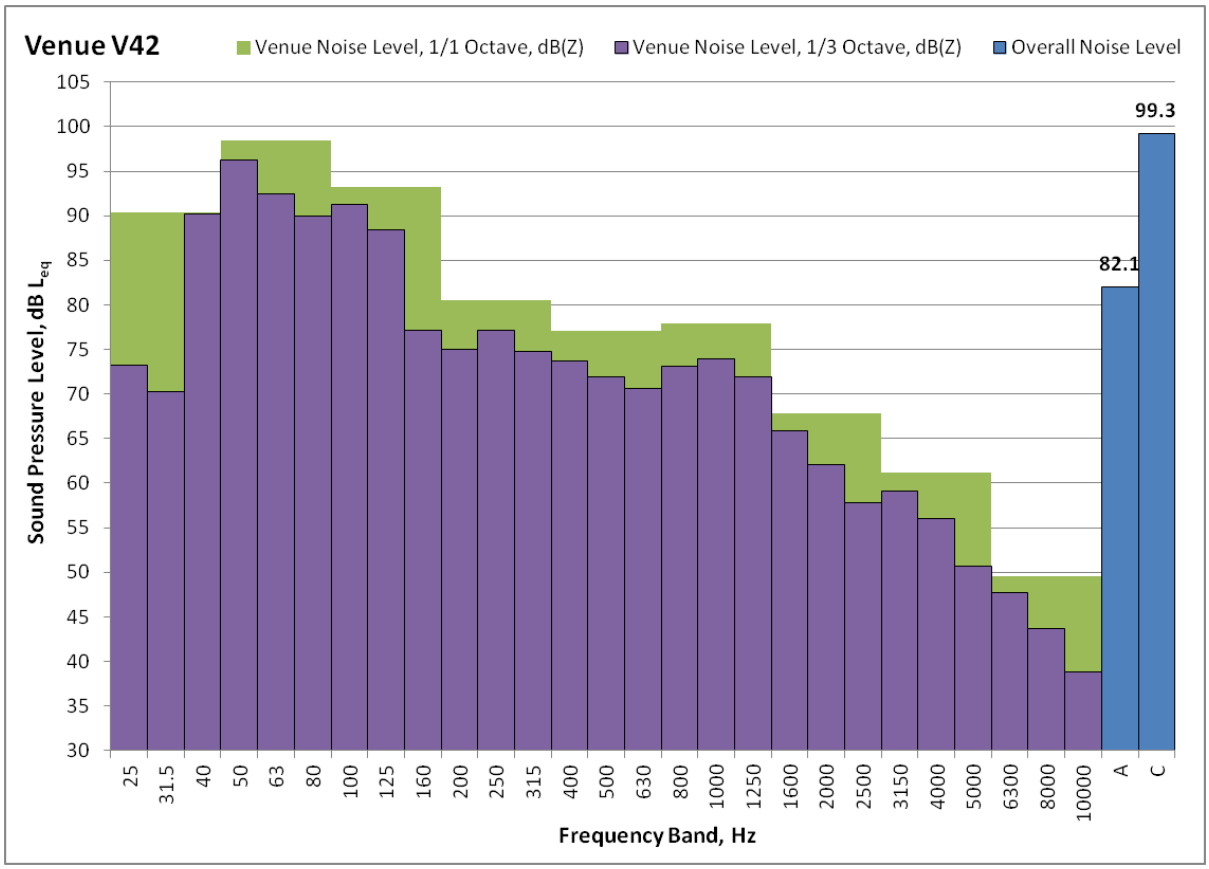

Venue V34
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
88.8
75.2
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V35
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
84.1
73.1
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V36UF
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
97.0
79.7
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V37UF
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
90.8
77.4
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V38e
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
86.2
70.3
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz


Venue V42
Venue Noise Level, 1/1 Octave, dB(Z)
Venue Noise Level, 1/3 Octave, dB(Z)
Overall Noise Level
Sound Pressure Level, dB Leq
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
99.3
82.1
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
A
C
Frequency Band, Hz

Appendix D

Tabulated Residential Spectra (1/3 Octave Band)

Location	Parameter	One-third Octave Band Centre Frequency (Hz)																											Overall dB(Z)
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	
Night 1 – Started 16th August 2019																													
R2	L_{10}	58.9	64.2	75.0	72.2	76.9	74.0	67.9	71.2	66.3	64.4	62.8	63.1	65.5	67.3	66.6	68.0	67.9	67.2	65.2	59.2	55.5	60.1	62.6	57.2	52.9	53.2	46.8	82.1
	L_{90}	51.4	53.9	64.3	65.9	69.0	67.6	62.3	64.3	61.7	58.8	58.5	57.0	59.7	61.1	60.8	61.3	60.8	60.4	59.0	53.9	50.5	53.4	54.2	51.3	47.8	46.1	41.8	78.4
	L_{eq}	57.9	61.9	72.1	70.0	74.2	71.3	65.8	68.8	64.6	62.2	61.0	60.3	63.3	65.3	64.4	65.3	65.2	64.5	62.7	57.1	53.5	57.6	59.9	55.2	51.0	50.2	44.7	80.4
R4n	L_{10}	72.1	71.5	82.9	78.4	77.8	80.7	75.8	75.9	74.1	76.6	67.9	69.6	68.9	68.7	68.3	66.3	64.6	63.0	60.4	53.4	51.6	50.2	50.0	51.6	45.6	41.5	39.0	87.6
	L_{90}	62.4	61.9	72.6	72.5	71.8	74.9	68.6	69.3	67.6	69.3	62.8	63.6	61.6	61.7	60.6	60.4	58.9	56.4	52.9	46.8	45.0	43.3	42.4	43.9	37.6	33.4	30.9	83.1
	L_{eq}	68.9	67.9	80.4	76.2	75.6	78.5	73.0	73.8	71.4	74.2	65.8	67.4	66.5	66.0	65.3	64.0	62.4	60.7	57.4	51.0	49.3	47.6	47.3	49.0	42.9	39.2	36.7	85.8
R4w	L_{10}	73.3	70.4	76.3	80.7	79.4	80.0	74.1	76.3	70.9	71.1	71.1	69.6	69.0	67.2	67.7	68.7	67.0	63.5	60.2	54.4	51.8	50.8	51.2	53.0	44.9	40.4	38.5	86.5
	L_{90}	66.0	63.1	72.4	76.3	73.5	72.6	68.1	71.6	65.8	63.2	62.3	61.2	60.8	61.4	61.4	61.8	60.8	57.6	53.0	47.3	44.3	41.9	41.9	43.9	36.1	32.2	29.3	83.7
	L_{eq}	70.9	68.0	74.6	78.9	77.0	77.3	71.5	74.3	69.0	68.4	67.7	66.6	65.7	64.6	65.1	66.6	65.1	61.1	57.5	51.6	48.9	47.3	48.4	49.7	42.3	39.7	42.5	85.0
R5	L_{10}	76.8	76.9	79.2	81.1	78.5	76.4	73.6	69.2	64.7	64.6	64.3	64.7	65.5	67.3	68.4	69.1	66.9	65.1	58.4	51.7	50.3	46.7	44.6	45.4	38.8	36.2	35.2	87.3
	L_{90}	67.0	62.2	68.2	73.2	72.8	70.2	66.5	64.3	61.2	60.3	58.6	57.6	57.8	58.3	59.2	59.6	58.7	55.3	49.5	44.0	40.7	38.2	37.2	38.3	30.9	27.2	24.8	82.1
	L_{eq}	73.6	73.1	75.9	78.0	76.3	74.0	70.6	67.1	63.1	62.7	62.1	62.1	63.6	64.6	65.2	65.9	63.8	61.7	55.4	49.0	47.3	43.7	42.2	43.1	37.3	36.0	33.7	84.1

Location	Parameter	One-third Octave Band Centre Frequency (Hz)																												Overall dB(Z)
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	
R7	L_{10}	60.9	58.7	67.3	72.4	73.6	65.6	58.4	54.8	56.1	55.1	54.6	49.6	48.5	49.0	49.8	52.7	54.0	49.3	42.8	39.1	36.4	33.7	32.3	33.6	26.7	23.2	20.5	77.2
	L_{90}	50.0	48.8	57.5	61.8	62.5	57.2	52.9	48.8	51.0	50.7	49.0	45.2	44.5	44.6	44.2	44.2	43.7	39.6	33.0	29.3	26.6	23.8	23.7	24.4	17.0	13.2	10.6	70.3
	L_{eq}	57.3	56.8	64.0	69.7	70.7	61.7	56.2	52.2	54.2	53.2	52.3	47.8	46.8	47.1	47.6	49.1	50.2	45.6	39.3	35.6	32.9	29.9	28.8	30.2	23.6	19.9	17.2	74.4
Night 2 - Started 17th August 2019																													
R1n	L_{10}	74.1	69.7	73.8	74.9	70.2	66.0	67.4	66.9	67.7	69.1	67.5	64.4	64.1	65.5	66.0	68.0	69.1	65.9	62.0	57.3	51.7	47.1	46.3	44.9	38.8	36.4	34.0	81.2
	L_{90}	65.6	62.2	66.0	69.1	65.4	57.3	59.8	56.3	59.3	59.3	59.4	56.9	57.1	57.2	56.5	57.7	57.9	53.8	50.9	46.3	41.6	37.5	36.0	35.4	29.4	27.0	24.7	77.2
	L_{eq}	70.8	67.0	71.3	72.7	68.2	62.8	64.5	64.0	65.4	65.9	64.3	62.2	61.7	62.9	63.3	65.0	65.2	62.7	59.1	53.9	48.2	43.8	43.3	41.6	36.1	33.6	31.3	79.5
R3	L_{10}	70.9	72.9	79.5	83.5	81.1	76.8	73.3	66.8	67.3	64.8	64.6	63.7	64.0	66.1	67.0	66.2	65.9	64.6	61.4	54.5	49.5	52.3	50.4	46.4	42.2	39.1	33.1	87.2
	L_{90}	58.4	61.7	67.6	73.0	74.2	68.8	66.0	61.6	61.4	60.2	60.7	59.3	59.9	62.1	62.7	62.0	61.4	60.6	57.6	50.5	46.0	48.9	46.9	42.2	37.3	33.6	27.1	81.2
	L_{eq}	66.8	70.0	75.5	80.3	78.7	74.2	70.7	64.7	65.0	62.9	62.8	61.8	62.2	64.4	65.3	64.5	64.1	63.0	59.8	52.7	48.1	51.4	49.3	44.4	40.1	37.0	30.9	84.7
R7	L_{10}	70.1	72.7	74.9	85.1	88.5	88.9	75.7	73.7	68.0	69.6	67.1	69.8	72.0	67.7	69.8	73.3	72.6	69.4	64.1	58.9	51.5	48.2	45.5	46.6	38.3	34.1	31.5	92.1
	L_{90}	58.7	59.8	66.5	73.3	77.9	75.8	69.5	65.1	62.6	64.4	62.2	61.9	63.2	62.3	63.0	65.5	65.1	61.2	55.6	50.7	45.1	42.1	39.0	39.5	31.4	26.5	22.1	84.3
	L_{eq}	65.9	69.1	72.2	82.1	85.4	84.0	73.5	71.1	66.1	67.4	65.2	66.7	69.1	65.8	67.4	71.0	70.2	66.8	61.4	56.4	48.9	46.0	43.4	44.4	35.9	31.6	29.1	89.5

Location	Parameter	One-third Octave Band Centre Frequency (Hz)																											Overall dB(Z)
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	
R8s	L_{10}	60.9	60.9	73.8	77.3	74.0	71.3	73.2	69.8	68.8	65.5	62.2	58.3	60.2	57.8	57.1	58.3	59.5	58.0	54.4	47.1	43.1	44.0	40.5	35.0	28.3	26.9	20.2	81.9
	L_{90}	55.3	55.7	62.1	67.9	67.0	65.8	65.8	63.1	62.9	59.8	58.3	53.9	54.0	53.6	52.9	52.6	52.9	52.9	49.6	43.1	38.9	40.2	36.9	30.6	23.8	20.2	14.2	76.3
	L_{eq}	58.8	58.7	69.4	73.4	70.7	69.1	70.4	67.2	66.7	63.4	60.5	56.5	57.5	55.9	55.2	56.0	56.9	56.2	52.2	45.4	41.4	42.7	39.1	33.1	26.6	25.0	18.8	79.0
R9	L_{10}	75.4	72.4	77.1	82.4	81.8	82.4	76.7	74.8	72.4	71.5	69.0	67.6	69.0	70.8	71.6	72.6	72.5	68.1	64.2	58.1	56.5	53.4	50.2	48.9	42.9	39.8	38.0	88.2
	L_{90}	64.9	62.7	69.8	72.3	74.5	75.3	71.7	68.7	66.7	66.3	64.9	63.3	64.3	65.2	65.5	66.5	65.3	62.1	57.0	51.6	50.4	47.1	43.4	42.1	37.1	33.9	29.2	84.6
	L_{eq}	72.9	68.9	75.5	80.0	79.3	79.7	74.7	72.4	70.0	69.4	67.4	66.0	67.2	68.5	69.1	70.1	69.5	65.7	61.5	55.5	54.1	50.7	47.7	46.7	41.1	38.0	35.3	86.7
MRA1	L_{10}	67.5	71.8	82.6	87.4	84.3	81.8	79.7	78.3	77.6	76.3	74.3	71.6	69.9	69.7	69.0	69.2	68.5	68.6	65.2	57.1	54.0	56.9	54.7	51.4	46.3	43.5	37.9	90.8
	L_{90}	61.0	64.0	71.9	79.3	79.0	76.6	73.6	71.2	69.9	69.2	65.5	62.8	62.2	62.6	62.7	61.7	60.8	60.8	58.5	51.1	46.8	50.2	47.3	42.0	36.3	32.6	26.6	86.9
	L_{eq}	64.8	70.2	79.1	84.6	82.1	79.7	77.2	75.6	75.0	74.0	71.4	68.4	67.0	67.1	66.3	66.8	65.7	66.1	62.8	54.8	51.3	54.5	52.0	48.7	44.0	41.5	36.4	89.2
Night 3 - Started 23rd August 2019																													
R4n	L_{10}	69.6	70.6	88.9	86.6	79.5	79.8	84.3	77.5	75.5	76.6	73.5	70.5	69.9	72.4	71.2	71.6	69.4	64.4	59.2	53.6	52.7	51.1	54.1	53.9	47.1	41.9	38.2	92.0
	L_{90}	63.4	63.4	77.6	79.5	73.7	72.9	72.5	70.3	67.5	68.0	65.5	62.1	62.6	64.8	64.8	65.3	62.1	57.9	52.8	47.7	47.1	45.1	47.3	46.5	39.5	34.4	30.5	86.7
	L_{eq}	67.3	68.6	86.0	84.1	77.1	77.3	81.0	75.1	72.4	73.8	70.6	67.6	67.4	69.5	68.7	69.1	66.5	61.8	56.7	51.4	50.5	49.0	51.9	51.6	44.7	39.4	36.2	90.1

Location	Parameter	One-third Octave Band Centre Frequency (Hz)																												Overall dB(Z)
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	
R4s	L_{10}	72.4	71.2	71.5	81.2	78.9	76.6	72.2	69.6	65.3	63.8	63.3	61.2	61.8	64.3	65.9	65.3	63.1	58.3	52.6	48.7	47.9	45.1	44.2	43.6	39.3	37.2	35.8	84.3
	L_{90}	61.2	58.5	65.4	75.3	71.5	69.8	66.2	61.8	60.7	58.8	57.4	55.8	56.9	58.7	59.1	58.2	54.4	49.6	44.5	40.4	38.7	35.6	34.5	33.5	27.6	24.2	20.9	81.1
	L_{eq}	69.1	67.7	69.1	78.7	75.9	74.1	69.9	66.5	63.2	61.7	61.4	59.3	59.7	62.0	63.6	63.1	60.3	55.5	50.1	45.9	45.3	42.9	42.8	43.2	43.1	43.6	34.6	82.8
R4w	L_{10}	69.9	71.5	80.9	87.1	82.3	80.6	79.0	75.4	72.8	75.6	73.0	69.9	69.7	71.3	73.1	72.0	69.0	65.3	60.9	54.7	55.4	52.9	52.7	51.9	47.7	43.0	39.5	90.3
	L_{90}	61.6	62.9	68.7	76.5	75.7	73.9	71.2	66.7	66.5	66.7	65.8	63.2	64.6	66.5	67.5	66.5	63.3	58.9	54.5	49.2	48.8	45.7	45.8	45.6	40.9	35.9	31.8	84.4
	L_{eq}	66.8	69.5	78.0	84.2	80.2	78.2	76.3	72.7	70.5	72.5	70.2	67.2	67.5	69.5	70.9	69.8	66.8	62.8	58.5	52.6	52.8	49.8	49.9	49.3	45.0	40.7	38.1	88.2
R6	L_{10}	73.1	67.6	67.8	73.6	73.8	66.1	66.8	64.1	61.7	59.8	59.3	56.8	57.8	58.8	60.3	62.5	62.5	57.0	50.6	47.5	44.8	41.7	42.2	41.7	36.4	34.3	32.0	79.4
	L_{90}	56.6	55.8	59.5	64.7	61.7	56.7	56.3	55.1	52.5	51.9	50.5	47.2	47.5	48.8	49.9	50.3	48.8	43.8	39.2	35.6	33.4	30.4	30.0	28.4	22.8	19.7	17.5	72.0
	L_{eq}	69.2	64.0	64.9	71.0	70.6	63.2	63.5	61.3	58.8	56.9	56.5	54.5	54.8	56.0	57.4	58.7	58.1	53.1	47.3	43.7	41.3	38.3	39.2	38.8	32.7	30.5	28.3	76.9
R7	L_{10}	58.2	61.0	68.0	84.3	87.3	83.9	79.9	72.8	70.4	69.2	67.6	64.8	62.4	63.3	64.8	64.3	61.2	54.3	50.0	48.3	47.0	45.1	46.4	46.8	40.2	35.2	33.1	90.9
	L_{90}	49.0	51.4	61.4	71.5	80.9	73.9	70.7	65.8	63.5	61.2	61.8	56.4	54.9	55.1	57.1	55.1	52.7	43.8	38.2	35.4	36.2	34.6	35.0	34.0	27.0	18.4	14.0	83.9
	L_{eq}	54.9	57.8	65.8	80.6	84.7	80.9	76.4	70.0	67.9	66.1	65.2	61.5	59.5	60.2	61.8	60.9	58.4	51.1	46.4	44.0	44.3	42.0	43.5	43.1	36.2	30.6	29.3	87.9
R8w	L_{10}	64.4	71.3	79.0	75.1	71.6	69.2	69.4	66.4	64.4	63.4	62.7	61.1	62.2	64.6	66.5	65.0	62.6	58.3	52.6	46.9	45.2	43.1	43.0	43.7	38.8	35.9	34.4	82.1
	L_{90}	57.2	61.1	66.5	67.7	64.7	63.5	61.8	59.2	58.0	58.4	55.6	52.9	53.8	55.2	56.4	57.0	54.2	48.5	43.3	39.2	37.7	34.9	34.3	33.0	28.2	25.0	21.2	76.2
	L_{eq}	62.1	67.2	75.2	72.4	68.9	67.6	66.9	65.2	64.0	61.7	60.6	58.3	59.8	61.8	63.4	63.7	60.4	55.7	49.5	44.3	43.2	40.4	39.9	40.4	36.2	33.6	33.3	79.7

Location	Parameter	One-third Octave Band Centre Frequency (Hz)																												Overall dB(Z)
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	
R9	L_{10}	74.7	70.6	74.9	78.5	77.9	76.5	73.7	71.3	67.8	65.4	64.1	62.8	63.0	63.8	65.4	67.1	65.7	62.2	57.5	52.2	47.3	46.0	46.1	45.4	38.0	36.5	33.8	84.1
	L_{90}	64.5	62.4	68.4	71.6	72.9	71.2	68.3	66.9	64.0	61.9	60.6	58.5	58.6	59.2	60.4	61.8	60.3	57.5	53.0	47.2	42.3	41.1	41.4	40.1	32.3	30.2	26.3	81.2
	L_{eq}	71.4	67.5	72.3	76.0	76.0	74.5	71.4	69.5	66.3	63.8	62.7	61.0	61.3	61.8	63.5	65.0	63.4	60.3	55.7	50.3	45.1	44.1	44.3	43.1	37.1	34.7	32.8	82.8
R10	L_{10}	68.2	66.9	69.6	71.3	69.8	69.5	65.2	62.8	60.6	59.4	57.8	56.1	55.5	55.5	56.7	56.6	57.1	55.1	49.6	45.9	41.6	41.7	39.9	37.3	32.0	28.8	24.7	78.1
	L_{90}	57.3	56.5	61.8	64.1	63.5	60.7	58.0	54.1	54.0	54.5	51.9	49.3	49.7	48.0	48.0	48.1	47.1	45.1	40.3	35.6	30.9	30.3	29.8	27.0	20.6	18.6	14.3	72.8
	L_{eq}	64.0	63.5	67.2	68.9	67.1	67.0	62.6	60.6	60.9	58.9	55.6	53.9	53.2	52.7	53.1	53.1	53.4	51.5	46.0	42.2	38.0	39.1	36.6	34.0	28.5	26.7	21.9	75.4
R11	L_{10}	63.2	64.5	71.1	72.3	69.0	66.4	64.0	62.9	61.7	62.1	61.6	58.7	57.9	59.2	60.9	63.6	62.8	57.9	52.2	46.8	45.6	41.9	41.4	41.7	38.1	34.3	32.3	78.1
	L_{90}	55.4	57.0	61.7	65.8	62.3	60.2	57.5	53.9	53.5	55.6	51.2	47.7	47.2	49.8	51.4	52.0	49.7	44.1	39.1	34.3	33.4	29.5	27.4	25.1	19.3	15.5	12.1	72.8
	L_{eq}	60.3	62.6	67.5	70.2	66.8	65.9	65.3	61.6	59.2	59.7	58.5	57.0	56.4	59.2	58.8	60.5	59.1	54.1	49.0	44.5	42.9	39.5	39.0	39.3	35.7	32.2	31.6	76.0
Night 4 - Started 24th August 2019																													
R1e	L_{10}	63.2	64.0	74.3	75.6	70.9	64.9	64.6	61.9	58.4	57.4	54.7	54.0	51.8	56.0	57.0	66.0	64.0	52.6	45.8	44.0	45.9	37.8	31.9	31.3	24.8	24.4	18.4	78.9
	L_{90}	56.2	57.8	66.5	69.1	64.8	58.8	60.2	56.7	55.1	54.2	51.7	49.7	47.8	53.0	54.3	59.5	57.6	50.5	44.2	41.4	42.4	35.3	30.1	29.2	22.0	18.9	15.4	75.4
	L_{eq}	60.4	61.6	70.9	73.1	68.7	62.4	62.8	59.8	57.0	56.2	53.3	52.1	49.9	54.8	55.9	63.5	61.6	51.8	45.4	42.9	44.2	36.9	32.1	31.0	24.6	24.5	22.0	77.3

Location	Parameter	One-third Octave Band Centre Frequency (Hz)																												Overall dB(Z)
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	
R1w	L_{10}	77.0	77.0	79.9	80.9	70.5	69.4	66.0	64.8	60.0	57.6	57.2	53.9	54.0	57.5	56.4	57.1	54.3	48.9	43.2	38.3	38.6	32.3	28.4	30.2	26.4	24.2	21.8	84.3
	L_{90}	62.1	63.5	68.6	68.5	64.3	63.0	60.5	57.1	54.5	51.8	51.3	48.6	49.1	52.1	52.5	52.2	48.1	44.5	38.8	34.2	31.6	28.5	24.1	24.0	20.2	18.2	15.0	77.1
	L_{eq}	71.4	72.7	76.1	77.0	68.3	67.2	63.8	61.9	57.8	55.3	54.7	51.8	52.0	55.1	54.8	54.8	51.5	46.9	41.2	36.8	36.0	31.2	26.7	27.8	24.0	22.1	19.1	81.5
R2	L_{10}	73.9	77.3	83.4	84.7	78.1	75.6	72.8	69.3	70.8	65.5	65.0	64.6	65.6	66.8	67.6	66.1	61.4	59.3	53.7	47.6	45.8	42.3	39.1	41.2	36.2	33.5	31.9	88.3
	L_{90}	63.5	69.0	69.3	73.1	72.3	69.5	67.8	64.0	65.9	61.4	60.1	58.9	60.7	61.3	61.7	61.1	56.1	54.0	48.5	42.6	40.5	36.9	33.0	33.8	29.5	26.6	22.4	81.9
	L_{eq}	71.3	74.2	78.7	81.7	76.2	74.4	70.8	67.3	68.9	63.9	63.0	62.4	63.5	64.3	64.8	64.5	59.2	57.2	51.8	45.5	43.8	40.4	37.0	38.6	33.6	31.1	30.4	85.7
R4n	L_{10}	75.1	71.7	88.9	88.0	87.5	82.6	87.1	78.2	82.3	80.0	75.8	71.6	69.4	70.9	71.2	71.7	67.4	64.0	58.9	52.2	50.2	48.0	46.7	45.7	41.2	37.4	31.2	94.4
	L_{90}	65.9	64.3	72.0	77.6	75.5	75.1	74.3	69.5	68.7	68.5	68.2	64.8	63.8	65.7	66.7	66.3	60.5	57.9	53.1	47.0	45.3	42.6	39.8	38.8	33.8	31.0	25.2	85.9
	L_{eq}	71.9	69.2	86.3	85.7	85.4	80.2	83.1	75.4	78.5	76.9	73.1	69.1	67.2	68.9	69.3	69.6	64.6	61.5	56.7	50.1	48.2	45.8	44.3	43.2	38.3	39.2	30.3	92.3
R4s	L_{10}	76.4	76.7	77.9	83.4	80.4	80.8	73.7	72.7	67.6	62.9	60.5	62.2	61.8	64.6	67.7	66.7	61.4	58.1	53.0	47.9	46.2	41.8	37.4	37.5	32.1	30.9	27.4	87.5
	L_{90}	66.0	66.0	69.0	77.8	75.0	72.4	69.0	63.9	61.4	57.5	56.2	56.5	54.8	57.7	60.4	59.5	54.9	51.5	46.4	41.0	38.3	34.2	30.3	29.8	23.8	21.8	16.8	83.4
	L_{eq}	73.0	72.8	75.5	81.4	78.2	77.6	72.1	70.0	65.2	60.7	58.7	60.2	60.0	62.3	65.0	64.2	59.4	56.9	50.6	45.4	43.8	39.6	35.4	34.9	30.8	30.4	25.6	85.8
R4w	L_{10}	70.4	69.9	81.5	89.5	86.4	87.0	77.6	75.0	74.4	76.1	73.5	71.7	70.6	72.2	73.2	73.4	67.8	65.3	60.1	54.4	53.7	49.8	45.3	43.9	38.2	37.0	34.1	92.8
	L_{90}	63.1	63.9	73.7	79.0	77.6	78.4	70.4	69.1	66.1	65.8	66.9	64.6	64.7	66.5	68.0	67.1	61.7	58.9	54.1	48.1	46.3	43.2	38.2	37.6	32.3	30.2	25.7	85.9
	L_{eq}	67.3	68.1	79.1	87.0	84.0	84.3	75.2	73.1	71.5	73.4	71.2	68.7	68.0	70.1	71.2	70.7	65.6	63.4	58.3	52.2	50.5	47.2	43.2	42.8	36.4	35.1	32.3	91.0

Location	Parameter	One-third Octave Band Centre Frequency (Hz)																												Overall dB(Z)
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	
R5	L_{10}	79.6	82.1	87.2	86.1	87.9	86.9	83.5	82.0	73.8	67.5	67.5	67.8	71.5	72.7	74.0	73.8	68.2	65.7	61.2	55.7	53.3	50.2	45.8	45.0	39.7	38.3	34.9	94.1
	L_{90}	68.7	72.0	79.2	80.5	81.0	79.6	73.8	70.2	66.7	62.3	62.2	61.7	62.8	62.6	64.4	64.5	59.7	56.8	51.7	46.4	44.1	40.7	36.6	36.6	31.4	29.9	26.8	89.0
	L_{eq}	76.0	79.3	84.3	84.2	85.8	84.2	80.5	79.7	71.3	65.5	65.3	65.4	68.2	69.8	70.4	70.8	65.7	63.0	57.9	52.7	50.6	47.2	42.6	42.5	36.9	35.9	32.3	92.0
R6	L_{10}	72.5	70.8	72.7	82.6	75.6	71.5	69.6	66.9	66.2	62.8	60.6	60.4	59.8	62.6	64.7	63.0	56.9	55.1	49.4	46.1	43.5	38.3	34.7	37.3	32.7	29.9	23.7	84.3
	L_{90}	59.1	60.8	66.9	71.7	65.8	62.2	58.9	57.2	56.4	54.2	52.5	52.7	52.4	54.0	56.0	52.7	48.5	46.3	40.8	38.0	34.9	29.1	26.3	27.0	22.0	19.9	14.7	77.8
	L_{eq}	69.4	67.9	70.4	79.2	72.5	68.3	66.7	66.3	68.3	61.1	58.7	60.1	57.2	59.3	61.3	59.2	53.7	51.8	46.5	43.3	40.4	35.1	32.6	34.4	30.6	29.7	22.1	81.9
R7	L_{10}	71.9	77.6	83.6	91.6	94.2	84.7	76.4	69.3	68.6	67.8	68.0	71.9	71.9	68.8	67.3	70.1	60.9	57.8	50.8	46.0	44.7	40.9	36.2	35.8	32.1	30.2	26.1	96.6
	L_{90}	58.9	64.4	71.4	75.9	78.8	75.0	72.3	64.7	61.5	60.3	61.2	60.8	59.4	60.4	59.8	60.1	54.4	51.3	45.2	40.8	38.7	34.6	29.7	28.7	23.6	21.2	17.9	84.7
	L_{eq}	67.8	73.2	80.3	87.8	90.1	81.1	74.6	67.3	66.1	64.8	66.4	67.9	67.5	65.6	64.8	66.5	58.6	55.1	48.9	44.0	42.4	38.5	34.5	35.3	31.3	30.0	27.5	92.9
R8e	L_{10}	72.4	73.9	77.6	80.5	78.1	71.2	68.0	66.0	62.6	61.2	59.6	57.0	58.0	59.9	60.6	60.3	56.1	52.9	47.7	43.4	40.4	36.8	33.6	34.6	31.3	29.0	24.8	84.2
	L_{90}	63.5	65.7	69.2	71.9	69.9	64.8	62.2	60.1	57.4	55.9	54.2	52.2	53.1	55.3	55.7	54.6	50.1	46.8	41.2	36.2	33.6	30.0	26.2	27.4	21.6	19.7	15.2	79.3
	L_{eq}	69.4	71.1	74.3	77.2	75.1	68.8	65.6	63.9	60.6	59.2	57.4	54.9	55.9	58.0	58.4	57.6	53.6	50.3	45.3	40.6	37.9	34.8	31.8	33.9	29.4	27.3	22.8	81.8
R8w	L_{10}	71.3	70.6	73.8	74.9	69.3	68.2	67.4	66.0	62.2	63.4	62.2	60.7	63.3	66.8	68.0	65.4	60.7	58.2	53.3	48.5	46.5	42.1	38.8	38.4	33.8	34.4	32.3	80.6
	L_{90}	62.9	61.4	64.6	68.2	63.5	62.0	62.5	60.0	57.6	59.2	57.1	55.1	57.2	59.0	59.6	57.7	52.3	50.0	44.8	40.1	37.9	34.7	30.7	31.0	26.4	24.5	20.2	76.7
	L_{eq}	68.4	67.4	70.5	72.2	67.1	66.3	65.4	63.7	60.4	61.8	60.1	58.8	61.0	64.0	64.9	62.7	58.2	56.7	51.9	46.5	43.8	40.1	36.8	36.6	32.0	32.2	35.6	78.5

Location	Parameter	One-third Octave Band Centre Frequency (Hz)																												Overall dB(Z)
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	
R9	L_{10}	76.9	74.9	77.5	81.1	79.3	76.5	74.8	72.5	66.8	66.2	65.2	64.0	62.8	64.1	64.3	64.9	60.9	57.5	52.0	46.4	44.2	41.0	36.8	38.1	33.2	31.8	29.6	85.9
	L_{90}	65.4	62.7	69.1	73.2	71.6	70.5	66.2	64.8	61.3	61.8	60.6	59.0	58.4	60.1	60.6	60.9	56.1	52.7	47.6	41.6	39.4	36.2	31.7	31.4	26.2	24.2	19.5	81.5
	L_{eq}	73.5	71.5	75.1	78.0	76.3	74.0	72.6	69.7	65.2	64.6	63.2	61.4	60.8	62.5	62.8	63.1	59.0	55.4	50.1	44.6	42.6	40.3	35.9	36.4	33.6	31.3	28.7	83.9
R10	L_{10}	67.0	71.2	74.6	78.1	78.2	73.5	66.1	66.2	62.1	58.7	58.8	57.3	55.2	56.2	55.5	55.4	51.3	50.6	41.9	36.5	36.4	36.1	27.9	29.6	26.0	21.5	17.2	82.4
	L_{90}	59.8	59.3	62.5	70.0	71.2	66.0	60.4	57.5	55.3	53.7	53.4	51.9	49.6	50.8	51.5	50.3	45.7	42.1	35.8	30.2	26.9	22.8	18.3	17.6	12.9	11.4	9.5	77.7
	L_{eq}	65.7	67.7	71.2	75.2	75.5	70.8	63.7	63.6	60.2	56.9	56.6	55.2	53.3	54.1	54.0	53.1	48.9	47.0	39.7	34.0	33.0	31.8	25.4	26.5	23.6	19.7	15.1	80.4
R11	L_{10}	69.9	66.2	72.5	75.2	71.5	67.7	64.3	61.6	60.1	57.8	56.4	55.2	54.6	56.3	58.2	56.6	52.3	49.5	43.8	38.2	35.5	31.6	27.8	30.7	23.1	21.0	17.6	79.0
	L_{90}	61.5	60.2	64.8	65.8	64.5	62.4	59.1	55.9	53.3	53.1	50.4	49.1	48.9	51.0	51.7	51.0	46.2	42.7	36.7	32.2	28.7	23.8	19.1	19.1	13.1	11.2	9.0	74.2
	L_{eq}	66.1	64.0	69.6	71.0	68.9	65.5	62.2	59.5	57.5	56.1	54.2	52.5	52.3	54.3	55.4	54.1	50.1	46.7	41.3	36.2	32.7	28.9	25.1	27.9	19.8	17.4	14.0	76.5
R12	L_{10}	77.1	75.9	82.1	84.9	84.1	81.3	79.6	73.5	72.1	69.7	69.3	66.7	68.0	69.3	69.2	68.7	62.9	63.1	58.9	50.9	48.5	45.6	40.6	40.5	36.1	34.8	31.3	89.4
	L_{90}	68.4	66.5	67.9	74.5	73.2	73.9	72.9	67.1	67.7	65.0	63.5	60.9	61.8	63.1	62.6	62.6	57.7	57.5	52.7	46.0	43.9	40.4	36.6	36.4	31.5	29.3	24.9	84.6
	L_{eq}	74.3	73.6	78.1	81.8	80.7	78.4	77.0	71.6	70.5	68.0	67.0	64.6	65.6	66.7	66.9	66.9	60.8	60.8	56.5	48.8	46.9	43.7	39.5	39.2	34.3	34.0	34.1	87.5

Appendix E

Tabulated Residential Spectra (1/1 Octave Band)

Location	Octave Band Centre Frequency (Hz)									dB(Z)
	Param.	31.5	63	125	250	500	1k	2k	4k	
Night 1 – Started 16 August 2019										
R2	L_{10}	75.4	79.3	73.4	67.7	71.1	72.2	66.3	65.2	82.1
	L_{90}	66.1	73.8	68.6	64.0	66.1	66.3	60.8	58.2	78.4
	L_{eq}	72.7	77.0	71.5	66.0	69.2	69.8	64.1	62.7	80.4
R4n	L_{10}	83.3	83.5	79.6	77.8	73.2	69.4	61.9	55.3	87.6
	L_{90}	75.5	79.0	74.3	71.9	66.8	63.7	54.8	48.1	83.1
	L_{eq}	80.9	81.7	77.6	75.5	70.7	67.4	58.8	52.8	85.8
R4w	L_{10}	78.5	84.3	78.4	75.1	72.0	71.3	61.6	56.5	86.5
	L_{90}	74.4	80.2	74.8	67.9	66.9	65.7	54.6	47.5	83.7
	L_{eq}	76.7	82.6	76.9	72.4	69.9	69.6	58.9	53.4	85.0
R5	L_{10}	82.9	83.3	74.9	69.0	72.2	72.2	59.8	50.4	87.3
	L_{90}	73.1	78.4	69.9	64.3	63.7	63.2	51.2	42.9	82.1
	L_{eq}	79.2	81.2	72.7	67.1	69.3	68.9	56.8	47.8	84.1
R7	L_{10}	68.3	76.8	61.2	57.8	53.8	57.2	44.6	38.1	77.2
	L_{90}	60.2	66.6	56.8	53.9	49.5	48.2	35.3	28.9	70.3
	L_{eq}	65.5	73.5	59.3	56.4	51.9	53.5	41.5	34.4	74.4
Night 2 - Started 17th August 2019										
R1n	L10	77.1	76.1	71.9	72.3	70.0	72.4	63.3	50.9	81.2
	L90	71.4	72.0	64.4	64.2	62.4	61.9	52.8	41.6	77.2
	Leq	74.9	74.4	69.4	69.2	67.5	69.2	60.5	47.8	79.5
R3	L10	80.5	86.1	74.8	68.6	70.3	70.3	62.3	55.0	87.2
	L90	71.7	78.2	69.3	65.8	67.1	66.5	58.8	51.7	81.2
	Leq	77.0	83.2	72.5	67.3	68.9	68.7	60.8	54.0	84.7
R7	L10	77.1	91.8	77.7	73.1	74.6	76.7	65.4	51.5	92.1
	L90	69.8	81.1	72.7	68.2	68.2	69.4	57.2	45.5	84.3
	Leq	74.6	88.8	76.0	71.3	72.4	74.5	62.7	49.5	89.5

Location	Octave Band Centre Frequency (Hz)									dB(Z)
	Param.	31.5	63	125	250	500	1k	2k	4k	
R8s	L10	74.0	79.6	75.4	67.4	62.9	63.2	55.2	45.9	81.9
	L90	64.6	72.5	70.3	63.7	58.8	58.0	51.0	42.3	76.3
	Leq	70.1	76.2	73.2	65.7	61.1	61.2	53.3	44.6	79.0
R9	L10	79.6	86.6	79.0	74.1	74.8	76.2	66.0	55.8	88.2
	L90	74.3	80.8	75.3	70.4	70.5	70.1	58.9	49.7	84.6
	Leq	78.0	84.4	77.6	72.6	73.1	73.6	63.1	53.5	86.7
MRA1	L10	83.2	89.4	83.2	79.0	74.1	73.3	66.2	59.9	90.8
	L90	73.4	84.2	77.3	71.9	68.1	66.2	59.5	52.6	86.9
	Leq	79.7	87.4	80.8	76.6	71.6	71.0	63.7	57.1	89.2
Night 3 - Started 23rd August 2019										
R4n	L10	89.0	87.7	85.1	78.8	75.7	74.1	60.9	58.0	92.0
	L90	78.5	82.1	76.9	71.2	69.5	67.8	55.2	51.5	86.7
	Leq	86.1	85.6	82.5	76.2	73.4	71.5	58.6	55.8	90.1
R4s	L10	75.5	83.3	74.3	67.5	69.0	68.1	54.9	49.1	84.3
	L90	69.8	79.0	68.9	62.8	63.3	60.1	46.7	39.4	81.1
	Leq	73.4	81.4	72.1	65.7	66.8	65.4	52.4	47.8	82.8
R4w	L10	81.4	88.9	80.6	77.9	76.2	74.5	62.5	57.5	90.3
	L90	72.4	80.9	75.0	71.1	71.6	68.8	56.7	50.7	84.4
	Leq	78.8	86.4	78.6	75.3	74.3	72.1	60.4	54.5	88.2
R6	L10	74.7	76.9	69.5	63.7	63.7	66.2	52.8	46.3	79.4
	L90	65.1	67.2	60.1	55.3	54.1	53.4	41.6	34.8	72.0
	Leq	71.4	74.2	66.4	60.9	61.0	62.0	49.6	43.6	76.9
R7	L10	69.0	90.5	80.8	71.9	67.7	66.1	52.8	50.7	90.9
	L90	62.8	82.8	73.7	66.1	61.4	57.6	42.2	39.5	83.9
	Leq	66.7	87.3	77.8	69.4	65.4	63.1	49.8	47.7	87.9

Location	Octave Band Centre Frequency (Hz)									dB(Z)
	Param.	31.5	63	125	250	500	1k	2k	4k	
R8w	L10	79.3	77.1	71.6	67.2	69.1	67.9	54.1	47.8	82.1
	L90	69.3	71.6	65.6	61.2	60.4	59.4	45.9	39.3	76.2
	Leq	76.0	74.9	70.3	65.2	66.7	65.8	51.4	45.0	79.7
R9	L10	77.6	82.0	75.7	68.7	68.6	70.0	58.8	50.5	84.1
	L90	72.6	77.7	72.5	65.8	64.9	65.2	54.5	45.9	81.2
	Leq	75.6	80.4	74.3	67.4	67.1	68.1	57.1	48.6	82.8
R10	L10	72.8	75.2	68.2	62.5	60.2	61.1	51.7	44.5	78.1
	L90	65.7	68.9	61.3	57.5	53.7	52.1	42.0	34.1	72.8
	Leq	70.0	72.5	66.2	61.4	57.8	57.6	48.0	41.8	75.4
R11	L10	72.1	74.7	69.0	65.6	64.4	66.8	54.1	46.8	78.1
	L90	65.0	69.3	60.6	57.8	54.8	54.5	41.2	32.9	72.8
	Leq	69.3	72.8	67.5	63.3	63.1	63.4	51.1	44.0	76.0
Night 4 - Started 24th August 2019										
R1e	L10	74.6	77.1	66.8	60.3	59.7	68.2	49.9	39.3	78.9
	L90	68.2	71.3	63.1	57.4	57.4	62.1	47.7	37.5	75.4
	Leq	71.7	74.7	65.3	59.0	59.0	65.8	49.1	38.9	77.3
R1w	L10	81.3	81.2	68.9	61.3	60.8	59.4	45.1	35.5	84.3
	L90	71.4	72.8	63.2	56.5	56.4	54.2	40.8	30.9	77.1
	Leq	78.6	77.9	66.6	59.0	58.9	56.9	43.4	33.8	81.5
R2	L10	84.9	86.3	75.5	69.7	71.6	67.9	55.1	45.9	88.3
	L90	74.7	78.1	71.8	65.7	66.7	63.1	50.2	39.8	81.9
	Leq	80.6	83.3	74.0	67.9	69.0	66.2	53.2	43.7	85.7
R4n	L10	89.0	91.1	88.4	81.4	75.0	73.5	60.1	51.6	94.4
	L90	74.6	81.5	77.9	73.5	71.2	68.0	54.8	45.8	85.9
	Leq	86.5	89.1	84.9	78.9	73.4	71.3	58.0	49.3	92.3

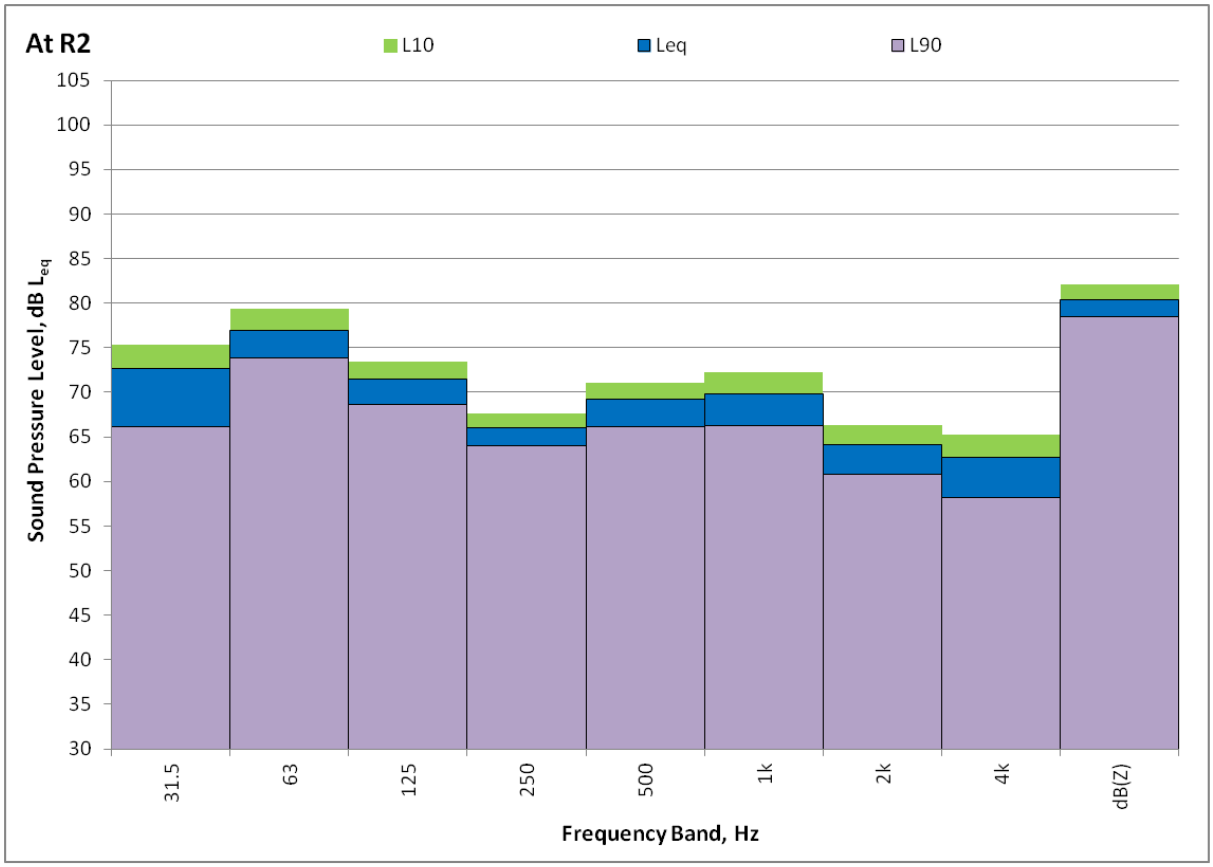
Location	Octave Band Centre Frequency (Hz)									dB(Z)
	Param.	31.5	63	125	250	500	1k	2k	4k	
R4s	L10	81.0	86.0	76.8	66.6	70.0	68.2	54.7	44.5	87.5
	L90	75.0	81.3	71.3	62.0	63.6	61.6	48.2	36.9	83.4
	Leq	78.7	84.2	74.7	64.7	67.7	66.0	52.4	41.9	85.8
R4w	L10	81.9	92.1	80.2	78.6	76.7	75.2	61.9	52.3	92.8
	L90	75.3	84.4	74.5	71.6	71.5	68.9	55.8	45.5	85.9
	Leq	79.7	90.1	78.3	76.3	74.7	72.4	59.8	49.7	91.0
R5	L10	88.5	91.5	85.9	71.9	77.6	75.6	62.7	52.6	94.1
	L90	82.4	85.9	76.7	67.6	68.3	66.4	53.4	43.4	89.0
	Leq	86.0	89.6	83.4	70.2	74.3	72.5	59.6	49.5	92.0
R6	L10	76.2	83.2	72.4	65.6	67.3	64.3	52.0	41.8	84.3
	L90	69.4	74.1	63.2	58.5	59.6	55.0	43.6	32.6	77.8
	Leq	74.1	80.3	72.0	64.8	64.3	60.8	48.9	38.9	81.9
R7	L10	84.7	96.3	77.3	74.2	74.1	71.0	52.5	42.8	96.6
	L90	74.0	82.7	74.1	66.2	65.5	61.7	47.6	36.9	84.7
	Leq	81.3	92.4	75.8	71.3	70.9	67.4	50.8	41.2	92.9
R8e	L10	79.7	82.3	70.7	64.2	64.3	62.2	49.6	40.2	84.2
	L90	73.0	75.3	65.7	59.7	59.9	56.6	43.0	33.1	79.3
	Leq	76.8	79.6	68.6	62.3	62.3	59.6	47.1	38.4	81.8
R8w	L10	76.3	76.6	70.0	67.0	71.2	67.5	55.4	45.0	80.6
	L90	70.1	71.2	66.1	62.9	63.8	59.5	46.6	37.4	76.7
	Leq	73.8	74.2	68.4	65.2	68.4	64.8	53.5	42.9	78.5
R9	L10	80.4	83.8	76.9	69.6	68.6	66.9	53.6	43.7	85.9
	L90	72.9	77.4	70.0	65.9	65.0	62.8	49.2	38.8	81.5
	Leq	78.4	81.2	74.9	68.1	66.9	65.1	51.8	42.8	83.9
R10	L10	76.6	81.1	69.6	62.6	60.1	57.5	43.4	37.5	82.4
	L90	67.4	75.8	63.4	58.4	56.4	52.5	37.4	25.2	77.7
	Leq	73.6	79.0	67.5	61.1	58.6	55.2	41.4	33.6	80.4

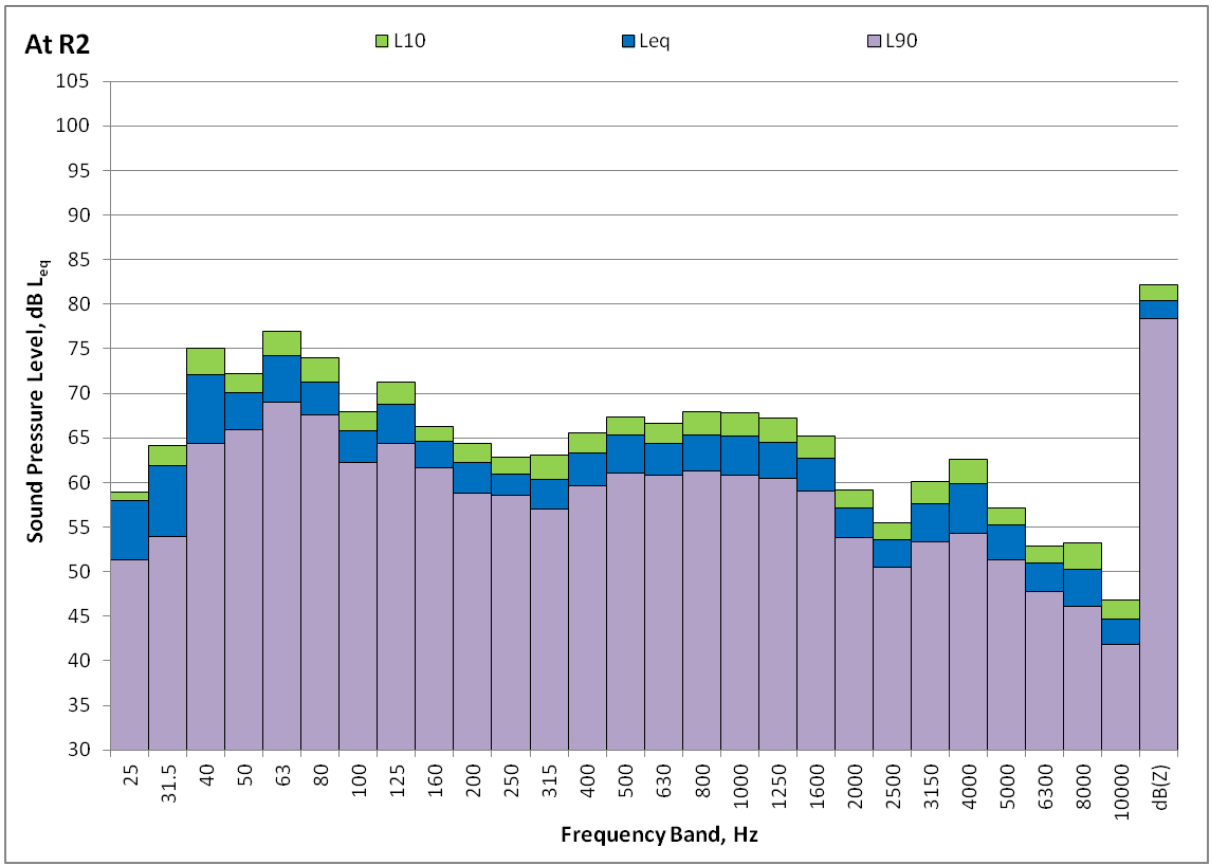
Location	Octave Band Centre Frequency (Hz)									dB(Z)
	Param.	31.5	63	125	250	500	1k	2k	4k	
R11	L10	74.4	76.9	67.0	61.4	61.3	58.6	45.3	35.9	79.0
	L90	68.8	70.4	62.1	56.4	55.9	52.8	38.7	26.2	74.2
	Leq	72.0	73.8	65.0	59.3	59.0	56.1	42.9	32.3	76.5
R12	L10	83.6	87.9	81.4	73.2	73.1	70.4	59.9	47.5	89.4
	L90	75.2	80.0	75.4	68.9	68.2	65.2	54.2	43.3	84.6
	Leq	80.6	85.3	78.8	71.5	71.2	68.6	57.6	46.1	87.5

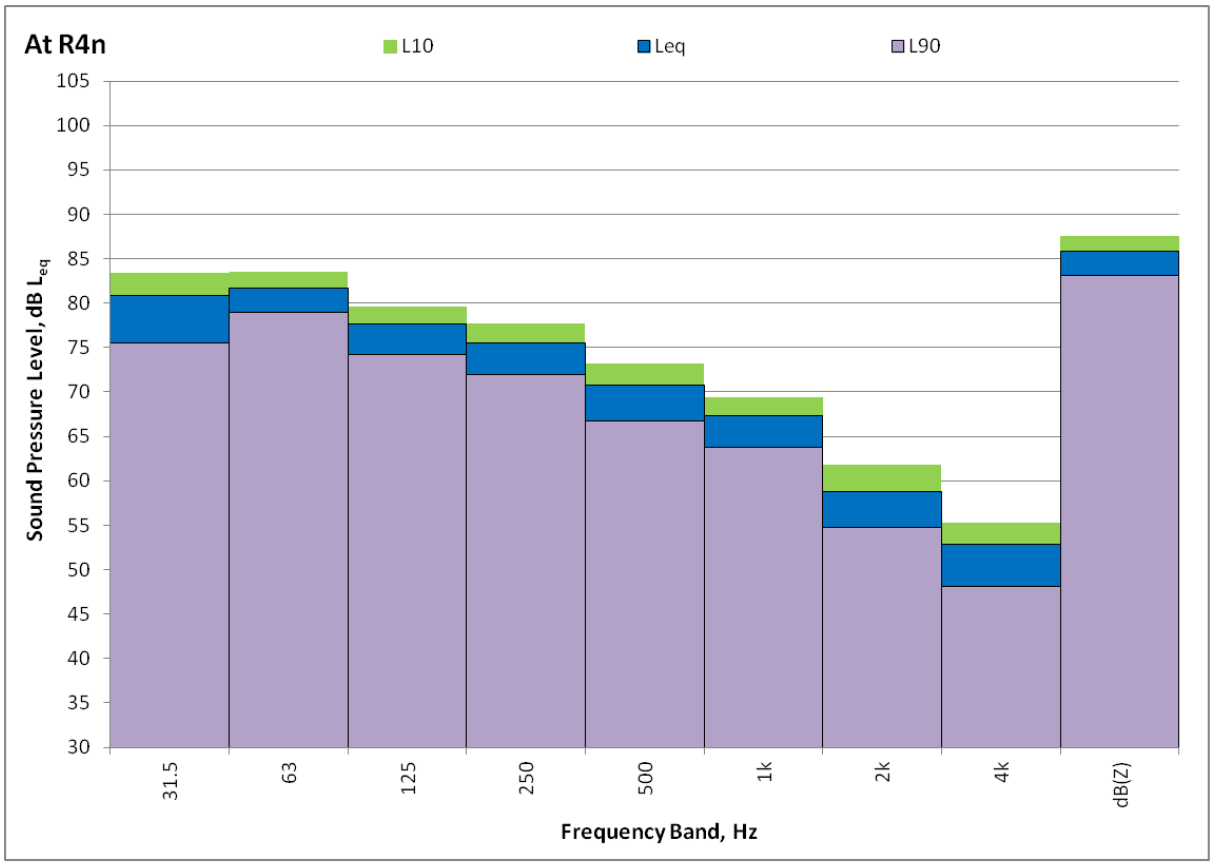
Appendix F

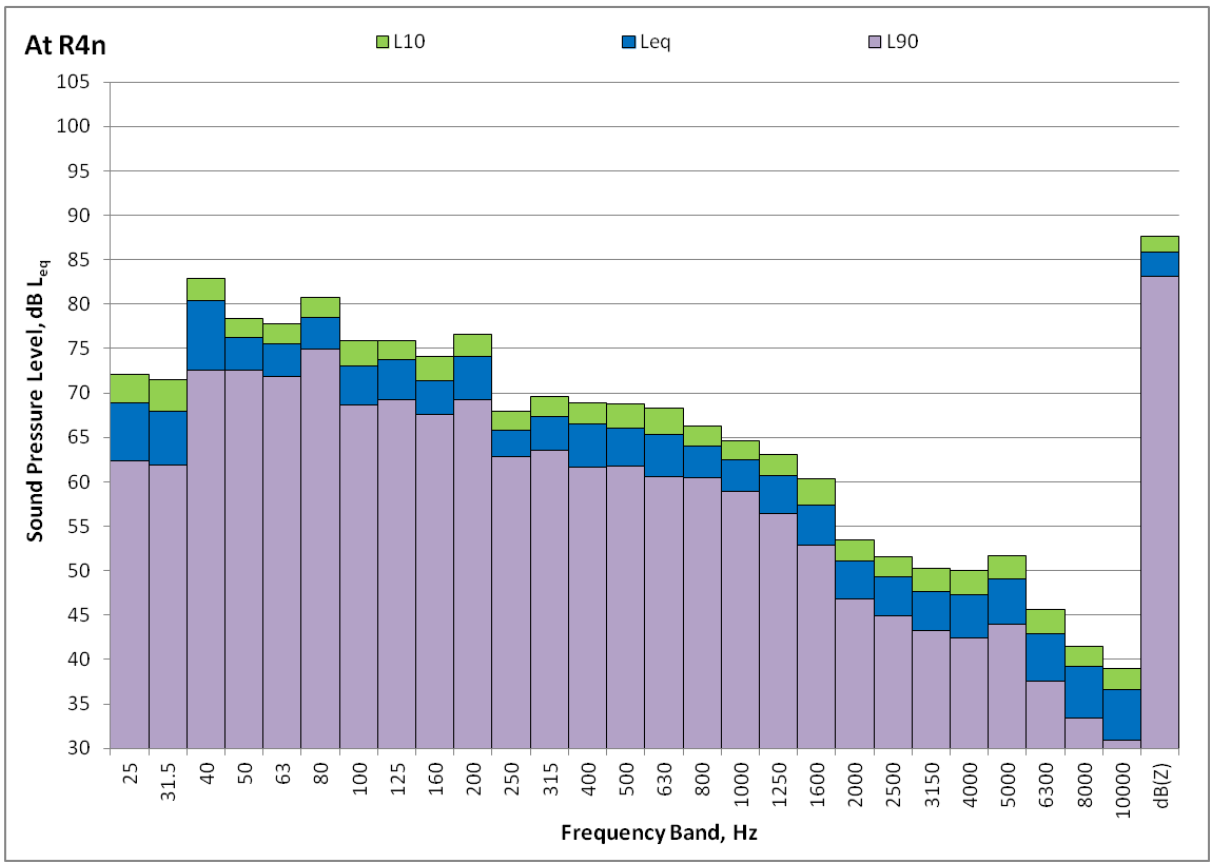
Plots of Residential Locations Spectra

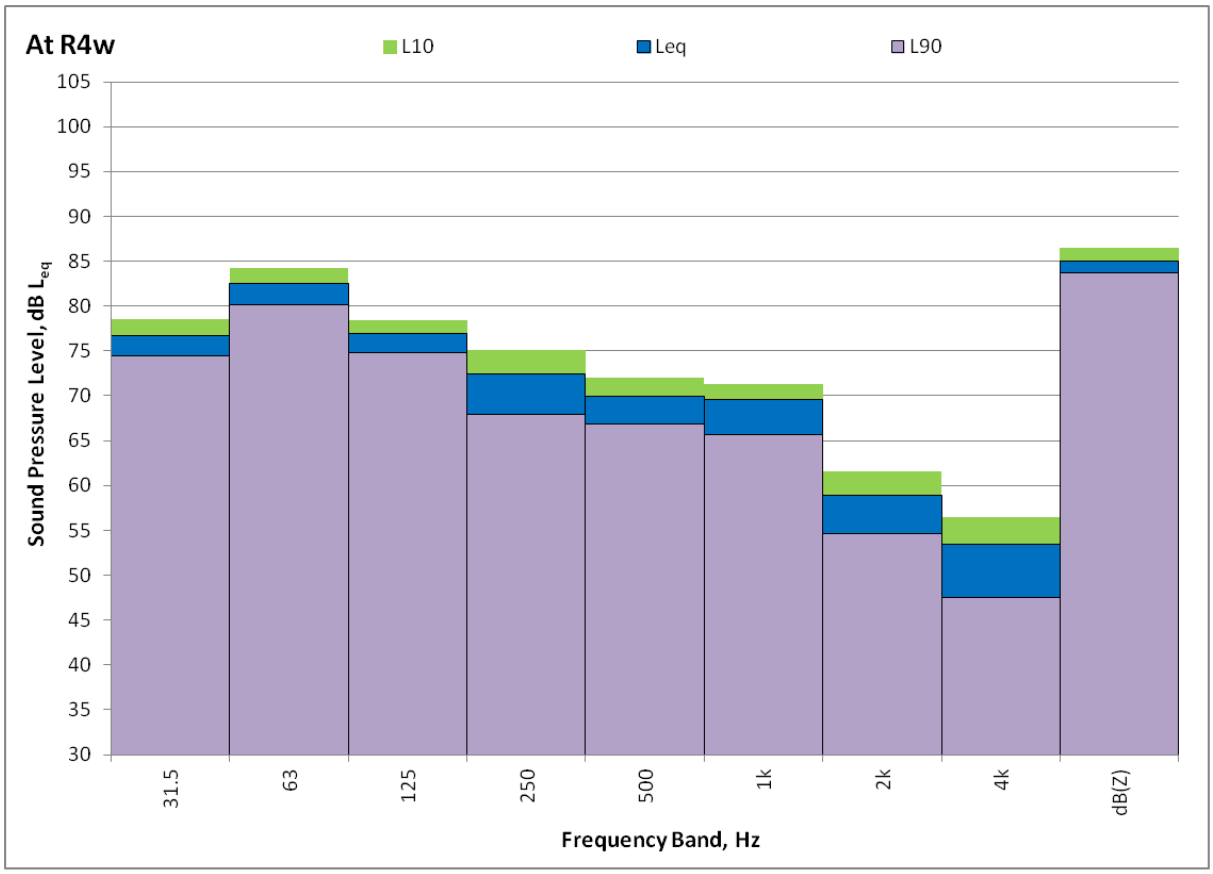
Night 1 Plots






At R4n
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R4n
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R4w
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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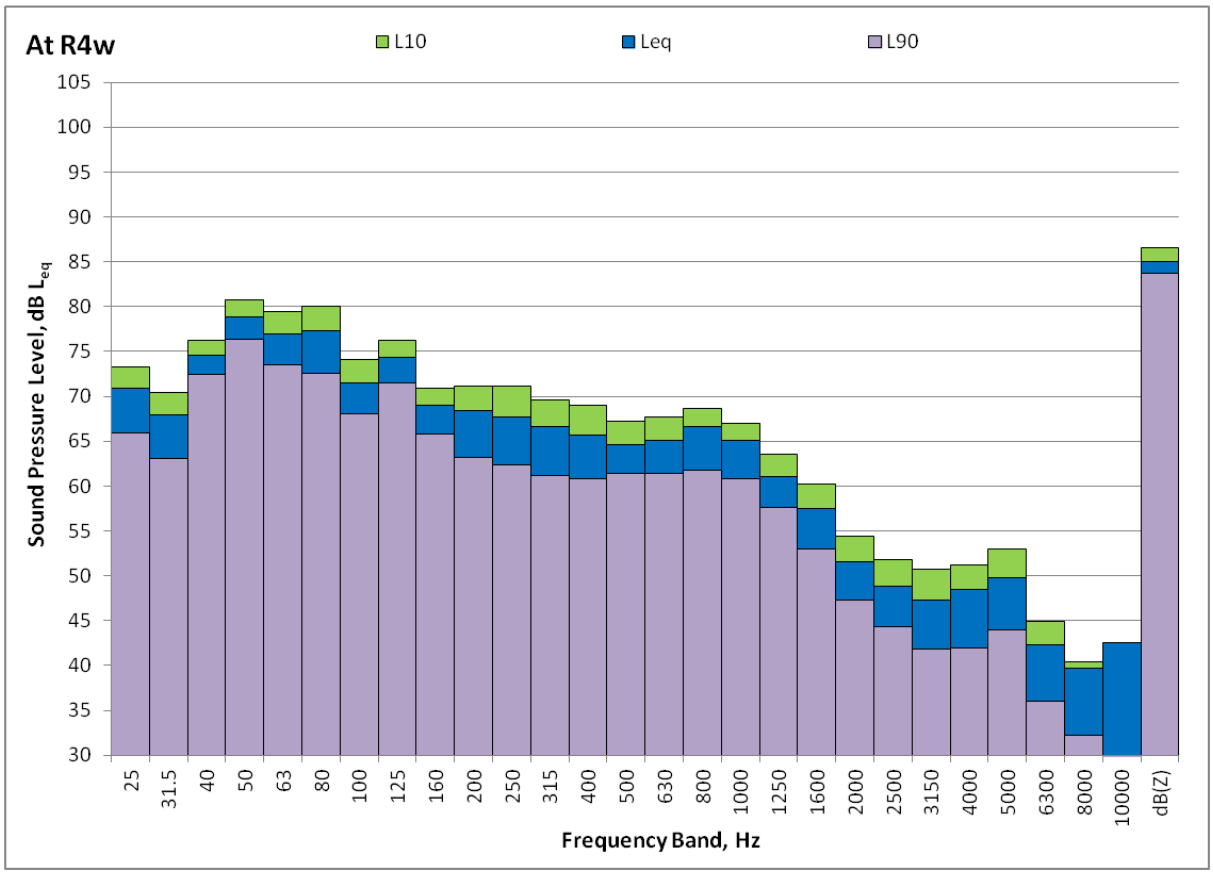
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R4w
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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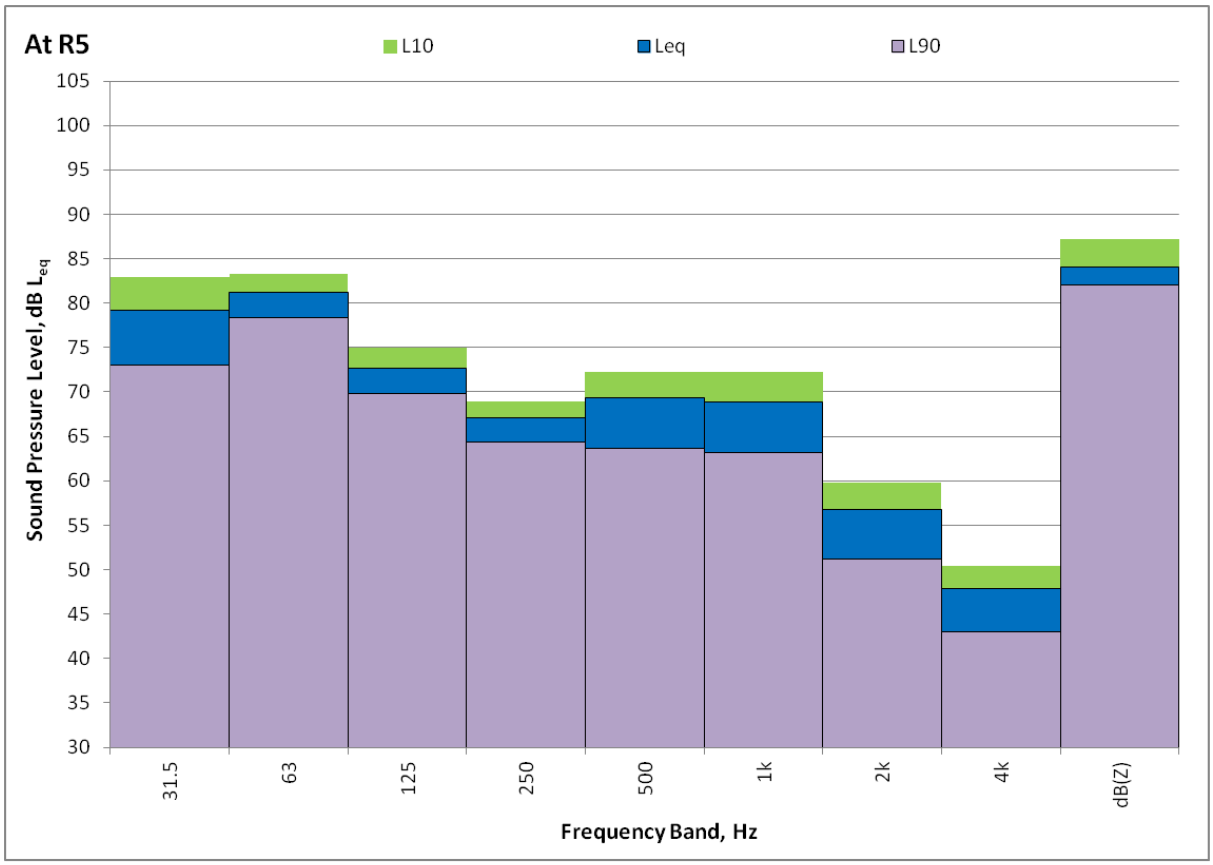
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R5
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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35
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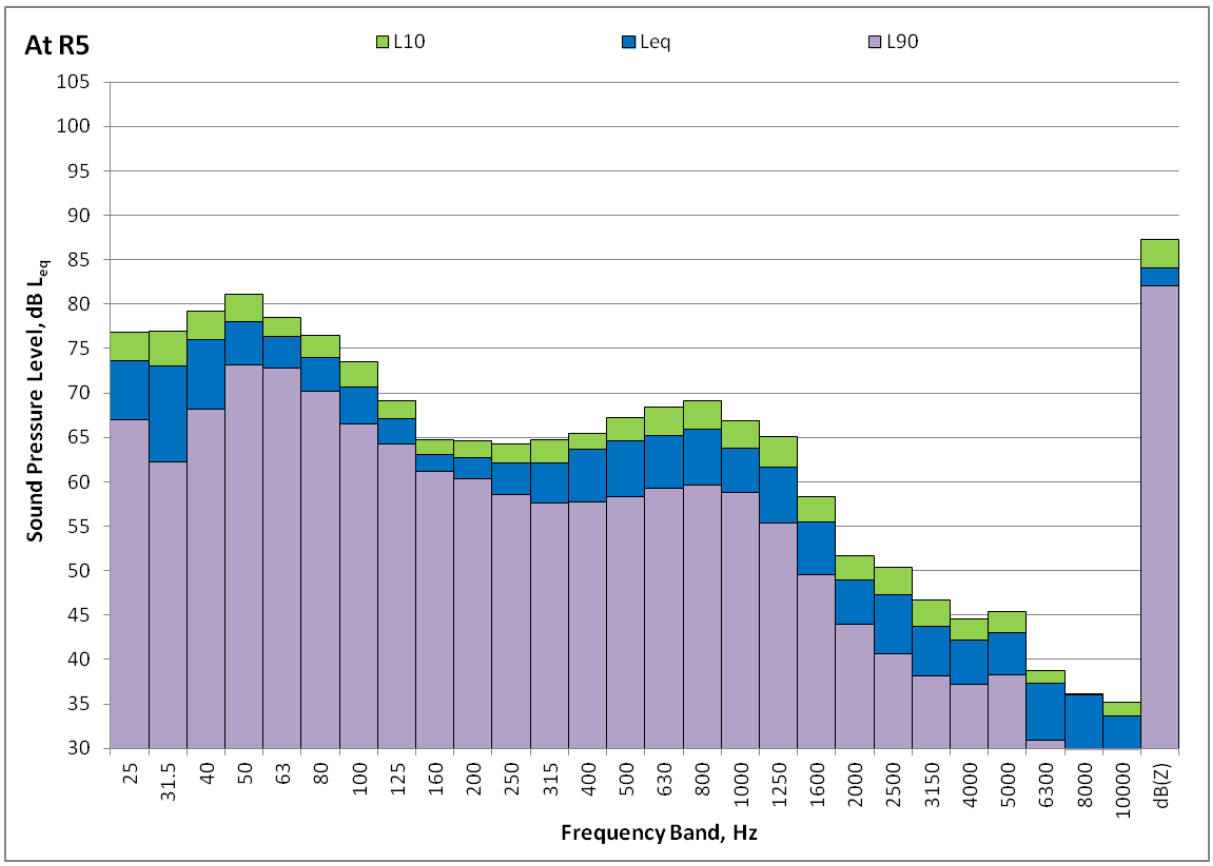
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R5
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
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1250
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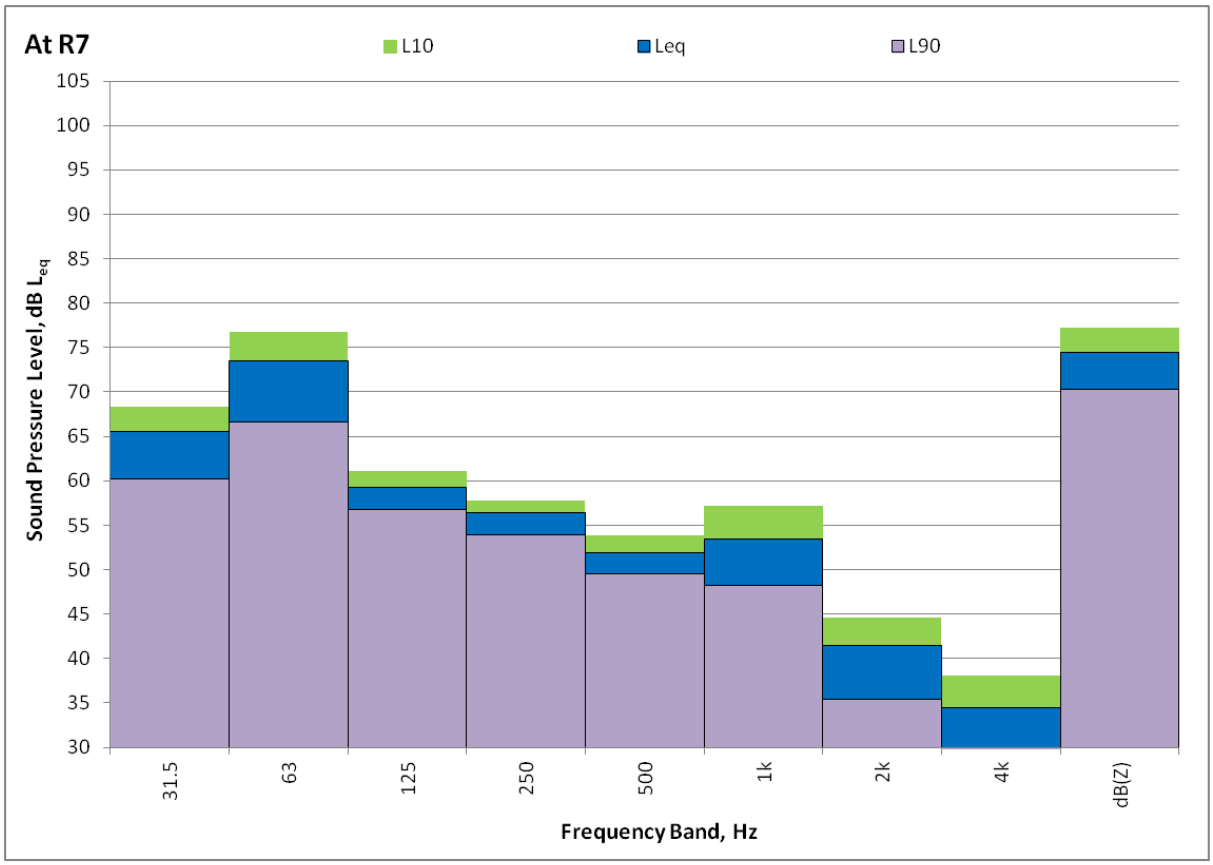
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R7
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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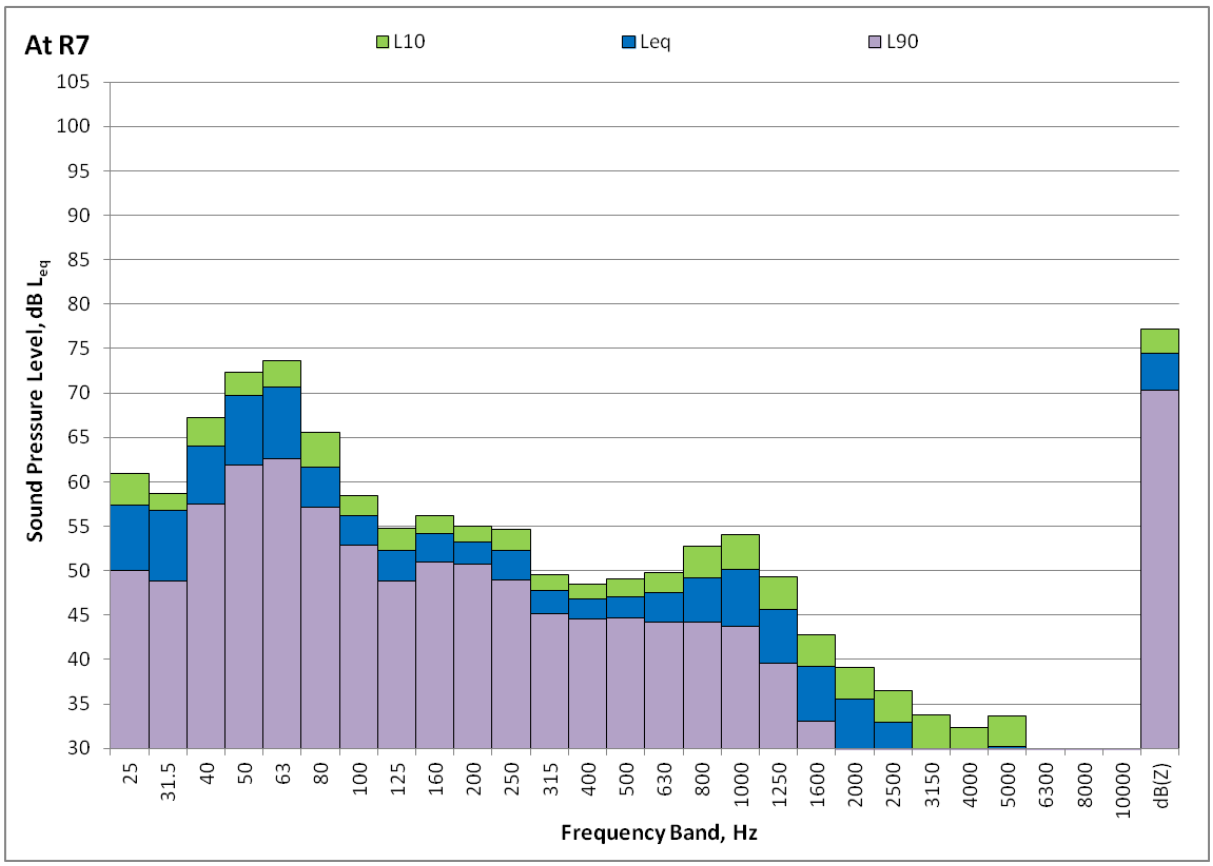
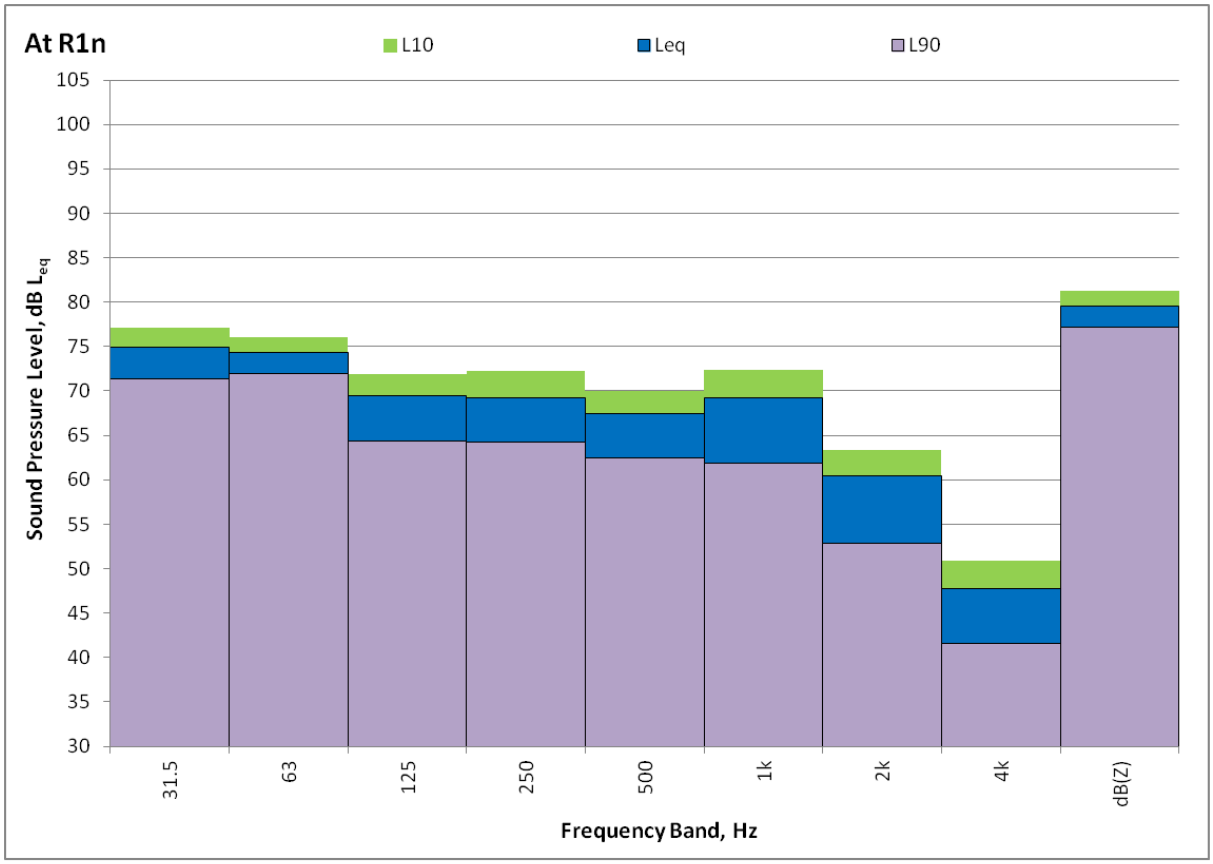
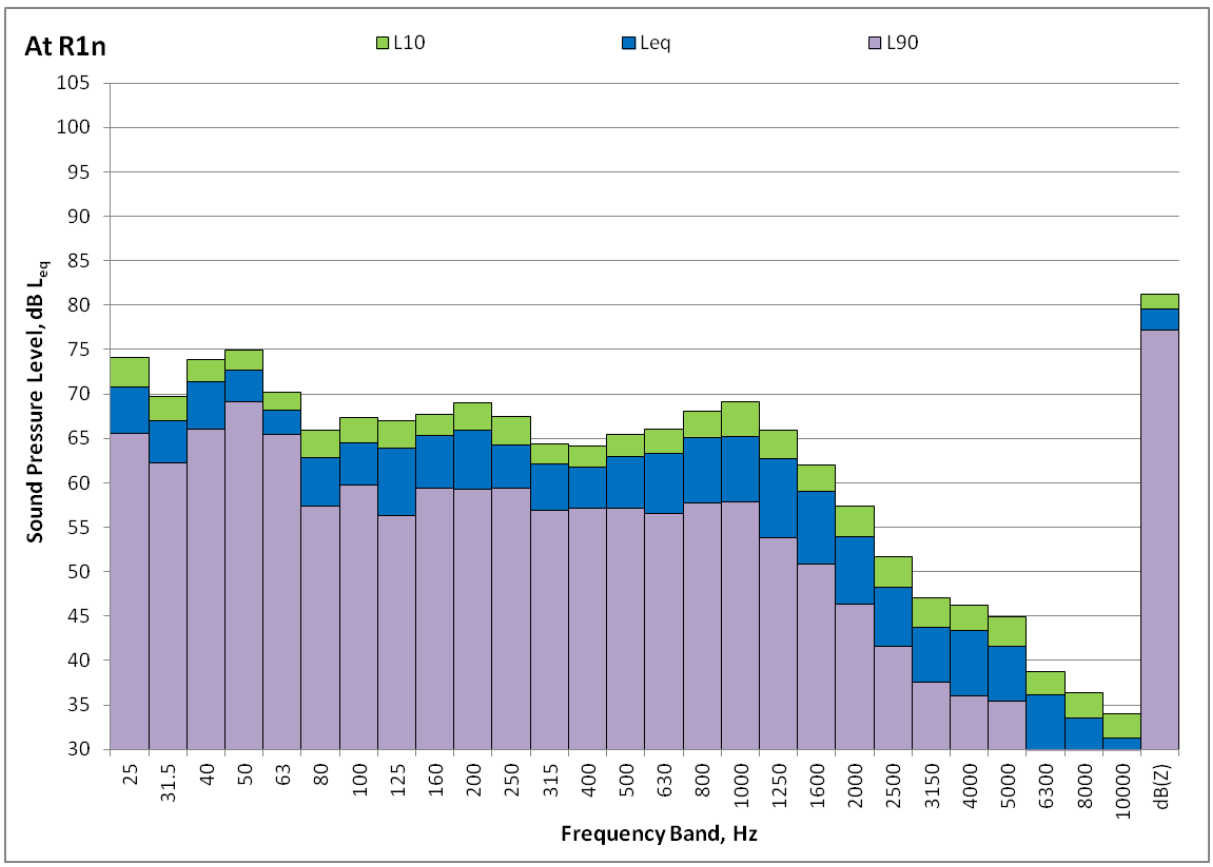
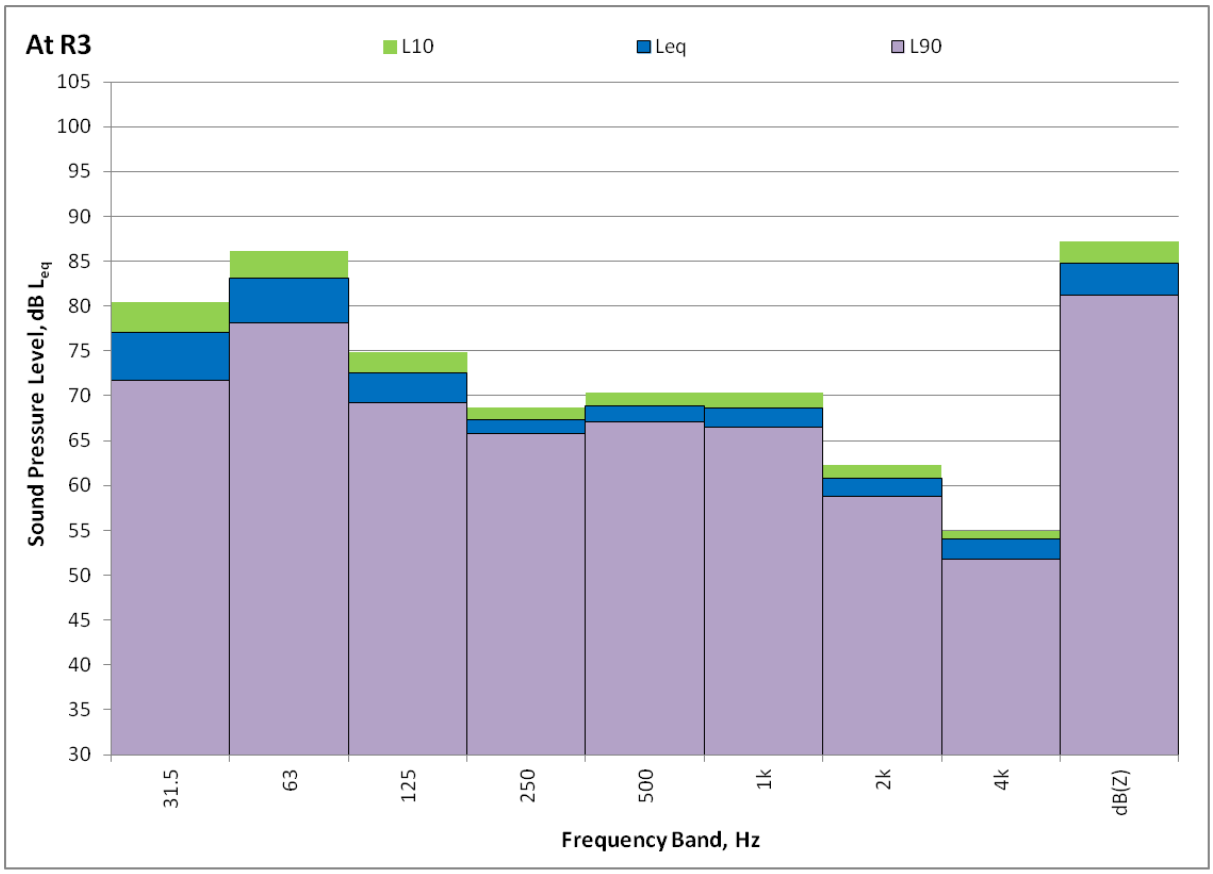
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R7
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz

Night 2 Plots






At R3
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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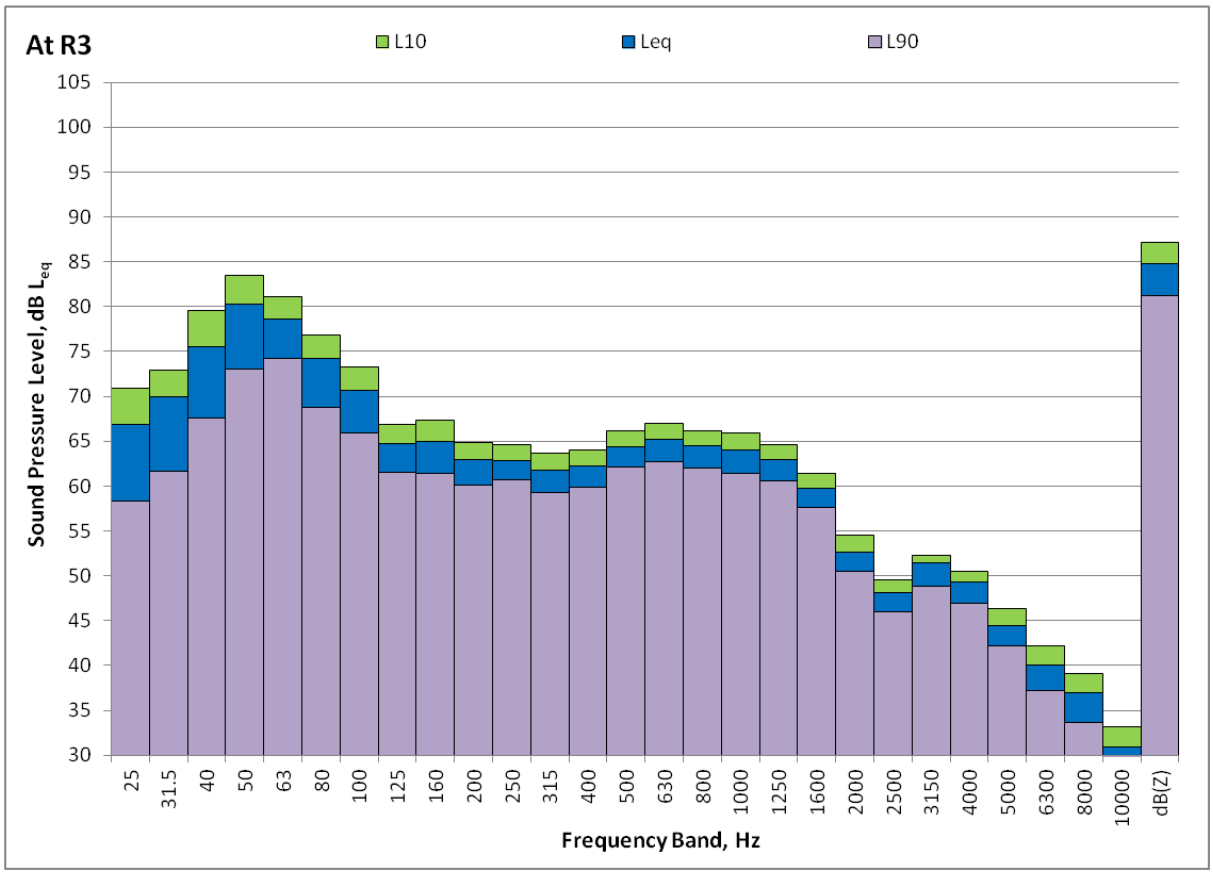
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R3
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
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1250
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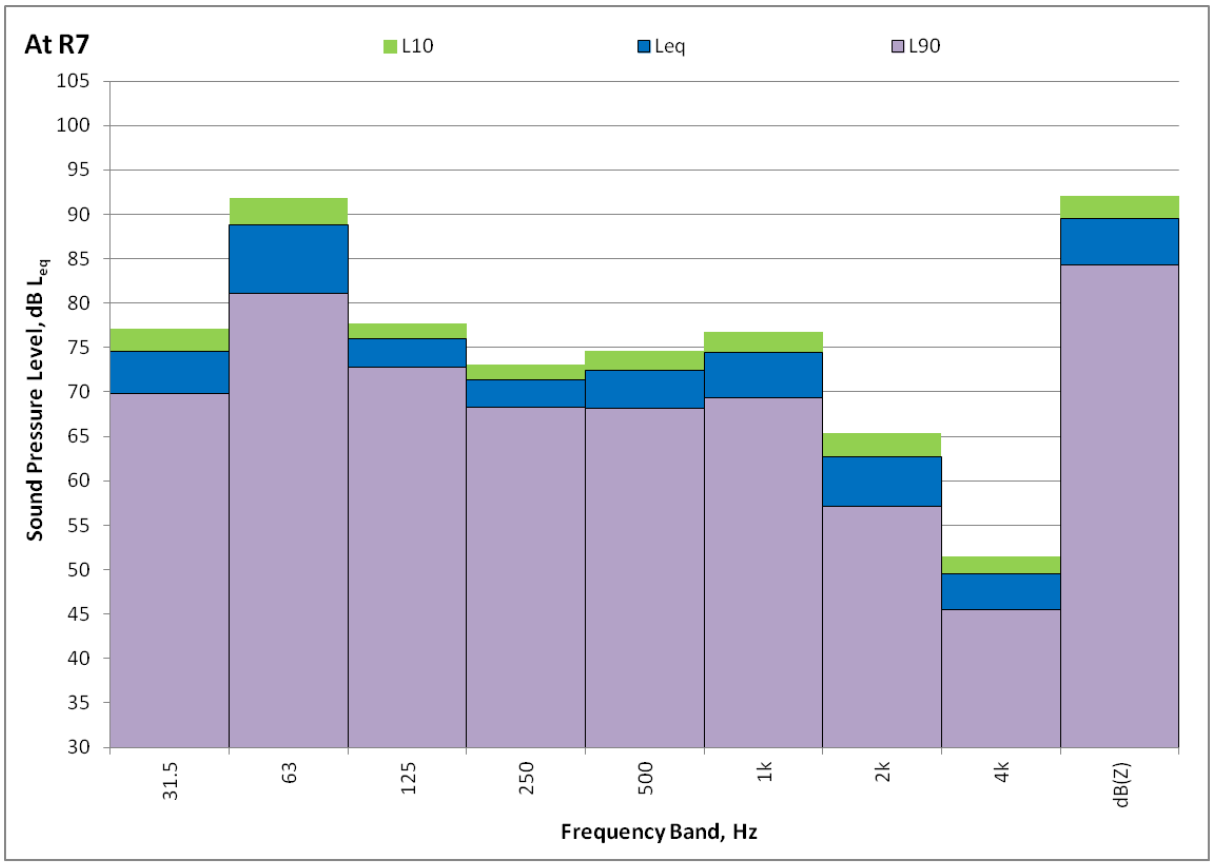
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R7
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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Sound Pressure Level, dB Leq
31.5
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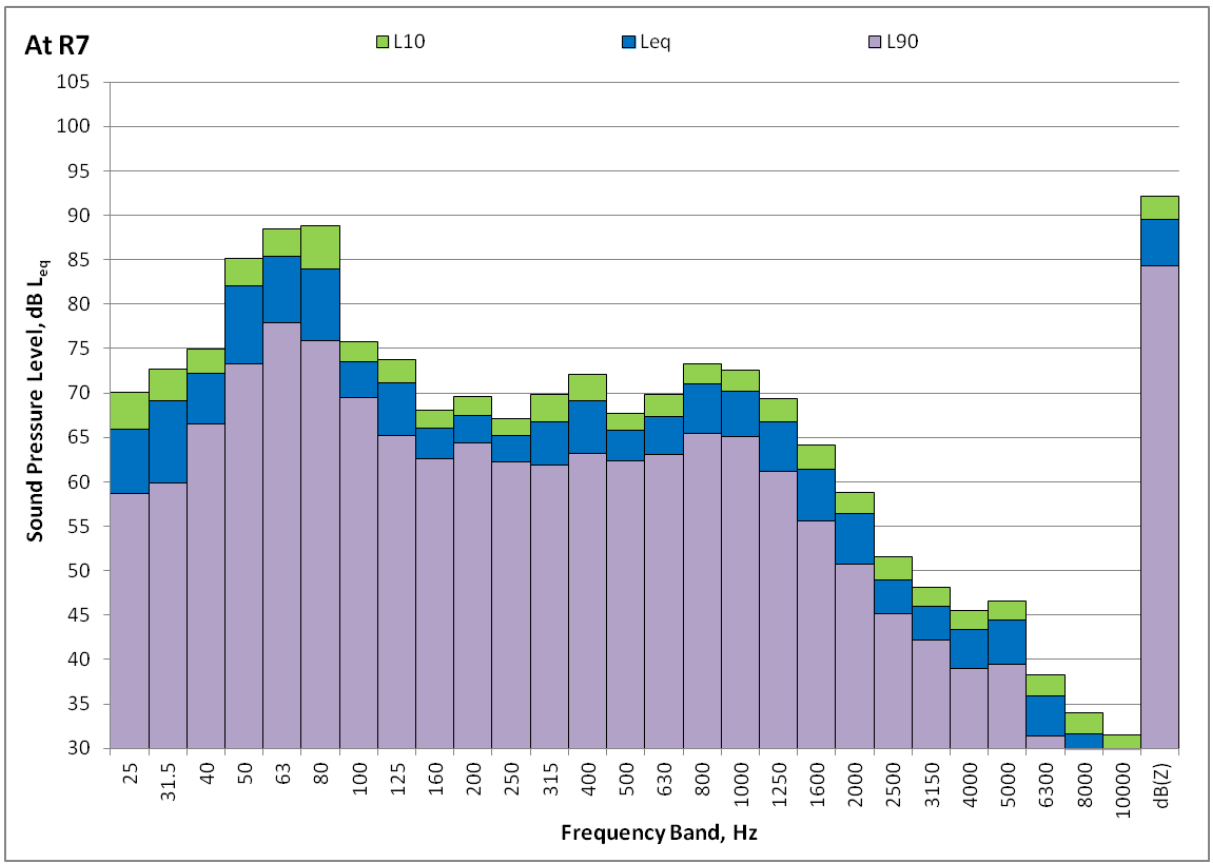
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R7
L10
Leq
L90
105
100
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90
85
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75
70
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60
55
50
45
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35
30
Sound Pressure Level, dB Leq
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31.5
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1250
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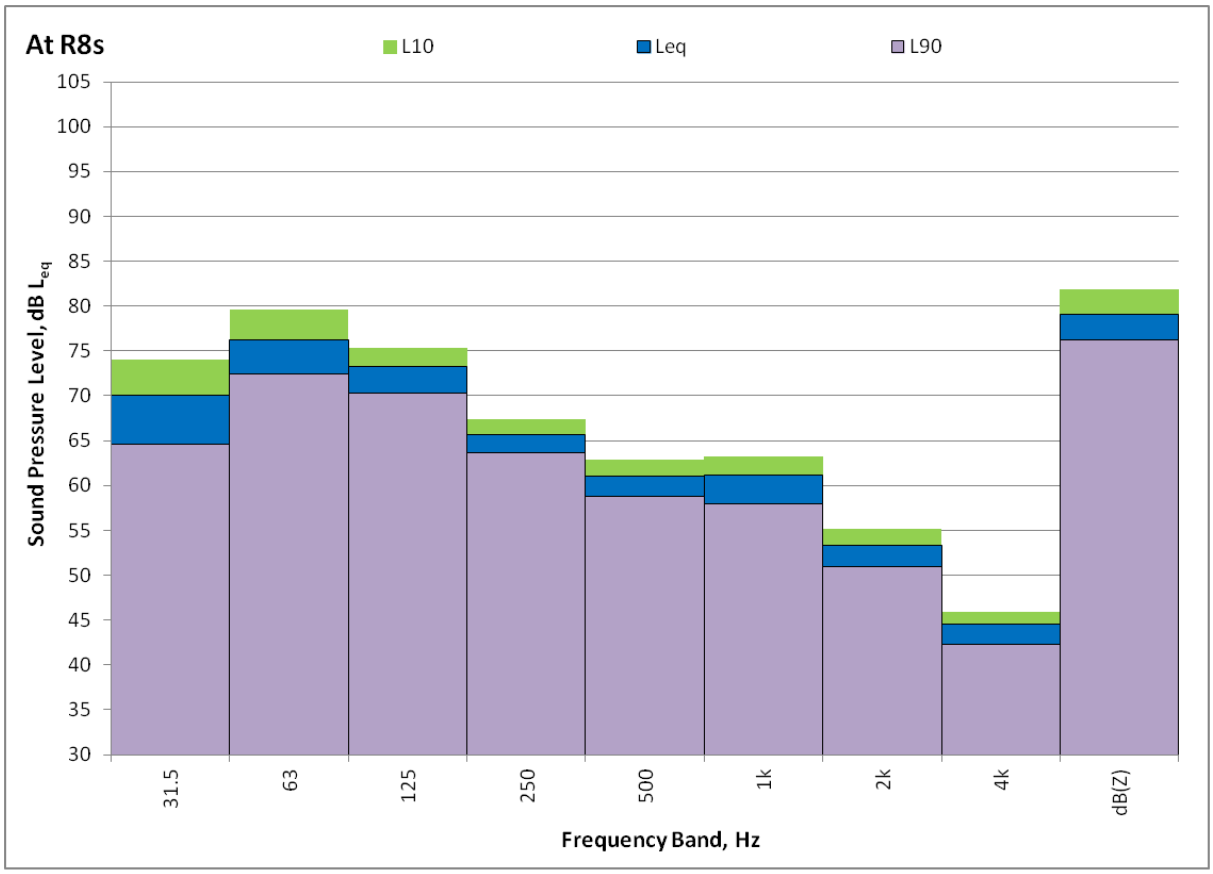
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R8s
L10
Leq
L90
105
100
95
90
85
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75
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60
55
50
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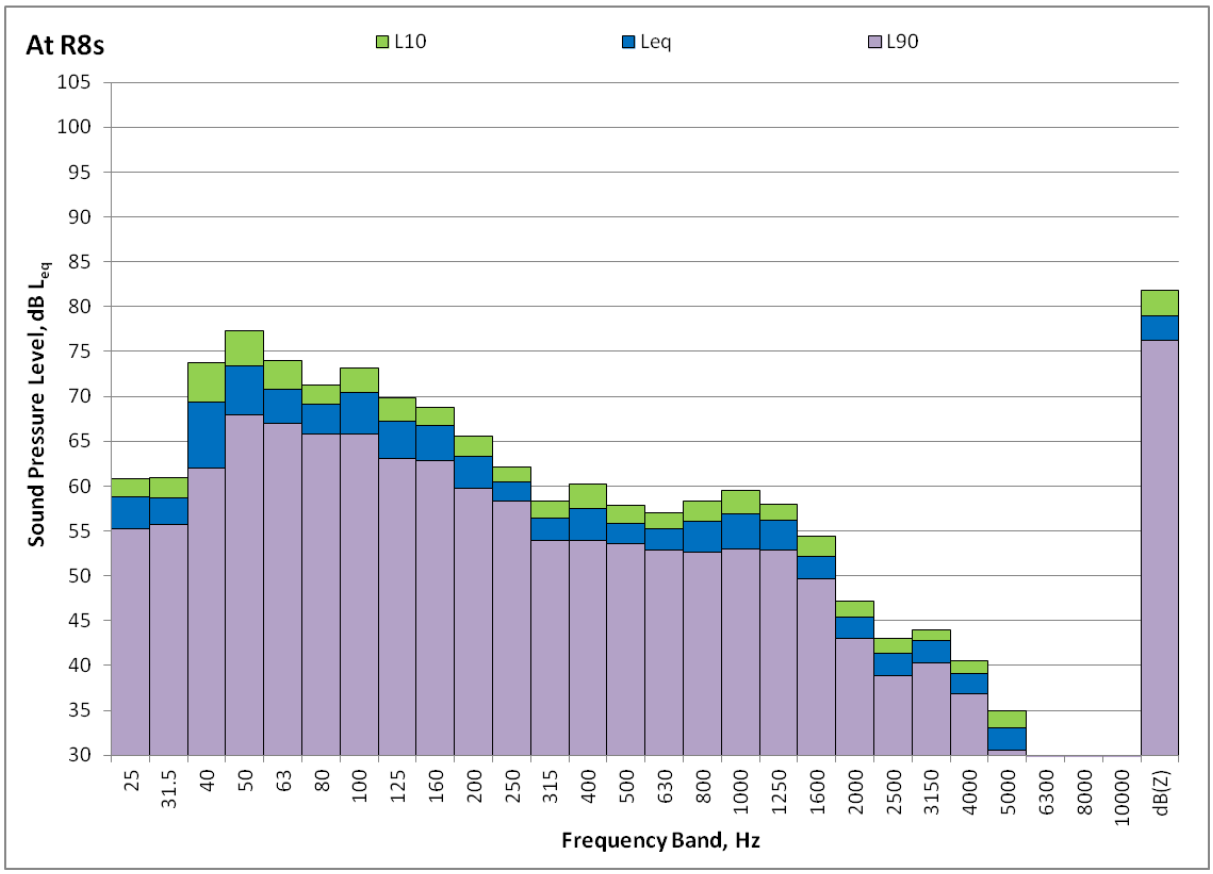
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R8s
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
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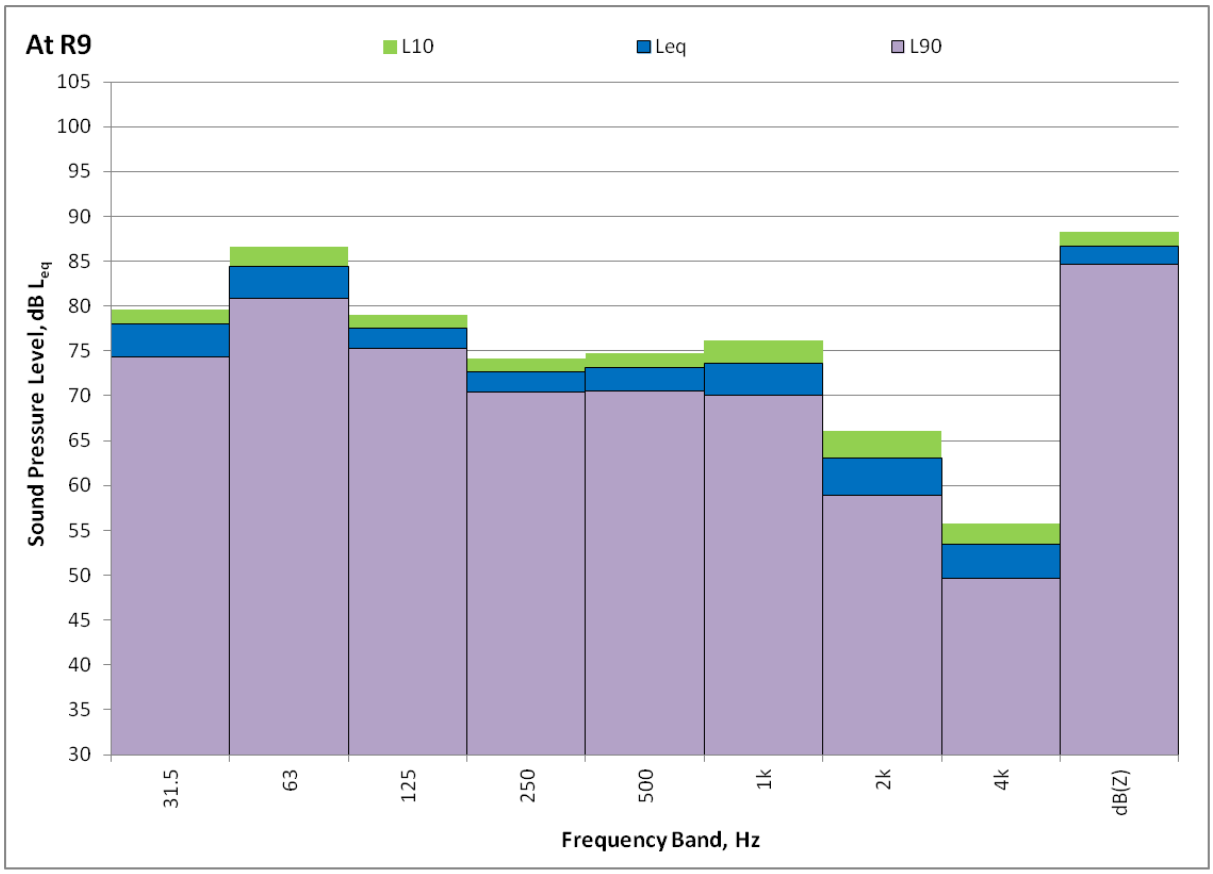
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R9
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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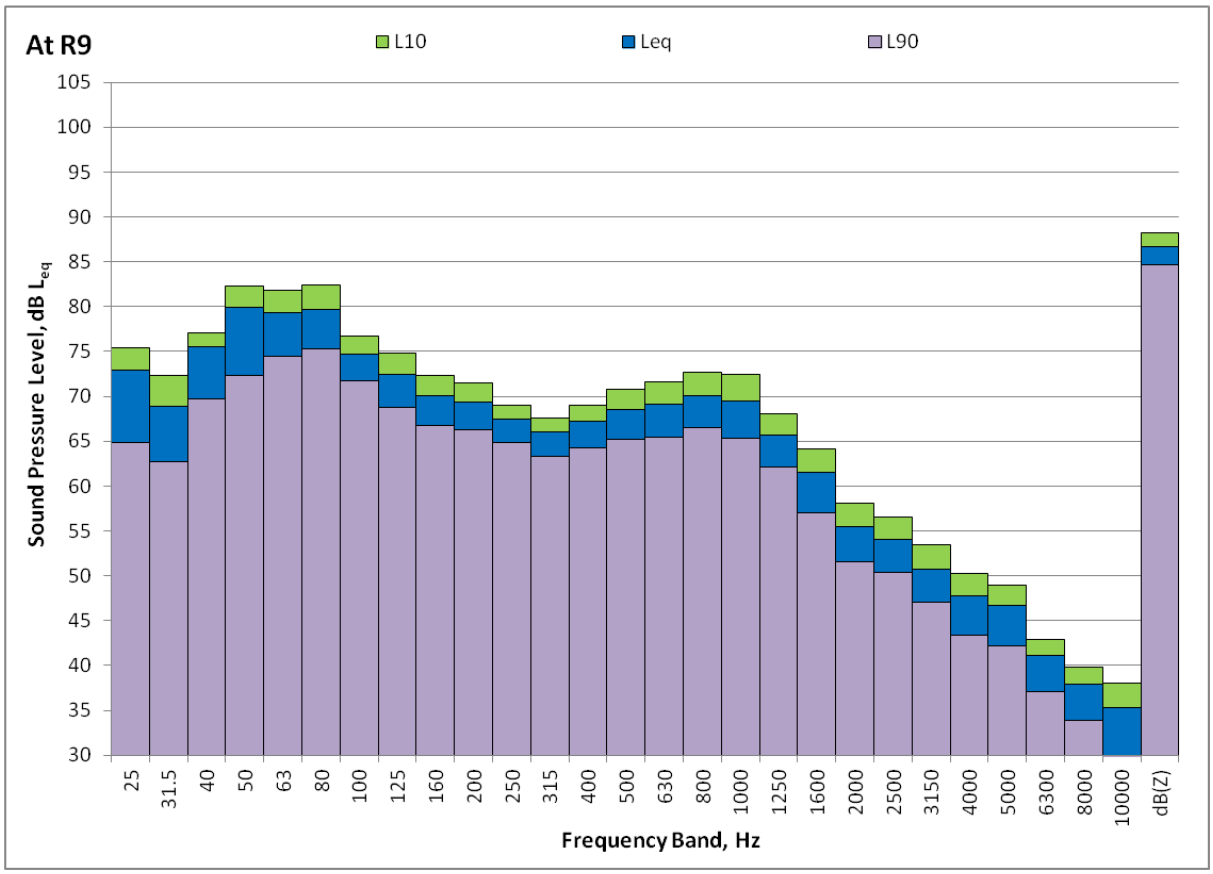
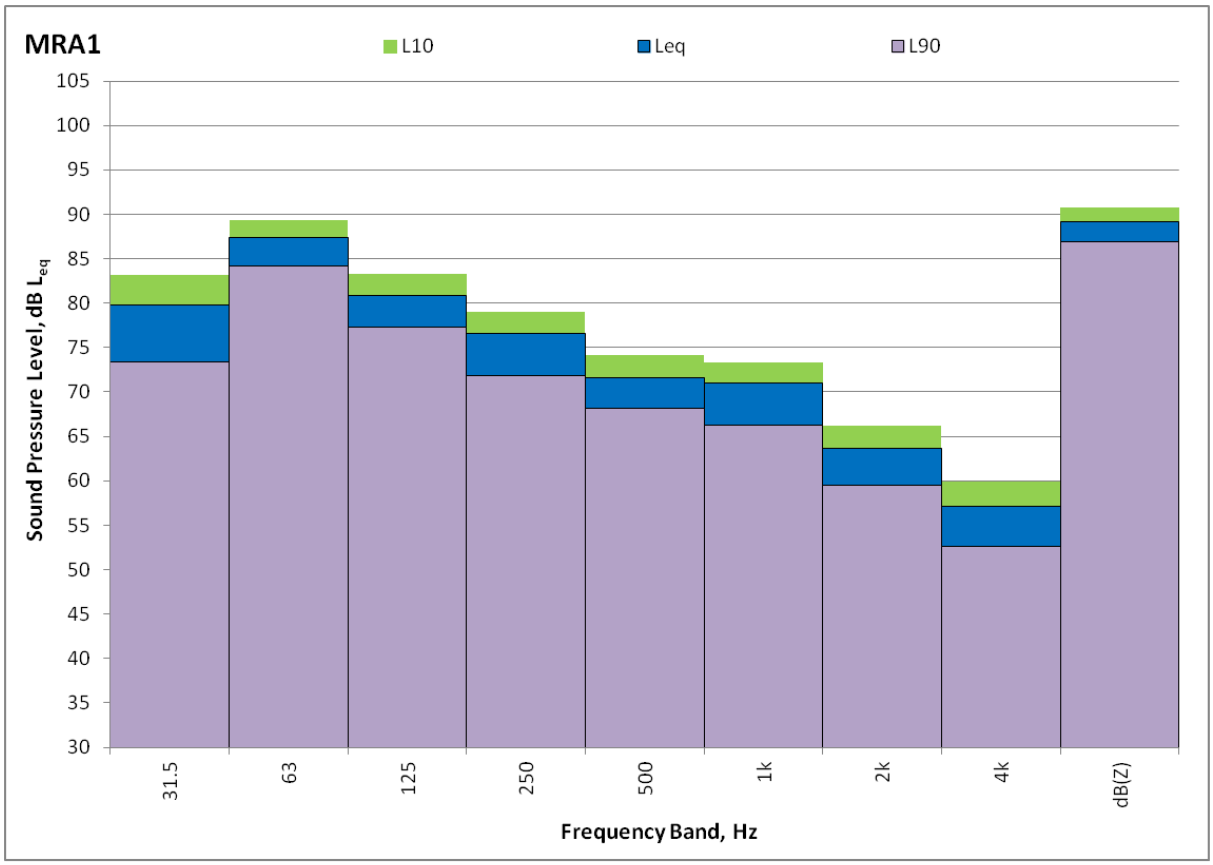
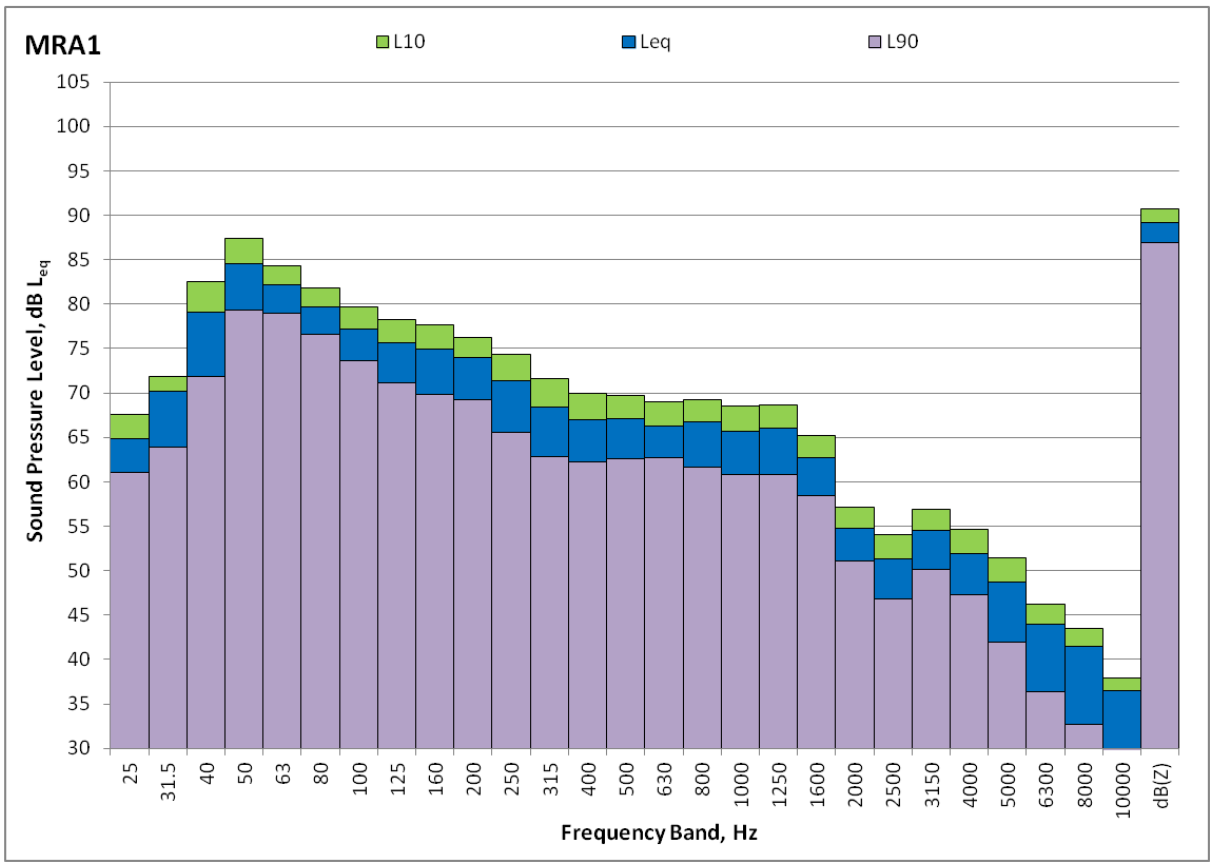
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R9
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


MRA1
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


MRA1
L10
Leq
L90
105
100
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85
80
75
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60
55
50
45
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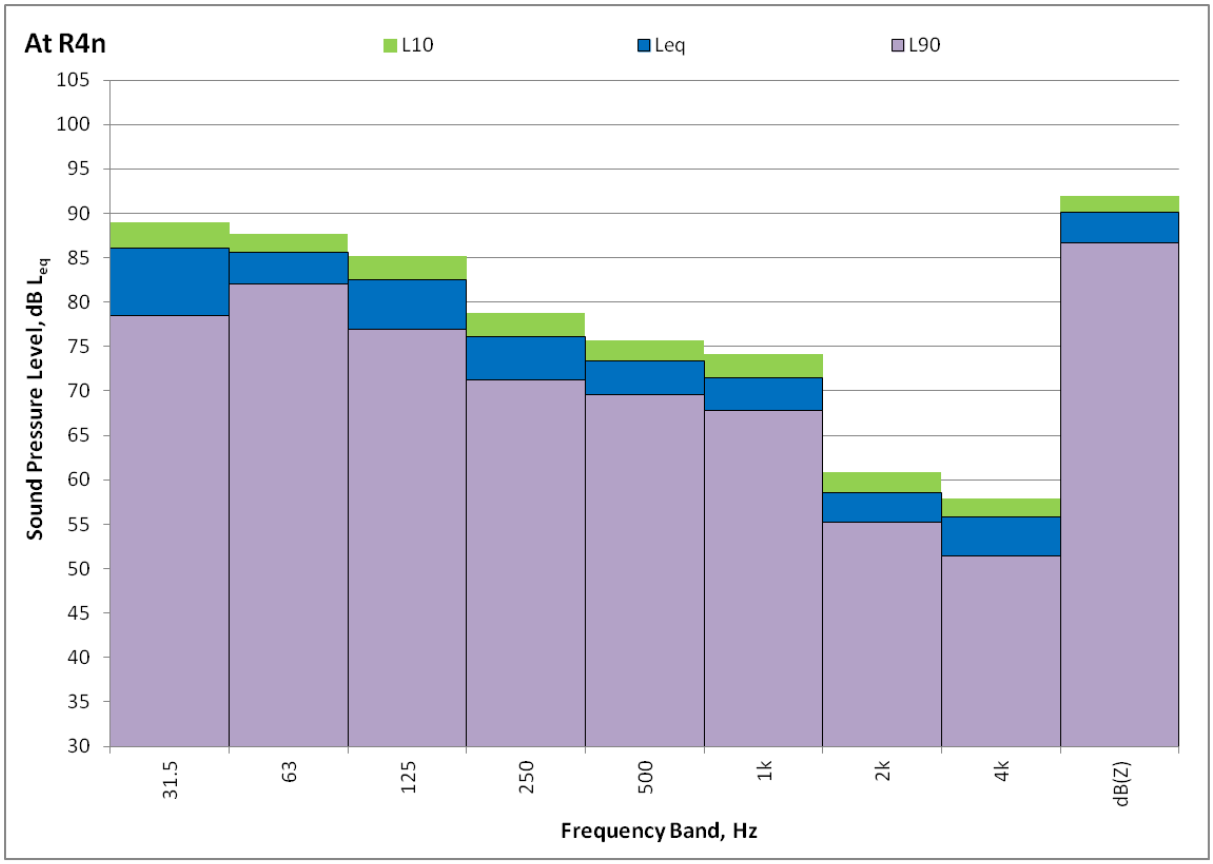
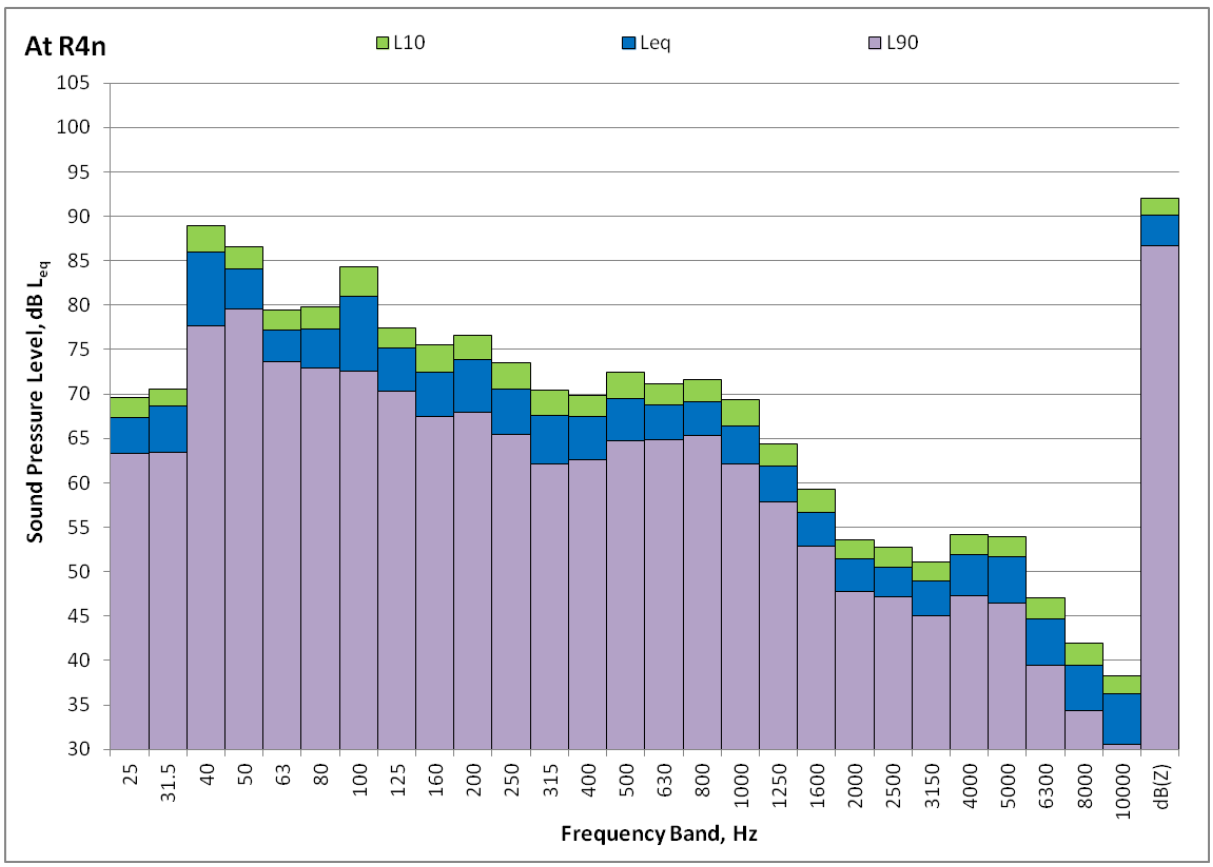
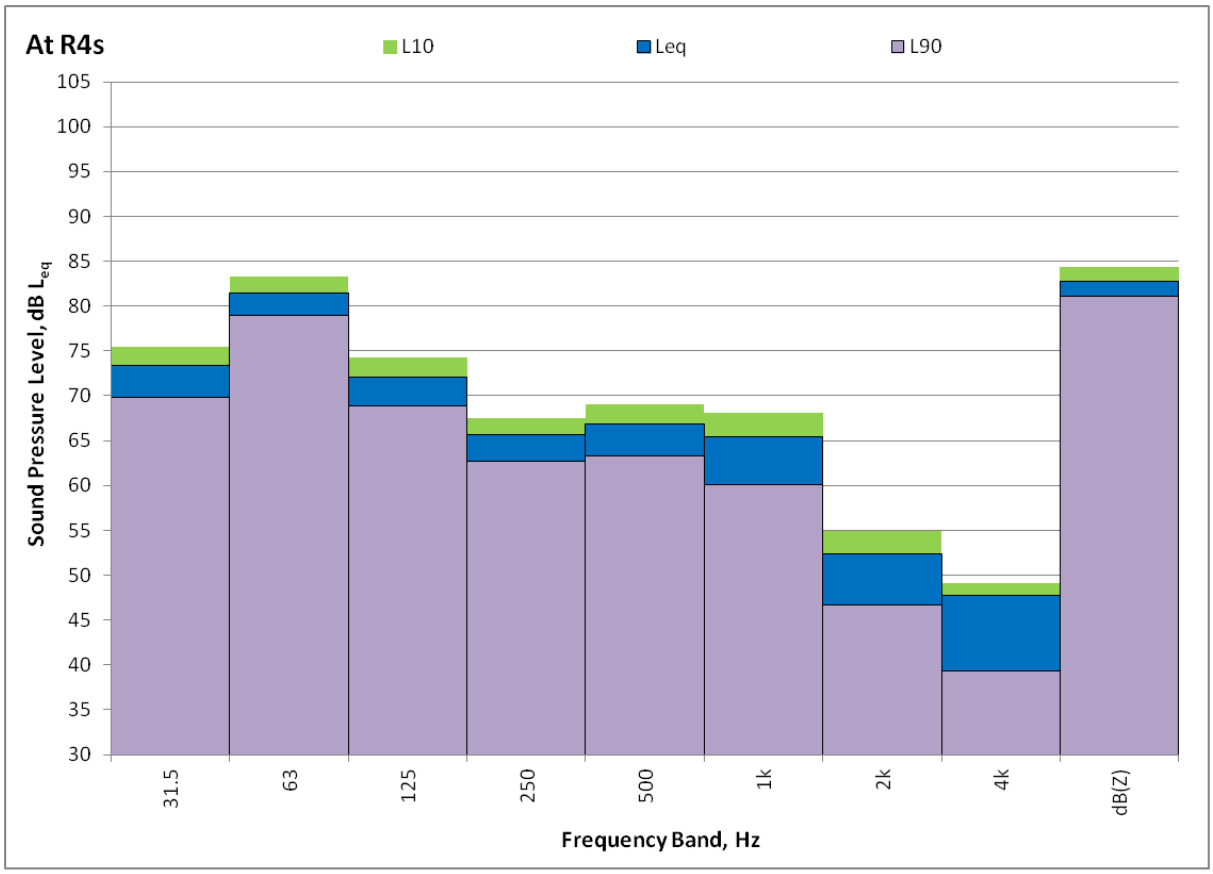
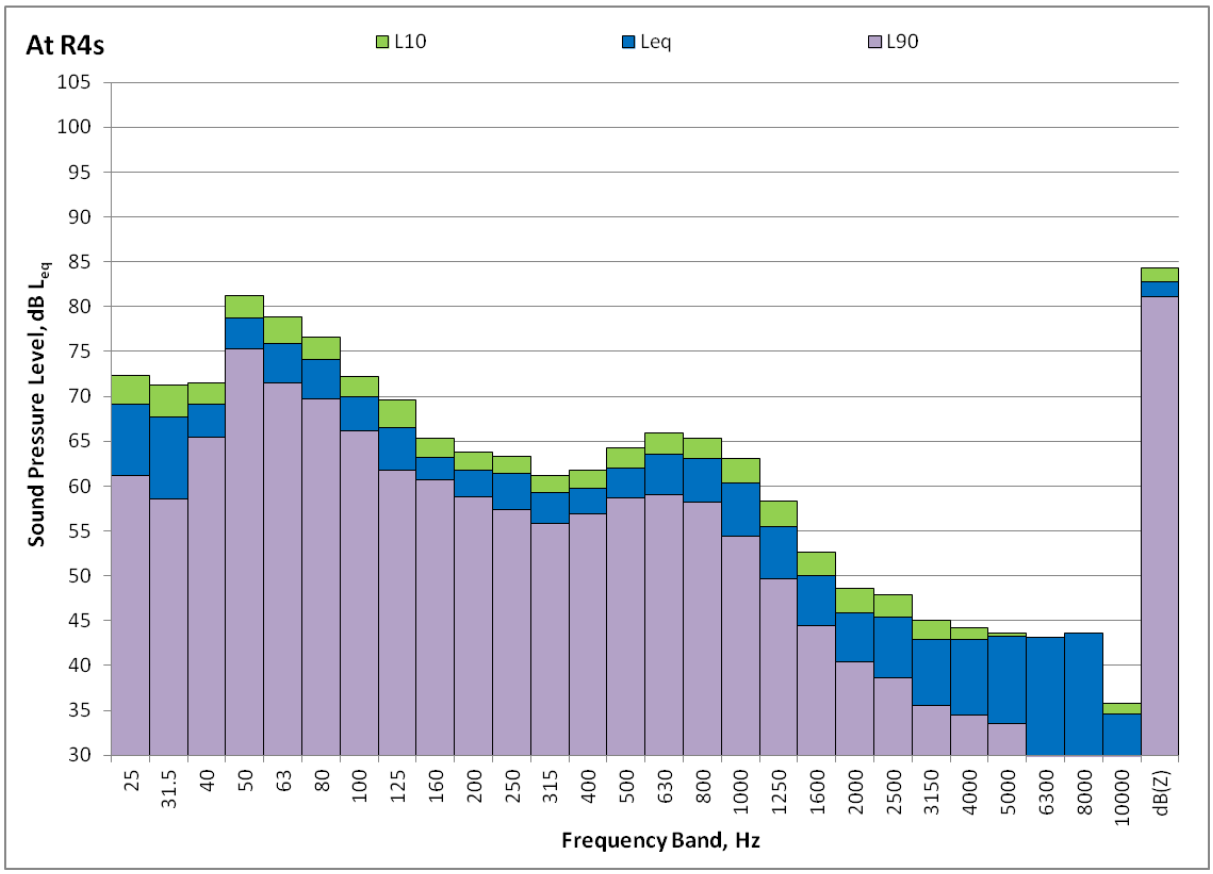
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz

Night 3 Plots






At R4s
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R4s
L10
Leq
L90
105
100
95
90
85
80
75
70
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60
55
50
45
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35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
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1250
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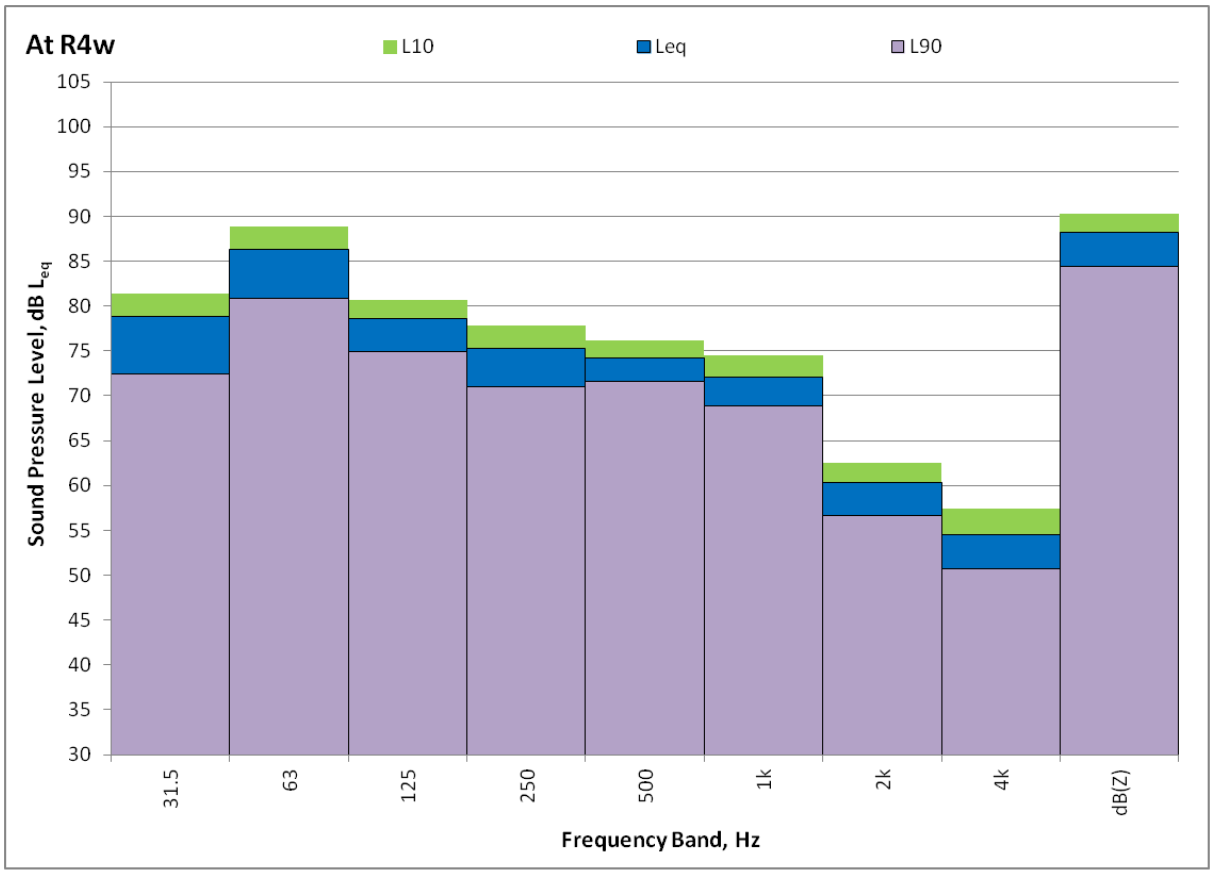
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R4w
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
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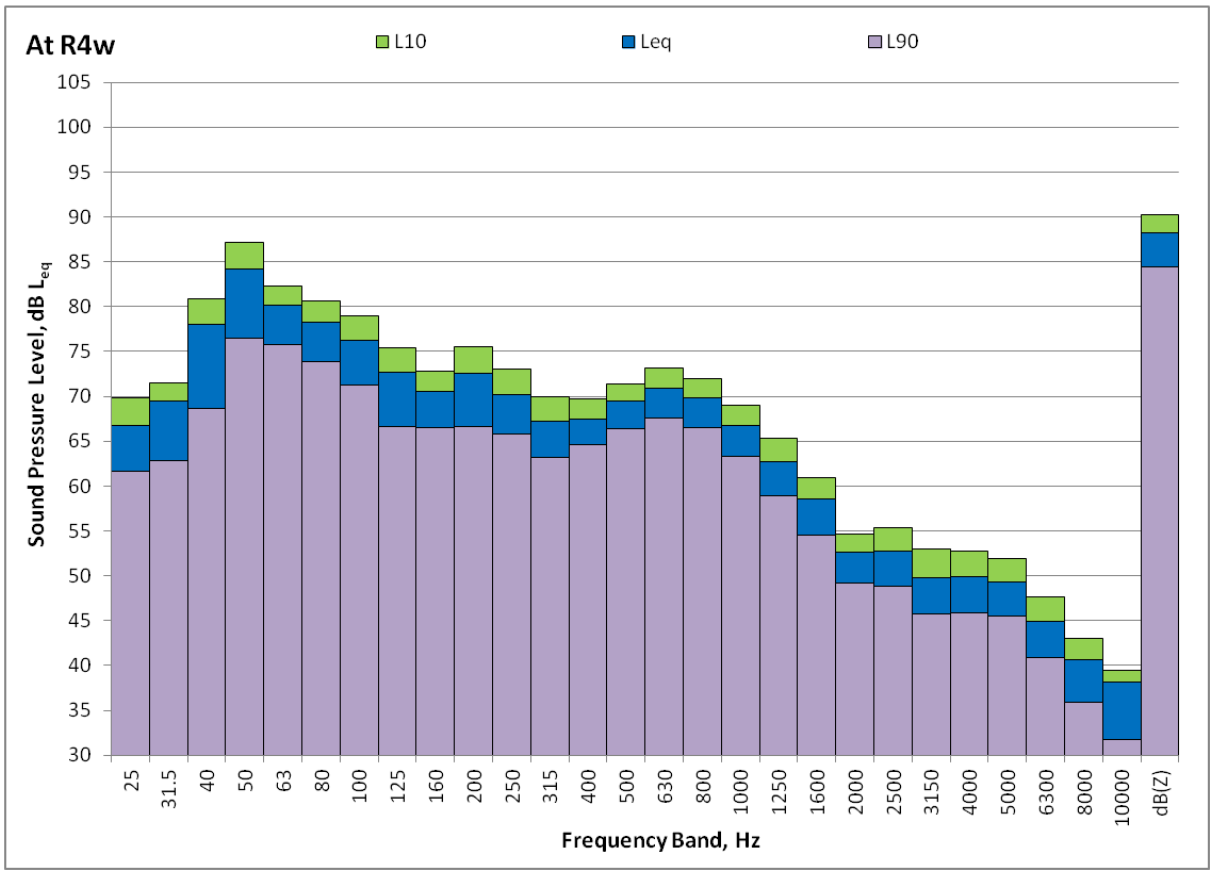
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R4w
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
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500
630
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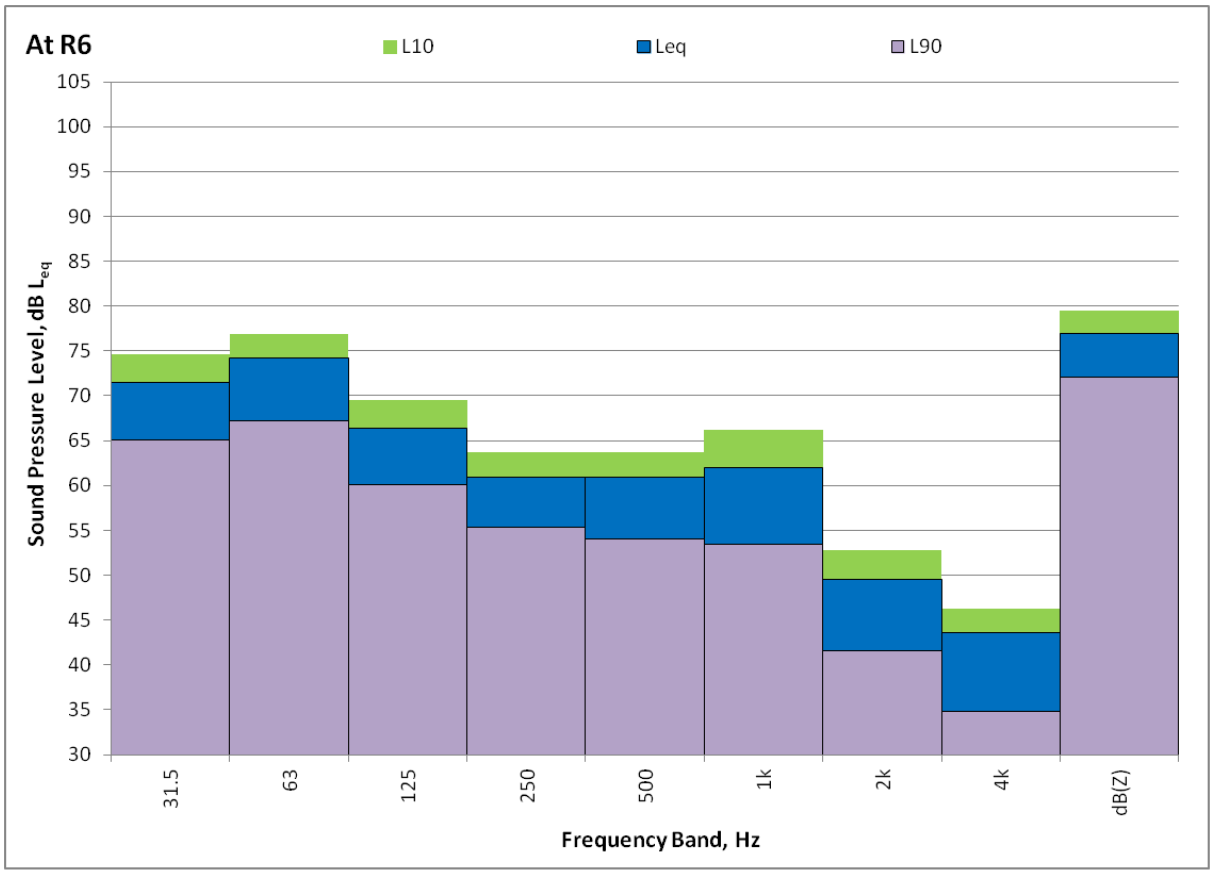
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R6
L10
Leq
L90
105
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90
85
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75
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60
55
50
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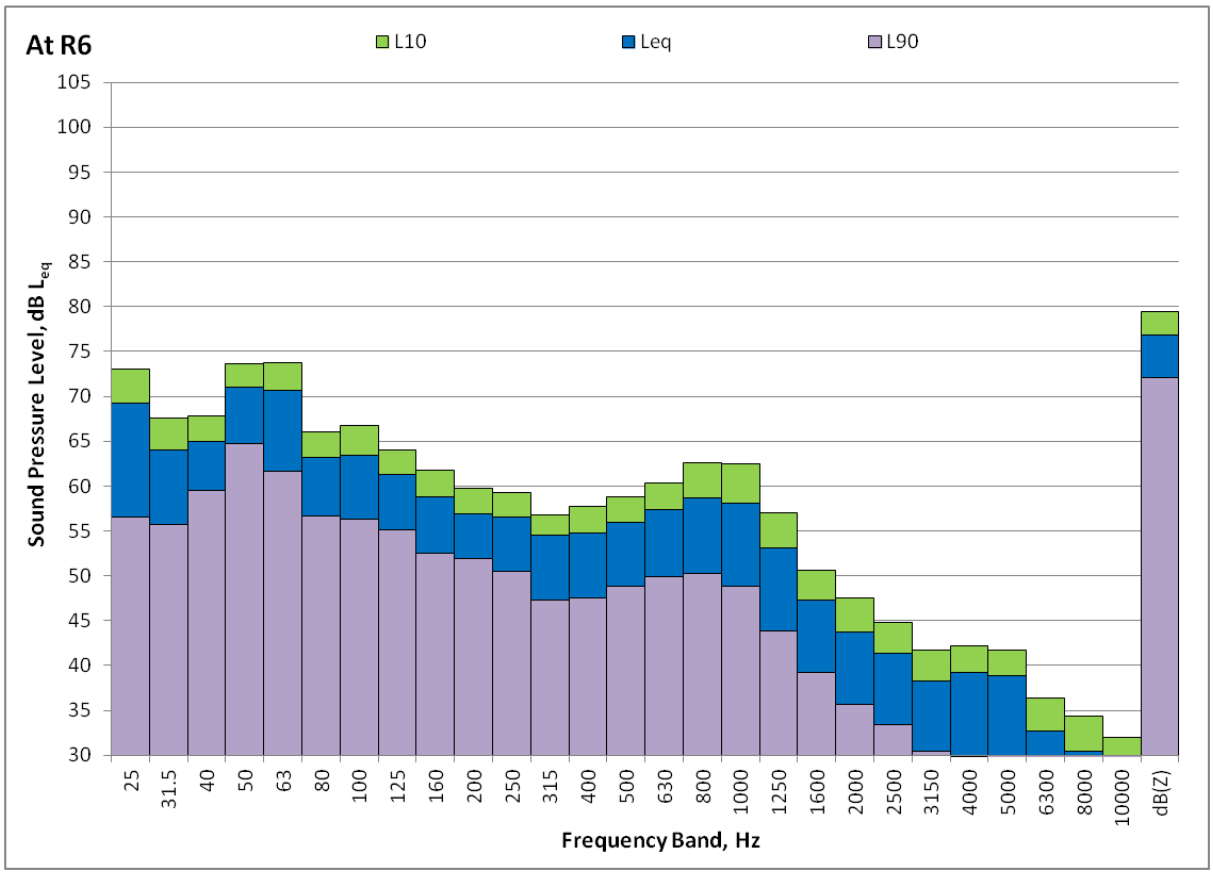
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R6
L10
Leq
L90
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60
55
50
45
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30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
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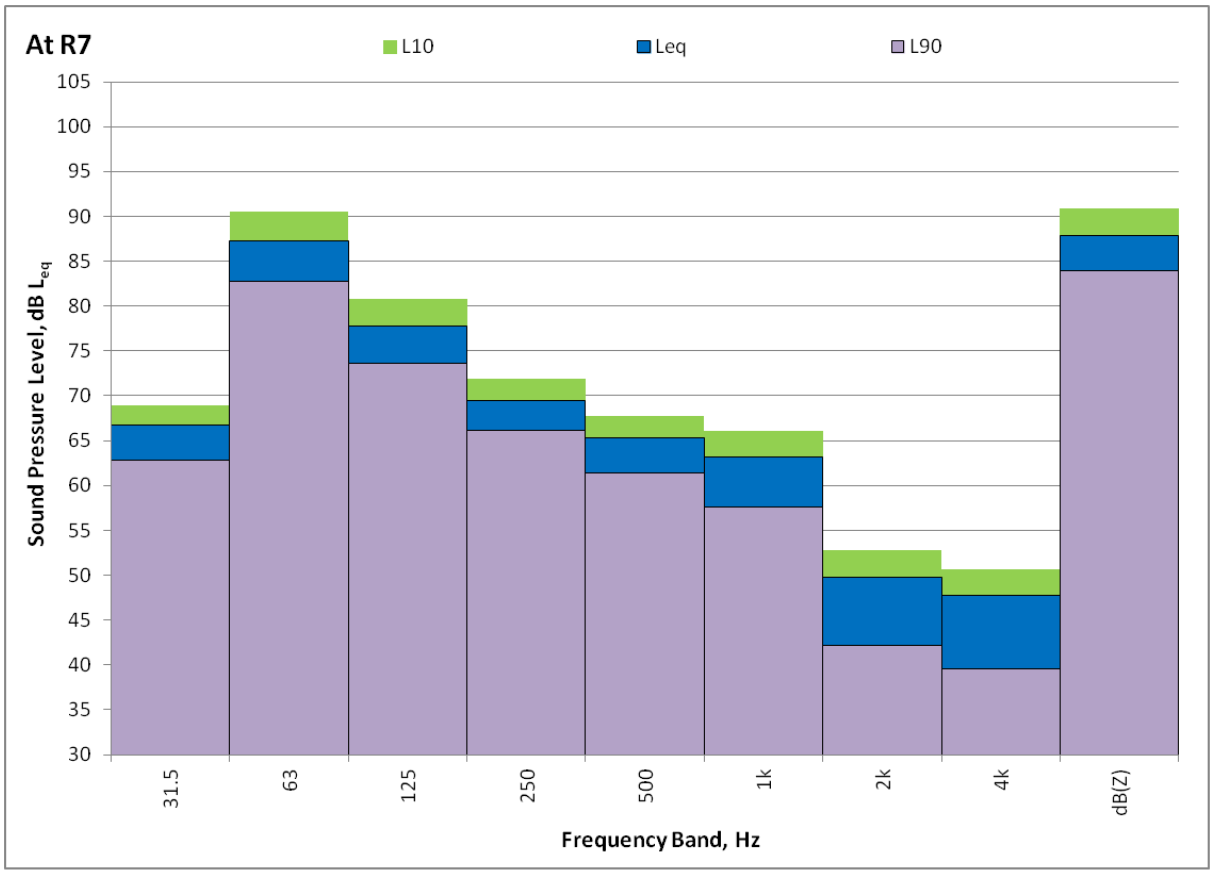
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R7
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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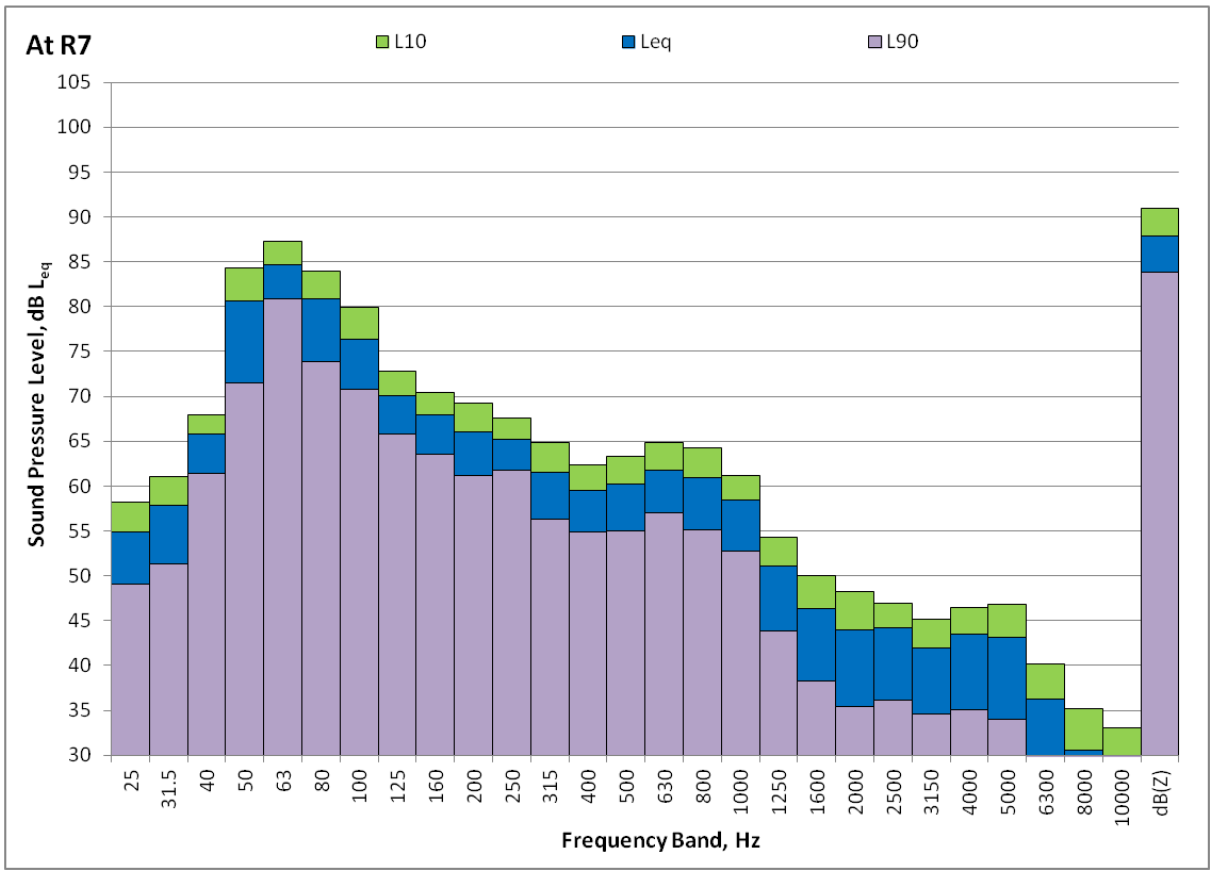
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R7
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
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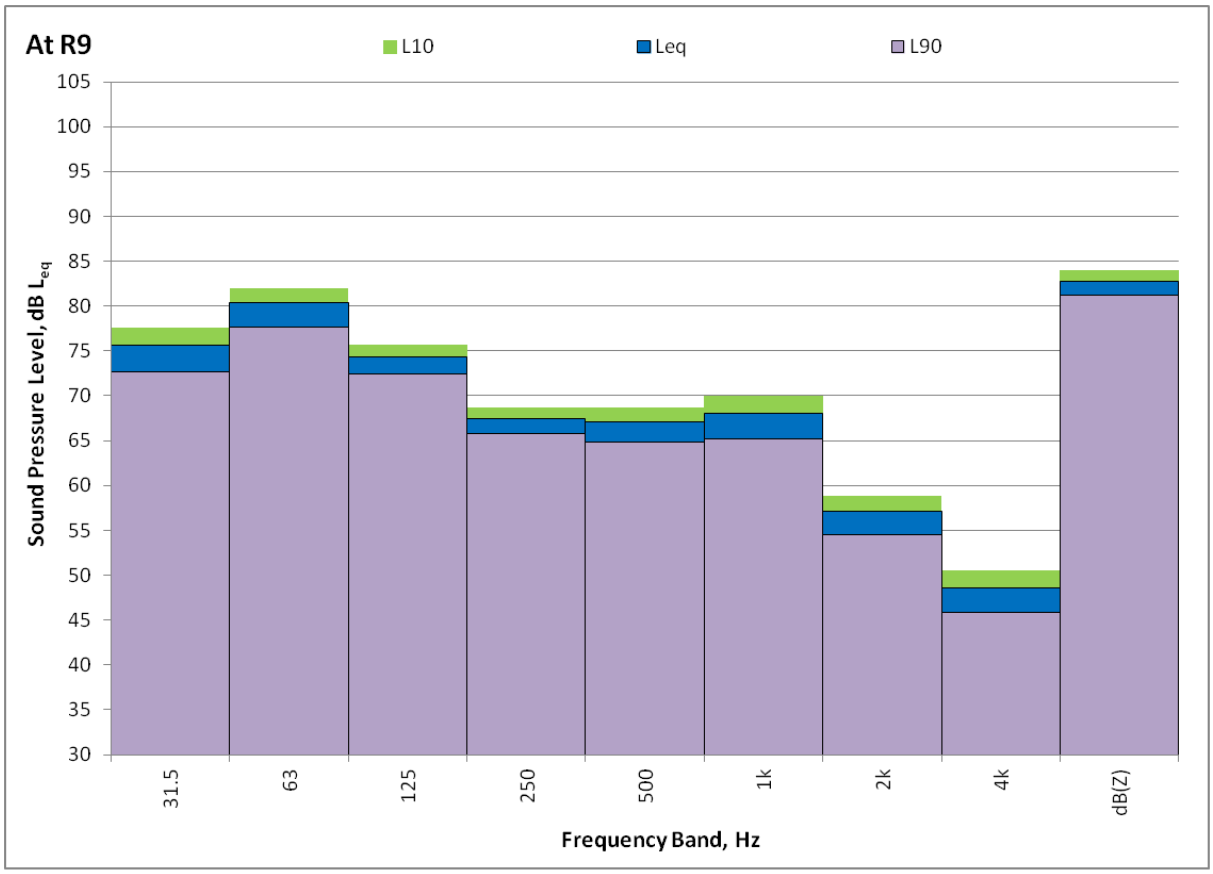
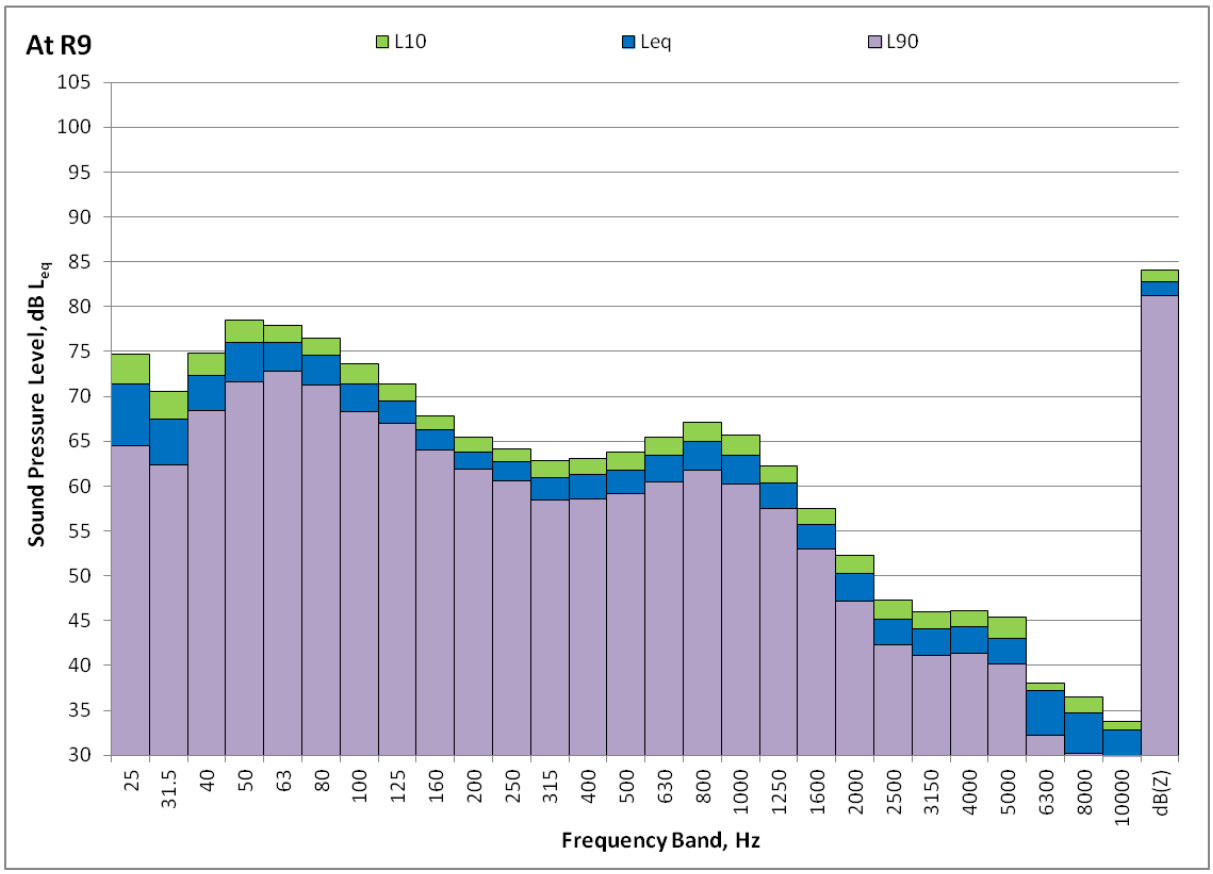
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R9
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R9
L10
Leq
L90
105
100
95
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85
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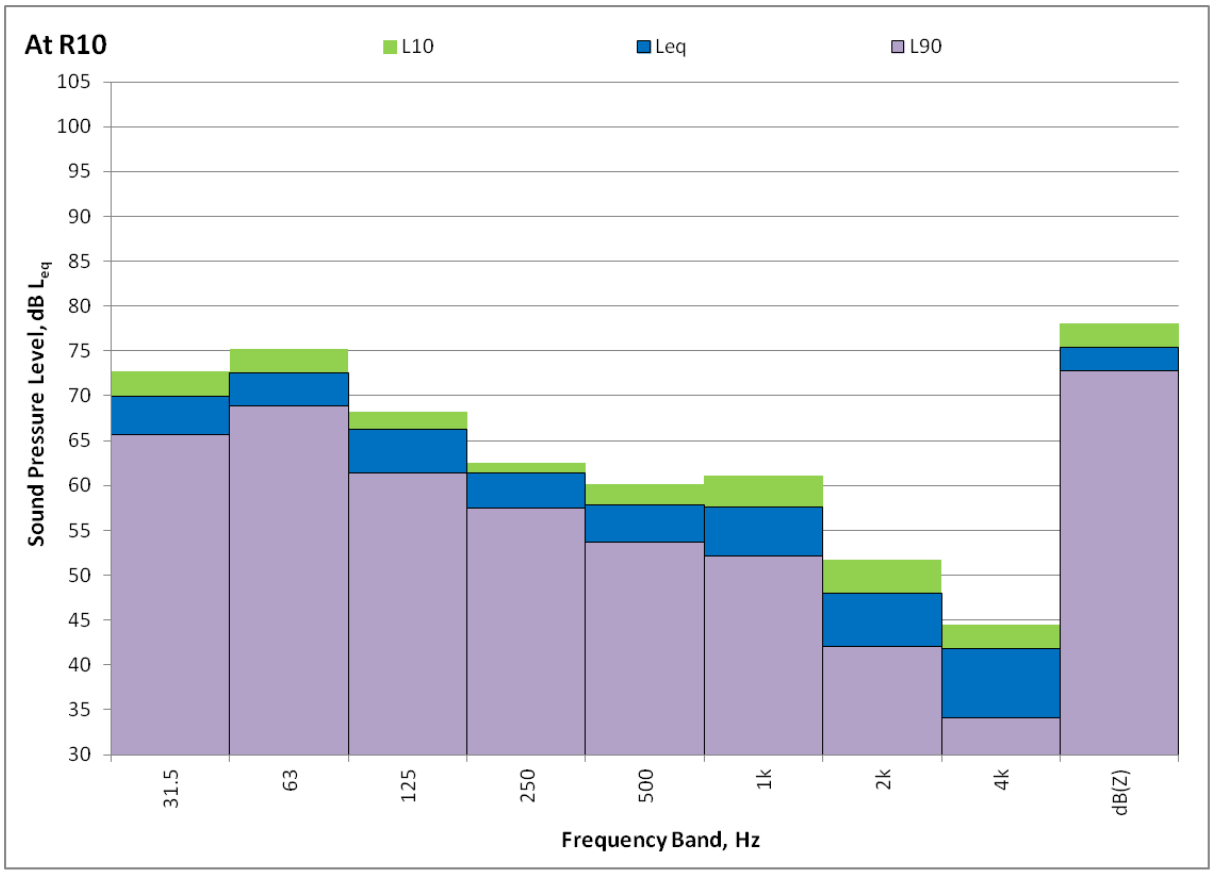
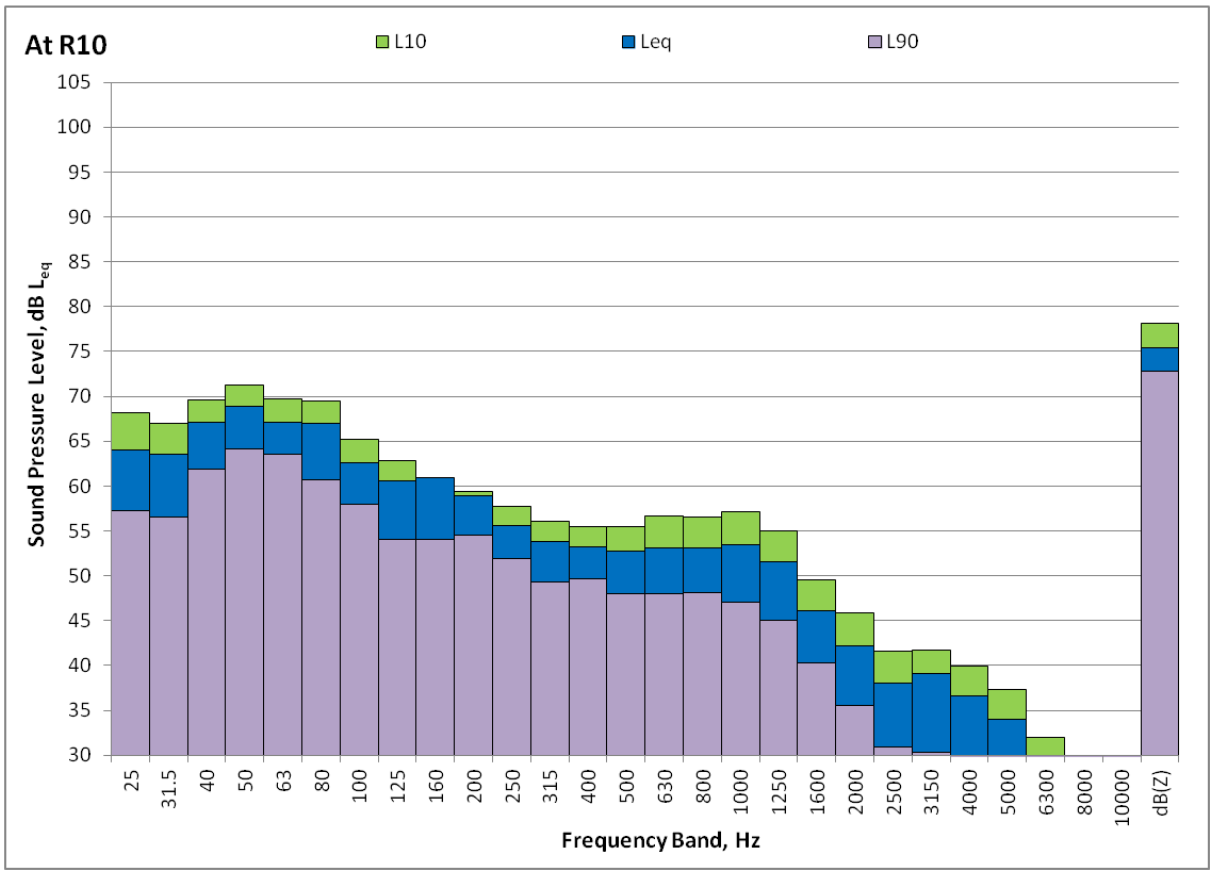
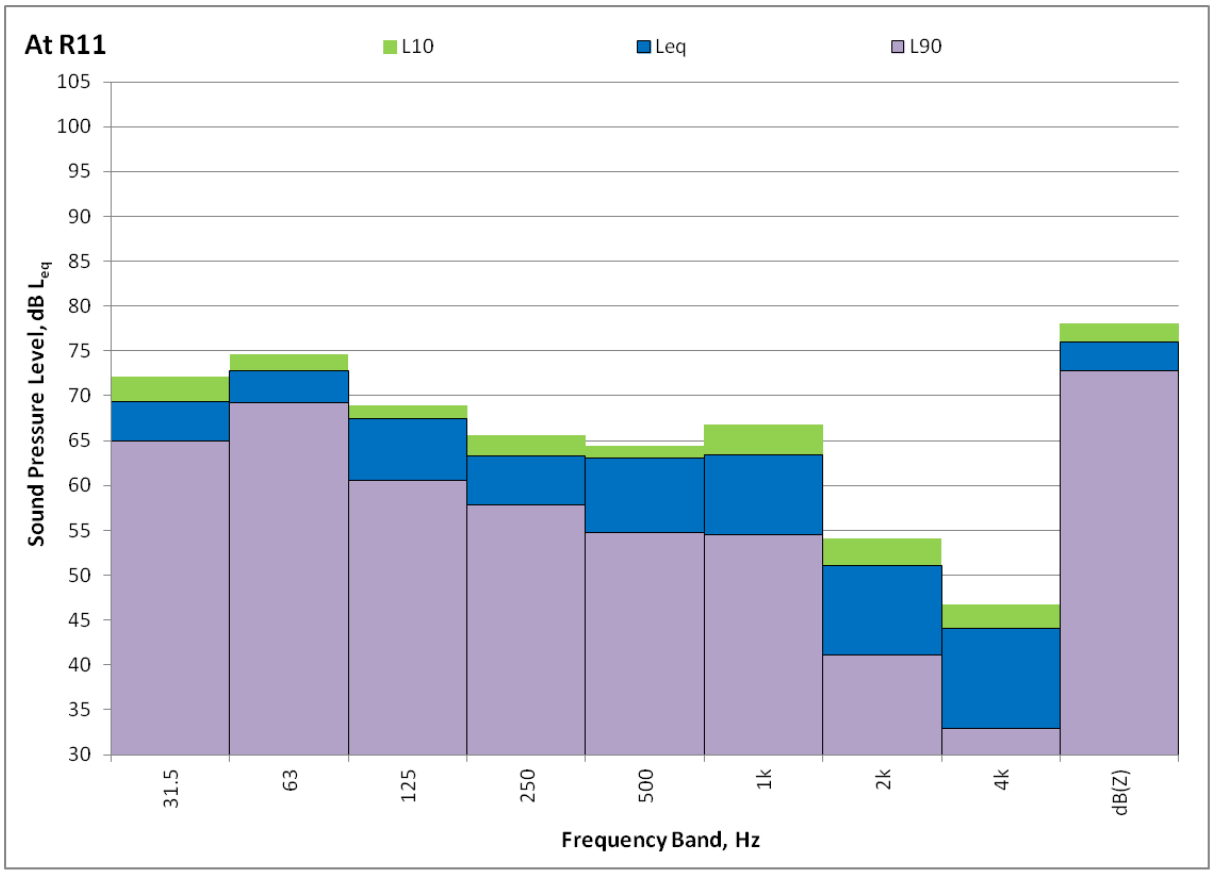
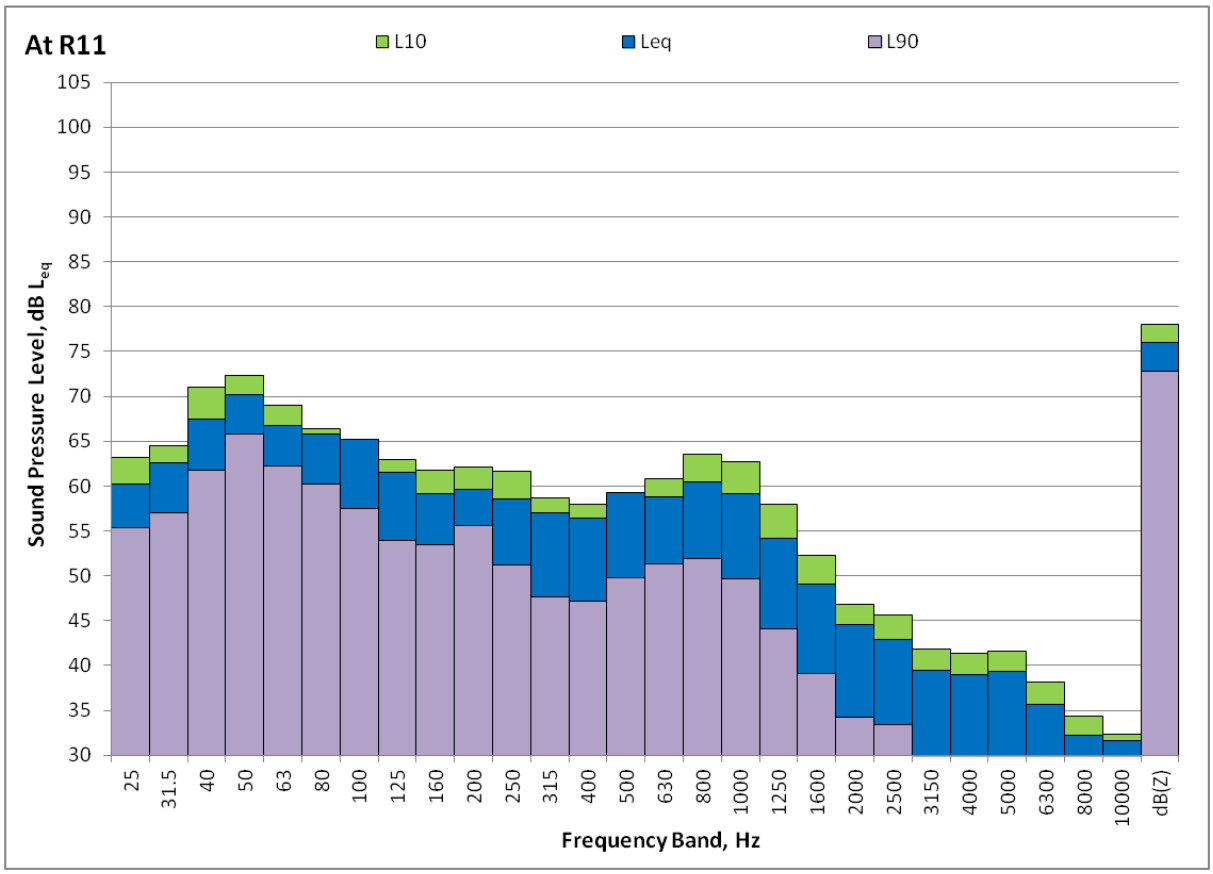
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz

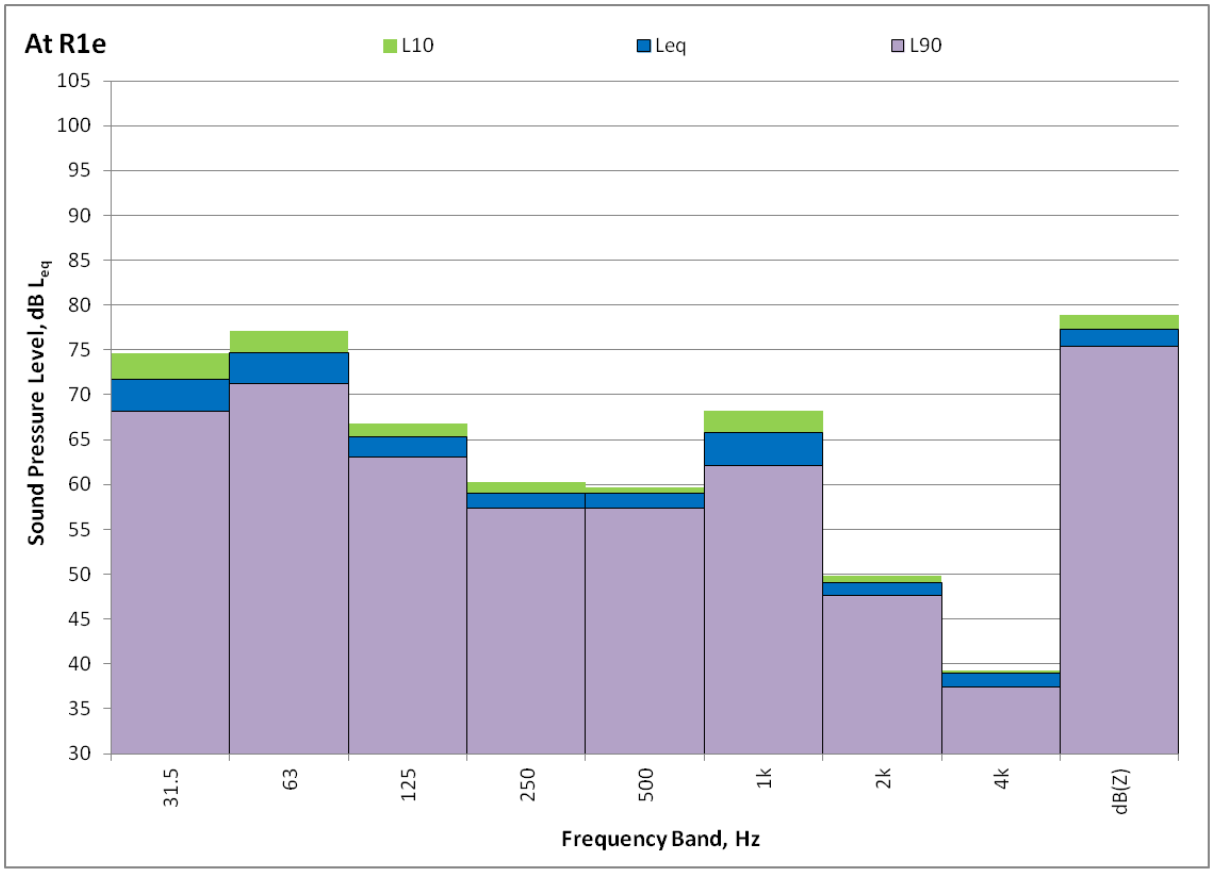

At R10
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz

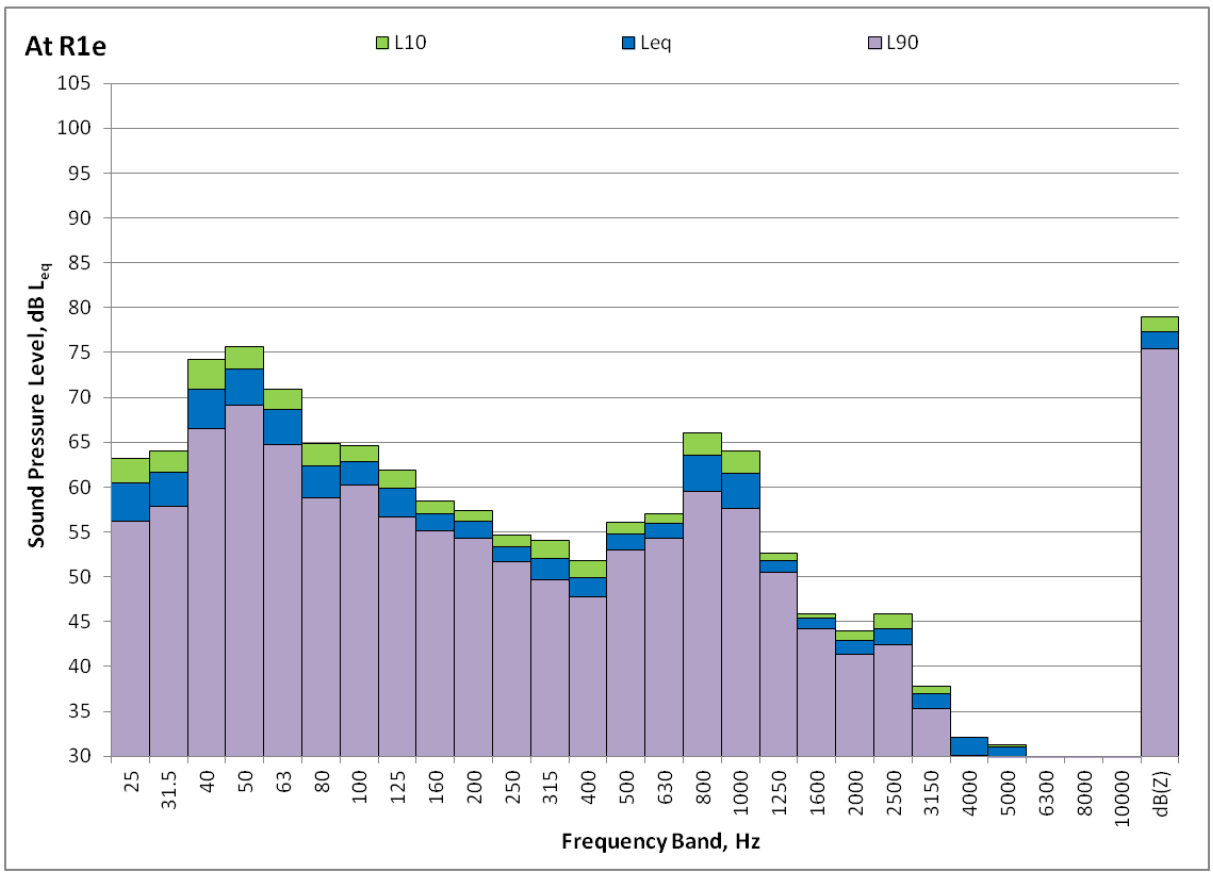

At R10
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz

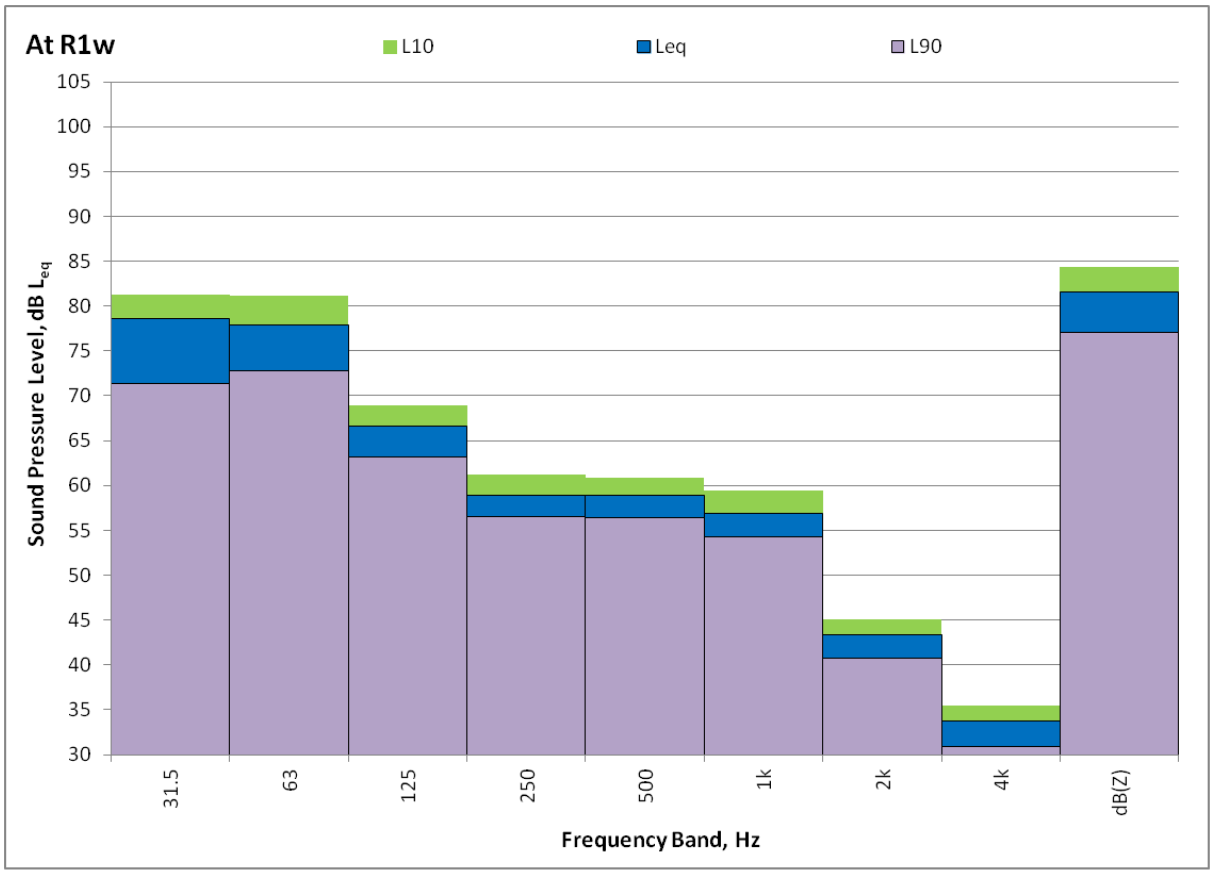

At R11
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz

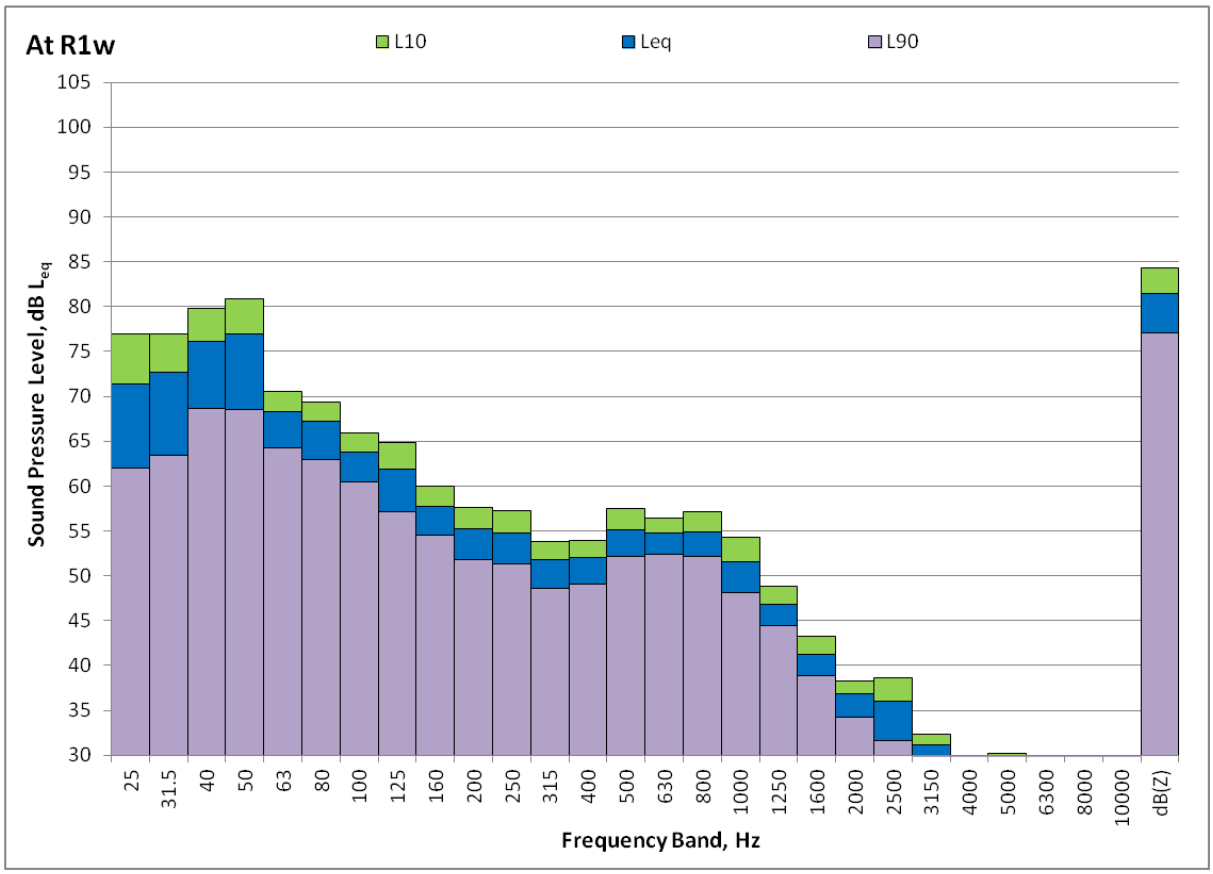

At R11
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz

Night 4 Plots






At R1w
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R1w
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
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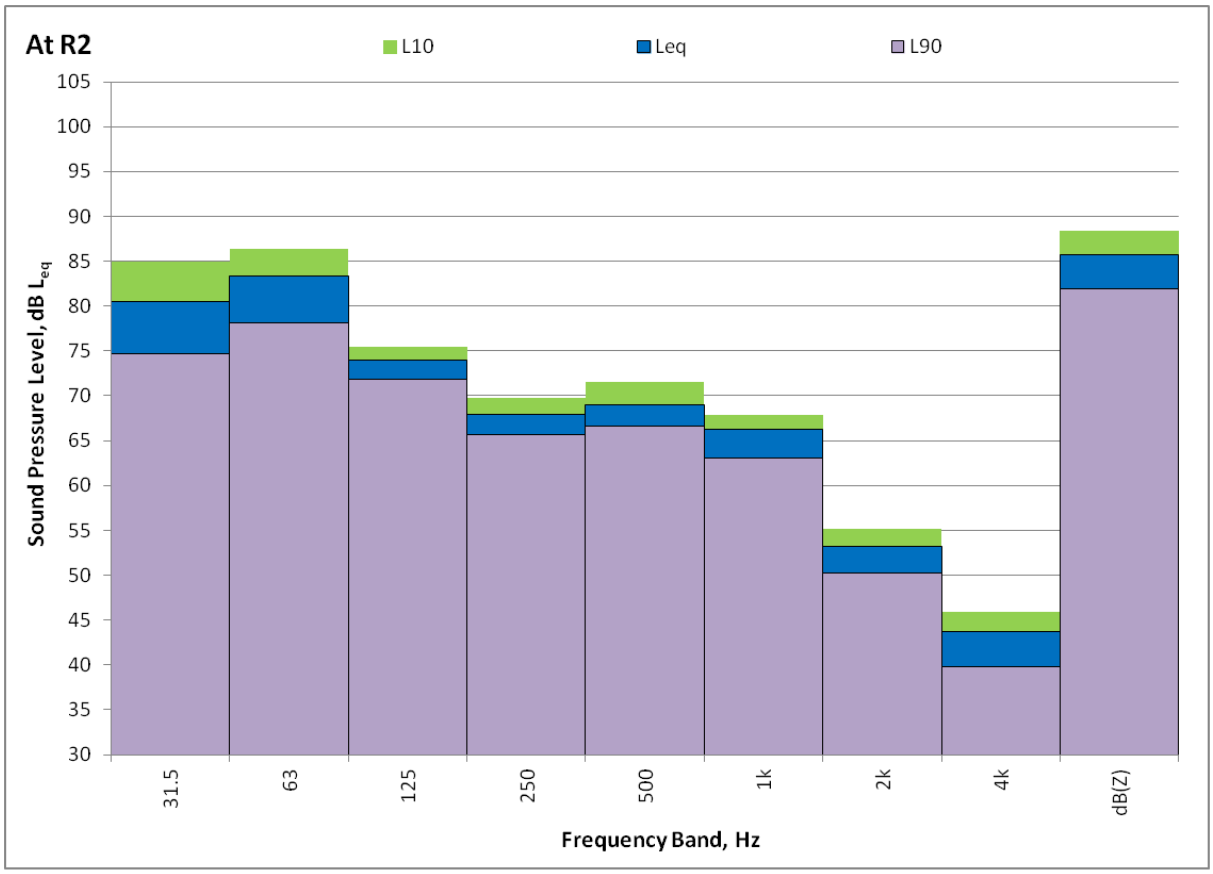
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R2
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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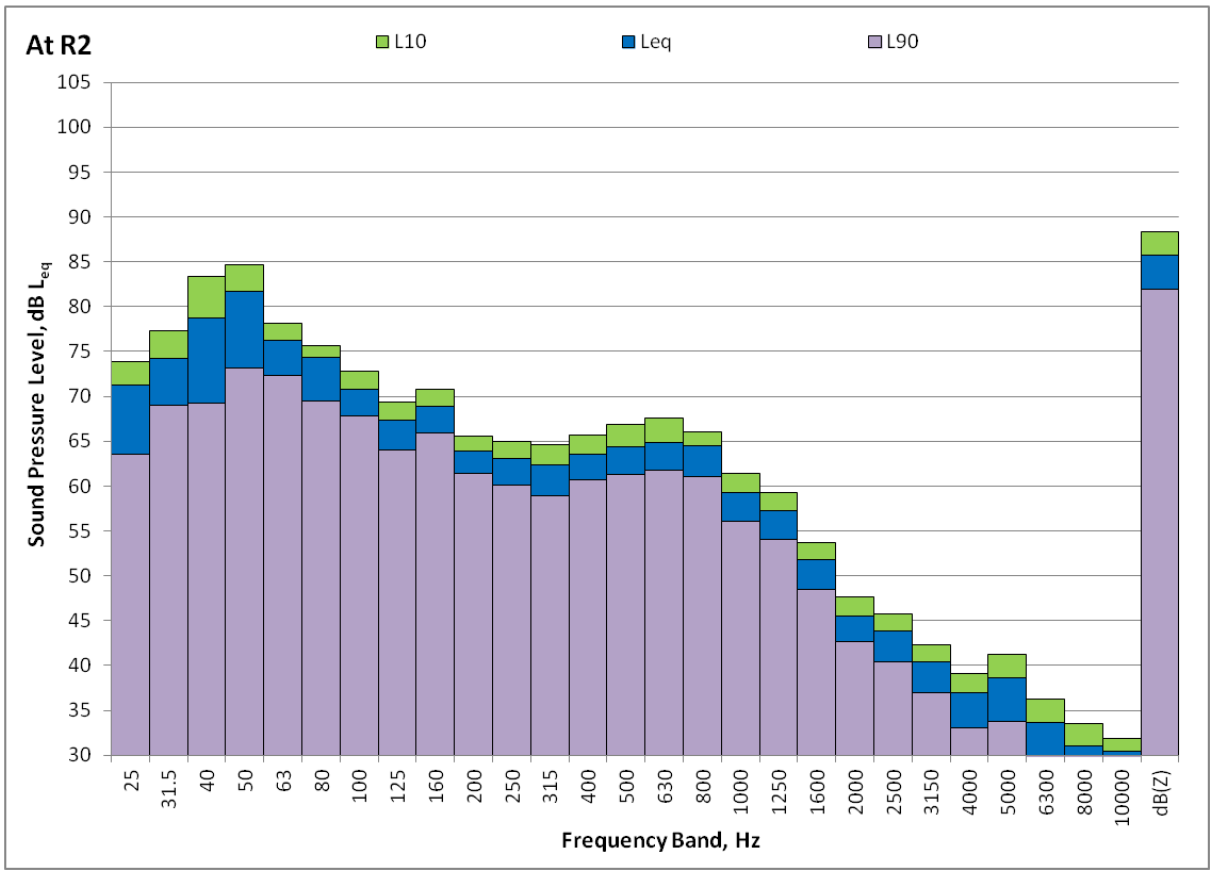
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R2
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
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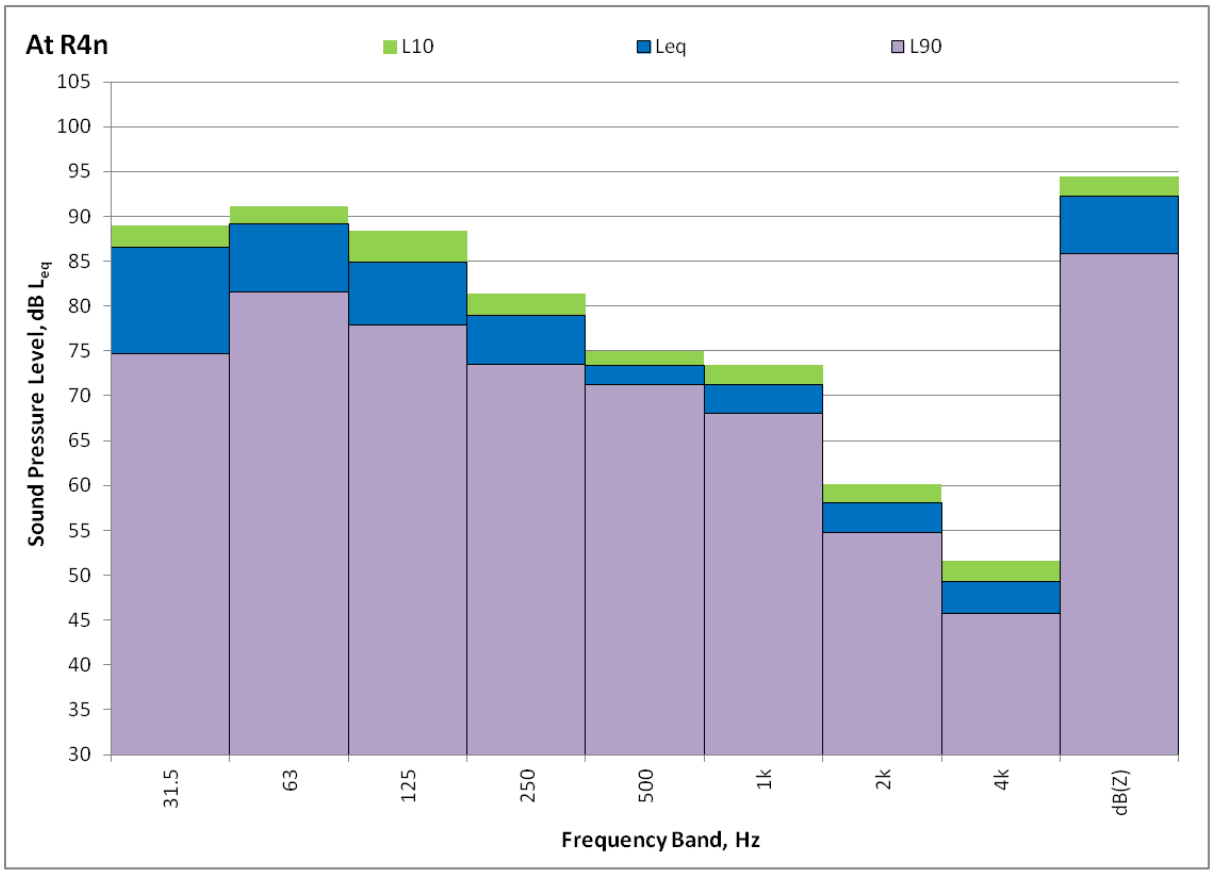
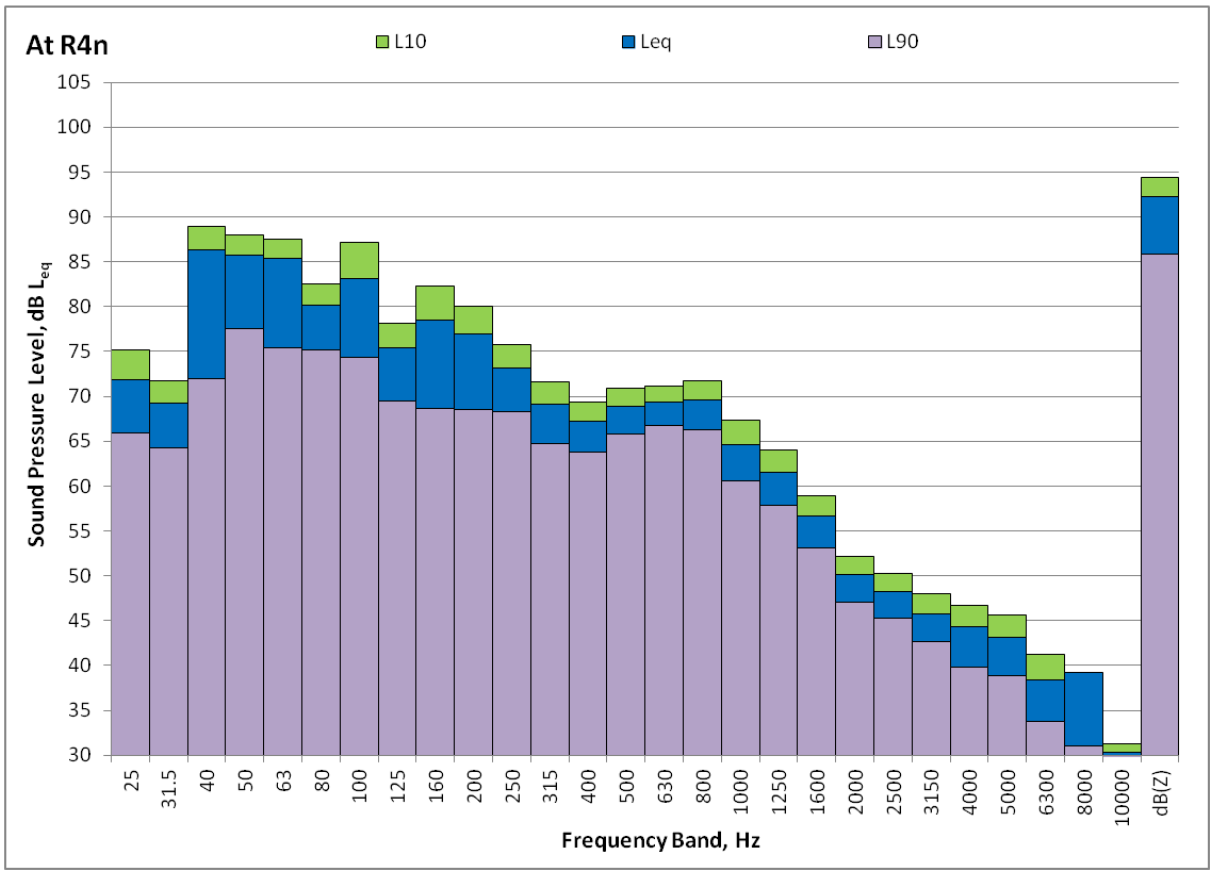
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R4n
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R4n
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
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50
63
80
100
125
160
200
250
315
400
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1250
1600
2000
2500
3150
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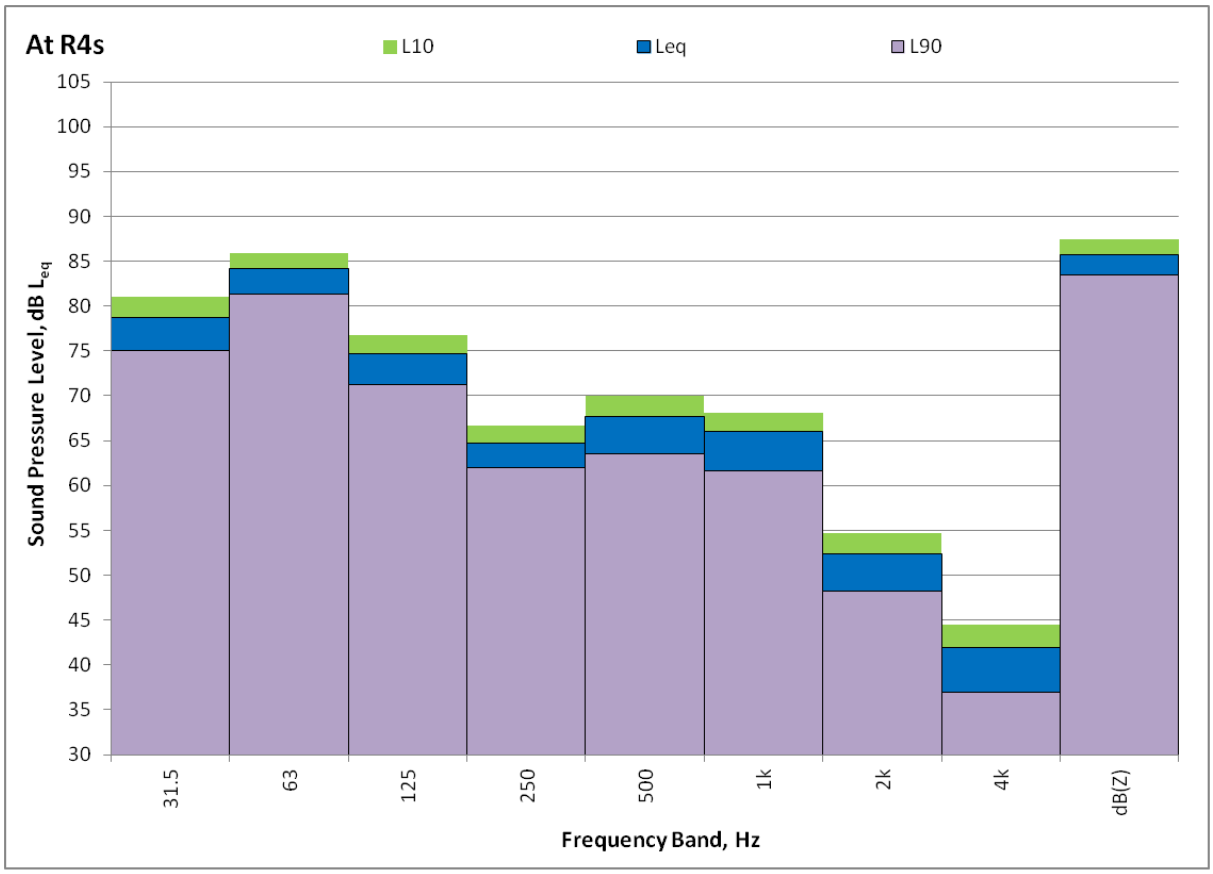
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R4s
L10
Leq
L90
105
100
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90
85
80
75
70
65
60
55
50
45
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Sound Pressure Level, dB Leq
31.5
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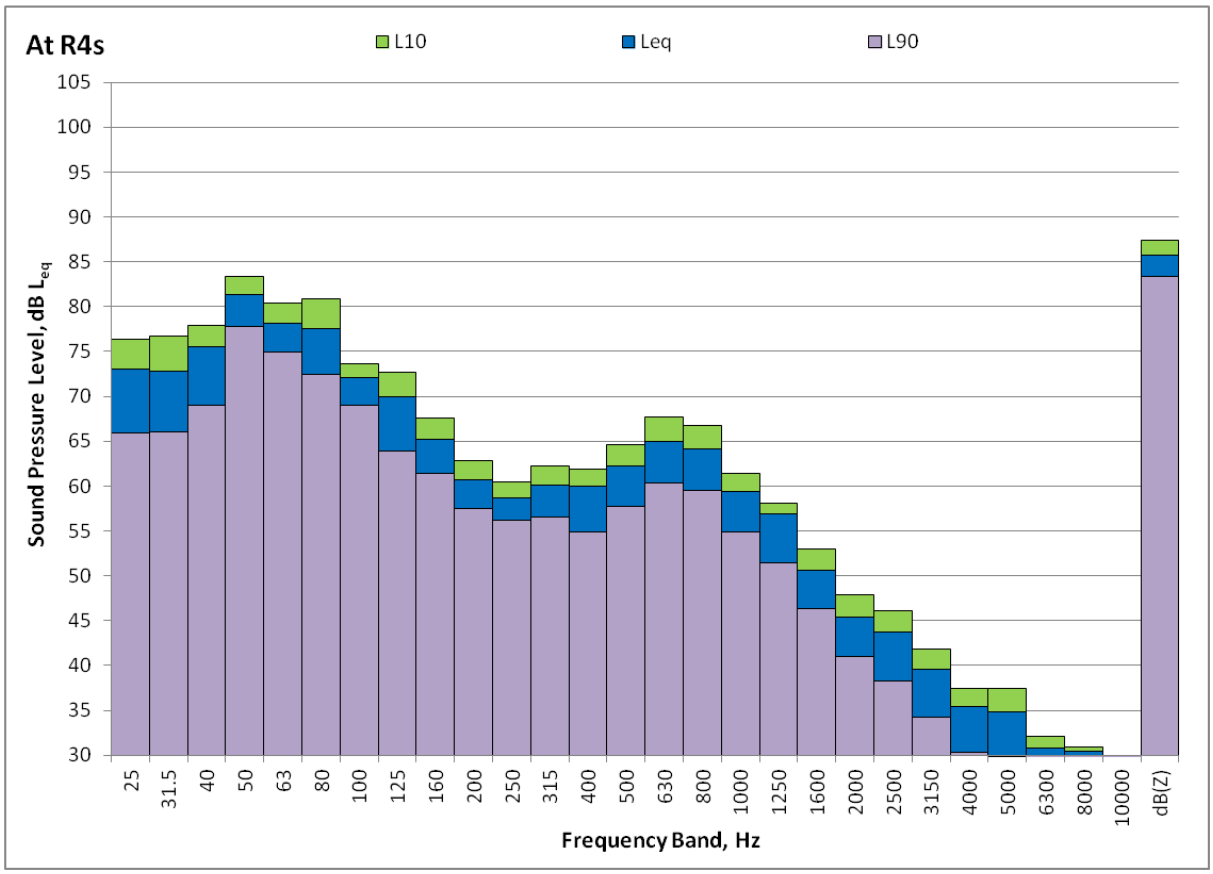
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R4s
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
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1250
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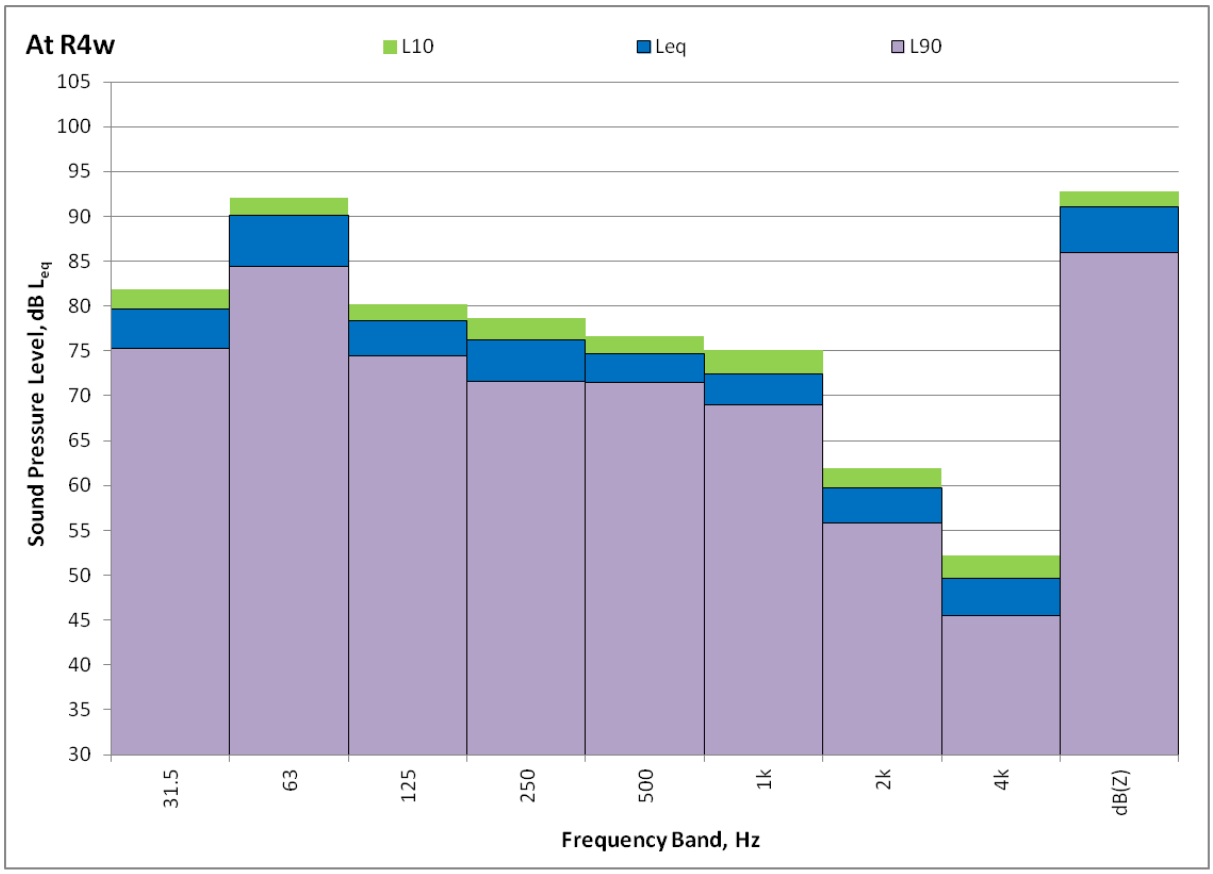
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R4w
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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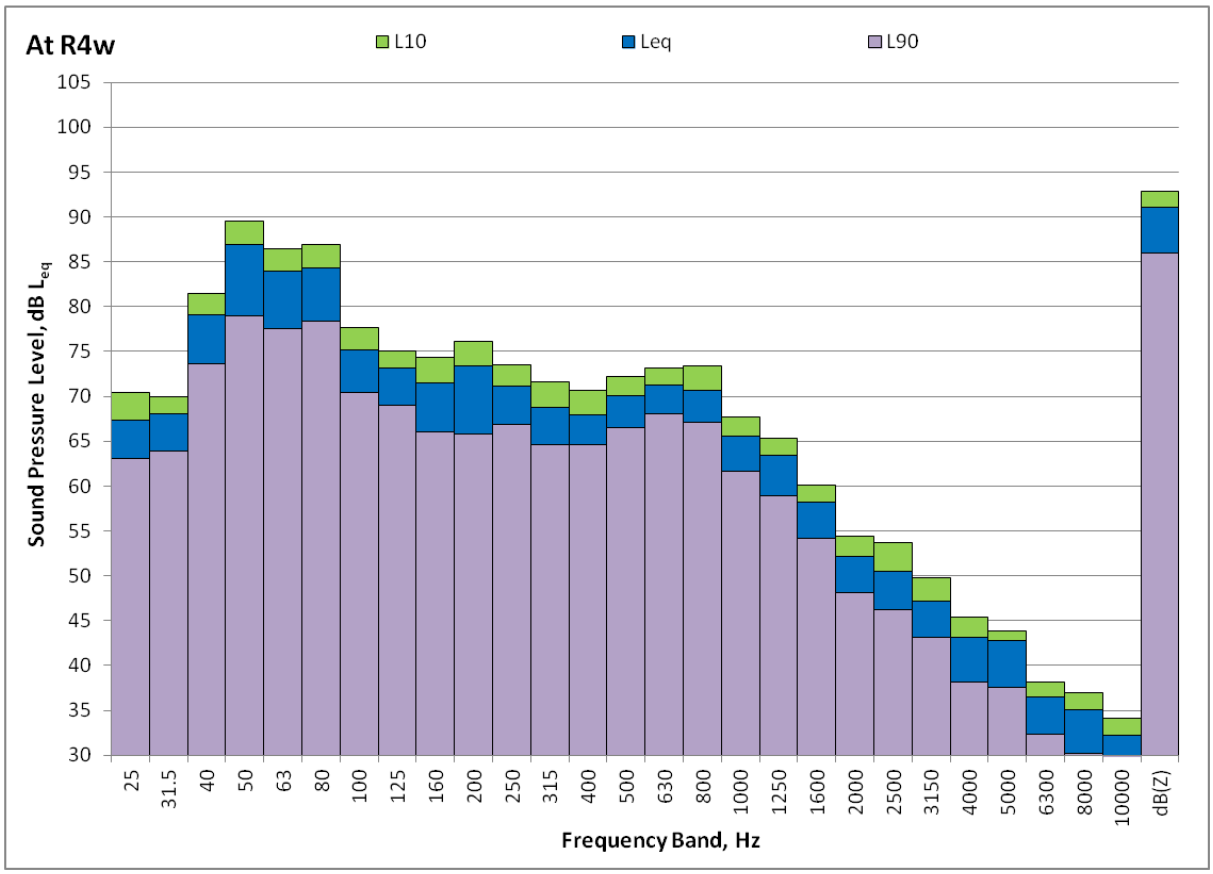
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R4w
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
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315
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500
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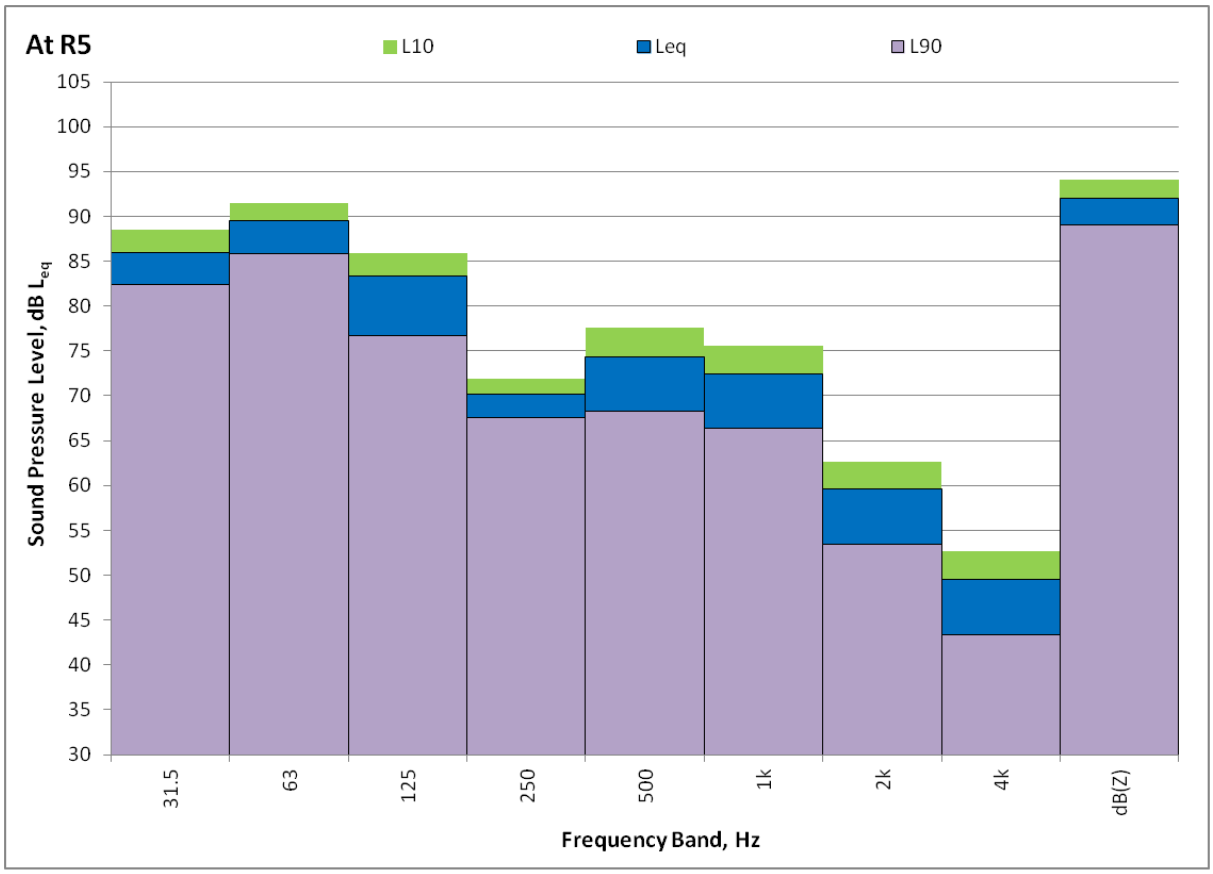
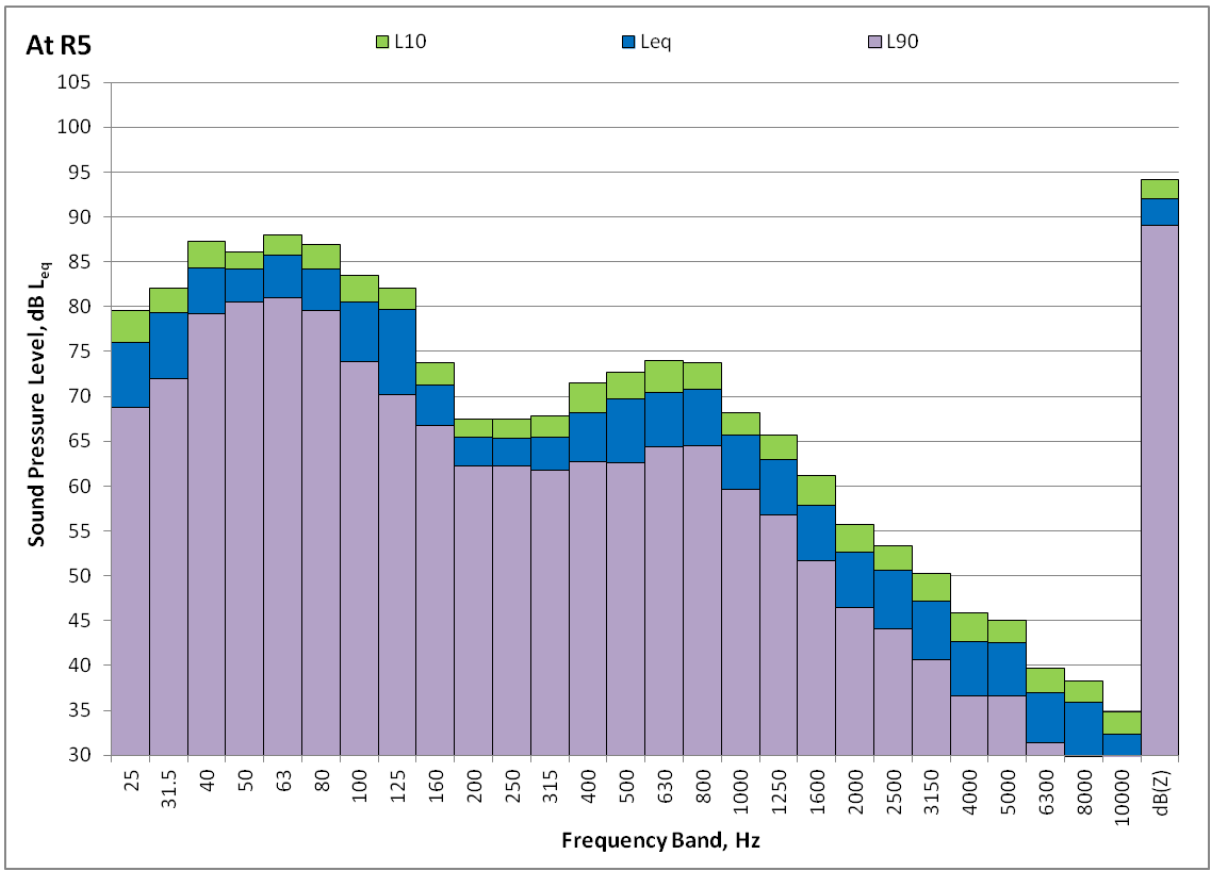
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R5
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R5
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
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1250
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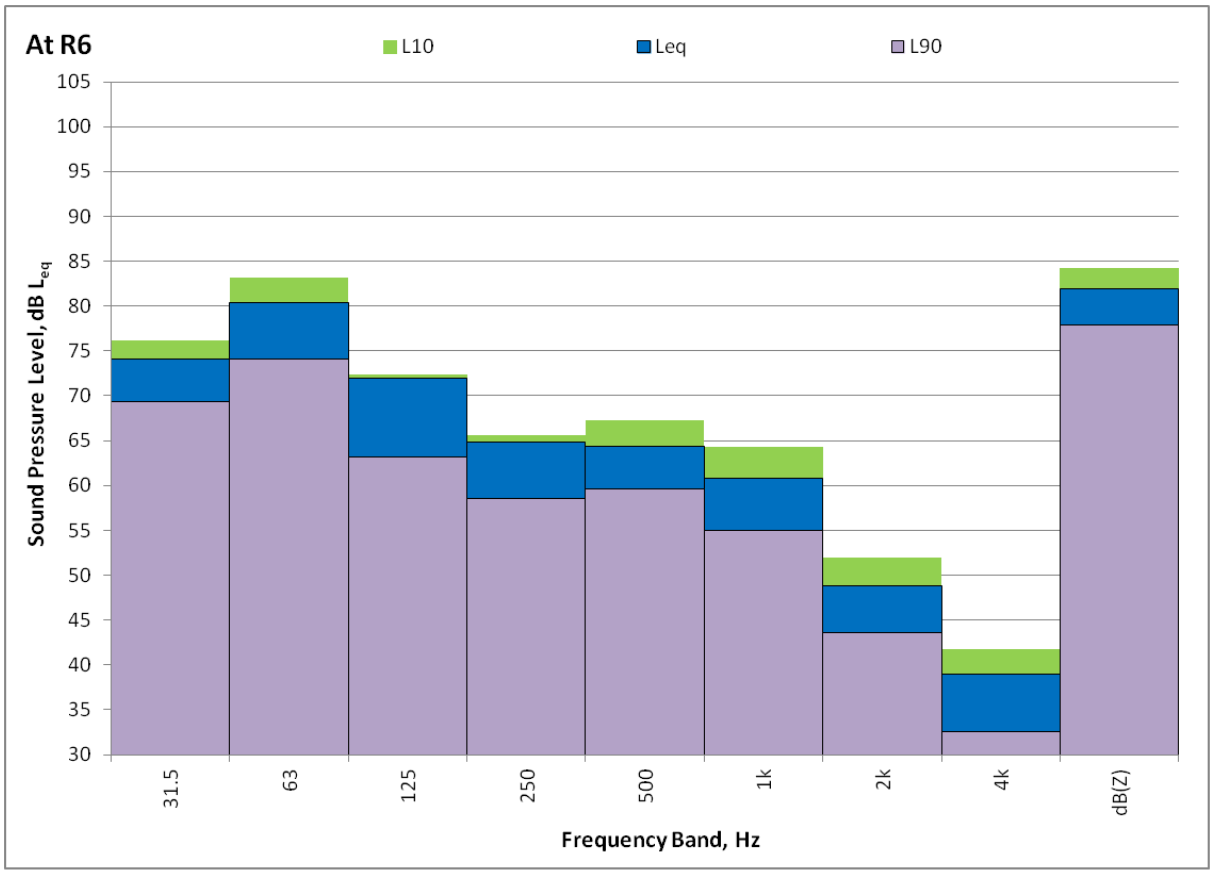
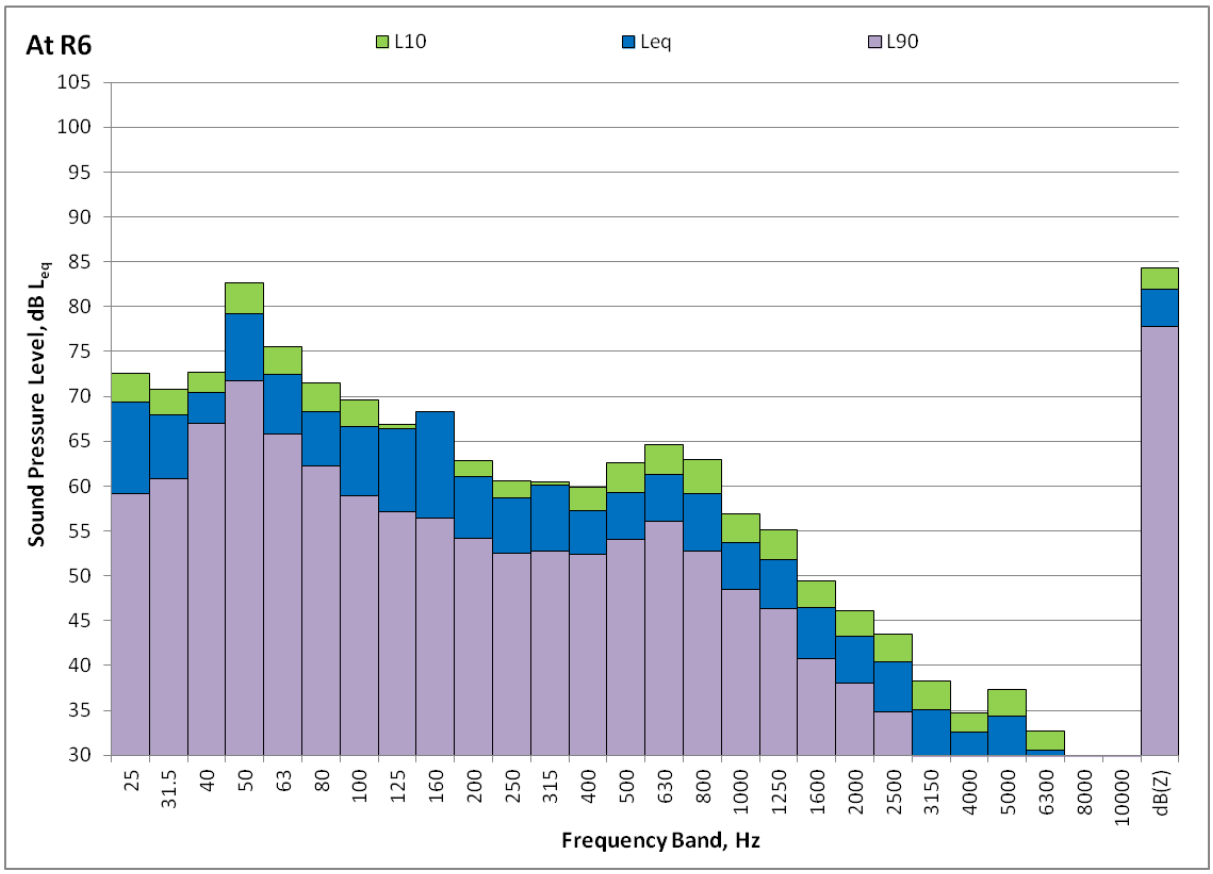
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R6
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R6
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
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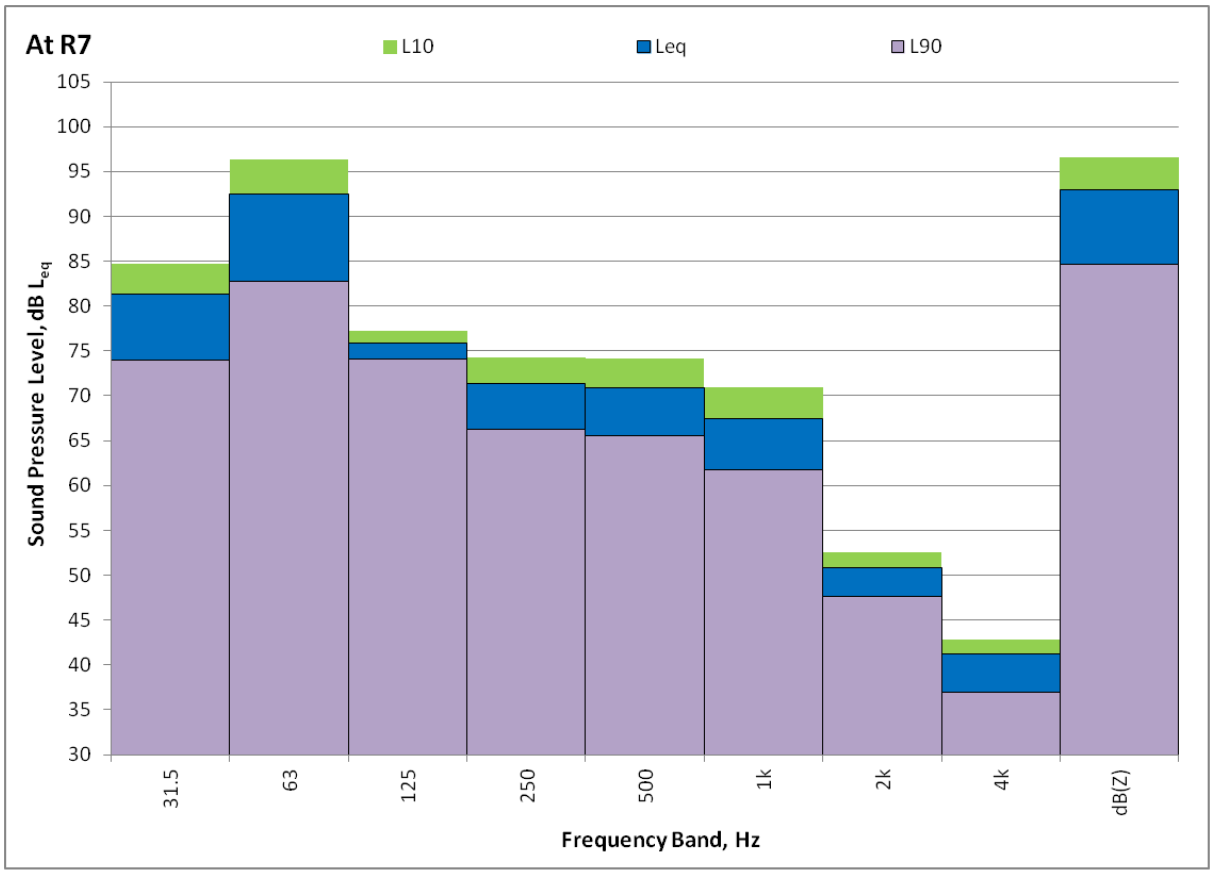
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R7
L10
Leq
L90
105
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95
90
85
80
75
70
65
60
55
50
45
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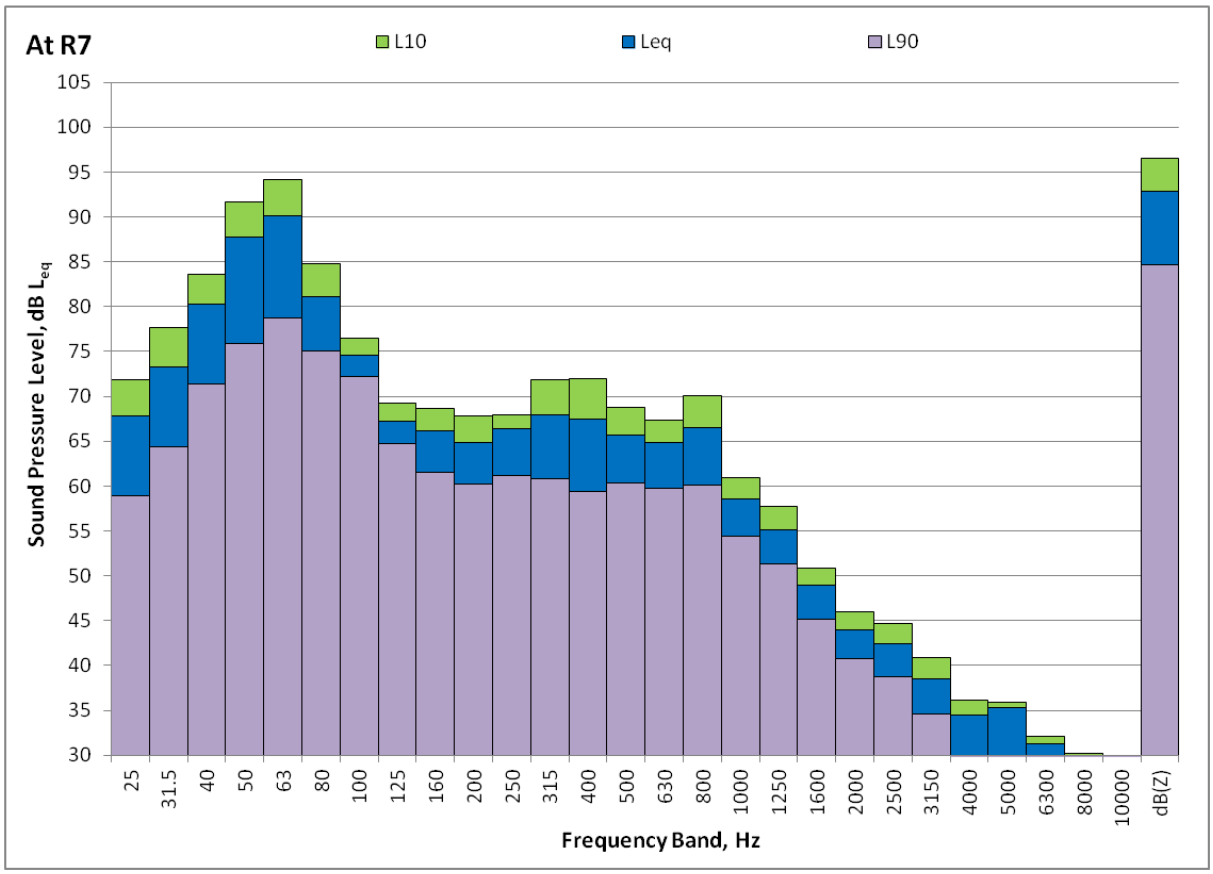
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R7
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
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1250
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2000
2500
3150
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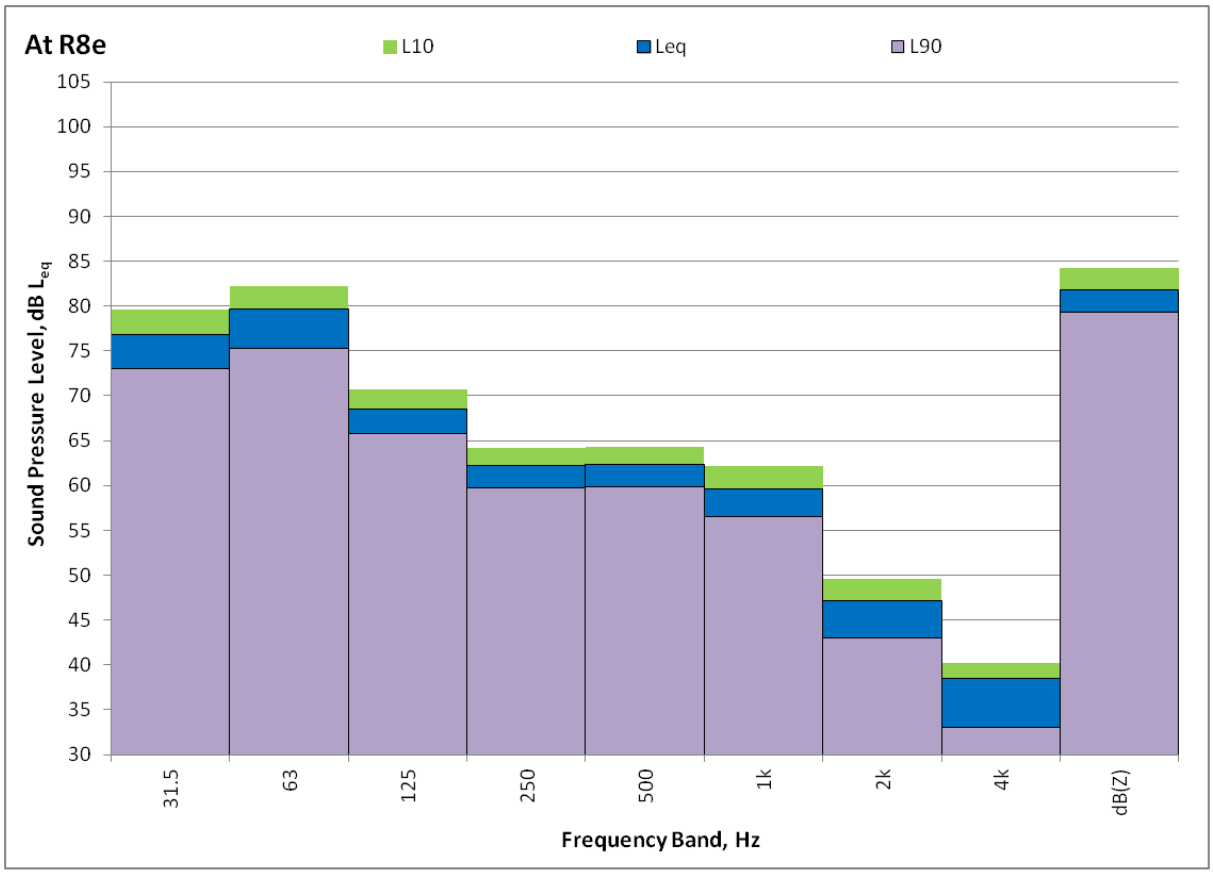
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R8e
L10
Leq
L90
105
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95
90
85
80
75
70
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60
55
50
45
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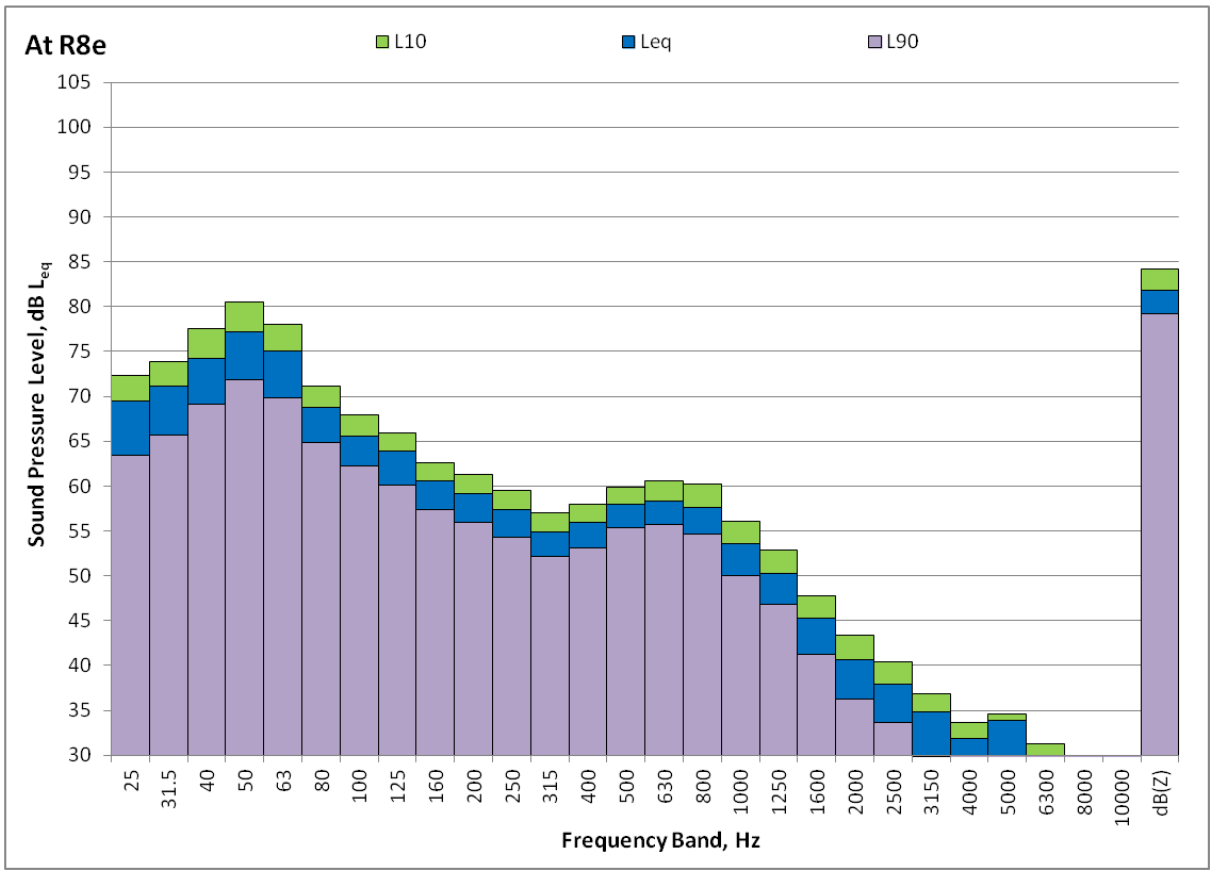
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R8e
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
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1250
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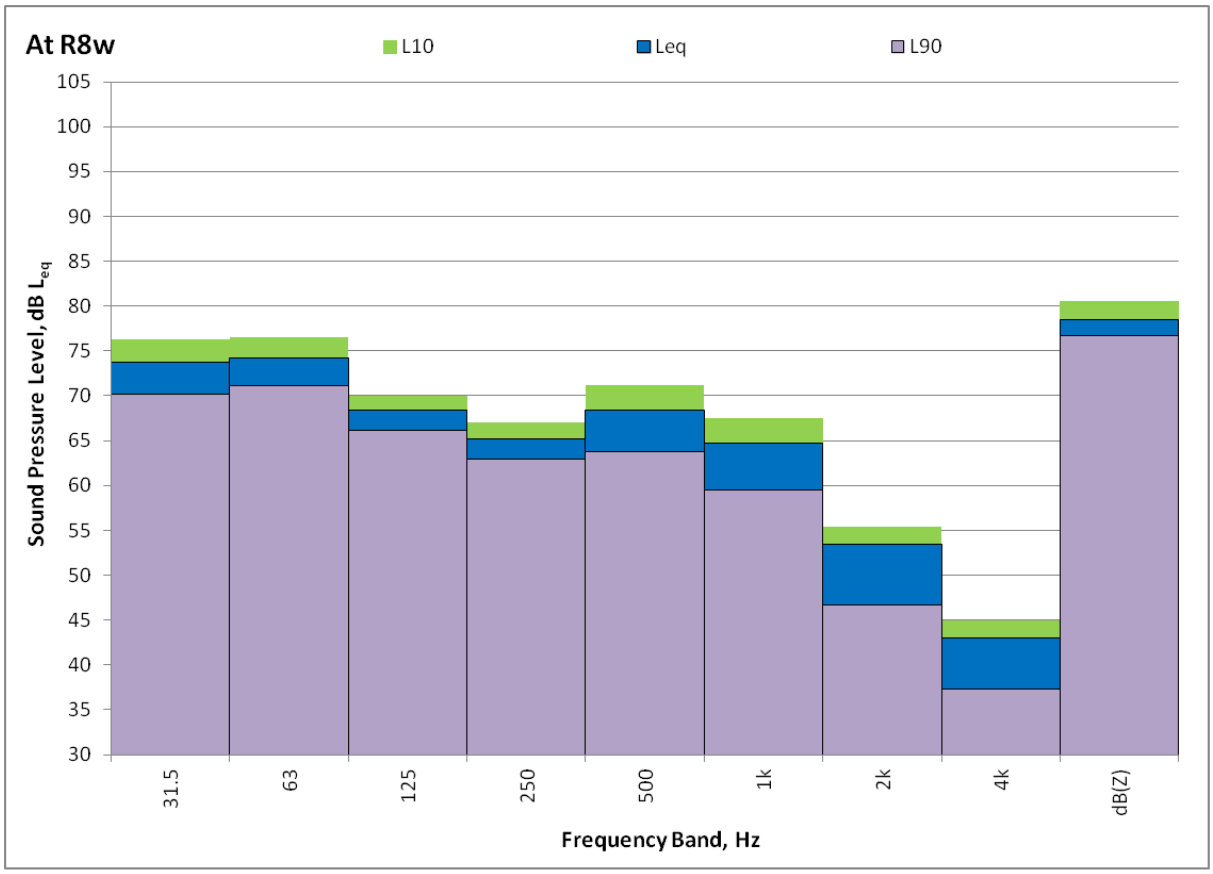
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R8w
L10
Leq
L90
105
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95
90
85
80
75
70
65
60
55
50
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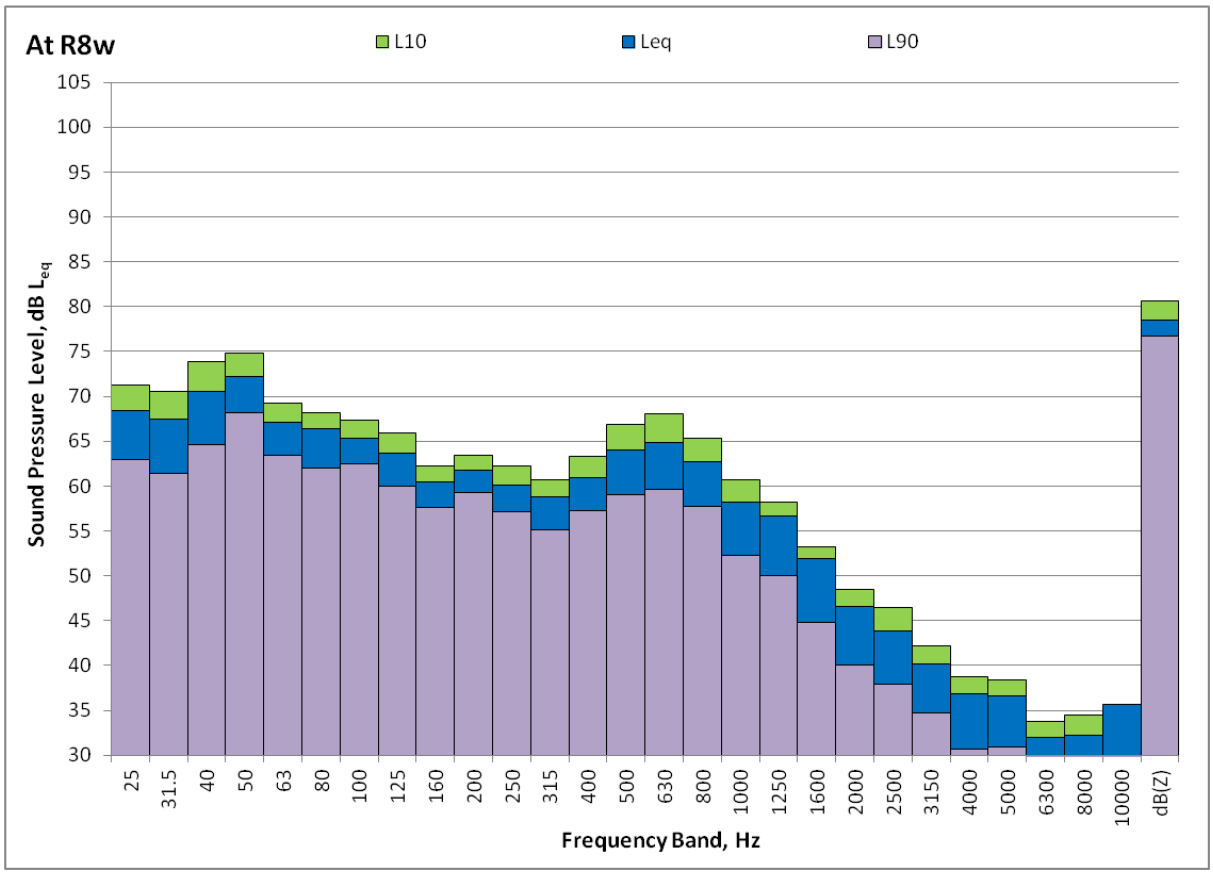
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R8w
L10
Leq
L90
105
100
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90
85
80
75
70
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60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
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1250
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2500
3150
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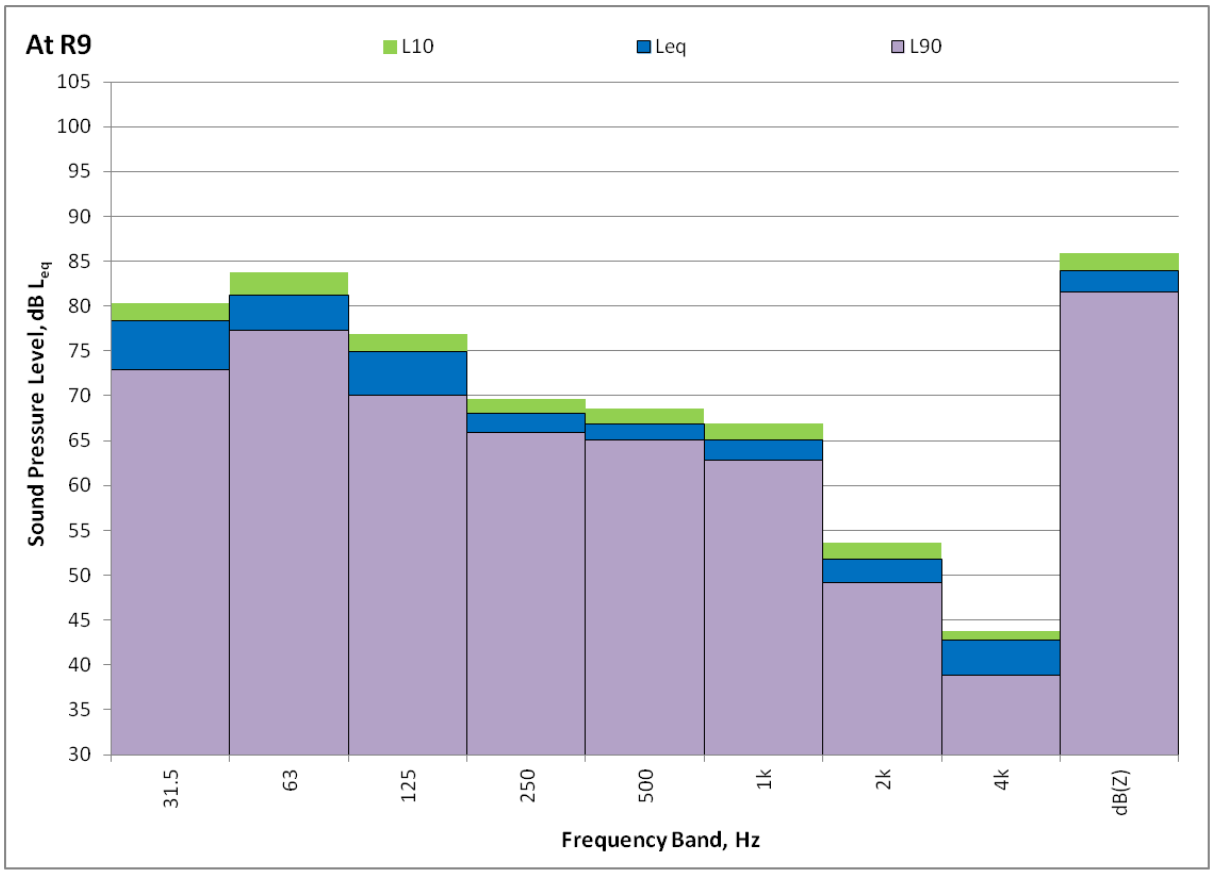
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R9
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
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35
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Sound Pressure Level, dB Leq
31.5
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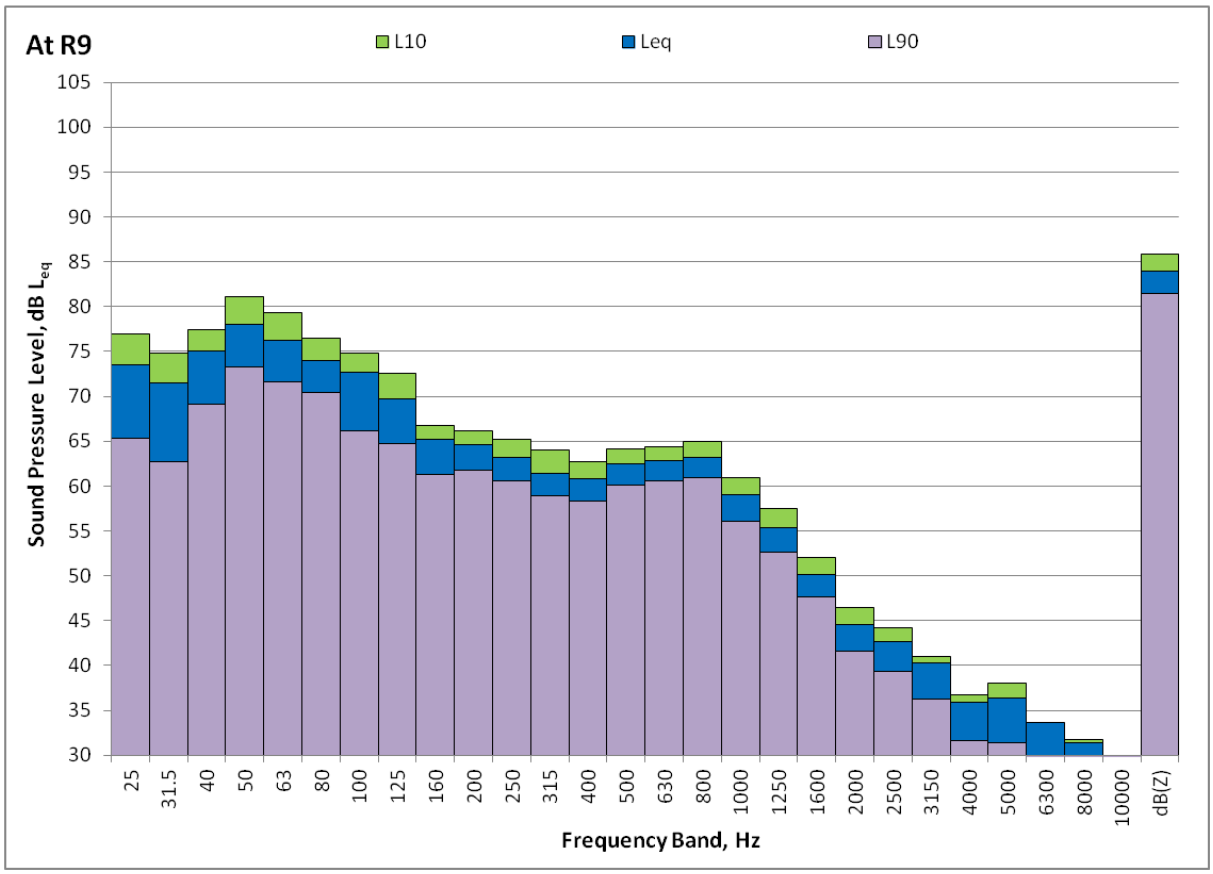
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R9
L10
Leq
L90
105
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90
85
80
75
70
65
60
55
50
45
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35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
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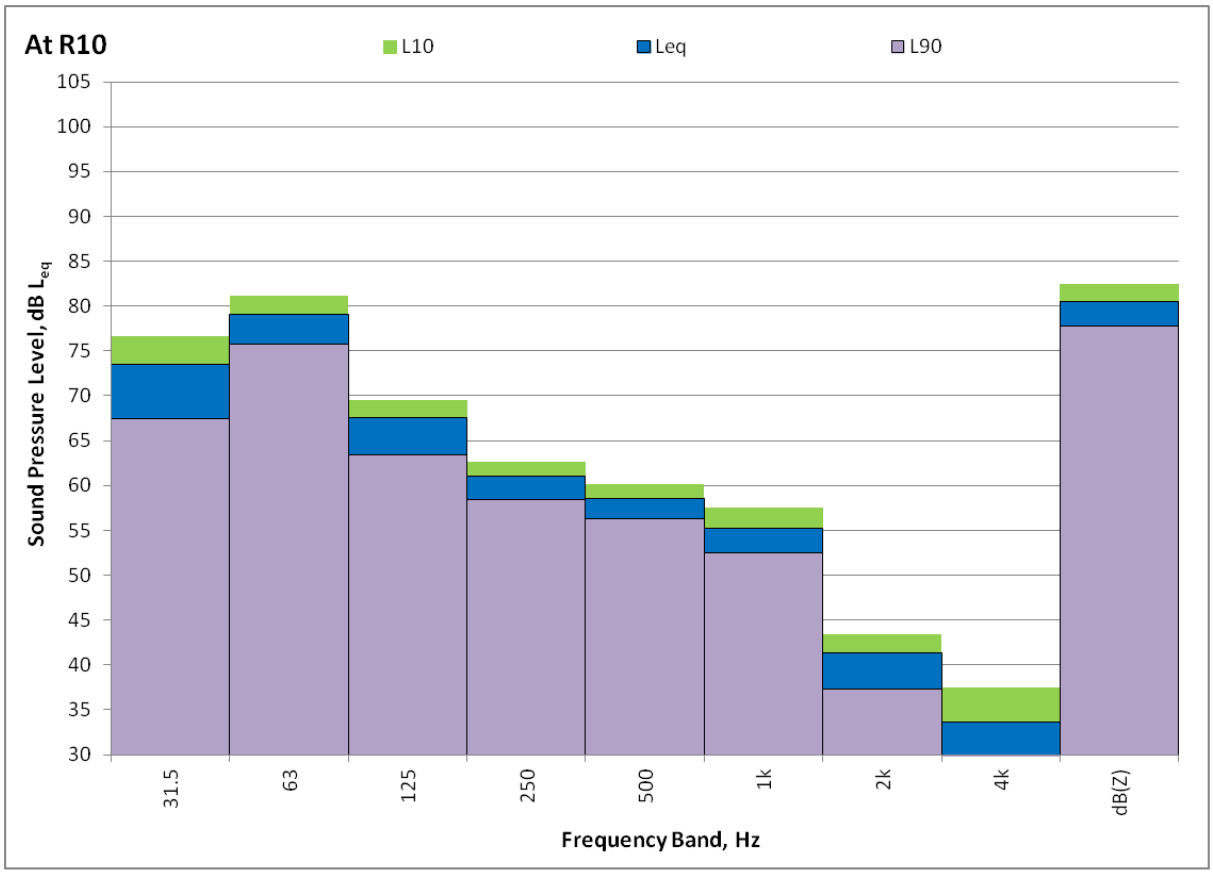
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R10
L10
Leq
L90
105
100
95
90
85
80
75
70
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60
55
50
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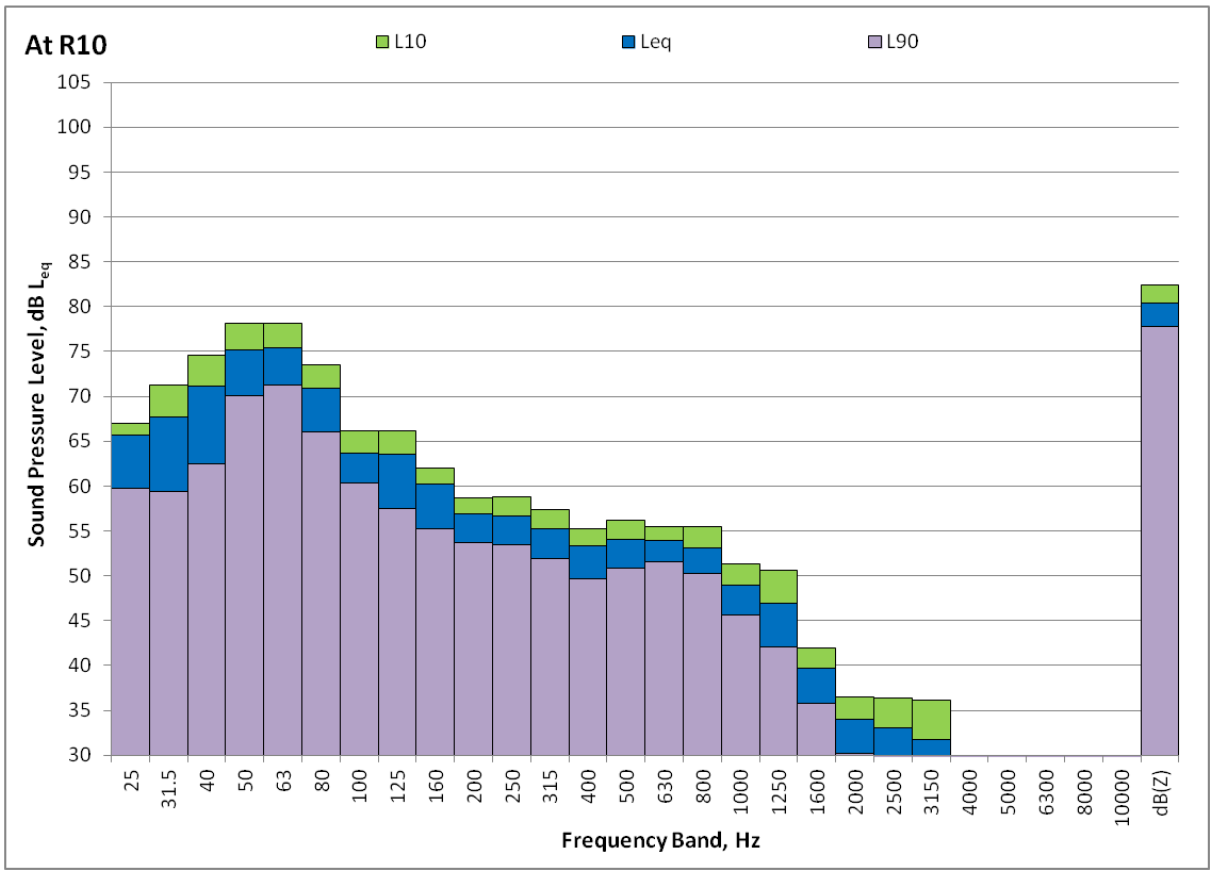
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R10
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
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1250
1600
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3150
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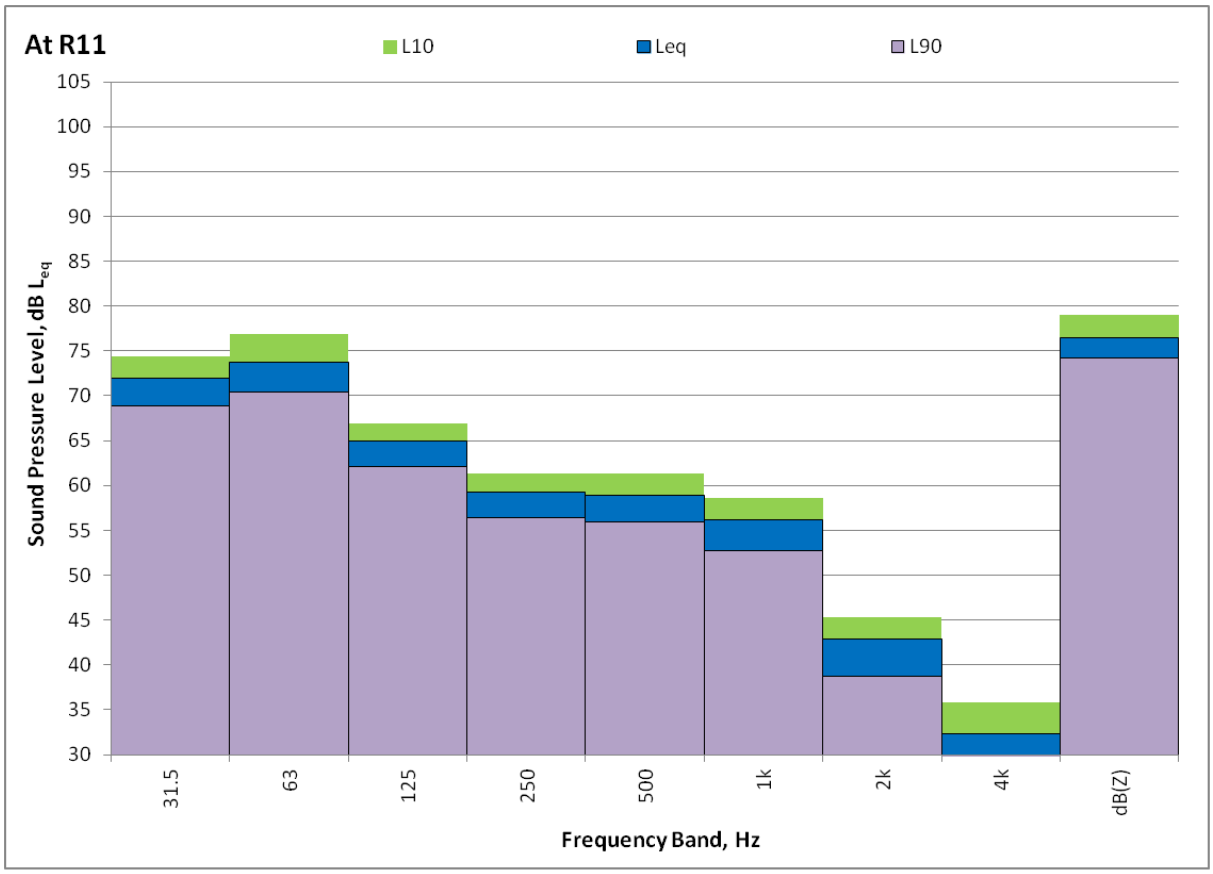
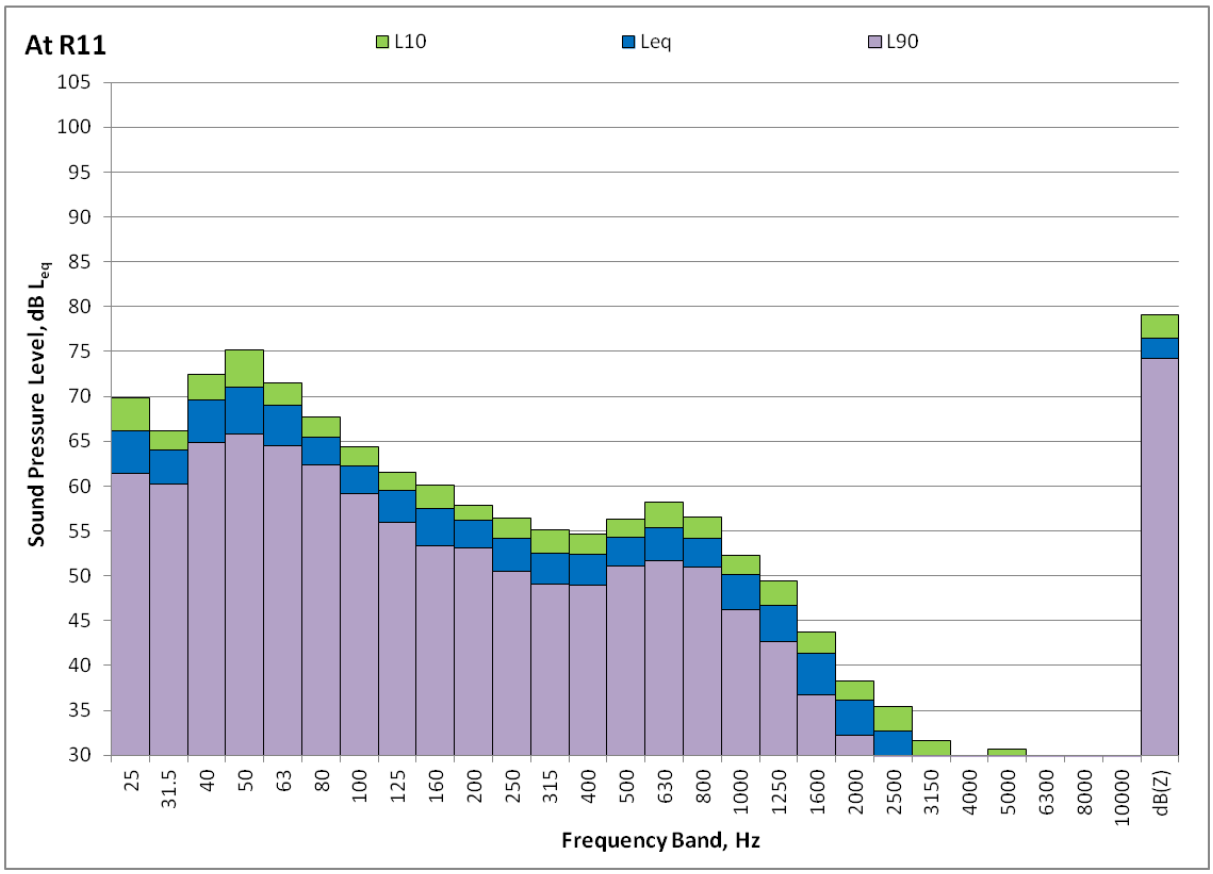
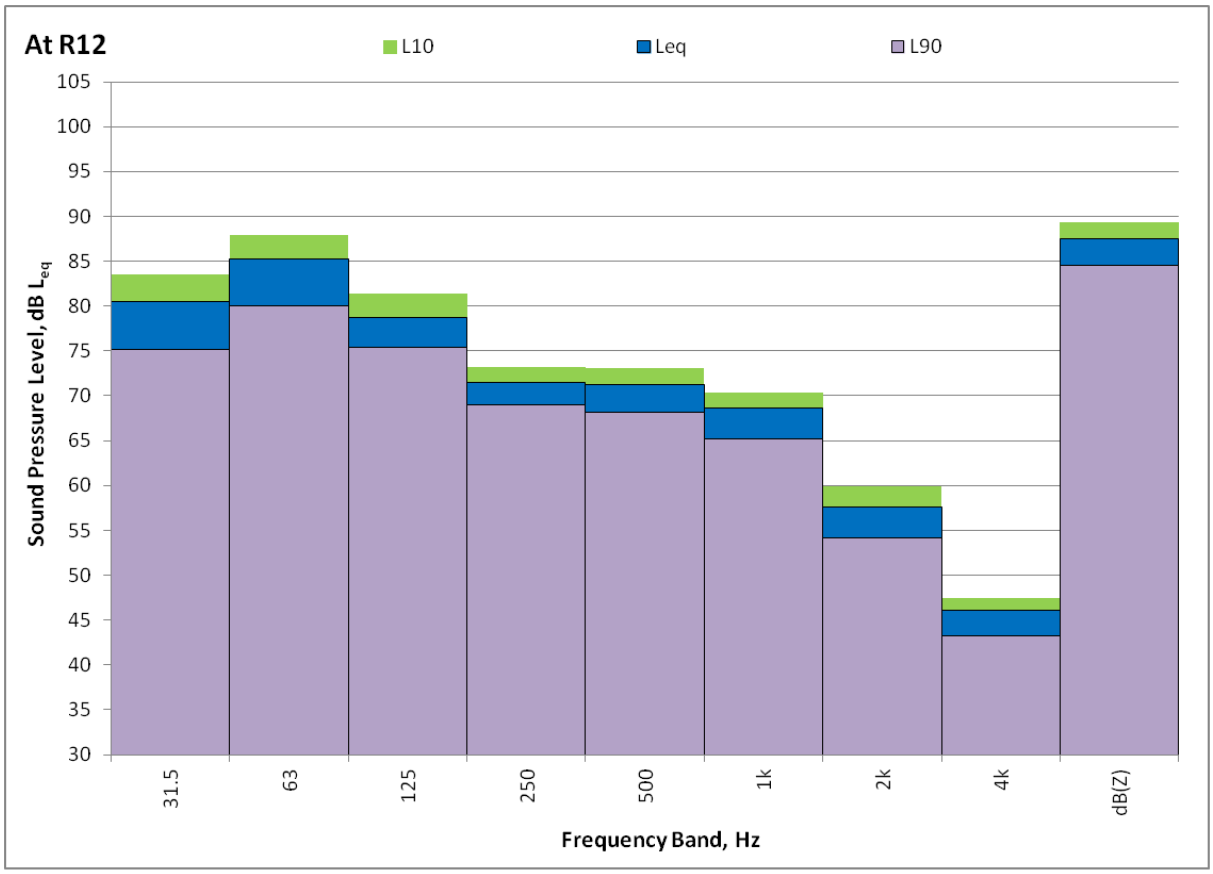
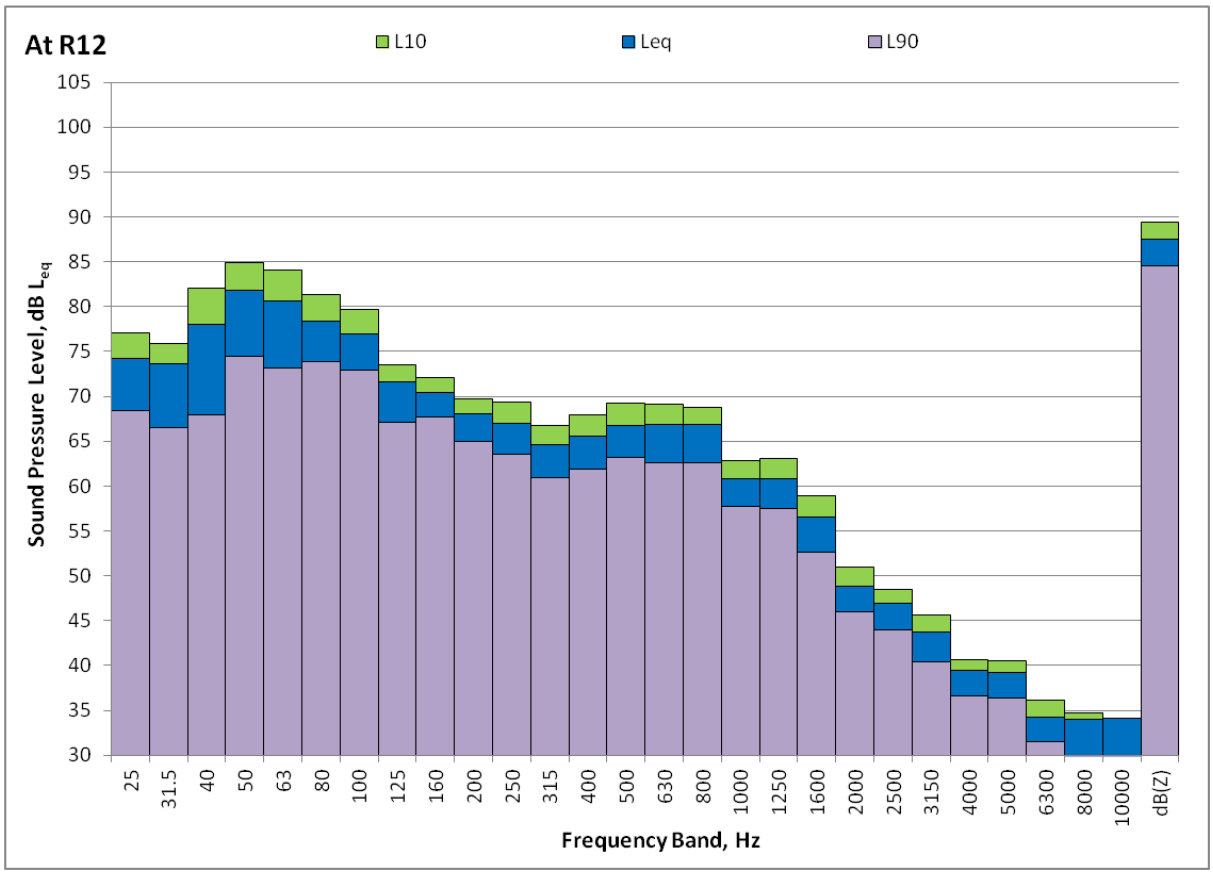
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R11
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R11
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz


At R12
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
31.5
63
125
250
500
1k
2k
4k
dB(Z)
Frequency Band, Hz


At R12
L10
Leq
L90
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Sound Pressure Level, dB Leq
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
dB(Z)
Frequency Band, Hz

Appendix G

Terminology

The following is an explanation of the terminology used throughout this report.

Decibel (dB)
The decibel is the unit that describes the sound pressure and sound power levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.

A-Weighting
An A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. An A-weighted sound level is described as L_A dB.

Sound Power Level (L_w)
Under normal conditions, a given sound source will radiate the same amount of energy, irrespective of its surroundings, being the sound power level. This is similar to a 1kW electric heater always radiating 1kW of heat. The sound power level of a noise source cannot be directly measured using a sound level meter but is calculated based on measured sound pressure levels at known distances. Noise modelling incorporates source sound power levels as part of the input data.

Sound Pressure Level (L_p)
The sound pressure level of a noise source is dependent upon its surroundings, being influenced by distance, ground absorption, topography, meteorological conditions etc and is what the human ear actually hears. Using the electric heater analogy above, the heat will vary depending upon where the heater is located, just as the sound pressure level will vary depending on the surroundings. Noise modelling predicts the sound pressure level from the sound power levels taking into account ground absorption, barrier effects, distance etc.

L_{ASlow}
This is the noise level in decibels, obtained using the A frequency weighting and the S (Slow) time weighting as specified in IEC 61672-1:2002. Unless assessing modulation, all measurements use the slow time weighting characteristic.

L_{AFast}
This is the noise level in decibels, obtained using the A frequency weighting and the F (Fast) time weighting as specified in IEC 61672-1:2002. This is used when assessing the presence of modulation only.

L_{APeak}
This is the greatest absolute instantaneous sound pressure in decibels using the A frequency weighting as specified in IEC 61672-1:2002.

L_{Amax}
An L_{Amax} level is the maximum A-weighted noise level during a particular measurement.

L_{A1}
An L_{A1} level is the A-weighted noise level which is exceeded for one percent of the measurement period and is considered to represent the average of the maximum noise levels measured.

L_{A10}
An L_{A10} level is the A-weighted noise level which is exceeded for 10 percent of the measurement period and is considered to represent the "*intrusive*" noise level.

L_{Aeq}
The equivalent steady state A-weighted sound level ("equal energy") in decibels which, in a specified time period, contains the same acoustic energy as the time-varying level during the same period. It is considered to represent the "average" noise level.

L_{A90}
An L_{A90} level is the A-weighted noise level which is exceeded for 90 percent of the measurement period and is considered to represent the "*background*" noise level.

One-Third-Octave Band
Means a band of frequencies spanning one-third of an octave and having a centre frequency between 25 Hz and 20 000 Hz inclusive.

L_{Amax} assigned level
Means an assigned level which, measured as a $L_{A\ Slow}$ value, is not to be exceeded at any time.

L_{A1} assigned level
Means an assigned level which, measured as a $L_{A\ Slow}$ value, is not to be exceeded for more than 1% of the representative assessment period.

L_{A10} assigned level
Means an assigned level which, measured as a $L_{A\ Slow}$ value, is not to be exceeded for more than 10% of the representative assessment period.

Tonal Noise
A tonal noise source can be described as a source that has a distinctive noise emission in one or more frequencies. An example would be whining or droning. The quantitative definition of tonality is:

the presence in the noise emission of tonal characteristics where the difference between -

(a) the A-weighted sound pressure level in any one-third octave band; and

(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A\ Slow}$ levels.

This is relatively common in most noise sources.

Modulating Noise
A modulating source is regular, cyclic and audible and is present for at least 10% of the measurement period. The quantitative definition of modulation is:

a variation in the emission of noise that —

(a) is more than 3 dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any one-third octave band;

(b) is present for at least 10% of the representative.

Impulsive Noise
An impulsive noise source has a short-term banging, clunking or explosive sound. The quantitative definition of impulsiveness is:

a variation in the emission of a noise where the difference between $L_{A\ peak}$ and $L_{A\ Max\ slow}$ is more than 15 dB when determined for a single representative event;

Major Road

Is a road with an estimated average daily traffic count of more than 15,000 vehicles.

Secondary / Minor Road

Is a road with an estimated average daily traffic count of between 6,000 and 15,000 vehicles.

Influencing Factor (IF)

$$= \frac{1}{10}(\%\ \text{Type A}_{100} + \%\ \text{Type A}_{450}) + \frac{1}{20}(\%\ \text{Type B}_{100} + \%\ \text{Type B}_{450})$$

where :

$\%\ \text{Type A}_{100}$ = the percentage of industrial land within a100m radius of the premises receiving the noise

$\%\text{TypeA}_{450}$ = the percentage of industrial land within a 450m radius of the premises receiving the noise

$\%\ \text{Type B}_{100}$ = the percentage of commercial land within a100m radius of the premises receiving the noise

$\%\text{TypeB}_{450}$ = the percentage of commercial land within a 450m radius of the premises receiving the noise

+ Traffic Factor (maximum of 6 dB)

= 2 for each secondary road within 100m

= 2 for each major road within 450m

= 6 for each major road within 100m

Representative Assessment Period

Means a period of time not less than 15 minutes, and not exceeding four hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission.

Background Noise

Background noise or residual noise is the noise level from sources other than the source of concern. When measuring environmental noise, residual sound is often a problem. One reason is that regulations often require that the noise from different types of sources be dealt with separately. This separation, e.g. of traffic noise from industrial noise, is often difficult to accomplish in practice. Another reason is that the measurements are normally carried out outdoors. Wind-induced noise, directly on the microphone and indirectly on trees, buildings, etc., may also affect the result. The character of these noise sources can make it difficult or even impossible to carry out any corrections.

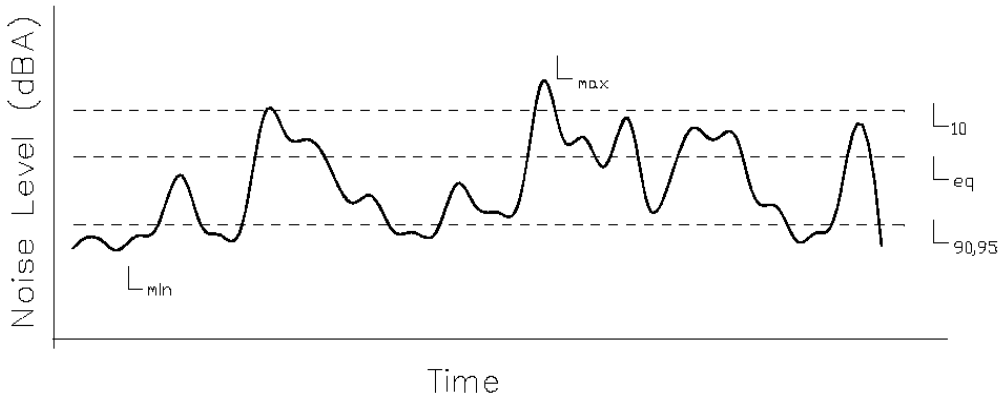
Ambient Noise

Means the level of noise from all sources, including background noise from near and far and the source of interest.

Specific Noise

Relates to the component of the ambient noise that is of interest. This can be referred to as the noise of concern or the noise of interest.

Chart of Noise Level Descriptors



Typical Noise Levels