



Certificate of Calibration

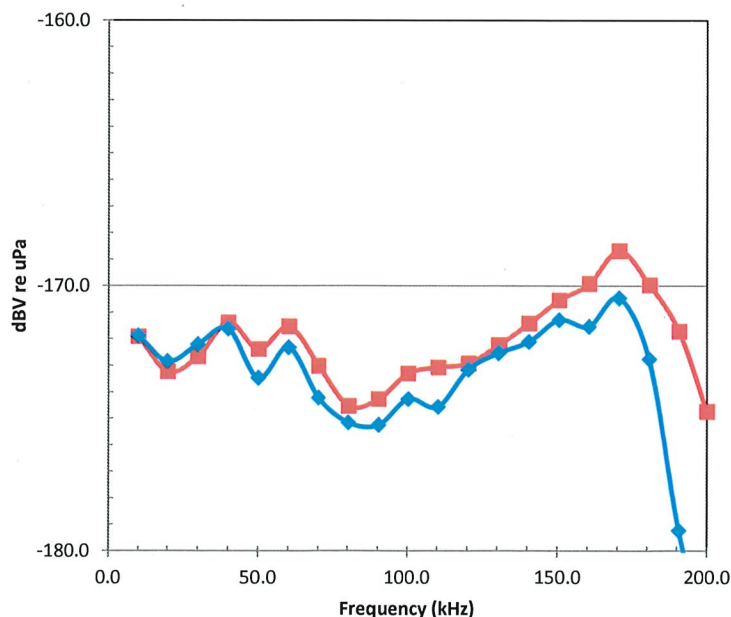
Ocean Sonics, Ltd.

Calibration Certificate Number: **C5429**

Test Result: 10 kHz to 100 kHz: -173.3 ± 1.9
10 kHz to 200 kHz: -176.0 ± 7.3

Model Number	SB35-ETH	Projector Manufacturer	Ocean Sonics
Serial Number	1292	Projector Model	TH2-SER-4F
Manufacture Date	23-Oct-2017	Projector Serial	2225
Measurement Date	16-Dec-2020	Measurement Distance	1 m
Certificate Date	16-Dec-2020	Output Level	129.6 dB re uPa @ 1 m
Sensitivity @ 26 Hz	-170.2 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	F000541	Primary Calibration	20-Jan-2020
Preamp Model	04-300435-09	Preamp Manufacturer	Ocean Sonics
Calibrated By	S.MacLean	Preamp Model	04-300449-01
Work Order Number	R309	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 uPa]	
kHz	0 deg	90 deg
10.0	-171.9	-171.9
20.1	-173.2	-172.8
30.1	-172.7	-172.2
40.2	-171.4	-171.6
50.2	-172.4	-173.5
60.2	-171.5	-172.3
70.3	-173.0	-174.2
80.3	-174.5	-175.2
90.4	-174.3	-175.3
100.4	-173.3	-174.3
110.4	-173.1	-174.6
120.5	-172.9	-173.2
130.5	-172.2	-172.5
140.5	-171.4	-172.1
150.6	-170.5	-171.3
160.6	-169.9	-171.5
170.7	-168.7	-170.4
180.7	-170.0	-172.8
190.7	-171.7	-179.2
200.0	-174.7	-183.4