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Loudspeaker Test

Report

Manufacturer: Next Two

Type: Cabinet

Model: Sub500T

For: MEDC Ltd

Report No.: 1147/LS/Sub500T

Prepared By: A. N. Stacey B.Sc.

November 2000

1.00 Object

1.1. The object of this Report is to present measurements of the acoustic performance of the Sub500T device.

2.00 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)
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
   Speech shape @ 1m, 1W
f) Octave band Power Apportionment (%)
g) Maximum Sound pressure level (dB @ 1m)
h) Frequency response chart
i) Impedance bode plot
j) Polar response charts
k) Acoustic Power chart (dB-PWL @ 1W)

3.00 Method

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

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.

4.00 Results

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

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

4.3. Polar plots of the device are shown in Appendix B.

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

4.5. Tabulated values of Directivity index, Directivity factor, Power apportionment, Impedance, Maximum SPL and Acoustic Power are shown in the Summary data sheet.

5.00 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 On-axis frequency response should be used for comparison purposes.

6.00 Observations

6.1. The following general observations are made:

Frequency response is uneven above 1kHz.

7.00 Engineers Notes

7.1. The following Engineers notes are made:

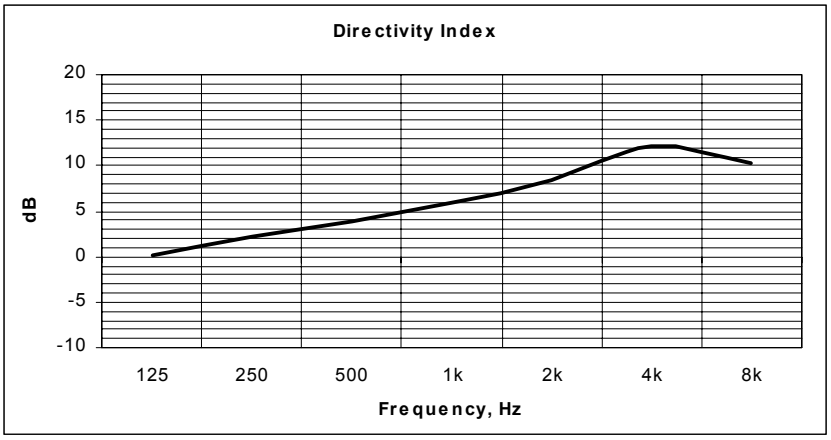
The measurement centre was taken as the geometric centre of the loudspeaker unit.

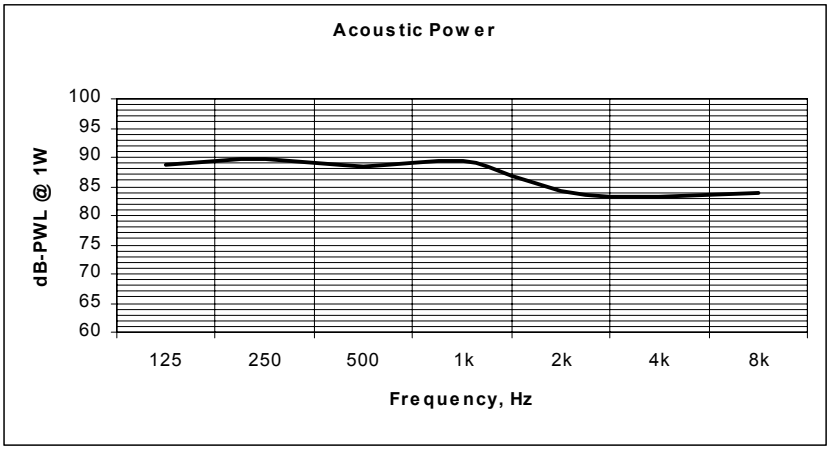
Manufacturer : Next Two
Model Code : Sub500T
Mounting : Full Space, Free Field
Transformer Tapping : 30W

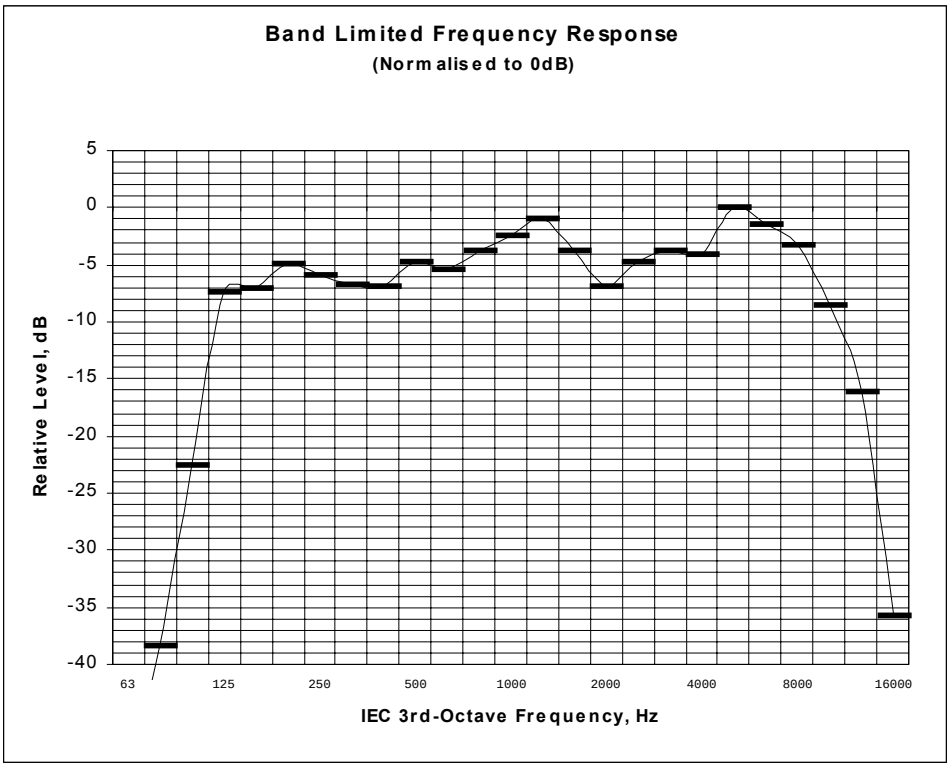
Measurement Axis Located at : 0 degrees

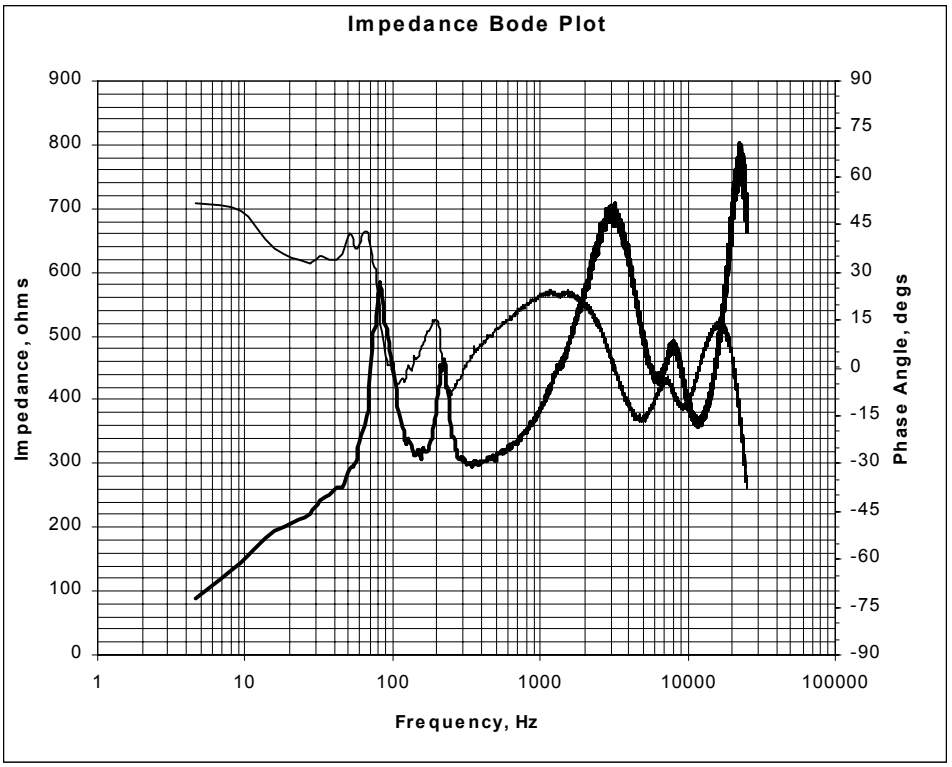
	Frequency (Hz)								
Parameter	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**dB**	**dBA**
Axial Q	1.0	1.6	2.3	3.9	7.0	16.4	10.4		
Directivity Index (dB on Axis)	-6.4	2.1	3.7	5.9	8.4	12.1	10.1		
Sensitivity (dB @ 1m, 1W/Oct)	86	88	88	92	91	94	92	90	90
Sensitivity(dB @ 1m, 1W)Speech Shape								88	85
Acoustic Power (dB-PWL @ 1W)	88	89	88	89	84	83	83		
Apportioned Power	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Effective Impedance (Ohms)	354	340	307	360	527	571	436		
Maximum SPL (dB @ 1m)	92	95	95	99	96	99	97	105	105

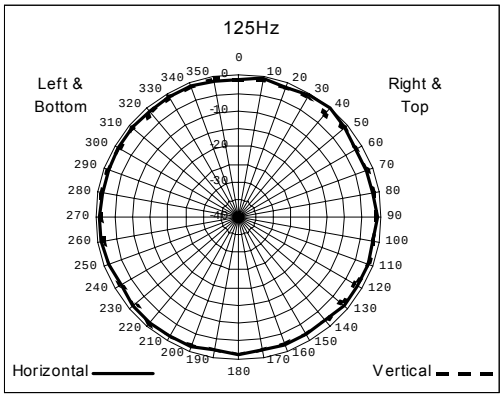
Test Signal: Pink Noise(100Hz-10kHz)

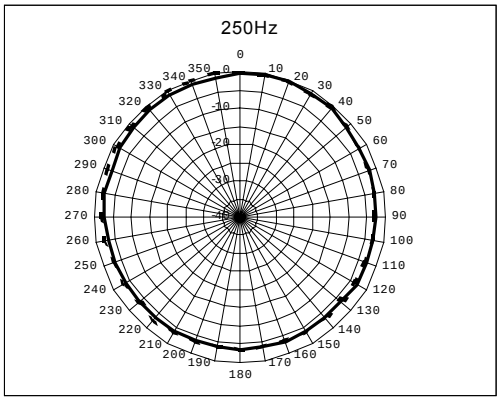


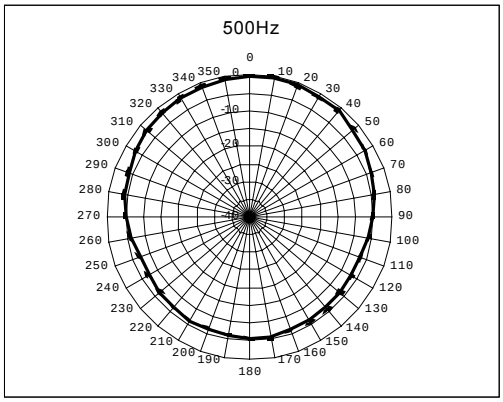


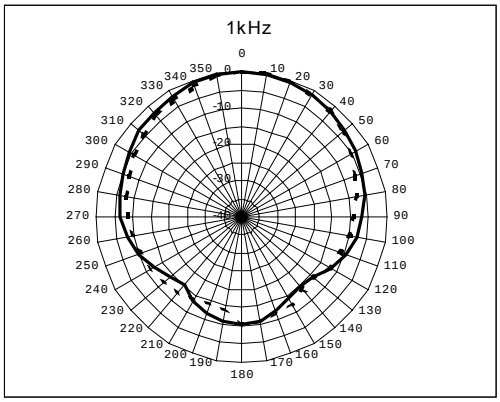

Band Limited Frequency Response
(Normalised to 0dB)
Relative Level, dB
5
0
-5
-10
-15
-20
-25
-30
-35
-40
63
125
250
500
1000
2000
4000
8000
16000
IEC 3rd-Octave Frequency, Hz

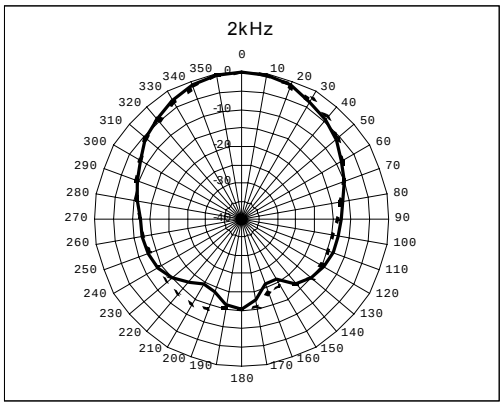

Impedance Bode Plot
Impedance, ohms
900
800
700
600
500
400
300
200
100
0
Phase Angle, degs
90
75
60
45
30
15
0
-15
-30
-45
-60
-75
-90
1
10
100
1000
10000
100000
Frequency, Hz

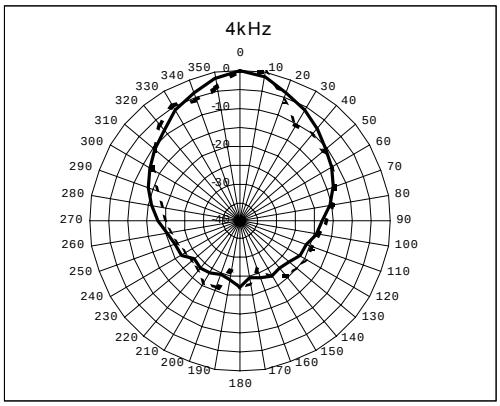

125Hz
Left &
Bottom
Right &
Top
Horizontal
Vertical

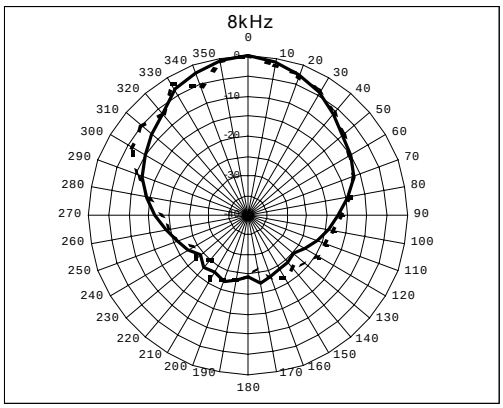

250Hz

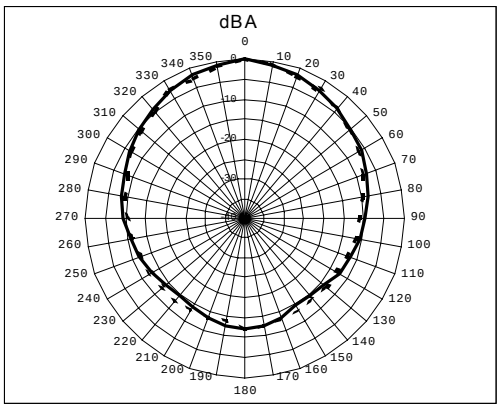

500Hz


1kHz


2kHz


4kHz


8kHz


dBA

Loudspeaker Information

Manufacturer :	Next Two
Model Code :	Sub500T
Type :	Cabinet
Colour :	Black
Serial No. :	Stock 5111014
Batch No. :	N/A
Other Markings :	None
Backbox :	As Supplied
Grille :	As Supplied
Weight (grammes) :	3100
Depth (mm) :	156 mm
Width (mm) :	156 mm
Height (mm) :	258 mm
Special Features :	Tapping selector switch

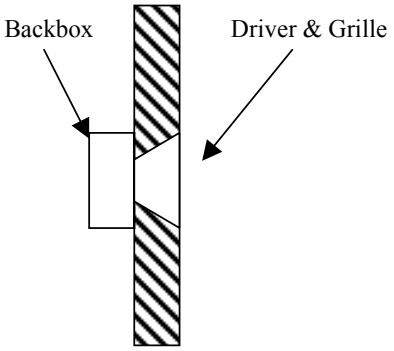
Internal Details

Driver Types/Sizes :	1 x LF cone, 1 x HF tweeter.
Driver Serial No.(s) :	Not known
Driver Markings :	Not known
Damping Material :	Mineral fibre
Available Tappings :	30W, 14W, 7W, 5W, 2.5W, 1.6W

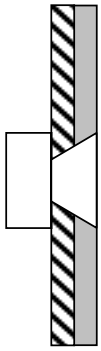
Electrical Details

Resonant Frequency(s) :	Multi
Cross-Over Frequency(s) :	Not known
dc. Resistance :	-
Inductance :	-
Capacitance :	-

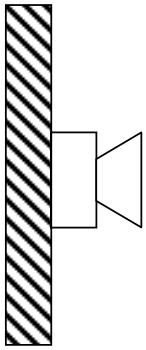
Loudspeaker Mounting Methods



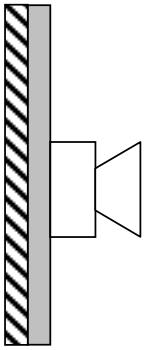
Mounting Method A
Loudspeaker Mounted
in a Reflective Baffle



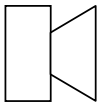
Mounting Method B
Loudspeaker Mounted
in an Absorbent Baffle



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