



**PALMER ACOUSTICS**  
(Australia) Pty Ltd

## **ECO-BLOCK AUST TEST**



# **PARTY WALL ACOUSTIC ISOLATION TEST REPORT**

**For:** Eco-Block Aust Pty Ltd

**Report Date:** 14 October 2004 Updated in 7-03-2011

**Report Number:** 2107

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

**PALMER ACOUSTICS (Aust) Pty Ltd**  
22 Burdekin Court Hillcrest QLD 4118 Australia  
PO Box 165 Browns Plains QLD 4118 Australia  
Ph (61 7) 3802 8355 Fax (61 7) 3802 8399  
Mobile 0411883113  
Email: [paa@bigpond.net.au](mailto:paa@bigpond.net.au) ACN 058751349

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**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** Eco-Block Aust Pty Ltd

<b>VERSION HISTORY</b>				
<b>Version</b>	<b>Description</b>	<b>Date</b>	<b>Author</b>	<b>Approved by</b>
V.1	Final	14-10-04	EH	RP
V.2	Updated wall detail	07-03-11	EH	RP

**PALMER ACOUSTICS (Aust) P/L**  
22 Burdekin Court Hillcrest QLD 4118  
PO Box 165 Browns Plains QLD 4118  
**Ph (07) 3802 8355**  
**Fax (07) 3802 8399**  
ACN 058 751 349  
Email – [paa@bigpond.net.au](mailto:paa@bigpond.net.au)

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## **1.0 INTRODUCTION**

Palmer Acoustics was engaged by Eco-Block 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

The wall was a 152mm Eco Block concrete wall with 62mm of polystyrene either side. This is called the Eco Block 280 series wall (280mm).

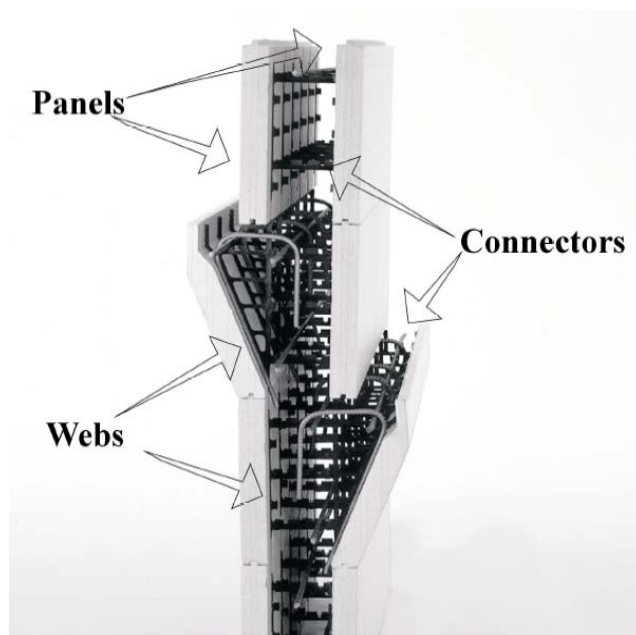
#### Sound Transmission Loss

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.

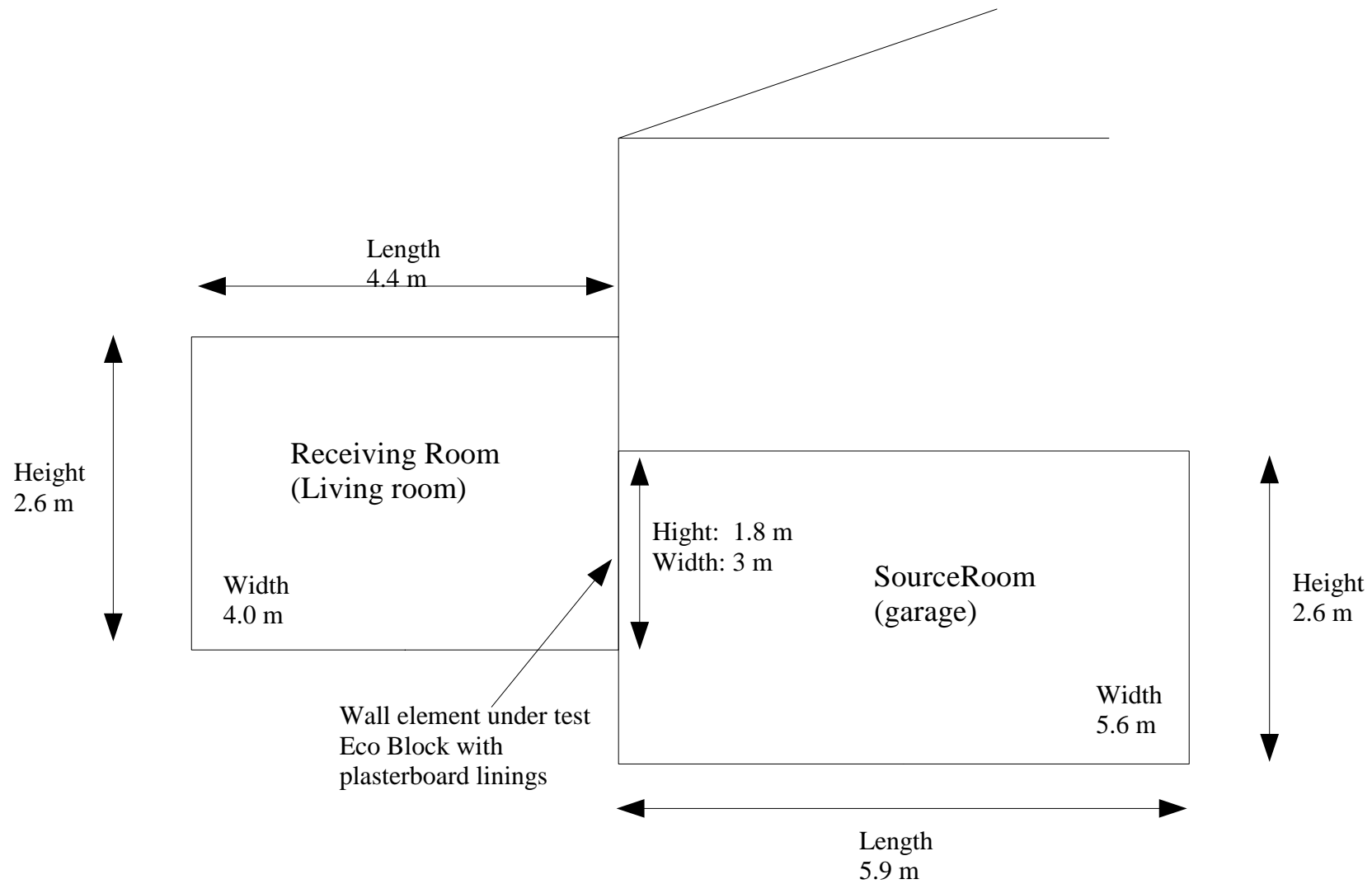
The STC rating is numerically the value that corresponds to the value at 500 Hz of the highest reference curve that meets the above two criteria.

- $D_{nt,w}$  – 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.
- $C_r$  – 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 airborne 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 Pty Ltd**  
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 ECO-Block Aust Test

Date  
14 October 2004

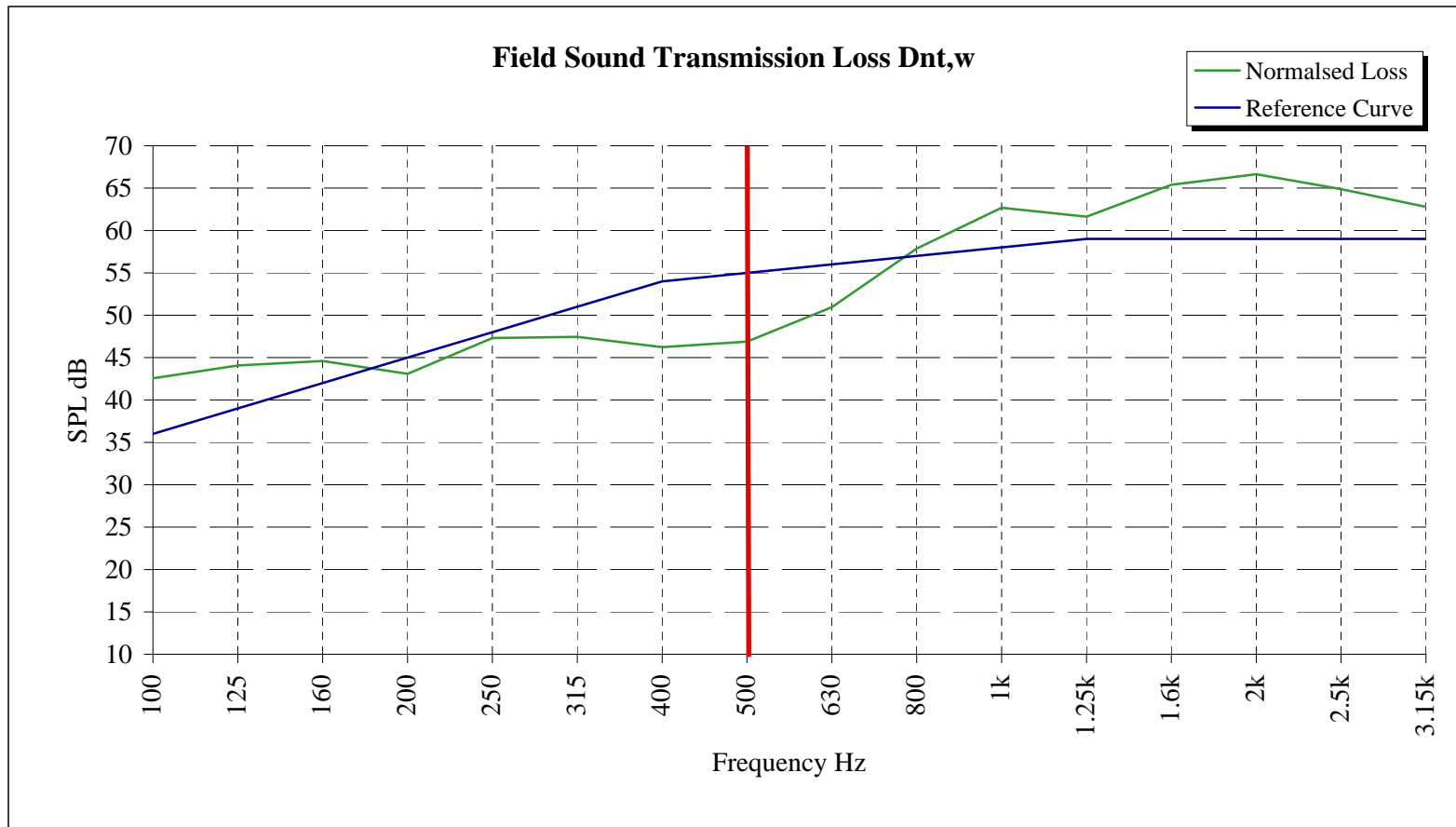
Scale  
NTS

**Project :** 2107 Eco-Block Aust Test  
**Test:** Field Rw tests. Wall system (Garage to Living room) Test 1

Report Date = 13/10/2004

Test Date = 8/10/2004  
 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

Centre Frequency Hz	Ri SPL Difference dB	Rw Ref Contour dB	Deficiencies 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
Total			
Dnt,w	55		27.1



**Project :** 2107 Eco-Block Aust Test  
**Test:** Field Rw tests. Wall system (Living room to Garage) Test 2

Report Date = 13/10/2004

Test Date = 8/10/2004  
 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

Centre Frequency Hz	Ri SPL Difference dB	Rw Ref Contour dB	Deficiencies 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	64.6	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	65.2	60	0.0
Total			
Dnt,w	56		29.4

