$$\text{ADD}_{32} := 15.376 \quad \text{ADD}_{64} := 15.992$$

$$\text{SUB}_{64} := 15.992$$

$$\text{COMP}_{64} := 16.601$$

$$\text{MUX}_{64} := 15.168$$

$$\text{REG}_{16} := 4.284 \quad \text{REG}_{32} := 4.973 \quad \text{REG}_{64} := 5.832$$

$$\text{SHL}_{64} := 19.817$$

$$\text{SHR}_{32} := 18.330 \quad \text{SHR}_{64} := 19.167$$

$$\text{DIV}_{32} := 102.83? \quad \text{DIV}_{64} := 303.302$$

$$\text{MOD}_{64} := 312.498$$

$$\text{DEC}_{64} := 14.392$$

$$\text{INC}_{64} := 10.968$$

3)
$$\text{lOO} := \text{ADD}_{32}$$
$$\text{lOl} := \text{ADD}_{32}$$
$$\text{lO2} := \text{ADD}_{32}$$
$$\text{lO3} := \text{ADD}_{32}$$
$$\text{llO} := \text{ADD}_{32} + \max(\text{lOO}, \text{lOl})$$
$$\text{lll} := \text{ADD}_{32} + \max(\text{lO2}, \text{lO3})$$
$$\text{l2} := \text{ADD}_{32} + \max(\text{llO}, \text{lll})$$
$$\text{l2div2} := \text{SHR}_{32} + \text{l2}$$
$$\text{l2div4} := \text{SHR}_{32} + \text{l2div2}$$
$$\text{l2div8} := \text{SHR}_{32} + \text{l2div4}$$
$$\text{avg} := \text{REG}_{32} + \text{l2div8}$$
$$\text{avg} = 106.091$$

4)
$$\text{t1} := \text{ADD}_{32}$$
$$\text{t2} := \text{ADD}_{32} + \text{t1}$$
$$\text{t3} := \text{ADD}_{32} + \text{t2}$$
$$\text{t4} := \text{ADD}_{32} + \text{t3}$$
$$\text{t5} := \text{ADD}_{32} + \text{t4}$$
$$\text{t6} := \text{ADD}_{32} + \text{t5}$$
$$\text{t7} := \text{ADD}_{32} + \text{t6}$$
$$\text{t8} := \text{ADD}_{32} + \text{t7}$$
$$\text{t9} := \text{ADD}_{32} + \text{t8}$$
$$\text{t10} := \text{ADD}_{32} + \text{t9}$$
$$\text{t11} := \text{ADD}_{32} + \text{t10}$$
$$\text{t12} := \text{ADD}_{32} + \text{t11}$$
$$\text{t13} := \text{ADD}_{32} + \text{t12}$$

$$\text{t14} := \text{ADD}_{32} + \text{t13}$$

$$\text{final} := \text{REG}_{32} + \text{t14}$$

$$\text{final} = 220.237$$

5)

$$\text{d} := \text{ADD}_{64}$$

$$\text{e} := \text{ADD}_{64}$$

$$\text{f} := \text{SUB}_{64}$$

$$\text{dEQe} := \text{COMP}_{64} + \max(\text{d}, \text{e})$$

$$\text{dLTe} := \text{COMP}_{64} + \max(\text{d}, \text{e})$$

$$\text{g} := \text{MUX}_{64} + \max(\text{dLTe}, \text{d}, \text{e})$$

$$\text{h} := \text{MUX}_{64} + \max(\text{dEQe}, \text{g}, \text{f})$$

$$\text{greg} := \text{REG}_{64} + \text{g}$$

$$\text{hreg} := \text{REG}_{64} + \text{h}$$

$$\text{xrin} := \text{SHL}_{64} + \text{hreg}$$

$$\text{zrin} := \text{SHR}_{64} + \text{greg}$$

$$\text{x} := \text{REG}_{64} + \text{xrin}$$

$$\text{z} := \text{REG}_{64} + \text{zrin}$$

$$\text{x} = 94.41$$

6)

$$\text{t1} := \text{ADD}_{32}$$

$$\text{r1} := \text{REG}_{32} + \text{t1}$$

$$\text{t2} := \text{ADD}_{32} + \text{r1}$$

$$\text{r2} := \text{REG}_{32} + \text{t2}$$

$$\text{t3} := \text{ADD}_{32} + \text{r2}$$

$$\text{r3} := \text{REG}_{32} + \text{t3}$$

$$\text{t4} := \text{ADD}_{32} + \text{r3}$$

$$\text{r4} := \text{REG}_{32} + \text{t4}$$

$$\text{t5} := \text{ADD}_{32} + \text{r4}$$

$$\text{r5} := \text{REG}_{32} + \text{t5}$$

$$\text{t6} := \text{ADD}_{32} + \text{r5}$$

$$\text{r6} := \text{REG}_{32} + \text{t6}$$

$$\text{t7} := \text{ADD}_{32} + \text{r6}$$

$$\text{r7} := \text{REG}_{32} + \text{t7}$$

$$\text{avgwire} := \text{DIV}_{32} + \text{r7}$$

$$\text{avg} := \text{REG}_{16} + \text{avgwire}$$

avg = 249.559

7)

$e := DIV_{64}$

$f := DIV_{64}$

$g := MOD_{64}$

$gEQz := COMP_{64} + g = 329.099$

$zwire := MUX_{64} + \max(e, f)$

$z := REG_{64} + zwire = 324.302$

$gEQz = 329.099$

8)

$e := DEC_{64}$

$f := INC_{64}$

$g := MOD_{64}$

$gEQz := COMP_{64} + g$

$zwire := MUX_{64} + \max(gEQz, e, f)$

$z := REG_{64} + zwire$

$z = 350.099$