MIMO mmWave Oracle LS Test

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Oracle LS performance is tested in relation to the number of measurements. Here in the MIMO system it is about the pilot overhead.

1 NMSE v.s. SNR (Pilot: 32)

SNR [dB]	OMP
−10	3.81
−8	2.76
−6	−0.11
−4	−2.79
−2	−4.50
0	−7.06
2	−9.96
4	−12.44
6	−14.89
8	−17.18
10	−20.07
12	−21.32
14	−23.37
16	−25.35
18	−27.54
20	−29.81

2 NMSE v.s. Pilot (-10dB)

Pilot	OMP (Iter: 6)	OMP (Iter: 9)	OMP (Iter: 12)	Oracle LS
8	9.29	11.10	12.44	4.62
16	7.07	8.40	9.44	0.68
24	5.23	6.53	7.53	−0.91
32	4.01	5.23	6.10	−2.29
40	2.83	4.17	5.08	−3.50
48	2.08	3.38	4.27	−4.30
56	1.18	2.27	3.11	−4.70
64	0.71	1.91	2.81	−6.04
72	0.63	1.73	2.54	−6.16
80	−0.50	0.78	1.76	−6.53
88	−1.12	0.09	1.02	−6.95
96	−1.79	−0.71	0.05	−7.01
104	−1.69	−0.48	0.48	−7.57
112	−2.20	−0.79	0.14	−8.41
120	−2.85	−1.56	−0.66	−8.48
128	−2.88	−1.55	−0.58	−8.35

3 NMSE v.s. Pilot (0dB)

Pilot	OMP (Iter: 6)	OMP (Iter: 9)	OMP (Iter: 12)	Oracle LS
8	1.25	2.31	3.26	−4.17
16	−2.60	−1.45	−0.34	−8.89
24	−4.83	−3.36	−2.25	−10.52
32	−7.61	−6.08	−4.89	−12.78
40	−8.68	−7.12	−5.95	−13.34
48	−9.62	−7.87	−6.60	−13.77
56	−11.30	−9.38	−8.22	−15.40
64	−11.12	−9.10	−7.88	−15.02
72	−12.23	−10.18	−8.80	−16.18
80	−12.41	−10.37	−9.07	−16.15
88	−13.12	−10.67	−9.40	−17.03
96	−13.51	−11.33	−10.07	−16.84
104	−14.28	−11.88	−10.53	−17.60
112	−14.77	−12.20	−10.73	−18.55
120	−14.63	−12.17	−10.82	−18.42
128	−15.08	−12.49	−11.11	−18.81

4 NMSE v.s. Pilot (10dB)

Pilot	OMP (Iter: 6)	OMP (Iter: 9)	OMP (Iter: 12)	Oracle LS
8	−2.48	−2.28	−1.77	−14.65
16	−15.11	−12.91	−11.52	−18.93
24	−17.84	−15.64	−14.18	−21.00
32	−19.91	−17.22	−15.69	−22.89
40	−20.93	−17.84	−16.12	−23.94
48	−21.48	−18.69	−17.05	−24.40
56	−22.04	−19.14	−17.63	−25.23
64	−22.62	−19.93	−18.47	−25.45
72	−23.29	−20.47	−19.07	−26.10
80	−23.56	−21.00	−19.54	−26.02
88	−23.96	−21.27	−19.89	−26.73
96	−24.91	−21.99	−20.46	−27.58
104	−24.60	−21.87	−20.37	−27.28
112	−25.28	−22.41	−20.98	−28.04
120	−25.31	−22.65	−21.23	−28.42
128	−25.44	−22.58	−21.13	−28.37