Loudspeaker Test
Report

Manufacturer: e2S
Type: Horn
Model: D1xL1FR008xxxA1x
For: e2S Warning Signals
Report No.: R.2058/LS/D1xL-008R-Gas-15W-S1
Prepared By: A. N Stacey, B.SC., MIOA(E), MInstSCE

September 2015

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1.00 Object

1.01 The object of this Report is to present measurements of the acoustic performance of the D1xL08RGas15WS1 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 and 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: e2S
Model Code: D1xL08RGas15WS1
  Type: Horn
  Colour: Red
  Serial No.: NM
  Batch No.: NA
Other Markings: -
  Backbox: As supplied
  Grille: NA
Weight (grams): 3380
  Depth (mm): 285
  Width (mm): 182
  Height (mm): 182
Special Features: Explosion proof

Internal Details
  Driver Types/Sizes: NM
  Driver Serial No.(s): NM
  Driver Markings: NM
  Damping Material: NA
  Available Tappings: 15W

NM = Not Measured, NA = Not Applicable
Manufacturer: e2S  
Model Code: D1xL08RGas15WS1  
Mounting: Turntable  
Measurement Distance [m]: 2.35  
Test Voltage [V]: 6.16  
Rated Noise Voltage [V]: 10.95  
Rated Noise Power [W]: 15.00  
Rated Impedance [Ohms]: 8.0  
Minimum Impedance [Ohms]: 7 (88% of Rated)  
Effective Impedance (Pink noise) [Ohms]: 8.8 (PF=0.994)  
Effective Impedance (IEC Male) [Ohms]: 7.5 (PF=0.987)  
Reference Axis Located at: 0 degrees

<table>
<thead>
<tr>
<th>Frequency [Hz]</th>
<th>125</th>
<th>250</th>
<th>500</th>
<th>1k</th>
<th>2k</th>
<th>4k</th>
<th>8k</th>
<th>dB</th>
<th>dBA</th>
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<tr>
<td>Directivity Index [dB on-axis]</td>
<td>1.1</td>
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<td>76</td>
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<td>Oct’ Sensitivity [dB @ 1m,1W/Oct]</td>
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<td>Expected Maximum SPL [dB @ 1m]</td>
<td>56</td>
<td>82</td>
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<td>108</td>
<td>108</td>
<td>106</td>
<td>93</td>
<td>112</td>
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**Directivity Index**

**Acoustic Power**
D1xL08RGas15WS1

Band Limited Frequency Response
(Normalised to 0dB)

-40 -35 -30 -25 -20 -15 -10 -5 0

IEC 3rd-Octave Frequency [Hz]

63 125 250 500 1k 2k 4k 8k 16k

Relative Level [dB]

IEC 3rd-Octave Frequency [Hz]

Band Limited Frequency Response
(Normalised to 0dB)

-90 -75 -60 -45 -30 -15 0 15 30 45 60 75 90

Phase [degs]

Impedance [Ohms]

Frequency [Hz]

Impedance Bode

25 20 15 10 5 0

Impedance [Ohms]

0 5 10 15 20 25

Phase [degs]

-90 -75 -60 -45 -30 -15 0 15 30 45 60 75 90

Frequency [Hz]

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

@ 15W

Test signal : Swept sine wave
D1xL08RGas15WS1

**Note:** The frequency response is derived using a Swept sine method.
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 E**
Loudspeaker not Attached to any Surface and Radiation Unaffected by nearby Reflecting Surfaces

Figure 1
Loudspeaker Test Report

Manufacturer: E2S Warning Signals

Type: Horn

Model: D1xL1FR008xxxD1x

For: E2S Warning Signals

Report No.: R.2058/LS/D1xL-008R-Dust-15W-S1

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

September 2015
1.00 Object

1.01 The object of this Report is to present measurements of the acoustic performance of the D1xL08RDus15WS1 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
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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.
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The reference point is located at the geometric centre of the enclosure and 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: E2S Warning Signals
Model Code: D1xL08RDus15WS1
Type: Horn
Colour: Red
Serial No.: NM
Batch No.: NA
Other Markings: -
  Backbox: As supplied
  Grille: NA
Weight (grams): 3380
Depth (mm): 285
Width (mm): 182
Height (mm): 182
Special Features: Explosion proof

Internal Details
Driver Types/Sizes: NM
Driver Serial No.(s): NM
Driver Markings: NM
Damping Material: NA
Available Tappings: 15W

NM = Not Measured, NA = Not Applicable
Manufacturer: E2S Warning Signals
Model Code: D1xL08RDus15WS1
Mounting: Turntable
Measurement Distance [m]: 2.35
Test Voltage [V]: 6.16
Rated Noise Voltage [V]: 10.95
Rated Noise Power [W]: 15.00
Rated Impedance [Ohms]: 8.0
Minimum Impedance [Ohms]: 7 (88% of Rated)
Effective Impedance (Pink noise) [Ohms]: 8.4 (PF=0.989)
Effective Impedance (IEC Male) [Ohms]: 7.2 (PF=0.987)
Reference Axis Located at: 0 degrees

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<td>34</td>
<td>49</td>
<td>67</td>
<td>79</td>
<td>74</td>
<td>69</td>
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<td>Sensitivity, IEC Male [dB @ 1m,1W]</td>
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<td>Acoustic Power [dB-PWL @ 1W]</td>
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<tr>
<td>Expected Maximum SPL [dB @ 1m]</td>
<td>46</td>
<td>61</td>
<td>79</td>
<td>90</td>
<td>86</td>
<td>81</td>
<td>66</td>
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![Directivity Index Graph](image1)

![Acoustic Power Graph](image2)
D1xL08RDus15WS1

**Band Limited Frequency Response**
(Normalised to 0dB)

IEC 3rd-Octave Frequency [Hz]

- Relative Level [dB]
  - 63 125 250 500 1k 2k 4k 8k 16k

Band Limited Frequency Response (Normalised to 0dB)

**Impedance Bode**

- Impedance [Ohms]
- Phase [degs]
- Frequency [Hz]

@ 15W

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

**Test signal: Swept sine wave**
D1xL08RDus15WS1
D1xL08RDus15WS1

**Frequency response**

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

Signed: [Signature]  
Countersigned: [Signature]

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Loudspeaker Mounting Methods

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

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Figure 1
Loudspeaker Test Report

Manufacturer: E2S Warning Signals

Type: Horn

Model: D1xL1FR016xxxA1x

For: E2S Warning Signals

Report No.: R.2058/LS/D1xL-016R-Gas-15W-S1

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

September 2015

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(ix) Impedance bode plot

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

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Loudspeaker Information

Manufacturer: E2S Warning Signals
Model Code: D1xL16RGas15WS1
Type: Horn
Colour: Red
Serial No.: NM
Batch No.: NA
Other Markings: -
   Backbox: As supplied
   Grille: NA
Weight (grams): 3380
Depth (mm): 285
Width (mm): 182
Height (mm): 182
Special Features: Explosion proof

Internal Details
Driver Types/Sizes: NM
Driver Serial No.(s): NM
Driver Markings: NM
Damping Material: NA
Available Tappings: 15W

NM = Not Measured, NA = Not Applicable
Manufacturer: E2S Warning Signals
Model Code: D1xL16RGas15WS1
Mounting: Turntable
Measurement Distance [m]: 2.35
Test Voltage [V]: 8.59
Rated Noise Voltage [V]: 15.49
Rated Noise Power [W]: 15.00
Rated Impedance [Ohms]: 16.0
Minimum Impedance [Ohms]: 15.1 (94% of Rated)
Effective Impedance (Pink noise) [Ohms]: 18.3 (PF=0.995)
Effective Impedance (IEC Male) [Ohms]: 17 (PF=0.995)
Reference Axis Located at: 0 degrees

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<th>500</th>
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Frequency [Hz]

**Directivity Index**

**Acoustic Power**
D1xL16RGas15WS1

Band Limited Frequency Response
(Normalised to 0dB)

IEC 3rd-Octave Frequency [Hz]

Relative Level [dB]

63 125 250 500 1k 2k 4k 8k 16k

Test signal: Pink noise-6dBCF (100Hz-10kHz)
@ 15W

Impedance Bode

Impedance [Ohms]

Frequency [Hz]

Phase [deg]

10 100 1000 10000

Test signal: Swept sine wave
@ 15W
D1xL16RGas15WS1

- 1k: Max SPL 100.0 dB, Sensitivity 106.5 dB
- 10k: Max SPL 100.0 dB, Sensitivity 72.0 dB
- 500: Max SPL 100.0 dB, Sensitivity 92.2 dB
- 8k: Max SPL 100.0 dB, Sensitivity 80.8 dB
- 250: Max SPL 100.0 dB, Sensitivity 81.1 dB
- 4k: Max SPL 100.0 dB, Sensitivity 54.7 dB
- 1k: Max SPL 100.0 dB, Sensitivity 106.5 dB

AMS Acoustics, London
D1xL16RGas15WS1

Frequency response

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

Signed:  Countersigned: J. Grosch
Loudspeaker Mounting Methods

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Loudspeaker Mounted in a Reflective Baffle

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For: E2S Warning Signals

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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 and in line with the mounting bolts.

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

The impedance does fall below 80% of the rated impedance within the frequency range 89Hz to 11.2kHz.
Loudspeaker Information

Manufacturer: E2S Warning Signals
Model Code: D1xL16RDus15WS1
Type: Horn
Colour: Red
Serial No.: NM
Batch No.: NA
Other Markings: -
Backbox: As supplied
Grille: NA
Weight (grams): 3
Depth (mm): 285
Width (mm): 182
Height (mm): 182
Special Features: Explosion proof

Internal Details
Driver Types/Sizes: NM
Driver Serial No.(s): NM
Driver Markings: NM
Damping Material: NA
Available Tappings: 15W

NM = Not Measured, NA = Not Applicable
Manufacturer: E2S Warning Signals
Model Code: D1xL16RDus15WS1
Mounting: Turntable
Measurement Distance [m]: 2.35
Test Voltage [V]: 8.71
Rated Noise Voltage [V]: 15.49
Rated Noise Power [W]: 15.00
Rated Impedance [Ohms]: 16.0
Minimum Impedance [Ohms]: 11.8 (74% of Rated)
Effective Impedance (Pink noise) [Ohms]: 14.1 (PF=0.987)
Effective Impedance (IEC Male) [Ohms]: 12.1 (PF=0.994)
Reference Axis Located at: 0 degrees

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<thead>
<tr>
<th>Parameter</th>
<th>125</th>
<th>250</th>
<th>500</th>
<th>1k</th>
<th>2k</th>
<th>4k</th>
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<th>dB</th>
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<td>Directivity Index [dB on-axis]</td>
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<td>Sensitivity [dB @ 1m,1W]</td>
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<td>Acoustic Power [dB-PWL @ 1W]</td>
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<td>Effective Impedance [Ohms]</td>
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<td>Oct' Sensitivity [dB @ 1m,1W/Oct]</td>
<td>43</td>
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<td>Expected Maximum SPL [dB @ 1m]</td>
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**Directivity Index**

![Directivity Index graph](image)

**Acoustic Power**

![Acoustic Power graph](image)
D1xL16RDus15WS1

Band Limited Frequency Response
(Normalised to 0dB)

IEC 3rd-Octave Frequency [Hz]

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

Impedance Bode

Frequency [Hz]

Impedance [Ohms]

Phase [degs]

@ 15W

Test signal: Swept sine wave
D1xL16RDus15WS1
D1xL16RDus15WS1

Frequency response

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

Signed:  
Countersigned: J. Grosch
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 D
Loudspeaker Mounted on an Absorbent Baffle

Mounting Method E
Loudspeaker not Attached to any Surface and Radiation Unaffected by nearby Reflecting Surfaces

Figure 1
Loudspeaker Test
Report

Manufacturer: E2S Warning Signals

Type: Horn

Model: D1xL1FV070xxxA1x

For: E2S Warning Signals

Report No.: R.2058/LS/D1xL1-070V-Gas-15W-S1

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

September 2015

© AMS Acoustics, London
1.00 Object

1.01 The object of this Report is to present measurements of the acoustic performance of the D1xL70VGas15WS1 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.

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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 and 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: E2S Warning Signals
Model Code: D1xL70VGas15WS1
Type: Horn
Colour: Red
Serial No.: NM
Batch No.: NA
Other Markings: -
   - Backbox: As supplied
   - Grille: NA
Weight (grams): 4260
Depth (mm): 285
Width (mm): 182
Height (mm): 182
Special Features: Explosion proof

Internal Details
Driver Types/Sizes: NM
Driver Serial No.(s): NM
Driver Markings: NM
Damping Material: NA
Available Tappings: 15W (70V)

NM = Not Measured, NA = Not Applicable
Manufacturer: E2S Warning Signals
Model Code: D1xL70VGas15WS1
Mounting: Turntable
Measurement Distance [m]: 2.35
Test Voltage [V]: 39.40
Rated Noise Voltage [V]: 70.00
Rated Noise Power [W]: 15.00
Rated Impedance [Ohms]: 326.6
Minimum Impedance [Ohms]: 273.6 (84% of Rated)
Effective Impedance (Pink noise) [Ohms]: 366.8 (PF=0.774)
Effective Impedance (IEC Male) [Ohms]: 368.8 (PF=0.798)
Reference Axis Located at: 0 degrees

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>250</th>
<th>500</th>
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<th>2k</th>
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<tr>
<td>Acoustic Power [dB-PWL @ 1W]</td>
<td>48</td>
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<td>Apportioned Power [%]</td>
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<tr>
<td>Oct' Sensitivity [dB @ 1m,1W/Oct]</td>
<td>48</td>
<td>79</td>
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<td>Expected Maximum SPL [dB @ 1m]</td>
<td>50</td>
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<td>100</td>
<td>108</td>
<td>108</td>
<td>106</td>
<td>94</td>
<td>113</td>
<td>113</td>
</tr>
</tbody>
</table>

![Directivity Index Graph](image1)

![Acoustic Power Graph](image2)
**D1xL70VGas15WS1**

**Band Limited Frequency Response**  
(Normalised to 0dB)

- **Relative Level [dB]**
  - -90
  - -75
  - -60
  - -45
  - -30
  - -15
  - 0
  - 15
  - 30

- **IEC 3rd-Octave Frequency [Hz]**
  - 63
  - 125
  - 250
  - 500
  - 1k
  - 2k
  - 4k
  - 8k
  - 16k

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

**Impedance Bode**

- **Impedance [Ohms]**
  - 4000
  - 3500
  - 3000
  - 2500
  - 2000
  - 1500
  - 1000
  - 500
  - 0

- **Phase [deg]**
  - 90
  - 75
  - 60
  - 45
  - 30
  - 15
  - 0
  - -15
  - -30
  - -45
  - -60

- **Frequency [Hz]**
  - 10
  - 100
  - 1000
  - 10000

**Test signal : Swept sine wave**
D1xL70VGas15WS1

[Diagram showing frequency response and sensitivity charts for different frequencies (1k, 10k, 500, 8k, 250, 2k) with corresponding max SPL and sensitivity values.]
D1xL70VGas15WS1

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

Signed: 

Countersigned: J. Grosch
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 D
Loudspeaker Mounted on an Absorbent Baffle

Mounting Method E
Loudspeaker not Attached to any Surface and Radiation Unaffected by nearby Reflecting Surfaces

Figure 1
Loudspeaker Test

Report

Manufacturer: E2S Warning Signals

Type: Horn

Model: D1xL1FV070xxxD1x

For: E2S Warning Signals

Report No.: R.2058/LS/D1xL1-070V-Dust-15W-S1

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

September 2015

© AMS Acoustics, London
1.00 Object

1.01 The object of this Report is to present measurements of the acoustic performance of the D1xL70VDus15WS1 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:

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(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)
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(ix) Impedance bode plot
(x) Polar response charts
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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.

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6.00 Engineers Notes & Observations

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

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

The impedance does fall below 80% of the rated impedance within the frequency range 89Hz to 11.2kHz.
Loudspeaker Information

Manufacturer: E2S Warning Signals
Model Code: D1xL70VDus15WS1
Type: Horn
Colour: Red
Serial No.: NM
Batch No.: NA
Other Markings: -
  Backbox: As supplied
  Grille: NA
Weight (grams): 4260
Depth (mm): 285
Width (mm): 182
Height (mm): 182
Special Features: Explosion proof

Internal Details
Driver Types/Sizes: NM
Driver Serial No.(s): NM
Driver Markings: NM
Damping Material: NA
Available Tappings: 15W (70V)

NM = Not Measured, NA = Not Applicable
Manufacturer: E2S Warning Signals
Model Code: D1xL70VDus15WS1
Mounting: Turntable
Measurement Distance [m]: 2.35
Test Voltage [V]: 39.30
Rated Noise Voltage [V]: 70.00
Rated Noise Power [W]: 15.00
Rated Impedance [Ohms]: 326.6
Minimum Impedance [Ohms]: 258.2 (79% of Rated)
Effective Impedance (Pink noise) [Ohms]: 351.2 (PF=0.778)
Effective Impedance (IEC Male) [Ohms]: 364.4 (PF=0.79)
Reference Axis Located at: 0 degrees

<table>
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<th>Parameter</th>
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<th>500</th>
<th>1k</th>
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<td>Sensitivity [dB @ 1m,1W]</td>
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<td>Apportioned Power [%]</td>
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<tr>
<td>Oct' Sensitivity [dB @ 1m,1W/Oct]</td>
<td>41</td>
<td>59</td>
<td>79</td>
<td>90</td>
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<td>92</td>
<td>89</td>
<td>80</td>
<td>69</td>
<td>94</td>
<td>95</td>
</tr>
</tbody>
</table>

![Directivity Index Graph](image1)

![Acoustic Power Graph](image2)
D1xL70VDus15WS1

**Band Limited Frequency Response**
(Normalised to 0dB)

- Relative Level [dB]
- IEC 3rd-Octave Frequency [Hz]

**Impedance Bode**

- Impedance [Ohms]
- Frequency [Hz]
- Phase [degs]

Test signal: Pink noise-6dB (100Hz-10kHz) @ 15W
Test signal: Swept sine wave
D1xL70VDus15WS1

**Frequency response**

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

Signed:  
Countersigned: J. Grosch
Loudspeaker Mounting Methods

Mounting Method A
Loudspeaker Mounted in a Reflective Baffle

Mounting Method B
Loudspeaker Mounted in an Absorbent Baffle

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Loudspeaker Mounted on a Reflective Baffle

Mounting Method E
Loudspeaker not Attached to any Surface and Radiation Unaffected by nearby Reflecting Surfaces

Figure 1