

Results for the final version of the firmware experiment with 512KB total, processed in 2KB chunks

For this experiment, the optimization level used for the speed analysis was -O3 (which generates the fastest code), and for the size it was -Oz (which generates the smallest code).

Below, we can see only the values needed to execute only the sha256 algorithm. (the vector declaration and initialization was subtracted from the final results – see the section *Raw Output*)

Note: All the commands used are listed in the section *Commands used*.

Cycle count

Difference: **1,280 cycles**

Without the function MatchSET1CLR1: **360,218,176**

With the function MatchSET1CLR1: **360,216,896**

Size

Difference:

text	data	bss	dec	hex
8	0	0	8	8

Without the function MatchSET1CLR1:

text	data	bss	dec	hex
1,992	288	128	2,408	968

With the function MatchSET1CLR1:

text	data	bss	dec	hex
1,984	288	128	2,400	960

Raw output

Speed

- without the function MatchSET1CLR1:

Full Code: 372868217

Only Vector Generation: 12650041

Difference: **360,218,176**

- with the function MatchSET1CLR1:

Full Code: 372866937

Only Vector Generation: 12650041

Difference: **360,216,896**

Size

- without the function MatchSET1CLR1:

Full Code:

text data bss dec hex filename

2758 294 8446 11498 2cea 2KB-chunks-full-code-without-function-size-Oz.out

Only Vector Generation:

text data bss dec hex filename

766 6 8318 9090 2382 2KB-chunks-only-vector-generation-without-function-size-Oz.out

Difference:

text	data	bss	dec	hex
1,992	288	128	2,408	968

- with the function MatchSET1CLR1:

Full Code:

text data bss dec hex filename

2750 294 8446 11490 2ce2 2KB-chunks-full-code-with-function-size-Oz.out

Only Vector Generation:

text data bss dec hex filename

766 6 8318 9090 2382 2KB-chunks-only-vector-generation-with-function-size-Oz.out

Difference:

text	data	bss	dec	hex
1,984	288	128	2,400	960

Commands used

--- Subsection without the function MatchSET1CLR1 ---

----- Speed -----

Full Code

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>clang -
fsim -O3 2KB-chunks-full-code.c -fdata-sections -ffunction-sections -WL,--gc-sections -
Tlinker_script.ld -o 2KB-chunks-full-code-without-function-speed-O3.out
```

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>rl78-elf-
sim -v 2KB-chunks-full-code-without-function-speed-O3.out Exit code: 0 total clocks:
372868217
```

Only vector generation

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>clang -
fsim -O3 2KB-chunks-only-vector-generation.c -fdata-sections -ffunction-sections -WL,--
gc-sections -Tlinker_script.ld -o 2KB-chunks-only-vector-generation-without-function-
speed-O3.out
```

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>rl78-elf-
sim -v 2KB-chunks-only-vector-generation-without-function-speed-O3.out Exit code: 0
total clocks: 12650041
```

----- Size -----

Full Code

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>clang -Oz
2KB-chunks-full-code.c -fdata-sections -ffunction-sections -WL,--gc-sections -
Tlinker_script.ld -o 2KB-chunks-full-code-without-function-size-Oz.out
```

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>llvm-size
2KB-chunks-full-code-without-function-size-Oz.out
```

text data bss dec hex filename

2758 294 8446 11498 2cea 2KB-chunks-full-code-without-function-size-Oz.out

Only vector generation

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>clang -Oz
2KB-chunks-only-vector-generation.c -fdata-sections -ffunction-sections -WL,--gc-
sections -Tlinker_script.ld -o 2KB-chunks-only-vector-generation-without-function-size-
Oz.out
```

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>llvm-size
2KB-chunks-only-vector-generation-without-function-size-Oz.out text data bss dec hex
filename 766 6 8318 9090 2382 2KB-chunks-only-vector-generation-without-function-size-
Oz.out
```

--- Subsection with the function MatchSET1CLR1 ---

----- Speed -----

Full Code

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>clang -
fsim -O3 2KB-chunks-full-code.c -fdata-sections -ffunction-sections -WL,--gc-sections -
Tlinker_script.ld -o 2KB-chunks-full-code-with-function-speed-O3.out
```

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>rl78-elf-
sim -v 2KB-chunks-full-code-with-function-speed-O3.out Exit code: 0 total clocks:
372866937
```

Only vector generation

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>clang -
fsim -O3 2KB-chunks-only-vector-generation.c -fdata-sections -ffunction-sections -WL,--
gc-sections -Tlinker_script.ld -o 2KB-chunks-only-vector-generation-with-function-speed-
O3.out
```

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>rl78-elf-
sim -v 2KB-chunks-only-vector-generation-with-function-speed-O3.out Exit code: 0 total
clocks: 12650041
```

----- Size -----

Full Code

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>clang -Oz
2KB-chunks-full-code.c -fdata-sections -ffunction-sections -WL,--gc-sections -
Tlinker_script.ld -o 2KB-chunks-full-code-with-function-size-Oz.out
```

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>llvm-size
2KB-chunks-full-code-with-function-size-Oz.out
```

text data bss dec hex filename

2750 294 8446 11490 2ce2 2KB-chunks-full-code-with-function-size-Oz.out

Only vector generation

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>clang -Oz
2KB-chunks-only-vector-generation.c -fdata-sections -ffunction-sections -WL,--gc-
sections -Tlinker_script.ld -o 2KB-chunks-only-vector-generation-with-function-size-
Oz.out
```

```
D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\2KB>llvm-size
2KB-chunks-only-vector-generation-with-function-size-Oz.out text data bss dec hex
filename 766 6 8318 9090 2382 2KB-chunks-only-vector-generation-with-function-size-
Oz.out
```