



15 October 2004

Project No 2107

ECO - BLOCK AUST. Pty Ltd  
37 Seaside Drive  
The Headland, Pacific Harbour  
**BRIBIE ISLAND QLD 4507**

**ATTENTION: MR TONY DAL BON**

Dear Tony,

**RE: 19 BEALE STREET SOUTHPORT – ECO BLOCK AUST  
PARTY WALL ACOUSTIC ISOLATION TEST**

Please find enclosed our test report for the above. This report show that the wall tested provides a good level of acoustic isolation, meeting the higher standard currently being applied under the new NSW and Victoria BCA.

*Airborne: a weighted standardised level difference with spectrum adaptation term ( $D_{nt,w} + C_{tr}$ ) not less than 45 when determined under AS/NZS 1276.1 or ISO 717.1*

In terms of the Association of Australia Acoustical Consultants (AAAC) Star rating for walls and floors (ref [www.aaac.org.au](http://www.aaac.org.au)):

3. Intertenancy Activities		2 Star	3 Star	4 Star	5 Star	6 Star
<b>(a) Airborne Sound Insulation for walls and floors</b>						
between separate tenancies	$D_{n,w} + C_{tr} \geq$	35	40	45	50	55
between a lobby/corridor & bedroom	$D_{n,w} + C_{tr} \geq$	30	40	40	45	50
between a lobby/corridor & living area	$D_{n,w} + C_{tr} \geq$	25	40	40	40	45
bedroom walls within a tenancy	$D_{n,w} + C_{tr} \geq$	25	30	35	40	45

This 150mm thick ECO Block wall system with one layer of 10mm plasterboard each side has  $D_{nt,w} + C_{tr}$  of 51.

Please do not hesitate to contact us should you wish to discuss this matter further.

Yours faithfully

**PALMER ACOUSTICS (Australia) Pty Ltd**

A handwritten signature in black ink, appearing to read 'R. Palmer', with a long horizontal line extending to the right.

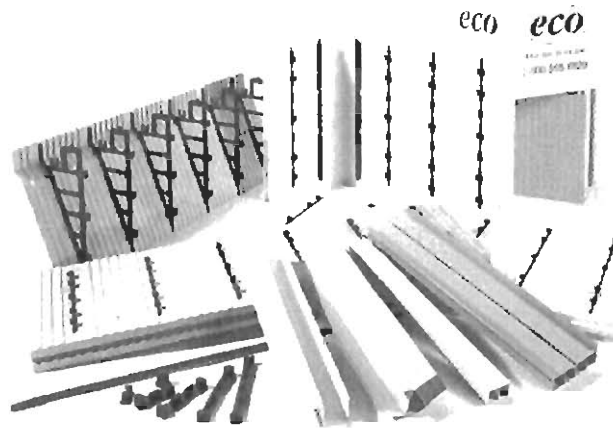
**ROSS H. PALMER** CPEng RPEQ  
Principal

ENCL: Test Report



**PALMER ACOUSTICS**  
(Australia) Pty Ltd

## **BLOCK AUST TEST**



# **PARTY WALL ACOUSTIC ISOLATION TEST REPORT**

**For:** Block Aust Pty Ltd

**Report Date:** 14 October 2004

**Report Number:** 2107

**Report By:** Ross Palmer                      Principal  
Eric Huang                                      Engineer

**PALMER ACOUSTICS (Aust) Pty Ltd**

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Member firm of the  
**Association of Australian Acoustical Consultants AAAC**

**PALMER ACOUSTICS (Australia) P/L**

**TITLE** PARTY WALL ACOUSTIC ISOLATION TEST REPORT

**TESTS BY** ERIC HUANG  
Engineer - Palmer Acoustics (Australia) Pty Ltd

**REPORT DATE** 14 OCTOBER 2004

**TEST DATE** 8 OCTOBER 2004

**TEST LOCATION** 19 Beale Street Southport  
Wall system between living room and garage

**FOR** Block Aust Pty Ltd

**PALMER ACOUSTICS (Aust) P/L**  
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## **1.0 INTRODUCTION**

Palmer Acoustics was engaged by Black Aust Pty Ltd to perform Field Sound Transmission Loss measurements (FSTC) on the party wall installed between two units at 19 Beale St. Southport. The test was conducted both ways on the party wall between the living area and garage.

The party wall was constructed using the ECO-Block insulating concrete form system. The ECO-Block insulating concrete form system consists of foam panels, embedded with plastic studs and connectors and poured concrete. The connectors snap into the plastic studs to create complete forms, ready for stacking. By using different lengths of the connectors, and poured concrete, the wall is created. (See Picture 1) On the each side of the wall system is secured one layer of 10mm plasterboard.

## **2.0 EQUIPMENT AND PROCEDURES**

The following instruments were used.

- Brüel & Kjær Precision Sound Analyzer Model 2260 Serial No 2001772
- Brüel & Kjær Acoustical Calibrator Type 4231 Serial No 2095146
- NTI programmable noise source
- 1000W Amplifier with two 15" speaker

The sound level meter was field calibrated before and after each measurement session and was found to be within 0.1dB of the reference signal. All instrumentation used in this assessment holds a current calibration certificate from a certified NATA calibration laboratory.

Tests were performed from the garage to the living area in the next unit and from the living area to the garage. (See enclose Sketch 1 for details) Five measurements were made in the source room and each measurement was averaged over a 1 minute period. In the receiving room five measurements were also measured. Ambient sound level was measured before and after the test.

Receiving room reverberation measurements were performed, utilising Room Acoustics Software BZ7204 installed in the Brüel & Kjær analyser, at 6 locations throughout the space with the results averaged.

The tests were conducted in accordance with the procedures of ASTM E366-90 and AS 1276: 1999.

### 3.0 DESCRIPTION OF ROOMS

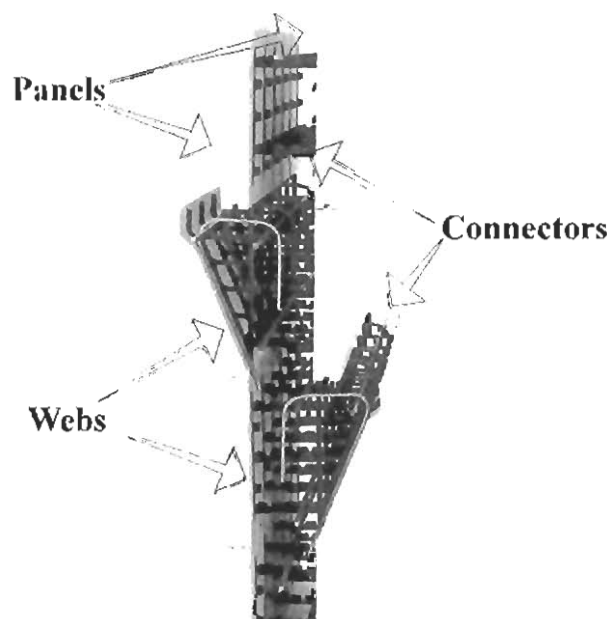
#### Sound Transmission Loss

Transmitting room for Transmission testing (Garage)

Floor : Fully tiled  
Walls: Plasterboard  
Windows: Closed for test  
Room finish: Fully finished.

Receiving room for Transmission testing (Living Room)

Floor : Fully tiled.  
Walls: Plasterboard  
Windows: Closed for test  
Room finish: Fully finished.



Picture 1 : ECO Block System

#### 4.0 RESULTS

Transmission loss measurements are as follows (see enclosed Data Output sheet);

- FSTC term in accordance with ASTM E413
- Dnt,w and Ctr spectrum adaptation terms in accordance with AS 1276: 2000 as defined in ISO 717 - 1: 1996

Test location	FSTC	Dnt,w	Ctr
Party Wall garage to living (Test 1)	54	56	-4
Party Wall living to garage (Test 2)	54	56	-5

**Table 1:** Transmission loss results, 19 Beale Street Southport, QLD

Test 1 & 2 meet the criterion defined in the new revised BCA being applied in NSW and Victoria (Dnt,w + Ctr not less than 45). The current QLD BCA requires that walls provide an isolation of not less than Rw 45.

**Note:** The field measurement Dnt,w closely approximates the laboratory measured Rw.

Report Compiled by:



**ERIC HUANG** BEng  
Engineer

Report Reviewed by:



**ROSS PALMER** CPEng  
Principal



**APPENDIX A**

**GLOSSARY**

TEST CERTIFICATE (2 page)

## APPENDIX B

### GLOSSARY

#### AIRBORNE SOUND INSULATION DESCRIPTORS

- **Sound Transmission Class (STC)** – A single number rating based on ASTM E413-87 (1994). The reference curve is defined by the values for the frequencies 125 to 3150 Hz; for 4000 Hz, the applicable reference value is 56 dB. The measured sound transmission loss values, rounded to the nearest integer, are compared with the reference curve using the following two criteria:
  1. The total unfavorable deviation for the sixteen (one-third-octave) frequencies centred on 125 to 4000 Hz are less than or equal 32dB.
  2. The maximum unfavorable deviation at any one frequency does not exceed 8 dB.

The STC rating is numerically the value that corresponds to the value at 500 Hz of the highest reference curve that meets the above two criteria.

- $D_{nt,w}$  – Weighted Standardized Level Difference measured in decibels, in the space and time average sound pressure levels produced by sound source(s) in one of the room.
- $D_{nw}$  – Weighted Normalized Level Difference measured in decibels from time averaged sound pressure levels produced in two rooms from sound source(s) in one of the room.
- $C$  – The spectrum adaptation term, in decibels to be added to the single-number rating to take account of the characteristics of particular sound spectra. The spectra are A-weighted sound levels in the source room and the receiving room, for pink noise in the source room. The overall spectrum level is normalized to 0 dB.
- $C_{tr}$  – The spectrum adaptation term, in decibels to be added to the single-number rating to take account of the characteristics of particular sound spectra. The spectra are A-weighted sound levels in the source room (or open air in front of the façade) and the receiving room, for road traffic noise.

#### STANDARDS

- **ISO 140 – 1**  
Acoustics – Rating of sound insulation in buildings and building elements – Part 1: Airborne sound insulation
- **ISO 140 – 4**  
Acoustics – Measurement of sound Insulation in buildings and of building elements – Part 4: Field measurements of airborue sound insulation between rooms
- **AS/NZS 1276.1:1999**  
Acoustics – Rating of sound insulation in buildings and building elements – Part 1: Airborne sound insulation



# PALMER ACOUSTICS (Australia) Pty Ltd

Member Firm - Association of Australian Acoustical Consultants AAAC

## AIRBORNE SOUND INSULATION - TEST CERTIFICATE

**Project :** 2107 Black Aust Test

Test Date = 8/10/2004

**Test:** Field Rw tests. Wall system (Garage to Living room) Test 1

Field STC = 54 ASTM E336-90 & E413-87 (1994)

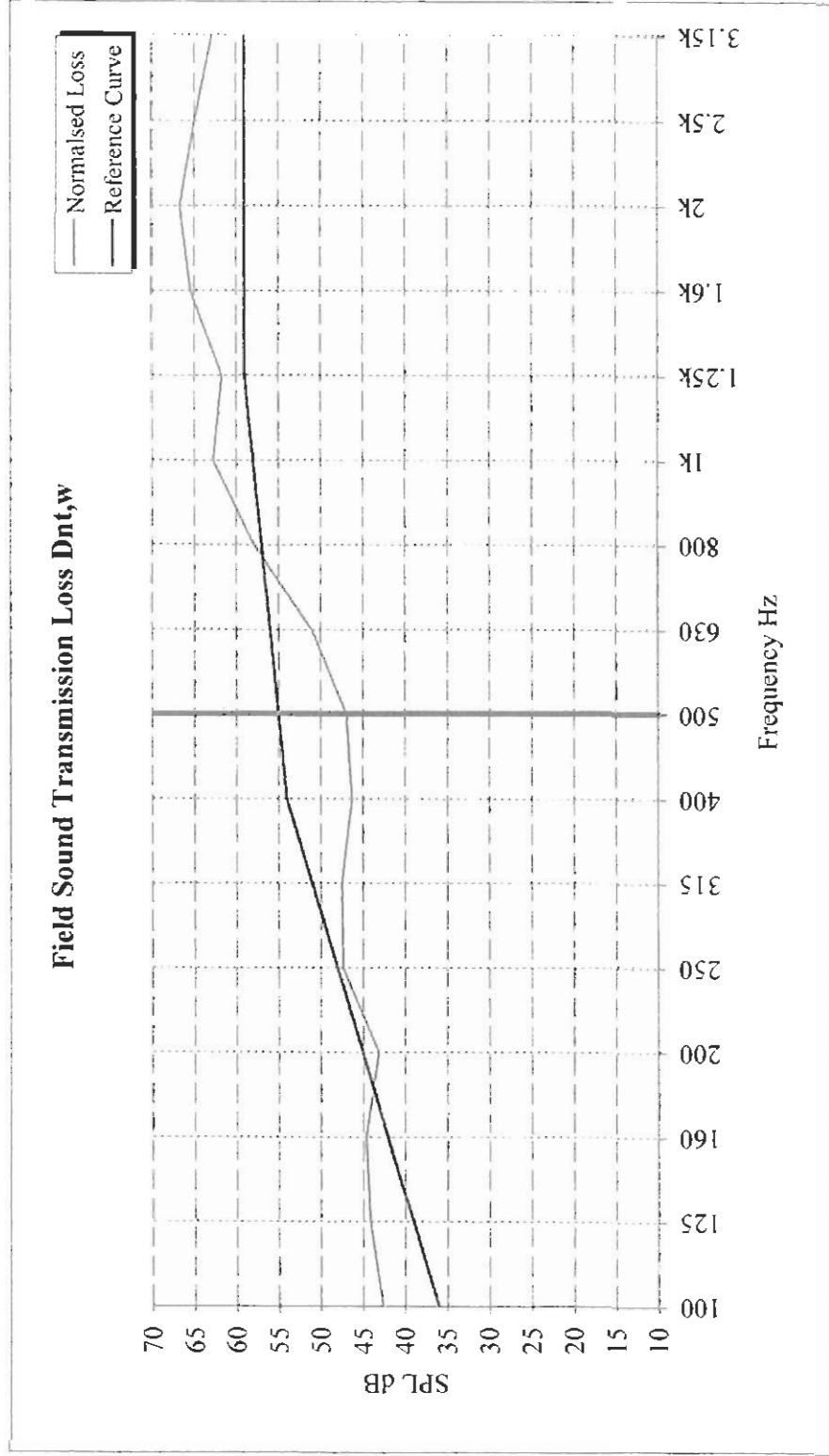
Dnt,w = 55 AS 1276.1:1999

C = -1 AS 1276.1:1999

Ctr = -4 AS 1276.1:1999

Report Date = 13/10/2004

Centre Frequency	Ri SPL Difference	Rw Ref Contour	Deficiencies
Hz	dB	dB	dB
100	42.6	36	0.0
125	44.1	39	0.0
160	44.6	42	0.0
200	43.1	45	1.9
250	47.3	48	0.7
315	47.4	51	3.6
400	46.2	54	7.8
500	46.9	55	8.1
630	51	56	5.0
800	57.9	57	0.0
1k	62.7	58	0.0
1.25k	61.6	59	0.0
1.6k	65.4	59	0.0
2k	66.6	59	0.0
2.5k	64.9	59	0.0
3.15k	62.8	59	0.0
<b>Total</b>			<b>27.1</b>
Dnt,w	55		



**Palmer Acoustics (Australia) Pty Ltd**

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Ph (61 7) 3802 8355 Fax (61 7) 3802 8399

**Project :** 2107 Black Aust Test

Test Date = 8/10/2004

**Test:** Field Rw tests. Wall system (Living room to Garage) Test 2

Field STC = 54 ASTM E336-90 & E413-87 (1994)

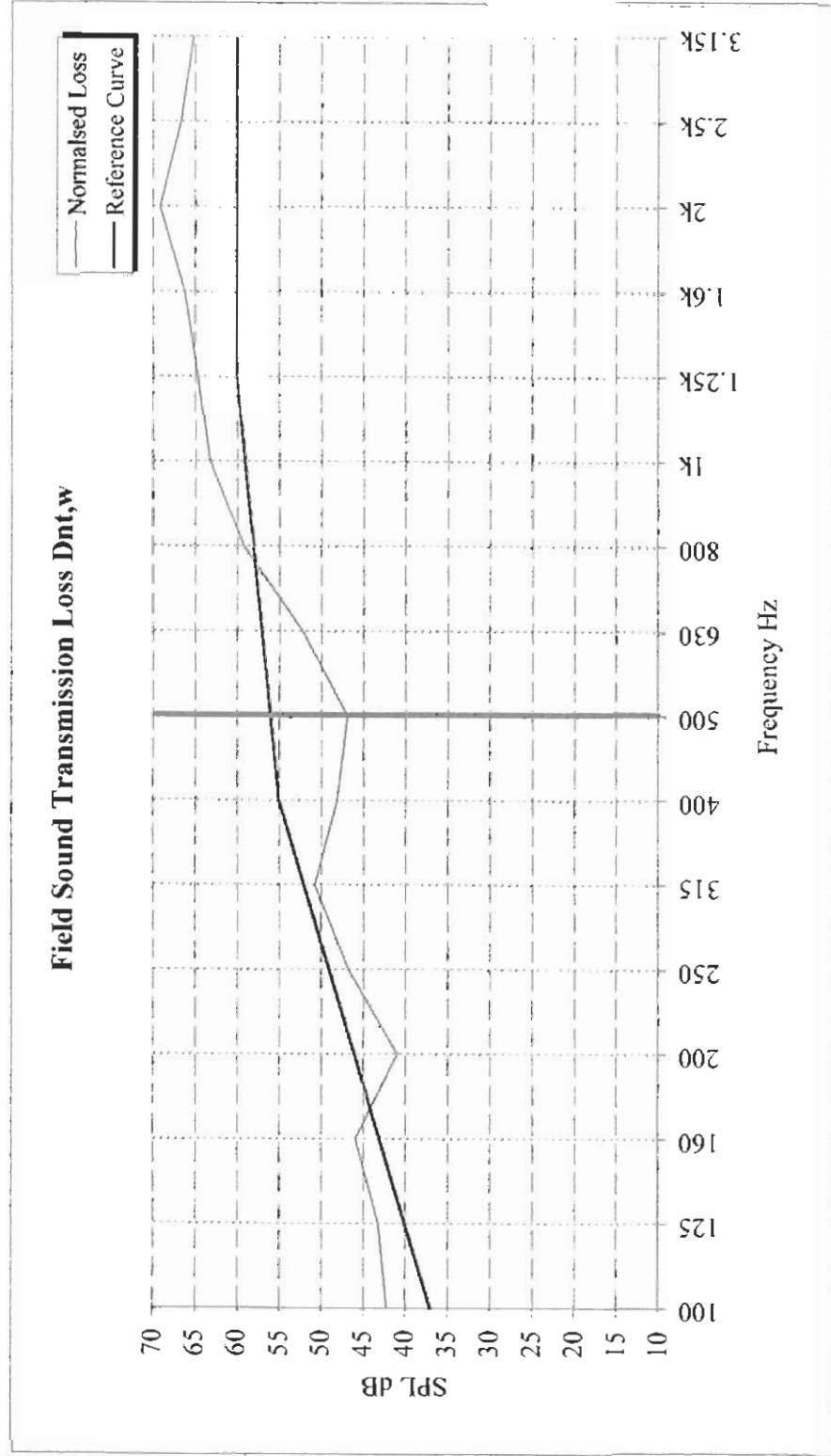
Dnt,w = 56 AS 1276.1:1999

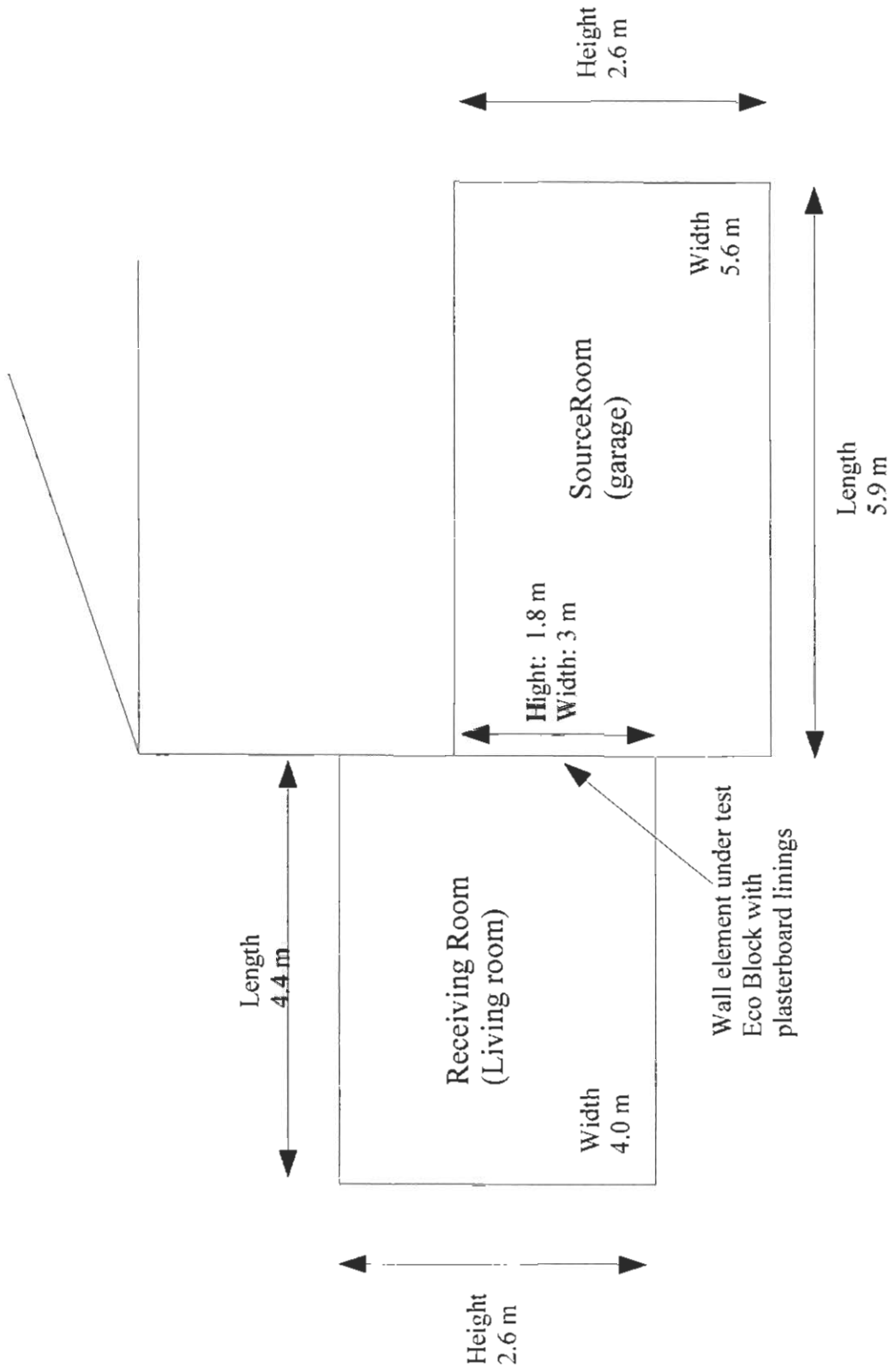
C = -2 AS 1276.1:1999

Ctr = -5 AS 1276.1:1999

Report Date = 13/10/2004

Centre Frequency	Ri SPL Difference	Rw Ref Contour	Deficiencies
Hz	dB	dB	dB
100	42.2	37	0.0
125	43.2	40	0.0
160	45.9	43	0.0
200	40.9	46	5.1
250	46.7	49	2.3
315	50.7	52	1.3
400	48.1	55	6.9
500	46.9	56	9.1
630	52.2	57	4.8
800	59.2	58	0.0
1k	63.2	59	0.0
1.25k	64.8	60	0.0
1.6k	66.2	60	0.0
2k	69.1	60	0.0
2.5k	66.6	60	0.0
3.15k	67.2	60	0.0
Total			
Dnt,w	56		29.4





<b>Palmer Acoustics Pty Ltd</b> Acoustic Engineers & Scientists	Title Elevation View through source & receiving room	Sketch No. 1	Project Number 2107
22 Burdekin Court Hillcrest, QLD 4118 Australia Ph (07) 3802 8355 Fax (07) 3802 8399	Project Block Aust Test	Date 14 October 2004	Scale NTS