Test Report

Report No	288/7387780 Part 1 of 2 This report consists of 22 pages
Licence/Certificate No	KM 532936
Client	GLT Exports Limited 72-78 Morfa Road Hafod Swansea SA1 2EN United Kingdom
Authority & date	BSI Service Management Order 7387780 dated 04 June 2009 Equipment Record Number 10105142
Item tested	Maxitone ZAMT Type A Addressable Sounder
Specifications	BS EN 54-3:2001 Incorporating Amendment A1.
Results	See Assessment Summary for details
Prepared by	E Attoh Engineer
Authorized by	R Hearty Team Leader
Issue Date	21 July 2010
Conditions of issue	This Test Report is issued subject to the conditions stated in current issue CP0322 'Conditions of Contract for Testing'. The results contained herein apply only to the particular sample/s tested and to the specific tests carried out, as detailed in this Test Report. The issuing of this Test Report does not indicate any measure of Approval, Certification, Supervision, Control or Surveillance by BSI of any product. No extract, abridgement or abstraction from a Test Report may be published or used to advertise a product without the written consent of the Managing Director, BSI Testing Services, who reserves the absolute right to agree or reject all or any of the details of any items or publicity for which consent may be sought.

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INTRODUCTION

For the purposes of product certification the sounders detailed below, were submitted on behalf of GLT Exports Ltd to BSI for testing. Limited testing was carried out as prescribed by Product Certification Schedule of tests for sounders.

This Report only relates to the actual samples that have been tested and assessed. The results obtained do not necessarily relate to samples from the production line and in no way imply the performance or quality of the continuing production will be maintained.

The tests and assessments contained in this report were undertaken by BSI EMC-Environmental laboratory from 16 June 2009.

PRODUCT INFORMATION

Maxitone ZAMT Type A Addressable Sounder

PRODUCT PICTURE

General view showing Maxitone ZAMT Type A Addressable Sounder

SCHEDULE OF TEST

Clause	Title of Requirement	Perform Test Variants
4.2	Sound level	√
4.3	Frequency and sound pattern	√
4.4	Durability	√
4.5	Construction	√
4.6	Marking and data	√
5.2	Reproducibility	√
5.3	Operational performance	√
5.4	Durability	√
5.5	Dry heat (Operational)	√
5.6	Dry heat (Endurance)	N/A. See comment on page 10
5.7	Cold (Operational)	√
5.8	Damp heat, cyclic (Operational)	√
5.9	Damp heat, steady state (Endurance)	√
5.10	Damp heat, cyclic (Endurance)	√
5.11	Sulphur dioxide ($S0_2$), corrosion (Endurance)	√
5.12	Shock (Operational)	√
5.13	Impact (Operational)	√
5.14	Vibration, sinusoidal (Operational)	√
5.15	Vibration, sinusoidal (Endurance)	√
5.16	Electromagnetic compatibility (EMC), immunity (Operational)	√
5.17	Enclosure protection	√

√: Test Performed
X: Do Not Perform this test
N/A: Test Not Applicable

ASSESSMENT SUMMARY FOR ALTERNATING SOUND PATTERN TYPE A SOUNDER

Clause	Title	PASS/FAIL
4.2	Sound level	PASS
4.3	Frequency and sound pattern	PASS
4.4	Durability	PASS
4.5	Construction	PASS
4.6	Marking and data	PASS
5.2	Reproducibility	PASS
5.3	Operational performance	PASS
5.4	Durability	PASS
5.5	Dry heat (Operational)	FAIL
5.6	Dry heat (Endurance)	N/A
5.7	Cold (Operational)	PASS
5.8	Damp heat, cyclic (Operational)	PASS
5.9	Damp heat, steady state (Endurance)	PASS
5.10	Damp heat, cyclic (Endurance)	PASS
5.11*	Sulphur dioxide (S02), corrosion (Endurance)	PASS
5.12	Shock (Operational)	PASS
5.13	Impact (Operational)	PASS
5.14	Vibration, sinusoidal (Operational)	PASS
5.15	Vibration, sinusoidal (Endurance)	PASS
5.16	Electromagnetic compatibility (EMC), Immunity (Operational)	PASS
5.17	Enclosure protection	PASS

RE-TEST: Clause 5.5

See results and comments on page 11.

5.5	Dry heat, (Operational)	**PASS**

√: Test Performed
X: Do Not Perform this test
N/A: Test Not Applicable

RESULTS

Clauses	Test	Assessment
4.2	**Sound level**	Complied. Tone: 800Hz-970Hz, The peak sound level 85.71dB at 1m and the average sound level 82.5 dB at 33VDC
4.3	**Frequency and sound pattern**	Complied. Information declared, the Tone frequency range is: 800Hz-970Hz,
4.4	**Durability**	Complied
4.5	**Construction**	
4.5.1	Provision for external conductors	Complied
4.5.2	Materials	Complied
4.5.3	IP rating	Complied
4.5.4	Access	Complied
4.6	**Marking & Data**	
4.6.1	Marking	
	Each fire alarm sounder shall be clearly marked with the following information:	It's required by the manufacturer to mark on the product. Manufacturer has however provided technical documentation file.
a)	Number of this standard (EN 54-3)	-
b)	Environment type (Type A or B)	-
c)	Name or trademark of manufacturer or supplier	-
d)	Manufacturer or supplier model designation (type or number)	-
e)	Terminal designations	-
f)	Rated supply voltage or voltage ranges (a.c. or d.c.)	-
g)	Power and current consumption	-
h)	A mark(s) or code(s) (for example, serial number or batch code), by which the manufacturer can identify, at least the date or batch and place of manufacturer and the version number of any software contained within the device	Complied

4.6.2	Data	
	The information required in 4.6.1 together with the following shall be supplied with the device, or shall be given in a data sheet or technical manual identified on, or with each device	
Information required in 4.6.1		
a)	Number of this standard (EN 54-3)	Complied
b)	Environment type (Type A or B)	Complied
c)	Name or trademark of manufacturer or supplier	Complied
d)	Manufacturer or supplier model designation (type or number)	Complied
e)	Terminal designations	Complied
f)	Rated supply voltage or voltage ranges (A.C. or D.C.)	Complied
g)	Power and current consumption	Complied
h)	A mark(s) or code(s) (for example, serial number or batch code), by which the manufacturer can identify, at least the date or batch and place of manufacturer and the version number of any software contained within the device	Complied
Other information		
a)	Operating voltage range(s);	Complied
b)	Supply frequency ranges, where relevant;	Complied
c)	The minimum A weighted sound level in direction through a semi circular arc;	Complied. Note: Manufacturer is to publish the values obtained during the assessments as the stated values for data sheets/Technical file details.
d)	Main sound frequency (ies), Frequency range(s) and sound pattern(s);	Complied
e)	IP Code to EN 60529:1991;	Complied
f)	Any other information necessary to allow correct installation, operation and maintenance of the device;	Complied

Clause 5.2 Reproducibility

Model	Maxitone ZAMT Type A Addressable Sounder
Sample Number	All
Voltage	24V

	Coordinate							
Sample	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	102.6	102.4	101.2	100.2	102.9	102.9	101.6	104
2	103.9	101.7	103.6	100.7	103.8	103.4	102	104.8
3	102.1	101.1	100.6	100.6	101.7	101.8	100.8	102.9
4	104.6	102	104.3	102.3	104.9	104.1	104.5	104.7
5	103.4	102.1	102	101.5	102.9	102.7	102.8	103.7
6	101.3	99.6	100.4	99.5	101.1	101.3	100.5	102.2
7	103.5	102.4	102.6	101.6	103	103.2	102.6	104
8	101.8	100.1	100.8	99.6	101.2	101.1	101.3	102
9	104.6	102.5	103.5	101.9	104	103.6	104.5	104.9
10	102.6	102.7	101.4	100.2	101.4	102.5	101.3	103.9

Averages

Sample	**Average SPL dB(A)**			
1	102.36		$L_{min=}$	100.82 dB(A)
2	103.17		$L_{max=}$	104.04 dB(A)
3	101.52			
4	104.04			
5	102.69			
6	100.82			
7	102.92			
8	101.05			
9	103.79			
10	102.13			

Max Limit (L_{max}- L_{min})	**6 dB(A)**
Actual (L_{max}- L_{min})	**3.22 dB(A)**

Assessment	**Complied**

Clause 5.3 Operational Performance

Model	Maxitone ZAMT Type A Addressable Sounder
Sample Number	No.1

		Voltage: 17VDC			**Voltage**: 35VDC			
		Sound: Alternating			**Sound**: Alternating			
Position	**Angle (^{o})**	**A-Weighted Level @ 3m**	**Corrected for 1m dB(A)**		**A-Weighted Level @ 3m**	**Corrected for 1m dB(A)**	**Max/Min V, level Diff dB(A)**	**Max/Min limit dB(A)**
Horizontal	**15**	67.08	76.62		69.33	78.87	2.25	6.00
	45	70.65	80.19		73.14	82.68	2.49	6.00
	75	73.51	83.05		76.17	85.71	2.66	6.00
	105	73.55	83.09		76.12	85.66	2.57	6.00
	135	70.35	79.89		73.04	82.58	2.69	6.00
	165	66.45	75.99		69.81	79.35	3.36	6.00
Vertical	**15**	67.09	76.63		69.74	79.28	2.65	6.00
	45	70.75	80.29		72.94	82.48	2.19	6.00
	75	73.74	83.28		76.07	85.61	2.33	6.00
	105	73.96	83.50		76.15	85.69	2.19	6.00
	135	70.83	80.37		72.94	82.48	2.11	6.00
	165	67.44	76.98		70.3	79.84	2.86	6.00

Additionally, the A-weighted sound level was greater than 65 dB in at least one direction and did not exceed 120dB in any direction. Compliance was achieved as the manufacturer published these values obtained during these assessments as the stated values for data sheets/Technical file details.

Assessment	**Complied**

5.4 Durability

Model	Maxitone ZAMT Type A Addressable Sounder
Sample Number	2

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (Clause 5.2)	103.9	101.7	103.6	100.7	103.8	103.4	102	104.8
Post- Durability conditioning	102.6	99.9	102.8	99.8	101.6	100.6	100.5	102.8

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	103.17
Post- Durability conditioning	101.49

Max Limit (L_{max}- L_{min})	**6 dB(A)**

Actual (L_{max}- L_{min})	**1.67 dB(A)**

Comments:
Post Durability visual examination of the sample revealed no obvious physical degradation.

No false operation was detected during test.

The A-weighted sound level measured after 100 durability cycles did not decrease by more than 6 dB from that measured for the same specimen, under the same operating condition in the reproducibility test.

Assessment	**Complied**

5.5 Dry heat (Operational)

Model	Maxitone ZAMT Type A Addressable Sounder
Sample Number	3

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (clause 5.2)	102.1	101.1	100.6	100.6	101.7	101.8	100.8	102.9
At 70deg C	94.1	90.4	95.5	90.4	93.4	92.6	93.3	92.2
Post - Dry Heat (Operational)	95.7	97.2	99.0	96.8	95.7	96.8	93.8	99.1

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	101.52
At 70deg C	93.02
Post – Dry Heat	97.07

Max Limit	**(L_{max}- L_{min})**	**6 dB(A)**
Actual	**(L_{max}- L_{min})**	**8.50 dB(A)**

Comments:
Post Dry heat (Operational) visual examination of the sample revealed no obvious physical degradation.

No false operation was detected during conditioning and post sound level measurement test.

However, the A-weighted sound levels measured after the recovery period decreased by more than 6 dB from that measured for the same specimen in the reproducibility test.

Note: the Client confirmed a change on the application environment from Type B to A. Refer to retest results on page 11 of 22 of this page.

Assessment	**Non - Complied**

RETEST

5.5 Dry heat (Operational)

Model	Maxitone ZAMT Type A Addressable Sounder
Sample Number	3

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (clause 5.2)	102.1	101.1	100.6	100.6	101.7	101.8	100.8	102.9
At 55deg C	93.4	95.1	100.2	99.1	99.8	93.6	98.3	92.9
Post - Dry Heat (Operational)	96.9	96.6	100.0	95.9	94.9	97.2	96.7	98.6

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	101.52
At 70deg C	97.47
Post – Dry Heat	97.35

Max Limit	**(L_{max}- L_{min})**	**6 dB(A)**
Actual	**(L_{max}- L_{min})**	**4.17 dB(A)**

Comments:
Post Dry heat (Operational) visual examination of the sample revealed no obvious physical degradation.

No false operation was detected during conditioning and post sound level measurement test.

The A-weighted sound levels measured after the recovery period did not decrease by more than 6 dB from that measured for the same specimen in the reproducibility test.

Assessment	**Complied**

5.7 Cold (Operational)

Model	Maxitone ZAMT Type 'A' Addressable Sounder
Sample Number	3

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (Clause 5.2)	102.1	101.1	100.6	100.6	101.7	101.8	100.8	102.9
At –25 deg	97.6	101.1	100.5	97.5	99.9	101.1	100.3	101.5
Post (After Recovery)	98.5	99.5	101.4	97.4	99.8	100.6	98.5	100.0

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	101.52
At –25 deg	100.16
Post (After Recovery)	99.63

Max Limit	**(L_{max}- L_{min})**	**6 dB(A)**
Actual	**(L_{max}- L_{min})**	**1.89 dB(A)**

Comments:
Post Cold (Operational) visual examination of the sample revealed no obvious physical degradation.

No false operation was detected during conditioning and post sound level measurement test.

The A-weighted sound levels measured after the recovery period did not decrease by more than 6 dB from that measured for the same specimen in the reproducibility test.

Assessment	**Complied**

5.8 Damp heat, cyclic (Operational)

Model	Maxitone ZAMT Type 'A' Addressable Sounder
Sample Number	3

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (Clause 5.2)	102.1	101.1	100.6	100.6	101.7	101.8	100.8	102.9
Post Damp Heat	101.1	98.6	100.9	98.5	101.5	98.8	100.7	102.6

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Values	101.52
Post Damp Heat	100.57

Max Limit	**(L_{max}- L_{min})**	**6 dB(A)**
Actual	**(L_{max}- L_{min})**	**0.95 dB(A)**

Comments:
Post Damp heat cyclic (Oprational) visual examination of the sample revealed no obvious physical degradation.

No false operation was detected during conditioning and post sound level measurement test.

The A-weighted sound levels measured after the recovery period did not decrease by more than 6 dB from that measured for the same specimen in the reproducibility test.

Assessment	**Complied**

5.9 Damp heat, steady state (Endurance)

Model	Maxitone ZAMT Type 'A' Addressable Sounder
Sample Number	3

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (Clause 5.2)	102.1	101.1	100.6	100.6	101.7	101.8	100.8	102.9
Post Damp Heat	101.0	99.8	100.0	99.7	101.0	100.0	100.0	101.0

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	101.52
Post Damp Heat	100.35

Max Limit	**(L_{max}- L_{min})**	**6 dB(A)**
Actual	**(L_{max}- L_{min})**	**1.17 dB(A)**

Comments:
Post Damp Heat Steady State (Endurance) visual examination of the sample revealed no obvious physical degradation.

No false operation was detected during the final sound output measurement test.

The A-weighted sound levels measured after the recovery period did not decrease by more than 6 dB from that measured for the same specimen in the reproducibility test.

Assessment	**Complied**

5.10 Damp heat, cyclic (Endurance)

Model	Maxitone ZAMT Type 'A' Addressable Sounder
Sample Number	10

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (Clause 5.2)	102.6	102.7	101.4	100.2	101.4	102.5	101.3	103.9
Damp Heat	102.0	101.7	101.0	99.5	101.2	99.6	100.9	102.8

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	102.13
Post Damp Heat	101.21

Max Limit	**(L_{max}- L_{min})**	**6 dB(A)**
Actual	**(L_{max}- L_{min})**	**0.92 dB(A)**

Comments:
Post Damp Heat Steady State (Endurance) visual examination of the sample revealed no obvious physical degradation.

No false operation was detected during the final sound output measurement test.

The A-weighted sound levels measured after the recovery period did not decrease by more than 6 dB from that measured for the same specimen in the reproducibility test.

Assessment	**Complied**

Clause 5.11 Sulphur Dioxide (SO_2) Corrosion (endurance)

SO_2 conditioning was subcontracted to ANPI Technologies, BELGIUM and the test was conducted by ANPI Technologies in accordance with IEC68-2-42, test Kc.

Model	Maxitone ZAMT Type 'A' Addressable Sounder
Sample Number	4

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (Clause 5.2)	104.6	102	104.3	102.3	104.9	104.1	104.5	104.7
Post- SO_2 conditioning	104.1	101.3	103.7	101.9	103.8	102.1	103.8	104.1

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	104.04
Post- SO_2 conditioning	103.22

Max Limit	**(L_{max}- L_{min})**	**6 dB(A)**
Actual	**(L_{max}- L_{min})**	**0.82 dB(A)**

Comments:
No false operation was detected during the post sound level measurement test.

The A-weighted sound levels measured after the recovery period did not decrease by more than 6 dB from that measured for the same specimen in the reproducibility test

Assessment	**Complied**

Clause 5.12 Shock (Operational)

Model	Maxitone ZAMT Type 'A' Addressable Sounder
Sample Number	5

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (Clause 5.2)	103.4	102.1	102	101.5	102.9	102.7	102.8	103.7
Post Shock	99.6	99.6	102.0	100.0	98.8	99.3	99.5	100.0

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	102.69
Post Shock	99.95

Max Limit	**(L_{max}- L_{min})**	**6 dB(A)**
Actual	**(L_{max}- L_{min})**	**2.74 dB(A)**

Comments:
Post Shock examination of the sample revealed no obvious physical degradation.

No false operation was detected during test.

The A-weighted sound levels measured after the recovery period did not decrease by more than 6 dB from that measured for the same specimen in the reproducibility test

Assessment	**Complied**

Clause 5.13 Impact (Operational)

Model	Maxitone ZAMT Type 'A' Addressable Sounder
Sample Number	6

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (Clause 5.2)	101.3	99.6	101.4	99.5	101.1	101.3	100.5	102.2
Post Impact	101.2	101.3	102.1	98.8	101.0	101.4	100.4	102.3

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	100.95
Post Impact	101.17

Max Limit (L_{max}- L_{min})	**6 dB(A)**

Actual (L_{max}- L_{min})	**0.23 dB(A)**

Comments:
Post Impact examination of the sample revealed no obvious physical degradation.

No false operation was detected during test.

The A-weighted sound levels measured after the recovery period did not decrease by more than 6 dB from that measured for the same specimen in the reproducibility test

Assessment	**Complied**

Clauses 5.14 & 5.15 Vibration, sinusoidal (Operational & Endurance) Combined

Model	Maxitone ZAMT Type 'A' Addressable Sounder
Sample Number	7

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (Clause 5.2)	103.5	102.4	102.6	101.6	103.0	103.2	102.6	104.0
Post Vibration	103.0	101.2	102.3	100.1	102.9	100.8	102.1	103.9

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	102.92
Post Vibration	102.20

Max Limit	**(L_{max}- L_{min})**	**6 dB(A)**
Actual	**(L_{max}- L_{min})**	**0.72 dB(A)**

Comments:
Post Vibration examination of the sample revealed no obvious physical degradation.

No false operation was detected during vibration operational conditioning and the post sound level measurement test.

The A-weighted sound levels measured after the recovery period did not decrease by more than 6 dB from that measured for the same specimen in the reproducibility test

Assessment	**Complied**

Clause 5.16 Electromagnetic Compatibility (EMC) Immunity (Operational)

For EMC test details, See Test Report No. EM 09041738 Issue 2

Model	Maxitone ZAMT Type 'A' Addressable Sounder
Sample Number	8

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (Clause 5.2)	101.8	100.1	100.8	99.6	101.2	101.1	101.3	102
Post- EMC	100.3	100.9	102.1	101.9	100.4	101.6	100.2	102.1

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	101.05
Post- EMC	101.26

Max Limit (L_{max}- L_{min})	**6 dB(A)**

Actual (L_{max}- L_{min})	**0.20 dB(A)**

Comments:
The Initial and Post EMC Sound Output measurements were performed by BSI.

The A-weighted sound levels measured after the recovery period did not decrease by more than 6 dB from that measured for the same specimen in the reproducibility test.

The EMC testing was carried out by external testing house.

Refer to Test Report number – EM 09041738 Issue 2.

Assessment	**Complied**

5.17 Enclosure protection

Model	Maxitone ZAMT Type 'A' Addressable Sounder
Sample Number	1

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (Clause 5.2)	102.6	102.4	101.2	100.2	102.9	102.9	101.6	104.0
Post Enclosure protectionTest	102.3	100.8	99.8	100.6	101.9	101.1	101.4	102.5

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	102.36
Post Enclosure protectionTest	101.39

Max Limit (L_{max}- L_{min})	**6 dB(A)**

Actual (L_{max}- L_{min})	**0.98 dB(A)**

Comments:
There was no ingress of water to effect the operation of the sample.

The sample met the requirements of the probe test.

No false operation was detected during conditioning and the post sound level measurement test.

The A-weighted sound levels measured after the recovery period did not decrease by more than 6 dB from that measured for the same specimen in the reproducibility test

Assessment	**Complied**

5.17 Enclosure protection (cont)

Model	Maxitone ZAMT Type 'A' Addressable Sounder
Sample Number	2

Individual Values

	Coordinate measured level dB(A)							
Sample/ Condition	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Values (Clause 5.2)	103.9	101.7	103.6	100.7	103.8	103.4	102.0	104.8
Post Enclosure protectionTest	104.9	103.5	102.6	102.9	103.9	103.3	102.8	104.8

Averages

Sample/ Condition	**Average SPL dB(A)**
Initial Value	103.17
Post Enclosure protectionTest	103.67

Max Limit (L_{max}- L_{min})	**6 dB(A)**

Actual (L_{max}- L_{min})	**0.50 dB(A)**

Comments:
There was no ingress of water to effect the operation of the sample.

The sample met the requirements of the probe test.

No false operation was detected during conditioning and the post sound level measurement test.

The A-weighted sound levels measured after the recovery period did not decrease by more than 6 dB from that measured for the same specimen in the reproducibility test

Assessment	**Complied**