Test Report

Memory ReadWrite Speed Test Report for Renesas G2L A55 SOM

Rev1.0
2022-07-06

Version History

Version	Modification instructions	Author	Date
V1.0	Initial document.	yuge	2022-07-06

1. Test Objective

The objective of the test is to evaluate the memory read/write speed, specifically the performance of DDR4, using the WTB-G2LS_V02 industrial control board launched by Weixin Technology (including the WTC-G2LS_V03 SOM)。

2. Test Results

Test result for a single Micron 1GB DDR4 memory: 1050MB/s

Test result for a single Samsung 512MB DDR4 memory: 1060MB/s

3. Test Tools

Memory bandwidth test tool: mbw

Mbw is a memory bandwidth testing tool that can test memory copy speeds in three different methods: byte copy, block copy, and overall copy. The program source code is simple and easy to understand.

To obtain: git clone http://github.com/raas/mbw

After compiling it with the appropriate cross-compiler, copy it to the machine to run.

```
root@weathink:~# ./mbw -h
mbw memory benchmark v1.5, https://github.com/raas/mbw
Usage: mbw [options] array_size_in_MiB
Options:
        -n: number of runs per test (0 to run forever)
        -a: Don't display average
        -t0: memcpy test
        -t1: dumb (b[i]=a[i] style) test
```

```
        -t2: memcpy test with fixed block size
        -b <size>: block size in bytes for -t2 (default: 262144)
        -q: quiet (print statistics only)
(will then use two arrays, watch out for swapping)
'Bandwidth' is amount of data copied over the time this operation took.

The default is to run all tests available.
root@weathink:~#
```

4、Test Process

4.1、Test for a Single Micron 1GB DDR4

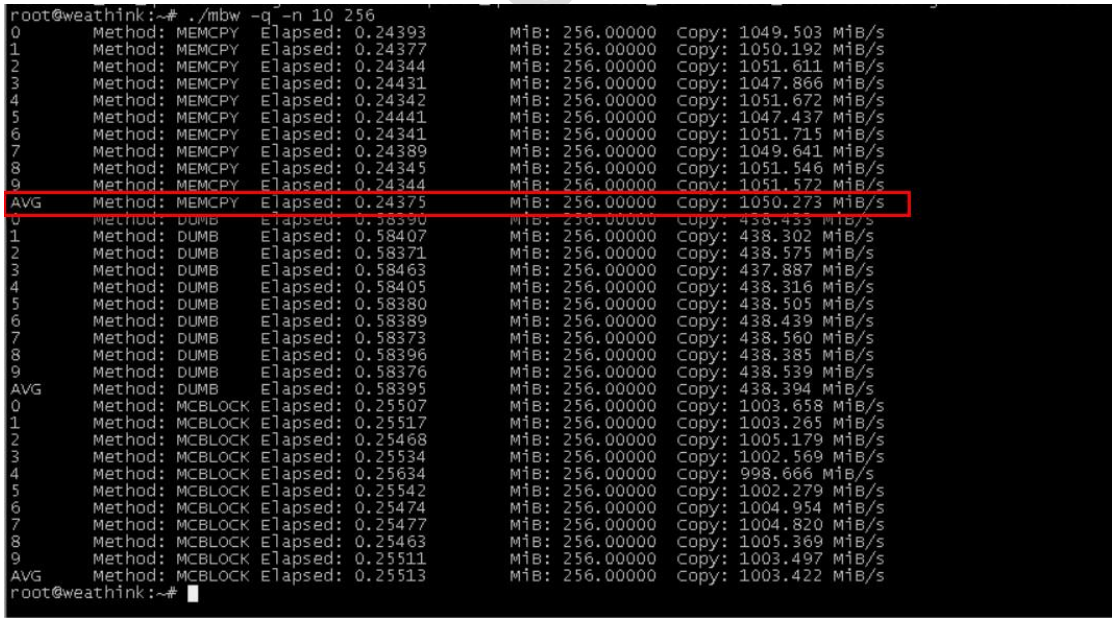
Memory read/write speed test on a single Micron 1GB DDR4 module.

Command used:

```
./mbw -q -n 10 256
```

-n indicates the number of test runs

256 indicates the memory size tested, which is 256MB



4.2 Test for a Single Samsung 512MB DDR4

Memory read/write speed test on a single Samsung 512MB DDR4 module.

Command used:

```
./mbw -q -n 10 128
```

-n indicates the number of test runs

128 indicates the memory size tested, which is 128MB

```
root@weathink:/# ./mbw -q -n 10 128
0       Method: MEMCPY  Elapsed: 0.12031        MiB: 128.00000  Copy: 1063.936 MiB/s
1       Method: MEMCPY  Elapsed: 0.12043        MiB: 128.00000  Copy: 1062.867 MiB/s
2       Method: MEMCPY  Elapsed: 0.12049        MiB: 128.00000  Copy: 1062.364 MiB/s
3       Method: MEMCPY  Elapsed: 0.12032        MiB: 128.00000  Copy: 1063.803 MiB/s
4       Method: MEMCPY  Elapsed: 0.12044        MiB: 128.00000  Copy: 1062.770 MiB/s
5       Method: MEMCPY  Elapsed: 0.12042        MiB: 128.00000  Copy: 1062.946 MiB/s
6       Method: MEMCPY  Elapsed: 0.12049        MiB: 128.00000  Copy: 1062.329 MiB/s
7       Method: MEMCPY  Elapsed: 0.12072        MiB: 128.00000  Copy: 1060.305 MiB/s
8       Method: MEMCPY  Elapsed: 0.12143        MiB: 128.00000  Copy: 1054.131 MiB/s
9       Method: MEMCPY  Elapsed: 0.12140        MiB: 128.00000  Copy: 1054.400 MiB/s
AVG     Method: MEMCPY  Elapsed: 0.12064        MiB: 128.00000  Copy: 1060.974 MiB/s
0       Method: DUMB    Elapsed: 0.29390        MiB: 128.00000  Copy: 435.530 MiB/s
1       Method: DUMB    Elapsed: 0.29384        MiB: 128.00000  Copy: 435.605 MiB/s
2       Method: DUMB    Elapsed: 0.29393        MiB: 128.00000  Copy: 435.476 MiB/s
3       Method: DUMB    Elapsed: 0.29385        MiB: 128.00000  Copy: 435.598 MiB/s
4       Method: DUMB    Elapsed: 0.29377        MiB: 128.00000  Copy: 435.714 MiB/s
5       Method: DUMB    Elapsed: 0.29381        MiB: 128.00000  Copy: 435.648 MiB/s
6       Method: DUMB    Elapsed: 0.29380        MiB: 128.00000  Copy: 435.663 MiB/s
7       Method: DUMB    Elapsed: 0.29390        MiB: 128.00000  Copy: 435.524 MiB/s
8       Method: DUMB    Elapsed: 0.29393        MiB: 128.00000  Copy: 435.472 MiB/s
9       Method: DUMB    Elapsed: 0.29368        MiB: 128.00000  Copy: 435.841 MiB/s
AVG     Method: DUMB    Elapsed: 0.29384        MiB: 128.00000  Copy: 435.607 MiB/s
0       Method: MCBLOCK Elapsed: 0.12734        MiB: 128.00000  Copy: 1005.191 MiB/s
1       Method: MCBLOCK Elapsed: 0.12838        MiB: 128.00000  Copy: 997.071 MiB/s
2       Method: MCBLOCK Elapsed: 0.12709        MiB: 128.00000  Copy: 1007.160 MiB/s
3       Method: MCBLOCK Elapsed: 0.12717        MiB: 128.00000  Copy: 1006.535 MiB/s
4       Method: MCBLOCK Elapsed: 0.12675        MiB: 128.00000  Copy: 1009.854 MiB/s
5       Method: MCBLOCK Elapsed: 0.12702        MiB: 128.00000  Copy: 1007.747 MiB/s
6       Method: MCBLOCK Elapsed: 0.12703        MiB: 128.00000  Copy: 1007.620 MiB/s
7       Method: MCBLOCK Elapsed: 0.12698        MiB: 128.00000  Copy: 1008.041 MiB/s
8       Method: MCBLOCK Elapsed: 0.12690        MiB: 128.00000  Copy: 1008.684 MiB/s
9       Method: MCBLOCK Elapsed: 0.12691        MiB: 128.00000  Copy: 1008.621 MiB/s
AVG     Method: MCBLOCK Elapsed: 0.12716        MiB: 128.00000  Copy: 1006.641 MiB/s
root@weathink:/#
```

Physical picture: