



# Test Certificate

## USBL Health Check



**Test Date** Thursday, March 29, 2018 12:53:36 PM

**Result** PASS

**Owner** UNIQUE

**Tested By** CET

| Array Details     |             |                    |        |
|-------------------|-------------|--------------------|--------|
| Serial Number     | 250889-2    | Build Date         | 11/1/8 |
| Array Type Number | 8021-002-C2 | Number of Elements | 5      |

| Calibration Data  |              |                   |              |
|-------------------|--------------|-------------------|--------------|
| Gain Factor       | 2.158055E-08 | Gain Variation    | 904          |
| Loss Factor Error | 0.000473     | Freq. Gain Factor | 5.047433E-07 |
| Timing Factor     | 2.211        | Temperature       | 22.1         |

| Results    |          |                 |           |                 |                    |
|------------|----------|-----------------|-----------|-----------------|--------------------|
| Rx Element | pF       | Cap Pass / Fail | Tan delta | Loss Pass /Fail | Frequency Response |
| A          | 425.70pF | PASS            | 0.0056    | PASS            | PASS               |
| B          | 422.40pF | PASS            | 0.0056    | PASS            | PASS               |
| C          | 423.20pF | PASS            | 0.0063    | PASS            | PASS               |
| D          | 418.00pF | PASS            | 0.0060    | PASS            | PASS               |
| E          | 423.00pF | PASS            | 0.0058    | PASS            | PASS               |

| Notes |
|-------|
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TANK TEST RESULTS FOR : 8021 STD USBL

UUT Serial Number : 251210-001

Assembly Issue Number : C4

This backup file created on March 29 2018 by CET  
using Tank Test section of Test procedure TP-8021-000.

Refer to MPDB for definitive source of results

TEST EQUIPMENT USED

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ANT serial Number : 9447-017  
Scope serial Number :  
Hydrophone serial No. : INC5010475  
MF Projector serial No. : INCMF03  
HF Projector serial No. : N/A

TANK TEST RESULTS

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Device Serial Number : 1663  
Installed firmware : 8.07.02.12

SOURCE LEVEL RESULTS

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5.15.1 MF1 @ HIGH Tx power (194.0-204.0)  
5.15.2 MF2 @ HIGH Tx power (194.0-204.0)  
5.15.3 MF3 @ HIGH Tx power (194.0-204.0)  
5.15.4 MF4 @ HIGH Tx power (194.0-204.0)  
5.15.5 MFHI302 @ HIGH Tx power (194.0-204.0)  
5.15.6 MF5 @ HIGH Tx power (194.0-204.0)  
5.15.7 MFHI303 @ HIGH Tx power (194.0-204.0)  
5.15.8 MF6 @ HIGH Tx power (194.0-204.0)  
5.15.9 MFHI304 @ HIGH Tx power (194.0-204.0)  
5.15.10 MF7 @ HIGH Tx power (194.0-204.0)  
5.15.11 MFHI305 @ HIGH Tx power (194.0-204.0)  
5.15.12 MF8 @ HIGH Tx power (194.0-204.0)  
5.15.13 MFHI306 @ HIGH Tx power (194.0-204.0)  
5.15.14 MFHI307 @ HIGH Tx power (195.0-205.0)  
5.15.15 MFCIF1 @ HIGH Tx power (195.0-205.0)  
5.15.16 MFHI308 @ HIGH Tx power (195.0-205.0)  
5.15.17 MFHI344 @ HIGH Tx power (195.0-205.0)  
5.15.18 MFHI355 @ HIGH Tx power (195.0-205.0)  
5.15.19 MF0 @ HIGH Tx power (195.0-205.0)  
5.15.20 MF9 @ HIGH Tx power (196.0-206.0)  
5.15.21 MF10 @ HIGH Tx power (196.0-206.0)  
5.15.22 MF11 @ HIGH Tx power (196.0-206.0)  
5.15.23 MF12 @ HIGH Tx power (195.0-205.0)  
5.15.24 MF13 @ HIGH Tx power (196.0-206.0)  
5.15.25 MF14 @ HIGH Tx power (196.0-206.0)

5.15.26 MF1 @ MEDIUM Tx power (187.0-196.0)  
 5.15.27 MFH1305 @ MEDIUM Tx power (187.0-196.0)  
 5.15.28 MF9 @ MEDIUM Tx power (187.0-196.0)  
 5.15.29 MF14 @ MEDIUM Tx power (189.0-198.0)  
 5.15.30 MF1 @ VERY LOW Tx power (180.0-189.0)  
 5.15.31 MFH1305 @ VERY LOW Tx power (181.0-190.0)  
 5.15.32 MF9 @ VERY LOW Tx power (181.0-190.0)  
 5.15.33 MF14 @ VERY LOW Tx power (181.0-190.0)

#### RECEIVER THRESHOLD LEVEL RESULTS

|         |                       |           |        |      |
|---------|-----------------------|-----------|--------|------|
| 5.16.1  | Rx Threshold: MF1     | (95.0 dB) | 83.0dB | PASS |
| 5.16.2  | Rx Threshold: MF3     | (95.0 dB) | 81.8dB | PASS |
| 5.16.3  | Rx Threshold: MF5     | (95.0 dB) | 83.8dB | PASS |
| 5.16.4  | Rx Threshold: MF7     | (95.0 dB) | 84.0dB | PASS |
| 5.16.5  | Rx Threshold: MFCRF1  | (95.0 dB) | 82.9dB | PASS |
| 5.16.6  | Rx Threshold: MFHR306 | (95.0 dB) | 83.8dB | PASS |
| 5.16.7  | Rx Threshold: MFHR307 | (95.0 dB) | 82.9dB | PASS |
| 5.16.8  | Rx Threshold: MF10    | (95.0 dB) | 83.4dB | PASS |
| 5.16.9  | Rx Threshold: MF11    | (95.0 dB) | 83.8dB | PASS |
| 5.16.10 | Rx Threshold: MF12    | (95.0 dB) | 86.4dB | PASS |
| 5.16.11 | Rx Threshold: MF13    | (95.0 dB) | 86.9dB | PASS |
| 5.16.12 | Rx Threshold: MF14    | (95.0 dB) | 86.9dB | PASS |
| 5.16.13 | Rx Threshold: MFTSU1  | (95.0 dB) | 85.0dB | PASS |
| 5.16.14 | Rx Threshold: MFTU0   | (95.0 dB) | 83.7dB | PASS |

#### RECEIVER GAIN TEST RESULTS

|          |                        |             |        |      |
|----------|------------------------|-------------|--------|------|
| 5.18.1.1 | VLOW @ MF9 - Channel A | (13.0-20.0) | 19.9dB | PASS |
| 5.18.1.2 | LOW @ MF9 - Channel A  | (9.0-11.0)  | 10.3dB | PASS |
| 5.18.1.3 | MED @ MF9 - Channel A  | (19.0-21.0) | 20.1dB | PASS |
| 5.18.1.4 | HIGH @ MF9 - Channel A | (29.0-31.0) | 29.7dB | PASS |
| 5.18.2.1 | VLOW @ MF9 - Channel B | (13.0-20.0) | 18.1dB | PASS |
| 5.18.2.2 | LOW @ MF9 - Channel B  | (9.0-11.0)  | 10.3dB | PASS |
| 5.18.2.3 | MED @ MF9 - Channel B  | (19.0-21.0) | 20.1dB | PASS |
| 5.18.2.4 | HIGH @ MF9 - Channel B | (29.0-31.0) | 29.9dB | PASS |
| 5.18.3.1 | VLOW @ MF9 - Channel C | (13.0-20.0) | 19.5dB | PASS |
| 5.18.3.2 | LOW @ MF9 - Channel C  | (9.0-11.0)  | 10.3dB | PASS |
| 5.18.3.3 | MED @ MF9 - Channel C  | (19.0-21.0) | 20.1dB | PASS |
| 5.18.3.4 | HIGH @ MF9 - Channel C | (29.0-31.0) | 29.6dB | PASS |
| 5.18.4.1 | VLOW @ MF9 - Channel D | (13.0-20.0) | 15.6dB | PASS |
| 5.18.4.2 | LOW @ MF9 - Channel D  | (9.0-11.0)  | 10.2dB | PASS |
| 5.18.4.3 | MED @ MF9 - Channel D  | (19.0-21.0) | 20.2dB | PASS |
| 5.18.4.4 | HIGH @ MF9 - Channel D | (29.0-31.0) | 29.9dB | PASS |
| 5.18.5.1 | VLOW @ MF9 - Channel E | (13.0-20.0) | 18.0dB | PASS |
| 5.18.5.2 | LOW @ MF9 - Channel E  | (9.0-11.0)  | 10.3dB | PASS |
| 5.18.5.3 | MED @ MF9 - Channel E  | (19.0-21.0) | 20.2dB | PASS |
| 5.18.5.4 | HIGH @ MF9 - Channel E | (29.0-31.0) | 29.8dB | PASS |