



Certificate of Calibration

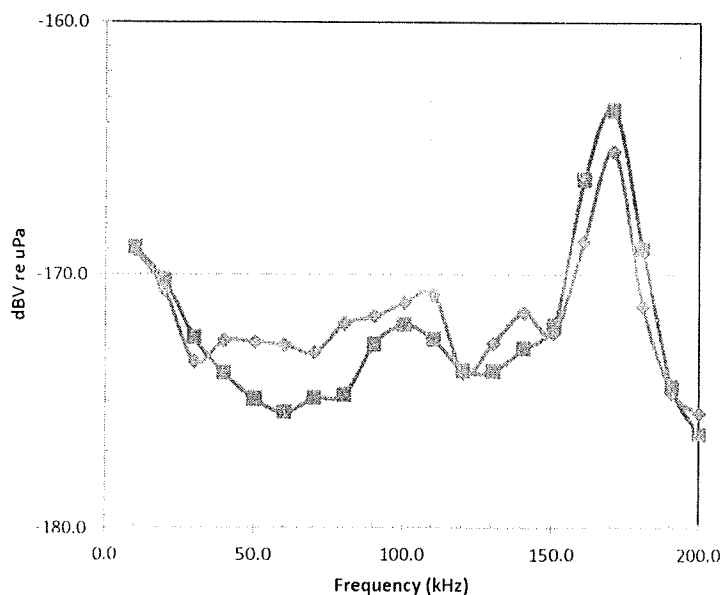
Ocean Sonics, Ltd.

Calibration Certificate Number: **C6046**

Test Result: 10 kHz to 100 kHz: -172.2 ± 3.3
10 kHz to 200 kHz: -169.9 ± 6.4

Model Number	SB35-ETH	Projector Manufacturer	Ocean Sonics
Serial Number	1249	Projector Model	TH2-SER-4F
Manufacture Date	11-Oct-2017	Projector Serial	2225
Measurement Date	18-Nov-2021	Measurement Distance	1 m
Certificate Date	18-Nov-2021	Output Level	130.3 dB re uPa @ 1 m
Sensitivity @ 26 Hz	-168.5 dB re V / uPa	Tone Burst	100.0 us / 300 ms
Case Type	Titanium	Reference Manufacturer	Ocean Sonics
Element Manufacturer	GeoSpectrum	Reference Model	RB9-ETH
Element Model	M24HF	Reference Serial	2080
Element Serial	626	Primary Calibration	20-Jan-2020
Preamplifier Model	04-300435-01	Preamplifier Manufacturer	Ocean Sonics
Calibrated By	Donggeun	Preamplifier Model	04-300449-01
Work Order Number	W1234	Preamplifier Serial	M58
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	04-300426-01
Water Temperature	16 °C	ADC Serial Number	M59

Receive Sensitivity



Frequency kHz	Sensitivity [dBV re uPa]	
	0 deg	90 deg
10.0	-168.9	-169.0
20.1	-170.2	-170.6
30.1	-172.5	-173.4
40.2	-173.9	-172.6
50.2	-174.9	-172.7
60.2	-175.4	-172.8
70.3	-174.9	-173.1
80.3	-174.7	-171.9
90.4	-172.8	-171.7
100.4	-172.0	-171.1
110.4	-172.6	-170.8
120.5	-173.8	-173.9
130.5	-173.8	-172.7
140.5	-172.9	-171.5
150.6	-172.0	-172.3
160.6	-166.2	-168.7
170.7	-163.5	-165.1
180.7	-169.0	-171.3
190.7	-174.4	-174.6
200.0	-176.3	-175.5