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Loudspeaker Test Report

Manufacturer: Penton Communications Inc.

Type: Spherical

Model: GB20TENC

For: Penton Communications Incorporated

Report No.: R.2004/LS/GB20TENC

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 GB20TENC 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 cable entry point of the loudspeaker enclosure.

The reference axis was made normal to the loudspeaker driver 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 Communications Inc.
Model Code : GB20TENC
Type : Spherical
Colour : White
Serial No. : None
Batch No. : None
Other Markings : None
Backbox : As supplied
Grille : As supplied
Weight (grams) : 2540
Depth (mm) : 254
Width (mm) : 254
Height (mm) : 254
Special Features : -

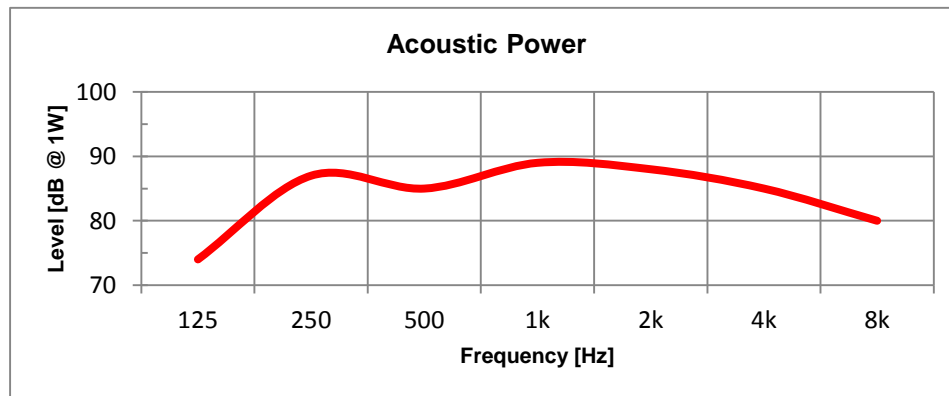
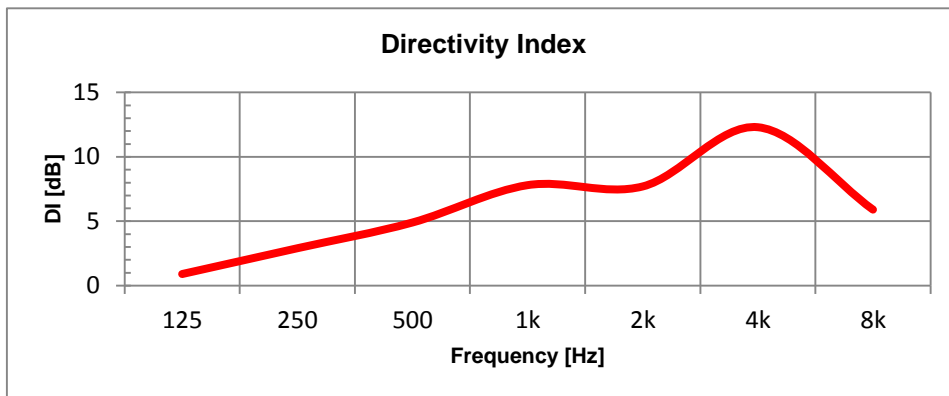
Internal Details

Driver Types/Sizes : NM
Driver Serial No.(s) : NM
Driver Markings : NM
Damping Material : Yes
Available Tappings : 20W, 10W, 5W, 2.5W (100V)

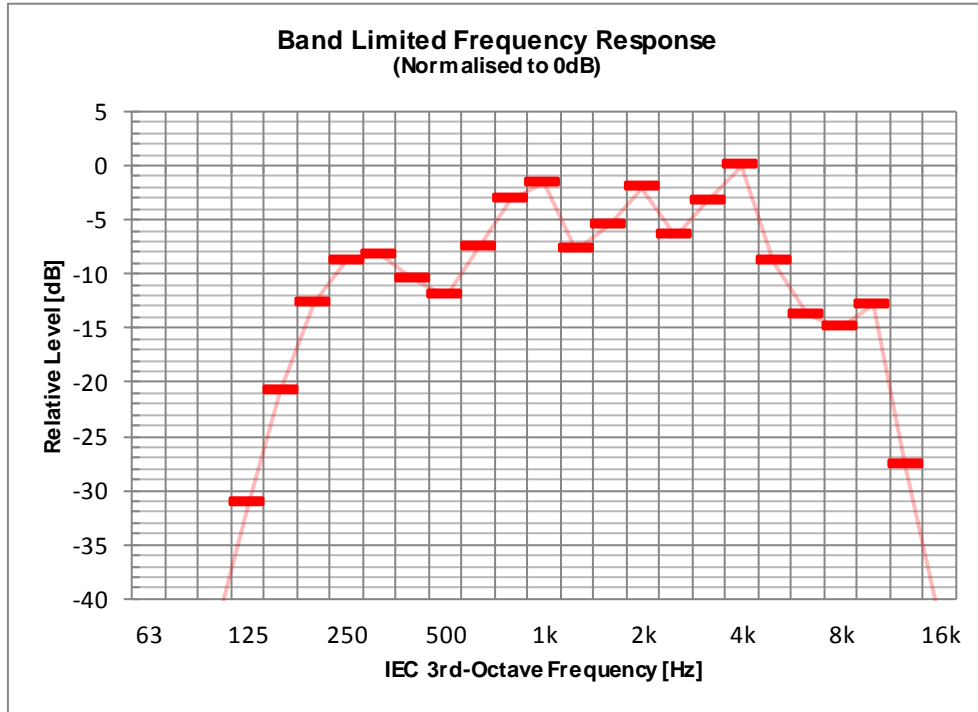
NM = Not Measured, NA = Not Applicable

Manufacturer : Penton Communications Inc.
 Model Code : GB20TENC
 Mounting : Turntable
 Measurement Distance [m] : 2.36
 Test Voltage [V] : 51.27
 Rated Noise Voltage [V] : 100.00
 Rated Noise Power [W] : 20.00
 Rated Impedance [Ohms] : 500.0
 Minimum Impedance [Ohms] : 439.2 (88% of Rated)
 Effective Impedance (Pink noise) [Ohms] : 560.9 (PF=0.942)
 Effective Impedance (IEC Male) [Ohms] : 521.6 (PF=0.948)
 Reference Axis Located at : 0 degrees

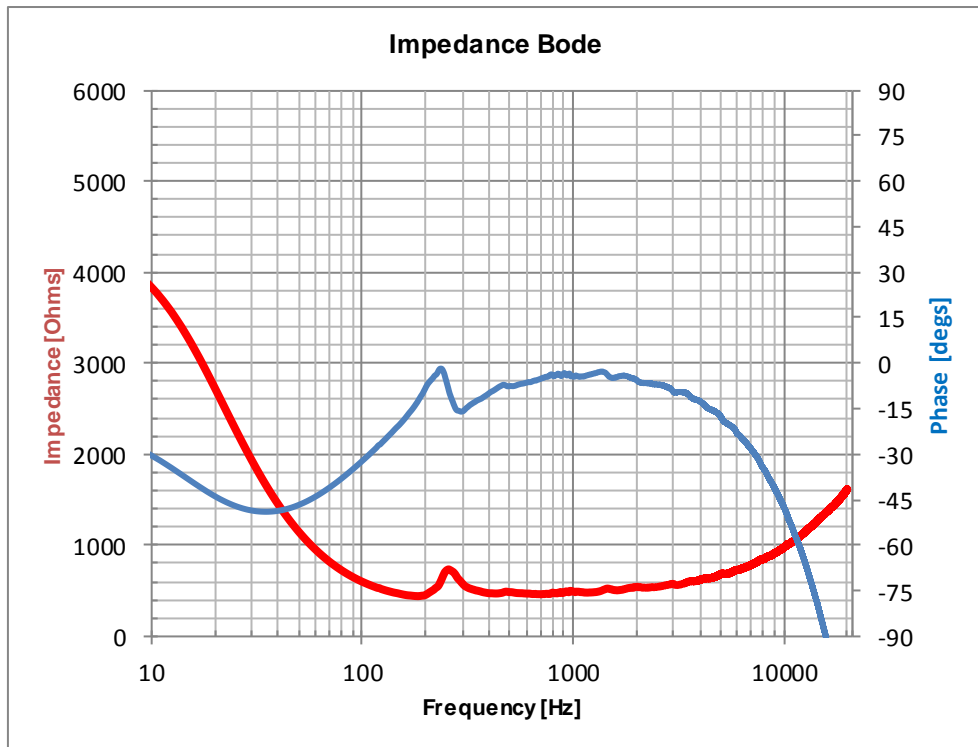
| Parameter | Frequency [Hz] | | | | | | | dB | dBA |
|------------------------------------|----------------|-----|-----|-----|-----|------|-----|-----|-----|
| | 125 | 250 | 500 | 1k | 2k | 4k | 8k | | |
| Directivity Index [dB on-axis] | 0.9 | 2.9 | 4.9 | 7.8 | 7.7 | 12.3 | 5.9 | | |
| Sensitivity [dB @ 1m,1W] | 70 | 85 | 85 | 91 | 91 | 92 | 81 | 97 | 97 |
| Sensitivity, IEC Male [dB @ 1m,1W] | 75 | 90 | 86 | 86 | 79 | 74 | 57 | 93 | 89 |
| Acoustic Power [dB-PWL @ 1W] | 80 | 93 | 91 | 95 | 94 | 91 | 86 | | |
| Apportioned Power [%] | 12 | 13 | 15 | 15 | 15 | 13 | 9 | | |
| Effective Impedance [Ohms] | 516 | 542 | 475 | 482 | 529 | 618 | 837 | | |
| Oct' Sensitivity [dB @ 1m,1W/Oct] | 79 | 95 | 95 | 101 | 100 | 102 | 91 | | |
| Expected Maximum SPL [dB @ 1m] | 83 | 98 | 98 | 104 | 104 | 105 | 94 | 110 | 110 |



GB20TENC



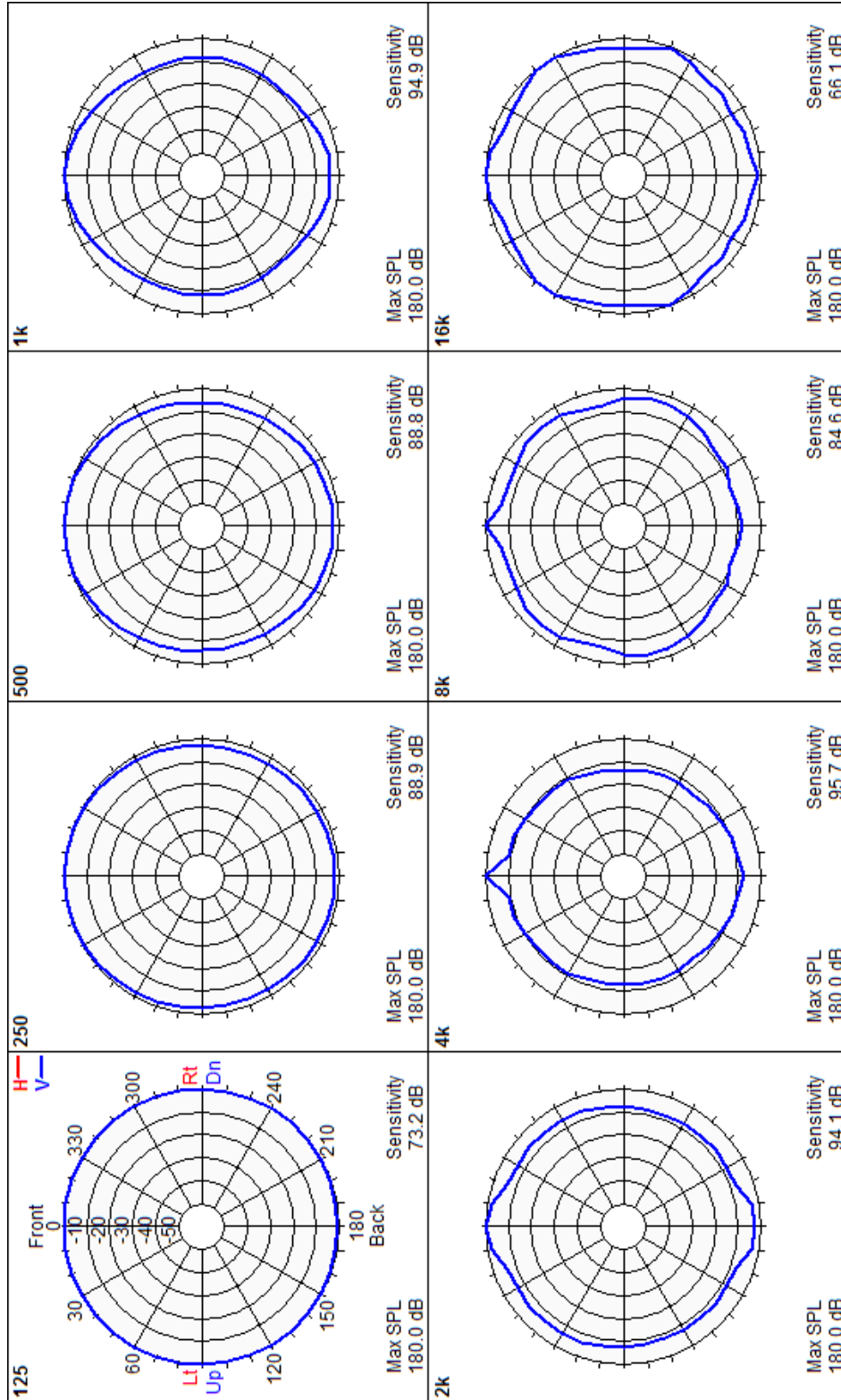
Test signal: Pink noise-6dBCF (100Hz-10kHz)



@ 20W

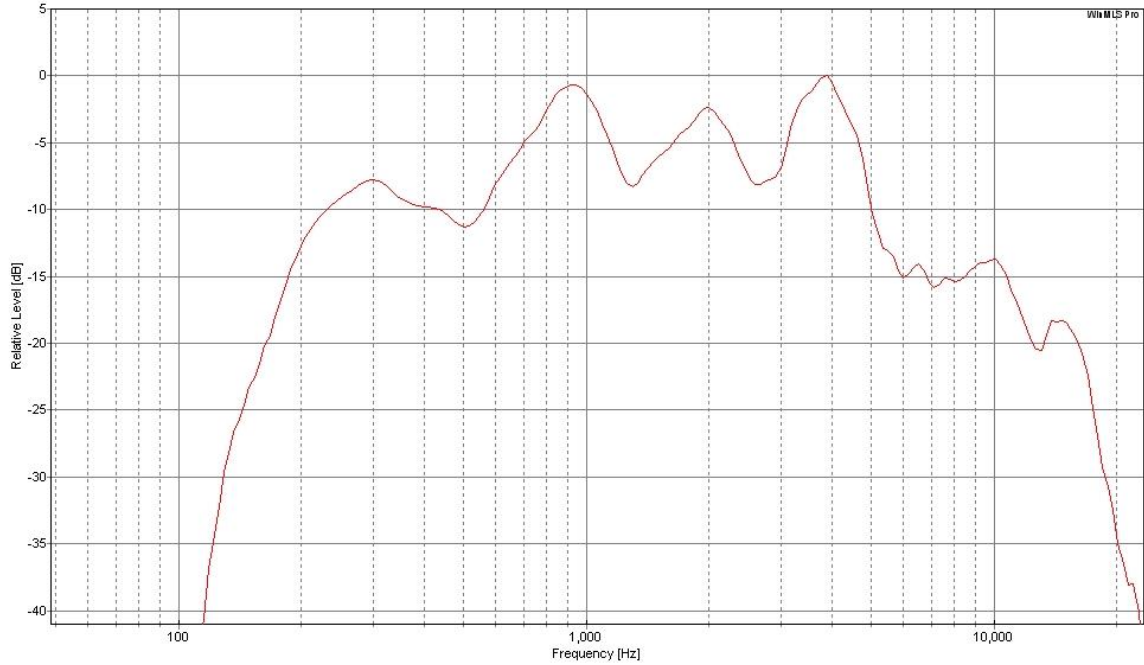
Test signal : Swept sine wave

GB20TENC



GB20TENC

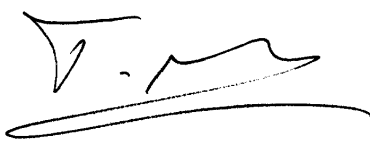
Frequency response




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

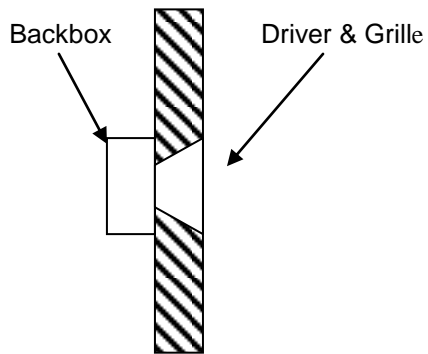


Picture 1

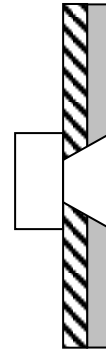
Signed: 

Countersigned: 

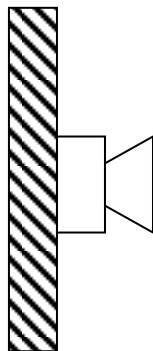
Loudspeaker Mounting Methods



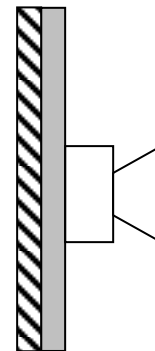
Mounting Method A
Loudspeaker Mounted
in a Reflective Baffle



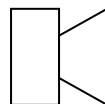
Mounting Method B
Loudspeaker Mounted
in an Absorbent Baffle



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

Figure 1