Type	Name	rpi4b Total	Distribution		qemu Total	rpi3bp Total			$\operatorname{graviton2}ig $ Tota		
checks c	P+po_p_amoswap_pl-coi+addr heck1 heck2	$0/0 \ 0/4M \ 0/4M$			$0/0 \ 0/0 \ 0/0$	0/0 0/3.50M 0/3.50M	-		0/0 0/102.50N 0/102.50N	I	
checks	heck3 heck4	0/9.50M 0/9.50M			0/0	0/3.50M 0/3.50M 0/3.50M	-		0/102.50N 0/109.50N 0/109.50N	l	
checks c	heck5 heck6	0/9.50M 0/9M 0/8.50M			0/0	0/3.50M 0/3.50M	-		0/109.50M 0/109.50M 0/116M	I	
data M	B+pos P+dmb+po P+dmbs	668.30K/3.50M 0/8.50M	95.47K/500K	$\pm 17.35 \text{K} / 500 \text{K}$	0/0 0/0 0/0	0/3.50M 783/3M 0/3.50M	130.50/500K	$\pm\ 26.32/500 { m K}$	10.93M/76M 0/115.50M	f 71.91K/500K	$\pm~6.46\mathrm{K}/500\mathrm{K}$
data M	P+po+dmb P+po-data+dmb	291/3M 7.57K/7M	540.79/500K	± 10.40/500K ± 190.30/500K	0/0	11.83K/3M 18.94K/3.50M	2.71K/500K	$\pm 1.54 \text{K} / 500 \text{K}$ $\pm 2.17 \text{K} / 500 \text{K}$	120.00K/76N 710.02K/112N	3.17K/500K	± 1.20K/500K ± 2.69K/500K
data M	P+pos P+rfi-data+dmb B+dmbs	1.16M/8M 4.51K/5M 0/8M	,	$\pm 28.18 \text{K} / 500 \text{K}$ $\pm 279.78 / 500 \text{K}$	$0/0 \ 0/0 \ 0/0$	23.18K/3.50M 22.81K/3.50M 0/3.50M	3.26 K/500 K	$\pm 1.49 \text{K} / 500 \text{K}$ $\pm 1.78 \text{K} / 500 \text{K}$	20.93M/115.50M 541.95K/95.50M 0/115.50M	1 2.84K/500K	$\pm 29.10 \text{K} / 500 \text{K}$ $\pm 2.88 \text{K} / 500 \text{K}$
data S	B+pos RC+addrs	1.86M/8M 0/7.50M	,	\pm 36.51K/500K	0/0	212.70K/3.50M 0/3.50M	30.39K/500K	$\pm 15.73 \text{K} / 500 \text{K}$	29.84M/115.50M 0/115.50M	I 129.17K/500K	$\pm 53.69 \text{K} / 500 \text{K}$
exc I	RC+pos .B+R-svc-W+R-svc-W .P+W-svc-W+addr	67.80K/7.50M 0/20M 0/20M	4.52K/500K	$\pm 980.62/500 \mathrm{K}$	0/0 0/0 0/0	9/3.50M 0/16M 117.36K/16M		$\pm 1.03/500K$ $\pm 2.85K/500K$	261.11K/115M 0/185M 240/185M	ſ	$\pm 1.49 \text{K} / 500 \text{K}$ $\pm 0.91 / 500 \text{K}$
exc Mexc	P+W-svc-eret-W+addr P+dmb+R-svc-R	0/3.50M 0/15.50M			0/0	7.45K/2.50M 0/15M	1.49K/500K	± 834.11/500K	29/75N 0/151.50N	0.19/500K	$\pm 0.47/500K$
exc M	P+dmb+R-svc-eret-R P+dmb+eret	0/20M 0/20.50M			0/0	0/15.50M 0/15.50M	-		0/185N 0/185N	l	
exc M	P+dmb+svc P+dmb+svc-R-eret-R P+dmb+svc-R-eret-svc-R	0/20.50M 0/15.50M 0/20.50M			0/0 0/0 0/0	0/15.50M 0/15M 0/15.50M	-		0/185M 0/151.50M 0/185M	l	
exc M	P+dmb+svc-R-svc-R P+dmb+svc-R-svc-eret-R	0/20.50M 0/20.50M			0/0	0/15.50M 0/15.50M	- - - -		0/184N 0/183.50N	<u>1</u> 1	
exc M	P+dmb+svc2-R-eret-R P+svc-W-eret-W+addr B+W-svc-R+W-svc-R	0/20.50M 0/20.50M 0/20.50M			0/0 0/0 0/0	0/15.50M 21.97K/15.50M 6.88K/15.50M	708.71/500K	± 630.49/500K ± 851.35/500K	0/183.50M 3.72K/183.50M 15.22K/183.50M	I 10.15/500K	$\pm 6.91/500K$ $\pm 23.47/500K$
exc S	B+svc-erets CoTR1.broken+dsb-tlbi-dsb-isb	34/20M 7/21.50M	$0.16/500 \mathrm{K}$	$\pm 2.66/500 \text{K} \pm 0.37/500 \text{K}$	0/0	6.45K/15.50M 0/0	207.90/500K	± 942.90/500K	3.12K/183.50N 0/0	1 8.51/500K	$\pm 6.38/500$ K
orhpan M	B.broken+pos P.BBM1+[dmb.ld]-dsb-tlbiis-[dmb.ld]-dsb-dsb+dsb-isb B.broken+W-svc-R+W-svc-R	$\frac{1.06M/1.50M}{0/500K}$ $\frac{20/2M}{}$	353.28K/500K	$\pm 39.86 \text{K} / 500 \text{K}$ $\pm 5.00 / 500 \text{K}$	0/0	0/0			0/0)	
orhpan W	RC.TRT1.broken+dsb-tlbiis-dsb+dmb	0/55.50M 964.72K/8M	,	± 31.30K/500K	0/0 0/0 0/0	0/0 0/0 520.06K/3M		$\pm 13.08 \text{K} / 500 \text{K}$	0/0 0/0 2.29M/108N)	$\pm 14.22 \text{K} / 500 \text{K}$
pgtable C	oRT+dsb-isb	802.86K/8M 2.51M/8M	50.18K/500K	$\pm 15.93 \text{K} / 500 \text{K}$	0/0	327.02K/3M 0/3M	54.50K/500K	\pm 5.67K/500K	3.41M/108N 21.70M/107.50N	15.77K/500K 1 100.92K/500K	$\pm 30.96 \text{K} / 500 \text{K}$
pgtable C	doTR+addr doTR+dmb doTR+dsb	0/8M $1/8M$ $2/8M$		$\pm 0.24/500 K$ $\pm 0.33/500 K$	$0/0 \ 0/0 \ 0/0$	1/3M $0/3M$ $0/2.50M$	-	$\pm 0.37/500 \text{K}$	0/107.50N 4/107.50N 5/107N	0.02/500K	$\pm 0.14/500K$ $\pm 0.15/500K$
pgtable C	CoTR+dsb-isb	1/8M 3.63M/6.50M	$0.06/500 \mathrm{K}$	$\pm 0.35/600K$ $\pm 0.24/500K$ $\pm 62.37K/500K$	0/0	0/2.50M 0/2.50M			1/107N 32.28M/43N	1 0.00/500K 1 375.33K/500K	$\pm 0.07/500K$ $\pm 0.07/500K$ $\pm 91.32K/500K$
pgtable C	oTR.inv+dsb-isb oTR1+dsb-dc-dsb-tlbi-dsb-isb oTR1+dsb-tlbi-dsb-isb	0/6.50M 2/6.50M 2/6.50M		$\pm 0.36/500 \text{K} \pm 0.36/500 \text{K}$	0/0 0/0 0/0	0/2.50M 0/2.50M 0/2.50M	-		0/43N 4/43N 3/43N	0.05/500K	$\pm 0.21/500 \text{K} \pm 0.18/500 \text{K}$
pgtable C	CoTR1.tlbi+dsb-isb	6/6.50M 0/6.50M		$\pm 0.36/500K$ $\pm 0.93/500K$	0/0	1/2.50M $0/2M$	0.20/500K	$\pm~0.40/500\mathrm{K}$	29/43N 0/43N	1 0.34/500K	$\pm 0.18/500K$ $\pm 0.58/500K$
pgtable C	OTW OWT	,	289.86K/500K	,	0/0		462.33 K / 500 K			I 263.28K/500K	,
pgtable C	CoWT+dsb-isb CoWT+dsb-svc-tlbi-dsb	,	289.17K/500K 290.59K/500K	,	$0/0 \ 0/0 \ 0/0$		248.76K/500K 248.94K/500K			I 250.05K/500K I 250.04K/500K I	,
pgtable C	CoWT.inv CoWT.inv+dmb	10/6.50M 8/6.50M	$0.62/500 \mathrm{K}$	$\pm 1.42/500 \text{K}$ $\pm 0.92/500 \text{K}$ $\pm 0.37/500 \text{K}$	0/0	1.73M/2M 69.38K/2M	432.85K/500K 17.35K/500K	$\pm 73.79 \text{K} / 500 \text{K}$ $\pm 16.32 \text{K} / 500 \text{K}$	169/42.50N 42/42.50N	1.99/500K 1 0.49/500K	$\pm 3.39/500K$ $\pm 0.85/500K$
pgtable C	OWT.inv+dsb OWT.inv+dsb-isb OWT1+dsb-tlbi-dsb	1/6.50M 0/6.50M 0/6.50M	0.08/500K	$\pm 0.27/500 K$	$0/0 \ 0/0 \ 0/0$	0/2M 0/2M 0/2M	-		57/42N 0/42N 0/42.50N	ı .	$\pm 1.00/500 \text{K}$
pgtable C	oWT1+dsb-tlbi-dsb-isb oWinvT	0/6.50M 4.17M/6.50M	320.63K/500K	,	0/0	0/2M 1.79M/2M	447.54K/500K	$\pm 88.94 \text{K} / 500 \text{K}$	0/42.50N 26.81M/42N	I 319.17K/500K	$\pm 105.14 \text{K} / 500 \text{K}$
pgtable C	oWinvT+dsb-isb oWinvT1+dsb-tlbi-dsb oWinvWT1+dsb-tlbi-dsb-dsb-isb	4.19M/6.50M 0/6.50M 0/6.50M	321.95K/500K	$\pm 97.84 \text{K} / 500 \text{K}$	0/0 0/0 0/0	1.83M/2M 0/2M 0/2M	-	$\pm 70.27 \text{K} / 500 \text{K}$	26.80M/42M 0/42M 0/42N	ſ	$\pm 105.27 \text{K} / 500 \text{K}$
pgtable I	SA2.TRR+dmb+po+dmb [P.BBM1+[dmb.ld]-dsb-tlbiis-dsb-isb-dsb-isb+dsb-isb	0/6.50M $0/6.50M$ $0/108.50M$			0/0	0/2M 0/2M 0/1.50M	-		0/42N 0/42N 0/437.50N	l	
pgtable M	P.BBM1+[dmb.ld]-tlbiis-dsb-isb-dsb-isb+dsb-isb P.BBM1+[po]-dsb-tlbiis-dsb-isb-dsb-isb+dsb-isb	0/198.50M 0/108.50M			0/0	0/1.06G 0/1.50M	-		0/129.50N 0/145.50N	I	1 0 49 F00T/
pgtable M	IP.BBM1+dsb-isb-tlbiis-dsb-isb-dsb-isb+dsb-isb IP.BBM1+dsb-tlbiis-dsb-dsb+dsb IP.BBM1+dsb-tlbiis-dsb-dsb+dsb-isb	0/6.50M 1/6.50M 0/6.50M	$0.08/500 \mathrm{K}$	$\pm 0.27/500 \mathrm{K}$	0/0 0/0 0/0	0/2M 0/2M 0/2M	-		52/135.50N 7/42.50N 2/42.50N	0.08/500K	$\pm 0.43/500K$ $\pm 0.31/500K$ $\pm 0.15/500K$
pgtable M	P.BBM1+dsb-tlbiis-dsb-dsb-isb+dsb P.BBM1+dsb-tlbiis-dsb-dsb-isb+dsb-isb	1/6M $2/6M$,	$\pm 0.28/500 \text{K} \pm 0.37/500 \text{K}$	0/0	0/2M 0/2M			0/42.50N 3/42.50N	1 0.04/500K	$\pm 0.24/500 K$
pgtable M	<pre>IP.BBM1+po-dsb-tlbiis-dsb-isb-dsb-isb IP.BBM1.id+dsb-tlbiis-dsb-dsb+dsb-isb IP.RT+svc-dsb-tlbi-dsb+dsb-isb</pre>	0/1M 10/6M 1/6M	,	$\pm 0.37/500K$ $\pm 0.28/500K$	$0/0 \ 0/0 \ 0/0$	0/1.50M 2/2M 0/2M	0.50/500 K	$\pm~0.50/500\mathrm{K}$	9/191.50N 87/42.50N 3/42N	1.02/500K	$\pm 0.15/500 \text{K}$ $\pm 0.15/500 \text{K}$ $\pm 0.19/500 \text{K}$
pgtable M	P.RT+svc-dsb-tlbiis-dsb+dsb-isb P.RT.inv+dmb+addr	1/6M 0/6M		$\pm 0.28/500 K$	0/0	0/2M 0/2M	-		3/42N 0/42N	1 0.04/500K I	± 0.19/500K
pgtable M	<pre>IP.RT.inv+dmb+po IP.RT1+[dmb.ld]-dmb+dsb-isb IP.RT1+[dmb.ld]-dsb-isb-tlbiis-dsb-isb+dmb</pre>	0/6M $7.15K/6M$ $0/1M$	595.58/500K	$\pm 290.84/500 \mathrm{K}$	$0/0 \ 0/0 \ 0/0$	6/1.50M 986/1.50M 0/1M	328.67/500K	$\pm 2.16/500K$ $\pm 464.80/500K$	0/42N 1.26K/42N 0/23N	I 15.01/500K	$\pm 32.31/500 \mathrm{K}$
pgtable M	P.RT1+[dmb.ld]-dsb-isb-tlbiis-dsb-isb+dsb-isb P.RT1+[dmb.ld]-dsb-tlbiis-dsb-isb+dmb	0/1M 0/6M			0/0	0/1M 0/1.50M			0/23N 0/42N	<u>1</u> 1	
pgtable M	P.RT1+dc-dsb-tlbiall-dsb+dsb-isb P.RT1+dc-dsb-tlbiall-dsb-isb+dsb-isb P.RT1+dsb-isb-tlbiis-dsb-isb+dsb-isb	$\frac{4/6M}{3/6M}$ $0/6M$		$\pm 0.47/500K$ $\pm 0.43/500K$	0/0 0/0 0/0	1/1.50M 0/1.50M 0/1.50M	-	$\pm 0.47/500 K$	5/41.50N 2/41.50N 4/41N	0.02/500K	$\pm 0.24/500K$ $\pm 0.15/500K$ $\pm 0.22/500K$
pgtable M	P.RT1+dsb-tlbi-dsb+dsb-isb P.RT1+dsb-tlbiall-dsb+dsb-isb	0/6M 5/6M		$\pm 0.49/500 K$	0/0	0/1.50M 0/1.50M			2/41N 6/41N	1 0.02/500K 1 0.07/500K	$\pm 0.15/500 \text{K} \pm 0.26/500 \text{K}$
pgtable M	P.RT1+dsb-tlbiallis-dsb+dsb-isb P.RT1+dsb-tlbiis-dsb+dsb-isb P.RT1+dsb-tlbiis-dsb-isb+dmb	3/6M 1/6M 0/6M		$\pm 0.60/500 \text{K} \pm 0.28/500 \text{K}$	0/0 0/0 0/0	0/1.50M 0/1.50M 0/1.50M	-		2/41N 1/41N 1/41N	0.01/500K	$\pm 0.15/500K$ $\pm 0.11/500K$ $\pm 0.11/500K$
pgtable M	P.RT1+dsb-tlbiis-dsb-isb+dsb-isb P.RT1+dsb-tlbiis-dsb-tlbiis-dsb+dsb-isb	0/6M 0/6M			0/0	0/1.50M 0/1.50M	-		1/41N 3/41N	1 0.01/500K 1 0.04/500K	$\pm 0.11/500 \text{K}$ $\pm 0.19/500 \text{K}$
pgtable M	P.TT+Winv-dmb-Winv+tpo P.TT+dmb+dsb-isb P.TT+dmb+tpo	254.83K/6M 688.65K/5.50M 843.79K/5.50M	62.60 K / 500 K	± 7.81K/500K ± 14.12K/500K + 12.64K/500K	0/0	114.48K/1.50M 174.78K/1.50M 157.80K/1.50M	58.26K/500K	$\pm 13.77 \text{K} / 500 \text{K}$ $\pm 2.25 \text{K} / 500 \text{K}$ $\pm 5.28 \text{K} / 500 \text{K}$	170.96K/41N 492.98K/41N 480.31K/41N	6.01K/500K	± 2.06K/500K ± 6.55K/500K + 5.24K/500K
pgtable M	P.TT+dmb+tpo P.TT.inv+dmb+dsb-isb P.TT.inv+dmb+tpo	843.79K/5.50M 0/5.50M 0/5.50M	10.11K/500K	± 12.64K/500K	$0/0 \ 0/0 \ 0/0$	157.80K/1.50M 0/1.50M 0/1.50M	-	± 5.28K/500K	480.31K/41N 0/41N 0/41N	ſ	$\pm 5.24 \text{K} / 500 \text{K}$
pgtable M	P.invRT+dsb+dsb-isb P.invRT1+dsb-isb-tlbiis-dsb-isb+dsb-isb	871.53K/5M 0/5.50M	87.15K/500K	\pm 33.34K/500K	0/0	101.75K/1.50M 0/1.50M	33.91K/500K	$\pm 10.14 \text{K} / 500 \text{K}$	1.78M/40.50N 1/41N	1 21.99K/500K 1 0.01/500K	± 19.45K/500K ± 0.11/500K ± 0.15/500K
pgtable M	P.invRT1+dsb-tlbiis-dsb+dsb P.invRT1+dsb-tlbiis-dsb+dsb-isb RC.AT+ctrl+dsb	0/5M 1/4.50M 128.64K/4.50M		$\pm 0.31/500K$ $\pm 3.29K/500K$	$0/0 \ 0/0 \ 0/0$	0/1.50M 0/1.50M 77.36K/1.50M	-	$\pm 4.61 \text{K} / 500 \text{K}$	2/41N 1/41N 214.45K/40N	0.01/500K	$\begin{array}{l} \pm \ 0.15/500 \mathrm{K} \\ \pm \ 0.11/500 \mathrm{K} \\ \pm \ 2.81 \mathrm{K}/500 \mathrm{K} \end{array}$
pgtable W	RC.TRR+addr+dmb RC.TRR.inv+addrs	0/4.50M 0/4.50M	,	,	0/0	0/1.50M 0/1.50M		,	0/40N 0/40N	<u>,</u> [,
pgtable W	RC.TRT+addr+dmb RC.TRT+dmbs RC.TRT+dsb-isbs	35.28K/4.50M 53.60K/4.50M 18.80K/4.50M	5.96 K / 500 K	$\pm 989.41/500K$ $\pm 4.36K/500K$ $\pm 878.54/500K$	$0/0 \ 0/0 \ 0/0$	32.50K/1.50M 36.76K/1.50M 30.44K/1.50M	12.25 K / 500 K	$\pm 5.05 \text{K} / 500 \text{K}$ $\pm 7.35 \text{K} / 500 \text{K}$ $\pm 1.19 \text{K} / 500 \text{K}$	103.16K/40M 171.51K/40M 104.62K/39.50M	1 2.14K/500K	$\pm 802.83/500K$ $\pm 1.83K/500K$ $\pm 501.19/500K$
pgtable W	RC.TRT.inv+addrs RC.TRT.inv+dsb-isbs	0/4M 0/4M	, 55011		0/0	0/1.50M 0/1M		/ 50011	0/38.50N 0/38N	Г	2,30011
pgtable W	RC.TRT.inv+po+addr RC.TRT.inv+po+dmb RC.TRT1+dsb-tlbiis-dsb+dmb	0/4M 0/4M 0/4.50M			0/0 0/0 0/0	0/1M 0/1M 0/1M	-		0/37.50N 0/37N 0/38N	I	
pgtable Waliasing C	RC.TRT1+dsb-tlbiis-dsb+dsb-isb oWR.alias	0/4.50M $0/6M$			0/0	0/1M 0/1.50M	- - -		0/38N 0/36N	<u>1</u> 1	
aliasing Maliasing M	P+dmb-data+dmb P.alias+dmbs Palias2+dmb-data+dmb	0/5M 0/5M 0/5M			0/0	0/1.50M 0/1.50M			0/36N 0/36N 0/36N	l	
aliasing M	IP.alias2+dmb-data+dmb IP.alias2+dmbs IP.alias2+po-data+dmb	0/5M 0/3M 2.23K/5M	222.60/500K	$\pm 44.19/500 K$	$0/0 \ 0/0 \ 0/0$	0/1.50M 0/1.50M 3.17K/1.50M	-	$\pm 107.89/500 K$	0/36N 0/19.50N 407.36K/36N	l	$\pm 1.83 \text{K} / 500 \text{K}$
aliasing Maliasing S	P.alias3+rfi-data+dmb B.alias+dmbs	$\frac{51/3M}{0/5M}$		$\pm 2.36/500 K$	0/0	16/1.50M 0/1M	5.33/500K	$\pm 2.05/500 K$	36.35K/19.50N 0/35.50N	932.18/500K	± 337.68/500K
aliasing W	RC.alias2+addrs RC.alias2+dmbs P.NC+dsb-dc-dsb-dmb+dmb	0/4M 0/4M 138.80K/8M	8.67K/500K	$\pm 1.69 \text{K} / 500 \text{K}$	$0/0 \ 0/0 \ 0/0$	0/43M 0/43M 364.97K/26M	-	± 555.37/500K	0/19N 0/18.50N 54.95K/25.50N	I	$\pm 1.54 \text{K} / 500 \text{K}$
cacheability M	P.NC+po-dmb+dmb P.NC1+dsb-tlbiis-dsb-dc-dsb-dmb+dmb	345.33K/7.50M 0/7.50M	23.02K/500K	$\pm 6.66 \text{K}/500 \text{K}$	0/0	642.90K/25.50M 0/25.50M	12.61K/500K	$\pm 1.14 \text{K/}500 \text{K}$	333.55K/25.50M 0/25.50M	f 6.54K/500K	$\pm 1.09 \text{K}/500 \text{K}$
cacheability W cacheability W cacheability W		556/7.50M 0/0 0/0	37.07/500K	$\pm 16.14/500 \mathrm{K}$	0/0 0/0 0/0	482/25.50M 0/0 0/0	,	$\pm 3.23/500 K$	6/25.50N 0/0 0/0)	$\pm 0.43/500 \text{K}$
cacheability W	R.WARA-NC+dsb	0/0 0/0			0/0	0/0)		0/0)	
•	oWT.L23+dsb-isb		440.53K/500K 495.27K/500K		0/0		249.08K/500K 495.87K/500K			1 289.56K/500K 1 476.97K/500K	
pmds C	CoWT.L23+po CoWT1.L23+dsb-t1bi-dsb-isb COT+dsb-dsb	12.88M/13M 0/13M 0/13M	499.41K/3UUK	⊥ 2.40 N / ∂UUK	$0/0 \ 0/0 \ 0/0$	13.39M/13.50M 0/13.50M 0/13.50M	,	⊥ <i>9</i> 09.60/500K	80.61M/84.50N 0/84.50N 0/84.50N	ſ	⊥ 44.4U N / ∂UU N
pmds R	.OT+po-po .OT1+dsb-dsb-tlbi-dsb	0/13M 0/13M			0/0	0/13.50M 0/13.50M			0/84N 0/84N	<u>1</u> 1	
same_page C	OT1+dsb-dsb-tlbivaa-dsb OTT+dsb-popage OTT+po-popage	0/13M $0/35.50M$ $1/47M$	0.01/500K	$\pm 0.10/500 K$	$0/0 \\ 0/0 \\ 0/0$	0/13.50M 0/31M 0/43.50M	-		0/84N 0/1.120 0/1.200	3	
sysreg W	R.MAIR1+dsb-isb-dc-dsb R.MAIR1+dsb-isb-po	0/0 0/0		.5/ 55511	0/0	0/0)		0/0)	
sysreg W	R.MAIR1+dsb-tlbi-dsb-isb-dc-dsb R.MAIR1+dsb-tlbi-dsb-isb-po R.MAIR1+po-po	0/0 0/0 0/0			0/0 0/0 0/0	0/0 0/0 0/0			0/0 0/0 0/0)	
	P.times+pos	0/0			0/0	0/0			0/0		