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Loudspeaker Test

Report

Manufacturer: Penton UK Ltd

Type: Ceiling

Model: PCL/5T

For: Penton UK

Report No.: 1278/LS/PCL6T

Prepared By: P Edwards

February 2002

1. Object

1.1. The object of this Report is to present measurements of the acoustic performance of the PCL/5T device.

2. Scope

2.1. 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

a) Directivity Index (dB), tabulated and graphical
b) Directivity factor, Q
c) Effective octave band impedance
d) Octave band Sensitivity (dB @ 1m, 1W/oct)
e) Overall Sensitivity:
   dBA @ 1m, 1W
   dBlin @ 1m, 1W
   250Hz-4kHz @ 1m, 1W
   Speech shape @ 1m, 1W
f) Acoustic Power (dB-PWL @ 1W), tabulated and graphical
g) Octave band Power Apportionment (%)
h) Impedance bode plot
i) Expected maximum Sound pressure level (dB @ 1m)
j) Frequency response chart
k) Polar response charts

3. Method

3.1. The device was mounted in Free Space as shown in figure 1 – Mounting method A.

3.2. The measurements were made in an anechoic chamber.

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

3.4. All measurements were made in general accordance with BS 6840: Part 5: 1995.

4. Results

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

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

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

4.4. 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.

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

5. Notes

5.1. 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'.

5.2. 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 is made. The reference axis frequency response should be used for comparison purposes.

6. Engineers Notes

Reference point located at centre of grille.

Reference axis located normal to grille and includes the reference point.

Loudspeaker Information

Manufacturer :	Penton UK Ltd
Model Code :	PCL/5T
Type :	Ceiling
Colour :	White
Serial No. :	None
Batch No. :	None
Other Markings :	None
Backbox :	None
Grille :	As Supplied
Weight (grammes) :	750
Depth (mm) :	80 mm
Width (mm) :	206 mm
Height (mm) :	206 mm
Special Features :	Easy fit clamping system

Internal Details

Driver Types/Sizes :	1 x 140mm cone driver
Driver Serial No.(s) :	None
Driver Markings :	None
Damping Material :	NA
Available Tappings :	6W, 3W, 1.5W, 0.75W, 0.25W (100V)

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

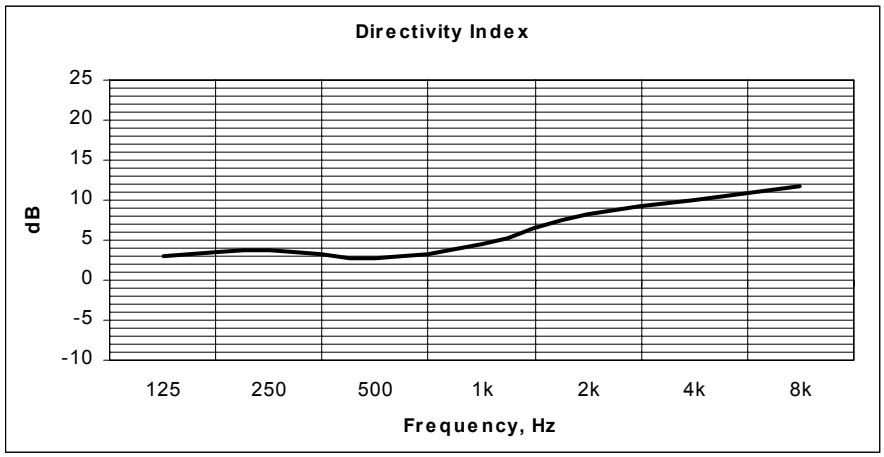
Originator: Countersigned:

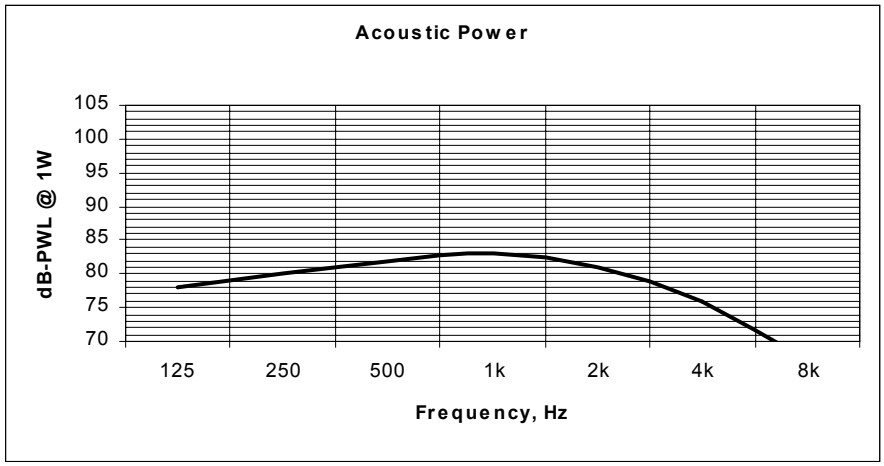
Manufacturer : Penton UK Ltd
Model Code : PCL5T
Mounting : Half-Space, Free Field
Transformer Tapping : 6W

Reference Axis Located at : 0 degrees

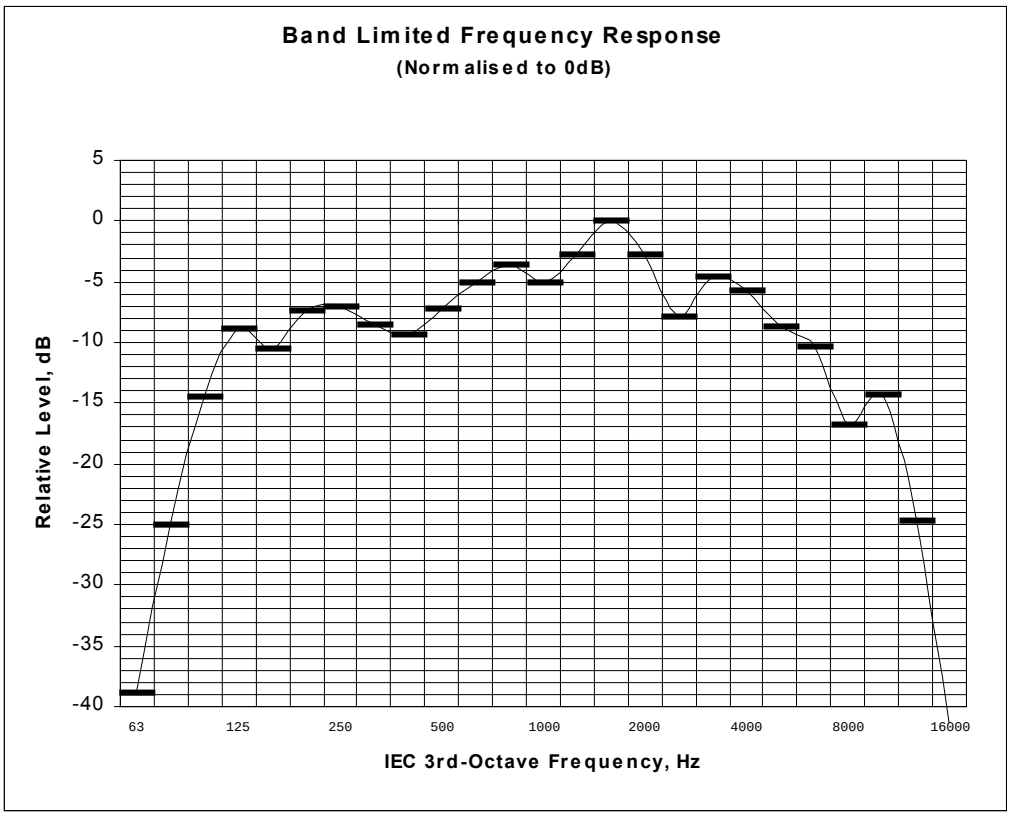
	Frequency (Hz)								
Parameter	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**dB**	**dBA**
Axial Q	2.0	2.4	1.9	2.9	6.6	9.7	14.8		
Directivity Index (dB on Axis)	3.0	3.8	2.8	4.6	8.2	9.9	11.7		
Sensitivity (dB @ 1m, 1W/Oct)	73	80	84	90	93	90	85	83	83
Sensitivity(dB @ 1m, 1Wt)250Hz-4kHz								86	86
Sensitivity(dB @ 1m, 1W)Speech Shape								79	77
Acoustic Power (dB-PWL @ 1W)	78	80	82	83	81	76	67		
Apportioned Power (%)	48	21	8	5	4	3	2		
Effective Impedance (Ohms)	120	299	688	1211	1730	2096	3083		
Expected maximum SPL (dB @ 1m)	78	81	81	85	86	82	75	91	91

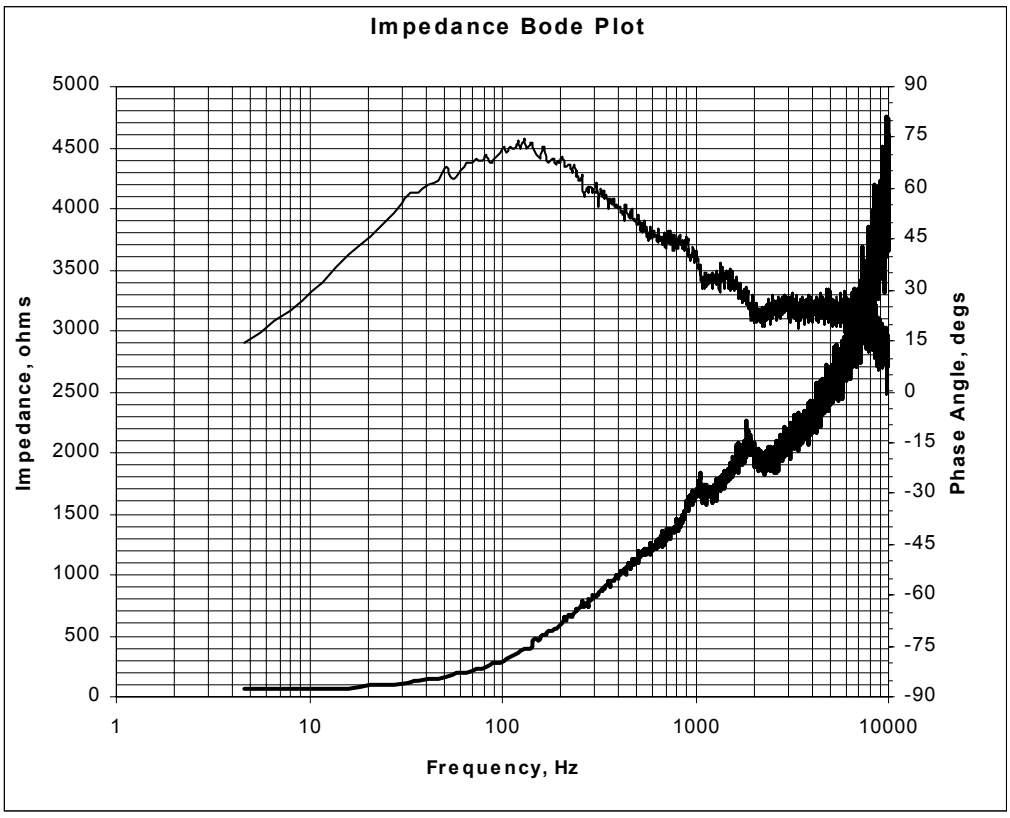
Test Signal: Pink Noise(100Hz-10kHz)



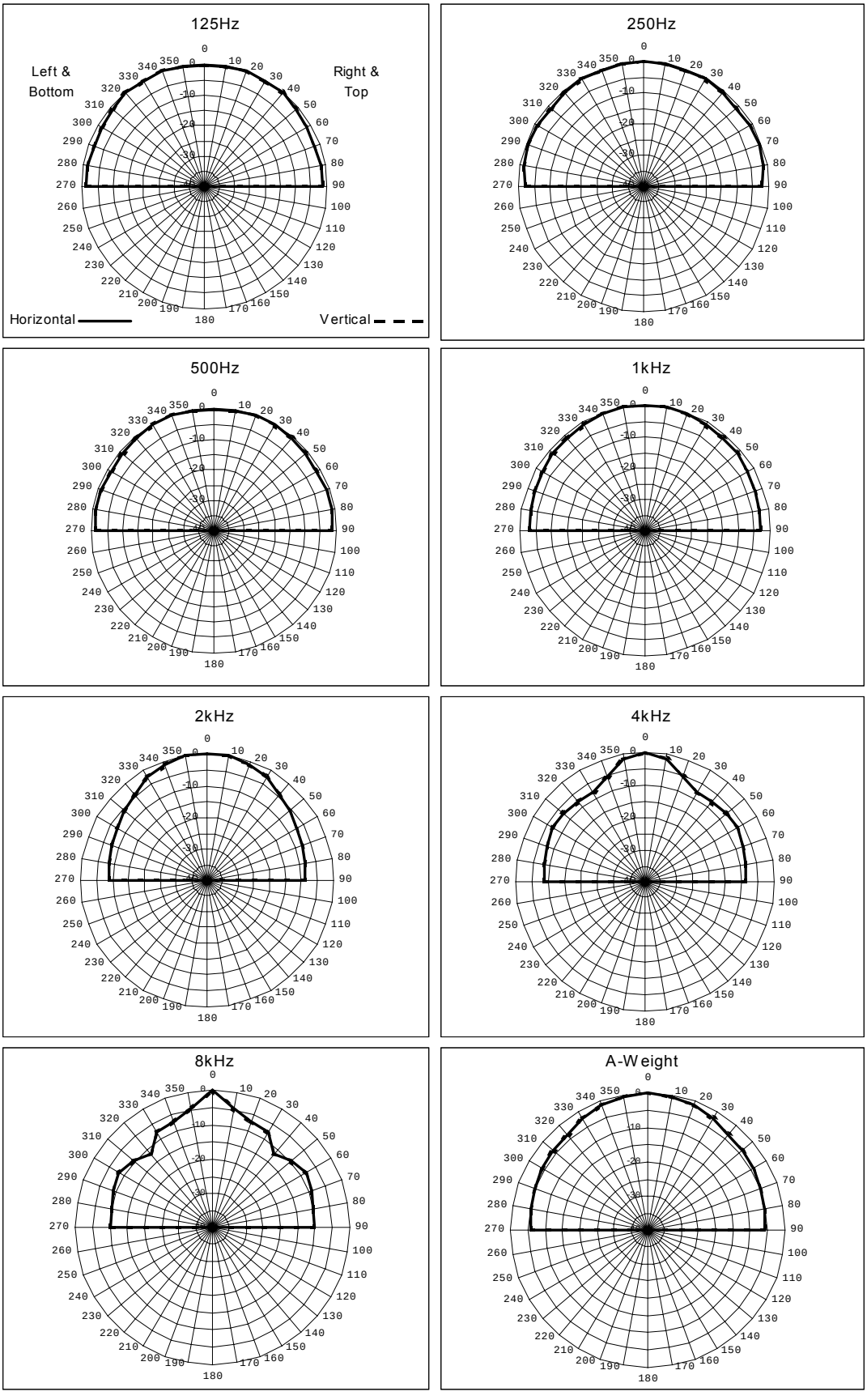


PCL5T





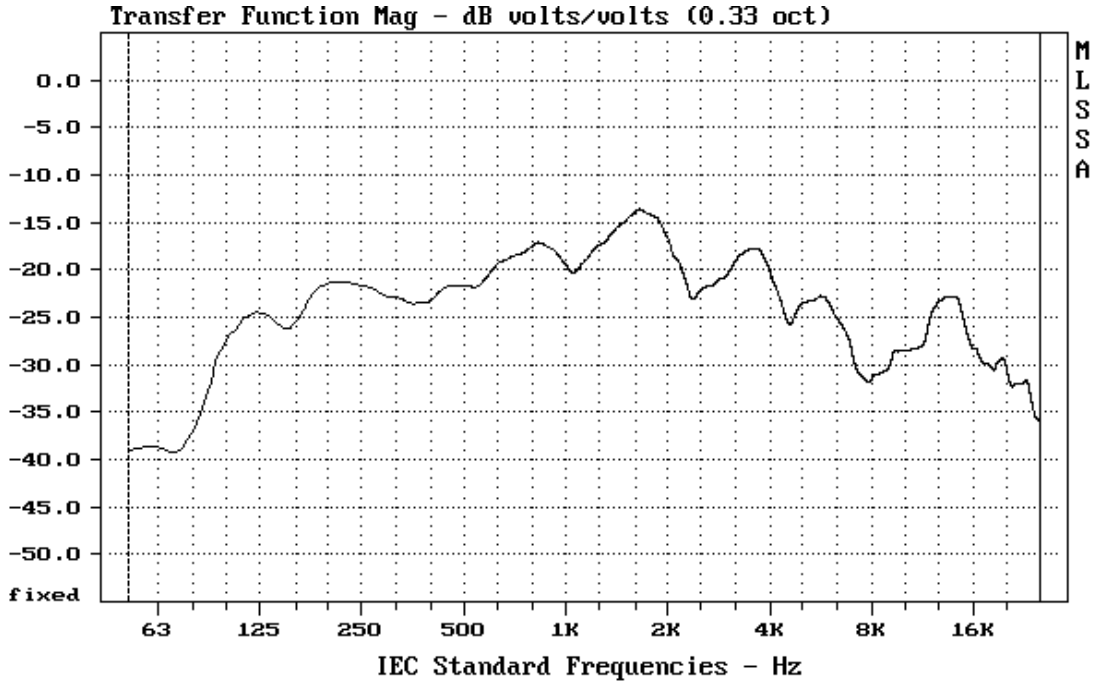
PCL/5T



PCL/5T

Wide Band Frequency Response

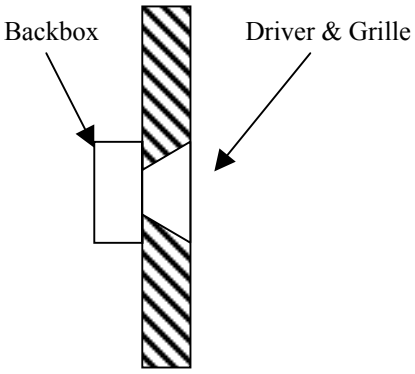
(Valid from 63Hz to 20kHz)



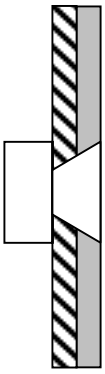
mean: -25.58, rms: -23.97, std: 4.45, max: -13.59, min: -39.18

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.

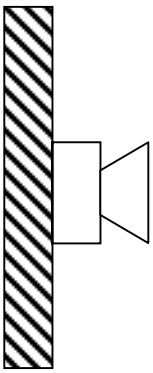
Loudspeaker Mounting Methods



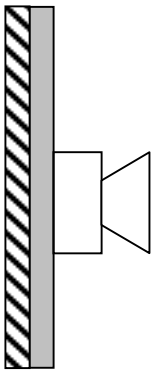
Mounting Method A
Loudspeaker Mounted
in a Reflective Baffle



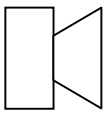
Mounting Method B
Loudspeaker Mounted
in an Absorbent Baffle



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