

# Air Quality Monitoring Equipments

Report no. : 940891CA212394(1)

Page 1 of 1

## CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

### Client Supplied Information

Details of Unit Under Test, UUT

Description : Laser dust monitor  
 Manufacturer : SIBATA  
 Model No. : LD-5R  
 Serial No. : 155716  
 Specification Limit : NA  
 Next Calibration Date : 02-Sep-2022

### Laboratory Information

Description : 1. Balance                      2. TSP high volume air sampler  
 Equipment ID. / Serial no. : 1. C-065-9                      2. 4350  
 Date of Calibration : 03-Sep-2021                      Ambient Temperature : 25 ± 10 °C  
 Calibration Location : General Chemical Laboratory of FTS and Ma Wan A1 Site Boundary  
 Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

### Calibration Results :

Reference concentration (mg/m <sup>3</sup> )	Total count for 1 hour	CPM (Count per minute)
0.0416	631	10.52
0.0388	626	10.43
0.0266	598	9.97

### Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m<sup>3</sup>) = K x [ UUT reading (CPM) ], where K = 0.003460
3. Correlation coefficient (r) : 0.9992

Checked by :                      Date : 28-9-2021 Certified by :                      Date : 28-9-2021  
 CA-R-297 (22/07/2009) Chan Chun Wai (Manager)

\*\* End of Report \*\*

Report no. : 940891CA212394

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## CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

### Client Supplied Information

Details of Unit Under Test, UUT

Description : Laser dust monitor  
 Manufacturer : SIBATA  
 Model No. : LD-5R  
 Serial No. : 155717  
 Specification Limit : NA  
 Next Calibration Date : 02-Sep-2022

### Laboratory Information

Description : 1. Balance 2. TSP high volume air sampler  
 Equipment ID. / Serial no. : 1. C-065-9 2. 4350  
 Date of Calibration : 03-Sep-2021 Ambient Temperature : 25 ± 10 °C  
 Calibration Location : General Chemical Laboratory of FTS and Ma Wan A1 Site Boundary  
 Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

### Calibration Results :

Reference concentration (mg/m <sup>3</sup> )	Total count for 1 hour	CPM (Count per minute)
0.0416	672	11.20
0.0388	650	10.83
0.0266	597	9.95

### Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m<sup>3</sup>) = K x [ UUT reading (CPM) ], where K = 0.003345
3. Correlation coefficient (r) : 0.9940

Checked by :         Cunmy         Date : 28-9-2021 Certified by :         Wai         Date : 28-9-2021  
 CA-R-297 (22/07/2009) Chan Chun Wai (Manager)

\*\* End of Report \*\*



**TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET**

Location : MaWTF, Ma Wan	Date of Calibration: 26-Jul-21
Location ID: A1 Site Boundary	Next Calibration Date: 30-Oct-21
	Technician: Herman Wang

**CONDITIONS**

Sea Level Pressure (hPa):	998.1	Corrected Pressure (mm Hg):	749
Temperature (°C):	34.0	Temperature (K):	307

**CALIBRATION ORIFICE**

Make:	Tisch	Qstd Slope:	2.11508
Model:	TE-5025A	Qstd Intercept:	-0.02962
Calibration Date:	11-Sep-20	Expiry Date:	11-Sep-21

**CALIBRATIONS**

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m <sup>3</sup> /min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	5.50	-6.50	12.000	1.616	57.00	55.74	Slope = 28.3811 Intercept = 9.9481 Corr. coeff.= 0.9979
13	4.30	-5.40	9.700	1.454	52.00	50.85	
10	2.90	-4.50	7.400	1.272	48.00	46.94	
7	1.90	-2.80	4.700	1.016	39.00	38.14	
5	1.00	-2.00	3.000	0.815	34.00	33.25	

**Calculations:**

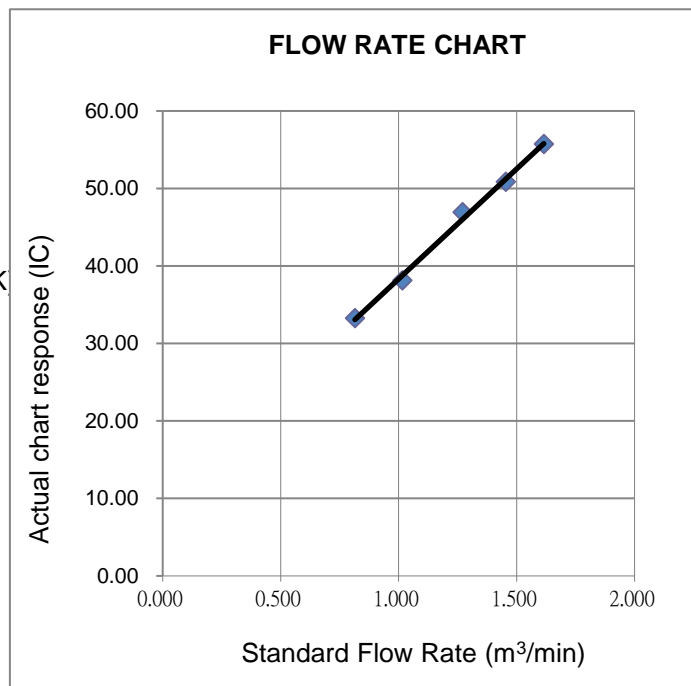
$Qstd = 1/m[\text{sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$   
 $IC = I[\text{sqrt}(Pa/Pstd)(Tstd/Ta)]$

- Qstd = standard flow rate
- IC = corrected chart response
- I = actual chart response
- m = calibrator Qstd slope
- b = calibrator Qstd intercept
- Ta = actual temperature during calibration (deg K)
- Pa = actual pressure during calibration (mm Hg)
- Tstd = 298 deg K
- Pstd = 760 mm Hg

**For subsequent calculation of sampler flow:**

$1/m((I)[\text{sqrt}(298/Tav)(Pav/760)]-b)$

- m = sampler slope
- b = sampler intercept
- I = chart response
- Tav = daily average temperature
- Pav = daily average pressure



## CALIBRATION REPORT OF WIND METER

<b>Project: Contract No. SPW 07/2020</b> <b>Location: Yuen Long Sewage Treatment Works</b>	<b>Date of Calibration: 27-Sep-2021</b> <b>Next Calibration Date: 26-Mar-2022</b> <b>Technician: Sam Fong</b>
<b>Brand: Global Water</b> <b>Model: GL500-7-2</b>	<b>Serial No: 2012000974</b>
<b>Anemometer</b>	
<b>Brand: Benetech</b> <b>Model: GM816</b>	<b>Equipment ID: 08</b>
<b>Procedures:</b>	
<ol style="list-style-type: none"> <li>1. <b>Wind Still Test:</b></li> <li>2. <b>Wind Speed Test:</b></li> <li>3. <b>Wind Direction Test:</b></li> </ol>	<p>The wind speed sensor was held by hand until stabilized.</p> <p>The wind meter was calibrated in-situ and compared with the Anemometer.</p> <p>The wind meter was calibrated in-situ and compared with a marine compass from four directions.</p>

**Wind Still Test:**

Wind Speed (m/s)
0.00

**Wind Speed Test:**

Global Water (m/s)	Anemometer (m/s)
1.7	1.5
2.5	2.4
1.4	1.6

**Wind Direction Test:**

	Marine Compass (o)
137	135
98	96
205	204
314	316



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**Wan Ka Ho**  
 Project Consultant

**Report Date: 29/9/2021**

# Noise Monitoring Equipments

Report no.: 203258CA211142

Page 1 of 1

## CALIBRATION CERTIFICATE OF SOUND LEVEL METER

### Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

### Details of Unit Under Test, UUT

 Description : Sound Level Meter  
 Manufacturer : Casella

	Meter	Microphone	Preamplifier
Model No.	CEL-63X	CE-251	CEL-495
Serial No.	0873599	02374	003916

Equipment ID : N-45

Next Calibration Date : 27-May-2022

Specification Limit : EN 61672-1: 2003 Class 1

### Laboratory Information

#### Details of Reference Equipment -

Description : B &amp; K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)

Equipment ID. : R-108-1

Date of Calibration : 28-May-2021

Calibration Location : Calibration Laboratory of FTS      Ambient Temperature : 20±2 °C

Method Used : By direct comparison      Relative Humidity : &lt;80% R.H.

### Calibration Results :

Parameters	Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	2.6 to -0.6
	2000Hz	2.8 to -0.4
	1000Hz	1.1 to -1.1
	500Hz	-1.8 to -4.6
	250Hz	-7.2 to -10.0
	125Hz	-14.6 to -17.6
	63Hz	-24.7 to -27.7
	31.5Hz	-37.4 to -41.4
Differential level linearity	94dB-104dB	± 0.6
	104dB-114dB	± 0.6

### Remarks :

- The equipment used in this calibration is traceable to recognized National Standards.
- The mean value is the average of four measurements.
- For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast
- The UUT does comply with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
- The values given in this Calibration Certificate only relate to unit under test and the values measured at the time of the test. Any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

 Checked by : William      Date : 1-6-2021      Certified by : K. T. Leung      Date : 1-6-2021  
 CA-R-297 (22/07/2009)      Leung Kwok Tai (Assistant Manager)

**\*\* End of Report \*\***





Report no.: 203258CA210891

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## CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : Fugro Technical Services Ltd.

Project : Calibration Services

### Client Supplied Information

Details of Unit Under Test, UUT

Description : Sound Calibrator  
 Manufacturer : Casella (Model CEL-120/1)  
 Serial No. : 4358251  
 Equipment ID : N-34

Next Calibration Date : 10-May-2022

Specification Limit : EN 60942: 2003 Class 1

### Laboratory Information

Details of Calibration Equipment

Description : Reference Sound level meter  
 Equipment ID. : R-119-2

Date of Calibration : 11-May-2021

Calibration Location : Calibration Laboratory of FTS      Ambient Temperature : 20±2 °C

Method Used : By direct comparison      Relative Humidity : &lt;80% R.H.

### Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.1 dB	±0.4dB
114dB	-0.1 dB	

### Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The unit under test complies with the specification limit.
4. The values given in this Calibration Certificate only relate to the unit-under-test and the values measured at the time of the test. Any uncertainties will not include allowances for the environmental changes, variation and shock during transportation, or the capability of any other laboratory to repeat the measurement.

 Checked by : William      Date : 12-5-2021      Certified by : R. T. Leung      Date : 12-5-2021

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

\*\* End of Report \*\*

Report no.: 212769CA212069(3)

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**CALIBRATION CERTIFICATE OF SOUND CALIBRATOR**

Client : Fugro Technical Services Ltd.

Project : Calibration Services

**Client Supplied Information**

Details of Unit Under Test, UUT

Description : Sound Calibrator  
Manufacturer : Casella (Model CEL-120/1)  
Serial No. : 2383707  
Equipment ID : N/A

Next Calibration Date : 25-Aug-2022

Specification Limit : EN 60942: 2003 Class 1

**Laboratory Information**

Details of Calibration Equipment

Description : Reference Sound level meter  
Equipment ID. : R-119-2

Date of Calibration : 26-Aug-2021

Calibration Location : Calibration Laboratory of FTS Ambient Temperature : 20±2 °C

Method Used : By direct comparison Relative Humidity : &lt;80% R.H.

**Calibration Results :**

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.4 dB	±0.4dB
114dB	-0.3 dB	

**Remarks :**

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The unit under test complies with the specification limit.
4. The values given in this Calibration Certificate only relate to the unit-under-test and the values measured at the time of the test. Any uncertainties quoted will not include allowances for the environmental changes, variation and shock during transportation, or the capability of any other laboratory to repeat the measurement.

Checked by : Canny Date : 27-8-2021 Certified by : K. Leung Date : 27-8-2021  
CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

**\*\* End of Report \*\***

Report No. : 212769CA211145

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**CALIBRATION CERTIFICATE OF ANEMOMETER**

**Client Supplied Information**

Client : Fugro Technical Services Limited

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Anemometer

Manufacturer : SENSOR

Model No. : AR816

Serial No. : 2136513

Equipment ID.: NA

Next Calibration Date : 30-May-2022

**Laboratory Information**

Details of Reference Equipment –

Description : Reference Anemometer

Equipment ID.: R-101-4

Date of Calibration : 31-May-2021 Ambient Temperature : 22 °C

Calibration Location : Calibration Laboratory of FTS

Method Used : In-house Method R-C-279

**Calibration Results :**

Reference Reading (m/s)	UUT Reading (m/s)	Error (m/s)
1.99	2.0	0.0
4.00	4.3	0.3
6.01	6.3	0.3
7.99	8.2	0.2
10.03	9.9	-0.1

**Remark :**

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The reported readings in this calibration are an average from 10 trials.
3. The expanded uncertainty is 0.5 m/s with a coverage factor of 2 at a confidence level of 95%.

Checked by : William Date : 2-6-2021 Certified by : P.T. Leung Date : 2-6-2021

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

**\*\* End of Report \*\***

# Water Quality Monitoring Equipments



Report No. : 142626WA212610



Page 1 of 3

**Report on Calibration of YSI EXO-1 Multi-parameter Water Quality Meter**

**Information Supplied by Client**

Client : Fugro Technical Services Limited (MCL)  
Client's address : 13/F, Fugro House – KCC2, No. 1 Kwai On Road, Kwai Chung, N.T., H.K.  
Sample description : One YSI EXO-3 Multi-parameter Water Quality Meter  
Client sample ID : Serial No. 19A105807  
Test required : Calibration of the YSI EXO-3 Multi-parameter Water Quality Meter

**Laboratory Information**

Lab. sample ID : WA212610/1  
Date sample received : 01/12/2021  
Date of calibration : 02/12/2021  
Next calibration date : 01/03/2022  
Test method used : In-house comparison method

*Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.*

Report No. : 142626WA212610

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**Results :**
**A. pH calibration**

pH reading at 25°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.19	+0.01
6.86	6.90	+0.04

**B. Salinity calibration**

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	1.0	0.0	± 0.1
10	9.96	-0.04	± 0.5
20	20.04	+0.04	± 1.0
30	30.01	+0.01	± 1.5
40	39.71	-0.29	± 2.0

**C. Dissolved Oxygen calibration**

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.50	8.54
2	8.50	8.49
3	8.45	8.52
Average	8.48	8.52

Differences of D.O. Content between Winkler Titration and D.O. meter should be less than 0.2 mg/L

Certified by :   
 Approved Signatory : CHAN Hoi Yan, Winnie  
 Assistant Manager

Date : 29-12-2011

*Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.*

Report No. : 142626WA212610

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**Results :**

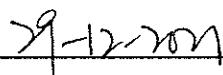
**D. Temperature calibration**

Thermometer reading, °C	Meter reading, °C
19.9	19.613

**E. Turbidity calibration**

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.34	+0.34	± 0.6
8	8.49	+0.49	± 0.8
40	42.49	+2.49	± 3.0
80	80.44	+0.44	± 4.0

Certified by :   
 Approved Signatory : CHAN Hoi Yan, Winnie  
 Assistant Manager

Date :   
 \*\* End of Report \*\*

*Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.*

Report No. : 142626WA212610(1)



Page 1 of 3

**Report on Calibration of YSI EXO-1 Multi-parameter Water Quality Meter****Information Supplied by Client**

Client : Fugro Technical Services Limited (MCL)

Client's address : 13/F, Fugro House – KCC2, No. 1 Kwai On Road, Kwai Chung, N.T., H.K.

Sample description : One YSI EXO-3 Multi-parameter Water Quality Meter

Client sample ID : Serial No. 19A105808

Test required : Calibration of the YSI EXO-3 Multi-parameter Water Quality Meter

**Laboratory Information**

Lab. sample ID : WA212610(1)/1

Date sample received : 01/12/2021

Date of calibration : 02/12/2021

Next calibration date : 01/03/2022

Test method used : In-house comparison method

*Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.*



Report No. : 142626WA212610(1)

Page 2 of 3

**Results :**
**A. pH calibration**

pH reading at 25°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.20	+0.02
6.86	6.93	+0.07

**B. Salinity calibration**

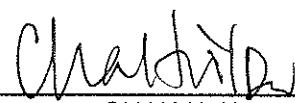
Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1	1.0	0.0	± 0.1
10	9.94	-0.06	± 0.5
20	19.92	-0.08	± 1.0
30	29.95	-0.05	± 1.5
40	39.65	-0.35	± 2.0

**C. Dissolved Oxygen calibration**

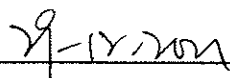
Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.48	8.47
2	8.38	8.46
3	8.33	8.40
Average	8.40	8.44

Differences of D.O. Content between Winkler Titration and D.O. meter should be less than 0.2 mg/L

Certified by :

  
 Approved Signatory : CHAN Hoi Yan, Winnie  
 Assistant Manager

Date :



*Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.*

Report No. : 142626WA212610(1)

Page 3 of 3

**Results :**

**D. Temperature calibration**

Thermometer reading, °C	Meter reading, °C
19.9	19.849

**E. Turbidity calibration**

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
4	4.36	+0.36	± 0.6
8	8.50	+0.50	± 0.8
40	38.48	-1.52	± 3.0
80	79.40	-0.60	± 4.0

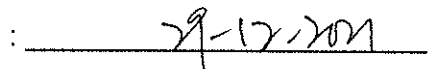
Certified by



Approved Signatory : CHAN Hoi Yan, Winnie  
Assistant Manager

Date


\*\* End of Report \*\*



*Note : This report refers only to the sample(s) tested and the result(s) applied to the sample(s) as received.*

# CALIBRATION CERTIFICATE

This document certifies that the instrument detailed below has been calibrated according to Valeport Limited's Standard Procedures, using equipment with calibrations traceable to UKAS or National Standards.

<b>Calibration Certificate Number:</b>	<b>61134</b>
Instrument Type:	MODEL 106
Instrument Serial Number:	67738
Calibrated By:	N.PADDON
Date:	11 <sup>TH</sup> NOVEMBER 2019
Signed:	

Full details of the results from the calibration procedure applied to each fitted sensor are available, on request, via email. This summary certificate should be kept with the instrument.

A large, stylized number '50' in a bold, sans-serif font, with a small square icon above the '0'.

**Valeport Limited**  
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VAT No: CB 165 8753 67  
Registered in England No: 1950444





a xylem brand

9940 Summers Ridge Road  
San Diego, CA 92121  
Tel: (858) 546-8327  
support@sontek.com

### Certificate of Calibration

#### TEST REPORT

Serial Number	5906
System Type	M9
System Orientation	Down
Compass Type	Sontek
Compass Offset (degrees)	N/A
Communications Output	RS232
Recorder Size (GB)	14.9
Firmware Version	4.02
Date Tested	05/23/2017

#### POWER TEST

Command Mode (W):	0.17	Range : 0.00 – 0.30
Sleep Mode (W):	N/A	Range : N/A
Ping Mode - 18V (W):	2.67	Range : 1.50 – 3.50
Power Check		PASS

#### NOISE TEST

Beam 1 – 3.0 MHz (counts)	95
Beam 2 – 1.0 MHz (counts)	96
Beam 3 – 3.0 MHz (counts)	95
Beam 4 – 1.0 MHz (counts)	101
Beam 5 – 3.0 MHz (counts)	93
Beam 6 – 1.0 MHz (counts)	95
Beam 7 – 3.0 MHz (counts)	91
Beam 8 – 1.0 MHz (counts)	100
Beam Vertical – 500KHz (counts)	88
Noise Test	PASS

## VERIFICATION

Velocity Check	PASS
Transmit Output	PASS
Sensitivity	PASS
Temperature Sensor	PASS
Compass Heading Check	PASS
Compass Level Check	PASS
Burn-in (24 hrs)	PASS
Load Default Parameters	DONE

## OPTIONS

Bottom Track	Installed
SmartPulse HD <sup>TM</sup>	Enabled
Stationary	Disabled
GPS Compass Integration	Disabled
RiverSurveyor	Enabled
HydroSurveyor	Disabled

Verified by: **ainthasane**

This report was generated on 5/24/2017.

ATTENTION: New Warranty Terms as of March 4, 2013:

This system is covered under a two year limited warranty that extends to all parts and labor for any malfunction due to workmanship or errors in the manufacturing process. The warranty is valid only if you properly maintain and operate this system under normal use as outlined in the User's Manual. The warranty does not cover shortcomings that are due to the design, or any incidental damages as a result of errors in the measurements.

SonTek will repair and/or replace, at its sole option, any product established to be defective with a product of like type. CLAIMS FOR LABOR COSTS AND/OR OTHER CHARGES RESULTING FROM THE USE OF SonTek GOODS AND/OR PRODUCTS ARE NOT COVERED BY THIS LIMITED WARRANTY.

SonTek DISCLAIMS ALL EXPRESS WARRANTIES OTHER THAN THOSE CONTAINED ABOVE AND ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE. SonTek DISCLAIMS AND WILL NOT BE LIABLE, UNDER ANY CIRCUMSTANCE, IN CONTRACT, TORT OR WARRANTY, FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING BUT NOT LIMITED TO LOST PROFITS, BUSINESS INTERRUPTION LOSSES, LOSS OF GOODWILL, OR LOSS OF BUSINESS OR CUSTOMER RELATIONSHIPS.

If your system is not functioning properly, first try to identify the source of the problem. If additional support is required, we encourage you to contact us immediately. We will work to resolve the problem as quickly as possible.

If the system needs to be returned to the factory, please contact SonTek to obtain a Service Request (SR) number. We reserve the right to refuse receipt of shipments without SRs. We require the system to be shipped back in the original shipping container using the original packing material with all delivery costs covered by the customer (including all taxes and duties). If the system is returned without appropriate packing, the customer will be required to cover the cost of a new packaging crate and material.

The warranty for repairs performed at an authorized SonTek Service Center is one year.