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# Loudspeaker Test

# Report

Manufacturer: Next Two

Type: Ceiling

Model: Quickfit T ST

For: MEDC Ltd

Report No.: 1147/LS/QuickfitTST

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 Quickfit T ST 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 A.

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:

The frequency response exhibits a strong resonant peak at approximately 2.5kHz.
The loudspeaker exhibits high frequency rool-off above approximately 5kHz.
The frequency response is uneven.

## 7.00 Engineers Notes

7.1. The following Engineers notes are made:

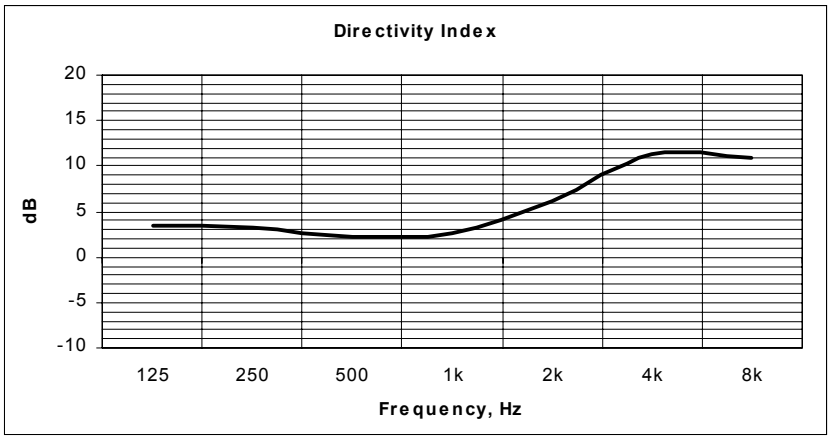
The measurement centre was taken as the centre of the front grille.

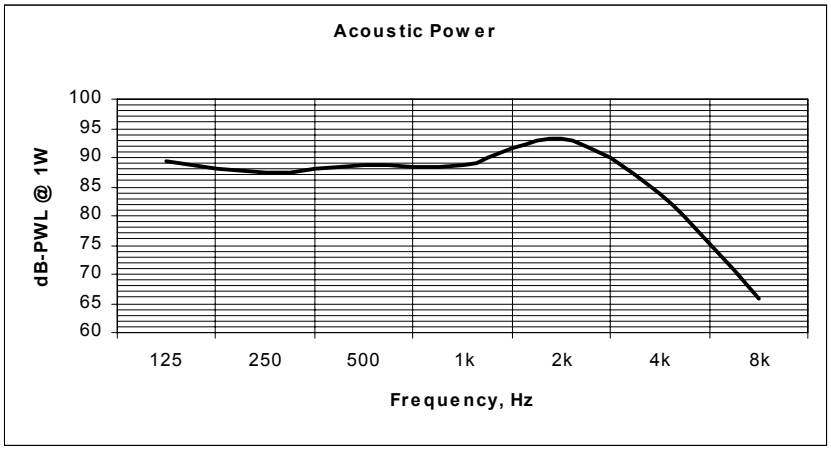
Manufacturer : Next Two
Model Code : Quickfit T ST
Mounting : Half Space, Free Field
Transformer Tapping : 10W

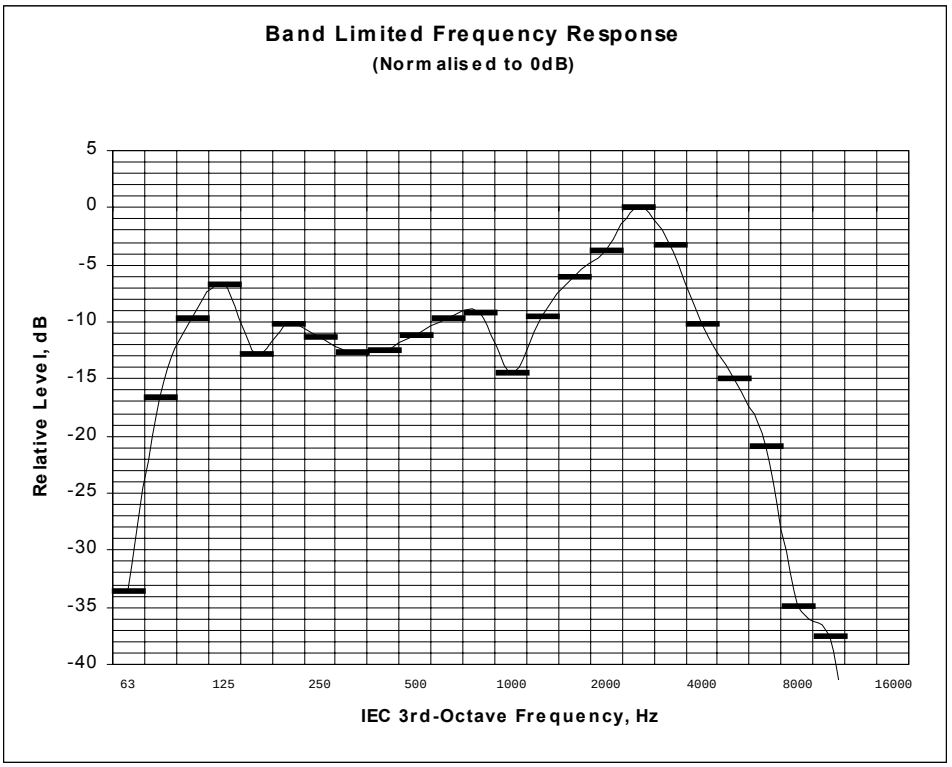
Measurement Axis Located at : 0 degrees

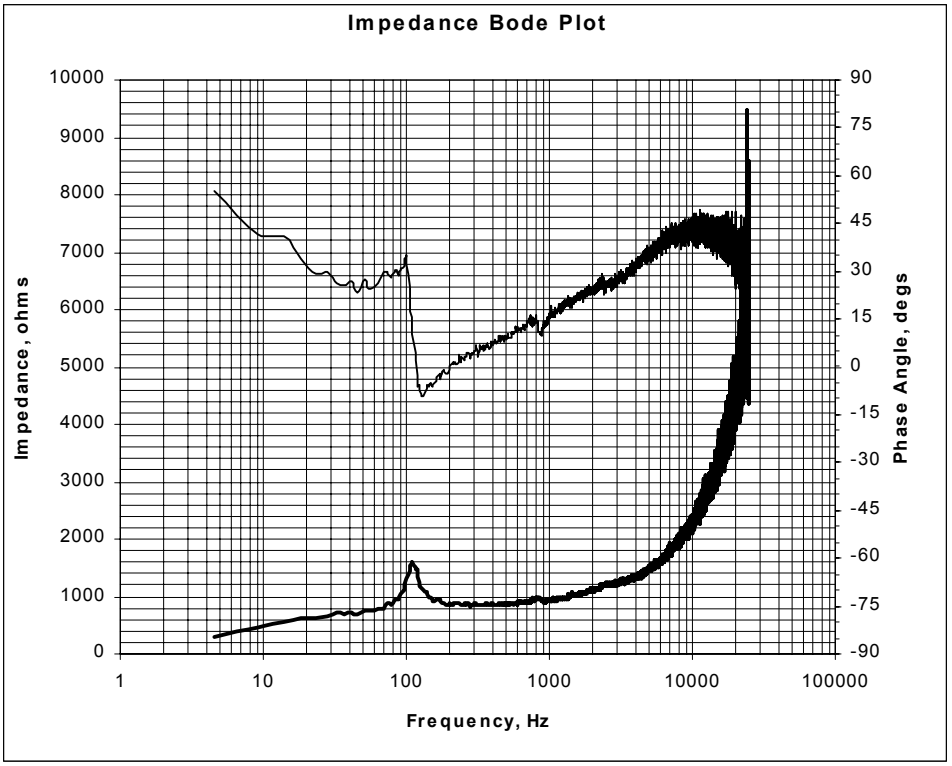
| | Frequency (Hz) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **125** | **250** | **500** | **1k** | **2k** | **4k** | **8k** | **dB** | **dBA** |
| Axial Q | 2.1 | 2.0 | 1.6 | 1.8 | 4.1 | 13.2 | 12.2 | | |
| Directivity Index (dB on Axis) | 3.4 | 3.1 | 2.2 | 2.6 | 6.1 | 11.2 | 10.8 | | |
| Sensitivity (dB @ 1m, 1W/Oct) | 90 | 87 | 87 | 88 | 96 | 92 | 75 | 91 | 91 |
| Sensitivity(dB @ 1m, 1W)Speech Shape | | | | | | | | 89 | 85 |
| Acoustic Power (dB-PWL @ 1W) | 89 | 87 | 88 | 88 | 93 | 83 | 65 | | |
| Apportioned Power | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | -9. | | |
| Effective Impedance (Ohms) | 1074 | 862 | 861 | 911 | 1014 | 1148 | 1426 | | |
| Maximum SPL (dB @ 1m) | 91 | 89 | 89 | 90 | 98 | 93 | 75 | 101 | 101 |

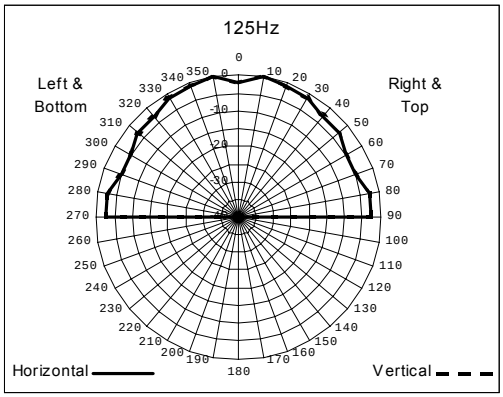
*Test Signal: Pink Noise(100Hz-10kHz)*

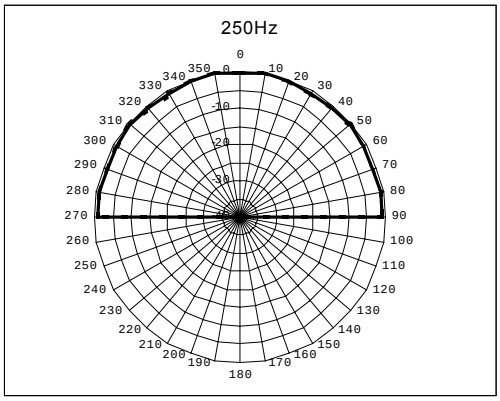


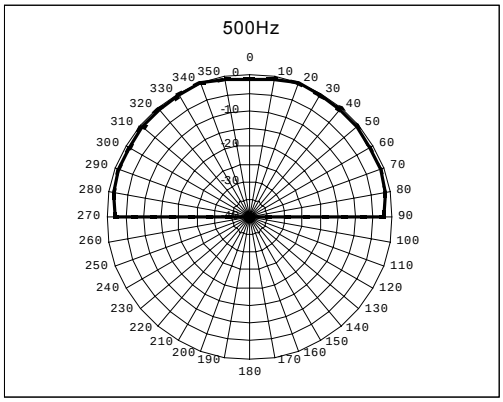



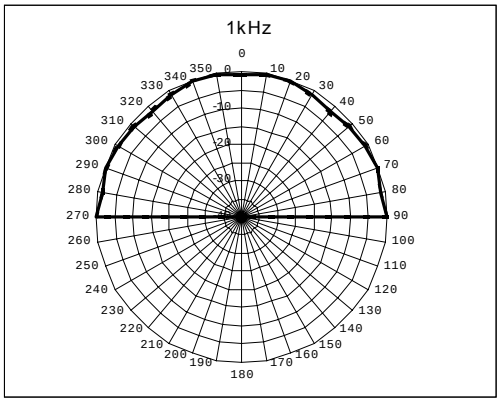

Band Limited Frequency Response
(Normalised to 0dB)
Relative Level, dB
5
0
-5
-10
-15
-20
-25
-30
-35
-40
63
125
250
500
1000
2000
4000
8000
16000
IEC 3rd-Octave Frequency, Hz

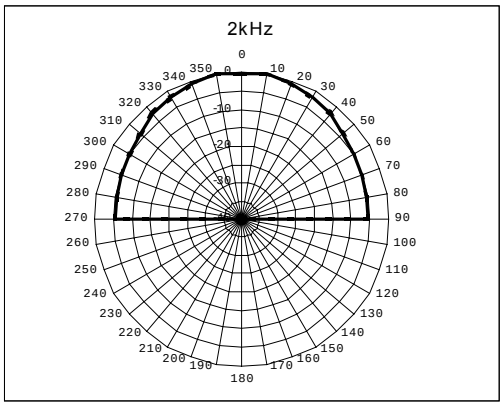

Impedance Bode Plot
Impedance, ohms
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Phase Angle, degs
90
75
60
45
30
15
0
-15
-30
-45
-60
-75
-90
1
10
100
1000
10000
100000
Frequency, Hz

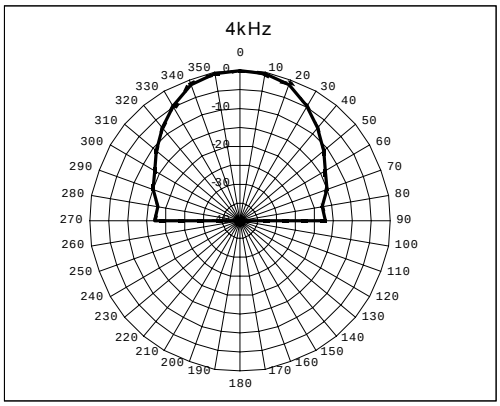

125Hz
Left &
Bottom
Right &
Top
Horizontal
Vertical

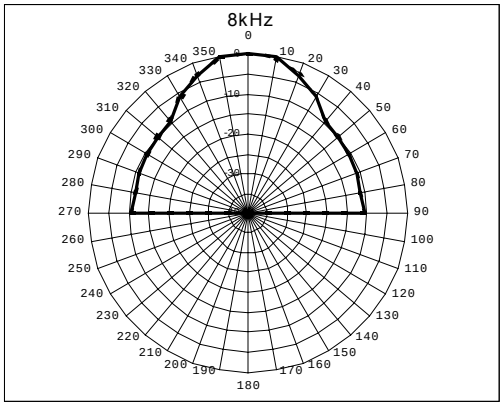

250Hz

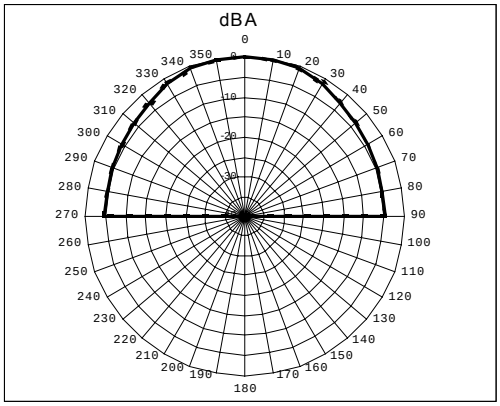

500Hz


1kHz


2kHz


4kHz


8kHz


dBA

# Loudspeaker Information

| | |
|---|---|
| Manufacturer : | Next Two |
| Model Code : | Quickfit T ST |
| Type : | Ceiling |
| Colour : | White |
| Serial No. : | Stock 5059007 |
| Batch No. : | N/A |
| Other Markings : | None |
| Backbox : | As Supplied |
| Grille : | As Supplied |
| Weight (grammes) : | 750 |
| Depth (mm) : | 71 mm |
| Width (mm) : | 230 mm |
| Height (mm) : | 230 mm |
| Special Features : | Quick fit mechanism |

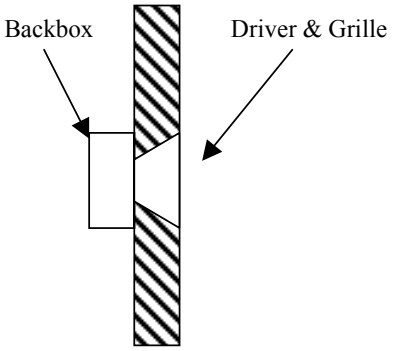
Internal Details

| | |
|---|---|
| Driver Types/Sizes : | 1 x 145mm cone driver |
| Driver Serial No.(s) : | None |
| Driver Markings : | Next Two label |
| Damping Material : | None |
| Available Tappings : | 10W, 5W, 2.5W, 1.25W |

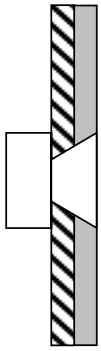
Electrical Details

| | |
|---|---|
| Resonant Frequency(s) : | 110Hz |
| Cross-Over Frequency(s) : | N/A |
| dc. Resistance : | - |
| Inductance : | - |
| Capacitance : | - |

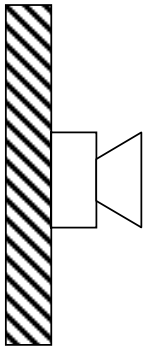
## Loudspeaker Mounting Methods



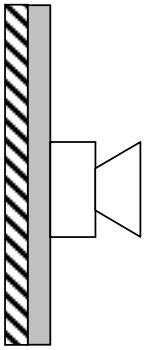

**Mounting Method A**
Loudspeaker Mounted
in a Reflective Baffle



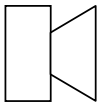
**Mounting Method B**
Loudspeaker Mounted
in an Absorbent Baffle



**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