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|---------------------|-------------------|---------------|----------|
| Unit under Test: | DS-IMU1 | Test Result: | Pass |
| Serial : | DB17000315 | Data Type: | As left |
| GNSS Receiver: | u-blox M8 | Performed on: | 5.3.2019 |
| Test Procedure: | DEWESoft-GNSS Cal | Temperature: | 20°C±1°C |
| Procedure Revision: | 1.0 | Humidity: | 45%±10% |

Dewesoft certifies that the above product meets or exceeds published specifications and has been calibrated using applicable Dewesoft procedures. These procedures are in compliance with the relevant clauses of ISO 9001. All used standards are traceable to national standards administered by Euromet

Standards Used

| Type | Description | Serial number | Certificate No. | CAL Due |
|---------------|-------------|---------------|-----------------|----------|
| GPS Simulator | GSG-62, GLO | 200384 | 00127433 | MAR 2020 |

Test Results

Velocity Output

Specification: ±0.05 km/h

| Simulated Value | measured Value | lower limit | upper limit | error | % of tol | Pass/Fail | uncertainty |
|-----------------|----------------|-------------|-------------|--------|----------|-----------|-------------|
| Nr. Sat | km/h | km/h | km/h | % | % | | |
| 19 | 25 | 24.97 | 24.95 | 25.05 | -0.13 | -66 | Pass |
| 19 | 42.65 | 42.63 | 42.6 | 42.7 | -0.05 | -38 | Pass |
| 19 | 66.2 | 66.24 | 66.15 | 66.25 | 0.07 | 89 | Pass |
| 19 | 100 | 99.97 | 99.95 | 100.05 | -0.03 | -52 | Pass |

Heading Output

Specification: ±0.1°

| Simulated Value | measured Value | lower limit | upper limit | error | % of tol | Pass/Fail | uncertainty |
|-----------------|----------------|-------------|-------------|--------------|----------|-----------|-------------|
| Nr. Sat | ° | ° | ° | % | % | | |
| 19 | 360 | 359.92 | 359.9 | 360.5 (0.5°) | -0.02 | -76 | Pass |
| 19 | 90 | 89.97 | 89.9 | 90.1 | -0.03 | -31 | Pass |
| 19 | 180 | 179.95 | 179.9 | 180.1 | -0.03 | -48 | Pass |
| 19 | 270 | 269.94 | 269.9 | 270.1 | -0.02 | -59 | Pass |

Number of satellites

Specification: ±1

| Simulated Value | measured Value | lower limit | upper limit | error | % of tol | Pass/Fail | uncertainty |
|-----------------|----------------|-------------|-------------|-------|----------|-----------|-------------|
| GPS | GLONASS | Nr. | Nr. | Nr. | % | % | |
| 10 | 10 | 19 | 18 | 20 | -5.00 | -100 | Pass |
| 10 | 10 | 19 | 18 | 20 | -5.00 | -100 | Pass |



| | | | |
|--------------------------|------------------|---------------|----------|
| Unit under Test: | DS-IMU1 | Test Result: | Pass |
| Serial : | DB17000315 | Data Type: | As left |
| ACC range/filter options | 2g / unlimited | Performed on: | 5.3.2019 |
| Test Procedure: | DEWESoft-ACC Cal | Temperature: | 20°C±1°C |
| Procedure Revision: | 1.0 | Humidity: | 45%±10% |

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Standards Used

| Type | Description | Serial number | Certificate No. | CAL Due |
|------|-------------|---------------|-----------------|---------|
| CNC | | | | |

Test Results

Accelerometer X

Specification: ±1% of range --> 2g

| Simulated Value | measured Value | lower limit | upper limit | error | % of tol | Pass/Fail | uncertainty |
|------------------|------------------|------------------|------------------|-------|----------|-----------|-------------|
| m/s ² | m/s ² | m/s ² | m/s ² | % | % | | |
| 0.00 | -0.11 | -0.2 | 0.2 | - | -57 | Pass | |
| 2.54 | 2.55 | 2.34 | 2.74 | 0.31 | 4 | Pass | |
| 4.91 | 5.06 | 4.71 | 5.11 | 3.03 | 74 | Pass | |
| 6.94 | 7.12 | 6.74 | 7.14 | 2.67 | 92 | Pass | |
| 8.50 | 8.31 | 8.3 | 8.7 | -2.21 | -94 | Pass | |
| 9.48 | 9.32 | 9.28 | 9.68 | -1.70 | -80 | Pass | |
| 9.81 | 9.64 | 9.61 | 10.01 | -1.70 | -83 | Pass | |

Accelerometer Y

Specification: ±1% of range --> 2g

| Simulated Value | measured Value | lower limit | upper limit | error | % of tol | Pass/Fail | uncertainty |
|------------------|------------------|------------------|------------------|-------|----------|-----------|-------------|
| m/s ² | m/s ² | m/s ² | m/s ² | % | % | | |
| 0.00 | -0.15 | -0.2 | 0.2 | - | -75 | Pass | |
| 2.54 | 2.62 | 2.34 | 2.74 | 3.09 | 39 | Pass | |
| 4.91 | 4.81 | 4.71 | 5.11 | -2.12 | -52 | Pass | |
| 6.94 | 7.10 | 6.74 | 7.14 | 2.35 | 81 | Pass | |
| 8.50 | 8.59 | 8.3 | 8.7 | 1.03 | 44 | Pass | |
| 9.48 | 9.30 | 9.28 | 9.68 | -1.90 | -90 | Pass | |
| 9.81 | 9.90 | 9.61 | 10.01 | 0.95 | 46 | Pass | |

10

Accelerometer Z

Specification: ±1% of range --> 2g

| Simulated Value | measured Value | lower limit | upper limit | error | % of tol | Pass/Fail | uncertainty |
|------------------|------------------|------------------|------------------|-------|----------|-----------|-------------|
| m/s ² | m/s ² | m/s ² | m/s ² | % | % | | |
| 0.00 | 0.01 | -0.2 | 0.2 | - | 6 | Pass | |
| 2.54 | 2.60 | 2.34 | 2.74 | 2.38 | 30 | Pass | |
| 4.91 | 4.75 | 4.71 | 5.11 | -3.24 | -79 | Pass | |
| 6.94 | 6.96 | 6.74 | 7.14 | 0.34 | 12 | Pass | |



| | | | |
|---------------------------|---------------------|---------------|----------|
| Unit under Test: | DS-IMU1 | Test Result: | Pass |
| Serial : | DB17000315 | Data Type: | As left |
| Gryo range/filter options | 250 °/s / unlimited | Performed on: | 5.3.2019 |
| Test Procedure: | DEWESoft-IMU Cal | Temperature: | 20°C±1°C |
| Procedure Revision: | 1.0 | Humidity: | 45%±10% |

Dewesoft certifies that the above product meets or exceeds published specifications and has been calibrated using applicable Dewesoft procedures. These procedures are in compliance with the relevant clauses of ISO 9001. All used standards are traceable to national standards administered by Euromet

Standards Used

| Type | Description | Serial number | Certificate No. | CAL Due |
|------|-------------|---------------|-----------------|---------|
| CNC | | | | |

Test Results

Roll Output

Specification: ±0.1°

| Simulated Value | measured Value | lower limit | upper limit | error | % of tol | Pass/Fail | uncertainty |
|-----------------|----------------|-------------|-------------|-------|----------|-----------|-------------|
| ° | ° | ° | ° | % | % | | |
| 0 | -0.05 | -0.1 | 0.1 | - | -51 | Pass | |
| 15 | 15.04 | 14.9 | 15.1 | 0.27 | 40 | Pass | |
| 30 | 29.97 | 29.9 | 30.1 | -0.10 | -31 | Pass | |
| 45 | 44.96 | 44.9 | 45.1 | -0.09 | -40 | Pass | |
| 60 | 59.99 | 59.9 | 60.1 | -0.01 | -8 | Pass | |
| 75 | 74.97 | 74.9 | 75.1 | -0.04 | -28 | Pass | |
| 90 | 89.96 | 89.9 | 90.1 | -0.04 | -39 | Pass | |

Pitch Output

Specification: ±0.1°

| Simulated Value | measured Value | lower limit | upper limit | error | % of tol | Pass/Fail | uncertainty |
|-----------------|----------------|-------------|--------------|-------|----------|-----------|-------------|
| ° | ° | ° | ° | % | % | | |
| 90 | 89.93 | 89.9 | 360.5 (0.5°) | -0.08 | -70 | Pass | |
| 75 | 74.99 | 74.9 | 75.1 | -0.01 | -10 | Pass | |
| 60 | 59.99 | 59.9 | 60.1 | -0.02 | -11 | Pass | |
| 45 | 44.94 | 44.9 | 45.1 | -0.13 | -58 | Pass | |
| 30 | 30.01 | 29.9 | 360.5 (0.5°) | 0.02 | 6 | Pass | |
| 15 | 15.03 | 14.9 | 15.1 | 0.23 | 34 | Pass | |
| 0 | 0.01 | -0.1 | 0.1 | - | 6 | Pass | |