Appendix

Hypervolume (HV) is also a composite evaluation metric that calculates the volume of the area enclosed by reference point in the approximate PF and objective space, and is defined as follows:

$$HV = VOL(P_t, Z^*) \tag{1}$$

where P_t is the approximate solutions on PF, Z^* is the reference point set in the objective space to support the calculation of HV.

Mean hypervolume is defined as the average of the HV of PF(t) obtained by convergence in all environments during the optimization process:

$$MHV = \frac{1}{|T|} \sum_{t \in T} HV(PF_t, Z^*) \tag{2}$$

where T is a set of discrete time steps in a run and $|T|$ calculates the cardinality of T.

Table 1: MHV (variance) for 30 independent runs of different response strategies.

Problem	M	DMOEA-LP	DMOEA-NDMDP	DMOEA-LMS	DMOEA-HRS	DMOEA-MABH
DF1	2	5.1312e-1 (3.00e-3) -	5.1310e-1 (2.21e-3) -	5.0708e-1 (2.98e-3) -	5.1327e-1 (2.90e-3) -	5.1774e-1 (2.69e-3)
DF2	2	6.8167e-1 (5.04e-3) -	6.8953e-1 (4.77e-3) -	6.8895e-1 (4.49e-3) -	6.9012e-1 (3.70e-3) -	6.9629e-1 (4.21e-3)
DF3	2	4.6962e-1 (5.95e-3) =	4.5286e-1 (9.83e-3) -	4.1490e-1 (1.31e-2) -	4.6152e-1 (8.51e-3) -	4.6771e-1 (5.66e-3)
DF4	2	7.4083e-1 (1.90e-3) =	7.3923e-1 (1.50e-3) -	7.3099e-1 (1.82e-3) -	7.4049e-1 (1.93e-3) =	7.4089e-1 (2.10e-3)
DF5	2	5.7088e-1 (9.57e-4) =	5.6931e-1 (8.72e-4) -	5.5743e-1 (2.22e-3) -	5.7001e-1 (7.74e-4) -	5.7058e-1 (9.11e-4)
DF6	2	1.2338e-1 (6.87e-2) -	1.7565e-1 (8.23e-2) -	3.3968e-1 (3.89e-2) +	1.4771e-1 (7.82e-2) -	3.1292e-1 (1.00e-1)
DF7	2	4.4189e-1 (1.11e-2) -	4.4787e-1 (9.07e-3) =	4.2947e-1 (1.21e-2) -	4.4972e-1 (7.30e-3) =	4.5015e-1 (7.09e-3)
DF8	2	5.7311e-1 (3.80e-3) -	5.7892e-1 (2.44e-3) -	5.7329e-1 (2.93e-3) -	5.8212e-1 (2.66e-3) -	5.9146e-1 (1.58e-3)
DF9	2	4.2283e-1 (2.34e-2) -	4.6245e-1 (1.10e-2) -	4.4409e-1 (1.57e-2) -	4.6503e-1 (1.82e-2) -	4.7882e-1 (1.46e-2)
DF10	3	3.7849e-1 (3.41e-2) -	3.8617e-1 (2.31e-2) -	4.3015e-1 (1.66e-2) -	4.1772e-1 (1.62e-2) -	4.4013e-1 (1.19e-2)
DF11	3	3.3579e-2 (2.11e-3) =	3.4169e-2 (2.01e-3) =	3.2339e-2 (2.32e-3) -	3.3325e-2 (2.00e-3) =	3.3674e-2 (2.67e-3)
DF12	3	2.8865e-1 (3.58e-3) -	2.8547e-1 (6.50e-3) -	2.8226e-1 (4.86e-3) -	2.9193e-1 (4.64e-3) -	3.0090e-1 (2.94e-3)
DF13	3	5.6886e-1 (2.71e-3) +	5.6191e-1 (4.47e-3) -	5.3511e-1 (6.65e-3) -	5.6384e-1 (3.52e-3) =	5.6458e-1 (3.37e-3)
DF14	3	4.4345e-1 (8.54e-4) +	4.4151e-1 (1.39e-3) -	4.3346e-1 (1.39e-3) -	4.4284e-1 (9.48e-4) =	4.4290e-1 (1.18e-3)
FDA1	2	7.1178e-1 (1.09e-3) =	7.1021e-1 (8.70e-4) -	6.9828e-1 (1.54e-3) -	7.1121e-1 (9.48e-4) =	7.1159e-1 (8.13e-4)
FDA2	2	5.9330e-1 (1.04e-2) =	5.9520e-1 (1.35e-2) +	5.8975e-1 (2.11e-2) -	5.9326e-1 (4.62e-3) =	5.9424e-1 (4.13e-3)
FDA3	2	5.4387e-1 (3.68e-3) -	5.4695e-1 (3.61e-3) -	5.3324e-1 (4.83e-3) -	5.4762e-1 (4.54e-3) -	5.6933e-1 (5.89e-3)
FDA4	3	5.1564e-1 (3.42e-3) -	5.1647e-1 (2.52e-3) -	5.0833e-1 (3.30e-3) -	5.1633e-1 (3.15e-3) -	5.2020e-1 (2.80e-3)
FDA5	3	5.1914e-1 (2.43e-3) =	5.1800e-1 (2.38e-3) -	5.1304e-1 (2.82e-3) -	5.1769e-1 (3.36e-3) -	5.2058e-1 (2.69e-3)
MIDP1	2	4.2913e-1 (6.02e-3) =	4.2947e-1 (3.94e-3) =	3.9236e-1 (8.15e-3) -	4.2907e-1 (4.76e-3) =	4.2927e-1 (6.13e-3)
MIDP2	2	1.8463e-1 (1.61e-1) -	2.5295e-1 (1.18e-1) -	6.4582e-2 (6.48e-2) -	2.4020e-1 (1.21e-1) -	3.2831e-1 (1.15e-1)
dMOP1	2	5.1970e-1 (5.06e-3) =	5.1917e-1 (4.66e-3) =	5.1888e-1 (5.96e-3) =	5.1925e-1 (5.93e-3) =	5.1783e-1 (4.97e-3)
dMOP2	2	5.1317e-1 (3.67e-3) -	5.1278e-1 (2.61e-3) -	5.0707e-1 (2.62e-3) -	5.1371e-1 (2.48e-3) -	5.1679e-1 (2.60e-3)
dMOP3	2	7.0885e-1 (2.88e-3) -	7.0939e-1 (1.68e-3) -	7.0643e-1 (1.66e-3) -	7.0927e-1 (2.47e-3) -	7.1175e-1 (2.28e-3)
+/-/=		2/13/9	1/19/4	1/22/1	0/15/9	

Table 2: MHV (variance) for 30 independent runs of different training strategies.

Problem	M	DMOEA-URT	DMOEA-DLT	DMOEA-IMT	DMOEA-MABH
DF1	2	5.1487e-1 (3.64e-3) -	5.1374e-1 (2.81e-3) -	5.1564e-1 (3.55e-3) -	5.1774e-1 (2.69e-3)
DF2	2	6.9179e-1 (3.80e-3) -	6.8894e-1 (3.99e-3) -	6.9466e-1 (3.18e-3) =	6.9629e-1 (4.21e-3)
DF3	2	4.6396e-1 (8.11e-3) =	4.5635e-1 (9.72e-3) -	4.6577e-1 (8.38e-3) =	4.6771e-1 (5.66e-3)
DF4	2	7.3983e-1 (1.33e-3) -	7.3819e-1 (1.54e-3) -	7.4168e-1 (1.13e-3) =	7.4089e-1 (2.10e-3)
DF5	2	5.7022e-1 (7.60e-4) =	5.6862e-1 (9.38e-4) -	5.7074e-1 (6.92e-4) =	5.7058e-1 (9.11e-4)
DF6	2	3.0453e-1 (1.03e-1) =	3.1126e-1 (1.27e-1) =	3.0290e-1 (8.58e-2) =	3.1292e-1 (1.00e-1)
DF7	2	4.4783e-1 (8.58e-3) =	4.4729e-1 (7.42e-3) -	4.4826e-1 (8.28e-3) =	4.5015e-1 (7.09e-3)
DF8	2	5.8104e-1 (2.85e-3) -	5.7721e-1 (2.72e-3) -	5.9115e-1 (1.90e-3) =	5.9146e-1 (1.58e-3)
DF9	2	4.7937e-1 (1.63e-2) =	4.6444e-1 (1.28e-2) -	4.7746e-1 (1.42e-2) =	4.7882e-1 (1.46e-2)
DF10	3	4.2975e-1 (1.64e-2) -	4.1655e-1 (2.06e-2) -	4.3751e-1 (1.50e-2) =	4.4013e-1 (1.19e-2)
DF11	3	3.3886e-2 (2.01e-3) =	3.3765e-2 (2.17e-3) =	3.3878e-2 (1.85e-3) =	3.3674e-2 (2.67e-3)
DF12	3	2.9378e-1 (4.29e-3) -	2.8773e-1 (3.47e-3) -	2.9810e-1 (2.73e-3) -	3.0090e-1 (2.94e-3)
DF13	3	5.6508e-1 (3.40e-3) =	5.5676e-1 (4.10e-3) -	5.6592e-1 (4.18e-3) =	5.6458e-1 (3.37e-3)
DF14	3	4.4289e-1 (1.32e-3) =	4.4112e-1 (1.48e-3) -	4.4316e-1 (1.07e-3) =	4.4290e-1 (1.18e-3)
FDA1	2	7.1167e-1 (7.31e-4) =	7.0963e-1 (7.05e-4) -	7.1190e-1 (9.00e-4) =	7.1159e-1 (8.13e-4)
FDA2	2	5.9233e-1 (4.02e-3) -	5.9007e-1 (5.73e-3) -	5.9451e-1 (2.24e-3) =	5.9424e-1 (4.13e-3)
FDA3	2	5.5039e-1 (3.48e-3) -	5.4997e-1 (3.92e-3) -	5.6944e-1 (6.08e-3) =	5.6933e-1 (5.89e-3)
FDA4	3	5.1976e-1 (2.19e-3) =	5.1434e-1 (3.52e-3) -	5.1833e-1 (3.71e-3) -	5.2020e-1 (2.80e-3)
FDA5	3	5.2076e-1 (2.98e-3) =	5.1694e-1 (2.73e-3) -	5.2089e-1 (3.52e-3) =	5.2058e-1 (2.69e-3)
MIDP1	2	4.2728e-1 (5.29e-3) -	4.2776e-1 (7.16e-3) =	4.3000e-1 (4.16e-3) =	4.2927e-1 (6.13e-3)
MIDP2	2	3.0583e-1 (1.38e-1) =	3.0089e-1 (1.20e-1) =	3.0350e-1 (1.35e-1) =	3.2831e-1 (1.15e-1)
dMOP1	2	5.1899e-1 (5.90e-3) =	5.1658e-1 (6.92e-3) =	5.1822e-1 (6.03e-3) =	5.1783e-1 (4.97e-3)
dMOP2	2	5.1532e-1 (3.17e-3) =	5.1267e-1 (3.50e-3) -	5.1625e-1 (2.95e-3) =	5.1679e-1 (2.60e-3)
dMOP3	2	7.1082e-1 (2.36e-3) =	7.0842e-1 (1.91e-3) -	7.1203e-1 (1.89e-3) =	7.1175e-1 (2.28e-3)
+/-/=		0/9/15	0/19/5	0/3/21	

Table 3: MHV (variance) for 30 independent runs of different optimizers.

Problem	M	DMOEA-DErand	DMOEA-GA	DMOEA-DElbest	DMOEA-HBD	DMOEA-MABH
DF1	2	5.0105e-1 (5.21e-3) -	5.0685e-1 (3.14e-3) -	3.6908e-1 (1.09e-1) -	5.1375e-1 (2.74e-3) -	5.1774e-1 (2.69e-3)
DF2	2	6.6736e-1 (5.85e-3) -	6.6693e-1 (4.94e-3) -	5.9279e-1 (2.08e-2) -	6.8888e-1 (3.61e-3) -	6.9629e-1 (4.21e-3)
DF3	2	4.6505e-1 (6.34e-3) =	3.6543e-1 (3.14e-2) -	3.2752e-1 (1.37e-1) -	4.6002e-1 (1.28e-2) -	4.6771e-1 (5.66e-3)
DF4	2	7.3516e-1 (2.57e-3) -	7.3405e-1 (3.92e-3) -	7.1862e-1 (2.01e-2) -	7.4208e-1 (1.45e-3) +	7.4089e-1 (2.10e-3)
DF5	2	5.6586e-1 (1.58e-3) -	5.6673e-1 (1.47e-3) -	4.2023e-1 (8.28e-2) -	5.7116e-1 (6.61e-4) +	5.7058e-1 (9.11e-4)
DF6	2	3.4347e-1 (1.35e-1) =	3.3012e-1 (8.01e-2) =	8.2823e-2 (7.60e-2) -	2.8307e-1 (4.15e-2) =	3.1292e-1 (1.00e-1)
DF7	2	4.4946e-1 (8.00e-3) =	3.7799e-1 (3.67e-3) -	4.2999e-1 (1.60e-2) -	4.3768e-1 (8.76e-3) -	4.5015e-1 (7.09e-3)
DF8	2	5.8334e-1 (4.30e-3) -	5.6454e-1 (3.46e-3) -	5.5007e-1 (9.55e-3) -	5.9055e-1 (2.70e-3) =	5.9146e-1 (1.58e-3)
DF9	2	4.8078e-1 (1.26e-2) =	3.9376e-1 (2.52e-2) -	3.5080e-1 (7.10e-2) -	4.6210e-1 (2.13e-2) -	4.7882e-1 (1.46e-2)
DF10	3	3.6870e-1 (2.18e-2) -	4.1170e-1 (1.27e-2) -	3.3307e-1 (4.09e-2) -	4.3409e-1 (1.54e-2) =	4.4013e-1 (1.19e-2)
DF11	3	2.7692e-2 (3.53e-3) -	2.8695e-2 (2.06e-3) -	2.3700e-2 (3.70e-3) -	3.0967e-2 (2.14e-3) -	3.3674e-2 (2.67e-3)
DF12	3	2.8327e-1 (6.29e-3) -	2.5176e-1 (5.88e-3) -	2.4289e-1 (3.27e-2) -	2.9982e-1 (4.54e-3) =	3.0090e-1 (2.94e-3)
DF13	3	5.2661e-1 (7.56e-3) -	5.7945e-1 (5.08e-3) +	4.9397e-1 (2.16e-2) -	5.6828e-1 (4.06e-3) +	5.6458e-1 (3.37e-3)
DF14	3	4.3085e-1 (1.28e-3) -	4.4565e-1 (1.42e-3) +	4.0410e-1 (2.08e-2) -	4.4274e-1 (1.21e-3) =	4.4290e-1 (1.18e-3)
FDA1	2	7.0806e-1 (1.11e-3) -	7.0646e-1 (1.16e-3) -	4.6033e-1 (1.62e-1) -	7.1182e-1 (8.84e-4) =	7.1159e-1 (8.13e-4)
FDA2	2	5.8992e-1 (4.18e-3) -	5.9236e-1 (3.91e-3) -	5.1634e-1 (1.19e-1) -	5.9517e-1 (2.72e-3) =	5.9424e-1 (4.13e-3)
FDA3	2	5.4155e-1 (3.44e-3) -	5.5795e-1 (3.36e-3) -	4.7059e-1 (3.82e-2) -	5.7741e-1 (1.47e-3) +	5.6933e-1 (5.89e-3)
FDA4	3	4.9773e-1 (5.62e-3) -	5.1275e-1 (4.41e-3) -	4.5267e-1 (1.77e-2) -	5.1539e-1 (3.35e-3) -	5.2020e-1 (2.80e-3)
FDA5	3	4.9296e-1 (9.14e-3) -	5.1693e-1 (2.94e-3) -	4.4824e-1 (2.36e-2) -	5.1619e-1 (3.32e-3) -	5.2058e-1 (2.69e-3)
MIDP1	2	4.1471e-1 (6.40e-3) -	4.2325e-1 (3.06e-3) -	6.2645e-2 (3.94e-2) -	4.2984e-1 (3.00e-3) =	4.2927e-1 (6.13e-3)
MIDP2	2	9.1988e-3 (2.00e-2) -	2.9532e-1 (9.89e-2) =	2.4720e-4 (1.35e-3) -	3.2405e-1 (9.81e-2) =	3.2831e-1 (1.15e-1)
dMOP1	2	4.9032e-1 (5.40e-3) -	5.0511e-1 (4.97e-3) -	5.0470e-1 (2.88e-2) =	5.1316e-1 (5.77e-3) -	5.1783e-1 (4.97e-3)
dMOP2	2	4.9985e-1 (4.18e-3) -	5.0599e-1 (4.96e-3) -	3.7089e-1 (9.98e-2) -	5.1391e-1 (2.59e-3) -	5.1679e-1 (2.60e-3)
dMOP3	2	6.9826e-1 (3.15e-3) -	7.0494e-1 (1.92e-3) -	6.2410e-1 (7.86e-2) -	7.1022e-1 (2.03e-3) -	7.1175e-1 (2.28e-3)
+/-/=		0/20/4	2/20/2	0/23/1	4/11/9	

Table 4: MHV (variance) for 30 independent runs of the comparison algorithms with $\tau_t = 10$, $n_t = 10$.

Problem	M	DNSGA-II	MOEAD-PPS	SGEA	MOEAD-HMPS	MDMEA-HCR	DMOEA-MABH
DF1	2	4.5528e-1 (5.53e-3) -	4.8494e-1 (4.85e-3) -	5.1127e-1 (1.83e-3) -	4.9390e-1 (4.30e-3) -	5.0338e-1 (3.59e-3) -	5.1774e-1 (2.69e-3)
DF2	2	6.0081e-1 (9.53e-3) -	6.3861e-1 (1.01e-2) -	6.3414e-1 (9.15e-3) -	6.6425e-1 (5.38e-3) -	6.7765e-1 (3.96e-3) -	6.9629e-1 (4.21e-3)
DF3	2	2.5656e-1 (8.56e-3) -	4.3013e-1 (2.86e-2) -	2.7489e-1 (1.35e-2) -	4.4514e-1 (6.17e-3) -	4.7058e-1 (4.04e-3) +	4.6771e-1 (5.66e-3)
DF4	2	7.2415e-1 (4.45e-3) -	7.3281e-1 (6.07e-3) -	7.4079e-1 (1.96e-3) =	7.2760e-1 (3.49e-3) -	7.3777e-1 (3.85e-3) -	7.4089e-1 (2.10e-3)
DF5	2	5.1103e-1 (4.76e-3) -	5.1553e-1 (3.91e-2) -	5.5899e-1 (2.02e-3) -	5.6313e-1 (1.86e-3) -	5.6905e-1 (1.92e-3) -	5.7058e-1 (9.11e-4)
DF6	2	2.3664e-1 (3.85e-2) -	8.2636e-2 (6.04e-2) -	4.2961e-1 (6.42e-2) +	2.7525e-1 (8.01e-2) =	4.4928e-1 (1.22e-1) +	3.1292e-1 (1.00e-1)
DF7	2	3.7332e-1 (2.45e-2) -	4.4417e-1 (5.06e-3) -	3.8577e-1 (1.85e-2) -	4.4346e-1 (3.51e-3) -	4.4779e-1 (7.20e-3) =	4.5015e-1 (7.09e-3)
DF8	2	5.8109e-1 (2.02e-3) -	5.4434e-1 (2.17e-2) -	5.8678e-1 (1.66e-3) -	5.8118e-1 (3.13e-3) -	5.8702e-1 (3.19e-3) -	5.9146e-1 (1.58e-3)
DF9	2	2.6945e-1 (1.05e-2) -	3.5962e-1 (2.83e-2) -	3.2618e-1 (8.04e-3) -	4.5465e-1 (1.50e-2) -	4.7795e-1 (7.57e-3) =	4.7882e-1 (1.46e-2)
DF10	3	4.6406e-1 (1.07e-2) +	2.6110e-1 (6.59e-2) -	4.8246e-1 (7.16e-3) +	3.5055e-1 (2.19e-2) -	3.8900e-1 (2.43e-2) -	4.4013e-1 (1.19e-2)
DF11	3	2.7125e-2 (1.63e-3) -	2.4926e-2 (3.57e-3) -	3.4289e-2 (1.84e-3) =	2.3897e-2 (3.27e-3) -	2.6858e-2 (2.29e-3) -	3.3674e-2 (2.67e-3)
DF12	3	2.4412e-1 (5.15e-3) -	2.4508e-1 (2.67e-2) -	2.8209e-1 (3.92e-3) -	2.7266e-1 (4.47e-3) -	2.8327e-1 (6.28e-3) -	3.0092e-1 (2.94e-3)
DF13	3	5.6100e-1 (5.95e-3) -	4.5938e-1 (3.98e-2) -	6.2536e-1 (3.45e-3) +	5.2129e-1 (1.07e-2) -	5.5574e-1 (4.86e-3) -	5.6458e-1 (3.37e-3)
DF14	3	1.0336e-1 (2.47e-2) -	3.8679e-1 (3.08e-2) -	1.6084e-2 (1.12e-2) -	4.2479e-1 (2.74e-3) -	4.3756e-1 (1.34e-3) -	4.4290e-1 (1.18e-3)
FDA1	2	6.7834e-1 (2.34e-3) -	6.5951e-1 (3.94e-2) -	7.0651e-1 (9.95e-4) -	7.0088e-1 (1.61e-3) -	7.0987e-1 (1.77e-3) -	7.1159e-1 (8.13e-4)
FDA2	2	5.9004e-1 (2.94e-3) -	5.6210e-1 (2.61e-2) -	5.9622e-1 (1.90e-3) =	5.7542e-1 (5.47e-3) -	5.8525e-1 (5.78e-3) -	5.9424e-1 (4.13e-3)
FDA3	2	5.3780e-1 (2.53e-3) -	4.9791e-1 (2.18e-2) -	5.5497e-1 (3.02e-3) -	5.3432e-1 (3.54e-3) -	5.6831e-1 (2.36e-3) =	5.6933e-1 (5.89e-3)
FDA4	3	3.4121e-1 (1.36e-2) -	4.6956e-1 (8.13e-3) -	4.8985e-1 (4.61e-3) -	4.8431e-1 (6.00e-3) -	4.9901e-1 (5.46e-3) -	5.2020e-1 (2.80e-3)
FDA5	3	3.6879e-1 (1.11e-2) -	4.5288e-1 (1.73e-2) -	4.8651e-1 (7.37e-3) -	4.7370e-1 (9.23e-3) -	4.9922e-1 (4.65e-3) -	5.2058e-1 (2.69e-3)
MIDP1	2	3.8012e-1 (8.26e-3) -	3.9847e-1 (1.22e-2) -	4.2063e-1 (8.68e-3) -	3.9714e-1 (6.88e-3) -	4.0623e-1 (8.30e-3) -	4.2927e-1 (6.13e-3)
MIDP2	2	2.0885e-3 (3.59e-3) -	9.0546e-6 (4.96e-5) -	2.4191e-1 (4.63e-2) -	4.7798e-3 (7.86e-3) -	1.8051e-2 (3.61e-2) -	3.2831e-1 (1.15e-1)
dMOP1	2	4.9358e-1 (8.82e-3) -	4.8951e-1 (1.68e-2) -	5.0750e-1 (9.40e-3) -	4.8560e-1 (5.82e-3) -	4.9993e-1 (7.69e-3) -	5.1783e-1 (4.97e-3)
dMOP2	2	4.5443e-1 (4.70e-3) -	4.8387e-1 (5.19e-3) -	5.1095e-1 (2.07e-3) -	4.9449e-1 (4.92e-3) -	5.0328e-1 (4.15e-3) -	5.1679e-1 (2.60e-3)
dMOP3	2	6.6888e-1 (3.26e-3) -	6.8874e-1 (4.28e-3) -	7.0701e-1 (9.48e-4) -	6.9379e-1 (5.03e-3) -	7.0106e-1 (3.10e-3) -	7.1175e-1 (2.28e-3)
+/-/=		1/23/0	0/24/0	3/18/3	0/23/1	2/19/3	

Table 5: MIGD (variance) for 30 independent runs of the comparison algorithms with $\tau_t = 5$, $n_t = 10$.

Problem	M	DNSGA-II	MOEAD-PPS	SGEA	MOEAD-HMPS	MDMEA-HCR	DMOEA-MABH
DF1	2	2.1511e-1 (1.93e-2) -	9.8238e-2 (2.18e-2) -	3.9565e-2 (4.22e-3) -	5.9228e-2 (8.72e-3) -	4.7096e-2 (9.96e-3) -	2.7837e-2 (1.09e-2)
DF2	2	2.0729e-1 (1.57e-2) -	1.5557e-1 (2.35e-2) -	1.3791e-1 (1.23e-2) -	8.1534e-2 (8.90e-3) -	7.0276e-2 (8.61e-3) -	5.6640e-2 (8.60e-3)
DF3	2	3.7499e-1 (3.73e-2) -	1.9485e-1 (1.19e-1) -	3.0681e-1 (2.44e-2) -	1.1994e-1 (3.61e-2) -	4.7379e-2 (6.85e-3) +	7.7017e-2 (4.72e-2)
DF4	2	2.9612e-1 (4.48e-2) -	2.1888e-1 (5.54e-2) -	1.8643e-1 (1.49e-2) =	2.3396e-1 (2.70e-2) -	1.8939e-1 (2.08e-2) =	1.9139e-1 (1.62e-2)
DF5	2	2.0202e-1 (2.68e-2) -	6.0558e-1 (3.24e-1) -	4.2112e-2 (3.60e-3) -	3.5770e-2 (5.35e-3) -	3.1594e-2 (4.72e-3) -	2.5683e-2 (2.70e-3)
DF6	2	6.4682e+0 (6.25e-1) -	6.4144e+0 (8.87e-1) -	2.8308e+0 (8.13e-1) =	4.3569e+0 (1.02e+0) -	2.7297e+0 (8.90e-1) =	2.5583e+0 (8.77e-1)
DF7	2	3.2841e-1 (7.32e-2) -	1.5644e-1 (4.74e-2) -	2.9608e-1 (4.56e-2) -	9.0647e-2 (1.87e-2) -	1.1983e-1 (6.45e-2) -	8.0805e-2 (4.39e-2)
DF8	2	8.5793e-2 (7.03e-3) +	2.2671e-1 (5.52e-2) -	7.6387e-2 (2.75e-3) +	1.2862e-1 (1.27e-2) -	9.8744e-2 (1.32e-2) -	9.2788e-2 (8.28e-3)
DF9	2	1.0093e+0 (8.56e-2) -	5.6024e-1 (1.61e-1) -	6.4831e-1 (7.07e-2) -	1.8261e-1 (3.79e-2) =	1.6726e-1 (1.69e-2) +	2.0695e-1 (6.26e-2)
DF10	3	1.1910e-1 (1.09e-2) +	3.6684e-1 (7.11e-2) -	1.0815e-1 (1.60e-2) +	2.3155e-1 (1.97e-2) -	1.8266e-1 (1.20e-2) +	1.9608e-1 (1.80e-2)
DF11	3	6.8276e-1 (4.69e-3) -	7.1354e-1 (2.50e-2) -	6.7164e-1 (2.75e-3) -	6.9067e-1 (7.86e-3) -	6.7839e-1 (1.01e-2) -	6.6429e-1 (7.72e-3)
DF12	3	2.7040e-1 (7.01e-2) -	3.0769e-1 (1.16e-1) -	1.7941e-1 (8.96e-3) =	1.7988e-1 (1.31e-2) =	1.9454e-1 (1.69e-2) -	1.7733e-1 (1.15e-2)
DF13	3	5.1290e-1 (5.07e-2) -	6.3633e-1 (1.71e-1) -	3.1246e-1 (4.66e-2) -	3.8026e-1 (2.36e-2) -	2.7110e-1 (1.56e-2) +	2.9171e-1 (1.15e-2)
DF14	3	5.6695e-1 (9.03e-2) -	2.3748e-1 (1.45e-1) -	1.0935e+0 (1.62e-1) -	7.7818e-2 (3.44e-3) -	7.4228e-2 (4.74e-3) -	7.0493e-2 (2.86e-3)
FDA1	2	1.2173e-1 (1.72e-2) -	2.8809e-1 (1.66e-1) -	2.9826e-2 (2.55e-3) -	3.8684e-2 (4.24e-3) -	2.5303e-2 (3.37e-3) -	2.1427e-2 (3.03e-3)
FDA2	2	4.4394e-2 (8.42e-3) -	9.6992e-2 (4.83e-2) -	2.6667e-2 (1.88e-2) +	6.8713e-2 (2.46e-2) -	5.5385e-2 (3.32e-2) -	3.6909e-2 (4.61e-2)
FDA3	2	1.4002e-1 (1.05e-1) -	3.8874e-1 (1.89e-1) -	6.1308e-2 (5.12e-3) +	1.0475e-1 (6.62e-3) -	7.0348e-2 (6.84e-3) -	6.5881e-2 (8.17e-3)
FDA4	3	3.7316e-1 (2.41e-2) -	1.7056e-1 (3.30e-2) -	2.3145e-1 (3.49e-2) -	1.3727e-1 (9.59e-3) -	1.3061e-1 (7.75e-3) -	1.1775e-1 (6.91e-3)
FDA5	3	4.4805e-1 (2.14e-2) -	4.0403e-1 (8.51e-2) -	3.0828e-1 (3.08e-2) -	3.4977e-1 (3.48e-2) -	2.9875e-1 (1.78e-2) -	2.4977e-1 (1.29e-2)
MIDP1	2	1.7452e-1 (3.51e-2) -	2.5711e-1 (1.72e-1) -	5.2778e-2 (1.88e-2) -	1.2142e-1 (5.07e-2) -	1.2892e-1 (4.10e-2) -	3.6984e-2 (1.19e-2)
MIDP2	2	4.7553e+0 (2.77e-1) -	7.3774e+0 (5.71e-1) -	1.7095e+0 (2.91e-1) =	5.7737e+0 (4.18e-1) -	4.4912e+0 (7.69e-1) -	1.8631e+0 (5.43e-1)
dMOP1	2	2.2508e-1 (6.80e-2) -	3.0757e-1 (2.54e-1) -	7.9931e-2 (3.59e-2) -	2.8813e-1 (9.36e-2) -	1.8712e-1 (6.74e-2) -	2.3738e-2 (1.53e-2)
dMOP2	2	2.1718e-1 (2.16e-2) -	1.0769e-1 (3.48e-2) -	3.9087e-2 (3.45e-3) -	6.2384e-2 (8.10e-3) -	4.6945e-2 (7.80e-3) -	2.6210e-2 (6.27e-3)
dMOP3	2	1.4818e-1 (9.60e-3) -	8.2157e-2 (3.02e-2) -	3.4944e-2 (7.15e-3) -	4.1880e-2 (5.50e-3) -	2.9365e-2 (5.19e-3) -	2.1134e-2 (4.75e-3)
+/-/=		2/22/0	0/24/0	4/16/4	0/22/2	4/18/2	

Table 6: MHV (variance) for 30 independent runs of the comparison algorithms with $\tau_t = 5$, $n_t = 10$.

Problem	M	DNSGA-II	MOEAD-PPS	SGEA	MOEAD-HMPS	MDMEA-HCR	DMOEA-MABH
DF1	2	3.4996e-1 (1.25e-2) -	4.4916e-1 (1.64e-2) -	4.9493e-1 (3.88e-3) -	4.8200e-1 (6.38e-3) -	5.0296e-1 (5.34e-3) -	5.0761e-1 (6.67e-3)
DF2	2	5.3444e-1 (1.33e-2) -	5.9144e-1 (1.90e-2) -	6.1737e-1 (1.44e-2) -	6.5130e-1 (8.95e-3) -	6.7558e-1 (5.83e-3) =	6.7793e-1 (5.39e-3)
DF3	2	2.2888e-1 (1.27e-2) -	3.6719e-1 (3.72e-2) -	2.6622e-1 (1.03e-2) -	3.8430e-1 (2.85e-2) -	4.5759e-1 (4.74e-3) +	4.3600e-1 (2.92e-2)
DF4	2	6.7578e-1 (7.72e-3) -	6.8625e-1 (1.91e-2) -	7.0669e-1 (2.30e-3) +	6.7483e-1 (6.33e-3) -	6.9906e-1 (4.57e-3) -	7.0155e-1 (3.63e-3)
DF5	2	3.6435e-1 (2.38e-2) -	3.3949e-1 (8.11e-2) -	5.4583e-1 (4.44e-3) -	5.4950e-1 (5.86e-3) -	5.5641e-1 (5.09e-3) -	5.6396e-1 (2.58e-3)
DF6	2	1.1588e-1 (3.09e-2) -	5.1893e-2 (3.55e-2) -	3.2229e-1 (6.10e-2) +	1.8102e-1 (1.04e-1) -	3.2422e-1 (1.35e-1) =	2.9701e-1 (1.00e-1)
DF7	2	3.2646e-1 (1.00e-2) -	3.9701e-1 (1.44e-2) -	3.6584e-1 (6.79e-3) -	4.1829e-1 (5.57e-3) -	4.0931e-1 (2.65e-2) =	4.2218e-1 (1.48e-2)
DF8	2	6.1455e-1 (2.94e-3) =	5.1501e-1 (3.06e-2) -	6.2328e-1 (1.79e-3) +	5.8906e-1 (5.86e-3) -	6.0955e-1 (5.99e-3) -	6.1560e-1 (2.89e-3)
DF9	2	1.8065e-1 (2.20e-2) -	2.5888e-1 (3.58e-2) -	2.9311e-1 (1.89e-2) -	4.0996e-1 (2.32e-2) -	4.1541e-1 (1.49e-2) -	4.3029e-1 (2.81e-2)
DF10	3	4.2976e-1 (1.52e-2) +	1.7657e-1 (4.77e-2) -	4.5345e-1 (1.76e-2) +	2.4150e-1 (4.14e-2) -	3.1919e-1 (2.98e-2) -	3.7311e-1 (2.76e-2)
DF11	3	9.2813e-3 (1.59e-3) -	7.7556e-3 (3.03e-3) -	1.6780e-2 (9.37e-4) +	6.2433e-3 (2.21e-3) -	1.2310e-2 (2.82e-3) =	1.3052e-2 (3.77e-3)
DF12	3	1.9158e-1 (2.92e-2) -	1.6452e-1 (3.87e-2) -	2.5702e-1 (7.01e-3) -	2.3081e-1 (1.61e-2) -	2.1579e-1 (1.97e-2) -	2.7030e-1 (9.84e-3)
DF13	3	4.6081e-1 (1.92e-2) -	3.7570e-1 (5.92e-2) -	5.5786e-1 (2.08e-2) -	5.0968e-1 (1.65e-2) -	5.7897e-1 (9.64e-3) +	5.6887e-1 (6.44e-3)
DF14	3	7.4207e-2 (1.94e-2) -	3.4763e-1 (5.56e-2) -	1.3335e-2 (8.72e-3) -	4.4972e-1 (5.34e-3) -	4.6047e-1 (4.80e-3) -	4.7401e-1 (3.38e-3)
FDA1	2	5.9076e-1 (1.60e-2) -	5.2658e-1 (7.59e-2) -	6.9537e-1 (2.18e-3) -	6.8116e-1 (4.78e-3) -	6.9747e-1 (4.00e-3) -	7.0249e-1 (3.16e-3)
FDA2	2	5.6907e-1 (9.99e-3) -	5.1697e-1 (4.13e-2) -	5.9332e-1 (1.52e-2) +	5.4425e-1 (2.69e-2) -	5.5922e-1 (3.34e-2) -	5.8869e-1 (1.30e-2)
FDA3	2	4.9354e-1 (4.05e-2) -	4.0754e-1 (5.01e-2) -	5.5576e-1 (4.33e-3) +	5.1410e-1 (6.11e-3) -	5.4561e-1 (6.04e-3) -	5.5130e-1 (7.94e-3)
FDA4	3	2.4376e-1 (1.30e-2) -	4.2480e-1 (2.97e-2) -	3.7183e-1 (2.83e-2) -	4.6498e-1 (6.35e-3) -	4.8954e-1 (5.73e-3) -	5.0852e-1 (5.05e-3)
FDA5	3	3.5711e-1 (9.57e-3) -	4.3462e-1 (1.83e-2) -	4.2177e-1 (1.69e-2) -	4.5307e-1 (8.39e-3) -	4.7513e-1 (4.27e-3) -	4.9385e-1 (5.38e-3)
MIDP1	2	2.7625e-1 (2.27e-2) -	2.9291e-1 (5.64e-2) -	4.0662e-1 (1.13e-2) -	3.6631e-1 (2.97e-2) -	3.5365e-1 (1.98e-2) -	4.1719e-1 (6.15e-3)
MIDP2	2	0.0000e+0 (0.00e+0) -	0.0000e+0 (0.00e+0) -	1.5652e-2 (1.98e-2) -	0.0000e+0 (0.00e+0) -	2.5589e-4 (1.40e-3) -	4.3763e-2 (6.61e-2)
dMOP1	2	4.5908e-1 (2.26e-2) -	4.7607e-1 (2.82e-2) -	5.0963e-1 (1.52e-2) -	4.7484e-1 (1.47e-2) -	4.9703e-1 (1.76e-2) -	5.2196e-1 (7.20e-3)
dMOP2	2	3.4960e-1 (1.47e-2) -	4.4197e-1 (2.35e-2) -	4.9533e-1 (3.11e-3) -	4.8141e-1 (6.34e-3) -	5.0402e-1 (3.76e-3) -	5.0856e-1 (4.11e-3)
dMOP3	2	5.8537e-1 (8.49e-3) -	6.5362e-1 (2.36e-2) -	6.9177e-1 (5.21e-3) -	6.8776e-1 (4.69e-3) -	7.0603e-1 (2.47e-3) =	7.0598e-1 (2.69e-3)
+/-/=		1/22/1	0/24/0	7/17/0	0/24/0	2/17/5	

Table 7: MIGD (variance) for 30 independent runs of the comparison algorithms with $\tau_t = 15$, $n_t = 10$.

Problem	M	DNSGA-II	MOEAD-PPS	SGEA	MOEAD-HMPS	MDMEA-HCR	DMOEA-MABH
DF1	2	2.1611e-2 (1.38e-3) -	2.2470e-2 (4.85e-3) -	8.3230e-3 (5.42e-4) -	2.2555e-2 (4.12e-3) -	1.6369e-2 (4.43e-3) -	6.3079e-3 (8.79e-4)
DF2	2	6.7538e-2 (8.14e-3) -	3.1121e-2 (3.73e-3) -	5.2907e-2 (7.13e-3) -	2.3940e-2 (3.01e-3) -	2.1067e-2 (4.08e-3) -	9.8070e-3 (8.06e-4)
DF3	2	2.7521e-1 (1.80e-2) -	3.1173e-2 (1.43e-2) -	2.3339e-1 (2.33e-2) -	2.4052e-2 (4.24e-3) -	1.5211e-2 (3.38e-3) =	1.5871e-2 (8.54e-3)
DF4	2	1.3987e-1 (3.76e-3) -	1.3451e-1 (1.33e-2) =	1.2872e-1 (1.28e-3) +	1.3906e-1 (4.19e-3) -	1.3494e-1 (3.07e-3) -	1.3136e-1 (8.81e-4)
DF5	2	2.2294e-2 (1.03e-3) -	1.9874e-2 (2.38e-2) -	1.1870e-2 (9.98e-4) -	8.9538e-3 (6.29e-4) -	6.8223e-3 (5.28e-4) -	6.2622e-3 (1.77e-4)
DF6	2	1.4472e+0 (4.56e-1) =	2.1485e+0 (6.61e-1) -	1.5611e+0 (5.47e-1) =	1.5112e+0 (3.21e-1) =	1.0346e+0 (4.42e-1) +	1.6561e+0 (4.57e-1)
DF7	2	2.4602e-1 (6.09e-2) -	3.6101e-2 (1.60e-2) =	1.6786e-1 (3.86e-2) -	3.0939e-2 (8.94e-3) =	4.5874e-2 (3.60e-2) =	5.7519e-2 (4.53e-2)
DF8	2	6.5727e-2 (3.12e-3) -	8.5023e-2 (2.38e-2) -	5.8615e-2 (4.12e-3) -	6.8398e-2 (7.87e-3) -	5.7260e-2 (1.02e-2) =	5.3767e-2 (4.73e-3)
DF9	2	4.3302e-1 (3.00e-2) -	7.9754e-2 (2.44e-2) -	2.1986e-1 (1.79e-2) -	5.1677e-2 (1.03e-2) -	3.4110e-2 (4.41e-3) =	3.8024e-2 (9.72e-3)
DF10	3	8.0613e-2 (7.07e-3) +	2.1637e-1 (3.79e-2) -	7.5910e-2 (7.74e-3) +	1.8843e-1 (2.25e-2) -	1.4608e-1 (7.41e-3) -	1.3245e-1 (4.48e-3)
DF11	3	6.5233e-1 (2.55e-3) -	6.4804e-1 (4.31e-3) -	6.4806e-1 (1.24e-3) -	6.4964e-1 (4.32e-3) -	6.4393e-1 (4.96e-3) -	6.3826e-1 (7.67e-4)
DF12	3	1.1987e-1 (4.85e-3) -	1.1309e-1 (2.10e-2) -	1.0792e-1 (3.78e-3) -	1.0403e-1 (3.44e-3) -	1.0109e-1 (2.96e-3) =	1.0229e-1 (2.33e-3)
DF13	3	1.4164e-1 (5.25e-3) +	2.8859e-1 (2.56e-2) -	1.0391e-1 (2.94e-3) +	2.6704e-1 (1.12e-2) -	2.5404e-1 (6.65e-3) -	2.3626e-1 (1.74e-3)
DF14	3	2.4491e-1 (5.94e-2) -	6.1892e-2 (4.73e-3) -	1.0613e+0 (1.39e-1) -	5.9539e-2 (1.34e-3) -	5.5529e-2 (9.59e-4) -	5.4950e-2 (8.60e-4)
FDA1	2	1.6419e-2 (9.26e-4) -	1.9167e-2 (1.41e-2) -	8.4714e-3 (5.89e-4) -	9.9798e-3 (8.37e-4) -	6.6519e-3 (4.73e-4) -	6.0564e-3 (2.57e-4)
FDA2	2	1.0090e-2 (1.64e-3) -	1.7320e-2 (1.25e-2) -	8.4465e-3 (3.00e-3) -	1.6455e-2 (3.45e-3) -	1.2269e-2 (2.70e-3) -	8.3213e-3 (8.26e-4)
FDA3	2	3.9491e-2 (2.68e-3) -	5.5749e-2 (1.22e-2) -	3.3541e-2 (3.18e-3) -	4.2444e-2 (3.66e-3) -	1.5580e-2 (1.15e-3) -	1.4042e-2 (3.26e-3)
FDA4	3	1.1448e-1 (3.46e-3) -	9.0691e-2 (3.29e-3) -	7.1196e-2 (1.08e-3) +	8.6311e-2 (4.33e-3) -	8.6024e-2 (3.72e-3) -	7.9262e-2 (8.10e-4)
FDA5	3	1.7150e-1 (5.32e-3) -	2.6480e-1 (5.85e-2) -	1.1267e-1 (2.15e-3) +	2.2204e-1 (3.52e-2) -	1.7781e-1 (7.29e-3) -	1.5041e-1 (1.74e-3)
MIDP1	2	2.5657e-2 (5.79e-3) -	2.6701e-2 (1.13e-2) -	1.4006e-2 (6.30e-3) -	2.8516e-2 (8.92e-3) -	2.7259e-2 (1.04e-2) -	9.2530e-3 (6.29e-3)
MIDP2	2	9.4548e-1 (1.00e-1) -	2.9476e+0 (7.96e-1) -	3.9583e-1 (6.64e-2) -	1.3055e+0 (3.77e-1) -	7.5733e-1 (2.74e-1) -	2.8089e-1 (1.59e-1)
dMOP1	2	3.1179e-2 (1.48e-2) -	6.1598e-2 (3.15e-2) -	1.3912e-2 (6.67e-3) -	8.3839e-2 (3.00e-2) -	6.0953e-2 (2.72e-2) -	6.8560e-3 (3.40e-3)
dMOP2	2	2.1252e-2 (9.96e-4) -	2.1651e-2 (4.10e-3) -	8.6580e-3 (8.02e-4) -	2.1970e-2 (4.32e-3) -	1.7960e-2 (5.60e-3) -	6.8228e-3 (1.29e-3)
dMOP3	2	1.6867e-2 (7.74e-4) -	1.5954e-2 (4.01e-3) -	7.8842e-3 (5.39e-4) -	1.7497e-2 (3.55e-3) -	1.2877e-2 (2.66e-3) -	5.8787e-3 (4.65e-4)
+/-/=		2/21/1	0/22/2	5/18/1	0/22/2	1/18/5	

Table 8: MHV (variance) for 30 independent runs of the comparison algorithms with $\tau_t = 15$, $n_t = 10$.

Problem	M	DNSGA-II	MOEAD-PPS	SGEA	MOEAD-HMPS	MDMEA-HCR	DMOEA-MABH
DF1	2	4.9927e-1 (1.69e-3) -	5.0271e-1 (3.90e-3) -	5.1953e-1 (7.66e-4) -	5.0405e-1 (3.09e-3) -	5.1249e-1 (3.58e-3) -	5.2249e-1 (1.07e-3)
DF2	2	6.4593e-1 (7.81e-3) -	6.7989e-1 (4.72e-3) -	6.6739e-1 (6.30e-3) -	6.8970e-1 (3.38e-3) -	6.9705e-1 (3.86e-3) -	7.0990e-1 (1.21e-3)
DF3	2	2.6937e-1 (8.43e-3) -	4.6076e-1 (1.26e-2) -	2.9024e-1 (1.36e-2) -	4.6563e-1 (4.33e-3) -	4.7938e-1 (2.94e-3) =	4.7741e-1 (7.02e-3)
DF4	2	7.3975e-1 (1.71e-3) -	7.4082e-1 (8.32e-3) -	7.4653e-1 (6.44e-4) -	7.4065e-1 (1.61e-3) -	7.4564e-1 (1.34e-3) -	7.4739e-1 (4.72e-4)
DF5	2	5.5155e-1 (1.55e-3) -	5.6143e-1 (1.69e-2) -	5.6704e-1 (1.51e-3) -	5.7130e-1 (9.22e-4) -	5.7506e-1 (7.68e-4) -	5.7565e-1 (2.77e-4)
DF6	2	3.3571e-1 (5.96e-2) =	1.3886e-1 (8.93e-2) -	4.6722e-1 (7.52e-2) +	3.3964e-1 (8.67e-2) =	4.7643e-1 (1.35e-1) +	3.3908e-1 (1.05e-1)
DF7	2	3.8477e-1 (2.23e-2) -	4.5280e-1 (3.01e-3) =	4.1423e-1 (1.12e-2) -	4.5238e-1 (2.18e-3) =	4.5223e-1 (7.13e-3) =	4.5132e-1 (8.08e-3)
DF8	2	5.8620e-1 (1.53e-3) -	5.7108e-1 (1.68e-2) -	5.9176e-1 (1.90e-3) -	5.9580e-1 (2.42e-3) -	5.9784e-1 (3.41e-3) =	5.9907e-1 (1.75e-3)
DF9	2	3.2593e-1 (7.46e-3) -	4.6014e-1 (1.76e-2) -	3.7788e-1 (9.21e-3) -	4.9434e-1 (1.05e-2) -	5.1420e-1 (5.37e-3) =	5.1402e-1 (9.04e-3)
DF10	3	4.8183e-1 (7.41e-3) +	3.2573e-1 (5.87e-2) -	4.9403e-1 (6.10e-3) +	3.8319e-1 (2.99e-2) -	4.2722e-1 (1.65e-2) -	4.5638e-1 (9.79e-3)
DF11	3	3.1856e-2 (2.01e-3) -	2.9758e-2 (3.55e-3) -	3.7550e-2 (1.46e-3) +	2.8170e-2 (3.38e-3) -	3.0067e-2 (4.06e-3) -	3.6692e-2 (4.96e-4)
DF12	3	2.6819e-1 (3.92e-3) -	2.8750e-1 (1.58e-2) -	3.0142e-1 (3.44e-3) -	2.9771e-1 (3.06e-3) -	3.0835e-1 (3.37e-3) -	3.1758e-1 (2.35e-3)
DF13	3	6.0271e-1 (4.11e-3) +	5.1935e-1 (2.09e-2) -	6.4847e-1 (2.26e-3) +	5.4423e-1 (7.38e-3) -	5.7067e-1 (4.54e-3) -	5.8155e-1 (2.85e-3)
DF14	3	1.8939e-1 (2.05e-2) -	4.2653e-1 (7.42e-3) -	1.2887e-2 (7.22e-3) -	4.3278e-1 (1.90e-3) -	4.4350e-1 (9.18e-4) -	4.4527e-1 (1.08e-3)
FDA1	2	7.0087e-1 (9.35e-4) -	6.9882e-1 (1.64e-2) -	7.1245e-1 (4.04e-4) -	7.0956e-1 (9.99e-4) -	7.1519e-1 (6.96e-4) -	7.1585e-1 (3.34e-4)
FDA2	2	5.9705e-1 (2.34e-3) -	5.8830e-1 (1.45e-2) -	5.9945e-1 (4.08e-3) =	5.8855e-1 (4.36e-3) -	5.9438e-1 (3.56e-3) -	5.9983e-1 (1.13e-3)
FDA3	2	5.5546e-1 (2.38e-3) -	5.4142e-1 (8.55e-3) -	5.6328e-1 (2.97e-3) -	5.5263e-1 (3.25e-3) -	5.7989e-1 (1.30e-3) -	5.8174e-1 (3.17e-3)
FDA4	3	4.3270e-1 (6.37e-3) -	4.9440e-1 (4.37e-3) -	5.2038e-1 (2.05e-3) -	5.0372e-1 (4.16e-3) -	5.1276e-1 (4.35e-3) -	5.2863e-1 (1.58e-3)
FDA5	3	4.4075e-1 (6.41e-3) -	4.8308e-1 (1.59e-2) -	5.1992e-1 (2.53e-3) -	4.9668e-1 (8.34e-3) -	5.1484e-1 (4.14e-3) -	5.3070e-1 (6.93e-4)
MIDP1	2	4.1481e-1 (4.42e-3) -	4.1780e-1 (8.94e-3) -	4.3222e-1 (4.86e-3) -	4.1519e-1 (6.18e-3) -	4.2106e-1 (6.48e-3) -	4.3647e-1 (4.15e-3)
MIDP2	2	6.5745e-2 (2.23e-2) -	6.0957e-3 (1.67e-2) -	4.1988e-1 (3.34e-2) -	1.2064e-1 (1.04e-1) -	2.9227e-1 (1.45e-1) -	4.8795e-1 (9.69e-2)
dMOP1	2	5.0544e-1 (8.01e-3) -	5.0229e-1 (6.91e-3) -	5.1882e-1 (4.93e-3) -	4.9029e-1 (6.61e-3) -	5.0439e-1 (4.64e-3) -	5.2380e-1 (3.07e-3)
dMOP2	2	4.9973e-1 (1.48e-3) -	5.0317e-1 (3.44e-3) -	5.1918e-1 (8.02e-4) -	5.0504e-1 (3.37e-3) -	5.1158e-1 (4.03e-3) -	5.2178e-1 (1.57e-3)
dMOP3	2	7.0007e-1 (1.13e-3) -	7.0293e-1 (4.10e-3) -	7.1335e-1 (4.58e-4) -	7.0224e-1 (3.40e-3) -	7.0838e-1 (2.68e-3) -	7.1616e-1 (7.30e-4)
+/-/=		2/21/1	0/23/1	4/19/1	0/22/2	1/19/4	

Table 9: MIGD (variance) for 30 independent runs of the comparison algorithms with $\tau_t = 10$, $n_t = 5$.

Problem	M	DNSGA-II	MOEAD-PPS	SGEA	MOEAD-HMPS	MDMEA-HCR	DMOEA-MABH
DF1	2	2.1030e-1 (1.68e-2) -	7.0963e-2 (1.87e-2) -	2.5932e-2 (2.84e-3) -	3.5731e-2 (6.25e-3) -	2.7211e-2 (6.27e-3) -	1.4891e-2 (1.67e-3)
DF2	2	2.0493e-1 (1.42e-2) -	1.0258e-1 (1.46e-2) -	9.7162e-2 (7.66e-3) -	5.4567e-2 (4.78e-3) -	4.5709e-2 (7.02e-3) -	2.1440e-2 (4.12e-3)
DF3	2	3.7038e-1 (1.64e-2) -	1.2456e-1 (7.50e-2) -	3.1148e-1 (1.57e-2) -	5.4216e-2 (1.38e-2) -	3.0965e-2 (4.72e-3) =	3.3029e-2 (1.16e-2)
DF4	2	1.7100e-1 (1.04e-2) -	1.5720e-1 (4.42e-2) -	1.3762e-1 (4.02e-3) +	1.5513e-1 (8.05e-3) -	1.4644e-1 (6.96e-3) -	1.3966e-1 (2.85e-3)
DF5	2	1.9001e-1 (2.49e-2) -	3.1165e-1 (1.63e-1) -	3.1133e-2 (2.90e-3) -	1.9398e-2 (1.42e-3) -	1.1931e-2 (1.36e-3) +	1.3858e-2 (9.95e-4)
DF6	2	3.8510e+0 (3.22e-1) -	3.1414e+0 (6.34e-1) -	1.1535e+0 (3.87e-1) +	2.2355e+0 (5.78e-1) -	1.0690e+0 (2.76e-1) +	1.3905e+0 (4.60e-1)
DF7	2	5.1431e-1 (2.74e-2) -	1.5591e-1 (3.93e-2) -	5.0642e-1 (3.43e-2) -	7.0288e-2 (7.91e-3) -	5.8105e-2 (2.56e-2) =	5.1494e-2 (2.05e-2)
DF8	2	8.0592e-2 (1.85e-3) -	1.2687e-1 (3.45e-2) -	7.7956e-2 (1.62e-3) -	9.0302e-2 (8.19e-3) -	7.4392e-2 (5.76e-3) =	7.3879e-2 (5.11e-3)
DF9	2	1.0194e+0 (7.25e-2) -	3.0116e-1 (7.89e-2) -	5.0617e-1 (6.01e-2) -	1.3270e-1 (2.07e-2) -	9.8019e-2 (1.16e-2) -	6.3277e-2 (1.43e-2)
DF10	3	8.5612e-2 (7.18e-3) +	2.5156e-1 (5.11e-2) -	8.0218e-2 (7.15e-3) +	1.6716e-1 (1.47e-2) -	1.4844e-1 (1.27e-2) -	1.3509e-1 (1.18e-2)
DF11	3	6.7873e-1 (2.47e-3) -	6.8094e-1 (8.04e-3) -	6.7306e-1 (1.81e-3) -	6.8016e-1 (8.03e-3) -	6.6969e-1 (6.69e-3) -	6.5822e-1 (1.58e-3)
DF12	3	2.4702e-1 (4.50e-2) -	1.7680e-1 (1.90e-2) -	1.6980e-1 (8.24e-3) =	1.6115e-1 (1.35e-2) =	1.4679e-1 (7.63e-3) +	1.6577e-1 (1.38e-2)
DF13	3	5.1724e-1 (5.32e-2) -	4.3460e-1 (1.10e-1) -	2.4062e-1 (2.31e-2) -	3.0654e-1 (1.95e-2) -	2.5193e-1 (5.89e-3) -	2.4690e-1 (4.14e-3)
DF14	3	5.7120e-1 (6.88e-2) -	2.2155e-1 (1.33e-1) -	9.7561e-1 (7.59e-2) -	6.8283e-2 (2.24e-3) -	6.1439e-2 (1.60e-3) -	5.9590e-2 (8.83e-4)
FDA1	2	1.0175e-1 (1.10e-2) -	2.3120e-1 (9.57e-2) -	2.1335e-2 (4.19e-3) -	2.0663e-2 (1.51e-3) -	1.0946e-2 (1.38e-3) +	1.2461e-2 (1.01e-3)
FDA2	2	2.3489e-2 (2.37e-3) -	3.8193e-2 (1.66e-2) -	1.3369e-2 (1.40e-3) =	3.3121e-2 (5.03e-3) -	2.1688e-2 (6.61e-3) -	1.2991e-2 (2.15e-3)
FDA3	2	2.8364e-1 (1.33e-1) -	2.4006e-1 (8.70e-2) -	7.8368e-2 (8.30e-2) -	8.1504e-2 (4.89e-3) -	4.0347e-2 (4.74e-3) =	4.2303e-2 (5.65e-3)
FDA4	3	3.7562e-1 (1.70e-2) -	1.2874e-1 (1.27e-2) -	1.8028e-1 (2.15e-2) -	1.0618e-1 (6.76e-3) -	9.8828e-2 (6.76e-3) -	8.9736e-2 (2.61e-3)
FDA5	3	4.3348e-1 (2.06e-2) -	3.1501e-1 (3.75e-2) -	2.4657e-1 (1.76e-2) -	2.6998e-1 (3.37e-2) -	2.2497e-1 (1.64e-2) -	1.8090e-1 (5.27e-3)
MIDP1	2	1.3025e-1 (2.77e-2) -	6.9891e-2 (3.36e-2) -	3.5588e-2 (1.36e-2) -	6.0249e-2 (1.23e-2) -	6.5644e-2 (1.65e-2) -	2.0450e-2 (8.21e-3)
MIDP2	2	3.0015e+0 (2.70e-1) -	5.4650e+0 (5.18e-1) -	1.1762e+0 (1.44e-1) +	4.2984e+0 (2.96e-1) -	2.7267e+0 (4.90e-1) -	1.4749e+0 (4.49e-1)
dMOP1	2	5.8737e-2 (2.82e-2) -	2.2072e-1 (3.23e-1) -	2.3970e-2 (1.58e-2) -	1.7150e-1 (6.52e-2) -	1.1593e-1 (4.88e-2) -	1.0385e-2 (5.68e-3)
dMOP2	2	2.0643e-1 (1.56e-2) -	7.2133e-2 (2.16e-2) -	2.5640e-2 (2.08e-3) -	3.8842e-2 (7.95e-3) -	2.7912e-2 (7.73e-3) -	1.4829e-2 (1.46e-3)
dMOP3	2	1.4419e-1 (8.06e-3) -	5.2184e-2 (7.26e-3) -	2.4112e-2 (3.72e-3) -	2.6611e-2 (3.95e-3) -	1.9134e-2 (3.75e-3) -	1.2439e-2 (1.47e-3)
+/-/=		1/23/0	0/24/0	4/17/3	0/23/1	4/16/4	

Table 10: MHV (variance) for 30 independent runs of the comparison algorithms with $\tau_t = 10$, $n_t = 5$.

Problem	M	DNSGA-II	MOEAD-PPS	SGEA	MOEAD-HMPS	MDMEA-HCR	DMOEA-MABH
DF1	2	3.2422e-1 (9.74e-3) -	4.4973e-1 (1.44e-2) -	4.9706e-1 (3.70e-3) -	4.9025e-1 (3.62e-3) -	5.0446e-1 (3.95e-3) -	5.1209e-1 (1.91e-3)
DF2	2	4.7474e-1 (1.26e-2) -	5.8893e-1 (1.81e-2) -	6.1114e-1 (8.64e-3) -	6.4484e-1 (5.34e-3) -	6.6499e-1 (7.00e-3) -	6.9348e-1 (3.94e-3)
DF3	2	2.1913e-1 (7.12e-3) -	3.9906e-1 (2.50e-2) -	2.4589e-1 (9.26e-3) -	4.3398e-1 (1.14e-2) -	4.6401e-1 (4.26e-3) =	4.5928e-1 (9.22e-3)
DF4	2	7.1426e-1 (3.31e-3) -	7.1049e-1 (2.50e-2) -	7.3090e-1 (1.88e-3) -	7.1774e-1 (3.70e-3) -	7.2868e-1 (3.01e-3) -	7.3206e-1 (1.29e-3)
DF5	2	3.5567e-1 (1.60e-2) -	4.5109e-1 (3.51e-2) -	5.3961e-1 (4.28e-3) -	5.5727e-1 (1.97e-3) -	5.6885e-1 (1.78e-3) +	5.6542e-1 (1.40e-3)
DF6	2	1.3786e-1 (2.41e-2) -	6.6282e-2 (4.53e-2) -	4.2432e-1 (4.10e-2) =	1.9162e-1 (9.24e-2) -	2.9049e-1 (5.96e-2) -	4.1162e-1 (9.89e-2)
DF7	2	3.1741e-1 (9.14e-3) -	4.0563e-1 (1.03e-2) -	3.2379e-1 (1.18e-2) -	4.3304e-1 (3.18e-3) -	4.4589e-1 (5.53e-3) -	4.4919e-1 (3.89e-3)
DF8	2	5.7754e-1 (1.28e-3) -	5.3248e-1 (2.48e-2) -	5.8182e-1 (9.78e-4) =	5.6535e-1 (3.11e-3) -	5.8477e-1 (1.97e-3) +	5.8173e-1 (2.26e-3)
DF9	2	1.2898e-1 (1.83e-2) -	2.9083e-1 (2.44e-2) -	2.5280e-1 (1.48e-2) -	4.0587e-1 (1.74e-2) -	4.4127e-1 (9.94e-3) -	4.7905e-1 (1.21e-2)
DF10	3	5.4991e-1 (6.58e-3) +	3.5700e-1 (4.99e-2) -	5.6318e-1 (9.25e-3) +	4.1737e-1 (3.63e-2) -	4.8269e-1 (1.40e-2) -	5.1583e-1 (1.24e-2)
DF11	3	2.8634e-2 (2.00e-3) -	2.6667e-2 (2.06e-3) -	3.5625e-2 (1.42e-3) =	2.7836e-2 (2.55e-3) -	3.0006e-2 (3.15e-3) -	3.5614e-2 (2.05e-3)
DF12	3	1.8748e-1 (1.71e-2) -	2.3069e-1 (1.21e-2) -	2.4215e-1 (6.76e-3) -	2.4723e-1 (9.37e-3) -	2.6185e-1 (7.39e-3) -	2.6636e-1 (8.84e-3)
DF13	3	4.2835e-1 (2.01e-2) -	4.4623e-1 (4.28e-2) -	5.7029e-1 (1.27e-2) =	5.2497e-1 (8.90e-3) -	5.7217e-1 (3.98e-3) -	5.7546e-1 (3.38e-3)
DF14	3	6.4266e-2 (2.29e-2) -	3.2625e-1 (4.57e-2) -	1.7471e-2 (1.28e-2) -	4.1266e-1 (4.88e-3) -	4.3762e-1 (2.21e-3) -	4.3985e-1 (1.50e-3)
FDA1	2	5.8801e-1 (1.23e-2) -	5.8943e-1 (2.96e-2) -	6.9653e-1 (2.92e-3) -	6.9438e-1 (2.33e-3) -	7.0842e-1 (2.11e-3) +	7.0606e-1 (1.33e-3)
FDA2	2	5.8435e-1 (2.84e-3) -	5.6631e-1 (2.12e-2) -	5.9813e-1 (2.01e-3) =	5.7332e-1 (6.36e-3) -	5.8820e-1 (7.77e-3) -	5.9878e-1 (2.86e-3)
FDA3	2	4.0465e-1 (6.00e-2) -	4.2936e-1 (1.72e-2) -	5.3172e-1 (3.75e-2) -	5.1067e-1 (5.12e-3) -	5.5333e-1 (4.71e-3) =	5.5129e-1 (5.06e-3)
FDA4	3	2.2288e-1 (9.21e-3) -	4.2852e-1 (1.71e-2) -	3.7743e-1 (1.86e-2) -	4.6846e-1 (5.87e-3) -	4.9686e-1 (5.38e-3) -	5.1089e-1 (4.40e-3)
FDA5	3	2.6899e-1 (1.28e-2) -	4.2257e-1 (1.49e-2) -	3.8799e-1 (1.41e-2) -	4.6121e-1 (1.04e-2) -	4.9354e-1 (6.46e-3) -	5.1424e-1 (4.22e-3)
MIDP1	2	2.8412e-1 (1.77e-2) -	3.7851e-1 (2.21e-2) -	4.0838e-1 (9.85e-3) -	3.8604e-1 (5.90e-3) -	3.8180e-1 (8.64e-3) -	4.2034e-1 (5.08e-3)
MIDP2	2	0.0000e+0 (0.00e+0) -	0.0000e+0 (0.00e+0) -	4.5112e-2 (2.40e-2) =	0.0000e+0 (0.00e+0) -	6.8359e-3 (2.98e-2) -	5.3433e-2 (6.90e-2)
dMOP1	2	4.9807e-1 (1.26e-2) -	4.8827e-1 (2.69e-2) -	5.1444e-1 (8.90e-3) -	4.8472e-1 (8.51e-3) -	5.0002e-1 (6.60e-3) -	5.2340e-1 (5.04e-3)
dMOP2	2	3.2656e-1 (1.11e-2) -	4.4886e-1 (1.59e-2) -	4.9733e-1 (3.09e-3) -	4.8955e-1 (4.00e-3) -	5.0437e-1 (4.44e-3) -	5.1211e-1 (1.95e-3)
dMOP3	2	5.4595e-1 (8.93e-3) -	6.5556e-1 (8.57e-3) -	6.9218e-1 (2.89e-3) -	6.8904e-1 (3.88e-3) -	7.0096e-1 (3.54e-3) -	7.0635e-1 (1.85e-3)
+/-/=		1/23/0	0/24/0	1/17/6	0/24/0	3/19/2	

Table 11: MIGD (variance) for 30 independent runs of the comparison algorithms with $\tau_t = 10$, $n_t = 15$.

Problem	M	DNSGA-II	MOEAD-PPS	SGEA	MOEAD-HMPS	MDMEA-HCR	DMOEA-MABH
DF1	2	2.9068e-2 (2.06e-3) -	3.8101e-2 (9.49e-3) -	1.2513e-2 (1.16e-3) -	3.3912e-2 (7.70e-3) -	2.8182e-2 (7.72e-3) -	8.5536e-3 (1.95e-3)
DF2	2	8.2086e-2 (9.64e-3) -	5.3055e-2 (8.92e-3) -	7.3842e-2 (1.10e-2) -	3.9764e-2 (5.14e-3) -	3.1915e-2 (4.96e-3) -	1.8956e-2 (3.99e-3)
DF3	2	3.5080e-1 (4.46e-2) -	4.8006e-2 (2.00e-2) -	3.0693e-1 (2.41e-2) -	3.8608e-2 (7.16e-3) -	2.0445e-2 (3.88e-3) =	2.3985e-2 (1.32e-2)
DF4	2	2.2004e-1 (1.45e-2) -	2.1873e-1 (8.48e-2) -	1.8875e-1 (3.07e-3) +	2.1792e-1 (9.30e-3) -	2.0467e-1 (7.44e-3) -	1.9758e-1 (4.52e-3)
DF5	2	3.2318e-2 (2.17e-3) -	4.4413e-2 (3.42e-2) -	1.6067e-2 (1.17e-3) -	1.4149e-2 (1.22e-3) -	1.0658e-2 (1.25e-3) -	8.6665e-3 (6.05e-4)
DF6	2	1.2051e+0 (1.82e-1) +	2.7059e+0 (1.11e+0) -	9.5138e-1 (5.13e-1) +	1.4217e+0 (3.14e-1) +	1.2205e+0 (4.07e-1) +	2.0643e+0 (7.87e-1)
DF7	2	2.4679e-1 (6.32e-2) -	4.8334e-2 (2.37e-2) =	2.2626e-1 (5.61e-2) -	4.6000e-2 (1.59e-2) =	8.9856e-2 (6.37e-2) =	8.3420e-2 (6.75e-2)
DF8	2	6.4364e-2 (4.30e-3) =	9.3402e-2 (2.71e-2) -	5.5949e-2 (2.75e-3) +	8.8391e-2 (1.10e-2) -	7.4387e-2 (1.35e-2) -	6.4751e-2 (9.70e-3)
DF9	2	3.9593e-1 (4.95e-2) -	1.1232e-1 (3.43e-2) -	2.0439e-1 (2.84e-2) -	6.5989e-2 (1.33e-2) -	4.9732e-2 (6.83e-3) -	4.3202e-2 (1.05e-2)
DF10	3	7.8018e-2 (5.77e-3) +	2.2865e-1 (5.04e-2) -	7.4541e-2 (5.00e-3) +	1.8044e-1 (1.72e-2) -	1.4257e-1 (8.71e-3) -	1.3048e-1 (9.10e-3)
DF11	3	6.7177e-1 (1.95e-3) -	6.8109e-1 (1.87e-2) -	6.6659e-1 (2.24e-3) -	6.7485e-1 (8.17e-3) -	6.6717e-1 (5.09e-3) -	6.5741e-1 (1.40e-3)
DF12	3	1.4028e-1 (4.95e-3) -	1.4000e-1 (2.59e-2) -	1.2468e-1 (5.29e-3) -	1.1669e-1 (5.00e-3) -	1.0965e-1 (4.22e-3) =	1.0884e-1 (2.49e-3)
DF13	3	1.4630e-1 (5.30e-3) +	3.4431e-1 (4.51e-2) -	1.1274e-1 (2.56e-3) +	2.7777e-1 (1.97e-2) -	2.6169e-1 (9.60e-3) -	2.4716e-1 (2.68e-3)
DF14	3	2.0140e-1 (2.34e-2) -	7.4963e-2 (1.37e-2) -	7.5502e-1 (6.19e-2) -	6.2464e-2 (1.82e-3) -	5.9255e-2 (1.80e-3) -	5.7926e-2 (1.10e-3)
FDA1	2	2.1719e-2 (1.76e-3) -	3.4142e-2 (2.25e-2) -	1.1159e-2 (1.28e-3) -	1.6006e-2 (1.78e-3) -	9.4784e-3 (1.10e-3) -	7.9295e-3 (6.49e-4)
FDA2	2	1.2576e-2 (1.66e-3) -	2.7543e-2 (1.83e-2) -	9.2574e-3 (1.48e-3) +	2.6502e-2 (4.70e-3) -	1.8497e-2 (4.86e-3) -	1.1768e-2 (2.22e-3)
FDA3	2	2.2117e-2 (1.33e-3) -	3.9429e-2 (2.23e-2) -	1.2294e-2 (6.26e-4) -	2.0041e-2 (1.32e-3) -	1.2399e-2 (1.27e-3) -	9.8287e-3 (4.43e-4)
FDA4	3	1.2161e-1 (3.53e-3) -	1.0676e-1 (8.73e-3) -	7.9584e-2 (2.37e-3) +	9.6853e-2 (5.54e-3) -	9.3644e-2 (6.66e-3) -	8.3510e-2 (1.60e-3)
FDA5	3	1.7498e-1 (6.18e-3) -	3.1161e-1 (6.09e-2) -	1.2423e-1 (3.07e-3) +	2.8277e-1 (5.25e-2) -	2.0012e-1 (9.75e-3) -	1.6954e-1 (4.06e-3)
MIDP1	2	4.2263e-2 (1.65e-2) -	4.5781e-2 (1.74e-2) -	2.2016e-2 (1.17e-2) -	5.5536e-2 (1.49e-2) -	4.2821e-2 (1.50e-2) -	1.4110e-2 (7.14e-3)
MIDP2	2	1.2922e+0 (1.50e-1) -	4.8531e+0 (7.42e-1) -	5.5787e-1 (8.58e-2) -	2.0805e+0 (5.98e-1) -	1.3303e+0 (4.09e-1) -	4.0872e-1 (1.28e-1)
dMOP1	2	7.2243e-2 (3.08e-2) -	1.1004e-1 (5.76e-2) -	2.4289e-2 (1.28e-2) -	1.5984e-1 (5.92e-2) -	1.2494e-1 (4.98e-2) -	1.0255e-2 (5.65e-3)
dMOP2	2	2.8886e-2 (2.10e-3) -	4.0882e-2 (1.18e-2) -	1.2287e-2 (1.28e-3) -	3.4603e-2 (5.50e-3) -	2.8686e-2 (7.52e-3) -	8.7505e-3 (2.68e-3)
dMOP3	2	2.1907e-2 (1.39e-3) -	2.7512e-2 (5.61e-3) -	1.0702e-2 (9.05e-4) -	2.3567e-2 (4.33e-3) -	1.9871e-2 (4.00e-3) -	8.1819e-3 (1.43e-3)
+/-/=		3/20/1	0/23/1	8/16/0	1/22/1	1/20/3	

Table 12: MHV (variance) for 30 independent runs of the comparison algorithms with $\tau_t = 10$, $n_t = 15$.

Problem	M	DNSGA-II	MOEAD-PPS	SGEA	MOEAD-HMPS	MDMEA-HCR	DMOEA-MABH
DF1	2	4.3544e-1 (2.29e-3) -	4.3245e-1 (7.28e-3) -	4.6045e-1 (1.20e-3) -	4.4067e-1 (5.03e-3) -	4.5099e-1 (4.11e-3) -	4.6608e-1 (2.58e-3)
DF2	2	6.2182e-1 (1.18e-2) -	6.5085e-1 (1.05e-2) -	6.3890e-1 (1.23e-2) -	6.6956e-1 (6.43e-3) -	6.8205e-1 (4.79e-3) -	6.9727e-1 (4.23e-3)
DF3	2	1.5905e-1 (1.76e-2) -	3.8276e-1 (1.80e-2) -	1.7568e-1 (1.30e-2) -	3.8877e-1 (6.75e-3) -	4.1388e-1 (3.33e-3) +	4.0921e-1 (1.06e-2)
DF4	2	8.4299e-1 (5.18e-3) -	8.4227e-1 (2.99e-2) -	8.5739e-1 (1.57e-3) +	8.4105e-1 (3.84e-3) -	8.5163e-1 (3.38e-3) -	8.5464e-1 (2.02e-3)
DF5	2	5.3570e-1 (3.25e-3) -	5.3246e-1 (2.79e-2) -	5.6008e-1 (1.79e-3) -	5.6308e-1 (1.62e-3) -	5.6881e-1 (1.67e-3) -	5.7130e-1 (9.03e-4)
DF6	2	2.5620e-1 (6.88e-2) =	1.2036e-1 (9.88e-2) -	4.6491e-1 (8.47e-2) +	2.8480e-1 (1.10e-1) =	4.2619e-1 (1.32e-1) +	2.3515e-1 (8.10e-2)
DF7	2	3.7772e-1 (1.94e-2) -	4.4715e-1 (4.49e-3) =	3.9522e-1 (1.45e-2) -	4.4663e-1 (3.34e-3) =	4.4175e-1 (1.26e-2) -	4.4524e-1 (1.22e-2)
DF8	2	5.8524e-1 (2.54e-3) -	5.6449e-1 (2.13e-2) -	5.9247e-1 (1.47e-3) -	5.8551e-1 (4.20e-3) -	5.8767e-1 (4.57e-3) -	5.9399e-1 (2.77e-3)
DF9	2	3.1978e-1 (1.11e-2) -	4.2638e-1 (2.98e-2) -	3.8552e-1 (1.00e-2) -	4.7875e-1 (1.26e-2) -	4.9636e-1 (8.10e-3) -	5.0871e-1 (9.11e-3)
DF10	3	5.4674e-1 (1.25e-2) +	3.1557e-1 (7.31e-2) -	5.6457e-1 (7.71e-3) +	4.0962e-1 (4.13e-2) -	4.7619e-1 (1.65e-2) -	5.0721e-1 (1.61e-2)
DF11	3	2.0556e-2 (1.90e-3) -	1.7972e-2 (3.75e-3) -	2.7527e-2 (1.73e-3) =	1.5650e-2 (3.35e-3) -	1.9532e-2 (3.08e-3) -	2.6687e-2 (2.24e-3)
DF12	3	2.4331e-1 (5.47e-3) -	2.4809e-1 (2.71e-2) -	2.7962e-1 (4.76e-3) -	2.7711e-1 (7.40e-3) -	2.9110e-1 (5.79e-3) -	3.0476e-1 (2.54e-3)
DF13	3	6.0519e-1 (3.30e-3) +	4.8477e-1 (2.95e-2) -	6.4578e-1 (1.88e-3) +	5.3694e-1 (1.03e-2) -	5.6257e-1 (4.69e-3) -	5.7276e-1 (2.64e-3)
DF14	3	1.8409e-1 (2.60e-2) -	4.2353e-1 (1.67e-2) -	2.4817e-2 (1.23e-2) -	4.4519e-1 (1.90e-3) -	4.5504e-1 (1.35e-3) -	4.5829e-1 (1.08e-3)
FDA1	2	6.9348e-1 (1.49e-3) -	6.7922e-1 (2.46e-2) -	7.0874e-1 (9.76e-4) -	7.0126e-1 (2.06e-3) -	7.1109e-1 (1.22e-3) -	7.1292e-1 (9.55e-4)
FDA2	2	4.9429e-1 (2.40e-3) =	4.7412e-1 (2.40e-2) -	4.9926e-1 (1.77e-3) +	4.7502e-1 (5.67e-3) -	4.8714e-1 (5.58e-3) -	4.9526e-1 (2.66e-3)
FDA3	2	5.6953e-1 (1.19e-3) -	5.5474e-1 (1.56e-2) -	5.8075e-1 (6.27e-4) -	5.6952e-1 (1.63e-3) -	5.7942e-1 (1.25e-3) -	5.8234e-1 (5.70e-4)
FDA4	3	4.2094e-1 (6.15e-3) -	4.7213e-1 (8.86e-3) -	5.0573e-1 (3.68e-3) -	4.8949e-1 (6.42e-3) -	5.0368e-1 (5.85e-3) -	5.2283e-1 (2.77e-3)
FDA5	3	4.3752e-1 (7.79e-3) -	4.5760e-1 (1.54e-2) -	5.0693e-1 (3.80e-3) -	4.7387e-1 (1.31e-2) -	5.0394e-1 (4.86e-3) -	5.2328e-1 (2.98e-3)
MIDP1	2	3.9652e-1 (1.15e-2) -	4.0452e-1 (9.82e-3) -	4.2388e-1 (8.22e-3) -	3.9810e-1 (5.80e-3) -	4.1040e-1 (7.78e-3) -	4.3115e-1 (5.07e-3)
MIDP2	2	2.1155e-2 (1.58e-2) -	8.9549e-5 (4.90e-4) -	3.0990e-1 (4.84e-2) -	5.4774e-2 (8.38e-2) -	1.0927e-1 (9.34e-2) -	4.4846e-1 (7.43e-2)
dMOP1	2	4.3771e-1 (1.27e-2) -	4.3908e-1 (8.41e-3) -	4.5745e-1 (7.95e-3) -	4.3127e-1 (4.77e-3) -	4.4648e-1 (7.88e-3) -	4.6732e-1 (4.70e-3)
dMOP2	2	4.3557e-1 (2.70e-3) -	4.2991e-1 (1.01e-2) -	4.6066e-1 (1.66e-3) -	4.3940e-1 (3.80e-3) -	4.5048e-1 (4.06e-3) -	4.6595e-1 (3.30e-3)
dMOP3	2	6.9300e-1 (1.95e-3) -	6.8879e-1 (6.52e-3) -	7.0930e-1 (8.71e-4) -	6.9478e-1 (4.72e-3) -	7.0093e-1 (3.55e-3) -	7.1274e-1 (1.96e-3)
+/-/=		2/20/2	0/23/1	5/18/1	0/22/2	2/22/0	