



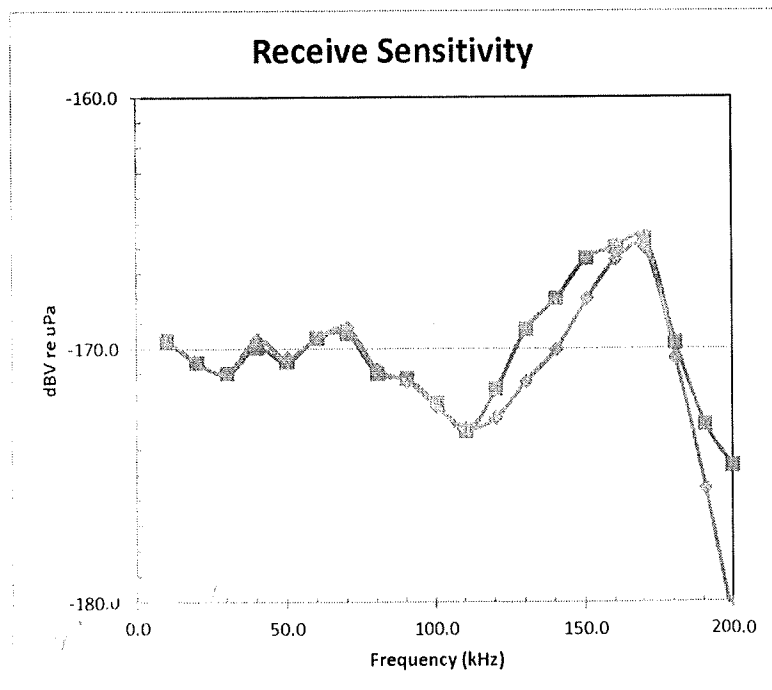
Certificate of Calibration

Ocean Sonics, Ltd.

Calibration Certificate Number: **C6048**

Test Result: 10 kHz to 100 kHz: -170.7 ± 1.6
10 kHz to 200 kHz: -173.2 ± 7.6

Model Number	SB35-ETH	Projector Manufacturer	Ocean Sonics
Serial Number	1361	Projector Model	TH2-SER-4F
Manufacture Date	9-Apr-2018	Projector Serial	2225
Measurement Date	18-Nov-2021	Measurement Distance	1 m
Certificate Date	18-Nov-2021	Output Level	130.3 dB re μ Pa @ 1 m
Sensitivity @ 26 Hz	-168.5 dB re V / μ Pa	Tone Burst	100.0 μ s / 300 ms
Case Type	Titanium	Reference Manufacturer	Ocean Sonics
Element Manufacturer	GeoSpectrum	Reference Model	RB9-ETH
Element Model	M24HF	Reference Serial	2080
Element Serial	1770	Primary Calibration	20-Jan-2020
Preamp Model	04-300419-01	Preamp Manufacturer	Ocean Sonics
Calibrated By	Donggeun	Preamp Model	04-300449-01
Work Order Number	W1234	Preamp Serial	M58
Test Type	RX Sensitivity	Preamp 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



Frequency	Sensitivity [dBV re μ Pa]	
kHz	0 deg	90 deg
10.0	-169.7	-169.6
20.1	-170.5	-170.5
30.1	-171.0	-171.0
40.2	-170.0	-169.6
50.2	-170.5	-170.4
60.2	-169.6	-169.6
70.3	-169.4	-169.2
80.3	-171.0	-170.8
90.4	-171.2	-171.3
100.4	-172.2	-172.3
110.4	-173.3	-173.1
120.5	-171.6	-172.7
130.5	-169.2	-171.3
140.5	-168.0	-170.0
150.6	-166.4	-168.0
160.6	-166.0	-166.5
170.7	-165.6	-166.0
180.7	-169.8	-170.4
190.7	-173.0	-175.5
200.0	-174.7	-180.9