Table 1. Results of filter consistency test of the designed EKF with the Xv noisy data of testing set A2 (sample rate 1h) and A3 (sample rate 7.5 min) during task 1. $\times$ means unacceptable, $\surd$ means acceptable, and Reg means region.

	Testing Set			
	A2		A3	
Methods	Reg1	Reg2	Reg1	Reg2
OF-NOMAD	$\times$	$\surd$	$\times$	$\times$
OF-PS	$\times$	$\surd$	$\times$	$\times$
OF-GCMAES	$\times$	$\times$	$\times$	$\times$
OF-CMAES	$\times$	$\times$	$\times$	$\times$
OF-ECA	$\times$	$\surd$	$\times$	$\times$
OF-SA	$\times$	$\surd$	$\times$	$\times$
OF-NUTS	$\surd$	$\surd$	$\times$	$\surd$
OF-NUTS-WP	$\times$	$\times$	$\times$	$\times$
RPE-NUTS	$\surd$	$\surd$	$\times$	$\surd$
RPE-NUTS-WP	$\times$	$\times$	$\times$	$\times$
BAT	$\surd$	$\surd$	$\surd$	$\surd$
BAT-WP	$\times$	$\times$	$\times$	$\times$

Table 18. The N $\times\mu(NIS)$ obtained by the designed EKF with BAT and baselines estimations during execution of task1. The filter consistency test (FCT) used are FCT3, FCT4, FCT5, and FCT6 defined in Section E.6.1. In blue, we have the acceptable values on the FCTs. This Table justifies the results presented in Table 1.

	A2		A3	
Methods	Region1 N $\times\mu(NIS)$ for FCT3	Region2 N $\times\mu(NIS)$ for FCT4	Region1 N $\times\mu(NIS)$ for FCT5	Region2 N $\times\mu(NIS)$ for FCT6
OF-NOMAD	77.82	62.07	793.25	530.8
OF-PS	77.82	62.07	793.25	530.8
OF-GCMAES	13.33	34.64	135.92	296.20
OF-CMAES	13.14	29.79	135.18	428.18
OF-ECA	77.82	62.04	793.26	530.62
OF-SA	77.79	62.05	640.23	530.66
OF-NUTS	46.02	49.62	468.95	418.09
RPE-NUTS	45.99	49.81	468.63	420.01
BAT	37.96	49.63	386.77	418.33
BAT-WP	0.77	3.90	7.88	32.9
OF-NUTS-WP	1.596	7.87	16.26	66.46
RPE-NUTS-WP	1.601	7.87	16.32	66.46
Ground Truth	40.85	49.88	416.39	426.6