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Loudspeaker Test

Report

Manufacturer: Penton (UK) Ltd

Type: Ceiling

Model: CCS4T

For: Penton (UK) Ltd

Report No.: 1749/LS/CCS4T

Prepared By: A. N. Stacey B.Sc., AMIOA(E), MInstSCE

May 2007

1.00 Object

1.01 The object of this Report is to present measurements of the acoustic performance of the CCS4T device.

2.00 Scope

2.01 The following characteristics were measured

- On-axis (reference 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 and wide band (100Hz to 10kHz) impedance

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

(v) Wide band 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]
(assuming no compression)

(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 A.

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: 2003.

4.00 Results

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

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

4.03 Polar plots of the device are shown graphically.

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.

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 concentric to grille and is n the rille

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

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Loudspeaker Information

Manufacturer :	Penton (UK) Ltd
Model Code :	CCS4T
Type :	Ceiling
Colour :	White
Serial No. :	None
Batch No. :	None
Other Markings :	Penton tapping label
Backbox :	As supplied
Grille :	As supplied
Weight (grammes) :	2560
Depth (mm) :	178 mm
Width (mm) :	194 mm
Height (mm) :	194 mm
Special Features :	Rotary tapping selector

Internal Details

Driver Types/Sizes :	1 x cone driver with concentric tweeter.
Driver Serial No.(s) :	NM
Driver Markings :	NM
Damping Material :	NM
Available Tappings :	30W, 15W, 7.5W, 3.75W (100V)

Electrical Details

Resonant Frequency(s) :	See impedance plot
Cross-Over Frequency(s) :	NA
Nominal Impedance (ohms):	8
Inductance :	NM
Capacitance :	NM

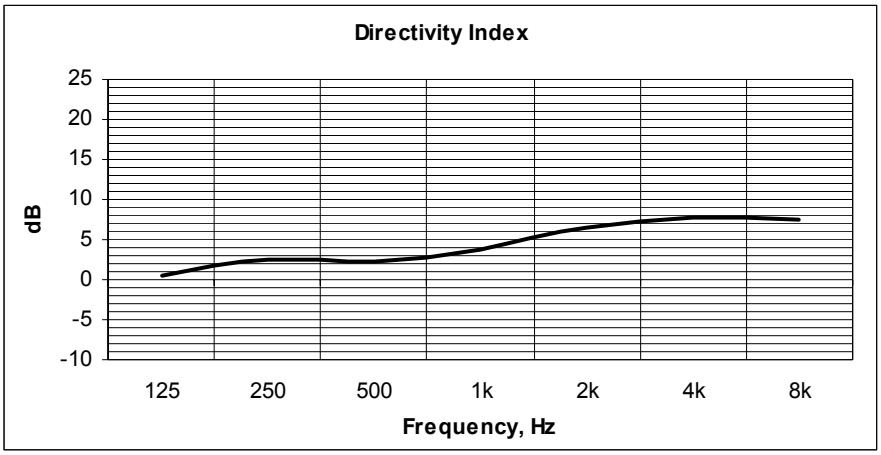
NM = Not Measured, NA = Not Applicable

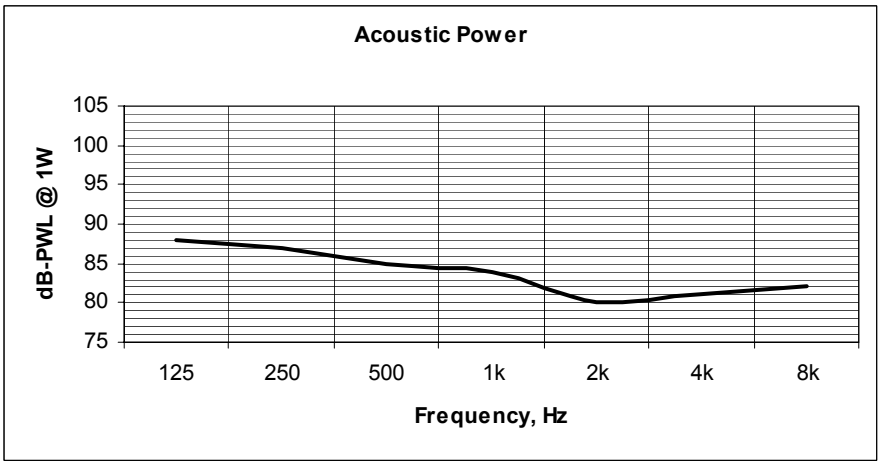
Manufacturer :	Penton
Model Code :	CCS4T
Mounting :	HalfSphere
Transformer Tapping :	30W
Effective Impedance :	343 ohms
Measurement Distance :	1.2m

Reference Axis Located at : 0 degrees

	Frequency (Hz)								
Parameter	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**dB**	**dBA**
Axial Q	1.1	1.8	1.7	2.4	4.5	5.9	5.8		
Directivity Index (dB on Axis)	0.4	2.6	2.3	3.8	6.5	7.7	7.6		
Sensitivity (dB @ 1m, 1W/Oct)	87	86	84	86	88	86	84	86	84
Sensitivity(dB @ 1m, 1W)250Hz-4kHz								86	85
Sensitivity(dB @ 1m, 1W)Speech Shape								86	80
Acoustic Power (dB-PWL @ 1W)	88	87	85	84	80	81	82		
Apportioned Power (%)	10	16	15	11	6	14	24		
Effective Impedance (Ohms)	449	311	309	417	810	334	204		
Expected maximum SPL (dB @ 1m)	92	93	91	92	91	93	93	101	99

Test Signal: Pink noise(100Hz-10kHz, 3rd octave bands)





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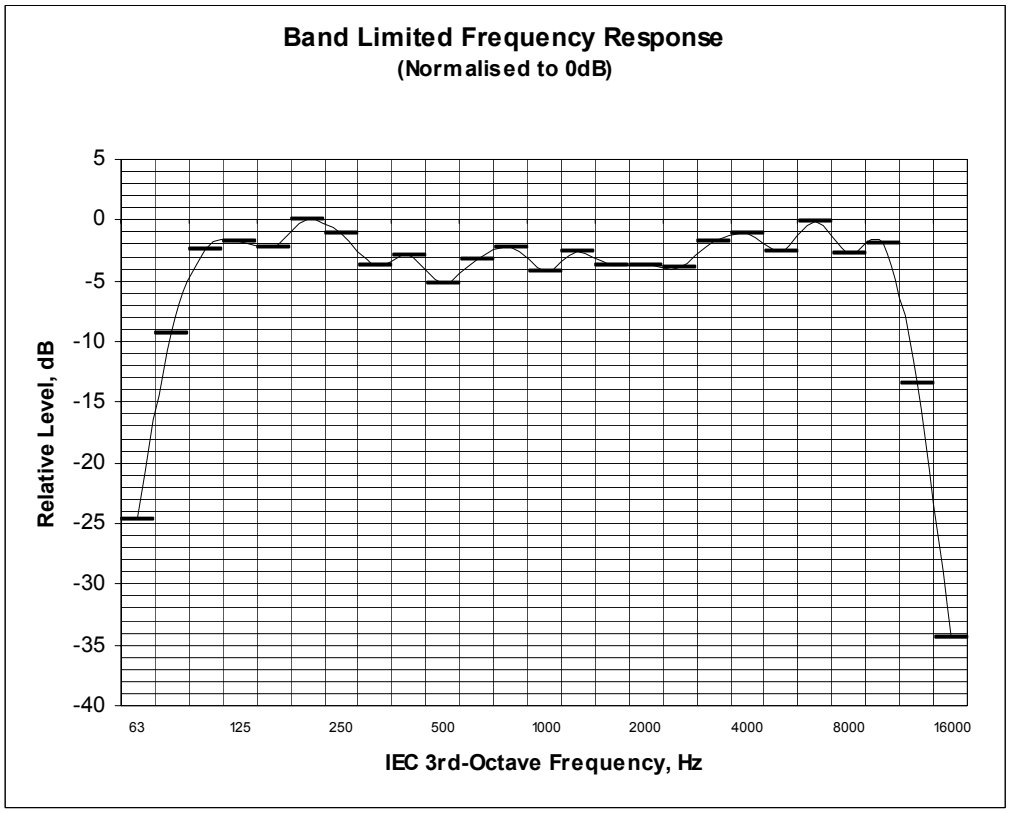

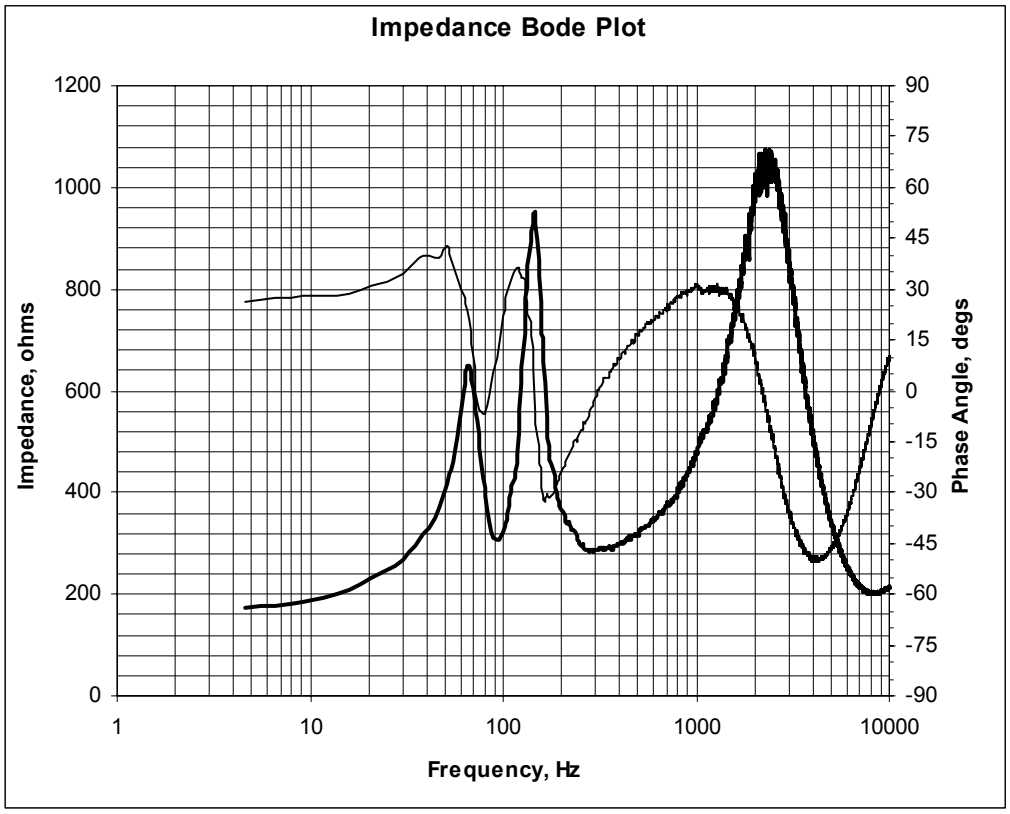

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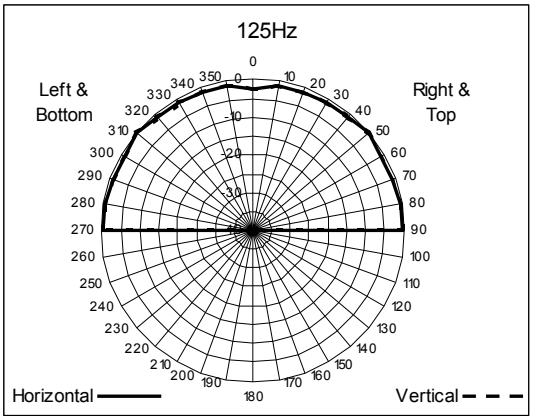

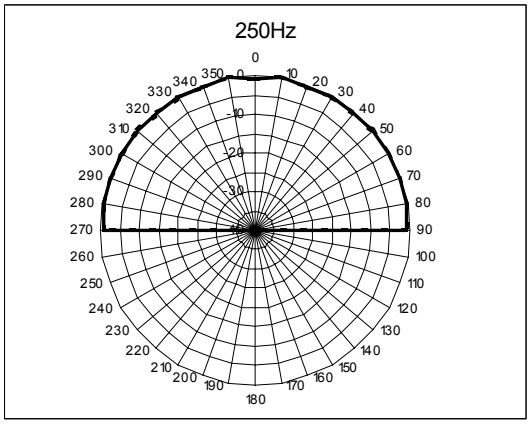

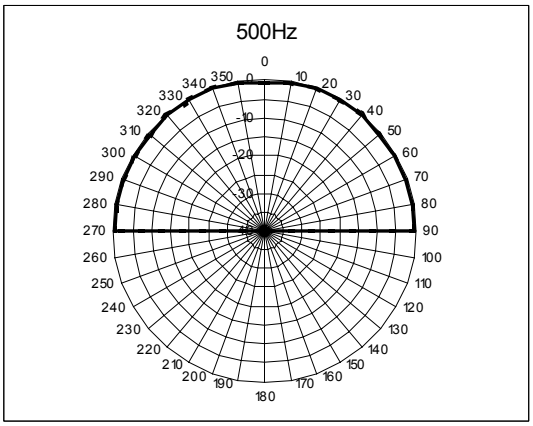

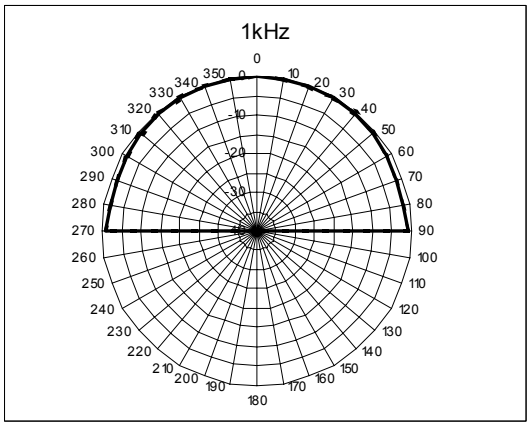

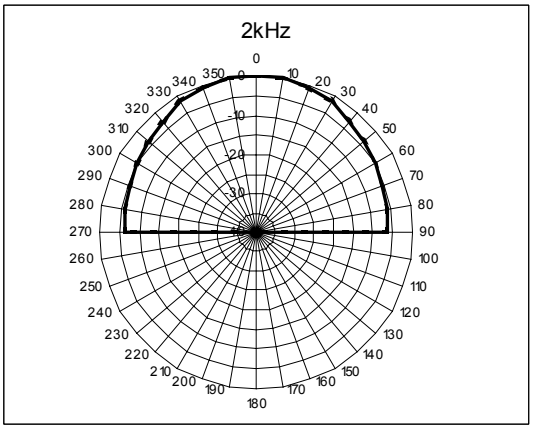

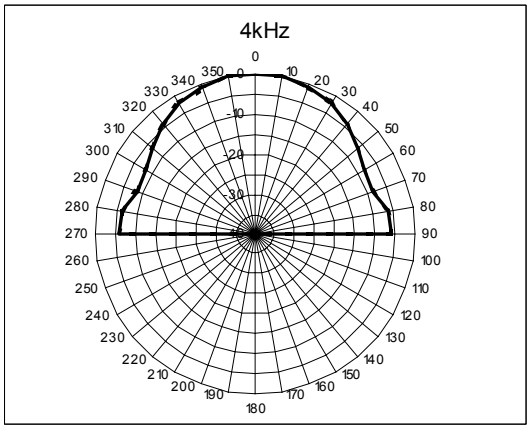

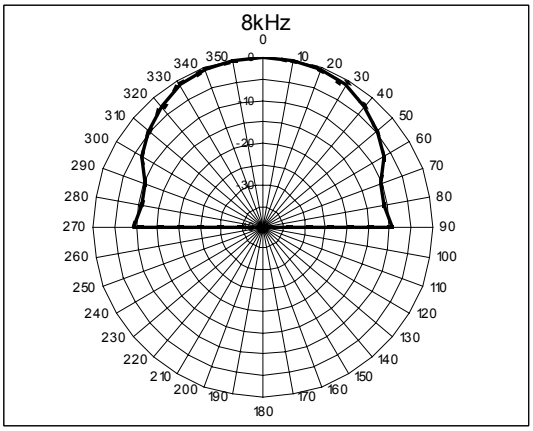

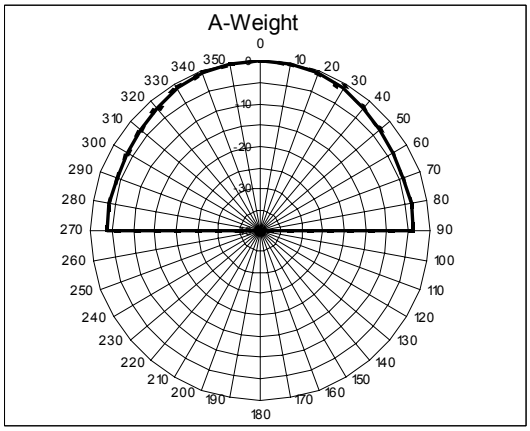

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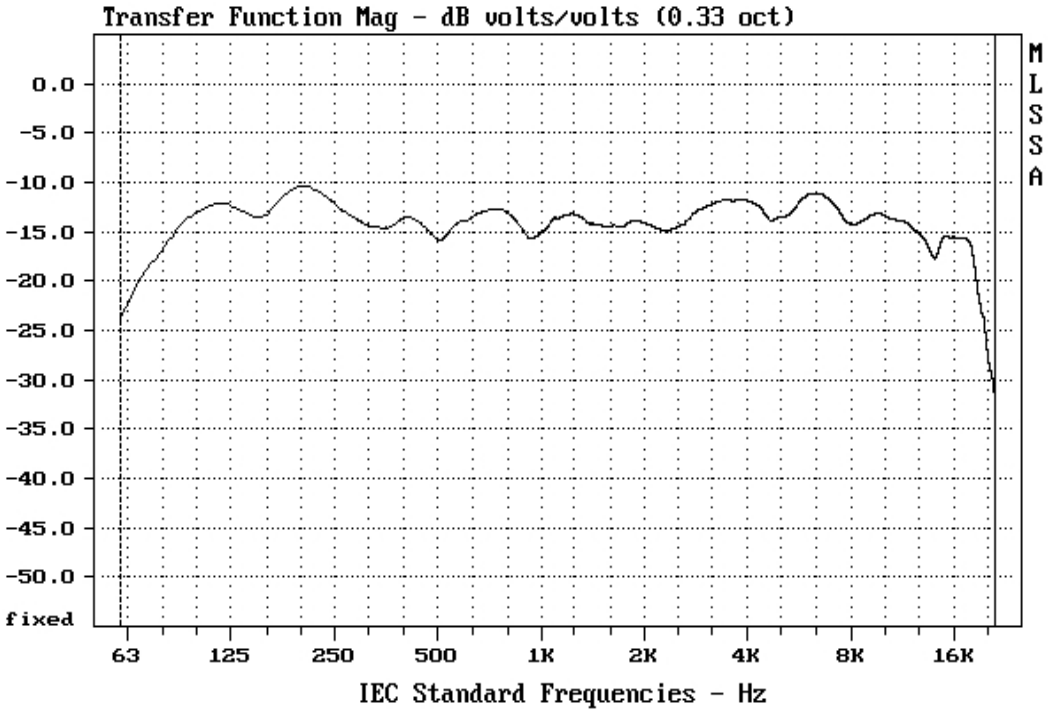
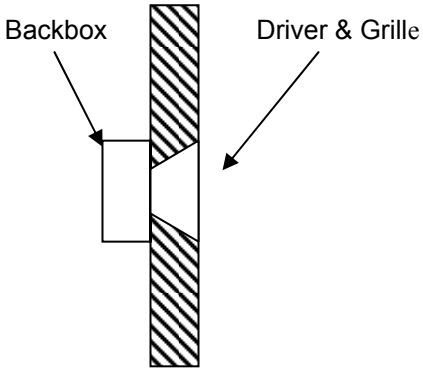
Wide Band Frequency Response



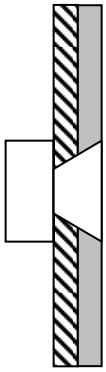
Note: The wide band frequency response is derived using MLS methods and does not necessarily relate to the sensitivity values given in the summary table.

Signed: Countersigned:

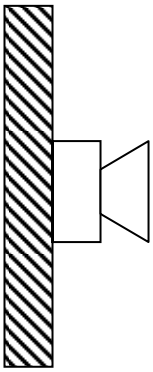
Loudspeaker Mounting Methods



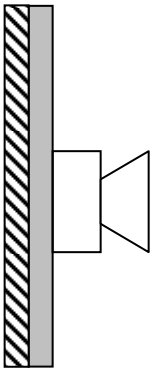
Mounting Method A
Loudspeaker Mounted
in a Reflective Baffle



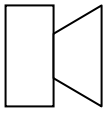
Mounting Method B
Loudspeaker Mounted
in an Absorbent Baffle



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