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Loudspeaker Test Report

Manufacturer: Penton (UK) Ltd

Type: Horn

Model: MHS20TENC

For: Internal only

Report No.: 2004/LS/MHS20TENC

Prepared By: A. N Stacey, B.SC., MIOA(E), MInstSCE

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1.00 Object

- 1.01 The object of this Report is to present measurements of the acoustic performance of the MHS20TENC device.

2.00 Scope

- 2.01 The following characteristics were measured

- On-axis (reference axis) frequency response
- Polar response
- Impedance (Small signal)
- Applied voltage
- On-axis 3rd octave band sound pressure level

from which the following are calculated:

- (i) Directivity Index [dB], tabulated and graphical
- (ii) Effective octave and wide band (100Hz to 10kHz) impedance
- (iii) Sensitivity [dB @ 1m,1W]:
Pink noise
Speech shape (*IEC Male)
(*BS EN 60268-16:2011)
- (iv) Octave band Sensitivity [dB @ 1m,1W/oct]
- (v) Acoustic Power [dB-PWL @ 1W], tabulated and graphical
- (vi) Octave band Power Apportionment [%]
- (vii) Expected maximum Sound pressure level [dB @ 1m]
(If extrapolated from a low noise voltage level then power compression is not being considered)
- (viii) Frequency response chart
- (ix) Impedance bode plot
- (x) Polar response charts

3.00 Method

- 3.01 The device was mounted in Free Space as shown in figure 1 - Mounting Method E.
- 3.02 The measurements were made in an anechoic chamber.
- 3.03 Measurements were made as detailed in AMS Test Method document No. IR141/LS/Handbook v.1.
- 3.04 All measurements were made in general accordance with BS EN 60268: Part 5: 2003.
- 3.05 The test signal for all sound pressure level measurements was band limited Pink noise (100Hz to 10kHz) with a 6dB Crest factor.

4.00 Results

- 4.01 The band limited on-axis 3rd octave (100Hz-10kHz) frequency response, Impedance bode plot and Polar plots of the device are shown graphically.
- 4.02 Tabulated values of Directivity Index, Sensitivity, Acoustic Power, Apportioned Power, Impedance and Expected Maximum SPL are shown in the Summary data sheet.
- 4.03 The Directivity Index has been calculated from 412 data points around the directivity balloon.

5.00 Notes

5.01 Sensitivity

The octave band sensitivity is produced for calculations. It should be noted that the octave band sensitivity is given as dB @ 1m with 1W in each octave band. For more detailed information, refer to AMS Acoustics Data Sheet 'Loudspeaker Sensitivity – Interpretation of Results'. Note that the octave band and wide band sensitivity levels are with reference to the 'Rated' impedance value.

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

The reference point is located at the geometric centre of the enclosure in line with the mounting bolts.

The reference axis was made normal to the horn mouth and includes the reference point.

The impedance does not fall below 80% of the rated impedance within the frequency range 89Hz to 11.2kHz.

Loudspeaker Information

Manufacturer : Penton (UK) Ltd
Model Code : MHS20TENC
Type : Horn
Colour : -
Serial No. : None
Batch No. : NA
Other Markings : None
Backbox : As supplied
Grille : As supplied
Weight (grams) : 2700
Depth (mm) : 297
Width (mm) : 217
Height (mm) : 217
Special Features : EN54-24 certified (0359-CPR-00289)

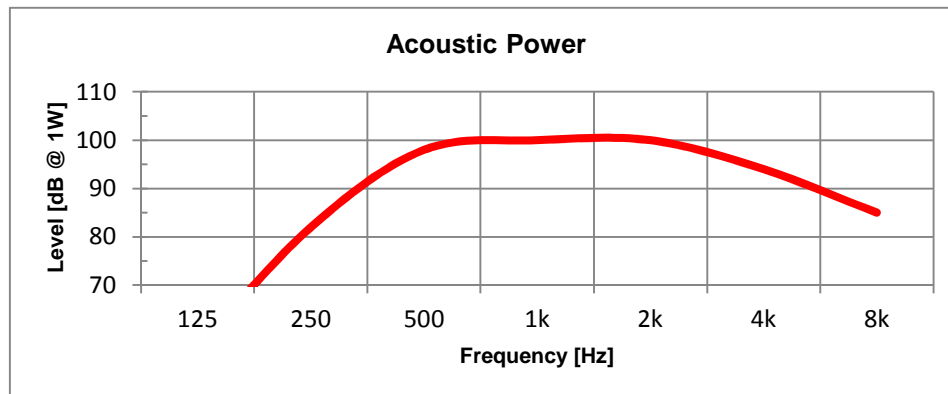
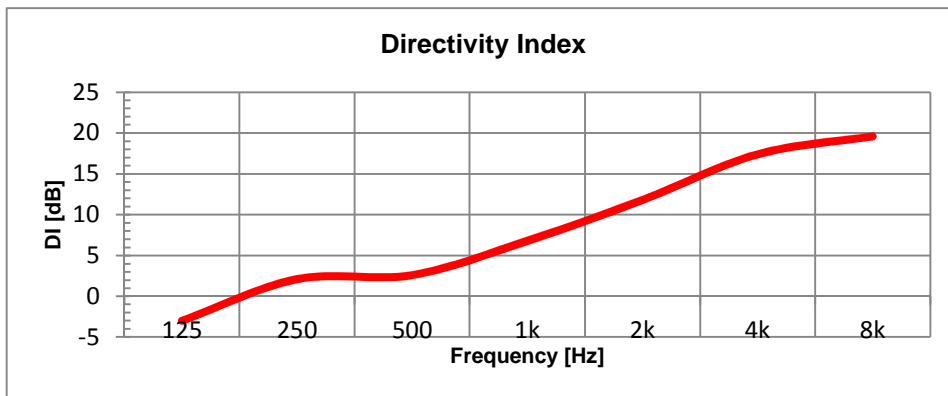
Internal Details

Driver Types/Sizes : NM
Driver Serial No.(s) : NM
Driver Markings : NM
Damping Material : None
Available Tappings : 20W, 10W, 5W, 2.5W, 1.25W (100V)

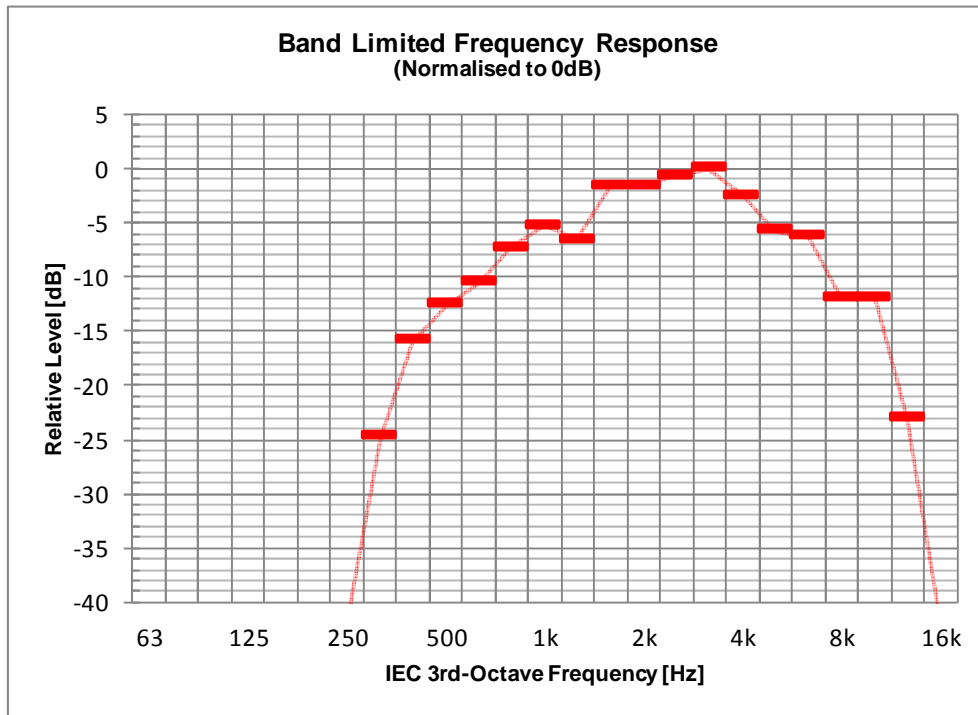
NM = Not Measured, NA = Not Applicable

Manufacturer : Penton (UK) Ltd
 Model Code : MHS20TENC
 Mounting : Turntable
 Measurement Distance [m] : 2.30
 Test Voltage [V] : 49.93
 Rated Noise Voltage [V] : 100.00
 Rated Noise Power [W] : 20.00
 Rated Impedance [Ohms] : 500.0
 Minimum Impedance [Ohms] : 445 (89% of Rated)
 Effective Impedance (Pink noise) [Ohms] : 559.2 (PF=0.682)
 Effective Impedance (IEC Male) [Ohms] : 532.1 (PF=0.869)
 Reference Axis Located at : 0 degrees

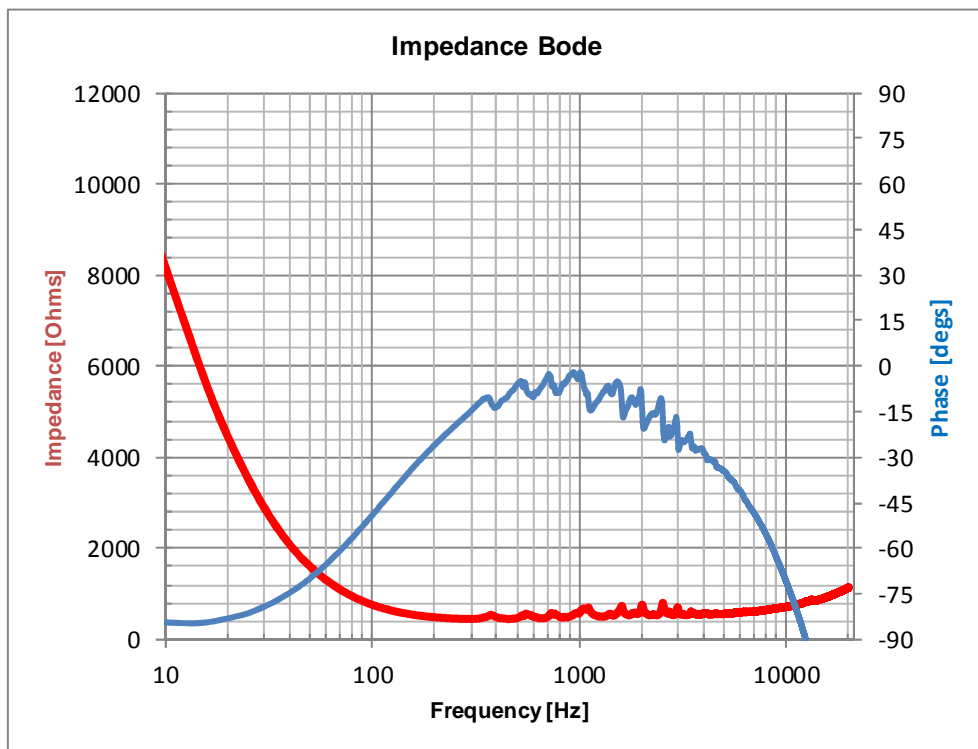
Parameter	Frequency [Hz]							dB	dBA
	125	250	500	1k	2k	4k	8k		
Directivity Index [dB on-axis]	-3.0	2.1	2.6	6.8	11.8	17.4	19.6		
Sensitivity [dB @ 1m,1W]	43	73	90	96	101	100	93	105	106
Sensitivity, IEC Male [dB @ 1m,1W]	48	78	91	91	89	83	70	95	95
Acoustic Power [dB-PWL @ 1W]	57	82	98	100	100	94	85		
Apportioned Power [%]	7	11	10	10	10	10	9		
Effective Impedance [Ohms]	629	470	487	542	580	564	647		
Oct' Sensitivity [dB @ 1m,1W/Oct]	52	82	99	106	111	110	103		
Expected Maximum SPL [dB @ 1m]	56	86	103	109	114	113	106	118	119



MHS20TENC



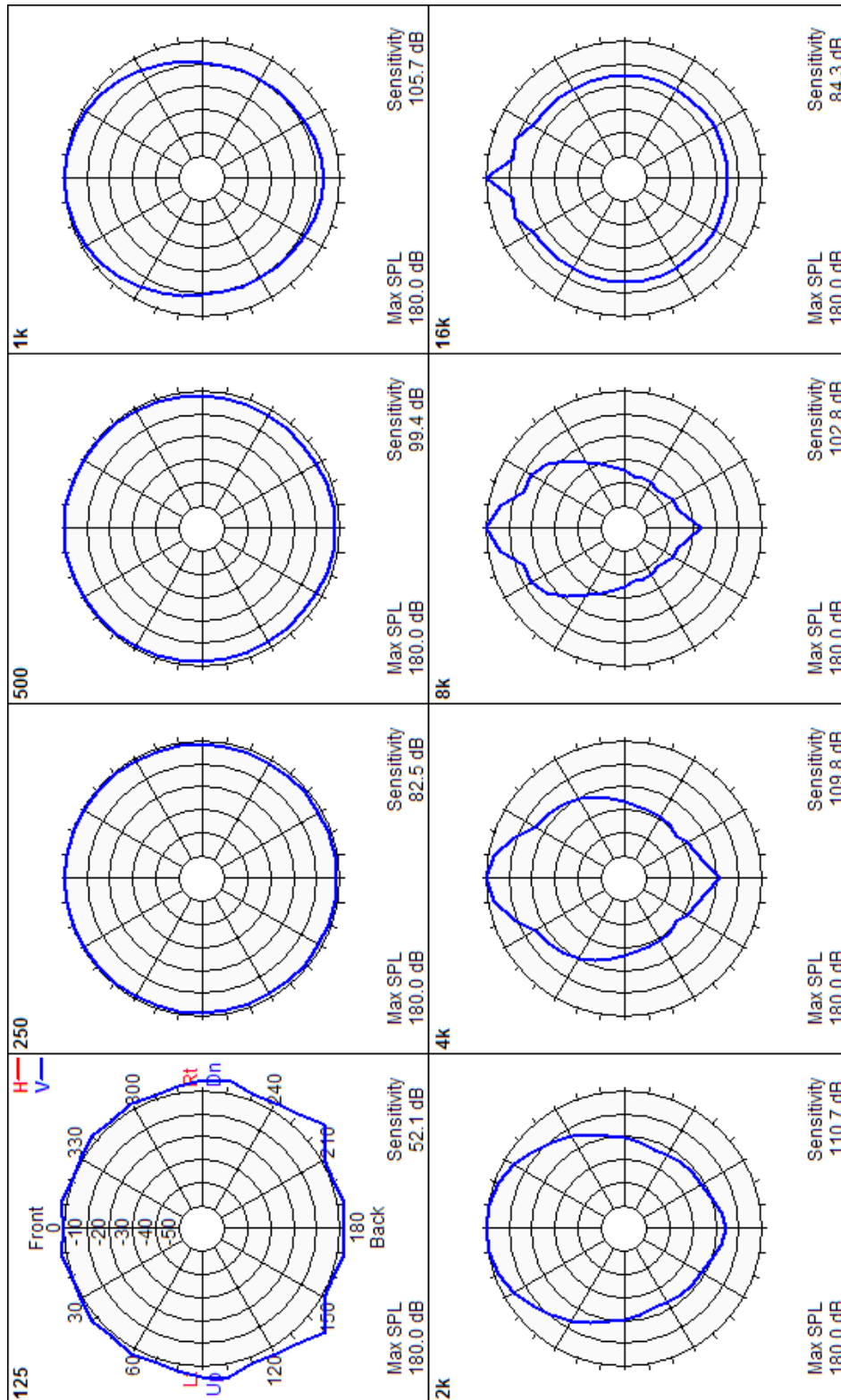
Test signal: Pink noise-6dBCF (100Hz-10kHz)



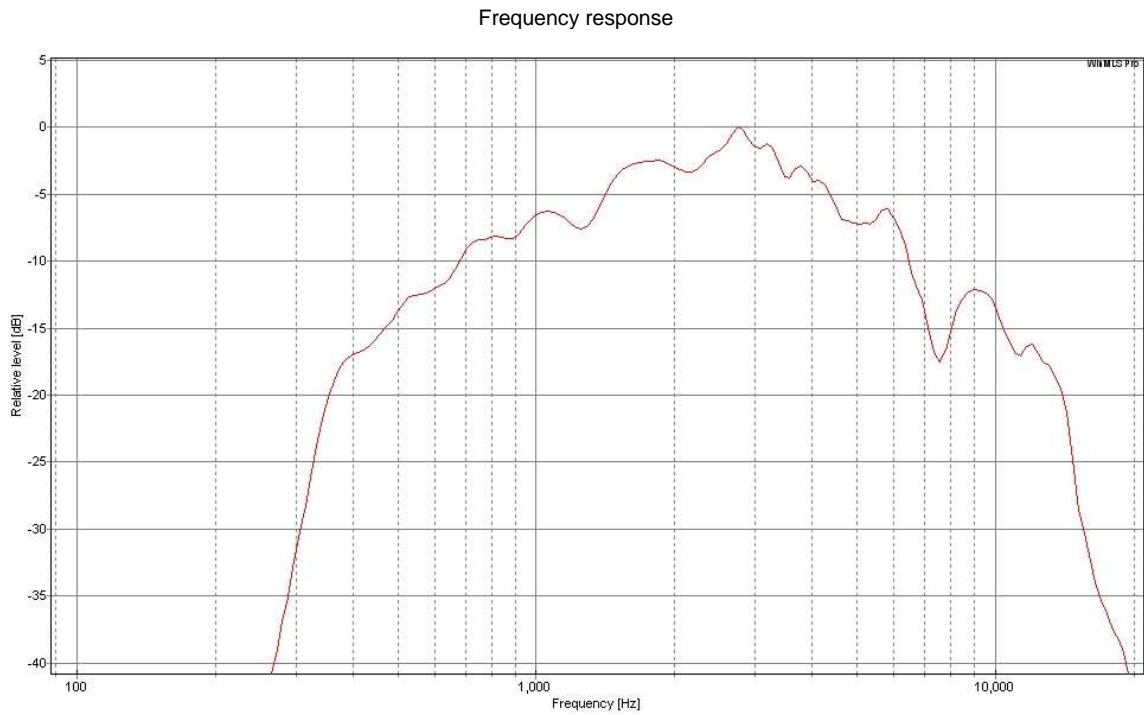
@ 20W

Test signal : Swept sine wave

MHS20TENC

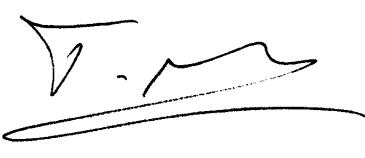


MHS20TENC



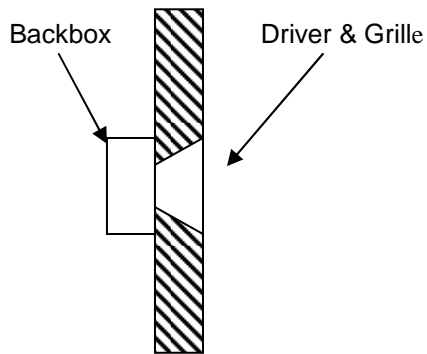
Note: The frequency response is derived using a Swept sine method.



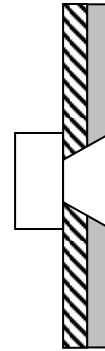
Signed: 

Countersigned: J. GRASCH

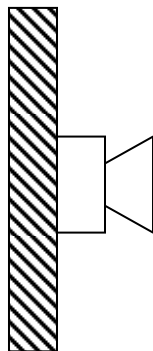
Loudspeaker Mounting Methods



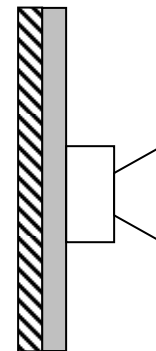
Mounting Method A
Loudspeaker Mounted
in a Reflective Baffle



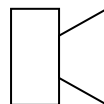
Mounting Method B
Loudspeaker Mounted
in an Absorbent Baffle



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

Figure 1