Combined system 1D-UR16

The aim of this report is to caracterize the accuracy of the 1DoF and UR16 6DoF platforms and identify the time synchronization of the combined system.The motion traces that have been tested in the Image X Institute are in the AP direction and can be found on ShareDrive: 2_ProjectData\6DoF Robotic Motion Phantom\Chris_tests\LARK - LIGHT SABR

1DoF	\2_ProjectData\6DoF Robotic Motion Phantom\Chris_tests\LARK - LIGHT SABR\1.Mean_Motion_resp_shifted_rescaled_gradual_start.txt"
6DoF	\2_ProjectData\6DoF Robotic Motion Phantom\Chris_tests\LARK - LIGHT SABR\1.Mean_Motion_gradual_start.txt"
1DoF	\2_ProjectData\6DoF Robotic Motion Phantom\Chris_tests\LARK - LIGHT SABR\1.Mean_Motion2_resp_shifted_rescaled_gradual_start.txt"
6DoF	\2_ProjectData\6DoF Robotic Motion Phantom\Chris_tests\LARK - LIGHT SABR\1.Mean_Motion2_gradual_start.txt"
1DoF	\2_ProjectData\6DoF Robotic Motion Phantom\Chris_tests\LARK - LIGHT SABR\3.Mean_Motion_1_092_resp_shifted_rescaled_gradual_start.txt"
6DoF	\2_ProjectData\6DoF Robotic Motion Phantom\Chris_tests\LARK - LIGHT SABR\3.Mean_Motion_1_092_gradual_start.txt"
1DoF	\2_ProjectData\6DoF Robotic Motion Phantom\Chris_tests\LARK - LIGHT SABR\4.Mean_Motion_2_111__resp_shifted_rescaled_gradual_start.txt"
6DoF	\2_ProjectData\6DoF Robotic Motion Phantom\Chris_tests\LARK - LIGHT SABR\4.Mean_Motion_2_111__gradual_start.txt"

Contents

Combined time synchronization

(s)	Combined system latency
Mean	0.14
Std	0.06
1st percentile	0.02
99th percentile	0.28

UR16 performance

(mm)	UR 16
Mean	-0.0
Std	0.6
1st percentile	-1.4
99th percentile	1.4

1.Mean_Motion1 (test1)

Trace	1.Mean_Motion_1D
Mean (mm)	0.0
Std (mm)	0.7
1st percentile (mm)	-1.7
99th percentile (mm)	2.0
Trace	1.Mean_Motion_6D
Mean (mm)	-0.0
Std (mm)	0.6
1st percentile (mm)	-1.4
99th percentile (mm)	1.4
Latency (s)	0.02

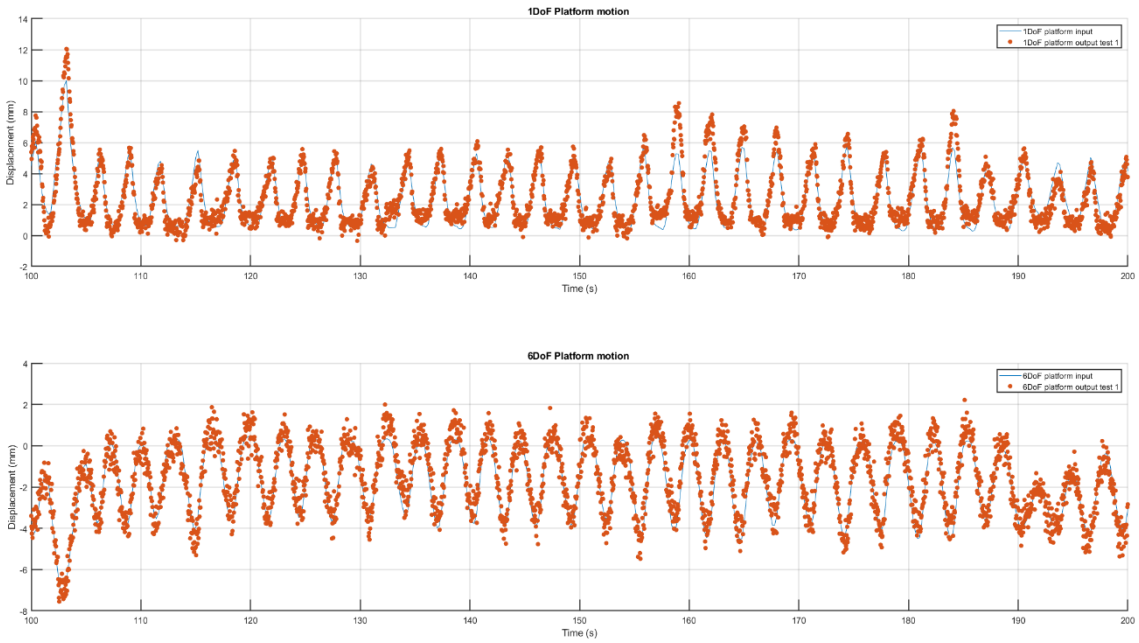

Figure 1.1: 1.Mean_Motion motion trace test 1

1.Mean_Motion1 (test2)

Trace	1.Mean_Motion_1D
Mean (mm)	0.0
Std (mm)	0.8
1st percentile (mm)	-1.9
99th percentile (mm)	1.8
Trace	1.Mean_Motion_6D
Mean (mm)	0.0
Std (mm)	0.7
1st percentile (mm)	-1.5
99th percentile (mm)	1.5
Latency (s)	0.13

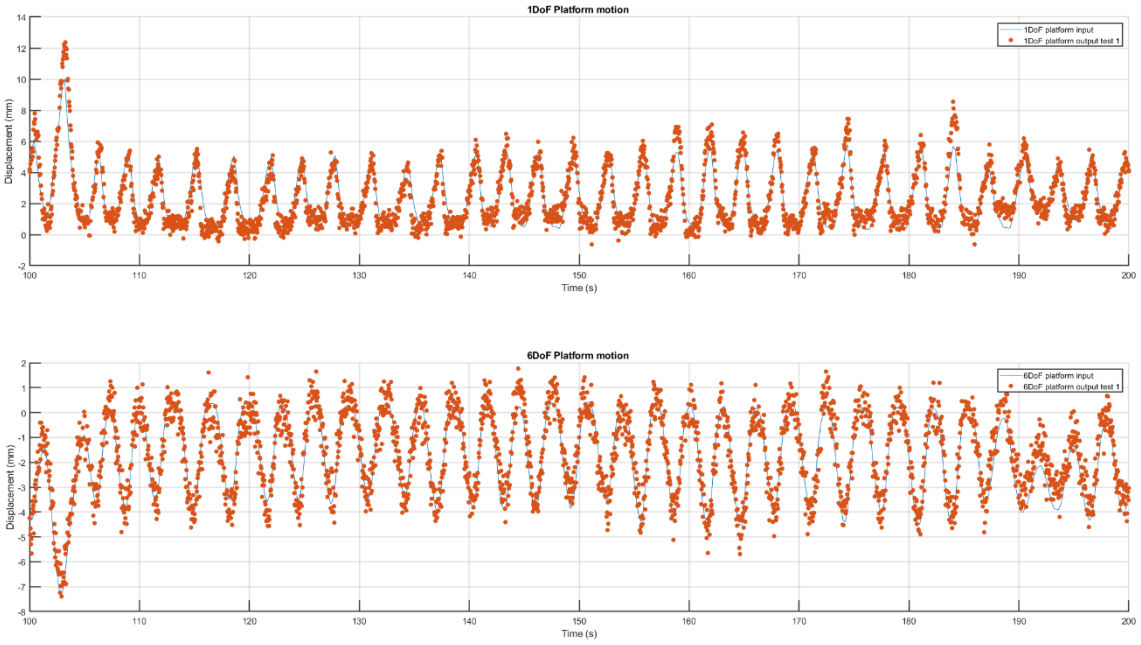

Figure 1.2: 1.Mean_Motion motion trace test 2

1.Mean_Motion1 (test3)

Trace	1.Mean_Motion_1D
Mean (mm)	-0.0
Std (mm)	0.8
1st percentile (mm)	-1.8
99th percentile (mm)	2.2
Trace	1.Mean_Motion_6D
Mean (mm)	0.0
Std (mm)	0.6
1st percentile (mm)	-1.4
99th percentile (mm)	1.4
Latency (s)	0.14

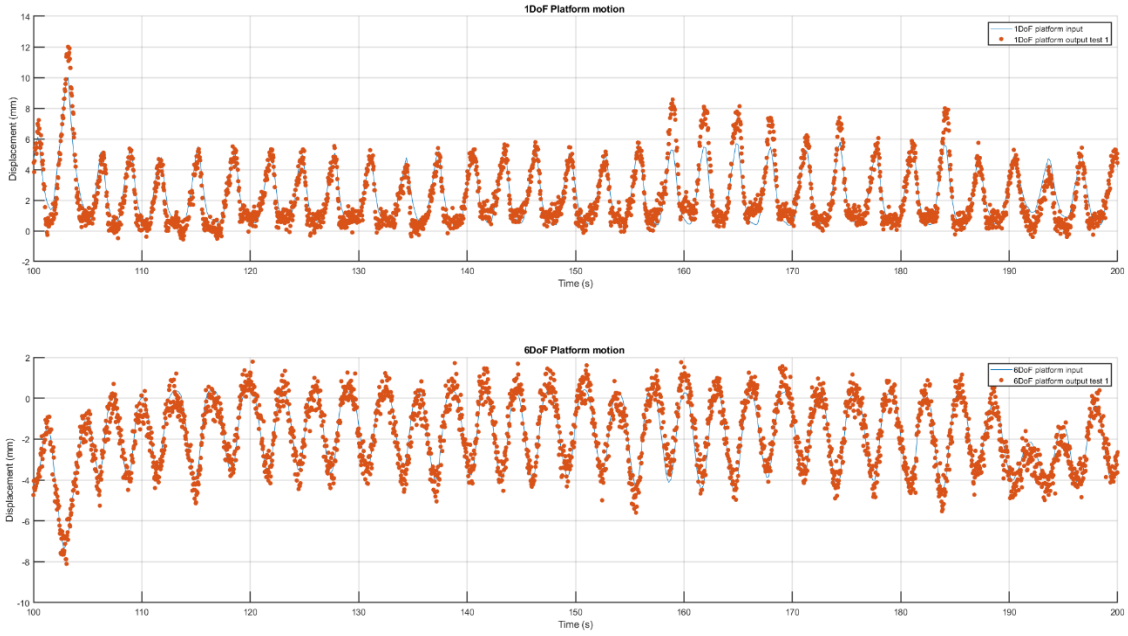

Figure 1.3: 1.Mean_Motion1 motion trace test 3

2.Mean_Motion (test1)

Trace	2.Mean_Motion_1D
Mean (mm)	0.0
Std (mm)	1.0
1st percentile (mm)	-2.4
99th percentile (mm)	2.4
Trace	2.Mean_Motion_6D
Mean (mm)	0.0
Std (mm)	0.6
1st percentile (mm)	-1.3
99th percentile (mm)	1.3
Latency (s)	0.10

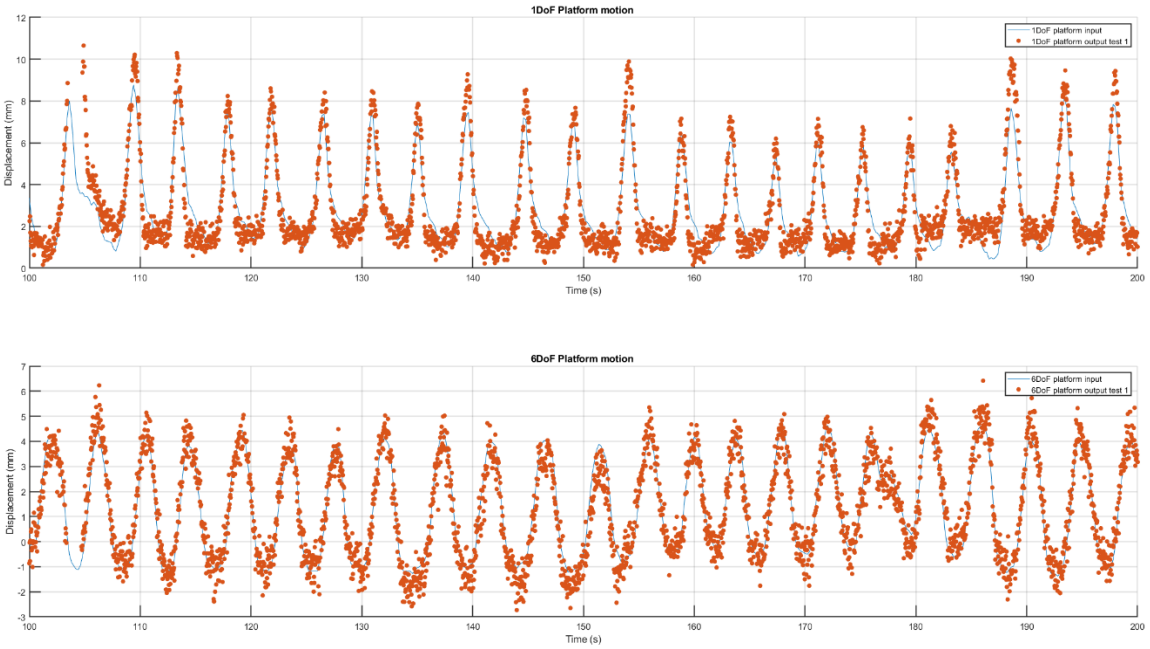

Figure 2.1: 2.Mean_Motion2 motion trace test 1

2.Mean_Motion (test2)

Trace	2.Mean_Motion_1D
Mean (mm)	-0.0
Std (mm)	1.0
1st percentile (mm)	-2.5
99th percentile (mm)	2.4
Trace	2.Mean_Motion_6D
Mean (mm)	0.0
Std (mm)	0.6
1st percentile (mm)	-1.4
99th percentile (mm)	1.4
Latency (s)	0.02

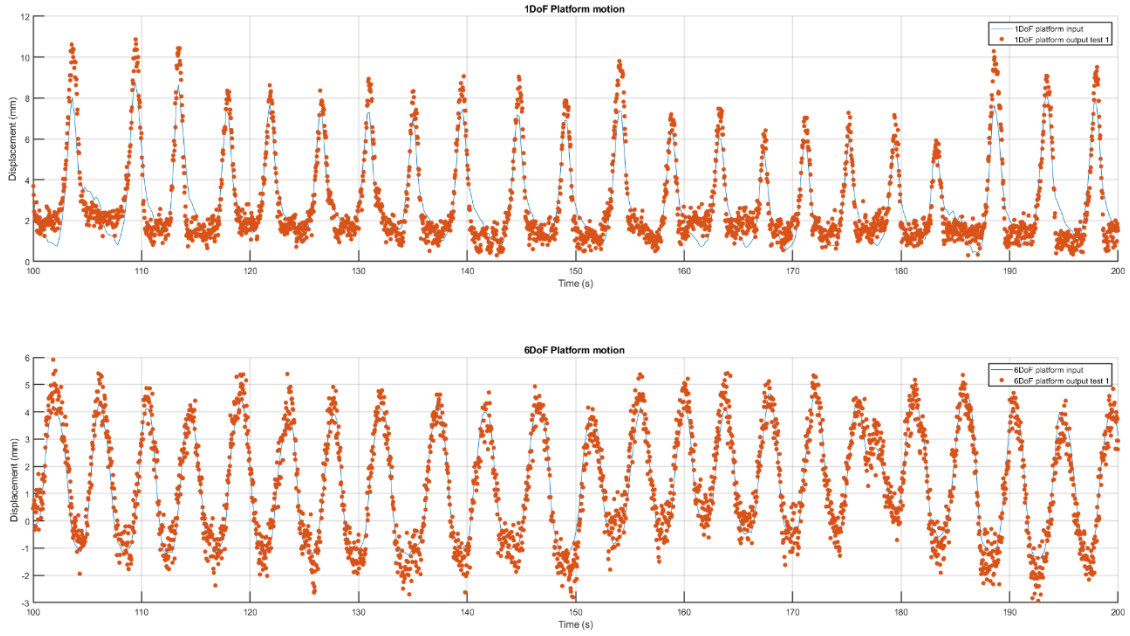

Figure 2.2: 2.Mean_Motion2 motion trace test 2

2.Mean_Motion2 (test3)

Trace	2.Mean_Motion_1D
Mean (mm)	0.0
Std (mm)	0.9
1st percentile (mm)	-2.3
99th percentile (mm)	2.2
Trace	2.Mean_Motion_6D
Mean (mm)	0.0
Std (mm)	0.6
1st percentile (mm)	-1.5
99th percentile (mm)	1.5
Latency (s)	0.09

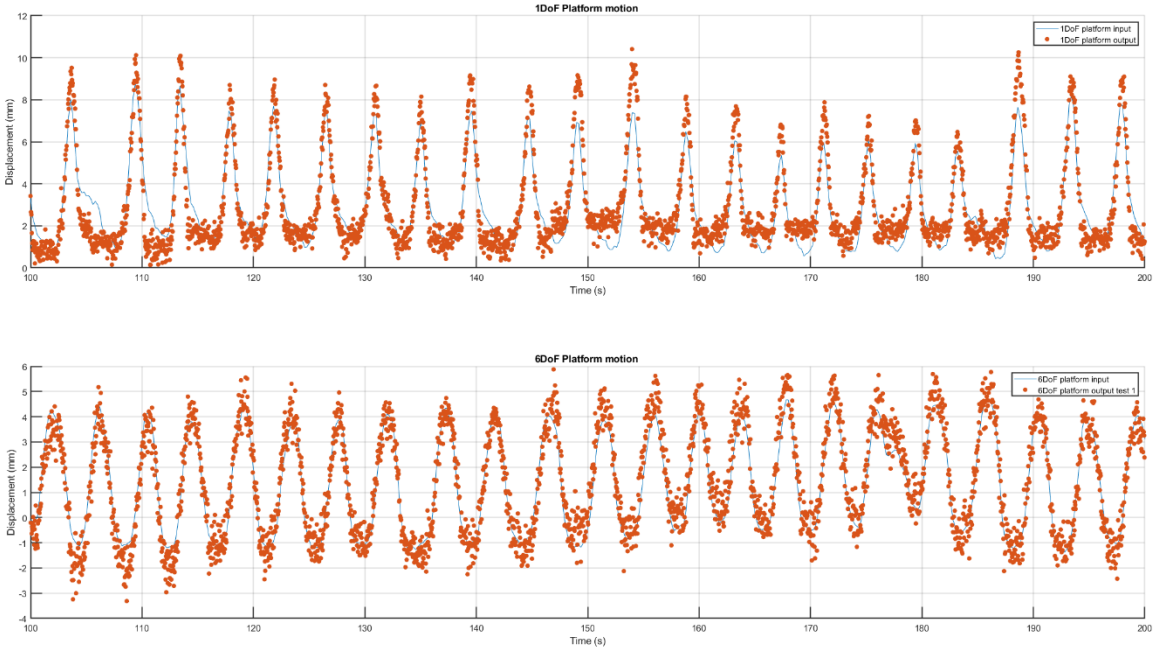

Figure 2.3: 2.Mean_Motion2 motion trace test 3

3.Mean_Motion_1 (test1)

Trace	3.Mean_Motion_1D
Mean (mm)	-0.0
Std (mm)	1.1
1st percentile (mm)	-2.6
99th percentile (mm)	2.8
Trace	3.Mean_Motion_6D
Mean (mm)	-0.0
Std (mm)	0.6
1st percentile (mm)	-1.4
99th percentile (mm)	1.4
Latency (s)	0.07

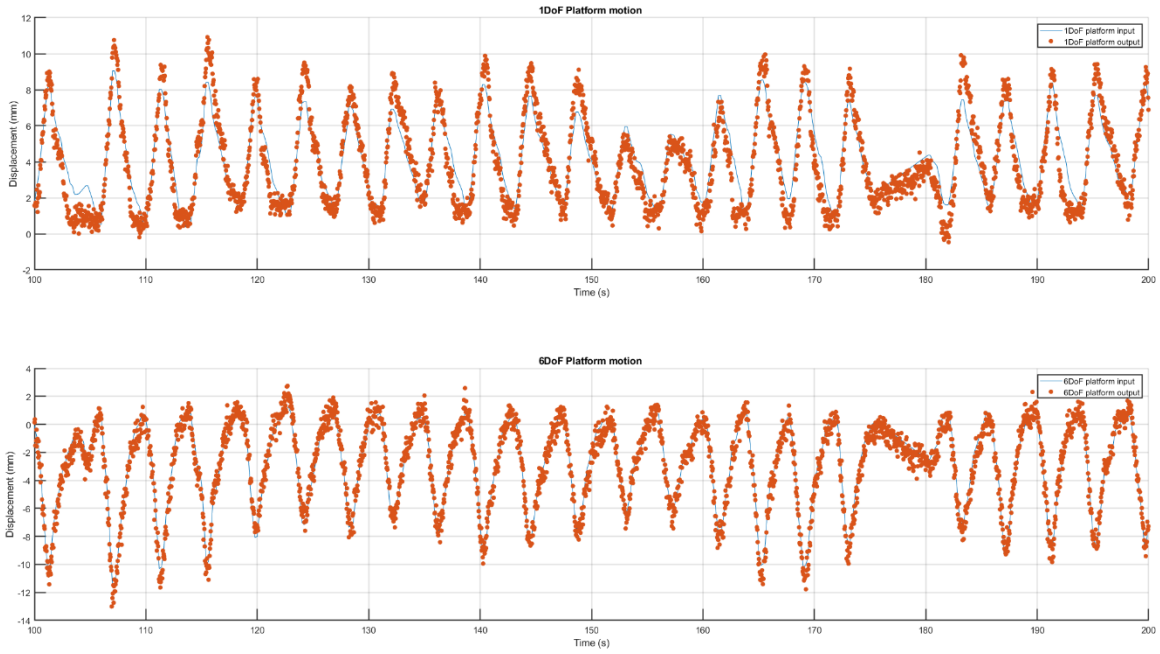

Figure 3.1: 3.Mean_Motion_1 motion trace test 1

3.Mean_Motion_1 (test2)

Trace	3.Mean_Motion_1D
Mean (mm)	0.0
Std (mm)	1.1
1st percentile (mm)	-2.4
99th percentile (mm)	2.9
Trace	3.Mean_Motion_6D
Mean (mm)	0.0
Std (mm)	0.6
1st percentile (mm)	-1.4
99th percentile (mm)	1.4
Latency (s)	0.13

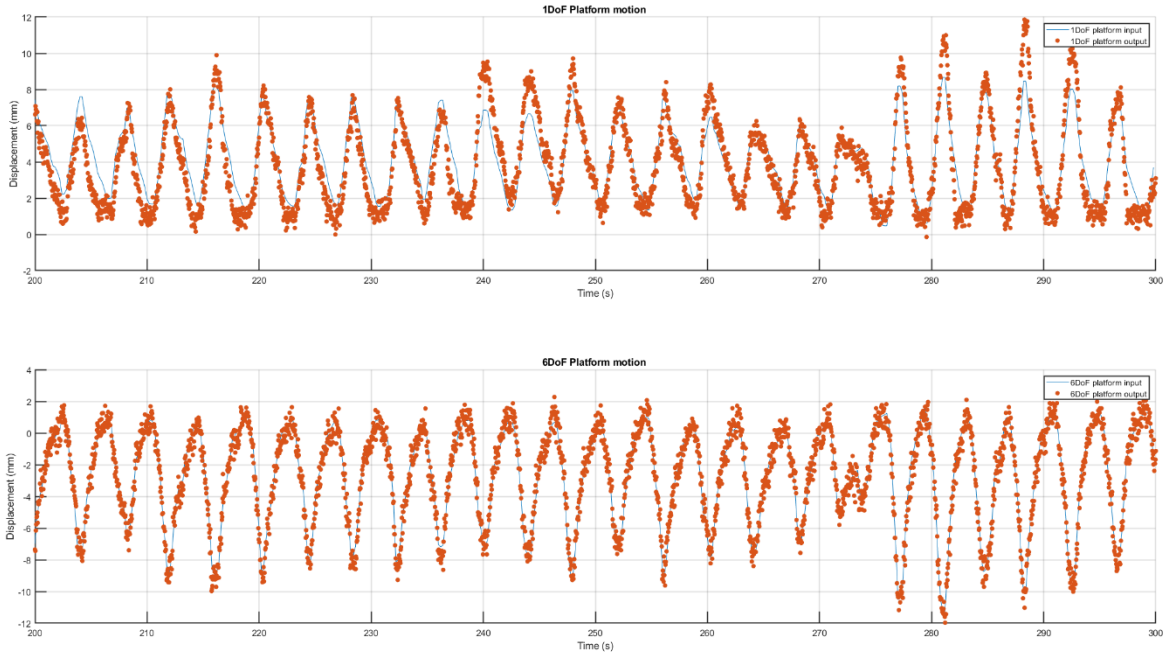

Figure 3.2: 3.Mean_Motion_1 motion trace test 2

3.Mean_Motion_1 (test3)

Trace	3.Mean_Motion_1D
Mean (mm)	0.0
Std (mm)	1.1
1st percentile (mm)	-2.4
99th percentile (mm)	2.8
Trace	3.Mean_Motion_6D
Mean (mm)	-0.0
Std (mm)	0.6
1st percentile (mm)	-1.4
99th percentile (mm)	1.4
Latency (s)	0.12

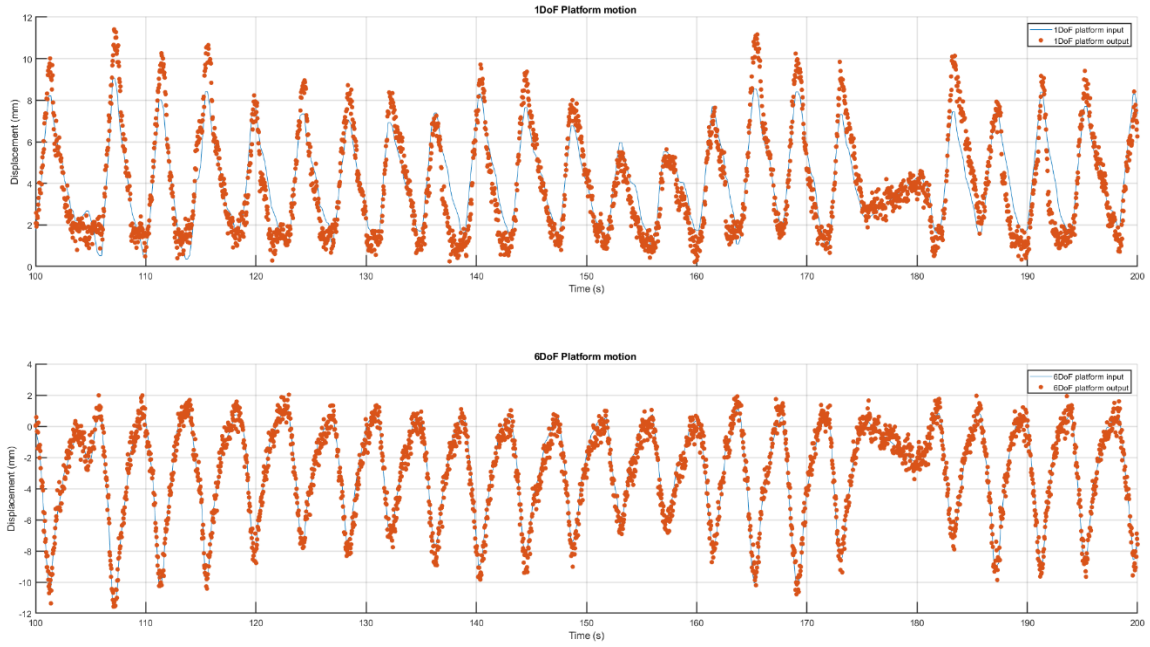

Figure 3.3: 3.Mean_Motion_1 motion trace test 3

4.Mean_Motion_2 (test1)

Trace	4.Mean_Motion_1D
Mean (mm)	-0.0
Std (mm)	1.0
1st percentile (mm)	-2.2
99th percentile (mm)	2.7
Trace	4.Mean_Motion_6D
Mean (mm)	0.0
Std (mm)	0.6
1st percentile (mm)	-1.4
99th percentile (mm)	1.4
Latency (s)	0.09

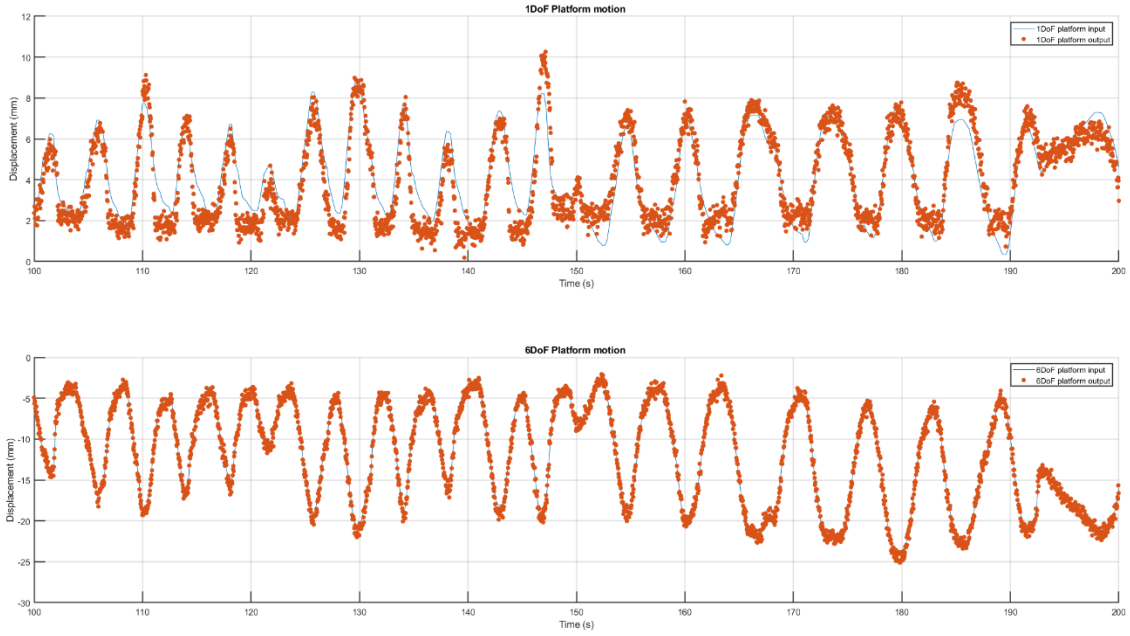

Figure 4.1: 4.Mean_Motion_2 motion trace test 1

4.Mean_Motion_2 (test2)

Trace	4.Mean_Motion_1D
Mean (mm)	-0.0
Std (mm)	1.0
1st percentile (mm)	-2.3
99th percentile (mm)	2.5
Trace	4.Mean_Motion_6D
Mean (mm)	0.0
Std (mm)	0.6
1st percentile (mm)	-1.4
99th percentile (mm)	1.4
Latency (s)	0.07

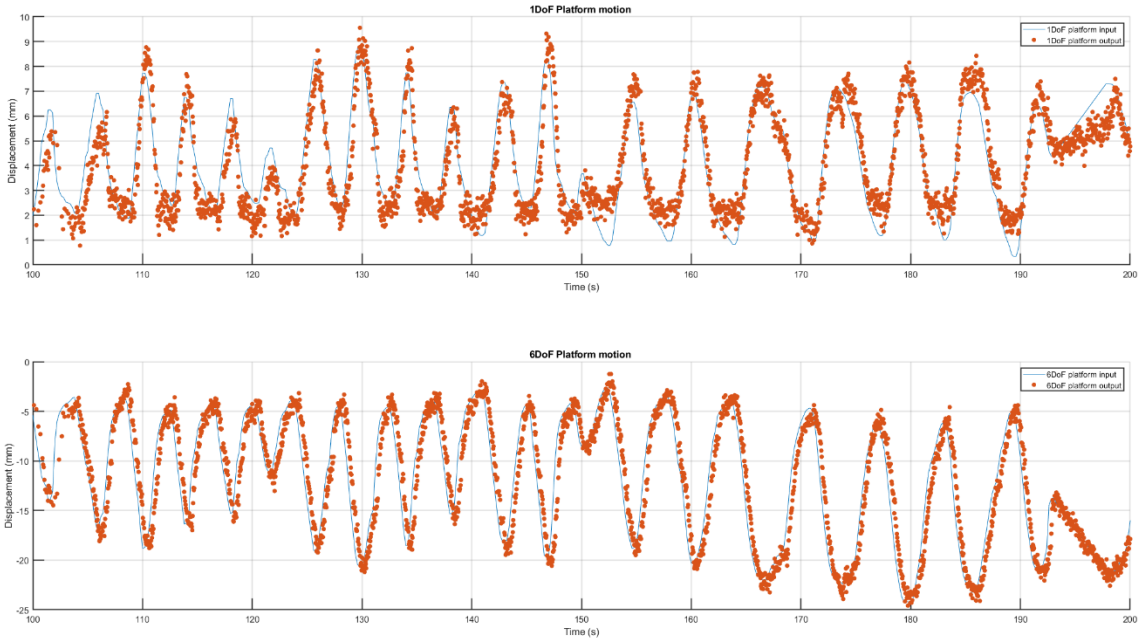

Figure 4.2: 4.Mean_Motion_2 motion trace test 2

4.Mean_Motion_2 (test3)

Trace	4.Mean_Motion_1D
Mean (mm)	0.0
Std (mm)	1.2
1st percentile (mm)	-2.6
99th percentile (mm)	2.6
Trace	4.Mean_Motion_6D
Mean (mm)	0.0
Std (mm)	0.6
1st percentile (mm)	-1.5
99th percentile (mm)	1.4
Latency (s)	0.09

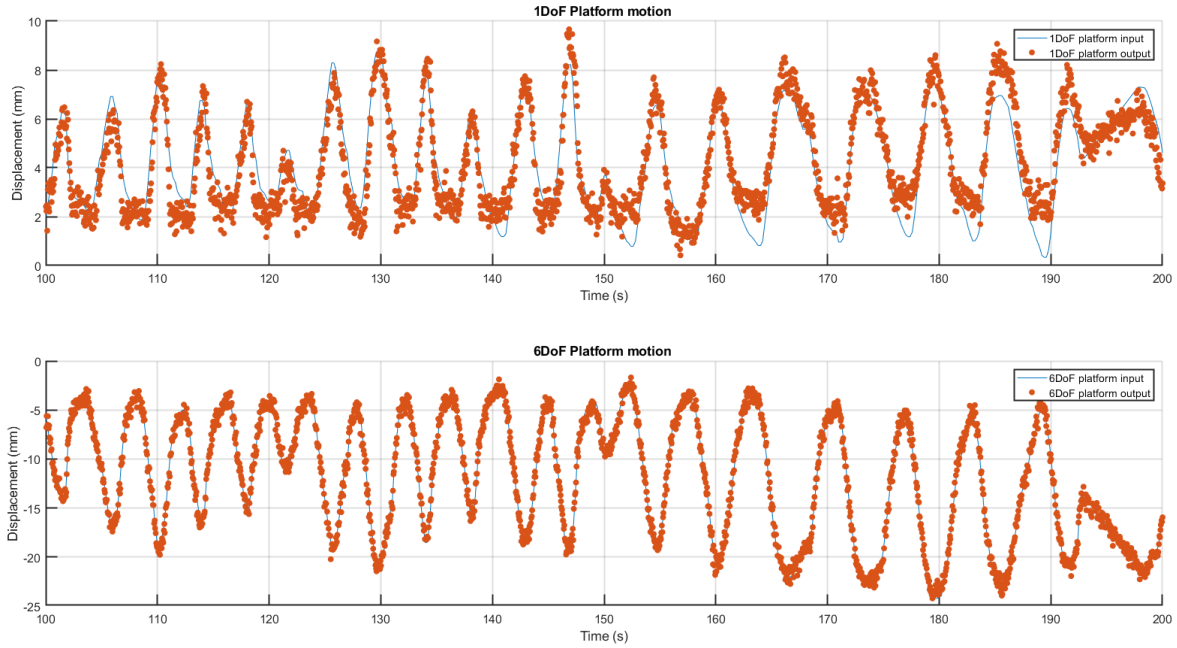

Figure 4.3: 4.Mean_Motion_2 motion trace test 3

1.Mean_Motion1 (test 1100s)

Trace	1.Mean_Motion_1D
Mean (mm)	-0.0
Std (mm)	0.7
1st percentile (mm)	-1.7
99th percentile (mm)	1.6
Trace	1.Mean_Motion_6D
Mean (mm)	-0.0
Std (mm)	0.6
1st percentile (mm)	-1.4
99th percentile (mm)	1.5
Latency (s)	0.28

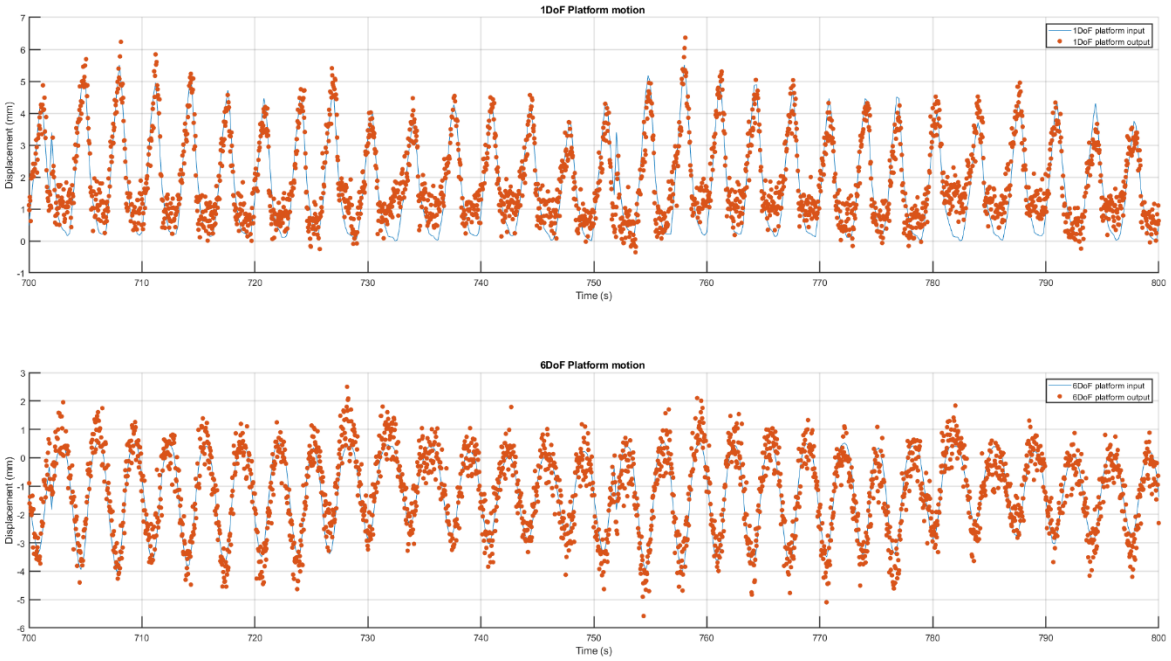

Figure 5: 1.Mean_Motion1 motion trace test 1100s