



Certificate of Calibration

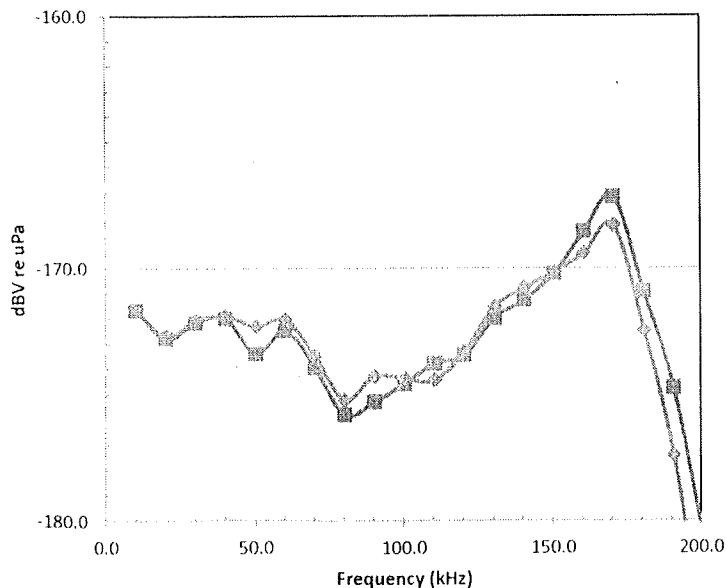
Ocean Sonics, Ltd.

Calibration Certificate Number: **C6047**

Test Result: 10 kHz to 100 kHz: -173.7 ± 2.1
10 kHz to 200 kHz: -175.7 ± 8.6

Model Number	SB2-ETH	Projector Manufacturer	Ocean Sonics
Serial Number	1272	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 μ Pa @ 1 m
Sensitivity @ 26 Hz	-170.5 dB re V / μ Pa	Tone Burst	100.0 us / 300 ms
Case Type	Plastic	Reference Manufacturer	Ocean Sonics
Element Manufacturer	GeoSpectrum	Reference Model	RB9-ETH
Element Model	M24HF	Reference Serial	2080
Element Serial	F000321	Primary Calibration	20-Jan-2020
Preamp Model	04-300435-09	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

Receive Sensitivity



Frequency	Sensitivity [dBV re μ Pa]	
kHz	0 deg	90 deg
10.0	-171.7	-171.6
20.1	-172.8	-172.7
30.1	-172.1	-172.0
40.2	-172.0	-171.9
50.2	-173.4	-172.3
60.2	-172.5	-172.0
70.3	-173.9	-173.5
80.3	-175.8	-175.2
90.4	-175.3	-174.3
100.4	-174.6	-174.4
110.4	-173.8	-174.4
120.5	-173.4	-173.3
130.5	-172.0	-171.5
140.5	-171.2	-170.8
150.6	-170.2	-170.2
160.6	-168.5	-169.4
170.7	-167.2	-168.3
180.7	-170.9	-172.5
190.7	-174.7	-177.4
200.0	-180.2	-184.3