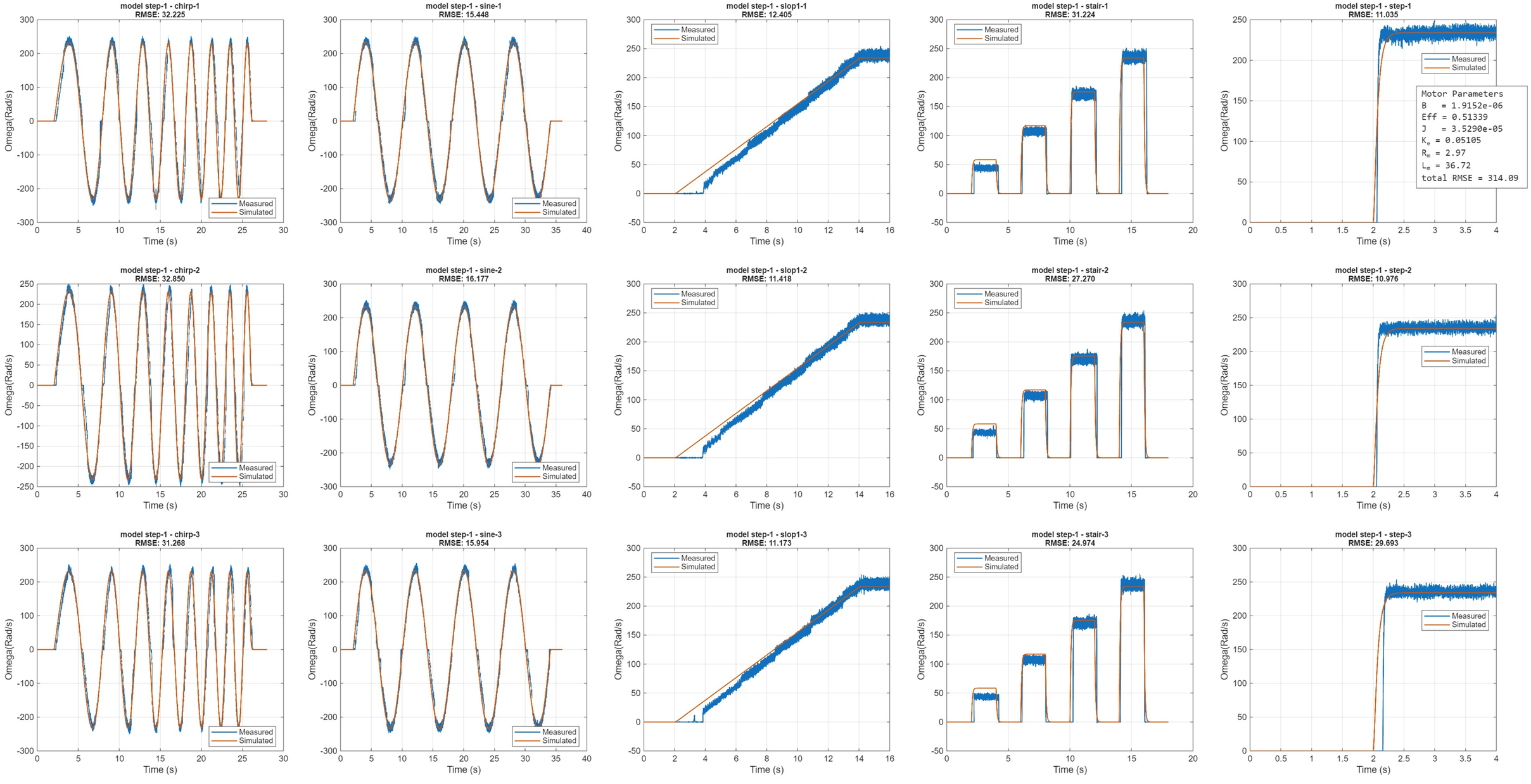
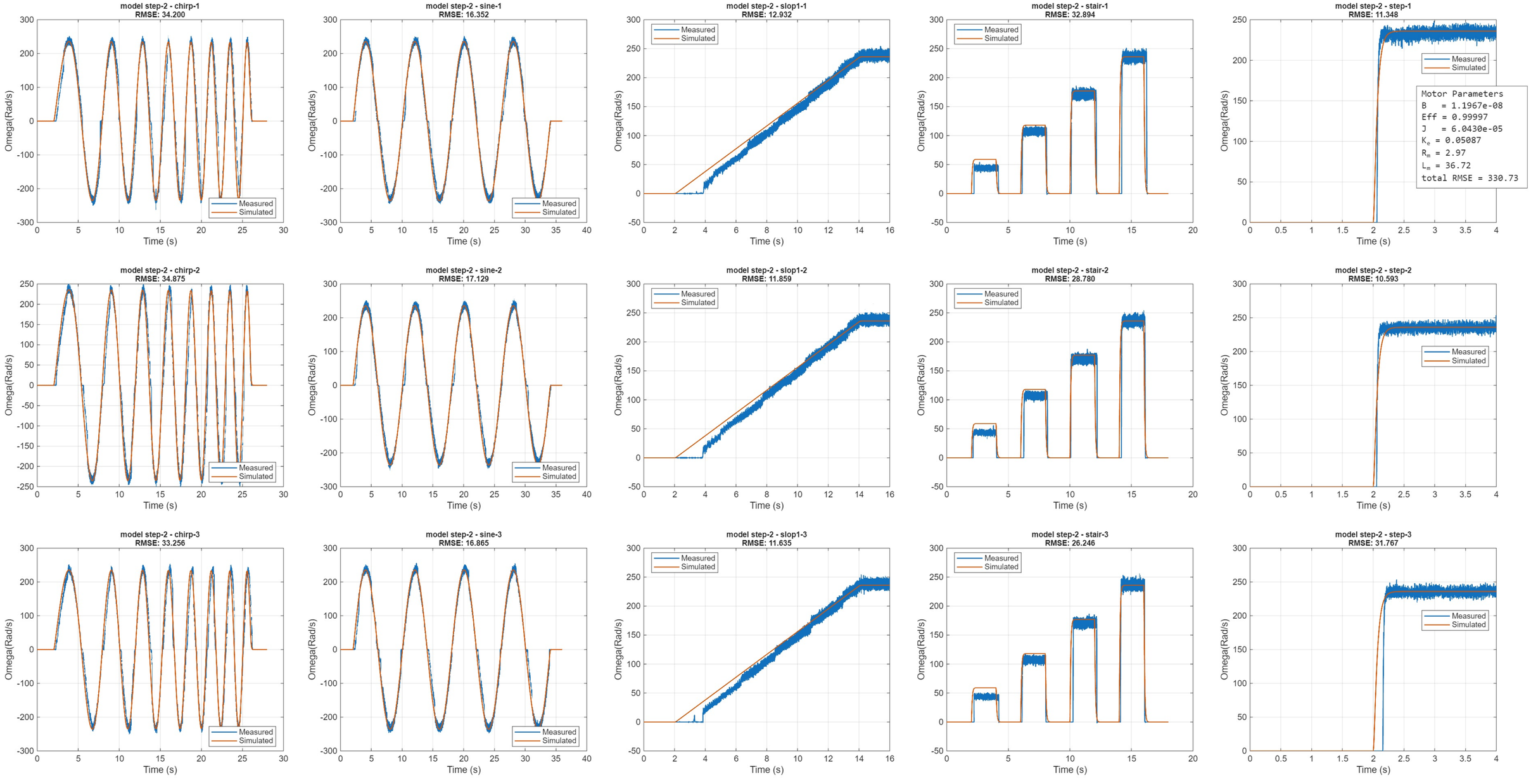
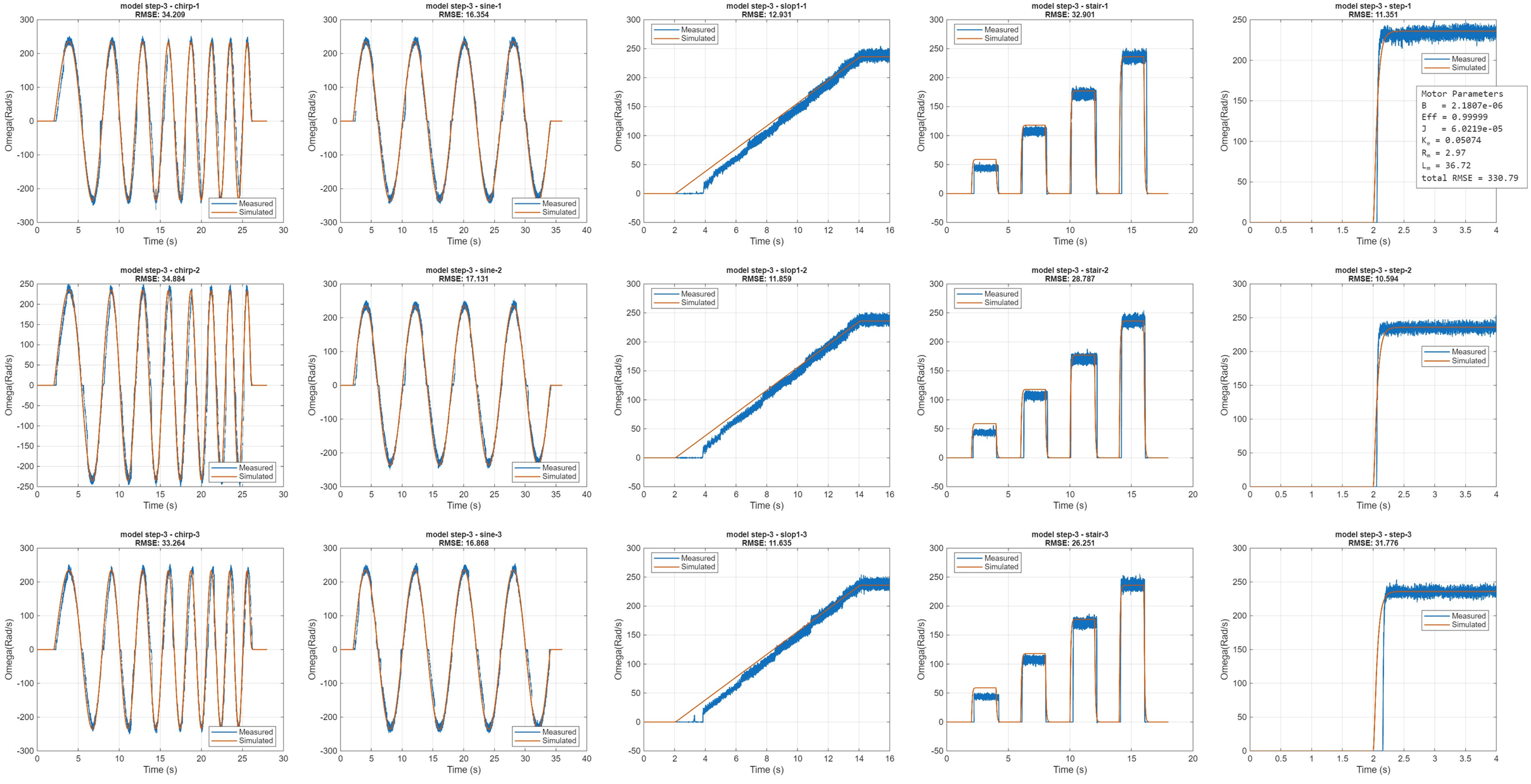
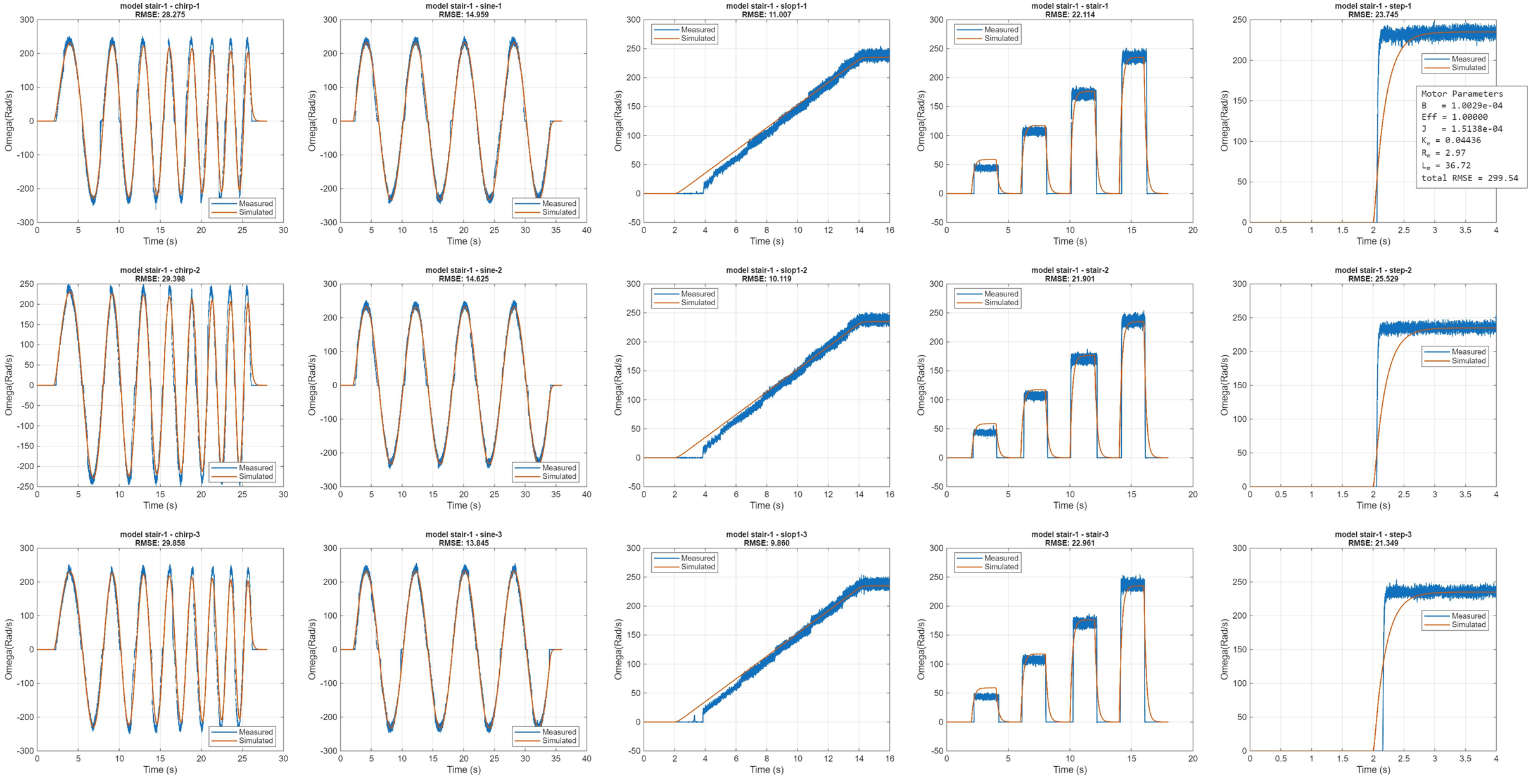
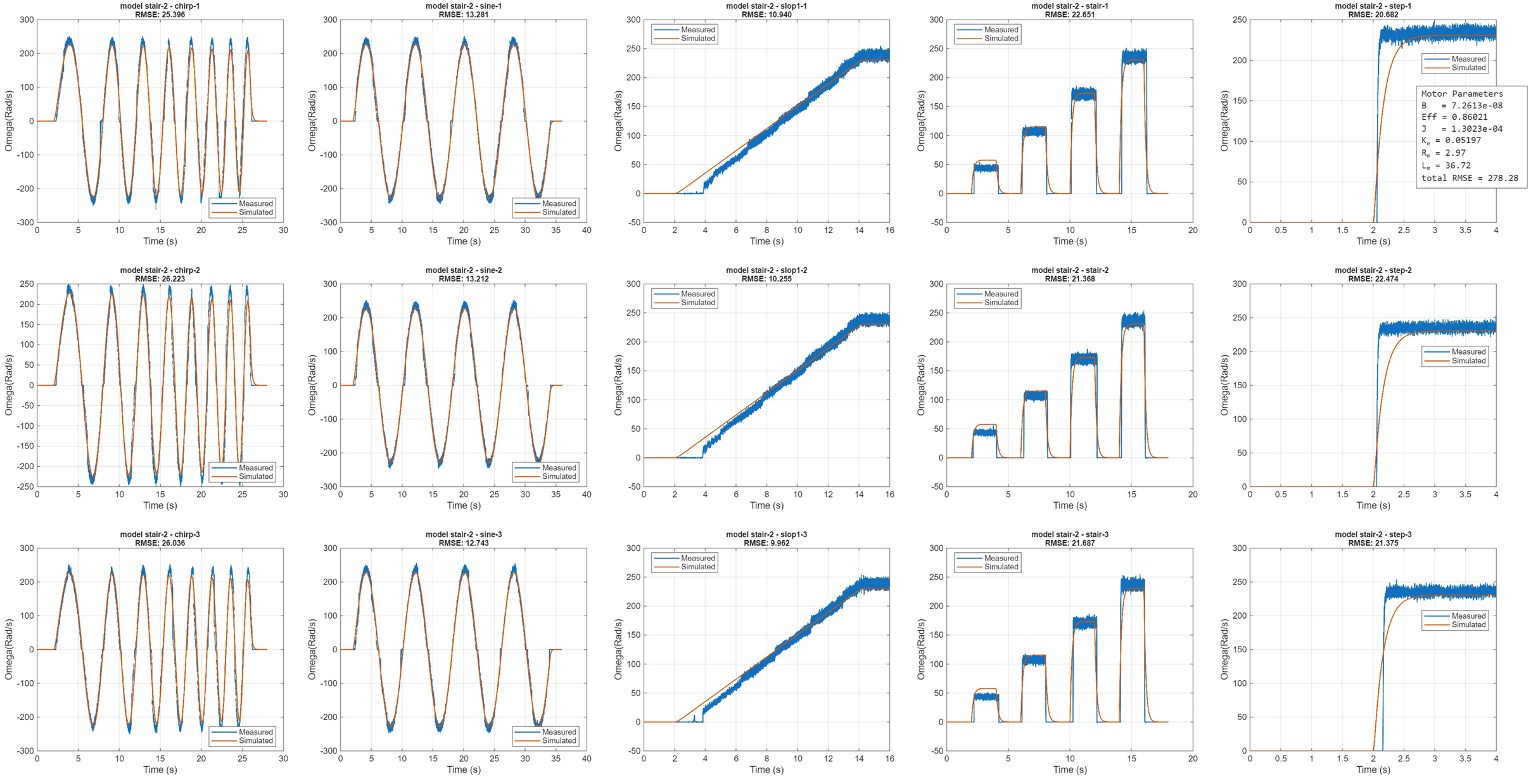
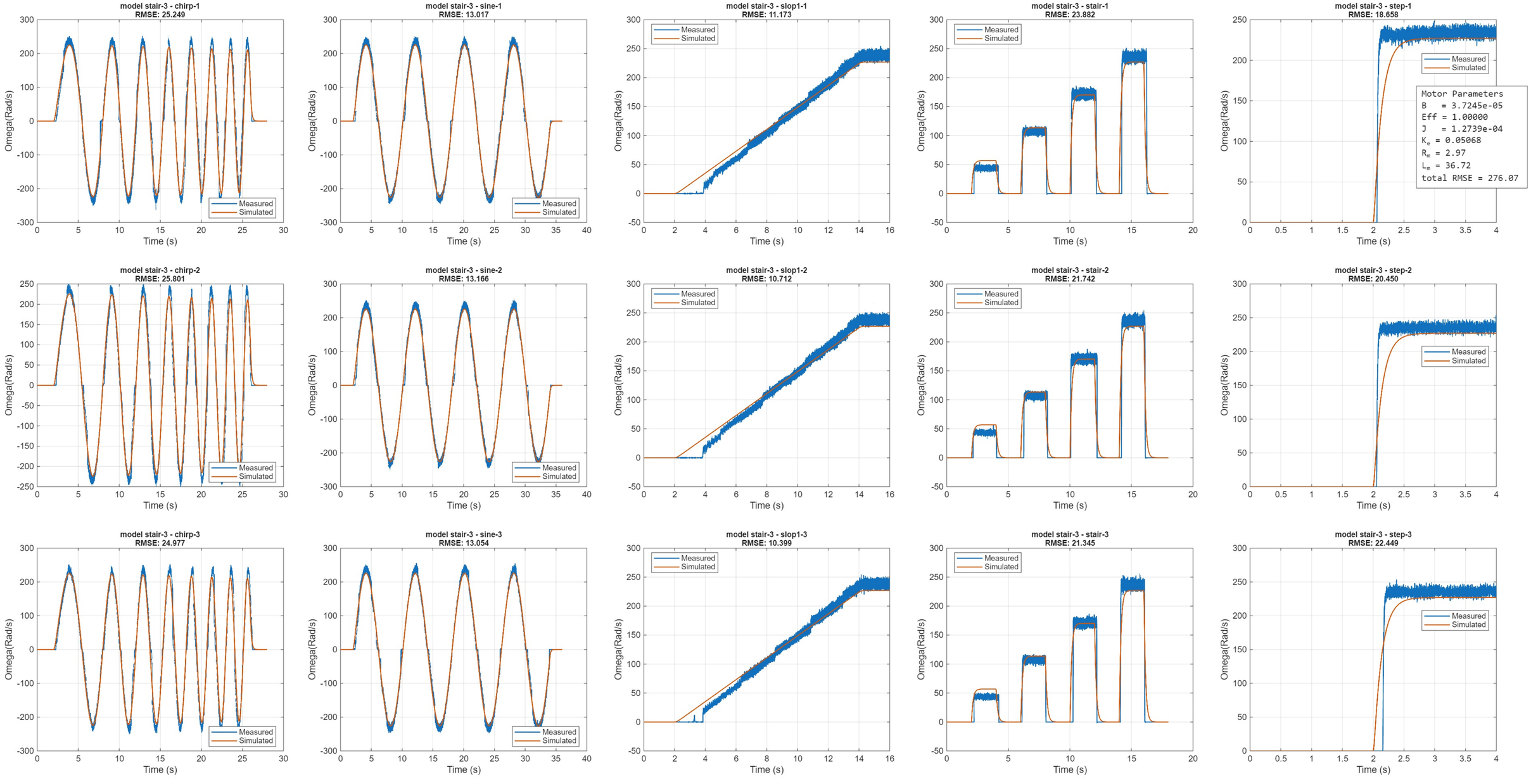

model step-1 - chirp-1
RMSE: 32.225
model step-1 - sine-1
RMSE: 15.448
model step-1 - slop1-1
RMSE: 12.405
model step-1 - stair-1
RMSE: 31.224
model step-1 - step-1
RMSE: 11.035
Motor Parameters
B = 1.9152e-06
Eff = 0.51339
J = 3.5290e-05
Ke = 0.05105
Rm = 2.97
Lm = 36.72
total RMSE = 314.09
model step-1 - chirp-2
RMSE: 32.850
model step-1 - sine-2
RMSE: 16.177
model step-1 - slop1-2
RMSE: 11.418
model step-1 - stair-2
RMSE: 27.270
model step-1 - step-2
RMSE: 10.976
model step-1 - chirp-3
RMSE: 31.268
model step-1 - sine-3
RMSE: 15.954
model step-1 - slop1-3
RMSE: 11.173
model step-1 - stair-3
RMSE: 24.974
model step-1 - step-3
RMSE: 29.693
Measured
Simulated
Omega(Rad/s)
Time (s)

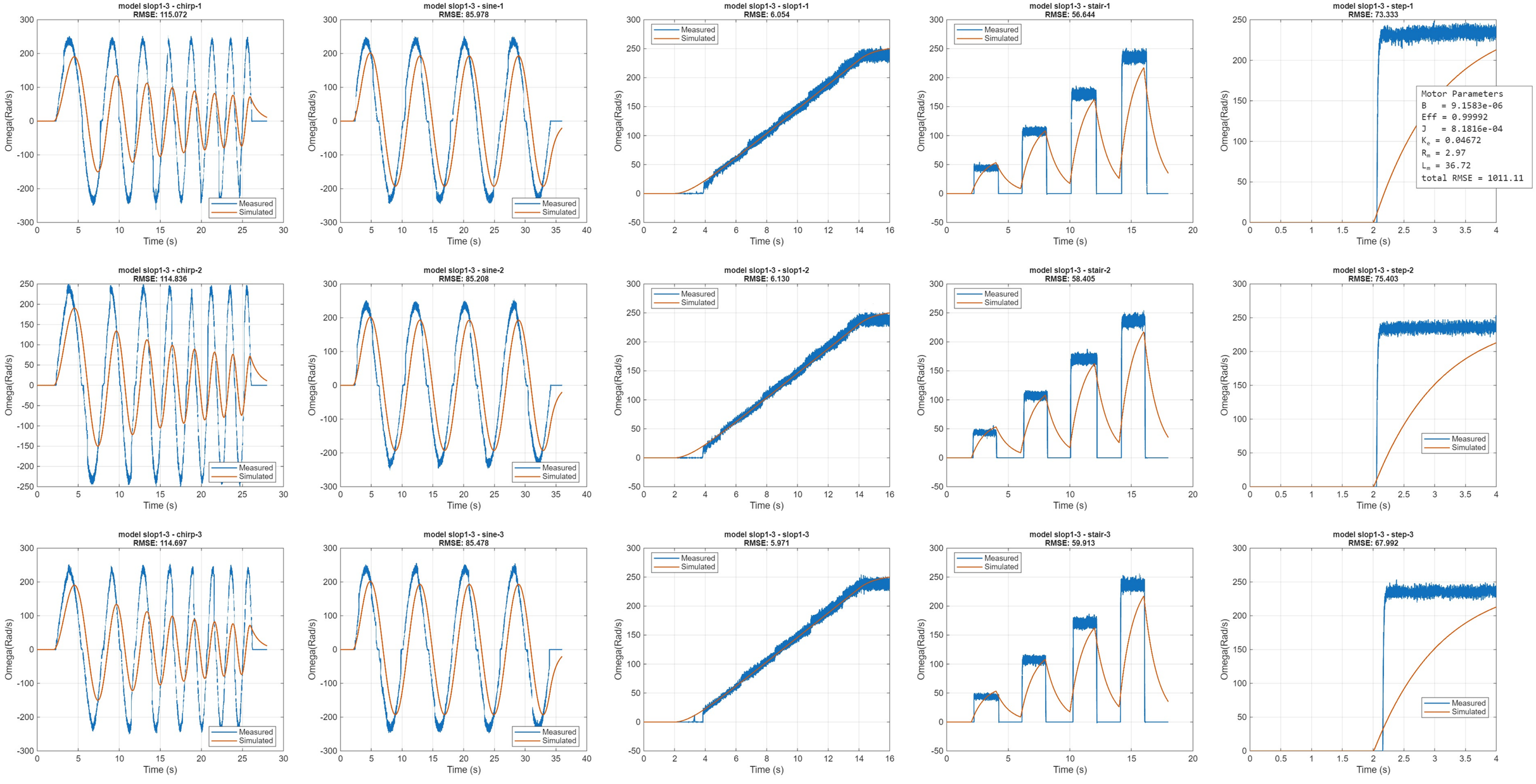

model step-2 - chirp-1
RMSE: 34.200
model step-2 - sine-1
RMSE: 16.352
model step-2 - slop1-1
RMSE: 12.932
model step-2 - stair-1
RMSE: 32.894
model step-2 - step-1
RMSE: 11.348
Motor Parameters
B = 1.1967e-08
Eff = 0.99997
J = 6.0430e-05
Ke = 0.05087
Rm = 2.97
Lm = 36.72
total RMSE = 330.73
model step-2 - chirp-2
RMSE: 34.875
model step-2 - sine-2
RMSE: 17.129
model step-2 - slop1-2
RMSE: 11.859
model step-2 - stair-2
RMSE: 28.780
model step-2 - step-2
RMSE: 10.593
model step-2 - chirp-3
RMSE: 33.256
model step-2 - sine-3
RMSE: 16.865
model step-2 - slop1-3
RMSE: 11.635
model step-2 - stair-3
RMSE: 26.246
model step-2 - step-3
RMSE: 31.767
Measured
Simulated
Omega(Rad/s)
Time (s)

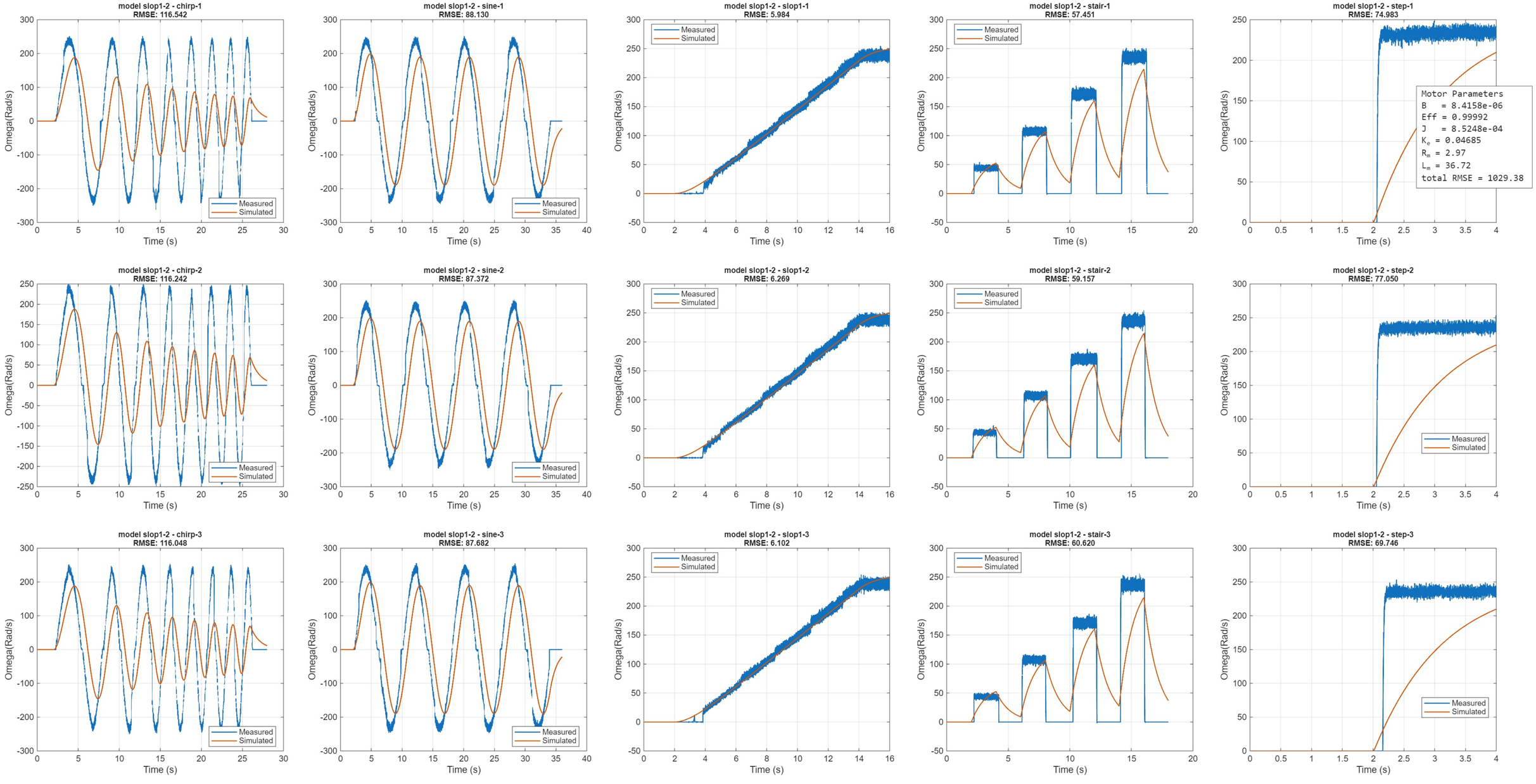

model step-3 - chirp-1
RMSE: 34.209
model step-3 - sine-1
RMSE: 16.354
model step-3 - slop1-1
RMSE: 12.931
model step-3 - stair-1
RMSE: 32.901
model step-3 - step-1
RMSE: 11.351
Motor Parameters
B = 2.1807e-06
Eff = 0.99999
J = 6.0219e-05
Ke = 0.05074
Rm = 2.97
Lm = 36.72
total RMSE = 330.79
model step-3 - chirp-2
RMSE: 34.884
model step-3 - sine-2
RMSE: 17.131
model step-3 - slop1-2
RMSE: 11.859
model step-3 - stair-2
RMSE: 28.787
model step-3 - step-2
RMSE: 10.594
model step-3 - chirp-3
RMSE: 33.264
model step-3 - sine-3
RMSE: 16.868
model step-3 - slop1-3
RMSE: 11.635
model step-3 - stair-3
RMSE: 26.251
model step-3 - step-3
RMSE: 31.776
Measured
Simulated
Omega(Rad/s)
Time (s)

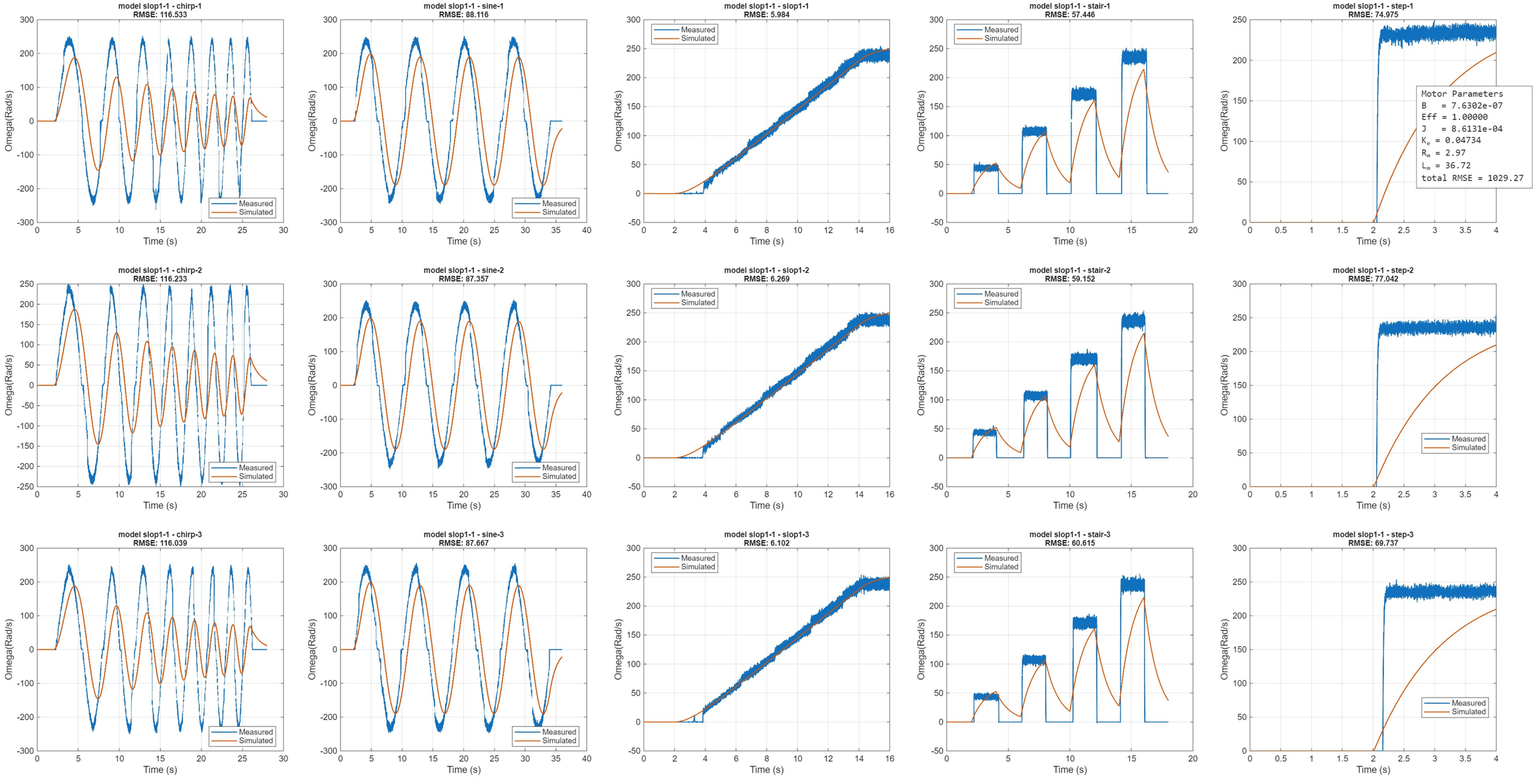

model stair-1 - chirp-1
RMSE: 28.275
model stair-1 - sine-1
RMSE: 14.959
model stair-1 - slop1-1
RMSE: 11.007
model stair-1 - stair-1
RMSE: 22.114
model stair-1 - step-1
RMSE: 23.745
Motor Parameters
B = 1.0029e-04
Eff = 1.00000
J = 1.5138e-04
Ke = 0.04436
Rm = 2.97
Lm = 36.72
total RMSE = 299.54
model stair-1 - chirp-2
RMSE: 29.398
model stair-1 - sine-2
RMSE: 14.625
model stair-1 - slop1-2
RMSE: 10.119
model stair-1 - stair-2
RMSE: 21.901
model stair-1 - step-2
RMSE: 25.529
model stair-1 - chirp-3
RMSE: 29.858
model stair-1 - sine-3
RMSE: 13.845
model stair-1 - slop1-3
RMSE: 9.860
model stair-1 - stair-3
RMSE: 22.961
model stair-1 - step-3
RMSE: 21.349
Measured
Simulated
Omega(Rad/s)
Time (s)

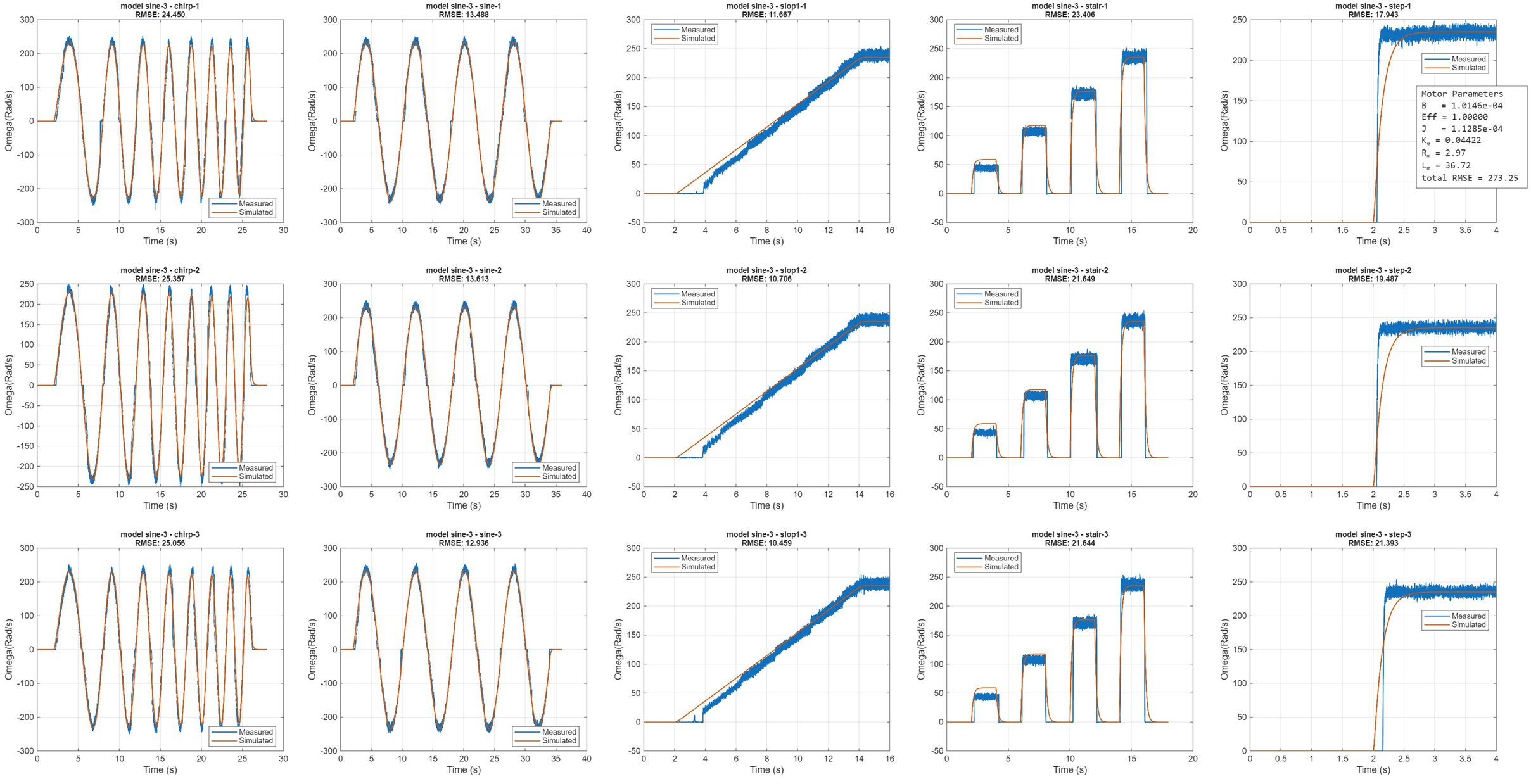

model stair-2 - chirp-1
RMSE: 25.396
model stair-2 - sine-1
RMSE: 13.281
model stair-2 - slop1-1
RMSE: 10.940
model stair-2 - stair-1
RMSE: 22.651
model stair-2 - step-1
RMSE: 20.682
Motor Parameters
B = 7.2613e-08
Eff = 0.86021
J = 1.3023e-04
Ke = 0.05197
Rm = 2.97
Lm = 36.72
total RMSE = 278.28
model stair-2 - chirp-2
RMSE: 26.223
model stair-2 - sine-2
RMSE: 13.212
model stair-2 - slop1-2
RMSE: 10.255
model stair-2 - stair-2
RMSE: 21.368
model stair-2 - step-2
RMSE: 22.474
model stair-2 - chirp-3
RMSE: 26.036
model stair-2 - sine-3
RMSE: 12.743
model stair-2 - slop1-3
RMSE: 9.962
model stair-2 - stair-3
RMSE: 21.687
model stair-2 - step-3
RMSE: 21.375
Measured
Simulated
Omega(Rad/s)
Time (s)

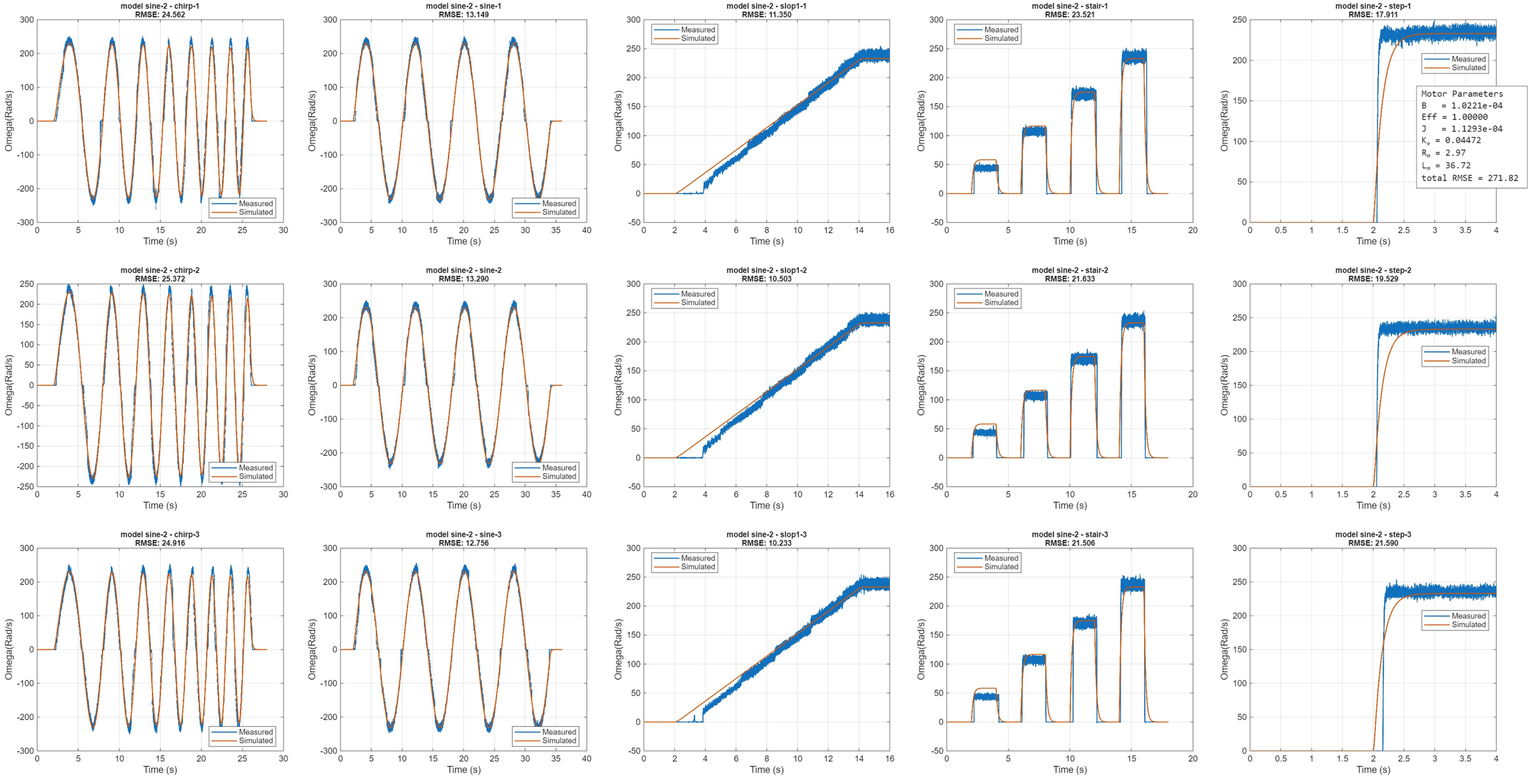

model stair-3 - chirp-1
RMSE: 25.249
model stair-3 - sine-1
RMSE: 13.017
model stair-3 - slop1-1
RMSE: 11.173
model stair-3 - stair-1
RMSE: 23.882
model stair-3 - step-1
RMSE: 18.658
Motor Parameters
B = 3.7245e-05
Eff = 1.00000
J = 1.2739e-04
Ke = 0.05068
Rm = 2.97
Lm = 36.72
total RMSE = 276.07
model stair-3 - chirp-2
RMSE: 25.801
model stair-3 - sine-2
RMSE: 13.166
model stair-3 - slop1-2
RMSE: 10.712
model stair-3 - stair-2
RMSE: 21.742
model stair-3 - step-2
RMSE: 20.450
model stair-3 - chirp-3
RMSE: 24.977
model stair-3 - sine-3
RMSE: 13.054
model stair-3 - slop1-3
RMSE: 10.399
model stair-3 - stair-3
RMSE: 21.345
model stair-3 - step-3
RMSE: 22.449
Measured
Simulated
Omega(Rad/s)
Time (s)

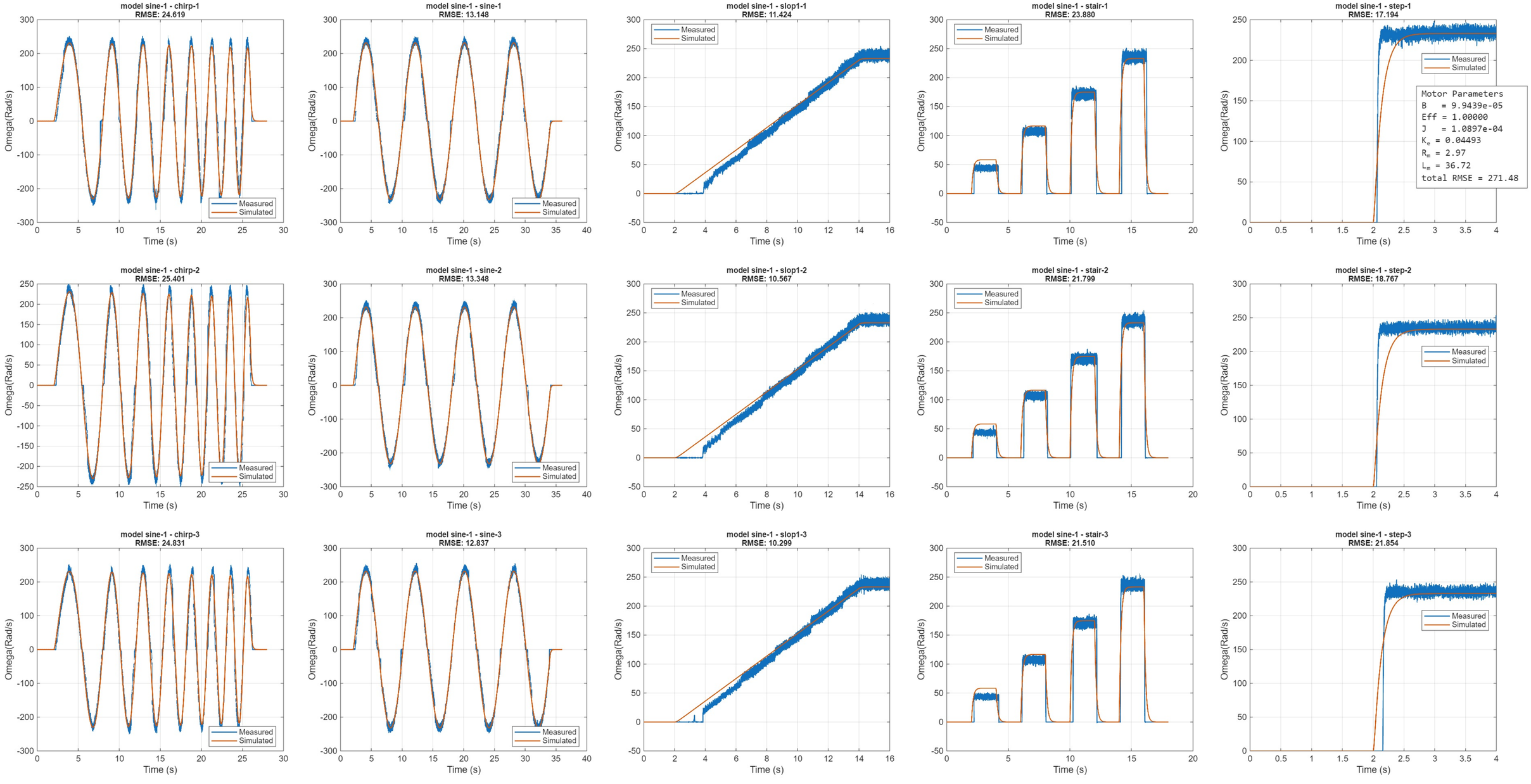

model slop1-3 - chirp-1
RMSE: 115.072
model slop1-3 - sine-1
RMSE: 85.978
model slop1-3 - slop1-1
RMSE: 6.054
model slop1-3 - stair-1
RMSE: 56.644
model slop1-3 - step-1
RMSE: 73.333
Motor Parameters
B = 9.1583e-06
Eff = 0.99992
J = 8.1816e-04
Ke = 0.04672
Rm = 2.97
Lm = 36.72
total RMSE = 1011.11
model slop1-3 - chirp-2
RMSE: 114.836
model slop1-3 - sine-2
RMSE: 85.208
model slop1-3 - slop1-2
RMSE: 6.130
model slop1-3 - stair-2
RMSE: 58.405
model slop1-3 - step-2
RMSE: 75.403
model slop1-3 - chirp-3
RMSE: 114.697
model slop1-3 - sine-3
RMSE: 85.478
model slop1-3 - slop1-3
RMSE: 5.971
model slop1-3 - stair-3
RMSE: 59.913
model slop1-3 - step-3
RMSE: 67.992
Omega(Rad/s)
Time (s)
Measured
Simulated

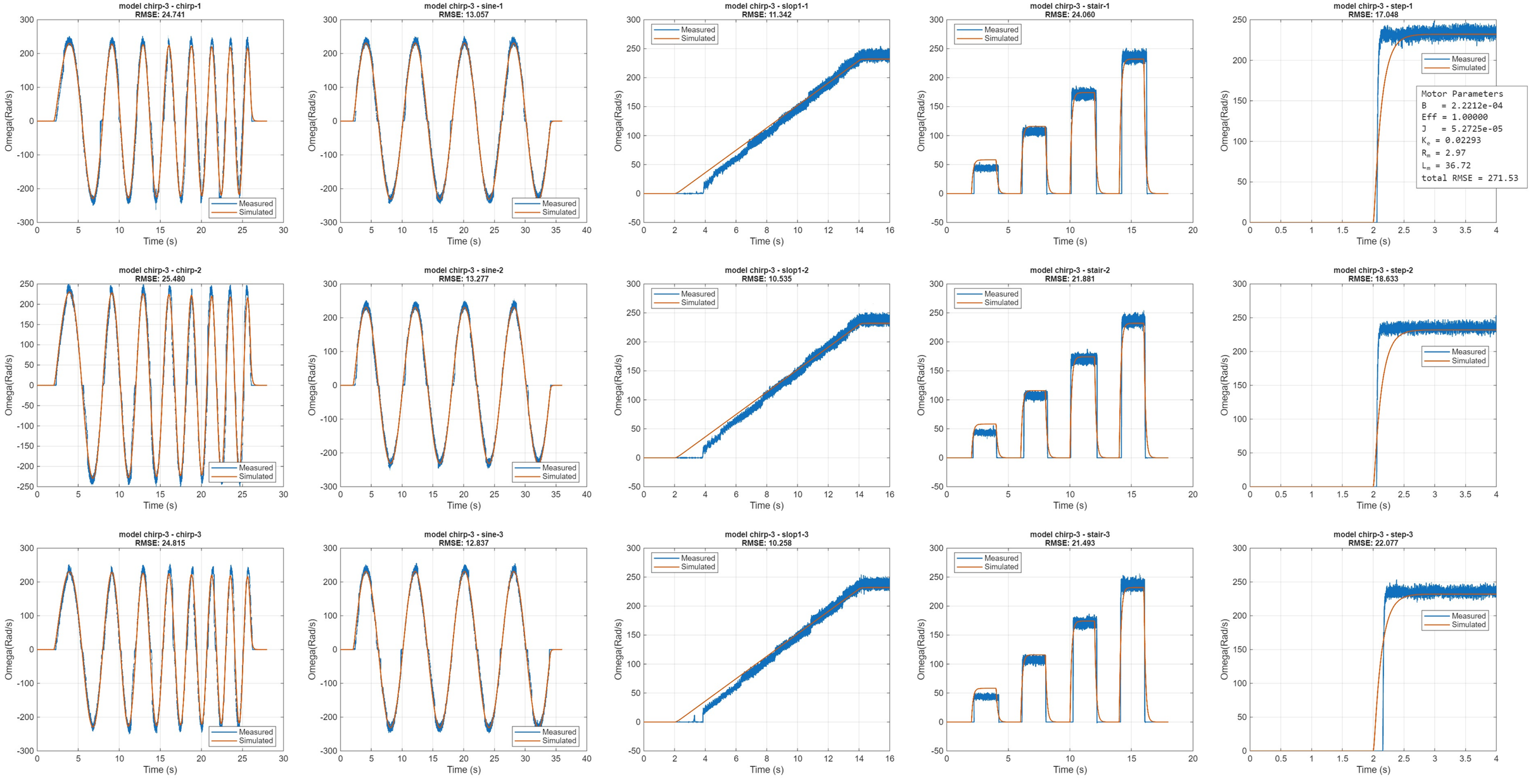

model slop1-2 - chirp-1
RMSE: 116.542
model slop1-2 - sine-1
RMSE: 88.130
model slop1-2 - slop1-1
RMSE: 5.984
model slop1-2 - stair-1
RMSE: 57.451
model slop1-2 - step-1
RMSE: 74.983
Motor Parameters
B = 8.4158e-06
Eff = 0.99992
J = 8.5248e-04
Ke = 0.04685
Rm = 2.97
Lm = 36.72
total RMSE = 1029.38
model slop1-2 - chirp-2
RMSE: 116.242
model slop1-2 - sine-2
RMSE: 87.372
model slop1-2 - slop1-2
RMSE: 6.269
model slop1-2 - stair-2
RMSE: 59.157
model slop1-2 - step-2
RMSE: 77.050
model slop1-2 - chirp-3
RMSE: 116.048
model slop1-2 - sine-3
RMSE: 87.682
model slop1-2 - slop1-3
RMSE: 6.102
model slop1-2 - stair-3
RMSE: 60.620
model slop1-2 - step-3
RMSE: 69.746
Measured
Simulated
Omega(Rad/s)
Time (s)

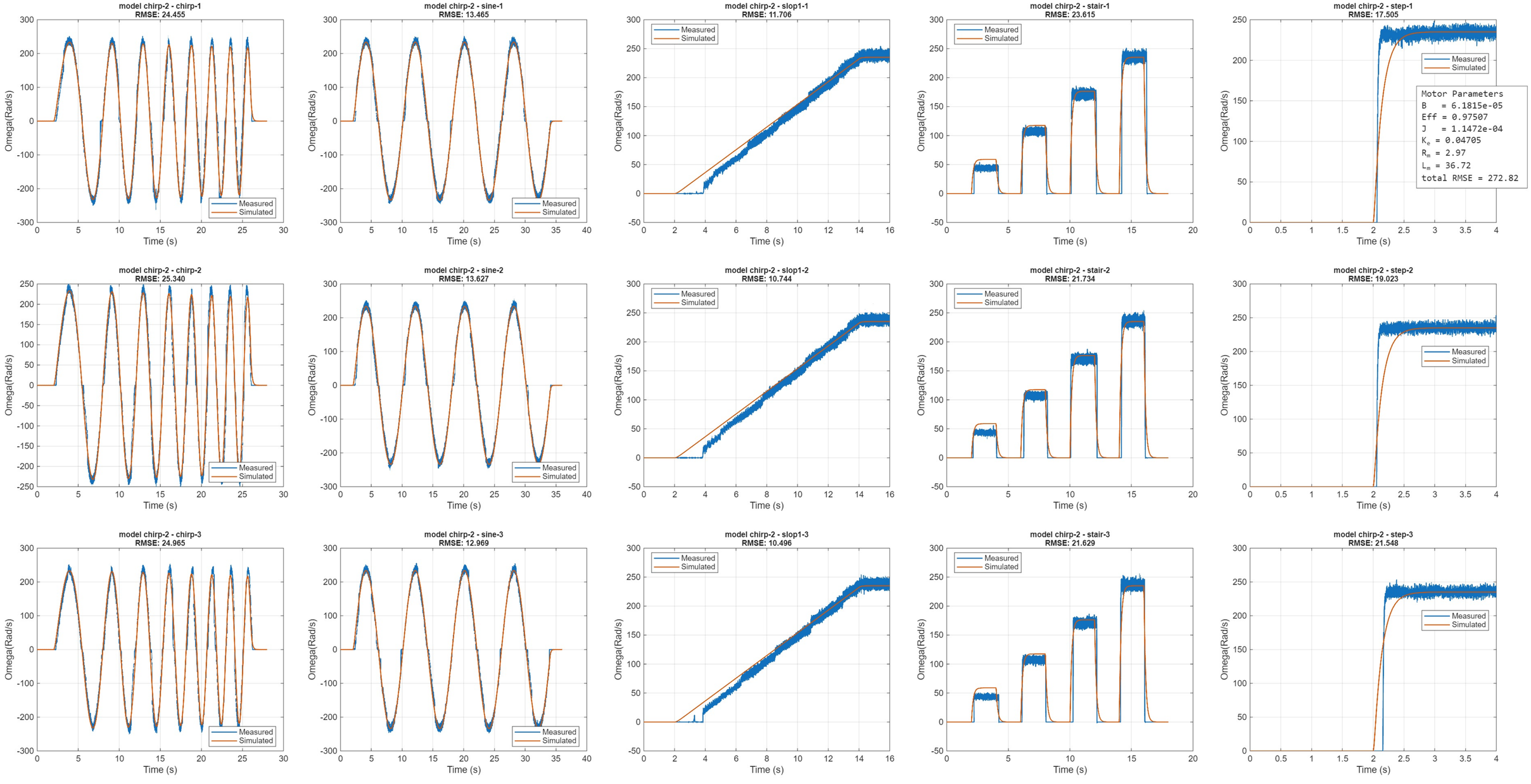

model slop1-1 - chirp-1
RMSE: 116.533
model slop1-1 - sine-1
RMSE: 88.116
model slop1-1 - slop1-1
RMSE: 5.984
model slop1-1 - stair-1
RMSE: 57.446
model slop1-1 - step-1
RMSE: 74.975
Motor Parameters
B = 7.6302e-07
Eff = 1.00000
J = 8.6131e-04
Ke = 0.04734
Rm = 2.97
Lm = 36.72
total RMSE = 1029.27
model slop1-1 - chirp-2
RMSE: 116.233
model slop1-1 - sine-2
RMSE: 87.357
model slop1-1 - slop1-2
RMSE: 6.269
model slop1-1 - stair-2
RMSE: 59.152
model slop1-1 - step-2
RMSE: 77.042
model slop1-1 - chirp-3
RMSE: 116.039
model slop1-1 - sine-3
RMSE: 87.667
model slop1-1 - slop1-3
RMSE: 6.102
model slop1-1 - stair-3
RMSE: 60.615
model slop1-1 - step-3
RMSE: 69.737
Measured
Simulated
Omega(Rad/s)
Time (s)

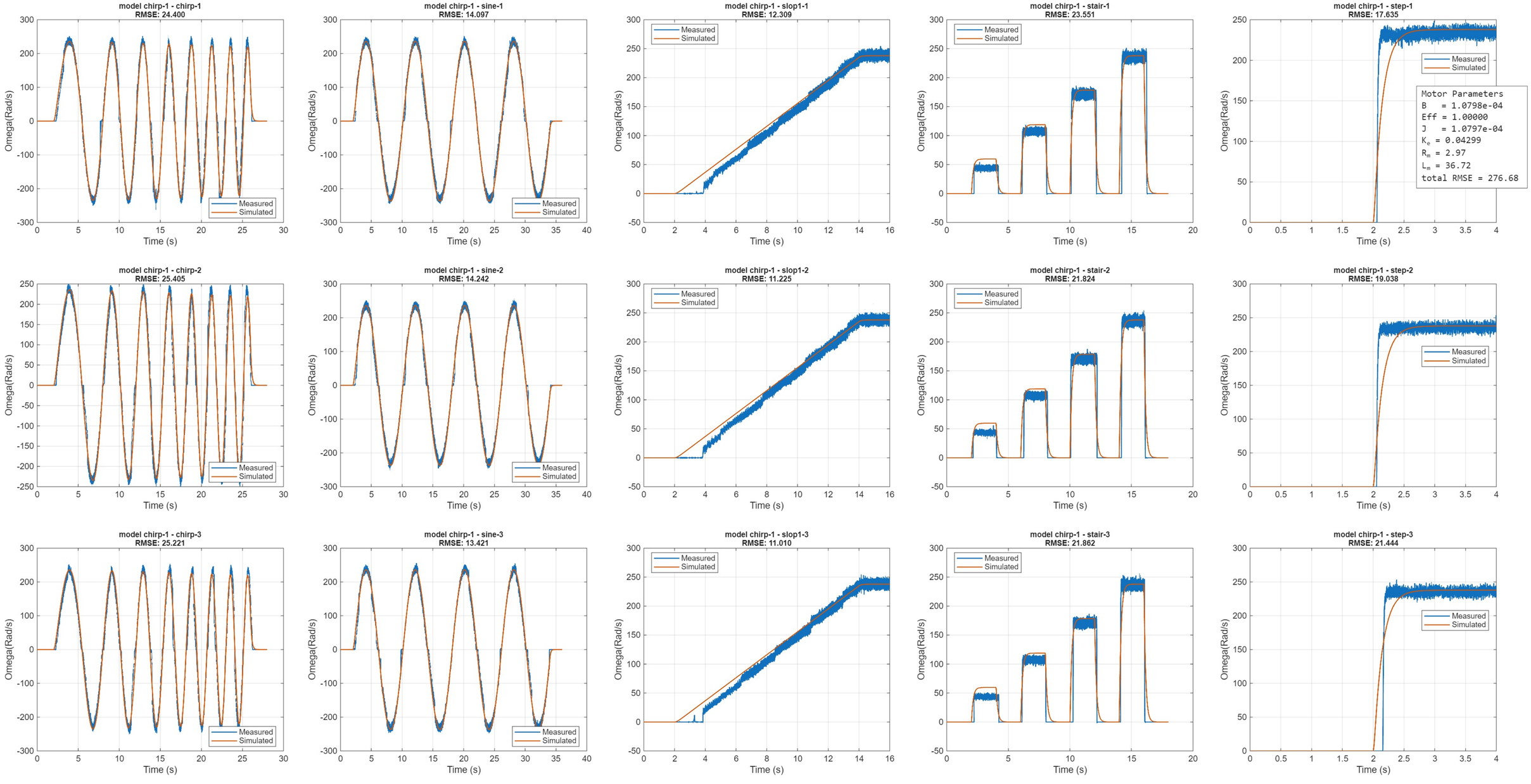

model sine-3 - chirp-1
RMSE: 24.450
model sine-3 - sine-1
RMSE: 13.488
model sine-3 - slop1-1
RMSE: 11.667
model sine-3 - stair-1
RMSE: 23.406
model sine-3 - step-1
RMSE: 17.943
Motor Parameters
B = 1.0146e-04
Eff = 1.00000
J = 1.1285e-04
Ke = 0.04422
Rm = 2.97
Lm = 36.72
total RMSE = 273.25
model sine-3 - chirp-2
RMSE: 25.357
model sine-3 - sine-2
RMSE: 13.613
model sine-3 - slop1-2
RMSE: 10.706
model sine-3 - stair-2
RMSE: 21.649
model sine-3 - step-2
RMSE: 19.487
model sine-3 - chirp-3
RMSE: 25.056
model sine-3 - sine-3
RMSE: 12.936
model sine-3 - slop1-3
RMSE: 10.459
model sine-3 - stair-3
RMSE: 21.644
model sine-3 - step-3
RMSE: 21.393
Measured
Simulated
Omega(Rad/s)
Time (s)


model sine-2 - chirp-1
RMSE: 24.562
model sine-2 - sine-1
RMSE: 13.149
model sine-2 - slop1-1
RMSE: 11.350
model sine-2 - stair-1
RMSE: 23.521
model sine-2 - step-1
RMSE: 17.911
Motor Parameters
B = 1.0221e-04
Eff = 1.00000
J = 1.1293e-04
Ke = 0.04472
Rm = 2.97
Lm = 36.72
total RMSE = 271.82
model sine-2 - chirp-2
RMSE: 25.372
model sine-2 - sine-2
RMSE: 13.290
model sine-2 - slop1-2
RMSE: 10.503
model sine-2 - stair-2
RMSE: 21.633
model sine-2 - step-2
RMSE: 19.529
model sine-2 - chirp-3
RMSE: 24.916
model sine-2 - sine-3
RMSE: 12.756
model sine-2 - slop1-3
RMSE: 10.233
model sine-2 - stair-3
RMSE: 21.506
model sine-2 - step-3
RMSE: 21.590
Measured
Simulated
Omega(Rad/s)
Time (s)


model sine-1 - chirp-1
RMSE: 24.619
model sine-1 - sine-1
RMSE: 13.148
model sine-1 - slop1-1
RMSE: 11.424
model sine-1 - stair-1
RMSE: 23.880
model sine-1 - step-1
RMSE: 17.194
Motor Parameters
B = 9.9439e-05
Eff = 1.00000
J = 1.0897e-04
Ke = 0.04493
Rm = 2.97
Lm = 36.72
total RMSE = 271.48
model sine-1 - chirp-2
RMSE: 25.401
model sine-1 - sine-2
RMSE: 13.348
model sine-1 - slop1-2
RMSE: 10.567
model sine-1 - stair-2
RMSE: 21.799
model sine-1 - step-2
RMSE: 18.767
model sine-1 - chirp-3
RMSE: 24.831
model sine-1 - sine-3
RMSE: 12.837
model sine-1 - slop1-3
RMSE: 10.299
model sine-1 - stair-3
RMSE: 21.510
model sine-1 - step-3
RMSE: 21.854
Measured
Simulated
Omega(Rad/s)
Time (s)


model chirp-3 - chirp-1
RMSE: 24.741
model chirp-3 - sine-1
RMSE: 13.057
model chirp-3 - slop1-1
RMSE: 11.342
model chirp-3 - stair-1
RMSE: 24.060
model chirp-3 - step-1
RMSE: 17.048
Motor Parameters
B = 2.2212e-04
Eff = 1.00000
J = 5.2725e-05
Ke = 0.02293
Rm = 2.97
Lm = 36.72
total RMSE = 271.53
model chirp-3 - chirp-2
RMSE: 25.480
model chirp-3 - sine-2
RMSE: 13.277
model chirp-3 - slop1-2
RMSE: 10.535
model chirp-3 - stair-2
RMSE: 21.881
model chirp-3 - step-2
RMSE: 18.633
model chirp-3 - chirp-3
RMSE: 24.815
model chirp-3 - sine-3
RMSE: 12.837
model chirp-3 - slop1-3
RMSE: 10.258
model chirp-3 - stair-3
RMSE: 21.493
model chirp-3 - step-3
RMSE: 22.077
Measured
Simulated
Omega(Rad/s)
Time (s)


model chirp-2 - chirp-1
RMSE: 24.455
model chirp-2 - sine-1
RMSE: 13.465
model chirp-2 - slop1-1
RMSE: 11.706
model chirp-2 - stair-1
RMSE: 23.615
model chirp-2 - step-1
RMSE: 17.505
Motor Parameters
B = 6.1815e-05
Eff = 0.97507
J = 1.1472e-04
Ke = 0.04705
Rm = 2.97
Lm = 36.72
total RMSE = 272.82
model chirp-2 - chirp-2
RMSE: 25.340
model chirp-2 - sine-2
RMSE: 13.627
model chirp-2 - slop1-2
RMSE: 10.744
model chirp-2 - stair-2
RMSE: 21.734
model chirp-2 - step-2
RMSE: 19.023
model chirp-2 - chirp-3
RMSE: 24.965
model chirp-2 - sine-3
RMSE: 12.969
model chirp-2 - slop1-3
RMSE: 10.496
model chirp-2 - stair-3
RMSE: 21.629
model chirp-2 - step-3
RMSE: 21.548
Measured
Simulated
Omega(Rad/s)
Time (s)


model chirp-1 - chirp-1
RMSE: 24.400
model chirp-1 - sine-1
RMSE: 14.097
model chirp-1 - slop1-1
RMSE: 12.309
model chirp-1 - stair-1
RMSE: 23.551
model chirp-1 - step-1
RMSE: 17.635
Motor Parameters
B = 1.0798e-04
Eff = 1.00000
J = 1.0797e-04
Ke = 0.04299
Rm = 2.97
Lm = 36.72
total RMSE = 276.68
model chirp-1 - chirp-2
RMSE: 25.405
model chirp-1 - sine-2
RMSE: 14.242
model chirp-1 - slop1-2
RMSE: 11.225
model chirp-1 - stair-2
RMSE: 21.824
model chirp-1 - step-2
RMSE: 19.038
model chirp-1 - chirp-3
RMSE: 25.221
model chirp-1 - sine-3
RMSE: 13.421
model chirp-1 - slop1-3
RMSE: 11.010
model chirp-1 - stair-3
RMSE: 21.862
model chirp-1 - step-3
RMSE: 21.444
Measured
Simulated
Omega(Rad/s)
Time (s)