```
Ta =

  se3

    0.6830   -0.5209    0.5120    0.5000
    0.6830    0.7039   -0.1951   -0.3000
   -0.2588    0.4830    0.8365    0.1000
         0         0         0    1.0000
```

only rigid transformation

```
RMSE =

   1.0154e-15


Teps =

  se3

    1.0000    0.0000   -0.0000    0.0000
   -0.0000    1.0000    0.0000    0.0000
    0.0000   -0.0000    1.0000   -0.0000
         0         0         0    1.0000


ans =

     0
```

1mm noise downsampled with 20

```
RMSE =

    0.0032


Teps =

  se3

    0.9995   -0.0310   -0.0056   -0.0088
    0.0310    0.9995   -0.0036   -0.0155
    0.0057    0.0035    1.0000   -0.0017
         0         0         0    1.0000


ans =
```

```
    1.8182

1mm noise downsampled with 50

RMSE =

    0.0074


Teps =

  se3

    0.9980    0.0303    0.0563    0.0021
   -0.0317    0.9992    0.0247    0.0141
   -0.0555   -0.0264    0.9981    0.0196
         0         0         0    1.0000


ans =

    3.9480

1mm noise downsampled with 20

RMSE =

    0.0029


Teps =

  se3

    0.9998   -0.0172   -0.0108   -0.0045
    0.0171    0.9998   -0.0067   -0.0079
    0.0110    0.0065    0.9999   -0.0029
         0         0         0    1.0000


ans =

    1.2234

1mm noise downsampled with 50

RMSE =
```

```
    0.0070


Teps =

  se3

    0.9979    0.0317    0.0574    0.0024
   -0.0327    0.9993    0.0177    0.0158
   -0.0568   -0.0196    0.9982    0.0220
         0         0         0    1.0000


ans =

    3.9056

2mm noise downsampled with 20

RMSE =

    0.0045


Teps =

  se3

    0.9993   -0.0353   -0.0115   -0.0090
    0.0352    0.9993   -0.0115   -0.0170
    0.0119    0.0111    0.9999   -0.0022
         0         0         0    1.0000


ans =

    2.2224

2mm noise downsampled with 50

RMSE =

    0.0080


Teps =

  se3
```

```
    0.9979      0.0295      0.0584      0.0014
   -0.0305      0.9994      0.0149      0.0142
   -0.0580     -0.0166      0.9982      0.0229
         0           0           0      1.0000
```

ans =

    3.8609

3mm noise downsampled with 20

RMSE =

    0.0060

Teps =

  se3

```
    0.9994     -0.0304     -0.0148     -0.0071
    0.0302      0.9994     -0.0157     -0.0141
    0.0153      0.0153      0.9998     -0.0030
         0           0           0      1.0000
```

ans =

    2.1338

3mm noise downsampled with 50

RMSE =

    0.0079

Teps =

  se3

```
    0.9989      0.0113      0.0445     -0.0015
   -0.0126      0.9995      0.0285      0.0043
   -0.0442     -0.0290      0.9986      0.0133
         0           0           0      1.0000
```

ans =

```
   3.1039


Ta =

  se3

    0.6830   -0.5209    0.5120  500.0000
    0.6830    0.7039   -0.1951 -300.0000
   -0.2588    0.4830    0.8365  100.0000
         0         0         0    1.0000
```

Downsampling ratio: 2, Noise ratio: 1[mm], Angular deviation: 0.1, RMSE: 1.776, ↵
MDE10: 1.529
Downsampling ratio: 2, Noise ratio: 1[mm], Angular deviation: 0.1, RMSE: 3.258, ↵
MDE10: 1.529
Downsampling ratio: 2, Noise ratio: 3[mm], Angular deviation: 0.5, RMSE: 5.275, ↵
MDE10: 5.721
Downsampling ratio: 2, Noise ratio: 3[mm], Angular deviation: 0.5, RMSE: 4.194, ↵
MDE10: 5.721
Downsampling ratio: 2, Noise ratio: 5[mm], Angular deviation: 1.5, RMSE: 8.986, ↵
MDE10: 17.784
Downsampling ratio: 2, Noise ratio: 5[mm], Angular deviation: 1.5, RMSE: 4.917, ↵
MDE10: 17.784
Downsampling ratio: 5, Noise ratio: 1[mm], Angular deviation: 0.9, RMSE: 2.085, ↵
MDE10: 10.590
Downsampling ratio: 5, Noise ratio: 1[mm], Angular deviation: 0.9, RMSE: 5.656, ↵
MDE10: 10.590
Downsampling ratio: 5, Noise ratio: 3[mm], Angular deviation: 1.1, RMSE: 5.290, ↵
MDE10: 12.856
Downsampling ratio: 5, Noise ratio: 3[mm], Angular deviation: 1.1, RMSE: 6.283, ↵
MDE10: 12.856
Downsampling ratio: 5, Noise ratio: 5[mm], Angular deviation: 1.8, RMSE: 9.506, ↵
MDE10: 19.606
Downsampling ratio: 5, Noise ratio: 5[mm], Angular deviation: 1.8, RMSE: 7.151, ↵
MDE10: 19.606
Downsampling ratio: 20, Noise ratio: 1[mm], Angular deviation: 1.8, RMSE: 3.227, ↵
MDE10: 19.362
Downsampling ratio: 20, Noise ratio: 1[mm], Angular deviation: 1.8, RMSE: 11.722, ↵
MDE10: 19.362
Downsampling ratio: 20, Noise ratio: 3[mm], Angular deviation: 1.9, RMSE: 5.803, ↵
MDE10: 21.209
Downsampling ratio: 20, Noise ratio: 3[mm], Angular deviation: 1.9, RMSE: 12.148, ↵
MDE10: 21.209
Downsampling ratio: 20, Noise ratio: 5[mm], Angular deviation: 2.0, RMSE: 8.865, ↵
MDE10: 22.922
Downsampling ratio: 20, Noise ratio: 5[mm], Angular deviation: 111.1, RMSE: 28.777, ↵
MDE10: 976.894

```
Downsampling ratio:  50, Noise ratio:  1[mm], Angular deviation: 3.5, RMSE: 7.492, ↙
MDE10: 33.526
Downsampling ratio:  50, Noise ratio:  1[mm], Angular deviation: 3.5, RMSE: 17.984, ↙
MDE10: 33.526
Downsampling ratio:  50, Noise ratio:  3[mm], Angular deviation: 3.4, RMSE: 8.216, ↙
MDE10: 34.330
Downsampling ratio:  50, Noise ratio:  3[mm], Angular deviation: 3.0, RMSE: 18.679, ↙
MDE10: 30.056
Downsampling ratio:  50, Noise ratio:  5[mm], Angular deviation: 105.1, RMSE: 77.160, ↙
MDE10: 906.953
Downsampling ratio:  50, Noise ratio:  5[mm], Angular deviation: 105.1, RMSE: 30.073, ↙
MDE10: 906.953
Downsampling ratio: 100, Noise ratio:  1[mm], Angular deviation: 6.9, RMSE: 13.183, ↙
MDE10: 85.247
Downsampling ratio: 100, Noise ratio:  1[mm], Angular deviation: 7.2, RMSE: 27.782, ↙
MDE10: 89.101
Downsampling ratio: 100, Noise ratio:  3[mm], Angular deviation: 4.8, RMSE: 13.753, ↙
MDE10: 45.452
Downsampling ratio: 100, Noise ratio:  3[mm], Angular deviation: 4.8, RMSE: 27.375, ↙
MDE10: 45.452
Downsampling ratio: 100, Noise ratio:  5[mm], Angular deviation: 97.3, RMSE: 150.161, ↙
MDE10: 1052.040
Downsampling ratio: 100, Noise ratio:  5[mm], Angular deviation: 122.1, RMSE: 37.875, ↙
MDE10: 1023.004
>>
```