

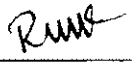

**RESOLUTION NUMBER 2010-024**

**A RESOLUTION OF THE KEY WEST PLANNING BOARD GRANTING APPROVAL OF A MAJOR MODIFICATION TO A MAJOR DEVELOPMENT PLAN APPROVAL AND GRANTING APPROVAL OF MODIFICATIONS TO REQUIRED AISLE WIDTH AND PARKING STALL SIZE FOR PROPERTY LOCATED AT 512 GREENE STREET (RE# 00001170-000000), KEY WEST FLORIDA; PROVIDING FOR AN EFFECTIVE DATE.**

**WHEREAS**, the subject property is located in the Historic Residential Commercial Core, Gulf Side (HRCC-1), zoning district; and

**WHEREAS**, Section 108-91C(3) and (4) of the Code of Ordinances allows applicants to request Major Modifications to Major Development Plans including changes to specific conditions of development approvals and those requests are required to be treated in the same manner as the original approval; and

**WHEREAS**, the original Major Development Plan and Conditional Use proposal was recommended for approval by the Planning Board through Resolution 2009-030 and was subsequently approved by the City Commission on October 13, 2009 through Resolution 09-242; and

  
Chairman  
  
Planning Director

**WHEREAS**, the applicant requested to modify the design of the Major Development Plan and modify conditions six and seven of City Commission approval 09-242; and

**WHEREAS**, Section 108-641 requires that isle widths for parking lots designed at a 90 degree angle be 24' wide and the stalls be 9' by 18'; and

**WHEREAS**, Section 108-641 provides a footnote allowing modifications to the aisle width and stall size requirement be approved by the City Commission, guided by the Architectural Graphics of Ramsey and Sleeper, in conjunction with the City Engineer recommendation; and

**WHEREAS**, the applicant requested a modified aisle width of 20'7" and compact parking sized stalls of 9'6" by 15'; and

**WHEREAS**, this matter came before the Planning Board at a duly noticed public hearing on June 17, 2010; and

**WHEREAS**, the granting of a Conditional Use will be in harmony with the general purpose and intent of the Land Development Regulations, and will not be injurious to the neighborhood, or otherwise detrimental to the public welfare;

**WHEREAS**, the granting of a combined Conditional Use and Major Modification to the

  
Chairman  
  
Planning Director

Major Development Plan is consistent with the criteria in the code; and

**WHEREAS**, the recommendation of approval of the combined Conditional Use and Major Development Plan is in harmony with the general purpose and intent of the Land Development Regulations, and will not be injurious to the neighborhood, or otherwise detrimental to the public welfare; and

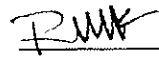

**WHEREAS**, the granting of a modified parking aisle width and parking stall size is consistent with the criteria in the code; and

**WHEREAS**, the approval is consistent with the criteria in the Code; and

**NOW, THEREFORE, BE IT RESOLVED** by the Planning Board of the City of Key West, Florida:

**Section 1.** That the above recitals are incorporated by reference as if fully set forth herein.

**Section 2.** That a Modification to a Major Development Plan for the redesign of the approved parking lot to eliminate an access easement and relocate the garbage area, including the modification of conditions number six and seven of approval (Resolution 09-242) per Section 108-91C(3) and (4), and modifications to required aisle width and parking stall size per Section 108-641, under the Code of Ordinances of the City of Key West, Florida, is hereby recommended for City Commission approval for property located at 512 Greene Street (RE#00001170-000000), as shown

 Chairman  
 Planning Director

in the attached site plans dated May 26, 2010, with conditions as follows:

1. The parking lot shall be used for handicap parking and compact cars only. ✓
2. The applicant voluntarily agrees to donate the 1.0 Equivalent Single Family Unit associated with the single family residence to the City of Key West through the execution of a donation waiver. ✓
3. The applicant will install and maintain a programmable distributive sound system consistent with that described in the document prepared by The Audio Bug and submitted on July 25, 2009, to assure compliance with the "unreasonable noise" definition of Section 26-191 of the Code of Ordinances, and that such referenced document shall be updated to include that a computerized sound monitoring system is installed and real time monitoring access is provided to the City. ✓
4. Prior to the issuance of the Certificate of Occupancy City Staff will confirm that the sound system is functioning as provided for in Condition 3. ✓
5. The applicant expressly agrees to provide the City's agents unfettered access to the computer-generated reports and full, real-time web-based access to the digital monitoring of on-site acoustics for the purpose of assuring compliance with the conditions contained herein. ✓
6. There will be no live music, disc jockeys, or karaoke anywhere on the site unless located indoors and approved under a special event permit per Section 6-86 of the Code of Ordinances. Under no circumstances will these venues be allowed outdoors. ✓
7. Security cameras will be provided on site and security personnel will be present during the hours of operation. ✓
8. Waste handling shall be consistent with the Solid Waste Management plan dated April 16, 2010. The applicant will recycle materials accepted by the city's waste handling contractor. ✓
9. Compliance with the plans dated May 26, 2010, is a condition of approval and specifically incorporated herein; except that the applicant will modify the site plan and landscape plan to provide a fixed barrier and vegetative buffer to prevent vehicular access but allow pedestrian access no less than six feet in width in the area on the site plan dated May 26, 2010, labeled as Future Landscape Area. ✓

  
Chairman  
  
Planning Director

10. No outdoor consumption area has been approved. ✓

**Section 3.** Full, complete, and final application for all permits required for which this resolution is wholly or partly necessary, shall be submitted in its entirety within 12 months after the date hereof.

**Section 4.** This Conditional Use request and Major Modification to a Major Development Plan application recommended for approval to the City Commission, do not constitute a finding as to ownership or right to possession of the property, and assumes, without finding, the correctness of applicant's assertion of legal authority respecting the property.

**Section 5.** This resolution shall go into effect immediately upon its passage and adoption and authentication by the signatures of the presiding officer and the Clerk of the Commission.


**Section 6.** This resolution is subject to appeal periods as provided by the City of Key West Code of Ordinances (including the Land Development Regulations). After the City appeal period has expired, this permit or development order will be rendered to the Florida Department of Community Affairs. Pursuant to Chapter 9J-1, F.A.C., this permit or development order is not effective for forty five (45) days after it has been properly rendered to the DCA with all exhibits and applications attached to or incorporated by reference in this approval; that within the forty five (45) day review period the DCA can appeal the permit or development order to the Florida Land and Water Adjudicatory Commission; and that such an appeal stays the effectiveness of the permit until the appeal is resolved by agreement or order.

Read and passed on first reading at a meeting held this 17 day of June, 2010.

Page 5 of 6  
Resolution Number 2010-024

  
Chairman  
  
Planning Director

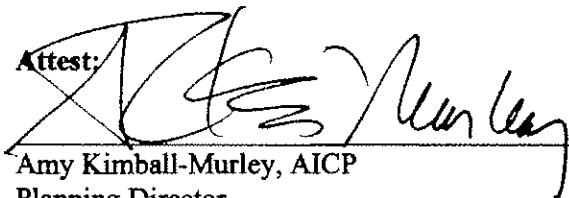
Authenticated by the Chairman of the Planning Board and the Planning Director.



Richard Klitenick, Chairman  
Key West Planning Board

JULY 6, 2010  
Date

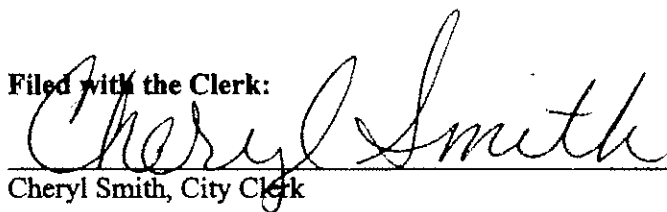
Attest:



Amy Kimball-Murley, AICP  
Planning Director

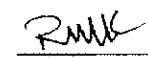
<sup>AKM</sup>  
July 6, 2010  
Date

Filed with the Clerk:



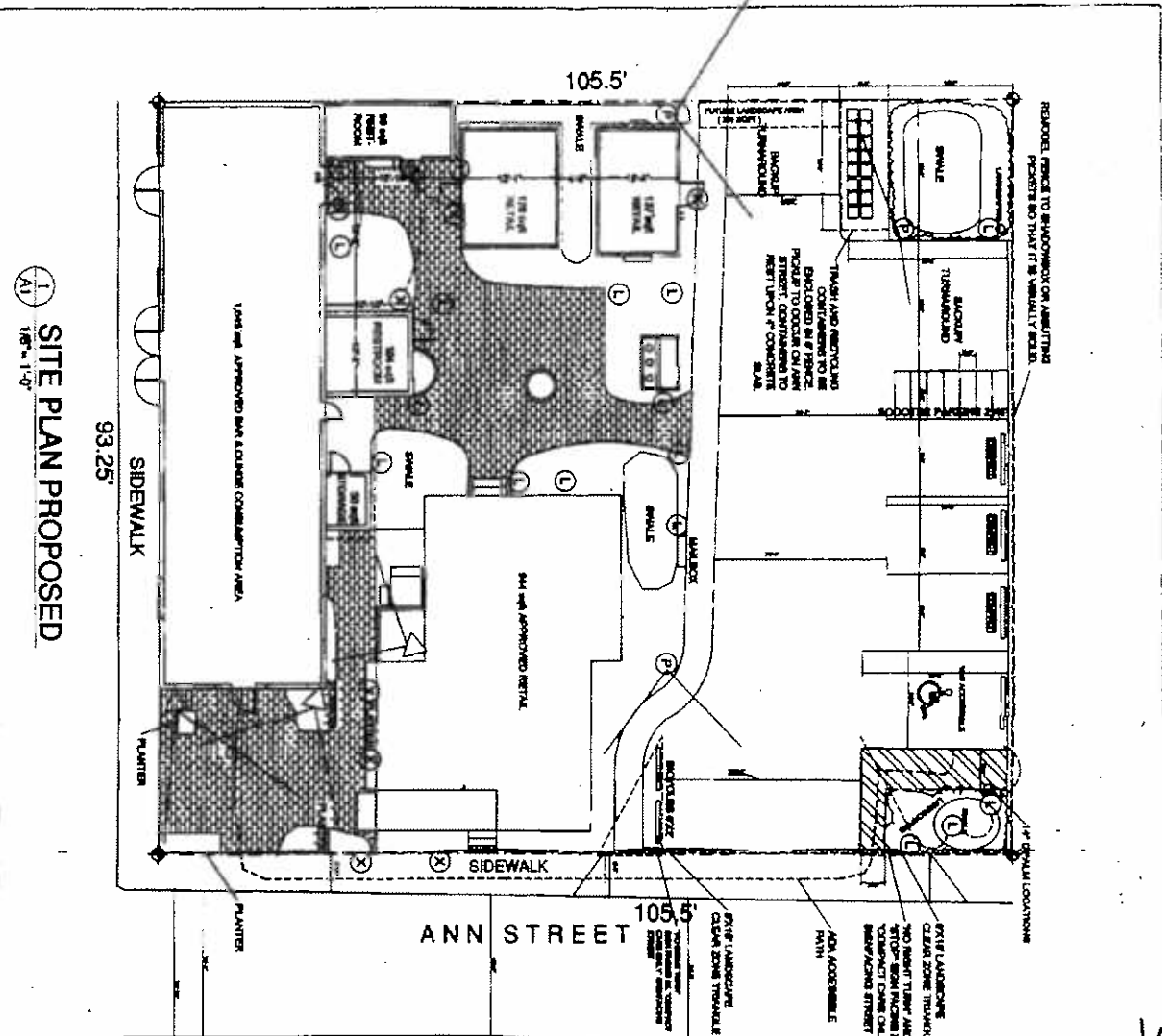
Cheryl Smith, City Clerk

7-7-10  
Date

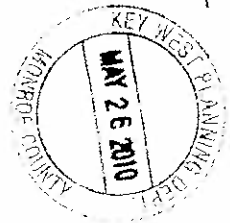
 Chairman  
 Planning Director

**SITE PLAN PROPOSED**

1  
A1  
1/8" = 1'-0"



*Accepted 7/6/10*  
*Revise 7/6/10*



SYMBOL	DESCRIPTION
(1)	OPERATIONAL FOOTCOT
(2)	SECURITY LIGHT
(3)	DOWN LIGHT
(4)	FOOT LIGHT
(5)	ALTIMETER SHIELD
(6)	GRAB BAR
(7)	PLANTER
(8)	SIDEWALK
(9)	PLANTER
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UNLIMITED DIRECTIONAL LIGHTING

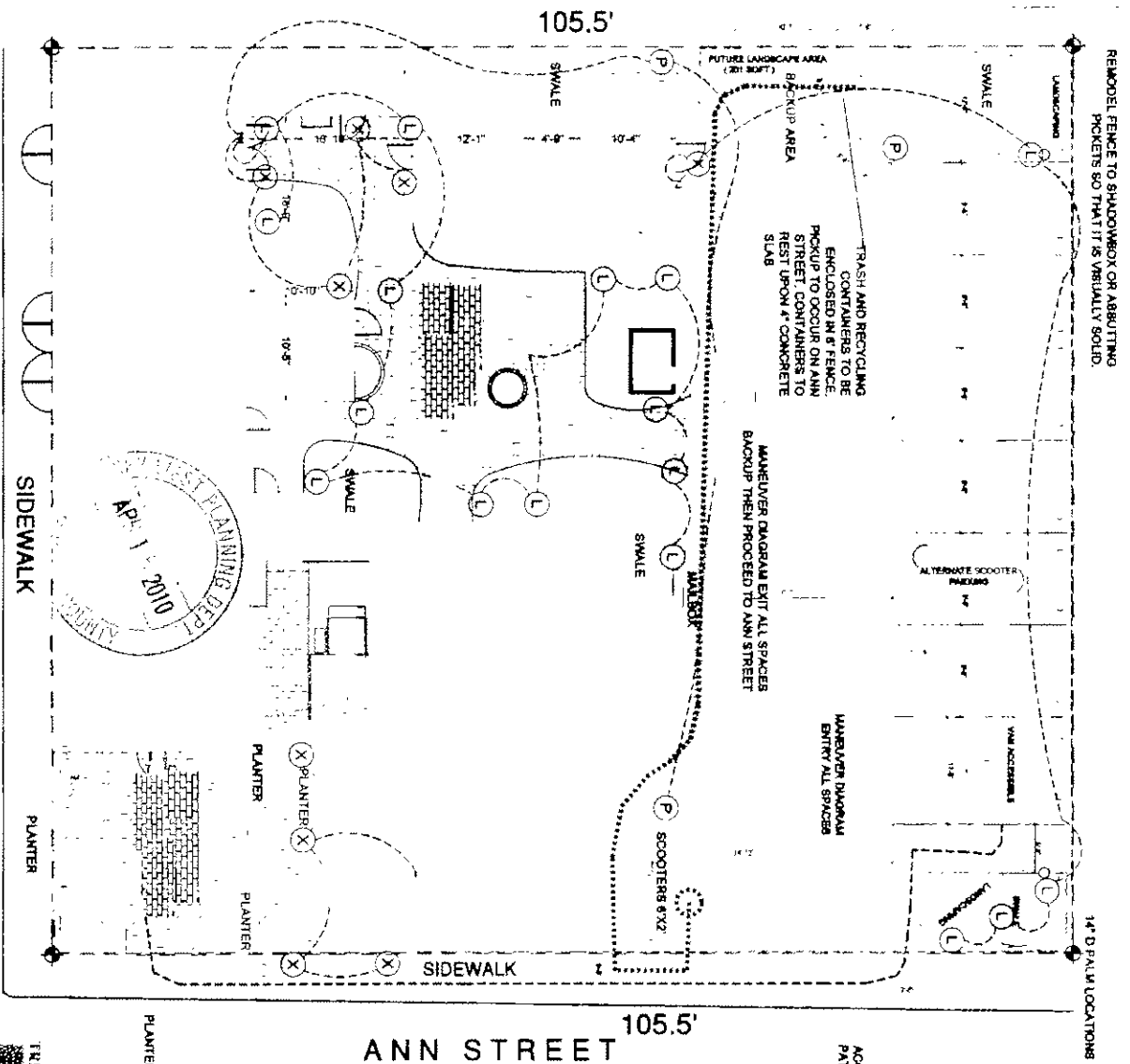
**A1**

**Carlos O. Rojas, AIA**  
512 Greene Street  
Key West, Florida 33040

KEY WEST PLANNING DEPT.  
MAY 26 2010  
APPROVED. AERONOR.







Solid Waste Management Plan provided on site plan by Cedar Square Architects

*Handwritten:* Ruck 7/6/10

# Solid Waste Management Plan

Pathway for pick-up

Waste pick-up to be determined by generation on an as-needed basis

Anticipate 2 36-inch square "toters" to be sufficient

"Toters" to be moved street side at the end of business prior to pick-up

"Toters" shall be returned to a screened enclosure in the morning after pick-up

"Toters" shall not block the public right-of-way

SIDEWALK

CITY HALL PARKING

512 GREENE STREET

TREPANIER

MAJOR DEVELOPMENT PLAN &  
CONDITIONAL USE

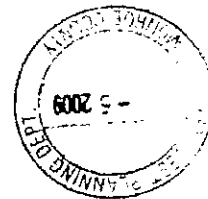


NOISE STUDY

O'ASSOCIATES INC  
LAND USE PLANNING  
DEVELOPMENT CONSULTANTS

This study was presented to the Planning Board on July 30<sup>th</sup> 2009. The Planning Board requested additional information to be included in the report, for the City Commission hearing, regarding recommendations for sound control and mitigation, the technical aspects of the system, and speaker locations. This report consists of the following:

- Section I – Noise Study: 512 Greene Street
- Section II – Addendum: Recommendations for Sound Control and Mitigation
- Section III – Professional Resume of Mr. Donald J. Washburn, President – The Audio Bug, Inc.



*AKW*  
*7/6/10*  
*RWK*  
*7/6/10*

# Amended Noise Mitigation

Adrian  
7/6/10

Runk  
7/6/10

# THE AUDIO BUG, INC.

3800 HILLCREST DRIVE • HOLLYWOOD, FL. 33021-7937 • 954-983-2788 • FAX: 954-083-2789 • [audiobug1@aol.com](mailto:audiobug1@aol.com)

## To the attention of the City of Key West Planning Board

The following are recommendations for Sound Control and Mitigation at 512 Greene Street, Key West:

- I. Sound System: The system should be designed to fully comply with local noise ordinances, employing the following techniques to accomplish this goal:
- A. Deployment of multiple closely spaced speakers driven at low individual volumes. This system design will distribute sound uniformly within the listening area in such a manner as not to interfere with normal conversational level of the clientele. Maximum long-term system levels are to be limited to 75 dBA SPL, with user access restricted to the selection of program material and manual reduction only of system levels. No increase above maximum design sound levels shall be possible by Staff. The system shall include eight (8) loudspeakers to ensure uniform coverage in the listening area. Loudspeaker layout and quantities are detailed in the attached data developed using EASE 4.2, a computer-assisted design program used to predict sound system and acoustical performance. The electronics package shall offer maximum control to the designer. Speakers shall be operated as a high impedance distribution system connected to an amplifier suitable for the application. Zone control shall be provided as required by the physical layout of the facility. **No outdoor speakers will be permitted.**
  - B. QSC Audio's DSP-30, a computer control and digital signal processor, shall form the heart of the system. With this device, the system will include the following functions and safeguards:
    1. All controls under lock and key, with no access once the system has been commissioned.
    2. The system shall be divided into two zones, each with a preset maximum level, separate dynamic equalization and signal alignment, sound compression, and intelligent gain adjustment feature which will raise and lower music volume in response to patron conversation noise.
    3. Local control shall consist only of source selection and the ability to turn the system down from preset maximums.
  - C. A Radio Design Labs FP-ALC2 Automatic Level Control will be included to control the inevitable disparities between source and selection sound levels, further ensuring consistent playback levels. Leveling removes the possibility of one song sounding louder than the previous or subsequent song. For example, if a Billy Joel vocal/piano ballad were followed by a song with a significantly different complement of vocals and instrumentals, the second song would normally sound louder at an equal volume setting. With leveling, the two songs would be reproduced at virtually the same sound level.
  - C. The House System will provide an input for pre-recorded music; i.e., CD player, iPod, satellite audio feed.  
No live music will be proffered except for special events subject to specific permit by the City of Key West.<sup>1</sup> For such events, the live sound mixer would be substituted for the pre-recorded music source.
  - D. Computerized sound monitoring system. Utilizing an inexpensive net-book or laptop computer, appropriate software and an external microphone, the club ~~shall~~ be equipped to self-monitor sound levels on the property to ensure and document compliance with the City's Noise Ordinance. Calibration of the system during its installation will allow direct correlation of sound levels on property with those at any location off property. Simple operation and reliable documentation will ensure that code violation claims can be refuted with accurate information at any time. Visit <http://www.fesb.hr/~mateljan/arta/> for details on obtaining this software.

<sup>1</sup> - If permitted as a special event under KW Code Sec. 6-86

ACK 7/6/10  
RMC  
7/6/10

**ARTICLE IV. SOUND CONTROL**

**Sec. 26-191. Definitions.**

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

*Commercial district* means the HRO, HRCC-1, HRCC-2, HRCC-3, HNC-1, HNC-2, HCT, HPS (Mallory Square only), CL, CG, CT and A zoning districts.

*Decibel* means a measure of a unit of sound pressure. Sound waves having the same decibel level "sound" louder or softer to the human ear depending upon the frequency of the sound wave in cycles per second (i.e., whether the pitch of the sound is high or low). Thus, an A-weighted filter, constructed in accordance with the specifications of the American National Standards Institute, which automatically takes account of the varying effect on the human ear of different pitches shall be used on any sound level measurements required by this article. Accordingly, all measurements are expressed in dBA to reflect the use of this A-weighted filter.

*Disturbing noise* means an uninvited or disruptive level of noise that is unreasonably loud or that is raucous and jarring, due to volume, character, or duration, and that causes an actual interference with a person's ability to enjoy peacefully his residence or place of business.

*Emergency and emergency work* mean any occurrence or set of circumstances involving or creating actual or imminent physical trauma or property damage which demands immediate attention.

*Property boundary* means the imaginary line along the surface, and its vertical plane extension, which separates the real property owned, rented, or leased by one person from that owned, rented, or leased by another person.

*Public right-of-way* means any street, avenue, boulevard, lane, highway, sidewalk, alley, or similar place normally accessible to the public which is owned or controlled by a governmental entity or which has been dedicated to use or access for the benefit of the public or adjacent property owners.

*Residential district* means the HMDR, HPRD, HPS (except Mallory Square), HHDR, C-OW, C-FW, C-TW, CM, C-UH, LDR-C, SF, MDR-C, MDR, HDR, RO, PRD, and PS zoning districts.

*Unreasonable noise* means:

(1) Any noise in or emanating from a commercial district which equals or exceeds a measured sound level of 75 dBA (maximum permitted sound level in decibels) collectively for more than 30 seconds of any measurement period which shall not be less than five minutes.

(2) Any noise in or emanating from a residential district which equals or exceeds a measured sound of 75 dBA between 8:00 a.m. and 7:59 p.m. and 60 dBA from 8:00 p.m. to 7:59 a.m. (maximum permitted sound level in decibels) collectively for more than 30 seconds of any measurement period which shall not be less than five minutes.

(Code 1986, § 55.01)

**Cross references:** Definitions generally, § 1-2.

Adm  
7/6/10

**Sec. 26-192. Prohibition against unreasonable noise.**

No person shall make, continue, or cause to be made any unreasonable noise or disturbing noise.

Runk  
7/6/10

(Code 1986, § 55.02(a))

**Sec. 26-193. Exceptions.**

The prohibitions contained in this article shall not apply to the following:

- (1) *Emergencies.* The emission of sound for the purpose of alerting persons to the existence of an emergency or emergency vehicle or to the performance of emergency work.
- (2) *Religious service or observance.* Sound levels produced from a religious service or observance.
- (3) *Construction/demolition.* Sound levels produced from tools and equipment in commercial construction, demolition, drilling, or reasonably similar activities. However, such sound levels are limited to the hours of 8:00 a.m. to 7:00 p.m., Monday through Friday, and 9:00 a.m. to 5:00 p.m. on Saturday. The tools and equipment must be muffled and maintained equal to the functional standards of the industry. No exceptions contained in this subsection shall apply on Thanksgiving Day, Christmas Day and New Year's Day.
- (4) *Domestic power tools.* Sound levels produced from any hand-powered or mechanically powered saw, sander, drill, grinder, lawn/garden tool or reasonably similar tools. However, to be lawful, sound producing the use must conform to industry standards for the equipment and must occur only between 8:00 a.m. and 7:00 p.m., Monday through Friday, and 9:00 a.m. and 5:00 p.m. on Saturday and Sunday only.
- (5) *Public events.* Sound levels from public events and celebrations sponsored by the city or approved by resolution of the city commission, but only during the hours designated by the resolution.
- (6) *Government radio transmissions.* Sound levels from equipment used by police, fire, and other city department radio or emergency equipment, and from similar equipment used by other government agencies in performance of official duties.
- (7) *Public address systems.* Sound levels from public address broadcast systems used in public stadiums, ballfields, parks and schoolyards.
- (8) *Sunset celebration.* Sound levels produced by performers engaged in activities sponsored by the city's lessee at Mallory Square Dock during sunset celebration.
- (9) *Franchisees.* Narration of tours of the city's franchisees upon the city right-of-way.
- (10) *Industrial equipment.* Noise levels for industrial equipment, including but not limited to air conditioners, generators, and pool pumps, must be set to reasonable industry standards for properly maintained equipment.

(Code 1986, § 55.03)

**Sec. 26-194. Citation procedure.**

- (a) Except as provided in subsection (e) of this section, all citations for violations issued under this article shall be based on a complaint to the city. The complainant shall be identified by name and address, the sound source shall be identified, and the investigating officer shall verify all information provided by the complainant. The investigating officer shall provide the complainant with a copy of the complaint form which may serve as a record of complaints relating to a property.

RMC  
7/16/10  
Ack  
7/24/10

(b) A decibel meter shall be used for a complaint of unreasonable noise made at or within 100 feet of the property line of the sound source. The decibel reading shall be made at the location of the complaint. The investigating officer shall issue a citation for unreasonable noise, unless in his judgment a warning is sufficient to cease the violation. There shall be no more than a total of one warning per offending person or establishment.

(c) A complaint of disturbing noise may be made when the location of the complaint is beyond 100 feet of the property line of a commercial property sound source. Additionally, a complaint of disturbing noise may be made when the location of the complaint is a residential property and the location of the sound source is a residential property or a commercial property that was a residential property as of September 1, 2000, at any distance from each other. A decibel meter measurement is not required to determine disturbing noise. The investigating officer shall issue a citation if the complainant suffers disturbing noise within the boundaries of his property. The investigating officer may issue a warning if in his judgment a warning is sufficient to cease the violation. There shall be no more than a total of one warning per offending person or establishment.

(d) If a complaint arises of unreasonable noise emanating from a multistory structure, the determination of whether such sound constitutes unreasonable noise shall be made from a story height equal to that of the sound source or from the nearest accessible point on the ground floor.

(e) Upon the authorization of the city manager, the city may act as the complainant of unreasonable noise when a commercial establishment from which alleged unreasonable noise is emanating holds an entertainment license pursuant to division 2 of article II of chapter 18. A code enforcement officer shall conduct the decibel reading at any point beyond the property line of the sound source. In addition to its being subject to citation for unreasonable noise, the establishment shall also be subject to the further penalties set forth in division 2 of article II of chapter 18.

(f) Citations issued for unreasonable noise or disturbing noise under this article shall be of a content-neutral character.

(g) Either a police officer or a code enforcement officer may issue a citation to an offender under this article.

(Code 1986, §§ 55.02(b)--(g), 55.07(b))

#### **Sec. 26-195. Liability; citizen suit.**

(a) *Liability.* The maker or creator of unreasonable noise or disturbing noise and the operator and/or owner of the premises that are its sound source shall each be subject to liability for violations of this article. If prosecuted jointly, each shall be jointly and severally liable for any fines imposed pursuant to this article. The sponsor of a special event shall not be liable for unreasonable noise or disturbing noise unless conditions placed upon the sponsor in the special event permit are violated.

(b) *Citizen suit.* In addition to any other remedy available to the city, including code enforcement, the city or any other adversely affected party may enforce the terms of this article in law or equity. Any citizen of the city may seek injunctive relief and damages in a court of competent jurisdiction to prevent a violation of this article. No section of this article shall be interpreted to prevent any person from commencing a civil action on his own behalf against any person who is alleged to be in violation of any section of this article. Attorney's fees and costs incurred in an action to enforce this article may be awarded to a substantially prevailing party in the discretion of the court.

(c) *Mediation services.* Upon request of parties to a residential noise dispute, the city manager

shall provide mediation services.

(Code 1986, § 55.07(a), (c), (d))

**Sec. 26-196. Motor vehicle noise emissions.**

(a) Motor vehicles operating on the public right-of-way are regulated as set forth in F.S. § 403.415. The decibel measurements of this statute shall pertain to motor vehicle noise. It shall be unlawful to operate a vehicle, moped, scooter or motorcycle in the city in violation of a provision of this statute. In addition, every vehicle, moped, scooter and motorcycle shall be equipped with a muffler in constant operation and be properly maintained to prevent disturbing or unreasonable noise. Furthermore, it shall be unlawful for a person to engage in rapid throttle advancing or revving of an internal combustion engine of a vehicle, moped, scooter or motorcycle that is at a standstill or that is in the flow of traffic where such rapid throttle advancing or revving is not necessary for its safe operation, thus resulting in increased noise.

(b) No person shall operate or cause to be operated any motor vehicle off a public right-of-way in violation of this article. This article shall apply to all motor vehicles, whether or not duly licensed or registered, including but not limited to commercial or recreational racing vehicles, motorcycles, dirt bikes, mopeds, go-carts, amphibious vehicles, campers, power boats, personal watercraft, or any other engine-powered vehicle; provided, however, that a vessel owner may operate an engine for a reasonable period of time in order to flush out the engine with fresh water.

(c) A citation issued under this section need not be initiated by citizen complaint. It may be issued by a police officer in the course of his duties.

(Code 1986, § 55.04; Ord. No. 03-13, § 1, 6-3-2003)

**Sec. 26-197. Animals.**

The owner of an animal that creates a noise nuisance as provided in section 10-2 is subject to citation for violation of this article. Animal noise need not be measured by decibel meter to be unreasonable. If animal noise disturbs at least two persons residing in separate residences adjacent to or within 100 feet of the property on which the animal is kept and such persons file a joint complaint or separate complaints with the city as provided in section 26-194, their complaint shall constitute prima facie evidence of a violation.

(Code 1986, § 55.05)

**Cross references:** Animals, ch. 10.

**Sec. 26-198. Retail establishment sound amplifiers; setback.**

(a) The property owner or operator of a retail establishment shall establish an interior 15-foot setback for sound amplifiers and speakers. This requirement pertains to sound that emanates directly from the retail establishment to a street, sidewalk or alley. All sound amplifiers and speakers shall be located inside the retail establishment at least 15 feet from the plane of the front, side or rear entrance and at least 15 feet from the plane of any open window. "Retail" shall be determined by business tax receipt status. This regulation shall apply only to the retail portion of a mixed-use commercial establishment.

(b) A property owner may apply to the board of adjustment for a variance to this section. The property owner must demonstrate a hardship based on the size or configuration of the retail establishment.



# Noise Report

ACK  
7/6/10  
RMC  
7/6/10

512 GREENE STREET

TREPANIER

MAJOR DEVELOPMENT PLAN &  
CONDITIONAL USE

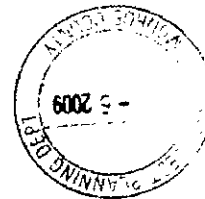


NOISE STUDY

OWENTREPANIER ASSOCIATES INC.  
LAND USE PLANNING  
DEVELOPMENT CONSULTANTS

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*Allen*  
*7/6/10*

*Russ*  
*7/6/10*

# THE AUDIO BUG, INC.

3800 HILLCREST DRIVE, # 102 • HOLLYWOOD, FL 33021 • PHONE: 954-983-2788 • FAX: 954-983-2789 • [audiobug.com](http://audiobug.com)

July 25, 2009

Mr. Owen Trepanier, President  
Trepanier & Associates, Inc.  
402 Appelrouth Lane, P.O. Box 2155  
Key West, FL 33405-2155  
Phone: 305-293-8983, Fax: 305-293-8748

Reference: Noise Study, Greene Street Project  
512 Greene Street, Key West, FL

Dear Mr. Trepanier,

I'm pleased to present the results of this Noise Study on the above referenced project. As Applicant of Record to the City of Key West for a Conditional Use approval, I'm addressing this report to your office for distribution to the appropriate parties including the owners of the subject property and members of the City Staff.

This Study was prompted by the City's interest in obtaining an accurate assessment of the acoustical environment surrounding the Greene Street project location and any possible noise impact the operation of the subject property might present to this environment. The process of developing a useful acoustical study involves the following steps:

1. Observe and measure current acoustical conditions (on-site survey)
2. Post-process and analyze collected data
3. Utilize information obtained to generate a report summarizing our findings and conclusions
4. Provide recommendations for sound control and mitigation as required.

The first step in this process, measurement and observation, took place beginning on Friday, July 10, and continuing through Saturday morning, July 11. Locations for acoustical measurements were selected during the survey as representative of the neighborhood. They are indicated on the attached area map (Figure 1) as Locations 11 through 15. Ambient noise levels typical of the neighborhood surrounding the subject property were measured and recorded during three time periods:

1. Early evening, beginning shortly after 7:00 p.m.
2. 11:30 p.m. to Midnight
3. 4:20 a.m. to 4:45 a.m. (after closing)

The accumulated data obtained during this process represents a comprehensive assessment of sound within the area over the span of a full evening/morning. Subsequent analysis of this data has led to observations and recommendations which will assist in determining what if any adverse impact the proposed facility will have on the surrounding environment and how to minimize any such impact identified during the study.



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The Greene Street property is somewhat removed from the main entertainment district, which is centered on Duval Street. Sound levels recorded during the evening hours were substantially lower than those noted along Duval Street.

Figures 2 through 6 show sound levels measured at various locations as identified on each chart. The measurements depicted in the charts represent the lowest average sound levels observed, as they were gathered after the close of business for most entertainment venues in the district. These figures most closely represent true ambient sound levels within the surrounding neighborhood, i.e., the lowest sound levels which might be expected under normal conditions (weather, etc.).

Additional measurement data is provided at the bottom of each of these charts showing times and average sound levels recorded at times other than those represented in the charts. Comparison with data gathered along Duval Street (see Figure 7) clearly indicates that the area surrounding the property at Ann and Greene is substantially quieter.

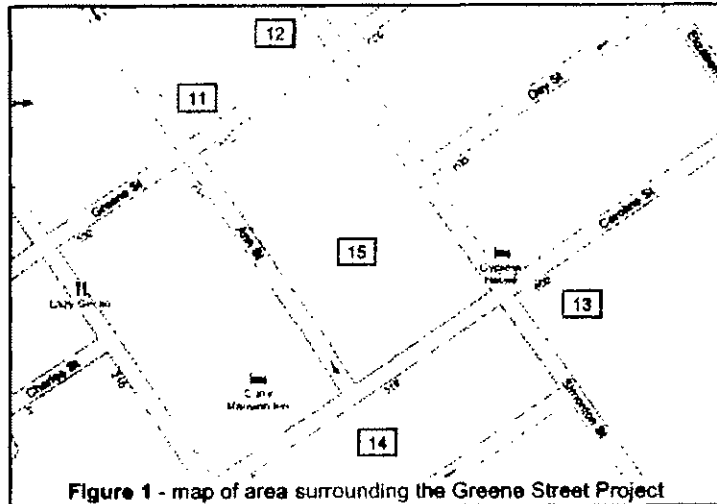
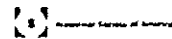


Figure 1 - map of area surrounding the Greene Street Project

With regard to an in-house sound system, we have recommended utilizing a distributed loudspeaker system intended to control sound levels within the bar area. The system will consist of multiple small, closely spaced speakers positioned to evenly distribute music throughout the bar at moderate levels. The system would be similar to that now used at the Hard Rock Café on Duval Street. During the course of my work on this survey, Dave Floerke and I took a short break, spending about 30 minutes at the bar in the Hard Rock. While there, we chatted with the bartender and could easily converse without interference from the music system. A ten-minute sound measurement indicated an average sound level reading of 79.8 dBA, a comfortable foreground music level. Sound levels were extremely consistent throughout the entire seating area, a condition not often achieved in such facilities. By contrast, most if not all of the systems now in place at clubs within the entertainment district use a "brute force" method, with only a few large loudspeakers played at very high levels. Detailed specifications for the proposed sound system appear below.

A side benefit to this distributed design approach is minimized leakage to the outside. Since sound levels within the bar would be well controlled, little impact on the outside environment would be experienced, even when patrons entered or exited the building.



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Currently, vehicular and pedestrian traffic represent the primary sound influences near the subject property. The intermittent nature of these events can be seen on the sound level graphs. While one would certainly anticipate an increase in such traffic as a result of the new facility, this might not necessarily represent a problem. Hours of operation might be used as a control factor with respect to this issue.

Based on our evaluation of neighboring properties, sound levels currently experienced in the area and a facility which clearly represents a low-impact usage, we can say with considerable confidence that this property will have no adverse impact on its neighbors with regard to sound or noise nuisance. Unlike many of the higher profile establishments within the entertainment district, this operation should blend into its neighborhood with little if any affect.

I welcome any questions you, the client or City Staff might have concerning our report and look forward to assisting with the process in any way possible. Please feel free to contact me by either phone or e-mail at your convenience.

Respectfully submitted,



Donald J. Washburn  
President

*Account  
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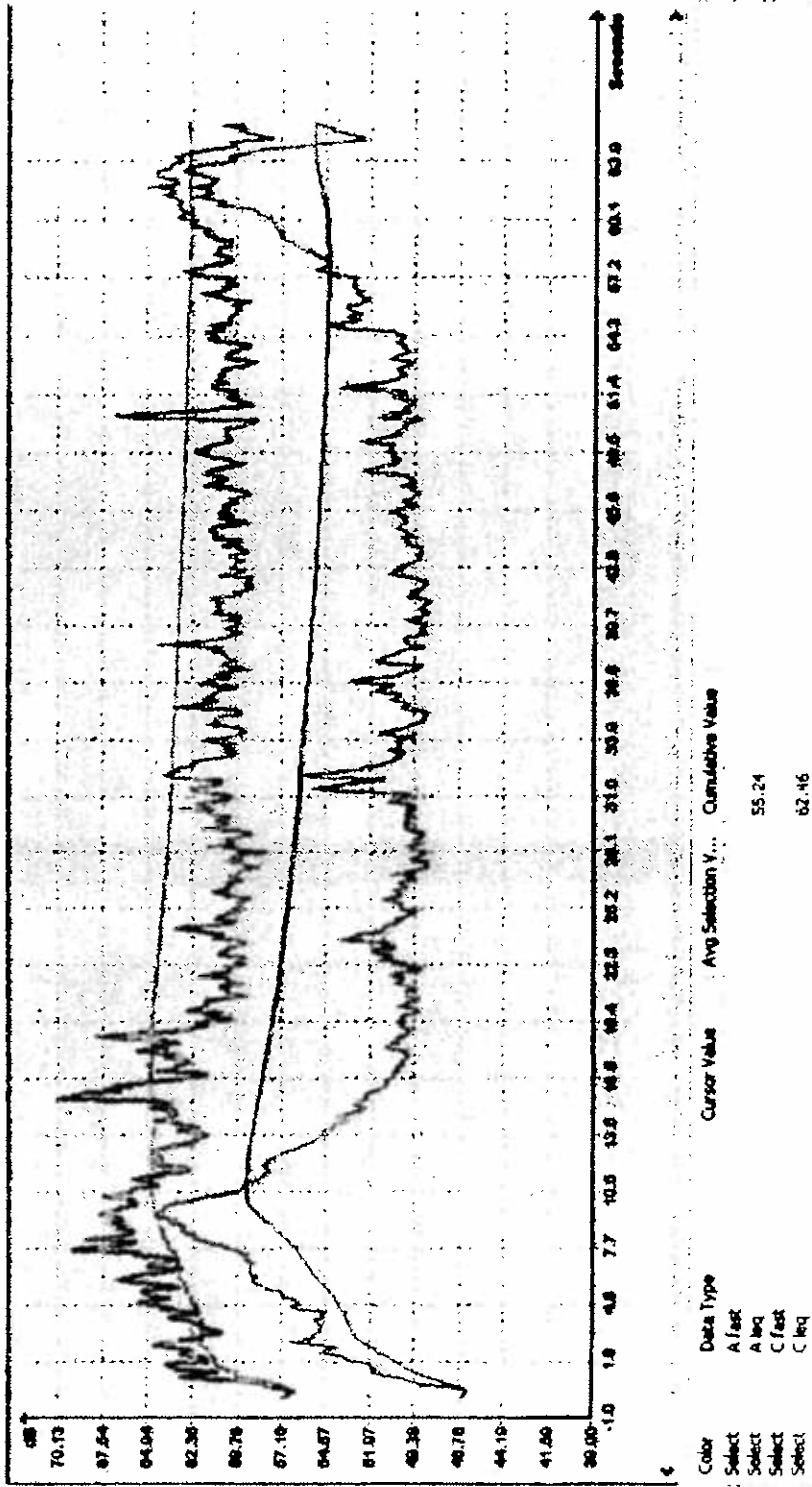
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One-minute Leq at Location 11 - Ann and Greene Streets, 4:30 a.m. July 11, 2009



*Adam*  
7/6/10

*Rmk*  
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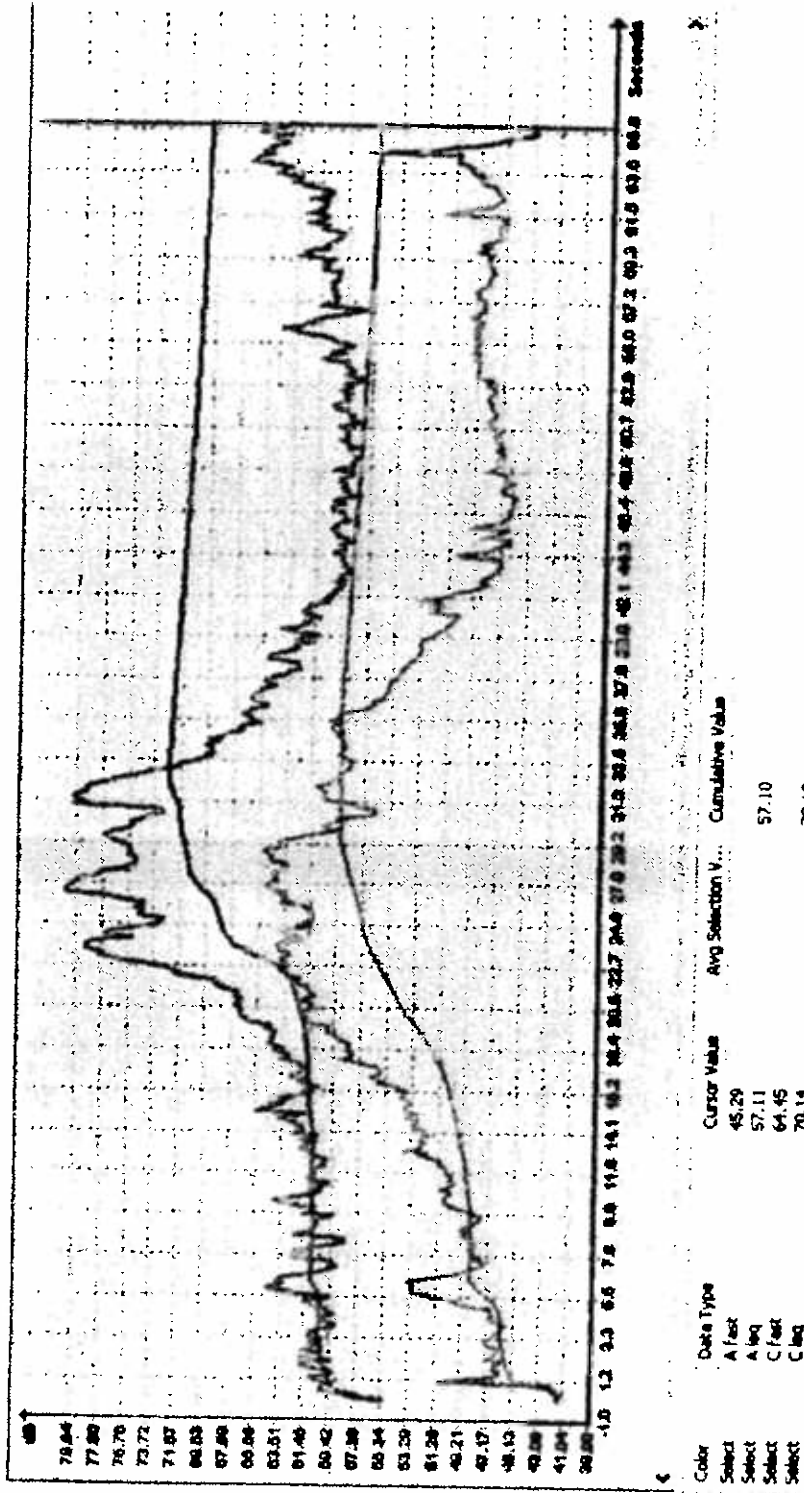
**NSCA**



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One-minute Leq at Location 12 - Simonton and Greene Streets, 4:25 a.m. July 11, 2009



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*RMLC*  
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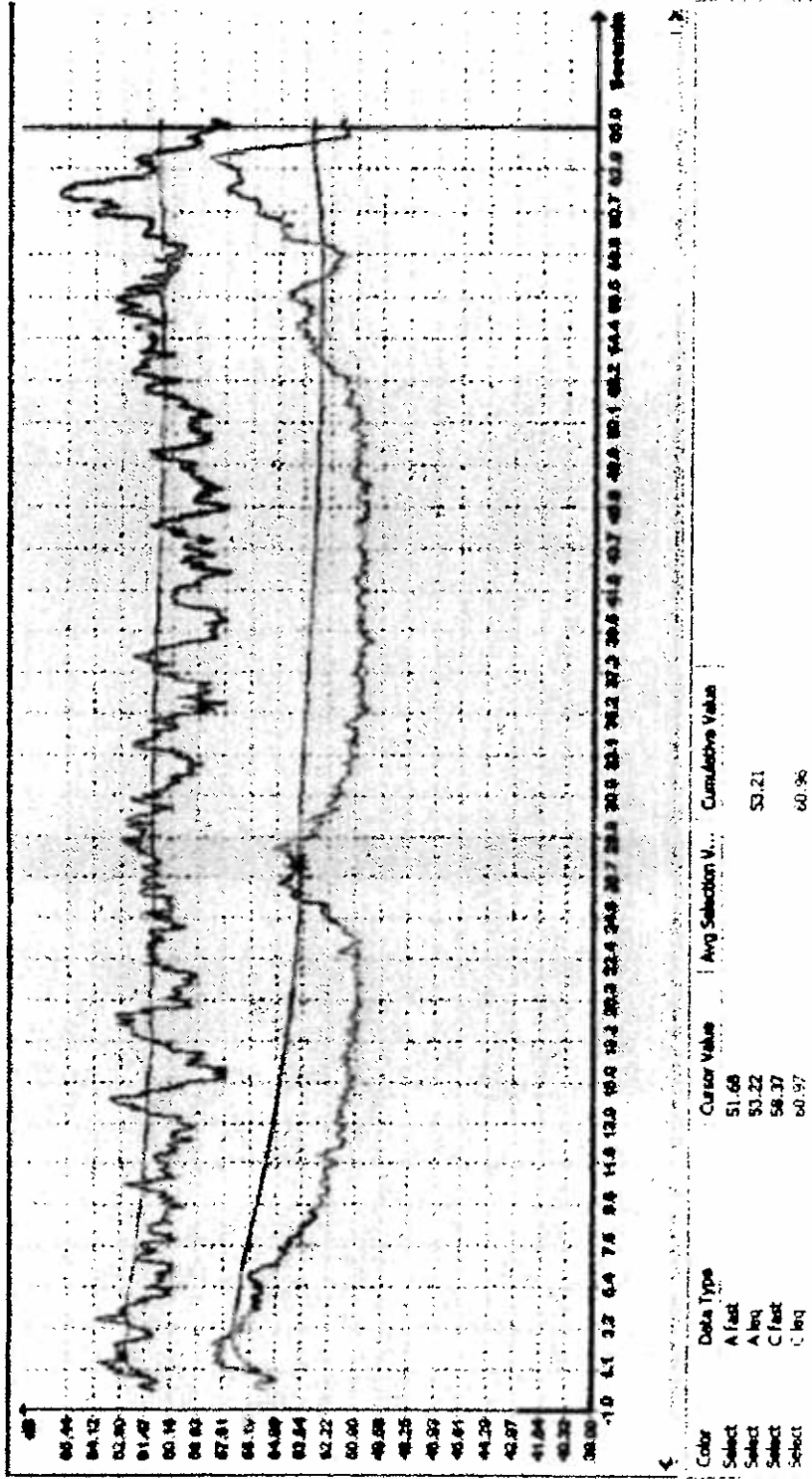
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One-minute Leq at Location 13 - Simonton and Caroline Streets, 4:22 a.m. July 11, 2009

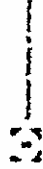


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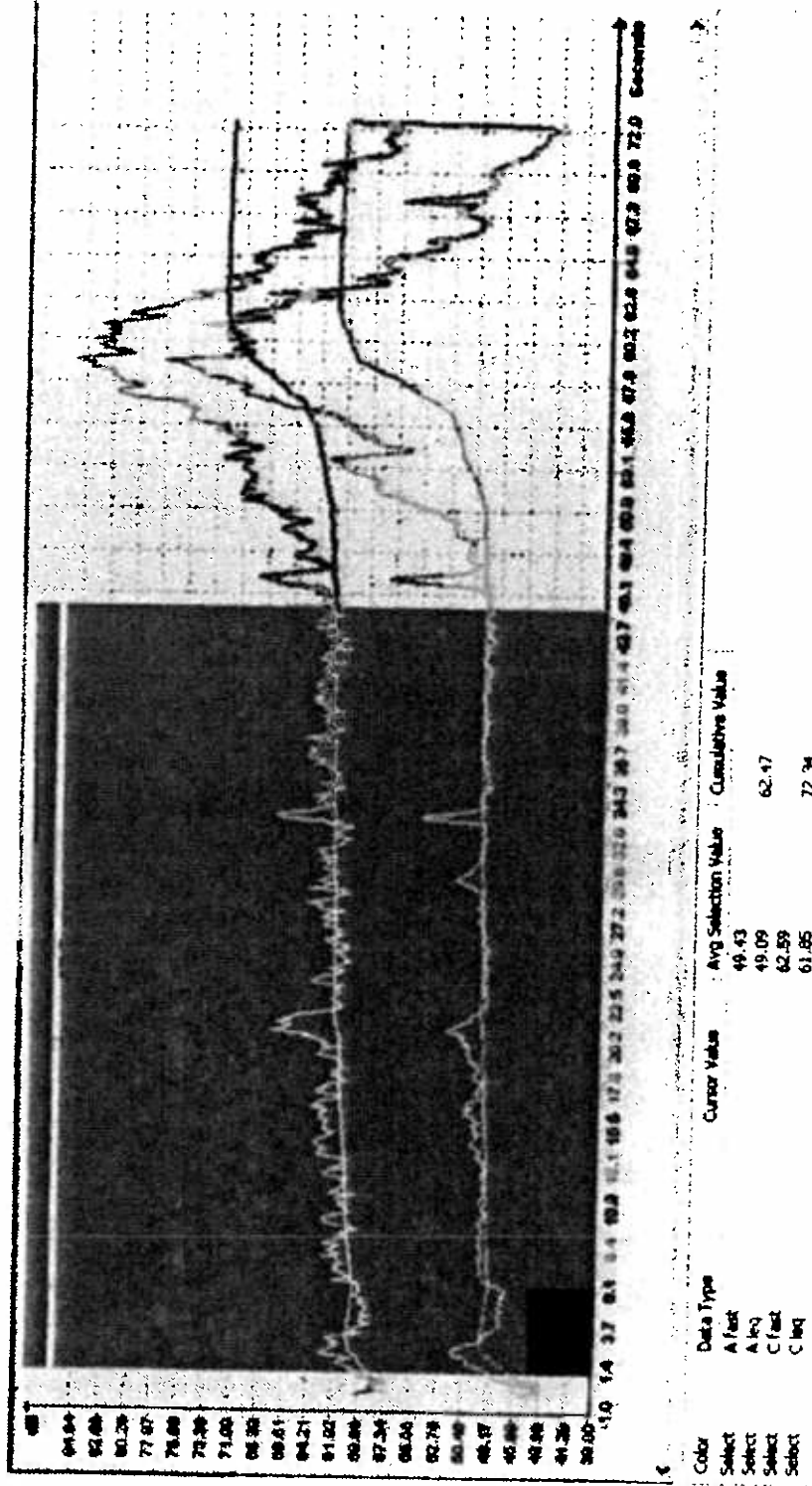




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One-minute Leq at Location 14 - Ann and Caroline Streets, 4:41 a.m. July 11, 2009



*Runk*  
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*Adrian*  
7/6/10



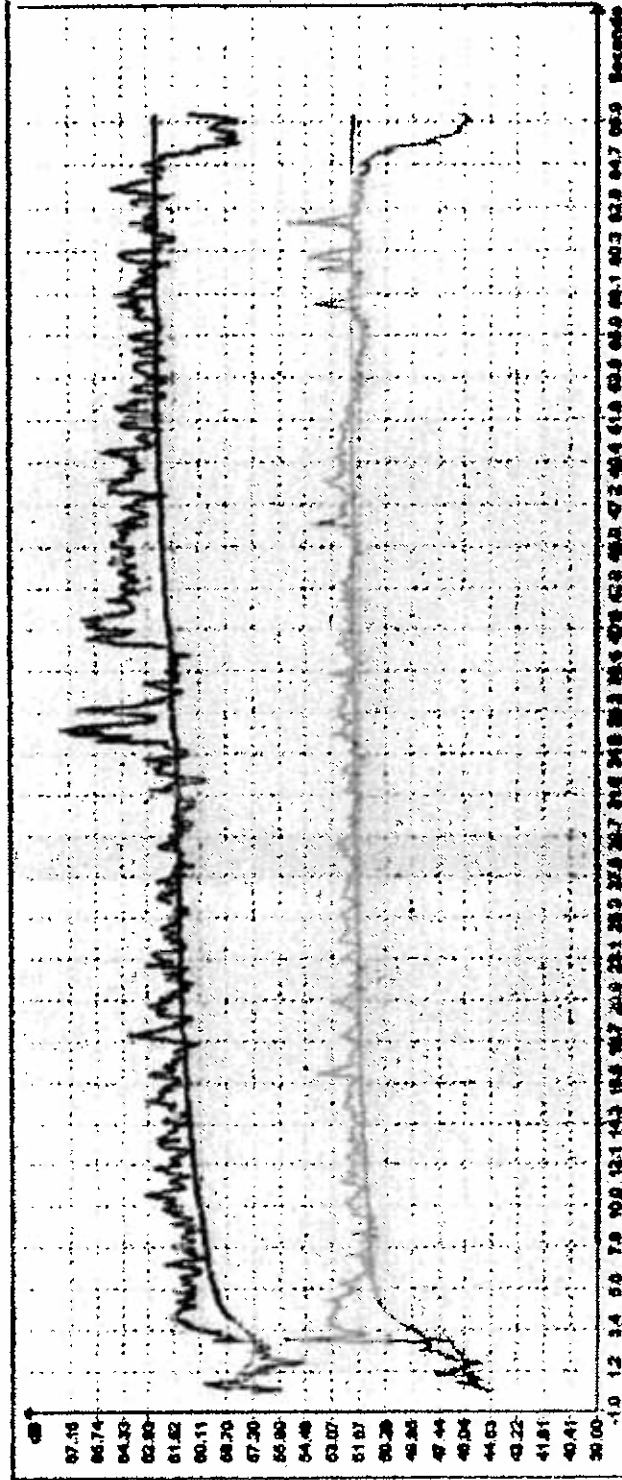
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One-minute Leq at Location 15 - 217 Ann Street, 4:38 a.m. July 11, 2009

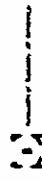


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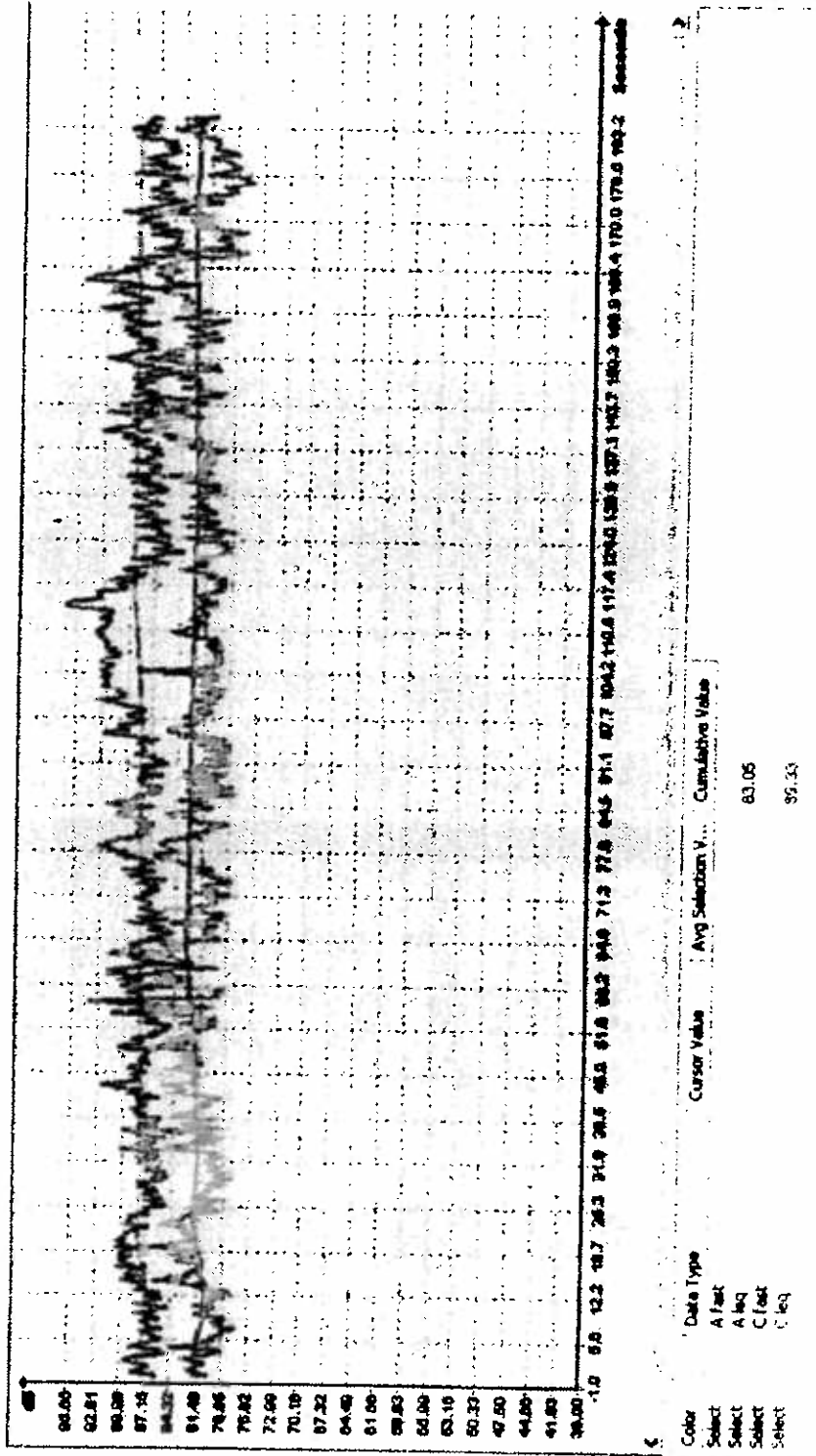
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3-minute Leq measurement at Charles and Duval beginning at 1:04 a.m. on July 11, 2009



**NSCA**

11

*RMK*  
7/6/10  
*ACK*  
7/6/10

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### NOISE LEVEL ANALYSIS TERMS

**Sound Pressure Level (SPL)** = The RMS sound pressure expressed in dB re 20 microPa, the lowest threshold of hearing for 1 kHz for a healthy auditory system. [As points of reference, 0 dB-SPL equals the threshold of hearing, while 140 dB-SPL equals irreparable hearing damage.] See: **inverse square law** below. 1 Pascal = 94 dB SPL. Average face-to-face conversation equals approximately 65 dB SPL.

**Decibel (dB)** = means of expressing power ratios, i.e. the difference between two sound levels, or an absolute sound level expressed in Sound Pressure Level (SPL) referenced to a standard pressure, i.e. 94 dB SPL = 1 Pascal.

**dBA** = "A" weighted sound pressure level. Please refer to the attached discussion of weighting filters and their applications.

**SLM** = Sound Level Meter. Device used to measure sound pressure levels.

**L<sub>min</sub>** = Lowest, or softest, Sound Pressure Level measured during the test period.

**L<sub>max</sub>** = Highest, or loudest, Sound Pressure Level measured during the test period.

**L<sub>eq</sub>** = Equivalent continuous sound level. The steady level which would produce the same sound energy over the test period as the specified time-varying sound. This figure is useful for studying long-term trends in environmental noise. A single L<sub>eq</sub> number is often used to define an entire measurement period.

**L<sub>10</sub>** = Sound level exceeded 10% of the measurement period. Highest of the L<sub>n</sub> figures.

**L<sub>50</sub>** = Sound level exceeded 50% of the measurement period. Median of the L<sub>n</sub> figures.

**L<sub>90</sub>** = Sound level exceeded 90% of the measurement period. Lowest of the L<sub>n</sub> figures. This figure is most commonly used in estimating true ambient noise level.

**L<sub>mean</sub>** = Mathematically averaged Sound Pressure Level.

**NC** = Noise Criteria, a standardized method of characterizing noise loudness. Extensively used in the analysis of noise and vibration.

**Sone** = a subjective unit of loudness for an average listener equal to the loudness of a 1 kHz. sound that has an intensity 40 decibels above the listener's own threshold of hearing.

**Phon** = the unit of loudness on a scale beginning at zero for the faintest audible sound (0.00002 Pascals) and corresponding to the decibel scale of sound intensity with the number of phons of a given sound being equal to the decibels of a pure 1 kHz tone judged by the average listener to be equal in loudness to the given sound.

*Rmk*  
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*ACW*  
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**Inverse Square Law** = inverse square law Sound Pressure Level. Sound propagates in all directions to form a spherical field, thus sound energy is inversely proportional to the square of the distance, i.e., doubling the distance quarters the sound energy (the inverse square law), so SPL is attenuated 6 dB for each doubling of distance from the source.

**Noise Reduction Coefficient (NRC)** = The average of the individual sound absorption coefficients at 250, 500, 1000 and 2000 Hz, to the nearest .05.

**Impact Insulation Class (IIC)** = Single-number rating that indicates the amount of impact noise isolation provided by a floor/ceiling assembly. The higher the number, the better the floor/ceiling assembly.

**Sound Transmission Class (STC)** = A single-number rating that indicates the sound transmission loss of a partition or ceiling system between adjacent closed rooms. STC Ratings are:

- 25 Normal speech can be understood quite clearly
- 30 Loud speech can be understood fairly well
- 35 Loud speech is audible but not intelligible
- 42 Loud speech is audible as a murmur
- 45 Must strain to hear loud speech
- 48 Some loud speech is barely audible
- 50 Loud speech is not audible

## Definitions

- 1) **sonic**: utilizing, produced by, or relating to sound waves; broadly: of or involving sound: having a frequency within the audibility range of the human ear: of, relating to, or being the speed of sound in air or about 761 miles per hour (1224 kilometers per hour) at sea level at 59°F (15°C)
- 2) **subsonic**: of, relating to, or being a speed less than that of sound in air
- 3) **supersonic**: of, being, or relating to speeds from one to five times the speed of sound in air
- 4) **hypersonic**: of or relating to speed five or more times that of sound in air
- 5) **audio**: of or relating to acoustic, mechanical, or electrical frequencies corresponding to normally audible sound waves which are of frequencies approximately from 20 to 20,000 hertz
- 6) **infrasonic**: having or relating to a frequency below the audibility range of the human ear (< 20 Hz)
- 7) **ultrasonic**: having a frequency above the human ear's audibility limit of about 20,000 hertz
- 8) **audible**: heard or capable of being heard
- 9) **intelligible**: capable of being understood or comprehended
- 10) **aural**: heard or perceived with the ear

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*ADAM*  
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- 11) **auditory:** of, relating to, or experienced through the sense of hearing
- 12) **acoustic:** of or relating to the sense or organs of hearing, to sound, or to the science of sounds
- 13) **vibration:** a periodic motion of the particles of an elastic body or medium in alternately opposite directions from the position of equilibrium when that equilibrium has been disturbed (as when a stretched cord produces musical tones or particles of air transmit sounds to the ear)
- 14) **noise:**
  - 1 loud, confused, or senseless shouting or outcry
  - 2 **a:** SOUND; *esp.* : one that lacks agreeable musical quality or is noticeably unpleasant
  - b:** any sound that is undesired or interferes with one's hearing of something
  - c:** an unwanted signal or a disturbance (as static or a variation of voltage) in an electronic device or instrument (as radio or television); *broadly* : a disturbance interfering with the operation of a usu. mechanical device or system
  - d:** electromagnetic radiation (as light or radio waves) that is composed of several frequencies and that involves random changes in frequency or amplitude
  - e:** irrelevant or meaningless data or output occurring along with desired information

Kunk  
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Adrian  
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## Fletcher-Munson Equal-Loudness Contours

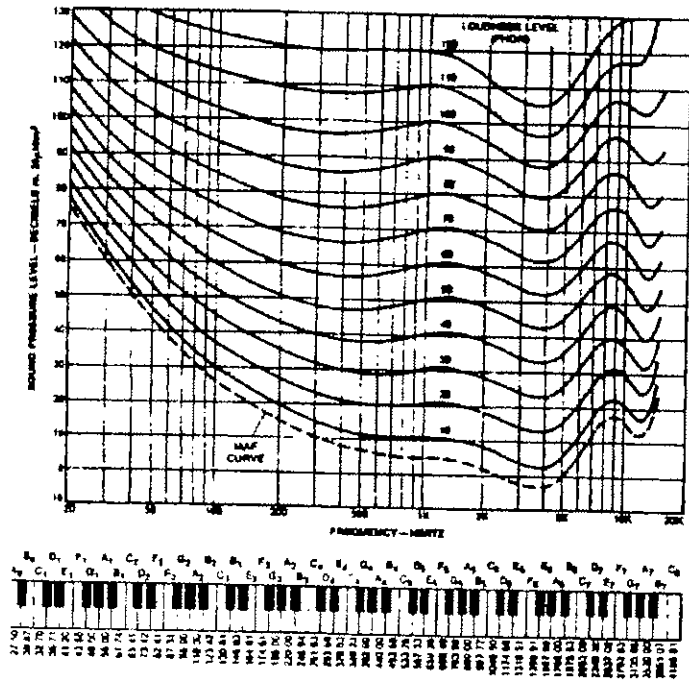


Figure 3-26 Equal-loudness contours.

*Revised  
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 Adam  
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## Sound Level Meter Weighting Networks

The following brief description of how the various weighting networks are used is intended to provide the reader an understanding of the purposes for and applications of standard weighting networks found in professional sound level meters. The information is an extract from "The New Audio Cyclopedia, Handbook for Sound Engineers", edited by Glen Ballou. It can be found on page 21 of that reference publication.

### 1.16 Weighting Networks

Sound level meters come with one or more weighting networks built in. The question confronting the user is, "Which one should I use?" The frequency responses of the three standard networks (A, B and C) are shown in figure 1-16. In the simplest terms, these different curves are designed to give readings of sound pressure level that will correspond, at least roughly, with human response to the sound. As we shall see in Chapter 2 "Psycho Acoustics," the Fletcher-Munson curves show that the human ear is less sensitive at lower frequencies than at a frequency of 1 kHz. This effect is greater for lower-level sounds than for louder sounds. Therefore, it makes sense to reduce the sensitivity of the sound level meter (chiefly in the lower frequencies) so that its readings follow the characteristics of the ear more closely.

The A-weighted curve of Fig. 1-16 is based on the 40 phon Fletcher-Munson equal-loudness contour and is to be preferred for measuring lower-level sounds such as background noise. The B-weighted curve is based on the 70-phon equal-loudness contour and is suitable for measuring sounds of intermediate level. Measurements taken with the A and B weighting are called *weighted sound levels*. The C weighting is essentially flat and is used for very loud sounds. It is also used when *sound pressure levels* are to be measured and generally when the sound level meter feeds a signal to other instruments for analysis.

**Table 1-4. Use of Weighting Networks**

Sound Level Range, in dB	Recommended Weighting Network
20 - 55	A
55 - 85	B
85 - 140	C

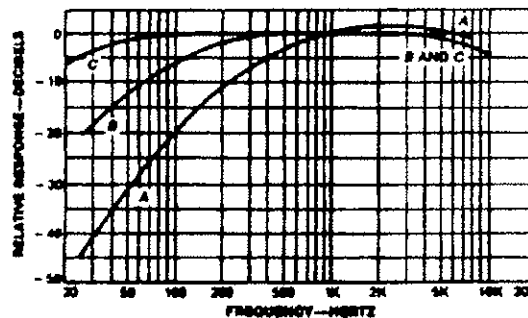
Table 1-4 gives general suggestions as to which weighting to use for different sound level ranges.

When comparing different sound levels, such as in Table 1-5, it may be expedient to use the A-weighting for the entire range rather than to shift weighting in the midst of a series of measurements to be directly compared.

**Table 1-5. Typical A-Weighted Sound Levels**

Sound Source	Sound Pressure Level, Decibels, (A-Weighted)
Jet airplane taking off (200 ft.)	120
Subway train (20 ft.)	90
Freight Train (100 ft.)	70
Speech (1 ft.)	70
Shopping Mall	60
Average residence with TV	50
Quiet residential area at night	40
Soft whisper	30
Recording studio background noise	30
Threshold of hearing	20

**Figure 1.16 - Weighting Networks**



Frequency Response Characteristics in the American National Standard Specification for Sound Level Meters, ANSI-31.4-1971.

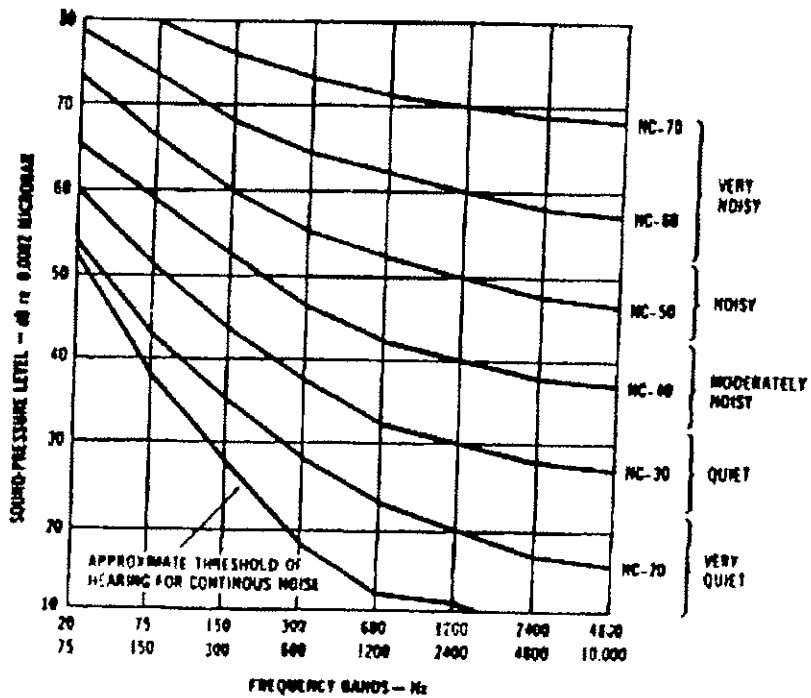
*Handwritten:*  
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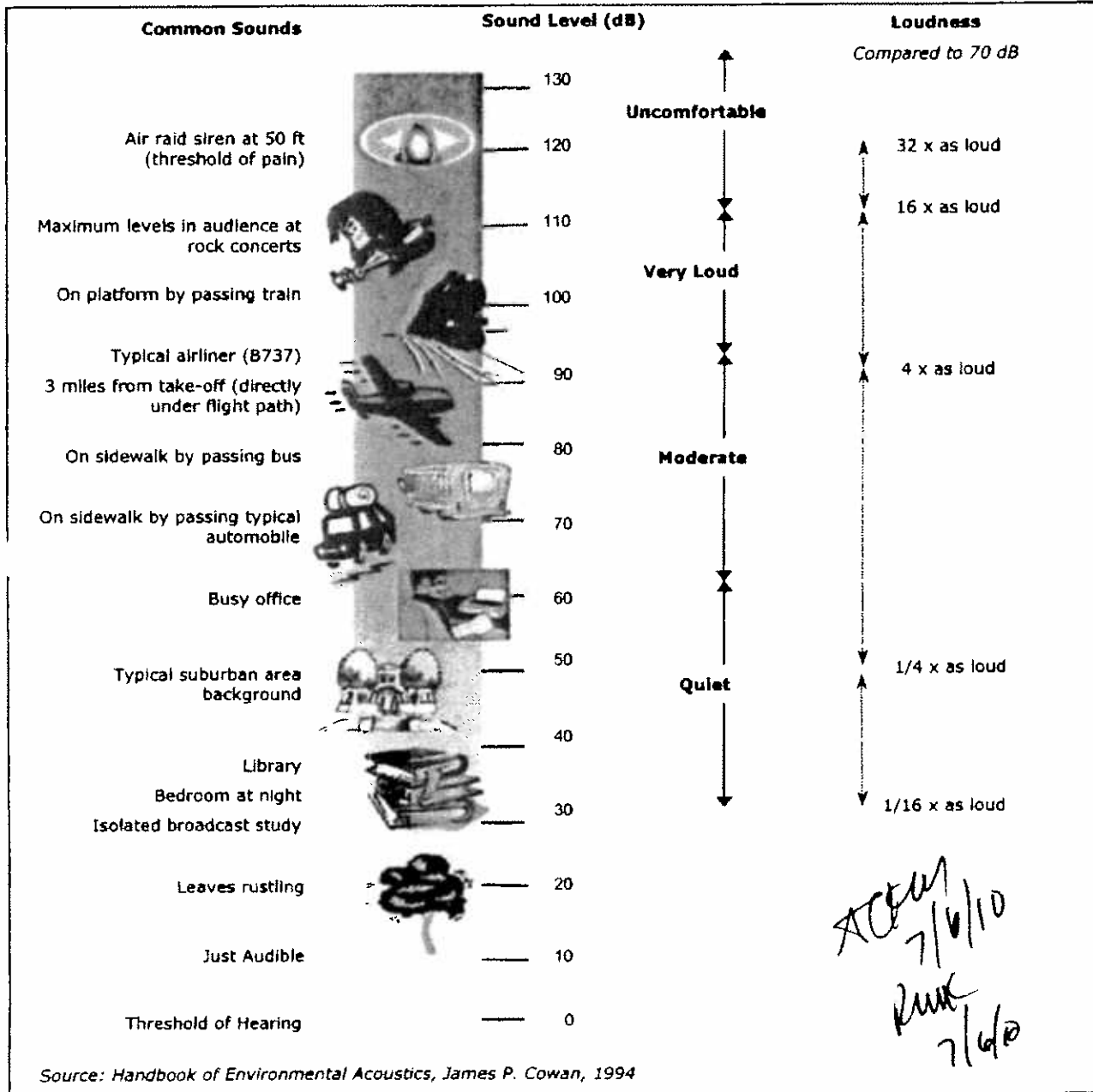
## Subjective Assessment of Noise Criteria Data



Subjective assessment of noise annoyance based on Noise Criteria measurements.

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*RMC*  
7/6/10

# Typical Sound Levels



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## Ranges of Indoor Design Goals for HVAC System Noise Control

TYPE OF AREA	Range of "A" Weighted Sound Levels in dB	Range of NC Curves
<b>Residences:</b> Private homes (rural and suburban) Private homes (urban) Apartment houses, 2 & 3 family units	25 - 35 30 - 40 35 - 45	20 - 30 25 - 35 30 - 40
<b>Hotels:</b> Individual rooms or suites Ballrooms, banquet rooms Halls and corridors, lobbies Garages Kitchens and laundries	35 - 45 35 - 45 40 - 50 45 - 55 45 - 55	30 - 40 30 - 40 35 - 46 40 - 50 40 - 50
<b>Hospitals and Clinics:</b> Private rooms Operating rooms, wards Laboratories, Halls, corridors, lobbies and waiting rooms Washrooms and toilets	30 - 40 35 - 46 40 - 50 45 - 55	25 - 35 30 - 40 35 - 45 40 - 50
<b>Offices:</b> Board rooms Conference rooms Executive office Supervisor office, reception room General open offices, drafting rooms Halls and corridors Tabulation and computation	25 - 35 30 - 40 35 - 45 35 - 45 40 - 55 40 - 55 45 - 65	20 - 30 25 - 35 30 - 40 30 - 40 35 - 50 35 - 56 40 - 60

*RWK*  
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*ACW*  
 7/6/10

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<b>Auditoriums and Music Halls:</b> Concert and Opera Halls, Studios for sound reproduction Legitimate theaters, multipurpose halls Movie theaters, TV audience studios, semi-outdoor amphitheaters, lecture halls, planetarium Lobbies	25 - 35  30 - 40  35 - 45 40 - 50	20 - 25  25 - 30  30 - 35 35 - 45
<b>Public Buildings:</b> Public libraries, museums, courtrooms Post offices, general banking areas, lobbies Washrooms and toilets	35 - 45 40 - 50 45 - 55	30 - 40 35 - 45 40 - 50
<b>Churches and schools:</b> Sanctuaries Libraries School classrooms Laboratories Recreation halls Corridors and halls Kitchens	25 - 35 35 - 45 35 - 45 40 - 50 40 - 55 40 - 55 45 - 55	20 - 30 30 - 40 30 - 40 35 - 45 35 - 50 35 - 50 40 - 50
<b>Restaurants, cafeterias, lounges:</b> Restaurants Cocktail lounges Night clubs Cafeterias	40 - 50 40 - 55 40 - 50 45 - 55	35 - 45 35 - 50 35 - 45 40 - 50
<b>Retail stores:</b> Clothing, department stores (upper floors) Department stores (main floor), small retail stores Supermarkets	40 - 50 45 - 55 45 - 55	35 - 45 40 - 50 40 - 50

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 ACE  
 7/6/10

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<b>Sports activities - Indoor:</b> Coliseums Bowling alleys, gymnasiums Swimming pools	35 - 45 40 - 50 45 - 60	30 - 40 35 - 45 40 - 55
<b>Transportation (rail, bus, airports):</b> Ticket sales offices Lounges and waiting rooms	35 - 45 40 - 55	30 - 40 35 - 50

NOTE: This information is provided by ASHRAE\*, a professional organization which develops standards for the HVAC industry. These guidelines are used during the design, installation and balancing of HVAC systems and are intended to prevent intrusive noise levels in a wide variety of venues.

\*ASHRAE: American Society of Heating, Refrigeration and Air-Conditioning Engineers

*Bill  
7/6/10  
Alex  
7/6/10*

## Section II

# Addendum: Recommendations for Sound Control and Mitigation

TREPANTER



WASSERFALLS INC.  
1000 W. 10TH ST.  
DENVER, CO 80202

RWK 7/6/10  
RCK 7/6/10

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## To the attention of the City of Key West Planning Board

The following are recommendations for Sound Control and Mitigation at 512 Greene Street, Key West:

- I. Sound System: The system should be designed to fully comply with local noise ordinances, employing the following techniques to accomplish this goal:
  - A. Deployment of multiple closely spaced speakers driven at low individual volumes. This system design will distribute sound uniformly within the listening area in such a manner as not to interfere with normal conversational level of the clientele. Maximum long-term system levels are to be limited to 75 dBA SPL, with user access restricted to the selection of program material and manual reduction only of system levels. No increase above maximum design sound levels shall be possible by Staff. The system shall include eight (8) loudspeakers to ensure uniform coverage in the listening area. Loudspeaker layout and quantities are detailed in the attached data developed using EASE 4.2, a computer-assisted design program used to predict sound system and acoustical performance. The electronics package shall offer maximum control to the designer. Speakers shall be operated as a high impedance distribution system connected to an amplifier suitable for the application. Zone control shall be provided as required by the physical layout of the facility. **No outdoor speakers will be permitted.**
  - B. QSC Audio's DSP-30, a computer control and digital signal processor, shall form the heart of the system. With this device, the system will include the following functions and safeguards:
    1. All controls under lock and key, with no access once the system has been commissioned.
    2. The system shall be divided into two zones, each with a preset maximum level, separate dynamic equalization and signal alignment, sound compression., and intelligent gain adjustment feature which will raise and lower music volume in response to patron conversation noise.
    3. Local control shall consist only of source selection and the ability to turn the system down from preset maximums.
  - C. A Radio Design Labs FP-ALC2 Automatic Level Control will be included to control the inevitable disparities between source and selection sound levels, further ensuring consistent playback levels. Leveling removes the possibility of one song sounding louder than the previous or subsequent song. For example, if a Billy Joel vocal/piano ballad were followed by a song with a significantly different complement of vocals and instrumentals, the second song would normally sound louder at an equal volume setting. With leveling, the two songs would be reproduced at virtually the same sound level.
  - C. The House System will provide an input for pre-recorded music; i.e., CD player, iPod, satellite audio feed.  
No live music will be proffered except for special events subject to specific permit by the City of Key West.<sup>1</sup> For such events, the live sound mixer would be substituted for the pre-recorded music source.
  - D. Computerized sound monitoring system. Utilizing an inexpensive net-book or laptop computer, appropriate software and an external microphone, the club shall be equipped to self-monitor sound levels on the property to ensure and document compliance with the City's Noise Ordinance. Calibration of the system during its installation will allow direct correlation of sound levels on property with those at any location off property. Simple operation and reliable documentation will ensure that code violation claims can be refuted with accurate information at any time. Visit <http://www.fesb.hr/~mateljan/arta/> for details on obtaining this software.

<sup>1</sup> - If permitted as a special event under KW Code Sec. 6-88

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Kull  
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ACM  
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Rev.	Date	Notes

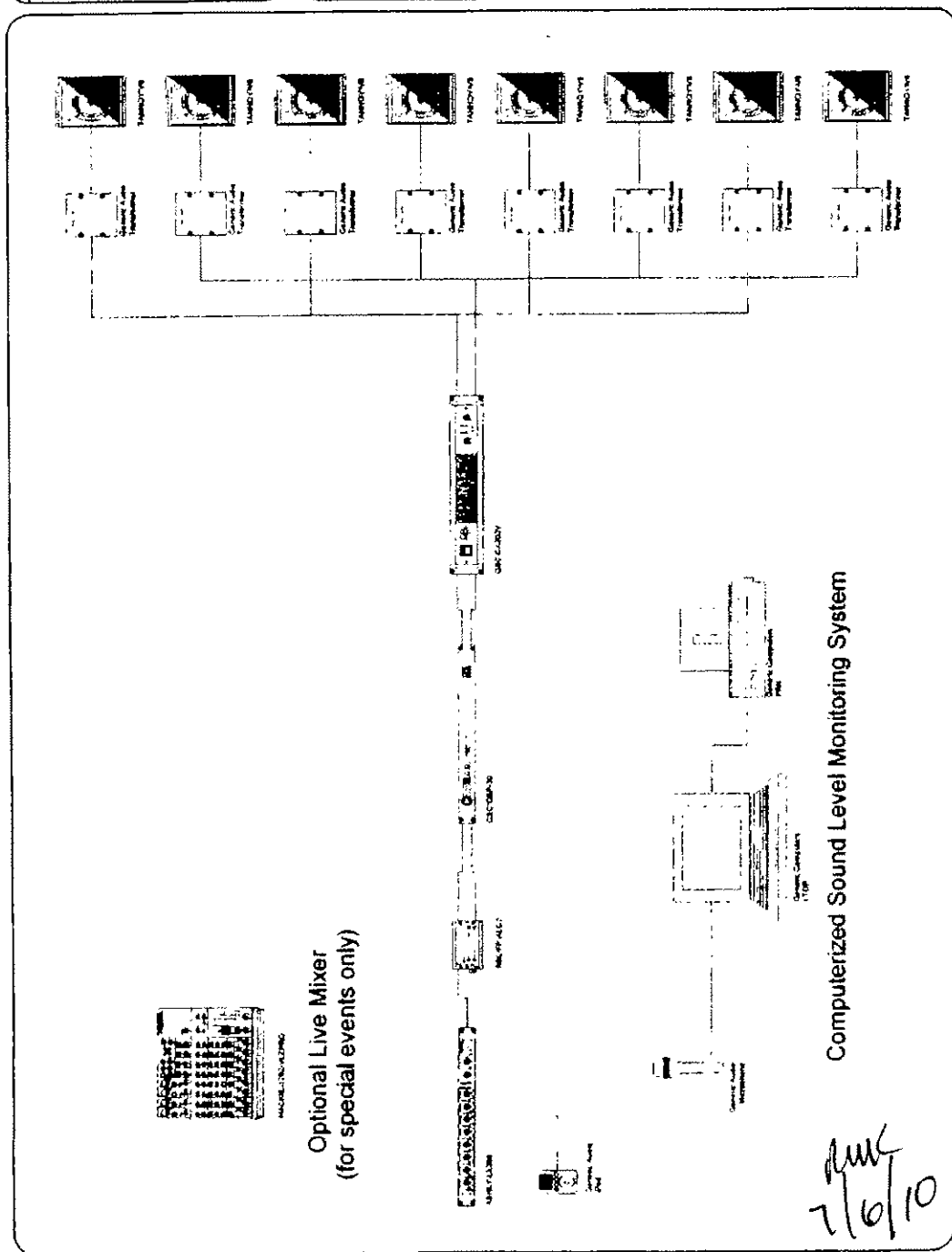
Symbols Used

Client  
512 Greene Street LLC  
Key West, Florida

System  
Bar Sound System

The Audio Bug, Inc.  
3600 Helmsdale Drive, Unit 102  
Hollywood  
Florida  
33022 U.S.A.  
Tel: 854-963-2788  
Fax: 854-963-2789  
E-mail: [audiobug1@aol.com](mailto:audiobug1@aol.com)

Drawn by	Date	NTS	Rev	08/04/08
Checked by				
Approved by				



*AWK*  
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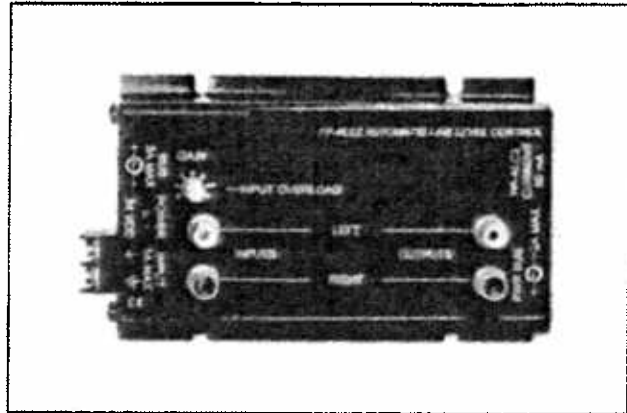


SPECIALISTS IN PRACTICAL PRECISION ENGINEERING™

## FLAT-PAK™ SERIES Model FP-ALC2 Automatic Level Control

### ANYWHERE YOU NEED...

- Consistent Levels from Variable Sources
- Split-Band AGC for Audio Transparency
- Self-Adjusting Attack and Release Times
- AGC with Simple Single Control Setup
- Level Control Range >20 dB
- Gated Control to Avoid Level "Seeking"
- Convenience of RDL FLAT-PAKs



### You Need The FP-ALC2!

The FP-ALC2 is part of the group of versatile FLAT-PAK products from Radio Design Labs. The unique FLAT-PAK case can be directly screwed or bolted to cabinets or shelves. Optionally available rack-mounting accessories permit single or multiple FLAT-PAK module mounting. All FLAT-PAK modules are supplied with a power interconnect cable for daisy-chaining multiple modules from a single power supply.

**APPLICATION:** The FP-ALC2 is the ideal choice in many applications where consistent stereo audio levels are needed from consumer sources with varying audio output levels. Power connections are made using either the full-size barrier block terminals or a dc power jack located in one end panel. A second dc power jack is provided on the other end panel for connecting additional FLAT-PAK modules.

The FP-ALC2 is a two channel (stereo) module featuring phono jack **INPUTS** and **OUTPUTS**. A single user adjustment makes installation simple and efficient. The gain adjustment is set as high as possible with the loudest source without the **INPUT OVERLOAD** indicator flashing. No further adjustments are needed. Foreground as well as background sound systems fed from variable audio source levels, such as multiple CD changers or satellite receivers, benefit from consistent levels.

The automatic level control circuitry in the FP-ALC2 maintains a consistent -10 dBV output for input signal variations as great as 25 dB. Yet the operation of the module is nearly transparent to the listener for a wide variety of source material from rock to classical. The level pumping effect frequently associated with automatic gain and compression devices is minimized in the FP-ALC2 by controlling mid and high band audio separately from the bass frequencies. The automatic gain circuitry and compression attack release times adjust according to the program material to further reduce any audible effects of the module. The level seeking effect also associated with various automatic level products is avoided in the FP-ALC2. When audio levels fall and remain below a level appropriate to that source, the module stops increasing the gain. As audio levels fade out, the module tracks the level for a natural sound. These features combine to produce nearly inaudible adjustment yet consistent levels without the listener fatigue associated heavily compressed music dynamics.

The FP-ALC2's low profile and compact size permit mounting in confined spaces and in various locations in equipment racks. The location of the input/output jacks permits high density mounting against flat surfaces while maintaining accessibility to the connectors. The economical cost can provide assurance of correct signal levels in nearly any stereo audio system. The FP-ALC2 may be mounted where needed, to rack sides or in an equipment rack (either the front or rear rack rails) using the RDL FP-RRA. Use the FP-ALC2 individually, or combine it with other RDL products as part of a complete audio/video system.

RMLC  
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ACM  
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SPECIALISTS IN PRACTICAL PRECISION ENGINEERING™

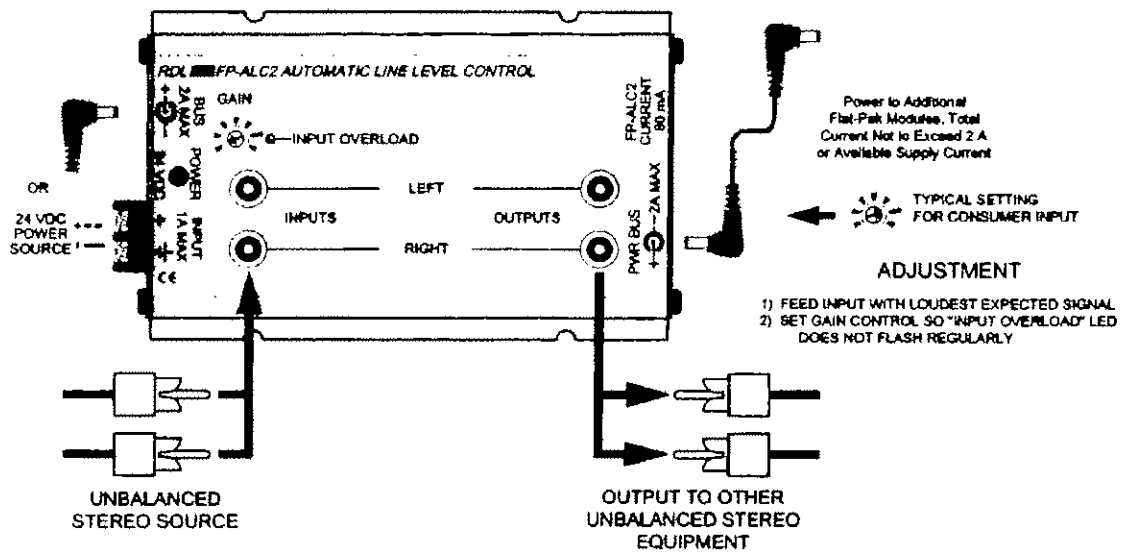
# FLAT-PAK™ SERIES

## Model FP-ALC2 Automatic Level Control

### Installation/Operation



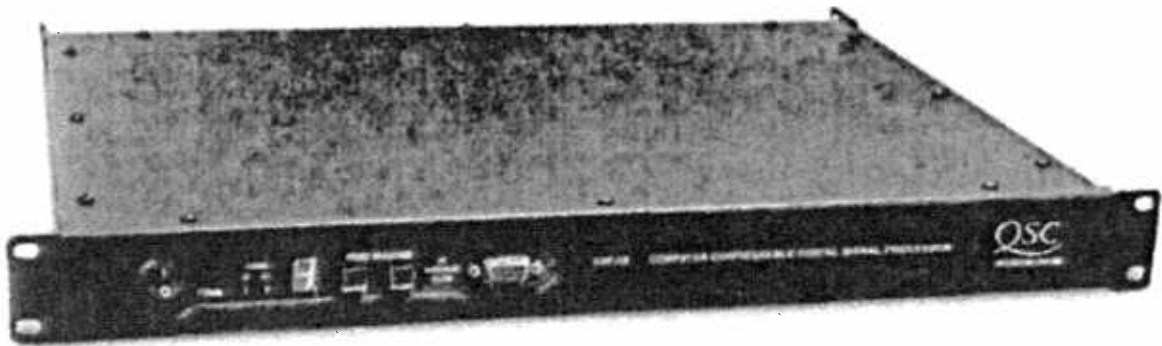
EN61103-1 E1-E5; EN61103-2 E1-E4  
Typical Performance reflects product at publication time exclusive of EMC data, if any, supplied with product. Specifications are subject to change without notice.



### TYPICAL PERFORMANCE

Inputs (2):	10 kΩ unbalanced phono jack
Input Level:	-10 dBV (nominal)
Output:	200 Ω unbalanced phono jack
Output Level:	-10 dBV
Automatic Level Range:	-30 to 0 dBV
Gate Threshold:	-40 dBV (20 Hz to 3 kHz)
Frequency Response (excluding AGC):	20 Hz to 20 kHz (+/- 0.5 dB)
THD+N (excluding AGC):	< 0.15% (20 Hz to 20 kHz)
Noise:	< -90 dB (below -10 dBV)
Crosstalk:	-75 dB (typical, 1 kHz)
Headroom:	> 18 dB
Indicator (1):	<b>INPUT OVERLOAD</b>
Power Requirement:	24 Vdc @ 80 mA, Ground-referenced
Overall Dimensions:	
	Height: 1.20 in. 3.05 cm
	Width: 3.25 in. 8.26 cm
	Length: 5.75 in. 14.61 cm

*Rmk*  
 7/6/10  
 AC/DC  
 7/6/10



Featuring intuitive PC system configuration combined with "set-and-forget" convenience, the DSP-30 unites easy-to-use, customizable, two channel digital signal processing (DSP) with a simple preset selection interface that requires only two buttons. It can be used with all amplifiers and is housed in a 1RU, 19" rack mount steel chassis. Sampling frequency is 48 kHz with 24-bit resolution. Dynamic range is greater than 95 dB. Rugged and dependable in the spirit of all QSC professional audio products, the DSP-30 is well suited to a variety of applications including mobile DJ, club PA, and pro touring.

#### **Powerful**

The DSP-30's powerful processor enables a wide range of signal processing functions. Whether you need speaker crossovers, EQ, signal delay, or infrasonic filters, the DSP-30 is as flexible as your system's needs.

Each channel includes:

- Crossover filtering
- Shelf filtering
- Compression and limiting
- Mixing
- Multiple Parametric EQs
- Multiple Delays (up to 910 ms)
- Precision attenuation
- Tone and noise generation

#### **Configurable**

The DSP-30's processing horsepower is dynamically assignable, so you are not limited by a fixed signal chain. Simply use QSC's powerful PC-based Signal Manager software to easily configure multiple processing functions and signal flow with "drag-and-drop" tools. The DSP-30 provides eight fully configurable user presets, selectable from front-panel switches.

#### **Cost-effective**

The power and flexibility of the DSP-30 eliminates the need for individual outboard signal processors—reducing cost, space, and installation time for almost any application. Housed in a 1RU, 19-inch rack-mount steel chassis, it can be used with all audio systems.

RWK  
7/6/10  
AEM  
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# DSP-30

## Signal Processing Functions and Additional Features

**Multiple Parametric Filters**, assignable anywhere in the signal chain:

Variable Frequency	Variable Q
Variable Gain	Show Response

**Multiple Delays**, assignable anywhere in the signal chain

20.85  $\mu$ sec incremental  
910 msec maximum (total of all delays)

**Compressor**, assignable anywhere in the signal chain:

Gain	Release Time
Threshold	Show Response
Ratio	Bypass
Attack Time	

**Output Peak Limiter**, assignable anywhere in the signal chain:

Gain	Release Time
Threshold	Show Response
Attack Time	Bypass

**High and Low-Pass Crossover Filters**, assignable anywhere in the signal chain:

Butterworth 6, 12, 18, 24 dB per octave slope  
Bessel 6, 12, 18, 24 dB per octave slope  
Linkwitz-Riley 12 and 24 dB per octave slope

**High and Low-Pass Shelf Filters**, assignable anywhere in the signal chain:

Variable Corner Frequency	Variable Q
Variable Gain	Show Response

### Signal Mute

Attenuation 0.1 dB steps

Mix Post Crossover Audio (2→1 Mixer)

### Signal Splitter

Built-in Noise Generator (Pink & White)

Built-in Variable Frequency Tone Generator

### Signal Polarity Reversal

Frequency Response readout for each filter

RMS and Peak Metering with Clip Indication

Add or delete up to 7 additional bands of "EQ" per filter block

Visual editing of composite filter response, using cursor controls in graphical display

Individual or group bypass of EQ bands per filter block

**Predictive Delay Feature** — produces less signal distortion than analog compressor/limiters — especially for fast attack times

### Hardware

Two independent channels of DSP

48 kHz, 24-bit converters

No turn on pops or "zipper" noise

If the memory or hardware fails, unit turns on muted to prevent driver damage

Easy PC connection with front panel RS-232

Balanced Neutrik® Combo (XLR and 1/4") inputs and XLR outputs

Power and signal present LEDs with signal level

Numeric display indicates current preset

Eight fully configurable user presets

Preset Browse and Accept buttons with lock-out feature

Selectable input sensitivity: 1.5, 4, 9, 18 Vrms; 6, 14.5, 21.5, 27.5 dBu; 3.5, 12, 19, 25 dBV

### Software

"Drag-and-drop" configuration software

Hard copy printout of configuration layout or parameter settings

DSP processing power and memory is dynamically assigned to signal processing functions — eliminating the limitations imposed by fixed signal chain designs

Graphical representation of DSP resources

Firmware upgrades via RS-232

Download the latest Signal Manager software at [www.qscaudio.com](http://www.qscaudio.com)

### System Requirements

Windows® 98, NT4 (SP6), and 2000 (SP1)\*

SVGA monitor at 800 x 600 (min.); 1024 x 768 recommended

CD-ROM drive

32 MB RAM (min.)

10 MB free hard disk space (min.)

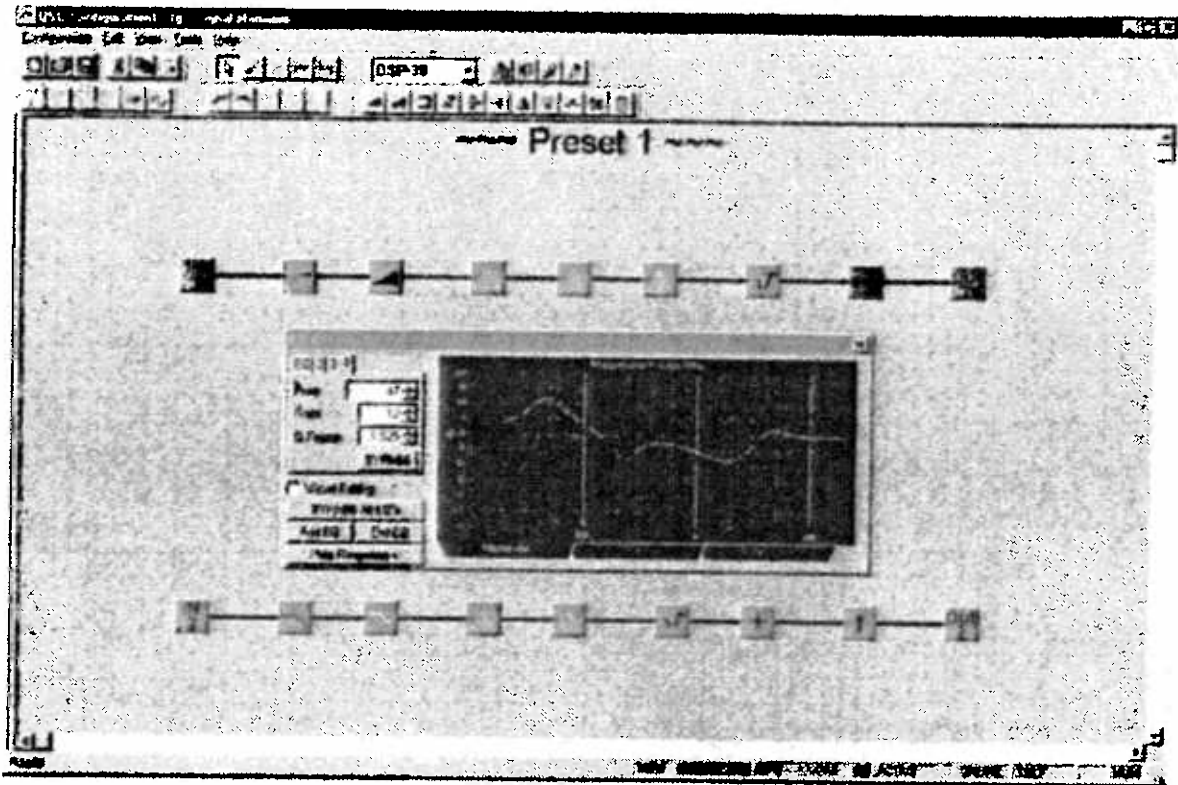
Available RS-232 COM port

Male to female 9-pin serial cable (for programming)

\* Windows Me not supported

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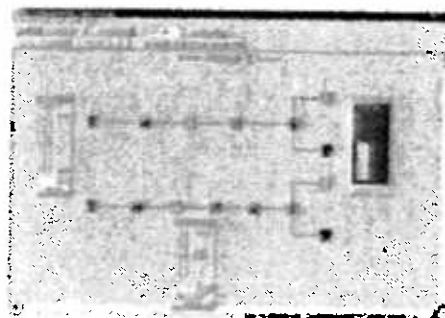
**Signal Manager**

**Advanced "Drag and Drop" Software Configuration**

DSP configuration is made simple with a PC-based "drag-and-drop" software program called Signal Manager. Users access a DSP "toolbox" and simple drawing tools to configure processing functions and signal flow. DSP processing power and memory is dynamically assigned to signal processing functions. Any combination of functions may be configured until the total capacity is used. DSP resources are graphically displayed at the bottom of the screen.

Configurations can be downloaded directly to the DSP-30 via an RS-232 serial connection. The software package also offers real-time control and set-and-forget convenience. Once saved, configurations (presets) can be recalled via the DSP-30's front panel switches without the need for a computer.

*The DSP is configured with an easy-to use software interface. Signal processing icons from the toolbar are dropped onto the workspace and the signal path is routed with simple drawing tools.*



ALM  
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Rmk  
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# DSP-30

## Specifications

Audio Converters	24 bit, 48 kHz		
Frequency Response	20 Hz to 20 kHz $\pm$ 0.4 dB at 1 dB below full scale input voltage (all sensitivities)		
Distortion	< 0.007% THD+N at 1 dB below full scale output (all sensitivities) 20 Hz to 20 kHz		
Throughput Delay	1.00 milliseconds (A/D - DSP - D/A)		
Dynamic Range (AES-17 -60 dB method)	> 95 dB unweighted, 1.5V, 4V and 9V input sensitivities   > 93 dB unweighted, 18V input sensitivities		
Polarity	in-phase or inverted		
Mute	> 93 dB attenuation		
Indicators	Power: 1 blue LED   Channel 1 and Channel 2 signal level: 2 green LEDs   Preset Display: 7 segment LED		
Input Sensitivity	Volts	dBu	dBV
Full scale sine wave RMS before clipping.	1.5	6.0	3.5
Full scale output voltage 9.3 Vrms.	4	14.5	12.0
	9	21.5	19.0
	18	27.5	25.0
<b>Audio Input Connectors</b>			
Program inputs	2		
Connector	Balanced Neutrik Combo		
Type	Electronically balanced		
Grounding	All shield terminals connected to chassis		
Input Impedance	8 k $\Omega$ ohm balanced, 3.7k ohm unbalanced		
Common Mode Rejection	> 54 dB, 20 Hz - 20 kHz		
Crosstalk (inter-channel within DataPort pair)	> 78 dB separation, 20 Hz - 20 kHz		
<b>Audio Output Connectors</b>			
Program Outputs	2		
Connector	3-pin male XLR receptacle		
Type	Electronically balanced		
Grounding	All shield terminals connected to chassis		
Output Level	Level and units are selectable in software interface		
Maximum Output (full scale)	9.3 Vrms (+21.5 dBu), THD < 1.0%		
Output Pad	-6 dB		
Output Impedance	600 $\Omega$ balanced		
Power Amplifier Interface - Compatibility	Works with all professional audio products		
<b>RS-232 Port</b>			
Port Type	RS-232, female		
Cable Type	9-pin serial cable, male-to-female (serial extension cable)		
Maximum Length	25 feet (7.6 meters)		
<b>Contact Closure Inout</b>			
Inputs	1 discrete input (pin #9 of RS-232 port)		
Configuration	Single-ended input, pull LOW (to GND, pins) for closure detect		
Resistance for closure detect	< 150 $\Omega$		
Resistance for open detect TTL compatible thresholds with 9V DC max input	> 19k ohms		
<b>Physical</b>			
Chassis	Steel (chassis and covers)		
Dimensions (HWD)	1.73" (4.39 cm) x 18.9" (48.0 cm) including rack ears x 14.9" (37.8 cm) including rack ears / 13.7" (34.8 cm) excluding rack ears		
Weight - Net / Shipping	9.5 lbs (4.31 kg) / 12.5 lbs (5.67 kg)		
Mounting	May be rack mounted or may be used separate from rack		
Operating Temperature	0° to 50° Celsius		
<b>Internal Power Requirements</b>			
AC Input Voltage	Autodetected 100-240 VAC		
AC Input Current	0.3 A RMS		
Frequency	50 to 60 Hz		
Power Cord	IEC type detachable 6 ft. cord		

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Avery  
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# CX 2-channel

## Professional Power Amplifiers

CX302 | CX502 | CX702 | CX902 | CX1102 | CX302V | CX602V | CX1202V



All models include an integrated security cover for tamper-proof installations

The CX Series is designed to meet the specialized needs of sound contractors. Eight 2-channel models have been designed from the ground up, combining the exclusive QSC PowerLight™ technology with specific features to meet the requirements of fixed installations.

With high-output power, versatile loading options, high thermal capacity and unmatched reliability, the CX Series is the perfect solution to any permanently installed sound system.

### CX 2-channel Amplifiers

Model	70 V*	Watts per channel		2Ω†
		8Ω**	4Ω**	
CX302	-	200	325	600
CX502	-	300	500	800
CX702	-	425	700	1200
CX902	440	550	900	1500
CX1102	1000	700	1100	1700
CX302V	250	-	-	-
CX602V	440	550	-	-
CX1202V	1000	700	1100	-

\* 1 kHz, 0.05% THD

\*\* 20 Hz - 20 kHz, 0.05% THD

† 1 kHz, 1% THD

### Features

- 8 models to meet your exact power requirements
- Exclusive PowerLight switch-mode power supply technology for high performance and compact size
- Custom integrated security cover for tamper proof installations
- Variable speed fan for low noise
- 1 dB detented gain controls for fast and accurate gain settings
- Active inrush limiting eliminates AC inrush current, removing the need for expensive power sequencers
- XLR and detachable Euro-style input connectors
- HD15 DataPort connector for QSCControl computer control or signal processing accessories
- Dip switch control for clip limiters, high-pass filters, bridge-mono and parallel operation
- Selectable high-pass filters protect speakers and prevent speaker transformer saturation with minimal effect on program material (33 Hz or 75 Hz on non-V models, 50 Hz or 75 Hz on V models)
- Comprehensive front panel indicators including signal, clip, protect and QSC's exclusive bridge-mono and parallel input LEDs
- Barrier strip output connector
- Comprehensive protection circuitry including DC, infrasonic, thermal overload and short circuit protection
- Class H complementary bipolar output circuitry for high efficiency (CX702, CX902, CX1102 & CX1202V)
- Optional external transformer accessory pack for isolated 70 and 100 volt outputs (converts CX302 to 400 watts per channel isolated output)
- Compact size – all models only 2 RU and 14" deep for reduced rack cost and floor space
- Lightweight – all models only 21 pounds (9.5 kg) for easier racking and shipping
- 3-year warranty plus optional 3-year extended service contract

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# CX 2-Channel

## Specifications

	CX302	CX502	CX702	CX902	CX1102	CX302V	CX602V	CX1202V
<b>Stereo Mode (both channels driven)</b>								
Continuous average output power per channel								
8Ω / 20 Hz - 20 kHz / 0.05% THD	200 W	300 W	475 W	550 W	700 W	-	550 W	700 W
4Ω / 20 Hz - 20 kHz / 0.05% THD	325 W	500 W	700 W	900 W	1100 W	-	-	1400 W
2Ω / 1 kHz / 1% THD	600 W	800 W	1200 W	1500 W	1700 W	-	-	-
70V / 20 Hz - 20 kHz / 0.05% THD	-	-	-	400 W	800 W	200 W	400 W	800 W
70V / 1 kHz / 0.05% THD	-	-	-	440 W	700 W	750 W	440 W	1000 W
70V / 1 kHz / 1% THD	-	-	-	600 W	1200 W	300 W	600 W	1200 W
<b>Bridge-Mono Mode</b>								
Bridge-mono mode operation								
16Ω / 20 Hz - 20 kHz / 0.1% THD	400 W	600 W	850 W	1100 W	1400 W	-	1100 W	1400 W
8Ω / 20 Hz - 20 kHz / 0.1% THD	700 W	1100 W	1500 W	2000 W	2700 W	-	-	2200 W
4Ω / 1 kHz / 1% THD	1200 W	1600 W	2400 W	3000 W	3400 W	-	-	-
140V / 20 Hz - 20 kHz / 0.1% THD	-	-	-	800 W	1600 W	400 W	800 W	1600 W
140V / 1 kHz / 0.05% THD	-	-	-	880 W	2000 W	500 W	880 W	2000 W
140V / 1 kHz / 1% THD	-	-	-	1200 W	2400 W	600 W	1200 W	2400 W
Signal to Noise (20 Hz - 20 kHz)	> -107 dB	> -107 dB	> -106 dB	> -106 dB	> -106 dB	> -106 dB	> -106 dB	> -106 dB
Input Sensitivity at 8Ω	1.26 Vrms	1.25 Vrms	1.16 Vrms	1.17 Vrms	1.35 Vrms	1.26 Vrms	1.26 Vrms	1.26 Vrms
Gain at 8Ω	30 dB	32 dB	34 dB	35 dB	35 dB	35 dB	35 dB	35 dB
Output Circuitry	Class AB+B	Class AB+B	2-tier Class H	2-tier Class H	2-tier Class H	Class AB+B	Class AB+B	2-tier Class H
Distortion (SMPTE-IM)	< 0.02%							
Distortion (typical)								
20 Hz - 20 kHz: 10 dB below rated power	< 0.01% THD							
10 kHz and below: full rated power	< 0.01% THD							
Frequency Response	20 Hz - 20 kHz, ± 0.2 dB							
Damping Factor	> 500							
Input Impedance	6k ohms unbalanced, 12k ohms balanced							
Input Clipping	70 Vrms (+22 dBu)							
Cooling	Variable-speed fan, rear-to-front air flow							
Connectors	Input: 3-pin XLR & 3-pin detachable terminal blocks (1 each per channel) Output: Safety shrouded barrier strip							
Amplifier Protection	Full short circuit, open circuit, thermal, ultrasonic, RF protection. Stable into reactive or mismatched loads							
Load Protection	On/off muting, DC-fault power supply shutdown							
Dimensions (HWD)	3.5" (89 cm) 2 RU x 19" (48.3 cm) rack mounting x 14" (35.6 cm) from front mounting rails							
Weight - Net / Shipping	21 lb (9.5 kg) / 27 lb (12.3 kg)							
120V Current Consumption	Idle	0.8 A	0.9 A	0.9 A	0.9 A	0.8 A	0.9 A	0.9 A
1/8 power pink noise (typical of program material at maximum undistorted power)	8Ω	3.8 A	5.6 A	5.0 A	6.0 A	7.6 A	-	-
	4Ω	6.0 A	9.0 A	7.9 A	9.5 A	11.6 A	-	-
	2Ω	9.6 A	14.0 A	11.8 A	14.0 A	16.6 A	-	-
	70V	-	-	-	-	-	5.7 A	8.7 A
	120 A	-	-	-	-	-	-	-
1/3 power pink noise (typical of program material with severe clipping)	8Ω	5.4 A	8.0 A	8.4 A	11.0 A	13.1 A	-	-
	4Ω	8.9 A	13.3 A	13.5 A	17.0 A	20.0 A	-	-
	2Ω	14.3 A	21.0 A	22.0 A	27.0 A	-	-	-
	70V	-	-	-	-	-	8.0 A	13.0 A



Specifications subject to change without notice

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Page 10 of 34

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RUK  
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# V8

# TANNOY



V8 is a high quality installation loudspeaker that provides a compact, yet punchy, solution for high performance music and speech reproduction in small to medium sized venues. This versatile design also has, due to acoustic matching to other V Series models, a wide range of other applications in more space-restricted areas within larger installations.

The high power handling 200mm (8.00") version of Tannoy's exclusive point source, constant directivity Dual Concentric™ drive unit technology, with it's reinforced paper cone LF, twin roll cambric surround and 25mm (1.00") titanium domed, neodymium magnet system HF, ensures high power output with high sensitivity. With the HF mounted in the throat of the LF driver these two sources are coincidentally aligned into a single point source. This is a configuration, exclusive to the Dual, delivers a smooth and uniform frequency response over a wide area. The CAD designed Tulip WaveGuide™ for the HF unit combines 90 degree conical dispersion, for optimum coverage, exceptional forward gain and excellent acoustic impedance characteristics. The dispersion characteristics of the Dual enhance speaker placement flexibility; allowing vertical or horizontal mounting of single or multi-cabinet arrays without any compromise to sound quality.

The conical coverage pattern makes the V8 an ideal low profile stage monitor; the exceptionally wide dispersion allowing the performer greater freedom of movement than allowed by conventional horn loaded designs. An inherent feature of this point source Dual Concentric™ driver design is that clusters and arrays have minimal lobing, and this is achieved without the use of any electronic signal processing.

The convenient aspect ratio of the asymmetric design of the multi layer birch ply cabinet allows installation in a wide range of configurations. Available in black or white, the V8 has a range of colour matched Secure-ET™ hardware options to allow yoke, wall mount, ceiling saddle or cluster bar arrangements of 2, 3 or 4 units. Although designed to perform without any external controller, the addition of one of the Tannoy digital system controllers will further enhance performance by equalising the system to improve bass performance; this as well as providing a 2-way crossover function to facilitate use with a separate subwoofer system.

- 200mm (8.00") point source Dual Concentric™ driver
- 90 degree controlled conical dispersion for optimum coverage and forward gain
- Compact, versatile enclosure
- High power handling
- High efficiency and low distortion
- Rugged birch plywood construction
- Convenient aspect ratio
- Integral carrying handle
- Integral flying points
- Secure-ET™ mounting options
- Five year loudspeaker warranty

- Live sound reinforcement
- High quality public address
- Theme pubs and nightclubs
- Theatre front of house and effects
- Movie theatre and cinema
- Side fill in large-scale music reinforcement
- Theme parks and leisure venues
- Sports and multi-use stadiums
- Audio visual
- Houses of worship

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Tannoy Deutschland	T: 00 49 180 1111 881	E: anfragen@tannoy.com
Tannoy France	T: 00 33 01 7036 7473	E: contact@tannoy.com

tannoy.com

Accept  
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# V8

# TANNOY

## TECHNICAL SPECIFICATIONS

<b>System</b>	<b>V8</b>	
<b>Frequency Response (-3dB) <sup>(1)</sup></b>	85Hz - 22kHz	
<b>Frequency Range (-10dB) <sup>(1)</sup></b>	62Hz - 30kHz	
<b>System Sensitivity (1W @1m) <sup>(2)</sup></b>	92dB (1W = 2.83V for 8 Ohms)	
<b>Dispersion (-6dB)</b>	90 degrees conical	
<b>Driver Complement</b>	Point source Dual Concentric™	
Low frequency section	200mm (8.00")	
High frequency section	25mm (1.00")	
<b>Crossover</b>	Passive 1.7kHz with dynamic HF protection	
<b>Directivity Factor (Q)</b>	6.8 averaged 1kHz to 10kHz	
<b>Directivity Index (DI)</b>	7.9 averaged 1kHz to 10kHz	
<b>Rated Maximum SPL <sup>(2)</sup></b>		
Average	113dB	
Peak	119dB	
<b>Power Handling</b>		
Average	130W	
Programme	260W	
Peak	520W	
<b>Recommended Amplifier Power 260W @ 8 Ohms</b>		
<b>Nominal Impedance</b>	8 Ohms	
<b>Distortion</b>		
<b>10% Full Power (10.2V)</b>	2nd Harmonic	3rd Harmonic
250Hz	0.12%	0.15%
1kHz	0.23%	0.84%
10kHz	1.35%	0.16%
<b>1% Full Power (3.2V)</b>	2nd Harmonic	3rd Harmonic
250Hz	0.16%	0.14%
1kHz	0.09%	0.53%
10kHz	0.53%	0.17%

<b>Construction</b>	
<b>Enclosure</b>	17 litre vented, internally braced 15mm (0.52") birch plywood cabinet with 15mm (0.62") MDF front baffle.
<b>Certification</b>	DIN 18 032 part 3 (April 1997)
<b>Finish</b>	Textured black or white paint, with custom colours available on request. Foam covered, powder coated perforated steel grille
<b>Connectors</b>	2 x Speakon NL4MP
<b>Fittings</b>	4 x M10 Flying inserts, 2 x M10 yoke bracket inserts 1 x recessed carrying handle Blanking plate for optional VTH pole mount
<b>Optional Accessories</b>	Black or white power coated perforated steel grille
<b>Dimensions</b>	388 x 280 x 275mm (H x W x D) 15.28 x 11.02 x 10.83" (H x W x D)
<b>NET Weight</b>	8.2kg (18.0lbs)

**Notes:**

- (1) Average over stated bandwidth. Measured at 1 metre on axis
- (2) Unweighted pink noise input, measured at 1 metre in an anechoic chamber

A full range of measurements, performance data, CLF and Ease™ Data can be downloaded from [www.tannoy.com](http://www.tannoy.com)

Full independent verification of published specifications carried out by NVAAL Labs, California can also be obtained from the downloads section of [www.tannoy.com](http://www.tannoy.com)

Tannoy operates a policy of continuous research and development. The introduction of new materials or manufacturing methods will always equal or exceed the published specifications, which Tannoy reserves the right to alter without prior notice. Please verify the latest specifications when dealing with critical applications

### Ordering information

PART NUMBER	MODEL NAME	COLOUR	PACKED QUANTITY
8001 2610	V8	Black	1
8001 2650	V8	White	1

Tannoy (United Kingdom)	T: 00 44 (0) 1236 420199	E: <a href="mailto:enquiries@tannoy.com">enquiries@tannoy.com</a>
Tannoy North America	T: (0) 1 (519) 745 1158	E: <a href="mailto:enquiries@tannoy.com">enquiries@tannoy.com</a>
Tannoy Deutschland	T: 00 49 (180) 1111 881	E: <a href="mailto:ontfragen@tannoy.com">ontfragen@tannoy.com</a>
Tannoy France	T: 06 33 011 7036 7473	E: <a href="mailto:ventes@tannoy.com">ventes@tannoy.com</a>

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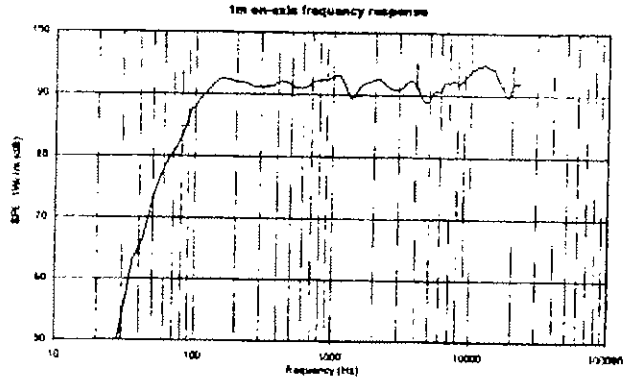
*Alan*  
7/6/10  
*Runc*  
7/6/10

# V8

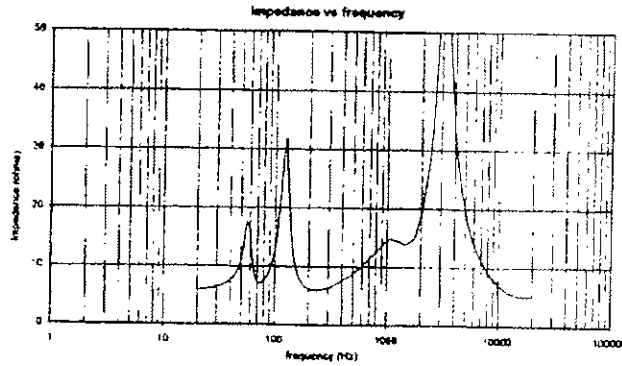
# TANNOY

## PERFORMANCE MEASUREMENTS

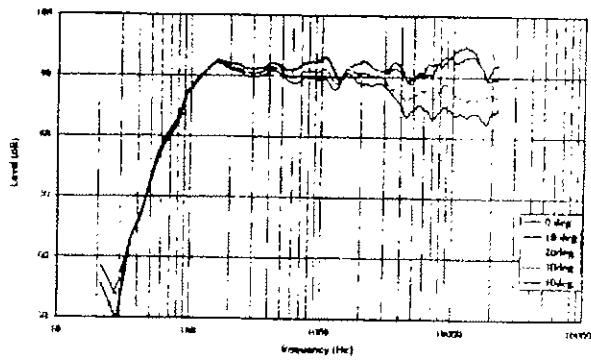
ANECHOIC  
FREQUENCY  
RESPONSE



IMPEDANCE



OFF AXIS  
RESPONSE



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Tannoy North America	T 00 1 (512) 745 1158	E enquiries@tannoy.com
Tannoy Deutschland	T 00 49 (0) 1111 881	E anfragen@tannoy.com
Tannoy France	T 00 33 (0) 7036 7473	E ventes@tannoy.com

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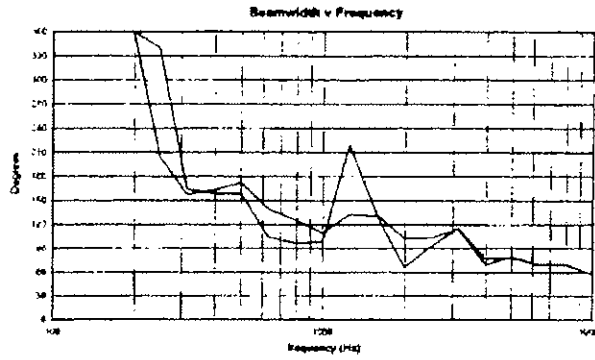
*Acorn*  
7/6/10

*RUK*  
7/6/10

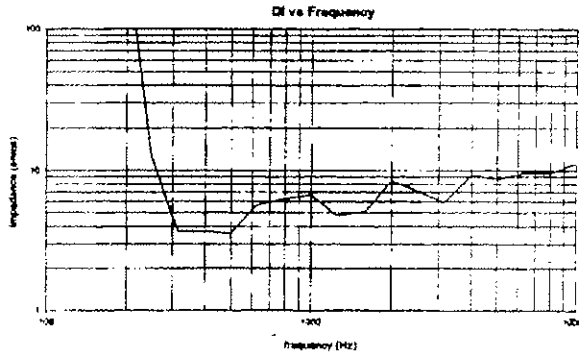
V8

TANNOY

PERFORMANCE MEASUREMENTS



BEAMWIDTH



DIRECTIVITY INDEX

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Tannoy Deutschland	T: 00 49 (180) 1111 881	E: anfrage@tannoy.com
Tannoy France	T: 00 33 (0) 1 7036 7473	E: vertus@tannoy.com

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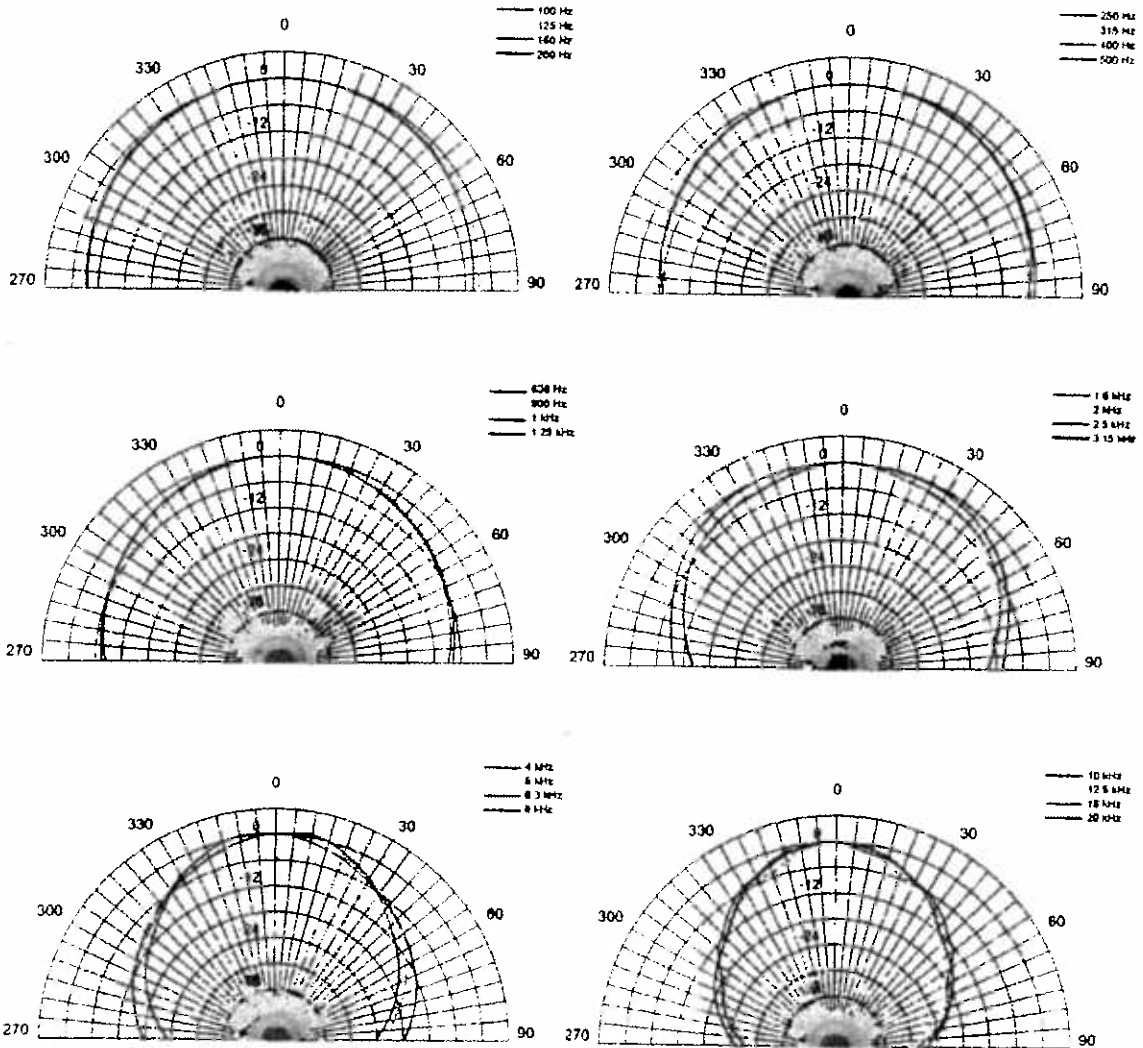
*Allen*  
7/6/10

*Rmk*  
7/6/10

# V8

# TANNOY

## PERFORMANCE MEASUREMENTS POLAR PLOTS (1/3 OCTAVE)



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Tannoy North America	T: 00 1 (513) 745 1158	E: <a href="mailto:na.enquiries@tannoy.com">na.enquiries@tannoy.com</a>
Tannoy Deutschland	T: 00 49 1806 1111 881	E: <a href="mailto:contact@tannoy.com">contact@tannoy.com</a>
Tannoy España	T: 00 33 0 1 7036 7473	E: <a href="mailto:espana@tannoy.com">espana@tannoy.com</a>

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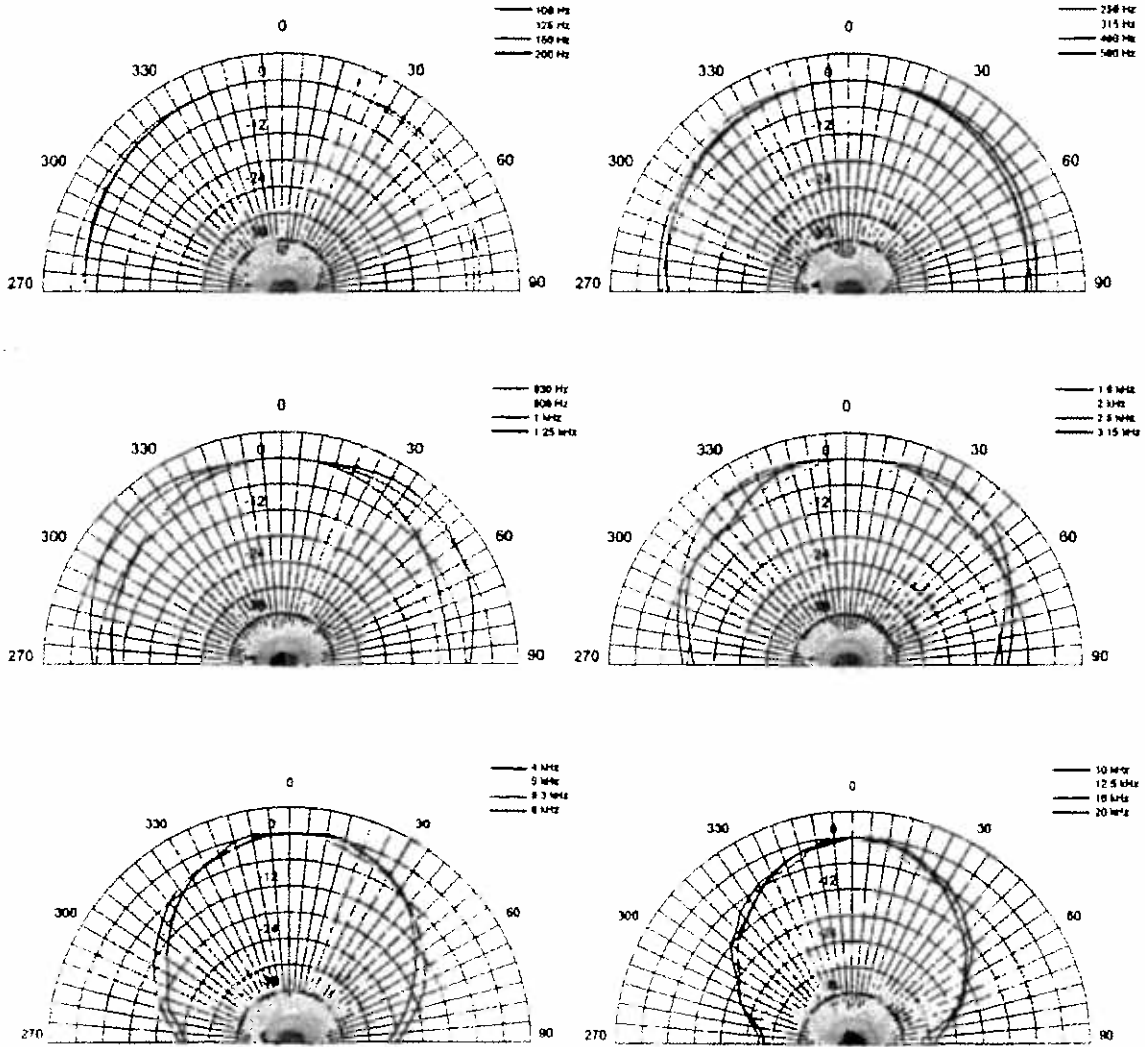
*ACK*  
7/6/10

*RANK*  
7/6/10

# V8

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## PERFORMANCE MEASUREMENTS



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V8 data file 2 issue 1.08 - 15.01.08

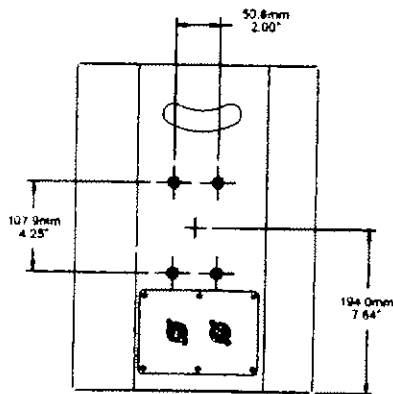
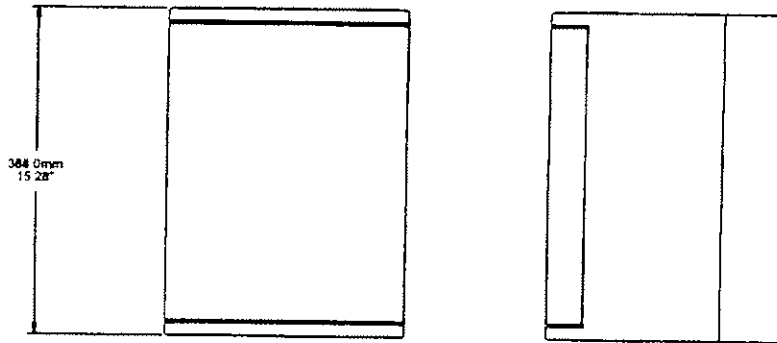
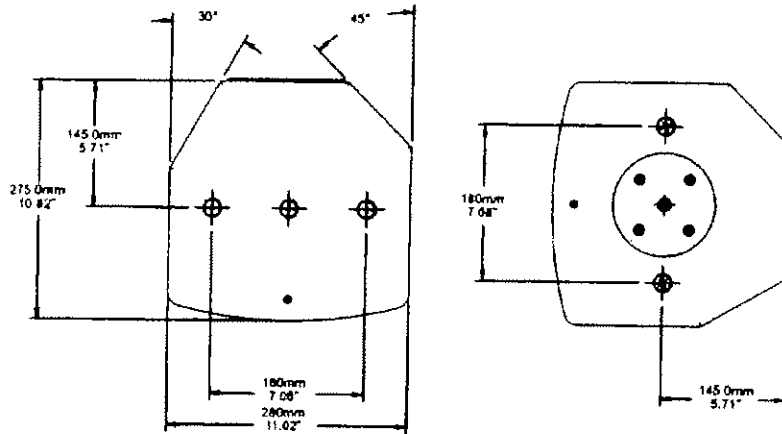
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ACKM  
7/6/10  
RUK  
7/6/10

# V8

# TANNOY

## DIMENSIONAL SKETCHES



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Tannoy Deutschland	T: 00 49 (0) 111 881	E: deutschland@tannoy.com
Tannoy France	T: 00 33 (0) 7036 7473	E: france@tannoy.com

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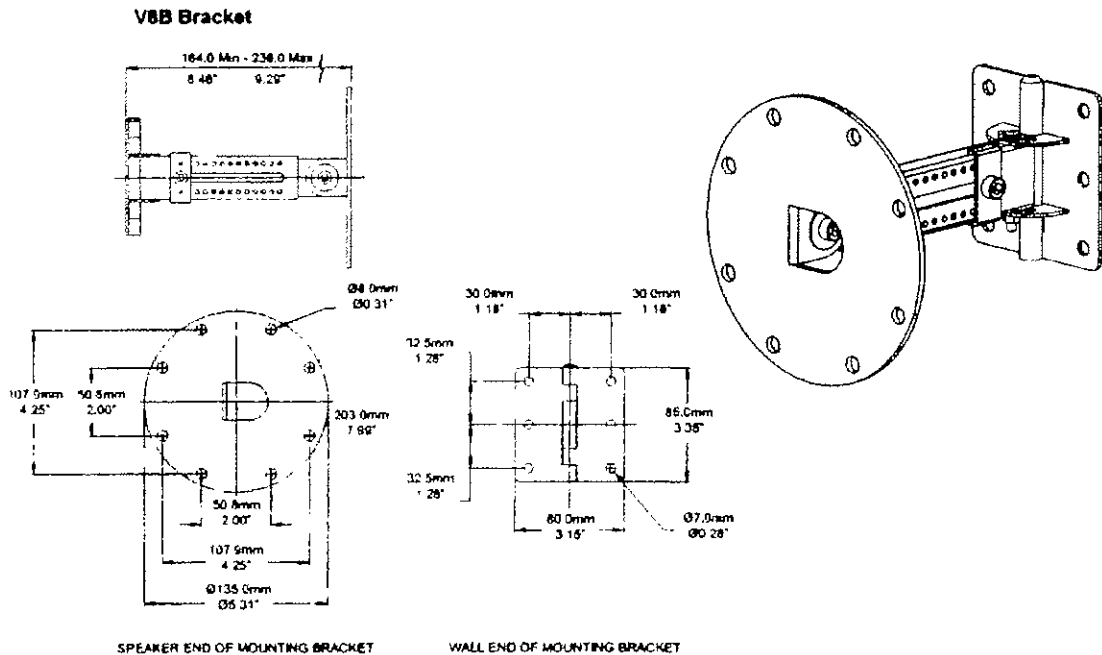
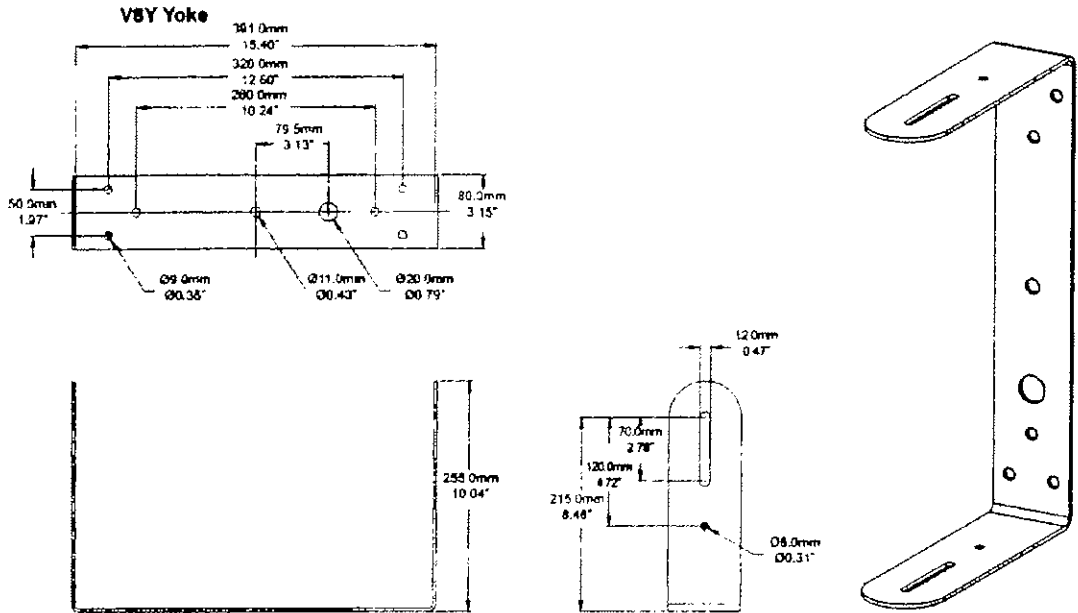
ALCAN  
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RUC  
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# V8

# TANNOY

## MOUNTING OPTIONS DIMENSIONAL SKETCHES



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 Tannoy North America      T: 00 1 (514) 745 1158      E: enquiry-na@tannoy.com  
 Tannoy Deutschland      T: 00 49 (180) 1111 881      E: anfragen@tannoy.com  
 Tannoy France      T: 00 33 (01) 7036 7473      E: ventes@tannoy.com

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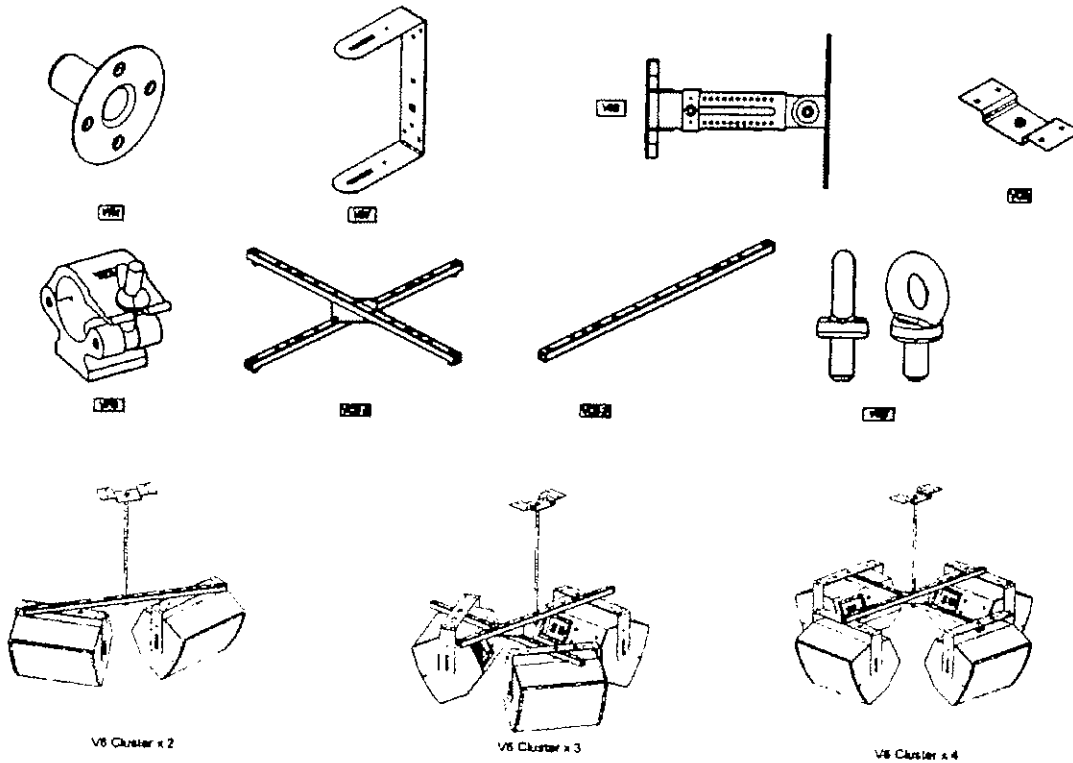
*RMG*  
7/6/10  
*ACM*  
7/6/10



# V8

# TANNOY

## MOUNTING OPTIONS ORDERING INFORMATION



### Ordering Information

PART NUMBER	MODEL NAME	COLOUR	PACKED QUANTITY
8001 2700	V8Y	Black	1
8001 2710	V8Y	White	1
8001 2720	V8B	Black	1
8001 2730	V8B	White	1
8001 2740	VCB 2	Black	1
8001 2750	VCB 2	White	1
8001 2760	VCB 4	Black	1
8001 2770	VCB 4	White	1
8001 2820	VEB	Black	1
8001 2830	VCS	Black	1
8001 2840	VCS	White	1
8001 2860	VTH	Black	1
8001 2870	VTH	White	1
8001 2850	VPC	Black	1
8001 3270	Grille V8	Black	1
8001 3271	Grille V8	White	1

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 Tannoy North America T: 00 1 (519) 745 1158 E: enquiries@tannoy.com  
 Tannoy Deutschland T: 00 49 (180) 1111 881 E: anfragen@tannoy.com  
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ADDN  
7/6/10

RMK  
7/6/10

# V8

# TANNOY

The loudspeaker shall consist of a 200mm (8.00") full range, single point source Dual Concentric™ transducer. The low and the high frequency elements shall be combined by an internal passive crossover network operating at 1.7kHz, with 2nd order high pass, 2nd order low pass. A configurable switching arrangement on the input panel allows the user to select between full range passive or bi-amped two way powering modes.

Performance of the loudspeaker, without any electronic control shall meet or exceed the following criteria: frequency response measured at 1 metre on axis with swept sine wave shall be 65Hz - 22kHz (+/-3dB). Sensitivity shall be at least 92dB (anechoic) for 2.83 volts @ 1 metre and shall be capable of producing a peak output level of 119dB (anechoic) on axis at 1 metre.

The dispersion of the loudspeaker shall be 90 degrees conical (-6dB). The system shall have a nominal impedance of 8 Ohms, maximum power handling shall be 520 Watts (programme). The enclosure shall be an optimally tuned 37.5 litre vented enclosure of birch plywood construction. The enclosure shall be fitted with an integral carrying handle, blanked off recess for optional pole-mount socket installation, 2 x M10 bracket inserts for landscape or portrait mounting and 4 x M10 mounting points for flying hardware. The enclosure shall not exceed the following dimensions: 388 x 280 x 275mm or 15.28 x 11.02 x 10.83" (H x W x D)

The loudspeaker shall be the Tannoy...V8.

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AKM  
7/6/10

PKK  
7/6/10

V8

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~~AKM~~  
7/6/10

RMK  
7/6/10

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**512 Greene Street Bar - Sound System Design and Specification**

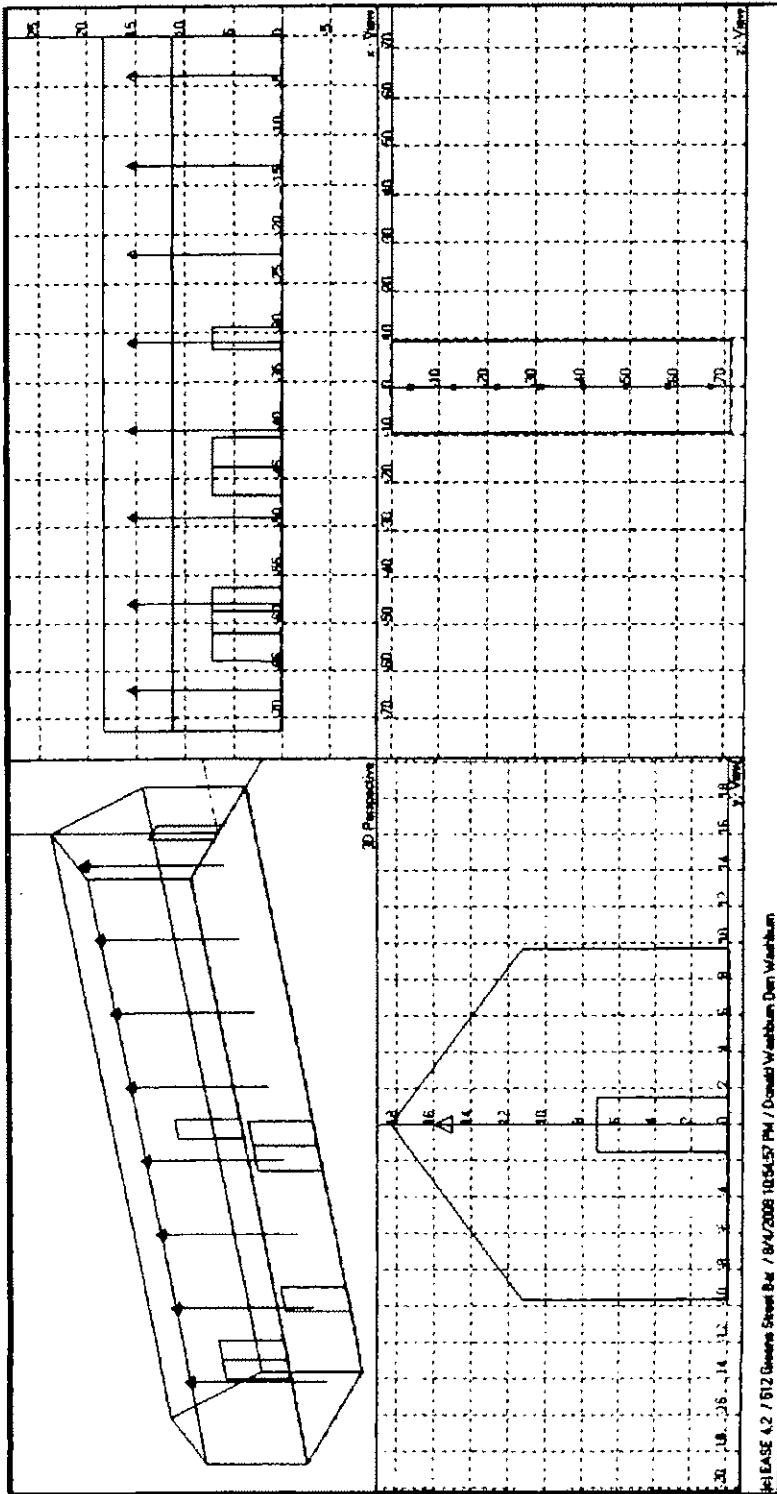


Figure 1 - OmniView of Greene Street Bar as rendered in EASE 4.2

ACKM  
7/6/10

Blank  
7/6/10



**NSCA**



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**512 Greene Street Bar - Sound System Design and Specification**

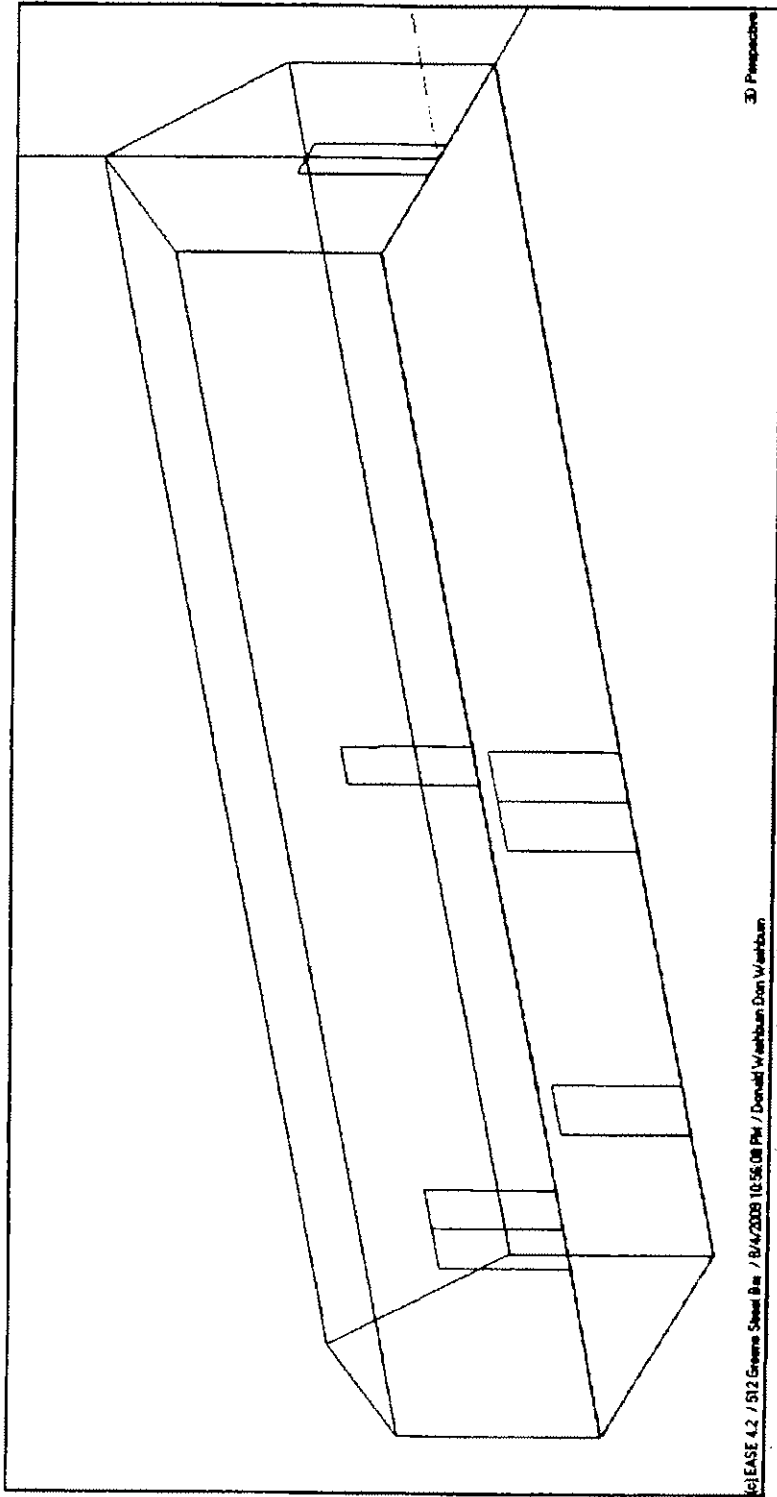
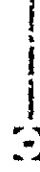


Figure 2 - Isometric view of Greene Street Bar as rendered in EASE 4.2



**NSCA**



*AKM*  
7/6/10

*Rmk*  
7/6/10

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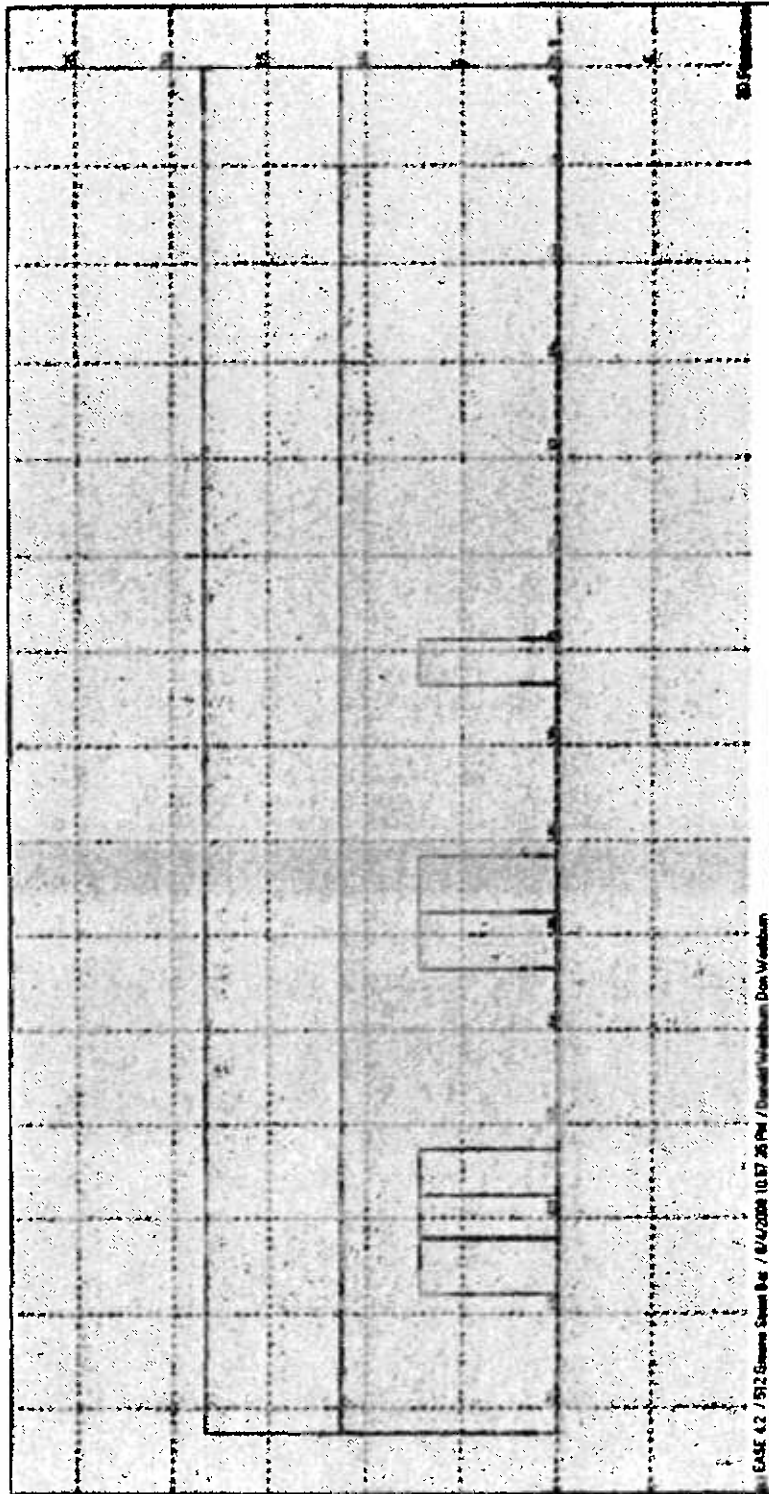


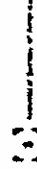
Figure 3 - Side elevation view of Greene Street Bar as rendered in EASE 4.2

ACM  
7/6/10

RWK  
7/6/10



NSCA



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**512 Greene Street Bar - Sound System Design and Specification**

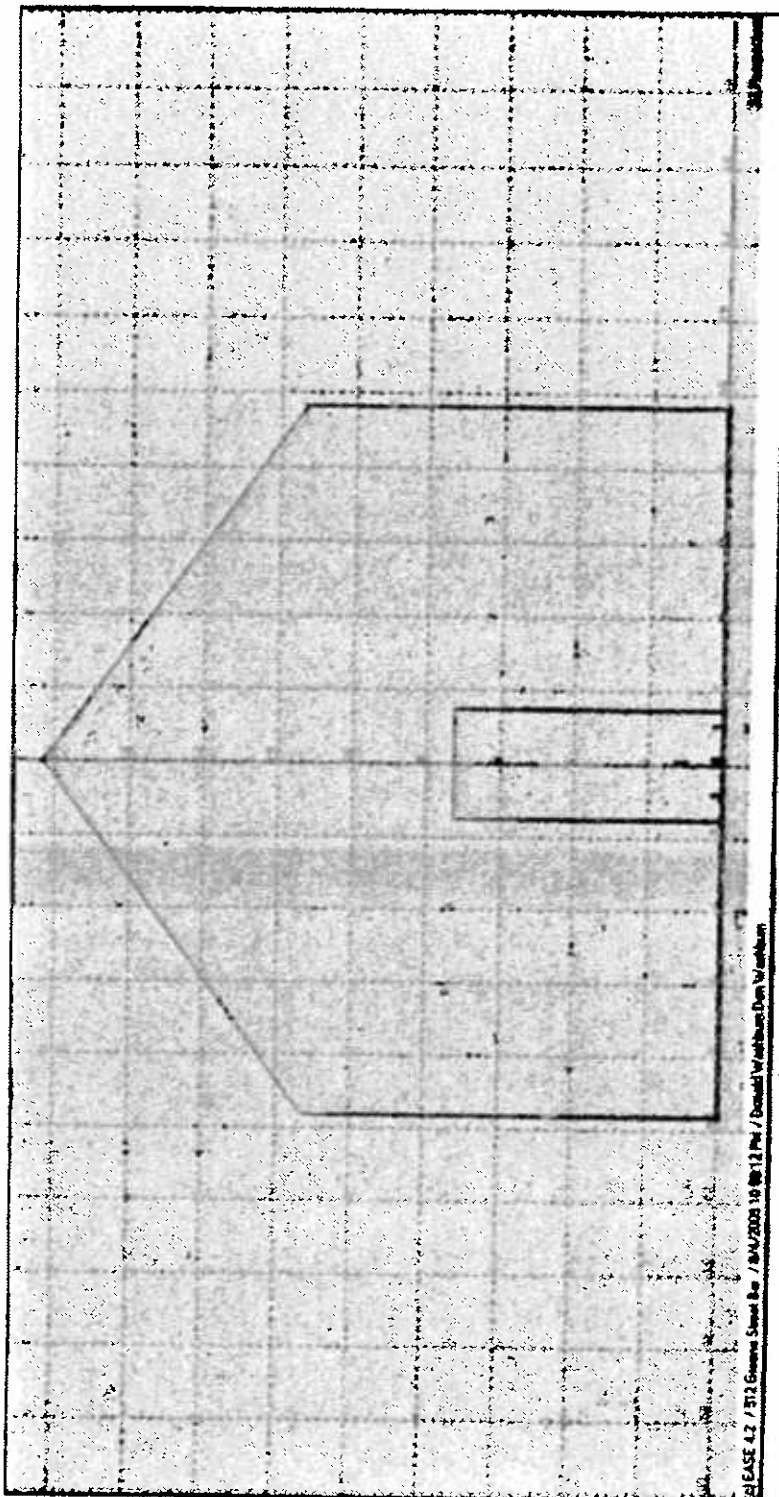


Figure 4 - End section view of Greene Street Bar as rendered in EASE 4.2

ACKM  
7/6/10

RUNK  
7/6/10



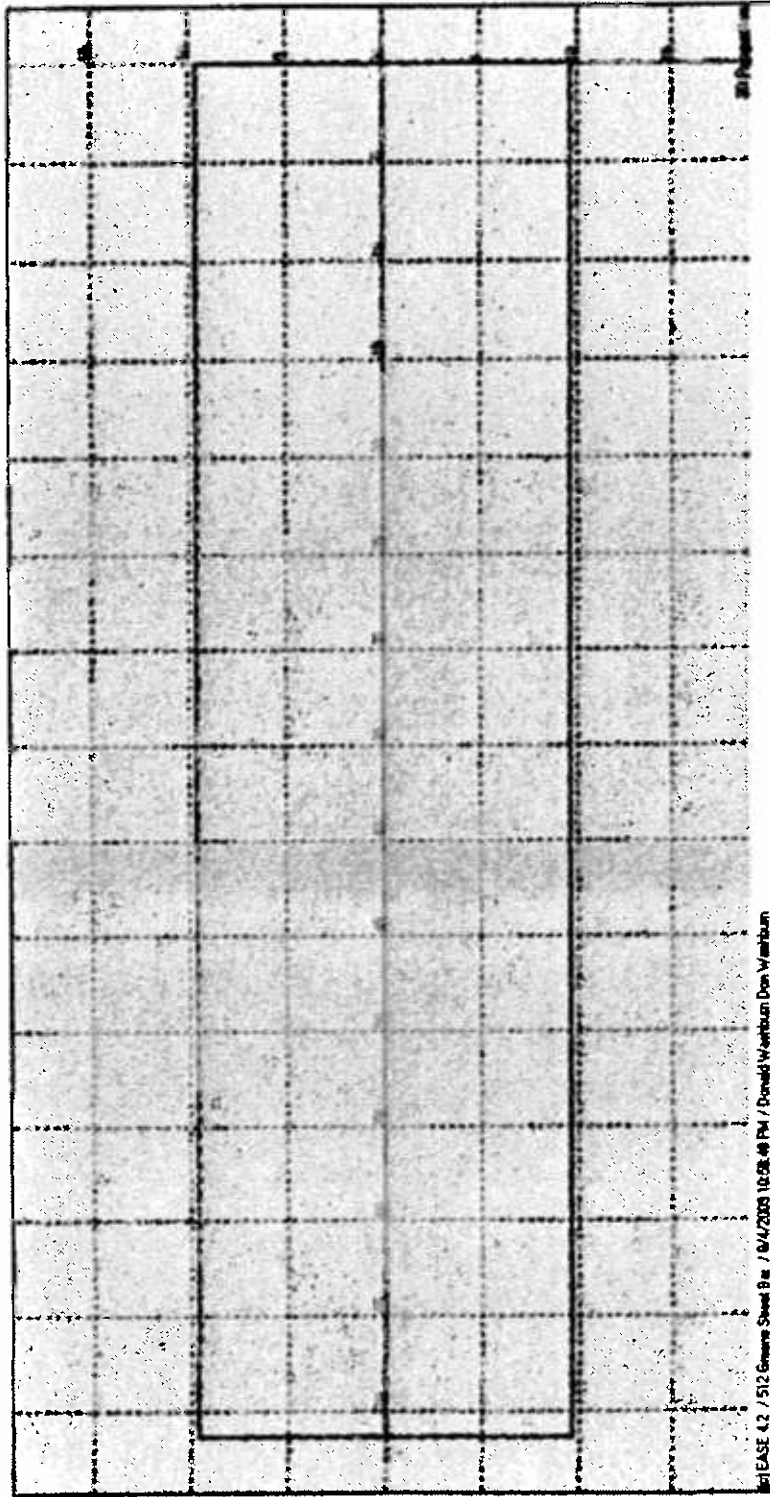
**NSCR**



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**512 Greene Street Bar - Sound System Design and Specification**



EASE 4.2 / 512 Greene Street Bar / 8/4/2008 10:58:48 PM / Donald Waltham Don Waltham

Figure 5 - Plan view of Greene Street Bar as rendered in EASE 4.2

*ADP*  
*7/6/10*

*Paul*  
*7/6/10*



**DSCA**

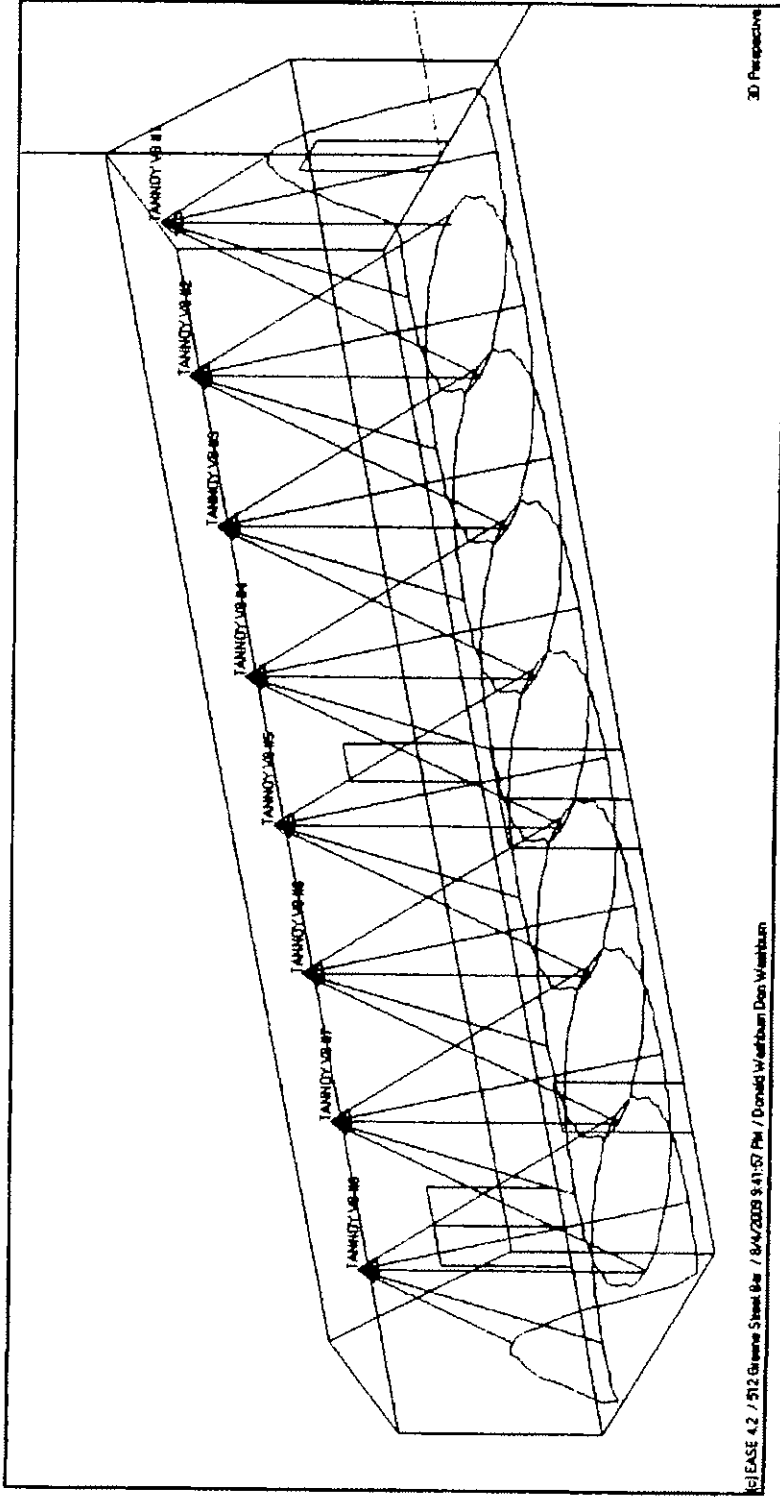




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**512 Greene Street Bar - Sound System Design and Specification**



EASE 4.2 / 512 Greene Street Bar / 8/4/2009 9:41:57 PM / Donald Weinbaum Don Weinbaum

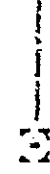
Figure 6 - Isometric view of Greene Street Bar as rendered in EASE 4.2 showing loudspeaker locations and -3 dB isobars @ 5 kHz

ACKM  
7/6/10

RWK  
7/6/10



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**512 Greene Street Bar - Sound System Design and Specification**

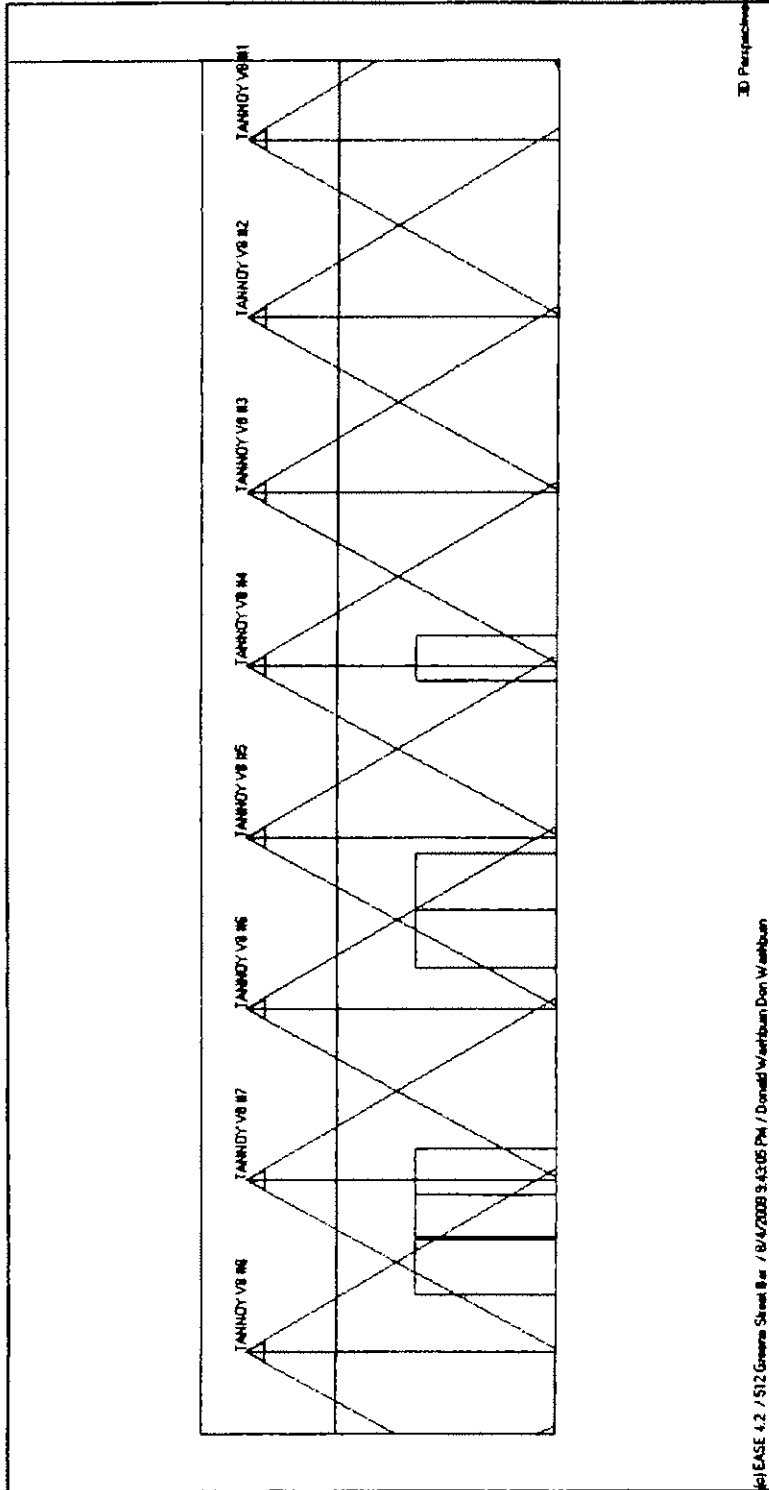
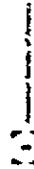


Figure 7 - Side elevation view of Greene Street Bar as rendered in EASE 4.2 showing loudspeaker locations and -3 dB isobars @ 5 kHz

*ACM*  
7/6/10

*RMK*  
7/6/10



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**512 Greene Street Bar - Sound System Design and Specification**

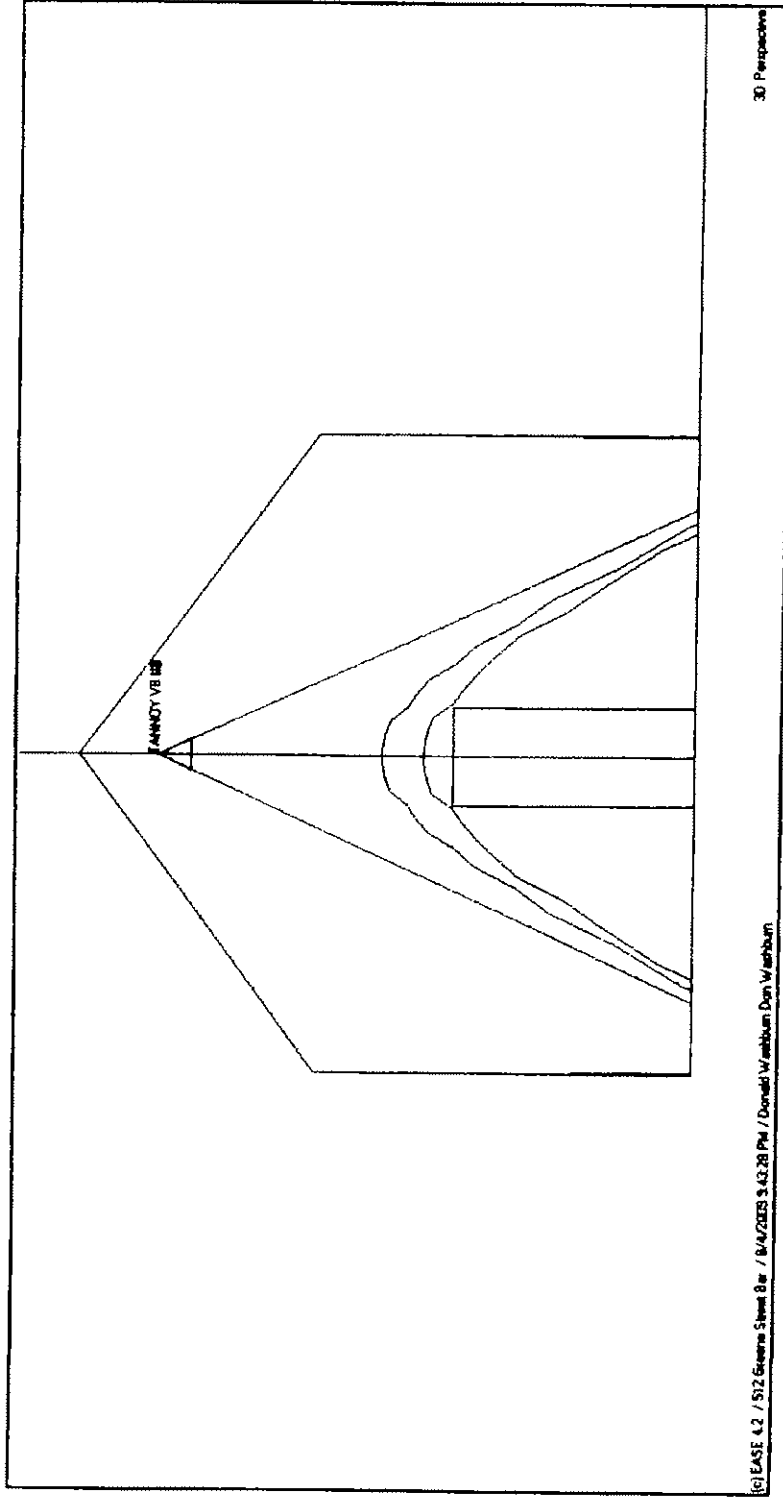


Figure 8 - End section view of Greene Street Bar as rendered in EASE 4.2 showing loudspeaker locations and -3 dB isobars @ 5 kHz

*AJW*  
7/6/10

*RWK*  
7/6/10



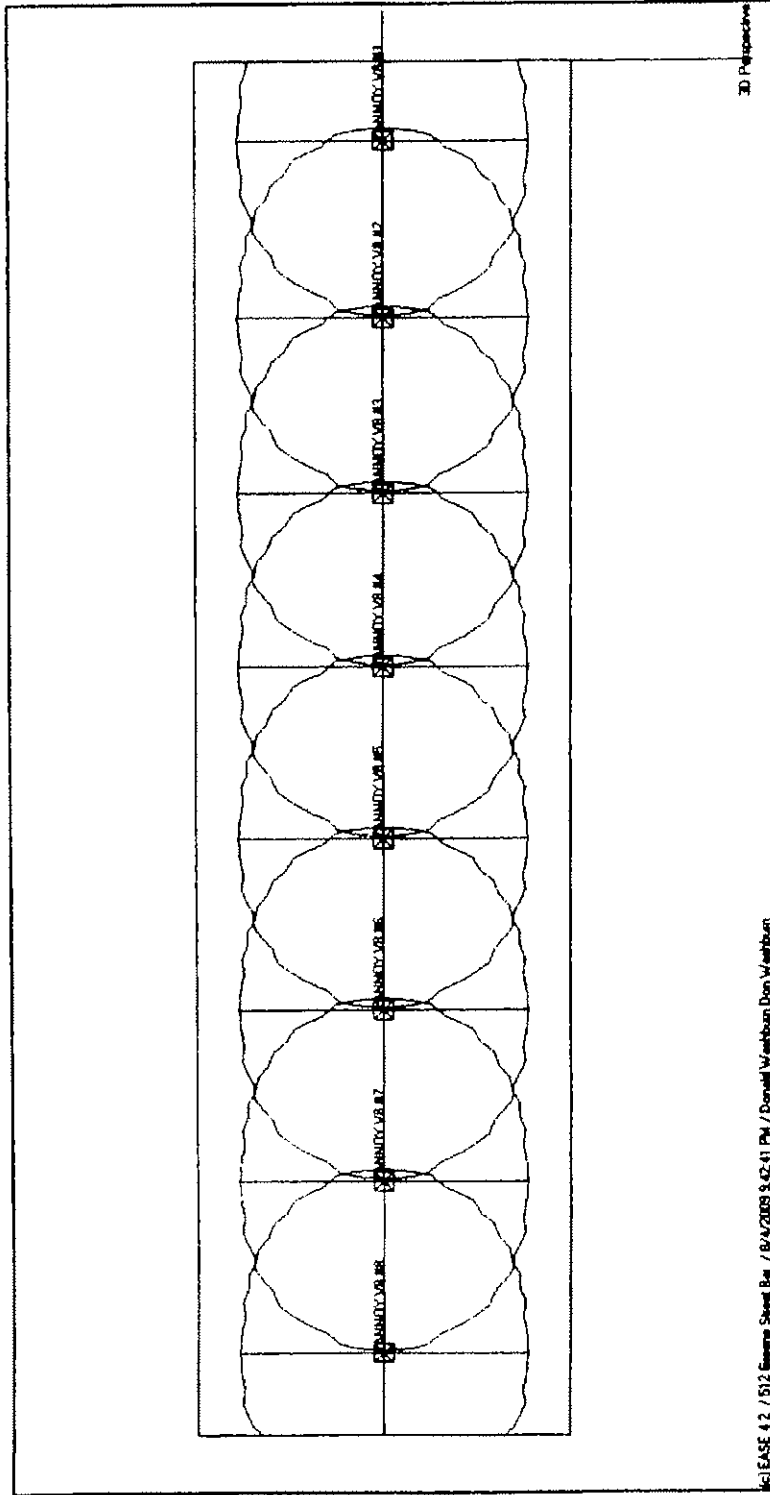
**NSCA**



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**512 Greene Street Bar - Sound System Design and Specification**



3D Perspective  
EASE 4.2 / 512 Greene Street Bar / 8/4/2009 9:52:41 PM / Donnell Vashburn Don Vashburn

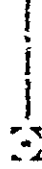
Figure 9 - Plan view of Greene Street Bar as rendered in EASE 4.2 showing loudspeaker locations and -3 dB isobars @ 5 kHz

ADVM  
7/6/10

RWK  
7/6/10



**D.S.C.A.**



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**512 Greene Street Bar - Sound System Design and Specification**

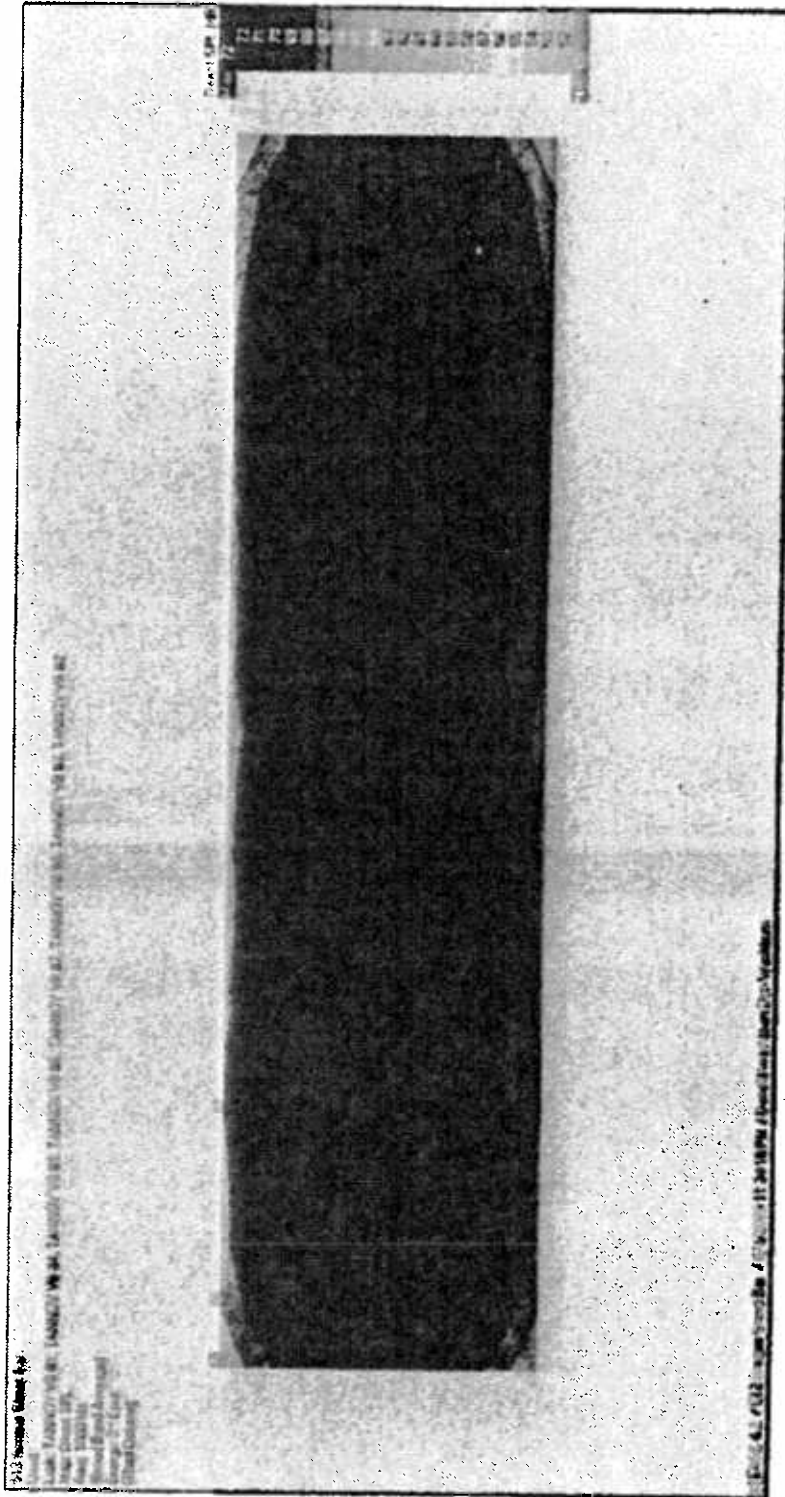


Figure 10 - Plan view of Greene Street Bar as rendered in EASE 4.2 showing uniformity of broadband direct sound coverage (+/- 3 dB)

ACKM  
7/6/10

RMK  
7/6/10



**NSCA**



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**512 Greene Street Bar - Sound System Design and Specification**

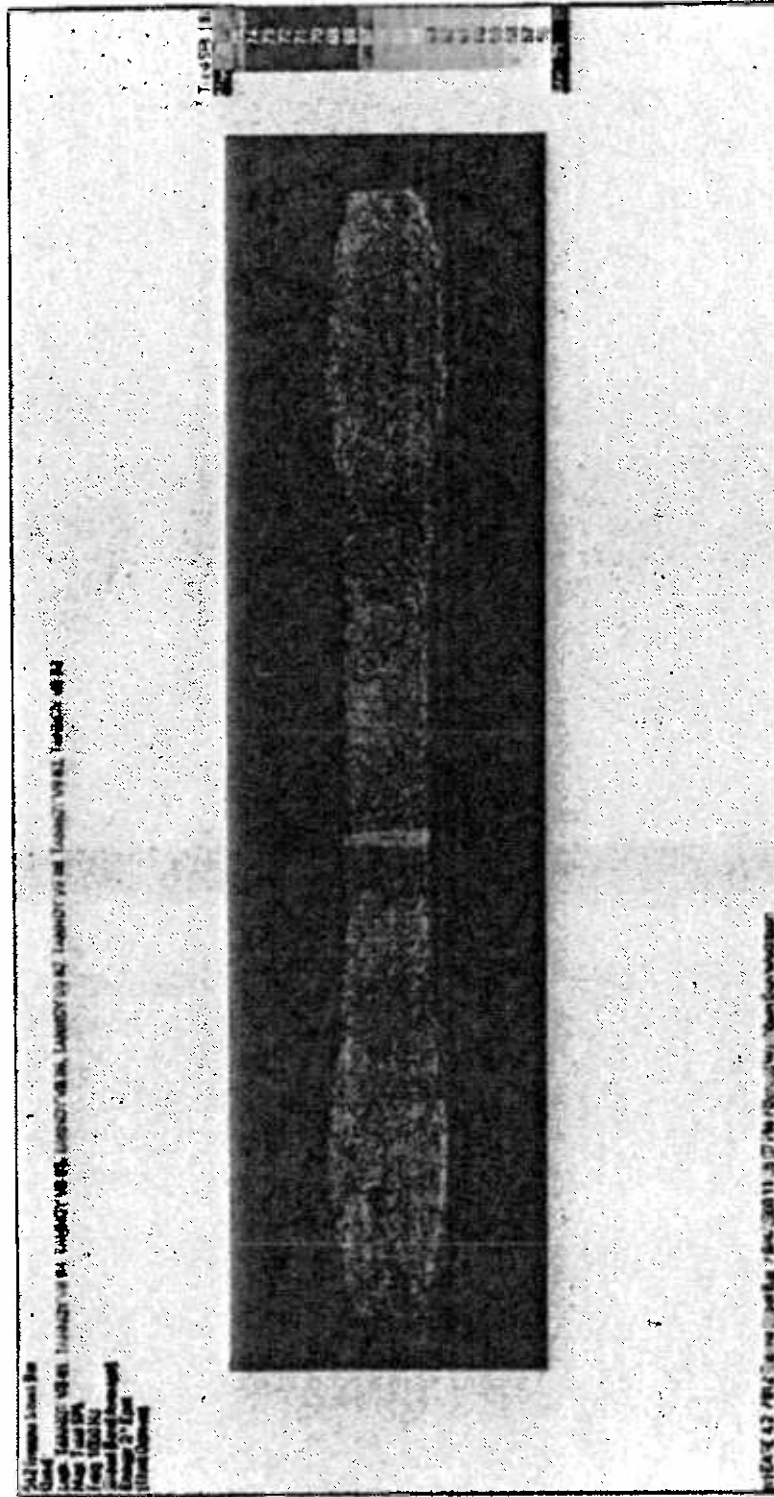
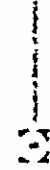
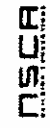


Figure 11 - Plan view of Greene Street Bar as rendered in EASE 4.2 showing uniformity of broadband total sound coverage (+/- 1 dB)

ACKM  
7/6/10

RMK  
7/6/10



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**512 Greene Street Bar - Sound System Design and Specification**

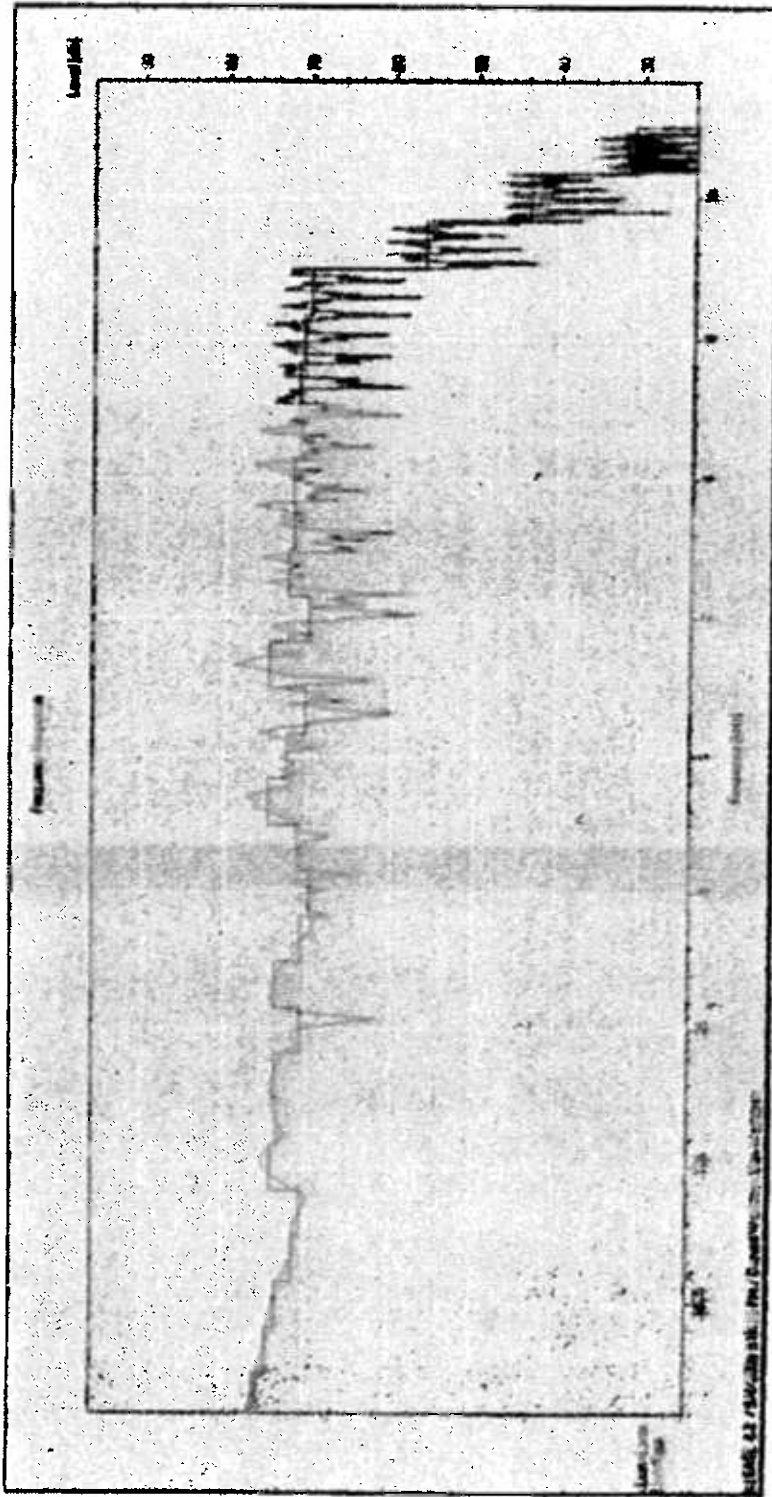


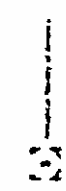
Figure 12 - Typical system response predicted in EASE 4.2 showing uniformity of frequency response (+/- 3 dB)

ACK  
7/6/10

PAUL  
7/6/10



**NSCA**



**THE AUDIO BUG, INC.**

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**512 Greene Street Bar - Sound System Design and Specification**

TANN0YV8 #1 [alt] Loudspeaker [v] 2 Greene Street Bar [AS]

Visible  Image visible

Loudspeaker Label: TANN0YV

Mirror Image:

Group Label:

Image Group:

Point of Reference : Angles:

x: [0.00] ft hor: [0]

y: [-4.00] ft ver: [-90]

z: [16.00] ft rot: [0]

Color:

Alignment (assoc): [0.000]

Delay (msec): [0.000]

Speaker Model: [V8]

Cluster info: [DI / GI Setup]

Show dB Cov. Cone

Show Image dB Cov. Cone

Frequ.	Ele. Power	SPL [Lin]	Phase	Myquist
100 Hz	0.127	82.04		Ele. Power :
125 Hz	0.101	82.04		Sel. To Max
160 Hz	8.017E-02	82.04		All To Max
200 Hz	6.688E-02	82.04		All To Current
250 Hz	0.103	82.04		Flat Max
315 Hz	0.113	82.04		All Off
400 Hz	0.101	82.04		
500 Hz	8.590E-02	82.04		
630 Hz	8.017E-02	82.04		
800 Hz	7.145E-02	82.04		
1000 Hz	7.145E-02	82.04		
1250 Hz	0.113	82.04		
1600 Hz	0.101	82.04		
2000 Hz	9.638E-02	82.04		
2500 Hz	0.127	82.04		
3150 Hz	0.106	82.04		
4000 Hz	0.127	82.04		
5000 Hz	0.127	82.04		
6300 Hz	0.127	82.04		
8000 Hz	7.834E-02	82.04		
10000 Hz	7.145E-02	82.04		

Priority :  
 Electric Power  
 SPL

Figure 13 - Loudspeaker properties (typical of 8)



*ACKM  
7/6/10*

*RANK  
7/6/10*





# THE AUDIO BUG, INC.

3800 HILLCREST DRIVE • HOLLYWOOD, FL. 33021-7937 • 954-983-2788 • FAX: 954-083-2789 • [audiobug1@aol.com](mailto:audiobug1@aol.com)

July 13, 2009

Subject: Resume of Don Washburn

To whom it may concern:

Mr. Washburn has been working in the fields of electronics and acoustics since 1974, when he established The Audio Bug, Inc. For more than twenty years, The Audio Bug, Inc. provided design, installation and maintenance services of professional sound reinforcement systems for a variety of clientele, including the United States District Court, Southern District; the United States Bankruptcy Court; the Cities of N. Miami, Miami Beach, N. Miami Beach, Pembroke Pines; a variety of Houses of Worship; the U.S. Postal Service, Homestead Air Force Base and many commercial facilities.

In the course of his work, Mr. Washburn's attention was drawn to the testing, measurement and documentation aspects of sound system contracting. Analysis of the performance of various devices, both electronic and electro-acoustic, became an intense interest and led to the purchase of an ever growing inventory of sophisticated measurement equipment.

The quest to better understand the how the systems he designed and installed interacted with the acoustical environments in which they operated led Mr. Washburn to study advanced electro-acoustics with some of the industry's most significant leaders. An association with Synergetic Audio Concepts, a teaching program founded by Don and Carolyn Davis, resulted in regular liaison with a worldwide association of peers seeking excellence in systems design and improved measurement techniques.

In 1995, Mr. Washburn discontinued the sound contracting aspect of The Audio Bug, Inc. to concentrate on consulting. Since then, his focus has been on providing electro-acoustical consulting services, product assessment for manufacturers, systems design and teaching. He has authored several technical papers for industry publications, conducted numerous training seminars for sound contracting firms and addressed a number of technical organizations including the Audio Engineering Society and the National Systems Contractors Association.

Employing the industry's most sophisticated measurement equipment, Mr. Washburn provides objective, state-of-the-art product evaluations, computer-assisted system designs and acoustical services to manufacturers, industry and end users. He has testified in the capacity of expert witness in several cases involving community noise annoyance matters and has become a leading authority in community noise planning and abatement.

A wide variety of clientele has engaged The Audio Bug to solve difficult acoustical problems in a wide variety of environments. A partial listing of clients is attached for your review.

Mr. Washburn sits on the TEF Advisory Board and is a certified TEF instructor. He is a member of the Acoustical Society of America, the American Institute of Physics, the National Systems Contractor Association and Synergetic Audio Concepts.



RWF  
7/6/10

ACM  
7/6/10

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## Partial Listing of Clients

Florida Gulf Coast University  
Mr. Eric Balmer  
Assistant Director of Campus Reservations  
10501 FGCU Boulevard, South  
Ft. Myers, Florida 33965-6565  
Phone: 239-590-1141, Fax: 239-590-1012  
[ebalmer@fgcu.edu](mailto:ebalmer@fgcu.edu)  
Reference: Alico Arena Acoustical and Electro-Acoustical Study

Concerto Networks, Attn: Mr. Jerry Hogan  
11000 Metro Parkway, Suite 31  
Fort Myers, Florida 33966  
Service: 800-314-8802, Sales 800-314-8803  
E-mail: [Jhogan@AIDigitalTechnology.com](mailto:Jhogan@AIDigitalTechnology.com)  
Project Name: Edison College, Lee Campus  
Corbin Auditorium Sound System Testing  
8099 College Parkway, Room J-103  
Fort Myers, Florida 33919

Alexander I. Tachmes, Esq.  
Shutts and Bowen LLP  
201 S. Biscayne Boulevard., Suite 1500  
Miami, Florida 33131  
Phone: 305-347-7341, Fax: 305-347-7754  
[atachmes@shutts.com](mailto:atachmes@shutts.com)  
Ref: Mondrian, 1100 West Properties, LLC,  
Mondrian Hotel Neighborhood Impact Establishment  
Assist with Conditional Use Application

Raleigh Hotel  
Michael Ryan, Hotel Manager  
1775 Collins Avenue  
Miami Beach, Florida 33139  
Phone: (305) 612-1152, Fax: (305) 538-8140  
[mryan@raleighhotel.com](mailto:mryan@raleighhotel.com)  
Reference: Sound and Noise Mitigation Project

Grove Isle, Attn: Ben Arbermann  
One Grove Isle Drive  
Coconut Grove, Florida 33133  
Phone: 305-858-1207  
Architectural Acoustics Analysis of Sound Transmission  
in Condominium Structure

Johnson and Wales University  
Attn: Don McGregor  
1701 N.E. 127th Street  
N. Miami, Florida 33181  
Phone: 305-892-7035  
Environmental Noise Impact Study

Beth David Congregation  
2625 S.W. 3rd Avenue  
Miami, Florida 33129-2314  
Phone: 305-854-3911  
Acoustical Analysis of Sanctuary leading to redesign of  
sound system and HVAC system

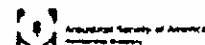
The Township Community Master Association, Inc.  
Attn: Claudia Genteel, Artistic Director  
2424 Lyons Road  
Coconut Creek, Florida 33063  
Phone: 954-973-8094, Fax: 954-973-1762  
Acoustical Analysis of Performing Arts Theater and  
Ballroom facilities, leading to redesign of sound  
systems for both

Miami-Dade School Board Contract Services  
Department, Coral Reef Maintenance  
15301 S.W. 117th Avenue, Miami, Florida 33177  
Phone: 305-256-3119, Fax: 305-256-5432  
[DDeRyke@dadeschools.net](mailto:DDeRyke@dadeschools.net)  
Ref: Miami Palmetto Senior High School  
Acoustics Design for Gymnasium  
Purchase Order # ROMO16849

Red Design Group, L.L.C. Architects  
Attn: Rick Hernandez  
1221 SW 27th Avenue, Suite 200  
Miami, FL 33135  
Phone: 305-631-7004, Fax: 305-631-7024  
[rhernandez@reddesigngroup.net](mailto:rhernandez@reddesigngroup.net)  
Reference: Multiple projects at University of Miami  
Richter Library, Whitten Learning Center, Frost School  
of Music,

Arthur J. Marcus, Architect  
1450 Lincoln Road, Suite # 806  
Miami Beach, Florida 33139  
Phone: 305-674-8945  
E-mail: [marcus\\_a@bellsouth.net](mailto:marcus_a@bellsouth.net)  
Consult on Noise & Vibration at Bath Club

St. John the Evangelist  
625 111<sup>th</sup> Avenue  
Naples, FL 34108-1825  
Phone: 941-566-8740  
[stjohnnev@aol.com](mailto:stjohnnev@aol.com)  
Father Thomas Glackin, Pastor  
Design of new sound system as highlighted in the  
December issue of "Church Production Magazine"



Ackey  
7/6/11

Rank  
7/6/10

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Holy Family Catholic Church  
Father Franky Jeana, Pastor  
14500 N.E. 11<sup>th</sup> Avenue  
N. Miami, Florida 33161  
Phone: 305-947-1471  
Sanctuary acoustical analysis with recommendations  
for redesign of sanctuary acoustics

First Presbyterian Church of Bonita Springs  
9751 Bonita Beach Road  
Bonita Springs, Florida 34135-4530  
Phone: 941-992-3233  
Evaluation of sanctuary acoustics and sound system

Bank Atlantic  
Mark Begelman, Senior Vice President  
2100 West Cypress Creek Road  
Ft. Lauderdale, Florida 33309  
Phone: 954-940-5286  
E-mail: [mbegelman@bankatlantic.com](mailto:mbegelman@bankatlantic.com)  
Consult on various branch bank acoustical issues

Canaveral Port Authority  
Mark Blake, Director of Engineering  
200 George King Boulevard  
Cape Canaveral, Florida 32920  
Phone: 321-783-7831, ext. 217  
E-mail: [mblake@portcanaveral.org](mailto:mblake@portcanaveral.org)  
Cruise Terminal Public Address System Design

Dave and Mary Alper Jewish Community Center  
Ed Rosen, Executive Director  
11155 S.W. 112th Avenue  
Miami, Florida 33178  
Phone: 305-271-9000  
E-mail: [erosen@alperjcc.org](mailto:erosen@alperjcc.org)  
Consulted on PAC acoustical problems

Island Pointe  
Elliott Sharaby, Developer  
10350 West Bay Harbor Drive  
Bay Harbor Islands, Florida 33154  
Phone: 305-993-1300  
E-mail: [elliott@thefallstaffgroup.com](mailto:elliott@thefallstaffgroup.com)  
Consulted on Noise & Vibration issue with large HVAC  
unit

James E. Rauh, Esq.  
1111 Lincoln Road, Suite 400  
Miami Beach, FL 33139  
Phone: 786-276-2343, Fax: 305-673-5505  
Email: [jrauh@terminello.com](mailto:jrauh@terminello.com)  
Consult in multiple Neighborhood Impact Establishment  
Conditional Use Applications

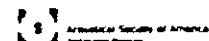
Waterview Condo  
Attn: Harvey Rosenberg, CAM  
20505/15 East Country Club Drive  
Aventura Fla. 33180-3057  
Office: 305-935-4541, Fax: 305-933-0489  
[hrosenberg@fdn.com](mailto:hrosenberg@fdn.com)  
Ref: Sound Transmission Project

Mr. Eric Margules  
Margules Properties, Inc.  
381 Park Avenue South, Suite 120  
New York, NY 10016  
Phone: (212) 684-7079, Fax: (212) 684-3879  
[emargules@marginproperties.com](mailto:emargules@marginproperties.com)  
Reference: Community Noise Impact Study  
12<sup>th</sup> + Collins Parking Garage  
1155 Collins Avenue  
Miami Beach, Florida 33139

Facchina-McGaughan, LLC  
Derek Murphy, Project Executive  
6600 N. Andrews Avenue, Suite 200  
Ft. Lauderdale, Florida 33309-2110  
Phone: 954-771-6677, Fax: 954-771-6697  
[derek.murphy@facchina-mcgaughan.com](mailto:derek.murphy@facchina-mcgaughan.com)  
Reference: Sound Transmission Testing  
Quantum By The Bay  
1900 North Bayshore Drive  
Miami, Florida 33132

Murdock Baptist Church  
Mark Smith, Pastor  
18375 Cochran Boulevard  
Port Charlotte, FL 33948-3330  
Phone: 941-627-6352, Fax: 941-627-6653  
[pastormark@murdockbaptstchurch.com](mailto:pastormark@murdockbaptstchurch.com)  
Acoustics Design for Sanctuary

RaceTrac Petroleum, Inc.  
Glen J. Cheatham, Facilities Brand Manager  
3225 Cumberland Boulevard, Suite 100  
Atlanta, GA 30339  
Phone: 800-388-8035 x1127  
Fax: 678-503-1076  
[gcheatham@racetrac.com](mailto:gcheatham@racetrac.com)  
Gas Station Community Noise Impact Study  
Project Address: 3996 Pembroke Road  
Pembroke Park, FL 33021



ACK  
7/6/10  
RANK  
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