Supplementary material of *Efficient Incremental GR(1) Synthesis via Monotonic Fixed-Point Reuse*

The supplementary experimental data comprise three parts, aligned with the experiments presented in the main paper: Tables 1 and 2 correspond to Tables 2 and 3 of the main paper; Tables 3–28 correspond to Tables 4 and 5 of the main paper; and Table 29 corresponds to Table 6 of the main paper.

Tables 30 and 31 present performance comparisons of the incremental approach of the AMBA+GenBuf specification against baseline methods: the former shows an overall comparison across different Δ values, while the latter compares performance for each Δ under varying execution times of the baseline methods. We have completed experiments for most values of Δ; however, due to time constraints, some Δ values remain unfinished. Nevertheless, the vast majority of completed experimental results are already sufficient to demonstrate the advantages of our approach.

Table 1: Performance comparison for realizable specifications. Superscripts are test case counts.

	Add Sys			Sub Sys				Add Env				Sub Env	
Δ	J*	J	S	J*	J	S*	S	J*	J	S*	S	J	S
1	**0.35**^{439}	**0.61**^{425}	**0.60**^{1503}	**0.20**^{445}	**0.20**^{441}	**0.20**^{1516}	**0.21**^{1515}	**0.06**^{73}	**0.06**^{61}	**0.11**^{32}	1.49^{17}	**0.90**^{41}	3.47^{18}
2	**0.52**^{281}	**0.68**^{280}	**0.65**^{1357}	**0.29**^{292}	**0.29**^{290}	**0.24**^{1053}	**0.25**^{1400}	**0.04**^{41}	**0.04**^{38}	**0.19**^{25}	2.09^{12}	**0.76**^{13}	4.46^{14}
3	**0.58**^{150}	**0.70**^{146}	**0.66**^{1144}	**0.42**^{157}	**0.44**^{155}	**0.30**^{783}	**0.31**^{1201}	**0.01**^{16}	**0.004**^{13}	–	–	–	1.79^{10}
4	**0.64**^{71}	**0.74**^{71}	**0.70**^{645}	**0.98**^{73}	1.15^{73}	**0.35**^{996}	**0.38**^{1037}	–	–	–	–	–	–
5	**0.83**^{20}	1.01^{20}	**0.69**^{526}	1.34^{19}	1.32^{19}	**0.40**^{844}	**0.38**^{888}	–	–	–	–	–	–
6	–	–	**0.66**^{421}	–	–	**0.46**^{701}	**0.44**^{748}	–	–	–	–	–	–
7	–	–	**0.59**^{312}	–	–	**0.47**^{575}	**0.50**^{625}	–	–	–	–	–	–
8	–	–	**0.59**^{249}	–	–	**0.52**^{478}	**0.49**^{527}	–	–	–	–	–	–
9	–	–	**0.82**^{362}	–	–	**0.55**^{402}	**0.54**^{453}	–	–	–	–	–	–
10	–	–	**0.66**^{156}	–	–	**0.60**^{335}	**0.56**^{384}	–	–	–	–	–	–
11	–	–	**0.65**^{118}	–	–	**0.54**^{274}	**0.62**^{321}	–	–	–	–	–	–
12	–	–	1.07^{198}	–	–	**0.47**^{231}	**0.60**^{276}	–	–	–	–	–	–
13	–	–	**0.80**^{75}	–	–	**0.60**^{194}	**0.73**^{238}	–	–	–	–	–	–
14	–	–	**0.87**^{58}	–	–	**0.70**^{155}	**0.86**^{197}	–	–	–	–	–	–
15	–	–	1.16^{102}	–	–	**0.69**^{126}	**0.74**^{161}	–	–	–	–	–	–
16	–	–	**0.62**^{39}	–	–	**0.66**^{97}	**0.71**^{127}	–	–	–	–	–	–
17	–	–	**0.65**^{31}	–	–	**0.60**^{74}	**0.71**^{95}	–	–	–	–	–	–
18	–	–	**0.61**^{22}	–	–	**0.66**^{57}	**0.68**^{75}	–	–	–	–	–	–
19	–	–	**0.68**^{14}	–	–	**0.76**^{45}	**0.88**^{62}	–	–	–	–	–	–
20	–	–	1.30^{28}	–	–	1.14^{48}	1.22^{48}	–	–	–	–	–	–

Table 2: Performance comparison for unrealizable specifications. Superscripts are test case counts.

	Add Sys			Sub Sys				Add Env				Sub Env	
Δ	J*	J	S	J*	J	S*	S	J*	J	S*	S	J	S
1	**0.08**^{98}	**0.21**^{103}	**0.03**^{265}	**0.50**^{69}	**0.42**^{73}	1.26^{235}	1.56^{233}	1.29^{190}	1.23^{194}	**0.97**^{671}	1.00^{672}	**0.31**^{426}	**0.12**^{700}
2	**0.52**^{70}	**0.89**^{73}	**0.04**^{244}	**0.55**^{38}	**0.40**^{41}	1.44^{201}	1.65^{197}	1.30^{126}	1.23^{125}	1.11^{585}	1.03^{588}	**0.69**^{134}	**0.13**^{622}
3	**0.68**^{45}	**0.91**^{46}	**0.06**^{219}	**0.39**^{17}	**0.71**^{19}	1.33^{189}	1.51^{186}	1.05^{72}	1.10^{71}	1.06^{504}	1.01^{507}	1.71^{85}	**0.16**^{544}
4	1.29^{27}	1.29^{19}	**0.08**^{196}	–	–	1.65^{163}	1.88^{163}	1.15^{54}	1.24^{53}	1.08^{435}	1.04^{429}	2.20^{59}	**0.17**^{471}
5	–	–	**0.08**^{174}	–	–	2.18^{151}	2.69^{145}	1.15^{36}	1.10^{34}	1.08^{368}	1.07^{299}	2.46^{40}	**0.20**^{405}
6	–	–	**0.06**^{148}	–	–	1.94^{135}	2.58^{135}	1.68^{24}	1.80^{23}	1.02^{302}	1.08^{104}	2.74^{28}	**0.23**^{342}
7	–	–	**0.07**^{129}	–	–	1.61^{123}	–	1.29^{15}	2.07^{15}	1.03^{235}	–	2.16^{20}	**0.27**^{285}
8	–	–	**0.05**^{105}	–	–	1.75^{108}	–	–	–	1.21^{198}	–	1.63^{10}	**0.27**^{242}
9	–	–	**0.05**^{76}	–	–	1.32^{93}	–	–	–	1.37^{72}	–	–	**0.31**^{207}
10	–	–	**0.04**^{56}	–	–	1.74^{79}	–	–	–	–	–	–	**0.35**^{164}
11	–	–	–	–	–	1.41^{70}	–	–	–	–	–	–	**0.32**^{133}
12	–	–	–	–	–	1.23^{63}	–	–	–	–	–	–	**0.39**^{101}
13	–	–	–	–	–	1.50^{56}	–	–	–	–	–	–	**0.38**^{75}
14	–	–	–	–	–	1.67^{49}	–	–	–	–	–	–	**0.39**^{49}
15	–	–	–	–	–	1.57^{42}	–	–	–	–	–	–	**0.28**^{28}
16	–	–	–	–	–	1.42^{35}	–	–	–	–	–	–	**0.30**^{17}
17	–	–	–	–	–	1.66^{28}	–	–	–	–	–	–	–
18	–	–	–	–	–	1.79^{21}	–	–	–	–	–	–	–

Table 3: The geometric mean of the time ratio for `Add Sys J*` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)									Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add SysJ*	1	**0.94**^{3}	**0.60**^{32}	**0.50**^{63}	**0.45**^{58}	**0.34**^{141}	**0.25**^{58}	**0.25**^{67}	**0.14**^{17}	**0.35**^{439}	6.94%	5.82%
	2	1.04^{2}	**0.37**^{5}	**0.67**^{40}	**0.66**^{40}	**0.61**^{103}	**0.43**^{40}	**0.35**^{39}	**0.17**^{12}	**0.52**^{281}	8.55%	9.21%
	3	1.42^{1}	**0.24**^{2}	**0.60**^{20}	**0.81**^{23}	**0.67**^{59}	**0.45**^{21}	**0.34**^{20}	**0.67**^{4}	**0.58**^{150}	8.54%	10.37%
	4	—	**0.64**^{2}	**0.37**^{5}	**0.91**^{11}	**0.82**^{36}	**0.18**^{7}	**0.68**^{7}	**0.42**^{3}	**0.64**^{71}	10.13%	12.66%
	5	—	1.70^{1}	**0.20**^{3}	1.97^{4}	**0.98**^{8}	**0.76**^{3}	**0.32**^{1}	—	**0.83**^{20}	9.52%	9.52%

Table 4: The geometric mean of the time ratio for `Add Sys J` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)									Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add SysJ	1	1.08^{3}	**0.84**^{32}	**0.81**^{62}	**0.79**^{58}	**0.67**^{137}	**0.48**^{56}	**0.37**^{63}	**0.24**^{14}	**0.61**^{425}	4.27%	5.39%
	2	1.08^{2}	**0.87**^{5}	**0.88**^{40}	**0.85**^{40}	**0.80**^{102}	**0.56**^{40}	**0.45**^{41}	**0.21**^{10}	**0.68**^{280}	6.98%	8.31%
	3	**0.68**^{1}	**0.74**^{2}	**0.76**^{20}	**0.88**^{24}	**0.79**^{58}	**0.53**^{20}	**0.47**^{18}	**0.32**^{3}	**0.70**^{146}	10.43%	9.82%
	4	—	**0.69**^{2}	**0.52**^{5}	**1.00**^{11}	**0.80**^{36}	**0.48**^{7}	**0.65**^{7}	**0.72**^{3}	**0.74**^{71}	10.00%	13.75%
	5	—	1.34^{1}	**0.82**^{3}	1.50^{4}	1.35^{8}	**0.44**^{3}	**0.36**^{1}	—	1.01^{20}	4.76%	9.52%

Table 5: The geometric mean of the time ratio for `Sub Sys J*` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)									Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Sub SysJ*	1	1.70^{48}	**0.46**^{56}	**0.12**^{75}	**0.18**^{59}	**0.14**^{125}	**0.08**^{39}	**0.11**^{39}	**0.03**^{4}	**0.20**^{445}	2.25%	1.80%
	2	2.88^{45}	**0.73**^{55}	**0.09**^{56}	**0.22**^{43}	**0.11**^{66}	**0.10**^{14}	**0.28**^{13}	—	**0.29**^{292}	0.00%	0.34%
	3	4.89^{34}	1.09^{41}	**0.10**^{29}	**0.16**^{26}	**0.03**^{17}	**0.06**^{3}	**0.22**^{7}	—	**0.42**^{157}	0.00%	0.00%
	4	7.47^{30}	1.00^{23}	**0.09**^{9}	**0.07**^{8}	**0.002**^{3}	—	—	—	**0.98**^{73}	0.00%	0.00%
	5	5.08^{10}	**0.38**^{6}	**0.17**^{2}	**0.26**^{1}	—	—	—	—	1.34^{19}	0.00%	0.00%

Table 6: The geometric mean of the time ratio for `Sub Sys J` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)									Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Sub SysJ	1	1.85^{48}	**0.44**^{56}	**0.12**^{75}	**0.16**^{58}	**0.14**^{124}	**0.09**^{38}	**0.12**^{38}	**0.01**^{4}	**0.20**^{441}	0.90%	1.80%
	2	3.00^{45}	**0.69**^{55}	**0.09**^{56}	**0.21**^{43}	**0.12**^{65}	**0.11**^{14}	**0.18**^{12}	—	**0.29**^{290}	0.68%	0.34%
	3	5.13^{34}	1.04^{41}	**0.11**^{29}	**0.17**^{26}	**0.03**^{17}	**0.07**^{3}	**0.14**^{5}	—	**0.44**^{155}	1.27%	0.00%
	4	9.05^{30}	1.04^{23}	**0.14**^{9}	**0.07**^{8}	**0.003**^{3}	—	—	—	1.15^{73}	0.00%	0.00%
	5	5.15^{10}	**0.35**^{6}	**0.17**^{2}	**0.26**^{1}	—	—	—	—	1.32^{19}	0.00%	0.00%

Table 7: The geometric mean of the time ratio for `Add Sys S` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)									Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add SysS	1	1.07^{366}	$\mathbf{0.70}^{490}$	$\mathbf{0.61}^{209}$	$\mathbf{0.50}^{82}$	$\mathbf{0.37}^{169}$	$\mathbf{0.29}^{51}$	$\mathbf{0.27}^{85}$	$\mathbf{0.15}^{38}$	$\mathbf{0.60}^{1503}$	2.47%	2.01%
	2	1.17^{309}	$\mathbf{0.75}^{439}$	$\mathbf{0.59}^{197}$	$\mathbf{0.56}^{76}$	$\mathbf{0.48}^{159}$	$\mathbf{0.44}^{50}$	$\mathbf{0.27}^{78}$	$\mathbf{0.26}^{37}$	$\mathbf{0.65}^{1357}$	3.21%	2.85%
	3	1.59^{182}	$\mathbf{0.76}^{386}$	$\mathbf{0.54}^{174}$	$\mathbf{0.60}^{76}$	$\mathbf{0.57}^{154}$	$\mathbf{0.34}^{47}$	$\mathbf{0.34}^{77}$	$\mathbf{0.22}^{37}$	$\mathbf{0.66}^{1144}$	3.95%	3.19%
	4	3.21^{40}	$\mathbf{0.99}^{209}$	$\mathbf{0.67}^{114}$	$\mathbf{0.67}^{49}$	$\mathbf{0.57}^{101}$	$\mathbf{0.40}^{34}$	$\mathbf{0.42}^{58}$	$\mathbf{0.27}^{29}$	$\mathbf{0.70}^{645}$	4.02%	3.12%
	5	6.26^{26}	$\mathbf{1.00}^{149}$	$\mathbf{0.69}^{94}$	$\mathbf{0.56}^{41}$	$\mathbf{0.61}^{95}$	$\mathbf{0.54}^{28}$	$\mathbf{0.41}^{52}$	$\mathbf{0.26}^{33}$	$\mathbf{0.69}^{526}$	5.23%	4.14%
	6	10.19^{14}	$\mathbf{0.97}^{99}$	$\mathbf{0.76}^{75}$	$\mathbf{0.58}^{33}$	$\mathbf{0.60}^{83}$	$\mathbf{0.46}^{29}$	$\mathbf{0.42}^{50}$	$\mathbf{0.31}^{28}$	$\mathbf{0.66}^{421}$	6.03%	5.13%
	7	6.64^{6}	1.06^{68}	$\mathbf{0.79}^{65}$	$\mathbf{0.62}^{22}$	$\mathbf{0.49}^{58}$	$\mathbf{0.54}^{19}$	$\mathbf{0.33}^{42}$	$\mathbf{0.27}^{26}$	$\mathbf{0.59}^{312}$	11.11%	6.55%
	8	—	1.05^{41}	$\mathbf{0.81}^{55}$	$\mathbf{0.53}^{19}$	$\mathbf{0.51}^{48}$	$\mathbf{0.46}^{17}$	$\mathbf{0.47}^{40}$	$\mathbf{0.38}^{25}$	$\mathbf{0.59}^{249}$	11.70%	7.80%
	9	3.28^{37}	$\mathbf{0.98}^{72}$	1.02^{72}	$\mathbf{0.78}^{25}$	$\mathbf{0.63}^{59}$	$\mathbf{0.41}^{22}$	$\mathbf{0.63}^{44}$	$\mathbf{0.32}^{26}$	$\mathbf{0.82}^{362}$	16.01%	9.98%
	10	—	$\mathbf{0.98}^{2}$	1.38^{24}	1.02^{16}	$\mathbf{0.69}^{40}$	$\mathbf{0.66}^{15}$	$\mathbf{0.48}^{33}$	$\mathbf{0.44}^{22}$	$\mathbf{0.66}^{156}$	15.22%	10.87%
	11	—	—	2.16^{15}	$\mathbf{0.87}^{15}$	$\mathbf{0.85}^{29}$	$\mathbf{0.35}^{10}$	$\mathbf{0.48}^{22}$	$\mathbf{0.40}^{23}$	$\mathbf{0.65}^{118}$	17.48%	12.59%
	12	15.71^{17}	2.14^{21}	1.86^{33}	1.59^{18}	$\mathbf{0.75}^{43}$	$\mathbf{0.38}^{15}$	$\mathbf{0.43}^{31}$	$\mathbf{0.35}^{16}$	1.07^{198}	23.55%	15.44%
	13	—	—	4.86^{5}	1.10^{5}	$\mathbf{0.94}^{23}$	$\mathbf{0.77}^{10}$	$\mathbf{0.73}^{18}$	$\mathbf{0.43}^{11}$	$\mathbf{0.80}^{75}$	27.18%	18.45%
	14	—	—	9.75^{2}	1.30^{3}	1.38^{16}	$\mathbf{0.86}^{8}$	$\mathbf{0.82}^{13}$	$\mathbf{0.49}^{12}$	$\mathbf{0.87}^{58}$	30.95%	21.43%
	15	7.28^{4}	2.19^{11}	1.99^{14}	3.24^{6}	1.22^{25}	$\mathbf{0.78}^{8}$	$\mathbf{0.49}^{20}$	$\mathbf{0.63}^{14}$	1.16^{102}	29.17%	18.75%
	16	—	1.61^{1}	$\mathbf{0.66}^{1}$	2.47^{1}	1.16^{6}	1.42^{3}	$\mathbf{0.76}^{12}$	$\mathbf{0.36}^{12}$	$\mathbf{0.62}^{39}$	23.53%	19.61%
	17	—	$\mathbf{0.91}^{1}$	$\mathbf{0.60}^{1}$	2.54^{1}	1.40^{4}	1.28^{1}	$\mathbf{0.69}^{10}$	$\mathbf{0.45}^{11}$	$\mathbf{0.65}^{31}$	16.22%	16.22%
	18	—	1.03^{1}	$\mathbf{0.74}^{1}$	5.07^{1}	1.03^{2}	1.17^{1}	$\mathbf{0.66}^{6}$	$\mathbf{0.39}^{9}$	$\mathbf{0.61}^{22}$	15.38%	7.69%
	19	—	2.84^{1}	$\mathbf{0.60}^{1}$	—	1.78^{1}	1.24^{1}	$\mathbf{0.87}^{3}$	$\mathbf{0.46}^{6}$	$\mathbf{0.68}^{14}$	26.32%	10.53%
	20	1.11^{1}	5.41^{3}	2.89^{8}	1.08^{1}	$\mathbf{0.91}^{2}$	1.66^{2}	$\mathbf{0.55}^{7}$	$\mathbf{0.77}^{3}$	1.30^{28}	34.88%	34.88%

Table 8: The geometric mean of the time ratio for `Sub Sys S*` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)									Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Sub SysS*	1	$\mathbf{0.35}^{496}$	$\mathbf{0.25}^{507}$	$\mathbf{0.17}^{211}$	$\mathbf{0.09}^{74}$	$\mathbf{0.07}^{129}$	$\mathbf{0.04}^{31}$	$\mathbf{0.03}^{44}$	$\mathbf{0.01}^{18}$	$\mathbf{0.20}^{1516}$	0.13%	0.53%
	2	$\mathbf{0.43}^{395}$	$\mathbf{0.25}^{381}$	$\mathbf{0.16}^{124}$	$\mathbf{0.11}^{46}$	$\mathbf{0.07}^{59}$	$\mathbf{0.05}^{15}$	$\mathbf{0.03}^{22}$	$\mathbf{0.01}^{7}$	$\mathbf{0.24}^{1053}$	0.28%	0.19%
	3	$\mathbf{0.62}^{301}$	$\mathbf{0.27}^{303}$	$\mathbf{0.18}^{84}$	$\mathbf{0.11}^{25}$	$\mathbf{0.08}^{42}$	$\mathbf{0.05}^{11}$	$\mathbf{0.05}^{12}$	$\mathbf{0.01}^{3}$	$\mathbf{0.30}^{783}$	0.00%	0.13%
	4	$\mathbf{0.69}^{428}$	$\mathbf{0.31}^{345}$	$\mathbf{0.20}^{107}$	$\mathbf{0.12}^{30}$	$\mathbf{0.11}^{47}$	$\mathbf{0.06}^{14}$	$\mathbf{0.05}^{19}$	$\mathbf{0.01}^{6}$	$\mathbf{0.35}^{996}$	0.00%	0.20%
	5	$\mathbf{0.77}^{389}$	$\mathbf{0.36}^{285}$	$\mathbf{0.16}^{89}$	$\mathbf{0.15}^{19}$	$\mathbf{0.09}^{38}$	$\mathbf{0.05}^{10}$	$\mathbf{0.03}^{11}$	$\mathbf{0.01}^{3}$	$\mathbf{0.40}^{844}$	0.00%	0.12%
	6	$\mathbf{0.83}^{346}$	$\mathbf{0.35}^{234}$	$\mathbf{0.20}^{70}$	$\mathbf{0.17}^{16}$	$\mathbf{0.12}^{22}$	$\mathbf{0.06}^{5}$	$\mathbf{0.05}^{7}$	$\mathbf{0.01}^{1}$	$\mathbf{0.46}^{701}$	0.14%	0.14%
	7	$\mathbf{0.80}^{298}$	$\mathbf{0.35}^{180}$	$\mathbf{0.16}^{64}$	$\mathbf{0.21}^{11}$	$\mathbf{0.23}^{15}$	$\mathbf{0.03}^{3}$	$\mathbf{0.06}^{4}$	—	$\mathbf{0.47}^{575}$	0.00%	0.00%
	8	$\mathbf{0.89}^{254}$	$\mathbf{0.37}^{152}$	$\mathbf{0.17}^{48}$	$\mathbf{0.17}^{12}$	$\mathbf{0.33}^{8}$	$\mathbf{0.04}^{1}$	$\mathbf{0.03}^{3}$	—	$\mathbf{0.52}^{478}$	0.00%	0.00%
	9	$\mathbf{0.85}^{223}$	$\mathbf{0.40}^{125}$	$\mathbf{0.19}^{41}$	$\mathbf{0.13}^{6}$	$\mathbf{0.15}^{6}$	$\mathbf{0.03}^{1}$	—	—	$\mathbf{0.55}^{402}$	0.00%	0.00%
	10	$\mathbf{0.87}^{194}$	$\mathbf{0.48}^{105}$	$\mathbf{0.14}^{30}$	$\mathbf{0.15}^{2}$	$\mathbf{0.29}^{4}$	—	—	—	$\mathbf{0.60}^{335}$	0.00%	0.00%
	11	$\mathbf{0.71}^{161}$	$\mathbf{0.49}^{85}$	$\mathbf{0.14}^{24}$	$\mathbf{0.18}^{2}$	$\mathbf{0.08}^{2}$	—	—	—	$\mathbf{0.54}^{274}$	0.00%	0.00%
	12	$\mathbf{0.56}^{140}$	$\mathbf{0.45}^{75}$	$\mathbf{0.16}^{14}$	$\mathbf{0.04}^{1}$	$\mathbf{0.06}^{1}$	—	—	—	$\mathbf{0.47}^{231}$	0.00%	0.00%
	13	$\mathbf{0.69}^{125}$	$\mathbf{0.52}^{61}$	$\mathbf{0.25}^{7}$	$\mathbf{0.09}^{1}$	—	—	—	—	$\mathbf{0.60}^{194}$	0.00%	0.00%
	14	$\mathbf{0.84}^{102}$	$\mathbf{0.54}^{49}$	$\mathbf{0.20}^{3}$	$\mathbf{0.10}^{1}$	—	—	—	—	$\mathbf{0.70}^{155}$	0.00%	0.00%
	15	$\mathbf{0.83}^{88}$	$\mathbf{0.46}^{35}$	$\mathbf{0.35}^{3}$	—	—	—	—	—	$\mathbf{0.69}^{126}$	0.00%	0.00%
	16	$\mathbf{0.66}^{69}$	$\mathbf{0.74}^{27}$	$\mathbf{0.07}^{1}$	—	—	—	—	—	$\mathbf{0.66}^{97}$	0.00%	0.00%
	17	$\mathbf{0.61}^{56}$	$\mathbf{0.74}^{17}$	$\mathbf{0.01}^{1}$	—	—	—	—	—	$\mathbf{0.60}^{74}$	0.00%	0.00%
	18	$\mathbf{0.59}^{45}$	1.20^{11}	$\mathbf{0.10}^{1}$	—	—	—	—	—	$\mathbf{0.66}^{57}$	0.00%	0.00%
	19	$\mathbf{0.63}^{36}$	1.70^{9}	—	—	—	—	—	—	$\mathbf{0.76}^{45}$	0.00%	0.00%
	20	1.12^{40}	1.23^{8}	—	—	—	—	—	—	1.14^{48}	0.00%	0.00%

Table 9: The geometric mean of the time ratio for `Sub Sys S` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)									Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Sub SysS	1	**0.42**^{496}	**0.26**^{507}	**0.17**^{211}	**0.09**^{74}	**0.07**^{129}	**0.04**^{31}	**0.03**^{43}	**0.01**^{18}	**0.21**^{1515}	0.26%	0.59%
	2	**0.56**^{523}	**0.28**^{461}	**0.16**^{170}	**0.10**^{57}	**0.07**^{96}	**0.04**^{24}	**0.03**^{45}	**0.01**^{20}	**0.25**^{1400}	0.36%	0.57%
	3	**0.74**^{464}	**0.31**^{407}	**0.16**^{138}	**0.12**^{41}	**0.08**^{76}	**0.06**^{21}	**0.04**^{35}	**0.01**^{17}	**0.31**^{1201}	0.17%	0.42%
	4	**0.85**^{428}	**0.36**^{349}	**0.18**^{115}	**0.14**^{32}	**0.11**^{58}	**0.06**^{17}	**0.04**^{28}	**0.01**^{10}	**0.38**^{1037}	0.19%	0.58%
	5	**0.78**^{389}	**0.35**^{292}	**0.15**^{95}	**0.19**^{26}	**0.09**^{45}	**0.07**^{13}	**0.03**^{22}	**0.01**^{6}	**0.38**^{888}	0.11%	0.34%
	6	**0.88**^{349}	**0.37**^{240}	**0.18**^{82}	**0.16**^{19}	**0.15**^{31}	**0.08**^{9}	**0.03**^{16}	**0.01**^{2}	**0.44**^{748}	0.40%	0.27%
	7	1.02^{305}	**0.41**^{186}	**0.17**^{76}	**0.17**^{16}	**0.16**^{26}	**0.06**^{4}	**0.03**^{9}	**0.01**^{3}	**0.50**^{625}	0.00%	0.00%
	8	**0.99**^{260}	**0.37**^{161}	**0.18**^{67}	**0.20**^{14}	**0.09**^{17}	**0.04**^{2}	**0.02**^{5}	**0.01**^{1}	**0.49**^{527}	0.38%	0.00%
	9	1.00^{232}	**0.43**^{139}	**0.19**^{56}	**0.13**^{9}	**0.08**^{15}	**0.04**^{1}	**0.002**^{1}	—	**0.54**^{453}	0.00%	0.00%
	10	1.01^{205}	**0.44**^{123}	**0.11**^{44}	**0.11**^{4}	**0.20**^{5}	**0.03**^{2}	**0.005**^{1}	—	**0.56**^{384}	0.00%	0.00%
	11	1.02^{175}	**0.46**^{106}	**0.15**^{33}	**0.17**^{3}	**0.16**^{4}	—	—	—	**0.62**^{321}	0.00%	0.00%
	12	**0.87**^{158}	**0.48**^{97}	**0.15**^{17}	**0.05**^{1}	**0.06**^{2}	**0.03**^{1}	—	—	**0.60**^{276}	0.00%	0.00%
	13	**0.97**^{149}	**0.51**^{77}	**0.36**^{9}	**0.05**^{1}	**0.09**^{2}	—	—	—	**0.73**^{238}	0.00%	0.00%
	14	1.11^{129}	**0.59**^{61}	**0.31**^{5}	**0.06**^{1}	**0.14**^{1}	—	—	—	**0.86**^{197}	0.00%	0.00%
	15	**0.93**^{108}	**0.48**^{48}	**0.87**^{3}	**0.06**^{1}	**0.07**^{1}	—	—	—	**0.74**^{161}	0.00%	0.00%
	16	**0.77**^{88}	**0.68**^{36}	**0.17**^{3}	—	—	—	—	—	**0.71**^{127}	0.00%	0.00%
	17	**0.74**^{69}	**0.80**^{24}	**0.01**^{1}	**0.10**^{1}	—	—	—	—	**0.71**^{95}	0.00%	0.00%
	18	**0.69**^{57}	**0.81**^{16}	**0.12**^{2}	—	—	—	—	—	**0.68**^{75}	0.00%	0.00%
	19	**0.79**^{51}	1.52^{11}	—	—	—	—	—	—	**0.88**^{62}	0.00%	0.00%
	20	1.22^{40}	1.20^{8}	—	—	—	—	—	—	1.22^{48}	0.00%	0.00%

Table 10: The geometric mean of the time ratio for `Add Env J*` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)									Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add EnvJ*	1	—	**0.28**^{3}	**0.02**^{9}	**0.20**^{6}	**0.06**^{23}	**0.10**^{18}	**0.03**^{13}	**0.21**^{1}	**0.06**^{73}	0.00%	3.95%
	2	—	**0.30**^{1}	**0.01**^{4}	**0.12**^{2}	**0.04**^{14}	**0.14**^{12}	**0.01**^{8}	—	**0.04**^{41}	0.00%	2.38%
	3	—	—	—	—	**0.03**^{6}	**0.05**^{5}	**0.0006**^{5}	—	**0.01**^{16}	0.00%	5.88%
	4	—	—	—	—	**0.01**^{3}	4.58^{1}	**0.0004**^{1}	—	**0.01**^{5}	0.00%	16.67%

Table 11: The geometric mean of the time ratio for `Add Env J` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)									Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add EnvJ	1	—	**0.20**^{2}	**0.002**^{5}	**0.07**^{4}	**0.07**^{22}	**0.12**^{18}	**0.03**^{10}	—	**0.06**^{61}	0.00%	4.69%
	2	—	**0.31**^{1}	**0.01**^{3}	**0.11**^{2}	**0.03**^{12}	**0.14**^{12}	**0.01**^{8}	—	**0.04**^{38}	0.00%	2.56%
	3	—	—	—	—	**0.02**^{5}	**0.01**^{3}	**0.0006**^{5}	—	**0.004**^{13}	0.00%	7.14%
	4	—	—	—	—	**0.02**^{3}	**0.33**^{1}	**0.0005**^{1}	—	**0.01**^{5}	0.00%	16.67%

Table 12: The geometric mean of the time ratio for `Sub Env J` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)									Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Sub EnvJ	1	—	1.20^{3}	1.10^{3}	1.12^{3}	1.14^{10}	**0.99**^{13}	**0.55**^{8}	**0.20**^{1}	**0.90**^{41}	0.00%	2.38%
	2	—	—	**0.56**^{2}	—	1.36^{5}	**0.88**^{4}	**0.18**^{2}	—	**0.76**^{13}	0.00%	0.00%

Table 13: The geometric mean of the time ratio for `Add Env S*` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)									Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add EnvS*	1	1.44^{8}	**0.24**^{9}	**0.01**^{2}	**0.03**^{6}	**0.04**^{6}	—	**0.000005**^{1}	—	**0.11**^{32}	0.00%	0.00%
	2	3.03^{4}	**0.59**^{7}	**0.01**^{2}	**0.13**^{6}	**0.16**^{5}	—	**0.000005**^{1}	—	**0.19**^{25}	0.00%	0.00%
	3	—	1.29^{2}	—	**0.66**^{2}	**0.76**^{4}	—	—	—	**0.84**^{8}	0.00%	0.00%
	4	—	—	—	—	**0.85**^{4}	—	—	—	**0.85**^{4}	0.00%	0.00%

Table 14: The geometric mean of the time ratio for `Add Env S` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add EnvS	1	1.64^{8}	100.13^{2}	—	$\mathbf{0.67}^{2}$	$\mathbf{0.32}^{5}$	—	—	—	1.49^{17}	0.00%	0.00%
	2	1.77^{4}	74.26^{2}	—	$\mathbf{0.74}^{2}$	$\mathbf{0.70}^{4}$	—	—	—	2.09^{12}	0.00%	0.00%
	3	—	1.42^{2}	—	$\mathbf{0.68}^{2}$	$\mathbf{0.75}^{4}$	—	—	—	$\mathbf{0.86}^{8}$	0.00%	0.00%

Table 15: The geometric mean of the time ratio for `Sub Env S` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Realizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Sub EnvS	1	4.31^{12}	45.66^{2}	—	$\mathbf{0.61}^{2}$	$\mathbf{0.41}^{2}$	—	—	—	3.47^{18}	0.00%	0.00%
	2	4.20^{10}	45.72^{2}	—	$\mathbf{0.59}^{2}$	—	—	—	—	4.46^{14}	0.00%	0.00%
	3	2.26^{8}	—	—	$\mathbf{0.71}^{2}$	—	—	—	—	1.79^{10}	0.00%	0.00%

Table 16: The geometric mean of the time ratio for `Add Sys J*` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add SysJ*	1	—	$\mathbf{0.29}^{6}$	$\mathbf{0.01}^{6}$	$\mathbf{0.27}^{10}$	$\mathbf{0.15}^{47}$	$\mathbf{0.04}^{15}$	$\mathbf{0.02}^{10}$	$\mathbf{0.01}^{4}$	$\mathbf{0.08}^{98}$	16.53%	11.57%
	2	—	$\mathbf{0.41}^{6}$	$\mathbf{0.23}^{5}$	1.14^{8}	$\mathbf{0.63}^{33}$	$\mathbf{0.64}^{8}$	$\mathbf{0.23}^{9}$	$\mathbf{0.22}^{1}$	$\mathbf{0.52}^{70}$	26.73%	19.80%
	3	—	$\mathbf{0.38}^{4}$	$\mathbf{0.58}^{4}$	1.08^{4}	1.04^{25}	$\mathbf{0.48}^{3}$	$\mathbf{0.13}^{4}$	$\mathbf{0.10}^{1}$	$\mathbf{0.68}^{45}$	26.98%	19.05%
	4	—	$\mathbf{0.58}^{2}$	1.23^{3}	1.01^{2}	1.46^{15}	$\mathbf{0.94}^{2}$	1.81^{3}	—	1.29^{27}	25.00%	22.22%
	5	—	—	2.28^{2}	1.06^{1}	4.64^{5}	$\mathbf{0.26}^{1}$	—	—	2.44^{9}	10.00%	0.00%

Table 17: The geometric mean of the time ratio for `Add Sys J` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add SysJ	1	—	$\mathbf{0.33}^{6}$	$\mathbf{0.02}^{6}$	$\mathbf{0.69}^{10}$	$\mathbf{0.53}^{49}$	$\mathbf{0.08}^{15}$	$\mathbf{0.06}^{12}$	$\mathbf{0.01}^{5}$	$\mathbf{0.21}^{103}$	24.43%	12.98%
	2	—	$\mathbf{0.53}^{6}$	1.04^{5}	1.27^{8}	1.27^{35}	$\mathbf{0.67}^{8}$	$\mathbf{0.42}^{9}$	$\mathbf{0.11}^{2}$	$\mathbf{0.89}^{73}$	37.72%	24.56%
	3	—	$\mathbf{0.49}^{4}$	$\mathbf{0.70}^{4}$	1.16^{4}	1.38^{25}	$\mathbf{0.73}^{3}$	$\mathbf{0.36}^{5}$	$\mathbf{0.08}^{1}$	$\mathbf{0.91}^{46}$	26.56%	21.88%
	4	—	$\mathbf{0.18}^{1}$	—	6.14^{1}	1.65^{12}	$\mathbf{0.49}^{2}$	1.08^{3}	—	1.29^{19}	13.64%	9.09%

Table 18: The geometric mean of the time ratio for `Sub Sys J*` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Sub SysJ*	1	—	$\mathbf{0.80}^{7}$	$\mathbf{0.96}^{2}$	1.01^{11}	$\mathbf{0.38}^{32}$	$\mathbf{0.49}^{8}$	$\mathbf{0.34}^{7}$	$\mathbf{0.35}^{2}$	$\mathbf{0.50}^{69}$	23.16%	10.53%
	2	—	1.07^{4}	1.12^{2}	1.14^{6}	$\mathbf{0.35}^{19}$	$\mathbf{0.67}^{3}$	$\mathbf{0.48}^{4}$	—	$\mathbf{0.55}^{38}$	29.63%	9.26%
	3	—	1.11^{1}	$\mathbf{0.75}^{2}$	$\mathbf{0.48}^{4}$	$\mathbf{0.19}^{7}$	$\mathbf{0.50}^{2}$	1.21^{1}	—	$\mathbf{0.39}^{17}$	19.05%	9.52%

Table 19: The geometric mean of the time ratio for `Sub Sys J` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Sub SysJ	1	—	$\mathbf{0.73}^{7}$	$\mathbf{0.80}^{2}$	$\mathbf{0.71}^{11}$	$\mathbf{0.34}^{33}$	$\mathbf{0.39}^{10}$	$\mathbf{0.32}^{8}$	$\mathbf{0.23}^{2}$	$\mathbf{0.42}^{73}$	15.38%	12.09%
	2	—	1.58^{5}	$\mathbf{0.90}^{2}$	$\mathbf{0.47}^{6}$	$\mathbf{0.24}^{19}$	$\mathbf{0.40}^{5}$	$\mathbf{0.40}^{4}$	—	$\mathbf{0.40}^{41}$	16.00%	8.00%
	3	—	1.04^{2}	13.87^{2}	1.20^{5}	$\mathbf{0.16}^{7}$	$\mathbf{0.94}^{2}$	1.28^{1}	—	$\mathbf{0.71}^{19}$	13.64%	9.09%

Table 20: The geometric mean of the time ratio for `Add Sys S` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add SysS	1	$\mathbf{0.16}^{30}$	$\mathbf{0.05}^{89}$	$\mathbf{0.03}^{31}$	$\mathbf{0.01}^{16}$	$\mathbf{0.02}^{55}$	$\mathbf{0.003}^{21}$	$\mathbf{0.002}^{18}$	$\mathbf{0.003}^{5}$	$\mathbf{0.03}^{265}$	10.58%	9.29%
	2	$\mathbf{0.20}^{18}$	$\mathbf{0.07}^{82}$	$\mathbf{0.04}^{31}$	$\mathbf{0.05}^{16}$	$\mathbf{0.03}^{54}$	$\mathbf{0.01}^{22}$	$\mathbf{0.01}^{17}$	$\mathbf{0.002}^{4}$	$\mathbf{0.04}^{244}$	16.77%	12.90%
	3	1.28^{12}	$\mathbf{0.09}^{70}$	$\mathbf{0.06}^{30}$	$\mathbf{0.10}^{15}$	$\mathbf{0.06}^{50}$	$\mathbf{0.02}^{21}$	$\mathbf{0.01}^{17}$	$\mathbf{0.001}^{4}$	$\mathbf{0.06}^{219}$	19.93%	15.12%
	4	5.77^{8}	$\mathbf{0.12}^{59}$	$\mathbf{0.11}^{26}$	$\mathbf{0.11}^{13}$	$\mathbf{0.07}^{47}$	$\mathbf{0.02}^{22}$	$\mathbf{0.02}^{17}$	$\mathbf{0.003}^{4}$	$\mathbf{0.08}^{196}$	19.54%	17.24%
	5	48.43^{4}	$\mathbf{0.13}^{49}$	$\mathbf{0.22}^{26}$	$\mathbf{0.06}^{10}$	$\mathbf{0.08}^{46}$	$\mathbf{0.01}^{18}$	$\mathbf{0.02}^{17}$	$\mathbf{0.001}^{4}$	$\mathbf{0.08}^{174}$	19.66%	17.09%
	6	$\mathbf{0.98}^{1}$	$\mathbf{0.23}^{36}$	$\mathbf{0.21}^{26}$	$\mathbf{0.05}^{9}$	$\mathbf{0.04}^{43}$	$\mathbf{0.01}^{17}$	$\mathbf{0.01}^{12}$	$\mathbf{0.01}^{4}$	$\mathbf{0.06}^{148}$	17.35%	15.82%
	7	$\mathbf{0.94}^{1}$	$\mathbf{0.32}^{23}$	$\mathbf{0.36}^{23}$	$\mathbf{0.05}^{9}$	$\mathbf{0.06}^{39}$	$\mathbf{0.01}^{17}$	$\mathbf{0.01}^{13}$	$\mathbf{0.005}^{4}$	$\mathbf{0.07}^{129}$	19.21%	18.64%
	8	$\mathbf{0.90}^{1}$	$\mathbf{0.44}^{9}$	$\mathbf{0.63}^{17}$	$\mathbf{0.13}^{9}$	$\mathbf{0.06}^{36}$	$\mathbf{0.01}^{16}$	$\mathbf{0.01}^{14}$	$\mathbf{0.0006}^{3}$	$\mathbf{0.05}^{105}$	24.36%	23.08%
	9	1.39^{1}	$\mathbf{0.83}^{5}$	$\mathbf{0.75}^{12}$	$\mathbf{0.65}^{5}$	$\mathbf{0.06}^{27}$	$\mathbf{0.005}^{13}$	$\mathbf{0.004}^{10}$	$\mathbf{0.0005}^{3}$	$\mathbf{0.05}^{76}$	29.84%	24.19%
	10	—	$\mathbf{0.90}^{2}$	$\mathbf{0.87}^{5}$	1.13^{3}	$\mathbf{0.08}^{23}$	$\mathbf{0.01}^{11}$	$\mathbf{0.01}^{9}$	$\mathbf{0.0008}^{3}$	$\mathbf{0.04}^{56}$	39.64%	34.23%

Table 21: The geometric mean of the time ratio for `Sub Sys S*` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Sub SysS*	1	4.20^{41}	1.59^{90}	$\mathbf{0.95}^{27}$	$\mathbf{0.85}^{14}$	$\mathbf{0.62}^{41}$	$\mathbf{0.42}^{14}$	$\mathbf{0.46}^{6}$	$\mathbf{0.08}^{2}$	1.26^{235}	17.53%	13.40%
	2	5.13^{40}	1.71^{81}	1.08^{20}	$\mathbf{0.91}^{13}$	$\mathbf{0.50}^{33}$	$\mathbf{0.47}^{8}$	$\mathbf{0.31}^{4}$	$\mathbf{0.30}^{2}$	1.44^{201}	16.80%	12.40%
	3	7.02^{40}	1.57^{77}	$\mathbf{0.50}^{10}$	$\mathbf{0.72}^{11}$	$\mathbf{0.40}^{33}$	$\mathbf{0.54}^{9}$	$\mathbf{0.30}^{6}$	$\mathbf{0.16}^{3}$	1.33^{189}	10.28%	9.81%
	4	6.72^{40}	2.11^{65}	$\mathbf{0.89}^{5}$	$\mathbf{0.67}^{11}$	$\mathbf{0.44}^{28}$	$\mathbf{0.41}^{6}$	$\mathbf{0.40}^{5}$	$\mathbf{0.16}^{3}$	1.65^{163}	9.84%	6.56%
	5	7.72^{39}	3.49^{56}	1.83^{5}	$\mathbf{0.79}^{11}$	$\mathbf{0.42}^{24}$	$\mathbf{0.86}^{6}$	$\mathbf{0.45}^{7}$	$\mathbf{0.17}^{3}$	2.18^{151}	3.80%	3.16%
	6	6.35^{35}	3.57^{52}	1.56^{5}	$\mathbf{0.44}^{10}$	$\mathbf{0.36}^{22}$	$\mathbf{0.67}^{4}$	$\mathbf{0.26}^{4}$	$\mathbf{0.14}^{3}$	1.94^{135}	3.55%	1.42%
	7	5.65^{29}	2.86^{51}	1.21^{5}	$\mathbf{0.29}^{8}$	$\mathbf{0.31}^{22}$	$\mathbf{0.67}^{5}$	$\mathbf{0.11}^{2}$	$\mathbf{0.02}^{1}$	1.61^{123}	3.12%	2.34%
	8	4.78^{23}	2.72^{50}	2.20^{4}	$\mathbf{0.38}^{7}$	$\mathbf{0.48}^{21}$	$\mathbf{0.98}^{1}$	$\mathbf{0.06}^{1}$	$\mathbf{0.02}^{1}$	1.75^{108}	1.80%	2.70%
	9	2.91^{17}	1.99^{47}	1.52^{4}	$\mathbf{0.92}^{7}$	$\mathbf{0.30}^{16}$	—	$\mathbf{0.03}^{1}$	$\mathbf{0.03}^{1}$	1.32^{93}	1.06%	1.06%
	10	2.94^{11}	2.71^{46}	1.25^{3}	$\mathbf{0.80}^{7}$	$\mathbf{0.34}^{12}$	—	—	—	1.74^{79}	4.82%	1.20%
	11	1.60^{7}	1.97^{46}	$\mathbf{0.88}^{4}$	$\mathbf{0.50}^{5}$	$\mathbf{0.69}^{7}$	—	$\mathbf{0.03}^{1}$	—	1.41^{70}	1.41%	1.41%
	12	1.52^{7}	1.59^{46}	$\mathbf{0.59}^{3}$	$\mathbf{0.31}^{3}$	$\mathbf{0.22}^{4}$	—	—	—	1.23^{63}	3.08%	1.54%
	13	1.08^{7}	1.66^{46}	$\mathbf{0.72}^{3}$	—	—	—	—	—	1.50^{56}	0.00%	0.00%
	14	1.02^{7}	1.96^{39}	$\mathbf{0.68}^{3}$	—	—	—	—	—	1.67^{49}	2.00%	2.00%
	15	$\mathbf{0.92}^{7}$	1.92^{33}	$\mathbf{0.40}^{2}$	—	—	—	—	—	1.57^{42}	2.33%	2.33%
	16	$\mathbf{0.76}^{7}$	1.92^{26}	$\mathbf{0.28}^{2}$	—	—	—	—	—	1.42^{35}	5.41%	2.70%
	17	$\mathbf{0.94}^{7}$	2.12^{20}	$\mathbf{0.66}^{1}$	—	—	—	—	—	1.66^{28}	9.68%	0.00%
	18	$\mathbf{0.83}^{7}$	2.62^{14}	—	—	—	—	—	—	1.79^{21}	8.70%	8.70%

Table 22: The geometric mean of the time ratio for `Sub Sys S` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Sub SysS	1	4.58^{41}	2.17^{90}	1.08^{26}	$\mathbf{0.97}^{14}$	$\mathbf{0.68}^{42}$	$\mathbf{0.44}^{12}$	1.03^{6}	$\mathbf{0.11}^{2}$	1.56^{233}	17.59%	13.45%
	2	5.46^{40}	1.87^{81}	1.13^{19}	1.03^{12}	$\mathbf{0.63}^{32}$	$\mathbf{0.42}^{6}$	1.02^{4}	$\mathbf{0.47}^{3}$	1.65^{197}	20.16%	13.04%
	3	7.56^{40}	1.87^{75}	$\mathbf{0.77}^{10}$	$\mathbf{0.72}^{11}$	$\mathbf{0.43}^{33}$	$\mathbf{0.52}^{9}$	$\mathbf{0.37}^{6}$	$\mathbf{0.07}^{2}$	1.51^{186}	11.68%	9.35%
	4	6.92^{40}	2.45^{66}	1.03^{6}	$\mathbf{0.75}^{11}$	$\mathbf{0.47}^{25}$	$\mathbf{0.73}^{5}$	$\mathbf{0.47}^{7}$	$\mathbf{0.19}^{3}$	1.88^{163}	10.87%	7.07%
	5	11.17^{39}	3.62^{56}	1.44^{5}	1.19^{11}	$\mathbf{0.48}^{23}$	$\mathbf{0.60}^{4}$	$\mathbf{0.77}^{4}$	$\mathbf{0.11}^{3}$	2.69^{145}	8.12%	3.12%
		9.00^{35}	4.19^{52}	4.05^{4}	$\mathbf{0.59}^{10}$	$\mathbf{0.59}^{23}$	1.24^{4}	$\mathbf{0.25}^{4}$	$\mathbf{0.09}^{3}$	2.58^{135}	2.86%	0.71%

Table 23: The geometric mean of the time ratio for Add Env J* across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add EnvJ*	1	1.12^{33}	2.15^{42}	1.49^{24}	1.08^{18}	1.29^{40}	1.46^{12}	$\mathbf{0.74}^{15}$	$\mathbf{0.23}^{6}$	1.29^{190}	19.34%	15.64%
	2	1.40^{18}	2.89^{21}	1.98^{18}	1.51^{8}	1.02^{29}	1.28^{10}	$\mathbf{0.74}^{17}$	$\mathbf{0.18}^{5}$	1.30^{126}	30.73%	24.02%
	3	1.10^{2}	2.95^{10}	3.45^{10}	$\mathbf{0.46}^{5}$	$\mathbf{0.69}^{23}$	1.05^{5}	$\mathbf{0.92}^{13}$	$\mathbf{0.19}^{4}$	1.05^{72}	29.36%	29.36%
	4	1.17^{1}	3.46^{7}	5.40^{7}	1.62^{2}	$\mathbf{0.79}^{18}$	$\mathbf{0.82}^{3}$	$\mathbf{0.91}^{12}$	$\mathbf{0.13}^{4}$	1.15^{54}	25.97%	23.38%
	5	—	3.93^{4}	11.38^{5}	—	$\mathbf{0.89}^{14}$	$\mathbf{0.77}^{2}$	$\mathbf{0.63}^{8}$	$\mathbf{0.11}^{3}$	1.15^{36}	26.42%	26.42%
	6	—	12.58^{2}	21.78^{3}	—	1.07^{13}	1.26^{1}	$\mathbf{0.99}^{4}$	$\mathbf{0.05}^{1}$	1.68^{24}	20.59%	26.47%
	7	—	7.07^{1}	23.30^{1}	—	1.53^{9}	—	$\mathbf{0.51}^{3}$	$\mathbf{0.04}^{1}$	1.29^{15}	22.73%	27.27%

Table 24: The geometric mean of the time ratio for `Add Env J` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add EnvJ	1	1.63^{34}	2.06^{42}	1.24^{25}	1.46^{18}	1.04^{40}	$\mathbf{0.94}^{14}$	$\mathbf{0.49}^{15}$	$\mathbf{0.24}^{6}$	1.23^{194}	18.03%	15.57%
	2	1.11^{18}	3.02^{21}	2.15^{18}	$\mathbf{0.91}^{7}$	1.02^{29}	1.40^{10}	$\mathbf{0.66}^{17}$	$\mathbf{0.17}^{5}$	1.23^{125}	33.52%	25.14%
	3	1.16^{2}	3.21^{10}	3.48^{10}	1.56^{5}	$\mathbf{0.75}^{23}$	$\mathbf{0.78}^{5}$	$\mathbf{0.74}^{12}$	$\mathbf{0.11}^{4}$	1.10^{71}	27.36%	28.30%
	4	1.19^{1}	3.39^{7}	4.93^{7}	1.97^{2}	$\mathbf{0.84}^{18}$	1.08^{4}	$\mathbf{0.80}^{10}$	$\mathbf{0.30}^{4}$	1.24^{53}	26.32%	22.37%
	5	—	3.65^{4}	10.14^{4}	—	$\mathbf{0.89}^{14}$	2.57^{2}	$\mathbf{0.60}^{7}$	$\mathbf{0.07}^{3}$	1.10^{34}	33.96%	26.42%
	6	—	9.53^{2}	26.37^{3}	—	1.32^{13}	$\mathbf{0.62}^{1}$	$\mathbf{0.80}^{3}$	$\mathbf{0.04}^{1}$	1.80^{23}	28.57%	28.57%
	7	—	24.52^{1}	90.15^{1}	—	1.75^{10}	—	1.31^{2}	$\mathbf{0.05}^{1}$	2.07^{15}	22.73%	27.27%

Table 25: The geometric mean of the time ratio for `Sub Env J` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Sub EnvJ	1	$\mathbf{0.56}^{56}$	$\mathbf{0.34}^{63}$	$\mathbf{0.59}^{31}$	$\mathbf{0.11}^{17}$	1.16^{20}	$\mathbf{0.52}^{4}$	$\mathbf{0.002}^{10}$	$\mathbf{0.001}^{3}$	$\mathbf{0.31}^{204}$	1.86%	3.26%
	2	$\mathbf{0.88}^{44}$	1.14^{42}	1.03^{20}	$\mathbf{0.15}^{9}$	1.73^{9}	$\mathbf{0.73}^{3}$	$\mathbf{0.002}^{6}$	1.38^{1}	$\mathbf{0.69}^{134}$	3.50%	3.50%
	3	1.81^{29}	3.09^{27}	3.14^{10}	$\mathbf{0.18}^{6}$	3.14^{8}	$\mathbf{0.87}^{2}$	$\mathbf{0.01}^{2}$	$\mathbf{0.21}^{1}$	1.71^{85}	1.12%	4.49%
	4	1.58^{20}	2.76^{23}	3.77^{6}	$\mathbf{0.47}^{3}$	3.73^{6}	1.40^{1}	—	—	2.20^{59}	0.00%	6.35%
	5	1.20^{14}	3.34^{21}	8.83^{3}	—	2.14^{2}	—	—	—	2.46^{40}	0.00%	6.98%
	6	1.38^{7}	2.96^{20}	70.74^{1}	—	—	—	—	—	2.74^{28}	0.00%	0.00%
	7	1.94^{6}	2.27^{14}	—	—	—	—	—	—	2.16^{20}	0.00%	0.00%
	8	2.22^{4}	1.32^{6}	—	—	—	—	—	—	1.63^{10}	0.00%	0.00%

Table 26: The geometric mean of the time ratio for `Add Env S*` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add EnvS*	1	$\mathbf{0.95}^{276}$	1.09^{228}	$\mathbf{0.97}^{71}$	1.05^{37}	$\mathbf{0.75}^{46}$	1.04^{4}	$\mathbf{0.47}^{6}$	$\mathbf{0.09}^{3}$	$\mathbf{0.97}^{671}$	7.23%	5.22%
	2	$\mathbf{0.98}^{236}$	1.34^{200}	1.18^{63}	1.23^{32}	1.02^{42}	$\mathbf{0.86}^{4}$	$\mathbf{0.48}^{5}$	$\mathbf{0.09}^{3}$	1.11^{585}	8.89%	6.63%
	3	$\mathbf{0.96}^{199}$	1.23^{164}	$\mathbf{0.90}^{60}$	1.19^{30}	1.20^{37}	1.41^{4}	$\mathbf{0.68}^{8}$	$\mathbf{0.20}^{2}$	1.06^{504}	11.56%	8.16%
	4	$\mathbf{0.98}^{172}$	1.30^{135}	$\mathbf{0.92}^{55}$	1.20^{27}	1.23^{34}	2.25^{4}	$\mathbf{0.50}^{5}$	$\mathbf{0.12}^{3}$	1.08^{435}	14.12%	8.70%
	5	$\mathbf{0.94}^{146}$	1.47^{106}	1.02^{47}	1.19^{24}	1.12^{32}	$\mathbf{0.59}^{4}$	$\mathbf{0.53}^{6}$	$\mathbf{0.13}^{3}$	1.08^{368}	17.82%	9.80%
	6	$\mathbf{0.86}^{122}$	1.27^{87}	$\mathbf{0.99}^{37}$	1.94^{17}	1.02^{27}	$\mathbf{0.54}^{3}$	1.10^{6}	$\mathbf{0.11}^{3}$	1.02^{302}	17.89%	11.05%
	7	$\mathbf{0.92}^{104}$	1.19^{69}	1.04^{23}	1.47^{11}	1.25^{21}	$\mathbf{0.81}^{1}$	$\mathbf{0.77}^{3}$	$\mathbf{0.15}^{3}$	1.03^{235}	22.22%	13.07%
	8	$\mathbf{0.99}^{86}$	1.25^{64}	5.04^{11}	2.79^{9}	1.64^{19}	$\mathbf{0.38}^{3}$	$\mathbf{0.75}^{3}$	$\mathbf{0.05}^{3}$	1.21^{198}	22.26%	8.30%
	9	1.05^{14}	1.43^{43}	2.40^{3}	$\mathbf{0.67}^{2}$	1.41^{8}	2.92^{2}	—	—	1.37^{72}	22.58%	4.30%

Table 27: The geometric mean of the time ratio for `Add Env S` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add EnvS	1	$\mathbf{0.97}^{276}$	1.11^{227}	1.06^{71}	$\mathbf{0.98}^{37}$	$\mathbf{0.91}^{45}$	1.57^{5}	$\mathbf{0.55}^{7}$	$\mathbf{0.13}^{4}$	1.00^{672}	6.84%	5.50%
	2	$\mathbf{0.97}^{236}$	1.24^{201}	$\mathbf{0.97}^{63}$	$\mathbf{0.94}^{31}$	$\mathbf{0.92}^{43}$	$\mathbf{0.96}^{3}$	$\mathbf{0.72}^{7}$	$\mathbf{0.12}^{4}$	1.03^{588}	8.58%	6.63%
	3	$\mathbf{0.98}^{199}$	1.17^{165}	$\mathbf{0.83}^{60}$	$\mathbf{0.97}^{30}$	1.13^{38}	1.11^{4}	$\mathbf{0.71}^{7}$	$\mathbf{0.14}^{4}$	1.01^{507}	10.88%	8.16%
	4	$\mathbf{0.95}^{172}$	1.35^{134}	$\mathbf{0.91}^{55}$	$\mathbf{0.89}^{26}$	1.02^{31}	1.86^{4}	$\mathbf{0.46}^{4}$	$\mathbf{0.11}^{3}$	1.04^{429}	13.45%	8.58%
	5	$\mathbf{0.93}^{146}$	1.44^{90}	$\mathbf{0.74}^{20}$	$\mathbf{0.95}^{15}$	1.29^{20}	$\mathbf{0.47}^{3}$	1.28^{4}	$\mathbf{0.84}^{1}$	1.07^{299}	16.62%	10.53%
	6	$\mathbf{0.86}^{42}$	1.31^{47}	$\mathbf{0.66}^{5}$	31.27^{2}	$\mathbf{0.82}^{6}$	$\mathbf{0.31}^{2}$	—	—	1.08^{104}	10.34%	6.90%

Table 28: The geometric mean of the time ratio for `Sub Env S` across different ranges of baseline synthesis time.

Case	Δ	Time Ratio (Unrealizable)								Timeouts	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Sub EnvS	1	**0.16**^{310}	**0.11**^{256}	**0.07**^{66}	**0.10**^{36}	**0.07**^{26}	—	**0.01**^{4}	**0.01**^{2}	**0.12**^{700}	0.69%	0.96%
	2	**0.18**^{290}	**0.11**^{225}	**0.09**^{60}	**0.11**^{26}	**0.05**^{18}	—	**0.03**^{3}	—	**0.13**^{622}	0.93%	1.24%
	3	**0.21**^{259}	**0.15**^{193}	**0.07**^{49}	**0.12**^{23}	**0.06**^{17}	—	**0.03**^{3}	—	**0.16**^{544}	0.88%	1.24%
	4	**0.21**^{234}	**0.17**^{160}	**0.06**^{37}	**0.19**^{21}	**0.06**^{16}	—	**0.03**^{3}	—	**0.17**^{471}	1.02%	1.64%
	5	**0.25**^{216}	**0.21**^{131}	**0.06**^{27}	**0.16**^{18}	**0.09**^{11}	—	**0.05**^{2}	—	**0.20**^{405}	1.42%	1.89%
	6	**0.26**^{191}	**0.26**^{106}	**0.08**^{20}	**0.16**^{15}	**0.09**^{8}	—	**0.04**^{2}	—	**0.23**^{342}	1.40%	2.23%
	7	**0.28**^{169}	**0.33**^{85}	**0.06**^{12}	**0.19**^{11}	**0.15**^{6}	—	**0.06**^{2}	—	**0.27**^{285}	1.67%	2.34%
	8	**0.28**^{149}	**0.30**^{70}	**0.15**^{9}	**0.09**^{9}	**0.23**^{3}	—	**0.04**^{2}	—	**0.27**^{242}	1.57%	2.36%
	9	**0.29**^{129}	**0.41**^{59}	**0.14**^{8}	**0.31**^{7}	**0.87**^{2}	—	**0.10**^{2}	—	**0.31**^{207}	0.47%	0.93%
	10	**0.31**^{110}	**0.42**^{46}	**0.71**^{4}	1.09^{3}	1.11^{1}	—	—	—	**0.35**^{164}	0.00%	0.59%
	11	**0.27**^{92}	**0.47**^{38}	**0.55**^{3}	—	—	—	—	—	**0.32**^{133}	0.00%	0.73%
	12	**0.36**^{73}	**0.45**^{26}	**0.64**^{2}	—	—	—	—	—	**0.39**^{101}	0.00%	0.00%
	13	**0.40**^{54}	**0.32**^{20}	**0.74**^{1}	—	—	—	—	—	**0.38**^{75}	0.00%	0.00%
	14	**0.38**^{36}	**0.40**^{13}	—	—	—	—	—	—	**0.39**^{49}	0.00%	0.00%
	15	**0.31**^{20}	**0.21**^{8}	—	—	—	—	—	—	**0.28**^{28}	0.00%	0.00%
	16	**0.28**^{13}	**0.40**^{4}	—	—	—	—	—	—	**0.30**^{17}	0.00%	0.00%

Table 29: Frequency of invariant winning regions after modification, by scenario and magnitude of change (Δ).

	Add Sys	**Sub Sys**		**Add Env**	
Δ	**J***	**J***	**S***	**J***	**S***
Realizable Specifications					
1	260/440(59.09%)	261/445(58.65%)	1011/1516(66.69%)	56/76(73.68%)	15/32(46.88%)
2	146/282(51.77%)	146/292(50.00%)	599/1053(56.89%)	32/42(76.19%)	8/25(32.00%)
3	77/150(51.33%)	79/157(50.32%)	382/783(48.79%)	13/17(76.47%)	–
4	38/71(53.52%)	36/73(49.32%)	490/996(49.20%)	4/6(66.67%)	–
5	14/20(70.00%)	14/19(73.68%)	381/844(45.14%)	–	–
6	–	–	304/701(43.37%)	–	–
7	–	–	243/575(42.26%)	–	–
8	–	–	198/478(41.42%)	–	–
9	–	–	154/402(38.31%)	–	–
10	–	–	121/335(36.12%)	–	–
11	–	–	95/274(34.67%)	–	–
12	–	–	71/231(30.74%)	–	–
13	–	–	52/194(26.80%)	–	–
14	–	–	36/155(23.23%)	–	–
15	–	–	27/126(21.43%)	–	–
16	–	–	19/97(19.59%)	–	–
17	–	–	12/74(16.22%)	–	–
18	–	–	4/57(7.02%)	–	–
19	–	–	0/45(0.00%)	–	–
20	–	–	0/48(0.00%)	–	–
Unrealizable Specifications					
1	53/101(52.48%)	54/73(73.97%)	211/240(87.92%)	153/196(78.06%)	532/693(76.77%)
2	24/74(32.43%)	25/38(65.79%)	186/208(89.42%)	92/133(69.17%)	434/605(71.74%)
3	11/46(23.91%)	11/17(64.71%)	178/192(92.71%)	43/77(55.84%)	349/520(67.12%)
4	1/27(3.70%)	–	159/165(96.36%)	32/57(56.14%)	278/452(61.50%)
5	0/9(0.00%)	–	150/152(98.68%)	15/39(38.46%)	216/383(56.40%)
6	–	–	136/136(100.00%)	5/27(18.52%)	160/312(51.28%)
7	–	–	124/124(100.00%)	3/17(17.65%)	123/238(51.68%)
8	–	–	109/109(100.00%)	1/6(16.67%)	101/206(49.03%)
9	–	–	93/93(100.00%)	–	–
10	–	–	79/79(100.00%)	–	–
11	–	–	70/70(100.00%)	–	–
12	–	–	63/63(100.00%)	–	–
13	–	–	56/56(100.00%)	–	–
14	–	–	49/49(100.00%)	–	–
15	–	–	42/42(100.00%)	–	–
16	–	–	35/35(100.00%)	–	–
17	–	–	28/28(100.00%)	–	–
18	–	–	21/21(100.00%)	–	–

Table 30: Performance comparison for AMBA+GenBuf specifications. Superscripts are test case counts.

	Add Sys			Sub Sys				Add Env				Sub Env	
Δ	J*	J	S	J*	J	S*	S	J*	J	S*	S	J	S
1	0.44^{12}	0.44^{12}	0.32^{245}	0.48^{12}	0.36^{12}	0.14^{252}	0.21^{252}	0.48^{11}	0.49^{10}	0.60^{47}	0.57^{47}	0.32^{12}	0.02^{47}
2	0.57^{6}	0.59^{6}	0.32^{225}	0.41^{6}	0.88^{6}	0.22^{240}	0.31^{195}	–	–	0.90^{34}	0.86^{35}	–	0.02^{36}
3	–	–	0.48^{168}	–	–	0.31^{228}	0.37^{212}	–	–	0.95^{28}	1.06^{29}	–	0.02^{30}
4	–	–	–	–	–	0.41^{216}	–	–	–	0.90^{22}	0.99^{23}	–	0.06^{24}
5	–	–	–	–	–	–	–	–	–	1.05^{16}	0.97^{7}	–	0.17^{18}

Table 31: How the geometric mean of the time ratio evolves as baseline synthesis time increases under AMBA+GenBuf specifications.

Case	Δ	Time Ratio (Geometric Mean)								Timeouts (%)	
		<1s	1–10s	10–30s	30s–1m	1–5m	5–10m	10–30m	30–60m	All	Our	Baseline
Add SysJ*	1	—	**0.45**^{2}	**0.37**^{4}	—	—	—	**0.49**^{4}	**0.48**^{2}	**0.44**^{12}	0.00%	0.00%
	2	—	—	—	—	—	—	**0.66**^{4}	**0.42**^{2}	**0.57**^{6}	0.00%	0.00%
Add SysJ	1	—	**0.45**^{2}	**0.35**^{4}	—	—	—	**0.57**^{4}	**0.39**^{2}	**0.44**^{12}	0.00%	0.00%
	2	—	—	—	—	—	—	**0.64**^{4}	**0.50**^{2}	**0.59**^{6}	0.00%	0.00%
Sub SysJ*	1	—	**0.48**^{8}	**0.47**^{4}	—	—	—	—	—	**0.48**^{12}	7.69%	0.00%
	2	—	**0.41**^{6}	—	—	—	—	—	—	**0.41**^{6}	14.29%	0.00%
Sub SysJ	1	—	**0.49**^{8}	**0.19**^{4}	—	—	—	—	—	**0.36**^{12}	7.69%	0.00%
	2	—	**0.88**^{6}	—	—	—	—	—	—	**0.88**^{6}	25.00%	0.00%
Add SysS	1	1.30^{87}	**0.12**^{67}	**0.13**^{36}	**0.24**^{11}	**0.23**^{21}	**0.32**^{13}	**0.12**^{7}	**0.14**^{3}	**0.32**^{245}	2.78%	0.00%
	2	1.33^{74}	**0.10**^{59}	**0.17**^{36}	**0.23**^{11}	**0.30**^{22}	**0.37**^{13}	**0.09**^{7}	**0.16**^{3}	**0.32**^{225}	6.25%	0.00%
	3	2.33^{55}	**0.29**^{37}	**0.15**^{28}	**0.29**^{11}	**0.19**^{16}	**0.30**^{12}	**0.19**^{6}	**0.23**^{3}	**0.48**^{168}	8.70%	0.00%
Sub SysS*	1	**0.12**^{100}	**0.43**^{71}	**0.12**^{35}	**0.06**^{11}	**0.04**^{19}	**0.04**^{12}	**0.03**^{3}	**0.01**^{1}	**0.14**^{252}	0.40%	0.00%
	2	**0.27**^{100}	**0.48**^{70}	**0.10**^{34}	**0.07**^{11}	**0.07**^{13}	**0.05**^{8}	**0.04**^{3}	**0.00**^{1}	**0.22**^{240}	0.41%	0.00%
	3	**0.36**^{100}	**0.55**^{69}	**0.16**^{33}	**0.14**^{11}	**0.09**^{8}	**0.03**^{5}	**0.05**^{2}	—	**0.31**^{228}	0.87%	0.00%
	4	**0.55**^{100}	**0.53**^{68}	**0.20**^{30}	**0.21**^{6}	**0.11**^{7}	**0.05**^{4}	**0.01**^{1}	—	**0.41**^{216}	1.37%	0.00%
Sub SysS	1	**0.26**^{100}	**0.49**^{71}	**0.13**^{35}	**0.06**^{11}	**0.06**^{19}	**0.04**^{12}	**0.03**^{3}	**0.01**^{1}	**0.21**^{252}	0.40%	0.00%
	2	**0.63**^{77}	**0.57**^{51}	**0.14**^{32}	**0.06**^{11}	**0.09**^{12}	**0.06**^{8}	**0.03**^{3}	**0.00**^{1}	**0.31**^{195}	0.51%	0.00%
	3	**0.61**^{89}	**0.53**^{64}	**0.16**^{33}	**0.15**^{11}	**0.08**^{8}	**0.03**^{5}	**0.09**^{2}	—	**0.37**^{212}	0.93%	0.00%
Add EnvJ*	1	—	1.19^{1}	**0.37**^{1}	**0.78**^{1}	**0.40**^{1}	**0.60**^{1}	**0.40**^{6}	—	**0.48**^{11}	0.00%	8.33%
Add EnvJ	1	—	1.18^{1}	**0.50**^{1}	**0.66**^{1}	**0.34**^{1}	1.66^{1}	**0.33**^{5}	—	**0.49**^{10}	8.33%	8.33%
Sub EnvJ	1	—	**0.69**^{3}	1.05^{2}	**0.33**^{2}	**0.29**^{2}	**0.10**^{1}	**0.06**^{2}	—	**0.32**^{12}	0.00%	0.00%
Add EnvS*	1	—	**0.96**^{30}	1.14^{2}	—	**0.35**^{3}	—	**0.17**^{11}	**0.63**^{1}	**0.60**^{47}	0.00%	2.08%
	2	—	**0.97**^{23}	**0.94**^{1}	—	**0.92**^{1}	—	**0.80**^{8}	**0.50**^{1}	**0.90**^{34}	2.78%	2.78%
	3	—	**0.96**^{17}	**0.94**^{1}	—	2.70^{1}	—	**0.88**^{8}	**0.60**^{1}	**0.95**^{28}	3.33%	3.33%
	4	—	**0.85**^{11}	**0.93**^{1}	—	2.45^{1}	—	**0.89**^{8}	**0.58**^{1}	**0.90**^{22}	4.17%	4.17%
	5	—	**0.99**^{5}	1.01^{1}	—	**0.96**^{1}	—	1.15^{8}	**0.79**^{1}	1.05^{16}	5.56%	5.56%
Add EnvS	1	—	**0.92**^{30}	1.16^{2}	—	**0.32**^{3}	—	**0.15**^{11}	**0.62**^{1}	**0.57**^{47}	0.00%	2.08%
	2	—	**0.91**^{23}	**0.01**^{1}	—	2.51^{1}	—	1.11^{9}	**0.56**^{1}	**0.86**^{35}	0.00%	2.78%
	3	—	1.08^{17}	**0.98**^{1}	—	1.00^{1}	—	1.09^{9}	**0.74**^{1}	1.06^{29}	0.00%	3.33%
	4	—	1.07^{11}	**0.90**^{1}	—	2.65^{1}	—	**0.87**^{9}	**0.53**^{1}	**0.99**^{23}	0.00%	4.17%
	5	—	**0.97**^{3}	—	—	—	—	**0.98**^{4}	—	**0.97**^{7}	0.00%	0.00%
Sub EnvS	1	**0.19**^{6}	**0.00**^{31}	1.05^{1}	**0.28**^{2}	—	**0.08**^{1}	**0.47**^{5}	**0.59**^{1}	**0.02**^{47}	2.08%	0.00%
	2	**0.19**^{6}	**0.01**^{29}	2.30^{1}	—	—	—	—	—	**0.02**^{36}	0.00%	0.00%
	3	**0.23**^{6}	**0.01**^{24}	—	—	—	—	—	—	**0.02**^{30}	0.00%	0.00%
	4	**0.21**^{6}	**0.04**^{18}	—	—	—	—	—	—	**0.06**^{24}	0.00%	0.00%
	5	**0.21**^{6}	**0.16**^{12}	—	—	—	—	—	—	**0.17**^{18}	0.00%	0.00%