



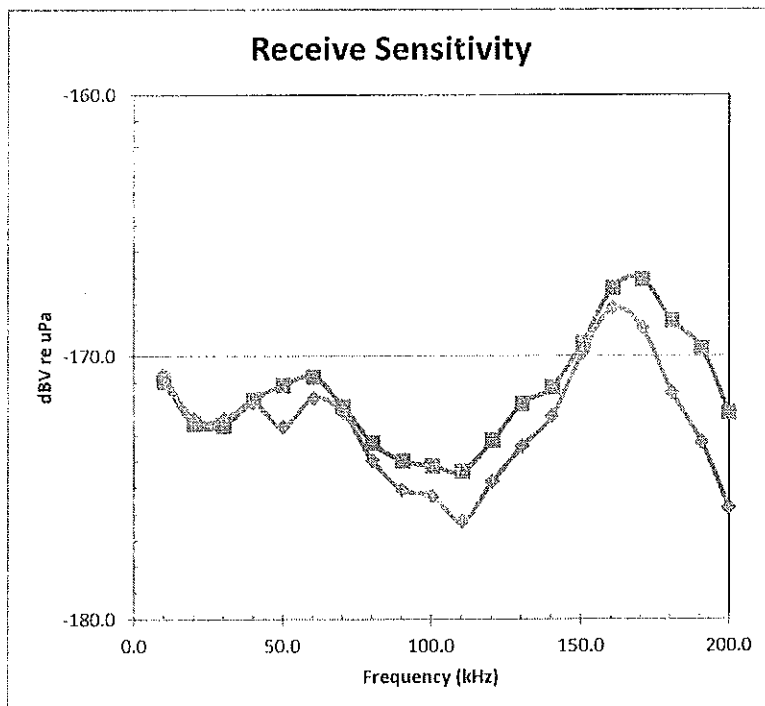
## Certificate of Calibration

Ocean Sonics, Ltd.

Calibration Certificate Number: **C4998**

Test Result: 10 kHz to 100 kHz:  $-173.0 \pm 2.3$   
10 kHz to 200 kHz:  $-171.7 \pm 4.6$

Model Number	SB35-ETH	Manufacturer	Ocean Sonics
Serial Number	1273	Projector Model	TH2-SER-4F
Manufacture Date	10-Sep-2019	Projector Serial	2210
Measurement Date	6-Dec-2019	Measurement Distance	1 m
Certificate Date	6-Dec-2019	Output Level	133 dB re $\mu$ Pa @ 1 m
Sensitivity @ 26 Hz	-168.7 dB re V / $\mu$ Pa	Tone Burst	100.0 $\mu$ s / 300 ms
Case Type	Titanium	Reference Manufacturer	Ocean Sonics
Element Manufacturer	GeoSpectrum	Reference Model	RB9-ETH
Element Model	M24HF	Reference Serial	1773
Element Serial	B001847	Primary Calibration	8-Nov-2017
Preamplifier Model	04-300435-01	Preamplifier Manufacturer	Ocean Sonics
Calibrated By	Cody Ellis	Preamplifier Model	04-300434-01
Work Order Number	W1960	Preamplifier Serial	912
Test Type	RX Sensitivity	Preamplifier Gain	36 dB
Test Procedure	Complex RMS	ADC Manufacturer	Ocean Sonics
Test Location	Tank #3, 1 m	ADC Model Number	04-300423-01
Water Temperature	16 °C	ADC Serial Number	586



Frequency kHz	Sensitivity [dBV re $\mu$ Pa]	
	0 deg	90 deg
10.0	-171.0	-170.7
20.1	-172.6	-172.4
30.1	-172.6	-172.4
40.2	-171.7	-171.8
50.2	-171.1	-172.7
60.2	-170.8	-171.6
70.3	-171.9	-172.1
80.3	-173.3	-174.0
90.4	-174.0	-175.1
100.4	-174.2	-175.3
110.4	-174.4	-176.3
120.5	-173.2	-174.8
130.5	-171.8	-173.4
140.5	-171.2	-172.3
150.6	-169.5	-169.9
160.6	-167.4	-168.2
170.7	-167.1	-168.9
180.7	-168.6	-171.4
190.7	-169.7	-173.3
200.0	-172.2	-175.8