

Ignoring empty loop time

CPU Core	Cortex A72		Neoverse N1		Neoverse V1		Apple M1	
Frequency (assume boost)	1.80 GHz		3.00 GHz		2.60 GHz		3.20 GHz	
Mean inst time (ns), inst/cycle	ns	inst/cycle	ns	inst/cycle	ns	inst/cycle	ns	inst/cycle
NOP	0.560	0.992	0.093	3.584	0.036	10.684	0.045	6.944
ADD	0.298	1.864	0.115	2.899	0.099	3.885	0.070	4.464
ADC	0.296	1.877	0.115	2.899	0.099	3.885	0.108	2.894
ADDS	0.315	1.764	0.120	2.778	0.132	2.914	0.108	2.894
ADCS	0.558	0.996	0.334	0.998	0.387	0.994	0.313	0.998
MUL	1.671	0.332	1.001	0.333	0.193	1.993	0.156	2.003
UMULH	2.228	0.249	1.335	0.250	0.193	1.993	0.156	2.003
DIV	5.571	0.100	3.003	0.111	3.851	0.100	0.628	0.498
MUL UMULH	1.950	0.285	1.168	0.285	0.193	1.993	0.156	2.003
MUL ADCS UMULH ADCS	0.975	0.570	0.584	0.571	0.294	1.308	0.156	2.003
MUL ADD	0.836	0.665	0.501	0.665	0.105	3.663	0.105	2.976
MUL ADC	0.836	0.665	0.501	0.665	0.105	3.663	0.104	3.005
MUL ADDS	0.836	0.665	0.501	0.665	0.103	3.734	0.104	3.005
MUL ADCS	0.836	0.665	0.501	0.665	0.196	1.962	0.156	2.003
MUL ADCS (alt)	0.836	0.665	0.501	0.665	0.195	1.972	0.156	2.003
UMULH ADD	1.114	0.499	0.667	0.500	0.131	2.936	0.105	2.976
UMULH ADC	1.114	0.499	0.667	0.500	0.131	2.936	0.104	3.005
UMULH ADDS	1.114	0.499	0.667	0.500	0.146	2.634	0.104	3.005
UMULH ADCS	1.114	0.499	0.667	0.500	0.340	1.131	0.157	1.990
UMULH ADCS (alt)	1.114	0.499	0.667	0.500	0.339	1.135	0.156	2.003
MUL ADD UMULH ADD	0.975	0.570	0.584	0.571	0.123	3.127	0.105	2.976
PACIA					0.385	0.999	0.313	0.998
AUTIA					0.385	0.999	0.313	0.998
PACIA AUTIA					0.385	0.999	0.313	0.998
PACIA ... AUTIA ...					0.385	0.999	0.313	0.998

UMULH vs. MUL

+33.33%

+33.37%

+0.00%

+0.00%

UMULH ADCS vs. MUL ADCS

+33.25%

+33.13%

+73.47%

+0.64%