

## Loudspeaker Test Report

Manufacturer: Penton (UK) Ltd.

Type: Ceiling

Model: PMC4T

For: Penton (UK) Ltd.

Report No.: 1508/LS/PMC4T

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## 1.00 Object

1.01 The object of this Report is to present measurements of the acoustic performance of the PMC4T device.

## 2.00 Scope

2.02 The following characteristics were measured

- On-axis frequency response
- Polar response
- Impedance
- Applied voltage
- On-axis 3<sup>rd</sup> 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 3<sup>rd</sup> 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 include the reference point.



## Loudspeaker Information

Manufacturer : Penton (UK) Ltd.  
Model Code : PMC4T  
Type : Ceiling  
Colour : White  
Serial No. : NA  
Batch No. : NA  
Other Markings : -  
Backbox : As Supplied  
Grille : As Supplied  
Weight (grammes) : 600  
Depth (mm) : 65 mm  
Width (mm) : 120 mm  
Height (mm) : 120 mm  
Special Features : -

### Internal Details

Driver Types/Sizes : NM  
Driver Serial No.(s) : NA  
Driver Markings : NA  
Damping Material : NM  
Available Tappings : 4W, 2W, 1W, 0.5W (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

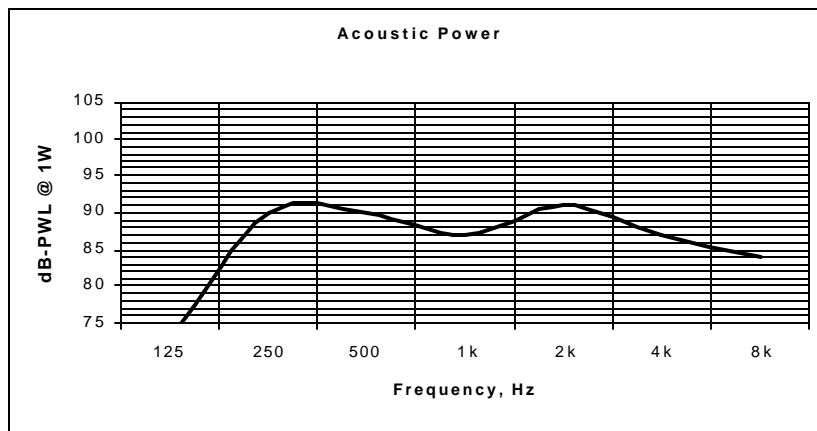
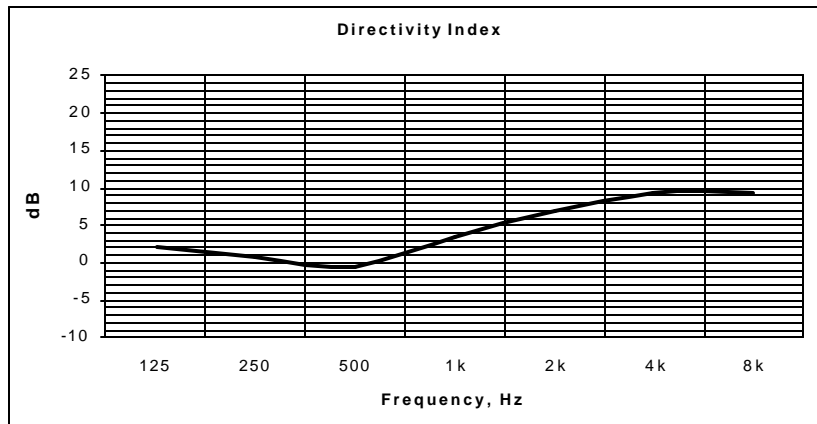


Manufacturer : Penton (UK) Ltd.  
 Model Code : PMC4T  
 Mounting : Half-Space, Free Field  
 Transformer Tapping : 4W

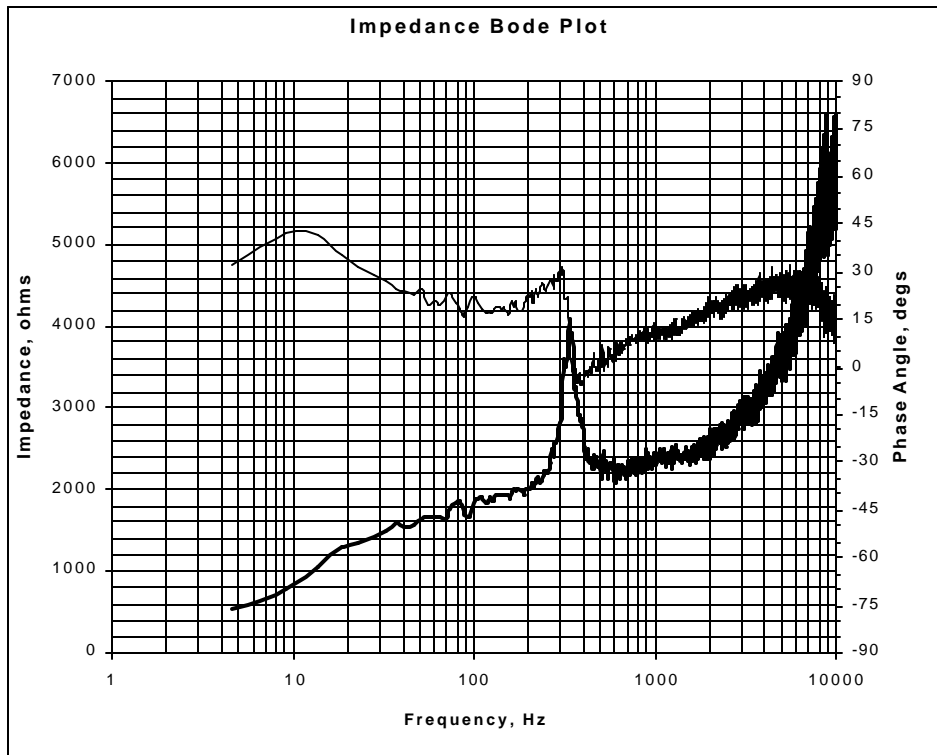
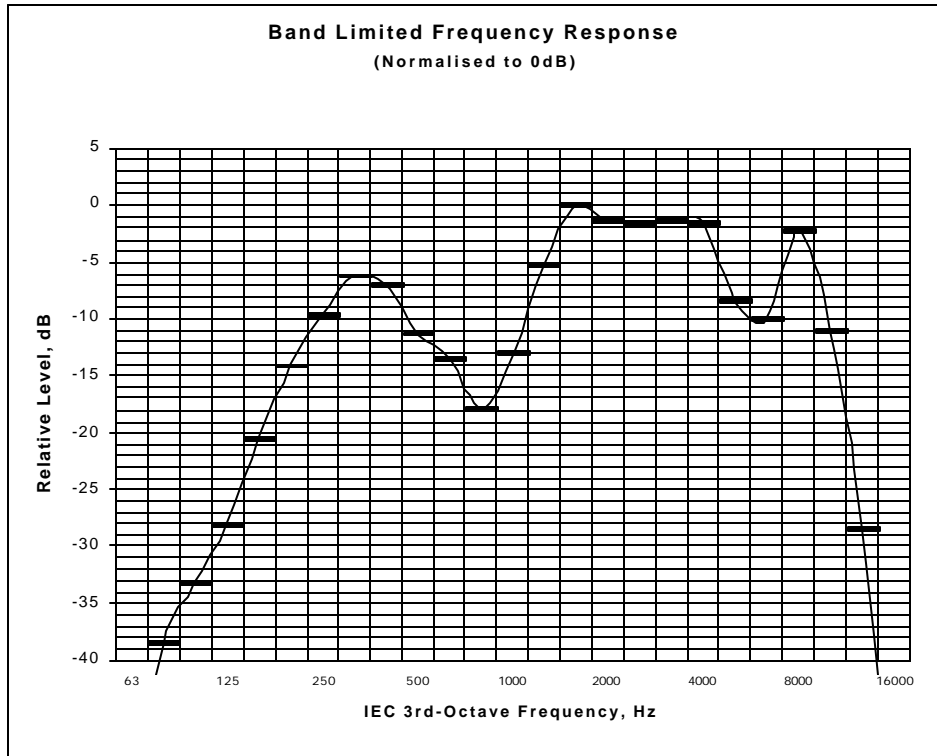
Reference Axis Located at : 0 degrees

Parameter	Frequency (Hz)							dB	dBA
	125	250	500	1k	2k	4k	8k		
Axial Q	1.6	1.2	0.9	2.2	5.1	8.6	8.4		
Directivity Index (dB on Axis)	2.0	0.8	-0.5	3.4	7.1	9.3	9.2		
Sensitivity (dB @ 1m, 1W/Oct)	72	88	87	88	96	95	94	91	92
Sensitivity(dB @ 1m, 1Wt)250Hz-4kHz								92	93
Sensitivity(dB @ 1m, 1W)Speech Shape								87	85
Acoustic Power (dB-PWL @ 1W)	73	90	90	87	91	87	84		
Apportioned Power (%)	18	16	14	15	14	12	8		
Effective Impedance (Ohms)	1791	2164	2391	2305	2448	2963	4520		
Expected maximum SPL (dB @ 1m)	70	86	85	86	94	92	89	97	98

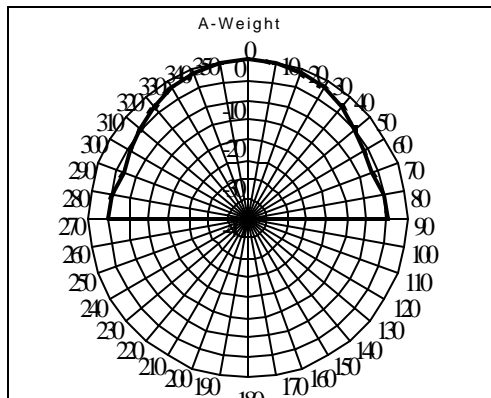
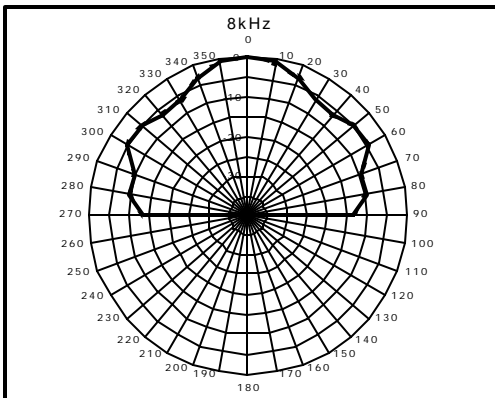
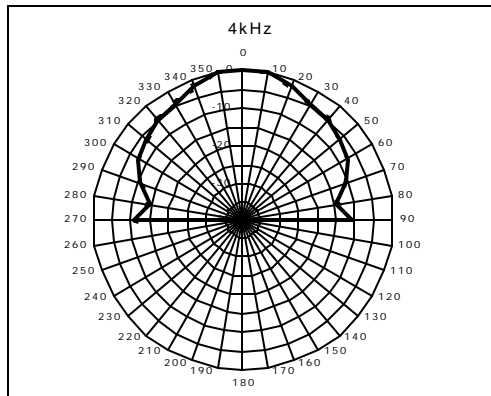
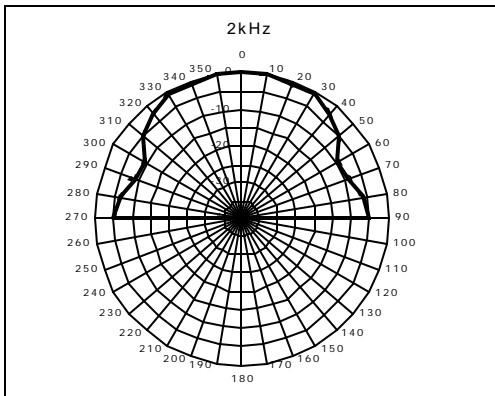
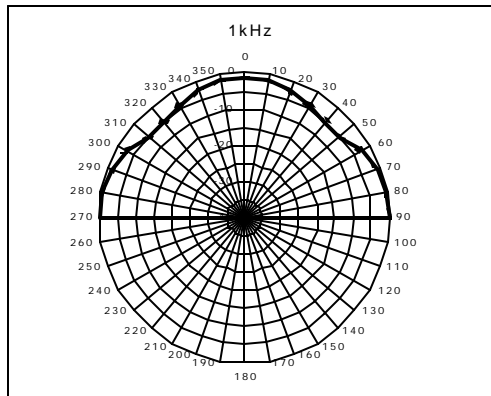
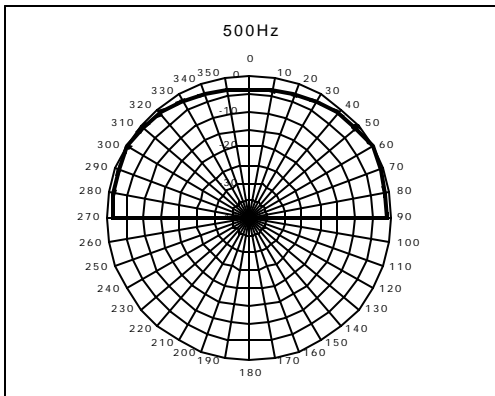
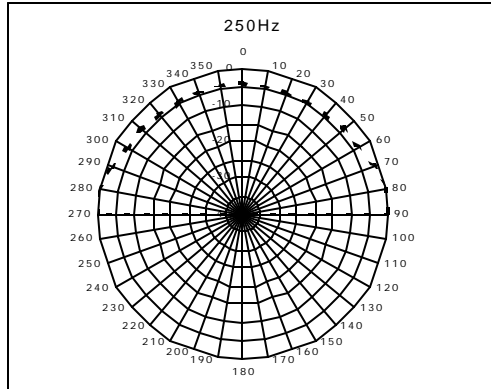
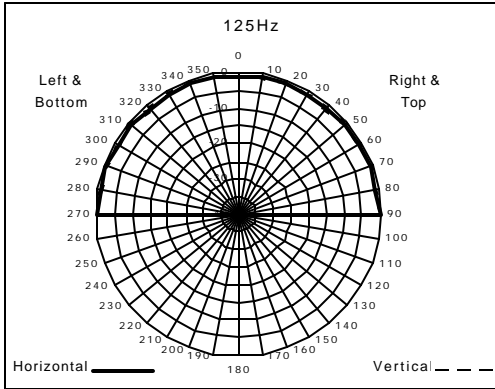
Test Signal: Pink Noise(100Hz-10kHz)



PMC4T



PMC4T

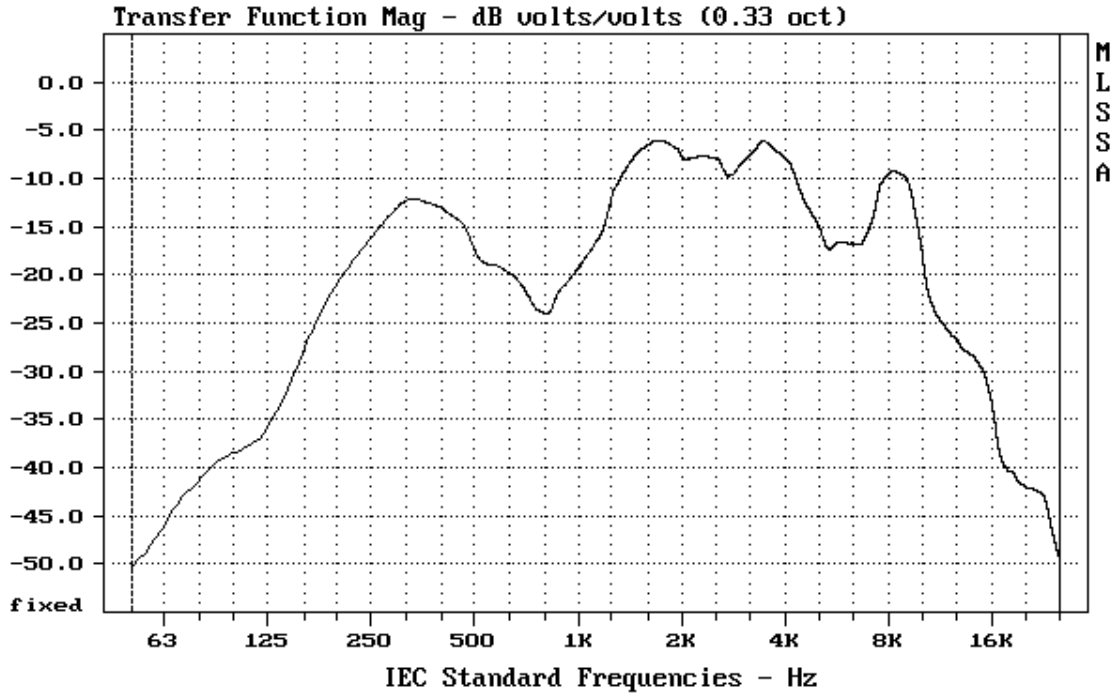






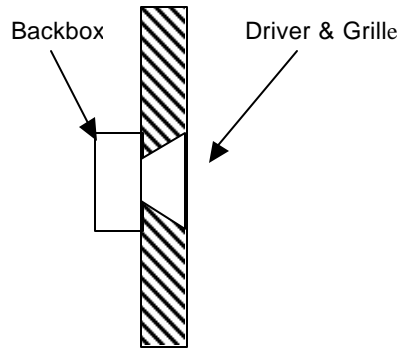
PMC4T

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.

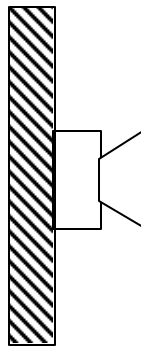
## Loudspeaker Mounting Methods



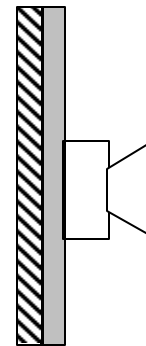
**Mounting Method A**  
Loudspeaker Mounted  
in a Reflective Baffle



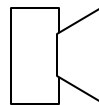
**Mounting Method B**  
Loudspeaker Mounted  
in an Absorbent Baffle



**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