

Table 1: Computational results for the MMIRP, $m = 1$

Instance	$K = 1$				$K = 3$				$K = 5$			
	LB	UB	Time (s)	Gap (%)	LB	UB	Time (s)	Gap (%)	LB	UB	Time (s)	Gap (%)
10-1-k-3-1	3138.06	3138.06	0.00	0.00	4214.25	4214.25	7.00	0.00	4285.83	4285.83	17.00	0.00
10-1-k-3-2	3256.12	3256.12	0.00	0.00	3849.31	3849.31	6.00	0.00	3813.46	3813.46	37.00	0.00
10-1-k-3-3	2179.98	2179.98	0.00	0.00	3634.02	3634.02	7.00	0.00	4909.57	4909.57	14.00	0.00
10-1-k-3-4	2957.99	2957.99	0.00	0.00	3924.06	3924.06	9.00	0.00	4146.00	4146.00	22.00	0.00
10-1-k-3-5	3886.48	3886.48	0.00	0.00	3280.41	3280.41	4.00	0.00	5196.59	5196.59	511.00	0.00
20-1-k-3-1	4612.90	4612.90	3.00	0.00	4560.23	4560.23	70.00	0.00	5033.67	5553.39	43200.00	9.36
20-1-k-3-2	4365.12	4365.12	1.00	0.00	5654.98	5654.98	375.00	0.00	5162.92	5708.19	43200.00	9.55
20-1-k-3-3	3696.19	3696.19	2.00	0.00	4427.42	4427.42	129.00	0.00	5523.58	5610.02	43200.00	1.54
20-1-k-3-4	4039.82	4039.82	0.00	0.00	3915.25	3915.25	3.00	0.00	5106.31	5106.31	2196.00	0.00
20-1-k-3-5	5051.68	5051.68	2.00	0.00	4511.32	4511.32	343.00	0.00	6256.01	6256.01	17056.00	0.00
30-1-k-3-1	5050.57	5050.57	21.00	0.00	5090.20	5090.20	12631.00	0.00	5950.00	6518.90	43200.00	8.73
30-1-k-3-2	5682.39	5682.39	1.00	0.00	5558.16	5558.16	1486.00	0.00	4795.11	6151.07	43200.00	22.04
30-1-k-3-3	5263.10	5263.10	14.00	0.00	5441.26	5441.26	5136.00	0.00	6348.15	8919.49	43200.00	28.83
30-1-k-3-4	5753.86	5753.86	19.00	0.00	5187.45	5187.45	2590.00	0.00	6176.94	6458.34	43200.00	4.36
30-1-k-3-5	5206.34	5206.34	11.00	0.00	6075.55	6075.55	3724.00	0.00	5134.34	5949.57	43200.00	13.70
40-1-k-3-1	6140.07	6140.07	67.00	0.00	5858.57	6154.27	43200.00	4.80	7259.12	8106.71	43200.00	10.46
40-1-k-3-2	6073.45	6073.45	6.00	0.00	5965.13	6613.79	43200.00	9.81	5993.70	7526.17	43200.00	20.36
40-1-k-3-3	6695.48	6695.48	40.00	0.00	6786.62	6786.62	31274.00	0.00	5934.72	7300.67	43200.00	18.71
40-1-k-3-4	5908.63	5908.63	30.00	0.00	6493.45	6493.45	22716.00	0.00	6595.44	7846.22	43200.00	15.94
40-1-k-3-5	6304.93	6304.93	366.00	0.00	6040.66	6040.66	718.00	0.00	5968.01	7065.20	43149.00	15.52
50-1-k-3-1	6735.22	6735.22	298.00	0.00	6333.69	9469.04	43200.00	33.11	6142.79	8174.80	43145.00	24.86
50-1-k-3-2	7359.11	7359.11	175.00	0.00	7068.33	8513.37	43200.00	16.97	6368.41	16799.30	43200.00	62.09
50-1-k-3-3	6633.74	6633.74	421.00	0.00	6935.66	9549.38	43200.00	27.37	5730.57	7914.88	43200.00	27.60
50-1-k-3-4	6775.92	6775.92	35.00	0.00	6619.71	6943.91	43200.00	4.67	6004.68	7930.75	43200.00	24.29
50-1-k-3-5	6284.49	6284.49	569.00	0.00	6601.30	7774.74	43200.00	15.09	6751.40	8683.23	43200.00	22.25
10-1-k-5-1	5130.45	5130.45	1.00	0.00	5616.25	5616.25	311.00	0.00	11091.30	12973.40	43200.00	14.51
10-1-k-5-2	4022.60	4022.60	1.00	0.00	6651.92	6651.92	9398.00	0.00	8610.24	9844.88	43200.00	12.54
10-1-k-5-3	4576.49	4576.49	1.00	0.00	5818.42	5882.91	43200.00	1.10	8787.57	10425.40	40538.00	15.71
10-1-k-5-4	4197.13	4197.13	1.00	0.00	8011.19	8011.19	6895.00	0.00	7131.65	7131.65	6631.00	0.00
10-1-k-5-5	3917.45	3917.45	1.00	0.00	6348.38	6348.38	2973.00	0.00	7333.53	9323.84	43200.00	21.35
20-1-k-5-1	5699.28	5699.28	14.00	0.00	7317.18	9093.89	39806.00	19.54	6776.72	11259.10	43200.00	39.81
20-1-k-5-2	5533.78	5533.78	17.00	0.00	8112.67	9515.50	43200.00	14.74	6408.02	11140.70	43200.00	42.48
20-1-k-5-3	5653.45	5653.45	16.00	0.00	6551.32	7521.28	42258.00	12.90	6773.82	13131.80	43200.00	48.42
20-1-k-5-4	5599.70	5599.70	14.00	0.00	7086.54	9171.71	39952.00	22.73	7194.52	14686.00	43200.00	51.01
20-1-k-5-5	5793.49	5793.49	41.00	0.00	6927.66	8177.43	43200.00	15.28	6199.83	9527.97	43200.00	34.93
30-1-k-5-1	7080.37	7080.37	139.00	0.00	6706.35	11048.50	43200.00	39.30	5665.57	12858.30	43200.00	55.94
30-1-k-5-2	7302.69	7302.69	435.00	0.00	7126.08	10421.40	43200.00	31.62	7599.29	11294.70	43187.00	32.72
30-1-k-5-3	6352.53	6352.53	137.00	0.00	7931.87	11341.90	43200.00	30.07	9205.64	15626.20	43200.00	41.09
30-1-k-5-4	7503.21	7503.21	175.00	0.00	7051.10	9600.91	43105.00	26.56	7208.87	12899.80	43200.00	44.12
30-1-k-5-5	7073.86	7073.86	25.00	0.00	7058.48	9835.43	43200.00	28.23	6985.73	12775.90	43200.00	45.32
40-1-k-5-1	9215.80	9217.63	43200.00	0.02	7854.39	12277.70	43200.00	36.03	7961.14	23067.10	43200.00	65.49
40-1-k-5-2	8673.32	8673.32	1569.00	0.00	7511.25	11432.20	43147.00	32.59	8410.13	14422.90	43188.00	41.69
40-1-k-5-3	9069.88	9069.88	864.00	0.00	7306.92	13656.10	43200.00	46.49	7128.14	16500.80	43200.00	56.80
40-1-k-5-4	8598.43	8598.43	576.00	0.00	8177.69	17694.60	43200.00	53.78	8248.86	16130.70	43200.00	48.86
40-1-k-5-5	9491.60	9491.60	1114.00	0.00	7614.12	13047.90	43197.00	41.64	7657.89	14255.70	43200.00	46.28
50-1-k-5-1	9970.48	10257.20	43200.00	2.80	8311.33	13450.70	43186.00	38.21	8176.04	20220.40	43200.00	59.57
50-1-k-5-2	8948.76	8948.76	7427.00	0.00	8568.28	21399.60	43200.00	59.96	8286.80	21978.80	43200.00	62.30
50-1-k-5-3	9954.52	9954.52	37392.00	0.00	8245.61	14260.60	43200.00	42.18	8697.43	27288.20	43200.00	68.13
50-1-k-5-4	9268.01	9268.01	12287.00	0.00	8479.29	16724.60	43200.00	49.30	7569.42	22512.20	43200.00	66.38
50-1-k-5-5	9790.65	9790.65	3257.00	0.00	8554.38	17446.10	43200.00	50.97	7451.98	28152.00	43200.00	73.53
10-1-k-7-1	4053.96	4053.96	3.00	0.00	7239.60	8872.79	21740.00	18.41	16281.70	20263.30	41990.00	19.65
10-1-k-7-2	7197.17	7197.17	123.00	0.00	9704.73	11752.90	23567.00	17.43	11018.20	14511.30	42209.00	24.07
10-1-k-7-3	5957.94	5957.94	6.00	0.00	11000.60	12752.90	19828.00	13.74	9922.91	15604.00	37773.00	36.41
10-1-k-7-4	4402.97	4402.97	3.00	0.00	10400.90	12353.70	32531.00	15.81	12564.80	15394.30	38255.00	18.38
10-1-k-7-5	5794.94	5794.94	4.00	0.00	6784.43	7265.75	43200.00	6.62	8661.02	14394.30	40305.00	39.83
20-1-k-7-1	7124.31	7124.31	2867.00	0.00	7353.30	10909.40	41221.00	32.60	7950.35	15783.80	43200.00	49.63
20-1-k-7-2	9003.82	9003.82	10839.00	0.00	7737.29	10782.30	43200.00	28.24	10788.90	17981.00	43200.00	40.00
20-1-k-7-3	7464.50	7464.50	612.00	0.00	7566.40	10642.50	41718.00	28.90	8651.42	17704.90	43200.00	51.14
20-1-k-7-4	6569.66	6569.66	237.00	0.00	9233.70	12110.20	42830.00	23.75	9422.20	21001.50	43110.00	55.14
20-1-k-7-5	7903.90	7903.90	2123.00	0.00	8634.05	11490.60	37518.00	24.86	8494.14	13163.40	43167.00	35.47
30-1-k-7-1	9437.01	10366.20	43130.00	8.96	9005.50	14384.00	43127.00	37.39	9930.06	30899.60	43200.00	67.86
30-1-k-7-2	10888.00	11154.60	43200.00	2.39	10001.70	14550.30	43130.00	31.26	8689.44	22120.00	43200.00	60.72
30-1-k-7-3	10321.30	10321.30	8807.00	0.00	9480.84	13989.70	43200.00	32.23	9516.21	19262.20	43200.00	50.60
30-1-k-7-4	9815.20	9815.20	4308.00	0.00	7350.00	11774.90	43200.00	37.58	7971.85	25338.80	43200.00	68.54
30-1-k-7-5	9032.11	9401.42	43200.00	3.93	9396.51	13337.60	43200.00	29.55	9656.29	23578.40	43156.00	59.05
40-1-k-7-1	10558.60	11551.00	43200.00	8.59	10809.50	15767.20	43200.00	31.44	10733.10	47723.60	43200.00	77.51
40-1-k-7-2	11554.70	11835.10	43200.00	2.37	10079.30	27142.60	43200.00	62.87	10195.40	37188.90	43200.00	72.58
40-1-k-7-3	10724.30	11448.60	43200.00	6.33	9272.25	33266.30	43200.00	72.13	10616.40	26752.80	43200.00	60.32
40-1-k-7-4	10647.60	11400.40	43200.00	6.60	9259.67	28472.10	43200.00	67.48	9829.88	28893.10	43200.00	65.98
40-1-k-7-5	12045.10	12849.10	43200.00	6.26	9503.61	33545.20	43200.00	71.67	9426.74	45049.10	43200.00	79.07
50-1-k-7-1	11899.50	13644.40	43200.00	12.79	9613.24	22377.50	43200.00	57.04	11985.60	37497.70	37639.00	68.04
50-1-k-7-2	13413.70	14147.70	43200.00	5.19	10476.80	23050.70	43200.00	54.55	10113.40	42090.90	43200.00	75.97
50-1-k-7-3	12438.30	13460.50	43200.00	7.59	10168.40	33297.40	43200.00	69.46	12913.40	42791.10	36203.00	69.82
50-1-k-7-4	10910.70	12319.20	43140.00	11.43	9783.94	29417.30	43200.00	66.74	10187.40	45441.00	43200.00	77.58
50-1-k-7-5	11108.60	12745.20	43199.00	12.84	10283.20	27838.10	43200.00	63.06	11903.50	35677.40	43200.00	66.64

Table 2: Computational results for the MMIRP, $m = 3$

Instance	$K = 1$				$K = 3$				$K = 5$			
	LB	UB	Time (s)	Gap (%)	LB	UB	Time (s)	Gap (%)	LB	UB	Time (s)	Gap (%)
10-3-k-3-1	3916.98	3916.98	0.00	0.00	4436.90	4436.90	2.00	0.00	4551.49	4551.49	82.00	0.00
10-3-k-3-2	5056.60	5056.60	0.00	0.00	4306.18	4306.18	2.00	0.00	5346.66	5346.66	74.00	0.00
10-3-k-3-3	3970.75	3970.75	0.00	0.00	4421.83	4421.83	7.00	0.00	4592.98	4592.98	139.00	0.00
10-3-k-3-4	3844.56	3844.56	1.00	0.00	4221.69	4221.69	4.00	0.00	5932.38	5932.38	200.00	0.00
10-3-k-3-5	3685.30	3685.30	7.00	0.00	4512.37	4512.37	14.00	0.00	5088.27	5088.27	17.00	0.00
20-3-k-3-1	5998.00	5998.00	1.00	0.00	6789.75	6789.75	1164.00	0.00	7331.43	7331.43	5848.00	0.00
20-3-k-3-2	5646.67	5646.67	1.00	0.00	7147.76	7147.76	117.00	0.00	7129.42	7641.69	43200.00	6.70
20-3-k-3-3	5457.56	5457.56	0.00	0.00	6231.98	6231.98	30.00	0.00	6942.08	6942.08	12179.00	0.00
20-3-k-3-4	5806.29	5806.29	1.00	0.00	6637.50	6637.50	79.00	0.00	7272.04	7703.03	43200.00	5.60
20-3-k-3-5	5652.29	5652.29	1.00	0.00	6274.52	6274.52	223.00	0.00	7495.26	7495.26	2693.00	0.00
30-3-k-3-1	7824.20	7824.20	1.00	0.00	8155.39	8155.39	1018.00	0.00	9065.79	9065.79	7391.00	0.00
30-3-k-3-2	7496.98	7496.98	1.00	0.00	8449.19	8449.19	13280.00	0.00	8782.78	8867.73	43200.00	0.96
30-3-k-3-3	7635.07	7635.07	0.00	0.00	7779.08	7779.08	616.00	0.00	8440.20	8595.89	43193.00	1.81
30-3-k-3-4	7741.39	7741.39	2.00	0.00	8281.00	8281.00	2772.00	0.00	8477.69	9445.33	43200.00	10.24
30-3-k-3-5	7581.47	7581.47	1.00	0.00	8545.20	8545.20	187.00	0.00	8413.47	8956.04	43200.00	6.06
40-3-k-3-1	9433.07	9433.07	1.00	0.00	10347.30	10347.30	15286.00	0.00	11108.70	11266.90	43200.00	1.40
40-3-k-3-2	9474.22	9474.22	8.00	0.00	8988.84	8988.84	3779.00	0.00	9739.91	9739.91	38409.00	0.00
40-3-k-3-3	9457.59	9457.59	4.00	0.00	9644.02	9644.02	1133.00	0.00	10579.70	10839.20	43200.00	2.39
40-3-k-3-4	9345.74	9345.74	3.00	0.00	9681.44	9681.44	1365.00	0.00	9864.89	10387.20	43200.00	5.03
40-3-k-3-5	8484.20	8484.20	10.00	0.00	10044.00	10176.40	43200.00	1.30	10666.00	10992.10	43200.00	2.97
50-3-k-3-1	10616.40	10616.40	25.00	0.00	11264.60	11498.50	43200.00	2.03	10599.60	10722.30	43200.00	1.14
50-3-k-3-2	11127.80	11127.80	7.00	0.00	10994.90	11608.80	43200.00	5.29	11247.60	12069.90	43200.00	6.81
50-3-k-3-3	10654.80	10654.80	11.00	0.00	11417.60	11417.60	34123.00	0.00	11165.40	11909.50	43200.00	6.25
50-3-k-3-4	10664.90	10664.90	3.00	0.00	11351.70	11827.50	43168.00	4.02	11258.70	15591.20	43200.00	27.79
50-3-k-3-5	11709.60	11709.60	11.00	0.00	11420.30	11420.30	13817.00	0.00	12231.30	12913.70	43200.00	5.28
10-3-k-5-1	5191.37	5191.37	4.00	0.00	6815.77	6815.77	918.00	0.00	9132.46	11413.80	43200.00	19.99
10-3-k-5-2	5395.52	5395.52	5.00	0.00	9209.42	9209.42	22003.00	0.00	8483.32	10497.30	43200.00	19.19
10-3-k-5-3	5868.90	5868.90	2.00	0.00	7940.89	7940.89	2235.00	0.00	11304.00	13388.70	33744.00	15.57
10-3-k-5-4	5857.99	5857.99	2.00	0.00	7817.68	7817.68	3494.00	0.00	10456.00	13627.20	42815.00	23.27
10-3-k-5-5	6378.46	6378.46	4.00	0.00	7918.98	7918.98	11391.00	0.00	9190.93	11336.60	43200.00	18.93
20-3-k-5-1	8856.90	8856.90	54.00	0.00	8734.07	9877.13	43152.00	11.57	9420.70	11659.10	43200.00	19.20
20-3-k-5-2	7577.07	7577.07	11.00	0.00	9765.76	12080.50	43200.00	19.16	11491.10	14995.40	43200.00	23.37
20-3-k-5-3	8632.27	8632.27	57.00	0.00	8863.04	11186.20	38260.00	20.77	9730.94	14330.60	43200.00	32.10
20-3-k-5-4	8966.59	8966.59	14.00	0.00	9814.23	12684.30	43200.00	22.63	11888.50	16084.00	43200.00	26.09
20-3-k-5-5	8858.34	8858.34	93.00	0.00	8897.23	10012.40	43200.00	11.14	10604.20	15024.30	43200.00	29.42
30-3-k-5-1	11306.00	11306.00	440.00	0.00	10865.70	14545.30	43200.00	25.30	11632.30	15763.30	43200.00	26.21
30-3-k-5-2	12048.70	12048.70	496.00	0.00	10722.20	14615.20	43200.00	26.64	11313.70	20055.20	43200.00	43.59
30-3-k-5-3	11616.20	11616.20	959.00	0.00	11768.30	13719.30	43200.00	14.22	11205.40	15474.00	43200.00	27.59
30-3-k-5-4	11245.40	11245.40	390.00	0.00	10960.10	13942.10	43200.00	21.39	10858.20	18757.40	43200.00	42.11
30-3-k-5-5	11360.30	11360.30	246.00	0.00	12668.60	15045.50	43180.00	15.80	9544.08	18996.00	43105.00	49.76
40-3-k-5-1	15160.40	15160.40	4548.00	0.00	13232.10	16851.40	43200.00	21.48	12580.70	33757.90	43200.00	62.73
40-3-k-5-2	14318.30	14318.30	8438.00	0.00	12951.30	17574.70	43164.00	26.31	12110.00	20019.90	43200.00	39.51
40-3-k-5-3	13486.20	13486.20	7857.00	0.00	13329.50	16266.10	43179.00	18.05	13293.00	21160.00	43200.00	37.18
40-3-k-5-4	14090.70	14090.70	9137.00	0.00	12637.30	18716.00	43200.00	32.48	12638.30	45952.30	43153.00	72.50
40-3-k-5-5	13939.90	13939.90	4859.00	0.00	12583.40	15641.50	43200.00	19.55	13281.50	23521.60	43200.00	43.53
50-3-k-5-1	16071.70	16320.90	43160.00	1.53	15506.40	37074.40	7646.00	58.17	14585.40	32938.30	17649.00	55.72
50-3-k-5-2	16492.20	16883.90	43200.00	2.32	13945.90	26196.00	5540.00	46.76	16216.50	26811.60	25895.00	39.52
50-3-k-5-3	16542.40	17248.00	43101.00	4.09	14940.40	26899.10	7065.00	44.46	14578.90	25704.80	24883.00	43.28
50-3-k-5-4	15499.70	16430.50	43131.00	5.66	14702.90	25239.40	35516.00	41.75	15054.60	29344.50	25218.00	48.70
50-3-k-5-5	17038.10	17038.10	28621.00	0.00	14901.90	23230.20	37009.00	36.54	15042.50	29039.50	15993.00	48.20
10-3-k-7-1	7138.72	7138.72	21.00	0.00	8597.49	10323.20	26230.00	16.72	13365.10	18836.80	43200.00	29.05
10-3-k-7-2	7781.51	7781.51	20.00	0.00	9458.35	10852.00	30613.00	12.84	10110.10	13691.00	43200.00	26.16
10-3-k-7-3	7682.17	7682.17	17.00	0.00	9242.18	14362.80	23771.00	35.65	11920.10	17788.30	43142.00	32.99
10-3-k-7-4	8665.93	8665.93	47.00	0.00	8661.91	12045.70	24846.00	28.09	11897.70	17312.40	43200.00	31.28
10-3-k-7-5	8578.93	8578.93	14.00	0.00	9444.19	11299.30	30460.00	16.42	12840.10	18719.60	39964.00	31.41
20-3-k-7-1	13355.80	13355.80	6044.00	0.00	12835.80	18456.80	43200.00	30.46	11989.40	18520.50	43200.00	35.26
20-3-k-7-2	12520.30	12520.30	14326.00	0.00	10911.80	15832.20	43200.00	31.08	12704.40	21589.90	43200.00	41.16
20-3-k-7-3	12901.50	12901.50	1363.00	0.00	11695.70	18738.70	43188.00	37.59	10313.10	18625.80	43176.00	44.63
20-3-k-7-4	12700.00	12700.00	5593.00	0.00	11891.40	15939.20	43200.00	25.40	12374.30	22748.00	43200.00	45.60
20-3-k-7-5	11352.30	11352.30	3541.00	0.00	11842.60	15237.20	43200.00	22.28	12275.90	19913.70	43200.00	38.35
30-3-k-7-1	15198.50	15803.00	43200.00	3.83	13588.80	18855.20	43189.00	27.93	14885.40	36934.10	43200.00	59.70
30-3-k-7-2	15164.30	16441.90	43200.00	7.77	12875.60	20340.80	43200.00	36.70	15603.70	40204.80	43200.00	61.19
30-3-k-7-3	15736.80	16706.40	43200.00	5.80	13867.70	20238.30	43200.00	31.48	13355.10	26980.20	43200.00	50.50
30-3-k-7-4	15128.30	16328.60	43200.00	7.35	14532.40	20988.90	43200.00	30.76	14206.00	20704.10	43200.00	47.53
30-3-k-7-5	15498.30	15862.60	43200.00	2.30	16277.10	22475.60	43200.00	27.58	14257.60	90995.40	43150.00	84.33
40-3-k-7-1	18688.20	20761.80	43200.00	9.99	17543.20	25969.10	43200.00	32.45	17451.20	47568.80	36173.00	63.31
40-3-k-7-2	18386.10	21030.40	43200.00	12.57	17179.40	33100.70	43200.00	48.10	14634.40	40787.30	36769.00	64.12
40-3-k-7-3	18279.60	20471.20	43200.00	10.71	18088.10	29792.20	43200.00	39.29	15919.57	43311.20	43200.00	63.24
40-3-k-7-4	18208.40	20232.20	43200.00	10.00	16334.80	26348.40	43200.00	38.00	17206.10	40332.30	43200.00	57.34
40-3-k-7-5	16649.40	18900.30	43200.00	11.91	16062.80	24307.90	43200.00	33.92	17677.80	41549.50	14491.00	57.45
50-3-k-7-1	19843.10	22901.60	43200.00	13.35	19104.70	64802.00	43200.00	70.52	20456.15	54303.56	43200.00	62.33
50-3-k-7-2	19870.80	23686.00	43200.00	16.11	19122.16	44594.59	43200.00	57.12	20642.05	54135.98	43200.00	61.87
50-3-k-7-3	19522.70	23445.00	43200.00	16.73	18787.45	39083.52	43200.00	51.93	20079.10	47932.92	43200.00	58.11
50-3-k-7-4	19821.80	23611.80	43199.00	16.05	18734.38	36138.85	43200.00	48.16	19592.50	41290.83	43200.00	52.55
50-3-k-7-5	21315.60	24643.40	43200.00	13.50	18836.15	34714.61	43200.00	45.74	18468.45	35044.50	43200.00	47.30

Table 3: Computational results for the MMIRP, $m = 5$

Instance	$K = 1$				$K = 3$				$K = 5$			
	LB	UB	Time (s)	Gap (%)	LB	UB	Time (s)	Gap (%)	LB	UB	Time (s)	Gap (%)
10-5-k-3-1	4628.48	4628.48	5.00	0.00	4891.30	4891.30	11.00	0.00	6208.50	6208.50	74.00	0.00
10-5-k-3-2	4925.00	4925.00	5.00	0.00	5992.61	5992.61	4.00	0.00	5611.29	5611.29	8.00	0.00
10-5-k-3-3	4981.21	4981.21	4.00	0.00	4094.86	4094.86	3.00	0.00	5221.06	5221.06	110.00	0.00
10-5-k-3-4	4632.71	4632.71	4.00	0.00	5221.85	5221.85	2.00	0.00	5450.37	5450.37	108.00	0.00
10-5-k-3-5	4476.96	4476.96	5.00	0.00	5370.81	5370.81	5.00	0.00	5855.20	5855.20	20.00	0.00
20-5-k-3-1	7516.03	7516.03	1.00	0.00	7119.48	7119.48	544.00	0.00	8393.66	8393.66	1357.00	0.00
20-5-k-3-2	7239.38	7239.38	1.00	0.00	6942.68	6942.68	45.00	0.00	8173.09	8173.09	2033.00	0.00
20-5-k-3-3	7893.46	7893.46	2.00	0.00	8534.41	8534.41	1757.00	0.00	8869.01	9145.41	43200.00	3.02
20-5-k-3-4	7738.59	7738.59	1.00	0.00	8416.55	8416.55	112.00	0.00	7357.39	7357.39	2403.00	0.00
20-5-k-3-5	7414.91	7414.91	0.00	0.00	7984.36	7984.36	142.00	0.00	7727.42	7727.42	73.00	0.00
30-5-k-3-1	9829.36	9829.36	1.00	0.00	9880.90	9880.90	2045.00	0.00	10716.00	10716.00	32492.00	0.00
30-5-k-3-2	9828.79	9828.79	4.00	0.00	10673.40	10673.40	139.00	0.00	10540.70	11044.90	43200.00	4.56
30-5-k-3-3	9815.54	9815.54	1.00	0.00	11008.90	11278.90	43200.00	2.39	9679.14	10176.10	43200.00	4.88
30-5-k-3-4	10571.10	10571.10	2.00	0.00	11206.70	11395.30	43200.00	1.66	10460.90	11153.10	43200.00	6.21
30-5-k-3-5	10072.90	10072.90	2.00	0.00	10527.70	10527.70	110.00	0.00	10192.60	10192.60	24969.00	0.00
40-5-k-3-1	12222.40	12222.40	10.00	0.00	13124.60	13607.30	43200.00	3.55	13244.20	14307.20	43200.00	7.43
40-5-k-3-2	12467.20	12467.20	6.00	0.00	12725.90	12725.90	3936.00	0.00	12603.90	13640.20	43197.00	7.60
40-5-k-3-3	11913.10	11913.10	3.00	0.00	12258.80	12258.80	2667.00	0.00	13065.00	13460.40	43200.00	2.94
40-5-k-3-4	12018.60	12018.60	8.00	0.00	12853.30	12853.30	20081.00	0.00	13146.20	13292.40	43200.00	1.10
40-5-k-3-5	12309.20	12309.20	5.00	0.00	12111.40	12111.40	1143.00	0.00	13301.60	14565.70	43200.00	8.68
50-5-k-3-1	14216.20	14216.20	26.00	0.00	14644.30	14871.10	43200.00	1.52	15322.70	15700.40	43200.00	2.41
50-5-k-3-2	13693.60	13693.60	36.00	0.00	15170.60	15438.40	43200.00	1.74	14493.30	21097.80	43200.00	31.30
50-5-k-3-3	13738.50	13738.50	7.00	0.00	14722.00	14722.00	13248.00	0.00	14729.30	15526.70	43200.00	5.14
50-5-k-3-4	13990.90	13990.90	11.00	0.00	14737.60	14737.60	26983.00	0.00	14496.50	16385.00	38555.00	11.53
50-5-k-3-5	14569.60	14569.60	15.00	0.00	14360.40	14717.70	43200.00	2.43	14916.80	16636.20	36893.00	10.34
10-5-k-5-1	6840.43	6840.43	9.00	0.00	7536.93	7536.93	1583.00	0.00	10859.80	13261.90	43200.00	18.11
10-5-k-5-2	6565.52	6565.52	10.00	0.00	9034.33	9034.33	3609.00	0.00	11913.00	14261.70	43200.00	16.47
10-5-k-5-3	7474.97	7474.97	9.00	0.00	9308.91	9308.91	6404.00	0.00	8633.05	10592.20	43200.00	18.50
10-5-k-5-4	6395.21	6395.21	5.00	0.00	9430.20	10923.80	27344.00	13.67	9737.29	12420.30	42810.00	21.60
10-5-k-5-5	7912.14	7912.14	4.00	0.00	8057.78	9137.63	43200.00	11.82	10379.60	12064.40	43200.00	13.96
20-5-k-5-1	11426.00	11426.00	27.00	0.00	11929.70	13956.30	43200.00	14.52	10524.00	15362.20	43200.00	31.49
20-5-k-5-2	12083.10	12083.10	63.00	0.00	12073.90	14637.40	43200.00	17.51	11746.20	17571.10	43200.00	33.15
20-5-k-5-3	11182.10	11182.10	166.00	0.00	10913.80	13222.20	43200.00	17.46	12322.20	17168.00	43200.00	28.23
20-5-k-5-4	11536.00	11536.00	53.00	0.00	13239.50	15181.00	43200.00	12.79	11193.40	14957.20	43200.00	25.16
20-5-k-5-5	11007.10	11007.10	167.00	0.00	11500.60	13391.30	43200.00	14.12	12887.70	19175.50	43200.00	32.79
30-5-k-5-1	15602.50	15602.50	5866.00	0.00	14110.60	19656.40	43143.00	28.21	15326.80	23987.40	43200.00	36.10
30-5-k-5-2	14280.60	14280.60	11014.00	0.00	13994.40	18744.10	43200.00	25.34	14125.20	19913.40	43200.00	29.07
30-5-k-5-3	15043.90	15043.90	1365.00	0.00	14291.60	16951.70	43200.00	15.69	14516.80	21377.50	43200.00	32.09
30-5-k-5-4	15129.00	15129.00	4945.00	0.00	13374.40	17533.10	43200.00	23.72	13774.30	33336.40	43200.00	58.68
30-5-k-5-5	14972.50	14972.50	5162.00	0.00	14463.80	17962.50	43200.00	19.48	14240.20	23508.30	43200.00	39.42
40-5-k-5-1	18862.70	19202.00	43200.00	1.77	16576.70	39945.90	43200.00	58.50	16930.40	48945.20	43200.00	65.41
40-5-k-5-2	18659.70	18659.70	8266.00	0.00	16448.70	23706.60	43173.00	30.62	17806.00	49838.60	43200.00	64.27
40-5-k-5-3	18844.60	19628.20	43200.00	3.99	17835.30	21441.50	43200.00	16.82	17264.50	25776.00	43200.00	33.02
40-5-k-5-4	18732.00	18732.00	25277.00	0.00	16190.40	21692.50	43200.00	25.36	15877.25	24600.64	43200.00	35.46
40-5-k-5-5	18531.70	19467.50	43200.00	4.81	17049.00	21495.70	43200.00	20.69	16897.80	67806.60	43200.00	75.08
50-5-k-5-1	20322.40	22163.90	43200.00	8.31	19135.00	56535.20	43200.00	66.15	19236.40	46817.40	33923.00	58.91
50-5-k-5-2	20525.10	22151.60	43200.00	7.34	19118.30	29673.50	43200.00	35.57	19944.64	42264.55	43200.00	52.81
50-5-k-5-3	21314.40	22813.30	43170.00	6.57	20057.00	45084.40	43200.00	55.51	20284.66	47107.90	43200.00	56.94
50-5-k-5-4	20562.50	22473.40	43200.00	8.50	20399.40	26212.50	38065.00	22.18	19388.27	42066.11	43200.00	53.91
50-5-k-5-5	20886.40	22393.10	43200.00	6.73	20110.70	38965.00	43200.00	48.39	21357.64	41976.49	43200.00	49.12
10-5-k-7-1	9847.48	9847.48	59.00	0.00	8742.22	11067.60	27393.00	21.01	12653.80	15794.60	39588.00	19.89
10-5-k-7-2	11703.30	11703.30	29.00	0.00	9435.95	13912.60	27081.00	32.18	14073.80	20643.70	43200.00	31.83
10-5-k-7-3	9617.75	9617.75	30.00	0.00	14580.50	16697.00	24424.00	12.68	10729.50	16987.00	41382.00	36.84
10-5-k-7-4	10529.00	10529.00	91.00	0.00	11474.00	14941.10	27658.00	23.21	10377.30	15724.00	43200.00	34.00
10-5-k-7-5	10522.90	10522.90	59.00	0.00	12248.00	16280.40	27360.00	24.77	15256.20	20428.50	43200.00	25.32
20-5-k-7-1	16445.00	16445.00	13544.00	0.00	15059.80	22343.70	43200.00	32.60	14835.10	22404.10	43200.00	33.78
20-5-k-7-2	15109.00	15109.00	6206.00	0.00	14309.20	20686.00	43200.00	30.83	13944.00	23429.40	43200.00	40.48
20-5-k-7-3	16517.30	16517.30	3665.00	0.00	13492.80	18957.10	43200.00	28.82	15977.10	27964.30	43200.00	42.87
20-5-k-7-4	16517.80	16517.80	27253.00	0.00	13617.50	17922.60	43200.00	24.02	14014.20	23116.20	43200.00	39.37
20-5-k-7-5	17088.90	17378.10	43200.00	1.66	13334.70	20646.00	43200.00	35.41	14799.50	26252.10	43200.00	43.63
30-5-k-7-1	19409.60	21287.20	43200.00	8.82	17553.50	26369.50	43200.00	33.43	17448.56	25603.17	43200.00	31.85
30-5-k-7-2	19864.20	21894.30	43200.00	9.27	18483.60	24898.60	43200.00	25.76	19349.60	44108.50	43127.00	56.13
30-5-k-7-3	21195.40	22874.80	43200.00	7.34	19644.80	30793.80	43200.00	36.21	20018.30	38216.60	43200.00	47.62
30-5-k-7-4	18569.90	20743.20	43200.00	10.48	19199.10	27976.00	43200.00	31.37	19015.62	32350.49	43200.00	41.22
30-5-k-7-5	19479.50	21895.60	43175.00	11.03	17068.30	23526.10	43200.00	27.45	19899.00	35180.90	43200.00	43.44
40-5-k-7-1	22106.40	25816.00	43200.00	14.37	19985.30	55343.10	43160.00	63.89	22134.78	44367.17	43200.00	50.11
40-5-k-7-2	22441.20	25698.40	43200.00	12.67	21988.40	68614.80	43200.00	67.95	22762.73	49995.01	43200.00	54.47
40-5-k-7-3	22349.70	25370.00	43200.00	11.90	24485.33	48114.23	43200.00	49.11	21438.07	48978.91	43200.00	56.23
40-5-k-7-4	23562.90	26630.60	43200.00	11.52	21754.90	74820.00	43200.00	70.92	24887.07	52504.37	43200.00	52.60
40-5-k-7-5	24631.30	27688.80	43200.00	11.04	24046.60	64845.50	43200.00	62.92	22698.07	56901.65	43200.00	60.11
50-5-k-7-1	26602.30	30914.00	43200.00	13.95	25428.25	56645.99	43200.00	55.11	26885.94	66648.34	43200.00	59.66
50-5-k-7-2	26582.00	33456.90	43174.00	20.55	27007.06	55444.59	43200.00	51.29	25483.34	50592.30	43200.00	49.63
50-5-k-7-3	26917.60	32146.90	43200.00	16.27	26894.75	65805.60	43200.00	59.13	26496.31	61777.36	43200.00	57.11
50-5-k-7-4	26462.20	32526.10	43200.00	18.64	25808.48	56424.31	43200.00	54.26	26588.46	60414.59	43200.00	55.99
50-5-k-7-5	25402.30	31290.10	43200.00	18.82	25533.58	61437.87	43200.00	58.44	24707.12	52490.16	43200.00	52.93