



Certificate of Calibration

Ocean Sonics, Ltd.

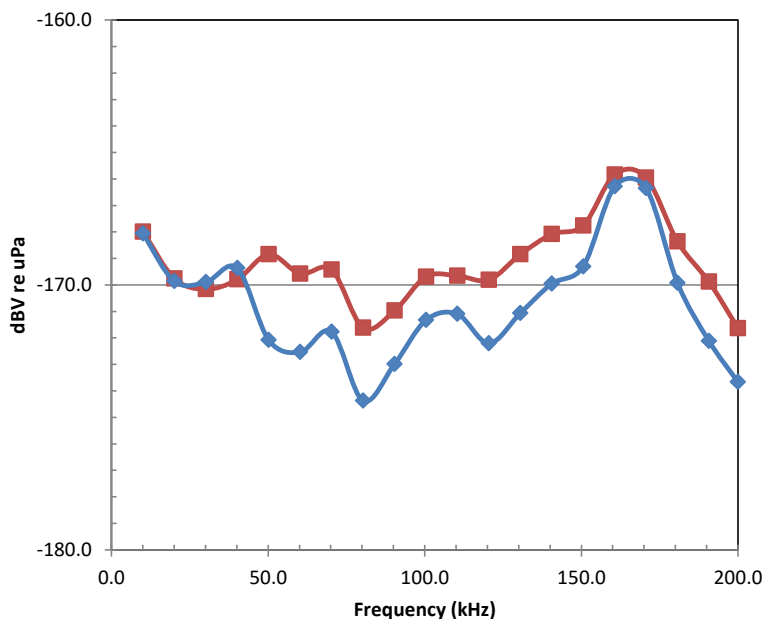
Calibration Certificate Number: **C4541**

Test Result: 10 kHz to 100 kHz: -171.2 ± 3.2
10 kHz to 200 kHz: -170.1 ± 4.3

Model Number SB35-ETH
Serial Number 1250
Manufacture Date 4-Sep-2018
Measurement Date 27-Sep-2018
Certificate Date 27-Sep-2018
Sensitivity @ 26 Hz -168.2 dB re V / uPa
Case Type Titanium
Element Manufacturer GeoSpectrum
Element Model M24HF
Element Serial D000135
Preamp Model 04-300435-01
Calibrated By S.MacLean
Work Order Number W1728
Test Type RX Sensitivity
Test Procedure Complex RMS
Test Location Tank #2, 1 m
Water Temperature 18 °C

Projector Manufacturer Ocean Sonics
Projector Model TH2-SER-4F
Projector Serial 2210
Measurement Distance 1 m
Output Level 131.9 dB re uPa @ 1 m
Tone Burst 100.0 us / 300 ms
Reference Manufacturer Ocean Sonics
Reference Model RB9-ETH
Reference Serial 1773
Primary Calibration 8-Nov-2017
Preamp Manufacturer Ocean Sonics
Preamp Model 04-300434-01
Preamp Serial 912
Preamp Gain 36 dB
ADC Manufacturer Ocean Sonics
ADC Model Number 04-300423-01
ADC Serial Number 586

Receive Sensitivity



| Frequency kHz | Sensitivity [dBV re uPa] | |
|------------------|--------------------------|--------|
| | 0 deg | 90 deg |
| 10.0 | -168.0 | -168.1 |
| 20.1 | -169.8 | -169.9 |
| 30.1 | -170.2 | -169.9 |
| 40.2 | -169.8 | -169.4 |
| 50.2 | -168.8 | -172.1 |
| 60.2 | -169.6 | -172.5 |
| 70.3 | -169.4 | -171.8 |
| 80.3 | -171.6 | -174.4 |
| 90.4 | -171.0 | -173.0 |
| 100.4 | -169.7 | -171.3 |
| 110.4 | -169.7 | -171.1 |
| 120.5 | -169.8 | -172.2 |
| 130.5 | -168.8 | -171.1 |
| 140.5 | -168.1 | -170.0 |
| 150.6 | -167.8 | -169.3 |
| 160.6 | -165.8 | -166.3 |
| 170.7 | -166.0 | -166.3 |
| 180.7 | -168.4 | -169.9 |
| 190.7 | -169.9 | -172.1 |
| 200.0 | -171.6 | -173.7 |