

#nodes	domain size	nwDNNF circuits				decision-DNNF circuits			
		Bella (<i>i</i>)		Bella (Cara)		D4		SharpSAT-TD	
		time (s)	size	time (s)	size	time (s)	size	time (s)	size
4 : 4	2	0.006	550	0.005	594	0.011	1 044.00	1.017	3 342.00
	3	0.018	3 683.67	0.020	3 916.00	0.025	8 696.00	1.398	40 114.00
	4	0.072	14 625.67	0.067	15 337.00	0.089	39 839.00	6.885	219 539.00
	5	0.261	43 068.33	0.214	45 300.00	0.406	129 988.00	58.433	814 974.00
	6	0.922	104 687.33	0.680	108 988.00	1.930	342 650.00	343.798	2 377 354.00
	7	2.325	222 812.00	2.080	232 304.00	7.134	779 275.00	1 441.982	5 879 618.00
	8	6.860	428 768.67	5.952	448 791.00	24.619	1 594 501.00	—	—
	9	16.526	765 712.33	16.594	794 758.00	77.476	3 003 284.00	—	—
	10	45.556	1 285 892.00	44.541	1 344 430.00	210.454	5 302 208.00	—	—
	11	115.950	2 056 320.33	116.425	2 143 609.00	788.073	8 882 680.00	—	—
	12	216.776	3 163 289.33	229.889	3 304 549.00	1 970.910	14 249 387.00	—	—
	13	459.339	4 696 570.33	411.684	4 907 716.00	4 984.727	22 039 556.00	—	—
	14	788.101	6 777 708.67	712.252	7 080 348.00	—	—	—	—
	15	1 247.657	9 538 053.33	1 282.415	9 962 260.00	—	—	—	—
	16	2 498.663	13 134 883.33	2 136.796	13 714 483.00	—	—	—	—
	17	4 484.010	17 742 187.33	4 237.589	18 520 764.00	—	—	—	—
	18	8 095.380	23 559 153.00	7 674.307	24 589 066.00	—	—	—	—
5 : 5	2	0.009	1 290.00	0.009	1 394.00	0.015	2 537.33	1.071	9 494.00
	3	0.071	13 175.67	0.058	13 960.00	0.084	31 943.00	6.987	173 602.00
	4	0.614	70 503.67	0.413	74 057.00	1.007	196 255.00	197.676	1 276 563.00
	5	3.822	261 415.67	2.891	273 425.00	9.985	803 113.00	—	—
	6	26.042	766 572.00	22.804	796 768.00	82.328	2 545 850.00	—	—
	7	107.525	1 909 131.67	100.542	1 977 782.00	589.727	6 770 407.00	—	—
	8	459.405	4 209 175.00	475.926	4 350 231.00	3 295.746	15 836 293.00	—	—
	9	1 883.894	8 471 321.33	1 947.773	8 747 257.00	—	—	—	—
	10	7 364.235	15 841 063.00	7 154.184	16 444 430.00	—	—	—	—
6 : 6	2	0.017	2 958.00	0.014	3 186.00	0.026	5 748.00	1.399	25 630.00
	3	0.415	45 995.00	0.230	48 466.00	0.525	113 348.00	103.746	709 660.00
	4	8.110	330 814.33	6.070	345 417.00	15.357	932 511.00	—	—
	5	121.543	1 539 814.67	95.051	1 601 550.00	391.891	4 781 238.00	—	—
	6	1 455.182	5 436 525.33	1 256.343	5 620 480.00	—	—	—	—
	7	8 251.030	15 829 135.33	7 454.445	16 324 786.00	—	—	—	—
7 : 7	2	0.042	6 674.00	0.028	7 154.00	0.044	13 172.00	3.335	66 598.00
	3	1.943	157 547.00	1.019	165 106.00	4.977	392 555.00	—	—
	4	145.819	1 519 254.00	127.213	1 576 777.00	457.475	4 319 903.00	—	—
	5	3 938.992	8 869 105.67	3 472.258	9 179 675.00	—	—	—	—
8 : 8	2	0.114	14 870.00	0.075	15 858.00	0.124	29 684.00	14.600	167 982.00
	3	26.860	531 539.00	17.651	554 392.00	51.040	1 335 152.00	—	—
	4	3 542.181	6 863 186.33	2 800.331	7 099 721.00	14 998.513	19 638 943.00	—	—

Table 1: The compilation times (in seconds), and the circuit sizes for fully dense BNs. The time-out was set to six hours.

#nodes	domain size	decision-DNNF circuits		smooth decision-DNNF circuits			
		C2D		D4		C2D	
		time (s)	size	time (s)	size	time (s)	size
4 : 4	2	0.145	768	0.014	1 682.00	0.963	1 484.67
	3	1.358	24 892.67	0.069	16 996.00	1.413	19 310.00
	4	4.487	217 549.33	0.786	86 684.00	51.713	262 089.00
	5	35.327	1 408 989.33	4.137	307 172.00	219.262	1 749 679.00
	6	199.224	6 134 067.33	24.696	866 230.00	1 408.687	7 196 069.00
	7	—	—	120.138	2 087 252.00	1 063.736	26 751 119.50
	8	—	—	759.410	4 482 176.00	—	—
	9	—	—	2 881.222	8 813 044.00	—	—
	10	—	—	6 698.377	16 162 202.00	—	—
	11	—	—	18 754.342	28 011 140.00	—	—
	12	—	—	—	—	—	—
	13	—	—	—	—	—	—
	14	—	—	—	—	—	—
	15	—	—	—	—	—	—
	16	—	—	—	—	—	—
	17	—	—	—	—	—	—
	18	—	—	—	—	—	—
5 : 5	2	0.448	1 817.33	0.024	4 434.00	1.470	4 244.00
	3	4.976	165 800.67	0.714	68 998.00	49.013	186 452.33
	4	95.105	2 533 011.67	13.704	485 192.00	650.612	2 936 253.33
	5	—	—	203.774	2 126 547.00	—	—
	6	—	—	3 198.962	7 242 550.00	—	—
	7	—	—	19 345.839	20 459 704.00	—	—
	8	—	—	—	—	—	—
	9	—	—	—	—	—	—
	10	—	—	—	—	—	—
6 : 6	2	0.708	11 034.00	0.070	11 250.00	5.305	12 151.33
	3	39.237	1 093 022.67	8.079	268 258.00	316.290	1 098 708.33
	4	—	—	629.216	2 493 084.00	—	—
	5	—	—	20 991.073	14 023 422.00	—	—
	6	—	—	—	—	—	—
	7	—	—	—	—	—	—
7 : 7	2	1.583	30 916.67	0.269	27 762.00	9.412	30 285.33
	3	923.277	7 256 298.00	115.647	1 016 464.00	771.857	8 318 038.00
	4	—	—	—	—	—	—
	5	—	—	—	—	—	—
8 : 8	2	4.831	86 649.33	1.409	67 058.00	37.912	92 366.67
	3	—	—	2 970.837	3 724 312.00	—	—
	4	—	—	—	—	—	—

Table 1: The compilation times (in seconds), and the circuit sizes for fully dense BNs. The time-out was set to six hours.

#nodes	domain size	nwdNNF circuits				decision-DNNF circuits			
		Bella (<i>i</i>)		Bella (Cara)		D4		SharpSAT-TD	
		time (s)	size	time (s)	size	time (s)	size	time (s)	size
5 : 10	2	0.012	2 250.00	0.011	2 354.00	0.020	4 532.00	1.255	18 474.00
	3	0.158	24 110.67	0.114	24 895.00	0.216	61 103.00	28.469	342 487.00
	4	1.295	131 984.67	0.811	135 497.00	3.404	380 575.00	—	—
	5	12.784	495 574.67	9.772	507 800.00	36.556	1 568 738.00	—	—
	6	93.895	1 465 698.33	84.063	1 495 744.00	385.220	4 995 290.00	—	—
	7	382.497	3 673 847.00	344.731	3 742 517.00	3 630.424	13 325 137.00	—	—
	8	1 709.894	8 142 028.00	1 595.724	8 309 015.00	—	—	—	—
	9	7 288.669	16 439 431.33	6 850.928	16 769 902.00	—	—	—	—
5 : 15	2	0.016	3 210.00	0.014	3 314.00	0.027	6 612.00	1.545	27 454.00
	3	0.258	35 048.67	0.148	35 830.00	0.316	90 263.00	59.363	511 372.00
	4	2.304	193 418.67	1.439	196 937.00	7.317	564 895.00	1 475.734	3 785 363.00
	5	22.129	730 030.33	19.355	742 175.00	85.611	2 334 363.00	—	—
	6	194.640	2 166 061.33	176.135	2 195 584.00	895.143	7 444 730.00	—	—
	7	857.669	5 437 283.67	758.593	5 517 199.00	—	—	—	—
	8	4 166.756	12 069 357.33	3 606.266	12 241 175.00	—	—	—	—
	9	16 683.064	24 404 363.00	16 060.649	24 741 517.00	—	—	—	—
5 : 20	2	0.022	4 170.00	0.018	4 274.00	0.024	8 692.00	1.951	36 434.00
	3	0.346	45 985.33	0.215	46 765.00	0.531	119 423.00	107.612	680 257.00
	4	4.768	254 845.00	3.499	257 993.00	11.965	749 215.00	—	—
	5	40.972	964 392.00	32.723	976 550.00	152.663	3 099 988.00	—	—
	6	336.071	2 865 873.33	317.295	2 895 424.00	1 789.391	9 894 170.00	—	—
	7	1 453.800	7 199 682.67	1 318.994	7 280 219.00	—	—	—	—
	8	7 145.302	16 001 427.00	6 727.859	16 173 335.00	—	—	—	—
5 : 25	2	0.029	5 130.00	0.021	5 234.00	0.023	10 772.00	2.417	45 414.00
	3	0.446	56 918.00	0.299	57 700.00	0.728	148 583.00	170.785	849 142.00
	4	6.927	316 275.00	5.362	319 433.00	16.992	933 535.00	—	—
	5	61.981	1 198 730.67	51.265	1 210 925.00	264.356	3 865 613.00	—	—
	6	527.213	3 565 100.00	467.465	3 598 720.00	2 802.064	12 343 610.00	—	—
	7	2 387.337	8 964 329.00	1 978.035	9 044 954.00	—	—	—	—
	8	10 677.756	19 933 587.00	9 395.692	20 105 495.00	—	—	—	—
6 : 12	2	0.031	5 262.00	0.024	5 490.00	0.029	10 740.00	2.539	50 230.00
	3	0.958	85 366.67	0.644	87 832.00	1.850	218 324.00	—	—
	4	25.521	625 766.67	20.260	640 329.00	65.242	1 817 247.00	—	—
	5	411.901	2 945 904.00	348.544	3 007 800.00	2 181.737	9 374 988.00	—	—
	6	5 268.075	10 475 454.33	4 699.969	10 659 328.00	—	—	—	—
6 : 18	2	0.046	7 566.00	0.032	7 794.00	0.041	15 732.00	4.349	74 830.00
	3	1.417	124 736.67	0.770	127 198.00	3.500	323 300.00	—	—
	4	54.854	920 630.00	45.168	935 241.00	147.039	2 701 983.00	—	—
	5	884.081	4 352 419.00	779.003	4 414 050.00	4 866.540	13 968 738.00	—	—
	6	12 135.462	15 514 257.33	10 339.925	15 692 992.00	—	—	—	—
6 : 24	2	0.059	9 870.00	0.046	10 098.00	0.061	20 724.00	6.991	99 430.00
	3	1.976	164 093.00	1.168	166 564.00	5.790	428 276.00	1 390.572	2 796 058.00
	4	95.304	1 215 486.33	77.825	1 230 153.00	296.330	3 586 719.00	—	—
	5	1 523.104	5 758 573.00	1 332.529	5 820 300.00	7 764.387	18 562 488.00	—	—
	6	20 823.196	20 548 781.67	17 915.205	20 752 576.00	—	—	—	—
6 : 30	2	0.074	12 174.00	0.050	12 402.00	0.075	25 716.00	10.252	124 030.00
	3	3.973	203 459.00	2.639	205 930.00	8.881	533 252.00	2 251.553	3 491 524.00
	4	143.475	1 510 459.33	126.855	1 523 529.00	410.255	4 471 455.00	—	—
	5	2 314.541	7 164 939.00	2 061.124	7 226 550.00	—	—	—	—
7 : 14	2	0.087	12 050.00	0.051	12 530.00	0.083	24 820.00	10.276	131 138.00
	3	7.734	295 326.67	5.396	302 887.00	17.994	759 971.00	—	—
	4	566.544	2 895 476.67	502.781	2 948 425.00	2 365.192	8 448 671.00	—	—
	5	15 409.648	17 073 567.00	13 254.171	17 382 800.00	—	—	—	—
7 : 21	2	0.125	17 426.00	0.076	17 906.00	0.130	36 468.00	22.113	195 678.00
	3	15.813	433 099.00	11.833	440 668.00	39.454	1 127 387.00	—	—
	4	1 253.208	4 271 405.33	1 043.227	4 330 825.00	5 256.676	12 577 439.00	—	—
7 : 28	2	0.174	22 802.00	0.103	23 282.00	0.206	48 116.00	40.983	260 218.00
	3	27.579	570 880.00	20.085	578 449.00	68.695	1 494 803.00	—	—
	4	2 190.359	5 648 062.33	2 138.750	5 707 081.00	—	—	—	—
7 : 35	2	0.237	28 178.00	0.149	28 658.00	0.269	59 764.00	61.555	324 758.00
	3	41.753	708 661.00	30.610	716 230.00	108.446	1 862 219.00	—	—
	4	3 314.631	7 024 333.00	2 938.088	7 077 193.00	—	—	—	—

Table 2: The compilation times (in seconds), and the circuit sizes for fully dense BNs. The time-out was set to six hours.

#nodes	domain size	decision-DNNF circuits		smooth decision-DNNF circuits			
		c2d		D4		c2d	
		time (s)	size	time (s)	size	time (s)	size
5 : 10	2	0.985	3 564.67	0.046	8 434.00	1.400	12 742.67
	3	373.124	8 859 360.00	2.297	135 292.00	92.116	1 135 995.67
	4	—	—	50.353	936 604.00	—	—
	5	—	—	1 311.515	4 204 672.00	—	—
	6	—	—	17 324.939	14 357 590.00	—	—
	7	—	—	—	—	—	—
	8	—	—	—	—	—	—
	9	—	—	—	—	—	—
5 : 15	2	1.533	5 350.67	0.073	12 434.00	2.896	28 315.33
	3	—	—	4.460	200 218.00	—	—
	4	—	—	154.742	1 397 404.00	—	—
	5	—	—	3 584.449	6 282 797.00	—	—
	6	—	—	—	—	—	—
	7	—	—	—	—	—	—
	8	—	—	—	—	—	—
	9	—	—	—	—	—	—
5 : 20	2	2.028	6 976.00	0.105	16 434.00	5.029	26 544.67
	3	—	—	8.330	265 828.00	38.250	502 157.00
	4	—	—	341.046	1 858 204.00	—	—
	5	—	—	5 263.520	8 360 922.00	—	—
	6	—	—	—	—	—	—
	7	—	—	—	—	—	—
	8	—	—	—	—	—	—
	9	—	—	—	—	—	—
5 : 25	2	2.599	8 671.33	0.144	20 434.00	6.220	40 294.67
	3	—	—	10.531	331 438.00	overflow	31 482 330.00
	4	—	—	512.699	2 319 004.00	—	—
	5	—	—	10 119.426	10 439 047.00	—	—
	6	—	—	—	—	—	—
	7	—	—	—	—	—	—
	8	—	—	—	—	—	—
	9	—	—	—	—	—	—
6 : 12	2	2.990	74 680.00	0.161	21 618.00	3.470	28 512.00
	3	—	—	27.206	534 604.00	206.973	2 702 515.00
	4	—	—	2 586.006	4 926 108.00	—	—
	5	—	—	—	—	—	—
	6	—	—	—	—	—	—
	7	—	—	—	—	—	—
6 : 18	2	155.342	637 364.67	0.361	31 986.00	7.499	58 772.67
	3	—	—	57.255	784 390.00	—	—
	4	—	—	6 639.665	7 359 132.00	—	—
	5	—	—	—	—	—	—
	6	—	—	—	—	—	—
	7	—	—	—	—	—	—
6 : 24	2	1 498.366	5 468 243.33	0.639	42 354.00	9.262	92 294.00
	3	—	—	120.036	1 042 456.00	—	—
	4	—	—	13 846.856	9 792 156.00	—	—
	5	—	—	—	—	—	—
	6	—	—	—	—	—	—
	7	—	—	—	—	—	—
6 : 30	2	—	—	0.956	52 722.00	15.184	139 663.33
	3	—	—	187.158	1 300 522.00	—	—
	4	—	—	19 522.735	12 225 180.00	—	—
	5	—	—	—	—	—	—
	6	—	—	—	—	—	—
7 : 14	2	29.272	297 497.33	0.923	53 746.00	17.915	108 397.33
	3	—	—	666.086	1 990 156.00	1 780.636	10 999 478.00
	4	—	—	—	—	—	—
	5	—	—	—	—	—	—
	6	—	—	—	—	—	—
7 : 21	2	906.275	3 587 806.00	1.842	79 730.00	15.539	122 502.00
	3	—	—	1 662.329	2 969 932.00	—	—
	4	—	—	—	—	—	—
7 : 28	2	—	—	2.990	105 714.00	29.223	233 370.00
	3	—	—	4 044.033	3 949 708.00	—	—
	4	—	—	—	—	—	—
7 : 35	2	—	—	5.083	131 698.00	95.039	595 160.00
	3	—	—	6 748.713	4 929 484.00	—	—
	4	—	—	—	—	—	—

Table 2: The compilation times (in seconds), and the circuit sizes for fully dense BNs. The time-out was set to six hours.

#nodes	density	domain size	nwDNNF circuits						decision-DNNF circuits					
			Bella (<i>i</i>)			Bella (Cara)			D4			Bella (Cara - signed variant)		
			time (s)	size	#	time (s)	size	#	time (s)	size	#	time (s)	size	#
5 : 5	80%	2	0.01	901	10	0.01	1 017	10	0.01	1 533	10	0.02	1 740	10
		5	0.75	107 314	10	0.27	117 950	10	0.77	200 694	10	0.59	666 049	10
		10	96.87	5 038 865	10	46.94	5 482 440	10	430.94	8 429 701	10	61.04	36 103 370	10
		11	202.42	7 303 401	10	130.84	7 973 873	10	1 221.48	13 791 873	10	122.41	74 267 196	10
		12	380.75	11 322 773	10	247.53	12 568 875	10	3 704.82	28 573 509	10	268.55	123 995 298	10
		13	663.97	19 509 851	10	436.63	21 705 539	10	6 624.75	34 465 982	1	621.20	215 247 313	8
		14	1 491.65	32 614 471	10	866.86	36 403 555	10	—	—	0	1 091.22	274 720 896	2
		15	3 254.79	49 867 671	10	1 669.92	56 643 910	10	—	—	0	—	—	0
		16	5 106.02	54 014 883	10	3 356.99	62 137 395	10	—	—	0	4 339.06	76 413 320	3
		17	5 211.91	22 620 828	2	5 784.90	65 672 463	5	—	—	0	6 455.61	117 295 401	2
	60%	2	0.01	541	10	0.01	680	10	0.02	864	10	0.01	1 089	10
		5	0.18	35 117	10	0.07	41 152	10	0.14	54 174	10	0.31	161 803	10
		10	4.65	424 484	10	1.32	545 453	10	8.04	882 666	10	2.56	5 304 574	10
		15	94.33	4 056 770	10	16.16	8 329 687	10	265.86	6 584 234	9	30.77	62 776 028	10
		20	856.45	29 159 870	10	121.42	36 543 985	10	3 254.71	26 635 851	8	168.18	215 716 865	8
		25	2 027.26	34 843 482	10	577.12	45 881 028	10	—	—	0	576.16	352 399 770	4
		26	2 480.59	43 127 890	10	680.07	61 837 592	10	—	—	0	509.33	251 872 954	1
		27	3 698.87	68 503 053	8	833.84	87 232 776	8	—	—	0	752.72	322 161 592	1
		28	3 796.22	52 154 815	10	1 265.15	78 709 459	10	—	—	0	—	—	0
		29	4 958.41	65 308 342	6	1 807.90	108 562 432	10	—	—	0	—	—	0
		30	3 481.50	66 019 829	3	1 854.18	96 143 411	8	—	—	0	—	—	0
7 : 7	90%	2	0.02	4 639	10	0.01	5 119	10	0.04	8 272	10	0.05	11 154	10
		3	0.70	85 986	10	0.30	93 227	10	0.85	157 897	10	0.48	345 957	10
		4	12.06	713 705	10	6.34	766 486	10	24.75	1 320 559	10	7.41	3 226 115	10
		5	146.63	3 739 274	10	100.56	4 014 988	10	598.10	6 657 814	10	92.52	21 382 163	10
		6	1 687.51	14 828 408	10	1 291.96	16 056 909	10	6 671.15	26 650 333	2	1 194.42	81 681 165	10
		7	—	—	0	7 073.52	52 967 247	2	—	—	0	—	—	0
	80%	2	0.02	3 428	10	0.01	3 861	10	0.02	5 487	10	0.04	8 255	10
		3	0.31	56 971	10	0.13	63 046	10	0.25	76 119	10	0.32	217 552	10
		4	3.25	440 239	10	0.65	521 519	10	3.66	548 462	10	1.30	2 238 185	10
		5	21.73	2 033 877	10	4.83	2 287 363	10	36.17	2 233 974	10	8.43	13 462 338	10
		6	113.88	8 043 704	10	33.00	9 196 274	10	261.39	9 349 728	10	43.87	63 391 689	10
		7	499.40	26 198 478	10	138.30	29 087 302	10	2 072.17	23 058 910	10	207.14	166 739 933	8
	60%	8	2 150.11	79 957 669	10	706.10	87 660 004	10	—	—	0	716.27	189 548 823	1
		9	4 921.20	79 666 358	5	2 951.34	160 648 695	10	—	—	0	—	—	0
		10	—	—	0	6 101.93	102 594 430	2	—	—	0	—	—	0
		2	0.01	2 213	10	0.01	2 997	10	0.02	3 089	10	0.02	6 064	10
		3	0.13	26 728	10	0.05	35 806	10	0.10	33 394	10	0.13	104 020	10
		4	0.99	170 243	10	0.20	221 686	10	0.88	212 623	10	0.66	1 093 961	10
10 : 10	90%	5	4.10	519 258	10	0.57	646 428	10	4.31	672 187	10	1.67	3 540 288	10
		6	23.74	2 773 231	10	1.84	3 346 648	10	28.64	3 007 438	10	8.13	24 539 823	10
		7	90.48	9 266 833	10	6.27	12 868 649	10	114.54	7 960 273	10	31.15	89 393 094	10
	80%	8	198.84	15 853 331	10	17.75	28 757 069	10	341.43	15 548 494	10	45.99	120 841 793	8
		9	814.51	69 519 302	10	54.32	90 048 399	10	871.11	22 139 821	7	96.17	224 859 064	3
		10	740.95	43 397 886	10	97.75	57 991 430	10	2 525.66	42 752 348	9	153.85	267 145 930	2
		11	1 933.60	83 373 914	9	265.85	114 309 981	9	5 254.01	48 384 725	6	—	—	0
		12	3 653.09	132 864 751	8	551.49	209 529 685	8	—	—	0	—	—	0
		13	4 921.87	179 597 411	3	1 022.24	343 350 230	7	—	—	0	—	—	0
	60%	2	0.41	48 977	10	0.17	53 029	10	0.45	83 611	10	0.37	117 490	10
		3	332.10	3 184 830	10	223.73	3 391 368	10	862.12	5 750 341	10	243.25	12 839 913	10
		2	0.22	37 004	10	0.07	40 997	10	0.17	52 012	10	0.28	100 594	10
		3	49.99	2 186 263	10	22.33	2 387 535	10	93.52	2 680 775	10	27.75	12 972 850	10
		4	5 045.94	43 770 339	10	3 225.37	47 987 631	10	—	—	0	3 761.66	231 626 057	2

Table 3: The compilation times (in seconds), the circuit sizes, and the number of successfully compiled instances (maximum is ten) for 60% – 90% densities. The time-out was set to two hours. The caching schemes *i* and Cara were considered.

#nodes	density	domain size	nwDNNF circuits						decision-DNNF circuits					
			Bella (<i>i</i>)			Bella (Cara)			D4			Bella (Cara - signed variant)		
			time (s)	size	#	time (s)	size	#	time (s)	size	#	time (s)	size	#
5 : 10	80%	2	0.01	1 453	10	0.01	1 619	10	0.01	2 593	10	0.03	3 394	10
		3	0.06	12 836	10	0.04	13 620	10	0.06	23 519	10	0.17	53 477	10
		4	0.36	59 543	10	0.15	62 588	10	0.42	109 951	10	0.39	340 159	10
		5	1.53	200 614	10	0.59	212 797	10	2.33	366 392	10	1.10	989 365	10
		6	6.21	562 386	10	2.30	595 154	10	13.71	963 488	10	3.61	3 576 548	10
		7	19.78	1 351 501	10	7.61	1 405 898	10	60.45	2 200 344	10	10.69	9 858 932	10
		8	55.85	2 844 342	10	26.84	2 947 505	10	208.46	4 536 754	10	30.82	19 667 236	10
		9	141.38	5 456 282	10	71.83	5 646 383	10	764.58	8 469 111	10	78.22	43 681 358	10
		10	335.31	9 779 116	10	189.18	10 220 815	10	2 508.84	14 962 083	10	226.96	97 791 590	10
		11	802.61	16 616 565	10	504.69	16 908 876	10	6 933.22	25 096 542	4	472.91	155 261 801	10
		12	1 586.77	26 709 446	10	865.38	28 278 987	10	—	—	0	1 035.42	250 397 029	9
		13	2 900.80	41 907 736	10	1 818.78	44 670 340	10	—	—	0	—	—	0
		14	5 595.88	65 382 472	4	4 163.73	71 089 087	10	—	—	0	—	—	0
		15	—	—	0	5 924.88	98 548 222	5	—	—	0	—	—	0
	60%	2	0.01	1 015	10	0.01	1 131	10	0.02	1 502	10	0.02	2 411	10
		5	0.61	102 661	10	0.17	114 425	10	0.51	108 179	10	0.75	559 975	10
		10	69.09	6 103 104	10	4.87	6 309 330	10	100.36	3 842 167	10	20.77	69 749 520	10
		15	909.81	48 434 157	10	62.22	54 321 910	10	2 313.29	24 602 105	10	76.16	105 832 510	1
		20	4 049.34	151 875 241	5	430.90	282 705 665	10	—	—	0	—	—	0
		25	5 480.54	89 815 424	4	1 828.10	100 994 770	4	—	—	0	—	—	0
5 : 15	80%	2	0.01	2 090	10	0.01	2 194	10	0.02	3 702	10	0.03	4 978	10
		3	0.10	18 004	10	0.06	18 755	10	0.10	33 968	10	0.29	66 286	10
		4	0.58	85 175	10	0.24	88 052	10	0.78	158 753	10	0.69	367 759	10
		5	2.37	295 661	10	0.89	311 205	10	5.10	525 448	10	1.35	1 588 558	10
		6	10.76	805 328	10	4.86	820 139	10	29.38	1 395 052	10	6.15	5 174 472	10
		7	33.39	1 962 244	10	15.52	2 016 095	10	128.03	3 180 640	10	20.71	12 592 882	10
		8	105.31	4 159 297	10	55.14	4 240 049	10	536.77	6 532 814	10	66.56	30 886 097	10
		9	259.31	7 955 993	10	150.00	8 072 640	10	1 947.67	12 275 444	10	159.23	61 514 756	10
		10	669.28	13 589 932	10	393.05	14 144 430	10	6 064.70	21 676 075	6	440.88	116 778 730	10
		11	1 802.83	24 723 205	10	1 072.99	25 766 681	10	—	—	0	1 039.28	229 622 774	10
		12	3 680.75	40 649 881	10	2 189.94	42 412 645	10	—	—	0	—	—	0
		13	5 806.77	60 934 747	5	4 199.73	64 942 938	10	—	—	0	—	—	0
		14	—	—	0	5 929.34	104 326 610	2	—	—	0	—	—	0
	60%	2	0.01	1 457	10	0.01	1 551	10	0.03	2 152	10	0.02	3 824	10
		5	1.09	167 751	10	0.23	179 612	10	0.93	150 081	10	0.82	1 097 163	10
		10	96.58	8 311 075	10	8.38	8 632 230	10	187.60	4 140 532	10	28.04	91 962 770	10
		15	1 765.17	86 924 621	10	110.74	92 125 649	10	4 937.30	26 459 366	5	126.48	138 509 260	1
		20	6 980.59	249 767 622	1	876.17	477 417 665	10	—	—	0	—	—	0
		25	—	—	0	—	—	0	—	—	0	—	—	0
5 : 20	80%	2	0.01	2 698	10	0.01	2 802	10	0.02	4 799	10	0.04	6 773	10
		3	0.14	23 329	10	0.08	24 101	10	0.12	44 206	10	0.46	86 050	10
		4	0.85	112 410	10	0.34	114 863	10	1.29	207 985	10	0.82	521 033	10
		5	3.58	388 621	10	1.29	398 275	10	9.21	687 618	10	2.29	2 126 790	10
		6	17.37	1 101 127	10	7.95	1 127 788	10	53.64	1 825 884	10	9.47	6 572 896	10
		7	52.89	2 612 828	10	24.75	2 649 067	10	235.83	4 171 582	10	31.70	16 932 582	10
		8	180.92	5 382 476	10	98.28	5 494 193	10	1 062.11	8 558 827	10	102.72	41 071 793	10
		9	489.98	10 376 736	10	279.37	10 658 987	10	4 206.14	16 149 649	10	313.06	89 477 300	10
		10	1 214.00	19 174 545	10	705.59	19 784 430	10	—	—	0	808.37	172 316 830	10
		11	3 145.58	31 626 455	10	2 023.32	32 691 874	10	—	—	0	1 814.66	263 622 703	4
		12	6 401.45	54 779 755	8	4 114.39	56 820 018	10	—	—	0	—	—	0
	60%	2	0.01	1 906	10	0.01	2 015	10	0.03	2 768	10	0.03	5 418	10
		5	1.69	244 718	10	0.30	252 903	10	1.63	195 176	10	1.13	1 591 417	10
		10	153.83	11 959 998	10	13.62	11 892 330	10	419.92	5 077 630	10	42.04	122 295 270	10
		15	2 472.84	115 040 845	10	185.66	121 371 010	10	6 220.46	48 726 938	1	—	—	0
		20	—	—	0	1 387.08	730 883 265	10	—	—	0	—	—	0
		25	—	—	0	—	—	0	—	—	0	—	—	0

Table 4: The compilation times (in seconds), the circuit sizes, and the number of successfully compiled instances (maximum is ten) for 60% – 90% densities. The time-out was set to two hours. The caching schemes *i* and Cara were considered.

#nodes	density	domain size	nwDNNF circuits						decision-DNNF circuits					
			Bella (<i>i</i>)			Bella (Cara)			D4			Bella (Cara - signed variant)		
			time (s)	size	#	time (s)	size	#	time (s)	size	#	time (s)	size	#
5 : 25	80%	2	0.02	3 293	10	0.02	3 397	10	0.04	5 920	10	0.04	8 216	10
		3	0.18	29 026	10	0.11	29 787	10	0.19	54 592	10	0.44	107 110	10
		4	1.21	140 543	10	0.49	143 126	10	1.98	256 607	10	0.98	628 556	10
		5	6.00	488 885	10	2.70	495 950	10	15.15	849 238	10	3.35	2 603 743	10
		6	25.44	1 339 710	10	12.24	1 362 342	10	82.31	2 260 551	10	13.50	8 393 229	10
		7	87.51	3 266 142	10	43.08	3 310 852	10	433.01	5 166 036	10	50.28	22 065 994	10
		8	280.91	6 785 362	10	158.59	6 920 471	10	1 999.10	10 586 450	10	155.67	50 783 153	10
		9	730.25	13 239 371	10	423.73	13 576 007	10	6 426.71	19 973 258	8	491.60	105 498 242	10
		10	1 803.32	23 727 756	10	1 105.14	24 344 430	10	—	—	0	1 182.29	203 452 830	10
		11	5 461.55	41 770 839	10	3 339.01	42 838 087	10	—	—	0	—	—	0
		12	—	—	0	6 209.82	70 898 932	10	—	—	0	—	—	0
	60%	2	0.02	2 304	10	0.02	2 415	10	0.03	3 382	10	0.03	6 668	10
		5	2.12	292 483	10	0.38	306 043	10	2.21	234 963	10	1.30	2 018 501	10
		10	221.58	14 628 322	10	18.60	15 165 430	10	716.46	6 029 341	10	63.50	178 827 030	10
		15	3 891.45	151 474 439	10	252.67	157 921 923	10	—	—	0	—	—	0
7 : 14	90%	2	0.08	8 056	10	0.03	8 536	10	0.06	13 960	10	0.11	19 602	10
		3	1.77	153 471	10	0.75	161 024	10	2.48	287 520	10	1.11	595 489	10
		4	38.26	1 337 028	10	21.72	1 385 801	10	101.59	2 401 671	10	24.89	6 911 740	10
		5	504.28	7 163 935	10	362.10	7 515 175	10	2 990.75	12 360 872	10	371.61	38 475 175	10
		6	6 286.15	28 444 485	8	5 083.96	29 931 366	10	—	—	0	4 649.88	178 089 753	7
	80%	2	0.04	5 850	10	0.02	6 328	10	0.04	8 367	10	0.05	16 258	10
		3	0.78	104 286	10	0.21	111 306	10	0.68	126 664	10	0.58	518 080	10
		4	7.65	861 409	10	1.40	951 599	10	12.30	895 381	10	2.85	6 029 225	10
		5	59.24	4 561 637	10	15.84	4 972 988	10	137.02	3 821 929	10	23.14	31 016 913	10
		6	394.93	18 510 942	10	120.90	19 722 256	10	1 503.79	12 813 428	10	145.40	135 875 997	10
		7	1 659.00	61 333 522	10	579.38	63 842 497	10	6 963.50	35 308 693	1	—	—	0
		8	6 529.75	162 432 445	8	2 901.99	172 093 309	10	—	—	0	—	—	0
	60%	2	0.02	4 365	10	0.02	4 818	10	0.03	5 356	10	0.03	13 277	10
		3	0.37	75 480	10	0.11	81 249	10	0.40	68 481	10	0.34	375 593	10
		4	3.59	575 055	10	0.38	614 601	10	3.15	397 848	10	1.56	3 787 126	10
		5	21.83	2 941 579	10	1.56	3 407 100	10	21.28	1 736 130	10	6.56	20 251 413	10
		6	97.72	11 694 833	10	6.27	15 217 878	10	128.81	6 883 413	10	33.95	108 999 920	10
		7	379.14	38 021 150	10	20.37	42 876 725	10	544.48	17 213 639	10	73.02	185 746 892	2
		8	1 265.21	110 708 997	10	61.82	121 413 501	10	2 422.86	50 048 000	10	112.59	263 080 215	1
		9	4 168.91	291 861 497	10	168.36	311 486 085	10	5 613.48	30 976 055	1	—	—	0
		10	2 730.43	121 739 579	1	439.55	565 574 430	4	—	—	0	—	—	0
		11	5 176.58	158 216 856	1	994.97	200 829 118	1	—	—	0	—	—	0
7 : 21	90%	2	0.08	11 410	10	0.04	11 890	10	0.08	20 282	10	0.18	29 036	10
		3	2.44	225 200	10	1.02	232 757	10	5.25	417 357	10	1.44	822 048	10
		4	76.74	1 926 189	10	47.83	1 970 710	10	240.51	3 493 948	10	53.87	8 965 116	10
		5	1 251.36	10 571 937	10	873.52	10 790 925	10	6 589.66	18 077 335	6	930.76	58 926 925	10
	80%	2	0.05	8 157	10	0.03	8 636	10	0.06	11 859	10	0.08	24 706	10
		3	1.15	146 075	10	0.32	152 154	10	1.15	178 366	10	0.76	696 793	10
		4	15.94	1 270 654	10	3.69	1 318 422	10	28.75	1 186 684	10	6.16	8 806 006	10
		5	106.64	6 621 785	10	32.22	7 052 738	10	317.71	5 166 154	10	45.65	46 802 663	10
		6	764.51	27 410 229	10	259.04	28 233 088	10	3 913.25	17 611 389	10	321.06	214 466 085	10
		7	3 507.29	88 860 338	10	1 391.90	90 772 353	10	—	—	0	—	—	0
	60%	2	0.03	6 361	10	0.02	6 904	10	0.04	7 494	10	0.05	21 749	10
		3	0.56	106 979	10	0.17	112 780	10	0.57	92 123	10	0.59	560 756	10
		4	6.09	835 430	10	0.58	937 415	10	6.01	530 142	10	2.27	5 531 024	10
		5	42.51	5 216 949	10	2.86	5 680 300	10	50.08	2 488 830	10	12.03	37 360 250	10
		6	203.78	21 165 117	10	11.57	21 720 040	10	301.57	8 369 727	10	53.97	164 624 906	10
		7	798.69	68 136 114	10	38.58	69 929 752	10	1 581.93	22 412 804	10	62.03	145 753 092	1
		8	2 450.00	179 341 720	10	124.11	184 789 681	10	4 761.02	35 354 051	2	—	—	0
		9	5 575.63	381 290 992	7	355.44	457 674 351	10	—	—	0	—	—	0

Table 5: The compilation times (in seconds), the circuit sizes, and the number of successfully compiled instances (maximum is ten) for 60% – 90% densities. The time-out was set to two hours. The caching schemes *i* and Cara were considered.

#nodes	density	domain size	nwDNNF circuits						decision-DNNF circuits					
			Bella (<i>i</i>)			Bella (Cara)			D4			Bella (Cara - signed variant)		
			time (s)	size	#	time (s)	size	#	time (s)	size	#	time (s)	size	#
7 : 28	90%	2	0.10	14 802	10	0.05	15 282	10	0.08	26 394	10	0.25	38 047	10
		3	3.49	296 496	10	1.52	304 053	10	9.22	548 853	10	2.02	1 171 750	10
		4	127.73	2 578 991	10	83.54	2 624 431	10	446.85	4 600 069	10	92.62	12 189 129	10
		5	2 180.57	14 110 167	10	1 468.22	14 392 800	10	—	—	0	1 605.87	76 627 800	10
	80%	2	0.06	10 549	10	0.03	11 029	10	0.04	15 278	10	0.12	33 471	10
		3	1.64	191 914	10	0.40	199 126	10	1.96	229 640	10	0.86	965 378	10
		4	22.81	1 732 886	10	5.35	1 767 241	10	50.47	1 541 082	10	8.97	10 374 691	10
		5	184.09	9 247 180	10	55.54	9 493 738	10	699.06	6 731 416	10	73.27	66 301 363	10
		6	1 280.35	36 457 364	10	484.03	37 476 419	10	6 418.23	22 370 654	5	—	—	0
		7	5 536.91	119 120 269	10	2 449.79	118 240 033	10	—	—	0	—	—	0
		8	0.03	8 025	10	0.02	8 455	10	0.04	9 388	10	0.06	27 557	10
	60%	3	0.82	145 772	10	0.15	154 066	10	0.75	115 453	10	0.54	838 157	10
		4	8.73	1 231 231	10	0.77	1 303 599	10	9.31	713 129	10	3.11	7 946 961	10
		5	56.72	6 631 791	10	3.67	6 968 613	10	78.54	2 919 025	10	16.29	46 831 663	10
		6	295.48	28 359 254	10	16.81	29 282 070	10	563.86	10 126 208	10	79.79	231 837 280	7
		7	1 069.52	91 076 878	10	60.66	93 236 019	10	2 862.76	27 401 023	10	—	—	0
		8	4 106.30	276 850 563	10	194.27	280 312 497	10	—	—	0	—	—	0
		9	—	—	0	592.69	672 547 757	10	—	—	0	—	—	0
8 : 2	90%	2	0.02	3 402	10	0.01	4 084	10	0.02	9 696	10	0.05	5 134	10
		3	0.63	73 000	10	0.29	85 645	10	0.82	145 724	10	0.49	155 751	10
		4	15.55	634 968	10	9.97	735 358	10	33.60	1 500 030	10	10.55	1 314 022	10
		5	353.59	3 446 083	10	266.00	3 957 803	10	1 495.45	9 114 771	10	272.11	8 615 933	10
		6	6 009.67	14 436 174	5	5 056.11	16 693 504	5	—	—	0	4 804.91	35 803 802	5
	80%	2	0.01	1 856	10	0.01	2 238	10	0.02	4 501	10	0.02	2 765	10
		3	0.16	24 978	10	0.12	29 078	10	0.19	50 450	10	0.31	73 303	10
		4	1.24	164 880	10	0.63	191 773	10	2.60	386 460	10	0.84	349 145	10
		5	14.74	721 023	10	10.38	835 809	10	39.76	1 905 813	10	9.54	1 646 446	10
		6	149.50	2 437 494	10	124.02	2 802 206	10	563.27	6 996 779	10	90.62	6 096 652	10
		7	943.88	6 635 791	10	753.52	7 574 124	10	6 049.38	20 791 068	9	1 001.94	19 439 567	10
		8	5 934.93	16 416 514	5	5 037.89	18 646 520	5	—	—	0	5 166.31	46 953 099	5
9 : 3	90%	2	0.04	10 304	10	0.02	12 159	10	0.05	16 889	10	0.18	21 823	10
		3	3.90	372 132	10	1.78	425 798	10	9.03	746 057	10	2.11	1 512 519	10
		4	466.75	6 024 640	10	335.07	6 908 438	10	1 679.83	12 395 176	10	384.12	33 712 867	10
	80%	2	0.03	5 934	10	0.01	8 160	10	0.03	9 982	10	0.07	11 968	10
		3	1.20	162 934	10	0.48	213 878	10	1.54	320 571	10	0.73	669 303	10
		4	33.65	1 466 672	10	17.99	2 112 074	10	71.97	2 829 054	10	24.70	13 053 516	10
		5	794.86	11 494 046	10	516.10	14 980 927	10	3 645.42	22 352 389	10	525.50	75 115 024	8

Table 6: The compilation times (in seconds), the circuit sizes, and the number of successfully compiled instances (maximum is ten) for 60% – 90% densities. The time-out was set to two hours. The caching schemes *i* and Cara were considered.