AMS ACOUSTICS
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Loudspeaker Test

Report

Manufacturer: Penton (UK) Ltd.

Type: Ceiling

Model: PWC6T

For: Penton (UK) Ltd.

Report No.: 1508/LS/PWC6T

Prepared By: A. N. Stacey B.Sc., AMIOA, AMInstSCE

July 2004

1.00 Object

1.01 The object of this Report is to present measurements of the acoustic performance of the PWC6T device.

2.00 Scope

2.02 The following characteristics were measured

- On-axis frequency response
- Polar response
- Impedance
- Applied voltage
- On-axis 3rd octave band sound pressure level

from which the following are calculated:

(i) Directivity Index (dB), tabulated and graphical

(ii) Directivity factor, Q

(iii) Effective octave band impedance

(iv) Octave band Sensitivity (dB @ 1m, 1W/oct)

(v) Overall Sensitivity: dBA @ 1m, 1W
dBlin @ 1m, 1W
250Hz-4kHz @ 1m, 1W
Speech shape @ 1m, 1W

(vi) Acoustic Power (dB-PWL @ 1W), tabulated and graphical

(vii) Octave band Power Apportionment (%)

(viii) Impedance bode plot

(ix) Expected maximum Sound pressure level (dB @ 1m)

(x) Frequency response chart

(xi) Polar response charts.

3.00 Method

3.01 The device was mounted in Free Space as shown in figure 1 - Mounting Method C.

3.02 The measurements were made in an anechoic chamber.

3.03 Measurements were made as detailed in AMS Test Method document No. IR/1a/LS/Meth.

3.04 All measurements were made in general accordance with BS EN 60268: Part 5: 1997.

4.00 Results

4.01 The On-axis 3rd octave frequency response of the device is shown graphically in the appendix.

4.02 The Impedance bode plot of the device is shown graphically in the appendix.

4.03 Polar plots of the device are shown graphically in the appendix.

4.04 Tabulated values of Directivity index, Directivity factor, Sensitivity, Acoustic Power, Power Apportionment, Impedance and Maximum SPL are shown in the Summary data sheet given in the appendix.

4.05 The Directivity Index has been calculated using Gerzon' equal angle, weighted area method.

5.00 Notes

5.01 Sensitivity

The octave band sensitivity is produced in its useful form for calculations. It should be noted that the octave band sensitivity is given as dB @ 1m, 1W/Oct. To determine the output when only the overall power is known, then only the overall dBA or dBlin values should be used. For more detailed information, refer to AMS Acoustics Data Sheet 'Loudspeaker Sensitivity – Interpretation of Results'.

5.02 Polar Plots

For convenience, each polar plot has been normalized to 0dB. For this reason, caution is advised when comparison of levels between octave bands are made. The reference axis frequency response should be used for comparison purposes.

6.00 Engineers Notes & Observations

Reference point located at the centre of the mounting baffle.

On-axis reference made normal to loudspeaker grille and includes the reference point.

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Loudspeaker Information

Manufacturer :	Penton (UK) Ltd.
Model Code :	PWC6T
Type :	Ceiling
Colour :	White
Serial No. :	NA
Batch No. :	NA
Other Markings :	-
Backbox :	As Supplied
Grille :	As Supplied
Weight (grammes) :	1050
Depth (mm) :	80 mm
Width (mm) :	170 mm
Height (mm) :	230 mm
Special Features :	-

Internal Details

Driver Types/Sizes :	NM
Driver Serial No.(s) :	NA
Driver Markings :	NA
Damping Material :	NM
Available Tappings :	6W, 3W, 1.5W, 0.75W, 0.25W

Electrical Details

Resonant Frequency(s) :	See Impedance Plot
Cross-Over Frequency(s) :	N/A
Nominal Impedance (ohms):	8
Inductance :	NM
Capacitance :	NM

NM = Not Measured, NA = Not Applicable

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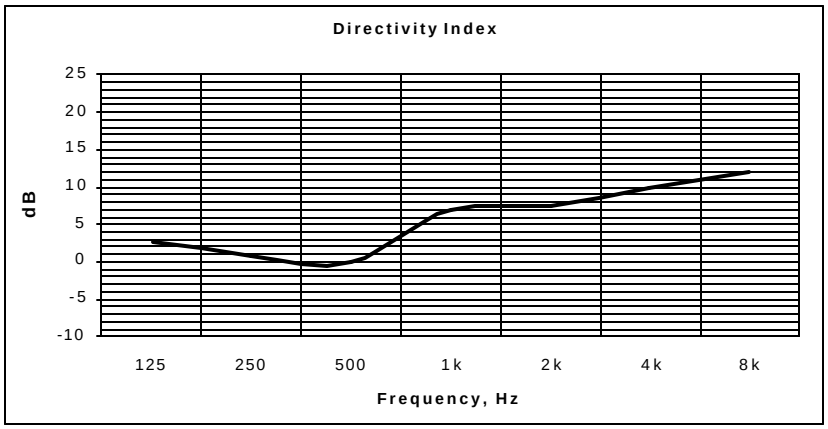
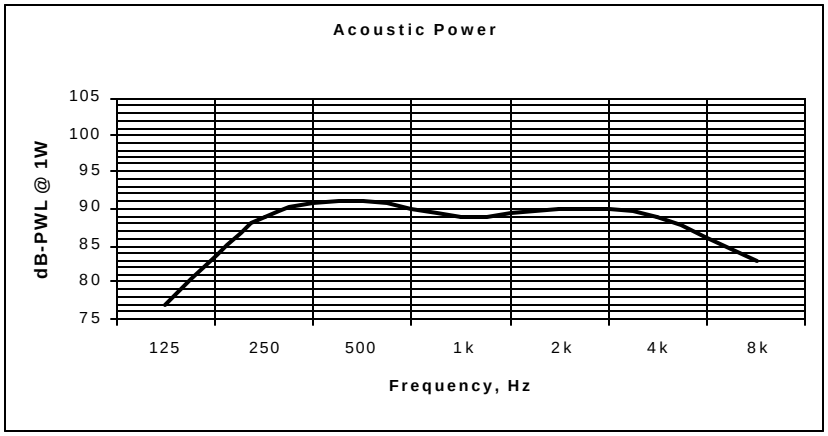
Manufacturer : Penton (UK) Ltd.
Model Code : PWC6T
Mounting : Half-Space, Free Field
Transformer Tapping : 6W

Reference Axis Located at : 0 degrees

	Frequency (Hz)								
Parameter	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**dB**	**dBA**
Axial Q	1.9	1.2	1.0	4.9	5.5	9.5	16.2		
Directivity Index (dB on Axis)	2.8	0.8	0.0	6.9	7.4	9.8	12.1		
Sensitivity (dB @ 1m, 1W/Oct)	77	87	88	94	95	96	95	93	93
Sensitivity(dB @ 1m, 1W)250Hz-4kHz								93	94
Sensitivity(dB @ 1m, 1W)Speech Shape								88	86
Acoustic Power (dB-PWL @ 1W)	77	89	91	89	90	89	83		
Apportioned Power (%)	18	15	15	14	14	12	8		
Effective Impedance (Ohms)	1282	1457	1444	1513	1610	1945	2872		
Expected maximum SPL (dB @ 1m)	77	87	88	93	94	95	92	100	101

Test Signal: Pink Noise(100Hz-10kHz)





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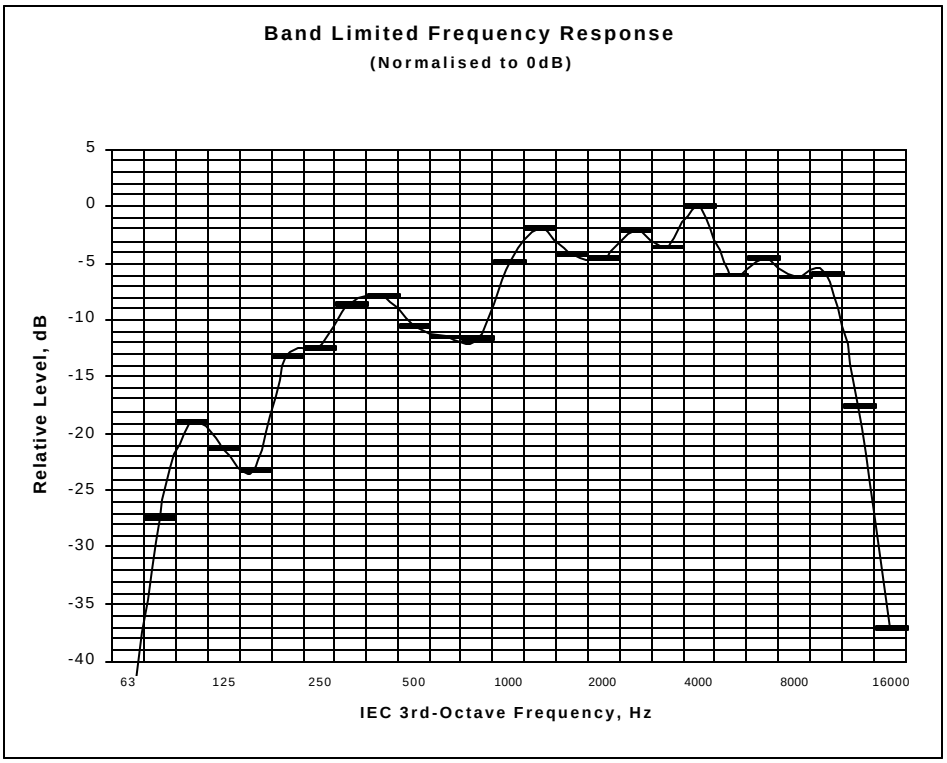
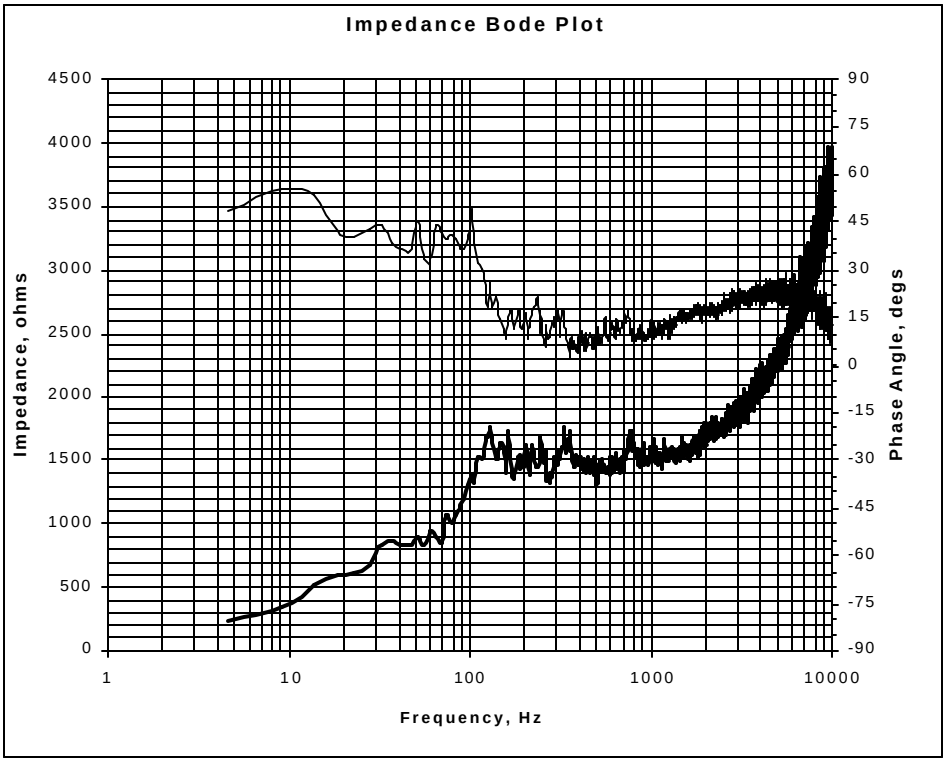
PWC6T





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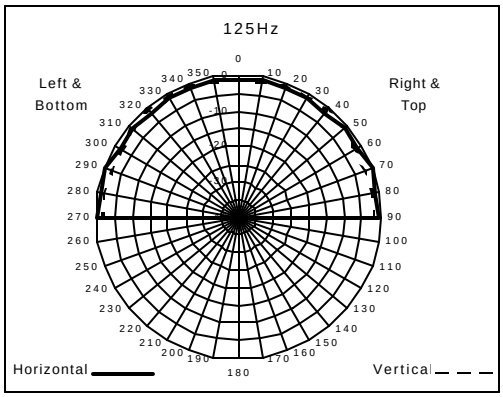
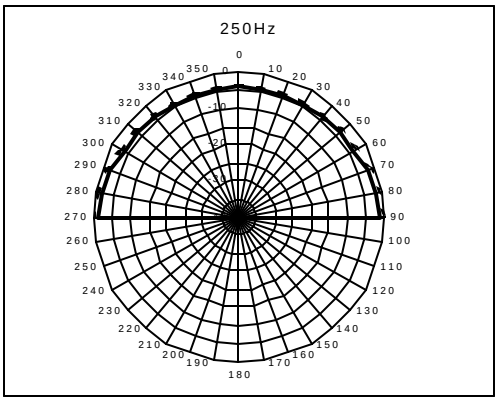
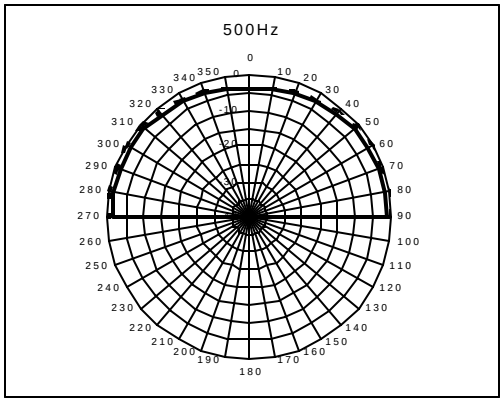
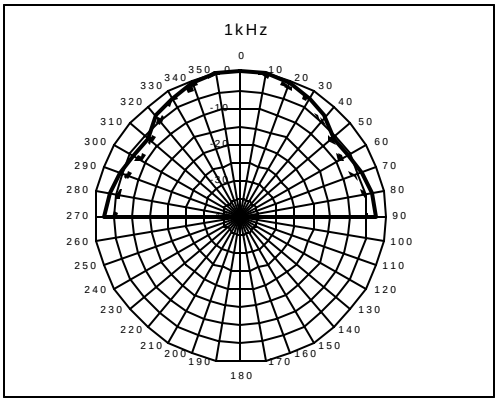
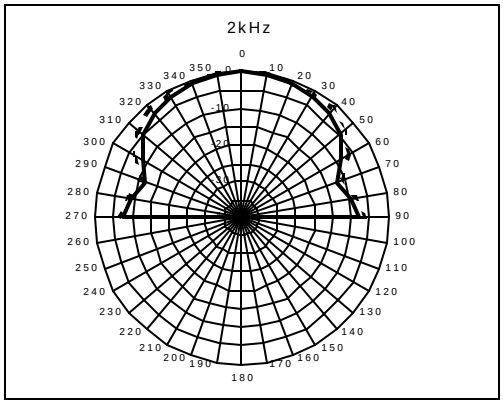
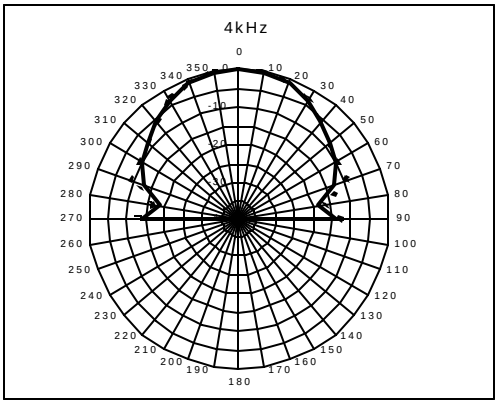


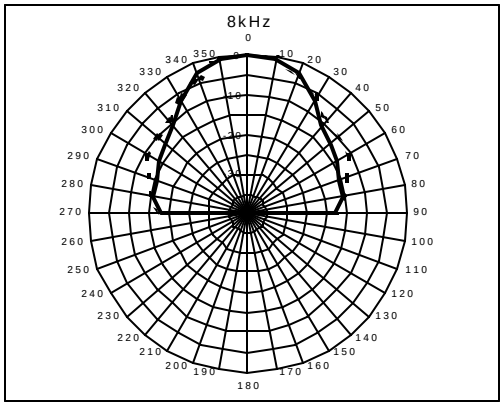


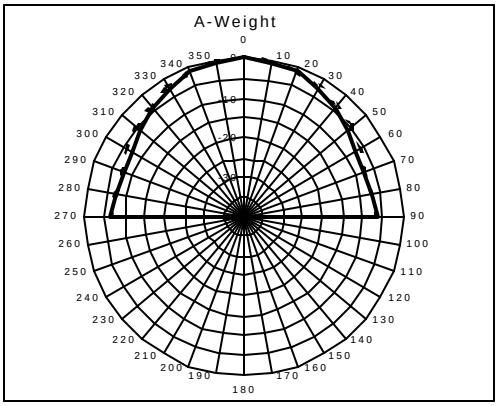






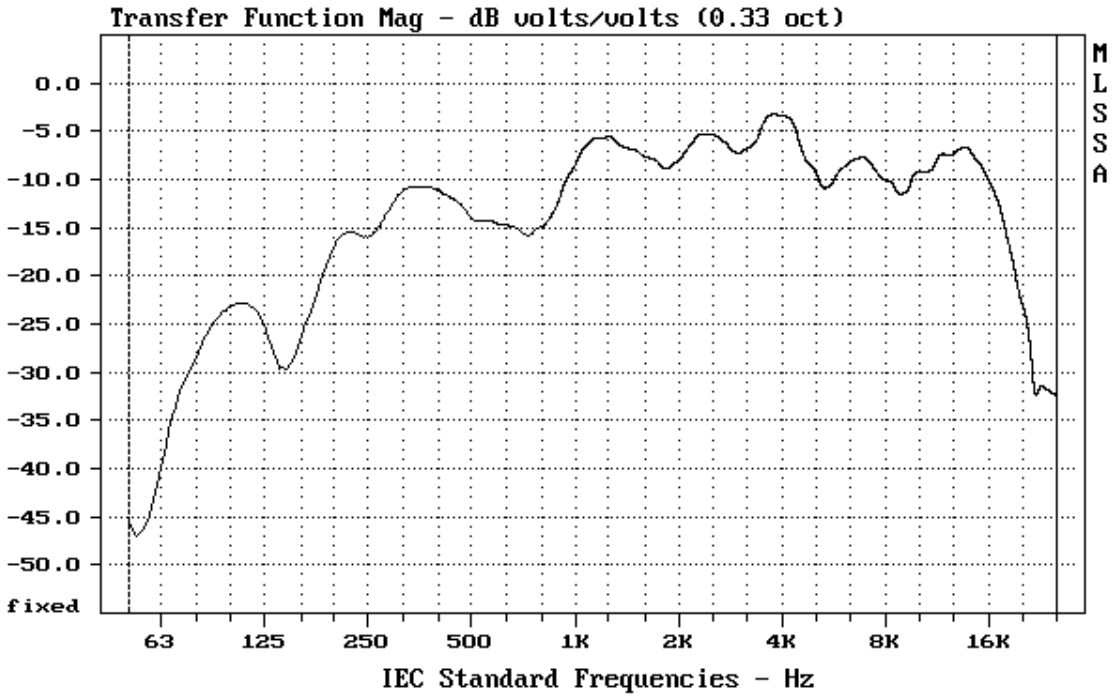






PWC6T

Wide Band Frequency Response
(Valid from 63Hz to 20kHz)



Note: The wide band frequency response is derived using MLS methods and does not necessarily relate to the sensitivity values given in the summary table.

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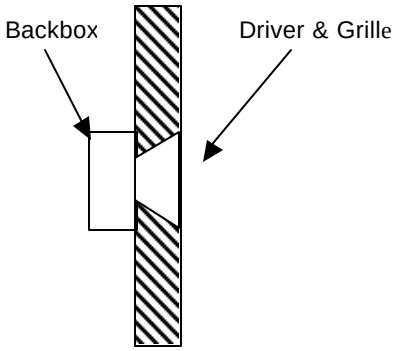
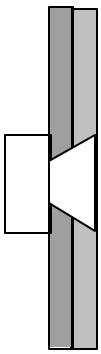
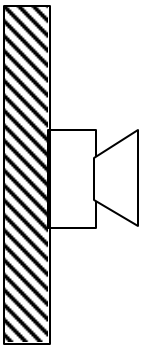
Loudspeaker Mounting Methods



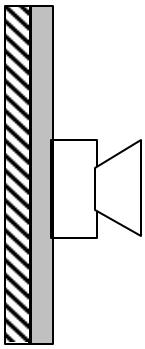
Mounting Method A
Loudspeaker Mounted
in a Reflective Baffle



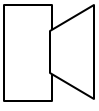
Mounting Method B
Loudspeaker Mounted
in an Absorbent Baffle



Mounting Method C
Loudspeaker Mounted
on a Reflective Baffle



Mounting Method B
Loudspeaker Mounted
on an Absorbent Baffle



Mounting Method E
Loudspeaker not Attached to any
Surface and Radiation Unaffected
by nearby Reflecting Surfaces